



Home of the Tualatin River National Wildlife Refuge

Planning Commission Meeting Packet

FOR

September 12, 2023

at 7:00 PM

**Sherwood City Hall
22560 SW Pine Street
Sherwood, Oregon**

Planning Commission Regular Meeting Agenda

September 12, 2023, at 7:00 PM

This meeting will be held at City Hall, 22560 SW Pine St,
Sherwood, OR 97140.

It will also be live streamed at

<https://www.youtube.com/user/CityofSherwood>



Home of the Tualatin River National Wildlife Refuge

Citizen comments and public testimony may be provided in person, in writing, or by telephone. Written comments must be submitted at least 24 hours in advance of the scheduled meeting start time by email to planning@sherwoodoregon.gov and must clearly state that it is intended as a general Citizen Comment for this meeting. To provide comment by phone during the live meeting, email or call (planning@sherwoodoregon.gov / 503-925-2308) at least 24 hours in advance of the meeting start time in order to receive dial-in instructions. Per Council Rules Ch. 2 Section (V)(D)(5), Citizen Comments, "Speakers shall identify themselves by their name and by their city of residence." Anonymous comments will not be accepted into the meeting record. **If you require ADA accommodations, please contact the Planning Department at 503-925-2308 or email planning@sherwoodoregon.gov at least 48 hours in advance of the scheduled meeting time.**

How to Find out What's on the Planning Commission Schedule: Planning Commission meeting materials and agenda are posted to the City web page at www.sherwoodoregon.gov, generally one week prior to a Commission meeting. When possible, Planning Commission agendas are also posted at the Sherwood Library/City Hall/Senior Center, YMCA, and the Sherwood Post Office.

Regular Meeting

1. CALL TO ORDER

2. CONSENT AGENDA

August 22, 2023, Planning Commission Regular Meeting Minutes

3. COUNCIL LIAISON ANNOUNCEMENTS

4. STAFF ANNOUNCEMENTS

5. COMMUNITY COMMENTS

6. PUBLIC HEARINGS

I. LU 2022-030 MMSP Chevron Major Modification and Site Plan Review

Proposal: An application for a Type IV – Major Modification and Site Plan Review to redevelop an existing vehicle fueling station with a 3,600 square foot retail commercial store, new Underground Storage Tanks (UST), and other associated site improvements. The subject property is 0.85 acres in size, zoned RC (Retail Commercial), and located at 21090 SW Pacific Highway (Washington County Assessors Map and Tax Lot number 2S130DA/1200).

7. NEW BUSINESS

a. Planning Commissioner Representative for City Charter Committee

8. COMMISSIONER COMMENTS

9. ADJOURN

Meeting documents are found on the City of Sherwood website at www.sherwoodoregon.gov/meetings or by contacting the Planning Staff at 503-925-2308. Information about the land use applications can be found at www.sherwoodoregon.gov/projects.

City of Sherwood, Oregon
Planning Commission Meeting
August 22, 2023

Planning Commissioners Present:

Chair Jean Simson
Vice Chair Rick Woidyla
Commissioner Teresa Montalvo
Commissioner Justin Kai
Commissioner Tyler Barns
Commissioner Daniel Bantz

Staff Present:

Erika Palmer, Planning Manager
Eric Rutledge, Community Development Director
Hugo Hamblin, Associate Planner

Planning Commissioners Absent:

Commissioner Cory Capko

City Council Liaison:

Councilor Dan Standke

REGULAR SESSION:

Chair Simson called the meeting to order at 7:00 pm.

1. CONSENT AGENDA

- A. July 25, 2023, Planning Commission Regular Meeting Minutes
- B. August 8, 2023, Planning Commission Work Session Minutes

Motion: from Vice Chair Woidyla to approve the consent agenda, seconded by Commissioner Barns. Motion passed 6:0 (Commissioners Capko was absent).

2. COUNCIL LIAISON ANNOUNCEMENT

City Councilor Dan Standke said the City Council considered LU 2023-012 TSP Update and said he provided the Council with the Planning Commission comments.

3. STAFF ANNOUNCEMENTS

Planning Manager Erika Palmer said the next Planning Commission meeting is September 12 and they will discuss which Planning Commission will serve on the new Charter Review Committee. Community Development Director Eric Rutledge explained recent development in Sherwood and said staff will start providing quarterly reports.

4. COMMUNITY COMMENTS

None.

5. PUBLIC HEARING

a. LU 2023-009 PA YMCA Zone Change and Conditional Use Permit

Planning Manager Erika Palmer read the public hearing and said the role of the Planning Commission is to make a recommendation to the City Council. She asked members of the Commission to expose any ex parte contact, biased or conflict of interest. Chair Simson, Vice Chair Woidyla, Commissioners Bantz, Kai, Montalvo, and Barns stated they had no ex parte contact, biased or conflict of interest and plan to participate in the hearing. Ms. Palmer asked if there were any challenges from the audience and there were none.

Community Development Director Eric Rutledge provided a presentation and said the City of Sherwood is the applicant and is requesting a zone change and condition use permit (see record, Exhibit A). He said the site location is 23000 SW Pacific Hwy which is the YMCA. He said the current zoning is Low Density Residential Planned Unit Development (LDR PUD) and they are requesting a change to Institution Public (IP), which is the same zoning as the High School across Hwy 99. He discussed the development standards and approval criteria and noted the YMCA is in the process of purchasing the site from the City. To comply with the Transportation Planning Rule (TPR) pursuant to OAR 660-012-0060, a trip cap of 89 weekday pm peak hours trips shall be applied to the site. Future changes of use or expansion to the site that exceed this trip threshold shall address TPR requirements, 75 trips shall be associated with the existing YMCA building and 14 trips shall be associated with the existing skatepark. He said staff recommends approval subject to the findings and conditions in the staff report.

Vice Chair Woidyla asked why the City is proposing a zone change now. Mr. Rutledge said the City is in close communication with the YMCA and the City is also doing a separate partition of the property and easements and roadway dedications are part of that and he said there are a lot of moving parts right now. He said the YMCA is in support of the zone change. He stated the City should have done a zone change 20 years ago and said when the site plan was approved for the recreational facility there was acknowledgment that a zone change should occur, and it never happened. He said this in an opportunity prior to the sale to get the zoning right and ensure that it remains a recreational facility. Vice Chair Woidyla clarified that the skatepark will remain with the City. Mr. Rutledge said that is correct.

Commissioner Barns asked if there are any outstanding bond conditions. Mr. Rutledge said staff will check on that. Commissioner Barns provided edits and staff agreed.

Commissioner Montalvo commented on the trip cap and expressed concerns. Mr. Rutledge said potential small changes could be addressed through code compliance. Commissioner Montalvo suggested adding an additional condition explaining what exactly it is approved. Discussion followed. Staff agreed to clarifying the language in the findings and ongoing condition of expansion of use to state, "future changes of use, expansion of the use, or expansion to the site that exceeds this trip threshold shall address TPR requirements". The Planning Commission agreed to the proposed change.

Commissioner Bantz and Barns provided staff with typographical errors.

With no public testimony, Chair Simson closed the public testimony portion of the hearing.

With no further discussion, the following motion was received.

Motion: from Vice Chair Woidyla to forward a recommendation of approval to the City Council for LU 2023-009 PA/CUP YMCA Zone Change based on the applicant testimony, public testimony received and the analysis, findings, and conditions in the staff report and has modified tonight during the Planning Commission meeting, seconded by Commissioner Bantz. Motion passed 5:1 (Vice Chair Woidyla voted against, and Commissioner Capko was absent).

6. COMMISSIONER COMMENTS

Vice Chair Woidyla commented on the “City of Sherwood” sign on Roy Rogers that now has a control box in front of it and asked staff to reach out to the County about moving the box.

Chair Simson adjourned the meeting at 8:40 pm.

Submitted by:

Colleen Resch, Planning Technician

Approval Date: _____

**CITY OF SHERWOOD
PLANNING COMMISSION STAFF REPORT
STAFF REPORT DATE: SEPTEMBER 12, 2023**



**CHEVRON
SITE PLAN REVIEW / MAJOR MODIFICATION
LU 2022-030 SP / MM**

Pre-App Meeting: May 19, 2022
App. Submitted: December 13, 2022
App. Complete: July 28, 2023
Hearing Date: September 12, 2023
120-Day Deadline: November 25, 2023

PROPOSAL: An application for a Type IV Site Plan Review and Major Modification to raze an existing structure and develop a new Chevron gasoline Service Station, including a new 3,600 square-foot convenience store, Underground Storage Tanks (UST), and other associated site improvements on an existing vehicle fueling station. The subject property is 0.85 acres in size, zoned RC (Retail Commercial), and located at 21090 SW Pacific Highway (Washington County Assessors Map and Tax Lot number 2S130DA/1200).

I. BACKGROUND

- A. Applicant: Barghausen Consulting Engineers, Inc
18215 72nd Avenue South.
Kent, WA 98032
- Owner: Chevron USA INC.
PO BOX 285
Houston, TX 77001
- B. Location: 21090 SW Pacific Hwy (Washington County Assessors Map and Tax Lot numbers: 2S130DA/1200).
- C. Review Type: Type IV – Site Plan Review & Major Modification
- D. Public Notice: Notice of the application was provided in accordance with § 16.72.020 of the Sherwood Zoning and Development Code (SZDC) as follows: notice was distributed in five locations throughout the City, posted on the property, and mailed to property owners within 1,000 feet of the site on or before August 9, 2023. Notice of the application was also published in a local newspaper (Tigard Times) on August 31, 2023, and September 7, 2023.

- E. Review Criteria: Chapter 16.22 Commercial Land Use Districts; Chapter 16.58 Clear Vision and Fence Standards; Chapter 16.70 – General Provision; Chapter 16.72 Procedures for Processing Development Permits; Chapter 16.90 Site Planning; Chapter 16.92 Landscaping ; Chapter 16.94 Off-Street Parking and Loading ; Chapter 16.96 On-Site Circulation ; Chapter 16.98 On-Site Storage; Chapter 16.106 Transportation Facilities ; Chapter 16.108 Improvement Plan Review; Chapter 16.110 Sanitary Sewers ; Chapter 16.112 Water Supply ; Chapter 16.114 Storm Water; Chapter 16.116 Fire Protection; Chapter 16.118 Public and Private Utilities; Chapter 16.142 Parks, Trees, and Open Spaces; Chapter 16.146 Noise; Chapter 16.148 Vibrations ; Chapter 16.150 Air Quality ; Chapter 16.152 Odors ; Chapter 15.154 Heat and Glare ; Chapter 16.156 Energy Conservation
- F. History and Background:
- LU 87-02 SP/CUP: An application to develop an auto repair building on an existing parcel. Historically, the site has been utilized as an auto service station since the 1930's and the Chevron service and repair business has been there since 1961.
 - LU 05-02 SP: An application to install a diesel fuel island on the existing Chevron fueling station site. The proposed fuel island would have two to four pumps and would be located on the southwestern portion of the site.
- G. Existing Conditions: The subject parcel is currently developed with an existing commercial convenience store and Underground Storage Tanks (UST).
- H. Surrounding Land Uses:
- West: Across from Southwest Sherwood Boulevard, Retail Commercial – RC & General Commercial – GC
 - South: General Commercial – GC
 - East: Retail Commercial – RC
 - North: Across Pacific Highway W., Retail Commercial – RC
- I. Current Zoning: General Commercial – GC

II. AFFECTED AGENCY AND PUBLIC COMMENTS

- A. Notice of the application was sent to affected agencies via email on August 9, 2023. A full list of the agencies / staff receiving the routing email is included as **Attachment A, Appendix G**. The following responses were received:
1. City of Sherwood Engineering Department: The Sherwood Engineering Department provided comments dated August 16, 2023. Comments and Conditions of Approval are included in the Division VI- Public Improvements

section of this report and are included as **Attachment B**. Comments are regarding Sanitary Sewer, Water, Storm Water, Transportation, Grading and Erosion Control, and Other Engineering Issues.

2. Clean Water Services (CWS): A CWS memorandum dated August 23, 2023, states that prior to any work on the site, the proposed project must obtain a Clean Water Services (CWS) Storm Water Connection Permit Authorization in accordance with the requirements of the Design and Construction Standards, Resolution and Order No. 19-5 as amended by R&O 19-22, or prior standards as meeting the implementation policy of R&O 18-28. Comments and Conditions of Approval are included in the Division I – Staff Recommendation and Conditions of Approval section of this report and are included as **Attachment C**.
3. Oregon Department of Transportation (ODOT): An ODOT memorandum dated August 23, 2023, was provided. Comments and Conditions of Approval are included in the Division VI- Public Improvements section of this report and are included as **Attachment D**.

B. Public Comments

1. None

III. APPLICABLE CODE PROVISIONS

*Note – three asterisks (***) Indicates code has been omitted because it is not applicable*

Chapter 16.70 - GENERAL PROVISIONS

16.70.010 - Pre-Application Conference

Pre-application conferences are encouraged and shall be scheduled to provide applicants with the informational and procedural requirements of this Code; to exchange information regarding applicable policies, goals and standards of the Comprehensive Plan; to provide technical and design assistance; and to identify opportunities and constraints for a proposed land use action. An applicant may apply at one time for all permits or zone changes needed for a development project as determined in the pre-application conference.

FINDINGS: A Pre-Application Conference was conducted on May 19, 2022. The applicant was provided feedback related to applicable policies, goals, and standards of the Comprehensive Plan and Sherwood zoning code. Application materials were routed to city departments and partner agencies for additional comments; therefore, this standard is met.

16.70.020 - Neighborhood Meeting

- A. The purpose of the neighborhood meeting is to solicit input and exchange information about the proposed development.
- B. Applicants of Type III, IV and V applications are required to hold a meeting, at a public location for adjacent property owners and recognized neighborhood organizations that are within 1,000 feet of the subject application, prior to submitting their application to the City. Affidavits of mailing, sign-in sheets and a summary of the meeting notes must be included

with the application when submitted. Applicants for Type II land use action are encouraged, but not required to hold a neighborhood meeting.

1. Projects requiring a neighborhood meeting in which the City or Urban Renewal District is the property owner or applicant shall also provide published and posted notice of the neighborhood meeting consistent with the notice requirements in 16.72.020.

FINDINGS: The proposal includes a Site Plan Review and Major Modification to an existing parcel and is processed under a Type IV application. In compliance with 16.70.020.B., the applicant conducted a Neighborhood meeting on November 3rd, 2022, for property owners within 1,000 feet of the subject parcel. This meeting was conducted at the Sherwood Police Department. Information pertaining to the proposal was shared with the community and feedback was solicited from attendees; therefore, this standard is met.

16.70.050 - Availability of Record for Review

A. Public Inspection

1. Except as provided herein, all application materials to be relied upon in public hearings on land use actions required by this Code shall be available for public inspection twenty (20) calendar days in advance of the initial hearing before the Commission or Council. If two (2) or more hearings are required on a land use action, all application materials shall be available for public inspection at least ten (10) calendar days in advance of the initial hearing before the Hearing Authority. All application materials to be relied upon for Type II decisions as indicated in Section 16.72.010 shall be available for public inspection fourteen (14) calendar days in advance of the staff decision on the application.
2. Application materials shall be available to the public for inspection at no cost. Copies of application materials will be provided to the public, upon request, at a cost defined by the City's fee schedule.

FINDING: The proposal was deemed complete on July 28, 2023, and the final iteration of application materials were made available to the public at no additional cost at least twenty (20) calendar days in advance of the initial public hearing scheduled for September 12, 2023; therefore, this criterion is satisfied.

Chapter 16.72 - PROCEDURES FOR PROCESSING DEVELOPMENT PERMITS

16.72.010 - Generally

A. Classifications

Except for Final Development Plans for Planned Unit Developments, which are reviewed per Section 16.40.030, all ministerial, administrative, and quasi-judicial development permit applications and legislative land use actions shall be classified as one of the following:

5. Except The following quasi-judicial actions shall be subject to a Type IV review process:
 - a. Site Plan review and/or "Fast Track" Site Plan review of new or existing structures in the Old Town Overlay District.
 - b. All quasi-judicial actions not otherwise assigned to a Hearing Authority under this section.
 - c. Site Plans — Greater than 40,000 square feet of floor area, parking or seating capacity.
 - d. Site Plans subject to Section 16.90.020.D.6.f.
 - e. Industrial Site Plans subject to Section 16.90.020.D.7.b.
 - f. Subdivisions — over 50 lots.
 - g. Class A Variance.
 - h. Residential Design Review.

FINDINGS: The proposal is to raze an existing structure and develop a new Chevron gasoline Service Station, including a new 3,600 square-foot convenience store, Underground Storage Tanks (UST), and other associated site improvements on an existing vehicle fueling station. The proposal is a Major Modification to an existing site plan under section 16.90.030, and the application is subject to the same review procedure and decision making body as in the original approval. The original review procedure and decision making body was the Sherwood Planning Commission per Case File LU 87-02 SP/CUP.

16.72.020 - Public Notice and Hearing

- A. Newspaper Notice. Notices of all public hearings for Type III, IV and V land use actions required by this Code shall be published in a newspaper of general circulation available within the City two (2) calendar weeks prior to the initial scheduled hearing before the Hearing Authority and shall be published one additional time in the Sherwood Archer, Sherwood Gazette or similarly local publication, no less than 5 days prior to the initial scheduled hearing before the hearing authority.
- B. Posted Notice.
 1. Notices of all Type II, III, IV and V land use actions required by this Code shall be posted by the City in no fewer than five (5) conspicuous locations within the City, not less than fourteen (14) calendar days in advance of the staff decision on Type II applications or twenty (20) calendar days in advance of the initial hearing before the Hearing Authority for Type III, IV and V applications.
 2. Signage must be posted on the subject property fourteen (14) calendar days in advance of the staff decision on Type II applications and twenty (20) calendar days in advance of the initial hearing before the Hearing Authority for Type III, IV and V applications.
 - a. on-site posted notice shall provide a general description of the land use action proposed, the project number and where additional information can be obtained.

- b. On-site posted notice shall be designed to be read by motorists passing by; the exact size and font style to be determined by the City.
- c. On-site posted notice shall be located on the property in a manner to be visible from the public street. For large sites or sites with multiple street frontages, more than one sign may be required.

C. Mailed Notice.

1. For Type II, III, IV and V actions specific to a property or group of properties, the City shall send written notice by regular mail to owners of record of all real property within one thousand (1,000) feet from the property subject to the land use action. Written notice shall also be sent to Oregon Department of Transportation (ODOT), Metro, the applicable transit service provider and other affected or potentially affected agencies. If the subject property is located adjacent to or split by a railroad crossing ODOT Rail Division shall also be sent public notice.
2. Written notice to property owners shall be mailed at least fourteen (14) calendar days prior to a decision being made on a Type II land use action and at least twenty (20) calendar days in advance of the initial public hearing before the Hearing Authority. If two (2) or more hearings are required on a land use action, notices shall be mailed at least ten (10) calendar days in advance of the initial hearing before the Commission or Council.
3. For the purposes of mailing the written notice, the names and addresses of the property owners of record, as shown on the most recent County Assessor's records in the possession of the City, shall be used. Written notice shall also be mailed to homeowner's associations when the homeowners association owns common property within the notification area and is listed in the County Assessor's records.
4. For written notices required by this Code, other than written notices to property owners of record, the City shall rely on the address provided by the persons so notified. The City shall not be responsible for verifying addresses so provided.
5. If a zone change application proposes to change the zone of property which includes all or part of a manufactured home park, the City shall give written notice by first class mail to each existing mailing address for tenants of the manufactured home park at least twenty (20) days but not more than forty (40) days before the date of the first hearing on the application. Such notice costs are the responsibility of the applicant.

FINDING: The application is reviewed under a Type IV review process. Mailed notice of this application, in compliance with 16.72.030, was sent to property owners within 1,000 feet of the subject property on August 9, 2023. Posted notice was placed in five (5) conspicuous locations within the City and posted on the subject property in a manner consistent with the above criteria on August 9, 2023. Notice of the public hearing was published in the Tigard Times, general circulation, on August 31, 2023, and September 7, 2023, at least two weeks prior to the initial public hearing. A complete description of the proposal, including accompanying application materials, were provided on the City of Sherwood website for all interested parties to review; therefore, these criteria are met.

16.72.030 - Content of Notice

Public notices shall include the following information:

- A. The nature of the application and proposed use(s).
- B. A list of the applicable Code or Comprehensive Plan criteria to be applied to the review of the proposed land use action.
- C. The location and street address of the property subject to the land use action (if any).
- D. The date, time, place, location of the public hearing.
- E. The name and telephone number of a local government representative to contact for additional information.
- F. The availability of all application materials for inspection at no cost, or copies at reasonable cost.
- G. The availability of the City planning staff report for inspection at no cost, or copies at a reasonable cost, at least seven (7) calendar days in advance of the hearing.
- H. The requirements for the submission of testimony and the procedures for conducting hearings, including notice that failure to raise an issue accompanied by statements or evidence sufficient to offer the City, applicant or other parties to the application the opportunity to respond, will preclude appeal on said issue to the Council or to the State Land Use Board of Appeals (LUBA).

FINDING: Public notice were sent out in conformance with 16.72.020, and included the above-mentioned information; therefore, this standard is met.

16.72.040 - Planning Staff Reports

Recommended findings of fact and conditions of approval for each land use action shall be made in writing in a City planning staff report. Said staff report shall be published seven (7) calendar days in advance of the initial required public hearing before the Hearing Authority. Copies shall be provided to the applicant and the Hearing Authority no later than seven (7) calendar days in advance of the scheduled public hearing. Staff reports shall be available to the public for inspection at no cost. Copies of the staff report shall be provided to the public, upon request, at a cost defined by the City's schedule of miscellaneous fees and charges.

FINDING: A staff report with recommended findings of fact and condition of approval was published at least seven (7) days prior to the initial required public hearing on September 5, 2023. Application materials were made available to the public at no additional cost and were posted on the city of Sherwood website for the public to review; therefore, this standard is met.

Chapter 16.31 – COMMERCIAL LAND USE DISTRICTS

16.22.010 – Purpose

- C. Retail Commercial (RC) - The RC zoning district provides areas for general retail and service uses that neither require larger parcels of land, nor produce excessive environmental impacts as per Division VIII.

16.22.020 - Uses.

- A. The table below identifies the land uses that are permitted outright (P), permitted conditionally (C), and not permitted (N) in the Commercial Districts. The specific land use

categories are described and defined in Chapter 16.88 Use Classifications and Interpretations.

- B. Uses listed in other sections of this code, but not within this specific table are prohibited.
- C. Any use not otherwise listed that can be shown to be consistent or associated with the uses permitted outright or conditionally in the commercial zones or contribute to the achievement of the objectives of the commercial zones may be permitted outright or conditionally, utilizing the provisions of Chapter 16.88 Use Classifications and Interpretations.
- D. Additional limitations for specific uses are identified in the footnotes of this table.

| Uses: Commercial | RC |
|---|----|
| Vehicle fueling stations or car wash facilities | C |

FINDING: The proposal includes demolition and rebuild of the subject site for the development of a new Chevron gasoline service station, including a new 3,600 square-foot convenience store, Underground Storage Tanks (UST), and other associated site improvements. The subject parcels use is designated under “**Vehicle fueling stations or car wash facilities**” and zoned RC (Retail Commercial). The existing use was referenced as a “grandfathered” use under previously approved permits and received a CUP for the existing use under LU 87-02 SP/CUP. This use has been continuously operating on the site since at least 1961 based on available records; therefore, this criterion is met.

16.22.030 - Development Standards

A. Generally

No lot area, setback, yard, landscaped area, open space, off-street parking or loading area, or other site dimension or requirement, existing on, or after, the effective date of this Code shall be reduced below the minimum required by this Code. Nor shall the conveyance of any portion of a lot for other than a public use or right-of-way, leave a lot or structure on the remainder of said lot with less than minimum Code dimensions, area, setbacks or other requirements, except as permitted by Chapter 16.84. (Variance and Adjustments)

B. Development Standards

Except as otherwise provided, required minimum lot areas, dimensions and setbacks shall be provided in the following table:

| Development Standards by Zone | RC Zone |
|-------------------------------|--------------|
| Lot area: | 5,000 sq. ft |

| | |
|--|-----------------------------------|
| Lot width at front property line: | 40 ft |
| Lot width at building line | 40 ft |
| Front yard setback ⁹ | 0 ft. |
| When abutting residential zone | Same as abutting residential zone |
| Side yard setback ⁹ | 0 ft. |
| when abutting residential zone or public park: | 10 ft |
| Rear yard setback ⁹ | 0 ft. |
| Corner lot ⁹ | 20 ft on any side facing street |
| Height ^{10,11} | 50 ft ^{13,14} |

⁹ Existing residential uses shall maintain setbacks specified in the High Density Residential Zone (16.12.030).

¹⁰ Maximum height is the lessor of feet or stories

¹¹ Solar and wind energy devices and similar structures attached to buildings and accessory buildings, may exceed this height limitation by up to twenty (20) feet.

¹³ Structures within one-hundred (100) feet of a residential zone shall be limited to the height requirements of that residential area.

¹⁴ Structures over fifty (50) feet in height may be permitted as conditional uses, subject to Chapter 16.82.

FINDING: The proposed development is on an existing parcel that is approximately 0.85-acres in size, with a lot of width of 240'-feet and depth 177'-feet; primary access is gained off Pacific Highway W with secondary access off SW Langer Drive via an existing easement. The proposed development is located approximately 25'-feet from the property line along the S.W. Pacific Highway, and 15'-feet from the property line along S.W. North Sherwood Boulevard. The proposed structure is approximately 144'-feet from the furthest interior side yard setback. Since the parcel is located on a corner lot with double frontage, the proposed structure is set approximately 67'-feet 3"-inches from Pacific Highway W and 30'-feet 3"-inches from SW Sherwood Boulevard, both exceeding the minimum standard. No additional rear or front yard setbacks are required. The height of the proposed structure is 20'-feet 2"-inches at the highest

point of the structure. No residential or public parks about the property; therefore, these criteria are satisfied.

16.22.040 - Community Design

- A. For standards relating to off-street parking and loading, energy conservation, historic resources, environmental resources, landscaping, access and egress, signs, parks and open space, on-site storage, and site design, see Divisions V, VIII and IX.

FINDING: The proposal includes development criteria that is subject to the Community Design Standards of the development code. These standards are addressed throughout this report in compliance in this code section; therefore, this criterion is met.

16.22.060 – Floodplain

Except as otherwise provided, Section 16.134.020 shall apply.

FINDING: The parcel does not contain any floodplains or wetlands on or adjacent to the property; therefore, this standard is not applicable.

Chapter 16.90 - SITE PLANNING

16.90.010 – Purpose

Site planning review is intended to:

- A. Encourage development that is compatible with the existing natural and manmade environment, existing community activity patterns, and community identity.
- B. Minimize or eliminate adverse visual, aesthetic or environmental effects caused by the design and location of new development, including but not limited to effects from:
 - 1. The scale, mass, height, areas, appearance and architectural design of buildings and other development structures and features.
 - 2. Vehicular and pedestrian ways and parking areas.
 - 3. Existing or proposed alteration of natural topographic features, vegetation and waterways.

16.90.020 - Site Plan Review

- A. Site Plan Review Required

Site Plan review is required prior to any substantial change to a site or use that is not subject to Residential Design Checklist or Residential Design Review, does not meet the criteria of a minor or major modification per 16.90.030, issuance of building permits for a new building or structure, or for the substantial alteration of an existing structure or use. Exemptions noted below.

Site Plan Review is required for the following development:

- 1. Multi-dwelling
- 2. Commercial
- 3. Industrial
- 4. Mixed-use

For the purposes of Section 16.90.020, the terms "substantial change" and "substantial alteration" mean any development activity as defined by this Code that generally requires a building permit and may exhibit one or more of the following characteristics:

1. The activity alters the exterior appearance of a structure, building or property and is not considered a modification.
2. The activity involves changes in the use of a structure, building, or property from residential to commercial or industrial and is not considered a modification.
3. The activity involves non-conforming uses as defined in Chapter 16.48.
4. The activity constitutes a change in a City approved plan, per Section 16.90.020 and is not considered a modification.
5. The activity is subject to site plan review by other requirements of this Code.
6. The activity increases the size of the building by more than 100% (i.e. the building more than doubles in size), regardless of whether it would be considered a major or minor modification.

B. Exemption to Site Plan Requirement

1. Single Family detached and middle housing developments are exempt from Site Plan Review but are required to complete either a Residential Design Checklist or Residential Design Review per Chapter 16.89, unless otherwise noted.
2. Manufactured homes located on individual residential lots per Section 16.46.010, and including manufactured home parks.

FINDING: The proposal includes demolition and rebuild of the subject site for the development of a new Chevron gasoline service station, including a new 3,600 square-foot convenience store, Underground Storage Tanks (UST), and other associated site improvements. The proposal is subject to Site Plan Review, including commercial design review; therefore, the code chapter is applicable.

D. Required Findings

No site plan approval will be granted unless each of the following is found:

1. The proposed development meets applicable zoning district standards and design standards in Division II, and all provisions of Divisions V, VI, VIII and IX.

FINDING: The proposal includes demolition and rebuild of the subject site for the development of a new Chevron gasoline service station, including a new 3,600 square-foot convenience store, Underground Storage Tanks (UST), and other associated site improvements. The parcel is zoned RC (Retail Commercial), and subject to Chapter 16.22 – Commercial Land Use Districts, as well as all other applicable provisions of Divisions V, VI, VIII and IX. Compliance with all applicable code is outlined within this staff report; therefore, this criterion is satisfied.

2. The proposed development can be adequately served by services conforming to the Community Development Plan, including but not limited to water, sanitary

facilities, storm water, solid waste, parks and open space, public safety, electric power, and communications.

FINDING: The application was reviewed by the City of Sherwood Engineering and Building department for compliance with the above criteria. A memorandum, dated August 16, 2023, indicated the proposed development would have adequate access to services, as further detailed in subsequent sections of this report; therefore, this criterion is satisfied.

3. Covenants, agreements, and other specific documents are adequate, in the City's determination, to assure an acceptable method of ownership, management, and maintenance of structures, landscaping, and other on-site features.

FINDING: The application was reviewed for compliance with the City of Sherwood Zoning and Community Development Code. No additional covenants, agreements, or other specific documents were needed beyond what is detailed in this staff report is necessary or existing prior to submittal; therefore, this criterion is satisfied.

4. The proposed development preserves significant natural features to the maximum extent feasible, including but not limited to natural drainage ways, wetlands, trees, vegetation (including but not limited to environmentally sensitive lands), scenic views, and topographical features, and conforms to the applicable provisions of Division VIII of this Code and Chapter 5 of the Community Development Code.

FINDING: The property is located on a developed site that does not contain natural drainage ways, wetlands, trees, vegetation, scenic views, or topographical features; therefore, this criterion is not applicable.

5. For developments that are likely to generate more than 400 average daily trips (ADTs), or at the discretion of the City Engineer, the applicant must provide adequate information, such as a traffic impact analysis (TIA) or traffic counts, to demonstrate the level of impact to the surrounding transportation system. The developer is required to mitigate for impacts attributable to the project, pursuant to TIA requirements in Section 16.106.080 and rough proportionality requirements in Section 16.106.090. The determination of impact or effect and the scope of the impact study must be coordinated with the provider of the affected transportation facility.

FINDING: The applicant provided a Traffic Impact Analysis, dated November 28, 2022, indicating the proposed development would generate approximately 47 new net daily trips, below the above threshold. The consultant, Kittelson & Associates, Inc, evaluated this project using a combination of Synchro 10 and Vistro analysis software. The analysis set the independent variable of the proposed development to 4,085 square feet, which was the initial scope and size of the proposed development. The applicant's final iteration of plans reduced the proposals size to 3,600 square feet, thus indicating the analysis for site was designed for a more intensive use than what's proposed; the memo indicated the development would have no impacts to the overall site circulation patterns. No change to the existing fueling positions and overhead canopy are proposed to be changed. As presented, this criterion is not applicable.

6. The proposed commercial, Multi-Family dwelling, institutional or mixed-use development is oriented to the pedestrian and bicycle, and to existing and planned transit facilities. Urban design standards include the following:
 - a. Primary, front entrances are located and oriented to the street, and have significant articulation and treatment, via facades, porticos, arcades, porches, portal, forecourt, or stoop to identify the entrance for pedestrians. Additional entrance/exit points for buildings, such as a postern, are allowed from secondary streets or parking areas.

FINDING: The applicant submitted elevations (Attachment A, Appendix D) displaying the proposed commercial development is oriented towards both Southwest Sherwood Boulevard and Pacific Highway W. Two primary entrances are oriented towards each road frontage and connects directly to public right of way and the dedicated bicycle parking area. The nearest transit facility is located at “16400 Block SW Langer” (Stop ID 9189) and is assessable via pedestrian connection through public-right-of-way. A third additional entrance is proposed, with an orientation towards the off-street parking area with a connection to the proposed pedestrian pathway system. Each entrance has significant and distinct articulation and treatment via facades, awnings, and windows; therefore, this standard is met.

- b. Buildings are located adjacent to and flush to the street, subject to landscape corridor and setback standards of the underlying zone.

FINDING: The site plan indicates the proposed structure is placed towards the western corner of the property, and abuts each street – Southwest Sherwood Boulevard and Pacific Highway W. A pedestrian pathway system is proposed that connects each entrance to public right of way. Applicable landscaping and setback standards are further addressed in applicable sections of this staff report; therefore, this standard is met.

- c. The architecture of buildings are oriented to the pedestrian and designed for the long term and be adaptable to other uses. Aluminum, vinyl, and T-111 siding are prohibited. Street facing elevations have windows, transparent fenestration, and divisions to break up the mass of any window. Roll up and sliding doors are acceptable. Awnings that provide a minimum 3 feet of shelter from rain are required unless other architectural elements are provided for similar protection, such as an arcade.

FINDING: The submitted application materials indicate the proposed structure is oriented towards the street and support pedestrian access and experience. The proposed materials do not incorporate any Aluminum, vinyl, or T-111 siding. All street facing elevations have corresponding windows, while each door will be tempered with glass to increase visibility; windows are broken up accordingly to prevent large massing. Awnings are proposed at each entrance and provide 4'-feet of shelter from the elements; therefore, this standard is met.

- d. Multi-family development requires a minimum of 15 percent of the area of the primary building elevation adjacent to a public right-of-way to include windows and entrance doors, and for the side building elevation, adjacent to a public right-of-way or public accessway, a minimum of 10 percent glazing of area is required.

FINDING: The proposal includes demolition and rebuild of the subject site for the development of a new Chevron gasoline service station, including a new 3,600 square-foot convenience store, Underground Storage Tanks (UST), and other associated site improvements. No multifamily development is proposed; therefore, this criterion is not applicable.

- e. As an alternative to the standards in Section 16.90.020.D.6.a—d, the following Commercial Design Review Matrix may be applied to any commercial, multi-family, institutional or mixed use development (this matrix may not be utilized for developments within the Old Town Overlay). A development must propose a minimum of 60 percent of the total possible points to be eligible for exemption from the standards in Section 16.90.020.D.6.a—d. In addition, a development proposing between 15,001 and 40,000 square feet of floor area, parking or seating capacity and proposing a minimum of 80 percent of the total possible points from the matrix below may be reviewed as a Type II administrative review, per the standards of Section 16.72.010.A.2.

| Design Criteria | Possible Points | | | | |
|---|---|---|--|--|--|
| | 0 | 1 | 2 | 3 | 4 |
| Building Design (21 Total Points Possible; Minimum 12 Points Required) These standards may be applied to individual buildings or developments with multiple buildings. | | | | | |
| Materials ^[26] | Concrete, artificial materials (artificial or "spray" stucco, etc.) | Cultured stone, brick, stone, decorative patterned masonry, wood | A mixture of at least two (2) materials (i.e. to break up vertical facade) | A mixture of at least three (3) materials (i.e. to break up vertical facade) | A mixture of at least three (3) of the following materials: brick, stone, cultured stone, decorative patterned masonry, wood |
| Roof Form ^[27] | Flat (no cornice) or single-pitch (no variation) | Distinctive from existing adjacent structures (not applicable to expansion of same building) or either variation in pitch or flat roof with | Distinctive from existing adjacent structures (not applicable to expansion of same building) and either variation in pitch or flat roof with | — | — |

| | | | | | |
|---|--|---|---|--|--|
| | | cornice treatment | cornice treatment | | |
| Commercial Glazing ^[28] | 0—20% glazing on street-facing side(s) | >20% glazing on at least one street-facing side (inactive, display or façade windows) | >20% glazing on all street-facing sides (inactive, display or façade windows) | >20% glazing on at least one street-facing side (active glazing—actual windows) | >20% glazing on all street-facing sides (active glazing—actual windows) |
| Multi-Family Glazing | Multi-family development requires a minimum of 15 percent of the area of the primary building elevation adjacent to a public right-of-way to include windows and entrance doors, and for side building elevations, adjacent to a public right-of-way or public accessway, a minimum of 10 percent glazing of area is required. | | | | |
| Fenestration on street-facing elevation(s) | One distinct "bay" with no vertical building elements | Multiple "bays" with one or more "bay" exceeding 30 feet in width | Vertical building elements with no "bay" exceeding 30 feet in width | Vertical building elements with no "bay" exceeding 20 feet in width | — |
| Entrance Articulation | No weather protection provided | Weather protection provided via awning, porch, etc. | — | Weather protection provided via awning, porch, etc. and pedestrian amenities such as benches, tables and chairs, etc. provided near the entrance but not covered | Weather protection provided via awning, porch, etc. and pedestrian amenities such as benches, tables and chairs, etc. provided near the entrance and covered |
| Structure Size ^[29] to discourage "big box" style development | Greater than 80,000 square feet | 60,000—79,999 square feet | 40,000—59,999 square feet | 20,000—39,999 square feet | Less than 20,000 square feet |
| Building Location and Orientation (6 Total Points Possible; Minimum 3 Points Required) | | | | | |
| Location ^[30] | Building(s) not flush to any right-of-way (including required PUE | Building(s) located flush to right-of-way on at least one side (with the | Buildings flush to all possible right-of-way (with the exception of | — | — |

| | adjacent to ROW, setbacks or visual corridor) (i.e. parking or drive aisle intervening) | exception of required setbacks, easements or visual corridors). | required setbacks, easements or visual corridors) (i.e. "built to the corner") | | |
|--|---|---|--|---|---|
| Orientation | Single-building site primary entrance oriented to parking lot | — | Single-building site primary entrance oriented to the pedestrian (i.e. entrance is adjacent to public sidewalk or adjacent to plaza area connected to public sidewalk and does not cross a parking area) | — | — |
| | Multiple building site primary entrance to anchor tenant or primary entrance to development oriented to parking lot | — | Multiple building site primary entrance to anchor tenant or primary entrance to development oriented to the pedestrian | — | — |
| Secondary Public Entrance ⁶ [31] | | | Secondary public pedestrian entrance provided adjacent to public sidewalk or adjacent to plaza area connected to | | |

| | | | | | |
|--|---|---|--|--|--|
| | | | public sidewalk | | |
| Parking and Loading Areas (13 Total Points Possible; Minimum 7 Points Required) | | | | | |
| Location of Parking | Greater than 50 percent of required parking is located between any building and a public street | 25—50 percent of required parking is located between any building and a public street | Less than 25 percent of required parking is located between any building and a public street | No parking is located between any building and a public street | — |
| Loading Areas | Visible from public street and not screened | Visible from public street and screened | Not visible from public street | — | — |
| Vegetation | At least one "landscaped" island every 13—15 parking spaces in a row | At least one "landscaped" island every 10—12 parking spaces in a row | At least one "landscaped" island every 8—9 parking spaces in a row | At least one "landscaped" island every 6—7 parking spaces in a row | — |
| Number of Parking Spaces ^[32] | >120% | 101—120% | 100% | <100% (i.e. joint use or multiple reduction) (1 bonus) | — |
| Parking Surface | Impervious | Some pervious paving (10—25%) | Partially pervious paving (26—50%) | Mostly pervious paving (>50%) | — |
| Landscaping (24 Total Point Possible, Minimum 14 Points Required) | | | | | |
| Tree Retention ^[33] | Less than 50% of existing trees on-site retained | 51—60% of existing trees on-site retained | 61—70% of existing trees on-site retained | 71—80% of existing trees on-site retained | 81—100% of existing trees on-site retained |
| Mitigation Trees ^[34] | Trees mitigated off-site or fee-in-lieu | 25—50% of trees mitigated on-site | 51—75% of trees mitigated on-site | 76—100% of trees mitigated on-site | — |
| Landscaping Trees ^[35] | Less than one tree for every 500 square feet of landscaping | 1 tree for every 500 square feet of landscaping | 2 trees for every 500 square feet of landscaping | 3 trees for every 500 square feet of landscaping | 4 trees for every 500 square feet of landscaping |

| | | | | | |
|--|--|---|---|---|--------------------|
| Landscaped Areas | Greater than 35% of landscaped areas are less than 100 square feet in size | Less than 25% of landscaped areas are less than 100 square feet in size | No landscaped areas are less than 100 square feet in size | — | — |
| Landscaping Trees greater than 3-inch Caliper | <25% | <25% 25-50% | >50% | — | — |
| Amount of Grass ^[36] | >75% of landscaped areas | 50—75% of landscaped areas | 25—49% of landscaped areas | <25% of landscaped areas | — |
| Total Amount of Site Landscaping ^[37] | <10% of gross site | 10—15% of gross site | 16—20% of gross site | 21—25% of gross site | >25% of gross site |
| Automatic Irrigation | No | Partial | Yes | — | — |
| Miscellaneous (10 Total Points Possible; Minimum 5 Points Required) | | | | | |
| Equipment Screening (roof) | Equipment not screened | Equipment partially screened | Equipment fully screened | Equipment fully screened by materials matching building architecture/finish | — |
| Fences and Walls ^[38] | Standard fencing and wall materials (i.e. wood fences, CMU walls etc.) | — | Fencing and wall materials match building materials | — | — |
| On-Site Pedestrian Amenities Not Adjacent to Building Entrances | No | Yes; 1 per building | Yes; more than 1 per building | — | — |
| Open Space Provided for Public Use | No | Yes; <500 square feet | Yes; 500—1,000 square feet | Yes; >1,000 square feet | — |
| Green Building Certification | | | | LEED, Earth Advantage, etc. (Bonus) | |

- f. As an alternative to the standards in Sections 16.90.020.D.6.a—c, the Old Town Design Standards (Chapter 16.162) may be applied to achieve this performance measure.

- g. As an alternative to the standards in Sections 16.90.020.D.6.a.—e, an applicant may opt to have a design review hearing before the Planning Commission to demonstrate how the proposed development meets or exceeds the objectives in Section 16.90.010.B of this Code. This design review hearing will be processed as a Type IV review with public notice and a public hearing.

FINDING: The applicant is not seeking an alternative to the standards in Section 16.90.020.D.6.a-d utilized the provided design matrix, requesting application of the Old Town Design Standards, or a design review hearing. As presented to the applicant has satisfied the requirements outlined in 16.90.020.D.6.a-d; therefore, this criterion is not applicable.

- 8. Driveways that are more than twenty-four (24) feet in width shall align with existing streets or planned streets as shown in the Local Street Connectivity Map in the adopted Transportation System Plan, except where prevented by topography, rail lines, freeways, pre-existing development, or leases, easements, or covenants.

FINDING: The subject parcel has access to Pacific Highway W and SW Langer Drive. Each driveway area is greater than twenty-four (24) feet in width and aligns with existing streets as shown in the adopted Transportation System Plan; therefore, this criterion is met.

16.90.030 - Site Plan Modifications and Revocation

A. Modifications to Approved Site Plans

1. Major Modifications to Approved Site Plans

- a. Defined. A major modification review is required if one or more of the changes listed below are proposed:
 - 1) A change in land use (i.e. residential to commercial, commercial to industrial, etc.);
 - 2) An increase in density by more than ten (10) percent, provided the resulting density does not exceed that allowed by the land use district;
 - 3) A change in setbacks or lot coverage by more than ten (10) percent, provided the resulting setback or lot coverage does not exceed that allowed by the land use district;
 - 4) A change in the type and/or location of access-ways, drives or parking areas negatively affecting off-site traffic or increasing Average Daily Trips (ADT) by more than 100;
 - 5) An increase in the floor area or height proposed for non-residential use by more than ten (10) percent;
 - 6) A reduction of more than ten (10) percent of the area reserved for common open space; or

- 7) Change to a condition of approval that was specifically applied to this approval (i.e. not a "standard condition"), or a change similar to items identified in Section 16.90.030.A.1.a.(1)—(2) as determined by the Review Authority.
- b. Approval Criteria. An applicant may request a major modification as follows:
- 1) Upon the review authority determining that the proposed modification is a major modification, the applicant must submit an application form, filing fee and narrative, and a site plan using the same plan format as in the original approval. The review authority may require other relevant information, as necessary, to evaluate the request.
 - 2) The application is subject to the same review procedure (Type II, III or IV) and decision making body as the initial project approval, except that adding a Conditional Use to an approved Type II project is reviewed using a Type III procedure. The approval criteria and standards in effect at the time of the current land use submittal apply to the modification request.
 - 3) The scope of review is limited to the modification request and does not open the entire site up for additional review unless impacted by the proposed modification. For example, a request to modify a parking lot requires site design review only for the proposed parking lot and any changes to associated access, circulation, pathways, lighting, trees, and landscaping.
 - 4) Notice must be provided in accordance with Chapter 16.72.020.
 - 5) The decision maker approves, denies, or approves with conditions an application for major modification based on written findings of the criteria.

FINDING: The proposal includes demolition and rebuild of the subject site for the development of a new Chevron gasoline service station, including a new 3,600 square-foot convenience store, Underground Storage Tanks (UST), and other associated site improvements. The proposal represents a 10% increase or more for a non-residential use; therefore, this criterion is applicable.

Chapter 16.58 - VISION CLEARANCE AND FENCE STANDARDS

16.58.010 - Clear Vision Areas

- A. A clear vision area shall be maintained on the corners of all property at the intersection of two (2) streets, intersection of a street with a railroad, or intersection of a street with an alley or private driveway.
- B. A clear vision area shall consist of a triangular area, two (2) sides of which are lot lines measured from the corner intersection of the street lot lines for a distance specified in this regulation; or, where the lot lines have rounded corners, the lot lines extended in a straight

line to a point of intersection, and so measured, and the third side of which is a line across the corner of the lot joining the non-intersecting ends of the other two (2) sides.

- C. A clear vision area shall contain no planting, sight obscuring fence, wall, structure, or temporary or permanent obstruction exceeding two and one-half (2½) feet in height, measured from the top of the curb, or where no curb exists, from the established street center line grade, except that trees exceeding this height may be located in this area, provided all branches and foliage are removed to the height of seven (7) feet above the ground on the sidewalk side and ten (10) feet on the street side.

The following requirements shall govern clear vision areas:

1. In all zones, the minimum distance shall be twenty (20) feet.
2. In all zones, the minimum distance from corner curb to any driveway shall be twenty-five(25) feet.
3. Where no setbacks are required, buildings may be constructed within the clear vision area.

FINDING: The subject parcel has three points of vehicular entry: two driveways along Pacific Highway W (one-way entries) and SW Langer Drive via an existing easement. Preliminary landscaping plans indicate driveways will be landscaped with lawn or other low-lying plant materials as to meet this standard. Required maintenance of this area will be bestowed upon the property owner(s), and future noncompliance will be subject to code compliance. No structure is proposed within this area as to interfere with clear vision standards. To ensure the clear vision area is established on the property prior to occupancy, the following condition applies:

Condition F.1: Prior to occupancy, Clear Vision Areas shall be established and maintained at each private driveway intersection, pursuant to 16.58.010.

this criterion is met.

Chapter 16.92 – LANDSCAPING

16.92.010 - Landscaping Plan Required

All proposed developments for which site plan review is required pursuant to Section 16.90.020 shall submit a landscaping plan that meets the standards of this Chapter. All areas not occupied by structures, paved roadways, walkways, or patios shall be landscaped or maintained according to an approved site plan.

FINDING: Pursuant to 16.90.020, the proposal is subject to Site Plan Review. The applicant submitted preliminary landscaping plans in accordance with this code section; therefore, this criterion is satisfied.

16.92.020 - Landscaping Materials

A. Type of Landscaping

Required landscaped areas shall include an appropriate combination of native evergreen or deciduous trees and shrubs, evergreen ground cover, and perennial plantings. Trees

to be planted in or adjacent to public rights-of-way shall meet the requirements of this Chapter. Plants may be selected from the City's "Suggested Plant Lists for Required Landscaping Manual" or suitable for the Pacific Northwest climate and verified by a landscape architect or certified landscape professional.

1. Ground Cover Plants

- a. All of the landscape that is not planted with trees and shrubs must be planted in ground cover plants, which may include grasses. Mulch is not a substitute for ground cover, but is allowed in addition to the ground cover plants.
- b. Ground cover plants other than grasses must be at least the four-inch pot size and spaced at distances appropriate for the plant species. Ground cover plants must be planted at a density that will cover the entire area within three (3) years from the time of planting.

FINDING: The applicant submitted preliminary landscaping plans indicating all areas not dedicated to either trees or shrubs will have sufficient ground coverage through the incorporation of grass and other appropriate materials. All ground cover plants, excluding grasses, will have a density that will cover the proposed areas within three (3) years of initial planting. All ground cover plants are evenly spaced throughout the landscaped area. No alternatives, such as mulch, are permitted or proposed; therefore, this standard is met.

4. Shrubs

- a. All shrubs must be of sufficient size and number to be at full growth within three (3) years of planting.
- b. Shrubs must be at least the one-gallon container size at the time of planting.

FINDING: The applicant submitted preliminary landscaping plans indicating 250 shrubs will be planted on the subject parcel. These will be evenly spaced throughout the landscaped area. A provided plant schedule indicated these plants will be at least one-gallon container sized when planted. The proposed shrubs will reach full growth within three years of being established given normal and appropriate conditions, as defined by their species type; therefore, this standard is met.

5. Trees

- a. Trees at the time of planting must be fully branched and must be a minimum of two (2) caliper inches and at least six (6) feet in height.
- b. Existing trees may be used to meet the standards of this chapter, as described in Section 16.92.020.C.2.

FINDING: The applicant submitted preliminary landscaping plans indicating the proposed trees will be at least two caliper inches when planted, and will be at least six (6) feet in height when planted. A total of thirty-eight (38) new trees will be introduced to the site; these tree selections are notated in a list of recommended street trees, pursuant to 16.142.090, except twenty (20) Douglas firs, which are native to the region. Existing trees on the site are posed for preservation, and will be protected during the construction period; therefore, this standard is met as conditioned below:

Condition D.1: Prior to building permits, the applicant shall submit a Tree and Vegetation Protection Plan illustrating how existing landscaping will be retained and protected from damage or destruction by construction activities, including protective fencing, selective pruning and root treatments, excavation techniques, temporary drainage systems, and like methods.

Condition B.1: Prior to final site plan approval, the applicant shall ensure the proposed trees are fully branched and a minimum of two (2) caliper inches and at least six (6) feet in height.

B. Plant Material Selection and Preparation

1. Required landscaping materials shall be established and maintained in a healthy condition and of a size sufficient to meet the intent of the approved landscaping plan. Specifications shall be submitted showing that adequate preparation of the topsoil and subsoil will be undertaken.
2. Landscape materials should be selected and sited to produce a hardy and drought-resistant landscape area. Selection of the plants should include consideration of soil type, and depth, the amount of maintenance required, spacing, exposure to sun and wind, the slope and contours of the site, and compatibility with existing native vegetation preserved on the site.

FINDING: The applicant submitted preliminary landscaping plans detailing the proposed plant schedule, which highlighted the various planting materials selected for landscaping. Further research into the plant type and species indicated the proposed landscaping materials were at least moderately resistant to drought conditions. Additional landscaping details provided indicated adequate preparation of the topsoil and subsoil will occur during the establishment of landscaped vegetation. Future maintenance of the proposed landscaping will be at responsibility of the owner(s), as conditioned below:

Condition A.9: The property owner(s) shall be responsible for ensuring the overall maintenance and health of the approved landscaping materials. Only hardy and drought-resistant landscaping shall be permitted on the parcel.

D. Existing Vegetation

1. All developments subject to site plan review per Section 16.90.020 and required to submit landscaping plans per this section shall preserve existing trees, woodlands and vegetation on the site to the maximum extent possible, as determined by the Review Authority, in addition to complying with the provisions of Section 16.142.(Parks, Trees and Open Space) and Chapter 16.144 (Wetland, Habitat, and Natural Resources).
2. Existing vegetation, except those plants on the Nuisance Plants list as identified in the "Suggested Plant Lists for Required Landscaping Manual" may be used to meet the landscape standards, if protected and maintained during the construction phase of the development.
 - a. If existing trees are used, each tree six (6) inches or less in diameter counts as one (1) medium tree.
 - b. Each tree that is more than six (6) inches and up to nine (9) inches in diameter counts as two (2) medium trees.

- c. Each additional three (3) inch diameter increment above nine (9) inches counts as an additional medium tree.

FINDING: The applicant submitted preliminary landscaping plans indicating that existing trees and lawns will be preserved to the maximum amount feasible. As conditioned previously in this staff report, these areas will be protected and maintained during the construction phase of this project; therefore, this standard is met.

E. Non-Vegetative Features

1. Landscaped areas as required by this Chapter may include architectural features interspersed with planted areas, such as sculptures, benches, masonry or stone walls, fences, rock groupings, bark dust, semi-pervious decorative paving, and graveled areas.
2. Impervious paving shall not be counted toward the minimum landscaping requirements unless adjacent to at least one (1) landscape strip and serves as a pedestrian pathway.
3. Artificial plants are prohibited in any required landscaped area.

FINDING: The proposal does not include any architectural features or artificial plants being incorporated into the overall landscaping plans. No impervious paving is being counted towards the minimum landscaping requirements; therefore, this criterion is satisfied.

16.92.030 - Site Area Landscaping and Perimeter Screening Standards

A. Perimeter Screening and Buffering

1. Perimeter Screening Separating Residential Zones:
A minimum six-foot high sight-obscuring wooden fence, decorative masonry wall, or evergreen screen, shall be required along property lines separating residential zones from commercial, institutional/public or industrial zones subject to the provisions of Chapter 16.48.020 (Fences, Walls and Hedges).
 - a. For new uses adjacent to inventoried environmentally sensitive areas, screening requirements shall be limited to vegetation only to preserve wildlife mobility. In addition, the Review Authority may require plants and other landscaping features in locations and sizes necessary to protect the privacy of residences and buffer any adverse effects of adjoining uses.
 - b. The required screening shall have breaks, where necessary, to allow pedestrian access to the site. The design of the wall or screening shall also provide breaks or openings for visual surveillance of the site and security.
 - c. Evergreen hedges used to comply with this standard shall be a minimum of thirty-six (36) inches in height at maturity, and shall be of such species, number and spacing to provide the required screening within one (1) year after planting.

FINDING: The subject parcel does not abut either a residential or institutional /public, or industrial zone district. No environmentally sensitive areas exist on or against the property; therefore, this criterion is not applicable.

2. Perimeter Landscaping Buffer

- a. A minimum ten (10) foot wide landscaped strip comprised of trees, shrubs and ground cover shall be provided between off-street parking, loading, or vehicular use areas on separate, abutting, or adjacent properties.
 - b. The access drives to a rear lot in the residential zone (i.e. flag lot) shall be separated from abutting property(ies) by a minimum of forty-two-inch sight-obscuring fence or a forty-two-inch to an eight (8) feet high landscape hedge within a four-foot wide landscape buffer. Alternatively, where existing mature trees and vegetation are suitable, Review Authority may waive the fence/buffer in order to preserve the mature vegetation.
3. Perimeter Landscape Buffer Reduction
- If the separate, abutting property to the proposed development contains an existing perimeter landscape buffer of at least five (5) feet in width, the applicant may reduce the proposed site's required perimeter landscaping up to five (5) feet maximum, if the development is not adjacent to a residential zone. For example, if the separate abutting perimeter landscaping is five (5) feet, then applicant may reduce the perimeter landscaping to five (5) feet in width on their site so there is at least five (5) feet of landscaping on each lot.

FINDING: The applicant submitted preliminary landscaping plans indicating a majority of off-street parking, ten (10) feet of landscaping, off-street parking, loading, and vehicular use areas from abutting or adjacent properties. Conversely, a portion of the landscaping strip separating the subject parcel from the abutting northeastern property does not provide sufficient perimeter landscaping, with an approximate landscape total of 4'-feet 1"-inch; the abutting property does not have existing landscaping that would qualify for a reduction in perimeter landscaping. To remedy this deficiency, the applicant will be required to provide additional perimeter landscaping to comply with the above criteria. This standard is met as conditioned below:

Condition B.2: Prior to final site plan approval, the applicant shall resubmit a landscaping plans indicating a minimum ten (10) foot wide landscaped strip comprised of trees, shrubs and ground cover is provided between off-street parking, loading, or vehicular use areas on separate, abutting, or adjacent properties, pursuant to 16.92.030.2.a.

B. Parking Area Landscaping

1. Purpose

The standard is a landscape treatment that uses a combination of trees, shrubs, and ground cover to provide shade, storm water management, aesthetic benefits, and screening to soften the impacts of large expanses of pavement and vehicle movement. It is applied to landscaped areas within and around the parking lot and loading areas.

- 2. Applicability. The provisions of this section apply to off-street parking areas of more than four (4) parking and/or loading spaces.
- 3. Definitions
 - a. Parking Area Landscaping: Any landscaped area on the site that is not required as perimeter landscaping § 16.92.030 (Site Landscaping and Screening).
 - b. Canopy Factor

- 1) Landscape trees are assigned a canopy factor to determine the specific number of required trees to be planted. The canopy factor is calculated based on the following formula: Canopy Factor = Mature Height (in feet) × Canopy Spread (in feet) × Growth Rate Factor × .01
- 2) Growth Rate Factor: The growth rate factor is three (3) for fast-growing trees, two (2) for medium growing trees, and one (1) for slow growing trees. The growth rate of a tree is identified in the "Suggested Plant Lists for Required Landscaping Manual."

FINDING: The applicant is proposing fourteen (14) off-street parking stalls, and therefore, subject to the applicability of this code section; this criterion is satisfied.

6. Required Landscaping

There shall be at least forty-five (45) square feet parking area landscaping for each parking space located on the site. The amount of required plant materials are based on the number of spaces as identified below.

FINDINGS: The amount of off-street parking provided on the site equates to 14 stalls, which equates to approximately 650 square feet of required landscaped area. The applicant submitted plans indicating that sufficient landscaping is provided, equating to approximately 1,345 square feet of parking area landscaping; therefore, this standard is met.

7. Amount and Type of Required Parking Area Landscaping

a. Number of Trees required based on Canopy Factor

Small trees have a canopy factor of less than forty (40), medium trees have a canopy factor from forty (40) to ninety (90), and large trees have a canopy factor greater than ninety (90);

1) Any combination of the following is required:

- i. One (1) large tree is required per four (4) parking spaces;
- ii. One (1) medium tree is required per three (3) parking spaces; or
- iii. One (1) small tree is required per two (2) parking spaces.
- iv. At least five (5) percent of the required trees must be evergreen.

2) Street trees may be included in the calculation for the number of required trees in the parking area.

FINDINGS: The applicant submitted preliminary landscaping plans which included a plant schedule. A combination of both large and medium trees, consisting of Thornless Honeylocust, Evergreen Magnolia, Amur Maple, Douglas Fir, and Vine map were displayed on the plans in a manner that was sufficient to reach the minimum required number of trees based on canopy factor; therefore, this criterion is met.

b. Shrubs:

- 1) Two (2) shrubs are required per each space.

- 2) For spaces where the front two (2) feet of parking spaces have been landscaped instead of paved, the standard requires one (1) shrub per space. Shrubs may be evergreen or deciduous.

FINDING: The applicant submitted preliminary landscaping plans indicating at least two (2) shrubs will be planted along the off-street parking area permitter. A plant schedule detailing species types further illustrated the variety of shrubs that will be placed throughout the perimeter; therefore, this criterion is met.

- c. Ground cover plants:
 - 1) Any remainder in the parking area must be planted with ground cover plants.
 - 2) The plants selected must be spaced to cover the area within three (3) years. Mulch does not count as ground cover.

FINDING: The applicant submitted preliminary landscaping plans indicating any remainder of the off-street parking area will be planted with ground plants. These species of plants will cover unoccupied area within three (3) years. No mulch is proposed. This criterion is satisfied.

8. Individual Landscape Islands Requirements

- a. Individual landscaped areas (islands) shall be at least ninety (90) square feet in area and a minimum width of five (5) feet and shall be curbed to protect the landscaping.
- b. Each landscape island shall be planted with at least one (1) tree.
- c. Landscape islands shall be evenly spaced throughout the parking area.
- d. Landscape islands shall be distributed according to the following:
 - 1) Residential uses in a residential zone: one (1) island for every eight (8) contiguous parking spaces.
 - 2) Multi or mixed-uses, institutional and commercial uses: one (1) island for every ten (10) contiguous parking spaces.
 - 3) Industrial uses: one (1) island for every twelve (12) contiguous parking spaces.
- e. Storm water bio-swales may be used in lieu of the parking landscape areas and may be included in the calculation of the required landscaping amount.
- f. Exception to Landscape Requirement.

Linear raised or marked sidewalks and walkways within the parking areas connecting the parking spaces to the on-site buildings may be included in the calculation of required site landscaping provide that it:

 - 1) Trees are spaced a maximum of thirty (30) feet on at least one (1) side of the sidewalk.
 - 2) The minimum unobstructed sidewalk width is at least six (6) feet wide.
 - 3) The sidewalk is separated from the parking areas by curbs, bollards, or other means on both sides.

FINDING: Pursuant to 16.92.030.B.6., commercial uses shall provide one (1) island for every ten (10) contiguous parking spaces. The applicant submitted application materials displaying eleven (11) contiguous parking spaces abutting the proposed structure and did not provide the necessary Individual Landscape Island. To meet this criterion, the applicant shall incorporate one (1) landscaped island in compliance with this standard, as conditioned below:

Condition B.3: Prior to final site plan approval, the applicant shall resubmit a site plan and preliminary landscaping plans indicating compliance with the minimum landscape Island requirement, pursuant to 16.92.030.B.8.

This criterion is satisfied.

9. Landscaping at Points of Access

When a private access-way intersects a public right-of-way or when a property abuts the intersection of two (2) or more public rights-of-way, landscaping shall be planted and maintained so that minimum sight distances shall be preserved pursuant to Section 16.58.010.

10. Exceptions

- a. For properties with an environmentally sensitive area and/or trees or woodlands that merit protection per Chapters 16.142 (Parks, Trees and Open Space) and 16.144 (Wetland, Habitat and Natural Areas) the landscaping standards may be reduced, modified or "shifted" on-site where necessary in order to retain existing vegetation that would otherwise be removed to meet the above referenced landscaping requirements.
- b. The maximum reduction in required landscaping buffer permitted through this exception process shall be no more than fifty (50) percent. The resulting landscaping buffer after reduction may not be less than five (5) feet in width unless otherwise permitted by the underlying zone. Exceptions to the required landscaping may only be permitted when reviewed as part of a land use action application and do not require a separate variance permit.

FINDING: The applicant submitted materials indicating compliance with clear vision standards, including a note regarding landscaping maintenance, pursuant to Chapter 16.58. The subject parcel is not within or abutting an environmentally sensitive area and/or woodland. No reduction is sought by the applicant; therefore, this criterion is satisfied.

C. Screening of Mechanical Equipment, Outdoor Storage, Service and Delivery Areas

All mechanical equipment, outdoor storage and manufacturing, and service and delivery areas, shall be screened from view from all public streets and any adjacent residential zones. If unfeasible to fully screen due to policies and standards, the applicant shall make efforts to minimize the visual impact of the mechanical equipment.

FINDINGS: Based on submitted materials, the applicant has provided the necessary screening of mechanical equipment, outdoor storage, service, and delivery areas to the maximum extent feasible. Future and existing infrastructure and areas shall be screened from all public streets, as conditioned below:

Condition A.10: The property owner(s) shall be responsible for maintaining all required screening of all Mechanical Equipment, Outdoor Storage, Service and Delivery Areas from public streets and any adjacent residential zone districts.

D. Visual Corridors

Except as allowed by subsection 6. above, new developments shall be required to establish landscaped visual corridors along Highway 99W and other arterial and collector streets, consistent with the Natural Resources and Recreation Plan Map, Appendix C of the Community Development Plan, Part II, and the provisions of Chapter 16.142 (Parks, Trees, and Open Space). Properties within the Old Town Overlay are exempt from this standard.

FINDINGS: The subject parcel abuts Pacific Highway W SW Sherwood Boulevard an arterial road), and is subject to the Visual Corridor provisions of Chapter 16.142(Parks, Trees, and Open Space); this requirement is addressed in corresponding sections of this staff report. This criterion is satisfied.

16.92.040 - Installation and Maintenance Standards

A. Installation

All required landscaping must be in-ground, except when in raised planters that are used to meet minimum Clean Water Services storm water management requirements. Plant materials must be installed to current nursery industry standards. Plant materials must be properly supported to ensure survival. Support devices such as guy wires or stakes must not interfere with vehicular or pedestrian movement.

B. Maintenance and Mitigation of Landscaped Areas

1. Maintenance of existing non-invasive native vegetation is encouraged within a development and required for portions of the property not being developed.
2. All landscaping shall be maintained in a manner consistent with the intent of the approved landscaping plan.
3. Any required landscaping trees removed must be replanted consistent with the approved landscaping plan and comply with § 16.142, (Parks, Trees and Open Space).

C. Irrigation

The intent of this standard is to ensure that plants will survive the critical establishment period when they are most vulnerable due to lack of watering. All landscaped areas must provide an irrigation system, as stated in Option 1, 2, or 3.

1. Option 1: A permanent built-in irrigation system with an automatic controller installed.
2. Option 2: An irrigation system designed and certified by a licensed landscape architect or other qualified professional as part of the landscape plan, which provides sufficient water to ensure that the plants become established. The system does not have to be permanent if the plants chosen can survive independently once established.

3. Option 3: Irrigation by hand. If the applicant chooses this option, an inspection will be required one (1) year after final inspection to ensure that the landscaping has become established.

D. Deferral of Improvements

Landscaping shall be installed prior to issuance of occupancy permits, unless security equal to one hundred twenty-five (125) percent of the cost of the landscaping is filed with the City. "Security" may consist of a performance bond payable to the City, cash, certified check, or other assurance of completion approved by the City. If the installation of the landscaping is not completed within one (1) year, the security may be used by the City to complete the installation.

FINDING: Installation, maintenance, and mitigation of all landscaped areas is the responsibility of the property owner(s). No deferral of improvements are requested. Prior to building occupancy, all required landscaping must be in-ground with an approved irrigation system, as conditioned below:

Condition F.2: Prior to building occupancy, the applicant shall place all required landscaping in-ground, including installation of an approved irrigation system, pursuant to the 16.92.040 standards.

Chapter 16.94 - OFF-STREET PARKING AND LOADING

16.94.010 - General Requirements

A. Off-Street Parking Required

No site shall be used for the parking of vehicles until plans are approved providing for off-street parking and loading space as required by this Code. Any change in uses or structures that reduces the current off-street parking and loading spaces provided on site, or that increases the need for off-street parking or loading requirements shall be unlawful and a violation of this Code, unless additional off-street parking or loading areas are provided in accordance with Section 16.94.020, or unless a variance from the minimum or maximum parking standards is approved in accordance with Chapter 16.84 Variances.

B. Deferral of Improvements

Off-street parking and loading spaces shall be completed prior to the issuance of occupancy permits, unless the City determines that weather conditions, lack of available surfacing materials, or other circumstances beyond the control of the applicant make completion impossible. In such circumstances, security equal to one hundred twenty five (125) percent of the cost of the parking and loading area is provided the City. "Security" may consist of a performance bond payable to the City, cash, certified check, or other assurance of completion approved by the City. If the installation of the parking or loading area is not completed within one (1) year, the security may be used by the City to complete the installation.

B. Options for Reducing the Required Parking Spaces

1. Two (2) or more uses or, structures on multiple parcels of land may utilize jointly the same parking and loading spaces when the peak hours of operation do not

substantially overlap, provided that satisfactory evidence is presented to the City, in the form of deeds, leases, or contracts, clearly establishing the joint use.

- a. Within commercial, institutional and public, or industrial zones, shared parking may be provided on lots that are within five hundred (500) feet of the property line of the use to be served.
 - b. Shared parking is allowed if the application can show that the combined peak use is available by a parking study that demonstrates:
 - 1) There is a sufficient number of parking spaces to accommodate the requirements of the individual businesses; or
 - 2) That the peak hours of operation of such establishments do not overlap, and
 - 3) That an exclusive permanent easement over a delineated area has been granted for parking space use.
3. Mixed use projects are developments where a variety of uses occupies a development project or complex. For example, an eating establishment, professional office building and movie theater are all components of a mixed-use site. It does not include a secondary use within a primary use such as an administrative office associated with a retail establishment. In mixed-use projects, the required minimum vehicle parking shall be determined using the following formula:
- a. Primary use: i.e. that with the largest proportion of total floor area within the development at one hundred (100) percent of the minimum vehicle parking required for that use.
 - b. Secondary Use: i.e. that with the second largest percentage of total floor area within the development, at ninety (90) percent of the vehicle parking required for that use.
 - c. Subsequent use or uses, at eighty (80) percent of the vehicle parking required for that use.

C. Prohibited Uses

Required parking, loading and maneuvering areas shall not be used for long-term storage or sale of vehicles or other materials, and shall not be rented, leased or assigned to any person or organization not using or occupying the building or use served.

FINDING: The proposal is subject to the criteria of Chapter 16.94, as further detailed in subsequent sections of this staff report. No deferrals or reduction to the required off-street parking is requested. The property owner(s) will be responsible for ensuring that no prohibited use will occur within the off-street parking area, as conditioned below:

Condition A.11: The property owner(s) shall be responsible for ensuring all required parking, loading, and maneuvering areas are not used for long-term storage or sale of vehicles or other materials, or rented, leased, or assigned to any person or organization not using or occupying the building or use served. All future violations are subject to Code Compliance.

As conditioned, these criteria are met.

D. Location

1. Residential off-street parking spaces:
 - a. Shall be located on the same lot or development as the residential use.
 - b. Shall not include garages or enclosed buildings with the exception of a parking structure in Multi-Family dwelling developments where three (3) or more spaces are not individually enclosed. (Example: Underground or multi-level parking structures).
2. For other non-residential uses, required off-street parking spaces may include adjacent on-street parking spaces, nearby public parking and shared parking located within five hundred (500) feet of the use. The distance from the parking, area to the use shall be measured from the nearest parking space to a building entrance, following a sidewalk or other pedestrian route. The right to use private off-site parking must be evidenced by a recorded deed, lease, easement, or similar written notarized letter or instrument.
3. Vehicle parking is allowed only on improved parking shoulders that meet City standards for public streets, within garages, carports and other structures, or on driveways or parking lots that have been developed in conformance with this code. Specific locations and types of spaces (car pool, compact, etc.) for parking shall be indicated on submitted plans and located to the side or rear of buildings where feasible.
 - a. All new development with forty (40) employees or more shall include preferential spaces for carpool/vanpool designation. Carpool and vanpool parking spaces shall be located closer to the main employee entrance than all other parking spaces with the exception of ADA parking spaces. Carpool/vanpool spaces shall be clearly marked as reserved for carpool/vanpool only.
 - b. Existing development may redevelop portions of designated parking areas for multi-modal facilities (transit shelters, park and ride, and bicycle parking), subject to meeting all other applicable standards, including minimum space standards.

FINDING: The applicant submitted materials indicating the proposed off-street parking will be located entirely within the subject parcel, and not located within a garage or enclosed buildings. No portion of the site is proposed to be redeveloped to include multi-modal facilities in a manner that would affect the existing off-street parking area. No carpool/vanpool designation is required as the proposed use does not result in an employee count greater or equal to forty (40); therefore, this criterion is met.

E. Marking

All parking, loading or maneuvering areas shall be clearly marked and painted. All interior drives and access aisles shall be clearly marked and signed to show the direction of flow and maintain vehicular and pedestrian safety.

FINDING: The applicant submitted materials indicating that all off-street parking, loading, and maneuvering areas will be clearly marked and painted, including directional flow markings to ensure vehicular and pedestrian safety; therefore, this standard is met:

F. Surface and Drainage

1. All parking and loading areas shall be improved with a permanent hard surface such as asphalt, concrete or a durable pervious surface. Use of pervious paving material is encouraged and preferred where appropriate considering soils, location, anticipated vehicle usage and other pertinent factors.
2. Parking and loading areas shall include storm water drainage facilities approved by the City Engineer or Building Official.

FINDING: The applicant submitted application materials indicating that all off-street parking, loading, and vehicle use areas will be improved with permanent hard surfaces in compliance with storm water drainage facilities per City Engineer requirements; therefore, this standard is met.

G. Repairs

Parking and loading areas shall be kept clean and in good repair. Breaks in paved surfaces shall be repaired. Broken or splintered wheel stops shall be replaced. Painted parking space boundaries and directional symbols shall be maintained in a readable condition.

FINDING: The property owner(s) shall be responsible for properly maintaining the parking and loading areas. Future violations are subject to Code Compliance. This standard is met as conditioned below:

Condition A.12: The property owner(s) shall be responsible for the maintenance and repair of the parking and loading areas, including associated infrastructure, pursuant to Chapter 16.94.010.G.

H. Parking and Loading Plan

An off-street parking and loading plan, drawn to scale, shall accompany requests for building permits or site plan approvals. A parking and loading plan is not required for all residential housing types, except for multi-family, on residential lots in a recorded subdivision. The plan shall show but not be limited to:

1. Delineation of individual parking and loading spaces and dimensions.
2. Circulation areas necessary to serve parking and loading spaces.
3. Location of accesses to streets, alleys and properties to be served, and any curb cuts.
4. Landscaping as required by Chapter 16.92.
5. Grading and drainage facilities.
6. Signing and bumper guard specifications.
7. Bicycle parking facilities as specified in Section 16.94.020.C.
8. Parking lots more than one (1) acre in size shall provide street-like features including curbs, sidewalks, and street trees or planting strips.

FINDING: The applicant provided materials that included sufficient detail of the proposed off-street parking. Compliance with all applicable standards and criteria, pursuant to SRZC 16.94, were reviewed against these materials and approved as part of this decision; therefore, this standard is met.

16.94.020 - Off-Street Parking Standards

A. Generally

Where square feet are specified, the area measured shall be the gross building floor area primary to the functioning of the proposed use. Where employees are specified, persons counted shall be those working on the premises, including proprietors, during the largest shift at peak season. Fractional space requirements shall be counted as a whole space. The Review Authority may determine alternate off - street parking and loading requirements for a use not specifically listed in this Section based upon the requirements of comparable uses.

**Table 1: Minimum and Maximum Parking Standards
(Metro spaces are based on 1 per 1,000 sq ft of gross leasable area; ADU standards are per OAR Division 46)**

| Use | Minimum Parking Standard | Maximum Permitted Parking Zone A ¹ |
|------------------------------------|---|---|
| General retail or personal service | 4.1 (244 sf) | 5.1 |
| | 15 stalls = ((3,600 square feet/1,000) x 4.1=14.76) | 19 stalls = ((3,600 square feet/1,000) x 5.1=18.36) |

¹ Parking Zone A reflects the maximum number of permitted vehicle parking spaces allowed for each listed land use. Parking Zone A areas include those parcels that are located within one-quarter (¼) mile walking distance of bus transit stops, one-half (½) mile walking distance of light rail station platforms, or both, or that have a greater than twenty-minute peak hour transit service.

FINDING: The proposal includes the development of a 3,600 square foot convenience store, installation of new underground storage tanks (USTs), and other associated site improvements. This use is categorized under SDZC Chapter 16.94.020.A, Table 1: Minimum and Maximum Parking Standards, as “**General retail or personal service.**” Based on the scope of the proposal, the applicant is required to dedicate 15 off-street parking spaces. As indicated on the site plan, the applicant is proposing 14 parking spaces, which is one below the minimum standard. Alternatively, in March of 2020, Governor Kate Brown issued an executive order, NO.20-04, which directed state agencies to take actions to reduce and regulate greenhouse gas emissions and mitigate the impacts of climate change while also centering the needs of Oregon’s most vulnerable communities.

In response, the Oregon Land Use Conservation and Development Commission (LCDC) developed, and the state adopted, updates to Oregon’s transportation and land use planning rules. These new rules are called Climate Friendly Equitable Communities (CFEC), and they went into effect on January 1, 2023. The City of Sherwood is implementing the CFEC standards that are clear and objective without codifying these standards at this time within Sherwood’s Zoning and Community Development Code (SZDCD).

Effective January 1, 2023, the City of Sherwood through administrative policy is implementing Oregon Administrative Rule (OAR) 660-012-0440 Parking Reform Near Transit Corridors. The city will not require parking within ½ mile of TriMet’s Line 94 which qualifies as “frequent service” under OAR 660-012-0440.

The subject parcel is located within a ¼ mile of an existing transportation line, with the nearest bus stop being located at “16400 Block SW Langer” (Stop ID 9189) and serviced by both routes 94 and 97.

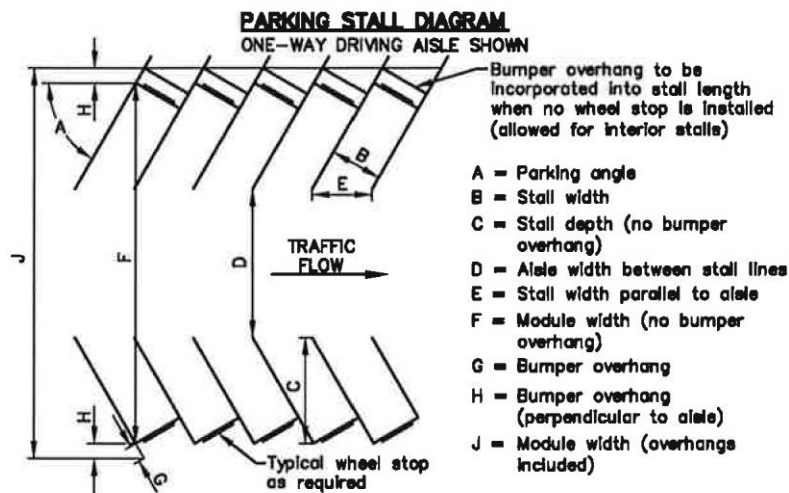
therefore, this standard is met through OAR 660-012-0440.

B. Dimensional and General Configuration Standards

1. Dimensions For the purpose of this Chapter, a "parking space" means a stall nine (9) feet in width and twenty (20) feet in length. Up to twenty-five (25) percent of required parking spaces may have a minimum dimension of eight (8) feet in width and eighteen (18) feet in length so long as they are signed as compact car stalls.

2. Layout

Parking space configuration, stall and access aisle size shall be of sufficient width for all vehicle turning and maneuvering. Groups of more than four (4) parking spaces shall be served by a driveway so as to minimize backing movements or other maneuvering within a street, other than an alley. All parking areas shall meet the minimum standards shown in the following table and diagram.



FINDING: The applicant's proposal includes fourteen (14) dedicated off-street parking stalls. Measurements of stalls one (1) through eleven (11), annotated on the site plan, display the proposed dimensional length of each stall ranging from 16'-feet to 19'-feet and the width of at least 9'-feet. Overall, these stalls are below the standards set forth in above criteria, and will need to be conditioned to meet applicable criteria. These stalls are serviced by a driveway that's approximately 33'-feet in width, exceeding the minimum requirement for two-driving aisles.

Alternatively, measurements of stalls twelve (12) through fourteen (14), located towards the northern portion of the property, display a dimensional length of at least 20' – feet and width of at least 9'-feet. One stall will be reserved for ADA handicap accessibility. The location of these three stalls is located within an irregularly shaped area of the parcel but have varying aisle widths ranging from 30'-feet to 41'-feet, exceeding the minimum requirement for two-driving aisles.

To satisfy the dimensional requirements of 16.94.020.B, the following conditions shall apply:

Condition B.4: Prior to final site plan approval, the applicant shall resubmit plans indicating compliance with the dimensional and general configuration standards for off-street parking stalls, pursuant to 16.94.020.B.1.

Condition B.5: Prior to final site plan approval, if the applicant includes compact off-street parking stalls, they shall provide signage and/or markings identifying each compact stall on the parcel, pursuant to 16.94.020.B.

3. Wheel Stops

- a. Parking spaces along the boundaries of a parking lot or adjacent to interior landscaped areas or sidewalks shall be provided with a wheel stop at least four (4) inches high, located three (3) feet back from the front of the parking stall as shown in the above diagram.
- b. Wheel stops adjacent to landscaping, bio-swales or water quality facilities shall be designed to allow storm water runoff.
- c. The paved portion of the parking stall length may be reduced by three (3) feet if replaced with three (3) feet of low-lying landscape or hardscape in lieu of a wheel stop; however, a curb is still required. In other words, the traditional three-foot vehicle overhang from a wheel stop may be low-lying landscaping rather than an impervious surface.

Findings: The applicant submitted a site plan indicating 14 dedicated off-street parking stalls. Stalls one (1) through eleven (11) are located towards the southern portion of the property, abutting a proposed pedestrian pathway, and do not display any proposed wheel stops; prior to building permit issuance, the applicant will be required to provide wheel stops for these stalls. Additionally, stalls twelve (12) through fourteen (14) are located at the northern portion of the property and are designed to support parallel off-street parking; these stalls will not encroach into required landscaping or pedestrian walkway systems, due to the configuration of the stall and a 6"-inch curb located adjacent to the off-street parking area, therefore meeting the intent of the standard. This criterion is satisfied as conditioned below:

Condition D.2: Prior to building permit issuance, the applicant shall submit revised materials indicating conformance with the wheel stop standards, pursuant to SZDC 16.94.020.B.3.

4. Service Drives

Service drives shall be clearly and permanently marked and defined through use of rails, fences, walls, or other barriers or markers, and shall have minimum vision clearance area formed by the intersection of the driveway center line, the street right-of-way line, and a straight line joining said lines through points fifteen (15) feet from their intersection.

FINDING: No service drives are proposed; therefore, this criterion is not applicable.

C. Bicycle Parking Facilities

1. General Provisions

a. Applicability.

Bicycle parking spaces shall be provided for new development, changes of use, and major renovations, defined as construction valued at twenty-five (25) percent or more of the assessed value of the existing structure.

Findings: The proposal includes razing and rebuild of the subject site for the development of a new Chevron gasoline service station, including a new 3,600 square-foot convenience store, Underground Storage Tanks (UST), and other associated site improvements. As presented, this constitutes a major renovation with a construction value exceeding twenty-five (25) percent of the assessed value of the existing structure; therefore, bicycle parking standards are applicable.

b. Types of Spaces. Bicycle parking facilities shall be provided in terms of short-term bicycle parking and long-term bicycle parking. Short-term bicycle parking is intended to encourage customers and other visitors to use bicycles by providing a convenient and readily accessible place to park bicycles. Long-term bicycle parking provides employees, students, residents, commuters, and others who generally stay at a site for at least several hours a weather-protected place to park bicycles.

c. Minimum Number of Spaces. The required total minimum number of bicycle parking spaces for each use category is shown in Table 4, Minimum Required Bicycle Parking Spaces.

d. Minimum Number of Long-term Spaces. If a development is required to provide eight (8) or more required bicycle parking spaces in Table 4, at least twenty-five (25) percent shall be provided as long-term bicycle with a minimum of one (1) long-term bicycle parking space.

Table 4: Minimum Required Bicycle Parking Spaces

| Use Categories | Minimum Required Spaces |
|-----------------------------|---|
| Commercial Categories | |
| Retail sales/service office | 2 or 1 per 20 auto spaces, whichever is greater |

Findings: The proposal includes the development of a 3,600 square foot convenience store, the installation of new underground storage tanks (USTs), and other associated site improvements. This use is categorized under SDZC Chapter 16.94.020.A, Table 4: Minimum Required Bicycle Parking Spaces, as “**Retail Sales/Service Office.**” Based on the scope of the proposal, the applicant is required to dedicate two (2) bicycle parking spaces. As indicated on the site plan, the applicant is proposing two (2) short-term bicycle parking spaces, located adjacent to the proposed development. No minimum long-term bicycle spaces are required. These criteria are satisfied.

- e. Multiple Uses. When there are two or more primary uses on a site, the required bicycle parking for the site is the sum of the required bicycle parking for the individual primary uses.

FINDING: The primary use of the parcel is designated under “**Vehicle fueling stations or car wash facilities,**” pursuant to 16.22.020. The proposed convenience store classified as a secondary use, and does not constitute an additional primary use to the parcel; therefore, this criterion is not applicable.

2. Location and Design.

a. General Provisions

- 1) Each space must be at least two (2) feet by six (6) feet in area, be accessible without moving another bicycle, and provide enough space between the rack and any obstructions to use the space properly.
- 2) There must be an aisle at least five (5) feet wide behind all required bicycle parking to allow room for bicycle maneuvering. Where the bicycle parking is adjacent to a sidewalk, the maneuvering area may extend into the right-of-way.
- 3) Lighting. Bicycle parking shall be at least as well-lit as vehicle parking for security.
- 4) Reserved Areas. Areas set aside for bicycle parking shall be clearly marked and reserved for bicycle parking only.
- 5) Bicycle parking in the Old Town Overlay District can be located on the sidewalk within the right-of-way. A standard inverted "U shaped" or staple design is appropriate. Alternative, creative designs are strongly encouraged.
- 6) Hazards. Bicycle parking shall not impede or create a hazard to pedestrians. Parking areas shall be located so as to not conflict with vision clearance standards.

FINDING: The bicycle parking area is approximately 6'-feet 6"-inches in length and 5'-feet in width, exceeding the minimum standard, and is clearly marked for bike parking only. The impervious area located directly behind the bicycle parking area equals approximately 6'-feet 2"-inches and allows for adequate bicycle maneuvering. Sufficient lighting will service the bike parking area since the proposed window articulations are adjacent to the area the exterior lighting poles provide for greater visibility and security. The location of the proposed bicycle parking does not impede or create a hazard to pedestrians, nor does it conflict with vision clearance standards. This parcel is located outside of the Old Town Overlay District; therefore, these criteria are satisfied.

b. Short-term Bicycle Parking

- 1) Provide lockers or racks that meet the standards of this section.
- 2) Locate inside or outside the building within thirty (30) feet of the main entrance to the building or at least as close as the nearest vehicle parking space, whichever is closer.

FINDING: The applicant has indicated on the site plan a U-shaped bike rack will be installed on the property within a dedicated bicycle parking area, equating to 72 square feet of impervious space. The distance between the proposed bicycle parking and the nearest main entrance to the structure is approximately 9'-feet 1"-inches; therefore, this standard is met.

c. Long-term Bicycle Parking

- 1) Provide racks, storage rooms, or lockers in areas that are secure or monitored (e.g., visible to employees or customers or monitored by security guards).
- 2) Locate the outside bicycle parking spaces within one hundred (100) feet of the entrance that will be accessed by the intended users.
- 3) All of the spaces shall be covered.

d. Covered Parking (Weather Protection)

- 1) When required, covered bicycle parking shall be provided in one (1) of the following ways: inside buildings, under roof overhangs or awnings, in bicycle lockers, or within or under other structures.
- 2) Where required covered bicycle parking is not within a building or locker, the cover must be permanent and designed to protect the bicycle from rainfall and provide seven-foot minimum overhead clearance.
- 3) Where required bicycle parking is provided in lockers, the lockers shall be securely anchored.

FINDING: The applicant is not proposing or required to provide eight or more dedicated long-term bicycle parking stalls pursuant to 16.94.020.C, Table 4: Minimum Required Bicycle Parking Spaces; therefore, these standards are not applicable..

16.94.030 - Off-Street Loading Standards

A. Minimum Standards

1. A driveway designed for continuous forward flow of passenger vehicles for the purpose of loading and unloading passengers shall be located on the site of any school, or other public meeting place, which is designed to accommodate more than twenty-five (25) persons at one time.
2. The minimum loading area for non-residential uses shall not be less than ten (10) feet in width by twenty-five (25) feet in length and shall have an unobstructed height of fourteen (14) feet.
3. Multiple uses on the same parcel or adjacent parcels may utilize the same loading area if it is shown in the development application that the uses will not have substantially overlapping delivery times.
4. The following additional minimum loading space is required for buildings in excess of twenty thousand (20,000) square feet of gross floor area:
 - a. Twenty thousand (20,000) to fifty (50,000) sq. ft. - five hundred (500) sq. ft.
 - b. Fifty (50,000) sq. ft. or more - seven hundred fifty (750) sq. ft.

FINDING: The applicant is not proposing a dedicated off-street loading area; therefore, this standard is not applicable.

B. Separation of Areas

Any area to be used for the maneuvering of delivery vehicles and the unloading or loading of materials shall be separated from designated off-street parking areas and designed to prevent the encroachment of delivery vehicles onto off-street parking areas or pub streets. Off-street parking areas used to fulfill the requirements of this Chapter shall not be used for loading and unloading operations.

FINDING: No off-street loading areas are proposed; therefore, this standard is not applicable.

Chapter 16.96 - ON-SITE CIRCULATION

16.96.010 - General Requirements for On-Site Pedestrian and Bicycle Circulation

A. Purpose

All new development, (except single-family detached and middle housing types), shall provide a continuous system of private pathways/sidewalks. The on-site facilities shall connect to adjacent residential areas and neighborhood activity centers within one-half mile of the development. Neighborhood activity centers include but are not limited to existing or planned schools, parks, shopping areas, transit stops or employment centers.

FINDING: The proposal includes the development of a 3,600 square foot convenience store, installation of new underground storage tanks (USTs), and other associated site improvements; therefore, these standards apply.

B. Maintenance

No building permit or other City permit shall be issued until plans for pedestrian ingress, egress and circulation have been approved by the City. Any change increasing any ingress, egress or circulation requirements, shall be a violation of this Code unless

additional facilities are provided in accordance with this Chapter. Required ingress, egress and circulation improvements shall be kept clean and in good repair.

C. Joint Pedestrian Access

Two (2) or more uses, structures, or parcels of land may utilize the same ingress and egress when the combined ingress and egress of all uses, structures, or parcels of land satisfied the other requirements of this Code, provided that satisfactory legal evidence is presented to the City in the form of deeds, easements, leases, or contracts to clearly establish the joint use.

FINDING: The proposal includes the development of a 3,600 square foot convenience store, installation of new underground storage tanks (USTs), and other associated site improvements. The applicant is proposing a pedestrian pathway network that connects the proposed development with adjacent public right of way. Maintenance of this pathway system will be the responsibility of the property owner(s). Violation of the above criteria will result in Code Enforcement action. No multiple uses, structures, or parcels of land are proposing joint pedestrian access with this application. This criterion is satisfied as conditioned below:

Condition A.13: The property owner(s) shall be responsible for the maintenance and repair of the on-site pedestrian and bicycle circulation area, including associated infrastructure, pursuant Chapter 16.96.010.B.

D. Connection to Streets

1. Except for joint access per this Section, all ingress and egress to a use or parcel shall connect directly to a public street, excepting alleyways with paved sidewalk.
2. Required private sidewalks shall extend from the ground floor entrances or the ground floor landing of stairs, ramps or elevators to the public sidewalk or curb of the public street which provides required ingress and egress.

FINDING: The applicant submitted materials indicating the pedestrian pathway network will connect each proposed entrance directly with adjacent public streets, with frontage along SW Pacific Highway W and SW Sherwood Boulevard; therefore, these standards are applicable.

E. Maintenance of Required Improvements

Required ingress, egress and circulation improvements shall be kept clean and in good repair.

FINDING: The property owner(s) will be required to maintain and repair all required ingress, egress, and circulation improvements located on the site, and will shall keep these areas clean and clear in perpetuity, as conditioned below:

Condition A.14: The property owner(s) shall maintain, and repair all required ingress, egress, and circulation improvements located on the site, and keep these areas clean and clear in perpetuity, pursuant to 16.96.010.E.

16.96.030 - Minimum Non-Residential Pedestrian Circulation Standards

Minimum standards for private, on-site pedestrian circulation improvements in non-residential developments:

A. Sidewalks and Curbs

1. A private pathway/sidewalk system extending throughout the development site shall be required to connect to existing development, to public rights-of-way with or without improvements, to parking and storage areas, and to connect all building entrances to one another. The system shall also connect to transit facilities within five hundred (500) feet of the site, future phases of development, and whenever possible to parks and open spaces.
2. Curbs shall also be required at a standard approved by the Hearing Authority. Private pathways/sidewalks shall be connected to public rights-of-way along driveways but may be allowed other than along driveways if approved by the Hearing Authority.
3. Private Pathway/Sidewalk Design. Private pathway surfaces shall be concrete, asphalt, brick/masonry pavers, or other pervious durable surface. Primary pathways connecting front entrances to the right of way shall be at least 6 feet wide and conform to ADA standards. Secondary pathways between buildings and within parking areas shall be a minimum of four (4) feet wide and/or conform to ADA standards. Where the system crosses a parking area, driveway or street, it shall be clearly marked with contrasting paving materials or raised crosswalk (hump). At a minimum all crosswalks shall include painted striping.
4. Exceptions. Private pathways/sidewalks shall not be required where physical or topographic conditions make a connection impracticable, where buildings or other existing development on adjacent lands physically preclude a connection now or in the future considering the potential for redevelopment; or pathways would violate provisions of leases, restrictions or other agreements.

FINDING: The applicant submitted materials indicating a proposed pedestrian pathway network, which will connect each proposed development entrance to adjacent public right of way, with frontage along SW Pacific Highway W and SW Sherwood Boulevard. Pathway surfaces are proposed to be constructed with impervious materials and other durable surfaces. Measurements of the pedestrian pathway indicate the pathways will be at least 6'-feet in width and conform to ADA standards. A portion of the pedestrian pathway is positioned along the driveway entry from SW Pacific Highway W and is separated by a 6"-inch curb. No exceptions to the standards are sought; therefore, this criterion is satisfied.

16.96.040 - On-Site Vehicle Circulation

A. Maintenance

No building permit or other City permit shall be issued until plans for ingress, egress and circulation have been approved by the City. Any change increasing any ingress, egress or circulation requirements, shall be a violation of this Code unless additional facilities are provided in accordance with this Chapter.

B. Joint Access [See also Chapter 16.108]

Two (2) or more uses, structures, or parcels of land are strongly encouraged to utilize jointly the same ingress and egress when the combined ingress and egress of all uses, structures, or parcels of land satisfy the other requirements of this Code, provided that satisfactory legal evidence is presented to the City in the form of deeds, easements, leases, or contracts to clearly establish the joint use. In some cases, the City may require a joint access to improve safety, vision clearance, site distance, and comply with access spacing standards for the applicable street classification.

FINDING: The proposal includes the development of a 3,600 square foot convenience store, installation of new underground storage tanks (USTs), and other associated site improvements. The parcel has existing off-street parking and traffic circulation infrastructure; vehicle access is gained from existing driveways off Pacific Highway W, with secondary access gained through a shared easement located on SW Langer Drive. City Engineering and Planning reviewed on-site vehicle circulation for compliance with all ingress, egress, and other circulation requirements as it related to the project scope and is further addressed in subsequent sections of this staff report. Maintenance of this on-site vehicle circulation systems will be the reasonability of the property owner(s). Violation of the above criteria will result in Code Enforcement action; therefore, these criterions are satisfied.

C. Connection to Streets

Except for joint access per this Section, all ingress and egress to a use or parcel shall connect directly to a public street, excepting alleyways.

D. Maintenance of Required Improvements

Required ingress, egress and circulation improvements shall be kept clean and in good repair.

E. Service Drives.

Service drives shall be provided pursuant to Section 16.94.030.

FINDING: The applicant submitted a site plan indicating the processed on-site vehicle circulation will connect with abutting public right of way, with access off Pacific Highway W and SW Langer Drive. The property owner(s) shall be responsible for the proper maintenance of the on-site vehicle circulation areas. Future violations are subject to Code Compliance. These criteria are met as conditioned below:

Condition A.15: The property owner(s) shall be responsible for the maintenance and repair of all on-site vehicle circulation areas located on the subject parcel, pursuant to Chapter 16.96.040.D.

16.96.060 - Minimum Non-Residential Vehicle Circulation Standards

Minimum standards for private, on-site circulation improvements in non-residential developments:

A. Driveways

1. Commercial and Mixed-Use: Improved hard surface driveways are required as follows:

| Required | | Minimum Width | |
|----------------|-------------|---------------|---------|
| Parking Spaces | # Driveways | One-Way Pair | Two-Way |
| ----- | | | |
| 1- 49 | 1 | 15 feet | 24 feet |
| 50 & above | 2 | 15 feet | 24 feet |

3. Surface materials are encouraged to be pervious when appropriate considering soils, anticipated vehicle usage and other pertinent factors.

FINDING: Pursuant to 16.22.020, the total amount of required off-street parking for the subject parcel is fifteen (15) stalls. Based on the total amount required off-street parking, a minimum of one driveway is required. The applicant submitted materials indicating the subject parcel has three existing driveways, each meeting or exceeding the standard for two-way traffic flow. Entry/exit to site off Pacific Highway W is provided by two (2) one-way driveways with the entry driveway equating to approximately 38'-feet 10"-inches, while the exiting driveway is approximately 41'-feet 2"-inches. SW Langer Drive is serviced by a two-way driveway approximately 36'-feet 2"-inches; therefore, this criterion is met.

Chapter 16.98 - ON-SITE STORAGE

16.98.020 - Solid Waste and Recycling Storage

All uses shall provide solid waste and recycling storage receptacles which are adequately sized to accommodate all solid waste generated on site. All solid waste and recycling storage areas and receptacles shall be located out of public view. Solid waste and recycling receptacles for multi-family, commercial, industrial and institutional uses shall be screened by six (6) foot high sight-obscuring fence or masonry wall and shall be easily accessible to collection vehicles.

16.98.030 - Material Storage

- A. Generally. Except as otherwise provided herein, external material storage is prohibited, except in commercial and industrial zones where storage areas are approved by the Review Authority as part of a site plan or per Section 16.98.040.
- B. Standards. Except as per Section 16.98.040, all service, repair, storage, and merchandise display activities carried on in connection with any commercial or industrial activity, and not conducted within an enclosed building, shall be screened from the view of all adjacent properties and adjacent streets by a six (6) foot to eight (8) foot high, sight obscuring fence subject to chapter 16.58.020. In addition, unless adjacent parcels to the side and rear of the storage area have existing solid evergreen screening or sight-obscuring fencing in place, new evergreen screening no less than three (3) feet in height shall be planted along side and rear property lines. Where other provisions of this Code require evergreen

screening, fencing, or a landscaped berm alongside and rear property lines, the additional screening stipulated by this Section shall not be required.

- C. Hazardous Materials. Storage of hazardous, corrosive, flammable, or explosive materials, if such storage is otherwise permitted by this Code, shall comply with all local fire codes, and Federal and State regulations.

FINDING: The applicant submitted application materials displaying a trash/recycling enclosure will be provided towards the eastern portion of the property. This will be enclosed by a stucco block wall that's approximately 6'-feet 8"-inches in height. The dimensions of the enclosure will be 10'-feet 10"-inches in width and 21'-feet 10"-inches in length. Access to the enclosure will be managed by a metal gate frame and encapsulated by a sight-obscuring stucco enclosure. Truck(s) accessing the site can safely navigate the trash enclosure area, with approximately 75'-feet of unobstructed access, meeting the minimum standard. No overhead structure is proposed. Access gates are hinged in front of the walls, not inside the walls, and are able to fully swing as required; these can be pinned from the closed position, but indication the proposed gates can be pinned in the open position was absent in the application materials; therefore, the On-Site Pedestrian and Bicycle Circulation standards of both the Sherwood Zoning and Development Code and P.R.I.D.E disposal standards are met, as conditioned below:

Condition D.3: Prior to issuance of building permits, the applicant will need to provide sufficient detail indicating that the proposed Solid Waste and Recycling Storage access gates can be pinned in the open position, as required by Sherwood Zoning and Development Code and P.R.I.D.E disposal standards.

Chapter 16.106 - TRANSPORTATION FACILITIES

16.106.020 - Required Improvements

A. Generally

Except as otherwise provided, all developments containing or abutting an existing or proposed street, that is either unimproved or substandard in right-of-way width or improvement, shall dedicate the necessary right-of-way prior to the issuance of building permits and/or complete acceptable improvements prior to issuance of occupancy permits. Right-of-way requirements are based on functional classification of the street network as established in the Transportation System Plan, Figure 17.

B. Existing Streets

Except as otherwise provided, when a development abuts an existing street, the improvements requirement shall apply to that portion of the street right-of-way located between the centerline of the right-of-way and the property line of the lot proposed for development. In no event shall a required street improvement for an existing street exceed a pavement width of thirty (30) feet.

C. Proposed Streets

1. Except as otherwise provided, when a development includes or abuts a proposed street, in no event shall the required street improvement exceed a pavement width of forty (40) feet.

2. Half Streets: When a half street is created, a minimum of 22 feet of driving surface shall be provided by the developer.

D. Extent of Improvements

1. Streets required pursuant to this Chapter shall be dedicated and improved consistent with Chapter 6 of the Community Development Plan, the TSP and applicable City specifications included in the City of Sherwood Construction Standards. Streets shall include curbs, sidewalks, catch basins, street lights, and street trees. Improvements shall also include any bikeways designated on the Transportation System Plan map. Applicant may be required to dedicate land for required public improvements only when the exaction is directly related to and roughly proportional to the impact of the development, pursuant to Section 16.106.090.
2. If the applicant is required to provide street improvements, the City Engineer may accept a future improvements guarantee in lieu of street improvements if one or more of the following conditions exist, as determined by the City:
 - a. A partial improvement is not feasible due to the inability to achieve proper design standards;
 - b. A partial improvement may create a potential safety hazard to motorists or pedestrians.
 - c. Due to the nature of existing development on adjacent properties it is unlikely that street improvements would be extended in the foreseeable future and the improvement associated with the project under review does not, by itself, provide a significant improvement to street safety or capacity;
 - d. The improvement would be in conflict with an adopted capital improvement plan;
 - e. The improvement is associated with an approved land partition on property zoned residential use and the proposed land partition does not create any new streets; or
 - f. Additional planning work is required to define the appropriate design standards for the street and the application is for a project that would contribute only a minor portion of the anticipated future traffic on the street.

16.106.030 – Location

A. *Generally*

The location, width and grade of streets shall be considered in their relation to existing and planned streets, topographical conditions, and proposed land uses. The proposed street system shall provide adequate, convenient and safe traffic and pedestrian circulation, and intersection angles, grades, tangents, and curves shall be adequate for expected traffic volumes. Street alignments shall be consistent with solar access requirements as per Chapter 16.156, and topographical considerations.

C. Underground Utilities

All public and private underground utilities, including sanitary sewers and storm water drains, shall be constructed prior to the surfacing of streets. Stubs for service connections shall be long enough to avoid disturbing the street improvements when service connections are made.

16.106.040 - Design

Standard cross sections showing street design and pavement dimensions are located in the City of Sherwood's Engineering Design Manual.

A. Reserve Strips

Reserve strips or street plugs controlling access or extensions to streets are not allowed unless necessary for the protection of the public welfare or of substantial property rights. All reserve strips shall be dedicated to the appropriate jurisdiction that maintains the street.

B. Alignment

All proposed streets shall, as far as practicable, be in alignment with existing streets. In no case shall the staggering of streets create a "T" intersection or a dangerous condition. Street offsets of less than one hundred (100) feet are not allowed.

C. Future Extension

Where necessary to access or permit future subdivision or development of adjoining land, streets must extend to the boundary of the proposed development and provide the required roadway width. Dead-end streets less than 100' in length must comply with the Engineering Design Manual.

A durable sign must be installed at the applicant's expense. The sign is required to notify the public of the intent to construct future streets. The sign must read as follows: "This road will be extended with future development. For more information contact the City of Sherwood Engineering Department."

D. Intersection Angles

Streets shall intersect as near to ninety (90) degree angles as practical, except where topography requires a lesser angle. In all cases, the applicant shall comply with the Engineering Design Manual.

F. Grades and Curves

Grades shall be evaluated by the City Engineer and comply with the Engineering Design Manual.

H. Buffering of Major Streets

Where a development abuts Highway 99W, or an existing or proposed principal arterial, arterial or collector street, or neighborhood route, adequate protection for residential properties must be provided, through and local traffic be separated, and traffic conflicts minimized. In addition, visual corridors pursuant to Section 16.142.040, and all applicable

access provisions of Chapter 16.96, are to be met. Buffering may be achieved by: parallel access streets, lots of extra depth abutting the major street with frontage along another street, or other treatment suitable to meet the objectives of this Code.

K. Traffic Controls

1. Pursuant to Section 16.106.080, or as otherwise required by the City Engineer, an application must include a traffic impact analysis to determine the number and types of traffic controls necessary to accommodate anticipated traffic flow.
2. For all other proposed developments including commercial, industrial or institutional uses with over an estimated 400 ADT, or as otherwise required by the City Engineer, the application must include a traffic impact analysis to determine the number and types of traffic controls necessary to accommodate anticipated traffic flow.

L. Traffic Calming

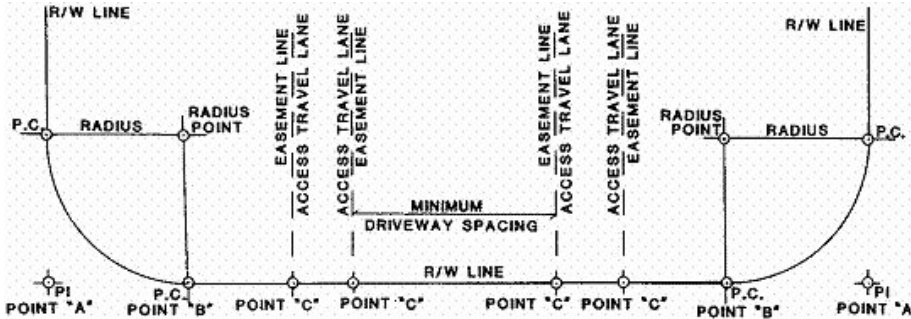
1. The following roadway design features, including internal circulation drives, may be required by the City in new construction in areas where traffic calming needs are anticipated:
 - a. Curb extensions (bulb-outs).
 - b. Traffic diverters/circles.
 - c. Alternative paving and painting patterns.
 - d. Raised crosswalks, speed humps, and pedestrian refuges.
 - e. Other methods demonstrated as effective through peer reviewed Engineering studies.
2. With approval of the City Engineer, traffic calming measures such as speed humps and additional stop signs can be applied to mitigate traffic operations and/or safety problems on existing streets. They should not be applied with new street construction unless approved by the City Engineer and Tualatin Valley Fire & Rescue.

M. Vehicular Access Management

All developments shall have legal access to a public road. Access onto public streets shall be permitted upon demonstration of compliance with the provisions of adopted street standards in the Engineering Design Manual.

1. Measurement: See the following access diagram where R/W = Right-of-Way; and P.I. = Point-of-Intersection where P.I. shall be located based upon a 90 degree angle of intersection between ultimate right-of-way lines.
 - a. Minimum right-of-way radius at intersections shall conform to City standards.
 - b. All minimum distances stated in the following sections shall be governed by sight distance requirements according to the Engineering Design Manual.
 - c. All minimum distances stated in the following sections shall be measured to the nearest easement line of the access or edge of travel lane of the access on both sides of the road.

- d. All minimum distances between accesses shall be measured from existing or approved accesses on both sides of the road.
- e. Minimum spacing between driveways shall be measured from Point "C" to Point "C" as shown below:



2. Roadway Access

No use will be permitted to have direct access to a street or road except as specified below. Access spacing shall be measured from existing or approved accesses on either side of a street or road. The lowest functional classification street available to the legal lot, including alleys within a public easement, shall take precedence for new access points.

- d. Arterials and Highway 99W - Points of ingress or egress to and from Highway 99W and arterials designated on the Transportation Plan Map, attached as Figure 1 of the Community Development Plan, Part II, shall be limited as follows:

- 1) Single family detached dwellings, middle housing dwellings, and manufactured homes on individual residential lots developed after the effective date of this Code shall not be granted permanent driveway ingress or egress from Highway 99W or arterials. If alternative public access is not available at the time of development, provisions shall be made for temporary access which shall be discontinued upon the availability of alternative access.
- 2) Other private ingress or egress from Highway 99W and arterial roadways shall be minimized. Where alternatives to Highway 99W or arterials exist or are proposed, any new or altered uses developed after the effective date of this Code shall be required to use the alternative ingress and egress. Alternatives include shared or crossover access agreement between properties, consolidated access points, or frontage or backage roads. When alternatives do not exist, access shall comply with the following standards:
 - a) Access to Highway 99W shall be consistent with ODOT standards and policies per OAR 734, Division 51, as follows: Direct access to an arterial or principal arterial will be permitted provided that Point 'A' of such access is more than six hundred (600) feet from any

intersection Point 'A' or other access to that arterial (Point 'C').

- b) The access to Highway 99W will be considered temporary until an alternative access to public right-of-ways is created. When the alternative access is available the temporary access to Highway 99W shall be closed.
- c) All site plans or Residential Design Checklists for new development submitted to the City for approval after the effective date of this Code shall show ingress and egress from existing or planned local, neighborhood route or collector streets, including frontage or backage roads, consistent with the Transportation Plan Map and Chapter 6 of the Community Development Plan.

16.106.060 – Sidewalks

A. Required Improvements

- 1. Except as otherwise provided, sidewalks shall be installed on both sides of a public street and in any special pedestrian way within new development.
- 2. For Highway 99W, arterials, or in special industrial districts, the City Manager or designee may approve a development without sidewalks if alternative pedestrian routes are available.
- 3. In the case of approved cul-de-sacs serving less than fifteen (15) dwelling units, sidewalks on one side only may be approved by the City Manager or designee.

B. Design Standards

1. Arterial and Collector Streets

Arterial and collector streets shall have minimum six (6) or eight (8) foot wide sidewalks/multi-use paths, located as required by this Code. Residential areas shall have a minimum of a six (6) foot wide sidewalk and commercial industrial areas shall have a minimum of an eight (8) foot wide sidewalk.

16.106.070 - Bike Lanes

If shown in Figure 13 of the Transportation System Plan, bicycle lanes shall be installed in public rights-of-way, in accordance with City specifications. Bike lanes shall be installed on both sides of designated roads, should be separated from the road by a twelve-inch stripe or other means approved by Engineering Staff, and should be a minimum of five (5) feet wide.

16.106.080 - Traffic Impact Analysis (TIA)

A. Purpose

The purpose of this section is to implement Sections 660-012-0045(2)(b) and -0045(2)(e) of the State Transportation Planning Rule (TPR), which require the City to adopt performance standards and a process to apply conditions to land use proposals in order to minimize impacts on and protect transportation facilities. This section establishes requirements for when a traffic impact analysis (TIA) must be prepared and submitted; the analysis methods and content involved in a TIA; criteria used to review the TIA; and

authority to attach conditions of approval to minimize the impacts of the proposal on transportation facilities.

This section refers to the TSP for performance standards for transportation facilities as well as for projects that may need to be constructed as mitigation measures for a proposal's projected impacts. This section also relies on the City's Engineering Design Manual to provide street design standards and construction specifications for improvements and projects that may be constructed as part of the proposal and mitigation measures approved for the proposal.

B. Applicability

A traffic impact analysis (TIA) shall be required to be submitted to the City with a land use application at the request of the City Engineer or if the proposal is expected to involve one (1) or more of the following:

1. An amendment to the Sherwood Comprehensive Plan or zoning map.
2. A new direct property approach road to Highway 99W is proposed.
3. The proposed development generates fifty (50) or more PM peak-hour trips on Highway 99W, or one hundred (100) PM peak-hour trips on the local transportation system.
4. An increase in use of any adjacent street or direct property approach road to Highway 99W by ten (10) vehicles or more per day that exceed the twenty thousand-pound gross vehicle weight.
5. The location of an existing or proposed access driveway does not meet minimum spacing or sight distance requirements, or is located where vehicles entering or leaving the property are restricted, or such vehicles are likely to queue or hesitate at an approach or access connection, thereby creating a safety hazard.
6. A change in internal traffic patterns that may cause safety problems, such as back up onto the highway or traffic crashes in the approach area.

C. Requirements

The following are typical requirements that may be modified in coordination with Engineering Staff based on the specific application.

1. Pre-application Conference. The applicant shall meet with the City Engineer prior to submitting an application that requires a TIA. This meeting will be coordinated with Washington County and ODOT when an approach road to a County road or Highway 99W serves the property, so that the TIA will meet the requirements of all relevant agencies.
2. Preparation. The TIA shall be prepared by an Oregon Registered Professional Engineer qualified to perform traffic Engineering analysis and will be paid for by the applicant.
3. Typical Average Daily Trips and Peak Hour Trips. The latest edition of the Trip Generation Manual, published by the Institute of Transportation Engineers (ITE), shall be used to gauge PM peak hour vehicle trips, unless a specific trip generation study that is approved by the City Engineer indicates an alternative trip generation rate is appropriate.

4. Intersection-level Analysis. Intersection-level analysis shall occur at every intersection where the analysis shows that fifty (50) or more peak hour vehicle trips can be expected to result from the development.
5. Transportation Planning Rule Compliance. The requirements of OAR 660-012-0060 shall apply to those land use actions that significantly affect the transportation system, as defined by the Transportation Planning Rule.

D. Study Area

The following facilities shall be included in the study area for all TIAs:

1. All site-access points and intersections (signalized and unsignalized) adjacent to the proposed development site. If the site fronts an arterial or collector street, the analysis shall address all intersections and driveways along the site frontage and within the access spacing distances extending out from the boundary of the site frontage.
2. Roads and streets through and adjacent to the site.
3. All intersections needed for signal progression analysis.
4. In addition to these requirements, the City Engineer may require analysis of any additional intersections or roadway links that may be adversely affected as a result of the proposed development.

E. Analysis Periods

To adequately assess the impacts of a proposed land use action, the following study periods, or horizon years, should be addressed in the transportation impact analysis where applicable:

1. Existing Year.
2. Background Conditions in Project Completion Year. The conditions in the year in which the proposed land use action will be completed and occupied, but without the expected traffic from the proposed land use action. This analysis should account for all City-approved developments that are expected to be fully built out in the proposed land use action horizon year, as well as all planned transportation system improvements.
3. Full Buildout Conditions in Project Completion Year. The background condition plus traffic from the proposed land use action assuming full build-out and occupancy.
4. Phased Years of Completion. If the project involves construction or occupancy in phases, the applicant shall assess the expected roadway and intersection conditions resulting from major development phases. Phased years of analysis will be determined in coordination with City staff.
5. Twenty-Year or TSP Horizon Year. For planned unit developments, comprehensive plan amendments or zoning map amendments, the applicant shall assess the expected future roadway, intersection, and land use conditions as compared to approved comprehensive planning documents.

F. Approval Criteria

When a TIA is required, a proposal is subject to the following criteria, in addition to all criteria otherwise applicable to the underlying land use proposal:

1. The analysis complies with the requirements of 16.106.080.C;
2. The analysis demonstrates that adequate transportation facilities exist to serve the proposed development or identifies mitigation measures that resolve identified

traffic safety problems in a manner that is satisfactory to the City Engineer and, when County or State highway facilities are affected, to Washington County and ODOT;

3. For affected non-highway facilities, the TIA demonstrates that mobility and other applicable performance standards established in the adopted City TSP have been met; and
4. Proposed public improvements are designed and will be constructed to the street standards specified in Section 16.106.010 and the Engineering Design Manual, and to the access standards in Section 16.106.040.
5. Proposed public improvements and mitigation measures will provide safe connections across adjacent right-of-way (e.g., protected crossings) when pedestrian or bicycle facilities are present or planned on the far side of the right-of-way.

G. Conditions of Approval

The City may deny, approve, or approve a development proposal with conditions needed to meet operations and safety standards and provide the necessary right-of-way and improvements to ensure consistency with the future planned transportation system. Improvements required as a condition of development approval, when not voluntarily provided by the applicant, shall be roughly proportional to the impact of the development on transportation facilities, pursuant to Section 16.106.090. Findings in the development approval shall indicate how the required improvements are directly related to and are roughly proportional to the impact of development.

16.106.090 - Rough Proportionality

A. Purpose

The purpose of this section is to ensure that required transportation facility improvements are roughly proportional to the potential impacts of the proposed development. The rough proportionality requirements of this section apply to both frontage and non-frontage improvements. A proportionality analysis will be conducted by the City Engineer for any proposed development that triggers transportation facility improvements pursuant to this chapter. The City Engineer will take into consideration any benefits that are estimated to accrue to the development property as a result of any required transportation facility improvements. A proportionality determination can be appealed pursuant to Chapter 16.76. The following general provisions apply whenever a proportionality analysis is conducted.

B. Mitigation of impacts due to increased demand for transportation facilities associated with the proposed development shall be provided in rough proportion to the transportation impacts of the proposed development. When applicable, anticipated impacts will be determined by the TIA in accordance with Section 16.106.080. When no TIA is required, anticipated impacts will be determined by the City Engineer.

C. The following shall be considered when determining proportional improvements:

1. Condition and capacity of existing facilities within the impact area in relation to City standards. The impact area is generally defined as the area within a one-half-mile radius of the proposed development. If a TIA is required, the impact area is the TIA study area.
2. Existing vehicle, bicycle, pedestrian, and transit use within the impact area.

3. The effect of increased demand on transportation facilities and other approved, but not yet constructed, development projects within the impact area that is associated with the proposed development.
4. Applicable TSP goals, policies, and plans.
5. Whether any route affected by increased transportation demand within the impact area is listed in any City program including school trip safety; neighborhood traffic management; capital improvement; system development improvement, or others.
6. Accident history within the impact area.
7. Potential increased safety risks to transportation facility users, including pedestrians and cyclists.
8. Potential benefit the development property will receive as a result of the construction of any required transportation facility improvements.
9. Other considerations as may be identified in the review process pursuant to Chapter 16.72.

FINDING: The application was reviewed by City of Sherwood Engineering for compliance with applicable criteria and provided the following findings:

The subject property has public street frontage along SW Pacific Highway (Arterial - ODOT), SW Sherwood Boulevard (Arterial – City) and SW Langer Drive (Collector – City).

The city of Sherwood TSP section for SW Pacific Highway along the subject property frontage consists of three 12-foot wide travel lanes, an 8-foot-wide bike lane and a 25-foot wide landscape strip containing a 10-foot wide walkway. When calculating the right-of-way width from centerline of the northbound SW Pacific Highway travel way, a right-of-way width of 51 feet is required.

Currently, SW Pacific Highway (northbound) consists of 3 travel lanes, a 6.7-foot-wide bike lane with a 5-foot-wide curb-tight sidewalk. Since the existing sidewalks through the existing driveways along SW Pacific Highway are not in compliance with ADA standards and since the sidewalk along SW Pacific Highway are not to TSP width or location, the sidewalk along the subject property frontage of SW Pacific Highway will need to be reconstructed to meet city standards. Widening the street 1.3 feet to achieve an 8-foot-wide bike lane would not be practical for approximately 200 feet of frontage and would not match surrounding curb lines. Therefore, no curb widening along the subject property frontage of SW Pacific Highway will be required.

Some of the half street right-of-way along the subject property frontage of SW Pacific Highway (northbound) may be less than the required 51-foot width. If so, dedication will be needed to provide for a 51-foot right-of-way width from the SW Pacific Highway (northbound) centerline.

Currently the half street section along the subject property frontage of SW Sherwood Boulevard consists of half of a left turn lane, left-through lane, right turn lane, 6-foot-wide bike lane and a 5-foot-wide curb tight sidewalk. This matches the city of Sherwood TSP section with the exception of the width and location of the sidewalk. Therefore, the sidewalk along the subject property frontage of SW Pacific Highway will need to be reconstructed to meet city standards and street trees will need to be installed into the newly created landscape strip between the sidewalk and curb.

It appears that some of the half street right-of-way along the subject property frontage of SW Sherwood Boulevard may be less than the required 51-foot width. If so, dedication will be needed to provide for a 51-foot right-of-way width from the SW Sherwood Boulevard centerline.

Currently the subject property frontage is fully developed along SW Langer Drive. However, the existing sidewalk is a 5-foot-wide curb tight sidewalk and the existing half street right-of-way width appears to be 30 feet. Neither meets city of Sherwood TSP standards which calls for a 6-foot-wide sidewalk with a 5-foot-wide landscape strip. The Sherwood TSP calls for a 36-foot half street right-of-way section for a 3-lane collector status street.

Since the subject property frontage onto SW Langer Drive is a flag stem and since the existing driveway for access to the subject property from SW Langer Drive falls within 2 parcels of land, constructing a new concrete sidewalk in the standard location could not be done without working within the neighboring property. Therefore, no sidewalk improvements are required along the subject property frontage of SW Langer Drive. Right-of-way dedication along the subject property frontage of SW Langer Drive will need to occur to create a 36-foot-wide half street right-of-way section.

Additionally, a memorandum by the Oregon Department of Transportation, dated August 23, 2023, further addressed existing transportation facilities, and provided comments and recommendations (attachment D). To meet city and state agency requirements, the following conditions apply:

Condition C.1: Prior to Approval of Engineering Public Improvement Plans, the developer shall design to reconstruct the existing sidewalk along the subject property frontage of SW Pacific Highway to a 10-foot sidewalk width (non-curb-tight) meeting the approval of ODOT and the Sherwood Engineering Department.

Condition C.2: Prior to Approval of Engineering Public Improvement Plans, the developer shall design to reconstruct the existing sidewalk along the subject property frontage of SW Sherwood Boulevard to create a 6-foot sidewalk width with 5-foot-wide landscape strip meeting the approval of ODOT and the Sherwood Engineering Department.

Condition E.1: Prior to Acceptance of Public Improvements, the developer shall dedicate half-street right-of-way along the subject property frontage of SW Pacific Highway to a width of 51 feet from the northbound centerline of SW Pacific Highway, in areas where the existing half street right-of-way is narrower than 51 feet, meeting the approval of the Sherwood Engineering Department.

Condition E.2: Prior to Acceptance of Public Improvements, the developer shall dedicate half-street right-of-way along the subject property frontage of SW Sherwood Boulevard to a width of 51 feet from centerline, in areas where the existing half street right-of-way is narrower than 51 feet, meeting the approval of the Sherwood Engineering Department.

Condition E.3: Prior to Acceptance of Public Improvements, the developer shall dedicate right-of-way along the subject property frontage of SW Langer Drive to achieve a 36-foot half-street right-of-way width.

Condition C.3: Prior to Approval of Engineering Public Improvement Plans, the property owner(s) shall donate the necessary amount of right-of-way, as determined by the Oregon Department of transportation, to accommodate the planned cross section.

Condition C.4: Prior to Approval of Public Improvements, the applicant shall obtain a State Highway Approach Road Permit from the Oregon Department of Transportation or written determination from ODOT that the existing approach(es) is/are legal for the proposed use.

Condition C.5: Prior to Approval of Public Improvements, the applicant shall obtain an ADOT Miscellaneous Permit for all work in the highway right-of-way.

Condition C.6: Prior to Approval of Public Improvements, the applicant shall obtain an ODOT utility permit for connection to state highway drainage facilities if the site's drainage naturally enters ODOT right-of-way.

As conditioned, this criterion is met.

Chapter 16.110 - SANITARY SEWERS

16.110.010 - Required Improvements

Sanitary sewers shall be installed to serve all new developments and shall connect to existing sanitary sewer mains. Provided, however, that when impractical to immediately connect to a trunk sewer system, the use of septic tanks may be approved, if sealed sewer laterals are installed for future connection and the temporary system meets all other applicable City, Clean Water Services, Washington County and State sewage disposal standards.

16.110.020 - Design Standards

A. Capacity

Sanitary sewers shall be constructed, located, sized, and installed at standards consistent with this Code, the Sanitary Sewer Service Plan Map in the Sanitary Sewer Master Plan, and other applicable Clean Water Services and City standards, in order to adequately serve the proposed development and allow for future extensions.

B. Over-Sizing

1. When sewer facilities will, without further construction, directly serve property outside a proposed development, gradual reimbursement may be used to equitably distribute the cost of that over-sized system.
2. Reimbursement shall be in an amount estimated by the City to be a proportionate share of the cost for each connection made to the sewer by property owners outside of the development, for a period of ten (10) years from the time of installation of the sewers. The boundary of the reimbursement area and the method of determining proportionate shares shall be determined by the City. Reimbursement shall only be made as additional connections are made and shall be collected as a surcharge in addition to normal connection charges.

16.110.030 - Service Availability

Approval of construction plans for new facilities pursuant to Chapter 16.106, and the issuance of building permits for new development to be served by existing sewer systems shall include certification by the City that existing or proposed sewer facilities are adequate to serve the development.

FINDING: No public sanitary sewer exists within SW Pacific Highway or SW Sherwood Boulevard. An 8-inch diameter public sanitary sewer main exists along the subject property frontage of SW Langer Drive. Properties in this area are served from the sanitary sewer line in SW Langer Drive. No extension of the public sanitary sewer is required.

The subject development will make use of the existing on-site sanitary system to provide sanitary sewer service to the proposed building. There is an existing sanitary lateral stubbed off to the subject property. The developer shall make use of the existing sanitary sewer lateral unless otherwise approved by the Sherwood Engineering Department; therefore, this criterion is met as conditioned below:

Condition C.7: Prior to Approval of Engineering Public Improvement Plans, the developer shall design to connect to the existing sanitary sewer lateral unless otherwise approved by the Sherwood Engineering Department.

Chapter 16.112 - WATER SUPPLY

16.112.010 - Required Improvements

Water lines and fire hydrants conforming to City and Fire District standards shall be installed to serve all building sites in a proposed development. All waterlines shall be connected to existing water mains or shall construct new mains appropriately sized and located in accordance with the Water System Master Plan.

16.112.020 - Design Standards

A. Capacity

Water lines providing potable water supply shall be sized, constructed, located and installed at standards consistent with this Code, the Water System Master Plan, the City's Design and Construction Manual, and with other applicable City standards and specifications, in order to adequately serve the proposed development and allow for future extensions.

B. Fire Protection

All new development shall comply with the fire protection requirements of Chapter 16.116, the applicable portions of Chapter 7 of the Community Development Plan, and the Fire District.

B. Over-Sizing

1. When water mains will, without further construction, directly serve property outside a proposed development, gradual reimbursement may be used to equitably distribute the cost of that over-sized system.
2. Reimbursement shall be in an amount estimated by the City to be the proportionate share of the cost of each connection made to the water mains by property owners outside the development, for a period of ten (10) years from the time of installation

of the mains. The boundary of the reimbursement area and the method of determining proportionate shares shall be determined by the City. Reimbursement shall only be made as additional connections are made and shall be collected as a surcharge in addition to normal connection charges.

3. When over-sizing is required in accordance with the Water System Master Plan, it shall be installed per the Water System Master Plan. Compensation for over-sizing may be provided through direct reimbursement, from the City, after mainlines have been accepted. Reimbursement of this nature would be utilized when the cost of over-sizing is for system wide improvements.

16.112.030 - Service Availability

Approval of construction plans for new water facilities pursuant to Chapter 16.106, and the issuance of building permits for new development to be served by existing water systems shall include certification by the City that existing or proposed water systems are adequate to serve the development.

FINDING: No public water main exists within SW Pacific Highway or SW Sherwood Boulevard. A 12-inch diameter public water main exists along the subject property frontage of SW Langer Drive. The subject property and surrounding properties obtain water service from the existing 12-inch diameter public water main within SW Langer Drive.

No public water line extensions show up on the water master plan along the subject property frontage of SW Pacific Highway or SW Sherwood Boulevard. Therefore, no extension of the public water lines is required.

The subject development will make use of the existing water service unless otherwise approved by the Sherwood Engineering Department. Currently there is no reduced pressure backflow assembly behind the domestic water meter therefore it will be required to be installed. This criterion is met as conditioned below.

Condition C.8: Prior to Approval of Engineering Public Improvement Plans, the developer shall design to make use of the existing water meter for service unless otherwise approved by the Sherwood Engineering Department.

Condition C.9: Prior to Approval of Engineering Public Improvement Plans, the developer shall design for a reduced pressure backflow assembly on the domestic water service meeting the approval of the Sherwood Engineering Department.

Chapter 16.114 - STORM WATER

16.114.010 - Required Improvements

Storm water facilities, including appropriate source control and conveyance facilities, shall be installed in new developments and shall connect to the existing downstream drainage systems consistent with the Comprehensive Plan and the requirements of the Clean Water Services water quality regulations contained in their Design and Construction Standards R&O 04-9, or its replacement.

16.114.020 - Design Standards

A. Capacity

Storm water drainage systems shall be sized, constructed, located, and installed at standards consistent with this Code, the Storm Drainage Master Plan Map, attached as Exhibit E, Chapter 7 of the Community Development Plan, other applicable City standards, the Clean Water Services Design and Construction standards R&O 04-9 or its replacement, and hydrologic data and improvement plans submitted by the developer.

B. On-Site Source Control

Storm water detention and groundwater recharge improvements, including but not limited to such facilities as dry wells, detention ponds, and roof top ponds shall be constructed according to Clean Water Services Design and Construction Standards.

C. Conveyance System

The size, capacity and location of storm water sewers and other storm water conveyance improvements shall be adequate to serve the development and accommodate upstream and downstream flow. If an upstream area discharges through the property proposed for development, the drainage system shall provide capacity to the receive storm water discharge from the upstream area. If downstream drainage systems are not sufficient to receive an increase in storm water caused by new development, provisions shall be made by the developer to increase the downstream capacity or to provide detention such that the new development will not increase the storm water caused by the new development.

16.114.030 - Service Availability

Approval of construction plans for new storm water drainage facilities pursuant to Chapter 16.106, and the issuance of building permits for new development to be served by existing storm water drainage systems shall include certification by the City that existing or proposed drainage facilities are adequate to serve the development.

FINDING: Public storm sewer exists within SW Pacific Highway, SW Sherwood Boulevard and SW Langer Drive along the subject property frontage. All surrounding properties have access to public storm sewer. No extension of the public storm sewer is required.

Currently the subject property has a storm sewer lateral from a catch basin along SW Sherwood Boulevard. This catch basin flows to an ODOT owned storm sewer. ODOT requires detention for all properties discharging to an ODOT storm sewer system. Clean Water Services (CWS) also requires developments to provide for storm water hydro-modification in compliance with CWS standards.

Storm water runoff water quality treatment in compliance with CWS standards is also required. A memorandum from Clean Water Services (CWS), dated August 23, 2023, indicated that a Storm Water Connection Permit Authorization must be obtained in accordance with the applicable Design and Construction Standards. This criterion is met as conditioned below:

Condition C.10: Prior to Approval of Engineering Public Improvement Plans, the developer shall design to connect to the existing public storm sewer meeting the approval of the Sherwood Engineering Department.

Condition C.11: Prior to Approval of Engineering Public Improvement Plans, the developer shall design to construct a storm water hydro-modification/detention facility in compliance with CWS standards meeting the approval of the Sherwood Engineering Department and ODOT.

Condition C.12: Prior to Approval of Engineering Public Improvement Plans, the developer shall design to construct a storm water runoff water quality treatment facility in compliance with CWS standards meeting the approval of the Sherwood Engineering Department.

Condition C.13: Prior to Acceptance of the Public Improvements, a Private Storm Water Access and Maintenance Covenant will need to be recorded for the private storm water runoff water quality/hydro-modification facilities meeting the approval of the Sherwood Engineering Department.

Condition C.14: Prior to Approval of Engineering Public Improvement Plans, a Storm Water Connection Permit Authorization shall be obtained from Clean Water Services.

Chapter 16.116 - FIRE PROTECTION

16.116.010 - Required Improvements

When land is developed so that any commercial or industrial structure is further than two hundred and fifty (250) feet or any residential structure is further than five hundred (500) feet from an adequate water supply for fire protection, as determined by the Fire District, the developer shall provide fire protection facilities necessary to provide adequate water supply and fire safety.

16.116.020 - Standards

A. Capacity

All fire protection facilities shall be approved by and meet the specifications of the Fire District, and shall be sized, constructed, located, and installed consistent with this Code, Chapter 7 of the Community Development Plan, and other applicable City standards, in order to adequately protect life and property in the proposed development.

B. Fire Flow

Standards published by the Insurance Services Office, entitled "Guide for Determination of Required Fire Flows" shall determine the capacity of facilities required to furnish an adequate fire flow. Fire protection facilities shall be adequate to convey quantities of water, as determined by ISO standards, to any outlet in the system, at no less than twenty (20) pounds per square inch residual pressure. Water supply for fire protection purposes shall be restricted to that available from the City water system. The location of hydrants shall be taken into account in determining whether an adequate water supply exists.

C. Access to Facilities

Whenever any hydrant or other appurtenance for use by the Fire District is required by this Chapter, adequate ingress and egress shall be provided. Access shall be in the form of an improved, permanently maintained roadway or open paved area, or any combination thereof, designed, constructed, and at all times maintained, to be clear and unobstructed. Widths, height clearances, ingress and egress shall be adequate for District firefighting equipment. The Fire District, may further prohibit vehicular parking along private accessways in order to keep them clear and unobstructed, and cause notice to that effect to be posted.

C. Hydrants

Hydrants located along private, accessways shall either have curbs painted yellow or otherwise marked prohibiting parking for a distance of at least fifteen (15) feet in either direction, or where curbs do not exist, markings shall be painted on the pavement, or signs erected, or both, given notice that parking is prohibited for at least fifteen (15) feet in either direction.

16.116.030 - Miscellaneous Requirements

A. Timing of Installation

When fire protection facilities are required, such facilities shall be installed and made serviceable prior to or at the time any combustible construction begins on the land unless, in the opinion of the Fire District, the nature or circumstances of said construction makes immediate installation impractical.

B. Maintenance of Facilities

All on-site fire protection facilities, shall be maintained in good working order. The Fire District may conduct periodic tests and inspection of fire protection and may order the necessary repairs or changes be made within ten (10) days.

C. Modification of Facilities

On-site fire protection facilities, may be altered or repaired with the consent of the Fire District; provided that such alteration or repairs shall be carried out in conformity with the provisions of this Chapter.

FINDING: Fire protection and emergency services are provided by Tualatin Valley Fire and Rescue (TVFR). The applicant has obtained a Service Provider Letter from TVF&R, dated October 7, 2022, and was approved; therefore this criteria is met.

Chapter 16.118 - PUBLIC AND PRIVATE UTILITIES

16.118.010 – Purpose

Public telecommunication conduits as well as conduits for franchise utilities including, but not limited to, electric power, telephone, natural gas, lighting, and cable television shall be installed to serve all newly created lots and developments in Sherwood.

16.118.020 - Standard

- A. Installation of utilities shall be provided in public utility easements and shall be sized, constructed, located and installed consistent with this Code, and applicable utility company and City standards.
- B. Public utility easements shall be a minimum of eight (8) feet in width unless a reduced width is specifically exempted by the City Engineer. An eight-foot wide public utility easement (PUE) shall be provided on private property along all public street frontages. This standard does not apply to developments within the Old Town Overlay.
- C. Where necessary, in the judgment of the City Manager or his designee, to provide for orderly development of adjacent properties, public and franchise utilities shall be extended through the site to the edge of adjacent property(ies).
- D. Franchise utility conduits shall be installed per the utility design and specification standards of the utility agency.

- E. Public Telecommunication conduits and appurtenances shall be installed per the City of Sherwood telecommunication design standards.
- F. Exceptions: Installation shall not be required if the development does not require any other street improvements. In those instances, the developer shall pay a fee in lieu that will finance installation when street or utility improvements in that location occur.

16.118.030 - Underground Facilities

Except as otherwise provided, all utility facilities, including but not limited to, electric power, telephone, natural gas, lighting, cable television, and telecommunication cable, shall be placed underground, unless specifically authorized for above ground installation, because the points of connection to existing utilities make underground installation impractical, or for other reasons deemed acceptable by the City.

16.118.040 - Exceptions

Surface-mounted transformers, surface-mounted connection boxes and meter cabinets, temporary utility service facilities during construction, high capacity electric and communication feeder lines, and utility transmission lines operating at fifty thousand (50,000) volts or more may be located above ground. The City reserves the right to approve location of all surface-mounted transformers.

16.118.050 - Private Streets

The construction of new private streets, serving single-family residential developments shall be prohibited unless it provides principal access to two or fewer residential lots or parcels i.e. flag lots. Provisions shall be made to assure private responsibility for future access and maintenance through recorded easements. Unless otherwise specifically authorized, a private street shall comply with the same standards as a public street identified in the Community Development Code and the Transportation System Plan. A private street shall be distinguished from public streets and reservations or restrictions relating to the private street shall be described in land division documents and deed records. A private street shall also be signed differently from public streets and include the words "Private Street".

FINDING: The proposal includes razing and rebuild of the subject site for the development of a new Chevron gasoline service station, including a new 3,600 square-foot convenience store, Underground Storage Tanks (UST), and other associated site improvements. No public telecommunication conduits or new parcels created with this application; therefore, this criterion is not applicable.

Chapter 16.140 - PARKS, TREES AND OPEN SPACES

16.140.010 - Purpose

This Chapter is intended to assure the provision of a system of public and private recreation and open space areas and facilities consistent with this Code and applicable portions of the City's adopted Comprehensive Plan. The standards of this section do not supersede the open space requirements of a Planned Unit Development, found in Chapter 16.40 - Planned Unit Development (PUD).

16.140.040 - Visual Corridors

A. Corridors Required

New developments located outside of the Old Town Overlay with frontage on Highway 99W, or arterial or collector streets designated on Figure 8-1 of the Transportation System Plan shall be required to establish a landscaped visual corridor according to the following standards:

| | Category | Width |
|----|-------------|---------|
| 1. | Highway 99W | 25 feet |
| 2. | Arterial | 15 feet |
| 3. | Collector | 10 feet |

In residential developments where fences are typically desired adjoining the above-described major street the corridor may be placed in the road right-of-way between the property line and the sidewalk. In all other developments, the visual corridor shall be on private property adjacent to the right-of-way.

FINDING: The subject parcel is located at the intersection of Pacific Highway W and SW Sherwood Boulevard, with secondary access off SW Langer Drive via an existing easement. Frontage along Pacific Highway W and SW Sherwood Boulevard is subject to landscaped visual corridor standards. Pacific Highway W requires a minimum 25'-foot landscaped area, while SW Sherwood Boulevard (Arterial – City) requires a minimum of 15'-feet landscaped area. The applicant submitted preliminary landscaping plans displaying compliance with this code section, as further detailed in subsequent sections of this staff report and is located on private property adjacent to corresponding right-of-way; therefore, this criterion is satisfied.

B. Landscape Materials

The required visual corridor areas shall be planted as specified by the review authority to provide a continuous visual and/or acoustical buffer between major streets and developed uses. Except as provided for above, fences and walls shall not be substituted for landscaping within the visual corridor. Uniformly planted, drought resistant street trees and ground cover, as specified in Section 16.140.060, shall be planted in the corridor by the developer. The improvements shall be included in the compliance agreement. In no case shall trees be removed from the required visual corridor.

FINDING: The applicant submitted preliminary landscaping plans indicating compliance with the visual corridor standards. No fences or walls are proposed with this application. Selected plant materials are proposed to be distributed throughout the site uniformly and are drought resistant based on the plant species type, as indicated on the proposed planting schedule. This standard is met as conditioned below:

Condition B.6: Prior to final site plan approval, the applicant shall obtain a compliance agreement with the City of Sherwood for the proposed visual corridor improvements, pursuant to 16.140.040.

C. Establishment and Maintenance

Designated visual corridors shall be established as a portion of landscaping requirements pursuant to Chapter 16.92. To assure continuous maintenance of the visual corridors, the

review authority may require that the development rights to the corridor areas be dedicated to the City or that restrictive covenants be recorded prior to the issuance of a building permit.

FINDING: The establishment and maintenance of the proposed visual corridor shall be the responsibility of the of the property owner(s). Violation of this criteria will result in Code enforcement action; therefore, this criterion is satisfied.

D. Required Yard

Visual corridors may be established in required yards, except that where the required visual corridor width exceeds the required yard width, the visual corridor requirement shall take precedence. In no case shall buildings be sited within the required visual corridor.

FINDING: The applicant submitted materials indicating that the proposed visual corridor will be established within the front yard setback. No building is proposed within this area; therefore, this criterion is satisfied.

F. Pacific Highway 99W Visual Corridor

1. Provide a landscape plan for the highway median paralleling the subject frontage. In order to assure continuity, appropriate plant materials and spacing, the plan shall be coordinated with the City Planning Department and ODOT.
2. Provide a visual corridor landscape plan with a variety of trees and shrubs. Fifty percent (50%) of the visual corridor plant materials shall consist of groupings of at least five (5) native evergreen trees a minimum of ten (10) feet in height each, spaced no less than fifty (50) feet apart, if feasible. Deciduous trees shall be a minimum of four (4) inches DBH and twelve (12) feet high, spaced no less than twenty-five (25) feet apart, if feasible.

FINDING: The applicant provided preliminary landscaping plans indicating that appropriate plan materials will be placed within the visual corridor and evenly spaced throughout the area. This includes grouping of trees, shrubs, and ground coverage; therefore this criteria is met.

16.140.060 - Street Trees

A. Installation of Street Trees on New or Redeveloped Property.

Trees are required to be planted to the following specifications along public streets abutting or within any new development or re-development. Planting of such trees shall be a condition of development approval. The City shall be subject to the same standards for any developments involving City-owned property, or when constructing or reconstructing City streets. After installing street trees, the property owner shall be responsible for maintaining the street trees on the owner's property or within the right-of-way adjacent to the owner's property.

1. Location: Trees shall be planted within the planter strip along a newly created or improved streets. In the event that a planter strip is not required or available, the trees shall be planted on private property within the front yard setback area or

within public street right-of-way between front property lines and street curb lines or as required by the City.

2. Size: Trees shall have a minimum trunk diameter of two (2) caliper inches, which is measured six inches above the soil line, and a minimum height of six (6) feet when planted.
3. Types: Developments shall include a variety of street trees. The trees planted shall be chosen from those listed in 16.140.080 of this Code.
4. Required Street Trees and Spacing:
 - a. The minimum spacing is based on the maximum canopy spread identified in the recommended street tree list in section 16.140.080 with the intent of providing a continuous canopy without openings between the trees. For example, if a tree has a canopy of forty (40) feet, the spacing between trees is forty (40) feet. If the tree is not on the list, the mature canopy width must be provided to the planning department by a certified arborist.
 - b. All new developments shall provide adequate tree planting along all public streets. The number and spacing of trees shall be determined based on the type of tree and the spacing standards described in a. above and considering driveways, street light locations and utility connections. Unless exempt per c. below, trees shall not be spaced more than forty (40) feet apart in any development.
 - c. A new development may exceed the forty-foot spacing requirement under section b. above, under the following circumstances:
 - 1) Installing the tree would interfere with existing utility lines and no substitute tree is appropriate for the site; or
 - 2) There is not adequate space in which to plant a street tree due to driveway or street light locations, vision clearance or utility connections, provided the driveways, street light or utilities could not be reasonably located elsewhere so as to accommodate adequate room for street trees; and
 - 3) The street trees are spaced as close as possible given the site limitations in (1) and (2) above.
 - 4) The location of street trees in an ODOT or Washington County right-of-way may require approval, respectively, by ODOT or Washington County and are subject to the relevant state or county standards.
 - 5) For arterial and collector streets, the City may require planted medians in lieu of paved twelve-foot wide center turning lanes, planted with trees to the specifications of this subsection.

FINDING: The applicant submitted preliminary landscaping plans indicating that street trees will be placed along both frontages of the subject parcel in compliance with this section. The proposed trees, further detailed in the proposed planting schedule, will have a trunk diameter of two (2) caliper inches and a minimum height of six (6) feet when planted. Based on the tree species of trees proposed, a continuous canopy will be created upon reaching full maturity; therefore, this criterion is satisfied.

Chapter 16.146 – NOISE

16.146.010 - Generally

All otherwise permitted commercial, industrial, and institutional uses in the City shall comply with the noise standards contained in OAR 340-35-035. The City may require proof of compliance with OAR 340-35-035 in the form of copies of all applicable State permits or certification by a professional acoustical engineer that the proposed uses will not cause noise in excess of State standards.

16.146.020 - Noise Sensitive Uses

When proposed commercial and industrial uses do not adjoin land exclusively in commercial or industrial zones, or when said uses adjoin special care, institutional, or parks and recreational facilities, or other uses that are, in the City's determination, sensitive to noise impacts, then:

- A. The applicant shall submit to the City a noise level study prepared by a professional acoustical engineer. Said study shall define noise levels at the boundaries of the site in all directions.
- B. The applicant shall show that the use will not exceed the noise standards contained in OAR 340-35-035, based on accepted noise modeling procedures and worst-case assumptions when all noise sources on the site are operating simultaneously.
- C. If the use exceeds applicable noise standards as per subsection B of this Section, then the applicant shall submit a noise mitigation program prepared by a professional acoustical engineer that shows how and when the use will come into compliance with said standards.

16.146.030 – Exceptions

This Chapter does not apply to noise making devices which are maintained and utilized solely as warning or emergency signals, or to noise caused by automobiles, trucks, trains, aircraft, and other similar vehicles when said vehicles are properly maintained and operated and are using properly designated rights-of-way, travel ways, flight paths or other routes. This Chapter also does not apply to noise produced by humans or animals. Nothing in this Chapter shall preclude the City from abating any noise problem as per applicable City nuisance and public safety ordinances.

FINDING: The proposed commercial use abuts only land exclusively zoned General Commercial (GC) or Retail Commercial (RC). The proposal includes the development of a Chevron gasoline Service Station, including a new 3,600 square-foot convenience store, Underground Storage Tanks (UST), and other associated site improvements. The scope of the project is not anticipated to exceed the noise standards detailed under OAR 340-35-035. No exception is sought by the applicant. Any future violations related to noise can be addressed by the applicable State agency or City Code Compliance; therefore, this standard is met.

Chapter 16.148 – VIBRATIONS

16.148.010 – Generally

All otherwise permitted commercial, industrial, and institutional uses shall not cause discernible vibrations that exceed a peak of 0.002 gravity at the property line of the originating use, except for vibrations that last five (5) minutes or less per day, based on a certification by a professional engineer.

16.148.020 - Exceptions

This Chapter does not apply to vibration caused by construction activities including vehicles accessing construction sites, or to vibrations caused by automobiles, trucks, trains, aircraft, and other similar vehicles when said vehicles are properly maintained and operated and are using properly designated rights-of-way, travelways, flight paths or other routes. Nothing in this Chapter shall preclude the City from abating any vibration problem as per applicable City nuisance and public safety ordinances.

FINDING: The proposal includes the development of a Chevron gasoline Service Station, including a new 3,600 square-foot convenience store, Underground Storage Tanks (UST), and other associated site improvements. The subject parcel has been operating under a vehicle fueling station use since at least 1961. The proposal was reviewed by both city engineers and by an external traffic consultant, hired by the applicant, and is not anticipated to create vibrations in excess, as defined by this code section. No exception is sought by the applicant. Any future violations related to air quality can be addressed by the applicable State agency or City Code Compliance; therefore, this standard is met.

Chapter 16.150 - AIR QUALITY

16.150.010 – Generally

All otherwise permitted commercial, industrial, and institutional uses shall comply with applicable State air quality rules and statutes:

- A. All such uses shall comply with standards for dust emissions as per OAR 340-21-060.
- B. Incinerators, if otherwise permitted by Section 16.140.020, shall comply with the standards set forth in OAR 340-25-850 through 340-25-905.
- C. Uses for which a State Air Contaminant Discharge Permit is required as per OAR 340-20-140 through 340-20-160 shall comply with the standards of OAR 340-220 through 340-20-276.

16.150.020 - Proof of Compliance

Proof of compliance with air quality standards as per Section 16.150.010 shall be in the form of copies of all applicable State permits, or if permits have not been issued, submission by the applicant, and acceptance by the City, of a report certified by a professional engineer indicating that the proposed use will comply with State air quality standards. Depending on the nature and size of the use proposed, the applicant may, in the City's determination, be required to submit to the City a report or reports substantially identical to that required for issuance of State Air Contaminant Discharge Permits.

16.150.030 – Exceptions

Nothing in this Chapter shall preclude the City from abating any air quality problem as per applicable City nuisance and public safety ordinances.

FINDING: The proposal includes the development of a Chevron gasoline Service Station, including a new 3,600 square-foot convenience store, Underground Storage Tanks (UST), and other associated site improvements. The subject parcel has been operating under a vehicle fueling station use since at least 1961. The scope of the project is not anticipated to create substantial degradation of the surrounding air quality. Any future violations related to air quality

can be addressed by the applicable State agency or City Code Compliance; therefore, this standard is met.

Chapter 16.152 - ODORS

16.152.010 – Generally

All otherwise permitted commercial, industrial, and institutional uses shall incorporate the best practicable design and operating measures so that odors produced by the use are not discernible at any point beyond the boundaries of the development site.

16.152.020 – Standards

The applicant shall submit a narrative explanation of the source, type and frequency of the odorous emissions produced by the proposed commercial, industrial, or institutional use. In evaluating the potential for adverse impacts from odors, the City shall consider the density and characteristics of surrounding populations and uses, the duration of any odorous emissions, and other relevant factors.

16.152.030 – Exceptions

Nothing in this Chapter shall preclude the City from abating any odor problem as per applicable City nuisance and public safety ordinances.

FINDING: The proposal includes the development of a Chevron gasoline Service Station, including a new 3,600 square-foot convenience store, Underground Storage Tanks (UST), and other associated site improvements. The subject parcel has been operating under a vehicle fueling station use since at least 1961. Vehicular exhaust originating from on-site traffic and odors from the refueling process are typical in the vicinity and will remain consistent upon project completion. No exception is sought by the applicant; therefore, this criterion is satisfied.

Chapter 16.154 - HEAT AND GLARE

16.154.010 – Generally

Except for exterior lighting, all otherwise permitted commercial, industrial, and institutional uses shall conduct any operations producing excessive heat or glare entirely within enclosed buildings. Exterior lighting shall be directed away from adjoining properties, and the use shall not cause such glare or lights to shine off site in excess of one-half (0.5) foot candle when adjoining properties are zoned for residential uses.

16.154.020 – Exceptions

Nothing in this Chapter shall preclude the City from abating any heat and glare problem as per applicable City nuisance and public safety ordinances.

FINDING: The proposal includes the development of a Chevron gasoline Service Station, including a new 3,600 square-foot convenience store, Underground Storage Tanks (UST), and other associated site improvements. The subject parcel has been operating under a vehicle fueling station use since at least 1961. The proposed project does not produce heat or glare outside of otherwise permitted uses. No exception is sought by the applicant. Proposed lighting will be directed away from neighboring properties, as conditioned below:

Condition A.16: The property owner(s) shall install and maintain lighting in a manner that prevents exterior lighting from shining or creating glare on abutting properties, pursuant to 16.154.010.

This criterion is satisfied.

Chapter 16.156 - ENERGY CONSERVATION

16.156.010 – Purpose

This Chapter and applicable portions of Chapter 5 of the Community Development Plan provide for natural heating and cooling opportunities in new development. The requirements of this Chapter shall not result in development exceeding allowable densities or lot coverage, or the destruction of existing trees.

16.156.020 – Applicability

The standards in this Chapter shall apply to any new uses or changes to existing uses in multi-dwelling, commercial, industrial and institutional zones. The standards in this Chapter do not apply to accessory dwelling unit or single detached, or middle housing development in residential zones.

16.156.030 – Standards

- A. Building Orientation - The maximum number of buildings feasible shall receive sunlight sufficient for using solar energy systems for space, water or industrial process heating or cooling. Buildings and vegetation shall be sited with respect to each other and the topography of the site so that unobstructed sunlight reaches the south wall of the greatest possible number of buildings between the hours of 9:00 AM and 3:00 PM, Pacific Standard Time on December 21st.
- B. Wind - The cooling effects of prevailing summer breezes and shading vegetation shall be accounted for in site design. The extent solar access to adjacent sites is not impaired vegetation shall be used to moderate prevailing winter wind on the site.

16.156.040 - Variance to Permit Solar Access

Variances from zoning district standards relating to height, setback and yard requirements approved as per Chapter 16.84 may be granted by the Commission through a Type IV review where necessary for the proper functioning of solar energy systems, or to otherwise preserve solar access on a site or to an adjacent site.

FINDING: The proposal includes the development of a Chevron gasoline Service Station, including a new 3,600 square-foot convenience store, Underground Storage Tanks (UST), and other associated site improvements. The subject parcel has been operating under a vehicle fueling station use since at least 1961. The designated use of the site, pursuant to 16.22.020, is "Vehicle fueling stations or car wash facilities." No change of use is proposed with this application; therefore, these are not applicable.

IV. STAFF RECOMMENDATION AND CONDITIONS OF APPROVAL

Based upon review of the applicant's submittal information, review of the code, agency comments and consideration of the applicant's submittal, staff finds that the proposed site plan does not fully comply with the standards but can be conditioned to comply.

Therefore, staff recommends approval of the application LU 2022-030 SP/MM "Chevron – Site Plan & Major Modification" "subject to the following conditions of approval:

A. General Conditions

1. Compliance with the Conditions of Approval is the responsibility of the developer or its successor in interest.
2. The development shall substantially comply with the submitted preliminary plans and narrative except as indicated in the conditions of the Notice of Decision. Additional development or change of use may require a new development application and approval.
3. This approval is valid for a period of two (2) years from the date of the Notice of Decision. Extensions may be granted by the City as afforded by the Sherwood Zoning and Community Development Code.
4. The continual operation of the property shall comply with the applicable requirements of the Sherwood Zoning and Community Development Code and Municipal Code.
5. This approval does not negate the need to obtain permits, as appropriate from other local, state or federal agencies even if not specifically required by this decision.
6. All new utilities to be installed for the development of the subject property shall be underground.
7. Any departure from approved plans not authorized by the Hearing Authority shall be cause for revocation of applicable building and occupancy permits.
8. The site shall conform to all local building and fire code regulations, in addition to any applicable state and federal regulations, for hazardous materials storage on the site.
9. The property owner(s) shall be responsible for ensuring the overall maintenance and health of the approved landscaping materials. Only hardy and drought-resistant landscaping shall be permitted on the parcel.
10. The property owner(s) shall be responsible for maintaining all required screening of all Mechanical Equipment, Outdoor Storage, Service and Delivery Areas from public streets and any adjacent residential zone districts.
11. The property owner(s) shall be responsible for ensuring all required parking, loading, and maneuvering areas are not used for long-term storage or sale of vehicles or other materials, or rented, leased, or assigned to any person or organization not using or occupying the building or use served. All future violations are subject to Code Compliance.

12. The property owner(s) shall be responsible for the maintenance and repair of the parking and loading areas, including associated infrastructure, pursuant to Chapter 16.94.010.G.
13. The property owner(s) shall be responsible for the maintenance and repair of the on-site pedestrian and bicycle circulation area, including associated infrastructure, pursuant Chapter 16.96.010.B.
14. The property owner(s) shall maintain, and repair all required ingress, egress, and circulation improvements located on the site, and keep these areas clean and clear in perpetuity, pursuant to 16.96.010.E.
15. The property owner(s) shall be responsible for the maintenance and repair of all on-site vehicle circulation areas located on the subject parcel, pursuant to Chapter 16.96.040.D.
16. The property owner(s) shall install and maintain lighting in a manner that prevents exterior lighting from shining or creating glare on abutting properties, pursuant to 16.154.010.
17. The applicant shall comply with conditions described in the CWS Memorandum dated August 23, 2023, the CWS Service Provider Letter in the applicant's submittal and all applicable CWS Design and Construction Standards.

B. Prior to Final Site Plan Approval

1. Prior to final site plan approval, the applicant shall ensure the proposed trees are fully branched and a minimum of two (2) caliper inches and at least six (6) feet in height.
2. Prior to final site plan approval, the applicant shall resubmit a landscaping plans indicating a minimum ten (10) foot wide landscaped strip comprised of trees, shrubs and ground cover is provided between off-street parking, loading, or vehicular use areas on separate, abutting, or adjacent properties, pursuant to 16.92.030.2.a.
3. Prior to final site plan approval, the applicant shall resubmit a site plan and preliminary landscaping plans indicating compliance with the minimum landscape Island requirement, pursuant to 16.92.030.B.8.
4. Prior to final site plan approval, the applicant shall resubmit plans indicating compliance with the dimensional and general configuration standards for off-street parking stalls, pursuant to 16.94.020.B.1.
5. Prior to final site plan approval, if the applicant includes compact off-street parking stalls, they shall provide signage and/or markings identifying each compact stall on the parcel, pursuant to 16.94.020.B.
6. Prior to final site plan approval, the applicant shall obtain a compliance agreement with the City of Sherwood for the proposed visual corridor improvements, pursuant to 16.140.040.

C. Prior to Approval of the Engineering Public Improvement Plans / Issuance of the Engineering Compliance Agreement

1. Prior to Approval of Engineering Public Improvement Plans, the developer shall design to reconstruct the existing sidewalk along the subject property frontage of

- SW Pacific Highway to a 10-foot sidewalk width (non-curb-tight) meeting the approval of ODOT and the Sherwood Engineering Department.
2. Prior to Approval of Engineering Public Improvement Plans, the developer shall design to reconstruct the existing sidewalk along the subject property frontage of SW Sherwood Boulevard to create a 6-foot sidewalk width with 5-foot-wide landscape strip meeting the approval of ODOT and the Sherwood Engineering Department.
 3. Prior to Approval of Engineering Public Improvement Plans, the property owner(s) shall donate the necessary amount of right-of-way, as determined by the Oregon Department of transportation, to accommodate the planned cross section.
 4. Prior to Approval of Public Improvements, the applicant shall obtain a State Highway Approach Road Permit from the Oregon Department of Transportation or written determination from ODOT that the existing approach(es) is/are legal for the proposed use.
 5. Prior to Approval of Public Improvements, the applicant shall obtain an ADOT Miscellaneous Permit for all work in the highway right-of-way.
 6. Prior to Approval of Public Improvements, the applicant shall obtain an ODOT utility permit for connection to state highway drainage facilities if the site's drainage naturally enters ODOT right-of-way.
 7. Prior to Approval of Engineering Public Improvement Plans, the developer shall design to connect to the existing sanitary sewer lateral unless otherwise approved by the Sherwood Engineering Department.
 8. Prior to Approval of Engineering Public Improvement Plans, the developer shall design to make use of the existing water meter for service unless otherwise approved by the Sherwood Engineering Department.
 9. Prior to Approval of Engineering Public Improvement Plans, the developer shall design for a reduced pressure backflow assembly on the domestic water service meeting the approval of the Sherwood Engineering Department.
 10. Prior to Approval of Engineering Public Improvement Plans, the developer shall design to connect to the existing public storm sewer meeting the approval of the Sherwood Engineering Department.
 11. Prior to Approval of Engineering Public Improvement Plans, the developer shall design to construct a storm water hydro-modification/detention facility in compliance with CWS standards meeting the approval of the Sherwood Engineering Department and ODOT.
 12. Prior to Approval of Engineering Public Improvement Plans, the developer shall design to construct a storm water runoff water quality treatment facility in compliance with CWS standards meeting the approval of the Sherwood Engineering Department.
 13. Prior to Acceptance of the Public Improvements, a Private Storm Water Access and Maintenance Covenant will need to be recorded for the private storm water runoff water quality/hydro-modification facilities meeting the approval of the Sherwood Engineering Department.
 14. Prior to Approval of Engineering Public Improvement Plans, a Storm Water Connection Permit Authorization shall be obtained from Clean Water Services.

15. Prior to Approval of Engineering Public Improvement Plans, the developer shall pay a fee-in-lieu of installing Sherwood broadband along the subject property frontage of SW Langer Drive.
16. Prior to Approval of Engineering Public Improvement Plans, an Engineering Compliance Agreement shall be executed between the developer and the City of Sherwood.

D. Prior to Issuance of Building Permits

1. Prior to building permits, the applicant shall submit a Tree and Vegetation Protection Plan illustrating how existing landscaping will be retained and protected from damage or destruction by construction activities, including protective fencing, selective pruning and root treatments, excavation techniques, temporary drainage systems, and like methods.
2. Prior to building permit issuance, the applicant shall submit revised materials indicating conformance with the wheel stop standards, pursuant to SZDC 16.94.020.B.3.
3. Prior to issuance of building permits, the applicant will need to provide sufficient detail indicating that the proposed Solid Waste and Recycling Storage access gates can be pinned in the open position, as required by Sherwood Zoning and Development Code and P.R.I.D.E disposal standards.
4. Prior to Issuance of building permits, a grading and erosion control permit shall be obtained by the developer.

E. Prior to Acceptance of Public Improvements

1. Prior to Acceptance of Public Improvements, the developer shall dedicate half-street right-of-way along the subject property frontage of SW Pacific Highway to a width of 51 feet from the northbound centerline of SW Pacific Highway, in areas where the existing half street right-of-way is narrower than 51 feet, meeting the approval of the Sherwood Engineering Department.
2. Prior to Acceptance of Public Improvements, the developer shall dedicate half-street right-of-way along the subject property frontage of SW Sherwood Boulevard to a width of 51 feet from centerline, in areas where the existing half street right-of-way is narrower than 51 feet, meeting the approval of the Sherwood Engineering Department.
3. Prior to Acceptance of Public Improvements, the developer shall dedicate right-of-way along the subject property frontage of SW Langer Drive to achieve a 36-foot half-street right-of-way width.

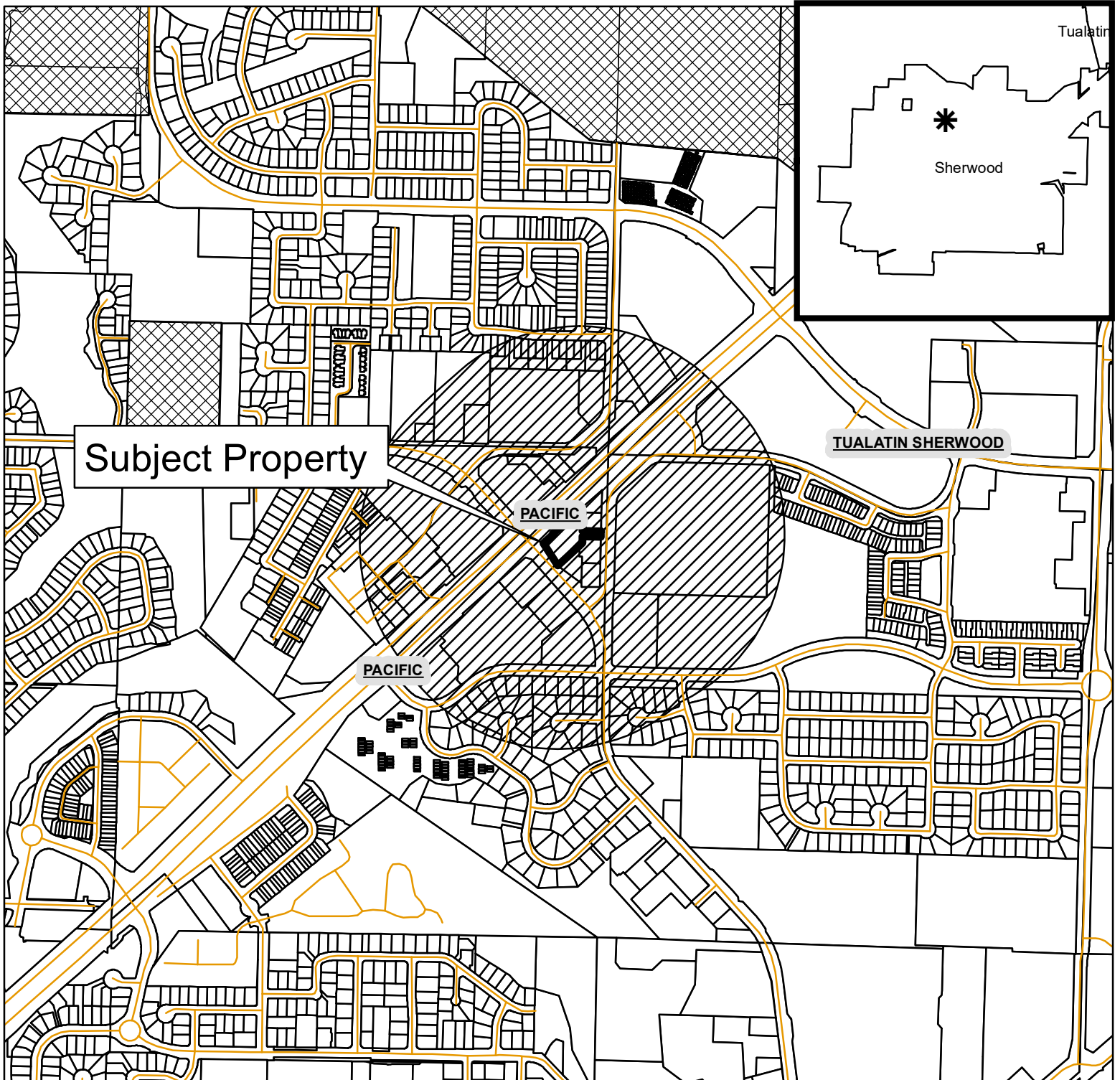
F. Prior to Receiving Occupancy

1. Prior to occupancy, Clear Vision Areas shall be established and maintained at each private driveway intersection, pursuant to 16.58.010.
2. Prior to occupancy, the applicant shall place all required landscaping in-ground, including installation of an approved irrigation system, pursuant to the 16.92.040 standards.








V. ATTACHMENTS

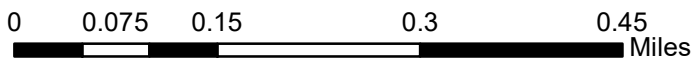
- A.** Applicant Submittal and Narrative*
 - Appendix A – Vicinity Map
 - Appendix B – Neighborhood Meeting Documentation
 - Appendix C – Tax Map
 - Appendix D – Preliminary Development Plans
 - Appendix E – Preliminary Landscaping Plans
 - Appendix G – Public Notice & Agency Routing List
 - Appendix H – Prelim Storm Report
 - Appendix J – Geotech Report
 - Appendix K – Title Reports
 - Appendix L – TVF&R SPL
 - Appendix M – Clean Water Services
 - Appendix N – Traffic Impact Analysis (TIA)
- B.** City of Sherwood Engineering Comments
- C.** Clean Water Services (CWS) Memorandum
- D.** Oregon Department of Transportation (ODOT) Memorandum

Public Notice Area (1,000 foot radius)
21090 SW Pacific Hwy, Sherwood, OR 97140



Legend

-  Subject Property
-  1,000 Foot Buffer
-  Taxlots
-  Major Arterial Highways
-  Sherwood_Railway
-  City Limits
-  Outside City Limits



N



Neighborhood Meeting

Chevron 92138
21090 SW Pacific HWY
Sherwood, OR

Date: November 3rd, 2022

Meeting Location: Sherwood Police Department Community Room

Time: 12:00 PM

Meeting Representatives: Nick Wecker, Senior Planner, Barghausen Consulting Engineers, Inc
Andrew Bowman, Assistant Planner, Barghausen Consulting Engineers, Inc

Agenda: Introduction
Project Overview
Q&A
Concluding Remarks

Project Overview

The project proposes a raze and rebuild of the site for the development of a new Chevron gasoline service station that features a 4,022-square foot convenience store. The project will require the installation of new Underground Storage Tanks (USTs) that includes a 20,000-gallon UST for regular unleaded fuels, a 15,000-gallon UST for premium fuels, and a 10,000-gallon UST for diesel. Additional site improvements include new sidewalk, landscaping, surface parking for sixteen (16) vehicles, a trash enclosure, an air/water unit, and propane refill station. The existing 958-square foot convenience store, and USTs will be demolished to accommodate the new improvements. The existing canopy and fuel dispensers will remain unchanged.

The convenience store would replicate typical elements and fixtures associated with convenience retail. Items being sold would include prepackaged convenience grocery items, sundries, hot and cold drinks, tobacco products, beer and wine, and automobile-related convenience items. Cold storage facilities and limited on-site dry storage would be provided to support both retail sales and food service. Food preparation is limited to warming (reheating) and packaging for resale. The facility will operate business hours of 24 hours, 7 days a week.

Meeting Summary

Andrew Bowman and Nick Wecker arrived at the Sherwood Police Department Community Room at 12:00pm to host the meeting. George Sobus? Arrived at the meeting and signed in. His address is under the Enserv LLC address. He had a few questions about the project and the timing of everything. He was the only attendee. After George left, Andrew and Nick stayed until the end of the meeting window.

NEIGHBORHOOD MEETING SIGN IN SHEET

Proposed Project: Chevron 92138

Proposed Project Location: 21090 SW Pacific Hwy Sherwood, OR

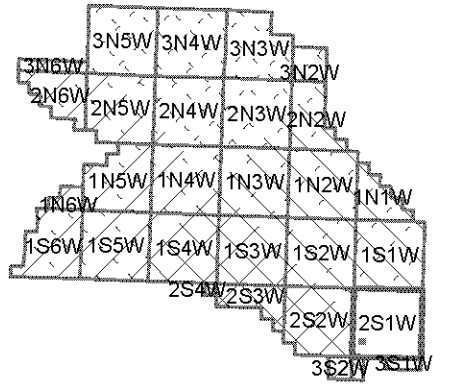
Project Contact: Andrew Bowman

Meeting Location: Sherwood Police Dept.

Meeting Date: Nov. 3, 2012

| Name | Address | E-Mail | Please identify yourself (check all that apply) | | | |
|--------------------------|--|--------|--|----------------|----------------|-------|
| | | | Resident | Property owner | Business owner | Other |
| <u>George H. Johnson</u> | <u>20945 SW Pacific Hwy Sherwood</u> | | | | | |
| | | | | | | |
| | | | | | | |
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| | | | | | | |
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| | | | | | | |

WASHINGTON COUNTY OREGON
NE 1/4 SE 1/4 SECTION 30 T2S R1W
SCALE 1"= 100'

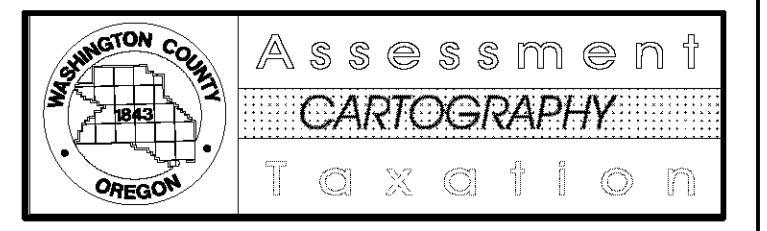
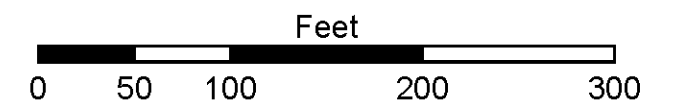


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|----|----|----|----|----|----|----|----|
| 36 | 31 | 32 | 33 | 34 | 35 | 36 | 31 |
| 1 | 8 | 5 | 4 | 3 | 2 | 1 | 6 |
| 12 | 7 | 8 | 9 | 10 | 11 | 12 | 7 |
| 13 | 18 | 17 | 16 | 15 | 14 | 13 | 18 |
| 24 | 19 | 20 | 21 | 22 | 23 | 24 | 19 |
| 25 | 30 | 29 | 28 | 27 | 26 | 25 | 30 |
| 36 | 31 | 32 | 33 | 34 | 35 | 36 | 31 |
| 1 | 8 | 5 | 4 | 3 | 2 | 1 | 6 |

| | | | |
|----|----|----|----|
| BB | BA | AB | AA |
| BC | BD | AC | AD |
| CB | CA | DB | DA |
| CC | CD | DC | DD |

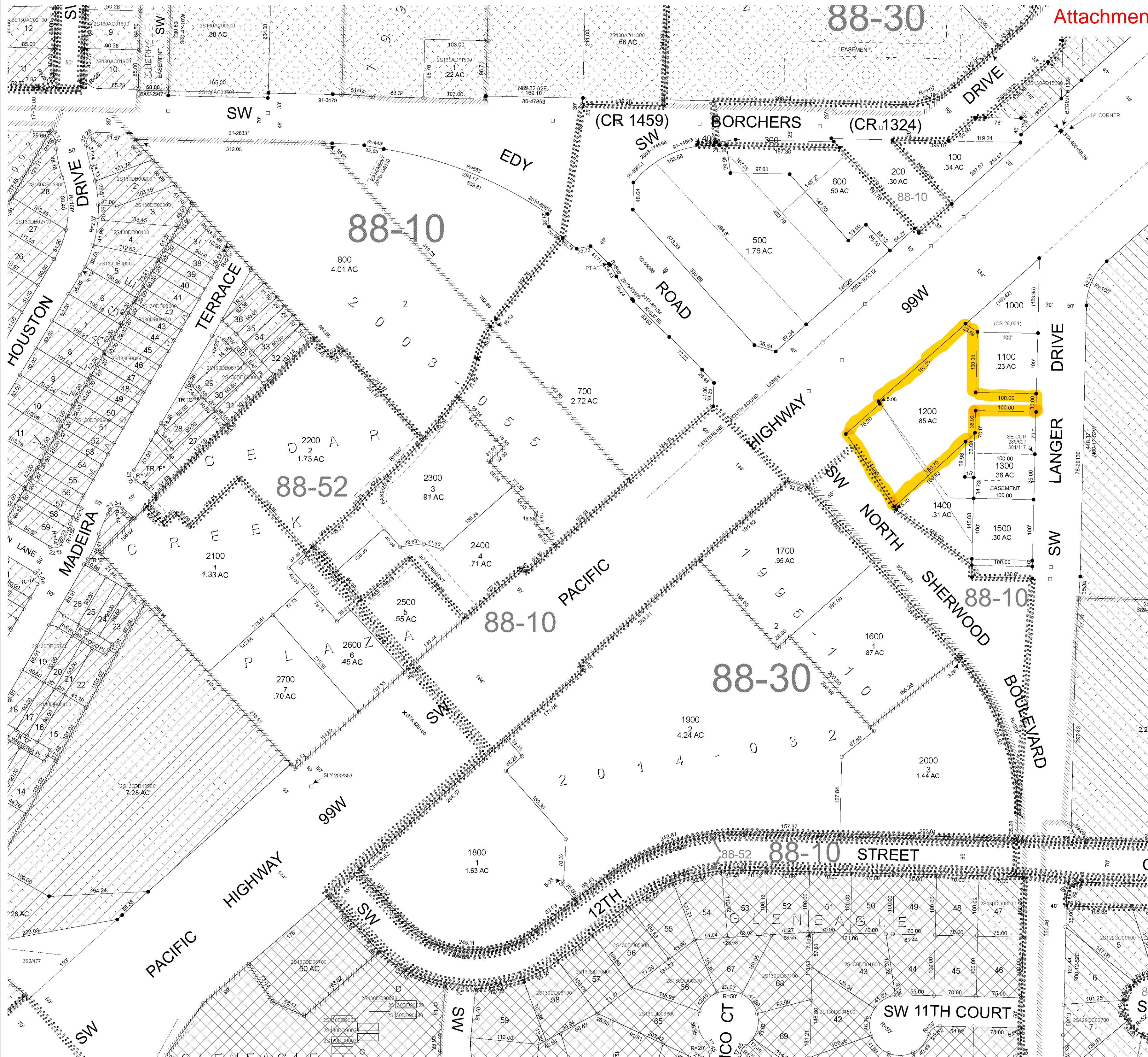
FOR ADDITIONAL MAPS VISIT OUR WEBSITE AT
www.co.washington.or.us

Cancelled Taxlots For: 2S130DA
900



PLOT DATE: 4/8/2022
FOR ASSESSMENT PURPOSES
ONLY - DO NOT RELY ON
FOR OTHER USE

Map areas delineated by either gray shading or a cross-hatched pattern are for reference only and may not indicate the most current property boundaries. Please consult the appropriate map for the most current information.



| LEGEND | | | |
|-----------------------|----------|----------|---------------------------|
| | EXISTING | PROPOSED | |
| CURB AND GUTTER | | | STORM LINE |
| BARRIER CURB | | | CATCH BASIN TYPE 1 |
| CONCRETE | | | CATCH BASIN TYPE 2 |
| ASPHALT | | | SANITARY SEWER LINE |
| PAINT STRIPING | | | SANITARY SEWER MANHOLE |
| DIRECTIONAL ARROW | | | CLEANOUT (AS NOTED) |
| SAWCUT | | | POWER OVERHEAD |
| BOLLARD | | | POWER UNDERGROUND |
| SIGN | | | POWER METER |
| BUILDING LINE | | | UTILITY POLE |
| CONTOURS | | | JUNCTION BOX (TYPE 1,2,3) |
| WATER LINE | | | LUMINAIRE |
| FIRE HYDRANT | | | YARD LIGHT |
| WATER METER | | | TELEPHONE |
| WATER VALVE | | | GAS |
| FIRE DEPARTMENT CONN. | | | GAS METER |
| POST INDICATOR VALVE | | | GAS VALVE |

| PROJECT GROUND COVER | |
|--------------------------------------|-----------------------|
| ON-SITE | |
| NEW IMPERVIOUS SURFACES | 3,731 SF (0.09 AC) |
| MODIFIED IMPERVIOUS SURFACES | 11,657 SF (0.27 AC) |
| NEW AND MODIFIED IMPERVIOUS SURFACES | 15,388 (0.36 AC) |
| EXISTING IMPERVIOUS SURFACES | 12,239 SF (0.28 AC) |
| UTILITY TRENCHING | 1,008 SF (0.02 AC) |
| TOTAL IMPERVIOUS AREA | 28,635 SF (0.66 AC) |
| PERVIOUS AREA | 8,428 SF (0.19 AC) |
| TOTAL AREA | 37,063± SF (0.85± AC) |

PRELIM. SITE PLAN
FOR
CHEVRON SHERWOOD
SECTION 30, TOWNSHIP 2 SOUTH, RANGE 1 WEST W.M.
CITY OF SHERWOOD, WASHINGTON COUNTY, OREGON

OWNER
CHEVRON STATION INC.
575 MARKET ST.
SAN FRANCISCO, CA 94105

ENGINEER
BARCHAUSEN CONSULTING ENGINEERS, INC.
18215 72ND AVE. SOUTH
KENT, WA 98032
TEL: (425) 251-6222
FAX: (425) 251-8782
CONTACT: CHRIS JENSEN, P.E.

SURVEYOR
BARCHAUSEN CONSULTING ENGINEERS, INC.
18215 72ND AVE. SOUTH
KENT, WA 98032
TEL: (425) 251-6222
FAX: (425) 251-8782
CONTACT: BRIAN GILLOOLY, P.L.S.

LAND USE:
SITE ZONE: RETAIL COMMERCIAL - RC

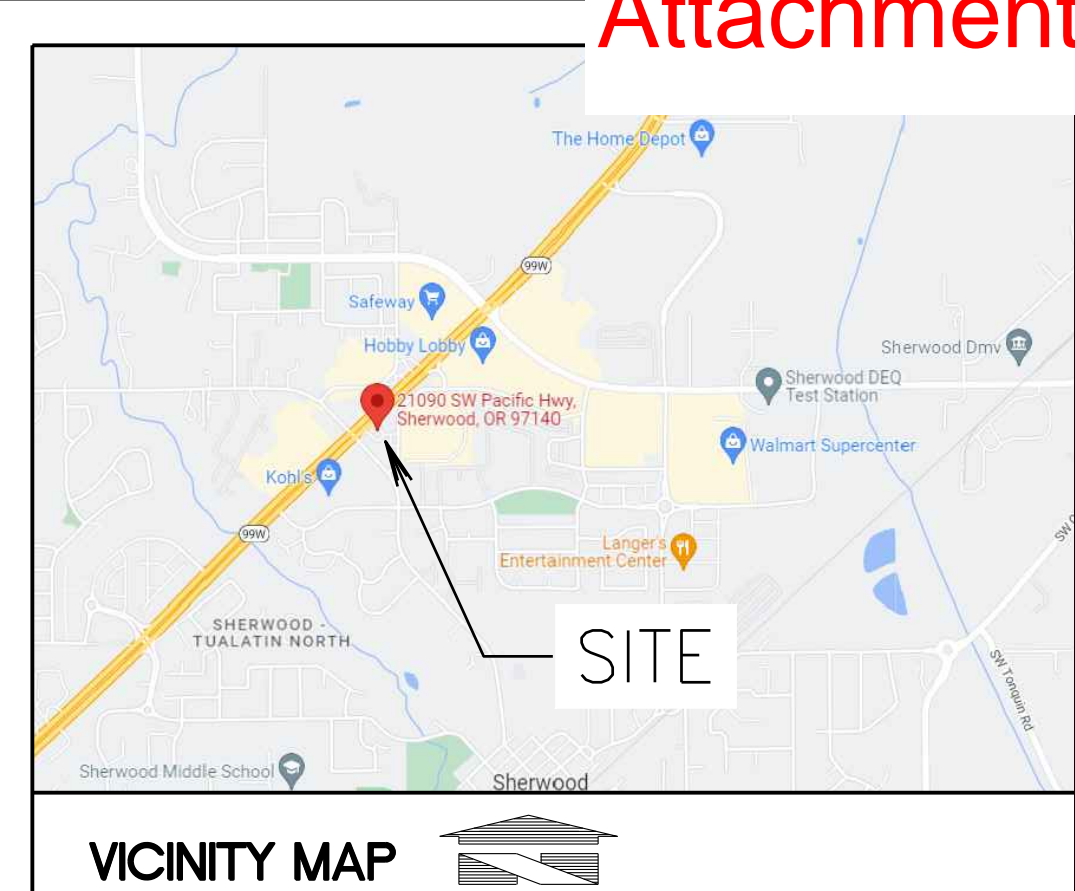
NEIGHBORING ZONING
NORTH: RC
SOUTH: CC/PUD-RC
EAST: RC
WEST: RC

BUILDING DATA:
CONVENIENCE STORE (RETAIL): 3,600 SF

OPEN STRUCTURES:
EXISTING FUEL CANOPY: 3,588 SF

NET BUILDABLE AREA:
37,402 SF (0.85 AC)

BUILDING SETBACKS
FRONT SIDE - 0'
STREET SIDE - 0'
INTERIOR SIDE: 0'
REAR: 0'

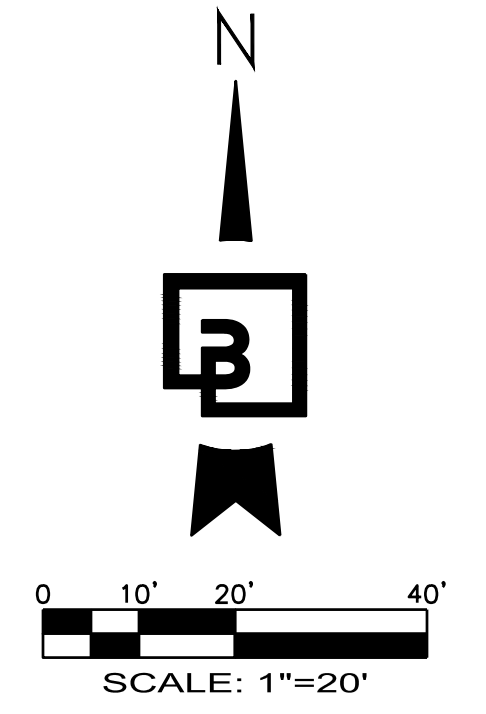
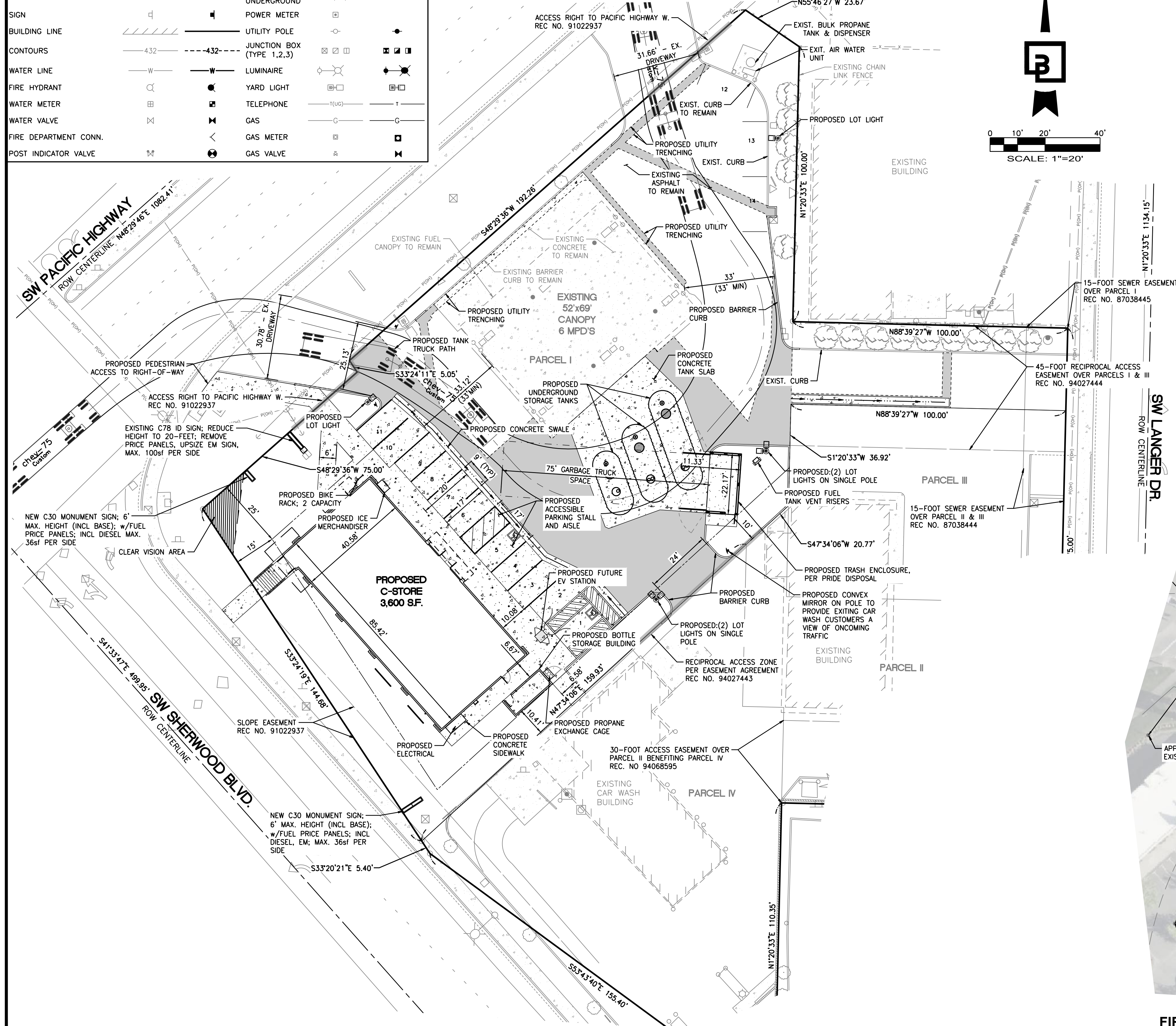


SHEET INDEX

PRELIM. CIVIL:
C1.0 - PRELIM. SITE PLAN
1 OF 2 - BOUNDARY AND TOPOGRAPHIC SURVEY
2 OF 2 - BOUNDARY AND TOPOGRAPHIC SURVEY
C2.0 - PRELIM. TESC PLAN
C3.0 - PRELIM. GRADING AND UTILITY PLAN
C3.1 - PRELIM. DRAINAGE DETAILS

PRELIM. LANDSCAPE
L-1 - PRELIMINARY LANDSCAPE PLAN
L-2 - PRELIMINARY LANDSCAPE PLAN

| | | |
|--------------------|---------|---|
| SITE PLAN REVISION | | Location: STORE NO. 92138 EM3220 w/ (6) MPD'S 21090 SW PACIFIC HIGHWAY SHERWOOD, OREGON |
| No. | Date | |
| 2 | 7/25/23 | |
| 1 | 4/24/23 | |
| CITY COMMENTS | | EXPIRES: 6-30-25 |



SITE INFORMATION

ADDRESS:
21090 SOUTHWEST PACIFIC HIGHWAY

LOT AREA:
37,063± S.F. (0.85 AC)

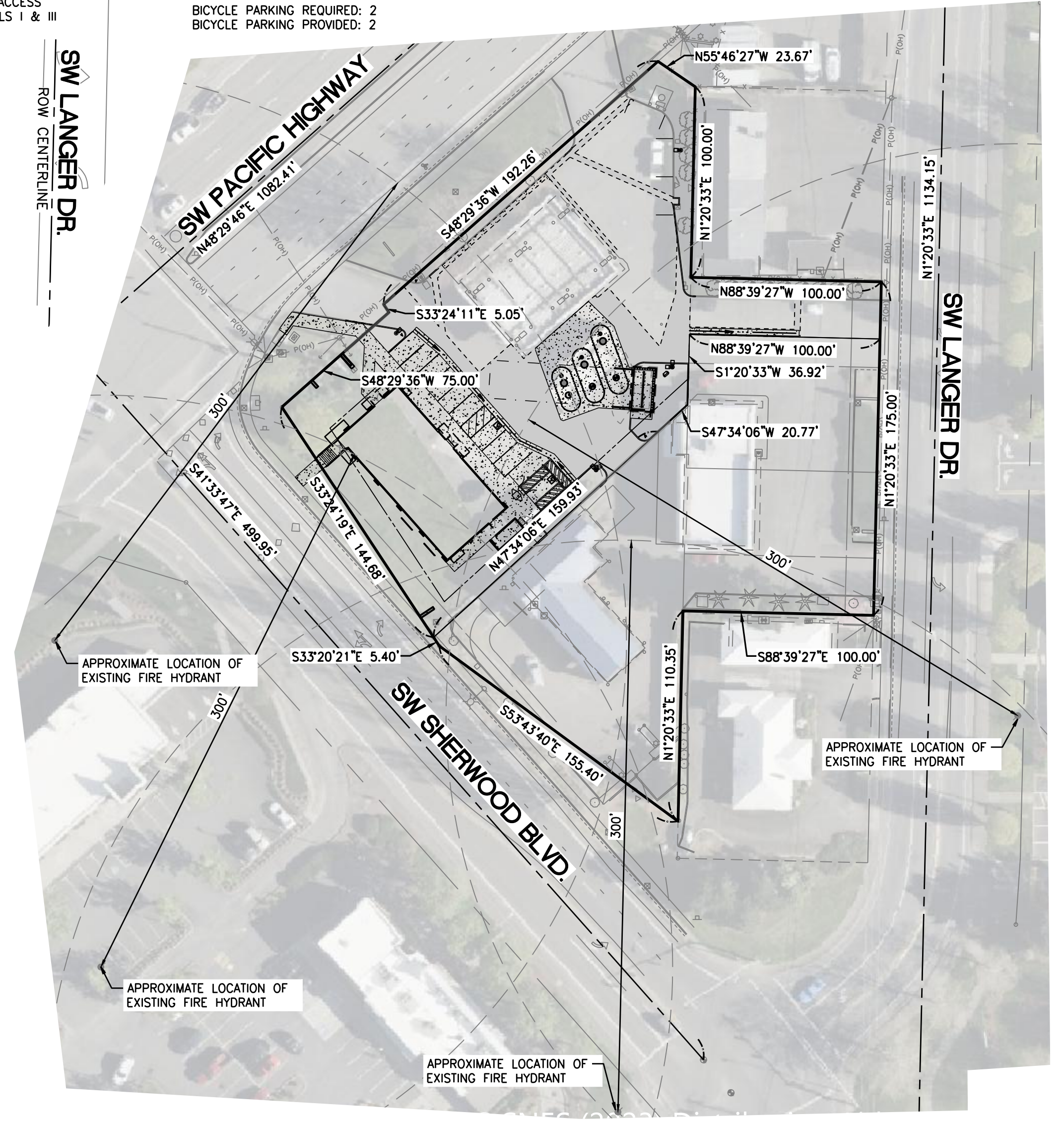
TAX PARCEL NUMBER:
25130DA01200

FEMA FLOOD ZONE:
THE SITE IS LOCATED WITHIN ZONE X PER FEMA FLOOD MAP41067C0601F, DATED OCTOBER 10, 2018

LANDSCAPING CHAPTER 16.92:
VEHICLE AREA PERIMETER: 10' (MAY BE REDUCED TO 5' IF ADJACENT SITE OF SAME USE HAS 5' MINIMUM, REF. 16.92.030 A.(3))
PARKING LANDSCAPE: 45 SF LANDSCAPE PER SPACE = 765 SF
LANDSCAPE PROVIDED: 7,138 SF (INCL ADDITIONAL STALL LANDSCAPE)

PARKING:
SPACES REQUIRED: 4X3.1 = 12.4 (13)
SPACES PROVIDED: 12 (9'X20') w/3-FOOT BUMPER OVERHANG INCLUSIVE
ACCESSIBLE SPACES: 2 (ADDITIONAL @ FUTURE EV CHARGING AREA)
TOTAL SPACES PROVIDED: 14

BICYCLE PARKING REQUIRED: 2
BICYCLE PARKING PROVIDED: 2



FIRE HYDRANT EXHIBIT
SCALE: 1" = 50'

Preparer:

Barghausen Consulting Engineers, Inc.
18215 72nd Avenue South
Kent, WA 98032
425.251.6222
barghausen.com

Client:

CHEVRON U.S.A. INC.
6001 BOLLINGER CANYON RD.
SAN RAMON, CA 94583
www.Chevron.com
ph 925.842.1000

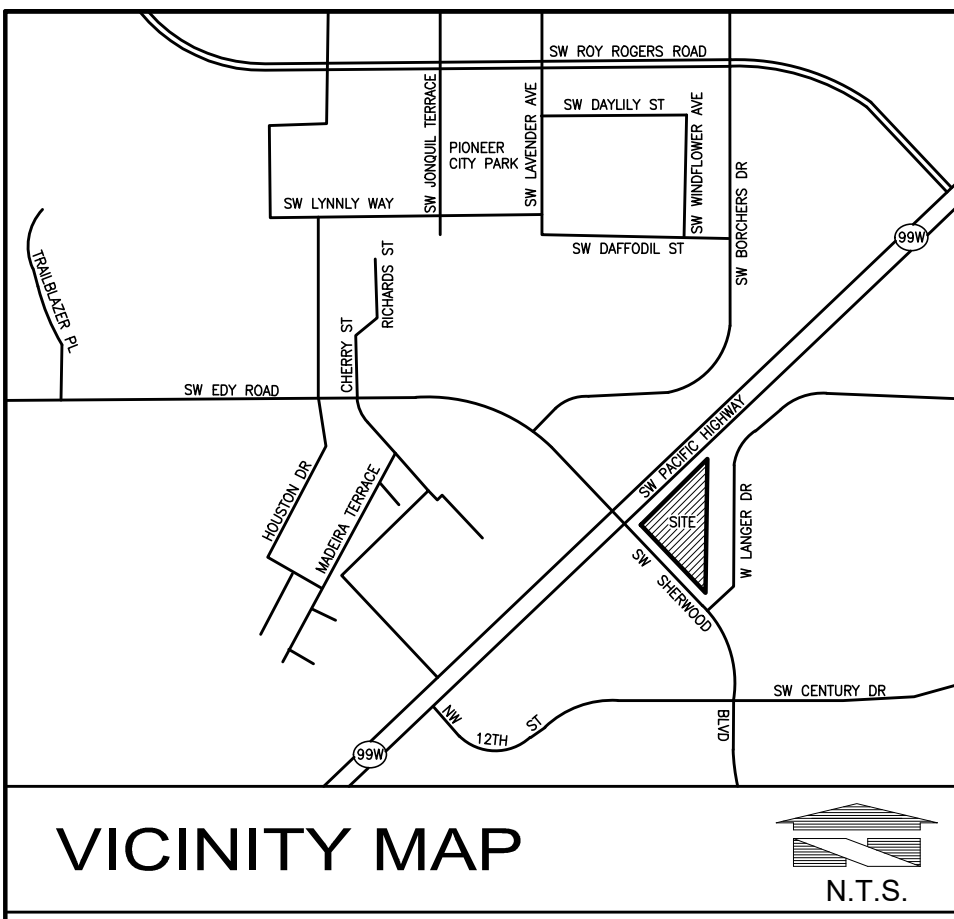
PRELIMINARY

PRELIM. SITE PLAN

C1.0

| | |
|------------------|-------------------|
| DESIGNED BY: JDF | DRAWN BY: JDF |
| CHECKED BY: ADW | APPROVED BY: CRJ |
| SCALE: VARIES | PROJECT NO: 22558 |
| SHEET TITLE: | |
| SHEET NO: | |

BOUNDARY AND TOPOGRAPHIC SURVEY



SURVEY INFORMATION:

HORIZONTAL DATUM & BASIS OF BEARINGS:
HORIZONTAL DATUM AND BASIS OF BEARINGS FOR THIS SURVEY ARE ASSUMED.

VERTICAL DATUM:
VERTICAL DATUM FOR THIS SURVEY IS NAVD88 AS ESTABLISHED BY GPS OBSERVATION OF NGS CONTROL STATION DESIGNATED "TIGARD."
STATION ELEVATION = 197.2 FEET.

PARCEL INFORMATION:
 PARCEL I – R548759/2S130DA01200, 21090 SW PACIFIC HWY SHERWOOD, OREGON, 37,063±S.F. (0.851± AC)
 PARCEL II – R548713/2S130DA01300, 16415 SW LANGER DR, SHERWOOD, OREGON, 8,492±S.F. (0.195± AC)
 PARCEL III – R548722/2S130DA01100, 16385 SW LANGER DR, SHERWOOD, OREGON, 7,000±S.F. (0.161± AC)
 PARCEL IV – R2194420 & R2054361/2S130DA01400, 16425 SW LANGER DR, SHERWOOD, OREGON, 13,404±S.F. (0.308± AC)

TOTAL PARCEL AREA: 65,959±S.F. (1.514± AC)

DATE OF SURVEY:
THIS SURVEY REPRESENTS VISIBLE PHYSICAL IMPROVEMENT CONDITIONS EXISTING ON APRIL 12, 2023. ALL SURVEY CONTROL INDICATED AS "FOUND" WAS RECOVERED FOR THIS PROJECT IN APRIL OF 2023.

SURVEYOR'S NOTES:

- THIS IS A FIELD TRAVERSE SURVEY. A TRIMBLE R12i GPS AND A TRIMBLE S-7 ROBOTIC TOTAL STATION (TRIMBLE TSC7 DATA COLLECTOR) WERE USED TO MEASURE THE ANGULAR AND DISTANCE RELATIONSHIPS BETWEEN THE CONTROLLING MONUMENTATION AS SHOWN. CLOSURE RATIOS OF THE TRAVERSE MET OR EXCEEDED THOSE SPECIFIED IN W.A.C. 332-130-090. ALL INSTRUMENTS AND EQUIPMENT HAVE BEEN MAINTAINED IN ADJUSTMENT ACCORDING TO MANUFACTURERS' SPECIFICATIONS AND USED BY APPROPRIATELY TRAINED PERSONNEL.
- ALL DISTANCES SHOWN HEREON ARE GROUND MEASUREMENTS IN INTERNATIONAL FEET.
- THE BOUNDARY CORNERS AND LINES DEPICTED ON THIS MAP REPRESENT DEED LINES ONLY, AND DON'T PURPORT TO SHOW OWNERSHIP LINES THAT MAY OTHERWISE BE DETERMINED BY A COURT OF LAW. NO GUARANTEE OF OWNERSHIP IS EXPRESSED OR IMPLIED. NO PROPERTY CORNERS WERE SET FOR THIS SURVEY.
- THE LEGAL DESCRIPTION AND SPECIAL EXCEPTIONS SHOWN HEREON ARE PER THE TITLE REPORT REFERENCED HEREON UNLESS OTHERWISE NOTED.
- THIS SURVEY HAS DEPICTED ALL VISIBLE OCCUPATIONAL INDICATORS (I.E. FENCE LINES, BUILDINGS, WALLS, ETC. – SEE MAP FOR PARTICULARS). LINES OF OCCUPATION, AS DEPICTED, MAY INDICATE AREAS OF POTENTIAL CLAIMS OF UNWRITTEN OWNERSHIP. THIS SURVEY HAS ONLY DEPICTED THE RELATIONSHIP BETWEEN LINES OF OCCUPATION AND DEEDED LINES OF RECORD. NO RESOLUTION OF OWNERSHIP BASED ON UNWRITTEN RIGHTS HAS BEEN MADE BY THIS SURVEY OR BY ANY PERSONNEL OF BARGHAUSEN CONSULTING ENGINEERS, INC.
- THE SOURCE OF THE CONTOURS SHOWN HEREON IS BASED UPON DIRECT FIELD OBSERVATIONS. THE CONTOUR ACCURACY IS PER NATIONAL MAPPING STANDARDS, BEING ONE HALF OF THE ONE-FOOT CONTOUR INTERVAL. THE PURPOSE OF THIS SURVEY IS TO MAP THE CURRENT CONDITIONS FOR DUE DILIGENCE AND FOR ENGINEERING DESIGN.
- UNDERGROUND UTILITIES AND FEATURES DEPICTED HEREON ARE BASED ON FIELD OBSERVATION, MARKINGS, DEVELOPMENT PLANS, AND/OR AVAILABLE RECORDED DOCUMENTS ONLY. THE TRUE LOCATION, NATURE AND/OR EXISTENCE OF BELOW GROUND FEATURES, DETECTED OR UNDETECTED SHOULD BE VERIFIED PRIOR TO ANY SITE DEVELOPMENT OR DISTURBANCE.
- BARGHAUSEN CONSULTING ENGINEERS, INC. SURVEY CREWS DETECTED NO OBSERVABLE EVIDENCE OF RECENT EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS ON THE SUBJECT PROPERTY.
- BARGHAUSEN CONSULTING ENGINEERS, INC. SURVEY CREWS DETECTED NO OBSERVABLE EVIDENCE OF CHANGES IN STREET RIGHT-OF-WAY LINES OR OF RECENT STREET OR SIDEWALK CONSTRUCTION ON OR ADJACENT TO THE SUBJECT PROPERTY, EXCEPT AS SHOWN.

TITLE INFORMATION:

TITLE COMMITMENT:
ALL TITLE INFORMATION SHOWN ON THIS MAP, INCLUDING APPURTENANT EASEMENTS AND ADJOINING DEEDS FOR UNPLATTED LOTS, IF ANY, HAS BEEN EXTRACTED FROM FIDELITY NATIONAL TITLE COMMITMENT NO. N0037351/45142204322, DATED XXXXXXXXXXXX. IN PREPARING THIS MAP, BARGHAUSEN CONSULTING ENGINEERS, INC. HAS CONDUCTED NO INDEPENDENT TITLE SEARCH NOR IS BARGHAUSEN CONSULTING ENGINEERS, INC. AWARE OF ANY TITLE ISSUES AFFECTING THE SURVEYED PROPERTY OTHER THAN THOSE SHOWN ON THE MAP AND DISCLOSED BY SAID COMMITMENT. BARGHAUSEN CONSULTING ENGINEERS, INC. HAS RELIED WHOLLY ON SAID TITLE COMPANY'S REPRESENTATIONS OF THE TITLE'S CONDITION TO PREPARE THIS SURVEY AND THEREFORE BARGHAUSEN CONSULTING ENGINEERS, INC. QUALIFIES THE MAP'S ACCURACY AND COMPLETENESS TO THAT EXTENT.

LEGAL DESCRIPTION:
(PER ABOVE REFERENCED TITLE REPORT)

FOR APN/PARCEL ID(S): R548759
FOR TAX MAP ID(S): 2S130DA01200

PARCEL I:
A TRACT OF LAND LOCATED IN THE SOUTHEAST QUARTER OF SECTION 30, TOWNSHIP 2 SOUTH, RANGE 1 WEST, OF THE WILLAMETTE MERIDIAN AND LOCATED IN THE CITY OF SHERWOOD, COUNTY OF WASHINGTON AND STATE OF OREGON, SAID TRACT DESCRIBED SPECIFICALLY AS FOLLOWS:
BEGINNING AT THE NORTHWEST CORNER OF THAT TRACT OF LAND CONVEYED TO PORTLAND GENERAL ELECTRIC COMPANY, JUNE 19, 1940, BY DEED RECORDED UNDER BOOK 190, PAGE 509, WASHINGTON COUNTY DEED RECORDS, SAID NORTHWEST CORNER BEARING SOUTH, ALONG THE EAST LINE OF SAID SECTION 30, A DISTANCE OF 334.65 FEET AND WEST, 130.00 FEET FROM THE EAST QUARTER CORNER OF SAID SECTION 30; THENCE, NORTH 50° 07' 00" WEST, ALONG THE NORTHEAST LINE OF THAT TRACT OF LAND CONVEYED TO REUBEN TEPOLT AND VERDA TEPOLT, SEPTEMBER 10, 1947, BY DEED RECORDED UNDER BOOK 278, PAGE 156, SAID DEED RECORDS, 23.59 FEET TO THE EAST CORNER OF THAT TRACT OF LAND CONVEYED TO THE STATE OF OREGON, AUGUST 24, 1954, BY DEED RECORDED UNDER BOOK 359, PAGE 511, SAID DEED RECORDS; THENCE, SOUTH 47° 09' 03" EAST, ALONG THE SOUTHEAST LINE OF SAID STATE OF OREGON TRACT, 192.29 FEET TO THE SOUTHWEST LINE OF SAID TEPOLT TRACT;
THENCE, SOUTH 34° 44' 44" EAST, ALONG THE SOUTHWEST LINE OF SAID TEPOLT TRACT, 5.05 FEET TO THE EAST CORNER OF THAT TRACT OF LAND CONVEYED TO PARKER R. CROSSWAY AND FRANCES F. CROSSWAY, OCTOBER 8, 1948, BY DEED RECORDED UNDER BOOK 289, PAGE 689, SAID DEED RECORDS; THENCE, SOUTH 47° 09' 03" WEST, ALONG THE SOUTHWEST LINE OF SAID CROSSWAY TRACT, 75.00 FEET TO THE SOUTH CORNER OF SAID CROSSWAY TRACT; THENCE, SOUTH 34° 44' 44" EAST, ALONG THE SOUTHWEST LINE OF THAT TRACT OF LAND CONVEYED TO PARKER R. CROSSWAY AND FRANCES F. CROSSWAY, JANUARY 22, 1957, BY DEED RECORDED UNDER BOOK 390, PAGE 257, SAID DEED RECORDS, SAID SOUTHWEST LINE BEING PARALLEL WITH THE SOUTHWEST LINE OF SAID TEPOLT TRACT, 144.60 FEET; THENCE, NORTH 46° 13' 33" EAST, 180.70 FEET TO THE EAST LINE OF SAID TEPOLT TRACT; THENCE, NORTH, ALONG THE EAST LINE OF SAID TEPOLT TRACT, 36.92 FEET TO THE NORTHWEST CORNER OF THAT TRACT OF LAND CONVEYED TO FLORIN TEPOLT AND JOSEPHINE TEPOLT, APRIL 19, 1958, BY DEED RECORDED UNDER BOOK 404, PAGE 667, SAID DEED RECORDS, SAID TRACT REFERRED TO HENCEFORTH AS THE SECOND TEPOLT TRACT; THENCE, EAST, ALONG THE NORTH LINE OF SAID SECOND TEPOLT TRACT, WHICH IS PARALLEL WITH AND 30.00 FEET SOUTH OF THE SOUTH LINE OF SAID PORTLAND GENERAL ELECTRIC COMPANY TRACT, MEASURED PERPENDICULAR THERETO, 100.00 FEET TO THE WEST RIGHT-OF-WAY LINE OF NORTH SHERWOOD BOULEVARD, 30.00 FEET FROM THE CENTERLINE THEREOF, MEASURED PERPENDICULAR THERETO; THENCE, NORTH, ALONG SAID WEST RIGHT-OF-WAY LINE OF NORTH SHERWOOD BOULEVARD, 30.00 FEET

TO THE SOUTHEAST CORNER OF SAID PORTLAND GENERAL ELECTRIC COMPANY TRACT; THENCE, WEST, ALONG THE SOUTH LINE OF SAID PORTLAND GENERAL ELECTRIC COMPANY TRACT, 100.00 FEET TO THE SOUTHWEST CORNER OF SAID PORTLAND GENERAL ELECTRIC COMPANY TRACT; THENCE, NORTH, ALONG THE WEST LINE OF SAID PORTLAND GENERAL ELECTRIC COMPANY TRACT, 100.00 FEET TO THE POINT OF BEGINNING.

PARCEL II:
TRACT A:
A TRACT OF LAND LOCATED IN THE SOUTHEAST QUARTER OF SECTION 30, TOWNSHIP 2 SOUTH, RANGE 1 WEST OF THE WILLAMETTE MERIDIAN AND LOCATED IN THE CITY OF SHERWOOD, WASHINGTON COUNTY, OREGON, SAID TRACT DESCRIBED SPECIFICALLY AS FOLLOWS:
BEGINNING AT A POINT ON THE WEST RIGHT-OF-WAY LINE OF SOUTHWEST LANGER DRIVE, 30.00 FEET FROM THE CENTERLINE THEREOF, AT THE SOUTHEAST CORNER OF THAT TRACT CONVEYED TO E.C. NEWALL AND EVAN H. NEWALL BY DEED RECORDED IN BOOK 285, PAGE 697, WASHINGTON COUNTY DEED RECORDS; SAID POINT OF BEGINNING BEARING SOUTH, ALONG THE EAST LINE OF SAID SECTION 30, A DISTANCE OF 534.65 FEET AND WEST, 30.00 FEET FROM THE EAST QUARTER CORNER OF SAID SECTION 30; THENCE, FROM SAID POINT OF BEGINNING, WEST ALONG THE SOUTH LINE OF SAID NEWALL TRACT, 100.00 FEET TO THE EAST LINE OF THAT TRACT OF LAND CONVEYED TO REUBEN TEPOLT AND VERDA TEPOLT BY DEED RECORDED SEPTEMBER 10, 1947 IN BOOK 278, PAGE 156, SAID DEED RECORDS; THENCE, NORTH, ALONG THE EAST LINE OF SAID TEPOLT TRACT, 33.08 FEET; THENCE, NORTH, ALONG THE EAST LINE OF SAID TEPOLT TRACT, 33.08 FEET; THENCE, SOUTH 46° 13' 33" WEST, 20.77 FEET TO A POINT 15.00 FEET FROM THE EAST LINE OF SAID TEPOLT TRACT, MEASURED PERPENDICULAR THERETO; THENCE, SOUTH, PARALLEL WITH THE EAST LINE OF SAID TEPOLT TRACT, 58.98 FEET; THENCE, EAST, 15.00 FEET TO THE EAST LINE OF SAID TEPOLT TRACT; THENCE SOUTH, ALONG THE EAST LINE OF SAID TEPOLT TRACT, 34.73 FEET; THENCE, EAST, 100.00 FEET TO SAID RIGHT-OF-WAY LINE OF SOUTHWEST LANGER DRIVE; THENCE, NORTH, ALONG SAID EAST RIGHT-OF-WAY LINE OF SOUTHWEST LANGER DRIVE, 75.00 FEET TO THE POINT OF BEGINNING.

TRACT B:
TOGETHER WITH AN ACCESS EASEMENT OVER A PORTION OF THAT TRACT OF LAND CONVEYED TO JOHN F. ALTO AND DOROTHY S. ALTO BY DEED RECORDED OCTOBER 14, 1986, UNDER DOCUMENT NO. 86-47006, WASHINGTON COUNTY DEED RECORDS, LOCATED IN THE SOUTHEAST QUARTER OF SECTION 30, TOWNSHIP 2 SOUTH, RANGE 1 WEST OF THE WILLAMETTE MERIDIAN AND LOCATED IN THE CITY OF SHERWOOD, WASHINGTON COUNTY, OREGON, SAID PARCEL DESCRIBED SPECIFICALLY AS FOLLOWS:
THE SOUTH, 30.00 FEET OF SAID ALTO TRACT MEASURED PERPENDICULAR TO THE SOUTH LINE THEREOF.

PARCEL III:
A TRACT OF LAND LOCATED IN THE SOUTHEAST QUARTER OF SECTION 30, TOWNSHIP 2 SOUTH, RANGE 1 WEST OF THE WILLAMETTE MERIDIAN, IN THE CITY OF SHERWOOD, COUNTY OF WASHINGTON AND STATE OF OREGON, SAID TRACT DESCRIBED SPECIFICALLY AS FOLLOWS:
BEGINNING AT A POINT ON THE WEST LINE OF COUNTY ROAD NO. 1324, 535 FEET SOUTH AND 30 FEET WEST OF THE QUARTER CORNER ON THE EAST LINE OF SECTION 30, TOWNSHIP 2 SOUTH, RANGE 1 WEST OF THE WILLAMETTE MERIDIAN, SAID BEGINNING POINT BEING THE SOUTHEAST CORNER OF THE TRACT CONVEYED TO REUBEN P. TEPOLT BY DEED RECORDED IN BOOK 381, PAGE 117 OF WASHINGTON COUNTY DEED RECORDS; RUNNING THENCE NORTH ALONG THE WEST LINE OF SAID COUNTY ROAD, 70.0 FEET TO A POINT; THENCE WEST PARALLEL WITH AND 30 FEET DISTANT SOUTHERLY FROM THE NORTH LINE OF SAID TEPOLT TRACT, A DISTANCE OF 100 FEET TO A POINT ON THE WEST LINE THEREOF; THENCE SOUTH, 70.0 FEET TO THE SOUTHWEST CORNER OF THE SAID TEPOLT TRACT; THENCE EAST, 100 FEET TO THE PLACE OF BEGINNING.

PARCEL IV:
TRACT A:
A TRACT OF LAND LOCATED IN THE SOUTHEAST QUARTER OF SECTION 30, TOWNSHIP 2 SOUTH, RANGE 1 WEST, OF THE WILLAMETTE MERIDIAN AND LOCATED IN THE CITY OF SHERWOOD, COUNTY OF WASHINGTON AND STATE OF OREGON, SAID TRACT DESCRIBED SPECIFICALLY AS FOLLOWS:
BEGINNING AT THE SOUTHWEST CORNER OF THAT TRACT OF LAND CONVEYED TO VICTOR MURALT AND ERNA MURALT BY DEED RECORDED FEBRUARY 27, 1951 IN BOOK 317, PAGE 532, WASHINGTON COUNTY DEED RECORDS, SAID POINT OF BEGINNING BEARING SOUTH ALONG THE EAST LINE OF SAID SECTION 30, A DISTANCE OF 720.00 FEET AND WEST, 130.00 FEET FROM THE EAST QUARTER CORNER OF SAID SECTION 30; THENCE FROM SAID POINT OF BEGINNING, NORTH ALONG THE WEST LINE OF SAID MURALT TRACT, ALONG THE WEST LINE OF THAT TRACT OF LAND CONVEYED TO VICTOR MURALT AND ERNA MURALT BY DEED RECORDED JUNE 9, 1950 IN BOOK 308, PAGE 28, SAID DEED RECORDS, AND ALONG THE EAST LINE OF THAT TRACT OF LAND CONVEYED TO REUBEN TEPOLT AND VERDA TEPOLT BY DEED RECORDED SEPTEMBER 10, 1947 IN BOOK 278, PAGE 156, SAID DEED RECORDS, 145.08 FEET; THENCE WEST, 15.00 FEET; THENCE NORTH ALONG A LINE PARALLEL WITH AND 15.00 FEET FROM THE EAST LINE OF SAID TEPOLT TRACT, MEASURED PERPENDICULAR THERETO, 58.98 FEET; THENCE SOUTH 46° 13' 33" WEST, 159.93 FEET TO THE SOUTHWEST LINE OF THAT TRACT OF LAND CONVEYED TO PARKER R. CROSSWAY AND FRANCES CROSSWAY BY DEED RECORDED JANUARY 22, 1957 IN BOOK 390, PAGE 257, SAID DEED RECORDS; THENCE SOUTH 34° 44' 44" EAST ALONG THE SOUTHWEST LINE OF SAID CROSSWAY TRACT, WHICH IS ALSO PARALLEL WITH THE SOUTHWEST LINE OF SAID TEPOLT TRACT, 5.40 FEET
TO AN ANGLE POINT IN THE SOUTHWEST LINE OF SAID CROSSWAY TRACT; THENCE SOUTH 55° 04' 13" EAST ALONG THE SOUTHWEST LINE OF SAID CROSSWAY TRACT 155.40 FEET TO THE POINT OF BEGINNING.

TRACT B:
TOGETHER WITH AN ACCESS EASEMENT OVER A PORTION OF THAT TRACT OF LAND CONVEYED TO JOHN F. ALTO AND DOROTHY S. ALTO BY DEED RECORDED OCTOBER 14, 1986, UNDER DOCUMENT NO. 86-47006, WASHINGTON COUNTY DEED RECORDS, LOCATED IN THE SOUTHEAST QUARTER OF SECTION 30, TOWNSHIP 2 SOUTH, RANGE 1 WEST, OF THE WILLAMETTE MERIDIAN, AND LOCATED IN THE CITY OF SHERWOOD, COUNTY OF WASHINGTON AND STATE OF OREGON, SAID PARCEL DESCRIBED SPECIFICALLY AS FOLLOWS:
THE SOUTH, 30.00 FEET OF SAID ALTO TRACT MEASURED PERPENDICULAR TO THE SOUTH LINE THEREOF.

SPECIAL EXCEPTIONS:
(PER ABOVE REFERENCED TITLE REPORT)
NOTE: THE TITLE COMPANY'S PARCEL REFERENCE IN THE FOLLOWING EXCEPTIONS DO NOT NECESSARILY CORRELATE WITH THE PARCEL NUMBERING IN THE PROPERTY DESCRIPTION PROVIDED.

- ITEMS 1 TO 3 ARE NOT SURVEY RELATED. SEE THE TITLE REPORT FOR THE DETAILS ON THESE ITEMS.
4. RESERVATION OF EASEMENT IN DEED FOR INGRESS AND EGRESS AND RIGHT TO ACCESS TO PACIFIC HIGHWAY WEST AT A SPECIFIC LOCATION, OR ANY RELOCATION THEREOF,
GRANTOR: AGNES M. HITE AND GARFIELD E. HITE, HER HUSBAND
GRANTEE: PARKER R. CROSSWAY, ET UX
RECORDING DATE: JANUARY 27, 1957
RECORDING NO.: BOOK 390, PAGE 257
(PROVIDES FOR THE RIGHT OF INGRESS AND EGRESS FOR PARCEL IV ACROSS PARCEL I TO AND FROM PACIFIC HIGHWAY WEST AT THE DRIVEWAY APPROACH TO SAID HIGHWAY AT THE WESTERLY CORNER OF PARCEL I. DRIVEWAY APPROACH SHOWN HEREON.)
5. EASEMENT, INCLUDING TERMS AND PROVISIONS CONTAINED THEREIN:
IN FAVOR OF: THE CITY OF SHERWOOD
FOR: SANITARY SEWER
RECORDING DATE: JULY 28, 1987
RECORDING NO.: 87-038444
AFFECTS: PARCELS II AND III
(AFFECTS PARCELS II AND III AS SHOWN HEREON. EASEMENT SHOWN HEREON.)
6. EASEMENT, INCLUDING TERMS AND PROVISIONS CONTAINED THEREIN:
IN FAVOR OF: THE CITY OF SHERWOOD
FOR: SANITARY SEWER
RECORDING DATE: JULY 28, 1987
RECORDING NO.: 87-038445
AFFECTS: THE EASTERLY 15 FEET OF PARCEL I
(AFFECTS PARCEL I AS SHOWN HEREON. EASEMENT SHOWN HEREON.)

7. LIMITED ACCESS PROVISIONS CONTAINED IN DEED TO THE STATE OF OREGON, BY AND THROUGH ITS STATE HIGHWAY COMMISSION RECORDED MAY 7, 1991 AS RECORDING NO. 91-022937 DEED RECORDS, WHICH PROVIDES THAT NO RIGHT OF EASEMENT OR RIGHT OF ACCESS TO, FROM OR ACROSS THE STATE HIGHWAY OTHER THAN EXPRESSLY THEREIN PROVIDED FOR SHALL ATTACH TO THE ADJUTING PROPERTY.
AFFECTS PARCEL I
(ACCESS APPROACH LOCATIONS ON PARCEL I AS SHOWN HEREON.)

8. EASEMENT, INCLUDING TERMS AND PROVISIONS CONTAINED THEREIN,
IN FAVOR OF: STATE OF OREGON, BY AND THROUGH ITS DEPARTMENT OF TRANSPORTATION, HIGHWAY DIVISION
FOR: SLOPES
RECORDING NO.: MAY 7, 1991
RECORDING NO.: 91-022937
AFFECTS: PARCELS I AND III
(SAME DOCUMENT AS EXCEPTION 7. SLOPE EASEMENT AFFECTS PARCEL I AND IV AS SHOWN HEREON.)

9. TERMS, PROVISIONS AND CONDITIONS, INCLUDING, BUT NOT LIMITED TO, MAINTENANCE PROVISIONS, AND A COVENANT TO SHARE THE COSTS OF MAINTENANCE, CONTAINED IN RECIPROCAL EASEMENT AGREEMENT,
RECORDING DATE: MARCH 22, 1994
RECORDING NO.: 94-027443
AFFECTS: PARCELS I AND III
(BLANKET EASEMENT AFFECTING PARCELS I, II AND IV AS SHOWN HERON, AND HAVING A DEFINED ACCESS ZONE ACROSS THE COMMON BOUNDARY BETWEEN PARCEL I, AND PARCELS II AND IV ALSO AS SHOWN HEREON.)

10. TERMS, PROVISIONS AND CONDITIONS, INCLUDING, BUT NOT LIMITED TO, MAINTENANCE PROVISIONS, AND A COVENANT TO SHARE THE COSTS OF MAINTENANCE, CONTAINED IN RECIPROCAL EASEMENT AGREEMENT,
RECORDING DATE: MARCH 22, 1994
RECORDING NO.: 94-027444
AFFECTS: PARCELS I AND III
(45-FOOT RECIPROCAL ACCESS EASEMENT AFFECTS PARCELS I AND II AS SHOWN HEREON. EASEMENT SHOWN HEREON.)

11. EASEMENT, INCLUDING TERMS AND PROVISIONS CONTAINED THEREIN:
IN FAVOR OF: CHEVRON U.S.A. INC., A PENNSYLVANIA CORPORATION
FOR: WELLS AND HYDROCARBON CONTAMINATION RECOVERY SYSTEM
RECORDING DATE: OCTOBER 31, 2003
RECORDING NO.: 2003-186239
AFFECTS: PARCEL I
(A BLANKET EASEMENT FOR CONTAMINANT MONITORING AND RECOVERY SYSTEMS AND FOR ACCESS TO AND MAINTENANCE THEREOF, LOCATED WHERE SUCH SYSTEMS EXIST, AFFECTS PARCEL I AS SHOWN HEREON. LEGAL DESCRIPTION CONTAINS TYPOS.)


12. EASEMENT, INCLUDING TERMS AND PROVISIONS CONTAINED THEREIN:
IN FAVOR OF: THE CITY OF SHERWOOD
FOR: SEWER
RECORDING NO.: JULY 28, 1987
RECORDING NO.: 87-038444
AFFECTS: THE EASTERLY 15 FEET OF PARCEL IV
(SAME DOCUMENT AS EXCEPTION 5. AFFECTS PARCELS II AND III AS SHOWN HEREON.)

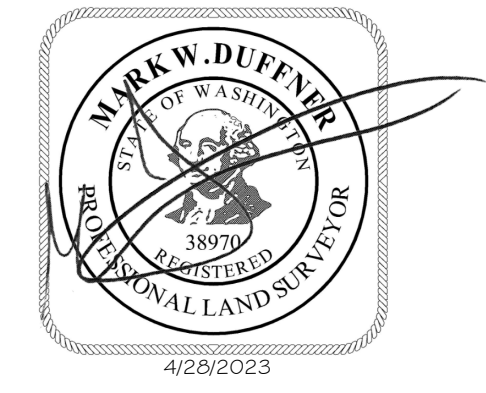
13. EASEMENT, INCLUDING TERMS AND PROVISIONS CONTAINED THEREIN:
IN FAVOR OF: ADJACENT PROPERTY OWNERS
FOR: ACCESS
RECORDING DATE: JULY 21, 1994
RECORDING NO.: 94-068595
AFFECTS: THE SOUTH 30 FEET OF PARCEL II
(30-FOOT ACCESS EASEMENT OVER PARCEL II, BENEFITING PARCEL IV, BOTH AS SHOWN HEREON. EASEMENT SHOWN HEREON.)

ITEMS 14 TO 16 ARE NOT SURVEY RELATED. SEE THE TITLE REPORT FOR THE DETAILS ON THESE ITEMS.

SURVEYOR'S CERTIFICATION:

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY UPON WHICH IT IS BASED WERE MADE BY ME OR UNDER MY DIRECTION AND CORRECTLY REFLECTS THE CONDITIONS OF THIS SITE AS OF APRIL 12, 2023.


 MARK W. DUFFNER
 OREGON REGISTRATION NO. 98989PLS
 MDUFFNER@BARGHAUSEN.COM
 DATE: 4/28/2023



| | | | | | |
|-----|------|----|------|-------|----------|
| No. | Date | By | Clk. | Appr. | Revision |
| | | | | | |

Title: BOUNDARY AND TOPOGRAPHIC SURVEY
PTN. OF THE NE1/4, OF THE SE1/4 OF SEC. 30,
TWP. 2 S., RGE. 1 W., W. M.
CITY OF SHERWOOD, WASHINGTON COUNTY,
STATE OF WASHINGTON

For: CHEVRON STATIONS, INC.

Scale:
Horizontal 1"=30'
Vertical

Designated: Drawn by STL, Checked by MWD, Approved by MWD, Date 4/28/23

Barghausen Consulting Engineers, Inc.
18215 72nd Avenue South
Kent, WA 98032
425.251.6222
barghausen.com

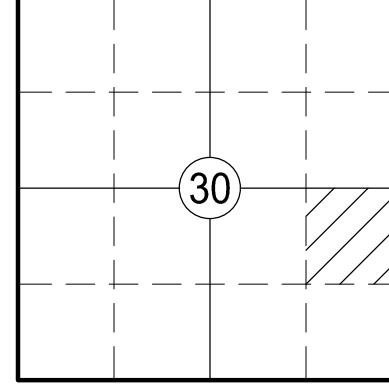
Job Number: 22558
Sheet: 1 of 1

File: P:\2023\22558\Survey\22558-4621.dwg Date/Time: Apr 28, 2023 - 10:50am Scale: 1"=30' mxd/mfr: mfr

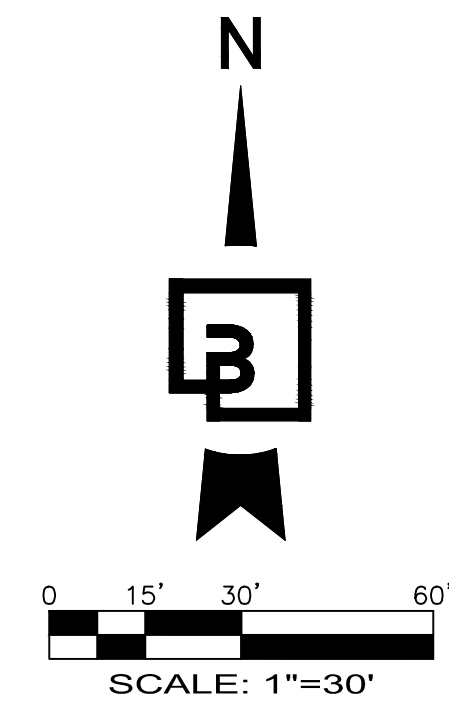
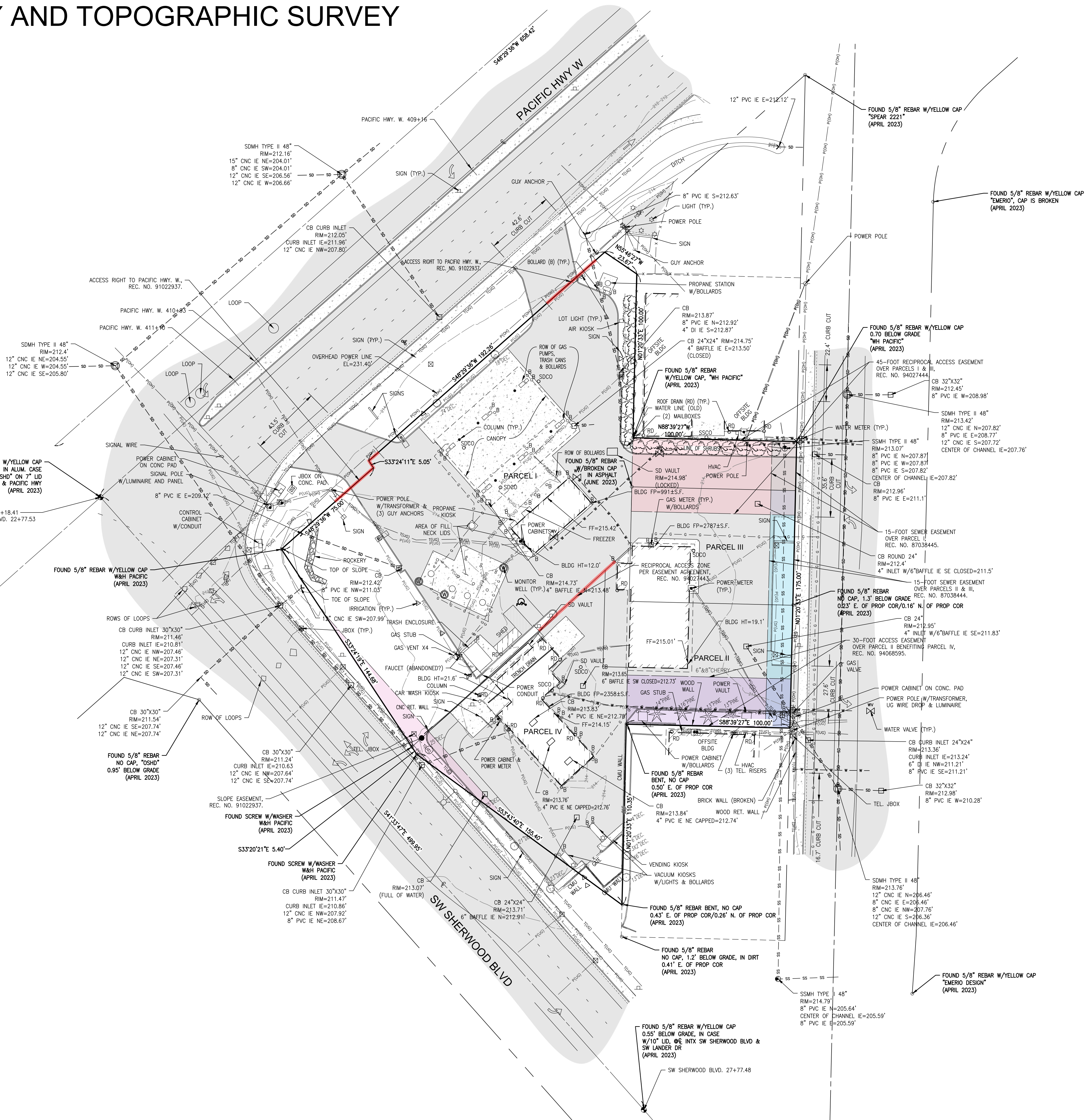
Packet Page 84

BOUNDARY AND TOPOGRAPHIC SURVEY

T. 2 S. R. 1 W.



SECTION INDEX



LEGEND

(NOTE: NOT ALL SYMBOLS MAY APPEAR ON THE MAP)

- SURVEY MONUMENT (AS NOTED)
 - SECTION CORNER (AS NOTED)
 - SET REBAR/CAP (AS NOTED)
 - FOUND REBAR/CAP (AS NOTED)
 - SET 2"x2" HUB/TACK LINE STAKE
 - MAG/WASHER OR LEAD/TACK (AS NOTED)
 - BENCHMARK
 - LUMINAIRE (LUM.)
 - YARD LIGHT
 - ORNAMENTAL LIGHT
 - TRAFFIC SIGNAL LIGHTS
 - POWER METER
 - POWER POLE
 - JUNCTION BOX (AS NOTED)
 - TELEPHONE MANHOLE
 - CATCH BASIN (CB)
 - STORM MANHOLE (SDMH)
 - SANITARY SEWER MANHOLE (SSMH)
 - CLEANOUT (AS NOTED)
 - GAS METER
 - GAS VALVE
 - WATER VALVE (WV)
 - FAUCET
 - FIRE HYDRANT(FH) / CONNECTION(FDC)
 - WATER MANHOLE
 - WATER METER
 - BLOW-OFF / AIRVAC
 - MONITOR WELL
 - SIGN
 - IRRIGATION SPRINKLER
 - DIRECTIONAL ARROW
 - ADA SYMBOL
 - CHAIN LINK FENCE
 - WOOD FENCE
 - HOGWIRE FENCE
 - SILT FENCE
 - METAL/IRON FENCE
 - GUARD RAIL/CABLE FENCE
 - WATER LINE
 - GAS LINE
 - STEAM LINE
 - TELEPHONE LINE (OH) OR (UG)
 - POWER LINE (OH) OR (UG)
 - STORM LINE
 - SEWER LINE
 - ROCKERY
 - KEYSTONE WALL
 - DECIDUOUS TREE
 - CONIFEROUS TREE
 - MAJOR CONTOUR LINE
 - MINOR CONTOUR LINE
 - CONCRETE
 - GRAVEL/SAND (AS NOTED)
 - ASPHALT
 - BUILDING LINE
- ABBREVIATIONS
- (RF) REFERENCE SURVEYS
 - (OH) OVERHEAD
 - (UG) UNDERGROUND
 - (TYP) TYPICAL
 - (C) CALCULATED
 - (M) MEASURED

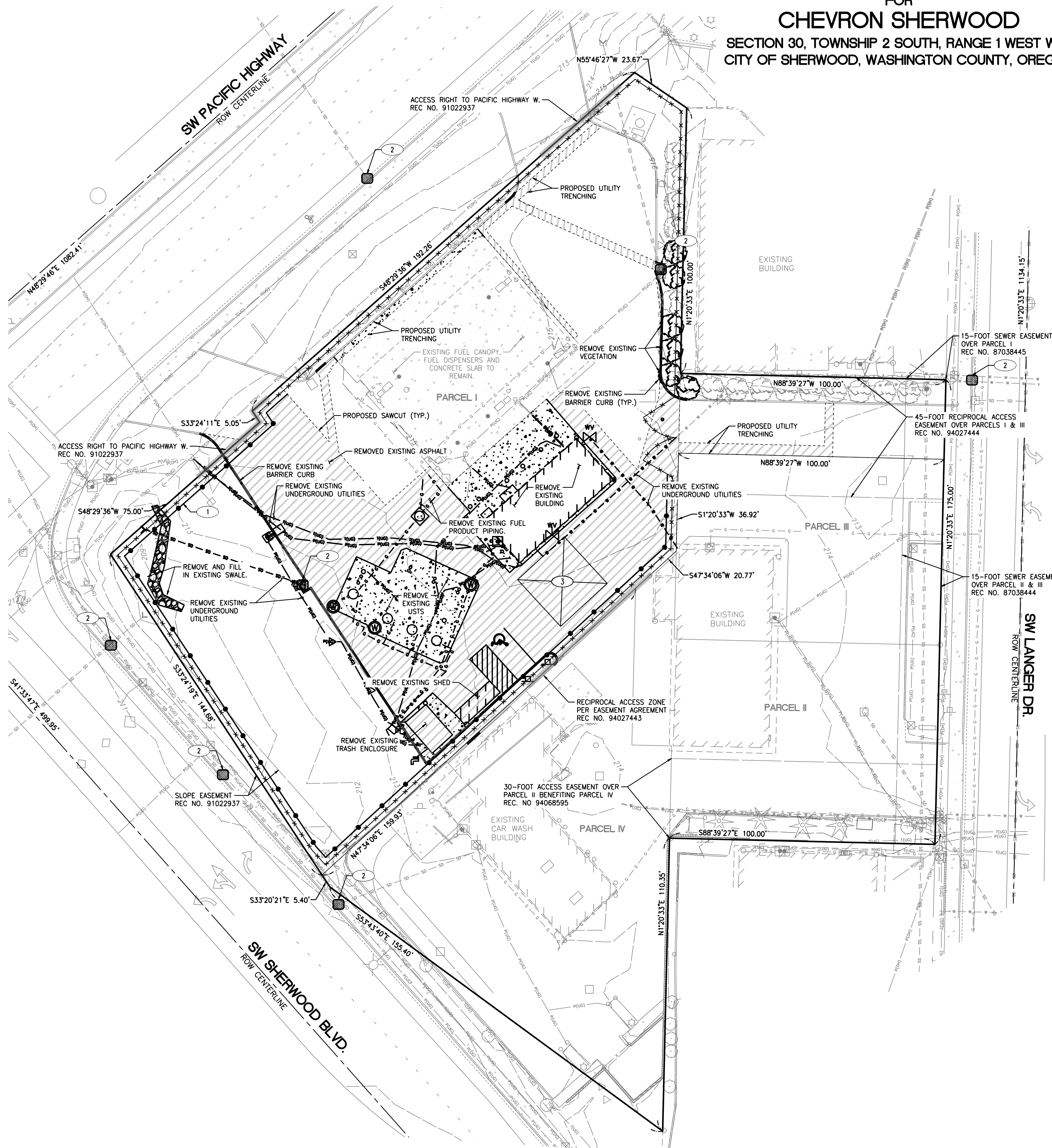


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|--|-------|-----|--|------|--|----|--|------|--|----------|-------|---|
| Revision | | No. | | Date | | By | | Cld. | | I. Appr. | | |
| <p>Title: BOUNDARY AND TOPOGRAPHIC SURVEY PTN. OF THE NE1/4 OF THE SE1/4 OF SEC. 30, TWP. 2 S., RGE. 1 W., W. M. CITY OF SHERWOOD, WASHINGTON COUNTY, OREGON</p> | | | | | | | | | | | | |
| <p>For: CHEVRON STATIONS, INC.</p> | | | | | | | | | | | | |
| <p>Scale: Horizontal 1"=30' Vertical</p> | | | | | | | | | | | | |
| <p>Designed: Drawn: Checked: Approved: MWD Date: 4/28/23</p> | | | | | | | | | | | | |
| <p>Barghausen Consulting Engineers, Inc. 18215 72nd Avenue South Kent, WA 98032 425.251.6222 barghausen.com</p> | | | | | | | | | | | | |
| Job Number | 22558 | | | | | | | | | | Sheet | 2 |
| | | | | | | | | | | | of | 2 |



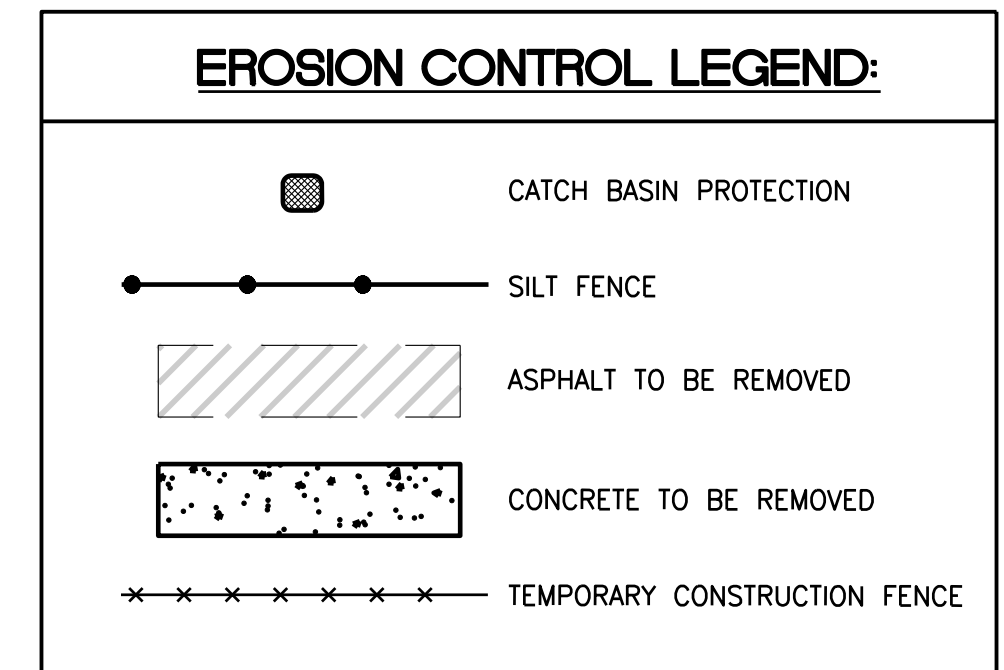
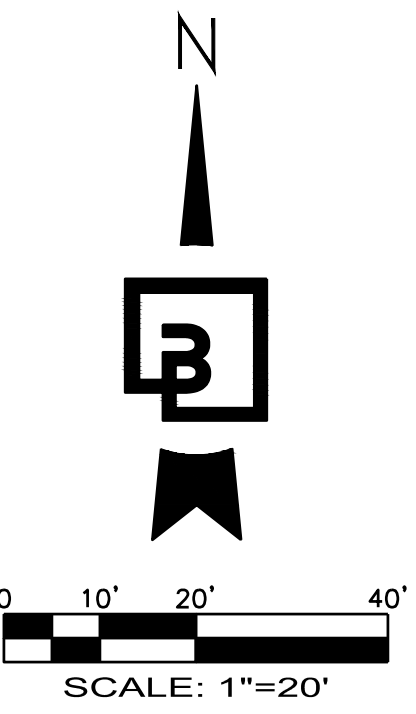
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PRELIM. TESC PLAN
 FOR
CHEVRON SHERWOOD
 SECTION 30, TOWNSHIP 2 SOUTH, RANGE 1 WEST W.M.
 CITY OF SHERWOOD, WASHINGTON COUNTY, OREGON



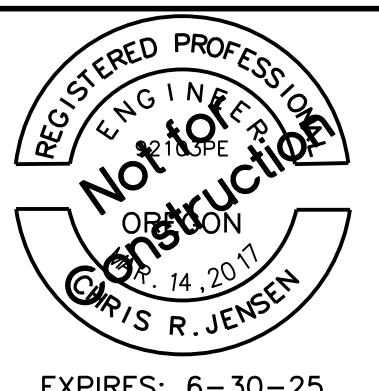
EROSION CONTROL CALLOUTS:

- 1 CONTRACTOR TO INSTALL SILT FENCE AROUND PERIMETER OF SITE AS REQUIRED TO PREVENT SILT-LADEN RUNOFF FROM LEAVING SITE, AND AS DIRECTED BY CITY INSPECTOR.
- 2 CONTRACTOR TO INSTALL STORM DRAIN PROTECTION AT ALL EXISTING AND PROPOSED CATCH BASINS AS REQUIRED TO PREVENT SILT-LADEN WATER FROM ENTERING STORM DRAINAGE SYSTEM PER 2019 CWS STANDARD. DRAWING 905-925. INCLUDE STORM DRAIN PROTECTION AT ALL EXISTING CATCH BASINS DOWNSLOPE AND WITHIN 500 FEET OF DISTURBED OR CONSTRUCTION AREA.
- 3 APPROXIMATE LOCATION OF CONSTRUCTION STAGING AREA. CONTRACTOR TO USE THIS AREA FOR TEMPORARY STOCKPILE STORAGE AND CONCRETE WASHOUT. ADJUST SIZE AND LOCATION OF AREA AS NEEDED DURING CONSTRUCTION.



| No. | Date | By | Chd. | Appr. | Revision |
|-----|---------|-----|------|-------|--------------------|
| 2 | 7/25/23 | JDF | ADW | CRJ | SITE PLAN REVISION |
| 1 | 4/24/23 | JDF | ADW | CRJ | CITY COMMENTS |

Location:
 STORE NO. 92138
 EM3220 w/ (6) MPD'S
 21090 SW PACIFIC HIGHWAY
 SHERWOOD, OREGON



Preparer:

Barghausen Consulting Engineers, Inc.
 18215 72nd Avenue South
 Kent, WA 98032
 425.251.6222
barghausen.com

Client:
Chevron
CHEVRON U.S.A. INC.
 6001 BOLLINGER CANYON RD.
 SAN RAMON, CA 94583
 ph 925.842.1000
www.Chevron.com

DESIGNED BY: JDF DRAWN BY: JDF
 CHECKED BY: ADW APPROVED BY: CRJ
 SCALE: 1" = 20' PROJECT NO: 22558

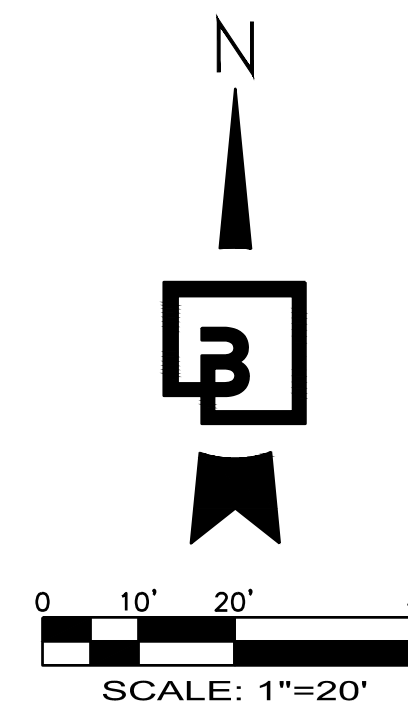
PRELIM. TESC PLAN

SHEET NO:
C2.0

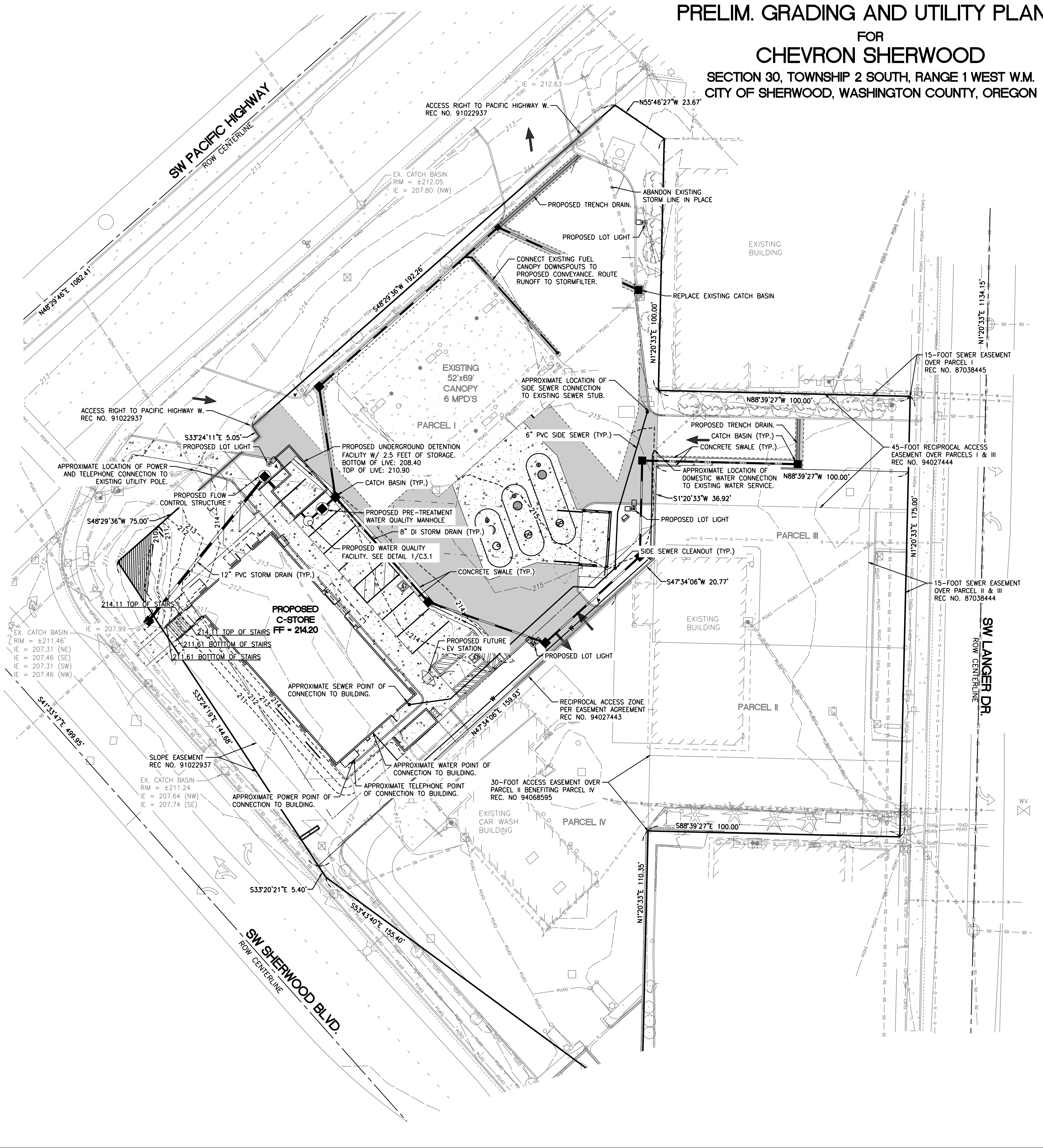
PRELIM. GRADING AND UTILITY PLAN

FOR CHEVRON SHERWOOD

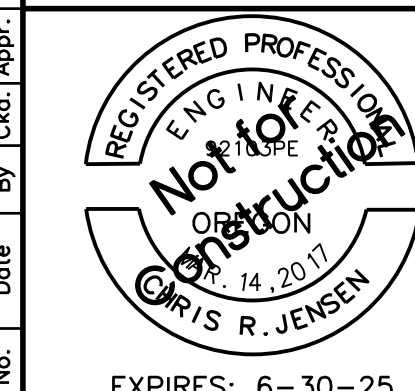
SECTION 30, TOWNSHIP 2 SOUTH, RANGE 1 WEST W.M.
CITY OF SHERWOOD, WASHINGTON COUNTY, OREGON



| GRADING LEGEND: | |
|------------------|----------------|
| PROPOSED CONTOUR | ----- 30 ----- |
| EXISTING CONTOUR | ————— 30 ————— |
| SWALE FLOWLINE | ————— 30 ————— |



| | | | | | |
|-----|---------|-----|------|-------|--------------------|
| 2 | 7/25/23 | JDF | ADW | CRJ | SITE PLAN REVISION |
| 1 | 4/24/23 | JDF | ADW | CRJ | CITY COMMENTS |
| No. | Date | By | Chd. | Appr. | Revision |



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PRELIMINARY

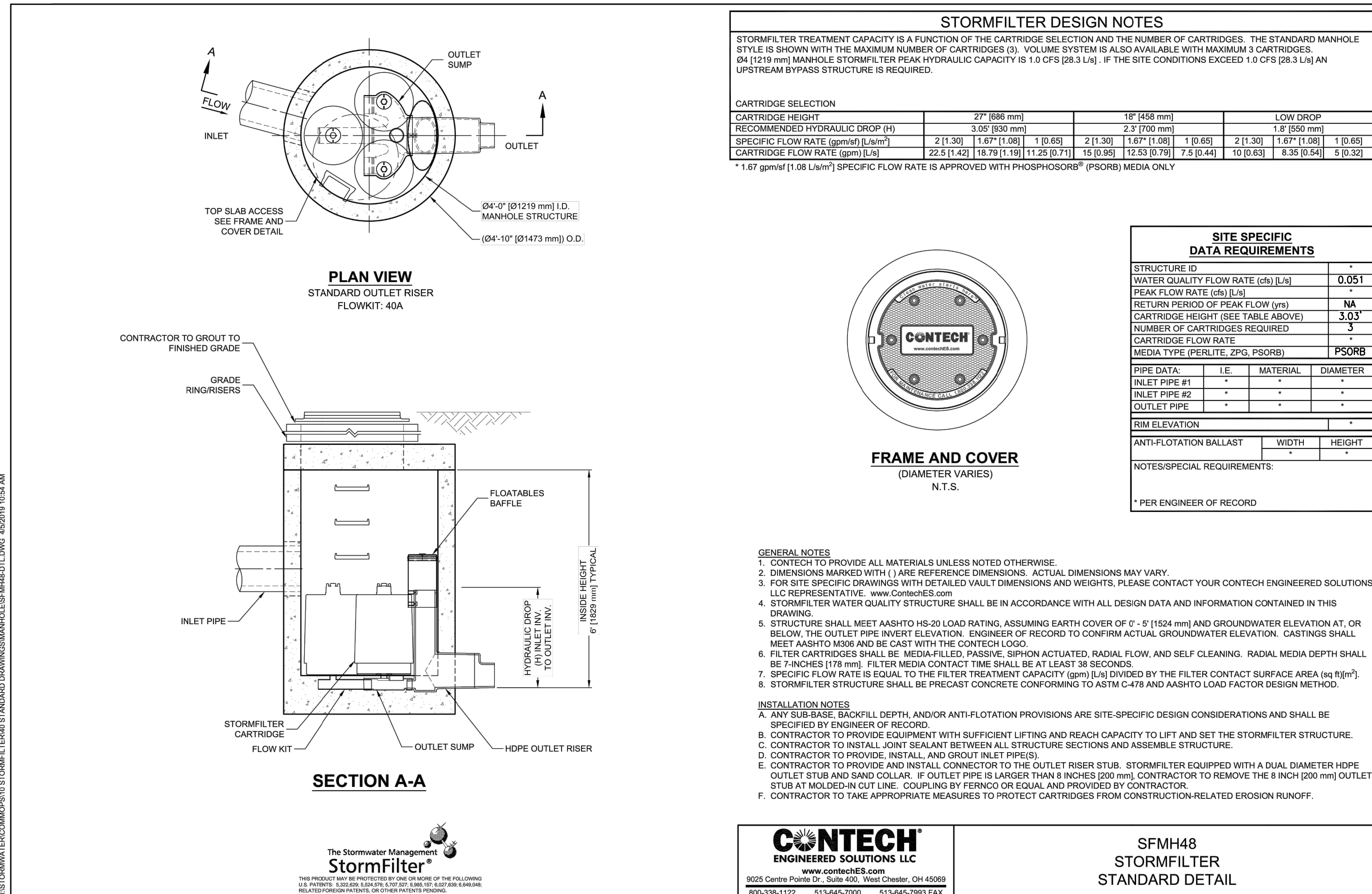
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 CHECKED BY: ADW APPROVED BY: CRJ
 SCALE: 1" = 20' PROJECT NO: 22558
 SHEET TITLE:
PRELIM. GRADING AND UTILITY PLAN
 SHEET NO:
C3.0

PRELIM. DRAINAGE DETAILS

FOR

CHEVRON SHERWOOD

SECTION 30, TOWNSHIP 2 SOUTH, RANGE 1 WEST W.M. CITY OF SHERWOOD, WASHINGTON COUNTY, OREGON



PRELIM. WQ CALCULATIONS

PER THE 2019 CLEAN WATER SERVICES (CWS) DESIGN AND CONSTRUCTION MANUAL SECTION 4.08 THE AREA REQUIRING TREATMENT IS AS FOLLOWS:

AREA = NEW IMPERVIOUS + 3(MODIFIED IMPERVIOUS - (PERMANENTLY REMOVED IMPERVIOUS)), UP TO THE TOTAL EXISTING IMPERVIOUS SURFACE ON THE SITE (26,485 SF)

AREA = 3,731 + 3(11,657 - (1,154)) = 35,240 SF

AREA TREATED = 26,487 (REFER TO DEVELOPED BASIN MAP WITHIN PRELIM STORM REPORT)

THIS PROJECT PROPOSES TO PROVIDED WATER QUALITY TREATMENT BY INSTALLING A NEW STORMFILTER MANHOLE, SEE DETAIL 1/C3.1.

PER THE 2019 CLEAN WATER SERVICES (CWS) DESIGN AND CONSTRUCTION MANUAL SECTION 4.08.5 THE WATER QUALITY FLOW RATE IS AS FOLLOWS:

STORMFILTER (SFMH48)

$$WQ \text{ FLOWRATE} = \frac{(0.36 \text{ IN}) \times (\text{WATER QUALITY BASIN AREA SF}^*)}{(12 \text{ IN/FT}) \times (4 \text{ HR}) \times (60 \text{ MIN/HR}) \times (60 \text{ SEC/MIN})} = 0.051 \text{ CFS}$$

DESIGN WATER QUALITY FLOWRATE = 0.051 CFS ROUNDED 25 GPM

PER THE CONTECH STORMFILTER DETAIL 1/C3.1, 1 - 27" TALL CARTRIDGE PROVIDES 11.25 GPM OF WATER QUALITY FLOWRATE TREATMENT. THEREFORE, THIS DEVELOPMENT PROPOSED A 48" SFMH WITH 3 - 27" TALL CARTRIDGES TO PROVIDED WATER QUALITY TREATMENT FOR THIS DEVELOPMENT.

*PLEASE REFER TO EXHIBIT F OF THE PRELIM STORMWATER REPORT ASSOCIATED WITH THIS DEVELOPMENT FOR THE WATER QUALITY BASIN AREAS.

PROJECT GROUND COVER

| ON-SITE | |
|---|------------------------------|
| NEW IMPERVIOUS SURFACES | 3,731 SF (0.09 AC) |
| MODIFIED IMPERVIOUS SURFACES | 11,657 SF (0.27 AC) |
| NEW AND MODIFIED IMPERVIOUS SURFACES | 15,388 (0.36 AC) |
| EXISTING IMPERVIOUS SURFACES | 12,239 SF (0.28 AC) |
| UTILITY TRENCHING | 1,008 SF (0.02 AC) |
| TOTAL IMPERVIOUS AREA | 28,635 SF (0.66 AC) |
| PERVIOUS AREA | 8,428 SF (0.19 AC) |
| TOTAL AREA | 37,063± SF (0.85± AC) |

1
C3.1
CONTECH STORMFILTER - SFMH48
SCALE: NTS

| No. | Date | By | Chd. | Appr. | Revision |
|-----|---------|-----|------|-------|--------------------|
| 2 | 7/25/23 | JDF | ADM | CRJ | SITE PLAN REVISION |
| 1 | 4/24/23 | JDF | ADM | CRJ | CITY COMMENTS |

Location:
STORE NO. 92138
EM3220 w/ (6) MPD'S
21090 SW PACIFIC HIGHWAY
SHERWOOD, OREGON

REGISTRED PROFESSIONAL ENGINEER
No. 14207
Chris R. Jensen
EXPIRES: 6-30-25

Barghausen Consulting Engineers, Inc.
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Preparer:

PRELIMINARY

Client:

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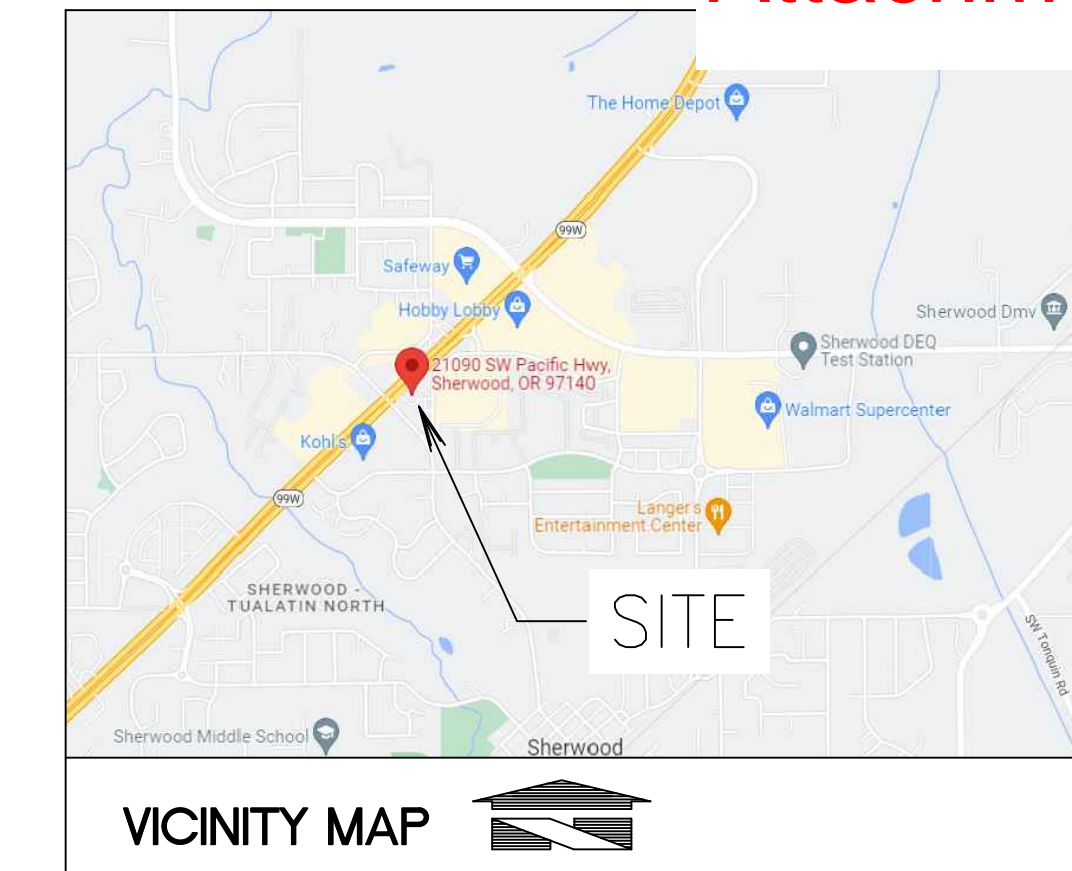
DESIGNED BY: JDF DRAWN BY: JDF
CHECKED BY: ADM APPROVED BY: CRJ
SCALE: N.A. PROJECT NO: 22558

SHEET TITLE:
PRELIM. DRAINAGE DETAILS

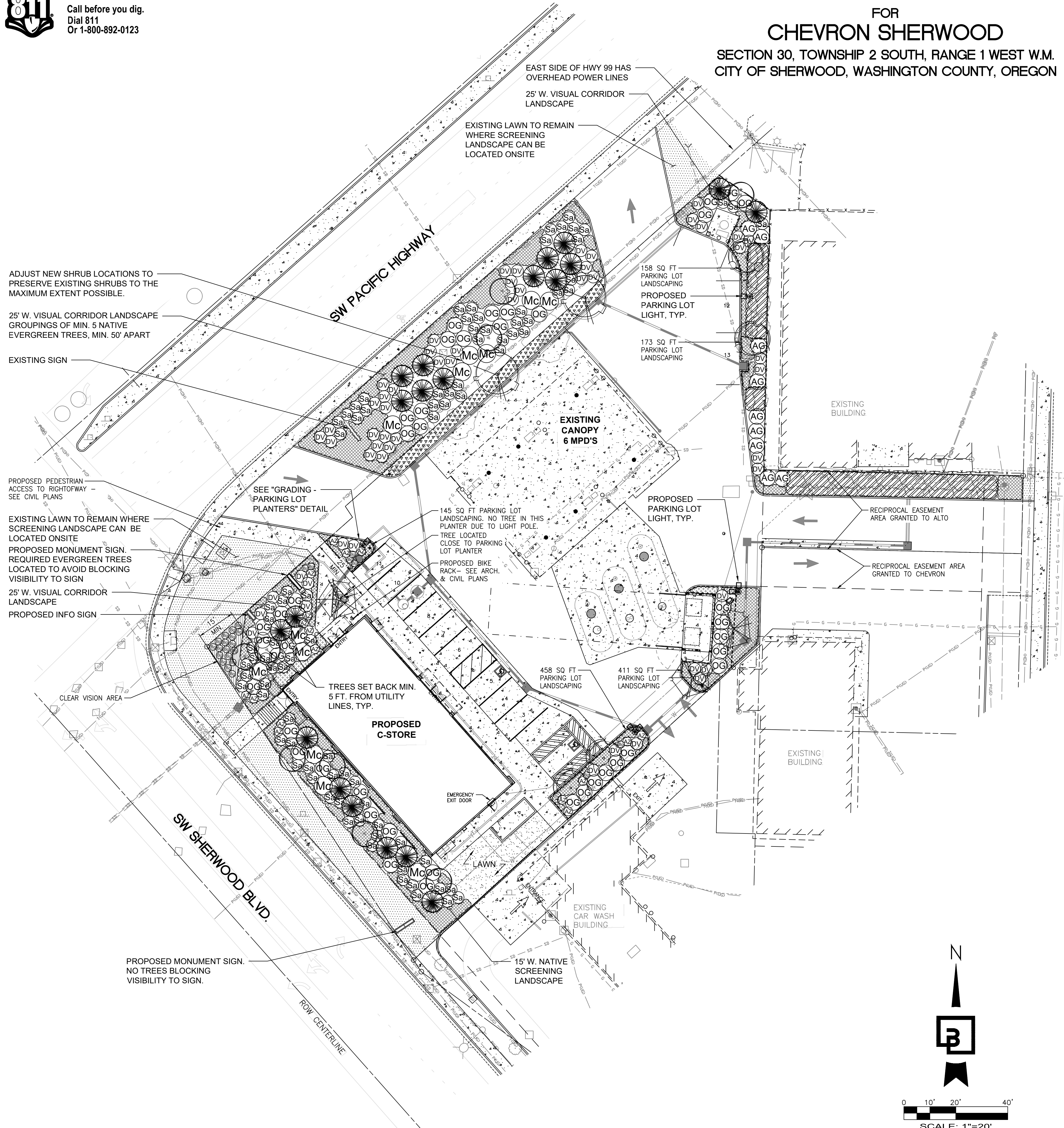
SHEET NO:
C3.1

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PRELIMINARY LANDSCAPE PLAN
FOR
CHEVRON SHERWOOD
SECTION 30, TOWNSHIP 2 SOUTH, RANGE 1 WEST W.M.
CITY OF SHERWOOD, WASHINGTON COUNTY, OREGON



| | |
|--------------|---|
| Location: | STORE NO. 92138 EM3220 w/ (6) MPD'S 21090 SW PACIFIC HIGHWAY SHERWOOD, OREGON |
| Preparer: | Barghausen Consulting Engineers, Inc. 18215 72nd Avenue South Kent, WA 98032 425.251.6222 barghausen.com |
| Client: | Chevron U.S.A. INC. 6001 BOLLINGER CANYON RD. SAN RAMON, CA 94583 ph 925.842.1000 www.Chevron.com |
| DESIGNED BY: | LP/JV |
| DRAWN BY: | LP/TR |
| CHECKED BY: | LP/JV |
| APPROVED BY: | JMV |
| SCALE: | AS NOTED |
| PROJECT NO.: | 22558 |
| SHEET TITLE: | PRELIMINARY LANDSCAPE PLAN |
| SHEET NO.: | L-1 |



LANDSCAPE REQUIREMENTS

SITE ZONE: RETAIL COMMERCIAL - RC
NEIGHBORING ZONING: NORTH: RC; SOUTH: GC/PUD-RC; EAST: RC; WEST: RC
BUILDING DATA: CONVENIENCE STORE (RETAIL): 4,000 SF
LANDSCAPING CHAPTER 16.92: VEHICLE AREA PERIMETER: 10' (MAY BE REDUCED TO 5' IF ADJACENT SITE OF SAME USE HAS 5' MINIMUM, REF. 16.92.030 A.3))
LANDSCAPING TYPE: HIGHWAY BUFFER
LANDSCAPE PROVIDED: 7,138 SF (INCL ADDITIONAL STALL LANDSCAPE)
PARKING LOT LANDSCAPING: 45 SQ FT PARKING LOT LANDSCAPING REQUIRED PER PARKING STALL
14 PARKING STALLS PROPOSED
45' x 14' = 630 SQ FT LANDSCAPING REQUIRED
1,345 SQ FT PROVIDED
PARKING LOT TREES: 14 STALLS PROPOSED
PER 16.92.030.B.5.c.1, AND COMBINATION OF THE FOLLOWING IS REQUIRED:
ONE LARGE TREE PER 4 PARKING STALLS, OR
ONE MEDIUM TREE PER 3 PARKING STALLS, OR
ONE SMALL TREE PER 2 PARKING STALLS
14 / 3 = 4.6 MEDIUM TREES REQUIRED
7 TREES PROVIDED
EACH LANDSCAPE ISLAND TO BE PLANTED WITH AT LEAST 1 TREE (16.92.030.B.6.b)
MINIMUM 5% REQUIRED TO BE EVERGREEN
7 x 0.05% = 1 EVERGREEN TREE REQUIRED
2 EVERGREEN TREES PROVIDED
2 SHRUBS REQUIRED PER PARKING STALL
14 STALLS x 2 SHRUBS/STALL = 28 SHRUBS REQUIRED
MINIMUM 28 SHRUBS PROVIDED
REMAINING AREA TO BE PLANTED WITH GROUND COVER PLANTS.
MULCH DOES NOT COUNT AS GROUND COVER (16.92.030.B.5.c.1 & 2)

SITE INFORMATION

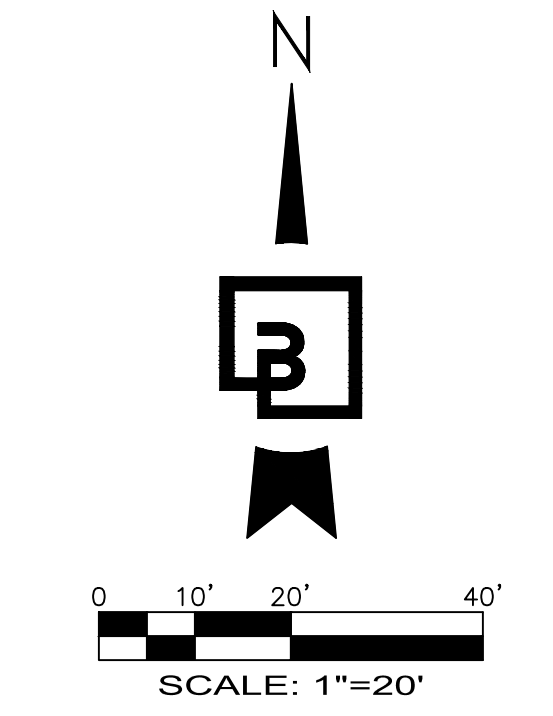
ADDRESS: 21090 SOUTHWEST PACIFIC HIGHWAY
LOT AREA: 37,042± S.F. (0.85 AC)
TAX PARCEL NUMBER: 2S130DA01200
FEMA FLOOD ZONE: THE SITE IS LOCATED WITHIN ZONE X PER FEMA FLOOD MAP41067C0601F, DATED OCTOBER 10, 2018

LANDSCAPE LEGEND

| SYMBOL | DESCRIPTION |
|--------|--|
| | EXISTING TREE TO BE RETAINED. PROTECT DURING CONSTRUCTION |
| | EXISTING LANDSCAPING TO BE RETAINED. RETURN ANY IMPACTED AREAS TO PRE-CONSTRUCTION CONDITION AFTER WORK IS COMPLETED |
| | EXISTING SHRUBS AND GROUND COVER TO BE RETAINED. PROTECT DURING CONSTRUCTION |
| | EXISTING HEDGE TO BE RETAINED |

PLANT SCHEDULE

| SYMBOL | BOTANICAL / COMMON NAMES | CONDITION | SPACING | QUANTITY | REMARKS |
|----------------------|--|----------------------|----------|----------|---|
| TREES: | | | | | |
| | GLEDTISIA TRI. INERMIS 'MORRAINE' / THORNLESS HONEYLOCUST (MEDIUM TREE) | 2" CALIPER B & B | AS SHOWN | 4 | NURSERY GROWN, UN-CUT LEADER, GROWN FOR STREET TREE USE |
| | MAGNOLIA GRANDIFLORA 'EDITH BOGUE' / EVERGREEN MAGNOLIA (MEDIUM TREE) | 2" CALIPER B & B | AS SHOWN | 3 | NURSERY GROWN, UN-CUT LEADER, GROWN FOR STREET TREE USE |
| | ACER GINNALA / AMUR MAPLE (STREET TREE) | 4" DBH B & B 12' HT. | AS SHOWN | 2 | NURSERY GROWN, UN-CUT LEADER, GROWN FOR STREET TREE USE |
| | PSEUDOTSUGA MENZIESII 'FASTIGIATA' / DOUGLAS FIR (NATIVE) | 10' HT. B & B | AS SHOWN | 20 | NURSERY GROWN, UN-CUT LEADER |
| | ACER CIRCINATUM / VINE MAPLE (NATIVE) | 10' HT. B & B | AS SHOWN | 9 | NURSERY GROWN, UN-CUT LEADER |
| SHRUBS: | | | | | |
| | ABELIA GRANDIFLORA / GLOSSY ABELIA (TO MATCH EXIST. HEDGE) | 1-GALLON | AS SHOWN | 9 | FULL AND BUSHY |
| | VIBURNUM DAVIDII / DAVID VIBURNUM | 1-GALLON | AS SHOWN | 55 | FULL AND BUSHY |
| | HELICTOTRICHON SEMP. 'SAPPHIRE' / BLUE OAT GRASS | 1-GALLON | AS SHOWN | 28 | FULL AND BUSHY |
| | MAHONIA AQUIFOLIUM / TALL OREGON GRAPE (NATIVE) | 1-GALLON | AS SHOWN | 42 | FULL AND BUSHY |
| | AZALEA SP. 'HINO-CRIMSON' / EVERGREEN AZALEA | 1-GALLON | AS SHOWN | 17 | FULL AND BUSHY |
| | MYRICA CALIFORNICA (SYN. MORELLA CALIFORNICA) / PACIFIC WAXMYRTLE (NATIVE) | 1-GALLON | AS SHOWN | 12 | FULL AND BUSHY |
| | SYMPHORICARPOS ALBUS / SNOWBERRY (NATIVE) | 1-GALLON | AS SHOWN | 87 | FULL AND BUSHY |
| GROUND COVER: | | | | | |
| | ARCTOSTAPHYLOS UVA-URSI / KINKINNIK (NATIVE) | 1 GALLON | 30" O.C. | AS REQ'D | HOLD 12" FROM BORDERS, SHRUBS, AND TREES |
| | PACHYSANDRA TERMINALIS / KINKINNIK (FOR SHADE) | 1 GALLON | 30" O.C. | AS REQ'D | HOLD 12" FROM BORDERS, SHRUBS, AND TREES |
| | LAWN, SOD OR SEED | | | | |





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PRELIMINARY LANDSCAPE NOTES + DETAILS

FOR CHEVRON SHERWOOD SECTION 30, TOWNSHIP 2 SOUTH, RANGE 1 WEST W.M. CITY OF SHERWOOD, WASHINGTON COUNTY, OREGON

LANDSCAPE PLANTING NOTES AND MATERIALS

SCOPE OF WORK

FURNISH ALL MATERIALS, LABOR, EQUIPMENT AND RELATED ITEMS NECESSARY TO ACCOMPLISH TOPSOIL, TREATMENT AND PREPARATION OF SOIL, FINISH GRADING, PLACEMENT OF SPECIFIED PLANT MATERIALS, FERTILIZER, STAKING, MULCH, CLEAN-UP, DEBRIS REMOVAL, AND 30-DAY MAINTENANCE.

QUALIFICATIONS:
LANDSCAPE CONTRACTOR TO BE SKILLED AND KNOWLEDGEABLE IN THE FIELD OF WORK AND HAVE A MINIMUM OF FIVE (5) YEAR'S EXPERIENCE INSTALLING SIMILAR WORK. CONTRACTOR TO BE LICENSED TO PERFORM THE WORK SPECIFIED WITHIN THE PRESIDING JURISDICTION.

JOB CONDITIONS:
IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW THE SITE AND REPORT ANY DISCREPANCIES TO THE OWNER OR THE OWNER'S REPRESENTATIVES. ALL PLANT MATERIAL AND FINISH GRADES ARE SUBJECT TO APPROVAL BY THE OWNER.

PROTECTION:
SAVE AND PROTECT ALL EXISTING PLANTINGS SHOWN TO REMAIN. DO NOT PLANT UNTIL OTHER CONSTRUCTION OPERATIONS WHICH CONFLICT HAVE BEEN COMPLETED. IF AN IRRIGATION SYSTEM IS TO BE INSTALLED DO NOT PLANT UNTIL THE SYSTEM HAS BEEN INSTALLED, TESTED, AND APPROVED BY THE OWNER. HANDLE PLANTS WITH CARE - DO NOT DAMAGE OR BREAK ROOT SYSTEM, BARK, OR BRANCHES. REPAIR AND/OR REPLACE ITEMS DAMAGED AS A RESULT OF WORK, OR WORK NOT IN COMPLIANCE WITH PLANS AND SPECIFICATIONS, AS DIRECTED BY OWNER AT NO ADDITIONAL COST TO THE OWNER.

REPAIR OF EXISTING PLANTINGS:
DURING THE COURSE OF WORK, REPAIR ALL EXISTING PLANTING AREAS BY PRUNING DEAD GROWTH, RE-ESTABLISHING FINISH GRADE AND RE-MULCHING TO SPECIFIED DEPTH.

REPAIR OF IRRIGATION SYSTEM:
DURING THE COURSE OF WORK, REPAIR ANY DAMAGE TO THE IRRIGATION SYSTEM TO MATCH CONDITIONS PRIOR TO THE DAMAGE.

GUARANTEE:
GUARANTEE ALL PLANT MATERIAL FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE OF THE JOB BY OWNER.

30-DAY MAINTENANCE:
CONTRACTOR TO PROVIDE OWNER WITH A SCOPE OF WORK AT TIME OF INITIAL PROJECT BID TO PROVIDE LANDSCAPE AND IRRIGATION MAINTENANCE FOR 30 DAYS FOLLOWING STORE OPENING. WORK TO INCLUDE MAINTENANCE AS DESCRIBED BELOW, IN PLANTING AND IRRIGATION MAINTENANCE.

SUBMITTALS:
SUBMIT THE FOLLOWING TO THE LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL PRIOR TO THE START OF ANY WORK:

- DOCUMENTATION THAT ALL PLANT MATERIAL HAS BEEN ORDERED.
- TOPSOIL ANALYSIS AND RECOMMENDED AMENDMENTS.
- TREE STAKING AND CUYING MATERIALS.
- ONE (1) QUART SIZE OF TOPSOIL AND MULCH.
- PLANTING SCHEDULE INCLUDING DATES AND TIMES.
- MAINTENANCE INSTRUCTIONS FOR ONE (1) FULL YEAR.

MATERIALS:

PLANT MATERIALS:
PLANT MATERIALS TO BE GRADE NO. 1, SIZED IN ACCORDANCE WITH (AAN) AMERICAN STANDARDS FOR NURSERY STOCK (ANSI Z60.1-2004). PRUNE PLANTS RECEIVED FROM THE NURSERY ONLY UPON AUTHORIZATION BY THE LANDSCAPE ARCHITECT. "B & B" INDICATES BALLED AND BURLAPPED; "CONT." INDICATES CONTAINER; "BR" INDICATES BARE ROOT; "CAL" INDICATES CALIPER AT 6" ABOVE SOIL LINE; "GAL" INDICATES GALLON.

A) SPECIFIED PLANT CANOPY SIZE OR CALIPER IS THE MINIMUM ACCEPTABLE CONTAINER OR BALL SIZE AND ESTABLISHES MINIMUM PLANT CONDITION TO BE PROVIDED.

B) QUALITY:
PLANT MATERIAL TO COMPLY WITH STATE AND FEDERAL LAWS FOR DISEASE INSPECTION, PLANTS TO BE FULLY LIVE, VIGOROUS, WELL FORMED, WITH WELL DEVELOPED FIBROUS ROOT SYSTEMS. ROOT BALLS OF PLANTS TO BE SOLID AND FIRMLY HELD TOGETHER, SECURELY CONTAINED AND PROTECTED FROM INJURY AND DESICATION. PLANTS DETERMINED BY LANDSCAPE ARCHITECT TO HAVE BEEN DAMAGED; HAVE DEFORMITIES OF STEM, BRANCHES, OR ROOTS; LACK SYMMETRY, HAVE MULTIPLE LEADERS OR "Y" CROTCHES LESS THAN 30 DEGREES IN TREES, OR DO NOT MEET SIZE OR ANSI STANDARDS WILL BE REJECTED. PLANT MATERIAL TO BE FROM A SINGLE NURSERY SOURCE FOR EACH SPECIFIED SPECIES/HYBRID. NURSERY SOURCES TO BE THOSE LOCATED IN THE SAME REGION AS THE JOB SITE.

C) SUBSTITUTION:
NO SUBSTITUTION OF PLANT MATERIAL, SPECIES OR VARIETY, WILL BE PERMITTED UNLESS WRITTEN EVIDENCE IS SUBMITTED TO THE OWNER FROM TWO QUALIFIED PLANT BROKERAGE OFFICES. SUBSTITUTIONS WHICH ARE PERMITTED TO BE IN WRITING FROM THE OWNER AND LANDSCAPE ARCHITECT. THE SPECIFIED SIZE, SPECIES AND NEAREST VARIETY, AS APPROVED, TO BE FURNISHED. SUBSTITUTIONS MAY REQUIRE SUBMITTAL TO REVISED LANDSCAPE PLAN TO CITY FOR APPROVAL.

D) LABEL AT LEAST ONE (1) TREE, SHRUB, AND GROUNDCOVER OF EACH VARIETY WITH A SECURELY ATTACHED WATERPROOF TAG BEARING LEGIBLE DESIGNATION OF BOTANICAL AND COMMON NAMES.

E) DELIVER PLANT MATERIAL AFTER PREPARATION OF PLANTING AREAS HAVE BEEN COMPLETED AND PLANT IMMEDIATELY. IF PLANTING IS DELAYED MORE THAN SIX (6) HOURS AFTER DELIVERY, SET MATERIAL IN SHADE, PROTECT FOR WEATHER AND MECHANICAL DAMAGE, AND KEEP ROOT BALLS MOIST BY COVERING WITH MULCH, BURLAP OR OTHER ACCEPTABLE MEANS OF RETAINING MOISTURE.

SOIL PREPARATION:
TOPSOIL, AMENDMENT, AND BACKFILL, ARE GENERAL REQUIREMENTS FOR ALL LANDSCAPE AREAS, UNLESS NOTED OTHERWISE ON THE PLANS. ANY EXISTING CLAY OR SANDY SOILS SHALL BE AUGMENTED WITH AN ORGANIC SUPPLEMENT. SOIL AMENDMENTS AND FERTILIZER NOTED BELOW ARE TO BE USED FOR BID PRICE BASIS ONLY. SPECIFIC AMENDMENTS AND FERTILIZERS WILL BE MADE AFTER SOIL SAMPLES ARE LABORATORY TESTED BY THE CONTRACTOR. PROVIDE CHANGE ORDER FOR ADDITIONAL OR REDUCTION OF MATERIALS REQUIRED OR NOT REQUIRED BY THE SOILS REPORT.

SOIL FERTILITY AND AGRICULTURAL SUITABILITY ANALYSIS:
AFTER ROUGH GRADING AND PRIOR TO SOIL PREPARATION, CONTRACTOR TO OBTAIN TWO REPRESENTATIVE SOIL SAMPLES, FROM LOCATIONS AS DIRECTED BY THE LANDSCAPE ARCHITECT, TO A SOIL TESTING LABORATORY. SUBMIT RESULTS TO LANDSCAPE ARCHITECT FOR REVIEW. TESTS TO INCLUDE FERTILITY AND SUITABILITY ANALYSIS WITH WRITTEN RECOMMENDATIONS FOR SOIL AMENDMENT, FERTILIZER, CONDITIONERS, APPLICATION RATES, AND POST-CONSTRUCTION MAINTENANCE PROGRAM. TESTS TO BE CONTRACTED WITH AND PAID FOR BY THE CONTRACTOR.

- TOPSOIL:
CONTRACTOR IS RESPONSIBLE FOR SUPPLYING ALL TOPSOIL AND FOR DETERMINING THE VOLUME OF TOPSOIL REQUIRED PER THE INFORMATION ON PLANS AND NOTED HERE-IN. CONTRACTOR IS RESPONSIBLE FOR ANY NECESSARY WEED CONTROL RESULTING FROM CONTAMINATED OFF SITE SOURCES.
- TOPSOIL TO CONSIST OF 1/3 BY VOLUME SANDY LOAM, 1/3 BY VOLUME COMPOSTED GARDEN MULCH, AND 1/3 BY VOLUME COARSE WASHED SAND OR EQUIVALENT.

D) TOPSOIL PREPARATION AND INSTALLATION:

- VERIFY SUBGRADES TO -7 INCHES IN LANDSCAPE AREAS AND -18/24 INCHES IN PARKING LOT ISLANDS BELOW FINISH ELEVATION, OR AS INDICATED ON PLANS. THIS ACCOMMODATES, TOPSOIL, AMENDMENTS, AND MULCH.
 - ERADICATE ANY SURFACE VEGETATION ROOTED IN THE SUB-GRADE PRIOR TO SUB-GRADE PREPARATION.
 - THOROUGHLY SCARIFY AND RIP ALL LANDSCAPE SUB-GRADES WHICH HAVE BECOME COMPACTED TO A DEPTH OF 12 INCHES WITH MULTIPLE PASSES, 90 DEGREES TO EACH OTHER. SCARIFY AREAS INACCESSIBLE TO MECHANIZED EQUIPMENT AND AROUND EXISTING PLANTINGS NOTED TO REMAIN WITH HAND TOOLS.
 - REMOVE SOIL LUMPS, ROCK, VEGETATION AND/OR DEBRIS LARGER THAN 2 INCHES FROM ALL SUB-GRADE PRIOR TO PLACEMENT OF SPECIFIED TOPSOIL.
 - REMOVE ANY ASPHALT EXTENDING BEYOND 6 INCHES FROM CURBS INTO ADJACENT LANDSCAPE AREAS.
 - PARKING LOT PLANTER ISLANDS TO BE OVER EXCAVATED BY BACKHOE. REMOVE PAVING WASTE, GRAVEL BASE MATERIAL AND UNDERLYING SUBSOIL TO 18 INCHES BELOW TOP OF PAVING. SCARIFY AND OVER EXCAVATE PLANT PIT BOTTOM 12 INCHES TO MINIMIZE STRUCTURAL COMPACTION.
- E) TOPSOIL PLACEMENT:
- PROVIDE A TOTAL FINISH COURSE OF 4 INCHES OF TOPSOIL FOR LANDSCAPE AREAS AND 18/24 INCHES IN PARKING LOT ISLANDS.
 - IN ALL LANDSCAPE AREAS, PLACE 2 INCHES (6 INCHES IN PARKING LOT ISLANDS) OF TOPSOIL MIX WITH AMENDMENTS OVER THE PREPARED SUB-GRADE AND THOROUGHLY ROTOTILL WITH MULTIPLE PASSES INTO THE TOP 6 INCHES OF SUB-GRADE FOR A TOTAL DEPTH OF 8 INCHES IN LANDSCAPE AREAS (12 INCHES IN PARKING LOT ISLANDS). PLACE AN ADDITIONAL 2 INCH LIFT OF TOPSOIL, IN ALL LANDSCAPE AREAS AND A MINIMUM 12 INCH LIFT IN ALL PARKING LOT ISLANDS, FOR THE FINAL TOPSOIL DEPTH OF 4 INCHES IN LANDSCAPE AREAS AND 18/24 INCHES IN PARKING LOT ISLANDS.
 - PLACE ADDITIONAL TOPSOIL AND SOIL MIX AS REQUIRED TO MEET FINISH ELEVATIONS.

ORGANIC MULCH (TOPDRESSING):
ONE-HALF-INCH (1/2"), HEMLOCK/FIR BARK. FINE TEXTURED AND DARK BROWN IN COLOR.

STAKES:
2-INCH DIAMETER BY 8-FOOT MINIMUM LODGEPOLE PINE STAKES.

GUY MATERIAL:
1-INCH WIDE POLYETHYLENE CHAIN LOCK TYPE TIES; OR, 3/8" DIAMETER RUBBER. NO WIRE.

EXECUTION:

CONTAMINANTS:
VERIFY THAT ALL SOIL CONTAMINANTS (E.G., PAINT, SEALANTS, SOLVENTS, OILS, GREASES, CONCRETE/ASPHALT SPOILS, ETC.) HAVE BEEN SATISFACTORY REMOVED FROM ALL PLANTING AREAS. DO NOT BEGIN WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

FINISH GRADES:
FINE GRADE AND REMOVE ROCKS, DEBRIS, AND FOREIGN OBJECTS OVER 2 INCHES DIAMETER FROM TOP SURFACE OF PREPARED LANDSCAPE AREAS. FINISH ELEVATIONS TO BE DEFINED AS 3 INCHES BELOW CURBS, WALKS AND/OR OTHER ADJACENT HARDSCAPE FOR ALL PLANTING BED AREAS AND 1-INCH BELOW CURBS, WALKS AND/OR OTHER ADJACENT HARDSCAPE FOR ALL LAWN AREAS. FINISH GRADE REFER TO GRADES PRIOR TO INSTALLATION OF MULCH OR LAWN. ALL FINISH GRADES TO BE SMOOTH EVEN GRADES, LIGHTLY COMPACTED, AS SHOWN ON THE PLAN AND DETAILED. PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS AND STRUCTURES. SITE CIVIL DRAWINGS IDENTIFY FINAL ELEVATIONS. MOISTEN PREPARED AREAS BEFORE PLANTING IF SOIL IS DRY. WATER THOROUGHLY AND ALLOW SURFACE TO DRY BEFORE PLANTING. DO NOT CREATE MUDDY SOIL.

TREES AND SHRUBS:
ARRANGE TREES AND SHRUBS ON SITE IN PROPOSED LOCATIONS PER DRAWINGS. EXCAVATE PIT, PLANT AND STAKE OR GUY, AS CALLED OUT AND DETAILED. ALL TREES, SHRUBS, AND SUPPORTS TO STAND VERTICAL. BACKFILL SHALL BE PIT SPOILS. SETTLE BACKFILL USING WATER ONLY. NO MECHANICAL COMPACTION.

GROUNDCOVERS:
EXCAVATE PITS TO A MINIMUM OF 3 INCHES BELOW, AND TWICE THE ROOT BALL DIAMETER, WATER THOROUGHLY AND TAKE CARE TO ENSURE THAT ROOT CROWN IS AT PROPER GRADE, AS DETAILED.

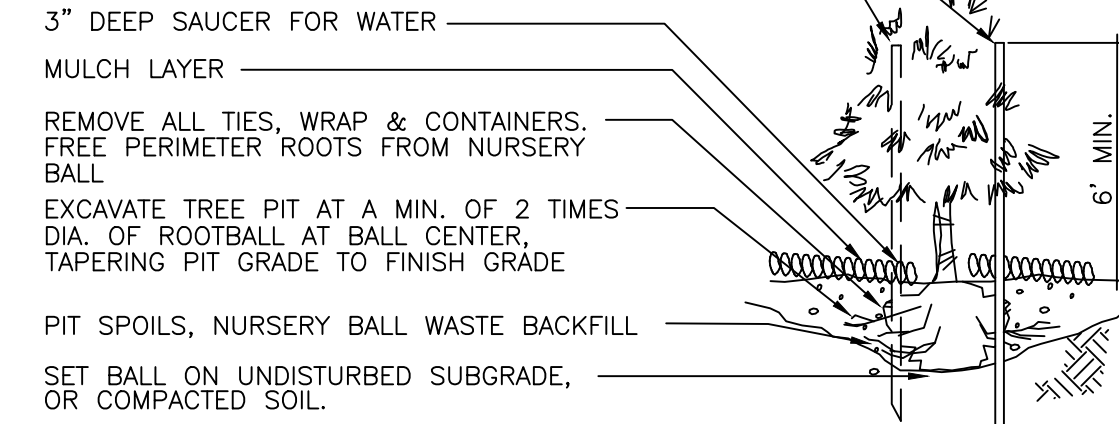
MULCH:
MULCH ALL LANDSCAPE AREAS NOT COVERED BY LAWN AND/OR SEED. APPLY SUFFICIENT QUANTITY TO PROVIDE A 2-INCH DEPTH.

CLEANUP AND PROTECTION:
DURING LANDSCAPE WORK, KEEP ALL PAVEMENT CLEAN AND WORK AREAS IN AN ORDERLY CONDITION. PROTECT LANDSCAPE WORK AND MATERIALS FROM DAMAGE DUE TO LANDSCAPE OPERATIONS AND TRESPASSERS. MAINTAIN PROTECTION DURING INSTALLATION AND MAINTENANCE PERIOD. TREAT, REPAIR, OR REPLACE DAMAGE LANDSCAPE WORK AS DIRECTED BY THE OWNER.

PLANTING MAINTENANCE:
PROVIDE FULL MAINTENANCE BY SKILLED EMPLOYEES OF LANDSCAPE INSTALLERS. CONTRACTOR TO MAINTAIN PLANTINGS THROUGH COMPLETED INSTALLATION, AND UNTIL ACCEPTANCE OF LANDSCAPE INSTALLATION. PLANTING MAINTENANCE TO INCLUDE WATERING, WEEDING, CULTIVATING, TIGHTENING AND REPAIRING OF TREE GUYS, RESETTING PLANTS TO PROPER GRADES OR POSITION, RE-ESTABLISHING SETTLED GRADES; AND MOWING LAWNS WEEKLY AFTER LAWN ESTABLISHMENT. HERBICIDE IS NOT RECOMMENDED FOR ONE YEAR FOLLOWING LANDSCAPE INSTALLATION. INCLUDED IS REPLACEMENT OF DEAD PLANTS AND PLANTS SHOWING LOSS OF 40 PERCENT OR MORE OF CANOPY.

IRRIGATION MAINTENANCE:
THE IRRIGATION SYSTEM TO BE MAINTAINED INCLUDING ADJUSTMENTS FOR BALANCED WATER DISTRIBUTION AND PRECIPITATION. FAILED OR MALFUNCTIONING IRRIGATION EQUIPMENT SHALL BE REPLACED AND/OR CORRECTED. PLANTING AND IRRIGATION MAINTENANCE TO INCLUDE THOSE OPERATIONS NECESSARY TO THE PROPER GROWTH AND SURVIVAL OF ALL PLANT MATERIALS. CONTRACTOR TO PROVIDE THIS WORK IN ADDITION TO SPECIFIC WARRANTY/GUARANTEES.

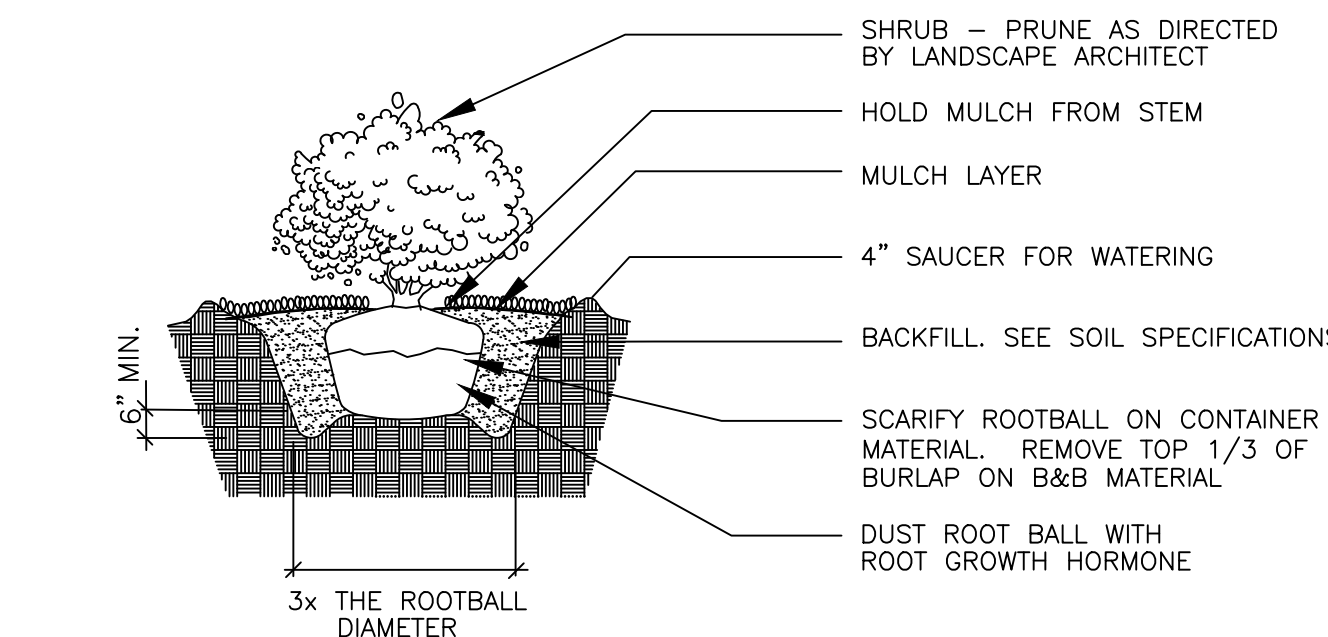
(2) LODGEPOLE STAKES; TIE AT APPROX. 1/3 TO 1/2 HEIGHT OF TREE WITH FLEXIBLE RUBBER TIE IN FIGURE EIGHT PATTERN. STAKES AND TREE TO BE PLUMB



NOTE:
LIGHT FERTILIZER OVER PLANTING BED AFTER BACKFILL ONLY; NO FERTILIZER IN PLANTING PIT.
WORK PERIMETER ROOTS FREE OF NURSERY BALL. BALL & PIT TO BE COURSELY SCARIFIED.

EVERGREEN TREE PLANTING/STAKING DETAIL

NOT TO SCALE



NOTE:
APPLY ADDITIONAL 4 OZ. 8-32-16 FERTILIZER INTO TOP 2" OF PLANTING MIX.
PLANT SHRUB HIGH ENOUGH TO ALLOW POSITIVE DRAINAGE AWAY FROM ROOTBALL. ROUGHEN ALL SURFACES OF PIT.

SHRUB PLANTING DETAIL

NOT TO SCALE

PRUNE DAMAGED TWIGS AFTER PLANTING
PLACE IN VERT. POSITION: DOUBLE LEADERS WILL BE REJECTED

NOTE:
KEEP ROOTBALL MOIST AND PROTECTED AT ALL TIMES.
HOLD CROWN OF ROOTBALL AT OR JUST ABOVE FINISH GRADE.
PROTECT TRUNK AND LIMBS FROM INJURY.
BACKFILL TO BE SETTLED USING WATER ONLY - NO MECHANICAL COMPACTION.
REMOVE ALL WRAP, TIES & CONTAINERS, REGARDLESS OF MATERIAL.

(2) LODGEPOLE STAKES, PLUMB WITH ELASTIC CHAIN-LOCK TYPE OR RUBBER GUYS TIED IN FIGURE EIGHT; REMOVE AFTER ONE GROWING SEASON

PROTECTIVE WRAPPING DURING SHIPMENT TO SITE AND INSTALLATION REMOVE AT COMPLETION OF PLANTING
LAWN PLANTING; PROVIDE 3" Ø "NO GRASS" TREE RING AND 2" DEEP MULCH LAYER IN WELL. HOLD BACK FROM TRUNK 8" TO 10"

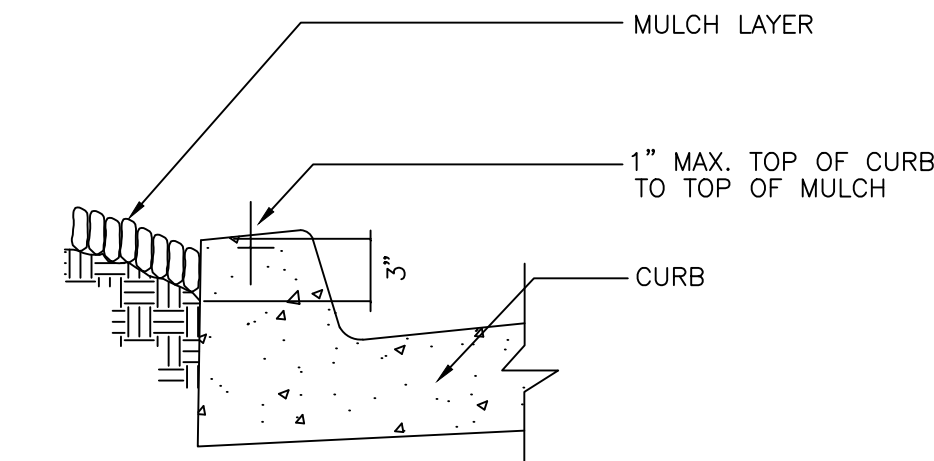
FINISH GRADE
PREPARE PLANTING BED PER SPEC'S: AT MIN., LOOSEN AND MIX SOIL TO 18" OR DEPTH OF ROOTBALL AND 2 TIMES BALL DIAMETER

REMOVE ALL WRAP, TIES, AND CONTAINERS
SCORE ROOTBALL AND WORK NURSERY SOIL AWAY FROM PERIMETER ROOTS
SET BALL ON UNDISTURBED BASE OR COMPACTED MOUND UNDER BALL

PENETRATION TO SUBBASE (+) 24"

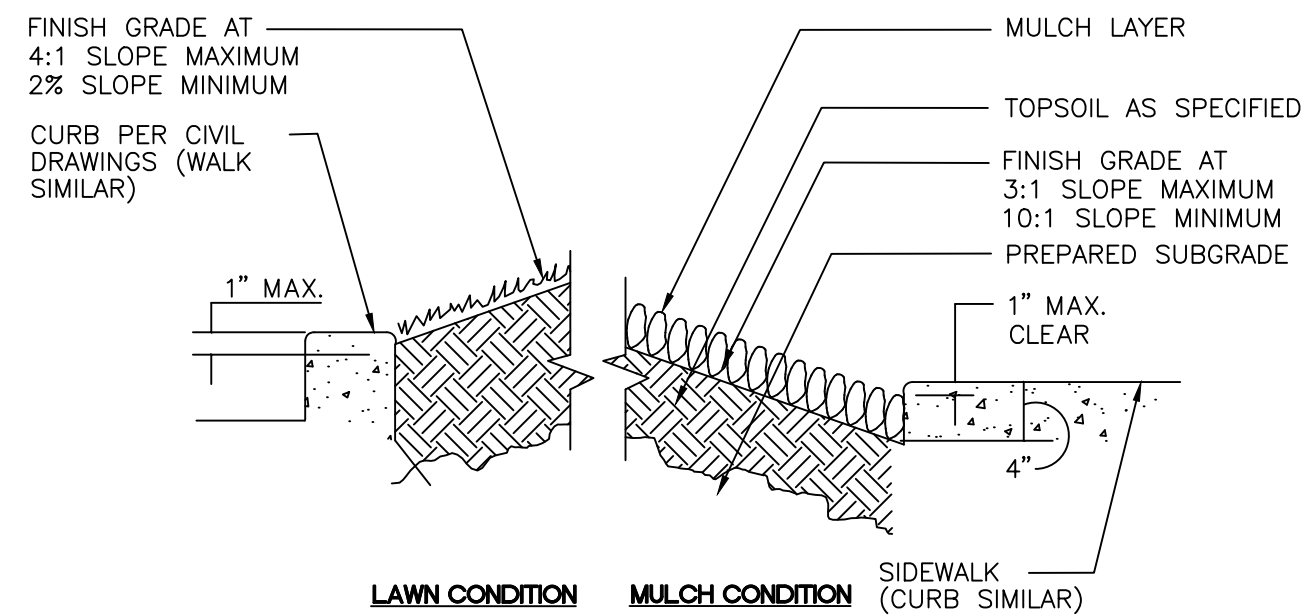
DECIDUOUS TREE PLANTING/STAKING DETAIL

NOT TO SCALE



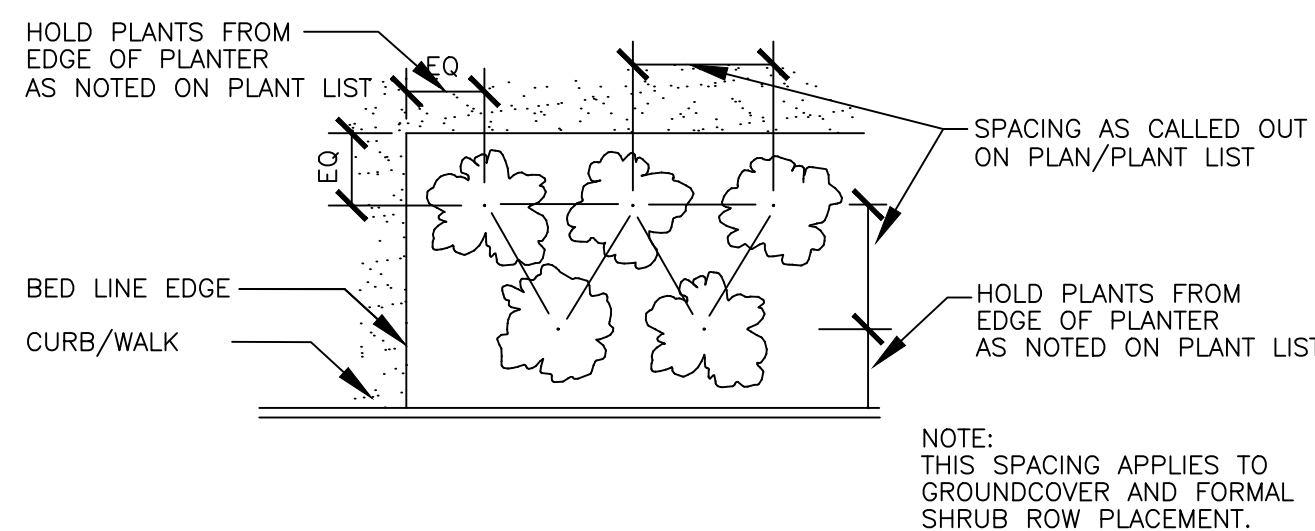
MULCH AT CURB DETAIL

NOT TO SCALE



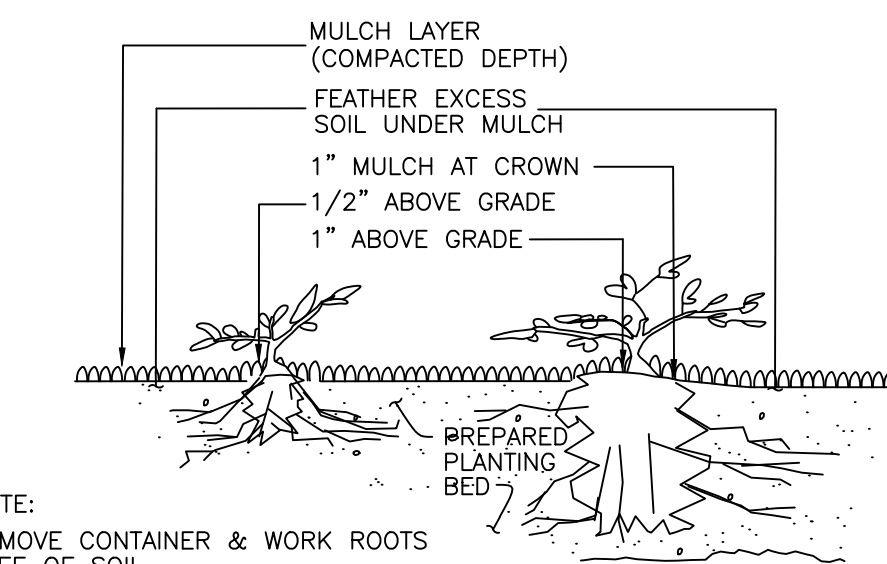
PLANTER SECTION DETAIL

NOT TO SCALE



PLANT MATERIAL SPACING DETAIL

NOT TO SCALE

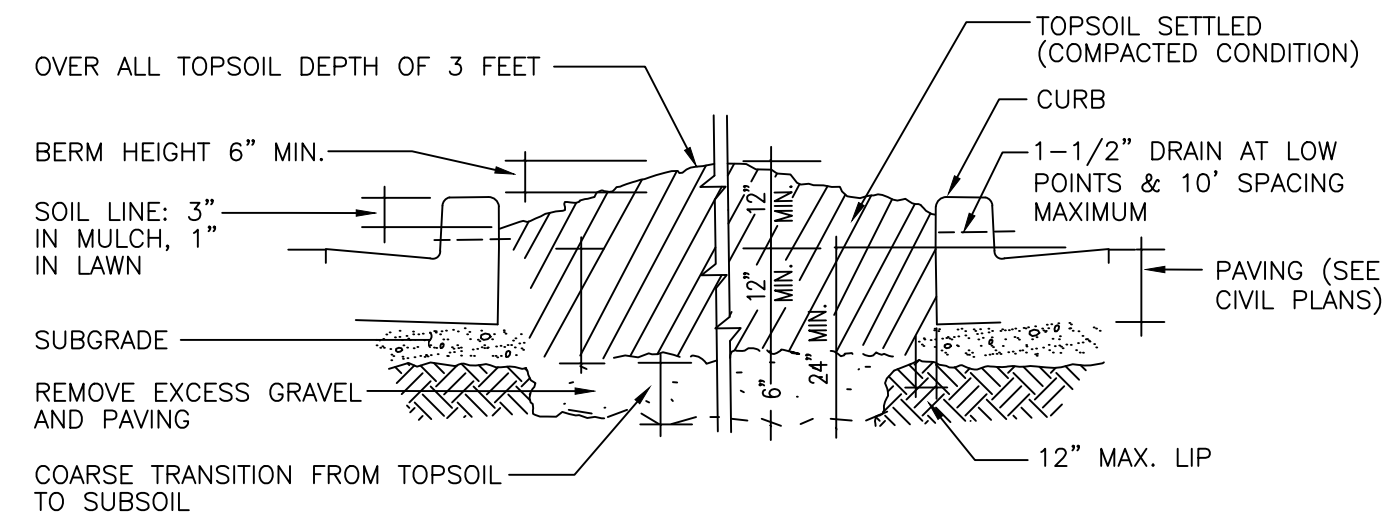


NOTE:
REMOVE CONTAINER & WORK ROOTS FREE OF SOIL.
BACKFILL TO BE SETTLED USING WATER ONLY
SEE PLANT LIST FOR PLANT SPACING

LESS THAN 1 GAL (PLANTED BEFORE MULCH)
1 GAL CONTAINER and LARGER (PLANTED BEFORE MULCH)

GROUNDCOVER PLANTING DETAIL

NOT TO SCALE



NOTE:
OVER EXCAVATE PARKING LOT PLANTERS TO LOOSEN COMPACTED SUBBASE

GRADING • PARKING LOT PLANTERS DETAIL

NOT TO SCALE

DEDUCT ALT #1: IF LANDSCAPE CONTRACTOR CAN DEMONSTRATE THAT PLANTER ISLANDS ARE NOT FULL OF NON-SOIL MATERIALS (CONCRETE WASTE, LUMBER, ROAD BASE, GRAVEL), FULL EXCAVATION AND REPLACE WITH 18"-21" OF TOPSOIL CAN BE ELIMINATED AND IN ITS PLACE, 6" OF COMPOST CAN BE PLACED ON SUB-GRADE AND CULTIVATED INTO TOP 12" OF EXISTING SOIL. TOP OF FINISH GRADE AND DEPTH OF MULCH STILL APPLIES

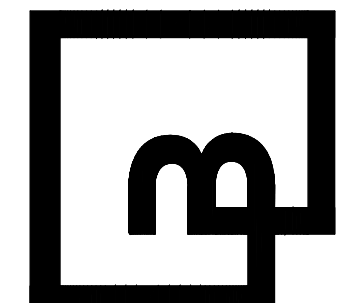
| No. | Date | By | Appr. | Revision |
|-----|---------|-------|-------|----------------------------|
| 1 | 7/28/23 | LP/JV | JMV | PRELIMINARY LANDSCAPE PLAN |

Location:

STORE NO. 92138
EM3220 w/ (6) MPD'S
21090 SW PACIFIC HIGHWAY
SHERWOOD, OREGON



Barghausen Consulting Engineers, Inc.
18215 72nd Avenue South
Kent, WA 98032
425.251.6222
barghausen.com



Preparer:

PRELIMINARY

Chevron
CHEVRON U.S.A. INC.
6001 BOLLINGER CANYON RD.
SAN RAMON, CA 94583
www.Chevron.com
ph 925.842.1000

Client:

DESIGNED BY: JMV DRAWN BY: TCR
CHECKED BY: JMV APPROVED BY: JMV
SCALE: PROJECT NO: 22558

SHEET TITLE:

PRELIMINARY LANDSCAPE NOTES & DETLS

SHEET NO:

L-2



NOTICE OF PUBLIC HEARING
LU 2022-030 MMSP
MAJOR MODIFICATION & SITE PLAN REVIEW
CHEVRON
September 12, 2023 AT 7PM

Public Notice is hereby given that the City of Sherwood Planning Commission will conduct a public hearing on **Tuesday September 12, 2023 at 7:00 PM** on the proposal described below. Public testimony can be provided in writing prior to hearing or in person or by telephone during the live hearing. The hearing will be held at Sherwood City Hall (Community Room, 1st Floor), 22560 SW Pine St., Sherwood, OR and broadcast live on the City's YouTube channel at <https://www.youtube.com/user/CityofSherwood>

Proposal: An application for a Type IV – Major Modification and Site Plan Review to redevelop an existing vehicle fueling station with a 3,600 square foot retail commercial store, new Underground Storage Tanks (UST), and other associated site improvements. The subject property is 0.85 acres in size, zoned RC (Retail Commercial), and located at 21090 SW Pacific Highway (Washington County Assessors Map and Tax Lot number 2S130DA/1200).

Case File No.: LU 2022-030 MMSP

Tax Map/Lot: 2S130DA01200

Location: East side of SW Pacific Highway W, North of Southwest Sherwood Boulevard.

Address: 21090 SW Pacific Highway, Sherwood, OR, 97140

Applicant

Barghausen Consulting Engineers, Inc
18215 72nd Avenue South
Kent, WA 98032

Owner

Chevron U.S.A Inc.
P.O. Box #6004
San Ramon, CA 94583

Staff Contact: Hugo Agosto, Associate Planner HamblinAgostoh@sherwoodoregon.gov 503-625-4271

Find out about the project on the City's website:

<https://www.sherwoodoregon.gov/planning/project/lu-2022-030-mm-sp-chevron-0>

Application materials are also available for review at the city offices or can be copied for a reasonable cost at City Hall, 22560 SW Pine Street. The City Planning Staff report on this matter will be available for review at least seven (7) days in advance of the hearing. If you have any questions, please call Hugo Agosto at (503) 625-4271.

The following chapters of the Sherwood Zoning and Community Development Code (SZCDC) are applicable to this proposal: Chapter 16.22 Commercial Land Use Districts; Chapter 16.48 - Non-Conforming Uses; Chapter 16.58 Clear Vision and Fence Standards; Chapter 16.70 – General Provision; Chapter 16.66 Transportation Facilities and Improvements; Chapter 16.72 Procedures for Processing Development Permits; Chapter 16.90 Site Planning; Chapter 16.92 Landscaping ; Chapter 16.94 Off-Street Parking and Loading ; Chapter 16.96 On-Site Circulation ; Chapter 16.98 On-Site Storage ; Chapter 16.106 Transportation Facilities ; Chapter 16.108 Improvement Plan Review ; Chapter 16.110 Sanitary Sewers ; Chapter 16.112 Water Supply ; Chapter 16.114 Storm Water; Chapter 16.116 Fire Protection; Chapter 16.118 Public and Private Utilities; Chapter 16.142 Parks, Trees, and Open Spaces; Chapter 16.146 Noise; Chapter 16.148 Vibrations ; Chapter 16.150 Air Quality ; Chapter 16.152 Odors ; Chapter 15.154 Heat and Glare

How to Provide Testimony: Public testimony may be provided in writing, in person, or by phone.

- **In Writing:** Provide testimony in writing, prior to the hearing, via email to reschc@sherwoodoregon.gov or regular mail to Planning Department, Sherwood City Hall, 22560 SW Pine St., Sherwood, OR 97140. Must be received at least 1 hour prior to the hearing.
- **In Person:** Provide testimony in-person during hearing at Sherwood City Hall (Community Room, 1st Floor), 22560 SW Pine St., Sherwood, OR 97140
- **By Telephone:** Provide testimony by telephone during the hearing via ZOOM. Contact Colleen Resch at least 24-hours in advance of the scheduled hearing to obtain ZOOM access instructions at reschc@sherwoodoregon.gov or 503-625-4223.

All testimony must clearly state that it is intended as testimony for a public hearing, the specific public hearing topic for which it is intended. Written testimony must be received at least 1 hour in advance of the scheduled meeting time.

Public testimony should be limited to the findings of fact in the Staff Report, the above criteria, or other City or State applicable land use standards. Only those persons who provide testimony may appeal the decision. Failure to raise an issue accompanied by statements or evidence sufficient to afford the decision-maker and the parties an opportunity to respond to the issue will preclude appeal, on said issue, to the Appeal Authority or State Land Use Board of Appeals (LUBA).

Notice to mortgagee, lien holder, vendor or seller: The City of Sherwood requests that you promptly forward this notice to the purchaser if this notice is received.



NOTICE OF APPLICATION AND REQUEST FOR COMMENTS

Notice Date:
Please submit comments by:

August 9, 2023
August 24, 2023

Notice is hereby given that the City of Sherwood Planning Commission will conduct a public hearing on **Tuesday, September 12, 2023, at 7:00 PM** at the Sherwood City Hall, 22560 SW Pine St, Sherwood, Oregon (first floor).

| | | | |
|-----------------------|---|---------------------------|---|
| Case File No.: | LU 2022-030 MMSP | Tax Map/Lot: | 2S130DA/1200 |
| Address: | 21090 SW Pacific Hwy. | Property Location: | East of Pacific Hwy. North of SW Sherwood Blvd. |
| Applicant: | Barghausen Consulting Engineers, Inc 18215 72 nd Avenue South Kent, WA 98032 | Property Owner: | Chevron U.S.A INC. PO BOX 285 Houston, TX 77001 |
| Contact: | Andrew Bowman, 720-320-9539 | | |

Staff Contact: Hugo Agosto, Associate Planner 503-625-4271 HamblinAgostoh@sherwoodoregon.gov

Proposal: An application for a Major Modification and Type IV Site Plan Review to develop a 3,600 square foot retail commercial store on an existing Vehicle fueling station with new Underground Storage Tanks (UST) and associated site improvements. The subject property is 0.85 acres in size, zoned RC (Retail Commercial), and located at 21090 SW Pacific Highway (Washington County Assessors Map and Tax Lot number 2S130DA/1200).

Project Information: <https://www.sherwoodoregon.gov/planning/project/lu-2022-030-mm-sp-chevron-0>

Applicable Code Criteria: Sherwood Zoning and Community Development Code: SZCDC Chapter 16.22 Commercial Land Use Districts; Chapter 16.48 - Non-Conforming Uses; Chapter 16.58 Clear Vision and Fence Standards; Chapter 16.70 – General Provision; Chapter 16.66 Transportation Facilities and Improvements; Chapter 16.72 Procedures for Processing Development Permits; Chapter 16.90 Site Planning; Chapter 16.92 Landscaping ; Chapter 16.94 Off-Street Parking and Loading ; Chapter 16.96 On-Site Circulation ; Chapter 16.98 On-Site Storage ; Chapter 16.106 Transportation Facilities ; Chapter 16.108 Improvement Plan Review ; Chapter 16.110 Sanitary Sewers ; Chapter 16.112 Water Supply ; Chapter 16.114 Storm Water; Chapter 16.116 Fire Protection; Chapter 16.118 Public and Private Utilities; Chapter 16.142 Parks, Trees, and Open Spaces; Chapter 16.146 Noise; Chapter 16.148 Vibrations ; Chapter 16.150 Air Quality ; Chapter 16.152 Odors ; Chapter 15.154 Heat and Glare.

Note: In order for comments to be considered in the City’s staff report, comments must be received by August 24, 2023. Comments will be accepted up to the close of the public hearing.

COMMENTS – LU 2022-030 MMSP

- No comment.
- We encourage approval of this request.
- Please address the following concerns should this application be approved:

- We encourage denial of this request for the following reasons:

Please feel free to attach additional sheets as needed to complete your comments.

Hugo Hamblin-Agosto

From: Hugo Hamblin-Agosto
Sent: Wednesday, August 9, 2023 5:59 PM
To: Winfree, Ryan; henry.english@pgn.com; Travis.Smallwood@pgn.com; humphreysj@CleanWaterServices.org; spieringm@CleanWaterServices.org; LUComments@cleanwaterservices.org; kmenroachmentspacific@kindermorgan.com; Kristen Tabscott; mwerner@gwrr.com; dxsmith@bpa.gov; Gary Bennett; tumpj@trimet.org; Baldwin, Ben; DevelopmentReview@trimet.org; landusenotifications@oregonmetro.gov; PRICE Ruth E; ODOT_R1_DevRev@odot.state.or.us; Naomi_Vogel@co.washington.or.us; stephen_roberts@co.washington.or.us; Theresa_Cherniak@co.washington.or.us; Bryan_Robb@co.washington.or.us; Arn, Jason S.; Brad Crawford; Richard Sattler; Jason Waters; Craig Christensen; Craig Sheldon; Jo Guediri; Andrew Stirling; Colleen Resch; Scott McKie; Ty Hanlon; Jon Carlson; hoon.choe@USPS.gov; mlrr.info@oregon.gov
Cc: Erika Palmer; Joy Chang; Eric Rutledge
Subject: [REQUEST FOR COMMENTS] 21090 SW Pacific Hwy, Sherwood, OR 97140 (CASE NO. LU 2022-030)_Type IV – Major Modification and Site Plan Review
Attachments: Agency Notice_Chevron.pdf

Hello,

An application for a **Type IV – Major Modification and Site Plan Review** located at **21090 SW Pacific Hwy, Sherwood, OR 97140 (CASE NO. LU 2022-030)** has been submitted for approval and deemed complete. The project description is as follows:

An application for a Major Modification and Type IV Site Plan Review to develop a 3,600 square foot retail commercial store on an existing Vehicle fueling station with new Underground Storage Tanks (UST) and associated site improvements. The subject property is 0.85 acres in size, zoned RC (Retail Commercial), and located at 21090 SW Pacific Highway (Washington County Assessors Map and Tax Lot number 2S130DA/1200).

Please provide formal comments no later than **8/24/2023**. [Projected related information can be found in the link below:](#)

<https://www.sherwoodoregon.gov/planning/project/lu-2022-030-mmsp-chevron-0>

If you have any questions or concerns, please don't hesitate to reach out for assistance.

Thanks in advance,



Hugo Agosto (He/Him/El)

Associate Planner

☎ 503-625-4271

✉ Hamblin-Agostoh@SherwoodOregon.gov

🌐 www.sherwoodoregon.gov

22560 SW Pine Street, Sherwood, OR 97140

Sherwood Community Development Department is open Monday-Friday 8 am – 5 pm. Located on the second floor of City Hall.

Comments by: _____
Address: _____

Date: _____
Tel.: _____ (optional)
Email: _____ (optional)



PRELIMINARY STORMWATER MANAGEMENT REPORT

Chevron Fuel Facility

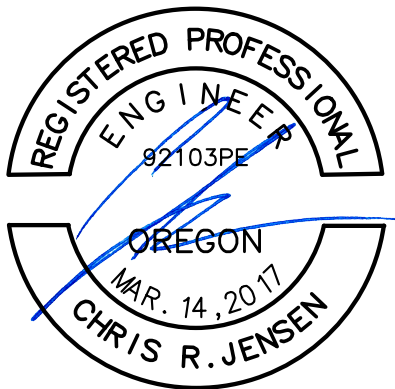
21090 Southwest Pacific Highway
Sherwood, Oregon 97140

Property Owner:

Chevron Station, Inc.
575 Market St.
San Francisco, CA 94105

Engineer of Record:

Chris Jensen, P.E.
Barghausen Consulting Engineers, Inc.
18215 - 72nd Avenue South
Kent, WA 98032
(425) 251-6222
cjensen@barghausen.com



EXPIRES: 6-30-25
07/28/2023

July 28, 2023

Our Job No. 22558

DESIGNER'S CERTIFICATION AND STATEMENT

I hereby certify that this Stormwater Management Report for the Chevron Fuel Facility has been prepared by me or under my supervision and meets minimum standards of the City of Sherwood and normal standards of engineering practice. I hereby acknowledge and agree that the jurisdiction does not and will not assume liability for the sufficiency, suitability, or performance of drainage facilities designed by me.



Chris Jensen, P.E. July 28, 2023

TABLE OF CONTENTS

- 1.0 PROJECT OVERVIEW AND DESCRIPTION
- 2.0 METHODOLOGY
- 3.0 ENGINEERING CONCLUSIONS
- 4.0 STORMWATER FACILITY DETAILS AND EXHIBITS

EXHIBITS

- EXHIBIT A Vicinity Map
- EXHIBIT B Assessor's Map
- EXHIBIT C FEMA Map
- EXHIBIT D Soils Map
- EXHIBIT E Existing Conditions Map
- EXHIBIT F Post-Developed Basin Area Map
- EXHIBIT G Stormfilter Detail and Calculations
- EXHIBIT H Preliminary TRUST Calculations

APPENDICES

- Appendix A Geotechnical Report prepared by The Riley Group, Inc. dated November 12, 2022

Tab 1.0

1.0 PROJECT OVERVIEW AND DESCRIPTION

Size and Location of Project Site

The project site is located at 21090 Southwest Pacific Highway in the City of Sherwood, Oregon. The parcel (2S130DA01200) is 0.85 acres. Please refer to Exhibits A-E for additional information on the existing site.

Type of Development/Proposed Improvements

The proposed project will upgrade and replace the existing convenience store and underground storage tanks, while maintaining the existing fuel facility.

Topography

The site is generally between elevation 207 and 210 sloping to the west. The site is generally covered in concrete and asphalt pavements that slope between 1 and 8 percent.

Soils

Based on soil survey information obtained from the USDA website, on-site soils consist of Hillsboro loam sloped at 0 to 3 percent with groundwater depth of up to 31 feet per the Geotechnical Report.

Hydrology

The project is located in the Tualatin Watershed which releases water to Clean Water Services. The project site is within the limits of Clean Water Services jurisdiction. The area of the site is located in a minimal flood hazard zone (Zone X), per FEMA standards.

Vegetation & Habitat

The proposed project has minimal vegetation with a few shrubs and trees lining the projects property boundary.

Water Quality Sensitive Areas

The proposed project does not have any known wetlands on site.

Property Zoning

The project site is zoned Retail Commercial per the Zoning Map for the City of Sherwood. This zone and land use permits the operation of fueling stations.

Access

The proposed will not alter any site access points. The driveways along Pacific Highway West will not change. An accessible pedestrian route connecting to Pacific High West is proposed as part of these improvements.

Utility Availability and Conflicts

Most of the site's utilities will remain the same during construction; however, building utilities such as water, sewer, power, and telephone will need to be revised to accommodate building relocation.

Permits Required

This project requires a City of Sherwood Building Permit.

Existing vs. Post-Construction Conditions

The existing site contains a convenience store, fueling dispensers with canopy and existing retail building. Please see the Existing Conditions Map located in Exhibit E for details of existing site conditions.

Post-Construction conditions will relocate the convenience store and underground storage tanks, while modifying the onsite parking. Please see the Post-Developed Basin Map in Exhibit F.

Tab 2.0

2.0 METHODOLOGY

Drainage at the Existing Site

Existing site drainage is routed southwest to a swale prior to entering the existing drainage system within Southwest Sherwood Boulevard.

Infiltration

Based on the Geotechnical Report, The Riley Group does not recommend onsite infiltration due to the potential for contaminated fill soils and the native soil consisting of 37.5 to 57.5% fines with it does not support infiltration.

Description of Proposed Stormwater Management Techniques

Hydromodification

The proposed project will modify or create over 1,000 square feet of impervious surface and will be required to implement or fund techniques to reduce impacts to the downstream receiving water body per Section 4.03.01 of the Clean Water Services (CWS) 2019 Design and Construction Standards (DCS). Since the project proposes to modify more than 12,000 square feet of impervious area, a hydromodification assessment is required per Section 4.03.2 of the CWS 2019 DCS.

Based on the requirements listed in Section 4.03.3 of the CWS 2019 DCS, the project's risk level is Category 3. Per Section 4.03.5 of the CWS 2019 DCS, Category 3 projects may use any of the options listed in this section. This project will propose a detention facility using the Flow Duration Curve Matching method, outlined in Section 4.08.7.

Water Quality

The proposed project will modify or create over 1,000 square feet of impervious surface and per Section 4.04.1 of the CWS 2019 DCS will be required to implement water quantity. This project will remove the existing swale; however, in its place per Section 4.04.3c a proprietary system will be installed to provide the required water treatment.

Tab 3.0

3.0 ENGINEERING CONCLUSIONS

Based on the information provided above, this proposed project will meet the hydromodification requirements by providing a detention facility and will meet water quality requirements with a proprietary Contech Stormfilter.

Refer to Exhibit G for the Preliminary Stormfilter Detail and Calculations of the proposed water quality facilities.

Refer to Exhibit H for the Preliminary Tualatin River Urban Stormwater Tool TRUST Calculations of the proposed detention vault.

Tab 4.0

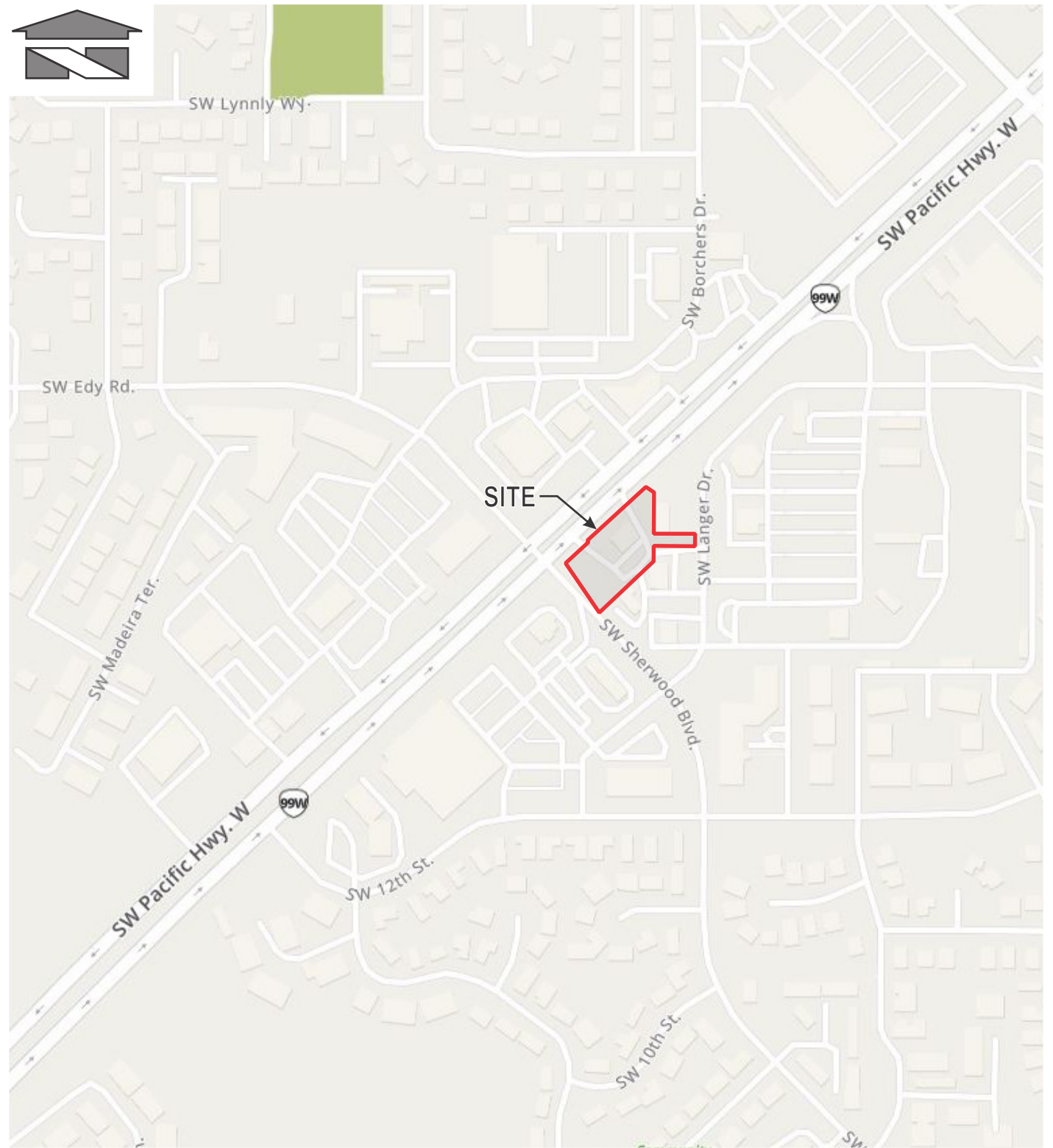
4.0 STORMWATER FACILITY DETAILS / EXHIBITS

The following exhibits are provided herein:

- EXHIBIT E Existing Conditions Map
- EXHIBIT F Post-Developed Basin Area Map
- EXHIBIT G Stormfilter Detail and Calculations
- EXHIBIT H Preliminary TRUST Calculations

Exhibits

Exhibit A Vicinity Map



REFERENCE: MapQuest (2023)

Scale:

Horizontal: N.T.S. Vertical: N/A

For:

Chevron No. 92138
Sherwood, Oregon

Job Number

22558



**Barghausen
Consulting Engineers, Inc.**

18215 72nd Avenue South
Kent, WA 98032
425.251.6222 barghausen.com

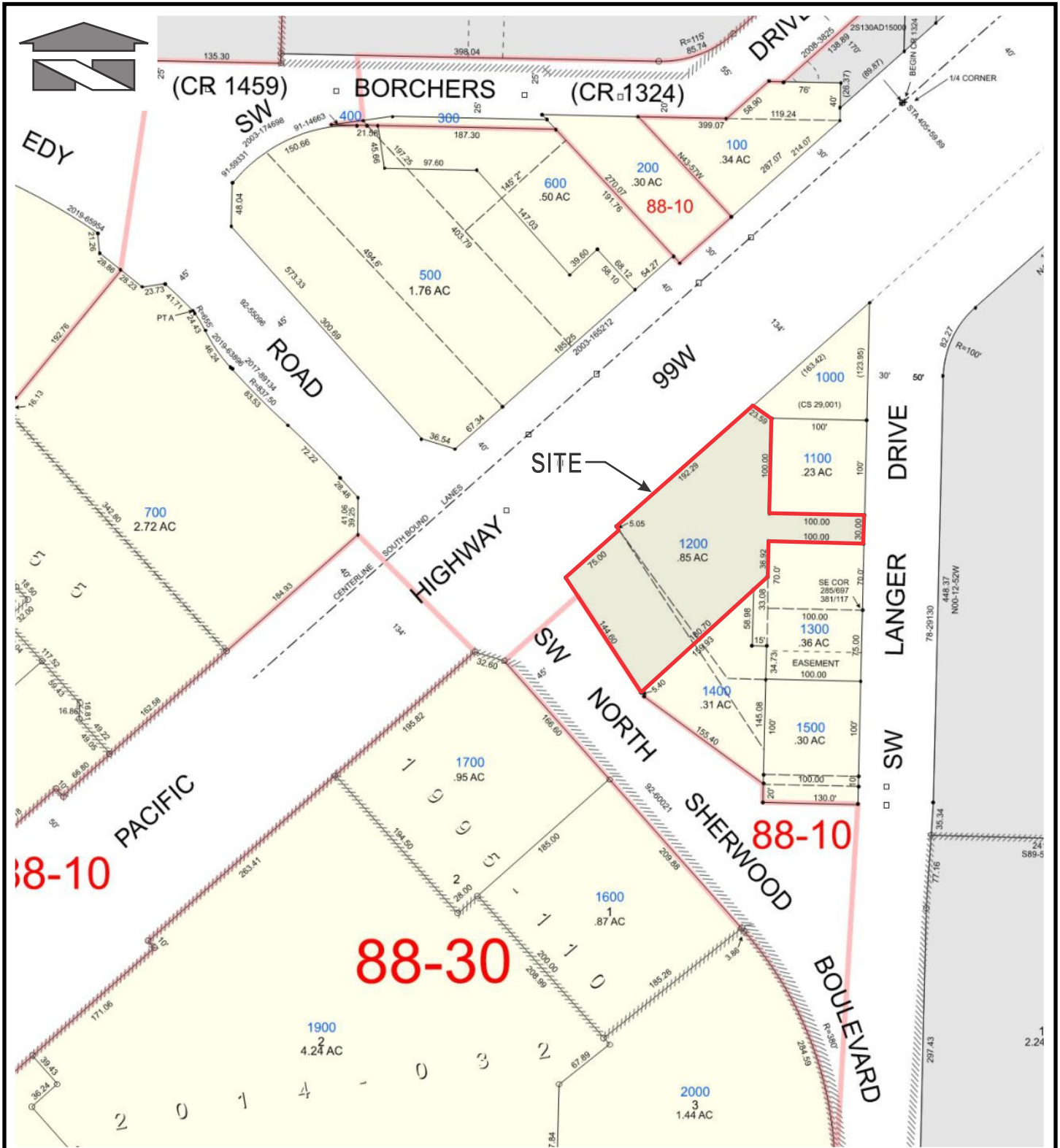
Title:

VICINITY MAP

DATE: 03/22/23

Exhibit B

Assessor's Map



REFERENCE: Washington County Department of Assessments (April 2022)


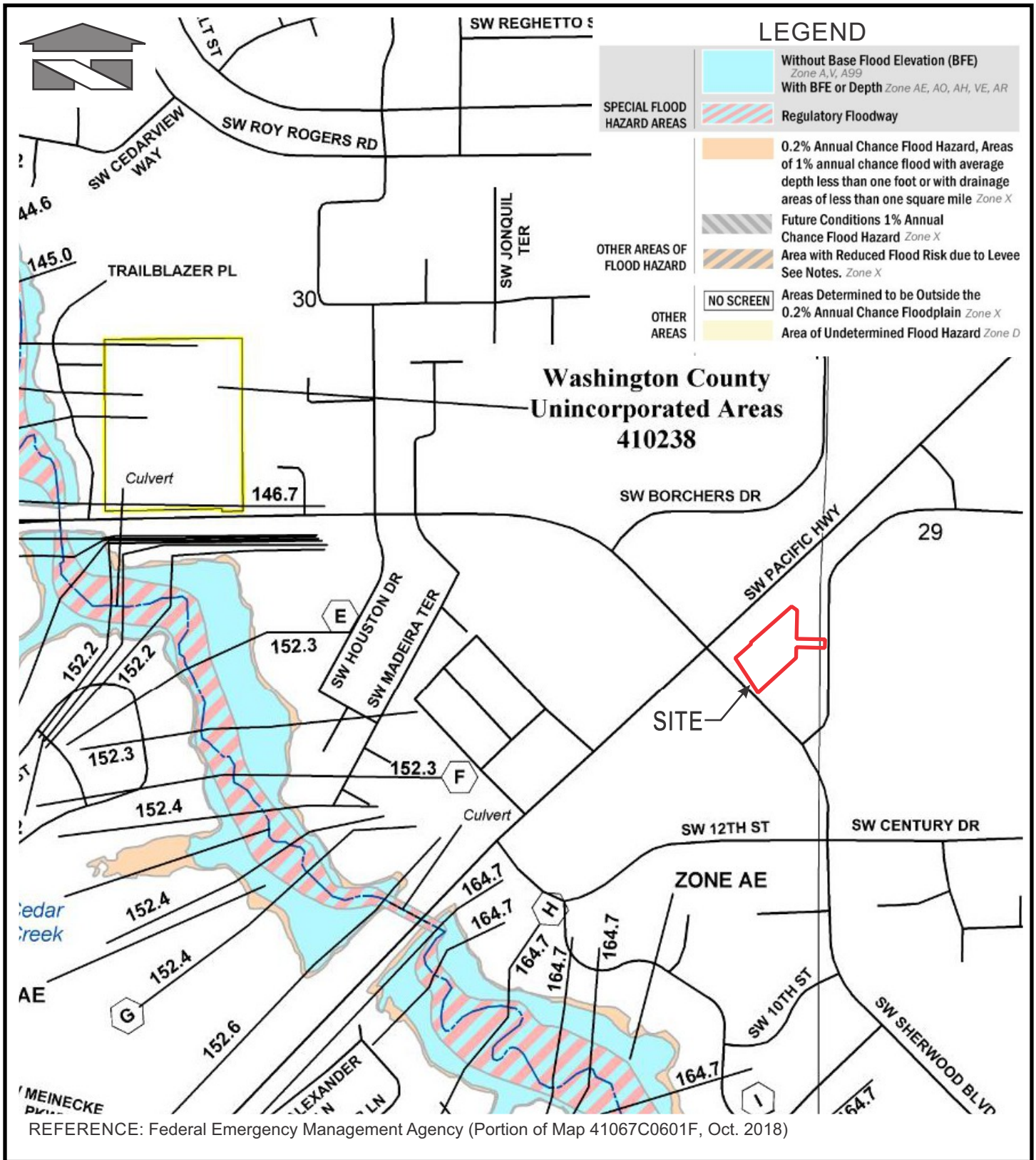
| | | |
|---|---|--------------------------------|
| <p>Scale:</p> <p>Horizontal: N.T.S. Vertical: N/A</p> | <p>For:</p> <p>Chevron No. 92138 Sherwood, Oregon</p> | <p>Job Number</p> <p>22558</p> |
|  <p>Barghausen Consulting Engineers, Inc. 18215 72nd Avenue South Kent, WA 98032 425.251.6222 barghausen.com</p> | <p>Title:</p> <p>ASSESSOR MAP</p> | <p>DATE: 03/22/23</p> |

Exhibit C FEMA Map



LEGEND

- Without Base Flood Elevation (BFE)
Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee See Notes, Zone X
- NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X
- Area of Undetermined Flood Hazard Zone D

**Washington County
Unincorporated Areas
410238**

Scale:
Horizontal: N.T.S. Vertical: N/A

For:
**Chevron No. 92138
Sherwood, Oregon**

Job Number
22558

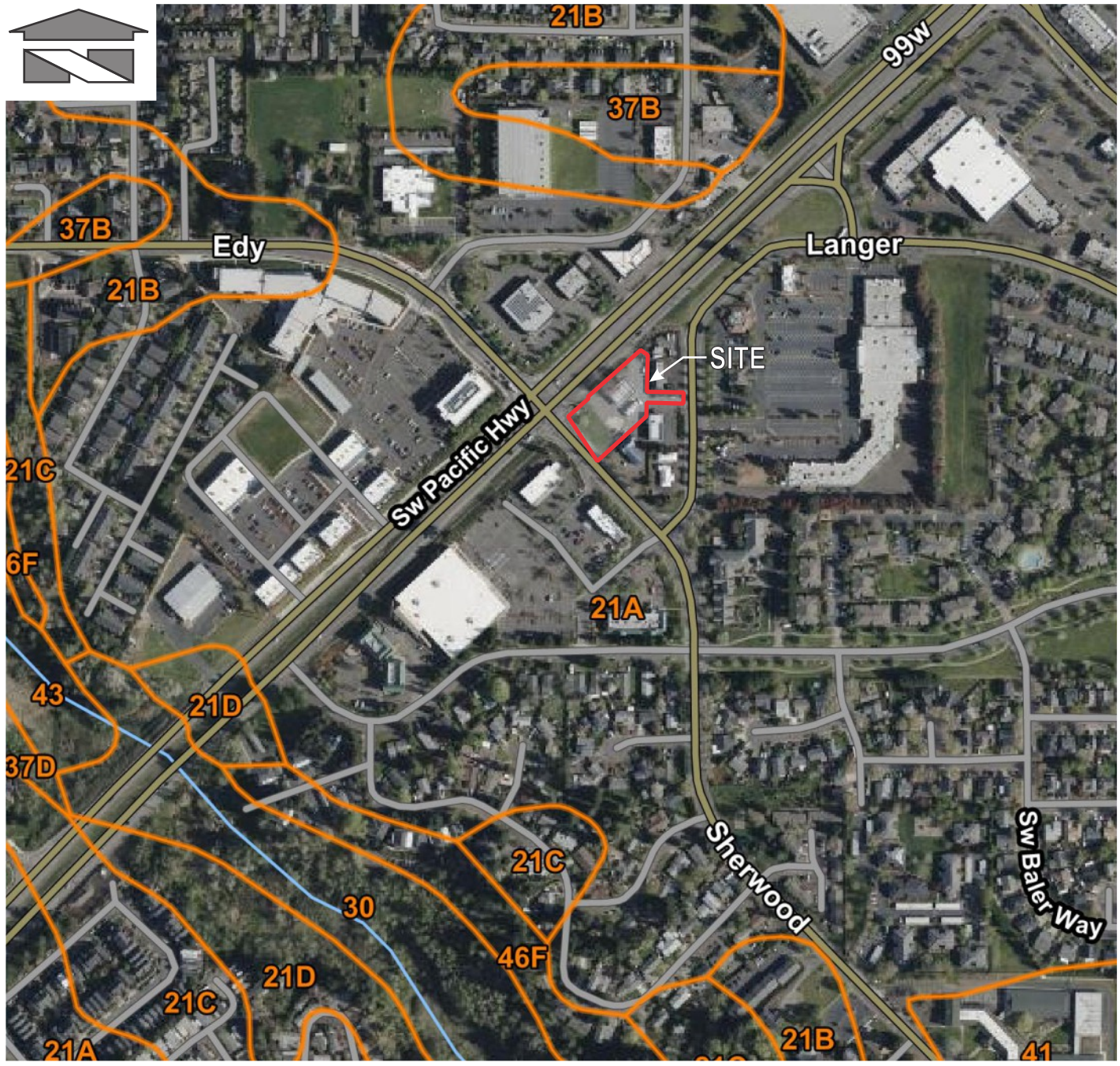


**Barghausen
Consulting Engineers, Inc.**
18215 72nd Avenue South
Kent, WA 98032
425.251.6222 barghausen.com

Title:
FEMA MAP

DATE: 03/22/23

Exhibit D Soils Map



REFERENCE: USDA, Natural Resources Conservation Service

LEGEND:

21A = Hillsboro loam, 0-3% slopes

HSG

B

Scale:
Horizontal: N.T.S. Vertical: N/A

For:
Chevron No. 92138
Sherwood, Oregon

Job Number
22558



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Consulting Engineers, Inc.**
18215 72nd Avenue South
Kent, WA 98032
425.251.6222 barghausen.com

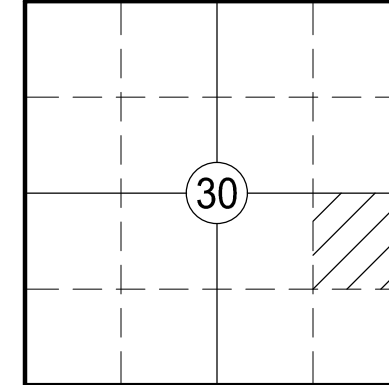
Title:
SOIL SURVEY MAP

DATE: 03/22/23

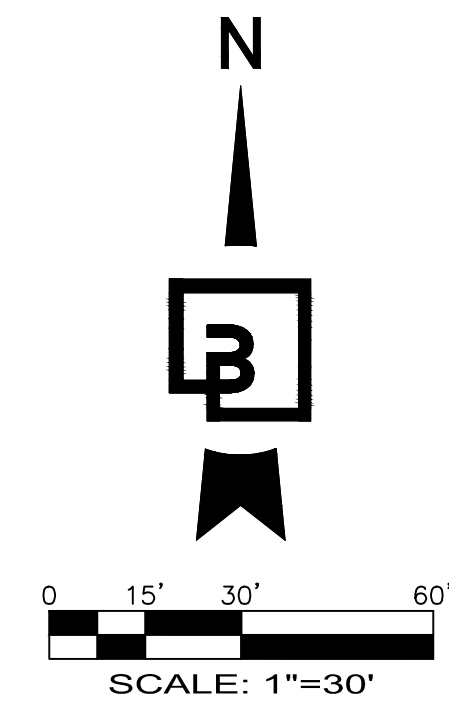
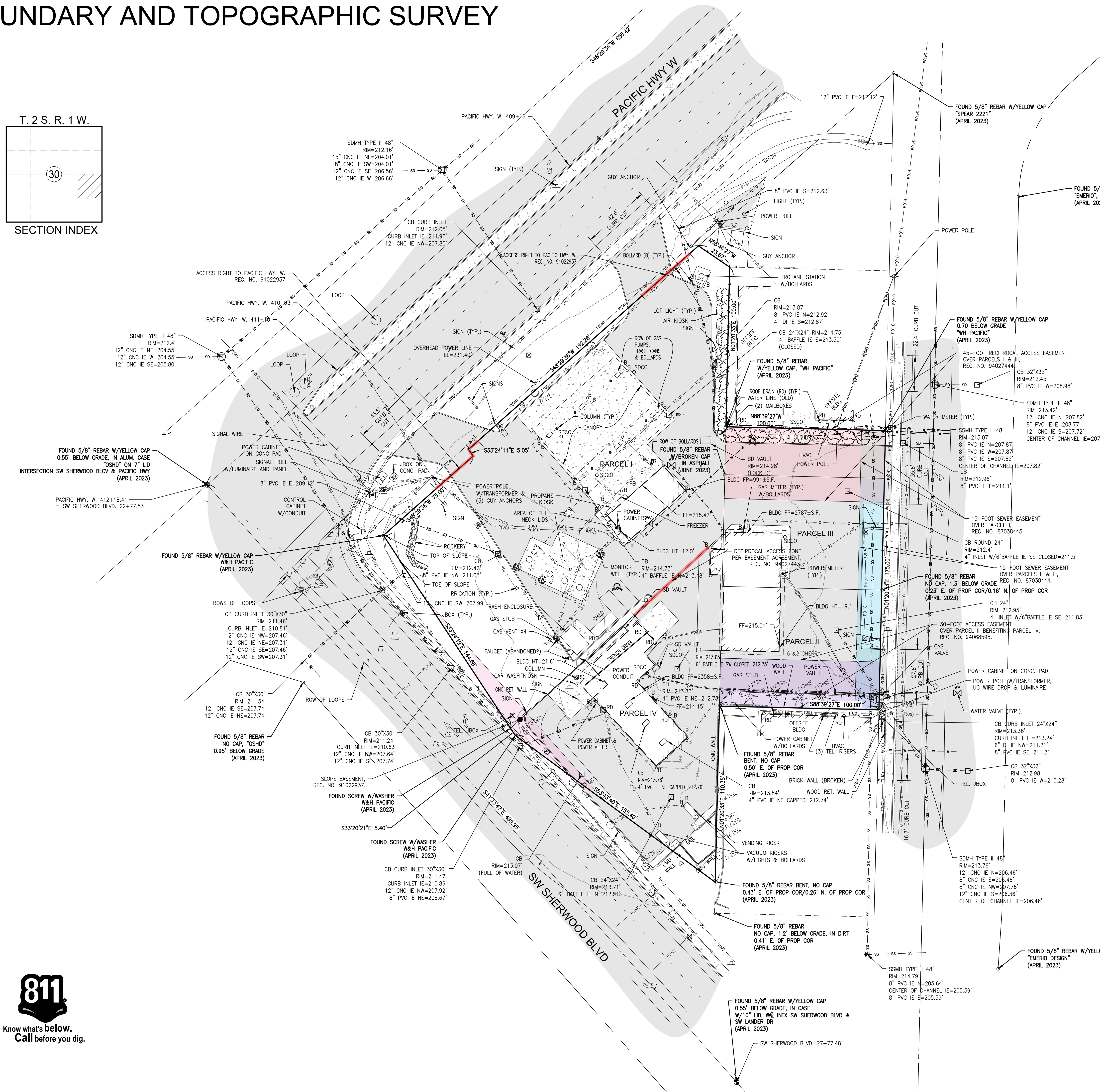
Exhibit E Existing Conditions Map

BOUNDARY AND TOPOGRAPHIC SURVEY

T. 2 S. R. 1 W.



SECTION INDEX



LEGEND

(NOTE: NOT ALL SYMBOLS MAY APPEAR ON THE MAP)

- SURVEY MONUMENT (AS NOTED)
 - SECTION CORNER (AS NOTED)
 - SET REBAR/CAP (AS NOTED)
 - FOUND REBAR/CAP (AS NOTED)
 - SET 2"x2" HUB/TACK LINE STAKE
 - MAG/WASHER OR LEAD/TACK (AS NOTED)
 - BENCHMARK
 - LUMINAIRE (LUM.)
 - YARD LIGHT
 - ORNAMENTAL LIGHT
 - TRAFFIC SIGNAL LIGHTS
 - POWER METER
 - POWER POLE
 - JUNCTION BOX (AS NOTED)
 - TELEPHONE MANHOLE
 - CATCH BASIN (CB)
 - STORM MANHOLE (SDMH)
 - SANITARY SEWER MANHOLE (SSMH)
 - CLEANOUT (AS NOTED)
 - GAS METER
 - GAS VALVE
 - WATER VALVE (WV)
 - FAUCET
 - FIRE HYDRANT(FH) / CONNECTION(FDC)
 - WATER MANHOLE
 - WATER METER
 - BLOW-OFF / AIRVAC
 - MONITOR WELL
 - SIGN
 - IRRIGATION SPRINKLER
 - DIRECTIONAL ARROW
 - ADA SYMBOL
 - CHAIN LINK FENCE
 - WOOD FENCE
 - HOGWIRE FENCE
 - SILT FENCE
 - METAL/IRON FENCE
 - GUARD RAIL/CABLE FENCE
 - WATER LINE
 - GAS LINE
 - STEAM LINE
 - TELEPHONE LINE (OH) OR (UG)
 - POWER LINE (OH) OR (UG)
 - STORM LINE
 - SEWER LINE
 - ROCKERY
 - KEYSTONE WALL
 - DECIDUOUS TREE
 - CONIFEROUS TREE
 - MAJOR CONTOUR LINE
 - MINOR CONTOUR LINE
 - CONCRETE
 - GRAVEL/SAND (AS NOTED)
 - ASPHALT
 - BUILDING LINE
- ABBREVIATIONS**
- (RF) REFERENCE SURVEYS
 - (OH) OVERHEAD
 - (UG) UNDERGROUND
 - (TYP) TYPICAL
 - (C) CALCULATED
 - (M) MEASURED



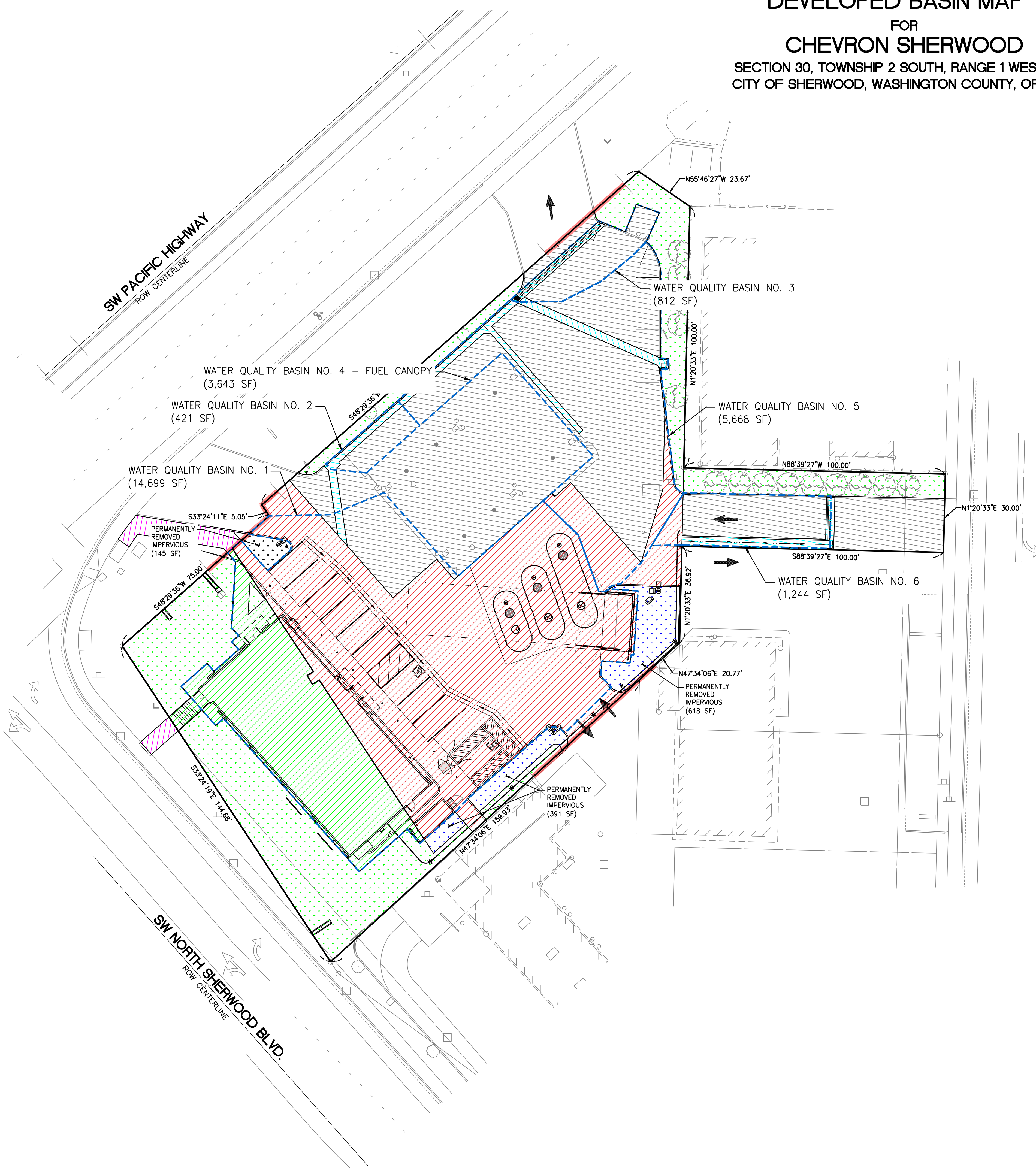
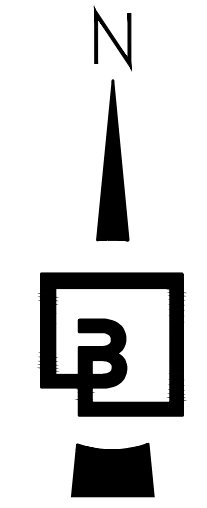
| | | | | |
|--|---|----------|----------|----------|
| Revision | Title: BOUNDARY AND TOPOGRAPHIC SURVEY PTN. OF THE NE1/4 OF THE SE1/4 OF SEC. 30, TWP. 2 S., RGE. 1 W., W. M. CITY OF SHERWOOD, WASHINGTON COUNTY, OREGON | | | |
| No. | Date | By | Cld. | I. Appr. |
| CHEVRON STATIONS, INC. | | | | |
| For: | | | | |
| Scale: | Horizontal 1"=30' | Vertical | | |
| Designed | Drawn | Checked | Approved | Date |
| — | — | — | — | 4/28/23 |
| Barghausen Consulting Engineers, Inc. 18215 72nd Avenue South Kent, WA 98032 425.251.6222 barghausen.com | | | | |
| Job Number | 22558 | | | |
| Sheet | 2 | of 2 | | |



File: P:\2023\22558\Survey\22558-461.dwg Date/Time: Apr 28, 2023 10:50am Scale: 1"=30' Author: MKC

Exhibit F Post-Developed Basin Area Map

DEVELOPED BASIN MAP
 FOR
CHEVRON SHERWOOD
 SECTION 30, TOWNSHIP 2 SOUTH, RANGE 1 WEST W.M.
 CITY OF SHERWOOD, WASHINGTON COUNTY, OREGON



PROJECT GROUND COVER

| | | |
|---|------------------------------|--|
| ON-SITE | | |
| NEW IMPERVIOUS SURFACES | 3,731 SF (0.09 AC) | |
| MODIFIED IMPERVIOUS SURFACES | 11,657 SF (0.27 AC) | |
| NEW AND MODIFIED IMPERVIOUS SURFACES | 15,388 (0.36 AC) | |
| EXISTING IMPERVIOUS SURFACES | 12,239 SF (0.28 AC) | |
| UTILITY TRENCHING | 1,008 SF (0.02 AC) | |
| TOTAL IMPERVIOUS AREA | 28,635 SF (0.66 AC) | |
| PERVIOUS AREA | 8,428 SF (0.19 AC) | |
| TOTAL AREA | 37,063± SF (0.85± AC) | |
| OFF-SITE | | |
| NEW AND MODIFIED IMPERVIOUS SURFACES | 412 SF (0.01 AC) | |
| TOTAL AREA | 412 SF (0.01 AC) | |

| | | | | |
|--------------------|-------------|-----|------|-------|
| SITE PLAN REVISION | | | | |
| 7/25/23 | JDF ADM CRJ | | | |
| 4/24/23 | JDF ADM CRJ | | | |
| CITY COMMENTS | | | | |
| No. | Date | By | Chd. | Appr. |
| 2 | 7/25/23 | JDF | ADM | CRJ |
| 1 | 4/24/23 | JDF | ADM | CRJ |
| Revision | | | | |

Location:
 STORE NO. 92138
 EM3220 w/ (6) MPD'S
 21090 SW PACIFIC HIGHWAY
 SHERWOOD, OREGON



Preparer:
Barghausen Consulting Engineers, Inc.
 18215 72nd Avenue South
 Kent, WA 98032
 425.251.6222
 barghausen.com

Client:
Chevron U.S.A. INC.
 6001 BOLLINGER CANYON RD.
 SAN RAMON, CA 94583
 ph 925.842.1000
 www.Chevron.com

| | |
|--------------|-------------------|
| DESIGNED BY: | DRAWN BY: |
| CHECKED BY: | APPROVED BY: |
| SCALE: | PROJECT NO: 22558 |
| SHEET TITLE: | |
| SHEET NO: | |

Exhibit G

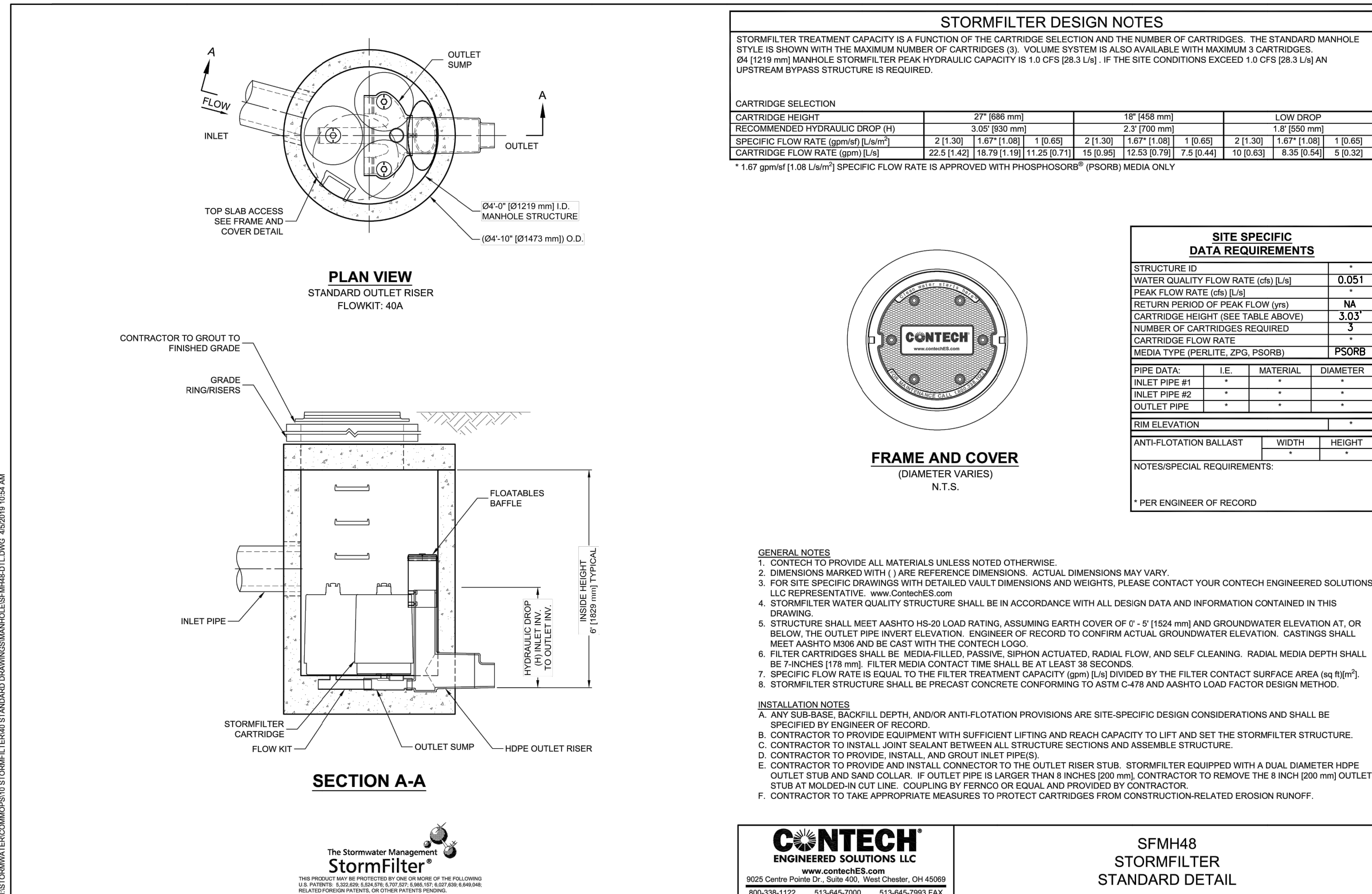
Stormfilter Detail and Calculations

PRELIM. DRAINAGE DETAILS

FOR

CHEVRON SHERWOOD

SECTION 30, TOWNSHIP 2 SOUTH, RANGE 1 WEST W.M.
CITY OF SHERWOOD, WASHINGTON COUNTY, OREGON



PRELIM. WQ CALCULATIONS

PER THE 2019 CLEAN WATER SERVICES (CWS) DESIGN AND CONSTRUCTION MANUAL SECTION 4.08 THE AREA REQUIRING TREATMENT IS AS FOLLOWS:

AREA = NEW IMPERVIOUS + 3(MODIFIED IMPERVIOUS - (PERMANENTLY REMOVED IMPERVIOUS)), UP TO THE TOTAL EXISTING IMPERVIOUS SURFACE ON THE SITE (26,485 SF)

AREA = 3,731 + 3(11,657 - (1,154)) = 35,240 SF

AREA TREATED = 26,487 (REFER TO DEVELOPED BASIN MAP WITHIN PRELIM STORM REPORT)

THIS PROJECT PROPOSES TO PROVIDED WATER QUALITY TREATMENT BY INSTALLING A NEW STORMFILTER MANHOLE, SEE DETAIL 1/C3.1.

PER THE 2019 CLEAN WATER SERVICES (CWS) DESIGN AND CONSTRUCTION MANUAL SECTION 4.08.5 THE WATER QUALITY FLOW RATE IS AS FOLLOWS:

STORMFILTER (SFMH48)

$$WQ \text{ FLOWRATE} = \frac{(0.36 \text{ IN}) \times (\text{WATER QUALITY BASIN AREA SF}^*)}{(12 \text{ IN/FT}) \times (4 \text{ HR}) \times (60 \text{ MIN/HR}) \times (60 \text{ SEC/MIN})} = 0.051 \text{ CFS}$$

DESIGN WATER QUALITY FLOWRATE = 0.051 CFS ROUNDED 25 GPM

PER THE CONTECH STORMFILTER DETAIL 1/C3.1, 1 - 27" TALL CARTRIDGE PROVIDES 11.25 GPM OF WATER QUALITY FLOWRATE TREATMENT. THEREFORE, THIS DEVELOPMENT PROPOSED A 48" SFMH WITH 3 - 27" TALL CARTRIDGES TO PROVIDED WATER QUALITY TREATMENT FOR THIS DEVELOPMENT.

*PLEASE REFER TO EXHIBIT F OF THE PRELIM STORMWATER REPORT ASSOCIATED WITH THIS DEVELOPMENT FOR THE WATER QUALITY BASIN AREAS.

PROJECT GROUND COVER

| ON-SITE | |
|---|------------------------------|
| NEW IMPERVIOUS SURFACES | 3,731 SF (0.09 AC) |
| MODIFIED IMPERVIOUS SURFACES | 11,657 SF (0.27 AC) |
| NEW AND MODIFIED IMPERVIOUS SURFACES | 15,388 (0.36 AC) |
| EXISTING IMPERVIOUS SURFACES | 12,239 SF (0.28 AC) |
| UTILITY TRENCHING | 1,008 SF (0.02 AC) |
| TOTAL IMPERVIOUS AREA | 28,635 SF (0.66 AC) |
| PERVIOUS AREA | 8,428 SF (0.19 AC) |
| TOTAL AREA | 37,063± SF (0.85± AC) |

1
C3.1
CONTECH STORMFILTER - SFMH48
SCALE: NTS

| No. | Date | By | Chd. | Appr. | Revision |
|-----|---------|-----|------|-------|--------------------|
| 2 | 7/25/23 | JDF | ADM | CRJ | SITE PLAN REVISION |
| 1 | 4/24/23 | JDF | ADM | CRJ | CITY COMMENTS |

Location:
STORE NO. 92138
EM3220 w/ (6) MPD'S
21090 SW PACIFIC HIGHWAY
SHERWOOD, OREGON

REG. PROFESSIONAL ENGINEER
No. 14201
Chris R. Jensen
EXPIRES: 6-30-25

Barghausen Consulting Engineers, Inc.
18215 72nd Avenue South
Kent, WA 98032
425.251.6222
barghausen.com

Preparer:

PRELIMINARY

Client:

CHEVRON U.S.A. INC.
6001 BOLLINGER CANYON RD.
SAN RAMON, CA 94583
ph 925.842.1000 www.Chevron.com

DESIGNED BY: JDF DRAWN BY: JDF
CHECKED BY: ADM APPROVED BY: CRJ
SCALE: N.A. PROJECT NO: 22558
SHEET TITLE:
PRELIM. DRAINAGE DETAILS
SHEET NO:
C3.1

Exhibit H

Preliminary TRUST Calculations

TRUST2019
PROJECT REPORT

General Model Information

TRUST Project Name: 22558-Vault-2023-4-24
Site Name: Chevron Sherwood
Site Address: 21090 SW Pacific Hwy
City: Sherwood
Report Date: 7/27/2023
Gage: Lower Tualatin Pump Station
Data Start: 1948/10/01
Data End: 2014/09/30
Timestep: Hourly
Precip Scale: 1.000
Version Date: 2022/01/04

Model Criteria

| | |
|---------------------------|-------|
| Conveyence: | False |
| Hydromod: | False |
| Both: | False |
| User Selected Percentage: | False |

Landuse Basin Data
Predeveloped Land Use

Basin 1

| | | |
|---------------------|----|------|
| Bypass: | | No |
| GroundWater: | | No |
| Pervious Land Use | | acre |
| B, Pasture, Good | 61 | 0.09 |
| Pervious Total | | 0.09 |
| Impervious Land Use | | acre |
| IMP FLAT | | 0.27 |
| Impervious Total | | 0.27 |
| Basin Total | | 0.36 |

| | | |
|-------------------|-----------|-------------|
| Element Flows To: | | |
| Surface | Interflow | Groundwater |

Mitigated Land Use

Basin 1

| | |
|---------------------|------|
| Bypass: | No |
| GroundWater: | No |
| Pervious Land Use | acre |
| Pervious Total | 0 |
| Impervious Land Use | acre |
| IMP FLAT | 0.36 |
| Impervious Total | 0.36 |
| Basin Total | 0.36 |

| | | |
|-------------------|-----------|-------------|
| Element Flows To: | | |
| Surface | Interflow | Groundwater |
| Vault 1 | Vault 1 | |

Routing Elements
Predeveloped Routing

Mitigated Routing

Vault 1

Width: 16.5 ft.
 Length: 16.5 ft.
 Depth: 3 ft.
 Discharge Structure
 Riser Height: 2.5 ft.
 Riser Diameter: 18 in.
 Notch Type: Rectangular
 Notch Width: 0.011 ft.
 Notch Height: 1.367 ft.
 Orifice 1 Diameter: 1.167 in. Elevation:0 ft.
 Element Flows To:
 Outlet 1 Outlet 2

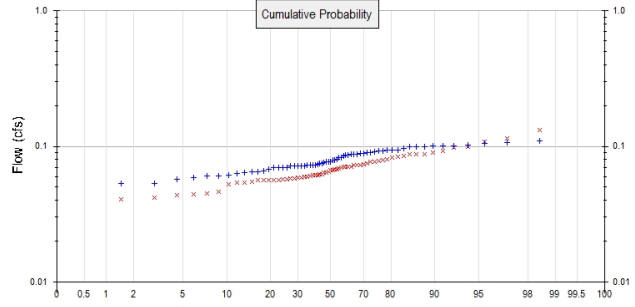
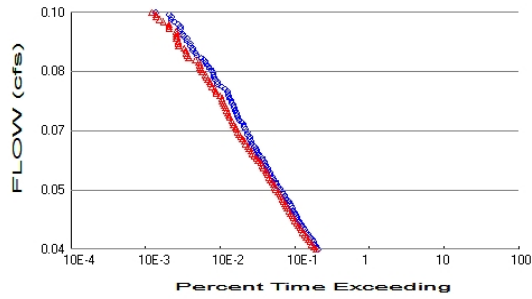
Vault Hydraulic Table

| Stage(feet) | Area(ac.) | Volume(ac-ft.) | Discharge(cfs) | Infilt(cfs) |
|-------------------------------------|-----------|----------------|----------------|-------------|
| -----Orifice 1 Invert = 0 Feet----- | | | | |
| 0.0000 | 0.006 | 0.000 | 0.000 | 0.000 |
| 0.0333 | 0.006 | 0.000 | 0.006 | 0.000 |
| 0.0667 | 0.006 | 0.000 | 0.009 | 0.000 |
| 0.1000 | 0.006 | 0.000 | 0.011 | 0.000 |
| 0.1333 | 0.006 | 0.000 | 0.013 | 0.000 |
| 0.1667 | 0.006 | 0.001 | 0.015 | 0.000 |
| 0.2000 | 0.006 | 0.001 | 0.016 | 0.000 |
| 0.2333 | 0.006 | 0.001 | 0.017 | 0.000 |
| 0.2667 | 0.006 | 0.001 | 0.019 | 0.000 |
| 0.3000 | 0.006 | 0.001 | 0.020 | 0.000 |
| 0.3333 | 0.006 | 0.002 | 0.021 | 0.000 |
| 0.3667 | 0.006 | 0.002 | 0.022 | 0.000 |
| 0.4000 | 0.006 | 0.002 | 0.023 | 0.000 |
| 0.4333 | 0.006 | 0.002 | 0.024 | 0.000 |
| 0.4667 | 0.006 | 0.002 | 0.025 | 0.000 |
| 0.5000 | 0.006 | 0.003 | 0.026 | 0.000 |
| 0.5333 | 0.006 | 0.003 | 0.027 | 0.000 |
| 0.5667 | 0.006 | 0.003 | 0.027 | 0.000 |
| 0.6000 | 0.006 | 0.003 | 0.028 | 0.000 |
| 0.6333 | 0.006 | 0.004 | 0.029 | 0.000 |
| 0.6667 | 0.006 | 0.004 | 0.030 | 0.000 |
| 0.7000 | 0.006 | 0.004 | 0.030 | 0.000 |
| 0.7333 | 0.006 | 0.004 | 0.031 | 0.000 |
| 0.7667 | 0.006 | 0.004 | 0.032 | 0.000 |
| 0.8000 | 0.006 | 0.005 | 0.033 | 0.000 |
| 0.8333 | 0.006 | 0.005 | 0.033 | 0.000 |
| 0.8667 | 0.006 | 0.005 | 0.034 | 0.000 |
| 0.9000 | 0.006 | 0.005 | 0.035 | 0.000 |
| 0.9333 | 0.006 | 0.005 | 0.035 | 0.000 |
| 0.9667 | 0.006 | 0.006 | 0.036 | 0.000 |
| 1.0000 | 0.006 | 0.006 | 0.037 | 0.000 |
| 1.0333 | 0.006 | 0.006 | 0.037 | 0.000 |
| 1.0667 | 0.006 | 0.006 | 0.038 | 0.000 |
| 1.1000 | 0.006 | 0.006 | 0.038 | 0.000 |
| 1.1333 | 0.006 | 0.007 | 0.039 | 0.000 |
| 1.1667 | 0.006 | 0.007 | 0.040 | 0.000 |

| | | | | |
|--|-------|-------|-------|-------|
| 1.2000 | 0.006 | 0.007 | 0.041 | 0.000 |
| 1.2333 | 0.006 | 0.007 | 0.042 | 0.000 |
| 1.2667 | 0.006 | 0.007 | 0.043 | 0.000 |
| 1.3000 | 0.006 | 0.008 | 0.044 | 0.000 |
| 1.3333 | 0.006 | 0.008 | 0.045 | 0.000 |
| 1.3667 | 0.006 | 0.008 | 0.047 | 0.000 |
| 1.4000 | 0.006 | 0.008 | 0.048 | 0.000 |
| 1.4333 | 0.006 | 0.009 | 0.049 | 0.000 |
| 1.4667 | 0.006 | 0.009 | 0.051 | 0.000 |
| 1.5000 | 0.006 | 0.009 | 0.052 | 0.000 |
| 1.5333 | 0.006 | 0.009 | 0.054 | 0.000 |
| 1.5667 | 0.006 | 0.009 | 0.055 | 0.000 |
| 1.6000 | 0.006 | 0.010 | 0.057 | 0.000 |
| 1.6333 | 0.006 | 0.010 | 0.058 | 0.000 |
| 1.6667 | 0.006 | 0.010 | 0.060 | 0.000 |
| 1.7000 | 0.006 | 0.010 | 0.062 | 0.000 |
| 1.7333 | 0.006 | 0.010 | 0.063 | 0.000 |
| 1.7667 | 0.006 | 0.011 | 0.065 | 0.000 |
| 1.8000 | 0.006 | 0.011 | 0.066 | 0.000 |
| 1.8333 | 0.006 | 0.011 | 0.068 | 0.000 |
| 1.8667 | 0.006 | 0.011 | 0.070 | 0.000 |
| 1.9000 | 0.006 | 0.011 | 0.071 | 0.000 |
| 1.9333 | 0.006 | 0.012 | 0.073 | 0.000 |
| 1.9667 | 0.006 | 0.012 | 0.075 | 0.000 |
| 2.0000 | 0.006 | 0.012 | 0.076 | 0.000 |
| 2.0333 | 0.006 | 0.012 | 0.078 | 0.000 |
| 2.0667 | 0.006 | 0.012 | 0.080 | 0.000 |
| 2.1000 | 0.006 | 0.013 | 0.081 | 0.000 |
| 2.1333 | 0.006 | 0.013 | 0.083 | 0.000 |
| 2.1667 | 0.006 | 0.013 | 0.085 | 0.000 |
| 2.2000 | 0.006 | 0.013 | 0.087 | 0.000 |
| 2.2333 | 0.006 | 0.014 | 0.089 | 0.000 |
| 2.2667 | 0.006 | 0.014 | 0.091 | 0.000 |
| 2.3000 | 0.006 | 0.014 | 0.093 | 0.000 |
| 2.3333 | 0.006 | 0.014 | 0.095 | 0.000 |
| 2.3667 | 0.006 | 0.014 | 0.097 | 0.000 |
| 2.4000 | 0.006 | 0.015 | 0.099 | 0.000 |
| 2.4333 | 0.006 | 0.015 | 0.101 | 0.000 |
| 2.4667 | 0.006 | 0.015 | 0.103 | 0.000 |
| -----Riser Weir Invert = 2.5 Feet----- | | | | |
| 2.5000 | 0.006 | 0.015 | 0.105 | 0.000 |
| 2.5333 | 0.006 | 0.015 | 0.202 | 0.000 |
| 2.5667 | 0.006 | 0.016 | 0.379 | 0.000 |
| 2.6000 | 0.006 | 0.016 | 0.608 | 0.000 |
| 2.6333 | 0.006 | 0.016 | 0.878 | 0.000 |
| 2.6667 | 0.006 | 0.016 | 1.181 | 0.000 |
| 2.7000 | 0.006 | 0.016 | 1.512 | 0.000 |
| 2.7333 | 0.006 | 0.017 | 1.864 | 0.000 |
| 2.7667 | 0.006 | 0.017 | 2.232 | 0.000 |
| 2.8000 | 0.006 | 0.017 | 2.609 | 0.000 |
| 2.8333 | 0.006 | 0.017 | 2.991 | 0.000 |
| 2.8667 | 0.006 | 0.017 | 3.370 | 0.000 |
| 2.9000 | 0.006 | 0.018 | 3.742 | 0.000 |
| 2.9333 | 0.006 | 0.018 | 4.098 | 0.000 |
| 2.9667 | 0.006 | 0.018 | 4.436 | 0.000 |
| 3.0000 | 0.006 | 0.018 | 4.749 | 0.000 |
| 3.0333 | 0.006 | 0.019 | 5.035 | 0.000 |
| 3.0667 | 0.000 | 0.000 | 5.290 | 0.000 |

Analysis Results

POC 1



+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1

Total Pervious Area: 0.09
 Total Impervious Area: 0.27

Mitigated Landuse Totals for POC #1

Total Pervious Area: 0
 Total Impervious Area: 0.36

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

| Return Period | Flow(cfs) |
|---------------|-----------|
| 2 year | 0.078886 |
| 5 year | 0.09205 |
| 10 year | 0.099435 |
| 25 year | 0.107685 |
| 50 year | 0.113215 |
| 100 year | 0.118321 |

Flow Frequency Return Periods for Mitigated. POC #1

| Return Period | Flow(cfs) |
|---------------|-----------|
| 2 year | 0.065866 |
| 5 year | 0.081535 |
| 10 year | 0.09159 |
| 25 year | 0.104058 |
| 50 year | 0.113228 |
| 100 year | 0.12233 |

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

| Year | Predeveloped | Mitigated |
|------|--------------|-----------|
| 1949 | 0.072 | 0.077 |
| 1950 | 0.063 | 0.055 |
| 1951 | 0.072 | 0.059 |
| 1952 | 0.107 | 0.087 |
| 1953 | 0.074 | 0.059 |
| 1954 | 0.087 | 0.078 |
| 1955 | 0.083 | 0.044 |
| 1956 | 0.103 | 0.109 |
| 1957 | 0.094 | 0.060 |
| 1958 | 0.065 | 0.052 |

| | | |
|------|-------|-------|
| 1959 | 0.099 | 0.061 |
| 1960 | 0.049 | 0.040 |
| 1961 | 0.087 | 0.076 |
| 1962 | 0.077 | 0.065 |
| 1963 | 0.088 | 0.090 |
| 1964 | 0.082 | 0.062 |
| 1965 | 0.080 | 0.072 |
| 1966 | 0.086 | 0.069 |
| 1967 | 0.064 | 0.056 |
| 1968 | 0.085 | 0.054 |
| 1969 | 0.093 | 0.062 |
| 1970 | 0.073 | 0.058 |
| 1971 | 0.059 | 0.060 |
| 1972 | 0.071 | 0.067 |
| 1973 | 0.076 | 0.075 |
| 1974 | 0.072 | 0.067 |
| 1975 | 0.073 | 0.054 |
| 1976 | 0.075 | 0.071 |
| 1977 | 0.070 | 0.045 |
| 1978 | 0.099 | 0.100 |
| 1979 | 0.072 | 0.060 |
| 1980 | 0.090 | 0.057 |
| 1981 | 0.094 | 0.082 |
| 1982 | 0.086 | 0.084 |
| 1983 | 0.071 | 0.071 |
| 1984 | 0.089 | 0.068 |
| 1985 | 0.060 | 0.064 |
| 1986 | 0.057 | 0.041 |
| 1987 | 0.075 | 0.073 |
| 1988 | 0.070 | 0.058 |
| 1989 | 0.069 | 0.044 |
| 1990 | 0.092 | 0.088 |
| 1991 | 0.080 | 0.062 |
| 1992 | 0.077 | 0.074 |
| 1993 | 0.097 | 0.092 |
| 1994 | 0.061 | 0.056 |
| 1995 | 0.100 | 0.132 |
| 1996 | 0.099 | 0.114 |
| 1997 | 0.079 | 0.087 |
| 1998 | 0.065 | 0.056 |
| 1999 | 0.072 | 0.068 |
| 2000 | 0.053 | 0.057 |
| 2001 | 0.090 | 0.046 |
| 2002 | 0.101 | 0.062 |
| 2003 | 0.110 | 0.073 |
| 2004 | 0.061 | 0.056 |
| 2005 | 0.065 | 0.067 |
| 2006 | 0.091 | 0.081 |
| 2007 | 0.068 | 0.064 |
| 2008 | 0.053 | 0.042 |
| 2009 | 0.088 | 0.097 |
| 2010 | 0.101 | 0.071 |
| 2011 | 0.070 | 0.056 |
| 2012 | 0.077 | 0.080 |
| 2013 | 0.105 | 0.084 |
| 2014 | 0.093 | 0.070 |

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

| Rank | Predeveloped | Mitigated |
|------|--------------|-----------|
| 1 | 0.1103 | 0.1318 |
| 2 | 0.1070 | 0.1140 |
| 3 | 0.1049 | 0.1090 |
| 4 | 0.1027 | 0.0997 |
| 5 | 0.1014 | 0.0973 |
| 6 | 0.1007 | 0.0924 |
| 7 | 0.1005 | 0.0901 |
| 8 | 0.0994 | 0.0879 |
| 9 | 0.0994 | 0.0871 |
| 10 | 0.0988 | 0.0869 |
| 11 | 0.0969 | 0.0844 |
| 12 | 0.0940 | 0.0839 |
| 13 | 0.0939 | 0.0825 |
| 14 | 0.0933 | 0.0806 |
| 15 | 0.0932 | 0.0797 |
| 16 | 0.0920 | 0.0777 |
| 17 | 0.0909 | 0.0773 |
| 18 | 0.0904 | 0.0764 |
| 19 | 0.0896 | 0.0748 |
| 20 | 0.0891 | 0.0738 |
| 21 | 0.0884 | 0.0731 |
| 22 | 0.0875 | 0.0728 |
| 23 | 0.0875 | 0.0725 |
| 24 | 0.0874 | 0.0711 |
| 25 | 0.0861 | 0.0707 |
| 26 | 0.0858 | 0.0706 |
| 27 | 0.0854 | 0.0702 |
| 28 | 0.0830 | 0.0692 |
| 29 | 0.0823 | 0.0685 |
| 30 | 0.0804 | 0.0676 |
| 31 | 0.0797 | 0.0674 |
| 32 | 0.0795 | 0.0671 |
| 33 | 0.0773 | 0.0665 |
| 34 | 0.0773 | 0.0646 |
| 35 | 0.0771 | 0.0642 |
| 36 | 0.0763 | 0.0639 |
| 37 | 0.0753 | 0.0622 |
| 38 | 0.0750 | 0.0618 |
| 39 | 0.0736 | 0.0617 |
| 40 | 0.0731 | 0.0615 |
| 41 | 0.0726 | 0.0615 |
| 42 | 0.0723 | 0.0602 |
| 43 | 0.0722 | 0.0599 |
| 44 | 0.0720 | 0.0595 |
| 45 | 0.0719 | 0.0588 |
| 46 | 0.0716 | 0.0587 |
| 47 | 0.0715 | 0.0583 |
| 48 | 0.0712 | 0.0576 |
| 49 | 0.0700 | 0.0574 |
| 50 | 0.0699 | 0.0574 |
| 51 | 0.0695 | 0.0564 |
| 52 | 0.0692 | 0.0562 |
| 53 | 0.0682 | 0.0562 |
| 54 | 0.0654 | 0.0560 |
| 55 | 0.0652 | 0.0559 |
| 56 | 0.0647 | 0.0546 |

| | | |
|----|--------|--------|
| 57 | 0.0639 | 0.0538 |
| 58 | 0.0627 | 0.0538 |
| 59 | 0.0612 | 0.0524 |
| 60 | 0.0608 | 0.0459 |
| 61 | 0.0601 | 0.0446 |
| 62 | 0.0591 | 0.0442 |
| 63 | 0.0573 | 0.0435 |
| 64 | 0.0533 | 0.0418 |
| 65 | 0.0529 | 0.0407 |
| 66 | 0.0492 | 0.0395 |

Duration Flows

The Facility PASSED

| Flow(cfs) | Predev | Mit | Percentage | Pass/Fail |
|-----------|--------|------|------------|-----------|
| 0.0394 | 1177 | 1118 | 94 | Pass |
| 0.0400 | 1125 | 1039 | 92 | Pass |
| 0.0407 | 1079 | 978 | 90 | Pass |
| 0.0413 | 1033 | 924 | 89 | Pass |
| 0.0419 | 991 | 877 | 88 | Pass |
| 0.0425 | 937 | 823 | 87 | Pass |
| 0.0431 | 881 | 790 | 89 | Pass |
| 0.0437 | 833 | 746 | 89 | Pass |
| 0.0443 | 793 | 704 | 88 | Pass |
| 0.0449 | 750 | 678 | 90 | Pass |
| 0.0455 | 718 | 642 | 89 | Pass |
| 0.0461 | 686 | 613 | 89 | Pass |
| 0.0467 | 658 | 583 | 88 | Pass |
| 0.0473 | 626 | 555 | 88 | Pass |
| 0.0479 | 607 | 533 | 87 | Pass |
| 0.0485 | 583 | 503 | 86 | Pass |
| 0.0491 | 560 | 479 | 85 | Pass |
| 0.0497 | 537 | 461 | 85 | Pass |
| 0.0504 | 515 | 444 | 86 | Pass |
| 0.0510 | 497 | 428 | 86 | Pass |
| 0.0516 | 479 | 405 | 84 | Pass |
| 0.0522 | 454 | 391 | 86 | Pass |
| 0.0528 | 430 | 376 | 87 | Pass |
| 0.0534 | 410 | 365 | 89 | Pass |
| 0.0540 | 396 | 344 | 86 | Pass |
| 0.0546 | 375 | 326 | 86 | Pass |
| 0.0552 | 348 | 315 | 90 | Pass |
| 0.0558 | 334 | 305 | 91 | Pass |
| 0.0564 | 324 | 288 | 88 | Pass |
| 0.0570 | 305 | 271 | 88 | Pass |
| 0.0576 | 292 | 260 | 89 | Pass |
| 0.0582 | 274 | 250 | 91 | Pass |
| 0.0588 | 267 | 242 | 90 | Pass |
| 0.0594 | 255 | 236 | 92 | Pass |
| 0.0600 | 249 | 218 | 87 | Pass |
| 0.0607 | 238 | 210 | 88 | Pass |
| 0.0613 | 230 | 202 | 87 | Pass |
| 0.0619 | 221 | 187 | 84 | Pass |
| 0.0625 | 214 | 176 | 82 | Pass |
| 0.0631 | 198 | 164 | 82 | Pass |
| 0.0637 | 192 | 157 | 81 | Pass |
| 0.0643 | 181 | 150 | 82 | Pass |
| 0.0649 | 174 | 141 | 81 | Pass |
| 0.0655 | 166 | 136 | 81 | Pass |
| 0.0661 | 156 | 128 | 82 | Pass |
| 0.0667 | 149 | 122 | 81 | Pass |
| 0.0673 | 144 | 116 | 80 | Pass |
| 0.0679 | 143 | 109 | 76 | Pass |
| 0.0685 | 136 | 104 | 76 | Pass |
| 0.0691 | 134 | 101 | 75 | Pass |
| 0.0697 | 126 | 95 | 75 | Pass |
| 0.0703 | 122 | 93 | 76 | Pass |
| 0.0710 | 119 | 87 | 73 | Pass |

| | | | | |
|--------|-----|----|----|------|
| 0.0716 | 113 | 86 | 76 | Pass |
| 0.0722 | 104 | 83 | 79 | Pass |
| 0.0728 | 100 | 77 | 77 | Pass |
| 0.0734 | 97 | 75 | 77 | Pass |
| 0.0740 | 95 | 73 | 76 | Pass |
| 0.0746 | 92 | 71 | 77 | Pass |
| 0.0752 | 90 | 69 | 76 | Pass |
| 0.0758 | 88 | 66 | 75 | Pass |
| 0.0764 | 83 | 64 | 77 | Pass |
| 0.0770 | 82 | 62 | 75 | Pass |
| 0.0776 | 77 | 61 | 79 | Pass |
| 0.0782 | 75 | 57 | 76 | Pass |
| 0.0788 | 74 | 51 | 68 | Pass |
| 0.0794 | 73 | 51 | 69 | Pass |
| 0.0800 | 67 | 49 | 73 | Pass |
| 0.0806 | 61 | 45 | 73 | Pass |
| 0.0813 | 53 | 43 | 81 | Pass |
| 0.0819 | 53 | 42 | 79 | Pass |
| 0.0825 | 50 | 39 | 78 | Pass |
| 0.0831 | 48 | 38 | 79 | Pass |
| 0.0837 | 47 | 37 | 78 | Pass |
| 0.0843 | 46 | 33 | 71 | Pass |
| 0.0849 | 44 | 32 | 72 | Pass |
| 0.0855 | 41 | 31 | 75 | Pass |
| 0.0861 | 39 | 31 | 79 | Pass |
| 0.0867 | 37 | 30 | 81 | Pass |
| 0.0873 | 35 | 27 | 77 | Pass |
| 0.0879 | 32 | 22 | 68 | Pass |
| 0.0885 | 28 | 21 | 75 | Pass |
| 0.0891 | 27 | 20 | 74 | Pass |
| 0.0897 | 25 | 20 | 80 | Pass |
| 0.0903 | 25 | 19 | 76 | Pass |
| 0.0910 | 23 | 16 | 69 | Pass |
| 0.0916 | 23 | 16 | 69 | Pass |
| 0.0922 | 21 | 16 | 76 | Pass |
| 0.0928 | 21 | 15 | 71 | Pass |
| 0.0934 | 19 | 15 | 78 | Pass |
| 0.0940 | 18 | 15 | 83 | Pass |
| 0.0946 | 17 | 15 | 88 | Pass |
| 0.0952 | 17 | 12 | 70 | Pass |
| 0.0958 | 17 | 12 | 70 | Pass |
| 0.0964 | 16 | 12 | 75 | Pass |
| 0.0970 | 14 | 10 | 71 | Pass |
| 0.0976 | 13 | 9 | 69 | Pass |
| 0.0982 | 13 | 8 | 61 | Pass |
| 0.0988 | 12 | 8 | 66 | Pass |
| 0.0994 | 8 | 7 | 87 | Pass |

Water Quality

Model Default Modifications

Total of 0 changes have been made.

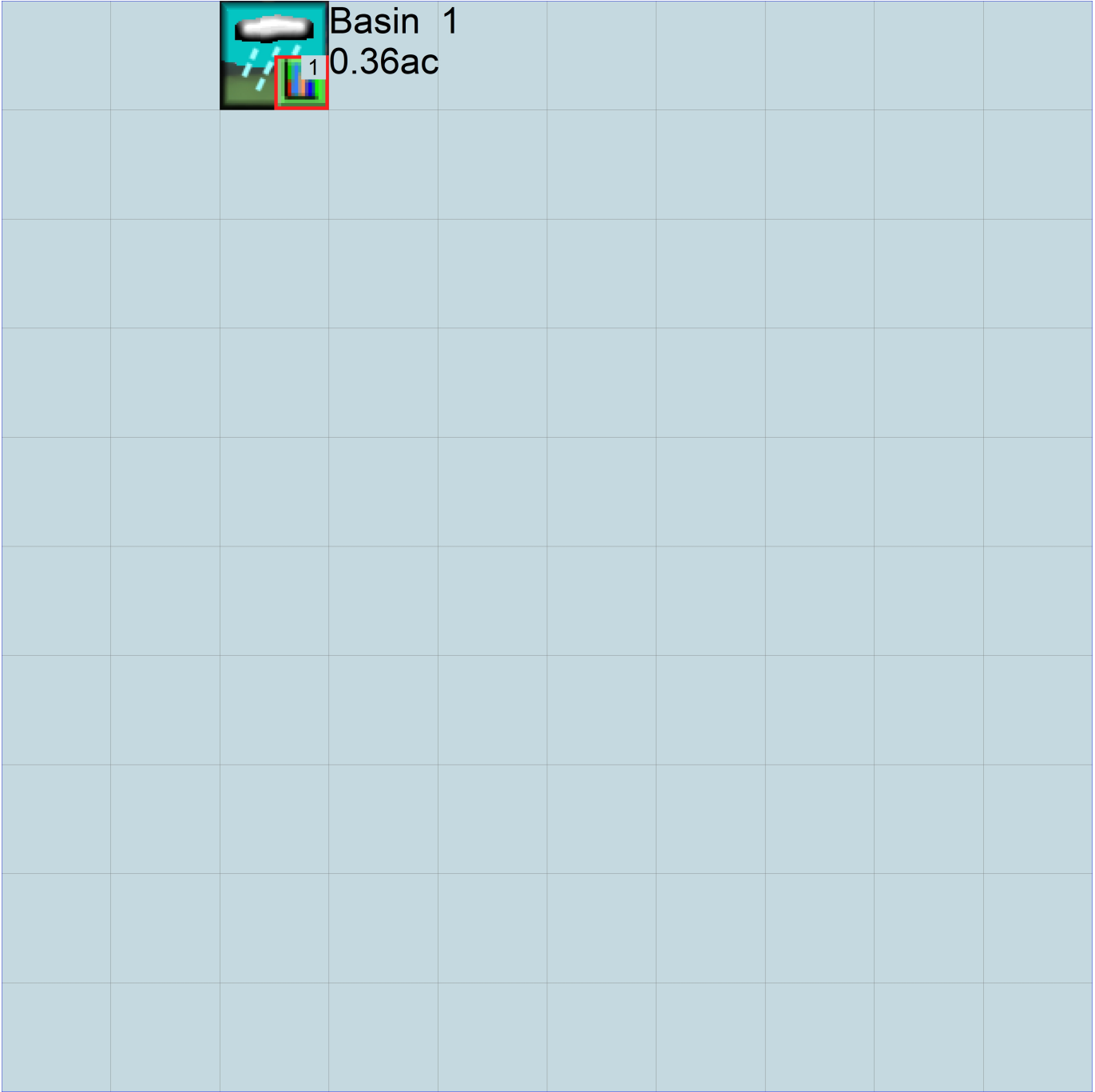
PERLND Changes

No PERLND changes have been made.

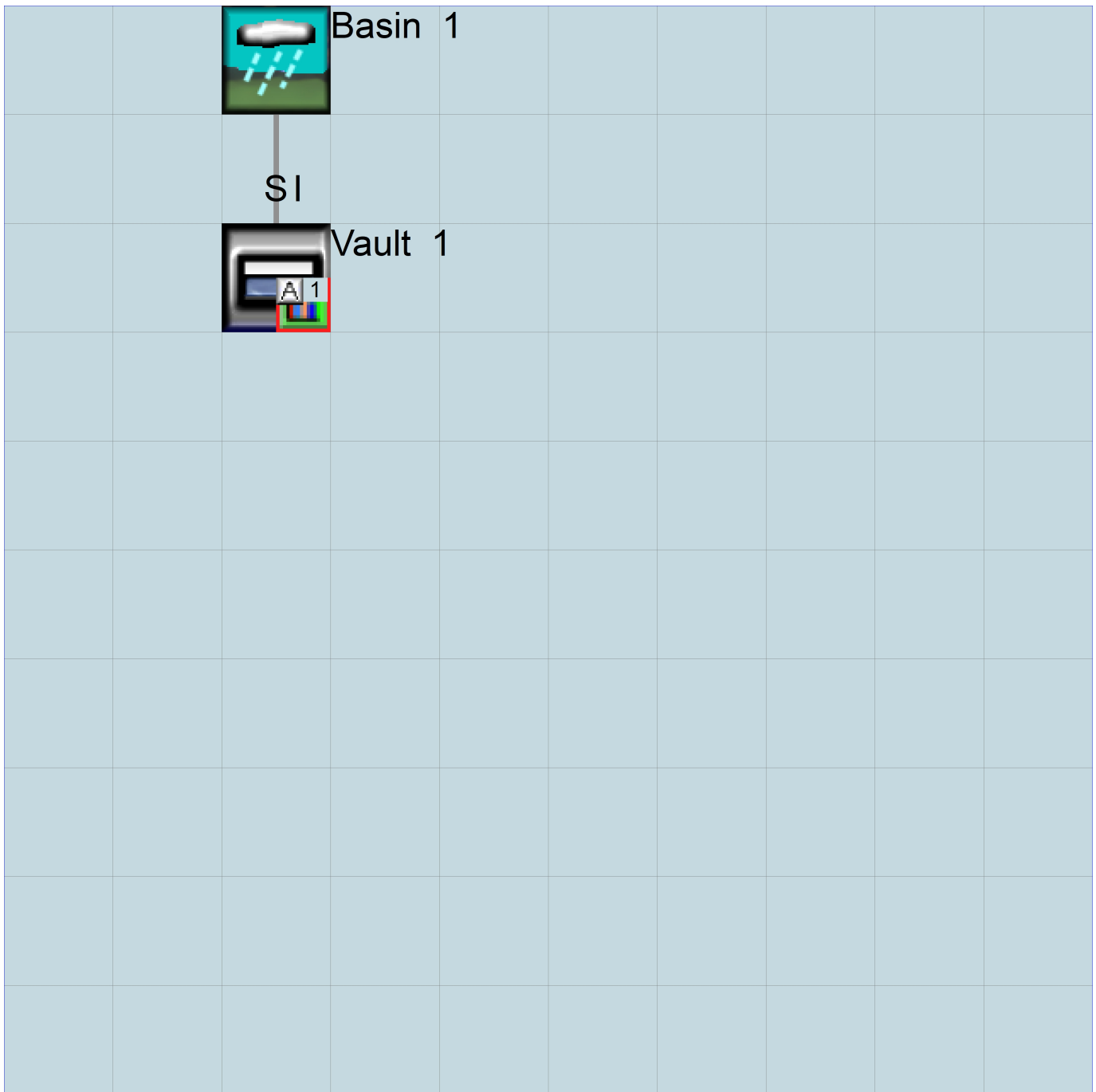
IMPLND Changes

No IMPLND changes have been made.

Appendix
Predeveloped Schematic



Mitigated Schematic



Disclaimer

Legal Notice

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Appendices

Appendix A Geotechnical Report



GEOTECHNICAL ENGINEERING REPORT

PREPARED BY:

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BOTHELL, WASHINGTON 98011**

PREPARED FOR:

**BARGHAUSEN CONSULTING ENGINEERS, INC.
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RGI PROJECT No. 2022-522-1

**SHERWOOD CHEVRON
21090 SOUTHWEST PACIFIC HIGHWAY
SHERWOOD, OREGON 97140**

NOVEMBER 18, 2022

Corporate Office
17522 Bothell Way Northeast
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November 18, 2022

Mr. Dan Goalwin
Barghausen Consulting Engineers, Inc.
21090 Southwest Pacific Highway
Sherwood, Oregon 97140

**Subject: Geotechnical Engineering Report
Sherwood Chevron
21090 Southwest Pacific Highway
Sherwood, Oregon 97140
RGI Project No. 2022-522-1**

Dear Mr. Goalwin:

As requested, The Riley Group, Inc. (RGI) has prepared this Geotechnical Engineering Report (GER) for the above-referenced site. Our services were completed in accordance with our proposal 2022-522-PRP1 dated August 29, 2022 and authorized by the client on September 19, 2022. The information in this GER is based on our understanding of the proposed construction, and the soil and groundwater conditions encountered in the borings and test pit completed by RGI at the site on October 28, 2022.

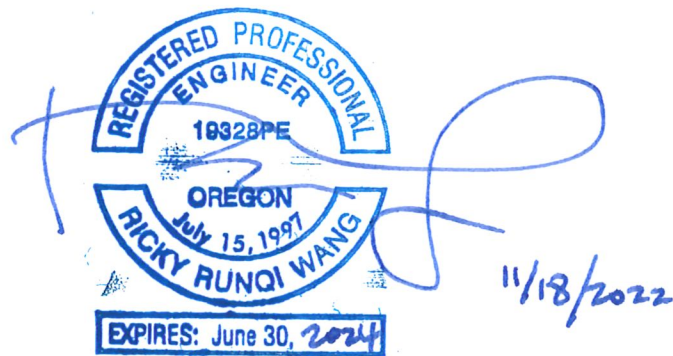
RGI recommends the project plans and specifications be submitted for a general review so that RGI may confirm that the recommendations in this GER are interpreted and implemented properly in the construction documents. RGI also recommends that a representative of our firm be present on site during portions of the project construction to confirm that the soil and groundwater conditions are consistent with those that form the basis for the engineering recommendations in this GER.

If you have any questions or require additional information, please contact us.

Respectfully submitted,

THE RILEY GROUP, INC.

Eric L. Woods, LG
Project Geologist



Ricky R. Wang, PhD, PE
Principal Engineer

TABLE OF CONTENTS

| | |
|---|-----------|
| 1.0 INTRODUCTION | 1 |
| 2.0 PROJECT DESCRIPTION | 1 |
| 3.0 FIELD EXPLORATION AND LABORATORY TESTING | 1 |
| 3.1 FIELD EXPLORATION | 1 |
| 3.2 LABORATORY TESTING | 2 |
| 4.0 SITE CONDITIONS | 2 |
| 4.1 SURFACE | 2 |
| 4.2 GEOLOGY | 2 |
| 4.3 SOILS..... | 2 |
| 4.4 GROUNDWATER | 3 |
| 4.5 SEISMIC CONSIDERATIONS | 3 |
| 4.6 GEOLOGIC HAZARD AREAS | 4 |
| 5.0 DISCUSSION AND RECOMMENDATIONS | 4 |
| 5.1 GEOTECHNICAL CONSIDERATIONS | 4 |
| 5.2 EARTHWORK..... | 4 |
| 5.2.1 Erosion and Sediment Control | 5 |
| 5.2.2 Excavations..... | 5 |
| 5.2.3 Underground Storage Tank Installation | 6 |
| 5.2.4 Stripping and Site Preparation | 6 |
| 5.2.5 Structural Fill | 7 |
| 5.3 FOUNDATIONS | 9 |
| 5.4 RETAINING WALL..... | 9 |
| 5.5 SLAB-ON-GRADE CONSTRUCTION | 10 |
| 5.6 DRAINAGE..... | 11 |
| 5.6.1 Surface | 11 |
| 5.6.2 Subsurface..... | 11 |
| 5.6.3 Infiltration | 11 |
| 5.7 UTILITIES..... | 11 |
| 5.8 PAVEMENTS..... | 12 |
| 6.0 ADDITIONAL SERVICES | 12 |
| 7.0 LIMITATIONS..... | 13 |

LIST OF APPENDICES

| | |
|-----------------|--|
| Figure 1 | Site Vicinity Map |
| Figure 2 | Geotechnical Exploration Plan |
| Figure 3 | Retaining Wall Drainage Detail |
| Figure 4 | Typical Footing Drain Detail |
| Appendix A..... | Field Exploration and Laboratory Testing |

Executive Summary

This Executive Summary should be used in conjunction with the entire GER for design and/or construction purposes. It should be recognized that specific details were not included or fully developed in this section, and this GER must be read in its entirety for a comprehensive understanding of the items contained herein. Section 7.0 should be read for an understanding of limitations.

RGI's geotechnical scope of work included the advancement of one test pit and five borings to depths up to 31.5 feet below ground surface (bgs).

Based on the information obtained from our subsurface exploration, the site is suitable for development of the proposed project. The following geotechnical considerations were identified.

Soil Conditions: The site is underlain by loose to medium dense silty sand and medium stiff to stiff sandy silt.

Groundwater: Groundwater was encountered at Boring B-3 at a depth of 31 feet bgs during our subsurface exploration.

Foundations: Foundations for the proposed building and canopy foundation can be supported on spread footings bearing on recompacted native soil subgrade or structural fill.

Slab-on-grade: Slab-on-grade floors for the proposed building can be supported on recompacted native soil subgrade or structural fill.

Pavements: The following new pavement sections are recommended:

- **For heavy truck traffic areas:** 4 inches of Hot Mix Asphalt over 8 inches of crushed rock base (CRB) over recompacted native soil
- **For general parking areas:** 3 inches of Hot Mix Asphalt over 6 inches of CRB over recompacted native soil
- **Concrete Pavement:** 5 inches of concrete over 4 inches of CRB over recompacted native soil

1.0 Introduction

This Geotechnical Engineering Report (GER) presents the results of the geotechnical engineering services provided for the proposed Sherwood Chevron in Sherwood, Oregon. The purpose of this GER is to assess subsurface conditions and provide geotechnical recommendations for the construction of a Sherwood Chevron. Our scope of services included field explorations, laboratory testing, engineering analyses, and preparation of this GER.

The recommendations in the following sections of this GER are based upon our current understanding of the proposed site development as outlined below. If actual features vary or changes are made, RGI should review them in order to modify our recommendations as required. In addition, RGI requests to review the site grading plan, final design drawings and specifications when available to verify that our project understanding is correct and that our recommendations have been properly interpreted and incorporated into the project design and construction.

2.0 Project Description

The project site is located at 21090 Southwest Pacific Highway in Sherwood, Oregon. The approximate location of the site is shown on Figure 1.

The site is occupied by an existing Chevron station with a paved parking lot. RGI understands it is proposed to add a new C-store about 4,022 square feet, build a trash enclosure, and landscaping upgrades. It is also understood that new underground storage tanks are to be installed to the south of the existing fuel canopy. RGI's understanding of the project is based on the plan SP1 prepared by Stantec Architecture, Inc.

RGI anticipates that the proposed building will be supported on perimeter foundation and the canopy will be supported with a series of columns. RGI expects that the perimeter wall loading will be 1 to 2 kips per linear foot and maximum column load will be up to 50 kips. Slab-on-grade floor loading of 250 pounds per square foot (psf) are expected. Minor site grading will be needed to reach the final grade.

3.0 Field Exploration and Laboratory Testing

3.1 FIELD EXPLORATION

On October 28, 2022, RGI observed the excavation of one test pit and the drilling of five borings. The approximate exploration locations are shown on Figure 2.

Field logs of each exploration were prepared by the geologist who continuously observed the drilling and test pit. These logs included visual classifications of the materials encountered during drilling as well as our interpretation of the subsurface conditions between samples. The boring and test pit logs included in Appendix A represent an interpretation of the field logs and include modifications based on laboratory observation and analysis of the samples.

3.2 LABORATORY TESTING

During the field investigation, a representative portion of each recovered sample was sealed in containers and transported to our laboratory for further visual and laboratory examination. Samples retrieved from the borings were tested for moisture content and grain size analysis to aid in soil classification and provide input for the recommendations provided in this GER. The results and descriptions of the laboratory tests are enclosed in Appendix A.

4.0 Site Conditions

4.1 SURFACE

The site is bound to the northwest by Southwest Pacific Highway, to the east by Southwest Langer Drive, and to the southwest by Southwest Sherwood Boulevard.

The site is occupied with existing Chevron fuel station with a paved parking lot. Most of the site is relatively level with less than 5 feet of elevation change across the property. The site is mostly paved with asphalt, with grass and decorative plants and trees in planter areas around the site perimeter.

4.2 GEOLOGY

Review of the *Generalized Geologic Map of the Willamette Lowland* by Marshall W. Gannett and Rodney R. Caldwell (1998) indicates the soil in the vicinity of the site is mapped as Alluvium and glacial-outburst flood sediment (Map Unit Qs), which is silt, sand, and gravel deposited by glacial-outburst floods. The native soil observed at the boring locations appear to match the descriptions.

4.3 SOILS

The site is underlain by loose to medium dense silty sand and medium stiff to stiff sandy silt.

More detailed descriptions of the subsurface conditions encountered are presented in the boring logs included in Appendix A. Sieve analyses were performed on three selected soil samples. The grain-size distribution curves are included in Appendix A.

4.4 GROUNDWATER

Groundwater was encountered at Boring B-3 at a depth of 31 feet bgs during our subsurface exploration. It should be recognized that fluctuations of the groundwater table will occur due to seasonal variations in the amount of rainfall, runoff, and other factors not evident at the time the explorations were performed. In addition, perched water can develop within seams and layers contained in fill soils or higher permeability soils overlying less permeable soils following periods of heavy or prolonged precipitation.

4.5 SEISMIC CONSIDERATIONS

Based on the current International Building Code (IBC), RGI recommends the following seismic parameters provided in Table 1 be used for design.

Table 1 IBC Seismic Parameters

| 2018 IBC Parameter | Value |
|---|------------------------------------|
| Site Soil Class ¹ | E ² |
| Site Latitude | 45.3666304 N |
| Site Longitude | 122.8474798 W |
| Maximum considered earthquake spectral response acceleration parameters (g) | $S_s = 0.834, S_1 = 0.394$ |
| Spectral response acceleration parameters adjusted for site class (g) | $S_{ms} = 1.056, S_{m1} = 0.955^3$ |
| Design spectral response acceleration parameters (g) | $S_{ds} = 0.704, S_{d1} = 0.637^3$ |

1. Note: In general accordance with Chapter 20 of ASCE 7-10. The Site Class is based on the average characteristics of the upper 100 feet of the subsurface profile.

2. Note: The 2015 IBC and ASCE 7-16 require a site soil profile determination extending to a depth of 100 feet for seismic site classification. The current scope of our services does not include the required 100 foot soil profile determination. Test pit explorations extended to a maximum depth of 31.5 feet, and this seismic site class definition considers that similar soil continues below the maximum depth of the subsurface exploration. Additional exploration to deeper depths would be required to confirm the conditions below the current depth of exploration.

3. Note: In accordance with ASCE 11.4.8, a ground motion hazard analysis is not required for the following cases:

- Structures on Site Class E sites with S_s greater than or equal to 1.0, provided the site coefficient F_a is taken as equal to that of Site Class C.
- Structures on Site Class D sites with S_1 greater than or equal to 0.2, provided that the value of the seismic response coefficient C_s is determined by Eq. 12.8-2 for values of $T \leq 1.5T_s$ and taken as equal to 1.5 times the value computed in accordance with either Eq. 12.8-3 for $T_L \geq T > 1.5T_s$ or Eq. 12.8-4 for $T > T_L$.
- Structures on Site Class E sites with S_1 greater than or equal to 0.2, provided that T is less than or equal to T_s and the equivalent static force procedure is used for design.

The above exceptions do not apply to seismically isolated structures, structures with damping systems or structures designed using the response history procedures of Chapter 16.

Liquefaction is a phenomenon where there is a reduction or complete loss of soil strength due to an increase in water pressure induced by vibrations from a seismic event. Liquefaction mainly affects geologically recent deposits of fine-grained sands that are below the groundwater table. Soils of this nature derive their strength from intergranular

friction. The generated water pressure or pore pressure essentially separates the soil grains and eliminates this intergranular friction, thus reducing or eliminating the soil's strength. Liquefaction is a phenomenon where there is a reduction or complete loss of soil strength due to an increase in water pressure induced by vibrations from a seismic event. Liquefaction mainly affects geologically recent deposits of fine-grained sands that are below the groundwater table. Soils of this nature derive their strength from intergranular friction. The generated water pressure or pore pressure essentially separates the soil grains and eliminates this intergranular friction, thus reducing or eliminating the soil's strength.

RGI reviewed the soil conditions encountered during field exploration and assessed the potential for liquefaction of the site's soil during an earthquake. Due to the depth to groundwater is deep; in our professional opinion, the potential of soil liquefaction during an earthquake event is low.

4.6 GEOLOGIC HAZARD AREAS

Regulated geologically hazardous areas include erosion, landslide, earthquake, or other geological hazards. Based on the mapping information from Oregon Department of Geology and Mineral Industries Statewide Geohazards Viewer, the vicinity of the project site is mapped as a low liquefaction hazard area. Therefore, based our evaluation and analysis, RGI considers that the liquefaction potential for the site is low and it doesn't have any impact to the proposed development.

5.0 Discussion and Recommendations

5.1 GEOTECHNICAL CONSIDERATIONS

Based on our study, the site is suitable for the proposed construction from a geotechnical standpoint. The building foundations can be supported on conventional spread footings or structural slab bearing on competent native soil or structural fill. If the native soil at footing subgrade is loose, it should be recompacted.

Slab-on-grade floors and pavements can be similarly supported on recompacted native soil or structural fill. Detailed recommendations regarding the above issues and other geotechnical design considerations are provided in the following sections. These recommendations should be incorporated into the final design drawings and construction specifications.

5.2 EARTHWORK

RGI expects that site grading will consist of shallow cuts and fills to achieve building and pavement grades and excavation for utilities including storm, water, sanitary sewer, and other utilities.

5.2.1 EROSION AND SEDIMENT CONTROL

Potential sources or causes of erosion and sedimentation depend on construction methods, slope length and gradient, amount of soil exposed and/or disturbed, soil type, construction sequencing and weather. The impacts on erosion-prone areas can be reduced by implementing an erosion and sedimentation control plan. The plan should be designed in accordance with applicable city and/or county standards.

RGI recommends the following erosion control Best Management Practices (BMPs):

- Scheduling site preparation and grading for the drier summer and early fall months and undertaking activities that expose soil during periods of little or no rainfall
- Establishing a quarry spall construction entrance
- Installing siltation control fencing or anchored straw or coir wattles on the downhill side of work areas
- Covering soil stockpiles with anchored plastic sheeting
- Revegetating or mulching exposed soils with a minimum 3-inch thickness of straw if surfaces will be left undisturbed for more than one day during wet weather or one week in dry weather
- Directing runoff away from exposed soils and slopes
- Decreasing runoff velocities with check dams, straw bales or coir wattles
- Confining sediment to the project site
- Inspecting and maintaining erosion and sediment control measures frequently (The contractor should be aware that inspection and maintenance of erosion control BMPs is critical toward their satisfactory performance. Repair and/or replacement of dysfunctional erosion control elements should be anticipated.)

Permanent erosion protection should be provided by reestablishing vegetation using hydroseeding and/or landscape planting. Until the permanent erosion protection is established, site monitoring should be performed by qualified personnel to evaluate the effectiveness of the erosion control measures. Provisions for modifications to the erosion control system based on monitoring observations should be included in the erosion and sedimentation control plan.

5.2.2 EXCAVATIONS

All temporary cut slopes associated with the site and utility excavations should be adequately inclined to prevent sloughing and collapse. The site soils consisted of loose to medium dense silty sand and medium stiff to stiff sandy silt.

Accordingly, for excavations more than 4 feet but less than 20 feet in depth, the temporary side slopes should be laid back with a minimum slope inclination of 1.5:1 (Horizontal:Vertical). If there is insufficient room to complete the excavations in this manner, or excavations greater than 20 feet in depth are planned, using temporary

shoring to support the excavations should be considered. For open cuts at the site, RGI recommends:

- No traffic, construction equipment, stockpiles or building supplies are allowed at the top of cut slopes within a distance of at least 5 feet from the top of the cut.
- Exposed soil along the slope is protected from surface erosion using waterproof tarps and/or plastic sheeting.
- Construction activities are scheduled so that the length of time the temporary cut is left open is minimized.
- Surface water is diverted away from the excavation.
- The general condition of slopes should be observed periodically by a geotechnical engineer to confirm adequate stability and erosion control measures.

In all cases, however, appropriate inclinations will depend on the actual soil and groundwater conditions encountered during earthwork. Ultimately, the site contractor must be responsible for maintaining safe excavation slopes that comply with applicable OSHA or WISHA guidelines.

5.2.3 UNDERGROUND STORAGE TANK INSTALLATION

The installation of the underground storage tank (UST) will require an excavation of up to 20 feet bgs. The contractor typically prefers slide rail shoring system for supporting the excavation area.

Slide rail shoring system is a dig-and-push style shoring system. With its modular flexible design, the system can work with a wide variety of shapes and sizes. The system is installed from the top down and removed from the bottom up, minimizing size of excavation, and soil disturbance. Based on the depth of excavation, they are designed as single, double, and triple track system. The double track system can provide protection at depth from 12 feet to 20 feet which is expected to be needed for the project. RGI recommends that double track slide rail system be used for the UST excavation support.

The depth to the top of the USTs is typically 3 feet below finished grade with at least 2 feet of appropriate backfill material. The backfill can be either pea gravel or other material per API specifications for setting the tanks.

The installation will require tank hold down slabs or anchors to accommodate possible buoyant forces. The UST system installation and design must be in accordance with API regulations.

5.2.4 STRIPPING AND SITE PREPARATION

Stripping efforts should include removal of pavements, vegetation, organic materials, and deleterious debris from areas slated for building, pavement, and utility construction.

RGI anticipates that some areas of loose soil may be present on the site after stripping operations are complete. Prior to placement of structural fill, RGI recommends proofrolling building and pavement subgrades and areas to receive structural fill. These areas should be proofrolled under the observation of RGI and compacted to a firm and unyielding condition in order to achieve a minimum compaction level of 95 percent of the modified proctor maximum dry density as determined by the American Society of Testing and Materials D1557-09 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (ASTM D1557).

Proofrolling and adequate subgrade compaction can only be achieved when the soils are within approximately ± 2 percent moisture content of the optimum moisture content. Soils may be proofrolled with a heavy compactor, loaded double-axle dump truck, or other heavy equipment under the observation of a RGI representative. This observer will assess the subgrade conditions prior to filling.

Subgrade soils that become disturbed due to elevated moisture conditions should be overexcavated to reveal firm, non-yielding, non-organic soils and backfilled with compacted structural fill. In order to maximize utilization of site soils as structural fill, RGI recommends that the earthwork portion of this project be completed during extended periods of warm and dry weather, if possible. If earthwork is completed during the wet season (typically November through May) it will be necessary to take extra precautionary measures to protect subgrade soils. Wet season earthwork will require additional mitigative measures beyond what would be expected during the drier summer and fall months.

5.2.5 STRUCTURAL FILL

Once site preparation is complete, cuts and fills can be made to establish desired building grades. Prior to placing fill, RGI recommends proof-rolling as described above. RGI recommends fill below the foundation and floor slab, behind retaining walls, and below pavement and hardscape surfaces be placed in accordance with the following recommendations for structural fill.

The suitability of excavated site soils and import soils for compacted structural fill use will depend on the gradation and moisture content of the soil when it is placed. As the amount of fines (that portion passing the U.S. No. 200 sieve) increases, soil becomes increasingly sensitive to small changes in moisture content and adequate compaction becomes more difficult or impossible to achieve. Soils containing more than about 5 percent fines cannot be consistently compacted to a dense, non-yielding condition when the moisture content is more than 2 percent above or below optimum. Optimum moisture content is the moisture that results in the greatest compacted dry density with a specified compactive effort.

The native soils are moisture sensitive and may be suitable for use as structural fill if the moisture can be properly controlled at the time of compaction if the construction occurs in dry weather. If the construction occurs in winter or extended to wet season, it may be necessary to import clean, granular soils to complete site work that meets the grading requirements listed in Table 2.

Table 2 Structural Fill Gradation

| U.S. Sieve Size | Percent Passing |
|-----------------|-----------------|
| 4 inches | 100 |
| ¾ inch | 70 minimum |
| No. 4 | 35 to 60 |
| No. 200 | 0 to 5* |

*Based on minus 3/4 inch fraction.

Prior to use, a RGI representative should observe and test all materials imported to the site for use as structural fill. Structural fill materials should be placed in uniform loose layers not exceeding 12 inches and compacted as specified in Table 3. The soil's maximum density and optimum moisture should be determined by ASTM D1557.

Table 3 Structural Fill Compaction ASTM D1557

| Location | Material Type | Minimum Compaction Percentage | Moisture Content Range | |
|-------------------------------------|--|-------------------------------|------------------------|----|
| Foundations | On-site granular or approved imported fill soils | 95 | +2 | -2 |
| Retaining Wall Backfill | On-site granular or approved imported fill soils | 92 | +2 | -2 |
| Slab-on-grade | On-site granular or approved imported fill soils | 95 | +2 | -2 |
| General Fill (non-structural areas) | On-site granular or approved imported fill soils | 90 | +3 | -2 |
| Pavement, Subgrade and Base Course | On-site granular or approved imported fill soils | 95 | +2 | -2 |

Placement and compaction of structural fill should be observed by RGI. A representative number of in-place density tests should be performed as the fill is being placed to confirm that the recommended level of compaction is achieved.

5.3 FOUNDATIONS

The proposed building and canopy foundation can be supported on conventional spread footings bearing on medium dense native soil or structural fill. Where loose soils or other unsuitable soils are encountered in the proposed building footprint, they should be recompacted or overexcavated and backfilled with structural fill.

Perimeter foundations exposed to weather should be at a minimum depth of 18 inches below final exterior grades. Interior foundations can be constructed at any convenient depth below the floor slab. Finished grade is defined as the lowest adjacent grade within 5 feet of the foundation for perimeter (or exterior) footings and finished floor level for interior footings.

Table 4 Foundation Design

| Design Parameter | Value |
|---|--|
| Allowable Bearing Capacity – Native soil or Structural fill | 2,000 psf ¹ |
| Friction Coefficient | 0.25 |
| Passive pressure (equivalent fluid pressure) | 250 pcf ² |
| Minimum foundation dimensions | Columns: 24 inches Walls: 16 inches |

1 psf = pounds per square foot

2 pcf = pounds per cubic foot

The allowable foundation bearing pressures apply to dead loads plus design live load conditions. For short-term loads, such as wind and seismic, a 1/3 increase in this allowable capacity may be used. At perimeter locations, RGI recommends not including the upper 12 inches of soil in the computation of passive pressures because it can be affected by weather or disturbed by future grading activity. The passive pressure value assumes the foundation will be constructed neat against competent soil or backfilled with structural fill as described in Section 5.2.4. The recommended base friction and passive resistance value includes a safety factor of about 1.5.

With spread-footing foundations designed in accordance with the recommendations in this section, maximum total and differential post-construction settlements of 1 inch and 1/2 inch, respectively, should be expected.

5.4 RETAINING WALL

RGI is not aware of retaining wall that will be needed on the site. If retaining walls are needed for a detention vault or site retaining walls, RGI recommends cast-in-place concrete walls be used. The magnitude of earth pressure development on retaining walls will partly depend on the quality of the wall backfill. RGI recommends placing and

compacting wall backfill as structural fill. The retaining wall foundation must be supported on recompacted native soil or structural fill. Wall drainage will be needed behind the wall face. A typical retaining wall drainage detail is shown on Figure 3. The retaining wall foundation subgrade should be supported on competent native soil.

With wall backfill placed and compacted as recommended, and drainage properly installed, RGI recommends using the values in the following table for design.

Table 5 Retaining Wall Design

| Design Parameter | Value |
|---|-----------|
| Allowable Bearing Capacity – Native soil or Structural fill | 2,000 psf |
| Active Earth Pressure (unrestrained walls) | 35 pcf |
| At-rest Earth Pressure (restrained walls) | 50 pcf |

For seismic design, an additional uniform load of 7 times the wall height (H) for unrestrained walls and 14H for restrained walls should be applied to the wall surface. Friction at the base of foundations and passive earth pressure will provide resistance to these lateral loads. Values for these parameters are provided in the Section 5.3.

5.5 SLAB-ON-GRADE CONSTRUCTION

Once site preparation has been completed as described in Section 5.2, suitable support for slab-on-grade construction should be provided. The native soil subgrade should be medium dense or recompacted. Immediately below the floor slab, RGI recommends placing a 4-inch-thick capillary break layer of clean, free-draining pea gravel, washed rock, or crushed rock that has less than 5 percent passing the U.S. No. 200 sieve. This material will reduce the potential for upward capillary movement of water through the underlying soil and subsequent wetting of the floor slab. Where moisture by vapor transmission is undesirable, an 8- to 10-mil-thick plastic membrane should be placed on a 4-inch-thick layer of clean gravel or rock.

For the anticipated floor slab loading, we estimate post-construction floor settlements of ¼- to ½-inch. For thickness design of the slab subjected to point loading from storage racks, RGI recommends using a subgrade modulus (K_s) of 150 pounds per square inch per inch of deflection.

If the buildings will be supported on reinforced slab with thickened edges, a soil bearing capacity of 1,000 pound per square feet (psf) and subgrade modulus of 150 pound per cubic inch (pci) can be used for the concrete slab design. For the anticipated floor slab loading, we estimate post-construction floor settlements of ¼- to ½-inch.

5.6 DRAINAGE

5.6.1 SURFACE

Final exterior grades should promote free and positive drainage away from the building area. Water must not be allowed to pond or collect adjacent to foundations or within the immediate building area. For non-pavement locations, RGI recommends providing a minimum drainage gradient of 3 percent for a minimum distance of 10 feet from the building perimeter. In paved locations, a minimum gradient of 1 percent should be provided unless provisions are included for collection and disposal of surface water adjacent to the structure.

5.6.2 SUBSURFACE

Perimeter foundation drains, details shown on Figure 4, are generally installed around the building. The foundation drains and roof downspouts should be tightlined separately to an approved discharge facility. Subsurface drains must be laid with a gradient sufficient to promote positive flow to a controlled point of approved discharge. If the building is supported on reinforced slab with thicken edge and paved to the building, the footing drains can be eliminated.

5.6.3 INFILTRATION

RGI excavated test pit (TP-1) to complete infiltration testing. Approximately 4.5 feet of potentially contaminated fill soil (petroleum odor) consisting of silty fine sand with asphalt pieces and construction debris over medium dense silty sand was encountered in test pit TP-1. Due to potentially contaminated fill soils, infiltration testing was not performed.

RGI has reviewed the native soil conditions for the potential for infiltration based on grain size analysis. The native soil at shallow depth is silty sand to silt (with 37.5 to 57.5% of fines), which does not support onsite infiltration systems. Therefore, RGI doesn't recommend onsite infiltration system be used for stormwater disposal.

5.7 UTILITIES

Utility pipes should be bedded and backfilled in accordance with American Public Works Association (APWA) specifications. For site utilities located within the right-of-ways, bedding and backfill should be completed in accordance with City of Sherwood specifications. At a minimum, trench backfill should be placed and compacted as structural fill, as described in Section 5.2.4. Where utilities occur below unimproved areas, the degree of compaction can be reduced to a minimum of 90 percent of the soil's maximum density as determined by ASTM D1557. The native soils may be used as backfill provided they can be adequately moisture conditioned and compacted in dry weather condition. Imported structural fill may be required for trench backfill in winter.

5.8 PAVEMENTS

Pavement subgrades should be prepared as described in Section 5.2 of this GER and as discussed below. Regardless of the relative compaction achieved, the subgrade must be firm and relatively unyielding before paving. This condition should be verified by proofrolling with heavy construction equipment or hand probe by inspector.

With the pavement subgrade prepared as described above, RGI recommends the following new pavement sections for parking and drive areas paved with flexible asphalt concrete surfacing.

- **For heavy truck traffic areas:** 4 inches of Hot Mix Asphalt (HMA) over 8 inches of crushed rock base (CRB) over recompacted native soil
- **For general parking areas:** 3 inches of HMA over 6 inches of CRB over recompacted native soil

The asphalt paving materials used should conform to the Oregon State Department of Transportation (ODOT) specifications for Type I asphalt wearing surface and base aggregate.

- **Concrete pavement:** 5 inches of concrete over 4 inches of CRB over recompacted native soil

Long-term pavement performance will depend on surface drainage. A poorly-drained pavement section will be subject to premature failure as a result of surface water infiltrating into the subgrade soils and reducing their supporting capability.

For optimum pavement performance, surface drainage gradients of no less than two percent are recommended. Also, some degree of longitudinal and transverse cracking of the pavement surface should be expected over time. Regular maintenance should be planned to seal cracks when they occur.

6.0 Additional Services

RGI is available to provide further geotechnical consultation throughout the design phase of the project. RGI should review the final design and specifications in order to verify that earthwork and foundation recommendations have been properly interpreted and incorporated into project design and construction.

RGI is also available to provide geotechnical engineering and construction monitoring services during construction. The integrity of the earthwork and construction depends on proper site preparation and procedures. In addition, engineering decisions may arise in the field in the event that variations in subsurface conditions become apparent. Construction monitoring services are not part of this scope of work. If these services are desired, please let us know and we will prepare a proposal.

7.0 Limitations

This GER is the property of RGI, Barghausen Consulting Engineers, Inc., and its designated agents. Within the limits of the scope and budget, this GER was prepared in accordance with generally accepted geotechnical engineering practices in the area at the time this report was issued. This GER is intended for specific application to the Sherwood Chevron project at 21090 Southwest Pacific Highway, Sherwood, Oregon, and for the exclusive use of Barghausen Consulting Engineers, Inc. and its authorized representatives. No other warranty, expressed or implied, is made. Site safety, excavation support, and dewatering requirements are the responsibility of others.

The analyses and recommendations presented in this GER are based upon data obtained from the exploration performed on site. Variations in soil conditions can occur, the nature and extent of which may not become evident until construction. If variations appear evident, RGI should be requested to reevaluate the recommendations in this GER prior to proceeding with construction.

It is the client's responsibility to see that all parties to the project, including the designers, contractors, subcontractors, are made aware of this GER in its entirety. The use of information contained in this GER for bidding purposes should be done at the contractor's option and risk.



USGS, 2020, Sherwood, Oregon
 USGS, 2020, Beaverton, Oregon
 7.5-Minute Quadrangle

Approximate Scale: 1"=1000'



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Sherwood Chevron

RGI Project Number:
 2022-522-1

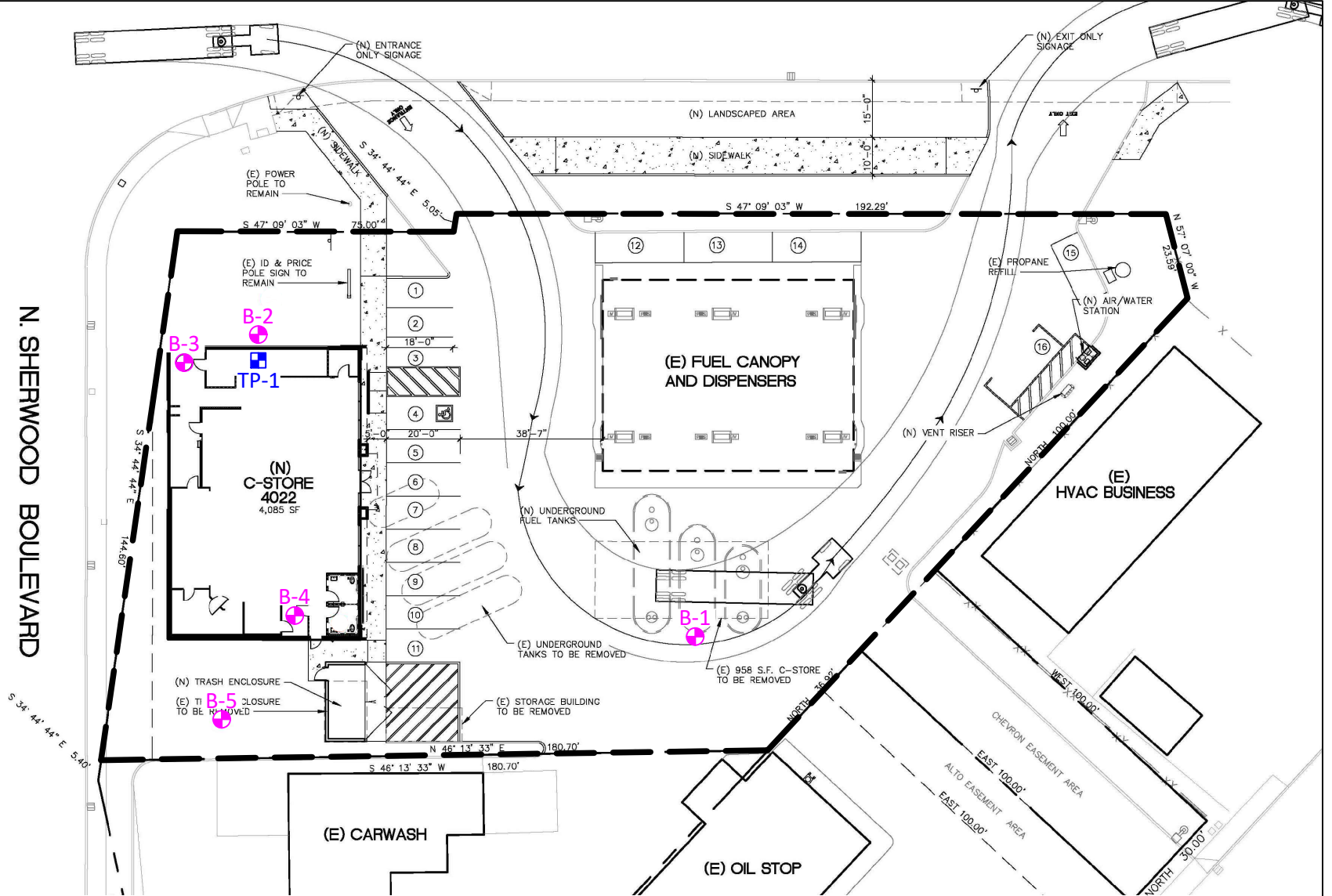
Site Vicinity Map

Figure 1

Date Drawn:
 11/2022

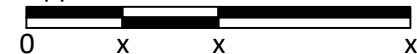
Address: 21090 Southwest Pacific Highway, Sherwood, Oregon 97140

N. SHERWOOD BOULEVARD



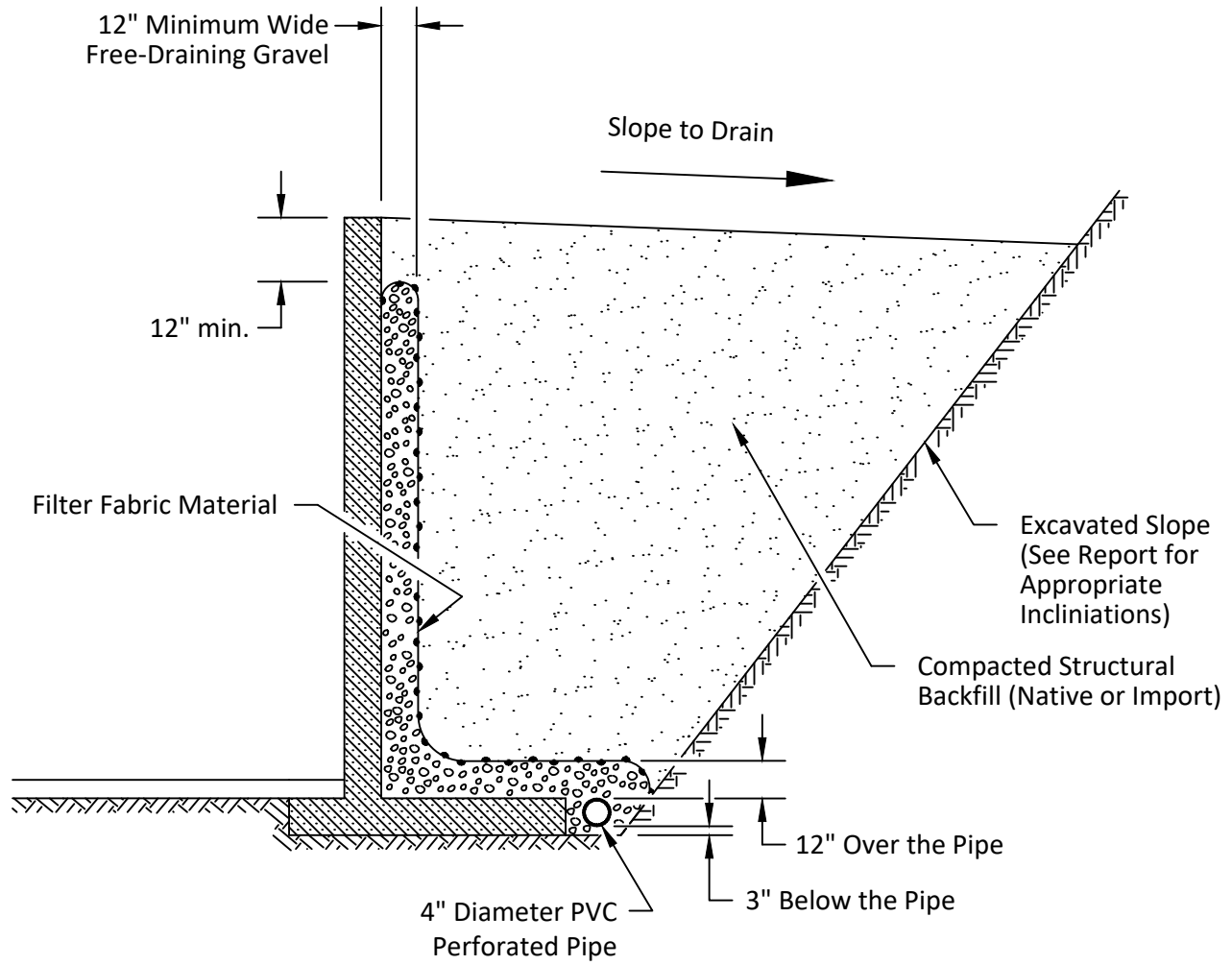
- = Test Pit by RGI, 10/28/2022
- = Boring by RGI, 10/28/2022
- = Site boundary

Approximate Scale: 1"=x'



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| | | |
|--|-------------------------------|------------------------|
| Sherwood Chevron | | Figure 2 |
| RGI Project Number: 2022-522-1 | Geotechnical Exploration Plan | Date Drawn: 11/2022 |
| Address: 21090 Southwest Pacific Highway, Sherwood, Oregon 97140 | | |

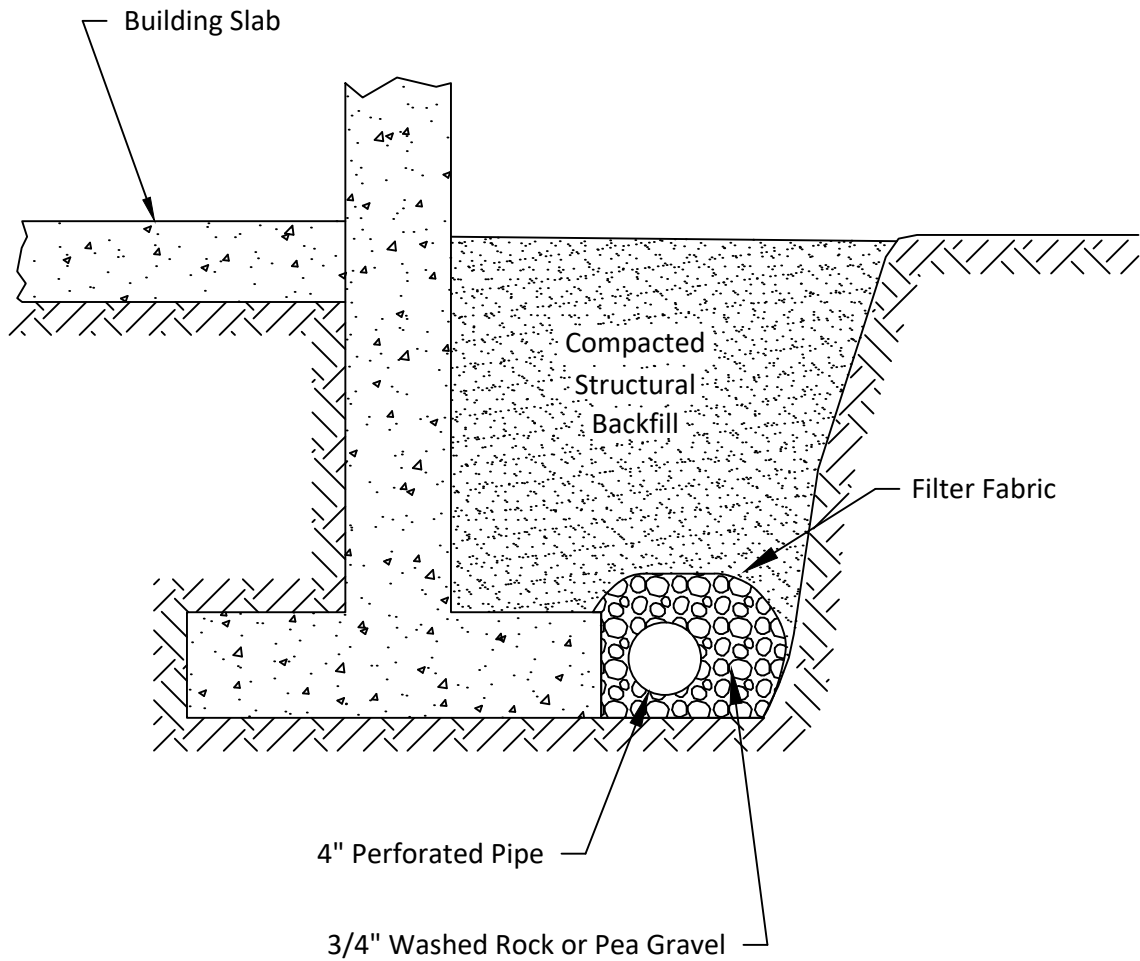


Not to Scale



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| | | |
|--|--------------------------------|------------------------|
| Sherwood Chevron | | Figure 3 |
| RGI Project Number: 2022-522-1 | Retaining Wall Drainage Detail | Date Drawn: 11/2022 |
| Address: 21090 Southwest Pacific Highway, Sherwood, Oregon 97140 | | |



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| | | |
|--|------------------------------|------------------------|
| Sherwood Chevron | | Figure 4 |
| RGI Project Number: 2022-522-1 | Typical Footing Drain Detail | Date Drawn: 11/2022 |
| Address: 21090 Southwest Pacific Highway, Sherwood, Oregon 97140 | | |

APPENDIX A

FIELD EXPLORATION AND LABORATORY TESTING

On October 28, 2022, RGI explored the subsurface soil conditions at the site by observing the excavation of one test pit and the drilling of five borings to a maximum depth of 31.5 feet below existing grade. The test pit and boring locations are shown on Figure 2. The test pit and boring locations were approximately determined by measurements from existing property lines and paved roads.

A geologist from our office conducted the field exploration and classified the soil conditions encountered, maintained a log of each exploration, obtained representative soil samples, and observed pertinent site features. All soil samples were visually classified in accordance with the Unified Soil Classification System (USCS).

Representative soil samples obtained from the explorations were placed in closed containers and taken to our laboratory for further examination and testing. As a part of the laboratory testing program, the soil samples were classified in our in house laboratory based on visual observation, texture, and the limited laboratory testing described below.

Moisture Content Determinations

Moisture content determinations were performed in accordance with the American Society of Testing and Materials D2216-10 Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass (ASTM D2216) on representative samples obtained from the exploration in order to aid in identification and correlation of soil types. The moisture content of typical sample was measured and is reported on the test pit and boring logs.

Grain Size Analysis

A grain size analysis indicates the range in diameter of soil particles included in a particular sample. Grain size analyses for the greater than 75 micrometer portion of the samples were performed in accordance with American Society of Testing and Materials D422 Standard Test Method for Particle-Size Analysis of Soils (ASTM D422) on three of the samples, the results of which are attached in Appendix A.

Project Name: **Sherwood Chevron**
 Project Number: **2022-522-1**
 Client: **Barghausen Consulting Engineers, Inc.**



Boring No.: **B-1**
 Sheet 1 of 1

| | | |
|---|--|---|
| Date(s) Drilled: 10/28/2022 | Logged By: ELW | Surface Conditions: Asphalt |
| Drilling Method(s): Solid Stem Auger | Drill Bit Size/Type: 2.25" | Total Depth of Borehole: 31.5 feet bgs |
| Drill Rig Type: Trailer Rig | Drilling Contractor: Dan J Fischer Excavating, Inc. | Approximate Surface Elevation: 211 |
| Groundwater Level: Not Encountered | Sampling Method(s): SPT | Hammer Data : 140 lb, 30" drop, rope and cathead |
| Borehole Backfill: Bentonite Chips | Location: 21090 Southwest Pacific Highway, Sherwood, Oregon | |

| Elevation (feet) | Depth (feet) | Sample Type | Sampling Resistance, blows/ft | RQD (%) | Recovery (%) | USCS Symbol | Graphic Log | MATERIAL DESCRIPTION | Moisture (%) |
|------------------|--------------|-------------|-------------------------------|---------|--------------|---------------|-------------|---------------------------------------|--------------|
| 211 | 0 | | | | | Asphalt SM | | 3" asphalt over crushed rock base | |
| | | | | | | | | Brown silty SAND, medium dense, moist | |
| 206 | 5 | | 13 | | | | | | 22 |
| 201 | 10 | | 17 | | | | | 45% fines | 22 |
| 196 | 15 | | 15 | | | | | Becomes gray | 16 |
| 191 | 20 | | 21 | | | | | | 15 |
| 186 | 25 | | 22 | | | | | | 15 |
| 181 | 30 | | 25 | | | | | | 15 |
| | | | | | | | | Boring terminated at 31.5' | |
| 176 | 35 | | | | | | | | |

Project Name: **Sherwood Chevron**
 Project Number: **2022-522-1**
 Client: **Barghausen Consulting Engineers, Inc.**



Boring No.: **B-2**
 Sheet 1 of 1

| | | |
|---|--|---|
| Date(s) Drilled: 10/28/2022 | Logged By: ELW | Surface Conditions: Grass |
| Drilling Method(s): Solid Stem Auger | Drill Bit Size/Type: 2.25" | Total Depth of Borehole: 11.5 feet bgs |
| Drill Rig Type: Trailer Rig | Drilling Contractor: Dan J Fischer Excavating, Inc. | Approximate Surface Elevation: 208 |
| Groundwater Level: Not Encountered | Sampling Method(s): SPT | Hammer Data : 140 lb, 30" drop, rope and cathead |
| Borehole Backfill: Bentonite Chips | Location: 21090 Southwest Pacific Highway, Sherwood, Oregon | |

| Elevation (feet) | Depth (feet) | Sample Type | Sampling Resistance, blows/ft | RQD (%) | Recovery (%) | USCS Symbol | Graphic Log | MATERIAL DESCRIPTION | Moisture (%) |
|------------------|--------------|-------------|-------------------------------|---------|--------------|--------------|-------------|--|--------------|
| 208 | 0 | | | | | TPSL Fill | | 3" topsoil Brown sandy SILT, medium stiff, moist (Fill) | |
| | 7 | | 7 | | | | | 58% fines | 21 |
| 203 | 5 | | 11 | | | SM | | Brown silty SAND with trace gravel, medium dense, moist | 21 |
| | 14 | | 14 | | | | | 37% fines | 24 |
| 198 | 10 | | 13 | | | | | | 23 |
| | 15 | | | | | | | Test Pit terminated at 11.5' | |
| 193 | 15 | | | | | | | | |
| 188 | 20 | | | | | | | | |
| 183 | 25 | | | | | | | | |
| 178 | 30 | | | | | | | | |
| 173 | 35 | | | | | | | | |

Project Name: **Sherwood Chevron**
 Project Number: **2022-522-1**
 Client: **Barghausen Consulting Engineers, Inc.**



Boring No.: **B-3**
 Sheet 1 of 1

| | | |
|---|--|---|
| Date(s) Drilled: 10/28/2022 | Logged By: ELW | Surface Conditions: Grass |
| Drilling Method(s): Solid Stem Auger | Drill Bit Size/Type: 2.25" | Total Depth of Borehole: 31.5 feet bgs |
| Drill Rig Type: Trailer Rig | Drilling Contractor: Dan J Fischer Excavating, Inc. | Approximate Surface Elevation: 207 |
| Groundwater Level: 31 | Sampling Method(s): SPT | Hammer Data : 140 lb, 30" drop, rope and cathead |
| Borehole Backfill: Bentonite Chips | Location: 21090 Southwest Pacific Highway, Sherwood, Oregon | |

| Elevation (feet) | Depth (feet) | Sample Type | Sampling Resistance, blows/ft | RQD (%) | Recovery (%) | USCS Symbol | Graphic Log | MATERIAL DESCRIPTION | Moisture (%) |
|------------------|--------------|-------------|-------------------------------|---------|--------------|-------------|-------------|--|--------------|
| 207 | 0 | | | | | TPSL SM | | Topsoil Brown silty SAND, medium dense, moist | |
| 202 | 5 | | 13 | | | | | | 20 |
| 197 | 10 | | 17 | | | | | | 22 |
| 192 | 15 | | 22 | | | | | | 18 |
| 187 | 20 | | 19 | | | | | Becomes gray | 15 |
| 182 | 25 | | 23 | | | | | | 13 |
| 177 | 30 | | 21 | | | | | Becomes brown Becomes water bearing | 25 |
| 172 | 35 | | | | | | | Boring terminated at 31.5' | |

Project Name: **Sherwood Chevron**
 Project Number: **2022-522-1**
 Client: **Barghausen Consulting Engineers, Inc.**



Boring No.: **B-4**
 Sheet 1 of 1

| | | |
|---|--|---|
| Date(s) Drilled: 10/28/2022 | Logged By: ELW | Surface Conditions: Grass |
| Drilling Method(s): Solid Stem Auger | Drill Bit Size/Type: 2.25" | Total Depth of Borehole: 21.5 feet bgs |
| Drill Rig Type: Trailer Rig | Drilling Contractor: Dan J Fischer Excavating, Inc. | Approximate Surface Elevation: 209 |
| Groundwater Level: Not Encountered | Sampling Method(s): SPT | Hammer Data : 140 lb, 30" drop, rope and cathead |
| Borehole Backfill: Bentonite Chips | Location: 21090 Southwest Pacific Highway, Sherwood, Oregon | |

| Elevation (feet) | Depth (feet) | Sample Type | Sampling Resistance, blows/ft | RQD (%) | Recovery (%) | USCS Symbol | Graphic Log | MATERIAL DESCRIPTION | Moisture (%) |
|------------------|--------------|-------------|-------------------------------|---------|--------------|-------------|-------------|--|--------------|
| 209 | 0 | | | | | TPSL SM | | Topsoil | |
| | | | | | | | | Brown silty sand, loose to medium dense, moist | |
| 204 | 5 | | 10 | | | | | | 16 |
| 199 | 10 | | 15 | | | ML | | Brown sandy SILT, stiff, moist to wet | 28 |
| 194 | 15 | | 13 | | | SM | | Brown silty SAND, medium dense, moist | 18 |
| 189 | 20 | | 12 | | | | | | 16 |
| | | | | | | | | Test Pit terminated at 21.5' | |
| 184 | 25 | | | | | | | | |
| 179 | 30 | | | | | | | | |
| 174 | 35 | | | | | | | | |

Project Name: **Sherwood Chevron**
 Project Number: **2022-522-1**
 Client: **Barghausen Consulting Engineers, Inc.**



Boring No.: **B-5**
 Sheet 1 of 1

| | | |
|---|--|---|
| Date(s) Drilled: 10/28/2022 | Logged By: ELW | Surface Conditions: Grass |
| Drilling Method(s): Solid Stem Auger | Drill Bit Size/Type: 2.25" | Total Depth of Borehole: 11.5 feet bgs |
| Drill Rig Type: Trailer Rig | Drilling Contractor: Dan J Fischer Excavating, Inc. | Approximate Surface Elevation: 209 |
| Groundwater Level: Not Encountered | Sampling Method(s): SPT | Hammer Data : 140 lb, 30" drop, rope and cathead |
| Borehole Backfill: Bentonite Chips | Location: 21090 Southwest Pacific Highway, Sherwood, Oregon | |

| Elevation (feet) | Depth (feet) | Sample Type | Sampling Resistance, blows/ft | RQD (%) | Recovery (%) | USCS Symbol | Graphic Log | MATERIAL DESCRIPTION | Moisture (%) |
|------------------|--------------|-------------|-------------------------------|---------|--------------|-------------|-------------|--|--------------|
| 209 | 0 | | | | | TPSL SM | | Topsoil Brown silty SAND, medium dense, moist | |
| | 3 | | 13 | | | | | | 15 |
| 204 | 5 | | 12 | | | | | | 16 |
| | 10 | | 16 | | | | | | 19 |
| 199 | 10 | | 14 | | | | | | 17 |
| | 15 | | | | | | | Boring terminated at 11.5' | |
| 194 | 15 | | | | | | | | |
| 189 | 20 | | | | | | | | |
| 184 | 25 | | | | | | | | |
| 179 | 30 | | | | | | | | |
| 174 | 35 | | | | | | | | |



| Elevation (feet) | Depth (feet) | Sample Type | Sampling Resistance, blows/ft | RQD (%) | Recovery (%) | USCS Symbol | Graphic Log | MATERIAL DESCRIPTION | Moisture (%) |
|------------------|--------------|-------------|-------------------------------|---------|--------------|-------------|-------------|----------------------|--------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

COLUMN DESCRIPTIONS

- | | |
|--|---|
| <p>1 Elevation (feet): Elevation (MSL, feet).</p> <p>2 Depth (feet): Depth in feet below the ground surface.</p> <p>3 Sample Type: Type of soil sample collected at the depth interval shown.</p> <p>4 Sampling Resistance, blows/ft: Number of blows to advance driven sampler one foot (or distance shown) beyond seating interval using the hammer identified on the boring log.</p> <p>5 RQD (%): Rock Quality Designation is a relative index of the rock mass quality calculated by comparing the cumulative length of intact pieces of core exceeding 100 mm in length to the cored interval length.</p> | <p>6 Recovery (%): Core Recovery Percentage is determined based on a ratio of the length of core sample recovered compared to the cored interval length.</p> <p>7 USCS Symbol: USCS symbol of the subsurface material.</p> <p>8 Graphic Log: Graphic depiction of the subsurface material encountered.</p> <p>9 MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.</p> <p>10 Moisture (%): Moisture, expressed as a water content.</p> |
|--|---|

FIELD AND LABORATORY TEST ABBREVIATIONS

- | | |
|---|--|
| <p>CHEM: Chemical tests to assess corrosivity</p> <p>COMP: Compaction test</p> <p>CONS: One-dimensional consolidation test</p> <p>LL: Liquid Limit, percent</p> | <p>PI: Plasticity Index, percent</p> <p>SA: Sieve analysis (percent passing No. 200 Sieve)</p> <p>UC: Unconfined compressive strength test, Qu, in ksf</p> <p>WA: Wash sieve (percent passing No. 200 Sieve)</p> |
|---|--|

MATERIAL GRAPHIC SYMBOLS

- | | |
|-------------------------|------------------------------------|
| Asphaltic Concrete (AC) | SILT, SILT w/SAND, SANDY SILT (ML) |
| AF | Silty SAND (SM) |
| | Topsoil |

TYPICAL SAMPLER GRAPHIC SYMBOLS

- | | | |
|-------------------------------------|---|---------------------------------------|
| Auger sampler | CME Sampler | Pitcher Sample |
| Bulk Sample | Grab Sample | 2-inch-OD unlined split spoon (SPT) |
| 3-inch-OD California w/ brass rings | 2.5-inch-OD Modified California w/ brass liners | Shelby Tube (Thin-walled, fixed head) |

OTHER GRAPHIC SYMBOLS

- | | |
|--|--|
| | Water level (at time of drilling, ATD) |
| | Water level (after waiting) |
| | Minor change in material properties within a stratum |
| | Inferred/gradational contact between strata |
| | Queried contact between strata |

GENERAL NOTES

- Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
- Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

Project Name: **Sherwood Chevron**
 Project Number: **2022-522-1**
 Client: **Barghausen Consulting Engineers, Inc.**



Test Pit No.: **TP-1**
 Sheet 1 of 1

| | | |
|---|---|---|
| Date(s) Excavated: 10/28/2022 | Logged By ALG | Surface Conditions: Grass |
| Excavation Method: Test Pit | Bucket Size: N/A | Total Depth of Excavation: 5 feet bgs |
| Excavator Type: Rubber Tired Backhoe | Excavating Contractor: Dan J Fischer Excavating, Inc. | Approximate Surface Elevation 208 |
| Groundwater Level: Not Encountered | Sampling Method(s) | Compaction Method 140 lb, 30" drop, rope and cathead |
| Test Pit Backfill: Cuttings | Location 21090 Southwest Pacific Highway, Sherwood, Oregon | |

| Elevation (feet) | Depth (feet) | Sample Type | Sample Number | USCS Symbol | Graphic Log | MATERIAL DESCRIPTION | REMARKS AND OTHER TESTS |
|------------------|--------------|-------------|---------------|-------------|-------------|---|-------------------------|
| 208 | 0 | | | TPSL | | 3" topsoil | |
| | | | | Fill | | Light brown silty fine SAND, loose, moist (Fill) Contains asphalt and construction debris | |
| | | | | Fill | | Gray to grayish brown silty fine SAND with trace gravel, loose, moist (Fill) Possible contamination, asphalt and construction debris | |
| | | | | SM | | Brown silty SAND, medium dense, moist | |
| 203 | 5 | | | | | Test Pit terminated at 5' | |
| 198 | 10 | | | | | | |



| Elevation (feet) | Depth (feet) | Sample Type | Sample Number | USCS Symbol | Graphic Log | MATERIAL DESCRIPTION | REMARKS AND OTHER TESTS |
|------------------|--------------|-------------|---------------|-------------|-------------|----------------------|-------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

COLUMN DESCRIPTIONS

- | | |
|---|--|
| <p>1 Elevation (feet): Elevation (MSL, feet). 2 Depth (feet): Depth in feet below the ground surface. 3 Sample Type: Type of soil sample collected at the depth interval shown. 4 Sample Number: Sample identification number.</p> | <p>5 USCS Symbol: USCS symbol of the subsurface material. 6 Graphic Log: Graphic depiction of the subsurface material encountered. 7 MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text. 8 REMARKS AND OTHER TESTS: Comments and observations regarding drilling or sampling made by driller or field personnel.</p> |
|---|--|

FIELD AND LABORATORY TEST ABBREVIATIONS

- | | |
|---|--|
| <p>CHEM: Chemical tests to assess corrosivity COMP: Compaction test CONS: One-dimensional consolidation test LL: Liquid Limit, percent</p> | <p>PI: Plasticity Index, percent SA: Sieve analysis (percent passing No. 200 Sieve) UC: Unconfined compressive strength test, Qu, in ksf WA: Wash sieve (percent passing No. 200 Sieve)</p> |
|---|--|

MATERIAL GRAPHIC SYMBOLS

- | | |
|----|-----------------|
| AF | Silty SAND (SM) |
| | Topsoil |

TYPICAL SAMPLER GRAPHIC SYMBOLS

- | | | |
|-------------------------------------|---|---------------------------------------|
| Auger sampler | CME Sampler | Pitcher Sample |
| Bulk Sample | Grab Sample | 2-inch-OD unlined split spoon (SPT) |
| 3-inch-OD California w/ brass rings | 2.5-inch-OD Modified California w/ brass liners | Shelby Tube (Thin-walled, fixed head) |

OTHER GRAPHIC SYMBOLS

- | | |
|--|--|
| | Water level (at time of drilling, ATD) |
| | Water level (after waiting) |
| | Minor change in material properties within a stratum |
| | Inferred/gradational contact between strata |
| | Queried contact between strata |

GENERAL NOTES

- 1: Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
 2: Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

GRAIN SIZE ANALYSIS
ASTM D421, D422, D1140, D2487, D6913

| | | | |
|-----------------------|------------------|-----------------------|------------|
| PROJECT TITLE | Sherwood Chevron | SAMPLE ID/TYPE | B-1 |
| PROJECT NO. | 2022-522 | SAMPLE DEPTH | 10 feet |
| TECH/TEST DATE | CM 11/2/2022 | DATE RECEIVED | 10/28/2022 |

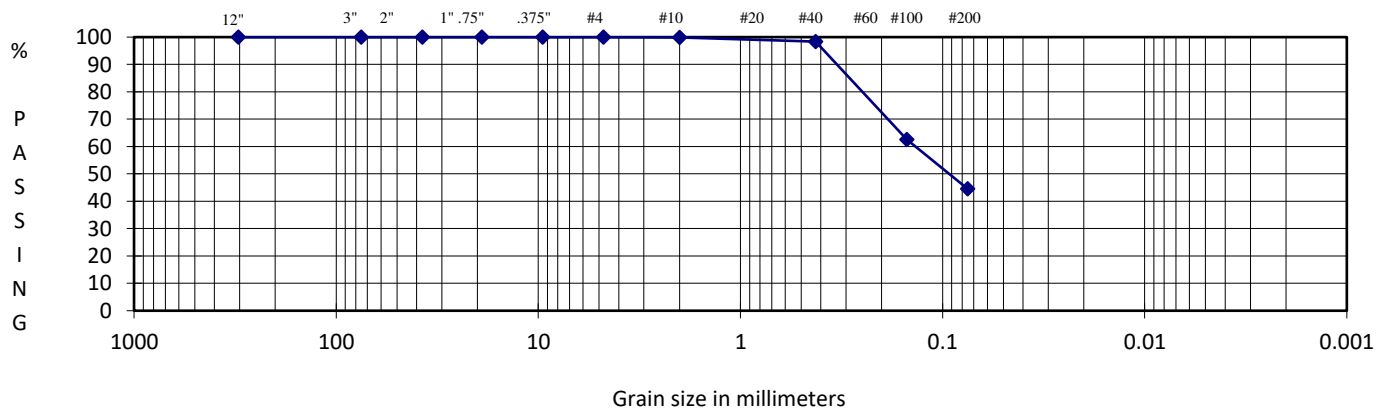
| | | | |
|---|------------|--|-------|
| WATER CONTENT (Delivered Moisture) | | Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture | |
| Wt Wet Soil & Tare (gm) | (w1) 272.1 | Weight Of Sample (gm) | 226.7 |
| Wt Dry Soil & Tare (gm) | (w2) 226.7 | Tare Weight (gm) | 15.9 |
| Weight of Tare (gm) | (w3) 15.9 | (W6) Total Dry Weight (gm) | 210.8 |

| | | | | |
|-------------------------|------------------|-----------------------|------------------|--------------------|
| Weight of Water (gm) | (w4=w1-w2) 45.4 | SIEVE ANALYSIS | | |
| Weight of Dry Soil (gm) | (w5=w2-w3) 210.8 | Wt Ret | (Wt-Tare) | Cumulative |
| Moisture Content (%) | (w4/w5)*100 22 | +Tare | | (%Retained) |
| | | | | (100-%ret) |

| | |
|------------|-------|
| % COBBLES | 0.0 |
| % C GRAVEL | 0.0 |
| % F GRAVEL | 0.0 |
| % C SAND | 0.1 |
| % M SAND | 1.5 |
| % F SAND | 53.8 |
| % FINES | 44.5 |
| % TOTAL | 100.0 |

| | |
|----------|--|
| D10 (mm) | |
| D30 (mm) | |
| D60 (mm) | |
| Cu | |
| Cc | |

| | Wt Ret +Tare | (Wt-Tare) | Cumulative (%Retained) ((wt ret/w6)*100) | % PASS (100-%ret) | |
|--------|--------------|-----------|--|-------------------|---------------|
| 12.0" | 15.9 | 0.00 | 0.00 | 100.00 | cobbles |
| 3.0" | 15.9 | 0.00 | 0.00 | 100.00 | coarse gravel |
| 2.5" | | | | | coarse gravel |
| 2.0" | | | | | coarse gravel |
| 1.5" | 15.9 | 0.00 | 0.00 | 100.00 | coarse gravel |
| 1.0" | | | | | coarse gravel |
| 0.75" | 15.9 | 0.00 | 0.00 | 100.00 | fine gravel |
| 0.50" | | | | | fine gravel |
| 0.375" | 15.9 | 0.00 | 0.00 | 100.00 | fine gravel |
| #4 | 15.9 | 0.00 | 0.00 | 100.00 | coarse sand |
| #10 | 16.1 | 0.20 | 0.09 | 99.91 | medium sand |
| #20 | | | | | medium sand |
| #40 | 19.3 | 3.40 | 1.61 | 98.39 | fine sand |
| #60 | | | | | fine sand |
| #100 | 94.7 | 78.80 | 37.38 | 62.62 | fine sand |
| #200 | 132.8 | 116.90 | 55.46 | 44.54 | finer |
| PAN | 226.7 | 210.80 | 100.00 | 0.00 | silt/clay |



DESCRIPTION Silty SAND

USCS SM

Prepared For:
 Barghausen Consulting Services

Reviewed By:
 ELW



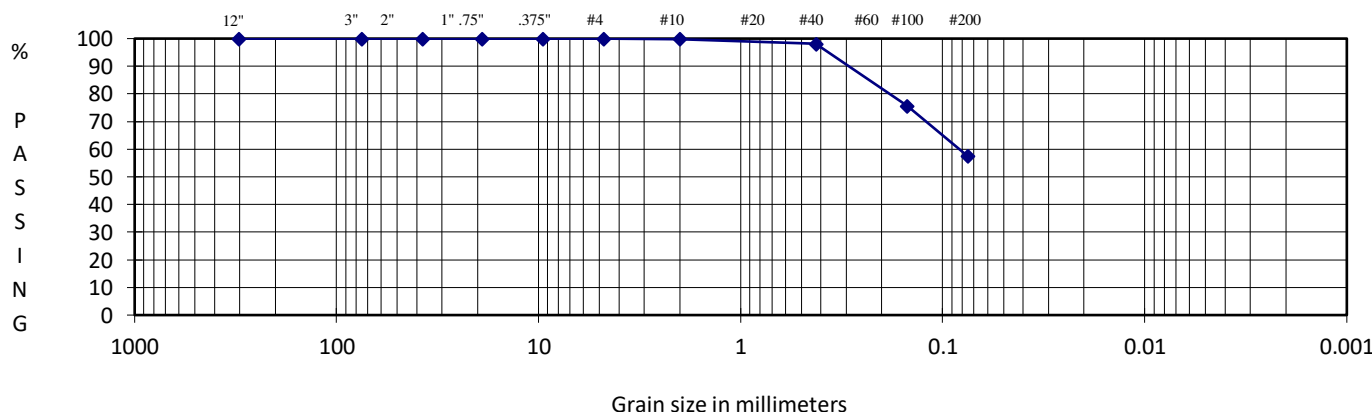
GRAIN SIZE ANALYSIS
ASTM D421, D422, D1140, D2487, D6913

| | | | |
|----------------|------------------|----------------|------------|
| PROJECT TITLE | Sherwood Chevron | SAMPLE ID/TYPE | B-2 |
| PROJECT NO. | 2022-522 | SAMPLE DEPTH | 2.5 feet |
| TECH/TEST DATE | CM 11/2/2022 | DATE RECEIVED | 10/28/2022 |

| | | | |
|---|------------|--|-------|
| WATER CONTENT (Delivered Moisture) | | Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture | |
| Wt Wet Soil & Tare (gm) | (w1) 424.8 | Weight Of Sample (gm) | 352.8 |
| Wt Dry Soil & Tare (gm) | (w2) 352.8 | Tare Weight (gm) | 15.9 |
| Weight of Tare (gm) | (w3) 15.9 | (w6) Total Dry Weight (gm) | 336.9 |

| | | | |
|-------------------------|------------------|-----------------------|---------------------------|
| Weight of Water (gm) | (w4=w1-w2) 72.0 | SIEVE ANALYSIS | |
| Weight of Dry Soil (gm) | (w5=w2-w3) 336.9 | Cumulative | |
| Moisture Content (%) | (w4/w5)*100 21 | Wt Ret +Tare | (Wt-Tare) (wt ret/w6)*100 |
| | | (%Retained) | % PASS (100-%ret) |

| | | | | | | | |
|------------|-------|--------|-------|--------|--------|--------|---------------|
| % COBBLES | 0.0 | 12.0" | 15.9 | 0.00 | 0.00 | 100.00 | cobbles |
| % C GRAVEL | 0.0 | 3.0" | 15.9 | 0.00 | 0.00 | 100.00 | coarse gravel |
| % F GRAVEL | 0.0 | 2.5" | | | | | coarse gravel |
| % C SAND | 0.2 | 2.0" | | | | | coarse gravel |
| % M SAND | 1.8 | 1.5" | 15.9 | 0.00 | 0.00 | 100.00 | coarse gravel |
| % F SAND | 40.5 | 1.0" | | | | | coarse gravel |
| % FINES | 57.5 | 0.75" | 15.9 | 0.00 | 0.00 | 100.00 | fine gravel |
| % TOTAL | 100.0 | 0.50" | | | | | fine gravel |
| D10 (mm) | | 0.375" | 15.9 | 0.00 | 0.00 | 100.00 | fine gravel |
| D30 (mm) | | #4 | 15.9 | 0.00 | 0.00 | 100.00 | coarse sand |
| D60 (mm) | | #10 | 16.6 | 0.70 | 0.21 | 99.79 | medium sand |
| Cu | | #20 | | | | | medium sand |
| Cc | | #40 | 22.5 | 6.60 | 1.96 | 98.04 | fine sand |
| | | #60 | | | | | fine sand |
| | | #100 | 98.0 | 82.10 | 24.37 | 75.63 | fine sand |
| | | #200 | 159.1 | 143.20 | 42.51 | 57.49 | finest |
| | | PAN | 352.8 | 336.90 | 100.00 | 0.00 | silt/clay |



DESCRIPTION: Sandy SILT
 USCS: ML

Prepared For: Barghausen Consulting Services

Reviewed By: ELW



GRAIN SIZE ANALYSIS
ASTM D421, D422, D1140, D2487, D6913

| | | | |
|----------------|------------------|----------------|------------|
| PROJECT TITLE | Sherwood Chevron | SAMPLE ID/TYPE | B-2 |
| PROJECT NO. | 2022-522 | SAMPLE DEPTH | 7.5 feet |
| TECH/TEST DATE | CM 11/2/2022 | DATE RECEIVED | 10/28/2022 |

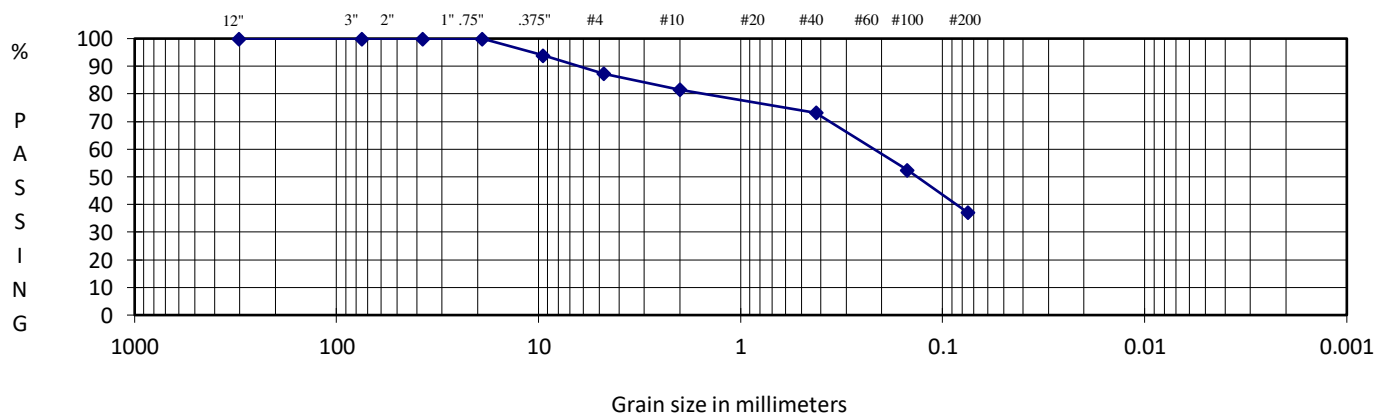
| | | | |
|---|------------|--|-------|
| WATER CONTENT (Delivered Moisture) | | Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture | |
| Wt Wet Soil & Tare (gm) | (w1) 357.7 | Weight Of Sample (gm) | 291.7 |
| Wt Dry Soil & Tare (gm) | (w2) 291.7 | Tare Weight (gm) | 15.9 |
| Weight of Tare (gm) | (w3) 15.9 | (w6) Total Dry Weight (gm) | 275.8 |

| | | | |
|-------------------------|------------------|-----------------------|-------------------|
| Weight of Water (gm) | (w4=w1-w2) 66.0 | SIEVE ANALYSIS | |
| Weight of Dry Soil (gm) | (w5=w2-w3) 275.8 | Cumulative | |
| Moisture Content (%) | (w4/w5)*100 24 | Wt Ret | (Wt-Tare) |
| | | +Tare | {(wt ret/w6)*100} |
| | | | % PASS |
| | | | (100-%ret) |

| | |
|------------|-------|
| % COBBLES | 0.0 |
| % C GRAVEL | 0.0 |
| % F GRAVEL | 12.7 |
| % C SAND | 5.8 |
| % M SAND | 8.4 |
| % F SAND | 36.1 |
| % FINES | 37.1 |
| % TOTAL | 100.0 |

| | |
|----------|--|
| D10 (mm) | |
| D30 (mm) | |
| D60 (mm) | |
| Cu | |
| Cc | |

| Sieve Size | Wt Ret +Tare | (Wt-Tare) | Cumulative (%Retained) {(wt ret/w6)*100} | % PASS (100-%ret) | Material |
|------------|--------------|-----------|--|-------------------|---------------|
| 12.0" | 15.9 | 0.00 | 0.00 | 100.00 | cobbles |
| 3.0" | 15.9 | 0.00 | 0.00 | 100.00 | coarse gravel |
| 2.5" | | | | | coarse gravel |
| 2.0" | | | | | coarse gravel |
| 1.5" | 15.9 | 0.00 | 0.00 | 100.00 | coarse gravel |
| 1.0" | | | | | coarse gravel |
| 0.75" | 15.9 | 0.00 | 0.00 | 100.00 | fine gravel |
| 0.50" | | | | | fine gravel |
| 0.375" | 32.7 | 16.80 | 6.09 | 93.91 | fine gravel |
| #4 | 50.8 | 34.90 | 12.65 | 87.35 | coarse sand |
| #10 | 66.7 | 50.80 | 18.42 | 81.58 | medium sand |
| #20 | | | | | medium sand |
| #40 | 89.8 | 73.90 | 26.79 | 73.21 | fine sand |
| #60 | | | | | fine sand |
| #100 | 147.0 | 131.10 | 47.53 | 52.47 | fine sand |
| #200 | 189.3 | 173.40 | 62.87 | 37.13 | finer |
| PAN | 291.7 | 275.80 | 100.00 | 0.00 | silt/clay |



DESCRIPTION: Silty SAND with trace gravel
USCS: SM

Prepared For: Barghausen Consulting Services

Reviewed By: ELW





GEOTECHNICAL ENGINEERING REPORT

PREPARED BY:

**THE RILEY GROUP, INC.
17522 BOTHELL WAY NORTHEAST
BOTHELL, WASHINGTON 98011**

PREPARED FOR:

**BARGHAUSEN CONSULTING ENGINEERS, INC.
18215 72ND AVENUE SOUTH
KENT, WASHINGTON 98032**

RGI PROJECT No. 2022-522-1

**SHERWOOD CHEVRON
21090 SOUTHWEST PACIFIC HIGHWAY
SHERWOOD, OREGON 97140**

NOVEMBER 18, 2022

Corporate Office
17522 Bothell Way Northeast
Bothell, Washington 98011
Phone 425.415.0551 ♦ Fax 425.415.0311

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November 18, 2022

Mr. Dan Goalwin
Barghausen Consulting Engineers, Inc.
21090 Southwest Pacific Highway
Sherwood, Oregon 97140

**Subject: Geotechnical Engineering Report
Sherwood Chevron
21090 Southwest Pacific Highway
Sherwood, Oregon 97140
RGI Project No. 2022-522-1**

Dear Mr. Goalwin:

As requested, The Riley Group, Inc. (RGI) has prepared this Geotechnical Engineering Report (GER) for the above-referenced site. Our services were completed in accordance with our proposal 2022-522-PRP1 dated August 29, 2022 and authorized by the client on September 19, 2022. The information in this GER is based on our understanding of the proposed construction, and the soil and groundwater conditions encountered in the borings and test pit completed by RGI at the site on October 28, 2022.

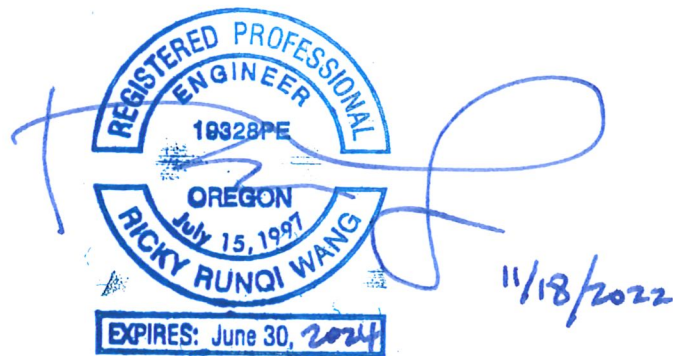
RGI recommends the project plans and specifications be submitted for a general review so that RGI may confirm that the recommendations in this GER are interpreted and implemented properly in the construction documents. RGI also recommends that a representative of our firm be present on site during portions of the project construction to confirm that the soil and groundwater conditions are consistent with those that form the basis for the engineering recommendations in this GER.

If you have any questions or require additional information, please contact us.

Respectfully submitted,

THE RILEY GROUP, INC.

Eric L. Woods, LG
Project Geologist



Ricky R. Wang, PhD, PE
Principal Engineer

TABLE OF CONTENTS

| | | |
|------------|---|-----------|
| 1.0 | INTRODUCTION | 1 |
| 2.0 | PROJECT DESCRIPTION | 1 |
| 3.0 | FIELD EXPLORATION AND LABORATORY TESTING | 1 |
| 3.1 | FIELD EXPLORATION | 1 |
| 3.2 | LABORATORY TESTING | 2 |
| 4.0 | SITE CONDITIONS | 2 |
| 4.1 | SURFACE | 2 |
| 4.2 | GEOLOGY | 2 |
| 4.3 | SOILS..... | 2 |
| 4.4 | GROUNDWATER | 3 |
| 4.5 | SEISMIC CONSIDERATIONS | 3 |
| 4.6 | GEOLOGIC HAZARD AREAS | 4 |
| 5.0 | DISCUSSION AND RECOMMENDATIONS | 4 |
| 5.1 | GEOTECHNICAL CONSIDERATIONS | 4 |
| 5.2 | EARTHWORK..... | 4 |
| 5.2.1 | Erosion and Sediment Control | 5 |
| 5.2.2 | Excavations..... | 5 |
| 5.2.3 | Underground Storage Tank Installation | 6 |
| 5.2.4 | Stripping and Site Preparation | 6 |
| 5.2.5 | Structural Fill | 7 |
| 5.3 | FOUNDATIONS | 9 |
| 5.4 | RETAINING WALL..... | 9 |
| 5.5 | SLAB-ON-GRADE CONSTRUCTION | 10 |
| 5.6 | DRAINAGE..... | 11 |
| 5.6.1 | Surface | 11 |
| 5.6.2 | Subsurface..... | 11 |
| 5.6.3 | Infiltration | 11 |
| 5.7 | UTILITIES..... | 11 |
| 5.8 | PAVEMENTS..... | 12 |
| 6.0 | ADDITIONAL SERVICES | 12 |
| 7.0 | LIMITATIONS..... | 13 |

LIST OF APPENDICES

| | |
|-----------------|--|
| Figure 1 | Site Vicinity Map |
| Figure 2 | Geotechnical Exploration Plan |
| Figure 3 | Retaining Wall Drainage Detail |
| Figure 4 | Typical Footing Drain Detail |
| Appendix A..... | Field Exploration and Laboratory Testing |

Executive Summary

This Executive Summary should be used in conjunction with the entire GER for design and/or construction purposes. It should be recognized that specific details were not included or fully developed in this section, and this GER must be read in its entirety for a comprehensive understanding of the items contained herein. Section 7.0 should be read for an understanding of limitations.

RGI's geotechnical scope of work included the advancement of one test pit and five borings to depths up to 31.5 feet below ground surface (bgs).

Based on the information obtained from our subsurface exploration, the site is suitable for development of the proposed project. The following geotechnical considerations were identified.

Soil Conditions: The site is underlain by loose to medium dense silty sand and medium stiff to stiff sandy silt.

Groundwater: Groundwater was encountered at Boring B-3 at a depth of 31 feet bgs during our subsurface exploration.

Foundations: Foundations for the proposed building and canopy foundation can be supported on spread footings bearing on recompacted native soil subgrade or structural fill.

Slab-on-grade: Slab-on-grade floors for the proposed building can be supported on recompacted native soil subgrade or structural fill.

Pavements: The following new pavement sections are recommended:

- **For heavy truck traffic areas:** 4 inches of Hot Mix Asphalt over 8 inches of crushed rock base (CRB) over recompacted native soil
- **For general parking areas:** 3 inches of Hot Mix Asphalt over 6 inches of CRB over recompacted native soil
- **Concrete Pavement:** 5 inches of concrete over 4 inches of CRB over recompacted native soil

1.0 Introduction

This Geotechnical Engineering Report (GER) presents the results of the geotechnical engineering services provided for the proposed Sherwood Chevron in Sherwood, Oregon. The purpose of this GER is to assess subsurface conditions and provide geotechnical recommendations for the construction of a Sherwood Chevron. Our scope of services included field explorations, laboratory testing, engineering analyses, and preparation of this GER.

The recommendations in the following sections of this GER are based upon our current understanding of the proposed site development as outlined below. If actual features vary or changes are made, RGI should review them in order to modify our recommendations as required. In addition, RGI requests to review the site grading plan, final design drawings and specifications when available to verify that our project understanding is correct and that our recommendations have been properly interpreted and incorporated into the project design and construction.

2.0 Project Description

The project site is located at 21090 Southwest Pacific Highway in Sherwood, Oregon. The approximate location of the site is shown on Figure 1.

The site is occupied by an existing Chevron station with a paved parking lot. RGI understands it is proposed to add a new C-store about 4,022 square feet, build a trash enclosure, and landscaping upgrades. It is also understood that new underground storage tanks are to be installed to the south of the existing fuel canopy. RGI's understanding of the project is based on the plan SP1 prepared by Stantec Architecture, Inc.

RGI anticipates that the proposed building will be supported on perimeter foundation and the canopy will be supported with a series of columns. RGI expects that the perimeter wall loading will be 1 to 2 kips per linear foot and maximum column load will be up to 50 kips. Slab-on-grade floor loading of 250 pounds per square foot (psf) are expected. Minor site grading will be needed to reach the final grade.

3.0 Field Exploration and Laboratory Testing

3.1 FIELD EXPLORATION

On October 28, 2022, RGI observed the excavation of one test pit and the drilling of five borings. The approximate exploration locations are shown on Figure 2.

Field logs of each exploration were prepared by the geologist who continuously observed the drilling and test pit. These logs included visual classifications of the materials encountered during drilling as well as our interpretation of the subsurface conditions between samples. The boring and test pit logs included in Appendix A represent an interpretation of the field logs and include modifications based on laboratory observation and analysis of the samples.

3.2 LABORATORY TESTING

During the field investigation, a representative portion of each recovered sample was sealed in containers and transported to our laboratory for further visual and laboratory examination. Samples retrieved from the borings were tested for moisture content and grain size analysis to aid in soil classification and provide input for the recommendations provided in this GER. The results and descriptions of the laboratory tests are enclosed in Appendix A.

4.0 Site Conditions

4.1 SURFACE

The site is bound to the northwest by Southwest Pacific Highway, to the east by Southwest Langer Drive, and to the southwest by Southwest Sherwood Boulevard.

The site is occupied with existing Chevron fuel station with a paved parking lot. Most of the site is relatively level with less than 5 feet of elevation change across the property. The site is mostly paved with asphalt, with grass and decorative plants and trees in planter areas around the site perimeter.

4.2 GEOLOGY

Review of the *Generalized Geologic Map of the Willamette Lowland* by Marshall W. Gannett and Rodney R. Caldwell (1998) indicates the soil in the vicinity of the site is mapped as Alluvium and glacial-outburst flood sediment (Map Unit Qs), which is silt, sand, and gravel deposited by glacial-outburst floods. The native soil observed at the boring locations appear to match the descriptions.

4.3 SOILS

The site is underlain by loose to medium dense silty sand and medium stiff to stiff sandy silt.

More detailed descriptions of the subsurface conditions encountered are presented in the boring logs included in Appendix A. Sieve analyses were performed on three selected soil samples. The grain-size distribution curves are included in Appendix A.

4.4 GROUNDWATER

Groundwater was encountered at Boring B-3 at a depth of 31 feet bgs during our subsurface exploration. It should be recognized that fluctuations of the groundwater table will occur due to seasonal variations in the amount of rainfall, runoff, and other factors not evident at the time the explorations were performed. In addition, perched water can develop within seams and layers contained in fill soils or higher permeability soils overlying less permeable soils following periods of heavy or prolonged precipitation.

4.5 SEISMIC CONSIDERATIONS

Based on the current International Building Code (IBC), RGI recommends the following seismic parameters provided in Table 1 be used for design.

Table 1 IBC Seismic Parameters

| 2018 IBC Parameter | Value |
|---|------------------------------------|
| Site Soil Class ¹ | E ² |
| Site Latitude | 45.3666304 N |
| Site Longitude | 122.8474798 W |
| Maximum considered earthquake spectral response acceleration parameters (g) | $S_s = 0.834, S_1 = 0.394$ |
| Spectral response acceleration parameters adjusted for site class (g) | $S_{ms} = 1.056, S_{m1} = 0.955^3$ |
| Design spectral response acceleration parameters (g) | $S_{ds} = 0.704, S_{d1} = 0.637^3$ |

1. Note: In general accordance with Chapter 20 of ASCE 7-10. The Site Class is based on the average characteristics of the upper 100 feet of the subsurface profile.

2. Note: The 2015 IBC and ASCE 7-16 require a site soil profile determination extending to a depth of 100 feet for seismic site classification. The current scope of our services does not include the required 100 foot soil profile determination. Test pit explorations extended to a maximum depth of 31.5 feet, and this seismic site class definition considers that similar soil continues below the maximum depth of the subsurface exploration. Additional exploration to deeper depths would be required to confirm the conditions below the current depth of exploration.

3. Note: In accordance with ASCE 11.4.8, a ground motion hazard analysis is not required for the following cases:

- Structures on Site Class E sites with S_s greater than or equal to 1.0, provided the site coefficient F_a is taken as equal to that of Site Class C.
- Structures on Site Class D sites with S_1 greater than or equal to 0.2, provided that the value of the seismic response coefficient C_s is determined by Eq. 12.8-2 for values of $T \leq 1.5T_s$ and taken as equal to 1.5 times the value computed in accordance with either Eq. 12.8-3 for $T_L \geq T > 1.5T_s$ or Eq. 12.8-4 for $T > T_L$.
- Structures on Site Class E sites with S_1 greater than or equal to 0.2, provided that T is less than or equal to T_s and the equivalent static force procedure is used for design.

The above exceptions do not apply to seismically isolated structures, structures with damping systems or structures designed using the response history procedures of Chapter 16.

Liquefaction is a phenomenon where there is a reduction or complete loss of soil strength due to an increase in water pressure induced by vibrations from a seismic event. Liquefaction mainly affects geologically recent deposits of fine-grained sands that are below the groundwater table. Soils of this nature derive their strength from intergranular

friction. The generated water pressure or pore pressure essentially separates the soil grains and eliminates this intergranular friction, thus reducing or eliminating the soil's strength. Liquefaction is a phenomenon where there is a reduction or complete loss of soil strength due to an increase in water pressure induced by vibrations from a seismic event. Liquefaction mainly affects geologically recent deposits of fine-grained sands that are below the groundwater table. Soils of this nature derive their strength from intergranular friction. The generated water pressure or pore pressure essentially separates the soil grains and eliminates this intergranular friction, thus reducing or eliminating the soil's strength.

RGI reviewed the soil conditions encountered during field exploration and assessed the potential for liquefaction of the site's soil during an earthquake. Due to the depth to groundwater is deep; in our professional opinion, the potential of soil liquefaction during an earthquake event is low.

4.6 GEOLOGIC HAZARD AREAS

Regulated geologically hazardous areas include erosion, landslide, earthquake, or other geological hazards. Based on the mapping information from Oregon Department of Geology and Mineral Industries Statewide Geohazards Viewer, the vicinity of the project site is mapped as a low liquefaction hazard area. Therefore, based our evaluation and analysis, RGI considers that the liquefaction potential for the site is low and it doesn't have any impact to the proposed development.

5.0 Discussion and Recommendations

5.1 GEOTECHNICAL CONSIDERATIONS

Based on our study, the site is suitable for the proposed construction from a geotechnical standpoint. The building foundations can be supported on conventional spread footings or structural slab bearing on competent native soil or structural fill. If the native soil at footing subgrade is loose, it should be recompacted.

Slab-on-grade floors and pavements can be similarly supported on recompacted native soil or structural fill. Detailed recommendations regarding the above issues and other geotechnical design considerations are provided in the following sections. These recommendations should be incorporated into the final design drawings and construction specifications.

5.2 EARTHWORK

RGI expects that site grading will consist of shallow cuts and fills to achieve building and pavement grades and excavation for utilities including storm, water, sanitary sewer, and other utilities.

5.2.1 EROSION AND SEDIMENT CONTROL

Potential sources or causes of erosion and sedimentation depend on construction methods, slope length and gradient, amount of soil exposed and/or disturbed, soil type, construction sequencing and weather. The impacts on erosion-prone areas can be reduced by implementing an erosion and sedimentation control plan. The plan should be designed in accordance with applicable city and/or county standards.

RGI recommends the following erosion control Best Management Practices (BMPs):

- Scheduling site preparation and grading for the drier summer and early fall months and undertaking activities that expose soil during periods of little or no rainfall
- Establishing a quarry spall construction entrance
- Installing siltation control fencing or anchored straw or coir wattles on the downhill side of work areas
- Covering soil stockpiles with anchored plastic sheeting
- Revegetating or mulching exposed soils with a minimum 3-inch thickness of straw if surfaces will be left undisturbed for more than one day during wet weather or one week in dry weather
- Directing runoff away from exposed soils and slopes
- Decreasing runoff velocities with check dams, straw bales or coir wattles
- Confining sediment to the project site
- Inspecting and maintaining erosion and sediment control measures frequently (The contractor should be aware that inspection and maintenance of erosion control BMPs is critical toward their satisfactory performance. Repair and/or replacement of dysfunctional erosion control elements should be anticipated.)

Permanent erosion protection should be provided by reestablishing vegetation using hydroseeding and/or landscape planting. Until the permanent erosion protection is established, site monitoring should be performed by qualified personnel to evaluate the effectiveness of the erosion control measures. Provisions for modifications to the erosion control system based on monitoring observations should be included in the erosion and sedimentation control plan.

5.2.2 EXCAVATIONS

All temporary cut slopes associated with the site and utility excavations should be adequately inclined to prevent sloughing and collapse. The site soils consisted of loose to medium dense silty sand and medium stiff to stiff sandy silt.

Accordingly, for excavations more than 4 feet but less than 20 feet in depth, the temporary side slopes should be laid back with a minimum slope inclination of 1.5:1 (Horizontal:Vertical). If there is insufficient room to complete the excavations in this manner, or excavations greater than 20 feet in depth are planned, using temporary

shoring to support the excavations should be considered. For open cuts at the site, RGI recommends:

- No traffic, construction equipment, stockpiles or building supplies are allowed at the top of cut slopes within a distance of at least 5 feet from the top of the cut.
- Exposed soil along the slope is protected from surface erosion using waterproof tarps and/or plastic sheeting.
- Construction activities are scheduled so that the length of time the temporary cut is left open is minimized.
- Surface water is diverted away from the excavation.
- The general condition of slopes should be observed periodically by a geotechnical engineer to confirm adequate stability and erosion control measures.

In all cases, however, appropriate inclinations will depend on the actual soil and groundwater conditions encountered during earthwork. Ultimately, the site contractor must be responsible for maintaining safe excavation slopes that comply with applicable OSHA or WISHA guidelines.

5.2.3 UNDERGROUND STORAGE TANK INSTALLATION

The installation of the underground storage tank (UST) will require an excavation of up to 20 feet bgs. The contractor typically prefers slide rail shoring system for supporting the excavation area.

Slide rail shoring system is a dig-and-push style shoring system. With its modular flexible design, the system can work with a wide variety of shapes and sizes. The system is installed from the top down and removed from the bottom up, minimizing size of excavation, and soil disturbance. Based on the depth of excavation, they are designed as single, double, and triple track system. The double track system can provide protection at depth from 12 feet to 20 feet which is expected to be needed for the project. RGI recommends that double track slide rail system be used for the UST excavation support.

The depth to the top of the USTs is typically 3 feet below finished grade with at least 2 feet of appropriate backfill material. The backfill can be either pea gravel or other material per API specifications for setting the tanks.

The installation will require tank hold down slabs or anchors to accommodate possible buoyant forces. The UST system installation and design must be in accordance with API regulations.

5.2.4 STRIPPING AND SITE PREPARATION

Stripping efforts should include removal of pavements, vegetation, organic materials, and deleterious debris from areas slated for building, pavement, and utility construction.

RGI anticipates that some areas of loose soil may be present on the site after stripping operations are complete. Prior to placement of structural fill, RGI recommends proofrolling building and pavement subgrades and areas to receive structural fill. These areas should be proofrolled under the observation of RGI and compacted to a firm and unyielding condition in order to achieve a minimum compaction level of 95 percent of the modified proctor maximum dry density as determined by the American Society of Testing and Materials D1557-09 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (ASTM D1557).

Proofrolling and adequate subgrade compaction can only be achieved when the soils are within approximately ± 2 percent moisture content of the optimum moisture content. Soils may be proofrolled with a heavy compactor, loaded double-axle dump truck, or other heavy equipment under the observation of a RGI representative. This observer will assess the subgrade conditions prior to filling.

Subgrade soils that become disturbed due to elevated moisture conditions should be overexcavated to reveal firm, non-yielding, non-organic soils and backfilled with compacted structural fill. In order to maximize utilization of site soils as structural fill, RGI recommends that the earthwork portion of this project be completed during extended periods of warm and dry weather, if possible. If earthwork is completed during the wet season (typically November through May) it will be necessary to take extra precautionary measures to protect subgrade soils. Wet season earthwork will require additional mitigative measures beyond what would be expected during the drier summer and fall months.

5.2.5 STRUCTURAL FILL

Once site preparation is complete, cuts and fills can be made to establish desired building grades. Prior to placing fill, RGI recommends proof-rolling as described above. RGI recommends fill below the foundation and floor slab, behind retaining walls, and below pavement and hardscape surfaces be placed in accordance with the following recommendations for structural fill.

The suitability of excavated site soils and import soils for compacted structural fill use will depend on the gradation and moisture content of the soil when it is placed. As the amount of fines (that portion passing the U.S. No. 200 sieve) increases, soil becomes increasingly sensitive to small changes in moisture content and adequate compaction becomes more difficult or impossible to achieve. Soils containing more than about 5 percent fines cannot be consistently compacted to a dense, non-yielding condition when the moisture content is more than 2 percent above or below optimum. Optimum moisture content is the moisture that results in the greatest compacted dry density with a specified compactive effort.

The native soils are moisture sensitive and may be suitable for use as structural fill if the moisture can be properly controlled at the time of compaction if the construction occurs in dry weather. If the construction occurs in winter or extended to wet season, it may be necessary to import clean, granular soils to complete site work that meets the grading requirements listed in Table 2.

Table 2 Structural Fill Gradation

| U.S. Sieve Size | Percent Passing |
|-----------------|-----------------|
| 4 inches | 100 |
| ¾ inch | 70 minimum |
| No. 4 | 35 to 60 |
| No. 200 | 0 to 5* |

*Based on minus 3/4 inch fraction.

Prior to use, a RGI representative should observe and test all materials imported to the site for use as structural fill. Structural fill materials should be placed in uniform loose layers not exceeding 12 inches and compacted as specified in Table 3. The soil's maximum density and optimum moisture should be determined by ASTM D1557.

Table 3 Structural Fill Compaction ASTM D1557

| Location | Material Type | Minimum Compaction Percentage | Moisture Content Range | |
|-------------------------------------|--|-------------------------------|------------------------|----|
| Foundations | On-site granular or approved imported fill soils | 95 | +2 | -2 |
| Retaining Wall Backfill | On-site granular or approved imported fill soils | 92 | +2 | -2 |
| Slab-on-grade | On-site granular or approved imported fill soils | 95 | +2 | -2 |
| General Fill (non-structural areas) | On-site granular or approved imported fill soils | 90 | +3 | -2 |
| Pavement, Subgrade and Base Course | On-site granular or approved imported fill soils | 95 | +2 | -2 |

Placement and compaction of structural fill should be observed by RGI. A representative number of in-place density tests should be performed as the fill is being placed to confirm that the recommended level of compaction is achieved.

5.3 FOUNDATIONS

The proposed building and canopy foundation can be supported on conventional spread footings bearing on medium dense native soil or structural fill. Where loose soils or other unsuitable soils are encountered in the proposed building footprint, they should be recompacted or overexcavated and backfilled with structural fill.

Perimeter foundations exposed to weather should be at a minimum depth of 18 inches below final exterior grades. Interior foundations can be constructed at any convenient depth below the floor slab. Finished grade is defined as the lowest adjacent grade within 5 feet of the foundation for perimeter (or exterior) footings and finished floor level for interior footings.

Table 4 Foundation Design

| Design Parameter | Value |
|---|--|
| Allowable Bearing Capacity – Native soil or Structural fill | 2,000 psf ¹ |
| Friction Coefficient | 0.25 |
| Passive pressure (equivalent fluid pressure) | 250 pcf ² |
| Minimum foundation dimensions | Columns: 24 inches Walls: 16 inches |

1 psf = pounds per square foot

2 pcf = pounds per cubic foot

The allowable foundation bearing pressures apply to dead loads plus design live load conditions. For short-term loads, such as wind and seismic, a 1/3 increase in this allowable capacity may be used. At perimeter locations, RGI recommends not including the upper 12 inches of soil in the computation of passive pressures because it can be affected by weather or disturbed by future grading activity. The passive pressure value assumes the foundation will be constructed neat against competent soil or backfilled with structural fill as described in Section 5.2.4. The recommended base friction and passive resistance value includes a safety factor of about 1.5.

With spread-footing foundations designed in accordance with the recommendations in this section, maximum total and differential post-construction settlements of 1 inch and 1/2 inch, respectively, should be expected.

5.4 RETAINING WALL

RGI is not aware of retaining wall that will be needed on the site. If retaining walls are needed for a detention vault or site retaining walls, RGI recommends cast-in-place concrete walls be used. The magnitude of earth pressure development on retaining walls will partly depend on the quality of the wall backfill. RGI recommends placing and

compacting wall backfill as structural fill. The retaining wall foundation must be supported on recompacted native soil or structural fill. Wall drainage will be needed behind the wall face. A typical retaining wall drainage detail is shown on Figure 3. The retaining wall foundation subgrade should be supported on competent native soil.

With wall backfill placed and compacted as recommended, and drainage properly installed, RGI recommends using the values in the following table for design.

Table 5 Retaining Wall Design

| Design Parameter | Value |
|---|-----------|
| Allowable Bearing Capacity – Native soil or Structural fill | 2,000 psf |
| Active Earth Pressure (unrestrained walls) | 35 pcf |
| At-rest Earth Pressure (restrained walls) | 50 pcf |

For seismic design, an additional uniform load of 7 times the wall height (H) for unrestrained walls and 14H for restrained walls should be applied to the wall surface. Friction at the base of foundations and passive earth pressure will provide resistance to these lateral loads. Values for these parameters are provided in the Section 5.3.

5.5 SLAB-ON-GRADE CONSTRUCTION

Once site preparation has been completed as described in Section 5.2, suitable support for slab-on-grade construction should be provided. The native soil subgrade should be medium dense or recompacted. Immediately below the floor slab, RGI recommends placing a 4-inch-thick capillary break layer of clean, free-draining pea gravel, washed rock, or crushed rock that has less than 5 percent passing the U.S. No. 200 sieve. This material will reduce the potential for upward capillary movement of water through the underlying soil and subsequent wetting of the floor slab. Where moisture by vapor transmission is undesirable, an 8- to 10-mil-thick plastic membrane should be placed on a 4-inch-thick layer of clean gravel or rock.

For the anticipated floor slab loading, we estimate post-construction floor settlements of ¼- to ½-inch. For thickness design of the slab subjected to point loading from storage racks, RGI recommends using a subgrade modulus (K_s) of 150 pounds per square inch per inch of deflection.

If the buildings will be supported on reinforced slab with thickened edges, a soil bearing capacity of 1,000 pound per square feet (psf) and subgrade modulus of 150 pound per cubic inch (pci) can be used for the concrete slab design. For the anticipated floor slab loading, we estimate post-construction floor settlements of ¼- to ½-inch.

5.6 DRAINAGE

5.6.1 SURFACE

Final exterior grades should promote free and positive drainage away from the building area. Water must not be allowed to pond or collect adjacent to foundations or within the immediate building area. For non-pavement locations, RGI recommends providing a minimum drainage gradient of 3 percent for a minimum distance of 10 feet from the building perimeter. In paved locations, a minimum gradient of 1 percent should be provided unless provisions are included for collection and disposal of surface water adjacent to the structure.

5.6.2 SUBSURFACE

Perimeter foundation drains, details shown on Figure 4, are generally installed around the building. The foundation drains and roof downspouts should be tightlined separately to an approved discharge facility. Subsurface drains must be laid with a gradient sufficient to promote positive flow to a controlled point of approved discharge. If the building is supported on reinforced slab with thicken edge and paved to the building, the footing drains can be eliminated.

5.6.3 INFILTRATION

RGI excavated test pit (TP-1) to complete infiltration testing. Approximately 4.5 feet of potentially contaminated fill soil (petroleum odor) consisting of silty fine sand with asphalt pieces and construction debris over medium dense silty sand was encountered in test pit TP-1. Due to potentially contaminated fill soils, infiltration testing was not performed.

RGI has reviewed the native soil conditions for the potential for infiltration based on grain size analysis. The native soil at shallow depth is silty sand to silt (with 37.5 to 57.5% of fines), which does not support onsite infiltration systems. Therefore, RGI doesn't recommend onsite infiltration system be used for stormwater disposal.

5.7 UTILITIES

Utility pipes should be bedded and backfilled in accordance with American Public Works Association (APWA) specifications. For site utilities located within the right-of-ways, bedding and backfill should be completed in accordance with City of Sherwood specifications. At a minimum, trench backfill should be placed and compacted as structural fill, as described in Section 5.2.4. Where utilities occur below unimproved areas, the degree of compaction can be reduced to a minimum of 90 percent of the soil's maximum density as determined by ASTM D1557. The native soils may be used as backfill provided they can be adequately moisture conditioned and compacted in dry weather condition. Imported structural fill may be required for trench backfill in winter.

5.8 PAVEMENTS

Pavement subgrades should be prepared as described in Section 5.2 of this GER and as discussed below. Regardless of the relative compaction achieved, the subgrade must be firm and relatively unyielding before paving. This condition should be verified by proofrolling with heavy construction equipment or hand probe by inspector.

With the pavement subgrade prepared as described above, RGI recommends the following new pavement sections for parking and drive areas paved with flexible asphalt concrete surfacing.

- **For heavy truck traffic areas:** 4 inches of Hot Mix Asphalt (HMA) over 8 inches of crushed rock base (CRB) over recompacted native soil
- **For general parking areas:** 3 inches of HMA over 6 inches of CRB over recompacted native soil

The asphalt paving materials used should conform to the Oregon State Department of Transportation (ODOT) specifications for Type I asphalt wearing surface and base aggregate.

- **Concrete pavement:** 5 inches of concrete over 4 inches of CRB over recompacted native soil

Long-term pavement performance will depend on surface drainage. A poorly-drained pavement section will be subject to premature failure as a result of surface water infiltrating into the subgrade soils and reducing their supporting capability.

For optimum pavement performance, surface drainage gradients of no less than two percent are recommended. Also, some degree of longitudinal and transverse cracking of the pavement surface should be expected over time. Regular maintenance should be planned to seal cracks when they occur.

6.0 Additional Services

RGI is available to provide further geotechnical consultation throughout the design phase of the project. RGI should review the final design and specifications in order to verify that earthwork and foundation recommendations have been properly interpreted and incorporated into project design and construction.

RGI is also available to provide geotechnical engineering and construction monitoring services during construction. The integrity of the earthwork and construction depends on proper site preparation and procedures. In addition, engineering decisions may arise in the field in the event that variations in subsurface conditions become apparent. Construction monitoring services are not part of this scope of work. If these services are desired, please let us know and we will prepare a proposal.

7.0 Limitations

This GER is the property of RGI, Barghausen Consulting Engineers, Inc., and its designated agents. Within the limits of the scope and budget, this GER was prepared in accordance with generally accepted geotechnical engineering practices in the area at the time this report was issued. This GER is intended for specific application to the Sherwood Chevron project at 21090 Southwest Pacific Highway, Sherwood, Oregon, and for the exclusive use of Barghausen Consulting Engineers, Inc. and its authorized representatives. No other warranty, expressed or implied, is made. Site safety, excavation support, and dewatering requirements are the responsibility of others.

The analyses and recommendations presented in this GER are based upon data obtained from the exploration performed on site. Variations in soil conditions can occur, the nature and extent of which may not become evident until construction. If variations appear evident, RGI should be requested to reevaluate the recommendations in this GER prior to proceeding with construction.

It is the client's responsibility to see that all parties to the project, including the designers, contractors, subcontractors, are made aware of this GER in its entirety. The use of information contained in this GER for bidding purposes should be done at the contractor's option and risk.



USGS, 2020, Sherwood, Oregon
 USGS, 2020, Beaverton, Oregon
 7.5-Minute Quadrangle

Approximate Scale: 1"=1000'



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Sherwood Chevron

RGI Project Number:
 2022-522-1

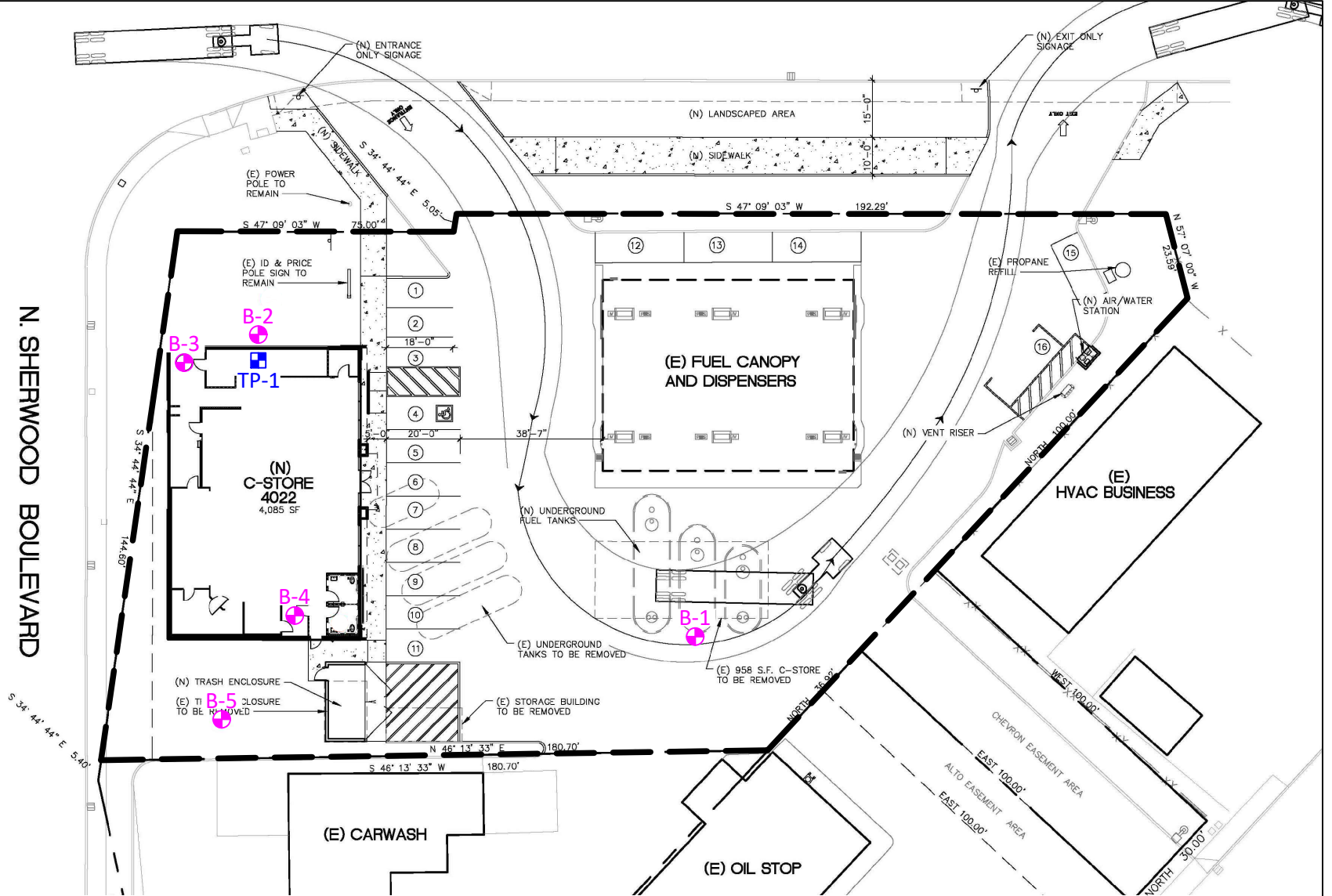
Site Vicinity Map




Figure 1

Date Drawn:
 11/2022

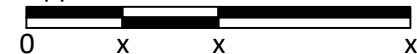
Address: 21090 Southwest Pacific Highway, Sherwood, Oregon 97140

N. SHERWOOD BOULEVARD



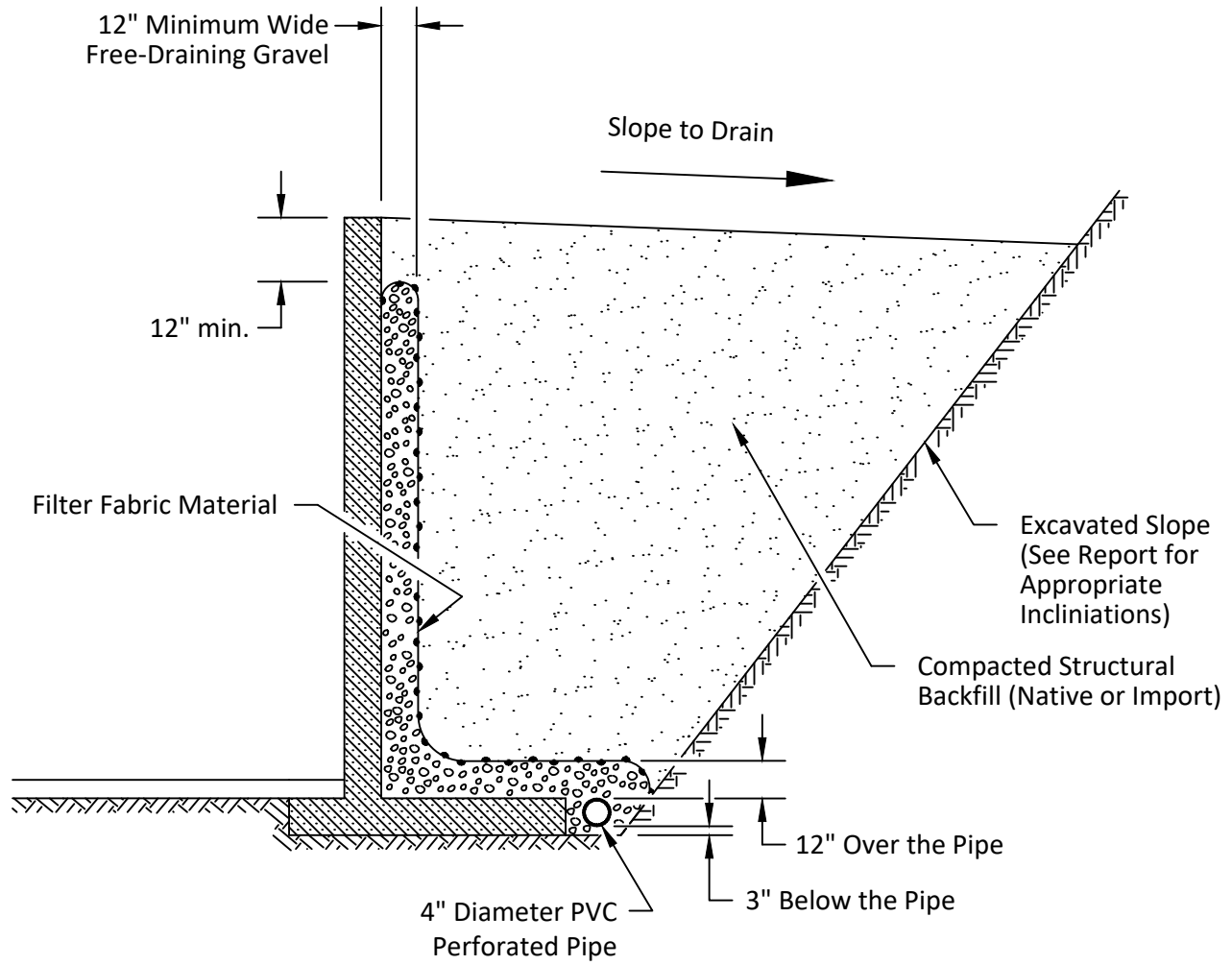
-  = Test Pit by RGI, 10/28/2022
-  = Boring by RGI, 10/28/2022
-  = Site boundary

Approximate Scale: 1"=x'



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| | | |
|--|-------------------------------|------------------------|
| Sherwood Chevron | | Figure 2 |
| RGI Project Number: 2022-522-1 | Geotechnical Exploration Plan | Date Drawn: 11/2022 |
| Address: 21090 Southwest Pacific Highway, Sherwood, Oregon 97140 | | |

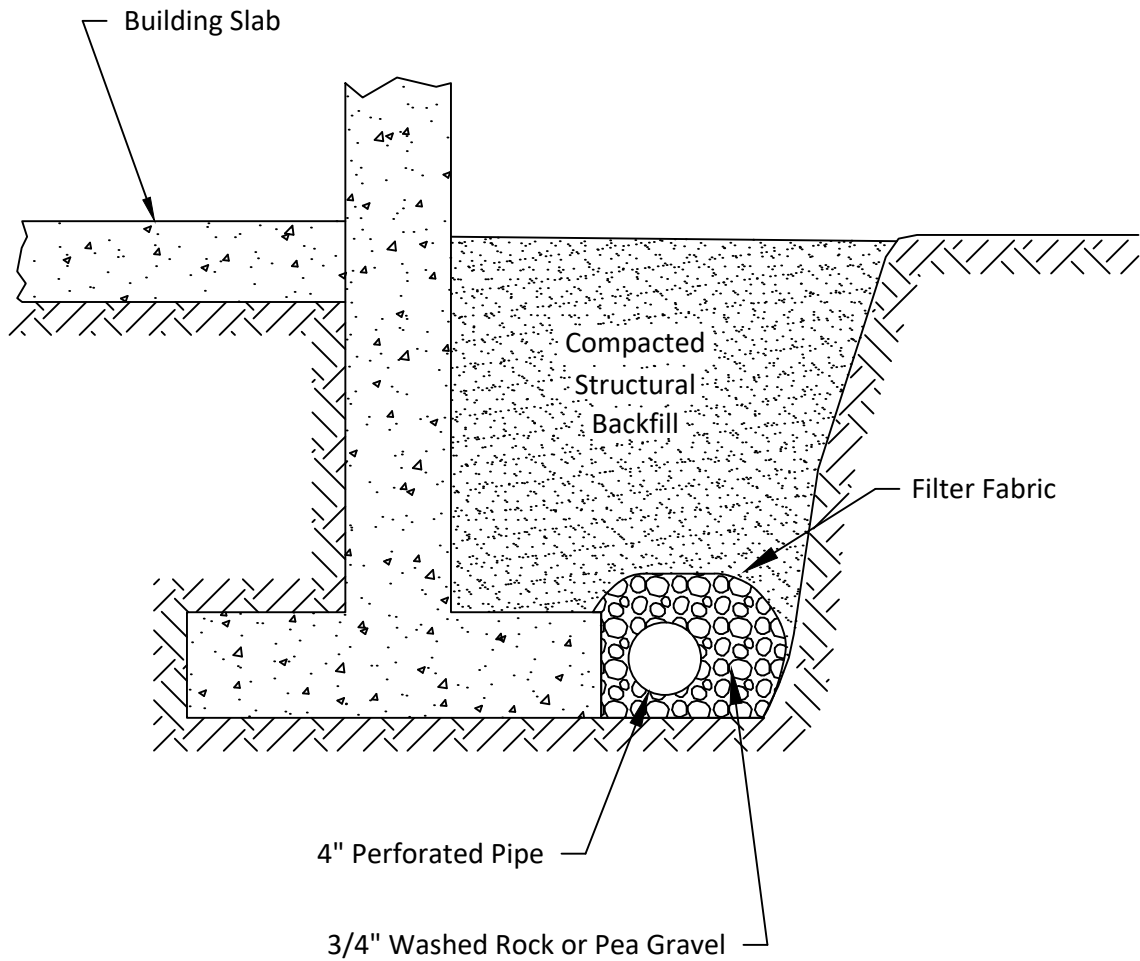


Not to Scale



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| | | |
|--|--------------------------------|------------------------|
| Sherwood Chevron | | Figure 3 |
| RGI Project Number: 2022-522-1 | Retaining Wall Drainage Detail | Date Drawn: 11/2022 |
| Address: 21090 Southwest Pacific Highway, Sherwood, Oregon 97140 | | |



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| | | |
|--|------------------------------|------------------------|
| Sherwood Chevron | | Figure 4 |
| RGI Project Number: 2022-522-1 | Typical Footing Drain Detail | Date Drawn: 11/2022 |
| Address: 21090 Southwest Pacific Highway, Sherwood, Oregon 97140 | | |

APPENDIX A

FIELD EXPLORATION AND LABORATORY TESTING

On October 28, 2022, RGI explored the subsurface soil conditions at the site by observing the excavation of one test pit and the drilling of five borings to a maximum depth of 31.5 feet below existing grade. The test pit and boring locations are shown on Figure 2. The test pit and boring locations were approximately determined by measurements from existing property lines and paved roads.

A geologist from our office conducted the field exploration and classified the soil conditions encountered, maintained a log of each exploration, obtained representative soil samples, and observed pertinent site features. All soil samples were visually classified in accordance with the Unified Soil Classification System (USCS).

Representative soil samples obtained from the explorations were placed in closed containers and taken to our laboratory for further examination and testing. As a part of the laboratory testing program, the soil samples were classified in our in house laboratory based on visual observation, texture, and the limited laboratory testing described below.

Moisture Content Determinations

Moisture content determinations were performed in accordance with the American Society of Testing and Materials D2216-10 Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass (ASTM D2216) on representative samples obtained from the exploration in order to aid in identification and correlation of soil types. The moisture content of typical sample was measured and is reported on the test pit and boring logs.

Grain Size Analysis

A grain size analysis indicates the range in diameter of soil particles included in a particular sample. Grain size analyses for the greater than 75 micrometer portion of the samples were performed in accordance with American Society of Testing and Materials D422 Standard Test Method for Particle-Size Analysis of Soils (ASTM D422) on three of the samples, the results of which are attached in Appendix A.

Project Name: **Sherwood Chevron**
 Project Number: **2022-522-1**
 Client: **Barghausen Consulting Engineers, Inc.**



Boring No.: **B-1**
 Sheet 1 of 1

| | | |
|---|--|---|
| Date(s) Drilled: 10/28/2022 | Logged By: ELW | Surface Conditions: Asphalt |
| Drilling Method(s): Solid Stem Auger | Drill Bit Size/Type: 2.25" | Total Depth of Borehole: 31.5 feet bgs |
| Drill Rig Type: Trailer Rig | Drilling Contractor: Dan J Fischer Excavating, Inc. | Approximate Surface Elevation: 211 |
| Groundwater Level: Not Encountered | Sampling Method(s): SPT | Hammer Data : 140 lb, 30" drop, rope and cathead |
| Borehole Backfill: Bentonite Chips | Location: 21090 Southwest Pacific Highway, Sherwood, Oregon | |

| Elevation (feet) | Depth (feet) | Sample Type | Sampling Resistance, blows/ft | RQD (%) | Recovery (%) | USCS Symbol | Graphic Log | MATERIAL DESCRIPTION | Moisture (%) |
|------------------|--------------|-------------|-------------------------------|---------|--------------|---------------|-------------|---------------------------------------|--------------|
| 211 | 0 | | | | | Asphalt SM | | 3" asphalt over crushed rock base | |
| | | | | | | | | Brown silty SAND, medium dense, moist | |
| 206 | 5 | | 13 | | | | | | 22 |
| 201 | 10 | | 17 | | | | | 45% fines | 22 |
| 196 | 15 | | 15 | | | | | Becomes gray | 16 |
| 191 | 20 | | 21 | | | | | | 15 |
| 186 | 25 | | 22 | | | | | | 15 |
| 181 | 30 | | 25 | | | | | | 15 |
| | | | | | | | | Boring terminated at 31.5' | |
| 176 | 35 | | | | | | | | |

Project Name: **Sherwood Chevron**
 Project Number: **2022-522-1**
 Client: **Barghausen Consulting Engineers, Inc.**



Boring No.: **B-2**
 Sheet 1 of 1

| | | |
|---|--|---|
| Date(s) Drilled: 10/28/2022 | Logged By: ELW | Surface Conditions: Grass |
| Drilling Method(s): Solid Stem Auger | Drill Bit Size/Type: 2.25" | Total Depth of Borehole: 11.5 feet bgs |
| Drill Rig Type: Trailer Rig | Drilling Contractor: Dan J Fischer Excavating, Inc. | Approximate Surface Elevation: 208 |
| Groundwater Level: Not Encountered | Sampling Method(s): SPT | Hammer Data : 140 lb, 30" drop, rope and cathead |
| Borehole Backfill: Bentonite Chips | Location: 21090 Southwest Pacific Highway, Sherwood, Oregon | |

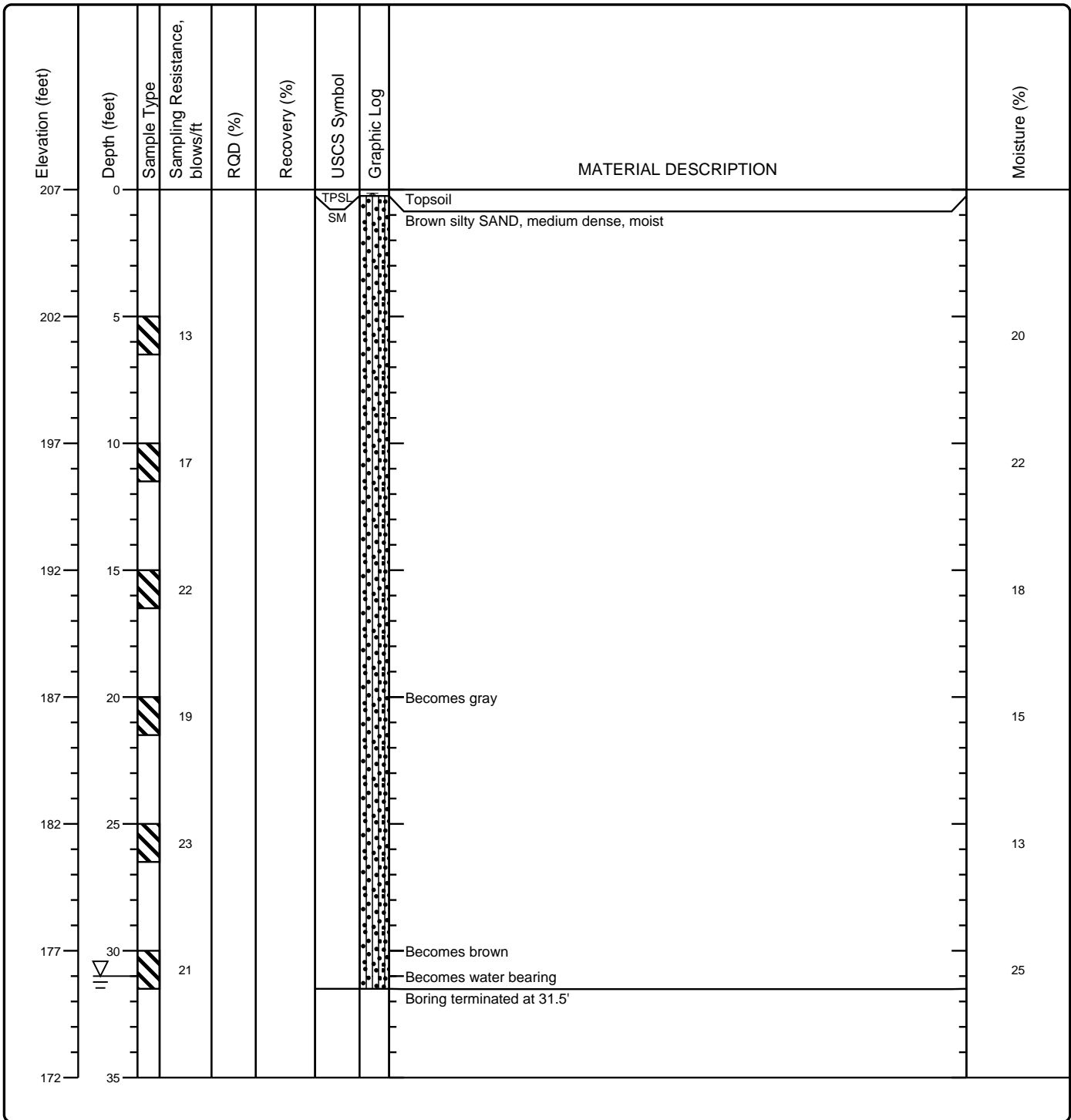
| Elevation (feet) | Depth (feet) | Sample Type | Sampling Resistance, blows/ft | RQD (%) | Recovery (%) | USCS Symbol | Graphic Log | MATERIAL DESCRIPTION | Moisture (%) |
|------------------|--------------|-------------|-------------------------------|---------|--------------|--------------|-------------|--|--------------|
| 208 | 0 | | | | | TPSL Fill | | 3" topsoil Brown sandy SILT, medium stiff, moist (Fill) | |
| | 7 | | 7 | | | | | 58% fines | 21 |
| 203 | 5 | | 11 | | | SM | | Brown silty SAND with trace gravel, medium dense, moist | 21 |
| | 14 | | 14 | | | | | 37% fines | 24 |
| 198 | 10 | | 13 | | | | | | 23 |
| | 15 | | | | | | | Test Pit terminated at 11.5' | |
| 193 | 15 | | | | | | | | |
| 188 | 20 | | | | | | | | |
| 183 | 25 | | | | | | | | |
| 178 | 30 | | | | | | | | |
| 173 | 35 | | | | | | | | |

Project Name: **Sherwood Chevron**
 Project Number: **2022-522-1**
 Client: **Barghausen Consulting Engineers, Inc.**



Boring No.: **B-3**
 Sheet 1 of 1

| | | |
|---|--|---|
| Date(s) Drilled: 10/28/2022 | Logged By: ELW | Surface Conditions: Grass |
| Drilling Method(s): Solid Stem Auger | Drill Bit Size/Type: 2.25" | Total Depth of Borehole: 31.5 feet bgs |
| Drill Rig Type: Trailer Rig | Drilling Contractor: Dan J Fischer Excavating, Inc. | Approximate Surface Elevation: 207 |
| Groundwater Level: 31 | Sampling Method(s): SPT | Hammer Data : 140 lb, 30" drop, rope and cathead |
| Borehole Backfill: Bentonite Chips | Location: 21090 Southwest Pacific Highway, Sherwood, Oregon | |



Project Name: **Sherwood Chevron**
 Project Number: **2022-522-1**
 Client: **Barghausen Consulting Engineers, Inc.**



Boring No.: **B-4**
 Sheet 1 of 1

| | | |
|---|--|---|
| Date(s) Drilled: 10/28/2022 | Logged By: ELW | Surface Conditions: Grass |
| Drilling Method(s): Solid Stem Auger | Drill Bit Size/Type: 2.25" | Total Depth of Borehole: 21.5 feet bgs |
| Drill Rig Type: Trailer Rig | Drilling Contractor: Dan J Fischer Excavating, Inc. | Approximate Surface Elevation: 209 |
| Groundwater Level: Not Encountered | Sampling Method(s): SPT | Hammer Data : 140 lb, 30" drop, rope and cathead |
| Borehole Backfill: Bentonite Chips | Location: 21090 Southwest Pacific Highway, Sherwood, Oregon | |

| Elevation (feet) | Depth (feet) | Sample Type | Sampling Resistance, blows/ft | RQD (%) | Recovery (%) | USCS Symbol | Graphic Log | MATERIAL DESCRIPTION | Moisture (%) |
|------------------|--------------|-------------|-------------------------------|---------|--------------|-------------|-------------|--|--------------|
| 209 | 0 | | | | | TPSL SM | | Topsoil | |
| | | | | | | | | Brown silty sand, loose to medium dense, moist | |
| 204 | 5 | | 10 | | | | | | 16 |
| 199 | 10 | | 15 | | | ML | | Brown sandy SILT, stiff, moist to wet | 28 |
| 194 | 15 | | 13 | | | SM | | Brown silty SAND, medium dense, moist | 18 |
| 189 | 20 | | 12 | | | | | | 16 |
| | | | | | | | | Test Pit terminated at 21.5' | |
| 184 | 25 | | | | | | | | |
| 179 | 30 | | | | | | | | |
| 174 | 35 | | | | | | | | |

Project Name: **Sherwood Chevron**
 Project Number: **2022-522-1**
 Client: **Barghausen Consulting Engineers, Inc.**



Boring No.: **B-5**
 Sheet 1 of 1

| | | |
|---|--|---|
| Date(s) Drilled: 10/28/2022 | Logged By: ELW | Surface Conditions: Grass |
| Drilling Method(s): Solid Stem Auger | Drill Bit Size/Type: 2.25" | Total Depth of Borehole: 11.5 feet bgs |
| Drill Rig Type: Trailer Rig | Drilling Contractor: Dan J Fischer Excavating, Inc. | Approximate Surface Elevation: 209 |
| Groundwater Level: Not Encountered | Sampling Method(s): SPT | Hammer Data : 140 lb, 30" drop, rope and cathead |
| Borehole Backfill: Bentonite Chips | Location: 21090 Southwest Pacific Highway, Sherwood, Oregon | |

| Elevation (feet) | Depth (feet) | Sample Type | Sampling Resistance, blows/ft | RQD (%) | Recovery (%) | USCS Symbol | Graphic Log | MATERIAL DESCRIPTION | Moisture (%) |
|------------------|--------------|-------------|-------------------------------|---------|--------------|-------------|-------------|--|--------------|
| 209 | 0 | | | | | TPSL SM | | Topsoil Brown silty SAND, medium dense, moist | |
| | | | 13 | | | | | | 15 |
| 204 | 5 | | 12 | | | | | | 16 |
| | | | 16 | | | | | | 19 |
| 199 | 10 | | 14 | | | | | | 17 |
| | | | | | | | | Boring terminated at 11.5' | |
| 194 | 15 | | | | | | | | |
| 189 | 20 | | | | | | | | |
| 184 | 25 | | | | | | | | |
| 179 | 30 | | | | | | | | |
| 174 | 35 | | | | | | | | |



| Elevation (feet) | Depth (feet) | Sample Type | Sampling Resistance, blows/ft | RQD (%) | Recovery (%) | USCS Symbol | Graphic Log | MATERIAL DESCRIPTION | Moisture (%) |
|------------------|--------------|-------------|-------------------------------|---------|--------------|-------------|-------------|----------------------|--------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

COLUMN DESCRIPTIONS

- 1** Elevation (feet): Elevation (MSL, feet).
- 2** Depth (feet): Depth in feet below the ground surface.
- 3** Sample Type: Type of soil sample collected at the depth interval shown.
- 4** Sampling Resistance, blows/ft: Number of blows to advance driven sampler one foot (or distance shown) beyond seating interval using the hammer identified on the boring log.
- 5** RQD (%): Rock Quality Designation is a relative index of the rock mass quality calculated by comparing the cumulative length of intact pieces of core exceeding 100 mm in length to the cored interval length.
- 6** Recovery (%): Core Recovery Percentage is determined based on a ratio of the length of core sample recovered compared to the cored interval length.
- 7** USCS Symbol: USCS symbol of the subsurface material.
- 8** Graphic Log: Graphic depiction of the subsurface material encountered.
- 9** MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.
- 10** Moisture (%): Moisture, expressed as a water content.

FIELD AND LABORATORY TEST ABBREVIATIONS

- CHEM: Chemical tests to assess corrosivity
- COMP: Compaction test
- CONS: One-dimensional consolidation test
- LL: Liquid Limit, percent
- PI: Plasticity Index, percent
- SA: Sieve analysis (percent passing No. 200 Sieve)
- UC: Unconfined compressive strength test, Qu, in ksf
- WA: Wash sieve (percent passing No. 200 Sieve)

MATERIAL GRAPHIC SYMBOLS

- Asphaltic Concrete (AC)
- AF
- SILT, SILT w/SAND, SANDY SILT (ML)
- Silty SAND (SM)
- Topsoil

TYPICAL SAMPLER GRAPHIC SYMBOLS

- Auger sampler
- Bulk Sample
- 3-inch-OD California w/ brass rings
- CME Sampler
- Grab Sample
- 2.5-inch-OD Modified California w/ brass liners
- Pitcher Sample
- 2-inch-OD unlined split spoon (SPT)
- Shelby Tube (Thin-walled, fixed head)

OTHER GRAPHIC SYMBOLS

- Water level (at time of drilling, ATD)
- Water level (after waiting)
- Minor change in material properties within a stratum
- Inferred/gradational contact between strata
- Queried contact between strata

GENERAL NOTES

- 1: Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
- 2: Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

Project Name: **Sherwood Chevron**
 Project Number: **2022-522-1**
 Client: **Barghausen Consulting Engineers, Inc.**



Test Pit No.: **TP-1**
 Sheet 1 of 1

| | | |
|---|---|---|
| Date(s) Excavated: 10/28/2022 | Logged By ALG | Surface Conditions: Grass |
| Excavation Method: Test Pit | Bucket Size: N/A | Total Depth of Excavation: 5 feet bgs |
| Excavator Type: Rubber Tired Backhoe | Excavating Contractor: Dan J Fischer Excavating, Inc. | Approximate Surface Elevation 208 |
| Groundwater Level: Not Encountered | Sampling Method(s) | Compaction Method 140 lb, 30" drop, rope and cathead |
| Test Pit Backfill: Cuttings | Location 21090 Southwest Pacific Highway, Sherwood, Oregon | |

| Elevation (feet) | Depth (feet) | Sample Type | Sample Number | USCS Symbol | Graphic Log | MATERIAL DESCRIPTION | REMARKS AND OTHER TESTS |
|------------------|--------------|-------------|---------------|-------------|-------------|--|-------------------------|
| 208 | 0 | | | TPSL | | 3" topsoil | |
| | | | | Fill | | Light brown silty fine SAND, loose, moist (Fill) | |
| | | | | | | Contains asphalt and construction debris | |
| | | | | Fill | | Gray to grayish brown silty fine SAND with trace gravel, loose, moist (Fill) | |
| | | | | | | Possible contamination, asphalt and construction debris | |
| | | | | SM | | Brown silty SAND, medium dense, moist | |
| 203 | 5 | | | | | Test Pit terminated at 5' | |
| 198 | 10 | | | | | | |



| Elevation (feet) | Depth (feet) | Sample Type | Sample Number | USCS Symbol | Graphic Log | MATERIAL DESCRIPTION | REMARKS AND OTHER TESTS |
|------------------|--------------|-------------|---------------|-------------|-------------|----------------------|-------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

COLUMN DESCRIPTIONS

- | | |
|---|--|
| <p>1 Elevation (feet): Elevation (MSL, feet). 2 Depth (feet): Depth in feet below the ground surface. 3 Sample Type: Type of soil sample collected at the depth interval shown. 4 Sample Number: Sample identification number.</p> | <p>5 USCS Symbol: USCS symbol of the subsurface material. 6 Graphic Log: Graphic depiction of the subsurface material encountered. 7 MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text. 8 REMARKS AND OTHER TESTS: Comments and observations regarding drilling or sampling made by driller or field personnel.</p> |
|---|--|

FIELD AND LABORATORY TEST ABBREVIATIONS

- | | |
|---|--|
| <p>CHEM: Chemical tests to assess corrosivity COMP: Compaction test CONS: One-dimensional consolidation test LL: Liquid Limit, percent</p> | <p>PI: Plasticity Index, percent SA: Sieve analysis (percent passing No. 200 Sieve) UC: Unconfined compressive strength test, Qu, in ksf WA: Wash sieve (percent passing No. 200 Sieve)</p> |
|---|--|

MATERIAL GRAPHIC SYMBOLS

- | | |
|----|-----------------|
| AF | Silty SAND (SM) |
| | Topsoil |

TYPICAL SAMPLER GRAPHIC SYMBOLS

- | | | |
|-------------------------------------|---|---------------------------------------|
| Auger sampler | CME Sampler | Pitcher Sample |
| Bulk Sample | Grab Sample | 2-inch-OD unlined split spoon (SPT) |
| 3-inch-OD California w/ brass rings | 2.5-inch-OD Modified California w/ brass liners | Shelby Tube (Thin-walled, fixed head) |

OTHER GRAPHIC SYMBOLS

- | | |
|--|--|
| | Water level (at time of drilling, ATD) |
| | Water level (after waiting) |
| | Minor change in material properties within a stratum |
| | Inferred/gradational contact between strata |
| | Queried contact between strata |

GENERAL NOTES

- 1: Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
 2: Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

GRAIN SIZE ANALYSIS
ASTM D421, D422, D1140, D2487, D6913

| | | | |
|-----------------------|------------------|-----------------------|------------|
| PROJECT TITLE | Sherwood Chevron | SAMPLE ID/TYPE | B-1 |
| PROJECT NO. | 2022-522 | SAMPLE DEPTH | 10 feet |
| TECH/TEST DATE | CM 11/2/2022 | DATE RECEIVED | 10/28/2022 |

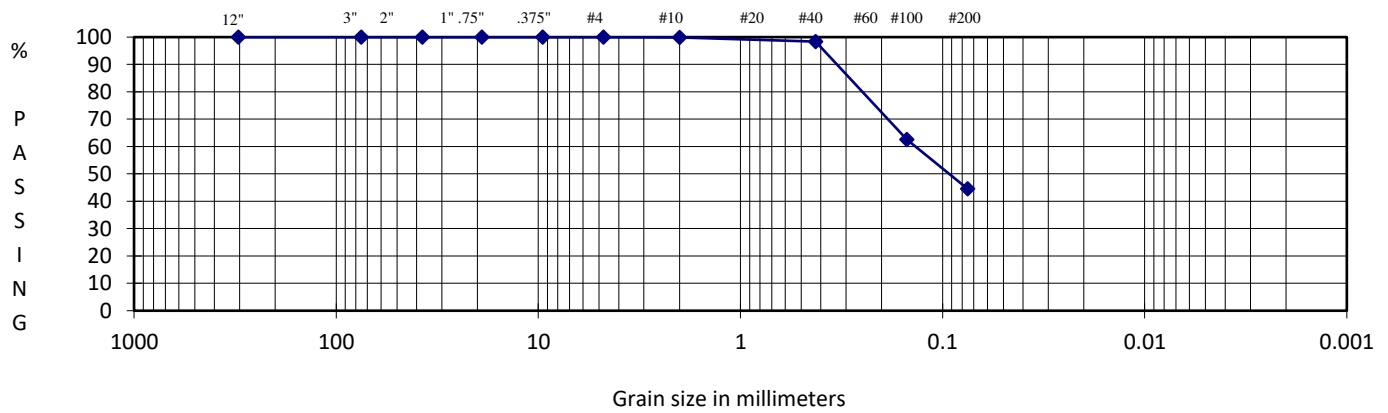
| | | | |
|---|------------|--|-------|
| WATER CONTENT (Delivered Moisture) | | Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture | |
| Wt Wet Soil & Tare (gm) | (w1) 272.1 | Weight Of Sample (gm) | 226.7 |
| Wt Dry Soil & Tare (gm) | (w2) 226.7 | Tare Weight (gm) | 15.9 |
| Weight of Tare (gm) | (w3) 15.9 | (W6) Total Dry Weight (gm) | 210.8 |

| | | | | |
|-------------------------|------------------|-----------------------|------------------|--------------------------|
| Weight of Water (gm) | (w4=w1-w2) 45.4 | SIEVE ANALYSIS | | |
| Weight of Dry Soil (gm) | (w5=w2-w3) 210.8 | <u>Wt Ret</u> | <u>(Wt-Tare)</u> | <u>Cumulative</u> |
| Moisture Content (%) | (w4/w5)*100 22 | <u>+Tare</u> | | <u>(%Retained)</u> |
| | | | | <u>{(wt ret/w6)*100}</u> |
| | | | | <u>% PASS</u> |
| | | | | <u>(100-%ret)</u> |

| | |
|------------|-------|
| % COBBLES | 0.0 |
| % C GRAVEL | 0.0 |
| % F GRAVEL | 0.0 |
| % C SAND | 0.1 |
| % M SAND | 1.5 |
| % F SAND | 53.8 |
| % FINES | 44.5 |
| % TOTAL | 100.0 |

| | |
|----------|--|
| D10 (mm) | |
| D30 (mm) | |
| D60 (mm) | |
| Cu | |
| Cc | |

| | Wt Ret +Tare | (Wt-Tare) | Cumulative {(wt ret/w6)*100} | % PASS (100-%ret) | |
|--------|-----------------|-----------|---------------------------------|----------------------|---------------|
| 12.0" | 15.9 | 0.00 | 0.00 | 100.00 | cobbles |
| 3.0" | 15.9 | 0.00 | 0.00 | 100.00 | coarse gravel |
| 2.5" | | | | | coarse gravel |
| 2.0" | | | | | coarse gravel |
| 1.5" | 15.9 | 0.00 | 0.00 | 100.00 | coarse gravel |
| 1.0" | | | | | coarse gravel |
| 0.75" | 15.9 | 0.00 | 0.00 | 100.00 | fine gravel |
| 0.50" | | | | | fine gravel |
| 0.375" | 15.9 | 0.00 | 0.00 | 100.00 | fine gravel |
| #4 | 15.9 | 0.00 | 0.00 | 100.00 | coarse sand |
| #10 | 16.1 | 0.20 | 0.09 | 99.91 | medium sand |
| #20 | | | | | medium sand |
| #40 | 19.3 | 3.40 | 1.61 | 98.39 | fine sand |
| #60 | | | | | fine sand |
| #100 | 94.7 | 78.80 | 37.38 | 62.62 | fine sand |
| #200 | 132.8 | 116.90 | 55.46 | 44.54 | finer |
| PAN | 226.7 | 210.80 | 100.00 | 0.00 | silt/clay |



DESCRIPTION Silty SAND

USCS SM

Prepared For:
 Barghausen Consulting Services

Reviewed By:
 ELW

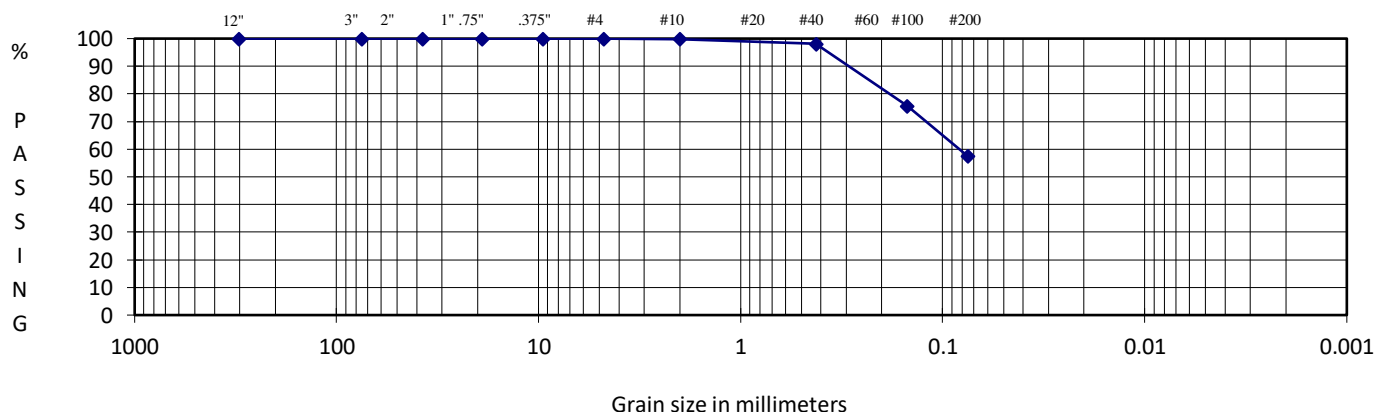


GRAIN SIZE ANALYSIS
ASTM D421, D422, D1140, D2487, D6913

| | | | |
|---|------------------|--|---------------------------|
| PROJECT TITLE | Sherwood Chevron | SAMPLE ID/TYPE | B-2 |
| PROJECT NO. | 2022-522 | SAMPLE DEPTH | 2.5 feet |
| TECH/TEST DATE | CM 11/2/2022 | DATE RECEIVED | 10/28/2022 |
| WATER CONTENT (Delivered Moisture) | | Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture | |
| Wt Wet Soil & Tare (gm) | (w1) 424.8 | Weight Of Sample (gm) | 352.8 |
| Wt Dry Soil & Tare (gm) | (w2) 352.8 | Tare Weight (gm) | 15.9 |
| Weight of Tare (gm) | (w3) 15.9 | (w6) Total Dry Weight (gm) | 336.9 |
| Weight of Water (gm) | (w4=w1-w2) 72.0 | SIEVE ANALYSIS | |
| Weight of Dry Soil (gm) | (w5=w2-w3) 336.9 | Cumulative | |
| Moisture Content (%) | (w4/w5)*100 21 | Wt Ret +Tare | (Wt-Tare) (wt ret/w6)*100 |
| | | (%Retained) | % PASS (100-%ret) |

| | |
|------------|-------|
| % COBBLES | 0.0 |
| % C GRAVEL | 0.0 |
| % F GRAVEL | 0.0 |
| % C SAND | 0.2 |
| % M SAND | 1.8 |
| % F SAND | 40.5 |
| % FINES | 57.5 |
| % TOTAL | 100.0 |
| D10 (mm) | |
| D30 (mm) | |
| D60 (mm) | |
| Cu | |
| Cc | |

| Sieve Size | Wt Ret +Tare | (Wt-Tare) | (wt ret/w6)*100 | % PASS (100-%ret) | Material |
|------------|--------------|-----------|-----------------|-------------------|---------------|
| 12.0" | 15.9 | 0.00 | 0.00 | 100.00 | cobbles |
| 3.0" | 15.9 | 0.00 | 0.00 | 100.00 | coarse gravel |
| 2.5" | | | | | coarse gravel |
| 2.0" | | | | | coarse gravel |
| 1.5" | 15.9 | 0.00 | 0.00 | 100.00 | coarse gravel |
| 1.0" | | | | | coarse gravel |
| 0.75" | 15.9 | 0.00 | 0.00 | 100.00 | fine gravel |
| 0.50" | | | | | fine gravel |
| 0.375" | 15.9 | 0.00 | 0.00 | 100.00 | fine gravel |
| #4 | 15.9 | 0.00 | 0.00 | 100.00 | coarse sand |
| #10 | 16.6 | 0.70 | 0.21 | 99.79 | medium sand |
| #20 | | | | | medium sand |
| #40 | 22.5 | 6.60 | 1.96 | 98.04 | fine sand |
| #60 | | | | | fine sand |
| #100 | 98.0 | 82.10 | 24.37 | 75.63 | fine sand |
| #200 | 159.1 | 143.20 | 42.51 | 57.49 | finest |
| PAN | 352.8 | 336.90 | 100.00 | 0.00 | silt/clay |



DESCRIPTION Sandy SILT

USCS ML

Prepared For:
 Barghausen Consulting Services

Reviewed By:
 ELW



GRAIN SIZE ANALYSIS
ASTM D421, D422, D1140, D2487, D6913

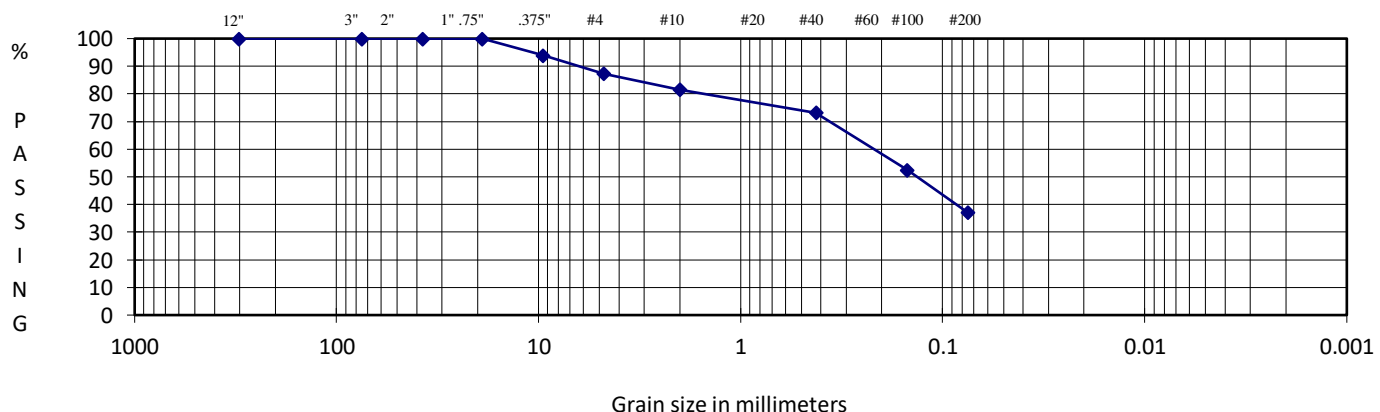
| | | | |
|----------------|------------------|----------------|------------|
| PROJECT TITLE | Sherwood Chevron | SAMPLE ID/TYPE | B-2 |
| PROJECT NO. | 2022-522 | SAMPLE DEPTH | 7.5 feet |
| TECH/TEST DATE | CM 11/2/2022 | DATE RECEIVED | 10/28/2022 |

| | | | |
|---|------------|--|-------|
| WATER CONTENT (Delivered Moisture) | | Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture | |
| Wt Wet Soil & Tare (gm) | (w1) 357.7 | Weight Of Sample (gm) | 291.7 |
| Wt Dry Soil & Tare (gm) | (w2) 291.7 | Tare Weight (gm) | 15.9 |
| Weight of Tare (gm) | (w3) 15.9 | (w6) Total Dry Weight (gm) | 275.8 |

| | | | |
|-------------------------|------------------|-----------------------|-------------------|
| Weight of Water (gm) | (w4=w1-w2) 66.0 | SIEVE ANALYSIS | |
| Weight of Dry Soil (gm) | (w5=w2-w3) 275.8 | Cumulative | |
| Moisture Content (%) | (w4/w5)*100 24 | Wt Ret | (Wt-Tare) |
| | | +Tare | {(wt ret/w6)*100} |
| | | | % PASS |
| | | | (100-%ret) |

| | |
|------------|-------|
| % COBBLES | 0.0 |
| % C GRAVEL | 0.0 |
| % F GRAVEL | 12.7 |
| % C SAND | 5.8 |
| % M SAND | 8.4 |
| % F SAND | 36.1 |
| % FINES | 37.1 |
| % TOTAL | 100.0 |
| D10 (mm) | |
| D30 (mm) | |
| D60 (mm) | |
| Cu | |
| Cc | |

| Sieve Size | Wt Ret +Tare | (Wt-Tare) | Cumulative (%Retained) {(wt ret/w6)*100} | % PASS (100-%ret) | Soil Description |
|------------|--------------|-----------|--|-------------------|------------------|
| 12.0" | 15.9 | 0.00 | 0.00 | 100.00 | cobbles |
| 3.0" | 15.9 | 0.00 | 0.00 | 100.00 | coarse gravel |
| 2.5" | | | | | coarse gravel |
| 2.0" | | | | | coarse gravel |
| 1.5" | 15.9 | 0.00 | 0.00 | 100.00 | coarse gravel |
| 1.0" | | | | | coarse gravel |
| 0.75" | 15.9 | 0.00 | 0.00 | 100.00 | fine gravel |
| 0.50" | | | | | fine gravel |
| 0.375" | 32.7 | 16.80 | 6.09 | 93.91 | fine gravel |
| #4 | 50.8 | 34.90 | 12.65 | 87.35 | coarse sand |
| #10 | 66.7 | 50.80 | 18.42 | 81.58 | medium sand |
| #20 | | | | | medium sand |
| #40 | 89.8 | 73.90 | 26.79 | 73.21 | fine sand |
| #60 | | | | | fine sand |
| #100 | 147.0 | 131.10 | 47.53 | 52.47 | fine sand |
| #200 | 189.3 | 173.40 | 62.87 | 37.13 | finer |
| PAN | 291.7 | 275.80 | 100.00 | 0.00 | silt/clay |



DESCRIPTION: Silty SAND with trace gravel
 USCS: SM

Prepared For: Barghausen Consulting Services

Reviewed By: ELW



Fidelity National Title Company
Order No. N0037351 / 45142204322



Fidelity National Title
Company of Oregon

OWNERSHIP AND ENCUMBRANCES REPORT WITH GENERAL INDEX LIENS
Informational Report of Ownership and Monetary and Non-Monetary Encumbrances

The information contained in this report is furnished by Fidelity National Title Company of Oregon (the "Company") as a real property information service based on the records and indices maintained by the Company for the county identified below. THIS IS NOT TITLE INSURANCE OR A PRELIMINARY TITLE REPORT FOR, OR COMMITMENT FOR, TITLE INSURANCE. No examination has been made of the title to the herein described property, other than as specifically set forth herein. Liability for any loss arising from errors and/or omissions is limited to the lesser of the charge or the actual loss, and the Company will have no greater liability by reason of this report. THIS REPORT IS SUBJECT TO THE LIMITATIONS OF LIABILITY STATED BELOW, WHICH LIMITATIONS OF LIABILITY ARE A PART OF THIS REPORT.

THIS REPORT INCLUDES MONETARY AND NON-MONETARY ENCUMBRANCES.

Part One - Ownership and Property Description

Owner. [The apparent vested owner](#) of property ("the Property") as of the Effective Date is:

Chevron U.S.A. Inc., a Pennsylvania corporation

Premises. The Property is:

(a) Street Address:

21090 SW Pacific Highway, Sherwood, OR 97140

(b) Legal Description:

SEE EXHIBIT "A" ATTACHED HERETO AND MADE A PART HEREOF

Part Two - Encumbrances

Encumbrances. As of the Effective Date, the Property appears subject to the following monetary and non-monetary encumbrances of record, not necessarily listed in order of priority, including liens specific to the subject property and general index liens (liens that are not property specific but affect any real property of the named person in the same county):

EXCEPTIONS

1. City Liens, if any, in favor of the City of Sherwood.
2. Rights of the public to any portion of the Land lying within the limits of streets, roads and highways.
3. Limited access provisions contained in Deed to the State of Oregon, by and through its State Highway Commission recorded August 24, 1954 in Book 359, page 511 Deed Records, which provides that no right of easement or right of access to, from or across the State Highway other than expressly therein provided for shall attach to the abutting property.
Affects Parcels I and III
4. Reservation of easement in deed for ingress and egress and right to access to Pacific Highway West at a specific location, or any relocation thereof,
Grantor: Agnes M. Hite and Garfield E. Hite, her husband
Grantee: Parker R. Crossway, et ux
Recording Date: January 27, 1957
Recording No.: [Book 390, page 257](#)
5. Easement, including terms and provisions contained therein:
In Favor of: The City of Sherwood
For: Sanitary sewer
Recording Date: July 28, 1987
[Recording No.: 87-038444](#)
Affects: Parcels II and III
6. Easement, including terms and provisions contained therein:
In Favor of: The City of Sherwood
For: Sanitary sewer
Recording Date: July 28, 1987
[Recording No.: 87-038445](#)
Affects: The Easterly 15 feet of Parcel I
7. Limited access provisions contained in Deed to the State of Oregon, by and through its State Highway Commission recorded May 7, 1991 as [Recording No. 91-022937](#) Deed Records, which provides that no right of easement or right of access to, from or across the State Highway other than expressly therein provided for shall attach to the abutting property.
Affects Parcel I
8. Easement, including terms and provisions contained therein,
In Favor of: State of Oregon, by and through its Department of Transportation, Highway Division
For: Slopes
Recording No.: May 7, 1991
[Recording No.: 91-022937](#)
Affects: Parcels I and III

9. Terms, provisions and conditions, including, but not limited to, maintenance provisions, and a covenant to share the costs of maintenance, contained in Reciprocal Easement Agreement,
Recording Date: March 22, 1994
[Recording No.: 94-027443](#)
Affects: Parcels I and III
10. Terms, provisions and conditions, including, but not limited to, maintenance provisions, and a covenant to share the costs of maintenance, contained in Reciprocal Easement Agreement,
Recording Date: March 22, 1994
[Recording No.: 94-027444](#)
Affects: Parcels I and III
11. Easement, including terms and provisions contained therein:
In Favor of: Chevron U.S.A. Inc., a Pennsylvania corporation
For: Wells and hydrocarbon contamination recovery system
Recording Date: October 31, 2003
[Recording No.: 2003-186239](#)
Affects: Parcel I
12. Easement, including terms and provisions contained therein:
In Favor of: The City of Sherwood
For: Sewer
Recording No.: July 28, 1987
[Recording No.: 87-038444](#)
Affects: The Easterly 15 feet of Parcel IV
13. Easement, including terms and provisions contained therein:
In Favor of: Adjacent property owners
For: Access
Recording Date: July 21, 1994
[Recording No.: 94-068595](#)
Affects: The South 30 feet of Parcel II
14. Please be advised that our search did not disclose any open Deeds of Trust of record. If you should have knowledge of any outstanding obligation, please contact the Title Department immediately for further review prior to closing.
15. Any right, interest or claim that may exist, arise or be asserted under or pursuant to the Perishable Agricultural Commodities Act of 1930, as amended, 7 USC 499a et seq., the Packers and Stockyard Act of 1921, as amended, 7 USC 181 et seq., or any similar state laws.
16. Existing leases and tenancies, if any, and any interests that may appear upon examination of such leases.

Note: Well Ownership Identification Form containing a Well Identification Number and other information. This informational note will not appear in the title insurance policy as this recorded form is not a matter within the scope of policy coverages.

Well Identification No.: L58886
Recording Date: 12/22/2003
[Recording No.: 2003-208287](#)

Well Identification No.: L58885
Recording Date: 12/22/2003
[Recording No.: 2003-208288](#)

Well Identification No.: L58884
Recording Date: 12/22/2003
[Recording No.: 2003-208289](#)

Well Identification No.: L58887
Recording Date: 12/22/2003
[Recording No.: 2003-208290](#)

Note: Property taxes for the fiscal year shown below are paid in full.

Fiscal Year: 2021-2022
Amount: \$12,435.33
Levy Code: 088.30
[Account No.: R548759](#)
Map No.: 2S130DA-01200
Affects Parcel I

Note: Property taxes for the fiscal year shown below are paid in full.

Fiscal Year: 2021-2022
Amount: \$5,090.76
Levy Code: 088.30
[Account No.: R2179909](#)
Map No.: 2S130DA-01200
Affects Parcel I - Associated Leasehold Improvements

Note: Property taxes for the fiscal year shown below are paid in full.

Fiscal Year: 2021-2022
Amount: \$6,279.15
Levy Code: 088.30
[Account No.: R548713](#)
Map No.: 2S130DA-01300
Affects Parcel II

Note: Property taxes for the fiscal year shown below are paid in full.

Fiscal Year: 2021-2022
Amount: \$7,008.21
Levy Code: 088.10
[Account No.: R2054361](#)
Map No.: 2S130DA-01400
Affects Parcel III

End of Reported Information

EXHIBIT "A"
Legal Description

For APN/Parcel ID(s): R548759
For Tax Map ID(s): 2S130DA01200

Parcel I:

A tract of land located in the Southeast quarter of Section 30, Township 2 South, Range 1 West, of the Willamette Meridian and located in the City of Sherwood, County of Washington and State of Oregon, said tract described specifically as follows:

BEGINNING at the Northwest corner of that tract of land conveyed to Portland General Electric Company, June 19, 1940, by Deed recorded under Book 190, Page 509, Washington County Deed Records, said Northwest corner bearing South, along the East line of said Section 30, a distance of 334.65 feet and West, 130.00 feet from the East quarter corner of said Section 30; thence, North 50° 07' 00" West, along the Northeast line of that tract of land conveyed to Reuben Tepolt and Verda Tepolt, September 10, 1947, by Deed recorded under Book 278, Page 156, said Deed Records, 23.59 feet to the East corner of that tract of land conveyed to the State of Oregon, August 24, 1954, by Deed recorded under Book 359, Page 511, said Deed Records; thence, South 47° 09' 03" East, along the Southeast line of said State of Oregon tract, 192.29 feet to the Southwest line of said Tepolt tract; thence, South 34° 44' 44" East, along the Southwest line of said Tepolt tract, 5.05 feet to the East corner of that tract of land conveyed to Parker R. Crossway and Frances F. Crossway, October 8, 1948, by Deed recorded under Book 289, Page 689, said Deed Records; thence, South 47° 09' 03" West, along the Southeast line of said Crossway tract, 75.00 feet to the South corner of said Crossway tract; thence, South 34° 44' 44" East, along the Southwest line of that tract of land conveyed to Parker R. Crossway and Frances Crossway, January 22, 1957, by Deed recorded under Book 390, Page 257, said Deed Records, said Southwest line being parallel with the Southwest line of said Tepolt tract, 144.60 feet; thence, North 46° 13' 33" East, 180.70 feet to the East line of said Tepolt tract; thence, North, along the East line of said Tepolt tract, 36.92 feet to the Northwest corner of that tract of land conveyed to Florin Tepolt and Josephine Tepolt, April 19, 1958, by Deed recorded under Book 404, Page 667, said Deed Records, said tract referred to henceforth as the second Tepolt tract; thence, East, along the North line of said second Tepolt tract, which is parallel with and 30.00 feet South of the South line of said Portland General Electric Company tract, measured perpendicular thereto, 100.00 feet to the West right-of-way line of North Sherwood Boulevard, 30.00 feet from the centerline thereof, measured perpendicular thereto; thence, North, along said West right-of-way line of North Sherwood Boulevard, 30.00 feet to the Southeast corner of said Portland General Electric Company tract; thence, West, along the South line of said Portland General Electric Company tract, 100.00 feet to the Southwest corner of said Portland General Electric Company tract; thence, North, along the West line of said Portland General Electric Company tract, 100.00 feet to the point of beginning.

Parcel II:

Tract A:

A tract of land located in the Southeast quarter of Section 30, Township 2 South, Range 1 West of the Willamette Meridian and located in the City of Sherwood, Washington County, Oregon, said tract described specifically as follows:

BEGINNING at a point on the West right-of-way line of Southwest Langer Drive, 30.00 feet from the centerline thereof, at the Southeast corner of that tract conveyed to E.C. Newall and Evan H. Newall by Deed recorded in Book 285, Page 697, Washington County Deed Records, said point of beginning bearing South, along the East

EXHIBIT "A"
Legal Description

line of said Section 30, a distance of 534.65 feet and West, 30.00 feet from the East quarter corner of said Section 30; thence, from said point of beginning, West along the South line of said Newall tract, 100.00 feet to the East line of that tract of land conveyed to Reuben Tepolt and Verda Tepolt by Deed recorded September 10, 1947 in Book 278, Page 156, said Deed Records; thence, North, along the East line of said Tepolt tract, 33.08 feet; thence, North, along the East line of said Tepolt tract, 33.08 feet; thence, South 46° 13' 33" West, 20.77 feet to a point 15.00 feet from the East line of said Tepolt tract, measured perpendicular thereto; thence, South, parallel with the East line of said Tepolt tract, 58.98 feet; thence, East, 15.00 feet to the East line of said Tepolt tract; thence South, along the East line of said Tepolt tract, 34.73 feet; thence, East, 100.00 feet to said right-of-way line of Southwest Langer Drive; thence, North, along said East right-of-way line of Southwest Langer Drive, 75.00 feet to the point of beginning.

Tract B:

TOGETHER WITH an access easement over a portion of that tract of land conveyed to John F. Alto and Dorothy S. Alto by Deed recorded October 14, 1986; under Document No. 86-47006, Washington County Deed Records, located in the Southeast quarter of Section 30, Township 2 South, Range 1 West of the Willamette Meridian and located in the City of Sherwood, Washington County, Oregon, said parcel described specifically as follows:

The South, 30.00 feet of said Alto tract measured perpendicular to the South line thereof.

Parcel III:

A tract of land located in the Southeast quarter of Section 30, Township 2 South, Range 1 West of the Willamette Meridian, in the City of Sherwood, County of Washington and State of Oregon, said tract described specifically as follows:

BEGINNING at a point on the West line of County Road No. 1324, 535 feet South and 30 feet West of the quarter corner on the East line of Section 30, Township 2 South, Range 1 West of the Willamette Meridian, said beginning point being the Southeast corner of the tract conveyed to Reuben P. Tepolt by Deed recorded in Book 381, Page 117 of Washington County Deed Records; running thence North along the West line of said County Road, 70.0 feet to a point; thence West parallel with and 30 feet distant Southerly from the North line of the said Tepolt tract, a distance of 100 feet to a point on the West line thereof; thence South, 70.0 feet to the Southwest corner of the said Tepolt tract; thence East, 100 feet to the place of beginning.

Parcel IV:

Tract A:

A tract of land located in the Southeast quarter of Section 30, Township 2 South, Range 1. West, of the Willamette Meridian and located in the City of Sherwood, County of Washington and State of Oregon, said tract described specifically as follows:

BEGINNING at the Southwest corner of that tract of land conveyed to Victor Muralt and Erna Muralt by Deed recorded February 27, 1951 in Book 317, Page 532, Washington County Deed Records, said point of beginning bearing South along the East line of said Section 30, a distance of 720.00 feet and West, 130.00 feet from the East quarter corner of said Section 30; thence from said point of beginning, North along the West line of said Muralt Tract, along the West line of that tract of land conveyed to Victor Muralt and Erna Muralt by Deed recorded June 9, 1950 in Book 308, Page 28, said Deed Records, and along the East line of that tract of land conveyed to Reuben Tepolt and Verda Tepolt, by Deed recorded September 10, 1947 in Book 278, Page 156, said Deed Records, 145.08 feet; thence West, 15.00 feet; thence North along a line parallel with and 15.00 feet from the East line of said Tepolt tract, measured perpendicular thereto, 58.98 feet; thence South 46° 13' 33" West, 159.93 feet to the Southwest line of that tract of land conveyed to Parker R. Crossway and Frances Crossway by Deed recorded January 22, 1957 in Book 390, Page 257, said Deed Records; thence South 34° 44' 44" East along the Southwest line of said Crossway tract, which is also parallel with the Southwest line of said Tepolt tract, 5.40 feet

EXHIBIT "A"
Legal Description

to an angle point in the Southwest line of said Crossway tract; thence South 55° 04' 13" East along the Southwest line of said Crossway tract 155.40 feet to the point of beginning.

Tract B:

TOGETHER WITH an access easement over a portion of that tract of land conveyed to John F. Alto and Dorothy S. Alto by Deed recorded October 14, 1986, under Document No. 86-47006, Washington County Deed Records, located in the Southeast quarter of Section 30, Township 2 South, Range 1 West, of the Willamette Meridian, and located in the City of Sherwood, County of Washington and State of Oregon, said parcel described specifically as follows:

The South, 30.00 feet of said Alto tract measured perpendicular to the South line thereof.

LIMITATIONS OF LIABILITY

"CUSTOMER" REFERS TO THE RECIPIENT OF THIS REPORT.

CUSTOMER EXPRESSLY AGREES AND ACKNOWLEDGES THAT IT IS EXTREMELY DIFFICULT, IF NOT IMPOSSIBLE, TO DETERMINE THE EXTENT OF LOSS WHICH COULD ARISE FROM ERRORS OR OMISSIONS IN, OR THE COMPANY'S NEGLIGENCE IN PRODUCING, THE REQUESTED REPORT, HEREIN "THE REPORT." CUSTOMER RECOGNIZES THAT THE FEE CHARGED IS NOMINAL IN RELATION TO THE POTENTIAL LIABILITY WHICH COULD ARISE FROM SUCH ERRORS OR OMISSIONS OR NEGLIGENCE. THEREFORE, CUSTOMER UNDERSTANDS THAT THE COMPANY IS NOT WILLING TO PROCEED IN THE PREPARATION AND ISSUANCE OF THE REPORT UNLESS THE COMPANY'S LIABILITY IS STRICTLY LIMITED. CUSTOMER AGREES WITH THE PROPRIETY OF SUCH LIMITATION AND AGREES TO BE BOUND BY ITS TERMS

THE LIMITATIONS ARE AS FOLLOWS AND THE LIMITATIONS WILL SURVIVE THE CONTRACT:

ONLY MATTERS IDENTIFIED IN THIS REPORT AS THE SUBJECT OF THE REPORT ARE WITHIN ITS SCOPE. ALL OTHER MATTERS ARE OUTSIDE THE SCOPE OF THE REPORT.

CUSTOMER AGREES, AS PART OF THE CONSIDERATION FOR THE ISSUANCE OF THE REPORT AND TO THE FULLEST EXTENT PERMITTED BY LAW, TO LIMIT THE LIABILITY OF THE COMPANY, ITS LICENSORS, AGENTS, SUPPLIERS, RESELLERS, SERVICE PROVIDERS, CONTENT PROVIDERS AND ALL OTHER SUBSCRIBERS OR SUPPLIERS, SUBSIDIARIES, AFFILIATES, EMPLOYEES, AND SUBCONTRACTORS FOR ANY AND ALL CLAIMS, LIABILITIES, CAUSES OF ACTION, LOSSES, COSTS, DAMAGES AND EXPENSES OF ANY NATURE WHATSOEVER, INCLUDING ATTORNEY'S FEES, HOWEVER ALLEGED OR ARISING, INCLUDING BUT NOT LIMITED TO THOSE ARISING FROM BREACH OF CONTRACT, NEGLIGENCE, THE COMPANY'S OWN FAULT AND/OR NEGLIGENCE, ERRORS, OMISSIONS, STRICT LIABILITY, BREACH OF WARRANTY, EQUITY, THE COMMON LAW, STATUTE OR ANY OTHER THEORY OF RECOVERY, OR FROM ANY PERSON'S USE, MISUSE, OR INABILITY TO USE THE REPORT OR ANY OF THE MATERIALS CONTAINED THEREIN OR PRODUCED, **SO THAT THE TOTAL AGGREGATE LIABILITY OF THE COMPANY AND ITS AGENTS, SUBSIDIARIES, AFFILIATES, EMPLOYEES, AND SUBCONTRACTORS SHALL NOT IN ANY EVENT EXCEED THE COMPANY'S TOTAL FEE FOR THE REPORT.**

CUSTOMER AGREES THAT THE FOREGOING LIMITATION ON LIABILITY IS A TERM MATERIAL TO THE PRICE THE CUSTOMER IS PAYING, WHICH PRICE IS LOWER THAN WOULD OTHERWISE BE OFFERED TO THE CUSTOMER WITHOUT SAID TERM. CUSTOMER RECOGNIZES THAT THE COMPANY WOULD NOT ISSUE THE REPORT BUT FOR THIS CUSTOMER AGREEMENT, AS PART OF THE CONSIDERATION GIVEN FOR THE REPORT, TO THE FOREGOING LIMITATION OF LIABILITY AND THAT ANY SUCH LIABILITY IS CONDITIONED AND PREDICATED UPON THE FULL AND TIMELY PAYMENT OF THE COMPANY'S INVOICE FOR THE REPORT.

THE REPORT IS LIMITED IN SCOPE AND IS NOT AN ABSTRACT OF TITLE, TITLE OPINION, PRELIMINARY TITLE REPORT, TITLE REPORT, COMMITMENT TO ISSUE TITLE INSURANCE, OR A TITLE POLICY, AND SHOULD NOT BE RELIED UPON AS SUCH. THE REPORT DOES NOT PROVIDE OR OFFER ANY TITLE INSURANCE, LIABILITY COVERAGE OR ERRORS AND OMISSIONS COVERAGE. THE REPORT IS NOT TO BE RELIED UPON AS A REPRESENTATION OF THE STATUS OF TITLE TO THE PROPERTY. THE COMPANY MAKES NO REPRESENTATIONS AS TO THE REPORT'S ACCURACY, DISCLAIMS ANY WARRANTY AS TO THE REPORT, ASSUMES NO DUTIES TO CUSTOMER, DOES NOT INTEND FOR CUSTOMER TO RELY ON THE REPORT, AND ASSUMES NO LIABILITY FOR ANY LOSS OCCURRING BY REASON OF RELIANCE ON THE REPORT OR OTHERWISE.

IF CUSTOMER (A) HAS OR WILL HAVE AN INSURABLE INTEREST IN THE SUBJECT REAL PROPERTY, (B) DOES NOT WISH TO LIMIT LIABILITY AS STATED HEREIN AND (C) DESIRES THAT ADDITIONAL LIABILITY BE ASSUMED BY THE COMPANY, THEN CUSTOMER MAY REQUEST AND PURCHASE A POLICY OF TITLE INSURANCE, A BINDER, OR A COMMITMENT TO ISSUE A POLICY OF TITLE INSURANCE. NO ASSURANCE IS GIVEN AS TO THE INSURABILITY OF THE TITLE OR STATUS OF TITLE. CUSTOMER EXPRESSLY AGREES AND ACKNOWLEDGES IT HAS AN INDEPENDENT DUTY TO ENSURE AND/OR RESEARCH THE ACCURACY OF ANY INFORMATION OBTAINED FROM THE COMPANY OR ANY PRODUCT OR SERVICE PURCHASED.

NO THIRD PARTY IS PERMITTED TO USE OR RELY UPON THE INFORMATION SET FORTH IN THE REPORT, AND NO LIABILITY TO ANY THIRD PARTY IS UNDERTAKEN BY THE COMPANY.

CUSTOMER AGREES THAT, TO THE FULLEST EXTENT PERMITTED BY LAW, IN NO EVENT WILL THE COMPANY, ITS LICENSORS, AGENTS, SUPPLIERS, RESELLERS, SERVICE PROVIDERS, CONTENT PROVIDERS, AND ALL OTHER SUBSCRIBERS OR SUPPLIERS, SUBSIDIARIES, AFFILIATES, EMPLOYEES AND SUBCONTRACTORS BE LIABLE FOR CONSEQUENTIAL, INCIDENTAL, INDIRECT, PUNITIVE, EXEMPLARY, OR SPECIAL DAMAGES, OR LOSS OF PROFITS, REVENUE, INCOME, SAVINGS, DATA, BUSINESS, OPPORTUNITY, OR GOODWILL, PAIN AND SUFFERING, EMOTIONAL DISTRESS, NON-OPERATION OR INCREASED EXPENSE OF OPERATION, BUSINESS INTERRUPTION OR DELAY, COST OF CAPITAL, OR COST OF REPLACEMENT PRODUCTS OR SERVICES, REGARDLESS OF WHETHER SUCH LIABILITY IS BASED ON BREACH OF CONTRACT, TORT, NEGLIGENCE, THE COMPANY'S OWN FAULT AND/OR NEGLIGENCE, STRICT LIABILITY, BREACH OF WARRANTIES, FAILURE OF ESSENTIAL PURPOSE, OR OTHERWISE AND WHETHER CAUSED BY NEGLIGENCE, ERRORS, OMISSIONS, STRICT LIABILITY, BREACH OF CONTRACT, BREACH OF WARRANTY, THE COMPANY'S OWN FAULT AND/OR NEGLIGENCE OR ANY OTHER CAUSE WHATSOEVER, AND EVEN IF THE COMPANY HAS BEEN ADVISED OF THE LIKELIHOOD OF SUCH DAMAGES OR KNEW OR SHOULD HAVE KNOWN OF THE POSSIBILITY FOR SUCH DAMAGES.

END OF THE LIMITATIONS OF LIABILITY

**FIRE CODE / LAND USE / BUILDING REVIEW
APPLICATION**

Attachment A, Appendix L



North Operating Center
11945 SW 70th Avenue
Tigard, OR 97223
Phone: 503-649-8577

South Operating Center
8445 SW Elligsen Rd
Wilsonville, OR 97070
Phone: 503-649-8577

REV 6-30-20

Project Information

Applicant Name: Andrew Bowman
Address: 18215 72nd Avenue South, Kent, WA 98032
Phone: 720-320-9539
Email: abowman@Barghausen.com
Site Address: 21090 SW Pacific HWY
City: Sherwood, OR
Map & Tax Lot #: 2S130DA01200
Business Name: Chevron
Land Use/Building Jurisdiction: Retail Commercial
Land Use/ Building Permit # Existing - CUP 87-03

Choose from: Beaverton, Tigard, Newberg, Tualatin, North Plains, West Linn, Wilsonville, Sherwood, Rivergrove, Durham, King City, **Washington County**, Clackamas County, Multnomah County, Yamhill County

Project Description

Demolition of existing Chevron Gas Station, convenience store, and underground storage tanks.

Installing new Chevron Gas Station, convenience store, and underground storage tanks.

City is requiring new Service Provider Permit for new project.

Permit/Review Type (check one):

Land Use / Building Review - Service Provider Permit

- Emergency Radio Responder Coverage Install/Test
- LPG Tank (Greater than 2,000 gallons)
- Flammable or Combustible Liquid Tank Installation (Greater than 1,000 gallons)
 - * Exception: Underground Storage Tanks (UST) are deferred to DEQ for regulation.
- Explosives Blasting (Blasting plan is required)
- Exterior Toxic, Pyrophoric or Corrosive Gas Installation (in excess of 810 cu.ft.)
- Tents or Temporary Membrane Structures (in excess of 10,000 square feet)
- Temporary Haunted House or similar
- OLCC Cannabis Extraction License Review
- Ceremonial Fire or Bonfire (For gathering, ceremony or other assembly)

For Fire Marshal's Office Use Only

TVFR Permit # 2022-0119
Permit Type: TVFR SPP-COS
Submittal Date: 10-7-22
Assigned To: DFM Arn
Due Date: NA
Fees Due: \$0.
Fees Paid: \$0.

Approval/Inspection Conditions

(For Fire Marshal's Office Use Only)

This section is for application approval only

Jason Arn 10-7-22

Fire Marshal or Designee Date

Conditions:
See attached FS Plan.

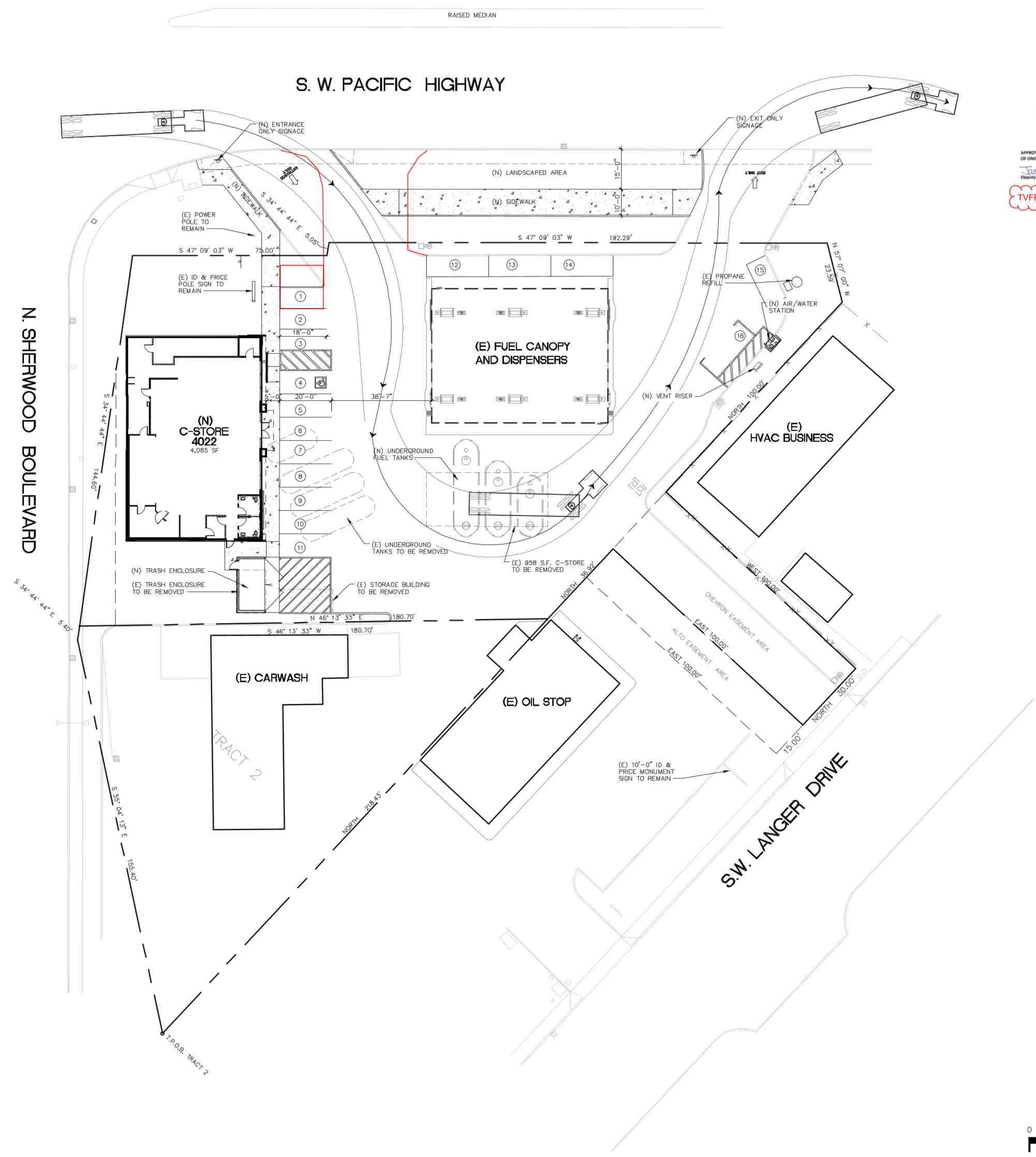
See Attached Conditions: Yes No

Site Inspection Required: Yes No

This section used when site inspection is required

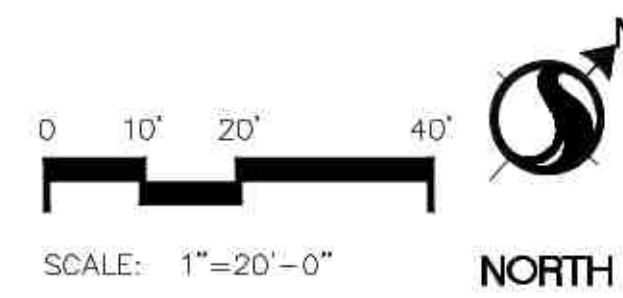
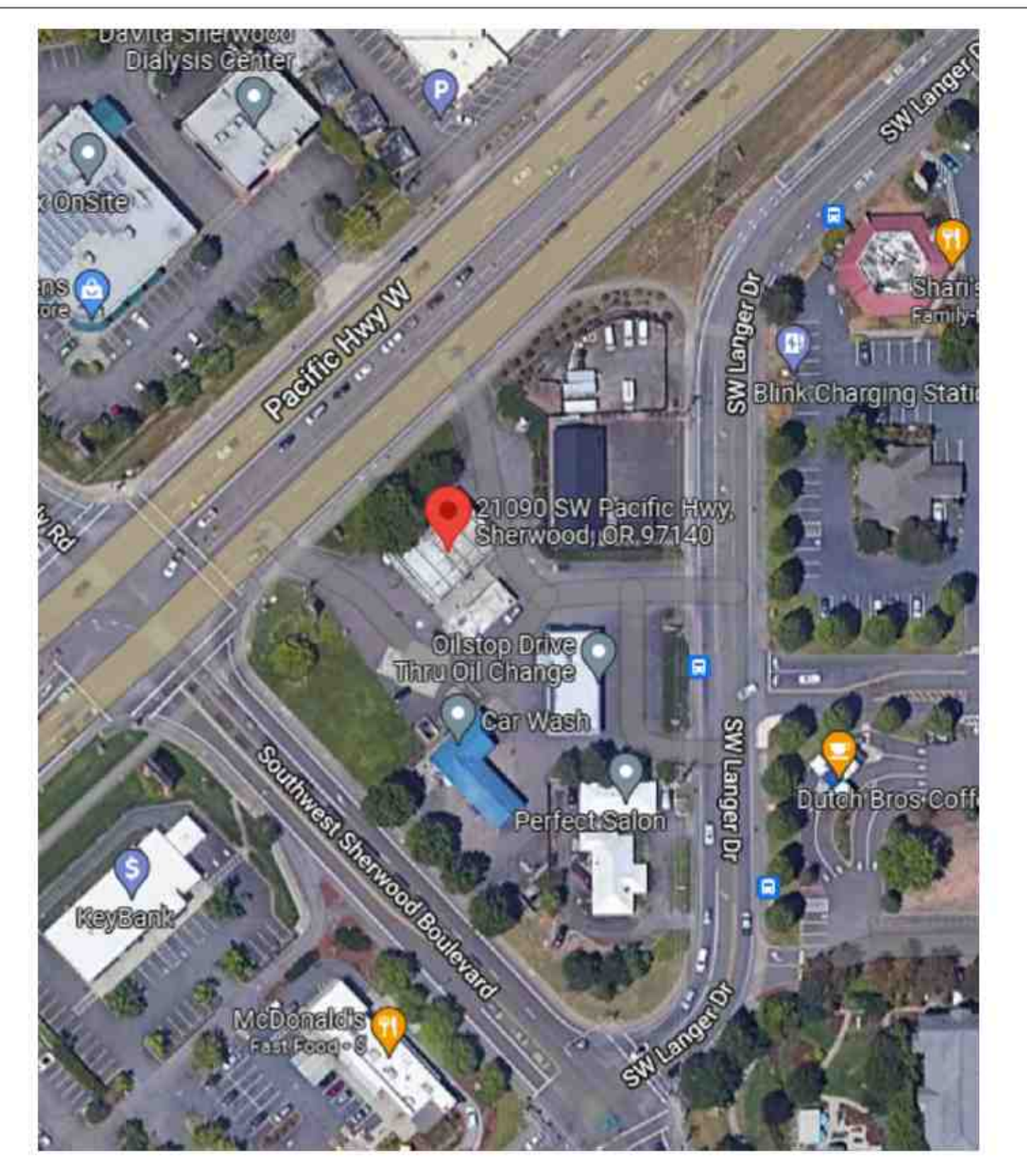
Inspection Comments:

Final TVFR Approval Signature & Emp ID Date



TVFR
Tualatin Valley
Fire & Rescue
APPROVED PLANS
APPROVAL OF PLANS IS NOT AN APPROVAL
OF OMISSIONS OR OVERSIGHTS
Jason A. Spangler
District Fire Marshal II
TVFR Permit # 2022-0119

VICINITY MAP



Chevron Products Company, a division of Chevron U.S.A. Inc., owns the copy rights to the design of the herein described "Extra Mile" market building as embodied in any tangible or electronic medium of expression including a building, architectural plans, or drawings. The copyrighted material includes the overall form as well as the arrangement and composition of spaces and elements in this "Extra Mile" design, but does not include individual standard features or details. Anyone wishes to copy, distribute, or sell this drawing or any derivative works based hereon must have written permission of Chevron Products Company.
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| MARK | DATE | REVISIONS | INITIAL | MARK | DATE | REVISIONS | INITIAL |
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Chevron
21090 SW PACIFIC HWY.
SHERWOOD, OR

Stantec
Stantec Architecture Inc.
180 North McDowell Road, Suite 200
Portland, OR 97228
Tel: 703.562.8480
www.stantec.com

SITE PLAN

| MILESTONES | | | | JOB# | SHEET |
|----------------------------|------|----------|-------------|------------|-------|
| PROJECT PHASE | DATE | INITIALS | SSW | | |
| ISSUED FOR PRELIM PLANNING | | | SSW 9/21/18 | 2007732013 | SP1 |
| ISSUED FOR PERMIT | | | | | |
| ISSUED FOR BID | | | | | |
| ISSUED FOR CONSTRUCTION | | | | | |
| ISSUED FOR FINAL | | | | | |

SCALE: AS NOTED

SENSITIVE AREA PRE-SCREENING SITE ASSESSMENT

Clean Water Services File Number

1. Jurisdiction: _____

2. Property Information (example: 1S234AB01400)

Tax lot ID(s): _____

OR Site Address: _____

City, State, Zip: _____

Nearest cross street: _____

4. Development Activity (check all that apply)

- Addition to single family residence (rooms, deck, garage)
 Lot line adjustment Minor land partition
 Residential condominium Commercial condominium
 Residential subdivision Commercial subdivision
 Single lot commercial Multi lot commercial
 Other _____

3. Owner Information

Name: _____

Company: _____

Address: _____

City, State, Zip: _____

Phone/fax: _____

Email: _____

4. Applicant Information

Name: _____

Company: _____

Address: _____

City, State, Zip: _____

Phone/fax: _____

Email: _____

6. Will the project involve any off-site work? Yes No Unknown

Location and description of off-site work: _____

7. Additional comments or information that may be needed to understand your project: _____

This application does NOT replace Grading and Erosion Control Permits, Connection Permits, Building Permits, Site Development Permits, DEQ 1200-C Permit or other permits as issued by the Department of Environmental Quality, Department of State Lands and/or Department of the Army COE. All required permits and approvals must be obtained and completed under applicable local, state, and federal law.

By signing this form, the Owner or Owner's authorized agent or representative, acknowledges and agrees that employees of Clean Water Services have authority to enter the project site at all reasonable times for the purpose of inspecting project site conditions and gathering information related to the project site. I certify that I am familiar with the information contained in this document, and to the best of my knowledge and belief, this information is true, complete, and accurate.

Print/type name _____ Print/type title _____

Signature ONLINE SUBMITTAL _____ Date _____

FOR DISTRICT USE ONLY

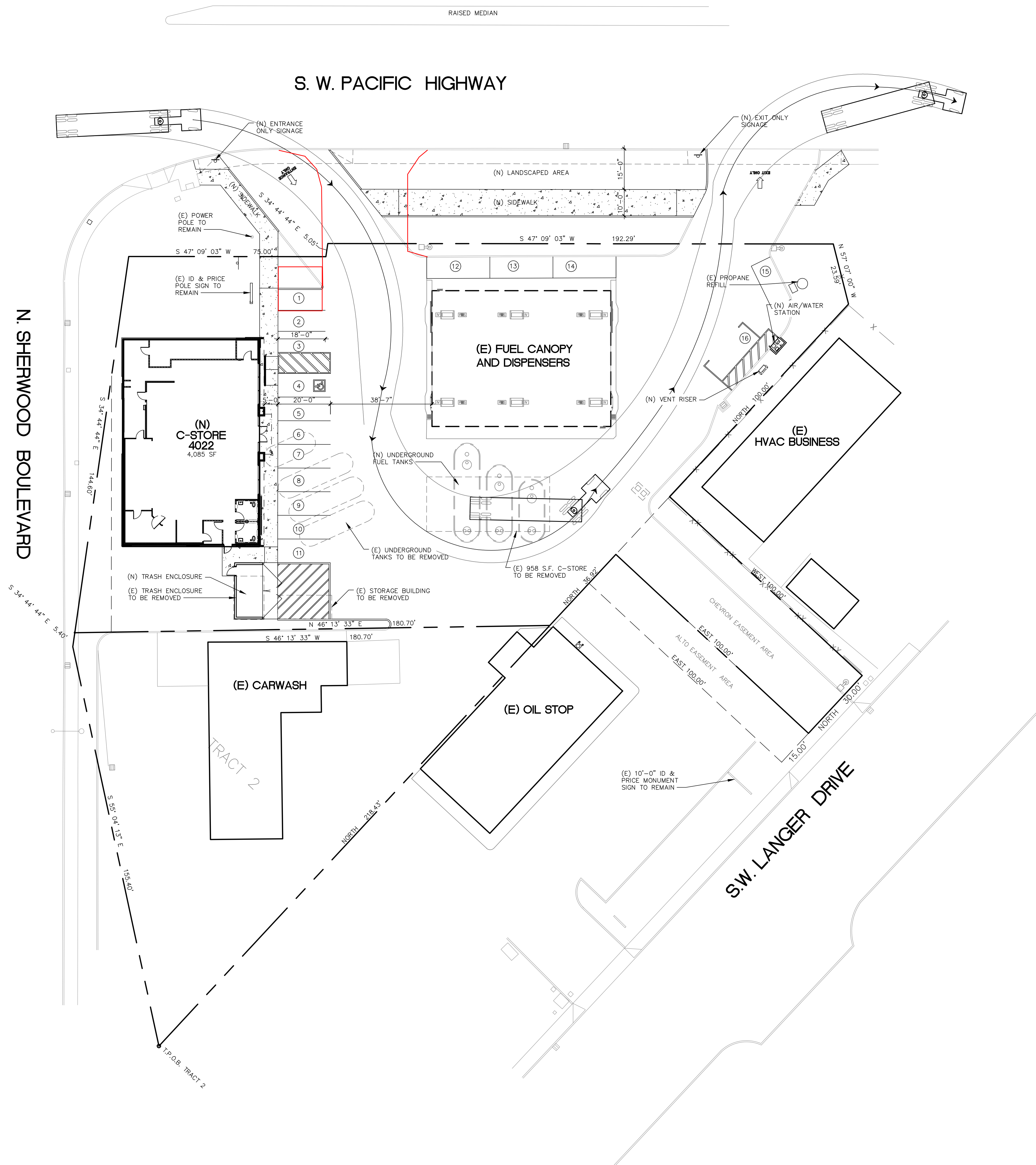
- Sensitive areas potentially exist on site or within 200' of the site. **THE APPLICANT MUST PERFORM A SITE ASSESSMENT PRIOR TO ISSUANCE OF A SERVICE PROVIDER LETTER.** If Sensitive Areas exist on the site or within 200 feet on adjacent properties, a Natural Resources Assessment Report may also be required.
- Based on review of the submitted materials and best available information sensitive areas do not appear to exist on site or within 200' of the site. This Sensitive Area Pre-Screening Site Assessment does NOT eliminate the need to evaluate and protect water quality sensitive areas if they are subsequently discovered. This document will serve as your Service Provider Letter as required by Resolution and Order 19-5, Section 3.02.1, as amended by Resolution and Order 19-22. All required permits and approvals must be obtained and completed under applicable local, State and federal law.
- Based on review of the submitted materials and best available information the above referenced project will not significantly impact the existing or potentially sensitive area(s) found near the site. This Sensitive Area Pre-Screening Site Assessment does NOT eliminate the need to evaluate and protect additional water quality sensitive areas if they are subsequently discovered. This document will serve as your Service Provider Letter as required by Resolution and Order 19-5, Section 3.02.1, as amended by Resolution and Order 19-22. All required permits and approvals must be obtained and completed under applicable local, state and federal law.
- THIS SERVICE PROVIDER LETTER IS NOT VALID UNLESS _____ CWS APPROVED SITE PLAN(S) ARE ATTACHED.**
- The proposed activity does not meet the definition of development or the lot was platted after 9/9/95 ORS 92.040(2). **NO SITE ASSESSMENT OR SERVICE PROVIDER LETTER IS REQUIRED.**

Reviewed by Mila Gonzalez Lima _____ Date _____Once complete, email to: SPLReview@cleanwaterservices.org • Fax: (503) 681-4439

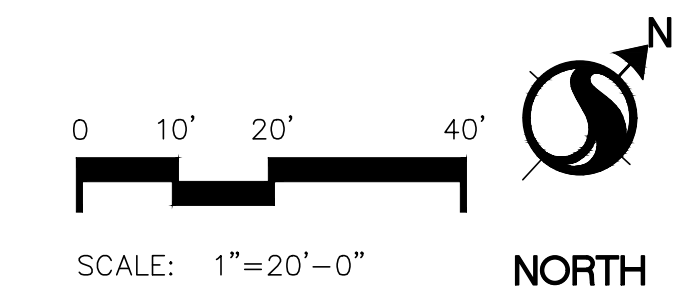
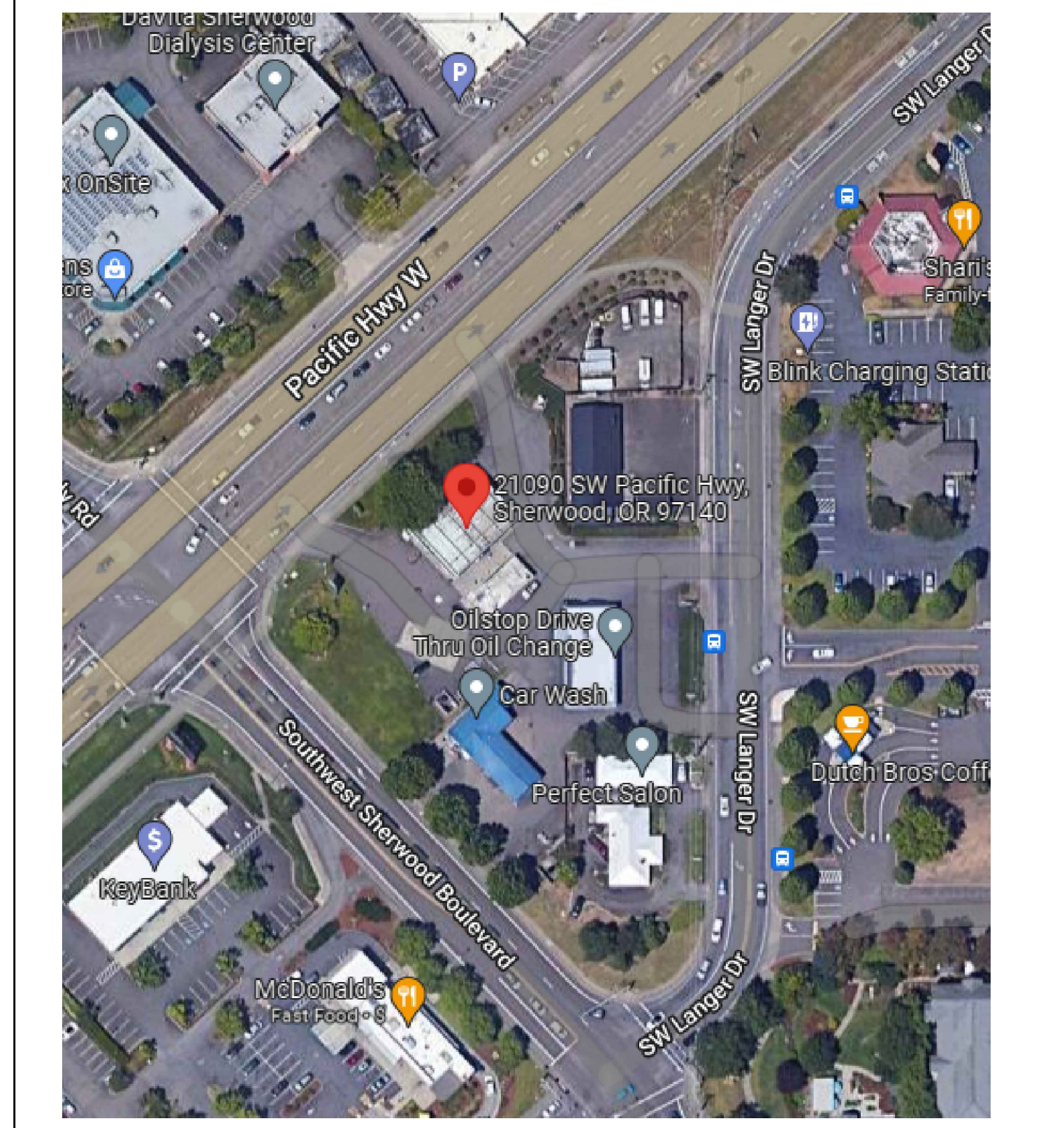
OR mail to: SPL Review, Clean Water Services, 2550 SW Hillsboro Highway, Hillsboro, Oregon 97123

Revised 2/2020

Packet Page 223



VICINITY MAP



Chevron Products Company, a division of Chevron U.S.A. Inc., owns the copy rights to the design of the herein described "Extra Mile" market building as embodied in any tangible or electronic medium of expression including a building, architectural plans, or drawings. The copyrighted material includes the overall form as well as the arrangement and composition of spaces and elements in this "Extra Mile" design, but does not include individual standard features or details. Anyone wishes to copy, distribute, or sell this drawing or any derivative works based hereon must have written permission of Chevron Products Company.
 ©2008 Chevron Products Company, a division of Chevron U.S.A. Inc. All rights reserved.

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|--|-----------------------|
| | 21090 SW PACIFIC HWY. |
| | SHERWOOD, OR |
| | SITE PLAN |

| MILESTONES | | | | SHEET |
|----------------------------|------|----------|-----------------|-------|
| PROJECT PHASE | DATE | INITIALS | ISS# | |
| ISSUED FOR PRELIM PLANNING | - | - | 92138 | SP1 |
| ISSUED FOR PERMIT | - | - | JOB# 2007732013 | |
| ISSUED FOR BID | - | - | SCALE: AS NOTED | |
| ISSUED FOR CONSTRUCTION | - | - | | |
| ISSUED FOR FINAL | - | - | | |



851 SW 6th Avenue, Suite 600
Portland, OR 97204
P 503.228.5230

Technical Memorandum

Project# 28275

November 28, 2022

To: Craig Christensen, P.E.
City of Sherwood
22560 SW Pine Street
Sherwood, OR 97140

From: Matt Hughart, AICP, McKenna Milacek, and Julia Kuhn, PE

CC: John Russell, P.E.; Oregon Department of Transportation

RE: Chevron Convenience Market – Transportation Impact Analysis

SUMMARY

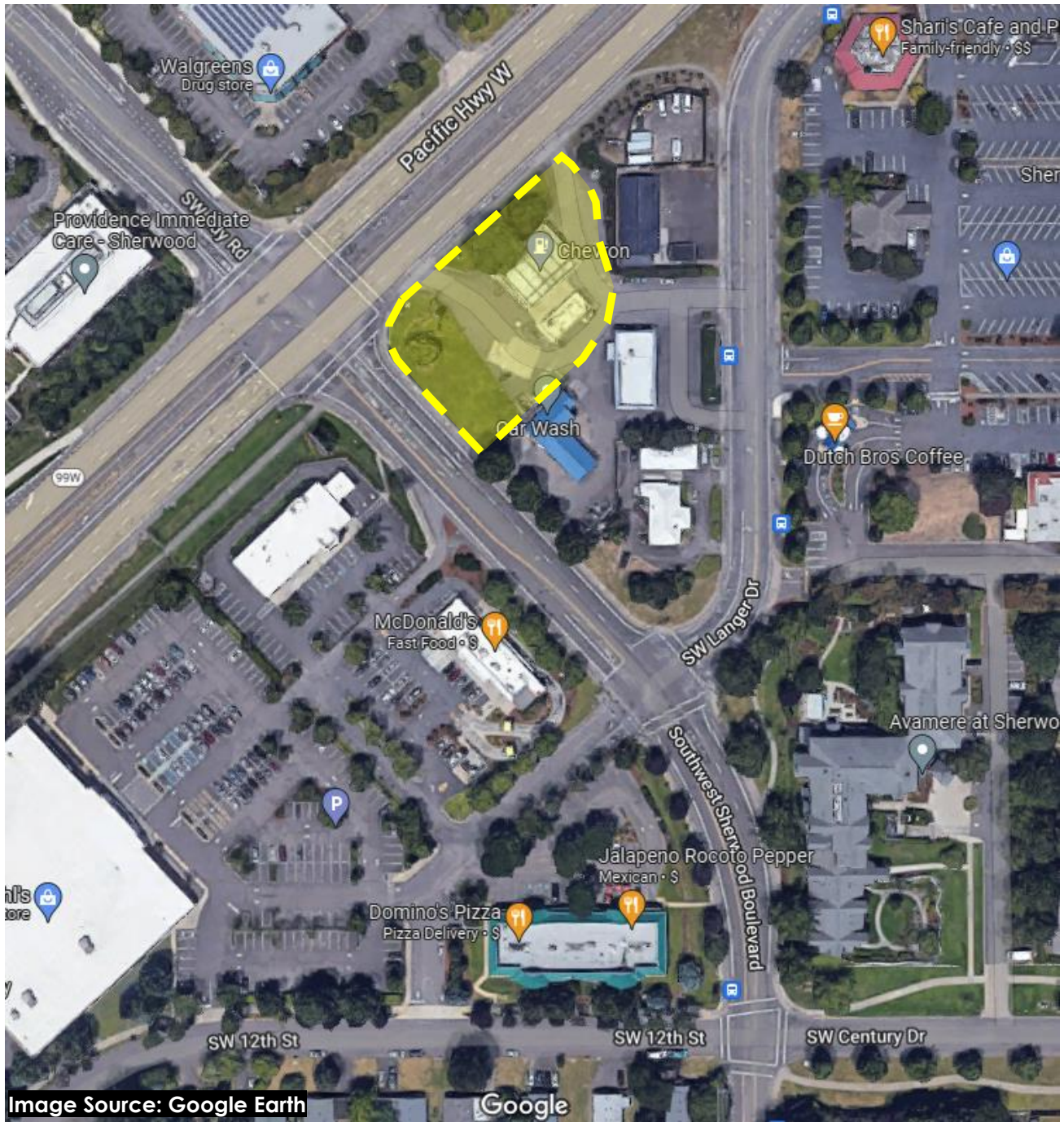
Chevron is proposing to raze and reconstruct the convenience store at its existing gas station located on the northeast corner of the 99W/SW Sherwood Boulevard intersection. This memorandum documents a transportation assessment of the proposed convenience store reconstruction. The following recommendations are identified for implementation in conjunction with site development, subject to City approval:

- Install two DO NOT ENTER (R5-1) signs on the westernmost access driveway to discourage exiting site traffic from accessing OR 99W using this driveway. Signs should be installed in accordance with City standards and the Manual on Uniform Traffic Control Devices (MUTCD).

INTRODUCTION

As proposed, the existing 968 square foot convenience store will be removed and replaced with a new 4,085 square foot convenience store to be located on the southwest corner of the site. The existing fueling stations and canopy will not change. Access to the site will remain unchanged with two driveways directly off 99W and one crossover easement to SW Langer Drive. The site location and vicinity are shown in Figure 1, and a site plan is shown in Figure 2.

Figure 1 - Site Vicinity Map



SCOPE OF THE REPORT

This report identifies the transportation-related impacts associated with the proposed Chevron convenience store reconstruction and was prepared in accordance with the City of Sherwood Transportation Impact Study requirements and Oregon Department of Transportation (ODOT) analysis procedures. Per discussions with City and ODOT staff, operational analyses were performed at the following study intersections:

- OR 99W/SW Sherwood Boulevard
- SW Sherwood Boulevard/SW Langer Drive
- SW Sherwood Boulevard/SW Century Drive/SW 12th Street
- The two OR 99W site access driveways

This report evaluates the following transportation issues:

- Existing 2022 land use and transportation system conditions within the site vicinity during the weekday AM and PM peak period;
- Forecast year 2023 background traffic conditions during the weekday AM and PM peak period, considering background growth and transportation improvements planned in the study area;
- Trip generation and distribution estimates for the proposed Chevron convenience store reconstruction;
- Forecast year 2023 total traffic conditions during the weekday AM and PM peak period with build-out of the convenience store; and
- Study recommendations.

Analysis Methodology

All operational analyses described in this report were performed in accordance with the procedures stated in the Highway Capacity Manual (HCM). The 6th Edition of the HCM was used to assess study intersection operations during the peak 15 minutes of the peak hour. The peak hour factor (PHF) was derived from the existing raw manual turning movement counts and applied uniformly over each scenario. The operations analysis presented in this report was completed using a combination of Synchro 10 and Vistro analysis software.

Applicable Mobility Standards

Intersection operating targets adopted by ODOT and the City of Sherwood are summarized below.

ODOT MOBILITY TARGETS

ODOT uses volume-to-capacity (v/c) ratios to assess intersection operations. Table 6 of the Oregon Highway Plan (OHP) provides maximum volume-to-capacity ratio mobility targets for all signalized/roundabout and unsignalized intersections located outside the Portland metropolitan area. Table 1 summarizes the v/c ratio applicable to the ODOT owned/maintained 99W/SW Sherwood Boulevard and 99W/existing Chevron gas station driveways.

Table 1 – ODOT Mobility Targets

| Intersection | OHP Mobility Target |
|---|---|
| 99W/SW Sherwood Boulevard | v/c = 0.99 during the 1 st and 2 nd hours |
| 99W/existing Chevron gas state driveways | 0.99 major approach/0.99 minor approach |
| <i>Note: 99W is a Statewide Highway (with a Freight Route designation) with a posted speed of 45 mph through the study intersections.</i> | |

CITY OF SHERWOOD OPERATING STANDARDS

For intersections within the Sherwood Town Center boundary (all other identified study intersections in this report), adopted standards require a 1.1 v/c in the highest peak hour and 0.99 v/c in the second hour.

EXISTING CONDITIONS

This section summarizes the existing characteristics of the transportation system and adjacent land uses in the vicinity of the proposed development, including an inventory of the existing multimodal transportation facilities and options, a summary of recent crash history, and an evaluation of existing intersection operations for motor vehicles at the study intersections.

Site Conditions and Adjacent Land Uses

The proposed Chevron convenience store reconstruction will occur within the existing site footprint with no impacts to the overall site circulation patterns. Adjacent uses include a heating and cooling business, a car wash, and drive through oil change business. The convenience store reconstruction will have no circulation or parking impacts to these adjacent businesses.

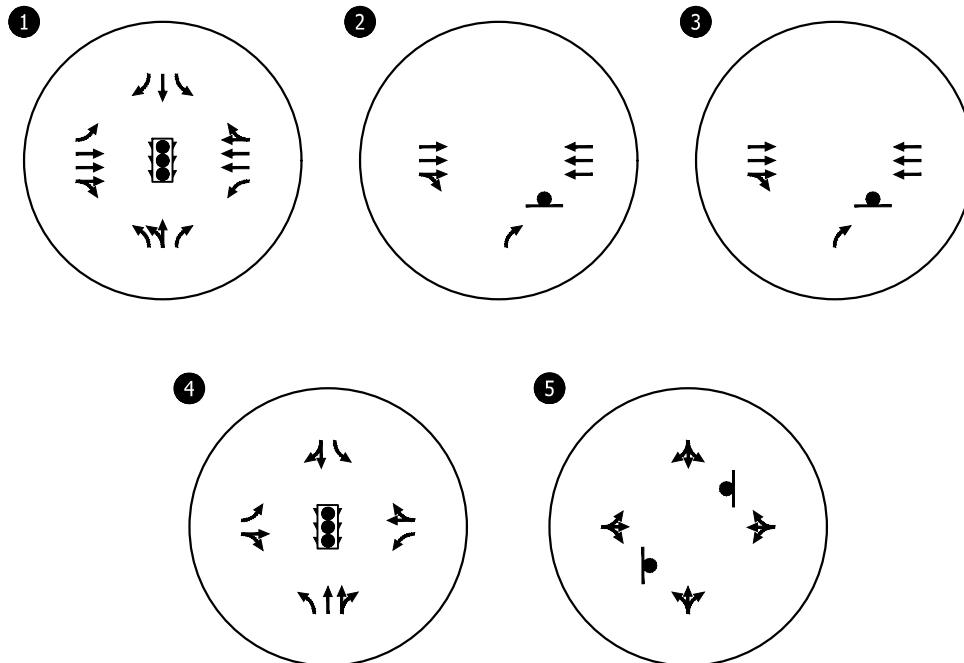
Transportation Facilities



Table 2 summarizes the characteristics of roadways within the site vicinity. **Figure 3** illustrates the existing lane configurations and traffic control devices at the study intersections.

Table 2: Existing Transportation Facilities

| Study Intersection | Functional Classification ¹ | Number of Lanes | Posted Speed (mph) | Sidewalks | Striped Bicycle Lanes | On Street Parking |
|-----------------------|---|-----------------|--------------------|-----------|-----------------------|-------------------|
| 99W | Statewide Highway - ODOT Principal Arterial - City of Sherwood | 5 lanes | 35 | Yes | No | No |
| SW Sherwood Boulevard | Arterial | 3 lanes | 25 | Yes | No | No |
| SW Langer Drive | Collector | 3 lanes | 35 | Yes | Yes | No |
| SW Century Drive | Collector | 2 lanes | 25 | Yes | No | Yes |

¹ Per the *City of Sherwood Transportation System Plan* (2014) or the *Oregon Highway Plan*.



-  - STOP SIGN
-  - TRAFFIC SIGNAL

Existing Lane Configurations
& Traffic Control Devices
Sherwood, OR

Figure
03

H:\28\28275 - Sherwood Chevron Expansion\report\figs\28275-FIGS 2.dwg Nov 21, 2022 - 8:29am - mmillecek Layout Tab: Fig 3. ELC & TCD

MULTI-USE FACILITIES

Within the immediate site vicinity, all of the study roadways have sidewalks. OR 99W and SW Langer Drive have bicycle lanes, but there are no bicycle facilities on SW Sherwood Boulevard or SW Century Drive.

TRANSIT FACILITIES

There are four transit stops that serve TriMet Bus number 94 to Portland within the study area. Two are located at the intersection of SW Sherwood Boulevard and SW Century Drive and two are located at the 16400 block of SW Langer Drive near the Langer Drive driveway. Both are located within a short walking distance from the site, providing convenient access to transit for employees.

Intersection Crash History

ODOT provided crash records for the study intersections for the five-year period from January 1, 2016 through December 31, 2020. Appendix A provides the ODOT crash reports which provides more details on the reported crashes. Table 3 summarizes the ODOT crash data.

Table 3 – Reported Crash History (January 1, 2016 – December 31, 2020)

| Study Intersection | Crash Type | | | | | Severity | | | Total |
|---|------------|------|----------|-----------|-------|----------|--------|-------|-------|
| | Angle | Turn | Read-End | Sideswipe | Other | PDO | Injury | Fatal | |
| 99W/ SW Sherwood Boulevard | 1 | 3 | 28 | 0 | 5 | 12 | 25 | 0 | 37 |
| SW Sherwood Boulevard/ SW Langer Drive | 0 | 4 | 4 | 0 | 1 | 5 | 4 | 0 | 9 |
| SW Sherwood Boulevard/ SW Century Drive | 7 | 7 | 2 | 0 | 0 | 9 | 7 | 0 | 16 |
| 99W/West Chevron Site Driveway ¹ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 99W/East Chevron Site Driveway ¹ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

¹Based on a review of ~300 feet of 99W segment data downstream from the 99W/SW Sherwood Boulevard intersection.

Intersection crash rates were calculated and compared to statewide crash rate performance thresholds. For this analysis, the critical crash rate was calculated and compared to the 90th percentile crash rates for urban intersections by traffic control and 3- versus 4-legged configurations (as appropriate). This is shown in Table 4.

Table 4 – Intersection Crash Rate Assessment

| Study Intersection | Total Crashes | Observed Crash Rate | Lane Type/Traffic Control | 90 th Percentile Rate by Lane Type and Traffic Control | Observed Crash Rate >90 th Percentile Crash Rate? |
|---|---------------|---------------------|---------------------------|---|--|
| 99W/ SW Sherwood Boulevard | 37 | 0.50 | 4SG | 0.62 | No |
| SW Sherwood Boulevard/ SW Langer Drive | 9 | 0.34 | 4SG | 0.72 | No |
| SW Sherwood Boulevard/SW Century Drive | 16 | 0.74 | 4ST | 0.38 | Yes |

CRASH DATA FINDINGS

As shown in Table 4, the observed crash rate at the SW Sherwood Boulevard/SW Century Drive intersection exceeds the critical crash rate based on intersection type. A detailed review of the intersection crash data revealed the following characteristics:

- With two rear end crashes, seven turning movement crashes, and seven angle collisions, there was no predominate crash type. However, of the seven angle crashes, five involved an eastbound side street movement interacting with a vehicle from either the north or south. There was no time of day correlation between these crashes.
- Of the turning crashes, all occurred at various times and were from different combinations of directions and movements.

While not identified as a safety-based mitigation measure, the SW Sherwood Boulevard/SW Century Drive intersection is planned for signalization (or a potential roundabout) in the Sherwood Transportation System Plan and Sherwood Town Center Plan. This project would be combined with the conversion of the SW Sherwood Boulevard/SW Langer Drive intersection to a right-in/right-out limited access intersection. Neither project is included in the City's Five-Year Capital Projects list of the *Sherwood Capital Improvement Plan*.

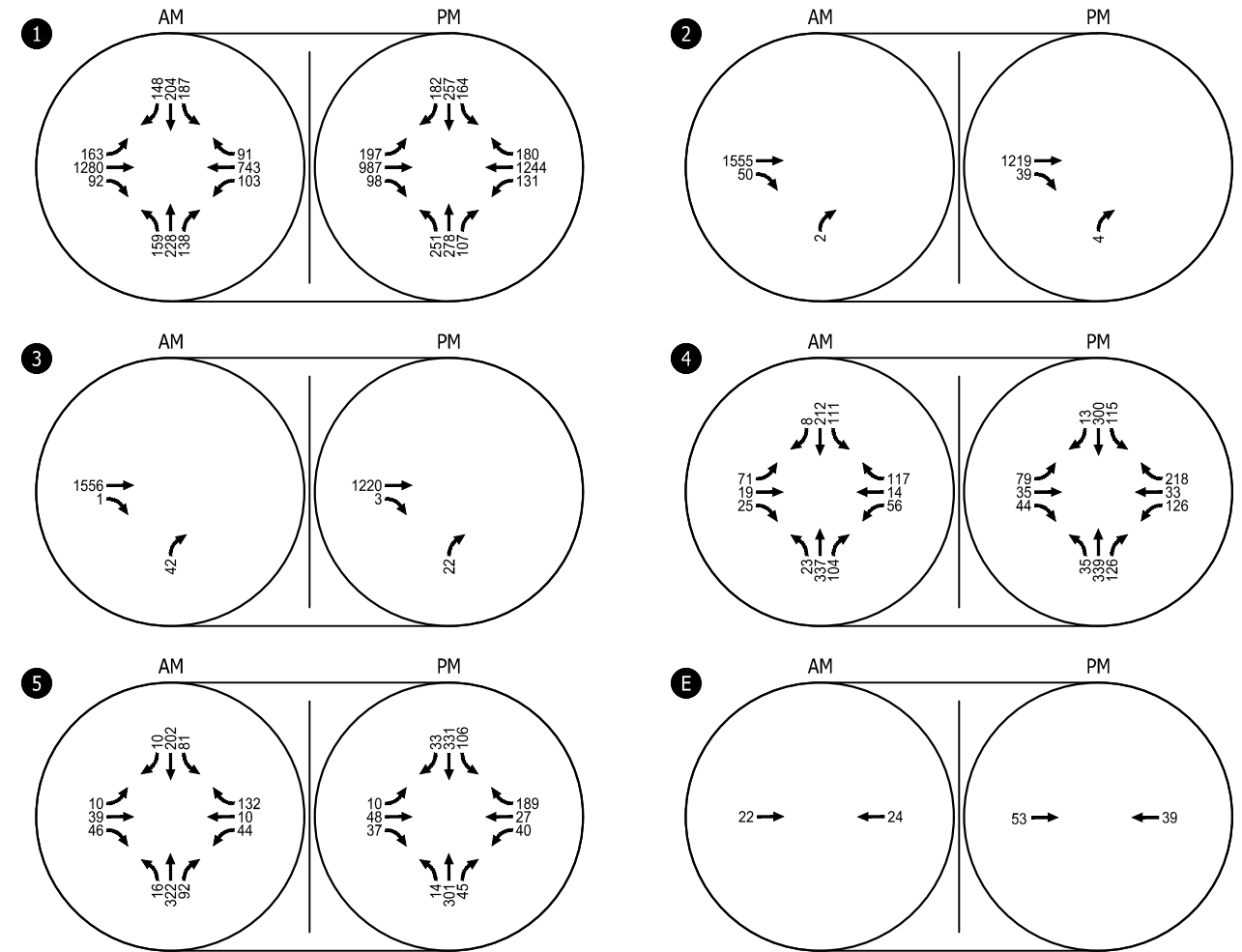
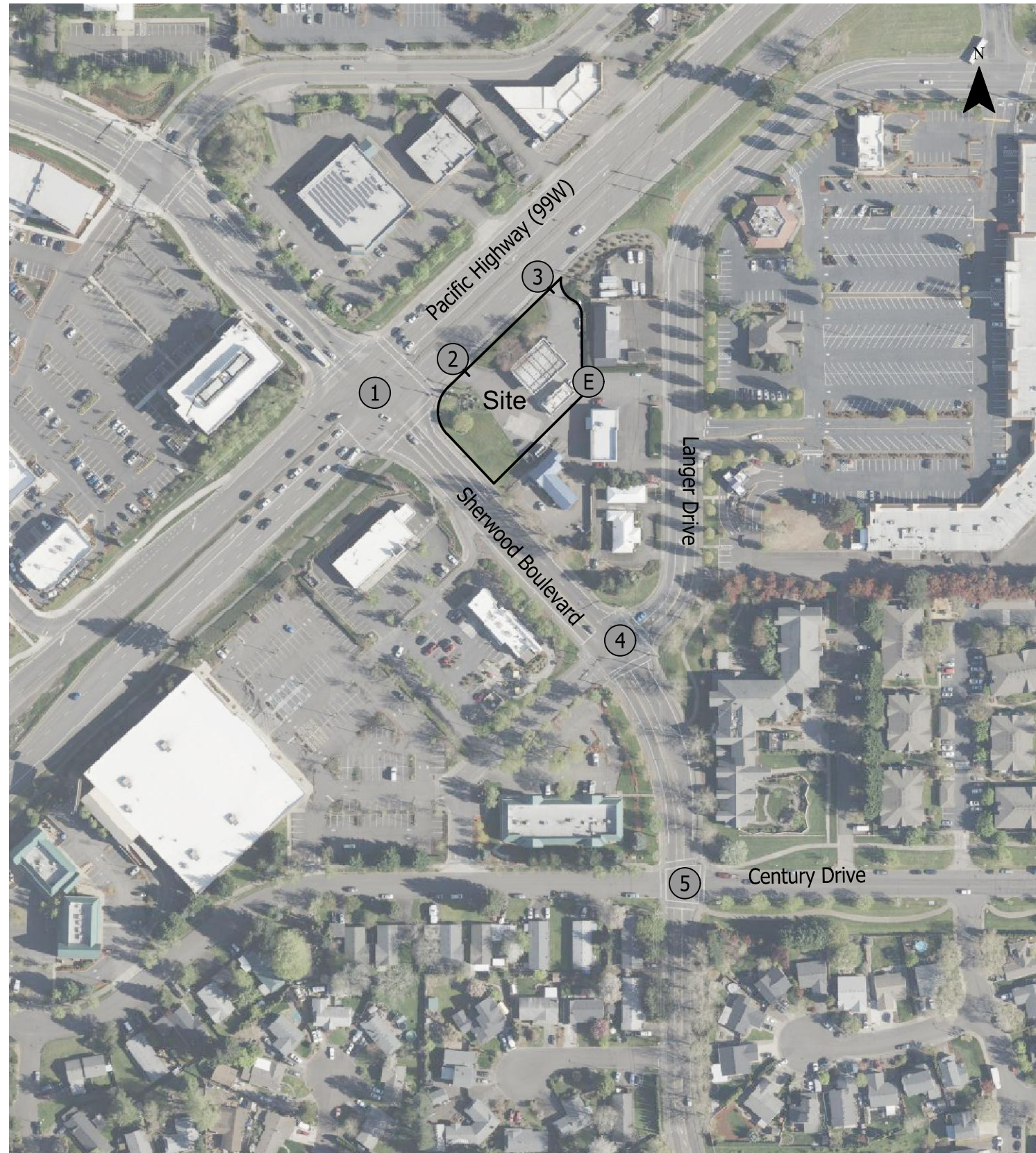
Existing Traffic Conditions

Turning movement counts at the study intersections were conducted in October 2022 on a typical mid-week date while local schools were in session.

Figure 4 illustrates the resulting 2022 existing traffic volumes at the study intersection while Table 5 summarizes the corresponding traffic operations. As shown in Table 5 and detailed in Appendix C (which includes the existing conditions operations analysis worksheets), the study intersection operations satisfy applicable ODOT performance targets and City v/c standards during both peak hours.

Table 5 – Existing Traffic Conditions

| Intersection | Critical Approach/Lane | Weekday AM Peak Hour | | | Weekday PM Peak Hour | | |
|---------------------------------------|------------------------|----------------------|----------------------|--------------|----------------------|----------------------|--------------|
| | | V/C | Approach Delay (sec) | Approach LOS | V/C | Approach Delay (sec) | Approach LOS |
| 99W/ SW Sherwood Blvd | - | 0.69 | 38.2 | D | 0.79 | 47.8 | D |
| SW Sherwood Blvd/ SW Langer Drive | - | 0.39 | 17.8 | B | 0.48 | 20.3 | C |
| SW Sherwood Blvd/ SW Century Drive | WB | 0.84 | 58.8 | F | 0.70 | 33.3 | D |
| 99W/Chevron West Driveway | NBRT | 0.01 | 23.9 | C | 0.03 | 22.9 | C |
| 99W/Chevron East Driveway | NBRT | 0.37 | 41.2 | E | 0.22 | 30.9 | D |



Existing Traffic Volumes
AM & PM Peak Hours
Sherwood, OR

Figure
04

H:\28\28275 - Sherwood Chevron Expansion\report\figs\28275-FIGS 2.dwg Nov 21, 2022 - 3:49pm - mmiback Layout Tab: Fig 4, Exist Traf Vol 11x17

TRANSPORTATION ASSESSMENT

The transportation impact analysis identifies how the study area's transportation system will operate in the year 2023 upon buildout of the convenience store reconstruction. This section of the report includes analysis of 2023 background traffic volumes and operations, an estimate of site-generated trips, and analysis of 2023 total traffic volumes and operations with the proposed convenience store reconstruction.

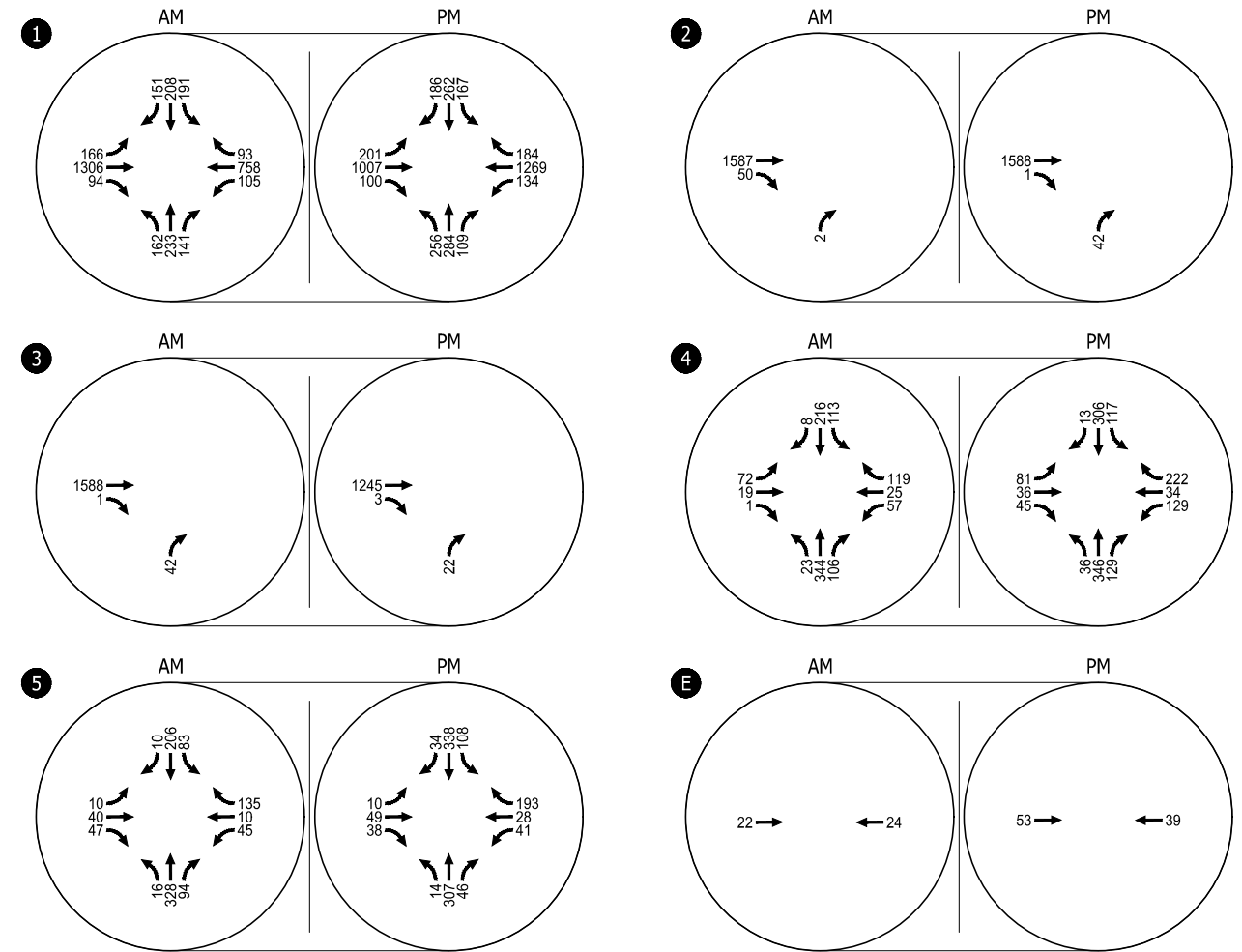
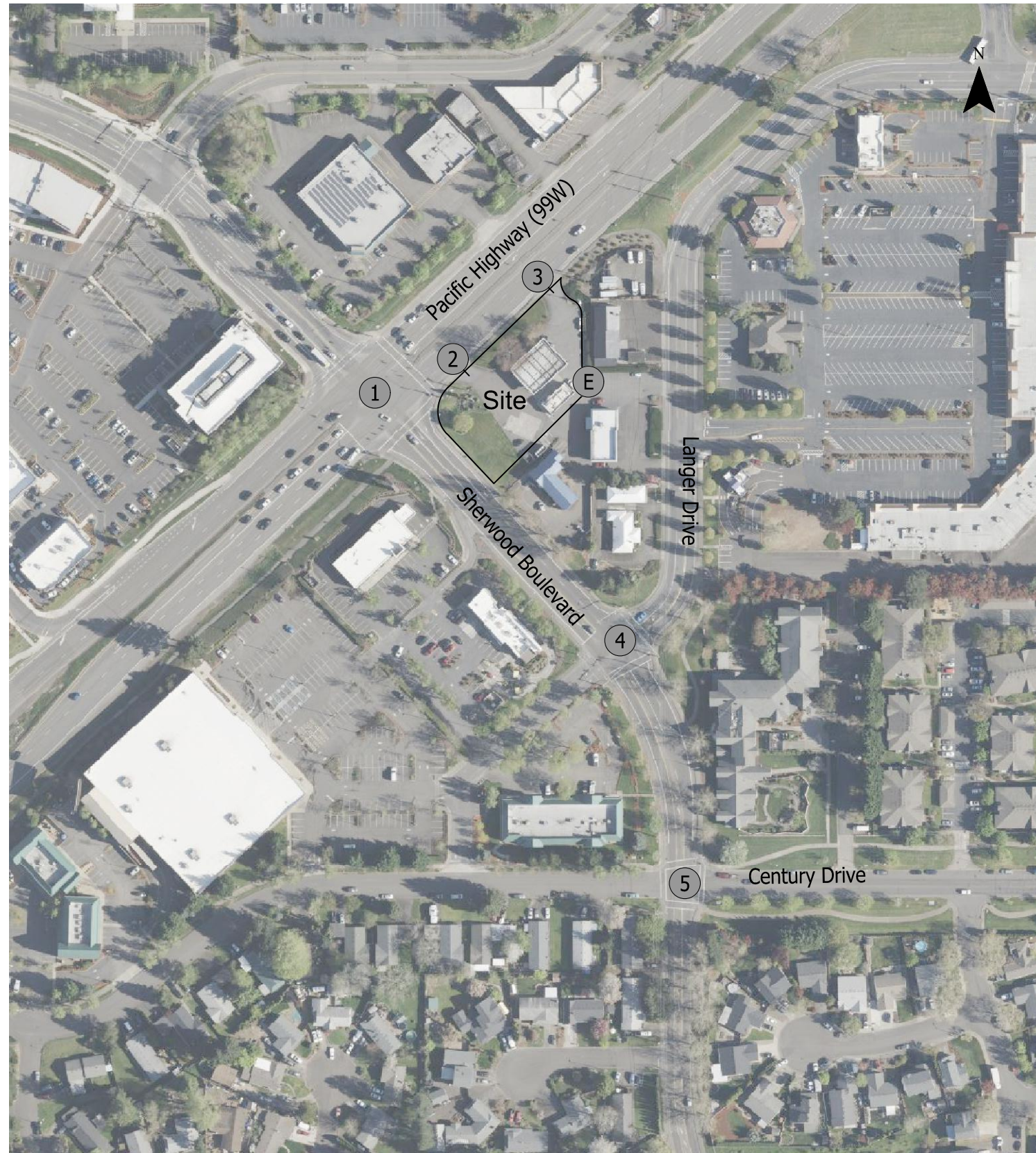
2023 Background Operational Analysis

A two percent annual growth rate (consistent with regional growth rates) was applied to the existing study intersection traffic volumes to reflect near-term growth on the local transportation network.

Figure 5 illustrates the resulting 2023 background traffic volumes while Table 6 summarizes the corresponding operational analysis for the weekday AM and PM peak hour. As shown, all of the study intersections are expected to continue to satisfy the respective City v/c standards and ODOT mobility target under background conditions. Appendix D includes the 2023 background conditions operations analysis worksheets.

Table 6 – 2023 Background Traffic Conditions

| Intersection | Critical Approach/Lane | Weekday AM Peak Hour | | | Weekday PM Peak Hour | | |
|---------------------------------------|------------------------|----------------------|----------------------|--------------|----------------------|----------------------|--------------|
| | | V/C | Approach Delay (sec) | Approach LOS | V/C | Approach Delay (sec) | Approach LOS |
| 99W/ SW Sherwood Blvd | - | 0.70 | 39.0 | D | 0.81 | 49.5 | D |
| SW Sherwood Blvd/ SW Langer Drive | - | 0.55 | 19.1 | B | 0.61 | 20.6 | C |
| SW Sherwood Blvd/ SW Century Drive | WB | 0.86 | 61.7 | F | 0.71 | 34.3 | D |
| 99W/Chevron West Driveway | NBR | 0.01 | 24.5 | C | 0.03 | 23.4 | C |
| 99W/Chevron East Driveway | NBR | 0.39 | 43.5 | E | 0.23 | 32.5 | D |



2023 Background Traffic Volumes
AM & PM Peak Hours
Sherwood, OR

Figure
05

H:\28\28275 - Sherwood Chevron Expansion\report\figs\28275-FIG5 2.dwg Nov 21, 2022 - 3:49pm - mmiback Layout Tab: Fig 5, Background Traf Vol 11x17

Proposed Development Plan

The proposed development will include the removal of the existing 968 square foot convenience store and the construction of a new 4,085 square foot convenience store to be located on the southwest corner of the site. The existing fueling canopy and dispensers will not change. The existing underground storage tanks (USTs) will be replaced with new tanks installed near the approximate location of the existing convenience store's footprint. The two existing vehicular access driveways to 99W and the crossover easement to SW Langer Drive will remain. A small modification to the westernmost 99W site driveway is proposed to better align inbound site vehicles to the proposed convenience store parking stalls and discourage use of the driveway for exiting maneuvers. With land use approval, construction is anticipated to begin in early 2023 and be completed by late 2023.

TRIP GENERATION ESTIMATE

A trip generation estimate was prepared for the proposed reconstruction based on information provided in *Trip Generation Manual*, 11th Edition, published by the Institute of Transportation Engineers (ITE). While the number of vehicular fueling positions is not changing, the convenience store element is proposed to be increased in square footage. Based on these factors, the trip generation profile for the project was developed under the following methodology:

- The measured site trips were held constant due to the following reasons:
 - While field observations noted a few cars in the peak time periods purposely accessed the site for the convenience store, the overwhelming majority of convenience store business came from active fueling customers. This is likely due to the small size of the convenience store and the site's lack of dedicated convenience store parking.
 - The site's fueling component (number of fueling positions) is not proposed to change.
- Using ITE land use code 945 (Convenience Store/Gas Station – Vehicle Fueling Positions 9-15), the daily, weekday AM, and weekday PM peak hour trips were calculated using a 4,085 square foot convenience store size as the independent variable.
- The site's existing measured demand was then subtracted from the estimated ITE 945 land use trips to estimate the expected increase in trips specifically associated with the 4,085 square foot convenience store. The pass-by rates from the ITE 945 land use were subsequently applied to generate the net new trips from the convenience store reconstruction. Table 7 summarizes the estimates for the daily, weekday AM and weekday PM peak hours.

Table 7: Trip Generation Estimate

| Land Use | ITE Code | Size (Sq. Ft.) | Daily Trips | Weekday AM Peak Hour | | | Weekday PM Peak Hour | | |
|--|----------|----------------|-------------|----------------------|-----|-----|----------------------|-----|-----|
| | | | | Total | In | Out | Total | In | Out |
| Convenience Store/Gas Station-VFP (9-15) | 945 | 4,085 | 2,861 | 232 | 116 | 116 | 224 | 112 | 112 |
| Existing Measured Demand ¹ | | | - | 121 | 65 | 56 | 140 | 71 | 69 |
| Trips Due to Convenience Store Upgrades | | | - | 111 | 51 | 60 | 84 | 41 | 43 |
| Pass-By (75% (AM), 76% (PM)) | | | - | 84 | 42 | 42 | 64 | 32 | 32 |
| Total Net New Trips | | | - | 27 | 9 | 18 | 20 | 9 | 11 |

¹Field observations noted approximately 10 peak hour trips passing through the site without stopping at the fueling stations or convenience store. As such, these trips have been removed from the noted measured demand totals for trip calculation purposes.

SITE TRIP DISTRIBUTION/TRIP ASSIGNMENT

The pass-by and net new site-generated trips shown in Table 7 were distributed onto the study area roadways based on a review of local and regional traffic patterns and existing site access. The trip distribution pattern and trip assignment is illustrated in Figure 6.

Year 2023 Total Traffic Conditions

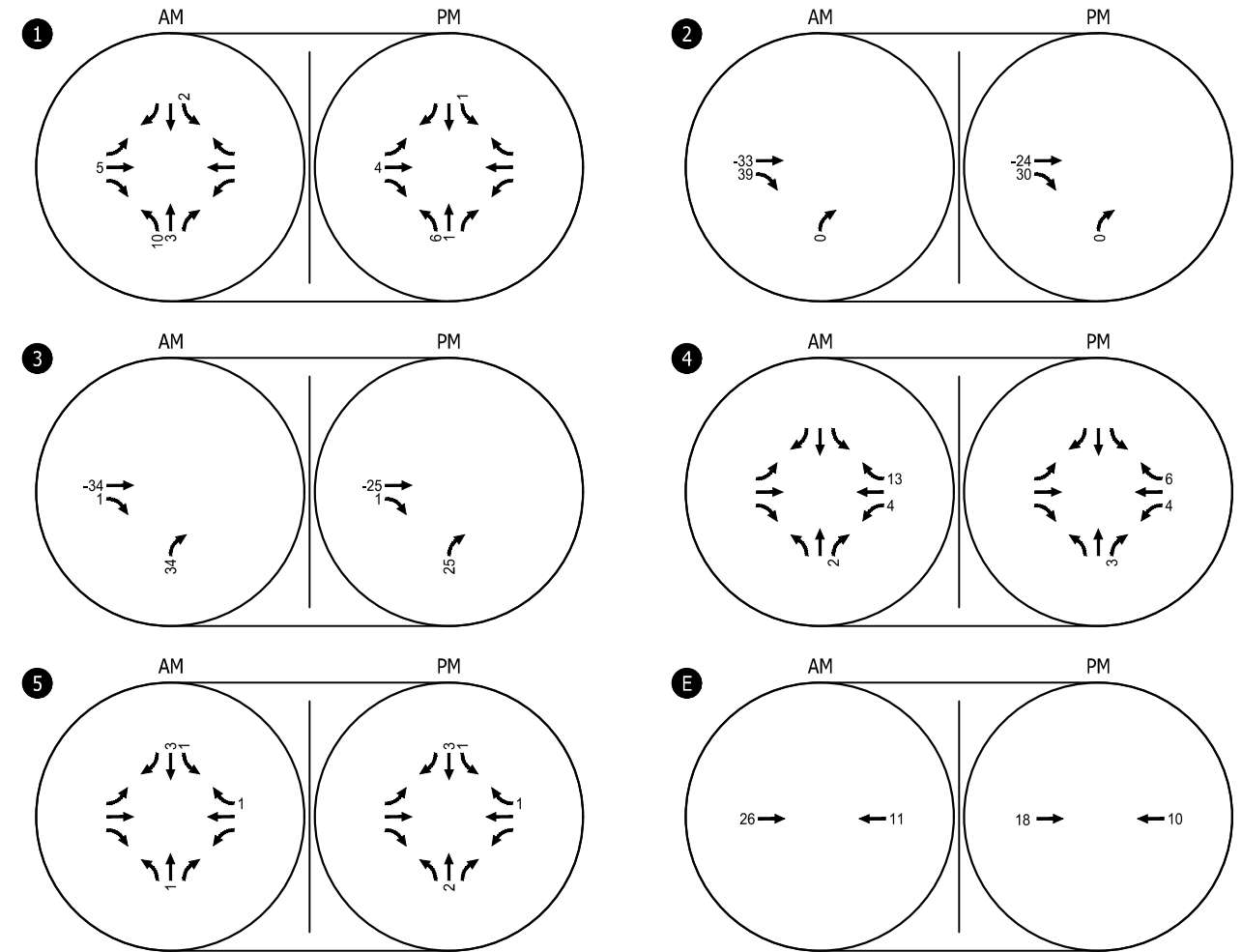
The total traffic conditions analysis forecasts the operation of the study intersections with the inclusion of traffic generated by the proposed convenience store reconstruction. Total traffic conditions were determined by adding the estimated site-generated trips to the year 2022 background volumes for the AM and PM peak hours. The resulting total traffic volumes are shown in

Figure 7.

Table 8 summarizes the corresponding operational analysis for the weekday AM and PM peak hours. As shown, all of the study intersections are expected to continue to satisfy the respective City v/c standards and ODOT mobility target under background conditions. Appendix E includes the 2023 total traffic volumes and operations analysis worksheets.

Table 8: 2023 Total Traffic Conditions

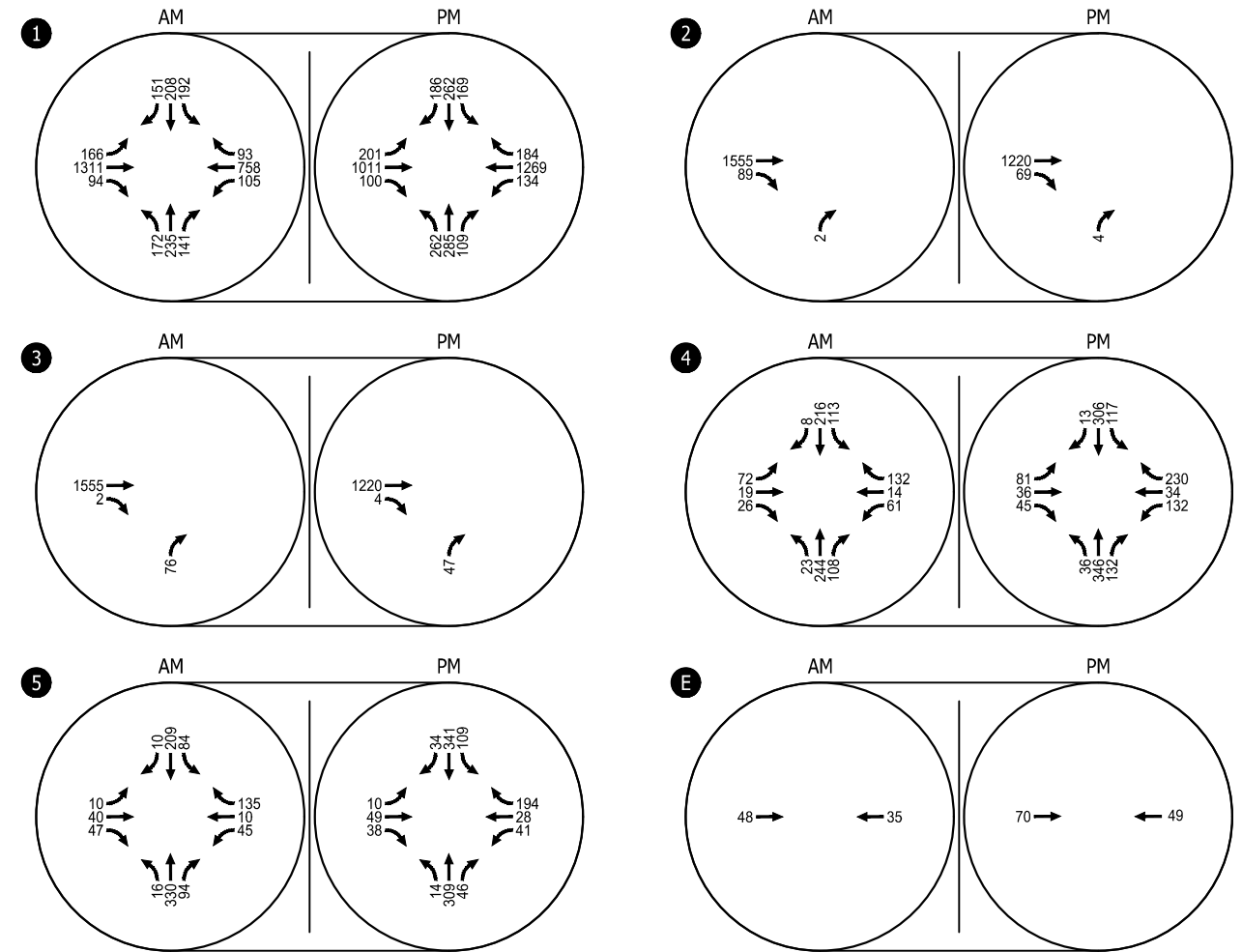
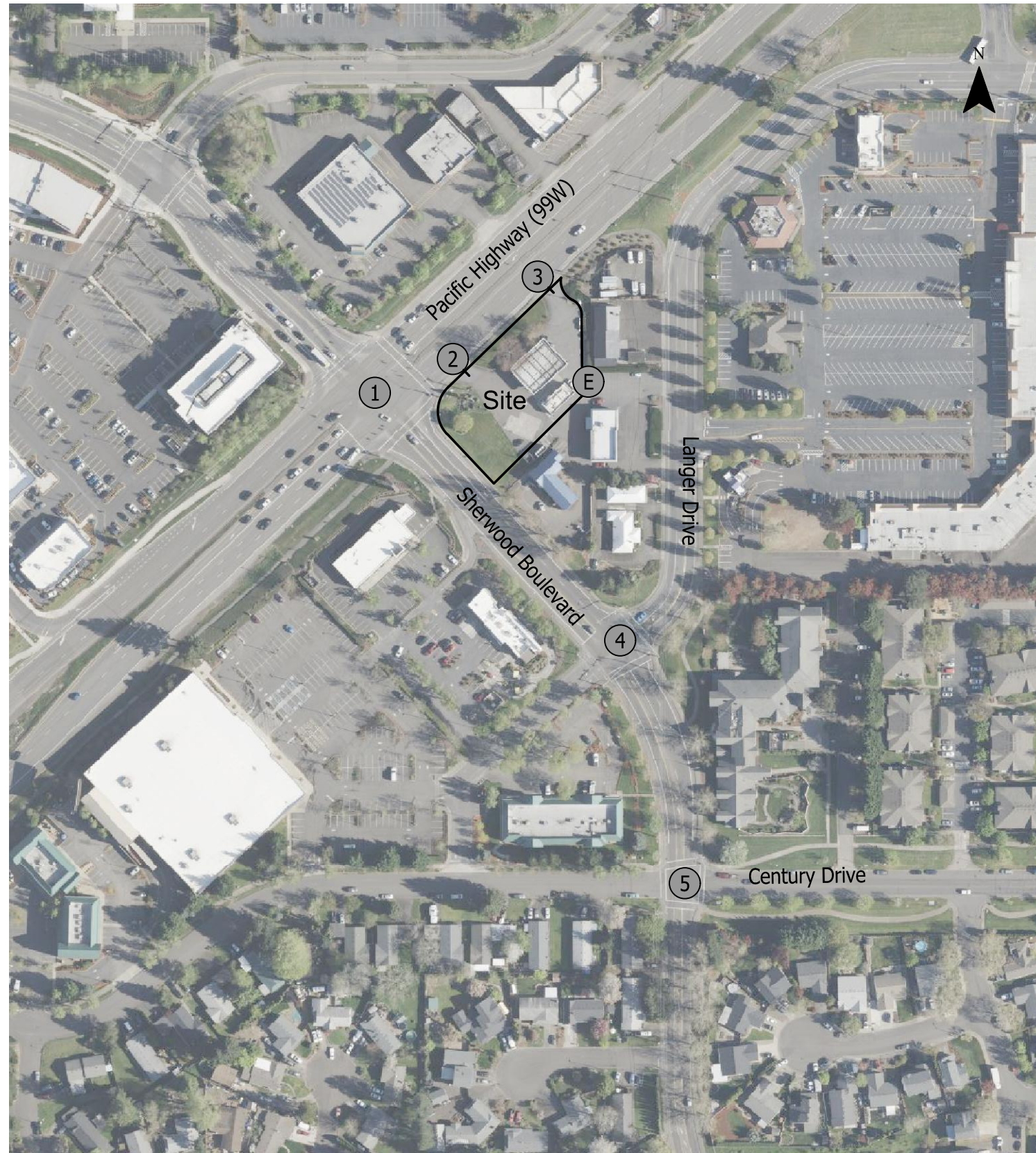
| Intersection | Critical Approach/Lane | Weekday AM Peak Hour | | | Weekday PM Peak Hour | | |
|---------------------------------------|------------------------|----------------------|----------------------|--------------|----------------------|----------------------|--------------|
| | | V/C | Approach Delay (sec) | Approach LOS | V/C | Approach Delay (sec) | Approach LOS |
| 99W/ SW Sherwood Blvd | - | 0.71 | 39.1 | D | 0.81 | 49.6 | D |
| SW Sherwood Blvd/ SW Langer Drive | - | 0.57 | 18.0 | B | 0.64 | 20.5 | C |
| SW Sherwood Blvd/ SW Century Drive | WB | 0.86 | 61.7 | F | 0.71 | 34.3 | D |
| 99W/Chevron West Driveway | NBRT | 0.01 | 22.7 | C | 0.02 | 19.1 | C |
| 99W/Chevron East Driveway | NBRT | 0.57 | 47.1 | E | 0.23 | 21.7 | C |



Trip Distribution and Site-Generated Trips
AM & PM Peak Hours
Sherwood, OR

Figure
06

H:\28\28275 - Sherwood Chevron Expansion\report\figs\28275-FIGS 2 - UPDATED VOLUMES.dwg Nov 23, 2022 - 10:25am - mmilback Layout Tab: Fig 6, Trip Dist



2023 Total Traffic Volumes
AM & PM Peak Hours
Sherwood, OR

Figure
07

H:\28\28275 - Sherwood Chevron Expansion\report\Figs\28275-FIGS 2 - UPDATED VOLUMES.dwg Nov 22, 2022 - 2:18pm - mmilacek Layout: Tab: Fig 7 - Total Traf Vd

On-Site Circulation/Site-Access Operations

Figure 2 illustrates the proposed site plan. The existing site includes two driveways on OR 99W and access to SW Langer Drive via a shared easement with adjacent parcels. Access to the Chevron gas station and convenience store is expected to remain the same under the proposed convenience store reconstruction. To better align inbound site vehicles to the proposed convenience store parking stalls and to discourage use of the driveway for exiting maneuvers back to OR 99W, a small curb adjustment is proposed in the westernmost driveway throat. To further discourage exiting trips to OR 99W via this driveway, two DO NOT ENTER (R5-1) signs are recommended on the westernmost driveway throat. Signs should be installed in accordance with City standards and the Manual on Uniform Traffic Control Devices (MUTCD).

FINDINGS AND RECOMMENDATIONS

The primary findings and recommendations of this study are summarized below.

- The study intersections are forecast to satisfy the City of Sherwood and ODOT mobility standards during the weekday AM and PM peak hours under existing and future traffic conditions.
- No capacity-based mitigation needs were identified at the study intersections.
- To address the expected increase in site-generated trips, the following improvement is recommended:
 - Install two DO NOT ENTER (R5-1) signs on the westernmost access driveway throat to discourage exiting site traffic from accessing OR 99W using this driveway. Signs should be installed in accordance with City standards and the Manual on Uniform Traffic Control Devices (MUTCD).

We trust this memorandum adequately addresses the traffic and circulation impacts associated with the proposed convenience store reconstruction. Please let us know if you have any questions regarding our analyses or need additional information.

APPENDIX

- A. Crash Summary Worksheets
- B. Traffic Count Data
- C. Existing Traffic Conditions Worksheets
- D. 2023 Background Traffic Conditions Worksheets
- E. 2023 Total Traffic Conditions Worksheets

Appendix A Crash Summary Worksheets

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
 TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
 CONTINUOUS SYSTEM CRASH LISTING

091 PACIFIC HIGHWAY WEST
 D
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 S
 U
 P G S W

Intersectional Crashes at OR-99W, Pacific Hwy (#091) & SW Sherwood Blvd / SW Edy Rd in Sherwood, OR.
 January 1, 2016 through December 31, 2020

| SER# | E A / C O DATE | COUNTY | RD# FC | CONN # | INT-TYP | SPCL USE | MOVE | A S | P E D | ACTN | EVENT | CAUSE |
|--------|---------------------------|-------------|--------------|-------------------|---------|-----------|-----------|--------|-------|------|-----------|-----------|
| INVEST | E L M H R DAY/TIME | CITY | CMPT/MLG | FIRST STREET | RD CHAR | TRLR QTY | OWNER | G E | LICNS | LOC | ERROR | |
| UNLOC? | D C J L K LAT/LONG | URBAN AREA | MILEPNT | SECOND STREET | DIRECT | VEH TYPE | FROM | R E | RES | | | |
| | | | LRN | INTERSECTION SEQ# | LOCTN | V# | | | | | | |
| 00867 | N N N N N 02/18/2018 | WASHINGTON | 2 14 | | INTER | 01 NONE | 0 STRGHT | | | | | 04 |
| CITY | N Sun 8P | SHERWOOD | MN 0 | SW PACIFIC HY 99W | NE | PRVTE | SW NE | | | | 000 | 00 |
| | | PORTLAND UA | 15.35 | N SHERWOOD BLVD | 05 | PSNGR CAR | | | | 01 | DRVR NONE | 51 M OR-Y |
| No | 45 21 59.28 -122 50 54.04 | | 009100200S00 | 1 | | | | | OR<25 | | 000 | 00 |
| | | | | | | | STRGHT | | | 01 | PED INJB | 17 M |
| | | | | | | | NW SE | | | | 01 020 | 035 |
| | | | | | | | | | | | | 04 |
| 02903 | N N N N N 06/08/2018 | WASHINGTON | 2 14 | | INTER | 01 NONE | 0 TURN-R | | | | | 02 |
| CITY | N Fri 3P | SHERWOOD | MN 0 | SW PACIFIC HY 99W | NE | PRVTE | SE NE | | | | 000 | 00 |
| | | PORTLAND UA | 15.35 | N SHERWOOD BLVD | 05 | PSNGR CAR | | | | 01 | DRVR NONE | 29 F OR-Y |
| No | 45 21 59.28 -122 50 54.04 | | 009100200S00 | 1 | | | | | OR<25 | | 029 | 000 |
| | | | | | | | STRGHT | | | 01 | PED INJC | 28 M |
| | | | | | | | SE NW | | | | 01 000 | 035 |
| | | | | | | | | | | | | 00 |
| 01269 | N N N 01/17/2016 | WASHINGTON | 2 14 | | INTER | 01 NONE | 0 STRGHT | | | | | 29 |
| NONE | N Sun 9P | SHERWOOD | MN 0 | SW PACIFIC HY 99W | NE | PRVTE | NE SW | | | | 000 | 00 |
| | | PORTLAND UA | 15.35 | N SHERWOOD BLVD | 06 | PSNGR CAR | | | | 01 | DRVR NONE | 29 F OR-Y |
| No | 45 21 59.28 -122 50 54.04 | | 009100200S00 | 1 | | | | | OR<25 | | 026 | 000 |
| | | | | | | | | | | | | 29 |
| | | | | | | | 02 NONE | 0 STOP | | | | |
| | | | | | | | PRVTE | NE SW | | | | 012 |
| | | | | | | | | | | | | 00 |
| | | | | | | | PSNGR CAR | | | 01 | DRVR INJC | 49 F OR-Y |
| | | | | | | | | | | | 000 | 000 |
| | | | | | | | | | | | | 00 |
| | | | | | | | | | | | | 00 |
| 03750 | N N N 06/08/2016 | WASHINGTON | 1 14 | | INTER | 01 NONE | 9 STRGHT | | | | | 29 |
| NO RPT | N Wed 7P | SHERWOOD | MN 0 | SW EDY RD | NE | N/A | NE SW | | | | 000 | 00 |
| | | PORTLAND UA | 15.35 | SW PACIFIC HY 99W | 06 | PSNGR CAR | | | | 01 | DRVR NONE | 00 U UNK |
| No | 45 21 59.71 -122 50 54.60 | | 009100100S00 | 1 | | | | | | | 000 | 000 |
| | | | | | | | | | | | | 00 |
| | | | | | | | 02 NONE | 9 STOP | | | | |
| | | | | | | | N/A | NE SW | | | | 013 |
| | | | | | | | | | | | | 00 |
| | | | | | | | PSNGR CAR | | | 01 | DRVR NONE | 00 U UNK |
| | | | | | | | | | | | 000 | 000 |
| | | | | | | | | | | | | 00 |
| | | | | | | | | | | | | 00 |
| 04830 | N N N 07/22/2016 | WASHINGTON | 2 14 | | INTER | 01 NONE | 9 STRGHT | | | | | 29 |
| NONE | N Fri 9A | SHERWOOD | MN 0 | SW EDY RD | NE | N/A | NE SW | | | | 000 | 00 |
| | | PORTLAND UA | 15.35 | SW PACIFIC HY 99W | 06 | PSNGR CAR | | | | 01 | DRVR NONE | 00 U UNK |
| No | 45 21 59.28 -122 50 54.04 | | 009100200S00 | 1 | | | | | | | 000 | 000 |
| | | | | | | | | | | | | 00 |
| | | | | | | | 02 NONE | 9 STOP | | | | |
| | | | | | | | N/A | NE SW | | | | 012 |
| | | | | | | | | | | | | 00 |
| | | | | | | | PSNGR CAR | | | 01 | DRVR NONE | 00 U UNK |
| | | | | | | | | | | | 000 | 000 |
| | | | | | | | | | | | | 00 |
| | | | | | | | | | | | | 00 |

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
 TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
 CONTINUOUS SYSTEM CRASH LISTING

091 PACIFIC HIGHWAY WEST

Intersectional Crashes at OR-99W, Pacific Hwy (#091) & SW Sherwood Blvd / SW Edy Rd in Sherwood, OR.
 January 1, 2016 through December 31, 2020

| SER# | E A / C O | DATE | COUNTY | RD# | FC | CONN # | INT-TYP | SPCL USE | MOVE | A S | PED | CAUSE |
|--------|-----------|---------------------|-------------|--------------|-------------------|-------------------|------------|-------------|-----------|-----------|-----------|------------|
| INVEST | E L M H R | DAY/TIME | CITY | MILEPNT | FIRST STREET | RD CHAR | (MEDIAN) | TRLR QTY | OWNER | FROM | LOC | ERROR |
| UNLOC? | D C J L K | LAT/LONG | URBAN AREA | LRS | INTERSECTION SEQ# | DIRECT | LEGS TRAF- | RND BT SURF | COLL TYP | PRTC INJ | G E LICNS | LOC ERROR |
| | | | | | | LOCTN | (#LANES) | V# | VEH TYPE | TO | P# | TYPE SVRTY |
| 07095 | N N N | 10/07/2016 | WASHINGTON | 1 | 14 | | CROSS | 01 | NONE | 0 | STRGHT | |
| NONE | N | Fri 4P | SHERWOOD | MN | 0 | SW EDY RD | NE | | PRVTE | NE SW | | 000 |
| | | | PORTLAND UA | 15.35 | SW PACIFIC HY 99W | 06 | 0 | | PSNGR CAR | | 01 | DRVR NONE |
| No | 45 21 | 59.71 -122 50 54.60 | | 009100100S00 | 1 | | | | | | | 46 M OR-Y |
| | | | | | | | | | | | | OR<25 |
| | | | | | | | | | 02 | NONE | 0 | STRGHT |
| | | | | | | | | | PRVTE | NE SW | | 000 |
| | | | | | | | | | PSNGR CAR | | 01 | DRVR NONE |
| | | | | | | | | | | | | 48 M OR-Y |
| | | | | | | | | | | | | OR<25 |
| | | | | | | | | | | | 02 | PSNG INJC |
| | | | | | | | | | | | | 44 F |
| | | | | | | | | | | | | 000 |
| | | | | | | | | | | | | 000 |
| | | | | | | | | | | | | 000 |
| 01643 | N N N N N | 03/23/2017 | WASHINGTON | 1 | 14 | | CROSS | 01 | NONE | 0 | STRGHT | |
| CITY | N | Thu 8P | SHERWOOD | MN | 0 | SW EDY RD | NE | | PRVTE | NE SW | | 000 |
| | | | PORTLAND UA | 15.35 | SW PACIFIC HY 99W | 06 | 0 | | PSNGR CAR | | 01 | DRVR NONE |
| No | 45 21 | 59.71 -122 50 54.60 | | 009100100S00 | 1 | | | | | | | 00 U UNK |
| | | | | | | | | | | | | 026 |
| | | | | | | | | | | | | UNK |
| | | | | | | | | | 02 | NONE | 0 | STOP |
| | | | | | | | | | PRVTE | NE SW | | 011 |
| | | | | | | | | | PSNGR CAR | | 01 | DRVR INJC |
| | | | | | | | | | | | | 33 F OR-Y |
| | | | | | | | | | | | | OR<25 |
| | | | | | | | | | | | 02 | PSNG NO<5 |
| | | | | | | | | | | | | 04 F |
| | | | | | | | | | | | | 000 |
| | | | | | | | | | | | | 000 |
| | | | | | | | | | | | | 000 |
| 02779 | N N N | 05/08/2017 | WASHINGTON | 1 | 14 | | CROSS | 01 | NONE | 9 | STRGHT | |
| NONE | N | Mon UNK | SHERWOOD | MN | 0 | SW EDY RD | NE | | N/A | NE SW | | 000 |
| | | | PORTLAND UA | 15.35 | SW PACIFIC HY 99W | 06 | 0 | | PSNGR CAR | | 01 | DRVR NONE |
| No | 45 21 | 59.71 -122 50 54.60 | | 009100100S00 | 1 | | | | | | | 00 U UNK |
| | | | | | | | | | | | | 000 |
| | | | | | | | | | | | | UNK |
| | | | | | | | | | 02 | NONE | 9 | STOP |
| | | | | | | | | | N/A | NE SW | | 011 |
| | | | | | | | | | PSNGR CAR | | 01 | DRVR NONE |
| | | | | | | | | | | | | 00 U UNK |
| | | | | | | | | | | | | 000 |
| | | | | | | | | | | | | 000 |
| | | | | | | | | | | | | 000 |
| 02100 | N N N N N | 04/27/2018 | WASHINGTON | 1 | 14 | | CROSS | 01 | NONE | 0 | STRGHT | |
| CITY | N | Fri 1P | SHERWOOD | MN | 0 | SW EDY RD | NE | | PRVTE | NE SW | | 000 |
| | | | PORTLAND UA | 15.35 | SW PACIFIC HY 99W | 06 | 0 | | PSNGR CAR | | 01 | DRVR NONE |
| No | 45 21 | 59.71 -122 50 54.60 | | 009100100S00 | 1 | | | | | | | 27 F OR-Y |
| | | | | | | | | | | | | 016,026 |
| | | | | | | | | | | | | OR<25 |
| | | | | | | | | | 02 | NONE | 0 | STOP |
| | | | | | | | | | PRVTE | NE SW | | 011 |
| | | | | | | | | | PSNGR CAR | | 01 | DRVR INJC |
| | | | | | | | | | | | | 48 F OR-Y |
| | | | | | | | | | | | | OR<25 |
| | | | | | | | | | | | | 000 |
| | | | | | | | | | | | | 000 |
| | | | | | | | | | | | | 000 |
| 05783 | N N N N N | 10/28/2018 | WASHINGTON | 1 | 14 | | CROSS | 01 | NONE | 0 | STRGHT | |
| CITY | N | Sun 11A | SHERWOOD | MN | 0 | SW PACIFIC HY 99W | NE | | PRVTE | NE SW | | 000 |
| | | | PORTLAND UA | 15.35 | N SHERWOOD BLVD | 06 | 0 | | PSNGR CAR | | 01 | DRVR NONE |
| No | 45 21 | 59.71 -122 50 54.61 | | 009100100S00 | 1 | | | | | | | 60 F OR-Y |
| | | | | | | | | | | | | 026 |
| | | | | | | | | | | | | OR>25 |
| | | | | | | | | | 02 | PSNG NONE | 20 | F |
| | | | | | | | | | | | | 000 |
| | | | | | | | | | | | | 000 |

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
 TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
 CONTINUOUS SYSTEM CRASH LISTING

091 PACIFIC HIGHWAY WEST

Intersectional Crashes at OR-99W, Pacific Hwy (#091) & SW Sherwood Blvd / SW Edy Rd in Sherwood, OR.
 January 1, 2016 through December 31, 2020

| SER# | E A / C O | DATE | COUNTY | RD# | FC | CONN # | INT-TYP | SPCL USE | MOVE | A S | PED | CAUSE | | | | | | | | |
|--------|-----------|---------------|-------------|--------------|-------------------|-----------|----------|----------|-------------|-----------|-------------|----------|---------------|-------|-------|-----|---------|------|-------|-------|
| INVEST | E L M H R | DAY/TIME | CITY | CMPT/MLG | FIRST STREET | RD CHAR | (MEDIAN) | INT-REL | OFFRD WTHR | CRASH TYP | TRLR QTY | FROM | PRTC INJ | G E | LICNS | LOC | ERROR | ACTN | EVENT | CAUSE |
| UNLOC? | D C J L K | LAT/LONG | URBAN AREA | MILEPNT | SECOND STREET | DIRECT | LEGS | TRAF- | RNDBT SURF | COLL TYP | OWNER | FROM | P# TYPE SVRTY | E X | RES | LOC | ERROR | ACTN | EVENT | CAUSE |
| | | | | LRS | INTERSECTION SEQ# | LOCTN | (#LANES) | CNTL | DRVWY LIGHT | SVRTY | V# VEH TYPE | TO | | | | | | | | |
| | | | | | | | | | | | 02 NONE | 0 STOP | | | | | | | | |
| | | | | | | | | | | | PRVTE | NE SW | | | | | | | 011 | 00 |
| | | | | | | | | | | | PSNGR CAR | | 01 DRVR INJC | 42 M | OR-Y | | 000 | | 000 | 00 |
| | | | | | | | | | | | | | | | OR<25 | | | | | |
| | | | | | | | | | | | | | 02 PSNG INJC | 48 F | | | 000 | | 000 | 00 |
| | | | | | | | | | | | | | 03 PSNG INJC | 09 F | | | 000 | | 000 | 00 |
| | | | | | | | | | | | | | 04 PSNG INJC | 11 F | | | 000 | | 000 | 00 |
| | | | | | | | | | | | | | 05 PSNG INJC | 09 M | | | 000 | | 000 | 00 |
| 07031 | N N N N N | 12/19/2018 | WASHINGTON | 1 | 14 | | | | | | 01 NONE | 9 STRGHT | | | | | | | | 29 |
| CITY | N | Wed | SHERWOOD | MN | 0 | SW EDY RD | INTER | CROSS | N | N CLD | S-1STOP | NE | N/A | NE SW | | | | | 000 | 00 |
| | | | PORTLAND UA | 15.35 | SW PACIFIC HY 99W | 06 | 0 | | N DAY | PDO | SEMI TOW | | 01 DRVR NONE | 00 U | UNK | | 000 | | 000 | 00 |
| No | 45 21 | 59.71 -122 50 | 54.60 | 009100100S00 | | 1 | | | | | | | | | | | | | | UNK |
| | | | | | | | | | | | 02 NONE | 9 STOP | | | | | | | | |
| | | | | | | | | | | | N/A | NE SW | | | | | | | 011 | 00 |
| | | | | | | | | | | | PSNGR CAR | | 01 DRVR NONE | 00 U | UNK | | 000 | | 000 | 00 |
| | | | | | | | | | | | | | | | | | | | | UNK |
| 03389 | N N N | 07/02/2019 | WASHINGTON | 1 | 14 | | | | | | 01 NONE | 0 STRGHT | | | | | | | | 29 |
| NONE | N | Tue | SHERWOOD | MN | 0 | SW EDY RD | INTER | CROSS | N | N CLR | S-1STOP | NE | PRVTE | NE SW | | | | | 000 | 00 |
| | | | PORTLAND UA | 15.35 | SW PACIFIC HY 99W | 06 | 0 | | N DAY | INJ | PSNGR CAR | | 01 DRVR NONE | 30 M | OR-Y | | 026 | | 000 | 29 |
| No | 45 21 | 59.71 -122 50 | 54.60 | 009100100S00 | | 1 | | | | | | | | | | | | | | OR<25 |
| | | | | | | | | | | | 02 NONE | 0 STOP | | | | | | | | |
| | | | | | | | | | | | PRVTE | NE SW | | | | | | | 011 | 00 |
| | | | | | | | | | | | PSNGR CAR | | 01 DRVR INJC | 39 M | OR-Y | | 000 | | 000 | 00 |
| | | | | | | | | | | | | | | | | | | | | OR<25 |
| 00659 | N N N N N | 01/31/2020 | WASHINGTON | 1 | 14 | | | | | | 01 NONE | 0 STRGHT | | | | | | | | 07 |
| CITY | N | Fri | SHERWOOD | MN | 0 | SW EDY RD | INTER | CROSS | N | N CLD | S-STRGHT | NE | PRVTE | NE SW | | | | | 000 | 00 |
| | | | PORTLAND UA | 15.35 | SW PACIFIC HY 99W | 06 | 0 | | N DAY | INJ | PSNGR CAR | | 01 DRVR INJC | 72 F | OR-Y | | 043 | | 000 | 07 |
| No | 45 21 | 59.71 -122 50 | 54.60 | 009100100S00 | | 1 | | | | | | | | | | | | | | OR<25 |
| | | | | | | | | | | | 02 NONE | 0 STOP | | | | | | | | |
| | | | | | | | | | | | PRVTE | NE SW | | | | | | | 011 | 00 |
| | | | | | | | | | | | PSNGR CAR | | 01 DRVR NONE | 39 M | OR-Y | | 000 | | 000 | 00 |
| | | | | | | | | | | | | | | | | | | | | OR>25 |
| | | | | | | | | | | | | | 02 PSNG INJC | 49 F | | | 000 | | 000 | 00 |
| 04612 | N N N N N | 12/14/2020 | WASHINGTON | 1 | 14 | | | | | | 01 NONE | 0 STRGHT | | | | | | | | 013 |
| CITY | N | Mon | SHERWOOD | MN | 0 | SW EDY RD | INTER | CROSS | N | N CLR | S-1STOP | NE | PRVTE | NE SW | | | | | 000 | 00 |
| | | | PORTLAND UA | 15.35 | SW PACIFIC HY 99W | 06 | 0 | | N DLIT | INJ | PSNGR CAR | | 01 DRVR NONE | 20 F | OR-Y | | 016,043 | | 038 | 27,07 |
| No | 45 21 | 59.71 -122 50 | 54.60 | 009100100S00 | | 1 | | | | | | | | | | | | | | OR<25 |

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
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 CONTINUOUS SYSTEM CRASH LISTING

091 PACIFIC HIGHWAY WEST

Intersectional Crashes at OR-99W, Pacific Hwy (#091) & SW Sherwood Blvd / SW Edy Rd in Sherwood, OR.
 January 1, 2016 through December 31, 2020

| SER# | INVEST | UNLOC? | E A / C O DATE | COUNTY | RD# | FC | CONN # | INT-TYP | RD CHAR | CRASH TYP | SPCL USE | MOVE | A S | LICNS | PED | ACTN | EVENT | CAUSE | | | | | | | | | | |
|--------|--------|--------|--------------------|------------|------------|-------------|-------------------|----------|-------------------|-----------|----------|------------|-----|--------|----------|-------|-------|-------|--------|-------|------|------|-----|-------|-------|-------|-----|----|
| NO | NO | NO | E L M H R DAY/TIME | CITY | MPNT | MLG | FIRST STREET | (MEDIAN) | DIRECT | COLL TYP | TRLR QTY | FROM | G E | RES | LOC | | | | | | | | | | | | | |
| | | | L A T / L O N G | URBAN AREA | LRS | | INTERSECTION SEQ# | (#LANES) | LOCTN | SVRTY | V# | VEH TYPE | TO | P# | TYPE | SVRTY | E X | RES | LOC | ERROR | | | | | | | | |
| | | | | | | | | | | | 02 | NONE | 0 | STOP | | | | | | | | | | | | | | |
| | | | | | | | | | | | PRVTE | NE SW | | | | | | | | | | 011 | 013 | 00 | | | | |
| | | | | | | | | | | | PSNGR | CAR | | 01 | DRVR | INJB | 60 | F | OR-Y | | 000 | 000 | | 00 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | OR<25 | | | | |
| | | | | | | | | | | | 03 | NONE | 0 | STOP | | | | | | | | | | | | | | |
| | | | | | | | | | | | PRVTE | NE SW | | | | | | | | | | 022 | 013 | 00 | | | | |
| | | | | | | | | | | | PSNGR | CAR | | 01 | DRVR | NONE | 16 | M | OR-Y | | 000 | 000 | | 00 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | OR<25 | | | | |
| | | | | | | | | | | | 04 | NONE | 0 | STOP | | | | | | | | | | | | | | |
| | | | | | | | | | | | PRVTE | NE SW | | | | | | | | | | 022 | | 00 | | | | |
| | | | | | | | | | | | PSNGR | CAR | | 01 | DRVR | NONE | 40 | M | OR-Y | | 000 | 000 | | 00 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | OR<25 | | | | |
| 06959 | N | N | N | 11/03/2017 | WASHINGTON | 2 | 14 | | INTER | CROSS | N | | | | | | | | | | | | | 013 | 29 | | | |
| CITY | | | | Fri | 9P | SHERWOOD | MN | 0 | SW PACIFIC HY 99W | SE | | TRF SIGNAL | N | RAIN | S-1STOP | 01 | NONE | 0 | STRGHT | | | | | | 000 | 00 | | |
| | | | | | | PORTLAND UA | 15.35 | | N SHERWOOD BLVD | 06 | | 0 | | N | DLIT | INJ | PSNGR | CAR | | 01 | DRVR | NONE | 18 | F | OR-Y | 026 | 000 | 29 |
| No | 45 | 21 | 59.28 | -122 | 50 | 54.04 | 009100200S00 | | | | | | | | | | | | | | | | | | | OR<25 | | |
| | | | | | | | | | | | 02 | NONE | 0 | STOP | | | | | | | | | | | | | | |
| | | | | | | | | | | | PRVTE | SE NW | | | | | | | | | | | | 011 | 013 | 00 | | |
| | | | | | | | | | | | PSNGR | CAR | | 01 | DRVR | INJC | 55 | M | OR-Y | | 000 | 000 | | 00 | 00 | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | OR<25 | | | |
| | | | | | | | | | | | 03 | NONE | 0 | STOP | | | | | | | | | | | | | | |
| | | | | | | | | | | | PRVTE | SE NW | | | | | | | | | | | | 022 | | 00 | | |
| | | | | | | | | | | | PSNGR | CAR | | 01 | DRVR | INJB | 55 | F | OR-Y | | 000 | 000 | | 00 | 00 | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | OR<25 | | | |
| 03015 | N | N | N | 06/13/2019 | WASHINGTON | 1 | 14 | | INTER | CROSS | N | | | | | | | | | | | | | | 100 | 10 | | |
| NO RPT | | | | Thu | 5A | SHERWOOD | MN | 0 | SW EDY RD | SW | | TRF SIGNAL | N | CLR | FIX OBJ | 01 | NONE | 9 | TURN-R | | | | | | 000 | 00 | | |
| | | | | | | PORTLAND UA | 15.35 | | SW PACIFIC HY 99W | 05 | | 0 | | N | DAWN | PDO | PSNGR | CAR | | 01 | DRVR | NONE | 00 | U | UNK | 000 | 000 | 00 |
| No | 45 | 21 | 59.71 | -122 | 50 | 54.60 | 009100100S00 | | | | | | | | | | | | | | | | | | | UNK | | |
| 03676 | N | N | N | 06/06/2016 | WASHINGTON | 2 | 14 | | INTER | CROSS | N | | | | | | | | | | | | | | | 07 | | |
| CITY | | | | Mon | 11A | SHERWOOD | MN | 0 | SW PACIFIC HY 99W | SW | | NONE | N | CLR | S-STRGHT | 01 | NONE | 0 | STRGHT | | | | | | 000 | 00 | | |
| | | | | | | PORTLAND UA | 15.35 | | N SHERWOOD BLVD | 06 | | 0 | | N | DAY | INJ | PSNGR | CAR | | 01 | DRVR | NONE | 28 | F | OR-Y | 043 | 000 | 07 |
| No | 45 | 21 | 59.28 | -122 | 50 | 54.04 | 009100200S00 | | | | | | | | | | | | | | | | | | | OR>25 | | |
| | | | | | | | | | | | 02 | NONE | 0 | STRGHT | | | | | | | | | | | | | | |
| | | | | | | | | | | | PRVTE | SW NE | | | | | | | | | | | | 000 | | 00 | | |
| | | | | | | | | | | | PSNGR | CAR | | 01 | DRVR | NONE | 64 | F | OR-Y | | 000 | 000 | | 00 | 00 | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | OR<25 | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | 000 | 000 | 00 | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | 000 | 000 | 00 | |

091 PACIFIC HIGHWAY WEST

Intersectional Crashes at OR-99W, Pacific Hwy (#091) & SW Sherwood Blvd / SW Edy Rd in Sherwood, OR.
January 1, 2016 through December 31, 2020

| SER# | EA / C O DATE | COUNTY | CITY | URBAN AREA | RD# | FC | CONN # | CMPT/MLG | FIRST STREET | RD CHAR | INT-TYP | INT-REL | OFFRD | WTHR | CRASH TYP | SPCL USE | TRLR QTY | MOVE | OWNER | FROM | PRTC | INJ | A S | G E | LICNS | PED | ACTN | EVENT | CAUSE | | | |
|--------|---------------|------------|------------|-------------|-------|-------|-------------------|----------|--------------|---------|----------|---------|--------|--------|-----------|----------|----------|-------|--------|------|------|------|-------|-----|-------|------|-------|---------|-------|-----|-------|----|
| UNLOC? | D C J L K | LAT/LONG | | | LRS | | INTERSECTION SEQ# | | | LOCTN | (#LANES) | CNTL | DRVWY | LIGHT | SVRTY | V# | VEH TYPE | TO | | | P# | TYPE | SVRTY | E X | RES | LOC | ERROR | | | | | |
| | | | | | | | | | | | | | | | | 03 | NONE | 0 | STRGHT | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | PRVTE | | SW NE | | | | | | | | | 022 | | | 00 | | |
| | | | | | | | | | | | | | | | | PSNGR | CAR | | | | 01 | DRVR | NONE | 18 | F | OR-Y | | 000 | | 000 | 00 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 05528 | N N N N N | 08/18/2016 | WASHINGTON | | 2 | 14 | | | | INTER | | N | | N CLR | S-STRGHT | 01 | NONE | 0 | STRGHT | | | | | | | | | | | | | |
| CITY | N | Thu | 10A | SHERWOOD | MN | 0 | SW PACIFIC HY 99W | | | SW | | TRF | SIGNAL | N DRY | REAR | | PRVTE | | SW NE | | | | | | | | 000 | | | 07 | | |
| | | | | PORTLAND UA | 15.35 | | N SHERWOOD BLVD | | | 06 | | 0 | | N DAY | INJ | | PSNGR | CAR | | | 01 | DRVR | NONE | 33 | F | OR-Y | | 043 | | 000 | 07 | |
| No | 45 | 21 | 59.28 | -122 | 50 | 54.04 | 009100200S00 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | 02 | NONE | 0 | STRGHT | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | PRVTE | | SW NE | | | | | | | | | 006 | | | | 00 | |
| | | | | | | | | | | | | | | | | PSNGR | CAR | | | | 01 | DRVR | NONE | 65 | F | OR-Y | | 000 | | | 000 | 00 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | 02 | PSNG | INJC | 65 | F | | 000 | | | | 000 | 00 |
| 06349 | N N N | 09/19/2016 | WASHINGTON | | 2 | 14 | | | | INTER | CROSS | N | | N CLR | S-1STOP | 01 | NONE | 9 | STRGHT | | | | | | | | | | | | | |
| NO RPT | N | Mon | 8P | SHERWOOD | MN | 0 | SW PACIFIC HY 99W | | | SW | | TRF | SIGNAL | N DRY | REAR | | N/A | | SW NE | | | | | | | | 000 | | | 00 | | |
| | | | | PORTLAND UA | 15.35 | | N SHERWOOD BLVD | | | 06 | | 0 | | N DLIT | PDO | | PSNGR | CAR | | | 01 | DRVR | NONE | 00 | U | UNK | | 000 | | 000 | 00 | |
| No | 45 | 21 | 59.28 | -122 | 50 | 54.04 | 009100200S00 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | 02 | NONE | 9 | STOP | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | N/A | | SW NE | | | | | | | | | 023 | | | | 00 | |
| | | | | | | | | | | | | | | | | SEMI | TOW | | | | 01 | DRVR | NONE | 00 | U | UNK | | 000 | | | 000 | 00 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 01316 | N N N | 03/07/2017 | WASHINGTON | | 2 | 14 | | | | INTER | CROSS | N | | N RAIN | S-1STOP | 01 | NONE | 9 | STRGHT | | | | | | | | | | | | | |
| NONE | N | Tue | 7A | SHERWOOD | MN | 0 | SW PACIFIC HY 99W | | | SW | | TRF | SIGNAL | N WET | REAR | | N/A | | SW NE | | | | | | | | 000 | | | 00 | | |
| | | | | PORTLAND UA | 15.35 | | N SHERWOOD BLVD | | | 06 | | 0 | | N DAY | PDO | | PSNGR | CAR | | | 01 | DRVR | NONE | 00 | U | UNK | | 000 | | 000 | 00 | |
| No | 45 | 21 | 59.28 | -122 | 50 | 54.04 | 009100200S00 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | 02 | NONE | 9 | STOP | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | N/A | | SW NE | | | | | | | | | 011 | | | | 00 | |
| | | | | | | | | | | | | | | | | PSNGR | CAR | | | | 01 | DRVR | NONE | 00 | U | UNK | | 000 | | | 000 | 00 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 02222 | Y N Y N N | 04/19/2017 | WASHINGTON | | 2 | 14 | | | | INTER | CROSS | N | | N SNOW | S-STRGHT | 01 | NONE | 0 | STRGHT | | | | | | | | | | | | | |
| CITY | N | Wed | 7P | SHERWOOD | MN | 0 | SW PACIFIC HY 99W | | | SW | | TRF | SIGNAL | N SNO | REAR | | PRVTE | | SW NE | | | | | | | | 000 | | | 00 | | |
| | | | | PORTLAND UA | 15.35 | | N SHERWOOD BLVD | | | 06 | | 0 | | N DUSK | INJ | | PSNGR | CAR | | | 01 | DRVR | NONE | 16 | M | OR-Y | | 016,047 | | 038 | 27,07 | |
| No | 45 | 21 | 59.28 | -122 | 50 | 54.04 | 009100200S00 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | 02 | NONE | 0 | STOP | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | PRVTE | | SW NE | | | | | | | | | 011 | | | | 00 | |
| | | | | | | | | | | | | | | | | PSNGR | CAR | | | | 01 | DRVR | INJC | 38 | F | OR-Y | | 000 | | | 000 | 00 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
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091 PACIFIC HIGHWAY WEST

Intersectional Crashes at OR-99W, Pacific Hwy (#091) & SW Sherwood Blvd / SW Edy Rd in Sherwood, OR.
January 1, 2016 through December 31, 2020

| SER# | E A / C O DATE | COUNTY | RD# FC CONN # | INT-TYP | SPCL USE | MOVE | A S | LICNS | PED | ACTN | EVENT | CAUSE |
|--------|---------------------------|-------------|-------------------------|---|------------------|------|----------------|-----------|-----|-------------|-------|-------|
| INVEST | E L M H R DAY/TIME | CITY | CMPT/MLG FIRST STREET | RD CHAR (MEDIAN) INT-REL OFFRD WTHR CRASH TYP | TRLR QTY | FROM | G E | RES | LOC | ERROR | | |
| UNLOC? | D C J L K LAT/LONG | URBAN AREA | MILEPNT SECOND STREET | DIRECT LEGS TRAF- RNCDBT SURF COLL TYP | OWNER | TO | P# TYPE SVRITY | E X | RES | LOC | ERROR | |
| | | | LRS INTERSECTION SEQ# | LOCTN (#LANES) CNTL DRVWY LIGHT SVRITY | V# VEH TYPE | | | | | | | |
| | | | | | 02 NONE 9 STOP | | | | | | | |
| | | | | | N/A SW NE | | | | | | 011 | 00 |
| | | | | | PSNGR CAR | | 01 DRVR NONE | 00 U UNK | | 000 | 000 | 00 |
| | | | | | | | | | | | | UNK |
| 04628 | N N N N N 12/15/2020 | WASHINGTON | 2 14 | INTER CROSS N | 01 NONE 0 STRGHT | | | | | | 013 | 27,07 |
| CITY | N Tue 5P | SHERWOOD | MN 0 SW PACIFIC HY 99W | SW TRF SIGNAL N RAIN S-1STOP | PRVTE SW NE | | | | | | 000 | 00 |
| | | PORTLAND UA | 15.35 N SHERWOOD BLVD | 06 0 N DLIT INJ | PSNGR CAR | | 01 DRVR NONE | 39 F OR-Y | | 016,043,026 | 038 | 27,07 |
| No | 45 21 59.28 -122 50 54.04 | | 009100200S00 1 | | | | | | | | | |
| | | | | | | | 02 PSNG INJC | 12 F | | 000 | 000 | 00 |
| | | | | | 02 NONE 0 STOP | | | | | | | |
| | | | | | PRVTE SW NE | | | | | | 011 | 013 |
| | | | | | PSNGR CAR | | 01 DRVR INJC | 26 F OR-Y | | 000 | 000 | 00 |
| | | | | | | | | | | | | OR<25 |
| | | | | | 03 NONE 0 STOP | | | | | | | |
| | | | | | PRVTE SW NE | | | | | | 022 | 013 |
| | | | | | PSNGR CAR | | 01 DRVR NONE | 66 M OR-Y | | 000 | 000 | 00 |
| | | | | | | | | | | | | OR<25 |
| | | | | | 04 NONE 0 STOP | | | | | | | |
| | | | | | PRVTE SW NE | | | | | | 022 | 00 |
| | | | | | PSNGR CAR | | 01 DRVR NONE | 53 F OR-Y | | 000 | 000 | 00 |
| | | | | | | | | | | | | OR<25 |
| 00701 | N Y N N N 02/10/2019 | WASHINGTON | 1 14 | INTER CROSS N | 01 NONE 0 TURN-L | | | | | | | 17,08 |
| CITY | N Sun 9P | SHERWOOD | MN 0 SW EDY RD | NW TRF SIGNAL N RAIN ANGL-OTH | PRVTE SW NW | | | | | | 000 | 00 |
| | | PORTLAND UA | 15.35 SW PACIFIC HY 99W | 06 0 N DLIT INJ | PSNGR CAR | | 01 DRVR NONE | 45 F NONE | | 002 | 028 | 17,08 |
| No | 45 21 59.72 -122 50 54.62 | | 009100100S00 1 | | | | | | | | | N-RES |
| | | | | | 02 NONE 0 TURN-R | | | | | | | |
| | | | | | PRVTE NW SW | | | | | | 000 | 00 |
| | | | | | PSNGR CAR | | 01 DRVR INJC | 17 M OR-Y | | 000 | 000 | 00 |
| | | | | | | | | | | | | OR<25 |
| | | | | | | | 02 PSNG INJC | 17 F | | 000 | 000 | 00 |
| 00275 | N N N 01/13/2020 | WASHINGTON | 1 14 | INTER CROSS N | 01 NONE 0 TURN-R | | | | | | | 04 |
| CITY | N Mon 11A | SHERWOOD | MN 0 SW EDY RD | NW TRF SIGNAL N RAIN PED | PRVTE NW SW | | | | | | 000 | 00 |
| | | PORTLAND UA | 15.35 SW PACIFIC HY 99W | 06 0 N DAY INJ | PSNGR CAR | | 01 DRVR NONE | 28 F OR-Y | | 000 | 000 | 00 |
| No | 45 21 59.71 -122 50 54.60 | | 009100100S00 1 | | | | | | | | | OR<25 |
| | | | | | STRGHT | | 01 PED INJB | 52 F | | 01 020 | 035 | 04 |
| | | | | | SW NE | | | | | | | |

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
 TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
 CONTINUOUS SYSTEM CRASH LISTING

091 PACIFIC HIGHWAY WEST

Intersectional Crashes at OR-99W, Pacific Hwy (#091) & SW Sherwood Blvd / SW Edy Rd in Sherwood, OR.
 January 1, 2016 through December 31, 2020

| SER# | E A / C O DATE | COUNTY | RD# FC CONN # | INT-TYP | SPCL USE | MOVE | A S | ACTN EVENT | CAUSE |
|--------|---------------------------|-------------|-------------------------|-------------------------------|-------------|--------|------------------------|------------|-------|
| INVEST | E L M H R DAY/TIME | CITY | CMPT/MLG FIRST STREET | RD CHAR (MEDIAN) | TRLR QTY | OWNER | G E LICNS PED | | |
| UNLOC? | D C J L K LAT/LONG | URBAN AREA | MILEPNT SECOND STREET | DIRECT LEGS TRAF- | VEH TYPE | FROM | X RES | | |
| | | | LRS INTERSECTION SEQ# | LOCTN (#LANES) CNTL | V# | TO | LOC ERROR | | |
| 03903 | N N N 05/09/2016 | WASHINGTON | 1 14 | INTER CROSS N | 01 NONE 0 | STRGHT | | | 29 |
| NONE | N Mon 12P | SHERWOOD | MN 0 SW EDY RD | CN TRF SIGNAL N CLR | UNKN NE SW | | | 000 | 00 |
| | | PORTLAND UA | 15.35 SW PACIFIC HY 99W | 01 0 N DAY INJ | PSNGR CAR | | 01 DRVR NONE 38 M OR-Y | 042 | 000 |
| No | 45 21 59.71 -122 50 54.60 | | 009100100S00 1 | | | | OR<25 | | 29 |
| | | | | | 02 NONE 0 | TURN-R | | | |
| | | | | | PRVTE NE NW | | | 000 | 00 |
| | | | | | PSNGR CAR | | 01 DRVR INJC 50 M OR-Y | 000 | 000 |
| | | | | | | | OR<25 | | 00 |
| 02520 | N N N N N 05/19/2019 | WASHINGTON | 2 14 | INTER CROSS N | 01 NONE 0 | TURN-L | | 087 | 04,32 |
| CITY | N Sun 12A | SHERWOOD | MN 0 SW EDY RD | CN TRF SIGNAL N RAIN ANGL-OTH | PRVTE NE SE | | | 000 | 087 |
| | | PORTLAND UA | 15.35 SW PACIFIC HY 99W | 01 0 N DLIT INJ | PSNGR CAR | | 01 DRVR INJC 56 M OR-Y | 020,052 | 000 |
| No | 45 21 59.28 -122 50 54.04 | | 009100200S00 1 | | | | OR<25 | | 04,32 |
| | | | | | 02 NONE 0 | STRGHT | | | |
| | | | | | PRVTE SE NW | | | 000 | 00 |
| | | | | | PSNGR CAR | | 01 DRVR NONE 58 M OR-Y | 000 | 000 |
| | | | | | | | OR<25 | | 00 |
| | | | | | | | 02 PSNG INJC 60 F | 000 | 000 |
| | | | | | | | | | 00 |
| 01681 | N N N N N 04/05/2018 | WASHINGTON | 2 14 | INTER CROSS N | 01 NONE 9 | STRGHT | | | 12 |
| CITY | N Thu 4P | SHERWOOD | MN 0 SW PACIFIC HY 99W | CN TRF SIGNAL N CLD ANGL-OTH | N/A SE NW | | | 000 | 00 |
| | | PORTLAND UA | 15.35 N SHERWOOD BLVD | 02 0 N DAY PDO | PSNGR CAR | | 01 DRVR NONE 00 U UNK | 000 | 000 |
| No | 45 21 59.28 -122 50 54.04 | | 009100200S00 1 | | | | UNK | | 00 |
| | | | | | 02 NONE 9 | STRGHT | | | |
| | | | | | N/A SW NE | | | 000 | 00 |
| | | | | | PSNGR CAR | | 01 DRVR NONE 00 U UNK | 000 | 000 |
| | | | | | | | UNK | | 00 |
| 06970 | N N N 12/17/2018 | WASHINGTON | 1 14 | INTER CROSS N | 01 NONE 0 | STRGHT | | | 29 |
| NONE | N Mon 8P | SHERWOOD | FR 0 SW EDY RD | NW TRF SIGNAL N DRY REAR | PRVTE NW SE | | | 000 | 00 |
| | | PORTLAND UA | 15.36 SW PACIFIC HY 99W | 06 0 N DLIT INJ | PSNGR CAR | | 01 DRVR NONE 28 M OR-Y | 026 | 000 |
| No | 45 21 59.72 -122 50 54.62 | | 0091CT100S00 1 | | | | OR<25 | | 29 |
| | | | | | 02 NONE 0 | STOP | | | |
| | | | | | PRVTE NW SE | | | 011 | 00 |
| | | | | | PSNGR CAR | | 01 DRVR INJC 47 M OR-Y | 000 | 000 |
| | | | | | | | OR<25 | | 00 |

ACTION CODE TRANSLATION LIST

| ACTION CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|-------------|-------------------|---|
| 000 | NONE | NO ACTION OR NON-WARRANTED |
| 001 | SKIDDED | SKIDDED |
| 002 | ON/OFF V | GETTING ON OR OFF STOPPED OR PARKED VEHICLE |
| 003 | LOAD OVR | OVERHANGING LOAD STRUCK ANOTHER VEHICLE, ETC. |
| 006 | SLOW DN | SLOWED DOWN |
| 007 | AVOIDING | AVOIDING MANEUVER |
| 008 | PAR PARK | PARALLEL PARKING |
| 009 | ANG PARK | ANGLE PARKING |
| 010 | INTERFERE | PASSENGER INTERFERING WITH DRIVER |
| 011 | STOPPED | STOPPED IN TRAFFIC NOT WAITING TO MAKE A LEFT TURN |
| 012 | STP/L TRN | STOPPED BECAUSE OF LEFT TURN SIGNAL OR WAITING, ETC. |
| 013 | STP TURN | STOPPED WHILE EXECUTING A TURN |
| 014 | EMR V PKD | EMERGENCY VEHICLE LEGALLY PARKED IN THE ROADWAY |
| 015 | GO A/STOP | PROCEED AFTER STOPPING FOR A STOP SIGN/FLASHING RED. |
| 016 | TRN A/RED | TURNED ON RED AFTER STOPPING |
| 017 | LOSTCTRL | LOST CONTROL OF VEHICLE |
| 018 | EXIT DWY | ENTERING STREET OR HIGHWAY FROM ALLEY OR DRIVEWAY |
| 019 | ENTR DWY | ENTERING ALLEY OR DRIVEWAY FROM STREET OR HIGHWAY |
| 020 | STR ENTR | BEFORE ENTERING ROADWAY, STRUCK PEDESTRIAN, ETC. ON SIDEWALK OR SHOULDER |
| 021 | NO DRVR | CAR RAN AWAY - NO DRIVER |
| 022 | PREV COL | STRUCK, OR WAS STRUCK BY, VEHICLE OR PEDESTRIAN IN PRIOR COLLISION BEFORE ACC. STABILIZED |
| 023 | STALLED | VEHICLE STALLED OR DISABLED |
| 024 | DRVR DEAD | DEAD BY UNASSOCIATED CAUSE |
| 025 | FATIGUE | FATIGUED, SLEEPY, ASLEEP |
| 026 | SUN | DRIVER BLINDED BY SUN |
| 027 | HDLGHTS | DRIVER BLINDED BY HEADLIGHTS |
| 028 | ILLNESS | PHYSICALLY ILL |
| 029 | THRU MED | VEHICLE CROSSED, PLUNGED OVER, OR THROUGH MEDIAN BARRIER |
| 030 | PURSUIT | PURSUING OR ATTEMPTING TO STOP A VEHICLE |
| 031 | PASSING | PASSING SITUATION |
| 032 | PRKOFFRD | VEHICLE PARKED BEYOND CURB OR SHOULDER |
| 033 | CROS MED | VEHICLE CROSSED EARTH OR GRASS MEDIAN |
| 034 | X N/SGNL | CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT |
| 035 | X W/ SGNL | CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT |
| 036 | DIAGONAL | CROSSING AT INTERSECTION - DIAGONALLY |
| 037 | BTWN INT | CROSSING BETWEEN INTERSECTIONS |
| 038 | DISTRACT | DRIVER'S ATTENTION DISTRACTED |
| 039 | W/TRAF-S | WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC |
| 040 | A/TRAF-S | WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC |
| 041 | W/TRAF-P | WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC |
| 042 | A/TRAF-P | WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC |
| 043 | PLAYINRD | PLAYING IN STREET OR ROAD |
| 044 | PUSH MV | PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER |
| 045 | WORK ON | WORKING IN ROADWAY OR ALONG SHOULDER |
| 046 | W/ TRAFIC | NON-MOTORIST WALKING, RUNNING, RIDING, ETC. WITH TRAFFIC |
| 047 | A/ TRAFIC | NON-MOTORIST WALKING, RUNNING, RIDING, ETC. FACING TRAFFIC |
| 050 | LAY ON RD | STANDING OR LYING IN ROADWAY |
| 051 | ENT OFFRD | ENTERING / STARTING IN TRAFFIC LANE FROM OFF ROAD |
| 052 | MERGING | MERGING |

ACTION CODE TRANSLATION LIST

| ACTION CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|----------------|----------------------|------------------------|
| 055 | SPRAY | BLINDED BY WATER SPRAY |
| 088 | OTHER | OTHER ACTION |
| 099 | UNK | UNKNOWN ACTION |

CAUSE CODE TRANSLATION LIST

| CAUSE CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|------------|-------------------|--|
| 00 | NO CODE | NO CAUSE ASSOCIATED AT THIS LEVEL |
| 01 | TOO-FAST | TOO FAST FOR CONDITIONS (NOT EXCEED POSTED SPEED |
| 02 | NO-YIELD | DID NOT YIELD RIGHT-OF-WAY |
| 03 | PAS-STOP | PASSED STOP SIGN OR RED FLASHER |
| 04 | DIS SIG | DISREGARDED TRAFFIC SIGNAL |
| 05 | LEFT-CTR | DROVE LEFT OF CENTER ON TWO-WAY ROAD; STRADDLING |
| 06 | IMP-OVER | IMPROPER OVERTAKING |
| 07 | TOO-CLOS | FOLLOWED TOO CLOSELY |
| 08 | IMP-TURN | MADE IMPROPER TURN |
| 09 | DRINKING | ALCOHOL OR DRUG INVOLVED |
| 10 | OTHR-IMP | OTHER IMPROPER DRIVING |
| 11 | MECH-DEF | MECHANICAL DEFECT |
| 12 | OTHER | OTHER (NOT IMPROPER DRIVING) |
| 13 | IMP LN C | IMPROPER CHANGE OF TRAFFIC LANES |
| 14 | DIS TCD | DISREGARDED OTHER TRAFFIC CONTROL DEVICE |
| 15 | WRNG WAY | WRONG WAY ON ONE-WAY ROAD; WRONG SIDE DIVIDED RO |
| 16 | FATIGUE | DRIVER DROWSY/FATIGUED/SLEEPY |
| 17 | ILLNESS | PHYSICAL ILLNESS |
| 18 | IN RDWY | NON-MOTORIST ILLEGALLY IN ROADWAY |
| 19 | NT VISBL | NON-MOTORIST NOT VISIBLE; NON-REFLECTIVE CLOTHIN |
| 20 | IMP PKNG | VEHICLE IMPROPERLY PARKED |
| 21 | DEF STER | DEFECTIVE STEERING MECHANISM |
| 22 | DEF BRKE | INADEQUATE OR NO BRAKES |
| 24 | LOADSHFT | VEHICLE LOST LOAD OR LOAD SHIFTED |
| 25 | TIREFAIL | TIRE FAILURE |
| 26 | PHANTOM | PHANTOM / NON-CONTACT VEHICLE |
| 27 | INATTENT | INATTENTION |
| 28 | NM INATT | NON-MOTORIST INATTENTION |
| 29 | F AVOID | FAILED TO AVOID VEHICLE AHEAD |
| 30 | SPEED | DRIVING IN EXCESS OF POSTED SPEED |
| 31 | RACING | SPEED RACING (PER PAR) |
| 32 | CARELESS | CARELESS DRIVING (PER PAR) |
| 33 | RECKLESS | RECKLESS DRIVING (PER PAR) |
| 34 | AGGRESV | AGGRESSIVE DRIVING (PER PAR) |
| 35 | RD RAGE | ROAD RAGE (PER PAR) |
| 40 | VIEW OBS | VIEW OBSCURED |
| 50 | USED MDN | IMPROPER USE OF MEDIAN OR SHOULDER |
| 51 | FAIL LN | FAILED TO MAINTAIN LANE |
| 52 | OFF RD | RAN OFF ROAD |

COLLISION TYPE CODE TRANSLATION LIST

| COLL CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|-----------|-------------------|------------------------------|
| & | OTH | MISCELLANEOUS |
| - | BACK | BACKING |
| 0 | PED | PEDESTRIAN |
| 1 | ANGL | ANGLE |
| 2 | HEAD | HEAD-ON |
| 3 | REAR | REAR-END |
| 4 | SS-M | SIDESWIPE - MEETING |
| 5 | SS-O | SIDESWIPE - OVERTAKING |
| 6 | TURN | TURNING MOVEMENT |
| 7 | PARK | PARKING MANEUVER |
| 8 | NCOL | NON-COLLISION |
| 9 | FIX | FIXED OBJECT OR OTHER OBJECT |

CRASH TYPE CODE TRANSLATION LIST

| CRASH TYPE | SHORT DESCRIPTION | LONG DESCRIPTION |
|------------|-------------------|---|
| & | OVERTURN | OVERTURNED |
| 0 | NON-COLL | OTHER NON-COLLISION |
| 1 | OTH RDWY | MOTOR VEHICLE ON OTHER ROADWAY |
| 2 | PRKD MV | PARKED MOTOR VEHICLE |
| 3 | PED | PEDESTRIAN |
| 4 | TRAIN | RAILWAY TRAIN |
| 6 | BIKE | PEDALCYCLIST |
| 7 | ANIMAL | ANIMAL |
| 8 | FIX OBJ | FIXED OBJECT |
| 9 | OTH OBJ | OTHER OBJECT |
| A | ANGL-STP | ENTERING AT ANGLE - ONE VEHICLE STOPPED |
| B | ANGL-OTH | ENTERING AT ANGLE - ALL OTHERS |
| C | S-STRGHT | FROM SAME DIRECTION - BOTH GOING STRAIGHT |
| D | S-1TURN | FROM SAME DIRECTION - ONE TURN, ONE STRAIGHT |
| E | S-1STOP | FROM SAME DIRECTION - ONE STOPPED |
| F | S-OTHER | FROM SAME DIRECTION-ALL OTHERS, INCLUDING PARKING |
| G | O-STRGHT | FROM OPPOSITE DIRECTION - BOTH GOING STRAIGHT |
| H | O-1 L-TURN | FROM OPPOSITE DIRECTION-ONE LEFT TURN, ONE STRAIGHT |
| I | O-1STOP | FROM OPPOSITE DIRECTION - ONE STOPPED |
| J | O-OTHER | FROM OPPOSITE DIRECTION-ALL OTHERS INCL. PARKING |

DRIVER LICENSE CODE TRANSLATION LIST

| LIC CODE | SHORT DESC | LONG DESCRIPTION |
|----------|------------|---|
| 0 | NONE | NOT LICENSED (HAD NEVER BEEN LICENSED) |
| 1 | OR-Y | VALID OREGON LICENSE |
| 2 | OTH-Y | VALID LICENSE, OTHER STATE OR COUNTRY |
| 3 | SUSP | SUSPENDED/REVOKED |
| 4 | EXP | EXPIRED |
| 8 | N-VAL | OTHER NON-VALID LICENSE |
| 9 | UNK | UNKNOWN IF DRIVER WAS LICENSED AT TIME OF CRASH |

DRIVER RESIDENCE CODE TRANSLATION LIST

| RES CODE | SHORT DESC | LONG DESCRIPTION |
|----------|------------|--|
| 1 | OR<25 | OREGON RESIDENT WITHIN 25 MILE OF HOME |
| 2 | OR>25 | OREGON RESIDENT 25 OR MORE MILES FROM HOME |
| 3 | OR-? | OREGON RESIDENT - UNKNOWN DISTANCE FROM HOME |
| 4 | N-RES | NON-RESIDENT |
| 9 | UNK | UNKNOWN IF OREGON RESIDENT |

ERROR CODE TRANSLATION LIST

| ERROR CODE | SHORT DESCRIPTION | FULL DESCRIPTION |
|------------|-------------------|---|
| 000 | NONE | NO ERROR |
| 001 | WIDE TRN | WIDE TURN |
| 002 | CUT CORN | CUT CORNER ON TURN |
| 003 | FAIL TRN | FAILED TO OBEY MANDATORY TRAFFIC TURN SIGNAL, SIGN OR LANE MARKINGS |
| 004 | L IN TRF | LEFT TURN IN FRONT OF ONCOMING TRAFFIC |
| 005 | L PROHIB | LEFT TURN WHERE PROHIBITED |
| 006 | FRM WRNG | TURNEED FROM WRONG LANE |
| 007 | TO WRONG | TURNEED INTO WRONG LANE |
| 008 | ILLEG U | U-TURNEED ILLEGALLY |
| 009 | IMP STOP | IMPROPERLY STOPPED IN TRAFFIC LANE |
| 010 | IMP SIG | IMPROPER SIGNAL OR FAILURE TO SIGNAL |
| 011 | IMP BACK | BACKING IMPROPERLY (NOT PARKING) |
| 012 | IMP PARK | IMPROPERLY PARKED |
| 013 | UNPARK | IMPROPER START LEAVING PARKED POSITION |
| 014 | IMP STRT | IMPROPER START FROM STOPPED POSITION |
| 015 | IMP LGHT | IMPROPER OR NO LIGHTS (VEHICLE IN TRAFFIC) |
| 016 | INATTENT | INATTENTION (FAILURE TO DIM LIGHTS PRIOR TO 4/1/97) |
| 017 | UNSF VEH | DRIVING UNSAFE VEHICLE (NO OTHER ERROR APPARENT) |
| 018 | OTH PARK | ENTERING/EXITING PARKED POSITION W/ INSUFFICIENT CLEARANCE; OTHER IMPROPER PARKING MANEUVER |
| 019 | DIS DRIV | DISREGARDED OTHER DRIVER'S SIGNAL |
| 020 | DIS SGNL | DISREGARDED TRAFFIC SIGNAL |
| 021 | RAN STOP | DISREGARDED STOP SIGN OR FLASHING RED |
| 022 | DIS SIGN | DISREGARDED WARNING SIGN, FLARES OR FLASHING AMBER |
| 023 | DIS OFCR | DISREGARDED POLICE OFFICER OR FLAGMAN |
| 024 | DIS EMER | DISREGARDED SIREN OR WARNING OF EMERGENCY VEHICLE |
| 025 | DIS RR | DISREGARDED RR SIGNAL, RR SIGN, OR RR FLAGMAN |
| 026 | REAR-END | FAILED TO AVOID STOPPED OR PARKED VEHICLE AHEAD OTHER THAN SCHOOL BUS |
| 027 | BIKE ROW | DID NOT HAVE RIGHT-OF-WAY OVER PEDALCYCLIST |
| 028 | NO ROW | DID NOT HAVE RIGHT-OF-WAY |
| 029 | PED ROW | FAILED TO YIELD RIGHT-OF-WAY TO PEDESTRIAN |
| 030 | PAS CURV | PASSING ON A CURVE |
| 031 | PAS WRNG | PASSING ON THE WRONG SIDE |
| 032 | PAS TANG | PASSING ON STRAIGHT ROAD UNDER UNSAFE CONDITIONS |
| 033 | PAS X-WK | PASSED VEHICLE STOPPED AT CROSSWALK FOR PEDESTRIAN |
| 034 | PAS INTR | PASSING AT INTERSECTION |
| 035 | PAS HILL | PASSING ON CREST OF HILL |
| 036 | N/PAS ZN | PASSING IN "NO PASSING" ZONE |
| 037 | PAS TRAF | PASSING IN FRONT OF ONCOMING TRAFFIC |
| 038 | CUT-IN | CUTTING IN (TWO LANES - TWO WAY ONLY) |
| 039 | WRNGSIDE | DRIVING ON WRONG SIDE OF THE ROAD (2-WAY UNDIVIDED ROADWAYS) |

ERROR CODE TRANSLATION LIST

| ERROR CODE | SHORT DESCRIPTION | FULL DESCRIPTION |
|------------|-------------------|---|
| 040 | THRU MED | DRIVING THROUGH SAFETY ZONE OR OVER ISLAND |
| 041 | F/ST BUS | FAILED TO STOP FOR SCHOOL BUS |
| 042 | F/SLO MV | FAILED TO DECREASE SPEED FOR SLOWER MOVING VEHICLE |
| 043 | TOO CLOSE | FOLLOWING TOO CLOSELY (MUST BE ON OFFICER'S REPORT) |
| 044 | STRDL LN | STRADDLING OR DRIVING ON WRONG LANES |
| 045 | IMP CHG | IMPROPER CHANGE OF TRAFFIC LANES |
| 046 | WRNG WAY | WRONG WAY ON ONE-WAY ROADWAY; WRONG SIDE DIVIDED ROAD |
| 047 | BASCRULE | DRIVING TOO FAST FOR CONDITIONS (NOT EXCEEDING POSTED SPEED) |
| 048 | OPN DOOR | OPENED DOOR INTO ADJACENT TRAFFIC LANE |
| 049 | IMPEDING TRAFFIC | IMPEDING TRAFFIC |
| 050 | SPEED | DRIVING IN EXCESS OF POSTED SPEED |
| 051 | RECKLESS | RECKLESS DRIVING (PER PAR) |
| 052 | CARELESS | CARELESS DRIVING (PER PAR) |
| 053 | RACING | SPEED RACING (PER PAR) |
| 054 | X N/SGNL | CROSSING AT INTERSECTION, NO TRAFFIC SIGNAL PRESENT |
| 055 | X W/SGNL | CROSSING AT INTERSECTION, TRAFFIC SIGNAL PRESENT |
| 056 | DIAGONAL | CROSSING AT INTERSECTION - DIAGONALLY |
| 057 | BTWN INT | CROSSING BETWEEN INTERSECTIONS |
| 059 | W/TRAF-S | WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC |
| 060 | A/TRAF-S | WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC |
| 061 | W/TRAF-P | WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC |
| 062 | A/TRAF-P | WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC |
| 063 | PLAYINRD | PLAYING IN STREET OR ROAD |
| 064 | PUSH MV | PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER |
| 065 | WORK IN RD | WORKING IN ROADWAY OR ALONG SHOULDER |
| 070 | LAY ON RD | STANDING OR LYING IN ROADWAY |
| 071 | NM IMP USE | IMPROPER USE OF TRAFFIC LANE BY NON-MOTORIST |
| 073 | ELUDING | ELUDING / ATTEMPT TO ELUDE |
| 079 | F NEG CURV | FAILED TO NEGOTIATE A CURVE |
| 080 | FAIL LN | FAILED TO MAINTAIN LANE |
| 081 | OFF RD | RAN OFF ROAD |
| 082 | NO CLEAR | DRIVER MISJUDGED CLEARANCE |
| 083 | OVRSTEER | OVER-CORRECTING |
| 084 | NOT USED | CODE NOT IN USE |
| 085 | OVRLOAD | OVERLOADING OR IMPROPER LOADING OF VEHICLE WITH CARGO OR PASSENGERS |
| 097 | UNA DIS TC | UNABLE TO DETERMINE WHICH DRIVER DISREGARDED TRAFFIC CONTROL DEVICE |

EVENT CODE TRANSLATION LIST

| EVENT CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|------------|-------------------|---|
| 001 | FEL/JUMP | OCCUPANT FELL, JUMPED OR WAS EJECTED FROM MOVING VEHICLE |
| 002 | INTERFER | PASSENGER INTERFERED WITH DRIVER |
| 003 | BUG INTF | ANIMAL OR INSECT IN VEHICLE INTERFERED WITH DRIVER |
| 004 | INDRCT PED | PEDESTRIAN INDIRECTLY INVOLVED (NOT STRUCK) |
| 005 | SUB-PED | "SUB-PED": PEDESTRIAN INJURED SUBSEQUENT TO COLLISION, ETC. |
| 006 | INDRCT BIK | PEDALCYCLIST INDIRECTLY INVOLVED (NOT STRUCK) |
| 007 | HITCHIKR | HITCHHIKER (SOLICITING A RIDE) |
| 008 | PSNGR TOW | PASSENGER OR NON-MOTORIST BEING TOWED OR PUSHED ON CONVEYANCE |
| 009 | ON/OFF V | GETTING ON/OFF STOPPED/PARKED VEHICLE (OCCUPANTS ONLY; MUST HAVE PHYSICAL CONTACT W/ VEHICLE) |
| 010 | SUB OTRN | OVERTURNED AFTER FIRST HARMFUL EVENT |
| 011 | MV PUSHD | VEHICLE BEING PUSHED |
| 012 | MV TOWED | VEHICLE TOWED OR HAD BEEN TOWING ANOTHER VEHICLE |
| 013 | FORCED | VEHICLE FORCED BY IMPACT INTO ANOTHER VEHICLE, PEDALCYCLIST OR PEDESTRIAN |
| 014 | SET MOTN | VEHICLE SET IN MOTION BY NON-DRIVER (CHILD RELEASED BRAKES, ETC.) |
| 015 | RR ROW | AT OR ON RAILROAD RIGHT-OF-WAY (NOT LIGHT RAIL) |
| 016 | LT RL ROW | AT OR ON LIGHT-RAIL RIGHT-OF-WAY |
| 017 | RR HIT V | TRAIN STRUCK VEHICLE |
| 018 | V HIT RR | VEHICLE STRUCK TRAIN |
| 019 | HIT RR CAR | VEHICLE STRUCK RAILROAD CAR ON ROADWAY |
| 020 | JACKKNIFE | JACKKNIFE; TRAILER OR TOWED VEHICLE STRUCK TOWING VEHICLE |
| 021 | TRL OTRN | TRAILER OR TOWED VEHICLE OVERTURNED |
| 022 | CN BROKE | TRAILER CONNECTION BROKE |
| 023 | DETACH TRL | DETACHED TRAILING OBJECT STRUCK OTHER VEHICLE, NON-MOTORIST, OR OBJECT |
| 024 | V DOOR OPN | VEHICLE DOOR OPENED INTO ADJACENT TRAFFIC LANE |
| 025 | WHEELOFF | WHEEL CAME OFF |
| 026 | HOOD UP | HOOD FLEW UP |
| 028 | LOAD SHIFT | LOST LOAD, LOAD MOVED OR SHIFTED |
| 029 | TIREFAIL | TIRE FAILURE |
| 030 | PET | PET: CAT, DOG AND SIMILAR |
| 031 | LVSTOCK | STOCK: COW, CALF, BULL, STEER, SHEEP, ETC. |
| 032 | HORSE | HORSE, MULE, OR DONKEY |
| 033 | HRSE&RID | HORSE AND RIDER |
| 034 | GAME | WILD ANIMAL, GAME (INCLUDES BIRDS; NOT DEER OR ELK) |
| 035 | DEER ELK | DEER OR ELK, WAPITI |
| 036 | ANML VEH | ANIMAL-DRAWN VEHICLE |
| 037 | CULVERT | CULVERT, OPEN LOW OR HIGH MANHOLE |
| 038 | ATENUATN | IMPACT ATTENUATOR |
| 039 | PK METER | PARKING METER |
| 040 | CURB | CURB (ALSO NARROW SIDEWALKS ON BRIDGES) |
| 041 | JIGGLE | JIGGLE BAR OR TRAFFIC SNAKE FOR CHANNELIZATION |
| 042 | GDRL END | LEADING EDGE OF GUARDRAIL |
| 043 | GARDRAIL | GUARD RAIL (NOT METAL MEDIAN BARRIER) |
| 044 | BARRIER | MEDIAN BARRIER (RAISED OR METAL) |
| 045 | WALL | RETAINING WALL OR TUNNEL WALL |
| 046 | BR RAIL | BRIDGE RAILING OR PARAPET (ON BRIDGE OR APPROACH) |
| 047 | BR ABUTMNT | BRIDGE ABUTMENT (INCLUDED "APPROACH END" THRU 2013) |
| 048 | BR COLMN | BRIDGE PILLAR OR COLUMN |
| 049 | BR GIRDR | BRIDGE GIRDER (HORIZONTAL BRIDGE STRUCTURE OVERHEAD) |
| 050 | ISLAND | TRAFFIC RAISED ISLAND |
| 051 | GORE | GORE |
| 052 | POLE UNK | POLE - TYPE UNKNOWN |
| 053 | POLE UTL | POLE - POWER OR TELEPHONE |
| 054 | ST LIGHT | POLE - STREET LIGHT ONLY |
| 055 | TRF SGNL | POLE - TRAFFIC SIGNAL AND PED SIGNAL ONLY |
| 056 | SGN BRDG | POLE - SIGN BRIDGE |
| 057 | STOPSIGN | STOP OR YIELD SIGN |

EVENT CODE TRANSLATION LIST

| EVENT CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|------------|-------------------|--|
| 058 | OTH SIGN | OTHER SIGN, INCLUDING STREET SIGNS |
| 059 | HYDRANT | HYDRANT |
| 060 | MARKER | DELINEATOR OR MARKER (REFLECTOR POSTS) |
| 061 | MAILBOX | MAILBOX |
| 062 | TREE | TREE, STUMP OR SHRUBS |
| 063 | VEG OHED | TREE BRANCH OR OTHER VEGETATION OVERHEAD, ETC. |
| 064 | WIRE/CBL | WIRE OR CABLE ACROSS OR OVER THE ROAD |
| 065 | TEMP SGN | TEMPORARY SIGN OR BARRICADE IN ROAD, ETC. |
| 066 | PERM SGN | PERMANENT SIGN OR BARRICADE IN/OFF ROAD |
| 067 | SLIDE | SLIDES, FALLEN OR FALLING ROCKS |
| 068 | FRGN OBJ | FOREIGN OBSTRUCTION/DEBRIS IN ROAD (NOT GRAVEL) |
| 069 | EQP WORK | EQUIPMENT WORKING IN/OFF ROAD |
| 070 | OTH EQP | OTHER EQUIPMENT IN OR OFF ROAD (INCLUDES PARKED TRAILER, BOAT) |
| 071 | MAIN EQP | WRECKER, STREET SWEEPER, SNOW PLOW OR SANDING EQUIPMENT |
| 072 | OTHER WALL | ROCK, BRICK OR OTHER SOLID WALL |
| 073 | IRRGL PVMT | OTHER BUMP (NOT SPEED BUMP), POTHOLE OR PAVEMENT IRREGULARITY (PER PAR) |
| 074 | OVERHD OBJ | OTHER OVERHEAD OBJECT (HIGHWAY SIGN, SIGNAL HEAD, ETC.); NOT BRIDGE |
| 075 | CAVE IN | BRIDGE OR ROAD CAVE IN |
| 076 | HI WATER | HIGH WATER |
| 077 | SNO BANK | SNOW BANK |
| 078 | LO-HI EDGE | LOW OR HIGH SHOULDER AT PAVEMENT EDGE |
| 079 | DITCH | CUT SLOPE OR DITCH EMBANKMENT |
| 080 | OBJ FRM MV | STRUCK BY ROCK OR OTHER OBJECT SET IN MOTION BY OTHER VEHICLE (INCL. LOST LOADS) |
| 081 | FLY-OBJ | STRUCK BY ROCK OR OTHER MOVING OR FLYING OBJECT (NOT SET IN MOTION BY VEHICLE) |
| 082 | VEH HID | VEHICLE OBSCURED VIEW |
| 083 | VEG HID | VEGETATION OBSCURED VIEW |
| 084 | BLDG HID | VIEW OBSCURED BY FENCE, SIGN, PHONE BOOTH, ETC. |
| 085 | WIND GUST | WIND GUST |
| 086 | IMMERSED | VEHICLE IMMERSED IN BODY OF WATER |
| 087 | FIRE/EXP | FIRE OR EXPLOSION |
| 088 | FENC/BLD | FENCE OR BUILDING, ETC. |
| 089 | OTHR CRASH | CRASH RELATED TO ANOTHER SEPARATE CRASH |
| 090 | TO 1 SIDE | TWO-WAY TRAFFIC ON DIVIDED ROADWAY ALL ROUTED TO ONE SIDE |
| 091 | BUILDING | BUILDING OR OTHER STRUCTURE |
| 092 | PHANTOM | OTHER (PHANTOM) NON-CONTACT VEHICLE |
| 093 | CELL PHONE | CELL PHONE (ON PAR OR DRIVER IN USE) |
| 094 | VIOL GDL | TEENAGE DRIVER IN VIOLATION OF GRADUATED LICENSE PGM |
| 095 | GUY WIRE | GUY WIRE |
| 096 | BERM | BERM (EARTHEN OR GRAVEL MOUND) |
| 097 | GRAVEL | GRAVEL IN ROADWAY |
| 098 | ABR EDGE | ABRUPT EDGE |
| 099 | CELL WTNSD | CELL PHONE USE WITNESSED BY OTHER PARTICIPANT |
| 100 | UNK FIXD | FIXED OBJECT, UNKNOWN TYPE. |
| 101 | OTHER OBJ | NON-FIXED OBJECT, OTHER OR UNKNOWN TYPE |
| 102 | TEXTING | TEXTING |
| 103 | WZ WORKER | WORK ZONE WORKER |
| 104 | ON VEHICLE | PASSENGER RIDING ON VEHICLE EXTERIOR |
| 105 | PEDAL PSGR | PASSENGER RIDING ON PEDALCYCLE |
| 106 | MAN WHLCHR | PEDESTRIAN IN NON-MOTORIZED WHEELCHAIR |
| 107 | MTR WHLCHR | PEDESTRIAN IN MOTORIZED WHEELCHAIR |
| 108 | OFFICER | LAW ENFORCEMENT / POLICE OFFICER |
| 109 | SUB-BIKE | "SUB-BIKE": PEDALCYCLIST INJURED SUBSEQUENT TO COLLISION, ETC. |
| 110 | N-MTR | NON-MOTORIST STRUCK VEHICLE |
| 111 | S CAR VS V | STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) STRUCK VEHICLE |
| 112 | V VS S CAR | VEHICLE STRUCK STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) |
| 113 | S CAR ROW | AT OR ON STREET CAR OR TROLLEY RIGHT-OF-WAY |

EVENT CODE TRANSLATION LIST

| EVENT CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|------------|-------------------|---|
| 114 | RR EQUIP | VEHICLE STRUCK RAILROAD EQUIPMENT (NOT TRAIN) ON TRACKS |
| 115 | DSTRCT GPS | DISTRACTED BY NAVIGATION SYSTEM OR GPS DEVICE |
| 116 | DSTRCT OTH | DISTRACTED BY OTHER ELECTRONIC DEVICE |
| 117 | RR GATE | RAIL CROSSING DROP-ARM GATE |
| 118 | EXPNSN JNT | EXPANSION JOINT |
| 119 | JERSEY BAR | JERSEY BARRIER |
| 120 | WIRE BAR | WIRE OR CABLE MEDIAN BARRIER |
| 121 | FENCE | FENCE |
| 123 | OBJ IN VEH | LOOSE OBJECT IN VEHICLE STRUCK OCCUPANT |
| 124 | SLIPPERY | SLIDING OR SWERVING DUE TO WET, ICY, SLIPPERY OR LOOSE SURFACE (NOT GRAVEL) |
| 125 | SHLDR | SHOULDER GAVE WAY |
| 126 | BOULDER | ROCK(S), BOULDER (NOT GRAVEL; NOT ROCK SLIDE) |
| 127 | LAND SLIDE | ROCK SLIDE OR LAND SLIDE |
| 128 | CURVE INV | CURVE PRESENT AT CRASH LOCATION |
| 129 | HILL INV | VERTICAL GRADE / HILL PRESENT AT CRASH LOCATION |
| 130 | CURVE HID | VIEW OBSCURED BY CURVE |
| 131 | HILL HID | VIEW OBSCURED BY VERTICAL GRADE / HILL |
| 132 | WINDOW HID | VIEW OBSCURED BY VEHICLE WINDOW CONDITIONS |
| 133 | SPRAY HID | VIEW OBSCURED BY WATER SPRAY |
| 134 | TORRENTIAL | TORRENTIAL RAIN (EXCEPTIONALLY HEAVY RAIN) |
| 135 | RAIL OCC | INJURED OCCUPANT OF RAILWAY TRAIN, LIGHT RAIL, STREET CAR OR CABLE CAR |

FUNCTIONAL CLASSIFICATION TRANSLATION LIST

| FUNC CLASS | DESCRIPTION |
|------------|---|
| 01 | RURAL PRINCIPAL ARTERIAL - INTERSTATE |
| 02 | RURAL PRINCIPAL ARTERIAL - OTHER |
| 06 | RURAL MINOR ARTERIAL |
| 07 | RURAL MAJOR COLLECTOR |
| 08 | RURAL MINOR COLLECTOR |
| 09 | RURAL LOCAL |
| 11 | URBAN PRINCIPAL ARTERIAL - INTERSTATE |
| 12 | URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXP |
| 14 | URBAN PRINCIPAL ARTERIAL - OTHER |
| 16 | URBAN MINOR ARTERIAL |
| 17 | URBAN MAJOR COLLECTOR |
| 18 | URBAN MINOR COLLECTOR |
| 19 | URBAN LOCAL |
| 78 | UNKNOWN RURAL SYSTEM |
| 79 | UNKNOWN RURAL NON-SYSTEM |
| 98 | UNKNOWN URBAN SYSTEM |
| 99 | UNKNOWN URBAN NON-SYSTEM |

HIGHWAY COMPONENT TRANSLATION LIST

| CODE | DESCRIPTION |
|------|------------------------|
| 0 | MAINLINE STATE HIGHWAY |
| 1 | COUplet |
| 3 | FRONTAGE ROAD |
| 6 | CONNECTION |
| 8 | HIGHWAY - OTHER |

INJURY SEVERITY CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|---------------------------------|
| 1 | KILL | FATAL INJURY (K) |
| 2 | INJA | SUSPECTED SERIOUS INJURY (A) |
| 3 | INJB | SUSPECTED MINOR INJURY (B) |
| 4 | INJC | POSSIBLE INJURY (C) |
| 5 | PRI | DIED PRIOR TO CRASH |
| 7 | NO<5 | NO INJURY - 0 TO 4 YEARS OF AGE |
| 9 | NONE | NO APPARENT INJURY (O) |

LIGHT CONDITION CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|-------------------------------|
| 0 | UNK | UNKNOWN |
| 1 | DAY | DAYLIGHT |
| 2 | DLIT | DARKNESS - WITH STREET LIGHTS |
| 3 | DARK | DARKNESS - NO STREET LIGHTS |
| 4 | DAWN | DAWN (TWILIGHT) |
| 5 | DUSK | DUSK (TWILIGHT) |

MEDIAN TYPE CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|------------------------------|
| 0 | NONE | NO MEDIAN |
| 1 | RSDMD | SOLID MEDIAN BARRIER |
| 2 | DIVMD | EARTH, GRASS OR PAVED MEDIAN |

MILEAGE TYPE CODE TRANSLATION LIST

| CODE | LONG DESCRIPTION |
|------|------------------|
| 0 | REGULAR MILEAGE |
| T | TEMPORARY |
| Y | SPUR |
| Z | OVERLAPPING |

MOVEMENT TYPE CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|---------------------|
| 0 | UNK | UNKNOWN |
| 1 | STRGHT | STRAIGHT AHEAD |
| 2 | TURN-R | TURNING RIGHT |
| 3 | TURN-L | TURNING LEFT |
| 4 | U-TURN | MAKING A U-TURN |
| 5 | BACK | BACKING |
| 6 | STOP | STOPPED IN TRAFFIC |
| 7 | PRKD-P | PARKED - PROPERLY |
| 8 | PRKD-I | PARKED - IMPROPERLY |
| 9 | PARKNG | PARKING MANEUVER |

NON-MOTORIST LOCATION CODE TRANSLATION LIST

| CODE | LONG DESCRIPTION |
|------|--|
| 00 | AT INTERSECTION - NOT IN ROADWAY |
| 01 | AT INTERSECTION - INSIDE CROSSWALK |
| 02 | AT INTERSECTION - IN ROADWAY, OUTSIDE CROSSWALK |
| 03 | AT INTERSECTION - IN ROADWAY, XWALK AVAIL UNKNWN |
| 04 | NOT AT INTERSECTION - IN ROADWAY |
| 05 | NOT AT INTERSECTION - ON SHOULDER |
| 06 | NOT AT INTERSECTION - ON MEDIAN |
| 07 | NOT AT INTERSECTION - WITHIN TRAFFIC RIGHT-OF-WAY |
| 08 | NOT AT INTERSECTION - IN BIKE PATH OR PARKING LANE |
| 09 | NOT-AT INTERSECTION - ON SIDEWALK |
| 10 | OUTSIDE TRAFFICWAY BOUNDARIES |
| 13 | AT INTERSECTION - IN BIKE LANE |
| 14 | NOT AT INTERSECTION - IN BIKE LANE |
| 15 | NOT AT INTERSECTION - INSIDE MID-BLOCK CROSSWALK |
| 16 | NOT AT INTERSECTION - IN PARKING LANE |
| 18 | OTHER, NOT IN ROADWAY |
| 99 | UNKNOWN LOCATION |

ROAD CHARACTER CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|--------------------------|
| 0 | UNK | UNKNOWN |
| 1 | INTER | INTERSECTION |
| 2 | ALLEY | DRIVEWAY OR ALLEY |
| 3 | STRGHT | STRAIGHT ROADWAY |
| 4 | TRANS | TRANSITION |
| 5 | CURVE | CURVE (HORIZONTAL CURVE) |
| 6 | OPENAC | OPEN ACCESS OR TURNOUT |
| 7 | GRADE | GRADE (VERTICAL CURVE) |
| 8 | BRIDGE | BRIDGE STRUCTURE |
| 9 | TUNNEL | TUNNEL |

PARTICIPANT TYPE CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|--|
| 0 | OCC | UNKNOWN OCCUPANT TYPE |
| 1 | DRVR | DRIVER |
| 2 | PSNG | PASSENGER |
| 3 | PED | PEDESTRIAN |
| 4 | CONV | PEDESTRIAN USING A PEDESTRIAN CONVEYAL |
| 5 | PTOW | PEDESTRIAN TOWING OR TRAILERING AN OB |
| 6 | BIKE | PEDALCYCLIST |
| 7 | BTOW | PEDALCYCLIST TOWING OR TRAILERING AN (|
| 8 | PRKD | OCCUPANT OF A PARKED MOTOR VEHICLE |
| 9 | OTHR | OTHER TYPE OF NON-MOTORIST |

TRAFFIC CONTROL DEVICE CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|--|
| 000 | NONE | NO CONTROL |
| 001 | TRF SIGNAL | TRAFFIC SIGNALS |
| 002 | FLASHBCN-R | FLASHING BEACON - RED (STOP) |
| 003 | FLASHBCN-A | FLASHING BEACON - AMBER (SLOW) |
| 004 | STOP SIGN | STOP SIGN |
| 005 | SLOW SIGN | SLOW SIGN |
| 006 | REG-SIGN | REGULATORY SIGN |
| 007 | YIELD | YIELD SIGN |
| 008 | WARNING | WARNING SIGN |
| 009 | CURVE | CURVE SIGN |
| 010 | SCHL X-ING | SCHOOL CROSSING SIGN OR SPECIAL SIGNAL |
| 011 | OFGR/FLAG | POLICE OFFICER, FLAGMAN - SCHOOL PATROL |
| 012 | BRDG-GATE | BRIDGE GATE - BARRIER |
| 013 | TEMP-BARR | TEMPORARY BARRIER |
| 014 | NO-PASS-ZN | NO PASSING ZONE |
| 015 | ONE-WAY | ONE-WAY STREET |
| 016 | CHANNEL | CHANNELIZATION |
| 017 | MEDIAN BAR | MEDIAN BARRIER |
| 018 | PILOT CAR | PILOT CAR |
| 019 | SP PED SIG | SPECIAL PEDESTRIAN SIGNAL |
| 020 | X-BUCK | CROSSBUCK |
| 021 | THR-GN-SIG | THROUGH GREEN ARROW OR SIGNAL |
| 022 | L-GRN-SIG | LEFT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL |
| 023 | R-GRN-SIG | RIGHT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL |
| 024 | WIGWAG | WIGWAG OR FLASHING LIGHTS W/O DROP-ARM GATE |
| 025 | X-BUCK WRN | CROSSBUCK AND ADVANCE WARNING |
| 026 | WW W/ GATE | FLASHING LIGHTS WITH DROP-ARM GATES |
| 027 | OVRHD SGNL | SUPPLEMENTAL OVERHEAD SIGNAL (RR XING ONLY) |
| 028 | SP RR STOP | SPECIAL RR STOP SIGN |
| 029 | ILUM GRD X | ILLUMINATED GRADE CROSSING |
| 037 | RAMP METER | METERED RAMPS |
| 038 | RUMBLE STR | RUMBLE STRIP |
| 040 | AUTO. FLAG | AUTOMATED FLAGGER ASSISTANCE DEVICE |
| 090 | L-TURN REF | LEFT TURN REFUGE (WHEN REFUGE IS INVOLVED) |
| 091 | R-TURN ALL | RIGHT TURN AT ALL TIMES SIGN, ETC. |
| 092 | EMR SGN/FL | EMERGENCY SIGNS OR FLARES |
| 093 | ACCEL LANE | ACCELERATION OR DECELERATION LANES |
| 094 | R-TURN PRO | RIGHT TURN PROHIBITED ON RED AFTER STOPPING |
| 095 | BUS STPSGN | BUS STOP SIGN AND RED LIGHTS |

VEHICLE TYPE CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|---|
| 00 | PDO | NOT COLLECTED FOR PDO CRASHES |
| 01 | PSNGR CAR | PASSENGER CAR, PICKUP, LIGHT DELIVERY, ETC. |
| 02 | BOBTAIL | TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL) |
| 03 | FARM TRCTR | FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT |
| 04 | SEMI TOW | TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW |
| 05 | TRUCK | TRUCK WITH NON-DETACHABLE BED, PANEL, ETC. |
| 06 | MOPED | MOPED, MINIBIKE, SEATED MOTOR SCOOTER, MOTOR BIKE |
| 07 | SCHL BUS | SCHOOL BUS (INCLUDES VAN) |
| 08 | OTH BUS | OTHER BUS |
| 09 | MTRCYCLE | MOTORCYCLE, DIRT BIKE |
| 10 | OTHER | OTHER: FORKLIFT, BACKHOE, ETC. |
| 11 | MOTRHOME | MOTORHOME |
| 12 | TROLLEY | MOTORIZED STREET CAR/TROLLEY (NO RAILS/WIRES) |
| 13 | ATV | ATV |
| 14 | MTRSCTR | MOTORIZED SCOOTER (STANDING) |
| 15 | SNOWMOBILE | SNOWMOBILE |
| 99 | UNKNOWN | UNKNOWN VEHICLE TYPE |

WEATHER CONDITION CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|------------------|
| 0 | UNK | UNKNOWN |
| 1 | CLR | CLEAR |
| 2 | CLD | CLOUDY |
| 3 | RAIN | RAIN |
| 4 | SLT | SLEET |
| 5 | FOG | FOG |
| 6 | SNOW | SNOW |
| 7 | DUST | DUST |
| 8 | SMOK | SMOKE |
| 9 | ASH | ASH |

ACTION CODE TRANSLATION LIST

| ACTION CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|-------------|-------------------|---|
| 000 | NONE | NO ACTION OR NON-WARRANTED |
| 001 | SKIDDED | SKIDDED |
| 002 | ON/OFF V | GETTING ON OR OFF STOPPED OR PARKED VEHICLE |
| 003 | LOAD OVR | OVERHANGING LOAD STRUCK ANOTHER VEHICLE, ETC. |
| 006 | SLOW DN | SLOWED DOWN |
| 007 | AVOIDING | AVOIDING MANEUVER |
| 008 | PAR PARK | PARALLEL PARKING |
| 009 | ANG PARK | ANGLE PARKING |
| 010 | INTERFERE | PASSENGER INTERFERING WITH DRIVER |
| 011 | STOPPED | STOPPED IN TRAFFIC NOT WAITING TO MAKE A LEFT TURN |
| 012 | STP/L TRN | STOPPED BECAUSE OF LEFT TURN SIGNAL OR WAITING, ETC. |
| 013 | STP TURN | STOPPED WHILE EXECUTING A TURN |
| 014 | EMR V PKD | EMERGENCY VEHICLE LEGALLY PARKED IN THE ROADWAY |
| 015 | GO A/STOP | PROCEED AFTER STOPPING FOR A STOP SIGN/FLASHING RED. |
| 016 | TRN A/RED | TURNED ON RED AFTER STOPPING |
| 017 | LOSTCTRL | LOST CONTROL OF VEHICLE |
| 018 | EXIT DWY | ENTERING STREET OR HIGHWAY FROM ALLEY OR DRIVEWAY |
| 019 | ENTR DWY | ENTERING ALLEY OR DRIVEWAY FROM STREET OR HIGHWAY |
| 020 | STR ENTR | BEFORE ENTERING ROADWAY, STRUCK PEDESTRIAN, ETC. ON SIDEWALK OR SHOULDER |
| 021 | NO DRVR | CAR RAN AWAY - NO DRIVER |
| 022 | PREV COL | STRUCK, OR WAS STRUCK BY, VEHICLE OR PEDESTRIAN IN PRIOR COLLISION BEFORE ACC. STABILIZED |
| 023 | STALLED | VEHICLE STALLED OR DISABLED |
| 024 | DRVR DEAD | DEAD BY UNASSOCIATED CAUSE |
| 025 | FATIGUE | FATIGUED, SLEEPY, ASLEEP |
| 026 | SUN | DRIVER BLINDED BY SUN |
| 027 | HDLGHTS | DRIVER BLINDED BY HEADLIGHTS |
| 028 | ILLNESS | PHYSICALLY ILL |
| 029 | THRU MED | VEHICLE CROSSED, PLUNGED OVER, OR THROUGH MEDIAN BARRIER |
| 030 | PURSUIT | PURSUING OR ATTEMPTING TO STOP A VEHICLE |
| 031 | PASSING | PASSING SITUATION |
| 032 | PRKOFFRD | VEHICLE PARKED BEYOND CURB OR SHOULDER |
| 033 | CROS MED | VEHICLE CROSSED EARTH OR GRASS MEDIAN |
| 034 | X N/SGNL | CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT |
| 035 | X W/ SGNL | CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT |
| 036 | DIAGONAL | CROSSING AT INTERSECTION - DIAGONALLY |
| 037 | BTWN INT | CROSSING BETWEEN INTERSECTIONS |
| 038 | DISTRACT | DRIVER'S ATTENTION DISTRACTED |
| 039 | W/TRAF-S | WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC |
| 040 | A/TRAF-S | WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC |
| 041 | W/TRAF-P | WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC |
| 042 | A/TRAF-P | WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC |
| 043 | PLAYINRD | PLAYING IN STREET OR ROAD |
| 044 | PUSH MV | PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER |
| 045 | WORK ON | WORKING IN ROADWAY OR ALONG SHOULDER |
| 046 | W/ TRAFIC | NON-MOTORIST WALKING, RUNNING, RIDING, ETC. WITH TRAFFIC |
| 047 | A/ TRAFIC | NON-MOTORIST WALKING, RUNNING, RIDING, ETC. FACING TRAFFIC |
| 050 | LAY ON RD | STANDING OR LYING IN ROADWAY |
| 051 | ENT OFFRD | ENTERING / STARTING IN TRAFFIC LANE FROM OFF ROAD |
| 052 | MERGING | MERGING |

ACTION CODE TRANSLATION LIST

| ACTION CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|----------------|----------------------|------------------------|
| 055 | SPRAY | BLINDED BY WATER SPRAY |
| 088 | OTHER | OTHER ACTION |
| 099 | UNK | UNKNOWN ACTION |

CAUSE CODE TRANSLATION LIST

| CAUSE CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|------------|-------------------|--|
| 00 | NO CODE | NO CAUSE ASSOCIATED AT THIS LEVEL |
| 01 | TOO-FAST | TOO FAST FOR CONDITIONS (NOT EXCEED POSTED SPEED |
| 02 | NO-YIELD | DID NOT YIELD RIGHT-OF-WAY |
| 03 | PAS-STOP | PASSED STOP SIGN OR RED FLASHER |
| 04 | DIS SIG | DISREGARDED TRAFFIC SIGNAL |
| 05 | LEFT-CTR | DROVE LEFT OF CENTER ON TWO-WAY ROAD; STRADDLING |
| 06 | IMP-OVER | IMPROPER OVERTAKING |
| 07 | TOO-CLOS | FOLLOWED TOO CLOSELY |
| 08 | IMP-TURN | MADE IMPROPER TURN |
| 09 | DRINKING | ALCOHOL OR DRUG INVOLVED |
| 10 | OTHR-IMP | OTHER IMPROPER DRIVING |
| 11 | MECH-DEF | MECHANICAL DEFECT |
| 12 | OTHER | OTHER (NOT IMPROPER DRIVING) |
| 13 | IMP LN C | IMPROPER CHANGE OF TRAFFIC LANES |
| 14 | DIS TCD | DISREGARDED OTHER TRAFFIC CONTROL DEVICE |
| 15 | WRNG WAY | WRONG WAY ON ONE-WAY ROAD; WRONG SIDE DIVIDED RO |
| 16 | FATIGUE | DRIVER DROWSY/FATIGUED/SLEEPY |
| 17 | ILLNESS | PHYSICAL ILLNESS |
| 18 | IN RDWY | NON-MOTORIST ILLEGALLY IN ROADWAY |
| 19 | NT VISBL | NON-MOTORIST NOT VISIBLE; NON-REFLECTIVE CLOTHIN |
| 20 | IMP PKNG | VEHICLE IMPROPERLY PARKED |
| 21 | DEF STER | DEFECTIVE STEERING MECHANISM |
| 22 | DEF BRKE | INADEQUATE OR NO BRAKES |
| 24 | LOADSHFT | VEHICLE LOST LOAD OR LOAD SHIFTED |
| 25 | TIREFAIL | TIRE FAILURE |
| 26 | PHANTOM | PHANTOM / NON-CONTACT VEHICLE |
| 27 | INATTENT | INATTENTION |
| 28 | NM INATT | NON-MOTORIST INATTENTION |
| 29 | F AVOID | FAILED TO AVOID VEHICLE AHEAD |
| 30 | SPEED | DRIVING IN EXCESS OF POSTED SPEED |
| 31 | RACING | SPEED RACING (PER PAR) |
| 32 | CARELESS | CARELESS DRIVING (PER PAR) |
| 33 | RECKLESS | RECKLESS DRIVING (PER PAR) |
| 34 | AGGRESV | AGGRESSIVE DRIVING (PER PAR) |
| 35 | RD RAGE | ROAD RAGE (PER PAR) |
| 40 | VIEW OBS | VIEW OBSCURED |
| 50 | USED MDN | IMPROPER USE OF MEDIAN OR SHOULDER |
| 51 | FAIL LN | FAILED TO MAINTAIN LANE |
| 52 | OFF RD | RAN OFF ROAD |

COLLISION TYPE CODE TRANSLATION LIST

| COLL CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|-----------|-------------------|------------------------------|
| & | OTH | MISCELLANEOUS |
| - | BACK | BACKING |
| 0 | PED | PEDESTRIAN |
| 1 | ANGL | ANGLE |
| 2 | HEAD | HEAD-ON |
| 3 | REAR | REAR-END |
| 4 | SS-M | SIDESWIPE - MEETING |
| 5 | SS-O | SIDESWIPE - OVERTAKING |
| 6 | TURN | TURNING MOVEMENT |
| 7 | PARK | PARKING MANEUVER |
| 8 | NCOL | NON-COLLISION |
| 9 | FIX | FIXED OBJECT OR OTHER OBJECT |

CRASH TYPE CODE TRANSLATION LIST

| CRASH TYPE | SHORT DESCRIPTION | LONG DESCRIPTION |
|------------|-------------------|--|
| & | OVERTURN | OVERTURNED |
| 0 | NON-COLL | OTHER NON-COLLISION |
| 1 | OTH RDWY | MOTOR VEHICLE ON OTHER ROADWAY |
| 2 | PRKD MV | PARKED MOTOR VEHICLE |
| 3 | PED | PEDESTRIAN |
| 4 | TRAIN | RAILWAY TRAIN |
| 6 | BIKE | PEDALCYCLIST |
| 7 | ANIMAL | ANIMAL |
| 8 | FIX OBJ | FIXED OBJECT |
| 9 | OTH OBJ | OTHER OBJECT |
| A | ANGL-STP | ENTERING AT ANGLE - ONE VEHICLE STOPPED |
| B | ANGL-OTH | ENTERING AT ANGLE - ALL OTHERS |
| C | S-STRGHT | FROM SAME DIRECTION - BOTH GOING STRAIGHT |
| D | S-1TURN | FROM SAME DIRECTION - ONE TURN, ONE STRAIGHT |
| E | S-1STOP | FROM SAME DIRECTION - ONE STOPPED |
| F | S-OTHER | FROM SAME DIRECTION-ALL OTHERS, INCLUDING PARKING |
| G | O-STRGHT | FROM OPPOSITE DIRECTION - BOTH GOING STRAIGHT |
| H | O-1 L-TURN | FROM OPPOSITE DIRECTION-ONE LEFT TURN,ONE STRAIGHT |
| I | O-1STOP | FROM OPPOSITE DIRECTION - ONE STOPPED |
| J | O-OTHER | FROM OPPOSITE DIRECTION-ALL OTHERS INCL. PARKING |

DRIVER LICENSE CODE TRANSLATION LIST

| LIC CODE | SHORT DESC | LONG DESCRIPTION |
|----------|------------|---|
| 0 | NONE | NOT LICENSED (HAD NEVER BEEN LICENSED) |
| 1 | OR-Y | VALID OREGON LICENSE |
| 2 | OTH-Y | VALID LICENSE, OTHER STATE OR COUNTRY |
| 3 | SUSP | SUSPENDED/REVOKED |
| 4 | EXP | EXPIRED |
| 8 | N-VAL | OTHER NON-VALID LICENSE |
| 9 | UNK | UNKNOWN IF DRIVER WAS LICENSED AT TIME OF CRASH |

DRIVER RESIDENCE CODE TRANSLATION LIST

| RES CODE | SHORT DESC | LONG DESCRIPTION |
|----------|------------|--|
| 1 | OR<25 | OREGON RESIDENT WITHIN 25 MILE OF HOME |
| 2 | OR>25 | OREGON RESIDENT 25 OR MORE MILES FROM HOME |
| 3 | OR-? | OREGON RESIDENT - UNKNOWN DISTANCE FROM HOME |
| 4 | N-RES | NON-RESIDENT |
| 9 | UNK | UNKNOWN IF OREGON RESIDENT |

ERROR CODE TRANSLATION LIST

| ERROR CODE | SHORT DESCRIPTION | FULL DESCRIPTION |
|------------|-------------------|---|
| 000 | NONE | NO ERROR |
| 001 | WIDE TRN | WIDE TURN |
| 002 | CUT CORN | CUT CORNER ON TURN |
| 003 | FAIL TRN | FAILED TO OBEY MANDATORY TRAFFIC TURN SIGNAL, SIGN OR LANE MARKINGS |
| 004 | L IN TRF | LEFT TURN IN FRONT OF ONCOMING TRAFFIC |
| 005 | L PROHIB | LEFT TURN WHERE PROHIBITED |
| 006 | FRM WRNG | TURNUED FROM WRONG LANE |
| 007 | TO WRONG | TURNUED INTO WRONG LANE |
| 008 | ILLEG U | U-TURNUED ILLEGALLY |
| 009 | IMP STOP | IMPROPERLY STOPPED IN TRAFFIC LANE |
| 010 | IMP SIG | IMPROPER SIGNAL OR FAILURE TO SIGNAL |
| 011 | IMP BACK | BACKING IMPROPERLY (NOT PARKING) |
| 012 | IMP PARK | IMPROPERLY PARKED |
| 013 | UNPARK | IMPROPER START LEAVING PARKED POSITION |
| 014 | IMP STRT | IMPROPER START FROM STOPPED POSITION |
| 015 | IMP LGHT | IMPROPER OR NO LIGHTS (VEHICLE IN TRAFFIC) |
| 016 | INATTENT | INATTENTION (FAILURE TO DIM LIGHTS PRIOR TO 4/1/97) |
| 017 | UNSF VEH | DRIVING UNSAFE VEHICLE (NO OTHER ERROR APPARENT) |
| 018 | OTH PARK | ENTERING/EXITING PARKED POSITION W/ INSUFFICIENT CLEARANCE; OTHER IMPROPER PARKING MANEUVER |
| 019 | DIS DRIV | DISREGARDED OTHER DRIVER'S SIGNAL |
| 020 | DIS SGNL | DISREGARDED TRAFFIC SIGNAL |
| 021 | RAN STOP | DISREGARDED STOP SIGN OR FLASHING RED |
| 022 | DIS SIGN | DISREGARDED WARNING SIGN, FLARES OR FLASHING AMBER |
| 023 | DIS OFCR | DISREGARDED POLICE OFFICER OR FLAGMAN |
| 024 | DIS EMER | DISREGARDED SIREN OR WARNING OF EMERGENCY VEHICLE |
| 025 | DIS RR | DISREGARDED RR SIGNAL, RR SIGN, OR RR FLAGMAN |
| 026 | REAR-END | FAILED TO AVOID STOPPED OR PARKED VEHICLE AHEAD OTHER THAN SCHOOL BUS |
| 027 | BIKE ROW | DID NOT HAVE RIGHT-OF-WAY OVER PEDALCYCLIST |
| 028 | NO ROW | DID NOT HAVE RIGHT-OF-WAY |
| 029 | PED ROW | FAILED TO YIELD RIGHT-OF-WAY TO PEDESTRIAN |
| 030 | PAS CURV | PASSING ON A CURVE |
| 031 | PAS WRNG | PASSING ON THE WRONG SIDE |
| 032 | PAS TANG | PASSING ON STRAIGHT ROAD UNDER UNSAFE CONDITIONS |
| 033 | PAS X-WK | PASSED VEHICLE STOPPED AT CROSSWALK FOR PEDESTRIAN |
| 034 | PAS INTR | PASSING AT INTERSECTION |
| 035 | PAS HILL | PASSING ON CREST OF HILL |
| 036 | N/PAS ZN | PASSING IN "NO PASSING" ZONE |
| 037 | PAS TRAF | PASSING IN FRONT OF ONCOMING TRAFFIC |
| 038 | CUT-IN | CUTTING IN (TWO LANES - TWO WAY ONLY) |
| 039 | WRNGSIDE | DRIVING ON WRONG SIDE OF THE ROAD (2-WAY UNDIVIDED ROADWAYS) |

ERROR CODE TRANSLATION LIST

| ERROR CODE | SHORT DESCRIPTION | FULL DESCRIPTION |
|------------|-------------------|---|
| 040 | THRU MED | DRIVING THROUGH SAFETY ZONE OR OVER ISLAND |
| 041 | F/ST BUS | FAILED TO STOP FOR SCHOOL BUS |
| 042 | F/SLO MV | FAILED TO DECREASE SPEED FOR SLOWER MOVING VEHICLE |
| 043 | TOO CLOSE | FOLLOWING TOO CLOSELY (MUST BE ON OFFICER'S REPORT) |
| 044 | STRDL LN | STRADDLING OR DRIVING ON WRONG LANES |
| 045 | IMP CHG | IMPROPER CHANGE OF TRAFFIC LANES |
| 046 | WRNG WAY | WRONG WAY ON ONE-WAY ROADWAY; WRONG SIDE DIVIDED ROAD |
| 047 | BASCRULE | DRIVING TOO FAST FOR CONDITIONS (NOT EXCEEDING POSTED SPEED) |
| 048 | OPN DOOR | OPENED DOOR INTO ADJACENT TRAFFIC LANE |
| 049 | IMPEDING | IMPEDING TRAFFIC |
| 050 | SPEED | DRIVING IN EXCESS OF POSTED SPEED |
| 051 | RECKLESS | RECKLESS DRIVING (PER PAR) |
| 052 | CARELESS | CARELESS DRIVING (PER PAR) |
| 053 | RACING | SPEED RACING (PER PAR) |
| 054 | X N/SGNL | CROSSING AT INTERSECTION, NO TRAFFIC SIGNAL PRESENT |
| 055 | X W/SGNL | CROSSING AT INTERSECTION, TRAFFIC SIGNAL PRESENT |
| 056 | DIAGONAL | CROSSING AT INTERSECTION - DIAGONALLY |
| 057 | BTWN INT | CROSSING BETWEEN INTERSECTIONS |
| 059 | W/TRAF-S | WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC |
| 060 | A/TRAF-S | WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC |
| 061 | W/TRAF-P | WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC |
| 062 | A/TRAF-P | WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC |
| 063 | PLAYINRD | PLAYING IN STREET OR ROAD |
| 064 | PUSH MV | PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER |
| 065 | WORK IN RD | WORKING IN ROADWAY OR ALONG SHOULDER |
| 070 | LAY ON RD | STANDING OR LYING IN ROADWAY |
| 071 | NM IMP USE | IMPROPER USE OF TRAFFIC LANE BY NON-MOTORIST |
| 073 | ELUDING | ELUDING / ATTEMPT TO ELUDE |
| 079 | F NEG CURV | FAILED TO NEGOTIATE A CURVE |
| 080 | FAIL LN | FAILED TO MAINTAIN LANE |
| 081 | OFF RD | RAN OFF ROAD |
| 082 | NO CLEAR | DRIVER MISJUDGED CLEARANCE |
| 083 | OVRSTEER | OVER-CORRECTING |
| 084 | NOT USED | CODE NOT IN USE |
| 085 | OVRLOAD | OVERLOADING OR IMPROPER LOADING OF VEHICLE WITH CARGO OR PASSENGERS |
| 097 | UNA DIS TC | UNABLE TO DETERMINE WHICH DRIVER DISREGARDED TRAFFIC CONTROL DEVICE |

EVENT CODE TRANSLATION LIST

| EVENT CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|------------|-------------------|---|
| 001 | FEL/JUMP | OCCUPANT FELL, JUMPED OR WAS EJECTED FROM MOVING VEHICLE |
| 002 | INTERFER | PASSENGER INTERFERED WITH DRIVER |
| 003 | BUG INTF | ANIMAL OR INSECT IN VEHICLE INTERFERED WITH DRIVER |
| 004 | INDRCT PED | PEDESTRIAN INDIRECTLY INVOLVED (NOT STRUCK) |
| 005 | SUB-PED | "SUB-PED": PEDESTRIAN INJURED SUBSEQUENT TO COLLISION, ETC. |
| 006 | INDRCT BIK | PEDALCYCLIST INDIRECTLY INVOLVED (NOT STRUCK) |
| 007 | HITCHIKR | HITCHHIKER (SOLICITING A RIDE) |
| 008 | PSNGR TOW | PASSENGER OR NON-MOTORIST BEING TOWED OR PUSHED ON CONVEYANCE |
| 009 | ON/OFF V | GETTING ON/OFF STOPPED/PARKED VEHICLE (OCCUPANTS ONLY; MUST HAVE PHYSICAL CONTACT W/ VEHICLE) |
| 010 | SUB OTRN | OVERTURNED AFTER FIRST HARMFUL EVENT |
| 011 | MV PUSHD | VEHICLE BEING PUSHED |
| 012 | MV TOWED | VEHICLE TOWED OR HAD BEEN TOWING ANOTHER VEHICLE |
| 013 | FORCED | VEHICLE FORCED BY IMPACT INTO ANOTHER VEHICLE, PEDALCYCLIST OR PEDESTRIAN |
| 014 | SET MOTN | VEHICLE SET IN MOTION BY NON-DRIVER (CHILD RELEASED BRAKES, ETC.) |
| 015 | RR ROW | AT OR ON RAILROAD RIGHT-OF-WAY (NOT LIGHT RAIL) |
| 016 | LT RL ROW | AT OR ON LIGHT-RAIL RIGHT-OF-WAY |
| 017 | RR HIT V | TRAIN STRUCK VEHICLE |
| 018 | V HIT RR | VEHICLE STRUCK TRAIN |
| 019 | HIT RR CAR | VEHICLE STRUCK RAILROAD CAR ON ROADWAY |
| 020 | JACKKNIFE | JACKKNIFE; TRAILER OR TOWED VEHICLE STRUCK TOWING VEHICLE |
| 021 | TRL OTRN | TRAILER OR TOWED VEHICLE OVERTURNED |
| 022 | CN BROKE | TRAILER CONNECTION BROKE |
| 023 | DETACH TRL | DETACHED TRAILING OBJECT STRUCK OTHER VEHICLE, NON-MOTORIST, OR OBJECT |
| 024 | V DOOR OPN | VEHICLE DOOR OPENED INTO ADJACENT TRAFFIC LANE |
| 025 | WHEELOFF | WHEEL CAME OFF |
| 026 | HOOD UP | HOOD FLEW UP |
| 028 | LOAD SHIFT | LOST LOAD, LOAD MOVED OR SHIFTED |
| 029 | TIREFAIL | TIRE FAILURE |
| 030 | PET | PET: CAT, DOG AND SIMILAR |
| 031 | LVSTOCK | STOCK: COW, CALF, BULL, STEER, SHEEP, ETC. |
| 032 | HORSE | HORSE, MULE, OR DONKEY |
| 033 | HRSE&RID | HORSE AND RIDER |
| 034 | GAME | WILD ANIMAL, GAME (INCLUDES BIRDS; NOT DEER OR ELK) |
| 035 | DEER ELK | DEER OR ELK, WAPITI |
| 036 | ANML VEH | ANIMAL-DRAWN VEHICLE |
| 037 | CULVERT | CULVERT, OPEN LOW OR HIGH MANHOLE |
| 038 | ATENUATN | IMPACT ATTENUATOR |
| 039 | PK METER | PARKING METER |
| 040 | CURB | CURB (ALSO NARROW SIDEWALKS ON BRIDGES) |
| 041 | JIGGLE | JIGGLE BAR OR TRAFFIC SNAKE FOR CHANNELIZATION |
| 042 | GDRL END | LEADING EDGE OF GUARDRAIL |
| 043 | GARDRAIL | GUARD RAIL (NOT METAL MEDIAN BARRIER) |
| 044 | BARRIER | MEDIAN BARRIER (RAISED OR METAL) |
| 045 | WALL | RETAINING WALL OR TUNNEL WALL |
| 046 | BR RAIL | BRIDGE RAILING OR PARAPET (ON BRIDGE OR APPROACH) |
| 047 | BR ABUTMNT | BRIDGE ABUTMENT (INCLUDED "APPROACH END" THRU 2013) |
| 048 | BR COLMN | BRIDGE PILLAR OR COLUMN |
| 049 | BR GIRDR | BRIDGE GIRDER (HORIZONTAL BRIDGE STRUCTURE OVERHEAD) |
| 050 | ISLAND | TRAFFIC RAISED ISLAND |
| 051 | GORE | GORE |
| 052 | POLE UNK | POLE - TYPE UNKNOWN |
| 053 | POLE UTL | POLE - POWER OR TELEPHONE |
| 054 | ST LIGHT | POLE - STREET LIGHT ONLY |
| 055 | TRF SGNL | POLE - TRAFFIC SIGNAL AND PED SIGNAL ONLY |
| 056 | SGN BRDG | POLE - SIGN BRIDGE |
| 057 | STOPSIGN | STOP OR YIELD SIGN |

EVENT CODE TRANSLATION LIST

| EVENT CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|------------|-------------------|--|
| 058 | OTH SIGN | OTHER SIGN, INCLUDING STREET SIGNS |
| 059 | HYDRANT | HYDRANT |
| 060 | MARKER | DELINEATOR OR MARKER (REFLECTOR POSTS) |
| 061 | MAILBOX | MAILBOX |
| 062 | TREE | TREE, STUMP OR SHRUBS |
| 063 | VEG OHED | TREE BRANCH OR OTHER VEGETATION OVERHEAD, ETC. |
| 064 | WIRE/CBL | WIRE OR CABLE ACROSS OR OVER THE ROAD |
| 065 | TEMP SGN | TEMPORARY SIGN OR BARRICADE IN ROAD, ETC. |
| 066 | PERM SGN | PERMANENT SIGN OR BARRICADE IN/OFF ROAD |
| 067 | SLIDE | SLIDES, FALLEN OR FALLING ROCKS |
| 068 | FRGN OBJ | FOREIGN OBSTRUCTION/DEBRIS IN ROAD (NOT GRAVEL) |
| 069 | EQP WORK | EQUIPMENT WORKING IN/OFF ROAD |
| 070 | OTH EQP | OTHER EQUIPMENT IN OR OFF ROAD (INCLUDES PARKED TRAILER, BOAT) |
| 071 | MAIN EQP | WRECKER, STREET SWEEPER, SNOW PLOW OR SANDING EQUIPMENT |
| 072 | OTHER WALL | ROCK, BRICK OR OTHER SOLID WALL |
| 073 | IRRGL PVMT | OTHER BUMP (NOT SPEED BUMP), POTHOLE OR PAVEMENT IRREGULARITY (PER PAR) |
| 074 | OVERHD OBJ | OTHER OVERHEAD OBJECT (HIGHWAY SIGN, SIGNAL HEAD, ETC.); NOT BRIDGE |
| 075 | CAVE IN | BRIDGE OR ROAD CAVE IN |
| 076 | HI WATER | HIGH WATER |
| 077 | SNO BANK | SNOW BANK |
| 078 | LO-HI EDGE | LOW OR HIGH SHOULDER AT PAVEMENT EDGE |
| 079 | DITCH | CUT SLOPE OR DITCH EMBANKMENT |
| 080 | OBJ FRM MV | STRUCK BY ROCK OR OTHER OBJECT SET IN MOTION BY OTHER VEHICLE (INCL. LOST LOADS) |
| 081 | FLY-OBJ | STRUCK BY ROCK OR OTHER MOVING OR FLYING OBJECT (NOT SET IN MOTION BY VEHICLE) |
| 082 | VEH HID | VEHICLE OBSCURED VIEW |
| 083 | VEG HID | VEGETATION OBSCURED VIEW |
| 084 | BLDG HID | VIEW OBSCURED BY FENCE, SIGN, PHONE BOOTH, ETC. |
| 085 | WIND GUST | WIND GUST |
| 086 | IMMERSED | VEHICLE IMMERSED IN BODY OF WATER |
| 087 | FIRE/EXP | FIRE OR EXPLOSION |
| 088 | FENC/BLD | FENCE OR BUILDING, ETC. |
| 089 | OTHR CRASH | CRASH RELATED TO ANOTHER SEPARATE CRASH |
| 090 | TO 1 SIDE | TWO-WAY TRAFFIC ON DIVIDED ROADWAY ALL ROUTED TO ONE SIDE |
| 091 | BUILDING | BUILDING OR OTHER STRUCTURE |
| 092 | PHANTOM | OTHER (PHANTOM) NON-CONTACT VEHICLE |
| 093 | CELL PHONE | CELL PHONE (ON PAR OR DRIVER IN USE) |
| 094 | VIOL GDL | TEENAGE DRIVER IN VIOLATION OF GRADUATED LICENSE PGM |
| 095 | GUY WIRE | GUY WIRE |
| 096 | BERM | BERM (EARTHEN OR GRAVEL MOUND) |
| 097 | GRAVEL | GRAVEL IN ROADWAY |
| 098 | ABR EDGE | ABRUPT EDGE |
| 099 | CELL WTNSD | CELL PHONE USE WITNESSED BY OTHER PARTICIPANT |
| 100 | UNK FIXD | FIXED OBJECT, UNKNOWN TYPE. |
| 101 | OTHER OBJ | NON-FIXED OBJECT, OTHER OR UNKNOWN TYPE |
| 102 | TEXTING | TEXTING |
| 103 | WZ WORKER | WORK ZONE WORKER |
| 104 | ON VEHICLE | PASSENGER RIDING ON VEHICLE EXTERIOR |
| 105 | PEDAL PSGR | PASSENGER RIDING ON PEDALCYCLE |
| 106 | MAN WHLCHR | PEDESTRIAN IN NON-MOTORIZED WHEELCHAIR |
| 107 | MTR WHLCHR | PEDESTRIAN IN MOTORIZED WHEELCHAIR |
| 108 | OFFICER | LAW ENFORCEMENT / POLICE OFFICER |
| 109 | SUB-BIKE | "SUB-BIKE": PEDALCYCLIST INJURED SUBSEQUENT TO COLLISION, ETC. |
| 110 | N-MTR | NON-MOTORIST STRUCK VEHICLE |
| 111 | S CAR VS V | STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) STRUCK VEHICLE |
| 112 | V VS S CAR | VEHICLE STRUCK STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) |
| 113 | S CAR ROW | AT OR ON STREET CAR OR TROLLEY RIGHT-OF-WAY |

EVENT CODE TRANSLATION LIST

| EVENT CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|------------|-------------------|---|
| 114 | RR EQUIP | VEHICLE STRUCK RAILROAD EQUIPMENT (NOT TRAIN) ON TRACKS |
| 115 | DSTRCT GPS | DISTRACTED BY NAVIGATION SYSTEM OR GPS DEVICE |
| 116 | DSTRCT OTH | DISTRACTED BY OTHER ELECTRONIC DEVICE |
| 117 | RR GATE | RAIL CROSSING DROP-ARM GATE |
| 118 | EXPNSN JNT | EXPANSION JOINT |
| 119 | JERSEY BAR | JERSEY BARRIER |
| 120 | WIRE BAR | WIRE OR CABLE MEDIAN BARRIER |
| 121 | FENCE | FENCE |
| 123 | OBJ IN VEH | LOOSE OBJECT IN VEHICLE STRUCK OCCUPANT |
| 124 | SLIPPERY | SLIDING OR SWERVING DUE TO WET, ICY, SLIPPERY OR LOOSE SURFACE (NOT GRAVEL) |
| 125 | SHLDR | SHOULDER GAVE WAY |
| 126 | BOULDER | ROCK(S), BOULDER (NOT GRAVEL; NOT ROCK SLIDE) |
| 127 | LAND SLIDE | ROCK SLIDE OR LAND SLIDE |
| 128 | CURVE INV | CURVE PRESENT AT CRASH LOCATION |
| 129 | HILL INV | VERTICAL GRADE / HILL PRESENT AT CRASH LOCATION |
| 130 | CURVE HID | VIEW OBSCURED BY CURVE |
| 131 | HILL HID | VIEW OBSCURED BY VERTICAL GRADE / HILL |
| 132 | WINDOW HID | VIEW OBSCURED BY VEHICLE WINDOW CONDITIONS |
| 133 | SPRAY HID | VIEW OBSCURED BY WATER SPRAY |
| 134 | TORRENTIAL | TORRENTIAL RAIN (EXCEPTIONALLY HEAVY RAIN) |
| 135 | RAIL OCC | INJURED OCCUPANT OF RAILWAY TRAIN, LIGHT RAIL, STREET CAR OR CABLE CAR |

FUNCTIONAL CLASSIFICATION TRANSLATION LIST

| FUNC CLASS | DESCRIPTION |
|------------|---|
| 01 | RURAL PRINCIPAL ARTERIAL - INTERSTATE |
| 02 | RURAL PRINCIPAL ARTERIAL - OTHER |
| 06 | RURAL MINOR ARTERIAL |
| 07 | RURAL MAJOR COLLECTOR |
| 08 | RURAL MINOR COLLECTOR |
| 09 | RURAL LOCAL |
| 11 | URBAN PRINCIPAL ARTERIAL - INTERSTATE |
| 12 | URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXP |
| 14 | URBAN PRINCIPAL ARTERIAL - OTHER |
| 16 | URBAN MINOR ARTERIAL |
| 17 | URBAN MAJOR COLLECTOR |
| 18 | URBAN MINOR COLLECTOR |
| 19 | URBAN LOCAL |
| 78 | UNKNOWN RURAL SYSTEM |
| 79 | UNKNOWN RURAL NON-SYSTEM |
| 98 | UNKNOWN URBAN SYSTEM |
| 99 | UNKNOWN URBAN NON-SYSTEM |

HIGHWAY COMPONENT TRANSLATION LIST

| CODE | DESCRIPTION |
|------|------------------------|
| 0 | MAINLINE STATE HIGHWAY |
| 1 | COUplet |
| 3 | FRONTAGE ROAD |
| 6 | CONNECTION |
| 8 | HIGHWAY - OTHER |

INJURY SEVERITY CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|---------------------------------|
| 1 | KILL | FATAL INJURY (K) |
| 2 | INJA | SUSPECTED SERIOUS INJURY (A) |
| 3 | INJB | SUSPECTED MINOR INJURY (B) |
| 4 | INJC | POSSIBLE INJURY (C) |
| 5 | PRI | DIED PRIOR TO CRASH |
| 7 | NO<5 | NO INJURY - 0 TO 4 YEARS OF AGE |
| 9 | NONE | NO APPARENT INJURY (O) |

LIGHT CONDITION CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|-------------------------------|
| 0 | UNK | UNKNOWN |
| 1 | DAY | DAYLIGHT |
| 2 | DLIT | DARKNESS - WITH STREET LIGHTS |
| 3 | DARK | DARKNESS - NO STREET LIGHTS |
| 4 | DAWN | DAWN (TWILIGHT) |
| 5 | DUSK | DUSK (TWILIGHT) |

MEDIAN TYPE CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|------------------------------|
| 0 | NONE | NO MEDIAN |
| 1 | RSDMD | SOLID MEDIAN BARRIER |
| 2 | DIVMD | EARTH, GRASS OR PAVED MEDIAN |

MILEAGE TYPE CODE TRANSLATION LIST

| CODE | LONG DESCRIPTION |
|------|------------------|
| 0 | REGULAR MILEAGE |
| T | TEMPORARY |
| Y | SPUR |
| Z | OVERLAPPING |

MOVEMENT TYPE CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|---------------------|
| 0 | UNK | UNKNOWN |
| 1 | STRGHT | STRAIGHT AHEAD |
| 2 | TURN-R | TURNING RIGHT |
| 3 | TURN-L | TURNING LEFT |
| 4 | U-TURN | MAKING A U-TURN |
| 5 | BACK | BACKING |
| 6 | STOP | STOPPED IN TRAFFIC |
| 7 | PRKD-P | PARKED - PROPERLY |
| 8 | PRKD-I | PARKED - IMPROPERLY |
| 9 | PARKNG | PARKING MANEUVER |

NON-MOTORIST LOCATION CODE TRANSLATION LIST

| CODE | LONG DESCRIPTION |
|------|--|
| 00 | AT INTERSECTION - NOT IN ROADWAY |
| 01 | AT INTERSECTION - INSIDE CROSSWALK |
| 02 | AT INTERSECTION - IN ROADWAY, OUTSIDE CROSSWALK |
| 03 | AT INTERSECTION - IN ROADWAY, XWALK AVAIL UNKNWN |
| 04 | NOT AT INTERSECTION - IN ROADWAY |
| 05 | NOT AT INTERSECTION - ON SHOULDER |
| 06 | NOT AT INTERSECTION - ON MEDIAN |
| 07 | NOT AT INTERSECTION - WITHIN TRAFFIC RIGHT-OF-WAY |
| 08 | NOT AT INTERSECTION - IN BIKE PATH OR PARKING LANE |
| 09 | NOT-AT INTERSECTION - ON SIDEWALK |
| 10 | OUTSIDE TRAFFICWAY BOUNDARIES |
| 13 | AT INTERSECTION - IN BIKE LANE |
| 14 | NOT AT INTERSECTION - IN BIKE LANE |
| 15 | NOT AT INTERSECTION - INSIDE MID-BLOCK CROSSWALK |
| 16 | NOT AT INTERSECTION - IN PARKING LANE |
| 18 | OTHER, NOT IN ROADWAY |
| 99 | UNKNOWN LOCATION |

ROAD CHARACTER CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|--------------------------|
| 0 | UNK | UNKNOWN |
| 1 | INTER | INTERSECTION |
| 2 | ALLEY | DRIVEWAY OR ALLEY |
| 3 | STRGHT | STRAIGHT ROADWAY |
| 4 | TRANS | TRANSITION |
| 5 | CURVE | CURVE (HORIZONTAL CURVE) |
| 6 | OPENAC | OPEN ACCESS OR TURNOUT |
| 7 | GRADE | GRADE (VERTICAL CURVE) |
| 8 | BRIDGE | BRIDGE STRUCTURE |
| 9 | TUNNEL | TUNNEL |

PARTICIPANT TYPE CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|--|
| 0 | OCC | UNKNOWN OCCUPANT TYPE |
| 1 | DRVR | DRIVER |
| 2 | PSNG | PASSENGER |
| 3 | PED | PEDESTRIAN |
| 4 | CONV | PEDESTRIAN USING A PEDESTRIAN CONVEYAL |
| 5 | PTOW | PEDESTRIAN TOWING OR TRAILERING AN OB |
| 6 | BIKE | PEDALCYCLIST |
| 7 | BTOW | PEDALCYCLIST TOWING OR TRAILERING AN (|
| 8 | PRKD | OCCUPANT OF A PARKED MOTOR VEHICLE |
| 9 | OTHR | OTHER TYPE OF NON-MOTORIST |

TRAFFIC CONTROL DEVICE CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|--|
| 000 | NONE | NO CONTROL |
| 001 | TRF SIGNAL | TRAFFIC SIGNALS |
| 002 | FLASHBCN-R | FLASHING BEACON - RED (STOP) |
| 003 | FLASHBCN-A | FLASHING BEACON - AMBER (SLOW) |
| 004 | STOP SIGN | STOP SIGN |
| 005 | SLOW SIGN | SLOW SIGN |
| 006 | REG-SIGN | REGULATORY SIGN |
| 007 | YIELD | YIELD SIGN |
| 008 | WARNING | WARNING SIGN |
| 009 | CURVE | CURVE SIGN |
| 010 | SCHL X-ING | SCHOOL CROSSING SIGN OR SPECIAL SIGNAL |
| 011 | OFGR/FLAG | POLICE OFFICER, FLAGMAN - SCHOOL PATROL |
| 012 | BRDG-GATE | BRIDGE GATE - BARRIER |
| 013 | TEMP-BARR | TEMPORARY BARRIER |
| 014 | NO-PASS-ZN | NO PASSING ZONE |
| 015 | ONE-WAY | ONE-WAY STREET |
| 016 | CHANNEL | CHANNELIZATION |
| 017 | MEDIAN BAR | MEDIAN BARRIER |
| 018 | PILOT CAR | PILOT CAR |
| 019 | SP PED SIG | SPECIAL PEDESTRIAN SIGNAL |
| 020 | X-BUCK | CROSSBUCK |
| 021 | THR-GN-SIG | THROUGH GREEN ARROW OR SIGNAL |
| 022 | L-GRN-SIG | LEFT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL |
| 023 | R-GRN-SIG | RIGHT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL |
| 024 | WIGWAG | WIGWAG OR FLASHING LIGHTS W/O DROP-ARM GATE |
| 025 | X-BUCK WRN | CROSSBUCK AND ADVANCE WARNING |
| 026 | WW W/ GATE | FLASHING LIGHTS WITH DROP-ARM GATES |
| 027 | OVRHD SGNL | SUPPLEMENTAL OVERHEAD SIGNAL (RR XING ONLY) |
| 028 | SP RR STOP | SPECIAL RR STOP SIGN |
| 029 | ILUM GRD X | ILLUMINATED GRADE CROSSING |
| 037 | RAMP METER | METERED RAMPS |
| 038 | RUMBLE STR | RUMBLE STRIP |
| 040 | AUTO. FLAG | AUTOMATED FLAGGER ASSISTANCE DEVICE |
| 090 | L-TURN REF | LEFT TURN REFUGE (WHEN REFUGE IS INVOLVED) |
| 091 | R-TURN ALL | RIGHT TURN AT ALL TIMES SIGN, ETC. |
| 092 | EMR SGN/FL | EMERGENCY SIGNS OR FLARES |
| 093 | ACCEL LANE | ACCELERATION OR DECELERATION LANES |
| 094 | R-TURN PRO | RIGHT TURN PROHIBITED ON RED AFTER STOPPING |
| 095 | BUS STPSGN | BUS STOP SIGN AND RED LIGHTS |

VEHICLE TYPE CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|---|
| 00 | PDO | NOT COLLECTED FOR PDO CRASHES |
| 01 | PSNGR CAR | PASSENGER CAR, PICKUP, LIGHT DELIVERY, ETC. |
| 02 | BOBTAIL | TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL) |
| 03 | FARM TRCTR | FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT |
| 04 | SEMI TOW | TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW |
| 05 | TRUCK | TRUCK WITH NON-DETACHABLE BED, PANEL, ETC. |
| 06 | MOPED | MOPED, MINIBIKE, SEATED MOTOR SCOOTER, MOTOR BIKE |
| 07 | SCHL BUS | SCHOOL BUS (INCLUDES VAN) |
| 08 | OTH BUS | OTHER BUS |
| 09 | MTRCYCLE | MOTORCYCLE, DIRT BIKE |
| 10 | OTHER | OTHER: FORKLIFT, BACKHOE, ETC. |
| 11 | MOTRHOME | MOTORHOME |
| 12 | TROLLEY | MOTORIZED STREET CAR/TROLLEY (NO RAILS/WIRES) |
| 13 | ATV | ATV |
| 14 | MTRSCTR | MOTORIZED SCOOTER (STANDING) |
| 15 | SNOWMOBILE | SNOWMOBILE |
| 99 | UNKNOWN | UNKNOWN VEHICLE TYPE |

WEATHER CONDITION CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|------------------|
| 0 | UNK | UNKNOWN |
| 1 | CLR | CLEAR |
| 2 | CLD | CLOUDY |
| 3 | RAIN | RAIN |
| 4 | SLT | SLEET |
| 5 | FOG | FOG |
| 6 | SNOW | SNOW |
| 7 | DUST | DUST |
| 8 | SMOK | SMOKE |
| 9 | ASH | ASH |

CITY OF SHERWOOD, WASHINGTON COUNTY
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Intersectional Crashes at SW Sherwood Blvd & SW Langer Dr in Sherwood, OR.
January 1, 2016 through December 31, 2020

| SER# | E A / C O | DATE | FC | CITY STREET FIRST STREET SECOND STREET INTERSECTION SEQ # | RD CHAR DIRECT DIRECTION | INT-TYP (MEDIAN) LEGS (#LANES) | INT-REL TRAF- CONTL | OFF-RD RDNDBT DRVWY | WTHR SURF LIGHT | CRASH TYP COLL TYP SVRTY | SPCL USE TLR QTY V# OWNER | MOVE FROM TO | A S G E X RES | PED LICNS RES | PED LOC ERROR | ACTN EVENT | CAUSE |
|-------|-----------|------------|-------|--|--------------------------------|---|---------------------------|---------------------------|-----------------------|--------------------------------|---------------------------------------|--------------------|---------------------|---------------------|---------------------|---------------|-------|
| 01732 | N N N | 03/27/2017 | 16 | SW LANGER DR N SHERWOOD BLVD | INTER NE | 3-LEG | N | N CLR N DRY | S-STRGHT REAR | 01 NONE N/A | 9 STRGHT NE SW | | | | | 000 | 27,29 |
| | NO RPT | Mon 5P | 0 | 1 | 06 | 0 | | N DAY | PDO | PSNGR CAR | | 01 | DRVR NONE | 00 U UNK | 000 | 000 | 00 |
| | | LAT/LONG | | | | | | | | | | | | | | | 00 |
| | 45 | 21 | 55.76 | -122 | 50 | 49.13 | | | | | | | | | | | 00 |
| | | | | | | | | | | | | | | | | | UNK |
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| | | | | | | | | | | | | | | | | | 00 |
| 03885 | N N N | 07/27/2018 | 16 | SW LANGER DR N SHERWOOD BLVD | INTER NE | 3-LEG | N | N CLR N DRY | S-1STOP REAR | 01 NONE N/A | 9 STRGHT NE SW | | | | | 000 | 29 |
| | NO RPT | Fri 10A | 0 | 1 | 06 | 0 | | N DAY | PDO | PSNGR CAR | | 01 | DRVR NONE | 00 U UNK | 000 | 000 | 00 |
| | | LAT/LONG | | | | | | | | | | | | | | | 00 |
| | 45 | 21 | 55.76 | -122 | 50 | 49.13 | | | | | | | | | | | 00 |
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| | | | | | | | | | | | | | | | | | 00 |
| 04148 | N N N | 06/24/2016 | 16 | SW LANGER DR N SHERWOOD BLVD | INTER SE | 3-LEG | N | N CLD N DRY | O-1STOP BACK | 01 NONE N/A | 9 BACK NW SE | | | | | 000 | 10 |
| | CITY | Fri 1P | 0 | 1 | 06 | 0 | | N DAY | PDO | PSNGR CAR | | 01 | DRVR NONE | 00 U UNK | 000 | 000 | 00 |
| | | LAT/LONG | | | | | | | | | | | | | | | 00 |
| | 45 | 21 | 55.76 | -122 | 50 | 49.13 | | | | | | | | | | | 00 |
| | | | | | | | | | | | | | | | | | UNK |
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| 05627 | N N N N N | 09/13/2017 | 16 | SW LANGER DR N SHERWOOD BLVD | INTER SE | 3-LEG | N | N CLR N DRY | S-1STOP REAR | 01 NONE N/A | 9 STRGHT SE NW | | | | | 000 | 07 |
| | CITY | Wed 1P | 0 | 1 | 06 | 0 | | N DAY | PDO | PSNGR CAR | | 01 | DRVR NONE | 00 U UNK | 000 | 000 | 00 |
| | | LAT/LONG | | | | | | | | | | | | | | | 00 |
| | 45 | 21 | 55.76 | -122 | 50 | 49.13 | | | | | | | | | | | 00 |
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| 00769 | N N N | 02/03/2016 | 16 | SW LANGER DR N SHERWOOD BLVD | INTER SW | 3-LEG | N | Y RAIN N WET | ANGL-STP TURN | 01 NONE PRVTE | 0 TURN-L SE SW | | | | | 019 | 08 |
| | NO RPT | Wed 12P | 0 | 1 | 06 | 0 | | Y DAY | INJ | PSNGR CAR | | 01 | DRVR NONE | 31 F OR-Y | 002 | 000 | 08 |
| | | LAT/LONG | | | | | | | | | | | | | | | 00 |
| | 45 | 21 | 55.76 | -122 | 50 | 49.13 | | | | | | | | | | | OR<25 |
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OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF SHERWOOD, WASHINGTON COUNTY
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Intersectional Crashes at SW Sherwood Blvd & SW Langer Dr in Sherwood, OR.
January 1, 2016 through December 31, 2020

Table with columns: SER#, INVEST, UNLOC?, P, G, S, W, E, A, /, C, O, DATE, FC, CITY STREET, RD CHAR, INT-TYP, INT-REL, OFF-RD, WTHR, CRASH TYP, SPCL USE, MOVE, A, S, G, E, LICNS, PED, ACTN, EVENT, CAUSE. Rows include crash details for 02017, 05006, 02667, and 01351.

ACTION CODE TRANSLATION LIST

| ACTION CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|-------------|-------------------|---|
| 000 | NONE | NO ACTION OR NON-WARRANTED |
| 001 | SKIDDED | SKIDDED |
| 002 | ON/OFF V | GETTING ON OR OFF STOPPED OR PARKED VEHICLE |
| 003 | LOAD OVR | OVERHANGING LOAD STRUCK ANOTHER VEHICLE, ETC. |
| 006 | SLOW DN | SLOWED DOWN |
| 007 | AVOIDING | AVOIDING MANEUVER |
| 008 | PAR PARK | PARALLEL PARKING |
| 009 | ANG PARK | ANGLE PARKING |
| 010 | INTERFERE | PASSENGER INTERFERING WITH DRIVER |
| 011 | STOPPED | STOPPED IN TRAFFIC NOT WAITING TO MAKE A LEFT TURN |
| 012 | STP/L TRN | STOPPED BECAUSE OF LEFT TURN SIGNAL OR WAITING, ETC. |
| 013 | STP TURN | STOPPED WHILE EXECUTING A TURN |
| 014 | EMR V PKD | EMERGENCY VEHICLE LEGALLY PARKED IN THE ROADWAY |
| 015 | GO A/STOP | PROCEED AFTER STOPPING FOR A STOP SIGN/FLASHING RED. |
| 016 | TRN A/RED | TURNED ON RED AFTER STOPPING |
| 017 | LOSTCTRL | LOST CONTROL OF VEHICLE |
| 018 | EXIT DWY | ENTERING STREET OR HIGHWAY FROM ALLEY OR DRIVEWAY |
| 019 | ENTR DWY | ENTERING ALLEY OR DRIVEWAY FROM STREET OR HIGHWAY |
| 020 | STR ENTR | BEFORE ENTERING ROADWAY, STRUCK PEDESTRIAN, ETC. ON SIDEWALK OR SHOULDER |
| 021 | NO DRVR | CAR RAN AWAY - NO DRIVER |
| 022 | PREV COL | STRUCK, OR WAS STRUCK BY, VEHICLE OR PEDESTRIAN IN PRIOR COLLISION BEFORE ACC. STABILIZED |
| 023 | STALLED | VEHICLE STALLED OR DISABLED |
| 024 | DRVR DEAD | DEAD BY UNASSOCIATED CAUSE |
| 025 | FATIGUE | FATIGUED, SLEEPY, ASLEEP |
| 026 | SUN | DRIVER BLINDED BY SUN |
| 027 | HDLGHTS | DRIVER BLINDED BY HEADLIGHTS |
| 028 | ILLNESS | PHYSICALLY ILL |
| 029 | THRU MED | VEHICLE CROSSED, PLUNGED OVER, OR THROUGH MEDIAN BARRIER |
| 030 | PURSUIT | PURSuing OR ATTEMPTING TO STOP A VEHICLE |
| 031 | PASSING | PASSING SITUATION |
| 032 | PRKOFFRD | VEHICLE PARKED BEYOND CURB OR SHOULDER |
| 033 | CROS MED | VEHICLE CROSSED EARTH OR GRASS MEDIAN |
| 034 | X N/SGNL | CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT |
| 035 | X W/ SGNL | CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT |
| 036 | DIAGONAL | CROSSING AT INTERSECTION - DIAGONALLY |
| 037 | BTWN INT | CROSSING BETWEEN INTERSECTIONS |
| 038 | DISTRACT | DRIVER'S ATTENTION DISTRACTED |
| 039 | W/TRAF-S | WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC |
| 040 | A/TRAF-S | WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC |
| 041 | W/TRAF-P | WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC |
| 042 | A/TRAF-P | WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC |
| 043 | PLAYINRD | PLAYING IN STREET OR ROAD |
| 044 | PUSH MV | PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER |
| 045 | WORK ON | WORKING IN ROADWAY OR ALONG SHOULDER |
| 046 | W/ TRAFIC | NON-MOTORIST WALKING, RUNNING, RIDING, ETC. WITH TRAFFIC |
| 047 | A/ TRAFIC | NON-MOTORIST WALKING, RUNNING, RIDING, ETC. FACING TRAFFIC |
| 050 | LAY ON RD | STANDING OR LYING IN ROADWAY |
| 051 | ENT OFFRD | ENTERING / STARTING IN TRAFFIC LANE FROM OFF ROAD |
| 052 | MERGING | MERGING |

ACTION CODE TRANSLATION LIST

| ACTION CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|----------------|----------------------|------------------------|
| 055 | SPRAY | BLINDED BY WATER SPRAY |
| 088 | OTHER | OTHER ACTION |
| 099 | UNK | UNKNOWN ACTION |

CAUSE CODE TRANSLATION LIST

| CAUSE CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|------------|-------------------|--|
| 00 | NO CODE | NO CAUSE ASSOCIATED AT THIS LEVEL |
| 01 | TOO-FAST | TOO FAST FOR CONDITIONS (NOT EXCEED POSTED SPEED |
| 02 | NO-YIELD | DID NOT YIELD RIGHT-OF-WAY |
| 03 | PAS-STOP | PASSED STOP SIGN OR RED FLASHER |
| 04 | DIS SIG | DISREGARDED TRAFFIC SIGNAL |
| 05 | LEFT-CTR | DROVE LEFT OF CENTER ON TWO-WAY ROAD; STRADDLING |
| 06 | IMP-OVER | IMPROPER OVERTAKING |
| 07 | TOO-CLOS | FOLLOWED TOO CLOSELY |
| 08 | IMP-TURN | MADE IMPROPER TURN |
| 09 | DRINKING | ALCOHOL OR DRUG INVOLVED |
| 10 | OTHR-IMP | OTHER IMPROPER DRIVING |
| 11 | MECH-DEF | MECHANICAL DEFECT |
| 12 | OTHER | OTHER (NOT IMPROPER DRIVING) |
| 13 | IMP LN C | IMPROPER CHANGE OF TRAFFIC LANES |
| 14 | DIS TCD | DISREGARDED OTHER TRAFFIC CONTROL DEVICE |
| 15 | WRNG WAY | WRONG WAY ON ONE-WAY ROAD; WRONG SIDE DIVIDED RO |
| 16 | FATIGUE | DRIVER DROWSY/FATIGUED/SLEEPY |
| 17 | ILLNESS | PHYSICAL ILLNESS |
| 18 | IN RDWY | NON-MOTORIST ILLEGALLY IN ROADWAY |
| 19 | NT VISBL | NON-MOTORIST NOT VISIBLE; NON-REFLECTIVE CLOTHIN |
| 20 | IMP PKNG | VEHICLE IMPROPERLY PARKED |
| 21 | DEF STER | DEFECTIVE STEERING MECHANISM |
| 22 | DEF BRKE | INADEQUATE OR NO BRAKES |
| 24 | LOADSHFT | VEHICLE LOST LOAD OR LOAD SHIFTED |
| 25 | TIREFAIL | TIRE FAILURE |
| 26 | PHANTOM | PHANTOM / NON-CONTACT VEHICLE |
| 27 | INATTENT | INATTENTION |
| 28 | NM INATT | NON-MOTORIST INATTENTION |
| 29 | F AVOID | FAILED TO AVOID VEHICLE AHEAD |
| 30 | SPEED | DRIVING IN EXCESS OF POSTED SPEED |
| 31 | RACING | SPEED RACING (PER PAR) |
| 32 | CARELESS | CARELESS DRIVING (PER PAR) |
| 33 | RECKLESS | RECKLESS DRIVING (PER PAR) |
| 34 | AGGRESV | AGGRESSIVE DRIVING (PER PAR) |
| 35 | RD RAGE | ROAD RAGE (PER PAR) |
| 40 | VIEW OBS | VIEW OBSCURED |
| 50 | USED MDN | IMPROPER USE OF MEDIAN OR SHOULDER |
| 51 | FAIL LN | FAILED TO MAINTAIN LANE |
| 52 | OFF RD | RAN OFF ROAD |

COLLISION TYPE CODE TRANSLATION LIST

| COLL CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|-----------|-------------------|------------------------------|
| & | OTH | MISCELLANEOUS |
| - | BACK | BACKING |
| 0 | PED | PEDESTRIAN |
| 1 | ANGL | ANGLE |
| 2 | HEAD | HEAD-ON |
| 3 | REAR | REAR-END |
| 4 | SS-M | SIDESWIPE - MEETING |
| 5 | SS-O | SIDESWIPE - OVERTAKING |
| 6 | TURN | TURNING MOVEMENT |
| 7 | PARK | PARKING MANEUVER |
| 8 | NCOL | NON-COLLISION |
| 9 | FIX | FIXED OBJECT OR OTHER OBJECT |

CRASH TYPE CODE TRANSLATION LIST

| CRASH TYPE | SHORT DESCRIPTION | LONG DESCRIPTION |
|------------|-------------------|---|
| & | OVERTURN | OVERTURNED |
| 0 | NON-COLL | OTHER NON-COLLISION |
| 1 | OTH RDWY | MOTOR VEHICLE ON OTHER ROADWAY |
| 2 | PRKD MV | PARKED MOTOR VEHICLE |
| 3 | PED | PEDESTRIAN |
| 4 | TRAIN | RAILWAY TRAIN |
| 6 | BIKE | PEDALCYCLIST |
| 7 | ANIMAL | ANIMAL |
| 8 | FIX OBJ | FIXED OBJECT |
| 9 | OTH OBJ | OTHER OBJECT |
| A | ANGL-STP | ENTERING AT ANGLE - ONE VEHICLE STOPPED |
| B | ANGL-OTH | ENTERING AT ANGLE - ALL OTHERS |
| C | S-STRGHT | FROM SAME DIRECTION - BOTH GOING STRAIGHT |
| D | S-1TURN | FROM SAME DIRECTION - ONE TURN, ONE STRAIGHT |
| E | S-1STOP | FROM SAME DIRECTION - ONE STOPPED |
| F | S-OTHER | FROM SAME DIRECTION-ALL OTHERS, INCLUDING PARKING |
| G | O-STRGHT | FROM OPPOSITE DIRECTION - BOTH GOING STRAIGHT |
| H | O-1 L-TURN | FROM OPPOSITE DIRECTION-ONE LEFT TURN, ONE STRAIGHT |
| I | O-1STOP | FROM OPPOSITE DIRECTION - ONE STOPPED |
| J | O-OTHER | FROM OPPOSITE DIRECTION-ALL OTHERS INCL. PARKING |

DRIVER LICENSE CODE TRANSLATION LIST

| LIC CODE | SHORT DESC | LONG DESCRIPTION |
|----------|------------|---|
| 0 | NONE | NOT LICENSED (HAD NEVER BEEN LICENSED) |
| 1 | OR-Y | VALID OREGON LICENSE |
| 2 | OTH-Y | VALID LICENSE, OTHER STATE OR COUNTRY |
| 3 | SUSP | SUSPENDED/REVOKED |
| 4 | EXP | EXPIRED |
| 8 | N-VAL | OTHER NON-VALID LICENSE |
| 9 | UNK | UNKNOWN IF DRIVER WAS LICENSED AT TIME OF CRASH |

DRIVER RESIDENCE CODE TRANSLATION LIST

| RES CODE | SHORT DESC | LONG DESCRIPTION |
|----------|------------|--|
| 1 | OR<25 | OREGON RESIDENT WITHIN 25 MILE OF HOME |
| 2 | OR>25 | OREGON RESIDENT 25 OR MORE MILES FROM HOME |
| 3 | OR-? | OREGON RESIDENT - UNKNOWN DISTANCE FROM HOME |
| 4 | N-RES | NON-RESIDENT |
| 9 | UNK | UNKNOWN IF OREGON RESIDENT |

ERROR CODE TRANSLATION LIST

| ERROR CODE | SHORT DESCRIPTION | FULL DESCRIPTION |
|------------|-------------------|---|
| 000 | NONE | NO ERROR |
| 001 | WIDE TRN | WIDE TURN |
| 002 | CUT CORN | CUT CORNER ON TURN |
| 003 | FAIL TRN | FAILED TO OBEY MANDATORY TRAFFIC TURN SIGNAL, SIGN OR LANE MARKINGS |
| 004 | L IN TRF | LEFT TURN IN FRONT OF ONCOMING TRAFFIC |
| 005 | L PROHIB | LEFT TURN WHERE PROHIBITED |
| 006 | FRM WRNG | TURNUED FROM WRONG LANE |
| 007 | TO WRONG | TURNUED INTO WRONG LANE |
| 008 | ILLEG U | U-TURNUED ILLEGALLY |
| 009 | IMP STOP | IMPROPERLY STOPPED IN TRAFFIC LANE |
| 010 | IMP SIG | IMPROPER SIGNAL OR FAILURE TO SIGNAL |
| 011 | IMP BACK | BACKING IMPROPERLY (NOT PARKING) |
| 012 | IMP PARK | IMPROPERLY PARKED |
| 013 | UNPARK | IMPROPER START LEAVING PARKED POSITION |
| 014 | IMP STRT | IMPROPER START FROM STOPPED POSITION |
| 015 | IMP LGHT | IMPROPER OR NO LIGHTS (VEHICLE IN TRAFFIC) |
| 016 | INATTENT | INATTENTION (FAILURE TO DIM LIGHTS PRIOR TO 4/1/97) |
| 017 | UNSF VEH | DRIVING UNSAFE VEHICLE (NO OTHER ERROR APPARENT) |
| 018 | OTH PARK | ENTERING/EXITING PARKED POSITION W/ INSUFFICIENT CLEARANCE; OTHER IMPROPER PARKING MANEUVER |
| 019 | DIS DRIV | DISREGARDED OTHER DRIVER'S SIGNAL |
| 020 | DIS SGNL | DISREGARDED TRAFFIC SIGNAL |
| 021 | RAN STOP | DISREGARDED STOP SIGN OR FLASHING RED |
| 022 | DIS SIGN | DISREGARDED WARNING SIGN, FLARES OR FLASHING AMBER |
| 023 | DIS OFCR | DISREGARDED POLICE OFFICER OR FLAGMAN |
| 024 | DIS EMER | DISREGARDED SIREN OR WARNING OF EMERGENCY VEHICLE |
| 025 | DIS RR | DISREGARDED RR SIGNAL, RR SIGN, OR RR FLAGMAN |
| 026 | REAR-END | FAILED TO AVOID STOPPED OR PARKED VEHICLE AHEAD OTHER THAN SCHOOL BUS |
| 027 | BIKE ROW | DID NOT HAVE RIGHT-OF-WAY OVER PEDALCYCLIST |
| 028 | NO ROW | DID NOT HAVE RIGHT-OF-WAY |
| 029 | PED ROW | FAILED TO YIELD RIGHT-OF-WAY TO PEDESTRIAN |
| 030 | PAS CURV | PASSING ON A CURVE |
| 031 | PAS WRNG | PASSING ON THE WRONG SIDE |
| 032 | PAS TANG | PASSING ON STRAIGHT ROAD UNDER UNSAFE CONDITIONS |
| 033 | PAS X-WK | PASSED VEHICLE STOPPED AT CROSSWALK FOR PEDESTRIAN |
| 034 | PAS INTR | PASSING AT INTERSECTION |
| 035 | PAS HILL | PASSING ON CREST OF HILL |
| 036 | N/PAS ZN | PASSING IN "NO PASSING" ZONE |
| 037 | PAS TRAF | PASSING IN FRONT OF ONCOMING TRAFFIC |
| 038 | CUT-IN | CUTTING IN (TWO LANES - TWO WAY ONLY) |
| 039 | WRNGSIDE | DRIVING ON WRONG SIDE OF THE ROAD (2-WAY UNDIVIDED ROADWAYS) |

ERROR CODE TRANSLATION LIST

| ERROR CODE | SHORT DESCRIPTION | FULL DESCRIPTION |
|------------|-------------------|---|
| 040 | THRU MED | DRIVING THROUGH SAFETY ZONE OR OVER ISLAND |
| 041 | F/ST BUS | FAILED TO STOP FOR SCHOOL BUS |
| 042 | F/SLO MV | FAILED TO DECREASE SPEED FOR SLOWER MOVING VEHICLE |
| 043 | TOO CLOSE | FOLLOWING TOO CLOSELY (MUST BE ON OFFICER'S REPORT) |
| 044 | STRDL LN | STRADDLING OR DRIVING ON WRONG LANES |
| 045 | IMP CHG | IMPROPER CHANGE OF TRAFFIC LANES |
| 046 | WRNG WAY | WRONG WAY ON ONE-WAY ROADWAY; WRONG SIDE DIVIDED ROAD |
| 047 | BASCRULE | DRIVING TOO FAST FOR CONDITIONS (NOT EXCEEDING POSTED SPEED) |
| 048 | OPN DOOR | OPENED DOOR INTO ADJACENT TRAFFIC LANE |
| 049 | IMPEDING | IMPEDING TRAFFIC |
| 050 | SPEED | DRIVING IN EXCESS OF POSTED SPEED |
| 051 | RECKLESS | RECKLESS DRIVING (PER PAR) |
| 052 | CARELESS | CARELESS DRIVING (PER PAR) |
| 053 | RACING | SPEED RACING (PER PAR) |
| 054 | X N/SGNL | CROSSING AT INTERSECTION, NO TRAFFIC SIGNAL PRESENT |
| 055 | X W/SGNL | CROSSING AT INTERSECTION, TRAFFIC SIGNAL PRESENT |
| 056 | DIAGONAL | CROSSING AT INTERSECTION - DIAGONALLY |
| 057 | BTWN INT | CROSSING BETWEEN INTERSECTIONS |
| 059 | W/TRAF-S | WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC |
| 060 | A/TRAF-S | WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC |
| 061 | W/TRAF-P | WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC |
| 062 | A/TRAF-P | WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC |
| 063 | PLAYINRD | PLAYING IN STREET OR ROAD |
| 064 | PUSH MV | PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER |
| 065 | WORK IN RD | WORKING IN ROADWAY OR ALONG SHOULDER |
| 070 | LAY ON RD | STANDING OR LYING IN ROADWAY |
| 071 | NM IMP USE | IMPROPER USE OF TRAFFIC LANE BY NON-MOTORIST |
| 073 | ELUDING | ELUDING / ATTEMPT TO ELUDE |
| 079 | F NEG CURV | FAILED TO NEGOTIATE A CURVE |
| 080 | FAIL LN | FAILED TO MAINTAIN LANE |
| 081 | OFF RD | RAN OFF ROAD |
| 082 | NO CLEAR | DRIVER MISJUDGED CLEARANCE |
| 083 | OVRSTEER | OVER-CORRECTING |
| 084 | NOT USED | CODE NOT IN USE |
| 085 | OVRLOAD | OVERLOADING OR IMPROPER LOADING OF VEHICLE WITH CARGO OR PASSENGERS |
| 097 | UNA DIS TC | UNABLE TO DETERMINE WHICH DRIVER DISREGARDED TRAFFIC CONTROL DEVICE |

EVENT CODE TRANSLATION LIST

| EVENT CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|------------|-------------------|---|
| 001 | FEL/JUMP | OCCUPANT FELL, JUMPED OR WAS EJECTED FROM MOVING VEHICLE |
| 002 | INTERFER | PASSENGER INTERFERED WITH DRIVER |
| 003 | BUG INTF | ANIMAL OR INSECT IN VEHICLE INTERFERED WITH DRIVER |
| 004 | INDRCT PED | PEDESTRIAN INDIRECTLY INVOLVED (NOT STRUCK) |
| 005 | SUB-PED | "SUB-PED": PEDESTRIAN INJURED SUBSEQUENT TO COLLISION, ETC. |
| 006 | INDRCT BIK | PEDALCYCLIST INDIRECTLY INVOLVED (NOT STRUCK) |
| 007 | HITCHIKR | HITCHHIKER (SOLICITING A RIDE) |
| 008 | PSNGR TOW | PASSENGER OR NON-MOTORIST BEING TOWED OR PUSHED ON CONVEYANCE |
| 009 | ON/OFF V | GETTING ON/OFF STOPPED/PARKED VEHICLE (OCCUPANTS ONLY; MUST HAVE PHYSICAL CONTACT W/ VEHICLE) |
| 010 | SUB OTRN | OVERTURNED AFTER FIRST HARMFUL EVENT |
| 011 | MV PUSHD | VEHICLE BEING PUSHED |
| 012 | MV TOWED | VEHICLE TOWED OR HAD BEEN TOWING ANOTHER VEHICLE |
| 013 | FORCED | VEHICLE FORCED BY IMPACT INTO ANOTHER VEHICLE, PEDALCYCLIST OR PEDESTRIAN |
| 014 | SET MOTN | VEHICLE SET IN MOTION BY NON-DRIVER (CHILD RELEASED BRAKES, ETC.) |
| 015 | RR ROW | AT OR ON RAILROAD RIGHT-OF-WAY (NOT LIGHT RAIL) |
| 016 | LT RL ROW | AT OR ON LIGHT-RAIL RIGHT-OF-WAY |
| 017 | RR HIT V | TRAIN STRUCK VEHICLE |
| 018 | V HIT RR | VEHICLE STRUCK TRAIN |
| 019 | HIT RR CAR | VEHICLE STRUCK RAILROAD CAR ON ROADWAY |
| 020 | JACKKNIFE | JACKKNIFE; TRAILER OR TOWED VEHICLE STRUCK TOWING VEHICLE |
| 021 | TRL OTRN | TRAILER OR TOWED VEHICLE OVERTURNED |
| 022 | CN BROKE | TRAILER CONNECTION BROKE |
| 023 | DETACH TRL | DETACHED TRAILING OBJECT STRUCK OTHER VEHICLE, NON-MOTORIST, OR OBJECT |
| 024 | V DOOR OPN | VEHICLE DOOR OPENED INTO ADJACENT TRAFFIC LANE |
| 025 | WHEELOFF | WHEEL CAME OFF |
| 026 | HOOD UP | HOOD FLEW UP |
| 028 | LOAD SHIFT | LOST LOAD, LOAD MOVED OR SHIFTED |
| 029 | TIREFAIL | TIRE FAILURE |
| 030 | PET | PET: CAT, DOG AND SIMILAR |
| 031 | LVSTOCK | STOCK: COW, CALF, BULL, STEER, SHEEP, ETC. |
| 032 | HORSE | HORSE, MULE, OR DONKEY |
| 033 | HRSE&RID | HORSE AND RIDER |
| 034 | GAME | WILD ANIMAL, GAME (INCLUDES BIRDS; NOT DEER OR ELK) |
| 035 | DEER ELK | DEER OR ELK, WAPITI |
| 036 | ANML VEH | ANIMAL-DRAWN VEHICLE |
| 037 | CULVERT | CULVERT, OPEN LOW OR HIGH MANHOLE |
| 038 | ATENUATN | IMPACT ATTENUATOR |
| 039 | PK METER | PARKING METER |
| 040 | CURB | CURB (ALSO NARROW SIDEWALKS ON BRIDGES) |
| 041 | JIGGLE | JIGGLE BAR OR TRAFFIC SNAKE FOR CHANNELIZATION |
| 042 | GDRL END | LEADING EDGE OF GUARDRAIL |
| 043 | GARDRAIL | GUARD RAIL (NOT METAL MEDIAN BARRIER) |
| 044 | BARRIER | MEDIAN BARRIER (RAISED OR METAL) |
| 045 | WALL | RETAINING WALL OR TUNNEL WALL |
| 046 | BR RAIL | BRIDGE RAILING OR PARAPET (ON BRIDGE OR APPROACH) |
| 047 | BR ABUTMNT | BRIDGE ABUTMENT (INCLUDED "APPROACH END" THRU 2013) |
| 048 | BR COLMN | BRIDGE PILLAR OR COLUMN |
| 049 | BR GIRDR | BRIDGE GIRDER (HORIZONTAL BRIDGE STRUCTURE OVERHEAD) |
| 050 | ISLAND | TRAFFIC RAISED ISLAND |
| 051 | GORE | GORE |
| 052 | POLE UNK | POLE - TYPE UNKNOWN |
| 053 | POLE UTL | POLE - POWER OR TELEPHONE |
| 054 | ST LIGHT | POLE - STREET LIGHT ONLY |
| 055 | TRF SGNL | POLE - TRAFFIC SIGNAL AND PED SIGNAL ONLY |
| 056 | SGN BRDG | POLE - SIGN BRIDGE |
| 057 | STOPSIGN | STOP OR YIELD SIGN |

EVENT CODE TRANSLATION LIST

| EVENT CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|------------|-------------------|--|
| 058 | OTH SIGN | OTHER SIGN, INCLUDING STREET SIGNS |
| 059 | HYDRANT | HYDRANT |
| 060 | MARKER | DELINEATOR OR MARKER (REFLECTOR POSTS) |
| 061 | MAILBOX | MAILBOX |
| 062 | TREE | TREE, STUMP OR SHRUBS |
| 063 | VEG OHED | TREE BRANCH OR OTHER VEGETATION OVERHEAD, ETC. |
| 064 | WIRE/CBL | WIRE OR CABLE ACROSS OR OVER THE ROAD |
| 065 | TEMP SGN | TEMPORARY SIGN OR BARRICADE IN ROAD, ETC. |
| 066 | PERM SGN | PERMANENT SIGN OR BARRICADE IN/OFF ROAD |
| 067 | SLIDE | SLIDES, FALLEN OR FALLING ROCKS |
| 068 | FRGN OBJ | FOREIGN OBSTRUCTION/DEBRIS IN ROAD (NOT GRAVEL) |
| 069 | EQP WORK | EQUIPMENT WORKING IN/OFF ROAD |
| 070 | OTH EQP | OTHER EQUIPMENT IN OR OFF ROAD (INCLUDES PARKED TRAILER, BOAT) |
| 071 | MAIN EQP | WRECKER, STREET SWEEPER, SNOW PLOW OR SANDING EQUIPMENT |
| 072 | OTHER WALL | ROCK, BRICK OR OTHER SOLID WALL |
| 073 | IRRGL PVMT | OTHER BUMP (NOT SPEED BUMP), POTHOLE OR PAVEMENT IRREGULARITY (PER PAR) |
| 074 | OVERHD OBJ | OTHER OVERHEAD OBJECT (HIGHWAY SIGN, SIGNAL HEAD, ETC.); NOT BRIDGE |
| 075 | CAVE IN | BRIDGE OR ROAD CAVE IN |
| 076 | HI WATER | HIGH WATER |
| 077 | SNO BANK | SNOW BANK |
| 078 | LO-HI EDGE | LOW OR HIGH SHOULDER AT PAVEMENT EDGE |
| 079 | DITCH | CUT SLOPE OR DITCH EMBANKMENT |
| 080 | OBJ FRM MV | STRUCK BY ROCK OR OTHER OBJECT SET IN MOTION BY OTHER VEHICLE (INCL. LOST LOADS) |
| 081 | FLY-OBJ | STRUCK BY ROCK OR OTHER MOVING OR FLYING OBJECT (NOT SET IN MOTION BY VEHICLE) |
| 082 | VEH HID | VEHICLE OBSCURED VIEW |
| 083 | VEG HID | VEGETATION OBSCURED VIEW |
| 084 | BLDG HID | VIEW OBSCURED BY FENCE, SIGN, PHONE BOOTH, ETC. |
| 085 | WIND GUST | WIND GUST |
| 086 | IMMERSED | VEHICLE IMMERSED IN BODY OF WATER |
| 087 | FIRE/EXP | FIRE OR EXPLOSION |
| 088 | FENC/BLD | FENCE OR BUILDING, ETC. |
| 089 | OTHR CRASH | CRASH RELATED TO ANOTHER SEPARATE CRASH |
| 090 | TO 1 SIDE | TWO-WAY TRAFFIC ON DIVIDED ROADWAY ALL ROUTED TO ONE SIDE |
| 091 | BUILDING | BUILDING OR OTHER STRUCTURE |
| 092 | PHANTOM | OTHER (PHANTOM) NON-CONTACT VEHICLE |
| 093 | CELL PHONE | CELL PHONE (ON PAR OR DRIVER IN USE) |
| 094 | VIOL GDL | TEENAGE DRIVER IN VIOLATION OF GRADUATED LICENSE PGM |
| 095 | GUY WIRE | GUY WIRE |
| 096 | BERM | BERM (EARTHEN OR GRAVEL MOUND) |
| 097 | GRAVEL | GRAVEL IN ROADWAY |
| 098 | ABR EDGE | ABRUPT EDGE |
| 099 | CELL WTNSD | CELL PHONE USE WITNESSED BY OTHER PARTICIPANT |
| 100 | UNK FIXD | FIXED OBJECT, UNKNOWN TYPE. |
| 101 | OTHER OBJ | NON-FIXED OBJECT, OTHER OR UNKNOWN TYPE |
| 102 | TEXTING | TEXTING |
| 103 | WZ WORKER | WORK ZONE WORKER |
| 104 | ON VEHICLE | PASSENGER RIDING ON VEHICLE EXTERIOR |
| 105 | PEDAL PSGR | PASSENGER RIDING ON PEDALCYCLE |
| 106 | MAN WHLCHR | PEDESTRIAN IN NON-MOTORIZED WHEELCHAIR |
| 107 | MTR WHLCHR | PEDESTRIAN IN MOTORIZED WHEELCHAIR |
| 108 | OFFICER | LAW ENFORCEMENT / POLICE OFFICER |
| 109 | SUB-BIKE | "SUB-BIKE": PEDALCYCLIST INJURED SUBSEQUENT TO COLLISION, ETC. |
| 110 | N-MTR | NON-MOTORIST STRUCK VEHICLE |
| 111 | S CAR VS V | STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) STRUCK VEHICLE |
| 112 | V VS S CAR | VEHICLE STRUCK STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) |
| 113 | S CAR ROW | AT OR ON STREET CAR OR TROLLEY RIGHT-OF-WAY |

EVENT CODE TRANSLATION LIST

| EVENT CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|------------|-------------------|---|
| 114 | RR EQUIP | VEHICLE STRUCK RAILROAD EQUIPMENT (NOT TRAIN) ON TRACKS |
| 115 | DSTRCT GPS | DISTRACTED BY NAVIGATION SYSTEM OR GPS DEVICE |
| 116 | DSTRCT OTH | DISTRACTED BY OTHER ELECTRONIC DEVICE |
| 117 | RR GATE | RAIL CROSSING DROP-ARM GATE |
| 118 | EXPNSN JNT | EXPANSION JOINT |
| 119 | JERSEY BAR | JERSEY BARRIER |
| 120 | WIRE BAR | WIRE OR CABLE MEDIAN BARRIER |
| 121 | FENCE | FENCE |
| 123 | OBJ IN VEH | LOOSE OBJECT IN VEHICLE STRUCK OCCUPANT |
| 124 | SLIPPERY | SLIDING OR SWERVING DUE TO WET, ICY, SLIPPERY OR LOOSE SURFACE (NOT GRAVEL) |
| 125 | SHLDR | SHOULDER GAVE WAY |
| 126 | BOULDER | ROCK(S), BOULDER (NOT GRAVEL; NOT ROCK SLIDE) |
| 127 | LAND SLIDE | ROCK SLIDE OR LAND SLIDE |
| 128 | CURVE INV | CURVE PRESENT AT CRASH LOCATION |
| 129 | HILL INV | VERTICAL GRADE / HILL PRESENT AT CRASH LOCATION |
| 130 | CURVE HID | VIEW OBSCURED BY CURVE |
| 131 | HILL HID | VIEW OBSCURED BY VERTICAL GRADE / HILL |
| 132 | WINDOW HID | VIEW OBSCURED BY VEHICLE WINDOW CONDITIONS |
| 133 | SPRAY HID | VIEW OBSCURED BY WATER SPRAY |
| 134 | TORRENTIAL | TORRENTIAL RAIN (EXCEPTIONALLY HEAVY RAIN) |
| 135 | RAIL OCC | INJURED OCCUPANT OF RAILWAY TRAIN, LIGHT RAIL, STREET CAR OR CABLE CAR |

FUNCTIONAL CLASSIFICATION TRANSLATION LIST

| FUNC CLASS | DESCRIPTION |
|------------|---|
| 01 | RURAL PRINCIPAL ARTERIAL - INTERSTATE |
| 02 | RURAL PRINCIPAL ARTERIAL - OTHER |
| 06 | RURAL MINOR ARTERIAL |
| 07 | RURAL MAJOR COLLECTOR |
| 08 | RURAL MINOR COLLECTOR |
| 09 | RURAL LOCAL |
| 11 | URBAN PRINCIPAL ARTERIAL - INTERSTATE |
| 12 | URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXP |
| 14 | URBAN PRINCIPAL ARTERIAL - OTHER |
| 16 | URBAN MINOR ARTERIAL |
| 17 | URBAN MAJOR COLLECTOR |
| 18 | URBAN MINOR COLLECTOR |
| 19 | URBAN LOCAL |
| 78 | UNKNOWN RURAL SYSTEM |
| 79 | UNKNOWN RURAL NON-SYSTEM |
| 98 | UNKNOWN URBAN SYSTEM |
| 99 | UNKNOWN URBAN NON-SYSTEM |

HIGHWAY COMPONENT TRANSLATION LIST

| CODE | DESCRIPTION |
|------|------------------------|
| 0 | MAINLINE STATE HIGHWAY |
| 1 | COUplet |
| 3 | FRONTAGE ROAD |
| 6 | CONNECTION |
| 8 | HIGHWAY - OTHER |

INJURY SEVERITY CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|---------------------------------|
| 1 | KILL | FATAL INJURY (K) |
| 2 | INJA | SUSPECTED SERIOUS INJURY (A) |
| 3 | INJB | SUSPECTED MINOR INJURY (B) |
| 4 | INJC | POSSIBLE INJURY (C) |
| 5 | PRI | DIED PRIOR TO CRASH |
| 7 | NO<5 | NO INJURY - 0 TO 4 YEARS OF AGE |
| 9 | NONE | NO APPARENT INJURY (O) |

LIGHT CONDITION CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|-------------------------------|
| 0 | UNK | UNKNOWN |
| 1 | DAY | DAYLIGHT |
| 2 | DLIT | DARKNESS - WITH STREET LIGHTS |
| 3 | DARK | DARKNESS - NO STREET LIGHTS |
| 4 | DAWN | DAWN (TWILIGHT) |
| 5 | DUSK | DUSK (TWILIGHT) |

MEDIAN TYPE CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|------------------------------|
| 0 | NONE | NO MEDIAN |
| 1 | RSDMD | SOLID MEDIAN BARRIER |
| 2 | DIVMD | EARTH, GRASS OR PAVED MEDIAN |

MILEAGE TYPE CODE TRANSLATION LIST

| CODE | LONG DESCRIPTION |
|------|------------------|
| 0 | REGULAR MILEAGE |
| T | TEMPORARY |
| Y | SPUR |
| Z | OVERLAPPING |

MOVEMENT TYPE CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|---------------------|
| 0 | UNK | UNKNOWN |
| 1 | STRGHT | STRAIGHT AHEAD |
| 2 | TURN-R | TURNING RIGHT |
| 3 | TURN-L | TURNING LEFT |
| 4 | U-TURN | MAKING A U-TURN |
| 5 | BACK | BACKING |
| 6 | STOP | STOPPED IN TRAFFIC |
| 7 | PRKD-P | PARKED - PROPERLY |
| 8 | PRKD-I | PARKED - IMPROPERLY |
| 9 | PARKNG | PARKING MANEUVER |

NON-MOTORIST LOCATION CODE TRANSLATION LIST

| CODE | LONG DESCRIPTION |
|------|--|
| 00 | AT INTERSECTION - NOT IN ROADWAY |
| 01 | AT INTERSECTION - INSIDE CROSSWALK |
| 02 | AT INTERSECTION - IN ROADWAY, OUTSIDE CROSSWALK |
| 03 | AT INTERSECTION - IN ROADWAY, XWALK AVAIL UNKNWN |
| 04 | NOT AT INTERSECTION - IN ROADWAY |
| 05 | NOT AT INTERSECTION - ON SHOULDER |
| 06 | NOT AT INTERSECTION - ON MEDIAN |
| 07 | NOT AT INTERSECTION - WITHIN TRAFFIC RIGHT-OF-WAY |
| 08 | NOT AT INTERSECTION - IN BIKE PATH OR PARKING LANE |
| 09 | NOT-AT INTERSECTION - ON SIDEWALK |
| 10 | OUTSIDE TRAFFICWAY BOUNDARIES |
| 13 | AT INTERSECTION - IN BIKE LANE |
| 14 | NOT AT INTERSECTION - IN BIKE LANE |
| 15 | NOT AT INTERSECTION - INSIDE MID-BLOCK CROSSWALK |
| 16 | NOT AT INTERSECTION - IN PARKING LANE |
| 18 | OTHER, NOT IN ROADWAY |
| 99 | UNKNOWN LOCATION |

ROAD CHARACTER CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|--------------------------|
| 0 | UNK | UNKNOWN |
| 1 | INTER | INTERSECTION |
| 2 | ALLEY | DRIVEWAY OR ALLEY |
| 3 | STRGHT | STRAIGHT ROADWAY |
| 4 | TRANS | TRANSITION |
| 5 | CURVE | CURVE (HORIZONTAL CURVE) |
| 6 | OPENAC | OPEN ACCESS OR TURNOUT |
| 7 | GRADE | GRADE (VERTICAL CURVE) |
| 8 | BRIDGE | BRIDGE STRUCTURE |
| 9 | TUNNEL | TUNNEL |

PARTICIPANT TYPE CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|--|
| 0 | OCC | UNKNOWN OCCUPANT TYPE |
| 1 | DRVR | DRIVER |
| 2 | PSNG | PASSENGER |
| 3 | PED | PEDESTRIAN |
| 4 | CONV | PEDESTRIAN USING A PEDESTRIAN CONVEYAL |
| 5 | PTOW | PEDESTRIAN TOWING OR TRAILERING AN OB |
| 6 | BIKE | PEDALCYCLIST |
| 7 | BTOW | PEDALCYCLIST TOWING OR TRAILERING AN (|
| 8 | PRKD | OCCUPANT OF A PARKED MOTOR VEHICLE |
| 9 | OTHR | OTHER TYPE OF NON-MOTORIST |

TRAFFIC CONTROL DEVICE CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|--|
| 000 | NONE | NO CONTROL |
| 001 | TRF SIGNAL | TRAFFIC SIGNALS |
| 002 | FLASHBCN-R | FLASHING BEACON - RED (STOP) |
| 003 | FLASHBCN-A | FLASHING BEACON - AMBER (SLOW) |
| 004 | STOP SIGN | STOP SIGN |
| 005 | SLOW SIGN | SLOW SIGN |
| 006 | REG-SIGN | REGULATORY SIGN |
| 007 | YIELD | YIELD SIGN |
| 008 | WARNING | WARNING SIGN |
| 009 | CURVE | CURVE SIGN |
| 010 | SCHL X-ING | SCHOOL CROSSING SIGN OR SPECIAL SIGNAL |
| 011 | OFGR/FLAG | POLICE OFFICER, FLAGMAN - SCHOOL PATROL |
| 012 | BRDG-GATE | BRIDGE GATE - BARRIER |
| 013 | TEMP-BARR | TEMPORARY BARRIER |
| 014 | NO-PASS-ZN | NO PASSING ZONE |
| 015 | ONE-WAY | ONE-WAY STREET |
| 016 | CHANNEL | CHANNELIZATION |
| 017 | MEDIAN BAR | MEDIAN BARRIER |
| 018 | PILOT CAR | PILOT CAR |
| 019 | SP PED SIG | SPECIAL PEDESTRIAN SIGNAL |
| 020 | X-BUCK | CROSSBUCK |
| 021 | THR-GN-SIG | THROUGH GREEN ARROW OR SIGNAL |
| 022 | L-GRN-SIG | LEFT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL |
| 023 | R-GRN-SIG | RIGHT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL |
| 024 | WIGWAG | WIGWAG OR FLASHING LIGHTS W/O DROP-ARM GATE |
| 025 | X-BUCK WRN | CROSSBUCK AND ADVANCE WARNING |
| 026 | WW W/ GATE | FLASHING LIGHTS WITH DROP-ARM GATES |
| 027 | OVRHD SGNL | SUPPLEMENTAL OVERHEAD SIGNAL (RR XING ONLY) |
| 028 | SP RR STOP | SPECIAL RR STOP SIGN |
| 029 | ILUM GRD X | ILLUMINATED GRADE CROSSING |
| 037 | RAMP METER | METERED RAMPS |
| 038 | RUMBLE STR | RUMBLE STRIP |
| 040 | AUTO. FLAG | AUTOMATED FLAGGER ASSISTANCE DEVICE |
| 090 | L-TURN REF | LEFT TURN REFUGE (WHEN REFUGE IS INVOLVED) |
| 091 | R-TURN ALL | RIGHT TURN AT ALL TIMES SIGN, ETC. |
| 092 | EMR SGN/FL | EMERGENCY SIGNS OR FLARES |
| 093 | ACCEL LANE | ACCELERATION OR DECELERATION LANES |
| 094 | R-TURN PRO | RIGHT TURN PROHIBITED ON RED AFTER STOPPING |
| 095 | BUS STPSGN | BUS STOP SIGN AND RED LIGHTS |

VEHICLE TYPE CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|---|
| 00 | PDO | NOT COLLECTED FOR PDO CRASHES |
| 01 | PSNGR CAR | PASSENGER CAR, PICKUP, LIGHT DELIVERY, ETC. |
| 02 | BOBTAIL | TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL) |
| 03 | FARM TRCTR | FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT |
| 04 | SEMI TOW | TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW |
| 05 | TRUCK | TRUCK WITH NON-DETACHABLE BED, PANEL, ETC. |
| 06 | MOPED | MOPED, MINIBIKE, SEATED MOTOR SCOOTER, MOTOR BIKE |
| 07 | SCHL BUS | SCHOOL BUS (INCLUDES VAN) |
| 08 | OTH BUS | OTHER BUS |
| 09 | MTRCYCLE | MOTORCYCLE, DIRT BIKE |
| 10 | OTHER | OTHER: FORKLIFT, BACKHOE, ETC. |
| 11 | MOTRHOME | MOTORHOME |
| 12 | TROLLEY | MOTORIZED STREET CAR/TROLLEY (NO RAILS/WIRES) |
| 13 | ATV | ATV |
| 14 | MTRSCTR | MOTORIZED SCOOTER (STANDING) |
| 15 | SNOWMOBILE | SNOWMOBILE |
| 99 | UNKNOWN | UNKNOWN VEHICLE TYPE |

WEATHER CONDITION CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|------------------|
| 0 | UNK | UNKNOWN |
| 1 | CLR | CLEAR |
| 2 | CLD | CLOUDY |
| 3 | RAIN | RAIN |
| 4 | SLT | SLEET |
| 5 | FOG | FOG |
| 6 | SNOW | SNOW |
| 7 | DUST | DUST |
| 8 | SMOK | SMOKE |
| 9 | ASH | ASH |

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

091 PACIFIC HIGHWAY WEST Crashes on OR-99W, Pacific Hwy (#091), within 250 Ft NE of Intersection with SW Sherwood Blvd/SW Edy Rd in Sherwood, OR.
January 1, 2016 through December 31, 2020

Table with columns: SER#, INVEST, UNLOC?, E, L, M, H, R, DATE, COUNTY, CITY, URBAN AREA, RD#, FC, CONN #, INT-TYP, RD CHAR, INT-REL, OFFRD, WTHR, CRASH TYP, COLL TYP, SVRTY, SPCL USE, TRLR QTY, MOVE, FROM, PRTC, INJ, SVRTY, A, S, G, E, LICNS, PED, LOC, ERROR, ACTN, EVENT, CAUSE. Rows include crash data for 80940, 06847, 03444, 08176, and 04666.

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
 TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
 CONTINUOUS SYSTEM CRASH LISTING

091 PACIFIC HIGHWAY WEST

Crashes on OR-99W, Pacific Hwy (#091), within 250 Ft NE of Intersection with SW Sherwood Blvd/SW Edy Rd in Sherwood, OR.
 January 1, 2016 through December 31, 2020

| SER# | E A / C O DATE | COUNTY | RD# FC | CONN # | INT-TYP | SPCL USE | MOVE | A S | ACTN | EVENT | CAUSE | | | | | | | | |
|--------|--------------------------|-------------|--------------|-------------------|---------|----------|------------|-------------|-----------|----------|-----------|---------------|-----------|------|-------|-------|-------|-------|-------|
| INVEST | E L M H R DAY/TIME | CITY | CMPT/MLG | FIRST STREET | RD CHAR | (MEDIAN) | INT-REL | OFFRD WTHR | CRASH TYP | TRLR QTY | MOVE | PRTC INJ | G E LICNS | PED | LOC | ERROR | ACTN | EVENT | CAUSE |
| UNLOC? | D C J L K LAT/LONG | URBAN AREA | MILEPNT | SECOND STREET | DIRECT | LEGS | TRAF- | RNDBT SURF | COLL TYP | OWNER | FROM | P# TYPE SVRTY | E X RES | LOC | ERROR | ACTN | EVENT | CAUSE | |
| | | | LRS | INTERSECTION SEQ# | LOCTN | (#LANES) | CNTL | DRVWY LIGHT | SVRTY | V# | VEH TYPE | TO | | | | | | | |
| | | | | | | | | | | 02 | NONE | 0 | STOP | | | | | | |
| | | | | | | | | | | | PRVTE | NE SW | | | | | | 011 | 00 |
| | | | | | | | | | | | PSNGR CAR | | 01 | DRVR | INJC | 59 | F | OR-Y | 000 |
| | | | | | | | | | | | | | | | | | | 000 | 00 |
| | | | | | | | | | | | | | | | | | | | OR<25 |
| 06884 | N N N N N 10/31/2017 | WASHINGTON | 1 14 | | STRGHT | | Y | N CLR | S-1STOP | 01 | NONE | 9 | STRGHT | | | | | | 07 |
| CITY | N Tue 3P | SHERWOOD | MN 0 | SW PACIFIC HY 99W | NE | (RSDMD) | TRF SIGNAL | N DRY | REAR | | N/A | | NE SW | | | | | | 000 |
| | | PORTLAND UA | 15.32 | SW EDY RD | 03 | | | N DAY | PDO | | PSNGR CAR | | 01 | DRVR | NONE | 00 | U | UNK | 000 |
| No | 45 22 0.79 -122 50 53.00 | | 009100100S00 | | 1 | (06) | | | | | | | | | | | | | 000 |
| | | | | | | | | | | | | | | | | | | | UNK |
| | | | | | | | | | | 02 | NONE | 9 | STOP | | | | | | 011 |
| | | | | | | | | | | | N/A | | NE SW | | | | | | 000 |
| | | | | | | | | | | | PSNGR CAR | | 01 | DRVR | NONE | 00 | U | UNK | 000 |
| | | | | | | | | | | | | | | | | | | | UNK |
| 03901 | N N N 07/10/2018 | WASHINGTON | 1 14 | | STRGHT | | Y | N CLR | S-1STOP | 01 | NONE | 9 | STRGHT | | | | | | 29 |
| NO RPT | N Tue 3P | SHERWOOD | MN 0 | SW PACIFIC HY 99W | NE | (RSDMD) | TRF SIGNAL | N DRY | REAR | | N/A | | NE SW | | | | | | 000 |
| | | PORTLAND UA | 15.32 | SW EDY RD | 03 | | | N DAY | PDO | | PSNGR CAR | | 01 | DRVR | NONE | 00 | U | UNK | 000 |
| No | 45 22 0.79 -122 50 53.00 | | 009100100S00 | | 1 | (06) | | | | | | | | | | | | | 000 |
| | | | | | | | | | | | | | | | | | | | UNK |
| | | | | | | | | | | 02 | NONE | 9 | STOP | | | | | | 011 |
| | | | | | | | | | | | N/A | | NE SW | | | | | | 000 |
| | | | | | | | | | | | PSNGR CAR | | 01 | DRVR | NONE | 00 | U | UNK | 000 |
| | | | | | | | | | | | | | | | | | | | UNK |
| 04610 | N N N 12/14/2020 | WASHINGTON | 1 14 | | STRGHT | | N | N CLR | S-1STOP | 01 | NONE | 0 | STRGHT | | | | | 013 | 29 |
| CITY | N Mon 5P | SHERWOOD | MN 0 | EDY RD | NE | (RSDMD) | UNKNOWN | N WET | REAR | | PRVTE | | NE SW | | | | | | 000 |
| | | PORTLAND UA | 15.32 | PACIFIC HY 99W | 04 | | | N DLIT | INJ | | PSNGR CAR | | 01 | DRVR | INJB | 17 | F | OR-Y | 026 |
| No | 45 22 0.80 -122 50 52.97 | | 009100100S00 | | 2 | (04) | | | | | | | | | | | | | 000 |
| | | | | | | | | | | | | | | | | | | | OR<25 |
| | | | | | | | | | | 02 | NONE | 0 | STOP | | | | | | 011 |
| | | | | | | | | | | | PRVTE | NE SW | | | | | | | 000 |
| | | | | | | | | | | | PSNGR CAR | | 01 | DRVR | INJB | 44 | F | OR-Y | 000 |
| | | | | | | | | | | | | | | | | | | | OR<25 |
| 02629 | N N N 04/21/2016 | WASHINGTON | 1 14 | | STRGHT | | Y | N CLR | S-STRGHT | 01 | NONE | 9 | STRGHT | | | | | | 13 |
| NONE | N Thu 5P | SHERWOOD | MN 0 | SW PACIFIC HY 99W | NE | (RSDMD) | UNKNOWN | N DRY | SS-O | | N/A | | NE SW | | | | | | 000 |
| | | PORTLAND UA | 15.32 | SW EDY RD | 06 | | | N DAY | PDO | | PSNGR CAR | | 01 | DRVR | NONE | 00 | U | UNK | 000 |
| No | 45 22 0.79 -122 50 53.00 | | 009100100S00 | | 1 | (07) | | | | | | | | | | | | | 000 |
| | | | | | | | | | | | | | | | | | | | UNK |
| | | | | | | | | | | 02 | NONE | 9 | STRGHT | | | | | | 000 |
| | | | | | | | | | | | N/A | | NE SW | | | | | | 000 |
| | | | | | | | | | | | PSNGR CAR | | 01 | DRVR | NONE | 00 | U | UNK | 000 |
| | | | | | | | | | | | | | | | | | | | UNK |

ACTION CODE TRANSLATION LIST

| ACTION CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|--------------------|--------------------------|---|
| 000 | NONE | NO ACTION OR NON-WARRANTED |
| 001 | SKIDDED | SKIDDED |
| 002 | ON/OFF V | GETTING ON OR OFF STOPPED OR PARKED VEHICLE |
| 003 | LOAD OVR | OVERHANGING LOAD STRUCK ANOTHER VEHICLE, ETC. |
| 006 | SLOW DN | SLOWED DOWN |
| 007 | AVOIDING | AVOIDING MANEUVER |
| 008 | PAR PARK | PARALLEL PARKING |
| 009 | ANG PARK | ANGLE PARKING |
| 010 | INTERFERE | PASSENGER INTERFERING WITH DRIVER |
| 011 | STOPPED | STOPPED IN TRAFFIC NOT WAITING TO MAKE A LEFT TURN |
| 012 | STP/L TRN | STOPPED BECAUSE OF LEFT TURN SIGNAL OR WAITING, ETC. |
| 013 | STP TURN | STOPPED WHILE EXECUTING A TURN |
| 014 | EMR V PKD | EMERGENCY VEHICLE LEGALLY PARKED IN THE ROADWAY |
| 015 | GO A/STOP | PROCEED AFTER STOPPING FOR A STOP SIGN/FLASHING RED. |
| 016 | TRN A/RED | TURNED ON RED AFTER STOPPING |
| 017 | LOSTCTRL | LOST CONTROL OF VEHICLE |
| 018 | EXIT DWY | ENTERING STREET OR HIGHWAY FROM ALLEY OR DRIVEWAY |
| 019 | ENTR DWY | ENTERING ALLEY OR DRIVEWAY FROM STREET OR HIGHWAY |
| 020 | STR ENTR | BEFORE ENTERING ROADWAY, STRUCK PEDESTRIAN, ETC. ON SIDEWALK OR SHOULDER |
| 021 | NO DRVR | CAR RAN AWAY - NO DRIVER |
| 022 | PREV COL | STRUCK, OR WAS STRUCK BY, VEHICLE OR PEDESTRIAN IN PRIOR COLLISION BEFORE ACC. STABILIZED |
| 023 | STALLED | VEHICLE STALLED OR DISABLED |
| 024 | DRVR DEAD | DEAD BY UNASSOCIATED CAUSE |
| 025 | FATIGUE | FATIGUED, SLEEPY, ASLEEP |
| 026 | SUN | DRIVER BLINDED BY SUN |
| 027 | HDLGHTS | DRIVER BLINDED BY HEADLIGHTS |
| 028 | ILLNESS | PHYSICALLY ILL |
| 029 | THRU MED | VEHICLE CROSSED, PLUNGED OVER, OR THROUGH MEDIAN BARRIER |
| 030 | PURSUIT | PURSUING OR ATTEMPTING TO STOP A VEHICLE |
| 031 | PASSING | PASSING SITUATION |
| 032 | PRKOFFRD | VEHICLE PARKED BEYOND CURB OR SHOULDER |
| 033 | CROS MED | VEHICLE CROSSED EARTH OR GRASS MEDIAN |
| 034 | X N/SGNL | CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT |
| 035 | X W/ SGNL | CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT |
| 036 | DIAGONAL | CROSSING AT INTERSECTION - DIAGONALLY |
| 037 | BTWN INT | CROSSING BETWEEN INTERSECTIONS |
| 038 | DISTRACT | DRIVER'S ATTENTION DISTRACTED |
| 039 | W/TRAF-S | WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC |
| 040 | A/TRAF-S | WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC |
| 041 | W/TRAF-P | WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC |
| 042 | A/TRAF-P | WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC |
| 043 | PLAYINRD | PLAYING IN STREET OR ROAD |
| 044 | PUSH MV | PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER |
| 045 | WORK ON | WORKING IN ROADWAY OR ALONG SHOULDER |
| 046 | W/ TRAFIC | NON-MOTORIST WALKING, RUNNING, RIDING, ETC. WITH TRAFFIC |
| 047 | A/ TRAFIC | NON-MOTORIST WALKING, RUNNING, RIDING, ETC. FACING TRAFFIC |
| 050 | LAY ON RD | STANDING OR LYING IN ROADWAY |
| 051 | ENT OFFRD | ENTERING / STARTING IN TRAFFIC LANE FROM OFF ROAD |
| 052 | MERGING | MERGING |

ACTION CODE TRANSLATION LIST

| ACTION CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|----------------|----------------------|------------------------|
| 055 | SPRAY | BLINDED BY WATER SPRAY |
| 088 | OTHER | OTHER ACTION |
| 099 | UNK | UNKNOWN ACTION |

CAUSE CODE TRANSLATION LIST

| CAUSE CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|------------|-------------------|--|
| 00 | NO CODE | NO CAUSE ASSOCIATED AT THIS LEVEL |
| 01 | TOO-FAST | TOO FAST FOR CONDITIONS (NOT EXCEED POSTED SPEED |
| 02 | NO-YIELD | DID NOT YIELD RIGHT-OF-WAY |
| 03 | PAS-STOP | PASSED STOP SIGN OR RED FLASHER |
| 04 | DIS SIG | DISREGARDED TRAFFIC SIGNAL |
| 05 | LEFT-CTR | DROVE LEFT OF CENTER ON TWO-WAY ROAD; STRADDLING |
| 06 | IMP-OVER | IMPROPER OVERTAKING |
| 07 | TOO-CLOS | FOLLOWED TOO CLOSELY |
| 08 | IMP-TURN | MADE IMPROPER TURN |
| 09 | DRINKING | ALCOHOL OR DRUG INVOLVED |
| 10 | OTHR-IMP | OTHER IMPROPER DRIVING |
| 11 | MECH-DEF | MECHANICAL DEFECT |
| 12 | OTHER | OTHER (NOT IMPROPER DRIVING) |
| 13 | IMP LN C | IMPROPER CHANGE OF TRAFFIC LANES |
| 14 | DIS TCD | DISREGARDED OTHER TRAFFIC CONTROL DEVICE |
| 15 | WRNG WAY | WRONG WAY ON ONE-WAY ROAD; WRONG SIDE DIVIDED RO |
| 16 | FATIGUE | DRIVER DROWSY/FATIGUED/SLEEPY |
| 17 | ILLNESS | PHYSICAL ILLNESS |
| 18 | IN RDWY | NON-MOTORIST ILLEGALLY IN ROADWAY |
| 19 | NT VISBL | NON-MOTORIST NOT VISIBLE; NON-REFLECTIVE CLOTHIN |
| 20 | IMP PKNG | VEHICLE IMPROPERLY PARKED |
| 21 | DEF STER | DEFECTIVE STEERING MECHANISM |
| 22 | DEF BRKE | INADEQUATE OR NO BRAKES |
| 24 | LOADSHFT | VEHICLE LOST LOAD OR LOAD SHIFTED |
| 25 | TIREFAIL | TIRE FAILURE |
| 26 | PHANTOM | PHANTOM / NON-CONTACT VEHICLE |
| 27 | INATTENT | INATTENTION |
| 28 | NM INATT | NON-MOTORIST INATTENTION |
| 29 | F AVOID | FAILED TO AVOID VEHICLE AHEAD |
| 30 | SPEED | DRIVING IN EXCESS OF POSTED SPEED |
| 31 | RACING | SPEED RACING (PER PAR) |
| 32 | CARELESS | CARELESS DRIVING (PER PAR) |
| 33 | RECKLESS | RECKLESS DRIVING (PER PAR) |
| 34 | AGGRESV | AGGRESSIVE DRIVING (PER PAR) |
| 35 | RD RAGE | ROAD RAGE (PER PAR) |
| 40 | VIEW OBS | VIEW OBSCURED |
| 50 | USED MDN | IMPROPER USE OF MEDIAN OR SHOULDER |
| 51 | FAIL LN | FAILED TO MAINTAIN LANE |
| 52 | OFF RD | RAN OFF ROAD |

COLLISION TYPE CODE TRANSLATION LIST

| COLL CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|-----------|-------------------|------------------------------|
| & | OTH | MISCELLANEOUS |
| - | BACK | BACKING |
| 0 | PED | PEDESTRIAN |
| 1 | ANGL | ANGLE |
| 2 | HEAD | HEAD-ON |
| 3 | REAR | REAR-END |
| 4 | SS-M | SIDESWIPE - MEETING |
| 5 | SS-O | SIDESWIPE - OVERTAKING |
| 6 | TURN | TURNING MOVEMENT |
| 7 | PARK | PARKING MANEUVER |
| 8 | NCOL | NON-COLLISION |
| 9 | FIX | FIXED OBJECT OR OTHER OBJECT |

CRASH TYPE CODE TRANSLATION LIST

| CRASH TYPE | SHORT DESCRIPTION | LONG DESCRIPTION |
|------------|-------------------|---|
| & | OVERTURN | OVERTURNED |
| 0 | NON-COLL | OTHER NON-COLLISION |
| 1 | OTH RDWY | MOTOR VEHICLE ON OTHER ROADWAY |
| 2 | PRKD MV | PARKED MOTOR VEHICLE |
| 3 | PED | PEDESTRIAN |
| 4 | TRAIN | RAILWAY TRAIN |
| 6 | BIKE | PEDALCYCLIST |
| 7 | ANIMAL | ANIMAL |
| 8 | FIX OBJ | FIXED OBJECT |
| 9 | OTH OBJ | OTHER OBJECT |
| A | ANGL-STP | ENTERING AT ANGLE - ONE VEHICLE STOPPED |
| B | ANGL-OTH | ENTERING AT ANGLE - ALL OTHERS |
| C | S-STRGHT | FROM SAME DIRECTION - BOTH GOING STRAIGHT |
| D | S-1TURN | FROM SAME DIRECTION - ONE TURN, ONE STRAIGHT |
| E | S-1STOP | FROM SAME DIRECTION - ONE STOPPED |
| F | S-OTHER | FROM SAME DIRECTION-ALL OTHERS, INCLUDING PARKING |
| G | O-STRGHT | FROM OPPOSITE DIRECTION - BOTH GOING STRAIGHT |
| H | O-1 L-TURN | FROM OPPOSITE DIRECTION-ONE LEFT TURN, ONE STRAIGHT |
| I | O-1STOP | FROM OPPOSITE DIRECTION - ONE STOPPED |
| J | O-OTHER | FROM OPPOSITE DIRECTION-ALL OTHERS INCL. PARKING |

DRIVER LICENSE CODE TRANSLATION LIST

| LIC CODE | SHORT DESC | LONG DESCRIPTION |
|----------|------------|---|
| 0 | NONE | NOT LICENSED (HAD NEVER BEEN LICENSED) |
| 1 | OR-Y | VALID OREGON LICENSE |
| 2 | OTH-Y | VALID LICENSE, OTHER STATE OR COUNTRY |
| 3 | SUSP | SUSPENDED/REVOKED |
| 4 | EXP | EXPIRED |
| 8 | N-VAL | OTHER NON-VALID LICENSE |
| 9 | UNK | UNKNOWN IF DRIVER WAS LICENSED AT TIME OF CRASH |

DRIVER RESIDENCE CODE TRANSLATION LIST

| RES CODE | SHORT DESC | LONG DESCRIPTION |
|----------|------------|--|
| 1 | OR<25 | OREGON RESIDENT WITHIN 25 MILE OF HOME |
| 2 | OR>25 | OREGON RESIDENT 25 OR MORE MILES FROM HOME |
| 3 | OR-? | OREGON RESIDENT - UNKNOWN DISTANCE FROM HOME |
| 4 | N-RES | NON-RESIDENT |
| 9 | UNK | UNKNOWN IF OREGON RESIDENT |

ERROR CODE TRANSLATION LIST

| ERROR CODE | SHORT DESCRIPTION | FULL DESCRIPTION |
|------------|-------------------|---|
| 000 | NONE | NO ERROR |
| 001 | WIDE TRN | WIDE TURN |
| 002 | CUT CORN | CUT CORNER ON TURN |
| 003 | FAIL TRN | FAILED TO OBEY MANDATORY TRAFFIC TURN SIGNAL, SIGN OR LANE MARKINGS |
| 004 | L IN TRF | LEFT TURN IN FRONT OF ONCOMING TRAFFIC |
| 005 | L PROHIB | LEFT TURN WHERE PROHIBITED |
| 006 | FRM WRNG | TURNTD FROM WRONG LANE |
| 007 | TO WRONG | TURNTD INTO WRONG LANE |
| 008 | ILLEG U | U-TURNTD ILLEGALLY |
| 009 | IMP STOP | IMPROPERLY STOPPED IN TRAFFIC LANE |
| 010 | IMP SIG | IMPROPER SIGNAL OR FAILURE TO SIGNAL |
| 011 | IMP BACK | BACKING IMPROPERLY (NOT PARKING) |
| 012 | IMP PARK | IMPROPERLY PARKED |
| 013 | UNPARK | IMPROPER START LEAVING PARKED POSITION |
| 014 | IMP STRT | IMPROPER START FROM STOPPED POSITION |
| 015 | IMP LGHT | IMPROPER OR NO LIGHTS (VEHICLE IN TRAFFIC) |
| 016 | INATTENT | INATTENTION (FAILURE TO DIM LIGHTS PRIOR TO 4/1/97) |
| 017 | UNSF VEH | DRIVING UNSAFE VEHICLE (NO OTHER ERROR APPARENT) |
| 018 | OTH PARK | ENTERING/EXITING PARKED POSITION W/ INSUFFICIENT CLEARANCE; OTHER IMPROPER PARKING MANEUVER |
| 019 | DIS DRIV | DISREGARDED OTHER DRIVER'S SIGNAL |
| 020 | DIS SGNL | DISREGARDED TRAFFIC SIGNAL |
| 021 | RAN STOP | DISREGARDED STOP SIGN OR FLASHING RED |
| 022 | DIS SIGN | DISREGARDED WARNING SIGN, FLARES OR FLASHING AMBER |
| 023 | DIS OFCR | DISREGARDED POLICE OFFICER OR FLAGMAN |
| 024 | DIS EMER | DISREGARDED SIREN OR WARNING OF EMERGENCY VEHICLE |
| 025 | DIS RR | DISREGARDED RR SIGNAL, RR SIGN, OR RR FLAGMAN |
| 026 | REAR-END | FAILED TO AVOID STOPPED OR PARKED VEHICLE AHEAD OTHER THAN SCHOOL BUS |
| 027 | BIKE ROW | DID NOT HAVE RIGHT-OF-WAY OVER PEDALCYCLIST |
| 028 | NO ROW | DID NOT HAVE RIGHT-OF-WAY |
| 029 | PED ROW | FAILED TO YIELD RIGHT-OF-WAY TO PEDESTRIAN |
| 030 | PAS CURV | PASSING ON A CURVE |
| 031 | PAS WRNG | PASSING ON THE WRONG SIDE |
| 032 | PAS TANG | PASSING ON STRAIGHT ROAD UNDER UNSAFE CONDITIONS |
| 033 | PAS X-WK | PASSED VEHICLE STOPPED AT CROSSWALK FOR PEDESTRIAN |
| 034 | PAS INTR | PASSING AT INTERSECTION |
| 035 | PAS HILL | PASSING ON CREST OF HILL |
| 036 | N/PAS ZN | PASSING IN "NO PASSING" ZONE |
| 037 | PAS TRAF | PASSING IN FRONT OF ONCOMING TRAFFIC |
| 038 | CUT-IN | CUTTING IN (TWO LANES - TWO WAY ONLY) |
| 039 | WRNGSIDE | DRIVING ON WRONG SIDE OF THE ROAD (2-WAY UNDIVIDED ROADWAYS) |

ERROR CODE TRANSLATION LIST

| ERROR CODE | SHORT DESCRIPTION | FULL DESCRIPTION |
|------------|-------------------|---|
| 040 | THRU MED | DRIVING THROUGH SAFETY ZONE OR OVER ISLAND |
| 041 | F/ST BUS | FAILED TO STOP FOR SCHOOL BUS |
| 042 | F/SLO MV | FAILED TO DECREASE SPEED FOR SLOWER MOVING VEHICLE |
| 043 | TOO CLOSE | FOLLOWING TOO CLOSELY (MUST BE ON OFFICER'S REPORT) |
| 044 | STRDL LN | STRADDLING OR DRIVING ON WRONG LANES |
| 045 | IMP CHG | IMPROPER CHANGE OF TRAFFIC LANES |
| 046 | WRNG WAY | WRONG WAY ON ONE-WAY ROADWAY; WRONG SIDE DIVIDED ROAD |
| 047 | BASCRULE | DRIVING TOO FAST FOR CONDITIONS (NOT EXCEEDING POSTED SPEED) |
| 048 | OPN DOOR | OPENED DOOR INTO ADJACENT TRAFFIC LANE |
| 049 | IMPEDING | IMPEDING TRAFFIC |
| 050 | SPEED | DRIVING IN EXCESS OF POSTED SPEED |
| 051 | RECKLESS | RECKLESS DRIVING (PER PAR) |
| 052 | CARELESS | CARELESS DRIVING (PER PAR) |
| 053 | RACING | SPEED RACING (PER PAR) |
| 054 | X N/SGNL | CROSSING AT INTERSECTION, NO TRAFFIC SIGNAL PRESENT |
| 055 | X W/SGNL | CROSSING AT INTERSECTION, TRAFFIC SIGNAL PRESENT |
| 056 | DIAGONAL | CROSSING AT INTERSECTION - DIAGONALLY |
| 057 | BTWN INT | CROSSING BETWEEN INTERSECTIONS |
| 059 | W/TRAF-S | WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC |
| 060 | A/TRAF-S | WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC |
| 061 | W/TRAF-P | WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC |
| 062 | A/TRAF-P | WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC |
| 063 | PLAYINRD | PLAYING IN STREET OR ROAD |
| 064 | PUSH MV | PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER |
| 065 | WORK IN RD | WORKING IN ROADWAY OR ALONG SHOULDER |
| 070 | LAY ON RD | STANDING OR LYING IN ROADWAY |
| 071 | NM IMP USE | IMPROPER USE OF TRAFFIC LANE BY NON-MOTORIST |
| 073 | ELUDING | ELUDING / ATTEMPT TO ELUDE |
| 079 | F NEG CURV | FAILED TO NEGOTIATE A CURVE |
| 080 | FAIL LN | FAILED TO MAINTAIN LANE |
| 081 | OFF RD | RAN OFF ROAD |
| 082 | NO CLEAR | DRIVER MISJUDGED CLEARANCE |
| 083 | OVRSTEER | OVER-CORRECTING |
| 084 | NOT USED | CODE NOT IN USE |
| 085 | OVRLOAD | OVERLOADING OR IMPROPER LOADING OF VEHICLE WITH CARGO OR PASSENGERS |
| 097 | UNA DIS TC | UNABLE TO DETERMINE WHICH DRIVER DISREGARDED TRAFFIC CONTROL DEVICE |

EVENT CODE TRANSLATION LIST

| EVENT CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|------------|-------------------|---|
| 001 | FEL/JUMP | OCCUPANT FELL, JUMPED OR WAS EJECTED FROM MOVING VEHICLE |
| 002 | INTERFER | PASSENGER INTERFERED WITH DRIVER |
| 003 | BUG INTF | ANIMAL OR INSECT IN VEHICLE INTERFERED WITH DRIVER |
| 004 | INDRCT PED | PEDESTRIAN INDIRECTLY INVOLVED (NOT STRUCK) |
| 005 | SUB-PED | "SUB-PED": PEDESTRIAN INJURED SUBSEQUENT TO COLLISION, ETC. |
| 006 | INDRCT BIK | PEDALCYCLIST INDIRECTLY INVOLVED (NOT STRUCK) |
| 007 | HITCHIKR | HITCHHIKER (SOLICITING A RIDE) |
| 008 | PSNGR TOW | PASSENGER OR NON-MOTORIST BEING TOWED OR PUSHED ON CONVEYANCE |
| 009 | ON/OFF V | GETTING ON/OFF STOPPED/PARKED VEHICLE (OCCUPANTS ONLY; MUST HAVE PHYSICAL CONTACT W/ VEHICLE) |
| 010 | SUB OTRN | OVERTURNED AFTER FIRST HARMFUL EVENT |
| 011 | MV PUSHD | VEHICLE BEING PUSHED |
| 012 | MV TOWED | VEHICLE TOWED OR HAD BEEN TOWING ANOTHER VEHICLE |
| 013 | FORCED | VEHICLE FORCED BY IMPACT INTO ANOTHER VEHICLE, PEDALCYCLIST OR PEDESTRIAN |
| 014 | SET MOTN | VEHICLE SET IN MOTION BY NON-DRIVER (CHILD RELEASED BRAKES, ETC.) |
| 015 | RR ROW | AT OR ON RAILROAD RIGHT-OF-WAY (NOT LIGHT RAIL) |
| 016 | LT RL ROW | AT OR ON LIGHT-RAIL RIGHT-OF-WAY |
| 017 | RR HIT V | TRAIN STRUCK VEHICLE |
| 018 | V HIT RR | VEHICLE STRUCK TRAIN |
| 019 | HIT RR CAR | VEHICLE STRUCK RAILROAD CAR ON ROADWAY |
| 020 | JACKKNIFE | JACKKNIFE; TRAILER OR TOWED VEHICLE STRUCK TOWING VEHICLE |
| 021 | TRL OTRN | TRAILER OR TOWED VEHICLE OVERTURNED |
| 022 | CN BROKE | TRAILER CONNECTION BROKE |
| 023 | DETACH TRL | DETACHED TRAILING OBJECT STRUCK OTHER VEHICLE, NON-MOTORIST, OR OBJECT |
| 024 | V DOOR OPN | VEHICLE DOOR OPENED INTO ADJACENT TRAFFIC LANE |
| 025 | WHEELOFF | WHEEL CAME OFF |
| 026 | HOOD UP | HOOD FLEW UP |
| 028 | LOAD SHIFT | LOST LOAD, LOAD MOVED OR SHIFTED |
| 029 | TIREFAIL | TIRE FAILURE |
| 030 | PET | PET: CAT, DOG AND SIMILAR |
| 031 | LVSTOCK | STOCK: COW, CALF, BULL, STEER, SHEEP, ETC. |
| 032 | HORSE | HORSE, MULE, OR DONKEY |
| 033 | HRSE&RID | HORSE AND RIDER |
| 034 | GAME | WILD ANIMAL, GAME (INCLUDES BIRDS; NOT DEER OR ELK) |
| 035 | DEER ELK | DEER OR ELK, WAPITI |
| 036 | ANML VEH | ANIMAL-DRAWN VEHICLE |
| 037 | CULVERT | CULVERT, OPEN LOW OR HIGH MANHOLE |
| 038 | ATENUATN | IMPACT ATTENUATOR |
| 039 | PK METER | PARKING METER |
| 040 | CURB | CURB (ALSO NARROW SIDEWALKS ON BRIDGES) |
| 041 | JIGGLE | JIGGLE BAR OR TRAFFIC SNAKE FOR CHANNELIZATION |
| 042 | GDRL END | LEADING EDGE OF GUARDRAIL |
| 043 | GARDRAIL | GUARD RAIL (NOT METAL MEDIAN BARRIER) |
| 044 | BARRIER | MEDIAN BARRIER (RAISED OR METAL) |
| 045 | WALL | RETAINING WALL OR TUNNEL WALL |
| 046 | BR RAIL | BRIDGE RAILING OR PARAPET (ON BRIDGE OR APPROACH) |
| 047 | BR ABUTMNT | BRIDGE ABUTMENT (INCLUDED "APPROACH END" THRU 2013) |
| 048 | BR COLMN | BRIDGE PILLAR OR COLUMN |
| 049 | BR GIRDR | BRIDGE GIRDER (HORIZONTAL BRIDGE STRUCTURE OVERHEAD) |
| 050 | ISLAND | TRAFFIC RAISED ISLAND |
| 051 | GORE | GORE |
| 052 | POLE UNK | POLE - TYPE UNKNOWN |
| 053 | POLE UTL | POLE - POWER OR TELEPHONE |
| 054 | ST LIGHT | POLE - STREET LIGHT ONLY |
| 055 | TRF SGNL | POLE - TRAFFIC SIGNAL AND PED SIGNAL ONLY |
| 056 | SGN BRDG | POLE - SIGN BRIDGE |
| 057 | STOPSIGN | STOP OR YIELD SIGN |

EVENT CODE TRANSLATION LIST

| EVENT CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|------------|-------------------|--|
| 058 | OTH SIGN | OTHER SIGN, INCLUDING STREET SIGNS |
| 059 | HYDRANT | HYDRANT |
| 060 | MARKER | DELINEATOR OR MARKER (REFLECTOR POSTS) |
| 061 | MAILBOX | MAILBOX |
| 062 | TREE | TREE, STUMP OR SHRUBS |
| 063 | VEG OHED | TREE BRANCH OR OTHER VEGETATION OVERHEAD, ETC. |
| 064 | WIRE/CBL | WIRE OR CABLE ACROSS OR OVER THE ROAD |
| 065 | TEMP SGN | TEMPORARY SIGN OR BARRICADE IN ROAD, ETC. |
| 066 | PERM SGN | PERMANENT SIGN OR BARRICADE IN/OFF ROAD |
| 067 | SLIDE | SLIDES, FALLEN OR FALLING ROCKS |
| 068 | FRGN OBJ | FOREIGN OBSTRUCTION/DEBRIS IN ROAD (NOT GRAVEL) |
| 069 | EQP WORK | EQUIPMENT WORKING IN/OFF ROAD |
| 070 | OTH EQP | OTHER EQUIPMENT IN OR OFF ROAD (INCLUDES PARKED TRAILER, BOAT) |
| 071 | MAIN EQP | WRECKER, STREET SWEEPER, SNOW PLOW OR SANDING EQUIPMENT |
| 072 | OTHER WALL | ROCK, BRICK OR OTHER SOLID WALL |
| 073 | IRRGL PVMT | OTHER BUMP (NOT SPEED BUMP), POTHOLE OR PAVEMENT IRREGULARITY (PER PAR) |
| 074 | OVERHD OBJ | OTHER OVERHEAD OBJECT (HIGHWAY SIGN, SIGNAL HEAD, ETC.); NOT BRIDGE |
| 075 | CAVE IN | BRIDGE OR ROAD CAVE IN |
| 076 | HI WATER | HIGH WATER |
| 077 | SNO BANK | SNOW BANK |
| 078 | LO-HI EDGE | LOW OR HIGH SHOULDER AT PAVEMENT EDGE |
| 079 | DITCH | CUT SLOPE OR DITCH EMBANKMENT |
| 080 | OBJ FRM MV | STRUCK BY ROCK OR OTHER OBJECT SET IN MOTION BY OTHER VEHICLE (INCL. LOST LOADS) |
| 081 | FLY-OBJ | STRUCK BY ROCK OR OTHER MOVING OR FLYING OBJECT (NOT SET IN MOTION BY VEHICLE) |
| 082 | VEH HID | VEHICLE OBSCURED VIEW |
| 083 | VEG HID | VEGETATION OBSCURED VIEW |
| 084 | BLDG HID | VIEW OBSCURED BY FENCE, SIGN, PHONE BOOTH, ETC. |
| 085 | WIND GUST | WIND GUST |
| 086 | IMMERSED | VEHICLE IMMERSED IN BODY OF WATER |
| 087 | FIRE/EXP | FIRE OR EXPLOSION |
| 088 | FENC/BLD | FENCE OR BUILDING, ETC. |
| 089 | OTHR CRASH | CRASH RELATED TO ANOTHER SEPARATE CRASH |
| 090 | TO 1 SIDE | TWO-WAY TRAFFIC ON DIVIDED ROADWAY ALL ROUTED TO ONE SIDE |
| 091 | BUILDING | BUILDING OR OTHER STRUCTURE |
| 092 | PHANTOM | OTHER (PHANTOM) NON-CONTACT VEHICLE |
| 093 | CELL PHONE | CELL PHONE (ON PAR OR DRIVER IN USE) |
| 094 | VIOL GDL | TEENAGE DRIVER IN VIOLATION OF GRADUATED LICENSE PGM |
| 095 | GUY WIRE | GUY WIRE |
| 096 | BERM | BERM (EARTHEN OR GRAVEL MOUND) |
| 097 | GRAVEL | GRAVEL IN ROADWAY |
| 098 | ABR EDGE | ABRUPT EDGE |
| 099 | CELL WTNSD | CELL PHONE USE WITNESSED BY OTHER PARTICIPANT |
| 100 | UNK FIXD | FIXED OBJECT, UNKNOWN TYPE. |
| 101 | OTHER OBJ | NON-FIXED OBJECT, OTHER OR UNKNOWN TYPE |
| 102 | TEXTING | TEXTING |
| 103 | WZ WORKER | WORK ZONE WORKER |
| 104 | ON VEHICLE | PASSENGER RIDING ON VEHICLE EXTERIOR |
| 105 | PEDAL PSGR | PASSENGER RIDING ON PEDALCYCLE |
| 106 | MAN WHLCHR | PEDESTRIAN IN NON-MOTORIZED WHEELCHAIR |
| 107 | MTR WHLCHR | PEDESTRIAN IN MOTORIZED WHEELCHAIR |
| 108 | OFFICER | LAW ENFORCEMENT / POLICE OFFICER |
| 109 | SUB-BIKE | "SUB-BIKE": PEDALCYCLIST INJURED SUBSEQUENT TO COLLISION, ETC. |
| 110 | N-MTR | NON-MOTORIST STRUCK VEHICLE |
| 111 | S CAR VS V | STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) STRUCK VEHICLE |
| 112 | V VS S CAR | VEHICLE STRUCK STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) |
| 113 | S CAR ROW | AT OR ON STREET CAR OR TROLLEY RIGHT-OF-WAY |

EVENT CODE TRANSLATION LIST

| EVENT CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|------------|-------------------|---|
| 114 | RR EQUIP | VEHICLE STRUCK RAILROAD EQUIPMENT (NOT TRAIN) ON TRACKS |
| 115 | DSTRCT GPS | DISTRACTED BY NAVIGATION SYSTEM OR GPS DEVICE |
| 116 | DSTRCT OTH | DISTRACTED BY OTHER ELECTRONIC DEVICE |
| 117 | RR GATE | RAIL CROSSING DROP-ARM GATE |
| 118 | EXPNSN JNT | EXPANSION JOINT |
| 119 | JERSEY BAR | JERSEY BARRIER |
| 120 | WIRE BAR | WIRE OR CABLE MEDIAN BARRIER |
| 121 | FENCE | FENCE |
| 123 | OBJ IN VEH | LOOSE OBJECT IN VEHICLE STRUCK OCCUPANT |
| 124 | SLIPPERY | SLIDING OR SWERVING DUE TO WET, ICY, SLIPPERY OR LOOSE SURFACE (NOT GRAVEL) |
| 125 | SHLDR | SHOULDER GAVE WAY |
| 126 | BOULDER | ROCK(S), BOULDER (NOT GRAVEL; NOT ROCK SLIDE) |
| 127 | LAND SLIDE | ROCK SLIDE OR LAND SLIDE |
| 128 | CURVE INV | CURVE PRESENT AT CRASH LOCATION |
| 129 | HILL INV | VERTICAL GRADE / HILL PRESENT AT CRASH LOCATION |
| 130 | CURVE HID | VIEW OBSCURED BY CURVE |
| 131 | HILL HID | VIEW OBSCURED BY VERTICAL GRADE / HILL |
| 132 | WINDOW HID | VIEW OBSCURED BY VEHICLE WINDOW CONDITIONS |
| 133 | SPRAY HID | VIEW OBSCURED BY WATER SPRAY |
| 134 | TORRENTIAL | TORRENTIAL RAIN (EXCEPTIONALLY HEAVY RAIN) |
| 135 | RAIL OCC | INJURED OCCUPANT OF RAILWAY TRAIN, LIGHT RAIL, STREET CAR OR CABLE CAR |

FUNCTIONAL CLASSIFICATION TRANSLATION LIST

| FUNC CLASS | DESCRIPTION |
|-------------------|---|
| 01 | RURAL PRINCIPAL ARTERIAL - INTERSTATE |
| 02 | RURAL PRINCIPAL ARTERIAL - OTHER |
| 06 | RURAL MINOR ARTERIAL |
| 07 | RURAL MAJOR COLLECTOR |
| 08 | RURAL MINOR COLLECTOR |
| 09 | RURAL LOCAL |
| 11 | URBAN PRINCIPAL ARTERIAL - INTERSTATE |
| 12 | URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXP |
| 14 | URBAN PRINCIPAL ARTERIAL - OTHER |
| 16 | URBAN MINOR ARTERIAL |
| 17 | URBAN MAJOR COLLECTOR |
| 18 | URBAN MINOR COLLECTOR |
| 19 | URBAN LOCAL |
| 78 | UNKNOWN RURAL SYSTEM |
| 79 | UNKNOWN RURAL NON-SYSTEM |
| 98 | UNKNOWN URBAN SYSTEM |
| 99 | UNKNOWN URBAN NON-SYSTEM |

HIGHWAY COMPONENT TRANSLATION LIST

| CODE | DESCRIPTION |
|-------------|------------------------|
| 0 | MAINLINE STATE HIGHWAY |
| 1 | COUplet |
| 3 | FRONTAGE ROAD |
| 6 | CONNECTION |
| 8 | HIGHWAY - OTHER |

INJURY SEVERITY CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|-------------|-------------------|---------------------------------|
| 1 | KILL | FATAL INJURY (K) |
| 2 | INJA | SUSPECTED SERIOUS INJURY (A) |
| 3 | INJB | SUSPECTED MINOR INJURY (B) |
| 4 | INJC | POSSIBLE INJURY (C) |
| 5 | PRI | DIED PRIOR TO CRASH |
| 7 | NO<5 | NO INJURY - 0 TO 4 YEARS OF AGE |
| 9 | NONE | NO APPARENT INJURY (O) |

LIGHT CONDITION CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|-------------|-------------------|-------------------------------|
| 0 | UNK | UNKNOWN |
| 1 | DAY | DAYLIGHT |
| 2 | DLIT | DARKNESS - WITH STREET LIGHTS |
| 3 | DARK | DARKNESS - NO STREET LIGHTS |
| 4 | DAWN | DAWN (TWILIGHT) |
| 5 | DUSK | DUSK (TWILIGHT) |

MEDIAN TYPE CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|-------------|-------------------|------------------------------|
| 0 | NONE | NO MEDIAN |
| 1 | RSDMD | SOLID MEDIAN BARRIER |
| 2 | DIVMD | EARTH, GRASS OR PAVED MEDIAN |

MILEAGE TYPE CODE TRANSLATION LIST

| CODE | LONG DESCRIPTION |
|-------------|-------------------------|
| 0 | REGULAR MILEAGE |
| T | TEMPORARY |
| Y | SPUR |
| Z | OVERLAPPING |

MOVEMENT TYPE CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|---------------------|
| 0 | UNK | UNKNOWN |
| 1 | STRGHT | STRAIGHT AHEAD |
| 2 | TURN-R | TURNING RIGHT |
| 3 | TURN-L | TURNING LEFT |
| 4 | U-TURN | MAKING A U-TURN |
| 5 | BACK | BACKING |
| 6 | STOP | STOPPED IN TRAFFIC |
| 7 | PRKD-P | PARKED - PROPERLY |
| 8 | PRKD-I | PARKED - IMPROPERLY |
| 9 | PARKNG | PARKING MANEUVER |

NON-MOTORIST LOCATION CODE TRANSLATION LIST

| CODE | LONG DESCRIPTION |
|------|--|
| 00 | AT INTERSECTION - NOT IN ROADWAY |
| 01 | AT INTERSECTION - INSIDE CROSSWALK |
| 02 | AT INTERSECTION - IN ROADWAY, OUTSIDE CROSSWALK |
| 03 | AT INTERSECTION - IN ROADWAY, XWALK AVAIL UNKNWN |
| 04 | NOT AT INTERSECTION - IN ROADWAY |
| 05 | NOT AT INTERSECTION - ON SHOULDER |
| 06 | NOT AT INTERSECTION - ON MEDIAN |
| 07 | NOT AT INTERSECTION - WITHIN TRAFFIC RIGHT-OF-WAY |
| 08 | NOT AT INTERSECTION - IN BIKE PATH OR PARKING LANE |
| 09 | NOT-AT INTERSECTION - ON SIDEWALK |
| 10 | OUTSIDE TRAFFICWAY BOUNDARIES |
| 13 | AT INTERSECTION - IN BIKE LANE |
| 14 | NOT AT INTERSECTION - IN BIKE LANE |
| 15 | NOT AT INTERSECTION - INSIDE MID-BLOCK CROSSWALK |
| 16 | NOT AT INTERSECTION - IN PARKING LANE |
| 18 | OTHER, NOT IN ROADWAY |
| 99 | UNKNOWN LOCATION |

ROAD CHARACTER CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|--------------------------|
| 0 | UNK | UNKNOWN |
| 1 | INTER | INTERSECTION |
| 2 | ALLEY | DRIVEWAY OR ALLEY |
| 3 | STRGHT | STRAIGHT ROADWAY |
| 4 | TRANS | TRANSITION |
| 5 | CURVE | CURVE (HORIZONTAL CURVE) |
| 6 | OPENAC | OPEN ACCESS OR TURNOUT |
| 7 | GRADE | GRADE (VERTICAL CURVE) |
| 8 | BRIDGE | BRIDGE STRUCTURE |
| 9 | TUNNEL | TUNNEL |

PARTICIPANT TYPE CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|--|
| 0 | OCC | UNKNOWN OCCUPANT TYPE |
| 1 | DRVR | DRIVER |
| 2 | PSNG | PASSENGER |
| 3 | PED | PEDESTRIAN |
| 4 | CONV | PEDESTRIAN USING A PEDESTRIAN CONVEYAL |
| 5 | PTOW | PEDESTRIAN TOWING OR TRAILERING AN OB |
| 6 | BIKE | PEDALCYCLIST |
| 7 | BTOW | PEDALCYCLIST TOWING OR TRAILERING AN (|
| 8 | PRKD | OCCUPANT OF A PARKED MOTOR VEHICLE |
| 9 | OTHR | OTHER TYPE OF NON-MOTORIST |

TRAFFIC CONTROL DEVICE CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|--|
| 000 | NONE | NO CONTROL |
| 001 | TRF SIGNAL | TRAFFIC SIGNALS |
| 002 | FLASHBCN-R | FLASHING BEACON - RED (STOP) |
| 003 | FLASHBCN-A | FLASHING BEACON - AMBER (SLOW) |
| 004 | STOP SIGN | STOP SIGN |
| 005 | SLOW SIGN | SLOW SIGN |
| 006 | REG-SIGN | REGULATORY SIGN |
| 007 | YIELD | YIELD SIGN |
| 008 | WARNING | WARNING SIGN |
| 009 | CURVE | CURVE SIGN |
| 010 | SCHL X-ING | SCHOOL CROSSING SIGN OR SPECIAL SIGNAL |
| 011 | OFGR/FLAG | POLICE OFFICER, FLAGMAN - SCHOOL PATROL |
| 012 | BRDG-GATE | BRIDGE GATE - BARRIER |
| 013 | TEMP-BARR | TEMPORARY BARRIER |
| 014 | NO-PASS-ZN | NO PASSING ZONE |
| 015 | ONE-WAY | ONE-WAY STREET |
| 016 | CHANNEL | CHANNELIZATION |
| 017 | MEDIAN BAR | MEDIAN BARRIER |
| 018 | PILOT CAR | PILOT CAR |
| 019 | SP PED SIG | SPECIAL PEDESTRIAN SIGNAL |
| 020 | X-BUCK | CROSSBUCK |
| 021 | THR-GN-SIG | THROUGH GREEN ARROW OR SIGNAL |
| 022 | L-GRN-SIG | LEFT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL |
| 023 | R-GRN-SIG | RIGHT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL |
| 024 | WIGWAG | WIGWAG OR FLASHING LIGHTS W/O DROP-ARM GATE |
| 025 | X-BUCK WRN | CROSSBUCK AND ADVANCE WARNING |
| 026 | WW W/ GATE | FLASHING LIGHTS WITH DROP-ARM GATES |
| 027 | OVRHD SGNL | SUPPLEMENTAL OVERHEAD SIGNAL (RR XING ONLY) |
| 028 | SP RR STOP | SPECIAL RR STOP SIGN |
| 029 | ILUM GRD X | ILLUMINATED GRADE CROSSING |
| 037 | RAMP METER | METERED RAMPS |
| 038 | RUMBLE STR | RUMBLE STRIP |
| 040 | AUTO. FLAG | AUTOMATED FLAGGER ASSISTANCE DEVICE |
| 090 | L-TURN REF | LEFT TURN REFUGE (WHEN REFUGE IS INVOLVED) |
| 091 | R-TURN ALL | RIGHT TURN AT ALL TIMES SIGN, ETC. |
| 092 | EMR SGN/FL | EMERGENCY SIGNS OR FLARES |
| 093 | ACCEL LANE | ACCELERATION OR DECELERATION LANES |
| 094 | R-TURN PRO | RIGHT TURN PROHIBITED ON RED AFTER STOPPING |
| 095 | BUS STPSGN | BUS STOP SIGN AND RED LIGHTS |

VEHICLE TYPE CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|---|
| 00 | PDO | NOT COLLECTED FOR PDO CRASHES |
| 01 | PSNGR CAR | PASSENGER CAR, PICKUP, LIGHT DELIVERY, ETC. |
| 02 | BOBTAIL | TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL) |
| 03 | FARM TRCTR | FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT |
| 04 | SEMI TOW | TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW |
| 05 | TRUCK | TRUCK WITH NON-DETACHABLE BED, PANEL, ETC. |
| 06 | MOPED | MOPED, MINIBIKE, SEATED MOTOR SCOOTER, MOTOR BIKE |
| 07 | SCHL BUS | SCHOOL BUS (INCLUDES VAN) |
| 08 | OTH BUS | OTHER BUS |
| 09 | MTRCYCLE | MOTORCYCLE, DIRT BIKE |
| 10 | OTHER | OTHER: FORKLIFT, BACKHOE, ETC. |
| 11 | MOTRHOME | MOTORHOME |
| 12 | TROLLEY | MOTORIZED STREET CAR/TROLLEY (NO RAILS/WIRES) |
| 13 | ATV | ATV |
| 14 | MTRSCTR | MOTORIZED SCOOTER (STANDING) |
| 15 | SNOWMOBILE | SNOWMOBILE |
| 99 | UNKNOWN | UNKNOWN VEHICLE TYPE |

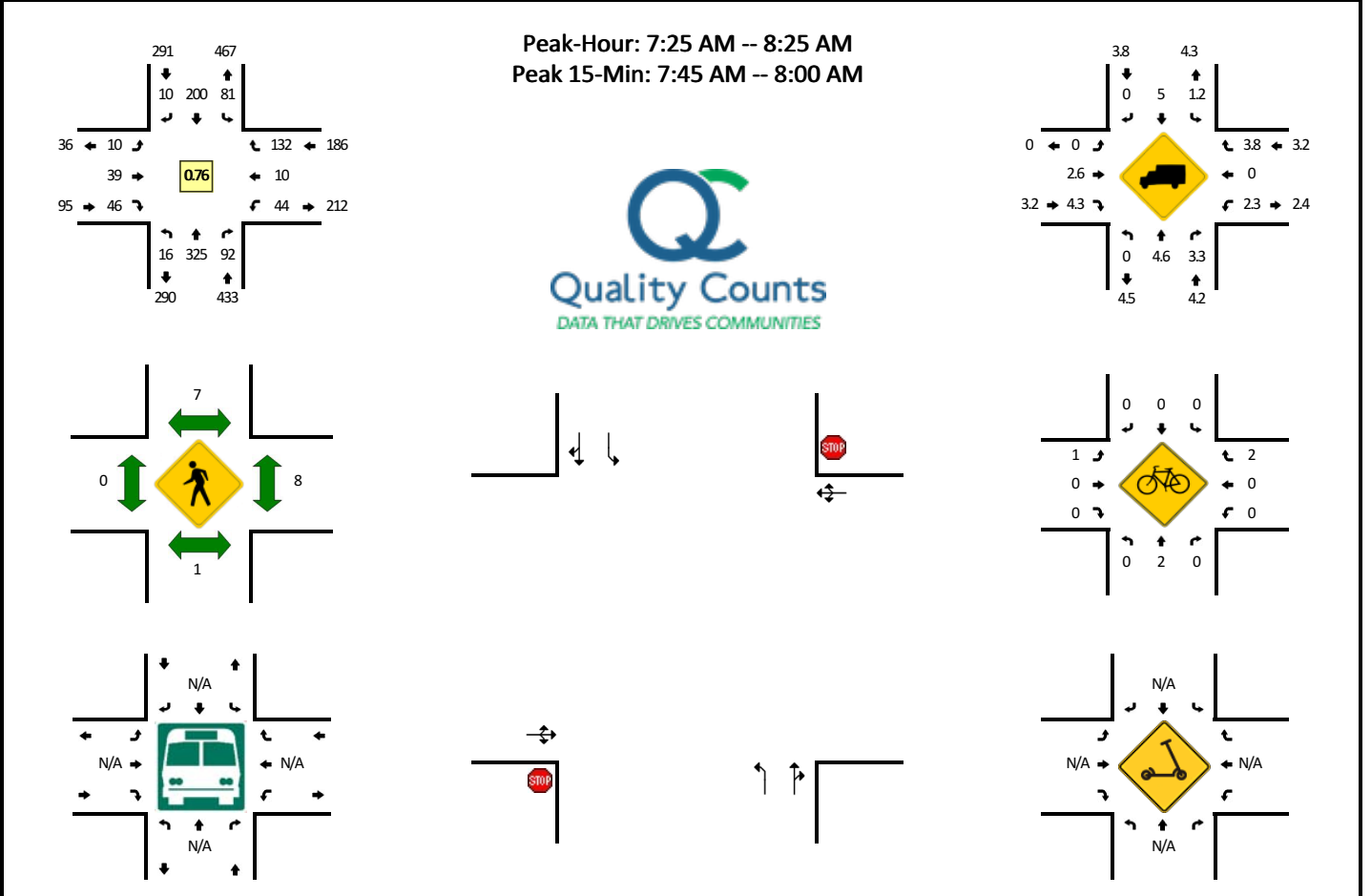
WEATHER CONDITION CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|------------------|
| 0 | UNK | UNKNOWN |
| 1 | CLR | CLEAR |
| 2 | CLD | CLOUDY |
| 3 | RAIN | RAIN |
| 4 | SLT | SLEET |
| 5 | FOG | FOG |
| 6 | SNOW | SNOW |
| 7 | DUST | DUST |
| 8 | SMOK | SMOKE |
| 9 | ASH | ASH |

Appendix B Traffic Count Data

LOCATION: Sherwood Blvd -- SW 12th St/SW Century Dr
CITY/STATE: Sherwood, OR

QC JOB #: 15970011
DATE: Wed, Oct 5 2022



| 5-Min Count Period Beginning At | Sherwood Blvd (Northbound) | | | | Sherwood Blvd (Southbound) | | | | SW 12th St/SW Century Dr (Eastbound) | | | | SW 12th St/SW Century Dr (Westbound) | | | | Total | Hourly Totals |
|---------------------------------|----------------------------|------|-------|---|----------------------------|------|-------|---|--------------------------------------|------|-------|---|--------------------------------------|------|-------|---|-------|---------------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 6:00 AM | 1 | 4 | 1 | 0 | 3 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 17 | |
| 6:05 AM | 0 | 7 | 0 | 0 | 3 | 4 | 0 | 0 | 1 | 2 | 1 | 0 | 1 | 1 | 4 | 0 | 24 | |
| 6:10 AM | 0 | 6 | 0 | 0 | 3 | 5 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 4 | 0 | 22 | |
| 6:15 AM | 0 | 3 | 1 | 0 | 6 | 3 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 2 | 0 | 18 | |
| 6:20 AM | 0 | 9 | 1 | 0 | 5 | 4 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | 6 | 0 | 30 | |
| 6:25 AM | 0 | 9 | 0 | 0 | 3 | 4 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 20 | |
| 6:30 AM | 0 | 4 | 0 | 0 | 3 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 16 | |
| 6:35 AM | 0 | 9 | 0 | 0 | 1 | 8 | 1 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 5 | 0 | 27 | |
| 6:40 AM | 0 | 9 | 1 | 0 | 4 | 4 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 27 | |
| 6:45 AM | 0 | 9 | 1 | 0 | 6 | 5 | 0 | 0 | 2 | 5 | 0 | 0 | 0 | 1 | 4 | 0 | 33 | |
| 6:50 AM | 0 | 22 | 1 | 0 | 2 | 9 | 0 | 0 | 1 | 5 | 0 | 0 | 0 | 0 | 6 | 0 | 46 | |
| 6:55 AM | 1 | 10 | 1 | 0 | 2 | 7 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 6 | 0 | 29 | 309 |
| 7:00 AM | 2 | 7 | 0 | 0 | 5 | 5 | 2 | 0 | 0 | 1 | 1 | 0 | 2 | 1 | 2 | 0 | 28 | 320 |
| 7:05 AM | 0 | 12 | 1 | 0 | 5 | 13 | 1 | 0 | 1 | 2 | 2 | 0 | 1 | 0 | 3 | 0 | 41 | 337 |
| 7:10 AM | 1 | 19 | 0 | 0 | 5 | 12 | 2 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 7 | 0 | 50 | 365 |
| 7:15 AM | 1 | 15 | 3 | 0 | 4 | 8 | 0 | 0 | 1 | 3 | 4 | 0 | 1 | 0 | 5 | 0 | 45 | 392 |
| 7:20 AM | 1 | 14 | 3 | 0 | 4 | 16 | 1 | 0 | 0 | 5 | 4 | 0 | 2 | 0 | 5 | 0 | 55 | 417 |
| 7:25 AM | 0 | 20 | 2 | 0 | 7 | 19 | 1 | 0 | 2 | 1 | 5 | 0 | 1 | 2 | 4 | 0 | 64 | 461 |
| 7:30 AM | 1 | 15 | 3 | 0 | 6 | 12 | 0 | 0 | 1 | 4 | 2 | 0 | 2 | 0 | 12 | 0 | 58 | 503 |
| 7:35 AM | 0 | 17 | 3 | 0 | 6 | 10 | 1 | 0 | 0 | 4 | 3 | 0 | 3 | 3 | 7 | 0 | 57 | 533 |
| 7:40 AM | 0 | 27 | 10 | 0 | 8 | 18 | 1 | 0 | 1 | 5 | 5 | 0 | 8 | 1 | 11 | 0 | 95 | 601 |
| 7:45 AM | 1 | 34 | 16 | 0 | 7 | 21 | 2 | 0 | 1 | 3 | 9 | 0 | 12 | 0 | 19 | 0 | 125 | 693 |
| 7:50 AM | 2 | 33 | 19 | 0 | 7 | 13 | 2 | 0 | 2 | 2 | 5 | 0 | 4 | 0 | 11 | 0 | 100 | 747 |
| 7:55 AM | 2 | 39 | 14 | 0 | 10 | 16 | 0 | 0 | 0 | 5 | 6 | 0 | 1 | 0 | 11 | 0 | 104 | 822 |
| 8:00 AM | 2 | 29 | 6 | 0 | 8 | 21 | 2 | 0 | 1 | 4 | 3 | 0 | 2 | 1 | 12 | 0 | 91 | 885 |
| 8:05 AM | 1 | 27 | 1 | 0 | 8 | 18 | 0 | 0 | 0 | 3 | 4 | 0 | 1 | 2 | 13 | 0 | 78 | 922 |
| 8:10 AM | 3 | 25 | 5 | 0 | 5 | 21 | 0 | 0 | 0 | 7 | 0 | 0 | 4 | 0 | 18 | 0 | 88 | 960 |
| 8:15 AM | 3 | 26 | 7 | 0 | 5 | 15 | 0 | 0 | 0 | 1 | 3 | 0 | 2 | 1 | 6 | 0 | 69 | 984 |
| 8:20 AM | 1 | 33 | 6 | 0 | 4 | 16 | 1 | 0 | 2 | 0 | 1 | 0 | 4 | 0 | 8 | 0 | 76 | 1005 |
| 8:25 AM | 0 | 17 | 3 | 0 | 8 | 12 | 1 | 0 | 2 | 3 | 1 | 0 | 5 | 0 | 8 | 0 | 60 | 1001 |
| 8:30 AM | 1 | 19 | 5 | 0 | 3 | 17 | 1 | 0 | 1 | 3 | 1 | 0 | 1 | 0 | 5 | 0 | 57 | 1000 |
| 8:35 AM | 0 | 22 | 0 | 0 | 11 | 6 | 0 | 0 | 0 | 5 | 1 | 0 | 0 | 0 | 4 | 0 | 49 | 992 |
| 8:40 AM | 1 | 10 | 1 | 0 | 6 | 12 | 1 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 4 | 0 | 38 | 935 |
| 8:45 AM | 0 | 15 | 0 | 0 | 6 | 8 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 5 | 0 | 39 | 849 |
| 8:50 AM | 1 | 13 | 1 | 0 | 6 | 10 | 0 | 0 | 1 | 5 | 2 | 0 | 1 | 0 | 10 | 0 | 50 | 799 |
| 8:55 AM | 0 | 28 | 1 | 0 | 5 | 15 | 0 | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 7 | 0 | 61 | 756 |

| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | Total |
|-----------------------|------------|------|-------|---|------------|------|-------|---|-----------|------|-------|---|-----------|------|-------|---|-------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | |
| All Vehicles | 20 | 424 | 196 | 0 | 96 | 200 | 16 | 0 | 12 | 40 | 80 | 0 | 68 | 0 | 164 | 0 | 1316 |
| Heavy Trucks | 0 | 12 | 4 | | 4 | 8 | 0 | | 0 | 0 | 0 | | 0 | 0 | 4 | | 32 |
| Buses | | | | | | | | | | | | | | | | | |
| Pedestrians | | 4 | | | | 16 | | | | 0 | | | | 4 | | | 24 |
| Bicycles | 0 | 4 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 4 |
| Scoters | | | | | | | | | | | | | | | | | |

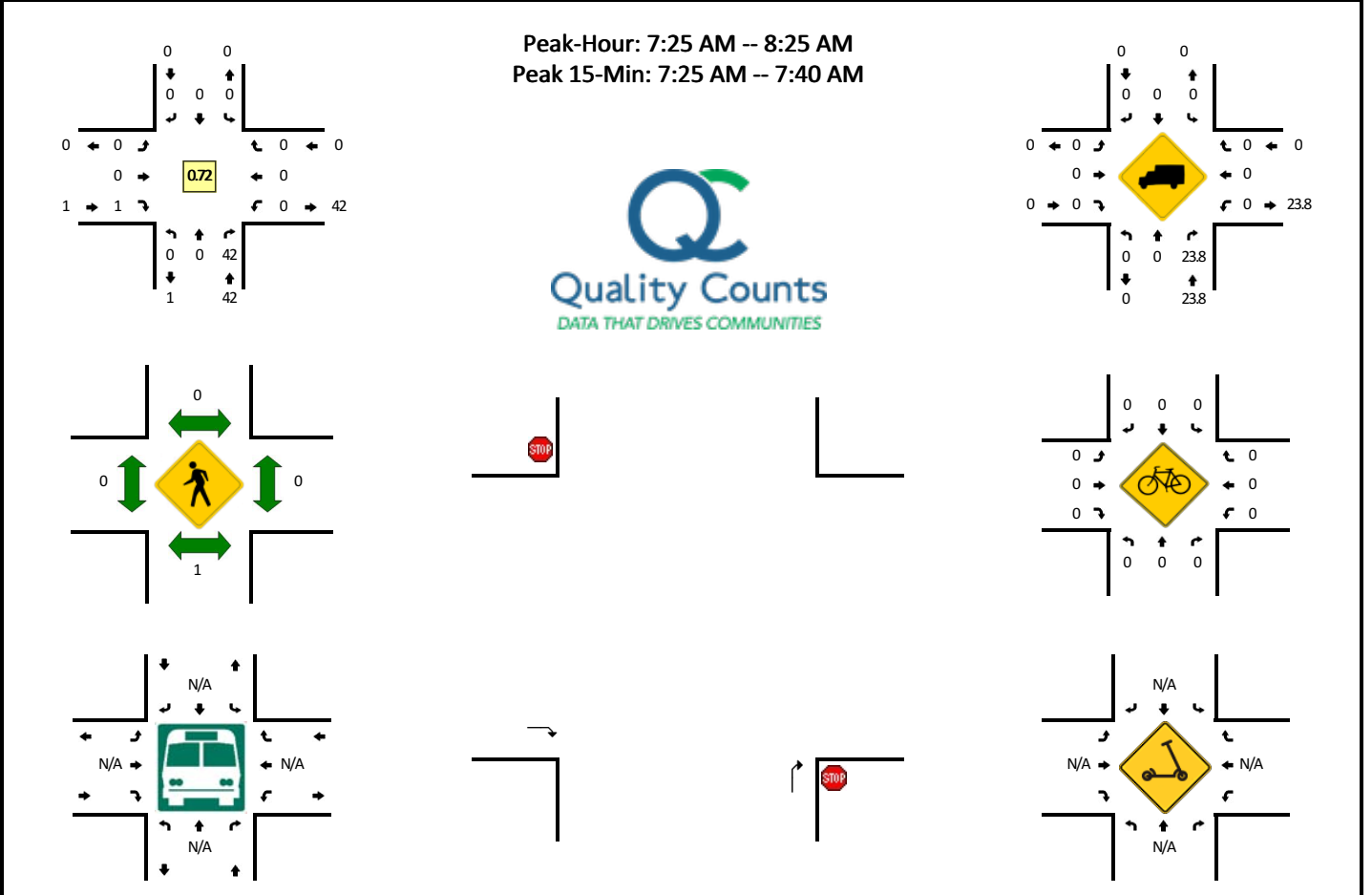
Comments:

Report generated on 11/25/2022 4:52 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: Chevron Dwy (east) -- 99W
CITY/STATE: Sherwood, OR

QC JOB #: 15970003
DATE: Wed, Oct 5 2022



| 5-Min Count Period Beginning At | Chevron Dwy (east) (Northbound) | | | | Chevron Dwy (east) (Southbound) | | | | 99W (Eastbound) | | | | 99W (Westbound) | | | | Total | Hourly Totals |
|---------------------------------|---------------------------------|------|-------|---|---------------------------------|------|-------|---|-----------------|------|-------|---|-----------------|------|-------|---|-------|---------------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 6:00 AM | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | |
| 6:05 AM | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | |
| 6:10 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| 6:15 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| 6:20 AM | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | |
| 6:25 AM | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | |
| 6:30 AM | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | |
| 6:35 AM | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | |
| 6:40 AM | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | |
| 6:45 AM | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | |
| 6:50 AM | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | |
| 6:55 AM | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | |
| 7:00 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 37 |
| 7:05 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 35 |
| 7:10 AM | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 33 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 36 |
| 7:20 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 35 |
| 7:25 AM | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 31 |
| 7:30 AM | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 33 |
| 7:35 AM | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 35 |
| 7:40 AM | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 35 |
| 7:45 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 34 |
| 7:50 AM | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 36 |
| 7:55 AM | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 35 |
| 8:00 AM | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 36 |
| 8:05 AM | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 39 |
| 8:10 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 36 |
| 8:15 AM | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 41 |
| 8:20 AM | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 43 |
| 8:25 AM | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 42 |
| 8:30 AM | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 43 |
| 8:35 AM | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 39 |
| 8:40 AM | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 41 |
| 8:45 AM | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 43 |
| 8:50 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 36 |
| 8:55 AM | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 37 |

| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | Total |
|-----------------------|------------|------|-------|---|------------|------|-------|---|-----------|------|-------|---|-----------|------|-------|---|-------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | |
| All Vehicles | 0 | 0 | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 60 |
| Heavy Trucks | 0 | 0 | 24 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 24 |
| Buses | | | | | | | | | | | | | | | | | |
| Pedestrians | | 4 | | | | 0 | | | | 0 | | | | 0 | | | 4 |
| Bicycles | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 |
| Scoters | | | | | | | | | | | | | | | | | |

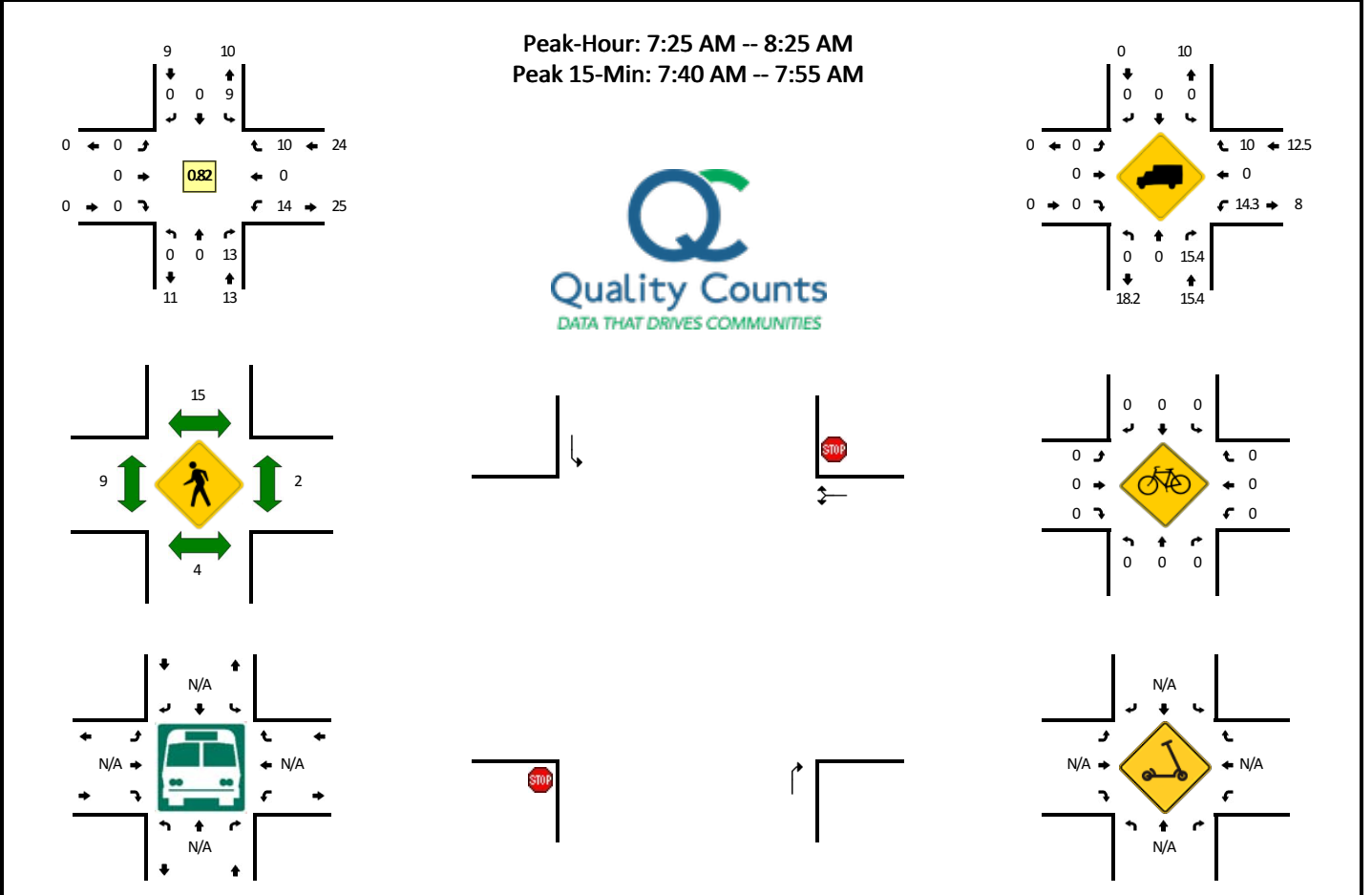
Comments:

Report generated on 11/25/2022 4:52 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: Chevron Dwy (west) -- Chevron Dwy (east)
CITY/STATE: Sherwood, OR

QC JOB #: 15970005
DATE: Wed, Oct 5 2022



| 5-Min Count Period Beginning At | Chevron Dwy (west) (Northbound) | | | | Chevron Dwy (west) (Southbound) | | | | Chevron Dwy (east) (Eastbound) | | | | Chevron Dwy (east) (Westbound) | | | | Total | Hourly Totals |
|---------------------------------|---------------------------------|------|-------|---|---------------------------------|------|-------|---|--------------------------------|------|-------|---|--------------------------------|------|-------|---|-------|---------------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 6:00 AM | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | |
| 6:05 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | |
| 6:10 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | |
| 6:15 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | |
| 6:20 AM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | |
| 6:25 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:30 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | |
| 6:35 AM | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | |
| 6:40 AM | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 | |
| 6:45 AM | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | |
| 6:50 AM | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 4 | |
| 6:55 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 26 |
| 7:00 AM | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 27 |
| 7:05 AM | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 29 |
| 7:10 AM | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 6 | 34 |
| 7:15 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 34 |
| 7:20 AM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 3 | 35 |
| 7:25 AM | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 5 | 40 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 40 |
| 7:35 AM | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 40 |
| 7:40 AM | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 5 | 41 |
| 7:45 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 1 | 5 | 44 |
| 7:50 AM | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 4 | 44 |
| 7:55 AM | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 45 |
| 8:00 AM | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 6 | 48 |
| 8:05 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 46 |
| 8:10 AM | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 5 | 45 |
| 8:15 AM | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 45 |
| 8:20 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 4 | 46 |
| 8:25 AM | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 45 |
| 8:30 AM | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 47 |
| 8:35 AM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 46 |
| 8:40 AM | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 43 |
| 8:45 AM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 40 |
| 8:50 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 38 |
| 8:55 AM | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5 | 39 |

| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | Total |
|-----------------------|------------|------|-------|---|------------|------|-------|---|-----------|------|-------|---|-----------|------|-------|---|-------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | |
| All Vehicles | 0 | 0 | 20 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 16 | 4 | 56 |
| Heavy Trucks | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 |
| Buses | | | | | | | | | | | | | | | | | |
| Pedestrians | | 0 | | | | 8 | | | | 4 | | | | 4 | | | 16 |
| Bicycles | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 |
| Scoters | | | | | | | | | | | | | | | | | |

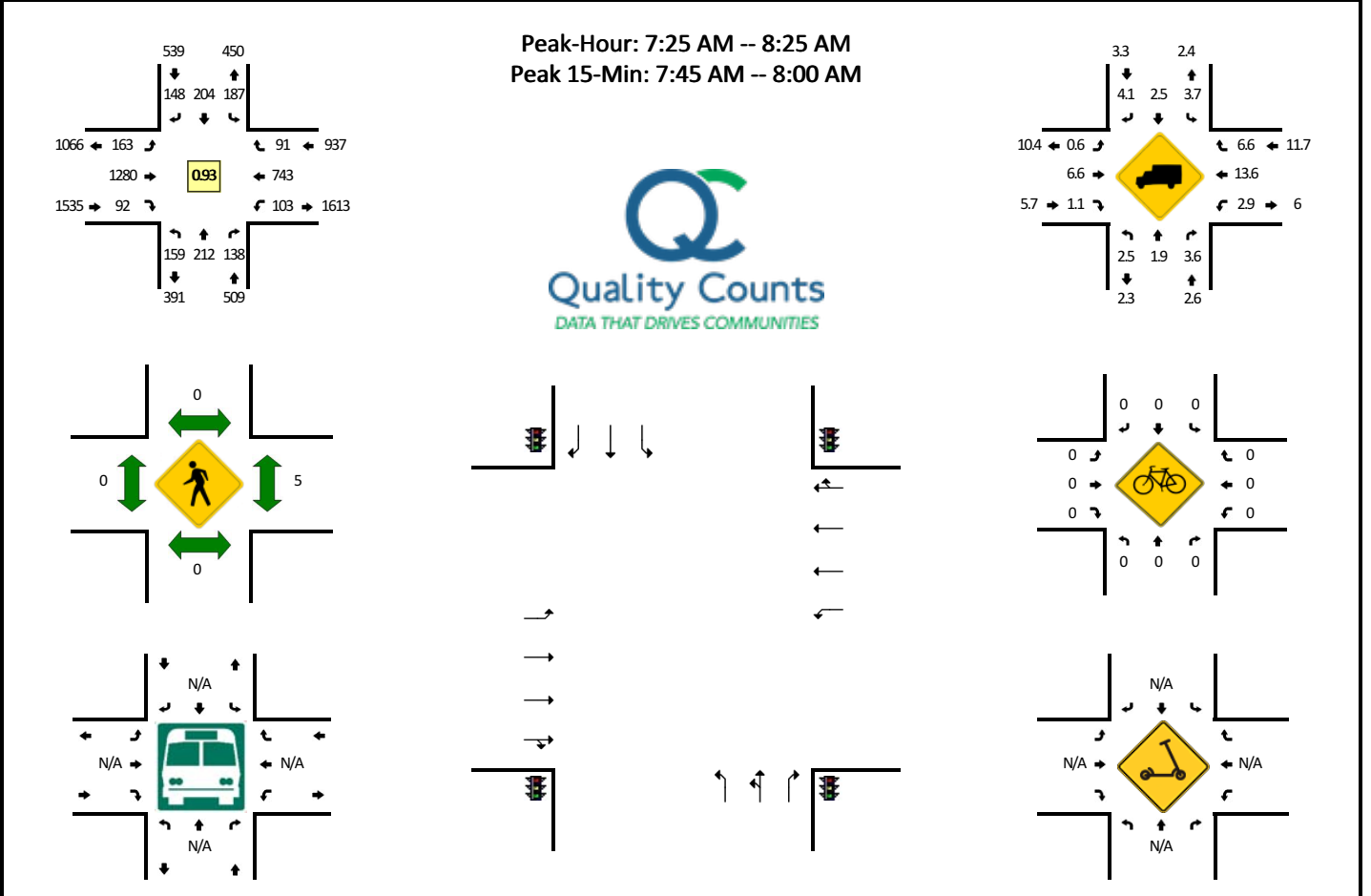
Comments:

Report generated on 11/25/2022 4:52 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: Sherwood Blvd -- 99W
CITY/STATE: Sherwood, OR

QC JOB #: 15970007
DATE: Wed, Oct 5 2022



Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:45 AM -- 8:00 AM



| 5-Min Count Period Beginning At | Sherwood Blvd (Northbound) | | | | Sherwood Blvd (Southbound) | | | | 99W (Eastbound) | | | | 99W (Westbound) | | | | Total | Hourly Totals |
|---------------------------------|----------------------------|------|-------|---|----------------------------|------|-------|---|-----------------|------|-------|---|-----------------|------|-------|---|-------|---------------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 6:00 AM | 3 | 1 | 1 | 0 | 4 | 5 | 0 | 0 | 6 | 84 | 7 | 1 | 1 | 33 | 0 | 0 | 146 | |
| 6:05 AM | 3 | 4 | 5 | 0 | 3 | 4 | 3 | 0 | 0 | 79 | 4 | 3 | 0 | 36 | 1 | 0 | 145 | |
| 6:10 AM | 3 | 6 | 4 | 0 | 6 | 7 | 5 | 0 | 6 | 91 | 3 | 2 | 3 | 23 | 1 | 0 | 160 | |
| 6:15 AM | 1 | 4 | 3 | 0 | 9 | 7 | 6 | 0 | 4 | 104 | 3 | 1 | 3 | 37 | 2 | 0 | 184 | |
| 6:20 AM | 2 | 6 | 5 | 0 | 9 | 7 | 4 | 0 | 3 | 116 | 7 | 1 | 0 | 28 | 2 | 2 | 192 | |
| 6:25 AM | 1 | 1 | 7 | 0 | 7 | 8 | 5 | 0 | 10 | 121 | 5 | 0 | 1 | 40 | 3 | 0 | 209 | |
| 6:30 AM | 5 | 6 | 5 | 0 | 10 | 5 | 4 | 0 | 5 | 86 | 2 | 2 | 2 | 41 | 0 | 0 | 173 | |
| 6:35 AM | 3 | 6 | 5 | 0 | 7 | 2 | 4 | 0 | 4 | 147 | 7 | 3 | 3 | 57 | 3 | 0 | 251 | |
| 6:40 AM | 3 | 9 | 7 | 0 | 11 | 4 | 5 | 0 | 10 | 122 | 6 | 1 | 2 | 40 | 2 | 0 | 222 | |
| 6:45 AM | 6 | 2 | 6 | 0 | 9 | 9 | 3 | 0 | 5 | 114 | 5 | 2 | 5 | 69 | 3 | 0 | 238 | |
| 6:50 AM | 8 | 10 | 15 | 0 | 6 | 6 | 3 | 0 | 2 | 117 | 9 | 2 | 0 | 30 | 2 | 0 | 210 | |
| 6:55 AM | 3 | 11 | 5 | 0 | 4 | 7 | 7 | 0 | 5 | 94 | 6 | 3 | 4 | 67 | 9 | 0 | 225 | 2355 |
| 7:00 AM | 5 | 4 | 3 | 0 | 16 | 11 | 8 | 0 | 10 | 86 | 8 | 0 | 6 | 37 | 4 | 0 | 198 | 2407 |
| 7:05 AM | 9 | 5 | 6 | 0 | 10 | 7 | 13 | 0 | 11 | 115 | 7 | 3 | 5 | 52 | 0 | 1 | 244 | 2506 |
| 7:10 AM | 15 | 13 | 6 | 0 | 15 | 11 | 7 | 0 | 6 | 94 | 8 | 2 | 4 | 29 | 8 | 0 | 218 | 2564 |
| 7:15 AM | 5 | 7 | 11 | 0 | 9 | 10 | 5 | 0 | 14 | 156 | 10 | 5 | 0 | 58 | 9 | 0 | 299 | 2679 |
| 7:20 AM | 8 | 12 | 5 | 0 | 16 | 16 | 6 | 0 | 7 | 103 | 2 | 2 | 7 | 38 | 7 | 0 | 229 | 2716 |
| 7:25 AM | 6 | 5 | 5 | 0 | 6 | 21 | 10 | 0 | 10 | 161 | 10 | 1 | 6 | 92 | 8 | 1 | 342 | 2849 |
| 7:30 AM | 15 | 9 | 11 | 0 | 18 | 11 | 8 | 0 | 8 | 111 | 9 | 0 | 7 | 51 | 3 | 0 | 261 | 2937 |
| 7:35 AM | 8 | 12 | 12 | 0 | 10 | 12 | 13 | 0 | 7 | 139 | 6 | 2 | 5 | 79 | 6 | 1 | 312 | 2998 |
| 7:40 AM | 17 | 12 | 8 | 0 | 17 | 17 | 13 | 0 | 13 | 106 | 6 | 3 | 11 | 44 | 9 | 1 | 277 | 3053 |
| 7:45 AM | 11 | 13 | 13 | 0 | 13 | 13 | 12 | 0 | 11 | 132 | 10 | 0 | 10 | 86 | 8 | 1 | 333 | 3148 |
| 7:50 AM | 19 | 24 | 16 | 0 | 22 | 24 | 14 | 0 | 9 | 88 | 6 | 0 | 6 | 67 | 8 | 1 | 304 | 3242 |
| 7:55 AM | 13 | 13 | 9 | 0 | 15 | 14 | 8 | 0 | 22 | 117 | 13 | 2 | 13 | 61 | 13 | 1 | 314 | 3331 |
| 8:00 AM | 14 | 30 | 14 | 0 | 26 | 24 | 18 | 0 | 12 | 82 | 8 | 1 | 11 | 41 | 11 | 0 | 292 | 3425 |
| 8:05 AM | 9 | 22 | 12 | 0 | 14 | 15 | 13 | 0 | 13 | 92 | 8 | 3 | 6 | 58 | 3 | 0 | 268 | 3449 |
| 8:10 AM | 18 | 28 | 16 | 0 | 12 | 17 | 15 | 0 | 17 | 92 | 7 | 2 | 6 | 46 | 8 | 2 | 286 | 3517 |
| 8:15 AM | 17 | 19 | 12 | 0 | 13 | 14 | 12 | 0 | 15 | 96 | 4 | 1 | 7 | 72 | 10 | 0 | 292 | 3510 |
| 8:20 AM | 12 | 25 | 10 | 0 | 21 | 22 | 12 | 0 | 10 | 64 | 5 | 1 | 7 | 46 | 4 | 0 | 239 | 3520 |
| 8:25 AM | 11 | 14 | 4 | 0 | 10 | 11 | 11 | 0 | 18 | 119 | 10 | 3 | 4 | 65 | 8 | 0 | 288 | 3466 |
| 8:30 AM | 15 | 23 | 9 | 0 | 15 | 13 | 10 | 0 | 18 | 93 | 6 | 0 | 4 | 51 | 2 | 1 | 260 | 3465 |
| 8:35 AM | 6 | 10 | 9 | 0 | 16 | 9 | 9 | 0 | 12 | 138 | 10 | 3 | 8 | 69 | 4 | 2 | 305 | 3458 |
| 8:40 AM | 11 | 9 | 6 | 0 | 14 | 13 | 10 | 0 | 8 | 76 | 2 | 2 | 5 | 54 | 5 | 1 | 216 | 3397 |
| 8:45 AM | 3 | 7 | 10 | 0 | 4 | 5 | 8 | 0 | 6 | 87 | 8 | 0 | 8 | 81 | 5 | 0 | 232 | 3296 |
| 8:50 AM | 8 | 14 | 5 | 0 | 15 | 14 | 6 | 0 | 11 | 72 | 4 | 2 | 8 | 51 | 10 | 0 | 220 | 3212 |
| 8:55 AM | 8 | 9 | 8 | 0 | 9 | 13 | 8 | 0 | 13 | 102 | 3 | 7 | 7 | 55 | 6 | 1 | 249 | 3147 |

| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | Total |
|-----------------------|------------|------|-------|---|------------|------|-------|---|-----------|------|-------|---|-----------|------|-------|----|-------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | |
| All Vehicles | 172 | 200 | 152 | 0 | 200 | 204 | 136 | 0 | 168 | 1348 | 116 | 8 | 116 | 856 | 116 | 12 | 3804 |
| Heavy Trucks | 4 | 8 | 4 | | 0 | 0 | 8 | | 4 | 88 | 0 | | 4 | 136 | 8 | | 264 |
| Buses | | | | | | | | | | | | | | | | | |
| Pedestrians | | 0 | | | | 0 | | | | 0 | | | | 8 | | | 8 |
| Bicycles | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 |
| Scoters | | | | | | | | | | | | | | | | | |

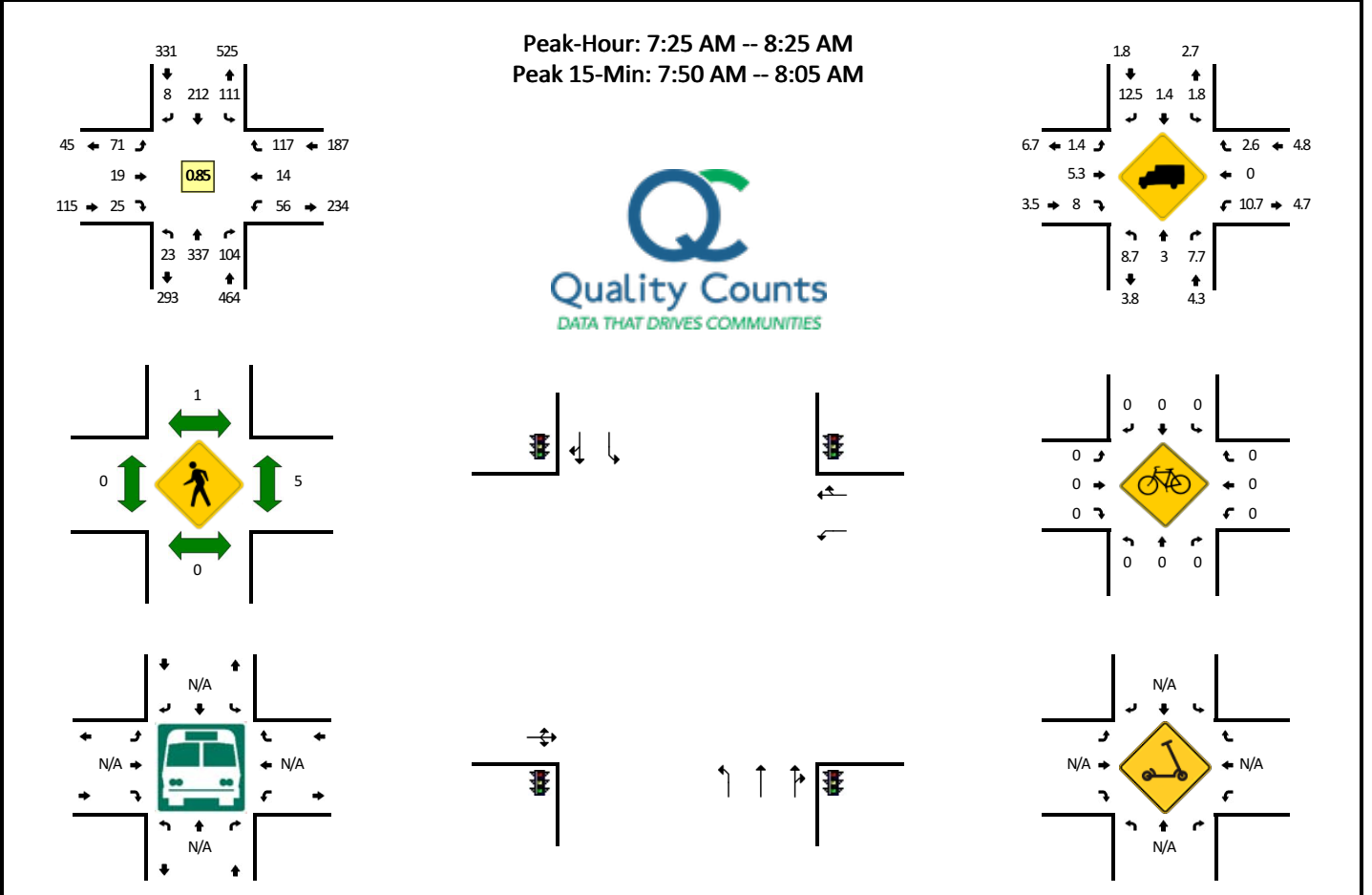
Comments:

Report generated on 11/25/2022 4:52 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: Sherwood Blvd -- SW Langer Dr
CITY/STATE: Sherwood, OR

QC JOB #: 15970009
DATE: Wed, Oct 5 2022



| 5-Min Count Period Beginning At | Sherwood Blvd (Northbound) | | | | Sherwood Blvd (Southbound) | | | | SW Langer Dr (Eastbound) | | | | SW Langer Dr (Westbound) | | | | Total | Hourly Totals |
|---------------------------------|----------------------------|------|-------|---|----------------------------|------|-------|---|--------------------------|------|-------|---|--------------------------|------|-------|---|-------|---------------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 6:00 AM | 0 | 4 | 4 | 0 | 6 | 6 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | |
| 6:05 AM | 2 | 6 | 5 | 0 | 2 | 5 | 0 | 0 | 3 | 1 | 2 | 0 | 0 | 1 | 2 | 0 | 29 | |
| 6:10 AM | 1 | 9 | 3 | 0 | 3 | 6 | 0 | 0 | 4 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 30 | |
| 6:15 AM | 0 | 3 | 2 | 0 | 4 | 5 | 0 | 0 | 2 | 1 | 4 | 0 | 1 | 0 | 1 | 0 | 23 | |
| 6:20 AM | 1 | 9 | 6 | 0 | 6 | 6 | 0 | 0 | 5 | 0 | 1 | 0 | 3 | 0 | 1 | 0 | 38 | |
| 6:25 AM | 0 | 4 | 4 | 0 | 5 | 6 | 0 | 0 | 3 | 1 | 0 | 0 | 1 | 0 | 3 | 0 | 27 | |
| 6:30 AM | 0 | 8 | 4 | 0 | 4 | 3 | 0 | 0 | 6 | 2 | 1 | 0 | 1 | 1 | 2 | 0 | 32 | |
| 6:35 AM | 0 | 12 | 3 | 0 | 2 | 7 | 0 | 0 | 3 | 0 | 0 | 0 | 3 | 1 | 3 | 0 | 34 | |
| 6:40 AM | 1 | 12 | 6 | 0 | 2 | 5 | 1 | 0 | 1 | 2 | 1 | 0 | 2 | 1 | 3 | 0 | 37 | |
| 6:45 AM | 0 | 9 | 5 | 0 | 4 | 7 | 0 | 0 | 5 | 1 | 2 | 0 | 2 | 2 | 3 | 0 | 40 | |
| 6:50 AM | 0 | 22 | 4 | 0 | 6 | 6 | 0 | 0 | 5 | 2 | 2 | 0 | 3 | 1 | 3 | 0 | 54 | |
| 6:55 AM | 2 | 15 | 4 | 0 | 8 | 7 | 0 | 0 | 3 | 2 | 2 | 0 | 1 | 0 | 5 | 0 | 49 | 416 |
| 7:00 AM | 0 | 5 | 3 | 0 | 7 | 12 | 0 | 0 | 3 | 2 | 1 | 0 | 2 | 0 | 3 | 0 | 38 | 431 |
| 7:05 AM | 0 | 12 | 5 | 0 | 6 | 10 | 0 | 0 | 4 | 1 | 1 | 0 | 5 | 1 | 10 | 0 | 55 | 457 |
| 7:10 AM | 2 | 18 | 3 | 0 | 5 | 12 | 0 | 0 | 4 | 3 | 3 | 0 | 5 | 0 | 4 | 0 | 59 | 486 |
| 7:15 AM | 0 | 17 | 7 | 0 | 10 | 8 | 0 | 0 | 5 | 2 | 1 | 0 | 2 | 1 | 8 | 0 | 61 | 524 |
| 7:20 AM | 1 | 12 | 5 | 0 | 8 | 20 | 0 | 0 | 4 | 2 | 2 | 0 | 2 | 0 | 5 | 0 | 61 | 547 |
| 7:25 AM | 1 | 14 | 11 | 0 | 10 | 21 | 1 | 0 | 3 | 3 | 1 | 0 | 2 | 1 | 8 | 0 | 76 | 596 |
| 7:30 AM | 1 | 21 | 3 | 0 | 9 | 14 | 0 | 0 | 6 | 0 | 1 | 0 | 5 | 0 | 4 | 0 | 64 | 628 |
| 7:35 AM | 1 | 16 | 9 | 0 | 6 | 10 | 1 | 0 | 6 | 1 | 1 | 0 | 5 | 0 | 15 | 0 | 71 | 665 |
| 7:40 AM | 5 | 27 | 6 | 0 | 7 | 22 | 0 | 0 | 3 | 1 | 2 | 0 | 4 | 0 | 6 | 0 | 83 | 711 |
| 7:45 AM | 4 | 33 | 14 | 0 | 7 | 21 | 0 | 0 | 5 | 5 | 3 | 0 | 6 | 2 | 9 | 0 | 109 | 780 |
| 7:50 AM | 3 | 31 | 11 | 0 | 14 | 13 | 1 | 0 | 10 | 2 | 3 | 0 | 5 | 0 | 7 | 0 | 100 | 826 |
| 7:55 AM | 0 | 35 | 8 | 0 | 16 | 20 | 1 | 0 | 4 | 1 | 3 | 0 | 2 | 4 | 12 | 0 | 106 | 883 |
| 8:00 AM | 3 | 31 | 10 | 0 | 16 | 23 | 1 | 0 | 6 | 0 | 5 | 0 | 6 | 3 | 12 | 0 | 116 | 961 |
| 8:05 AM | 0 | 30 | 10 | 0 | 6 | 16 | 2 | 0 | 10 | 1 | 0 | 0 | 8 | 0 | 13 | 0 | 96 | 1002 |
| 8:10 AM | 2 | 40 | 6 | 0 | 9 | 16 | 0 | 0 | 5 | 2 | 4 | 0 | 7 | 2 | 11 | 0 | 104 | 1047 |
| 8:15 AM | 1 | 27 | 5 | 0 | 8 | 16 | 0 | 0 | 7 | 1 | 1 | 0 | 3 | 1 | 13 | 0 | 83 | 1069 |
| 8:20 AM | 2 | 32 | 11 | 0 | 3 | 20 | 1 | 0 | 6 | 2 | 1 | 0 | 3 | 1 | 7 | 0 | 89 | 1097 |
| 8:25 AM | 2 | 21 | 4 | 0 | 14 | 12 | 0 | 0 | 2 | 3 | 3 | 0 | 3 | 2 | 6 | 0 | 72 | 1093 |
| 8:30 AM | 2 | 16 | 5 | 0 | 8 | 15 | 0 | 0 | 9 | 2 | 2 | 0 | 3 | 1 | 11 | 0 | 74 | 1103 |
| 8:35 AM | 2 | 18 | 8 | 0 | 6 | 14 | 1 | 0 | 3 | 2 | 1 | 0 | 1 | 0 | 9 | 0 | 65 | 1097 |
| 8:40 AM | 0 | 11 | 3 | 0 | 5 | 14 | 0 | 0 | 6 | 2 | 0 | 0 | 5 | 3 | 5 | 0 | 54 | 1068 |
| 8:45 AM | 1 | 17 | 2 | 0 | 4 | 8 | 0 | 0 | 5 | 0 | 5 | 0 | 3 | 2 | 4 | 0 | 51 | 1010 |
| 8:50 AM | 1 | 14 | 10 | 0 | 3 | 15 | 0 | 0 | 7 | 1 | 1 | 0 | 1 | 1 | 4 | 0 | 58 | 968 |
| 8:55 AM | 3 | 23 | 7 | 0 | 8 | 13 | 1 | 0 | 4 | 2 | 2 | 0 | 3 | 2 | 9 | 0 | 77 | 939 |

| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | Total |
|-----------------------|------------|------|-------|---|------------|------|-------|---|-----------|------|-------|---|-----------|------|-------|---|-------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | |
| All Vehicles | 24 | 388 | 116 | 0 | 184 | 224 | 12 | 0 | 80 | 12 | 44 | 0 | 52 | 28 | 124 | 0 | 1288 |
| Heavy Trucks | 0 | 16 | 0 | | 0 | 0 | 4 | | 0 | 0 | 4 | | 4 | 0 | 12 | | 40 |
| Buses | | | | | | | | | | | | | | | | | |
| Pedestrians | | 0 | | | | 0 | | | | 0 | | | | 4 | | | 4 |
| Bicycles | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 |
| Scooters | | | | | | | | | | | | | | | | | |

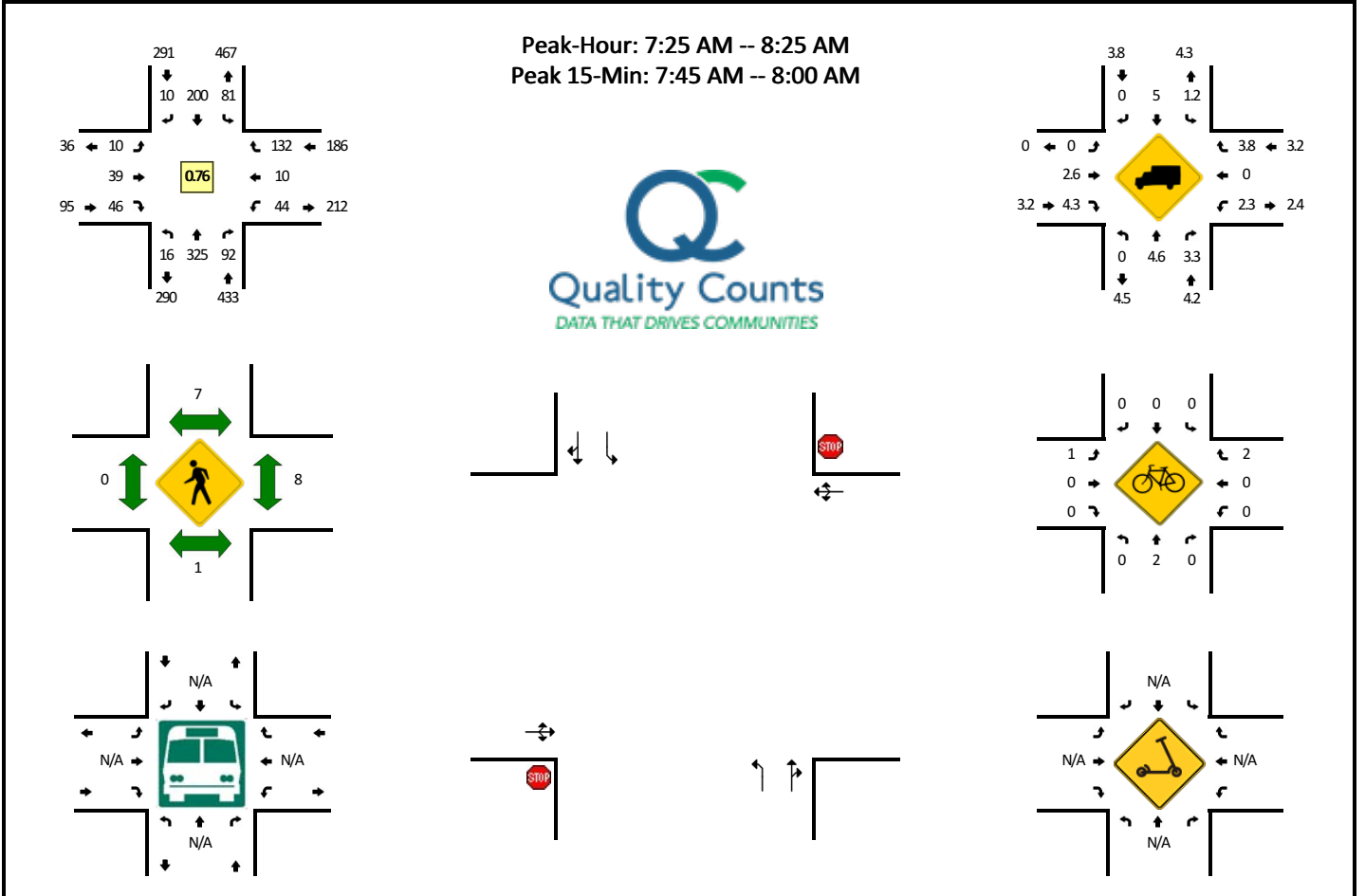
Comments:

Report generated on 11/25/2022 4:52 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: Sherwood Blvd -- SW 12th St/SW Century Dr
CITY/STATE: Sherwood, OR

QC JOB #: 15970011
DATE: Wed, Oct 5 2022



| 5-Min Count Period Beginning At | Sherwood Blvd (Northbound) | | | | Sherwood Blvd (Southbound) | | | | SW 12th St/SW Century Dr (Eastbound) | | | | SW 12th St/SW Century Dr (Westbound) | | | | Total | Hourly Totals |
|---------------------------------|----------------------------|------|-------|---|----------------------------|------|-------|---|--------------------------------------|------|-------|---|--------------------------------------|------|-------|---|-------|---------------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 6:00 AM | 1 | 4 | 1 | 0 | 3 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 17 | |
| 6:05 AM | 0 | 7 | 0 | 0 | 3 | 4 | 0 | 0 | 1 | 2 | 1 | 0 | 1 | 1 | 4 | 0 | 24 | |
| 6:10 AM | 0 | 6 | 0 | 0 | 3 | 5 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 4 | 0 | 22 | |
| 6:15 AM | 0 | 3 | 1 | 0 | 6 | 3 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 2 | 0 | 18 | |
| 6:20 AM | 0 | 9 | 1 | 0 | 5 | 4 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | 6 | 0 | 30 | |
| 6:25 AM | 0 | 9 | 0 | 0 | 3 | 4 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 20 | |
| 6:30 AM | 0 | 4 | 0 | 0 | 3 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 16 | |
| 6:35 AM | 0 | 9 | 0 | 0 | 1 | 8 | 1 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 5 | 0 | 27 | |
| 6:40 AM | 0 | 9 | 1 | 0 | 4 | 4 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 27 | |
| 6:45 AM | 0 | 9 | 1 | 0 | 6 | 5 | 0 | 0 | 2 | 5 | 0 | 0 | 0 | 1 | 4 | 0 | 33 | |
| 6:50 AM | 0 | 22 | 1 | 0 | 2 | 9 | 0 | 0 | 1 | 5 | 0 | 0 | 0 | 0 | 6 | 0 | 46 | |
| 6:55 AM | 1 | 10 | 1 | 0 | 2 | 7 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 6 | 0 | 29 | 309 |
| 7:00 AM | 2 | 7 | 0 | 0 | 5 | 5 | 2 | 0 | 0 | 1 | 1 | 0 | 2 | 1 | 2 | 0 | 28 | 320 |
| 7:05 AM | 0 | 12 | 1 | 0 | 5 | 13 | 1 | 0 | 1 | 2 | 2 | 0 | 1 | 0 | 3 | 0 | 41 | 337 |
| 7:10 AM | 1 | 19 | 0 | 0 | 5 | 12 | 2 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 7 | 0 | 50 | 365 |
| 7:15 AM | 1 | 15 | 3 | 0 | 4 | 8 | 0 | 0 | 1 | 3 | 4 | 0 | 1 | 0 | 5 | 0 | 45 | 392 |
| 7:20 AM | 1 | 14 | 3 | 0 | 4 | 16 | 1 | 0 | 0 | 5 | 4 | 0 | 2 | 0 | 5 | 0 | 55 | 417 |
| 7:25 AM | 0 | 20 | 2 | 0 | 7 | 19 | 1 | 0 | 2 | 1 | 5 | 0 | 1 | 2 | 4 | 0 | 64 | 461 |
| 7:30 AM | 1 | 15 | 3 | 0 | 6 | 12 | 0 | 0 | 1 | 4 | 2 | 0 | 2 | 0 | 12 | 0 | 58 | 503 |
| 7:35 AM | 0 | 17 | 3 | 0 | 6 | 10 | 1 | 0 | 0 | 4 | 3 | 0 | 3 | 3 | 7 | 0 | 57 | 533 |
| 7:40 AM | 0 | 27 | 10 | 0 | 8 | 18 | 1 | 0 | 1 | 5 | 5 | 0 | 8 | 1 | 11 | 0 | 95 | 601 |
| 7:45 AM | 1 | 34 | 16 | 0 | 7 | 21 | 2 | 0 | 1 | 3 | 9 | 0 | 12 | 0 | 19 | 0 | 125 | 693 |
| 7:50 AM | 2 | 33 | 19 | 0 | 7 | 13 | 2 | 0 | 2 | 2 | 5 | 0 | 4 | 0 | 11 | 0 | 100 | 747 |
| 7:55 AM | 2 | 39 | 14 | 0 | 10 | 16 | 0 | 0 | 0 | 5 | 6 | 0 | 1 | 0 | 11 | 0 | 104 | 822 |
| 8:00 AM | 2 | 29 | 6 | 0 | 8 | 21 | 2 | 0 | 1 | 4 | 3 | 0 | 2 | 1 | 12 | 0 | 91 | 885 |
| 8:05 AM | 1 | 27 | 1 | 0 | 8 | 18 | 0 | 0 | 0 | 3 | 4 | 0 | 1 | 2 | 13 | 0 | 78 | 922 |
| 8:10 AM | 3 | 25 | 5 | 0 | 5 | 21 | 0 | 0 | 0 | 7 | 0 | 0 | 4 | 0 | 18 | 0 | 88 | 960 |
| 8:15 AM | 3 | 26 | 7 | 0 | 5 | 15 | 0 | 0 | 0 | 1 | 3 | 0 | 2 | 1 | 6 | 0 | 69 | 984 |
| 8:20 AM | 1 | 33 | 6 | 0 | 4 | 16 | 1 | 0 | 2 | 0 | 1 | 0 | 4 | 0 | 8 | 0 | 76 | 1005 |
| 8:25 AM | 0 | 17 | 3 | 0 | 8 | 12 | 1 | 0 | 2 | 3 | 1 | 0 | 5 | 0 | 8 | 0 | 60 | 1001 |
| 8:30 AM | 1 | 19 | 5 | 0 | 3 | 17 | 1 | 0 | 1 | 3 | 1 | 0 | 1 | 0 | 5 | 0 | 57 | 1000 |
| 8:35 AM | 0 | 22 | 0 | 0 | 11 | 6 | 0 | 0 | 0 | 5 | 1 | 0 | 0 | 0 | 4 | 0 | 49 | 992 |
| 8:40 AM | 1 | 10 | 1 | 0 | 6 | 12 | 1 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 4 | 0 | 38 | 935 |
| 8:45 AM | 0 | 15 | 0 | 0 | 6 | 8 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 5 | 0 | 39 | 849 |
| 8:50 AM | 1 | 13 | 1 | 0 | 6 | 10 | 0 | 0 | 1 | 5 | 2 | 0 | 1 | 0 | 10 | 0 | 50 | 799 |
| 8:55 AM | 0 | 28 | 1 | 0 | 5 | 15 | 0 | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 7 | 0 | 61 | 756 |

| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | Total |
|-----------------------|------------|------|-------|---|------------|------|-------|---|-----------|------|-------|---|-----------|------|-------|---|-------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | |
| All Vehicles | 20 | 424 | 196 | 0 | 96 | 200 | 16 | 0 | 12 | 40 | 80 | 0 | 68 | 0 | 164 | 0 | 1316 |
| Heavy Trucks | 0 | 12 | 4 | | 4 | 8 | 0 | | 0 | 0 | 0 | | 0 | 0 | 4 | | 32 |
| Buses | | | | | | | | | | | | | | | | | |
| Pedestrians | | 4 | | | | 16 | | | | 0 | | | | 4 | | | 24 |
| Bicycles | 0 | 4 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 4 |
| Scoters | | | | | | | | | | | | | | | | | |

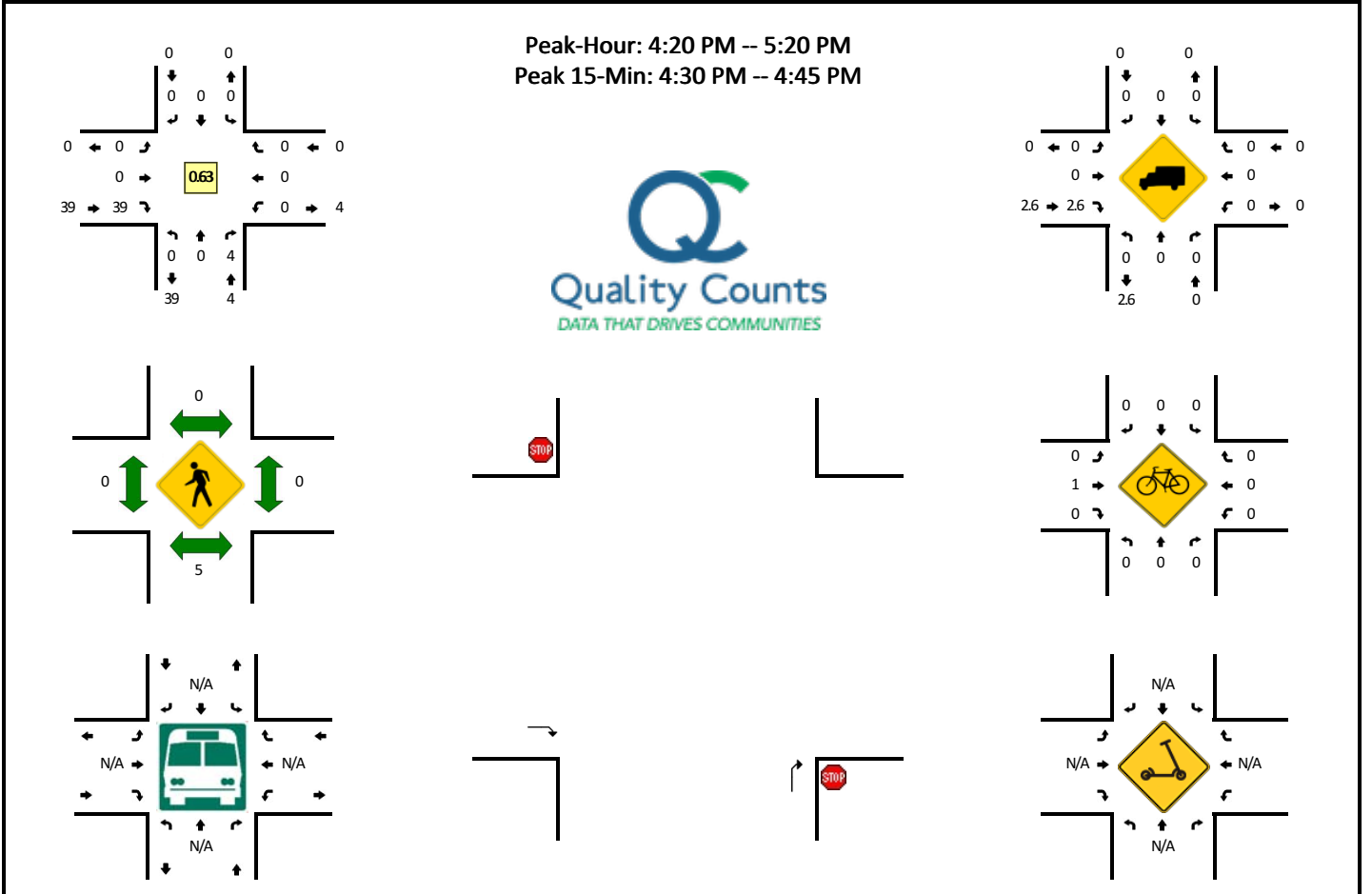
Comments:

Report generated on 11/25/2022 4:52 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: Chevron Dwy (west) -- 99W
CITY/STATE: Sherwood, OR

QC JOB #: 15970002
DATE: Wed, Oct 5 2022



| 5-Min Count Period Beginning At | Chevron Dwy (west) (Northbound) | | | | Chevron Dwy (west) (Southbound) | | | | 99W (Eastbound) | | | | 99W (Westbound) | | | | Total | Hourly Totals |
|---------------------------------|---------------------------------|------|-------|---|---------------------------------|------|-------|---|-----------------|------|-------|---|-----------------|------|-------|---|-------|---------------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 3:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | |
| 3:05 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 5 | |
| 3:10 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 5 | |
| 3:15 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | |
| 3:20 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | |
| 3:25 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 4 | |
| 3:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | |
| 3:35 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | |
| 3:40 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | |
| 3:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | |
| 3:50 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 5 | |
| 3:55 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 4 | 39 |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 4 | 40 |
| 4:05 PM | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 8 | 43 |
| 4:10 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 39 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 4 | 41 |
| 4:20 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 41 |
| 4:25 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 38 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 7 | 43 |
| 4:35 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 6 | 47 |
| 4:40 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 4 | 48 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 48 |
| 4:50 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 5 | 48 |
| 4:55 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 7 | 51 |
| 5:00 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 4 | 51 |
| 5:05 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 44 |
| 5:10 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 4 | 47 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 43 |
| 5:20 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 43 |
| 5:25 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 4 | 46 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 |
| 5:35 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 35 |
| 5:40 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 33 |
| 5:45 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 4 | 36 |
| 5:50 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 4 | 35 |
| 5:55 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 30 |

| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | Total |
|-----------------------|------------|------|-------|---|------------|------|-------|---|-----------|------|-------|---|-----------|------|-------|---|-------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | |
| All Vehicles | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 68 | 0 | 0 | 0 | 0 | 0 | 68 |
| Heavy Trucks | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 4 | | 0 | 0 | 0 | | 4 |
| Buses | | | | | | | | | | | | | | | | | |
| Pedestrians | | 4 | | | | 0 | | | | 0 | | | | 0 | | | 4 |
| Bicycles | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 4 | 0 | | 0 | 0 | 0 | | 4 |
| Scoters | | | | | | | | | | | | | | | | | |

Comments:

Report generated on 11/25/2022 4:58 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | Total |
|-----------------------|------------|------|-------|---|------------|------|-------|---|-----------|------|-------|---|-----------|------|-------|---|-------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | |
| All Vehicles | 0 | 0 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 44 |
| Heavy Trucks | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 |
| Buses | | | | | | | | | | | | | | | | | |
| Pedestrians | | 4 | | | | 0 | | | | 0 | | | | 0 | | | 4 |
| Bicycles | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 |
| Scoters | | | | | | | | | | | | | | | | | |

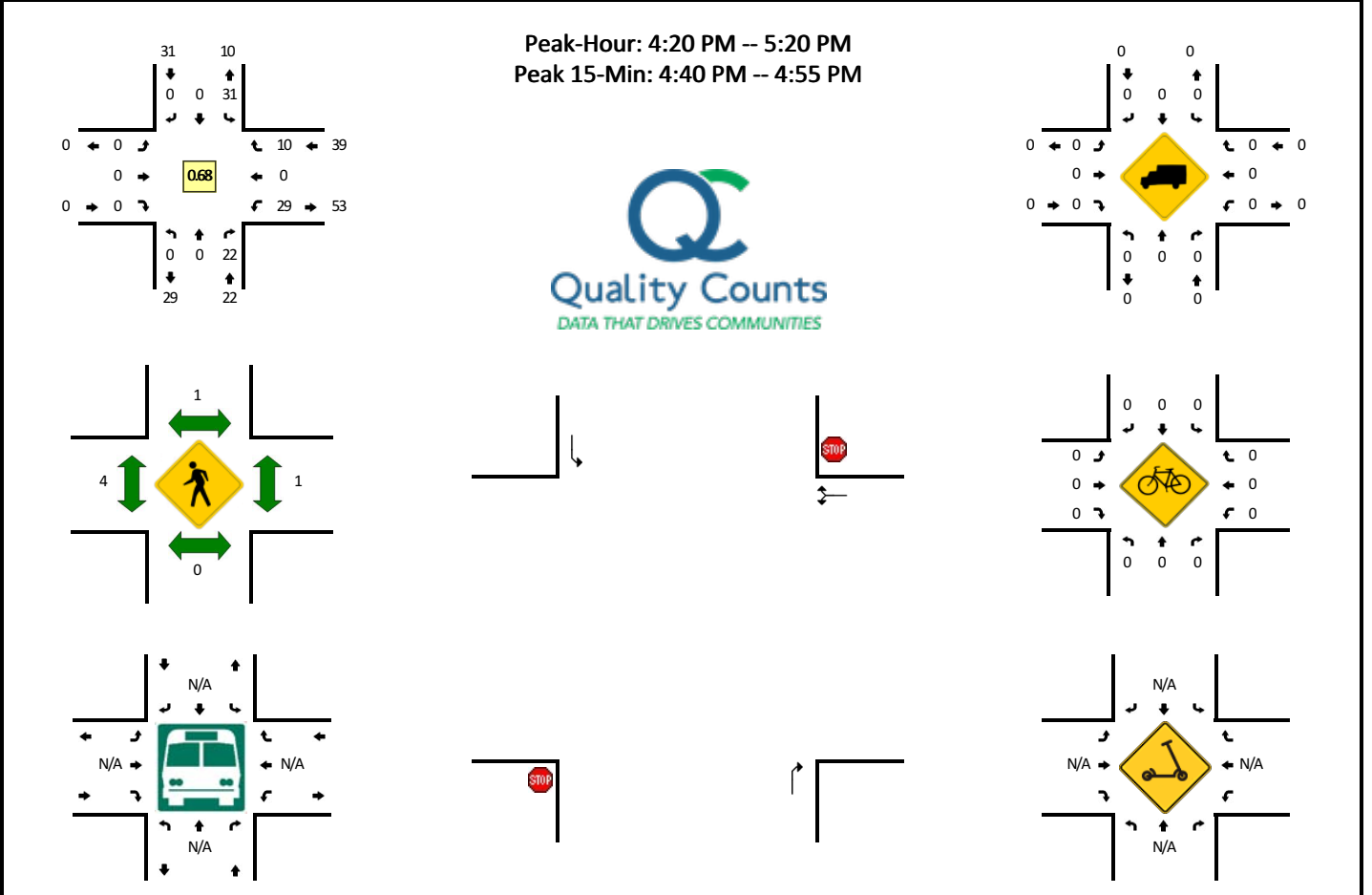
Comments:

Report generated on 11/25/2022 4:58 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: Chevron Dwy (west) -- Chevron Dwy (east)
CITY/STATE: Sherwood, OR

QC JOB #: 15970006
DATE: Wed, Oct 5 2022



| 5-Min Count Period Beginning At | Chevron Dwy (west) (Northbound) | | | | Chevron Dwy (west) (Southbound) | | | | Chevron Dwy (east) (Eastbound) | | | | Chevron Dwy (east) (Westbound) | | | | Total | Hourly Totals | |
|---------------------------------|---------------------------------|------|-------|---|---------------------------------|------|-------|---|--------------------------------|------|-------|---|--------------------------------|------|-------|---|-------|---------------|-----|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | | |
| 3:00 PM | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 6 | |
| 3:05 PM | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4 | |
| 3:10 PM | 0 | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6 | |
| 3:15 PM | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 7 | |
| 3:20 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | |
| 3:25 PM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | |
| 3:30 PM | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 7 | |
| 3:35 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | |
| 3:40 PM | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 7 | |
| 3:45 PM | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 5 | |
| 3:50 PM | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 8 | |
| 3:55 PM | 0 | 0 | 4 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 9 | 66 |
| 4:00 PM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 6 | 66 |
| 4:05 PM | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 6 | 68 |
| 4:10 PM | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 6 | 68 |
| 4:15 PM | 0 | 0 | 4 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 14 | 75 |
| 4:20 PM | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5 | 79 |
| 4:25 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 77 |
| 4:30 PM | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 73 |
| 4:35 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 4 | 74 |
| 4:40 PM | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 1 | 0 | 13 | 80 |
| 4:45 PM | 0 | 0 | 3 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 10 | 85 |
| 4:50 PM | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 5 | 0 | 11 | 88 |
| 4:55 PM | 0 | 0 | 5 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 9 | 88 |
| 5:00 PM | 0 | 0 | 1 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 8 | 90 |
| 5:05 PM | 0 | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 8 | 92 |
| 5:10 PM | 0 | 0 | 2 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 9 | 95 |
| 5:15 PM | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 2 | 0 | 11 | 92 |
| 5:20 PM | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 8 | 95 |
| 5:25 PM | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 8 | 102 |
| 5:30 PM | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 102 |
| 5:35 PM | 0 | 0 | 2 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 8 | 106 |
| 5:40 PM | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 1 | 8 | 101 |
| 5:45 PM | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 7 | 98 |
| 5:50 PM | 0 | 0 | 4 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 9 | 96 |
| 5:55 PM | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 90 |

| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | Total |
|-----------------------|------------|------|-------|---|------------|------|-------|---|-----------|------|-------|---|-----------|------|-------|---|-------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | |
| All Vehicles | 0 | 0 | 24 | 0 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 44 | 0 | 24 | 0 | 136 |
| Heavy Trucks | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 |
| Buses | | | | | | | | | | | | | | | | | |
| Pedestrians | | 0 | | | | 0 | | | | 8 | | | | 0 | | | 8 |
| Bicycles | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 |
| Scoters | | | | | | | | | | | | | | | | | |

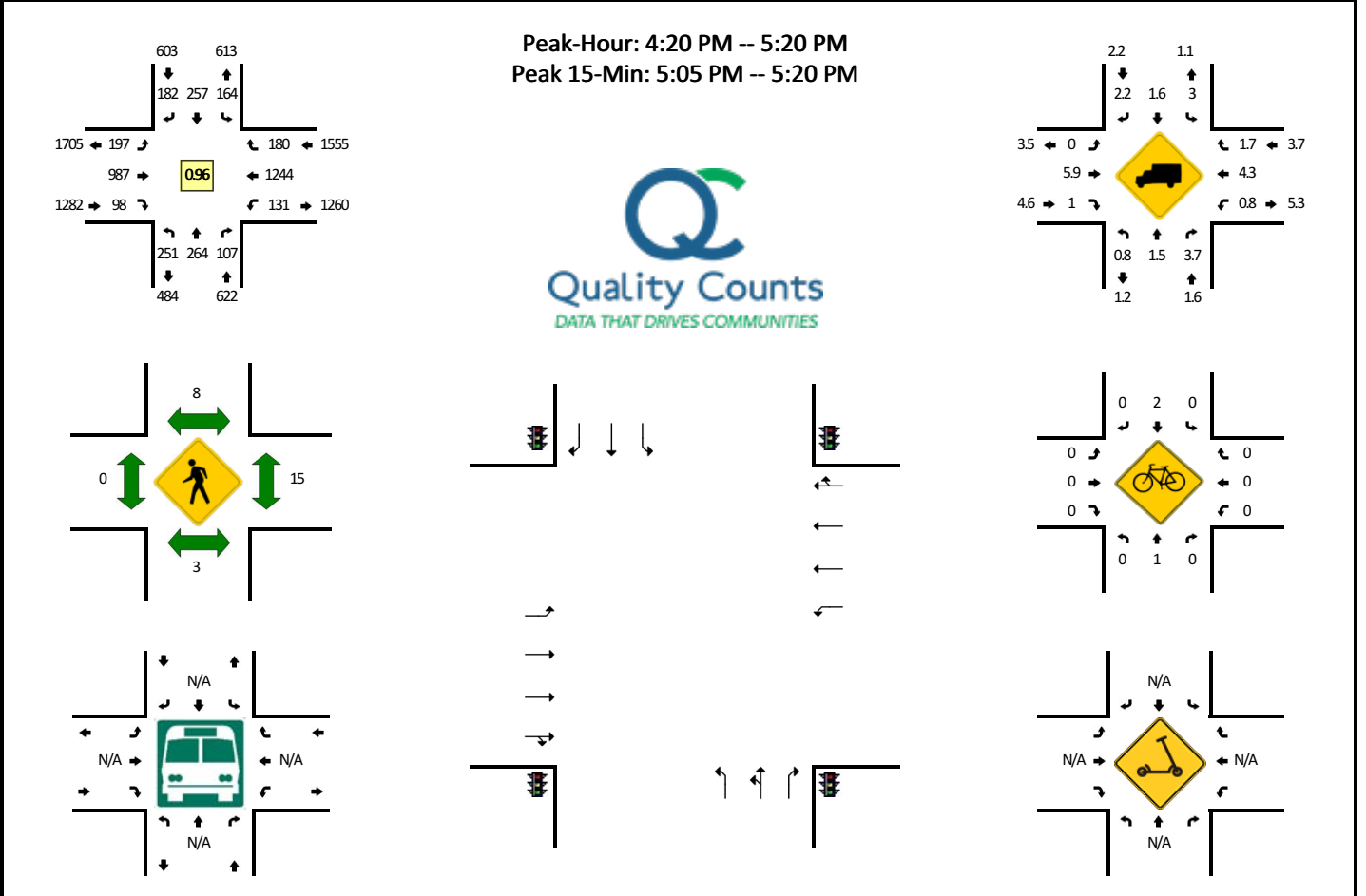
Comments:

Report generated on 11/25/2022 4:58 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: Sherwood Blvd -- 99W
CITY/STATE: Sherwood, OR

QC JOB #: 15970008
DATE: Wed, Oct 5 2022



| 5-Min Count Period Beginning At | Sherwood Blvd (Northbound) | | | | Sherwood Blvd (Southbound) | | | | 99W (Eastbound) | | | | 99W (Westbound) | | | | Total | Hourly Totals |
|---------------------------------|----------------------------|------|-------|---|----------------------------|------|-------|---|-----------------|------|-------|---|-----------------|------|-------|---|-------|---------------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 3:00 PM | 24 | 13 | 7 | 0 | 10 | 15 | 14 | 0 | 8 | 86 | 7 | 5 | 7 | 93 | 10 | 0 | 299 | |
| 3:05 PM | 10 | 9 | 12 | 0 | 13 | 17 | 13 | 0 | 6 | 79 | 11 | 1 | 4 | 82 | 4 | 0 | 261 | |
| 3:10 PM | 24 | 16 | 5 | 0 | 11 | 20 | 13 | 0 | 10 | 94 | 9 | 0 | 12 | 75 | 10 | 1 | 300 | |
| 3:15 PM | 25 | 13 | 7 | 0 | 6 | 14 | 7 | 0 | 11 | 68 | 10 | 1 | 13 | 97 | 9 | 0 | 281 | |
| 3:20 PM | 20 | 14 | 4 | 0 | 7 | 10 | 9 | 0 | 11 | 94 | 4 | 0 | 4 | 111 | 15 | 2 | 305 | |
| 3:25 PM | 23 | 21 | 8 | 0 | 19 | 13 | 16 | 0 | 9 | 83 | 3 | 0 | 8 | 99 | 14 | 1 | 317 | |
| 3:30 PM | 18 | 24 | 7 | 0 | 13 | 15 | 14 | 0 | 21 | 90 | 4 | 0 | 8 | 82 | 11 | 0 | 307 | |
| 3:35 PM | 24 | 24 | 9 | 0 | 8 | 9 | 16 | 0 | 7 | 62 | 12 | 1 | 11 | 141 | 6 | 0 | 330 | |
| 3:40 PM | 22 | 30 | 9 | 0 | 16 | 18 | 15 | 0 | 5 | 76 | 9 | 2 | 10 | 112 | 10 | 0 | 334 | |
| 3:45 PM | 22 | 27 | 15 | 0 | 15 | 17 | 21 | 0 | 12 | 83 | 6 | 1 | 11 | 91 | 20 | 0 | 341 | |
| 3:50 PM | 23 | 23 | 13 | 0 | 15 | 17 | 15 | 0 | 17 | 94 | 7 | 3 | 5 | 104 | 9 | 1 | 346 | |
| 3:55 PM | 15 | 14 | 6 | 0 | 14 | 20 | 7 | 0 | 8 | 69 | 4 | 1 | 17 | 122 | 12 | 0 | 309 | 3730 |
| 4:00 PM | 28 | 26 | 5 | 0 | 15 | 24 | 13 | 0 | 15 | 60 | 9 | 2 | 13 | 76 | 13 | 0 | 299 | 3730 |
| 4:05 PM | 21 | 16 | 11 | 0 | 16 | 17 | 18 | 0 | 21 | 73 | 6 | 1 | 8 | 100 | 11 | 0 | 319 | 3788 |
| 4:10 PM | 16 | 20 | 15 | 0 | 4 | 17 | 15 | 0 | 12 | 64 | 6 | 3 | 8 | 113 | 16 | 0 | 309 | 3797 |
| 4:15 PM | 27 | 34 | 8 | 0 | 11 | 18 | 28 | 0 | 13 | 69 | 5 | 0 | 6 | 84 | 8 | 0 | 311 | 3827 |
| 4:20 PM | 26 | 20 | 13 | 0 | 12 | 27 | 14 | 0 | 19 | 101 | 11 | 4 | 9 | 86 | 24 | 0 | 366 | 3888 |
| 4:25 PM | 14 | 20 | 10 | 0 | 10 | 17 | 13 | 0 | 12 | 79 | 6 | 1 | 13 | 133 | 19 | 1 | 348 | 3919 |
| 4:30 PM | 27 | 27 | 9 | 0 | 13 | 17 | 8 | 0 | 11 | 60 | 6 | 2 | 3 | 95 | 9 | 1 | 288 | 3900 |
| 4:35 PM | 23 | 18 | 9 | 0 | 14 | 15 | 24 | 0 | 13 | 93 | 9 | 4 | 10 | 82 | 8 | 0 | 322 | 3892 |
| 4:40 PM | 18 | 21 | 5 | 0 | 12 | 22 | 8 | 0 | 11 | 91 | 10 | 2 | 14 | 104 | 15 | 0 | 333 | 3891 |
| 4:45 PM | 24 | 20 | 9 | 0 | 6 | 19 | 14 | 0 | 12 | 76 | 9 | 1 | 13 | 110 | 13 | 0 | 326 | 3876 |
| 4:50 PM | 15 | 27 | 8 | 0 | 22 | 31 | 14 | 0 | 16 | 74 | 9 | 1 | 6 | 88 | 7 | 0 | 318 | 3848 |
| 4:55 PM | 19 | 22 | 9 | 0 | 11 | 20 | 14 | 0 | 21 | 93 | 5 | 1 | 9 | 105 | 21 | 0 | 350 | 3889 |
| 5:00 PM | 19 | 25 | 6 | 0 | 18 | 19 | 21 | 0 | 11 | 74 | 11 | 2 | 19 | 109 | 23 | 0 | 357 | 3947 |
| 5:05 PM | 26 | 29 | 5 | 0 | 18 | 26 | 19 | 0 | 12 | 46 | 5 | 3 | 14 | 97 | 5 | 0 | 305 | 3933 |
| 5:10 PM | 19 | 14 | 10 | 0 | 15 | 25 | 20 | 0 | 19 | 107 | 9 | 3 | 4 | 107 | 16 | 0 | 368 | 3992 |
| 5:15 PM | 21 | 21 | 14 | 0 | 13 | 19 | 13 | 0 | 12 | 93 | 8 | 4 | 15 | 128 | 20 | 0 | 381 | 4062 |
| 5:20 PM | 21 | 32 | 14 | 0 | 15 | 20 | 19 | 0 | 9 | 66 | 7 | 2 | 2 | 98 | 11 | 0 | 316 | 4012 |
| 5:25 PM | 18 | 23 | 8 | 0 | 19 | 19 | 10 | 0 | 20 | 90 | 8 | 5 | 6 | 97 | 8 | 0 | 331 | 3995 |
| 5:30 PM | 15 | 24 | 14 | 0 | 9 | 21 | 10 | 0 | 10 | 64 | 12 | 3 | 12 | 127 | 21 | 0 | 342 | 4049 |
| 5:35 PM | 22 | 35 | 3 | 0 | 11 | 19 | 20 | 0 | 13 | 69 | 6 | 1 | 7 | 88 | 11 | 0 | 305 | 4032 |
| 5:40 PM | 16 | 16 | 6 | 0 | 24 | 32 | 26 | 0 | 18 | 72 | 10 | 1 | 5 | 103 | 16 | 0 | 345 | 4044 |
| 5:45 PM | 19 | 19 | 6 | 0 | 7 | 20 | 14 | 0 | 11 | 82 | 5 | 0 | 12 | 134 | 18 | 0 | 347 | 4065 |
| 5:50 PM | 23 | 19 | 4 | 0 | 11 | 22 | 21 | 0 | 10 | 76 | 9 | 0 | 14 | 109 | 12 | 0 | 330 | 4077 |
| 5:55 PM | 26 | 25 | 5 | 0 | 17 | 28 | 27 | 0 | 12 | 60 | 4 | 1 | 0 | 88 | 16 | 0 | 309 | 4036 |

| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | Total |
|-----------------------|------------|------|-------|---|------------|------|-------|---|-----------|------|-------|----|-----------|------|-------|---|-------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | |
| All Vehicles | 264 | 256 | 116 | 0 | 184 | 280 | 208 | 0 | 172 | 984 | 88 | 40 | 132 | 1328 | 164 | 0 | 4216 |
| Heavy Trucks | 0 | 8 | 4 | | 4 | 8 | 0 | | 0 | 56 | 0 | | 4 | 84 | 0 | | 168 |
| Buses | | | | | | | | | | | | | | | | | |
| Pedestrians | | 4 | | | | 8 | | | | 0 | | | | 20 | | | 32 |
| Bicycles | 0 | 0 | 0 | | 0 | 8 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 8 |
| Scoters | | | | | | | | | | | | | | | | | |

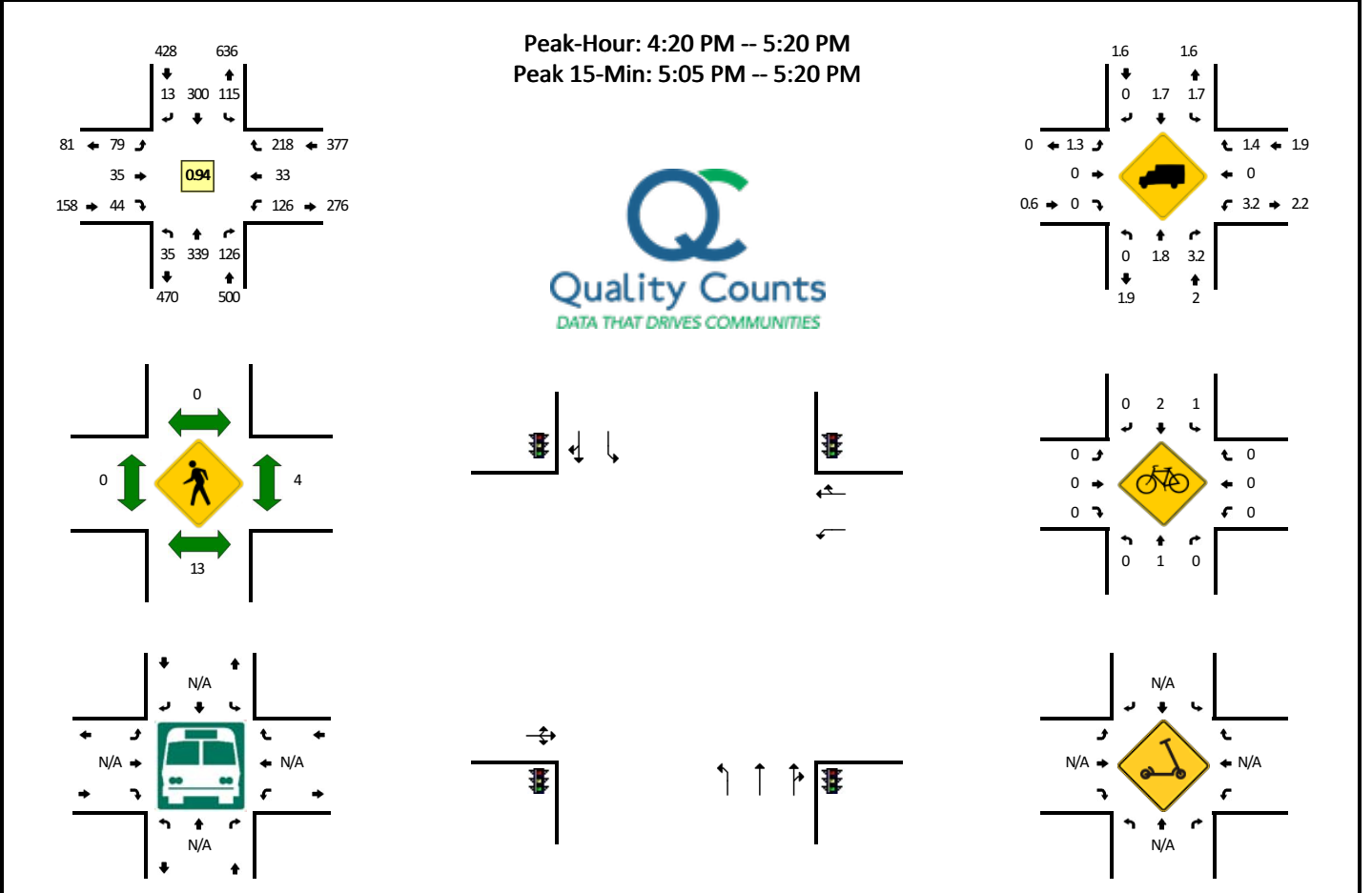
Comments:

Report generated on 11/25/2022 4:58 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: Sherwood Blvd -- SW Langer Dr
CITY/STATE: Sherwood, OR

QC JOB #: 15970010
DATE: Wed, Oct 5 2022



| 5-Min Count Period Beginning At | Sherwood Blvd (Northbound) | | | | Sherwood Blvd (Southbound) | | | | SW Langer Dr (Eastbound) | | | | SW Langer Dr (Westbound) | | | | Total | Hourly Totals |
|---------------------------------|----------------------------|------|-------|---|----------------------------|------|-------|---|--------------------------|------|-------|---|--------------------------|------|-------|---|-------|---------------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 3:00 PM | 0 | 19 | 7 | 0 | 8 | 24 | 0 | 0 | 8 | 2 | 2 | 0 | 6 | 0 | 14 | 0 | 90 | |
| 3:05 PM | 1 | 22 | 3 | 0 | 8 | 16 | 0 | 0 | 7 | 0 | 4 | 0 | 1 | 1 | 12 | 0 | 75 | |
| 3:10 PM | 1 | 18 | 11 | 0 | 10 | 21 | 0 | 0 | 6 | 2 | 3 | 0 | 5 | 2 | 16 | 0 | 95 | |
| 3:15 PM | 5 | 18 | 10 | 0 | 14 | 14 | 2 | 0 | 7 | 4 | 3 | 0 | 12 | 4 | 19 | 0 | 112 | |
| 3:20 PM | 3 | 17 | 11 | 0 | 9 | 10 | 0 | 0 | 5 | 4 | 0 | 0 | 4 | 7 | 21 | 0 | 91 | |
| 3:25 PM | 2 | 26 | 9 | 0 | 2 | 16 | 0 | 0 | 11 | 3 | 1 | 0 | 12 | 1 | 12 | 0 | 95 | |
| 3:30 PM | 1 | 32 | 3 | 0 | 6 | 21 | 0 | 0 | 7 | 1 | 8 | 0 | 4 | 2 | 20 | 0 | 105 | |
| 3:35 PM | 1 | 30 | 8 | 0 | 13 | 15 | 0 | 0 | 4 | 5 | 0 | 0 | 4 | 1 | 14 | 0 | 95 | |
| 3:40 PM | 0 | 38 | 5 | 0 | 9 | 26 | 3 | 0 | 5 | 2 | 2 | 0 | 8 | 3 | 19 | 0 | 120 | |
| 3:45 PM | 4 | 38 | 6 | 0 | 11 | 12 | 0 | 0 | 8 | 2 | 3 | 0 | 13 | 3 | 17 | 0 | 117 | |
| 3:50 PM | 4 | 32 | 7 | 0 | 10 | 16 | 0 | 0 | 6 | 2 | 3 | 0 | 10 | 6 | 19 | 0 | 115 | |
| 3:55 PM | 2 | 20 | 6 | 0 | 11 | 23 | 0 | 0 | 8 | 2 | 1 | 0 | 10 | 5 | 16 | 0 | 104 | 1214 |
| 4:00 PM | 2 | 15 | 6 | 0 | 7 | 20 | 1 | 0 | 13 | 3 | 3 | 0 | 9 | 3 | 23 | 0 | 105 | 1229 |
| 4:05 PM | 2 | 28 | 15 | 0 | 8 | 24 | 1 | 0 | 11 | 1 | 3 | 0 | 10 | 4 | 17 | 1 | 125 | 1279 |
| 4:10 PM | 0 | 32 | 11 | 0 | 9 | 11 | 1 | 0 | 9 | 3 | 5 | 0 | 8 | 1 | 17 | 0 | 107 | 1291 |
| 4:15 PM | 2 | 31 | 11 | 0 | 5 | 22 | 1 | 0 | 6 | 1 | 2 | 0 | 11 | 3 | 21 | 0 | 116 | 1295 |
| 4:20 PM | 0 | 29 | 11 | 0 | 10 | 28 | 1 | 0 | 5 | 2 | 0 | 0 | 10 | 2 | 22 | 0 | 120 | 1324 |
| 4:25 PM | 1 | 37 | 11 | 0 | 11 | 20 | 1 | 0 | 5 | 1 | 4 | 0 | 8 | 4 | 15 | 0 | 118 | 1347 |
| 4:30 PM | 2 | 31 | 11 | 0 | 6 | 20 | 2 | 0 | 4 | 7 | 4 | 0 | 10 | 0 | 16 | 0 | 113 | 1355 |
| 4:35 PM | 3 | 20 | 18 | 0 | 3 | 18 | 1 | 0 | 7 | 6 | 5 | 0 | 11 | 5 | 19 | 0 | 116 | 1376 |
| 4:40 PM | 5 | 37 | 9 | 0 | 11 | 28 | 0 | 0 | 9 | 1 | 4 | 0 | 9 | 1 | 15 | 0 | 129 | 1385 |
| 4:45 PM | 4 | 23 | 12 | 0 | 10 | 32 | 1 | 0 | 5 | 2 | 3 | 0 | 8 | 3 | 9 | 0 | 112 | 1380 |
| 4:50 PM | 5 | 24 | 10 | 0 | 12 | 22 | 1 | 0 | 9 | 1 | 3 | 0 | 8 | 3 | 25 | 0 | 123 | 1388 |
| 4:55 PM | 5 | 26 | 12 | 0 | 10 | 28 | 0 | 0 | 5 | 0 | 3 | 0 | 11 | 0 | 22 | 0 | 122 | 1406 |
| 5:00 PM | 2 | 26 | 6 | 0 | 14 | 30 | 0 | 0 | 5 | 3 | 7 | 0 | 10 | 3 | 16 | 0 | 122 | 1423 |
| 5:05 PM | 2 | 26 | 7 | 0 | 4 | 27 | 4 | 0 | 7 | 4 | 4 | 0 | 13 | 4 | 19 | 0 | 121 | 1419 |
| 5:10 PM | 4 | 24 | 14 | 0 | 11 | 21 | 1 | 0 | 9 | 5 | 4 | 0 | 15 | 4 | 21 | 0 | 133 | 1445 |
| 5:15 PM | 2 | 36 | 5 | 0 | 13 | 26 | 1 | 0 | 9 | 3 | 3 | 0 | 13 | 4 | 19 | 0 | 134 | 1463 |
| 5:20 PM | 5 | 26 | 8 | 0 | 9 | 18 | 1 | 0 | 9 | 2 | 7 | 0 | 14 | 3 | 17 | 0 | 119 | 1462 |
| 5:25 PM | 0 | 41 | 5 | 0 | 11 | 25 | 0 | 0 | 5 | 1 | 4 | 0 | 9 | 0 | 14 | 0 | 115 | 1459 |
| 5:30 PM | 0 | 26 | 10 | 0 | 6 | 22 | 0 | 0 | 8 | 3 | 3 | 0 | 13 | 3 | 21 | 0 | 115 | 1461 |
| 5:35 PM | 0 | 20 | 8 | 0 | 8 | 29 | 0 | 0 | 6 | 4 | 3 | 0 | 5 | 2 | 13 | 0 | 98 | 1443 |
| 5:40 PM | 1 | 29 | 11 | 0 | 6 | 30 | 0 | 0 | 8 | 0 | 3 | 0 | 8 | 4 | 11 | 0 | 111 | 1425 |
| 5:45 PM | 1 | 20 | 12 | 0 | 8 | 26 | 0 | 0 | 9 | 0 | 4 | 0 | 13 | 4 | 18 | 0 | 115 | 1428 |
| 5:50 PM | 2 | 25 | 7 | 0 | 11 | 26 | 2 | 0 | 4 | 3 | 4 | 0 | 14 | 3 | 14 | 0 | 115 | 1420 |
| 5:55 PM | 4 | 29 | 8 | 0 | 5 | 20 | 0 | 0 | 9 | 4 | 6 | 0 | 11 | 1 | 15 | 0 | 112 | 1410 |

| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | Total |
|-----------------------|------------|------|-------|---|------------|------|-------|---|-----------|------|-------|---|-----------|------|-------|---|-------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | |
| All Vehicles | 32 | 344 | 104 | 0 | 112 | 296 | 24 | 0 | 100 | 48 | 44 | 0 | 164 | 48 | 236 | 0 | 1552 |
| Heavy Trucks | 0 | 12 | 0 | | 4 | 8 | 0 | | 0 | 0 | 0 | | 8 | 0 | 0 | | 32 |
| Buses | | | | | | | | | | | | | | | | | |
| Pedestrians | | 16 | | | | 0 | | | | 0 | | | | 12 | | | 28 |
| Bicycles | 0 | 0 | 0 | | 0 | 8 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 8 |
| Scoters | | | | | | | | | | | | | | | | | |

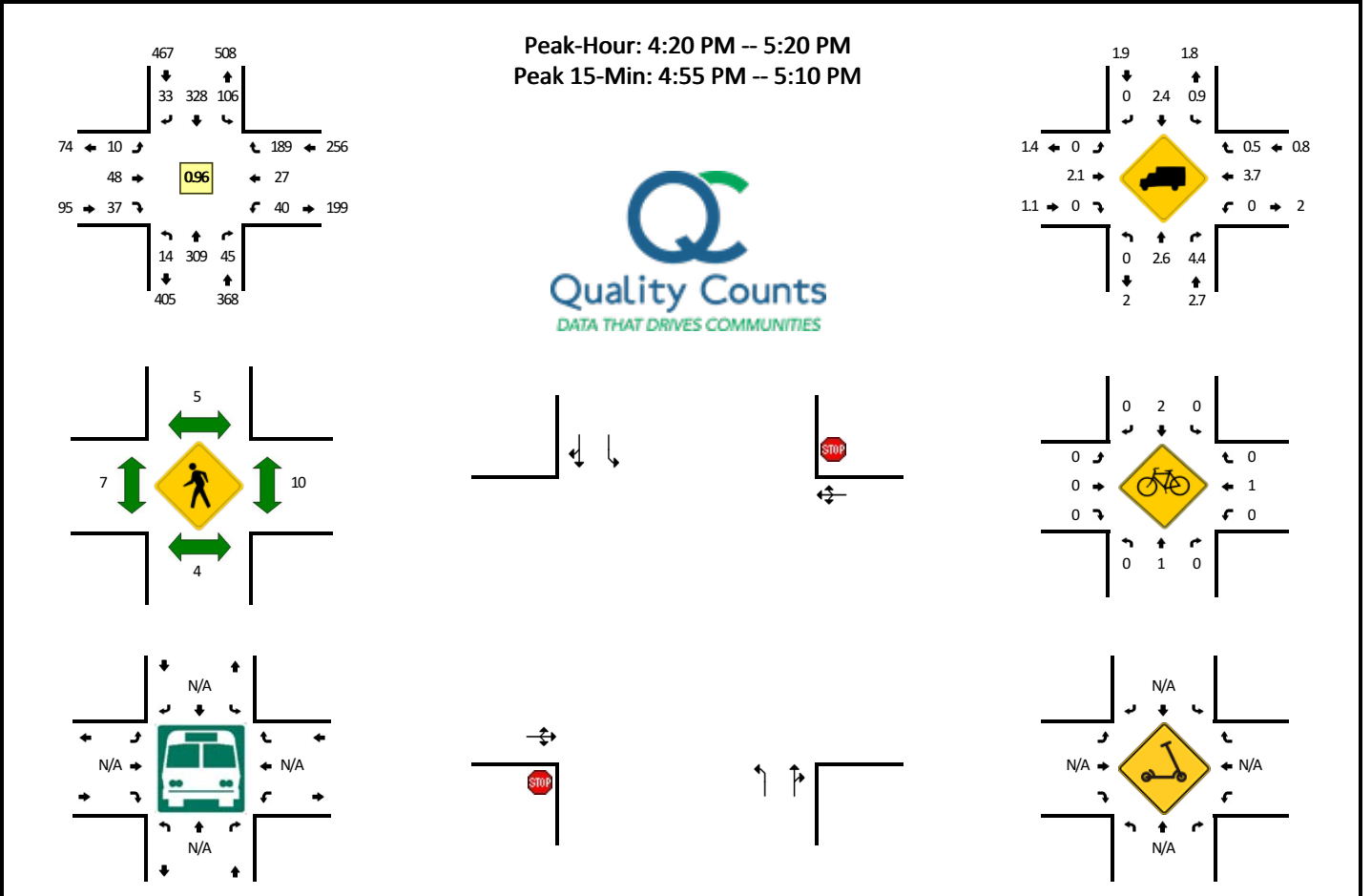
Comments:

Report generated on 11/25/2022 4:58 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: Sherwood Blvd -- SW 12th St/SW Century Dr
CITY/STATE: Sherwood, OR

QC JOB #: 15970012
DATE: Wed, Oct 5 2022



| 5-Min Count Period Beginning At | Sherwood Blvd (Northbound) | | | | Sherwood Blvd (Southbound) | | | | SW 12th St/SW Century Dr (Eastbound) | | | | SW 12th St/SW Century Dr (Westbound) | | | | Total | Hourly Totals |
|---------------------------------|----------------------------|------|-------|---|----------------------------|------|-------|---|--------------------------------------|------|-------|---|--------------------------------------|------|-------|---|-------|---------------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 3:00 PM | 1 | 11 | 3 | 0 | 7 | 21 | 3 | 0 | 2 | 4 | 1 | 0 | 4 | 2 | 13 | 0 | 72 | |
| 3:05 PM | 0 | 14 | 3 | 0 | 5 | 16 | 0 | 0 | 0 | 3 | 1 | 0 | 3 | 2 | 11 | 0 | 58 | |
| 3:10 PM | 0 | 15 | 2 | 0 | 8 | 15 | 5 | 0 | 0 | 2 | 1 | 0 | 1 | 0 | 13 | 0 | 62 | |
| 3:15 PM | 1 | 17 | 2 | 0 | 11 | 18 | 1 | 0 | 2 | 1 | 0 | 0 | 1 | 1 | 15 | 0 | 70 | |
| 3:20 PM | 1 | 18 | 2 | 0 | 3 | 12 | 0 | 0 | 1 | 3 | 2 | 0 | 7 | 2 | 12 | 0 | 63 | |
| 3:25 PM | 0 | 23 | 1 | 0 | 7 | 20 | 1 | 0 | 0 | 3 | 1 | 0 | 3 | 1 | 15 | 0 | 75 | |
| 3:30 PM | 1 | 23 | 1 | 0 | 4 | 28 | 1 | 0 | 1 | 4 | 1 | 0 | 2 | 1 | 13 | 0 | 80 | |
| 3:35 PM | 3 | 26 | 2 | 0 | 10 | 8 | 2 | 0 | 1 | 4 | 0 | 0 | 2 | 0 | 13 | 0 | 71 | |
| 3:40 PM | 1 | 32 | 4 | 0 | 12 | 19 | 3 | 0 | 0 | 4 | 1 | 0 | 2 | 3 | 12 | 0 | 93 | |
| 3:45 PM | 2 | 31 | 3 | 0 | 6 | 21 | 2 | 0 | 0 | 5 | 2 | 0 | 1 | 1 | 14 | 0 | 88 | |
| 3:50 PM | 2 | 24 | 6 | 0 | 3 | 25 | 1 | 0 | 2 | 3 | 3 | 0 | 0 | 2 | 17 | 0 | 88 | |
| 3:55 PM | 1 | 11 | 4 | 0 | 4 | 29 | 1 | 0 | 1 | 6 | 2 | 0 | 3 | 3 | 13 | 0 | 78 | 898 |
| 4:00 PM | 1 | 16 | 5 | 0 | 11 | 20 | 1 | 0 | 0 | 3 | 3 | 0 | 3 | 3 | 11 | 0 | 77 | 903 |
| 4:05 PM | 1 | 26 | 5 | 0 | 9 | 25 | 3 | 0 | 2 | 3 | 3 | 0 | 5 | 0 | 13 | 0 | 95 | 940 |
| 4:10 PM | 0 | 28 | 5 | 0 | 9 | 12 | 1 | 0 | 2 | 4 | 1 | 0 | 4 | 3 | 17 | 0 | 86 | 964 |
| 4:15 PM | 1 | 25 | 1 | 0 | 8 | 26 | 2 | 0 | 0 | 3 | 6 | 0 | 3 | 5 | 15 | 0 | 95 | 989 |
| 4:20 PM | 3 | 22 | 3 | 0 | 12 | 24 | 1 | 0 | 1 | 6 | 1 | 0 | 5 | 0 | 22 | 0 | 100 | 1026 |
| 4:25 PM | 2 | 35 | 10 | 0 | 6 | 23 | 4 | 0 | 0 | 7 | 4 | 0 | 3 | 3 | 11 | 0 | 108 | 1059 |
| 4:30 PM | 0 | 33 | 1 | 0 | 6 | 26 | 2 | 0 | 0 | 1 | 2 | 0 | 3 | 2 | 12 | 0 | 88 | 1067 |
| 4:35 PM | 0 | 27 | 4 | 0 | 7 | 22 | 3 | 0 | 2 | 3 | 2 | 0 | 4 | 2 | 21 | 0 | 97 | 1093 |
| 4:40 PM | 1 | 26 | 6 | 0 | 13 | 25 | 2 | 0 | 3 | 6 | 2 | 0 | 1 | 2 | 13 | 0 | 100 | 1100 |
| 4:45 PM | 1 | 20 | 4 | 0 | 10 | 30 | 2 | 0 | 1 | 2 | 3 | 0 | 5 | 4 | 15 | 0 | 97 | 1109 |
| 4:50 PM | 1 | 20 | 3 | 0 | 10 | 23 | 2 | 0 | 0 | 5 | 5 | 0 | 3 | 2 | 18 | 0 | 92 | 1113 |
| 4:55 PM | 1 | 28 | 1 | 0 | 4 | 38 | 1 | 0 | 0 | 5 | 5 | 0 | 2 | 2 | 17 | 0 | 104 | 1139 |
| 5:00 PM | 1 | 26 | 3 | 0 | 10 | 31 | 2 | 0 | 0 | 4 | 7 | 0 | 4 | 4 | 12 | 0 | 104 | 1166 |
| 5:05 PM | 1 | 24 | 4 | 0 | 7 | 32 | 6 | 0 | 2 | 4 | 1 | 0 | 4 | 3 | 12 | 0 | 100 | 1171 |
| 5:10 PM | 3 | 18 | 6 | 0 | 9 | 27 | 5 | 0 | 1 | 3 | 3 | 0 | 3 | 1 | 21 | 0 | 100 | 1185 |
| 5:15 PM | 0 | 30 | 0 | 0 | 12 | 27 | 3 | 0 | 0 | 2 | 2 | 0 | 3 | 2 | 15 | 0 | 96 | 1186 |
| 5:20 PM | 3 | 27 | 2 | 0 | 8 | 30 | 1 | 0 | 1 | 1 | 4 | 0 | 4 | 3 | 13 | 0 | 97 | 1183 |
| 5:25 PM | 3 | 24 | 4 | 0 | 8 | 28 | 2 | 0 | 2 | 5 | 2 | 0 | 1 | 1 | 15 | 0 | 95 | 1170 |
| 5:30 PM | 4 | 19 | 4 | 0 | 6 | 31 | 1 | 0 | 0 | 5 | 4 | 0 | 1 | 0 | 13 | 0 | 88 | 1170 |
| 5:35 PM | 0 | 20 | 5 | 0 | 8 | 28 | 1 | 0 | 1 | 4 | 4 | 0 | 5 | 5 | 9 | 0 | 90 | 1163 |
| 5:40 PM | 0 | 25 | 4 | 0 | 10 | 26 | 0 | 0 | 0 | 4 | 4 | 0 | 6 | 1 | 14 | 0 | 94 | 1157 |
| 5:45 PM | 0 | 20 | 2 | 0 | 9 | 32 | 5 | 0 | 1 | 2 | 2 | 0 | 3 | 1 | 13 | 0 | 90 | 1150 |
| 5:50 PM | 0 | 27 | 7 | 0 | 9 | 37 | 0 | 0 | 1 | 4 | 12 | 0 | 7 | 1 | 7 | 0 | 112 | 1170 |
| 5:55 PM | 2 | 25 | 8 | 0 | 7 | 30 | 0 | 0 | 0 | 3 | 2 | 0 | 4 | 1 | 14 | 0 | 96 | 1162 |

| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | Total |
|-----------------------|------------|------|-------|---|------------|------|-------|---|-----------|------|-------|---|-----------|------|-------|---|-------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | |
| All Vehicles | 12 | 312 | 32 | 0 | 84 | 404 | 36 | 0 | 8 | 52 | 52 | 0 | 40 | 36 | 164 | 0 | 1232 |
| Heavy Trucks | 0 | 4 | 0 | | 0 | 4 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 8 |
| Buses | | | | | | | | | | | | | | | | | |
| Pedestrians | | 8 | | | | 0 | | | | 4 | | | | 16 | | | 28 |
| Bicycles | 0 | 4 | 0 | | 0 | 4 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 8 |
| Scoters | | | | | | | | | | | | | | | | | |

Comments:

Report generated on 11/25/2022 4:58 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Appendix C
Existing Traffic Conditions Worksheets

HCM 6th TWSC
2: Chevron Dwy (west) & 99W

11/15/2022

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0 | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↑↑↑ | | | ↑↑↑ | | ↑ |
| Traffic Vol, veh/h | 1555 | 50 | 0 | 0 | 0 | 2 |
| Future Vol, veh/h | 1555 | 50 | 0 | 0 | 0 | 2 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | - | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 76 | 76 | 76 | 76 | 76 | 76 |
| Heavy Vehicles, % | 0 | 11 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 2046 | 66 | 0 | 0 | 0 | 3 |

| Major/Minor | Major1 | Major2 | Minor1 | Minor2 | Minor3 |
|----------------------|--------|--------|--------|--------|--------|
| Conflicting Flow All | 0 | 0 | - | - | 1056 |
| Stage 1 | - | - | - | - | - |
| Stage 2 | - | - | - | - | - |
| Critical Hdwy | - | - | - | - | 7.1 |
| Critical Hdwy Stg 1 | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - |
| Follow-up Hdwy | - | - | - | - | 3.9 |
| Pot Cap-1 Maneuver | - | - | 0 | - | 193 |
| Stage 1 | - | - | 0 | - | - |
| Stage 2 | - | - | 0 | - | - |
| Platoon blocked, % | - | - | - | - | - |
| Mov Cap-1 Maneuver | - | - | - | - | 193 |
| Mov Cap-2 Maneuver | - | - | - | - | - |
| Stage 1 | - | - | - | - | - |
| Stage 2 | - | - | - | - | - |

| Approach | EB | WB | NB |
|----------------------|----|----|------|
| HCM Control Delay, s | 0 | 0 | 23.9 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h) | 193 | - | - | - |
| HCM Lane V/C Ratio | 0.014 | - | - | - |
| HCM Control Delay (s) | 23.9 | - | - | - |
| HCM Lane LOS | C | - | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | - |

HCM 6th TWSC
 3: Chevron Dwy (east) & 99W

11/15/2022

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 1.1 | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↑↑↑ | | | ↑↑↑ | | ↑ |
| Traffic Vol, veh/h | 1556 | 1 | 0 | 0 | 0 | 42 |
| Future Vol, veh/h | 1556 | 1 | 0 | 0 | 0 | 42 |
| Conflicting Peds, #/hr | 0 | 1 | 1 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | - | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 72 | 72 | 72 | 72 | 72 | 72 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 24 |
| Mvmt Flow | 2161 | 1 | 0 | 0 | 0 | 58 |






















| Major/Minor | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|------------|
| Conflicting Flow All | 0 | 0 | - - - 1082 |
| Stage 1 | - | - | - - - |
| Stage 2 | - | - | - - - |
| Critical Hdwy | - | - | - - - 7.58 |
| Critical Hdwy Stg 1 | - | - | - - - |
| Critical Hdwy Stg 2 | - | - | - - - |
| Follow-up Hdwy | - | - | - - - 4.14 |
| Pot Cap-1 Maneuver | - | - 0 | - 0 156 |
| Stage 1 | - | - 0 | - 0 - |
| Stage 2 | - | - 0 | - 0 - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | - | - | - - - 156 |
| Mov Cap-2 Maneuver | - | - | - - - |
| Stage 1 | - | - | - - - |
| Stage 2 | - | - | - - - |

| Approach | EB | WB | NB |
|----------------------|----|----|------|
| HCM Control Delay, s | 0 | 0 | 41.2 |
| HCM LOS | | | E |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h) | 156 | - | - | - |
| HCM Lane V/C Ratio | 0.374 | - | - | - |
| HCM Control Delay (s) | 41.2 | - | - | - |
| HCM Lane LOS | E | - | - | - |
| HCM 95th %tile Q(veh) | 1.6 | - | - | - |

HCM Signalized Intersection Capacity Analysis
4: Sherwood Blvd & SW Langer Dr

11/15/2022

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|--|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |   | |  |  | |
| Traffic Volume (vph) | 71 | 19 | 25 | 56 | 14 | 117 | 23 | 337 | 104 | 111 | 212 | 8 |
| Future Volume (vph) | 71 | 19 | 25 | 56 | 14 | 117 | 23 | 337 | 104 | 111 | 212 | 8 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 1.00 | |
| Frbp, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.91 | | 1.00 | 0.87 | | 1.00 | 0.96 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1752 | 1637 | | 1656 | 1581 | | 1736 | 3318 | | 1770 | 1828 | |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1752 | 1637 | | 1656 | 1581 | | 1736 | 3318 | | 1770 | 1828 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 84 | 22 | 29 | 66 | 16 | 138 | 27 | 396 | 122 | 131 | 249 | 9 |
| RTOR Reduction (vph) | 0 | 25 | 0 | 0 | 120 | 0 | 0 | 32 | 0 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 84 | 26 | 0 | 66 | 34 | 0 | 27 | 486 | 0 | 131 | 257 | 0 |
| Confl. Peds. (#/hr) | 1 | | | | | | 1 | | 5 | 5 | | |
| Heavy Vehicles (%) | 3% | 5% | 7% | 9% | 0% | 3% | 4% | 4% | 5% | 2% | 3% | 14% |
| Turn Type | Prot | NA | | Prot | NA | | Prot | NA | | Prot | NA | |
| Protected Phases | 3 | 8 | | 7 | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | 6.1 | 7.1 | | 4.4 | 6.3 | | 2.5 | 21.4 | | 6.7 | 26.7 | |
| Effective Green, g (s) | 8.0 | 9.1 | | 7.2 | 8.3 | | 4.3 | 22.8 | | 9.4 | 27.9 | |
| Actuated g/C Ratio | 0.12 | 0.14 | | 0.11 | 0.13 | | 0.07 | 0.35 | | 0.15 | 0.43 | |
| Clearance Time (s) | 5.9 | 6.0 | | 6.8 | 6.0 | | 5.8 | 5.4 | | 6.7 | 5.2 | |
| Vehicle Extension (s) | 2.7 | 1.6 | | 2.4 | 1.6 | | 2.9 | 2.1 | | 2.6 | 2.1 | |
| Lane Grp Cap (vph) | 217 | 230 | | 184 | 203 | | 115 | 1172 | | 257 | 790 | |
| v/s Ratio Prot | c0.05 | 0.02 | | 0.04 | c0.02 | | 0.02 | c0.15 | | c0.07 | 0.14 | |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | 0.39 | 0.11 | | 0.36 | 0.17 | | 0.23 | 0.41 | | 0.51 | 0.33 | |
| Uniform Delay, d1 | 26.0 | 24.2 | | 26.5 | 25.0 | | 28.5 | 15.8 | | 25.4 | 12.1 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.0 | 0.1 | | 0.8 | 0.1 | | 1.0 | 0.1 | | 1.2 | 0.1 | |
| Delay (s) | 27.0 | 24.3 | | 27.3 | 25.2 | | 29.5 | 15.9 | | 26.7 | 12.2 | |
| Level of Service | C | C | | C | C | | C | B | | C | B | |
| Approach Delay (s) | | 25.9 | | | 25.8 | | | 16.6 | | | 17.1 | |
| Approach LOS | | C | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 19.3 | | | | HCM 2000 Level of Service | | | | B | |
| HCM 2000 Volume to Capacity ratio | | | 0.39 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 64.5 | | | | Sum of lost time (s) | | | 16.0 | | |
| Intersection Capacity Utilization | | | 44.7% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM 6th Signalized Intersection Summary

4: Sherwood Blvd & SW Langer Dr

11/15/2022



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|-------|-------|-------|------|-------|-------|-------|------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 71 | 19 | 25 | 56 | 14 | 117 | 23 | 337 | 104 | 111 | 212 | 8 |
| Future Volume (veh/h) | 71 | 19 | 25 | 56 | 14 | 117 | 23 | 337 | 104 | 111 | 212 | 8 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1856 | 1826 | 1796 | 1767 | 1900 | 1856 | 1841 | 1841 | 1826 | 1870 | 1856 | 1693 |
| Adj Flow Rate, veh/h | 84 | 22 | 29 | 66 | 16 | 138 | 27 | 396 | 122 | 131 | 249 | 9 |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Percent Heavy Veh, % | 3 | 5 | 7 | 9 | 0 | 3 | 4 | 4 | 5 | 2 | 3 | 14 |
| Cap, veh/h | 190 | 116 | 152 | 196 | 29 | 251 | 118 | 666 | 203 | 261 | 583 | 21 |
| Arrive On Green | 0.11 | 0.16 | 0.12 | 0.12 | 0.17 | 0.13 | 0.07 | 0.25 | 0.22 | 0.15 | 0.33 | 0.30 |
| Sat Flow, veh/h | 1767 | 713 | 939 | 1682 | 170 | 1463 | 1753 | 2633 | 801 | 1781 | 1779 | 64 |
| Grp Volume(v), veh/h | 84 | 0 | 51 | 66 | 0 | 154 | 27 | 261 | 257 | 131 | 0 | 258 |
| Grp Sat Flow(s),veh/h/ln | 1767 | 0 | 1652 | 1682 | 0 | 1633 | 1753 | 1749 | 1686 | 1781 | 0 | 1843 |
| Q Serve(g_s), s | 2.2 | 0.0 | 1.4 | 1.8 | 0.0 | 4.4 | 0.7 | 6.5 | 6.7 | 3.4 | 0.0 | 5.4 |
| Cycle Q Clear(g_c), s | 2.2 | 0.0 | 1.4 | 1.8 | 0.0 | 4.4 | 0.7 | 6.5 | 6.7 | 3.4 | 0.0 | 5.4 |
| Prop In Lane | 1.00 | | 0.57 | 1.00 | | 0.90 | 1.00 | | 0.48 | 1.00 | | 0.03 |
| Lane Grp Cap(c), veh/h | 190 | 0 | 268 | 196 | 0 | 280 | 118 | 442 | 426 | 261 | 0 | 604 |
| V/C Ratio(X) | 0.44 | 0.00 | 0.19 | 0.34 | 0.00 | 0.55 | 0.23 | 0.59 | 0.60 | 0.50 | 0.00 | 0.43 |
| Avail Cap(c_a), veh/h | 424 | 0 | 566 | 434 | 0 | 559 | 417 | 930 | 896 | 456 | 0 | 973 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 20.8 | 0.0 | 18.5 | 20.2 | 0.0 | 19.7 | 21.9 | 16.3 | 16.7 | 19.5 | 0.0 | 13.1 |
| Incr Delay (d2), s/veh | 1.4 | 0.0 | 0.1 | 0.7 | 0.0 | 0.6 | 0.9 | 0.6 | 0.6 | 1.2 | 0.0 | 0.2 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.9 | 0.0 | 0.5 | 0.7 | 0.0 | 1.6 | 0.3 | 2.3 | 2.4 | 1.3 | 0.0 | 2.0 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 22.2 | 0.0 | 18.6 | 20.8 | 0.0 | 20.3 | 22.8 | 16.9 | 17.3 | 20.7 | 0.0 | 13.3 |
| LnGrp LOS | C | A | B | C | A | C | C | B | B | C | A | B |
| Approach Vol, veh/h | | 135 | | | 220 | | | 545 | | | | 389 |
| Approach Delay, s/veh | | 20.8 | | | 20.5 | | | 17.4 | | | | 15.8 |
| Approach LOS | | C | | | C | | | B | | | | B |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 7.4 | 20.5 | 9.3 | 12.5 | 11.3 | 16.6 | 9.8 | 12.0 | | | | |
| Change Period (Y+Rc), s | * 5.8 | * 5.4 | * 5.9 | 6.0 | * 6.7 | * 5.4 | * 6.8 | 6.0 | | | | |
| Max Green Setting (Gmax), s | * 10 | * 25 | * 10 | 15.0 | * 10 | * 25 | * 10 | 15.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 2.7 | 7.4 | 4.2 | 6.4 | 5.4 | 8.7 | 3.8 | 3.4 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.9 | 0.1 | 0.3 | 0.1 | 2.0 | 0.0 | 0.1 | | | | |

Intersection Summary

| | |
|--------------------|------|
| HCM 6th Ctrl Delay | 17.8 |
| HCM 6th LOS | B |

Notes

- User approved pedestrian interval to be less than phase max green.
- * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th AWSC
 5: Chevron Dwy (west) & Chevron Dwy (east)

11/15/2022

Intersection

Intersection Delay, s/veh 7
 Intersection LOS A

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---------------------|------|------|------|------|------|------|
| Lane Configurations | W | | T | | | T |
| Traffic Vol, veh/h | 14 | 10 | 0 | 13 | 9 | 0 |
| Future Vol, veh/h | 14 | 10 | 0 | 13 | 9 | 0 |
| Peak Hour Factor | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 |
| Heavy Vehicles, % | 19 | 0 | 0 | 29 | 0 | 0 |
| Mvmt Flow | 17 | 12 | 0 | 16 | 11 | 0 |
| Number of Lanes | 1 | 0 | 1 | 0 | 0 | 1 |

| Approach | WB | NB | SB |
|-------------------------------|-----|-----|-----|
| Opposing Approach | | SB | NB |
| Opposing Lanes | 0 | 1 | 1 |
| Conflicting Approach Left NB | | | WB |
| Conflicting Lanes Left | 1 | 0 | 1 |
| Conflicting Approach Right SB | | WB | |
| Conflicting Lanes Right | 1 | 1 | 0 |
| HCM Control Delay | 7.3 | 6.4 | 7.2 |
| HCM LOS | A | A | A |

| Lane | NBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|
| Vol Left, % | 0% | 58% | 100% |
| Vol Thru, % | 0% | 0% | 0% |
| Vol Right, % | 100% | 42% | 0% |
| Sign Control | Stop | Stop | Stop |
| Traffic Vol by Lane | 13 | 24 | 9 |
| LT Vol | 0 | 14 | 9 |
| Through Vol | 0 | 0 | 0 |
| RT Vol | 13 | 10 | 0 |
| Lane Flow Rate | 16 | 29 | 11 |
| Geometry Grp | 1 | 1 | 1 |
| Degree of Util (X) | 0.015 | 0.034 | 0.013 |
| Departure Headway (Hd) | 3.359 | 4.137 | 4.163 |
| Convergence, Y/N | Yes | Yes | Yes |
| Cap | 1066 | 869 | 861 |
| Service Time | 1.378 | 2.144 | 2.18 |
| HCM Lane V/C Ratio | 0.015 | 0.033 | 0.013 |
| HCM Control Delay | 6.4 | 7.3 | 7.2 |
| HCM Lane LOS | A | A | A |
| HCM 95th-tile Q | 0 | 0.1 | 0 |

HCM 6th TWSC
6: Sherwood Blvd & SW 12th St/SW Century Dr

11/15/2022

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 14.7 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 10 | 39 | 46 | 44 | 10 | 132 | 16 | 322 | 92 | 81 | 202 | 10 |
| Future Vol, veh/h | 10 | 39 | 46 | 44 | 10 | 132 | 16 | 322 | 92 | 81 | 202 | 10 |
| Conflicting Peds, #/hr | 7 | 0 | 1 | 1 | 0 | 7 | 0 | 0 | 8 | 8 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 |
| Heavy Vehicles, % | 0 | 3 | 4 | 2 | 0 | 4 | 0 | 5 | 3 | 1 | 5 | 0 |
| Mvmt Flow | 13 | 51 | 61 | 58 | 13 | 174 | 21 | 424 | 121 | 107 | 266 | 13 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 1114 | 1082 | 274 | 1079 | 1028 | 500 | 279 | 0 | 0 | 553 | 0 | 0 |
| Stage 1 | 487 | 487 | - | 535 | 535 | - | - | - | - | - | - | - |
| Stage 2 | 627 | 595 | - | 544 | 493 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.53 | 6.24 | 7.12 | 6.5 | 6.24 | 4.1 | - | - | 4.11 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.53 | - | 6.12 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.53 | - | 6.12 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4.027 | 3.336 | 3.518 | 4 | 3.336 | 2.2 | - | - | 2.209 | - | - |
| Pot Cap-1 Maneuver | 187 | 217 | 760 | 196 | 236 | 567 | 1295 | - | - | 1022 | - | - |
| Stage 1 | 566 | 549 | - | 529 | 527 | - | - | - | - | - | - | - |
| Stage 2 | 475 | 491 | - | 523 | 550 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 108 | 184 | 759 | 125 | 200 | 559 | 1295 | - | - | 1014 | - | - |
| Mov Cap-2 Maneuver | 108 | 184 | - | 125 | 200 | - | - | - | - | - | - | - |
| Stage 1 | 552 | 480 | - | 513 | 510 | - | - | - | - | - | - | - |
| Stage 2 | 309 | 475 | - | 376 | 481 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|----|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 31 | | 58.8 | | 0.3 | | 2.5 | |
| HCM LOS | D | | F | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1295 | - | - | 260 | 291 | 1014 | - | - |
| HCM Lane V/C Ratio | 0.016 | - | - | 0.481 | 0.841 | 0.105 | - | - |
| HCM Control Delay (s) | 7.8 | 0 | - | 31 | 58.8 | 9 | 0 | - |
| HCM Lane LOS | A | A | - | D | F | A | A | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 2.4 | 7.1 | 0.4 | - | - |

Intersection Level Of Service Report

Intersection 1:

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 38.2 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.689 |

Intersection Setup

| Name | Sherwood Blvd | | | Sherwood Blvd | | | 99W | | | 99W | | |
|------------------------------|---------------|--------|--------|---------------|--------|--------|-----------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 150.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 | 475.00 | 100.00 | 100.00 | 415.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | No | | | Yes | | |

Volumes

| Name | Sherwood Blvd | | | Sherwood Blvd | | | 99W | | | 99W | | |
|---|---------------|--------|--------|---------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | | | | | | | | | | | |
| Base Volume Input [veh/h] | 159 | 228 | 138 | 187 | 204 | 148 | 163 | 1280 | 92 | 103 | 743 | 91 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 3.00 | 2.00 | 4.00 | 4.00 | 2.00 | 4.00 | 1.00 | 7.00 | 1.00 | 3.00 | 14.00 | 7.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 159 | 228 | 138 | 187 | 204 | 148 | 163 | 1280 | 92 | 103 | 743 | 91 |
| Peak Hour Factor | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 43 | 61 | 37 | 50 | 55 | 40 | 44 | 344 | 25 | 28 | 200 | 24 |
| Total Analysis Volume [veh/h] | 171 | 245 | 148 | 201 | 219 | 159 | 175 | 1376 | 99 | 111 | 799 | 98 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing in | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Version 2022 (SP 0-2)

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 11.0 |
| Offset Reference | End of Lagging Red |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

Phasing & Timing

| Control Type | Split | Split | Split | Split | Split | Split | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|------------------------------|-------|-------|-------|-------|-------|-------|----------|---------|---------|----------|---------|---------|
| Signal Group | 8 | 8 | 8 | 4 | 4 | 4 | 5 | 2 | 2 | 1 | 6 | 6 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lag | - | - | Lag | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 6 | 6 | 6 | 6 | 6 | 6 | 4 | 10 | 10 | 4 | 10 | 10 |
| Maximum Green [s] | 19 | 19 | 19 | 20 | 20 | 20 | 20 | 50 | 50 | 12 | 40 | 40 |
| Amber [s] | 4.0 | 4.0 | 4.0 | 4.5 | 4.5 | 4.5 | 3.5 | 5.0 | 5.0 | 3.5 | 5.0 | 5.0 |
| All red [s] | 1.0 | 1.0 | 1.0 | 0.5 | 0.5 | 0.5 | 1.0 | 0.5 | 0.5 | 1.0 | 0.5 | 0.5 |
| Split [s] | 24 | 24 | 24 | 25 | 25 | 25 | 25 | 55 | 55 | 16 | 46 | 46 |
| Vehicle Extension [s] | 2.3 | 2.3 | 2.3 | 3.0 | 3.0 | 3.0 | 3.0 | 4.4 | 4.4 | 2.3 | 4.4 | 4.4 |
| Walk [s] | 0 | 0 | 0 | 9 | 9 | 9 | 0 | 8 | 8 | 0 | 9 | 9 |
| Pedestrian Clearance [s] | 19 | 19 | 19 | 11 | 11 | 11 | 0 | 27 | 27 | 0 | 28 | 28 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 2.5 | 3.5 | 3.5 | 2.5 | 3.5 | 3.5 |
| Minimum Recall | | No | | | No | | No | Yes | | No | Yes | |
| Maximum Recall | | No | | | No | | No | No | | No | No | |
| Pedestrian Recall | | No | | | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 6.0 | 6.0 | 20.0 | 6.0 | 6.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | R | L | C | R | L | C | C | L | C | C |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 4.50 | 5.50 | 5.50 | 4.50 | 5.50 | 5.50 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 2.50 | 3.50 | 3.50 | 2.50 | 3.50 | 3.50 |
| g_i, Effective Green Time [s] | 18 | 18 | 18 | 17 | 17 | 17 | 14 | 56 | 56 | 9 | 52 | 52 |
| g / C, Green / Cycle | 0.15 | 0.15 | 0.15 | 0.14 | 0.14 | 0.14 | 0.11 | 0.47 | 0.47 | 0.08 | 0.43 | 0.43 |
| (v / s)_i Volume / Saturation Flow Rate | 0.10 | 0.13 | 0.09 | 0.11 | 0.12 | 0.10 | 0.10 | 0.29 | 0.29 | 0.06 | 0.19 | 0.19 |
| s, saturation flow rate [veh/h] | 1767 | 1870 | 1564 | 1752 | 1870 | 1564 | 1795 | 3418 | 1734 | 1767 | 3217 | 1597 |
| c, Capacity [veh/h] | 265 | 280 | 235 | 242 | 258 | 216 | 206 | 1600 | 812 | 136 | 1386 | 688 |
| d1, Uniform Delay [s] | 48.00 | 49.90 | 47.89 | 50.34 | 50.48 | 49.61 | 52.13 | 23.79 | 23.80 | 54.53 | 23.90 | 23.93 |
| k, delay calibration | 0.07 | 0.17 | 0.07 | 0.19 | 0.20 | 0.13 | 0.11 | 0.50 | 0.50 | 0.08 | 0.50 | 0.50 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.62 | 12.37 | 1.71 | 11.67 | 12.74 | 5.83 | 9.98 | 1.75 | 3.43 | 8.75 | 0.98 | 1.99 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | | | | |
|---------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| X, volume / capacity | 0.65 | 0.87 | 0.63 | 0.83 | 0.85 | 0.74 | 0.85 | 0.61 | 0.61 | 0.81 | 0.43 | 0.43 |
| d, Delay for Lane Group [s/veh] | 49.62 | 62.27 | 49.60 | 62.01 | 63.22 | 55.44 | 62.11 | 25.55 | 27.23 | 63.29 | 24.88 | 25.92 |
| Lane Group LOS | D | E | D | E | E | E | E | C | C | E | C | C |
| Critical Lane Group | No | Yes | No | No | Yes | No | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 4.94 | 8.14 | 4.27 | 6.65 | 7.33 | 4.93 | 5.74 | 10.56 | 11.10 | 3.63 | 6.10 | 6.29 |
| 50th-Percentile Queue Length [ft/ln] | 123.44 | 203.49 | 106.80 | 166.35 | 183.16 | 123.13 | 143.40 | 264.02 | 277.56 | 90.85 | 152.52 | 157.21 |
| 95th-Percentile Queue Length [veh/ln] | 8.58 | 12.82 | 7.66 | 10.88 | 11.77 | 8.56 | 9.66 | 15.89 | 16.57 | 6.54 | 10.15 | 10.40 |
| 95th-Percentile Queue Length [ft/ln] | 214.54 | 320.46 | 191.55 | 272.11 | 294.14 | 214.12 | 241.59 | 397.25 | 414.17 | 163.54 | 253.79 | 260.02 |

Movement, Approach, & Intersection Results

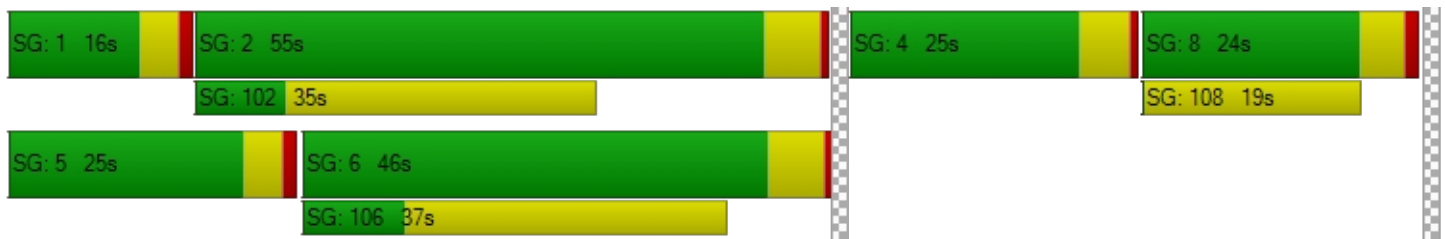
| | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 49.62 | 62.27 | 49.60 | 62.01 | 63.22 | 55.44 | 62.11 | 26.03 | 27.23 | 63.29 | 25.14 | 25.92 |
| Movement LOS | D | E | D | E | E | E | E | C | C | E | C | C |
| d_A, Approach Delay [s/veh] | 55.11 | | | 60.67 | | | 29.93 | | | 29.42 | | |
| Approach LOS | E | | | E | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 38.21 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.689 | | | | | | | | | | | |

Other Modes

| | | | | |
|--|-------|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 12.0 | 13.0 | 0.0 | 4.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 48.60 | 47.71 | 0.00 | 56.07 |
| I_p,int, Pedestrian LOS Score for Intersection | 2.386 | 2.411 | 0.000 | 2.993 |
| Crosswalk LOS | B | B | F | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 317 | 333 | 825 | 675 |
| d_b, Bicycle Delay [s] | 42.51 | 41.67 | 20.71 | 26.34 |
| I_b,int, Bicycle LOS Score for Intersection | 2.490 | 2.515 | 2.467 | 2.114 |
| Bicycle LOS | B | B | B | B |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | 4 | - | 8 | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



HCM 6th TWSC
2: Chevron Dwy (west) & 99W

11/15/2022

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.1 | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↑↑↑ | | | ↑↑↑ | | ↑ |
| Traffic Vol, veh/h | 1219 | 39 | 0 | 0 | 0 | 4 |
| Future Vol, veh/h | 1219 | 39 | 0 | 0 | 0 | 4 |
| Conflicting Peds, #/hr | 0 | 5 | 5 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | - | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 63 | 63 | 63 | 63 | 63 | 63 |
| Heavy Vehicles, % | 0 | 4 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 1935 | 62 | 0 | 0 | 0 | 6 |

| Major/Minor | Major1 | Major2 | Minor1 | | | |
|----------------------|--------|--------|--------|---|---|------|
| Conflicting Flow All | 0 | 0 | - | - | - | 1004 |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |
| Critical Hdwy | - | - | - | - | - | 7.1 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - |
| Follow-up Hdwy | - | - | - | - | - | 3.9 |
| Pot Cap-1 Maneuver | - | - | 0 | - | 0 | 209 |
| Stage 1 | - | - | 0 | - | 0 | - |
| Stage 2 | - | - | 0 | - | 0 | - |
| Platoon blocked, % | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | - | - | - | - | - | 208 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |

| Approach | EB | WB | NB |
|----------------------|----|----|------|
| HCM Control Delay, s | 0 | 0 | 22.9 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h) | 208 | - | - | - |
| HCM Lane V/C Ratio | 0.031 | - | - | - |
| HCM Control Delay (s) | 22.9 | - | - | - |
| HCM Lane LOS | C | - | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | - |

HCM 6th TWSC
 3: Chevron Dwy (east) & 99W

11/15/2022

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.5 | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↑↑↑ | | | ↑↑↑ | | ↑ |
| Traffic Vol, veh/h | 1220 | 3 | 0 | 0 | 0 | 22 |
| Future Vol, veh/h | 1220 | 3 | 0 | 0 | 0 | 22 |
| Conflicting Peds, #/hr | 0 | 3 | 3 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | - | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 57 | 57 | 57 | 57 | 57 | 57 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 7 |
| Mvmt Flow | 2140 | 5 | 0 | 0 | 0 | 39 |

| Major/Minor | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|------------|
| Conflicting Flow All | 0 | 0 | - - - 1076 |
| Stage 1 | - | - | - - - |
| Stage 2 | - | - | - - - |
| Critical Hdwy | - | - | - - - 7.24 |
| Critical Hdwy Stg 1 | - | - | - - - |
| Critical Hdwy Stg 2 | - | - | - - - |
| Follow-up Hdwy | - | - | - - - 3.97 |
| Pot Cap-1 Maneuver | - | - | 0 - 0 178 |
| Stage 1 | - | - | 0 - 0 |
| Stage 2 | - | - | 0 - 0 |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | - | - | - - - 177 |
| Mov Cap-2 Maneuver | - | - | - - - |
| Stage 1 | - | - | - - - |
| Stage 2 | - | - | - - - |

| Approach | EB | WB | NB |
|----------------------|----|----|------|
| HCM Control Delay, s | 0 | 0 | 30.9 |
| HCM LOS | | | D |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h) | 177 | - | - | - |
| HCM Lane V/C Ratio | 0.218 | - | - | - |
| HCM Control Delay (s) | 30.9 | - | - | - |
| HCM Lane LOS | D | - | - | - |
| HCM 95th %tile Q(veh) | 0.8 | - | - | - |

HCM Signalized Intersection Capacity Analysis

4: Sherwood Blvd & SW Langer Dr

11/15/2022



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|-------|-------|-------|------|---------------------------|------|------|-------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 79 | 35 | 44 | 126 | 33 | 218 | 35 | 339 | 126 | 115 | 300 | 13 |
| Future Volume (vph) | 79 | 35 | 44 | 126 | 33 | 218 | 35 | 339 | 126 | 115 | 300 | 13 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.92 | | 1.00 | 0.87 | | 1.00 | 0.96 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1787 | 1701 | | 1752 | 1638 | | 1805 | 3360 | | 1770 | 1851 | |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1787 | 1701 | | 1752 | 1638 | | 1805 | 3360 | | 1770 | 1851 | |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 84 | 37 | 47 | 134 | 35 | 232 | 37 | 361 | 134 | 122 | 319 | 14 |
| RTOR Reduction (vph) | 0 | 40 | 0 | 0 | 190 | 0 | 0 | 47 | 0 | 0 | 2 | 0 |
| Lane Group Flow (vph) | 84 | 44 | 0 | 134 | 77 | 0 | 37 | 448 | 0 | 122 | 331 | 0 |
| Confl. Peds. (#/hr) | | | 13 | 13 | | | | | 4 | 4 | | |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | | | 2 |
| Heavy Vehicles (%) | 1% | 0% | 0% | 3% | 0% | 1% | 0% | 2% | 3% | 2% | 2% | 0% |
| Turn Type | Prot | NA | | Prot | NA | | Prot | NA | | Prot | NA | |
| Protected Phases | 3 | 8 | | 7 | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | 6.0 | 7.6 | | 6.6 | 9.1 | | 2.6 | 15.8 | | 6.5 | 20.8 | |
| Effective Green, g (s) | 7.9 | 9.6 | | 9.4 | 11.1 | | 4.4 | 17.2 | | 9.2 | 22.0 | |
| Actuated g/C Ratio | 0.13 | 0.16 | | 0.15 | 0.18 | | 0.07 | 0.28 | | 0.15 | 0.36 | |
| Clearance Time (s) | 5.9 | 6.0 | | 6.8 | 6.0 | | 5.8 | 5.4 | | 6.7 | 5.2 | |
| Vehicle Extension (s) | 2.7 | 1.6 | | 2.4 | 1.6 | | 2.9 | 2.1 | | 2.6 | 2.1 | |
| Lane Grp Cap (vph) | 229 | 265 | | 268 | 296 | | 129 | 941 | | 265 | 663 | |
| v/s Ratio Prot | 0.05 | 0.03 | | c0.08 | c0.05 | | 0.02 | 0.13 | | c0.07 | c0.18 | |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | 0.37 | 0.17 | | 0.50 | 0.26 | | 0.29 | 0.48 | | 0.46 | 0.50 | |
| Uniform Delay, d1 | 24.5 | 22.4 | | 23.8 | 21.6 | | 27.0 | 18.4 | | 23.8 | 15.4 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.8 | 0.1 | | 1.0 | 0.2 | | 1.2 | 0.2 | | 1.0 | 0.3 | |
| Delay (s) | 25.3 | 22.5 | | 24.8 | 21.8 | | 28.2 | 18.5 | | 24.8 | 15.7 | |
| Level of Service | C | C | | C | C | | C | B | | C | B | |
| Approach Delay (s) | | 23.9 | | | 22.8 | | | 19.2 | | | 18.1 | |
| Approach LOS | | C | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 20.3 | | | | HCM 2000 Level of Service | | | | C | |
| HCM 2000 Volume to Capacity ratio | | | 0.48 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 61.4 | | | | Sum of lost time (s) | | | 16.0 | | |
| Intersection Capacity Utilization | | | 53.6% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM 6th Signalized Intersection Summary
 4: Sherwood Blvd & SW Langer Dr

11/15/2022



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|-------|-------|-------|------|-------|-------|-------|------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 79 | 35 | 44 | 126 | 33 | 218 | 35 | 339 | 126 | 115 | 300 | 13 |
| Future Volume (veh/h) | 79 | 35 | 44 | 126 | 33 | 218 | 35 | 339 | 126 | 115 | 300 | 13 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.96 | 1.00 | | 0.98 | 1.00 | | 0.97 | 1.00 | | 0.97 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1885 | 1900 | 1900 | 1856 | 1900 | 1885 | 1900 | 1870 | 1856 | 1870 | 1870 | 1900 |
| Adj Flow Rate, veh/h | 84 | 37 | 47 | 134 | 35 | 232 | 37 | 361 | 134 | 122 | 319 | 14 |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Percent Heavy Veh, % | 1 | 0 | 0 | 3 | 0 | 1 | 0 | 2 | 3 | 2 | 2 | 0 |
| Cap, veh/h | 181 | 141 | 179 | 257 | 50 | 329 | 131 | 594 | 217 | 241 | 523 | 23 |
| Arrive On Green | 0.10 | 0.19 | 0.15 | 0.15 | 0.23 | 0.20 | 0.07 | 0.24 | 0.21 | 0.14 | 0.29 | 0.27 |
| Sat Flow, veh/h | 1795 | 741 | 941 | 1767 | 212 | 1403 | 1810 | 2526 | 921 | 1781 | 1776 | 78 |
| Grp Volume(v), veh/h | 84 | 0 | 84 | 134 | 0 | 267 | 37 | 252 | 243 | 122 | 0 | 333 |
| Grp Sat Flow(s),veh/h/ln | 1795 | 0 | 1681 | 1767 | 0 | 1614 | 1810 | 1777 | 1670 | 1781 | 0 | 1854 |
| Q Serve(g_s), s | 2.4 | 0.0 | 2.4 | 3.8 | 0.0 | 8.4 | 1.1 | 6.9 | 7.2 | 3.5 | 0.0 | 8.4 |
| Cycle Q Clear(g_c), s | 2.4 | 0.0 | 2.4 | 3.8 | 0.0 | 8.4 | 1.1 | 6.9 | 7.2 | 3.5 | 0.0 | 8.4 |
| Prop In Lane | 1.00 | | 0.56 | 1.00 | | 0.87 | 1.00 | | 0.55 | 1.00 | | 0.04 |
| Lane Grp Cap(c), veh/h | 181 | 0 | 319 | 257 | 0 | 379 | 131 | 418 | 393 | 241 | 0 | 546 |
| V/C Ratio(X) | 0.46 | 0.00 | 0.26 | 0.52 | 0.00 | 0.71 | 0.28 | 0.60 | 0.62 | 0.51 | 0.00 | 0.61 |
| Avail Cap(c_a), veh/h | 392 | 0 | 525 | 415 | 0 | 504 | 392 | 862 | 810 | 416 | 0 | 892 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 23.1 | 0.0 | 19.3 | 21.5 | 0.0 | 20.0 | 23.9 | 18.5 | 19.0 | 21.8 | 0.0 | 16.5 |
| Incr Delay (d2), s/veh | 1.6 | 0.0 | 0.2 | 1.1 | 0.0 | 1.5 | 1.1 | 0.6 | 0.7 | 1.3 | 0.0 | 0.5 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 1.0 | 0.0 | 0.9 | 1.5 | 0.0 | 3.1 | 0.5 | 2.6 | 2.6 | 1.4 | 0.0 | 3.2 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 24.7 | 0.0 | 19.5 | 22.6 | 0.0 | 21.5 | 25.0 | 19.2 | 19.7 | 23.2 | 0.0 | 17.0 |
| LnGrp LOS | C | A | B | C | A | C | C | B | B | C | A | B |
| Approach Vol, veh/h | | 168 | | | 401 | | | 532 | | | | 455 |
| Approach Delay, s/veh | | 22.1 | | | 21.9 | | | 19.8 | | | | 18.7 |
| Approach LOS | | C | | | C | | | B | | | | B |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 7.9 | 20.2 | 9.5 | 16.8 | 11.4 | 16.8 | 11.9 | 14.3 | | | | |
| Change Period (Y+Rc), s | * 5.8 | * 5.4 | * 5.9 | 6.0 | * 6.7 | * 5.4 | * 6.8 | 6.0 | | | | |
| Max Green Setting (Gmax), s | * 10 | * 25 | * 10 | 15.0 | * 10 | * 25 | * 10 | 15.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 3.1 | 10.4 | 4.4 | 10.4 | 5.5 | 9.2 | 5.8 | 4.4 | | | | |
| Green Ext Time (p_c), s | 0.0 | 1.2 | 0.1 | 0.4 | 0.1 | 1.9 | 0.1 | 0.1 | | | | |

| Intersection Summary | | | | | | | | | | | | |
|----------------------|--|--|--|--|--|--|--|--|--|--|------|--|
| HCM 6th Ctrl Delay | | | | | | | | | | | 20.3 | |
| HCM 6th LOS | | | | | | | | | | | C | |

Notes
 User approved pedestrian interval to be less than phase max green.
 * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th AWSC
5: Chevron Dwy (west) & Chevron Dwy (east)

11/15/2022

Intersection

| | |
|---------------------------|-----|
| Intersection Delay, s/veh | 7.2 |
| Intersection LOS | A |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---------------------|------|------|------|------|------|------|
| Lane Configurations | Y | | B | | | Y |
| Traffic Vol, veh/h | 29 | 10 | 0 | 22 | 31 | 0 |
| Future Vol, veh/h | 29 | 10 | 0 | 22 | 31 | 0 |
| Peak Hour Factor | 0.68 | 0.68 | 0.68 | 0.68 | 0.68 | 0.68 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 43 | 15 | 0 | 32 | 46 | 0 |
| Number of Lanes | 1 | 0 | 1 | 0 | 0 | 1 |

| Approach | WB | NB | SB |
|-------------------------------|-----|-----|-----|
| Opposing Approach | | SB | NB |
| Opposing Lanes | 0 | 1 | 1 |
| Conflicting Approach Left NB | | | WB |
| Conflicting Lanes Left | 1 | 0 | 1 |
| Conflicting Approach Right SB | | WB | |
| Conflicting Lanes Right | 1 | 1 | 0 |
| HCM Control Delay | 7.3 | 6.6 | 7.5 |
| HCM LOS | A | A | A |

| Lane | NBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|
| Vol Left, % | 0% | 74% | 100% |
| Vol Thru, % | 0% | 0% | 0% |
| Vol Right, % | 100% | 26% | 0% |
| Sign Control | Stop | Stop | Stop |
| Traffic Vol by Lane | 22 | 39 | 31 |
| LT Vol | 0 | 29 | 31 |
| Through Vol | 0 | 0 | 0 |
| RT Vol | 22 | 10 | 0 |
| Lane Flow Rate | 32 | 57 | 46 |
| Geometry Grp | 1 | 1 | 1 |
| Degree of Util (X) | 0.031 | 0.064 | 0.054 |
| Departure Headway (Hd) | 3.435 | 4.031 | 4.226 |
| Convergence, Y/N | Yes | Yes | Yes |
| Cap | 1037 | 888 | 847 |
| Service Time | 1.472 | 2.06 | 2.253 |
| HCM Lane V/C Ratio | 0.031 | 0.064 | 0.054 |
| HCM Control Delay | 6.6 | 7.3 | 7.5 |
| HCM Lane LOS | A | A | A |
| HCM 95th-tile Q | 0.1 | 0.2 | 0.2 |

HCM 6th TWSC
6: Sherwood Blvd & SW 12th St/SW Century Dr

11/15/2022

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 10.3 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 10 | 48 | 37 | 40 | 27 | 189 | 14 | 301 | 45 | 106 | 331 | 33 |
| Future Vol, veh/h | 10 | 48 | 37 | 40 | 27 | 189 | 14 | 301 | 45 | 106 | 331 | 33 |
| Conflicting Peds, #/hr | 5 | 0 | 4 | 4 | 0 | 5 | 7 | 0 | 10 | 10 | 0 | 7 |
| 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 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 0 | 2 | 0 | 0 | 4 | 1 | 0 | 3 | 4 | 1 | 2 | 0 |
| Mvmt Flow | 10 | 50 | 39 | 42 | 28 | 197 | 15 | 314 | 47 | 110 | 345 | 34 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | | Major2 | | | | |
|----------------------|--------|-------|--------|------|--------|-------|------|--------|---|-------|---|---|
| Conflicting Flow All | 1074 | 990 | 373 | 1009 | 984 | 353 | 386 | 0 | 0 | 371 | 0 | 0 |
| Stage 1 | 589 | 589 | - | 378 | 378 | - | - | - | - | - | - | - |
| Stage 2 | 485 | 401 | - | 631 | 606 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.52 | 6.2 | 7.1 | 6.54 | 6.21 | 4.1 | - | - | 4.11 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.52 | - | 6.1 | 5.54 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.52 | - | 6.1 | 5.54 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4.018 | 3.3 | 3.5 | 4.036 | 3.309 | 2.2 | - | - | 2.209 | - | - |
| Pot Cap-1 Maneuver | 199 | 246 | 678 | 221 | 246 | 693 | 1184 | - | - | 1193 | - | - |
| Stage 1 | 498 | 495 | - | 648 | 612 | - | - | - | - | - | - | - |
| Stage 2 | 567 | 601 | - | 472 | 484 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 113 | 210 | 671 | 152 | 210 | 683 | 1176 | - | - | 1182 | - | - |
| Mov Cap-2 Maneuver | 113 | 210 | - | 152 | 210 | - | - | - | - | - | - | - |
| Stage 1 | 487 | 434 | - | 632 | 596 | - | - | - | - | - | - | - |
| Stage 2 | 377 | 585 | - | 346 | 424 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | | SB | | |
|----------------------|------|--|------|--|-----|--|--|-----|--|--|
| HCM Control Delay, s | 27.8 | | 33.3 | | 0.3 | | | 1.9 | | |
| HCM LOS | D | | D | | | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1176 | - | - | 255 | 383 | 1182 | - | - |
| HCM Lane V/C Ratio | 0.012 | - | - | 0.388 | 0.696 | 0.093 | - | - |
| HCM Control Delay (s) | 8.1 | 0 | - | 27.8 | 33.3 | 8.4 | 0 | - |
| HCM Lane LOS | A | A | - | D | D | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 1.7 | 5.1 | 0.3 | - | - |

Intersection Level Of Service Report

Intersection 1:

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 47.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.793 |

Intersection Setup

| Name | Sherwood Blvd | | | Sherwood Blvd | | | 99W | | | 99W | | |
|------------------------------|---------------|--------|--------|---------------|--------|--------|-----------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 150.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 | 475.00 | 100.00 | 100.00 | 415.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | No | | | Yes | | |

Volumes

| Name | Sherwood Blvd | | | Sherwood Blvd | | | 99W | | | 99W | | |
|---|---------------|--------|--------|---------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | 251 | 278 | 107 | 164 | 257 | 182 | 197 | 987 | 98 | 131 | 1244 | 180 |
| Base Volume Input [veh/h] | 251 | 278 | 107 | 164 | 257 | 182 | 197 | 987 | 98 | 131 | 1244 | 180 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 1.00 | 4.00 | 2.00 | 1.00 | 2.00 | 1.00 | 5.00 | 2.00 | 2.00 | 4.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 251 | 278 | 107 | 164 | 257 | 182 | 197 | 987 | 98 | 131 | 1244 | 180 |
| Peak Hour Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 65 | 72 | 28 | 43 | 67 | 47 | 51 | 257 | 26 | 34 | 324 | 47 |
| Total Analysis Volume [veh/h] | 261 | 290 | 111 | 171 | 268 | 190 | 205 | 1028 | 102 | 136 | 1296 | 188 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 2 | | | 4 | | | 1 | | | 4 | | |
| v_di, Inbound Pedestrian Volume crossing in | 1 | | | 4 | | | 2 | | | 4 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 130 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 4.0 |
| Offset Reference | End of Lagging Red |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

Phasing & Timing

| Control Type | Split | Split | Split | Split | Split | Split | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|------------------------------|-------|-------|-------|-------|-------|-------|----------|---------|---------|----------|---------|---------|
| Signal Group | 8 | 8 | 8 | 4 | 4 | 4 | 5 | 2 | 2 | 1 | 6 | 6 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lag | - | - | Lag | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 6 | 6 | 6 | 6 | 6 | 6 | 4 | 10 | 10 | 4 | 10 | 10 |
| Maximum Green [s] | 30 | 30 | 30 | 18 | 18 | 18 | 20 | 44 | 44 | 18 | 42 | 42 |
| Amber [s] | 4.0 | 4.0 | 4.0 | 4.5 | 4.5 | 4.5 | 3.5 | 5.0 | 5.0 | 3.5 | 5.0 | 5.0 |
| All red [s] | 1.0 | 1.0 | 1.0 | 0.5 | 0.5 | 0.5 | 1.0 | 0.5 | 0.5 | 1.0 | 0.5 | 0.5 |
| Split [s] | 35 | 35 | 35 | 23 | 23 | 23 | 24 | 50 | 50 | 22 | 48 | 48 |
| Vehicle Extension [s] | 2.3 | 2.3 | 2.3 | 3.0 | 3.0 | 3.0 | 3.0 | 4.4 | 4.4 | 2.3 | 4.4 | 4.4 |
| Walk [s] | 0 | 0 | 0 | 9 | 9 | 9 | 0 | 8 | 8 | 0 | 9 | 9 |
| Pedestrian Clearance [s] | 30 | 30 | 30 | 9 | 9 | 9 | 0 | 27 | 27 | 0 | 28 | 28 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 2.5 | 3.5 | 3.5 | 2.5 | 3.5 | 3.5 |
| Minimum Recall | | No | | | No | | No | Yes | | No | Yes | |
| Maximum Recall | | No | | | No | | No | No | | No | No | |
| Pedestrian Recall | | No | | | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 6.0 | 6.0 | 20.0 | 6.0 | 6.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | R | L | C | R | L | C | C | L | C | C |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 4.50 | 5.50 | 5.50 | 4.50 | 5.50 | 5.50 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 2.50 | 3.50 | 3.50 | 2.50 | 3.50 | 3.50 |
| g_i, Effective Green Time [s] | 23 | 23 | 23 | 18 | 18 | 18 | 17 | 58 | 58 | 12 | 53 | 53 |
| g / C, Green / Cycle | 0.17 | 0.17 | 0.17 | 0.14 | 0.14 | 0.14 | 0.13 | 0.44 | 0.44 | 0.09 | 0.41 | 0.41 |
| (v / s)_i Volume / Saturation Flow Rate | 0.15 | 0.15 | 0.07 | 0.10 | 0.14 | 0.12 | 0.11 | 0.22 | 0.22 | 0.08 | 0.28 | 0.29 |
| s, saturation flow rate [veh/h] | 1781 | 1885 | 1564 | 1781 | 1885 | 1589 | 1795 | 3475 | 1740 | 1781 | 3503 | 1716 |
| c, Capacity [veh/h] | 309 | 327 | 271 | 247 | 261 | 220 | 232 | 1540 | 771 | 162 | 1419 | 695 |
| d1, Uniform Delay [s] | 52.03 | 52.48 | 47.79 | 53.37 | 56.00 | 54.80 | 55.67 | 25.73 | 25.74 | 58.13 | 32.11 | 32.18 |
| k, delay calibration | 0.13 | 0.16 | 0.07 | 0.18 | 0.41 | 0.30 | 0.23 | 0.50 | 0.50 | 0.07 | 0.50 | 0.50 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 7.61 | 11.17 | 0.60 | 5.77 | 57.26 | 22.42 | 20.11 | 1.11 | 2.22 | 6.92 | 2.90 | 5.90 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | | | | |
|---------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| X, volume / capacity | 0.84 | 0.89 | 0.41 | 0.69 | 1.03 | 0.86 | 0.89 | 0.49 | 0.49 | 0.84 | 0.70 | 0.70 |
| d, Delay for Lane Group [s/veh] | 59.63 | 63.65 | 48.40 | 59.14 | 113.26 | 77.22 | 75.78 | 26.85 | 27.96 | 65.06 | 35.02 | 38.08 |
| Lane Group LOS | E | E | D | E | F | E | E | C | C | E | D | D |
| Critical Lane Group | No | Yes | No | No | Yes | No | Yes | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 8.90 | 10.26 | 3.27 | 5.73 | 12.70 | 7.46 | 7.91 | 8.51 | 8.77 | 4.72 | 13.48 | 13.87 |
| 50th-Percentile Queue Length [ft/ln] | 222.50 | 256.44 | 81.69 | 143.37 | 317.57 | 186.55 | 197.66 | 212.63 | 219.24 | 118.03 | 336.93 | 346.72 |
| 95th-Percentile Queue Length [veh/ln] | 13.79 | 15.51 | 5.88 | 9.66 | 18.78 | 11.94 | 12.52 | 13.29 | 13.63 | 8.28 | 19.50 | 19.98 |
| 95th-Percentile Queue Length [ft/ln] | 344.82 | 387.75 | 147.05 | 241.55 | 469.53 | 298.55 | 312.94 | 332.21 | 340.66 | 207.12 | 487.44 | 499.41 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 59.63 | 63.65 | 48.40 | 59.14 | 113.26 | 77.22 | 75.78 | 27.15 | 27.96 | 65.06 | 35.73 | 38.08 |
| Movement LOS | E | E | D | E | F | E | E | C | C | E | D | D |
| d_A, Approach Delay [s/veh] | 59.51 | | | 87.66 | | | 34.68 | | | 38.46 | | |
| Approach LOS | E | | | F | | | C | | | D | | |
| d_I, Intersection Delay [s/veh] | 47.84 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.793 | | | | | | | | | | | |

Other Modes

| | | | | |
|--|-------|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 12.0 | 13.0 | 0.0 | 4.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 53.55 | 52.65 | 0.00 | 61.06 |
| I_p,int, Pedestrian LOS Score for Intersection | 2.433 | 2.467 | 0.000 | 3.024 |
| Crosswalk LOS | B | B | F | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 462 | 277 | 685 | 654 |
| d_b, Bicycle Delay [s] | 38.46 | 48.25 | 28.12 | 29.45 |
| I_b,int, Bicycle LOS Score for Intersection | 2.652 | 2.597 | 2.294 | 2.451 |
| Bicycle LOS | B | B | B | B |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | 4 | - | 8 | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Appendix D
2023 Background Traffic Operations
2023 Total Traffic Operations Worksheets

HCM 6th TWSC
2: Chevron Dwy (west) & 99W

11/18/2022

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0 | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↑↑↑ | | | ↑↑↑ | | ↑ |
| Traffic Vol, veh/h | 1587 | 50 | 0 | 0 | 0 | 2 |
| Future Vol, veh/h | 1587 | 50 | 0 | 0 | 0 | 2 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | - | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 76 | 76 | 76 | 76 | 76 | 76 |
| Heavy Vehicles, % | 0 | 16 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 2088 | 66 | 0 | 0 | 0 | 3 |

| Major/Minor | Major1 | Major2 | Minor1 | | | |
|----------------------|--------|--------|--------|---|---|------|
| Conflicting Flow All | 0 | 0 | - | - | - | 1077 |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |
| Critical Hdwy | - | - | - | - | - | 7.1 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - |
| Follow-up Hdwy | - | - | - | - | - | 3.9 |
| Pot Cap-1 Maneuver | - | - | 0 | - | 0 | 187 |
| Stage 1 | - | - | 0 | - | 0 | - |
| Stage 2 | - | - | 0 | - | 0 | - |
| Platoon blocked, % | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | - | - | - | - | - | 187 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |

| Approach | EB | WB | NB |
|----------------------|----|----|------|
| HCM Control Delay, s | 0 | 0 | 24.5 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h) | 187 | - | - | - |
| HCM Lane V/C Ratio | 0.014 | - | - | - |
| HCM Control Delay (s) | 24.5 | - | - | - |
| HCM Lane LOS | C | - | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | - |

HCM 6th TWSC
3: Chevron Dwy (east) & 99W

11/18/2022

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 1.1 | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↑↑↑ | | | ↑↑↑ | | ↑ |
| Traffic Vol, veh/h | 1588 | 1 | 0 | 0 | 0 | 42 |
| Future Vol, veh/h | 1588 | 1 | 0 | 0 | 0 | 42 |
| Conflicting Peds, #/hr | 0 | 1 | 1 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | - | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 72 | 72 | 72 | 72 | 72 | 72 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 24 |
| Mvmt Flow | 2206 | 1 | 0 | 0 | 0 | 58 |

| Major/Minor | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|------------|
| Conflicting Flow All | 0 | 0 | - - - 1105 |
| Stage 1 | - | - | - - - |
| Stage 2 | - | - | - - - |
| Critical Hdwy | - | - | - - - 7.58 |
| Critical Hdwy Stg 1 | - | - | - - - |
| Critical Hdwy Stg 2 | - | - | - - - |
| Follow-up Hdwy | - | - | - - - 4.14 |
| Pot Cap-1 Maneuver | - | - | 0 - 0 150 |
| Stage 1 | - | - | 0 - 0 - |
| Stage 2 | - | - | 0 - 0 - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | - | - | - - - 150 |
| Mov Cap-2 Maneuver | - | - | - - - |
| Stage 1 | - | - | - - - |
| Stage 2 | - | - | - - - |

| Approach | EB | WB | NB |
|----------------------|----|----|------|
| HCM Control Delay, s | 0 | 0 | 43.5 |
| HCM LOS | | | E |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h) | 150 | - | - | - |
| HCM Lane V/C Ratio | 0.389 | - | - | - |
| HCM Control Delay (s) | 43.5 | - | - | - |
| HCM Lane LOS | E | - | - | - |
| HCM 95th %tile Q(veh) | 1.7 | - | - | - |

HCM 6th Signalized Intersection Summary
 4: Sherwood Blvd & SW Langer Dr

11/18/2022



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|-------|-------|-------|------|-------|-------|-------|------|------|------|------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↕ | | ↖ | ↗ | |
| Traffic Volume (veh/h) | 72 | 19 | 1 | 57 | 14 | 119 | 23 | 344 | 106 | 113 | 216 | 8 |
| Future Volume (veh/h) | 72 | 19 | 1 | 57 | 14 | 119 | 23 | 344 | 106 | 113 | 216 | 8 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1885 | 1826 | 1781 | 1737 | 1900 | 1856 | 1767 | 1856 | 1781 | 1870 | 1885 | 1722 |
| Adj Flow Rate, veh/h | 85 | 22 | 1 | 67 | 16 | 140 | 27 | 405 | 125 | 133 | 254 | 9 |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Percent Heavy Veh, % | 1 | 5 | 8 | 11 | 0 | 3 | 9 | 3 | 8 | 2 | 1 | 12 |
| Cap, veh/h | 193 | 280 | 13 | 193 | 29 | 250 | 113 | 676 | 206 | 262 | 598 | 21 |
| Arrive On Green | 0.11 | 0.16 | 0.12 | 0.12 | 0.17 | 0.13 | 0.07 | 0.25 | 0.23 | 0.15 | 0.33 | 0.31 |
| Sat Flow, veh/h | 1795 | 1733 | 79 | 1654 | 167 | 1465 | 1682 | 2653 | 809 | 1781 | 1809 | 64 |
| Grp Volume(v), veh/h | 85 | 0 | 23 | 67 | 0 | 156 | 27 | 268 | 262 | 133 | 0 | 263 |
| Grp Sat Flow(s),veh/h/ln | 1795 | 0 | 1811 | 1654 | 0 | 1632 | 1682 | 1763 | 1699 | 1781 | 0 | 1873 |
| Q Serve(g_s), s | 2.2 | 0.0 | 0.5 | 1.9 | 0.0 | 4.5 | 0.8 | 6.7 | 6.9 | 3.4 | 0.0 | 5.5 |
| Cycle Q Clear(g_c), s | 2.2 | 0.0 | 0.5 | 1.9 | 0.0 | 4.5 | 0.8 | 6.7 | 6.9 | 3.4 | 0.0 | 5.5 |
| Prop In Lane | 1.00 | | 0.04 | 1.00 | | 0.90 | 1.00 | | 0.48 | 1.00 | | 0.03 |
| Lane Grp Cap(c), veh/h | 193 | 0 | 293 | 193 | 0 | 279 | 113 | 449 | 433 | 262 | 0 | 619 |
| V/C Ratio(X) | 0.44 | 0.00 | 0.08 | 0.35 | 0.00 | 0.56 | 0.24 | 0.60 | 0.61 | 0.51 | 0.00 | 0.42 |
| Avail Cap(c_a), veh/h | 427 | 0 | 616 | 423 | 0 | 555 | 397 | 931 | 897 | 452 | 0 | 981 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(l) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 20.9 | 0.0 | 17.8 | 20.3 | 0.0 | 19.9 | 22.1 | 16.4 | 16.7 | 19.6 | 0.0 | 13.0 |
| Incr Delay (d2), s/veh | 1.4 | 0.0 | 0.0 | 0.7 | 0.0 | 0.7 | 1.0 | 0.6 | 0.6 | 1.2 | 0.0 | 0.2 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.9 | 0.0 | 0.2 | 0.7 | 0.0 | 1.6 | 0.3 | 2.4 | 2.4 | 1.4 | 0.0 | 2.0 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 22.3 | 0.0 | 17.9 | 21.1 | 0.0 | 20.5 | 23.1 | 17.0 | 17.4 | 20.9 | 0.0 | 13.3 |
| LnGrp LOS | C | A | B | C | A | C | C | B | B | C | A | B |
| Approach Vol, veh/h | | 108 | | | 223 | | | 557 | | | | 396 |
| Approach Delay, s/veh | | 21.3 | | | 20.7 | | | 17.5 | | | | 15.8 |
| Approach LOS | | C | | | C | | | B | | | | B |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 7.4 | 20.7 | 9.4 | 12.5 | 11.4 | 16.7 | 9.8 | 12.1 | | | | |
| Change Period (Y+Rc), s | * 5.8 | * 5.4 | * 5.9 | 6.0 | * 6.7 | * 5.4 | * 6.8 | 6.0 | | | | |
| Max Green Setting (Gmax), s | * 10 | * 25 | * 10 | 15.0 | * 10 | * 25 | * 10 | 15.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 2.8 | 7.5 | 4.2 | 6.5 | 5.4 | 8.9 | 3.9 | 2.5 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.9 | 0.1 | 0.3 | 0.1 | 2.1 | 0.0 | 0.0 | | | | |

Intersection Summary

| | |
|--------------------|------|
| HCM 6th Ctrl Delay | 17.8 |
| HCM 6th LOS | B |

Notes

User approved pedestrian interval to be less than phase max green.
 * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th AWSC
 5: Chevron Dwy (west) & Chevron Dwy (east)

11/18/2022

Intersection

Intersection Delay, s/veh 7
 Intersection LOS A

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---------------------|------|------|------|------|------|------|
| Lane Configurations | W | | T | | | T |
| Traffic Vol, veh/h | 14 | 10 | 0 | 13 | 9 | 0 |
| Future Vol, veh/h | 14 | 10 | 0 | 13 | 9 | 0 |
| Peak Hour Factor | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 |
| Heavy Vehicles, % | 14 | 10 | 0 | 15 | 0 | 0 |
| Mvmt Flow | 17 | 12 | 0 | 16 | 11 | 0 |
| Number of Lanes | 1 | 0 | 1 | 0 | 0 | 1 |

| Approach | WB | NB | SB |
|-------------------------------|-----|-----|-----|
| Opposing Approach | | SB | NB |
| Opposing Lanes | 0 | 1 | 1 |
| Conflicting Approach Left NB | | | WB |
| Conflicting Lanes Left | 1 | 0 | 1 |
| Conflicting Approach Right SB | | WB | |
| Conflicting Lanes Right | 1 | 1 | 0 |
| HCM Control Delay | 7.2 | 6.4 | 7.2 |
| HCM LOS | A | A | A |

| Lane | NBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|
| Vol Left, % | 0% | 58% | 100% |
| Vol Thru, % | 0% | 0% | 0% |
| Vol Right, % | 100% | 42% | 0% |
| Sign Control | Stop | Stop | Stop |
| Traffic Vol by Lane | 13 | 24 | 9 |
| LT Vol | 0 | 14 | 9 |
| Through Vol | 0 | 0 | 0 |
| RT Vol | 13 | 10 | 0 |
| Lane Flow Rate | 16 | 29 | 11 |
| Geometry Grp | 1 | 1 | 1 |
| Degree of Util (X) | 0.015 | 0.033 | 0.013 |
| Departure Headway (Hd) | 3.359 | 4.051 | 4.163 |
| Convergence, Y/N | Yes | Yes | Yes |
| Cap | 1067 | 887 | 862 |
| Service Time | 1.376 | 2.059 | 2.178 |
| HCM Lane V/C Ratio | 0.015 | 0.033 | 0.013 |
| HCM Control Delay | 6.4 | 7.2 | 7.2 |
| HCM Lane LOS | A | A | A |
| HCM 95th-tile Q | 0 | 0.1 | 0 |

HCM 6th TWSC
6: Sherwood Blvd & SW 12th St/SW Century Dr

11/18/2022

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 15.3 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 10 | 40 | 47 | 45 | 10 | 135 | 16 | 328 | 94 | 83 | 206 | 10 |
| Future Vol, veh/h | 10 | 40 | 47 | 45 | 10 | 135 | 16 | 328 | 94 | 83 | 206 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 |
| Heavy Vehicles, % | 0 | 3 | 4 | 2 | 0 | 4 | 0 | 5 | 3 | 1 | 5 | 0 |
| Mvmt Flow | 13 | 53 | 62 | 59 | 13 | 178 | 21 | 432 | 124 | 109 | 271 | 13 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 1128 | 1094 | 278 | 1089 | 1038 | 494 | 284 | 0 | 0 | 556 | 0 | 0 |
| Stage 1 | 496 | 496 | - | 536 | 536 | - | - | - | - | - | - | - |
| Stage 2 | 632 | 598 | - | 553 | 502 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.53 | 6.24 | 7.12 | 6.5 | 6.24 | 4.1 | - | - | 4.11 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.53 | - | 6.12 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.53 | - | 6.12 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4.027 | 3.336 | 3.518 | 4 | 3.336 | 2.2 | - | - | 2.209 | - | - |
| Pot Cap-1 Maneuver | 183 | 213 | 756 | 193 | 233 | 571 | 1290 | - | - | 1020 | - | - |
| Stage 1 | 559 | 544 | - | 529 | 527 | - | - | - | - | - | - | - |
| Stage 2 | 472 | 489 | - | 517 | 545 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 106 | 181 | 756 | 123 | 199 | 571 | 1290 | - | - | 1020 | - | - |
| Mov Cap-2 Maneuver | 106 | 181 | - | 123 | 199 | - | - | - | - | - | - | - |
| Stage 1 | 546 | 475 | - | 516 | 514 | - | - | - | - | - | - | - |
| Stage 2 | 309 | 477 | - | 369 | 476 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 32.1 | | 61.7 | | 0.3 | | 2.5 | |
| HCM LOS | D | | F | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1290 | - | - | 257 | 291 | 1020 | - | - |
| HCM Lane V/C Ratio | 0.016 | - | - | 0.497 | 0.859 | 0.107 | - | - |
| HCM Control Delay (s) | 7.8 | 0 | - | 32.1 | 61.7 | 9 | 0 | - |
| HCM Lane LOS | A | A | - | D | F | A | A | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 2.6 | 7.5 | 0.4 | - | - |

Intersection Level Of Service Report

Intersection 1:

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 39.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.704 |

Intersection Setup

| Name | Sherwood Blvd | | | Sherwood Blvd | | | 99W | | | 99W | | |
|------------------------------|---------------|--------|--------|---------------|--------|--------|-----------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 150.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 | 475.00 | 100.00 | 100.00 | 415.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | No | | | Yes | | |

Volumes

| Name | Sherwood Blvd | | | Sherwood Blvd | | | 99W | | | 99W | | |
|---|---------------|--------|--------|---------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | | | | | | | | | | | |
| Base Volume Input [veh/h] | 162 | 233 | 141 | 191 | 208 | 151 | 166 | 1306 | 94 | 105 | 758 | 93 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 3.00 | 2.00 | 4.00 | 4.00 | 2.00 | 4.00 | 1.00 | 7.00 | 1.00 | 3.00 | 14.00 | 7.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 162 | 233 | 141 | 191 | 208 | 151 | 166 | 1306 | 94 | 105 | 758 | 93 |
| Peak Hour Factor | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 44 | 63 | 38 | 51 | 56 | 41 | 45 | 351 | 25 | 28 | 204 | 25 |
| Total Analysis Volume [veh/h] | 174 | 251 | 152 | 205 | 224 | 162 | 178 | 1404 | 101 | 113 | 815 | 100 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing in | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 11.0 |
| Offset Reference | End of Lagging Red |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

Phasing & Timing

| Control Type | Split | Split | Split | Split | Split | Split | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|------------------------------|-------|-------|-------|-------|-------|-------|----------|---------|---------|----------|---------|---------|
| Signal Group | 8 | 8 | 8 | 4 | 4 | 4 | 5 | 2 | 2 | 1 | 6 | 6 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lag | - | - | Lag | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 6 | 6 | 6 | 6 | 6 | 6 | 4 | 10 | 10 | 4 | 10 | 10 |
| Maximum Green [s] | 19 | 19 | 19 | 20 | 20 | 20 | 20 | 50 | 50 | 12 | 40 | 40 |
| Amber [s] | 4.0 | 4.0 | 4.0 | 4.5 | 4.5 | 4.5 | 3.5 | 5.0 | 5.0 | 3.5 | 5.0 | 5.0 |
| All red [s] | 1.0 | 1.0 | 1.0 | 0.5 | 0.5 | 0.5 | 1.0 | 0.5 | 0.5 | 1.0 | 0.5 | 0.5 |
| Split [s] | 24 | 24 | 24 | 25 | 25 | 25 | 25 | 55 | 55 | 16 | 46 | 46 |
| Vehicle Extension [s] | 2.3 | 2.3 | 2.3 | 3.0 | 3.0 | 3.0 | 3.0 | 4.4 | 4.4 | 2.3 | 4.4 | 4.4 |
| Walk [s] | 0 | 0 | 0 | 9 | 9 | 9 | 0 | 8 | 8 | 0 | 9 | 9 |
| Pedestrian Clearance [s] | 19 | 19 | 19 | 11 | 11 | 11 | 0 | 27 | 27 | 0 | 28 | 28 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 2.5 | 3.5 | 3.5 | 2.5 | 3.5 | 3.5 |
| Minimum Recall | | No | | | No | | No | Yes | | No | Yes | |
| Maximum Recall | | No | | | No | | No | No | | No | No | |
| Pedestrian Recall | | No | | | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 6.0 | 6.0 | 20.0 | 6.0 | 6.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | R | L | C | R | L | C | C | L | C | C |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 4.50 | 5.50 | 5.50 | 4.50 | 5.50 | 5.50 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 2.50 | 3.50 | 3.50 | 2.50 | 3.50 | 3.50 |
| g_i, Effective Green Time [s] | 18 | 18 | 18 | 17 | 17 | 17 | 14 | 55 | 55 | 9 | 51 | 51 |
| g / C, Green / Cycle | 0.15 | 0.15 | 0.15 | 0.14 | 0.14 | 0.14 | 0.12 | 0.46 | 0.46 | 0.08 | 0.42 | 0.42 |
| (v / s)_i Volume / Saturation Flow Rate | 0.10 | 0.13 | 0.10 | 0.12 | 0.12 | 0.10 | 0.10 | 0.29 | 0.29 | 0.06 | 0.19 | 0.19 |
| s, saturation flow rate [veh/h] | 1767 | 1870 | 1564 | 1752 | 1870 | 1564 | 1795 | 3418 | 1734 | 1767 | 3217 | 1597 |
| c, Capacity [veh/h] | 270 | 286 | 239 | 246 | 263 | 220 | 209 | 1578 | 800 | 138 | 1363 | 677 |
| d1, Uniform Delay [s] | 47.77 | 49.75 | 47.71 | 50.19 | 50.35 | 49.44 | 52.03 | 24.57 | 24.58 | 54.46 | 24.59 | 24.62 |
| k, delay calibration | 0.07 | 0.19 | 0.07 | 0.19 | 0.21 | 0.14 | 0.12 | 0.50 | 0.50 | 0.09 | 0.50 | 0.50 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.58 | 13.76 | 1.72 | 12.14 | 13.51 | 6.09 | 10.52 | 1.94 | 3.79 | 9.51 | 1.07 | 2.16 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | | | | |
|---------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| X, volume / capacity | 0.64 | 0.88 | 0.64 | 0.83 | 0.85 | 0.74 | 0.85 | 0.63 | 0.63 | 0.82 | 0.45 | 0.45 |
| d, Delay for Lane Group [s/veh] | 49.35 | 63.50 | 49.42 | 62.34 | 63.86 | 55.54 | 62.55 | 26.51 | 28.37 | 63.97 | 25.66 | 26.78 |
| Lane Group LOS | D | E | D | E | E | E | E | C | C | E | C | C |
| Critical Lane Group | No | Yes | No | No | Yes | No | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 5.01 | 8.44 | 4.38 | 6.81 | 7.54 | 5.03 | 5.86 | 11.04 | 11.63 | 3.73 | 6.35 | 6.54 |
| 50th-Percentile Queue Length [ft/ln] | 125.31 | 211.08 | 109.58 | 170.34 | 188.61 | 125.73 | 146.56 | 275.98 | 290.65 | 93.17 | 158.70 | 163.60 |
| 95th-Percentile Queue Length [veh/ln] | 8.68 | 13.21 | 7.82 | 11.09 | 12.05 | 8.71 | 9.83 | 16.49 | 17.22 | 6.71 | 10.48 | 10.74 |
| 95th-Percentile Queue Length [ft/ln] | 217.11 | 330.21 | 195.42 | 277.36 | 301.22 | 217.67 | 245.84 | 412.21 | 430.44 | 167.71 | 262.00 | 268.49 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 49.35 | 63.50 | 49.42 | 62.34 | 63.86 | 55.54 | 62.55 | 27.05 | 28.37 | 63.97 | 25.94 | 26.78 |
| Movement LOS | D | E | D | E | E | E | E | C | C | E | C | C |
| d_A, Approach Delay [s/veh] | 55.53 | | | 61.05 | | | 30.88 | | | 30.20 | | |
| Approach LOS | E | | | E | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 38.96 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.704 | | | | | | | | | | | |

Other Modes

| | | | | |
|--|-------|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 12.0 | 13.0 | 0.0 | 4.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 48.60 | 47.71 | 0.00 | 56.07 |
| I_p,int, Pedestrian LOS Score for Intersection | 2.392 | 2.416 | 0.000 | 3.001 |
| Crosswalk LOS | B | B | F | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 317 | 333 | 825 | 675 |
| d_b, Bicycle Delay [s] | 42.51 | 41.67 | 20.71 | 26.34 |
| I_b,int, Bicycle LOS Score for Intersection | 2.512 | 2.535 | 2.485 | 2.125 |
| Bicycle LOS | B | B | B | B |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | 4 | - | 8 | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



HCM 6th TWSC
2: Chevron Dwy (west) & 99W

11/18/2022

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0 | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↑↑↑ | | | ↑↑↑ | | ↑ |
| Traffic Vol, veh/h | 1244 | 39 | 0 | 1587 | 0 | 4 |
| Future Vol, veh/h | 1244 | 39 | 0 | 1587 | 0 | 4 |
| Conflicting Peds, #/hr | 0 | 5 | 5 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | - | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 63 | 63 | 63 | 63 | 63 | 63 |
| Heavy Vehicles, % | 0 | 3 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 1975 | 62 | 0 | 2519 | 0 | 6 |

| Major/Minor | Major1 | Major2 | Minor1 | | | |
|----------------------|--------|--------|--------|---|---|------|
| Conflicting Flow All | 0 | 0 | - | - | - | 1024 |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |
| Critical Hdwy | - | - | - | - | - | 7.1 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - |
| Follow-up Hdwy | - | - | - | - | - | 3.9 |
| Pot Cap-1 Maneuver | - | - | 0 | - | 0 | 203 |
| Stage 1 | - | - | 0 | - | 0 | - |
| Stage 2 | - | - | 0 | - | 0 | - |
| Platoon blocked, % | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | - | - | - | - | - | 202 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |

| Approach | EB | WB | NB |
|----------------------|----|----|------|
| HCM Control Delay, s | 0 | 0 | 23.4 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h) | 202 | - | - | - |
| HCM Lane V/C Ratio | 0.031 | - | - | - |
| HCM Control Delay (s) | 23.4 | - | - | - |
| HCM Lane LOS | C | - | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | - |

HCM 6th TWSC
3: Chevron Dwy (east) & 99W

11/18/2022

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.3 | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↑↑↑ | | | ↑↑↑ | | ↑ |
| Traffic Vol, veh/h | 1245 | 3 | 0 | 1587 | 0 | 22 |
| Future Vol, veh/h | 1245 | 3 | 0 | 1587 | 0 | 22 |
| Conflicting Peds, #/hr | 0 | 3 | 3 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | - | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 57 | 57 | 57 | 57 | 57 | 57 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 9 |
| Mvmt Flow | 2184 | 5 | 0 | 2784 | 0 | 39 |

| Major/Minor | Major1 | Major2 | Minor1 | | |
|----------------------|--------|--------|--------|---|------|
| Conflicting Flow All | 0 | 0 | - | - | 1098 |
| Stage 1 | - | - | - | - | - |
| Stage 2 | - | - | - | - | - |
| Critical Hdwy | - | - | - | - | 7.28 |
| Critical Hdwy Stg 1 | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - |
| Follow-up Hdwy | - | - | - | - | 3.99 |
| Pot Cap-1 Maneuver | - | - | 0 | - | 169 |
| Stage 1 | - | - | 0 | - | - |
| Stage 2 | - | - | 0 | - | - |
| Platoon blocked, % | - | - | - | - | - |
| Mov Cap-1 Maneuver | - | - | - | - | 169 |
| Mov Cap-2 Maneuver | - | - | - | - | - |
| Stage 1 | - | - | - | - | - |
| Stage 2 | - | - | - | - | - |

| Approach | EB | WB | NB |
|----------------------|----|----|------|
| HCM Control Delay, s | 0 | 0 | 32.5 |
| HCM LOS | | | D |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h) | 169 | - | - | - |
| HCM Lane V/C Ratio | 0.228 | - | - | - |
| HCM Control Delay (s) | 32.5 | - | - | - |
| HCM Lane LOS | D | - | - | - |
| HCM 95th %tile Q(veh) | 0.8 | - | - | - |

HCM 6th Signalized Intersection Summary
 4: Sherwood Blvd & SW Langer Dr

11/18/2022



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|-------|-------|-------|------|-------|-------|-------|------|------|------|------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↕ | ↗ | ↖ | ↗ | |
| Traffic Volume (veh/h) | 81 | 36 | 45 | 129 | 34 | 222 | 36 | 346 | 129 | 117 | 306 | 13 |
| Future Volume (veh/h) | 81 | 36 | 45 | 129 | 34 | 222 | 36 | 346 | 129 | 117 | 306 | 13 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.96 | 1.00 | | 0.98 | 1.00 | | 0.97 | 1.00 | | 0.97 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1885 | 1900 | 1900 | 1856 | 1900 | 1885 | 1900 | 1870 | 1856 | 1870 | 1870 | 1900 |
| Adj Flow Rate, veh/h | 86 | 38 | 48 | 137 | 36 | 236 | 38 | 368 | 137 | 124 | 326 | 14 |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Percent Heavy Veh, % | 1 | 0 | 0 | 3 | 0 | 1 | 0 | 2 | 3 | 2 | 2 | 0 |
| Cap, veh/h | 181 | 141 | 179 | 259 | 50 | 331 | 131 | 598 | 219 | 242 | 528 | 23 |
| Arrive On Green | 0.10 | 0.19 | 0.15 | 0.15 | 0.24 | 0.20 | 0.07 | 0.24 | 0.21 | 0.14 | 0.30 | 0.28 |
| Sat Flow, veh/h | 1795 | 743 | 939 | 1767 | 214 | 1401 | 1810 | 2523 | 923 | 1781 | 1778 | 76 |
| Grp Volume(v), veh/h | 86 | 0 | 86 | 137 | 0 | 272 | 38 | 257 | 248 | 124 | 0 | 340 |
| Grp Sat Flow(s),veh/h/ln | 1795 | 0 | 1682 | 1767 | 0 | 1615 | 1810 | 1777 | 1669 | 1781 | 0 | 1854 |
| Q Serve(g_s), s | 2.5 | 0.0 | 2.5 | 4.0 | 0.0 | 8.7 | 1.1 | 7.1 | 7.4 | 3.6 | 0.0 | 8.7 |
| Cycle Q Clear(g_c), s | 2.5 | 0.0 | 2.5 | 4.0 | 0.0 | 8.7 | 1.1 | 7.1 | 7.4 | 3.6 | 0.0 | 8.7 |
| Prop In Lane | 1.00 | | 0.56 | 1.00 | | 0.87 | 1.00 | | 0.55 | 1.00 | | 0.04 |
| Lane Grp Cap(c), veh/h | 181 | 0 | 320 | 259 | 0 | 382 | 131 | 421 | 396 | 242 | 0 | 550 |
| V/C Ratio(X) | 0.48 | 0.00 | 0.27 | 0.53 | 0.00 | 0.71 | 0.29 | 0.61 | 0.63 | 0.51 | 0.00 | 0.62 |
| Avail Cap(c_a), veh/h | 387 | 0 | 518 | 410 | 0 | 497 | 387 | 850 | 799 | 410 | 0 | 880 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 23.4 | 0.0 | 19.6 | 21.8 | 0.0 | 20.2 | 24.2 | 18.8 | 19.2 | 22.1 | 0.0 | 16.7 |
| Incr Delay (d2), s/veh | 1.7 | 0.0 | 0.2 | 1.1 | 0.0 | 1.9 | 1.1 | 0.7 | 0.8 | 1.3 | 0.0 | 0.5 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 1.1 | 0.0 | 0.9 | 1.6 | 0.0 | 3.2 | 0.5 | 2.7 | 2.7 | 1.5 | 0.0 | 3.4 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 25.1 | 0.0 | 19.7 | 22.9 | 0.0 | 22.1 | 25.4 | 19.4 | 20.0 | 23.5 | 0.0 | 17.3 |
| LnGrp LOS | C | A | B | C | A | C | C | B | B | C | A | B |
| Approach Vol, veh/h | | 172 | | | 409 | | | 543 | | | | 464 |
| Approach Delay, s/veh | | 22.4 | | | 22.4 | | | 20.1 | | | | 18.9 |
| Approach LOS | | C | | | C | | | C | | | | B |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 8.0 | 20.6 | 9.6 | 17.0 | 11.5 | 17.1 | 12.1 | 14.5 | | | | |
| Change Period (Y+Rc), s | * 5.8 | * 5.4 | * 5.9 | 6.0 | * 6.7 | * 5.4 | * 6.8 | 6.0 | | | | |
| Max Green Setting (Gmax), s | * 10 | * 25 | * 10 | 15.0 | * 10 | * 25 | * 10 | 15.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 3.1 | 10.7 | 4.5 | 10.7 | 5.6 | 9.4 | 6.0 | 4.5 | | | | |
| Green Ext Time (p_c), s | 0.0 | 1.2 | 0.1 | 0.4 | 0.1 | 1.9 | 0.1 | 0.1 | | | | |

Intersection Summary

| | |
|--------------------|------|
| HCM 6th Ctrl Delay | 20.6 |
| HCM 6th LOS | C |

Notes

User approved pedestrian interval to be less than phase max green.
 * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
5: Chevron Dwy (west) & Chevron Dwy (east)

11/18/2022

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 6.4 | | | | | |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Y | | B | | | Y |
| Traffic Vol, veh/h | 29 | 10 | 0 | 22 | 31 | 0 |
| Future Vol, veh/h | 29 | 10 | 0 | 22 | 31 | 0 |
| Conflicting Peds, #/hr | 0 | 1 | 0 | 1 | 1 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 68 | 68 | 68 | 68 | 68 | 68 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 43 | 15 | 0 | 32 | 46 | 0 |

| Major/Minor | Minor1 | Major1 | Major2 | | |
|----------------------|--------|--------|--------|---|------|
| Conflicting Flow All | 109 | 18 | 0 | 0 | 33 |
| Stage 1 | 17 | - | - | - | - |
| Stage 2 | 92 | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 |
| Pot Cap-1 Maneuver | 893 | 1066 | - | - | 1592 |
| Stage 1 | 1011 | - | - | - | - |
| Stage 2 | 937 | - | - | - | - |
| Platoon blocked, % | | | | | |
| Mov Cap-1 Maneuver | 866 | 1064 | - | - | 1590 |
| Mov Cap-2 Maneuver | 866 | - | - | - | - |
| Stage 1 | 1010 | - | - | - | - |
| Stage 2 | 910 | - | - | - | - |

| Approach | WB | NB | SB |
|----------------------|-----|----|-----|
| HCM Control Delay, s | 9.2 | 0 | 7.3 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL | SBT |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h) | - | - | 909 | 1590 |
| HCM Lane V/C Ratio | - | - | 0.063 | 0.029 |
| HCM Control Delay (s) | - | - | 9.2 | 7.3 |
| HCM Lane LOS | - | - | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.2 | 0.1 |

HCM 6th TWSC
6: Sherwood Blvd & SW 12th St/SW Century Dr

11/18/2022

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 10.5 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 10 | 49 | 38 | 41 | 28 | 193 | 14 | 307 | 46 | 108 | 338 | 34 |
| Future Vol, veh/h | 10 | 49 | 38 | 41 | 28 | 193 | 14 | 307 | 46 | 108 | 338 | 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 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 0 | 2 | 0 | 0 | 4 | 4 | 0 | 3 | 4 | 1 | 2 | 0 |
| Mvmt Flow | 10 | 51 | 40 | 43 | 29 | 201 | 15 | 320 | 48 | 113 | 352 | 35 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | | Major2 | | | | |
|----------------------|--------|-------|--------|------|--------|-------|------|--------|---|-------|---|---|
| Conflicting Flow All | 1085 | 994 | 370 | 1015 | 987 | 344 | 387 | 0 | 0 | 368 | 0 | 0 |
| Stage 1 | 596 | 596 | - | 374 | 374 | - | - | - | - | - | - | - |
| Stage 2 | 489 | 398 | - | 641 | 613 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.52 | 6.2 | 7.1 | 6.54 | 6.24 | 4.1 | - | - | 4.11 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.52 | - | 6.1 | 5.54 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.52 | - | 6.1 | 5.54 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4.018 | 3.3 | 3.5 | 4.036 | 3.336 | 2.2 | - | - | 2.209 | - | - |
| Pot Cap-1 Maneuver | 196 | 245 | 680 | 219 | 245 | 694 | 1183 | - | - | 1196 | - | - |
| Stage 1 | 494 | 492 | - | 651 | 614 | - | - | - | - | - | - | - |
| Stage 2 | 564 | 603 | - | 466 | 480 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 112 | 212 | 680 | 151 | 212 | 694 | 1183 | - | - | 1196 | - | - |
| Mov Cap-2 Maneuver | 112 | 212 | - | 151 | 212 | - | - | - | - | - | - | - |
| Stage 1 | 486 | 432 | - | 641 | 604 | - | - | - | - | - | - | - |
| Stage 2 | 375 | 593 | - | 340 | 422 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 27.7 | | 34.3 | | 0.3 | | 1.9 | |
| HCM LOS | D | | D | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1183 | - | - | 258 | 384 | 1196 | - | - |
| HCM Lane V/C Ratio | 0.012 | - | - | 0.392 | 0.711 | 0.094 | - | - |
| HCM Control Delay (s) | 8.1 | 0 | - | 27.7 | 34.3 | 8.3 | 0 | - |
| HCM Lane LOS | A | A | - | D | D | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 1.8 | 5.3 | 0.3 | - | - |

Intersection Level Of Service Report

Intersection 1:

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 49.5 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.813 |

Intersection Setup

| Name | Sherwood Blvd | | | Sherwood Blvd | | | 99W | | | 99W | | |
|------------------------------|---------------|--------|--------|---------------|--------|--------|-----------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 150.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 | 475.00 | 100.00 | 100.00 | 415.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | No | | | Yes | | |

Volumes

| Name | Sherwood Blvd | | | Sherwood Blvd | | | 99W | | | 99W | | |
|---|---------------|--------|--------|---------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | 256 | 284 | 109 | 167 | 262 | 186 | 201 | 1007 | 100 | 134 | 1269 | 184 |
| Base Volume Input [veh/h] | 256 | 284 | 109 | 167 | 262 | 186 | 201 | 1007 | 100 | 134 | 1269 | 184 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.00 | 2.00 | 4.00 | 3.00 | 2.00 | 2.00 | 2.00 | 6.00 | 1.00 | 1.00 | 4.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 256 | 284 | 109 | 167 | 262 | 186 | 201 | 1007 | 100 | 134 | 1269 | 184 |
| Peak Hour Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 67 | 74 | 28 | 43 | 68 | 48 | 52 | 262 | 26 | 35 | 330 | 48 |
| Total Analysis Volume [veh/h] | 267 | 296 | 114 | 174 | 273 | 194 | 209 | 1049 | 104 | 140 | 1322 | 192 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 2 | | | 4 | | | 1 | | | 4 | | |
| v_di, Inbound Pedestrian Volume crossing in | 1 | | | 4 | | | 2 | | | 4 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 130 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 4.0 |
| Offset Reference | End of Lagging Red |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

Phasing & Timing

| Control Type | Split | Split | Split | Split | Split | Split | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|------------------------------|-------|-------|-------|-------|-------|-------|----------|---------|---------|----------|---------|---------|
| Signal Group | 8 | 8 | 8 | 4 | 4 | 4 | 5 | 2 | 2 | 1 | 6 | 6 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lag | - | - | Lag | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 6 | 6 | 6 | 6 | 6 | 6 | 4 | 10 | 10 | 4 | 10 | 10 |
| Maximum Green [s] | 30 | 30 | 30 | 18 | 18 | 18 | 20 | 44 | 44 | 18 | 42 | 42 |
| Amber [s] | 4.0 | 4.0 | 4.0 | 4.5 | 4.5 | 4.5 | 3.5 | 5.0 | 5.0 | 3.5 | 5.0 | 5.0 |
| All red [s] | 1.0 | 1.0 | 1.0 | 0.5 | 0.5 | 0.5 | 1.0 | 0.5 | 0.5 | 1.0 | 0.5 | 0.5 |
| Split [s] | 35 | 35 | 35 | 23 | 23 | 23 | 24 | 50 | 50 | 22 | 48 | 48 |
| Vehicle Extension [s] | 2.3 | 2.3 | 2.3 | 3.0 | 3.0 | 3.0 | 3.0 | 4.4 | 4.4 | 2.3 | 4.4 | 4.4 |
| Walk [s] | 0 | 0 | 0 | 9 | 9 | 9 | 0 | 8 | 8 | 0 | 9 | 9 |
| Pedestrian Clearance [s] | 30 | 30 | 30 | 9 | 9 | 9 | 0 | 27 | 27 | 0 | 28 | 28 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 2.5 | 3.5 | 3.5 | 2.5 | 3.5 | 3.5 |
| Minimum Recall | | No | | | No | | No | Yes | | No | Yes | |
| Maximum Recall | | No | | | No | | No | No | | No | No | |
| Pedestrian Recall | | No | | | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 6.0 | 6.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | R | L | C | R | L | C | C | L | C | C |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 4.50 | 5.50 | 5.50 | 4.50 | 5.50 | 5.50 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 2.50 | 3.50 | 3.50 | 2.50 | 3.50 | 3.50 |
| g_i, Effective Green Time [s] | 23 | 23 | 23 | 18 | 18 | 18 | 17 | 57 | 57 | 12 | 52 | 52 |
| g / C, Green / Cycle | 0.18 | 0.18 | 0.18 | 0.14 | 0.14 | 0.14 | 0.13 | 0.44 | 0.44 | 0.09 | 0.40 | 0.40 |
| (v / s)_i Volume / Saturation Flow Rate | 0.15 | 0.16 | 0.07 | 0.10 | 0.15 | 0.12 | 0.12 | 0.22 | 0.22 | 0.08 | 0.29 | 0.29 |
| s, saturation flow rate [veh/h] | 1795 | 1870 | 1564 | 1767 | 1870 | 1589 | 1781 | 3446 | 1726 | 1795 | 3503 | 1716 |
| c, Capacity [veh/h] | 319 | 332 | 278 | 245 | 259 | 220 | 235 | 1507 | 755 | 166 | 1394 | 683 |
| d1, Uniform Delay [s] | 51.62 | 52.21 | 47.40 | 53.52 | 56.00 | 54.95 | 55.48 | 26.48 | 26.49 | 58.05 | 33.17 | 33.24 |
| k, delay calibration | 0.14 | 0.17 | 0.07 | 0.19 | 0.42 | 0.31 | 0.25 | 0.50 | 0.50 | 0.07 | 0.50 | 0.50 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 7.37 | 12.21 | 0.59 | 6.69 | 66.55 | 25.41 | 21.29 | 1.23 | 2.46 | 6.95 | 3.36 | 6.81 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | | | | |
|---------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| X, volume / capacity | 0.84 | 0.89 | 0.41 | 0.71 | 1.05 | 0.88 | 0.89 | 0.51 | 0.51 | 0.84 | 0.73 | 0.73 |
| d, Delay for Lane Group [s/veh] | 58.99 | 64.42 | 47.99 | 60.21 | 122.55 | 80.36 | 76.78 | 27.72 | 28.95 | 64.99 | 36.53 | 40.05 |
| Lane Group LOS | E | E | D | E | F | F | E | C | C | E | D | D |
| Critical Lane Group | No | Yes | No | No | Yes | No | Yes | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 9.06 | 10.56 | 3.34 | 5.90 | 13.27 | 7.79 | 8.13 | 8.87 | 9.15 | 4.86 | 14.11 | 14.57 |
| 50th-Percentile Queue Length [ft/ln] | 226.59 | 263.92 | 83.57 | 147.57 | 331.74 | 194.77 | 203.26 | 221.64 | 228.75 | 121.49 | 352.72 | 364.35 |
| 95th-Percentile Queue Length [veh/ln] | 14.00 | 15.89 | 6.02 | 9.89 | 19.73 | 12.37 | 12.81 | 13.75 | 14.11 | 8.47 | 20.27 | 20.83 |
| 95th-Percentile Queue Length [ft/ln] | 350.02 | 397.13 | 150.42 | 247.18 | 493.13 | 309.21 | 320.17 | 343.72 | 352.77 | 211.87 | 506.72 | 520.87 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 58.99 | 64.42 | 47.99 | 60.21 | 122.55 | 80.36 | 76.78 | 28.05 | 28.95 | 64.99 | 37.35 | 40.05 |
| Movement LOS | E | E | D | E | F | F | E | C | C | E | D | D |
| d_A, Approach Delay [s/veh] | 59.51 | | | 92.86 | | | 35.59 | | | 40.00 | | |
| Approach LOS | E | | | F | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 49.48 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.813 | | | | | | | | | | | |

Other Modes

| | | | | |
|--|-------|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 12.0 | 13.0 | 0.0 | 4.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 53.55 | 52.65 | 0.00 | 61.06 |
| I_p,int, Pedestrian LOS Score for Intersection | 2.439 | 2.473 | 0.000 | 3.033 |
| Crosswalk LOS | B | B | F | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 462 | 277 | 685 | 654 |
| d_b, Bicycle Delay [s] | 38.46 | 48.25 | 28.12 | 29.45 |
| I_b,int, Bicycle LOS Score for Intersection | 2.677 | 2.617 | 2.309 | 2.469 |
| Bicycle LOS | B | B | B | B |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | 4 | - | 8 | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Appendix E
2023 Total Traffic Operations Worksheets

HCM 6th TWSC
2: WEST DRIVEWAY & 99W

11/22/2022

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0 | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↑↑↑ | | | ↑↑↑ | | ↑ |
| Traffic Vol, veh/h | 1555 | 89 | 0 | 0 | 0 | 2 |
| Future Vol, veh/h | 1555 | 89 | 0 | 0 | 0 | 2 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | - | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 81 | 81 | 81 | 81 | 81 | 81 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 1920 | 110 | 0 | 0 | 0 | 2 |

| Major/Minor | Major1 | Major2 | Minor1 | Minor2 | Minor3 |
|----------------------|--------|--------|--------|--------|--------|
| Conflicting Flow All | 0 | 0 | - | - | 1015 |
| Stage 1 | - | - | - | - | - |
| Stage 2 | - | - | - | - | - |
| Critical Hdwy | - | - | - | - | 7.1 |
| Critical Hdwy Stg 1 | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - |
| Follow-up Hdwy | - | - | - | - | 3.9 |
| Pot Cap-1 Maneuver | - | - | 0 | - | 206 |
| Stage 1 | - | - | 0 | - | - |
| Stage 2 | - | - | 0 | - | - |
| Platoon blocked, % | - | - | - | - | - |
| Mov Cap-1 Maneuver | - | - | - | - | 206 |
| Mov Cap-2 Maneuver | - | - | - | - | - |
| Stage 1 | - | - | - | - | - |
| Stage 2 | - | - | - | - | - |

| Approach | EB | WB | NB |
|----------------------|----|----|------|
| HCM Control Delay, s | 0 | 0 | 22.7 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h) | 206 | - | - | - |
| HCM Lane V/C Ratio | 0.012 | - | - | - |
| HCM Control Delay (s) | 22.7 | - | - | - |
| HCM Lane LOS | C | - | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | - |

HCM 6th TWSC
3: EAST DRIVEWAY & 99W

11/22/2022

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 2.2 | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↑↑↑ | | | ↑↑↑ | | ↑ |
| Traffic Vol, veh/h | 1555 | 2 | 0 | 0 | 0 | 76 |
| Future Vol, veh/h | 1555 | 2 | 0 | 0 | 0 | 76 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | - | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 72 | 72 | 72 | 72 | 72 | 72 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 2160 | 3 | 0 | 0 | 0 | 106 |

| Major/Minor | Major1 | Major2 | Minor1 | | |
|----------------------|--------|--------|--------|---|------|
| Conflicting Flow All | 0 | 0 | - | - | 1082 |
| Stage 1 | - | - | - | - | - |
| Stage 2 | - | - | - | - | - |
| Critical Hdwy | - | - | - | - | 7.1 |
| Critical Hdwy Stg 1 | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - |
| Follow-up Hdwy | - | - | - | - | 3.9 |
| Pot Cap-1 Maneuver | - | - | 0 | - | 186 |
| Stage 1 | - | - | 0 | - | - |
| Stage 2 | - | - | 0 | - | - |
| Platoon blocked, % | - | - | - | - | - |
| Mov Cap-1 Maneuver | - | - | - | - | 186 |
| Mov Cap-2 Maneuver | - | - | - | - | - |
| Stage 1 | - | - | - | - | - |
| Stage 2 | - | - | - | - | - |

| Approach | EB | WB | NB |
|----------------------|----|----|------|
| HCM Control Delay, s | 0 | 0 | 47.1 |
| HCM LOS | | | E |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h) | 186 | - | - | - |
| HCM Lane V/C Ratio | 0.568 | - | - | - |
| HCM Control Delay (s) | 47.1 | - | - | - |
| HCM Lane LOS | E | - | - | - |
| HCM 95th %tile Q(veh) | 3 | - | - | - |

HCM 6th Signalized Intersection Summary
 4: SHERWOOD BLVD & LANGER DR

11/22/2022



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|-------|-------|-------|------|-------|-------|-------|------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 72 | 19 | 26 | 61 | 14 | 132 | 23 | 344 | 108 | 113 | 216 | 8 |
| Future Volume (veh/h) | 72 | 19 | 26 | 61 | 14 | 132 | 23 | 344 | 108 | 113 | 216 | 8 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adj Flow Rate, veh/h | 84 | 22 | 30 | 71 | 16 | 153 | 27 | 400 | 126 | 131 | 251 | 9 |
| Peak Hour Factor | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 |
| Percent Heavy Veh, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cap, veh/h | 194 | 123 | 168 | 216 | 28 | 268 | 122 | 659 | 205 | 263 | 578 | 21 |
| Arrive On Green | 0.11 | 0.17 | 0.13 | 0.12 | 0.18 | 0.14 | 0.07 | 0.24 | 0.22 | 0.15 | 0.32 | 0.29 |
| Sat Flow, veh/h | 1810 | 728 | 993 | 1810 | 155 | 1479 | 1810 | 2709 | 844 | 1810 | 1823 | 65 |
| Grp Volume(v), veh/h | 84 | 0 | 52 | 71 | 0 | 169 | 27 | 265 | 261 | 131 | 0 | 260 |
| Grp Sat Flow(s),veh/h/ln | 1810 | 0 | 1721 | 1810 | 0 | 1634 | 1810 | 1805 | 1748 | 1810 | 0 | 1888 |
| Q Serve(g_s), s | 2.2 | 0.0 | 1.3 | 1.8 | 0.0 | 4.8 | 0.7 | 6.5 | 6.6 | 3.3 | 0.0 | 5.4 |
| Cycle Q Clear(g_c), s | 2.2 | 0.0 | 1.3 | 1.8 | 0.0 | 4.8 | 0.7 | 6.5 | 6.6 | 3.3 | 0.0 | 5.4 |
| Prop In Lane | 1.00 | | 0.58 | 1.00 | | 0.91 | 1.00 | | 0.48 | 1.00 | | 0.03 |
| Lane Grp Cap(c), veh/h | 194 | 0 | 291 | 216 | 0 | 296 | 122 | 439 | 426 | 263 | 0 | 599 |
| V/C Ratio(X) | 0.43 | 0.00 | 0.18 | 0.33 | 0.00 | 0.57 | 0.22 | 0.60 | 0.61 | 0.50 | 0.00 | 0.43 |
| Avail Cap(c_a), veh/h | 434 | 0 | 590 | 467 | 0 | 560 | 431 | 961 | 931 | 463 | 0 | 998 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 20.7 | 0.0 | 18.2 | 20.0 | 0.0 | 19.4 | 21.9 | 16.6 | 17.0 | 19.5 | 0.0 | 13.4 |
| Incr Delay (d2), s/veh | 1.3 | 0.0 | 0.1 | 0.6 | 0.0 | 0.6 | 0.9 | 0.6 | 0.7 | 1.2 | 0.0 | 0.2 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.9 | 0.0 | 0.5 | 0.7 | 0.0 | 1.7 | 0.3 | 2.4 | 2.4 | 1.3 | 0.0 | 2.0 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 22.0 | 0.0 | 18.3 | 20.6 | 0.0 | 20.1 | 22.7 | 17.2 | 17.7 | 20.7 | 0.0 | 13.6 |
| LnGrp LOS | C | A | B | C | A | C | C | B | B | C | A | B |
| Approach Vol, veh/h | | 136 | | | 240 | | | 553 | | | | 391 |
| Approach Delay, s/veh | | 20.6 | | | 20.2 | | | 17.7 | | | | 16.0 |
| Approach LOS | | C | | | C | | | B | | | | B |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 7.4 | 19.9 | 9.3 | 13.0 | 11.2 | 16.1 | 9.9 | 12.4 | | | | |
| Change Period (Y+Rc), s | * 5.8 | * 5.4 | * 5.9 | 6.0 | * 6.7 | * 5.4 | * 6.8 | 6.0 | | | | |
| Max Green Setting (Gmax), s | * 10 | * 25 | * 10 | 15.0 | * 10 | * 25 | * 10 | 15.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 2.7 | 7.4 | 4.2 | 6.8 | 5.3 | 8.6 | 3.8 | 3.3 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.9 | 0.1 | 0.3 | 0.1 | 2.0 | 0.0 | 0.1 | | | | |

| Intersection Summary | | | | | | | | | | | | |
|----------------------|--|--|--|------|--|--|--|--|--|--|--|--|
| HCM 6th Ctrl Delay | | | | 18.0 | | | | | | | | |
| HCM 6th LOS | | | | B | | | | | | | | |

Notes
 User approved pedestrian interval to be less than phase max green.
 * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
5: SHERWOOD BLVD & CENTURY DR

11/22/2022

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 15.3 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 10 | 40 | 47 | 45 | 10 | 135 | 16 | 330 | 94 | 84 | 209 | 10 |
| Future Vol, veh/h | 10 | 40 | 47 | 45 | 10 | 135 | 16 | 330 | 94 | 84 | 209 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 13 | 53 | 62 | 59 | 13 | 178 | 21 | 434 | 124 | 111 | 275 | 13 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|------|--------|------|--------|-----|--------|---|---|------|---|---|
| Conflicting Flow All | 1138 | 1104 | 282 | 1099 | 1048 | 496 | 288 | 0 | 0 | 558 | 0 | 0 |
| Stage 1 | 504 | 504 | - | 538 | 538 | - | - | - | - | - | - | - |
| Stage 2 | 634 | 600 | - | 561 | 510 | - | - | - | - | - | - | - |
| 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 | 213 | 762 | 192 | 230 | 578 | 1286 | - | - | 1023 | - | - |
| Stage 1 | 554 | 544 | - | 531 | 526 | - | - | - | - | - | - | - |
| Stage 2 | 471 | 493 | - | 516 | 541 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 105 | 181 | 762 | 122 | 196 | 578 | 1286 | - | - | 1023 | - | - |
| Mov Cap-2 Maneuver | 105 | 181 | - | 122 | 196 | - | - | - | - | - | - | - |
| Stage 1 | 541 | 474 | - | 518 | 513 | - | - | - | - | - | - | - |
| Stage 2 | 310 | 481 | - | 367 | 471 | - | - | - | - | - | - | - |




| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 32.1 | | 61.7 | | 0.3 | | 2.5 | |
| HCM LOS | D | | F | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1286 | - | - | 257 | 291 | 1023 | - | - |
| HCM Lane V/C Ratio | 0.016 | - | - | 0.497 | 0.859 | 0.108 | - | - |
| HCM Control Delay (s) | 7.8 | 0 | - | 32.1 | 61.7 | 8.9 | 0 | - |
| HCM Lane LOS | A | A | - | D | F | A | A | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 2.6 | 7.5 | 0.4 | - | - |

HCM 6th AWSC
6: Chevron Exit & Langer Dr. Exit

11/22/2022

| Intersection | |
|---------------------------|-----|
| Intersection Delay, s/veh | 7.1 |
| Intersection LOS | A |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---------------------|---|------|---|------|------|---|
| Lane Configurations |  | |  | | |  |
| Traffic Vol, veh/h | 20 | 15 | 0 | 19 | 29 | 0 |
| Future Vol, veh/h | 20 | 15 | 0 | 19 | 29 | 0 |
| Peak Hour Factor | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 23 | 17 | 0 | 22 | 34 | 0 |
| Number of Lanes | 1 | 0 | 1 | 0 | 0 | 1 |

| Approach | WB | NB | SB |
|----------------------------|-----|-----|-----|
| Opposing Approach | | SB | NB |
| Opposing Lanes | 0 | 1 | 1 |
| Conflicting Approach Left | NB | | WB |
| Conflicting Lanes Left | 1 | 0 | 1 |
| Conflicting Approach Right | SB | WB | |
| Conflicting Lanes Right | 1 | 1 | 0 |
| HCM Control Delay | 7.1 | 6.5 | 7.4 |
| HCM LOS | A | A | A |

| Lane | NBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|
| Vol Left, % | 0% | 57% | 100% |
| Vol Thru, % | 0% | 0% | 0% |
| Vol Right, % | 100% | 43% | 0% |
| Sign Control | Stop | Stop | Stop |
| Traffic Vol by Lane | 19 | 35 | 29 |
| LT Vol | 0 | 20 | 29 |
| Through Vol | 0 | 0 | 0 |
| RT Vol | 19 | 15 | 0 |
| Lane Flow Rate | 22 | 41 | 34 |
| Geometry Grp | 1 | 1 | 1 |
| Degree of Util (X) | 0.021 | 0.044 | 0.039 |
| Departure Headway (Hd) | 3.396 | 3.854 | 4.188 |
| Convergence, Y/N | Yes | Yes | Yes |
| Cap | 1053 | 930 | 857 |
| Service Time | 1.419 | 1.874 | 2.205 |
| HCM Lane V/C Ratio | 0.021 | 0.044 | 0.04 |
| HCM Control Delay | 6.5 | 7.1 | 7.4 |
| HCM Lane LOS | A | A | A |
| HCM 95th-tile Q | 0.1 | 0.1 | 0.1 |

Intersection Level Of Service Report

Intersection 1:

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 39.1 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.707 |

Intersection Setup

| Name | SHERWOOD BLVD | | | SHERWOOD BLVD | | | 99W | | | 99W | | |
|------------------------------|---------------|--------|--------|---------------|--------|--------|-----------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 150.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 | 475.00 | 100.00 | 100.00 | 415.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | No | | | Yes | | |

Volumes

| Name | SHERWOOD BLVD | | | SHERWOOD BLVD | | | 99W | | | 99W | | |
|---|---------------|--------|--------|---------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | | | | | | | | | | | |
| Base Volume Input [veh/h] | 172 | 235 | 141 | 192 | 208 | 151 | 166 | 1311 | 94 | 105 | 758 | 93 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 4.00 | 4.00 | 2.00 | 4.00 | 1.00 | 7.00 | 1.00 | 3.00 | 14.00 | 7.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 172 | 235 | 141 | 192 | 208 | 151 | 166 | 1311 | 94 | 105 | 758 | 93 |
| Peak Hour Factor | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 46 | 63 | 38 | 52 | 56 | 41 | 45 | 352 | 25 | 28 | 204 | 25 |
| Total Analysis Volume [veh/h] | 185 | 253 | 152 | 206 | 224 | 162 | 178 | 1410 | 101 | 113 | 815 | 100 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing in | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 11.0 |
| Offset Reference | End of Lagging Red |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

Phasing & Timing

| Control Type | Split | Split | Split | Split | Split | Split | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|------------------------------|-------|-------|-------|-------|-------|-------|----------|---------|---------|----------|---------|---------|
| Signal Group | 8 | 8 | 8 | 4 | 4 | 4 | 5 | 2 | 2 | 1 | 6 | 6 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lag | - | - | Lag | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 6 | 6 | 6 | 6 | 6 | 6 | 4 | 10 | 10 | 4 | 10 | 10 |
| Maximum Green [s] | 19 | 19 | 19 | 20 | 20 | 20 | 20 | 50 | 50 | 12 | 40 | 40 |
| Amber [s] | 4.0 | 4.0 | 4.0 | 4.5 | 4.5 | 4.5 | 3.5 | 5.0 | 5.0 | 3.5 | 5.0 | 5.0 |
| All red [s] | 1.0 | 1.0 | 1.0 | 0.5 | 0.5 | 0.5 | 1.0 | 0.5 | 0.5 | 1.0 | 0.5 | 0.5 |
| Split [s] | 24 | 24 | 24 | 25 | 25 | 25 | 25 | 55 | 55 | 16 | 46 | 46 |
| Vehicle Extension [s] | 2.3 | 2.3 | 2.3 | 3.0 | 3.0 | 3.0 | 3.0 | 4.4 | 4.4 | 2.3 | 4.4 | 4.4 |
| Walk [s] | 0 | 0 | 0 | 9 | 9 | 9 | 0 | 8 | 8 | 0 | 9 | 9 |
| Pedestrian Clearance [s] | 19 | 19 | 19 | 11 | 11 | 11 | 0 | 27 | 27 | 0 | 28 | 28 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 2.5 | 3.5 | 3.5 | 2.5 | 3.5 | 3.5 |
| Minimum Recall | | No | | | No | | No | Yes | | No | Yes | |
| Maximum Recall | | No | | | No | | No | No | | No | No | |
| Pedestrian Recall | | No | | | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 6.0 | 6.0 | 20.0 | 6.0 | 6.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | R | L | C | R | L | C | C | L | C | C |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 4.50 | 5.50 | 5.50 | 4.50 | 5.50 | 5.50 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 2.50 | 3.50 | 3.50 | 2.50 | 3.50 | 3.50 |
| g_i, Effective Green Time [s] | 18 | 18 | 18 | 17 | 17 | 17 | 14 | 55 | 55 | 9 | 51 | 51 |
| g / C, Green / Cycle | 0.15 | 0.15 | 0.15 | 0.14 | 0.14 | 0.14 | 0.12 | 0.46 | 0.46 | 0.08 | 0.42 | 0.42 |
| (v / s)_i Volume / Saturation Flow Rate | 0.10 | 0.14 | 0.10 | 0.12 | 0.12 | 0.10 | 0.10 | 0.29 | 0.29 | 0.06 | 0.19 | 0.19 |
| s, saturation flow rate [veh/h] | 1781 | 1870 | 1564 | 1752 | 1870 | 1564 | 1795 | 3418 | 1734 | 1767 | 3217 | 1597 |
| c, Capacity [veh/h] | 274 | 288 | 241 | 246 | 263 | 220 | 209 | 1574 | 799 | 138 | 1360 | 675 |
| d1, Uniform Delay [s] | 47.94 | 49.68 | 47.59 | 50.22 | 50.35 | 49.44 | 52.03 | 24.71 | 24.72 | 54.46 | 24.69 | 24.71 |
| k, delay calibration | 0.07 | 0.19 | 0.07 | 0.20 | 0.21 | 0.14 | 0.12 | 0.50 | 0.50 | 0.09 | 0.50 | 0.50 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.78 | 14.03 | 1.68 | 12.55 | 13.50 | 6.09 | 10.52 | 1.98 | 3.87 | 9.51 | 1.07 | 2.17 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | | | | |
|---------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| X, volume / capacity | 0.68 | 0.88 | 0.63 | 0.84 | 0.85 | 0.74 | 0.85 | 0.64 | 0.64 | 0.82 | 0.45 | 0.45 |
| d, Delay for Lane Group [s/veh] | 49.72 | 63.71 | 49.26 | 62.77 | 63.85 | 55.53 | 62.55 | 26.69 | 28.58 | 63.97 | 25.76 | 26.89 |
| Lane Group LOS | D | E | D | E | E | E | E | C | C | E | C | C |
| Critical Lane Group | No | Yes | No | No | Yes | No | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 5.36 | 8.53 | 4.38 | 6.87 | 7.54 | 5.03 | 5.86 | 11.13 | 11.73 | 3.73 | 6.36 | 6.56 |
| 50th-Percentile Queue Length [ft/ln] | 134.07 | 213.24 | 109.38 | 171.85 | 188.60 | 125.72 | 146.56 | 278.27 | 293.20 | 93.17 | 159.06 | 163.99 |
| 95th-Percentile Queue Length [veh/ln] | 9.16 | 13.32 | 7.81 | 11.17 | 12.05 | 8.71 | 9.83 | 16.60 | 17.34 | 6.71 | 10.50 | 10.76 |
| 95th-Percentile Queue Length [ft/ln] | 229.02 | 332.98 | 195.13 | 279.35 | 301.21 | 217.67 | 245.84 | 415.06 | 433.61 | 167.71 | 262.48 | 268.99 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 49.72 | 63.71 | 49.26 | 62.77 | 63.85 | 55.53 | 62.55 | 27.23 | 28.58 | 63.97 | 26.04 | 26.89 |
| Movement LOS | D | E | D | E | E | E | E | C | C | E | C | C |
| d_A, Approach Delay [s/veh] | 55.60 | | | 61.20 | | | 31.04 | | | 30.29 | | |
| Approach LOS | E | | | E | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 39.14 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.707 | | | | | | | | | | | |

Other Modes

| | | | | |
|--|-------|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 12.0 | 13.0 | 0.0 | 4.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 48.60 | 47.71 | 0.00 | 56.07 |
| I_p,int, Pedestrian LOS Score for Intersection | 2.395 | 2.417 | 0.000 | 3.002 |
| Crosswalk LOS | B | B | F | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 317 | 333 | 825 | 675 |
| d_b, Bicycle Delay [s] | 42.51 | 41.67 | 20.71 | 26.34 |
| I_b,int, Bicycle LOS Score for Intersection | 2.533 | 2.536 | 2.489 | 2.125 |
| Bicycle LOS | B | B | B | B |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | 4 | - | 8 | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



HCM 6th TWSC
2: WEST DRIVEWAY & 99W

11/22/2022

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.1 | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↑↑↑ | | | ↑↑↑ | | ↑ |
| Traffic Vol, veh/h | 1220 | 69 | 0 | 0 | 0 | 4 |
| Future Vol, veh/h | 1220 | 69 | 0 | 0 | 0 | 4 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | - | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 75 | 75 | 75 | 75 | 75 | 75 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 1627 | 92 | 0 | 0 | 0 | 5 |

| Major/Minor | Major1 | Major2 | Minor1 | | |
|----------------------|--------|--------|--------|---|-----|
| Conflicting Flow All | 0 | 0 | - | - | 860 |
| Stage 1 | - | - | - | - | - |
| Stage 2 | - | - | - | - | - |
| Critical Hdwy | - | - | - | - | 7.1 |
| Critical Hdwy Stg 1 | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - |
| Follow-up Hdwy | - | - | - | - | 3.9 |
| Pot Cap-1 Maneuver | - | - | 0 | - | 260 |
| Stage 1 | - | - | 0 | - | - |
| Stage 2 | - | - | 0 | - | - |
| Platoon blocked, % | - | - | - | - | - |
| Mov Cap-1 Maneuver | - | - | - | - | 260 |
| Mov Cap-2 Maneuver | - | - | - | - | - |
| Stage 1 | - | - | - | - | - |
| Stage 2 | - | - | - | - | - |

| Approach | EB | WB | NB |
|----------------------|----|----|------|
| HCM Control Delay, s | 0 | 0 | 19.1 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h) | 260 | - | - | - |
| HCM Lane V/C Ratio | 0.021 | - | - | - |
| HCM Control Delay (s) | 19.1 | - | - | - |
| HCM Lane LOS | C | - | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | - |

HCM 6th TWSC
3: EAST DRIVEWAY & 99W

11/22/2022

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.8 | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↑↑↑ | | | ↑↑↑ | | ↑ |
| Traffic Vol, veh/h | 1220 | 4 | 0 | 0 | 0 | 47 |
| Future Vol, veh/h | 1220 | 4 | 0 | 0 | 0 | 47 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | - | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 75 | 75 | 75 | 75 | 75 | 75 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 1627 | 5 | 0 | 0 | 0 | 63 |

| Major/Minor | Major1 | Major2 | Minor1 | | |
|----------------------|--------|--------|--------|---|-----|
| Conflicting Flow All | 0 | 0 | - | - | 816 |
| Stage 1 | - | - | - | - | - |
| Stage 2 | - | - | - | - | - |
| Critical Hdwy | - | - | - | - | 7.1 |
| Critical Hdwy Stg 1 | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - |
| Follow-up Hdwy | - | - | - | - | 3.9 |
| Pot Cap-1 Maneuver | - | 0 | - | 0 | 278 |
| Stage 1 | - | 0 | - | 0 | - |
| Stage 2 | - | 0 | - | 0 | - |
| Platoon blocked, % | - | - | - | - | - |
| Mov Cap-1 Maneuver | - | - | - | - | 278 |
| Mov Cap-2 Maneuver | - | - | - | - | - |
| Stage 1 | - | - | - | - | - |
| Stage 2 | - | - | - | - | - |

| Approach | EB | WB | NB |
|----------------------|----|----|------|
| HCM Control Delay, s | 0 | 0 | 21.7 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h) | 278 | - | - | - |
| HCM Lane V/C Ratio | 0.225 | - | - | - |
| HCM Control Delay (s) | 21.7 | - | - | - |
| HCM Lane LOS | C | - | - | - |
| HCM 95th %tile Q(veh) | 0.8 | - | - | - |

HCM 6th Signalized Intersection Summary
 4: SHERWOOD BLVD & LANGER DR

11/22/2022



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|-------|-------|-------|------|-------|-------|-------|------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 81 | 36 | 45 | 131 | 34 | 230 | 36 | 346 | 132 | 117 | 306 | 13 |
| Future Volume (veh/h) | 81 | 36 | 45 | 131 | 34 | 230 | 36 | 346 | 132 | 117 | 306 | 13 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adj Flow Rate, veh/h | 86 | 38 | 48 | 139 | 36 | 245 | 38 | 368 | 140 | 124 | 326 | 14 |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Percent Heavy Veh, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cap, veh/h | 184 | 148 | 187 | 266 | 50 | 343 | 132 | 590 | 221 | 246 | 522 | 22 |
| Arrive On Green | 0.10 | 0.19 | 0.16 | 0.15 | 0.24 | 0.20 | 0.07 | 0.23 | 0.20 | 0.14 | 0.29 | 0.27 |
| Sat Flow, veh/h | 1810 | 763 | 964 | 1810 | 210 | 1432 | 1810 | 2569 | 963 | 1810 | 1808 | 78 |
| Grp Volume(v), veh/h | 86 | 0 | 86 | 139 | 0 | 281 | 38 | 257 | 251 | 124 | 0 | 340 |
| Grp Sat Flow(s),veh/h/ln | 1810 | 0 | 1727 | 1810 | 0 | 1642 | 1810 | 1805 | 1727 | 1810 | 0 | 1886 |
| Q Serve(g_s), s | 2.4 | 0.0 | 2.4 | 3.9 | 0.0 | 8.7 | 1.1 | 7.0 | 7.2 | 3.5 | 0.0 | 8.5 |
| Cycle Q Clear(g_c), s | 2.4 | 0.0 | 2.4 | 3.9 | 0.0 | 8.7 | 1.1 | 7.0 | 7.2 | 3.5 | 0.0 | 8.5 |
| Prop In Lane | 1.00 | | 0.56 | 1.00 | | 0.87 | 1.00 | | 0.56 | 1.00 | | 0.04 |
| Lane Grp Cap(c), veh/h | 184 | 0 | 335 | 266 | 0 | 394 | 132 | 415 | 397 | 246 | 0 | 545 |
| V/C Ratio(X) | 0.47 | 0.00 | 0.26 | 0.52 | 0.00 | 0.71 | 0.29 | 0.62 | 0.63 | 0.50 | 0.00 | 0.62 |
| Avail Cap(c_a), veh/h | 395 | 0 | 538 | 424 | 0 | 512 | 391 | 873 | 835 | 421 | 0 | 905 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 23.1 | 0.0 | 19.1 | 21.5 | 0.0 | 19.9 | 23.9 | 18.9 | 19.3 | 21.9 | 0.0 | 16.9 |
| Incr Delay (d2), s/veh | 1.6 | 0.0 | 0.1 | 1.1 | 0.0 | 1.9 | 1.1 | 0.7 | 0.8 | 1.3 | 0.0 | 0.5 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 1.1 | 0.0 | 0.9 | 1.6 | 0.0 | 3.3 | 0.5 | 2.7 | 2.7 | 1.4 | 0.0 | 3.4 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 24.7 | 0.0 | 19.3 | 22.6 | 0.0 | 21.8 | 25.1 | 19.6 | 20.1 | 23.2 | 0.0 | 17.4 |
| LnGrp LOS | C | A | B | C | A | C | C | B | C | C | A | B |
| Approach Vol, veh/h | | 172 | | | 420 | | | 546 | | | | 464 |
| Approach Delay, s/veh | | 22.0 | | | 22.1 | | | 20.2 | | | | 18.9 |
| Approach LOS | | C | | | C | | | C | | | | B |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 8.0 | 20.0 | 9.5 | 17.1 | 11.4 | 16.5 | 12.0 | 14.6 | | | | |
| Change Period (Y+Rc), s | * 5.8 | * 5.4 | * 5.9 | 6.0 | * 6.7 | * 5.4 | * 6.8 | 6.0 | | | | |
| Max Green Setting (Gmax), s | * 10 | * 25 | * 10 | 15.0 | * 10 | * 25 | * 10 | 15.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 3.1 | 10.5 | 4.4 | 10.7 | 5.5 | 9.2 | 5.9 | 4.4 | | | | |
| Green Ext Time (p_c), s | 0.0 | 1.2 | 0.1 | 0.4 | 0.1 | 1.9 | 0.1 | 0.1 | | | | |

| Intersection Summary | | | | | | | | | | | | |
|----------------------|--|--|--|------|--|--|--|--|--|--|--|--|
| HCM 6th Ctrl Delay | | | | 20.5 | | | | | | | | |
| HCM 6th LOS | | | | C | | | | | | | | |

Notes
 User approved pedestrian interval to be less than phase max green.
 * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
5: SHERWOOD BLVD & CENTURY DR

11/22/2022

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 10.5 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 10 | 49 | 38 | 41 | 28 | 194 | 14 | 309 | 46 | 109 | 341 | 34 |
| Future Vol, veh/h | 10 | 49 | 38 | 41 | 28 | 194 | 14 | 309 | 46 | 109 | 341 | 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 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 10 | 51 | 40 | 43 | 29 | 202 | 15 | 322 | 48 | 114 | 355 | 35 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | | Major2 | | | | |
|----------------------|--------|------|--------|------|--------|-----|------|--------|---|------|---|---|
| Conflicting Flow All | 1093 | 1001 | 373 | 1022 | 994 | 346 | 390 | 0 | 0 | 370 | 0 | 0 |
| Stage 1 | 601 | 601 | - | 376 | 376 | - | - | - | - | - | - | - |
| Stage 2 | 492 | 400 | - | 646 | 618 | - | - | - | - | - | - | - |
| 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 | 193 | 245 | 678 | 216 | 247 | 702 | 1180 | - | - | 1200 | - | - |
| Stage 1 | 491 | 493 | - | 649 | 620 | - | - | - | - | - | - | - |
| Stage 2 | 562 | 605 | - | 464 | 484 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 110 | 212 | 678 | 149 | 213 | 702 | 1180 | - | - | 1200 | - | - |
| Mov Cap-2 Maneuver | 110 | 212 | - | 149 | 213 | - | - | - | - | - | - | - |
| Stage 1 | 483 | 433 | - | 639 | 610 | - | - | - | - | - | - | - |
| Stage 2 | 375 | 595 | - | 338 | 425 | - | - | - | - | - | - | - |




| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 27.8 | | 34.3 | | 0.3 | | 1.9 | |
| HCM LOS | D | | D | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1180 | - | - | 257 | 385 | 1200 | - | - |
| HCM Lane V/C Ratio | 0.012 | - | - | 0.393 | 0.712 | 0.095 | - | - |
| HCM Control Delay (s) | 8.1 | 0 | - | 27.8 | 34.3 | 8.3 | 0 | - |
| HCM Lane LOS | A | A | - | D | D | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 1.8 | 5.3 | 0.3 | - | - |

HCM 6th AWSC
6: Chevron Exit & Langer Dr. Exit

11/22/2022

| Intersection | |
|---------------------------|-----|
| Intersection Delay, s/veh | 7.2 |
| Intersection LOS | A |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---------------------|---|------|---|------|------|---|
| Lane Configurations |  | |  | | |  |
| Traffic Vol, veh/h | 34 | 15 | 0 | 27 | 43 | 0 |
| Future Vol, veh/h | 34 | 15 | 0 | 27 | 43 | 0 |
| Peak Hour Factor | 0.78 | 0.78 | 0.78 | 0.78 | 0.78 | 0.78 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 44 | 19 | 0 | 35 | 55 | 0 |
| Number of Lanes | 1 | 0 | 1 | 0 | 0 | 1 |

| Approach | WB | NB | SB |
|----------------------------|-----|-----|-----|
| Opposing Approach | | SB | NB |
| Opposing Lanes | 0 | 1 | 1 |
| Conflicting Approach Left | NB | | WB |
| Conflicting Lanes Left | 1 | 0 | 1 |
| Conflicting Approach Right | SB | WB | |
| Conflicting Lanes Right | 1 | 1 | 0 |
| HCM Control Delay | 7.3 | 6.6 | 7.6 |
| HCM LOS | A | A | A |

| Lane | NBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|
| Vol Left, % | 0% | 69% | 100% |
| Vol Thru, % | 0% | 0% | 0% |
| Vol Right, % | 100% | 31% | 0% |
| Sign Control | Stop | Stop | Stop |
| Traffic Vol by Lane | 27 | 49 | 43 |
| LT Vol | 0 | 34 | 43 |
| Through Vol | 0 | 0 | 0 |
| RT Vol | 27 | 15 | 0 |
| Lane Flow Rate | 35 | 63 | 55 |
| Geometry Grp | 1 | 1 | 1 |
| Degree of Util (X) | 0.033 | 0.07 | 0.065 |
| Departure Headway (Hd) | 3.451 | 4.01 | 4.237 |
| Convergence, Y/N | Yes | Yes | Yes |
| Cap | 1031 | 891 | 845 |
| Service Time | 1.493 | 2.045 | 2.267 |
| HCM Lane V/C Ratio | 0.034 | 0.071 | 0.065 |
| HCM Control Delay | 6.6 | 7.3 | 7.6 |
| HCM Lane LOS | A | A | A |
| HCM 95th-tile Q | 0.1 | 0.2 | 0.2 |

Intersection Level Of Service Report

Intersection 1:

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 49.6 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.808 |

Intersection Setup

| Name | SHERWOOD BLVD | | | SHERWOOD BLVD | | | 99W | | | 99W | | |
|------------------------------|---------------|--------|--------|---------------|--------|--------|-----------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 150.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 | 475.00 | 100.00 | 100.00 | 415.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | No | | | Yes | | |

Volumes

| Name | SHERWOOD BLVD | | | SHERWOOD BLVD | | | 99W | | | 99W | | |
|---|---------------|--------|--------|---------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | | | | | | | | | | | |
| Base Volume Input [veh/h] | 262 | 285 | 109 | 169 | 262 | 186 | 201 | 1011 | 100 | 134 | 1269 | 184 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 1.00 | 4.00 | 2.00 | 1.00 | 2.00 | 1.00 | 5.00 | 2.00 | 2.00 | 4.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 262 | 285 | 109 | 169 | 262 | 186 | 201 | 1011 | 100 | 134 | 1269 | 184 |
| Peak Hour Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9300 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 68 | 74 | 28 | 44 | 68 | 50 | 52 | 263 | 26 | 35 | 330 | 48 |
| Total Analysis Volume [veh/h] | 273 | 297 | 114 | 176 | 273 | 200 | 209 | 1053 | 104 | 140 | 1322 | 192 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing in | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 130 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 4.0 |
| Offset Reference | End of Lagging Red |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

Phasing & Timing

| Control Type | Split | Split | Split | Split | Split | Split | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|------------------------------|-------|-------|-------|-------|-------|-------|----------|---------|---------|----------|---------|---------|
| Signal Group | 8 | 8 | 8 | 4 | 4 | 4 | 5 | 2 | 2 | 1 | 6 | 6 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lag | - | - | Lag | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 6 | 6 | 6 | 6 | 6 | 6 | 4 | 10 | 10 | 4 | 10 | 10 |
| Maximum Green [s] | 30 | 30 | 30 | 18 | 18 | 18 | 20 | 44 | 44 | 18 | 42 | 42 |
| Amber [s] | 4.0 | 4.0 | 4.0 | 4.5 | 4.5 | 4.5 | 3.5 | 5.0 | 5.0 | 3.5 | 5.0 | 5.0 |
| All red [s] | 1.0 | 1.0 | 1.0 | 0.5 | 0.5 | 0.5 | 1.0 | 0.5 | 0.5 | 1.0 | 0.5 | 0.5 |
| Split [s] | 35 | 35 | 35 | 23 | 23 | 23 | 24 | 50 | 50 | 22 | 48 | 48 |
| Vehicle Extension [s] | 2.3 | 2.3 | 2.3 | 3.0 | 3.0 | 3.0 | 3.0 | 4.4 | 4.4 | 2.3 | 4.4 | 4.4 |
| Walk [s] | 0 | 0 | 0 | 9 | 9 | 9 | 0 | 8 | 8 | 0 | 9 | 9 |
| Pedestrian Clearance [s] | 30 | 30 | 30 | 9 | 9 | 9 | 0 | 27 | 27 | 0 | 28 | 28 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 2.5 | 3.5 | 3.5 | 2.5 | 3.5 | 3.5 |
| Minimum Recall | | No | | | No | | No | Yes | | No | Yes | |
| Maximum Recall | | No | | | No | | No | No | | No | No | |
| Pedestrian Recall | | No | | | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 6.0 | 6.0 | 20.0 | 6.0 | 6.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | R | L | C | R | L | C | C | L | C | C |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 4.50 | 5.50 | 5.50 | 4.50 | 5.50 | 5.50 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 2.50 | 3.50 | 3.50 | 2.50 | 3.50 | 3.50 |
| g_i, Effective Green Time [s] | 23 | 23 | 23 | 18 | 18 | 18 | 17 | 57 | 57 | 12 | 52 | 52 |
| g / C, Green / Cycle | 0.18 | 0.18 | 0.18 | 0.14 | 0.14 | 0.14 | 0.13 | 0.44 | 0.44 | 0.09 | 0.40 | 0.40 |
| (v / s)_i Volume / Saturation Flow Rate | 0.15 | 0.16 | 0.07 | 0.10 | 0.14 | 0.13 | 0.12 | 0.22 | 0.22 | 0.08 | 0.29 | 0.29 |
| s, saturation flow rate [veh/h] | 1781 | 1885 | 1564 | 1781 | 1885 | 1589 | 1795 | 3475 | 1742 | 1781 | 3503 | 1723 |
| c, Capacity [veh/h] | 316 | 334 | 277 | 247 | 261 | 220 | 235 | 1519 | 762 | 166 | 1399 | 688 |
| d1, Uniform Delay [s] | 51.97 | 52.24 | 47.47 | 53.54 | 56.00 | 55.19 | 55.54 | 26.46 | 26.46 | 57.99 | 33.01 | 33.02 |
| k, delay calibration | 0.16 | 0.17 | 0.07 | 0.20 | 0.42 | 0.33 | 0.24 | 0.50 | 0.50 | 0.07 | 0.50 | 0.50 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 9.83 | 11.92 | 0.60 | 6.77 | 63.51 | 30.53 | 20.86 | 1.21 | 2.41 | 6.93 | 3.30 | 6.58 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | | | | |
|---------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| X, volume / capacity | 0.87 | 0.89 | 0.41 | 0.71 | 1.05 | 0.91 | 0.89 | 0.51 | 0.51 | 0.84 | 0.73 | 0.73 |
| d, Delay for Lane Group [s/veh] | 61.81 | 64.16 | 48.06 | 60.30 | 119.51 | 85.72 | 76.40 | 27.67 | 28.87 | 64.92 | 36.31 | 39.60 |
| Lane Group LOS | E | E | D | E | F | F | E | C | C | E | D | D |
| Critical Lane Group | No | Yes | No | No | Yes | No | Yes | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 9.51 | 10.57 | 3.35 | 5.98 | 13.16 | 8.32 | 8.10 | 8.88 | 9.16 | 4.86 | 14.06 | 14.48 |
| 50th-Percentile Queue Length [ft/ln] | 237.85 | 264.16 | 83.64 | 149.40 | 328.90 | 208.10 | 202.60 | 222.10 | 229.09 | 121.45 | 351.55 | 361.98 |
| 95th-Percentile Queue Length [veh/ln] | 14.57 | 15.90 | 6.02 | 9.99 | 19.51 | 13.06 | 12.77 | 13.77 | 14.13 | 8.47 | 20.21 | 20.72 |
| 95th-Percentile Queue Length [ft/ln] | 364.31 | 397.44 | 150.55 | 249.63 | 487.78 | 326.40 | 319.32 | 344.30 | 353.20 | 211.81 | 505.30 | 517.99 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 61.81 | 64.16 | 48.06 | 60.30 | 119.51 | 85.72 | 76.40 | 28.00 | 28.87 | 64.92 | 37.07 | 39.60 |
| Movement LOS | E | E | D | E | F | F | E | C | C | E | D | D |
| d_A, Approach Delay [s/veh] | 60.54 | | | 93.04 | | | 35.47 | | | 39.72 | | |
| Approach LOS | E | | | F | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 49.61 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.808 | | | | | | | | | | | |

Other Modes

| | | | | |
|--|-------|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 12.0 | 13.0 | 0.0 | 4.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 53.55 | 52.65 | 0.00 | 61.06 |
| I_p,int, Pedestrian LOS Score for Intersection | 2.441 | 2.476 | 0.000 | 3.034 |
| Crosswalk LOS | B | B | F | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 462 | 277 | 685 | 654 |
| d_b, Bicycle Delay [s] | 38.46 | 48.25 | 28.12 | 29.45 |
| I_b,int, Bicycle LOS Score for Intersection | 2.688 | 2.630 | 2.311 | 2.469 |
| Bicycle LOS | B | B | B | B |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | 4 | - | 8 | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Engineering Land Use Application Comments



To: Hugo Hamlin-Agosto, Planning Associate

From: Craig Christensen, P.E., Civil Engineer

Project: Chevron (LU 2022-030)

Date: August 16, 2023

Engineering staff has reviewed the information provided for the above cited project. Final construction plans will need to meet the standards established by the City of Sherwood and Clean Water Services (CWS), in addition to requirements established by other jurisdictional agencies providing land use comments. City of Sherwood Engineering Department comments are as follows:

Overview

The subject property consists of a parcel of land (approximately 0.85 acres) with an existing gas station and small convenience store. The subject property has frontage along SW Pacific Highway, SW Sherwood Boulevard and SW Langer Drive via a flag. Access to the site is mainly from the 2 existing driveways along SW Pacific Highway with a back access from SW Langer Drive. The proposed development is to remove the existing convenience store and construct a new larger convenience store.

Sanitary Sewer

No public sanitary sewer exists within SW Pacific Highway or SW Sherwood Boulevard. An 8-inch diameter public sanitary sewer main exists along the subject property frontage of SW Langer Drive. Properties in this area are served from the sanitary sewer line in SW Langer Drive. No extension of the public sanitary sewer is required.

The subject development will make use of the existing on-site sanitary system to provide sanitary sewer service to the proposed building.

There is an existing sanitary lateral stubbed off to the subject property. The developer shall make use of the existing sanitary sewer lateral unless otherwise approved by the Sherwood Engineering Department.

CONDITION: Prior to Approval of Engineering Public Improvement Plans, the developer shall design to connect to the existing sanitary sewer lateral unless otherwise approved by the Sherwood Engineering Department.

Water

No public water main exists within SW Pacific Highway or SW Sherwood Boulevard. A 12-inch diameter public water main exists along the subject property frontage of SW Langer Drive. The subject property and surrounding properties obtain water service from the existing 12-inch diameter public water main within SW Langer Drive.

No public water line extensions show up on the water master plan along the subject property frontage of SW Pacific Highway or SW Sherwood Boulevard. Therefore, no extension of the public water lines is required.

The subject development will make use of the existing water service unless otherwise approved by the Sherwood Engineering Department.

Currently there is no reduced pressure backflow assembly behind the domestic water meter therefore it will be required to be installed.

CONDITION: Prior to Approval of Engineering Public Improvement Plans, the developer shall design to make use of the existing water meter for service unless otherwise approved by the Sherwood Engineering Department.

CONDITION: Prior to Approval of Engineering Public Improvement Plans, the developer shall design for a reduced pressure backflow assembly on the domestic water service meeting the approval of the Sherwood Engineering Department.

Storm Sewer

Public storm sewer exists within SW Pacific Highway, SW Sherwood Boulevard and SW Langer Drive along the subject property frontage. All surrounding properties have access to public storm sewer. No extension of the public storm sewer is required.

Currently the subject property has a storm sewer lateral from a catch basin along SW Sherwood Boulevard. This catch basin flows to an ODOT owned storm sewer. ODOT requires detention for all properties discharging to an ODOT storm sewer system. Clean Water Services (CWS) also requires developments to provide for storm water hydro-modification in compliance with CWS standards.

Storm water runoff water quality treatment in compliance with CWS standards is also required.

CONDITION: Prior to Approval of Engineering Public Improvement Plans, the developer shall design to connect to the existing public storm sewer meeting the approval of the Sherwood Engineering Department.

CONDITION: Prior to Approval of Engineering Public Improvement Plans, the developer shall design to construct a storm water hydro-modification/detention facility in

compliance with CWS standards meeting the approval of the Sherwood Engineering Department and ODOT.

CONDITION: Prior to Approval of Engineering Public Improvement Plans, the developer shall design to construct a storm water runoff water quality treatment facility in compliance with CWS standards meeting the approval of the Sherwood Engineering Department.

CONDITION: Prior to Acceptance of the Public Improvements, a Private Storm Water Access and Maintenance Covenant will need to be recorded for the private storm water runoff water quality/hydro-modification facilities meeting the approval of the Sherwood Engineering Department.

Transportation

The subject property has public street frontage along SW Pacific Highway (Arterial - ODOT), SW Sherwood Boulevard (Arterial – City) and SW Langer Drive (Collector – City).

The city of Sherwood TSP section for SW Pacific Highway along the subject property frontage consists of three 12-foot wide travel lanes, an 8-foot wide bike lane and a 25-foot wide landscape strip containing a 10-foot wide walkway. When calculating the right-of-way width from centerline of the northbound SW Pacific Highway travel way, a right-of-way width of 51 feet is required.

Currently SW Pacific Highway (northbound) consists of 3 travel lanes, a 6.7-foot wide bike lane with a 5-foot wide curb-tight sidewalk. Since the existing sidewalks through the existing driveways along SW Pacific Highway are not in compliance with ADA standards and since the sidewalk along SW Pacific Highway are not to TSP width or location, the sidewalk along the subject property frontage of SW Pacific Highway will need to be reconstructed to meet city standards. Widening the street 1.3 feet to achieve an 8-foot wide bike lane would be not be practical for approximately 200 feet of frontage and would not match surrounding curb lines. Therefore, no curb widening along the subject property frontage of SW Pacific Highway will be required.

Some of the half street right-of-way along the subject property frontage of SW Pacific Highway (northbound) may be less than the required 51-foot width. If so, dedication will be needed to provide for a 51-foot right-of-way width from the SW Pacific Highway (northbound) centerline.

Currently the half street section along the subject property frontage of SW Sherwood Boulevard consists of half of a left turn lane, left-through lane, right turn lane, 6-foot wide bike lane and a 5-foot wide curb tight sidewalk. This matches the city of Sherwood TSP section with the exception of the width and location of the sidewalk. Therefore, the sidewalk along the subject property frontage of SW Pacific Highway will need to be

reconstructed to meet city standards and street trees will need to be installed into the newly created landscape strip between the sidewalk and curb.

It appears that some of the half street right-of-way along the subject property frontage of SW Sherwood Boulevard may be less than the required 51-foot width. If so, dedication will be needed to provide for a 51-foot right-of-way width from the SW Sherwood Boulevard centerline.

Currently the subject property frontage is fully developed along SW Langer Drive. However the existing sidewalk is a 5-foot wide curb tight sidewalk and the existing half street right-of-way width appears to be 30 feet. Neither meets city of Sherwood TSP standards which calls for a 6-foot wide sidewalk with a 5-foot wide landscape strip. The Sherwood TSP calls for a 36-foot half street right-of-way section for a 3-lane collector status street.

Since the subject property frontage onto SW Langer Drive is a flag stem and since the existing driveway for access to the subject property from SW Langer Drive falls within 2 parcels of land, constructing a new concrete sidewalk in the standard location could not be done without working within the neighboring property. Therefore, no sidewalk improvements are required along the subject property frontage of SW Langer Drive.

Right-of-way dedication along the subject property frontage of SW Langer Drive will need to occur to create a 36-foot wide half street right-of-way section.

CONDITION: Prior to Approval of Engineering Public Improvement Plans, the developer shall design to reconstruct the existing sidewalk along the subject property frontage of SW Pacific Highway to a 10-foot sidewalk width (non curb-tight) meeting the approval of ODOT and the Sherwood Engineering Department.

CONDITION: Prior to Approval of Engineering Public Improvement Plans, the developer shall design to reconstruct the existing sidewalk along the subject property frontage of SW Sherwood Boulevard to create a 6-foot sidewalk width with 5-foot wide landscape strip meeting the approval of ODOT and the Sherwood Engineering Department.

CONDITION: Prior to Acceptance of Public Improvements, the developer shall dedicate half-street right-of-way along the subject property frontage of SW Pacific Highway to a width of 51 feet from the northbound centerline of SW Pacific Highway, in areas where the existing half street right-of-way is narrower than 51 feet, meeting the approval of the Sherwood Engineering Department.

CONDITION: Prior to Acceptance of Public Improvements, the developer shall dedicate half-street right-of-way along the subject property frontage of SW Sherwood Boulevard to a width of 51 feet from centerline, in areas where the existing half street right-of-way is narrower than 51 feet, meeting the approval of the Sherwood Engineering Department.

CONDITION: Prior to Acceptance of Public Improvements, the developer shall dedicate right-of-way along the subject property frontage of SW Langer Drive to achieve a 36-foot half-street right-of-way width.

Grading and Erosion Control:

The subject property is less than 1 acre in size there for a DEQ NPDES permit is not required.

A City of Sherwood grading and erosion control permit will be required for on-site grading work.

CONDITION: Prior to Issuance of Building Permits, a grading and erosion control permit shall be obtained by the developer.

Other Engineering Issues:

A CWS Service Provider Letter has been obtained and stated no significant impacts.

A CWS storm water connection permit authorization is required for the project.

A PUE with a minimum width of 8-feet is required along the subject property frontage of all right-of-way.

Sherwood broadband conduit exists along the subject property frontage of SW Sherwood Boulevard. No Sherwood broadband exists along the subject property frontage of SW Pacific Highway, however there is no need for Sherwood broadband to be installed along the subject property frontage of SW Pacific Highway. Currently aerial Sherwood broadband exists along the subject property frontage of SW Langer Drive. A fee-in-lieu of installing Sherwood broadband conduits along SW Langer Drive will be required.

An Engineering Compliance Agreement is required to be executed between the developer and the City of Sherwood prior to the release of the public improvement plans.

CONDITION: Prior to Approval of Engineering Public Improvement Plans, a Storm Water Connection Permit Authorization shall be obtained from Clean Water Services.

CONDITION: Prior to Approval of Engineering Public Improvement Plans, the developer shall pay a fee-in-lieu of installing Sherwood broadband along the subject property frontage of SW Langer Drive.

CONDITION: Prior to Approval of Engineering Public Improvement Plans, an Engineering Compliance Agreement shall be executed between the developer and the City of Sherwood.

Project: Chevron (LU 2022-030)
Date: August 16, 2023
Page: 6 of 6

CONDITION: Prior to Acceptance of the Public Improvements, the developer shall construct the public improvements shown on the Approved Engineering Public Improvement Plans meeting the approval of the Sherwood Engineering Department.

CONDITION: Prior to Acceptance of the Public Improvements, the developer shall have performed all of the requirements of the Engineering Compliance Agreement meeting the approval of the Sherwood Engineering Department.

End of Engineering Land Use Review Comments.

M E M O R A N D U M

Date: August 23, 2023

To: Hugo Agosto, Associate Planner, City of Sherwood

From: Jackie Sue Humphreys, Clean Water Services (CWS)

Subject: Chevron Sherwood Convenience Store, LU 2022-030 MMSP, 2S130DA01200

Please include the following comments when writing your conditions of approval:

PRIOR TO ANY WORK ON THE SITE

A Clean Water Services (CWS) Storm Water Connection Permit Authorization must be obtained. Application for CWS Permit Authorization must be in accordance with the requirements of the Design and Construction Standards, Resolution and Order No. 19-5 as amended by R&O 19-22, or prior standards as meeting the implementation policy of R&O 18-28, and is to include:

- a. Detailed plans prepared in accordance with Chapter 2, Section 2.04.
- b. Detailed grading and erosion control plan. An Erosion Control Permit will be required. Area of Disturbance must be clearly identified on submitted construction plans.
- c. Detailed plans showing the development having direct access by gravity to public storm and sanitary sewer.
- d. Provisions for water quality in accordance with the requirements of the above named design standards. Water Quality is required for all new development and redevelopment areas per R&O 19-5, Section 4.04. Access shall be provided for maintenance of facility per R&O 19-5, Section 4.07.6.
- e. If use of an existing offsite or regional Water Quality Facility is proposed, it must be clearly identified on plans, showing its location, condition, capacity to treat this site and, any additional improvements and/or upgrades that may be needed to utilize that facility.

- f. If private lot LIDA systems proposed, must comply with the current CWS Design and Construction Standards. A private maintenance agreement, for the proposed private lot LIDA systems, needs to be provided to the City for review and acceptance.
- g. Show all existing and proposed easements on plans. Any required storm sewer, sanitary sewer, and water quality related easements must be granted to the City.
- h. Application may require additional permitting and plan review from CWS Source Control Program. For any questions or additional information, please contact Source Control at (503) 681-5175.
- i. Any proposed offsite construction activities will require an update or amendment to the current Service Provider Letter for this project.

CONCLUSION

This Land Use Review does not constitute CWS approval of storm or sanitary sewer compliance to the NPDES permit held by CWS. CWS, prior to issuance of any connection permits, must approve final construction plans and drainage calculations.



Oregon

Tina Kotek, Governor

Department of Transportation

Transportation Region 1

123 NW Flanders St.

Portland, OR 97209-4012

(503) 731-8200

Fax: (503) 731-8259

August 23, 2023

ODOT # 12615

ODOT Response

| | |
|---|--|
| Project: Chevron Convenience Market | Applicant: Barghausen Consulting Engineers, Inc |
| Jurisdiction: City of Sherwood | Jurisdiction Case #: LU 2022-030 |
| Site Address: 21090 SW Pacific Hwy, Sherwood | State Highway: Pacific Hwy (OR 99W) |

The site of this proposed land use action is adjacent to SW Pacific Hwy (OR 99W). ODOT has permitting authority for this facility and an interest in ensuring that this proposed land use is compatible with its safe and efficient operation.

PROJECT DESCRIPTION

ODOT received a Request for Comment for a Type IV – Major Modification and Site Plan Review application to redevelop an existing vehicle fueling station with a 3,600 square foot retail commercial store, new underground storage tanks, and other associated site improvements. The site is accessed through two driveways off SW Pacific Hwy and one crossover easement to SW Langer Drive. The materials provided for review include a Transportation Impact Analysis (TIA) prepared by Kittelson & Associates, Inc. dated November 2022 noting the install of two DO NOT ENTER signs on the westernmost access driveway to discourage existing traffic from accessing OR 99W via this driveway.

STORMWATER COMMENTS/FINDINGS

The applicant proposes to add impervious surface on the SW quadrant of the property and fills and eliminates an existing swale. It appears that this swale, and the proposed storm sewer improvements, will tie into ODOT system. The design will need to comply with Clean Water Services and ODOT's requirements for water quality and quantity. ODOT requires that all stormwater entering our system and/or right-of-way is treated and is within the allowed quantity and discharge requirements. At time of permitting, ODOT will require an analysis demonstrating the existing system's capacity to withstand the additional water and will need to include design details with the proposed system and connection. At this time, ODOT will also request a stormwater report (See ODOT Hydraulics Manual Chapter 4, appendix C and Clean Water Services requirements).

TRANSPORTATION COMMENTS/FINDINGS

Traffic Impact Analysis

ODOT has reviewed the TIA and concurs with the findings and recommendations summarized on page 18. The studied intersections are expected to satisfy mobility standards during weekday peak hours under existing and proposed traffic conditions and no capacity-based mitigation needs were identified. To address the expected increase in site-generated trips, ODOT supports the install of two DO NOT ENTER signs on the throat of the westernmost access. Signs should be installed in accordance with City standards and the Manual on Uniform Traffic Control Devices. ODOT also supports the proposed paving marking arrows on both accesses to 99W delineating entrance only on the west and exit only on the east as shown on Figure 2. Pavement markings should be installed in accordance with ODOT specifications and standards if within ODOT right-of-way.

Highway Access

The site plan shows the continued use of two existing driveways off Pacific Hwy. Due to the proposed improvements and presumed increase in trip generation, ODOT has determined that the proposed development meets the criteria for a Change of Use of a Private Connection (OAR 734-051-3020) and a new State Highway Approach Road Permit is required. ODOT also recommends that the driveways be brought up to current ADA standards and, per OAR 734-051-4020, both driveways do not meet current ODOT Access Management Spacing Standards. To increase safety of the State highway system, rather than closing the driveways, the existing driveways are required to be more clearly delineated by installing curb, signage, and striping for one-way circulation on-site to improve visibility and sight distance, with the southern driveway serving as entrance only and northern driveway as exit only. ODOT believes the installation of the DO NOT ENTER signage as well as the pavement marking arrows meets this criterion.

Frontage Improvements

ODOT recommends frontage improvements, including sidewalk and planter strip, along Pacific Highway to be consistent with the City of Sherwood's Transportation System Plan. Additional right-of-way may be necessary to accommodate the frontage improvements. ODOT recommends the city require the right-of-way donation to ODOT as necessary for the frontage improvements. An ODOT Miscellaneous Permit must be obtained for all work in the highway right-of-way, including the construction of a planter strip. Trees are not allowed in planter strips along highway frontage with posted speeds above 35 mph due to safety and visibility concerns. Due to the current posted speed of 45 mph, only low landscape shrubs (2ft-3ft) will be allowed in the planter strip. ODOT technical staff will review the landscape plan to ensure sight lines are maintained. Please direct the applicant to the District Contact below to determine permit requirements and obtain application information.

All alterations within the State highway right-of-way are subject to the ODOT Highway Design Manual (HDM) standards. Alterations along the State highway but outside of ODOT right-of-way may also be subject to ODOT review pending its potential impact to safe operation of the highway. If proposed alterations deviate from ODOT standards a Design Exception Request must be prepared by a licensed engineer for review by ODOT Technical Services. Preparation of a Design Exception request does not guarantee its ultimate approval. Until more detailed plans have been reviewed, ODOT cannot make a determination whether design elements will require a Design Exception.

Note: Design Exception Requests may take **4 months or longer** to process.

All ODOT permits and approvals must reach 100% plans before the District Contact will sign-off on a local jurisdiction building permit, or other necessary requirement prior to construction.

ODOT RECOMMENDED LOCAL CONDITIONS OF APPROVAL

Frontage Improvements and Right of Way

- Curb, sidewalk, cross walk ramp(s) bikeways and road widening shall be constructed as necessary to be consistent with local, ODOT and ADA standards.
- Right of way donated to ODOT as necessary to accommodate the planned cross section shall be provided. The deed must be to the State of Oregon, Oregon Department of Transportation. The ODOT District contact will assist in coordinating the transfer. ODOT should provide verification to the local jurisdiction that this requirement has been fulfilled. The property owner must be the signatory for the deed and will be responsible for a certified environmental assessment of the site prior to transfer of property to the Department.

Note: It may take up to **6 months or longer** to transfer ownership of property to ODOT.

Access to the State Highway

- A State Highway Approach Road Permit from ODOT for access to the state highway or written determination (e-mail, fax, or mail acceptable) from ODOT that the existing approach(es) is/are legal for the proposed use is required. Truck turning templates shall be provided as needed to ensure vehicles can enter and exit the approach safely. Site access to the state highway is regulated by OAR 734.51. For application information go to <http://www.oregon.gov/ODOT/HWY/ACCESSMGT/Pages/Application-Forms.aspx>.

Note: It may take up to **6 months to 1 year or longer** to process a State Highway Approach Road Permit depending on the level of complexity of the project and plan review timeline.

Permits and Agreements to Work in State Right of Way

- An ODOT Miscellaneous Permit must be obtained for all work in the highway right-of-way. When the total value of improvements within the ODOT right of way is estimated to be \$100,000 or more, an agreement with ODOT is required to address the transfer of ownership of the improvement to ODOT. An Intergovernmental Agreement (IGA) is required for agreements involving local governments and a Cooperative Improvement Agreement (CIA) is required for private sector agreements. The agreement shall address the work standards that must be followed, maintenance responsibilities, and compliance with ORS 276.071, which includes State of Oregon prevailing wage requirements.

Note: If a CIA is required, it may take **6 months or longer** to process.

- An ODOT Utility Permit is required for connection to state highway drainage facilities. Connection will only be considered if the site’s drainage naturally enters ODOT right-of-way. The applicant must provide ODOT District with a preliminary drainage plan showing impacts to the highway right of way.

A drainage study prepared by an Oregon Registered Professional Engineer is usually required by ODOT if:

1. Total peak runoff entering the highway right-of-way is greater than 1.77 cubic feet per second; or
2. The improvements create an increase of the impervious surface area greater than 10,758 square feet.

Please send a copy of the Notice of Decision including conditions of approval to:

ODOT Region 1 Planning
Development Review
123 NW Flanders St
Portland, OR 97209

ODOT_R1_DevRev@odot.oregon.gov

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| Development Review Planner: Melissa Gonzalez | melissa.gonzalez-gabriel2@odot.oregon.gov |
| District Contact: District 2B | D2bup@odot.oregon.gov |