



**CITY OF REDMOND**  
Community Development Department

411 SW 9<sup>th</sup> Street  
Redmond, OR 97756  
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[www.redmondoregon.gov](http://www.redmondoregon.gov)

**REDMOND URBAN AREA PLANNING COMMISSION**

411 SW 9<sup>th</sup> Street-COUNCIL CHAMBERS Redmond, OR 97756

**Wednesday, April 16, 2025 5:30 pm**

Oral comments can be provided in-person or virtually. For those who plan to provide oral comments virtually during the meeting, pre-register at [planredmond@redmondoregon.gov](mailto:planredmond@redmondoregon.gov) (must pre-register before 3:00 p.m. on April 16, 2025)

Stream the meeting live at: [www.redmondoregon.gov/PlanningCommissionLive](http://www.redmondoregon.gov/PlanningCommissionLive)

**Agenda**

| RUAPC Members                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tobias Colvin,<br>Chair           | I. CALL TO ORDER / INTRODUCTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Norman<br>Schultz, Vice-<br>Chair | II. CITIZEN COMMENTS FOR ITEMS NOT ON THE AGENDA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Heather DeWolf                    | III. APPROVAL OF MINUTES<br>a. February 19, 2025<br>b. March 19, 2025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Mercedes<br>Cook-Bostick          | IV. PUBLIC HEARINGS<br>a. Redmond Development Code Amendment (File No. 711-25-000057-TA)<br>b. Antelope Flats: Annexation, Master Development Plan, Tentative Subdivision<br>(File Nos.: 711-25-000003-ANN, 711-25-000004-MD, 711-25-000005-SUB)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Michael Rogers                    | V. NEXT MEETING – May 21, 2025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Tom Kuhn                          | VI. COMMISSIONER COMMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Ben<br>Schimmoller                | VII. ADJOURN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Ex-Officio<br>Vacant              | <p>Please note that these documents are also available on the City's website <a href="http://www.redmondoregon.gov">www.redmondoregon.gov</a>; click on City Government, hover on Commissions and Committees, click on Urban Area Planning Commission. You may also request a copy from City Records Office 541-923-7751 or email <a href="mailto:Kelly.morse@redmondoregon.gov">Kelly.morse@redmondoregon.gov</a></p> <p>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 <a href="mailto:access@redmondoregon.gov">access@redmondoregon.gov</a>. 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.</p> |

**Regular Meeting Minutes**

Council Chambers & Remote Video Conferencing

<https://www.redmondoregon.gov/RUAPC>

**CALL TO ORDER / INTRODUCTIONS**

**Chair Colvin** called the meeting to order at 5:30 pm.

Present: Chair Tobias Colvin, Vice Chair Norman Schultz, Mercedes Cook-Bostick, Tom Kuhn, Michael Rogers

Excused: Heather DeWolf, Ben Schimmoller

Staff Present: Kyle Roberts, Planning Director; Clarissa Davis, Long Range Planner; Jamie Buddenbohn, Planning Permit Coordinator

Others Present: None

**CITIZEN COMMENTS FOR ITEMS NOT ON THE AGENDA**

There were none.

**Planning Director Roberts** introduced new Long Range Planner Davis, noting the Planning Division is now fully staffed.

**DRAFT 2025 PLANNING COMMISSION WORKPLAN**

**Planning Director Roberts** displayed the draft 2025 Planning Commission Workplan, which City Council would review at its March 11<sup>th</sup> regular meeting. He reviewed the items in the Workplan and the anticipated schedule for each item to come before the Commission, highlighting development applications, area plans, public facility plans, and Development Code amendments. Council would discuss the sequence of plan adoptions at its March 17<sup>th</sup> informal meeting.

The Commission and Staff discussed Chair Colvin's desire to have three subcommittees, one for each of the Workplan areas. Chair Colvin would work on the Development Code Amendments subcommittee and Commissioners wanting to be on a particular subcommittee should let him know.

Staff noted development applications are quasi-judicial reviews so reviewing them before they came before the full Commission would likely be limited. Reassurance was sought about discussing some items without a quorum before being brought to the full Commission.

Questions from the Commission were addressed confirming Northpoint Vista will come to the Commission in phases; neighborhood concerns regarding Horizon Pointe's potential to increase traffic on Helmholtz Way; marijuana dispensaries would be allowed in Zones C-1, C-2, and C-3

with State restrictions and local parameters; the City does not have discretion to increase the State's buffer of 1,000 ft between marijuana dispensaries; the flexibility of the Sign Code in the approach to marijuana dispensaries; and the City's Code reading as open-ended regarding home occupation provisions.

**Chair Colvin** encouraged attending Council's February 25th meeting to voice opinions on allowing marijuana dispensaries.

The Commission consented to adding “to review open area plans” to the Workplan.

#### **DRAFT NEIGHBORHOOD CODE AMENDMENT PROJECT CHARTER**

**Planning Director Roberts** stated he would bring the draft project charter to the March 19<sup>th</sup> Commission meeting.

#### **NEXT MEETING – March 19, 2025**

The Commission would hold a public hearing for marijuana dispensary Time, Place, and Manner restrictions (TPMs).

#### **COMMISSIONER COMMENTS**

**Vice Chair Schultz** commended Planning Staff.

**Chair Colvin** appreciated everyone's ability to show up to Commission meetings and their helpful questions.

#### **ADJOURNMENT**

The meeting adjourned at 6:15 pm.

Prepared by ABC Transcription Services  
Reviewed by Kyle Roberts, Planning Director

APPROVED by the Redmond Urban Area Planning Commission and SIGNED by the Chair this 16th day of April 2025.

ATTEST:

\_\_\_\_\_/s/ Tobias Colvin\_\_\_\_\_  
Tobias Colvin  
Chair

\_\_\_\_\_/s/ Kyle Roberts\_\_\_\_\_  
Kyle Roberts, staff  
Planning Director

## **Redmond Urban Area Planning Commission**

**March 19, 2025**

### **Regular Meeting Minutes**

Council Chambers & Remote Video Conferencing

<https://www.redmondoregon.gov/RUAPC>

### **CALL TO ORDER / INTRODUCTIONS**

**Chair Colvin** called the meeting to order at 5:30 pm.

**Present:** Chair Tobias Colvin, Vice Chair Norman Schultz, Mercedes Cook-Bostick, Heather DeWolf, Tom Kuhn, Michael Rogers

**Excused:** Ben Schimmoller

**Staff Present:** Kyle Roberts, Planning Director; Keith Leitz, City Attorney; James Wood, Finance Director; Steve Lopez, Police Captain; Keith Witcosky, City Manager; Steve Ashworth, Deputy City Manager; Jamie Buddenbohn, Planning Permit Coordinator.

**Others Present:** Jeremy Kwit, Eli Harrison, Russell Huntamer

### **CITIZEN COMMENTS FOR ITEMS NOT ON THE AGENDA**

There were none.

### **APPROVAL OF MINUTES**

a. January 15, 2025

**Commissioner Rogers moved to approve the January 15, 2025, minutes as presented.**

**Commissioner DeWolf seconded the motion, which passed 6 to 0. (Ayes: Colvin, Schultz, Cook-Bostick, DeWolf, Kuhn, Rogers. Nays: None.)**

### **PUBLIC HEARING**

a. Redmond Development Code Amendment (File No. 711-25-000033-TA)

**Chair Colvin** opened the public hearing at 5:31 pm.

**Planning Director Roberts** presented the Staff report via PowerPoint reviewing the proposed text amendment to the Development Code establishing time, place, and manner (TPM) restrictions for cannabis dispensaries (Slide 7). The Commission was asked to make a recommendation to City Council on the marijuana TPMs.

**Finance Director Wood** reviewed the estimated annual revenue impact of \$150,000 to \$200,000 per dispensary.



Staff addressed Commissioner questions about impacts to State Shared Revenue eligibility, the State's moratorium limiting dispensary licenses, Staff's research on cities with recreational cannabis sales, regulated marijuana's effect on the black market, the City's tax exemptions aligning with Oregon statute, delivery services, not exceeding Oregon Liquor and Cannabis Commission (OLCC) regulations, and how entire parcels are excluded if any portion touches the TPM buffer.

Commissioners expressed concerns about the economic impact of restricting dispensary operating hours, regulating daily marijuana purchases, and heavy security lighting. An updated map showing allowable parcels was requested, as well as an interactive map for the 1,000-ft buffer radius.

**Chair Colvin** called for public testimony.

- **Russell Huntamer, President, Compass Commercial**, explained why he opposed the 500- and 1,000-ft buffers and noted the benefits of cannabis delivery services. Natural or artificial barriers should be considered to provide separation even for businesses technically within a buffer distance, and case-by-case variances should be considered for proposed dispensaries that do not conflict with a sensitive use.
- **Jeremy Kwit, Owner, Substance Cannabis Market**, explained the issues landlords had with leasing to cannabis businesses due to the federal law and provided information on dispensary operations, including the regulation of sales to intoxicated persons. He supported no buffers or a maximum 250-ft buffer from sensitive use areas.
  - He addressed Commissioner questions regarding exclusion buffers, secondhand smoke concerns, and buffers as a trade-off for gaining Redmond's acceptance of dispensaries.

Commissioners discussed allowing a 50-ft variance if a substantial majority of a property is within the allowed zone and larger buffers for treatment centers and shelters.

**Chair Colvin**, seeing no further public comments, closed the public hearing at 6:52 pm.

Commissioners deliberated on the recommended TPM buffers and discussed public support for limiting the number of dispensaries; allowing more areas to site dispensaries; Council's direction for the proposed buffers; the exclusion of industrial zoning; leaving agricultural use to other cities; potential rezoning requests; distancing from shelters; and items to defer to Council and Staff.

**Commissioner Rogers moved to recommend the City Council approve the proposed text amendments as drafted by Staff in Exhibits A and B of the Staff report with the following modifications: buffers of 1000 ft for schools, 500 ft for parks, 1000 ft for daycares, 250 ft for**

the transit hub, 500 ft for treatment centers, 1000 ft for shelters, and variance allowances where Staff sees fit. Vice Chair Schultz seconded the motion.

Ayes: Chair Tobias Colvin, Vice Chair Norman Schultz, Mercedes Cook-Bostick, Heather DeWolf, Tom Kuhn, Michael Rogers)

Nays: None

Motion Carried: 6 to 0

**NEXT MEETING – April 16, 2025**

#### **COMMISSIONER COMMENTS**

The Commission appreciated Staff's work and the comments and discussion. Mr. Kwit was asked to submit an exhibit showing the property challenges he had discussed when speaking to Council.

#### **ADJOURNMENT**

The meeting adjourned at 7:16 pm.

Prepared by ABC Transcription Services  
Reviewed by Kyle Roberts, Planning Director

APPROVED by the Redmond Urban Area Planning Commission and SIGNED by the Chair this 16th day of April 2025.

ATTEST:

\_\_\_\_\_/s/ Tobias Colvin\_\_\_\_\_  
Tobias Colvin  
Chair

\_\_\_\_\_/s/ Kyle Roberts\_\_\_\_\_  
Kyle Roberts, staff  
Planning Director

## **FINDINGS FOR TEXT AMENDMENTS TO THE REDMOND CITY CODE, CHAPTER 8 (DEVELOPMENT CODE)**

**HEARING DATE:** April 16, 2025, 5:30 PM, Redmond City Hall Council Chambers and via digital conference (GoTo Meeting)

**HEARINGS BODY:** Redmond Urban Area Planning Commission

**FILE NUMBER:** 711-25-000057-TA

**FILE NAME:** Redmond Development Code Text Amendment

**REQUEST:** A Legislative Amendment to the Redmond City Code, Chapter 8 (Development Code), to Modify Supportive Shelter Standards

**APPLICANT:** City of Redmond

**REVIEWING STAFF:** Kyle Roberts, AICP, Planning Director  
Linda Cline, Housing Program Analyst

### **I. BACKGROUND**

#### **Summary:**

The Redmond Development Code (RDC) is the primary mechanism to implement the City's Comprehensive Plan, regulate zoning, growth and development, land use activity, and other City policies related to Great Neighborhood Principles. As a living document, periodic amendments to the RDC are needed to adapt to changing conditions, comply with Comprehensive Plan policies, new state legislation, or simply to improve administration of provisions within the code. Code amendments touch on many different aspects of the community, livability and have significant implications regarding providing certainty, flexibility and modernization of regulations all at the same time.

In May 2021, the Oregon legislature passed House Bill (HB) 2006, requiring local governments to approve applications for the development or use of land for emergency shelters, with few provisions. This bill was extended twice through passage of HB 4051 (2022) and HB 3395 (2023).

In December 2023, Ordinance 2023-07 was adopted by City Council, codifying RDC Section 8.370, Supportive Shelter Standards. The code defines supportive shelter as any tract of land being actively managed by an agency which maintains two or more shelter units for the primary purpose of providing shelter alongside supportive services to individuals or families who lack access to permanent or safe shelter. The provisions found in this section of code set clear parameters for the development and use of emergency shelters including allowable shelter types, development standards, site layout and characteristics, and site management.

Items being addressed as part of this amendment include shelter types and placing restrictions around the use of open flames and portable heaters. This proposed amendment to the Supportive Shelter Standards of the Development Code is being initiated legislatively by staff at the direction of Council. The findings and supporting materials demonstrate the proposed text amendment is consistent with the Statewide Planning Goals, the Comprehensive Plan, and RDC Section 8.760 (Amendments). The four criteria set forth in Section 8.760 are addressed herein, as well as applicable state laws and requirements.

#### **Proposal:**

In January 2025, City Council amended Chapter 5 of the City Code to include the allowance for microshelters – hard- or semi-hard shelled temporary structures that do not exceed 200 square feet

and do not contain permanent provisions for cooking – in the City’s Safe Parking<sup>1</sup> provisions of code. Furthermore, as regulated by the code, essentially the shelter structures are constructed and sited in a manner that ensures safety related to snow, wind, and other environmental factors. Staff is proposing to include the allowance for microshelters in the Supportive Shelter provisions of the RDC as well.

Currently, the Supportive Shelter Standards do not address the use of open flames or cooking appliances, and propane heaters are outright prohibited within a Supportive Shelter site. The proposed amendment allows open flames under certain conditions: 1) When integral to the operation of a built-in appliance contained in a Recreational Vehicle; and 2) Propane grills may be used in designated cooking areas with consideration of clearance distances, and when supplied with an appropriate fire extinguisher.

Allowances are also proposed for the use of free-standing heaters indoors, necessary for the health and safety of emergency shelter participants due to climate conditions. Free-standing heaters must be appropriately rated for planned use and must be approved by the managing agency or their designee.

**Exhibits:**

The proposed amendment to the Supportive Shelter standards of the RDC is contained in Exhibit A and is attached hereto:

Exhibit A – Revisions to RDC Section 8.370

**Noticing:**

Noticing for the first evidentiary hearing scheduled for April 16, 2025, was noticed as follows:

- Per ORS 197.610, a notice of proposed change to an implementing regulation and zoning map amendment was submitted to the Department of Land Conservation and Development (DLCD) on March 12, 2025.
- Per Section 8.1110 of the Redmond Development Code, a public hearing notice for the April 16<sup>th</sup> Planning Commission hearing was published in the *Redmond Spokesman* on April 3, 2025.

**Applicable Criteria:**

The following are the applicable sections from the Oregon Revised Statutes, Oregon Administrative Rules, and the Redmond Development Code:

- Oregon Revised Statutes (ORS) – Chapter 197
- Oregon Administrative Rules (OAR), Chapter 660:
  - Division 15, Statewide Planning Goals and Guidelines
  - Division 18, Post-Acknowledgement Amendments
- City of Redmond Development Code:
  - Article I – Zoning Standards
    - Section 8.760: Criteria for Amendments

## **II. FINDINGS & CONCLUSIONS**

**Findings:**

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<sup>1</sup> Safe parking, provided through overnight camping and transitional overnight parking accommodations, is intended to be used on a limited basis for emergency or transitional shelter purposes by individuals, families, or households who lack permanent or safe shelter. RC Section 5.720.

Redmond Development Code, Article I – Zoning Standards: Amendments: Sections 8.750 through 8.770 set forth the procedure and standards for an amendment to the text of the Redmond Development Code. Specifically, Section 8.760 sets forth the four review criteria that must be met when evaluating amendment requests. Findings for each criterion are presented below.

**8.760 Criteria for Amendments.** The burden of proof is upon the applicant. The applicant shall show the proposed change is:

1. In conformity with all applicable State statutes;

**FINDING:** The following State statutes apply directly to this application:

*ORS 197.610, Submission of proposed comprehensive plan or land use regulation changes to Department of Land Conservation and Development*

ORS 197.610 requires local jurisdictions to submit proposed comprehensive plan or land use regulation changes to Department of Land Conservation and Development (DLCD). Notice of the proposed implementing amendments to the Redmond Development Code (RDC) has been provided to DLCD more than 35 days in advance of the first evidentiary hearing concerning the amendments.

*ORS 197.797, Local quasi-judicial land use hearings; notice requirements; hearing procedures*

ORS 197.797 sets forth noticing requirements. The applicable RDC standards that address amendment and legislative procedures and noticing requirements (i.e., Sections 8.750-8.770 and 8.1100-8.1125) were developed in compliance with the applicable State statute regarding noticing and public hearings. The relevant findings, incorporated by reference herein, show compliance with the aforementioned statutes.

Notice of the proposed text amendment has been advertised in the local newspaper (public notice) as required by the RDC and State statute. Regarding statutory public hearing requirements, this proposal is legislative and not quasi-judicial. Sections 8.1100 through 8.1125 of the RDC implement the quasi-judicial statutory requirements in similar fashion and have been met. The Redmond Urban Area Planning Commission and City Council's public hearing and review processes meet the statutory requirements for the purpose of the review.

*ORS 197.782, Emergency shelters developed under temporary authorization and ORS 197.783, Local approval of emergency shelters; process; limitations*

ORS 197.782 is the enabling legislation allowing for the continuation of "emergency shelters" and ORS 197.783 establishes the minimum approval requirements for the application of (emergency/temporary) shelters. The proposed amendments to the City's Supportive Shelter Standards (i.e., RDC Section 8.370) comply with the minimum requirements outlined in ORS 197.783.

Based on the above discussion and finding, staff concludes that the proposed amendments comply with criterion #1.

2. In conformity with the State-wide planning goals whenever they are determined to be applicable;

**FINDING:** The following State-wide planning goals have been determined to apply directly to this application:

Goal 1 – Citizen Involvement - calls for the opportunity for citizens to be involved in all phases of the planning process. The Redmond Urban Area Planning Commission serves as the City's formal citizen advisory commission to fulfill Goal 1 and is made up of Redmond area residents.

The agenda for the Planning Commission public hearing, where and when the proposed amendments are discussed, were provided in accordance with law. All documents were available for public review. Public notice advertising the April 16<sup>th</sup> public hearing was published in the *Redmond Spokesman*.

Goal 2 – Land Use Planning – requires establishing a land use planning process and policy framework as a basis for all decisions and actions related to use of land and to assure an adequate factual base for such decisions and actions.

ORS 197.782, originally created by House Bill 2006, is the state enabling legislation that requires local governments to approve applications for the development or use of land for emergency shelters, with few provisions. ORS 197.783 establishes the minimum requirements, and local governments are permitted to add additional provisions.

As codified in the RDC, and as authorized by ORS 197.783(5)(a), review and approval of supportive shelters are considered a Development Action. This means there is no hearing involved in the review and approval of a proposal and staff must take action within 30 days of receiving a complete application.

Goal 3 – Agricultural Lands – is not applicable because there are no agricultural lands in the city limits.

Goal 4 – Forest Lands – is not applicable because there are no forest lands in the city limits.

Goal 5 – Natural Resources, Scenic and Historic Areas, and Open Spaces – is not applicable because the proposed amendments do not affect any regulation that implements Goal 5 and the City's acknowledged regulations implementing Goal 5 remain in effect with no change in applicability.

Goal 6 – Air, Water, and Land Resources Quality – is not applicable because the City's acknowledged regulations implementing Goal 6 remain in effect with no change in applicability.

Goal 7 – Areas Subject to Natural Hazards – is not applicable because the City's acknowledged regulations implementing Goal 7 remain in effect with no change in applicability.

Goal 8 – Recreational Needs – requires the City to satisfy the recreational needs of the citizens of the state and visitors and, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts. This goal is not applicable as the amendments have no effect on the availability of or access to recreational opportunities.

Goal 9 – Economic Development – requires the City to plan and zone enough land to meet the community's projected commercial and industrial needs. The City adopted an Economic Opportunities Analysis (EOA) in 2020. This document serves as the City's compliance document under Goal 9, OAR 660-009-0015, and ORS 197.712. Strategies identified in the EOA carried over as economic development goals and policies outlined in Chapter 9 of the City's Comprehensive Plan. The proposed code amendments do not have a direct impact on the EOA or the economic development goals and policies of the City's Comprehensive Plan.

Goal 10 – Housing – provides for the housing needs of citizens of the state. The City adopted a Housing Needs Analysis (HNA) in 2019. This document serves as the City's compliance document under Goal 10, OAR Chapter 660, Division 008, and ORS 197.296(3). This report concludes that

Redmond should plan to accommodate development of 6,963 new dwelling units over the next 20 years in order to house the projected population growth. The proposed amendments will have no impact on lands needed for housing.

State law has allowed for emergency shelters as a use since 2021. Their approval as a use is valid until the point-in-time count, as reported to the United States Department of Housing and Urban Development under 24 C.F.R. part 578, indicates that the total sheltered and unsheltered homeless population is less than 0.18 percent of the state population, based on the latest estimate from the Portland State University Population Research Center [ORS 197.783(6)].

Goal 11 – Public Facilities and Services – requires the City to plan and develop a timely, orderly, and efficient arrangement of public facilities and services to serve as a framework for urban and rural development. The proposed amendments will have no impact on the City’s ability to plan and develop public facilities and services.

Goal 12 – Transportation – requires the City to provide and encourage a safe and convenient and economic transportation system. Per OAR 660-012-0060, the proposed amendments will have no impact on an existing or planned transportation facility.

Goal 13 – Energy Conservation – is not applicable because the City’s acknowledged regulations implementing Goal 13 remain in effect with no change in applicability.

Goal 14 – Urbanization – requires the City to provide for an orderly and efficient transition from rural to urban land use, to accommodate urban population and urban employment inside urban growth boundaries, to ensure efficient use of land, and to provide for livable communities. The proposed amendments do not encourage uncoordinated development, sprawl, or lower targeted densities. The management of the City’s land use inventories is unaffected by this amendment.

Goal 15 – Willamette River Greenway – is not applicable to the city of Redmond.

Goal 16 – Estuarine Resources – is not applicable to the city of Redmond.

Goal 17 – Coastal Shorelands – is not applicable to the city of Redmond.

Goal 18 – Beaches and Dunes – is not applicable to the city of Redmond.

Goal 19 – Ocean Resources – is not applicable to the city of Redmond.

Based on the above discussion and finding, the proposed amendments are consistent with the statewide planning goals and therefore complies with criterion #2.

3. In conformity with the Redmond Comprehensive Plan, land use requirements and policies; and

**FINDING:** The Redmond Comprehensive Plan is the official land use policy statement of the Redmond City Council. The City frequently reviews and updates the RDC to try and ensure it is aligned with the Comprehensive Plan. Staff have found only a couple of Comprehensive Plan policies have meaningful relevance to the proposed amendment.

Chapter 2 of the Comprehensive Plan identifies goals and policies that pertain to land use planning and procedures. Goal 1 of the chapter states: “Ensure that Redmond’s Comprehensive Plan, implementation tools, and administration procedures build on the community’s vision for the future and align with regional, state, and federal plans and regulations.” The RDC serves as the major

implementation mechanism of the Comprehensive Plan. Amendments to the RDC create greater alignment with the Comprehensive Plan that contribute to advancing the community's vision for the future.

Policy 2-3-4 speaks to the need to ensure that the community has opportunities to provide input during the preparation and review of implementing ordinances (i.e., the amendments to the Redmond City Code). Any change to the Comprehensive Plan's implementing ordinances (i.e., Redmond City Code, which include the Redmond Development Code) requires a public hearing and notification to the public in advance of the hearing. This requirement is intended to provide the community with an opportunity to provide input. As mentioned earlier, a public hearing notice was published in the *Redmond Spokesman* at least ten in advance of the public hearing date.

Chapter 10 of the Comprehensive Plan addresses housing need in Redmond. Although not directly applicable to the proposed amendment, Policy 10-2-2 speaks to the need to allow for and encourage a wider range of housing types including tiny house clusters with shared central amenities. Although emergency shelters are not necessarily a "housing type," there is a great need among the community's unhoused for shelter for which the supportive shelter provisions and respective amendment aim to address.

Staff concludes that the proposed amendments are consistent with the applicable Redmond Comprehensive Plan goals and policies.

4. That there is a change of circumstances, further studies justifying the amendment or mistake in the original zoning.

**FINDING:** With any new code provisions, with time as the provisions are utilized it's common that opportunities to enhance standards are identified. This is certainly the case with the relatively new supportive shelter standards. Currently, the supportive shelter provisions define a built shelter unit as "Site built, modular, or prefabricated structures, or similarly built structures." To provide clarity and ensure these structures meet construction and siting considerations related to snow, wind, and anchors, the proposed language will be consistent with the definition of "microshelter" found in the Safe Parking provisions of the City Code.

Provisions that allow open flames and free standing heaters in some circumstances are being proposed for the following reasons: 1) Many RVs contain built-in propane burning appliances such as cooktops that are regularly and safely used; 2) Staff, City Councilors, and community partners visited similar shelters around Oregon, including those in Eugene, Medford, and Salem, and learned that it is necessary for shelter sites to include congregate cooking areas for those participants that do not have or choose not to use cooking facilities contained in an RV. Congregate cooking areas minimize fire risk and litter that may be created from make-shift cooking facilities; and 3) Reasonable methods to provide warmth are essential for the health and safety of supportive shelter participants. Because electricity may be limited in areas considered for supportive shelters, provisions for the safe use of propane heaters is necessary. According to the National Health Care for the Homeless Council, "In the coldest areas, homeless persons with a history of frostbite, immersion foot, or hypothermia have an eightfold risk of dying when compared to matched non homeless controls." Provisions for the safe use of propane heaters reduces the likelihood of wood and other types of unauthorized warming fires.

Staff concludes that the proposed text amendments are needed to enhance safety and to better accommodate the basic needs of participants utilizing supportive shelters.



# EXHIBIT A

## Sec. 8.370. Supportive Shelter Standards.

1. *Applicability.*
  - A. Any proposal for a supportive shelter which is identified as a qualifying emergency shelter under ORS 197.782 shall be reviewed for compliance with State law and approved accordingly.
  - B. See Use Tables 8.135, 8.137, 8.190, 8.220 and 8.260.
2. *Review and Application.* Supportive shelters shall be reviewed as a Development Action. An approved site plan shall identify an appropriate timeline and process for periodic review and renewal. A complete application for a Support Shelter proposal shall include:
  - A. *Pre-development.* A completed Pre-development Application ~~prior to submission.~~
  - B. *Site Plan.* A site plan which demonstrates compliance with standards of this Section.
  - C. *Lease or Legal Use Agreement.* A copy of the lease document or equivalent that outlines the legal agreement between the applicant and the property owner to use the subject property for the supportive shelter proposal, if the applicant is not the property owner.
  - D. *Financial Security Proposal.* Proof of financial security in compliance with Subsection (6.D.) of these standards.
  - E. *Operating Plan.* A plan outlining and identifying the operations, security, and case management services.
  - G. *Narrative.* A narrative explaining the supportive shelters compliance with these standards. This includes a description of the managing agency, the name and contact information of the designated contact person from the managing agency, and a copy of the draft Code of Conduct that would be provided to authorized shelter residents.
3. *Shelter Unit.* A shelter unit provides shelter from the elements. Shelter units are not dwelling units, and no structure that could meet building code as a dwelling unit shall be used as a shelter unit. Shelter units shall obtain all building permits determined to be necessary by the Building Official and may not contain natural gas appliances, ~~propane heaters,~~ or generators.

Shelter Unit Types:

  - A. Tents, yurts, and membrane or fabric structures, as per ORS 197.746.
  - B. Recreational Vehicles or other privately owned Vehicle (as defined by Section 5.325 of City Code).
  - C. ~~Site-built, modular, or prefabricated structures, or similarly built structures~~ Microshelters, which are hard- or semi-hard shelled temporary structures that do not exceed 200 square feet, and which do not contain permanent provisions for cooking.
    1. Microshelter construction must adequately address safety related to snow, wind, and the use of anchors as defined in Section 5.720(5) of City Code.
4. Open Flames and Free-standing Heaters. No open flames or free-standing heaters shall be allowed on the premises, or within vehicles unless;
  - A. Open flames are integral to the operation of a built-in appliance contained in a Recreational Vehicle.
  - B. The approved site plan includes a designated area or structure that may be used for propane-fired grills for cooking purposes only, situated at least ten feet from any other structure, vegetation or debris, and is supplied with a Class B rated fire extinguisher. The ignition of charcoal, wood, or other matter is prohibited.

C. Free-standing heaters may only be used in structures if rated for indoor use and appropriately rated for the size of the shelter unit. Free-standing heaters must be approved by the Managing Agency or their designee prior to use on premises.

5. *Development Standards.*

- A. *Height and Setbacks.* Building height and setback standards of the underlying zone shall apply to any supportive shelter site.
  - 1. Setback standards shall only be applied to permanent structures, such as common area buildings.
  - 2. No shelter units regardless of type may be sited closer than ten feet to any public right-of-way.
- B. *Density.* No supportive shelter site shall exceed a density of 25 shelter units per net acre.

56. *Site Layout and Characteristics.*

- A. *Proximity and Spacing.* Shelter units of various types may be collocated, provided they are clearly delineated, and development standards are met. Shelter units must be sited with adequate separation between shelter types and units to provide for safety and privacy. Spacing will vary depending on shelter-type, fire-separation requirements, ADA compliance, emergency egress pathways, and emergency access for first responders.
- B. *Parking.* Parking areas shall be provided for use by shelter residents, staff, and visitors pursuant to Sections 8.500 through 8.515 (Off-Street Parking and Loading Requirements). Additional spaces shall be provided for authorized shelter residents using privately owned vehicles as shelter units. Parking shall be approved based on capacity proffered by managing agency providing services.
- C. *Storage.* No outdoor storage is permitted, excluding bicycles or similar mobility devices, except as provided in a designated and approved storage area. Residents shall be provided with enclosed, secure storage for their belongings.
- D. *Fencing.* The supportive shelter site shall be fenced and screened from sight except at entry and exit places. The fencing and screening shall be no less than six feet in height and shall be maintained. The Community Development Director may allow for deviations or reduced fencing or screening standards.
- E. *Signage.* A sign must be posted with the name and phone number of the managing agency. This sign is exempt from sign standards but must be posted at the entrance to the supportive shelter site and shall not be illuminated or exceed six square feet in size.
- F. *Common Area Facilities.* Common areas for use by the authorized shelter residents and staff shall be provided to ensure adequate trash and recycling services. At least one toilet and hand-washing station shall be provided and maintained. These common areas may provide access to water, sanitation, laundry, cooking, warming or cooling areas, through permanent or temporary facilities. The Oregon Health Authority may require public health best practices for shared health and sanitation facilities. Common areas may also be furnished with facilities needed by the managing agency to provide other supportive services, such as case management, counseling, daycare, kennel space, skill development, or similar.
- G. *Compliance.* The layout of the supportive shelter site and all structures shall comply with any applicable Federal, State, and local requirements, including but not limited to Fire, Environmental Health, Building, and Engineering requirements and will not pose any unreasonable risk to public health or safety.

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1. Ensure units and support structures are accessible in accordance with the Americans with Disabilities Act of 1990 (ADA), as amended and in accordance with the City of Redmond Building Code.
67. *Site Management.* An approved supportive shelter site must be actively managed and maintained by a managing agency in order to operate and serve shelter residents. A shelter site that is not being actively managed or maintained by a managing agency for a period of six or more months will be considered to be an abandonment of the use unless an extension or another approval is obtained. A shelter site found to be operating without being actively managed and maintained by a managing agency will be considered to be in violation of this Section.
- A. *Managing Agency.* The managing agency may be any governmental, housing authority, nonprofit, religious agency or public benefits corporation (as defined in ORS 65.001). The managing agency must have a designated contact person and their contact information must be kept up to date for the City's use and reference.
  - B. *Active Management and Maintenance.* A managing agency can demonstrate active management and maintenance of the supportive shelter site by having a local or on-site presence and being available to accept and respond to telephone calls during business hours and to any potential after-hours emergency.
    1. *Supportive Services.* A managing agency must be providing supportive services to each authorized shelter resident for the entire duration that the shelter has residents. Staff must be able to assist residents in obtaining necessary documentation, such as government identification and vehicle registration and insurance. Additional on-site services may include case management services for housing, financial, vocational, educational, physical or behavioral health care, public benefits, and any other similar services incidental to shelter.
  - C. *Code of Conduct.* The managing agency shall not authorize a shelter resident without providing each resident with a code of conduct form to review and sign. The managing agency has the right to refuse entry or discontinue use for any individual. The code of conduct shall be written in a language understandable to the resident and shall contain policies and information that set out regulations regarding:
    1. How individuals who may stay on the premises will be selected.
    2. How many days someone may stay on the premises.
    3. Supervision and identification of the supportive services or case management to be provided.
    4. What structures or other items may be placed or stored on the premises.
    5. Conduct, noise disturbance, pets, location and expected use of all common area facilities, and visitation.
    6. Prohibition of open flames on the premises, ~~or within vehicles unless contained in a Recreational Vehicle (RV), currently titled and registered with the State of Oregon Department of Motor Vehicles, except as allowed in Section 8.370(4) of City Code.~~
    7. Other information or policies the managing agency feels necessary to include.
  - D. *Financial Security.* The managing agency at the time of application shall provide a financial security proposal to ensure the removal of the improvements should the shelter site approval expire or become void. This may be in the form of a bond, petition, cash, or other adequate method. The financial security itself shall be provided to the City and secured before the shelter site may begin operation, or else the operation of the supportive shelter will be considered to be in violation of this code.
  - E. *Enforcement.*
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1. Approval of a supportive shelter site shall not be construed to abrogate or limit the jurisdiction or authority of the Redmond Police Department or any other law enforcement agency. Notwithstanding any other provision of this Section or City Code, the City Manager or designee may:
    - A. Revoke authorization of a supportive shelter site for violations of the requirements of this Section.
    - B. Prohibit a supportive shelter site on a property if the City finds that any activity related to the shelter site on that property constitutes a nuisance or other threat to the public welfare.
  2. Nothing in this Section of this code creates any duty on the part of the City or its agents to ensure the protection of persons or property with regard to permitted supportive shelter sites.

(Ord. No. 2023-07, 12-19-2023)

Editor's note(s)—Section 8.370 Building Setbacks for the Protection of Solar Access was amended by Ord. No. 2012-04 passed April 24, 2012. Later, was amended by Ord. No. 2020-15 passed November 10, 2020. Later, was deleted by Ord. No. 2022-04 passed June 28, 2022.

**ANTELOPE FLATS ANNEXATION, MASTER DEVELOPMENT PLAN, AND TENTATIVE  
SUBDIVISION**

**HEARING DATE:** April 16, 2025 at 5:30 PM in Redmond City Hall Council Chambers and via digital conference (GoTo Meeting)

**HEARINGS BODY:** Redmond Urban Area Planning Commission

**FILE NUMBERS:** 711-25-000003-ANN, 711-25-000004-MD, and 711-25-000005-SUB

**FILE NAME:** Antelope Flats

**REQUEST:** Approval of an Annexation, Master Development Plan, and 32-lot Tentative Subdivision

**LOCATION:** 3758 SW Helmholtz Way (taxlot: 151330BC00900) in Redmond, OR 97756

**APPLICANT:** Matt Wittmer, Wittmer Construction  
Hayes McCoy, H.A. McCoy Engineering and Surveying

**PROPERTY OWNER:** Texas Tango, LLC

**REVIEWING STAFF:** Kyle Roberts, AICP, Planning Director

**RECOMMENDATION:** Approved with Conditions

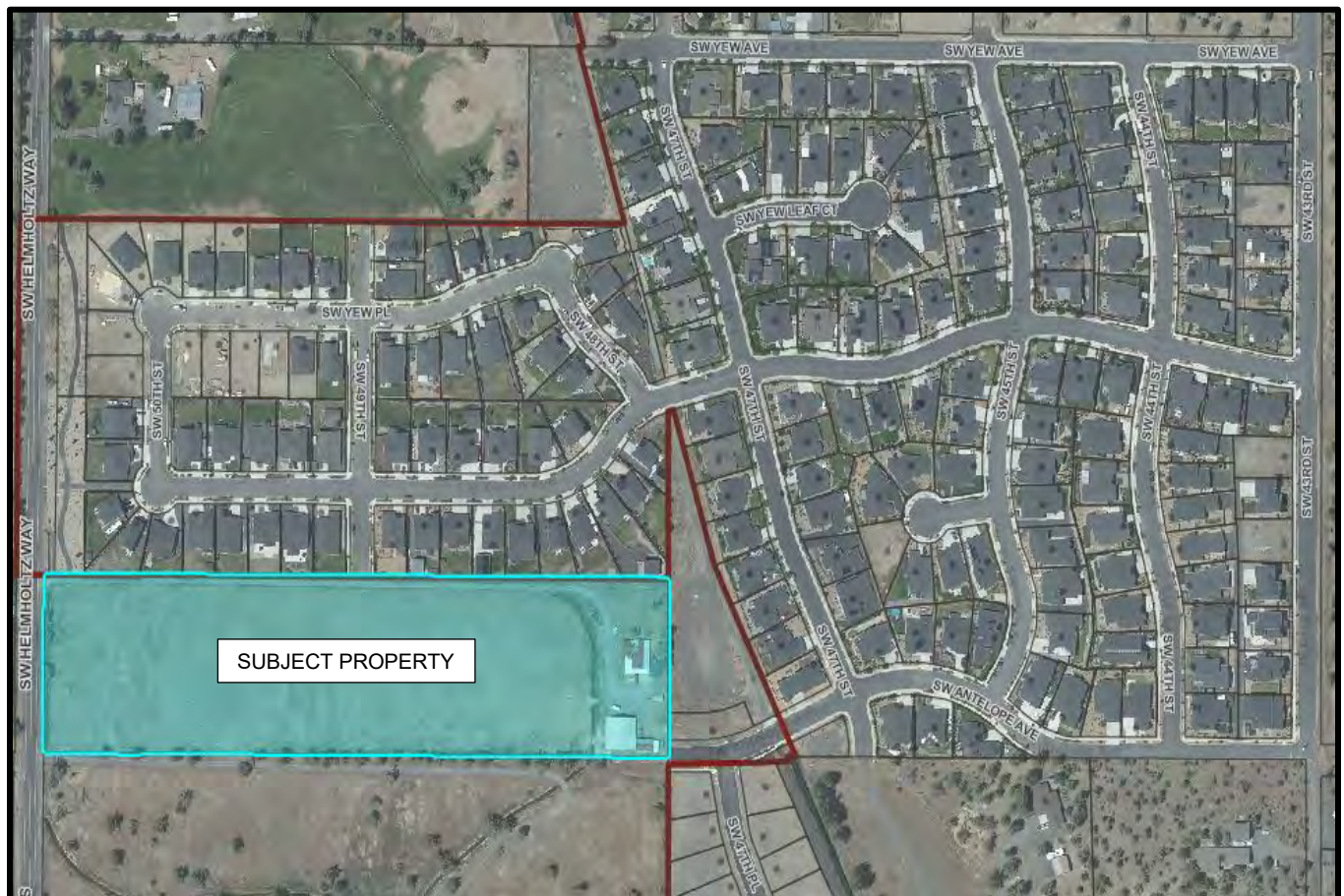


Figure 1 - Vicinity Map



## I. BACKGROUND

### **Site Description:**

The subject property is located in west Redmond, adjacent to city limits and located within the Redmond Urban Growth Boundary (UGB). More specifically, the property abuts SW Helmholtz Way and Josie Meadows subdivision and has a situs address of 3758 SW Helmholtz Way (taxlot 151330BC00900). The property is 9.81 acres in size and is zoned Urban Holding (UH-10). The property has an existing single-family dwelling with an outbuilding and has a Central Oregon Irrigation District (COID) lateral running north-south along the eastern portion of the property.

According to Deschutes County Deed Record, Volume 124, Page 53, the property was originally created via Warranty Deed in 1960 as Lot 2 of Section 30, Township 15 South, and Range 13 East of the Willamette Meridian. Since then, the property has been conveyed several times and is currently described by Statutory Bargain and Sale Deed recorded in Deschutes County Official Record 2022-13228, dated March 29, 2022.

### **Land Use History:**

In 2006, Redmond added more than 2,300 acres of “urbanizable” land along the City’s western and northern boundaries to its UGB, including the subject property. 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 Framework Plan conceptually identified the general area of the subject property as future residential lands. Building on that vision, in 2014, the City adopted the Southwest Area Plan that proposed a Limited Residential (R-2) zoning designation for the subject property. That designation was carried over to the 2040 Greater Redmond Area Comprehensive Plan and Zone Map. Although currently zoned UH-10, at time of annexation, the subject property will be rezoned to R-2.

### **Proposal:**

The applicant, Wittmer Construction, submitted applications for: 1) annexation; 2) master development plan; and 3) tentative subdivision. The applicant is proposing to annex the 9.81-acre property into city limits and create a 32-lot master development planned residential subdivision. In keeping with the Comprehensive Plan and Zone Map’s R-2 zoning designation, the applicant will, in two phases, construct 32 single-family dwellings as well as a landscaped open space tract with a multi-use path.

### **Adjacent Zoning & Land Uses:**

|       | <b>Zoning</b>                                                   | <b>Land Use</b>                                         |
|-------|-----------------------------------------------------------------|---------------------------------------------------------|
| North | Limited Residential Zone (R-2)                                  | Suburban residential subdivision development            |
| East  | Urban Holding Zone (UH-10)                                      | Vacant, undeveloped tracts of land                      |
| South | Urban Holding Zone (UH-10)                                      | Rural residential development and farm use on large lot |
| West  | Exclusive Farm Use –<br>Tumalo/Redmond/Bend Subzone<br>(EFUTRB) | Rural residential development and farm use on large lot |

### **Comments:**

At the time of completion of this staff report no written comments have been received from the public by the Planning Division concerning these applications.

**Attachments:**

Attachment A – Project Plans, dated November 13, 2024

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, dated September 11, 2024

**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:

- Annexation, Master Development Plan, and Tentative Subdivision applications, materials, and all required elements submitted by the applicant on January 8, 2025
- Application deemed complete for review on February 7, 2025
- City department and related agency request for comments routed on February 18, 2025
- Notice to Department of Land Conservation and Development (DLCD) posted March 12, 2025
- Adjacent property owner notices of public hearing mailed on March 24, 2025
- Public Hearing Notice published in the *Redmond Spokesman* on April 3, 2025
- Final action 120-day deadline (ORS 227.178) is June 7, 2025<sup>1</sup>

**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 Framework Plan
- City of Redmond Southwest Area Plan
- City of Redmond Transportation System Plan
- City of Redmond Public Facility Master Plans
- Oregon Revised Statutes (ORS), Chapters 92, 197, 222, and 227
- Oregon Administrative Rules (OAR), Chapter 660:
  - Division 12, Transportation Planning Rule
  - Division 14, Newly Incorporated Cities, Annexation, and Urban Development on Rural Lands
  - Division 15, Statewide Planning Goals and Guidelines
  - Division 18, Post-Acknowledgement Amendments
- City of Redmond Development Code (last amended by Ord. 2024-14)
  - Article I – Zoning Standards
    - Section 8.065: Establishment of Zones and Districts
    - Section 8.085: Zoning of Annexed Areas
    - Section 8.135: Table A, Residential Zones, Uses Permitted
    - Section 8.140: Table B, Minimum Standards
    - Section 8.270: Master Development Plans
    - Section 8.385: Neighborhood Meeting
  - Article II – Land Use Procedures
  - Article III – Land Division Standards
    - Section 8.2200: Pre-Application Meeting
    - Section 8.2202: Neighborhood Meeting
    - Section 8.2220: Phased Development Plan
    - Section 8.2225: Approval of Phased Development Plan

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<sup>1</sup> Final action 120-day deadline only applies to the Tentative Subdivision application.

- Section 8.2230: Development Following Approval
- Section 8.2235: Approval Criteria for Tentative Subdivision Plans
- Section 8.2240: Future Subdivision
- Section 8.2700: Compliance Required
- Section 8.2705: Blocks, Lots and Parcels
- Section 8.2710: Streets
- Section 8.2715: Fundamental Design Standards
- Section 8.2720: Grading of Building Sites
- Section 8.2800: Improvement Procedures
- Section 8.2815: Transportation System Analysis
- Section 8.2820: Access Management Standards
- Section 8.2825: Street Dedications

## II. FINDINGS & CONCLUSIONS

### **Findings:**

The Redmond Development Code (RDC) used to evaluate these applications is the code in effect on January 8, 2025, which was last amended by Ordinance 2024-14. RDC Article I – Zoning Standards: Sections 8.065, 8.085, 8.135, 8.140, 8.270, and 8.385; and Article III – Land Division Standards: Sections 8.2200, 8.2202, 8.2220-8.2240, 8.2700-8.2720, 8.2800, 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 8.065 and 8.085*

#### **Sec. 8.065. Establishment of Zones and Districts.**

[...]

*UH-10 Urban Holding Zone.* To retain large undeveloped or underdeveloped land areas for future urban development; to act as a holding category and is considered agricultural in nature as it will allow agricultural uses to continue operation until urbanization takes place. Land in the UH-10 Holding Zone requires annexation, master plan approval, a zone change and/or a comprehensive plan amendment before urban development can occur. In most instances, Master plans are required before development can occur.

**FINDING:** The property is currently zoned Urban Holding (UH-10) and with an existing single-family dwelling and two farm buildings.

*R-2 Limited Residential Zone.* To provide low density residential neighborhoods for single family detached residences, middle housing, and a mix of other housing types.

**FINDING:** The applicant is proposing a master development planned low density residential subdivision comprised of 32 single-family dwelling lots.

#### **Sec. 8.085. 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 proposing to annex into the city with the Southwest Area Plan and Comprehensive Plan and Zone Map's R-2 zoning designation for the property. This standard is met.



# ARTICLE I – ZONING STANDARDS > RESIDENTIAL USE ZONES

RDC Sections 8.135 and 8.140

## Sec. 8.135. 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

| Residential Uses:                                     | R-1 | R-2 | R-3 | R-4 | R-5 | RESTRICTIONS AND REQUIREMENTS                                                                                                     |
|-------------------------------------------------------|-----|-----|-----|-----|-----|-----------------------------------------------------------------------------------------------------------------------------------|
| Accessory Building:                                   |     |     |     |     |     |                                                                                                                                   |
| Detached sheds, shops, and garages                    | O   | O   | O   | O   | O   | Must be located within the property and not in the yard setback areas. Moveable shipping containers, or similar, are not allowed. |
| 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   |                                                                                                                                   |
| Duplex, Triplex, Quadplex, Townhouse, Cottage Cluster | O   | O   | O   | O   | O   |                                                                                                                                   |
| Manufactured Home                                     | O   | O   | O   | O   | O   | See Single Family Detached Dwelling                                                                                               |
| Manufactured Home Park                                | N   | N   | N   | O   | O   | See Section 8.375                                                                                                                 |
| Manufactured Home Subdivision                         | N   | N   | O   | O   | O   | Subject to compliance w/ applicable ORS                                                                                           |
| Multi Family Complex (five + units)                   | C   | C   | C   | O   | O   |                                                                                                                                   |
| Public-Owned Affordable Housing Developments          | O   | O   | O   | O   | O   | See Section 8.145                                                                                                                 |
| Nursing, Convalescent, and Assisted Living Facility   | N   | N   | C   | C   | C   | More than 15 people                                                                                                               |
| Planned Unit Development                              | C   | C   | 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 Detached Dwelling                       | O   | O   | O   | O   | O   |                                                                                                                                   |
| Single Room Occupancy Development                     | O   | O   | O   | O   | O   |                                                                                                                                   |
| Non Residential Uses:                                 | R-1 | R-2 | R-3 | R-4 | R-5 | RESTRICTIONS AND REQUIREMENTS                                                                                                     |

|                                                                                                                                                                      |   |   |   |   |   |                                                                                                                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Child Care Facility:                                                                                                                                                 |   |   |   |   |   |                                                                                                                                                                                                                                                            |
| Child Care Center                                                                                                                                                    | C | C | C | C | C |                                                                                                                                                                                                                                                            |
| Child Care Home                                                                                                                                                      | O | O | O | O | O |                                                                                                                                                                                                                                                            |
| Church, Religious Institution                                                                                                                                        | C | C | C | C | C |                                                                                                                                                                                                                                                            |
| Community Center (private)                                                                                                                                           | C | C | C | C | C |                                                                                                                                                                                                                                                            |
| Community Pool (private)                                                                                                                                             | C | C | C | C | C |                                                                                                                                                                                                                                                            |
| Emergency Shelter                                                                                                                                                    | O | O | O | O | O | Reviewed under ORS 197.782. Emergency shelters for natural disaster response are not subject to review.                                                                                                                                                    |
| Farm Use, Farming                                                                                                                                                    | O | O | O | O | O |                                                                                                                                                                                                                                                            |
| Mini Storage                                                                                                                                                         | N | N | N | N | N |                                                                                                                                                                                                                                                            |
| Mobile Food Pod                                                                                                                                                      | N | N | N | N | N |                                                                                                                                                                                                                                                            |
| Mobile Food Unit                                                                                                                                                     | N | N | N | N | N |                                                                                                                                                                                                                                                            |
| Mobile Food Vendor on private property                                                                                                                               | O | O | O | O | O | Permitted through Business Licensing provisions in City Code, Section 7.005 et seq. Can only operate between 8 AM and 9 PM for no more than two consecutive days within a 90-day period and must be located on real property in association with an event. |
| Mobile Food Vendor on public property                                                                                                                                | O | O | O | O | O | Permitted through Special Events provisions in City Code, Section 7.350 et seq. or Parks Reservation Permit.                                                                                                                                               |
| Multi-Use Trail                                                                                                                                                      | O | O | O | O | O |                                                                                                                                                                                                                                                            |
| Park                                                                                                                                                                 | O | O | O | O | O |                                                                                                                                                                                                                                                            |
| Livestock                                                                                                                                                            | O | O | O | O | O | Subject to livestock provisions, Section 8.365                                                                                                                                                                                                             |
| Office                                                                                                                                                               | N | N | C | C | C | Conditional in conjunction with a master plan or PUD                                                                                                                                                                                                       |
| Retail                                                                                                                                                               | N | N | C | C | C | Conditional in conjunction with a master plan or PUD                                                                                                                                                                                                       |
| Residential Conversion of Existing Commercial Structure                                                                                                              | O | O | O | O | O | See Section 8.144                                                                                                                                                                                                                                          |
| School (private)                                                                                                                                                     | C | C | C | C | C |                                                                                                                                                                                                                                                            |
| Supportive Shelter                                                                                                                                                   | O | O | O | O | O | See Section 8.370, Supportive Shelter Standards.                                                                                                                                                                                                           |
| Tennis Court (private)                                                                                                                                               | O | O | O | O | O | Non-commercial use only                                                                                                                                                                                                                                    |
| Public Facility or Emergency Management Services                                                                                                                     | C | C | C | C | C |                                                                                                                                                                                                                                                            |
| City Owned Utility Facility                                                                                                                                          | O | O | O | O | O |                                                                                                                                                                                                                                                            |
| Private Utility Facilities                                                                                                                                           | C | C | C | C | C |                                                                                                                                                                                                                                                            |
| All "R" zones are subject to density transfer provisions. See Section 8.020, "Definitions," Density Transfer, and 8.367, "OSPR / 'R' Zone Density Transfer Provision |   |   |   |   |   |                                                                                                                                                                                                                                                            |

**FINDING:** The applicant is proposing a master development planned low density residential subdivision comprised of 32 single-family dwelling lots. Single-family dwellings are outright permitted uses in the R-2 zone. This standard is met.

**Sec. 8.140. Table B, Minimum Standards.**

**The following minimum standards apply in each of the Residential zones:**

| <b>Standard:</b>                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>R-1</b>                                         | <b>R-2</b> | <b>R-3, R-3A</b> | <b>R-4</b> | <b>R-5</b> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|------------|------------------|------------|------------|
| <b>Minimum Lot size - Square Feet</b>                                                                                                                                                                                                                                                                                                                                                                                                    |                                                    |            |                  |            |            |
| Single Family, Duplex, Triplex, Single Room Occupancy Development                                                                                                                                                                                                                                                                                                                                                                        | 9,000                                              | 9,000      | 7,500            | 5,500      | 5,500      |
| Quadplex, Cottage Clusters                                                                                                                                                                                                                                                                                                                                                                                                               | 9,000                                              | 9,000      | 7,500            | 7,000      | 7,000      |
| Townhouse                                                                                                                                                                                                                                                                                                                                                                                                                                | 1,500                                              | 1,500      | 1,500            | 1,500      | 1,500      |
| Multi-family Complex: 5+ units                                                                                                                                                                                                                                                                                                                                                                                                           | No Minimum Lot Size<br>Must Meet Density Standards |            |                  |            |            |
| <b>Density - Units/Net Acres</b>                                                                                                                                                                                                                                                                                                                                                                                                         |                                                    |            |                  |            |            |
| Minimum Density: All                                                                                                                                                                                                                                                                                                                                                                                                                     | 4                                                  | 4          | 5                | 5          | 8          |
| Maximum Density: Single Family, Single Room Occupancy Development                                                                                                                                                                                                                                                                                                                                                                        | 5                                                  | 5          | 5.8              | 8          | 8          |
| Maximum Density: Duplex, Triplex, Quadplex, Cottage Cluster                                                                                                                                                                                                                                                                                                                                                                              | No Maximum Density<br>Must Meet Minimum Lot Size   |            |                  |            |            |
| Maximum Density: Townhouses                                                                                                                                                                                                                                                                                                                                                                                                              | 20                                                 | 20         | 23.2             | 25         | 25         |
| Maximum Density: Multi-family Complex 5+ units                                                                                                                                                                                                                                                                                                                                                                                           | N/A                                                | N/A        | N/A              | 14.5       | 17.4       |
| <b>Standard:</b>                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>R-1</b>                                         | <b>R-2</b> | <b>R-3, R-3A</b> | <b>R-4</b> | <b>R-5</b> |
| <b>Planned Unit Developments (PUDs) densities in Section 8.275.</b>                                                                                                                                                                                                                                                                                                                                                                      |                                                    |            |                  |            |            |
| <b>Minimum Setback Distance - Feet</b>                                                                                                                                                                                                                                                                                                                                                                                                   |                                                    |            |                  |            |            |
| Front Façade, excluding garage                                                                                                                                                                                                                                                                                                                                                                                                           | 10                                                 | 10         | 10               | 10         | 10         |
| Interior Side                                                                                                                                                                                                                                                                                                                                                                                                                            | 5/10                                               | 5/10       | 5                | 5          | 5          |
| Interior side yards must be a minimum of 5 feet on one side and 10 feet on the other side for single family, duplex, triplex, and quadplex residences. Where alley access is provided, both interior side yards may be reduced to 5 feet. Exceptions to the 10-foot setback are allowed (1) when the residential lot was created prior to the adoption of this standard (November 9, 2006); (2) on cul-de-sac lots; or (3) on flag lots. |                                                    |            |                  |            |            |
| Street Side                                                                                                                                                                                                                                                                                                                                                                                                                              | 10                                                 | 10         | 10               | 10         | 10         |
| Rear                                                                                                                                                                                                                                                                                                                                                                                                                                     | 20                                                 | 20         | 20               | 15         | 5          |
| Attached Garage, access from alley or street                                                                                                                                                                                                                                                                                                                                                                                             | 20                                                 | 20         | 20               | 20         | 20         |
| <b>Setbacks:</b>                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                    |            |                  |            |            |
| ADUs: Specified in Section 8.325                                                                                                                                                                                                                                                                                                                                                                                                         |                                                    |            |                  |            |            |
| Detached Accessory Structures: Specified in Section 8.323                                                                                                                                                                                                                                                                                                                                                                                |                                                    |            |                  |            |            |

|                                                                   |    |    |    |    |    |
|-------------------------------------------------------------------|----|----|----|----|----|
| Cottage Clusters: Specified in Section 8.143                      |    |    |    |    |    |
| Multi-family Complexes: Specified in Section 8.3035(4.E. Table A. |    |    |    |    |    |
| Townhouses: Specified in Section 8.142                            |    |    |    |    |    |
|                                                                   |    |    |    |    |    |
| <b>Maximum Building Height - Feet</b>                             |    |    |    |    |    |
| Single Family, Plexes, ADU                                        | 32 | 32 | 32 | 45 | 45 |
| Cottage Cluster                                                   | 25 | 25 | 25 | 25 | 25 |
| Townhouse                                                         | 35 | 35 | 35 | 45 | 45 |
|                                                                   |    |    |    |    |    |
| <b>Minimum Street Frontage - Feet</b>                             |    |    |    |    |    |
| Standard Street                                                   | 50 | 50 | 50 | 50 | 40 |
| Cul-de-sac                                                        | 30 | 30 | 30 | 30 | 30 |
| Flag Lot                                                          | 20 | 20 | 20 | 20 | 20 |
| Townhouse                                                         | 20 | 20 | 20 | 20 | 20 |

**FINDING:** This section presents minimum dimensional and siting specification standards for residential zoning districts. Each applicable standard is addressed below:

Minimum lot size: The applicant is proposing detached single-family lots in the R-2 zone. These lots have a minimum lot size of 9,000 square feet. All proposed lots meet the minimum lot size.

Density: The applicant is proposing 32 single-family units over 7.55 net acres, which equates to 4.24 dwelling units per net acre, falling within the minimum density standard of 4 units per net acre and maximum density standard of 5 units per net acre for single-family in R-2.

Setbacks and building heights: All proposed lots are adequate in size to ensure compliance with applicable setbacks for single-family dwellings. Setbacks and building heights will be evaluated on a lot-by-lot basis at time of building permit review.

Minimum street frontage: All proposed standard single-family lots meet the minimum street frontage requirement of 50 feet. Lots 3 and 17 are flag lots and meet the minimum street frontage requirement of 20 feet. Lots 18, 19, and 20 are cul-de-sac<sup>2</sup> lots<sup>3</sup> and meet the minimum street frontage requirement of 30 feet. Lots 2 and 4 are not considered cul-de-sac lots and therefore must meet the minimum street frontage requirement of 50 feet.

Staff finds that, with exception of proposed Lots 2 and 4, the proposed lots comply with the applicable standards of Section 8.140. This standard is not fully met.

## **ARTICLE I – ZONING STANDARDS > MASTER DEVELOPMENT PLANS AND PLANNED UNIT DEVELOPMENTS**

### *RDC Section 8.270*

#### **Sec. 8.270. Master Development Plans.**

A Master Development Plan is required 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 specific

<sup>2</sup> *Cul-de-sac.* A street having one end open to traffic and the other end terminating in a vehicle turnaround (Sec. 8.020, RDC).

<sup>3</sup> *Cul-de-sac Lot.* A lot fronting the bulb of a cul-de-sac that has a frontage of less than 50 feet (Sec. 8.020, RDC).

requirements for a Master Development Plan are:

Section 8.270(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, 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 applicant's plan set and response to this criterion and concurs that the proposed Antelope Flats master development plan is generally consistent with the Framework Plan, Southwest Area Plan (SWAP), and Comprehensive Plan in terms of land use, density, transportation systems and networks, adequacy of infrastructure and open space.

The Framework Plan designated the subject property as future residential lands and the SWAP designated the property as R-2. Furthermore, the SWAP envisioned the R-2 lands to be low density residential neighborhoods made up of primarily single-family dwellings with densities ranging from 2-5 dwellings units per net acre.<sup>4</sup> As identified in both the SWAP and Transportation System Plan (TSP), SW Helmholtz Way is a minor arterial street of which requires additional right-of-way dedication and being brought up to City arterial standards as properties fronting the street are annexed into city limits. Also, identified in the TSP is a multi-use pedestrian path along the eastside of SW Helmholtz Way, which the applicant has incorporated into their plans. The SWAP contemplated a general local grid street structure in the general vicinity that included the north-south connection of SW 49<sup>th</sup> Street. Although the SWAP identified a canal trail network and locations for future City parks in the southwest area of the city, neither apply to the applicant's property. Lastly, as required by the City's public facility plans, the existing water main located in SW 49<sup>th</sup> Street and SW Antelope Avenue will be extended to and through the proposed subdivision. The proposed subdivision will also extend the existing wastewater main in SW 49<sup>th</sup> Street to and through. It should be noted, however, that the applicant will be required to construct a 12-inch water main along the property frontage along SW Helmholtz Way with a loop into the proposed subdivision. Additionally, the applicant will be required to provide a cash contribution for the future 12-inch Far West Sewer Interceptor to be located along the property frontage along SW Helmholtz Way. This standard is met.

- 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 applicant's plan set and response to this criterion and concurs that the proposed Antelope Flats master development plan is generally suitable for the area. The proposed master development plan is consistent with the vision contemplated by the City's various long-range plans as elements of the Southwest Area Plan were adopted and incorporated into the Comprehensive Plan and its supporting plans (e.g., Transportation System Plan, Public Facility Plan, Parks Master Plan). The proposed development will extend the existing residential development pattern and existing infrastructure in an orderly fashion. This standard is met.

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<sup>4</sup> The Southwest Area Plan (SWAP) was adopted in 2014. Since then, the Redmond Development Code has increased the minimum density in R-2 and has outright permitted residential uses up to a fourplex in all residential zones. These changes supersede those outlined in the SWAP.

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

**FINDING:** The proposed Antelope Flats master development plan functionally integrates into the vicinity of southwest Redmond. This is demonstrated by the fact that elements of the proposed master development plan such as zoning, land uses, public facilities, and amenities align with the Framework Plan, Southwest Area Plan, and Comprehensive Plan (inclusive of supporting plans such as the Public Facility Plan, and Transportation System Plan) for the area. Said plans are the long-range planning documents that established the vision for how the area would develop. This standard is met.

- d. The proposed Plan meets the applicable Great Neighborhood Principles.

**FINDING:** Staff has examined the applicant's plan set and response for this criterion. Staff concurs with the applicant's responses. Compliance with each Great Neighborhood Principle is addressed 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. Curved streets are encouraged to provide interest and variety in neighborhood design. Trails shall be provided to link with existing or planned pedestrian facilities.

**FINDING:** The proposed master development plan will provide for a complete transportation network by extending existing local grid streets<sup>5</sup> and will provide additional right-of-way and improvements to the eastern half of SW Helmholtz Way that abuts the subject property. The local grid streets will be built to City standard, which will include sidewalks on both street sides. Included in the half acre open space tract will be a multi-use pathway, accessible to the development via a 20-foot-wide pedestrian access easement between Lots 18 and 19. All said transportation improvements will connect to existing transportation infrastructure adjacent to the proposed master development plan.

- b. *Housing.* A mix of housing unit types and densities shall be integrated into the design of new neighborhoods consistent with zone requirements unless a variance or other planning permit is approved.

**FINDING:** The applicant is proposing single-family dwellings on primarily rectangular-shaped lots with some cul-de-sac and deep lot configurations. Although the proposed master development plan is not proposing a mix of housing unit types, the Southwest Area Plan did contemplate that the R-2 zone within the planned area would be comprised of primarily single-family dwellings. Additionally, the Redmond Housing Needs Analysis identifies a great need for single-family in the City's limited residential zones (i.e., R-1, R-2, and R-3).

- c. *Open spaces, greenways, recreation.* All new neighborhoods shall provide open spaces with recreation amenities that are useable to the public and are integrated to the larger community via trails or pathways. Parks and plazas shall be developed in accordance with Redmond's

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<sup>5</sup> The applicant's plan set indicates that SW Antelope Avenue will not fully connect to the adjoining property to the east due to needed acquisition of right-of-way from the neighboring property to the south.

Parks Master Plan, or otherwise should be centrally located in the neighborhood and capable of supporting public gathering places. New neighborhoods should retain and incorporate significant geological features such as rock outcroppings or stands of clustered native trees into the design and lot layout.

**FINDING:** Both the Southwest Area Plan and City's Park Master Plan did not identify the subject property as a future site for a neighborhood or community park. However, to meet open space and recreational requirements, the applicant is proposing a half-acre open space tract between the development and SW Helmholtz Way with amenities such as benches and a meandering multi-use path that will connect to the existing pathway to the north. There are no significant geological features or stands of native trees on-site to incorporate into the design and lot layout.

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

**FINDING:** This Great Neighborhood Principle is more applicable to larger-scale master development plans. However, the applicant intends to provide a coherent development made up of single-family dwellings with sloped roofs in a varied Pacific Northwest style.

- e. *Diverse mix of activities.* A variety of uses are 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, and 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:** This Great Neighborhood Principle is more applicable to larger-scale master development plans. However, the single-family residential development will provide a half-acre open space tract with a meandering multi-use pathway connecting to the adjacent pathway to the north. Additionally, the sidewalk and street network will connect to adjacent developments, which includes the Forked Horn Butte subdivision with the canal trail that connects south to Ridgeview High School. The open space tract will not be constructed until phase 2 of the project, which staff deems reasonable given the first phase will be comprised of 16 single-family dwellings with private yards.

- f. *Public Art or Artistic Feature.* Places for the installation of public art or artistic feature is required to provide focal points, preferably, at the gateways to neighborhoods, in and around the center of neighborhoods, or trailheads.

**FINDING:** The applicant shall provide for a location for the potential installation of public art, preferably at the neighborhood gateway, in and around the center of the neighborhood, or along the multi-use pathway in Tract A.

- g. *Scenic Views.* Identify and preserve scenic views and corridors of the Cascade Range, Ochoco Mountains, and Smith Rock, 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:** The proposed master development plan includes an open space tract on its west end, which should allow for relatively unobstructed views of the Cascade Range to the west, especially considering that the subject property is adjacent to the Redmond Urban Area Reserve boundary. Essentially, this means that no urban development will occur west of the proposed master development plan for several decades. Additionally, as the applicant stated, the proposed subdivision's varied housing types and upper story development may provide for view opportunities.

- h. *Urban-Rural Interface.* Residential development adjacent to areas outside of the Urban Reserve Area (URA) shall provide buffering to manage the transition from urban to rural intensities by meeting at least one of the following standards:
  - i. Provide 100-foot-wide landscaped buffers, exclusive of rights-of-way, for the entire length that the urban development is adjacent to lands outside of the URA. The buffers shall be landscaped with native vegetation characteristic of the local ecosystem; or
  - ii. Locating lower density development at the urban-rural interface; or
  - iii. Other appropriate and equivalent transitional elements as approved by the Review Authority.

**FINDING:** To address this Great Neighborhood Principle, the applicant is proposing Tract A, a 60-foot-wide landscaped open space tract located on the subject property's western edge, adjacent to SW Helmholtz Way and the Urban Area Reserve boundary. Staff believes that the applicant's proposed master development plan complies with the urban-rural interface buffer requirement for the following three reasons: 1) the subdivision will include a 60-foot-wide landscaped open space; 2) the subdivision will be a low density development with relatively large lot sizes; and 3) the proposed open space tract and residential development pattern is consistent with the two existing master development planned subdivisions to the north.

- i. *Pocket Parks/Tot Lots.* 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 25 lots/units, a minimum of 3,000 square feet and privately maintained. Examples of amenities include: turf areas, benches, deciduous shade trees, irrigation, shrubs, natural or decorative features, and adequate trash receptable(s) and lighting.

**FINDING:** Although the proposed master development planned subdivision is considered low density, the applicant is proposing a 19,828 square foot open space tract, which will include a 10-foot-wide meandering multi-use pathway, benches, trees, and shrubs. This would exceed the minimum 3,000 square foot pocket park requirement. This open space tract will be privately maintained and will require



City review and approval of landscaping and amenities prior to final platting phase 2.

- j. *Canal Trails.* If canals or laterals are present, multi-use trails at least ten 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 (e.g., every 500 feet, at trailheads or intersections with public streets).

**FINDING:** Although there is an existing Central Oregon Irrigation District B-2-4-2 sub lateral that traverses north-south through the eastern portion of the subject property, the applicant proposes to pipe it and place in an easement as was done to said sub lateral in the two adjacent developments to the north. As no canals or laterals will be present, this Great Neighborhood Principle does not apply.

- k. *Green Design.* Land divisions and site plans shall incorporate principles of sustainable design befitting the natural ecosystem of Central Oregon. These principles may be incorporated through the layout of individual lots and the configuration of neighborhoods and include energy efficient siting and construction of buildings, water-wise and native landscaping, and amenities to provide for walkability via shade and priority access for pedestrians, or other such similar design strategy.

**FINDING:** The applicant has stated that the proposed open space tract will be furnished with drought-tolerant species, shrubs, trees, and ground covers. As mentioned earlier, the landscape plan for the open space tract will require review and approval at time of phase 2 final plat.

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

### *RDC Section 8.385*

#### **Sec. 8.385. Neighborhood Meeting.**

1. *Purpose and Intent.* The purpose of the neighborhood meeting is to provide a forum for the applicant, surrounding neighbors, and interested members of the community to meet and consider a proposed land use application, and to discuss issues/concerns regarding the proposal prior to application submittal. Neighborhood meetings encourage citizen participation early in the development process, and an opportunity to revise the land use application to address the issues prior to application submittal.
2. *Applicability.* Neighborhood meetings are encouraged prior to submitting any land use application. The following application types or development proposals shall be subject to the neighborhood meeting requirements:
  - A. Master Development Plans.
  - B. Residential or mixed use development proposals that generate 200 or more daily trip ends, or 20 or more p.m. peak hour trip ends, where a Transportation Impact Analysis (TIA) is required.
  - C. Wireless and Broadcast Communications Facilities.
3. *Requirements and Procedures.* The neighborhood meeting must be held after a pre-development meeting with City Staff, but before submittal of a land use application. The applicant shall be required to hold only one meeting prior to submitting an application for a specific site but may hold

more if desired. If the development proposal is revised after the neighborhood meeting, and a major modification is requested, a second neighborhood meeting with a new notice shall be required before the revised application is submitted.

- A. *Location and Time.* Neighborhood meetings shall be held in person at a location in reasonable proximity to the subject site. The meeting shall be held at a location open to the public., City Staff, and at a facility that is ADA accessible. The meeting shall be held on a weekday evening, or weekends at any reasonable time. Applicants may provide a virtual component for participants to join in the meeting. The virtual component shall not be done in lieu of the in-person requirements. ADA accommodations when requested by attendee must be provided.
- B. *Notice - Mail.* Mailed notice of the meeting shall be provided by the applicant to the neighboring property owners (within 750 feet outside city limits and 250 feet within city limits) and the Community Development Department between ten and 30 calendar days prior to the meeting. Notices must be sent first class and shall include the date, time, and location of the meeting, as well as a brief description of the development proposal and property location. The description shall take into consideration information provided by City staff at the pre-development meeting, include project contact information, a copy of the tax map or a GIS map that clearly identifies the location of the proposed development, and a conceptual site plan.
- C. *Notice - Signage.* The applicant shall also post notice of the neighborhood meeting on the subject site or on an access easement to the site within clear view of a public street at least seven days in advance of the meeting. The sign must display the meeting date, time, and address as well as project contact information.
- D. *Meeting Requirements.* The developer must provide a sign-in sheet for attendees to provide their name, address, telephone number, and email address. At the meeting, the applicant shall provide a conceptual site plan and describe the major elements of the proposal. Depending on the type and scale of the particular application, the applicant should be prepared to discuss proposed land uses and densities; traffic impacts; proposed building size and height; proposed access and parking; and proposed landscaping, buffering and/or protection of natural resources as applicable. Attendees will have an opportunity to speak at the meeting and may identify any issues that they believe should be addressed. If no one arrives within 30 minutes of the scheduled start time for the meeting, the applicant may close the meeting and this requirement will be considered met upon the applicant's submittal of the documentation to that effect.
- E. *Materials Submitted with Application.* The neighborhood meeting notes that identify the major points discussed about the development, list of parties notified, signed affidavits of mailing and posting notices, copies of all materials provided by the applicant, and a signature sheet of attendees shall be included with the development application upon submittal.
- F. *Validity Period.* The land use application shall be submitted to the City within 180 days of the neighborhood meeting. If an application is not submitted in this timeframe, the applicant shall be required to hold a new neighborhood meeting.
- G. *Denial.* Failure of the applicant to hold a neighborhood meeting in accordance with these provisions prior to submittal of a land use application shall result in an incomplete application and the application may be rejected.

**FINDING:** As this land use proposal includes both a Master Development Plan and development that will generate more than 200 daily trip ends, a neighborhood meeting is required. The applicant held two neighborhood meetings on September 16, 2024, and October 7, 2024, and submitted this land use

application package within 180 days of the neighborhood meetings. The applicant has submitted documentation that demonstrates compliance with this standard.

**ARTICLE III – LAND DIVISION STANDARDS > TENTATIVE SUBDIVISION PLAN**  
*RDC Sections 8.2200, 8.2202, and 8.2220-8.2240*

**Sec. 8.2200. Pre-Application Meeting.**

Prior to submitting a tentative subdivision plan 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:** The applicant submitted a pre-development application (File No. 711-24-000041-PDOC) and a pre-development meeting was held on March 26, 2024. This standard is met.

**Sec. 8.2202. Neighborhood Meeting.**

The applicant or their representative shall conduct a neighborhood meeting that meets the requirements of Section 8.385 for residential or mixed use development proposals that generate 200 or more daily trip ends, or 20 or more p.m. peak hour trip ends, where a Transportation Impact Analysis (TIA) is required per Section 8.2815.

**FINDING:** See finding for Section 8.385, Neighborhood Meetings, above.

**Sec. 8.2220. Phased Development Plan.**

An applicant may propose phased development of a tentative subdivision plan by submitting a phased development plan that shall include but not be limited to, the following elements:

1. Overall development plan, including phase or unit sequence.
  - A. For development that includes a commercial component, a surety may be required when the commercial component is not sequenced in the initial phases.
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.

**FINDING:** The applicant is proposing a two-phased master development planned residential subdivision and is entitling the entire project at this time. Shown on the proposed tentative subdivision plan is a phasing summary and timelines in addition to depicting phases on the tentative plan. The first phase, scheduled to be final platted by fall of 2025, comprises the eastern half of the proposed development and includes the extension of SW 49<sup>th</sup> Street. Phase 2, projected to be final platted by fall

2026, comprises the western half and will include the open space tract on the far west end of the development.

**Sec. 8.2225. Approval of Phased Development Plan.**

The Review Authority shall review a phased development plan at the same time the tentative plan is reviewed. The Review Authority may approve, modify, or disapprove the phased development plan and shall set forth findings for such decision. The Review Authority may also attach conditions necessary to bring the plan into compliance with all applicable land use standards and policies.

**FINDING:** The applicant has submitted a tentative plan for a two-phased subdivision. As stated in this standard, a phased development plan may be approved before the tentative plan for the first phase is submitted. Tentative plans submitted for each phase shall conform to the proposed tentative plan for the multiple-phased subdivision as included in this land use application package.

**Sec. 8.2230. Development Following Approval.**

1. Once a phased development plan is approved, the plan shall be binding, upon both the City and the applicant. The applicant shall submit a final plat for each phase per Section 8.2305.
2. The Review Authority may attach conditions to any changes proposed that are deemed necessary to ensure compliance with the Comprehensive Plan and implementing regulations.

**FINDING:** This section is procedural.

**Sec. 8.2235. Approval Criteria for Tentative Subdivision Plans.**

1. The Review Authority shall approve, approve with conditions, or deny a proposed tentative subdivision plan. Approval, or approval with conditions shall be based on compliance with the following criteria:
  - A. Proposal is in compliance with ORS Chapter 92.

**FINDING:** The proposed master planned subdivision is found to be in compliance with ORS Chapter 92. This finding is substantiated by way of findings addressing said ORS, plans, standards, and criteria throughout this staff report.

- B. Proposal complies with the standards of this Code, including but not limited to:
  1. Section 8.2705, Blocks, Lots and Parcels.
  2. Section 8.2710, Streets.
  3. Section 8.2715, Fundamental Design Standards.
  4. Section 8.2720, Grading of Building Sites.
  5. Section 8.2815, Transportation System Analysis.
  6. Section 8.2820, Access Management Standards.
  7. Any other applicable standards.

**FINDING:** Findings for these sections are addressed later in this staff report.

- C. Proposal complies with the standards of the zoning district in which the project is located.

**FINDING:** With the exception of proposed Lots 2 and 4 not meeting the minimum street frontage requirement, the proposed tentative plan complies with standards of the zoning district.

- D. The proposal is in conformance with any applicable approved area plan, master plan, and/or framework plan.

**FINDING:** Staff has examined the applicant's plan set and has determined that the proposed Antelope Flats master development planned subdivision is in conformance with the Framework Plan and Southwest Area Plan (SWAP).

The Framework Plan designated the subject property as future residential lands and the SWAP designated the property as R-2. Furthermore, the SWAP envisioned the R-2 lands to be low density residential neighborhoods made up of primarily single-family dwellings with densities ranging from 2-5 dwellings units per net acre.<sup>6</sup> The SWAP contemplated a general local grid street structure in the general vicinity that included the north-south connection of SW 49<sup>th</sup> Street. Although the SWAP identified a canal trail network and locations for future City parks in the southwest area of the city, neither apply to the applicant's property. This standard is met.

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

**FINDING:** The applicant's tentative plan proposes a 10-foot-wide pedestrian access easement between Lots 18 and 19. This shall be a 20-foot-wide public access easement.

- F. The proposed subdivision will provide required transportation system infrastructure, water supply, sewage disposal, drainage, and other public utilities consistent with the Public Works Standards and Specifications.

**FINDING:** As identified in the Transportation System Plan (TSP), SW Helmholtz Way is a minor arterial street of which will require additional 20 feet of right-of-way dedication and being brought up to City arterial standards along the subject property's frontage. Also, identified in the TSP is a multi-use pedestrian path along the eastside of SW Helmholtz Way, which the applicant has incorporated into their plans. The proposed subdivision will extend existing streets, SW Antelope Avenue and SW 49<sup>th</sup> Street, which will be built to City standards.<sup>7</sup> As required by the City's public facility plans, the existing water main located in SW 49<sup>th</sup> Street and SW Antelope Avenue will be extended to and through the proposed subdivision. The proposed subdivision will also extend the existing wastewater main in SW 49<sup>th</sup> Street to and through. It should be noted, however, that the applicant will be required to construct a 12-inch water main along the property frontage along SW Helmholtz Way with a loop into the proposed subdivision. Additionally, the applicant will be required to provide a cash contribution for the future 12-inch Far West Sewer Interceptor to be located along the property frontage along SW Helmholtz Way.

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<sup>6</sup> The Southwest Area Plan (SWAP) was adopted in 2014. Since then, the Redmond Development Code has increased the minimum density in R-2 and has outright permitted residential uses up to a fourplex in all residential zones. These changes supersede those outlined in the SWAP.

<sup>7</sup> The applicant's plan set indicates that SW Antelope Avenue will not fully connect to the adjoining property to the east due to needed acquisition of right-of-way from the neighboring property to the south.

This standard is met.

- G. 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:** As part of this land use application submittal, the applicant was required to submit an Infrastructure Allocation Analysis application to the City to ensure adequate capacity would be available to serve the development. The overall development, inclusive of planned improvements, will provide needed improvements and will ensure that adequate capacity is available to serve the entire master development planned subdivision.

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

**FINDING:** No water rights division plan has been approved by the Central Oregon Irrigation District (COID). The applicant will need to coordinate with COID on all water rights-related issues. Refer to COID comments in Attachment C for more details.

#### **Sec. 8.2240. Future Subdivision.**

On any Residential zoned property, if the subdivision results in a lot greater than twice the minimum lot size in the underlying zone, 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 code and without interfering with the orderly extension of adjacent streets, bicycle paths, and accessways.

**FINDING:** The largest single-family lot proposed is 13,613 square feet, which is not greater than twice the minimum lot size for single-family lots in the R-2 zone; therefore, this standard does not apply.

### **ARTICLE III – LAND DIVISION STANDARDS > DESIGN STANDARDS AND IMPROVEMENTS** *RDC Sections 8.2700-8.2720*

#### **Sec. 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.

#### **Sec. 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:** No block exceeds 660 feet in length between street center lines. This standard is met.

- 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 ten feet wide, with an all weather surface a minimum of five feet wide, constructed and centered within the right-of-way.

**FINDING:** The proposed development is adjacent to SW Helmholtz Way, an arterial street, for only 331 feet. This standard is not applicable.

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

**FINDING:** Although the proposed development proposals single-tiered blocks, the northern tier will uniformly and directly abut an existing block to the north (Josie Meadows subdivision), which will create a two-tiered block. Future development abutting the subject property to the south will create a block of lots, which together with this proposal will ultimately result in another two-tiered block. This standard is met.

- 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 Review Authority 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 percent or where path grade would exceed 12 percent 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 Review Authority, when it is determined that the City's grid street standards should not be applied to the industrial development.

**FINDING:** The applicant is proposing a pedestrian access easement between Lots 18 and 19 to allow for pedestrian access to the open space tract and multi-use path located on the western end of the development. This standard is met.

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 Review Authority. 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 proposed master planned subdivision includes 32 single-family dwelling lots, which all meet minimum lot size and density requirements. Additionally, all lots, with exception of lots fronting the cul-de-sac and street eyebrow, are rectangular in shape. The proposed master planned subdivision will be located in city limits and the site does not contain any steep terrain; therefore, subsections A., B., and C. of this section do not apply. This standard is met.

3. *Frontage.* Each newly created lot and parcel shall abut upon a public street other than an alley for at least 50 feet (at least 25 feet in Mixed Use zones). Lots fronting on the bulb of a cul-de-sac the minimum frontage shall be 30 feet. Flag lots shall have no less than 20 feet of street frontage measured at the property line. Townhouse frontage shall be at least 20 feet. 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 proposed lots are for single-family dwellings, will abut a public street, and meet the minimum street frontage requirements with exception of Lots 2 and 4. As discussed in the finding for Section 8.140 above, Lots 2 and 4 are not considered cul-de-sac lots and therefore must be revised to meet the 50-foot street frontage requirement.

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 side lot lines of Lots 6-15 and 22-31 are at right angles to the street lines. Lots 1-5, 16-21, and 32 are radial to the cul-de-sac, street eyebrow, or street curve. This standard is met.



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 subdivision does not contain any Through/Double Frontage lots.

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 proposed subdivision does not include any lots abutting a collector or arterial street. Although the subdivision abuts SW Helmholtz Way, an arterial street, a 60-foot-wide open space tract is proposed between Lots 17-20 and SW Helmholtz Way. Additionally, no vehicular access to SW Helmholtz Way is being proposed. This standard is met.

7. *Corner Lots and Parcels.* Corner lots and parcels shall be five 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:** Lots 10, 11, 26, 27, and 32 are considered corner lots. These lots exceed the minimum street frontage requirement by more than five feet and are sufficient in width to meet the street side setback requirement. 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:** No special building setbacks are being proposed or required; therefore, this standard does not apply.

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 Review Authority, 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:** The applicant is proposing 32 lots intended for single-family dwellings. As such, all lots are at or minimally exceed the minimum lot size for single-family dwellings in the R-2 zone making re-division impractical; therefore, this standard is not applicable.

10. *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 proposed subdivision will be required to extend SW Antelope Avenue. Given that SW Antelope Avenue is proposed to temporarily terminate at the subject property's southeastern corner, a curvilinear centerline is required to center the street through the mid-section of the subdivision to allow for the creation of two-tiered blocks as required by the RDC. This standard is met.

11. *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 feet wide. Flag lot frontage can be reduced by approval from Redmond Fire & Rescue and City Engineer.
  - B. 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 12-foot-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 ten feet 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, except as provided for by middle housing.
  - G. The "pole" of the flag lot shall be no longer than 150 feet 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 feet or greater.
  - J. Flag lots are prohibited along or abutting the Dry Canyon Rim.
  - K. Two off-street parking spaces shall be provided for single family detached dwellings; and one space per unit for middle housing on a flag lot.

**FINDING:** Proposed Lots 3 and 17 are considered flag lots. The lots have a minimum street frontage of 20 feet and the "poles" of the lots are 20 feet in width and are not longer than 150 feet in length. Excluding area of the "poles," Lots 3 and 17 meet the minimum lot size of 9,000 square feet for single-family dwellings. The lots as proposed, meet these standards.

## **Sec. 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 proposed subdivision will extend the existing local streets, SW Antelope Avenue west and SW 49<sup>th</sup> Street south.<sup>8</sup> The intersection of SW Antelope Avenue and SW 49<sup>th</sup> Street is spaced approximately 330 feet from the existing intersection of SW 49<sup>th</sup> Street and SW Zenith Avenue to the north. The spacing between SW 49<sup>th</sup> Street and SW 47<sup>th</sup> Place, adjacent to the proposed development, exceeds 660 feet but is necessary given the location of the existing connection points (i.e., SW 49<sup>th</sup> Street and SW 47<sup>th</sup> Place). This standard is met.

- 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:** As shown in the applicant's plan set, the proposed subdivision includes constructing streets and sidewalks that will connect to existing streets and sidewalks adjacent to the development. As these streets are local streets, bike lanes are not proposed or required; however, a bike lane will be provided as part of the requirement to bring the eastern half of SW Helmholtz Way up to City arterial street standards along the subject property's frontage. Additionally, included within the proposed open space tract is a ten-foot-wide meandering multi-use path that will connect to the path to the north as identified in the City's Transportation System Plan. This standard is met.

- 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 applicant's proposed street layout extends local streets to existing connection points.<sup>9</sup> The west end of SW Antelope Avenue terminates with a cul-de-sac because no connection to SW Helmholtz Way, an arterial street, is permitted. The City's access management standards only allow for connections to arterial streets no less than a quarter mile apart. That said, the City's Transportation

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<sup>8</sup> The applicant's plan set indicates that SW Antelope Avenue will not fully connect to the adjoining property to the east due to needed acquisition of right-of-way from the neighboring property to the south.

<sup>9</sup> The applicant's plan set indicates that SW Antelope Avenue will not fully connect to the adjoining property to the east due to needed acquisition of right-of-way from the neighboring property to the south.

System Plan (TSP) has identified the future minor collector street, SW Badger Avenue, connecting to SW Helmholtz Way south of the proposed subdivision. The TSP has identified the future major collector street, SW Wickiup Avenue connecting to SW Helmholtz Way north of the proposed subdivision. A proposed subdivision to the north has proposed an extension of SW Yew Avenue west, connecting to SW Helmholtz Way. Lastly, the applicant is proposing an eyebrow to SW Antelope Avenue to facilitate the street connection of SW Antelope Avenue to the southeast. This standard is met.

- 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 subdivision will be developed in a 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:** Compliance with the City's access management standards are discussed in Section 8.2820 below. The proposed extension of SW Antelope Avenue and SW 49<sup>th</sup> Street comply with the local street standards of the RDC and Transportation System Plan (TSP). Additionally, 20 feet of right-of-way dedication and street frontage improvements to SW Helmholtz Way will be required to comply with the RDC and TSP. This standard is met.

- 2. *Existing Streets.* Whenever existing streets, adjacent to or within a tract, are of inadequate width per Public Works Standards and Specifications and the City's approved Transportation System Plan 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 Review Authority 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:** Adjacent to the proposed subdivision is SW Helmholtz Way, a minor arterial street, as identified in the Transportation System Plan. Currently the street has 60 feet of right-of-way; however, the City standard is 100 feet of right-of-way for an arterial street; therefore, the applicant will be required to dedicate 20 feet of right-of-way along the property frontage. In addition to dedicating needed right-of-way, the applicant will be required to construct improvements to SW Helmholtz Way along the property's frontage as a requirement of the proposed subdivision. Lastly, the transportation impact analysis conducted for the proposed subdivision concludes that no off-site improvements to streets not within or adjacent to the development will be required. This standard is met.

3. *Existing Access Easements.* Whenever existing unpaved access easements, adjacent to or within a tract, the Review Authority may require paving to City standards at the time of the land division by the applicant.

**FINDING:** The only unpaved access easement that currently exists on the subject property is the Central Oregon Irrigation District's 20-foot-wide right-of-way easement for the B-2-4-2 sub lateral of the Pilot Butte Canal that traverses north-south through the eastern portion of the property. No paving of this easement is required or proposed.

4. *Minimum Right-of-Way and Roadway Standards.* The minimum street right-of-way widths shall be in conformance with Table 1 below. Additional right-of-way may be required at intersections to accommodate intersection widening and roundabouts.

| Table 1 - Minimum Right of Way Width Standards |                            |
|------------------------------------------------|----------------------------|
| Functional Classification                      | Minimum Right of Way Width |
| Minor Arterial                                 | 100 feet                   |
| Major Collector                                | 80 feet                    |
| Minor Collector                                | 60 feet                    |
| Industrial Collector                           | 80 feet                    |
| Industrial Local                               | 60 feet                    |
| Local Residential                              | 60 feet                    |
| Alley                                          | 20 feet                    |
| Cul-de-sacs                                    | 108 feet                   |

Street surfacing, sidewalks or multi-use paths, travel lanes, medians, planter strips, curbs and bicycle lanes must be installed in conformance with the Public Works Standards and Specifications and the Transportation System Plan. Oregon Department of Transportation (ODOT) facilities must meet ODOT design standards.

**FINDING:** The proposed subdivision will involve three streets. Adjacent to the subject property is SW Helmholtz Way, a minor arterial street as identified in the Transportation System Plan. Currently the street has 60 feet of right-of-way, which will require the applicant to dedicate 20 feet of right-of-way along the property's frontage. The applicant will be extending existing local residential streets, SW Antelope Avenue and SW 49<sup>th</sup> Street, which will require 60 feet of right-of-way dedication and 108 feet of right-of-way dedication for the cul-de-sac as is identified on the applicant's plan set.<sup>10</sup> This standard is met.

5. *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

<sup>10</sup> The applicant's plan set indicates that SW Antelope Avenue will not fully connect to the adjoining property to the east due to needed acquisition of right-of-way from the neighboring property to the south.

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 applicant's plan set indicates that SW Antelope Avenue will not fully connect to the existing SW Antelope Avenue to the east and no permanent turn around is proposed at the terminus of SW Antelope Avenue. As such, the southeast corner of SW Antelope Avenue does not meet the minimum width of 20 feet as required by Redmond Fire and Rescue. For more information, refer to the Redmond Fire and Rescue comments in Attachment C. This standard is not met.

6. *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 Review Authority, 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 subdivision abuts an existing arterial street, SW Helmholtz Way. The applicant is proposing a 60-foot-wide open space tract to act as a buffer from the proposed residential neighborhood. This standard is met.

7. *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 either side of such right-of-way at a distance suitable for use of the land between the required street and the abutting railroad, freeway, or parkway. In the case of a railroad, there shall be a land strip of not less than 25 feet in width between the railroad right-of-way and residential property. The land strip must be occupied by the fire-resistant materials, and may contain a fence, a trellis, a wall, or small decorative or artistic feature. 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 a passive-style park or thoroughfare use by bicycles and/or pedestrians. 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:** Although the proposed subdivision is residentially zoned, it does not abut a railroad, freeway, or parkway; therefore, this standard is not applicable.

8. *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 Review Authority, where such continuation is necessary to maintain the function of the street or desirable in the surrounding area.
9. *Street Names.* Except for extensions of existing streets, no street names 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 Redmond Fire and Rescue and Deschutes County.

**FINDING:** The only streets that the proposed subdivision will be creating are extensions to existing streets, SW Antelope Avenue and SW 49<sup>th</sup> Street. As stated in this standard, continuation of street names and numbers will be subject to the approval of the Redmond Fire and Rescue and Deschutes County.

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 that comply with the City of Redmond Transportation System Plan. In the case of collectors, arterials, special industrial districts or in steep terrain, the Review Authority 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 subdivision will provide sidewalks on both sides of the extended SW Antelope Avenue and SW 49<sup>th</sup> Street. Additionally, the applicant will be required to dedicate 20 feet of right-of-way along the eastern edge of SW Helmholtz Way in addition to bringing the eastern half of SW Helmholtz Way up to City standards, which will include constructing a sidewalk. This standard is met.

11. *Bicycle Facilities and Multi-Use Pathways.* Bicycle facilities and multi-use pathways are required to be installed within the subdivision or partition that comply with the City of Redmond Transportation System Plan.

**FINDING:** The applicant is proposing to construct a meandering multi-use pathway in proposed Tract A. The required pathway is identified in the Transportation System Plan as project ID B1, which will be constructed to City standards. Although the proposed extensions to SW Antelope Avenue and SW 49<sup>th</sup> Street are not required to have and will not include bike lanes, the applicant will provide a bike lane as part of the requirement to bring the eastern half of SW Helmholtz Way up to City standards. This standard is met.

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 Public Works Standards and Specifications.

**FINDING:** As shown on the applicant's plan set, the proposed subdivision will include one street intersection, SW Antelope Avenue at SW 49<sup>th</sup> Street, that will be at right angles. 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 Public Works Standards and Specifications.

**FINDING:** The proposed subdivision does not include any staggered street alignments. This standard is not applicable.

14. *Narrow Streets.* Local streets designed at widths less than 36 feet may be permitted subject to the following:

- A. The narrow street is internal to a Subdivision or Planned Unit Development with street connections on both ends.
- B. All lots adjoining the narrow streets are at least 5,000 square feet and have a minimum 50 feet of frontage.
- C. Sidewalks, curbs, and street trees conforming with Public Works Standards and Specifications shall be installed.
- D. Curb cuts along the narrow street shall not be less than the minimum width required within the adopted Public Works Standards and Specifications.
- E. Covenants, Conditions, and Restrictions (CC&Rs) and a Homeowners Association (HOA) are established for the development. The CC&Rs must effectuate the HOA as responsible for parking enforcement.

**FINDING:** The proposed subdivision is not proposing narrow streets; therefore, this standard does not apply.

- 15. *Private Steets.* Private streets must be approved by the City Engineer. The City Engineer may require private streets to meet public standards. Private streets must comply with fire code and access management standards and will only be permitted when accompanied by CC&Rs that designate an HOA as responsible for maintenance and repair.

**FINDING:** The proposed subdivision is not proposing any private streets; therefore, this standard does not apply.

#### **Sec. 8.2715. Fundamental Design Standards.**

- 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 applicant will provide underground wiring to City standards and will be reviewed by the City's Engineering Department as part of the public improvement review process.

- 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 applicant's plan set indicates that SW Antelope Avenue will not fully connect to the existing SW Antelope Avenue to the east. However, the proposed terminus of SW Antelope Avenue will be required to serve as the proposed subdivision's second point of access. As such, the southeast corner of SW Antelope Avenue does not meet the minimum width of 20 feet as required by Redmond Fire and Rescue. For more information, refer to the Redmond Fire and Rescue comments in Attachment C. The proposed subdivision's other point of access will be provided north via SW 49<sup>th</sup> Street.

- 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:** All proposed lots will be served by the City water and sewer and all main and service lines will be installed prior to curbing and paving. As required by the City's public facility plans, the existing water main located in SW 49<sup>th</sup> Street and SW Antelope Avenue will be extended to and through the proposed subdivision. The proposed subdivision will also extend the existing wastewater main in SW 49<sup>th</sup> Street to and through. It should be noted, however, that the applicant will be required to construct a 12-inch water main along the property frontage along SW Helmholtz Way with a loop into the proposed subdivision. Additionally, the applicant will be required to provide a cash contribution for the future 12-inch Far West Sewer Interceptor to be located along the property frontage along SW Helmholtz Way. This standard is met.

4. *Underground Utilities.* All permanent utility service, cell 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 Review Authority. The subdivider, 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 applicant has stated that all new utilities are proposed to be underground. The applicant will coordinate directly with the City's Engineering Department and utility companies during construction plan review.

5. *Preservation of Natural Features.* Existing natural features (i.e., rock outcrops) add character to the development and shall be preserved to the greatest extent practicable.

**FINDING:** The subject property does not include any significant geological features to preserve or consider incorporating into the proposed subdivision's design and lot layout.

6. *Preservation and Replacement Trees.* All deciduous or coniferous existing trees having a ten-inch trunk diameter 4.5 feet above grade or greater are considered significant and shall be preserved or replaced at a 'one-to-one' ratio. Replacement trees shall have a minimum 1-1/2-inch trunk diameter measured at 4.5 feet above grade. This criterion shall be met in the submitted landscape plan. Street trees are counted as replacement trees. Trees removed for installation of public infrastructure are not required to be replaced, however they should be preserved where possible. The Community Development Director, or designee, may prohibit removal of significant trees located within the setback along the perimeter of the parcel to be developed, located adjacent to water features, or that provide screening or buffering to existing development where not located

within the proposed or potential building footprint. An alternate restoration plan may be approved by the Community Development Director, or designee.

**FINDING:** The applicant's plan set and response to this standard indicates that one juniper tree with a diameter greater than 10 inches is proposed to be removed; however, numerous street trees will be required as part of the applicant's proposed development; therefore, this standard is met.

## 7. *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 ten 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:** The applicant's plan set does not depict Public Utility Easements (PUEs). PUEs shall be dedicated along all street rights-of-way and shown on the final plat. There is an existing Central Oregon Irrigation District (COID) B-2-4-2 sub lateral that traverses north-south through the eastern portion of the subject property. The applicant proposes to pipe it and place in an easement as was done to said sub lateral in the two adjacent developments to the north. The applicant will need to coordinate with COID as discussed in COID's comments presented in Attachment C.

- 8. 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 25 lots/units, a minimum of 3,000 square feet and privately maintained. Park amenities shall, at a minimum, include: 1/2 of the park dedicated to turf areas, benches, trees, shrubs, ground cover, irrigation, other landscape or decorative features, and acceptable trash receptable(s) and lighting.

**FINDING:** Although the proposed master development planned subdivision is considered low density, the applicant is proposing a 19,828 square foot open space tract, which will include a 10-foot-wide meandering multi-use pathway, benches, trees, and shrubs. This would exceed the minimum 3,000 square foot pocket park requirement. This open space tract will be privately maintained and will require City review and approval of landscaping and amenities prior to final platting phase 2. This standard will be fully met by complying with the respective condition of approval.

- 9. *Urban-Rural Interface.* Residential subdivisions adjacent to areas outside of the Urban Reserve Area (URA) shall provide buffering to manage the transition from urban to rural intensities by meeting at least one of the following standards:

- A. Provide landscaped buffers at least 100 feet wide, exclusive of rights-of-way, for the entire length that the urban development is adjacent to lands outside of the URA. The buffers shall be landscaped with native vegetation characteristic of the local ecosystem; or
- B. Locating lower density development at the urban-rural interface; or
- C. Other appropriate and equivalent transitional elements as approved by the Review Authority.

**FINDING:** The applicant is proposing Tract A, a 60-foot-wide landscaped open space tract located on the subject property's western edge, adjacent to SW Helmholtz Way and the Urban Area Reserve boundary. Staff believes that the applicant's proposed subdivision complies with the urban-rural interface buffer requirement for the following three reasons: 1) the subdivision will include a 60-foot-wide landscaped open space; 2) the subdivision will be a low density development with relatively large lot sizes; and 3) the proposed open space tract and residential development pattern is consistent with the two existing master development planned subdivisions to the north.

#### **Sec. 8.2720. Grading of Building Sites.**

Grading of building sites shall conform to the City of Redmond Public Works Standards and Specifications.

**FINDING:** This standard will be applied after the applicant's receives tentative plan approval. A subdivision site grading and drainage plan with erosion/sediment control plan and drainage report will be required upon development of each project phase per current City standards.

### **ARTICLE III – LAND DIVISION STANDARDS > SUPPLEMENTARY PROVISIONS**

*RDC Sections 8.2800, and 8.2815-8.2825*

#### **Sec. 8.2800. Improvement Procedures.**

In addition to other requirements, public or private improvements to be installed by the applicant either as a requirement of these standards or other applicable regulations or at his or her own option, shall conform to the requirements of this Article:

1. *Plan Review and Approval.* Improvement work shall not be commenced until plans thereof have been reviewed and approved by the Community Development Director, or Hearings Body, or a designated representative thereof. To the extent necessary for evaluation of a proposed development, such improvement plans may be required before approval of the tentative plat or preliminary map or drawing.
2. *Public Improvements as Platted.* Public improvements shall be designed, installed, and constructed as platted and approved by the City Engineering Division, and plans shall be filed with the final plat at the time of recordation or upon completion.
3. *Inspection.* Improvements shall be constructed under the inspection and approval of a city Inspector. Expenses incurred thereby shall be borne by the applicant/owner. The inspector may require changes in sections and details of the improvements if unusual conditions arise during construction to warrant such changes.
4. *As-Built Plans.* A map showing the completed public improvements shall be filed with the Community Development Department upon completion of the improvements.

**FINDING:** This section is procedural and must be complied with following tentative plan approval.

### **Sec. 8.2815. Transportation System Analysis.**

It shall be the burden of the developer to evaluate transportation system impacts when a proposed development involves either a Subdivision, Site and Design Review, Planned Unit Development, Master Development Plan, Comprehensive Plan and Zone Map Amendment, a change or expansion of use, or any other development that the City Engineer deems necessary. Transportation System Analyses are not required for residential site plan review for up to four units or Partitions.

Transportation System Analyses are approved based on the information presented in the report and must not be older than 180 days from approval at the time the land use application is deemed complete. If the associated land use application is not deemed complete prior to the expiration, the City may require the approved report be updated.

[...]

**FINDING:** The applicant submitted a Transportation System Analysis Application (TSAA) on June 6, 2024, and a Traffic Impact Analysis (TIA) conducted by Lancaster Mobley, LLC, dated September 11, 2024. The TSAA and TIA have been reviewed and approved by City Engineering. Transportation mitigation requirements have been incorporated into the conditions of approval (see also, TIA approval memo, dated September 30, 2024 in Attachment E).

### **Sec. 8.2820. Access Management Standards.**

Access management standards apply to new developments, redevelopments, subdivisions, and partitions.

#### *Location of Access Points.*

1. Access shall be taken from the lower order street or alley unless otherwise approved by Public Works and/or ODOT. Access to higher order streets may be allowed for emergency vehicles when restricted with a locked fire gate, bollards or similar, when approved or required by Redmond Fire and Rescue.

**FINDING:** The streets within the proposed subdivision will be local residential streets with each proposed lot having direct access to these streets. Although SW Helmholtz Way, an arterial street, abuts the proposed subdivision, no access will be permitted or constructed to SW Helmholtz Way. This standard is met.

2. Every lot or parcel shall be limited to one point of access, subject to the following exceptions:
  - A. *Single Family Dwellings, Accessory Dwelling Units, Plexes, Mixed-Use Developments.*
    1. Lots with multiple frontages on local roadways or alleys may be permitted one access per frontage, provided the driveways meet all other required standards.
    2. Lots with accessory structures requiring vehicular access, such as a shop or detached garage, may be permitted two access points, provided the lot frontage is on a local roadway, the driveways are separated by a minimum of 10 feet, and the driveways meet all other required standards.
  - B. *All Other Uses.*
    1. Lots may be permitted a secondary access when it is demonstrated that the additional access improves on-site circulation, does not adversely impact the

operations of the transportation system, and when approved by the City Engineer or designee.

**FINDING:** The layout and design of the proposed subdivision's single-family dwelling lots are such that only one access point to each lot will be permitted. This standard is met.

3. Lots with more than one existing access may be required to close an existing street access upon redevelopment. This standard may be waived when access to an existing, permanent garage structure would be removed, or removal of the access would result in increasing the nonconformity of the site.

**FINDING:** As the applicant stated, no existing access is proposed to remain as a result of tentative plan approval/redevelopment. This standard is met.

4. In the event that the access management standards cannot be achieved on the subject property, shared access with adjacent property may be permitted. When a driveway serves more than one lot, the developer must record an access and maintenance easement/agreement to benefit each lot prior to building permit issuance. Shared access points should be centered on property boundaries when possible.

**FINDING:** The layout and design of the proposed subdivision's single-family dwelling lots are such that no shared access between lots will be needed. This standard is not applicable.

5. 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.

**FINDING:** The specific location of the proposed lots' access points will be determined during zoning conformance review as part of the building permit application submittal. However, it is anticipated that this standard can and will be met given the lots' sizes and street frontages.

#### *Design of Access Points.*

6. The City Engineer or designee may require access locations to align with existing driveways on the opposite side of the roadway, be located as far from driveways on the same side of the street or intersections as possible, or to be right-in/right-out. Right-in/right-out may be required when the access is located within 300 feet of a signalized intersection or roundabout.

**FINDING:** The specific location of the proposed lots' driveways will be determined during zoning conformance review as part of the building permit application submittal. However, it is anticipated that this standard can and will be met given the lots' sizes and street frontages.

7. Property-tight driveway aprons excluding the wings must be located a minimum of three feet from property lines, and curb-tight driveway aprons excluding the wings must be located a minimum of six feet from property lines, unless the access is approved to be shared.

**FINDING:** The specific location of the proposed lots' driveways will be determined during zoning

conformance review as part of the building permit application submittal. However, it is anticipated that this standard can and will be met given the lots' sizes and street frontages.

- 8. A minimum of 24 feet of backing distance shall be provided and shall be measured from the rear end of a perpendicular parking stall or garage door face to the opposite end of a paved alley or roadway. If the abutting alley or street is unpaved, the measurement shall be taken to the opposite end of the right-of-way. If the backing distance is demonstrated onsite, the measurement shall be taken to the nearest barrier, such as a property line, retaining wall, fence, or edge of driveway.

**FINDING:** The specific location of the proposed lots' driveways will be determined during zoning conformance review as part of the building permit application submittal. However, it is anticipated that this standard can and will be met given the lots' sizes and street frontages.

- 9. Corner clearance shall be provided and is measured from the edge of right-of-way to the nearest edge of the access. Spacing is measured from centerline of access/intersection to centerline of access/intersection. Driveway spacing and corner clearance is required as follows:

All land use approvals shall be in compliance with the following standards.

| Roadway Classification | Minimum Access Driveway Spacing | Minimum Access Clearance to Corner | Intersection Spacing (Min.) |
|------------------------|---------------------------------|------------------------------------|-----------------------------|
| Local Street           | No Restrictions                 | 30 ft                              | 165 ft                      |
| Minor Collector        | 50 ft                           | 80 ft                              | 330 ft                      |
| Major Collector        | 165 ft                          | 165 ft                             | 330 ft                      |
| Minor Arterial         | 330 ft                          | 330 ft                             | 1/4 mile                    |
| Major Arterial         | ODOT Stds                       | ODOT Stds                          | ODOT Stds                   |

**FINDING:** The specific location of the proposed lots' driveways/access points will be determined during zoning conformance review as part of the building permit application submittal. However, it is anticipated that this standard can and will be met given the lots' sizes, street frontages, and that the lots will abut local residential streets. Additionally, the proposed subdivision will only have one local street intersection, which will be farther than 165 feet from the nearest existing intersection of SW 49<sup>th</sup> Street and SW Zenith Avenue to the north.

*Additional Standards.*

- 10. 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).

**FINDING:** The specific location of the proposed lots' driveways/access points will be determined during zoning conformance review as part of the building permit application submittal. However, it is anticipated that this standard can and will be met given the lots' sizes, street frontages.

- 11. Access within the North Redmond US 97 Interchange Area Management Plan (IAMP) shall also conform to the 2007 "North Redmond US 97 Interchange Area Management Plan (IAMP)," as amended.

**FINDING:** The proposed subdivision is not located within the geographic area of the North Redmond US 97 Interchange Area Management Plan (IAMP); therefore, this standard is not applicable.

12. Public Works may require supporting information, including but not limited to traffic count data, trip generation, trip distribution, truck and trailer turning/backing templates and/or onsite circulation diagram. Transportation Impact Analysis study, etc., in order to make a proper determination of access/driveway location.

**FINDING:** The specific location of the proposed lots' driveways/access points will be determined during zoning conformance review as part of the building permit application submittal. This standard may be applicable at that time.

#### **Sec. 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 or her 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 are part of the proposed Antelope Flats master planned subdivision; therefore, this standard does not apply.

#### **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 Antelope Flats Master Development Plan and Tentative Subdivision Plan, consistent with all applicable City policies, rules, and regulations.

### III. RECOMMENDATION & CONDITIONS OF APPROVAL

#### **Recommendation:**

Based on the submitted plans, staff findings and conclusions, staff recommends the Planning Commission make a recommendation to the City Council to approve the Antelope Flats Master Development Plan and Tentative Subdivision applications (File Nos. 711-25-000004-MD and 711-25-000005-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 RDC Section 8.1400, Modifications of Approval.
2. As presented in the findings for Secs. 8.140 and 8.2705(3) of this staff report, proposed Lots 2 and 4 are not considered cul-de-sac lots and therefore must be revised to meet minimum street frontage standards.
3. To ensure compliance with the Public Art or Artistic Feature Great Neighborhood Principle, the proposed master development planned subdivision shall provide for a location for the potential installation of public art or artistic feature, preferably at the neighborhood gateway, in and around the center of the neighborhood, or along the multi-use pathway in Tract A.
4. The proposed open space tract, Tract A, must be privately owned and maintained. Review and approval by the City of a complete landscape and amenity plan will be required prior to final platting phase 2.
5. The proposed pedestrian access easement located between Lots 18 and 19 must be a 20-foot-wide public access easement.
6. Per the requirements of Redmond Fire and Rescue, the proposed secondary access at southeast corner of SW Antelope Avenue does not meet the minimum width of 20 feet.
7. The applicant shall coordinate directly with the Central Oregon Irrigation District (COID) for all COID-related issues.
8. **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. Barricades shall be required on all dead-end streets at phase/property boundaries and signed for future extension. All street names shall be approved by Redmond Fire and Rescue and/or Deschutes County. The proposed master plan and public street system complies with City street and TSP standards subject to the following: *[COR Code 8.0270(2)(D), 3(B)(1)(a), 3(C)(11) & 3(C)(14)(a & j)] [COR Code 8.2220(4), 8.2235(1)(B, F & G), 8.2320(2), 8.2710(1, 2, 4, 5, & 8-11), 8.2715(2) & 8.2820] [CORSS Development Provisions 03]*
  - A) **SW Helmholtz Way** - minor arterial street. A paved road and sixty (60) ft. public right-of-way exist, no curb or sidewalk, along project/property frontage. A paved road with public paved path on the east side and eighty (80) ft. public right-of way exist north of subject property. Street frontage



improvements conforming to full width (3-lane) City minor arterial street standards shall be required and constructed per COR Standard Drawing 2-1 and 2-6 with new pavement section, curb on both sides, paved path on the east side, signage, striping, bike lanes and storm drainage unless otherwise approved by the City Engineer. Twenty (20) ft. public right-of-way dedication shall be required along project/property frontage for a total width of fifty (50) ft. east of centerline per City minor arterial standards and COR Standard Drawing 2-1. Street and right-of-way centerline shall match existing.

B) **SW Antelope Ave.** - local/cul-de-sac street. A paved street with curb, sidewalk and sixty (60) ft. public right-of-way exist east of project/property boundary. Proposed alignment of SW Antelope Ave. east of SW 49<sup>th</sup> St. in Phase 1 shall be revised to eliminate the unequal reverse/compound centerline curves, and must meet the alignment approved in the TIA dated September 11, 2024 as part of 711-24-000086-PW , unless otherwise approved by the City Engineer. Street improvements conforming to City local/cul-de-sac/eyebrow minimum street standards shall be required and constructed per COR Standard Drawing 2-1, 2-3, 2-4 and 2-5 prior to plat approval as follows:

1. Phase 1 (east of SW 49<sup>th</sup> St.) - full width local/eyebrow street improvements with 36-ft. wide pavement, 48-ft. radius cul-de-sac pavement, curb, sidewalk, directional curb ramps, storm drainage, thirty (30) to sixty (60) ft. right-of-way dedication and proposed sixty (60) ft. radius cul-de-sac right-of-way dedication shall be required subject to the following off-site right-of-way dedication scenarios by others on neighboring tax lot 15-13-30-1101 frontage and prior to Phase 1 construction plan submittal to City Engineering unless otherwise approved by the City Engineer:

a) South 30-ft. right-of-way dedication (60-ft. total) plus eyebrow right-of-way - Full width paved street, eyebrow and connection to existing paved street at the east project/property boundary with curb on both sides and sidewalk on the north side.

b) South 10-ft. right-of-way dedication (40-ft. total) - Partial width paved street and connection to existing paved street at the east project/property boundary with pavement transitioning and curb and sidewalk on the north side.

c) No right-of-way dedication - A cash contribution fee payment shall be provided for street frontage improvements in lieu of construction. End-of-roadway markers/barriers shall be required at the south/east terminus. Proposed fire access, service road surface, removable/locking bollards and connection to the existing paved street east of project shall be reviewed/approved by Redmond Fire & Rescue (RFR) and City Engineer for adequate secondary emergency access.

d) End of roadway markers, or similar traffic control as approved by the City and COID, shall be provided at the southern and eastern extent of Antelope Ave where connecting to adjacent private property and existing Antelope Ave.

2. Phase 2 (west of SW 49<sup>th</sup> St.) - full width local/cul-de-sac street improvements with 36-ft. wide pavement, 48-ft. radius cul-de-sac pavement, curb, sidewalk, directional curb ramps, storm drainage, sixty (60) ft. right-of-way dedication and fifty-four (54) ft. radius cul-de-sac right-of-way dedication.

C) **SW 49<sup>th</sup> St.** - local street. A paved street with curb, sidewalk and sixty (60) ft. public right-of-way exist at the north project/property boundary. Street improvements conforming to full width City local street standards shall be required and constructed per COR Standard Drawing 2-1 with 36 ft. minimum wide pavement, curb and sidewalk on both sides, and storm drainage through project from the connection to the existing street at the north boundary to the termination at the south property boundary. Street and right-of-way centerline shall match existing at north project/property boundary.

End-of-roadway markers/barriers shall be required at the south terminus.

D) **Public Pedestrian/Bike Multi-Use Paths** – public multi-use paths shall be constructed and dedicated per COR Standard Drawing 2-6 as follows:

- 1) The separated public pedestrian/bike multi-use path identified as B1 per City 2020 Transportation System Plan (TSP) shall be required along the east side of SW Helmholtz Way within public right-of-way or easement and shall match existing path to the north.
- 2) The proposed path between connection from SW Antelope Ave. (cul-de-sac) to the B1 path in SW Helmholtz Way and between Lots 18-19 shall be 10-ft. minimum pavement with 20-ft. public access easement unless otherwise approved by the City Engineer.

E) Lot/Tract Access:

- 1) Vehicular access to each new lot shall conform to City access management, corner clearance, clear vision and driveway construction standards. Driveways/curb cuts shall not conflict with water service/meters, fire vaults, fire hydrants or street catch basins. [COR Code 3.300, 8.0305 & 8.2820]
- 2) Direct vehicular access to SW Helmholtz Way, minor arterial street, shall not be permitted from any lot, tract or alley except for emergency access with locked fire gate/bollards required by Redmond Fire & Rescue (RFR) and COID access connections unless otherwise approved by the City Engineer. [COR Code 8.2820(1)]
- 3) Corner lots and double fronting lots shall take vehicular access from the lower order street, alley or access easement. [COR Code 8.2820(1)]
- 4) Postal box installation shall be subject to US Postal Service standards and City Engineer approval. [CORSS Design Standards II(A)(18)]

F) Traffic Impacts: The Transportation System Analysis Application (TSAA) dated 6-5-24 and Transportation Impact Analysis (TIA) dated 9-11-24 submitted by Lancaster-Mobley have been reviewed and approved by City Engineering conditioned upon the transportation mitigation requirements identified per City Approval Memo dated 9-30-24 unless otherwise specified. [COR Code 8.0270(3)(C)(11), 8.1015(1)(C) & 8.2815]

9. Water: An eight (8) inch City water main exists in SW 49<sup>th</sup> Street at the north project/property boundary. An eight (8) inch City water main exists in SW Antelope Ave. near the east project/property boundary.

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

B) The Infrastructure Allocation Analysis (IAA) Application submitted by H.A. McCoy Engineering & Surveying LLC has been reviewed and approved by City Engineering for the proposed connection to the City water system conditioned upon public water system improvement/mitigation requirements identified per City Approval Memo dated 7-29-24 unless otherwise specified. [COR Code 8.0270(3)(C)(12), 8.2235(1)(F & G) & 8.2715(3)]

10. Wastewater: The twelve (12) inch City gravity sewer trunk Line 'D' per current City Wastewater System Master Plan (WSMP) exists in 47<sup>th</sup> St. at Antelope Ave. east of subject property. An eight (8) inch City gravity sewer main exists in SW 49<sup>th</sup> St. at the north property boundary.

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

B) The Infrastructure Allocation Analysis (IAA) Application submitted by H.A. McCoy Engineering & Surveying LLC has been reviewed and approved by City Engineering for the proposed connection to the City gravity sewer system and existing Sewer Line D basin conditioned upon public sewer system improvement/connection requirements identified per City Approval Memo dated 7-29-24 unless otherwise specified. [COR Code 8.0270(3)(C)(12), 8.2235(1)(F & G) & 8.2715(3)]

11. 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 8.0270(3)(C)(7 & 12), 8.2235(1)(F) & 8.2720] [CORSS Development Provisions 23] [CORSS Design Standards II(B)]

A) Lot and Tract grading shall conform to current COR Development Code 8.2720 and COR Standard and Specifications. [COR Dev Code 8.2720 & CORSS Design Standards II(B)(5)]

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.

12. Construction Plan Review: Upon land use approval, a separate set of construction drawings may be submitted directly to the City Engineering Division along with a Site Development Review Application for design review of all proposed and/or required public infrastructure improvements, utilities and subdivision site grading. Instructions for construction plan/Site Development (SD) review and submittal can be found on the Engineering page of the City's website at; <https://www.redmondoregon.gov/government/departments/engineering/engineering-applications>. [COR Code 8.2720 & 8.2800] [CORSS Development Provisions 04 & 23] [CORSS Design Standards]

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

Prepared by:  
Kyle Roberts, AICP  
Planning Director



ATTACHMENT A

ANTELOPE FLATS

3758 SW HELMHOLTZ WAY, REDMOND. OR, 97756

TAX LOT 900 , MAP 151330BC

NOVEMBER, 2024

LAND SURVEYOR / CIVIL ENGINEER

H.A. McCOY ENGINEERING & SURVEYING  
CONTACT: HAYES McCOY  
1180 SW LAKE ROAD SUITE 201  
REDMOND, OR 97756  
PH: 541-923-7554

APPLICANT

WITTMER CONSTRUCTION  
PO BOX 976  
REDMOND, OR 97756

OWNER

TEXAS TANGO LLC ET AL  
8080 11TH ST #65,  
TERREBONNE, OR, 97760

UTILITY STATEMENT

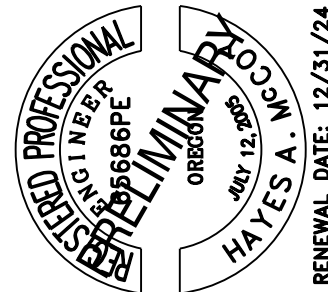
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THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

EXISTING UNDERGROUND UTILITY LOCATIONS SHOULD BE VERIFIED PRIOR TO ANY CONSTRUCTION ACTIVITIES.

SHEET INDEX

MP1.0 COVER SHEET AND PROJECT OVERVIEW  
MP1.1 EXISTING CONDITIONS  
MP2.0 PRELIMINARY STREET AND UTILITY LAYOUT  
MP2.1 TENTATIVE PLAT  
MP2.2 LANDSCAPE PLAN  
MP2.3 PHASING PLAN



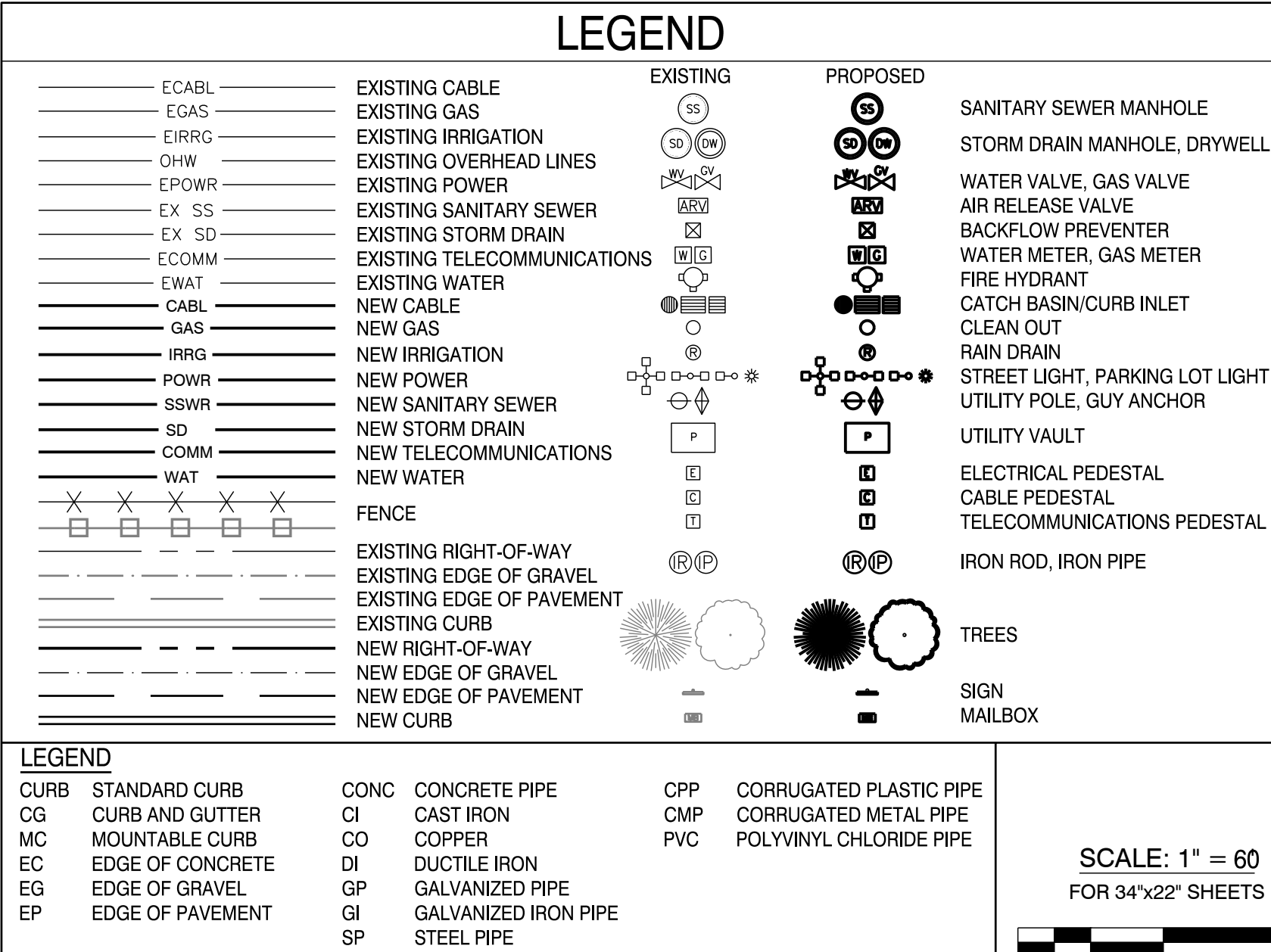
PROJECT SITE

VICINITY MAP

NTS

SITE INFORMATION

ADDRESS: 3758 SW HELMHOLTZ WAY, REDMOND. OR, 97756  
TAX ASSESSORS TAX LOT 900 , MAP 151330BC  
ZONING: UH10



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)

COVER SHEET

PROJECT:  
ANTELOPE FLATS

PROJECT LOCATION:  
REDMOND, OR

CLIENT:  
TEXAS TANGO LLC ET AL

SHEET TITLE:  
COVER SHEET AND  
EXISTING CONDITIONS

JOB NO. 20-018

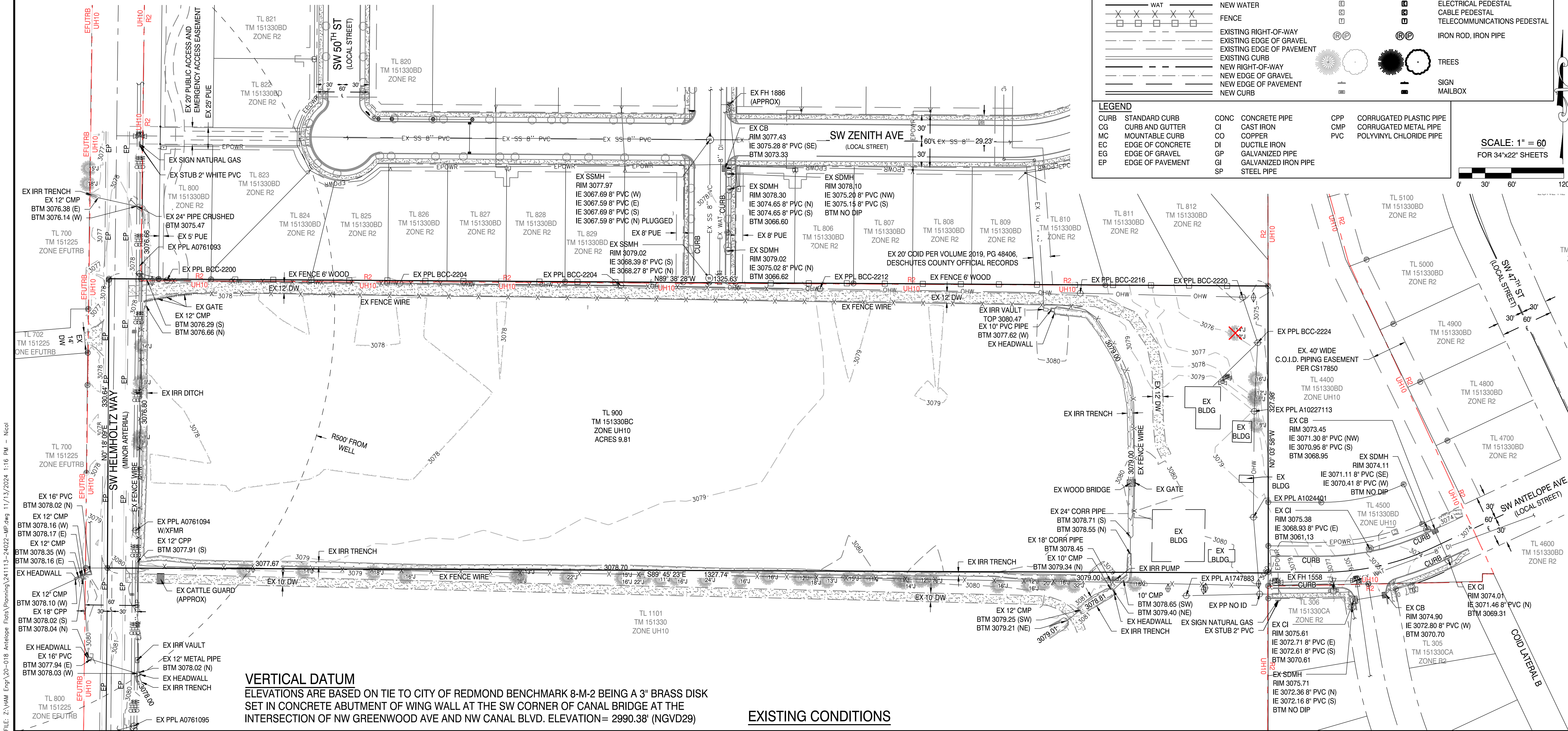
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DRAWING:

MP1.0



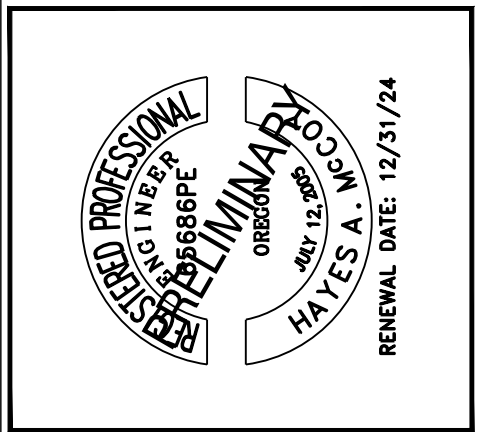
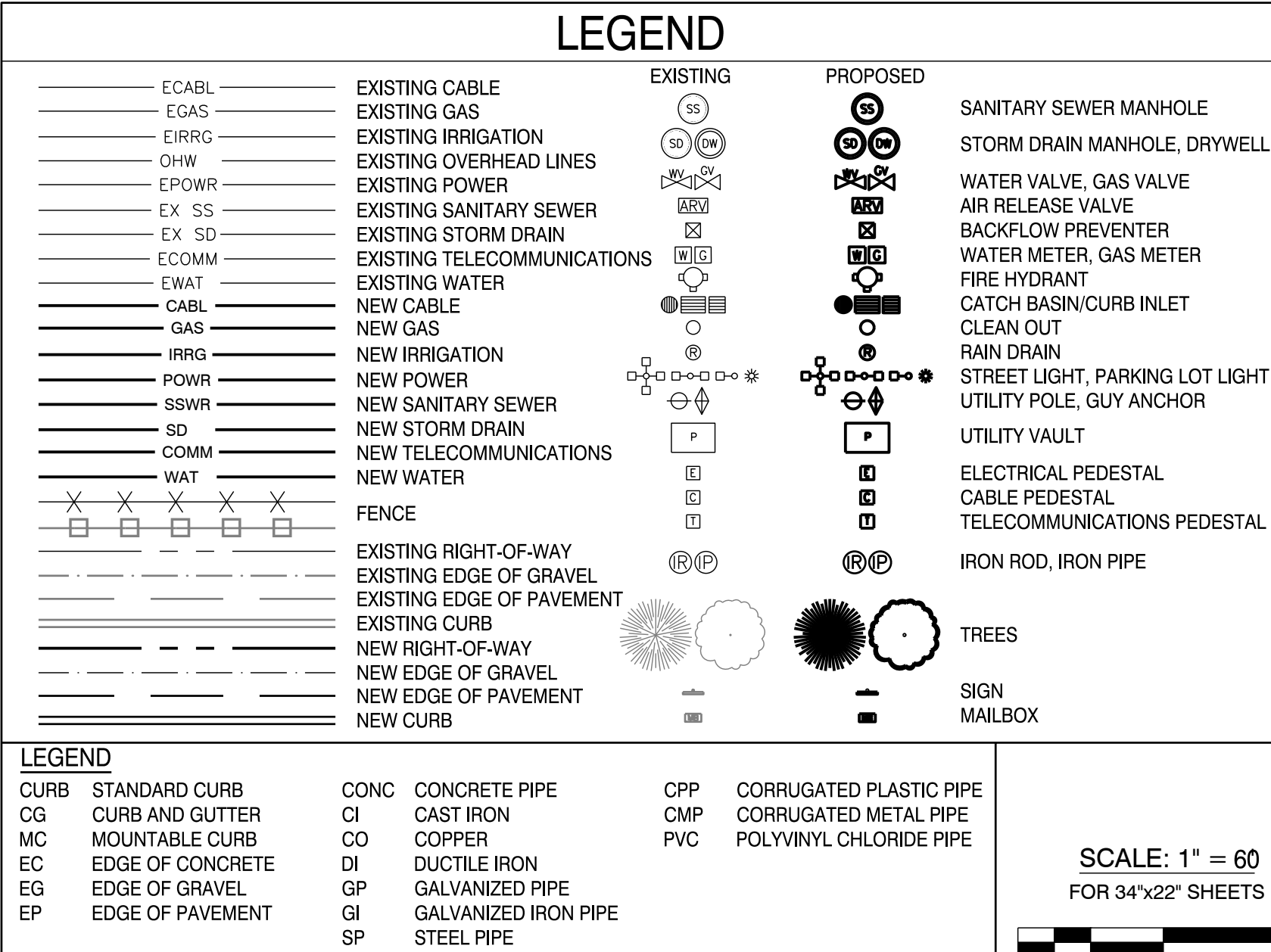
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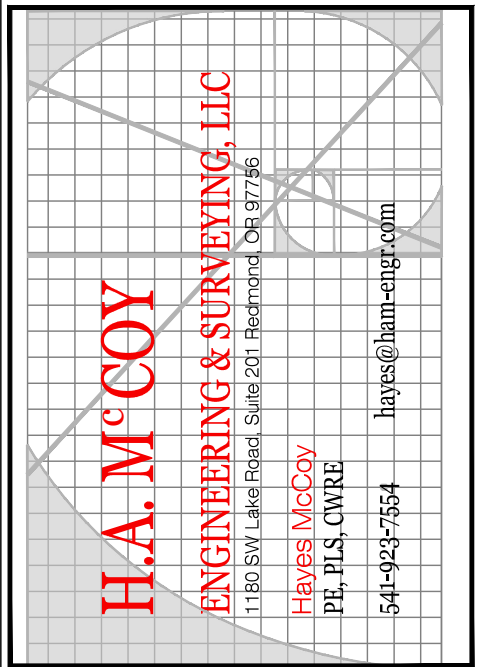
**VERTICAL DATUM**

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)

**EXISTING CONDITIONS**



| DRAWING STATUS: | DATE:    | REVISION: | No. | DATE:    |
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| EXISTING COND   | 11/13/24 |           | 2   | 11/13/24 |
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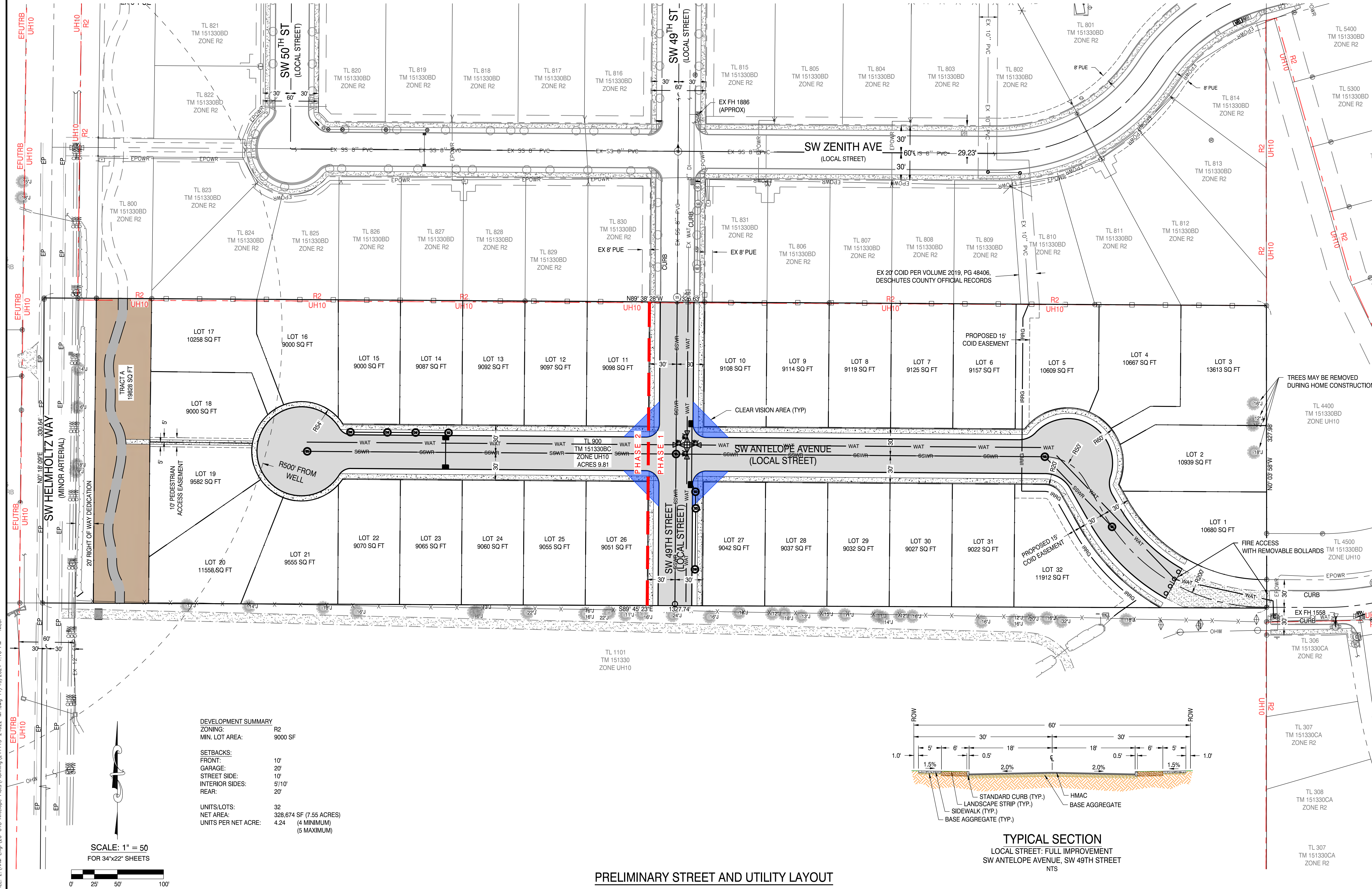


PROJECT: ANTELOPE FLATS  
PROJECT LOCATION: REDMOND, OR  
CLIENT: TEXAS TANGO LLC ET AL

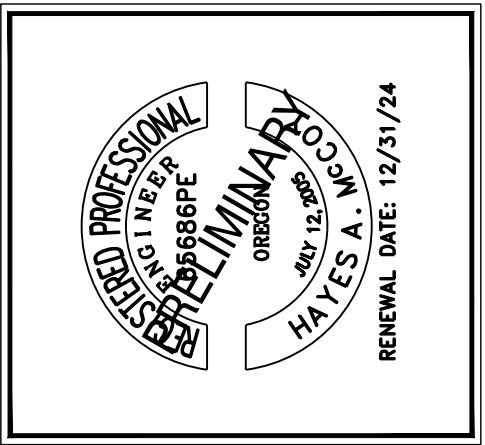
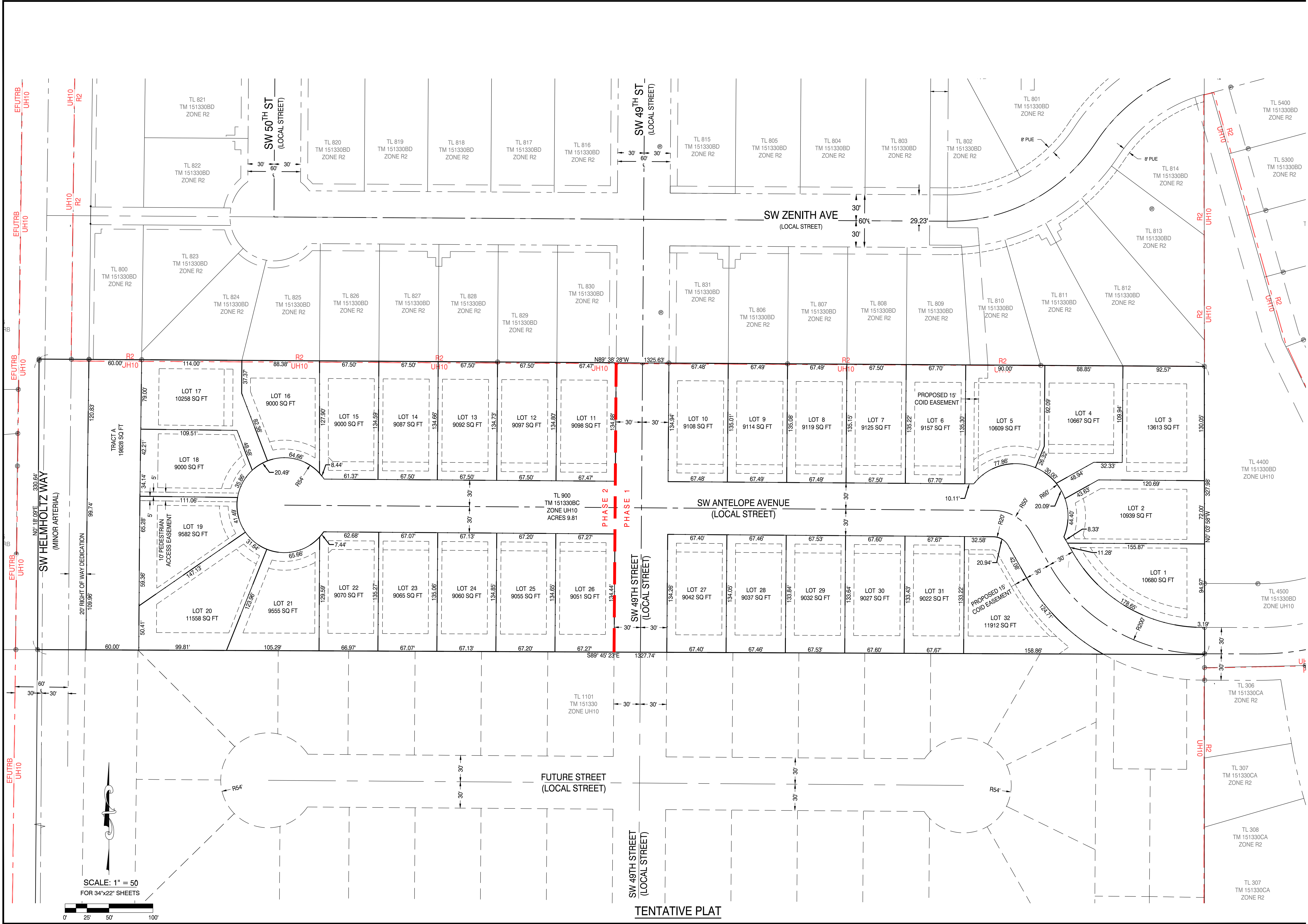
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JOB NO. 20-018  
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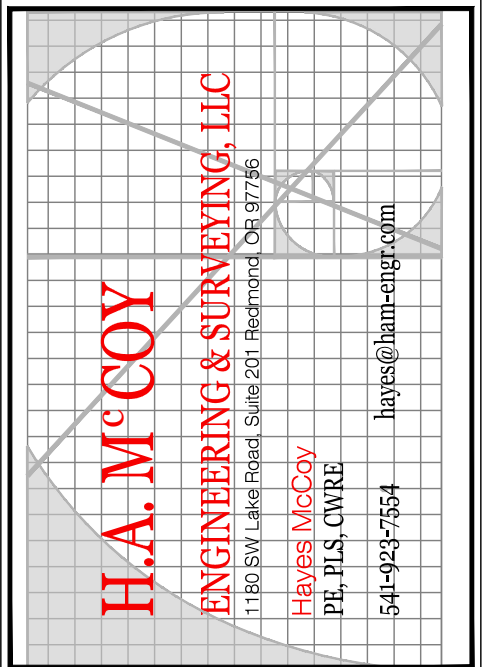








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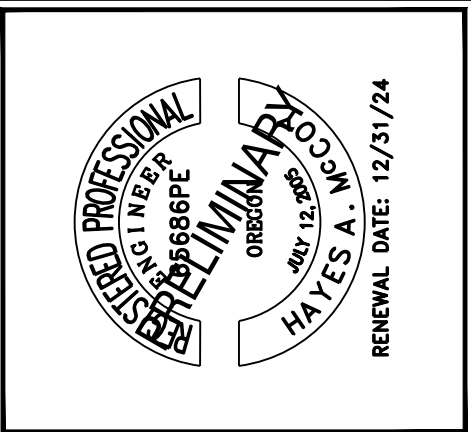


PROJECT: ANTELOPE FLATS  
PROJECT LOCATION: REDMOND, OR  
CLIENT: TEXAS TANGO LLC ET AL

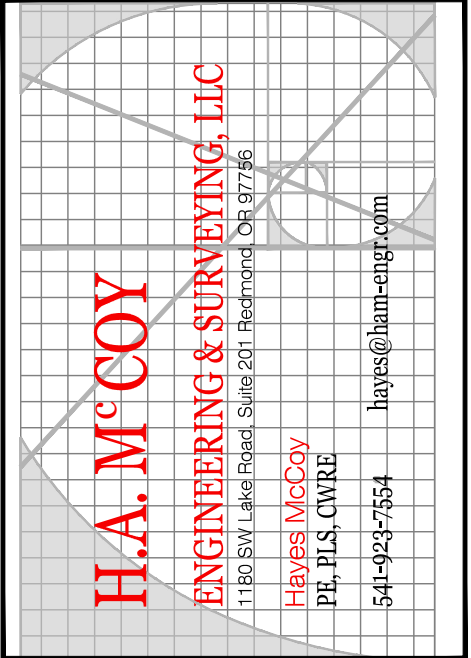
SHEET TITLE: TENTATIVE PLAT

JOB NO. 20-018  
DRAWN BY: CPF  
DRAWING: MP2.1





| DRAWING STATUS:                                   | DATE:    | REVISION: | No. |
|---------------------------------------------------|----------|-----------|-----|
| <input type="checkbox"/> EXISTING COND            | 07/31/24 |           |     |
| <input checked="" type="checkbox"/> EXISTING COND | 11/13/24 |           |     |
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**PROJECT:**  
ANTELOPE FLATS

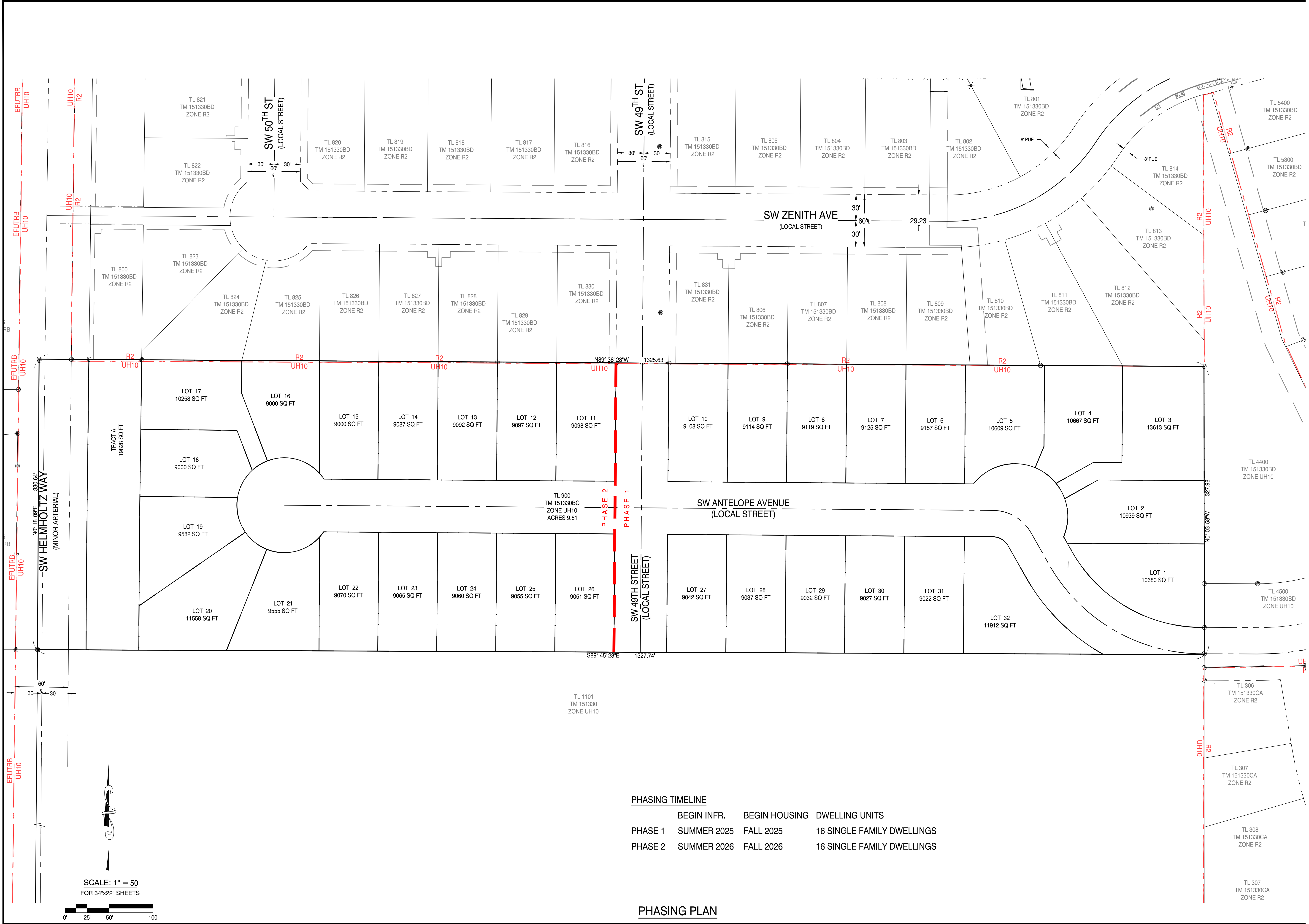
**PROJECT LOCATION:**  
REDMOND, OR

**CLIENT:**  
TEXAS TANGO LLC ET AL

**SHEET TITLE:**  
LANDSCAPE PLAN

|           |        |
|-----------|--------|
| JOB NO.   | 20-018 |
| DRAWN BY: | CPF    |
| DRAWING:  | MP2.2  |





PHASING TIMELINE

|         | BEGIN INFR. | BEGIN HOUSING | DWELLING UNITS             |
|---------|-------------|---------------|----------------------------|
| PHASE 1 | SUMMER 2025 | FALL 2025     | 16 SINGLE FAMILY DWELLINGS |
| PHASE 2 | SUMMER 2026 | FALL 2026     | 16 SINGLE FAMILY DWELLINGS |

PHASING PLAN

SEAL

REGISTERED PROFESSIONAL  
SURVEYOR  
STATE OF TEXAS  
No. 12,987  
HAYES A. MCCOY

RENEWAL DATE: 12/31/24

| DRAWING STATUS:                                   | DATE:    | REVISION: | DATE: |
|---------------------------------------------------|----------|-----------|-------|
| <input type="checkbox"/> EXISTING COND            | 07/31/24 | No.       |       |
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| <input type="checkbox"/>                          |          |           |       |

H.A. MCCOY

ENGINEERING & SURVEYING, LLC

1180 SW Lake Ridge, Suite 201, Richmond, TX 77469

HAYES MCCOY

P.E., P.L.S. CIVIL

541-423-7554

hayes@ham-eng.com

PROJECT:  
ANTELOPE FLATS

PROJECT LOCATION:  
REDMOND, OR

CLIENT:  
TEXAS TANGO LLC ET AL

SHEET TITLE:  
PHASING PLAN

JOB NO. 20-018

DRAWN BY: CPF

DRAWING:  
MP2.3

# ATTACHMENT B

## Antelope Flats

### Burden of Proof Statement

Master Plan, Subdivision

**REQUEST:** Requesting approval of a 32-lot master planned subdivision approval for single family housing.

**LOCATION:** The site is identified as: 3758 SW Helmholtz Way; Tax Lot 900, Deschutes County Tax Assessor's Map #151330BC, Redmond, Oregon 97756

**PROPERTY OWNER:** Texas Tango LLC ET AL  
8080 11th St #65  
Terrebonne, OR 97760

**APPLICANT:** Wittmer Construction  
PO Box 976  
Redmond, OR 97756

### Aerial Map



## Applicable Criteria

### **ARTICLE I – ZONING STANDARDS**

#### **RESIDENTIAL USE ZONES**

**CHAPTER 8.105 – LIMITED RESIDENTIAL R-2 ZONE**

**CHAPTER 8.130 – URBAN HOLDING UH-10 ZONE**

**CHAPTER 8.135 – TABLE A, RESIDENTIAL ZONES, USES PERMITTED**

**CHAPTER 8.140 – TABLE B, MINIMUM STANDARDS**

#### **MASTER DEVELOPMENT PLANS & PLANNED UNIT DEVELOPMENTS**

**CHAPTER 8.270 – MASTER DEVELOPMENT PLANS**

#### **SUPPLEMENTARY PROVISIONS**

**CHAPTER 8.305 – ESTABLISHMENT OF CLEAR VISION AREAS**

**CHAPTER 8.310 – EXCEPTIONS TO CLEAR VISION AREAS**

**CHAPTER 8.385 – NEIGHBORHOOD MEETING**

#### **OFF-STREET PARKING & LOADING REQUIREMENTS**

**CHAPTER 8.500 – OFF STREET PARKING**

**CHAPTER 8. 505 – OFF STREET PARKING AND LOADING**

#### **LANDSCAPING REQUIREMENTS**

**CHAPTER 8.520 – LANDSCAPE PLAN STANDARDS**

**CHAPTER 8.530 – LANDSCAPE DESIGN STANDARDS**

**CHAPTER 8.540 – STREET TREE STANDARDS**

### **ARTICLE III – LAND DIVISION**

#### **TENTATIVE SUBDIVISION PLAN**

**CHAPTER 8.2200 – PRE-APPLICATION MEETING**

**CHAPTER 8.2202 – NEIGHBORHOOD MEETING**

**CHAPTER 8.2205 – APPLICATION SUBMISSION**

**CHAPTER 8.2210 – SCALE OF TENTATIVE SUBDIVISION PLAN**

**CHAPTER 8.2215 – INFORMATIONAL REQUIREMENTS**

**CHAPTER 8.2220 – PHASED DEVELOPMENT PLAN**

**CHAPTER 8.2225 – APPROVAL OF PHASED DEVELOPMENT PLAN**

**CHAPTER 8.2230 – DEVELOPMENT FOLLOWING APPROVAL**

**CHAPTER 8.2235 – APPROVAL CRITERIA FOR TENTATIVE SUBDIVISION PLANS**

**CHAPTER 8.2240 – FUTURE SUBDIVISION**

**CHAPTER 8.2245 – RESUBMISSION OF DENIED TENTATIVE SUBDIVISION PLANS**

#### **DESIGN STANDARDS AND IMPROVEMENTS**

**CHAPTER 8.2700 – COMPLIANCE REQUIRED**

**CHAPTER 8.2705 – BLOCKS, LOTS AND PARCELS**

**CHAPTER 8.2710 – STREETS**

**CHAPTER 8.2715 – FUNDAMENTAL DESIGN ELEMENTS**

**CHAPTER 8.2720 – GRADING BUILDING SITES**

**SUPPLEMENTARY PROVISIONS**

**CHAPTER 8.2800 – IMPROVEMENT PROCEDURES**

**CHAPTER 8.2805 – IMPROVEMENTS IN PARTITIONS**

**CHAPTER 8.2810 – ACCEPTANCE OF IMPROVEMENTS**

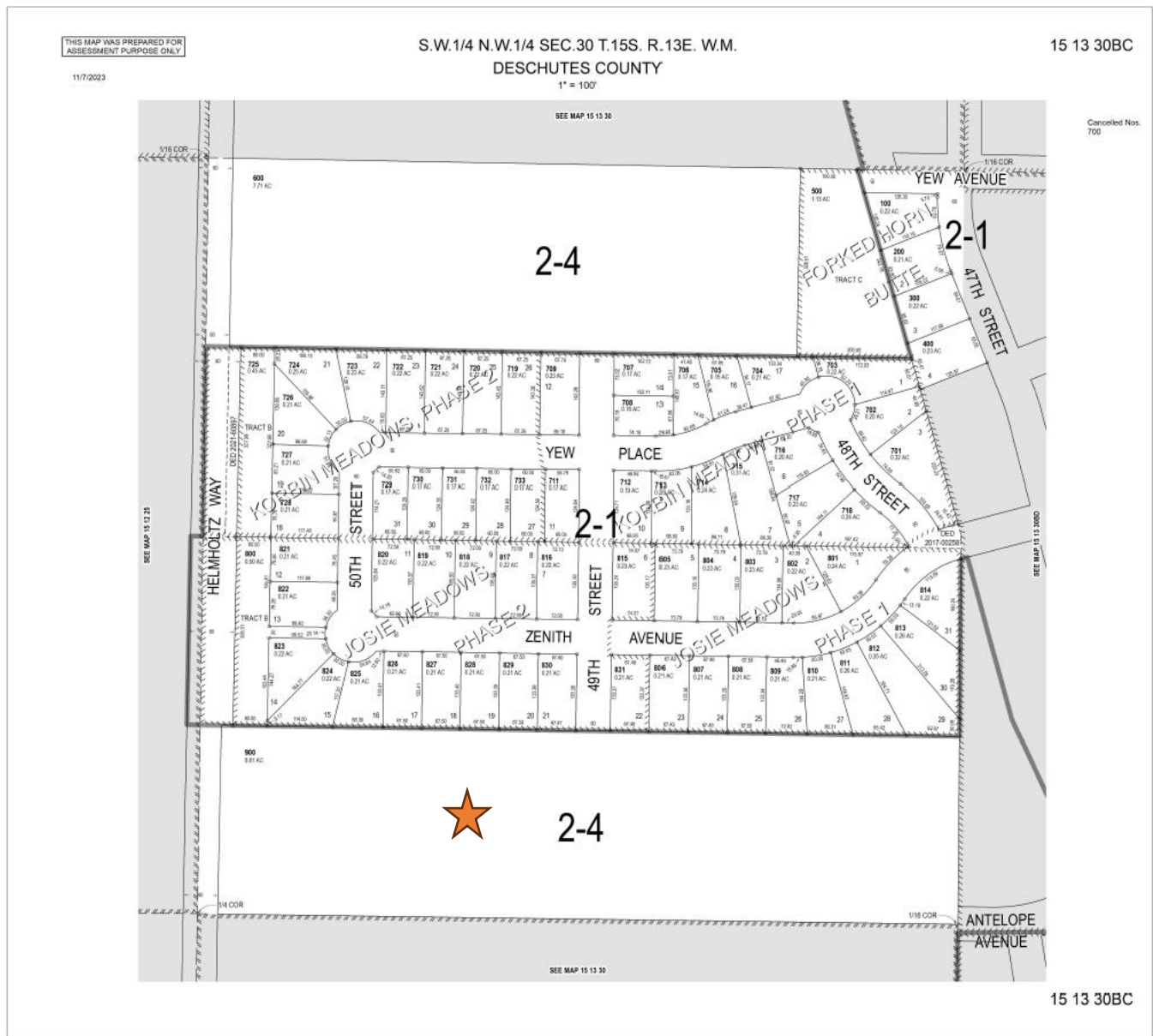
**CHAPTER 8.2815 – TRANSPORTATION SYSTEM ANALYSIS**

**CHAPTER 8.2820 – ACCESS MANAGEMENT STANDARDS**

**CHAPTER 8.2825 – STREET DEDICATIONS**



1. **Location:** The site is identified as: 3758 SW Helmholtz Way; Tax Lot 900, Deschutes County Tax Assessor's Map #151330BC, Redmond, Oregon 97756



2. **Zone and Comprehensive Plan Designation:** The subject property is zoned UH10 and planned R-2 General Residential on the Redmond Urban Area Comprehensive Plan and Zone map.
3. **Proposal:** Requesting approval of a 32-lot master planned subdivision approval for single family housing.

## **RESIDENTIAL USE ZONES**

### **Sec. 8.105. Limited Residential R-2 Zone.**

### **Sec. 8.130. Urban Holding UH-10 Zone.**

The City shall administer the provisions of Title 20 Redmond Urban Area Zoning Ordinance of the Deschutes County Code for this County zoning district.

1. *Master Development Plans.* The development and approval of an Urban Area Master Plan subject to the provisions of Section 8.270 is required as a condition of annexation, prior to or concurrent with rezoning from UH-10 to City zoning districts.
2. *Exception to Master Development Plans Requirement.* Approval of a development plan may be granted without going through a Master Development Plan process according to the following requirements:

*Non-Residential Properties.*

- A. The development plan is 12 acres or less in size; and,
- B. The development plan addresses the applicable Great Neighborhood Principles; and, the development plan includes an appropriate local grid street plan, that complies with street spacing and connectivity requirements in the Redmond TSP and showing street connectivity and bike/pedestrian system connectivity to adjacent planned and unplanned residential areas; and,
- C. The development plan meets applicable requirements for land near the urban edge; and,
- D. The development approval is obtained through a PUD process except when the property is to be used for a public use, such as for a park or school or some other public facility; and,
- E. Annexation to the City of Redmond is proposed as part of the development plan; and,
- F. The development plan addresses all other applicable requirements of the Redmond Comprehensive Plan and Development Code; and,
- G. The development plan conforms to the density and design guidelines established for the area in the Redmond Urban Framework Plan and/or an adopted Area Plan.

*Residential Properties.*

- H. The parcel is within the City of Redmond or can be annexed to the City; and,
- I. The parcel is three acres or less in size; and,
- J. The development plan conforms to the density and design guidelines established for the area in the Redmond Urban Framework Plan and/or an adopted Area Plan; and,
- K. The development plan meets the applicable Great Neighborhood Principles, Land Division, and Site Plan policies; and,
- L. Significant Goal 5 resources, as defined in *Redmond Comprehensive Plan, Chapter 5*, are identified, and managed, in accordance with Redmond's Goal 5 resource protection program; and,
- M. The development plan includes an appropriate local grid street plan that complies with street spacing and connectivity requirements in the Redmond TSP and showing street connectivity and bike/pedestrian system connectivity to adjacent planned and unplanned residential areas; and,
- N. The development plan meets applicable requirements for land near the urban edge and meets applicable planning requirements for land near the urban rural interface; and,
- O. The development application meets all other required elements for one of the City's land use planning approval processes.

**RESPONSE: A Master Development Plan is proposed for this development.**

### **Sec. 8.135. 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

| <b>Residential Uses:</b>                              | <b>R-1</b> | <b>R-2</b> | <b>R-3</b> | <b>R-4</b> | <b>R-5</b> | <b>RESTRICTIONS AND REQUIREMENTS</b>                                                                                              |
|-------------------------------------------------------|------------|------------|------------|------------|------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Accessory Building:                                   |            |            |            |            |            |                                                                                                                                   |
| Detached sheds, shops, and garages                    | O          | O          | O          | O          | O          | Must be located within the property and not in the yard setback areas. Moveable shipping containers, or similar, are not allowed. |
| 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          |                                                                                                                                   |
| Duplex, Triplex, Quadplex, Townhouse, Cottage Cluster | O          | O          | O          | O          | O          |                                                                                                                                   |
| Manufactured Home                                     | O          | O          | O          | O          | O          | See Single Family Detached Dwelling                                                                                               |
| Manufactured Home Park                                | N          | N          | N          | O          | O          | See Section 8.375                                                                                                                 |
| Manufactured Home Subdivision                         | N          | N          | O          | O          | O          | Subject to compliance w/ applicable ORS                                                                                           |
| Multi Family Complex (five + units)                   | C          | C          | C          | O          | O          |                                                                                                                                   |
| Public-Owned Affordable Housing Developments          | O          | O          | O          | O          | O          | See Section 8.145                                                                                                                 |
| Nursing, Convalescent, and Assisted Living Facility   | N          | N          | C          | C          | C          | More than 15 people                                                                                                               |
| Planned Unit Development                              | C          | C          | 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 Detached Dwelling                       | O          | O          | O          | O          | O          |                                                                                                                                   |
| Single Room Occupancy Development                     | O          | O          | O          | O          | O          |                                                                                                                                   |

**RESPONSE: Single Family Detached Dwellings are permitted outright in the R-2 zone.**

#### **Sec. 8.140. Table B, Minimum Standards.**

The following minimum standards apply in each of the Residential zones:

| <b>Standard:</b>                                                  | <b>R-1</b>                                             | <b>R-2</b> | <b>R-3, R-3A</b> | <b>R-4</b> | <b>R-5</b> |
|-------------------------------------------------------------------|--------------------------------------------------------|------------|------------------|------------|------------|
| <b>Minimum Lot size - Square Feet</b>                             |                                                        |            |                  |            |            |
| Single Family, Duplex, Triplex, Single Room Occupancy Development | 9,000                                                  | 9,000      | 7,500            | 5,500      | 5,500      |
| Quadplex, Cottage Clusters                                        | 9,000                                                  | 9,000      | 7,500            | 7,000      | 7,000      |
| Townhouse                                                         | 1,500                                                  | 1,500      | 1,500            | 1,500      | 1,500      |
| Multi-family Complex: 5+ units                                    | No Minimum Lot Size<br><br>Must Meet Density Standards |            |                  |            |            |
| <b>Density - Units/Net Acres</b>                                  |                                                        |            |                  |            |            |
| Minimum Density: All                                              | 4                                                      | 4          | 5                | 5          | 8          |
| Maximum Density: Single Family, Single Room Occupancy Development | 5                                                      | 5          | 5.8              | 8          | 8          |

|                                                                                                                                                                                                                                                                                                                                                                                                                                          |                            |            |                  |            |            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------|------------------|------------|------------|
| Maximum Density: Duplex, Triplex, Quadplex, Cottage Cluster                                                                                                                                                                                                                                                                                                                                                                              | No Maximum Density         |            |                  |            |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                          | Must Meet Minimum Lot Size |            |                  |            |            |
| Maximum Density: Townhouses                                                                                                                                                                                                                                                                                                                                                                                                              | 20                         | 20         | 23.2             | 25         | 25         |
| Maximum Density: Multi-family Complex 5+ units                                                                                                                                                                                                                                                                                                                                                                                           | N/A                        | N/A        | N/A              | 14.5       | 17.4       |
| <b>Standard:</b>                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>R-1</b>                 | <b>R-2</b> | <b>R-3, R-3A</b> | <b>R-4</b> | <b>R-5</b> |
| Planned Unit Developments (PUDs) densities in Section 8.275.                                                                                                                                                                                                                                                                                                                                                                             |                            |            |                  |            |            |
| <b>Minimum Setback Distance - Feet</b>                                                                                                                                                                                                                                                                                                                                                                                                   |                            |            |                  |            |            |
| Front Façade, excluding garage                                                                                                                                                                                                                                                                                                                                                                                                           | 10                         | 10         | 10               | 10         | 10         |
| Interior Side                                                                                                                                                                                                                                                                                                                                                                                                                            | 5/10                       | 5/10       | 5                | 5          | 5          |
| Interior side yards must be a minimum of 5 feet on one side and 10 feet on the other side for single family, duplex, triplex, and quadplex residences. Where alley access is provided, both interior side yards may be reduced to 5 feet. Exceptions to the 10-foot setback are allowed (1) when the residential lot was created prior to the adoption of this standard (November 9, 2006); (2) on cul-de-sac lots; or (3) on flag lots. |                            |            |                  |            |            |
| Street Side                                                                                                                                                                                                                                                                                                                                                                                                                              | 10                         | 10         | 10               | 10         | 10         |
| Rear                                                                                                                                                                                                                                                                                                                                                                                                                                     | 20                         | 20         | 20               | 15         | 5          |
| Attached Garage, access from alley or street                                                                                                                                                                                                                                                                                                                                                                                             | 20                         | 20         | 20               | 20         | 20         |
| <b>Setbacks:</b>                                                                                                                                                                                                                                                                                                                                                                                                                         |                            |            |                  |            |            |
| ADUs: Specified in Section 8.325                                                                                                                                                                                                                                                                                                                                                                                                         |                            |            |                  |            |            |
| Detached Accessory Structures: Specified in Section 8.323                                                                                                                                                                                                                                                                                                                                                                                |                            |            |                  |            |            |
| Cottage Clusters: Specified in Section 8.143                                                                                                                                                                                                                                                                                                                                                                                             |                            |            |                  |            |            |
| Multi-family Complexes: Specified in Section 8.3035(4.E. Table A.                                                                                                                                                                                                                                                                                                                                                                        |                            |            |                  |            |            |
| Townhouses: Specified in Section 8.142                                                                                                                                                                                                                                                                                                                                                                                                   |                            |            |                  |            |            |
| <b>Maximum Building Height - Feet</b>                                                                                                                                                                                                                                                                                                                                                                                                    |                            |            |                  |            |            |
| Single Family, Plexes, ADU                                                                                                                                                                                                                                                                                                                                                                                                               | 32                         | 32         | 32               | 45         | 45         |
| Cottage Cluster                                                                                                                                                                                                                                                                                                                                                                                                                          | 25                         | 25         | 25               | 25         | 25         |
| Townhouse                                                                                                                                                                                                                                                                                                                                                                                                                                | 35                         | 35         | 35               | 45         | 45         |
| <b>Minimum Street Frontage - Feet</b>                                                                                                                                                                                                                                                                                                                                                                                                    |                            |            |                  |            |            |
| Standard Street                                                                                                                                                                                                                                                                                                                                                                                                                          | 50                         | 50         | 50               | 50         | 40         |
| Cul-de-sac                                                                                                                                                                                                                                                                                                                                                                                                                               | 30                         | 30         | 30               | 30         | 30         |
| Flag Lot                                                                                                                                                                                                                                                                                                                                                                                                                                 | 20                         | 20         | 20               | 20         | 20         |
| Townhouse                                                                                                                                                                                                                                                                                                                                                                                                                                | 20                         | 20         | 20               | 20         | 20         |

**RESPONSE: All proposed single family dwelling lots are a minimum of 9,000 square feet. 32 single family lots are proposed on 7.55 net acres resulting in 4.24 dwelling units per acre meeting the standard for the R-2 zone. Proposed flag lots have at least 20 feet of frontage, proposed lots on the cul-de-sac and eyebrow have at least 30 feet of frontage, and the remaining proposed lots have at least 50 feet of frontage.**

## **MASTER DEVELOPMENT PLANS AND PLAN UNIT DEVELOPMENTS**

### **Sec. 8.270. Master Development Plans.**

A Master Development Plan is required 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 specific requirements for a Master Development Plan are:

1. *Applicability.* This Section applies to properties proposed for annexation or rezoning from Urban Holding-10, except that in the event that an applicant has applied for a Planned Unit Development application prior to or concurrent with rezoning from Urban Holding-10, the Master Development Plan approval criteria shall be those used for the Planned Unit Development application and the Great Neighborhood Principles.

2. *Purpose.* The purpose of Master Development Plan is to provide:
  - A. Orderly and efficient development of the City consistent with the City of Redmond Framework Plan and adopted Area Plans.
  - B. Compatibility or transitions with adjacent developments and the character of the area.
  - C. A complementary mix of uses and activities.
  - D. An interconnected transportation network (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 and densities 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 and the Great Neighborhood Planning Principles described in 3(C)(13) below.
3. *Procedures for Review.*
  - A. *General.* Master Development Plans (MDP 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, or designee, shall inform the applicant during the mandatory pre-application stage if the proposed MDP area includes the necessary contiguous properties. The determination for the proposed plan area shall be based on utilizing the following factors:
    1. Whether there are properties that abut or are surrounded by the plan boundary that would reasonably fit within the zoning concept for the area plan;
    2. Whether the extension of public services and infrastructure would be enhanced by the inclusion of abutting properties;
    3. Whether the total acreage of abutting or enclave properties is less than the acreage in the proposed plan area; and
    4. 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 (MPD) or Partial Master Development Plans (PMDP).*
    1. *General.* In the review of any application for a Master 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, adopted Area Plan, and Comprehensive Plan in terms of land use, density, transportation systems and networks, adequacy of infrastructure and open space.

**RESPONSE: The proposed plan takes into consideration the necessary facilities that are needed to support the development pattern established within both the Comprehensive and Framework plans. It also 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.

**RESPONSE: The proposed plan takes into consideration zoning and proposes a plan that complements 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.

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

**RESPONSE: This 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 both pedestrians and vehicular traffic.**

- d. The proposed Plan meets the applicable Great Neighborhood Principles.

**RESPONSE: Elements of the Great Neighborhood Principles are expanded on below.**

- C. *Master Development Plan (MDP) 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. *Neighborhood Meeting.* Proof a neighborhood meeting was conducted to provide an opportunity for the applicant to meet with surrounding property owners discuss the proposal. See Section 8.385 for meeting requirements.
3. *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.
4. *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.
5. *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.
6. *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, SDC credits, dedication, and other value consideration may be identified in the planning process to compensate property owners for land dedicated to public use.
7. *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.
8. *Natural Hazard Areas.* Inventory areas subject to natural hazards, particularly steep slopes, and program urban development that is suitable for the identified hazard areas.
9. *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.

10. *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.
11. *Transportation Analysis and Diagram.* Prepare a *Transportation Impact Analysis* (TIA) including a grid street plan that is consistent with street spacing and connectivity guidelines in the *Redmond Transportation System Plan* (TSP) and adopted Area or Framework Plans. The TIA shall identify and show:
  - a. The proposed classification for all streets.
  - b. The location of approved TSP improvement projects.
  - c. Any capital improvements that may need to be added to the TSP in order to serve the plan area.
  - d. Proposed bicycle pedestrian, and trail routes.
  - e. Demonstrate how planned transportation facilities will connect to transportation facilities in adjacent urban areas.
12. *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.
13. *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:
    - i. Direct Access to a local public street other than a State highway consistent with the Local Street Connectivity Plan; and,
    - ii. 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).

**RESPONSE: Additional materials submitted in support of the proposed Master Development Plan include all the applicable elements listed above.**

14. *Great Neighborhood Principles.* MDPs shall address applicable Great Neighborhood Principles below. In instances where the property proposed for a MDP is located within the boundary of an adopted Area Plan, the MDP shall also address the Great Neighborhood Principles according to the specificity provided in the Area Plan.
  - 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. Curved streets are encouraged to provide interest and variety in neighborhood design. Trails shall be provided to link with existing or planned pedestrian facilities.

**RESPONSE:** Sidewalks through the development and paths connecting to the multi-use trail along SW Helmholtz Way will allow bicycles and pedestrians to conveniently and safely traverse the proposed subdivision and surrounding area. 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 unit types and densities shall be integrated into the design of new neighborhoods consistent with zone requirements unless a variance or other planning permit is approved.

**RESPONSE:** Housing is varied by diverse lot sizes and configuration (i.e. mostly rectangular lots with some cul-de-sac and deep lot configurations). According to the Southwest Area Plan, this property is proposed to be zoned R-2, which provides a more specific type of use for the subject property. However, within the entire Southwest Area Plan, there is a variety of types and density of housing.

- c. *Open spaces, greenways, recreation.* All new neighborhoods shall provide open spaces with recreation amenities that are useable to the public and are integrated to the larger community via trails or pathways. Parks and plazas shall be developed in accordance with Redmond's Parks Master Plan, or otherwise should be centrally located in the neighborhood and capable of supporting public gathering places. New neighborhoods should retain and incorporate significant geological features such as rock outcroppings or stands of clustered native trees into the design and lot layout.

**RESPONSE:** A 19,828 square foot landscape tract is proposed between the residential lots and SW Helmholtz way and includes a multi-use path that is connected to the internal sidewalks within the development. Amenities will be designed during the engineering process. No significant geological features exist to be retained.

- d. *Integrated design elements.* Streets, civic spaces, signage, and architecture shall be coordinated to establish a coherent and distinct character for the MDP. MDPs may integrate design themes with adjacent developed or planned areas.
- e. *Diverse mix of activities.* A variety of uses are 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, and 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.

**RESPONSE:** This criterion is best suited to larger more complex developments, primarily developments with recreational centers or town centers. The project will have single family detached dwellings with sloped roofs in a varied Pacific Northwest style common in other areas of Redmond. The infrastructure (streets, sidewalks, street trees, streetlights) will all be developed according to City standards and specifications which will provide continuity throughout the development.

- f. *Public Art or Artistic Feature.* Places for the installation of public art or artistic feature is required to provide focal points, preferably, at the gateways to neighborhoods, in and around the center of neighborhoods, or trailheads.

**RESPONSE:** The developer shall consider opportunities for art at distinctive locations with consideration of the accelerated and increasing cost of housing.

- g. *Scenic Views.* Identify and preserve scenic views and corridors of the Cascade Range, Ochoco Mountains, and Smith Rock, 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.

**RESPONSE:** The proposed landscape tract is located on the west end of the development and may provide views of the Cascade Range. Varied housing types and upper story development may offer view



opportunities. Based on the development factors it can be found that the development takes advantage of the views to the greatest degree practical.

- h. *Urban-Rural Interface.* Residential development adjacent to areas outside of the Urban Reserve Area (URA) shall provide buffering to manage the transition from urban to rural intensities by meeting at least one of the following standards:
  - i. Provide 100-foot-wide landscaped buffers, exclusive of rights-of-way, for the entire length that the urban development is adjacent to lands outside of the URA. The buffers shall be landscaped with native vegetation characteristic of the local ecosystem; or
  - ii. Locating lower density development at the urban-rural interface; or
  - iii. Other appropriate and equivalent transitional elements as approved by the Review Authority.

**RESPONSE: A 60 foot wide densely vegetated landscape buffer with a 10 foot multi use paved path is provided between the proposed residential subdivision and the urban boundary. A variety of plant species with varying heights are proposed to provide screening throughout the proposed buffer zone.**

- i. *Pocket Parks/Tot Lots.* 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 25 lots/units, a minimum of 3,000 square feet and privately maintained. Examples of amenities include: turf areas, benches, deciduous shade trees, irrigation, shrubs, natural or decorative features, and adequate trash receptable(s) and lighting.

**RESPONSE: This standard has been addressed in criterion 'c' above.**

- j. *Canal Trails.* If canals or laterals are present, multi-use trails at least ten 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 (e.g., every 500 feet, at trailheads or intersections with public streets).

**RESPONSE: A COID canal is proposed to be piped and placed in an easement as part of this development. No open canals or laterals will remain on the subject property.**

- k. *Green Design.* Land divisions and site plans shall incorporate principles of sustainable design befitting the natural ecosystem of Central Oregon. These principles may be incorporated through the layout of individual lots and the configuration of neighborhoods and include energy efficient siting and construction of buildings, water-wise and native landscaping, and amenities to provide for walkability via shade and priority access for pedestrians, or other such similar design strategy.

**RESPONSE: The proposed open space is to be planted with drought tolerant species, shrubs, trees, and ground covers thus reducing water use. Street trees are proposed along pathways and will provide shade.**

- D. *Implementation.* Upon approval, all subsequent development located within the MDP boundaries shall be consistent with the approval.
- E. *Amendment/Modification to Master Development Plan.* Any modifications to the approved MDP shall be subject to the standards and procedures in Article II, "Modifications", and subject to the review criteria contained in this Section.
- F. *Expiration of Master Development Plan.* An approved MDP or PMDP shall be subject to the requirements of Section 8.1605 concerning expiration, unless a specific timeline is approved through the land use review process.

**RESPONSE: These standards are advisory.**

## **SUPPLEMENTARY PROVISIONS**

### **Sec. 8.305. Establishment of Clear Vision Areas.**

Clear vision areas must be established at the intersection of two streets, an alley and a street, a driveway and a street, or a street and a railroad right-of-way. These standards apply to public and private streets, alleys, and driveways. The clear vision area is triangular shaped and extends across the corner of private property to the face of the curb at the adjacent street or alley. The two legs of the clear vision area are each measured from the point of intersection of the two corner lot lines or access easement lines. Where rounded corners are present, the two legs of the clear vision area are measured from the point of intersection that would result from extending the two corner lot lines. Measurements along a driveway are taken at the edge of pavement. No structures, fences, or sight obstructions are permitted in the clear vision area, except as permitted in Section 8.310 Exceptions to Clear Vision Areas.

Clear vision distances shall be measured as follows:

| <b>Intersection at a Street and the Following:</b> | <b>Minimum Distance of Triangle Side</b> |
|----------------------------------------------------|------------------------------------------|
| Street                                             | 15 feet                                  |
| Alley                                              | 10 feet                                  |
| Driveway                                           | 10 feet                                  |
| Railroad                                           | 15 feet                                  |

**RESPONSE: Clear vision areas have been established and are shown on the site plan.**

### **Sec. 8.385. Neighborhood Meeting.**

1. *Purpose and Intent.* The purpose of the neighborhood meeting is to provide a forum for the applicant, surrounding neighbors, and interested members of the community to meet and consider a proposed land use application, and to discuss issues/concerns regarding the proposal prior to application submittal. Neighborhood meetings encourage citizen participation early in the development process, and an opportunity to revise the land use application to address the issues prior to application submittal.
2. *Applicability.* Neighborhood meetings are encouraged prior to submitting any land use application. The following application types or development proposals shall be subject to the neighborhood meeting requirements:
  - A. Master Development Plans.
  - B. Residential or mixed use development proposals that generate 200 or more daily trip ends, or 20 or more p.m. peak hour trip ends, where a Transportation Impact Analysis (TIA) is required.
  - C. Wireless and Broadcast Communications Facilities.
3. *Requirements and Procedures.* The neighborhood meeting must be held after a pre-development meeting with City Staff, but before submittal of a land use application. The applicant shall be required to hold only one meeting prior to submitting an application for a specific site but may hold more if desired. If the development proposal is revised after the neighborhood meeting, and a major modification is requested, a second neighborhood meeting with a new notice shall be required before the revised application is submitted.
  - A. *Location and Time.* Neighborhood meetings shall be held in person at a location in reasonable proximity to the subject site. The meeting shall be held at a location open to the public., City Staff, and at a facility that is ADA accessible. The meeting shall be held on a weekday evening, or weekends at any reasonable time. Applicants may provide a virtual component for participants to join in the meeting. The virtual component shall not be done in lieu of the in-person requirements. ADA accommodations when requested by attendee must be provided.
  - B. *Notice - Mail.* Mailed notice of the meeting shall be provided by the applicant to the neighboring property owners (within 750 feet outside city limits and 250 feet within city limits) and the Community Development Department between ten and 30 calendar days prior to the meeting. Notices must be sent first class and shall include the date, time, and location of the meeting, as well as a brief description of the development proposal and property location. The description shall take into consideration information provided by City staff at the pre-development meeting, include project contact information, a copy of the tax map or a GIS map that clearly identifies the location of the proposed development, and a conceptual site plan.

- C. *Notice - Signage.* The applicant shall also post notice of the neighborhood meeting on the subject site or on an access easement to the site within clear view of a public street at least seven days in advance of the meeting. The sign must display the meeting date, time, and address as well as project contact information.
- D. *Meeting Requirements.* The developer must provide a sign-in sheet for attendees to provide their name, address, telephone number, and email address. At the meeting, the applicant shall provide a conceptual site plan and describe the major elements of the proposal. Depending on the type and scale of the particular application, the applicant should be prepared to discuss proposed land uses and densities; traffic impacts; proposed building size and height; proposed access and parking; and proposed landscaping, buffering and/or protection of natural resources as applicable. Attendees will have an opportunity to speak at the meeting and may identify any issues that they believe should be addressed. If no one arrives within 30 minutes of the scheduled start time for the meeting, the applicant may close the meeting and this requirement will be considered met upon the applicant's submittal of the documentation to that effect.
- E. *Materials Submitted with Application.* The neighborhood meeting notes that identify the major points discussed about the development, list of parties notified, signed affidavits of mailing and posting notices, copies of all materials provided by the applicant, and a signature sheet of attendees shall be included with the development application upon submittal.
- F. *Validity Period.* The land use application shall be submitted to the City within 180 days of the neighborhood meeting. If an application is not submitted in this timeframe, the applicant shall be required to hold a new neighborhood meeting.
- G. *Denial.* Failure of the applicant to hold a neighborhood meeting in accordance with these provisions prior to submittal of a land use application shall result in an incomplete application and the application may be rejected.

**RESPONSE: Neighborhood meeting procedures have been adhered to and the required documentation is included with this application.**

## ***OFF-STREET PARKING AND LOADING REQUIREMENTS***

### **Sec. 8.500. Off-Street Parking.**

1. Parking space requirements are based on the following standards according to the use (note: all required accessible parking is included in the calculation derived parking standards). Manufacturing, warehousing, and other industrial uses may base the number of required parking spaces on the number of employees. When the number of employees is specified, persons counted shall be those working on the premises, including proprietors, during the largest shift at peak season.

| Land use                        | Standard      |
|---------------------------------|---------------|
| <b>Residential</b>              |               |
| Single Family Detached Dwelling | 2 spaces / DU |

**RESPONSE: Parking shall be determined at time of engineering or home construction; however, the lots are designed to be able to meet the standards described above.**

### **Sec. 8.505. Off-Street Parking and Loading.**

General provisions are as follows:

1. The provisions and maintenance of off-street parking and loading spaces is the continuing obligation of the property owner. Should the owner or occupant of any lot or building change the use to which the lot or building is sited, thereby increasing off-street parking, or loading requirements, this Section must then be complied with. Businesses within the Central Business District (C-2 zone) and Downtown Overlay District (DOD) shall be exempt from this provision if there is an existing building on the subject site that prevents the addition of on-site parking. Expansions of buildings in the C-2 and DOD zone must comply with this Section.
2. Requirements for types of buildings and uses not specifically listed in these standards shall be determined by the Community Development Director, or designee, based upon the requirements for comparable uses listed.
3. In the event that several uses occupy a single structure or parcel of land, the total requirements for off-street parking shall be the sum of the net floor area requirements of the several uses computed separately.

4. Owners of two or more uses, structures or parcels of land may agree to utilize jointly the same parking and loading spaces when the hours of operation do not overlap; provided that satisfactory legal evidence is presented to the City in the form of deeds, leases, or contracts to establish the joint use.

**RESPONSE: These standards are advisory.**

5. Off-street parking spaces for Dwelling Units (DU) shall be located on the same parcel with those dwellings, or written contract of agreement shall be provided to the City that expressly permits shared use of parking areas which are off-site.
6. All required parking spaces shall be located not farther than 300 feet from the building or use they are required to serve, measured in a straight line from the building unless approved by the City Engineer.
7. Required parking spaces shall be available for the parking of passenger automobiles of residents, customers, patrons, and employees only, and shall not be used for storage of vehicles or materials or for the parking of trucks used in conducting the business or use.

**RESPONSE: Proposed parking for the dwelling units will be located on the same parcel and are adjacent to the buildings in which they serve. Resident and visitor parking for each unit will be located within 65' of the building served. No outdoor storage for parking is proposed.**

8. In any zone, every building having a gross floor area of 10,000 square feet or more, which is to be occupied for: manufacturing, storage, warehousing, retail sales, hotel, hospital, laundry, dry cleaning establishment, or other uses similar requiring the receipt or distribution by vehicles, materials or merchandise, shall provide one off-street loading berth, plus one additional loading berth for each additional 20,000 square feet of gross floor area. Each loading berth shall be provided with paved access, driveways and surfacing in the same manner as for off-street parking, except that each space shall be ten feet wide and 22 feet long with a height clearance of at least 14 feet. Additionally, all loading areas shall be screened from view of public streets at no less than three feet in height.
9. Interior loading docks, or loading areas or docks located inside buildings, shall be considered as being screened when securable by a powered overhead door that totally encloses the opening for vehicles being loaded / unloaded.
10. Loading and unloading of merchandise, equipment, etc. shall not be permitted from public streets or roads.

**RESPONSE: Proposed parking is within a residential zone; therefore, these standards do not apply.**

11. Common Parking Areas shall conform to City standards and shall be located within 220 feet of the land use.

**RESPONSE: Common parking areas are not proposed for this development.**

## ***LANDSCAPING REQUIREMENTS***

### **Sec. 8.520. Landscape Plan Standards.**

1. *Applicability.* A landscape plan is required for proposal which includes any of the following:
  - A. New housing.
  - B. Development subject to Article IV Site and Design review.
  - C. Planned Unit Development.
  - D. New wireless broadcast communication facilities, as described in Section 8.415.
2. *Contents.* A landscape plan need not be prepared by a certified landscape architect unless deviations from the Landscape Design Standards of Section 8.530 are proposed. In all cases, a landscape plan must include the following to be considered complete:
  - A. *Existing Landscaping.* The existing landscaping diagram shall depict the location of existing natural features and vegetation on the subject property and adjacent right-of-way areas. Any tree with a diameter of ten inches as measured at three feet above natural grade or greater shall be clearly labeled as a significant tree; smaller trees need not be depicted. Any tree that is shown on the plan shall be identified as coniferous or deciduous and whether the tree(s) is proposed to be retained or removed as part of the development.

**RESPONSE: Existing conditions including trees with diameters greater than ten inches are shown on the provided plan and what trees are planned to be removed.**

- B. *Proposed Landscaping.* The proposed landscaping diagram shall depict the location of the vegetation, soil preparations, and irrigation for the subject property and adjacent right-of-way areas and shall be shown in relation to proposed improvements, including building footprints, frontage improvements, and utility infrastructure. Additionally, the landscape plan must identify the total required landscaping area, as required by Section 8.530(2.), in square feet.
1. *Vegetation.* The species, native or non-native status, and corresponding water use category (very-low, low, moderate, high, other) as identified in the Oregon State University Extension Office Water-Wise Gardening in Central Oregon Guide, revised June 2020, shall be depicted. The installation size, if applicable, of all vegetation shall be identified. For any tree proposed to be retained, a Tree Protection Zone (TPZ) complying with the Public Works Standards and Specifications shall also be depicted. All required replacement trees shall be clearly labeled.
  2. *Soil Preparation.* The type of amendments or treatments to the soil shall be depicted.
  3. *Irrigation.* The method of irrigation proposed for use, including all points of connection and the system components (meters, valves, backflow, quick couplers, blow out ports, main and lateral lines, sprinkler layout, etc.) shall be depicted.

**RESPONSE: Landscape areas are incorporated into the provided plan set and shall be designed and approved by the planner during engineering of construction plans. Low water trees, shrubs, bunch grasses, and ground cover are proposed in the landscape area.**

#### **Sec. 8.540. Street Tree Standards.**

Street trees are required wherever the subject property abuts public or private streets and shall be subject to the following:

1. *Species of Street Trees.* Street trees shall be selected from the most recent City of Redmond Approved Street Trees list.

**RESPONSE: Street tree species will be selected in coordination with the city arborist.**

2. *Amount of Required Street Trees.* The amount of street trees required to be installed shall be based on the length of the development frontage, less the clearance areas, divided by the required spacing distance. The required spacing distance is based on the species of tree and described in the City of Redmond Approved Street Trees list. Clearance areas are described in Subsection (C.) below.

Number of Trees Required = [(Length of Development Frontage) — (Clearance Areas)] / (Required Spacing Distance)

**RESPONSE: Street trees are proposed in landscape strips along the local streets and are spaced 30 feet apart.**

3. *Placement of Street Trees.* Trees shall be centered in the landscape strip or shoulder, where applicable, at the required spacing distance. The required spacing distance of street trees is based on the species of tree and described in the City of Redmond Approved Street Trees list; spacing shall be measured from the center of the trunk of the tree. The spacing distance of street trees shall be adjusted based on the following:
  - A. Clearance Areas, wherein no tree shall be planted. Clearance areas include:
    1. Clear vision areas;
    2. Sight distance areas;
    3. Stopping distance areas;
    4. Medians less than four feet wide;
    5. Utility easements;
    6. City easements, unless permitted by City Engineer.

**RESPONSE: Street tree spacing deviates where clear vision is shown and resumes after clear vision areas end.**

- B. Buffers, which provide space between a tree and boundaries, infrastructure, improvements, or other physical barrier, shall be provided as described in the table below.

| Physical Barrier                                                                 | Required Buffer                            |
|----------------------------------------------------------------------------------|--------------------------------------------|
| Stop Signs                                                                       | 50 feet                                    |
| Other Traffic Signs                                                              | 20 feet                                    |
| Streetlights                                                                     | 25 feet                                    |
| Non-Streetlight Utility Poles                                                    | 10 feet                                    |
| Retaining Walls                                                                  | 5 feet                                     |
| Fire Hydrants                                                                    | 10 feet                                    |
| Water or Sewer Meter/Service, including vaults, utility boxes, sampling manholes | 5 feet                                     |
| Catch Basins, Sedimentation Manhole, Drywell                                     | 10 feet                                    |
| Intersections                                                                    | 35 feet                                    |
| Alleys                                                                           | 10 feet                                    |
| Driveways                                                                        | 5 feet                                     |
| Sidewalks, Curbs                                                                 | 2 feet, unless centered in landscape strip |
| Property Lines                                                                   | 2 feet                                     |
| Other                                                                            | Subject to City Engineer review            |

**RESPONSE: Street trees are buffered from physical barriers described above in the provided plan set.**

- C. Existing street trees may be factored into spacing distance and placement of street trees.

**RESPONSE: No existing trees are proposed as street trees.**

4. The Community Development Director or designee may approve alternate street tree species selections and placements. Additionally, in the event that the required amount of street trees cannot be entirely accommodated within the public or private street frontage based on the above standards and adjustments, street trees may be permitted to be located on private property within five feet of the right-of-way, utility easement boundary, or property line.

**RESPONSE: This standard is advisory.**

### ***TENTATIVE SUBDIVISION PLAN***

#### **Sec. 8.2200. Pre-Application Meeting.**

Prior to submitting a tentative subdivision plan each applicant or their representative is required to meet with the Community Development Director or a designated staff member(s) to review the proposal.

**RESPONSE: Pre-development meeting was held and is identified as 711-24-000041-PLNG-PD.**

#### **Sec. 8.2202. Neighborhood Meeting.**

The applicant or their representative shall conduct a neighborhood meeting that meets the requirements of Section 8.385 for residential or mixed use development proposals that generate 200 or more daily trip ends, or 20 or more p.m. peak hour trip ends, where a Transportation Impact Analysis (TIA) is required per Section 8.2815.

**RESPONSE: This standard has been addressed in Section 8.0385.**

#### **Sec. 8.2205. Application Submission.**

Any person, authorized agent, or representatives, proposing a subdivision, shall include with an application and filing fee for a subdivision, a tentative plan together with improvement plans and other supplementary material as may be required.

**RESPONSE: All required documents have been included with this submission.**



## **Sec. 8.2210. Scale of Tentative Subdivision Plan.**

The tentative plan of a proposed subdivision shall be drawn on a sheet at an engineer's scale not greater than one inch per 100 feet, or as approved by the Community Development Director, or designee.

**RESPONSE: This standard is advisory.**

## **Sec. 8.2215. Informational Requirements.**

The following information shall be shown on the tentative plan or provided in accompanying materials. A tentative plan must be prepared by a professional land surveyor, a registered professional engineer, or a registered landscape architect. No tentative plan shall be considered complete unless all such information is provided:

1. *General Information Required.*
  - A. Proposed name of the subdivision.
  - B. Names, address, and phone numbers of the owner of record, authorized agents or representatives, engineer or surveyor, and any assumed business names filed or to be filed with the Oregon Secretary of State Corporation Division by the applicant. If the application is filed by anyone other than the owner of record, a letter or other evidence of the owner's permission to file the application.
  - C. Date of plan preparation, north and magnetic north and south, scale and gross area of the proposed subdivision.
  - D. Appropriate identification of the drawing as a tentative plan for a subdivision. Location and tract designation sufficient to define its location and boundaries, and a legal description of the tract boundaries in relation to existing plats and streets.
  - E. Certified copy of the recorded instrument under which the applicant claims an ownership interest, or copy of a land sales contract, which binds the applicant in the event of tentative approval.
  - F. Title report or subdivision guarantee, issued within the last 90 days, and supporting documentation of all easements identified on the property.
2. *Information Concerning Existing Conditions.*
  - A. Location, names, and widths of existing improved and unimproved public or private streets and roads within and adjacent to the proposed subdivision.
  - B. Location of any existing features such as section lines, section corners, City and special district boundary lines, and survey monuments.
  - C. Location of existing structures, irrigation canals and ditches, pipelines, waterways, railroads, and any natural features such as rock outcroppings, designated wetlands, wooded areas, and natural hazards.
  - D. Location and direction of water courses, and the location of areas subject to flooding and high water tables.
  - E. Location, width and use or purpose of any existing easement or right-of-way within and adjacent to the proposed subdivision.
  - F. Existing sewer lines or septic tanks and drain fields, water mains, wells, fire hydrants, culverts, and other underground and overhead utilities within and adjacent to the proposed subdivision together with pipe sizes, grades, and locations.
  - G. Contour lines related to some established benchmark or other engineering acceptable datum and having minimum intervals of two feet for slopes of less than five percent, five feet for slopes of five to 15 percent, ten feet for slopes of 15 to 20 percent, and 20 feet for slopes greater than 20 percent.
  - H. Zoning classification of land within and adjacent to the proposed subdivision.
  - I. Names and addresses of all adjoining property owners.
  - J. Existing covenants, conditions, and restrictions.
  - K. Conditions specified on the approved Transportation System Analysis prepared in accordance with Section 8.2815.

3. *Information Concerning Proposed Subdivision.*

- A. Location, names, width, typical improvements, cross sections, bridges, culverts, approximate grades, curve radii and centerline lengths and reserve strips of all proposed streets, and the relationship to all existing and projected streets.
  - B. Location, width, and purpose of all proposed easements or rights-of-way and relationship to all existing easements and rights-of-way.
  - C. Location of at least one temporary benchmark within the proposed subdivision boundary.
  - D. Location, approximate area and dimensions of each proposed lot, and proposed lot and block numbers.
  - E. Location, approximate area and dimensions of any lot or area proposed for public use, the use proposed, and plans for improvements or development thereof.
  - F. Proposed use, location, approximate area, and dimensions of any lot intended for non-residential use.
  - G. An outline of the area proposed for partial recording, if contemplated or proposed.
  - H. Source, method, and preliminary plans, prepared by a licensed civil engineer, for domestic and other water supplies, sewage disposal, solid waste disposal, and all utilities.
  - I. Description and location of any proposed community facility.
  - J. Storm water, drainage facility and grading plans.
  - K. Proposed deed restrictions including access restrictions or protective covenants if such are proposed to be utilized for the proposed subdivision.
  - L. Statement from each utility company proposed to serve the proposed subdivision stating that each company is able and willing to serve the proposed subdivision as set forth in the tentative plan, and the conditions and estimated costs of such service.
  - M. Proposed fire protection or fire hydrant system for the proposed subdivision and written approval thereof by the appropriate serving fire protection agency.
4. *Narrative.* Letter or narrative report documenting compliance with the applicable approval criteria contained in Section 8.2235.
5. *Tree Survey.* A survey indicating location of all trees having ten-inch trunk diameter 4.5 feet above grade or greater, their diameter, and whether they are coniferous or deciduous on private property and in the right-of-way adjacent to the property. The plan shall show which trees are proposed for removal and the location of replacement trees. The plan shall show the Tree Protection Zone (TPZ) for trees to be preserved, conforming with the Public Works Standards and Specifications. The tree survey shall show the proposed improvements or potential improvements, indicated by the buildable area of a lot consistent with the maximum lot coverage area of the zone.

**RESPONSE: These standards are advisory and have been adhered to as shown on the accompanying site plan.**

**Sec. 8.2220. Phased Development Plan.**

An applicant may propose phased development of a tentative subdivision plan by submitting a phased development plan that shall include but not be limited to, the following elements:

- 1. Overall development plan, including phase or unit sequence.
  - A. For development that includes a commercial component, a surety may be required when the commercial component is not sequenced in the initial phases.
- 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.

#### **Sec. 8.2225. Approval of Phased Development Plan.**

The Review Authority shall review a phased development plan at the same time the tentative plan is reviewed. The Review Authority may approve, modify, or disapprove the phased development plan and shall set forth findings for such decision. The Review Authority may also attach conditions necessary to bring the plan into compliance with all applicable land use standards and policies.

#### **Sec. 8.2230. Development Following Approval.**

1. Once a phased development plan is approved, the plan shall be binding, upon both the City and the applicant. The applicant shall submit a final plat for each phase per Section 8.2305.
2. The Review Authority may attach conditions to any changes proposed that are deemed necessary to ensure compliance with the Comprehensive Plan and implementing regulations.

**RESPONSE: All phases of the proposed subdivision are included. This standard is met.**

#### **Sec. 8.2235. Approval Criteria for Tentative Subdivision Plans.**

1. The Review Authority shall approve, approve with conditions, or deny a proposed tentative subdivision plan. Approval, or approval with conditions shall be based on compliance with the following criteria:
  - A. Proposal is in compliance with ORS Chapter 92.
  - B. Proposal complies with the standards of this Code, including but not limited to:
    1. Section 8.2705, Blocks, Lots and Parcels.
    2. Section 8.2710, Streets.
    3. Section 8.2715, Fundamental Design Standards.
    4. Section 8.2720, Grading of Building Sites.
    5. Section 8.2815, Transportation System Analysis.
    6. Section 8.2820, Access Management Standards.
    7. Any other applicable standards.
  - C. Proposal complies with the standards of the zoning district in which the project is located.
  - D. The proposal is in conformance with any applicable approved area plan, master plan, and/or framework plan.
  - E. Proposal does not conflict with acquired public access easements within or adjacent to the subdivision.
  - F. The proposed subdivision will provide required transportation system infrastructure, water supply, sewage disposal, drainage, and other public utilities consistent with the Public Works Standards and Specifications.
  - G. 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.
  - H. A water rights division plan has been approved by the applicable irrigation district.

**RESPONSE: This document serves to address how the proposal complies with the above standards.**

#### **Sec. 8.2240. Future Subdivision.**

On any Residential zoned property, if the subdivision results in a lot greater than twice the minimum lot size in the underlying zone, 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 code and without interfering with the orderly extension of adjacent streets, bicycle paths, and accessways.

**RESPONSE: No proposed lots are greater than twice the minimum lot size and no lots are intended for future subdivision.**

#### **Sec. 8.2245. Resubmission of Denied Tentative Subdivision Plans.**

1. A tentative plan that was previously denied for an area or tract of land shall be resubmitted in accordance with this Chapter, and shall be reviewed in the same manner as any other tentative plan.

**RESPONSE: This application is not a resubmittal of a previously denied application. This standard is not applicable.**

### ***DESIGN STANDARDS AND IMPROVEMENTS***

#### **Sec. 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.

#### **Sec. 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.

**RESPONSE: Street and block lengths comply with the 660 foot limit except between the intersection of SW Antelope Avenue & SW 47<sup>th</sup> Place and the intersection of SW Antelope Avenue & SW 49<sup>th</sup> Street. The north side of this right-of-way exceeds 660 feet and placing an intersecting street is not possible due to the City's stormwater facility and the previously developed Josie Meadows subdivision. Development of Antelope Flats must match the street pattern of existing development to the north and is unable to extend a public street within this area. The south side of this right-of-way also exceeds 660 feet; however, preliminary layouts in coordination with the engineering department determined a street extending south between these intersections is not necessary since SW 47<sup>th</sup> Place and SW 49<sup>th</sup> Street will supply connections to the south.**

- 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 ten feet wide, with an all weather surface a minimum of five feet wide, constructed and centered within the right-of-way.

**RESPONSE: This development does not interrupt the existing block length along SW Helmholtz Way. The subject property length along NW Helmholtz Way is 330 feet and a 10 foot wide paved multi use path connecting to the existing public path to the north is proposed in an adjacent tract.**

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

**RESPONSE: The development is designed to create two tiers of lots in conjunction with the neighboring development.**

- 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 Review Authority 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 percent or where path grade would exceed 12 percent 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 Review Authority, when it is determined that the City's grid street standards should not be applied to the industrial development.

**RESPONSE: A pedestrian and bicycle access is proposed within an easement to connect the internal local street sidewalks from the cul-de-sac to the proposed multi-use path along SW Helmholtz Way.**

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 Review Authority. 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.

**RESPONSE: The proposed lots are designed in an appropriate fashion and are very roughly rectangular in shape as far as practicable. Some deviation from a rectangular lot is required around the eyebrows and cul-de-sac. The lots are sufficiently large enough to serve the intended uses (Single Family Dwellings). All lots comply with the minimum lot size standard for the zone. The proposal meets the above standards, subject to the conditions of approval.**

3. *Frontage.* Each newly created lot and parcel shall abut upon a public street other than an alley for at least 50 feet (at least 25 feet in Mixed Use zones). Lots fronting on the bulb of a cul-de-sac the minimum frontage shall be 30 feet. Flag lots shall have no less than 20 feet of street frontage measured at the property line. Townhouse frontage shall be at least 20 feet. 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.

**RESPONSE: All flag lot frontages are a minimum of 20 feet. All cul-de-sac and eyebrow frontages that are not flag lots are a minimum of 30 feet. The remaining lots have a minimum frontage greater than 50 feet.**

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.

**RESPONSE: The side lot lines of the proposed lots are as near to right angles as practical as allowed by this standard. The proposal is in general compliance 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.

**RESPONSE: No double frontage lots are proposed within the subdivision.**

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.

**RESPONSE: A 60 foot buffer tract is proposed between the adjacent minor arterial SW Helmholtz Way and lots proposed for residential lots. No access is proposed from SW Helmholtz way.**

7. *Corner Lots and Parcels.* Corner lots and parcels shall be five 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.

**RESPONSE: All lots are proposed wider than the required minimum frontage by more than five feet. Side yard requirements are able to be met in all proposed lots.**

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.

**RESPONSE: No special building setbacks are proposed for this subdivision; therefore, this standard does not apply.**

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 Review Authority, 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.

**RESPONSE: This standard is advisory.**

10. *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.

**RESPONSE: Due to the awkward location of SW Antelope Avenue on the east side of the subject property, a curvilinear centerline is required to center the road through the development and create two tier lots as described previously in the Redmond Development Code.**

11. *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 feet wide. Flag lot frontage can be reduced by approval from Redmond Fire & Rescue and City Engineer.

**RESPONSE: Proposed flag poles are 20 feet wide minimum.**

- B. 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 12-foot-wide paved driveway.

**RESPONSE: Minimum lot size and setbacks are met in the proposed flag lots. Driveways shall be designed during the engineering process.**

- D. A flag lot is exempt from the 50-foot street frontage requirement; however, a minimum of 20 feet of street frontage is required.

**RESPONSE: 20 feet of frontage minimum is proposed for flag lots.**

- E. Front and/or rear yard setbacks may be reduced to no less than ten feet 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.

**RESPONSE: No reduced setbacks are proposed.**

- F. No flag lot shall be partitioned or further divided, except as provided for by middle housing.

**RESPONSE: The proposed flag lots are intended for single family dwellings and are not large enough to be further divided and meet City standards.**

- G. The "pole" of the flag lot shall be no longer than 150 feet measured from the street intersection to the beginning of the base of the flag.

**RESPONSE: The longest proposed "pole" is 73 feet in length from the right-of-way intersection to the base.**

- H. The "pole" of the flag shall not be included in the minimum lot size calculation.

**RESPONSE: The lot sizes excluding the "poles" exceed the minimum lot size. Lot 9 is 12,105 square feet and Lot 19 is 9,068 square feet.**

- I. Flag lots shall be exempt from street tree requirements unless the street frontage portion of the flag lot is 30 feet or greater.
- J. Flag lots are prohibited along or abutting the Dry Canyon Rim.

**RESPONSE: These standards are advisory.**

- K. Two off-street parking spaces shall be provided for single family detached dwellings; and one space per unit for middle housing on a flag lot.

**RESPONSE: Parking shall be determined at time of engineering or home construction; however, the lots are designed to be able to meet the standards described above.**

## **Sec. 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.

**RESPONSE: Streets are developed consistent with the City of Redmond Transportation System Plan.**

- 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.

**RESPONSE: All proposed streets and sidewalks connect to other streets and sidewalks as shown in the provided plans.**

- 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.).

**RESPONSE: The extensions of new local streets maintain their current alignments with existing streets. The proposed eyebrows are the only reasonable solution for efficient development of the site allowing safe access to the various housing and allowing SW Antelope Avenue to be eventually complete from the east.**

- 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.
- 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.



**RESPONSE: The proposed streets are designed in accordance with City of Redmond's TSP and other applicable associated standards. Access management standards are addressed under Section 8.2820 later in this document.**

2. *Existing Streets.* Whenever existing streets, adjacent to or within a tract, are of inadequate width per Public Works Standards and Specifications and the City's approved Transportation System Plan 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 Review Authority 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.

**RESPONSE: A traffic impact analysis is provided as part of this application to address the impact this development will have on traffic. Through the pre-development review adequate improvements have been recommended and the proposed subdivision is designed to meet those recommendations.**

3. *Existing Access Easements.* Whenever existing unpaved access easements, adjacent to or within a tract, the Review Authority may require paving to City standards at the time of the land division by the applicant.

**RESPONSE: This standard is advisory.**

4. *Minimum Right-of-Way and Roadway Standards.* The minimum street right-of-way widths shall be in conformance with Table 1 below. Additional right-of-way may be required at intersections to accommodate intersection widening and roundabouts.

| Table 1 - Minimum Right of Way Width Standards |                            |
|------------------------------------------------|----------------------------|
| Functional Classification                      | Minimum Right of Way Width |
| Minor Arterial                                 | 100 feet                   |
| Major Collector                                | 80 feet                    |
| Minor Collector                                | 60 feet                    |
| Industrial Collector                           | 80 feet                    |
| Industrial Local                               | 60 feet                    |
| Local Residential                              | 60 feet                    |
| Alley                                          | 20 feet                    |
| Cul-de-sacs                                    | 108 feet                   |

Street surfacing, sidewalks or multi-use paths, travel lanes, medians, planter strips, curbs and bicycle lanes must be installed in conformance with the Public Works Standards and Specifications and the Transportation System Plan. Oregon Department of Transportation (ODOT) facilities must meet ODOT design standards.

**RESPONSE: All proposed new local streets meet the minimum 60' requirement for right-of-way. A right-of-way dedication for SW Helmholtz Way is provided to meet the required distance from centerline for the minor arterial.**

5. *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.

**RESPONSE: The future extension of streets has been incorporated into the proposed subdivision plan.**

6. *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 Review Authority, 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.

**RESPONSE: Consistent with 711-24-000041-PLNG-PD, the applicant shall construct a multiuse path along SW Helmholtz Way. No other special treatments are required.**

7. *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 either side of such right-of-way at a distance suitable for use of the land between the required street and the abutting railroad, freeway, or parkway. In the case of a railroad, there shall be a land strip of not less than 25 feet in width between the railroad right-of-way and residential property. The land strip must be occupied by the fire-resistant materials, and may contain a fence, a trellis, a wall, or small decorative or artistic feature. 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 a passive-style park or thoroughfare use by bicycles and/or pedestrians. 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.

**RESPONSE: The subject property does not abut a railroad, freeway, or parkway. This standard does not apply.**

8. *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 Review Authority, where such continuation is necessary to maintain the function of the street or desirable in the surrounding area.

**RESPONSE: The project includes the extension and alignment of SW 49th Street and SW Antelope Avenue.**

9. *Street Names.* Except for extensions of existing streets, no street names 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 Redmond Fire and Rescue and Deschutes County.

**RESPONSE: All proposed streets are extensions of existing streets. No new names are required.**

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 that comply with the City of Redmond Transportation System Plan. In the case of collectors, arterials, special industrial districts or in steep terrain, the Review Authority 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.

**RESPONSE: Sidewalks are proposed along all local streets and a 10 foot wide paved multi use path is proposed along SW Helmholtz Way.**

11. *Bicycle Facilities and Multi-Use Pathways.* Bicycle facilities and multi-use pathways are required to be installed within the subdivision or partition that comply with the City of Redmond Transportation System Plan.

**RESPONSE: A multi-use paved path is proposed along SW Helmholtz Way and is connected to the subdivision via sidewalk.**

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 Public Works Standards and Specifications.

**RESPONSE: Street intersections are proposed at right angles.**

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 Public Works Standards and Specifications.

**RESPONSE: There are no streets within the proposed site plan that utilize a staggered alignment.**

14. *Narrow Streets.* Local streets designed at widths less than 36 feet may be permitted subject to the following:
- A. The narrow street is internal to a Subdivision or Planned Unit Development with street connections on both ends.
  - B. All lots adjoining the narrow streets are at least 5,000 square feet and have a minimum 50 feet of frontage.
  - C. Sidewalks, curbs, and street trees conforming with Public Works Standards and Specifications shall be installed.
  - D. Curb cuts along the narrow street shall not be less than the minimum width required within the adopted Public Works Standards and Specifications.

- E. Covenants, Conditions, and Restrictions (CC&Rs) and a Homeowners Association (HOA) are established for the development. The CC&Rs must effectuate the HOA as responsible for parking enforcement.

**RESPONSE: No narrow streets are proposed. This standard does not apply.**

15. *Private Streets.* Private streets must be approved by the City Engineer. The City Engineer may require private streets to meet public standards. Private streets must comply with fire code and access management standards and will only be permitted when accompanied by CC&Rs that designate an HOA as responsible for maintenance and repair.

**RESPONSE: No private streets are proposed. This standard does not apply.**

## **Sec. 8.2715. Fundamental Design Standards.**

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.

**RESPONSE: Street lighting is reviewed for compliance by the Engineering Department as a part of the public improvement process.**

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.

**RESPONSE: Access to the site is provided by SW 49th Street and a fire access with removable bollards on SW Antelope Avenue.**

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.

**RESPONSE: As proposed, each lot shall be connected to City Water and Sewer services.**

4. *Underground Utilities.* All permanent utility service, cell 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 Review Authority. The subdivider, 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.

**RESPONSE: All new utilities are proposed underground.**

5. *Preservation of Natural Features.* Existing natural features (i.e., rock outcrops) add character to the development and shall be preserved to the greatest extent practicable.

**RESPONSE: There are no natural features on the proposed site. Several trees greater than ten inches in diameter are proposed to remain in the dedicated right-of-way for SW Helmholtz Way.**

6. *Preservation and Replacement Trees.* All deciduous or coniferous existing trees having a ten-inch trunk diameter 4.5 feet above grade or greater are considered significant and shall be preserved or replaced at a 'one-to-one' ratio. Replacement trees shall have a minimum 1-1/2-inch trunk diameter measured at 4.5 feet above grade. This criterion shall be met in the submitted landscape plan. Street trees are counted as replacement trees. Trees removed for installation of public infrastructure are not required to be replaced, however they should be preserved where possible. The Community Development Director, or designee, may prohibit removal of significant trees located within the setback along the perimeter of the parcel to be developed, located adjacent to water features, or that provide screening or buffering to existing development where not located within the proposed or potential building footprint. An alternate restoration plan may be approved by the Community Development Director, or designee.

**RESPONSE: One tree with diameters greater than ten inches is proposed to be removed. 90 new trees are proposed along the new local streets and in the landscape tract along SW Helmholtz Way.**

7. *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 designee. Excepting utility pole guyline easements along the rear of lots adjacent to unsubdivided land may be reduced to ten feet in width, unless determined otherwise by the City Engineer or designee.

**RESPONSE: Easements for utilities will be created in the Final Plat and are shown on the submitted Tentative Plat to meet the standard described.**

- 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.

**RESPONSE: A COID canal is proposed to be piped and placed within an easement. No other watercourses exists on the subject property.**

8. 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 25 lots/units, a minimum of 3,000 square feet and privately maintained. Park amenities shall, at a minimum, include: 1/2 of the park dedicated to turf areas, benches, trees, shrubs, ground cover, irrigation, other landscape or decorative features, and acceptable trash receptable(s) and lighting.

**RESPONSE: The proposed subdivision falls within the planned R-2 Limited Residential with a maximum density of 5 dwelling units per acre. No pocket parks or tot lots are proposed.**

9. *Urban-Rural Interface.* Residential subdivisions adjacent to areas outside of the Urban Reserve Area (URA) shall provide buffering to manage the transition from urban to rural intensities by meeting at least one of the following standards:
- A. Provide landscaped buffers at least 100 feet wide, exclusive of rights-of-way, for the entire length that the urban development is adjacent to lands outside of the URA. The buffers shall be landscaped with native vegetation characteristic of the local ecosystem; or
  - B. Locating lower density development at the urban-rural interface; or
  - C. Other appropriate and equivalent transitional elements as approved by the Review Authority.

**RESPONSE: A 60 foot wide densely vegetated landscape buffer with a 10 foot multi use paved path is provided between the proposed residential subdivision and the urban boundary. A variety of plant species with varying heights are proposed to provide screening throughout the proposed buffer zone.**

**Sec. 8.2720. Grading of Building Sites.**

Grading of building sites shall conform to the City of Redmond Public Works Standards and Specifications.

**RESPONSE: The applicant will supply a final grading and drainage plan to the Engineering Department for review and approval after the Subdivision Application.**

***SUPPLEMENTARY PROVISIONS***

**Sec. 8.2800. Improvement Procedures.**

In addition to other requirements, public or private improvements to be installed by the applicant either as a requirement of these standards or other applicable regulations or at his or her own option, shall conform to the requirements of this Article:

1. *Plan Review and Approval.* Improvement work shall not be commenced until plans thereof have been reviewed and approved by the Community Development Director, or Hearings Body, or a designated representative thereof. To the extent necessary for evaluation of a proposed development, such improvement plans may be required before approval of the tentative plat or preliminary map or drawing.
2. *Public Improvements as Platted.* Public improvements shall be designed, installed, and constructed as platted and approved by the City Engineering Division, and plans shall be filed with the final plat at the time of recordation or upon completion.
3. *Inspection.* Improvements shall be constructed under the inspection and approval of a city Inspector. Expenses incurred thereby shall be borne by the applicant/owner. The inspector may require changes in sections and details of the improvements if unusual conditions arise during construction to warrant such changes.
4. *As-Built Plans.* A map showing the completed public improvements shall be filed with the Community Development Department upon completion of the improvements.

**RESPONSE: The applicant can meet these standards by complying with the conditions of approval.**

#### **Sec. 8.2805. Improvements in Partitions.**

The same improvements may be required to be installed to serve each building site of a partition as are required of a subdivision.

**RESPONSE: The proposal is a subdivision. This standard is not applicable.**

#### **Sec. 8.2810. Acceptance of Improvements.**

Improvements shall be considered for acceptance after final inspection, after the improvements have been completed.

**RESPONSE: The applicant can meet these standards by complying with the conditions of approval.**

#### **Sec. 8.2815. Transportation System Analysis.**

It shall be the burden of the developer to evaluate transportation system impacts when a proposed development involves either a Subdivision, Site and Design Review, Planned Unit Development, Master Development Plan, Comprehensive Plan and Zone Map Amendment, a change or expansion of use, or any other development that the City Engineer deems necessary. Transportation System Analyses are not required for residential site plan review for up to four units or Partitions.

Transportation System Analyses are approved based on the information presented in the report and must not be older than 180 days from approval at the time the land use application is deemed complete. If the associated land use application is not deemed complete prior to the expiration, the City may require the approved report be updated.

**RESPONSE: A TIA is provided as part of the application materials.**

#### **Sec. 8.2820. Access Management Standards.**

Access management standards apply to new developments, redevelopments, subdivisions, and partitions.

##### *Location of Access Points.*

1. Access shall be taken from the lower order street or alley unless otherwise approved by Public Works and/or ODOT. Access to higher order streets may be allowed for emergency vehicles when restricted with a locked fire gate, bollards or similar, when approved or required by Redmond Fire and Rescue.

**RESPONSE: All access in the proposed subdivision is proposed to be taken from local streets.**

2. Every lot or parcel shall be limited to one point of access, subject to the following exceptions:
  - A. *Single Family Dwellings, Accessory Dwelling Units, Plexes, Mixed-Use Developments.*
    1. Lots with multiple frontages on local roadways or alleys may be permitted one access per frontage, provided the driveways meet all other required standards.

2. Lots with accessory structures requiring vehicular access, such as a shop or detached garage, may be permitted two access points, provided the lot frontage is on a local roadway, the driveways are separated by a minimum of 10 feet, and the driveways meet all other required standards.

**RESPONSE: Access to individual lots and parking shall be determined at time of engineering or home construction; however, the lots are designed to be able to meet the standards described above.**

3. Lots with more than one existing access may be required to close an existing street access upon redevelopment. This standard may be waived when access to an existing, permanent garage structure would be removed, or removal of the access would result in increasing the nonconformity of the site.

**RESPONSE: No existing access is proposed to remain after redevelopment.**

4. In the event that the access management standards cannot be achieved on the subject property, shared access with adjacent property may be permitted. When a driveway serves more than one lot, the developer must record an access and maintenance easement/agreement to benefit each lot prior to building permit issuance. Shared access points should be centered on property boundaries when possible.

**RESPONSE: No shared access is proposed.**

5. 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.

*Design of Access Points.*

6. The City Engineer or designee may require access locations to align with existing driveways on the opposite side of the roadway, be located as far from driveways on the same side of the street or intersections as possible, or to be right-in/right-out. Right-in/right-out may be required when the access is located within 300 feet of a signalized intersection or roundabout.

**RESPONSE: Access is taken via extending existing dead end streets stubbed to the subject property.**

7. Property-tight driveway aprons excluding the wings must be located a minimum of three feet from property lines, and curb-tight driveway aprons excluding the wings must be located a minimum of six feet from property lines, unless the access is approved to be shared.

**RESPONSE: Driveways shall be determined at time of engineering or home construction; however, the lots are designed to be able to meet the access management standards for local streets described above.**

8. A minimum of 24 feet of backing distance shall be provided and shall be measured from the rear end of a perpendicular parking stall or garage door face to the opposite end of a paved alley or roadway. If the abutting alley or street is unpaved, the measurement shall be taken to the opposite end of the right-of-way. If the backing distance is demonstrated onsite, the measurement shall be taken to the nearest barrier, such as a property line, retaining wall, fence, or edge of driveway.

**RESPONSE: Parking shall be determined at time of engineering or home construction; however, the lots are designed to be able to meet the access management standards for local streets described above.**

9. Corner clearance shall be provided and is measured from the edge of right-of-way to the nearest edge of the access. Spacing is measured from centerline of access/intersection to centerline of access/intersection. Driveway spacing and corner clearance is required as follows:

All land use approvals shall be in compliance with the following standards.

| Roadway Classification | Minimum Access Driveway Spacing | Minimum Access Clearance to Corner | Intersection Spacing (Min.) |
|------------------------|---------------------------------|------------------------------------|-----------------------------|
| Local Street           | No Restrictions                 | 30 ft                              | 165 ft                      |
| Minor Collector        | 50 ft                           | 80 ft                              | 330 ft                      |
| Major Collector        | 165 ft                          | 165 ft                             | 330 ft                      |
| Minor Arterial         | 330 ft                          | 330 ft                             | 1/4 mile                    |
| Major Arterial         | ODOT Stds                       | ODOT Stds                          | ODOT Stds                   |

**RESPONSE: Driveways shall be determined at time of engineering or home construction.**

*Additional Standards.*

10. 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).

**RESPONSE: This standard will be addressed at the time the final engineering plan is submitted.**

11. Access within the North Redmond US 97 Interchange Area Management Plan (IAMP) shall also conform to the 2007 "North Redmond US 97 Interchange Area Management Plan (IAMP)," as amended.

**RESPONSE: The subject property is not within the IAMP. This standard does not apply.**

12. Public Works may require supporting information, including but not limited to traffic count data, trip generation, trip distribution, truck and trailer turning/backing templates and/or onsite circulation diagram. Transportation Impact Analysis study, etc., in order to make a proper determination of access/driveway location.

**RESPONSE: A traffic impact analysis is provided as part of this application.**

**Sec. 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 or her 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.

**RESPONSE: The streets are proposed to be dedicated to the public within the subdivision.**

**Sec. 8.2835. City as Beneficiary to Covenants, Conditions and Restrictions.**

When Covenants, Conditions and Restrictions (CCR's), or other similar documents, are required by either the provisions of this Code or through the land use review process, the City of Redmond may require the CCR's (or other documents) include a provision or provisions that allow the City to come onto the property(s) that are subject to the CCR's for the purpose of removing, repairing or maintaining improvements and other common areas in the event such improvements or common areas are not property maintained or otherwise kept in good order. The provision(s) shall state that the City has sole and exclusive discretion to determine the need for and timing of any such removal, repair, or maintenance. The provision shall authorize the City to recover the cost of such removal, repair, or maintenance by directly billing the record owner of the property(s) subject to the CCR's or the property(s) directly benefited by the removal, repair, or maintenance. In the event a bill is not paid, the City may impose a lien on the property(s), which shall be recorded and may be enforced in the manner of an assessment lien. The inclusion of a provision or provisions described in this Section does not affect the obligations of an association, group and/or other persons or property owner(s) designated in the CCR's from any responsibilities or obligations respecting such improvements or common areas, nor shall it obligate the City to such undertake such removal, repair, or maintenance.



**RESPONSE: The maintenance of common areas shall be governed by CCRs.**

## ***SITE AND DESIGN REVIEW STANDARDS***

### **Sec. 8.3000. Purpose and Intent.**

The purpose of this Article is to conserve and enhance the appearance of the City and to promote functional, safe, and innovative site development. The intent is to ensure that there is general compatibility between adjoining uses, outdoor space is designed and installed in a functional and attractive manner, vehicular access and circulation is designed and constructed consistent with maximizing public safety, adequate public utilities are available, and the structures on-site provide a consistent architectural theme. This Article further implements the policies and goals of the City of Redmond Comprehensive Plan.

**RESPONSE: This standard is advisory.**

### **Sec. 8.3005. Applicability of Site and Design and Review.**

Unless exempted in Section 8.3010, Site and Design Review shall be required for any new development or use containing a structure, or multiple structures, and Mobile Food Pods.

### **Sec. 8.3010. Exemptions.**

The following are exempt from Site Design and Review:

1. Normal maintenance and repair.
2. Hangar development entirely on and interior to airport property.
3. Single family detached dwellings and middle housing, unless located on a lot within 100 feet of the canyon.
4. Manufactured home in an approved manufactured home park.
5. Additions to an existing building of less than 25 percent of the total building square footage, not to exceed 1,000 square feet.
6. Any development that does not include the construction or alteration of a building which will have a negligible impact on the land as determined by the Community Development Director, or designee.
7. Overhead electrical power transmission lines and poles greater than 12.5 kv.
8. Child care facility in residential neighborhoods that utilize existing structures.
9. Any single room occupancy development which complies with the development and design standards of Sections 8.141, 8.142, or 8.143.
10. Supportive Shelters, as identified in Section 8.370.

**RESPONSE: Single family detached dwellings are exempt from site and design review. This proposal is for single family detached dwellings.**

# ATTACHMENT C



## CITY OF REDMOND Engineering Division

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Redmond, OR 97756

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TO: KYLE ROBERTS, *Planning Division/Community Development Dept*

FROM: DAVID PILLING, *Engineering Division/Public Works Dept*

DATE: March 21, 2025

SUBJECT: **711-25-000004-PLNG-MD & 005-PLNG-SUB: 32-Lot Antelope Flats Master Plan & Subdivision**  
Texas Tango LLC/Wittmer Construction/H.A. McCoy Engineering & Surveying LLC  
Tax Lot 15-13-30BC-900

Subject property located east of SW Helmholtz Way, south of Wickiup Ave. and north of Elkhorn Avenue. 3758 SW Helmholtz Way. The Engineering Division provides the following recommendations based on the submitted Master Plan/Tentative Plat dated 11-13-24 per Redmond Development (COR) Code Section 8.0270, 8.0305, 8.1015(1)(C) and 8.2000-2840 and City of Redmond Standards and Specifications (CORSS).

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. Barricades shall be required on all dead-end streets at phase/property boundaries and signed for future extension. All street names shall be approved by Redmond Fire and Rescue and/or Deschutes County. The proposed master plan and public street system complies with City street and TSP standards subject to the following: [COR Code 8.0270(2)(D), 3(B)(1)(a), 3(C)(11) & 3(C)(14)(a & j))] [COR Code 8.2220(4), 8.2235(1)(B, F & G), 8.2320(2), 8.2710(1, 2, 4, 5, & 8-11), 8.2715(2) & 8.2820] [CORSS Development Provisions 03]

A) **SW Helmholtz Way** - minor arterial street. A paved road and sixty (60) ft. public right-of-way exist, no curb or sidewalk, along project/property frontage. A paved road with public paved path on the east side and eighty (80) ft. public right-of-way exist north of subject property. Street frontage improvements conforming to full width (3-lane) City minor arterial street standards shall be required and constructed per COR Standard Drawing 2-1 and 2-6 with new pavement section, curb on both sides, paved path on the east side, signage, striping, bike lanes and storm drainage unless otherwise approved by the City Engineer. Twenty (20) ft. public right-of-way dedication shall be required along project/property frontage for a total width of fifty (50) ft. east of centerline per City minor arterial standards and COR Standard Drawing 2-1. Street and right-of-way centerline shall match existing.

B) **SW Antelope Ave.** - local/cul-de-sac street. A paved street with curb, sidewalk and sixty (60) ft. public right-of-way exist east of project/property boundary. Proposed alignment of SW Antelope Ave. east of SW 49<sup>th</sup> St. in Phase 1 shall be revised to eliminate the unequal reverse/compound centerline curves, and must meet the alignment approved in the TIA dated September 11, 2024 as part of 711-24-000086-PW, unless otherwise approved by the City Engineer. Street improvements conforming to City local/cul-de-sac/eyebrow minimum street standards shall be required and constructed per COR Standard Drawing 2-1, 2-3, 2-4 and 2-5 prior to plat approval as follows:

1. Phase 1 (east of SW 49<sup>th</sup> St.) - full width local/eyebrow street improvements with 36-ft. wide pavement, 48-ft. radius cul-de-sac pavement, curb, sidewalk, directional curb ramps, storm drainage, thirty (30) to sixty (60) ft. right-of-way dedication and proposed sixty (60) ft. radius cul-de-sac right-of-way dedication shall be required subject to the following off-site right-of-way dedication scenarios by others on neighboring tax lot 15-13-30-1101 frontage and prior to Phase 1 construction plan submittal to City Engineering unless otherwise approved by the City Engineer:

a) South 30-ft. right-of-way dedication (60-ft. total) plus eyebrow right-of-way - Full width paved street, eyebrow and connection to existing paved street at the east project/property boundary with curb on both sides and sidewalk on the north side.

b) South 10-ft. right-of-way dedication (40-ft. total) - Partial width paved street and connection to existing paved street at the east project/property boundary with pavement transitioning and curb and sidewalk on the north side.

c) No right-of-way dedication - A cash contribution fee payment shall be provided for street frontage improvements in lieu of construction. End-of-roadway markers/barriers shall be required at the south/east terminus. Proposed fire access, service road surface, removable/locking bollards and connection to the existing paved street east of project shall be reviewed/approved by Redmond Fire & Rescue (RFR) and City Engineer for adequate secondary emergency access.

d) End of roadway markers, or similar traffic control as approved by the City and COID, shall be provided at the southern and eastern extent of Antelope Ave where connecting to adjacent private property and existing Antelope Ave.

2. Phase 2 (west of SW 49<sup>th</sup> St.) - full width local/cul-de-sac street improvements with 36-ft. wide pavement, 48-ft. radius cul-de-sac pavement, curb, sidewalk, directional curb ramps, storm drainage, sixty (60) ft. right-of-way dedication and fifty-four (54) ft. radius cul-de-sac right-of-way dedication.

C) **SW 49<sup>th</sup> St.** - local street. A paved street with curb, sidewalk and sixty (60) ft. public right-of-way exist at the north project/property boundary. Street improvements conforming to full width City local street standards shall be required and constructed per COR Standard Drawing 2-1 with 36 ft. minimum wide pavement, curb and sidewalk on both sides, and storm drainage through project from the connection to the existing street at the north boundary to the termination at the south property boundary. Street and right-of-way centerline shall match existing at north project/property boundary. End-of-roadway markers/barriers shall be required at the south terminus.

D) **Public Pedestrian/Bike Multi-Use Paths** – public multi-use paths shall be constructed and dedicated per COR Standard Drawing 2-6 as follows:

1) The separated public pedestrian/bike multi-use path identified as B1 per City 2020 Transportation System Plan (TSP) shall be required along the east side of SW Helmholtz Way within public right-of-way or easement and shall match existing path to the north.

2) The proposed path between connection from SW Antelope Ave. (cul-de-sac) to the B1 path in SW Helmholtz Way and between Lots 18-19 shall be 10-ft. minimum pavement with 20-ft. public access easement unless otherwise approved by the City Engineer.

E) **Street Storm Drainage:**

1) Stormwater drainage systems in the public right-of-way shall be subject to current City design standards. [COR Code 8.2235(1)(F)] [CORSS 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. [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. [CORSS Design Standards II(B)]

F) **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/intersection clear vision and sight-stopping distance areas or blocking public street lighting.

5) Street tree species shall be selected from Redmond Parks Division approved tree list.

G) **Lot/Tract Access:**

1) Vehicular access to each new lot shall conform to City access management, corner clearance, clear vision and driveway construction standards. Driveways/curb cuts shall not conflict with water service/meters, fire vaults, fire hydrants or street catch basins. [COR Code 3.300, 8.0305 & 8.2820]

2) Direct vehicular access to SW Helmholtz Way, minor arterial street, shall not be permitted from any lot, tract or alley except for emergency access with locked fire gate/bollards required by Redmond Fire & Rescue (RFR) and COID access connections unless otherwise approved by the City Engineer. [COR Code 8.2820(1)]

3) Corner lots and double fronting lots shall take vehicular access from the lower order street, alley or access easement. [COR Code 8.2820(1)]

4) Postal box installation shall be subject to US Postal Service standards and City Engineer approval. [CORSS Design Standards II(A)(18)]

H) **Traffic Impacts:** The Transportation System Analysis Application (TSAA) dated 6-5-24 and Transportation Impact Analysis (TIA) dated 9-11-24 submitted by Lancaster-Mobley have been reviewed and approved by City Engineering conditioned upon the transportation mitigation requirements identified per City Approval Memo dated 9-30-24 unless otherwise specified. [COR Code 8.0270(3)(C)(11), 8.1015(1)(C) & 8.2815]

2. **Water:** An eight (8) inch City water main exists in SW 49<sup>th</sup> Street at the north project/property boundary. An eight (8) inch City water main exists in SW Antelope Ave. near the east project/property boundary.

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

B) The Infrastructure Allocation Analysis (IAA) Application submitted by H.A. McCoy Engineering & Surveying LLC has been reviewed and approved by City Engineering for the proposed connection to the City water system conditioned upon public water system improvement/mitigation requirements identified per City Approval Memo dated 7-29-24 unless otherwise specified. [COR Code 8.0270(3)(C)(12), 8.2235(1)(F & G) & 8.2715(3)]

C) The proposed public water system complies with City "to & through" Public Facility Requirement and Water System Master Plan (WSMP) standards for service to each new lot and adjacent property subject to the following: [COR Code 8.0270(3)(C)(12), 8.2235(1)(F & G) & 8.2715(3)] [CORSS Development Provisions 03]

1) The twelve (12) inch public water main identified as P3346 per current WSMP along SW Helmholtz Way project/property frontage shall be required and constructed and looped through the subdivision unless otherwise approved by the City Engineer.

2) The proposed public water main in SW Antelope Ave. shall be extended west for connection to the 12-inch P3346 water main in SW Helmholtz Way. A twenty (20) ft. public water easement or public utility easement (PUE) shall be

required for public water located beyond existing or required public right-of-way.

3) Proposed connection to existing City water in SW Antelope Ave. near the east project/property boundary shall be reviewed/approved by City Water Division and City Engineer.

4) Proposed public water main extensions shall be eight (8) inch minimum pipe size unless otherwise specified.

5) Design review/approval of the public improvement construction plans for compliance to City standards.

D) A separate domestic water service connection conforming to City standards for residential property 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 multi-family and non-residential properties, water services larger than one (1) inch, fire sprinkler systems and irrigation systems. [COR Code 4.200, 4.161 & 8.2715 (3 & 4(C))]

E) 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. [CORSS Development Provisions 04.2.00] [CORSS 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 8.0270(3)(C)(12) & 8.2235(1)(F & G)] [CORSS Design Standards II(D)(1(a) & 3(a))]

F) 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. [CORSS Development Provisions 04.7.00 & 22(13)]

3. Wastewater: The twelve (12) inch City gravity sewer trunk Line 'D' per current City Wastewater System Master Plan (WSMP) exists in 47<sup>th</sup> St. at Antelope Ave. east of subject property. An eight (8) inch City gravity sewer main exists in SW 49<sup>th</sup> St. at the north property boundary.

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

B) The Infrastructure Allocation Analysis (IAA) Application submitted by H.A. McCoy Engineering & Surveying LLC has been reviewed and approved by City Engineering for the proposed connection to the City gravity sewer system and existing Sewer Line D basin conditioned upon public sewer system improvement/connection requirements identified per City Approval Memo dated 7-29-24 unless otherwise specified. [COR Code 8.0270(3)(C)(12), 8.2235(1)(F & G) & 8.2715(3)]

C) Proposed public gravity sewer system complies with City "to & through" Public Facility Requirement and Redmond Wastewater System Master Plan (RWSMP) standards for complete gravity service to each new lot and adjacent property subject to the following: [COR Code 8.0270(3)(C)(12), 8.2235(1)(F & G) & 8.2715(3)] [CORSS Development Provisions 03]

1) Proposed public gravity main in SW Antelope Ave/Phase 1 shall be extended to the south project/property boundary unless otherwise approved by the City Engineer.

2) Proposed public gravity sewer main extensions shall be eight (8) inch minimum pipe size unless otherwise specified.

3) A cash contribution fee payment shall be provided in lieu of constructing the future twelve (12) inch Far West Sewer Interceptor (FWSI) gravity sewer trunk main identified in the current RWSMP along SW Helmholtz Way property frontage. Fee-in-lieu of payment shall be for the standard eight (8) inch pipe portion at ten (10) foot average depth.

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

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

6) 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.

7) 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 8.2715(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)] [CORSS 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 8.0270(3)(C)(7 & 12), 8.2235(1)(F) & 8.2720] [CORSS Development Provisions 23] [CORSS Design Standards II(B)]

A) Lot and Tract grading shall conform to current COR Development Code 8.2720 and COR Standard and Specifications. [COR Dev Code 8.2720 & CORSS Design Standards II(B)(5)]

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. Please note that existing active private water wells may be located nearby. Privately owned drywells within 500 ft. of any private water well will require a general permit from the Oregon DEQ prior to construction plan approval. Locate and identify existing water wells and wellhead protection zones that could affect the location of proposed drywells. [CORSS Development Provisions 23] [OAR 340-044-0018]

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

I) Permanent perimeter fencing shall be required along the east project/property boundary due to the existing public stormwater pond located directly east.

5. Construction Plan Review: Upon land use approval, a separate set of construction drawings may be submitted directly to the City Engineering Division along with a Site Development Review Application for design review of all proposed and/or required public infrastructure improvements, utilities and subdivision site grading. Instructions for construction plan/Site Development (SD) review and submittal can be found on the Engineering page of the City's website at; <https://www.redmondoregon.gov/government/departments/engineering/engineering-applications>. [COR Code 8.2720 & 8.2800] [CORSS Development Provisions 04 & 23] [CORSS Design Standards]

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**COID's comments for land use action-REVIEW\_ 711-25-000004-PLNG (MD) & 711-25-000005-PLNG (SUB) \_ Antelope Flats**

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From DanDowning <d Downing@co id.org>

Date Tue 2/25/2025 12:56

To Kyle Roberts <kyle.roberts@redmondoregon.gov>

Cc Kelley O'Rourke <Kelleyo@co id.org>

[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.

Date: 2/25/2025

Regarding: 711-25-000004-PLNG (MD) & 711-25-000005-PLNG (SUB) \_ Antelope Flats

Attention: Kyle Roberts

Please be advised that Central Oregon Irrigation District (COID) has reviewed the application received on February 19<sup>th</sup>, 2025, for the above referenced project located at 3758 SW Helmholtz Way, Redmond, OR 97756/tax lot(s): 151330BC00900. The applicant is requesting a review of a proposal that includes three distinct applications to annex into Redmond city limits approximately 10 acres and to create a 32-lot master development planned residential subdivision

There are 9.0 acres of mapped irrigation water rights appurtenant to the tax lot(s) listed above. Please note that COID's B-2-4-2 sub lateral of the Pilot Butte Canal, traverses through to the tax lot(s) listed. The B-2-4-2 sub lateral has a 20-foot right of way easement for the canal.

Listed below are COIDs initial comments to the provided application and site plan. All development affecting irrigation facilities shall be in accordance with COID's Development Handbook and/or as otherwise approved by the District.

*Pursuant to ORS 92.090(6) Central Oregon Irrigation District (COID) certifies that the Tentative Plan lies within the boundary of COID and is subject to the fees and policies of COID.*

*Pursuant to ORS 92.103 (2) Central Oregon Irrigation District (COID) is providing comments (statements) containing information or recommended conditions for approval of the tentative plan for the proposed plat.*

- Tax Map 151330BC00900 has 9.0 acres of COID irrigation water mapped to a specific place of use. Construction of a structure, driveway, or other impermeable surface on top of a mapped water right is not permitted.
  - COID will require the removal of all water rights on this property to follow the City of Redmond Annexation agreement guidelines. Contact COID's water rights department to begin the process.
- The applicant must provide all application materials to COID including all relevant linework. COID must review and approve all linework prior to approval of the application.
  - All water rights that may be impacted by development, ROW dedication, or other action as a result of the application or development must receive an approval letter from COID's water rights team. COID may require the removal of impacted water rights in any development or application.
- Irrigation infrastructure and rights-of-way are required to be identified on all maps and plans.

- COID holds an easement adjacent and within the subject property and has the right to install, pipe, maintain and operate its irrigation system above and below ground. COID has the right to operate and maintain all other related facilities within the canal irrigation easement. This includes the right of access to such facilities and the right to require the removal of any obstructions that may be placed within the canal easement at the lot owner's expense. At no time may permanent structures be placed within the canal easement or COID's property, nor may any other obstruction be placed within the easement which interferes with the use of the canal easement without prior written approval from COID.
- Crossings or encroachments within COID's easements are only permitted with approval from COID in the form of a recorded crossing/encroachment license.
- 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 without written permission from this office.
- All work within COID easements must be completed before the irrigation season begins on April 1st. This includes any work that may interfere with the delivery of water (excavation, piping, water control and measurement devices, backfill). Any claims that arise out of delayed water delivery to COID's patrons resulting from the development/project/site work will be applicant & developer's sole responsibility.
- Policies, standards and requirements set forth in the COID Developer Handbook must be complied with.
- Comply with Requirements of COID Developer Handbook including restriction on drilling / blasting and excavation within and adjacent to the existing canal embankment. No blasting is permitted within 100-feet of any open ditch or canal.

Our comments are based on the information provided, which we understand to be preliminary nature at this time. Our comments are subject to change and additional requirements may be made as site planning progresses and additional information becomes available. Please provide updated documents to COID for review as they become available.

Central Oregon Irrigation District

**Daniel S Downing| G.I.S Analyst**

Central Oregon Irrigation District

Office: 541.548.6047

Direct Line

541.504.7579

Cell

541.598.4397





# REDMOND FIRE & RESCUE

341 NW Dogwood Avenue, Redmond, OR 97756

Phone: (541) 504-5000 Fax: (541) 526-1254

[www.rdmfire.org](http://www.rdmfire.org)

February 20, 2025

Kyle Roberts  
Principal Director  
City of Redmond  
411 SW 9<sup>th</sup> Street  
Redmond, OR 97756

**Re:**

**711-25-000004-PLNG (MD) | Antelope Flats**

**711-25-000005-PLNG (SUB)**

**Tax Lot ID: 151330BC00900**

Dear Kyle,

Thank you for the opportunity to review the proposed site plan surrounding the above-named development project. These notes are provided in regard to the plans received February 18, 2025. There may be more or less requirements needed based upon the final project design, however, Redmond Fire & Rescue will endorse this proposal predicated on the following criteria and conditions of approval.

## **FIRE APPARATUS ACCESS:**

1. **FIRE APPARATUS ACCESS ROAD DISTANCE FROM BUILDINGS AND FACILITIES:** Access roads shall be within 150 feet of all portions of the exterior wall of the first story of the building as measured by an approved route around the exterior of the building or facility. An approved turnaround is required if the remaining distance to an approved intersecting roadway, as measured along the fire apparatus access road, is greater than 150 feet. (OFC 503.1.1)
2. **ADDITIONAL ACCESS ROADS – ONE- OR TWO-FAMILY RESIDENTIAL DEVELOPMENTS:** Developments of one- or two-family dwellings, 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 D104.3.  
Exception: Where there are more than 30 dwelling units on a single public or private fire apparatus access road and all dwelling units are equipped throughout with an approved automatic sprinkler system in accordance with section 903.3.1.1, 903.3.1.2, or 903.3.1.3 of the International Fire Code, access from two directions shall not be required. (OFC D107)
3. **MULTIPLE ACCESS ROADS SEPARATION:** 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 dimension of the area to be served (as identified by the Fire Marshal), measured in a straight line between accesses. (OFC D104.3)

4. **FIRE APPARATUS ACCESS ROAD WIDTH AND VERTICAL CLEARANCE:** Fire apparatus access roads shall have an unobstructed driving surface width of not less than 20 feet (26 feet adjacent to fire hydrants (OFC D103.1)) and an unobstructed vertical clearance of not less than 13 feet 6 inches. (OFC 503.2.1)

**The proposed secondary access road at the SE corner of SW Antelope Ave does not meet the minimum width of 20 feet.**

5. **NO PARKING SIGNS:** Where fire apparatus roadways are not of sufficient width to accommodate parked vehicles and 20 feet of unobstructed driving surface, “No Parking” signs shall be installed on one or both sides of the roadway and in turnarounds as needed. Signs shall read “NO PARKING - FIRE LANE” and shall be installed with a clear space above grade level of 7 feet. Signs shall be 12 inches wide by 18 inches high and shall have red letters on a white reflective background. (OFC D103.6)

**Install No Parking Fire Lane signs at bollards.**

6. **NO PARKING:** Parking on emergency access roads shall be as follows (OFC D103.6.1-2):
  1. 20-26 feet road width – no parking on either side of roadway
  2. 26-32 feet road width – parking is allowed on one side
  3. Greater than 32 feet road width – parking is not restricted
7. **PAINTED CURBS:** Where required, fire apparatus access roadway curbs shall be painted red (or as approved) and marked “NO PARKING FIRE LANE” at 25-foot intervals. Lettering shall have a stroke of not less than one inch wide by six inches high. Lettering shall be white on red background (or as approved). (OFC 503.3)
8. **FIRE APPARATUS ACCESS ROADS WITH FIRE HYDRANTS:** Where a fire hydrant is located on a fire apparatus access road, the minimum road width shall be 26 feet and shall extend 20 feet before and after the point of the hydrant. (OFC D103.1)
9. **SURFACE AND LOAD CAPACITIES:** Fire apparatus access roads shall be designed and maintained to support the imposed loads of fire apparatus and shall be surfaced as to provide all-weather driving capabilities. (OFC 503.2.3)
10. **TURNING RADIUS:** The inside turning radius and outside turning radius shall not be less than 30 feet and 50 feet respectively, measured from the same center point. (OFC 503.2.4 & D103.3)
11. **ACCESS ROAD GRADE:** Fire apparatus access roadway grades shall not exceed 10%.
12. **ANGLE OF APPROACH/GRADE FOR TURNAROUNDS:** Turnarounds shall be as flat as possible and have a maximum of 5% grade with the exception of crowning for water run-off. (OFC 503.2.7 & D103.2)

13. **ANGLE OF APPROACH/GRADE FOR INTERSECTIONS:** Intersections shall be level (maximum 5%) with the exception of crowning for water run-off. (OFC 503.2.7 & D103.2)
14. **GATES:** Gates securing fire apparatus roads shall comply with all of the following (OFC D103.5, and 503.6):
1. Minimum unobstructed width shall be not less than 20 feet (or the required roadway surface width).
  2. Gates serving three or less single-family dwellings shall be a minimum of 12 feet in width.
  3. Gates shall be set back at minimum of 30 feet from the intersecting roadway or as approved.
  4. Electric gates shall be equipped with a means for operation by fire department personnel
  5. Electric automatic gates shall comply with ASTM F 2200 and UL 325.
15. **BOLLARDS:** Where secondary fire access roads are required, they shall be secured utilizing a removable bollard. The *fire code official* is authorized to require the installation and maintenance of gates or other *approved* barricades across fire apparatus access roads, trails or other accessways, not including public streets, alleys or highways. The MaxiForce Removable Bollard MRRW-RS1-R, MRRW-RS2-R, MRSW-SS1-R, MRSW-SS2-R and MRSW-SS3-R are approved for use. [maxiforcebollards.com](http://maxiforcebollards.com) (OFC 503.5)
- A total of three bollards can be utilized to secure the secondary access road. One at the current side of SW Antelope Ave and two on the newly coonstructed side of SW Antelope Ave.**
16. **ACCESS DURING CONSTRUCTION:** Approved fire apparatus access roadways shall be installed and operational prior to any combustible construction or storage of combustible materials on the site. Temporary address signage shall also be provided during construction. (OFC 3309 and 3310.1)
17. **TRAFFIC CALMING DEVICES:** Shall be prohibited on fire access routes unless approved by the Fire Marshal. (OFC 503.4.1).

## **FIREFIGHTING WATER SUPPLIES:**

18. **WATER SUPPLY DURING CONSTRUCTION IN MUNICIPAL AREAS:** In areas with fixed and reliable water supply, approved firefighting water supplies shall be installed and operational prior to any combustible construction or storage of combustible materials on the site. (OFC 3312.1)

## **FIRE HYDRANTS:**

19. **FIRE HYDRANTS – ONE- AND TWO-FAMILY DWELLINGS & ACCESSORY STRUCTURES:** Where the most remote portion of a structure is more than 600 feet from a hydrant on a fire apparatus access road, as measured in an approved route around the exterior of the structure(s), on-site fire hydrants and mains shall be provided. (OFC 507.5.1)
20. **FIRE HYDRANT NUMBER AND DISTRIBUTION:** The minimum number and distribution of fire hydrants available to a building shall not be less than that listed in Table C 105.1. (OFC Appendix C)

21. **FIRE HYDRANT(S) PLACEMENT:** (OFC C104)

- Existing hydrants in the area may be used to meet the required number of hydrants as approved. Hydrants that are up to 600 feet away from the nearest point of a subject building that is protected with fire sprinklers may contribute to the required number of hydrants. (OFC 507.5.1)
- Hydrants that are separated from the subject building by railroad tracks shall not contribute to the required number of hydrants unless approved by the Fire Marshal.
- Hydrants that are separated from the subject building by divided highways or freeways shall not contribute to the required number of hydrants. Heavily traveled collector streets may be considered when approved by the Fire Marshal.
- Hydrants that are accessible only by a bridge shall be acceptable to contribute to the required number of hydrants only if approved by the Fire Marshal.

**Indicate locations of fire hydrants on plans.**

22. **FIRE HYDRANT DISTANCE FROM AN ACCESS ROAD:** Fire hydrants shall be located not more than 15 feet from an approved fire apparatus access roadway unless approved by the Fire Marshal. (OFC C102.1)

23. **PHYSICAL PROTECTION:** Where fire hydrants are subject to impact by a motor vehicle, guard posts, bollards or other approved means of protection shall be provided. (OFC 507.5.6 & OFC 312)

24. **CLEAR SPACE AROUND FIRE HYDRANTS:** A 3-foot clear space shall be provided around the circumference of fire hydrants. (OFC 507.5.5)

## **BUILDING ACCESS AND FIRE SERVICE FEATURES**

25. **PREMISES IDENTIFICATION:** New and existing buildings shall have approved address numbers; building numbers or approved building identification placed in a position that is plainly legible and visible from the street or road fronting the property, including monument signs. These numbers shall contrast with their background. Numbers shall be a minimum of 4 inches high with a minimum stroke width of 1/2 inch. (OFC 505.1)

If you have questions or need further clarification or would like to discuss any alternate methods and/or materials, please feel free to contact me at 541-504-5010.

Sincerely,

*Tom Mooney*

Tom Mooney  
Fire Marshal  
Tom.mooney@rdmfire.org

Cc: File

## **ATTACHMENT D**

No public comments were received by the Planning Division.

# ATTACHMENT E



## CITY OF REDMOND Engineering Department

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September 30, 2024

Melissa Webb  
Lancaster Mobley  
[melissa@lancastermobley.com](mailto:melissa@lancastermobley.com)

### **Re: Approval Memo for Antelope Flats Traffic Impact Analysis (TIA) (711-24-000086-PW)**

The City reviewed the subject TIA, prepared by Lancaster Mobley, dated September 11, 2024. Transportation mitigations for the subject project will be required as follows:

#### **Prior to plat of Phase 1:**

- Suitable fire access must be maintained for all project phases. Temporary turn-arounds may be required at the termination of streets longer than 150' as required by Redmond Fire and Rescue. Emergency access routes will require removable bollards, as required by Redmond Fire and Rescue and Engineering.
- Local streets should be dedicated as a 60' public ROW (30-feet from centerline) and constructed as full width street section where possible. A partial street section will be required where a full width street section is not feasible.
- Right of way dedication by others is proposed at 3800 SW HELMHOLTZ WAY (tax lot 1513300001101) to achieve a full-width local roadway and to provide a secondary access to the development. Any right of way dedication by others shall occur prior to engineering plan submittal.
  - o If 30 feet of right of way dedication is obtained to provide a full-width local roadway at Antelope Ave (60 feet of right of way total), Antelope Ave shall connect to the existing paved section of Antelope Ave to the east and be constructed with the full width section (36' pavement), curbs on both sides, and sidewalk on the north side.
  - o If 10 feet of right of way dedication is obtained to provide a partial-width local roadway at Antelope Ave (40 feet of right of way total), Antelope Ave shall connect to the existing paved section of Antelope Ave to the east and be constructed to the partial width section (25' pavement), curb on the north side, and sidewalk on the north side.
  - o If no right of way dedication is obtained, the plan shall be revised to provide secondary/emergency access to the development. Emergency access routes shall be coordinated and approved by RFR. A payment in lieu of construction will be required where partial roadway standards cannot be achieved along Antelope Ave.
- End of roadway markers shall be installed at the southern extent of SW 49<sup>th</sup> Street per COR Standard 2-39. End of roadway markers, or similar traffic control as approved by the City and COID, may be required at the southern and eastern extent of Antelope Ave where connecting to adjacent private property and existing Antelope Ave.
- Directional curb ramps will be required at all intersections serving crossings in all directions.
- A separated multiuse path conforming to City of Redmond Standards and Specifications is required along Helmholtz Way per the Transportation System Plan (identified as B1 in the TSP). The path will be required to connect and align with the existing path located to the north.
- The applicant shall dedicate right-of-way along the frontage of the property on SW Helmholtz Way for a total of 100-feet of right-of-way (or 50 feet from centerline).



**CITY OF REDMOND**  
**Engineering Department**

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- Helmholtz Way along the project limits shall be improved to arterial roadway standards per City of Redmond Standards and Specifications and Development Code requirements, unless a payment in lieu of construction is otherwise permitted by the City Engineer.

Please contact me with any questions.

Lindsey Crowsigt, PE  
Assistant City Engineer  
City of Redmond

[Lindsey.Crowsigt@redmondoregon.gov](mailto:Lindsey.Crowsigt@redmondoregon.gov) | 541-306-1647





## Antelope Flats Subdivision

### Transportation Impact Analysis

### Redmond, Oregon



Date:

September 11, 2024

Prepared for:

Sandie Braden

Prepared by:

Melissa Webb, PE

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## Executive Summary

1. The proposed development (Antelope Flats Subdivision) will include the construction of up to 32 single-family detached dwellings on one existing parcel in southwest Redmond, Oregon. The site will connect to the existing transportation network via SW Zenith Avenue and SW 49<sup>th</sup> Street.
2. The trip generation calculations show that the proposed development is expected to generate a net increase of 21 trips during the morning peak hour, 29 trips during the evening peak hour, and 292 trips during the weekday.
3. Based on a review of the most recent five years of available crash data, none of the study intersections reported collisions involving a pedestrian or bicyclist, or a collision resulting in a fatality/serious injury. No significant trends or crash patterns were identified at any of the study intersections, and no safety mitigation is recommended per the crash data analysis.
4. Adequate sight distances are available at the site access intersection to allow for safe operation along SW Zenith Avenue. No sight distance mitigation is necessary or recommended.
5. For the intersection of SW Reservoir Drive at SW 43<sup>rd</sup> Street, left-turn lane warrants are met in the westbound direction for the year 2026 buildout scenario. A left-turn lane is being installed as part of the SW Reservoir Drive Improvement Project currently in construction.
6. Right-turn lane warrant criteria are met for the northbound approach at the study intersection of SW Helmholtz Way at SW Wickiup Avenue under existing 2024 traffic volumes. No crashes were reported in the most recent five years of data that could have been prevented with the addition of a northbound right-turn lane. In addition, the study intersection is currently operating acceptably per jurisdictional standards and is projected to continue operating acceptably through the 2031 planning horizon year. Therefore, installation of a right-turn lane is not recommended as mitigation for the intersection.
7. Traffic signal warrants are not projected to be met at any of the study intersections under any of the analysis scenarios, including five years beyond completion of the proposed development.
8. All study intersections are currently operating acceptably per jurisdictional standards and are projected to continue operating acceptably through the 2031 planning horizon year. No operational mitigation is necessary or recommended.
9. Changes in 95<sup>th</sup> percentile queuing between the 2026 buildout and 2031 planning horizon scenarios are anticipated to be small, between zero and one vehicle. In addition, no queues are expected to be longer than four vehicles.
10. The local street of SW Zenith Avenue from SW 49<sup>th</sup> Street to SW 43<sup>rd</sup> Street is expected to serve less than 1,200 daily vehicle trips in 2026 with full buildout of the site. Therefore, the proposed development is not expected to have significant operational impacts on the transportation system upon full buildout of the site.
11. The proposed development meets all standards shown in the City of Redmond Development Code Section 8.2815(2)(B)(8)(e); therefore, the development is not expected to have a significant operational impact on the transportation system, and no mitigation related to transportation is recommended.



# Project Description

## Introduction

The proposed development (Antelope Flats Subdivision) will include the construction of 32 single-family detached dwellings on one existing parcel in southwest Redmond, Oregon. This report addresses the impacts of the project on the nearby street system. Based on correspondence with City of Redmond staff, the report conducts safety and operational analyses at the following intersections:

1. SW Helmholtz Way at SW Wickiup Avenue
2. SW Reservoir Drive at SW 43<sup>rd</sup> Street
3. SW 49<sup>th</sup> Street at SW Zenith Avenue
4. SW 43<sup>rd</sup> Street at SW Zenith Avenue

The purpose of this study is to provide an analysis of potential traffic impacts of the proposed development on the surrounding transportation system and to recommend any required mitigative measures. Detailed information on traffic counts, trip generation calculations, safety analyses, and level of service calculations are included in the appendices to this report.

## Location Description

The project site is located south of SW Zenith Avenue, east of SW Helmholtz Way, and west of SW 47<sup>th</sup> Street in Redmond, Oregon. The site consists of one tax lot (lot 900 of tax map 151330BC) of approximately 9.81 acres. The site currently has one single-family home on the property, plus additional storage buildings, which will be removed following construction of the proposed development. The proposed development is projected to add 32 single-family dwelling units.

The site will have several connections to the transportation network; however, most traffic is anticipated to travel along SW 49<sup>th</sup> Street to SW Zenith Avenue which connects to SW 43<sup>rd</sup> Street to the east. Future connections southward to SW Antelope Avenue will occur when the property to the south develops.

Figure 1 presents an aerial image of the nearby vicinity with the subject site outlined in yellow. A site plan is included in Appendix A.



Figure 1: Project Location (image from Google Earth)

### Vicinity Streets

The proposed development is expected to impact six roadways near the site. Table 1 provides a description of each of the vicinity roadways.

Table 1: Vicinity Roadway Descriptions

| Street Name                | Jurisdiction    | Functional Classification <sup>1</sup> | Cross-Section | Speed (MPH)                | Curbs & Sidewalks  | On-Street Parking   | Bicycle Facilities |
|----------------------------|-----------------|----------------------------------------|---------------|----------------------------|--------------------|---------------------|--------------------|
| SW Helmholtz Way           | City of Redmond | Minor Arterial                         | 2-3 Lanes     | 45 mph Posted <sup>2</sup> | Partial East Side  | Not Permitted       | None               |
| SW Wickiup Avenue          | City of Redmond | Major Collector                        | 2 Lanes       | 35 mph Posted              | Partial North Side | Note Permitted      | Partial North Side |
| SW Reservoir Drive         | City of Redmond | Major Collector                        | 2 Lanes       | 35 mph Posted              | Partial Both Sides | Not Permitted       | Partial Both Sides |
| SW 43 <sup>rd</sup> Street | City of Redmond | Minor Collector                        | 2 Lanes       | 25 mph Posted              | Partial Both Sides | Partially Permitted | None               |
| SW Zenith Avenue           | City of Redmond | Local Road                             | 2 Lanes       | 25 mph Posted              | Both Sides         | Permitted           | None               |
| SW 49 <sup>th</sup> Street | City of Redmond | Local Road                             | 2 Lanes       | 25 mph Statutory           | Both Sides         | Permitted           | None               |

Table Notes:

1. Functional Classification from City of Redmond TSP (June 2008), Figure 9-1.
2. The 45-mph speed zone ends south of SW Wickiup Avenue and the statutory 55 mph speed applies.

## Study Intersections

Based on coordination with City of Redmond staff, four intersections were identified for analysis. A summarized description of the study intersections is provided in Table 2.

Table 2: Study Intersection Descriptions

|   | Intersection                                     | Geometry                  | Traffic Control | Phasing/Stopped Approaches |
|---|--------------------------------------------------|---------------------------|-----------------|----------------------------|
| 1 | SW Helmholtz Way at SW Wickiup Avenue            | Four-Legged               | Stop Sign       | EB/WB Stop-Controlled      |
| 2 | SW Reservoir Drive at SW 43 <sup>rd</sup> Street | Three-Legged <sup>1</sup> | Stop Sign       | NB Stop-Controlled         |
| 3 | SW 49 <sup>th</sup> Street at SW Zenith Avenue   | Four-Legged               | Stop Sign       | NB/SB Stop-Controlled      |
| 4 | SW 43 <sup>rd</sup> Street at SW Zenith Avenue   | Three-Legged <sup>2</sup> | Stop Sign       | EB Stop-Controlled         |

Table Notes:

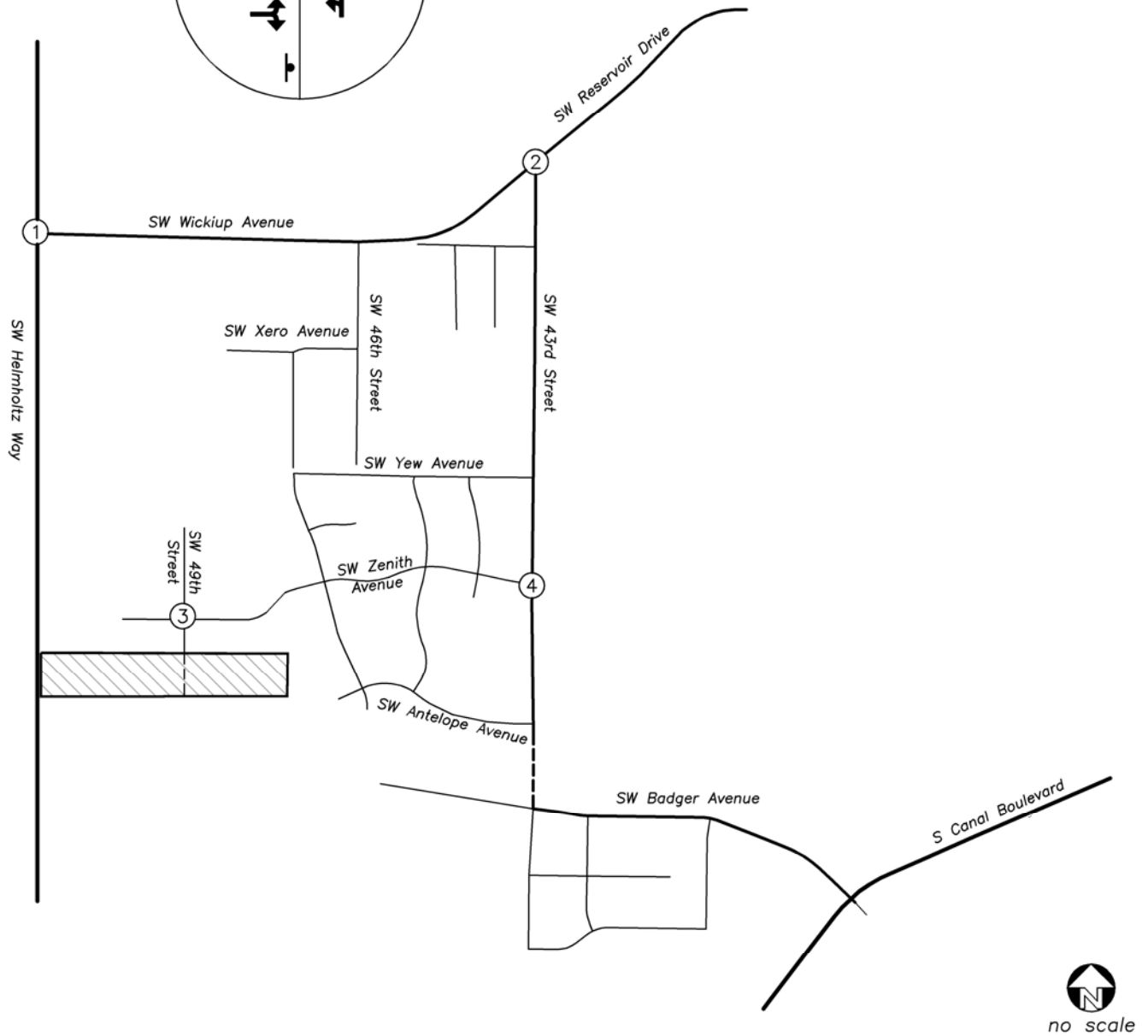
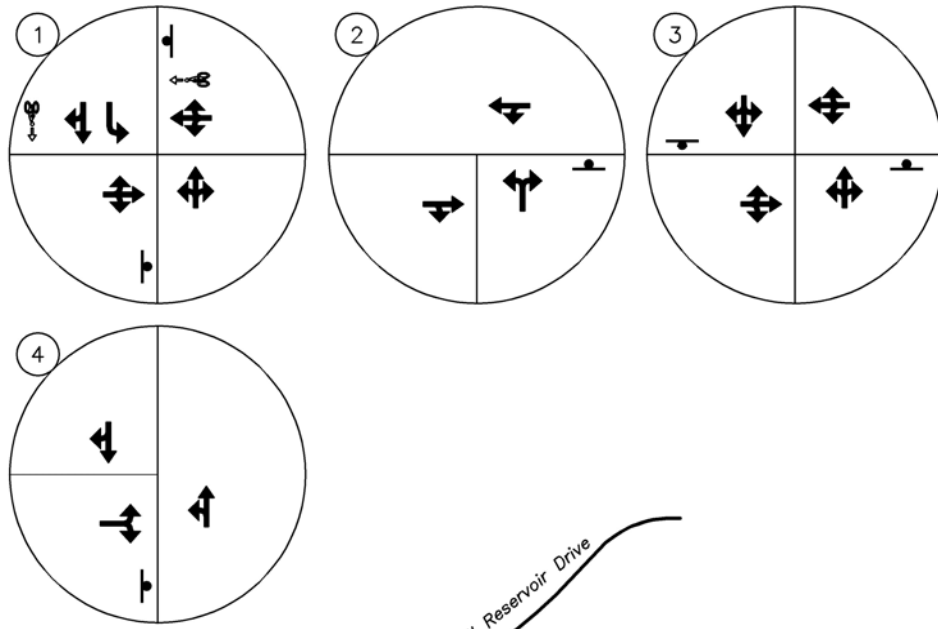
1. Intersection is currently three-legged but planned to be four-legged upon full buildout of the Summit Crest subdivision.
2. Intersection is currently three-legged but planned to be four-legged upon full buildout of Viewpoint subdivision.

A vicinity map showing the project site, vicinity streets, and study intersection configurations is shown in Figure 2.



# LEGEND

-  STUDY INTERSECTION
-  STOP SIGN
-  BIKE LANE
-  PROJECT SITE
-  ARTERIAL ROADWAY
-  COLLECTOR ROADWAY
-  LOCAL ROADWAY
-  FUTURE CONNECTION



## Site Trips

### Trip Generation

To determine the anticipated increase in trip generation due to the proposed development, trip generation for the existing and proposed use are evaluated. The site currently has one single-family dwelling located on it and the proposed development will construct 32 single-family dwellings.

To estimate the number of trips that could be generated by the existing single-family dwelling units and the proposed development, trip rates from the *Trip Generation Manual*<sup>1</sup> were used. Data from the land use code 210, *Single-Family Detached Housing*, was used to estimate trip generation of both the existing single-family dwelling and the proposed development based on the number of dwelling units (DU).

As shown in Table 3, the trip generation calculations show that the proposed development is expected to generate a net increase of 21 trips during the morning peak hour, 29 trips during the evening peak hour, and 292 trips during the weekday. Detailed trip generation calculations are included in Appendix A.

**Table 3: Trip Generation Summary**

| ITE Code                             | Intensity | Morning Peak Hour |     |       | Evening Peak Hour |     |       | Daily Trips |
|--------------------------------------|-----------|-------------------|-----|-------|-------------------|-----|-------|-------------|
|                                      |           | In                | Out | Total | In                | Out | Total |             |
| Existing Conditions                  |           |                   |     |       |                   |     |       |             |
| 210 – Single Family Detached Housing | 1 DU      | 0                 | 1   | 1     | 1                 | 0   | 1     | 10          |
| Proposed Development                 |           |                   |     |       |                   |     |       |             |
| 210 – Single Family Detached Housing | 32 DU     | 6                 | 16  | 22    | 19                | 11  | 30    | 302         |
| Net Increase                         |           | 6                 | 15  | 21    | 18                | 11  | 29    | 292         |

### Trip Distribution

A preliminary directional distribution of the site trips to and from the proposed development was estimated based on an approved trip distribution for the property to the north<sup>2</sup>. For the purpose of this analysis, it was assumed that the connection of SW 43<sup>rd</sup> Street to SW Badger Avenue is complete.

The following trip distribution was estimated and used for analysis:

- Approximately 40 percent of site trips will travel to/from the east along SW Reservoir Drive
- Approximately 30 percent of site trips will travel to/from the north along SW Helmholtz Way
- Approximately 20 percent of site trips will travel to/from the south along SW Helmholtz Way
- Approximately 10 percent of site trips will travel to/from the north along S Canal Boulevard

<sup>1</sup> Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 11th Edition, 2021.

<sup>2</sup> Lancaster Mobley, *Korbin Meadows North Subdivision Transportation Impact Analysis*, June 3, 2024.

### Site Access

According to the most recent site plan, the site will initially have one access point: SW 49<sup>th</sup> Street will extend southward into the proposed development. Site traffic to vehicles can access SW 49<sup>th</sup> Street directly from SW Zenith Avenue. Future connections southward to SW Antelope Avenue will occur when the property to the south develops.

Secondary (fire) access to the development will be provided at SW Antelope Avenue. The developer will provide a 20-foot-wide gravel surface to connect to the existing paved section of SW Antelope Avenue. This access will be restricted by installing removable bollards.

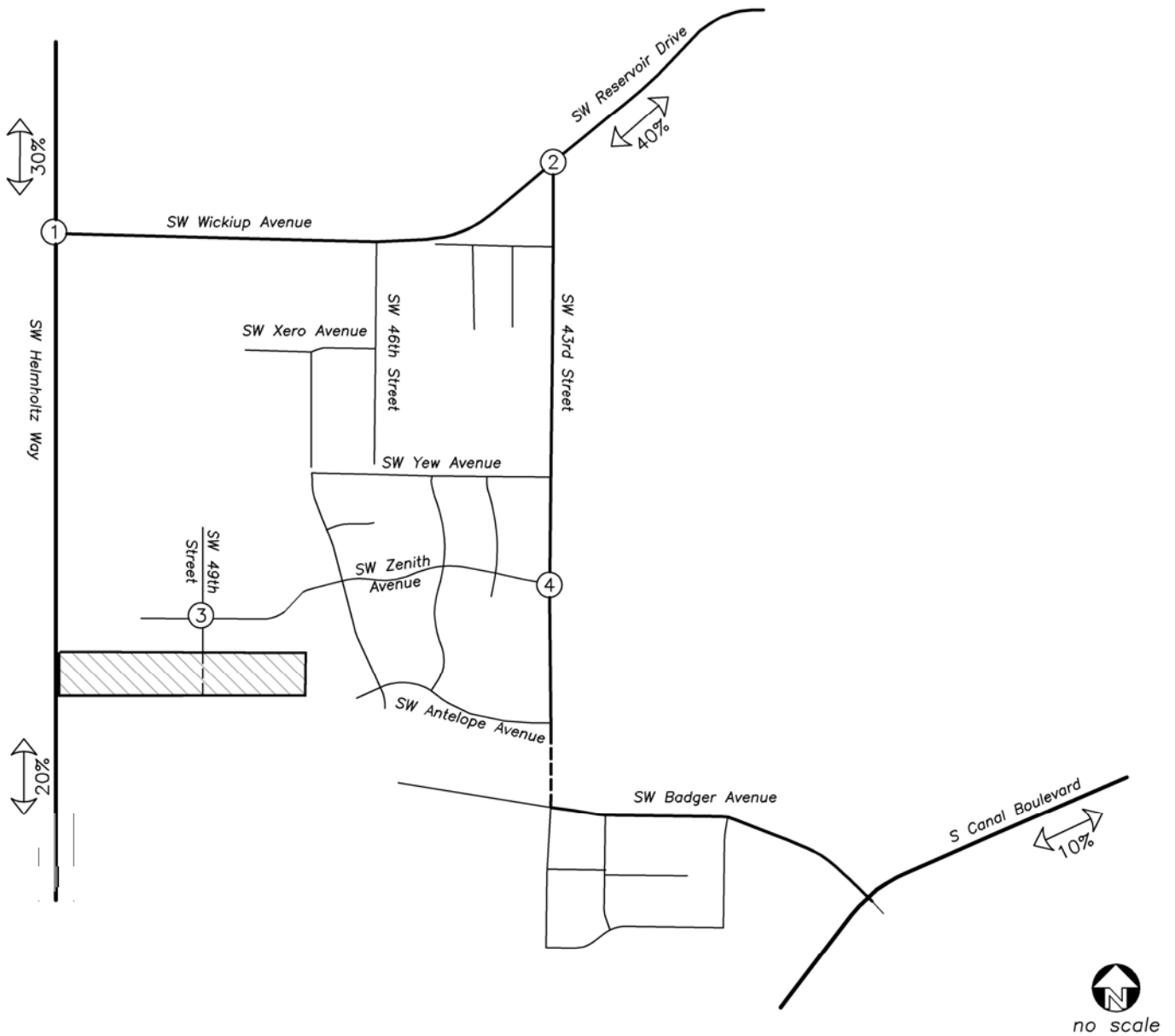
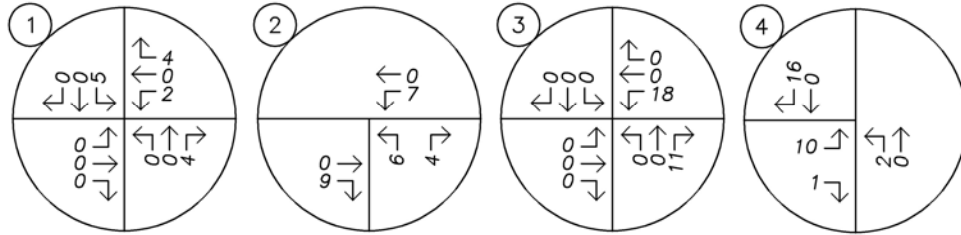
Figure 3 shows the anticipated trip generation and assignment for the evening peak hour.



# LEGEND

XX%  
PERCENT OF PROJECT TRIPS

| TRIP GENERATION |    |     |       |
|-----------------|----|-----|-------|
|                 | IN | OUT | TOTAL |
| PM              | 19 | 11  | 29    |



## Traffic Volumes

### Existing Conditions

Recent traffic counts were collected at the following study intersections on Wednesday, April 10, 2024, from 4:00 PM to 6:00 PM:

- SW Helmholtz Way at SW Wickiup Avenue
- SW Reservoir Drive at SW 43<sup>rd</sup> Street

New traffic counts were collected at the following study intersections on Wednesday, June 26, 2024, from 4:00 PM to 6:00 PM:

- SW 49<sup>th</sup> Street at SW Zenith Avenue
- SW 43<sup>rd</sup> Street at SW Zenith Avenue

Data corresponding to the individual intersection peak hour was used to determine existing volumes for each intersection. Raw count data is included in Appendix B.

Figure 4 shows the existing traffic volumes at the study intersections during the evening peak hour.

### Background Conditions

To provide an analysis of the impact of the proposed development on the nearby transportation facilities, an estimate of future traffic volumes is required. The proposed development is anticipated to be completed and fully occupied by the year 2026. To account for general background growth, a compounded growth rate of two percent per year was applied to the existing traffic volumes over a two-year period to determine year 2026 background volumes.

In addition to the general growth, in-process trips associated with the following previously approved developments were added to the background volumes to represent future traffic volumes at the study intersections prior to approval of the proposed subdivision:

- Little Texas Subdivision
- Horizon Pointe Subdivision
- Feather Ridge Subdivision
- Summit Crest Subdivision Phase 5
- Ward Commons Cottage Subdivision
- Summerhaven Subdivision
- Korbin Meadows Subdivision (remaining phases)
- Owen Ridge Subdivision
- Viewpoint Subdivision

Figure 5 shows the projected year 2026 background traffic volumes at the study intersections during the evening peak hour.

## Buildout Conditions

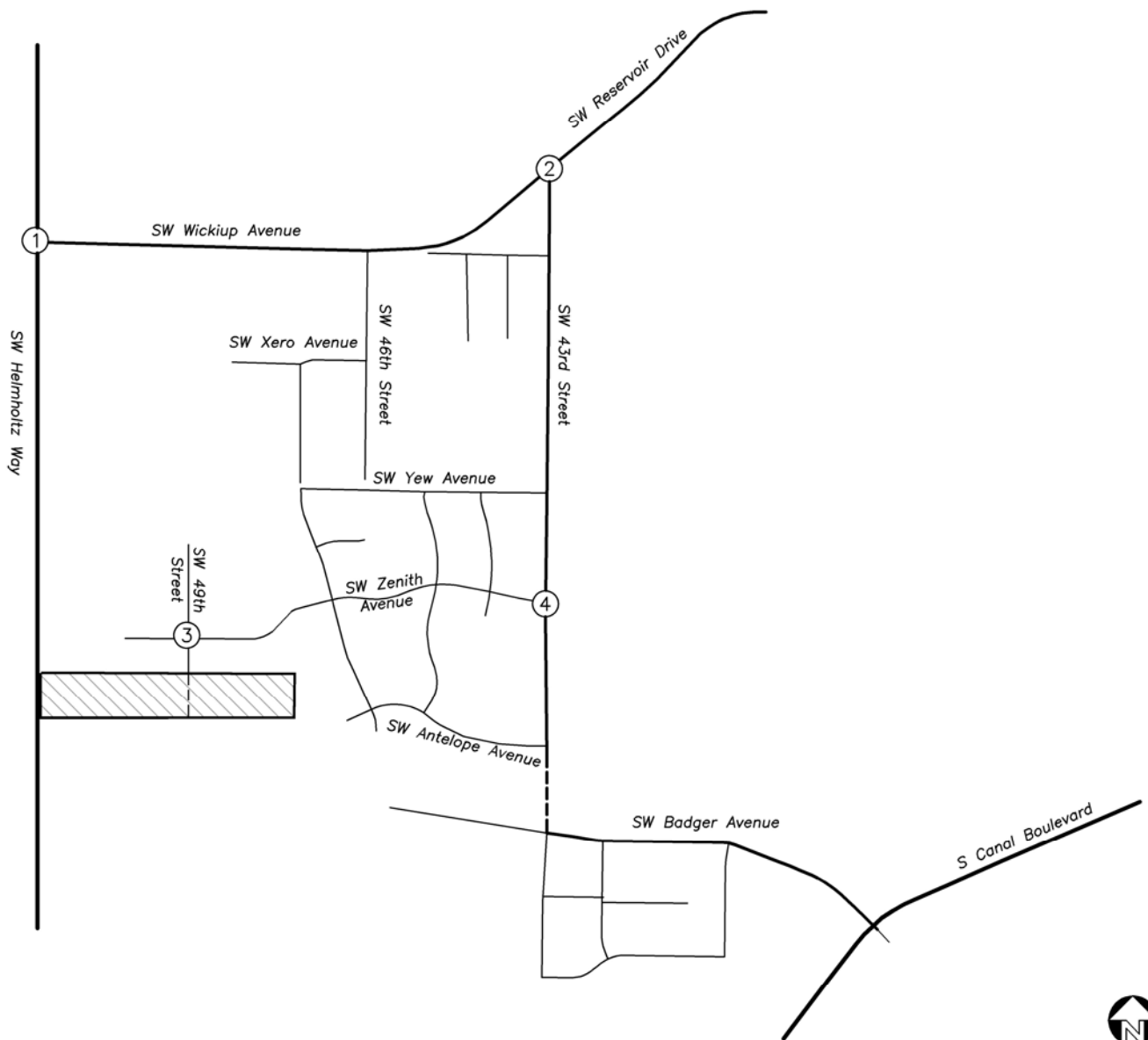
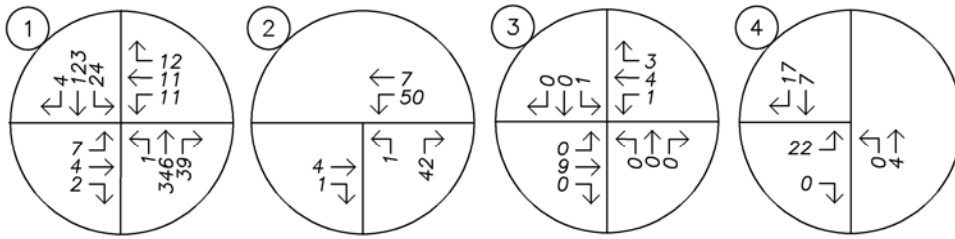
The peak hour trips projected to be generated by the proposed development, as described earlier within the *Site Trips* section, were added to the background volumes to estimate the year 2026 buildout volumes after completion of all phases.

Figure 6 shows year 2026 buildout traffic volumes at the study intersections during the evening peak hour.

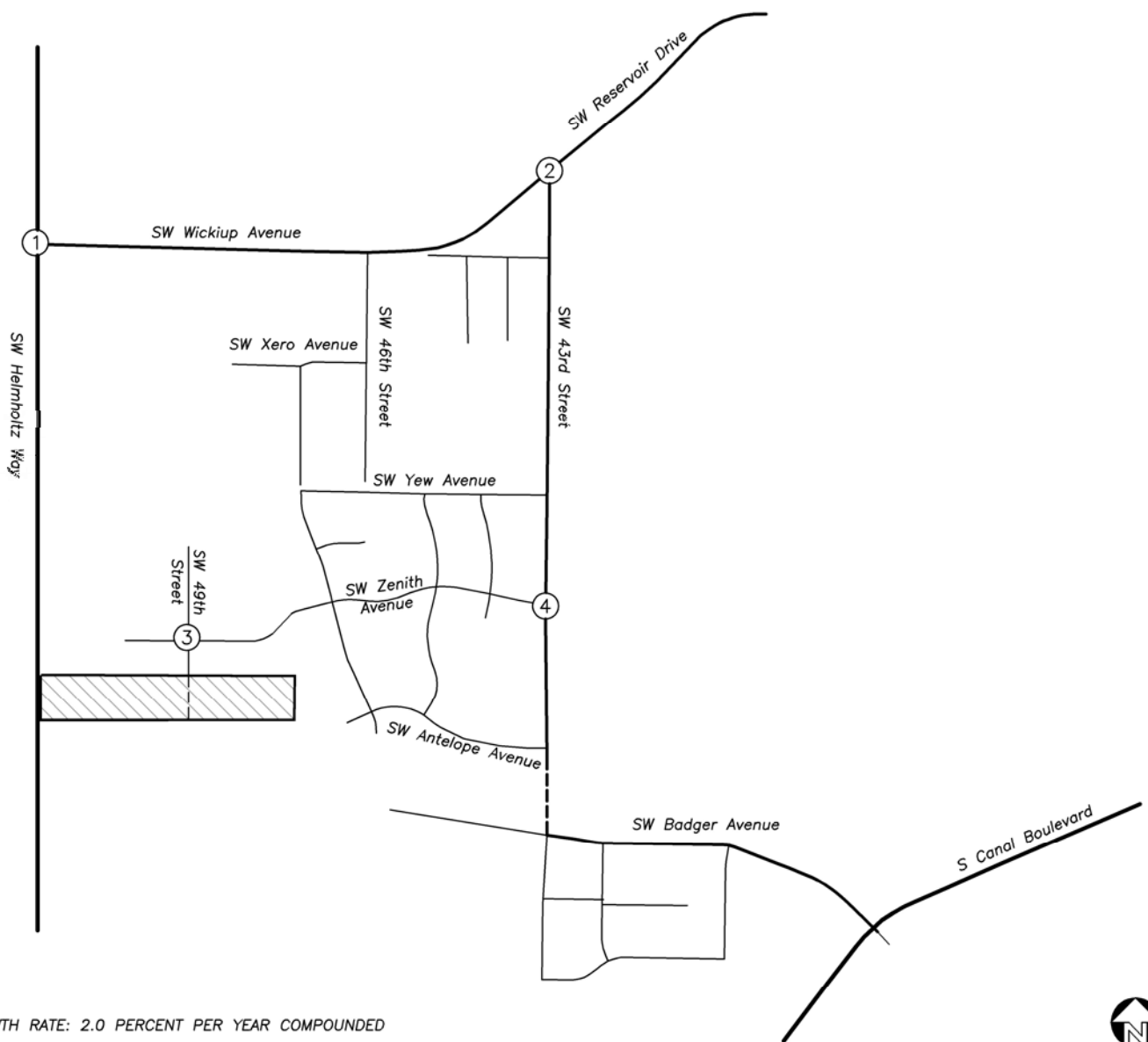
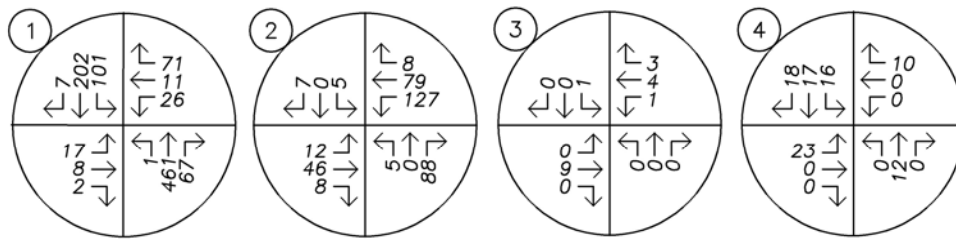
## Planning Horizon Conditions

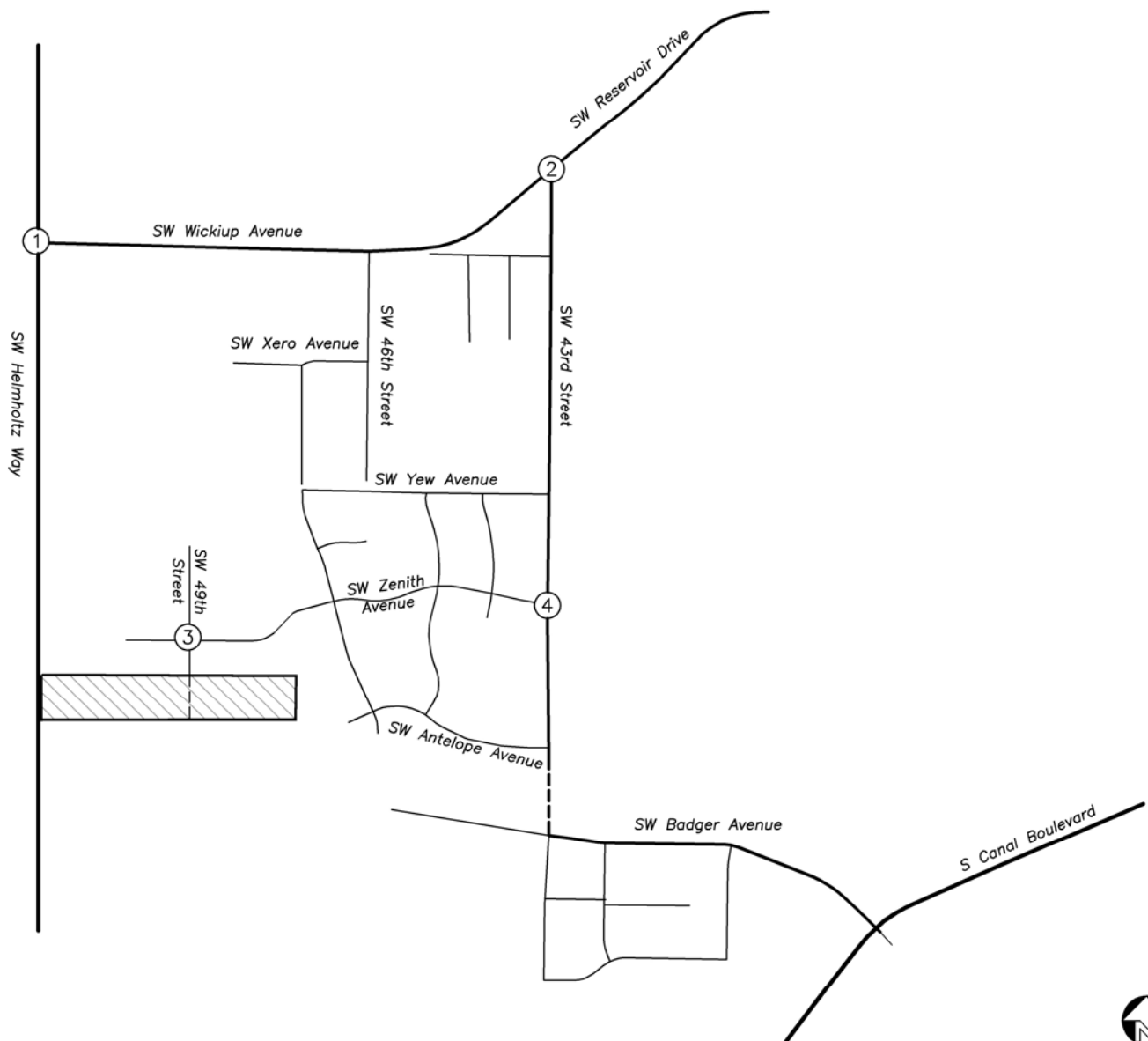
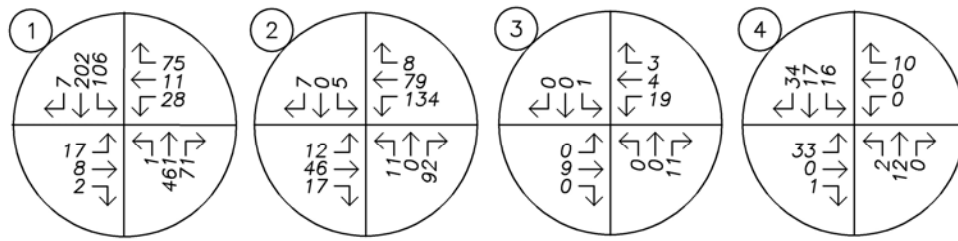
The City of Redmond also requires an analysis of traffic conditions five years beyond the completion and occupancy of the proposed development (Redmond Development Code Section 8.2815(2)(B)(4)(c)). Growth corresponding to 7 years at two percent per year was applied to the existing volumes before adding in-process trips and trips generated by the proposed development to obtain year 2031 conditions, five years after the completion and occupancy of the proposed development.

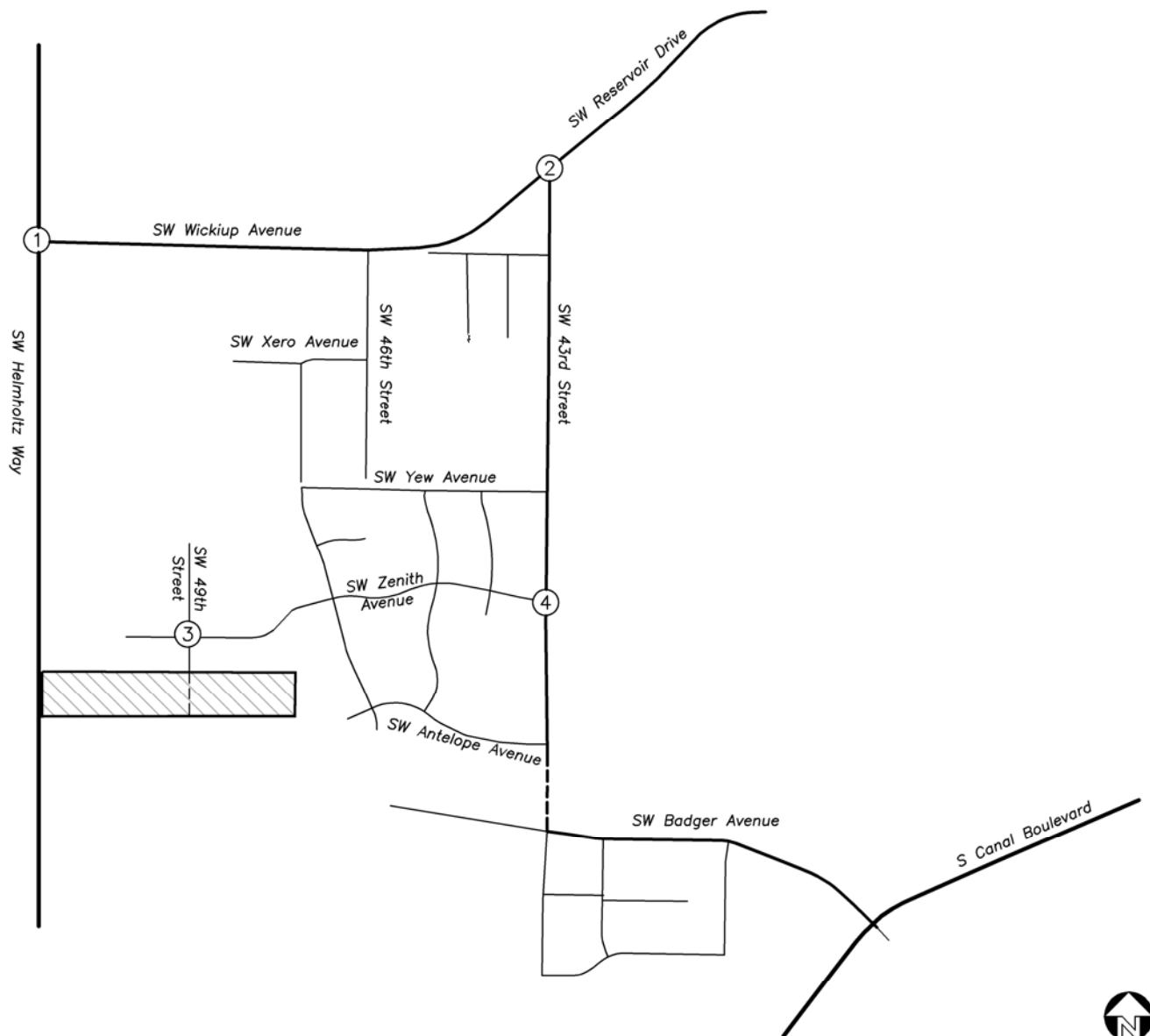
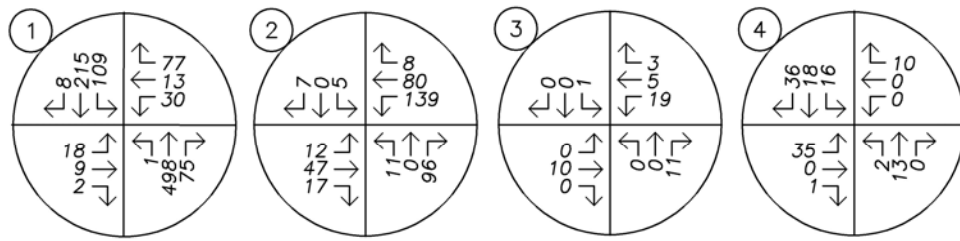
Figure 7 shows year 2031 planning horizon traffic volumes at the study intersections during the evening peak hour.











# Safety Analysis

## Crash History Review

Using data obtained from ODOT’s Crash Data System, a review of approximately five years of the most recent available crash history (January 2018 through December 2022) was performed at the study intersections. The crash data was evaluated based on the number of crashes, the type of collisions, and the severity of the collisions. Crash severity is based on injuries sustained by people involved in the crash, and includes five categories:

- *PDO* – Property Damage Only
- *Injury C* – Possible Injury
- *Injury B* – Suspected Minor Injury
- *Injury A* – Suspected Serious Injury
- *Fatality*

Crash rates provide the ability to compare safety risks at different intersections by accounting for both the number of crashes that have occurred during the study period and the number of vehicles that typically travel through the intersection. Crash rates were calculated using the common assumption that traffic counted during the evening peak hour represents approximately 10 percent of the annual average daily traffic (AADT) at the intersection.

ODOT’s *Analysis Procedures Manual* (APM) also provides crash rates separated by control type and the number of approaches. Exhibit 4.1: Intersection Crash Rates per MEV by Land Type and Traffic Control of the APM indicates the following 90<sup>th</sup> percentile crash rates for various intersection configurations. The study intersection of SW Helmholtz Way at SW Wickiup Avenue is a four-legged unsignalized intersection within an urban setting and has 90<sup>th</sup> percentile crash rate of 0.408.

The study intersection of SW Helmholtz Way at SW Wickiup Avenue was the only study intersection to have any reported collisions within the last five years. Table 4 provides a summary of crash types while Table 5 summarizes crash severities and rates for this study intersection. Detailed crash data is provided in Appendix C.

Table 4: Crash Type Summary

| Intersection |                                       | Crash Type |          |       |              |            |           |         | Total Crashes |
|--------------|---------------------------------------|------------|----------|-------|--------------|------------|-----------|---------|---------------|
|              |                                       | Turn       | Rear End | Angle | Fixed Object | Side swipe | Ped/ Bike | Backing |               |
| 1            | SW Helmholtz Way at SW Wickiup Avenue | 2          | 0        | 3     | 0            | 0          | 0         | 0       | 5             |



**Table 5: Crash Severity and Rate Summary**

| Intersection |                                       | Severity |   |   |   |       | Total Crashes | Average Daily Volume | Crash Rate per MEV | ODOT 90 <sup>th</sup> % Rate |
|--------------|---------------------------------------|----------|---|---|---|-------|---------------|----------------------|--------------------|------------------------------|
|              |                                       | PDO      | C | B | A | Fatal |               |                      |                    |                              |
| 1            | SW Helmholtz Way at SW Wickiup Avenue | 1        | 3 | 1 | 0 | 0     | 5             | 5,840                | 0.47               | 0.408                        |

As shown in Table 5, none of the study intersections experienced a crash rate greater than 1.0 crashes per million entering vehicles, nor were there any reported fatalities or serious injuries. The intersection of SW Helmholtz Way at SW Wickiup Avenue had a crash rate greater than ODOT's 90<sup>th</sup> percentile crash rate of similarly configured intersections.

SW Helmholtz Way at SW Wickiup Avenue is a four-legged intersection with stop control on the eastbound and westbound approaches. SW Helmholtz Way has a three-lane cross-section at the intersection which tapers to a two-lane cross section south of SW Wickiup Avenue. The posted speed is 45 mph on SW Helmholtz Way but the speed zone ends just south of the intersection and the statutory 55 mph speed applies.

Five crashes were reported at this intersection over the last five years, which resulted in a crash rate of 0.47. This crash rate is higher than the statewide 90<sup>th</sup> percentile rate for similar four-legged, stop-controlled intersections in an urban setting.

- Four of the crashes occurred in 2019 and one crash occurred in 2021.
- The crashes at this intersection were either angle or turning movement collisions. There was no pattern discerned among the crashes: they occurred on all approaches with traffic traveling in different directions and the majority occurred during clear, dry, daytime conditions.
- Four crashes resulted in injury, and one resulted in property damage only.
- There were no crashes reported which involved a pedestrian or bicyclist during the five-year analysis period.

Based on a review of the most recent five years of available crash data, none of the study intersections reported collisions involving a pedestrian or bicyclist, or a collision resulting in a serious injury or fatality. No significant trends or crash patterns were identified at any of the study intersections, and no safety mitigation is recommended per the crash data analysis.

## Sight Distance Evaluation

A sight distance analysis was conducted at the intersection of SW 49<sup>th</sup> Street and SW Zenith Avenue that will provide access into the site. To evaluate the sight distance available at these intersections, intersection sight distance was measured and recommended in accordance with the current AASHTO manual<sup>3</sup>. According to

<sup>3</sup> American Association of State Highway and Transportation Officials (AASHTO), *A Policy on Geometric Design of Highways and Streets*, 7th Edition, 2018.

AASHTO, the driver's eye is assumed to be 14.5 feet from the near edge of the nearest travel lane of the intersecting street and at a height of 3.5 feet above the minor-street approach pavement. The vehicle driver's eye-height along the major-street approach is assumed to be 3.5 feet above the cross-street pavement.

Based on a posted speed of 25 mph along SW Zenith Avenue, the minimum recommended intersection sight distance is 280 feet. Sight distance to the east was measured to be at least 425 feet, while sight distance to the west was measured to be 390 feet (to the partial cul-de-sac at the end of the roadway). Sight distance images are included in Appendix C.

Adequate sight distances are available at the site access intersection to allow for safe operation along SW Zenith Avenue. No sight distance mitigation is necessary or recommended.

## Warrant Analysis

Left-turn lane warrants, right-turn lane warrants, and preliminary traffic signal warrants were examined at the appropriate study intersections. Detailed information on the warrant analyses is included in Appendix C.

### Left-Turn Lane Warrants

A left-turn refuge lane is primarily a safety consideration for the major street, removing left-turning vehicles from the through traffic stream. The left-turn lane warrants used were based on ODOT's methodology outlined within the *Analysis Procedures Manual*<sup>4</sup> (APM). Left-turn warrants were evaluated based on the number of advancing and opposing vehicles, number of turning vehicles, travel speed, and the number of through lanes.

Left-turn lane warrants were examined for the following study intersections:

- SW Reservoir Drive at SW 43<sup>rd</sup> Street (WB direction)
- SW 49<sup>th</sup> Street at SW Zenith Avenue (WB direction)

For the intersection of SW Reservoir Drive at SW 43<sup>rd</sup> Street, left-turn lane warrants are met in the westbound direction for the year 2026 buildout scenario. A left-turn lane is being installed as part of the SW Reservoir Drive Improvement Project currently in construction.

Left-turn lane warrants were not met for the study intersection of SW 49<sup>th</sup> Street at SW Zenith Avenue.

### Right-Turn Lane Warrants

Per Redmond Development Code Section 8.2815(2)(B)(9)(b), right-turn lane warrants were assessed for major intersections including either a collector or arterial based on ODOT's methodology outlined within the APM. The purpose of a right-turn lane at an unsignalized intersection is to improve safety and capacity of the roadway by reducing the differences in speed between through vehicles and decelerating right-turning vehicles. Right-turn lane warrants were evaluated for the following unsignalized study intersections:

- SW Helmholtz Way at SW Wickiup Avenue
- SW Reservoir Drive at SW 43<sup>rd</sup> Street

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<sup>4</sup> Oregon Department of Transportation, *Analysis Procedures Manual*, Version 2, March 2024

Right-turn lane warrant criteria are met for the northbound approach at the study intersection of SW Helmholtz Way at SW Wickiup Avenue under existing 2024 traffic volumes. No crashes were reported in the most recent five years of data that could have been prevented with the addition of a northbound right-turn lane. In addition, the study intersection is currently operating acceptably per jurisdictional standards and is projected to continue operating acceptably through the 2031 planning horizon year (see *Operational Analysis* section, Table 7). Therefore, installation of a right-turn lane is not recommended as mitigation for the intersection.

### **Preliminary Traffic Signal Warrants**

Preliminary traffic signal warrants were examined for all unsignalized study intersections to determine whether the installation of a new traffic signal will be warranted at the intersection upon site buildout.

Methodologies were based on the *Manual on Uniform Traffic Control Devices*<sup>5</sup> (MUTCD). Warrant 1, Eight-Hour Vehicular Volumes, was evaluated based on the common assumption that traffic counted during the evening peak hour represents 10 percent of the average daily traffic (ADT) and that the 8<sup>th</sup> highest hour is 5.65 percent of the daily volume.

Traffic signal warrants are not projected to be met at any of the study intersections under any of the analysis scenarios, including five years beyond completion of the proposed development.

## **Assessment of Pedestrian, Bicycle, and Transit Modes**

The proposed development is located within a residential area of SW Redmond that consists of both older homes as well as newer subdivisions. As new roadways are constructed and existing roadways are extended, sidewalks are being included along these roadways. This allows for pedestrians to walk comfortably within the proposed development and to/from other connecting residential developments.

Bicycle lanes are provided along both sides of SW Reservoir Drive from SW 39<sup>th</sup> Street to SW Canal Boulevard, and along SW Helmholtz Way approximately 1,700 feet north of SW Wickiup Avenue. Additionally, neighborhood streets not listed as bicycle routes in the immediate site vicinity are typically low-stress roadways that provide alternative routes to other nearby bicycle paths.

There are no transit lines located near the project site. The City of Redmond offers a Rural Dial-A-Ride service through Cascades East Transit.

There are six planned pedestrian and bicycle projects listed in the Redmond TSP which will provide connections between the proposed development and existing infrastructure as well as enhance safety for vulnerable roadway users. These projects are listed in Table 6.

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5 Federal Highway Administration, *Manual on Uniform Traffic Control Devices*, 11th Edition, 2023



Table 6: Planned Roadway Projects in Redmond TSP

| Project Number      | Location                                                                 | Description                                                                                                                    |
|---------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| B1                  | SW/NW Helmholtz Way (from NW Canal Boulevard to SW Canal Boulevard)      | Install multi-use pathway                                                                                                      |
| B65                 | SW 43 <sup>rd</sup> Street (from SW Reservoir Drive to SW Badger Avenue) | Bicycle improvements included in Complete Street Upgrade Project                                                               |
| B67                 | SW Helmholtz Way (from SW Reservoir Drive to SW Canal Boulevard)         | Install multi-use pathway                                                                                                      |
| S41                 | SW 43 <sup>rd</sup> Street (from SW Yew Street to SW Badger Avenue)      | Proposed new minor collector street <sup>1</sup>                                                                               |
| S42                 | SW Badger Avenue (from SW Helmholtz Way to SW 43 <sup>rd</sup> Street)   | Proposed new minor collector street <sup>1</sup>                                                                               |
| TR1901 <sup>2</sup> | SW Reservoir Drive (from SW Helmholtz Way to SW 39 <sup>th</sup> Street) | Street improvements including bike lanes, sidewalks, stormwater facilities, waterline replacement, and sewer line replacement. |

Table Notes:

1 – City of Redmond minor collector typical section includes sidewalks

2 – Project listed in the City of Redmond's 5-Year Capital Improvement Plan with construction estimated in 2024

## Operational Analysis

A capacity and delay analysis were conducted for each of the study intersections per the unsignalized intersection analysis methodologies in the *Highway Capacity Manual* (HCM)<sup>6</sup>. Intersections are generally evaluated based on the average control delay experienced by vehicles and are assigned a grade according to their operation. The level of service (LOS) of an intersection can range from LOS A, which indicates very little or no delay experienced by vehicles, to LOS F, which indicates a high degree of congestion and delay. The volume-to-capacity (v/c) ratio is a measure that compares the traffic volumes (demand) against the available capacity of an intersection.

## Performance Standards

All study intersections must comply with agency mobility standards. The City of Redmond has the following applicable mobility standards per the City of Redmond Development Code Section 8.2815(2)(B)(8)(e):

- For unsignalized intersections, the acceptable standard for City streets is LOS E and a v/c ratio of less than 0.90 for the critical approach.
- Local streets should experience an average daily traffic (ADT) volume of less than 1,200 vehicles per day.

## Delay & Capacity Analysis

The LOS, delay, and v/c results of the capacity analysis are shown in Table 7 for the evening peak hour. Detailed calculations as well as tables showing the relationship between delay and LOS are included in Appendix D.

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<sup>6</sup> Transportation Research Board, *Highway Capacity Manual 7<sup>th</sup> Edition*, 2022.

Table 7: Capacity Analysis Summary

| Intersection & Condition                            | Mobility Standard | PM Peak Hour |           |      |
|-----------------------------------------------------|-------------------|--------------|-----------|------|
|                                                     |                   | LOS          | Delay (s) | v/c  |
| 1. SW Helmholtz Way at SW Wickiup Avenue            |                   |              |           |      |
| 2024 Existing Conditions                            | LOS E<br>0.90     | B            | 14        | 0.09 |
| 2026 Background Conditions                          |                   | D            | 33        | 0.43 |
| 2026 Buildout Conditions                            |                   | D            | 35        | 0.47 |
| 2031 Planning Horizon Conditions                    |                   | E            | 42        | 0.56 |
| 2. SW Reservoir Drive at SW 43 <sup>rd</sup> Street |                   |              |           |      |
| 2024 Existing Conditions                            | LOS E<br>0.90     | A            | 9         | 0.05 |
| 2026 Background Conditions                          |                   | B            | 12        | 0.13 |
| 2026 Buildout Conditions                            |                   | B            | 12        | 0.15 |
| 2031 Planning Horizon Conditions                    |                   | B            | 12        | 0.16 |
| 3. SW 49 <sup>th</sup> Street at SW Zenith Avenue   |                   |              |           |      |
| 2024 Existing Conditions                            | LOS E<br>0.90     | A            | 9         | 0.01 |
| 2026 Background Conditions                          |                   | A            | 9         | 0.01 |
| 2026 Buildout Conditions                            |                   | A            | 9         | 0.01 |
| 2031 Planning Horizon Conditions                    |                   | A            | 9         | 0.01 |
| 4. SW 43 <sup>rd</sup> Street at SW Zenith Avenue   |                   |              |           |      |
| 2024 Existing Conditions                            | LOS E<br>0.90     | A            | 9         | 0.03 |
| 2026 Background Conditions                          |                   | A            | 9         | 0.03 |
| 2026 Buildout Conditions                            |                   | A            | 9         | 0.04 |
| 2031 Planning Horizon Conditions                    |                   | A            | 9         | 0.05 |

Table Notes: LOS, delay, v/c – for two-way stop, these values are taken from the movement with the worst (highest) delay value.

All study intersections are currently operating acceptably per jurisdictional standards and are projected to continue operating acceptably through the 2031 planning horizon year. No operational mitigation is necessary or recommended.

## Queuing Analysis

An analysis of projected queuing was conducted for the study intersections. The 95<sup>th</sup> percentile queue lengths were estimated based on the same Synchro/SimTraffic simulations used for the delay calculations. The 95<sup>th</sup> percentile queue is a statistical measurement which indicates there is a 5 percent chance that the queue may exceed this length during the analysis period; however, given this is a probability, the 95<sup>th</sup> percentile queue length may theoretically never be met or observed in the field.

The 95<sup>th</sup> percentile queue lengths reported in the simulation are presented in Table 8 for the evening peak hour. All queue lengths more than 5 feet longer than a multiple of 25 were rounded up to the nearest 25 feet, equivalent to an average vehicle length. Those queues that were 5 feet or less than a multiple of 25 were rounded down since 5 feet is equivalent to the space between queued vehicles. Detailed queuing analysis reports are included in Appendix D.

**Table 8: 95<sup>th</sup> Percentile Queueing Analysis Summary**

| Intersection/Movement                                     | Available Storage (ft) | 2026 Buildout Queue (ft) | 2031 Planning Horizon Queue (ft) |
|-----------------------------------------------------------|------------------------|--------------------------|----------------------------------|
| <b>1. SW Helmholtz Way at SW Wickiup Avenue</b>           |                        |                          |                                  |
| EB Approach                                               | 625                    | 50                       | 50                               |
| WB Approach                                               | 500                    | 100                      | 100                              |
| NB Approach                                               | 700                    | 25                       | 25                               |
| SB Left-Turn Lane                                         | 175                    | 50                       | 50                               |
| SB Through-Right Lane                                     | 900                    | 25                       | -                                |
| <b>2. SW Reservoir Drive at SW 43<sup>rd</sup> Street</b> |                        |                          |                                  |
| NB Approach                                               | 195                    | 50                       | 50                               |
| SB Approach                                               | 50                     | 25                       | 25                               |
| NEB Approach                                              | 225                    | 25                       | 25                               |
| SWB Approach                                              | 90                     | 50                       | 50                               |
| <b>3. SW 49<sup>th</sup> Street at SW Zenith Avenue</b>   |                        |                          |                                  |
| WB Approach                                               | 25                     | -                        | -                                |
| NB Approach                                               | 125                    | 50                       | 50                               |
| SB Approach                                               | 125                    | 25                       | 25                               |
| <b>4. SW 43<sup>rd</sup> Street at SW Zenith Avenue</b>   |                        |                          |                                  |
| EB Approach                                               | 50                     | 50                       | 50                               |
| WB Approach                                               | 50                     | 50                       | 50                               |
| NB Approach                                               | 650                    | -                        | 25                               |
| SB Approach                                               | 525                    | -                        | 25                               |

Changes in 95<sup>th</sup> percentile queuing between the 2026 buildout and 2031 planning horizon scenarios are anticipated to be small, between zero and one vehicle. In addition, no queues are expected to be longer than four vehicles.

## Average Daily Traffic on Local Streets

In addition to capacity requirements, the City of Redmond also has standards related to the local street impacts of adjacent development projects. The Redmond Development Code 8.2815(2)(B)(8)(e) states the following:

*Projects are considered to have significant operational impacts on the transportation system when identified at the year of completion of the final or intermediate phase as identified below:*

*(iii) Local streets experiencing an Average Daily Traffic volume higher than 1,200 vehicles per day.*

The existing Average Daily Traffic (ADT) was calculated using the common assumption that traffic counted during the evening peak hour represents approximately 10 percent of the ADT along the roadway. Recently collected traffic counts, as described in the *Traffic Volumes* section, were used to estimate the traffic volumes during the evening peak hour. Future ADT estimates were approximated based on the number of new residential lots that would be served by the connection, as shown previously in Table 3. Table 9 provides a summary of the estimated ADT for local streets in the project vicinity.

**Table 9: Estimated Local Street ADT**

| Local Street                                                                      | Existing ADT (Estimated) | Future Project ADT                | Total Estimated ADT (Existing + Future) | <1,200 ADT? |
|-----------------------------------------------------------------------------------|--------------------------|-----------------------------------|-----------------------------------------|-------------|
| SW Zenith Avenue<br>(SW 49 <sup>th</sup> Street to<br>SW 43 <sup>rd</sup> Street) | 390                      | Approx. 34 homes<br>292 Total ADT | 682                                     | Yes         |

As shown in Table 9, SW Zenith Avenue from SW 49<sup>th</sup> Street to SW 43<sup>rd</sup> Street is expected to serve less than 1,200 daily vehicle trips in 2026 with full buildout of the site. Therefore, the proposed development is not expected to have significant operational impacts on the transportation system upon full buildout of the site.

## Mitigation Analysis

According to the City of Redmond Development Code Section 8.2815(2)(B)(8)(e), a project is considered to have a significant operational impact on the transportation system if certain standards are exceeded at the year of completion. For two-way stop-controlled intersections, these standards are as follows (with responses shown in italics):

1. (ii) The critical movement delay exceeds LOS "E" and the v/c ratio on the critical movement is more than 0.90.

*Response: For the buildout year 2026 scenario as well as the year 2031 planning horizon scenario, all intersections operate at a LOS "E" or better and all v/c ratios are below 0.90.*

2. (ii) The critical movement experiences a 95<sup>th</sup> percentile queue of more than four vehicles.

*Response: All projected queues are expected to be four vehicles or less for all analysis scenarios, including five years beyond completion of the proposed development.*

3. (ii) A stop-controlled intersection meets MUTCD volume-based signal warrants.

*Response: Traffic signal warrants are not projected to be met at any of the stop-controlled study intersections under any of the analysis scenarios, including five years beyond completion of the proposed development.*

4. (iii) Local streets experiencing an Average Daily Traffic volume higher than 1,200 vehicles per day.

*Response: The local street of SW Zenith Avenue from SW 49<sup>th</sup> Street to SW 43<sup>rd</sup> Street is expected to serve less than 1,200 daily vehicle trips in 2026 with full buildout of the site.*

As all standards are met, no mitigation related to transportation is recommended.



## Conclusions

Key findings of this study include:

- Based on a review of the most recent five years of available crash data, none of the study intersections reported collisions involving a pedestrian or bicyclist, or a collision resulting in a fatality. No significant trends or crash patterns were identified at any of the study intersections, and no safety mitigation is recommended per the crash data analysis.
- Adequate sight distances are available at the proposed site access intersection to allow for safe operation along SW Helmholtz Way. No sight distance mitigation is necessary or recommended.
- For the intersection of SW Reservoir Drive at SW 43<sup>rd</sup> Street, left-turn lane warrants are met in the westbound direction for the year 2026 buildout scenario. A left-turn lane is being installed as part of the SW Reservoir Drive Improvement Project currently in construction.
- Right-turn lane warrant criteria are met for the northbound approach at the study intersection of SW Helmholtz Way at SW Wickiup Avenue under existing 2024 traffic volumes. No crashes were reported in the most recent five years of data that could have been prevented with the addition of a northbound right-turn lane. In addition, the study intersection is currently operating acceptably per jurisdictional standards and is projected to continue operating acceptably through the 2031 planning horizon year. Therefore, installation of a right-turn lane is not recommended as mitigation for the intersection.
- Traffic signal warrants are not projected to be met at any of the study intersections under any of the analysis scenarios, including five years beyond completion of the proposed development.
- All study intersections are currently operating acceptably per jurisdictional standards and are projected to continue operating acceptably through the 2031 planning horizon year. No operational mitigation is necessary or recommended.
- Changes in 95<sup>th</sup> percentile queuing between the 2026 buildout and 2031 planning horizon scenarios are anticipated to be small, between zero and one vehicle. In addition, no queues are expected to be longer than four vehicles.
- The local street of SW Zenith Avenue from SW 49<sup>th</sup> Street to SW 43<sup>rd</sup> Street is expected to serve less than 1,200 daily vehicle trips in 2026 with full buildout of the site. Therefore, the proposed development is not expected to have significant operational impacts on the transportation system upon full buildout of the site.
- The proposed development meets all standards shown in the City of Redmond Development Code Section 8.2815(2)(B)(8)(e); therefore, the development is not expected to have a significant operational impact on the transportation system, and no mitigation related to transportation is recommended.



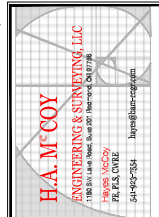
## Appendix A – Site Information

Site Plan

Trip Generation Calculations





[illegible]

PROJECT:  
ANTELOPE FLATS

PROJECT LOCATION:  
REDMOND, OR

CLIENT:  
TEXAS TANGO LLC ET AL

**SHEET TITLE:**

|           |        |
|-----------|--------|
| JOB NO.   | 20-018 |
| DRAWN BY: | JJW    |
| DRAWING:  | OPT3   |



## TRIP GENERATION CALCULATIONS

Existing Conditions

*Land Use:* Single-Family Detached Housing

*Land Use Code:* 210

*Land Use Subcategory:* Not Close to Rail Transit

*Setting/Location:* General Urban/Suburban

*Variable:* Dwelling Units

*Trip Type:* Vehicle

*Formula Type:* Rate

*Variable Quantity:* 1

### AM PEAK HOUR

*Trip Rate:* 0.70

|                   | Enter | Exit | Total |
|-------------------|-------|------|-------|
| Directional Split | 25%   | 75%  |       |
| Trip Ends         | 0     | 1    | 1     |

### PM PEAK HOUR

*Trip Rate:* 0.94

|                   | Enter | Exit | Total |
|-------------------|-------|------|-------|
| Directional Split | 63%   | 37%  |       |
| Trip Ends         | 1     | 0    | 1     |

### WEEKDAY

*Trip Rate:* 9.43

|                   | Enter | Exit | Total |
|-------------------|-------|------|-------|
| Directional Split | 50%   | 50%  |       |
| Trip Ends         | 5     | 5    | 10    |

Source: Trip Generation Manual, 11th Edition



## TRIP GENERATION CALCULATIONS

Proposed Development

*Land Use:* Single-Family Detached Housing

*Land Use Code:* 210

*Land Use Subcategory:* Not Close to Rail Transit

*Setting/Location:* General Urban/Suburban

*Variable:* Dwelling Units

*Trip Type:* Vehicle

*Formula Type:* Rate

*Variable Quantity:* 32

### AM PEAK HOUR

*Trip Rate:* 0.70

|                   | Enter | Exit | Total |
|-------------------|-------|------|-------|
| Directional Split | 25%   | 75%  |       |
| Trip Ends         | 6     | 16   | 22    |

### PM PEAK HOUR

*Trip Rate:* 0.94

|                   | Enter | Exit | Total |
|-------------------|-------|------|-------|
| Directional Split | 63%   | 37%  |       |
| Trip Ends         | 19    | 11   | 30    |

### WEEKDAY

*Trip Rate:* 9.43

|                   | Enter | Exit | Total |
|-------------------|-------|------|-------|
| Directional Split | 50%   | 50%  |       |
| Trip Ends         | 151   | 151  | 302   |

Source: Trip Generation Manual, 11th Edition

## Appendix B – Volumes

Traffic Counts

In-Process Trips





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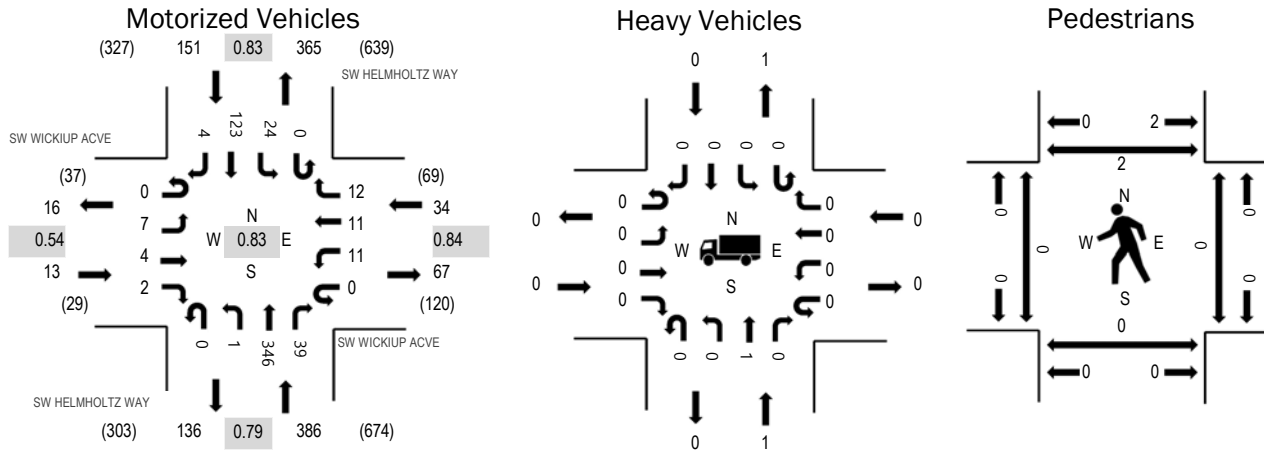
Location: 1 SW HELMHOLTZ WAY & SW WICKIUP ACVE PM

Date: Wednesday, April 10, 2024

Peak Hour: 04:50 PM - 05:50 PM

Peak 15-Minutes: 05:30 PM - 05:45 PM

## Peak Hour



Note: Total study counts contained in parentheses.

|     | HV%  | PHF  |
|-----|------|------|
| EB  | 0.0% | 0.54 |
| WB  | 0.0% | 0.84 |
| NB  | 0.3% | 0.79 |
| SB  | 0.0% | 0.83 |
| All | 0.2% | 0.83 |

## Traffic Counts - Motorized Vehicles

| Interval<br>Start Time | SW WICKIUP ACVE<br>Eastbound |      |      |       | SW WICKIUP ACVE<br>Westbound |      |      |       | SW HELMHOLTZ WAY<br>Northbound |      |      |       | SW HELMHOLTZ WAY<br>Southbound |      |      |       | Total | Rolling<br>Hour |
|------------------------|------------------------------|------|------|-------|------------------------------|------|------|-------|--------------------------------|------|------|-------|--------------------------------|------|------|-------|-------|-----------------|
|                        | U-Turn                       | Left | Thru | Right | U-Turn                       | Left | Thru | Right | U-Turn                         | Left | Thru | Right | U-Turn                         | Left | Thru | Right |       |                 |
| 4:00 PM                | 0                            | 0    | 1    | 0     | 0                            | 2    | 1    | 2     | 0                              | 1    | 25   | 4     | 0                              | 2    | 14   | 0     | 52    | 527             |
| 4:05 PM                | 0                            | 1    | 1    | 0     | 0                            | 0    | 3    | 1     | 0                              | 0    | 12   | 1     | 0                              | 1    | 13   | 0     | 33    | 512             |
| 4:10 PM                | 0                            | 1    | 0    | 0     | 0                            | 1    | 0    | 1     | 0                              | 0    | 14   | 0     | 0                              | 3    | 8    | 0     | 28    | 543             |
| 4:15 PM                | 0                            | 0    | 0    | 0     | 0                            | 2    | 1    | 1     | 0                              | 0    | 12   | 2     | 0                              | 1    | 14   | 0     | 33    | 550             |
| 4:20 PM                | 0                            | 3    | 1    | 0     | 0                            | 1    | 1    | 0     | 0                              | 0    | 28   | 3     | 0                              | 2    | 7    | 0     | 46    | 556             |
| 4:25 PM                | 0                            | 1    | 0    | 0     | 0                            | 0    | 1    | 0     | 0                              | 2    | 27   | 2     | 0                              | 3    | 17   | 2     | 55    | 537             |
| 4:30 PM                | 0                            | 1    | 1    | 0     | 0                            | 4    | 1    | 0     | 0                              | 0    | 26   | 0     | 0                              | 1    | 9    | 0     | 43    | 540             |
| 4:35 PM                | 0                            | 0    | 1    | 0     | 0                            | 2    | 0    | 0     | 0                              | 1    | 26   | 2     | 0                              | 1    | 11   | 0     | 44    | 565             |
| 4:40 PM                | 0                            | 1    | 0    | 0     | 0                            | 1    | 0    | 1     | 0                              | 1    | 21   | 4     | 1                              | 1    | 14   | 1     | 46    | 568             |
| 4:45 PM                | 0                            | 0    | 0    | 0     | 0                            | 1    | 2    | 0     | 0                              | 0    | 24   | 3     | 0                              | 1    | 15   | 2     | 48    | 582             |
| 4:50 PM                | 0                            | 0    | 0    | 1     | 0                            | 0    | 1    | 2     | 0                              | 0    | 30   | 1     | 0                              | 4    | 12   | 1     | 52    | 584             |
| 4:55 PM                | 0                            | 1    | 0    | 0     | 0                            | 0    | 2    | 2     | 0                              | 0    | 28   | 3     | 0                              | 1    | 9    | 1     | 47    | 582             |
| 5:00 PM                | 0                            | 0    | 0    | 1     | 0                            | 1    | 1    | 1     | 0                              | 0    | 22   | 2     | 0                              | 1    | 7    | 1     | 37    | 572             |
| 5:05 PM                | 0                            | 1    | 0    | 0     | 0                            | 1    | 1    | 0     | 0                              | 0    | 36   | 3     | 0                              | 1    | 21   | 0     | 64    |                 |
| 5:10 PM                | 0                            | 2    | 0    | 0     | 0                            | 0    | 0    | 0     | 0                              | 0    | 22   | 2     | 0                              | 3    | 6    | 0     | 35    |                 |
| 5:15 PM                | 0                            | 0    | 0    | 0     | 0                            | 0    | 2    | 1     | 0                              | 0    | 20   | 2     | 0                              | 1    | 12   | 1     | 39    |                 |
| 5:20 PM                | 0                            | 0    | 1    | 0     | 0                            | 0    | 1    | 1     | 0                              | 1    | 16   | 2     | 0                              | 0    | 5    | 0     | 27    |                 |
| 5:25 PM                | 0                            | 1    | 0    | 0     | 0                            | 1    | 1    | 0     | 0                              | 0    | 39   | 6     | 0                              | 2    | 8    | 0     | 58    |                 |
| 5:30 PM                | 0                            | 0    | 2    | 0     | 0                            | 2    | 1    | 3     | 0                              | 0    | 47   | 2     | 0                              | 2    | 9    | 0     | 68    |                 |
| 5:35 PM                | 0                            | 1    | 0    | 0     | 0                            | 2    | 0    | 0     | 0                              | 0    | 25   | 3     | 0                              | 2    | 14   | 0     | 47    |                 |
| 5:40 PM                | 0                            | 1    | 1    | 0     | 0                            | 3    | 0    | 0     | 0                              | 0    | 33   | 6     | 0                              | 4    | 12   | 0     | 60    |                 |
| 5:45 PM                | 0                            | 0    | 0    | 0     | 0                            | 1    | 1    | 2     | 0                              | 0    | 28   | 7     | 0                              | 3    | 8    | 0     | 50    |                 |
| 5:50 PM                | 0                            | 1    | 1    | 0     | 0                            | 3    | 0    | 1     | 0                              | 0    | 23   | 4     | 0                              | 3    | 13   | 1     | 50    |                 |
| 5:55 PM                | 0                            | 1    | 0    | 0     | 0                            | 1    | 0    | 0     | 0                              | 0    | 18   | 2     | 0                              | 1    | 14   | 0     | 37    |                 |
| Count Total            | 0                            | 17   | 10   | 2     | 0                            | 29   | 21   | 19    | 0                              | 6    | 602  | 66    | 1                              | 44   | 272  | 10    | 1,099 |                 |
| Peak Hour              | 0                            | 7    | 4    | 2     | 0                            | 11   | 11   | 12    | 0                              | 1    | 346  | 39    | 0                              | 24   | 123  | 4     | 584   |                 |

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

| Interval<br>Start Time | Heavy Vehicles |    |    |    |       | Interval<br>Start Time | Bicycles on Roadway |    |    |    |       | Interval<br>Start Time | Pedestrians/Bicycles on Crosswalk |    |    |    |       |
|------------------------|----------------|----|----|----|-------|------------------------|---------------------|----|----|----|-------|------------------------|-----------------------------------|----|----|----|-------|
|                        | EB             | NB | WB | SB | Total |                        | EB                  | NB | WB | SB | Total |                        | EB                                | NB | WB | SB | Total |
| 4:00 PM                | 0              | 0  | 0  | 0  | 0     | 4:00 PM                | 1                   | 0  | 0  | 0  | 1     | 4:00 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:05 PM                | 0              | 0  | 0  | 0  | 0     | 4:05 PM                | 0                   | 0  | 0  | 0  | 0     | 4:05 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:10 PM                | 0              | 0  | 0  | 0  | 0     | 4:10 PM                | 0                   | 0  | 0  | 0  | 0     | 4:10 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:15 PM                | 0              | 0  | 0  | 0  | 0     | 4:15 PM                | 0                   | 0  | 0  | 0  | 0     | 4:15 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:20 PM                | 0              | 0  | 0  | 0  | 0     | 4:20 PM                | 0                   | 1  | 0  | 0  | 1     | 4:20 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:25 PM                | 0              | 0  | 0  | 0  | 0     | 4:25 PM                | 0                   | 0  | 0  | 0  | 0     | 4:25 PM                | 0                                 | 0  | 0  | 2  | 2     |
| 4:30 PM                | 0              | 0  | 0  | 0  | 0     | 4:30 PM                | 0                   | 0  | 0  | 0  | 0     | 4:30 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:35 PM                | 0              | 0  | 0  | 0  | 0     | 4:35 PM                | 0                   | 0  | 0  | 0  | 0     | 4:35 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:40 PM                | 0              | 0  | 0  | 0  | 0     | 4:40 PM                | 0                   | 0  | 0  | 0  | 0     | 4:40 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:45 PM                | 0              | 0  | 0  | 0  | 0     | 4:45 PM                | 0                   | 0  | 0  | 2  | 2     | 4:45 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:50 PM                | 0              | 0  | 0  | 0  | 0     | 4:50 PM                | 0                   | 0  | 0  | 0  | 0     | 4:50 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:55 PM                | 0              | 0  | 0  | 0  | 0     | 4:55 PM                | 0                   | 0  | 0  | 0  | 0     | 4:55 PM                | 0                                 | 0  | 0  | 2  | 2     |
| 5:00 PM                | 0              | 0  | 0  | 0  | 0     | 5:00 PM                | 0                   | 0  | 0  | 0  | 0     | 5:00 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:05 PM                | 0              | 1  | 0  | 0  | 1     | 5:05 PM                | 0                   | 0  | 0  | 0  | 0     | 5:05 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:10 PM                | 0              | 0  | 0  | 0  | 0     | 5:10 PM                | 0                   | 0  | 0  | 0  | 0     | 5:10 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:15 PM                | 0              | 0  | 0  | 0  | 0     | 5:15 PM                | 0                   | 0  | 0  | 0  | 0     | 5:15 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:20 PM                | 0              | 0  | 0  | 0  | 0     | 5:20 PM                | 0                   | 0  | 0  | 0  | 0     | 5:20 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:25 PM                | 0              | 0  | 0  | 0  | 0     | 5:25 PM                | 0                   | 0  | 0  | 0  | 0     | 5:25 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:30 PM                | 0              | 0  | 0  | 0  | 0     | 5:30 PM                | 0                   | 0  | 0  | 0  | 0     | 5:30 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:35 PM                | 0              | 0  | 0  | 0  | 0     | 5:35 PM                | 0                   | 0  | 0  | 0  | 0     | 5:35 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:40 PM                | 0              | 0  | 0  | 0  | 0     | 5:40 PM                | 0                   | 0  | 0  | 0  | 0     | 5:40 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:45 PM                | 0              | 0  | 0  | 0  | 0     | 5:45 PM                | 0                   | 0  | 0  | 0  | 0     | 5:45 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:50 PM                | 0              | 0  | 0  | 0  | 0     | 5:50 PM                | 0                   | 0  | 0  | 0  | 0     | 5:50 PM                | 0                                 | 1  | 0  | 1  | 2     |
| 5:55 PM                | 0              | 0  | 0  | 0  | 0     | 5:55 PM                | 0                   | 0  | 0  | 0  | 0     | 5:55 PM                | 0                                 | 0  | 0  | 0  | 0     |
| Count Total            | 0              | 1  | 0  | 0  | 1     | Count Total            | 1                   | 1  | 0  | 2  | 4     | Count Total            | 0                                 | 1  | 0  | 5  | 6     |
| Peak Hour              | 0              | 1  | 0  | 0  | 1     | Peak Hour              | 0                   | 0  | 0  | 0  | 0     | Peak Hour              | 0                                 | 0  | 0  | 2  | 2     |



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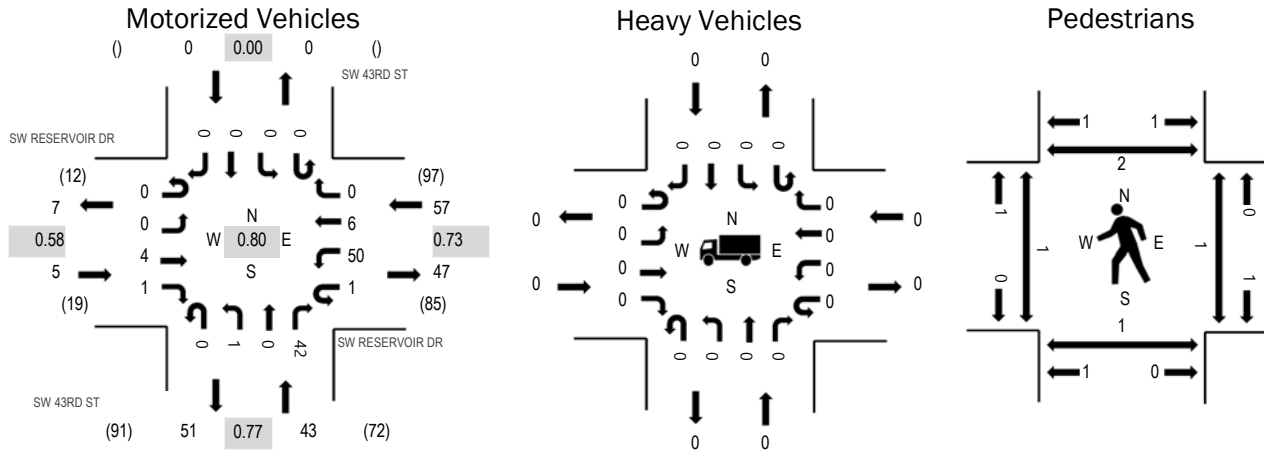
**Location:** 2 SW 43RD ST & SW RESERVOIR DR PM

**Date:** Wednesday, April 10, 2024

**Peak Hour:** 04:00 PM - 05:00 PM

**Peak 15-Minutes:** 04:45 PM - 05:00 PM

## Peak Hour



Note: Total study counts contained in parentheses.

|     | HV%  | PHF  |
|-----|------|------|
| EB  | 0.0% | 0.58 |
| WB  | 0.0% | 0.73 |
| NB  | 0.0% | 0.77 |
| SB  | 0.0% | 0.00 |
| All | 0.0% | 0.80 |

## Traffic Counts - Motorized Vehicles

| Interval<br>Start Time | SW RESERVOIR DR<br>Eastbound |      |      |       | SW RESERVOIR DR<br>Westbound |      |      |       | SW 43RD ST<br>Northbound |      |      |       | SW 43RD ST<br>Southbound |      |      |       | Total | Rolling<br>Hour |
|------------------------|------------------------------|------|------|-------|------------------------------|------|------|-------|--------------------------|------|------|-------|--------------------------|------|------|-------|-------|-----------------|
|                        | U-Turn                       | Left | Thru | Right | U-Turn                       | Left | Thru | Right | U-Turn                   | Left | Thru | Right | U-Turn                   | Left | Thru | Right |       |                 |
| 4:00 PM                | 0                            | 0    | 1    | 0     | 0                            | 5    | 0    | 0     | 0                        | 0    | 0    | 3     | 0                        | 0    | 0    | 0     | 9     | 105             |
| 4:05 PM                | 0                            | 0    | 0    | 1     | 0                            | 3    | 0    | 0     | 0                        | 1    | 0    | 2     | 0                        | 0    | 0    | 0     | 7     | 104             |
| 4:10 PM                | 0                            | 0    | 1    | 0     | 0                            | 2    | 1    | 0     | 0                        | 0    | 0    | 5     | 0                        | 0    | 0    | 0     | 9     | 103             |
| 4:15 PM                | 0                            | 0    | 1    | 0     | 0                            | 5    | 0    | 0     | 0                        | 0    | 0    | 6     | 0                        | 0    | 0    | 0     | 12    | 102             |
| 4:20 PM                | 0                            | 0    | 1    | 0     | 0                            | 2    | 0    | 0     | 0                        | 0    | 0    | 2     | 0                        | 0    | 0    | 0     | 5     | 95              |
| 4:25 PM                | 0                            | 0    | 0    | 0     | 0                            | 2    | 0    | 0     | 0                        | 0    | 0    | 4     | 0                        | 0    | 0    | 0     | 6     | 96              |
| 4:30 PM                | 0                            | 0    | 0    | 0     | 0                            | 5    | 0    | 0     | 0                        | 0    | 0    | 4     | 0                        | 0    | 0    | 0     | 9     | 97              |
| 4:35 PM                | 0                            | 0    | 0    | 0     | 0                            | 4    | 1    | 0     | 0                        | 0    | 0    | 1     | 0                        | 0    | 0    | 0     | 6     | 96              |
| 4:40 PM                | 0                            | 0    | 0    | 0     | 1                            | 6    | 0    | 0     | 0                        | 0    | 0    | 2     | 0                        | 0    | 0    | 0     | 9     | 98              |
| 4:45 PM                | 0                            | 0    | 0    | 0     | 0                            | 2    | 2    | 0     | 0                        | 0    | 0    | 4     | 0                        | 0    | 0    | 0     | 8     | 96              |
| 4:50 PM                | 0                            | 0    | 0    | 0     | 0                            | 6    | 0    | 0     | 0                        | 0    | 0    | 7     | 0                        | 0    | 0    | 0     | 13    | 96              |
| 4:55 PM                | 0                            | 0    | 0    | 0     | 0                            | 8    | 2    | 0     | 0                        | 0    | 0    | 2     | 0                        | 0    | 0    | 0     | 12    | 87              |
| 5:00 PM                | 0                            | 0    | 1    | 0     | 0                            | 4    | 0    | 0     | 0                        | 0    | 0    | 3     | 0                        | 0    | 0    | 0     | 8     | 83              |
| 5:05 PM                | 0                            | 0    | 1    | 0     | 0                            | 2    | 0    | 0     | 0                        | 1    | 0    | 2     | 0                        | 0    | 0    | 0     | 6     |                 |
| 5:10 PM                | 0                            | 0    | 0    | 0     | 0                            | 5    | 1    | 0     | 0                        | 0    | 0    | 2     | 0                        | 0    | 0    | 0     | 8     |                 |
| 5:15 PM                | 0                            | 0    | 1    | 1     | 0                            | 1    | 0    | 0     | 0                        | 0    | 0    | 2     | 0                        | 0    | 0    | 0     | 5     |                 |
| 5:20 PM                | 0                            | 0    | 0    | 0     | 1                            | 2    | 1    | 0     | 0                        | 0    | 0    | 2     | 0                        | 0    | 0    | 0     | 6     |                 |
| 5:25 PM                | 0                            | 0    | 0    | 1     | 0                            | 0    | 0    | 0     | 0                        | 0    | 0    | 6     | 0                        | 0    | 0    | 0     | 7     |                 |
| 5:30 PM                | 0                            | 0    | 1    | 0     | 1                            | 5    | 0    | 0     | 0                        | 0    | 0    | 1     | 0                        | 0    | 0    | 0     | 8     |                 |
| 5:35 PM                | 0                            | 0    | 2    | 0     | 0                            | 4    | 0    | 0     | 0                        | 0    | 0    | 2     | 0                        | 0    | 0    | 0     | 8     |                 |
| 5:40 PM                | 0                            | 0    | 0    | 0     | 0                            | 3    | 0    | 0     | 0                        | 0    | 0    | 4     | 0                        | 0    | 0    | 0     | 7     |                 |
| 5:45 PM                | 0                            | 0    | 1    | 2     | 0                            | 3    | 0    | 0     | 0                        | 1    | 0    | 1     | 0                        | 0    | 0    | 0     | 8     |                 |
| 5:50 PM                | 0                            | 0    | 0    | 0     | 0                            | 3    | 0    | 0     | 0                        | 0    | 0    | 1     | 0                        | 0    | 0    | 0     | 4     |                 |
| 5:55 PM                | 0                            | 0    | 2    | 1     | 0                            | 3    | 1    | 0     | 0                        | 0    | 0    | 1     | 0                        | 0    | 0    | 0     | 8     |                 |
| Count Total            | 0                            | 0    | 13   | 6     | 3                            | 85   | 9    | 0     | 0                        | 3    | 0    | 69    | 0                        | 0    | 0    | 0     | 188   |                 |
| Peak Hour              | 0                            | 0    | 4    | 1     | 1                            | 50   | 6    | 0     | 0                        | 1    | 0    | 42    | 0                        | 0    | 0    | 0     | 105   |                 |

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

| Interval<br>Start Time | Heavy Vehicles |    |    |    |       | Interval<br>Start Time | Bicycles on Roadway |    |    |    |       | Interval<br>Start Time | Pedestrians/Bicycles on Crosswalk |    |    |    |       |
|------------------------|----------------|----|----|----|-------|------------------------|---------------------|----|----|----|-------|------------------------|-----------------------------------|----|----|----|-------|
|                        | EB             | NB | WB | SB | Total |                        | EB                  | NB | WB | SB | Total |                        | EB                                | NB | WB | SB | Total |
| 4:00 PM                | 0              | 0  | 0  | 0  | 0     | 4:00 PM                | 0                   | 0  | 0  | 0  | 0     | 4:00 PM                | 0                                 | 1  | 0  | 0  | 1     |
| 4:05 PM                | 0              | 0  | 0  | 0  | 0     | 4:05 PM                | 0                   | 0  | 0  | 0  | 0     | 4:05 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:10 PM                | 0              | 0  | 0  | 0  | 0     | 4:10 PM                | 0                   | 0  | 0  | 0  | 0     | 4:10 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:15 PM                | 0              | 0  | 0  | 0  | 0     | 4:15 PM                | 0                   | 0  | 0  | 0  | 0     | 4:15 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:20 PM                | 0              | 0  | 0  | 0  | 0     | 4:20 PM                | 0                   | 0  | 0  | 0  | 0     | 4:20 PM                | 0                                 | 0  | 0  | 1  | 1     |
| 4:25 PM                | 0              | 0  | 0  | 0  | 0     | 4:25 PM                | 0                   | 0  | 0  | 0  | 0     | 4:25 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:30 PM                | 0              | 0  | 0  | 0  | 0     | 4:30 PM                | 0                   | 0  | 0  | 0  | 0     | 4:30 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:35 PM                | 0              | 0  | 0  | 0  | 0     | 4:35 PM                | 0                   | 0  | 0  | 0  | 0     | 4:35 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:40 PM                | 0              | 0  | 0  | 0  | 0     | 4:40 PM                | 0                   | 0  | 0  | 0  | 0     | 4:40 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:45 PM                | 0              | 0  | 0  | 0  | 0     | 4:45 PM                | 0                   | 0  | 0  | 0  | 0     | 4:45 PM                | 0                                 | 0  | 0  | 1  | 1     |
| 4:50 PM                | 0              | 0  | 0  | 0  | 0     | 4:50 PM                | 0                   | 0  | 0  | 0  | 0     | 4:50 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:55 PM                | 0              | 0  | 0  | 0  | 0     | 4:55 PM                | 0                   | 0  | 0  | 0  | 0     | 4:55 PM                | 1                                 | 0  | 1  | 0  | 2     |
| 5:00 PM                | 0              | 0  | 0  | 0  | 0     | 5:00 PM                | 0                   | 0  | 0  | 0  | 0     | 5:00 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:05 PM                | 0              | 0  | 0  | 0  | 0     | 5:05 PM                | 0                   | 0  | 0  | 0  | 0     | 5:05 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:10 PM                | 0              | 0  | 0  | 0  | 0     | 5:10 PM                | 0                   | 0  | 0  | 0  | 0     | 5:10 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:15 PM                | 0              | 0  | 0  | 0  | 0     | 5:15 PM                | 0                   | 0  | 0  | 0  | 0     | 5:15 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:20 PM                | 0              | 0  | 0  | 0  | 0     | 5:20 PM                | 0                   | 0  | 0  | 0  | 0     | 5:20 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:25 PM                | 0              | 0  | 0  | 0  | 0     | 5:25 PM                | 0                   | 0  | 0  | 0  | 0     | 5:25 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:30 PM                | 0              | 0  | 0  | 0  | 0     | 5:30 PM                | 0                   | 0  | 0  | 0  | 0     | 5:30 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:35 PM                | 0              | 0  | 0  | 0  | 0     | 5:35 PM                | 0                   | 0  | 0  | 0  | 0     | 5:35 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:40 PM                | 0              | 0  | 0  | 0  | 0     | 5:40 PM                | 0                   | 0  | 0  | 0  | 0     | 5:40 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:45 PM                | 0              | 0  | 0  | 0  | 0     | 5:45 PM                | 0                   | 0  | 0  | 0  | 0     | 5:45 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:50 PM                | 0              | 0  | 0  | 0  | 0     | 5:50 PM                | 0                   | 0  | 0  | 0  | 0     | 5:50 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:55 PM                | 0              | 0  | 0  | 0  | 0     | 5:55 PM                | 0                   | 0  | 0  | 0  | 0     | 5:55 PM                | 0                                 | 0  | 0  | 0  | 0     |
| Count Total            | 0              | 0  | 0  | 0  | 0     | Count Total            | 0                   | 0  | 0  | 0  | 0     | Count Total            | 1                                 | 1  | 1  | 2  | 5     |
| Peak Hour              | 0              | 0  | 0  | 0  | 0     | Peak Hour              | 0                   | 0  | 0  | 0  | 0     | Peak Hour              | 1                                 | 1  | 1  | 2  | 5     |





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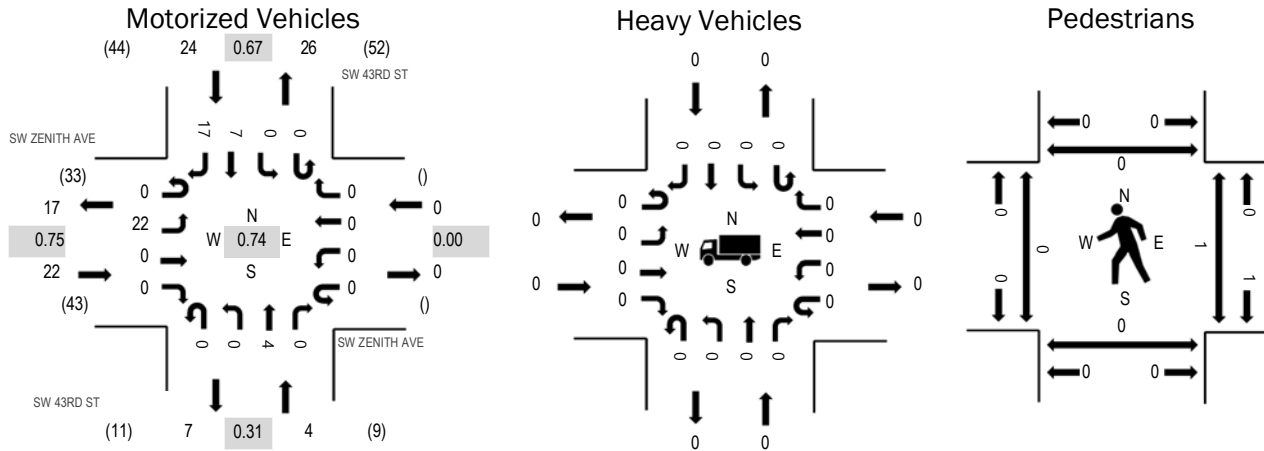
**Location:** 2 SW 43RD ST & SW ZENITH AVE PM

**Date:** Wednesday, June 26, 2024

**Peak Hour:** 04:00 PM - 05:00 PM

**Peak 15-Minutes:** 04:10 PM - 04:25 PM

## Peak Hour



Note: Total study counts contained in parentheses.

|     | HV%  | PHF  |
|-----|------|------|
| EB  | 0.0% | 0.75 |
| WB  | 0.0% | 0.00 |
| NB  | 0.0% | 0.31 |
| SB  | 0.0% | 0.67 |
| All | 0.0% | 0.74 |

## Traffic Counts - Motorized Vehicles

| Interval<br>Start Time | SW ZENITH AVE<br>Eastbound |      |      |       | SW ZENITH AVE<br>Westbound |      |      |       | SW 43RD ST<br>Northbound |      |      |       | SW 43RD ST<br>Southbound |      |      |       | Total | Rolling<br>Hour |
|------------------------|----------------------------|------|------|-------|----------------------------|------|------|-------|--------------------------|------|------|-------|--------------------------|------|------|-------|-------|-----------------|
|                        | U-Turn                     | Left | Thru | Right | U-Turn                     | Left | Thru | Right | U-Turn                   | Left | Thru | Right | U-Turn                   | Left | Thru | Right |       |                 |
| 4:00 PM                | 0                          | 1    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 1    | 3     | 5     | 50              |
| 4:05 PM                | 0                          | 1    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 1     | 2     | 46              |
| 4:10 PM                | 0                          | 2    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 1    | 3     | 6     | 47              |
| 4:15 PM                | 0                          | 1    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 1    | 0     | 0                        | 0    | 1    | 1     | 4     | 44              |
| 4:20 PM                | 0                          | 5    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 1    | 1     | 7     | 43              |
| 4:25 PM                | 0                          | 1    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 1    | 0     | 0                        | 0    | 1    | 0     | 3     | 39              |
| 4:30 PM                | 0                          | 0    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0     | 39              |
| 4:35 PM                | 0                          | 0    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 1    | 0     | 0                        | 0    | 0    | 1     | 2     | 43              |
| 4:40 PM                | 0                          | 4    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 1    | 2     | 7     | 49              |
| 4:45 PM                | 0                          | 3    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 1    | 0     | 0                        | 0    | 0    | 1     | 5     | 48              |
| 4:50 PM                | 0                          | 2    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 2     | 4     | 49              |
| 4:55 PM                | 0                          | 2    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 1    | 2     | 5     | 46              |
| 5:00 PM                | 0                          | 0    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 1     | 1     | 46              |
| 5:05 PM                | 0                          | 3    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 3     |                 |
| 5:10 PM                | 0                          | 1    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 1    | 1     | 3     |                 |
| 5:15 PM                | 0                          | 2    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 1    | 0     | 3     |                 |
| 5:20 PM                | 0                          | 2    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 1     | 3     |                 |
| 5:25 PM                | 0                          | 1    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 2     | 3     |                 |
| 5:30 PM                | 0                          | 2    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 1    | 1     | 4     |                 |
| 5:35 PM                | 0                          | 5    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 1    | 2     | 8     |                 |
| 5:40 PM                | 0                          | 1    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 3    | 0     | 0                        | 0    | 0    | 2     | 6     |                 |
| 5:45 PM                | 0                          | 2    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 1    | 0     | 0                        | 0    | 0    | 3     | 6     |                 |
| 5:50 PM                | 0                          | 1    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 1     |                 |
| 5:55 PM                | 0                          | 1    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 1    | 0     | 0                        | 0    | 0    | 3     | 5     |                 |
| Count Total            | 0                          | 43   | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 9    | 0     | 0                        | 0    | 11   | 33    | 96    |                 |
| Peak Hour              | 0                          | 22   | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 4    | 0     | 0                        | 0    | 7    | 17    | 50    |                 |

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

| Interval<br>Start Time | Heavy Vehicles |    |    |    |       | Interval<br>Start Time | Bicycles on Roadway |    |    |    |       | Interval<br>Start Time | Pedestrians/Bicycles on Crosswalk |    |    |    |       |
|------------------------|----------------|----|----|----|-------|------------------------|---------------------|----|----|----|-------|------------------------|-----------------------------------|----|----|----|-------|
|                        | EB             | NB | WB | SB | Total |                        | EB                  | NB | WB | SB | Total |                        | EB                                | NB | WB | SB | Total |
| 4:00 PM                | 0              | 0  | 0  | 0  | 0     | 4:00 PM                | 0                   | 0  | 0  | 0  | 0     | 4:00 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:05 PM                | 0              | 0  | 0  | 0  | 0     | 4:05 PM                | 0                   | 0  | 0  | 0  | 0     | 4:05 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:10 PM                | 0              | 0  | 0  | 0  | 0     | 4:10 PM                | 0                   | 0  | 0  | 0  | 0     | 4:10 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:15 PM                | 0              | 0  | 0  | 0  | 0     | 4:15 PM                | 0                   | 0  | 0  | 0  | 0     | 4:15 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:20 PM                | 0              | 0  | 0  | 0  | 0     | 4:20 PM                | 0                   | 0  | 0  | 0  | 0     | 4:20 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:25 PM                | 0              | 0  | 0  | 0  | 0     | 4:25 PM                | 0                   | 0  | 0  | 0  | 0     | 4:25 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:30 PM                | 0              | 0  | 0  | 0  | 0     | 4:30 PM                | 0                   | 0  | 0  | 0  | 0     | 4:30 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:35 PM                | 0              | 0  | 0  | 0  | 0     | 4:35 PM                | 0                   | 0  | 0  | 0  | 0     | 4:35 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:40 PM                | 0              | 0  | 0  | 0  | 0     | 4:40 PM                | 0                   | 0  | 0  | 0  | 0     | 4:40 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:45 PM                | 0              | 0  | 0  | 0  | 0     | 4:45 PM                | 0                   | 0  | 0  | 1  | 1     | 4:45 PM                | 0                                 | 0  | 1  | 0  | 1     |
| 4:50 PM                | 0              | 0  | 0  | 0  | 0     | 4:50 PM                | 0                   | 0  | 0  | 0  | 0     | 4:50 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:55 PM                | 0              | 0  | 0  | 0  | 0     | 4:55 PM                | 0                   | 0  | 0  | 0  | 0     | 4:55 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:00 PM                | 0              | 0  | 0  | 0  | 0     | 5:00 PM                | 0                   | 0  | 0  | 0  | 0     | 5:00 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:05 PM                | 0              | 0  | 0  | 0  | 0     | 5:05 PM                | 0                   | 0  | 0  | 0  | 0     | 5:05 PM                | 1                                 | 0  | 0  | 0  | 1     |
| 5:10 PM                | 0              | 0  | 0  | 0  | 0     | 5:10 PM                | 0                   | 0  | 0  | 0  | 0     | 5:10 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:15 PM                | 0              | 0  | 0  | 0  | 0     | 5:15 PM                | 0                   | 0  | 0  | 0  | 0     | 5:15 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:20 PM                | 0              | 0  | 0  | 0  | 0     | 5:20 PM                | 0                   | 0  | 0  | 0  | 0     | 5:20 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:25 PM                | 0              | 0  | 0  | 0  | 0     | 5:25 PM                | 0                   | 0  | 0  | 0  | 0     | 5:25 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:30 PM                | 0              | 0  | 0  | 0  | 0     | 5:30 PM                | 0                   | 0  | 0  | 0  | 0     | 5:30 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:35 PM                | 0              | 0  | 0  | 0  | 0     | 5:35 PM                | 0                   | 0  | 0  | 0  | 0     | 5:35 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:40 PM                | 0              | 0  | 0  | 0  | 0     | 5:40 PM                | 0                   | 0  | 0  | 0  | 0     | 5:40 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:45 PM                | 0              | 0  | 0  | 0  | 0     | 5:45 PM                | 0                   | 0  | 0  | 0  | 0     | 5:45 PM                | 0                                 | 0  | 1  | 0  | 1     |
| 5:50 PM                | 0              | 0  | 0  | 0  | 0     | 5:50 PM                | 0                   | 0  | 0  | 0  | 0     | 5:50 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:55 PM                | 0              | 0  | 0  | 0  | 0     | 5:55 PM                | 0                   | 0  | 0  | 0  | 0     | 5:55 PM                | 0                                 | 0  | 0  | 0  | 0     |
| Count Total            | 0              | 0  | 0  | 0  | 0     | Count Total            | 0                   | 0  | 0  | 1  | 1     | Count Total            | 1                                 | 0  | 2  | 0  | 3     |
| Peak Hour              | 0              | 0  | 0  | 0  | 0     | Peak Hour              | 0                   | 0  | 0  | 1  | 1     | Peak Hour              | 0                                 | 0  | 1  | 0  | 1     |



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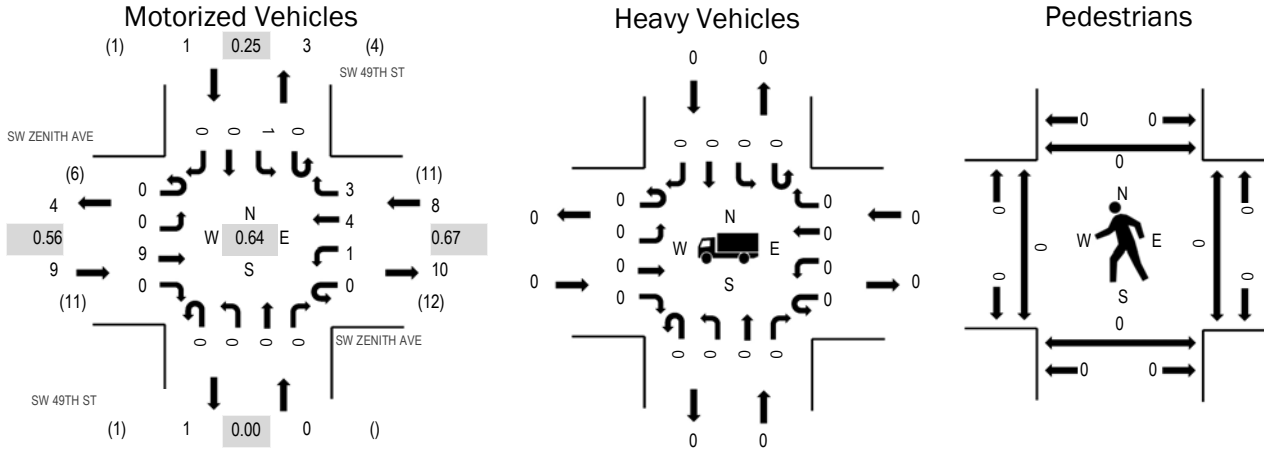
**Location:** 1 SW 49TH ST & SW ZENITH AVE PM

**Date:** Wednesday, June 26, 2024

**Peak Hour:** 05:00 PM - 06:00 PM

**Peak 15-Minutes:** 05:25 PM - 05:40 PM

## Peak Hour



Note: Total study counts contained in parentheses.

|     | HV%  | PHF  |
|-----|------|------|
| EB  | 0.0% | 0.56 |
| WB  | 0.0% | 0.67 |
| NB  | 0.0% | 0.00 |
| SB  | 0.0% | 0.25 |
| All | 0.0% | 0.64 |

## Traffic Counts - Motorized Vehicles

| Interval<br>Start Time | SW ZENITH AVE<br>Eastbound |      |      |       | SW ZENITH AVE<br>Westbound |      |      |       | SW 49TH ST<br>Northbound |      |      |       | SW 49TH ST<br>Southbound |      |      |       | Total | Rolling<br>Hour |
|------------------------|----------------------------|------|------|-------|----------------------------|------|------|-------|--------------------------|------|------|-------|--------------------------|------|------|-------|-------|-----------------|
|                        | U-Turn                     | Left | Thru | Right | U-Turn                     | Left | Thru | Right | U-Turn                   | Left | Thru | Right | U-Turn                   | Left | Thru | Right |       |                 |
| 4:00 PM                | 0                          | 0    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0     | 5               |
| 4:05 PM                | 0                          | 0    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0     | 5               |
| 4:10 PM                | 0                          | 0    | 0    | 0     | 0                          | 0    | 0    | 1     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 1     | 7               |
| 4:15 PM                | 0                          | 0    | 0    | 0     | 0                          | 0    | 1    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 1     | 7               |
| 4:20 PM                | 0                          | 0    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0     | 9               |
| 4:25 PM                | 0                          | 0    | 1    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 1     | 9               |
| 4:30 PM                | 0                          | 0    | 1    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 1     | 11              |
| 4:35 PM                | 0                          | 0    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0     | 13              |
| 4:40 PM                | 0                          | 0    | 0    | 0     | 0                          | 0    | 1    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 1     | 14              |
| 4:45 PM                | 0                          | 0    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0     | 14              |
| 4:50 PM                | 0                          | 0    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0     | 16              |
| 4:55 PM                | 0                          | 0    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0     | 16              |
| 5:00 PM                | 0                          | 0    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0     | 18              |
| 5:05 PM                | 0                          | 0    | 1    | 0     | 0                          | 0    | 0    | 1     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 2     |                 |
| 5:10 PM                | 0                          | 0    | 1    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 1     |                 |
| 5:15 PM                | 0                          | 0    | 2    | 0     | 0                          | 0    | 1    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 3     |                 |
| 5:20 PM                | 0                          | 0    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0     |                 |
| 5:25 PM                | 0                          | 0    | 1    | 0     | 0                          | 0    | 1    | 1     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 3     |                 |
| 5:30 PM                | 0                          | 0    | 2    | 0     | 0                          | 0    | 1    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 3     |                 |
| 5:35 PM                | 0                          | 0    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 1    | 0    | 0     | 1     |                 |
| 5:40 PM                | 0                          | 0    | 1    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 1     |                 |
| 5:45 PM                | 0                          | 0    | 1    | 0     | 0                          | 0    | 1    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 2     |                 |
| 5:50 PM                | 0                          | 0    | 0    | 0     | 0                          | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 0     |                 |
| 5:55 PM                | 0                          | 0    | 0    | 0     | 0                          | 1    | 0    | 1     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 2     |                 |
| Count Total            | 0                          | 0    | 11   | 0     | 0                          | 1    | 6    | 4     | 0                        | 0    | 0    | 0     | 0                        | 1    | 0    | 0     | 23    |                 |
| Peak Hour              | 0                          | 0    | 9    | 0     | 0                          | 1    | 4    | 3     | 0                        | 0    | 0    | 0     | 0                        | 1    | 0    | 0     | 18    |                 |

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

| Interval<br>Start Time | Heavy Vehicles |    |    |    |       | Interval<br>Start Time | Bicycles on Roadway |    |    |    |       | Interval<br>Start Time | Pedestrians/Bicycles on Crosswalk |    |    |    |       |
|------------------------|----------------|----|----|----|-------|------------------------|---------------------|----|----|----|-------|------------------------|-----------------------------------|----|----|----|-------|
|                        | EB             | NB | WB | SB | Total |                        | EB                  | NB | WB | SB | Total |                        | EB                                | NB | WB | SB | Total |
| 4:00 PM                | 0              | 0  | 0  | 0  | 0     | 4:00 PM                | 0                   | 0  | 0  | 0  | 0     | 4:00 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:05 PM                | 0              | 0  | 0  | 0  | 0     | 4:05 PM                | 0                   | 0  | 0  | 0  | 0     | 4:05 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:10 PM                | 0              | 0  | 0  | 0  | 0     | 4:10 PM                | 0                   | 0  | 0  | 0  | 0     | 4:10 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:15 PM                | 0              | 0  | 0  | 0  | 0     | 4:15 PM                | 0                   | 0  | 0  | 0  | 0     | 4:15 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:20 PM                | 0              | 0  | 0  | 0  | 0     | 4:20 PM                | 0                   | 0  | 0  | 0  | 0     | 4:20 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:25 PM                | 0              | 0  | 0  | 0  | 0     | 4:25 PM                | 0                   | 0  | 0  | 0  | 0     | 4:25 PM                | 0                                 | 2  | 0  | 0  | 2     |
| 4:30 PM                | 0              | 0  | 0  | 0  | 0     | 4:30 PM                | 0                   | 0  | 0  | 0  | 0     | 4:30 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:35 PM                | 0              | 0  | 0  | 0  | 0     | 4:35 PM                | 0                   | 0  | 0  | 0  | 0     | 4:35 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:40 PM                | 0              | 0  | 0  | 0  | 0     | 4:40 PM                | 0                   | 0  | 0  | 0  | 0     | 4:40 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:45 PM                | 0              | 0  | 0  | 0  | 0     | 4:45 PM                | 0                   | 0  | 0  | 0  | 0     | 4:45 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:50 PM                | 0              | 0  | 0  | 0  | 0     | 4:50 PM                | 0                   | 0  | 0  | 0  | 0     | 4:50 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:55 PM                | 0              | 0  | 0  | 0  | 0     | 4:55 PM                | 0                   | 0  | 0  | 0  | 0     | 4:55 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:00 PM                | 0              | 0  | 0  | 0  | 0     | 5:00 PM                | 0                   | 0  | 0  | 0  | 0     | 5:00 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:05 PM                | 0              | 0  | 0  | 0  | 0     | 5:05 PM                | 0                   | 0  | 0  | 0  | 0     | 5:05 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:10 PM                | 0              | 0  | 0  | 0  | 0     | 5:10 PM                | 0                   | 0  | 0  | 0  | 0     | 5:10 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:15 PM                | 0              | 0  | 0  | 0  | 0     | 5:15 PM                | 0                   | 0  | 0  | 0  | 0     | 5:15 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:20 PM                | 0              | 0  | 0  | 0  | 0     | 5:20 PM                | 0                   | 0  | 0  | 0  | 0     | 5:20 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:25 PM                | 0              | 0  | 0  | 0  | 0     | 5:25 PM                | 0                   | 0  | 0  | 0  | 0     | 5:25 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:30 PM                | 0              | 0  | 0  | 0  | 0     | 5:30 PM                | 0                   | 0  | 0  | 0  | 0     | 5:30 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:35 PM                | 0              | 0  | 0  | 0  | 0     | 5:35 PM                | 0                   | 0  | 0  | 0  | 0     | 5:35 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:40 PM                | 0              | 0  | 0  | 0  | 0     | 5:40 PM                | 0                   | 0  | 0  | 0  | 0     | 5:40 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:45 PM                | 0              | 0  | 0  | 0  | 0     | 5:45 PM                | 0                   | 0  | 0  | 0  | 0     | 5:45 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:50 PM                | 0              | 0  | 0  | 0  | 0     | 5:50 PM                | 0                   | 0  | 0  | 0  | 0     | 5:50 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:55 PM                | 0              | 0  | 0  | 0  | 0     | 5:55 PM                | 0                   | 0  | 0  | 0  | 0     | 5:55 PM                | 0                                 | 0  | 0  | 0  | 0     |
| Count Total            | 0              | 0  | 0  | 0  | 0     | Count Total            | 0                   | 0  | 0  | 0  | 0     | Count Total            | 0                                 | 2  | 0  | 0  | 2     |
| Peak Hour              | 0              | 0  | 0  | 0  | 0     | Peak Hour              | 0                   | 0  | 0  | 0  | 0     | Peak Hour              | 0                                 | 0  | 0  | 0  | 0     |

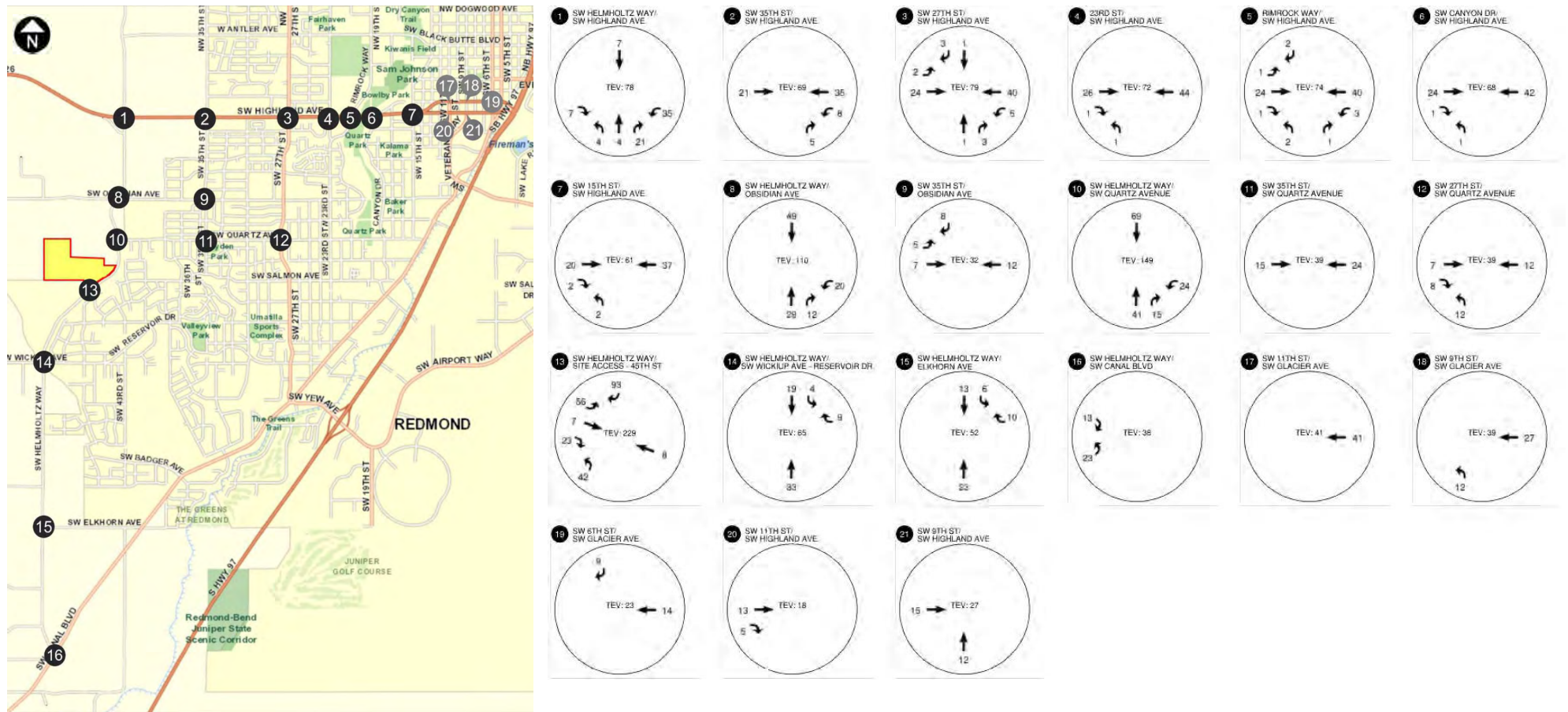
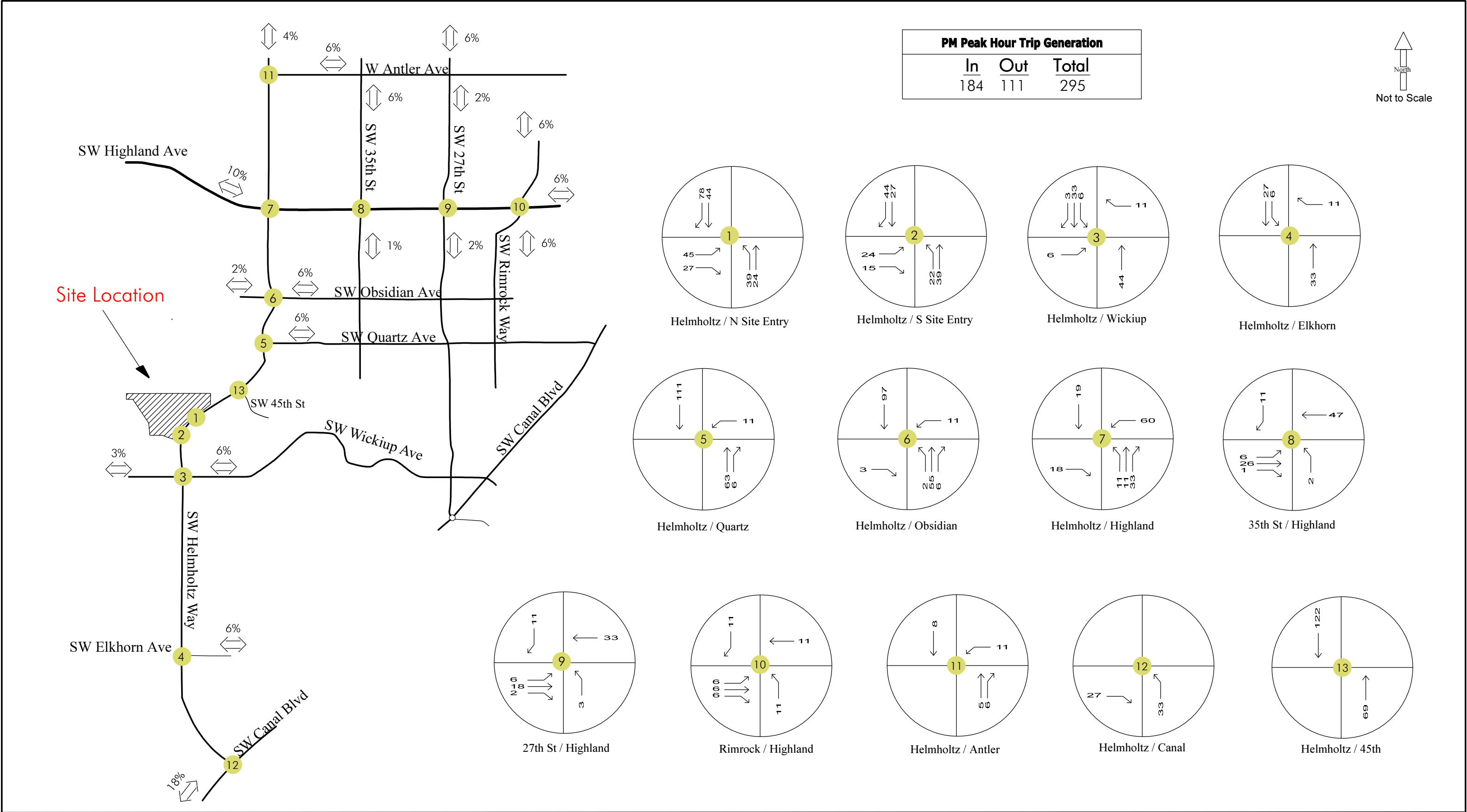


Figure 17. Estimated Trip Assignment, Weekday PM Peak Hour.



PM Peak Hour Distribution & Assignment  
Horizon Pointe Subdivision - Redmond, Oregon

Figure 10  
Ferguson & Associates, Inc.



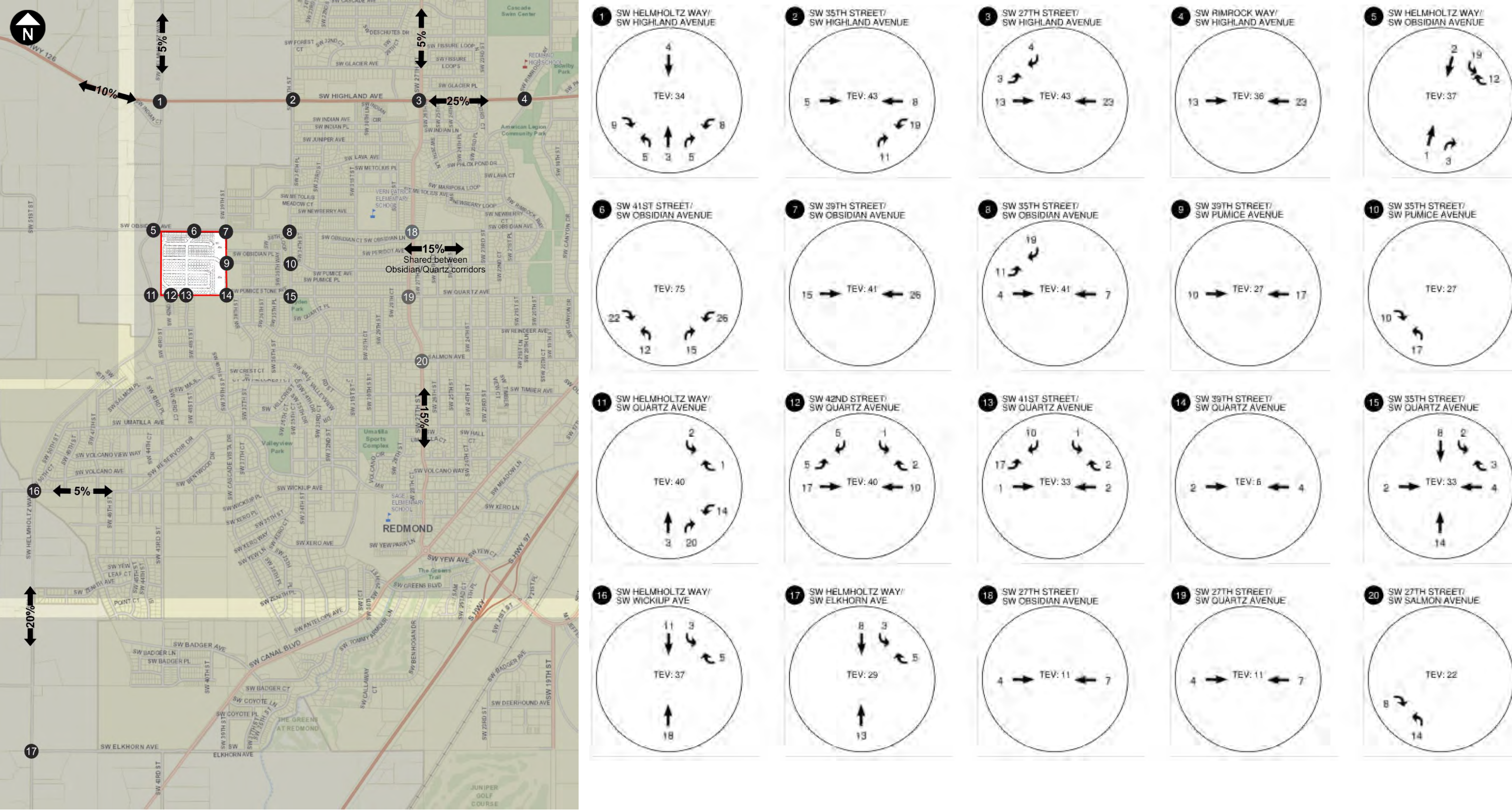
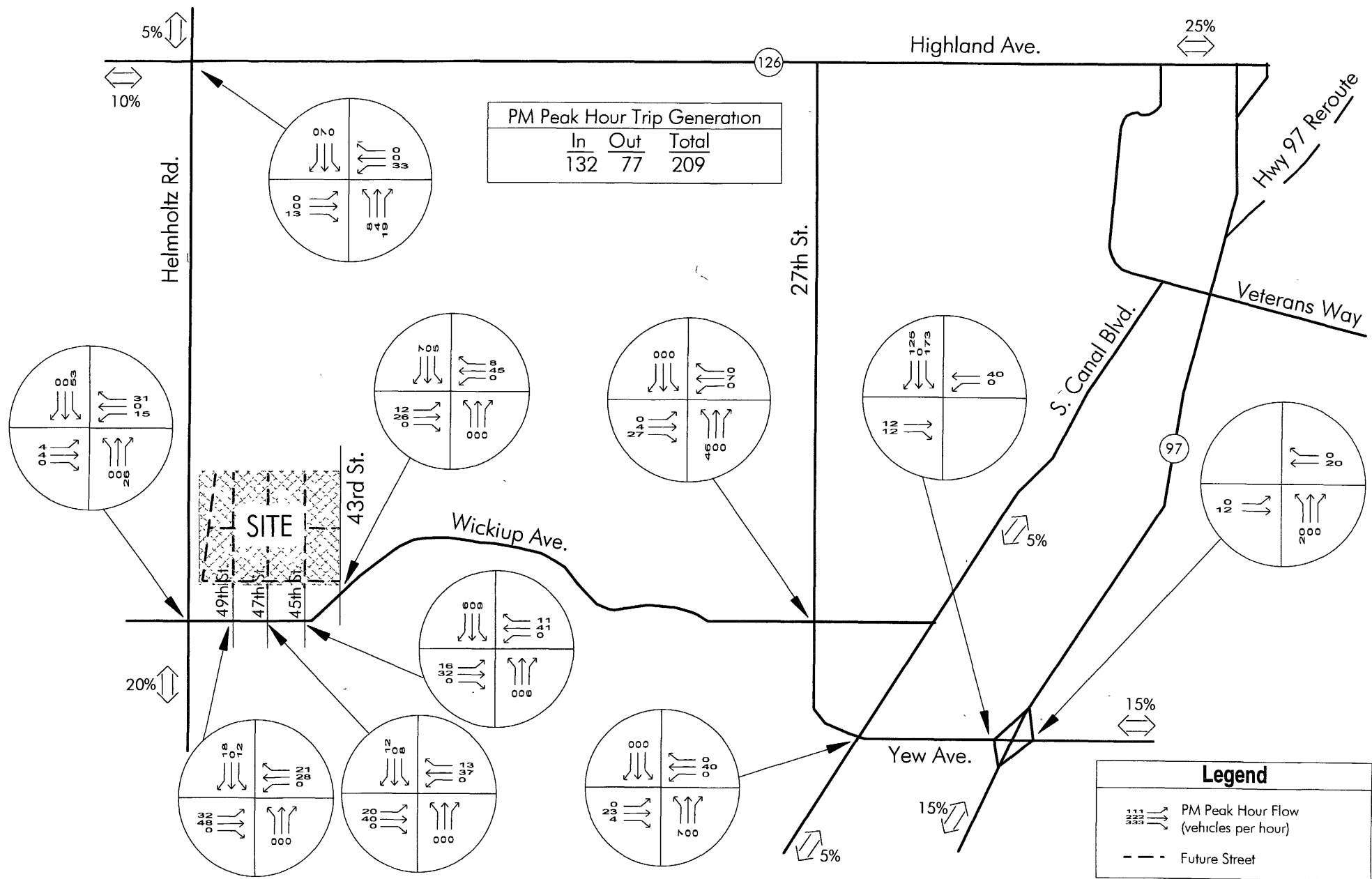


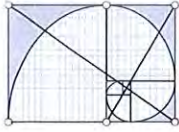
Figure 17. Estimated Vehicular Trip Distribution Pattern and Trip Assignment, Weekday PM Peak Hour. Map Source: Deschutes County DIAL.



PM Peak Hour Trip Distribution & Assignment  
Summit Crest Subdivision - Redmond, OR

Figure 10  
Ferguson & Associates, Inc.





**H.A. M<sup>c</sup>COY**  
**ENGINEERING**  
**& SURVEYING, LLC**

541-923-7554 | PO Box 533, Redmond, OR 97756 | [www.ham-engr.com](http://www.ham-engr.com)

September 28, 2020

Curtis and Kristin Tucker  
15660 SW Rangeland Drive  
Powell Butte, OR 97753

RE: Trip Generation Statement – Ward Commons

This letter is to accompany the Cottage Application for the property located at 4300 SW Quartz and 1970 SW Helmholtz in Redmond, Oregon.

The application proposes a 19 unit cottage development. Estimated traffic counts for Single Family Detached Housing (Code 210) from the ITE manual, 10th Edition will be used. Traffic counts are based off every dwelling unit (DU). Average daily trips (ADT) are calculated using a trip rate of 9.44 trips per DU.

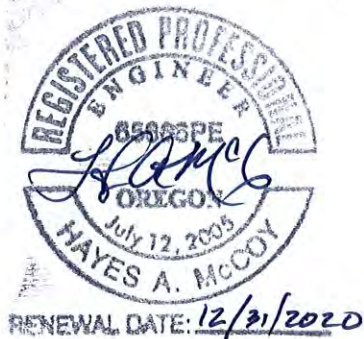
Single Family Detached Housing:  $(9.44 \text{ trips}) * 19 \text{ DU} = 179.36 \text{ trips} \rightarrow$  **179 trips/weekday**

PM peak hour trips are calculated using a trip rate of 0.99 PM peak trips per DU. PM peak hour trips for the proposed development are calculated as:

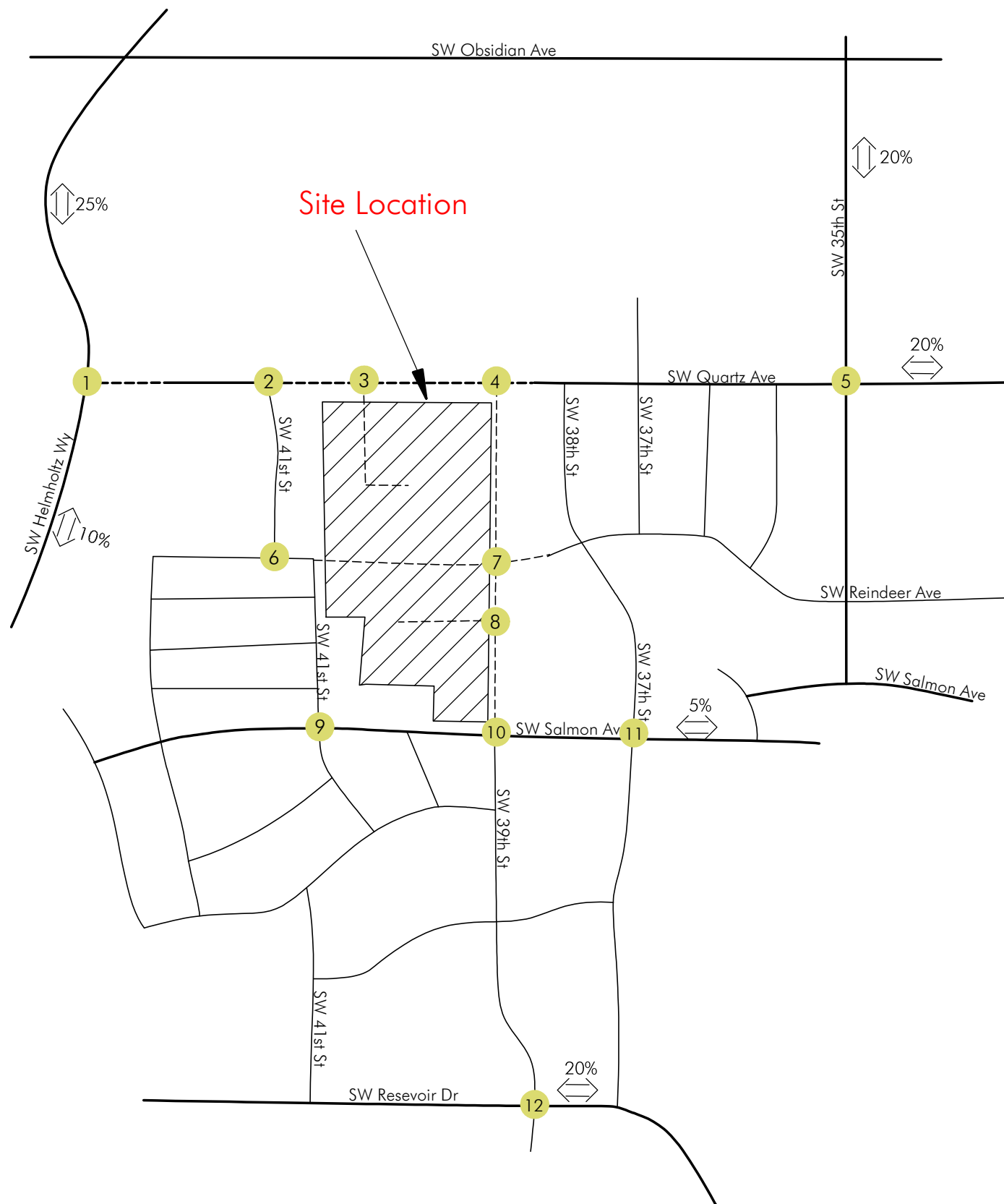
Single Family Detached Housing:  $(0.99 \text{ trips}) * 19 \text{ DU} = 18.81 \text{ trips} \rightarrow$  **18.81 PM peak hour trips**

Please contact me if you require any additional information.

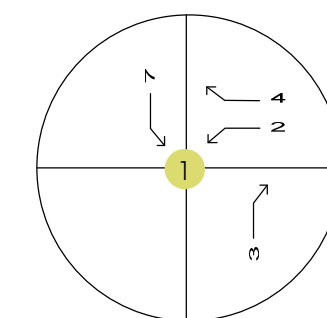
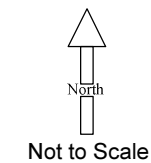
Sincerely,



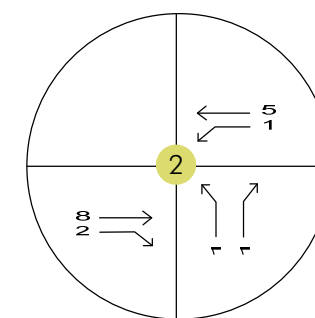
Hayes A. McCoy - PE



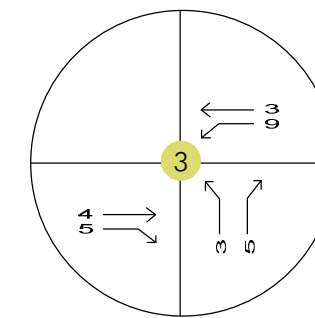
| PM Peak Hour Trip Generation |     |       |
|------------------------------|-----|-------|
| In                           | Out | Total |
| 29                           | 17  | 46    |



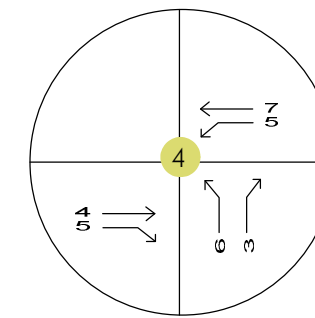
SW Quartz Ave / SW Helmholz Wy\*



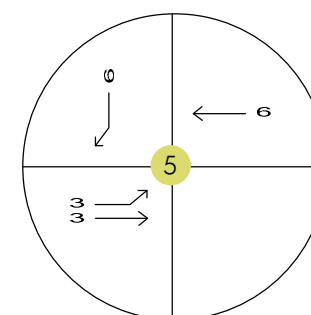
SW Quartz Ave / SW 41st St



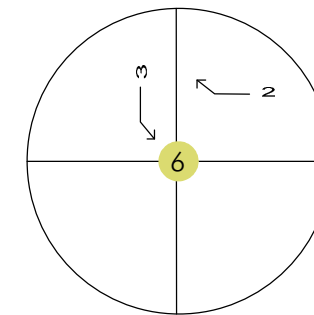
SW Quartz Ave / SW 41st Lane\*



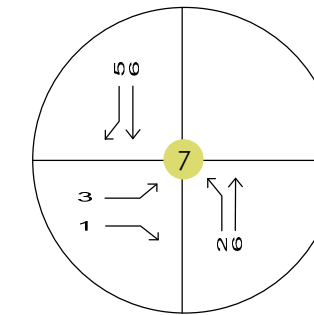
SW Quartz Ave / SW 39th St\*



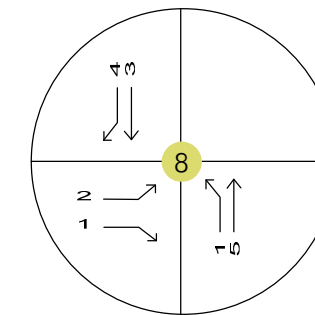
SW Quartz Ave / SW 35th St



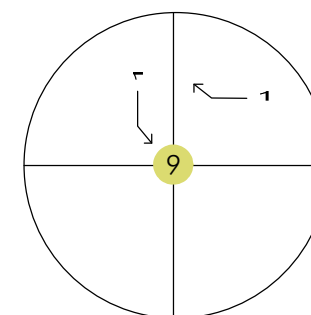
SW Reindeer Ave / SW 41st St



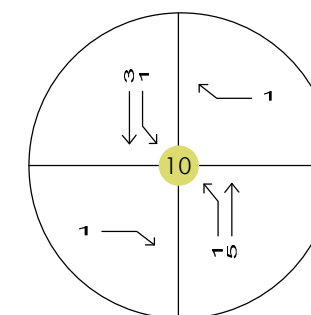
SW Reindeer Ave / SW 39th St\*



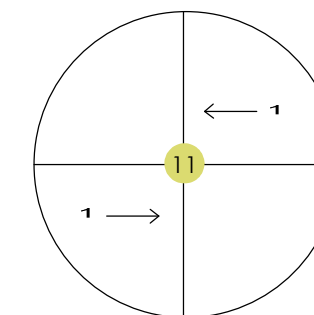
SW Reindeer Ct / SW 39th St\*



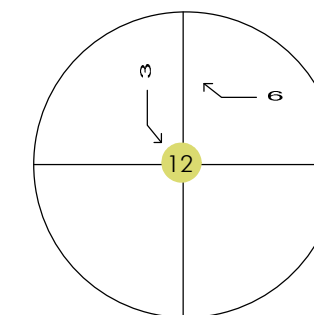
SW Salmon Ave / SW 41st St



SW Salmon Ave / SW 39th St



SW Salmon Ave / SW 37th St



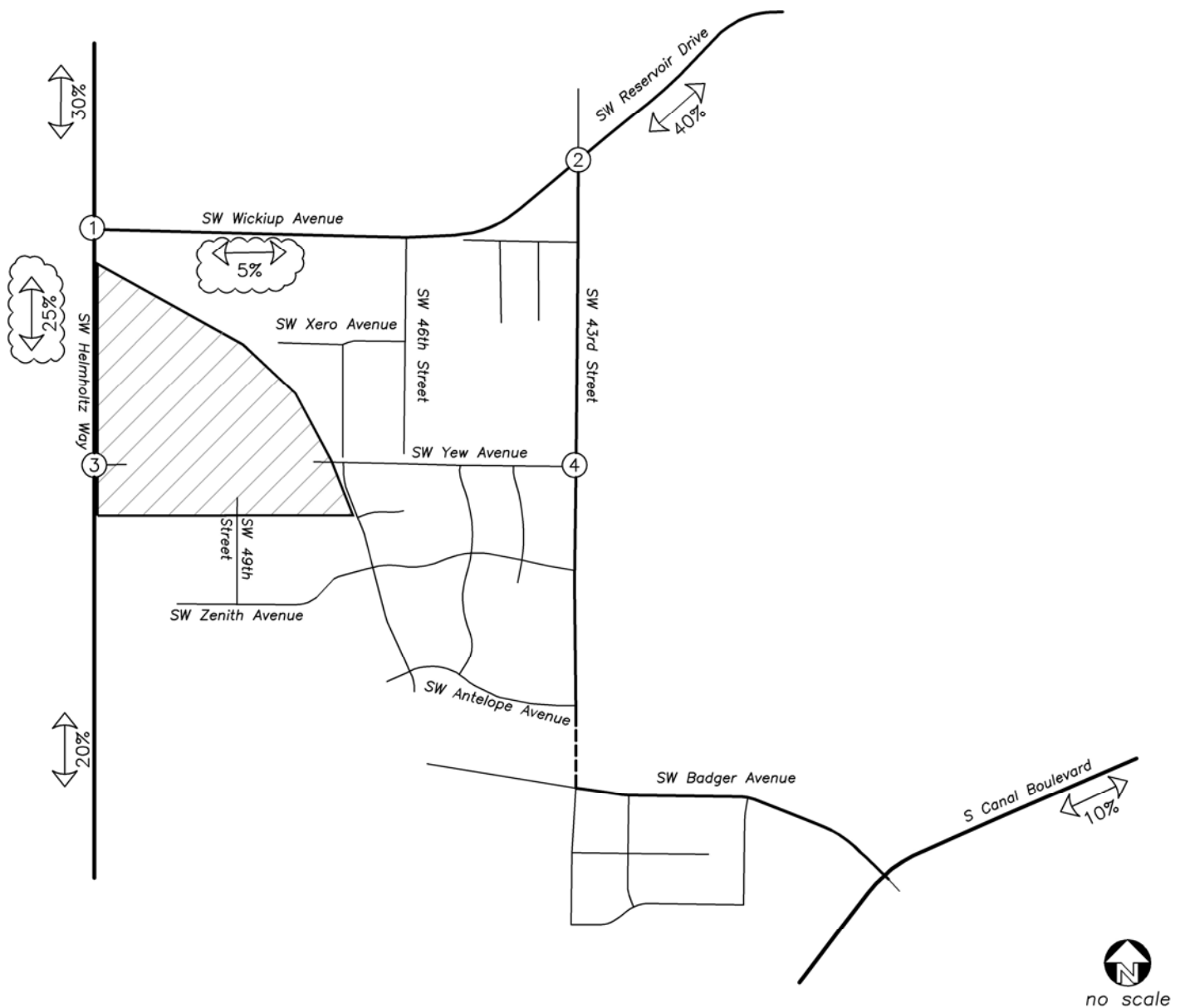
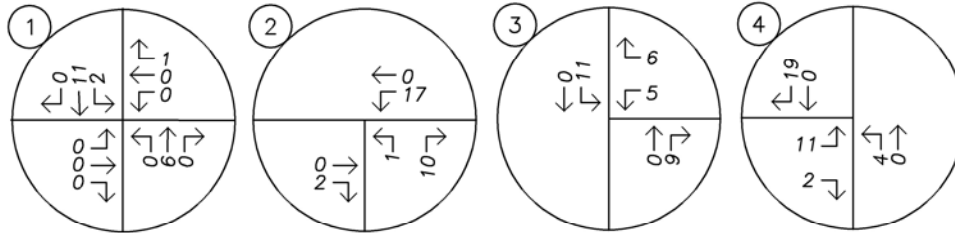
SW Reservoir Rd / SW 39th St

\* Denotes Future Street

# LEGEND

XX%  
PERCENT OF PROJECT TRIPS

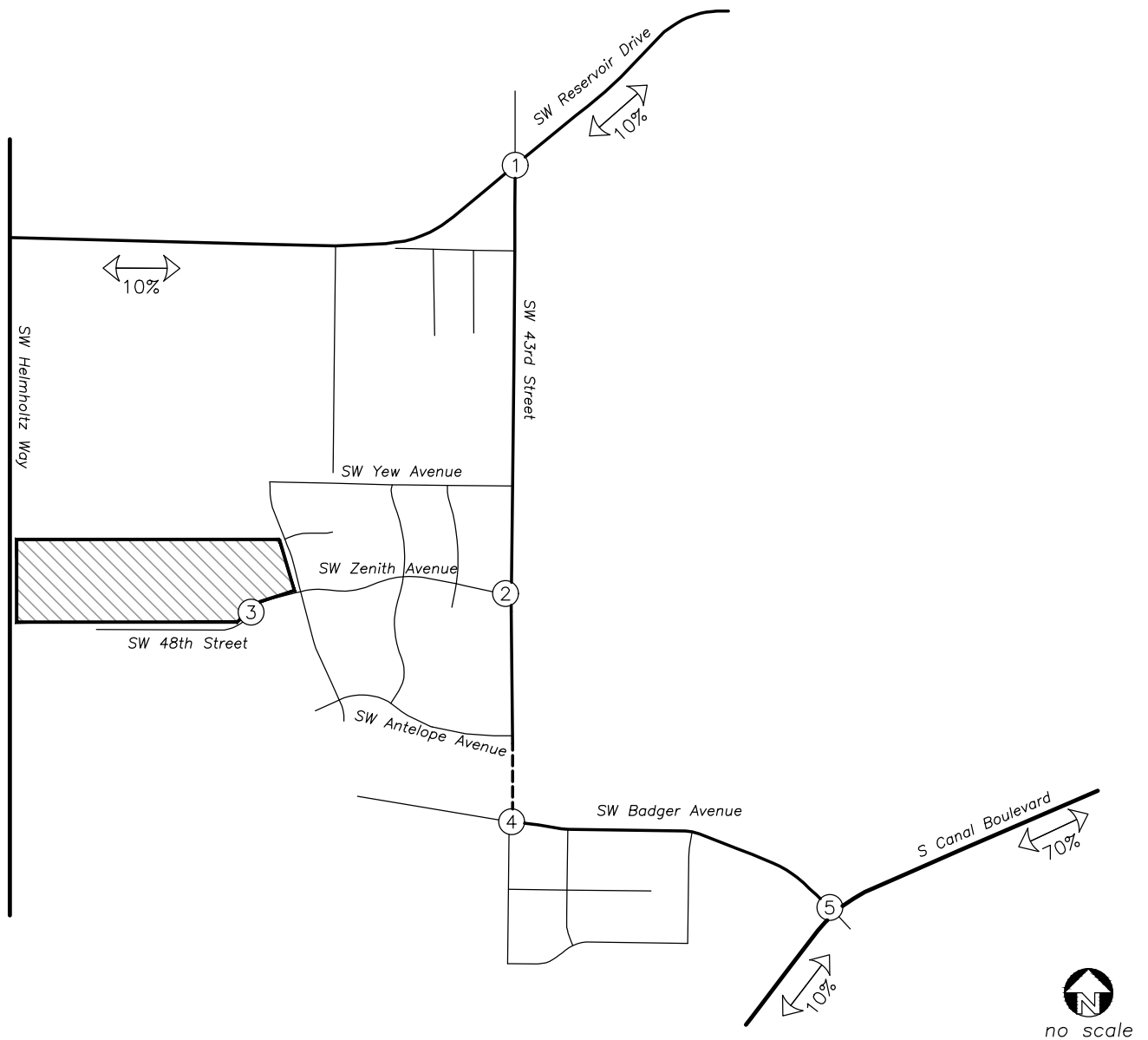
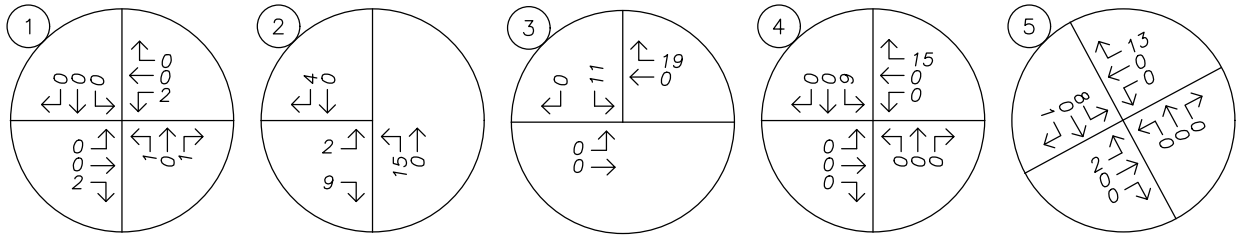
| TRIP GENERATION |    |     |       |
|-----------------|----|-----|-------|
|                 | IN | OUT | TOTAL |
| PM              | 43 | 24  | 67    |



# LEGEND

XX%  
PERCENT OF PROJECT TRIPS

| TRIP GENERATION |    |     |       |
|-----------------|----|-----|-------|
|                 | IN | OUT | TOTAL |
| PM              | 19 | 11  | 30    |





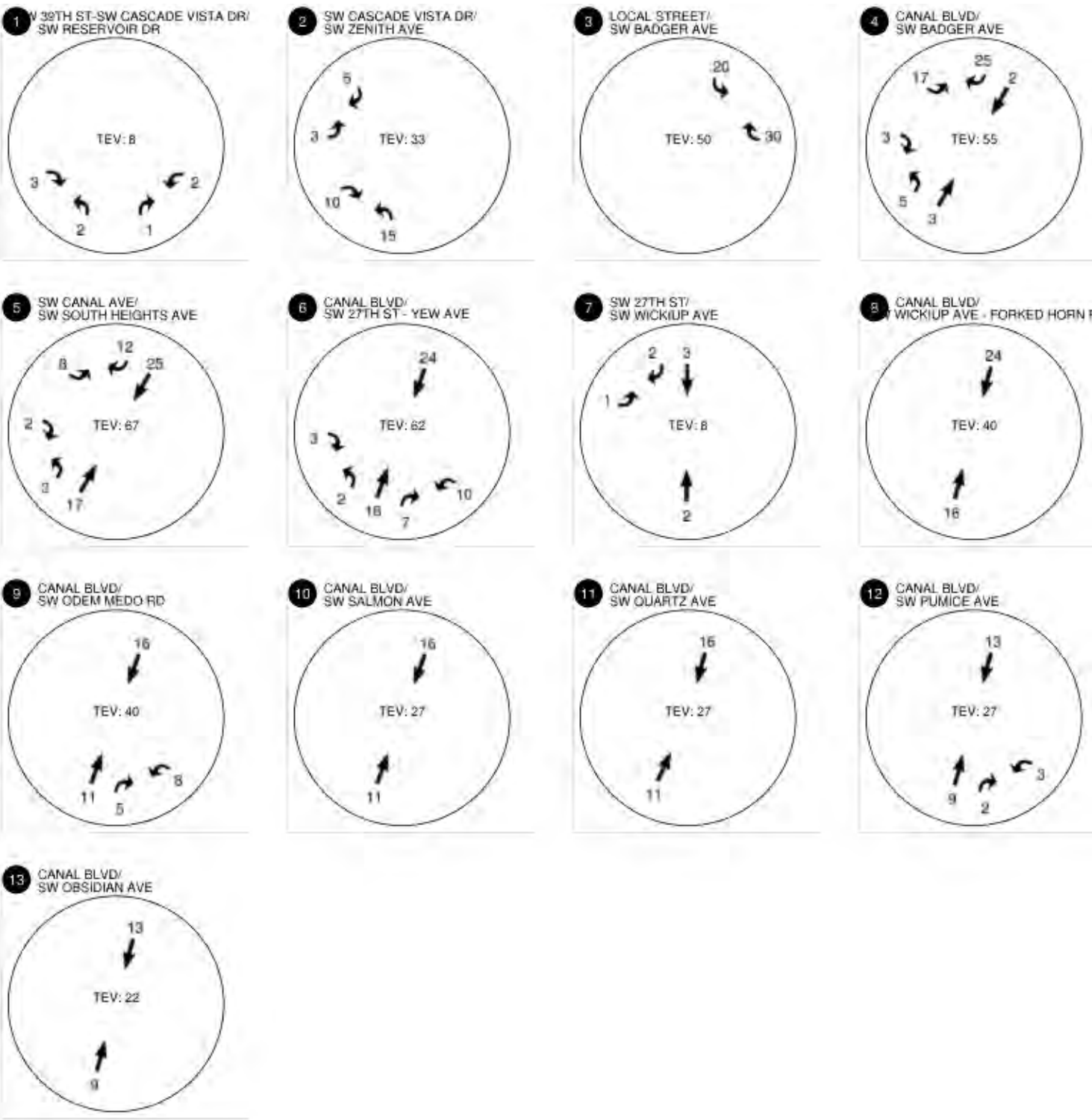
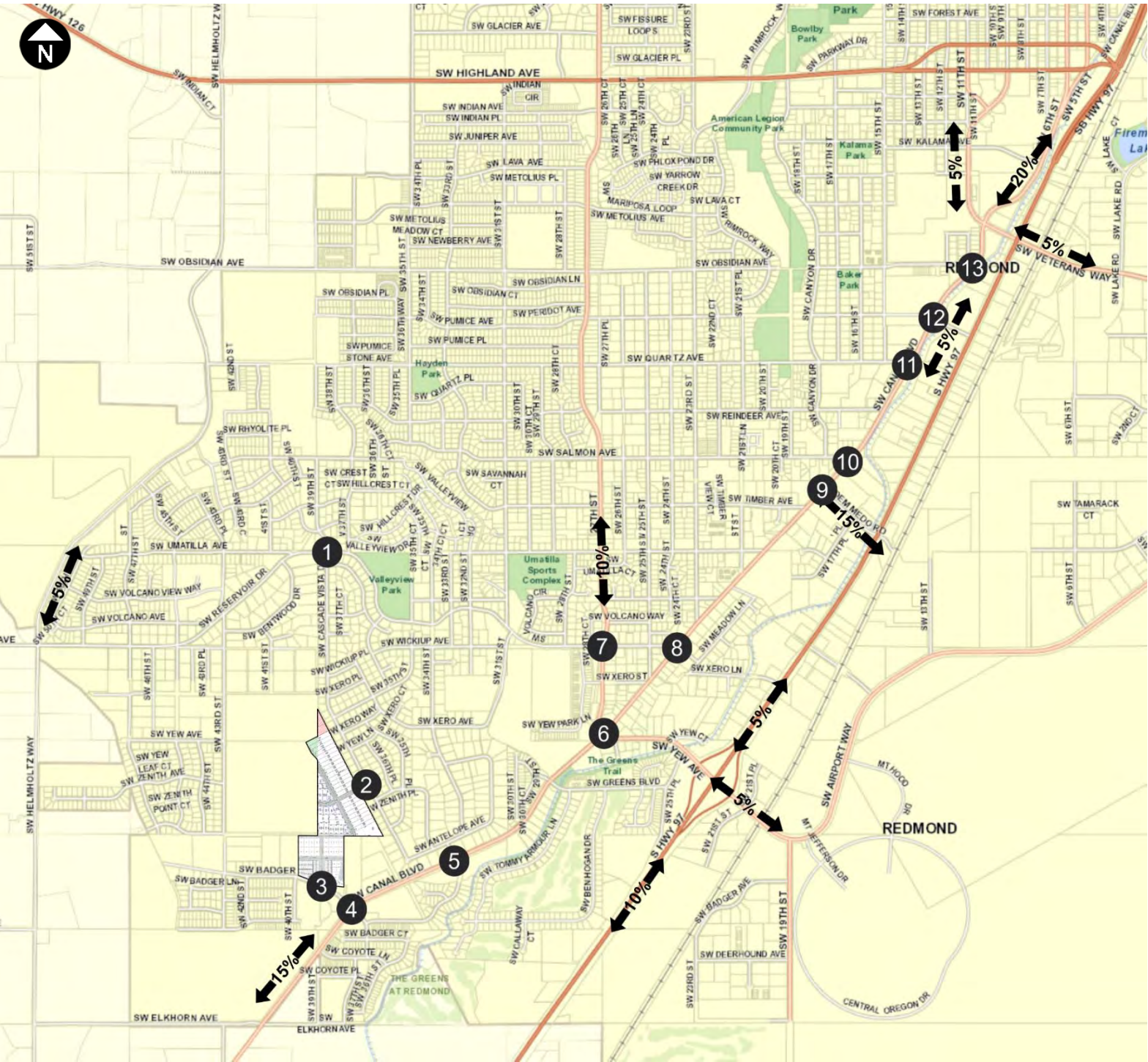
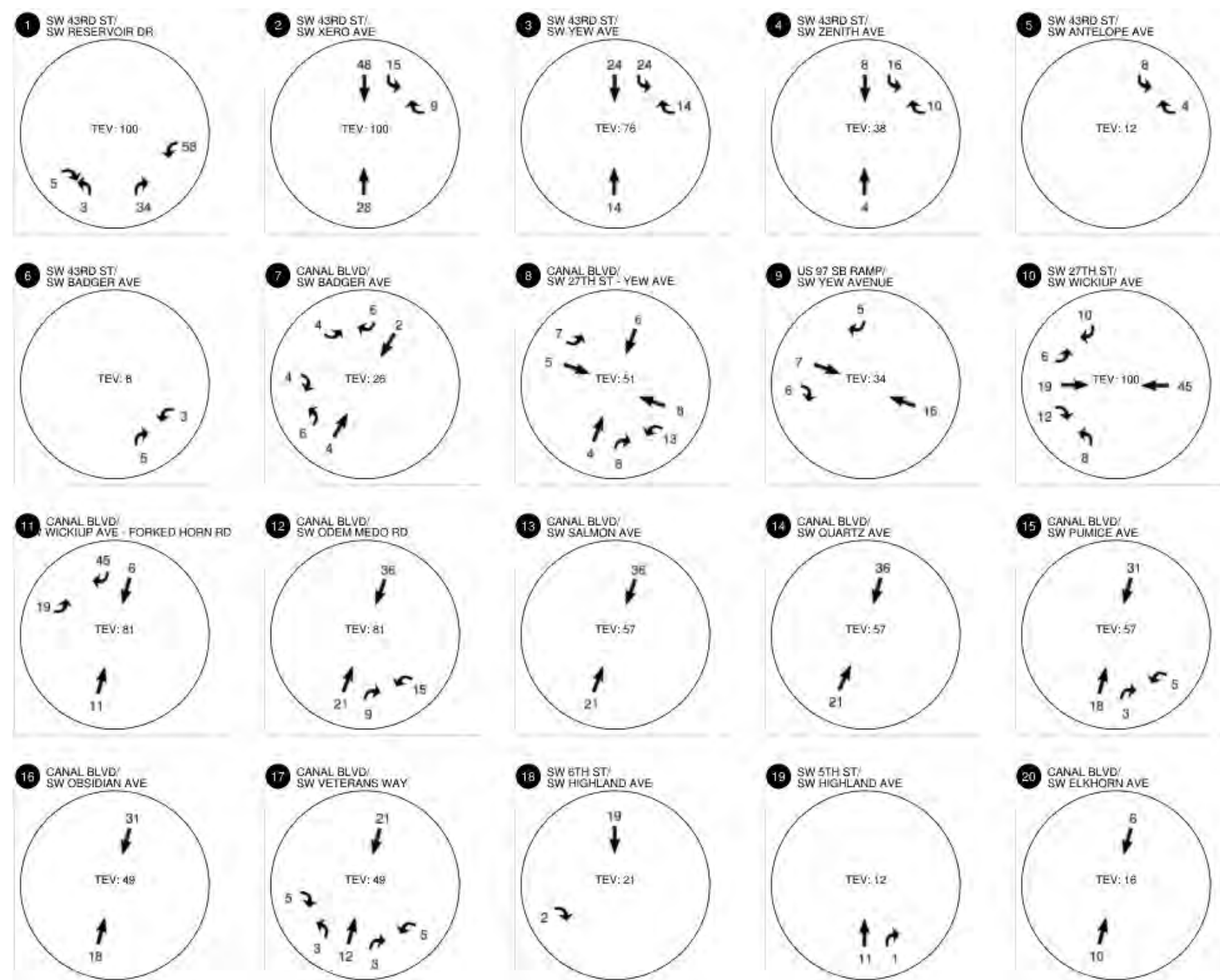


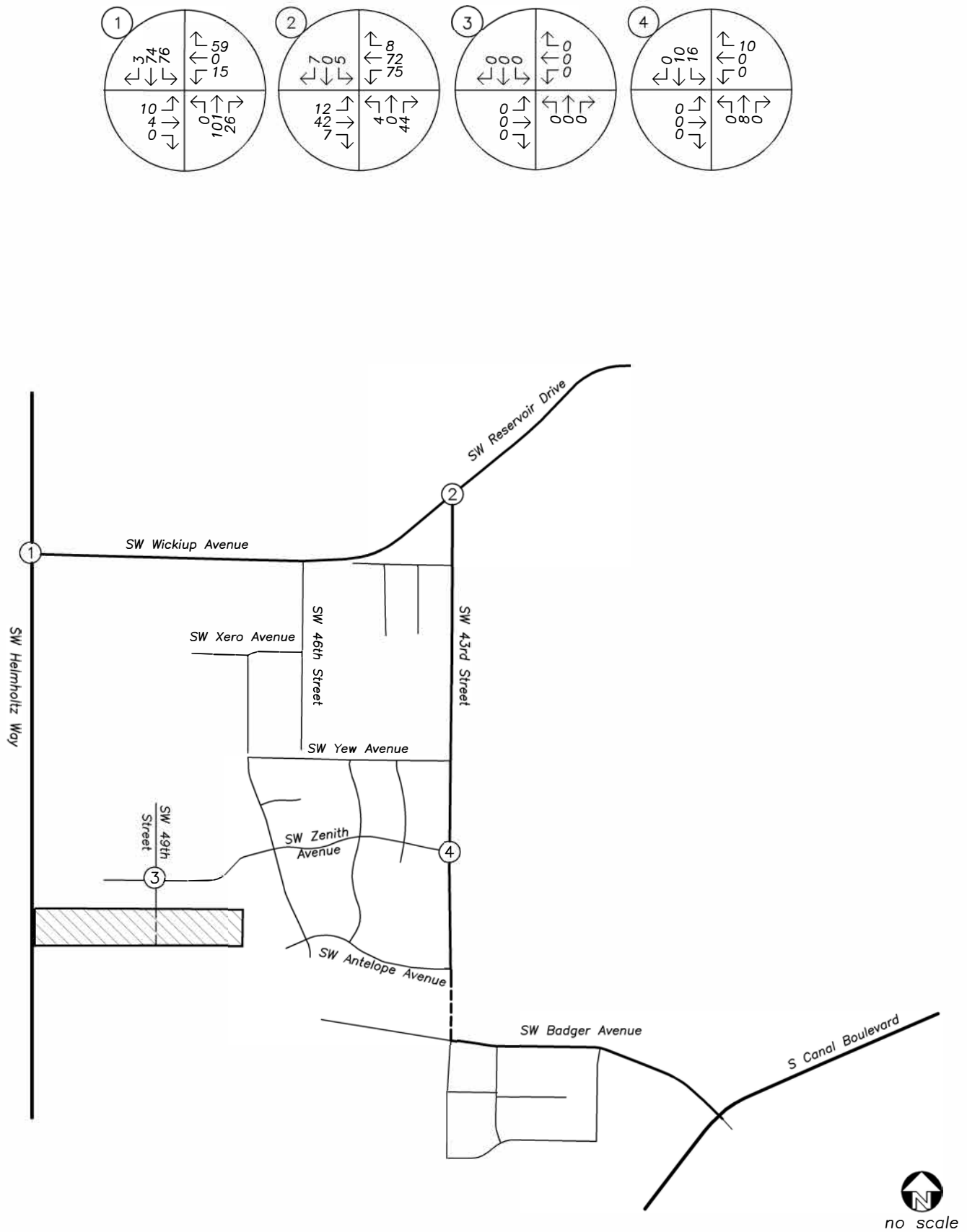
Figure 17. Estimated Vehicular Trip Distribution Pattern and Trip Assignment, Weekday PM Peak Hour.  
Map Source: Deschutes County DIAL.





Figure 4. Estimated Vehicular Trip Distribution Pattern and Trip Assignment, Weekday PM Peak Hour.  
(No 43<sup>rd</sup> Street Extension to SW Badger Avenue)  
*Map Source: Deschutes County DIAL.*





## Appendix C - Safety

Crash History Data

Sight Distance Images

Left-Turn Lane Warrant Analysis

Right-Turn Lane Warrant Analysis

Preliminary Signal Warrant Analysis





## URBAN NON-SYSTEM CRASH LISTING

HELMHOLTZ WY at WICKIUP AVE, City of Redmond, Deschutes County, 01/01/2018 to 12/31/2022

1 - 4 of 5 Crash records shown.

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

URBAN NON-SYSTEM CRASH LISTING

CITY OF REDMOND, DESCHUTES COUNTY

HELMHOLTZ WY at WICKIUP AVE, City of Redmond, Deschutes County, 01/01/2018 to 12/31/2022

5 - 5 of 5 Crash records shown.

| S      |   | D |   | M |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|--------|---|---|---|---|---|--------|-------|---------------|---------|----------|---------|-------|-------|-------|----------|------|-----------|------|--------|-------|-----|------|------|-------|-------|------|--|--|-----|-----|----|
| SER#   | P | R | J | S | W | DATE   | CLASS | CITY STREET   | RD CHAR | INT-TYPE | INT-REL | OFFRD | WTHR  | CRASH | SPCL USE | MOVE | A         |      | S      | PRTC  | INJ | G    | E    | LICNS | PED   |      |  |  |     |     |    |
| INVEST | E | A | U | I | C | O DAY  | DIST  | FIRST STREET  | DIRECT  | LEGS     | TRAF-   | RNDBT | SURF  | COLL  | OWNER    | FROM |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
| RD DPT | E | L | G | N | H | R TIME | FROM  | SECOND STREET | DIRECT  | LEGS     | TRAF-   | RNDBT | SURF  | COLL  | OWNER    | FROM |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
| UNLOC? | D | C | S | V | L | K LAT  | LONG  | LRS           | LOCTN   | (#LANES) | CONTL   | DRVWY | LIGHT | SVRTY | V#       | TYPE | TO        | P#   | TYPE   | SVRTY | E   | X    | RES  | LOC   | ERROR |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          | 02   | NONE      | 0    | STRGHT |       |     |      |      |       | 000   | 00   |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      | PRVTE     | W -E |        |       |     |      |      |       | 000   | 02   |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      | PSNGR CAR |      |        |       | 01  | DRVR | NONE | 84    | M     | OR-Y |  |  | 028 | 000 | 02 |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |
|        |   |   |   |   |   |        |       |               |         |          |         |       |       |       |          |      |           |      |        |       |     |      |      |       |       |      |  |  |     |     |    |

## Sight Distance Images

From site access looking east



From site access looking west





390 feet west and looking at site access





425 feet east and looking at site access



### Stopping Sight Distance

#### *Uphill*

|                 |                          |
|-----------------|--------------------------|
| Travel Speed    | 25 mph                   |
| Reaction Time   | 2.5 seconds              |
| Acceleration    | 11.2 ft/sec <sup>2</sup> |
| Grade (percent) | 0.00%                    |

|     |          |
|-----|----------|
| SSD | 155 feet |
|-----|----------|

### Reaction Distance

|               |             |
|---------------|-------------|
| Travel Speed  | 25 mph      |
| Travel Speed  | 36.8 fps    |
| Reaction Time | 2.5 seconds |

|                   |           |
|-------------------|-----------|
| Reaction Distance | 91.9 feet |
|-------------------|-----------|

### Braking Distance

|                 |                          |
|-----------------|--------------------------|
| Travel Speed    | 25 mph                   |
| Acceleration    | 11.2 ft/sec <sup>2</sup> |
| Grade (percent) | 0.00%                    |

|                  |           |
|------------------|-----------|
| Braking Distance | 59.9 feet |
|------------------|-----------|

#### *Downhill*

|                 |                          |
|-----------------|--------------------------|
| Travel Speed    | 25 mph                   |
| Reaction Time   | 2.5 seconds              |
| Acceleration    | 11.2 ft/sec <sup>2</sup> |
| Grade (percent) | 0.00%                    |

|     |          |
|-----|----------|
| SSD | 155 feet |
|-----|----------|

|               |             |
|---------------|-------------|
| Travel Speed  | 25 mph      |
| Travel Speed  | 36.8 fps    |
| Reaction Time | 2.5 seconds |

|                   |           |
|-------------------|-----------|
| Reaction Distance | 91.9 feet |
|-------------------|-----------|

|                 |                          |
|-----------------|--------------------------|
| Travel Speed    | 25 mph                   |
| Acceleration    | 11.2 ft/sec <sup>2</sup> |
| Grade (percent) | 0.00%                    |

|                  |           |
|------------------|-----------|
| Braking Distance | 59.9 feet |
|------------------|-----------|

Note: If grades are less than 3%, no adjustment is needed.



## Intersection Sight Distance

|                                    | <i>Left Turn Looking Left</i> | <i>Left Turn Looking Right</i> | <i>Right Turn Looking Left</i> |
|------------------------------------|-------------------------------|--------------------------------|--------------------------------|
| Approach Speed                     | 25 mph                        | 25 mph                         | 25 mph                         |
| Number of Lanes                    | 2 lanes                       | 2 lanes                        | 2                              |
| Vehicle Type (P/S/C)               | P Passenger Car               | P Passenger Car                | P Passenger Car                |
| Extra Crossing Lanes               | 0                             | 0                              |                                |
| Time Gap                           | 7.5 seconds                   | 7.5 seconds                    | 6.5 seconds                    |
| <b>Intersection Sight Distance</b> | <b>280 feet</b>               | <b>280 feet</b>                | <b>240 feet</b>                |
| Washington County                  | 250 feet                      | 250 feet                       | 250 feet                       |

### Notes:

- 1) For Approach speed, use the design speed of the roadway (typically 85th percentile speed).
- 2) For Time Gap, use 7.5 seconds for passenger cars, 9.5 seconds for single-unit trucks, and 11.5 seconds for combination trucks.
- 3) The above values are for 2-lane highways without medians and grades of 3 percent or less.
- 4) For grades in excess of 3 percent on the minor street, add .2 seconds for each percent grade.
- 5) For additional lanes, add 0.5 seconds per lane for passenger cars and 0.7 seconds per lane for trucks.



Project: 24088 - 3758 SW Helmholtz Way Subdivision  
Intersection: SW Reservoir Drive at SW 43rd Street (WB direction)  
Date: 7/30/2024  
Scenario: 2026 Buildout

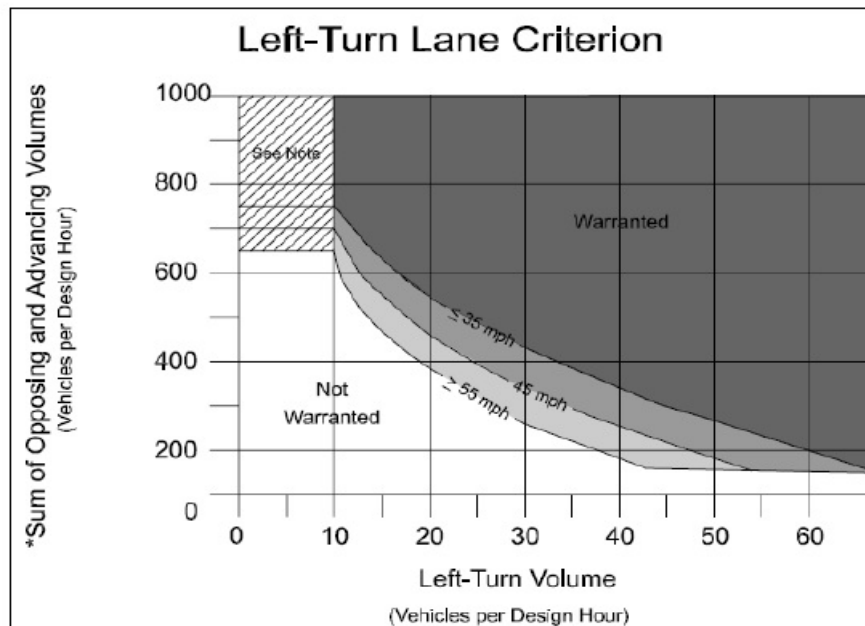
Speed? 35 mph

**PM Peak Hour**

|                              |     |
|------------------------------|-----|
| Left-Turn Volume             | 134 |
| Approaching DHV              | 221 |
| # of Advancing Through Lanes | 1   |
| Opposing DHV                 | 63  |
| # of Opposing Through Lanes  | 1   |

**O+A DHV 284**

Lane Needed? **Yes**



Source: Oregon DOT Analysis Procedures Manual 2008

**\*(Advancing Vol/ # of Advancing Through Lanes)+  
(Opposing Vol/ # of Opposing Through Lanes)**

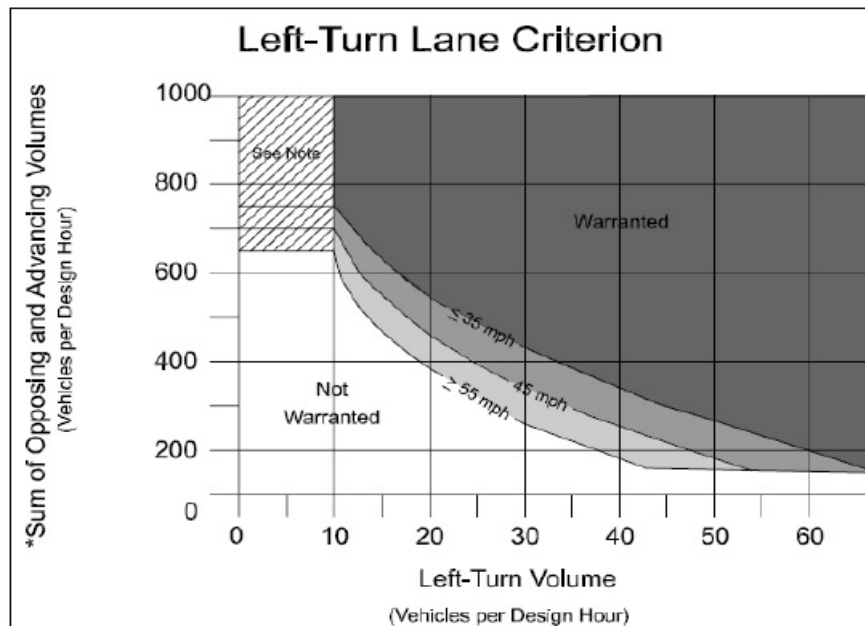
Note: The criterion is not met from zero to ten left turn vehicles per hour, but careful consideration should be given to installing a left turn lane due to the increased potential for accidents in the through lanes. While the turn volumes are low, the adverse safety and operational impacts may require installation of a left turn. The final determination will be based on a field study.



Project: 24088 - 3758 SW Helmholtz Way Subdivision  
Intersection: SW 49th Street at SW Zenith Avenue (WB direction)  
Date: 7/30/2024  
Scenario: 2026 Buildout

Speed? 25 mph

| PM Peak Hour                 |    |
|------------------------------|----|
| Left-Turn Volume             | 19 |
| Approaching DHV              | 26 |
| # of Advancing Through Lanes | 1  |
| Opposing DHV                 | 9  |
| # of Opposing Through Lanes  | 1  |
| O+A DHV                      | 35 |
| Lane Needed?                 | No |



Source: Oregon DOT Analysis Procedures Manual 2008

$$*(\text{Advancing Vol} / \# \text{ of Advancing Through Lanes}) + (\text{Opposing Vol} / \# \text{ of Opposing Through Lanes})$$

Note: The criterion is not met from zero to ten left turn vehicles per hour, but careful consideration should be given to installing a left turn lane due to the increased potential for accidents in the through lanes. While the turn volumes are low, the adverse safety and operational impacts may require installation of a left turn. The final determination will be based on a field study.

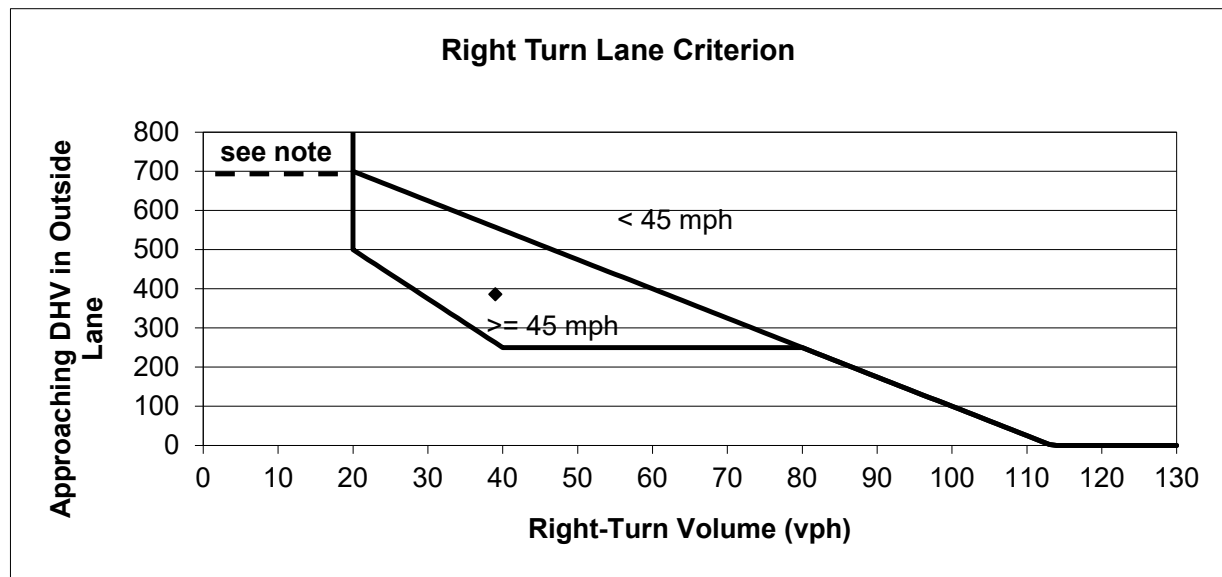


Project: 24088 - 3758 SW Helmholtz Way Subdivision  
Intersection: SW Helmholtz Way at SW Wickiup Avenue  
Date: 7/30/2024  
Scenario: 2024 Existing Conditions

Speed? 45 mph 72 kmh

**PM Peak Hour**

Right-Turn Volume 39  
Approaching DHV 386  
Lane Needed? **Yes**



Note: If there is no right turn lane, a shoulder needs to be provided.  
If this intersection is in a rural area and is a connection to a public street, a right turn lane is needed.

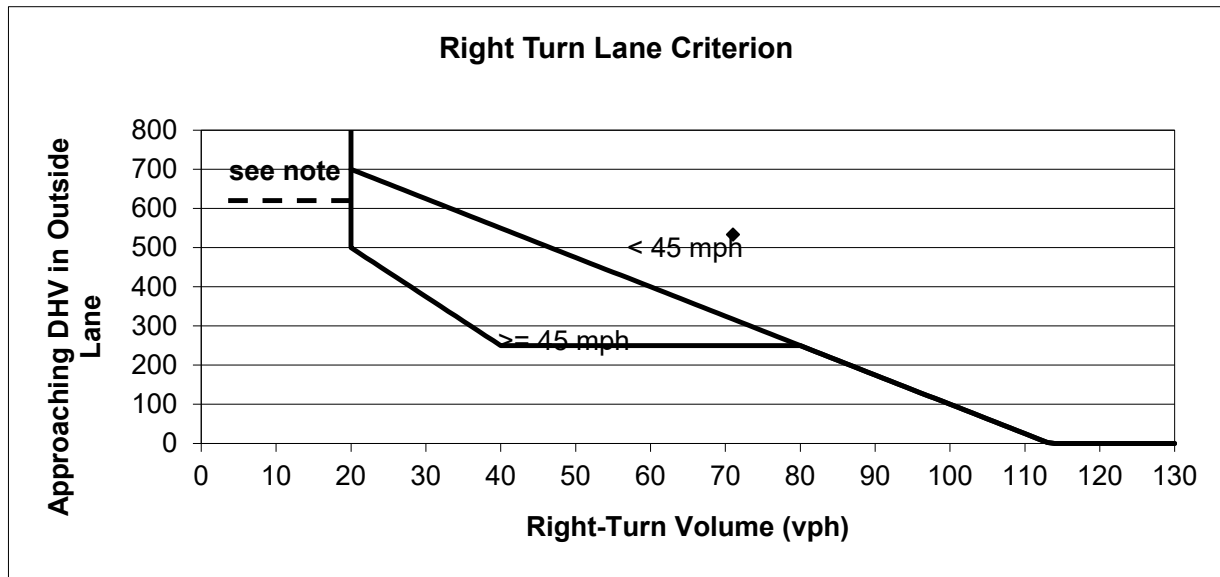


Project: 24088 - 3758 SW Helmholtz Way Subdivision  
Intersection: SW Helmholtz Way at SW Wickiup Avenue  
Date: 7/30/2024  
Scenario: 2026 Buildout Conditions

Speed? 45 mph 72 kmh

**PM Peak Hour**

Right-Turn Volume 71  
Approaching DHV 533  
Lane Needed? **Yes**



Note: If there is no right turn lane, a shoulder needs to be provided.  
If this intersection is in a rural area and is a connection to a public street, a right turn lane is needed.

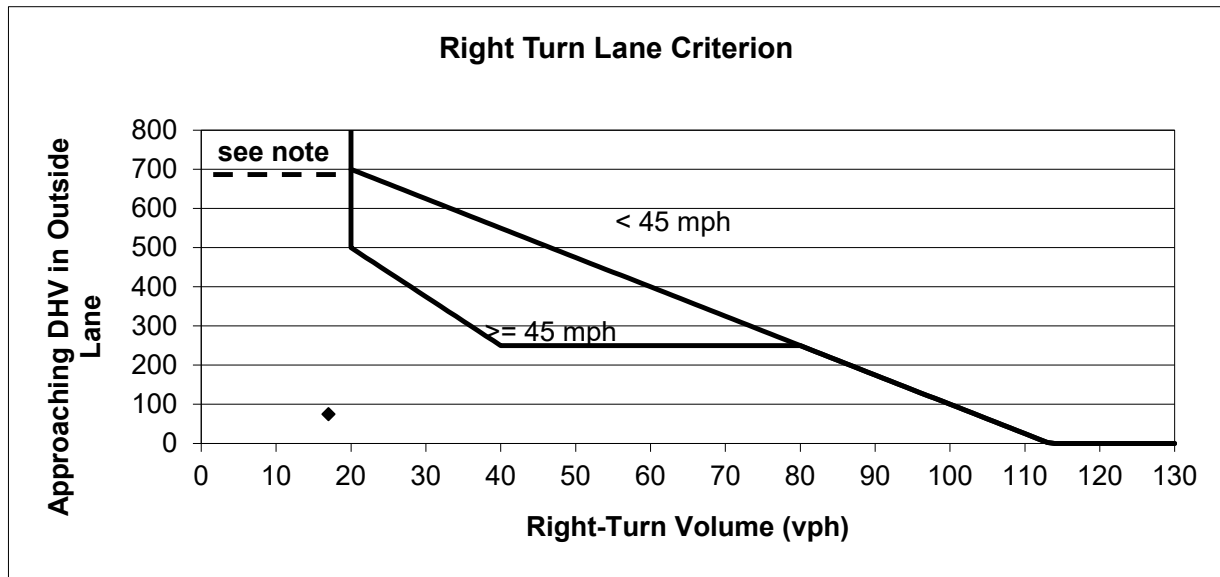


Project: 24088 - 3758 SW Helmholtz Way Subdivision  
Intersection: SW Reservoir Drive at SW 43rd Street  
Date: 7/30/2024  
Scenario: 2026 Buildout Conditions

Speed? 35 mph 56 kmh

**PM Peak Hour**

Right-Turn Volume 17  
Approaching DHV 75  
Lane Needed? **No**



Note: If there is no right turn lane, a shoulder needs to be provided.  
If this intersection is in a rural area and is a connection to a public street, a right turn lane is needed.



## Preliminary Traffic Signal Warrant Analysis

Project: 24088 - 3758 SW Helmholtz Way Subdivision

Date: 7/30/2024

Scenario: 2026 Buildout PM Peak Hour

|                  |                  |                  |                   |             |
|------------------|------------------|------------------|-------------------|-------------|
| Major Street:    | SW Helmholtz Way | Minor Street:    | SW Wickiup Avenue |             |
| Number of Lanes: | 2                | Number of Lanes: | 1                 |             |
| PM Peak          |                  | PM Peak          | 114               | Total       |
| Hour Volumes:    | 848              | Hour Volumes:    | 75                | Rights      |
|                  |                  |                  | 25%               | RT Discount |

Warrant Used:

|   |                                                                                                                                               |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------|
|   | 100 percent of standard warrants used                                                                                                         |
| X | 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000. |

| Number of Lanes for Moving<br>Traffic on Each Approach: |                  | ADT on Major St.<br>(total of both approaches) |                 | ADT on Minor St.<br>(higher-volume approach) |                 |
|---------------------------------------------------------|------------------|------------------------------------------------|-----------------|----------------------------------------------|-----------------|
|                                                         |                  | 100%                                           | 70%             | 100%                                         | 70%             |
| <u>WARRANT 1, CONDITION A</u>                           |                  |                                                |                 |                                              |                 |
| <u>Major St.</u>                                        | <u>Minor St.</u> | <u>Warrants</u>                                | <u>Warrants</u> | <u>Warrants</u>                              | <u>Warrants</u> |
| 1                                                       | 1                | 8,850                                          | 6,200           | 2,650                                        | 1,850           |
| 2 or more                                               | 1                | 10,600                                         | 7,400           | 2,650                                        | 1,850           |
| 2 or more                                               | 2 or more        | 10,600                                         | 7,400           | 3,550                                        | 2,500           |
| 1                                                       | 2 or more        | 8,850                                          | 6,200           | 3,550                                        | 2,500           |
| <u>WARRANT 1, CONDITION B</u>                           |                  |                                                |                 |                                              |                 |
| 1                                                       | 1                | 13,300                                         | 9,300           | 1,350                                        | 950             |
| 2 or more                                               | 1                | 15,900                                         | 11,100          | 1,350                                        | 950             |
| 2 or more                                               | 2 or more        | 15,900                                         | 11,100          | 1,750                                        | 1,250           |
| 1                                                       | 2 or more        | 13,300                                         | 9,300           | 1,750                                        | 1,250           |

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

|                                                        | Approach Volumes | Minimum Volumes | Is Signal Warrant<br>Met? |
|--------------------------------------------------------|------------------|-----------------|---------------------------|
| <i>Warrant 1</i>                                       |                  |                 |                           |
| <i>Condition A: Minimum Vehicular Volume</i>           |                  |                 |                           |
| Major Street                                           | 8,480            | 7,400           |                           |
| Minor Street*                                          | 950              | 1,850           | No                        |
| <i>Condition B: Interruption of Continuous Traffic</i> |                  |                 |                           |
| Major Street                                           | 8,480            | 11,100          |                           |
| Minor Street*                                          | 950              | 950             | No                        |
| <i>Combination Warrant</i>                             |                  |                 |                           |
| Major Street                                           | 8,480            | 8,880           |                           |
| Minor Street*                                          | 950              | 1,480           | No                        |

\* Minor street right-turning traffic volumes reduced by 25%.





## Preliminary Traffic Signal Warrant Analysis

Project: 24088 - 3758 SW Helmholtz Way Subdivision

Date: 7/30/2024

Scenario: 2026 Buildout PM Peak Hour

|                          |                     |                          |                  |                                |
|--------------------------|---------------------|--------------------------|------------------|--------------------------------|
| Major Street:            | SW Reservoir Avenue | Minor Street:            | SW 43rd Street   |                                |
| Number of Lanes:         | 1                   | Number of Lanes:         | 1                |                                |
| PM Peak<br>Hour Volumes: | 296                 | PM Peak<br>Hour Volumes: | 103<br>92<br>25% | Total<br>Rights<br>RT Discount |

Warrant Used:

|   |                                                                                                                                               |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------|
| X | 100 percent of standard warrants used                                                                                                         |
|   | 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000. |

| Number of Lanes for Moving<br>Traffic on Each Approach: |                  | ADT on Major St.<br>(total of both approaches) |                 | ADT on Minor St.<br>(higher-volume approach) |                 |
|---------------------------------------------------------|------------------|------------------------------------------------|-----------------|----------------------------------------------|-----------------|
|                                                         |                  | 100%                                           | 70%             | 100%                                         | 70%             |
| <u>Major St.</u>                                        | <u>Minor St.</u> | <u>Warrants</u>                                | <u>Warrants</u> | <u>Warrants</u>                              | <u>Warrants</u> |
| 1                                                       | 1                | 8,850                                          | 6,200           | 2,650                                        | 1,850           |
| 2 or more                                               | 1                | 10,600                                         | 7,400           | 2,650                                        | 1,850           |
| 2 or more                                               | 2 or more        | 10,600                                         | 7,400           | 3,550                                        | 2,500           |
| 1                                                       | 2 or more        | 8,850                                          | 6,200           | 3,550                                        | 2,500           |

### WARRANT 1, CONDITION B

|           |           |        |        |       |       |
|-----------|-----------|--------|--------|-------|-------|
| 1         | 1         | 13,300 | 9,300  | 1,350 | 950   |
| 2 or more | 1         | 15,900 | 11,100 | 1,350 | 950   |
| 2 or more | 2 or more | 15,900 | 11,100 | 1,750 | 1,250 |
| 1         | 2 or more | 13,300 | 9,300  | 1,750 | 1,250 |

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

|                                                        | Approach Volumes | Minimum Volumes | Is Signal Warrant<br>Met? |
|--------------------------------------------------------|------------------|-----------------|---------------------------|
| <i>Warrant 1</i>                                       |                  |                 |                           |
| <i>Condition A: Minimum Vehicular Volume</i>           |                  |                 |                           |
| Major Street                                           | 2,960            | 8,850           |                           |
| Minor Street*                                          | 800              | 2,650           | No                        |
| <i>Condition B: Interruption of Continuous Traffic</i> |                  |                 |                           |
| Major Street                                           | 2,960            | 13,300          |                           |
| Minor Street*                                          | 800              | 1,350           | No                        |
| <i>Combination Warrant</i>                             |                  |                 |                           |
| Major Street                                           | 2,960            | 10,640          |                           |
| Minor Street*                                          | 800              | 2,120           | No                        |

\* Minor street right-turning traffic volumes reduced by 25%.



## Preliminary Traffic Signal Warrant Analysis

Project: 24088 - 3758 SW Helmholtz Way Subdivision

Date: 7/30/2024

Scenario: 2026 Buildout PM Peak Hour

|                  |                  |                  |                |             |
|------------------|------------------|------------------|----------------|-------------|
| Major Street:    | SW Zenith Avenue | Minor Street:    | SW 49th Street |             |
| Number of Lanes: | 1                | Number of Lanes: | 1              |             |
| PM Peak          |                  | PM Peak          | 11             | Total       |
| Hour Volumes:    | 35               | Hour Volumes:    | 11             | Rights      |
|                  |                  |                  | 25%            | RT Discount |

Warrant Used:

|   |                                                                                                                                               |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------|
| X | 100 percent of standard warrants used                                                                                                         |
|   | 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000. |

| Number of Lanes for Moving<br>Traffic on Each Approach: |                  | ADT on Major St.<br>(total of both approaches) |                 | ADT on Minor St.<br>(higher-volume approach) |                 |
|---------------------------------------------------------|------------------|------------------------------------------------|-----------------|----------------------------------------------|-----------------|
|                                                         |                  | 100%                                           | 70%             | 100%                                         | 70%             |
| <u>Major St.</u>                                        | <u>Minor St.</u> | <u>Warrants</u>                                | <u>Warrants</u> | <u>Warrants</u>                              | <u>Warrants</u> |
| 1                                                       | 1                | 8,850                                          | 6,200           | 2,650                                        | 1,850           |
| 2 or more                                               | 1                | 10,600                                         | 7,400           | 2,650                                        | 1,850           |
| 2 or more                                               | 2 or more        | 10,600                                         | 7,400           | 3,550                                        | 2,500           |
| 1                                                       | 2 or more        | 8,850                                          | 6,200           | 3,550                                        | 2,500           |
| <b>WARRANT 1, CONDITION B</b>                           |                  |                                                |                 |                                              |                 |
| 1                                                       | 1                | 13,300                                         | 9,300           | 1,350                                        | 950             |
| 2 or more                                               | 1                | 15,900                                         | 11,100          | 1,350                                        | 950             |
| 2 or more                                               | 2 or more        | 15,900                                         | 11,100          | 1,750                                        | 1,250           |
| 1                                                       | 2 or more        | 13,300                                         | 9,300           | 1,750                                        | 1,250           |

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

|                                                        | Approach Volumes | Minimum Volumes | Is Signal Warrant<br>Met? |
|--------------------------------------------------------|------------------|-----------------|---------------------------|
| <b>Warrant 1</b>                                       |                  |                 |                           |
| <b>Condition A: Minimum Vehicular Volume</b>           |                  |                 |                           |
| Major Street                                           | 350              | 8,850           |                           |
| Minor Street*                                          | 80               | 2,650           | No                        |
| <b>Condition B: Interruption of Continuous Traffic</b> |                  |                 |                           |
| Major Street                                           | 350              | 13,300          |                           |
| Minor Street*                                          | 80               | 1,350           | No                        |
| <b>Combination Warrant</b>                             |                  |                 |                           |
| Major Street                                           | 350              | 10,640          |                           |
| Minor Street*                                          | 80               | 2,120           | No                        |

\* Minor street right-turning traffic volumes reduced by 25%.



## Preliminary Traffic Signal Warrant Analysis

Project: 24088 - 3758 SW Helmholtz Way Subdivision

Date: 7/30/2024

Scenario: 2026 Buildout Conditions - PM Peak Hour

|                  |                |                  |                  |             |
|------------------|----------------|------------------|------------------|-------------|
| Major Street:    | SW 43rd Street | Minor Street:    | SW Zenith Avenue |             |
| Number of Lanes: | 1              | Number of Lanes: | 1                |             |
| PM Peak          |                | PM Peak          | 34               | Total       |
| Hour Volumes:    | 81             | Hour Volumes:    | 1                | Rights      |
|                  |                |                  | 25%              | RT Discount |

Warrant Used:

|          |                                                                                                                                               |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <u>X</u> | 100 percent of standard warrants used                                                                                                         |
|          | 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000. |

| Number of Lanes for Moving<br>Traffic on Each Approach: |                  | ADT on Major St.<br>(total of both approaches) |                 | ADT on Minor St.<br>(higher-volume approach) |                 |
|---------------------------------------------------------|------------------|------------------------------------------------|-----------------|----------------------------------------------|-----------------|
|                                                         |                  | 100%                                           | 70%             | 100%                                         | 70%             |
| <u>WARRANT 1, CONDITION A</u>                           |                  |                                                |                 |                                              |                 |
|                                                         | <u>Major St.</u> | <u>Minor St.</u>                               | <u>Warrants</u> | <u>Warrants</u>                              | <u>Warrants</u> |
|                                                         | 1                | 1                                              | 8,850           | 6,200                                        | 2,650           |
|                                                         | 2 or more        | 1                                              | 10,600          | 7,400                                        | 2,650           |
|                                                         | 2 or more        | 2 or more                                      | 10,600          | 7,400                                        | 3,550           |
|                                                         | 1                | 2 or more                                      | 8,850           | 6,200                                        | 3,550           |
|                                                         |                  |                                                |                 |                                              |                 |
| <u>WARRANT 1, CONDITION B</u>                           |                  |                                                |                 |                                              |                 |
|                                                         | 1                | 1                                              | 13,300          | 9,300                                        | 1,350           |
|                                                         | 2 or more        | 1                                              | 15,900          | 11,100                                       | 1,350           |
|                                                         | 2 or more        | 2 or more                                      | 15,900          | 11,100                                       | 1,750           |
|                                                         | 1                | 2 or more                                      | 13,300          | 9,300                                        | 1,750           |

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

|                                                        | Approach Volumes | Minimum Volumes | Is Signal Warrant<br>Met? |
|--------------------------------------------------------|------------------|-----------------|---------------------------|
| <i>Warrant 1</i>                                       |                  |                 |                           |
| <i>Condition A: Minimum Vehicular Volume</i>           |                  |                 |                           |
| Major Street                                           | 810              | 8,850           |                           |
| Minor Street*                                          | 340              | 2,650           | No                        |
| <i>Condition B: Interruption of Continuous Traffic</i> |                  |                 |                           |
| Major Street                                           | 810              | 13,300          |                           |
| Minor Street*                                          | 340              | 1,350           | No                        |
| <i>Combination Warrant</i>                             |                  |                 |                           |
| Major Street                                           | 810              | 10,640          |                           |
| Minor Street*                                          | 340              | 2,120           | No                        |

\* Minor street right-turning traffic volumes reduced by 25%.



## Preliminary Traffic Signal Warrant Analysis

Project: 24029 - Korbin Meadows North Subdivision  
 Date: 7/30/2024  
 Scenario: 2031 Planning Horizon PM Peak Hour

|                          |                  |                          |                   |                                |
|--------------------------|------------------|--------------------------|-------------------|--------------------------------|
| Major Street:            | SW Helmholtz Way | Minor Street:            | SW Wickiup Avenue |                                |
| Number of Lanes:         | 2                | Number of Lanes:         | 1                 |                                |
| PM Peak<br>Hour Volumes: | 906              | PM Peak<br>Hour Volumes: | 120<br>77<br>25%  | Total<br>Rights<br>RT Discount |

Warrant Used:

|   |                                                                                                                                               |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------|
|   | 100 percent of standard warrants used                                                                                                         |
| X | 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000. |

| Number of Lanes for Moving<br>Traffic on Each Approach: |                  | ADT on Major St.<br>(total of both approaches) |                 | ADT on Minor St.<br>(higher-volume approach) |                 |
|---------------------------------------------------------|------------------|------------------------------------------------|-----------------|----------------------------------------------|-----------------|
|                                                         |                  | 100%                                           | 70%             | 100%                                         | 70%             |
| <u>WARRANT 1, CONDITION A</u>                           |                  | <u>Warrants</u>                                | <u>Warrants</u> | <u>Warrants</u>                              | <u>Warrants</u> |
| <u>Major St.</u>                                        | <u>Minor St.</u> |                                                |                 |                                              |                 |
| 1                                                       | 1                | 8,850                                          | 6,200           | 2,650                                        | 1,850           |
| 2 or more                                               | 1                | 10,600                                         | 7,400           | 2,650                                        | 1,850           |
| 2 or more                                               | 2 or more        | 10,600                                         | 7,400           | 3,550                                        | 2,500           |
| 1                                                       | 2 or more        | 8,850                                          | 6,200           | 3,550                                        | 2,500           |
| <u>WARRANT 1, CONDITION B</u>                           |                  |                                                |                 |                                              |                 |
| 1                                                       | 1                | 13,300                                         | 9,300           | 1,350                                        | 950             |
| 2 or more                                               | 1                | 15,900                                         | 11,100          | 1,350                                        | 950             |
| 2 or more                                               | 2 or more        | 15,900                                         | 11,100          | 1,750                                        | 1,250           |
| 1                                                       | 2 or more        | 13,300                                         | 9,300           | 1,750                                        | 1,250           |

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

|                                                        | Approach Volumes | Minimum Volumes | Is Signal Warrant<br>Met? |
|--------------------------------------------------------|------------------|-----------------|---------------------------|
| <i>Warrant 1</i>                                       |                  |                 |                           |
| <i>Condition A: Minimum Vehicular Volume</i>           |                  |                 |                           |
| Major Street                                           | 9,060            | 7,400           |                           |
| Minor Street*                                          | 1,010            | 1,850           | No                        |
| <i>Condition B: Interruption of Continuous Traffic</i> |                  |                 |                           |
| Major Street                                           | 9,060            | 11,100          |                           |
| Minor Street*                                          | 1,010            | 950             | No                        |
| <i>Combination Warrant</i>                             |                  |                 |                           |
| Major Street                                           | 9,060            | 8,880           |                           |
| Minor Street*                                          | 1,010            | 1,480           | No                        |

\* Minor street right-turning traffic volumes reduced by 25%.



## Preliminary Traffic Signal Warrant Analysis

Project: 24029 - Korbin Meadows North Subdivision  
 Date: 7/30/2024  
 Scenario: 2031 Planning Horizon PM Peak Hour

|                          |                     |                          |                  |                                |
|--------------------------|---------------------|--------------------------|------------------|--------------------------------|
| Major Street:            | SW Reservoir Avenue | Minor Street:            | SW 43rd Street   |                                |
| Number of Lanes:         | 1                   | Number of Lanes:         | 1                |                                |
| PM Peak<br>Hour Volumes: | 303                 | PM Peak<br>Hour Volumes: | 107<br>96<br>25% | Total<br>Rights<br>RT Discount |

Warrant Used:

|   |                                                                                                                                               |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------|
| X | 100 percent of standard warrants used                                                                                                         |
|   | 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000. |

| Number of Lanes for Moving<br>Traffic on Each Approach: |                  | ADT on Major St.<br>(total of both approaches) |                 | ADT on Minor St.<br>(higher-volume approach) |                 |
|---------------------------------------------------------|------------------|------------------------------------------------|-----------------|----------------------------------------------|-----------------|
|                                                         |                  | 100%                                           | 70%             | 100%                                         | 70%             |
| <u>Major St.</u>                                        | <u>Minor St.</u> | <u>Warrants</u>                                | <u>Warrants</u> | <u>Warrants</u>                              | <u>Warrants</u> |
| 1                                                       | 1                | 8,850                                          | 6,200           | 2,650                                        | 1,850           |
| 2 or more                                               | 1                | 10,600                                         | 7,400           | 2,650                                        | 1,850           |
| 2 or more                                               | 2 or more        | 10,600                                         | 7,400           | 3,550                                        | 2,500           |
| 1                                                       | 2 or more        | 8,850                                          | 6,200           | 3,550                                        | 2,500           |
| <b>WARRANT 1, CONDITION B</b>                           |                  |                                                |                 |                                              |                 |
| 1                                                       | 1                | 13,300                                         | 9,300           | 1,350                                        | 950             |
| 2 or more                                               | 1                | 15,900                                         | 11,100          | 1,350                                        | 950             |
| 2 or more                                               | 2 or more        | 15,900                                         | 11,100          | 1,750                                        | 1,250           |
| 1                                                       | 2 or more        | 13,300                                         | 9,300           | 1,750                                        | 1,250           |

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

|                                                        | Approach Volumes | Minimum Volumes | Is Signal Warrant<br>Met? |
|--------------------------------------------------------|------------------|-----------------|---------------------------|
| <b>Warrant 1</b>                                       |                  |                 |                           |
| <i>Condition A: Minimum Vehicular Volume</i>           |                  |                 |                           |
| Major Street                                           | 3,030            | 8,850           |                           |
| Minor Street*                                          | 830              | 2,650           | No                        |
| <i>Condition B: Interruption of Continuous Traffic</i> |                  |                 |                           |
| Major Street                                           | 3,030            | 13,300          |                           |
| Minor Street*                                          | 830              | 1,350           | No                        |
| <i>Combination Warrant</i>                             |                  |                 |                           |
| Major Street                                           | 3,030            | 10,640          |                           |
| Minor Street*                                          | 830              | 2,120           | No                        |

\* Minor street right-turning traffic volumes reduced by 25%.



## Preliminary Traffic Signal Warrant Analysis

Project: 24029 - Korbin Meadows North Subdivision  
 Date: 7/30/2024  
 Scenario: 2031 Planning Horizon PM Peak Hour

|                  |                  |                  |                |             |
|------------------|------------------|------------------|----------------|-------------|
| Major Street:    | SW Zenith Avenue | Minor Street:    | SW 49th Street |             |
| Number of Lanes: | 1                | Number of Lanes: | 1              |             |
| PM Peak          |                  | PM Peak          | 11             | Total       |
| Hour Volumes:    | 37               | Hour Volumes:    | 11             | Rights      |
|                  |                  |                  | 25%            | RT Discount |

Warrant Used:

|               |                                                                                                                                               |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <u>X</u>      | 100 percent of standard warrants used                                                                                                         |
| <u>      </u> | 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000. |

| Number of Lanes for Moving<br>Traffic on Each Approach: |                  | ADT on Major St.<br>(total of both approaches) |                 | ADT on Minor St.<br>(higher-volume approach) |                 |
|---------------------------------------------------------|------------------|------------------------------------------------|-----------------|----------------------------------------------|-----------------|
|                                                         |                  | 100%                                           | 70%             | 100%                                         | 70%             |
| <u>WARRANT 1, CONDITION A</u>                           |                  |                                                |                 |                                              |                 |
|                                                         | <u>Major St.</u> | <u>Minor St.</u>                               | <u>Warrants</u> | <u>Warrants</u>                              | <u>Warrants</u> |
|                                                         | 1                | 1                                              | 8,850           | 6,200                                        | 2,650           |
|                                                         | 2 or more        | 1                                              | 10,600          | 7,400                                        | 2,650           |
|                                                         | 2 or more        | 2 or more                                      | 10,600          | 7,400                                        | 3,550           |
|                                                         | 1                | 2 or more                                      | 8,850           | 6,200                                        | 3,550           |

| <u>WARRANT 1, CONDITION B</u> |           |           |        |        |       |
|-------------------------------|-----------|-----------|--------|--------|-------|
|                               | 1         | 1         | 13,300 | 9,300  | 1,350 |
|                               | 2 or more | 1         | 15,900 | 11,100 | 1,350 |
|                               | 2 or more | 2 or more | 15,900 | 11,100 | 1,750 |
|                               | 1         | 2 or more | 13,300 | 9,300  | 1,750 |

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

|                                                        | Approach Volumes | Minimum Volumes | Is Signal Warrant<br>Met? |
|--------------------------------------------------------|------------------|-----------------|---------------------------|
| <i>Warrant 1</i>                                       |                  |                 |                           |
| <i>Condition A: Minimum Vehicular Volume</i>           |                  |                 |                           |
| Major Street                                           | 370              | 8,850           |                           |
| Minor Street*                                          | 80               | 2,650           | No                        |
| <i>Condition B: Interruption of Continuous Traffic</i> |                  |                 |                           |
| Major Street                                           | 370              | 13,300          |                           |
| Minor Street*                                          | 80               | 1,350           | No                        |
| <i>Combination Warrant</i>                             |                  |                 |                           |
| Major Street                                           | 370              | 10,640          |                           |
| Minor Street*                                          | 80               | 2,120           | No                        |

\* Minor street right-turning traffic volumes reduced by 25%.



## Preliminary Traffic Signal Warrant Analysis

Project: 24029 - Korbin Meadows North Subdivision  
 Date: 7/30/2024  
 Scenario: 2031 Planning Horizon Conditions - PM Peak Hour

|                  |                |                  |                  |             |
|------------------|----------------|------------------|------------------|-------------|
| Major Street:    | SW 43rd Street | Minor Street:    | SW Zenith Avenue |             |
| Number of Lanes: | 1              | Number of Lanes: | 1                |             |
| PM Peak          |                | PM Peak          | 36               | Total       |
| Hour Volumes:    | 85             | Hour Volumes:    | 1                | Rights      |
|                  |                |                  | 25%              | RT Discount |

Warrant Used:

|               |                                                                                                                                               |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <u>X</u>      | 100 percent of standard warrants used                                                                                                         |
| <u>      </u> | 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000. |

| Number of Lanes for Moving<br>Traffic on Each Approach: |                                   | ADT on Major St.<br>(total of both approaches) |                 | ADT on Minor St.<br>(higher-volume approach) |                 |
|---------------------------------------------------------|-----------------------------------|------------------------------------------------|-----------------|----------------------------------------------|-----------------|
|                                                         |                                   | 100%                                           | 70%             | 100%                                         | 70%             |
| <u>WARRANT 1, CONDITION A</u>                           |                                   | <u>Warrants</u>                                | <u>Warrants</u> | <u>Warrants</u>                              | <u>Warrants</u> |
|                                                         | <u>Major St.</u> <u>Minor St.</u> |                                                |                 |                                              |                 |
| 1                                                       | 1                                 | 8,850                                          | 6,200           | 2,650                                        | 1,850           |
| 2 or more                                               | 1                                 | 10,600                                         | 7,400           | 2,650                                        | 1,850           |
| 2 or more                                               | 2 or more                         | 10,600                                         | 7,400           | 3,550                                        | 2,500           |
| 1                                                       | 2 or more                         | 8,850                                          | 6,200           | 3,550                                        | 2,500           |

| <u>WARRANT 1, CONDITION B</u> |           |        |        |       |       |
|-------------------------------|-----------|--------|--------|-------|-------|
| 1                             | 1         | 13,300 | 9,300  | 1,350 | 950   |
| 2 or more                     | 1         | 15,900 | 11,100 | 1,350 | 950   |
| 2 or more                     | 2 or more | 15,900 | 11,100 | 1,750 | 1,250 |
| 1                             | 2 or more | 13,300 | 9,300  | 1,750 | 1,250 |

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

|                                                        | Approach Volumes | Minimum Volumes | Is Signal Warrant<br>Met? |
|--------------------------------------------------------|------------------|-----------------|---------------------------|
| <i>Warrant 1</i>                                       |                  |                 |                           |
| <i>Condition A: Minimum Vehicular Volume</i>           |                  |                 |                           |
| Major Street                                           | 850              | 8,850           |                           |
| Minor Street*                                          | 360              | 2,650           | No                        |
| <i>Condition B: Interruption of Continuous Traffic</i> |                  |                 |                           |
| Major Street                                           | 850              | 13,300          |                           |
| Minor Street*                                          | 360              | 1,350           | No                        |
| <i>Combination Warrant</i>                             |                  |                 |                           |
| Major Street                                           | 850              | 10,640          |                           |
| Minor Street*                                          | 360              | 2,120           | No                        |

\* Minor street right-turning traffic volumes reduced by 25%.



## Appendix D - Operations

LOS Definitions

Synchro Operations Reports

SimTraffic Queuing Reports





## LEVEL OF SERVICE

Level of service is used to describe the quality of traffic flow. Levels of service A to C are considered good, and rural roads are usually designed for level of service C. Urban streets and signalized intersections are typically designed for level of service D. Level of service E is considered to be the limit of acceptable delay. For unsignalized intersections, level of service E is generally considered acceptable. Here is a more complete description of levels of service:

*Level of service A:* Very low delay at intersections, with all traffic signal cycles clearing and no vehicles waiting through more than one signal cycle. On highways, low volume and high speeds, with speeds not restricted by other vehicles.

*Level of service B:* Operating speeds beginning to be affected by other traffic; short traffic delays at intersections. Higher average intersection delay than for level of service A resulting from more vehicles stopping.

*Level of service C:* Operating speeds and maneuverability closely controlled by other traffic; higher delays at intersections than for level of service B due to a significant number of vehicles stopping. Not all signal cycles clear the waiting vehicles. This is the recommended design standard for rural highways.

*Level of service D:* Tolerable operating speeds; long traffic delays occur at intersections. The influence of congestion is noticeable. At traffic signals many vehicles stop, and the proportion of vehicles not stopping declines. The number of signal cycle failures, for which vehicles must wait through more than one signal cycle, are noticeable. This is typically the design level for urban signalized intersections.

*Level of service E:* Restricted speeds, very long traffic delays at traffic signals, and traffic volumes near capacity. Flow is unstable so that any interruption, no matter how minor, will cause queues to form and service to deteriorate to level of service F. Traffic signal cycle failures are frequent occurrences. For unsignalized intersections, level of service E or better is generally considered acceptable.

*Level of service F:* Extreme delays, resulting in long queues which may interfere with other traffic movements. There may be stoppages of long duration, and speeds may drop to zero. There may be frequent signal cycle failures. Level of service F will typically result when vehicle arrival rates are greater than capacity. It is considered unacceptable by most drivers.



*LEVEL OF SERVICE CRITERIA  
FOR SIGNALIZED INTERSECTIONS*

| LEVEL<br>OF<br>SERVICE | CONTROL DELAY<br>PER VEHICLE<br>(Seconds) |
|------------------------|-------------------------------------------|
| A                      | <10                                       |
| B                      | 10-20                                     |
| C                      | 20-35                                     |
| D                      | 35-55                                     |
| E                      | 55-80                                     |
| F                      | >80                                       |

*LEVEL OF SERVICE CRITERIA  
FOR UNSIGNALIZED INTERSECTIONS*

| LEVEL<br>OF<br>SERVICE | CONTROL DELAY<br>PER VEHICLE<br>(Seconds) |
|------------------------|-------------------------------------------|
| A                      | <10                                       |
| B                      | 10-15                                     |
| C                      | 15-25                                     |
| D                      | 25-35                                     |
| E                      | 35-50                                     |
| F                      | >50                                       |

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.5  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      | ↕    | ↕    |      |
| Traffic Vol, veh/h       | 7    | 4    | 2    | 11   | 11   | 12   | 1    | 346  | 39   | 24   | 123  | 4    |
| Future Vol, veh/h        | 7    | 4    | 2    | 11   | 11   | 12   | 1    | 346  | 39   | 24   | 123  | 4    |
| Conflicting Peds, #/hr   | 2    | 0    | 0    | 0    | 0    | 2    | 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           | -    | -    | -    | -    | -    | -    | -    | -    | -    | 250  | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 83   | 83   | 83   | 83   | 83   | 83   | 83   | 83   | 83   | 83   | 83   | 83   |
| Heavy Vehicles, %        | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Mvmt Flow                | 8    | 5    | 2    | 13   | 13   | 14   | 1    | 417  | 47   | 29   | 148  | 5    |

| Major/Minor          | Minor2 |     | Minor1 |     | Major1 |     | Major2 |   |   |      |   |   |
|----------------------|--------|-----|--------|-----|--------|-----|--------|---|---|------|---|---|
| Conflicting Flow All | 636    | 675 | 151    | 651 | 654    | 442 | 153    | 0 | 0 | 464  | 0 | 0 |
| Stage 1              | 208    | 208 | -      | 443 | 443    | -   | -      | - | - | -    | - | - |
| Stage 2              | 428    | 466 | -      | 208 | 211    | -   | -      | - | - | -    | - | - |
| 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   | 393    | 378 | 901    | 384 | 389    | 619 | 1440   | - | - | 1108 | - | - |
| Stage 1              | 798    | 733 | -      | 598 | 579    | -   | -      | - | - | -    | - | - |
| Stage 2              | 609    | 566 | -      | 798 | 732    | -   | -      | - | - | -    | - | - |
| Platoon blocked, %   |        |     |        |     |        |     |        | - | - |      | - | - |
| Mov Cap-1 Maneuver   | 360    | 368 | 901    | 368 | 378    | 618 | 1440   | - | - | 1108 | - | - |
| Mov Cap-2 Maneuver   | 360    | 368 | -      | 368 | 378    | -   | -      | - | - | -    | - | - |
| Stage 1              | 777    | 714 | -      | 597 | 579    | -   | -      | - | - | -    | - | - |
| Stage 2              | 579    | 565 | -      | 770 | 712    | -   | -      | - | - | -    | - | - |

| Approach                    | EB | WB    | NB   | SB   |
|-----------------------------|----|-------|------|------|
| HCM Control Delay, s/v14.37 |    | 14.16 | 0.02 | 1.32 |
| HCM LOS                     | B  | B     |      |      |

| Minor Lane/Major Mvmt     | NBL   | NBT | NBR | EBLn1WBLn1 | SBL   | SBT   | SBR |
|---------------------------|-------|-----|-----|------------|-------|-------|-----|
| Capacity (veh/h)          | 5     | -   | -   | 400        | 434   | 1108  | -   |
| HCM Lane V/C Ratio        | 0.001 | -   | -   | 0.039      | 0.094 | 0.026 | -   |
| HCM Control Delay (s/veh) | 7.5   | 0   | -   | 14.4       | 14.2  | 8.3   | -   |
| HCM Lane LOS              | A     | A   | -   | B          | B     | A     | -   |
| HCM 95th %tile Q(veh)     | 0     | -   | -   | 0.1        | 0.3   | 0.1   | -   |

**Intersection**

Int Delay, s/veh 7

| Movement                 | NBL                                                                               | NBR  | NET                                                                               | NER  | SWL  | SWT                                                                               |
|--------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|
| Lane Configurations      |  |      |  |      |      |  |
| Traffic Vol, veh/h       | 1                                                                                 | 42   | 4                                                                                 | 1    | 50   | 7                                                                                 |
| Future Vol, veh/h        | 1                                                                                 | 42   | 4                                                                                 | 1    | 50   | 7                                                                                 |
| Conflicting Peds, #/hr   | 2                                                                                 | 1    | 0                                                                                 | 1    | 1    | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop | Free                                                                              | Free | Free | Free                                                                              |
| RT Channelized           | -                                                                                 | None | -                                                                                 | None | -    | None                                                                              |
| Storage Length           | -                                                                                 | -    | -                                                                                 | -    | -    | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -    | 0                                                                                 | -    | -    | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -    | 0                                                                                 | -    | -    | 0                                                                                 |
| Peak Hour Factor         | 80                                                                                | 80   | 80                                                                                | 80   | 80   | 80                                                                                |
| Heavy Vehicles, %        | 0                                                                                 | 0    | 0                                                                                 | 0    | 0    | 0                                                                                 |
| Mvmt Flow                | 1                                                                                 | 53   | 5                                                                                 | 1    | 63   | 9                                                                                 |

| Major/Minor          | Minor1 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 142    | 8      | 0      |
| Stage 1              | 7      | -      | -      |
| Stage 2              | 136    | -      | -      |
| Critical Hdwy        | 6.4    | 6.2    | -      |
| Critical Hdwy Stg 1  | 5.4    | -      | -      |
| Critical Hdwy Stg 2  | 5.4    | -      | -      |
| Follow-up Hdwy       | 3.5    | 3.3    | -      |
| Pot Cap-1 Maneuver   | 855    | 1080   | -      |
| Stage 1              | 1022   | -      | -      |
| Stage 2              | 896    | -      | -      |
| Platoon blocked, %   |        | -      | -      |
| Mov Cap-1 Maneuver   | 820    | 1078   | -      |
| Mov Cap-2 Maneuver   | 820    | -      | -      |
| Stage 1              | 1021   | -      | -      |
| Stage 2              | 859    | -      | -      |

| Approach               | NB   | NE | SW   |
|------------------------|------|----|------|
| HCM Control Delay, s/v | 8.54 | 0  | 6.41 |
| HCM LOS                | A    |    |      |

| Minor Lane/Major Mvmt     | NET | NER | NBLn1 | SWL   | SWT |
|---------------------------|-----|-----|-------|-------|-----|
| Capacity (veh/h)          | -   | -   | 1071  | 1579  | -   |
| HCM Lane V/C Ratio        | -   | -   | 0.05  | 0.038 | -   |
| HCM Control Delay (s/veh) | -   | -   | 8.5   | 7.3   | 0   |
| HCM Lane LOS              | -   | -   | A     | A     | A   |
| HCM 95th %tile Q(veh)     | -   | -   | 0.2   | 0.1   | -   |

HCM 7th TWSC  
3: SW 49th Street & SW Zenith Avenue

07/01/2024

| Intersection              |        |       |      |        |       |      |        |       |       |        |       |       |
|---------------------------|--------|-------|------|--------|-------|------|--------|-------|-------|--------|-------|-------|
| Int Delay, s/veh          | 2.7    |       |      |        |       |      |        |       |       |        |       |       |
| Movement                  | EBL    | EBT   | EBR  | WBL    | WBT   | WBR  | NBL    | NBT   | NBR   | SBL    | SBT   | SBR   |
| Lane Configurations       |        | ↕     |      |        | ↕     |      |        | ↕     |       |        | ↕     |       |
| Traffic Vol, veh/h        | 1      | 9     | 1    | 1      | 4     | 3    | 1      | 1     | 1     | 1      | 1     | 1     |
| Future Vol, veh/h         | 1      | 9     | 1    | 1      | 4     | 3    | 1      | 1     | 1     | 1      | 1     | 1     |
| 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          | 92     | 92    | 92   | 92     | 92    | 92   | 92     | 92    | 92    | 92     | 92    | 92    |
| Heavy Vehicles, %         | 2      | 2     | 2    | 2      | 2     | 2    | 2      | 2     | 2     | 2      | 2     | 2     |
| Mvmt Flow                 | 1      | 10    | 1    | 1      | 4     | 3    | 1      | 1     | 1     | 1      | 1     | 1     |
|                           |        |       |      |        |       |      |        |       |       |        |       |       |
| Major/Minor               | Major1 |       |      | Major2 |       |      | Minor1 |       |       | Minor2 |       |       |
| Conflicting Flow All      | 8      | 0     | 0    | 11     | 0     | 0    | 20     | 22    | 10    | 21     | 21    | 6     |
| Stage 1                   | -      | -     | -    | -      | -     | -    | 12     | 12    | -     | 8      | 8     | -     |
| Stage 2                   | -      | -     | -    | -      | -     | -    | 7      | 10    | -     | 12     | 13    | -     |
| Critical Hdwy             | 4.12   | -     | -    | 4.12   | -     | -    | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1       | -      | -     | -    | -      | -     | -    | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2       | -      | -     | -    | -      | -     | -    | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy            | 2.218  | -     | -    | 2.218  | -     | -    | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver        | 1613   | -     | -    | 1608   | -     | -    | 994    | 871   | 1071  | 992    | 872   | 1077  |
| Stage 1                   | -      | -     | -    | -      | -     | -    | 1008   | 885   | -     | 1013   | 889   | -     |
| Stage 2                   | -      | -     | -    | -      | -     | -    | 1015   | 887   | -     | 1008   | 885   | -     |
| Platoon blocked, %        |        | -     | -    |        | -     | -    |        |       |       |        |       |       |
| Mov Cap-1 Maneuver        | 1613   | -     | -    | 1608   | -     | -    | 990    | 870   | 1071  | 989    | 871   | 1077  |
| Mov Cap-2 Maneuver        | -      | -     | -    | -      | -     | -    | 990    | 870   | -     | 989    | 871   | -     |
| Stage 1                   | -      | -     | -    | -      | -     | -    | 1007   | 885   | -     | 1013   | 888   | -     |
| Stage 2                   | -      | -     | -    | -      | -     | -    | 1012   | 887   | -     | 1005   | 884   | -     |
|                           |        |       |      |        |       |      |        |       |       |        |       |       |
|                           |        |       |      |        |       |      |        |       |       |        |       |       |
| Approach                  | EB     |       |      | WB     |       |      | NB     |       |       | SB     |       |       |
| HCM Control Delay, s/v    | 0.66   |       |      | 0.9    |       |      | 8.72   |       |       | 8.72   |       |       |
| HCM LOS                   |        |       |      |        |       |      | A      |       |       | A      |       |       |
|                           |        |       |      |        |       |      |        |       |       |        |       |       |
|                           |        |       |      |        |       |      |        |       |       |        |       |       |
| Minor Lane/Major Mvmt     | NBLn1  | EBL   | EBT  | EBR    | WBL   | WBT  | WBR    | SBLn1 |       |        |       |       |
| Capacity (veh/h)          | 970    | 160   | -    | -      | 207   | -    | -      | 972   |       |        |       |       |
| HCM Lane V/C Ratio        | 0.003  | 0.001 | -    | -      | 0.001 | -    | -      | 0.003 |       |        |       |       |
| HCM Control Delay (s/veh) | 8.7    | 7.2   | 0    | -      | 7.2   | 0    | -      | 8.7   |       |        |       |       |
| HCM Lane LOS              | A      | A     | A    | -      | A     | A    | -      | A     |       |        |       |       |
| HCM 95th %tile Q(veh)     | 0      | 0     | -    | -      | 0     | -    | -      | 0     |       |        |       |       |

HCM 7th TWSC  
4: SW 43rd Street & SW Zenith Avenue

07/01/2024

Intersection

Int Delay, s/veh 4

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations 

Traffic Vol, veh/h 22 1 1 4 7 17

Future Vol, veh/h 22 1 1 4 7 17

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length - - - - - -

Veh in Median Storage, # 0 - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 92 92 92 92 92 92

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 24 1 1 4 8 18

Major/Minor Minor2 Major1 Major2

Conflicting Flow All 23 17 26 0 - 0

Stage 1 17 - - - - -

Stage 2 7 - - - - -

Critical Hdwy 6.42 6.22 4.12 - - -

Critical Hdwy Stg 1 5.42 - - - - -

Critical Hdwy Stg 2 5.42 - - - - -

Follow-up Hdwy 3.518 3.318 2.218 - - -

Pot Cap-1 Maneuver 993 1062 1588 - - -

Stage 1 1006 - - - - -

Stage 2 1017 - - - - -

Platoon blocked, % - - -

Mov Cap-1 Maneuver 992 1062 1588 - - -

Mov Cap-2 Maneuver 992 - - - - -

Stage 1 1005 - - - - -

Stage 2 1017 - - - - -

Approach EB NB SB

HCM Control Delay, s/v 8.71 1.45 0

HCM LOS A

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h) 360 - 995 - -

HCM Lane V/C Ratio 0.001 - 0.025 - -

HCM Control Delay (s/veh) 7.3 0 8.7 - -

HCM Lane LOS A A A - -

HCM 95th %tile Q(veh) 0 - 0.1 - -



| 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       | 17   | 8    | 2    | 26   | 11   | 71   | 1    | 461  | 67   | 101  | 202  | 7    |
| Future Vol, veh/h        | 17   | 8    | 2    | 26   | 11   | 71   | 1    | 461  | 67   | 101  | 202  | 7    |
| Conflicting Peds, #/hr   | 2    | 0    | 0    | 0    | 0    | 2    | 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           | -    | -    | -    | -    | -    | -    | -    | -    | -    | 250  | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 83   | 83   | 83   | 83   | 83   | 83   | 83   | 83   | 83   | 83   | 83   | 83   |
| Heavy Vehicles, %        | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Mvmt Flow                | 20   | 10   | 2    | 31   | 13   | 86   | 1    | 555  | 81   | 122  | 243  | 8    |

| Major/Minor          | Minor2 |      | Minor1 |      | Major1 |     | Major2 |   |   |     |   |   |
|----------------------|--------|------|--------|------|--------|-----|--------|---|---|-----|---|---|
| Conflicting Flow All | 1057   | 1130 | 248    | 1090 | 1093   | 598 | 252    | 0 | 0 | 636 | 0 | 0 |
| Stage 1              | 491    | 491  | -      | 598  | 598    | -   | -      | - | - | -   | - | - |
| Stage 2              | 566    | 639  | -      | 492  | 495    | -   | -      | - | - | -   | - | - |
| 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   | 205    | 206  | 796    | 194  | 216    | 506 | 1325   | - | - | 957 | - | - |
| Stage 1              | 563    | 552  | -      | 492  | 494    | -   | -      | - | - | -   | - | - |
| Stage 2              | 512    | 474  | -      | 563  | 549    | -   | -      | - | - | -   | - | - |
| Platoon blocked, %   |        |      |        |      |        |     |        | - | - |     | - | - |
| Mov Cap-1 Maneuver   | 139    | 179  | 796    | 161  | 188    | 505 | 1325   | - | - | 957 | - | - |
| Mov Cap-2 Maneuver   | 139    | 179  | -      | 161  | 188    | -   | -      | - | - | -   | - | - |
| Stage 1              | 491    | 481  | -      | 492  | 493    | -   | -      | - | - | -   | - | - |
| Stage 2              | 413    | 473  | -      | 480  | 479    | -   | -      | - | - | -   | - | - |

| Approach                    | EB | WB    | NB   | SB   |
|-----------------------------|----|-------|------|------|
| HCM Control Delay, s/v33.36 |    | 25.93 | 0.01 | 3.03 |
| HCM LOS                     | D  | D     |      |      |

| Minor Lane/Major Mvmt     | NBL   | NBT | NBR | EBLn1WBLn1 | SBL   | SBT   | SBR |
|---------------------------|-------|-----|-----|------------|-------|-------|-----|
| Capacity (veh/h)          | 3     | -   | -   | 159        | 300   | 957   | -   |
| HCM Lane V/C Ratio        | 0.001 | -   | -   | 0.205      | 0.434 | 0.127 | -   |
| HCM Control Delay (s/veh) | 7.7   | 0   | -   | 33.4       | 25.9  | 9.3   | -   |
| HCM Lane LOS              | A     | A   | -   | D          | D     | A     | -   |
| HCM 95th %tile Q(veh)     | 0     | -   | -   | 0.7        | 2.1   | 0.4   | -   |

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 5.4  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  | NEL  | NET  | NER  | SWL  | SWT  | SWR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 5    | 1    | 88   | 5    | 1    | 7    | 12   | 46   | 8    | 127  | 79   | 8    |
| Future Vol, veh/h        | 5    | 1    | 88   | 5    | 1    | 7    | 12   | 46   | 8    | 127  | 79   | 8    |
| Conflicting Peds, #/hr   | 2    | 0    | 1    | 1    | 0    | 2    | 1    | 0    | 1    | 1    | 0    | 1    |
| 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         | 80   | 80   | 80   | 80   | 80   | 80   | 80   | 80   | 80   | 80   | 80   | 80   |
| Heavy Vehicles, %        | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Mvmt Flow                | 6    | 1    | 110  | 6    | 1    | 9    | 15   | 58   | 10   | 159  | 99   | 10   |

| Major/Minor          | Minor1 |     | Minor2 |     | Major1 |     | Major2 |   |   |      |   |   |
|----------------------|--------|-----|--------|-----|--------|-----|--------|---|---|------|---|---|
| Conflicting Flow All | 512    | 521 | 65     | 511 | 521    | 107 | 110    | 0 | 0 | 69   | 0 | 0 |
| Stage 1              | 94     | 94  | -      | 422 | 422    | -   | -      | - | - | -    | - | - |
| Stage 2              | 419    | 427 | -      | 89  | 99     | -   | -      | - | - | -    | - | - |
| 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   | 475    | 463 | 1005   | 476 | 463    | 953 | 1493   | - | - | 1545 | - | - |
| Stage 1              | 918    | 821 | -      | 613 | 592    | -   | -      | - | - | -    | - | - |
| Stage 2              | 616    | 589 | -      | 923 | 817    | -   | -      | - | - | -    | - | - |
| Platoon blocked, %   |        |     |        |     |        |     |        | - | - | -    | - | - |
| Mov Cap-1 Maneuver   | 413    | 407 | 1003   | 372 | 407    | 950 | 1492   | - | - | 1544 | - | - |
| Mov Cap-2 Maneuver   | 413    | 407 | -      | 372 | 407    | -   | -      | - | - | -    | - | - |
| Stage 1              | 908    | 812 | -      | 546 | 526    | -   | -      | - | - | -    | - | - |
| Stage 2              | 541    | 524 | -      | 811 | 808    | -   | -      | - | - | -    | - | - |

| Approach               | NB   |  | SB    |  | NE   |  | SW   |  |
|------------------------|------|--|-------|--|------|--|------|--|
| HCM Control Delay, s/v | 9.49 |  | 11.64 |  | 1.35 |  | 4.51 |  |
| HCM LOS                | A    |  | B     |  |      |  |      |  |

| Minor Lane/Major Mvmt     | NEL  | NET | NER | NBLn1 | SBLn1 | SWL   | SWT | SWR |
|---------------------------|------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h)          | 318  | -   | -   | 919   | 559   | 1049  | -   | -   |
| HCM Lane V/C Ratio        | 0.01 | -   | -   | 0.128 | 0.029 | 0.103 | -   | -   |
| HCM Control Delay (s/veh) | 7.4  | 0   | -   | 9.5   | 11.6  | 7.6   | 0   | -   |
| HCM Lane LOS              | A    | A   | -   | A     | B     | A     | A   | -   |
| HCM 95th %tile Q(veh)     | 0    | -   | -   | 0.4   | 0.1   | 0.3   | -   | -   |

HCM 7th TWSC  
3: SW 49th Street & SW Zenith Avenue

07/01/2024

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2.7  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 1    | 9    | 1    | 1    | 4    | 3    | 1    | 1    | 1    | 1    | 1    | 1    |
| Future Vol, veh/h        | 1    | 9    | 1    | 1    | 4    | 3    | 1    | 1    | 1    | 1    | 1    | 1    |
| 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         | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 1    | 10   | 1    | 1    | 4    | 3    | 1    | 1    | 1    | 1    | 1    | 1    |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 8      | 0 | 0 | 11     | 0 | 0 | 20     | 22    | 10    | 21     | 21    | 6     |
| Stage 1              | -      | - | - | -      | - | - | 12     | 12    | -     | 8      | 8     | -     |
| Stage 2              | -      | - | - | -      | - | - | 7      | 10    | -     | 12     | 13    | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 1613   | - | - | 1608   | - | - | 994    | 871   | 1071  | 992    | 872   | 1077  |
| Stage 1              | -      | - | - | -      | - | - | 1008   | 885   | -     | 1013   | 889   | -     |
| Stage 2              | -      | - | - | -      | - | - | 1015   | 887   | -     | 1008   | 885   | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver   | 1613   | - | - | 1608   | - | - | 990    | 870   | 1071  | 989    | 871   | 1077  |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 990    | 870   | -     | 989    | 871   | -     |
| Stage 1              | -      | - | - | -      | - | - | 1007   | 885   | -     | 1013   | 888   | -     |
| Stage 2              | -      | - | - | -      | - | - | 1012   | 887   | -     | 1005   | 884   | -     |

| Approach                    | EB | WB  | NB   | SB   |
|-----------------------------|----|-----|------|------|
| HCM Control Delay, s/v 0.66 |    | 0.9 | 8.72 | 8.72 |
| HCM LOS                     |    |     | A    | A    |

| Minor Lane/Major Mvmt     | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|---------------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)          | 970   | 160   | -   | -   | 207   | -   | -   | 972   |
| HCM Lane V/C Ratio        | 0.003 | 0.001 | -   | -   | 0.001 | -   | -   | 0.003 |
| HCM Control Delay (s/veh) | 8.7   | 7.2   | 0   | -   | 7.2   | 0   | -   | 8.7   |
| HCM Lane LOS              | A     | A     | A   | -   | A     | A   | -   | A     |
| HCM 95th %tile Q(veh)     | 0     | 0     | -   | -   | 0     | -   | -   | 0     |

HCM 7th TWSC  
4: SW 43rd Street & SW Zenith Avenue

07/01/2024

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 4.5  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 23   | 1    | 1    | 1    | 1    | 10   | 1    | 12   | 1    | 16   | 17   | 18   |
| Future Vol, veh/h        | 23   | 1    | 1    | 1    | 1    | 10   | 1    | 12   | 1    | 16   | 17   | 18   |
| 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         | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 25   | 1    | 1    | 1    | 1    | 11   | 1    | 13   | 1    | 17   | 18   | 20   |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       | Major2 |   |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 79     | 79    | 28     | 70    | 89     | 14    | 38     | 0 | 0 | 14    | 0 | 0 |
| Stage 1              | 63     | 63    | -      | 16    | 16     | -     | -      | - | - | -     | - | - |
| Stage 2              | 16     | 16    | -      | 54    | 73     | -     | -      | - | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | 6.52   | 6.22  | 4.12   | - | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -      | - | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -      | - | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | 4.018  | 3.318 | 2.218  | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 910    | 811   | 1047   | 922   | 802    | 1066  | 1572   | - | - | 1604  | - | - |
| Stage 1              | 948    | 842   | -      | 1004  | 882    | -     | -      | - | - | -     | - | - |
| Stage 2              | 1004   | 882   | -      | 959   | 834    | -     | -      | - | - | -     | - | - |
| Platoon blocked, %   |        |       |        |       |        |       |        | - | - |       | - | - |
| Mov Cap-1 Maneuver   | 889    | 801   | 1047   | 909   | 792    | 1066  | 1572   | - | - | 1604  | - | - |
| Mov Cap-2 Maneuver   | 889    | 801   | -      | 909   | 792    | -     | -      | - | - | -     | - | - |
| Stage 1              | 937    | 833   | -      | 1003  | 882    | -     | -      | - | - | -     | - | - |
| Stage 2              | 992    | 881   | -      | 946   | 825    | -     | -      | - | - | -     | - | - |

| Approach               | EB   |  | WB   |  | NB   |  | SB   |  |
|------------------------|------|--|------|--|------|--|------|--|
| HCM Control Delay, s/v | 9.17 |  | 8.57 |  | 0.52 |  | 2.28 |  |
| HCM LOS                | A    |  | A    |  |      |  |      |  |

| Minor Lane/Major Mvmt     | NBL   | NBT | NBR | EBLn1WBLn1 | SBL   | SBT   | SBR |
|---------------------------|-------|-----|-----|------------|-------|-------|-----|
| Capacity (veh/h)          | 127   | -   | -   | 890        | 1022  | 512   | -   |
| HCM Lane V/C Ratio        | 0.001 | -   | -   | 0.031      | 0.013 | 0.011 | -   |
| HCM Control Delay (s/veh) | 7.3   | 0   | -   | 9.2        | 8.6   | 7.3   | 0   |
| HCM Lane LOS              | A     | A   | -   | A          | A     | A     | -   |
| HCM 95th %tile Q(veh)     | 0     | -   | -   | 0.1        | 0     | 0     | -   |

| 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       | 17   | 8    | 2    | 28   | 11   | 75   | 1    | 461  | 71   | 106  | 202  | 7    |
| Future Vol, veh/h        | 17   | 8    | 2    | 28   | 11   | 75   | 1    | 461  | 71   | 106  | 202  | 7    |
| Conflicting Peds, #/hr   | 2    | 0    | 0    | 0    | 0    | 2    | 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           | -    | -    | -    | -    | -    | -    | -    | -    | -    | 250  | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 83   | 83   | 83   | 83   | 83   | 83   | 83   | 83   | 83   | 83   | 83   | 83   |
| Heavy Vehicles, %        | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Mvmt Flow                | 20   | 10   | 2    | 34   | 13   | 90   | 1    | 555  | 86   | 128  | 243  | 8    |

| Major/Minor          | Minor2 |      | Minor1 |      | Major1 |     | Major2 |   |   |     |   |   |
|----------------------|--------|------|--------|------|--------|-----|--------|---|---|-----|---|---|
| Conflicting Flow All | 1069   | 1146 | 248    | 1104 | 1108   | 600 | 252    | 0 | 0 | 641 | 0 | 0 |
| Stage 1              | 503    | 503  | -      | 601  | 601    | -   | -      | - | - | -   | - | - |
| Stage 2              | 566    | 643  | -      | 504  | 507    | -   | -      | - | - | -   | - | - |
| 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   | 201    | 201  | 796    | 190  | 212    | 505 | 1325   | - | - | 953 | - | - |
| Stage 1              | 555    | 545  | -      | 491  | 493    | -   | -      | - | - | -   | - | - |
| Stage 2              | 512    | 471  | -      | 554  | 542    | -   | -      | - | - | -   | - | - |
| Platoon blocked, %   |        |      |        |      |        |     |        | - | - |     | - | - |
| Mov Cap-1 Maneuver   | 133    | 174  | 796    | 156  | 183    | 504 | 1325   | - | - | 953 | - | - |
| Mov Cap-2 Maneuver   | 133    | 174  | -      | 156  | 183    | -   | -      | - | - | -   | - | - |
| Stage 1              | 480    | 472  | -      | 490  | 492    | -   | -      | - | - | -   | - | - |
| Stage 2              | 408    | 471  | -      | 469  | 470    | -   | -      | - | - | -   | - | - |

| Approach                    | EB | WB    | NB   | SB   |
|-----------------------------|----|-------|------|------|
| HCM Control Delay, s/v34.72 |    | 27.62 | 0.01 | 3.15 |
| HCM LOS                     | D  | D     |      |      |

| Minor Lane/Major Mvmt     | NBL   | NBT | NBR | EBLn1WBLn1 | SBL   | SBT   | SBR |
|---------------------------|-------|-----|-----|------------|-------|-------|-----|
| Capacity (veh/h)          | 3     | -   | -   | 153        | 293   | 953   | -   |
| HCM Lane V/C Ratio        | 0.001 | -   | -   | 0.212      | 0.468 | 0.134 | -   |
| HCM Control Delay (s/veh) | 7.7   | 0   | -   | 34.7       | 27.6  | 9.4   | -   |
| HCM Lane LOS              | A     | A   | -   | D          | D     | A     | -   |
| HCM 95th %tile Q(veh)     | 0     | -   | -   | 0.8        | 2.4   | 0.5   | -   |

## Intersection

Int Delay, s/veh 5.6

| Movement                 | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  | NEL  | NET  | NER  | SWL  | SWT  | SWR  |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 11   | 1    | 92   | 5    | 1    | 7    | 12   | 46   | 17   | 134  | 79   | 8    |
| Future Vol, veh/h        | 11   | 1    | 92   | 5    | 1    | 7    | 12   | 46   | 17   | 134  | 79   | 8    |
| Conflicting Peds, #/hr   | 2    | 0    | 1    | 1    | 0    | 2    | 1    | 0    | 1    | 1    | 0    | 1    |
| 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         | 80   | 80   | 80   | 80   | 80   | 80   | 80   | 80   | 80   | 80   | 80   | 80   |
| Heavy Vehicles, %        | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Mvmt Flow                | 14   | 1    | 115  | 6    | 1    | 9    | 15   | 58   | 21   | 168  | 99   | 10   |

| Major/Minor          | Minor1 |     | Minor2 |     | Major1 |     | Major2 |   |   |      |   |   |
|----------------------|--------|-----|--------|-----|--------|-----|--------|---|---|------|---|---|
| Conflicting Flow All | 536    | 544 | 70     | 529 | 550    | 107 | 110    | 0 | 0 | 80   | 0 | 0 |
| Stage 1              | 99     | 99  | -      | 440 | 440    | -   | -      | - | - | -    | - | - |
| Stage 2              | 436    | 445 | -      | 89  | 110    | -   | -      | - | - | -    | - | - |
| 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   | 459    | 449 | 998    | 464 | 446    | 953 | 1493   | - | - | 1531 | - | - |
| Stage 1              | 912    | 817 | -      | 600 | 581    | -   | -      | - | - | -    | - | - |
| Stage 2              | 603    | 578 | -      | 923 | 808    | -   | -      | - | - | -    | - | - |
| Platoon blocked, %   |        |     |        |     |        |     |        | - | - |      | - | - |
| Mov Cap-1 Maneuver   | 395    | 392 | 996    | 357 | 389    | 950 | 1492   | - | - | 1530 | - | - |
| Mov Cap-2 Maneuver   | 395    | 392 | -      | 357 | 389    | -   | -      | - | - | -    | - | - |
| Stage 1              | 902    | 808 | -      | 529 | 513    | -   | -      | - | - | -    | - | - |
| Stage 2              | 525    | 510 | -      | 806 | 799    | -   | -      | - | - | -    | - | - |

| Approach                    | NB | SB    | NE   | SW   |
|-----------------------------|----|-------|------|------|
| HCM Control Delay, s/v10.02 |    | 11.84 | 1.19 | 4.63 |
| HCM LOS                     | B  | B     |      |      |

| Minor Lane/Major Mvmt     | NEL  | NET | NER | NBLn1 | SBLn1 | SWL  | SWT | SWR |
|---------------------------|------|-----|-----|-------|-------|------|-----|-----|
| Capacity (veh/h)          | 273  | -   | -   | 847   | 543   | 1072 | -   | -   |
| HCM Lane V/C Ratio        | 0.01 | -   | -   | 0.153 | 0.03  | 0.11 | -   | -   |
| HCM Control Delay (s/veh) | 7.4  | 0   | -   | 10    | 11.8  | 7.6  | 0   | -   |
| HCM Lane LOS              | A    | A   | -   | B     | B     | A    | A   | -   |
| HCM 95th %tile Q(veh)     | 0    | -   | -   | 0.5   | 0.1   | 0.4  | -   | -   |

HCM 7th TWSC  
3: SW 49th Street & SW Zenith Avenue

07/30/2024

| 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        | 1      | 9     | 1    | 19     | 4     | 3    | 1      | 1     | 11    | 1      | 1     | 1     |
| Future Vol, veh/h         | 1      | 9     | 1    | 19     | 4     | 3    | 1      | 1     | 11    | 1      | 1     | 1     |
| 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          | 92     | 92    | 92   | 92     | 92    | 92   | 92     | 92    | 92    | 92     | 92    | 92    |
| Heavy Vehicles, %         | 2      | 2     | 2    | 2      | 2     | 2    | 2      | 2     | 2     | 2      | 2     | 2     |
| Mvmt Flow                 | 1      | 10    | 1    | 21     | 4     | 3    | 1      | 1     | 12    | 1      | 1     | 1     |
|                           |        |       |      |        |       |      |        |       |       |        |       |       |
| Major/Minor               | Major1 |       |      | Major2 |       |      | Minor1 |       |       | Minor2 |       |       |
| Conflicting Flow All      | 8      | 0     | 0    | 11     | 0     | 0    | 59     | 61    | 10    | 60     | 60    | 6     |
| Stage 1                   | -      | -     | -    | -      | -     | -    | 12     | 12    | -     | 47     | 47    | -     |
| Stage 2                   | -      | -     | -    | -      | -     | -    | 46     | 49    | -     | 12     | 13    | -     |
| Critical Hdwy             | 4.12   | -     | -    | 4.12   | -     | -    | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1       | -      | -     | -    | -      | -     | -    | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2       | -      | -     | -    | -      | -     | -    | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy            | 2.218  | -     | -    | 2.218  | -     | -    | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver        | 1613   | -     | -    | 1608   | -     | -    | 938    | 829   | 1071  | 936    | 831   | 1077  |
| Stage 1                   | -      | -     | -    | -      | -     | -    | 1008   | 885   | -     | 966    | 855   | -     |
| Stage 2                   | -      | -     | -    | -      | -     | -    | 968    | 854   | -     | 1008   | 885   | -     |
| Platoon blocked, %        |        | -     | -    |        | -     | -    |        |       |       |        |       |       |
| Mov Cap-1 Maneuver        | 1613   | -     | -    | 1608   | -     | -    | 923    | 818   | 1071  | 912    | 819   | 1077  |
| Mov Cap-2 Maneuver        | -      | -     | -    | -      | -     | -    | 923    | 818   | -     | 912    | 819   | -     |
| Stage 1                   | -      | -     | -    | -      | -     | -    | 1007   | 885   | -     | 954    | 844   | -     |
| Stage 2                   | -      | -     | -    | -      | -     | -    | 953    | 843   | -     | 995    | 884   | -     |
|                           |        |       |      |        |       |      |        |       |       |        |       |       |
|                           |        |       |      |        |       |      |        |       |       |        |       |       |
| Approach                  | EB     |       |      | WB     |       |      | NB     |       |       | SB     |       |       |
| HCM Control Delay, s/v    | 0.66   |       |      | 5.31   |       |      | 8.53   |       |       | 8.91   |       |       |
| HCM LOS                   |        |       |      |        |       |      | A      |       |       | A      |       |       |
|                           |        |       |      |        |       |      |        |       |       |        |       |       |
| Minor Lane/Major Mvmt     | NBLn1  | EBL   | EBT  | EBR    | WBL   | WBT  | WBR    | SBLn1 |       |        |       |       |
| Capacity (veh/h)          | 1034   | 160   | -    | -      | 1212  | -    | -      | 924   |       |        |       |       |
| HCM Lane V/C Ratio        | 0.014  | 0.001 | -    | -      | 0.013 | -    | -      | 0.004 |       |        |       |       |
| HCM Control Delay (s/veh) | 8.5    | 7.2   | 0    | -      | 7.3   | 0    | -      | 8.9   |       |        |       |       |
| HCM Lane LOS              | A      | A     | A    | -      | A     | A    | -      | A     |       |        |       |       |
| HCM 95th %tile Q(veh)     | 0      | 0     | -    | -      | 0     | -    | -      | 0     |       |        |       |       |



HCM 7th TWSC  
4: SW 43rd Street & SW Zenith Avenue

07/30/2024

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 4.3  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 33   | 1    | 1    | 1    | 1    | 10   | 2    | 12   | 1    | 16   | 17   | 34   |
| Future Vol, veh/h        | 33   | 1    | 1    | 1    | 1    | 10   | 2    | 12   | 1    | 16   | 17   | 34   |
| 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         | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 36   | 1    | 1    | 1    | 1    | 11   | 2    | 13   | 1    | 17   | 18   | 37   |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       | Major2 |   |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 90     | 90    | 37     | 72    | 108    | 14    | 55     | 0 | 0 | 14    | 0 | 0 |
| Stage 1              | 72     | 72    | -      | 18    | 18     | -     | -      | - | - | -     | - | - |
| Stage 2              | 18     | 18    | -      | 54    | 90     | -     | -      | - | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | 6.52   | 6.22  | 4.12   | - | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -      | - | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -      | - | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | 4.018  | 3.318 | 2.218  | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 895    | 800   | 1035   | 919   | 782    | 1066  | 1549   | - | - | 1604  | - | - |
| Stage 1              | 938    | 835   | -      | 1001  | 880    | -     | -      | - | - | -     | - | - |
| Stage 2              | 1001   | 880   | -      | 959   | 820    | -     | -      | - | - | -     | - | - |
| Platoon blocked, %   |        |       |        |       |        |       |        | - | - |       | - | - |
| Mov Cap-1 Maneuver   | 874    | 790   | 1035   | 906   | 772    | 1066  | 1549   | - | - | 1604  | - | - |
| Mov Cap-2 Maneuver   | 874    | 790   | -      | 906   | 772    | -     | -      | - | - | -     | - | - |
| Stage 1              | 927    | 826   | -      | 1000  | 879    | -     | -      | - | - | -     | - | - |
| Stage 2              | 988    | 879   | -      | 946   | 811    | -     | -      | - | - | -     | - | - |

| Approach               | EB  |  | WB   |  | NB   |  | SB   |  |
|------------------------|-----|--|------|--|------|--|------|--|
| HCM Control Delay, s/v | 9.3 |  | 8.58 |  | 0.98 |  | 1.74 |  |
| HCM LOS                | A   |  | A    |  |      |  |      |  |

| Minor Lane/Major Mvmt     | NBL   | NBT | NBR | EBLn1WBLn1  | SBL   | SBT | SBR |
|---------------------------|-------|-----|-----|-------------|-------|-----|-----|
| Capacity (veh/h)          | 236   | -   | -   | 875 1019    | 379   | -   | -   |
| HCM Lane V/C Ratio        | 0.001 | -   | -   | 0.043 0.013 | 0.011 | -   | -   |
| HCM Control Delay (s/veh) | 7.3   | 0   | -   | 9.3 8.6     | 7.3   | 0   | -   |
| HCM Lane LOS              | A     | A   | -   | A A         | A     | A   | -   |
| HCM 95th %tile Q(veh)     | 0     | -   | -   | 0.1 0       | 0     | -   | -   |

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 6.1  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      | ↕    | ↕    |      |
| Traffic Vol, veh/h       | 18   | 9    | 2    | 30   | 13   | 77   | 1    | 498  | 75   | 109  | 215  | 8    |
| Future Vol, veh/h        | 18   | 9    | 2    | 30   | 13   | 77   | 1    | 498  | 75   | 109  | 215  | 8    |
| Conflicting Peds, #/hr   | 2    | 0    | 0    | 0    | 0    | 2    | 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           | -    | -    | -    | -    | -    | -    | -    | -    | -    | 250  | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 83   | 83   | 83   | 83   | 83   | 83   | 83   | 83   | 83   | 83   | 83   | 83   |
| Heavy Vehicles, %        | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Mvmt Flow                | 22   | 11   | 2    | 36   | 16   | 93   | 1    | 600  | 90   | 131  | 259  | 10   |

| Major/Minor          | Minor2 |      | Minor1 |      | Major1 |     | Major2 |   |   |     |   |   |
|----------------------|--------|------|--------|------|--------|-----|--------|---|---|-----|---|---|
| Conflicting Flow All | 1139   | 1219 | 264    | 1175 | 1179   | 647 | 269    | 0 | 0 | 690 | 0 | 0 |
| Stage 1              | 527    | 527  | -      | 648  | 648    | -   | -      | - | - | -   | - | - |
| Stage 2              | 612    | 693  | -      | 527  | 531    | -   | -      | - | - | -   | - | - |
| 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   | 180    | 182  | 780    | 170  | 192    | 474 | 1307   | - | - | 914 | - | - |
| Stage 1              | 539    | 532  | -      | 463  | 469    | -   | -      | - | - | -   | - | - |
| Stage 2              | 484    | 448  | -      | 538  | 529    | -   | -      | - | - | -   | - | - |
| Platoon blocked, %   |        |      |        |      |        |     |        | - | - | -   | - | - |
| Mov Cap-1 Maneuver   | 113    | 155  | 780    | 136  | 164    | 474 | 1307   | - | - | 914 | - | - |
| Mov Cap-2 Maneuver   | 113    | 155  | -      | 136  | 164    | -   | -      | - | - | -   | - | - |
| Stage 1              | 461    | 455  | -      | 462  | 469    | -   | -      | - | - | -   | - | - |
| Stage 2              | 375    | 447  | -      | 448  | 453    | -   | -      | - | - | -   | - | - |

| Approach                    | EB | WB    | NB   | SB   |
|-----------------------------|----|-------|------|------|
| HCM Control Delay, s/v41.73 |    | 34.95 | 0.01 | 3.15 |
| HCM LOS                     | E  | D     |      |      |

| Minor Lane/Major Mvmt     | NBL   | NBT | NBR | EBLn1WBLn1  | SBL   | SBT | SBR |
|---------------------------|-------|-----|-----|-------------|-------|-----|-----|
| Capacity (veh/h)          | 3     | -   | -   | 132 260     | 914   | -   | -   |
| HCM Lane V/C Ratio        | 0.001 | -   | -   | 0.264 0.557 | 0.144 | -   | -   |
| HCM Control Delay (s/veh) | 7.8   | 0   | -   | 41.7 34.9   | 9.6   | -   | -   |
| HCM Lane LOS              | A     | A   | -   | E D         | A     | -   | -   |
| HCM 95th %tile Q(veh)     | 0     | -   | -   | 1 3.1       | 0.5   | -   | -   |

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 5.7  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  | NEL  | NET  | NER  | SWL  | SWT  | SWR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 11   | 1    | 96   | 5    | 1    | 7    | 12   | 47   | 17   | 139  | 80   | 8    |
| Future Vol, veh/h        | 11   | 1    | 96   | 5    | 1    | 7    | 12   | 47   | 17   | 139  | 80   | 8    |
| Conflicting Peds, #/hr   | 2    | 0    | 1    | 1    | 0    | 2    | 1    | 0    | 1    | 1    | 0    | 1    |
| 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         | 80   | 80   | 80   | 80   | 80   | 80   | 80   | 80   | 80   | 80   | 80   | 80   |
| Heavy Vehicles, %        | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Mvmt Flow                | 14   | 1    | 120  | 6    | 1    | 9    | 15   | 59   | 21   | 174  | 100  | 10   |

| Major/Minor          | Minor1 |     | Minor2 |     | Major1 |     |      | Major2 |   |      |   |   |
|----------------------|--------|-----|--------|-----|--------|-----|------|--------|---|------|---|---|
| Conflicting Flow All | 551    | 559 | 71     | 544 | 565    | 108 | 111  | 0      | 0 | 81   | 0 | 0 |
| Stage 1              | 100    | 100 | -      | 454 | 454    | -   | -    | -      | - | -    | - | - |
| Stage 2              | 450    | 459 | -      | 90  | 111    | -   | -    | -      | - | -    | - | - |
| 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   | 449    | 440 | 997    | 453 | 437    | 951 | 1492 | -      | - | 1529 | - | - |
| Stage 1              | 911    | 816 | -      | 590 | 573    | -   | -    | -      | - | -    | - | - |
| Stage 2              | 592    | 570 | -      | 922 | 807    | -   | -    | -      | - | -    | - | - |
| Platoon blocked, %   |        |     |        |     |        |     |      | -      | - |      | - | - |
| Mov Cap-1 Maneuver   | 384    | 382 | 995    | 345 | 379    | 949 | 1490 | -      | - | 1528 | - | - |
| Mov Cap-2 Maneuver   | 384    | 382 | -      | 345 | 379    | -   | -    | -      | - | -    | - | - |
| Stage 1              | 900    | 807 | -      | 518 | 503    | -   | -    | -      | - | -    | - | - |
| Stage 2              | 513    | 501 | -      | 800 | 798    | -   | -    | -      | - | -    | - | - |

| Approach                    | NB | SB | NE   | SW   |
|-----------------------------|----|----|------|------|
| HCM Control Delay, s/v10.07 |    | 12 | 1.17 | 4.69 |
| HCM LOS                     | B  | B  |      |      |

| Minor Lane/Major Mvmt     | NEL  | NET | NER | NBLn1 | SBLn1 | SWL   | SWT | SWR |
|---------------------------|------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h)          | 270  | -   | -   | 845   | 530   | 1083  | -   | -   |
| HCM Lane V/C Ratio        | 0.01 | -   | -   | 0.16  | 0.031 | 0.114 | -   | -   |
| HCM Control Delay (s/veh) | 7.4  | 0   | -   | 10.1  | 12    | 7.7   | 0   | -   |
| HCM Lane LOS              | A    | A   | -   | B     | B     | A     | A   | -   |
| HCM 95th %tile Q(veh)     | 0    | -   | -   | 0.6   | 0.1   | 0.4   | -   | -   |

HCM 7th TWSC  
3: SW 49th Street & SW Zenith Avenue

07/30/2024

| 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        | 1      | 10                                                                                | 1    | 19     | 5                                                                                 | 3    | 1      | 1                                                                                 | 11    | 1      | 1                                                                                   | 1     |
| Future Vol, veh/h         | 1      | 10                                                                                | 1    | 19     | 5                                                                                 | 3    | 1      | 1                                                                                 | 11    | 1      | 1                                                                                   | 1     |
| 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          | 92     | 92                                                                                | 92   | 92     | 92                                                                                | 92   | 92     | 92                                                                                | 92    | 92     | 92                                                                                  | 92    |
| Heavy Vehicles, %         | 2      | 2                                                                                 | 2    | 2      | 2                                                                                 | 2    | 2      | 2                                                                                 | 2     | 2      | 2                                                                                   | 2     |
| Mvmt Flow                 | 1      | 11                                                                                | 1    | 21     | 5                                                                                 | 3    | 1      | 1                                                                                 | 12    | 1      | 1                                                                                   | 1     |
|                           |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Major/Minor               | Major1 |                                                                                   |      | Major2 |                                                                                   |      | Minor1 |                                                                                   |       | Minor2 |                                                                                     |       |
| Conflicting Flow All      | 9      | 0                                                                                 | 0    | 12     | 0                                                                                 | 0    | 61     | 64                                                                                | 11    | 62     | 63                                                                                  | 7     |
| Stage 1                   | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 14     | 14                                                                                | -     | 48     | 48                                                                                  | -     |
| Stage 2                   | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 47     | 50                                                                                | -     | 14     | 14                                                                                  | -     |
| Critical Hdwy             | 4.12   | -                                                                                 | -    | 4.12   | -                                                                                 | -    | 7.12   | 6.52                                                                              | 6.22  | 7.12   | 6.52                                                                                | 6.22  |
| Critical Hdwy Stg 1       | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 6.12   | 5.52                                                                              | -     | 6.12   | 5.52                                                                                | -     |
| Critical Hdwy Stg 2       | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 6.12   | 5.52                                                                              | -     | 6.12   | 5.52                                                                                | -     |
| Follow-up Hdwy            | 2.218  | -                                                                                 | -    | 2.218  | -                                                                                 | -    | 3.518  | 4.018                                                                             | 3.318 | 3.518  | 4.018                                                                               | 3.318 |
| Pot Cap-1 Maneuver        | 1611   | -                                                                                 | -    | 1607   | -                                                                                 | -    | 934    | 827                                                                               | 1069  | 933    | 828                                                                                 | 1075  |
| Stage 1                   | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 1007   | 884                                                                               | -     | 965    | 855                                                                                 | -     |
| Stage 2                   | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 966    | 853                                                                               | -     | 1007   | 884                                                                                 | -     |
| Platoon blocked, %        |        | -                                                                                 | -    |        | -                                                                                 | -    |        |                                                                                   |       |        |                                                                                     |       |
| Mov Cap-1 Maneuver        | 1611   | -                                                                                 | -    | 1607   | -                                                                                 | -    | 920    | 816                                                                               | 1069  | 909    | 817                                                                                 | 1075  |
| Mov Cap-2 Maneuver        | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 920    | 816                                                                               | -     | 909    | 817                                                                                 | -     |
| Stage 1                   | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 1006   | 884                                                                               | -     | 953    | 844                                                                                 | -     |
| Stage 2                   | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 952    | 842                                                                               | -     | 993    | 883                                                                                 | -     |
|                           |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Approach                  | EB     |                                                                                   |      | WB     |                                                                                   |      | NB     |                                                                                   |       | SB     |                                                                                     |       |
| HCM Control Delay, s/v    | 0.6    |                                                                                   |      | 5.12   |                                                                                   |      | 8.54   |                                                                                   |       | 8.92   |                                                                                     |       |
| HCM LOS                   |        |                                                                                   |      |        |                                                                                   |      | A      |                                                                                   |       | A      |                                                                                     |       |
|                           |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Minor Lane/Major Mvmt     | NBLn1  | EBL                                                                               | EBT  | EBR    | WBL                                                                               | WBT  | WBR    | SBLn1                                                                             |       |        |                                                                                     |       |
| Capacity (veh/h)          | 1032   | 147                                                                               | -    | -      | 1178                                                                              | -    | -      | 922                                                                               |       |        |                                                                                     |       |
| HCM Lane V/C Ratio        | 0.014  | 0.001                                                                             | -    | -      | 0.013                                                                             | -    | -      | 0.004                                                                             |       |        |                                                                                     |       |
| HCM Control Delay (s/veh) | 8.5    | 7.2                                                                               | 0    | -      | 7.3                                                                               | 0    | -      | 8.9                                                                               |       |        |                                                                                     |       |
| HCM Lane LOS              | A      | A                                                                                 | A    | -      | A                                                                                 | A    | -      | A                                                                                 |       |        |                                                                                     |       |
| HCM 95th %tile Q(veh)     | 0      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 0                                                                                 |       |        |                                                                                     |       |

HCM 7th TWSC  
4: SW 43rd Street & SW Zenith Avenue

07/30/2024

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 4.3  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 35   | 1    | 1    | 1    | 1    | 10   | 2    | 13   | 1    | 16   | 18   | 36   |
| Future Vol, veh/h        | 35   | 1    | 1    | 1    | 1    | 10   | 2    | 13   | 1    | 16   | 18   | 36   |
| 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         | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 38   | 1    | 1    | 1    | 1    | 11   | 2    | 14   | 1    | 17   | 20   | 39   |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       | Major2 |   |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 93     | 93    | 39     | 74    | 113    | 15    | 59     | 0 | 0 | 15    | 0 | 0 |
| Stage 1              | 74     | 74    | -      | 19    | 19     | -     | -      | - | - | -     | - | - |
| Stage 2              | 19     | 20    | -      | 55    | 93     | -     | -      | - | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | 6.52   | 6.22  | 4.12   | - | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -      | - | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -      | - | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | 4.018  | 3.318 | 2.218  | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 891    | 797   | 1032   | 916   | 778    | 1065  | 1545   | - | - | 1603  | - | - |
| Stage 1              | 935    | 833   | -      | 1000  | 879    | -     | -      | - | - | -     | - | - |
| Stage 2              | 1000   | 879   | -      | 957   | 818    | -     | -      | - | - | -     | - | - |
| Platoon blocked, %   |        |       |        |       |        |       |        | - | - | -     | - | - |
| Mov Cap-1 Maneuver   | 869    | 786   | 1032   | 903   | 768    | 1065  | 1545   | - | - | 1603  | - | - |
| Mov Cap-2 Maneuver   | 869    | 786   | -      | 903   | 768    | -     | -      | - | - | -     | - | - |
| Stage 1              | 925    | 824   | -      | 999   | 878    | -     | -      | - | - | -     | - | - |
| Stage 2              | 987    | 878   | -      | 944   | 808    | -     | -      | - | - | -     | - | - |

| Approach               | EB   |  | WB   |  | NB   |  | SB   |  |
|------------------------|------|--|------|--|------|--|------|--|
| HCM Control Delay, s/v | 9.34 |  | 8.59 |  | 0.92 |  | 1.66 |  |
| HCM LOS                | A    |  | A    |  |      |  |      |  |

| Minor Lane/Major Mvmt     | NBL   | NBT | NBR | EBLn1WBLn1  | SBL   | SBT | SBR |
|---------------------------|-------|-----|-----|-------------|-------|-----|-----|
| Capacity (veh/h)          | 222   | -   | -   | 871 1017    | 363   | -   | -   |
| HCM Lane V/C Ratio        | 0.001 | -   | -   | 0.046 0.013 | 0.011 | -   | -   |
| HCM Control Delay (s/veh) | 7.3   | 0   | -   | 9.3 8.6     | 7.3   | 0   | -   |
| HCM Lane LOS              | A     | A   | -   | A A         | A     | A   | -   |
| HCM 95th %tile Q(veh)     | 0     | -   | -   | 0.1 0       | 0     | -   | -   |

Queuing and Blocking Report  
Year 2026 Buildout Volumes - PM Peak Hour

07/30/2024

Intersection: 1: SW Helmholtz Way & SW Wickiup Avenue

| Movement              | EB  | WB   | NB   | SB  | SB  |
|-----------------------|-----|------|------|-----|-----|
| Directions Served     | LTR | LTR  | LTR  | L   | TR  |
| Maximum Queue (ft)    | 48  | 136  | 22   | 70  | 11  |
| Average Queue (ft)    | 17  | 42   | 1    | 24  | 0   |
| 95th Queue (ft)       | 41  | 96   | 9    | 51  | 6   |
| Link Distance (ft)    | 835 | 2680 | 1265 |     | 854 |
| Upstream Blk Time (%) |     |      |      |     |     |
| Queuing Penalty (veh) |     |      |      |     |     |
| Storage Bay Dist (ft) |     |      |      | 250 |     |
| Storage Blk Time (%)  |     |      |      |     |     |
| Queuing Penalty (veh) |     |      |      |     |     |

Intersection: 2: SW Wickiup Avenue/SW Reservoir Drive & SW 43rd Street

| Movement              | NB   | SB  | NE   | SW   |
|-----------------------|------|-----|------|------|
| Directions Served     | LTR  | LTR | LTR  | LTR  |
| Maximum Queue (ft)    | 50   | 12  | 18   | 50   |
| Average Queue (ft)    | 15   | 3   | 1    | 8    |
| 95th Queue (ft)       | 35   | 10  | 10   | 31   |
| Link Distance (ft)    | 1693 | 178 | 2680 | 1084 |
| Upstream Blk Time (%) |      |     |      |      |
| Queuing Penalty (veh) |      |     |      |      |
| Storage Bay Dist (ft) |      |     |      |      |
| Storage Blk Time (%)  |      |     |      |      |
| Queuing Penalty (veh) |      |     |      |      |

Intersection: 3: SW 49th Street & SW Zenith Avenue

| Movement              | WB   | NB  | SB  |
|-----------------------|------|-----|-----|
| Directions Served     | LTR  | LTR | LTR |
| Maximum Queue (ft)    | 11   | 36  | 31  |
| Average Queue (ft)    | 0    | 15  | 3   |
| 95th Queue (ft)       | 4    | 40  | 19  |
| Link Distance (ft)    | 1884 | 243 | 247 |
| Upstream Blk Time (%) |      |     |     |
| Queuing Penalty (veh) |      |     |     |
| Storage Bay Dist (ft) |      |     |     |
| Storage Blk Time (%)  |      |     |     |
| Queuing Penalty (veh) |      |     |     |

Queuing and Blocking Report  
Year 2026 Buildout Volumes - PM Peak Hour

07/30/2024

Intersection: 4: SW 43rd Street & SW Zenith Avenue

| Movement              | EB   | WB  |
|-----------------------|------|-----|
| Directions Served     | LTR  | LTR |
| Maximum Queue (ft)    | 52   | 31  |
| Average Queue (ft)    | 20   | 8   |
| 95th Queue (ft)       | 45   | 30  |
| Link Distance (ft)    | 1884 | 761 |
| Upstream Blk Time (%) |      |     |
| Queuing Penalty (veh) |      |     |
| Storage Bay Dist (ft) |      |     |
| Storage Blk Time (%)  |      |     |
| Queuing Penalty (veh) |      |     |

Network Summary

|                                 |
|---------------------------------|
| Network wide Queuing Penalty: 0 |
|---------------------------------|



Queuing and Blocking Report  
Year 2031 Planning Horizon Volumes - PM Peak Hour

07/30/2024

Intersection: 1: SW Helmholtz Way & SW Wickiup Avenue

| Movement              | EB  | WB   | NB   | SB |
|-----------------------|-----|------|------|----|
| Directions Served     | LTR | LTR  | LTR  | L  |
| Maximum Queue (ft)    | 50  | 90   | 17   | 65 |
| Average Queue (ft)    | 18  | 40   | 1    | 26 |
| 95th Queue (ft)       | 43  | 73   | 13   | 52 |
| Link Distance (ft)    | 835 | 2680 | 1265 |    |
| Upstream Blk Time (%) |     |      |      |    |
| Queuing Penalty (veh) |     |      |      |    |
| Storage Bay Dist (ft) |     |      | 250  |    |
| Storage Blk Time (%)  |     |      |      |    |
| Queuing Penalty (veh) |     |      |      |    |

Intersection: 2: SW Wickiup Avenue/SW Reservoir Drive & SW 43rd Street

| Movement              | NB   | SB  | NE   | SW   |
|-----------------------|------|-----|------|------|
| Directions Served     | LTR  | LTR | LTR  | LTR  |
| Maximum Queue (ft)    | 42   | 13  | 9    | 49   |
| Average Queue (ft)    | 13   | 3   | 1    | 10   |
| 95th Queue (ft)       | 32   | 10  | 9    | 34   |
| Link Distance (ft)    | 1693 | 178 | 2680 | 1084 |
| Upstream Blk Time (%) |      |     |      |      |
| Queuing Penalty (veh) |      |     |      |      |
| Storage Bay Dist (ft) |      |     |      |      |
| Storage Blk Time (%)  |      |     |      |      |
| Queuing Penalty (veh) |      |     |      |      |

Intersection: 3: SW 49th Street & SW Zenith Avenue

| Movement              | WB   | NB  | SB  |
|-----------------------|------|-----|-----|
| Directions Served     | LTR  | LTR | LTR |
| Maximum Queue (ft)    | 5    | 35  | 30  |
| Average Queue (ft)    | 0    | 9   | 3   |
| 95th Queue (ft)       | 4    | 32  | 19  |
| Link Distance (ft)    | 1884 | 243 | 247 |
| Upstream Blk Time (%) |      |     |     |
| Queuing Penalty (veh) |      |     |     |
| Storage Bay Dist (ft) |      |     |     |
| Storage Blk Time (%)  |      |     |     |
| Queuing Penalty (veh) |      |     |     |

Queuing and Blocking Report  
Year 2031 Planning Horizon Volumes - PM Peak Hour

07/30/2024

Intersection: 4: SW 43rd Street & SW Zenith Avenue

| Movement              | EB   | WB  | NB   | SB  |
|-----------------------|------|-----|------|-----|
| Directions Served     | LTR  | LTR | LTR  | LTR |
| Maximum Queue (ft)    | 58   | 31  | 12   | 12  |
| Average Queue (ft)    | 19   | 11  | 0    | 0   |
| 95th Queue (ft)       | 44   | 34  | 6    | 6   |
| Link Distance (ft)    | 1884 | 761 | 1067 | 527 |
| Upstream Blk Time (%) |      |     |      |     |
| Queuing Penalty (veh) |      |     |      |     |
| Storage Bay Dist (ft) |      |     |      |     |
| Storage Blk Time (%)  |      |     |      |     |
| Queuing Penalty (veh) |      |     |      |     |

Network Summary

Network wide Queuing Penalty: 0

## Appendix E - Miscellaneous

Scoping Memorandum

City of Redmond Scoping Memorandum Comments





Engineering Department  
243 E. Antler Ave, Suite 100  
Redmond, OR 97756-0100  
541-504-2002

[siteplan@redmondoregon.gov](mailto:siteplan@redmondoregon.gov)  
[www.redmondoregon.gov](http://www.redmondoregon.gov)

## TRANSPORTATION SYSTEM ANALYSIS APPLICATION

**Applicability:** Required when a proposed development involves either a Subdivision, Site and Design Review, Planned Unit Development, Master Plan, Comprehensive Plan Amendment, a change or expansion of use, or any other development that the City Engineer deems necessary. This application is not required for residential site plan review (4 units or less) or for partitions (3 lots or less).

This application must be approved prior to submitting a land use application for the project.

### Applicant Information

Applicant: Melissa Webb Email: melissa@lancastermobley.com  
Company: Lancaster Mobley Phone: 503-248-0313 x402  
Address: 1130 SW Morrison Street, Suite 318, Portland, OR. 97205  
Date Submitted: 6/5/2024

### Owner Information

Owner: Sandie Braden, Texas Tango LLC Email: sandiebraden1@aol.com  
Company: 8080 11th St #65, Terrebonne, OR. 97760 Phone: 928-502-9295  
Address: 3758 SW Helmholtz Way, Redmond, OR. 97756

### Project Information

Project Title: 3758 SW Helmholtz Way Subdivision Tax Lot Number(s): 151330BC00900  
Project Address: 3758 SW Helmholtz Way, Redmond, OR. 97756  
Zone: UH-10 Area (SF): 427,324 SF (9.81 acres)  
Existing Use: Residential (one single-family detached dwelling on the lot)  
Proposed Use(s) and code(s) per the Institute of Transportation Engineer's (ITE) Manual, 11<sup>th</sup> Edition:  
Single-Family Detached Dwelling (LUC 210)  
Total PM Peak Trips: 31 Average Daily Trips (ADT): 310

### Reserved for City of Redmond Approval

Reviewed by: \_\_\_\_\_  
Approved (date): \_\_\_\_\_  
Approved PM Peak Trips: \_\_\_\_\_  
Approved ADT: \_\_\_\_\_



# Transportation System Analysis Application

## Submittal Requirements:

- See Redmond Development Code 8.2815 for complete submittal requirements
- **Trip Generation Report** - required when the proposed development generates up to 20 PM Peak Hour Trips and/or up to 200 Average Daily Trips (ADT)
  - The Trip Generation Calculation Worksheet (next page) is required to be submitted to satisfy this requirement. The worksheet must demonstrate existing and proposed trips for the development.
  - Include a conceptual site plan demonstrating the existing and proposed use of the development showing the following:
    - North arrow
    - Address and tax lot number
    - Uses and sizes summarized
    - Number of floors
    - Scaled dimensions
    - Access points
    - Adjacent rights of way (roads, alleys), roadway names labeled, roadway classifications labeled, roadway widths labeled
    - Floor plan
    - Circulation diagram if required
- **A Transportation Impact Analysis** - required when the proposed development generates 20 or more PM Peak Hour Trips and/or 200 or more ADT
  - The applicant must scope the project with the City and/or ODOT prior to initiating the report. Including the scoping request with the application submittal.
  - Trip generation may be summarized on the Trip Generation Calculation Worksheet (next page) or in the formal report
  - A Professional Engineer must submit a stamped Transportation Impact Analysis report including:
    - Trip generation as described above
    - Study timeframes (existing, completion year, 5 years beyond final phase)
    - Intersection studies (collector/arterial nearest to the site, any others with 25+ additional peak hour trips, others as determined by staff)
    - Level of service tables
    - Left/right turn warrants
    - Signal warrants
    - Sight distance evaluations
    - Access management standards evaluation
    - Circulation diagrams if required
    - Safety analysis
    - Recommended mitigations
  - Include a conceptual site plan as described above

### Fees:

|                                                        |                 |
|--------------------------------------------------------|-----------------|
| Trip Generation Report                                 |                 |
| Less than 20 PM Peak Trips and 200 Average Daily Trips | \$200.00 each   |
| Transportation Impact Analysis                         |                 |
| Up to 99PM Peak Trips                                  | \$2,000.00 each |
| 100-199 PM Peak Trips                                  | \$6,000.00 each |
| 200+ PM Peak Trips                                     | \$8,000.00 each |



**Engineering Department**  
 243 E Antler Avenue  
 Redmond, OR 97756-0100  
 Phone: 541-504-2002  
[www.redmondoregon.gov](http://www.redmondoregon.gov)  
[Siteplan@redmondoregon.gov](mailto:Siteplan@redmondoregon.gov)

### Trip Generation Calculation Worksheet

This form may be used as a Trip Generation Report and must be attached to the Transportation System Analysis Application.

| Site Location and Applicant Information            |
|----------------------------------------------------|
| Project: 3758 SW Helmholtz Way Subdivision         |
| Address: 3758 SW Helmholtz Way, Redmond, OR, 97756 |
| Taxlot(s): 151330BC00900                           |
| Submitter: Melissa Webb (Lancaster Mobley)         |
| Date: 6/5/2024                                     |

| Trip Generation Calculation Worksheet |                                 |       |                       |               |        |                   |                            |            |       |             |       |
|---------------------------------------|---------------------------------|-------|-----------------------|---------------|--------|-------------------|----------------------------|------------|-------|-------------|-------|
| ITE*<br>CODE                          | Code Description                | Qty   | Unit of Measure (UOM) | ADT**<br>Rate | ADT    | PM Peak Trip Rate | Weekday PM Peak Hour Trips |            |       |             |       |
|                                       |                                 |       |                       |               |        |                   | Total                      | % In (0-1) | In    | % Out (0-1) | Out   |
| Existing Uses                         |                                 |       |                       |               |        |                   |                            |            |       |             |       |
| 210                                   | Single-Family Detached Dwelling | 1.00  | DU                    | 9.43          | 9.43   | 0.94              | 0.94                       | 0.63       | 0.59  | 0.37        | 0.35  |
|                                       |                                 |       |                       |               | 0.00   |                   | 0.00                       |            | 0.00  |             | 0.00  |
|                                       |                                 |       |                       |               | 0.00   |                   | 0.00                       |            | 0.00  |             | 0.00  |
| Totals:                               |                                 |       |                       |               | 9.43   |                   | 0.94                       |            | 0.59  |             | 0.35  |
| Proposed Uses                         |                                 |       |                       |               |        |                   |                            |            |       |             |       |
| 210                                   | Single-Family Detached Dwelling | 34.00 | DU                    | 9.43          | 320.62 | 0.94              | 31.96                      | 0.63       | 20.13 | 0.37        | 11.83 |
|                                       |                                 |       |                       |               | 0.00   |                   | 0.00                       |            | 0.00  |             | 0.00  |
|                                       |                                 |       |                       |               | 0.00   |                   | 0.00                       |            | 0.00  |             | 0.00  |
| Totals:                               |                                 |       |                       |               | 320.62 |                   | 31.96                      |            | 20.13 |             | 11.83 |

(Proposed - Existing) Totals: 311.19

31.02

\*Institute of Traffic Engineer's Manual, 11th Edition; \*\*Average Daily Trips

## Memorandum

To: **David Pilling, City of Redmond**

Copy: **Sandie Braden**

From: **Melissa Webb, PE**

Date: **June 5, 2024**

Subject: **3758 SW Helmholtz Way Subdivision – Scoping Memorandum**

---

This memorandum provides a proposed scope of work and analysis methodology for a Transportation Impact Analysis (TIA) for a proposed 34-lot subdivision located on one tax lot in southwest Redmond, Oregon.

### Project Location and Description

The project site is located south of SW Zenith Avenue, east of SW Helmholtz Way, and west of SW 47<sup>th</sup> Street in Redmond, Oregon. The site consists of one tax lot (lot 900 of tax map 151330BC) which encompasses an approximate total of 9.81 acres. The site currently has one single-family home on the property, plus additional storage buildings, which will be removed following construction of the proposed development.

Figure 1 presents an aerial image of the nearby vicinity with the subject site outlined in yellow. A site plan is included as an attachment to this memorandum.





Figure 1: Project Location (image from Google Earth)

## Trip Generation

To determine the anticipated increase in trip generation due to the proposed development, trip generation for the existing and proposed use are evaluated. The site currently has one single-family dwelling located on it and the proposed development will construct up to 34 single-family dwellings.

To estimate the number of trips that could be generated by the existing single-family dwelling unit and the proposed development, trip rates from the *Trip Generation Manual*<sup>1</sup> were used. Data from the land use code

<sup>1</sup> Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 11th Edition, 2021.

210, *Single-Family Detached Housing*, was used to estimate trip generation of both the existing single-family dwelling and the proposed development based on the number of dwelling units (DU).

The initial trip generation calculations show that the proposed development is expected to generate a net increase of 23 trips during the morning peak hour, 31 trips during the evening peak hour, and 310 trips during the weekday. The trip generation estimates are summarized in Table 1. Detailed trip generation calculations are included as an attachment to this memorandum.

**Table 1: Trip Generation**

| ITE Code                             | Intensity | Morning Peak Hour |     |       | Evening Peak Hour |     |       | Daily Trips |
|--------------------------------------|-----------|-------------------|-----|-------|-------------------|-----|-------|-------------|
|                                      |           | In                | Out | Total | In                | Out | Total |             |
| Existing Conditions                  |           |                   |     |       |                   |     |       |             |
| 210 – Single Family Detached Housing | 1 DU      | 0                 | 1   | 1     | 1                 | 0   | 1     | 10          |
| Proposed Development                 |           |                   |     |       |                   |     |       |             |
| 210 – Single Family Detached Housing | 34 DU     | 6                 | 18  | 24    | 20                | 12  | 32    | 320         |
| Net Increase                         |           | 6                 | 17  | 23    | 19                | 12  | 31    | 310         |

Redmond Development Code 8.2815 (*Transportation System Analysis*) states that a TIA shall be required if a proposed development will generate 200 or more daily trips, or 20 or more evening peak hour trips. Based on the estimated trip generation calculations, a TIA will be necessary.

## Trip Distribution

A preliminary directional distribution of the site trips to and from the proposed development was estimated based on an approved trip distribution for the property to the north<sup>2</sup>. For the purpose of this analysis, it was assumed that the connection of SW 43<sup>rd</sup> Street to SW Badger Avenue is complete.

The following trip distribution was estimated and used for analysis:

- Approximately 40 percent of site trips will travel to/from the east along SW Reservoir Drive
- Approximately 30 percent of site trips will travel to/from the north along SW Helmholtz Way
- Approximately 20 percent of site trips will travel to/from the south along SW Helmholtz Way
- Approximately 10 percent of site trips will travel to/from the north along S Canal Boulevard

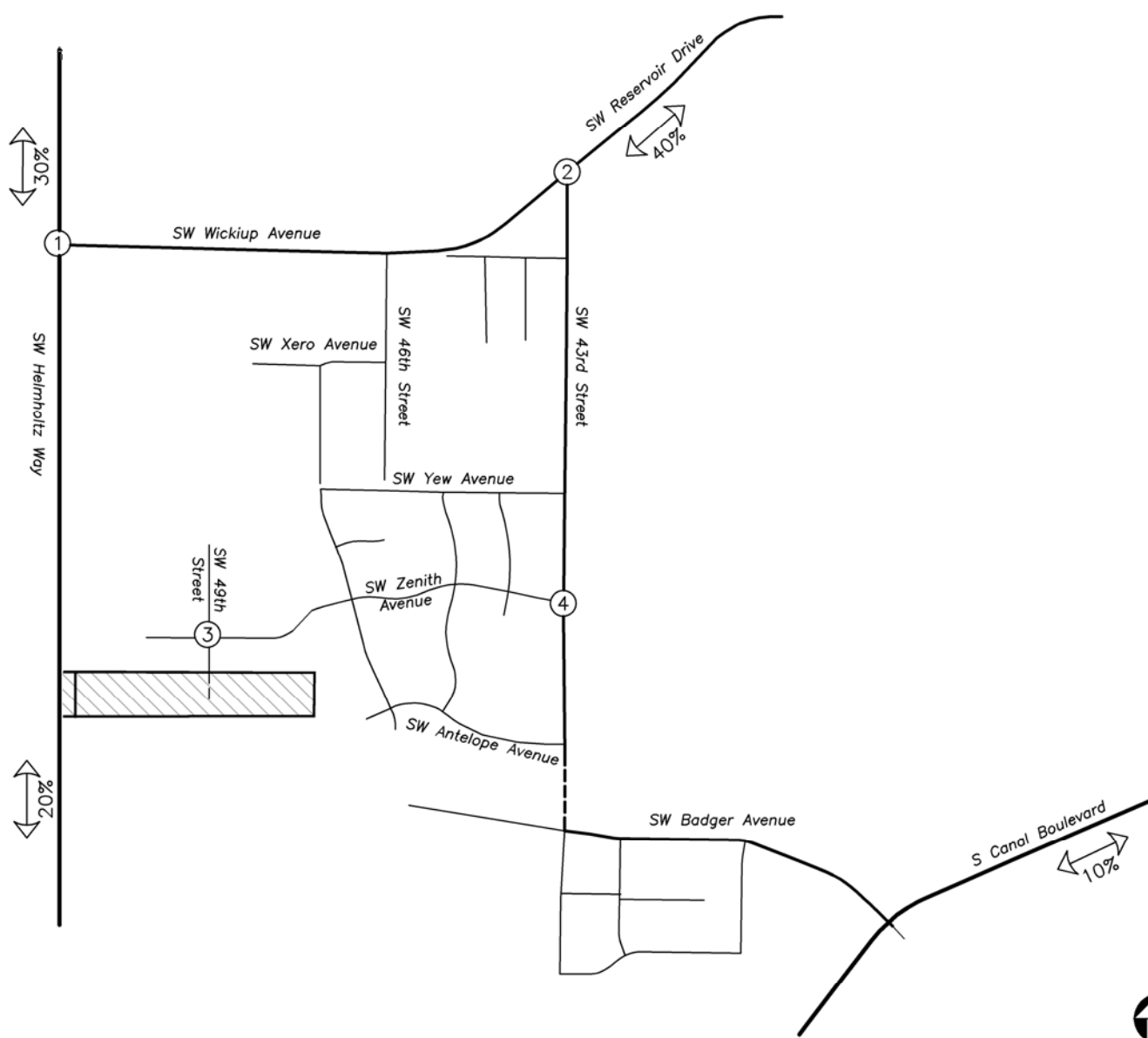
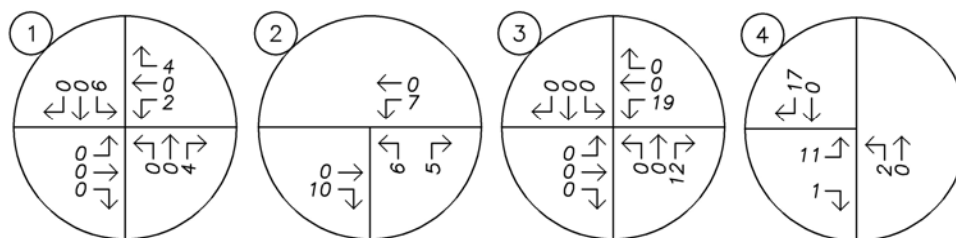
Figure 2 shows the anticipated trip generation and assignment for the evening peak hour.

<sup>2</sup> Lancaster Mobley, *Korbin Meadows North Subdivision Transportation Impact Analysis*, June 3, 2024.



XX% PERCENT OF PROJECT TRIPS

| TRIP GENERATION |    |     |       |
|-----------------|----|-----|-------|
|                 | IN | OUT | TOTAL |
| PM              | 19 | 12  | 31    |



no scale

## Site Access

According to the most recent site plan, there is one access point to the proposed development:

- Extending SW 49<sup>th</sup> Street south into the proposed development (vehicles can access SW 49<sup>th</sup> Street directly from SW Zenith Avenue)

## Proposed Study Intersections

Redmond Development Code 8.2815.5 lists the following intersections to be included in the TIA: all site access intersections; nearest intersecting collector or arterial street upstream and downstream of the development; any other collector or arterial street intersection that would experience an increase of 25 additional peak hour trips; additional intersections required by staff.

Based on the criteria listed in the Redmond Development Code, the following intersections are proposed for analysis:

1. SW Helmholtz Way at SW Wickiup Avenue
2. SW Reservoir Drive at SW 43<sup>rd</sup> Street
3. SW 49<sup>th</sup> Street at SW Zenith Avenue (site access)
4. SW 43<sup>rd</sup> Street at SW Zenith Avenue (expected to have more than 25 additional peak hour trips)

## Existing Traffic Volumes

Recent traffic counts were collected at the study intersections of SW Helmholtz Way at SW Wickiup Avenue and SW Reservoir Drive at SW 43<sup>rd</sup> Street on Wednesday, April 10, 2024, from 4:00 PM to 6:00 PM. We propose using these existing counts for the two above-mentioned intersections.

New traffic counts will be collected at the study intersections of SW 49<sup>th</sup> Street at SW Zenith Avenue and SW 43<sup>rd</sup> Street at SW Zenith Avenue during the hours of 4:00 PM to 6:00 PM on a Tuesday, Wednesday, or Thursday. Data will be used from each intersection's respective evening peak hour.

The traffic study will also analyze the estimated average daily traffic (ADT) volume on SW Zenith Avenue, a local street, per Redmond Development Code 8.2815(2)(B)(8)(e)(iii).

## Future Traffic Volumes

The proposed development is anticipated to be completed and fully occupied by the year 2026. Therefore, a compounded growth rate of two percent per year will be applied to the existing traffic volumes over a two-year period to determine year 2026 background volumes. Traffic volumes from approved development projects within the study area will be added to the background volumes.

The City of Redmond also requires an analysis of traffic conditions five years beyond the completion and occupancy of the proposed development (Redmond Development Code 8.2815.2.B.4(c)). Growth corresponding to 7 years at two percent per year will be applied to the existing volumes before adding trips generated by the



proposed development to obtain year 2031 horizon conditions, five years after completion and occupancy of the proposed development.

## Safety Analysis

The TIA will include a safety analysis consistent with City procedures for all study intersections, including a review of crash history at applicable study intersections and an assessment of potential mitigation if needed.

Sight distance measurements will be taken according to AASHTO standards at the proposed site access location along SW Zenith Avenue.

Preliminary traffic signal warrants will be performed where applicable per the most current edition of the Manual on Uniform Traffic Control Devices (MUTCD).

Per Redmond Development Code 8.2815.9, left-turn lane warrants will be assessed where applicable per guidance within NCHRP 193. Right-turn lane warrants will be assessed where applicable per ODOT methodology outlined within ODOT's Analysis Procedures Manual.

## Other Considerations

If applicable, the following are also required for the preparation of the TIA:

- Any in-process development data which should be incorporated within the TIA. Preferably, the traffic studies for these projects are requested if they were not prepared by Lancaster Mobley.

## Summary of Scoping Proposal

Please review our proposed scope of work and analysis methodology and confirm the following:

- Trip generation and distribution is acceptable.
- The proposed study area intersections are acceptable. If not, please identify what other intersections should be included in the TIA.
- Our approach to using a combination of existing and new traffic count data for the evening peak hour only is acceptable.
- Our background growth rate is acceptable.

Additionally, if there are any nearby in-process development projects that should be incorporated within the TIA, please provide their traffic studies.



## Attachments

Site Plan

Trip Generation Calculations











## TRIP GENERATION CALCULATIONS

Existing Conditions

*Land Use:* Single-Family Detached Housing

*Land Use Code:* 210

*Land Use Subcategory:* Not Close to Rail Transit

*Setting/Location:* General Urban/Suburban

*Variable:* Dwelling Units

*Trip Type:* Vehicle

*Formula Type:* Rate

*Variable Quantity:* 1

### AM PEAK HOUR

*Trip Rate:* 0.70

|                   | Enter | Exit | Total |
|-------------------|-------|------|-------|
| Directional Split | 25%   | 75%  |       |
| Trip Ends         | 0     | 1    | 1     |

### PM PEAK HOUR

*Trip Rate:* 0.94

|                   | Enter | Exit | Total |
|-------------------|-------|------|-------|
| Directional Split | 63%   | 37%  |       |
| Trip Ends         | 1     | 0    | 1     |

### WEEKDAY

*Trip Rate:* 9.43

|                   | Enter | Exit | Total |
|-------------------|-------|------|-------|
| Directional Split | 50%   | 50%  |       |
| Trip Ends         | 5     | 5    | 10    |

Source: Trip Generation Manual, 11th Edition



## TRIP GENERATION CALCULATIONS

### Proposed Development

*Land Use:* Single-Family Detached Housing

*Land Use Code:* 210

*Land Use Subcategory:* Not Close to Rail Transit

*Setting/Location:* General Urban/Suburban

*Variable:* Dwelling Units

*Trip Type:* Vehicle

*Formula Type:* Rate

*Variable Quantity:* 34

### AM PEAK HOUR

*Trip Rate:* 0.70

|                   | Enter | Exit | Total |
|-------------------|-------|------|-------|
| Directional Split | 25%   | 75%  |       |
| Trip Ends         | 6     | 18   | 24    |

### PM PEAK HOUR

*Trip Rate:* 0.94

|                   | Enter | Exit | Total |
|-------------------|-------|------|-------|
| Directional Split | 63%   | 37%  |       |
| Trip Ends         | 20    | 12   | 32    |

### WEEKDAY

*Trip Rate:* 9.43

|                   | Enter | Exit | Total |
|-------------------|-------|------|-------|
| Directional Split | 50%   | 50%  |       |
| Trip Ends         | 160   | 160  | 320   |

Source: Trip Generation Manual, 11th Edition

---

**Additional Information is required for record # 711-24-000086-PW at 3758 SW HELMHOLTZ WAY, REDMOND, OR 97756**

1 message

---

**City of Redmond** <RedmondNoReply@accela.com>  
To: melissa@lancastermobley.com

Fri, Jun 7, 2024 at 12:29 PM

Additional information is required to process your permit application **711-24-000086-PW** at job site address **3758 SW HELMHOLTZ WAY, REDMOND, OR 97756**. Please see the comments below for details.

*Workflow Task: Engineering Review*

*Comment: The City reviewed the TIA scoping request dated June 5, 2024 and have the following comments: - ODOT review not required. -Trip generation is acceptable -Trip distribution and study intersections are acceptable -Evaluate ADT along adjoining local roadways per COR Dev Code 8.2805(8)(e)(iii) -Please submit TIA. -In-Process developments include: --Little Texas Subdivision (711-23-000080-PW); TSAA/TIA by Transight -- Horizon Pointe Subdivision (711-23-000046-PW); TSAA/TIA by Ferguson & Associates --Feather Ridge Subdivision; TIA by Transight. --Summit Crest Subdivision Phase 5; TIA by Ferguson & Associates --Ward Commons Cottage Subdivision; Trip Generation Statement by H.A. McCoy Eng. --Summerhaven Subdivision -- Viewpoint Subdivision (22-138PLNG-SUB); TIA/memos by Transight --Korbin Meadows Subdivision; remaining phases (711-24-000043-PW)- TIA by Landcaster Mobley --Owen Ridge Subdivision TIAs available at this link: [https://redmondor.sharepoint.com/:f/s/Engineering/EvS4e1\\_xMalBtcoaG9wgX\\_ABg5sXjH5VYMt9erKZfgzuZg?email=melissa%40lancastermobley.com&e=NUffDb](https://redmondor.sharepoint.com/:f/s/Engineering/EvS4e1_xMalBtcoaG9wgX_ABg5sXjH5VYMt9erKZfgzuZg?email=melissa%40lancastermobley.com&e=NUffDb)*

If you have questions, please contact **Lindsey Crowsigt** at 541-306-1647 or [lindsey.crowsigt@redmondoregon.gov](mailto:lindsey.crowsigt@redmondoregon.gov).

Your record is available online for tracking by clicking here:

<https://aca-oregon.accela.com/oregon/Cap/CapDetail.aspx?Module=PublicWorks&TabName=PublicWorks&capID1=24CAP&capID2=00000&capID3=00150&agencyCode=REDMOND>

Thank you.

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