

# JR Meadows No. 2 Subdivision

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**Date:** August 2020

**Submitted to:** City of Carlton  
Planning Department  
191 E Main Street  
Carlton, OR 97111

**Applicant:** TJA, LLC  
9110 NW Clay Pit Road  
Yamhill, OR 97148

**AKS Job Number:** 7395-01



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### Exhibits

- Exhibit A:** Preliminary Plans
  - Exhibit B:** Application Form and Checklist
  - Exhibit C:** Yamhill County Assessor’s Map
  - Exhibit D:** Ownership Information
  - Exhibit E:** Transportation Impact Analysis
  - Exhibit F:** Geotechnical Engineering Report
  - Exhibit G:** FEMA Flood Insurance Rate Map (FIRM)
  - Exhibit H:** Preliminary Stormwater Report
  - Exhibit I:** Arborist Report
  - Exhibit J:** List of Surrounding Property Owners
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<b>Submitted to:</b>	City of Carlton Planning Department 191 E Main Street Carlton, OR 97111
<b>Applicant:</b>	TJA, LLC 9110 NW Clay Pit Road Yamhill, OR 97148
<b>Property Owner:</b>	Larry and Cheryl Park 10215 NE Old McMinnville Highway Yamhill, OR 97148
<b>Applicant's Consultant:</b>	AKS Engineering & Forestry, LLC 12965 SW Herman Road, Suite 100 Tualatin, OR 97062
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<b>Site Location:</b>	South of S 7 <sup>th</sup> Street, and west of NE Old McMinnville Highway
<b>Yamhill County Assessor's Map:</b>	3 4 22 Tax Lot 1300
<b>Site Size:</b>	±13.94 acres
<b>Land Use Districts:</b>	Residential-Medium Density (R-2) and Residential-Medium High Density (R-3)

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## I. Executive Summary

JR Meadows No. 2 is a residential subdivision planned on approximately ±13.94 acres of land within the City of Carlton. Planning for this project began in 1981 when this property was brought into the City's Urban Growth Boundary (UGB) with an Agricultural Holding (AH) zoning designation. The City identified the property as an ideal location for future residential housing to meet projected population growth. The AH designation allowed for agricultural uses to continue until such time the land is needed for urban uses and public facilities and services are available. With the increasing need for housing in the City, the Applicant submitted a zone change application to change the zoning from AH to Residential-Medium Density (R-2) and Residential-Medium High (R-3) to accommodate future residential homes. This zone change marked the first step to utilize the land for its intended purpose and has received approvals from the Planning Commission and City Council.

Steve Reimann (Applicant) is a long-time resident of Yamhill County. No stranger to the growing needs of the community, he has worked on many residential projects in the area over the past several years to provide needed housing for local residents.

Steve previously received approvals for a residential subdivision (JR Meadows) immediately north of the subject site. Steve worked closely with the City to make sure the infrastructure improvements included with JR Meadows set the stage for future extension of the adjacent properties by providing necessary utilities and transportation facilities to their boundaries. JR Meadows No. 2 will be an extension of the first phase with similar lot sizes for future detached single-family homes and much-needed multifamily dwellings.

This application involves the creation of a new residential subdivision. The project is consistent with City zoning and includes 54 residential lots that are intended to accommodate future single-family homes and one lot that is slated for future attached dwellings. A separate site design review application for the R-3 designated lot is required and planned to be submitted in the future.

Recognizing the need for additional housing, JR Meadows No. 2 incorporates features that the City has identified as critical to facilitating anticipated future growth while accommodating constraints imposed by existing natural features, required infrastructure, and necessary utilities. The project includes:

- **Open Space:** JR Meadows No. 2 includes over 2 acres of voluntary open space (over 15 percent of the overall site) featuring existing natural areas, preservation of many large trees, off-street trails, and other park like amenities.
- **Interconnected Transportation Network:** JR Meadows No. 2 will be served by a comprehensive transportation network that includes the extension of S 7<sup>th</sup> Street (City Collector Street) from the north to E Main Street and E Washington Street. It also helps the City accomplish goals identified within the City's Transportation System Plan (TSP) because it includes E Wilson Street, E Cleveland Street, and S 8<sup>th</sup> Street. These transportation improvements provide the framework for future connectivity.
- **Linked Pedestrian Circulation System:** This project includes a network of sidewalks and pedestrian trails that create a walkable community for future residents, including a connection to the Yamhill Carlton Elementary School site to the west.
- **Infrastructure:** JR Meadows No. 2 includes a full range of underground utilities through the site and provides for potential future development opportunities for other properties in the area. This

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application includes sanitary sewer, stormwater facilities, water, and transportation improvements (including a separate emergency access from the site to NE Old McMinnville Highway) that have been designed that demonstrate that the infrastructure systems will have necessary capacity to accommodate the planned subdivision.

## II. Site Description/Setting

The subject site is ±13.94 acres located in the southeastern portion of the City of Carlton within the Urban Growth Boundary (UGB) and is vacant. The property is Parcel 2 of the preliminary partition plat approved by the City of Carlton (City File No. Partition 2020-02) and is a portion of Tax Lot 1300 of Yamhill County Assessor's Map 3 4 22. The site is directly south of the approved JR Meadows Subdivision and is surrounded by properties zoned Residential-Low Density (R-2) and Agricultural Holding (AH) to the north, Public Facility (PF) and Agricultural Holding (AH) to the west, and Yamhill County AF-80 to the east.

## III. Other Considerations

The Applicant appreciates that the community is interested in how change occurs in the neighborhood. The following discussion describes how other topics/items that were discussed during the zone change approval were considered:

- **Existing Trees:** The project preserves ±22% of the existing on-site trees in open space areas.
- **Wetlands:** This site has existing wetlands that have been evaluated and concurrence from the Oregon Department of State Lands (DSL) has been submitted. As shown on the Preliminary Plans, wetlands are planned to be preserved within open space areas.
- **Floodplain:** As shown on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) there is a mapped 100-year floodplain located on a small portion of the northeast corner. This area is planned to be retained as open space.
- **Surrounding Agricultural Uses:** This site abuts properties that are within the city limits but are being utilized for agricultural purposes. Although this will likely be seen as a positive feature to future homeowners, the Applicant plans to record a covenant which would preclude future homeowners/residents from remonstrating against customarily accepted farm practices.
- **Parks:** This application includes over 2 acres of open space areas and includes planned park amenities for the use of future homeowners. The Applicant is willing to dedicate this land to the City of Carlton if desired by the City.
- **School Capacity:** As part of the zone change application process, the Yamhill-Carlton School District was contacted and the superintendent confirmed that the District has the capacity to support the number of students that would likely be projected by this project.
- **Housing Variety:** This application involves a subdivision that includes 54 lots for future detached single-family homes and 1 lot that is planned to accommodate 22 future multifamily dwellings. This mix of housing types is 71% single-family to 29% multifamily, which closely matches the City's desired mix identified within the Comprehensive Plan.

Although these elements are not related to specific approval criteria for a subdivision application, they have been thoroughly considered and incorporated into the layout included in this application due to their importance to the Carlton community.

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#### **IV. Applicable Review Criteria**

The JR Meadows No. 2 subdivision application involves a “limited land use application” as that term is defined in ORS 197.015 (12). ORS 197.195 (1) describes how certain standards can be applied to a limited land use application. The applicable land use regulations for this subdivision application are found in the Carlton Development Code. Pursuant to ORS 197.195(1) Comprehensive Plan provisions (as well as goals, policies, etc. from within the adopted elements of the Comprehensive Plan) may not be used as a basis for a decision or an appeal of a decision unless they are specifically incorporated into the Carlton Development Code.

This subdivision application involves the development of land for housing. ORS 197.307(4) states that a local government may apply only clear and objective standards, conditions, and procedures regulating the development of housing, including needed housing, and such standards, conditions, and procedures cannot have the effect, either in themselves or cumulatively, of discouraging needed housing through unreasonable cost or delay. While this application addresses all applicable standards and criteria, the Applicant reserves the right to object to the enforcement of standards or conditions that are not clear and objective and does not waive its right to assert that the attempted enforcement of Comprehensive Plan provisions that are not specifically listed in the Carlton Development Code.

This application includes the City application forms, written materials, and Preliminary Plans necessary for City staff to review and determine compliance with the applicable approval criteria. The evidence is substantial and supports the City’s approval of the application.

#### **CARLTON DEVELOPMENT CODE**

##### **Division II. - ZONING AND DEVELOPMENT PROVISIONS**

##### **Chapter 17.22 - RESIDENTIAL-MEDIUM DENSITY (R-2) DISTRICT**

##### **17.22.040 - Dimensional standards.**

**The following dimensional standards shall be the minimum requirements for all development in the R-2 district except for modifications permitted under Chapter 17.132.**

Dimensional Standards in R-2 District	
<b>Minimum Lot Area</b>	
Single-family dwelling	
Non-common wall dwelling <sup>1</sup>	6,000 square feet
<b>Minimum Yard Setback Requirements, except as provided for Accessory Structures under Chapter 17.96:</b>	
Front yard	15 feet, except 20 feet for a garage or carport opening when facing street, and 10 feet for uncovered porches and covered but unenclosed porches not more than one story high (except where easements preclude closer setback)
Rear yard	15 feet
Side yard (interior)	3 feet, except 0 feet for adjoining townhome units
Side yard (adjacent to street)	Same as Front Yard
Maximum structure height	35 feet, except where a new building (any use) is proposed on a lot platted prior to [effective date of Code], the height of the new building shall not exceed the average height of all dwellings (residential uses) located within 50 feet of the subject lot, plus 5 feet.
Minimum lot width at building line	50 feet, except 60 feet for corner lot

**Response:** This application includes 54 lots for the future construction of detached single-family homes in the R-2 zoning district. As illustrated on the Preliminary Plans (Exhibit A), the lots meet the dimensional standards for the R-2 district, consistent with the table above.

17.22.050 - Development standards.

All development in the R-2 district shall comply with the applicable provisions of Chapters 17.128 through 17.140. In addition, the following specific standards shall apply:

- A. Accessory Structures. Accessory structures as provided for in Chapter 17.96.

**Response:** This application does not involve accessory structures. Therefore, provisions of Chapter 17.96 do not apply.

- B. Off-Street Parking. Parking shall be as specified in Chapter 17.68.

**Response:** Please refer to the responses to the provisions of Chapter 17.68 below.

- C. Subdivisions and Partitions. Land divisions shall be reviewed in accordance with the provisions of Chapters 17.172 through 17.176, as applicable.

**Response:** This application involves a subdivision. Please refer to the responses to the provisions of Chapter 17.176 below. The provisions of Chapter 17.172 Partitions do not apply.

- D. Lot Coverage. The following standards are applied to parcel area or lot area, as applicable:
  1. Maximum lot coverage by buildings: thirty-five (35) percent where a building exceeds 20 feet in height, and forty (40) percent where all buildings on the site are 20 feet or less in height;

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2. Maximum lot coverage by impervious surfaces, including pavement and roofed areas not considered buildings: thirty (30) percent;
  3. Combined maximum lot coverage: sixty-five (65) percent where a building exceeds 20 feet in height, and eighty (80) percent where all buildings on the site are 20 feet or less in height.

**Response:** The lot coverage standards are to be applied and addressed at the time of building permit review.

- E. Yards and Lots. Yards and lots shall conform to the standards of Chapter 17.92.

**Response:** Please see the responses to the standards of Chapter 17.92, which demonstrate compliance with this provision.

- F. Signs. Signs shall conform to the requirements of Chapter 17.80.

**Response:** This application does not involve signs; therefore, the provisions of Chapter 17.80 do not apply.

- G. Driveways. Driveways shall conform to the standards 17.68.060.

**Response:** Please refer to the responses below. Conformance with the driveway standards of Section 17.68.060 are to be addressed at the time of building permit review.

- H. Landscaping and Screening. All front and street side yards shall be landscaped pursuant to Section 17.84.050. Other landscaping, fencing or other screening may be required pursuant to land division approval or other land use approval. All landscaping shall be installed in accordance with Chapter 17.84 and approved plans prior to issuance of building occupancy permits.

**Response:** Compliance with the required landscaping and screening standards in front and side yards is to be demonstrated at the time of building permit review. A site design review application showing landscaping and screening that meet the requirements for a multifamily dwelling is to be submitted and reviewed separately. Therefore, this criterion will be met.

- I. Building and Site Design. All residential structures shall conform to the design standards of Chapter 17.106.

**Response:** Compliance with the design standards of Chapter 17.106 will be demonstrated at the time of building permit review.

Chapter 17.28 - RESIDENTIAL-MEDIUM HIGH DENSITY (R-3) DISTRICT

17.28.020 - Permitted uses.

The following uses are permitted in the Residential-Medium High Density district:

- A. Duplex dwelling, Multi-family dwellings, Manufactured Home Parks subject to Chapter 17.120.
- B. Public park and recreation area.
- C. Planned unit development subject to the provisions of Chapter 17.112.



- D. Boarding, lodging, or rooming house.
- E. Child care facilities, as defined by Oregon Revised Statutes Chapter 657A.
- F. Residential care homes and Residential Care facilities, as defined by this ordinance. All residential care homes and residential care facilities shall be duly licensed by the State of Oregon.
- G. Home occupation, subject to the provisions of Chapter 17.124.
- H. Single-family dwelling subdivisions platted after [effective date of amended code] provided subdivision achieves a density of not less than eight (8) dwelling unit per acre.
- I. Single-family dwellings (attached or non-attached), including single-family manufactured dwelling subject to Chapter 17.116, lawfully existing as of [effective date of amended code].
- J. A single-family vacation rental dwelling unit, when such dwelling obtains a vacation rental dwelling permit in accordance with the vacation rental dwelling conditional use standards and procedures set forth in Chapter 17.125.

**Response:** This application includes 1 lot (Lot 71) that has an R-3 zoning designation that allows for the uses noted above. The ordinance adopting the zone change of this site conditioned that at least 25% of the dwellings to be multi-family, attached single-family, or duplex homes within the R-3 portion of this property. As shown on the Preliminary Plans, Lot 71 is ±38,015 square feet and is set aside to provide only future multifamily dwellings on the lot. A site design review application demonstrating compliance with this condition is intended to be submitted and reviewed separately from this application.

17.28.040 - Dimensional standards.

The following dimensional standards shall be the minimum requirements for all development in the R-3 district except for modifications permitted under Chapter 17.132.

Dimensional Standards in R-3 District	
<b>Minimum Lot Area</b>	
Multi-family dwelling, 3-unit	9,500 square feet plus 1,500 square feet per unit in excess of 3 units
<b>Minimum Yard Setback Requirements, except as provided for Accessory Structures under Chapter 17.96:</b>	
Front yard	20 feet, except 15 feet for uncovered porches and covered but unenclosed porches not more than one story high
Rear yard	15 feet
Side yard (interior)	7 feet
Side yard (adjacent to street)	20 feet, except 15 feet for uncovered porches and covered but unenclosed porches not more than one story high
Minimum lot width at building line	40 feet for interior lot and 50 feet for corner lot, except 24 feet for interior lot with attached dwelling
Maximum structure height	35 feet

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**Response:** This application includes 1 lot (Lot 71) for the future construction of a multifamily building to accommodate up to 22 units in the R-3 district. As shown on the Preliminary Plans, this lot meets the above dimensional standards. This criterion is satisfied.

17.28.050 - Development standards.

All development in the R-3 district shall comply with the applicable provisions of Chapters 17.128 through 17.140. In addition, the following specific standards shall apply:

A. Accessory Structures. Accessory structures as provided for in Chapter 17.96.

**Response:** This application does not include accessory structures. Therefore, this criterion is not applicable.

B. Off-street Parking. Parking shall be as specified in Chapter 17.68.

**Response:** A site design review application for a future multifamily residential building on Lot 71 that meets the applicable off-street parking requirements is intended to be submitted and reviewed separately from this subdivision application.

C. Subdivisions and Partitions. Land divisions shall be reviewed in accordance with the provisions of Chapters 17.172 through 17.176, as applicable.

**Response:** Chapters 17.172 through 17.176 are discussed in detail later in this application. This criterion is met.

D. Lot Coverage. The following standards are applied to parcel area or lot area, as applicable:

1. Maximum building coverage by buildings: forty (40) percent;
2. Maximum lot coverage by impervious surfaces, including pavement and roofed areas not considered buildings: thirty (30) percent;
3. Combined maximum lot coverage: seventy (70) percent.

**Response:** This application involves a residential subdivision. Lot coverage for Lot 71 will be reviewed with the future site design review application. These criteria will be met.

E. Multi-family residential uses (three or more units) shall be subject to the site design review procedures of Chapter 17.156.

**Response:** A site design review application for a future multifamily residential building on Lot 71 that addresses the provisions of Chapter 17.156 is intended to be submitted and reviewed separately from this application.

F. Landscaping. Multi-family dwelling developments shall provide a minimum landscaped area equal to twenty-five (25) percent of the gross site area. Landscaping improvements shall be installed and maintained in accordance with Chapter 17.84.

**Response:** A site design review application for a future multifamily residential building on Lot 71 that addresses landscaping is intended to be submitted and reviewed separately from this application.

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G. Signs. Signs shall conform to the requirements of Chapter 17.80.

**Response:** This application involves a residential subdivision and does not include signage. If signage is desired in the future, it is understood that a permit per the requirements of Chapter 17.80 is required.

H. Driveways. Driveways shall conform to the standards 17.68.060.

**Response:** This application involves a residential subdivision. A site design review application for a future multifamily residential building on Lot 71 that shows driveways meeting the standards of 17.68.060 is intended to be submitted and reviewed separately from this subdivision application.

I. Landscaping and Screening. All front and street side yards shall be landscaped pursuant to Section 17.84.050. Other landscaping, fencing or other division may be required pursuant to land division approval or other land use approval. All landscaping shall be installed in accordance with Chapter 17.84 and approved plans prior to issuance of building occupancy permits.

J. The minimum landscape area standard of twenty-five (25) percent for multifamily development may be reduced to ten (10) percent where the development plan dedicates one-quarter (1/4) acre or more land for a neighborhood park, consistent with an adopted city parks plan.

**Response:** This application involves a residential subdivision with one lot planned for a future multifamily building. A site design review that addresses the required landscaping and screening for this lot is intended to be submitted separately from this subdivision application.

K. Building and Site Design. All residential structures shall conform to the design standards of Chapter 17.106.

**Response:** This application involves a residential subdivision and does not include structures. A site design review for a future multifamily residential building on Lot 71 that addresses the design standards of Chapter 17.106 is intended to be submitted and reviewed separately from this subdivision application.

Chapter 17.56 - FLOODPLAIN MANAGEMENT (FP) OVERLAY ZONE

17.56.020 - Applicability.

A. Lands To Which This Chapter Applies. This chapter shall apply to all areas of special flood hazards within the jurisdiction of the City of Carlton, Yamhill County, Oregon.

B. Basis for Establishing the Areas of Special Flood Hazard. The areas of special flood hazard identified by the Federal Insurance Administration in a scientific and engineering report entitled "The Flood Insurance Study for Yamhill County, Oregon and Incorporated Areas, dated March 2, 2010," with accompanying flood insurance map (FIRM) is hereby adopted by reference and declared to be part of this chapter. The flood insurance study and the FIRM are on file at the City Hall. The best available information for flood hazard area identification as outlined in Subsection 17.56.070 A. shall be the basis for regulation until a new FIRM is issued which incorporates the data utilized under Subsection 17.56.070 A.

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**Response:** As demonstrated on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) (Exhibit G), there is a mapped 100-year floodplain located on a small portion of the northeast corner. However, as shown on the Preliminary Plans (Exhibit A), improvements are not planned within the floodplain, and this area is planned to be retained as part of an open space area.

17.56.040 - Development procedures.

- A. Development Permit Required. A development permit shall be obtained before construction or development begins within any area of special flood hazard established in Subsection 17.56.020 B.

(...)

**Response:** As shown on the Preliminary Plans (Exhibit A), the planned improvements for this project are not within the mapped floodway. Therefore, these provisions are not applicable.

**Division III. - GENERAL DEVELOPMENT STANDARDS**

**Chapter 17.60 - GENERAL PROVISIONS**

17.60.020 - Application of standards.

- A. The standards set forth in this chapter shall apply to partitions; subdivisions; planned unit developments; commercial and industrial projects; single-family dwellings, duplexes, and multi-family structures. Developments outside the city which will tie into or take access from city streets, or increase the flow or change the point of discharge to the city storm drainage system shall be subject to the improvement standards set forth in this title to the extent necessary to mitigate the impacts to these systems.

**Response:** This application involves a residential subdivision. Therefore, the standards of this chapter apply.

- B. The application of these standards to a particular development shall be modified as follows:
1. Development standards that are unique to a particular use, or special use, shall be set forth within the district;
  2. Those development standards which are unique to a particular district shall be set forth in the section governing that district.

**Response:** To the extent applicable, the application of these standards can be modified as outlined in the provisions above.

- C. No public works construction shall be undertaken until an agreement is executed between the developer and the city specifying the period within which required improvements and repairs shall be completed, as well as referencing the terms and conditions under which the city has approved the development. The agreement shall be in the form acceptable to the city attorney.

**Response:** This requirement is understood.

17.60.030 - Application of public facility standards.

Standards for the provision and utilization of public facilities or services available within the City of Carlton shall apply to all land

developments in accordance with the following table of reference. No development permit shall be approved unless the following improvements are provided for prior to occupancy or operation, or unless future provision is assured in accordance with Chapter 17.216.

Public Facilities Improvement Requirements Table						
	Fire Hydrant	Streets	Water Hookup	Sewer Hookup	Storm Drain	Street Lights
Partition, Subdivisions, PUD, or Manufactured Home Park	C-1	Yes	Yes	Yes	Yes	Yes
<b>Legend:</b> No = Not required Yes = Required C = Conditional, as noted: C-1 Fire Hydrants for Commercial, Industrial Expansions, or Residential Uses: One or more fire hydrants are required as per the Uniform Building Code and Uniform Fire Code or if adequate fire flows are not available to the site. If the existing water lines are insufficient to provide adequate fire flows, water lines shall be upgraded to provide sufficient capacity at the developer's expense.						

**Response:** The required public facilities improvements are illustrated on the Preliminary Plans in Exhibit A, in compliance with the standard above. This criterion is satisfied.

17.60.040 - Design standards.

The design of all improvements within existing and proposed rights-of-way and easements, all improvements to be maintained by the city, and all improvements for which city approval is required, shall comply with the requirements of the most recently adopted Standard Specifications for Public Works Construction in the City of Carlton.

**Response:** The required public facility improvements are designed to be in compliance with the most recently adopted Standard Specifications for the Public Works Construction in the City of Carlton, as illustrated on the Preliminary Plans (Exhibit A). This criterion is satisfied.

Chapter 17.64 - STREET STANDARDS

17.64.020 - Scope.

The provisions of this chapter shall be applicable to:

- A. The creation, dedication, or construction of all new public or private streets, pedestrian facilities, and bikeways in all subdivisions, partitions, or other developments in the city.
- B. The extension or widening of existing public or private street rights-of-way, easements, or street improvements including those which may be proposed by an individual or the city, or which may be required by the city in association with other development approvals.
- C. The construction or modification of any utilities, bikeways, or sidewalks in public rights-of-way or private street easements.
- D. The planting of street trees or other landscape materials in public rights-of-way (landscape strip).

**Response:** This application includes the design and construction of new public and private streets in association with a subdivision application. Therefore, the provisions of this chapter are applicable.

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17.64.030 - General provisions.

The following provisions shall apply to the dedication, construction, improvement, or other development of all public streets in the city, and are intended to provide a general overview of typical minimum design standards. All streets shall be designed in conformance with the specific requirements of the most recently adopted Standard Specifications for Public Works Construction in the City of Carlton and the Transportation System Plan.

The standard sections contained in Standard Specifications for Public Works Construction in the City of Carlton and the Transportation System Plan are minimum requirements only and shall not be construed as prohibiting the city engineer from requiring thicker sections or engineer designed pavement sections in lieu of standard sections where conditions warrant.

- A. The location, width, and grade of streets shall be considered in their relation to existing and planned streets, to topographical conditions, to public convenience and safety, and to the proposed use of the land to be served by the streets.

**Response:** The planned streets within the subject site are designed with consideration to relate to existing and planned streets, topographical conditions, resource constraints, public convenience and safety, and the layout of the planned residential subdivision, as illustrated on the Preliminary Plans. As further shown on the Preliminary Plans, this application includes the roadways and transportation infrastructure shown on the City's Transportation System Plan (TSP) and provide long-term community connectivity. Therefore, this provision is met.

- B. Development proposals shall provide for the continuation, and connection to, all streets, bikeways and pedestrian facilities within the development and to existing streets, bikeways and pedestrian facilities outside the development.

**Response:** As shown on the Preliminary Plans in Exhibit A, the layout of the subdivision is designed to provide for the continuation and connection to streets, bikeways, and pedestrian facilities within the subject site and to existing streets, bikeways and pedestrian facilities outside of the subject site. The Preliminary Plans further illustrate a planned pedestrian connection from the open space area in Tract C through the subdivision to the Yamhill Carlton Elementary School to the west. Therefore, this provision is met.

- C. Alignment. All streets other than minor streets or culs-de-sac, as far as practical, shall be in alignment with existing streets by continuation of the centerline thereof. The staggering of street alignments resulting in "T" intersections shall leave a minimum distance recommended by the city engineer.

**Response:** As illustrated on the Preliminary Plans in Exhibit A, the streets planned for construction within the subject site are designed to align with existing streets by the continuation of the centerline, to the extent practicable. Therefore, this provision is satisfied.

- D. Future Extension of Streets. In order to promote the development of an efficient network of city streets and connections to state and county roads, development shall provide future street extensions as

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shown on the Future Street Plan found in the Carlton Transportation System Plan.

In addition to providing for future street extensions shown on the Future Street Plan, streets, bikeways and pedestrian facilities, shall also be extended to the boundary of a tract being developed, where necessary to give access to or permit a satisfactory future development of adjoining land. Reserve strips and street plugs may be required to preserve the objectives of street extensions.

**Response:** The Preliminary Plans included in Exhibit A illustrate that this subdivision application includes street extensions to the boundary of the subject site (including streets, bikeways, and pedestrian facilities) that are consistent with the Future Street Plan found in the TSP. The streets planned for construction within the subdivision are consistent with the TSP; therefore, it is not warranted for strips and street plugs to be reserved to preserve the objective of street extensions in addition to the stub streets planned (shown on the Preliminary Plans). This provision is met.

E. Existing Streets.

1. Three-quarter improvements to all existing streets adjacent to, within or necessary to serve the property, shall be required at the time of partitioning or subdivision, unless the applicant demonstrates to the satisfaction of the city engineer that the condition and sections of the existing streets meet city standards and are in satisfactory condition to handle projected traffic loads.

Full street improvements to all existing streets adjacent to, within or necessary to serve the property, shall be required when it is determined that the vehicular and/or pedestrian impacts from the proposed development necessitate such improvements.

**Response:** The site is not adjacent to existing streets. This provision does not apply.

2. For infill development that does not include partitioning or subdivision, construction of sidewalks, including curb and gutter where necessary, along all property frontages shall be the minimum requirement of development. A three-quarter street improvement shall be required if the city engineer determines that the existing streets are not in condition to handle projected traffic loads.

**Response:** This application involves a subdivision. Therefore, this provision is not applicable.

3. The city shall require the applicant to record an approved improvement deferral agreement or non-remonstrance agreement, see Section 17.216.030, in lieu of street improvements, where the following criteria are met:
  - a. The existing roadway condition and sections are adequate to handle existing and projected traffic loads; and
  - b. Existing public utilities (water, sanitary sewer and storm sewer) located within the existing roadway are adequate, or can be improved without damaging the existing roadway surface.

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**Response:** As demonstrated through the written responses in this narrative coupled with the application materials, this application is in compliance with the required improvements. Therefore, a deferral agreement or non-remonstrance agreement in lieu of street improvements is not relevant, and these provisions do not apply.

F. **New Streets.** Where new streets are created, full street improvements shall be required. Three-quarter streets may be approved in lieu of full street improvements on boundary streets when the city finds it to be practical to require the completion of the other one-quarter street improvement when the adjoining property is developed. The city may allow three-quarter street improvements if all of the following criteria are met:

1. The adjoining land abutting the opposite side of the street is undeveloped; and
2. Storm water drainage is provided for on the non-curbed side of three-quarter street improvements in areas judged by the city engineer to have drainage concerns.

One-foot wide reserve strips and street plugs may be required to preserve the objectives of three-quarter streets.

**Response:** Based on the code, standards, the location of the subject site relative to existing streets, and the layout of the planned subdivision, full street improvements are required. As illustrated on the Preliminary Plans, the new streets required to be constructed on the subject site are designed to be full street improvements. Therefore, a three-quarter street improvement in lieu of a full street improvement is not applicable. The provisions above do not apply.

G. **Culs-de-Sac.** Culs-de-sac shall have maximum lengths of four hundred (400) feet and serve no more than eighteen (18) dwelling units. All culs-de-sac shall terminate with circular turn-a-rounds.

**Response:** As shown on the Preliminary Plans (Exhibit A), this application does not include the creation of a public street with a cul-de-sac. Therefore, this provision does not apply.

H. **Dead-End Streets.** When it appears necessary to continue a street or public access way into a future subdivision or adjacent acreage, streets, or public access way shall be platted to a boundary of a subdivision or partition. The street may be platted without a turnaround unless the Planning Commission finds that a turnaround is necessary.

**Response:** As shown on the Preliminary Plans (Exhibit A), this application includes the extension of S 7<sup>th</sup> Street from the north. As further illustrated on the Preliminary Plans, S 7<sup>th</sup> Street, S 8<sup>th</sup> Street, E Cleveland Street, and E Wilson Street extend to the site's southern, western, and eastern boundaries and are planned future connections to adjacent properties. The site also has access to N Old McMinnville Highway through an Emergency Access Easement (EAE) at the terminus of E Cleveland Street. To address emergency services at the terminus of E Wilson Street, an emergency vehicle access connection to the north, a fire department turnaround, or individual fire suppression sprinkler systems for the homes on Lots 79-82 and 90-93 can be provided.



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- I. **Street Names.** Street names and numbers shall conform to the established pattern in the city and shall be subject to the approval of the city. Street names shall be required for all new publicly dedicated streets and private streets.

**Response:** As illustrated on the Preliminary Plans, the planned street names and numbers conform to the established pattern in the City. The planned street names are to be reviewed by the City for approval. Therefore, this provision is satisfied.

- J. **Grades and Curves.** Grades shall not exceed six percent on arterials, ten (10) percent on collectors, or twelve (12) percent on any other public or private street. To provide for adequate drainage, all streets shall have a minimum slope of 0.5 percent. Center line radii of curves shall not be less than three hundred (300) feet on major arterials, two hundred (200) feet on minor arterials, or one hundred (100) feet on other streets and shall be to an even ten (10) feet. On arterials there shall be a tangent of not less than one hundred (100) feet between reversed curves. Where existing conditions, particularly topography, make it otherwise impractical to provide buildable lots, the Planning Commission may accept steeper grades and sharper curves.

**Response:** As illustrated on the Preliminary Plans, the planned public streets are designed to be in compliance with the provision above. Therefore, this provision is satisfied.

- K. **Marginal Access Streets.** If a development abuts or contains an existing or proposed arterial street or railroad right-of-way, the city may require marginal access streets, reverse frontage lots with suitable depth, screen planting contained in a non-access reservation along the rear or side property line, or such other treatment as may be necessary for adequate protection of residential properties and to afford separation of through and local traffic.

**Response:** The subject site does not abut existing or proposed arterial streets or railroad right-of-way. Therefore, this criterion is not applicable.

- L. **Vision Clearance Area.** Vision clearance areas shall be maintained on corner lots at the intersection of all public streets and at the intersections of a public street with a private street as outlined in Section 17.92.080.

**Response:** Vision clearance areas are shown on the Preliminary Plans and are planned to be maintained, consistent with the provision above and as outlined in Section 17.92.080. Please refer to the response in Section 17.92.080.

- M. **Spacing Between Public Road Intersections.** Spacing between public road intersections for each functional class of road shall conform to access spacing standards found in Section 17.100.030.

**Response:** Please refer to the responses to access spacing standards found in Section 17.100.030 below, which demonstrate compliance with the provision above.

- N. **Landscape Strip.** The landscape strip includes the area located between a sidewalk and the curb (see figure below). This area serves many important functions including creating space for a variety of underground utilities such as telephone, cable television, fiber optic cables, etc. The landscape strip is also beneficial for locating utility poles, fire hydrants, benches, bus shelters and other features that might otherwise block or obstruct pedestrian travel along sidewalks.

Landscaping helps to soften the hard edge created by pavement and curbs. Large trees can also provide cooling summer shade for parked cars and pedestrians. A canopy of street trees can help to slow traffic and enhance the beauty of the community. The physical separation from the street also improves the design of sidewalks by maintaining a constant grade without dipping at driveways, and makes American with Disabilities Act compliance easier. During winter months, snow can be plowed into these areas from the street and not block sidewalks. The landscape strip provides a physical separation from the adjacent roadway, providing enhanced pedestrian comfort and improved walking experience.

Landscaping and plant materials used in the landscape strip are subject to the provisions of Chapter 17.84. Maintenance of landscape strips in the right-of-way is the continuing obligation of the adjacent property owner.

**Response:** As shown on the Preliminary Plans, this subdivision application includes new local streets (S 8<sup>th</sup> Street and E Cleveland Street). It also includes two collector streets (S 7<sup>th</sup> Street and E Wilson Street). Based on prior conversations with City staff, S 7<sup>th</sup> Street has been designed as a local street, and as further discussed in Section 17.64.050, E Wilson Street has also been designed as a local street. Per Carlton Development Code Section 17.64.040, landscape strips are an optional improvement for local streets. This subdivision application includes curb-tight sidewalks with no landscape strips. This provision is not applicable.

17.64.040 - Right-of-way and improvement widths.

The following standards are general criteria for all types of public streets, bikeways, landscape strips and sidewalks in the city. These standards shall be the minimum requirements for all streets, except where modifications are permitted under Section 17.64.050.

Street Classification		ROW Width (ft.)	Pavement Width (ft.)	Sidewalk Width (ft.)	Landscape Strip (ft.)	Bikeway Width (ft.)	Parking
Local	Typical	47-57	34	5 <sup>1</sup>	5(optional)	N/R	2 sides
<sup>1</sup> Ten-foot sidewalks required along commercially zoned property. <sup>4</sup> Bicycle lanes required on Grant Street from Yamhill Street to Pine Street and Yamhill Street from Main Street to Grant Street.							

The property line radius at intersections of local streets shall be twenty (20) feet. All other intersection property line radii shall be according to the specifications of the city engineer.

**Response:** The Preliminary Plans illustrate the planned right-of-way and improvement widths for the new streets within the subject site designed to local street standards, including 20-foot property line radii at intersections. As shown on the Preliminary Plans, S 7<sup>th</sup> Street and E Wilson Street are designed as local streets. Per previous conversations with City staff, it is understood that the right-of-way and improvement width of S 7<sup>th</sup> Street shown on the Preliminary Plans is allowed. A modification for the right-of-way and improvement widths

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of S 7<sup>th</sup> Street and E Wilson Street is included with this application and is further discussed in Section 17.64.050 below. Therefore, this standard is met.

17.64.050 - Modification of right-of-way and improvement width.

The city, pursuant to the review procedures of Chapter 17.196, may allow modification to the public street standards of Section 17.64.040, when both of the following criteria are satisfied:

- A. The modification is necessary to provide design flexibility in instances where:
  - 1. Unusual topographic conditions require a reduced width or grade separation of improved surfaces; or
  - 2. Parcel shape or configuration precludes accessing a proposed development with a street which meets the full standards of Section 17.64.040; or
  - 3. A modification is necessary to preserve trees or other natural features determined by the city to be significant to the aesthetic character of the area; or
  - 4. A planned unit development is proposed and the modification of street standards is necessary to provide greater privacy or aesthetic quality to the development.
- B. Modification of the standards of Section 17.64.040 shall only be approved if the city finds that the specific design proposed provides adequate vehicular access based on anticipated traffic volumes.

**Response:** As previously discussed, S 7<sup>th</sup> Street and E Wilson Street have been designed to local street standards. S 7<sup>th</sup> Street and E Wilson Street are planned to have 46-foot-wide paved sections with 5-foot-wide sidewalks on both sides within a 58-foot right-of-way. The planned right-of-way widths are consistent with street widths in residential neighborhoods and will provide continuity between the new street and existing S 7<sup>th</sup> Street. These modifications are due to constraints imposed by existing topography and the planned preservation of trees and natural resources within open space tracts. Additionally, as discussed in the Transportation Impact Analysis (Exhibit E) prepared by Lancaster Mobley, the site and transportation impacts related to the planned subdivision were analyzed and it was determined that the planned roadways are expected to have sufficient capacity to accommodate traffic volumes in a safe and efficient manner. These standards are satisfied.

17.64.060 - Private streets.

- A. Streets and other rights-of-way serving a planned unit development that are not dedicated for public use shall comply with the following:
  - 1. Private streets shall only be allowed where the applicable criteria of Section 17.88.030(C) are satisfied. Private streets shall have a minimum easement width of twenty (20) feet and a minimum paved or curbed width of eighteen (18) feet.

**Response:** This application involves a subdivision that includes a private street (as defined in Section 17.22.020) that is planned to provide access to Lots 59-67. As discussed in this narrative, the planned lot areas included in this application meet the minimum lot area

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requirements as defined in Section 17.12 and discussed in Section 17.22.040, meeting the applicable criteria of Section 17.88.030(C).

As shown on the Preliminary Plans (Exhibit A) the planned private street has a 20-foot wide paved section within a 20-foot-wide easement and meets the applicable access requirements as discussed in Section 17.88.030(D). This provision is satisfied.

2. Unless otherwise specified in the Standard Specifications for Public Works Construction in the City of Carlton, all private streets serving more than two dwelling units shall be constructed to the same pavement section specifications required for public streets. Provision for the maintenance of the street shall be provided in the form of a maintenance agreement, homeowners association, or other instrument acceptable to the city attorney.

**Response:** The private street is planned to be owned and maintained by the future homeowners' association. This standard is met.

3. A turn-around shall be required for any private street which has only one outlet and which is in excess of two hundred (200) feet long or which serves more than two residences. Turn-arounds for private streets shall be either a circular turn-around with a minimum paved radius of thirty-five (35) feet, or a "tee" or "hammerhead" turn-around with a minimum paved dimension across the "tee" of seventy (70) feet and a twenty (20) foot width with appropriate radius at the corners.

**Response:** As previously discussed, this application includes a private street that is planned to provide access to Lots 59-67. As shown on the Preliminary Plans, a "hammerhead" turnaround for this street is planned. Due to physical constraints in this location (topography and natural resources), a smaller turnaround is provided with individual fire suppression sprinkler systems for the future homes where necessary with approval from the Fire District and City. This standard is satisfied.

- B. Any grant of a private street or land functioning as an easement shall not be accepted by the city and dedicated for public use except upon approval of the council and upon meeting the specifications of Sections 17.64.020 and 17.64.040.

**Response:** This application does not include a grant of a private street to the public. This standard is not applicable.

17.64.070 - Access easements.

A private access easement created as the result of an approved partitioning shall conform to the following:

- A. Partition access easements shall only be allowed where the applicable criteria of Section 17.88.030(D) are satisfied. The easement shall comply with the following standards:
  1. Minimum width: twenty (20) feet;
  2. Minimum paved or curb to curb width: twenty (20) feet;
  3. Maximum length: two hundred fifty (250) feet;

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4. No more than three dwelling units shall have sole access to the easement.
- B. Unless otherwise specified in the Standard Specifications for Public Works Construction in the City of Carlton, all private streets serving more than two dwelling units shall be constructed to the same pavement section specifications required for public streets. Provision for the maintenance of the street shall be provided in the form of a maintenance agreement, homeowners association, or other instrument acceptable to the city attorney.
  - C. A turn-around shall be required for any access easement which has only one outlet and which is in excess of two hundred (200) feet long or which serves more than two residences. Turn-arounds shall be either a circular turn-around with a minimum paved radius of thirty-five (35) feet, or a "tee" or "hammerhead" turn-around with a minimum paved dimension across the "tee" of seventy (70) feet and a twenty (20) foot width with appropriate radius at the corners.
  - D. All private access easements serving more than two residences shall be designated as fire lanes and signed for no parking.

**Response:** This application involves a residential subdivision, not a partition. Therefore, the provisions above do not apply.

#### Chapter 17.68 - OFF-STREET PARKING AND LOADING

##### 17.68.020 - Scope.

Development of off-street parking and loading areas for commercial, industrial, or multi-family development shall be subject to the site design review procedures of Chapter 17.156. The provisions of this chapter shall apply to the following types of development:

- A. Any new building or structure erected after the effective date of the ordinance codified in this title, except as provided in subsection E of this section.

**Response:** This application involves a residential subdivision for the future construction of single-family homes and a future multifamily building. Therefore, the subdivision is subject to the provisions of this chapter. As stated above, these standards will apply to a site design review for Lot 71 at such time as that application is submitted but do not apply at this time.

##### 17.68.030 - Location.

Off-street parking and loading areas shall be provided on the same lot with the main building or structure or use except that:

- A. In any residential zone or for any residential use permitted in a nonresidential zone, automobile parking areas may be located on another lot if such lot is within two hundred (200) feet of the lot containing the main building, structure or use.
- B. In any nonresidential zone, the parking area may be located off the site of the main building, structure or use if it is within five hundred (500) feet of such site.

**Response:** This application involves a residential subdivision and does not involve nonresidential uses that would warrant loading areas. The required off-street parking for each of the future single-family homes is planned to be provided and located on the same individual

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lot. Compliance with these provisions is to be addressed at the time of building permit review. Therefore, to the extent applicable, this provision is met.

17.68.040 - Joint use.

Parking area may be used for a loading area during those times when the parking area is not needed or used. Parking areas may be shared subject to city approval for nonresidential uses where hours of operation or use are staggered such that peak demand periods do not occur simultaneously. The requirements of Section 17.68.050 may be reduced accordingly. Such joint use shall not be approved unless satisfactory legal evidence is presented which demonstrates the access and parking rights of parties.

**Response:** This application involves a residential subdivision and does not involve a nonresidential or joint use. Therefore, this provision does not apply.

17.68.050 - Off-street parking requirements.

Except where other city code provisions waive off-street parking requirements or allow credit for on-street parking in lieu of off-street parking, developments and changes in use that are subject to site design review shall provide off-street parking as required by Section 17.68.080 and approved by the city in the amount not less than listed below. The Planning Commission may reduce the off-street parking requirements contained herein without the need for a variance upon finding that the specific characteristics of a proposed use are different than a typical use regulated by this section and the proposed use warrants less parking, as demonstrated by evidence in the record.

Residential		
A.	1 and 1 family dwellings	2 spaces/ dwelling unit
B.	Multi-family dwellings	1 spaces/dwelling unit

**Response:** The minimum off-street parking requirement is two spaces per dwelling unit for single-family dwellings and one space per dwelling unit for multifamily dwellings. Two required off-street parking spaces are planned to be provided and located on each individual lot/driveway of the single-family homes. A site design review application showing parking spaces that meet the requirements for a multifamily dwelling is required to be submitted and reviewed separately in the future. Therefore, the provisions are satisfied.

17.68.060 - Residential driveways.

All single and joint use residential driveways shall be paved and have a maximum twenty (20) foot approach width from the curb line.

**Response:** This application involves a residential subdivision. Compliance with the residential driveway provision is to be addressed at the time of building permit review. This criterion will be met.

17.68.070 - Off-street loading requirements.

Buildings or structures to be built or substantially altered which receive and distribute materials and merchandise by trucks shall provide and maintain off-street loading berths in sufficient number and size to adequately handle the needs of the particular use.

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**Response:** This application involves a residential subdivision and does not include a use that involves receiving or distributing materials and merchandise that would require loading berths. Therefore, the provision above does not apply.

17.68.080 - Parking and loading area requirements.

All parking and loading areas, except those for single-family dwellings, shall be developed and maintained as follows:

**Response:** This application involves a residential subdivision for the future construction of single-family homes and a multifamily building. A site design review application showing parking that meets the requirements for multifamily dwellings is required to be submitted and reviewed separately in the future. This criterion will be met.

17.68.090 - General provisions—Off-street parking and loading.

- A. The provision and maintenance of off-street parking and loading space is a continuing obligation of the property owner. No building permit shall be issued until plans are presented that show an area that is and will remain available for exclusive use as off-street parking and loading space. The subsequent use of property for which the building permit is issued shall be conditional upon the unqualified continuance and availability of the amount of parking and loading space required by this title. Should the owner or occupant of any lot or building change the use to which the lot or building is put, thereby increasing off-street parking and loading requirements, it shall be unlawful and a violation of this title to begin or maintain such altered use until such time as the increased off-street parking and loading requirements are observed.

**Response:** This application is for a residential subdivision not a building permit. Compliance with Section 17.68.090 is to be demonstrated at the time of building permit review.

- B. Requirements for types of buildings and uses not specifically listed herein shall be determined by the Planning Commission based upon the requirements of comparable uses listed and expectations of parking and loading need.

**Response:** This application involves a residential subdivision and the responses above in Section 17.68.050 demonstrate that compliance with the off-street parking requirements can be met. Therefore, this requirement is not applicable.

- C. In the event several uses occupy a single structure or parcel of land, the total requirements for off-street parking shall be the sum of the requirements of the several uses computed separately, unless a reduction is approved for shared parking pursuant to Section 17.68.040.

**Response:** As noted above, this application involves a residential subdivision. This application does not involve more than one use for a single structure or parcel of land. Therefore, this requirement is not applicable.

- D. Required parking spaces shall be available for the parking of operable passenger automobiles of residents, customers, patrons, and employees only, and shall not be used for storage of vehicles or materials or for the parking of trucks used in conducting the business or use.

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**Response:** As noted above, the required off-street parking is associated with a residential subdivision. To the extent applicable, this requirement can be met.

17.68.100 - Parking lot landscaping and screening standards.

All parking lots, which for purposes of this section include areas of vehicle maneuvering, parking, and loading, shall be landscaped and screened as follows:

**Response:** This application involves a residential subdivision that includes a lot for a future multifamily building. A site design review application showing required landscaping and screening is required to be submitted and reviewed separately in the future.

17.68.110 - Bicycle parking.

- A. The following minimum number of bicycle parking spaces shall be provided:

Type of Use	Minimum Number
Single-Family Residential	0
Duplex, Triplex and Multi-Family	Minimum two or one per every two dwelling units, whichever is greater.

**Response:** This application involves a residential subdivision. A site design review application addressing the applicable bicycle parking requirements for the potential multifamily building is required to be submitted and reviewed separately in the future. Therefore, these provisions are satisfied.

Chapter 17.72 - STORM DRAINAGE

17.72.020 - Scope.

- A. The provisions of this chapter shall apply to all new residential land partitions and subdivisions, planned unit developments, multi-family developments, commercial developments, and industrial development; and to the reconstruction or expansion of such developments.

**Response:** The planned residential subdivision included in this application is subject to the provisions of this chapter.

- B. The provisions of this chapter shall apply to all drainage facilities that impact any public storm drain system, public right-of-way or easement dedicated to or located within all off-street parking and loading areas.

**Response:** This provision is understood.

- C. All storm water runoff shall be conveyed to a public storm sewer or natural drainage channel having adequate capacity to carry the flow without overflowing or otherwise causing damage to public and/or private property. In the case of private development, the developer shall pay all costs associated with designing and constructing the facilities necessary to meet this requirement.

**Response:** The planned stormwater management system is illustrated on the Preliminary Plans (Exhibit A) and described in the Preliminary Stormwater Report (Exhibit H) is designed to collect and convey runoff to the existing public storm sewer/drainage channel, which has



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adequate capacity to accommodate stormwater flows from this project. This standard is met.

17.72.030 - Plan for storm drainage and erosion control.

No construction of any facilities in a development included in Section 17.72.020 shall be permitted until a storm drainage and erosion control plan for the project is prepared by an engineer registered in the State of Oregon and approved by the city. This plan shall contain at a minimum:

- A. The methods to be used to minimize the amount of runoff, siltation, and pollution created from the development both during and after construction.
- B. Plans for the construction of storm sewers, open drainage channels, and other facilities that depict line sizes, profiles, construction specifications, and other such information as is necessary for the city to review the adequacy of the storm drainage plans.
- C. Design calculations shall be submitted for all drainage facilities. These drainage calculations shall be included on the site plan drawings and shall be stamped by a licensed professional engineer in the State of Oregon. Peak design discharges shall be computed using the rational formula and based upon the design criteria outlined in the Standard Specifications for Public Works Construction in the City of Carlton and the most current adopted storm drainage master plan.

**Response:** Storm drainage and erosion control measures are included in the Preliminary Plans (Exhibit A). These plans illustrate methods/measures for the planned storm drainage and erosion control measures for this subdivision. A Preliminary Stormwater Report that provides design calculations is included with this application (Exhibit H). These criteria are satisfied.

17.72.040 - General standards.

- A. All development shall be planned, designed, constructed and maintained to:
  - 1. Protect and preserve existing natural drainage channels to the maximum practicable extent;

**Response:** As shown on the Preliminary Plans, the site has an existing drainage channel in the northeastern corner of Tract C. Modifications to the existing drainage channel are not planned with this application. This standard is met.

- 2. Protect development from flood hazards;

**Response:** As shown on the FEMA FIRM (Exhibit G), the improvements planned for this site are outside of the floodplain overlay zone. This standard is met.

- 3. Provide a system by which water within the development will be controlled without causing damage or harm to the natural environment, or to property or persons within the drainage basin;

**Response:** Storm drainage and erosion control measures are included in the Preliminary Plans (Exhibit A). A Preliminary Stormwater report that includes design calculations of the stormwater system is included with this application (Exhibit H). This standard is satisfied.

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4. Assure that waters drained from the development are substantially free of pollutants, through such construction and drainage techniques as sedimentation ponds, reseeded, phasing or grading;

**Response:** The subdivision design includes a conveyance system consisting of curb inlets, laterals, manholes, and piping. Erosion control measures are planned, including seeding (as necessary), such that sedimentation ponds are not necessary. A Preliminary Stormwater Report (Exhibit H) is included with this application. Together, this information demonstrates that the project satisfies this standard.

5. Assure that waters are drained from the development in such a manner that will not cause erosion to any greater extent than would occur in the absence of development;

**Response:** Storm drainage and erosion control measures are included in the Preliminary Plans (Exhibit A) and design calculations of the stormwater system are included in the Preliminary Stormwater Report (Exhibit H). The plans and report demonstrate that this application meets these requirements. Therefore, this standard is satisfied.

6. Provide dry wells; French drains, or similar methods, as necessary to supplement storm drainage systems;

**Response:** The Preliminary Plans show the planned stormwater facilities for the site that do not require dry wells or French drains. To the extent applicable, this standard is met.

7. Avoid placement of surface detention or retention facilities in road rights-of-way.

**Response:** The Preliminary Plans do not include surface detention or retention facilities in road rights-of-way. This standard is met.

- B. Where culverts cannot provide sufficient capacity without significant environmental degradation, the city may require the watercourse to be bridged or spanned.

**Response:** This application does not involve crossing drainageways with culverts or bridges. Therefore, this standard does not apply.

- C. In the event a development or any part thereof is traversed by any watercourse, channel, stream or creek, gulch, or other natural drainage channel, adequate easements for storm drainage purposes shall be provided to the city. This does not imply maintenance by the city.

**Response:** As shown on the Preliminary Plans, easements for storm drainage purposes are planned to be provided in open space areas where appropriate/necessary. This standard is met.

- D. Channel obstructions are not allowed except as approved for the creation of detention or retention facilities approved under the provisions of this title. Fences with swing gates may be utilized.

**Response:** This application does not involve obstructions to drainage facilities. Therefore, to the extent applicable, this standard is met.

- E. Prior to acceptance of a storm sewer system by the city, the storm sewers shall be flushed and inspected by the city. All costs shall be borne by the developer.

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**Response:** This provision is understood. Compliance with this provision is to be addressed at the time it is applicable.

- F. Easements for creeks and other watercourses shall be provided and shall extend fifteen (15) feet in each direction from the waterway centerline, ten (10) feet from the top of a recognizable bank, or sufficient width to pass 10-year flood flows or 100-year floodway on FEMA regulated stream, whichever is greater. The easements required by this chapter shall be held to prohibit the placement of any building on or over the easement, but shall not preclude landscaping, and shall be held to require restoration of the site following any excavation or other disturbance permitted by the easement.

**Response:** As shown on the Preliminary Plans, areas subject to above ground drainage flows are located in unbuildable tracts. Therefore, this standard is met.

Chapter 17.76 - UTILITY LINES AND FACILITIES

17.76.020 - Standards.

- A. The design of all improvements within existing and proposed rights-of-way and easements, all improvements to be maintained by the city, and all improvements for which city approval is required, shall comply with the requirements of the most current adopted Standard Specifications for Public Works Construction in the City of Carlton.

**Response:** As illustrated on the Preliminary Plans, the utility infrastructure required for the construction of the project is designed to be in compliance with the requirements of the most current adopted Standard Specifications for Public Works Construction in the City of Carlton. Therefore, this standard is met.

- B. The location, design, installation and maintenance of all utility lines and facilities shall be carried out with minimum feasible disturbance of soil and site.

**Response:** The Preliminary Plans illustrate that planned utilities are generally located within street rights-of-way, which minimizes disturbance of the soil and site. Therefore, this standard is met.

C. Standards for Water Improvements.

1. All developments shall be required to be linked to existing water facilities adequately sized to serve their intended area by the construction of water distribution lines, reservoirs and pumping station which connect to such water service facilities. All necessary easements required for the construction of these facilities shall be obtained by the developer and granted to the city pursuant to the requirements of the city.

**Response:** As illustrated on the Preliminary Plans, the water system infrastructure to serve the subdivision is planned to connect to and extend existing water mains located in S 7<sup>th</sup> Street. This standard is met.

2. Specific location, size and capacity of such facilities will be subject to the approval of the city engineer with reference to

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the most current adopted City of Carlton water master plan. All water facilities shall conform with existing city pressure zones and shall be looped where necessary to provide adequate pressure and fire flows during peak demand at every point within the system in the development to which the water facilities will be connected. The city will not expect the developer to pay for the extra pipe material cost for waterlines exceeding eight inches in size. Installation costs shall remain entirely the developer's responsibility.

**Response:** The Preliminary Composite Utility Plan illustrates planned water system infrastructure with sufficient detail to find that this standard can be met. This includes points of connection, waterline locations, a looped system, and extensions to adjacent properties. This standard is met.

3. The design of the water facilities shall take into account provisions for the future extension beyond the development to serve adjacent properties that, in the judgment of the city, cannot be feasibly served otherwise.

**Response:** The Preliminary Plans illustrate that the water facility infrastructure designed to adequately serve the subdivision is extended to site boundaries to serve adjacent properties in the future. Therefore, this standard is met.

4. Design, construction and material standards shall be as specified by the city engineer for the construction of such public water facilities in the city.

**Response:** The application includes a Preliminary Composite Utility Plan that is suitable for planning level purposes. Design details and construction and material specifications are planned to be provided with final construction documents as is customary and appropriate. This standard is met.

**D. Standards for Sanitary Sewer Improvements.**

1. All developments shall be required to be linked to existing sanitary sewer collection facilities adequately sized to serve their intended area by the construction of sewer lines which connect to existing adequately sized sewer facilities. All necessary easements required for the construction of these facilities shall be obtained by the developer and granted to the city pursuant to the requirements of the city.

**Response:** As shown on the Preliminary Composite Utility Plan, this subdivision is planned to connect to an existing sanitary sewer main in S 7<sup>th</sup> Street. The sanitary sewer line is planned to be extended through the site to provide service for each of the lots. Access to sanitary sewer service for Lots 59-62 and 65-67 will be provided through a sanitary sewer line within a 20-foot wide Public Access and Utility Easement (PAUE) as shown on the Preliminary Plans. This standard is met.

2. Specific location, size and capacity of such facilities will be subject to the approval of the city engineer with reference to the most current adopted wastewater facilities plan. All sewer facilities shall be sized to provide adequate capacity during peak flows from the entire area potentially served by such facilities. The city will not expect the developer to pay

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for the extra pipe material cost for sanitary sewer lines exceeding twelve (12) inches in size. Installation costs shall remain entirely the developer's responsibility.

**Response:** The Preliminary Composite Utility Plan illustrates planned sanitary sewer system infrastructure with sufficient detail to find that this standard can be met. This includes points of connection, sewer line locations, and extensions to adjacent properties. This standard is met.

3. All properties shall be provided with gravity sanitary sewer service to a public sanitary sewer system except for parcels that have unique topographic or other natural features that make gravity sewer extension impractical as determined by the city engineer. Pumping stations will be allowed only when it has been demonstrated to the satisfaction of the city engineer that the development cannot be served by gravity. Maintenance of residential pumping stations is the responsibility of the property owner.

**Response:** As illustrated on the Preliminary Plans, each lot in the subdivision is designed to be provided with gravity sewer service to the public sanitary sewer system. Therefore, this standard is satisfied.

4. Temporary sewer service facilities, including pumping stations, will be permitted only if the city engineer approves the temporary facilities, including all facilities necessary for transition to permanent facilities.

**Response:** This application does not involve new sanitary sewer pump stations. Therefore, this standard is not applicable.

5. The design of the sewer facilities shall take into account provisions for the future extension beyond the development to serve upstream properties that, in the judgment of the city, cannot be feasibly served otherwise.

**Response:** The Preliminary Plans show that sanitary sewer service is being extended to adjacent uphill properties as appropriate, thus providing for future extension beyond the subject site. Therefore, this standard is met.

6. All land divisions or other developments requiring subsurface sanitary sewer disposal systems shall be prohibited.

**Response:** Subsurface sanitary sewer disposal systems are not necessary. Therefore, this standard is not applicable.

7. Design, construction and material standards shall be as specified by the city engineer for the construction of such sewer facilities in the city.

**Response:** The application includes a Preliminary Composite Utility Plan that is suitable for planning-level purposes. Design details and construction and material specifications are planned to be provided with final construction documents as is customary and appropriate. This standard is met.

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8. Prior to acceptance of the sanitary sewer system by the city, the sewers shall be flushed and inspected by the city as required by the Standard Specifications for Public Works Construction in the City of Carlton. All costs shall be borne by the developer.

**Response:** This standard is understood.

- E. **Street Lights.** All developments shall include underground electric service, light standards, wiring and lamps for street lights according to the specifications and standards of the city engineer. The developer shall install all such facilities and make the necessary arrangements with the serving electric utility for the street lighting system.

**Response:** Electrical service for streetlights is being accommodated in the project design. Coordination with Portland General Electric for the streetlight system design is planned to occur in the future, prior to construction. Therefore, this standard is satisfied.

- F. **Private Utilities.** All development which has a need for private utilities, including but not limited to electricity, gas, and communications services shall install them pursuant to the requirements of the district or company serving the development.

1. Except as otherwise provided herein, all utility lines, cables or wires, including but not limited to those used for electricity, communications services and street lighting which are on or adjacent to land partitioned, subdivided or developed within the City of Carlton after the effective date of the ordinance codified in this title, shall be required to be placed underground. The intent of the city is that no poles, towers, or other structures associated with utility facilities shall be permitted on any street or lot within or adjacent to such partition, subdivision or development.

**Response:** The Preliminary Plans illustrate locations provided for public utility easements where utility infrastructure, which is designed to be located underground, is planned to be installed, consistent with the standards above.

2. **Exceptions.** Above ground facilities shall be permitted for the following in which case the above provisions shall not apply:
  - a. Emergency installations or electric transmission lines or to through feeders operating at distribution voltages which act as a main source of supply to primary lateral and to direct connected distribution transformers and primary loads. Should it be necessary to increase the capacity of major power transmission facilities for service to the area, such new or revised installations shall be made only on rights-of-way or easements on which existing overhead facilities exist at the time of such capacity increase;
  - b. Appurtenances and associated equipment such as surface-mounted transformers, pedestal-mounted terminal boxes, meter cabinets, telephone cable closures, connection boxes and the like;

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- c. Structures without overhead wires, used exclusively for fire alarm boxes, streetlights, or municipal equipment installed under the supervision and with the approval of the city engineer;
  - d. Power substations, pumping plants, and similar facilities necessary for transmission or distribution of utility services shall be permitted subject to compliance with all zoning regulations and other applicable land use regulations. The engineer for all such facilities, prior to any construction being started, shall approve plans showing landscaping and screening;
  - e. Certain industries requiring exceptionally large power supplies may request direct overhead power as a condition;
  - f. If existing overhead utilities within or adjacent to the development total less than one hundred fifty (150) linear feet, the city may allow the applicant to record an approved improvement deferral agreement, see Section 17.216.030, in lieu of relocating existing private utilities underground at the time of development.

**Response:** With the exception of those provisions listed above, new utility infrastructure is planned to be installed underground. These standards are met.

- 3. Information on Development Plans. The developer or subdivider shall show on the development plan or in his or her explanatory information, easements for all underground utility facilities. Plans showing the location of all underground facilities as described herein shall be submitted to the city engineer for review and approval. Care shall be taken in all cases to ensure that aboveground equipment does not obstruct vision clearance areas for vehicular traffic.

**Response:** The Preliminary Plans illustrate the existing and planned easements for underground utility facilities, as applicable. Therefore, this standard is met.

- 4. Future Installations. The owner(s) or contract purchaser(s) of subdivided real property within a subdivision shall, upon conveyance or transfer of any interest including a leasehold interest in or to any lot or parcel of land, provide in the instrument conveying such interest a covenant running with and appurtenant to the land transferred under which grantee(s) or lessee(s), their heirs, successors, or assigns mutually covenant not to erect or allow to be erected upon the property conveyed any overhead utility facilities, including electric, communication, and cable television lines, poles, guys, or related facilities, except such facilities as are exempt from underground installation under this title or are owned or operated by the city. Such covenant shall require grantees to install, maintain, and use underground electric, telephone, cable television, or other utility services used or to be used to serve the premises. A copy of the covenant shall be submitted with the final plats.

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**Response:** Compliance with this standard is to be addressed at the time of building permit review.

- K. Easements for public and private utilities shall be provided as deemed necessary by the city, special districts, and utility companies. Easements for special purpose uses shall be of a width deemed appropriate by the responsible agency. Such easements shall be recorded on easement forms approved by the city attorney and designated on the final plat of all subdivisions and partitions. Minimum required easement width and locations are as follows:  
(...)

**Response:** To the extent easements for public and private utilities are deemed necessary, their locations and dimensions are indicated on the Preliminary Plans. This standard is met.

Chapter 17.84 - SITE AND LANDSCAPING DESIGN

17.84.020 - Scope.

All construction, expansion, or redevelopment of structures or parking lots for commercial, multi-family, or industrial uses shall be subject to the landscaping requirements of this chapter. The construction of new streets containing landscape strips shall also be subject to the landscaping requirements of this chapter.

Properties within the Downtown Parking District (Exhibit A of Chapter 17.68) are exempt from landscaping requirements, except as specifically required by Chapter 17.30 Downtown (D) District design standards and guidelines.

**Response:** The provisions of Chapter 17.156 require landscaping plans with site design review applications. This application involves a residential subdivision that includes a lot designated for a future multifamily project. A future site design review application showing required landscaping and screening is required to be submitted and reviewed separately. Therefore, the provisions of this chapter are not applicable.

Chapter 17.88 - DEVELOPMENT STANDARDS FOR LAND DIVISIONS

17.88.020 - Scope.

The provisions of this chapter shall apply to all subdivisions, planned unit developments and partitions within the City of Carlton.

17.88.030 - Standards for lots or parcels.

- A. Minimum Lot Area. Minimum lot area shall conform to the requirements of the zoning district in which the parcel is located.

**Response:** The Preliminary Plans illustrate the subdivision meets the minimum lot area standards for the R-2 and R-3 zones.

- B. Maximum Lot Area. When single-family residential use is proposed for a lot with an area double or greater than the minimum density of the underlying zone the Planning Commission may take into consideration the potential for further division of the lot at a future date.

**Response:** As illustrated on the Preliminary Plans, the subdivision does not include lots with an area double or greater than the minimum density in the R-2 or R-3 zone. Therefore, this standard is not applicable.



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- C. **Lot Width and Depth.** The depth of a lot or parcel shall not be more than three times the width of the parcel, with the exception that parcels created for public utility uses or in zones where there is no minimum lot area requirement shall be exempt from width to depth ratio provisions.

**Response:** The Preliminary Plans show the lot width and depth for each of the planned lots, and as shown, the depth of each lot is less than three times the width of the lot. This criterion is met.

- D. **Access.** All lots and parcels created after the effective date of the ordinance codified in this title shall provide a minimum frontage, on an existing or proposed public street, equal to twenty (20) feet. An exception shall apply when residential lots or parcels and planned unit developments, may be accessed via a private street or easement developed in accordance with the provisions of Chapter 17.64 or when the city finds that public street access is:

1. Infeasible due to parcel shape, terrain, or location of existing structures; and
2. Not necessary to provide for the future development of adjoining property.

**Response:** This application involves a subdivision for residential lots created after the effective date of the ordinance codified in this title (Ord. 619, 2003; Ord. No. 693, § 1(Exh. A), 12-12-2011). As shown on the Preliminary Plans (Exhibit A), this application includes a private street that is necessary due to existing physical constraints (topography and natural resources). The private street is an internal street and, and as illustrated on the Preliminary Plans, is not needed to provide access for adjoining properties. Additionally, the planned private street meets the applicable provisions for a private street as discussed in detail in 17.64.060.

As further shown on the Preliminary Plans, each of the lots has a minimum of twenty feet of frontage on a public street or private street within an access easement to a public street, or both. This criterion is met.

- E. **Flag Lots.** If a flag-lot is permitted, the following standards shall be met:

**Response:** As illustrated on the Preliminary Plans, the planned subdivision does not include flag lots. Therefore, this standard is not applicable.

- F. **Through Lots.** Through lots shall be avoided except where essential to provide separation of residential development from major traffic arteries, adjacent nonresidential activities, or to overcome specific disadvantages of topography and orientation. A ten (10) foot wide screening or buffering easement, pursuant to the provision of Chapter 17.84, may be required by the city during the review of the land division request.

**Response:** As illustrated on the Preliminary Plans, the planned subdivision does not include through lots. Therefore, this standard is not applicable.

- G. **Lot Side Lines.** The side lines of lots, as far as practicable, shall run at right angles to the right-of-way line of the street upon which the lots face.

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**Response:** As illustrated on the Preliminary Plans, the side lot lines, as far as is practicable, run at right angles to the right-of-way line of the street upon which the lots face. Therefore, this standard is satisfied.

- H. **Lot Grading.** The minimum elevation at which a structure may be erected, taking into consideration the topography of the lot, the surrounding area, drainage patterns and other pertinent data, shall be established by the building inspector.

**Response:** The Preliminary Plans include lot grading that demonstrates that lot elevations are sufficient to build structures and provide for positive drainage. This standard is met.

- I. **Utility Easements.** Utility easements shall be provided on lot areas where necessary to accommodate public utilities. Such easements shall have a minimum total width as specified in Section 17.76.020.

**Response:** The location and width of public utility easements are shown on the Preliminary Plans, consistent with the provision above. This requirement is satisfied.

17.88.040 - Standards for blocks.

- A. **General.** The length, width, and shape of blocks shall be designed with regard to providing adequate building sites for the use contemplated; consideration of needs for convenient access, circulation, control, and safety of street traffic; and recognition of limitations and opportunities of topography.

**Response:** The Preliminary Plans illustrate that the planned block length, width, and shape are designed to provide adequate lot sizes for the future construction of single-family homes and a future multifamily building. Additionally, the Preliminary Plans illustrate the blocks are designed to provide adequate access, circulation, control, and safety of street traffic.

B. **Sizes.**

1. **Block Length.** Except as provided in Section 17.100.030 for the Main Street Special Transportation Area (STA), blocks in residential and commercial districts shall be a minimum of one hundred (100) feet long and shall not exceed six hundred (600) feet in length between street right-of-way lines, unless the previous adjacent development pattern or topographical conditions justify a variation. Blocks that exceed six hundred (600) feet in length shall provide additional pedestrian and bicycle accessways.
2. **Block Perimeter.** Block perimeters in residential and commercial districts shall not exceed one thousand four hundred (1,400) feet.

**Response:** As illustrated on the Preliminary Plans, the site has existing topographical constraints and natural areas. As a result, there is one block within the subdivision that exceeds the block length and perimeter standards, and as such, a Public Access Easement (PAE) for a pedestrian connection through Tract B is planned. As further shown on the Preliminary Plans, each of the other blocks in the subdivision are in compliance with the 600-foot maximum block length and 1,400-foot perimeter block perimeter standards. To the extent applicable, these standards are met.

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- C. Alleys. Alleys may be provided in all districts, however, alleys shall be provided in commercial and industrial areas, unless other permanent provisions for access to off-street parking and loading facilities are provided.

**Response:** This application does not include alleys; therefore, this standard is not applicable.

17.88.050 - Improvement requirements.

All improvements required by this title or as conditions of approval of any subdivision or partition shall be completed prior to the issuance of any building permits for any structures within the subject development. If the developer requests approval to record the final plat before all required improvements have been constructed and all conditions of approval have been met by the developer and accepted by the city, the developer shall provide a security guarantee satisfactory to the city that all improvements will be constructed in conformance with all city standards and ordinances and all conditions of approval will be satisfied. If the total street frontage of the development is less than or equal to two hundred fifty (250) feet, the applicant may request to sign and the city may grant an improvement deferral agreement or non-remonstrance agreement.

**Response:** This requirement is understood and can be met, as applicable.

- A. Frontage Improvements. Street improvements shall be required for all public streets on which a proposed land division fronts in accordance with Chapter 17.64. Such improvements shall be designed to match with existing improved surfaces for a reasonable distance beyond the frontage of the property. Frontage improvements shall include: sidewalks, curbing, storm sewer, sanitary sewer, water lines, other public utilities as necessary, and such other improvements as the city shall determine to be reasonably necessary to serve the development or the immediate neighborhood.

**Response:** The subject site does not have frontage along a public street. Therefore, this requirement is not applicable.

- B. Project Streets. All public or private streets within the land division shall be constructed as required by the provisions of Chapter 17.64. Private driveways serving flag lots or private streets shall be surfaced as per the requirements of this title.

**Response:** The Preliminary Plans illustrate the streets planned to be constructed within the subdivision, S 7<sup>th</sup> Street, S 8<sup>th</sup> Street, E Wilson Street, and E Cleveland Street, and the private street that provides access to Lots 59-67, are consistent with the provisions of Chapter 17.64. Please refer to the responses in Chapter 17.64, above.

- C. Monuments. Upon completion of street improvements, centerline monuments shall be established and protected in monument boxes at every street intersection at all points of curvature, points of tangency of street center lines, and other points required by state law.

**Response:** This requirement can be satisfied.

- D. Bench Marks. Elevation benchmarks shall be set at intervals established by the city engineer. The benchmarks shall consist of a brass cap set in a curb or other immovable structure.

**Response:** This requirement is understood and can be met.

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- E. **Surface Drainage and Storm Sewer System.** Drainage facilities shall be provided within the land division and to connect the land division drainage to drainage-ways or to storm sewers outside the land division and shall be consistent with the most current adopted storm water master plan. Design of drainage within the land division shall take into account the capacity and grade necessary to maintain unrestricted flow from areas draining through the land division and to provide extension of the system to serve such areas. The design shall take into account provisions for the future extension beyond the land division to serve upstream properties that, in the judgment of the city, cannot be served otherwise.

**Response:** The Preliminary Plans demonstrate that the planned stormwater management system accommodates stormwater runoff from areas draining through the subdivision and provides for the future connections to extend the system to other properties in the area, consistent with the requirements above.

- F. **Sanitary Sewers.** Sanitary sewer shall be installed to serve the land division and to connect the Land division to existing mains both on and off the property being divided. The design shall take into account provisions for the future extension beyond the land division to serve upstream properties that, in the judgment of the city, cannot be served otherwise. The city may require that the construction of sewage lines of a size in excess of that necessary to adequately service the development in question, where such facilities are or will be necessary to serve the entire area within which the development is located when the area is ultimately developed.

**Response:** The Preliminary Plans show the planned sanitary sewer improvements, which are designed to provide adequate capacity and provide for the extension of the system to other properties in the area, consistent with the requirements above.

- G. **Water System.** Water lines with valves and fire hydrants serving the land division and connecting the land division to the city mains shall be installed. The design shall take into account provisions for extension beyond the land division to adequately grid the city system and to serve the area within which the development is located when the area is ultimately developed. However, the city will not expect the developer to pay for the extra pipe material cost of mains exceeding eight inches in size. Installation costs shall remain entirely the developer's responsibility.

**Response:** The Preliminary Composite Utility Plan shows the planned water system infrastructure including waterlines, water valves, and fire hydrants that are planned serve the subdivision. As further illustrated, the water system has been designed to extend to the site's boundaries as appropriate to provide extension to adjoining properties. Therefore, this standard is met.

- H. **Pedestrian Facilities and Bicycle Ways.** Sidewalks shall be installed along both sides of each public street and in any pedestrian or bicycle ways within the land division as well as along all frontages to existing streets. Sidewalks shall be extended as required to connect to other sidewalk systems. The city may defer sidewalk construction until the dwellings or structures fronting the sidewalk are constructed. Any required off-site sidewalks, sidewalks fronting public property, or sidewalks adjacent to existing structures shall not be deferred.

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**Response:** As shown on the Preliminary Plans (Exhibit A), sidewalks are planned to be installed along both sides of the public streets. In addition to the planned sidewalks, this application includes planned pathways through open space areas. No other pedestrian facilities are planned or warranted. Therefore, this criterion is satisfied.

I. **Pedestrian/Bicycle Design Standards.** Pedestrian/bicycle access ways shall meet the following design standards:

**Response:** This application does not include pedestrian or bicycle accessways. Therefore, these criteria are not applicable.

J. **Other.**

1. Curb cuts and driveway installations, excluding common drives, are not required of the land divider but, if installed, shall be according to the city standards;
2. Street tree planting is not required of the land divider but, if planted, shall be in accordance with city requirements and of a species compatible with the width of the planting strip;

**Response:** Curb cuts and street tree plantings will be reviewed at the time of building permit's submittal. These criteria can be met.

3. **Streetlights.** The installation of underground electric service, light standards, wiring, and lamps for streetlights of a type required by city standards following the making of necessary arrangements with the serving electric;
4. **Street Signs.** The installation of street name signs and traffic control signs is required at locations determined to be appropriate by the city and shall be of a type required by city standards.

**Response:** This application includes new public streets that are planned to include streetlights and street signs, as necessary. These improvements will be designed and constructed in accordance with the requirements of the City of Carlton. Therefore, these criteria have been met.

17.88.060 - **Improvement procedures.**

In addition to other requirements, improvements installed by a developer for any land division, either as a requirement of these regulations or at his or her own option, shall conform to the requirements of this title and improvement standards and specifications adopted by the city, and shall be installed in accordance with the following procedure:

A. Improvement work shall not commence until plans have been checked for adequacy and approved by the city engineer. Plans shall be prepared in accordance with requirements of the city.

**Response:** This procedural requirement is understood and can be met.

B. Improvement work shall not commence until the city has been notified in advance; and, if work has been discontinued for any reason, it shall not be resumed until the city has been notified.

**Response:** This procedural requirement is understood and can be met.

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- C. Improvements shall be constructed under the inspection and to the satisfaction of the city engineer. The city may require changes in typical sections and details in the public interest, if unusual conditions arise during construction to warrant the change.

**Response:** This procedural requirement is understood and to the extent applicable, can be met.

- D. All underground utilities, sanitary sewers, and storm drains installed in streets by the developer shall be constructed prior to the surfacing of the streets. Stubs for service connections for underground utilities and sanitary sewers shall be placed to a length eliminating the necessity for disturbing the street improvements when service connections are made. Unless otherwise approved by the city, this shall be interpreted as extending to the right-of-way or easement line.

**Response:** This procedural requirement is understood and can be met.

- E. Upon completion of the public improvements and prior to final acceptance of the improvements by the city, the developer shall provide two certified as-built drawings of all public utility improvements to the city. As-built conditions and information shall be reflected on one set of Mylar base as-built drawings. The developer's engineer shall submit the as-built drawings to the city.

**Response:** This procedural requirement is understood and can be met.

Chapter 17.92 - YARD AND LOT STANDARDS

17.92.010 - New buildings—Required to be located on a lot.

Every building erected shall be located on a lot as herein defined.

**Response:** As illustrated on the Preliminary Plans, this application involves a residential subdivision. Each of the newly created lots is designed to be suitable for the future construction of a new single-family home or multifamily building. Therefore, this standard is satisfied.

17.92.020 - Yards apply only to one building.

No required yard or other open space or required driveway provided around or for any building or structure for the purpose of complying with the provisions of this title shall be considered as providing a yard or open space for any other building, nor shall any yard or other required space on an adjoining lot be considered as providing a yard or open space on the lot whereon the building is to be erected.

**Response:** The planned setbacks are illustrated on the Preliminary Plans, which show that setbacks are associated with an individual lot, consistent with this standard. Therefore, this standard is satisfied.

17.92.030 - No parking in yard areas.

Exclusive of city-approved paved or gravel driveways, no parking shall be allowed within the required front yard area or yards located adjacent to a street. The side yard and rear yard areas may not be used for parking of vehicles, except in city-approved parking areas. The yard areas adjacent to a street shall not be used for the permanent storage of utility trailers, house or vacation trailers, boats, or other similar vehicles.

**Response:** This application involves a subdivision for the future construction of single-family homes and future multifamily dwellings. A minimum of two off-street parking spaces will be

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provided in the garage and/or driveway of each of the single-family homes. Required parking areas for the multifamily homes will be included in a future site design review application. This standard is satisfied.

17.92.040 - Front yard projections.

Planter boxes, chimneys and flues, steps, cornices, eaves, gutters, belt courses, leaders, sills, pilasters, lintels, and other ornamental features which extend not more than eighteen (18) inches from main buildings are exempt from the front yard setback provisions and need not be included when determining the setback.

**Response:** Compliance with this standard is to be addressed at the time of building permit review.

17.92.050 - Side yard projections.

- A. Cornices, eaves, gutters, and fire escapes, when not prohibited by any other code or ordinance, may project into a required side yard not more than one-third ( 1/3 ) of the width of the side yard provided a minimum setback of thirty-six (36) inches is maintained.
- B. Chimneys, flues, belt courses, leaders, sills, pilasters, lintels, and ornamental features may project not more than eighteen (18) inches into a required side yard, provided, however, chimneys and flues shall not exceed six (6) feet in width.
- C. Uncovered decks and patios attached to the main building when measured directly beneath the outside edge of the deck or patio may be extended to the side yard property line when they are thirty-six (36) inches or less in height from ground level.

**Response:** Compliance with the standards above is to be addressed at the time of building permit review.

17.92.060 - Rear yard projections.

- A. Chimneys, flues, belt courses, leaders, sills, pilasters, lintels, gutters and other ornamental features, may project not more than eighteen (18) inches into a required rear yard, provided, however, chimneys and flues shall not exceed six (6) feet in width.
- B. A fire escape, balcony, outside stairway, cornice or other unenclosed, unroofed projections may project not more than five (5) feet into a required rear yard and set back at least six (6) feet from any property line.
- C. Planter boxes, steps, uncovered porches when not more thirty-six (36) inches above grade are exempt from the minimum rear yard depth requirements.
- D. Uncovered decks and patios attached to the main building when measured directly beneath the outside edge of the deck or patio may be extended to the rear yard property line when they are thirty-six (36) inches or less in height from ground level.

**Response:** Compliance with the standards above is to be addressed at the time of building permit review.

17.92.070 - Vision clearance.

- A. A vision clearance area shall be maintained at each access to a public street and on each corner of property at the intersection of two streets

or a street and a railroad. A vision clearance area shall contain no planting, sight-obscuring fence (open chain link excluded), wall, structure, or temporary or permanent obstruction exceeding three (3) feet in height, measured from the ground. The preceding provisions shall not apply to the following:

1. Public utility poles;
2. A tree trimmed (to the trunk) to a line at least eight (8) feet above the level of the intersection;
3. Another plant species of open growth habit that is not planted in the form of a hedge and which is so planted and trimmed as to leave at all seasons a clear and unobstructed cross-view;
4. A supporting member or appurtenance to a permanent building lawfully existing on the date this standard becomes effective;
5. An official warning sign or signal;
6. A place where the natural contour of the ground is such that there can be no cross-visibility at the intersection;
7. The post section of a pole sign when there are no more than two posts and any post is less than eight inches in diameter;
8. Telephone switch boxes provided they are less than ten (10) inches wide at the widest dimension.

**Response:** The required vision clearance areas are shown on the Preliminary Plans is consistent with the provisions above.

- B. For single use residential driveways, the vision clearance area shall consist of a triangular area, two sides of which are the curb line and the edge of the driveway. Where no curbs exist, the future location of the curb, based on future full street improvements shall be used.

**Response:** The required vision clearance areas are shown on the Preliminary Plans is consistent with the provisions above.

- C. The following measurements shall establish the vision clearance areas:

Type of Intersection	Measurement Along Each Lot Line or Drive Edge*
Controlled intersection (stop sign or signal)	15 feet
Uncontrolled intersection	40 feet
Commercial and industrial driveways	20 feet
Residential driveways	10 feet
Alley	15 feet

**Response:** The vision clearance areas for intersections shown on the Preliminary Plans are compliant with the requirements of Section 17.92.070(C). Vision clearance areas for driveways will be reviewed at the time of building permit review. Therefore, to the extent applicable, this provision is met.



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- 17.92.080 - Fences, walls and hedges.
- A. Materials.
1. Fences and walls shall not be constructed of nor contain any material that could cause bodily harm, such as barbed wire, broken glass, spikes, or any other hazardous or dangerous materials. Electric fences are not permitted;
  2. Electric or barbed wire fences intended to contain or restrict cattle, sheep, horses or other livestock, and existing prior to annexation to the city, may remain;
  3. All required swimming pool and hot tub fencing shall be a minimum of four (4) feet in height and be equipped with a self-locking gate that closes automatically.

**Response:** Fencing is not relevant to this subdivision application. To the extent fencing is installed in the future, these requirements are understood.

- B. Standards.
1. Every fence shall be maintained in a condition of reasonable repair and shall not be allowed to become and remain in a condition of disrepair including noticeable leaning, missing sections, broken supports, non-uniform height, and uncontrolled growth of vegetation;
  2. Fences shall not exceed four (4) feet in height in any front yard;
  3. The maximum fence height in a street side yard shall not exceed six (6) feet;
  4. Fences within a front or street side yard shall also conform to the clear vision requirements at intersections, which further restrict the use or height of sight-obscuring fences;
  5. In no instance shall a fence extend beyond the property line including into a public right-of-way. It is the responsibility of the property owner to determine the property line.
  6. Fences shall not exceed seven (7) feet in height.

**Response:** Fencing is not relevant to this subdivision application. To the extent fencing is installed in the future, these requirements are understood.

#### Chapter 17.100 - ACCESS CONTROL STANDARDS

- 17.100.020 - Applicability.
- This title shall apply to all public streets within Carlton and to all properties that abut these roadways
- 17.100.030 - Access spacing standards.
- A hierarchy of spacing standards is established that is dependent on the functional classification of the street.

Function Street Classification	Posted Speed Range	Minimum Spacing Between Driveways and/or Streets
Highway 47		
Yamhill to Pine Street (Main Street STA)	20 mph	Streets: Existing city block spacing Driveways: 175 feet or mid-block if block is less than 350 feet
North city limits to Main Street	20—30 mph	450—600 feet
South city limits to Main Street	20—30 mph	450—600 feet
Collector	20—25 mph	75 feet
Local	20—25 mph	50 feet

**Response:** The Preliminary Plans illustrate the on-site circulation and access spacing of the conceptual driveway locations and planned public streets. The planned streets include new local streets and collector streets (S 7<sup>th</sup> Street and E Wilson Street). The conceptual driveway locations have been designed to meet local street spacing standards. For the homes that take access from S 7<sup>th</sup> Street or E Wilson Street, the conceptual driveway locations have been designed to provide the maximum spacing possible, which is consistent with the first phase of JR Meadows.

17.100.040 - General standards.

- A. Lots that front on more than one street shall be required to locate motor vehicle accesses on the street with the lower functional classification.

**Response:** As shown on the Preliminary Plans, this application includes corner lots (Lots 42, 44, 45, 48, 49, 53, 54, 71, 72, 86, and 87). Lots 71 and 72 have frontage on two streets with the same functional classification (local); therefore, vehicular access for each of those lots could be from either street. Lots 45, 48, and 49 have frontage on two streets with the same functional classification (collector); therefore, vehicular access for each of those lots could be from either street. Lots 42, 44, 53, 54, 86, and 87 have frontages on a local street and a collector street. Similar to vehicular access for the corner lots within the JR Meadows subdivision, vehicular access for these lots is planned from the collector streets, providing for cohesive streetscapes.

- B. When a residential subdivision is proposed that would abut an arterial, it shall be designed to provide through lots along the arterial with access from a marginal access or local street. Access rights of these lots, to the arterial shall be dedicated to the City of Carlton and recorded with the deed. A berm or buffer yard may be required at the rear of through lots to buffer residences from traffic on the arterial.

**Response:** The subject site does not abut an arterial street. This standard does not apply.

- C. Subdivisions with frontage on the state highway system shall be designed to share access points to and from the highway. If access off of a secondary street is possible, then access should not be allowed onto the state highway.

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**Response:** The subject site does not have frontage on a state highway system; therefore, this standard is not applicable.

- D. Wherever a proposed development abuts unplatted developable land within the urban growth boundary, street stubs shall be provided to provide access to abutting properties or to logically extend the street system into the surrounding area.

**Response:** The subject site is located adjacent to developable land within the urban growth boundary. As illustrated on the Preliminary Plans, stub streets are planned to be located to provide access to the abutting properties, consistent with the standard above.

- E. Local streets shall connect with surrounding streets to permit the convenient movement of traffic between residential neighborhoods or facilitate emergency access and evacuation. Connections shall be designed to avoid or minimize through traffic on local streets. Appropriate design and traffic control such as four-way stops and traffic calming measures are the preferred means of discouraging through traffic.

**Response:** The subject site does not abut existing streets. As shown on the Preliminary Plans, S 7<sup>th</sup> Street is planned to be extended into the subdivision. As further shown on the Preliminary Plans, future street connections are facilitated through the project's street design. The planned connections are designed to minimize/avoid through traffic on local streets. Therefore, this standard is met.

- F. In all cases reasonable access or the minimum number of access connections, direct or indirect, necessary to provide safe access to and from a street shall be granted.

**Response:** The Preliminary Plans illustrate that each planned lot is provided adequate and safe access to and from on- and off-site streets. Therefore, this standard is satisfied.

- G. New connections shall not be permitted within the functional area of an intersection as defined by the connection spacing standards of this title, unless no other reasonable access to the property is available.

**Response:** As previously discussed, as required by the City's TSP, there are two collector level streets within this application (S 7<sup>th</sup> Street and E Wilson Street). Due to the required transportation improvements, the layout includes lots that will take access from S 7<sup>th</sup> Street and E Wilson Street as the only reasonable access. The conceptual driveway locations have been designed to provide the maximum spacing possible, which is consistent with the first phase of JR Meadows. Therefore, this standard is satisfied.

17.100.050 - Joint and cross access.

- A. Adjacent commercial properties classified as major traffic generators (i.e. shopping plazas, office parks), shall provide a cross access drive and pedestrian access to allow circulation between sites.

**Response:** This application involves a residential subdivision and does not include commercial property. Therefore, the standards included in this section are not applicable.

17.100.060 - Nonconforming access features.

Legal access connections in place as of the effective date of the ordinance codified in this title that do not conform with the standards

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herein are considered nonconforming features and shall be brought into compliance with applicable standards under the following conditions:

**Response:** The subject site is currently vacant, unimproved land and does not contain existing, non-conforming access features. Therefore, the standards included in this section do not apply.

17.100.070 - Review procedures.

- A. Access Permit Required. Access to a public street (e.g., a new curb cut or driveway approach) requires an access permit. An access permit may be in the form of a letter to the applicant, or it may be attached to a land use decision notice as a condition of approval. In either case, approval of an access permit shall follow the procedures and requirements of the applicable road authority, as determined through the Type I review procedures found in Section 17.188.010.

**Response:** As shown on the Preliminary Plans (Exhibit A) access to the site is planned to be taken from S 7<sup>th</sup> Street and permits for access will be obtained as required.

B. Traffic Study Requirements.

1. The City shall require a traffic impact analysis (TIA) prepared by a qualified professional to determine access, circulation, and other transportation requirements when:
  - a. The development generates twenty-five (25) or more peak-hour trips or two hundred fifty (250) or more daily trips.
  - b. An access spacing exception is required for the site access driveway(s) and the development generates ten (10) or more peak-hour trips or one hundred (100) or more daily trips.
  - c. The development is expected to impact intersections that are currently operating at the upper limits of the acceptable range of level of service during the peak operating hour.
  - d. The development is expected to significantly impact adjacent roadways and intersections that have previously been identified as high crash locations or areas that contain a high concentration of pedestrians or bicyclists such as a schools.

**Response:** The project is expected to generate traffic in excess of 25 p.m. peak hour trips and 250 average daily trips. Therefore, a Transportation Impact Analysis (TIA) prepared by a transportation engineer is included in Exhibit E. As discussed in the TIA, the intersections that were analyzed (E Main Street at 7<sup>th</sup> Street and S Pine Street at E Polk Street) function at acceptable levels before and after the planned improvements. This submittal requirement is met.

2. Transportation Assessment. If a TIA is not required, the applicant's traffic engineer shall submit a transportation assessment letter to the City indicating the proposed land use action is exempt. This letter shall outline the trip-generating characteristics of the proposed land use and

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verify that the site-access driveways or roadways meet City of Carlton sight-distance requirements and roadway design standards.

The Public Works Director may waive the requirement for a transportation assessment letter if a clear finding can be made that the proposed land use action does not generate twenty-five (25) or more peak-hour trips or two hundred fifty (250) or more daily trips and the existing and or proposed driveway(s) meet the City's sight-distance requirements and access spacing standards.

**Response:** As noted in the response above, a Transportation Impact Analysis is required; therefore, the requirements above do not apply.

- C. Conditions of Approval. The City may require the closing or consolidation of existing curb cuts or other vehicle access points, recording of reciprocal access easements (i.e., for shared driveways), development of a frontage street, installation of traffic control devices, and/or other mitigation as a condition of granting an access permit, to ensure the safe and efficient operation of the street and highway system.

**Response:** As shown on the Preliminary Plans, the site has access to NE Old McMinnville Highway through an Emergency Access Easement, and the main access for the subdivision is planned to be taken from S 7<sup>th</sup> Street. Reciprocal easements are not necessary for this subdivision, and, as discussed in the Transportation Impact Analysis (Exhibit E), traffic mitigation is not needed or warranted. To the extent applicable, this requirement is satisfied.

- D. Access permit reviews shall address the following criteria:

1. Access shall be properly placed in relation to sight distance, driveway spacing, and other related considerations, including opportunities for joint and cross access;

**Response:** As shown on the Preliminary Plans, S 7<sup>th</sup> Street is planned to be extended into this site, aligned with the centerline of the current S 7<sup>th</sup> Street, to be the primary access for this subdivision. No other new accesses are planned. To the extent applicable, this requirement is satisfied.

2. The road system shall provide adequate access to buildings for residents, visitors, deliveries, emergency vehicles, and service vehicles;

**Response:** The planned internal streets shown on the Preliminary Plans provide access for each of the planned new homes for residents. This requirement is satisfied.

3. The access shall be consistent with the access management standards in the most current adopted City of Carlton Transportation System Plan.

**Response:** As shown on the Preliminary Plans, the extension of S 7<sup>th</sup> Street is consistent with the City of Carlton's Transportation System. This requirement is satisfied.

- E. Any application that involves access to the State Highway System shall be reviewed by the Oregon Department of Transportation for conformance with state access management standards.

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**Response:** This application does not involve access to the State Highway System. Therefore, this requirement does not apply.

**Chapter 17.106 - RESIDENTIAL DESIGN STANDARDS**

**17.106.020 - Applicability.**

This section applies to the following building types:

- A. Single-family non-attached (non-common wall) dwellings are not subject to site development review, but new dwellings are required to comply with subsection 17.106.030(A); no other provisions of Chapter 17.106 apply to non-attached single-family dwellings;
- B. Duplexes, triplexes, and attached single-family dwellings (e.g., townhomes) are subject to all provisions of Chapter 17.106;
- C. Multi-family housing, including residential care facilities, are subject to all provisions of Chapter 17.106;
- D. Mixed-use buildings (residential and other use combined) are subject to all provisions of Chapter 17.106.

**Response:** This application includes a residential subdivision that includes one lot for the future construction of a multifamily building. A site design review application addressing design standards for a multifamily building is required to be submitted and reviewed separately in the future.

**Chapter 17.132 - GENERAL EXCEPTIONS**

**17.132.010 - General exception to building height.**

Projections such as chimneys, spires, domes, elevator shaft housing, flagpoles, and other similar objects not used for human occupancy are not subject to the building height limitations of the underlying zone.

**Response:** Compliance with building height is to be addressed at the time of building permit review. Exceptions to building height are not applicable at this time.

**17.132.020 - Height exceptions for public buildings.**

Public or quasi-public buildings, hospitals, places of worship, and educational institutions may be constructed to a height not to exceed forty-five (45) feet provided the required yards are increased one foot for each foot of additional building height above the height regulation for the zone.

**Response:** This application involves an application for a residential subdivision, and not the construction of public buildings. Therefore, this exception is not applicable.

**17.132.030 - Public dedications.**

Setback restrictions of this title shall not apply to existing structures whose setback is reduced by a public dedication.

**Response:** This application does not include setbacks that are reduced by a public dedication. Therefore, this standard is not applicable.

**17.132.040 - Miscellaneous setback exceptions.**

Setback limitations stipulated elsewhere in this title may be modified as follows:

- 
- A. Bus shelters that are intended for use by the general public and are under public ownership and/or control shall be exempt from setback requirements.
  - B. Side and rear yards of underground structures may be reduced to three (3) feet except all openings into the structure, including doors, windows, skylights, plumbing, intake and exhaust vents, shall meet the minimum setbacks of the district.

**Response:** This application does not include exceptions to the minimum setback standards. Therefore, the standards included in this section do not apply.

**Chapter 17.140 - USES PERMITTED IN ALL ZONES**

**17.140.010 - Permitted uses.**

The following uses and activities are permitted in all zones:

- A. Placement and maintenance of underground or above ground wires, cables, pipes, guys, support structures, pump stations, drains, and detention basins within rights-of-ways by public agencies and utility companies for telephone, TV cable, or electrical power transmission, or transmission of natural gas, petroleum products, geothermal water, water, wastewaters, sewage and rainwater.

**Response:** As permitted by this provision, this application involves a residential subdivision that includes underground utilities.

- B. Railroad tracks and related structures and facilities located within rights-of-ways controlled by a railroad operator.

**Response:** The subject site does not contain railroad tracks or related structures/facilities. Therefore, this is not applicable.

**Division VI. - APPLICATION REQUIREMENTS AND REVIEW CRITERIA**

**Chapter 17.144 - SUMMARY OF APPLICATION TYPES**

**17.144.010 - Generally.**

All development permits and land use actions are processed under the administrative procedures provided for in this chapter. There are four types of actions, each with its own procedures.

**17.144.030 - Type II action.**

- A. Type II action is a quasi-judicial review in which the Planning Commission applies a mix of objective and subjective standards that allow considerable discretion. Public notice and a public hearing is provided, see Chapter 17.192. Appeal of a Type II decision is to the City Council. The following actions are processed under a Type II procedure:

- A. Major variance;
- B. Conditional use permit, major;
- C. Site design review, major;
- D. Code interpretation;
- E. Nonconforming uses, Type II modification;
- F. Partitions;

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G. Subdivision;

**Response:** This application involves a residential subdivision. Therefore, this application will be reviewed through a Type II action.

Chapter 17.176 - SUBDIVISIONS AND PLANNED UNIT DEVELOPMENTS

17.176.010 - General provisions.

- A. All subdivisions and planned unit developments (PUDs) shall conform to all applicable zoning district Standards, development standards and other provisions of this title.

**Response:** As demonstrated through the responses within this narrative, Preliminary Plans, and supplemental materials, this application complies with the applicable R-2 and R-3 zoning district Standards, development standards, and other provisions of this title.

- B. A master plan for development is required for any application that leaves a portion of the subject property capable of redevelopment.

**Response:** As shown on the Preliminary Plans, the subdivision is a complete parcelization of the property. Therefore, this requirement is not applicable.

17.176.020 - Application and fee.

- A. The following submittal requirements shall apply to all preliminary plan applications for subdivisions and PUDs:

1. All applications shall be submitted on forms provided by the city to the city recorder along with the appropriate fee. It shall be the applicant's responsibility to submit a complete application that addresses the review criteria of this chapter;

**Response:** The required City application forms and appropriate fee are included with the application materials. Therefore, this submittal requirement is satisfied.

2. The applicant shall submit ten (10) clear and legible copies of the preliminary plan on sheets that are twenty-four (24) inches by thirty-six (36) inches in size. Preliminary plans shall be drawn to a scale of one-inch equals one hundred (100) feet or larger;

**Response:** Preliminary Plans are included in the application materials, consistent with the provision above. Therefore, this submittal requirement is satisfied.

3. General Information. The following general information shall be shown on the preliminary plan:

- a. Vicinity map extending one thousand two hundred (1,200) feet in each direction showing all streets, property lines, streams, and other pertinent data to locate the proposal;
- b. North arrow, scale of drawing and date of preparation;
- c. Tax map and tax lot number or tax account of the subject property;
- d. Dimensions and size in square feet or acres of the subject property;



- 
- e. The names and addresses of the property owner, partitioner and engineer, surveyor, or other individual responsible for laying out the partition.

**Response:** The Preliminary Plans included in the application materials show the information required above. Therefore, this submittal requirement is satisfied.

- 4. Existing Conditions. The preliminary plan shall show:
  - a. Location of all existing easements within the property;
  - b. Location of city utilities (water, sanitary sewer, storm drainage) within or adjacent to the property proposed for use to serve the development;
  - c. The location and direction of watercourses or drainage swales. The location and disposition of any wells, wetlands identified on the State Wetland Inventory, septic tanks, and drain fields in the development;
  - d. Existing uses of the property, including location of existing structures on the property. It should be noted whether the existing structures are to be removed or to remain on the property;
  - e. Contour lines related to an established benchmark, having the following minimum intervals:
    - i. Areas with less than five percent slope: one-foot contours;
    - ii. Areas with slope between five percent and ten (10) percent: two-foot contours;
    - iii. Areas with slope greater than ten (10) percent: five-foot contours;

**Response:** The Preliminary Plans included in the application materials show the information required above, as applicable. Therefore, this submittal requirement is satisfied.

- 5. Proposed Plan. The preliminary plan shall clearly show to scale the following:
  - a. Proposed name of the PUD or subdivision;
  - b. Locations, approximate dimensions and area in square feet of all proposed lots. Identification of each lot and block by number;
  - c. Proposed streets and their names, approximate grade, radius of curves, and right-of-way widths;
  - d. Any other legal access to the subdivision or PUD, other than a public street;
  - e. Location, width and purpose of any proposed easements;
  - f. If the development is to be constructed in phases, indicate the area of each phase.
- 6. Supplemental Information. Proposed deed restrictions, if any, in outline form.

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7. A traffic impact analysis if requested by the city manager.

**Response:** The Preliminary Plans included in the application materials show the information required above, as applicable. Additionally, a Transportation Impact Analysis is included in Exhibit E. This application includes two tracts that are intended as open space areas. These tracts will either be owned and maintained by a future Homeowners' Association or the City of Carlton (if the City will accept them). Therefore, this submittal requirement is satisfied.

B. The following supplemental information shall be required for all PUD preliminary plan applications:

1. Calculations justifying the proposed density of development as required by Section 17.112.050(C);
2. Proposed uses of the property, including sites, if any, for attached dwelling units, recreational facilities, parks and playgrounds or other public or semi-public uses, with the purpose, condition and limitations of such reservations clearly indicated;
3. The approximate location and dimensions of all commercial or multi-family structures proposed to be located on the site;
4. Statement of improvements to be made or installed including streets, sidewalks, bikeways, trails, lighting, tree planting, landscaping, and time such improvements are to be made or completed;
5. Written statement-outlining proposals for ownership and maintenance of all open space areas, private streets and any commonly owned facilities.

**Response:** This application involves a subdivision and not a PUD; therefore, this submittal requirement does not apply.

17.176.030 - Process.

- A. Preliminary plans for subdivisions and PUDs shall be reviewed in accordance with the Type II review procedures.
- B. Approvals of any preliminary plans for a subdivision or PUD shall be valid for eighteen (18) months after the date of the written decision. A final plat for a subdivision shall be recorded within this time period or the approvals shall lapse. PUDs that do not involve the subdivision of property shall show substantial progress toward the construction of the project within the 18-month period or the approval shall lapse.
- C. The Planning Commission may extend the approval period for any subdivision or PUD for not more than one additional year at a time. Requests for extension of approval time shall be submitted in writing thirty (30) days prior to the expiration date of the approval period.
- D. If the approval period is allowed to lapse, the applicant must resubmit the proposal, including all applicable fees, for public hearing before the Planning Commission. The applicant will be subject to all applicable standards currently in effect.

**Response:** This application involves a residential subdivision. It is understood that this application is to be reviewed through a Type II procedure.

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## **V. Conclusion**

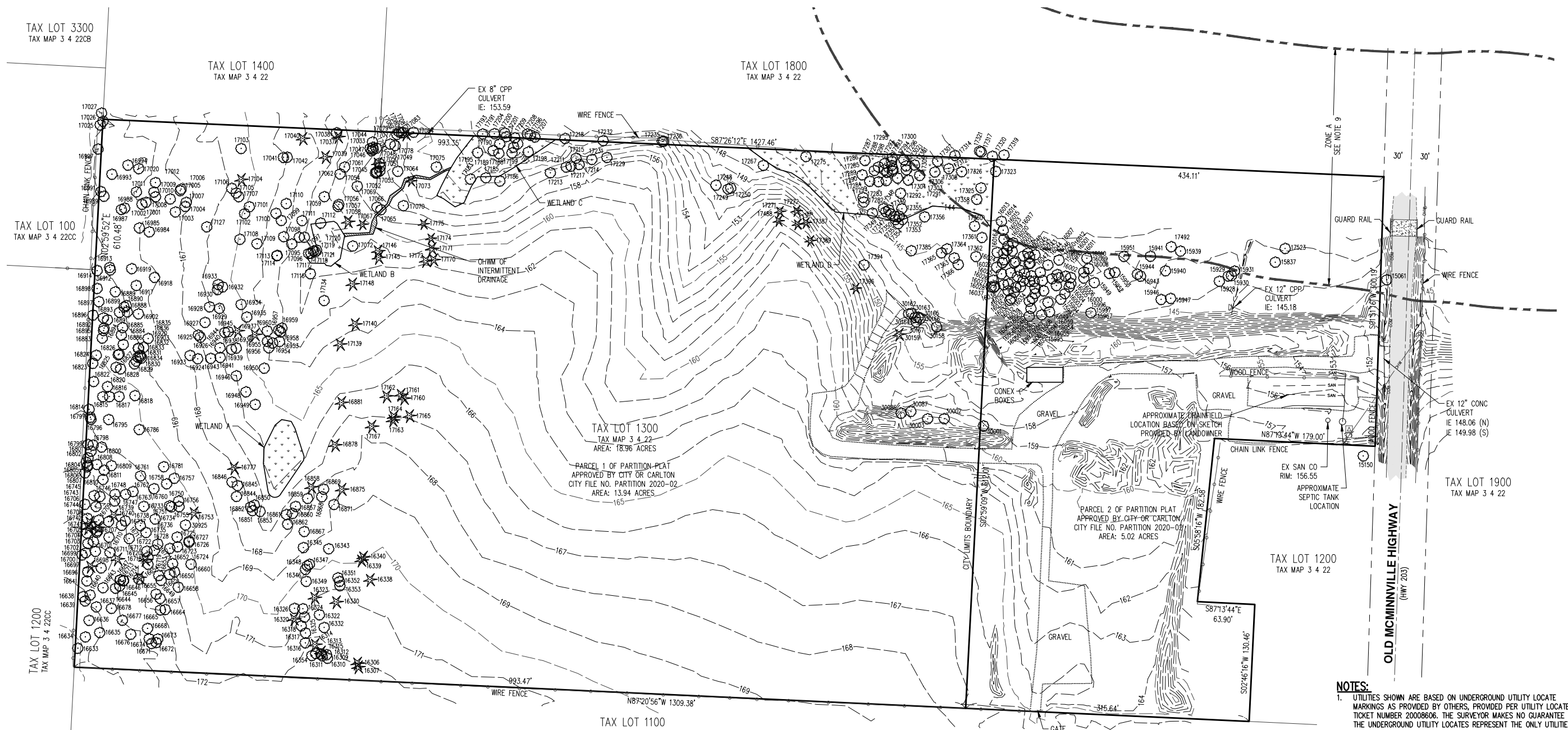
The required findings have been made, and this written narrative and accompanying documentation demonstrate that the application is consistent with the applicable provisions of the City of Carlton Community Development Code. The evidence in the record is substantial, and the City can rely upon this information in its approval of the application.

## **Exhibit A: Preliminary Plans**

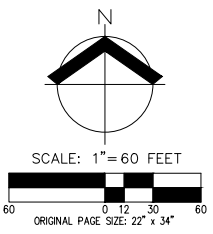
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- NOTES:**
- UTILITIES SHOWN ARE BASED ON UNDERGROUND UTILITY LOCATE MARKINGS AS PROVIDED BY OTHERS, PROVIDED PER UTILITY LOCATE TICKET NUMBER 20008606. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITY LOCATES REPRESENT THE ONLY UTILITIES IN THE AREA. CONTRACTORS ARE RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS PRIOR TO BEGINNING CONSTRUCTION.
  - FIELD WORK WAS CONDUCTED JANUARY 15-30, AND FEBRUARY 2, 2020.
  - VERTICAL DATUM: ELEVATIONS ARE BASED ON NGS MONUMENT U 98 (PID R00845) BEING A BRASS DISK SET IN CONCRETE LOCATED 66 FEET EAST FROM THE CENTER OF PINE STREET AND 32 FEET NORTH FROM THE CENTER OF MAIN STREET ELEVATION = 202.08 FEET (NAVD 88).
  - HORIZONTAL DATUM: A LOCAL DATUM PLANE DERIVED FROM STATE PLANE OREGON NORTH 3601 NAD83(2011)EPOCH: 2010.0000 BY MULTIPLYING A PROJECT MEAN GROUND SCALE FACTOR OF 1.00010743905367 AT A CENTRAL PROJECT POINT WITH INTERNATIONAL FOOT GRID COORDINATES N604280.514, E7515183.436. STATE PLANE COORDINATES WERE DERIVED FROM THE TRIMBLE VRS NOW NETWORK. DISTANCES SHOWN ARE INTERNATIONAL FOOT GROUND VALUES.
  - THIS IS NOT A PROPERTY BOUNDARY SURVEY TO BE RECORDED WITH THE COUNTY. BOUNDARIES MAY BE PRELIMINARY AND SHOULD BE CONFIRMED WITH THE STAMPING SURVEYOR PRIOR TO RELYING ON FOR DETAILED DESIGN OR CONSTRUCTION.
  - BUILDING FOOTPRINTS ARE MEASURED TO SIDING UNLESS NOTED OTHERWISE. CONTACT SURVEYOR WITH QUESTIONS REGARDING BUILDING TIES.
  - CONTOUR INTERVAL IS 1 FOOT.
  - TREES WITH DIAMETER OF 6" AND GREATER ARE SHOWN. TREE DIAMETERS WERE MEASURED UTILIZING A DIAMETER TAPE AT BREAST HEIGHT. SEE ARBORIST REPORT FOR DETAILED TREE INFORMATION.
  - ZONE A FLOOD PLAIN BOUNDARY IS SHOWN PER GIS OVERLAY OF FEMA FIRM MAP 41071C0191D, WITH AN EFFECTIVE DATE OF MARCH 2, 2010.
  - WETLAND AND WATER BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC ON 11/11/2019 AND WERE PROFESSIONALLY SURVEYED BY AKS ON 11/13/2019. A FOLLOW-UP SITE VISIT WAS CONDUCTED ON 8/12/2020 AND ADDITIONAL WETLAND DATA WAS GPS SURVEYED USING A TRIMBLE GEO7X GPS RECEIVER WITH SUB-METER ACCURACY. WETLAND BOUNDARY STUDY AREA ONLY WITHIN CITY LIMITS BOUNDARY.



**PRELIMINARY EXISTING  
 CONDITIONS PLAN  
 JR MEADOWS NO. 2  
 CARLTON, OREGON**

REGISTERED PROFESSIONAL LAND SURVEYOR  
**PRELIMINARY**  
 NOT FOR CONSTRUCTION  
 COMPLETED 11/13/2019  
 BENJAMIN R HUFF  
 84738PLS  
 RENEWS: 6/30/21

JOB NUMBER: 7395-01  
 DATE: 08/19/2020  
 DESIGNED BY: AK  
 DRAWN BY: BRH  
 CHECKED BY: BRH

**PRELIMINARY OPEN SPACE AND LANDSCAPE PLAN**

**JR MEADOWS NO. 2  
 CARLTON, OREGON**



**LEGEND**

- OPEN SPACE
- INTERCONNECTED PEDESTRIAN SYSTEM

**PLAY AREA**  
 PLAY AREA NESTLED INTO EXISTING MATURE VEGETATION BLENDS NATURALLY WITH SURROUNDING OPEN SPACE AND PROVIDES A NEIGHBORHOOD GATHERING SPACE.

**PRESERVED EXISTING TREES AND VEGETATION**  
 VEGETATED OPEN SPACE PROVIDES NATURAL BUFFERS, WILDLIFE HABITAT, INCREASED SHADE, AND PLEASANT VIEWS.

**INTERCONNECTED PEDESTRIAN SYSTEM**  
 PATHWAYS PROMOTE EASE OF ACCESS TO OPEN SPACE AREAS AND CONNECT TO THE EXISTING SCHOOL PROPERTY.

**PRESERVED WETLANDS**  
 WETLAND AREAS PROVIDE HABITAT AND RESOURCE OPPORTUNITIES FOR LOCAL WILDLIFE.

**PRESERVED OPEN MEADOW**  
 GRASSY MEADOW AREA PROVIDES PASSIVE RECREATIONAL OPPORTUNITIES AND VIEWSHEDS.

**INTERPRETIVE SIGNS**  
 INTERPRETIVE SIGNS ENHANCE COMMUNITY IDENTITY AND OFFER EDUCATIONAL OPPORTUNITIES.

**STREETSCAPE**  
 SIDEWALKS AND LANDSCAPING ADD CURB APPEAL, INCREASED SHADING, AND NEIGHBORHOOD CONNECTIVITY.

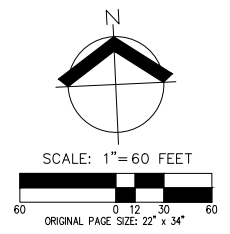
**PICNIC SHELTER**  
 COVERED PICNIC SHELTER WITH OUTDOOR BBQ CREATES A SOCIAL ACTIVITY HUB.

SCALE: 1" = 60 FEET  
 ORIGINAL PAGE SIZE: 22" x 34"

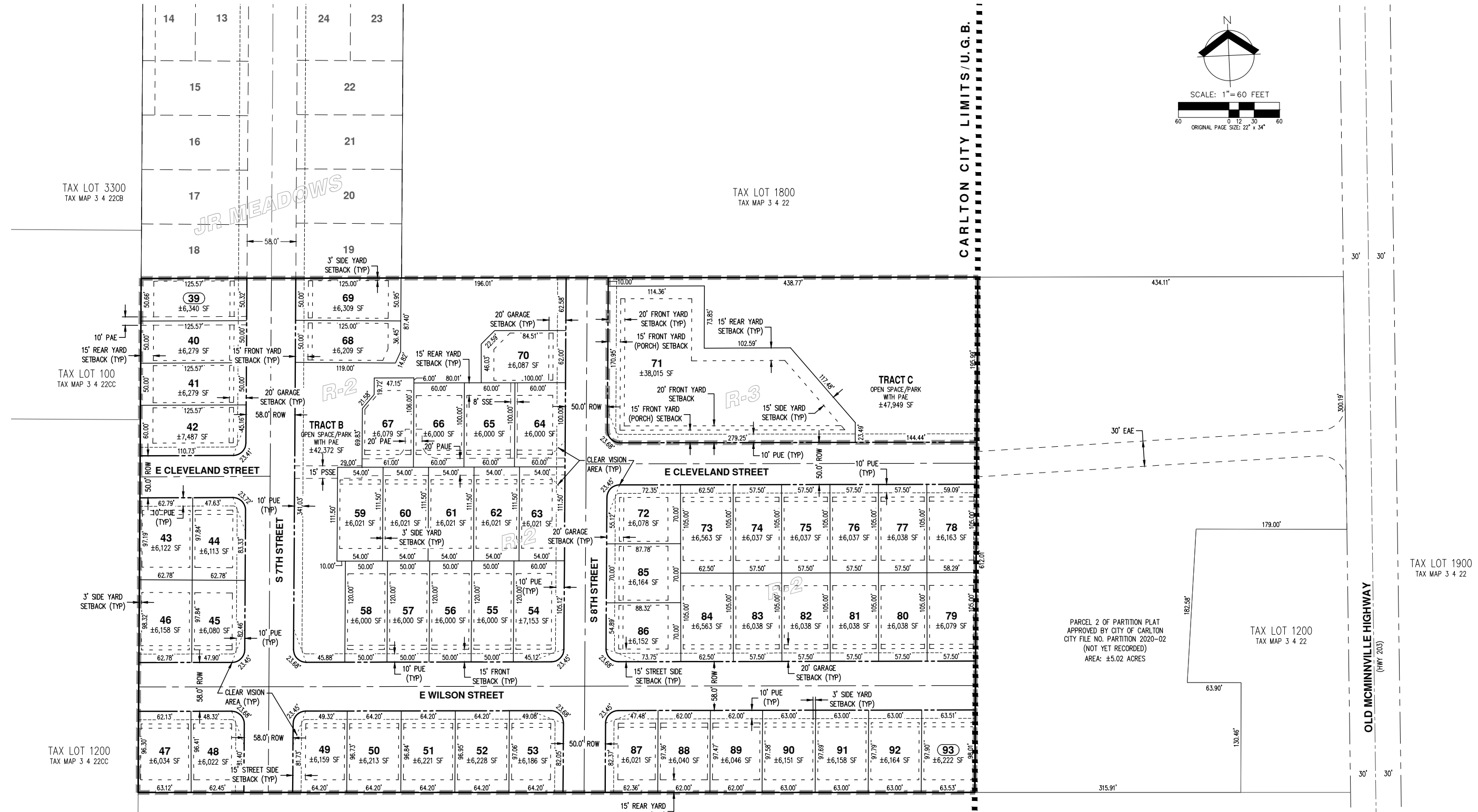
NOTE: POTENTIAL PLAN ELEMENTS AS SHOWN ARE CONCEPTUAL AND SUBJECT TO CHANGE.

JOB NUMBER:	7395-01
DATE:	08/19/2020
DESIGNED BY:	NKP
DRAWN BY:	NKP
CHECKED BY:	KAH

AKS DRAWING FILE: 7395-01 MASTER PLAN EXHIBIT.DWG | LAYOUT: CTB



CARLTON CITY LIMITS / U.G.B.



TAX LOT 3300  
TAX MAP 3 4 22CB

TAX LOT 1800  
TAX MAP 3 4 22

TAX LOT 100  
TAX MAP 3 4 22CC

TAX LOT 1200  
TAX MAP 3 4 22CC

TAX LOT 1900  
TAX MAP 3 4 22

TAX LOT 1200  
TAX MAP 3 4 22

PARCEL 2 OF PARTITION PLAT  
APPROVED BY CITY OF CARLTON  
CITY FILE NO. PARTITION 2020-02  
(NOT YET RECORDED)  
AREA: ±5.02 ACRES

TAX LOT 1100  
TAX MAP 3 4 22

**EASEMENT LEGEND**

- PUBLIC UTILITY EASEMENT PUE
- PUBLIC ACCESS AND UTILITY EASEMENT PAUE
- PUBLIC ACCESS EASEMENT PAE
- PUBLIC SANITARY SEWER EASEMENT PSSE
- EMERGENCY ACCESS EASEMENT EAE
- PRIVATE SANITARY SEWER EASEMENT SSE

**OPEN SPACE NOTES:**

- TRACT B & C SHALL EITHER BE OWNED AND MAINTAINED BY A HOMEOWNERS ASSOCIATION AS OPEN SPACE OR DEDICATED TO THE CITY OF CARLTON AS A PARK.

**ACREAGE**

R-2 ZONE	11.97 AC
R-3 ZONE	1.97 AC
<b>TOTAL</b>	<b>13.94 AC</b>

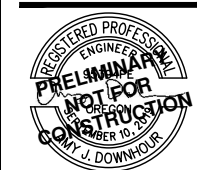
**REQUIRED SETBACKS & LOT COVERAGE**

<b>R-2 DISTRICT</b>	
FRONT YARD	15 FT
FRONT YARD TO GARAGE	20 FT
SIDE YARD	3 FT
STREET SIDE YARD	15 FT
REAR YARD	15 FT
COMBINED MAXIMUM LOT COVERAGE:	
BUILDING HEIGHT < 20 FT	80%
BUILDING HEIGHT > 20 FT	65%
<b>R-3 DISTRICT</b>	
FRONT YARD	20 FT
FRONT YARD TO PORCH	15 FT
SIDE YARD	7 FT
STREET SIDE YARD	20 FT
REAR YARD	15 FT
COMBINED MAXIMUM LOT COVERAGE:	70%

**NOTE:**

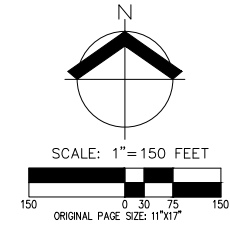
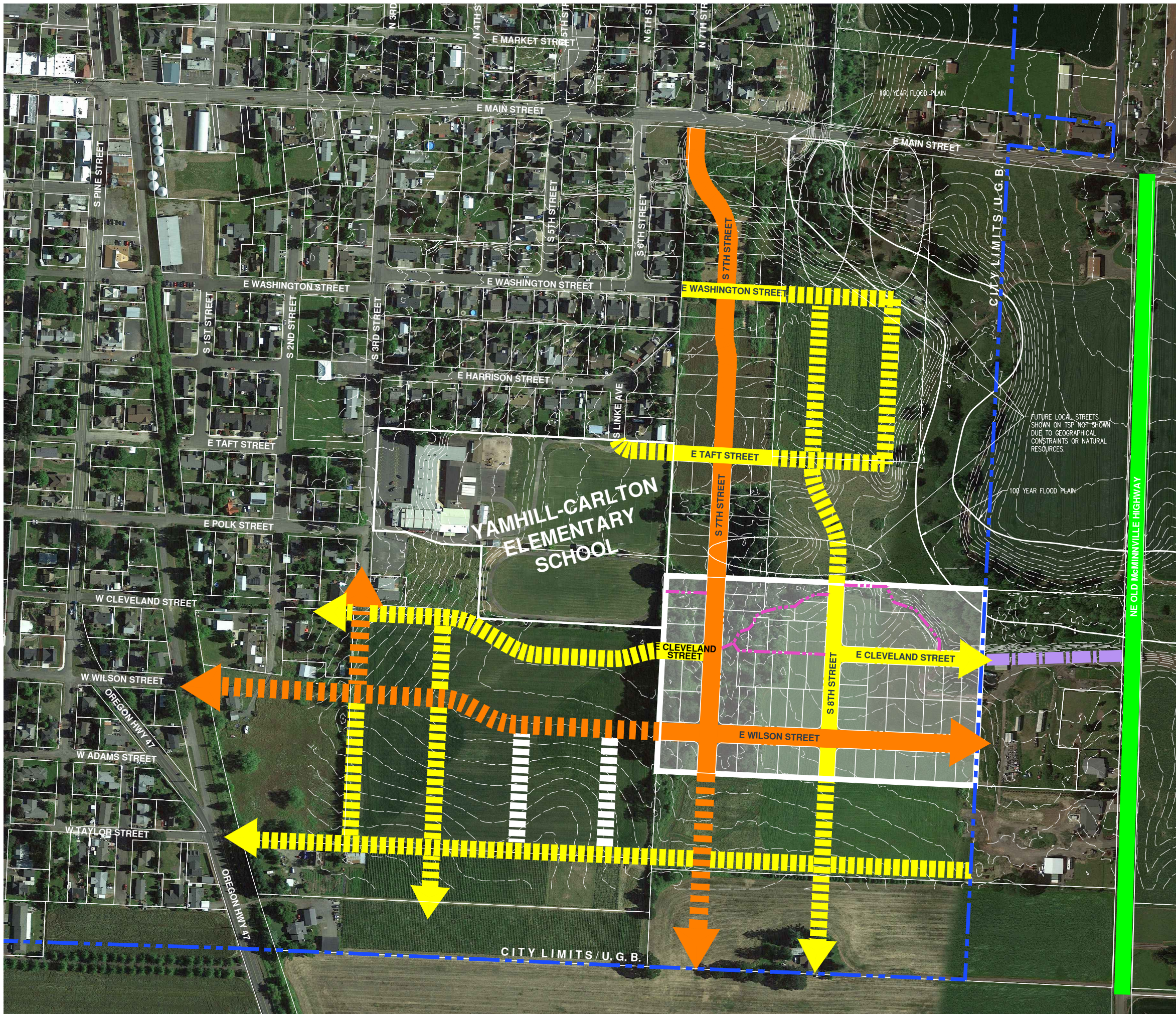
THE PURPOSE OF THIS PRELIMINARY SUBDIVISION PLAT IS TO SHOW LOT DIMENSIONS AND AREAS FOR PLANNING PURPOSES. THIS IS NOT AN OFFICIAL RECORDED FINAL PLAT AND IS NOT TO BE USED FOR SURVEY PURPOSES. ALL DIMENSIONS ARE SUBJECT TO CHANGE.

**PRELIMINARY SUBDIVISION PLAT  
 WITH FUTURE BUILDING SETBACKS  
 JR MEADOWS NO. 2  
 CARLTON, OREGON**



RENEWED: DECEMBER 31, 2021  
 JOB NUMBER: 7395-01  
 DATE: 08/19/2020  
 DESIGNED BY: AJD  
 DRAWN BY: CL  
 CHECKED BY: RSW



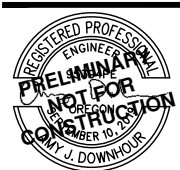


**LEGEND**

- CITY LIMITS/U.G.B.
- PROJECT SITE BOUNDARY
- \* PLANNED LOCAL STREET
- \* PLANNED COLLECTOR
- CONCEPTUAL FUTURE COLLECTOR (ON TSP)
- CONCEPTUAL FUTURE LOCAL STREET (ON TSP)
- YAMHILL COUNTY EXISTING LOCAL
- CONCEPTUAL FUTURE LOCAL STREET (NOT ON TSP)
- EMERGENCY ACCESS
- PEDESTRIAN TRAIL
- \* INCLUDES PLANNED ON-SITE STREETS AND OFF-SITE STREETS THAT ARE UNDER CONSTRUCTION AT THE TIME OF THIS APPLICATION.

- NOTES:**
1. THIS PLAN IS INCLUDED TO MEET THE SUBMITTAL REQUIREMENTS FOR THE CITY OF CARLTON.
  2. CONCEPTUAL FUTURE STREET LOCATIONS ARE SHOWN FOR ILLUSTRATIVE PURPOSES FOR THE LAND USE APPLICATION ONLY AND ARE NOT PROPOSED WITH THIS PARTITION AND ARE NOT BINDING ON ANY OFF SITE PROPERTIES.
  3. THIS DRAWING DOES NOT REPRESENT A FIELD VERIFIED TOPOGRAPHIC/PROPERTY BOUNDARY SURVEY.
  4. DATA SOURCES FOR THIS CONCEPTUAL DRAWING INCLUDE INFORMATION EXTRAPOLATED FROM CITY OF CARLTON FUTURE STREET PLAN, GIS AND NOAA LIDAR TOPOGRAPHY.
  5. AREAS, DIMENSIONS, EASEMENT LOCATIONS, AERIAL PHOTO FEATURES, ETC. ARE THEREFORE CONSIDERED APPROXIMATE.

**CONCEPTUAL NEIGHBORHOOD  
 CIRCULATION PLAN  
 JR MEADOWS NO. 2  
 CARLTON, OREGON**

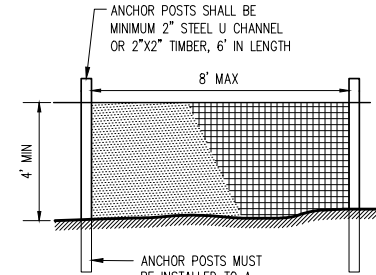
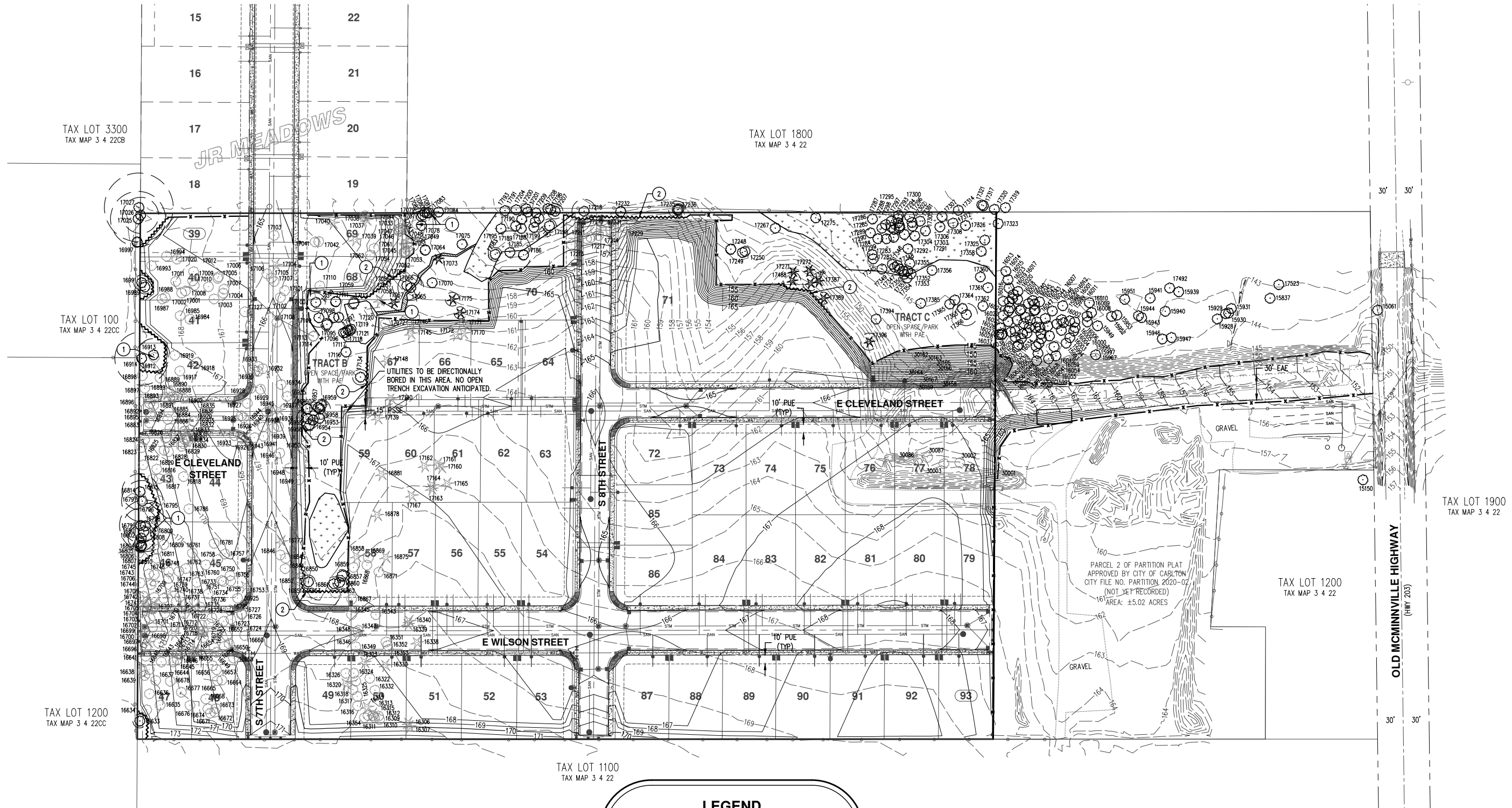


RENEWS: DECEMBER 31, 2021	
JOB NUMBER:	7395-01
DATE:	08/19/2020
DESIGNED BY:	AJD
DRAWN BY:	CL
CHECKED BY:	RSW

**PRELIMINARY TREE PRESERVATION  
 AND REMOVAL PLAN  
 JR MEADOWS NO. 2  
 CARLTON, OREGON**



RENEWS: DECEMBER 31, 2021  
 JOB NUMBER: 7395-01  
 DATE: 08/19/2020  
 DESIGNED BY: AJD  
 DRAWN BY: CL  
 CHECKED BY: RSW



- NOTES:
1. BLAZE ORANGE PLASTIC MESH FENCE FOR TREE PROTECTION DEVICE OR APPROVED EQUAL.
  2. AVOID DAMAGE TO ROOT ZONE. DO NOT DAMAGE OR SEVER LARGE ROOTS WHEN INSTALLING POSTS.
  3. DEVICE SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.

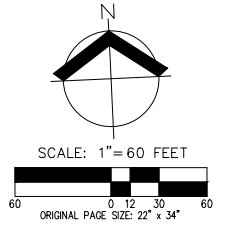
**TREE PROTECTION / CONSTRUCTION FENCE**

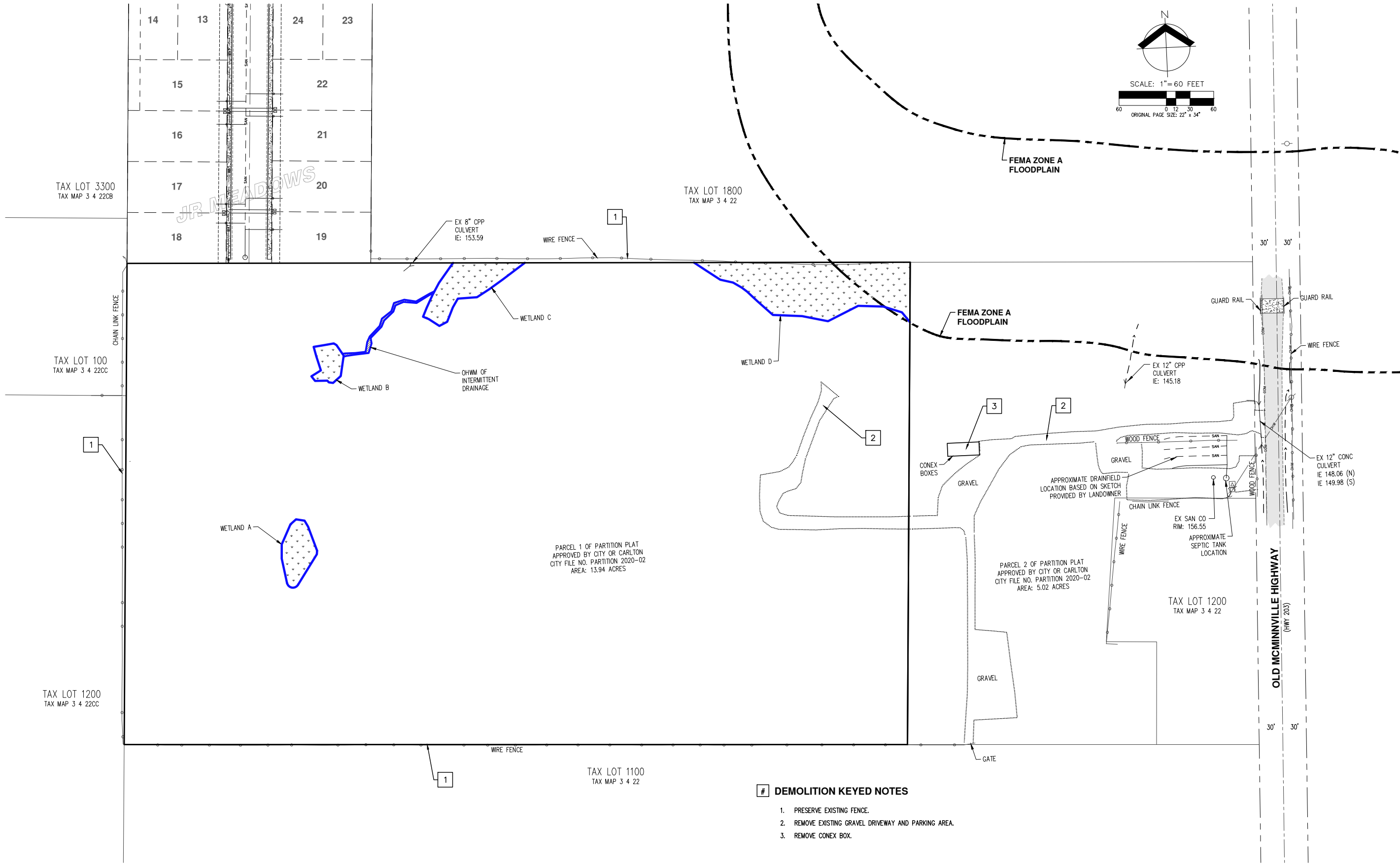
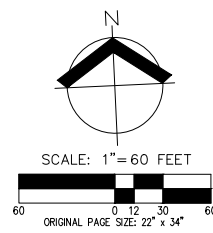
LEGEND	
EXISTING GROUND CONTOUR (1 FT)	--- 149 ---
EXISTING GROUND CONTOUR (5 FT)	--- 150 ---
FINISHED GRADE CONTOUR (1 FT)	--- 149 ---
FINISHED GRADE CONTOUR (5 FT)	--- 150 ---
EXISTING CONIFEROUS TREE	★
EXISTING DECIDUOUS TREE	○
TREE REMOVAL	○ ★
TREE PROTECTION/CONSTRUCTION FENCE (TREE PROTECTION AREA)	~ ~ ~ ~ ~
SEDIMENT FENCE (TO SERVE AS TREE PROTECTION FENCE WHERE SHOWN)	- x - x -
ASSUMED TREE ROOT ZONE (1-FT RADIUS PER 1-IN OF DBH)	○

**NOTE:**  
 SEE ATTACHED ARBORIST REPORT FOR DETAILED TREE INFORMATION.

EASEMENT LEGEND	
PUBLIC UTILITY EASEMENT	PUE
PUBLIC ACCESS AND UTILITY EASEMENT	PAUE
PUBLIC ACCESS EASEMENT	PAE
PUBLIC SANITARY SEWER EASEMENT	PSSE
EMERGENCY ACCESS EASEMENT	EAE
PRIVATE SANITARY SEWER EASEMENT	SSE

- KEYED NOTES:**
1. ARBORIST OBSERVATION RECOMMENDED DURING TREE REMOVAL BEHIND TREE PROTECTION FENCE.
  2. INSTALL STRAW WATTLE WITH TREE PROTECTION FENCE.





PARCEL 1 OF PARTITION PLAT  
 APPROVED BY CITY OR CARLTON  
 CITY FILE NO. PARTITION 2020-02  
 AREA: 13.94 ACRES

PARCEL 2 OF PARTITION PLAT  
 APPROVED BY CITY OR CARLTON  
 CITY FILE NO. PARTITION 2020-02  
 AREA: 5.02 ACRES

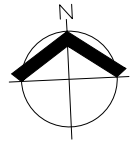
**# DEMOLITION KEYED NOTES**

1. PRESERVE EXISTING FENCE.
2. REMOVE EXISTING GRAVEL DRIVEWAY AND PARKING AREA.
3. REMOVE CONEX BOX.

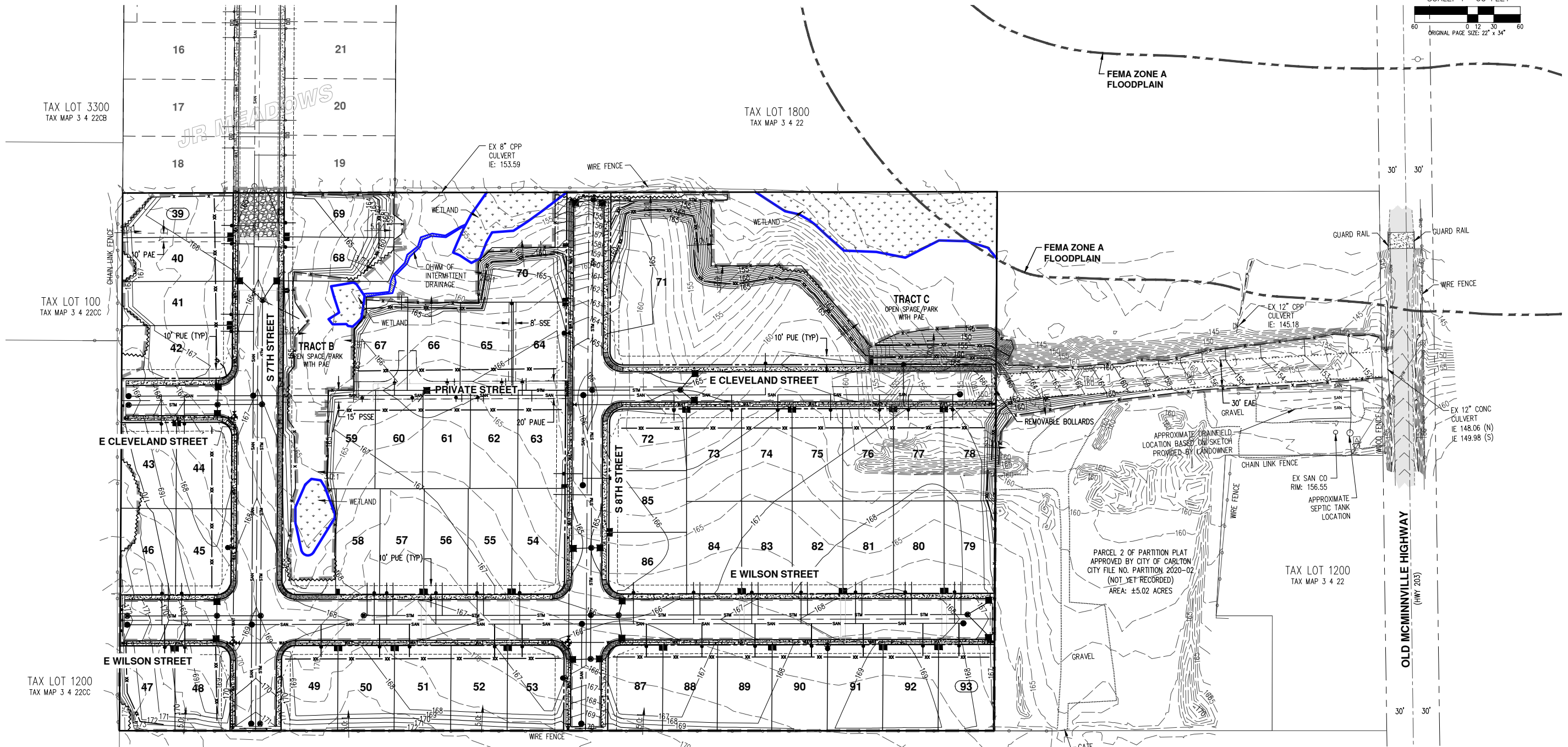
**PRELIMINARY  
 DEMOLITION PLAN  
 JR MEADOWS NO. 2  
 CARLTON, OREGON**



RENEWS: DECEMBER 31, 2021  
 JOB NUMBER: 7395-01  
 DATE: 08/19/2020  
 DESIGNED BY: AJD  
 DRAWN BY: CL  
 CHECKED BY: RSW



SCALE: 1" = 60 FEET  
ORIGINAL PAGE SIZE: 22" x 34"



TAX LOT 3300  
TAX MAP 3 4 22CB

TAX LOT 1800  
TAX MAP 3 4 22

TAX LOT 100  
TAX MAP 3 4 22CC

TAX LOT 1200  
TAX MAP 3 4 22CC

TAX LOT 1100  
TAX MAP 3 4 22

TAX LOT 1200  
TAX MAP 3 4 22

PARCEL 2 OF PARTITION PLAT  
APPROVED BY CITY OF CARLTON  
CITY FILE NO. PARTITION 2020-02  
(NOT YET RECORDED)  
AREA: ±5.02 ACRES

**LEGEND**

EXISTING GROUND CONTOUR (1 FT)	---
EXISTING GROUND CONTOUR (5 FT)	-----
FINISHED GRADE CONTOUR	-----
SEDIMENT FENCE (TO BE INSTALLED PRIOR TO GRADING)	—x—x—x—
SEDIMENT FENCE (TO BE INSTALLED AFTER GRADING)	—x—x—x—
AREA DRAIN PROTECTION (TYP) PER CATCH BASIN INSERT BAG DETAIL	□
CONCRETE WASHOUT AREA	■
GRAVEL CONSTRUCTION ENTRANCE	▒
GRADING LIMITS	---

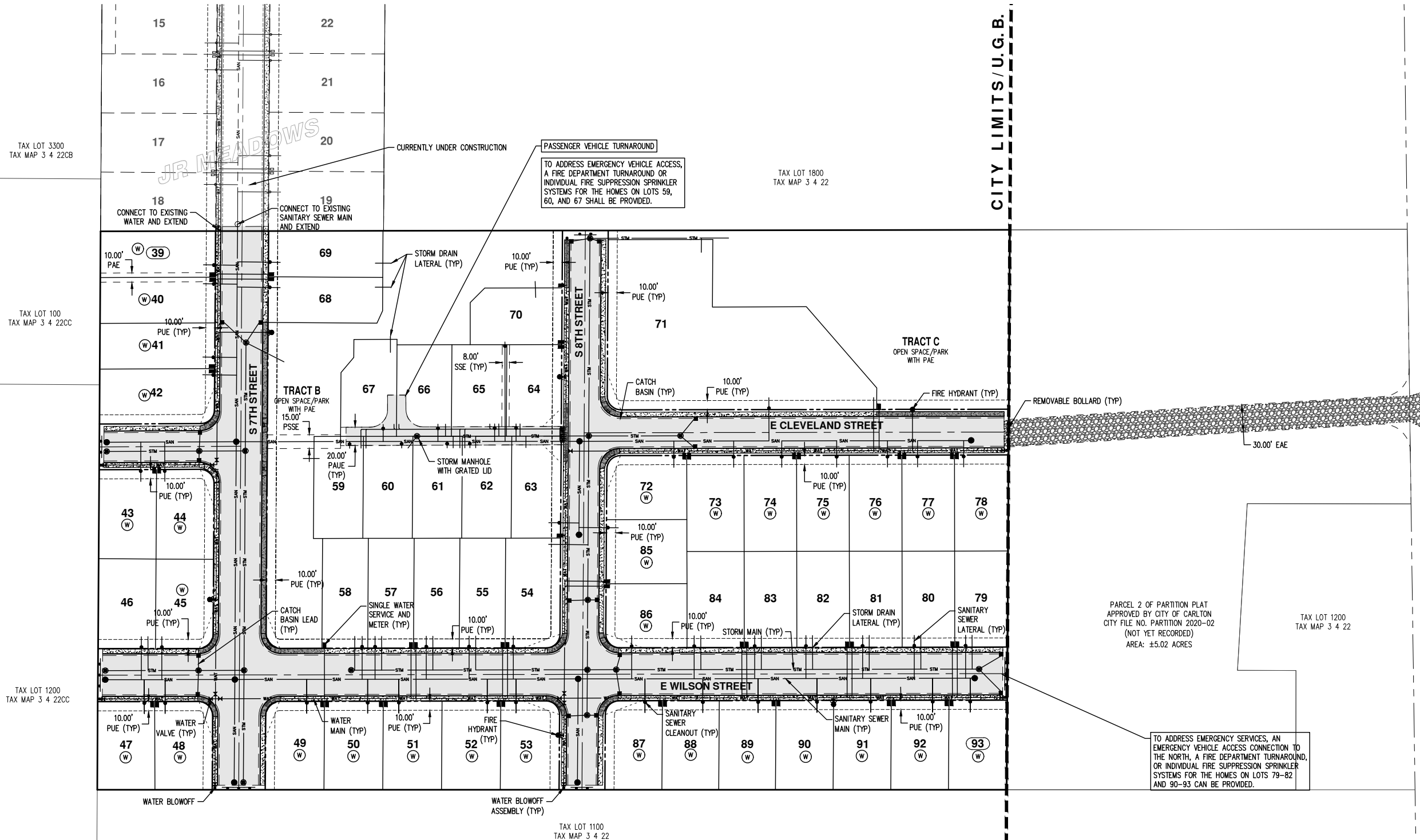
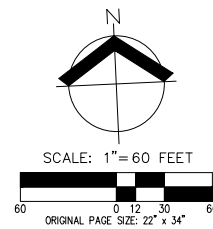
**EASEMENT LEGEND**

PUBLIC UTILITY EASEMENT	PUE
PUBLIC ACCESS AND UTILITY EASEMENT	PAUE
PUBLIC ACCESS EASEMENT	PAE
PUBLIC SANITARY SEWER EASEMENT	PSSE
EMERGENCY ACCESS EASEMENT	EAE
PRIVATE SANITARY SEWER EASEMENT	SSE

**PRELIMINARY GRADING AND  
EROSION CONTROL PLAN  
JR MEADOWS NO. 2  
CARLTON, OREGON**



RENEWED: DECEMBER 31, 2021  
JOB NUMBER: 7395-01  
DATE: 08/19/2020  
DESIGNED BY: AJD  
DRAWN BY: CL  
CHECKED BY: RSW



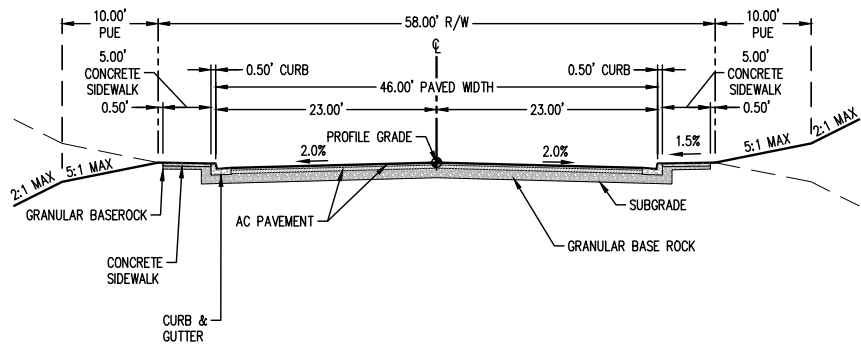
**EASEMENT LEGEND**

PUBLIC UTILITY EASEMENT	PUE
PUBLIC ACCESS AND UTILITY EASEMENT	PAUE
PUBLIC ACCESS EASEMENT	PAE
PUBLIC SANITARY SEWER EASEMENT	PSSE
EMERGENCY ACCESS EASEMENT	EAE
PRIVATE SANITARY SEWER EASEMENT	SSE

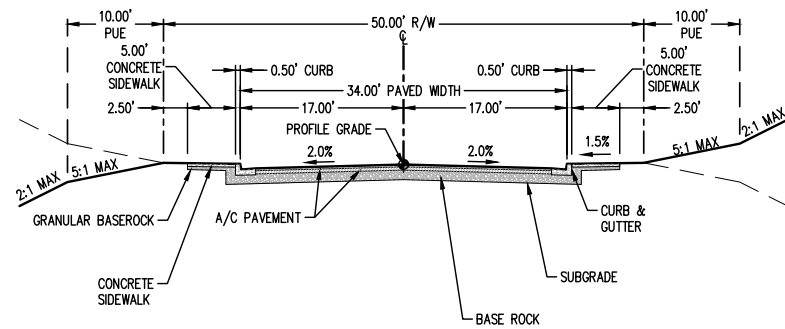
- NOTES:**
- (W) LOTS SHALL UTILIZE CURB WEEP HOLES FOR ROOF DRAIN CONNECTIONS.
  - 1. LOTS 59-62, 65-67 TO BE SERVED BY A WATER SERVICE METER BANK AT S 8TH STREET.

**PRELIMINARY COMPOSITE  
 UTILITY PLAN  
 JR MEADOWS NO. 2  
 CARLTON, OREGON**

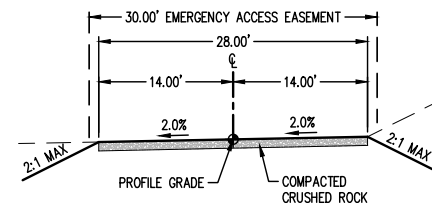
REGISTERED PROFESSIONAL ENGINEER  
 PRELIMINARY  
 NOT FOR CONSTRUCTION  
 J. DOWNHOUR  
 RENEWS: DECEMBER 31, 2021  
 JOB NUMBER: 7395-01  
 DATE: 08/19/2020  
 DESIGNED BY: A.J.D.  
 DRAWN BY: C.L.  
 CHECKED BY: R.S.W.



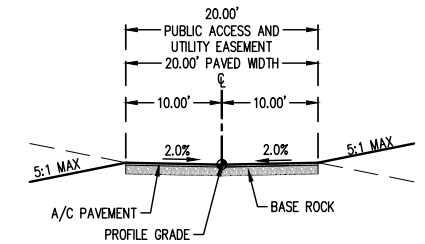
**A** TYPICAL COLLECTOR STREET CROSS SECTION  
 SCALE: 1" = 10'



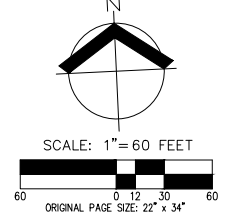
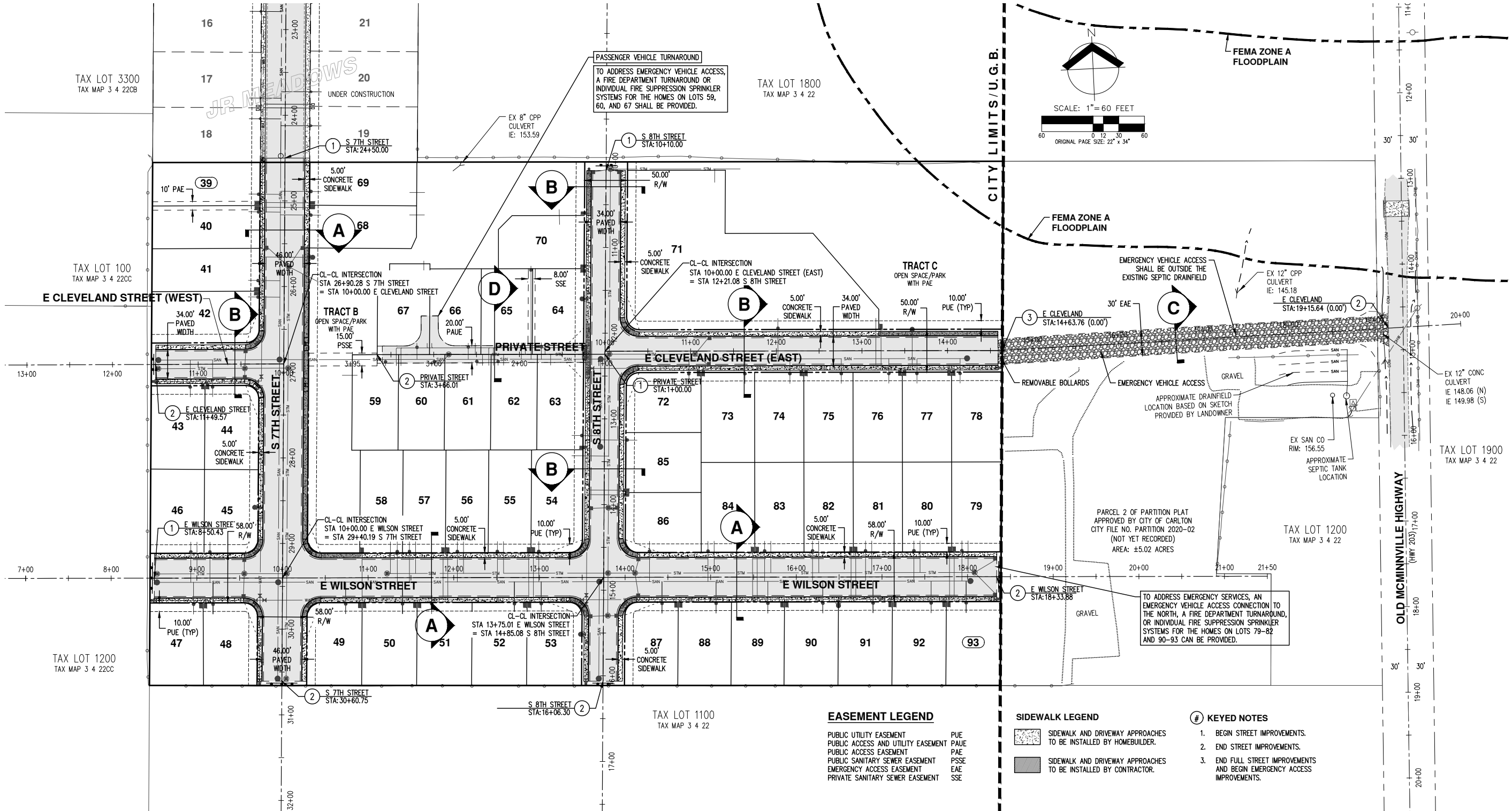
**B** TYPICAL LOCAL STREET CROSS SECTION  
 SCALE: 1" = 10'



**C** TYPICAL EMERGENCY ACCESS SECTION  
 SCALE: 1" = 10'



**D** TYPICAL PRIVATE STREET SECTION  
 SCALE: 1" = 10'



**EASEMENT LEGEND**

PUBLIC UTILITY EASEMENT	PUE
PUBLIC ACCESS AND UTILITY EASEMENT	PAUE
PUBLIC ACCESS EASEMENT	PAE
PUBLIC SANITARY SEWER EASEMENT	PSSE
EMERGENCY ACCESS EASEMENT	EAE
PRIVATE SANITARY SEWER EASEMENT	SSE

**SIDEWALK LEGEND**

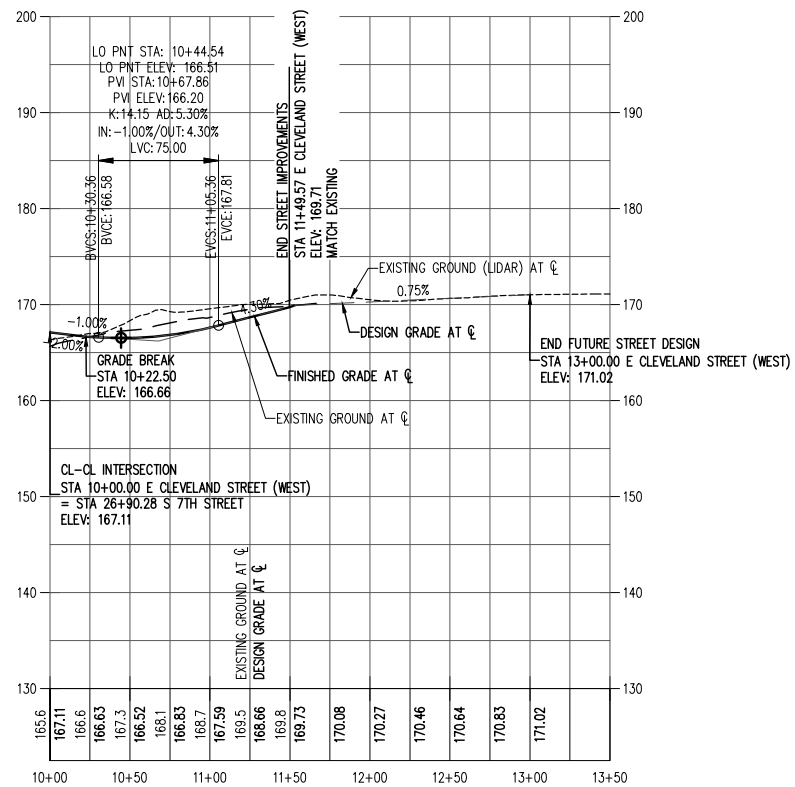
	SIDEWALK AND DRIVEWAY APPROACHES TO BE INSTALLED BY CONTRACTOR.
	SIDEWALK AND DRIVEWAY APPROACHES TO BE INSTALLED BY HOMEOWNER.

- KEYED NOTES**
- BEGIN STREET IMPROVEMENTS.
  - END STREET IMPROVEMENTS.
  - END FULL STREET IMPROVEMENTS AND BEGIN EMERGENCY ACCESS IMPROVEMENTS.

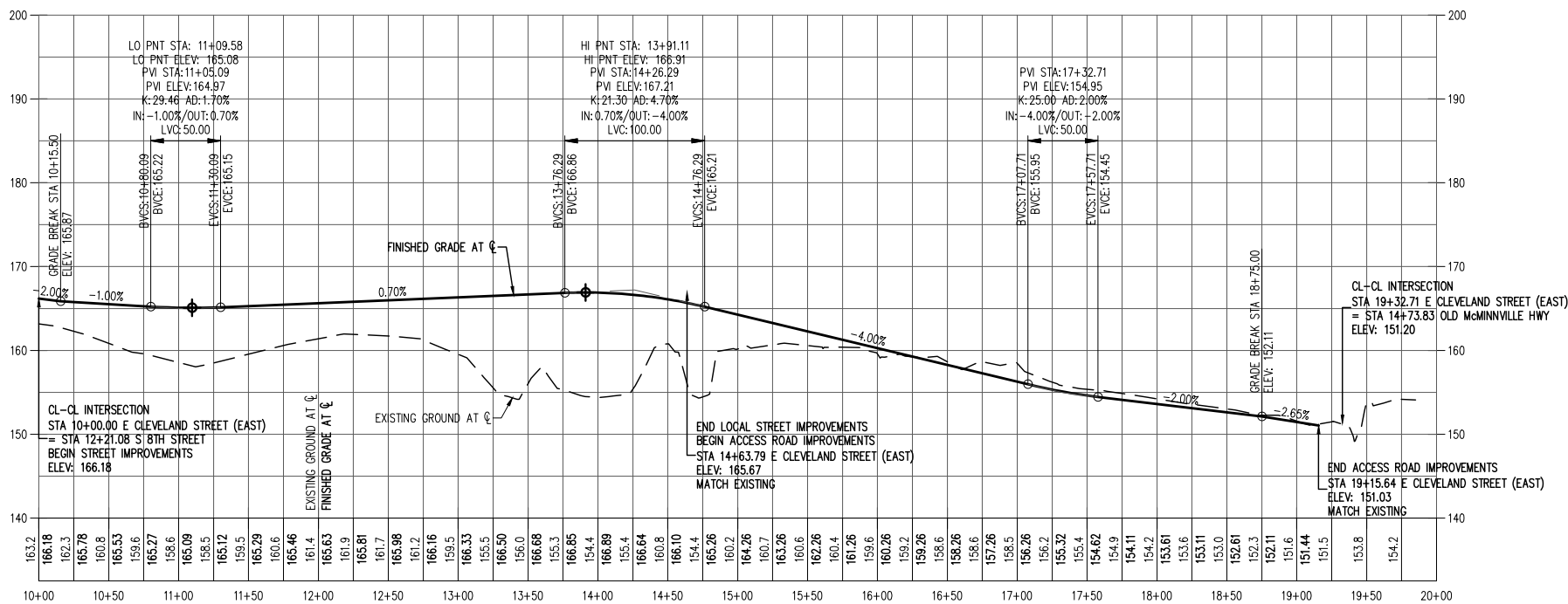
**PRELIMINARY STREET PLAN  
 AND CROSS SECTIONS  
 JR MEADOWS NO. 2  
 CARLTON, OREGON**



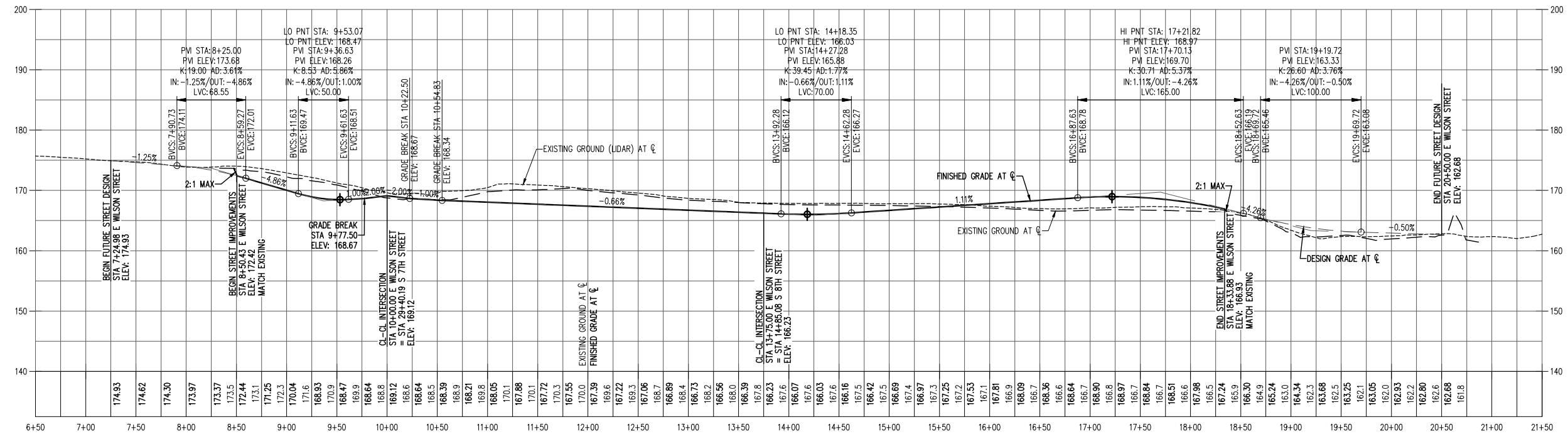
RENEWED: DECEMBER 31, 2021  
 JOB NUMBER: 7395-01  
 DATE: 08/19/2020  
 DESIGNED BY: AJD  
 DRAWN BY: CL  
 CHECKED BY: RSW



**E CLEVELAND STREET (WEST) PROFILE**  
 Hor. Scale: 1" = 60'  
 Vert. Scale: 1" = 10'

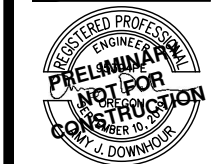


**E CLEVELAND STREET (EAST) PROFILE**  
 Hor. Scale: 1" = 60'  
 Vert. Scale: 1" = 10'

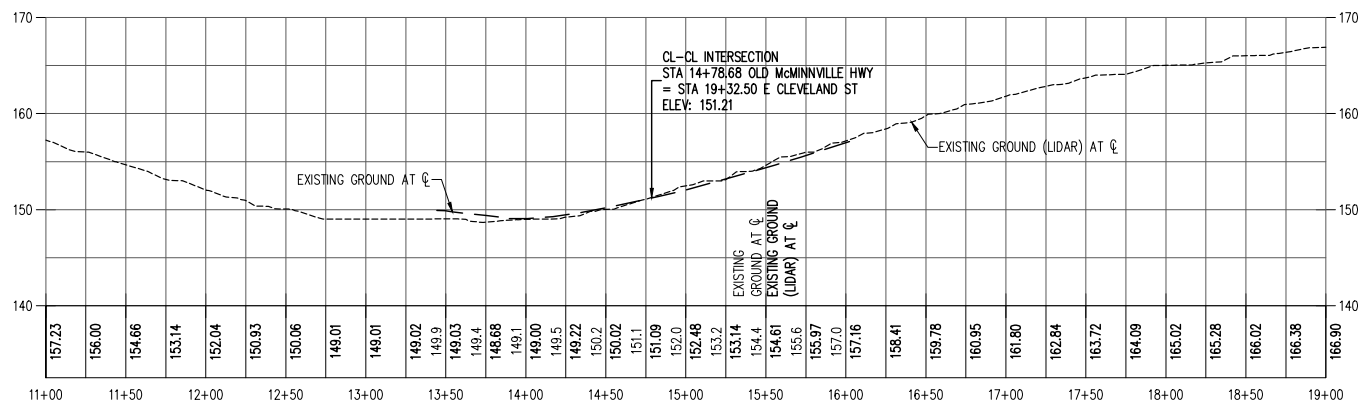


**E WILSON STREET PROFILE**  
 Hor. Scale: 1" = 60'  
 Vert. Scale: 1" = 10'

**PRELIMINARY  
 STREET PROFILES  
 JR MEADOWS NO. 2  
 CARLTON, OREGON**



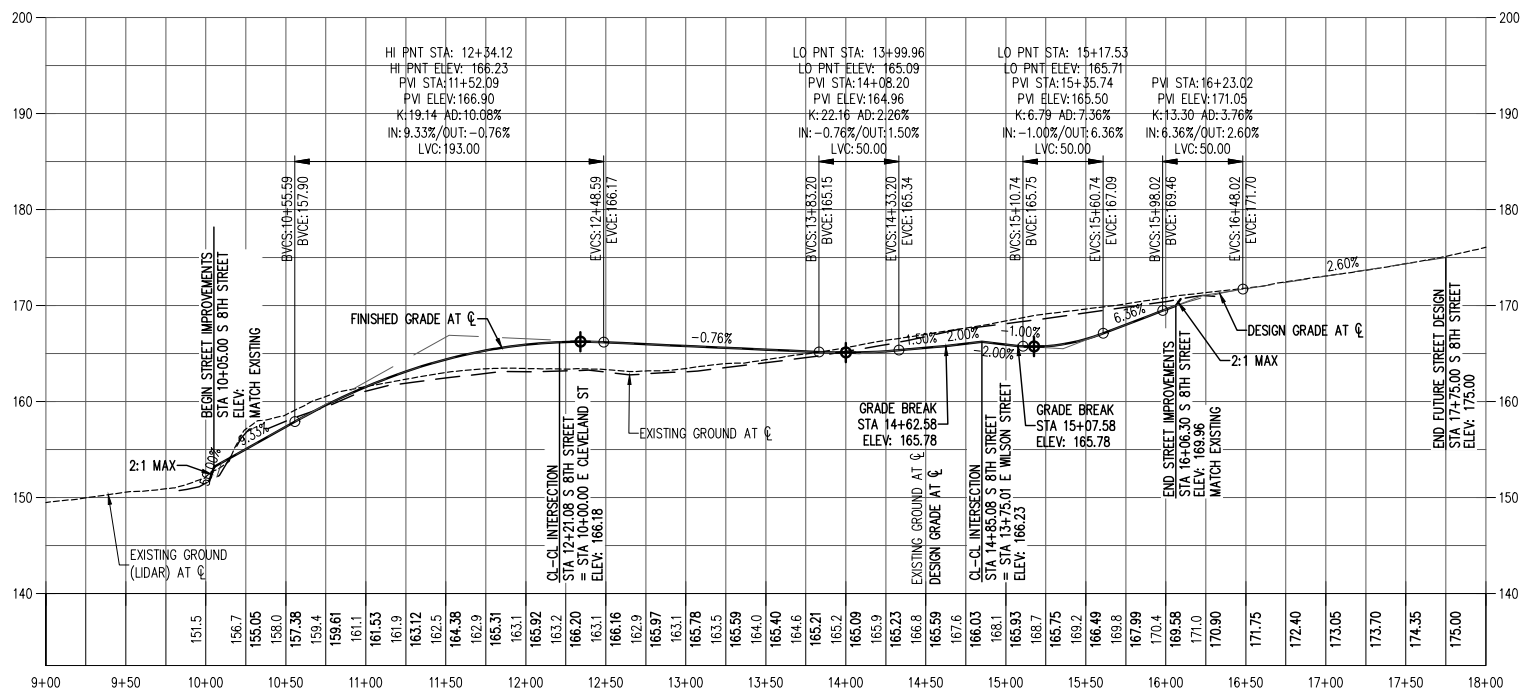
REVISIONS: DECEMBER 31, 2021  
 JOB NUMBER: 7395-01  
 DATE: 08/19/2020  
 DESIGNED BY: AJD  
 DRAWN BY: CL  
 CHECKED BY: RSW



OLD McMINNVILLE HWY PROFILE

Hor. Scale: 1" = 60'

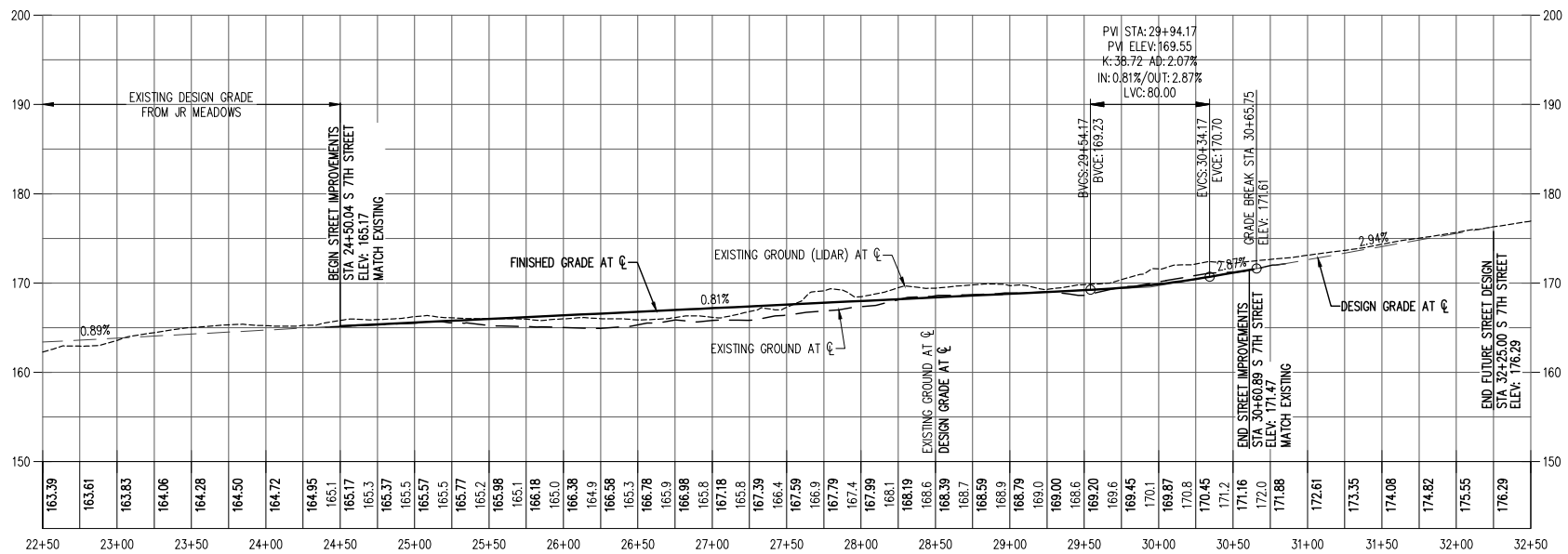
Vert. Scale: 1" = 10'



S 8TH STREET PROFILE

Hor. Scale: 1" = 60'

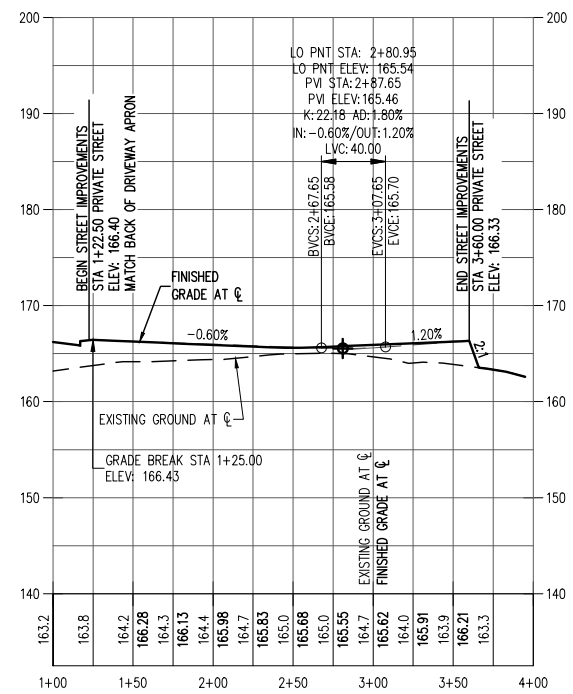
Vert. Scale: 1" = 10'



S 7TH STREET PROFILE

Hor. Scale: 1" = 60'

Vert. Scale: 1" = 10'



PRIVATE STREET PROFILE

Hor. Scale: 1" = 60'

Vert. Scale: 1" = 10'

PRELIMINARY  
 STREET PROFILES  
 JR MEADOWS NO. 2  
 CARLTON, OREGON

REGISTERED PROFESSIONAL ENGINEER  
 PRELIMINARY PLAN  
 NOT FOR CONSTRUCTION  
 DECEMBER 10, 2020  
 J. DOWNHUR

RENEW: DECEMBER 31, 2021

JOB NUMBER: 7395-01  
 DATE: 08/19/2020  
 DESIGNED BY: AJD  
 DRAWN BY: CL  
 CHECKED BY: RSW

AKS DRAWING FILE: 7395-01\_STR\_PROFILES.DWG | LAYOUT: P-12





**PRELIMINARY AERIAL  
 PHOTOGRAPH PLAN  
 JR MEADOWS NO. 2  
 CARLTON, OREGON**



RENEWS: DECEMBER 31, 2021  
 JOB NUMBER: 7395-01  
 DATE: 08/19/2020  
 DESIGNED BY: AJD  
 DRAWN BY: CL  
 CHECKED BY: RSW

## **Exhibit B: Application Form and Checklist**

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Applicant's Consultant:  
AKS Engineering & Forestry, LLC  
Contact: Chris Goodell  
12965 SW Herman Road, Suite 100  
Tualatin, OR 97062  
(503) 563-6151 - Email: chrisg@aks-eng.com

# Subdivision Application

## City of Carlton

Docket No.: \_\_\_\_\_  
Date: \_\_\_\_\_  
Fee: \_\_\_\_\_  
Receipt No.: \_\_\_\_\_

**Applicant:** Name \_\_\_\_\_  
Mailing Address \_\_\_\_\_  
Phone \_\_\_\_\_

**Title Holder:** Name \_\_\_\_\_  
Mailing Address \_\_\_\_\_

**Surveyor and/or Engineer (if applicable):**  
Name \_\_\_\_\_  
Phone \_\_\_\_\_

**Location:** Street Address South of S 7th Avenue and west of NE Old McMinnville Highway  
Tax Lot Number Portion of 1300 Map \_\_\_\_\_

**Description:** Comprehensive Plan Designation \_\_\_\_\_  
Current Zoning \*Residential-Medium Density (R-2) and Residential-Medium High Density (R-3)  
*\* Approved - Pending Second Reading*

**Prerequisites:** In accordance with Carlton Development Code Section 17.12.020, Subdivision is defined as:

**Subdivision:** To divide a tract of land into four or more lots within a single calendar year when such land exists as a unit or contiguous units under a single ownership at the beginning of the year.

To request a hearing and approval of a subdivision by the City Planning Commission, there shall be submitted to the City Recorder with this application and filing fee, the following information:

\_\_\_\_\_ A preliminary subdivision plan on sheets that are no larger than 24 by 36 inches in size. Preliminary plans shall be drawn to a scale of one-inch equals 100 feet or larger.

- ✓1. The following general information shall be shown on the preliminary plan:
  - a. Vicinity map extending 1,200 feet in each direction showing all streets, property lines, streams, and other pertinent data to locate the proposal.
  - b. North arrow, scale of drawing, and date of preparation.
  - c. Tax map and tax lot number or tax account of the subject property.
  - d. Dimensions and size in square feet or acres of the subject property.
  - e. The names and addresses of the property owner, subdivider (if different), and engineer, surveyor, or other individual responsible for laying out the partition.
  - f. Location of all existing easements within the property.
  - g. Location of City utilities (water, sanitary sewer, storm drainage) within or adjacent to the property proposed for use to serve the development.
  - h. The location and direction of watercourses or drainage swales. The location and disposition of any wells, wetlands identified on the State Wetland Inventory, septic tanks, and drain fields in the development.
  - i. Existing uses of the property, including location of existing structures on the property. It should be noted whether the existing structures are to be removed or to remain on the property.
  - j. Contour lines related to an established benchmark, having the following minimum intervals:
    - (1) Areas with less than 5% slope: One-foot contours
    - (2) Areas with slope between 5% and 10%: Two-foot contours.
    - (3) Areas with slope greater than 10%: Five-foot contours.
- ✓2. The preliminary plan shall clearly show to scale the following:
  - a. Proposed name of the PUD or subdivision.
  - b. Locations, approximate dimensions and area in square feet of all proposed lots. Identification of each lot and block by number.
  - c. Proposed streets and their names, approximate grade, radius of curves, and right-of-way widths.
  - d. Any other legal access to the subdivision or PUD, other than a public street.
  - e. Location, width and purpose of any proposed easements.
  - f. If the development is to be constructed in phases, indicate the area of each phase.
- 3. Supplemental Information.
  - a. Proposed deed restrictions, if any, in outline form.

\_\_\_\_ The names and addresses of all property owners within 100 feet of the site boundaries, as shown on the last preceding tax roll of the Yamhill County Assessor. Note: A list of property owner names and addresses within 100 feet of the property may be obtained from a title company or the Yamhill County Assessor Department located at: 535 NE 5<sup>th</sup> Street, Room 42, McMinnville, OR, phone: (503) 434-7521.



**One (1) paper copy and one (1) electronic copy** (PDF format preferred) of this application and all of the application attachments. Copies must be clear and legible.

**Review Standards:** All subdivisions shall conform to all applicable Zoning District standards, development standards, and other provisions of the Carlton Development Code.

**Variance Application:** When necessary, the Planning Commission may authorize variances to the requirements of the Carlton Development Code in conjunction with a subdivision request. Application for a variance shall be made by petition of the subdivider, stating fully the grounds for the application. The Planning Commission shall review the Variance in accordance with Development Code Section 17.148. An Application for a Variance  **Does**  **Does Not** accompany this subdivision application.

**I HEREBY CERTIFY THAT ALL STATEMENTS CONTAINED HEREIN, ALONG WITH THE EVIDENCE SUBMITTED, ARE IN ALL RESPECTS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.**

*Steve Reiman*  
\_\_\_\_\_  
Applicant's Signature

8/18/2020  
\_\_\_\_\_  
Date

\_\_\_\_\_  
Applicant's Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title Holder's Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title Holder's Signature

\_\_\_\_\_  
Date

**NOTE: ALL OWNERS MUST SIGN THIS APPLICATION OR SUBMIT LETTERS OF CONSENT. INCOMPLETE OR MISSING INFORMATION MAY DELAY THE APPROVAL PROCESS.**

**One (1) paper copy and one (1) electronic copy** (PDF format preferred) of this application and all of the application attachments. Copies must be clear and legible.

**Review Standards:** All subdivisions shall conform to all applicable Zoning District standards, development standards, and other provisions of the Carlton Development Code.

**Variance Application:** When necessary, the Planning Commission may authorize variances to the requirements of the Carlton Development Code in conjunction with a subdivision request. Application for a variance shall be made by petition of the subdivider, stating fully the grounds for the application. The Planning Commission shall review the Variance in accordance with Development Code Section 17.148. An Application for a Variance  **Does**  **Does Not** accompany this subdivision application.

**I HEREBY CERTIFY THAT ALL STATEMENTS CONTAINED HEREIN, ALONG WITH THE EVIDENCE SUBMITTED, ARE IN ALL RESPECTS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.**

*Cheryl A Park* dotloop verified  
08/19/20 11:53 AM PDT  
SWHP-SZ3K-MWYO-3FKI

Title Holder's ~~Signature~~ Applicant's Signature  
08/19/2020

Date

Applicant's Signature

Date

Title Holder's Signature

Date

Title Holder's Signature

Date

**NOTE: ALL OWNERS MUST SIGN THIS APPLICATION OR SUBMIT LETTERS OF CONSENT. INCOMPLETE OR MISSING INFORMATION MAY DELAY THE APPROVAL PROCESS.**



## Subdivision

---

A subdivision means to divide a tract of land into four (4) or more lots within a single calendar year when such land exists as a unit or contiguous units under a single ownership at the beginning of the year. Lots created through the subdivision process shall meet the Development Standards for Land Divisions found in Carlton Development Code (CDC) Chapter 17.88\*, and other applicable development standards found in the Carlton Development Code and Public Works Design Standards (PWDS). Each lot shall satisfy the dimensional standards of the applicable zoning district, unless a variance from these standards is approved. In addition, adequate public facilities shall be available to serve the existing and newly created lots (CDC 17.176).

A master plan is required for any application that leaves a portion of the subject property capable of redevelopment (CDC 17.176.010).

### **Application Process**

Subdivisions are reviewed through a two-step process. Preliminary plats for subdivisions are first reviewed in accordance with the Type II land use review procedures found in CDC Section 17.188.020. The Planning Commission conducts a public hearing to review the request and makes a final decision on whether or not to grant preliminary subdivision approval. The Planning Commission's decision may be appealed to the City Council by filing an appeal application within twelve (12) days following the final written notice of the Commission's decision.

Upon receiving preliminary subdivision approval, the applicant has eighteen (18) months to complete the required conditions of approval and record the final survey plat. Final plats are reviewed in accordance with the provisions found in CDC 17.176.040-17.176.050. No final plat shall be approved by the city unless:

1. The plat is in substantial conformance with the Carlton Development Code and the provisions of the preliminary plan as approved, including any conditions imposed in connection therewith;
2. The plat contains free and clear of all liens and encumbrances a donation to the public of all common improvements, including but not limited to streets, roads, sewage disposal and water supply systems, the donation of which is required by the Carlton Development Code or was made a condition of the approval of the preliminary plat;

3. Explanations of all common improvements required as conditions of approval of the preliminary plan have been recorded and referenced on the plat;
4. All reserve blocks shown on the preliminary plan or required as conditions of approval have been deeded in fee simple to the city;
5. The city has received adequate assurances that the applicant has agreed to make all public improvements that are required as conditions of approval of the preliminary plan. The following constitute acceptable adequate assurances:
  - a. Certification by the City Engineer that all required public improvements are completed and approved by the city; or
  - b. The City Engineer certifies that seventy-five (75) percent of the improvements are completed and a performance guarantee as provided by Section 17.216.010.

### **Application Requirements**

To request a subdivision, there shall be submitted to the City Recorder:

\_\_\_ **One (1) paper copy** and **one (1) electronic copy** (PDF format preferred) of the application form and the application attachments. Copies must be clear and legible.

\_\_\_ Application filing **fee**

### **Expiration of Approval**

If the final survey plat is not recorded within eighteen (18) months, the preliminary approval shall lapse. The City Manager shall upon written request by the applicant and payment of the required fee; grant an extension not to exceed six (6) months provided that:

1. No changes are made to the approved preliminary plat;
2. There have been no changes in existing conditions, facts, or applicable policies or ordinance provisions on which the original approval was based (CDC 17.172.050).

The Planning Commission may extend the approval period for any subdivision or PUD for not more than one (1) additional year at a time. Requests for extension of approval time shall be submitted in writing thirty (30) days prior to the expiration date of the approval period.

\*The Carlton Development Code is available online at: [www.ci.carlton.or.us/municode](http://www.ci.carlton.or.us/municode)



## **Exhibit C: Yamhill County Assessor's Map**

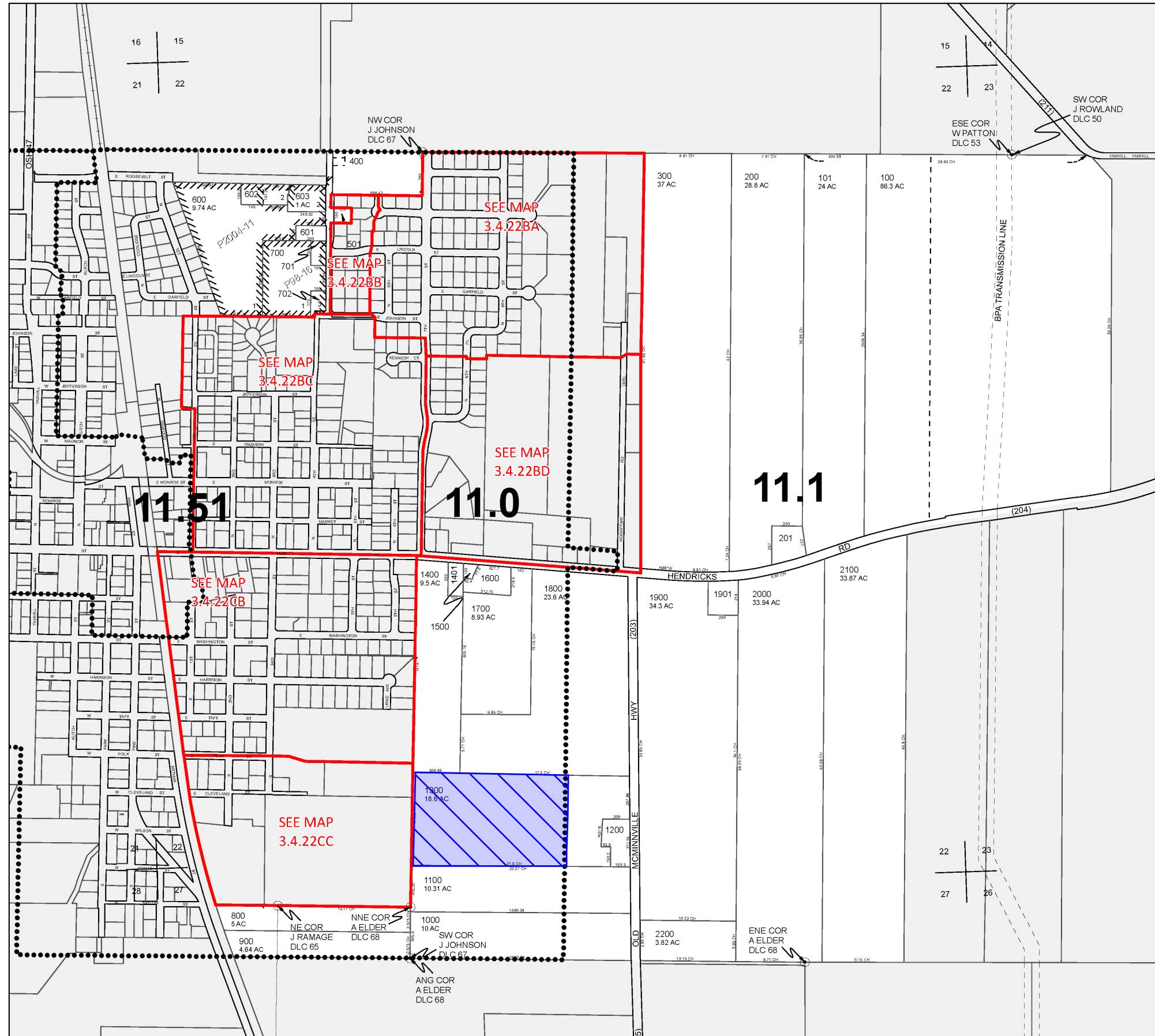
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ASSESSMENT & TAX  
CARTOGRAPHY

SECTION 22 T.3S. R.4W. W.M.  
YAMHILL COUNTY OREGON  
1" = 400'



CANCELLED TAXLOTS:  
502  
500

DATE PRINTED: 8/16/2018

This product is for Assessment and Taxation (A&T) purposes only and has not been prepared or is suitable for legal, engineering, surveying or any purposes other than assessment and taxation.

## **Exhibit D: Ownership Information**

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1994 MAR 31 PM 2:33

F306P0602

BARGAIN AND SALE DEED

LARRY JAMES PARK, Grantor conveys to LARRY JAMES PARK and CHERYL A. PARK, husband and wife, Grantee, the following described real property:

---See attached Exhibit "A"---

The true consideration paid for this transfer, stated in terms of dollars is \$-0-

However, the actual consideration consists of or includes other property or value given or promised which is the whole of the consideration.

THE PROPERTY DESCRIBED IN THIS INSTRUMENT MAY NOT BE WITHIN A FIRE PROTECTION DISTRICT PROTECTING STRUCTURES. THE PROPERTY IS SUBJECT TO LAND USE LAWS AND REGULATIONS, WHICH, IN FARM OR FOREST ZONES, MAY NOT AUTHORIZE CONSTRUCTION OR SITING OF A RESIDENCE AND WHICH LIMIT LAWSUITS AGAINST FARMING OR FOREST PRACTICES AS DEFINED IN ORS 30.930. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY APPROVED USES AND EXISTENCE OF FIRE PROTECTION FOR STRUCTURES.

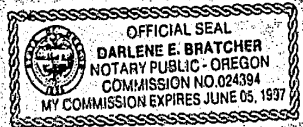
THIS INSTRUMENT WILL NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY APPROVED USES AND TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES AS DEFINED IN ORS 30.930.

In Witness Whereof, the grantor has executed this 31st day of MARCH, 1994.

*Larry James Park*  
LARRY JAMES PARK

Bargain and Sale Deed:	After Recording Return to:	Send Tax Statements to:
LARRY JAMES PARK	Drabkin and Tankersley	No change
to: CHERYL A. PARK	701 N. Evans	
Larry James Park	McMinnville, OR 97128	
STATE OF OREGON )		

County of Yamhill )  
Personally appeared LARRY JAMES PARK and acknowledged said instrument to be his free act and deed.  
Before me:



*Darlene E. Bratcher*  
NOTARY PUBLIC FOR OREGON  
My Commission Expires: \_\_\_\_\_

PAGE 1 - BARGAIN AND SALE DEED

DRABKIN AND TANKERSLEY  
P.O. Box 625, 701 North Evans Street  
McMinnville, Oregon 97128  
(503) 472-0111

3-31-94

1994 MAR 31 PM 2:33

F306P0603

Exhibit "A"

Beginning on the West line of the James Johnson and wife Donation Land Claim No. 27, Notification No. 1563, Township 3 South, Range 4 West of the Willamette Meridian at a point which is 18-1/2 rods North of the Southwest corner of said Claim; thence North along the West line of said Claim, 55-1/4 rods; thence East parallel with the South line of said Claim, 86 rods and 61 links to the center line of the county road; thence Southerly along the center of said county road to a point which is East from the point of beginning, which point is also the Northeast corner of the property described in Book 137, Page 442, Deed Records; thence West along the North line of said property a distance of 86 rods and 93 links to the place of beginning in Yamhill County, Oregon. SAVE AND EXCEPT THE FOLLOWING: Being a part of the South one-half of the Donation Land Claim of James Johnson and wife, Claim No. 67, Notification No. 1563 in Township 3 South, Range 4 West of the Willamette Meridian, Yamhill County, Oregon, beginning at an iron pipe set in the center of the County road No. 205 at a point 1482.0 feet East and North 00° 55' West 610.50 feet from stone and iron pipe at the Southwest corner of said Johnson Claim; thence West parallel with South line of said Claim, 160.3 feet to an iron pipe; thence North 130.2 feet to an iron pipe; thence West 63.9 feet to iron pipe; thence North 3° 12' East 122.58 feet to iron pipe; thence East 209.0 feet to a point in the center of the county road; thence South 00° 55' East along road 312.54 feet to beginning.

SUBJECT TO: Right of the public in streets, roads and highways and easement recorded in Book 181, Page 703, Deed Records.

005170  
 10.00  
 10.00  
 20.00

STATE OF OREGON )  
 ) ss.  
 COUNTY OF YAMHILL )

I hereby certify that this instrument was received and duly recorded by me in Yamhill County records.  
 Instrument No. \_\_\_\_\_

*Charles Stern*  
 CHARLES STERN,  
 COUNTY CLERK

3-31-94

## **Exhibit E: Transportation Impact Analysis**

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JR Meadows No. 2  
Transportation Impact Analysis  
Carlton, OR



Date:  
August 19, 2020  
Prepared for:  
Steve Reiman,  
TJA, LLC  
Prepared by:  
Terrington Smith, EIT  
Daniel Stumpf, PE

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## Executive Summary

1. A residential subdivision is proposed for construction on approximately 13.94 acres located at/near 10215 NE Old McMinnville Highway in Carlton, Oregon.
2. The proposed JR Meadows No. 2 subdivision is estimated to generate 50 trips during the morning peak hour, 65 trips during the evening peak hour, and 672 trips each weekday.
3. No crashes were found to have been reported at either of the study intersections and no safety concerns were identified.
4. Preliminary traffic signal warrants are not projected to be met at either of the study intersections under any analysis scenario.
5. Left-turn lane warrants are projected to be met at the intersection of E Main Street at 7<sup>th</sup> Street for the eastbound direction under future year 2022 conditions, regardless of whether the proposed subdivision is constructed. In addition, warrants are met for the southbound approach at the intersection of S Pine Street at E Polk Street. Although warrants are met, the site will not impact the left-turning movements of the eastbound approach of E Main Street at 7<sup>th</sup> Street and the southbound approach of S Pine Street at E Polk Street. Additionally, neither intersection had reported crashes during a five-year analysis period that could have been mitigated with the inclusion of a left-turn lane. Accordingly, no new turn lanes are recommended at these intersections.
6. The future segment of 7<sup>th</sup> Street will be classified as a Collector and is expected to have more than sufficient capacity to accommodate projected traffic utilizing the roadway safely and efficiently.
7. All study intersections are projected to operate acceptably under all analysis scenarios.



# Project Description

## Introduction

A residential subdivision is proposed for construction on a portion of the property located at/near 10215 NE Old McMinnville Highway (Tax Lot 1300) in Carlton, Oregon. The proposed subdivision will consist of 54 single family homes and up to 22 multifamily dwelling units and will have internal roadway connections to S 7<sup>th</sup> Street and subsequently E Washington Street.

Traffic impacts related to the proposed subdivision were analyzed at the following intersections:

1. E Main Street at 7<sup>th</sup> Street
2. S Pine Street at E Polk Street

The purpose of this study is to determine whether the transportation system within the vicinity of the site is capable of safely and efficiently supporting the existing and proposed uses in the area, and to determine any mitigation that may be necessary to do so. Detailed information on traffic counts, trip generation calculations, safety analyses, and level of service calculations is included in the appendix to this report.

## Location Description

The subject site is located south of E Main Street, east of S Arthur Street, and west of NE Old McMinnville Highway in Carlton, Oregon. The site includes a portion of tax lot #1300 which encompasses an approximate total of 13.94 acres. The site will be provided future access to the north by way of the in-process JR Meadows Subdivision (subsequently, access to E Washington Street will also be available), and will provide seven future connections to adjacent properties via four additional streets which end as stubs along the northern, southern, eastern, and western edges of the site.

### Vicinity Roadways

The proposed development is expected to impact four vicinity roadways. Table 1 on page 6 provides a description of each vicinity roadway.



Table 1: Vicinity Roadway Descriptions

Roadway	Jurisdiction	Functional Classification	Speed	On-street Parking	Curbs	Sidewalks
S Pine Street (OR Hwy 47)	ODOT	Rural Minor Arterial	30 mph Posted	Not Permitted	None	Yes
E Main Street	City of Carlton	Arterial	25 mph Posted	Permitted	Partial	Yes
E Polk Street	City of Carlton	School Zone Collector	25 mph Statutory	Partially Permitted	Partial	Partial
N 7th Street	Yamhill County	Collector	25 mph Statutory	Permitted	Partial	Partial

S Pine Street is under the jurisdiction of the Oregon Department of Transportation (ODOT) and is also identified as Tualatin Valley Highway or Oregon Highway 47. It is classified as a Rural Minor Arterial in the *2012 ODOT Highway Design Manual* and as a Regional Highway in the *1999 Oregon Highway Plan*.

**Study Intersections**

The proposed subdivision is expected to impact two vicinity intersections of significance. Table 2 below provides a summarized description of each study intersection.










Table 2: Vicinity Intersection Descriptions

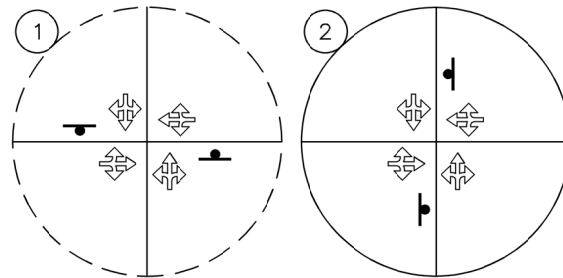
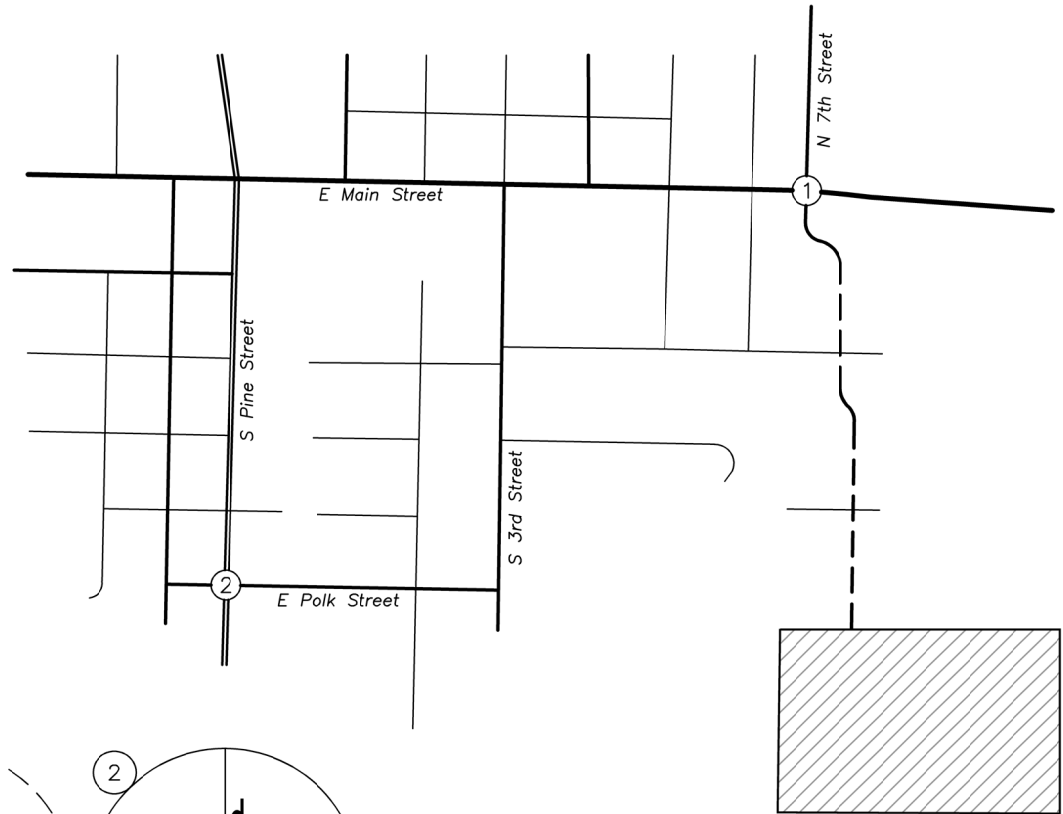
Number	Name	Geometry	Traffic Control	Phasing/Stopped Approaches
1	E Main Street at N 7th Street	Three-Legged	Stop Controlled	Stop-Controlled Southbound Approach
2	S Pine Street at E Polk Street	Four-Legged	Stop Controlled	Stop-Controlled Eastbound and Westbound Approaches

A vicinity map displaying the project site, vicinity streets, and the study intersections with their associated lane configurations and control types is shown in Figure 1 on page 7.



**LEGEND**

-  STUDY INTERSECTION (EXISTING)
-  STUDY INTERSECTION (FUTURE)
-  STOP SIGN
-  PROJECT SITE
-  RURAL MINOR ARTERIAL
-  ARTERIAL
-  COLLECTOR
-  FUTURE COLLECTOR
-  LOCAL ROADWAY



no scale

## Site Trips

### Trip Generation

The proposed subdivision will include the construction of 54 single family homes and up to 22 multifamily dwelling units. To estimate the number of trips generated by the proposed development, trips rates from the *Trip Generation Manual*<sup>1</sup> were used, data from land use codes 210, *Single-Family Detached Housing*, and 220, *Multifamily Housing (Low-Rise)*, were used based on the number of dwelling units.

The trip generation estimates are summarized in Table 3. Detailed trip generation calculations are included in the technical appendix to this report.

Table 3: Trip Generation Summary

	ITE Code	Size	Morning Peak Hour			Evening Peak Hour			Weekday Total
			Enter	Exit	Total	Enter	Exit	Total	
<b>Proposed Development</b>									
Single Family Home	210	54 Units	10	30	40	33	20	53	510
Multifamily Housing	220	22 Units	2	8	10	8	4	12	162
<b>Total</b>			12	38	50	41	24	65	672

### Trip Distribution

The directional distribution of site trips to/from the project site was estimated based on locations of likely trip destinations, locations of major transportation facilities in the site vicinity, and existing travel patterns at the study intersections. The following trip distribution was estimated and used for analysis:

- Approximately 30 percent of site trips will travel to/from the west along E Main Street;
- Approximately 25 percent of site trips will travel to/from the east along E Main Street;
- Approximately 20 percent of site trips will travel to/from the north on N Yamhill Street;
- Approximately 15 percent of site trips will travel to/from the south on S Pine Street; and
- Approximately 10 percent of site trips will travel to/from the north on S 3<sup>rd</sup> Street.

<sup>1</sup> Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 10<sup>th</sup> Edition, 2017.

Based on the site plan and the locations of available access to the transportation system, site trips are expected to access the greater transportation system via the following locations:

- Approximately 85 percent of site trips will utilize S 7<sup>th</sup> Street to access E Main Street; and
- Approximately 15 percent of site trips will utilize E Polk Street to access S Pine Street

To access E Polk Street from the project site, vehicle trips may travel north along S 7<sup>th</sup> Street until E Washington Street, turn left at the intersection, turn south on S 3<sup>rd</sup> Street, and then turn west onto E Polk Street. The same path of travel in the opposite direction can be used by vehicle trips arriving to the site.

## Traffic Volumes

### Existing Conditions

Year 2019 traffic volumes were referenced from the traffic study conducted for the adjacent JR Meadows Subdivision (dated August 2<sup>nd</sup>, 2019). To reflect existing year 2020 conditions, the volumes were increased by applying a compounded growth rate of two percent per year over a one year period at each of the study intersections.

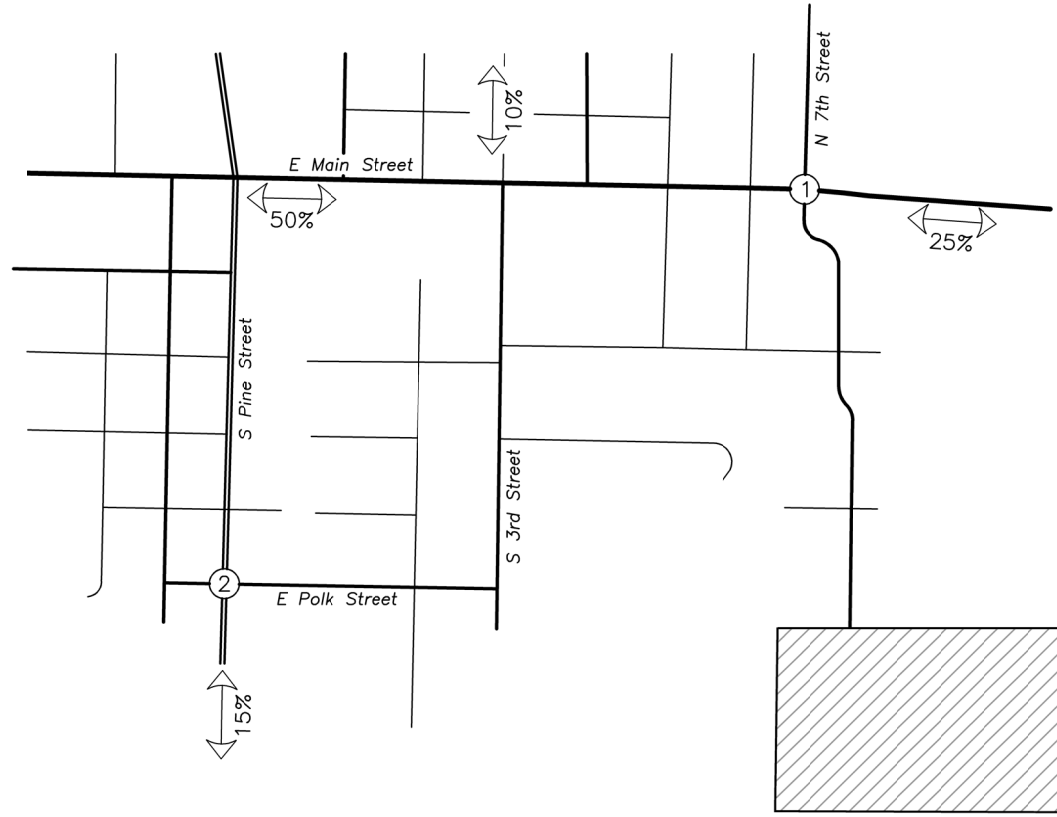
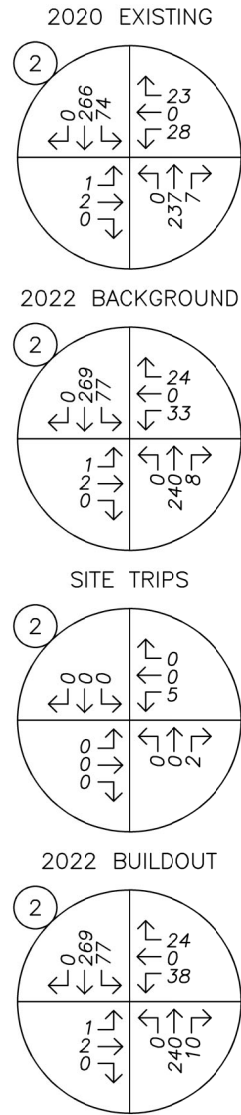
### Year 2022 Background Conditions

In order to calculate the future traffic volumes on local streets, a compounded growth rate of two percent per year was used for analysis. Growth rates for traffic volumes on Oregon Highway 47 were derived using ODOT's 2038 Future Volume Tables in accordance with the Analysis Procedures Manual (APM). Using data corresponding to milepost 38.18, a linear growth rate of 0.53 percent was calculated and applied to through volumes on the highway.

Two years of growth were applied to existing volumes in order to obtain the year 2022 background conditions for a "no-build" scenario. In addition, background volumes were adjusted to account for trips associated with the adjacent JR Meadows Subdivision. The JR Meadows Subdivision Transportation Impact Analysis (TIA) was used to obtain trip generation and trip assignment data to quantify the total number of trips travelling through the study intersections related to this report. These in-process trips were included in the year 2022 background volumes for each study intersection.

### Year 2022 Buildout Conditions

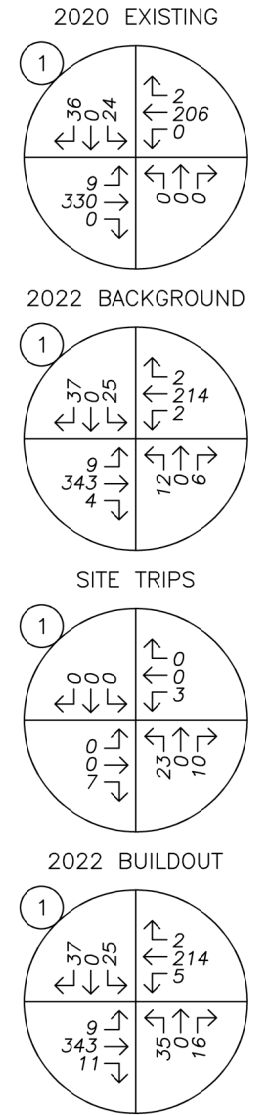
Peak hour trips calculated to be generated by the proposed development, as described earlier within the *Site Trips* section, were added to the projected year 2022 background traffic volumes to obtain the expected year 2022 buildout volumes. The traffic volumes used to analyze the proposed development scenario are shown in Figure 2 and Figure 3 for the morning and evening peak hours, respectively.



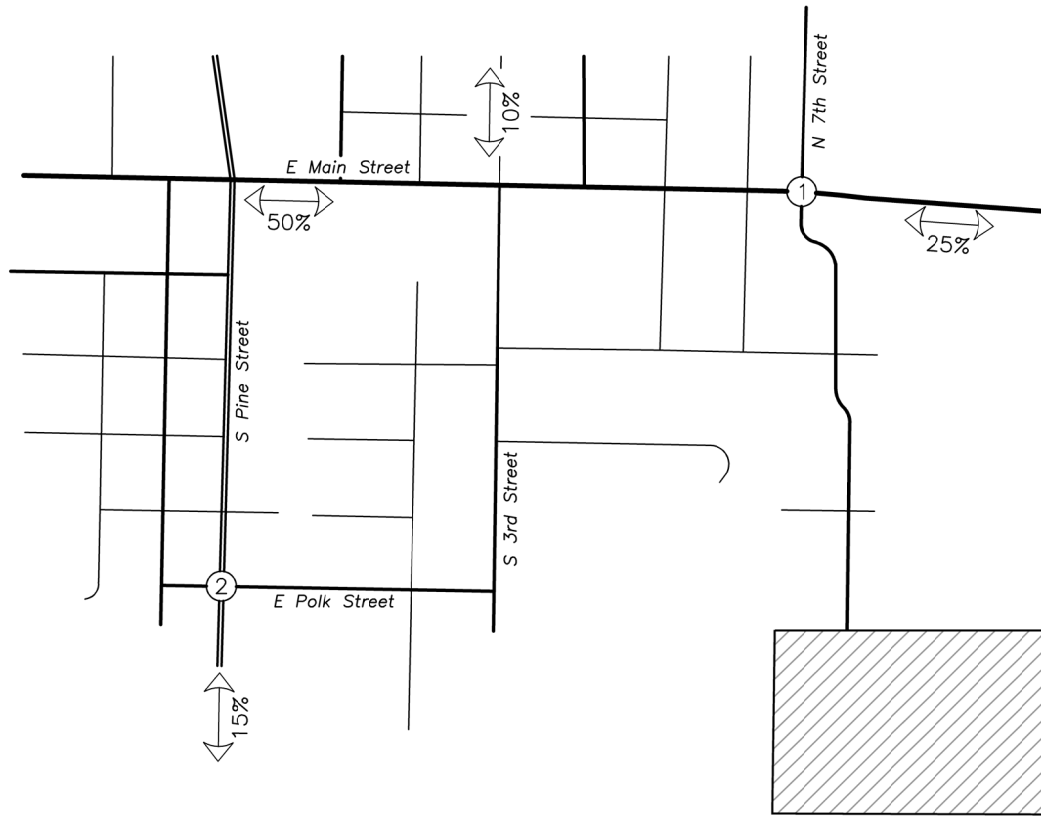
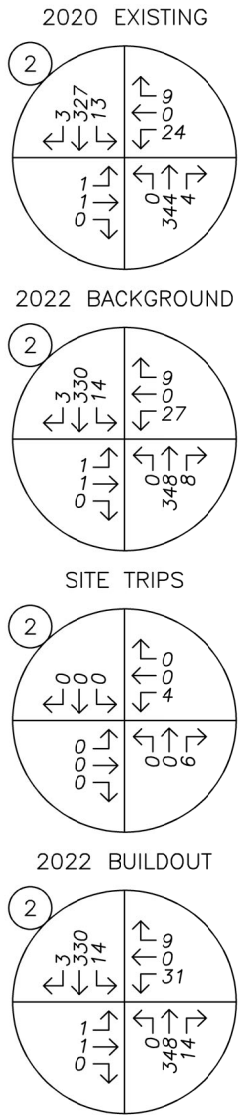
LEGEND

XX% PERCENT OF SITE TRIPS

TRIP GENERATION			
	IN	OUT	TOTAL
AM	12	38	50



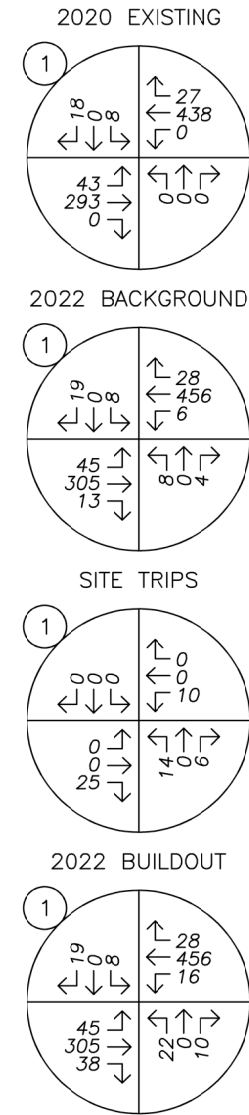




**LEGEND**

XX% PERCENT OF SITE TRIPS

TRIP GENERATION			
	IN	OUT	TOTAL
PM	41	24	65



# Safety Analysis

## Crash History Review

Using data obtained from the ODOT's Crash Analysis and Reporting Unit, a review of the most recent available five years of crash history (January 2013 to December 2017) at the study intersection was performed. The crash data was evaluated based on the number of crashes, the type of collisions, the severity of the collisions, and the resulting crash rate for the intersection.

Based on a review of the crash data, no reported crashes were found at the intersections of E Main Street at 7<sup>th</sup> Street and S Pine Street at E Polk Street during the analysis period. Accordingly, no safety concerns were identified at the study intersections.

## Warrant Analysis

### Preliminary Traffic Signal Warrants

Preliminary traffic signal warrants were examined for the unsignalized study intersections to determine whether the installation of a new traffic signal will be warranted at the intersections upon completion of the proposed development.

Low volumes were observed for the minor street approaches at each unsignalized study intersection. By examination, traffic signal warrants are not projected to be met under any of the analysis scenarios. No new installations of traffic signals are recommended.

### Left-Turn Lane Warrants

Left-turn lane warrants were examined for both study intersections. A left-turn refuge is primarily a safety consideration for the major-street approach, removing left-turning vehicles from the through traffic stream.

Warrants for an eastbound or westbound left-turn lane at the intersection of E Main Street at 7<sup>th</sup> Street were based on the methodology outlined in the National Cooperative Highway Research Program (NCHRP) Report Number 457<sup>2</sup> while warrants for a southbound or northbound left-turn lane at the intersection of S Pine Street at E Polk Street were based on design curves developed by the Texas Transportation Institute as adopted by ODOT. Both methodologies evaluate the need for a left-turn lane based on the number of left-turning vehicles, the number of travel lanes, the number of advancing and opposing vehicles, and the roadway travel speed.

An eastbound left-turn lane is projected to be warranted at the intersection of E Main Street at 7<sup>th</sup> Street under year 2022 background conditions, without construction of the proposed subdivision. It should be noted that the proposed development is not anticipated to contribute site trips to the eastbound left-turn approach.

Additionally, based on the crash data analysis, there were no crashes reported that could be mitigated by the installation of a turn lane whereby no turn lanes are recommended at this intersection.

Left-turn lane warrants are met for the southbound approach at the intersection of S Pine Street at E Polk Street under existing conditions. The proposed development is not expected to contribute site trips to the southbound left-turn approach nor were any rear-end collisions reported at the intersection. Since the proposed

---

<sup>2</sup> Bonneson, James A. and Michael D. Fontaine, NCHRP Report 457: An Engineering Study Guide for Evaluating Intersection Improvements, Transportation Research Board, 2001.

development is not expected to contribute vehicle trips to this movement and the crash data does not indicate any significant safety issue that could be remedied by a dedicated left-turn lane, no new turn lane is recommended at this intersection.

No other turn lanes are projected to be warranted. Detailed warrant analyses for each study intersection are included in the technical appendix to this report.

## S 7<sup>th</sup> Street Traffic Volumes

Once constructed, the segment of 7<sup>th</sup> Street located south of E Main Street will be classified as a Collector roadway. Collector roadways are considered a higher classification of road than a Local Street and a lower classification than an Arterial. Generally, the higher the roadway classification, the more traffic the roadway can safely and efficiently serve.

Upon inspecting the traffic volumes at the intersection of E Main Street at 7<sup>th</sup> Street, the segment of 7<sup>th</sup> Street south of the intersection is anticipated to serve approximately 890 average daily trips (i.e. approximately 10 times the evening peak hour traffic volumes along the road). Generally, Local Streets are designed to accommodate up to 1,000 vehicle trips per day. Given the future segment of 7<sup>th</sup> Street will be classified as a Collector, the roadway is expected to have more than sufficient capacity to accommodate traffic in a safe and efficient manner.

## Operational Analysis

A capacity and delay analysis was conducted for the study intersections per the unsignalized intersection analysis methodologies in the *Highway Capacity Manual*<sup>3</sup> (HCM). Study intersections were evaluated during the morning and evening peak hours under the following conditions:

- Year 2020 existing conditions;
- Year 2022 background traffic conditions, assuming no additional development on site; and
- Year 2022 buildout traffic conditions, assuming the proposed development is completed and occupied;

Intersections are generally evaluated based on the average control delay experienced by vehicles and are assigned a grade according to their operation. The level of service (LOS) of an intersection can range from LOS A, which indicates very little or no delay experienced by vehicles, to LOS F, which indicates a high degree of congestion and delay. The volume-to-capacity (v/c) ratio is a measure that compares the traffic volumes (demand) against the available capacity of an intersection.

The City of Carlton does not have an adopted performance standard for intersection operation. Generally, unsignalized intersections operating at LOS E are considered to be operating acceptably.

The intersection of S Pine Street at E Polk Street is under the jurisdiction of ODOT. The applicable minimum operational standards for ODOT facilities are established under the Oregon Highway Plan<sup>4</sup> and are based on the classification of the roadway and its v/c ratio. Regional Highways with speed limits less than 35 mph that are

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<sup>3</sup> Transportation Research Board, *Highway Capacity Manual, 6<sup>th</sup> Edition, 2016*.

<sup>4</sup> Oregon Department of Transportation, 1999 Oregon Highway Plan, Including Amendments November 1999 through May 2015, 1999.

inside the Urban Growth Boundary but aren't within a Metropolitan Planning Organization are required to operate with a v/c ratio of 0.90 or better.

The v/c, delay, and LOS results of the capacity analysis are shown in Table 4 on page 14 for the morning and evening peak hours. Detailed calculations as well as tables showing the relationship between delay and LOS are included in the appendix to this report.

Table 4: Intersection Capacity Analysis

	Morning Peak Hour			Evening Peak Hour		
	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c
<b>1 E Main Street at 7th Street</b>						
2020 Existing Conditions	B	12	0.11	B	14	0.06
2022 Background Conditions	B	14	0.13	C	18	0.07
2022 Buildout Conditions	C	15	0.14	C	21	0.13
<b>2 S Pine Street at E Polk Street</b>						
2020 Existing Conditions	C	17	0.13	C	17	0.12
2022 Background Conditions	C	17	0.16	C	18	0.14
2022 Buildout Conditions	C	17	0.18	C	19	0.15

**BOLDED** results indicate operation above acceptable jurisdictional standards.

Based on the above results, all study intersections are currently operating acceptably per their respective jurisdictional standards and are projected to continue operating acceptably all analysis scenarios.



## Conclusions

No crashes were found to have been reported at either of the study intersections and no safety concerns were identified.

Preliminary traffic signal warrants are not projected to be met at either of the study intersections under any analysis scenario.

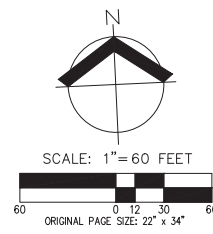
Left-turn lane warrants are projected to be met at the intersection of E Main Street at 7<sup>th</sup> Street for the eastbound direction under future year 2022 conditions, regardless of whether the proposed subdivision is constructed. In addition, warrants are met for the southbound approach at the intersection of S Pine Street at E Polk Street. Although warrants are met, the site will not impact the left-turning movements of the eastbound approach of E Main Street at 7<sup>th</sup> Street and the southbound approach of S Pine Street at E Polk Street. Additionally, neither intersection had reported crashes during a five-year analysis period that could have been mitigated with the inclusion of a left-turn lane. Accordingly, no new turn lanes are recommended at these intersections.

The future segment of 7<sup>th</sup> Street will be classified as a Collector and is expected to have more than sufficient capacity to accommodate projected traffic utilizing the roadway safely and efficiently.

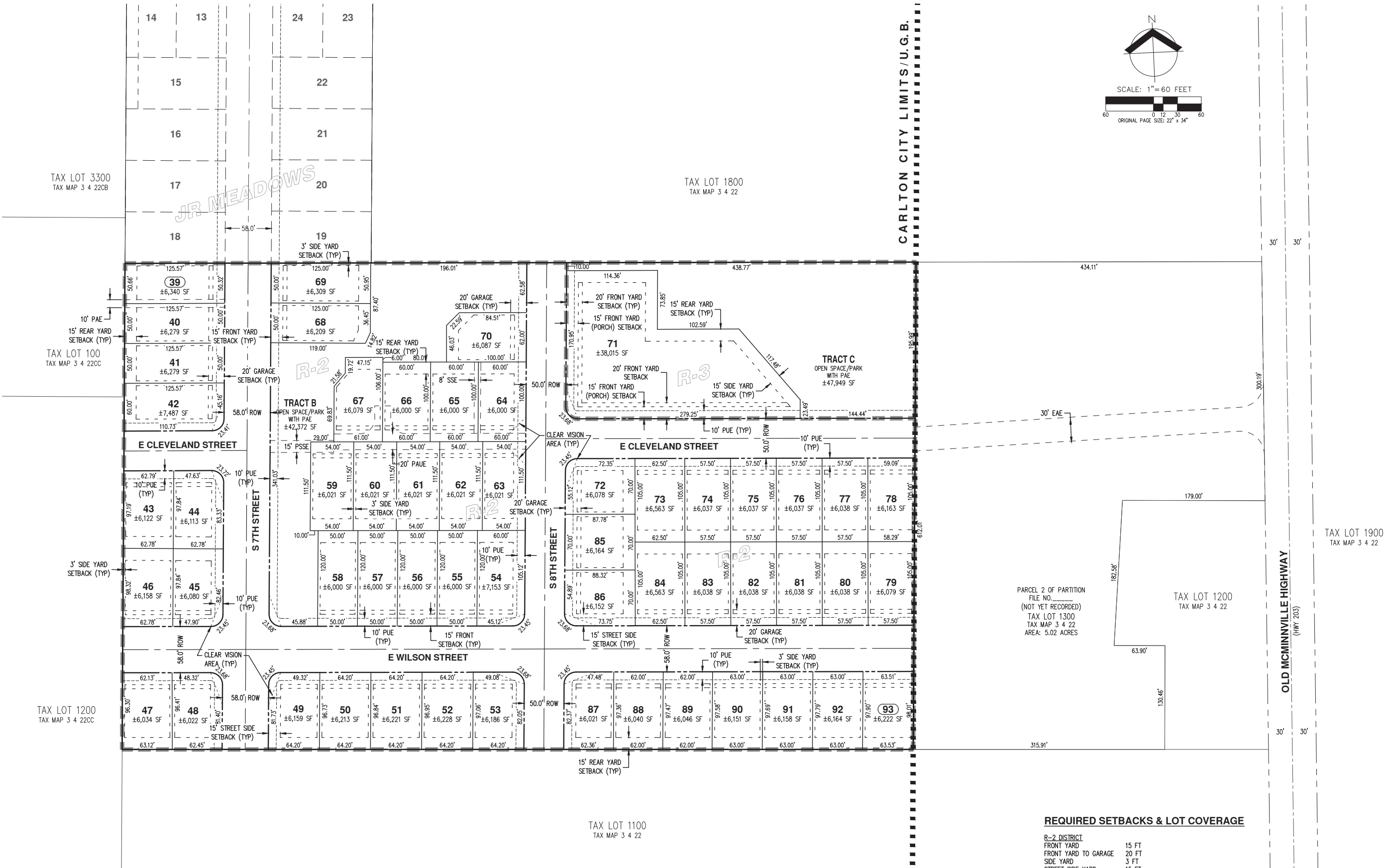
All study intersections are projected to operate acceptably under all analysis scenarios.

# Appendix





CARLTON CITY LIMITS / U.G.B.



**EASEMENT LEGEND**

PUBLIC UTILITY EASEMENT	PUE
PUBLIC ACCESS AND UTILITY EASEMENT	PAUE
PUBLIC ACCESS EASEMENT	PAE
PUBLIC SANITARY SEWER EASEMENT	PSSE
EMERGENCY ACCESS EASEMENT	EAE
PRIVATE SANITARY SEWER EASEMENT	SSE

**OPEN SPACE NOTES:**

- TRACT B & C SHALL EITHER BE OWNED AND MAINTAINED BY A HOMEOWNERS ASSOCIATION OR DEDICATED TO THE CITY OF CARLTON.

**ACREAGE**

R-2 ZONE	11.97 AC
R-3 ZONE	1.97 AC
<b>TOTAL</b>	<b>13.94 AC</b>

**REQUIRED SETBACKS & LOT COVERAGE**

<b>R-2 DISTRICT</b>	
FRONT YARD	15 FT
FRONT YARD TO GARAGE	20 FT
SIDE YARD	3 FT
STREET SIDE YARD	15 FT
REAR YARD	15 FT
COMBINED MAXIMUM LOT COVERAGE:	
BUILDING HEIGHT < 20 FT	80%
BUILDING HEIGHT > 20 FT	65%
<b>R-3 DISTRICT</b>	
FRONT YARD	20 FT
FRONT YARD TO PORCH	15 FT
SIDE YARD	7 FT
STREET SIDE YARD	20 FT
REAR YARD	15 FT
COMBINED MAXIMUM LOT COVERAGE:	70%

**NOTE:**  
 THE PURPOSE OF THIS PRELIMINARY SUBDIVISION PLAT IS TO SHOW LOT DIMENSIONS AND AREAS FOR PLANNING PURPOSES. THIS IS NOT AN OFFICIAL RECORDED FINAL PLAT AND IS NOT TO BE USED FOR SURVEY PURPOSES. ALL DIMENSIONS ARE SUBJECT TO CHANGE.

**PRELIMINARY SUBDIVISION PLAT  
 WITH FUTURE BUILDING SETBACKS  
 JR MEADOWS NO. 2  
 CARLTON, OREGON**



RENEWED: DECEMBER 31, 2021

JOB NUMBER:	7395-01
DATE:	08/13/2020
DESIGNED BY:	AJD
DRAWN BY:	CL
CHECKED BY:	RSW

**P-03**



## TRIP GENERATION CALCULATIONS Proposed Conditions

*Land Use:* Single-Family Detached Housing  
*Land Use Code:* 210  
*Setting/Location:* General Urban/Suburban  
*Variable:* Dwelling Units  
*Variable Value:* 54

### AM PEAK HOUR

*Trip Rate:* 0.74

	Enter	Exit	Total
Directional Distribution	25%	75%	
Trip Ends	<b>10</b>	<b>30</b>	<b>40</b>

### PM PEAK HOUR

*Trip Rate:* 0.99

	Enter	Exit	Total
Directional Distribution	63%	37%	
Trip Ends	<b>33</b>	<b>20</b>	<b>53</b>

### WEEKDAY

*Trip Rate:* 9.44

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	<b>255</b>	<b>255</b>	<b>510</b>

### SATURDAY

*Trip Rate:* 9.54

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	<b>258</b>	<b>258</b>	<b>516</b>

Source: Trip Generation Manual, Tenth Edition





## TRIP GENERATION CALCULATIONS

*Land Use:* Multifamily Housing (Low-Rise)  
*Land Use Code:* 220  
*Setting/Location:* General Urban/Suburban  
*Variable:* Dwelling Units  
*Variable Value:* 22

### AM PEAK HOUR

*Trip Rate:* 0.46

	Enter	Exit	Total
Directional Distribution	23%	77%	
Trip Ends	<b>2</b>	<b>8</b>	<b>10</b>

### PM PEAK HOUR

*Trip Rate:* 0.56

	Enter	Exit	Total
Directional Distribution	63%	37%	
Trip Ends	<b>8</b>	<b>4</b>	<b>12</b>

### WEEKDAY

*Trip Rate:* 7.32

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	<b>81</b>	<b>81</b>	<b>162</b>

### SATURDAY

*Trip Rate:* 8.14

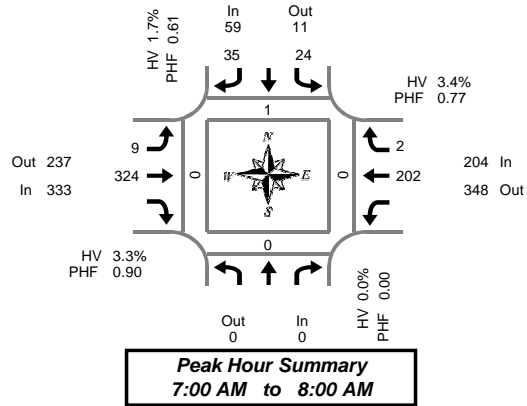
	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	<b>90</b>	<b>90</b>	<b>180</b>

Source: TRIP GENERATION, Tenth Edition

# Total Vehicle Summary



Clay Carney  
(503) 833-2740



## N 7th St & E Main St

Tuesday, May 14, 2019  
7:00 AM to 9:00 AM

### 5-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound N 7th St				Southbound N 7th St				Eastbound E Main St			Westbound E Main St				Interval Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	L	R	Total	Bikes	L	T	Bikes	T	R	Bikes	North		South	East	West	
7:00 AM	0	3	3	0	4	0	0	0	29	0	10	0	0	46	1	0	0	0		
7:05 AM	0	3	3	0	5	0	0	0	28	0	10	0	0	46	0	0	0	0		
7:10 AM	0	7	7	0	2	0	0	0	23	0	10	0	0	42	0	0	0	0		
7:15 AM	0	2	2	0	4	0	1	1	29	0	13	0	0	49	0	0	0	0		
7:20 AM	0	1	1	0	1	0	1	2	22	0	14	0	0	39	0	0	0	0		
7:25 AM	0	1	1	0	4	0	0	0	23	0	17	1	0	46	0	0	0	0		
7:30 AM	0	2	2	0	4	0	0	0	30	0	21	1	0	58	0	0	0	0		
7:35 AM	0	0	0	0	1	0	0	0	28	0	25	0	1	54	0	0	0	0		
7:40 AM	0	0	0	0	4	0	3	3	31	0	16	0	0	54	0	0	0	0		
7:45 AM	0	2	2	0	3	0	0	0	27	0	24	0	0	56	0	0	0	0		
7:50 AM	0	1	1	0	2	0	1	1	21	0	25	0	0	50	0	0	0	0		
7:55 AM	0	2	2	0	1	0	3	3	33	0	17	0	0	56	0	0	0	0		
8:00 AM	0	0	0	0	3	0	1	1	23	0	16	0	0	43	0	0	0	0		
8:05 AM	0	0	0	0	2	0	2	2	23	0	8	0	0	35	1	0	0	0		
8:10 AM	0	1	1	0	2	0	0	0	20	0	9	1	0	33	1	0	0	0		
8:15 AM	0	1	1	0	1	0	2	2	28	0	5	0	0	37	0	0	0	0		
8:20 AM	0	2	2	0	2	0	0	0	23	0	14	0	0	41	0	0	0	0		
8:25 AM	0	1	1	0	4	0	0	0	23	0	16	0	0	44	0	0	0	0		
8:30 AM	0	1	1	0	2	0	0	0	18	0	16	1	0	38	0	0	0	0		
8:35 AM	0	1	1	0	1	0	2	2	30	0	9	0	0	43	1	0	0	0		
8:40 AM	0	1	1	0	1	0	1	1	24	0	9	1	0	37	0	0	0	0		
8:45 AM	0	0	0	0	2	0	2	2	15	0	8	0	0	27	0	0	0	0		
8:50 AM	0	2	2	0	1	0	2	1	13	0	9	0	0	27	0	0	0	0		
8:55 AM	0	2	2	0	2	0	0	0	18	0	13	1	0	36	0	0	0	0		
Total Survey	0	36	36	0	58	0	21	582	0	334	6	1	1,037	4	0	0	0			

### 15-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound N 7th St				Southbound N 7th St				Eastbound E Main St			Westbound E Main St				Interval Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	L	R	Total	Bikes	L	T	Bikes	T	R	Bikes	North		South	East	West	
7:00 AM	0	13	13	0	11	0	0	0	80	0	30	0	0	134	1	0	0	0		
7:15 AM	0	4	4	0	9	0	2	7	74	0	44	1	0	134	0	0	0	0		
7:30 AM	0	2	2	0	9	0	3	8	89	0	62	1	1	166	0	0	0	0		
7:45 AM	0	5	5	0	6	0	4	8	81	0	66	0	0	162	0	0	0	0		
8:00 AM	0	1	1	0	7	0	3	6	66	0	33	1	0	111	2	0	0	0		
8:15 AM	0	4	4	0	7	0	2	7	74	0	35	0	0	122	0	0	0	0		
8:30 AM	0	3	3	0	4	0	3	7	72	0	34	2	0	118	1	0	0	0		
8:45 AM	0	4	4	0	5	0	4	4	46	0	30	1	0	90	0	0	0	0		
Total Survey	0	36	36	0	58	0	21	582	0	334	6	1	1,037	4	0	0	0			

### Peak Hour Summary 7:00 AM to 8:00 AM

By Approach	Northbound N 7th St				Southbound N 7th St				Eastbound E Main St				Westbound E Main St				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	0	0	0	0	59	11	70	0	333	237	570	0	204	348	552	1	596	1	0	0	0
%HV	0.0%				1.7%				3.3%				3.4%				3.2%				
PHF	0.00				0.61				0.90				0.77				0.90				

By Movement	Northbound N 7th St				Southbound N 7th St				Eastbound E Main St				Westbound E Main St				Total
	Total	L	R	Total	L	T	Total	L	T	Total	T	R	Total	Total			
Volume	0	24	35	59	9	324	333	202	2	204	596	2	204	596			
%HV	NA	NA	NA	0.0%	0.0%	NA	2.9%	1.7%	0.0%	3.4%	NA	3.3%	NA	3.0%	50.0%	3.4%	3.2%
PHF		0.00	0.46	0.80	0.61	0.56	0.91	0.90		0.77	0.25	0.77	0.90				

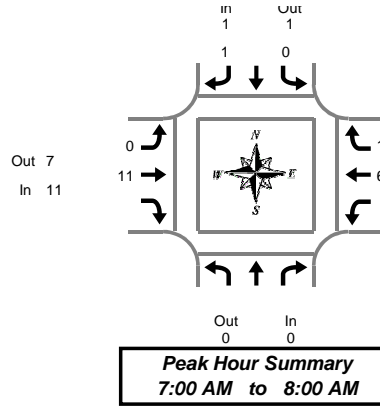
### Rolling Hour Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound N 7th St				Southbound N 7th St				Eastbound E Main St			Westbound E Main St				Interval Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	L	R	Total	Bikes	L	T	Bikes	T	R	Bikes	North		South	East	West	
7:00 AM	0	24	24	0	35	0	9	324	0	202	2	1	596	1	0	0	0			
7:15 AM	0	12	12	0	31	0	12	310	0	205	3	1	573	2	0	0	0			
7:30 AM	0	12	12	0	29	0	12	310	0	196	2	1	561	2	0	0	0			
7:45 AM	0	13	13	0	24	0	12	293	0	168	3	0	513	3	0	0	0			
8:00 AM	0	12	12	0	23	0	12	258	0	132	4	0	441	3	0	0	0			

# Heavy Vehicle Summary



Clay Carney  
(503) 833-2740



## N 7th St & E Main St

Tuesday, May 14, 2019  
7:00 AM to 9:00 AM

### Heavy Vehicle 5-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound N 7th St			Southbound N 7th St			Eastbound E Main St			Westbound E Main St			Interval Total
	In	Out	Total	L	R	Total	L	T	Total	T	R	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	1	0	1	1
7:05 AM	0	0	0	0	0	0	0	2	2	0	0	0	2
7:10 AM	0	0	0	0	0	0	0	2	2	1	0	1	3
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:20 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:25 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	1	1	1
7:35 AM	0	0	0	0	0	0	0	2	2	1	0	1	3
7:40 AM	0	0	0	1	1	0	0	0	0	1	0	1	2
7:45 AM	0	0	0	0	0	0	0	1	1	2	0	2	3
7:50 AM	0	0	0	0	0	0	0	1	1	0	0	0	1
7:55 AM	0	0	0	0	0	0	0	3	3	0	0	0	3
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:05 AM	0	0	0	0	0	0	0	1	1	0	0	0	1
8:10 AM	0	0	0	0	0	0	0	0	0	1	0	1	1
8:15 AM	0	0	0	0	0	0	0	2	2	1	0	1	3
8:20 AM	0	0	0	0	0	0	0	1	1	0	0	0	1
8:25 AM	0	0	0	0	0	0	0	1	1	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:35 AM	0	0	0	1	1	0	0	2	2	1	0	1	4
8:40 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	1	0	1	1	2	0	2	3
8:50 AM	0	0	0	0	0	0	0	1	1	2	0	2	3
8:55 AM	0	0	0	0	0	0	0	3	3	1	0	1	4
Total Survey	0	0	0	2	2	1	22	23	14	1	15	40	40

### Heavy Vehicle 15-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound N 7th St			Southbound N 7th St			Eastbound E Main St			Westbound E Main St			Interval Total
	In	Out	Total	L	R	Total	L	T	Total	T	R	Total	
7:00 AM	0	0	0	0	0	0	0	4	4	2	0	2	6
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	1	1	0	0	2	2	2	1	3	6
7:45 AM	0	0	0	0	0	0	0	5	5	2	0	2	7
8:00 AM	0	0	0	0	0	0	0	1	1	1	0	1	2
8:15 AM	0	0	0	0	0	0	0	4	4	1	0	1	5
8:30 AM	0	0	0	1	1	0	0	2	2	1	0	1	4
8:45 AM	0	0	0	0	0	1	4	5	5	5	0	5	10
Total Survey	0	0	0	2	2	1	22	23	14	1	15	40	40

### Heavy Vehicle Peak Hour Summary 7:00 AM to 8:00 AM

By Approach	Northbound N 7th St			Southbound N 7th St			Eastbound E Main St			Westbound E Main St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	1	1	2	11	7	18	7	11	18	19
PHF	0.00			0.25			0.55			0.44			0.59

By Movement	Northbound N 7th St			Southbound N 7th St			Eastbound E Main St			Westbound E Main St			Total
	In	Out	Total	L	R	Total	L	T	Total	T	R	Total	
Volume	0	0	0	1	1	0	11	7	11	6	1	7	19
PHF	0.00	0.00		0.25	0.25	0.00	0.55	0.55	0.55	0.38	0.25	0.44	0.59

### Heavy Vehicle Rolling Hour Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound N 7th St			Southbound N 7th St			Eastbound E Main St			Westbound E Main St			Interval Total
	In	Out	Total	L	R	Total	L	T	Total	T	R	Total	
7:00 AM	0	0	0	1	1	0	11	7	11	6	1	7	19
7:15 AM	0	0	0	1	1	0	8	8	8	5	1	6	15
7:30 AM	0	0	0	1	1	0	12	12	12	6	1	7	20
7:45 AM	0	0	0	1	1	0	12	12	12	5	0	5	18
8:00 AM	0	0	0	1	1	1	11	11	12	8	0	8	21

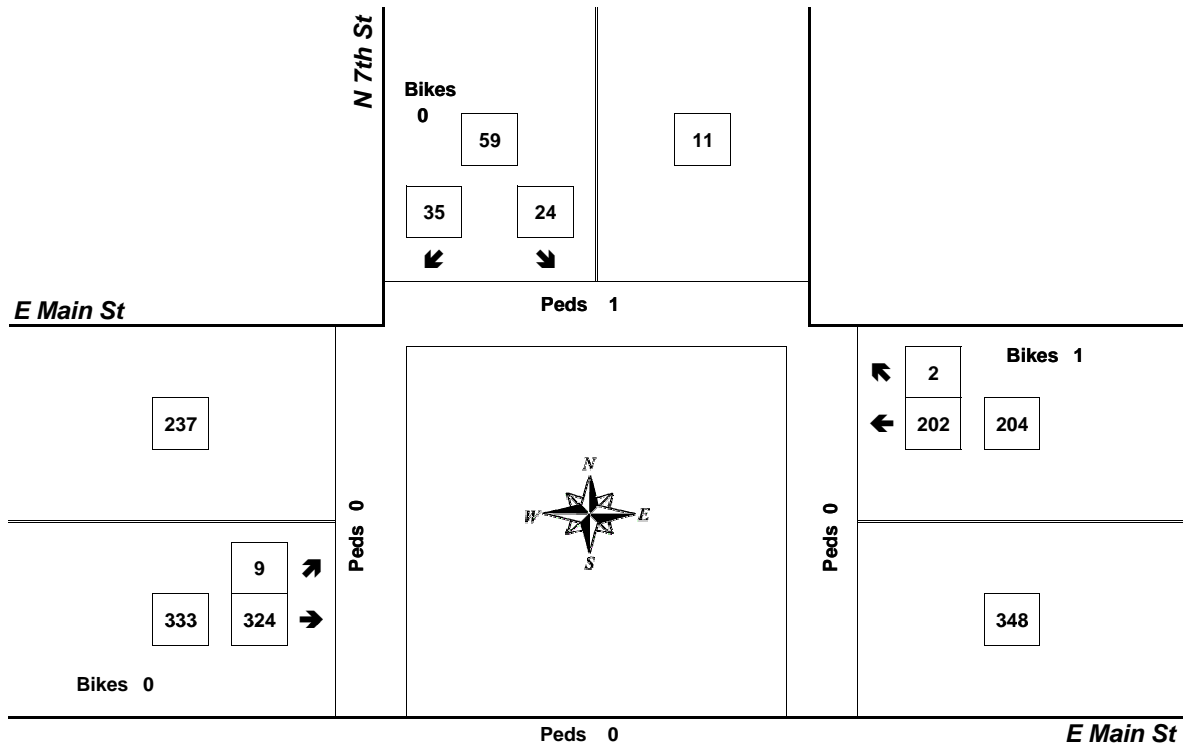
# Peak Hour Summary



Clay Carney  
(503) 833-2740

## N 7th St & E Main St

7:00 AM to 8:00 AM  
Tuesday, May 14, 2019



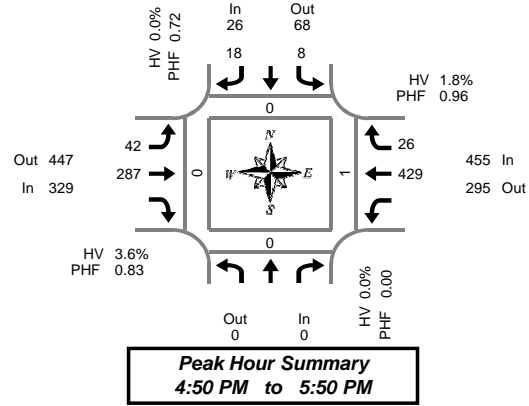
Approach	PHF	HV%	Volume
EB	0.90	3.3%	333
WB	0.77	3.4%	204
NB	0.00	0.0%	0
SB	0.61	1.7%	59
<b>Intersection</b>	<b>0.90</b>	<b>3.2%</b>	<b>596</b>

Count Period: 7:00 AM to 9:00 AM

# Total Vehicle Summary



Clay Carney  
(503) 833-2740



## N 7th St & E Main St

Tuesday, May 14, 2019  
4:00 PM to 6:00 PM

### 5-Minute Interval Summary 4:00 PM to 6:00 PM

Interval Start Time	Northbound N 7th St				Southbound N 7th St				Eastbound E Main St			Westbound E Main St			Interval Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	L	R	Total	Bikes	L	T	Bikes	T	R	Bikes		North	South	East	West
4:00 PM	0	0	0	0	2	0	2	0	2	17	0	21	1	0	43	0	0	0	0
4:05 PM	0	2	2	0	2	0	3	23	0	26	3	0	59	0	0	0	0	0	
4:10 PM	0	1	1	0	1	0	1	18	0	34	3	0	59	0	0	0	0	0	
4:15 PM	0	1	1	0	1	0	1	28	0	31	3	0	65	0	0	0	0	0	
4:20 PM	0	0	0	0	1	0	1	19	0	41	2	0	64	0	0	0	0	0	
4:25 PM	0	0	0	0	0	0	1	25	0	49	1	0	76	0	0	0	0	0	
4:30 PM	0	0	0	0	2	0	3	25	0	20	0	0	50	0	0	0	0	0	
4:35 PM	0	1	1	0	2	0	4	21	0	30	3	0	61	0	0	0	0	0	
4:40 PM	0	1	1	0	1	0	3	25	0	30	2	0	62	0	0	0	0	0	
4:45 PM	0	0	0	0	2	0	0	28	0	27	2	0	59	0	0	0	0	0	
4:50 PM	0	0	0	0	0	0	2	24	0	32	1	0	59	0	0	0	0	0	
4:55 PM	0	0	0	0	0	0	4	29	0	41	3	0	77	0	0	0	0	0	
5:00 PM	0	1	1	0	3	0	4	24	0	36	4	0	72	0	0	0	0	0	
5:05 PM	0	1	1	0	2	0	3	14	0	32	1	0	53	0	0	0	0	0	
5:10 PM	0	1	1	0	1	0	3	25	0	37	0	0	67	0	0	0	0	0	
5:15 PM	0	1	1	0	2	0	4	25	0	36	0	0	68	0	0	0	0	0	
5:20 PM	0	0	0	0	1	0	8	17	0	42	2	0	70	0	0	0	0	0	
5:25 PM	0	0	0	0	4	0	1	27	0	29	2	0	63	0	0	0	0	0	
5:30 PM	0	0	0	0	1	0	5	27	0	37	2	0	72	0	0	0	0	0	
5:35 PM	0	1	1	0	1	0	4	35	0	34	2	0	77	0	0	1	0	0	
5:40 PM	0	1	1	0	0	0	2	21	1	40	4	4	68	0	0	0	0	0	
5:45 PM	0	2	2	0	3	0	2	19	0	33	5	0	64	0	0	0	0	0	
5:50 PM	0	0	0	0	3	0	2	33	0	16	4	0	58	0	0	0	0	0	
5:55 PM	0	1	1	0	2	0	0	20	0	22	2	0	47	0	0	0	0	0	
Total Survey	0	15	15	0	38	0	63	569	1	776	52	0	1,513	0	0	1	0	0	

### 15-Minute Interval Summary 4:00 PM to 6:00 PM

Interval Start Time	Northbound N 7th St				Southbound N 7th St				Eastbound E Main St			Westbound E Main St			Interval Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	L	R	Total	Bikes	L	T	Bikes	T	R	Bikes		North	South	East	West
4:00 PM	0	3	3	0	6	0	6	58	0	81	7	0	161	0	0	0	0	0	
4:15 PM	0	1	1	0	2	0	3	72	0	121	6	0	205	0	0	0	0	0	
4:30 PM	0	2	2	0	5	0	10	71	0	80	5	0	173	0	0	0	0	0	
4:45 PM	0	0	0	0	2	0	6	81	0	100	6	0	195	0	0	0	0	0	
5:00 PM	0	3	3	0	6	0	10	63	0	105	5	0	192	0	0	0	0	0	
5:15 PM	0	1	1	0	7	0	13	69	0	107	4	0	201	0	0	0	0	0	
5:30 PM	0	2	2	0	2	0	11	83	1	111	8	0	217	0	0	1	0	0	
5:45 PM	0	3	3	0	8	0	4	72	0	71	11	0	169	0	0	0	0	0	
Total Survey	0	15	15	0	38	0	63	569	1	776	52	0	1,513	0	0	1	0	0	

### Peak Hour Summary 4:50 PM to 5:50 PM

By Approach	Northbound N 7th St				Southbound N 7th St				Eastbound E Main St			Westbound E Main St			Total	Pedestrians Crosswalk					
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out		Total	North	South	East	West	
Volume	0	0	0	0	26	68	94	0	329	447	776	1	455	295	750	0	810	0	0	1	0
%HV	0.0%				0.0%				3.6%			1.8%			2.5%						
PHF	0.00				0.72				0.83			0.96			0.93						

By Movement	Northbound N 7th St				Southbound N 7th St				Eastbound E Main St			Westbound E Main St			Total		
	In	Out	Total	Bikes	L	R	Total	Bikes	L	T	Total	T	R	Total			
Volume	0	0	0	0	8	18	26	42	287	329	429	26	455	810			
%HV	NA	NA	NA	0.0%	0.0%	NA	0.0%	0.0%	0.0%	4.2%	NA	3.6%	NA	1.6%	3.8%	1.8%	2.5%
PHF				0.00	0.50	0.64	0.72	0.70	0.81	0.83	0.93	0.59	0.96	0.93			

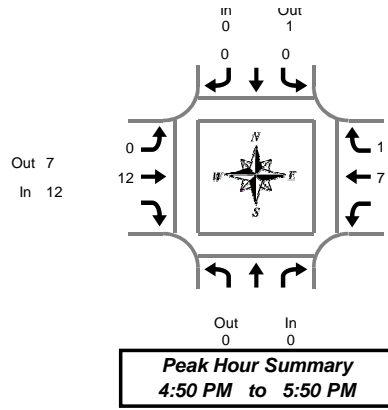
### Rolling Hour Summary 4:00 PM to 6:00 PM

Interval Start Time	Northbound N 7th St				Southbound N 7th St				Eastbound E Main St			Westbound E Main St			Interval Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	L	R	Total	Bikes	L	T	Bikes	T	R	Bikes		North	South	East	West
4:00 PM	0	6	6	0	15	0	25	282	0	382	24	0	734	0	0	0	0	0	
4:15 PM	0	6	6	0	15	0	29	287	0	406	22	0	765	0	0	0	0	0	
4:30 PM	0	6	6	0	20	0	39	284	0	392	20	0	761	0	0	0	0	0	
4:45 PM	0	6	6	0	17	0	40	296	1	423	23	0	805	0	0	1	0	0	
5:00 PM	0	9	9	0	23	0	38	287	1	394	28	0	779	0	0	1	0	0	

# Heavy Vehicle Summary



Clay Carney  
(503) 833-2740



## N 7th St & E Main St

Tuesday, May 14, 2019  
4:00 PM to 6:00 PM

### Heavy Vehicle 5-Minute Interval Summary 4:00 PM to 6:00 PM

Interval Start Time	Northbound N 7th St			Southbound N 7th St			Eastbound E Main St			Westbound E Main St			Interval Total	
	In	Out	Total	L	R	Total	L	T	Total	T	R	Total		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:05 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	
4:10 PM	0	0	0	0	0	0	0	0	0	3	0	3	3	
4:15 PM	0	0	0	0	0	0	0	0	0	4	0	4	4	
4:20 PM	0	0	0	0	0	0	0	0	0	2	0	2	2	
4:25 PM	0	0	0	0	0	0	0	0	0	1	0	1	1	
4:30 PM	0	0	0	0	0	0	2	2	2	1	0	1	3	
4:35 PM	0	1	1	0	1	1	0	0	0	3	0	3	4	
4:40 PM	0	0	0	0	0	0	0	0	0	1	0	1	1	
4:45 PM	0	0	0	0	0	0	1	1	1	0	0	0	1	
4:50 PM	0	0	0	0	0	0	0	0	0	1	0	1	1	
4:55 PM	0	0	0	0	0	0	1	1	1	0	0	0	1	
5:00 PM	0	0	0	0	0	0	2	2	2	2	0	2	4	
5:05 PM	0	0	0	0	0	0	1	1	1	1	0	1	2	
5:10 PM	0	0	0	0	0	0	2	2	2	0	0	0	2	
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:20 PM	0	0	0	0	0	0	1	1	1	1	0	1	2	
5:25 PM	0	0	0	0	0	0	2	2	2	0	0	0	2	
5:30 PM	0	0	0	0	0	0	1	1	1	1	0	1	2	
5:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:40 PM	0	0	0	0	0	0	2	2	2	0	0	0	2	
5:45 PM	0	0	0	0	0	0	0	0	0	1	1	2	2	
5:50 PM	0	0	0	0	0	0	0	0	0	1	0	1	1	
5:55 PM	0	0	0	0	0	0	1	1	1	0	0	0	1	
Total Survey			0	1	0	1	0	16	16		24	1	25	42

### Heavy Vehicle 15-Minute Interval Summary 4:00 PM to 6:00 PM

Interval Start Time	Northbound N 7th St			Southbound N 7th St			Eastbound E Main St			Westbound E Main St			Interval Total	
	In	Out	Total	L	R	Total	L	T	Total	T	R	Total		
4:00 PM	0	0	0	0	0	0	0	0	0	4	0	4	4	
4:15 PM	0	0	0	0	0	0	0	0	0	7	0	7	7	
4:30 PM	0	1	1	0	1	1	2	2	2	5	0	5	8	
4:45 PM	0	0	0	0	0	0	2	2	2	1	0	1	3	
5:00 PM	0	0	0	0	0	0	5	5	5	3	0	3	8	
5:15 PM	0	0	0	0	0	0	3	3	3	1	0	1	4	
5:30 PM	0	0	0	0	0	0	3	3	3	1	0	1	4	
5:45 PM	0	0	0	0	0	0	1	1	1	2	1	3	4	
Total Survey			0	1	0	1	0	16	16		24	1	25	42

### Heavy Vehicle Peak Hour Summary 4:50 PM to 5:50 PM

By Approach	Northbound N 7th St			Southbound N 7th St			Eastbound E Main St			Westbound E Main St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	0	1	1	12	7	19	8	12	20	20
PHF	0.00			0.00			0.60			0.67			0.63

By Movement	Northbound N 7th St			Southbound N 7th St			Eastbound E Main St			Westbound E Main St			Total	
	In	Out	Total	L	R	Total	L	T	Total	T	R	Total		
Volume			0	0	0	0	0	12	12		7	1	8	20
PHF			0.00	0.00		0.00	0.00	0.00	0.60	0.60		0.58	0.25	0.67

### Heavy Vehicle Rolling Hour Summary 4:00 PM to 6:00 PM

Interval Start Time	Northbound N 7th St			Southbound N 7th St			Eastbound E Main St			Westbound E Main St			Interval Total
	In	Out	Total	L	R	Total	L	T	Total	T	R	Total	
4:00 PM	0	1	1	0	1	1	0	4	4	17	0	17	22
4:15 PM	0	1	1	0	1	1	0	9	9	16	0	16	26
4:30 PM	0	1	1	0	1	1	0	12	12	10	0	10	23
4:45 PM	0	0	0	0	0	0	0	13	13	6	0	6	19
5:00 PM	0	0	0	0	0	0	0	12	12	7	1	8	20

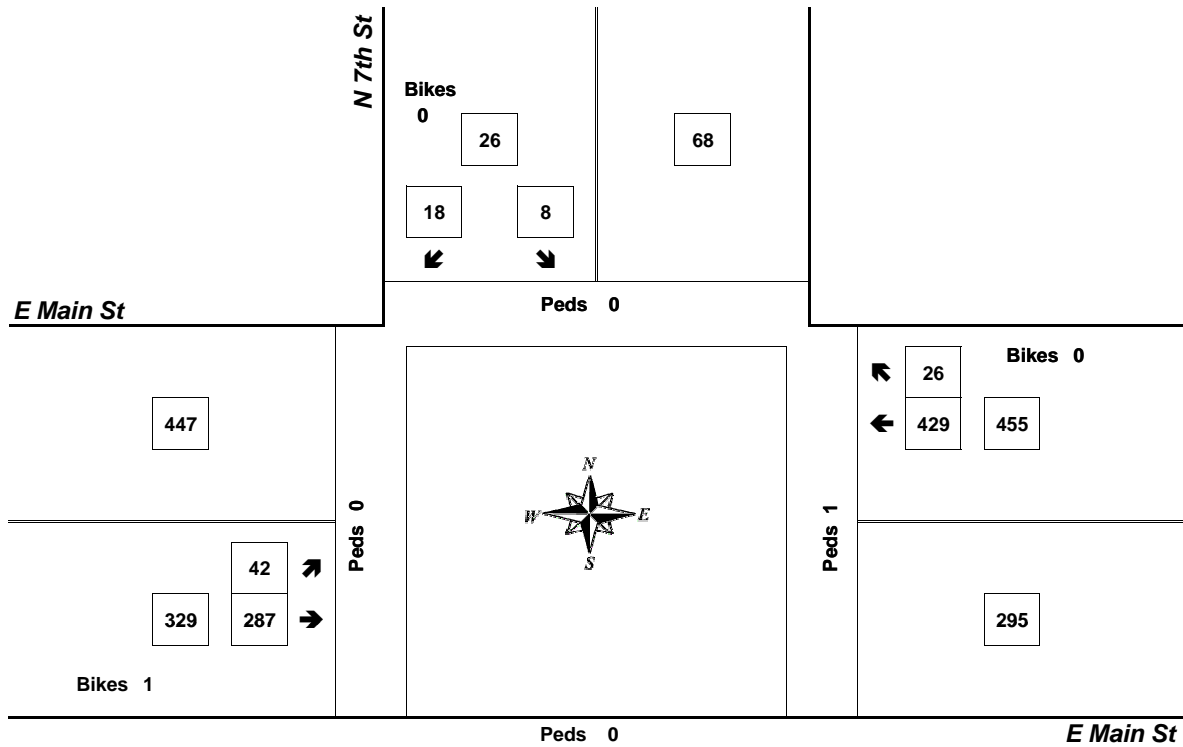
# Peak Hour Summary



Clay Carney  
(503) 833-2740

## N 7th St & E Main St

4:50 PM to 5:50 PM  
Tuesday, May 14, 2019



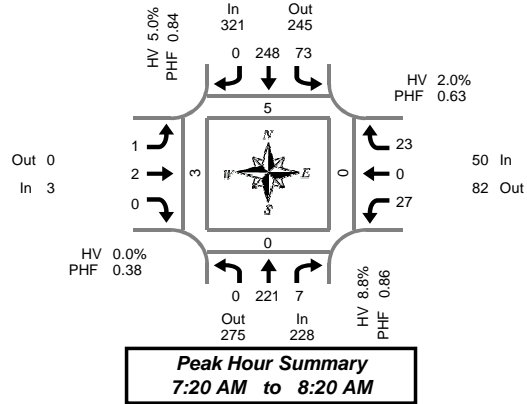
Approach	PHF	HV%	Volume
EB	0.83	3.6%	329
WB	0.96	1.8%	455
NB	0.00	0.0%	0
SB	0.72	0.0%	26
<b>Intersection</b>	<b>0.93</b>	<b>2.5%</b>	<b>810</b>

Count Period: 4:00 PM to 6:00 PM

# Total Vehicle Summary



Clay Carney  
(503) 833-2740



## S Pine St & W Polk St

Tuesday, May 14, 2019  
7:00 AM to 9:00 AM

### 5-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound S Pine St				Southbound S Pine St				Eastbound W Polk St				Westbound W Polk St				Interval Total	Pedestrians Crosswalk						
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West			
7:00 AM	0	21	1	0	0	11	0	0	0	0	0	0	0	0	0	1	0	0	0	34	1	0	0	1
7:05 AM	0	12	0	0	0	14	0	0	0	2	0	0	0	0	0	1	0	0	0	29	0	0	0	0
7:10 AM	0	16	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0	0	0	0
7:15 AM	0	15	0	0	2	18	0	0	0	0	0	0	2	0	1	0	0	0	0	38	1	0	0	0
7:20 AM	0	18	0	0	3	22	0	0	0	0	0	0	2	0	1	0	0	0	0	46	2	0	0	2
7:25 AM	0	14	1	0	1	16	0	0	0	0	0	0	0	0	0	0	0	0	0	32	2	0	0	1
7:30 AM	0	28	0	0	5	18	0	0	0	0	0	0	3	0	2	0	0	0	0	56	0	0	0	0
7:35 AM	0	14	1	0	5	31	0	0	0	0	0	0	2	0	0	0	0	0	0	53	0	0	0	0
7:40 AM	0	23	0	0	7	22	0	0	0	0	0	0	1	0	2	0	0	0	0	55	0	0	0	0
7:45 AM	0	25	1	0	7	24	0	0	0	1	0	0	3	0	1	0	0	0	0	62	1	0	0	0
7:50 AM	0	9	2	0	6	23	0	0	0	1	0	0	2	0	3	0	0	0	0	46	0	0	0	0
7:55 AM	0	24	1	0	4	18	0	0	0	0	0	0	3	0	0	0	0	0	0	50	0	0	0	0
8:00 AM	0	11	0	0	13	13	0	0	1	0	0	0	2	0	5	0	0	0	0	45	0	0	0	0
8:05 AM	0	17	0	0	10	23	0	0	0	0	0	0	0	0	4	0	0	0	0	54	0	0	0	0
8:10 AM	0	12	1	0	8	20	0	0	0	0	0	0	6	0	3	0	0	0	0	50	0	0	0	0
8:15 AM	0	26	0	0	4	18	0	0	0	0	0	0	3	0	2	0	0	0	0	53	0	0	0	0
8:20 AM	0	16	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	27	0	0	0	0
8:25 AM	0	14	0	0	0	19	0	0	0	0	0	0	0	0	1	0	0	0	0	34	0	0	0	0
8:30 AM	0	21	0	0	0	8	0	0	0	0	0	0	1	0	0	0	0	0	0	30	0	0	0	0
8:35 AM	0	21	0	0	0	25	0	0	0	0	0	0	2	0	0	0	0	0	0	48	0	0	0	0
8:40 AM	0	17	0	0	1	16	0	0	0	0	0	0	0	0	0	0	0	0	0	34	0	0	0	0
8:45 AM	0	13	0	0	1	20	0	0	0	0	0	0	1	0	1	0	0	0	0	36	0	0	0	0
8:50 AM	0	13	0	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	32	0	0	0	0
8:55 AM	0	24	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	42	0	0	0	0
Total Survey	0	424	8	0	77	436	0	0	1	4	0	0	33	0	28	0	0	0	0	1,011	7	0	0	4

### 15-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound S Pine St				Southbound S Pine St				Eastbound W Polk St				Westbound W Polk St				Interval Total	Pedestrians Crosswalk						
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West			
7:00 AM	0	49	1	0	0	34	0	0	0	2	0	0	0	0	2	0	0	0	0	88	1	0	0	1
7:15 AM	0	47	1	0	6	56	0	0	0	0	0	0	4	0	2	0	0	0	0	116	5	0	0	3
7:30 AM	0	65	1	0	17	71	0	0	0	0	0	0	6	0	4	0	0	0	0	164	0	0	0	0
7:45 AM	0	58	4	0	17	65	0	0	0	2	0	0	8	0	4	0	0	0	0	158	1	0	0	0
8:00 AM	0	40	1	0	31	56	0	0	1	0	0	0	8	0	12	0	0	0	0	149	0	0	0	0
8:15 AM	0	56	0	0	4	48	0	0	0	0	0	0	3	0	3	0	0	0	0	114	0	0	0	0
8:30 AM	0	59	0	0	1	49	0	0	0	0	0	0	3	0	0	0	0	0	0	112	0	0	0	0
8:45 AM	0	50	0	0	1	57	0	0	0	0	0	0	1	0	1	0	0	0	0	110	0	0	0	0
Total Survey	0	424	8	0	77	436	0	0	1	4	0	0	33	0	28	0	0	0	0	1,011	7	0	0	4

### Peak Hour Summary 7:20 AM to 8:20 AM

By Approach	Northbound S Pine St				Southbound S Pine St				Eastbound W Polk St				Westbound W Polk St				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	228	275	503	0	321	245	566	0	3	0	3	0	50	82	132	0	602	5	0	0	3
%HV	8.8%				5.0%				0.0%				2.0%				6.1%				
PHF	0.86				0.84				0.38				0.63				0.89				

By Movement	Northbound S Pine St				Southbound S Pine St				Eastbound W Polk St				Westbound W Polk St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	221	7	228	73	248	0	321	1	2	0	3	27	0	23	50	602
%HV	0.0%	8.1%	28.6%	8.8%	11.0%	3.2%	0.0%	5.0%	0.0%	0.0%	0.0%	0.0%	3.7%	0.0%	0.0%	2.0%	6.1%
PHF	0.00	0.85	0.44	0.86	0.59	0.81	0.00	0.84	0.25	0.25	0.00	0.38	0.75	0.00	0.48	0.63	0.89

### Rolling Hour Summary 7:00 AM to 9:00 AM

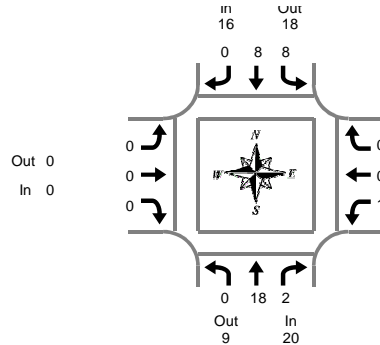
Interval Start Time	Northbound S Pine St				Southbound S Pine St				Eastbound W Polk St				Westbound W Polk St				Interval Total	Pedestrians Crosswalk						
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West			
7:00 AM	0	219	7	0	40	226	0	0	0	4	0	0	18	0	12	0	0	0	0	526	7	0	0	4
7:15 AM	0	210	7	0	71	248	0	0	1	2	0	0	26	0	22	0	0	0	0	587	6	0	0	3
7:30 AM	0	219	6	0	69	240	0	0	1	2	0	0	25	0	23	0	0	0	0	585	1	0	0	0
7:45 AM	0	213	5	0	53	218	0	0	1	2	0	0	22	0	19	0	0	0	0	533	1	0	0	0
8:00 AM	0	205	1	0	37	210	0	0	1	0	0	0	15	0	16	0	0	0	0	485	0	0	0	0



# Heavy Vehicle Summary



Clay Carney  
(503) 833-2740



**Peak Hour Summary**  
7:20 AM to 8:20 AM

## S Pine St & W Polk St

Tuesday, May 14, 2019  
7:00 AM to 9:00 AM

### Heavy Vehicle 5-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound S Pine St				Southbound S Pine St				Eastbound W Polk St				Westbound W Polk St				Interval Total	
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total		
7:00 AM	0	3	0	3	0	1	0	1	0	0	0	0	0	0	0	0	0	4
7:05 AM	0	2	0	2	0	0	0	0	0	1	0	1	0	0	0	0	0	3
7:10 AM	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
7:15 AM	0	3	0	3	0	2	0	2	0	0	0	0	0	0	0	0	0	5
7:20 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:25 AM	0	1	1	2	0	1	0	1	0	0	0	0	0	0	0	0	0	3
7:30 AM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1
7:35 AM	0	2	0	2	1	0	0	1	0	0	0	0	0	0	0	0	0	3
7:40 AM	0	3	0	3	1	1	0	2	0	0	0	0	0	0	0	0	0	5
7:45 AM	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	2
7:50 AM	0	0	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0	2
7:55 AM	0	1	0	1	1	1	0	2	0	0	0	0	0	0	0	0	0	3
8:00 AM	0	2	0	2	2	0	0	2	0	0	0	0	0	0	0	0	0	4
8:05 AM	0	1	0	1	1	1	0	2	0	0	0	0	0	0	0	0	0	3
8:10 AM	0	1	0	1	0	2	0	2	0	0	0	0	1	0	0	1	4	
8:15 AM	0	5	0	5	0	1	0	1	0	0	0	0	0	0	0	0	0	6
8:20 AM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:25 AM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	1	1	3	
8:30 AM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:35 AM	0	2	0	2	0	2	0	2	0	0	0	0	0	0	0	0	0	4
8:40 AM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:45 AM	0	2	0	2	0	6	0	6	0	0	0	0	0	0	0	0	0	8
8:50 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	2
8:55 AM	0	6	0	6	0	1	0	1	0	0	0	0	0	0	0	0	0	7
Total Survey	0	47	2	49	8	22	0	30	0	1	0	1	1	0	1	2	82	

### Heavy Vehicle 15-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound S Pine St				Southbound S Pine St				Eastbound W Polk St				Westbound W Polk St				Interval Total	
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total		
7:00 AM	0	8	0	8	0	1	0	1	0	1	0	1	0	0	0	0	0	10
7:15 AM	0	5	1	6	0	3	0	3	0	0	0	0	0	0	0	0	0	9
7:30 AM	0	5	0	5	3	1	0	4	0	0	0	0	0	0	0	0	0	9
7:45 AM	0	2	1	3	2	2	0	4	0	0	0	0	0	0	0	0	0	7
8:00 AM	0	4	0	4	3	3	0	6	0	0	0	0	1	0	0	1	11	
8:15 AM	0	9	0	9	0	1	0	1	0	0	0	0	0	0	1	1	11	
8:30 AM	0	6	0	6	0	2	0	2	0	0	0	0	0	0	0	0	0	8
8:45 AM	0	8	0	8	0	9	0	9	0	0	0	0	0	0	0	0	0	17
Total Survey	0	47	2	49	8	22	0	30	0	1	0	1	1	0	1	2	82	

### Heavy Vehicle Peak Hour Summary 7:20 AM to 8:20 AM

By Approach	Northbound S Pine St			Southbound S Pine St			Eastbound W Polk St			Westbound W Polk St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	20	9	29	16	18	34	0	0	0	1	10	11	37
PHF	0.71			0.67			0.00			0.25			0.71

By Movement	Northbound S Pine St				Southbound S Pine St				Eastbound W Polk St				Westbound W Polk St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	18	2	20	8	8	0	16	0	0	0	0	1	0	0	1	37
PHF	0.00	0.64	0.50	0.71	0.50	0.50	0.00	0.67	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.25	0.71

### Heavy Vehicle Rolling Hour Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound S Pine St				Southbound S Pine St				Eastbound W Polk St				Westbound W Polk St				Interval Total	
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total		
7:00 AM	0	20	2	22	5	7	0	12	0	1	0	1	0	0	0	0	0	35
7:15 AM	0	16	2	18	8	9	0	17	0	0	0	0	1	0	0	1	1	36
7:30 AM	0	20	1	21	8	7	0	15	0	0	0	0	1	0	1	2	38	
7:45 AM	0	21	1	22	5	8	0	13	0	0	0	0	1	0	1	2	37	
8:00 AM	0	27	0	27	3	15	0	18	0	0	0	0	1	0	1	2	47	

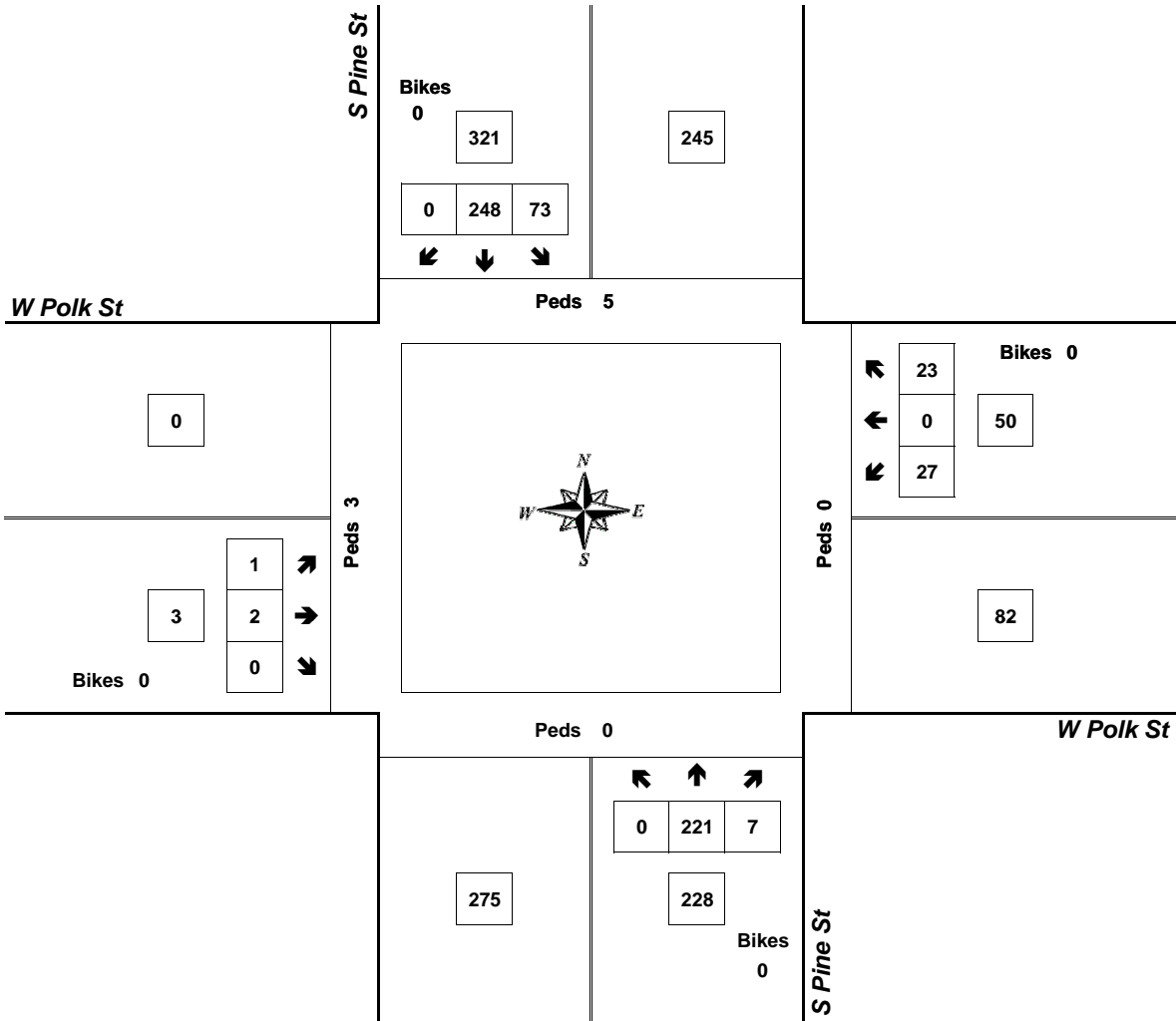
# Peak Hour Summary



Clay Carney  
(503) 833-2740

## S Pine St & W Polk St

7:20 AM to 8:20 AM  
Tuesday, May 14, 2019



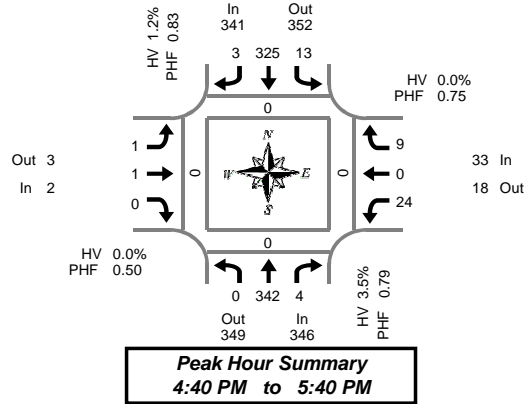
Approach	PHF	HV%	Volume
EB	0.38	0.0%	3
WB	0.63	2.0%	50
NB	0.86	8.8%	228
SB	0.84	5.0%	321
<b>Intersection</b>	<b>0.89</b>	<b>6.1%</b>	<b>602</b>

Count Period: 7:00 AM to 9:00 AM

# Total Vehicle Summary



Clay Carney  
(503) 833-2740



## S Pine St & W Polk St

Tuesday, May 14, 2019  
4:00 PM to 6:00 PM

### 5-Minute Interval Summary 4:00 PM to 6:00 PM

Interval Start Time	Northbound S Pine St				Southbound S Pine St				Eastbound W Polk St				Westbound W Polk St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	0	23	1	0	0	22	0	0	0	0	0	0	1	0	1	0	48	0	0	0	0
4:05 PM	0	16	0	0	1	16	0	0	0	0	0	0	0	1	2	0	36	0	0	0	0
4:10 PM	0	20	0	0	0	32	0	0	0	1	0	0	1	0	2	0	56	0	0	0	0
4:15 PM	0	24	0	0	1	23	0	0	0	0	0	0	0	0	1	0	49	0	0	0	0
4:20 PM	0	35	0	0	0	22	0	0	0	0	0	0	1	0	1	0	59	0	0	0	0
4:25 PM	0	26	0	0	0	24	0	0	0	0	0	0	0	0	0	0	50	0	0	0	0
4:30 PM	0	31	0	0	4	30	0	0	0	0	0	0	3	0	1	0	69	0	0	0	0
4:35 PM	0	25	0	0	1	22	2	0	1	0	0	0	1	0	0	0	52	0	0	0	0
4:40 PM	0	30	0	0	0	32	0	0	0	0	0	0	2	0	1	0	65	0	0	0	0
4:45 PM	0	23	0	0	0	28	0	0	0	0	0	0	0	0	0	0	51	0	0	0	0
4:50 PM	0	20	0	0	2	26	0	0	0	0	0	0	2	0	0	0	50	0	0	0	0
4:55 PM	0	33	0	0	0	29	0	0	0	0	0	0	4	0	1	0	67	0	0	0	0
5:00 PM	0	18	0	0	1	40	2	0	0	1	0	0	1	0	0	0	63	0	0	0	0
5:05 PM	0	26	3	0	0	16	0	0	0	0	0	0	3	0	1	0	49	0	0	0	0
5:10 PM	0	31	1	0	4	20	0	0	0	0	0	0	1	0	1	0	58	0	0	0	0
5:15 PM	0	22	0	0	1	17	0	0	0	0	0	0	3	0	0	0	43	0	0	0	0
5:20 PM	0	30	0	0	1	26	0	0	0	0	0	0	1	0	1	0	59	0	0	0	0
5:25 PM	0	34	0	0	0	36	0	0	0	0	0	0	3	0	1	0	74	0	0	0	0
5:30 PM	0	37	0	0	3	36	1	0	1	0	0	0	2	0	2	0	82	0	0	0	0
5:35 PM	0	38	0	0	1	19	0	0	0	0	0	0	2	0	1	0	61	0	0	0	0
5:40 PM	0	25	0	0	1	34	0	0	0	0	0	0	1	0	0	0	61	0	0	0	0
5:45 PM	0	24	0	0	2	18	0	0	0	0	0	0	1	0	1	0	46	0	0	0	0
5:50 PM	0	26	0	0	2	22	0	0	0	0	0	0	1	1	0	0	52	0	0	0	0
5:55 PM	1	28	0	0	1	14	0	0	0	0	0	0	2	0	1	0	47	0	0	0	0
Total Survey	1	645	5	0	26	604	5	0	2	2	0	0	36	2	19	0	1,347	0	0	0	0

### 15-Minute Interval Summary 4:00 PM to 6:00 PM

Interval Start Time	Northbound S Pine St				Southbound S Pine St				Eastbound W Polk St				Westbound W Polk St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	0	59	1	0	1	70	0	0	0	1	0	0	2	1	5	0	140	0	0	0	0
4:15 PM	0	85	0	0	1	69	0	0	0	0	0	0	1	0	2	0	158	0	0	0	0
4:30 PM	0	86	0	0	5	84	2	0	1	0	0	0	6	0	2	0	186	0	0	0	0
4:45 PM	0	76	0	0	2	83	0	0	0	0	0	0	6	0	1	0	168	0	0	0	0
5:00 PM	0	75	4	0	5	76	2	0	0	1	0	0	5	0	2	0	170	0	0	0	0
5:15 PM	0	86	0	0	2	79	0	0	0	0	0	0	7	0	2	0	176	0	0	0	0
5:30 PM	0	100	0	0	5	89	1	0	1	0	0	0	5	0	3	0	204	0	0	0	0
5:45 PM	1	78	0	0	5	54	0	0	0	0	0	0	4	1	2	0	145	0	0	0	0
Total Survey	1	645	5	0	26	604	5	0	2	2	0	0	36	2	19	0	1,347	0	0	0	0

### Peak Hour Summary 4:40 PM to 5:40 PM

By Approach	Northbound S Pine St				Southbound S Pine St				Eastbound W Polk St				Westbound W Polk St				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	346	349	695	0	341	352	693	0	2	3	5	0	33	18	51	0	722	0	0	0	0
%HV	3.5%				1.2%				0.0%				0.0%				2.2%				
PHF	0.79				0.83				0.50				0.75				0.83				

By Movement	Northbound S Pine St				Southbound S Pine St				Eastbound W Polk St				Westbound W Polk St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	342	4	346	13	325	3	341	1	1	0	2	24	0	9	33	722
%HV	0.0%	3.2%	25.0%	3.5%	0.0%	1.2%	0.0%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.2%
PHF	0.00	0.78	0.25	0.79	0.54	0.83	0.38	0.83	0.25	0.25	0.00	0.50	0.75	0.00	0.56	0.75	0.83

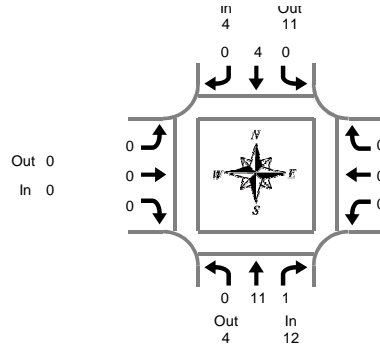
### Rolling Hour Summary 4:00 PM to 6:00 PM

Interval Start Time	Northbound S Pine St				Southbound S Pine St				Eastbound W Polk St				Westbound W Polk St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	0	306	1	0	9	306	2	0	1	1	0	0	15	1	10	0	652	0	0	0	0
4:15 PM	0	322	4	0	13	312	4	0	1	1	0	0	18	0	7	0	682	0	0	0	0
4:30 PM	0	323	4	0	14	322	4	0	1	1	0	0	24	0	7	0	700	0	0	0	0
4:45 PM	0	337	4	0	14	327	3	0	1	1	0	0	23	0	8	0	718	0	0	0	0
5:00 PM	1	339	4	0	17	298	3	0	1	1	0	0	21	1	9	0	695	0	0	0	0

# Heavy Vehicle Summary



Clay Carney  
(503) 833-2740



**Peak Hour Summary**  
4:40 PM to 5:40 PM

## S Pine St & W Polk St

Tuesday, May 14, 2019  
4:00 PM to 6:00 PM

### Heavy Vehicle 5-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound S Pine St				Southbound S Pine St				Eastbound W Polk St				Westbound W Polk St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	1	0	1	0	2	0	2	0	0	0	0	0	0	0	0	3
4:05 PM	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	2
4:10 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
4:15 PM	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
4:20 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
4:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	2	0	2	0	3	0	3	0	0	0	0	0	0	0	0	5
4:35 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
4:40 PM	0	2	0	2	0	2	0	2	0	0	0	0	0	0	0	0	4
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:50 PM	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
4:55 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:05 PM	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	2
5:10 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
5:15 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:20 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:25 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:35 PM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
5:40 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
5:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:55 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
Total Survey	0	15	1	16	1	20	0	21	0	0	0	0	0	0	0	0	37

### Heavy Vehicle 15-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound S Pine St				Southbound S Pine St				Eastbound W Polk St				Westbound W Polk St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	1	0	1	1	5	0	6	0	0	0	0	0	0	0	0	7
4:15 PM	0	1	0	1	0	3	0	3	0	0	0	0	0	0	0	0	4
4:30 PM	0	4	0	4	0	6	0	6	0	0	0	0	0	0	0	0	10
4:45 PM	0	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	3
5:00 PM	0	2	1	3	0	1	0	1	0	0	0	0	0	0	0	0	4
5:15 PM	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
5:30 PM	0	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	3
5:45 PM	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3
Total Survey	0	15	1	16	1	20	0	21	0	0	0	0	0	0	0	0	37

### Heavy Vehicle Peak Hour Summary

4:40 PM to 5:40 PM

By Approach	Northbound S Pine St			Southbound S Pine St			Eastbound W Polk St			Westbound W Polk St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	12	4	16	4	11	15	0	0	0	0	1	1	16
PHF	0.75			0.33			0.00			0.00			0.67

By Movement	Northbound S Pine St				Southbound S Pine St				Eastbound W Polk St				Westbound W Polk St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	11	1	12	0	4	0	4	0	0	0	0	0	0	0	0	16
PHF	0.00	0.92	0.25	0.75	0.00	0.33	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67

### Heavy Vehicle Rolling Hour Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound S Pine St				Southbound S Pine St				Eastbound W Polk St				Westbound W Polk St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	8	0	8	1	15	0	16	0	0	0	0	0	0	0	0	24
4:15 PM	0	9	1	10	0	11	0	11	0	0	0	0	0	0	0	0	21
4:30 PM	0	11	1	12	0	8	0	8	0	0	0	0	0	0	0	0	20
4:45 PM	0	9	1	10	0	3	0	3	0	0	0	0	0	0	0	0	13
5:00 PM	0	7	1	8	0	5	0	5	0	0	0	0	0	0	0	0	13

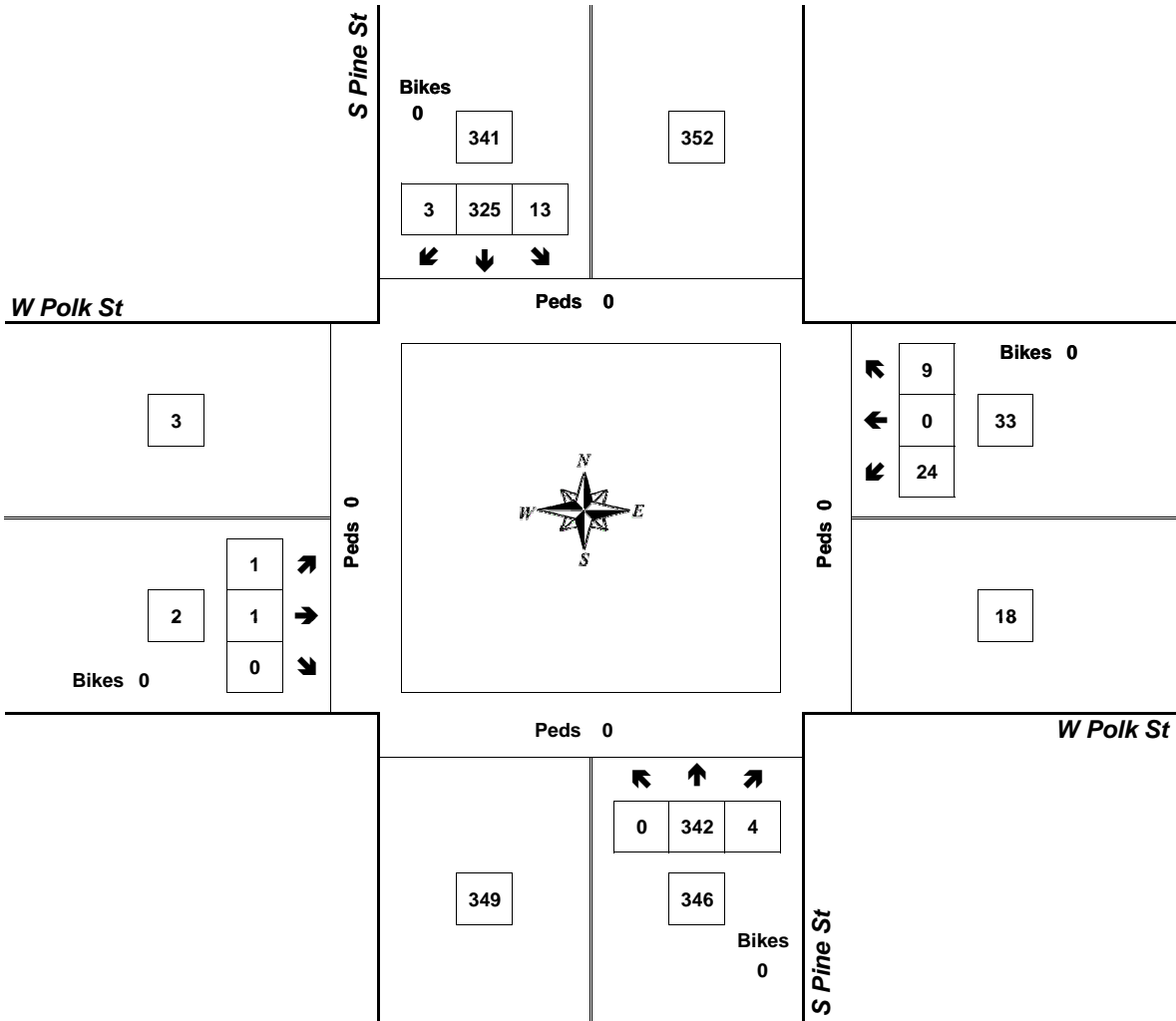
# Peak Hour Summary



Clay Carney  
(503) 833-2740

## S Pine St & W Polk St

4:40 PM to 5:40 PM  
Tuesday, May 14, 2019



Approach	PHF	HV%	Volume
EB	0.50	0.0%	2
WB	0.75	0.0%	33
NB	0.79	3.5%	346
SB	0.83	1.2%	341
<b>Intersection</b>	<b>0.83</b>	<b>2.2%</b>	<b>722</b>

Count Period: 4:00 PM to 6:00 PM

## Left-Turn Lane Warrant Analysis



Project: JR Meadows Phase 2  
 Intersection: E Main Street at N 7th Street - Eastbound  
 Date: 8/17/2020  
 Scenario: Year 2022 Buildout Conditions AM

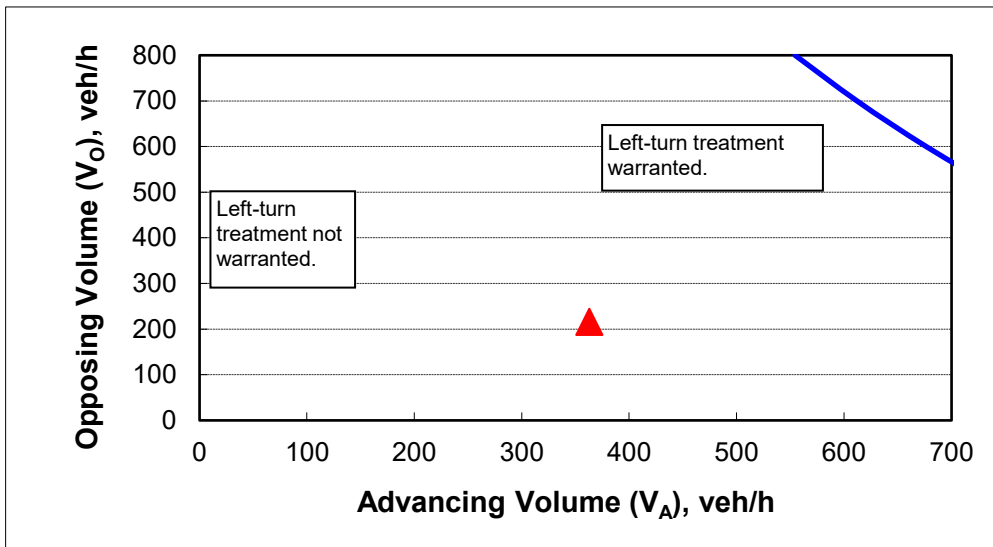
### 2-lane roadway (English)

#### INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	25
Percent of left-turns in advancing volume ( $V_A$ ), %:	2%
Advancing volume ( $V_A$ ), veh/h:	363
Opposing volume ( $V_O$ ), veh/h:	216

#### OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	1017
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment NOT warranted.</b>	



#### CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

## Left-Turn Lane Warrant Analysis



Project: JR Meadows Phase 2  
 Intersection: E Main Street at N 7th Street - Westbound  
 Date: 8/17/2020  
 Scenario: Year 2022 Buildout Conditions AM

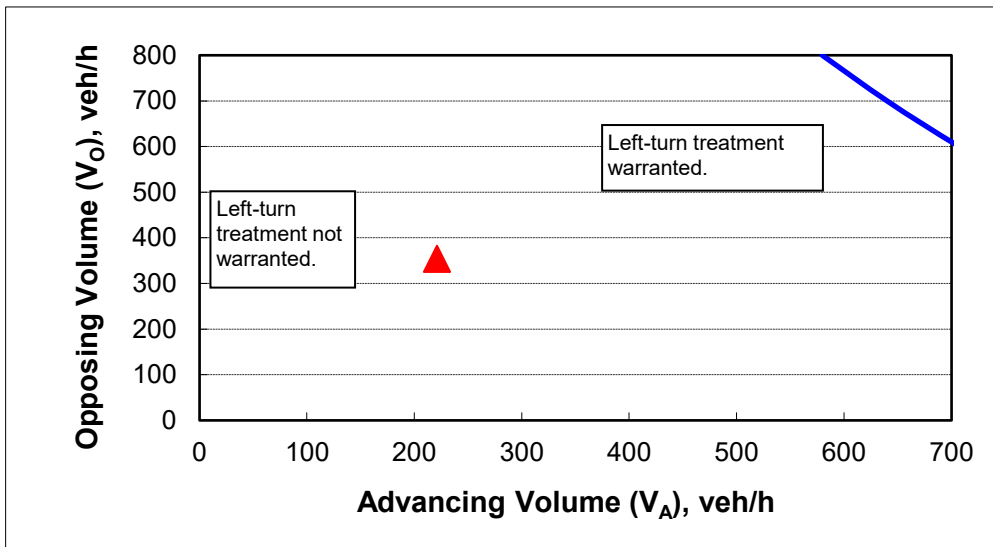
### 2-lane roadway (English)

#### INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	25
Percent of left-turns in advancing volume ( $V_A$ ), %:	2%
Advancing volume ( $V_A$ ), veh/h:	221
Opposing volume ( $V_O$ ), veh/h:	354

#### OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	914
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment NOT warranted.</b>	



#### CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

## Left-Turn Lane Warrant Analysis



Project: JR Meadows Phase 2  
 Intersection: E Main Street at N 7th Street - Eastbound  
 Date: 8/17/2020  
 Scenario: Year 2022 Background Conditions PM

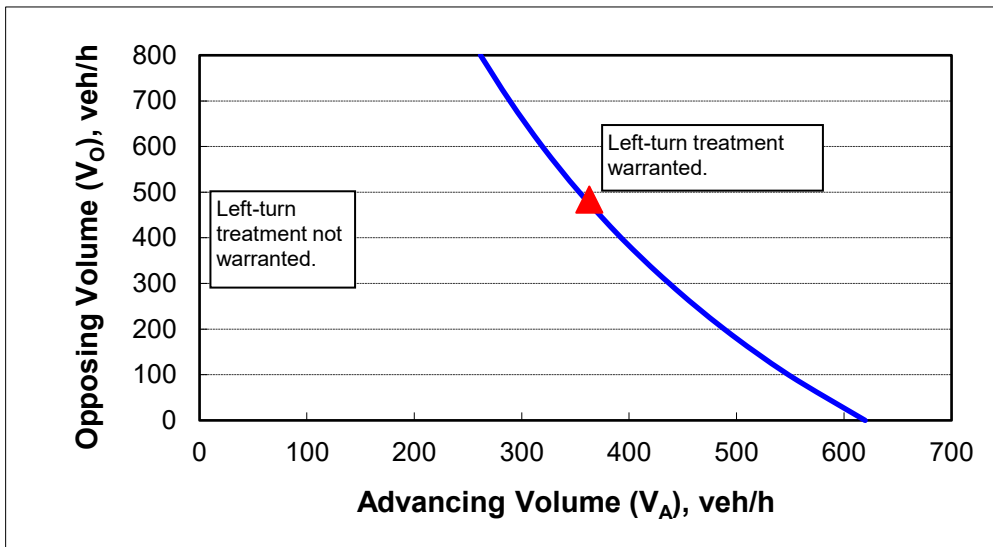
### 2-lane roadway (English)

#### INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	25
Percent of left-turns in advancing volume ( $V_A$ ), %:	12%
Advancing volume ( $V_A$ ), veh/h:	363
Opposing volume ( $V_O$ ), veh/h:	484

#### OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	360
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment warranted.</b>	



#### CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9



## Left-Turn Lane Warrant Analysis



Project: JR Meadows Phase 2  
 Intersection: E Main Street at N 7th Street - Westbound  
 Date: 8/17/2020  
 Scenario: Year 2022 Buildout Conditions PM

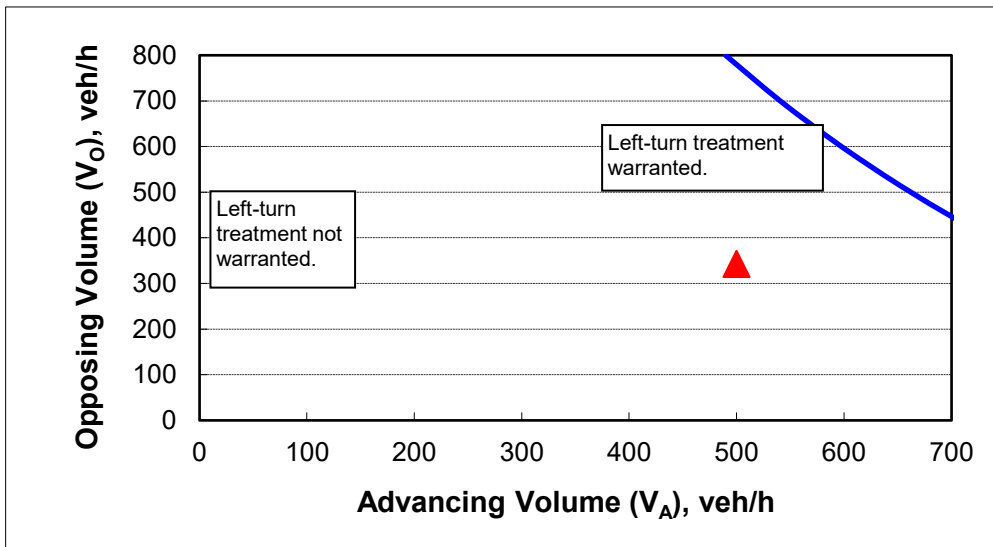
### 2-lane roadway (English)

#### INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	25
Percent of left-turns in advancing volume ( $V_A$ ), %:	3%
Advancing volume ( $V_A$ ), veh/h:	500
Opposing volume ( $V_O$ ), veh/h:	343

#### OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	781
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment NOT warranted.</b>	



#### CALIBRATION CONSTANTS

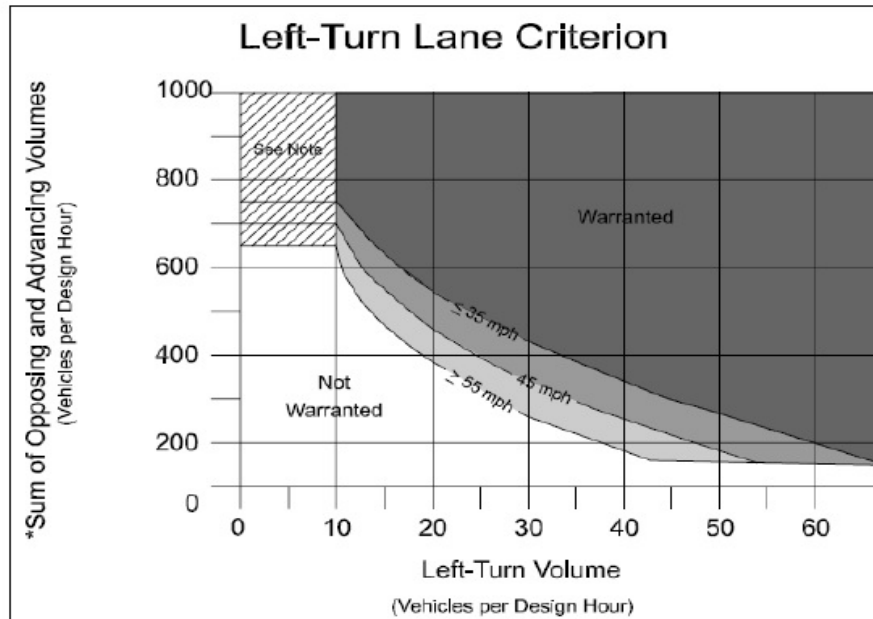
Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9



Project: JR Meadows Phase 2  
 Intersection: E Polk Street at S Pine Street  
 Date: 8/17/2020  
 Scenario: 2022 Buildout Conditions - Northbound

Speed: 30 mph

<b>AM Peak Hour</b>		<b>PM Peak Hour</b>	
Left-Turn Volume	0	Left-Turn Volume	0
Approaching DHV	250	Approaching DHV	362
# of Advancing Through Lanes	1	# of Advancing Through Lanes	1
Opposing DHV	269	Opposing DHV	333
# of Opposing Through Lanes	1	# of Opposing Through Lanes	1
<b>O+A DHV</b>	<b>519</b>	<b>O+A DHV</b>	<b>695</b>
Lane Needed?	<b>No</b>	Lane Needed?	<b>No</b>



Source: Oregon DOT Analysis Procedures Manual 2008

$$*(\text{Advancing Vol} / \# \text{ of Advancing Through Lanes}) + (\text{Opposing Vol} / \# \text{ of Opposing Through Lanes})$$

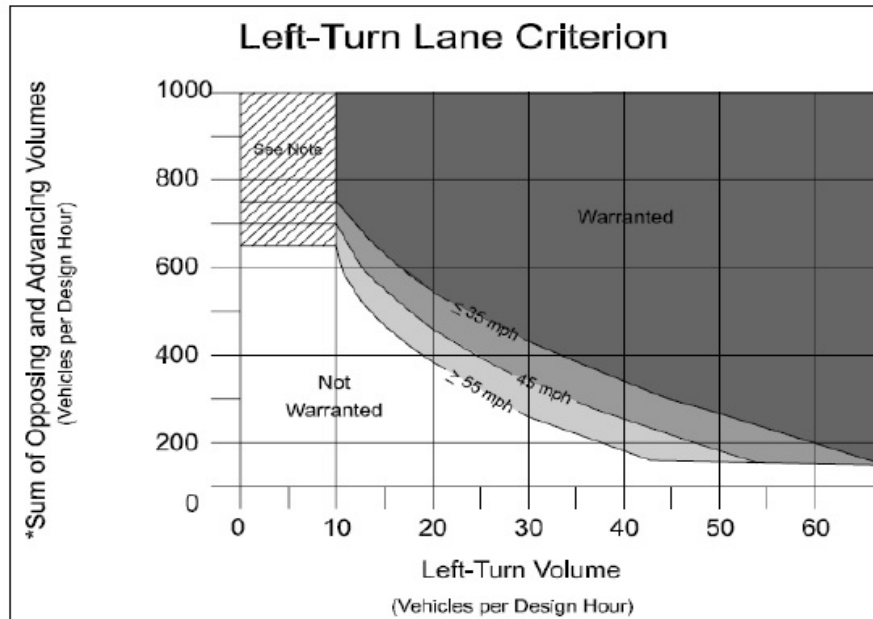
Note: The criterion is not met from zero to ten left turn vehicles per hour, but careful consideration should be given to installing a left turn lane due to the increased potential for accidents in the through lanes. While the turn volumes are low, the adverse safety and operational impacts may require installation of a left turn. The final determination will be based on a field study.



Project: JR Meadows Phase 2  
 Intersection: E Polk Street at S Pine Street  
 Date: 8/17/2020  
 Scenario: 2020 Existing Conditions - Southbound

Speed: 30 mph

<b>AM Peak Hour</b>		<b>PM Peak Hour</b>	
Left-Turn Volume	74	Left-Turn Volume	13
Approaching DHV	340	Approaching DHV	343
# of Advancing Through Lanes	1	# of Advancing Through Lanes	1
Opposing DHV	244	Opposing DHV	348
# of Opposing Through Lanes	1	# of Opposing Through Lanes	1
<b>O+A DHV</b>	<b>584</b>	<b>O+A DHV</b>	<b>691</b>
Lane Needed?	<b>Yes</b>	Lane Needed?	<b>Yes</b>



Source: Oregon DOT Analysis Procedures Manual 2008

$$*(\text{Advancing Vol} / \# \text{ of Advancing Through Lanes}) + (\text{Opposing Vol} / \# \text{ of Opposing Through Lanes})$$

Note: The criterion is not met from zero to ten left turn vehicles per hour, but careful consideration should be given to installing a left turn lane due to the increased potential for accidents in the through lanes. While the turn volumes are low, the adverse safety and operational impacts may require installation of a left turn. The final determination will be based on a field study.

# Traffic Signal Warrant Analysis



Project: JR Meadows Phase 2  
 Date: 3/18/2020  
 Scenario: Year 2022 Buildout Conditions

Major Street:	E Main Street	Minor Street:	7th Street
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	888	PM Peak Hour Volumes:	30

**Warrant Used:**

\_\_\_\_\_ 100 percent of standard warrants used  
      X       70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)	ADT on Minor St. (higher-volume approach)		
<u>Major St.</u>	<u>Minor St.</u>	100% <u>Warrants</u>	70% <u>Warrants</u>	100% <u>Warrants</u>	70% <u>Warrants</u>
<b>WARRANT 1, CONDITION A</b>					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<b>WARRANT 1, CONDITION B</b>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<b>Warrant 1</b>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	8,880	6,200	
Minor Street*	300	1,850	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	8,880	9,300	
Minor Street*	300	950	<b>No</b>
<i>Combination Warrant</i>			
Major Street	8,880	7,440	
Minor Street*	300	1,480	<b>No</b>

\* Minor street right-turning traffic volumes reduced by 25%

# Traffic Signal Warrant Analysis



Project: JR Meadows Phase 2  
 Date: 3/18/2020  
 Scenario: Year 2022 Buildout Conditions

Major Street:	S Pine Street	Minor Street:	E Polk Street
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	709	PM Peak Hour Volumes:	38

**Warrant Used:**

\_\_\_\_\_ 100 percent of standard warrants used  
    X     70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)	ADT on Minor St. (higher-volume approach)		
Major St.	Minor St.	100% Warrants	70% Warrants	100% Warrants	70% Warrants
<b>WARRANT 1, CONDITION A</b>					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<b>WARRANT 1, CONDITION B</b>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<b>Warrant 1</b>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	7,090	6,200	
Minor Street*	380	1,850	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	7,090	9,300	
Minor Street*	380	950	<b>No</b>
<i>Combination Warrant</i>			
Major Street	7,090	7,440	
Minor Street*	380	1,480	<b>No</b>

\* Minor street right-turning traffic volumes reduced by 25%



## LEVEL OF SERVICE

Level of service is used to describe the quality of traffic flow. Levels of service A to C are considered good, and rural roads are usually designed for level of service C. Urban streets and signalized intersections are typically designed for level of service D. Level of service E is considered to be the limit of acceptable delay. For unsignalized intersections, level of service E is generally considered acceptable. Here is a more complete description of levels of service:

*Level of service A:* Very low delay at intersections, with all traffic signal cycles clearing and no vehicles waiting through more than one signal cycle. On highways, low volume and high speeds, with speeds not restricted by other vehicles.

*Level of service B:* Operating speeds beginning to be affected by other traffic; short traffic delays at intersections. Higher average intersection delay than for level of service A resulting from more vehicles stopping.

*Level of service C:* Operating speeds and maneuverability closely controlled by other traffic; higher delays at intersections than for level of service B due to a significant number of vehicles stopping. Not all signal cycles clear the waiting vehicles. This is the recommended design standard for rural highways.

*Level of service D:* Tolerable operating speeds; long traffic delays occur at intersections. The influence of congestion is noticeable. At traffic signals many vehicles stop, and the proportion of vehicles not stopping declines. The number of signal cycle failures, for which vehicles must wait through more than one signal cycle, are noticeable. This is typically the design level for urban signalized intersections.

*Level of service E:* Restricted speeds, very long traffic delays at traffic signals, and traffic volumes near capacity. Flow is unstable so that any interruption, no matter how minor, will cause queues to form and service to deteriorate to level of service F. Traffic signal cycle failures are frequent occurrences. For unsignalized intersections, level of service E or better is generally considered acceptable.

*Level of service F:* Extreme delays, resulting in long queues which may interfere with other traffic movements. There may be stoppages of long duration, and speeds may drop to zero. There may be frequent signal cycle failures. Level of service F will typically result when vehicle arrival rates are greater than capacity. It is considered unacceptable by most drivers.



*LEVEL OF SERVICE CRITERIA  
FOR SIGNALIZED INTERSECTIONS*

LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (Seconds)
A	<10
B	10-20
C	20-35
D	35-55
E	55-80
F	>80

*LEVEL OF SERVICE CRITERIA  
FOR UNSIGNALIZED INTERSECTIONS*

LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (Seconds)
A	<10
B	10-15
C	15-25
D	25-35
E	35-50
F	>50

HCM 6th TWSC  
1: E Main Street & N 7th Street

02/24/2020

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	9	330	206	2	24	36
Future Vol, veh/h	9	330	206	2	24	36
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	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	2	2
Mvmt Flow	10	367	229	2	27	40

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	231	0	-	0	617 230
Stage 1	-	-	-	-	230 -
Stage 2	-	-	-	-	387 -
Critical Hdwy	4.13	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.227	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1331	-	-	-	453 809
Stage 1	-	-	-	-	808 -
Stage 2	-	-	-	-	686 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1331	-	-	-	449 809
Mov Cap-2 Maneuver	-	-	-	-	449 -
Stage 1	-	-	-	-	801 -
Stage 2	-	-	-	-	686 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1331	-	-	-	613
HCM Lane V/C Ratio	0.008	-	-	-	0.109
HCM Control Delay (s)	7.7	0	-	-	11.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.4



HCM 6th TWSC  
 2: S Pine Street & W Polk Street/E Polk Street

02/24/2020

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	2	0	28	0	23	0	237	7	74	266	0
Future Vol, veh/h	1	2	0	28	0	23	0	237	7	74	266	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	2	2	2	9	9	9	5	5	5
Mvmt Flow	1	2	0	31	0	26	0	266	8	83	299	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	748	739	299	736	735	270	299	0	0	274	0	0
Stage 1	465	465	-	270	270	-	-	-	-	-	-	-
Stage 2	283	274	-	466	465	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.12	6.52	6.22	4.19	-	-	4.15	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.518	4.018	3.318	2.281	-	-	2.245	-	-
Pot Cap-1 Maneuver	331	347	745	335	347	769	1223	-	-	1272	-	-
Stage 1	581	566	-	736	686	-	-	-	-	-	-	-
Stage 2	728	687	-	577	563	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	301	320	745	313	320	769	1223	-	-	1272	-	-
Mov Cap-2 Maneuver	301	320	-	313	320	-	-	-	-	-	-	-
Stage 1	581	522	-	736	686	-	-	-	-	-	-	-
Stage 2	704	687	-	530	519	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.6	14.7	0	1.7
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1223	-	-	313	427	1272	-	-
HCM Lane V/C Ratio	-	-	-	0.011	0.134	0.065	-	-
HCM Control Delay (s)	0	-	-	16.6	14.7	8	0	-
HCM Lane LOS	A	-	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.5	0.2	-	-

HCM 6th TWSC  
1: E Main Street & N 7th Street

02/24/2020

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	43	293	438	27	8	18
Future Vol, veh/h	43	293	438	27	8	18
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	93	93	93	93	93	93
Heavy Vehicles, %	4	4	2	2	0	0
Mvmt Flow	46	315	471	29	9	19

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	500	0	-	0	893 486
Stage 1	-	-	-	-	486 -
Stage 2	-	-	-	-	407 -
Critical Hdwy	4.14	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.236	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1054	-	-	-	315 585
Stage 1	-	-	-	-	623 -
Stage 2	-	-	-	-	676 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1054	-	-	-	298 585
Mov Cap-2 Maneuver	-	-	-	-	298 -
Stage 1	-	-	-	-	590 -
Stage 2	-	-	-	-	676 -

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	13.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1054	-	-	-	451
HCM Lane V/C Ratio	0.044	-	-	-	0.062
HCM Control Delay (s)	8.6	0	-	-	13.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

HCM 6th TWSC  
 2: S Pine Street & W Polk Street/E Polk Street

02/24/2020

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	1	0	24	0	9	0	344	4	13	327	3
Future Vol, veh/h	1	1	0	24	0	9	0	344	4	13	327	3
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	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	4	4	4	1	1	1
Mvmt Flow	1	1	0	29	0	11	0	414	5	16	394	4

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	850	847	396	846	847	417	398	0	0	419	0	0
Stage 1	428	428	-	417	417	-	-	-	-	-	-	-
Stage 2	422	419	-	429	430	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.14	-	-	4.11	-	-
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	2.236	-	-	2.209	-	-
Pot Cap-1 Maneuver	283	301	658	284	301	640	1150	-	-	1145	-	-
Stage 1	609	588	-	617	595	-	-	-	-	-	-	-
Stage 2	613	593	-	608	587	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	275	296	658	279	296	640	1150	-	-	1145	-	-
Mov Cap-2 Maneuver	275	296	-	279	296	-	-	-	-	-	-	-
Stage 1	609	577	-	617	595	-	-	-	-	-	-	-
Stage 2	603	593	-	596	576	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	17.7		17.4		0		0.3	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1150	-	-	285	330	1145	-	-
HCM Lane V/C Ratio	-	-	-	0.008	0.12	0.014	-	-
HCM Control Delay (s)	0	-	-	17.7	17.4	8.2	0	-
HCM Lane LOS	A	-	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.4	0	-	-

HCM 6th TWSC  
1: N 7th Street & E Main Street

02/24/2020

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	9	343	4	2	214	2	12	0	6	25	0	37
Future Vol, veh/h	9	343	4	2	214	2	12	0	6	25	0	37
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	92	92	90	90	92	92	92	90	92	90
Heavy Vehicles, %	3	3	2	2	3	3	2	2	2	2	2	2
Mvmt Flow	10	381	4	2	238	2	13	0	7	28	0	41

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	240	0	0	385	0	0	667	647	383	650	648	239
Stage 1	-	-	-	-	-	-	403	403	-	243	243	-
Stage 2	-	-	-	-	-	-	264	244	-	407	405	-
Critical Hdwy	4.13	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.227	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1321	-	-	1173	-	-	372	390	664	382	389	800
Stage 1	-	-	-	-	-	-	624	600	-	761	705	-
Stage 2	-	-	-	-	-	-	741	704	-	621	598	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1321	-	-	1173	-	-	350	385	664	375	384	800
Mov Cap-2 Maneuver	-	-	-	-	-	-	350	385	-	375	384	-
Stage 1	-	-	-	-	-	-	618	594	-	753	704	-
Stage 2	-	-	-	-	-	-	702	703	-	609	592	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.1			14.1			12.5		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	415	1321	-	-	1173	-	-	549
HCM Lane V/C Ratio	0.047	0.008	-	-	0.002	-	-	0.125
HCM Control Delay (s)	14.1	7.7	0	-	8.1	0	-	12.5
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.4

HCM 6th TWSC  
2: S Pine Street & W Polk Street/E Polk Street

02/24/2020

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	2	0	33	0	24	0	240	8	77	269	0
Future Vol, veh/h	1	2	0	33	0	24	0	240	8	77	269	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	2	2	2	9	9	9	5	5	5
Mvmt Flow	1	2	0	37	0	27	0	270	9	87	302	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	764	755	302	752	751	275	302	0	0	279	0	0
Stage 1	476	476	-	275	275	-	-	-	-	-	-	-
Stage 2	288	279	-	477	476	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.12	6.52	6.22	4.19	-	-	4.15	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.518	4.018	3.318	2.281	-	-	2.245	-	-
Pot Cap-1 Maneuver	323	340	742	327	340	764	1220	-	-	1267	-	-
Stage 1	574	560	-	731	683	-	-	-	-	-	-	-
Stage 2	724	683	-	569	557	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	292	312	742	304	312	764	1220	-	-	1267	-	-
Mov Cap-2 Maneuver	292	312	-	304	312	-	-	-	-	-	-	-
Stage 1	574	514	-	731	683	-	-	-	-	-	-	-
Stage 2	698	683	-	519	511	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	16.9		15.5		0		1.8	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1220	-	-	305	407	1267	-	-
HCM Lane V/C Ratio	-	-	-	0.011	0.157	0.068	-	-
HCM Control Delay (s)	0	-	-	16.9	15.5	8	0	-
HCM Lane LOS	A	-	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.6	0.2	-	-

HCM 6th TWSC  
1: N 7th Street & E Main Street

02/24/2020

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	45	305	13	6	456	28	8	0	4	8	0	19
Future Vol, veh/h	45	305	13	6	456	28	8	0	4	8	0	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	92	92	93	93	92	92	92	93	92	93
Heavy Vehicles, %	4	4	2	2	2	2	2	2	2	0	2	0
Mvmt Flow	48	328	14	7	490	30	9	0	4	9	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	520	0	0	342	0	0	960	965	335	952	957	505
Stage 1	-	-	-	-	-	-	431	431	-	519	519	-
Stage 2	-	-	-	-	-	-	529	534	-	433	438	-
Critical Hdwy	4.14	-	-	4.12	-	-	7.12	6.52	6.22	7.1	6.52	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.1	5.52	-
Follow-up Hdwy	2.236	-	-	2.218	-	-	3.518	4.018	3.318	3.5	4.018	3.3
Pot Cap-1 Maneuver	1036	-	-	1217	-	-	236	255	707	241	258	571
Stage 1	-	-	-	-	-	-	603	583	-	544	533	-
Stage 2	-	-	-	-	-	-	533	524	-	605	579	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1036	-	-	1217	-	-	216	238	707	228	241	571
Mov Cap-2 Maneuver	-	-	-	-	-	-	216	238	-	228	241	-
Stage 1	-	-	-	-	-	-	569	550	-	513	529	-
Stage 2	-	-	-	-	-	-	510	520	-	567	546	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0.1	18.4	14.8
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	281	1036	-	-	1217	-	-	395
HCM Lane V/C Ratio	0.046	0.047	-	-	0.005	-	-	0.073
HCM Control Delay (s)	18.4	8.6	0	-	8	0	-	14.8
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.2

HCM 6th TWSC  
2: S Pine Street & W Polk Street/E Polk Street

02/24/2020

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	1	0	27	0	9	0	348	8	14	330	3
Future Vol, veh/h	1	1	0	27	0	9	0	348	8	14	330	3
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	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	4	4	4	1	1	1
Mvmt Flow	1	1	0	33	0	11	0	419	10	17	398	4

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	864	863	400	859	860	424	402	0	0	429	0	0
Stage 1	434	434	-	424	424	-	-	-	-	-	-	-
Stage 2	430	429	-	435	436	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.14	-	-	4.11	-	-
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	2.236	-	-	2.209	-	-
Pot Cap-1 Maneuver	277	295	654	279	296	634	1146	-	-	1136	-	-
Stage 1	604	585	-	612	590	-	-	-	-	-	-	-
Stage 2	607	587	-	604	583	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	268	289	654	274	290	634	1146	-	-	1136	-	-
Mov Cap-2 Maneuver	268	289	-	274	290	-	-	-	-	-	-	-
Stage 1	604	574	-	612	590	-	-	-	-	-	-	-
Stage 2	597	587	-	591	572	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	18.1		18.1		0		0.3	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1146	-	-	278	319	1136	-	-
HCM Lane V/C Ratio	-	-	-	0.009	0.136	0.015	-	-
HCM Control Delay (s)	0	-	-	18.1	18.1	8.2	0	-
HCM Lane LOS	A	-	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.5	0	-	-

HCM 6th TWSC  
1: N 7th Street & E Main Street

08/17/2020

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	9	343	11	5	214	2	35	0	16	25	0	37
Future Vol, veh/h	9	343	11	5	214	2	35	0	16	25	0	37
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	92	92	90	90	92	92	92	90	92	90
Heavy Vehicles, %	3	3	2	2	3	3	2	2	2	2	2	2
Mvmt Flow	10	381	12	5	238	2	38	0	17	28	0	41

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	240	0	0	393	0	0	677	657	387	665	662	239
Stage 1	-	-	-	-	-	-	407	407	-	249	249	-
Stage 2	-	-	-	-	-	-	270	250	-	416	413	-
Critical Hdwy	4.13	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.227	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1321	-	-	1166	-	-	367	385	661	374	382	800
Stage 1	-	-	-	-	-	-	621	597	-	755	701	-
Stage 2	-	-	-	-	-	-	736	700	-	614	594	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1321	-	-	1166	-	-	344	379	661	360	376	800
Mov Cap-2 Maneuver	-	-	-	-	-	-	344	379	-	360	376	-
Stage 1	-	-	-	-	-	-	615	591	-	747	697	-
Stage 2	-	-	-	-	-	-	695	697	-	592	588	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.2			15.3			12.7		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	405	1321	-	-	1166	-	-	536
HCM Lane V/C Ratio	0.137	0.008	-	-	0.005	-	-	0.129
HCM Control Delay (s)	15.3	7.7	0	-	8.1	0	-	12.7
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.4



HCM 6th TWSC  
2: S Pine Street & W Polk Street/E Polk Street

08/17/2020

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	2	0	38	0	24	0	240	10	77	269	0
Future Vol, veh/h	1	2	0	38	0	24	0	240	10	77	269	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	2	2	2	9	9	9	5	5	5
Mvmt Flow	1	2	0	43	0	27	0	270	11	87	302	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	765	757	302	753	752	276	302	0	0	281	0	0
Stage 1	476	476	-	276	276	-	-	-	-	-	-	-
Stage 2	289	281	-	477	476	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.12	6.52	6.22	4.19	-	-	4.15	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.518	4.018	3.318	2.281	-	-	2.245	-	-
Pot Cap-1 Maneuver	323	339	742	326	339	763	1220	-	-	1264	-	-
Stage 1	574	560	-	730	682	-	-	-	-	-	-	-
Stage 2	723	682	-	569	557	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	292	311	742	304	311	763	1220	-	-	1264	-	-
Mov Cap-2 Maneuver	292	311	-	304	311	-	-	-	-	-	-	-
Stage 1	574	514	-	730	682	-	-	-	-	-	-	-
Stage 2	697	682	-	519	511	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17	16	0	1.8
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1220	-	-	304	396	1264	-	-
HCM Lane V/C Ratio	-	-	-	0.011	0.176	0.068	-	-
HCM Control Delay (s)	0	-	-	17	16	8.1	0	-
HCM Lane LOS	A	-	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.6	0.2	-	-

HCM 6th TWSC  
1: N 7th Street & E Main Street

08/17/2020

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	45	305	38	16	456	28	22	0	10	8	0	19
Future Vol, veh/h	45	305	38	16	456	28	22	0	10	8	0	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	92	92	93	93	92	92	92	93	92	93
Heavy Vehicles, %	4	4	2	2	2	2	2	2	2	0	2	0
Mvmt Flow	48	328	41	17	490	30	24	0	11	9	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	520	0	0	369	0	0	994	999	349	989	1004	505
Stage 1	-	-	-	-	-	-	445	445	-	539	539	-
Stage 2	-	-	-	-	-	-	549	554	-	450	465	-
Critical Hdwy	4.14	-	-	4.12	-	-	7.12	6.52	6.22	7.1	6.52	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.1	5.52	-
Follow-up Hdwy	2.236	-	-	2.218	-	-	3.518	4.018	3.318	3.5	4.018	3.3
Pot Cap-1 Maneuver	1036	-	-	1190	-	-	224	243	694	228	242	571
Stage 1	-	-	-	-	-	-	592	575	-	530	522	-
Stage 2	-	-	-	-	-	-	520	514	-	592	563	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1036	-	-	1190	-	-	203	224	694	211	223	571
Mov Cap-2 Maneuver	-	-	-	-	-	-	203	224	-	211	223	-
Stage 1	-	-	-	-	-	-	557	541	-	499	512	-
Stage 2	-	-	-	-	-	-	491	504	-	548	530	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	1			0.3			20.9			15.3		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	261	1036	-	-	1190	-	-	379
HCM Lane V/C Ratio	0.133	0.047	-	-	0.015	-	-	0.077
HCM Control Delay (s)	20.9	8.6	0	-	8.1	0	-	15.3
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0	-	-	0.2

HCM 6th TWSC  
 2: S Pine Street & W Polk Street/E Polk Street

08/17/2020

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	1	0	31	0	9	0	348	14	14	330	3
Future Vol, veh/h	1	1	0	31	0	9	0	348	14	14	330	3
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	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	4	4	4	1	1	1
Mvmt Flow	1	1	0	37	0	11	0	419	17	17	398	4

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	867	870	400	863	864	428	402	0	0	436	0	0
Stage 1	434	434	-	428	428	-	-	-	-	-	-	-
Stage 2	433	436	-	435	436	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.14	-	-	4.11	-	-
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	2.236	-	-	2.209	-	-
Pot Cap-1 Maneuver	275	292	654	277	294	631	1146	-	-	1129	-	-
Stage 1	604	585	-	609	588	-	-	-	-	-	-	-
Stage 2	605	583	-	604	583	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	266	286	654	272	288	631	1146	-	-	1129	-	-
Mov Cap-2 Maneuver	266	286	-	272	288	-	-	-	-	-	-	-
Stage 1	604	574	-	609	588	-	-	-	-	-	-	-
Stage 2	595	583	-	591	572	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	18.2		18.6		0		0.3	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1146	-	-	276	312	1129	-	-
HCM Lane V/C Ratio	-	-	-	0.009	0.154	0.015	-	-
HCM Control Delay (s)	0	-	-	18.2	18.6	8.2	0	-
HCM Lane LOS	A	-	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.5	0	-	-

# **Exhibit F: Geotechnical Engineering Report**

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## **Geotechnical Engineering Report**

JR Meadows No. 2  
10215 NE Old McMinnville Hwy  
Carlton, Oregon 97111  
Tax Lot 1300, Yamhill County Tax Map 3 4 22

GeoPacific Engineering, Inc. Job No. 20-5415  
August 20, 2020



Real-World Geotechnical Solutions  
Investigation • Design • Construction Support

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- 2 Site Aerial and Exploration Locations
- 3 Site Plan and Exploration Locations
- 4 Typical Perimeter Footing Drain Detail



Real-World Geotechnical Solutions  
Investigation • Design • Construction Support

August 20, 2020  
Project No. 20-5415

Mr. Steve Reimann  
TJA, LLC  
9110 NW Clay Pit Road  
Yamhill, Oregon 97148  
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Phone: (503) 563-6151  
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**SUBJECT: GEOTECHNICAL ENGINEERING REPORT  
JR MEADOWS NO. 2  
10215 NE OLD MCMINNVILLE HWY  
CARLTON, OREGON 97111  
TAX LOT 1300 YAMHILL COUNTY TAX MAP 3 4 22**

## 1.0 PROJECT INFORMATION

This report presents the results of a geotechnical engineering study conducted by GeoPacific Engineering, Inc. (GeoPacific) for the above-referenced project. The purpose of our investigation was to evaluate subsurface conditions at the site, and to provide geotechnical recommendations for site development. This geotechnical study was performed in accordance with GeoPacific Proposal No. P-7137, dated October 22, 2019, and your subsequent authorization of our proposal and *General Conditions for Geotechnical Services*.

**Site Location:** 10215 NE Old McMinnville Hwy  
Carlton, Oregon 97111  
(see Figures 1 through 3)

---

**Civil Engineer:** AKS Engineering, LLC  
12965 SW Herman Rd, STE 100  
Tualatin, Oregon 97062  
Phone: (503) 563-6151

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**Jurisdictional Agency:** Yamhill County, Oregon

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**Geotechnical Engineer:** GeoPacific Engineering, Inc  
14835 SW 72<sup>nd</sup> Avenue  
Portland, Oregon 97224  
Phone: (503) 598-8445  
Fax: (503) 941-9281



## **2.0 SITE AND PROJECT DESCRIPTION**

As indicated on Figures 1 through 3, the subject site is located at 10215 NE Old McMinnville Hwy in Carlton, Oregon. The site is comprised Yamhill County Tax Lot 1300 on tax map 3 4 22, totaling approximately 18.6-acres in size. Approximately 14.35-acres of the property is proposed for development. The site latitude and longitude are 45.288798, -123.166317, and the legal description is the SE  $\frac{1}{4}$  of Section 22, T3S, R4W, Willamette Meridian. The site is bordered by NE Old McMinnville Hwy to the east, and by existing agricultural and residential properties to the north, west, and south. Topography at the site is relatively level to moderately sloping. The northeastern portion of the site contains an area which slopes at an approximate 50 percent gradient over an approximately 12-foot vertical change. In general, the site slopes are gentle and slope to the north and west. Site elevations ranging from approximately 144 to 172 feet above mean sea level (amsl).

The property contains an existing residential home and various storage areas for vehicles and equipment, primarily located in the 4.28-acres not currently proposed for development. Gravel drives extend into the site from NE Old McMinnville Hwy, soil stockpiles have been bermed along the margins of the gravel drives. At the western end of the gravel drive there is an area where some vehicles and soil stockpiles are present within the proposed development area. The remainder of the site consists of an open grassy field surrounded by heavily vegetated coniferous areas. As shown on Figure 2, the heavily vegetated areas are present at the western and northeastern portions of the site. The coniferous areas also contain thick scrub oak, blackberries, and understory vegetation.

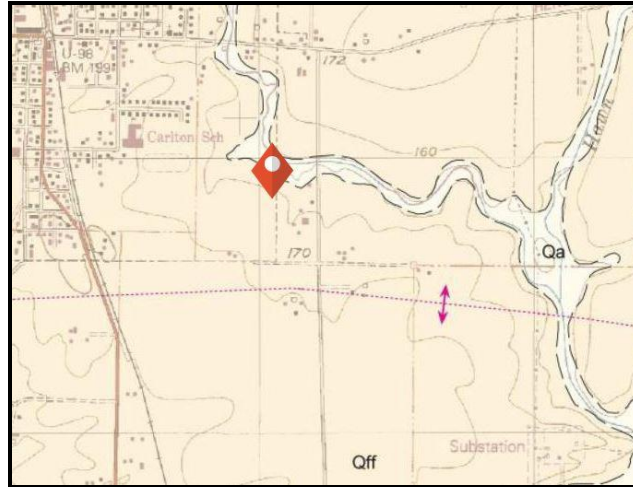
Based upon our review of site plans and communication with the civil engineer, GeoPacific understands that the proposed development at the site will consist of construction of 55 residential building lots, new public streets, and new underground utilities. We anticipate that the homes will be constructed with typical spread foundations and wood framing, with maximum structural loading on column footings and continuous strip footings on the order of 10 to 35 kips, and 2 to 4 kips respectively. We have not reviewed a grading plan at this time but anticipate that cuts and fills will be proposed on the order of 10 feet or less. We understand that the northeastern portion of the site is located within the FEMA 100-Year flood zone, and that a seasonal stream is mapped as flowing through the area. Based on our review of the proposed development it appears that this area is largely located outside of the development area, however the proposed stormwater Tract A may encroach into the zone.

## **3.0 REGIONAL GEOLOGIC SETTING**

Regionally, the subject site lies within the Willamette Valley/Puget Sound lowland, a broad structural depression situated between the Coast Range on the west and the Cascade Range on the east. A series of discontinuous faults subdivide the Willamette Valley into a mosaic of fault-bounded, structural blocks (Yeats et al., 1996). Uplifted structural blocks form bedrock highlands, while down-warped structural blocks form sedimentary basins.

According to the *Geologic Map of the Carlton Quadrangle, Yamhill County, Oregon, U.S. Geological Survey, Open-File Report 2009-1172, 2009*, the site is underlain by upper Pleistocene-aged (approximately 14,000 years ago), unconsolidated fine-grained sediment

consisting of clay, silt, and fine sand, deposited by repeated catastrophic glacial outburst flooding of Glacial Lake Missoula (Qff) that flowed down the Columbia River and re-deposited in the Willamette Valley. The geologic map indicates that in the northeastern portion of the site, the site is underlain by Holocene-aged (approximately 10,000 years ago to present), alluvial deposits (Qa) consisting of unconsolidated clay, silt, sand, and gravel deposited on floodplains and in stream channels.



*Geologic Map of the Carlton Quadrangle, Yamhill County, Oregon, 2009. Site Location Indicated with Red Diamond.*

The *Web Soil Survey* (United States Department of Agriculture, Natural Resource Conservation Service (USDA NRCS 2020 Website), indicates that near-surface soils primarily consist of the Amity, Waldo, and Woodburn silt loam soils series. These soils generally consist of very deep, poorly drained, to moderately well drained soils, that formed in silty stratified, glaciolacustrine deposits.

#### **4.0 REGIONAL SEISMIC SETTING**

At least three major fault zones capable of generating damaging earthquakes are thought to exist in the vicinity of the subject site. These include the Portland Hills Fault Zone, the Gales Creek-Newberg-Mt. Angel Structural Zone, and the Cascadia Subduction Zone.

##### **4.1 Portland Hills Fault Zone**

The Portland Hills Fault Zone is a series of NW-trending faults that include the central Portland Hills Fault, the western Oatfield Fault, and the eastern East Bank Fault. These faults occur in a northwest-trending zone that varies in width between 3.5 and 5.0 miles. The combined three faults reportedly vertically displace the Columbia River Basalt by 1,130 feet and appear to control thickness changes in late Pleistocene (approx. 780,000 years) sediment (Madin, 1990). The Portland Hills Fault occurs along the Willamette River at the base of the Portland Hills and is located approximately 28 miles northeast of the site. The Oatfield Fault occurs along the western side of the Portland Hills and is located approximately 25.5 miles northeast of the site. The East Bank Fault occurs along the eastern margin of the Willamette River, and is located approximately 29 miles northeast of the site. The accuracy of the fault mapping is stated to be within 500 meters (Wong, et al., 2000).

According to the USGS Earthquake Hazards Program, the fault was originally mapped as a down-to-the-northeast normal fault but has also been mapped as part of a regional-scale zone of right-lateral, oblique slip faults, and as a steep escarpment caused by asymmetrical folding above a south-west dipping, blind thrust fault. The Portland Hills fault offsets Miocene Columbia River Basalts, and Miocene to Pliocene sedimentary rocks of the Troutdale Formation. No fault scarps on surficial Quaternary deposits have been described along the fault trace, and the fault is mapped as buried by the Pleistocene aged Missoula flood deposits. No historical seismicity is correlated with the mapped portion of the Portland Hills Fault Zone, but in 1991 a M3.5 earthquake occurred on a NW-trending shear plane located 1.3 miles east of the fault (Yelin, 1992). Although there is no definitive evidence of recent activity, the Portland Hills Fault Zone is assumed to be potentially active (Geomatrix Consultants, 1995).

#### **4.2 Gales Creek-Newberg-Mt. Angel Structural Zone**

The Gales Creek-Newberg-Mt. Angel Structural Zone is a 50-mile-long zone of discontinuous, NW-trending faults that lies about 6.5 miles northeast of the subject site. These faults are recognized in the subsurface by vertical separation of the Columbia River Basalt and offset seismic reflectors in the overlying basin sediment (Yeats et al., 1996; Werner et al., 1992). A geologic reconnaissance and photogeologic analysis study conducted for the Scoggins Dam site in the Tualatin Basin revealed no evidence of deformed geomorphic surfaces along the structural zone (Unruh et al., 1994). No seismicity has been recorded on the Gales Creek Fault or Newberg Fault (the fault closest to the subject site); however, these faults are considered to be potentially active because they may connect with the seismically active Mount Angel Fault and the rupture plane of the 1993 M5.6 Scotts Mills earthquake (Werner et al. 1992; Geomatrix Consultants, 1995).

According to the USGS Earthquake Hazards Program, the Mount Angel fault is mapped as a high-angle, reverse-oblique fault, which offsets Miocene rocks of the Columbia River Basalts, and Miocene and Pliocene sedimentary rocks. The fault appears to have controlled emplacement of the Frenchman Spring Member of the Wanapum Basalts, and thus must have a history that predates the Miocene age of these rocks. No unequivocal evidence of deformation of Quaternary deposits has been described, but a thick sequence of sediments deposited by the Missoula floods covers much of the southern part of the fault trace.

#### **4.3 Cascadia Subduction Zone**

The Cascadia Subduction Zone is a 680-mile-long zone of active tectonic convergence where oceanic crust of the Juan de Fuca Plate is subducting beneath the North American continent at a rate of 4 cm per year (Goldfinger et al., 1996). A growing body of geologic evidence suggests that prehistoric subduction zone earthquakes have occurred (Atwater, 1992; Carver, 1992; Peterson et al., 1993; Geomatrix Consultants, 1995). This evidence includes: (1) buried tidal marshes recording episodic, sudden subsidence along the coast of northern California, Oregon, and Washington, (2) burial of subsided tidal marshes by tsunami wave deposits, (3) paleoliquefaction features, and (4) geodetic uplift patterns on the Oregon coast. Radiocarbon dates on buried tidal marshes indicate a recurrence interval for major subduction zone earthquakes of 250 to 650 years with the last event occurring 300 years ago (Atwater, 1992; Carver, 1992; Peterson et al., 1993; Geomatrix Consultants, 1995). The inferred seismogenic portion of the plate interface lies approximately along the Oregon Coast at depths of between 20 and 40 kilometers below the surface.

## 5.0 FIELD EXPLORATION AND SUBSURFACE CONDITIONS

Our subsurface explorations for this report were conducted on February 19, 2019. Eight exploratory test pits (TP-1 through TP-8) were excavated at the site to a maximum depth of approximately 11 feet bgs using a Case, 16,000 lbs rubber-tired backhoe subcontracted by GeoPacific. Explorations were conducted under the full-time observation of a GeoPacific geologist. During the explorations, pertinent information including soil sample depths, stratigraphy, soil engineering characteristics, and groundwater occurrence were recorded. Soils were classified in accordance with the Unified Soil Classification System (USCS). Soil samples obtained from the explorations were placed in relatively air-tight plastic bags. Upon completion of excavation and testing the explorations were loosely backfilled with onsite soils. The approximate locations of the explorations are indicated on Figures 2 and 3. It should be noted that exploration locations were located in the field by pacing or taping distances from apparent property corners and other site features shown on the plans provided. As such, the locations of the explorations should be considered approximate. Summary exploration logs are attached. The stratigraphic contacts shown on the individual test pit logs represent the approximate boundaries between soil types. The actual transitions may be more gradual. The soil and groundwater conditions depicted are only for the specific dates and locations reported, and therefore, are not necessarily representative of other locations and times. Soil and groundwater conditions encountered in the explorations are summarized below.

### 5.1 Soil Descriptions

#### ***Topsoil:***

At the locations of our test pit explorations in the grassy portions of the property the topsoil horizon was typically observed to consist of 6 to 8 inches of brown, moderately organic SILT (OL-ML), containing fine roots. At the locations of test pits TP-5 and TP-6 which were conducted in the densely wooded western portion of the site, the topsoil horizon was observed to consist of 24 to 30 inches dark brown, highly organic SILT (OL-ML), containing abundant roots.

***SILT:*** Underlying the topsoil within our test pit explorations soils were observed to consist of brown with some orange mottling, medium stiff to stiff, very moist to wet, low plasticity, SILT (ML). In general soil strength was observed to increase at depths of 2 to 3 feet below the existing ground surface. The soil type was observed to extend to the maximum depth of exploration (11 feet bgs).

Soils laboratory testing conducted on representative samples collected from test pits TP-1 and TP-3 indicated that the soil type classified as SILT (ML) according to the USCS soil classification system, and as A-6(13), A-6(14), and A-7-5(20) according to AASHTO standards. Sieve analysis indicated 98 to 99 percent by weight passing the U.S. No. 200 sieve, and moisture content of 32 to 38 percent. Atterberg Limit testing indicated a liquid limit of 38 to 48, and a plasticity index of 10 to 16. Pocket penetrometer measurements conducted within the upper four feet of the ground surface below the topsoil layers ranged from approximately 1.5 to greater than 4.0 tons/ft<sup>2</sup>.

**5.2 Shrink-Swell Potential**

Fine-grained soils were encountered within test pit explorations conducted at the site. Based upon the results of our soils laboratory testing and our local experience with the soil layers in the vicinity of the subject site, the plasticity of the soils is low, and the shrink-swell potential of the soil types is considered to be low. Special design measures are not considered necessary to minimize the risk of uncontrolled damage of foundations as a result of potential soil expansion at this site.

**5.3 Groundwater and Soil Moisture**

On February 19, 2020, observed soil moisture conditions were generally very moist to wet. Light perched groundwater seepage was observed within test pits TP-7 and TP-8 at depths of approximately 2 to 4 feet bgs. Surface streaming flow was observed in the western portion of the site at the approximate location indicated on Figure 2. Test pit TP-5 conducted in that area show that the standing water was perched on the ground surface and is likely seasonal. According to review of available Oregon State well logs in the vicinity of the subject site, groundwater has been encountered at depths ranging from approximately 15 to 30 feet bgs in the vicinity of the subject site. It is anticipated that groundwater conditions will vary depending on the season, local subsurface conditions, changes in site utilization, and other factors. Perched groundwater may be encountered in localized areas. Seeps and springs may exist in areas not explored and may become evident during site grading.

**5.4 Infiltration Testing**

Soil infiltration testing was performed using the encased falling-head test method at a depth of 10 feet bgs within test pit TP-3 in accordance with the methodology of ASTM standards, and the 2016 City of Portland Stormwater Management Manual. The approximate location of the subsurface exploration is indicated on Figures 2 and 3. The test location was pre-saturated prior to testing. During testing the water level was measured to the nearest 0.01 foot (1/8 inch) from a fixed point, and the change in water level was recorded at regular intervals until three successive measurements showing a consistent infiltration rate were achieved.

Table 1 summarizes the results of the infiltration testing. Infiltration rates have been reported without applying a factor of safety. Soils at the test locations were observed and sampled in order to characterize the subsurface profile. Tested native soils classified as Silt (ML).

**Table 1: Summary of Infiltration Test Results**

Test Location	Test Designation	Depth (feet)	Soil Type	% Passing U.S. No 200 Sieve	Infiltration Rate (inches/hr)	Hydraulic Head Range (inches)	Test Type
TP-3	IT-1	10	ML	99.1	0	0-12	Encased-Falling Head

No infiltration was measured at the location and depth tested. During testing the water level was observed to rise within the encased tube indicating near saturated soil conditions. Based upon the results of our testing it appears that stormwater infiltration systems are not geotechnically feasible at the location and depth tested.

Infiltration test methods and procedures attempt to simulate the as-built conditions of the planned disposal systems. However, due to natural variations in soil properties, actual infiltration rates may vary from the measured and/or recommended design rates. Infiltration rates presented in this report should not be applied to inappropriate or complex hydrological models such as a closed basin without extensive further studies. Evaluating environmental implications of stormwater disposal at this site are beyond the scope of this study.

## **6.0 CONCLUSIONS AND RECOMMENDATIONS**

Our site investigation indicates that the proposed construction appears to be geotechnically feasible, provided that the recommendations of this report are incorporated into the design and construction phases of the project. The primary geotechnical concerns associated with site development are 1) thick topsoil layers in heavily wood portions of the site; and 2) the presence of soil stockpiles in areas proposed for development.

### **6.1 Site Preparation Recommendations**

Areas of proposed construction and areas to receive fill should be cleared of any organic and inorganic debris, and loose stockpiled soils. Inorganic debris and organic materials from clearing should be removed from the site. Organic-rich soils and root zones should then be stripped from construction areas of the site or where engineered fill is to be placed. Depth of stripping of existing organic topsoil is estimated to be approximately 6 to 8 inches in the open grassy portions of the site and should be anticipated to increase to 18 to 36 inches in areas where trees and vegetation are present.

The final depth of soil removal should be determined by the geotechnical engineer or designated representative during site inspection while stripping/excavation is being performed. Stripped topsoil should be removed from areas proposed for placement of engineered fill and structures. Any remaining topsoil should be stockpiled only in designated areas and stripping operations should be observed and documented by the geotechnical engineer or his representative.

Where/if encountered, except as noted above, undocumented fills and any subsurface structures (dry wells, basements, driveway and landscaping fill, old utility lines, septic leach fields, etc.) should be completely removed and the excavations backfilled with engineered fill. As indicated on Figure 2, stockpiled soils are present in the northeastern portion of the site.

Site earthwork may be impacted by wet weather conditions. Stabilization of subgrade soils may require aeration and recompaction. If subgrade soils are found to be difficult to stabilize, over-excavation, placement of granular soils, or cement treatment of subgrade soils may be feasible options. GeoPacific should be onsite to observe preparation of subgrade soil conditions prior to placement of engineered fill.

### **6.2 Engineered Fill**

We have not reviewed a grading plan at this time but anticipate that cuts and fills will be proposed on the order of 10 feet or less. All grading for the proposed construction should be performed as engineered grading in accordance with the applicable building code at the time of construction with the exceptions and additions noted herein. Site grading should be conducted in accordance with

the requirements outlined in the 2018 International Building Code (IBC), and 2019 Oregon Structural Specialty Code (OSSC), Chapter 18 and Appendix J. Areas proposed for fill placement should be prepared as described in Section 6.1, *Site Preparation Recommendations*. Surface soils should then be scarified and recompacted prior to placement of structural fill. Site preparation, soil stripping, and grading activities should be observed and documented by a geotechnical engineer or his representative. Proper test frequency and earthwork documentation usually requires daily observation and testing during stripping, rough grading, and placement of engineered fill.

Onsite native soils appear to be suitable for use as engineered fill. Soils containing greater than 5 percent organic content should not be used as structural fill. Imported fill material must be approved by the geotechnical engineer prior to being imported to the site. Oversize material greater than 6 inches in size should not be used within 3 feet of foundation footings, and material greater than 12 inches in diameter should not be used in engineered fill.

Engineered fill should be compacted in horizontal lifts not exceeding 12 inches using standard compaction equipment. We recommend that engineered fill be compacted to at least 95 percent of the maximum dry density determined by ASTM D698 (Standard Proctor) or equivalent. Soils should be moisture conditioned to within two percent of optimum moisture. Field density testing should conform to ASTM D2922 and D3017, or D1556. All engineered fill should be observed and tested by the project geotechnical engineer or his representative. Typically, one density test is performed for at least every 2 vertical feet of fill placed or every 500 yd<sup>3</sup>, whichever requires more testing. Because testing is performed on an on-call basis, we recommend that the earthwork contractor be held contractually responsible for test scheduling and frequency.

Site earthwork may be impacted by shallow groundwater, soil moisture and wet weather conditions. Earthwork in wet weather would likely require extensive use of additional crushed aggregate, cement or lime treatment, or other special measures, at considerable additional cost compared to earthwork performed under dry-weather conditions.

### **6.3 Excavating Conditions and Utility Trench Backfill**

We anticipate that onsite soils can generally be excavated using conventional heavy equipment. Bedrock was not encountered within our subsurface explorations which extended to a maximum depth of 11 feet bgs. Maintenance of safe working conditions, including temporary excavation stability, is the responsibility of the contractor. Actual slope inclinations at the time of construction should be determined based on safety requirements and actual soil and groundwater conditions. All temporary cuts in excess of 4 feet in height should be sloped in accordance with U.S. Occupational Safety and Health Administration (OSHA) regulations (29 CFR Part 1926) or be shored. The existing native soils classify as Type B Soil and temporary excavation side slope inclinations as steep as 1H:1V may be assumed for planning purposes. These cut slope inclinations are applicable to excavations above the water table only.

Shallow, perched groundwater may be encountered at the site and should be anticipated in excavations and utility trenches. Vibrations created by traffic and construction equipment may cause some caving and raveling of excavation walls. In such an event, lateral support for the excavation walls should be provided by the contractor to prevent loss of ground support and possible distress to existing or previously constructed structural improvements.

Underground utility pipes should be installed in accordance with the procedures specified in ASTM D2321 and Yamhill County standards. We recommend that structural trench backfill be compacted to at least 95 percent of the maximum dry density obtained by the Standard Proctor (ASTM D698, AASHTO T-99) or equivalent. Initial backfill lift thicknesses for a ¾"-0 crushed aggregate base may need to be as great as 4 feet to reduce the risk of flattening underlying flexible pipe. Subsequent lift thickness should not exceed 1 foot. If imported granular fill material is used, then the lifts for large vibrating plate-compaction equipment (e.g. hoe compactor attachments) may be up to 2 feet, provided that proper compaction is being achieved and each lift is tested. Use of large vibrating compaction equipment should be carefully monitored near existing structures and improvements due to the potential for vibration-induced damage.

Adequate density testing should be performed during construction to verify that the recommended relative compaction is achieved. Typically, at least one density test is taken for every 4 vertical feet of backfill on each 100-lineal-foot section of trench.

#### **6.4 Erosion Control Considerations**

During our field exploration program, we did not observe soil conditions which are considered highly susceptible to erosion. In our opinion, the primary concern regarding erosion potential will occur during construction in areas that have been stripped of vegetation. Erosion at the site during construction can be minimized by implementing the project erosion control plan, which should include judicious use of straw wattles, fiber rolls, and silt fences. If used, these erosion control devices should remain in place throughout site preparation and construction.

Erosion and sedimentation of exposed soils can also be minimized by quickly re-vegetating exposed areas of soil, and by staging construction such that large areas of the project site are not denuded and exposed at the same time. Areas of exposed soil requiring immediate and/or temporary protection against exposure should be covered with either mulch or erosion control netting/blankets. Areas of exposed soil requiring permanent stabilization should be seeded with an approved grass seed mixture, or hydroseeded with an approved seed-mulch-fertilizer mixture.

#### **6.5 Wet Weather Earthwork**

Soils underlying the site are likely to be moisture sensitive and will be difficult to handle or traverse with construction equipment during periods of wet weather. Earthwork is typically most economical when performed under dry weather conditions. Earthwork performed during the wet-weather season will require expensive measures such as cement treatment or imported granular material to compact areas where fill may be proposed to the recommended engineering specifications. If earthwork is to be performed or fill is to be placed in wet weather or under wet conditions when soil moisture content is difficult to control, the following recommendations should be incorporated into the contract specifications.

- Earthwork should be performed in small areas to minimize exposure to wet weather. Excavation or the removal of unsuitable soils should be followed promptly by the placement and compaction of clean engineered fill. The size and type of construction equipment used may have to be limited to prevent soil disturbance. Under some circumstances, it may be necessary to excavate soils with a backhoe to minimize subgrade disturbance caused by equipment traffic;



- The ground surface within the construction area should be graded to promote run-off of surface water and to prevent the ponding of water;
- Material used as engineered fill should consist of clean, granular soil containing less than 5 percent passing the No. 200 sieve. The fines should be non-plastic. Alternatively, cement treatment of on-site soils may be performed to facilitate wet weather placement;
- The ground surface within the construction area should be sealed by a smooth drum vibratory roller, or equivalent, and under no circumstances should be left uncompacted and exposed to moisture. Soils which become too wet for compaction should be removed and replaced with clean granular materials;
- Excavation and placement of fill should be observed by the geotechnical engineer to verify that all unsuitable materials are removed and suitable compaction and site drainage is achieved; and
- Geotextile silt fences, straw wattles, and fiber rolls should be strategically located to control erosion.

If cement or lime treatment is used to facilitate wet weather construction, GeoPacific should be contacted to provide additional recommendations and field monitoring.

## **6.6 Spread Foundations**

Based upon our review of site plans and communication with the civil engineer, GeoPacific understands that the proposed development at the site will consist of construction of 55 residential building lots. We anticipate that the homes will be constructed with typical spread foundations and wood framing, with maximum structural loading on column footings and continuous strip footings on the order of 10 to 35 kips, and 2 to 4 kips respectively.

The proposed structures may be supported on shallow foundations bearing on stiff, native soils and/or engineered fill, appropriately designed and constructed as recommended in this report. Foundation design, construction, and setback requirements should conform to the applicable building code at the time of construction. For maximization of bearing strength and protection against frost heave, spread footings should be embedded at a minimum depth of 12 inches below exterior grade. If soft soil conditions are encountered at footing subgrade elevation, they should be removed and replaced with compacted crushed aggregate.

The anticipated allowable soil bearing pressure is 1,500 lbs/ft<sup>2</sup> for footings bearing on competent, native soil and/or engineered fill. The recommended maximum allowable bearing pressure may be increased by 1/3 for short-term transient conditions such as wind and seismic loading. For loads heavier than 35 kips, the geotechnical engineer should be consulted. If heavier loads than described above are proposed, it may be necessary to over-excavate point load areas and replace with additional compacted crushed aggregate to achieve a higher allowable bearing capacity. The coefficient of friction between on-site soil and poured-in-place concrete may be taken as 0.42, which includes no factor of safety. The maximum anticipated total and differential footing movements (generally from soil expansion and/or settlement) are 1 inch and ¾ inch over a span of 20 feet, respectively. We anticipate that the majority of the estimated settlement will occur during construction, as loads are applied. Excavations near structural footings should not extend within a 1H:1V plane projected downward from the bottom edge of footings.

Footing excavations should penetrate through topsoil and any disturbed soil to competent subgrade that is suitable for bearing support. All footing excavations should be trimmed neat, and all loose or softened soil should be removed from the excavation bottom prior to placing reinforcing steel bars. Due to the moisture sensitivity of on-site native soils, foundations constructed during the wet weather season may require over-excavation of footings and backfill with compacted, crushed aggregate.

Our recommendations are for residential construction incorporating raised wood floors and conventional spread footing foundations. After site development, a Final Soil Engineer's Report should either confirm or modify the above recommendations.

## **6.7 Concrete Slabs-on-Grade**

Preparation of areas beneath concrete slab-on-grade floors should be performed as described in Section 6.1, *Site Preparation Recommendations* and Section 6.6, *Spread Foundations*. Care should be taken during excavation for foundations and floor slabs, to avoid disturbing subgrade soils. If subgrade soils have been adversely impacted by wet weather or otherwise disturbed, the surficial soils should be scarified to a minimum depth of 8 inches, moisture conditioned to within about 3 percent of optimum moisture content and compacted to engineered fill specifications. Alternatively, disturbed soils may be removed, and the removal zone backfilled with additional crushed rock.

For evaluation of the concrete slab-on-grade floors using the beam on elastic foundation method, a modulus of subgrade reaction of 150 kcf (87 pci) should be assumed for the medium dense, fine to coarse-grained soils anticipated to be present at foundation subgrade elevation following adequate site preparation as described above. This value assumes the concrete slab system is designed and constructed as recommended herein, with a minimum thickness of 8 inches of 1½"-0 crushed aggregate beneath the slab. The total thickness of crushed aggregate will be dependent on the subgrade conditions at the time of construction and should be verified visually by proof-rolling. Under-slab aggregate should be compacted to at least 95 percent of its maximum dry density as determined by ASTM D1557 (Modified Proctor) or equivalent.

In areas where moisture will be detrimental to floor coverings or equipment inside the proposed structure, appropriate vapor barrier and damp-proofing measures should be implemented. A commonly applied vapor barrier system consists of a 10-mil polyethylene vapor barrier placed directly over the capillary break material. Other damp/vapor barrier systems may also be feasible. Appropriate design professionals should be consulted regarding vapor barrier and damp proofing systems, ventilation, building material selection and mold prevention issues, which are outside GeoPacific's area of expertise.

## **6.8 Footing and Roof Drains**

Construction should include typical measures for controlling subsurface water beneath the structures, including positive crawlspace drainage to an adequate low-point drain exiting the foundation, visqueen covering the exposed ground in the crawlspace, and crawlspace ventilation (foundation vents). The client should be informed and educated that some slow flowing water in the crawlspaces is considered normal and not necessarily detrimental to the structures given these

other design elements incorporated into construction. Appropriate design professionals should be consulted regarding crawlspace ventilation, building material selection and mold prevention issues, which are outside GeoPacific's area of expertise.

Down spouts and roof drains should collect roof water in a system separate from the footing drains to reduce the potential for clogging. Roof drain water should be directed to an appropriate discharge point and storm system well away from structural foundations. Grades should be sloped downward and away from buildings to reduce the potential for ponded water near structures.

Perimeter footing drains may be eliminated at the discretion of the geotechnical engineer based on soil conditions encountered at the site and experience with standard local construction practices. Where it is desired to reduce the potential for moist crawl spaces, footing drains may be installed. If concrete slab-on-grade floors are used, perimeter footing drains should be installed as recommended below.

Where deemed necessary, perimeter footing drains should consist of 3 or 4-inch diameter, perforated plastic pipe embedded in a minimum of 1 ft<sup>3</sup> per lineal foot of clean, free-draining drain rock. The drain-pipe and surrounding drain rock should be wrapped in non-woven geotextile (Mirafi 140N, or approved equivalent) to minimize the potential for clogging and/or ground loss due to piping. A minimum 0.5 percent fall should be maintained throughout the drain and non-perforated pipe outlet. Figure 4 presents a typical perimeter footing drain detail. In our opinion, footing drains may outlet at the curb, or on the back sides of lots where sufficient fall is not available to allow drainage to meet the street.

## **6.9 Permanent Below-Grade Walls**

Lateral earth pressures against below-grade retaining walls will depend upon the inclination of any adjacent slopes, type of backfill, degree of wall restraint, method of backfill placement, degree of backfill compaction, drainage provisions, and magnitude and location of any adjacent surcharge loads. At-rest soil pressure is exerted on a retaining wall when it is restrained against rotation. In contrast, active soil pressure will be exerted on a wall if its top is allowed to rotate or yield a distance of roughly 0.001 times its height or greater.

If the subject retaining walls will be free to rotate at the top, they should be designed for an active earth pressure equivalent to that generated by a fluid weighing 35 pcf for level backfill against the wall. For restrained wall, an at-rest equivalent fluid pressure of 52 pcf should be used in design, again assuming level backfill against the wall. These values assume that the recommended drainage provisions are incorporated, and hydrostatic pressures are not allowed to develop against the wall.

During a seismic event, lateral earth pressures acting on below-grade structural walls will increase by an incremental amount that corresponds to the earthquake loading. Based on the Mononobe-Okabe equation and peak horizontal accelerations appropriate for the site location, seismic loading should be modeled using the active or at-rest earth pressures recommended above, plus an incremental rectangular-shaped seismic load of magnitude 6.5H, where H is the total height of the wall.

We assume relatively level ground surface below the base of the walls. As such, we recommend a passive earth pressure of 320 pcf for use in design, assuming wall footings are cast against competent native soils or engineered fill. If the ground surface slopes down and away from the base of any of the walls, a lower passive earth pressure should be used and GeoPacific should be contacted for additional recommendations.

A coefficient of friction of 0.42 may be assumed along the interface between the base of the wall footing and subgrade soils. The recommended coefficient of friction and passive earth pressure values do not include a safety factor, and an appropriate safety factor should be included in design. The upper 12 inches of soil should be neglected in passive pressure computations unless it is protected by pavement or slabs on grade.

The above recommendations for lateral earth pressures assume that the backfill behind the subsurface walls will consist of properly compacted structural fill, and no adjacent surcharge loading. If the walls will be subjected to the influence of surcharge loading within a horizontal distance equal to or less than the height of the wall, the walls should be designed for the additional horizontal pressure. For uniform surcharge pressures, a uniformly distributed lateral pressure of 0.3 times the surcharge pressure should be added. Traffic surcharges may be estimated using an additional vertical load of 250 psf (2 feet of additional fill), in accordance with local practice.

The recommended equivalent fluid densities assume a free-draining condition behind the walls so that hydrostatic pressures do not build-up. This can be accomplished by placing a 12 to 18-inch wide zone of sand and gravel containing less than 5 percent passing the No. 200 sieve against the walls. A 3-inch minimum diameter perforated, plastic drain-pipe should be installed at the base of the walls and connected to a suitable discharge point to remove water in this zone of sand and gravel. The drain-pipe should be wrapped in filter fabric (Mirafi 140N or other as approved by the geotechnical engineer) to minimize clogging.

Wall drains are recommended to prevent detrimental effects of surface water runoff on foundations – not to dewater groundwater. Drains should not be expected to eliminate all potential sources of water entering a basement or beneath a slab-on-grade. An adequate grade to a low point outlet drain in the crawlspace is required by code. Underslab drains are sometimes added beneath the slab when placed over soils of low permeability and shallow, perched groundwater.

Water collected from the wall drains should be directed into the local storm drain system or other suitable outlet. A minimum 0.5 percent fall should be maintained throughout the drain and non-perforated pipe outlet. Down spouts and roof drains should not be connected to the wall drains in order to reduce the potential for clogging. The drains should include clean-outs to allow periodic maintenance and inspection. Grades around the proposed structure should be sloped such that surface water drains away from the building.

GeoPacific should be contacted during construction to verify subgrade strength in wall keyway excavations, to verify that backslope soils are in accordance with our assumptions, and to take density tests on the wall backfill materials.

Structures should be located a horizontal distance of at least 1.5H away from the back of the retaining wall, where H is the total height of the wall. GeoPacific should be contacted for additional foundation recommendations where structures are located closer than 1.5H to the top of any wall.

## 7.0 SEISMIC DESIGN

The Oregon Department of Geology and Mineral Industries (DOGAMI), Oregon HazVu: 2020 Statewide GeoHazards Viewer indicates that the site is in an area where *very strong* ground shaking is anticipated during an earthquake. Structures should be designed to resist earthquake loading in accordance with the methodology described in the 2018 International Building Code (IBC) with applicable Oregon Structural Specialty Code (OSSC) revisions (current 2019). We recommend Site Class D be used for design as defined in ASCE 7-16, Chapter 20, and Table 20.3-1. Design values determined for the site using the ATC Hazards by Location 2020 Seismic Design Maps Summary Report are summarized in Table 2 and are based upon observed existing soil conditions.

**Table 2: Recommended Earthquake Ground Motion Parameters (ASCE-7-16)**

Parameter	Value
Location (Lat, Long), degrees	45.288, -123.166
Probabilistic Ground Motion Values, 2% Probability of Exceedance in 50 yrs	
Peak Ground Acceleration $PGA_M$	0.499 g
Short Period, $S_s$	0.909 g
1.0 Sec Period, $S_1$	0.453 g
Soil Factors for Site Class D:	
$F_a$	1.136
* $F_v$	1.847
$SD_s = 2/3 \times F_a \times S_s$	0.689 g
* $SD_1 = 2/3 \times F_v \times S_1$	0.558 g
Seismic Design Category	D

\*  $F_v$  value reported in the above table is a straight-line interpolation of mapped spectral response acceleration at 1-second period,  $S_1$  per Table 1613.2.3(2) with the assumption that Exception 2 of ASCE 7-16 Chapter 11.4.8 is met per the Structural Engineer. If Exception 2 is not met, and the long-period site coefficient ( $F_v$ ) is required for design, GeoPacific Engineering can be consulted to provide a site-specific procedure as per ASCE 7-16, Chapter 21.

### 7.1 Soil Liquefaction

The Oregon Department of Geology and Mineral Industries (DOGAMI), Oregon HazVu: 2020 Statewide GeoHazards Viewer indicates that the site is in an area considered to be at *high* risk for soil liquefaction during an earthquake. Soil liquefaction is a phenomenon wherein saturated soil deposits temporarily lose strength and behave as a liquid in response to ground shaking caused by strong earthquakes. Soil liquefaction is generally limited to loose sands and granular soils located below the water table, and fine-grained soils with a plasticity index less than 15. The upper 11 feet of the site was observed to be underlain by medium stiff to stiff, low plasticity, SILT located above the static water table, with plasticity indexes ranging from 10 to 16. On February 19, 2020, observed soil moisture conditions were generally very moist to wet. Light perched groundwater seepage was observed within test pits TP-7 and TP-8 at depths of approximately 2 to 4 feet bgs. Static groundwater was not observed. Surface streaming flow was observed in the western portion

of the site at the approximate location indicated on Figure 2. Based upon the results of our study, it is our opinion that the risk of soil liquefaction in the upper 11 feet of the ground surface during a seismic event at the subject site should be considered to be low, however if sandy soil layers are present at greater depths located below the static groundwater table (anticipated to be 15 to 30 feet bgs), then the risk of soil liquefaction may be higher.

If additional information is desired or required regarding the soil liquefaction potential of the subject site during an earthquake, quantitative liquefaction analysis can be performed by GeoPacific. Additional study of liquefaction potential would include conducting an electronic cone penetrometer test (CPT) to a depth of 60 feet bgs, or bedrock refusal, and quantitative liquefaction calculations to estimate seismically induced vertical settlements and lateral spreading.

### 8.0 UNCERTAINTIES AND LIMITATIONS

We have prepared this report for the owner and their consultants for use in design of this project only. This report should be provided in its entirety to prospective contractors for bidding and estimating purposes; however, the conclusions and interpretations presented in this report should not be construed as a warranty of the subsurface conditions. Experience has shown that soil and groundwater conditions can vary significantly over small distances. Inconsistent conditions can occur between explorations that may not be detected by a geotechnical study. If, during future site operations, subsurface conditions are encountered which vary appreciably from those described herein, GeoPacific should be notified for review of the recommendations of this report, and revision of such if necessary.

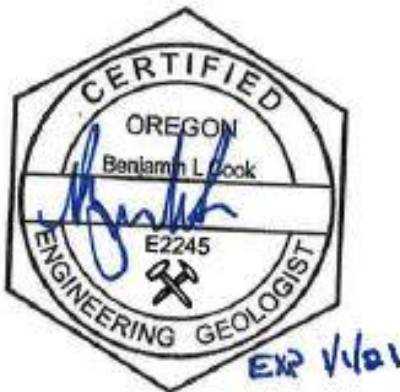
Sufficient geotechnical monitoring, testing and consultation should be provided during construction to confirm that the conditions encountered are consistent with those indicated by explorations. The checklist attached to this report outlines recommended geotechnical observations and testing for the project. Recommendations for design changes will be provided should conditions revealed during construction differ from those anticipated, and to verify that the geotechnical aspects of construction comply with the contract plans and specifications.

Within the limitations of scope, schedule and budget, GeoPacific attempted to execute these services in accordance with generally accepted professional principles and practices in the fields of geotechnical engineering and engineering geology at the time the report was prepared. No warranty, expressed or implied, is made. The scope of our work did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous or toxic substances in the soil, surface water, or groundwater at this site.

We appreciate this opportunity to be of service.

Sincerely,

**GEO PACIFIC ENGINEERING, INC.**



Benjamin L. Cook, C.E.G.  
Senior Engineering Geologist



James D. Imbrie, G.E.  
Principal Geotechnical Engineer

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**CHECKLIST OF RECOMMENDED GEOTECHNICAL TESTING AND OBSERVATION**

Item No.	Procedure	Timing	By Whom	Done
1	Preconstruction meeting	Prior to beginning site work	Contractor, Developer, Civil and Geotechnical Engineers	
2	Fill removal from site or sorting and stockpiling	Prior to mass stripping	Soil Technician/ Geotechnical Engineer	
3	Stripping, aeration, and root-picking operations	During stripping	Soil Technician	
4	Compaction testing of engineered fill (95% of Standard Proctor)	During filling, tested every 2 vertical feet	Soil Technician	
5	Foundation Subgrade Compaction (95% of Modified Proctor)	During Foundation Preparation, Prior to Placement of Reinforcing Steel	Soil Technician/ Geotechnical Engineer	
6	Compaction testing of trench backfill (95% of Standard Proctor)	During backfilling, tested every 4 vertical feet for every 200 linear feet	Soil Technician	
7	Street Subgrade Inspection (95% of Standard Proctor)	Prior to placing base course	Soil Technician	
8	Base course compaction (95% of Modified Proctor)	Prior to paving, tested every 200 linear feet	Soil Technician	
9	Asphalt Compaction (92% Rice Value)	During paving, tested every 100 linear feet	Soil Technician	
10	Final Geotechnical Engineer's Report	Completion of project	Geotechnical Engineer	



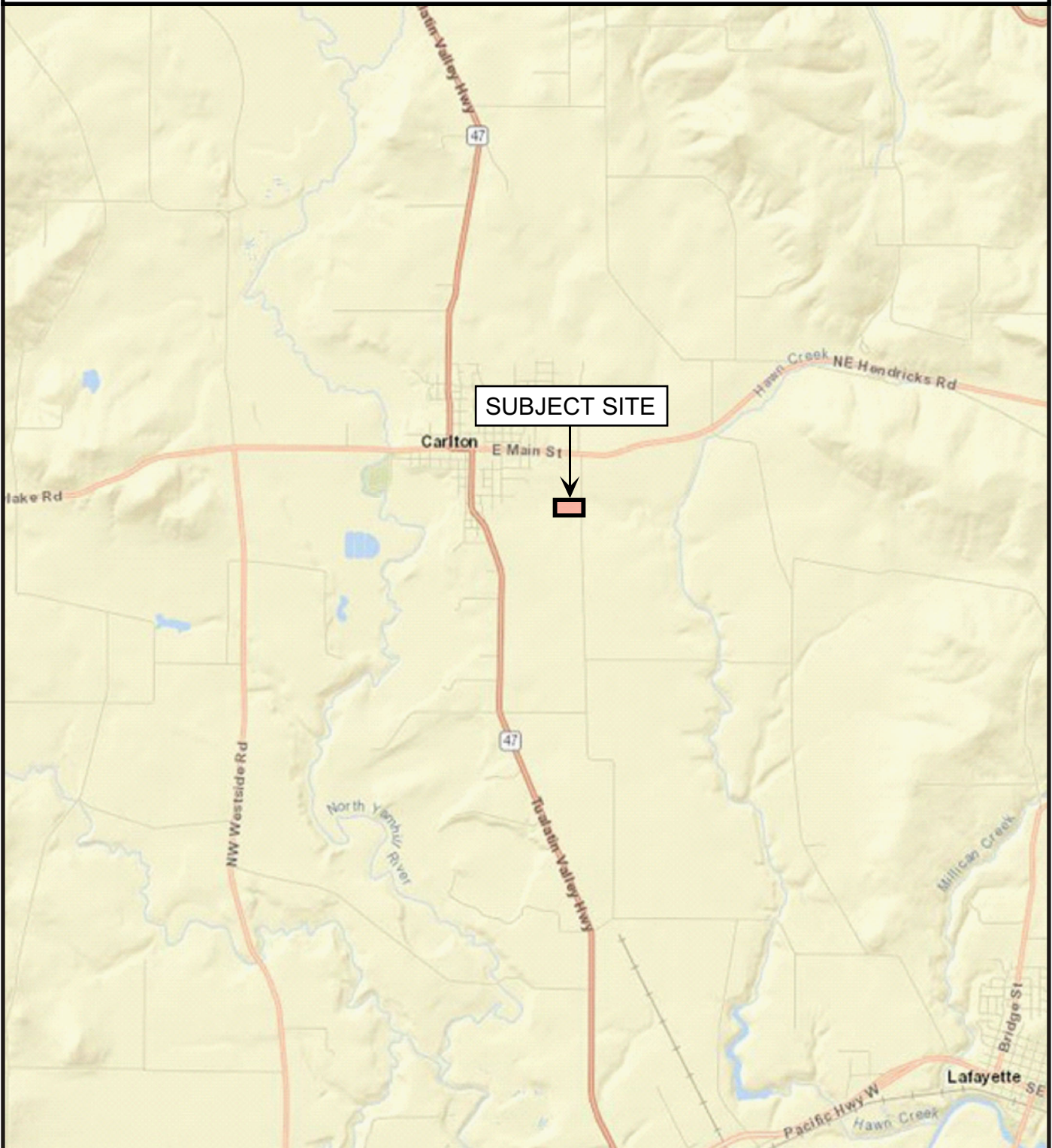
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## FIGURES



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# SITE VICINITY MAP



Base Map: Street View, 2020  
Date: 3/6/2020  
Drawn by: BLC



Project: 10215 NE Old McMinnville Hwy  
Tax Lot 1300 Yamhill County Tax Map 3 4 22  
Carlton, Oregon 97111

Project No. 20-5415

FIGURE 1



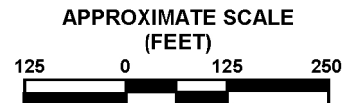
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 Portland, Oregon 97224  
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# SITE AERIAL AND EXPLORATION LOCATIONS



**Legend:**

-  Test Pit Exploration Designation and Approximate Location
-  Test Pit With Infiltration Test Exploration Designation and Approximate Location



Drawn By: BLC  
 Date: 8/21/2020



Project: JR Meadows No. 2  
 10215 NE Old McMinnville Hwy  
 Carlton, Oregon 9711

Project No. 20-5415

FIGURE 2





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# SITE PLAN AND EXPLORATION LOCATIONS



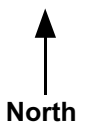
Base Map: AKS Engineering, Preliminary Aerial Photograph Plan, JR Meadows No. 2, Sheet P-12, dated 8/13/2020

**Legend:**

-  Test Pit Exploration Designation and Approximate Location
-  Test Pit With Infiltration Test Exploration Designation and Approximate Location

APPROXIMATE SCALE  
(AS NOTED)

Drawn By: BLC  
 Date: 8/20/2020



Project: JR Meadows No. 2  
 10215 NE Old McMinnville Hwy  
 Carlton, Oregon 9711

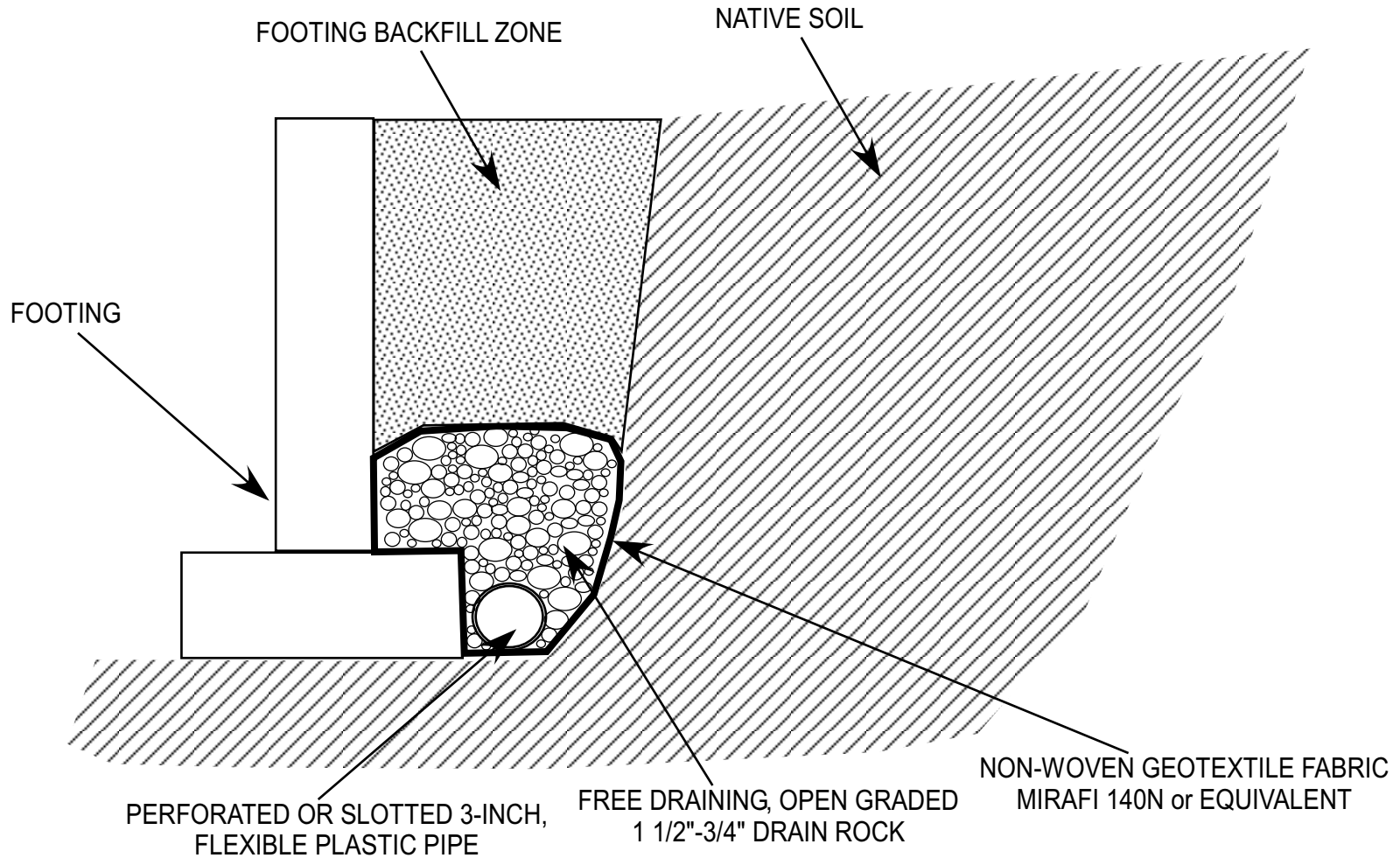
Project No. 20-5415

FIGURE 3



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# TYPICAL PERIMETER FOOTING DRAIN DETAIL



**Notes:**

- 1) Drain rock should contain no more than 5 percent fines passing the U.S. No. 200 Sieve.
- 2) Trench bottom and drain pipe should be sloped to drain to approved discharge location.

Date: 3/6/2020  
 Drawn by: BLC

Project: 10215 NE Old McMinnville Hwy  
 Tax Lot 1300, Yamhill County Tax Map 3 4 22  
 Carlton, Oregon 9711

Project No. 20-5415

FIGURE 4



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## EXPLORATION LOGS



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# TEST PIT LOG

Project: 10215 NE Old McMinnville Hwy Carlton, Oregon	Project No. 20-5415	Test Pit No. <b>TP-1</b>
--	---------------------	--------------------------

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Torvane Shear (tons/ft <sup>2</sup> )	Sample Type	% Passing No. 200 Sieve	Moisture Content (%)	Water Bearing Zone	Material Description
1	2.0						TOPSOIL. Grassy area. Organic SILT (OL-ML), brown, very moist, fine roots, extends to approximately 8 inches bgs.
2	3.0						SILT (ML), brown with some mottling and minor mica content, medium stiff to stiff, very moist, low to moderate plasticity.
3	3.5			98.5	38.8		AASHTO Classification= A-7-5(20); LL=48; PI=16
4	3.5						
5							
6				99.1	37.7		AASHTO Classification= A-6(14); LL=40; PI=11
7							
8							
9				99.7	35.2		AASHTO Classification= A-6(13); LL=38; PI=10
10							
11							Test pit terminated at 11 feet bgs. No groundwater observed
12							
13							
14							
15							
16							
17							

**LEGEND**

Bag Sample	Bucket Sample	Shelby Tube Sample	Seepage	Water Bearing Zone	Water Level at Abandonment
------------	---------------	--------------------	---------	--------------------	----------------------------

Date Excavated: 2/19/2020  
 Logged By: B. Cook  
 Surface Elevation: 157 Feet











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# TEST PIT LOG

Project: 10215 NE Old McMinnville Hwy Carlton, Oregon	Project No. 20-5415	Test Pit No. <b>TP-2</b>
--	---------------------	--------------------------

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Torvane Shear (tons/ft <sup>2</sup> )	Sample Type	% Passing No. 200 Sieve	Moisture Content (%)	Water Bearing Zone	Material Description
1	3.5						TOPSOIL. Grassy area. Organic SILT (OL-ML), brown, very moist, fine roots, extends to approximately 8 inches bgs.
2	3.5						SILT (ML), brown with some mottling and minor mica content, medium stiff to stiff becoming hard below 4 feet, very moist, low to moderate plasticity.
3	3.5						
4	4.0						
5							
6							
7							
8							
9							
10							
11							
12							Test pit terminated at 12 feet bgs. No groundwater observed
13							
14							
15							
16							
17							

**LEGEND**

 Bag Sample	 5 Gal. Bucket Sample	 Shelby Tube Sample	 Seepage	 Water Bearing Zone	 Water Level at Abandonment
--	--	--	---	--	---


Date Excavated: 2/19/2020  
 Logged By: B. Cook  
 Surface Elevation: 159 Feet









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# TEST PIT LOG

Project: 10215 NE Old McMinnville Hwy Carlton, Oregon	Project No. 20-5415	Test Pit No. <b>TP-3</b>
--	---------------------	--------------------------

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Torvane Shear (tons/ft <sup>2</sup> )	Sample Type	% Passing No. 200 Sieve	Moisture Content (%)	Water Bearing Zone	Material Description
1	2.5						TOPSOIL. Grassy area. Organic SILT (OL-ML), brown, very moist, fine roots, extends to approximately 8 inches bgs.
2	3.0						SILT (ML), brown with some mottling and minor mica content, medium stiff to stiff becoming hard below 4 feet, very moist, low to moderate plasticity.
3	3.5						
4	4.0						
5							
6							
7							
8							
9				99.1	31.8		AASHTO Classification= A-7-5(20); LL=46; PI=16
10							Test pit terminated at 10 feet bgs. No groundwater observed
11							
12							Infiltration test IT-1 conducted at -10 feet. Encased falling head test method, 6-inch diameter pipe. Measured infiltration rate 0.1 inches per hour.
13							
14							
15							
16							
17							

**LEGEND**

 Bag Sample	 Bucket Sample	 Shelby Tube Sample	 Seepage	 Water Bearing Zone	 Water Level at Abandonment
--	---	--	---	--	---

Date Excavated: 2/19/2020  
 Logged By: B. Cook  
 Surface Elevation: 158 Feet









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# TEST PIT LOG

Project: 10215 NE Old McMinnville Hwy Carlton, Oregon	Project No. 20-5415	Test Pit No. <b>TP-4</b>
--	---------------------	--------------------------

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Torvane Shear (tons/ft <sup>2</sup> )	Sample Type	% Passing No. 200 Sieve	Moisture Content (%)	Water Bearing Zone	Material Description
1	2.0						TOPSOIL. Grassy area. Organic SILT (OL-ML), brown, very moist, fine roots, extends to approximately 6 inches bgs.
2	3.0						SILT (ML), brown with some mottling and minor mica content, medium stiff to stiff, very moist, low to moderate plasticity.
3	3.5						
4	3.5						
5							
6							
7							
8							
9							Test pit terminated at 9 feet bgs. No groundwater observed
10							
11							
12							
13							
14							
15							
16							
17							

**LEGEND**

 Bag Sample	 Bucket Sample	 Shelby Tube Sample	 Seepage	 Water Bearing Zone	 Water Level at Abandonment
---	--	---	--	---	--

Date Excavated: 2/19/2020  
 Logged By: B. Cook  
 Surface Elevation: 165 Feet









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# TEST PIT LOG

Project: 10215 NE Old McMinnville Hwy Carlton, Oregon	Project No. 20-5415	Test Pit No. <b>TP-5</b>
--	---------------------	--------------------------

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Torvane Shear (tons/ft <sup>2</sup> )	Sample Type	% Passing No. 200 Sieve	Moisture Content (%)	Water Bearing Zone	Material Description
1	0.25						TOPSOIL. Heavily wooded area. Surface stream flow in area of test pit. Organic SILT (OL-ML), dark brown, wet, tree roots, extends to approximately 30 inches bgs.
2	0.25						
3	0.25						SILT (ML), brown with orange mottling, medium stiff to stiff, very moist, low to moderate plasticity.
4	3.0						
5							
6							
7							
8							
9							
10							Test pit terminated at 10 feet bgs. No groundwater observed
11							
12							
13							
14							
15							
16							
17							

**LEGEND**

 Bag Sample	 Bucket Sample	 Shelby Tube Sample	 Seepage	 Water Bearing Zone	 Water Level at Abandonment
--	---	--	---	--	---

Date Excavated: 2/19/2020  
 Logged By: B. Cook  
 Surface Elevation: 166 Feet









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# TEST PIT LOG

Project: 10215 NE Old McMinnville Hwy Carlton, Oregon	Project No. 20-5415	Test Pit No. <b>TP-6</b>
--	---------------------	--------------------------

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Torvane Shear (tons/ft <sup>2</sup> )	Sample Type	% Passing No. 200 Sieve	Moisture Content (%)	Water Bearing Zone	Material Description
1	0.25						TOPSOIL. Heavily wooded area. Organic SILT (OL-ML), dark brown, very moist, tree roots, extends to approximately 24 inches bgs.
2	0.5						SILT (ML), brown with orange mottling, medium stiff to stiff, very moist, low to moderate plasticity.
3	3.0						
4	3.0						
5							
6							
7							
8							
9							
10							Test pit terminated at 10 feet bgs. No groundwater observed
11							
12							
13							
14							
15							
16							
17							

**LEGEND**

 Bag Sample	 Bucket Sample	 Shelby Tube Sample	 Seepage	 Water Bearing Zone	 Water Level at Abandonment
---	--	---	--	---	--



Date Excavated: 2/19/2020  
 Logged By: B. Cook  
 Surface Elevation: 171 Feet









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# TEST PIT LOG

Project: 10215 NE Old McMinnville Hwy Carlton, Oregon	Project No. 20-5415	Test Pit No. <b>TP-7</b>
--	---------------------	--------------------------

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Torvane Shear (tons/ft <sup>2</sup> )	Sample Type	% Passing No. 200 Sieve	Moisture Content (%)	Water Bearing Zone	Material Description
1	2.0						TOPSOIL. Grassy area. Organic SILT (OL-ML), brown, very moist, fine roots, extends to approximately 6 inches bgs.
2	3.0						SILT (ML), brown with some mottling and minor mica content, medium stiff, very moist to wet, low to moderate plasticity.
3	3.5						Light perched groundwater seepage 2 to 3.5 feet bgs.
4	3.5						SILT (ML), brown with some mottling and minor mica content, stiff, very moist, low to moderate plasticity.
5							
6							
7							
8							
9							Test pit terminated at 9 feet bgs.
10							Light perched groundwater seepage observed 2 to 3.5 feet bgs.
11							
12							
13							
14							
15							
16							
17							

**LEGEND**

 Bag Sample	 Bucket Sample	 Shelby Tube Sample	 Seepage	 Water Bearing Zone	 Water Level at Abandonment
--	---	--	---	--	---


Date Excavated: 2/19/2020  
 Logged By: B. Cook  
 Surface Elevation: 165 Feet









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# TEST PIT LOG

Project: 10215 NE Old McMinnville Hwy Carlton, Oregon	Project No. 20-5415	Test Pit No. <b>TP-8</b>
--	---------------------	--------------------------

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Torvane Shear (tons/ft <sup>2</sup> )	Sample Type	% Passing No. 200 Sieve	Moisture Content (%)	Water Bearing Zone	Material Description
1	1.5						TOPSOIL. Grassy area. Organic SILT (OL-ML), brown, very moist, fine roots, extends to approximately 6 inches bgs.
2	2.0						SILT (ML), brown with some mottling and minor mica content, medium stiff, very moist to wet, low to moderate plasticity.
3	3.0						Light perched groundwater seepage 3 to 4 feet bgs.
4	3.0						SILT (ML), brown with some mottling and minor mica content, stiff, very moist, low to moderate plasticity.
5							
6							
7							
8							
9							
10							Test pit terminated at 10 feet bgs. Light perched groundwater seepage observed 3-4 feet bgs.
11							
12							
13							
14							
15							
16							
17							

**LEGEND**

 Bag Sample	 Bucket Sample	 Shelby Tube Sample	 Seepage	 Water Bearing Zone	 Water Level at Abandonment
--	---	--	---	--	---

Date Excavated: 2/19/2020  
 Logged By: B. Cook  
 Surface Elevation: 166 Feet


















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## LABORATORY TEST RESULTS



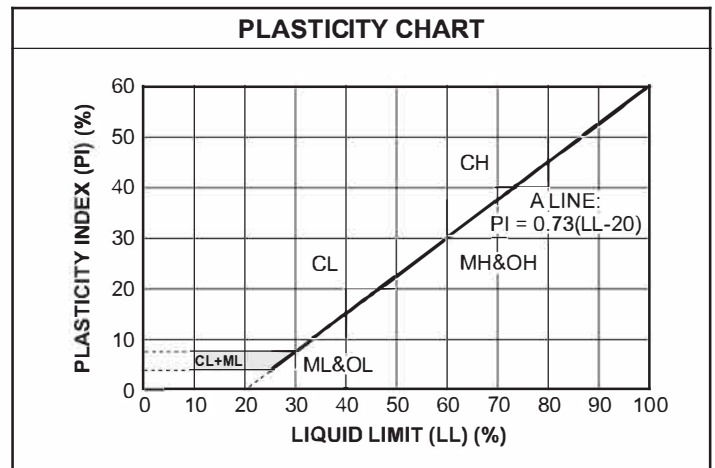
# UNIFIED SOIL CLASSIFICATION SYSTEM

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART		
<b>COARSE-GRAINED SOILS</b> (more than 50% of material is larger than No. 200 sieve size.)		
Clean Gravels (Less than 5% fines)		
<b>GRAVELS</b> More than 50% of coarse fraction larger than No. 4 sieve size	 GW	Well-graded gravels, gravel-sand mixtures, little or no fines
	 GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravels with fines (More than 12% fines)	
	 GM	Silty gravels, gravel-sand-silt mixtures
	 GC	Clayey gravels, gravel-sand-clay mixtures
Clean Sands (Less than 5% fines)		
<b>SANDS</b> 50% or more of coarse fraction smaller than No. 4 sieve size	 SW	Well-graded sands, gravelly sands, little or no fines
	 SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with fines (More than 12% fines)	
	 SM	Silty sands, sand-silt mixtures
	 SC	Clayey sands, sand-clay mixtures
<b>FINE-GRAINED SOILS</b> (50% or more of material is smaller than No. 200 sieve size.)		
<b>SILTS AND CLAYS</b> Liquid limit less than 50%	 ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
	 CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
	 OL	Organic silts and organic silty clays of low plasticity
<b>SILTS AND CLAYS</b> Liquid limit 50% or greater	 MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
	 CH	Inorganic clays of high plasticity, fat clays
	 OH	Organic clays of medium to high plasticity, organic silts
<b>HIGHLY ORGANIC SOILS</b>	 PT	Peat and other highly organic soils

LABORATORY CLASSIFICATION CRITERIA		
GW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3	
GP	Not meeting all gradation requirements for GW	
GM	Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
GC	Atterberg limits above "A" line with P.I. greater than 7	
SW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3	
SP	Not meeting all gradation requirements for GW	
SM	Atterberg limits below "A" line or P.I. less than 4	Limits plotting in shaded zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols.
SC	Atterberg limits above "A" line with P.I. greater than 7	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

Less than 5 percent ..... GW, GP, SW, SP  
 More than 12 percent ..... GM, GC, SM, SC  
 5 to 12 percent ..... Borderline cases requiring dual symbols



# SOIL DESCRIPTION AND CLASSIFICATION GUIDELINES

## Particle-Size Classification

COMPONENT	ASTM/USCS		AASHTO	
	size range	sieve size range	size range	sieve size range
Cobbles	> 75 mm	greater than 3 inches	> 75 mm	greater than 3 inches
Gravel	75 mm – 4.75 mm	3 inches to No. 4 sieve	75 mm – 2.00 mm	3 inches to No. 10 sieve
Coarse	75 mm – 19.0 mm	3 inches to 3/4-inch sieve	-	-
Fine	19.0 mm – 4.75 mm	3/4-inch to No. 4 sieve	-	-
Sand	4.75 mm – 0.075 mm	No. 4 to No. 200 sieve	2.00 mm – 0.075 mm	No. 10 to No. 200 sieve
Coarse	4.75 mm – 2.00 mm	No. 4 to No. 10 sieve	2.00 mm – 0.425 mm	No. 10 to No. 40 sieve
Medium	2.00 mm – 0.425 mm	No. 10 to No. 40 sieve	-	-
Fine	0.425 mm – 0.075 mm	No. 40 to No. 200 sieve	0.425 mm – 0.075 mm	No. 40 to No. 200 sieve
Fines (Silt and Clay)	< 0.075 mm	Passing No. 200 sieve	< 0.075 mm	Passing No. 200 sieve

## Consistency for Cohesive Soil

CONSISTENCY	SPT N-VALUE (BLOWS PER FOOT)	POCKET PENETROMETER (UNCONFINED COMPRESSIVE STRENGTH, tsf)
Very Soft	2	less than 0.25
Soft	2 to 4	0.25 to 0.50
Medium Stiff	4 to 8	0.50 to 1.0
Stiff	8 to 15	1.0 to 2.0
Very Stiff	15 to 30	2.0 to 4.0
Hard	30 to 60	greater than 4.0
Very Hard	greater than 60	-

## Relative Density for Granular Soil

RELATIVE DENSITY	SPT N-VALUE (BLOWS PER FOOT)
Very Loose	0 to 4
Loose	4 to 10
Medium Dense	10 to 30
Dense	30 to 50
Very Dense	more than 50

## Moisture Designations

TERM	FIELD IDENTIFICATION
Dry	No moisture. Dusty or dry.
Damp	Some moisture. Cohesive soils are usually below plastic limit and are moldable.
Moist	Grains appear darkened, but no visible water is present. Cohesive soils will clump. Sand will bulk. Soils are often at or near plastic limit.
Wet	Visible water on larger grains. Sand and silt exhibit dilatancy. Cohesive soil can be readily remolded. Soil leaves wetness on the hand when squeezed. Soil is much wetter than optimum moisture content and is above plastic limit.

# AASHTO SOIL CLASSIFICATION SYSTEM

**TABLE 1. Classification of Soils and Soil-Aggregate Mixtures**

General Classification	Granular Materials (35 Percent or Less Passing .075 mm)				Silt-Clay Materials (More than 35 Percent Passing 0.075)		
Group Classification	A-1	A-3	A-2	A-4	A-5	A-6	A-7
<u>Sieve analysis, percent passing:</u>							
2.00 mm (No. 10)	-	-	-	-	-	-	-
0.425 mm (No. 40)	50 max	51 min	-	-	-	-	-
0.075 mm (No. 200)	25 max	10 max	35 max	36 min	36 min	36 min	36 min
<u>Characteristics of fraction passing 0.425 mm (No. 40)</u>							
Liquid limit				40 max	41 min	40 max	41 min
Plasticity index	6 max	N.P.		10 max	10 max	11 min	11 min
General rating as subgrade	Excellent to good				Fair to poor		

Note: The placing of A-3 before A-2 is necessary in the "left to right elimination process" and does not indicate superiority of A-3 over A-2.

**TABLE 2. Classification of Soils and Soil-Aggregate Mixtures**

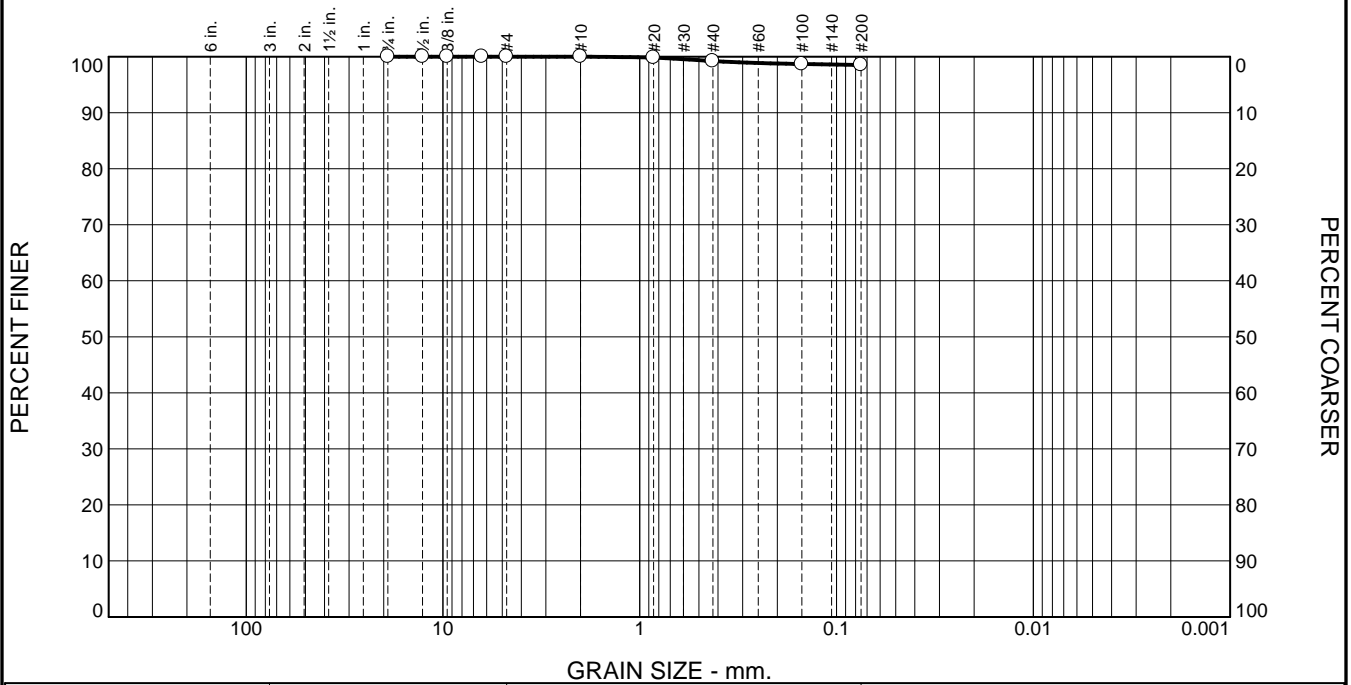
General Classification	Granular Materials (35 Percent or Less Passing 0.075 mm)							Silt-Clay Materials (More than 35 Percent Passing 0.075 mm)			
Group Classification	A-1		A-2					A-4	A-5	A-6	A-7
	A-1-a	A-1-b	A-3	A-2-4	A-2-5	A-2-6	A-2-7	A-4	A-5	A-6	A-7-5, A-7-6
<u>Sieve analysis, percent passing:</u>											
2.00 mm (No. 10)	50 max	-	-	-	-	-	-	-	-	-	-
0.425 mm (No. 40)	30 max	50 max	51 min	-	-	-	-	-	-	-	-
0.075 mm (No. 200)	15 max	25 max	10 max	35 max	35 max	35 max	35 max	36 min	36 min	36 min	36 min
<u>Characteristics of fraction passing 0.425 mm (No. 40)</u>											
Liquid limit				40 max	41 min	40 max	41 min	40 max	41 min	40 max	41 min
Plasticity index	6 max		N.P.	10 max	10 max	11 min	11 min	10 max	10 max	11 min	11 min
Usual types of significant constituent materials	Stone fragments, gravel and sand		Fine sand	Silty or clayey gravel and sand				Silty soils		Clayey soils	
General ratings as subgrade	Excellent to Good							Fair to poor			

Note: Plasticity index of A-7-5 subgroup is equal to or less than LL minus 30. Plasticity index of A-7-6 subgroup is greater than LL minus 30 (see Figure 2).

AASHTO = American Association of State Highway and Transportation Officials



# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.8	0.7	98.5	

TEST RESULTS			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
.75	100.0		
.5	100.0		
.375	100.0		
.25	100.0		
#4	100.0		
#10	100.0		
#20	99.8		
#40	99.2		
#100	98.7		
#200	98.5		

**Material Description**

Silt

**Atterberg Limits (ASTM D 4318)**

PL= 31.8      LL= 47.9      PI= 16.1

**Classification**

USCS (D 2487)= ML      AASHTO (M 145)= A-7-5(20)

**Coefficients**

D<sub>90</sub>=      D<sub>85</sub>=      D<sub>60</sub>=  
D<sub>50</sub>=      D<sub>30</sub>=      D<sub>15</sub>=  
D<sub>10</sub>=      C<sub>u</sub>=      C<sub>c</sub>=

Remarks

Moisture 38.8%

---

Date Received: \_\_\_\_\_ Date Tested: 2/27/2020

Tested By: SJC

Checked By: \_\_\_\_\_

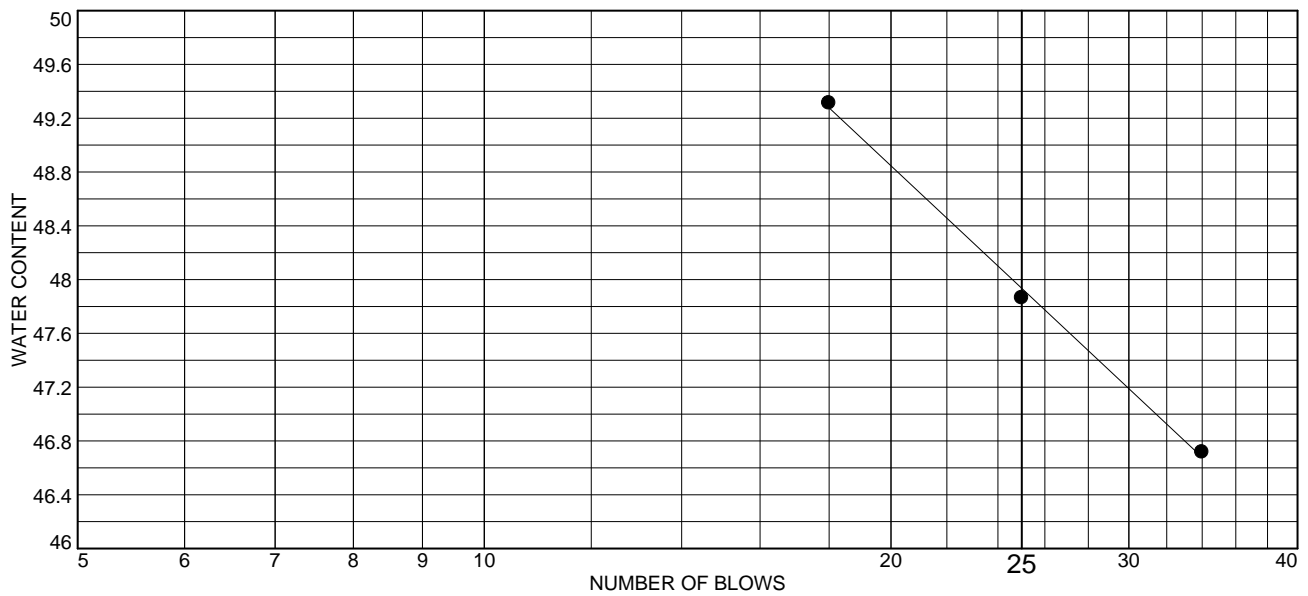
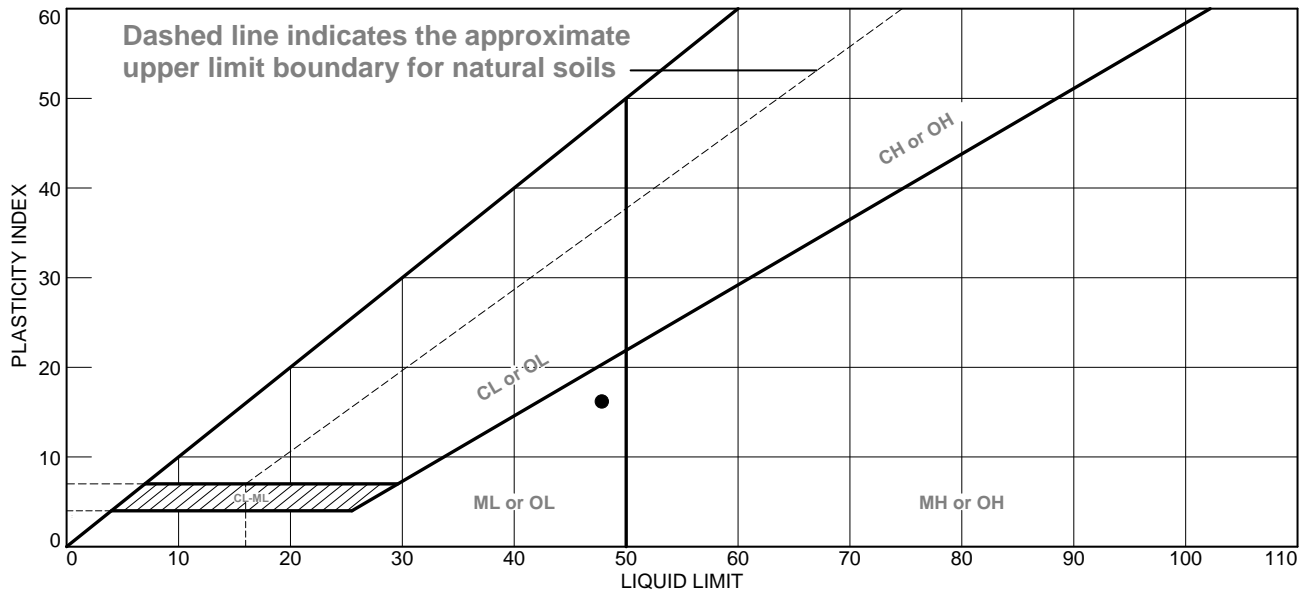
Title: \_\_\_\_\_

\* (no specification provided)

Location: TP-1      Sample Number: S20-034      Depth: 3'      Date Sampled: 2/19/2020

<h2 style="margin: 0;">GEOPACIFIC ENGINEERING, INC.</h2>	Client: TJA, LLC Project: 10215 NE Old McMinnville Hwy. Project No: 20-5415      Figure
--	---

# LIQUID AND PLASTIC LIMITS TEST REPORT



MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
Silt	47.9	31.8	16.1	99.2	98.5	ML

Project No. 20-5415 Client: TJA, LLC

Project: 10215 NE Old McMinnville Hwy.

Location: TP-1

Sample Number: S20-034 Depth: 3'

Remarks:

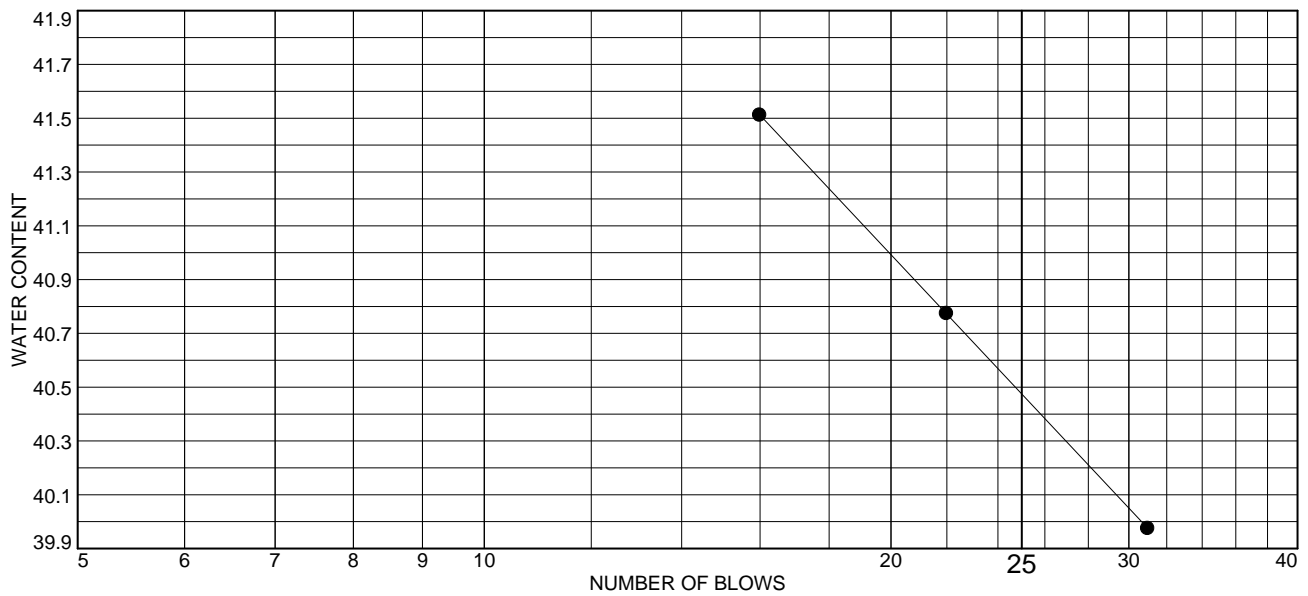
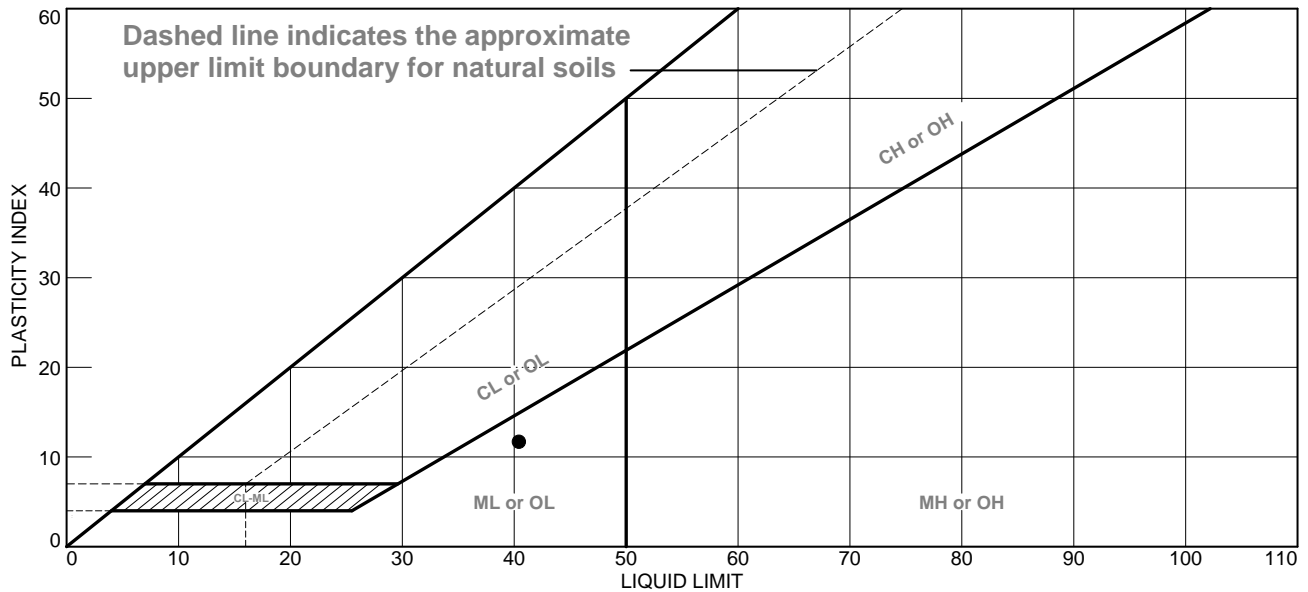
## GEOPACIFIC ENGINEERING, INC.

Figure

Tested By: SJC



# LIQUID AND PLASTIC LIMITS TEST REPORT



MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
● Silt	40.5	28.9	11.6	99.6	99.1	ML

**Project No.** 20-5415      **Client:** TJA, LLC  
**Project:** 10215 NE Old McMinnville Hwy.  
**Location:** TP-1  
**Sample Number:** S20-035      **Depth:** 6'

**Remarks:**

## GEOPACIFIC ENGINEERING, INC.

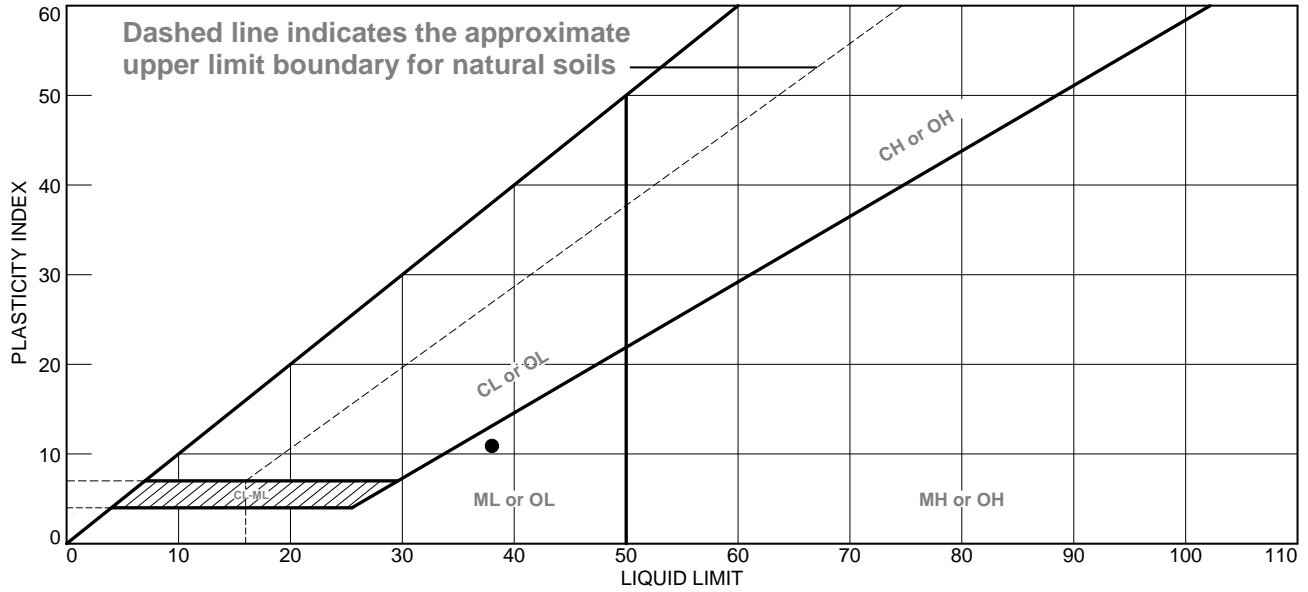
Figure

**Tested By:** SJC





# LIQUID AND PLASTIC LIMITS TEST REPORT



MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
● Silt	38.1	27.3	10.8	99.9	99.7	ML

**Project No.** 20-5415      **Client:** TJA, LLC  
**Project:** 10215 NE Old McMinnville Hwy.  
**Location:** TP-1  
**Sample Number:** S20-036      **Depth:** 9'

**Remarks:**

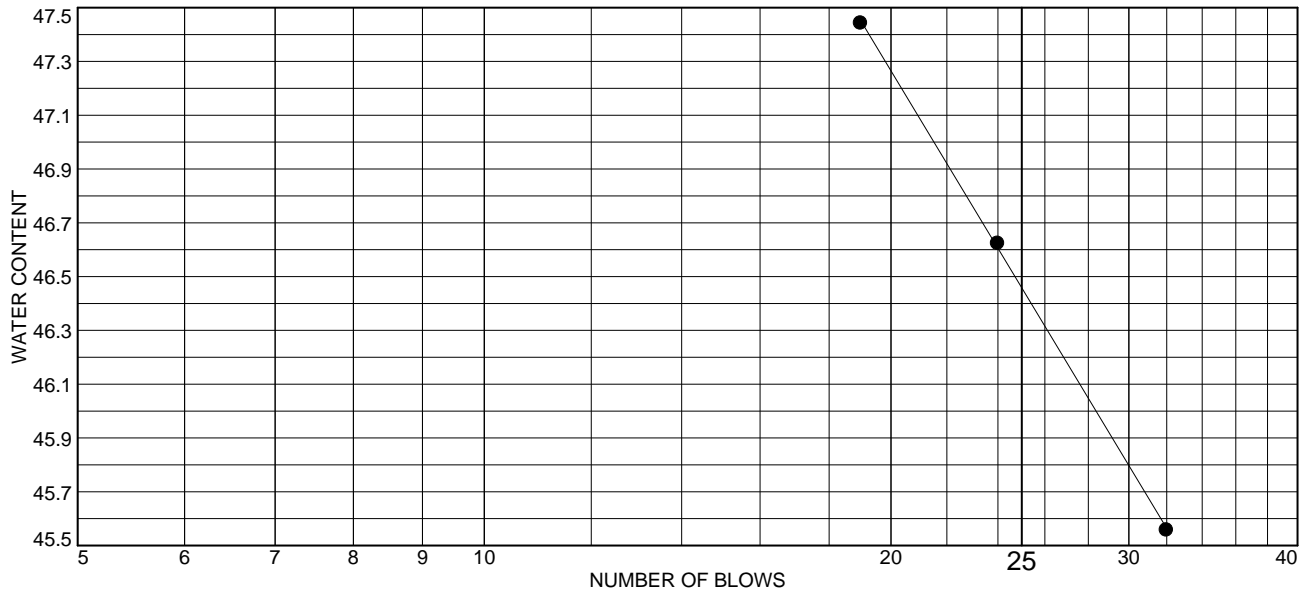
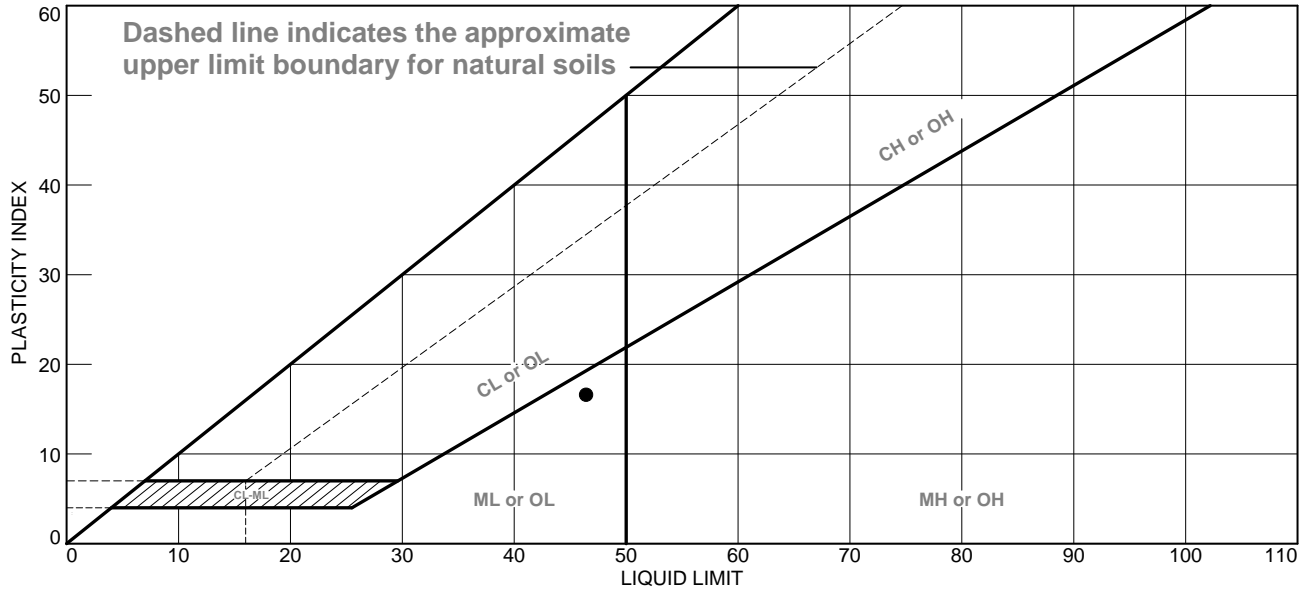
## GEOPACIFIC ENGINEERING, INC.

Figure

**Tested By:** SJC



# LIQUID AND PLASTIC LIMITS TEST REPORT



MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
Silt	46.5	30.0	16.5	99.6	99.1	ML

Project No. 20-5415 Client: TJA, LLC  
 Project: 10215 NE Old McMinnville Hwy.  
 Location: TP-3  
 Sample Number: S20-037 Depth: 10'

Remarks:

## GEOPACIFIC ENGINEERING, INC.

Figure

Tested By: SJC



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## SITE RESEARCH

Soil Map—Yamhill County, Oregon



Soil Map may not be valid at this scale.

Map Scale: 1:6,190 if printed on A landscape (11" x 8.5") sheet.

0 50 100 200 300 Meters

0 300 600 1200 1800 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge ticks: UTM Zone 10N WGS84



### MAP LEGEND

**Area of Interest (AOI)**

 Area of Interest (AOI)




















**Soils**

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

**Special Point Features**






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

**Water Features**

 Streams and Canals

**Transportation**

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

**Background**

 Aerial Photography

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

**Warning:** Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Yamhill County, Oregon  
 Survey Area Data: Version 7, Sep 10, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 16, 2015—Feb 12, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
2012A	Waldo silty clay loam, 0 to 3 percent slopes	10.9	7.2%
2301A	Amity silt loam, 0 to 3 percent slopes	46.2	30.5%
2310A	Woodburn silt loam, 0 to 3 percent slopes	66.8	44.1%
2310C	Woodburn silt loam, 3 to 12 percent slopes	14.1	9.3%
2310D	Woodburn silt loam, 12 to 20 percent slopes	13.4	8.9%
<b>Totals for Area of Interest</b>		<b>151.4</b>	<b>100.0%</b>



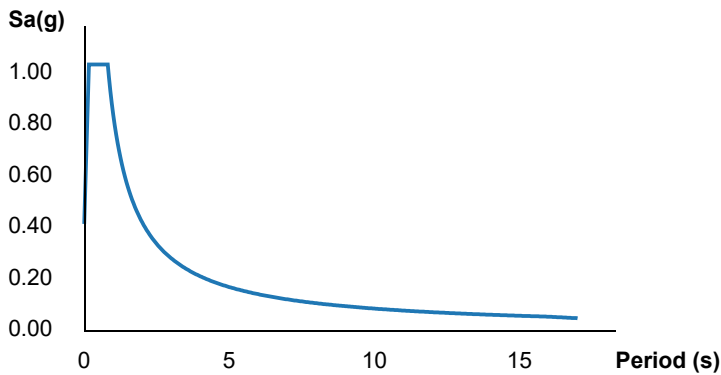
# ATC Hazards by Location

## Search Information

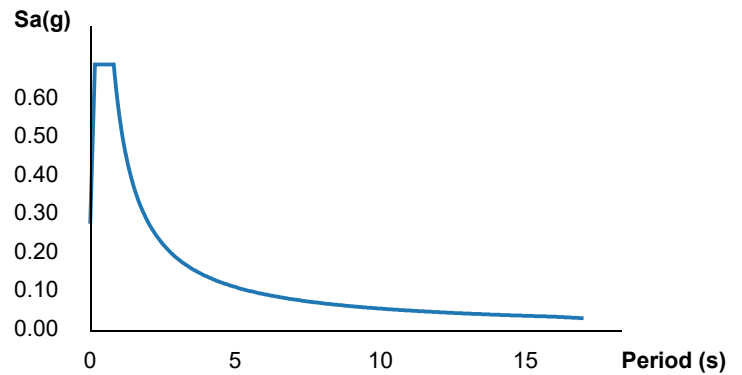
**Coordinates:** 45.288798, -123.166317  
**Elevation:** 167 ft  
**Timestamp:** 2020-03-11T20:33:59.541Z  
**Hazard Type:** Seismic  
**Reference Document:** NEHRP-2015  
**Risk Category:** II  
**Site Class:** D



### MCER Horizontal Response Spectrum



### Design Horizontal Response Spectrum



## Basic Parameters

Name	Value	Description
$S_S$	0.909	$MCE_R$ ground motion (period=0.2s)
$S_1$	0.453	$MCE_R$ ground motion (period=1.0s)
$S_{MS}$	1.033	Site-modified spectral acceleration value
$S_{M1}$	* 0.837	Site-modified spectral acceleration value
$S_{DS}$	0.689	Numeric seismic design value at 0.2s SA
$S_{D1}$	* 0.558	Numeric seismic design value at 1.0s SA

\* See Section 11.4.7

## Additional Information

Name	Value	Description
SDC	* D	Seismic design category
$F_a$	1.136	Site amplification factor at 0.2s
$F_v$	* 1.847	Site amplification factor at 1.0s

CR <sub>S</sub>	0.875	Coefficient of risk (0.2s)
CR <sub>1</sub>	0.867	Coefficient of risk (1.0s)
PGA	0.424	MCE <sub>G</sub> peak ground acceleration
F <sub>PGA</sub>	1.176	Site amplification factor at PGA
PGA <sub>M</sub>	0.499	Site modified peak ground acceleration
T <sub>L</sub>	16	Long-period transition period (s)
SsRT	0.909	Probabilistic risk-targeted ground motion (0.2s)
SsUH	1.039	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	1.5	Factored deterministic acceleration value (0.2s)
S1RT	0.453	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.523	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	0.754	Factored deterministic acceleration value (1.0s)
PGAd	0.641	Factored deterministic acceleration value (PGA)

\* See Section 11.4.7

*The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.*

## Disclaimer

Hazard loads are provided by the U.S. Geological Survey [Seismic Design Web Services](#).

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## PHOTOGRAPHIC LOG

## JR MEADOWS NO. 2 GEOTECHNICAL SITE INVESTIGATION PHOTOGRAPHIC LOG



Test Pit TP-1



Test Pit TP-1

## JR MEADOWS NO. 2 GEOTECHNICAL SITE INVESTIGATION PHOTOGRAPHIC LOG



Test Pit TP-2



Test Pit TP-2

## JR MEADOWS NO. 2 GEOTECHNICAL SITE INVESTIGATION PHOTOGRAPHIC LOG



**Test Pit TP-3 With Infiltration Testing at -10 Feet bgs**



**Test Pit TP-3**

## JR MEADOWS NO. 2 GEOTECHNICAL SITE INVESTIGATION PHOTOGRAPHIC LOG



Test Pit TP-4



Test Pit TP-4

## JR MEADOWS NO. 2 GEOTECHNICAL SITE INVESTIGATION PHOTOGRAPHIC LOG



Test Pit TP-5



Test Pit TP-5



## JR MEADOWS NO. 2 GEOTECHNICAL SITE INVESTIGATION PHOTOGRAPHIC LOG



Test Pit TP-6



Test Pit TP-6

## JR MEADOWS NO. 2 GEOTECHNICAL SITE INVESTIGATION PHOTOGRAPHIC LOG



Test Pit TP-7



Test Pit TP-7

## JR MEADOWS NO. 2 GEOTECHNICAL SITE INVESTIGATION PHOTOGRAPHIC LOG



Test Pit TP-8



Test Pit TP-8

## JR MEADOWS NO. 2 GEOTECHNICAL SITE INVESTIGATION PHOTOGRAPHIC LOG



**Existing Gravel Drive**



**Fill Piles**

## JR MEADOWS NO. 2 GEOTECHNICAL SITE INVESTIGATION PHOTOGRAPHIC LOG



**Fill Piles**



**Facing South**

## **Exhibit G: FEMA Flood Insurance Rate Map (FIRM)**

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**NOTES TO USERS**

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study Report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 10. The **horizontal datum** was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services  
NOAA, NINGS12  
National Geodetic Survey  
SSM-C-3, #6202  
1315 East-West Highway  
Silver Spring, Maryland 20910-3282  
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov>.

**Base map** information shown on this FIRM was derived from multiple sources. Base map files were provided in digital format by the State of Oregon. This information was compiled from the U.S. Geological Survey (2007), Oregon Department of Transportation (2007), CRWA Bureau of Land Management (2005), Oregon Department of Forestry (2003), NGS (2007), and USDA-FSA (2006) at a scale of 1:24,000.

The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

**Corporate limits** shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels, community map repository addresses, and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at <http://fims.fema.gov>.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/business/nfp/>.



**LEGEND**

**SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD**  
The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

**ZONE A** No Base Flood Elevations determined.

**ZONE AE** Base Flood Elevations determined.

**ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

**ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

**ZONE AR** Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently determined. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

**ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

**ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

**ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

**FLOODWAY AREAS IN ZONE AE**  
The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

**OTHER FLOOD AREAS**

**ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

**OTHER AREAS**

**ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.

**ZONE D** Areas in which flood hazards are undetermined, but possible.

**COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**

**OTHERWISE PROTECTED AREAS (OPAs)**  
CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

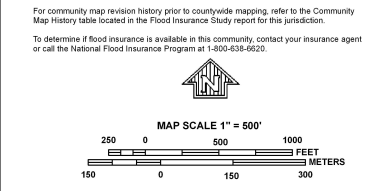
1% Annual Chance Floodplain Boundary  
0.2% Annual Chance Floodplain Boundary  
Floodway boundary  
Zone D boundary  
CBRS and OPA boundary  
Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.  
Base Flood Elevation line and value; elevation in feet  
Base Flood Elevation value where uniform within zone; elevation in feet

\*Referenced to the North American Vertical Datum of 1988

○ A ○ A Cross section line  
○ A - - - - ○ A Transect line

45° 02' 06", 93° 02' 12" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere  
3100000 FT 5000-foot ticks: Oregon State Plane North Zone (FIPS Zone 3601), Lambert Conformal Conic projection  
\*99<sup>m</sup> N 100-meter Universal Transverse Mercator grid values, zone 10N  
D45510 X Bench mark (see explanation in Notes to Users section of this FIRM panel)  
\* M1.5 River Mile  
MAP REPOSITORIES Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP: March 2, 2010  
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL:



**NATIONAL FLOOD INSURANCE PROGRAM**

PANEL 0191D

**FIRM**  
FLOOD INSURANCE RATE MAP  
YAMHILL COUNTY,  
OREGON  
AND INCORPORATED AREAS

PANEL 191 OF 675  
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CARLTON CITY OF	410251	0191	D
YAMHILL COUNTY	410249	0191	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

**MAP NUMBER**  
41071C0191D  
**EFFECTIVE DATE**  
MARCH 2, 2010  
Federal Emergency Management Agency

## **Exhibit H: Preliminary Stormwater Report**

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*JR Meadows No. 2  
10215 NE Old McMinnville Hwy  
Carlton, Oregon*

**Preliminary Stormwater  
Report**

**Date:** August 19, 2020

**Client:** TJA, LLC  
9110 NW Clay Pit Road  
Yamhill, OR 97148

**Engineering Contact:** Amy Downhour, PE  
Downhoura@aks-eng.com

**Engineering Firm:** AKS Engineering & Forestry, LLC

**AKS Job Number:** 7395-01



12965 SW Herman RD., STE 100  
Tualatin, OR 97062  
P: (503) 563-6151  
www.aks-eng.com



RENEWS: DECEMBER 31, 2021

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  - APPENDIX B:** CITY OF CARLTON STORMWATER MANAGEMENT
  - APPENDIX C:** STREAMSTATS REPORT
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# **Preliminary Stormwater Report**

**JR MEADOWS NO. 2  
10215 NE OLD MCMINNVILLE HWY  
CARLTON, OREGON**

## **1.0 Purpose of Report**

The purpose of this report is to analyze the effects the proposed development will have on the existing overland drainage; document the criteria, methodology, and informational sources used to design the proposed stormwater system; and present the results of the hydraulic analysis.

## **2.0 Project Location/Description**

The residential subdivision project is located south of the intersection of E Main Street and N 7<sup>th</sup> Street in Carlton, Oregon. It encompasses approximately 13.94 acres (a portion of Tax Lot 1300 Yamhill County Assessor's Map 3S 4W 22).

The project will consist of R-2 and R-3 zoning. The site improvements will include construction of public streets and underground utilities.

## **3.0 Design Methodology**

The Rational Method as described in Appendix F – Rational Method of the Oregon Department of Transportation (ODOT) *Hydraulics Manual* (April 2014) was used to calculate the storm peak discharge per City of Carlton Stormwater Management Design Standards.

## **4.0 Design Conditions**

### **4.1 PRE-DEVELOPED SITE CONDITIONS**

#### **4.1.1 Site Topography**

Existing on-site grades generally vary from  $\pm 1$  to  $\pm 22$  percent, with the site draining to the northeast (toward Hawn Creek). The site has a high point of  $\pm 177$  feet in the southwest property corner and a low point of  $\pm 144$  feet along the northeastern boundary of the site.

#### **4.1.2 Land Use**

The existing site is vacant with field and treed areas.

### **4.2 POST-DEVELOPED SITE CONDITIONS**

#### **4.2.1 Site Topography**

The on-site slopes will be modified with cuts and fills to accommodate the construction of public streets.

#### **4.2.2 Land Use**

The post-developed site land use will consist of a 55-lot subdivision, with 54 lots for single-family residential and one lot for multifamily residential, and associated streets, sidewalks, and underground utilities.

---

### 4.2.3 Post-Developed Input Parameters

The time of concentration was calculated using the travel time for overland sheet flow. The rainfall intensity was determined using ODOT Zone 8 Intensity-Duration-Frequency (IDF) Curve Tabular Data (Carlton). The flow rate was determined using the 10-year storm event. Calculations are shown in Appendix A. Catchment areas are provided in Figure 3.

### 4.2.4 Description of Off-Site Contributing Basins

The properties to the south and west drain stormwater through the subject site. The areas are shown in Figure 3 and in the analysis as Subcatchment 11S, 12S and 13S.

## 5.0 Stormwater Analyses

### 5.1 PROPOSED STORMWATER CONDUIT SIZING AND INLET SPACING

The proposed storm system reaches 1R through 16R have been sized using Manning's equation, based on peak flows from the Rational Method for a 10-year storm event to convey stormwater-runoff through this development and upstream development.

A Manning's Roughness Coefficient N of 0.009 is used for all pipe reaches. These reaches are specified as PVC pipe and the pipe manufacturer recommends a design Manning's Roughness Coefficient N of 0.009.

The time of concentration for each reach has been calculated using Appendix F – Rational Method of the ODOT *Hydraulics* Manual. This was used to accurately calculate the time of concentration and intensity of each reach.

### 5.2 HAWN CREEK EVALUATION

The site currently drains to Hawn Creek and the storm system will continue to drain to Hawn Creek. The increase in flow created by the subdivision has been calculated in this report under Appendix A. The increase in flow is calculated to be 5.88 ft<sup>3</sup>/sec at a 100-year event. The current peak flow at a 100-year in Hawn Creek at the outfall has been determined using StreamStats. The StreamStats report is included under Appendix C. The current peak flow is 282 ft<sup>3</sup>/sec.

Exhibit F includes the calculation of the capacity of Hawn Creek downstream from JR Meadows No. 2 using LiDAR contours. The capacity of Hawn Creek is 205,321 ft<sup>3</sup>/sec. The new peak flow at a 100-year event will be 287.88 ft<sup>3</sup>/sec, which is within the capacity of Hawn Creek.



DATE: 08/19/2020

**JR MEADOWS NO. 2  
VICINITY MAP**

**FIGURE  
1**

AKS ENGINEERING & FORESTRY, LLC  
12965 SW HERMAN RD, STE 100  
TUALATIN, OR 97062  
503.563.6151 WWW.AKS-ENG.COM

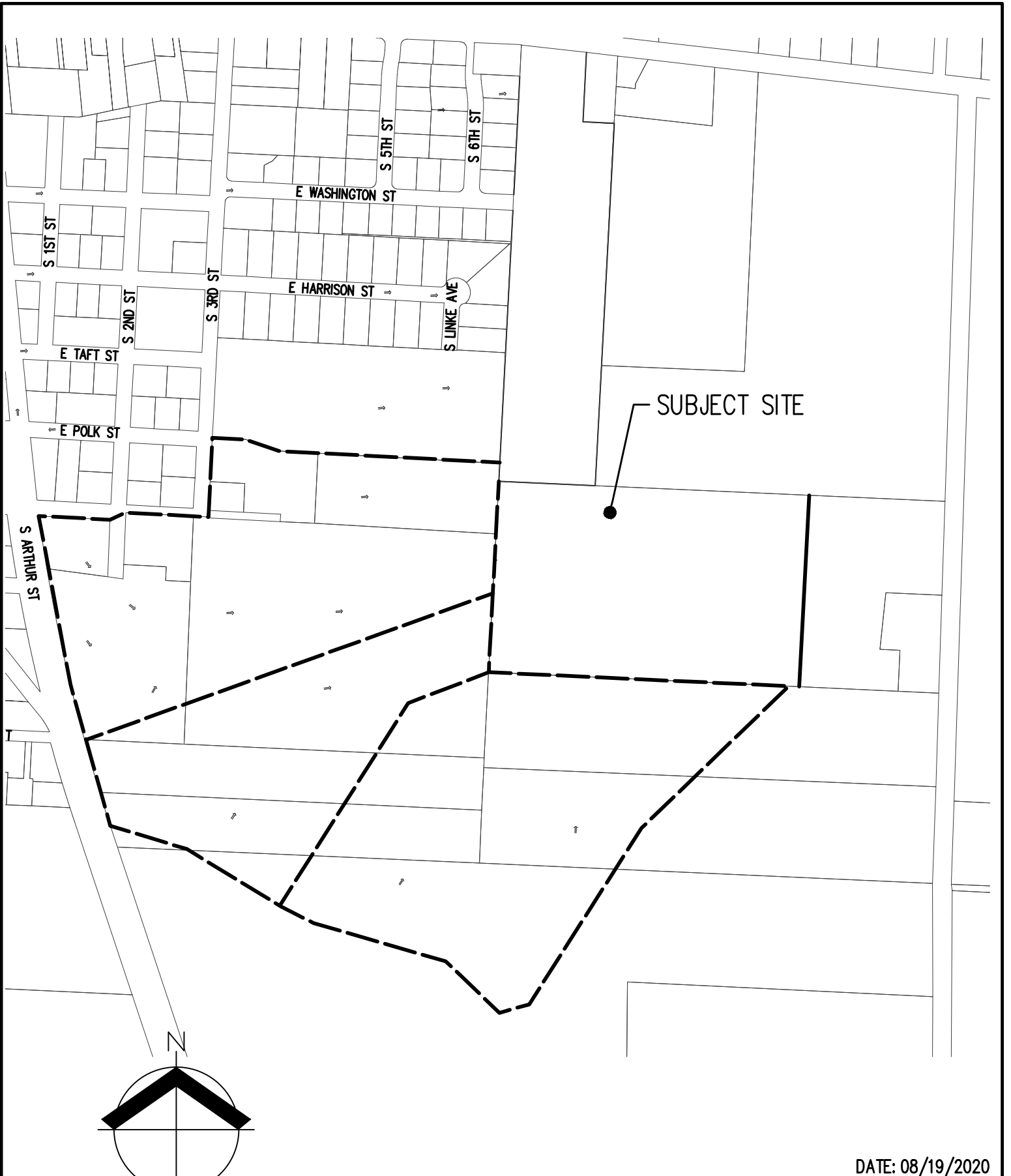


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CHKD: VN  
AKS JOB:  
7395-01

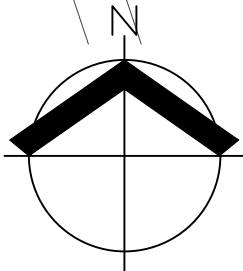
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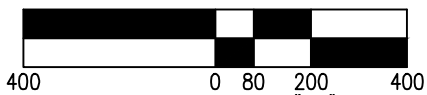
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SUBJECT SITE



SCALE: 1" = 400 FEET



ORIGINAL PAGE SIZE: 8.5"x11"

DATE: 08/19/2020

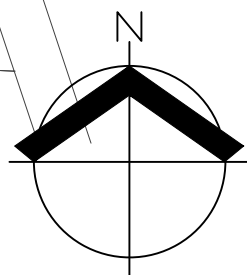
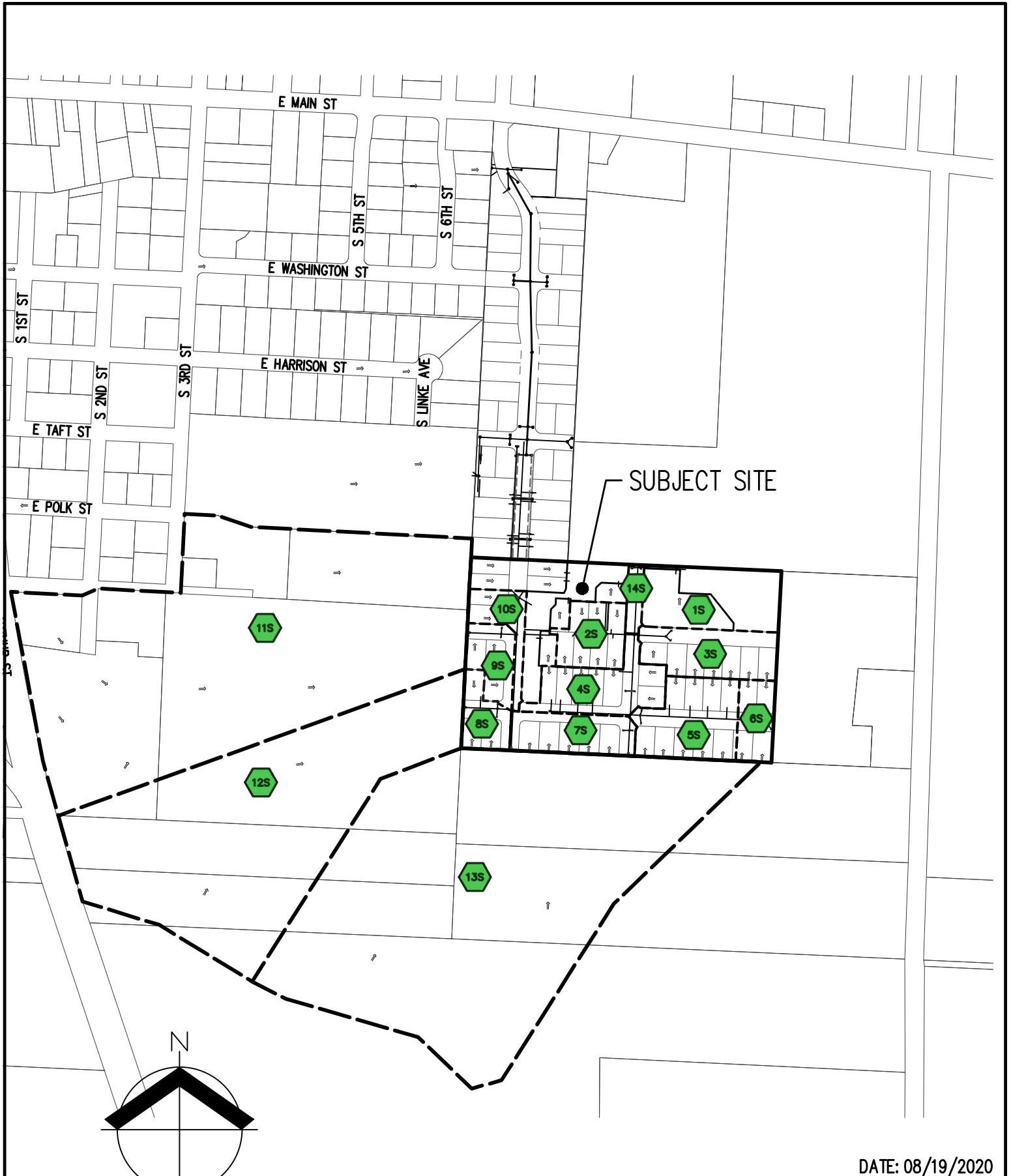
**JR MEADOWS NO. 2  
PRE-DEVELOPED BASIN MAP**

**FIGURE  
2**

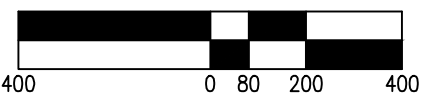
AKS ENGINEERING & FORESTRY, LLC  
12965 SW HERMAN RD, STE 100  
TUALATIN, OR 97062  
503.563.6151 WWW.AKS-ENG.COM



DRWN: AJD  
CHKD: VN  
AKS JOB:  
7395-01



SCALE: 1" = 400 FEET

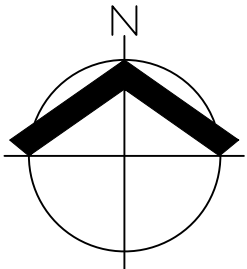
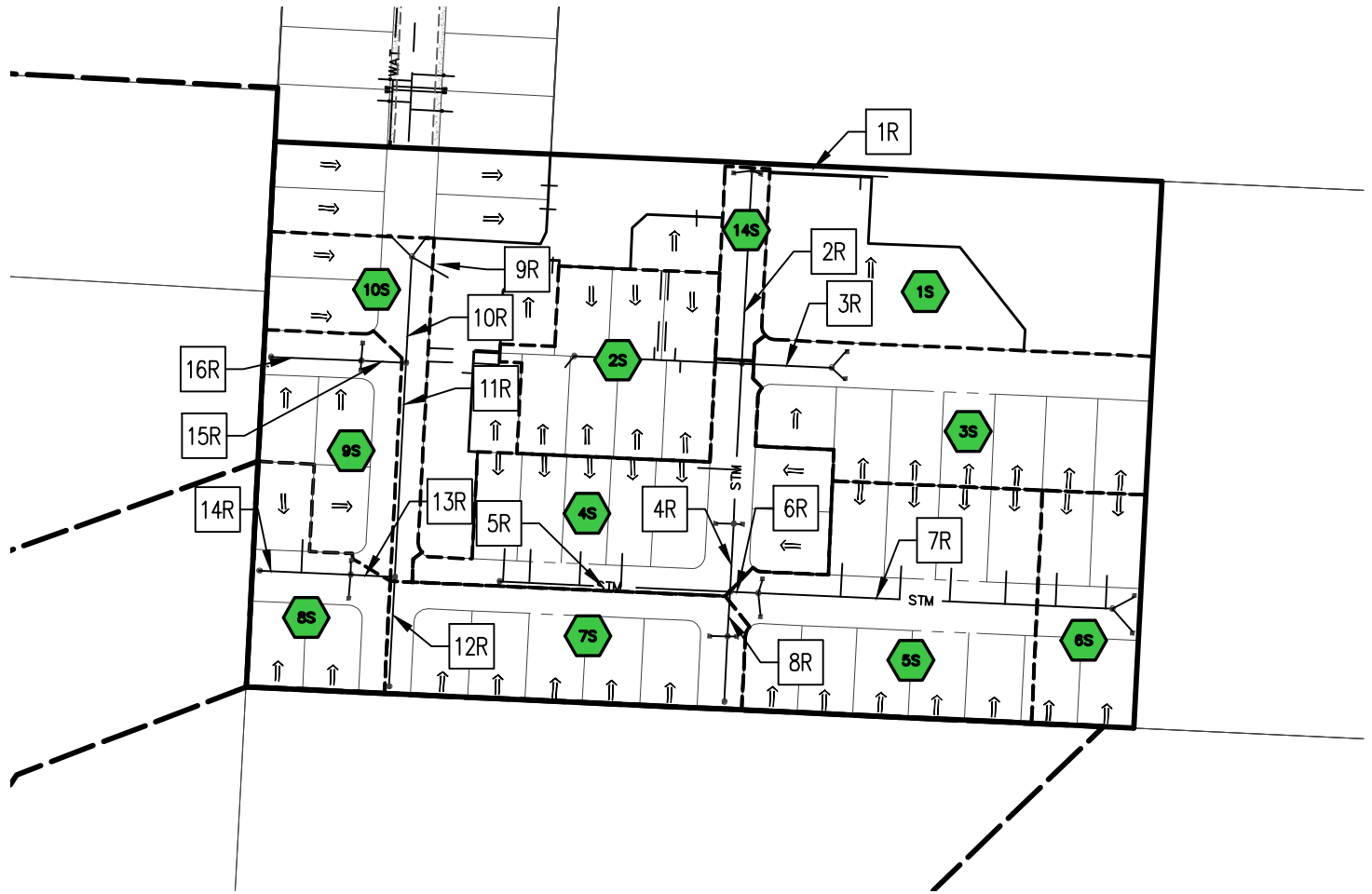


ORIGINAL PAGE SIZE: 8.5"x11"

DATE: 08/19/2020

<b>JR MEADOWS NO. 2 POST-DEVELOPED BASIN MAP</b>		<b>FIGURE 3</b>
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151    WWW.AKS-ENG.COM		DRWN: AJD CHKD: VN AKS JOB: 7395-01





SCALE: 1" = 200 FEET



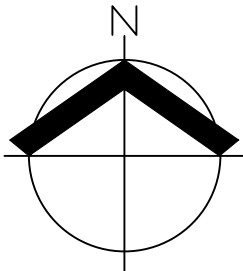
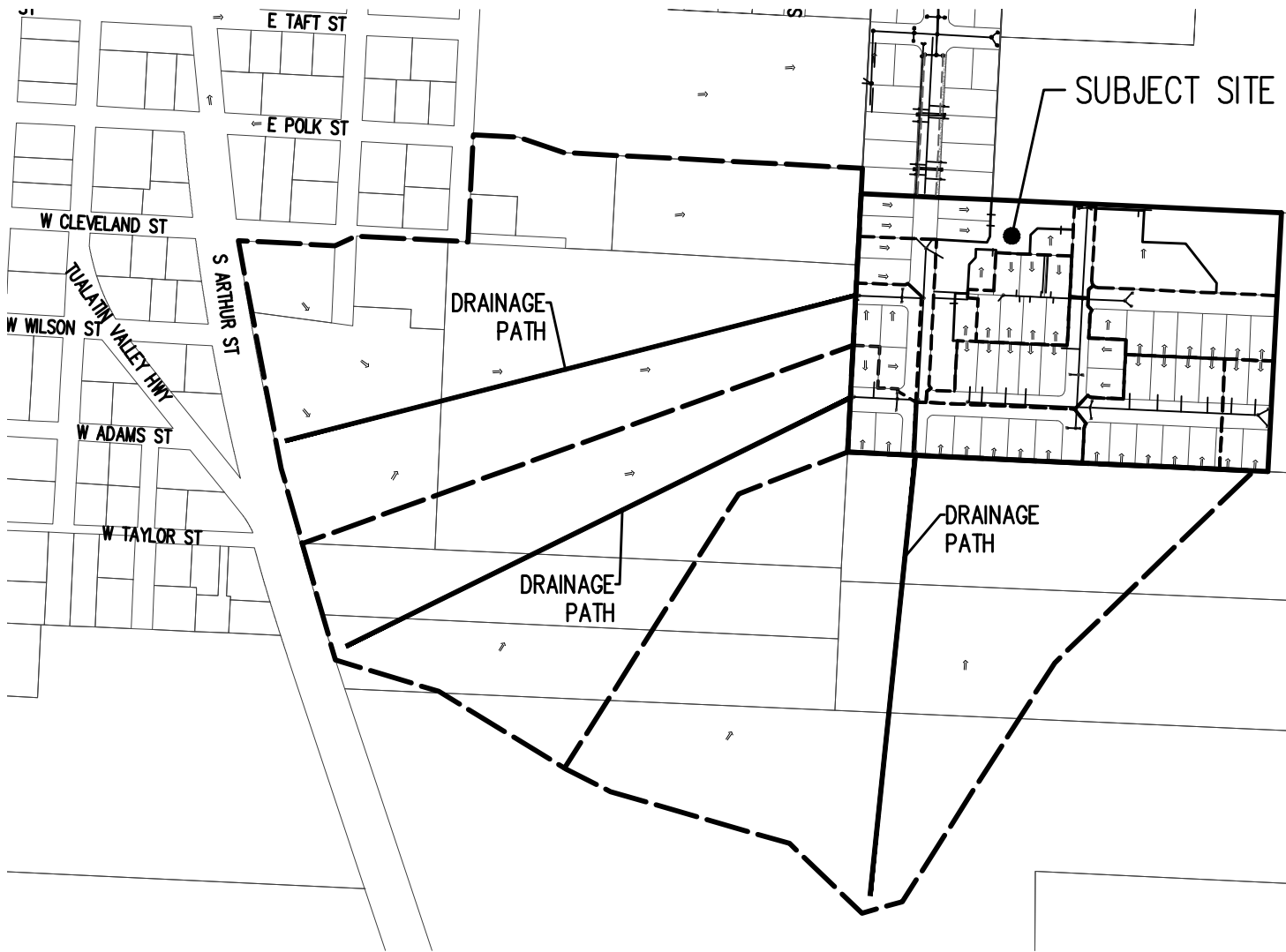
ORIGINAL PAGE SIZE: 8.5"x11"

DATE: 08/19/2020

<b>JR MEADOWS NO. 2 POST-DEVELOPED STORM DRAINAGE PLAN</b>		<b>FIGURE 4</b>
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151    WWW.AKS-ENG.COM		DRWN: AJD CHKD: VN AKS JOB: 7395-01







SCALE: 1" = 400 FEET



ORIGINAL PAGE SIZE: 8.5"x11"

DATE: 08/19/2020

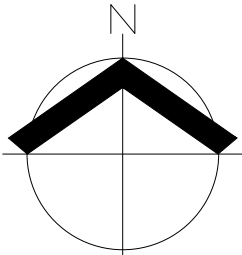
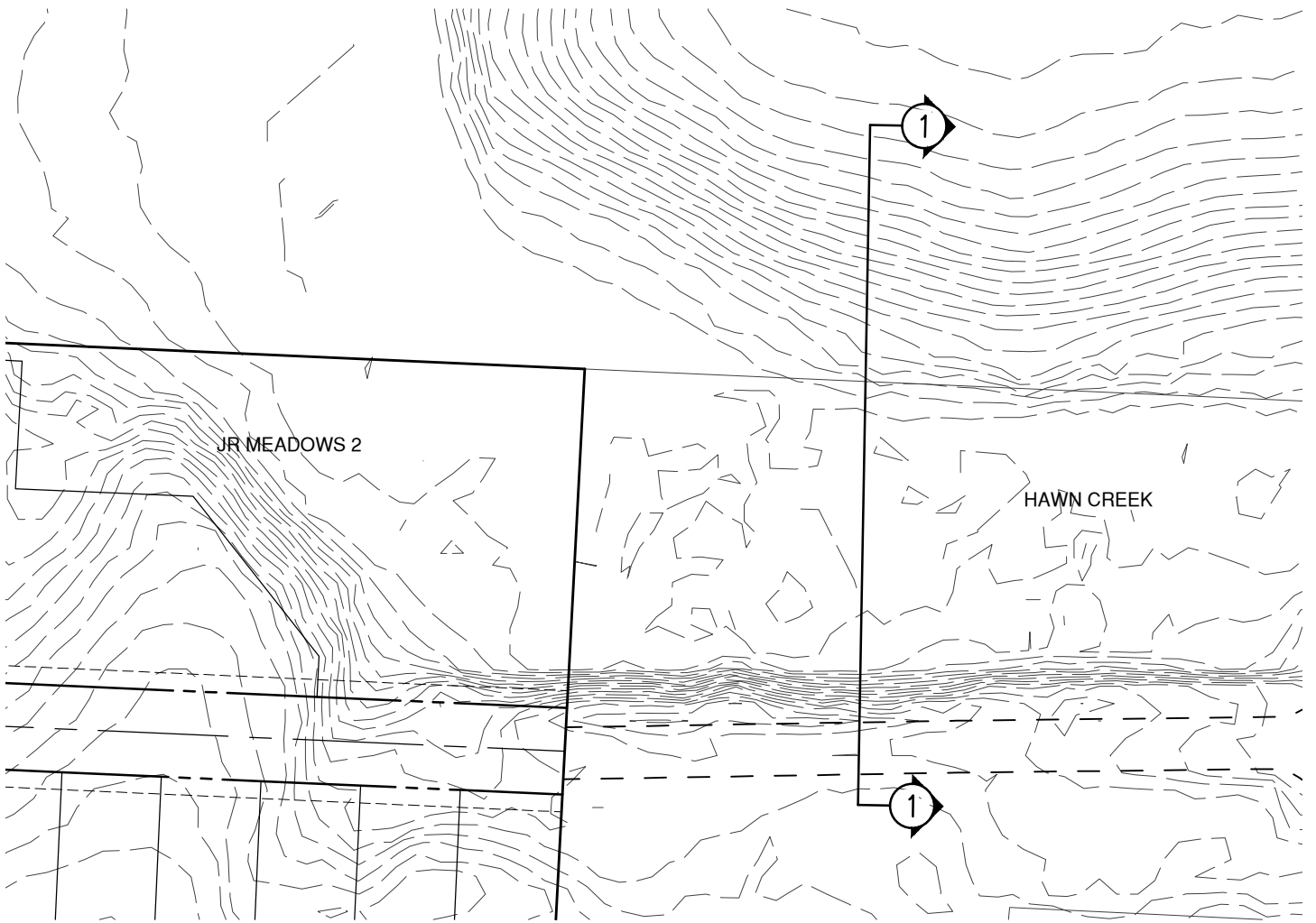
**JR MEADOWS NO. 2  
TIME OF CONCENTRATION MAP**

**FIGURE  
5**

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503.563.6151 WWW.AKS-ENG.COM



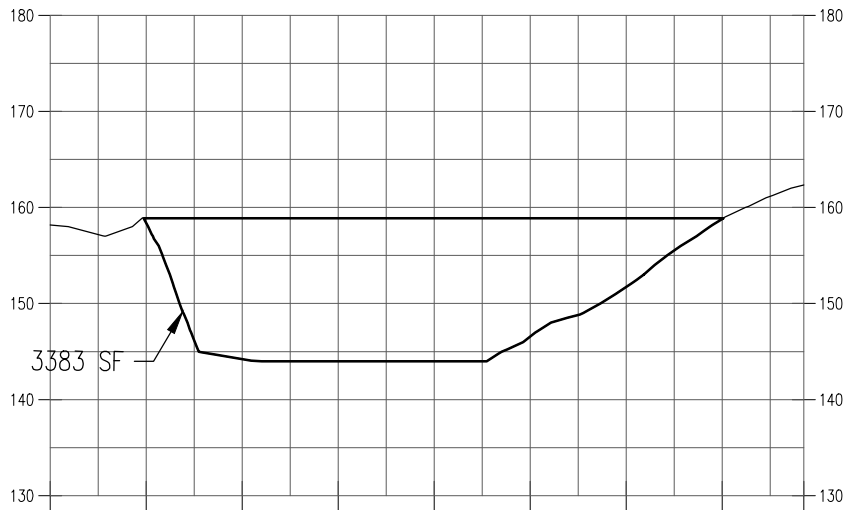
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CHKD: VN  
AKS JOB:  
7395-01



SCALE: 1" = 100 FEET



ORIGINAL PAGE SIZE: 8.5" x 11"



CHANNEL	EXISTING DITCH AREA	MANNING'S N	EXISTING DITCH SLOPE	DITCH CAPACITY	VELOCITY	q
	(ft <sup>2</sup> )	(coefficient)	(ft/ft)	(ft <sup>3</sup> /sec)	(ft/sec)	(ft <sup>3</sup> /sec)
Hawn Creek	3383.0	0.0300	0.0025	205320.82	60.69	24.89

HAWN CREEK  
 Hor. Scale: 1" = 60'  
 Vert. Scale: 1" = 12'

DATE: 08/19/2020

NOTE: CONTOURS SHOWN ARE BASED ON LIDAR AND HAVE NOT BEEN VERIFIED.

**JR MEADOWS NO. 2  
 HAWN CREEK CAPACITY MAP AND CALCULATION**

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 12965 SW HERMAN RD, STE 100  
 TUALATIN, OR 97062  
 503.563.6151 WWW.AKS-ENG.COM



FIGURE  
**6**

DRWN: AJD  
 CHKD: AJD  
 AKS JOB:  
 7395-01

**Appendix A:  
Post-Developed Site Storm Event Analysis  
(10-year) using Rational Method**

---

<b>PIPE</b>	<b>PROPOSED PIPE DIAMETER</b>	<b>MANNING'S N</b>	<b>PROPOSED PIPE SLOPE</b>	<b>PIPE CAPACITY</b>	<b>VELOCITY</b>	<b>Q</b>
(XR)	(inches)	(coefficient)	(ft/ft)	(ft <sup>3</sup> /sec)	(ft/sec)	(ft <sup>3</sup> /sec)
1R	12.0	0.0090	0.0110	5.40	6.87	5.31
2R	12.0	0.0090	0.0090	4.88	6.22	4.69
3R	12.0	0.0090	0.0035	3.04	3.88	1.07
4R	12.0	0.0090	0.0060	3.99	5.08	3.62
5R	12.0	0.0090	0.0035	3.04	3.88	1.08
6R	12.0	0.0090	0.0035	3.04	3.88	1.73
7R	12.0	0.0090	0.0035	3.04	3.88	0.49
8R	12.0	0.0090	0.0035	3.04	3.88	0.82
9R	18.0	0.0090	0.0070	12.69	7.18	12.44
10R	18.0	0.0090	0.0070	12.69	7.18	12.63
11R	18.0	0.0090	0.0030	8.31	4.70	7.91
12R	12.0	0.0090	0.0095	5.02	6.39	4.89
13R	12.0	0.0090	0.0060	3.99	5.08	3.87
14R	12.0	0.0090	0.0060	3.99	5.08	3.7
15R	18.0	0.0090	0.0020	6.79	3.84	5.9
16R	12.0	0.0090	0.0130	5.87	7.47	5.87

Project Name: JR Meadows No. 2  
 Job #: 7395-01  
 Date: June 2020

**SUBJECT: Peak Flow Calculation Per Rational Method**

$Q = CiA$

$T_c = T_{osf} + T_{scf} = 0.93(L_1^{0.6}n^{0.6})/(i^{0.4}S^{0.3}) + L_2/60V$

Q: Peak Flow (cfs)

C: Runoff Coefficient

i: Rainfall Intensity (inches/hr)

A: Drainage Area (acres)

$T_c$ : Time of Concentration (min)

$T_{osf}$ : Travel time for the overland sheet flow segment in minutes (min.)

$T_{scf}$ : Travel time for the shallow concentrated flow segment in minutes (min.)

$L_1$ : Length of overland sheet flow (first 300 ft) (ft)

$L_2$ : Length of overland sheet flow (after first 300 ft) (ft)

n: Mannings roughness coefficient

i: Rainfall intensity (in/hr)

S: Average slope of overland area (ft/ft)

V: Average flow velocity in feet per section (ft/s) (Figure 1 of ODOT Appendix F - Rational Method)

**10-year**

<b>16R</b>	
$L_1 =$	300 feet
$L_2 =$	1,090 feet
V =	4.5
n =	0.15
i =	0.98 inches/hr
S =	0.02 ft/ft
$T_c =$	$0.93 * (300^{0.6} * 0.15^{0.6}) / (0.98^{0.4} * 0.02^{0.3}) + 1090 / (60 * 4.5)$
Time of Concentration =	33.80 minutes
A = 11S	19.97 acres
C =	0.30
i =	0.98 inches/hr
Q = CiA =	$(0.30) * (0.98) * (19.97)$
<b>Q =</b>	<b>5.87 ft<sup>3</sup>/sec</b>

<b>15R</b>	
$T_c = T_{c16R} + T_{c15R} =$	$33.8 + 100 / (60 * 1.5)$
$T_c =$	34.91 minutes
A = 9S + 11S	20.71 acres
C =	0.30
i =	0.94 inches/hr
Q = $Q_{16R} + CiA =$	$(0.30) * (0.94) * (20.71)$
<b>Q =</b>	<b>5.90 ft<sup>3</sup>/sec</b>

<b>14R</b>	
$L_1 =$	300 feet
$L_2 =$	1,030 feet

V=	4.5
n=	0.15
i =	0.96 inches/hr
S=	0.02 ft/ft
$T_c=$	$0.93 \cdot (300^{0.6} \cdot 0.15^{0.6}) / (0.96^{0.4} \cdot 0.02^{0.3}) + 1030 / (60 \cdot 4.5)$
Time of Concentration =	33.82 minutes
A = 12S	12.83 acres
C =	0.30
i =	0.96 inches/hr
Q = CiA =	$(0.30) \cdot (0.96) \cdot (12.83)$
<b>Q =</b>	<b>3.70 ft<sup>3</sup>/sec</b>

<b>13R</b>	
$T_c = T_{c14R} + T_{c13R} =$	$33.82 + 100 / (60 \cdot 1.5)$
$T_c =$	34.93 minutes
A = 12S+8S	13.50 acres
C =	0.31
i =	0.94 inches/hr
Q = CiA =	$(0.31) \cdot (0.94) \cdot (13.50)$
<b>Q =</b>	<b>3.87 ft<sup>3</sup>/sec</b>

<b>12R</b>	
$L_1 =$	300 feet
$L_2 =$	750 feet
V=	4.5
n=	0.15
i =	0.77 inches/hr
S=	0.008 ft/ft
$T_c =$	$0.93 \cdot (300^{0.6} \cdot 0.15^{0.6}) / (0.77^{0.4} \cdot 0.008^{0.3}) + 750 / (60 \cdot 4.5)$
Time of Concentration =	45.92 minutes
A = 13S	21.18 acres
C =	0.30
i =	0.77 inches/hr
Q = CiA =	$(0.30) \cdot (0.77) \cdot (21.18)$
<b>Q =</b>	<b>4.89 ft<sup>3</sup>/sec</b>

<b>11R</b>	
$T_c = T_{c12R} + T_{c11R} =$	$45.92 + 100 / (60 \cdot 1.5)$
$T_c =$	47.03 minutes
A = 13S+12S+8S	34.68 acres
C =	0.30
i =	0.76 inches/hr
Q = CiA =	$(0.30) \cdot (0.76) \cdot (34.68)$
<b>Q =</b>	<b>7.91 ft<sup>3</sup>/sec</b>

<b>10R</b>	
$T_c = T_{c11R} + T_{c10R} =$	$47.03 + 245 / (60 \cdot 1.5)$
$T_c =$	49.75 minutes
A = 13S+12S+8S+11S+9S	55.39 acres

C =	0.30
i =	0.76 inches/hr
Q = CiA =	(0.30) * (0.76) * (55.39)
<b>Q =</b>	<b>12.63 ft<sup>3</sup>/sec</b>
<b>9R</b>	
T <sub>c</sub> = T <sub>c9R</sub> + T <sub>c10R</sub> =	49.75 + 100 / (60 * 1.5)
T <sub>c</sub> =	50.86 minutes
A = 13S + 12S + 8S + 11S + 9S + 10S	56.04 acres
C =	0.30
i =	0.74 inches/hr
Q = CiA =	(0.30) * (0.74) * (56.04)
<b>Q =</b>	<b>12.44 ft<sup>3</sup>/sec</b>
<b>8R</b>	
T <sub>c</sub> =	10.00 minutes
A = 7S	1.15 acres
C =	0.40
i =	1.78 inches/hr
Q = CiA =	(0.40) * (1.78) * (1.15)
<b>Q =</b>	<b>0.82 ft<sup>3</sup>/sec</b>
<b>7R</b>	
T <sub>c</sub> =	10.00 minutes
A = 6S	0.69 acres
C =	0.40
i =	1.78 inches/hr
Q = CiA =	(0.40) * (1.78) * (0.69)
<b>Q =</b>	<b>0.49 ft<sup>3</sup>/sec</b>
<b>6R</b>	
T <sub>c</sub> =	10.00 minutes
A = 5S + 6S	2.43 acres
C =	0.40
i =	1.78 inches/hr
Q = CiA =	(0.40) * (1.78) * (2.43)
<b>Q =</b>	<b>1.73 ft<sup>3</sup>/sec</b>
<b>5R</b>	
T <sub>c</sub> =	10.00 minutes
A = 4S	1.51 acres
C =	0.40
i =	1.78 inches/hr
Q = CiA =	(0.40) * (1.78) * (1.51)
<b>Q =</b>	<b>1.08 ft<sup>3</sup>/sec</b>
<b>4R</b>	
<b>Q = Q<sub>5R</sub> + Q<sub>8R</sub> + Q<sub>6R</sub></b>	<b>3.62 ft<sup>3</sup>/sec</b>

**3R**

$T_c =$	10.00 minutes
$A = 3S$	1.50 acres
$C =$	0.40
$i =$	1.78 inches/hr
$Q = CiA =$	$(0.40) * (1.78) * (1.50)$
<b>Q =</b>	<b>1.07 ft<sup>3</sup>/sec</b>

**2R**

$$Q = Q_{4R} + Q_{3R} \quad 4.69 \text{ ft}^3/\text{sec}$$

**1R**

$T_c =$	10.00 minutes
$A = 14S+1S+3S+6S+5S+4S+7S$	7.46 acres
$C =$	0.40
$i =$	1.78 inches/hr
$Q = CiA =$	$(0.40) * (1.78) * (7.46)$
<b>Q =</b>	<b>5.31 ft<sup>3</sup>/sec</b>



**SUBJECT: Additional Flow to Hawn Creek Using Rational Method**

**100-year**

**Existing Flow**

$$C = ((0.3)(8.12) + (0.1)(5.82)) / (13.94) =$$

0.22

$$T_c = T_{osf} + T_{scf} = 0.93(L^{0.6}n^{0.6}) / (i^{0.4}S^{0.3}) + L_2 / 60V = .93(300^{0.6}.15^{0.6}) / (1.60^{0.4}0.02^{0.3}) + 840 / (60 * 4.5) =$$

27.57 minutes

$$i =$$

1.6 inches/hr

$$Q = CiA = 0.22 * 1.60 * 13.94$$

4.91 cfs

**Proposed Flow**

$$C = ((11.87)(0.4) + (2.07)(0.1)) / (13.94) =$$

0.36

$$T_c = T_{osf} + T_{scf} = 0.93(L^{0.6}n^{0.6}) / (i^{0.4}S^{0.3}) + L_2 / 60V = .93(130^{0.6}.15^{0.6}) / (2.15^{0.4}0.02^{0.3}) + 890 / (60 * 4.5) =$$

16.46 minutes

$$i =$$

2.15 inches/hr

$$Q = CiA = 0.36 * 2.15 * 13.94 =$$

10.79 cfs

$$\text{Additional Flow to Hawn Creek Using Rational Method} = 10.79 - 4.91 =$$

5.88 cfs

# **Appendix B: City of Carlton Stormwater Management**

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- j) Maintenance, including accessibility for cleaning and inspection personnel and equipment.

**3.10 DESIGN CALCULATIONS AND CAPACITY**

**a. Design Calculations**

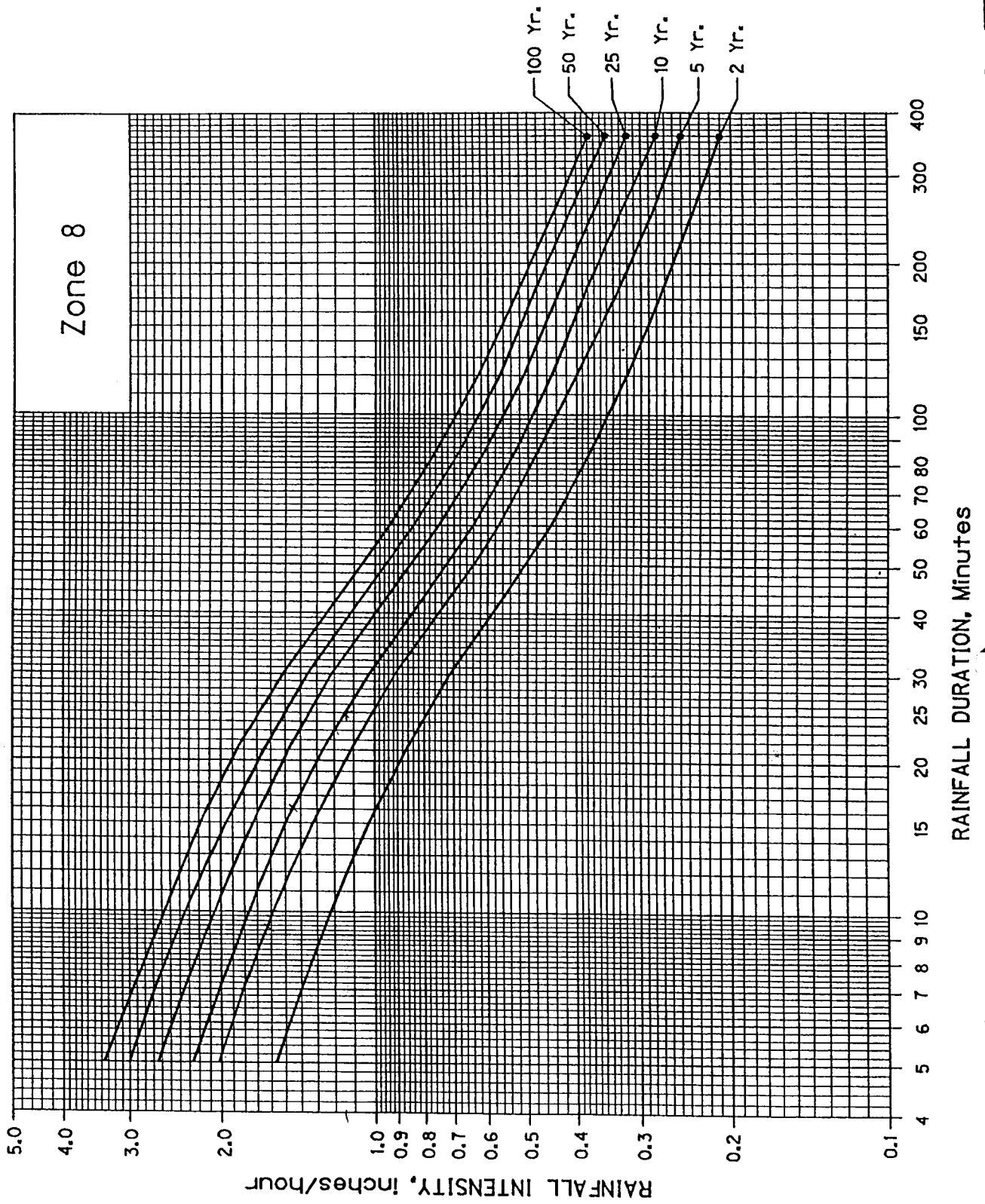
- 1) Design calculations shall be submitted for all drainage facilities. These drainage calculations shall be included on the site plan drawings and shall be stamped by a professional engineer licensed in the State of Oregon.
- 2) Peak design discharges shall be computed using the rational formula,  $Q=CiA$ .
- 3) If use of a Santa Barbara Urban Hydrograph (SBUH) based computer program is proposed for use in sizing storm drain pipes for peak discharge, a 50 year SBUH storm event must be used in lieu of the 10 year or 25 year rational storm frequency to provide equivalent capacity. All CN parameters shall be as or more conservative than the equivalent runoff coefficients listed in these standards. The City Engineer reserves the right to verify all calculations using the rational method, and require larger pipe sizes if the rational calculations result in higher flows than the SBUH methodology.

**b. Design Storm**

- 1) Rainfall Intensity-Duration Curve - The rainfall intensity-duration-frequency (IDF) curve for use in the City of Carlton is the ODOT Zone 8 IDF curve (enclosed herein).
- 2) Design Frequency - The intensity-duration design frequency is based on the time of concentration for the area and the size of the drainage facility. The adopted criteria are listed in the following table.

<b>DESIGN STORM FREQUENCY</b>	
<b>AREA</b>	<b>FREQUENCY</b>
Residential areas	10-year storm
Commercial and high value districts	10-year storm
Trunk lines (18" pipe and larger)	25-year storm
Minor creeks and drainage ways (not shown as a flood plain on the Flood Insurance Rate Map (FIRM))	50-year storm
Major creeks (shown as a flood plain on the FIRM)	100-year storm

# RAINFALL INTENSITY - DURATION - FREQUENCY CURVES



## ODOT Zone 8 IDF Curve Tabular Data (Carlton)

Rainfall Duration (Min)	Rainfall Intensity, inches/hour				
	5 year Storm	10 year Storm	25 year Storm	50 year Storm	100 year Storm
5	2.01	2.25	2.63	3.00	3.35
6	1.90	2.12	2.50	2.81	3.12
7	1.81	2.01	2.35	2.68	2.95
8	1.71	1.91	2.24	2.55	2.80
9	1.65	1.83	2.14	2.43	2.69
10	1.60	1.78	2.07	2.33	2.58
11	1.51	1.70	1.98	2.25	2.48
12	1.48	1.65	1.90	2.18	2.40
13	1.41	1.60	1.85	2.10	2.31
14	1.38	1.55	1.79	2.01	2.24
15	1.32	1.50	1.72	1.95	2.19
20	1.13	1.30	1.50	1.69	1.90
25	1.00	1.14	1.35	1.50	1.69
30	0.91	1.02	1.21	1.36	1.51
35	0.82	0.92	1.10	1.21	1.38
40	0.75	0.84	0.98	1.11	1.24
45	0.69	0.78	0.92	1.02	1.15
50	0.64	0.73	0.85	0.95	1.08
55	0.60	0.68	0.80	0.89	1.00
60	0.57	0.64	0.75	0.84	0.94
70	0.53	0.59	0.68	0.76	0.85
80	0.49	0.54	0.63	0.70	0.78
90	0.46	0.52	0.59	0.66	0.74
100	0.44	0.49	0.56	0.62	0.69
110	0.42	0.47	0.53	0.60	0.66
120	0.40	0.45	0.51	0.57	0.63
130	0.385	0.44	0.49	0.55	0.60
140	0.37	0.420	0.48	0.53	0.58
150	0.36	0.410	0.46	0.520	0.56
160	0.35	0.400	0.45	0.50	0.540
170	0.340	0.390	0.44	0.49	0.53
180	0.33	0.38	0.43	0.48	0.52

- 3) If use of a Santa Barbara Urban Hydrograph (SBUH) based computer program is proposed for use in sizing storm drain pipes for peak discharge, a 50 year SBUH storm event must be used in lieu of the 10 year or 25 year rational storm frequency to provide equivalent capacity. All CN parameters shall be as or more conservative than the equivalent runoff coefficients listed in these standards. The City Engineer reserves the right to verify all calculations using the rational method, and require larger pipe sizes if the rational calculations result in higher flows than the SBUH methodology.

c. **Runoff Coefficients**

- 1) The coefficients of runoff "C" are listed below. Use of coefficients other than those listed must be based on field investigations which demonstrate conclusively that the proposed coefficients are justified.

<b>RUNOFF COEFFICIENTS</b>			
<b>SOIL COVER</b>	<b>FLAT TERRAIN S&lt;2%</b>	<b>ROLLING TERRAIN 2%&lt;S≤10%</b>	<b>STEEP TERRAIN S&gt;10%</b>
Cultivated Land	0.30	0.35	0.40
Parks & Cemeteries	0.15	0.20	0.30
Woodlands & Forests	0.10	0.15	0.20
Meadows & Pasture Land	0.25	0.30	0.35
1) Single-family residential in urban areas, except corner lots with duplex potential	0.40	0.45	0.50
2) Gravel parking lots	0.50	0.55	0.60
3) Mobile home parks	0.60	0.65	0.70
4) Multi-family residential, zero-lot-line single-family residential and potential duplex lots in single-family residential	0.70	0.75	0.80
Highly impermeable (roofs and paved areas)	0.90	0.90	0.90

d. **Time of Concentration**

- 1) For land in a pre-development condition, the minimum time of concentration

from the most remote point in the basin to the first defined channel (e.g. gutter, ditch or pipe) shall be 10 minutes. Pre-development shall be defined as a site with natural vegetation on native soil.

- 2) For developed residential and commercial/industrial property, the maximum time of concentration from the most remote point in the development to the closest inlet shall be 10 minutes, unless calculations by an acceptable method show the time to be longer.

### **3.11 OPEN CHANNELS**

- a. Within the UGB, creation of new open channels will not generally be allowed. Where allowed by the City, ditches shall be located along or adjacent to lot lines.
- b. For reasons of maintenance and safety, bank slopes generally shall be 3H:1V or flatter unless otherwise required by the Public Works Superintendent or the Public Works Superintendent.
- c. The maximum allowable design velocity shall be 7 fps.
- d. The minimum allowable design velocity shall be 2 fps. The installation of a concrete lined low-flow channel may be required to achieve minimum velocity.
- e. Unless otherwise approved by the City Engineer, all piped discharges to open channels (existing or new) shall be mitered to match the channel side slope and include a reinforced concrete collar (6" minimum thickness) to prevent settlement or erosion of the pipe trench at the discharge location, and to protect the end of the pipe. Unless otherwise approved by Public Works and the City Engineer, the concrete collar shall extend from the channel bottom to the top of bank. Grates shall be provided on all inlets or outlets 18" or larger unless otherwise specifically approved by Public Works and the City Engineer, as well as at any locations required by Public Works to accommodate maintenance or mowing requirements.

### **3.12 ALIGNMENT AND LOCATION**

#### **a. General**

- 1) Generally, storm drains shall be laid on a straight alignment between catch basins and between manholes. Lines 15-inch in diameter and smaller may be laid on horizontal curves conforming to the street curvature provided the radius of the horizontal curve is not less than 200 feet.
- 2) Variance for horizontal curves on larger size pipes shall be reviewed by the City Engineer on a case by case basis.
- 3) Where storm drains are being designed for installation parallel to other utility

## Appendix C: Streamstats Report

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# StreamStats Report

**Region ID:**

OR

**Workspace ID:**

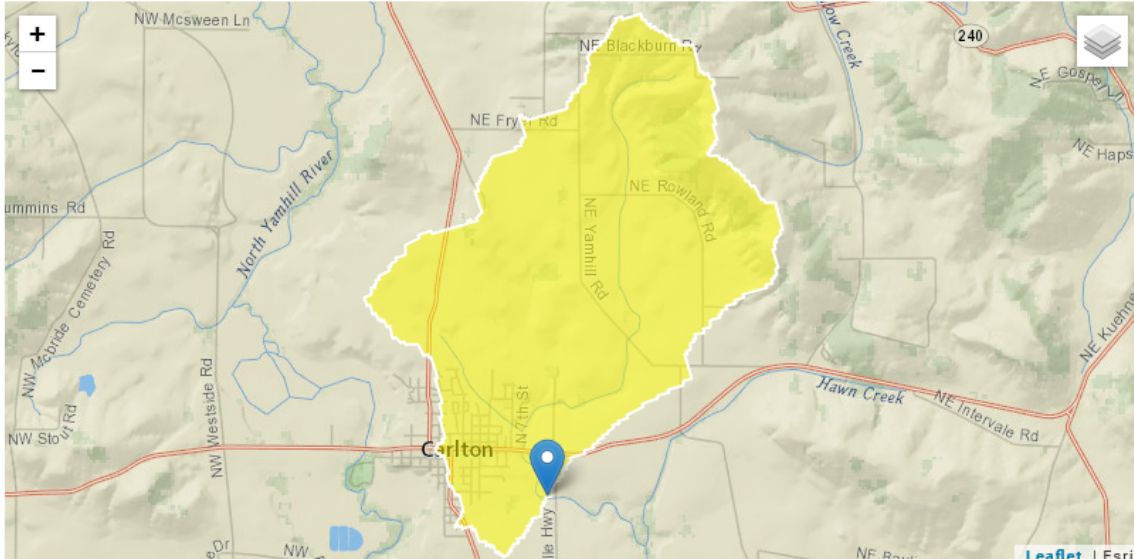
OR20200819162409896000

**Clicked Point (Latitude, Longitude):**

45.29017, -123.16551

**Time:**

2020-08-19 09:24:28 -0700



## Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	3.86	square miles
I24H2Y	Maximum 24-hour precipitation that occurs on average once in 2 years - Equivalent to precipitation intensity index	1.97	inches
SOILPERM	Average Soil Permeability	0.75	inches per hour
JANMAXT2K	Mean Maximum January Temperature from 2K resolution PRISM 1961-1990 data	45.9	degrees F
WATCAPORC	Available water capacity from STATSGO data using methods from SIR 2005-5116	0.18	inches
ORREG2	Oregon Region Number	10001	dimensionless
BSLOPD	Mean basin slope measured in degrees	3.21	degrees
JANMINT2K	Mean Minimum January Temperature from 2K resolution PRISM PRISM 1961-1990 data	33.1	degrees F

Parameter Code	Parameter Description	Value	Unit
ELEV	Mean Basin Elevation	242	feet
WATCAPORR	Available water capacity from STATSGO data using methods from SIR 2008-5126	0.18	inch per inch

## General Disclaimers

Parameter values have been edited, computed flows may not apply.

Upstream regulation was checked for this watershed.

This watershed is percent regulated, computed flows may not apply.

This watershed has been edited, computed flows may not apply.

The resulting delineations are derived from digital elevation data and storm drain vectors that have been processed to enforce drainage through storm drains.

Urban regression equations for peak flows were not developed using streamgages which incorporate storm drain delineations and therefore should be used with caution.

## Peak-Flow Statistics Parameters [Reg 2B Western Interior LT 3000 ft Cooper]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	3.86	square miles	0.37	7270
BSLOPD	Mean Basin Slope degrees	3.21	degrees	5.62	28.3
I24H2Y	24 Hour 2 Year Precipitation	1.97	inches	1.53	4.48
ELEV	Mean Basin Elevation	242	feet		
ORREG2	Oregon Region Number	10001	dimensionless		

## Peak-Flow Statistics Disclaimers [Reg 2B Western Interior LT 3000 ft Cooper]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

## Peak-Flow Statistics Flow Report [Reg 2B Western Interior LT 3000 ft Cooper]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit
2 Year Peak Flood	94.7	ft <sup>3</sup> /s
5 Year Peak Flood	141	ft <sup>3</sup> /s
10 Year Peak Flood	174	ft <sup>3</sup> /s
25 Year Peak Flood	217	ft <sup>3</sup> /s
50 Year Peak Flood	249	ft <sup>3</sup> /s
100 Year Peak Flood	282	ft <sup>3</sup> /s
500 Year Peak Flood	360	ft <sup>3</sup> /s

## Peak-Flow Statistics Citations

**Cooper, R.M.,2005, Estimation of Peak Discharges for Rural, Unregulated Streams in Western Oregon: U.S. Geological Survey Scientific Investigations Report 2005-5116, 76 p.**

USGS Storm Drain Disclaimer: The Storm Drain methods are being provided to meet the need for timely best science and are released on the condition that neither the USGS nor the U.S. Government may be held liable for any damages resulting from authorized or unauthorized use. At his time these methods are provisional and are subject to revision until thoroughly reviewed and approved.

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distribution constitute any such warranty.

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USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Application Version: 4.4.0

## Exhibit I: Arborist Report

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# JR Meadows No. 2 Arborist Report

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**Date:** August 26, 2020

**Prepared For:** TJA, LLC  
9110 NW Clay Pit Road  
Yamhill, OR 97148

**Prepared By:** Bruce R. Baldwin  
ISA Certified Arborist No.: PN-6666A  
ISA Qualified Tree Risk Assessor  
bruce@aks-eng.com

**Site Information:** South of the Intersection of  
E Main Street & S 7<sup>th</sup> Street, Carlton, OR 97111  
Tax Lot 1300; Tax Map 3S 4W 22



12965 SW Herman Road, Suite 100  
Tualatin, OR 97062  
(503) 563-6151

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## Project Summary

This project consists of a 55-lot subdivision for future residential dwelling units. The purpose of this Arborist Report is to document information related to existing onsite trees, planned tree preservation and removal for the project, and protection measures for trees to be preserved.

## Tree Inventory & Evaluation

A site visit was conducted on August 24<sup>th</sup> & 25<sup>th</sup>, 2020 to evaluate existing on-site trees. The trees were evaluated for species, DBH, average crown radius, and visual assessment of tree health and condition. Please refer to "Appendix A – Tree Inventory" for the above-mentioned information as well as additional tree related information.

## Tree Preservation & Removal Plan

The Preliminary Tree Preservation and Removal Plan (dated August 19, 2020) was reviewed by a Certified Arborist. Trees in good health have been prioritized for preservation where feasible and tree protection measures shown appear to be sufficient. For additional tree protection measures and tree protection fencing locations, please refer to "Appendix B – Preliminary Tree Preservation and Removal Plan."

## Arborist Disclosure Statement

Arborists are tree specialists who use their education, knowledge, training, and experience to examine trees, recommend measures to enhance the health of trees, and attempt to reduce the risk of living near trees. The Client and Jurisdiction may choose to accept or disregard the recommendations of the arborist, or seek additional advice. Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees and below ground. Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments, like medicine, cannot be guaranteed. Trees can be managed, but they cannot be controlled. To live near trees is to accept some degree of risk. The only way to eliminate all risk associated with trees is to eliminate all trees.

Neither this author nor AKS Engineering & Forestry, LLC have assumed any responsibility for liability associated with the trees on or adjacent to this site.

Sincerely,

**AKS ENGINEERING & FORESTRY, LLC**



Bruce R. Baldwin

ISA Certified Arborist, ISA Qualified Tree Risk Assessor  
12965 SW Herman Road, Suite 100, Tualatin, OR 97062  
503-563-6151 | bruce@aks-eng.com



Appendix A - Tree Inventory

Detailed Tree Inventory for JR Meadows No. 2

AKS Job No. 7395-01 - Evaluation Date: 8/24/2020 - 8/25/2020

Tree #	DBH (in.)	Avg. Crown Radius (ft)	Tree Species Common Name (Scientific name)	Comments	Health Rating*	Structure Rating**	Remove/Preserve
15061	8	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
15150	22	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
15837	9,7	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
15928	7	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
15929	10	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
15930	6	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
15931	8	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
15939	12,11	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
15940	16,15,6	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
15941	12,10	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
15943	11	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
15944	8,7	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
15946	7	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
15947	9	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
15949	8,7	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
15951	16,6	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
15952	6	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
15953	9,6	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
15967	10,9,9	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
15992	11,6	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
15993	10	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
15994	10	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
15995	9	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
15996	8	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
15997	8	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
15998	10,7	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
15999	12	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16000	8	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16001	10	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16002	8	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16003	13	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16004	9	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16005	8,7	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16006	7,7	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16007	8,7	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16008	14	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16009	10,7	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16010	8,8	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16011	10	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16012	6	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16013	14	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16014	7,6	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16015	9,8,8,6	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16016	10,9	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16017	8	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16018	7	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16019	6	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16020	6	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve

## Detailed Tree Inventory for JR Meadows No. 2

AKS Job No. 7395-01 - Evaluation Date: 8/24/2020 - 8/25/2020

Tree #	DBH (in.)	Avg. Crown Radius (ft)	Tree Species Common Name (Scientific name)	Comments	Health Rating*	Structure Rating**	Remove/Preserve
16021	11	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16022	7	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16023	8	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16024	7	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16025	7	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16026	9,8	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16027	8,8	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16028	8	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16029	9	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16032	10	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16033	9	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16034	7	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16035	7	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16036	7,6	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16037	6	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16038	8	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16039	14,7	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16040	6	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16041	8	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16042	7	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16043	13	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16044	8	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16045	8	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16046	10	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16047	8,6	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16048	7	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16049	7	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16050	8	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16051	6	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16052	8	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16053	7	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16054	7	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16055	8,7	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16056	6	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16057	8	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16058	8	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16059	6	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16060	9	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16061	8	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16062	8,8,7	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
16306	9	11	Douglas-fir ( <i>Pseudotsuga menziesii</i> )		1	1	Remove
16307	9	12	Douglas-fir ( <i>Pseudotsuga menziesii</i> )		1	1	Remove
16309	29	21	Oregon White Oak ( <i>Quercus garryana</i> )		1	1	Remove
16310	9	17	Oregon White Oak ( <i>Quercus garryana</i> )	Lean (S)	1	2	Remove
16311	14	20	Oregon White Oak ( <i>Quercus garryana</i> )	Lean (S); Large cavity with decay	2	2	Remove
16312	10	12	Oregon White Oak ( <i>Quercus garryana</i> )	Suppressed	2	2	Remove
16313	17	15	Douglas-fir ( <i>Pseudotsuga menziesii</i> )	Butt sweep; Abnormal dead branches	2	1	Remove



## Detailed Tree Inventory for JR Meadows No. 2

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Tree #	DBH (in.)	Avg. Crown Radius (ft)	Tree Species Common Name (Scientific name)	Comments	Health Rating*	Structure Rating**	Remove/Preserve
16314	26	15	Douglas-fir ( <i>Pseudotsuga menziesii</i> )	Sweep; Exposed buttress roots	1	2	Remove
16315	9	20	Oregon White Oak ( <i>Quercus garryana</i> )	1-sided canopy (S); Abnormal dead branches	2	2	Remove
16316	25	20	Oregon White Oak ( <i>Quercus garryana</i> )	1-sided canopy (S); Abnormal dead branches	2	2	Remove
16317	24	22	Oregon White Oak ( <i>Quercus garryana</i> )	High canopy	1	2	Remove
16318	27	25	Oregon White Oak ( <i>Quercus garryana</i> )	Lean (SW); 1-sided canopy (SW)	1	2	Remove
16320	29	0	Douglas-fir ( <i>Pseudotsuga menziesii</i> )	Dead	3	3	Remove
16322	21	17	Oregon White Oak ( <i>Quercus garryana</i> )	High canopy; Sparse canopy; Many abnormal dead branches; Dead codominant stem	3	2	Remove
16323	31	0	Douglas-fir ( <i>Pseudotsuga menziesii</i> )	Dead	3	3	Remove
16324	7	10	Willow ( <i>Salix sp.</i> )	Lean (W)	1	2	Remove
16325	6	10	English Hawthorn ( <i>Crataegus monogyna</i> )	Lean (W)	1	2	Remove
16326	7	10	Willow ( <i>Salix sp.</i> )	Lean (W)	1	2	Remove
16330	36	20	Douglas-fir ( <i>Pseudotsuga menziesii</i> )	1-sided canopy (E)	1	2	Remove
16332	6	12	English Hawthorn ( <i>Crataegus monogyna</i> )	Lean (E)	1	2	Remove
16338	15	14	Douglas-fir ( <i>Pseudotsuga menziesii</i> )		1	1	Remove
16339	12	12	Douglas-fir ( <i>Pseudotsuga menziesii</i> )		1	1	Remove
16340	13	12	Douglas-fir ( <i>Pseudotsuga menziesii</i> )		1	1	Remove
16343	29	27	Oregon White Oak ( <i>Quercus garryana</i> )	Failed codominant stem leaving large cavity with decay; 1-sided canopy (S)	2	3	Remove
16345	15,10,8,6	18	Cherry ( <i>Prunus sp.</i> )	Crooked; Abnormal dead branches; Exposed roots	2	2	Remove
16346	6	10	English Hawthorn ( <i>Crataegus monogyna</i> )		1	1	Remove
16347	6	10	English Hawthorn ( <i>Crataegus monogyna</i> )		1	1	Remove
16348	6	8	English Hawthorn ( <i>Crataegus monogyna</i> )		1	1	Remove
16349	24	20	Oregon White Oak ( <i>Quercus garryana</i> )		1	1	Remove
16351	6	8	Cherry ( <i>Prunus sp.</i> )		1	1	Remove
16352	6,6	7	Cherry ( <i>Prunus sp.</i> )		1	1	Remove
16353	7	7	Cherry ( <i>Prunus sp.</i> )		1	1	Remove
16354	15	20	Oregon White Oak ( <i>Quercus garryana</i> )	Epicormic sprouts; 1-sided canopy (S); Abnormal dead branches	2	2	Remove
16633	8	7	English Hawthorn ( <i>Crataegus monogyna</i> )		1	1	Preserve
16634	6	10	English Hawthorn ( <i>Crataegus monogyna</i> )		2	2	Remove
16635	11	8	English Hawthorn ( <i>Crataegus monogyna</i> )	Lean (S); Abnormal dead branches	2	2	Remove
16636	32	27	Oregon White Oak ( <i>Quercus garryana</i> )	Abnormal dead branches	1	1	Remove
16637	21	19	Oregon White Oak ( <i>Quercus garryana</i> )	High canopy; Abnormal dead branches	2	2	Remove
16638	26	35	Oregon White Oak ( <i>Quercus garryana</i> )	1-sided canopy (W)	1	2	Remove
16639	7	10	Cherry ( <i>Prunus sp.</i> )		1	1	Remove
16640	12	30	Oregon White Oak ( <i>Quercus garryana</i> )	Large cavity with decay; Deformed bole; Suppressed; Sparse canopy	3	2	Remove
16641	39	30	Oregon White Oak ( <i>Quercus garryana</i> )	1-sided canopy (W)	1	2	Remove
16643	8	10	Cherry ( <i>Prunus sp.</i> )		1	1	Remove
16644	22	20	Oregon White Oak ( <i>Quercus garryana</i> )	Abnormal dead branches	2	1	Remove
16645	18	18	Oregon White Oak ( <i>Quercus garryana</i> )	High canopy	1	2	Remove
16646	7	10	English Hawthorn ( <i>Crataegus monogyna</i> )		1	1	Remove
16647	6	11	Willow ( <i>Salix sp.</i> )	Lean (W); Crooked bole	1	2	Remove
16649	26	23	Oregon White Oak ( <i>Quercus garryana</i> )		1	1	Remove
16650	27	22	Oregon White Oak ( <i>Quercus garryana</i> )	High canopy	1	2	Remove
16651	8	10	English Hawthorn ( <i>Crataegus monogyna</i> )		1	1	Remove
16652	9	16	English Hawthorn ( <i>Crataegus monogyna</i> )		1	2	Remove
16653	13	14	Oregon White Oak ( <i>Quercus garryana</i> )	Sparse canopy; High canopy; Abnormal dead branches	2	2	Remove
16654	17	15	Douglas-fir ( <i>Pseudotsuga menziesii</i> )	Sparse canopy; High canopy; Abnormal dead branches	2	2	Remove

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Tree #	DBH (in.)	Avg. Crown Radius (ft)	Tree Species Common Name (Scientific name)	Comments	Health Rating*	Structure Rating**	Remove/Preserve
16655	12	18	Cherry ( <i>Prunus sp.</i> )	Lean (S); Abnormal dead branches	2	2	Remove
16656	7	10	Willow ( <i>Salix sp.</i> )	Lean (W); Abnormal dead branches	2	2	Remove
16657	7,6	7	Willow ( <i>Salix sp.</i> )	Broken top; Abnormal dead branches	3	2	Remove
16658	7	14	English Hawthorn ( <i>Crataegus monogyna</i> )	Lean (E); Exposed roots	1	2	Remove
16660	30	25	Oregon White Oak ( <i>Quercus garryana</i> )	Lean (E); 1-sided canopy (E)	1	2	Remove
16664	8,8	10	English Hawthorn ( <i>Crataegus monogyna</i> )	1-sided canopy (E)	1	2	Remove
16665	6	7	English Hawthorn ( <i>Crataegus monogyna</i> )		1	1	Remove
16668	6,6	16	English Hawthorn ( <i>Crataegus monogyna</i> )	Lean (E)	1	2	Remove
16671	7	10	English Hawthorn ( <i>Crataegus monogyna</i> )	Lean (E)	1	2	Remove
16672	8	10	English Hawthorn ( <i>Crataegus monogyna</i> )		1	1	Remove
16673	7	8	English Hawthorn ( <i>Crataegus monogyna</i> )		1	1	Remove
16674	7	8	English Hawthorn ( <i>Crataegus monogyna</i> )		1	1	Remove
16676	10,7,6	12	English Hawthorn ( <i>Crataegus monogyna</i> )		1	1	Remove
16677	27,14	30	Oregon White Oak ( <i>Quercus garryana</i> )	Lean (S); 1-sided canopy (S); Abnormal dead branches	2	2	Remove
16678	10,6,6	13	English Hawthorn ( <i>Crataegus monogyna</i> )	Abnormal dead branches	2	1	Remove
16696	21	20	Oregon White Oak ( <i>Quercus garryana</i> )	Crooked bole; Epicormic sprouts; High canopy	2	2	Remove
16697	23	18	Douglas-fir ( <i>Pseudotsuga menziesii</i> )	Abnormal dead branches	2	1	Remove
16698	20	19	Oregon White Oak ( <i>Quercus garryana</i> )	High canopy; Abnormal dead branches	2	2	Remove
16699	11	15	Oregon White Oak ( <i>Quercus garryana</i> )	Crooked bole; Epicormic sprouts; High canopy	2	2	Remove
16700	28	27	Oregon White Oak ( <i>Quercus garryana</i> )	Lean (W); Broken branches; 1-sided canopy (W); Abnormal dead branches	2	2	Remove
16701	11	0	Oregon White Oak ( <i>Quercus garryana</i> )	Fallen snag	3	3	Remove
16702	17	16	Oregon White Oak ( <i>Quercus garryana</i> )	Many abnormal dead branches; Very sparse canopy; Many epicormic sprouts	3	2	Remove
16703	12	9	Oregon White Oak ( <i>Quercus garryana</i> )	Many abnormal dead branches; Very sparse canopy; Many epicormic sprouts	3	2	Remove
16704	27	35	Oregon White Oak ( <i>Quercus garryana</i> )	Deformed bole; Lean (W); 1-sided canopy (W); Abnormal dead branches	2	2	Remove
16705	28	18	Douglas-fir ( <i>Pseudotsuga menziesii</i> )		1	1	Remove
16706	14	0	Oregon White Oak ( <i>Quercus garryana</i> )	Snag	3	3	Remove
16707	10	0	Oregon White Oak ( <i>Quercus garryana</i> )	Snag	3	3	Remove
16708	17	12	Douglas-fir ( <i>Pseudotsuga menziesii</i> )	Broken top	3	2	Remove
16709	12	8	Oregon White Oak ( <i>Quercus garryana</i> )	Many abnormal dead branches; Sparse canopy; Epicormic sprouts; Suppressed	3	2	Remove
16710	10	0	Oregon White Oak ( <i>Quercus garryana</i> )	Dead	3	3	Remove
16711	17	20	Oregon White Oak ( <i>Quercus garryana</i> )	Abnormal dead branches	2	1	Remove
16712	39	17	Douglas-fir ( <i>Pseudotsuga menziesii</i> )	1-sided canopy (S)	1	2	Remove
16713	6	10	Willow ( <i>Salix sp.</i> )	Lean (W)	1	2	Remove
16714	6	11	Willow ( <i>Salix sp.</i> )	Lean (W)	1	2	Remove
16717	8	8	English Hawthorn ( <i>Crataegus monogyna</i> )		1	1	Remove
16718	7	0	Douglas-fir ( <i>Pseudotsuga menziesii</i> )	Dead	3	3	Remove
16719	8	10	Cherry ( <i>Prunus sp.</i> )	Abnormal dead branches	2	1	Remove
16720	11	12	Cherry ( <i>Prunus sp.</i> )	Crooked bole; Abnormal dead branches	2	2	Remove
16721	12	9	Cherry ( <i>Prunus sp.</i> )	Many abnormal dead branches; Dead codominant stem	3	2	Remove
16722	11	15	Cherry ( <i>Prunus sp.</i> )	Lean (W)	1	2	Remove
16723	6	10	Cherry ( <i>Prunus sp.</i> )	Crooked bole; Lean (S)	1	2	Remove
16724	10	11	English Hawthorn ( <i>Crataegus monogyna</i> )		1	1	Remove
16725	28	20	Oregon White Oak ( <i>Quercus garryana</i> )		1	1	Remove
16726	7	16	Willow ( <i>Salix sp.</i> )	Abnormal dead branches; Lean (E)	2	2	Remove
16727	8	16	Willow ( <i>Salix sp.</i> )	Abnormal dead branches; Lean (E)	2	2	Remove
16728	9	9	Cherry ( <i>Prunus sp.</i> )	Abnormal dead branches; Lean (E)	2	2	Remove
16733	20	16	Oregon White Oak ( <i>Quercus garryana</i> )	Dead scaffold branches; High canopy	2	2	Remove

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Tree #	DBH (in.)	Avg. Crown Radius (ft)	Tree Species		Comments	Health Rating*	Structure Rating**	Remove/Preserve
			Common Name	(Scientific name)				
16734	8	18	English Hawthorn	( <i>Crataegus monogyna</i> )		1	1	Remove
16735	22	22	Oregon White Oak	( <i>Quercus garryana</i> )	1-sided canopy (S); Abnormal dead branches	2	2	Remove
16736	19	14	Oregon White Oak	( <i>Quercus garryana</i> )	Dead scaffold branches; Sparse canopy	2	2	Remove
16737	23	20	Oregon White Oak	( <i>Quercus garryana</i> )	High canopy; Abnormal dead branches	2	2	Remove
16738	6	17	Willow	( <i>Salix sp.</i> )	Abnormal dead branches; Lean (S)	2	2	Remove
16739	20	14	Douglas-fir	( <i>Pseudotsuga menziesii</i> )	Large conks up bole; Many abnormal dead branches	3	3	Remove
16740	15	0	Oregon White Oak	( <i>Quercus garryana</i> )	Dead	3	3	Remove
16741	19	16	Douglas-fir	( <i>Pseudotsuga menziesii</i> )	Abnormal dead branches; Exposed buttress roots (E)	2	1	Remove
16742	22	14	Oregon White Oak	( <i>Quercus garryana</i> )	High canopy	1	2	Remove
16743	8,8	11	English Hawthorn	( <i>Crataegus monogyna</i> )		1	1	Remove
16744	24	35	Oregon White Oak	( <i>Quercus garryana</i> )	Lean (W); 1-sided canopy (W)	1	2	Remove
16745	15	10	Oregon White Oak	( <i>Quercus garryana</i> )	High canopy; Epicormic sprouts; Sparse canopy	2	2	Remove
16746	6	11	Willow	( <i>Salix sp.</i> )	Lean (N); Crooked bole	1	2	Remove
16747	22	19	Oregon White Oak	( <i>Quercus garryana</i> )	Broken branches; High canopy; Sparse canopy	2	2	Remove
16748	8	10	English Hawthorn	( <i>Crataegus monogyna</i> )		1	1	Remove
16750	12	11	Cherry	( <i>Prunus sp.</i> )	Many abnormal dead branches; Sparse canopy; In decline	3	2	Remove
16751	12	11	Cherry	( <i>Prunus sp.</i> )	Many abnormal dead branches; Sparse canopy; In decline	3	2	Remove
16753	42	30	Douglas-fir	( <i>Pseudotsuga menziesii</i> )	Codominant with included bark	1	2	Remove
16755	10	17	Cherry	( <i>Prunus sp.</i> )		1	1	Remove
16756	14	16	Cherry	( <i>Prunus sp.</i> )	Many abnormal dead branches; Sparse canopy; In decline	3	2	Remove
16757	10	12	Holly	( <i>Ilex sp.</i> )	Bore holes; Abnormal dead branches; Lean (E)	2	2	Remove
16758	20	20	Oregon White Oak	( <i>Quercus garryana</i> )	Abnormal dead branches	2	1	Remove
16760	6,6	10	English Hawthorn	( <i>Crataegus monogyna</i> )	Crooked bole; Lean (W); Abnormal dead branches	2	2	Remove
16761	7	9	Willow	( <i>Salix sp.</i> )		1	1	Remove
16762	23	23	Oregon White Oak	( <i>Quercus garryana</i> )	High canopy; Lean (N)	1	2	Remove
16763	8	0	Oregon White Oak	( <i>Quercus garryana</i> )	Snag	3	3	Remove
16777	33	20	Douglas-fir	( <i>Pseudotsuga menziesii</i> )	Abnormal dead branches; Exposed buttress roots	2	1	Remove
16781	19	13	English Hawthorn	( <i>Crataegus monogyna</i> )	1-sided canopy (W)	1	2	Remove
16786	7	11	Cherry	( <i>Prunus sp.</i> )		1	1	Remove
16795	9,6	12	Cherry	( <i>Prunus sp.</i> )		1	1	Remove
16796	24	20	Oregon White Oak	( <i>Quercus garryana</i> )	1-sided canopy (S)	1	2	Preserve
16797	13	0	Oregon White Oak	( <i>Quercus garryana</i> )	Snag	3	3	Remove
16798	30	30	Oregon White Oak	( <i>Quercus garryana</i> )	Many abnormal dead branches; Dead scaffold branches; 1-sided (W); In decline	3	2	Preserve
16799	20	20	Oregon White Oak	( <i>Quercus garryana</i> )	1-sided canopy (W); Abnormal dead branches	2	2	Preserve
16800	10,8	14	English Hawthorn	( <i>Crataegus monogyna</i> )		1	1	Remove
16801	11	11	Oregon White Oak	( <i>Quercus garryana</i> )	Crooked bole; Suppressed	2	2	Preserve
16802	16,15	22	Oregon White Oak	( <i>Quercus garryana</i> )	1-sided canopy (W); Abnormal dead branches	2	2	Preserve
16804	7	10	Cherry	( <i>Prunus sp.</i> )	Lean (W); 1-sided canopy (W)	1	2	Preserve
16805	6	10	Cherry	( <i>Prunus sp.</i> )	Lean (W); 1-sided canopy (W)	1	2	Preserve
16806	7	10	English Hawthorn	( <i>Crataegus monogyna</i> )	Lean (W)	1	2	Preserve
16807	21	18	Oregon White Oak	( <i>Quercus garryana</i> )	Lean (W); High canopy; Many abnormal dead branches; Dead foliage	3	2	Remove
16808	12,12	17	Oregon White Oak	( <i>Quercus garryana</i> )	Suppressed; Sparse canopy	2	2	Remove
16809	8	11	English Hawthorn	( <i>Crataegus monogyna</i> )	Suppressed; Sparse canopy	2	2	Remove
16810	28	31	Oregon White Oak	( <i>Quercus garryana</i> )		1	1	Remove
16811	14	0	Oregon White Oak	( <i>Quercus garryana</i> )	Dead	3	3	Remove
16814	21,21	20	Oregon White Oak	( <i>Quercus garryana</i> )	1-sided canopy (W)	1	2	Preserve
16815	15,15	21	Oregon White Oak	( <i>Quercus garryana</i> )	Cavity with decay	2	1	Remove

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Tree #	DBH (in.)	Avg. Crown Radius (ft)	Tree Species		Comments	Health Rating*	Structure Rating**	Remove/Preserve
			Common Name (Scientific name)					
16816	22	25	Oregon White Oak ( <i>Quercus garryana</i> )		Lean (S); Crooked bole	1	2	Remove
16817	8	11	English Hawthorn ( <i>Crataegus monogyna</i> )			1	1	Remove
16818	18.24	18	Oregon White Oak ( <i>Quercus garryana</i> )		Abnormal dead branches; Sparse canopy	2	2	Remove
16820	21	23	Oregon White Oak ( <i>Quercus garryana</i> )			1	1	Remove
16822	27.22	31	Oregon White Oak ( <i>Quercus garryana</i> )		Cavity with decay; 1-sided canopy (W)	2	2	Remove
16823	23	20	Oregon White Oak ( <i>Quercus garryana</i> )		Crooked bole; 1-sided canopy (W)	1	2	Remove
16824	14	15	Oregon White Oak ( <i>Quercus garryana</i> )		Crooked bole; Suppressed	2	2	Remove
16825	11	0	Oregon White Oak ( <i>Quercus garryana</i> )		Snag	3	3	Remove
16826	17	20	Oregon White Oak ( <i>Quercus garryana</i> )		Broken scaffold branches with decay; 1-sided canopy (SE)	2	2	Remove
16827	7	10	Willow ( <i>Salix sp.</i> )			1	1	Remove
16828	7	11	Willow ( <i>Salix sp.</i> )			1	1	Remove
16829	12	15	Cherry ( <i>Prunus sp.</i> )			1	1	Remove
16830	10	15	Cherry ( <i>Prunus sp.</i> )		Lean (E); 1-sided canopy (E)	1	2	Remove
16831	9	15	Cherry ( <i>Prunus sp.</i> )		Lean (E)	1	2	Remove
16832	9	15	Cherry ( <i>Prunus sp.</i> )		Lean (E)	1	2	Remove
16833	7	15	Cherry ( <i>Prunus sp.</i> )		Lean (E)	1	2	Remove
16834	6	15	Cherry ( <i>Prunus sp.</i> )		Lean (E)	1	2	Remove
16835	10	12	Cherry ( <i>Prunus sp.</i> )		Cavities with decay	2	2	Remove
16836	6	10	English Hawthorn ( <i>Crataegus monogyna</i> )			1	1	Remove
16844	7	12	English Hawthorn ( <i>Crataegus monogyna</i> )		Cavity with decay	2	1	Remove
16845	6	0	Willow ( <i>Salix sp.</i> )		Dead	3	3	Remove
16846	6.6	10	Willow ( <i>Salix sp.</i> )			1	1	Remove
16850	22	19	Oregon White Oak ( <i>Quercus garryana</i> )		High canopy	1	2	Remove
16851	10	14	Oregon White Oak ( <i>Quercus garryana</i> )		High canopy	1	2	Remove
16852	6	16	English Hawthorn ( <i>Crataegus monogyna</i> )		Lean (N)	1	2	Remove
16853	8	10	English Hawthorn ( <i>Crataegus monogyna</i> )		Lean (E)	1	2	Preserve
16857	7	7	English Hawthorn ( <i>Crataegus monogyna</i> )		Lean (W); Abnormal dead branches	2	2	Preserve
16858	32	12	Douglas-fir ( <i>Pseudotsuga menziesii</i> )		Dead top; Abnormal dead branches; Epicormic sprouts; Sparse canopy	3	2	Remove
16859	8,8,8	16	English Hawthorn ( <i>Crataegus monogyna</i> )		Lean (W)	1	2	Remove
16860	8	9	English Hawthorn ( <i>Crataegus monogyna</i> )		Lean (W)	1	2	Preserve
16861	8	11	English Hawthorn ( <i>Crataegus monogyna</i> )		Lean (W)	1	2	Preserve
16862	15,14,10,7,6,6	20	Oregon White Oak ( <i>Quercus garryana</i> )			1	1	Remove
16867	6	10	Cherry ( <i>Prunus sp.</i> )			1	1	Remove
16868	24	22	Oregon White Oak ( <i>Quercus garryana</i> )			1	1	Remove
16869	18	20	Oregon White Oak ( <i>Quercus garryana</i> )		1-sided canopy (W); Epicormic sprouts; Broken branches with decay	2	2	Remove
16871	27,10	32	Oregon White Oak ( <i>Quercus garryana</i> )		10' stem is dead; 1-sided canopy (S)	2	2	Remove
16875	33,22	19	Douglas-fir ( <i>Pseudotsuga menziesii</i> )		Codominant base; Sap seepage; Sluffing bark; Abnormal dead branches	2	2	Remove
16878	40	16	Douglas-fir ( <i>Pseudotsuga menziesii</i> )			1	1	Remove
16881	47	16	Douglas-fir ( <i>Pseudotsuga menziesii</i> )			1	1	Remove
16883	36,18	25	Oregon White Oak ( <i>Quercus garryana</i> )		Failed 18" stem leaving large cavity with decay; Abnormal dead branches	2	2	Remove
16884	24	25	Oregon White Oak ( <i>Quercus garryana</i> )		1-sided canopy (E)	1	2	Remove
16885	18	30	Oregon White Oak ( <i>Quercus garryana</i> )		Epicormic sprouts; Abnormal dead branches	2	1	Remove
16886	10	0	English Hawthorn ( <i>Crataegus monogyna</i> )		Dead	3	3	Remove
16888	31	35	Oregon White Oak ( <i>Quercus garryana</i> )			1	1	Remove
16889	22	25	Oregon White Oak ( <i>Quercus garryana</i> )		Suppressed; Cavities; Dead scaffold branches	2	2	Remove
16890	12	0	English Hawthorn ( <i>Crataegus monogyna</i> )		Dead	3	3	Remove

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Tree #	DBH (in.)	Avg. Crown Radius (ft)	Tree Species		Comments	Health Rating*	Structure Rating**	Remove/Preserve
			Common Name	(Scientific name)				
16891	14	11	Oregon White Oak	( <i>Quercus garryana</i> )	Suppressed; Epicormic sprouts	2	2	Remove
16892	11	10	English Hawthorn	( <i>Crataegus monogyna</i> )		1	1	Remove
16893	6	10	English Hawthorn	( <i>Crataegus monogyna</i> )		1	1	Remove
16894	6,7	10	English Hawthorn	( <i>Crataegus monogyna</i> )	Lean (W)	1	2	Remove
16895	14	9	Oregon White Oak	( <i>Quercus garryana</i> )	Very sparse canopy; Epicormic sprouts; High canopy; In decline	3	2	Remove
16896	25	0	Oregon White Oak	( <i>Quercus garryana</i> )	Dead	3	3	Remove
16897	8,6,6	10	English Hawthorn	( <i>Crataegus monogyna</i> )		1	1	Remove
16898	22	20	Oregon White Oak	( <i>Quercus garryana</i> )	Dead primary stem; Very sparse canopy; 1-sided canopy (W)	3	2	Remove
16899	32	25	Oregon White Oak	( <i>Quercus garryana</i> )	Abnormal dead branches; Sparse canopy	2	2	Remove
16902	7	7	English Hawthorn	( <i>Crataegus monogyna</i> )		1	1	Remove
16903	7,7,6	10	English Hawthorn	( <i>Crataegus monogyna</i> )		1	1	Remove
16912	20	0	Oregon White Oak	( <i>Quercus garryana</i> )	Snag	3	3	Remove
16913	19	35	Oregon White Oak	( <i>Quercus garryana</i> )	1-sided canopy (N)	1	2	Preserve
16914	31	30	Oregon White Oak	( <i>Quercus garryana</i> )	1-sided canopy (W)	1	2	Preserve
16917	6	10	English Hawthorn	( <i>Crataegus monogyna</i> )		1	1	Remove
16918	24	20	Oregon Ash	( <i>Fraxinus latifolia</i> )		1	1	Remove
16919	10,8	10	English Hawthorn	( <i>Crataegus monogyna</i> )	Very sparse canopy; In decline	3	2	Remove
16920	7	0	English Hawthorn	( <i>Crataegus monogyna</i> )	Dead	3	3	Remove
16923	11	13	English Hawthorn	( <i>Crataegus monogyna</i> )		1	1	Remove
16924	12,8	19	Oregon White Oak	( <i>Quercus garryana</i> )	1-sided canopy (W)	1	2	Remove
16925	7,7,6,6	12	English Hawthorn	( <i>Crataegus monogyna</i> )		1	1	Remove
16926	6	10	English Hawthorn	( <i>Crataegus monogyna</i> )	Lean (E)	1	2	Remove
16927	11	13	English Hawthorn	( <i>Crataegus monogyna</i> )		1	1	Remove
16928	6,6	12	English Hawthorn	( <i>Crataegus monogyna</i> )	Lean (S)	1	2	Remove
16929	7	15	English Hawthorn	( <i>Crataegus monogyna</i> )	Lean (W); Abnormal dead branches	2	2	Remove
16930	9,8	10	English Hawthorn	( <i>Crataegus monogyna</i> )	Lean (E); Abnormal dead branches	2	2	Remove
16932	10	10	English Hawthorn	( <i>Crataegus monogyna</i> )	Deformed bole; Failed codominant stems; Abnormal dead branches	3	2	Remove
16933	8	10	English Hawthorn	( <i>Crataegus monogyna</i> )	Deformed bole; Failed codominant stems; Abnormal dead branches	3	2	Remove
16934	11,10	12	English Hawthorn	( <i>Crataegus monogyna</i> )	Abnormal dead branches	2	1	Remove
16935	7	10	English Hawthorn	( <i>Crataegus monogyna</i> )	Lean (W)	1	2	Remove
16936	18	17	Douglas-fir	( <i>Pseudotsuga menziesii</i> )	Many abnormal dead branches; Dead foliage; In decline	3	2	Remove
16937	21,13,10	15	Douglas-fir	( <i>Pseudotsuga menziesii</i> )	Codominant base; Many abnormal dead branches; Exposed buttress roots; In decline	3	2	Remove
16938	7,6	10	English Hawthorn	( <i>Crataegus monogyna</i> )	Lean (W)	1	2	Remove
16939	9	10	English Hawthorn	( <i>Crataegus monogyna</i> )		1	1	Remove
16940	9	10	English Hawthorn	( <i>Crataegus monogyna</i> )	Lean (W)	1	2	Remove
16941	12,8	12	English Hawthorn	( <i>Crataegus monogyna</i> )		1	1	Remove
16943	6,6	15	English Hawthorn	( <i>Crataegus monogyna</i> )		1	1	Remove
16944	9	10	English Hawthorn	( <i>Crataegus monogyna</i> )		1	1	Remove
16945	7	10	English Hawthorn	( <i>Crataegus monogyna</i> )	Lean (W)	1	2	Remove
16946	8	13	Willow	( <i>Salix sp.</i> )	1-sided canopy (S)	1	2	Remove
16948	8	11	Cherry	( <i>Prunus sp.</i> )		1	1	Remove
16949	8	10	English Hawthorn	( <i>Crataegus monogyna</i> )		1	1	Remove
16950	6	10	English Hawthorn	( <i>Crataegus monogyna</i> )	Lean (E); Abnormal dead branches	2	2	Remove
16953	6	10	English Hawthorn	( <i>Crataegus monogyna</i> )		1	1	Remove
16954	6	17	English Hawthorn	( <i>Crataegus monogyna</i> )	Lean (E)	1	2	Preserve
16955	13	17	English Hawthorn	( <i>Crataegus monogyna</i> )	1-sided canopy (E)	1	2	Preserve

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Tree #	DBH (in.)	Avg. Crown Radius (ft)	Tree Species Common Name (Scientific name)	Comments	Health Rating*	Structure Rating**	Remove/Preserve
16956	7	15	English Hawthorn ( <i>Crataegus monogyna</i> )	Lean (W); Abnormal dead branches	2	2	Preserve
16957	6,6	0	English Hawthorn ( <i>Crataegus monogyna</i> )	Snag	3	3	Preserve
16958	12,6	16	English Hawthorn ( <i>Crataegus monogyna</i> )	1-sided canopy (E); Bore holes; Cavities	2	2	Preserve
16959	7	16	English Hawthorn ( <i>Crataegus monogyna</i> )	Lean (E)	1	2	Preserve
16960	6	7	Willow ( <i>Salix sp.</i> )	Lean (N); Abnormal dead branches	2	2	Preserve
16984	8,7,7,6	10	English Hawthorn ( <i>Crataegus monogyna</i> )		1	1	Remove
16985	10	10	Oregon White Oak ( <i>Quercus garryana</i> )		1	1	Remove
16987	8	0	English Hawthorn ( <i>Crataegus monogyna</i> )	Dead	3	3	Remove
16988	8,8	10	English Hawthorn ( <i>Crataegus monogyna</i> )	Lean (W); Abnormal dead branches	2	2	Remove
16989	8,7	12	Oregon White Oak ( <i>Quercus garryana</i> )		1	1	Preserve
16991	9	9	Oregon White Oak ( <i>Quercus garryana</i> )	Crooked bole; Lean (N)	1	2	Preserve
16993	6	12	English Hawthorn ( <i>Crataegus monogyna</i> )		1	1	Remove
16994	9,8	10	Apple ( <i>Malus domestica</i> )	Cavities with decay	2	2	Remove
16997	6	9	English Hawthorn ( <i>Crataegus monogyna</i> )	<b>OFFSITE</b> ; 1-sided canopy (W)	1	2	Preserve
17001	6	10	English Hawthorn ( <i>Crataegus monogyna</i> )		1	1	Remove
17002	6	11	English Hawthorn ( <i>Crataegus monogyna</i> )		1	2	Remove
17003	6	10	English Hawthorn ( <i>Crataegus monogyna</i> )	Lean (E)	1	1	Remove
17004	6	10	English Hawthorn ( <i>Crataegus monogyna</i> )		1	1	Remove
17005	13	15	Oregon White Oak ( <i>Quercus garryana</i> )		1	1	Remove
17006	6	12	Oregon Ash ( <i>Fraxinus latifolia</i> )	Lean (S)	1	2	Remove
17007	8	7	Oregon White Oak ( <i>Quercus garryana</i> )	Sparse canopy; Many abnormal dead branches; in decline	3	2	Remove
17008	9	10	English Hawthorn ( <i>Crataegus monogyna</i> )	Broken top	3	2	Remove
17009	8	10	English Hawthorn ( <i>Crataegus monogyna</i> )	Lean (S)	1	2	Remove
17010	6	10	English Hawthorn ( <i>Crataegus monogyna</i> )	Lean (S)	1	2	Remove
17011	6	10	English Hawthorn ( <i>Crataegus monogyna</i> )	Broken top	3	2	Remove
17012	8,8	10	English Hawthorn ( <i>Crataegus monogyna</i> )		1	1	Remove
17020	7	6	Cherry ( <i>Prunus sp.</i> )		1	1	Remove
17025	32	27	Oregon White Oak ( <i>Quercus garryana</i> )	<b>OFFSITE</b> ; 50% lvy coverage; Abnormal dead branches	2	1	Preserve
17026	21	27	Oregon White Oak ( <i>Quercus garryana</i> )	<b>OFFSITE</b> ; 50% lvy coverage; Abnormal dead branches	2	1	Preserve
17027	40	27	Oregon White Oak ( <i>Quercus garryana</i> )	<b>OFFSITE</b> ; 50% lvy coverage; Abnormal dead branches	2	1	Preserve
17033	12,10,8	13	Oregon White Oak ( <i>Quercus garryana</i> )	8" stem dead; High canopy; 1-sided canopy (S)	2	2	Remove
17037	27	13	Douglas-fir ( <i>Pseudotsuga menziesii</i> )		1	1	Remove
17038	13	20	Oregon White Oak ( <i>Quercus garryana</i> )	1-sided canopy (S); Abnormal dead branches	2	2	Remove
17039	33	0	Douglas-fir ( <i>Pseudotsuga menziesii</i> )	Snag	3	3	Remove
17040	33	0	Douglas-fir ( <i>Pseudotsuga menziesii</i> )	Snag	3	3	Remove
17041	8	10	English Hawthorn ( <i>Crataegus monogyna</i> )		1	1	Remove
17042	8	10	English Hawthorn ( <i>Crataegus monogyna</i> )		1	1	Remove
17043	10	10	Oregon White Oak ( <i>Quercus garryana</i> )	Suppressed; Very sparse canopy; in decline	3	2	Remove
17044	7	10	Oregon White Oak ( <i>Quercus garryana</i> )	Suppressed; Very sparse canopy; in decline	3	2	Remove
17045	7	10	Oregon White Oak ( <i>Quercus garryana</i> )	Suppressed; Very sparse canopy; in decline	3	2	Remove
17046	7	10	Oregon White Oak ( <i>Quercus garryana</i> )	Suppressed; Very sparse canopy; in decline	3	2	Remove
17047	6	10	Oregon White Oak ( <i>Quercus garryana</i> )	Suppressed; Very sparse canopy; in decline	3	2	Remove
17048	23	12	Douglas-fir ( <i>Pseudotsuga menziesii</i> )	Many abnormal dead branches; Dead foliage; in decline	3	2	Remove
17049	11	14	Oregon White Oak ( <i>Quercus garryana</i> )	Suppressed; Epicormic sprouts; bulges; Dead scaffold branches	2	2	Remove
17050	8	10	Oregon White Oak ( <i>Quercus garryana</i> )	Suppressed; Epicormic sprouts; bulges; Dead scaffold branches	2	2	Remove
17051	18,15	35	Oregon White Oak ( <i>Quercus garryana</i> )	Lean (SE); 1-sided canopy (SE); Abnormal dead branches	2	2	Remove
17052	9	16	Oregon White Oak ( <i>Quercus garryana</i> )	Lean (S)	1	2	Remove

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Tree #	DBH (in.)	Avg. Crown Radius (ft)	Tree Species		Comments	Health Rating*	Structure Rating**	Remove/Preserve
			Common Name (Scientific name)					
17053	9	16	Oregon White Oak ( <i>Quercus garryana</i> )	Lean (S)		1	2	Remove
17054	6	0	Oregon White Oak ( <i>Quercus garryana</i> )	Snag		3	3	Remove
17056	7,7	17	English Hawthorn ( <i>Crataegus monogyna</i> )	Abnormal dead branches; Cavities; Lean		2	2	Remove
17057	10	17	English Hawthorn ( <i>Crataegus monogyna</i> )	Abnormal dead branches; Cavities; Lean		2	2	Remove
17058	27	15	Douglas-fir ( <i>Pseudotsuga menziesii</i> )	Many abnormal dead branches; Dead foliage; In decline		3	2	Remove
17059	15	16	Oregon White Oak ( <i>Quercus garryana</i> )	Lean (S); 1-sided canopy (S)		1	2	Remove
17061	20,20	21	Oregon White Oak ( <i>Quercus garryana</i> )	Lean (E); Abnormal dead branches		2	2	Remove
17062	11	18	Oregon White Oak ( <i>Quercus garryana</i> )	Lean (W); Dead codominant stems with decay; Bulges; Sparse canopy; In decline		3	2	Remove
17064	6	6	English Hawthorn ( <i>Crataegus monogyna</i> )			1	1	Preserve
17065	15	16	Oregon White Oak ( <i>Quercus garryana</i> )	Dead scaffold branches		2	1	Preserve
17066	17	14	Oregon White Oak ( <i>Quercus garryana</i> )			1	1	Preserve
17067	27	14	Douglas-fir ( <i>Pseudotsuga menziesii</i> )	Abnormal dead branches; Dead foliage		2	1	Preserve
17069	7	0	Willow ( <i>Salix sp.</i> )	Dead		3	3	Remove
17070	20	20	Oregon White Oak ( <i>Quercus garryana</i> )			1	1	Preserve
17072	20	20	Oregon White Oak ( <i>Quercus garryana</i> )			1	1	Remove
17073	11	10	Douglas-fir ( <i>Pseudotsuga menziesii</i> )			1	1	Preserve
17075	14	12	English Hawthorn ( <i>Crataegus monogyna</i> )			1	1	Preserve
17077	6	0	Oregon White Oak ( <i>Quercus garryana</i> )			3	3	Remove
17078	17,8	28	Oregon White Oak ( <i>Quercus garryana</i> )	Lean (S); 1-sided canopy (S)		1	2	Preserve
17079	8	11	Oregon White Oak ( <i>Quercus garryana</i> )	High canopy; Abnormal dead branches		2	2	Preserve
17080	13	15	Oregon White Oak ( <i>Quercus garryana</i> )	OFFSITE; High canopy; Abnormal dead branches		2	2	Preserve
17081	13	15	Oregon White Oak ( <i>Quercus garryana</i> )	OFFSITE; High canopy; Abnormal dead branches		2	2	Preserve
17082	12	15	Oregon White Oak ( <i>Quercus garryana</i> )	OFFSITE; High canopy; Abnormal dead branches		2	2	Preserve
17083	12	0	Douglas-fir ( <i>Pseudotsuga menziesii</i> )	Snag; Lean (S)		3	3	Remove
17084	30	40	Oregon White Oak ( <i>Quercus garryana</i> )	OFFSITE; 1-sided canopy (E)		1	2	Preserve
17095	7	17	English Hawthorn ( <i>Crataegus monogyna</i> )	Lean (SW)		1	2	Preserve
17096	7,7	13	English Hawthorn ( <i>Crataegus monogyna</i> )	Very sparse canopy; Many abnormal dead branches; In decline		3	2	Preserve
17097	20	20	Oregon Ash ( <i>Fraxinus latifolia</i> )	Abnormal dead branches		2	1	Preserve
17098	11	16	Oregon White Oak ( <i>Quercus garryana</i> )	Suppressed; Crooked bole		2	2	Preserve
17099	11	14	Oregon White Oak ( <i>Quercus garryana</i> )	Crooked bole; 1-sided canopy (S)		1	2	Preserve
17100	19	20	Oregon White Oak ( <i>Quercus garryana</i> )	Epicormic sprouts; Abnormal dead branches		2	1	Remove
17101	7	8	Willow ( <i>Salix sp.</i> )	Abnormal dead branches		2	1	Remove
17102	7	10	English Hawthorn ( <i>Crataegus monogyna</i> )	Lean (E)		1	2	Remove
17103	29	23	Oregon White Oak ( <i>Quercus garryana</i> )			1	1	Remove
17104	41	0	Douglas-fir ( <i>Pseudotsuga menziesii</i> )	Snag		3	3	Remove
17105	7	10	Oregon White Oak ( <i>Quercus garryana</i> )	Abnormal dead branches		2	1	Remove
17106	9	10	Oregon White Oak ( <i>Quercus garryana</i> )	Abnormal dead branches		2	1	Remove
17107	6,6	9	English Hawthorn ( <i>Crataegus monogyna</i> )			1	1	Remove
17108	17	16	Oregon White Oak ( <i>Quercus garryana</i> )	High canopy		1	2	Remove
17109	7	11	English Hawthorn ( <i>Crataegus monogyna</i> )	Lean (E)		1	2	Remove
17110	10	12	Oregon White Oak ( <i>Quercus garryana</i> )			1	1	Remove
17111	6	10	English Hawthorn ( <i>Crataegus monogyna</i> )	Deformed bole; Lean (E)		1	2	Preserve
17112	7	9	English Hawthorn ( <i>Crataegus monogyna</i> )			1	1	Preserve
17113	17	0	Douglas-fir ( <i>Pseudotsuga menziesii</i> )	Snag		3	3	Remove
17114	10	15	English Hawthorn ( <i>Crataegus monogyna</i> )	Lean (E); Abnormal dead branches		2	2	Remove
17116	20	20	Oregon White Oak ( <i>Quercus garryana</i> )	Lean (SW)		1	2	Preserve
17117	8	19	Oregon Ash ( <i>Fraxinus latifolia</i> )	1-sided canopy (W)		1	2	Preserve

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Tree #	DBH (in.)	Avg. Crown Radius (ft)	Tree Species		Comments	Health Rating*	Structure Rating**	Remove/Preserve
			Common Name (Scientific name)					
17118	6	19	Oregon Ash ( <i>Fraxinus latifolia</i> )		1-sided canopy (W)	1	2	Preserve
17119	7.6	19	Oregon Ash ( <i>Fraxinus latifolia</i> )		1-sided canopy (S)	1	2	Preserve
17120	12	20	Oregon Ash ( <i>Fraxinus latifolia</i> )		1-sided canopy (SE)	1	2	Preserve
17121	10	18	Oregon Ash ( <i>Fraxinus latifolia</i> )		Lean (S); 1-sided canopy (S)	1	2	Preserve
17127	7.6	10	English Hawthorn ( <i>Crataegus monogyna</i> )			1	1	Remove
17134	9.8	16	Cherry ( <i>Prunus sp.</i> )		Crooked bole	1	2	Preserve
17139	36	21	Douglas-fir ( <i>Pseudotsuga menziesii</i> )		Codominant stems with included bark; Crooked bole	1	2	Remove
17140	35	21	Douglas-fir ( <i>Pseudotsuga menziesii</i> )		Abnormal dead branches	2	1	Remove
17145	7	8	Douglas-fir ( <i>Pseudotsuga menziesii</i> )			1	1	Remove
17146	6	8	Douglas-fir ( <i>Pseudotsuga menziesii</i> )			1	1	Remove
17148	29	17	Douglas-fir ( <i>Pseudotsuga menziesii</i> )			1	1	Remove
17160	13	12	Douglas-fir ( <i>Pseudotsuga menziesii</i> )			1	1	Remove
17161	9	12	Douglas-fir ( <i>Pseudotsuga menziesii</i> )			1	1	Remove
17162	6	10	Douglas-fir ( <i>Pseudotsuga menziesii</i> )			1	1	Remove
17163	7	10	Douglas-fir ( <i>Pseudotsuga menziesii</i> )			1	1	Remove
17164	6	10	Douglas-fir ( <i>Pseudotsuga menziesii</i> )			1	1	Remove
17165	8.8	9	Douglas-fir ( <i>Pseudotsuga menziesii</i> )		Codominant with included bark	1	2	Remove
17167	6	8	Douglas-fir ( <i>Pseudotsuga menziesii</i> )			1	1	Remove
17170	8	10	Douglas-fir ( <i>Pseudotsuga menziesii</i> )			1	1	Remove
17171	6	10	Douglas-fir ( <i>Pseudotsuga menziesii</i> )			1	1	Remove
17172	7	10	Douglas-fir ( <i>Pseudotsuga menziesii</i> )			1	1	Remove
17174	7	10	Douglas-fir ( <i>Pseudotsuga menziesii</i> )			1	1	Preserve
17175	8	10	Douglas-fir ( <i>Pseudotsuga menziesii</i> )			1	1	Preserve
17183	8.7.7	11	Oregon Ash ( <i>Fraxinus latifolia</i> )			1	1	Preserve
17185	25	25	Oregon Ash ( <i>Fraxinus latifolia</i> )			1	1	Preserve
17186	6	6	Willow ( <i>Salix sp.</i> )		Abnormal dead branches	2	1	Preserve
17188	6	7	Oregon Ash ( <i>Fraxinus latifolia</i> )			1	1	Preserve
17189	7	8	Oregon Ash ( <i>Fraxinus latifolia</i> )			1	1	Preserve
17190	8	9	Oregon Ash ( <i>Fraxinus latifolia</i> )			1	1	Preserve
17191	8	10	Oregon Ash ( <i>Fraxinus latifolia</i> )			1	1	Preserve
17193	11	11	Oregon Ash ( <i>Fraxinus latifolia</i> )		<b>OFFSITE</b>	1	1	Preserve
17195	6	8	Oregon Ash ( <i>Fraxinus latifolia</i> )		<b>OFFSITE</b>	1	1	Preserve
17196	8	9	Oregon Ash ( <i>Fraxinus latifolia</i> )			1	1	Preserve
17197	6	7	Oregon Ash ( <i>Fraxinus latifolia</i> )			1	1	Preserve
17198	8	10	Oregon Ash ( <i>Fraxinus latifolia</i> )			1	1	Preserve
17199	6	10	Oregon Ash ( <i>Fraxinus latifolia</i> )			1	1	Preserve
17200	7	10	Oregon Ash ( <i>Fraxinus latifolia</i> )		<b>OFFSITE</b>	1	1	Preserve
17201	6	9	Oregon Ash ( <i>Fraxinus latifolia</i> )			1	1	Preserve
17204	6	11	Oregon Ash ( <i>Fraxinus latifolia</i> )		<b>OFFSITE</b> ; 1-sided canopy (N)	1	2	Preserve
17207	9	12	Oregon Ash ( <i>Fraxinus latifolia</i> )		<b>OFFSITE</b>	1	1	Preserve
17208	8	11	Oregon Ash ( <i>Fraxinus latifolia</i> )		<b>OFFSITE</b>	1	1	Preserve
17209	8	10	Oregon Ash ( <i>Fraxinus latifolia</i> )		<b>OFFSITE</b>	1	1	Preserve
17211	6	12	Cherry ( <i>Prunus sp.</i> )		Lean (S); 1-sided canopy (S)	1	2	Remove
17213	6	10	Cherry ( <i>Prunus sp.</i> )		Lean (S); 1-sided canopy (S); Abnormal dead branches	2	2	Remove
17214	12	13	Cherry ( <i>Prunus sp.</i> )		Lean (S); 1-sided canopy (S); Abnormal dead branches	2	2	Remove
17215	10.10.9.8	15	Oregon Ash ( <i>Fraxinus latifolia</i> )		Codominant with included bark	1	2	Remove
17217	7	13	Cherry ( <i>Prunus sp.</i> )		Abnormal dead branches	2	1	Remove



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Tree #	DBH (in.)	Avg. Crown Radius (ft)	Tree Species Common Name (Scientific name)	Comments	Health Rating*	Structure Rating**	Remove/Preserve
17218	14,12,9,9,7	15	Oregon Ash ( <i>Fraxinus latifolia</i> )	<b>OFFSITE</b>	1	1	Preserve
17229	11	12	Oregon Ash ( <i>Fraxinus latifolia</i> )		1	1	Remove
17231	15,14	13	Cherry ( <i>Prunus sp.</i> )	Sluffing bark; Cavities with decay; Many abnormal dead branches; In decline	3	2	Remove
17232	6	9	Cherry ( <i>Prunus sp.</i> )	<b>OFFSITE</b> ; Crooked bole; Abnormal dead branches; 1-sided canopy (N)	2	2	Preserve
17235	10,8,6	18	Oregon Ash ( <i>Fraxinus latifolia</i> )	<b>OFFSITE</b>	1	1	Preserve
17236	7,6,6	16	Willow ( <i>Salix sp.</i> )	<b>OFFSITE</b>	1	1	Preserve
17248	6	10	Willow ( <i>Salix sp.</i> )	Lean (S)	1	2	Preserve
17249	9,6	10	Willow ( <i>Salix sp.</i> )	Lean (S)	1	2	Preserve
17250	7,6	10	Willow ( <i>Salix sp.</i> )	Lean (S)	1	2	Preserve
17267	6	9	Oregon Ash ( <i>Fraxinus latifolia</i> )		1	1	Preserve
17271	10	9	Douglas-fir ( <i>Pseudotsuga menziesii</i> )		1	1	Preserve
17272	16	10	Douglas-fir ( <i>Pseudotsuga menziesii</i> )		1	1	Preserve
17275	6	10	Oregon Ash ( <i>Fraxinus latifolia</i> )	Abnormal dead branches; Dead foliage	2	1	Preserve
17282	9,6	17	Oregon Ash ( <i>Fraxinus latifolia</i> )	1-sided canopy (N)	1	2	Preserve
17283	16	19	Oregon Ash ( <i>Fraxinus latifolia</i> )	1-sided canopy (N)	1	2	Preserve
17284	8,7,7	9	Oregon Ash ( <i>Fraxinus latifolia</i> )	Abnormal dead branches; Epicormic sprouts	2	1	Preserve
17285	20	18	Oregon Ash ( <i>Fraxinus latifolia</i> )	Abnormal dead branches; 1-sided canopy (W)	2	2	Preserve
17286	14	17	Oregon Ash ( <i>Fraxinus latifolia</i> )		1	1	Preserve
17287	10	14	Oregon Ash ( <i>Fraxinus latifolia</i> )	Abnormal dead branches	2	1	Preserve
17288	6	10	Oregon Ash ( <i>Fraxinus latifolia</i> )	Abnormal dead branches	2	1	Preserve
17289	10	11	Oregon Ash ( <i>Fraxinus latifolia</i> )	High canopy; Abnormal dead branches	2	2	Preserve
17290	13,7	12	Oregon Ash ( <i>Fraxinus latifolia</i> )	High canopy; Abnormal dead branches	2	2	Preserve
17291	9	10	Oregon Ash ( <i>Fraxinus latifolia</i> )	High canopy; Abnormal dead branches	2	2	Preserve
17292	16	15	Oregon Ash ( <i>Fraxinus latifolia</i> )	Abnormal dead branches	2	1	Preserve
17293	7	11	Oregon Ash ( <i>Fraxinus latifolia</i> )	Many abnormal dead branches; In decline	3	2	Preserve
17294	6	11	Oregon Ash ( <i>Fraxinus latifolia</i> )	Many abnormal dead branches; In decline	3	2	Preserve
17295	7	10	Oregon Ash ( <i>Fraxinus latifolia</i> )	High canopy; Abnormal dead branches	2	2	Preserve
17296	6	9	Oregon Ash ( <i>Fraxinus latifolia</i> )	Abnormal dead branches; 1-sided canopy (N)	2	2	Preserve
17297	8,7	11	Oregon Ash ( <i>Fraxinus latifolia</i> )	Abnormal dead branches; 1-sided canopy (N)	2	2	Preserve
17298	10,6	0	Oregon Ash ( <i>Fraxinus latifolia</i> )	Broken top	3	2	Preserve
17299	6	10	Oregon Ash ( <i>Fraxinus latifolia</i> )	Abnormal dead branches; 1-sided canopy (N)	2	2	Preserve
17300	6	7	Oregon Ash ( <i>Fraxinus latifolia</i> )	Many abnormal dead branches; In decline	3	2	Preserve
17301	8,6	16	Oregon Ash ( <i>Fraxinus latifolia</i> )	Abnormal dead branches; 1-sided canopy (N)	2	2	Preserve
17302	8	15	Oregon Ash ( <i>Fraxinus latifolia</i> )	Abnormal dead branches; Lean (N)	2	2	Preserve
17303	11	9	Oregon Ash ( <i>Fraxinus latifolia</i> )	High canopy	1	2	Preserve
17304	9	15	Oregon Ash ( <i>Fraxinus latifolia</i> )	Lean (S); Abnormal dead branches	2	2	Preserve
17305	11	16	Oregon Ash ( <i>Fraxinus latifolia</i> )	Lean (N) Abnormal dead branches	2	2	Preserve
17306	18	16	Oregon Ash ( <i>Fraxinus latifolia</i> )	High canopy; Abnormal dead branches	2	2	Preserve
17307	8	12	Oregon Ash ( <i>Fraxinus latifolia</i> )		1	1	Preserve
17308	16,12	20	Oregon Ash ( <i>Fraxinus latifolia</i> )		1	2	Preserve
17312	18	19	Oregon Ash ( <i>Fraxinus latifolia</i> )	Exposed roots; Cavities; Dead codominant stem; Sparse canopy	3	2	Preserve
17314	17	-	Deciduous	<b>OFFSITE</b> ; Not Evaluated by an Arborist	-	-	Preserve
17317	18	-	Deciduous	<b>OFFSITE</b> ; Not Evaluated by an Arborist	-	-	Preserve
17319	14,12	-	Deciduous	<b>OFFSITE</b> ; Not Evaluated by an Arborist	-	-	Preserve
17320	11	-	Deciduous	<b>OFFSITE</b> ; Not Evaluated by an Arborist	-	-	Preserve
17321	18,8	-	Deciduous	<b>OFFSITE</b> ; Not Evaluated by an Arborist	-	-	Preserve
17323	12	-	Deciduous	<b>OFFSITE</b> ; Not Evaluated by an Arborist	-	-	Preserve

## Detailed Tree Inventory for JR Meadows No. 2

AKS Job No. 7395-01 - Evaluation Date: 8/24/2020 - 8/25/2020

Tree #	DBH (in.)	Avg. Crown Radius (ft)	Tree Species Common Name (Scientific name)	Comments	Health Rating*	Structure Rating**	Remove/Preserve
17325	9	12	Oregon Ash ( <i>Fraxinus latifolia</i> )	High canopy	1	2	Preserve
17326	19	16	Oregon Ash ( <i>Fraxinus latifolia</i> )	Lean (N); Many dead branches; Many epicormic sprouts; Exposed roots	3	2	Preserve
17345	14,12	18	Oregon Ash ( <i>Fraxinus latifolia</i> )	1-sided canopy (NW)	1	2	Preserve
17346	9,7	11	Oregon Ash ( <i>Fraxinus latifolia</i> )	1-sided canopy (NW)	1	2	Preserve
17347	6	14	Oregon Ash ( <i>Fraxinus latifolia</i> )	Suppressed	2	2	Preserve
17348	6	13	Oregon Ash ( <i>Fraxinus latifolia</i> )	Suppressed; In decline	3	2	Preserve
17349	7	13	Oregon Ash ( <i>Fraxinus latifolia</i> )	Lean (W)	1	2	Preserve
17350	6	13	Oregon Ash ( <i>Fraxinus latifolia</i> )	1-sided canopy (W)	1	2	Preserve
17351	10,9	16	Oregon Ash ( <i>Fraxinus latifolia</i> )		1	1	Preserve
17352	9	10	Oregon Ash ( <i>Fraxinus latifolia</i> )	High canopy	1	2	Preserve
17353	6	13	Oregon Ash ( <i>Fraxinus latifolia</i> )	Lean (N); Abnormal dead branches	2	2	Preserve
17354	9	12	Oregon Ash ( <i>Fraxinus latifolia</i> )	1-sided canopy (N)	1	2	Preserve
17355	7,7,6	13	Oregon Ash ( <i>Fraxinus latifolia</i> )	Suppressed; Abnormal dead branches	2	2	Preserve
17356	16	20	Oregon Ash ( <i>Fraxinus latifolia</i> )		1	1	Preserve
17358	13	15	Oregon Ash ( <i>Fraxinus latifolia</i> )		1	1	Preserve
17360	11,9,9	18	Oregon Ash ( <i>Fraxinus latifolia</i> )	Codominant with included bark; Lean (W)	1	2	Preserve
17361	13	16	Oregon Ash ( <i>Fraxinus latifolia</i> )	Cavity; Abnormal dead branches	2	1	Preserve
17363	17	19	Oregon Ash ( <i>Fraxinus latifolia</i> )		1	1	Preserve
17364	16	16	Oregon Ash ( <i>Fraxinus latifolia</i> )		1	1	Preserve
17365	23	20	Oregon Ash ( <i>Fraxinus latifolia</i> )		1	1	Preserve
17366	13,13	17	Oregon Ash ( <i>Fraxinus latifolia</i> )		1	2	Preserve
17385	18	18	Oregon Ash ( <i>Fraxinus latifolia</i> )	Codominant with included bark	1	1	Preserve
17386	9	10	Douglas-fir ( <i>Pseudotsuga menziesii</i> )		1	1	Preserve
17387	14	12	Douglas-fir ( <i>Pseudotsuga menziesii</i> )		1	1	Preserve
17389	7	8	Douglas-fir ( <i>Pseudotsuga menziesii</i> )		1	1	Preserve
17394	6	12	English Hawthorn ( <i>Crataegus monogyna</i> )		1	1	Preserve
17396	10	10	Douglas-fir ( <i>Pseudotsuga menziesii</i> )		1	1	Preserve
17488	10	9	Douglas-fir ( <i>Pseudotsuga menziesii</i> )		1	1	Preserve
17492	8	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
17523	8	-	Deciduous	OFFSITE; Not Evaluated by an Arborist	-	-	Preserve
30001	34	22	Oregon White Oak ( <i>Quercus garryana</i> )	OFFSITE	1	1	Remove
30002	24	21	Oregon White Oak ( <i>Quercus garryana</i> )		1	1	Remove
30003	45	21	Oregon White Oak ( <i>Quercus garryana</i> )		1	1	Remove
30086	18	13	Oregon White Oak ( <i>Quercus garryana</i> )	1-sided canopy (W)	1	2	Remove
30087	31	22	Oregon White Oak ( <i>Quercus garryana</i> )		1	1	Remove
30158	16	8	Oregon White Oak ( <i>Quercus garryana</i> )	Very sparse canopy; Many dead branches; In decline	3	2	Remove
30159	44	20	Douglas-fir ( <i>Pseudotsuga menziesii</i> )		1	1	Remove
30162	15	17	Oregon White Oak ( <i>Quercus garryana</i> )	1-sided canopy (N); Dead scaffold branches	2	2	Remove
30163	8	17	Oregon White Oak ( <i>Quercus garryana</i> )	Suppressed; Very sparse canopy; 1-sided canopy (N); In decline	3	2	Remove
30164	35	35	Oregon White Oak ( <i>Quercus garryana</i> )	1-sided canopy (N)	1	2	Remove
30165	12	16	Oregon White Oak ( <i>Quercus garryana</i> )	Scars; 1-sided canopy (N); Cavities	2	2	Remove
30166	7	9	Oregon White Oak ( <i>Quercus garryana</i> )	Suppressed; Very sparse canopy; 1-sided canopy (N); In decline	3	2	Remove
30167	7	9	English Hawthorn ( <i>Crataegus monogyna</i> )		1	1	Remove
30925	8	15	English Hawthorn ( <i>Crataegus monogyna</i> )	Lean (W)	1	2	Remove

**Total # of Existing Trees Inventoried = 559**

**Total # of Existing Onsite Trees = 443**

Total # of Existing Onsite Trees to be Preserved = 126

Total # of Existing Onsite Trees to be Removed = 317

**Total # of Existing Offsite Trees = 116**

Total # of Existing Offsite Trees to be Preserved = 115

Total # of Existing Offsite Trees to be Removed = 1

**\*Health Rating:**

- 1 = Good Health - A tree that exhibits typical foliage, bark, and root characteristics, for its respective species, shows no signs of infection or infestation, and has a high level of vigor and vitality.
- 2 = Fair Health - A tree that exhibits some abnormal health characteristics and/or shows some signs of infection or infestation, but may be reversed or abated with supplemental treatment.
- 3 = Poor Health - A tree that is in significant decline, to the extent that supplemental treatment would not likely result in reversing or abating its decline.

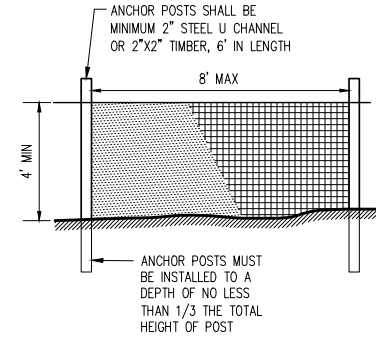
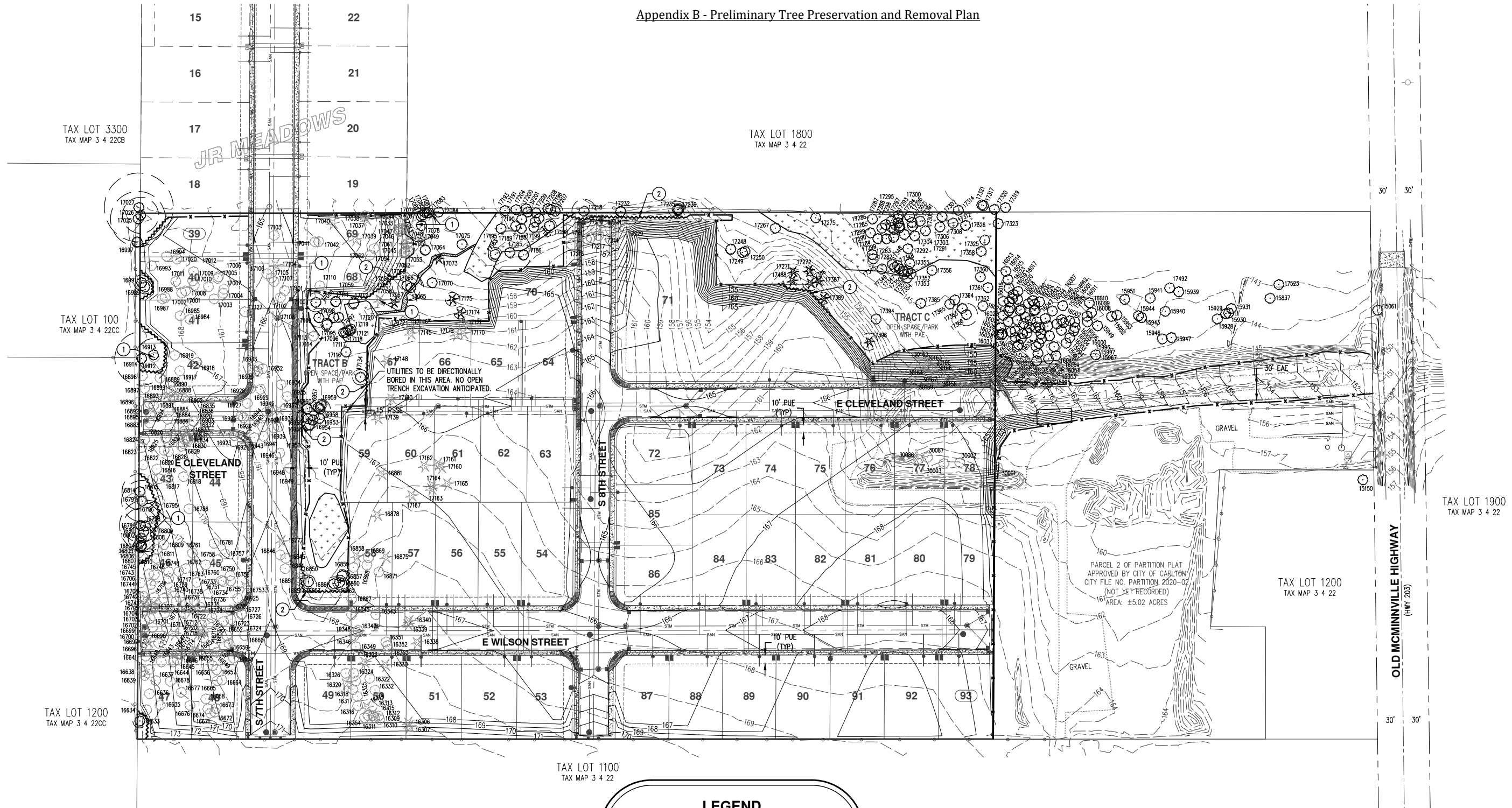
**\*\*Structure Rating:**

- 1 = Good Structure - A tree that exhibits typical physical form characteristics, for its respective species, shows no signs of structural defects of the canopy, trunk, and/or root system.
- 2 = Fair Structure - A tree that exhibits some abnormal physical form characteristics and/or some signs of structural defects, which reduce the structural integrity of the tree, but are not indicative of imminent physical failure, and may be corrected using arboricultural abatement methods.
- 3 = Poor Structure - A tree that exhibits extensively abnormal physical form characteristics and/or significant structural defects that substantially reduces the structural viability of the tree, cannot feasibly be abated, and are indicative of imminent physical failure.

**Arborist Disclosure Statement:**

Arborists are tree specialists who use their education, knowledge, training, and experience to examine trees, recommend measures to enhance the health of trees, and attempt to reduce the risk of living near trees. The Client and Jurisdiction may choose to accept or disregard the recommendations of the arborist, or seek additional advice. Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees and below ground. Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments, like medicine, cannot be guaranteed. Trees can be managed, but they cannot be controlled. To live near trees is to accept some degree of risk. The only way to eliminate all risk associated with trees is to eliminate all trees. Neither this author nor AKS Engineering & Forestry, LLC have assumed any responsibility for liability associated with the trees on or adjacent to this site.

At the completion of construction, all trees should once again be reviewed. Land clearing and removal of adjacent trees can expose previously unseen defects and otherwise healthy trees can be damaged during construction.



- NOTES:
1. BLAZE ORANGE PLASTIC MESH FENCE FOR TREE PROTECTION DEVICE OR APPROVED EQUAL.
  2. AVOID DAMAGE TO ROOT ZONE. DO NOT DAMAGE OR SEVER LARGE ROOTS WHEN INSTALLING POSTS.
  3. DEVICE SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.

**TREE PROTECTION / CONSTRUCTION FENCE**

**LEGEND**

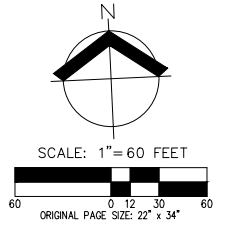
EXISTING GROUND CONTOUR (1 FT)	---	149
EXISTING GROUND CONTOUR (5 FT)	---	150
FINISHED GRADE CONTOUR (1 FT)	---	149
FINISHED GRADE CONTOUR (5 FT)	---	150
EXISTING CONIFEROUS TREE	★	
EXISTING DECIDUOUS TREE	○	
TREE REMOVAL	○★	
TREE PROTECTION/CONSTRUCTION FENCE (TREE PROTECTION AREA)	~~~~~	
SEDIMENT FENCE (TO SERVE AS TREE PROTECTION FENCE WHERE SHOWN)	---x---	
ASSUMED TREE ROOT ZONE (1-FT RADIUS PER 1-IN OF DBH)	○	

**NOTE:**  
 SEE ATTACHED ARBORIST REPORT FOR DETAILED TREE INFORMATION.

**EASEMENT LEGEND**

PUBLIC UTILITY EASEMENT	PUE
PUBLIC ACCESS AND UTILITY EASEMENT	PAUE
PUBLIC ACCESS EASEMENT	PAE
PUBLIC SANITARY SEWER EASEMENT	PSSE
EMERGENCY ACCESS EASEMENT	EAE
PRIVATE SANITARY SEWER EASEMENT	SSE

- KEYED NOTES:**
1. ARBORIST OBSERVATION RECOMMENDED DURING TREE REMOVAL BEHIND TREE PROTECTION FENCE.
  2. INSTALL STRAW WATTLE WITH TREE PROTECTION FENCE.



**PRELIMINARY TREE PRESERVATION AND REMOVAL PLAN  
 JR MEADOWS NO. 2  
 CARLTON, OREGON**

REGISTERED PROFESSIONAL ENGINEER  
 J. DOWNHUR  
 PRELIMINARY  
 NOT FOR CONSTRUCTION  
 NUMBER 10 2020  
 RENEWS: DECEMBER 31, 2021  
 JOB NUMBER: 7395-01  
 DATE: 08/19/2020  
 DESIGNED BY: AJD  
 DRAWN BY: CL  
 CHECKED BY: RSW

## **Exhibit J: List of Surrounding Property Owners**

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R3422 01100  
Catherine Liedtke  
16300 Sw Hart Rd  
Beaverton, OR 97007

R3422CC 01200  
Jeffrey Degrauw  
9680 Ne Old McMinnville Hwy  
Carlton, OR 97111

R3422 01300  
Larry & Cheryl Park  
PO Box 698  
Carlton, OR 97111

R3422 01900  
Ronald & Kathy Sticka  
PO Box 579  
Carlton, OR 97111

R3422 01800  
Ronald & Linda Tribbett  
PO Box 549  
Carlton, OR 97111

R3422CC 00100  
School District No 11  
535 Ne 5th St  
McMinnville, OR 97128

R3422CB 03300  
School District No 11  
535 Ne 5th St  
McMinnville, OR 97128

R3422 01200  
Stephen Hoff li & Amy Hoff  
10051 Ne Old McMinnville Hwy  
Carlton, OR 97111

R3422 01400  
Steve Reimann  
9110 Nw Clay Pit Rd  
Yamhill, OR 97148