

AGENDA
CANBY PLANNING COMMISSION
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Monday, May 10, 2021
7:00 PM (Virtual Zoom Meeting)

Commissioner John Savory, Chair

Commissioner Larry Boatright, Vice Chair

Commissioner Jennifer Trundy

Commissioner Jeff Mills

Commissioner Michael Hutchinson

Commissioner Jason Padden

Commissioner James Hieb

1. CALL TO ORDER

- a. Invocation
- b. Pledge of Allegiance

2. CITIZEN INPUT ON NON-AGENDA ITEMS

This is an opportunity for audience members to address the Planning Commission on items not on the agenda. Each person will be given 3 minutes to speak. Staff and the Planning Commission will make every effort to respond to questions raised during citizens input before the meeting ends or as quickly as possible thereafter. ***If you would like to speak on non-agenda items, please send an email to PublicComments@canbyoregon.gov no later than 3:00 pm on May 10, 2021, and **provide your name, the topic you'd like to speak on, your phone number and your email address**. Once your information is received, you will be sent instructions for signing into Zoom. Commissioners and Staff will be attending this meeting virtually.

3. MINUTES – Planning Commission Minutes for April 12, 2021

4. NEW BUSINESS – None

5. PUBLIC HEARING To testify, please send **your name, phone number and email address** to PublicComments@canbyoregon.gov no later than 3:00 pm on the May 10, 2021. Once your information is received, you will be sent instructions for signing into Zoom. Commissioners and Staff will be attending this meeting virtually.

- a. To consider a proposal to approve and recommend approval of the Hemmerling Subdivision Project which contains four separate requests culminating into one proposal:
 - i. A request to recommend approval to the City Council for a Comprehensive Plan Map amendment to amend the designation of the subject property on the Comprehensive Plan Map from Low-Density Residential to (LDR) to Medium-Density Residential (MDR). **Hemmerling - [CPA 21-01]**
 - ii. A request to recommend approval to the City Council for a Zone Map amendment to amend the designation of the subject property from Low-Density Residential (R-1) to Medium Density Residential (R-1.5). **Hemmerling - [ZC 21-01]**
 - iii. A request to approve a subdivision of the ~ 3.17 acre property into 20 separate legal lots with associated public and private improvements. **Hemmerling - [SUB 21-02]**
 - iv. A request to approve a Major Variance to the building setbacks of the (R-1.5) Zone. **Hemmerling - [VAR 21-02]**

- b.** To consider a request to approve a 12-unit multifamily development in the High-Density Residential (R-2 Zone). **State Street (DR 21-04).**

6. FINAL DECISIONS –

- a.** Hemmerling (CPA 21-01 / ZC 21-01 / VAR 21-02 / SUB 21-02)
 - b.** State Street (DR 21-04).

7. ITEMS OF INTEREST/REPORT FROM PLANNING STAFF–

- a.** Next regularly scheduled Planning Commission meeting – Monday, May 24, 2021.
 - b.** Potential mini-trainings at the end of public hearings.

8. ITEMS OF INTEREST/GUIDANCE FROM PLANNING COMMISSION

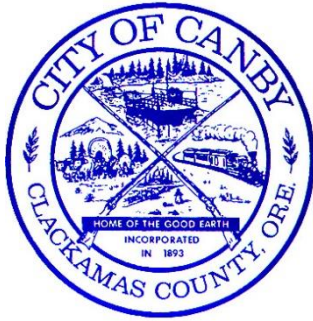
9. ADJOURNMENT

The meeting location is accessible to persons with disabilities. A request for an interpreter for the hearing impaired or for other accommodations for person with disabilities should be made at least 48 hours before the meeting at 503-266-7001. A copy of this agenda can be found on the City's web page www.canbyoregon.gov. City Council and Planning Commission Meetings are broadcast live and can be viewed on CTV Channel 5. For a schedule of the playback times, please call 503-263-6287.

PLANNING COMISSION
HEMMERLING PROJECT
(CPA 21-01 / ZC 21-02 / SUB 21-02 / VAR 21-02)
MAY 10, 2021 MEETING

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City of Canby

Hemmerling– Proposed Comprehensive Plan Amendment and Zone Change City Files: CPA 21-01 / ZC 21-01

HEARING DATE: May 10, 2021
STAFF REPORT DATE: April 30, 2021
TO: Planning Commission
STAFF: Erik Forsell, Associate Planner

Applicant Request

The applicant is requesting approval of multiple land use proposals culminating into a unified request for a 20-unit subdivision. Staff describes this as the *Hemmerling Project*. This request requires sequencing because of the differing types of approval processes required by Type III and Type IV land use proposals.

The first portion of the applicant's request is a Comprehensive Plan amendment (CPA 21-01) and a concurrent Zone Change (ZC 21-01). The applicant proposes to amend the City of Canby's Comprehensive Plan Map for the subject property from Low-Density Residential (LDR) to Medium-Density Residential (MDR). As part of the request, the applicant is also proposing a concurrent zone change consistent with the Comprehensive Plan Map amendment from Low Density Residential (R-1) to Medium Density Residential (R-1.5).

These requests are required to be approved and free of appeal in order for the subdivision itself to be approved. Additional discussion regarding the sequencing and interconnectedness of the applicant's requests are discussed in the body of this report.

Staff notes that the applicant assumes the risk of requesting the processing of these applications concurrently. The reliance on multiple land use decisions necessitates conditions at the Subdivision Type III level to assure that the process can be executed properly.

Staff Recommendation

Based on the application submitted and the facts, findings, and conclusions of this report, staff recommend that the Planning Commission pass on a recommendation of **Approval** for CPA 21-01 and ZC 21-01 to the City Council pursuant to the Conditions of Approval presented in **Section VI** at the end of this report.

Type IV Land Use Actions Overview

This development proposal is essentially four separate applications combined into one proposal:

requests for Comprehensive Plan Map Amendment, Zone Change, Subdivision and Major Variance. The subdivision proposal is reliant on the approval of the Comprehensive Plan amendment and Zone Change, as the subdivision preliminary plan proposes denser lots and an increase from 15 to 20 individual lots. The variance request is contingent upon the other remaining applications gaining approval.

This portion of the staff report focuses on the Comprehensive Plan Map amendment and zone change. The submittal requirements, criteria for analysis and conditions of approval are included in the body of the report. The applicant is requesting to modify the existing Comprehensive Plan Map from (LDR) – Low Density Residential to (MDR) – Medium Density Residential. The applicant is also requesting a concurrent zone change from (R-1) – Low Density Residential to (R-1.5) – Medium Density Residential. These land use actions are considered Type IV actions, with quasi-judicial / legislative procedures. As part of a Comprehensive Plan Map Amendment and Zone Change, the applicant must address applicable components of the Comprehensive Plan, Statewide Planning Goals, the pre-existing N. Holly Development Concept Plan and the Canby Municipal Code. The applicant’s stated goal is to essentially *upzone* the property so that additional lots can be created as part of the subdivision proposal.

Figure A.1 – Existing Comprehensive Plan Map

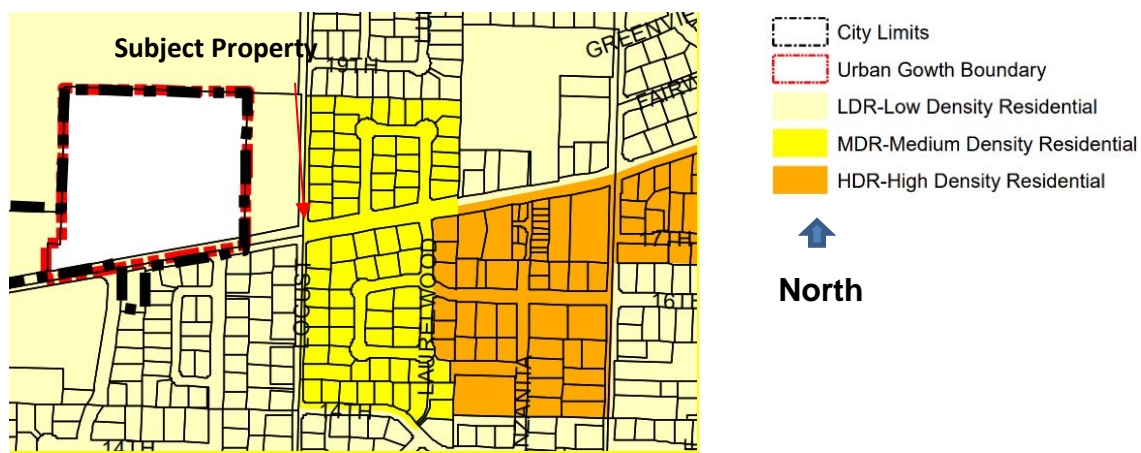


Figure A.2 – Existing Zoning Map

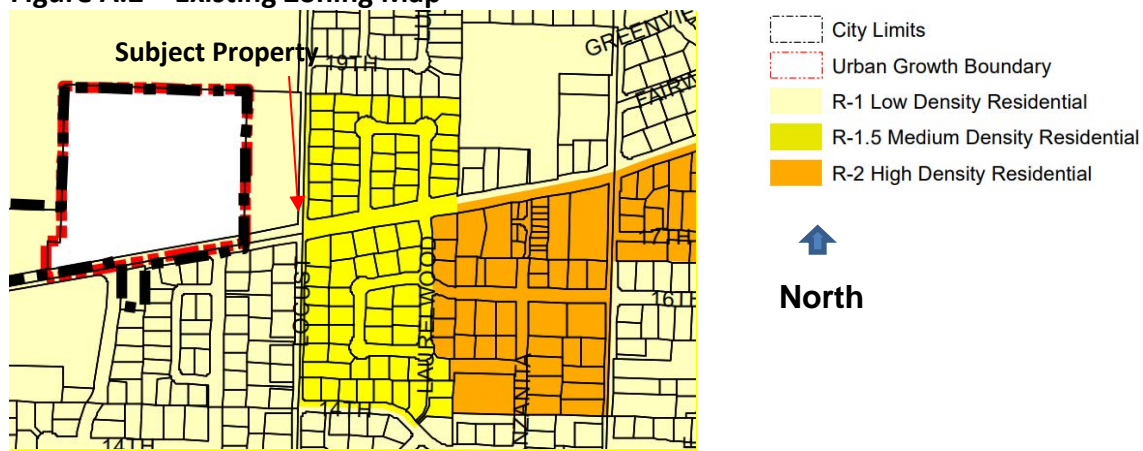
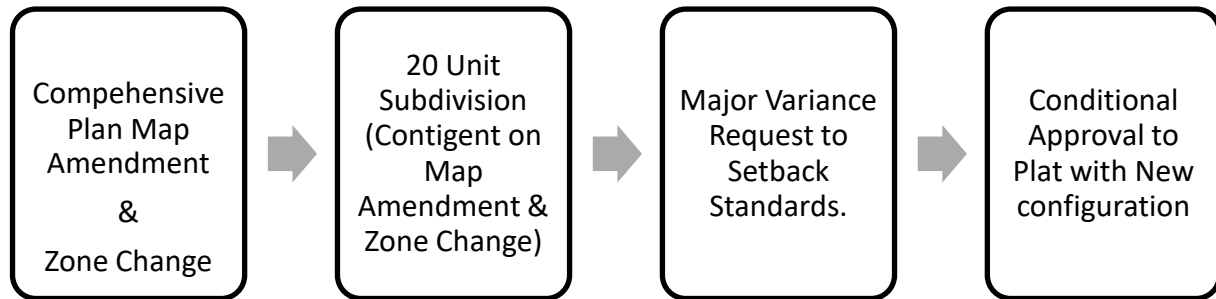


Figure A.3 – Elements of Applicant’s Proposal**Property/Owner Information**

Location	102 NE Territorial Road
Tax Lot(s)	31E28C 00401
Property Size	Approximately 3.17 Acres
Comprehensive Plan	LDR – Low Density Residential
Zoning	R-1 – Low Density Residential
Owner	Hemmerling Nursery, LLC; Lori Hemmerling
Applicant	Venture Properties, Inc.
Representative	ATWELL, LLC.
Application Type	Comprehensive Plan Amendment and Zone Change - Type IV Quasi-Judicial/Legislative
City File Number(s)	CPA 21-01 / ZC 21-01

Exhibits of Record

- A. Application Narrative and Exhibits
- B. Application Appendices
- C. Survey / Existing Conditions of Subject Property
- D. Proposed Preliminary Subdivision Plat
- E. Proposed Site Plan
- F. Traffic Analysis Letter (TAL)
- G. Pre-Application Conference Minutes
- H. Neighborhood Meeting Notes
- I. North Holly Development Concept Plan
- J. Ordinance 1501
- K. Agency Comments:
 - 1. City Engineer – Hassan Ibrahim, PE
 - 2. Canby Utility – Doug Erkson

I. Existing Conditions:

The subject property is generally located at 102 NE Territorial Road, Canby OR 97013. The property is relatively flat and historically was in direct or supporting agricultural uses. The property has frontage along NE Territorial to the South and N Locust Street to the East. The property is approximately 3.17 acres in size and contains two existing structures on the southern portion of the property. See Figure A.4 below for aerial imagery of the subject property.

Figure A.4 – Aerial Imagery of Subject Property



Surrounding Land Uses:

<i>Direction</i>	<i>Zoning</i>	<i>Land Uses</i>
North	R-1	Dodd's Subdivision (Recently Approved, Not Yet Built)
West	EFU	Unincorporated Clackamas County
South	N/A	Territorial Road
East	N/A	N. Locust Street and R-1.5 Zoned Land (Subdivided and built)

Utilities/Sewer/Disposal/Fire/Police:

- Water and electric service will be provided by Canby Utility.
- Wastewater, storm drainage, and streets are managed by the City of Canby Public Works.
- Disposal services are provided by Canby Disposal.
- Fire services are provided by Canby Fire District.
- Police services are provided by Canby Police Department.

Staff has provided conditions of approval at the end of this staff report (Section VI), written to ensure the necessary public infrastructure is constructed and installed in accordance with all applicable city, county, state, and federal requirements.

II. Approval Criteria:

The applicable criteria for evaluation of the Comprehensive Plan Map Amendment and Zone Change are described in the bulleted list below:

- Canby Comprehensive Plan, October, 2019, Goals & Policies
- Statewide Planning Goals – 1-19 as applicable
- N. Holly Development Concept Plan
- CMC 16.08.150 – Traffic Impact Study (TIS)
- CMC 16.18 - Medium Density Residential Zone (R 1.5)
- CMC 16.54.040 - Amendments to Zoning Map
- CMC 16.88 - General Standards & Procedures
- CMC 16.88.180 - Comprehensive Plan Amendments, (D) Quasi-judicial Plan Amendment Standards and Criteria
- CMC 16.88.190 - Conformance with Transportation System Plan and Transportation Planning Rule
- 16.89 - Application and Review Procedures

III. Summary of Findings:

Consistency with the Canby Comprehensive Plan and Canby Municipal Code are required to amend the Comprehensive Plan Map and Zoning Map. The request must also be consistent with applicable portions of the Oregon Statewide Planning Goals and portions of the Canby Zoning Ordinance. Staff finds that the proposal is generally consistent with these standards. Detailed discussion is found below:

Consistency with the Canby Comprehensive Plan, Updated October, 2019

Finding 1: Staff accept and incorporate the applicant's submittal as objective evidence supporting the justification for a Comprehensive Plan Map amendment as supplemental findings for the request. The findings below describe the applicable elements of the Comprehensive Plan and the proposal's consistency with the elements.

Generally speaking, the Canby Municipal Code (CMC) is the implementing tool of the Canby Comprehensive Plan and to the extent applicable, consistency with the CMC largely creates consistency with the Canby Comprehensive Plan. Additional policy goals are discussed in greater detail as they relate to the request to amend the Comprehensive Plan Map.

Citizen Involvement Element

Finding 2: The citizen involvement element is a policy goal for promoting and providing thorough citizen involvement in Canby. The policies reflect an intent for residents and people living in Canby to have the opportunity for involvement in planning processes and land use decisions within the Urban Growth Boundary of the City.

The applicant held a neighborhood meeting as required on December 23, 2020 pursuant to the requirements found in CMC 16.88. This package of land use requests will require a minimum of two public hearings, one before the Planning Commission on May 10, 2021 and another a date to be determined later before the City Council.

Staff sent public notice with a request to comment and participate in the land use process on 4/19/2021. Staff provide notice on 4/27/21 to the Canby Herald. Staff also posted physical notice on the subject property on 4/27/21. These public noticing process are intended to be implementing measures for citizen involvement.

Staff finds that the applicant is appropriately addressing the Citizen Involvement Element and that the public processes included in the implementing municipal code sufficiently address the Citizen Involvement element.

Urban Growth Element

Finding 3: The urban growth element is directly related to the preservation of agricultural and forest lands and for allowing orderly urbanized development within the confines on the Urban Growth Boundary (UGB). This property was annexed into the City in May of 2019 and rezoned for residential uses. City of Canby Ordinance 1501 provided for annexation of the subject property. This property has been brought into 'urban land use' through annexation and the N. Holly Development Concept Plan (DCP). The orderly development of urbanized land is an understood and acceptable use for the subject property. Staff finds the Comprehensive Plan Map amendment is consistent with the Urban Growth Element.

Land Use Element

Finding 4: This request proposes to change the Comprehensive Plan land use designation for the subject property to a Medium Density Residential designation which is consistent with the

properties to the east across N. Locust Street. The proposed change is a logical contiguous extension of the higher intensity residential land use designation for the area within and nearby the N. Holly DCP area. The larger size of the existing parcels in relation to the others which are adjacent and already the MDR designation to the east invite a transition to more efficiently utilize the land for additional single family home sites that are within reasonable size of those existing in the remainder of the area. This assures the proposed use is suitably related to those it is nearby.

The City currently has a lower supply of platted R 1.5 zone lots available than it has R-1 zone lots. Additional R-1.5 lots are expected to urbanize; however, the majority remaining in the City at the date of this report are developed or are currently developing. Those include Redwood Landing nearby to the southeast. The proposed change in the Comprehensive Plan Map designation and corresponding zoning district will increase the supply of the smaller lot size therefore increasing housing opportunity choices within the City, and doing so in a compatible manner to the adjacent developed properties.

Comprehensive Plan Policy No. 6, Implementation B 9. Speaks directly to residential development in this area. "I" consists of a wide strip of property bordering N.E. Territorial Road. It includes properties which are planned for medium density residential use and properties planned for high density residential use. Present development in the area includes apartments, condominiums, single-family dwellings, and vacant lots. Present zoning includes some R-2 areas and a predominance of R-1 areas. Street dedications and, in some cases, street improvements are needed to make some of the properties suitable for higher density development. New developments, other than one single-family dwelling per lot, will require prior upzoning to either R-1.5 or R-2, as appropriate."

Staff finds that the proposed Comprehensive Plan Map change is not out of character with the land use element section of the Comprehensive Plan.

Environmental Concerns Element

Finding 5: This element is intended to protect identified natural and historic resources.

The subject property is not identified or known to have any identified significant natural or historic resources that would be impacted as part of this amendment proposal. The actual development of the property requires a variety of state and local permitting to protect harm to the natural environment. Among these are 1200-C permits for grading and site disturbance, grading, erosion control, plumbing and sewer permitting. Much of the environmental and natural components are evaluated through building permitting processes. Staff finds this amendment does not present any unusual or significant potential impacts to identified natural and historic resources in Canby.

Transportation Element

Finding 6: The transportation element goals seeks: "To develop and maintain a transportation system which is safe, convenient and economical requires cities to provide "a safe, convenient and economic transportation system."

The Contract Purchaser/Applicant commissioned a traffic engineer to prepare a Transportation Analysis Letter (TAL). Based on TAL, the proposed Comprehensive Plan Amendment/Zone Map Change would not degrade the performance of any existing or planned transportation facility beyond what is currently allowed under the existing zone. As a result, no mitigation is required.

The applicant will be required to dedicate and provide public improvements to existing transportation infrastructure as part of the subdivision proposal which is discussed in detail in a later section of this report.

Staff finds that the transportation analysis letter and the memorandum evaluating the letter by the City's traffic engineering consultant provide credible objective information related to the consistency with the Comprehensive Plan.

Public Facilities and Services Element

Finding 7: The Public Facilities and Services Element is focused on the provision of the following public facilities and services:

- Water and wastewater
- Stormwater
- Transportation
- Transportation Infrastructure
- Park and Recreation Facilities

The applicant has indicated that the subject property will be served by Canby Utility for water and power. Sewer connections will be provided and accommodated for by the City of Canby and Stormwater will be managed on site with approval by the City's engineering consultant. As previously mentioned in Finding 6, adequate transportation facilities will be constructed per City and County requirements – no major impacts were discovered during the transportation impact analysis.

A park is planned for in the Dodd's Subdivision area less than ½ a mile to the north of the subject property.

The subdivision process largely addresses the public facilities and services element of the Comprehensive Plan as the implementing tool for ensuring adequate public facilities are present at the time of development.

Staff finds this element of the Comprehensive Plan is sufficiently addressed for consistency.

Economic Element

Finding 8: The economic element is largely inapplicable to this proposal. To the extent it requires consistency, the applicant states that some economic benefit could be seen from the construction of the proposed subdivision and individual homes. The homes reasonably could contribute to the non-basic components of Canby's local and regional economy.

Housing Element

Finding 9: The stated goals in the Housing Element portion of the Comprehensive Plan are to provide needed housing and more specifically as Policy No 2 states, “Canby shall provide a gradual increase in housing density”.

The N. Holly Development Concept plan which allowed for the annexation of this property also discusses through a housing analysis that this property among the larger study area was needed in part to bolster the supply of buildable residential land. The applicant suggests that the Comprehensive Plan Map amendment and concurrent Zone Change allow for slightly more dense single family housing and adds 17-21 lots as opposed to 15 that would be allowed in the R-1 zone.

The Comprehensive Map amendment and concurrent Zone change are producing additional lots for single family homes which appears to generally conform to the concepts and policies stated in the Comprehensive Plan.

General Consistency with the Comprehensive Plan

Finding 10: The applicant’s narrative and accompanying materials appear to demonstrate that the proposal to modify the Comprehensive Plan Map from LDR Low-Density Residential to MDR Medium-Density Residential are generally consistent with the applicable elements, policies and goals of the Canby Comprehensive Plan.

Consistency with the Oregon Statewide Planning Goals

Finding 11: Generally speaking the Canby Comprehensive plan is an implementing mechanism of Oregon’s Statewide Planning Goals much like the Canby Development and Zoning Ordinance is the implementing mechanism of the Canby Comprehensive Plan. The requirement for consistency with Oregon Statewide Planning Goals while applicable to this instance is largely more relevant to wholesale or sweeping legislative changes to the Comprehensive Plan text or large mapping changes. Such changes have broad reaching impacts to the entire municipality or county; whereas, in situations such as this, the changes are relatively small and do not have broad impacts or changes to the Comprehensive Plan Map or text.

Regardless, consistency with the Statewide Planning Goals is a requirement for any amendment to a Department of Land Conservation and Development (DLCD) acknowledged Comprehensive Plan and triggers an analysis of the proposal and its consistency with the Statewide Planning Goals.

Staff incorporates the applicant’s findings herein by reference (Exhibits A and B) as findings related to the consistency with the Statewide Planning Goals.

Finding 12: Staff accepts the findings contained in the applicant’s narrative and adds the following additional findings to support demonstration of consistency with Oregon’s Land Use System Planning Goals:

Goal 12 – Transportation: Traffic Analysis focused on the Transportation Planning Rule

requirements found in State Statute. An analysis is required by the City and paid for by the applicant.

The proposed zone change of the site is projected to increase the trip generation potential of the site by 7 morning peak hour trips, 7 evening peak hour trips, and 150 average weekday trips. Accordingly, the net increase in the traffic intensity of the site will not degrade the performance of any existing or planned transportation facility beyond what is currently allowed under the existing zone. Accordingly, the Transportation Planning Rule is satisfied. The proposed Hemmerling Subdivision is projected to generate 15 morning peak hour trips, 20 evening peak hour trips, and 188 average weekday trips. Provided any obstructing on-site foliage is removed following development of the site, adequate sight distances can be made available to ensure safe operation of the three proposed access intersections. No other sight distance related mitigation is necessary or recommended. Following a review of access spacing standards, both City of and County standards will be met with respect to spacing between the proposed public access roads and other public road intersections. The proposed private access will also meet spacing standards with all other public intersections and driveways along N Locust Street.

Table 2 below from the Transportation Analysis Letter demonstrates the difference between the existing R-1 Zone and the R-1.5 Zone. As noted in the report, the increase is marginal and does not trigger any further detailed studies or mitigation measures.

Table 2: Trip Generation Summary

	ITE Code	Size	Morning Peak Hour			Evening Peak Hour			Weekday
			Enter	Exit	Total	Enter	Exit	Total	Total
Existing R-1 Zone									
Single-Family Houses	210	15 units	3	8	11	9	6	15	142
Proposed R-1.5 Zone									
Single-Family Houses	210	20 units	4	11	15	13	7	20	188

(Refer to Exhibit F for details from the Transportation Analysis Letter).

Canby Municipal Code (CMC) Section 16.08 General Provisions

CMC 16.08.150 – Traffic Impact Study

Finding 13: The purpose of this section of the code is to implement Section 660-012-0045(2)(b) of the State Transportation Planning Rule (TPR), which requires the city to adopt a process to apply conditions to development proposals in order to minimize adverse impacts to and protect transportation facilities. The Transportation Planning Rule (TPR) within State Statute (OAR 660-12-0060-9) requires that there be a record of traffic generation findings which are consistent with the City's Transportation System Plan with any Comprehensive Plan Map Amendment or Zoning Map Amendment.

The City required a TPR analysis memorandum to document that TPR requirements are satisfactorily met with the proposed Comprehensive Plan Map change and Zoning Map

change proposed. The memorandum indicates that the expected reasonable traffic impact from the new map amendments will cause “no further degradation” to the surrounding roadway network therefore complies with TPR requirements without necessary mitigation measures.

(Refer to Exhibit F for details from the Transportation Analysis Letter).

Consistency with the N. Holly Development Concept Plan (DCP)

Finding 14: The subject property is within the N. Holly Development Concept Plan (DCP) area and was annexed along with a number of other properties as part of City Ordinance 1501 in February, 2019. The DCP and annexation called for all property to be zoned R-1 Low-Density Residential. (Refer to Exhibit J for a copy of Ordinance 1501).

The applicant has proposed to amend the Comprehensive Plan Map to change the current designation of LDR Low-Density Residential to MDR Medium-Density Residential concurrent to the Comprehensive Plan Map change is a Zoning Map change from R-1 Low-Density Residential to R-1.5 Medium Density Residential. As mentioned previously in this report, this changes the maximum dwelling density count. Staff includes analysis and findings from the annexation and DCP process as background to the housing inventory and supply.

The N. Holly DCP detailed the provision of housing supply via the annexation of land in the study area to the City of Canby and as indicated in the report, “Dodd’s property could provide an additional 81 new R-1 lots when developed, **the Hemmerling Nursery property could provide an additional 15 lots**, and the Burkert and Montecucco properties together could provide an additional 81 lots. Altogether the annexation properties could accommodate an eventual 177 units, but only some are anticipated to develop in the next few years.” (Refer to Exhibit I for the N. Holly Development Concept Plan).

Figure 5 on the following page provides analysis related to the 3-year single family residential housing supply and projected inventory until the end of the calendar year 2021. **Figure 6** on the following page shows the changes in maximum buildable lots from the request to change the property’s Comprehensive Plan Map and Zoning designation from Low-Density Residential to Medium-Density Residential.

Figure 5 – 3-Year SFR Lot Supply Analysis from N. Holly DCP Application

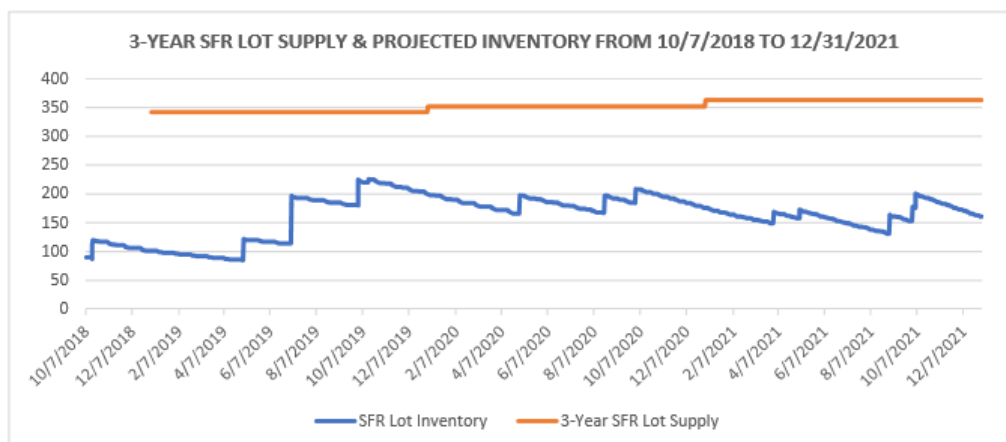


Figure 6 – Dwelling Units per Comprehensive Plan Map and Consistent Zone Designation

Comprehensive Plan Map Designation	Zoning Map Designation	Housing Units
LDR Low-Density Residential	R-1 Low-Density Residential	15 Single Family Dwellings Maximum
MDR Medium Density Residential	R-1.5 Medium Density Residential	21 Single Family Dwellings Maximum

Finding 15: Staff are not aware of a previous instance where a Development Concept Plan was adopted and a subsequent Comprehensive Plan Map and Zoning Map designation were amended within the concept plan area. As a matter of sound planning practice, staff suggest it should largely be avoided if possible so as to not defeat the assumptions present in the Development Concept Plan analysis process. However, in this instance, the results are relatively minor and negligible. The request does not significantly alter traffic, street and circulation patterns or otherwise substantively skew housing production analysis.

Staff also note that there are no criteria present in the Canby Municipal Code that indicate any additional processes or review analysis are required when amending the Zone or Comprehensive Plan Map designation once the property has been through an adopted Development Concept Plan. The discussion found in **Findings 14 and 15** are to provide context and to evaluate the request thoroughly.

Finding 16: Staff finds the requested change to the Comprehensive Plan Map and Zoning Designation create a *de minimis* impact on the assumptions and findings found in the N. Holly Development Concept Plan. Further, staff finds that while Development Concept Plans (DCPs) should generally be adhered to as a development scheme, there is no binding or requisite code or procedural components for subsequently altering the DCP post adoption.

CMC 16.18 — Medium-Density Residential (R-1.5) Zone

Finding 17: The applicant's immediate development objective is to subdivide the property into 20 lots upon approval of the Comprehensive Plan Map amendment and Zone Change. Should the Comprehensive Plan Map amendment and Zone change fail to gain approval, the applicant will not be able to execute the preliminary 20-unit subdivision as proposed. The applicant is proposing a 20-lot subdivision with an average lot area of 5,165 square/feet and two lots as an exception at 4,219 square feet and 4,732 square feet. These standards can be met for lot area if the Planning Commission grants an exception for the two lots under 5,000 square feet total.

Staff notes that the applicant assumes the risk of requesting the processing of these applications concurrently. The reliance on multiple land use decisions necessitates conditions at the Subdivision Type III level to assure that the process can be executed properly.

CMC 16.54 — Amendments to the Zoning Map

16.54.010 Authorization to Initiate Amendments.

An amendment to the zoning map may be initiated by the City Council, by the Planning Commission, or by application of the property owner or his authorized agent. The Planning Commission shall, within forty days after closing the hearing, recommend to the City Council, approval, disapproval or modification of the proposed amendment. (Ord. 740 section 10.3.45 (A), 1984)

Finding 18: The applicant has provided a written application with a request to initiate a zoning map amendment which is consistent with the above criteria.

16.54.020 Application and Fee.

Application procedures shall be as described in Chapter 16.89. (Ord. 740 section 10.3.85(B), 1984; Ord. 981 section 7, 1997; Ord. 1019 section 13, 1999; Ord. 1080, 2001).

Finding 19: The applicant has followed the application procedures and paid the appropriate fees.

16.54.030 Public Hearing on Amendment.

Before taking final action on a proposed amendment, the Planning Commission shall hold a public hearing on the amendment following the requirements for advertising and conduct of hearing prescribed in Division VIII. (Ord. 740 section 10.3.85(C), 1984)

Finding 20: This criterion will be met when the Planning Commission holds a public hearing and makes a recommendation to the City Council and when the City Council conducts a hearing and issues a decision. The advertising and conduct of the hearing shall be consistent with state law and Canby Municipal Code.

16.54.040 Standards and criteria in judging whether or not the zoning map should be amended or changed, the Planning Commission and City Council shall consider the following criteria:

- A. The Comprehensive Plan of the city, giving special attention to Policy 6 of the land use element and implementation measures therefore, and the plans and policies of the county,**

state and local districts in order to preserve functions and local aspects of land conservation and development;

Finding 21: The subject properties are not identified as being in an “Area of Special Concern” that is delineated in Policy 6 of the Comprehensive Plan. Additionally, the proposed zone for the properties is consistent with the zone designation on the Comprehensive Plan Map. Staff concludes that the request meets provisions in Policy 6 and the Comprehensive Plan.

B. Whether all required public facilities and services exist or will be provided concurrent with development to adequately meet the needs of any use or development which would be permitted by the new zoning designation. (Ord. 749 section 1(B), 1984; Ord. 740 section 10.3.85(D), 1984)

Finding 22: Problems or issues in the extension of utility services have not been raised by City service providers that would prevent services at the time of development. It appears that future development of the properties can meet standards for adequate public facilities. This zone change proposal allows for the continuation of planned development through a subdivision. The North Holly DCP is an established planning document that provides guidelines for this development area. The zoning designation will be consistent with the updated comprehensive plan. Staff finds these criteria are met.

16.54.050 (Ord. 740 section 10.3.85(E), 1984)

Finding 23: These standards are encapsulated in the previously stated code criteria in CMC 16.54; staff finds these criteria are met.

16.54.60 Improvement conditions.

A. In acting on an application for a zone change, the Planning Commission may recommend and the City Council may impose conditions to be met by the proponents of the change before the proposed change takes effect. Such conditions shall be limited to improvements or physical changes to the property which are directly related to the health, safety or general welfare of those in the area. Further, such conditions shall be limited to improvements which clearly relate to and benefit the area of the proposed zone change. Allowable conditions of approval may include, but are not necessarily limited to:

- 1. Street and sidewalk construction or improvements;**
- 2. Extension of water, sewer, or other forms of utility lines;**
- 3. Installation of fire hydrants.**

B. The city will not use the imposition of improvement conditions as a means of preventing planned development, and will consider the potential impact of the costs or required improvements on needed housing. The Planning Commission and City Council will assure that the required improvements will not reduce housing densities below those anticipated in the Comprehensive Plan. (Ord. 749 section 1(C), 1984; Ord. 740 section 10.3.85 (F). 1984)

Finding 24: Much of this analysis and conditioning will occur as part of the subdivision application process. Public improvements are planned to be dedicated and constructed as part of the subdivision approval—detailed conditions of approval are included at that level. Inserting conditions at the zone change level is not necessary for this project. Should the planning commission recommend such conditions, staff will present those conditions to the City Council for consideration.

CMC 16.89.060 Process Compliance

16.89.060 Type IV Decision

For certain applications, the City Council makes a final decision after a recommendation by the Planning Commission. These application types are referred to as Type IV decisions.

- A. Pre-application conference. A pre-application conference may be required by the Planning Director for Type IV applications.**

Finding 25: A preapplication conference was held on September 23, 2020.

- B. Neighborhood meetings. The applicant may be required to present their development proposal at a neighborhood meeting (see Section 16.89.070). Table 16.89.020 sets the minimum guidelines for neighborhood review but the Planning Director may require other applications to go through neighborhood review as well.**

Finding 26: A neighborhood meeting consistent with the above standards was held by the applicant on December 23, 2020.

- C. Application requirements. Type IV applications shall be made on forms provided by the Planning Director. The application shall be accompanied by all required information and fees.**
- C. Public notice and hearings. The public notice and hearings process for the Planning Commission's review of Type IV applications shall follow that for Type III applications, as provided in subsections 16.89.050.D and 16.89.050.E.**

Finding 27: The standards for application requirements and public noticing are met.

- E. Decision process.**
 - 1. Approval or denial of a Type IV decision shall be based on the standards and criteria located in the code.**
 - 2. The hearings body shall issue a final written order containing findings and conclusions recommending that the City Council approve, approve with conditions, or deny the application.**

3. The written decision shall explain the relevant criteria and standards, state the facts relied upon in rendering the decision, and justify the decision according to the criteria, standards, and facts.

4. In cases involving attorneys, the prevailing attorney shall prepare the findings, conclusions, and final order. Staff shall review and, if necessary, revise, these materials prior to submittal to the hearings body.

F. City Council proceedings:

1. Upon receipt of the record of the Planning Commission proceedings, and the recommendation of the Commission, the City Council shall conduct a review of that record and shall vote to approve, approve with conditions, or deny the recommendation of the Planning Commission.

2. The City Council may question those individuals who are a party to the public hearing conducted by the Planning Commission were if the Commission's record appears to be lacking sufficient information to allow for a decision by the Council. The Council shall hear arguments based solely on the record of the Commission.

3. The City Council may choose to conduct public hearings on Comprehensive Plan amendments, amendments to the text of this title, zone map amendments, and annexations. If the Council elects to conduct such hearings, it may do so in joint session with the Planning Commission or after receiving the written record of the Commission. (Ord. 1080, 2001)

Finding 28: Comprehensive Plan Map amendments and Zoning Map amendments are processed through a Type IV "quasi-judicial" process which is considered through a public hearing at the Planning Commission that forwards a recommendation to the City Council. The City Council also holds a public hearing and issues a final decision. The notice requirements are the same as for Type III applications.

Notice of this application and the Planning Commission and Council Hearing dates was made to surrounding property owners on April 16, 2021 more than 20-days prior to the hearing. Prior notification and neighborhood meetings were completed during the application process. The site was posted with a Public Hearing Notice sign on April 27, 2021. Notice meeting ordinance requirements of the public hearings was published in the Canby Herald on April 27, 2020. The A pre-application conference was held on September 23, 2020. These findings indicate that all processing requirements have been satisfied with this application to date.

IV. Public Testimony Received

Notice of this application and opportunity to provide comment was mailed to owners of lots within 500 feet of the subject properties and to all applicable public agencies and City departments on April 16, 2021. Complete comments are documented in the file. As of the date of this Staff Report, the following comments were received by City of Canby from the following persons/agencies:

- City Engineer
- DirectLink

Conclusion Regarding Consistency with the Standards of the Canby Municipal Code

Staff concludes, as detailed in the submittal from the applicant and as indicated here in this staff report, including all attachments hereto, that:

1. The applications and proposed use is in conformance with applicable sections of the City's Comprehensive Plan and Land Development and Planning Ordinance when the determinations contained in this staff report are applied.
2. The zoning of the property, if approved, shall be R-1.5 as indicated in the application and pursuant to the approval criteria set forth for map amendments in CMC 16.54.040.
3. The proposed zoning district of R-1.5 is in conformance with the Comprehensive Plan Land Use Plan Map if the requests are approved concurrently.
4. The application complies with all applicable Oregon Revised Statutes.
5. There are sufficient public and private agency utility and service capacity to serve the site at the anticipated development intensity.
6. In accordance with the Department of Land Conservation and Development (DLCD) requirements this request was noticed 35-days before a public hearing. A 35-day notice of decision window will be provided after the 2nd reading by the City Council regardless of disposition.

V. Recommendation to Planning Commission: CPA 21-01 / ZC 21-01

Based on the application submitted and the facts, findings and conclusions of this report, but without benefit of a public hearing, staff recommends that the Planning Commission provide a motion recommendation to the City Council that:

1. The City of Canby's Comprehensive Plan Map for the subject property be amended from LDR Low-Density Residential to MDR Medium-Density Residential;
2. The City of Canby's Zoning Map for the subject property be amended from R-1 Low-Density Residential to City of Canby R-1.5 Medium-Density Residential which is consistent with the Comprehensive Plan Map change;
3. The City Council direct City planning staff to amend the Comprehensive Plan Map and Zone Map to be consistent with this decision;
4. The applicant's request City File # CPA 20-01/ZC 20-01 be approved by the City Council;

The planning Commission move to attach the following conditions to this recommendation of approval:

1. Comprehensive Plan Map Amendment (CPA 21-01) and Zone Map Change (ZC 21-01) must be free of appeals and final land use decisions as defined by ORS 197.015 prior to the subdivision (SUB 21-02) gaining final approval. Any action on behalf of the applicant that invalidates or disqualifies CPA 20-01 and ZC 20-01 shall invalidate SUB 21-02 which is directly contingent on these approvals.
2. Comprehensive Plan Map amendment approval shall conform to all other applicable City of Canby ordinances, municipal code, state law and administrative rule.



City of Canby

File #: SUB 21-02 – Hemmerling Subdivision

HEARING DATE: May 10, 2021
STAFF REPORT DATE: May 3, 2021
TO: Planning Commission
STAFF: Erik Forsell, Associate Planner

Applicant Request

The applicant requests approval to subdivide a ±3.17-acre parcel into 20 separate legal lots. This proposal is dependent on the Comprehensive Plan Map amendment (CPA 21-01) and Zone Change (ZC 21-01) gaining approval.

Staff Recommendation

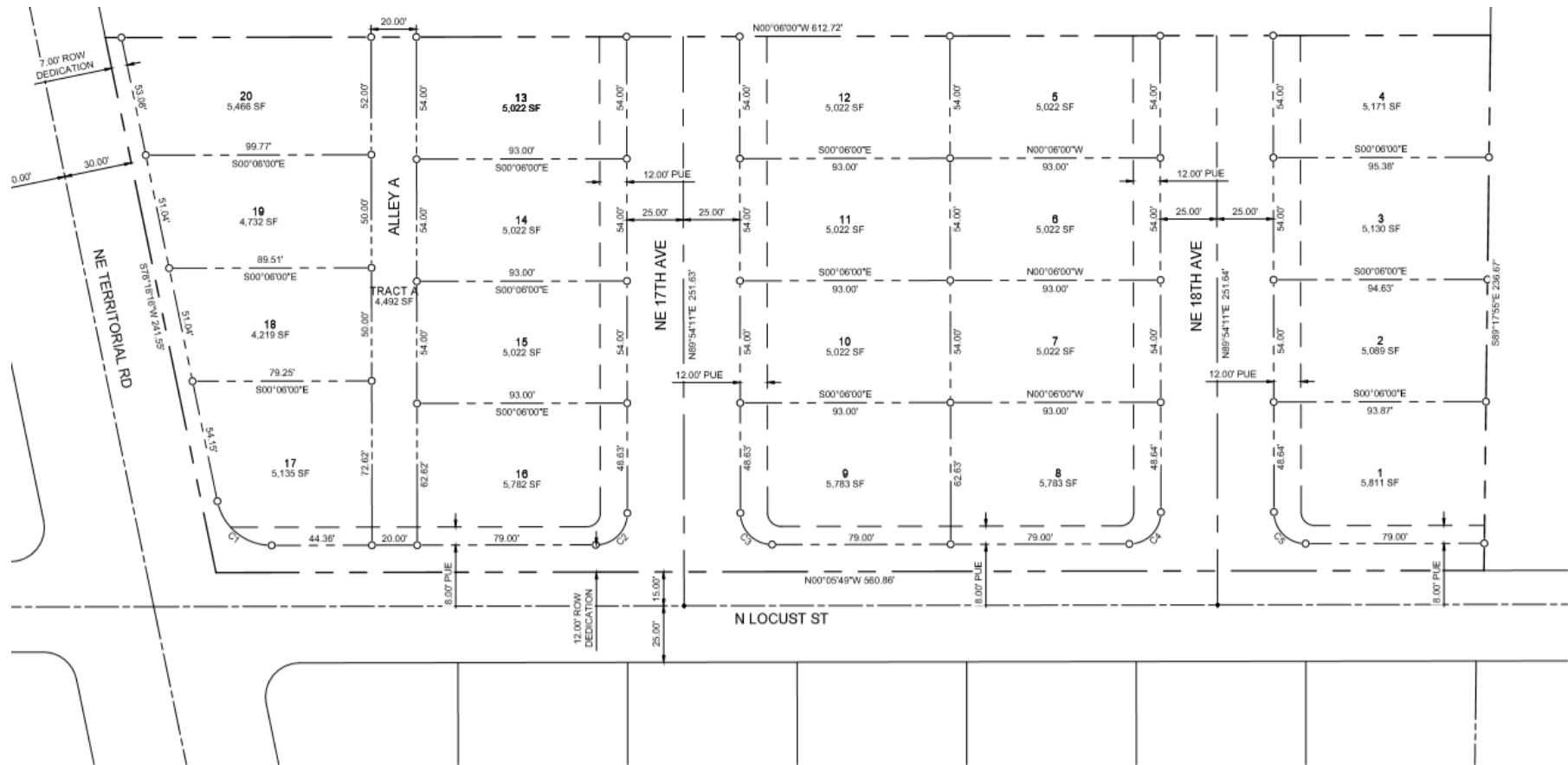
Based on the application submitted and the facts, findings, and conclusions of this report, staff recommends that the Planning Commission move to **Approve** SUB 21-02 pursuant to the Conditions of Approval presented in **Section VI** at the end of this report.

Project Overview

This development proposal is essentially four separate applications combined into one proposal, a request for Comprehensive Plan Map Amendment, a Zone Map change, this subdivision request and a variance to the setback standards. The subdivision proposal is reliant on the approval of the Comprehensive Plan Amendment and Zone Change, as the preliminary plan proposes 20-lots which would not be allowed under the (R-1) Low-Density Residential Zone.

This portion of the staff report focuses on the subdivision, the submittal requirements, criteria for analysis and conditions of approval. This proposed project is to develop a 20-lot residential subdivision with the required improvements associated with the development. The subject development site is part of the approved North Holly Development Concept Plan (DCP) area, which was approved by the Canby City Council for annexation into Canby city limits on February 6, 2019. This project is also contingent upon annexation CPA 20-01 and zone change ZC 20-01 as those changes to the Comprehensive Plan and Zoning designations are incorporated into the subdivision preliminary plan. The Comprehensive Plan Map amendment and zone change are discussed in greater detail in that portion of the staff report. The diagram on the following page is the applicant's preliminary plan for the subdivision.

Figure B.1 – Applicant's Preliminary Plan



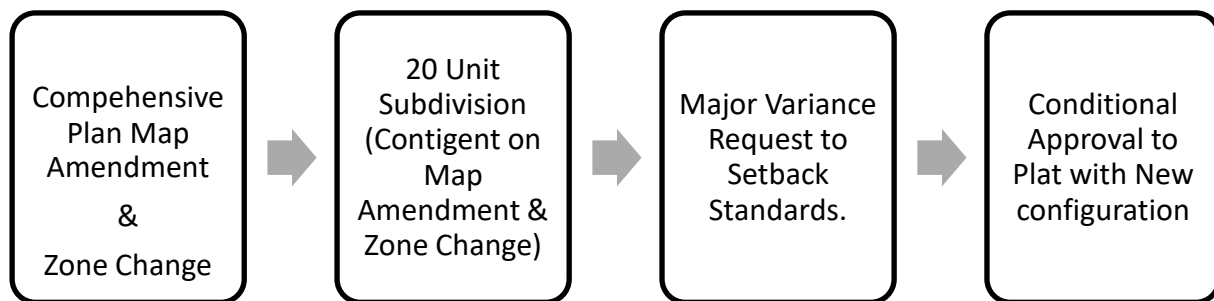
The subject property contains lots 26, 27, and 28 of Pruneland Subdivision which was originally recorded on March 14, 1891. The subject property appears to be a legal lot and was created by Deed via Instrument No. 73-37705 out of Pruneland subdivision. This does not constitute a formal legal lot determination as a land use decision. The subject site is currently zoned R-1 Low-Density Residential but as part of this application package, the subject property is proposed to be rezoned R-1.5 Medium Density residential.

This proposal amounts to **Hemmerling Subdivision**. Minimum and maximum lot sizes for single family residential development in the R-1.5 zone are 5,000 and 6,500 square feet respectively. The applicant is proposing to divide the +/- 3.17-acre property into 20 lots. The subdivision will meet these requirements save two lots in which the applicant is requesting an exception pursuant to lot area standards adjustments found in CMC 16.18.030(B) – these lots are identified as 18 and 19. It is anticipated that the grading, site and infrastructure improvements will be constructed at one time under a single site improvement permit. Access to the site will be via three new proposed new intersections onto N. Locust Road. No access will be granted directly on NE Territorial Road.

In summary, the applicant is proposing a multi-layered process to execute the Hemmerling subdivision proposal. The process starts with a Comprehensive Plan Map amendment and zone map change from Low-Density Residential to Medium-Density Residential. Next, the applicant is proposing Hemmerling Subdivision, a 20-lot subdivision using the newly designated comprehensive plan map and zoning map districts. Staff notes that the subdivision can still be approved with a denial to the major variance request VAR 21-02. A denied variance does not cause the subdivision to fail and does not preclude the applicant or future builders to seek relief on a different basis.

Assuming all of these items are completed, the applicant is requesting conditional approval for the Hemmerling subdivision proposal. **Figure B.2** below describes this in basic terms.

Figure B.2 – Process of Applicant’s Proposal



Property/Owner Information

Location	102 NE Territorial Road
Tax Lot(s)	31E28C 00401
Property Size	Approximately 3.17 Acres
Comprehensive Plan	LDR – Medium Density Residential (Proposed)
Zoning	R-1.5 – Medium Density Residential (Proposed)
Owner	Hemmerling Nursery, LLC; Lori Hemmerling
Applicant	Venture Properties, Inc.
Representative	ATWELL, LLC.
Application Type	Subdivision Type III – Quasi-Judicial
City File Number(s)	SUB 21-02

Exhibits of Record

- A. Application Narrative and Exhibits
- B. Application Appendices
- C. Survey / Existing Conditions of Subject Property
- D. Proposed Preliminary Subdivision Plat
- E. Proposed Site Plan
- F. Traffic Analysis Letter (TAL)
- G. Pre-Application Conference Minutes
- H. Neighborhood Meeting Notes
- I. North Holly Development Concept Plan
- J. Ordinance 1501
- K. Agency Comments:
 - 1. City Engineer – Hassan Ibrahim, PE
 - 2. Canby Utility – Doug Erkson

I. Existing Conditions:

The subject property is generally located at 102 NE Territorial Road, Canby OR 97013. The property is relatively flat and historically was in direct or supporting agricultural uses. The property has frontage along NE Territorial to the South and N Locust Street to the East. The property is approximately 3.17 acres in size and contains two existing structures on the southern portion of the property. See Figure B.3 below for aerial imagery of the subject property.

Figure B.3 Aerial Imagery of Subject Property



Surrounding Land Uses:

<i>Direction</i>	<i>Zoning</i>	<i>Land Uses</i>
North	R-1	Dodd's Subdivision (Recently Approved, Not Yet Built)
West	EFU	Unincorporated Clackamas County
South	N/A	Territorial Road
East	N/A	N. Locust Street and R-1.5 Zoned Land (Subdivided and built)

Utilities/Sewer/Disposal/Fire/Police:

- Water and electric service will be provided by Canby Utility.
- Wastewater, storm drainage, and streets are managed by the City of Canby Public Works.
- Disposal services are provided by Canby Disposal.
- Fire services are provided by Canby Fire District.
- Police services are provided by Canby Police Department.

Staff has provided conditions of approval at the end of this staff report (Section VI), written to ensure the necessary public infrastructure is constructed and installed in accordance with all applicable city, county, state, and federal requirements.

II. Applicable Criteria & Findings

In addition to components of the City of Canby Comprehensive Plan, applicable criteria used in evaluating this application are listed in the following sections of the **City of Canby's Land Development and Planning Ordinance**:

- 16.08 General Provisions
- 16.10 Off-street Parking and Loading
- 16.18 R-1.5 Medium Density Residential Zone
- 16.56 Land Divisions
- 16.62 Subdivisions-Applications
- 16.64 Subdivisions – Design Standards
- 16.86 Street Alignments
- 16.88 General Standards and Procedures
- 16.89 Application and Review Procedures

III. Summary of Findings

Consistent with Section 16.04.600 of the **Canby Land Development and Planning Ordinance** (the Ordinance), Chapter 16 of the Municipal Code, the proposed application qualifies as a Subdivision, as it would divide the subject property into “four or more lots in a given calendar year for the purpose of transfer of ownership.”

Section 16.56 of the Ordinance identifies the purpose and scope of land divisions and sets forth regulations for dividing land within the City. **Section 16.62.020 – Subdivisions**, sets forth the standards and approval criteria for subdivisions which the applicant must respond to in their narrative within their submitted application materials. Staff incorporates the applicant's written response as findings in support of the criteria. Additional facts and findings are provided herein.

Section 16.10 – Parking and Off-Street Loading

USE	PARKING REQUIREMENT
<i>Residential Uses:</i>	
a. Single-family dwellings	2.00 spaces per dwelling unit for new construction. (Existing single-family dwellings having only a single parking space shall not be considered to be nonconforming.)

Finding 29: The applicant is proposing single family homes. Special consideration shall be applied to the

homes along the alley because of limited on-street parking. Each driveway shall provide at a minimum of 2.0 spaces to adequately provide for parking. The applicant during pre-construction phases and individual site plans shall demonstrate these requirements. This has been made a condition of approval.

Section 16.18 – R 1.5 Medium Density Residential Zone

16.18.030 Development standards.

The following subsections indicate the required development standards of the R-1.5 zone:

A. Minimum and maximum lot area:

1. For single family dwellings: five thousand (5,000) square feet minimum and six thousand five hundred (6,500) square feet maximum

Finding 30:

The applicant is proposing a 20-lot subdivision. The application of the Comprehensive Plan Designation MDR Medium-Density Residential is required in order to subdivide the subject property into 20 lots. The applicant is proposing the following lot configuration according to the preliminary plan and accompanying narrative. See **Figure B.4 below for exact lot sizes.** The applicant's request meets the averaging requirement for lots between 5,000 and 6,500 square feet; however, two lots are substandard to the minimum size – lots 18 and 19. Therefore, the applicant is requesting an exception from the Planning Commission. This is discussed in greater detail below. Staff finds this criterion can be met with exceptions granted by the Planning Commission.

Figure B.4 Applicant's Proposed Lot Sizes

Lot Number	Lot Size (Expressed in Square Footage)
Lot 1	5,811
Lot 2	5,089
Lot 3	5,130
Lot 4	5,171
Lot 5	5,022
Lot 6	5,022
Lot 7	5,022
Lot 8	5,783
Lot 9	5,783
Lot 10	5,022
Lot 11	5,022
Lot 12	5,022
Lot 13	5,022
Lot 14	5,022
Lot 15	5,022
Lot 16	5,782
Lot 17	5,135
Lot 18	4,219
Lot 19	4,732
Lot 20	5,466

Tract A (Alley)	4,491
Total	107,790 SF
Average Lot Size	5,165 SF

1. The Planning Commission may approve an exception to the minimum and maximum lot

area standards in subsection 16.18.030.A as part of a subdivision or partition application when all of the following standards are met:

a. The average area of all lots and open space tracts created through the subject land division, excluding required public park land dedications, surface water management facilities and similar public use areas, shall be no less than five thousand square feet and no greater than six thousand five hundred square feet. Non-required significant natural resource areas shall be included in the average lot size calculation to enable a transfer of density onto buildable portions of the site. Required areas include identified parks, wetland areas, riparian corridors, and other areas in which building is not permitted under local, state, or federal laws or regulations. For land in the North Redwood DCP area, the Planning Commission may allow public park land dedications to be included in the lot size averaging calculation in order to achieve community development goals and allow protection of natural resources; in this case, the resulting average lot size shall not be less than 4,000 square feet;

Finding 31: The total area of the development site is approximately 138,552 square feet per the applicant's survey (Exhibit C). The total lot area for the 20 lot subdivision is approximately 107,790 feet which includes the required public right-of-way dedications. Refer to Figure B.5 below for details on site area and dedication exactions on buildable area. On balance, this is approximately 5,165 square feet of area which meets the standards of the 5,000 – 6,000 square foot range. Staff finds the exception can be granted by the Planning Commission.

Figure B.5 Gross Site Area and Right of Way Areas

Area	Lot Coverage (Expressed in Square Footage)
Gross Site Area:	3.187 Ac. (138,852 SF)
<i>Proposed Roadway Dedication:</i>	
ROW – Northeast Territorial Road Widening	0.038 Ac. (1,684 SF)
ROW – North Locust Street Widening	0.148 Ac. (6,746 SF)
ROW – Proposed "NE 17 th " Street	0.260 Ac. (11,316 SF)
ROW – Proposed "NE 18 th " Street	0.260 Ac. (11,316 SF)
Net Site Area:	2.475 Ac. (107,790 SF)

b. No lot shall be created that contains less than four thousand square feet, unless the alternative lot layout option provided in Section 16.64.040 is used; and

Finding 32: According to the applicant's submittals, the smallest lot size proposed is approximately ~ 4,219 square feet. This standard is met.

c. As a condition of granting the exception, the city will require the owner to record a deed restriction with the final plat that prevents the re-division of oversized lots (six thousand and five hundred square feet and larger), when such redivision would violate the average lot size provision in subsection 16.18.030.B.1.a. All lots approved for use by more than one dwelling shall be so designated on the final plat.

Finding 33: Not applicable no lots are proposed that meet this standard.

2. A public benefit must be demonstrated in order to allow more than ten percent of the lots to be outside of the minimum and maximum lot areas in subsection 16.18.030.B.1.a.

Finding 34: Two lots are proposed for this exception—10% of the total. This standard is met.

3. The Planning Commission may modify the maximum lot area requirements in subsection 16.18.030.B if these cannot be met due to existing lot dimensions, road patterns, or other site characteristics.

Finding 35: Not applicable to this proposal.

4. The maximum lot area standard does not apply to dwellings existing prior to subdivision or partition plan approval or to lots designated for open space.

Finding 36: Not applicable to this proposal; the existing structures will be demolished as part of this development proposal.

C. Minimum width and frontage: forty feet, except that the Planning Commission may approve lots having less frontage subject to special conditions to assure adequate access. Twenty feet is permitted for single family attached (common wall) housing on interior lots.

Finding 37: According to the applicant's submittal and plans sets, all proposed lots will meet this standard.

D. Minimum yard requirements:

- 1. Street yard: twenty feet on side with driveway; fifteen feet for all other street sides; except that street yards may be reduced to ten feet for covered porches only.**
- 2. Rear yard: all corner lots, ten feet single story or fifteen feet two-story; all other lots: fifteen feet single story or twenty feet two-story. One story building components must meet the single story setback requirements; two story building components must meet the two-story setback requirements;**
- 3. Interior yard: seven feet, except as otherwise provided for zero-lot line housing.**
- 4. Interior and rear yards may be reduced to three feet, or the width of any existing utility easement, whichever is greater, for detached accessory structures, except accessory dwellings, erected sixty feet or more from any street other than an alley. The height limitations noted in subsection E.2 below apply. Utility easements may only be reduced with the approval of all utility providers.**
- 5. Infill standards may also apply. See CMC 16.21.050**

Finding 38: The applicant is requesting a major variance to the minimum yard requirements. At the time of the creation of this staff report, staff are not in support of the variance request. Should the request be denied and made a final decision as part of this land use package, the standard setbacks shall apply. Should the applicant or builder in the future request a variance to these standards, that request will be decided on a case-by-case basis. Additional findings regarding the variance request are presented later in this report.

E. Maximum building height:

- 1. Principal building: thirty-five feet.**
- 2. Detached accessory structure:**

- a. If located inside the allowed building footprint for the principal building, a detached accessory structure may be up to twenty-two feet tall, as measured to the highest point of the roof.
- b. If located outside the allowed building footprint for the principal building, a detached accessory structure is subject to a step-up height standard, and is allowed outright only if it meets this standard. The structure shall not exceed eight feet tall, as measured to the highest point of the roof, at a distance of three feet from the property line. The structure may increase in height by one foot vertically for every one foot horizontally away from the three foot line, up to the maximum height of twenty-two feet.
- c. A conditional use permit is required to locate the structure outside of the allowed building footprint for the principal building in violation of the step-up height standard.
- d. Detached accessory structures over twenty-two feet tall are not permitted.

3. For detached accessory dwellings, the Planning Commission may approve building heights over twenty-two feet through the Conditional Use process, but in no case shall the accessory dwelling be higher than the principal building. The Planning Commission may only approve the use of buildings over twenty-two feet in the case of existing structures where no substantial changes to existing roof lines are proposed.

Finding 39: The applicant's narrative and accompanying sample building elevations included as part of the submittal demonstrate compliance with these standards. Staff finds these criteria are met and will be further verified at building permit submittal.

Section 16.56 – Land Divisions

16.56.030 Conformance.

A. Comprehensive Plan. A subdivision or partition shall conform to the Comprehensive Plan. A determination of such conformity shall be based upon consideration of all applicable portions of the Comprehensive Plan and shall not be based solely upon a review of the land use map.

B. Land Development and Planning Ordinance. A land division shall be subject to all applicable requirements of other sections of this title. Where an applicant seeks the approval of any division which requires a change in zoning, the applicant may be required to complete the rezoning process prior to submittal of an application for property division.

Finding 40: As mentioned previously in this report, this project is contingent on CPA 21-01 and ZC 21-01 in which the subject property is proposed for a new Comprehensive Plan Map designation and concurrent Zoning Map change from LDR Low-Density Residential / R-1 Zone to MDR Medium-Density Residential / R-1.5. Staff have made previous findings to the consistency with the changes and believe the proposed subdivision is largely in conformity with the overall comprehensive plan and planning ordinance.

C. Health, Safety, and Sanitation. A subdivision or partition shall conform to all applicable state, county and city regulations regarding health, safety and sanitation. The county will not issue any permits for on-site sewage disposal systems for any lot or parcel created in violation of these regulations, nor for the remainder of the parent parcel from which lots or parcels have been illegally created, unless and until such violation has been rectified and all legal requirements met.

Finding 41: All lots are proposed for connection to City of Canby sanitary sewer. Staff finds these criteria are met.

D. Building. Structures and buildings in any property division shall conform with applicable codes and regulations regarding building. The City Building Official shall not allow the issuance of a building permit on any lot or parcel created, subdivided or partitioned in violation of these requirements. No building permit shall be issued for the remainder of the parent parcel, from which any lots or parcels have been created in violation of this title, unless and until such violation has been rectified and all legal requirements met.

Finding 42: The existing structures will be demolished as part of this development proposal. This standard has been made a condition of approval and can be met as conditioned. No known building violations are known on the subject property.

E. Streets and Roads. A property division shall conform to all applicable city ordinances or policies pertaining to streets, roads, or access. (Ord. 740 section 10.4.10(C), 1984)

Finding 43: This standard is described at length in the body of this report; this criterion can be met as conditioned.

Section 16.62.020 Standards and criteria

Applications for a subdivision shall be evaluated based upon the following standards and criteria:

A. Conformance with other applicable requirements of the Land Development and Planning Ordinance.

Finding 44: The applicant has indicated in the narrative, consistency with all applicable standards of the Canby Land Development and Planning Ordinance as addressed within the submitted application materials and plan set. Staff finds this request is consistent with the applicable standards of the Ordinance for the **subdivision request**. Assuming that the applicant gains approval for the proposed Comprehensive Plan Map amendment and zone change, staff believes as conditioned in these reports, that the applicant can meet these standards. Therefore, staff finds this criterion has been met.

B. The overall design and arrangement of lots shall be functional and adequately provide building sites, utility easements, and access facilities deemed necessary for the development of the property without unduly hindering the use or development of adjacent properties.

Finding 45: According to the applicant, the proposed lots are consistent with the requirements of the **Canby Land Development and Planning Ordinance** as well as the North Holly Development Concept Plan (DCP). The DCP was created in part, to ensure logical and equitable development patterns, thus providing opportunities to individual landowners to develop their tracts of land independently with each property having a proportionate share of improvements adjacent to or within future subdivisions. Staff finds the applicant will meet the requirements of adequately providing building sites, utility easements, and access facilities necessary without unduly hindering the use of adjacent properties. Staff finds this request is consistent with the applicable standards of the Ordinance. Therefore, staff finds this criterion has been met.

C. Subdivision design and layout shall incorporate Low Impact Development techniques where possible to achieve the following:

1. **Manage stormwater through a strategy that emphasizes conservation and use of onsite natural features...to more closely mimic predevelopment hydrologic conditions.**
2. **Encourage the conservation of natural conditions and features, appropriate use of technologies and techniques, efficient layout of open space, streets, utility networks and other public improvements.**
3. **Minimize impervious surfaces.**
4. **Encourage the creation or preservation of native vegetation and permanent open space.**
5. **Clustering of dwellings where appropriate to achieve 1-4 above. Arrangement of clustered dwellings shall be designed to avoid linear development patterns.**

Finding 46: Proposed stormwater management will occur through drywells and on-site infiltration. The applicant states stormwater generated on-site will be infiltrated on site via public drywells; and private drywells will infiltrate the stormwater from roof drains and foundation drains of individual homes. The applicant contends that storm water pretreatment will reduce sediment and pollution loads on nearby receiving waterbodies. The City of Engineer is requesting that the applicant provide and demonstrate how runoff generated from impervious surfaces will be properly disposed of, this has been made a condition of approval (Refer to Exhibit K.1). In addition, Staff has provided conditions of approval requiring all stormwater management and other public improvements be constructed in compliance with all applicable Department of Environmental Quality (DEQ) requirements, Canby Public Works Design Standards, Clackamas County Water Environmental Services (WES) requirements, and State of Oregon requirements. Therefore, staff finds, as conditioned, this criterion has been met.

D. It must be demonstrated that all required public facilities and services are available, or will become available through the development, to adequately meet the needs of the proposed land division.

Finding 47: The applicant has stated that all necessary public facilities are available to serve the proposed residential development, as demonstrated by the preliminary utility plan submitted with the application, and as demonstrated in the adopted North Holly DCP. Storm drainage analysis was not submitted with this plan set. Staff has reviewed the plan set, and has provided conditions of approval requiring that the necessary public facilities be constructed to adequately meet the needs of the proposed land division. Therefore, staff finds, as conditioned, this criterion has been met.

E. The layout of subdivision streets, and pedestrian ways supports the objects of the Safe Routes to School Program by providing safe and efficient walking and bicycling routes within the subdivision...and all schools within a one-mile radius.

Finding 48: The applicant states in the narrative that the proposed street network for the subdivision will

have sidewalks as required in order to provide safe and efficient routes for walking and bicycling within, and to adjacent neighborhoods and schools. Additional improvements will be provided along the project frontage of N. Territorial and N. Locus which will include pedestrian and bicycle facilities where required. The proposed subdivision supports safe, multimodal transportation. Staff concur that the proposed street layout and sidewalks will provide for connectivity in support of the Safe Routes to School Program. Staff has provided conditions of approval requiring all necessary street and sidewalk construction, including planter strips, and street trees, to be in compliance with the applicable Public Works Design Standards, and the Planning Ordinance. Therefore, staff finds, as conditioned, this criterion has been met.

F. A Traffic Impact Study (TIS) may be required in accordance with Section 16.08.150.

Finding 49: The applicant has submitted a Traffic Analysis Letter (TAL), completed by Lancaster Mobley in February, 2021. The projected trip generation estimates were based on information published in the Trip Generation Manual, Institute of Transportation Engineers, 10th Edition. Refer to Exhibit F, herein incorporated by reference for more information on the TAL. The TAL was reviewed by DKS, the City's traffic engineering consultant on May 7, 2021.

Per the Traffic Study, the new residential development will generate a total of 188 average daily trips with 15 AM Peak Hour trips and 20 PM Peak Hour trips. The current AM and PM Peak Hour trips, prior to development are 1 and 1 trips respectively, which represents the one single-family residence on the subject site. Staff has provided conditions of approval regarding all necessary street and sidewalk construction to accommodate the new residential project. The applicant has provided the requisite traffic impact study in accordance with the Planning Ordinance. Therefore, staff finds, as conditioned, this criterion has been met.

Section 16.64 Subdivisions – Design Standards

16.64.010 Streets

A. Generally. The location, width and grade of streets shall be considered in relation to existing and planned streets, to topographical conditions, to public convenience and safety, and to the proposed use of land to be served by the streets. The street system shall assure an adequate traffic circulation pattern with intersection angles, grades, tangents, and curves appropriate for the traffic to be carried. Where location is not shown in a development plan, the arrangement of streets shall either:

1. Provide for the continuation or appropriate projection of existing principal streets in surrounding areas; or
2. Conform to a plan for the neighborhood approved or adopted by the commission to meet a particular situation where topographical or other conditions make continuance of conformance to existing street patterns impractical;
3. Minimum right-of-way and roadway width shall follow the requirements of the Canby Public Works Design Standards;
4. Consider opportunities to incrementally extend and connect local streets to provide for safe and convenient bike and pedestrian circulation.

Finding 50: Through the preapplication conference with planning, engineering and public works staff, the proposal was presented without major conflict captured in the preapplication meeting minutes. The applicant has suggested that the development proposal honors the North Holly

DCP while accommodating individual property interests. Staff generally agrees with this assertion. The project provides for the continuation and appropriate projection of existing principal streets, allows for requirements by Canby Public Works design standards and affords the opportunity to connect to existing streets. On the following page are Figures B.6 and B.7 which show the Concept Plan as compared to the proposed subdivision preliminary site plan.

Figure B.6 – Preliminary Hemmerling Plat

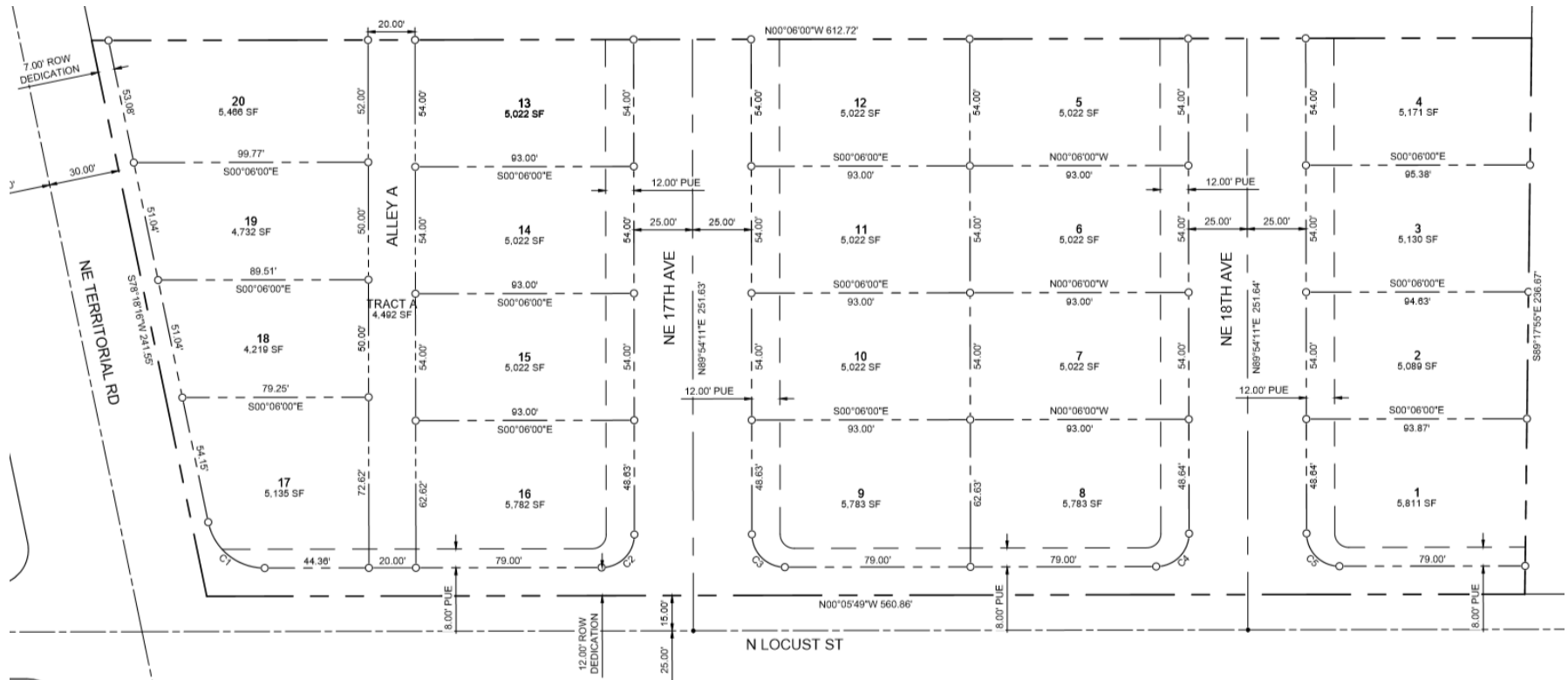
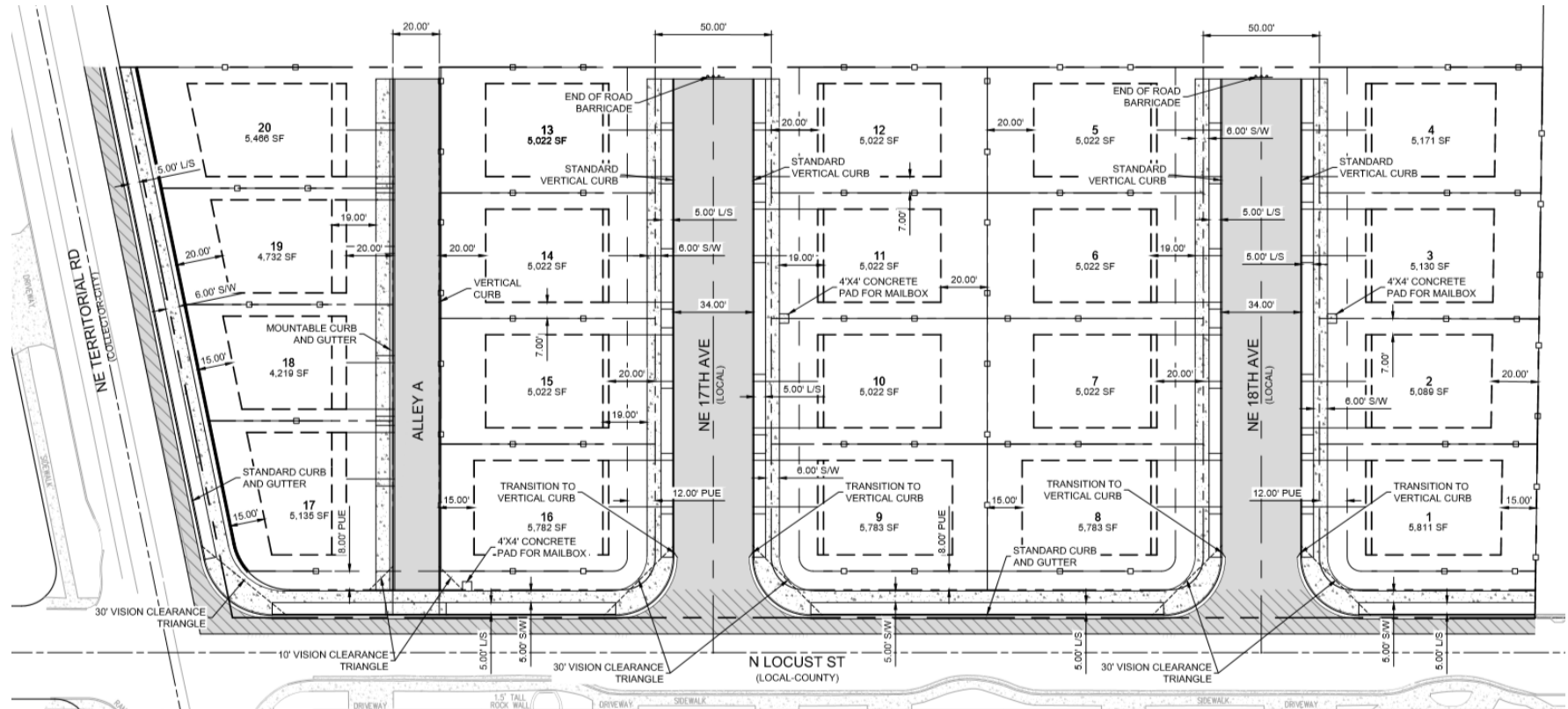


Figure B.7 – Preliminary Site Plan Hemmerling



B. Permeable Surfaces. Permeable surfacing alternatives and on-site stormwater management facilities, are encouraged for street improvements. Permeable surfacing and LID stormwater management facilities shall be constructed in accordance with the Canby Public Works Design Standards and the manufacturer's recommendations. Permeable surfacing includes, but is not limited to: paving blocks, turf block, pervious concrete, porous asphalt, and other similar approved materials. Alternative surfacing methods may be approved for public and private roads, road shoulders, pedestrian ways, driveways, and easement service roads unless site constraints make use of such materials detrimental to water quality. Use of permeable surfacing methods shall meet the imposed load requirements for fire apparatus, and shall be subject to review and approval by the Canby Public Works Department.

Finding 51: The applicant indicates that no permeable surfacing are proposed as part of the development. Staff finds that should alternative permeable surfaces be proposed that they shall meet the approval of the Public Works Department. This has been made a condition of approval.

C. Reserve Strips. Reserve strips or street plugs controlling the access to streets will not be approved unless such strips are necessary for the protection of the public welfare or of substantial property rights, or both, and in no case unless the control and disposal of the land composing such strips is placed within the jurisdiction of the city, under conditions approved by the commission.

Finding 52: No reserve strips are necessitated at this point in time. Should the Planning Commission find these are required as part of the development those could be added as conditions during the hearing.

D. Alignment. All streets other than minor streets or cul-de-sacs, shall, as far as possible, be in alignment with the existing streets by continuations of the center lines thereof. Jogs creating "T" intersections shall have centerline offsets of not less than one hundred fifty feet, unless it is found that community benefits of such an alignment outweigh its disadvantages.

Finding 53: The two new local streets have intersections that are offset 236 feet from each other on N. Locust. Staff finds these standards are met.

E. Future Extension of Streets. Where a subdivision adjoins unplatted acreage, streets which in the opinion of the commission should be continued in the event of the subdivision of the acreage, will be required to be provided through to the boundary lines of the tract. Reserve strips, street plugs and temporary turnaround areas may be required to preserve the objectives of street extensions. Reserve strips and street plugs shall be deeded to the city prior to final plat approval. The Planning Commission may require that the costs of title insurance and recordation fees, if any, for such areas be borne by the subdivider. If, in the opinion of the city engineer, a traffic pedestrian, or safety hazard temporarily exists by the construction of a dead-end street, he may direct that a barricade of adequate design be installed at the developer's expense as one of the required improvement items for the subdivision.

Finding 54: The two local streets as demonstrated in the applicant's preliminary subdivision plan and site plan, indicate termini at the unplatted acreage to the west. This property is currently not in the Urban Growth Boundary or within the City limits of Canby. As an advisory finding, Canby Fire District often requires temporary turnarounds on projects that do not have through streets. Staff has included a condition that requires coordination and consistency with the

Canby Fire District so that fire, life, safety are provided for.

F. Intersection Angles. Streets shall intersect one another at an angle as near to a right angle as possible, and no intersections of streets at angles of less than thirty degrees will be approved unless necessitated by topographic conditions. When intersections of other than ninety degrees are unavoidable, the right-of-way lines along the acute angle shall have a minimum corner radius of twelve feet. All right-of-way lines at intersections with arterial streets shall have a corner radius of not less than twelve feet.

Finding 55: The preliminary street plans appears to indicate intersections at right angles. Staff finds this criterion is met.

G. Existing Streets. Whenever existing streets, adjacent to or within a tract, are of inadequate width, dedication of additional right-of-way shall be provided at the time of subdivision.

Finding 56: As part of the subdivision approval, the applicant shall dedicate additional right-of-way to N. Locust Street and NE Territorial Road. This has been made a condition of approval.

H. Half Streets. Half streets, while generally not acceptable, may be approved where essential to the reasonable development of the subdivision, when in conformity with the other requirements of these regulations, and when the commission finds it will be practical to require the dedication of the other half when the adjoining property is subdivided. Whenever a half street is adjacent to a tract to be subdivided, the other half of the street shall be platted within such tract. Reserve strips, street plugs, special signs and barricades may be required to preserve the objectives of half streets.

Finding 57: Not applicable. No half streets are proposed.

I. Cul-de-sacs. A cul-de-sac shall only be allowed when environmental or topographical constraints, existing development patterns, or compliance with other standards in this code preclude street extension and through circulation. When cul-de-sacs are provided, all of the following shall be met:

Finding 58: Not applicable. No cul-de-sacs are proposed.

J. Marginal Access Streets. Where a subdivision abuts or contains an existing or proposed arterial street, the commission may require marginal access streets, through lots with suitable depth, screen planting contained in a non-access reservation along the rear 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.

Finding 59: Not applicable. The subject property does not contain or abut an arterial street.

K. Alleys.

1. Alleys shall be provided to commercial and industrial districts, unless other permanent provisions for access to off-street parking and loading facilities are made as approved by the commission.

2. Alleys shall be provided within residential subdivisions when streets are designed to meet the narrow "green" street standards in the Canby Public Works Design Standards. Visitor parking areas may be required by the city to mitigate the lack of on-street parking.

3. When alleys are provided as part of a new residential subdivision, streets shall be designed

in accordance with the narrow “green” street standards in the Canby Public Works Design Standards. Visitor parking areas may be required by the city to mitigate the lack of on-street parking.

4. Alley intersection corners shall have a minimum radius of ten feet.

Finding 60: A private alley is proposed to provide access to Lots 17 through 20. The applicant has indicated the willingness to provide fire suppression sprinklers to these homes if access has been deemed an issue for the Canby Fire District. Adequate parking shall be provided as part of the individual lot approval. This has been made a condition of approval for lots 17 through 20.

L. Street Names. No street name shall be used which will duplicate or be confused with the name of existing streets except for extensions of existing streets. Street names and numbers shall conform to the established pattern in the city and the surrounding area and shall be subject to the approval of the commission.

Finding 61: The proposed streets names are consistent with the City’s street naming conventions.

M. Planting Easements. The Planning Commission may require additional easements for planting street trees or shrubs.

Finding 62: A planter strip shall be incorporated within the curb and sidewalk infrastructure as described in Public Works Design Standards and the city engineer.

N. Grades and Curbs. Grades shall not exceed seven percent on arterials, ten percent on collector streets, or fifteen percent on any other street. In flat areas allowance shall be made for finished street grades having a minimum slope of .5 percent. Centerline radii of curves shall not be less than three hundred feet on major arterials, two hundred feet on secondary arterials, or one hundred feet on other streets, unless specifically approved by the City, and shall be to an even ten feet.

Finding 63: These minimum standards have been made a condition of approval.

O. Streets Adjacent to Highway 99-E or Railroad Right-of-Way. Wherever the proposed subdivision contains or is adjacent to a railroad right-of-way or Highway 99-E, provisions may be required for a street approximately parallel to and on each side of such right-of-way at a distance suitable for the appropriate use of the land between the streets and the railroad or Highway 99-E. The distances shall be determined with due consideration of cross streets at a minimum distance required for approach grades to a future grade separation and to provide sufficient depth to allow screen planting along the railroad right-of-way. (Ord. 740 section 10.4.40(C)(1), 1984; Ord. 1043 section 3, 2000; Ord 1237, 2007; Ord. 1338, 2010)

Finding 64: Not applicable to this development proposal.

16.64.015 Access

A. 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 (See appendix G of the Transportation System Plan).

Finding 65: Not applicable to this development proposal.

B. All proposed roads shall follow the natural topography and preserve natural features of the site as much as possible. Alignments shall be planned to minimize grading.

Finding 66: Grading considerations will be made during the subdivision mass grading and site preparation procedures. Staff finds this criterion will be met as conditioned and during the pre-construction phase of the project.

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

Finding 67: These standards have been conditioned. The driveway spacing requirements shall be addressed as time of building permit for an individual lot. The applicant's Transportation Analysis Letter indicates that sight obstructing vegetation, fencing or other materials shall be removed and not placed within the approaches on the private alley.

D. The road system shall provide adequate access to buildings for residents, visitors, deliveries, emergency vehicles, and garbage collection.

Finding 68: The proposed road system appears to effectively accommodate these uses. Special considerations for the fire department have been previously mentioned in this report and are conditioned as appropriate.

E. Streets shall have sidewalks on both sides. Pedestrian linkages should also be provided to the peripheral street system.

Finding 69: The preliminary plans accommodate for sidewalks on both sides of the street with the exception of the private alley which is consistent with the Public Works Design standards. Staff finds this criterion is met.

F. Access shall be consistent with the access management standards adopted in the Transportation System Plan. (Ord. 1043 section 3, 2000)

Finding 70: The subject property will take direct access via NE Territorial Road, a City owned and maintained facility functionally classified as a collector. The applicant is required to provide improvements and dedications as part of the subdivision approval. See the City's Traffic Engineering Comments (Exhibit K.1).

16.64.020 Blocks.

A. Generally. The lengths, widths and shapes of blocks shall be designed with due regard to providing adequate building sites suitable to the special needs of the type of use contemplated, needs for access, circulation, control and safety of street traffic and limitations and opportunities of topography.

B. Sizes. Block length shall be limited to 300 feet in the C-1 zone, 400 feet in residential zones, 600 feet in all other zones, except for 1,000 feet on arterials. Exceptions to this prescribed block standard shall be permitted where topography, barriers such as railroads or arterial roads, or environmental constraints prevent street extension. The block depth shall be sufficient to provide two lot depths appropriate to the sizes required by Division III. (Ord. 740 section 10.4.40(C)(2), 1984; Ord. 1043 section 3, 2000; Ord. 1076, 2001; Ord. 1338, 2010)

Finding 71: The block configuration appears to meet the needs of the contemplated uses. The longest

block length according to the preliminary plans is approximately 255 feet. Staff finds the block length standards are met.

16.64.030 Easements.

A. Utility Lines. Easements for electric lines or other public utilities are required, subject to the recommendations of the utility providing agency. Utility easements twelve feet in width shall be required along all street lot lines unless specifically waived. The commission may also require utility easements alongside or rear lot lines when required for utility provision. The construction of buildings or other improvements on such easements shall not be permitted unless specifically allowed by the affected utility providing agency.

Finding 72: A 12-foot wide public utility is required in conformance with Chapter 2 of Canby Public Work Design Standards, dated June 2012. This has been made a condition of approval.

B. Watercourses. Where a subdivision is traversed by a watercourse, drainage way, channel or stream, there shall be provided a storm water easement or drainage right-of-way conforming substantially to the lines of such watercourse, and such further width as will be adequate for the purpose of assuring adequate flood control. Streets parallel to watercourses may be required.

Finding 73: No identified watercourses, drainage ways, channels or streams are identified on the subject property.

C. Pedestrian Ways. In any block over six hundred feet in length, a pedestrian way or combination pedestrian way and utility easement shall be provided through the middle of the block. If unusual conditions require blocks longer than one thousand two hundred feet, two pedestrian ways may be required. When essential for public convenience, such ways may be required to connect to cul-de-sacs, or between streets and other public or semipublic lands or through green way systems. Sidewalks to city standards may be required in easements where insufficient right-of-way exists for the full street surface and the sidewalk. All pedestrian ways shall address the following standards to provide for the safety of users:

1. Length should be kept to a minimum and normally not in excess of two hundred feet;
2. Width should be maximized and shall not be below ten feet. For pathways over one hundred feet long, pathway width shall increase above the minimum by one foot for every twenty feet of length;
3. A minimum of three foot-candles illumination shall be provided. Lighting shall minimize glare on adjacent uses consistent with the outdoor lighting provisions in section 16.43 of this code;
4. Landscaping, grade differences, and other obstructions should not hinder visibility into the pedestrian way from adjacent streets and properties. Fencing along public pedestrian ways shall conform to the standards in Section 16.08.110;
5. Surrounding land uses should be designed to provide surveillance opportunities from those uses into the pedestrian way, such as with the placement of windows;
6. Exits shall be designed to maximize safety of users and traffic on adjacent streets; and
7. Use of permeable surfacing materials for pedestrian ways and sidewalks is encouraged whenever site and soil conditions make permeable surfacing feasible. Permeable surfacing

includes, but is not limited to: paving blocks, turf block, pervious concrete, and porous asphalt. All permeable surfacing shall be designed, constructed, and maintained in accordance with Canby Public Works Design Standards and the manufacturer's recommendations. Maintenance of permeable surfacing materials located on private property are the responsibility of the property owner.

Finding 74: No proposed blocks over 600 feet in length. The proposed development contains sidewalks used for pedestrian mobility.

D. Developments that abut the Molalla Forest Road multi-use path shall provide a pedestrian/bicycle access to the path. The city may determine the development to be exempt from this standard if there is an existing or planned access to the path within 300 feet of the development.

Finding 75: Not applicable to this development proposal.

~~E. Solar Easements. Subdividers shall be encouraged to establish solar easements and utilize appropriate solar design in their development proposals. Solar easements shall be shown on the final plat and in the deed restrictions of the subdivision. The Planning Commission may require the recordation of special easements or other documents intended to protect solar access. (Ord. 740 section 10.4.40(C)(3), 1984; Ord. 1043 section 3, 2000; Ord. 1237, 2007; Ord. 1338, 2010; Ord. 1340, 2011)~~

Finding 76: These standards were revoked via ordinance and are no longer applicable to subdivisions.

16.64.040 Lots.

A. Size and Shape. The lot size, width, shape and orientation shall be appropriate for the location of the subdivision and for the type of development and use contemplated. To provide for proper site design and prevent the creation of irregularly shaped parcels, the depth of any lot or parcel shall not exceed three times its width (or four times its width in rural areas) unless there is a topographical or environmental constraint or an existing man-made feature such as a railroad line.

Finding 77: The applicant is proposing lots to allow for single family homes while accommodating the density standards as prescribed by the R-1.5 zone. The lot size and shape are appropriate for this type of subdivision.

B. Minimum Lot Sizes:

1. Lot sizes shall conform to requirements of Division III unless the applicant chooses to use an alternative lot layout per subsection (3) below to accommodate interconnected and continuous open space and or other natural resources. In this case, the average minimum lot size may be reduced by 5,000 square feet after subtracting access tracts. Overall development densities shall comply with the underlying maximum density allowed by the zone.

2. In areas that cannot be connected to sewer trunk lines, minimum lot sizes shall be greater than the minimum herein specified if necessary because of adverse soil structure for sewage disposal by septic systems. Such lot sizes shall conform to the requirements of Clackamas County for sewage disposal unless provisions are made for sanitary sewers.

Finding 78: The average lot area proposed is 5,165 square feet which meets the average requirement. As mentioned previously in this staff report, Finding 37, the applicant is requesting a major variance to the minimum yard requirements. At the time of the creation of this staff report,

staff are not in support of the variance request. Should the request be denied and made a final decision as part of this land use package, the standard setbacks shall apply. Should the applicant or builder in the future request a variance to these standards that will be decided on through a case-by-case basis. Additional findings regarding the variance request are presented later in this report.

3. Alternative lot layout. Applicants may deviate from standard lot setbacks and dimensions to accommodate dedicated interconnected open space or other natural areas. Clustered housing, lot-size averaging, and a mixture of approaches where building lots can be grouped into a smaller portion of the total development, reserving the remainder for open space or other natural areas. Alternative development layouts shall not exceed the underlying maximum density allowed by the zone.

4. When using the alternative lot layout option, the following must be met:

- a. The arrangement of the alternative lot layout shall be designed to avoid development forms commonly known as linear, straight-line or highway strip patterns.
- b. To the maximum extent possible, open space and natural areas, where used, shall be continuous, interconnected, and concentrated in large usable areas.
- c. Where possible, open space shall be connected to adjacent off-site open space areas.
- d. Open space and natural areas shall be maintained permanently by the property owner or the property owner's association.

Finding 79: Alternative lot layouts were not requested as part of this subdivision request and are not applicable.

C. Lot Frontage. All lots shall meet the requirements specified in Division III for frontage on a public street, except that the Planning Commission may allow the creation of flag lots, cul- de-sac lots and other such unique designs upon findings that access and building areas are adequate. Lots that front on more than one major street shall be required to locate motor vehicle accesses on the street with the lower functional classification.

Finding 80: Lots 17-20 have frontage along NE Territorial Road. These lots cannot take access directly onto this road and are required to take access via a new commercial approach onto N. Locust Street. Staff finds these criteria are met.

D. Double Frontage. Double frontage or through lots should be avoided except where essential to provide separation of residential development from traffic arteries or to overcome specific disadvantages of topography and orientation.

Finding 81: No proposed lots will have double frontage save the properties on the alley which will only have real and lawful access via the private alleyway.

E. Lot Side Lines. The side lines of lots shall run at right angles to the street upon which the lots face, or on curved streets they shall be radial to the curve, unless there is some recognizable advantage to a different design.

Finding 82: Staff finds that the configuration largely conforms to this standard.

F. Resubdivision. In subdividing tracts into large lots which at some future time are likely to be resubdivided, the location of lot lines and other details of the layout shall be such that resubdivision may readily take place without violating the requirements of these regulations and without interfering with the orderly development of streets. Restriction of building locations in relationship to future street rights-of-way shall be made a matter of record if the commission considers it necessary.

Finding 83: Current zoning standards would not allow for resubdivision at this time; staff finds this criterion is not applicable.

G. Building Lines. If special building setback lines are to be established in the subdivision plat, they shall be shown on the subdivision plat or included in the deed restrictions. This includes lots where common wall construction is to be permitted between two single-family dwellings.

Finding 84: No special setbacks are proposed.

H. Potentially Hazardous Lots or Parcels. The commission shall utilize its prerogative to modify or deny a tentative plat or partition map where it is found that a proposed lot or parcel is potentially hazardous due to flooding or soil instability.

Finding 85: The subject property is not within a mapped Special Flood Hazard Area according to FIRM for this area. No known hazards exist; this standard is not applicable.

I. Flag Lots or Panhandle-shaped Lots. The commission may allow the creation of flag lots provided that the following standards are met:

Finding 86: No flag lots or panhandle-shaped lots are proposed with the development request.

J. Designation of Lots as 'Infill Home' Sites. The Planning Commission may require that homes built on one or more lots adjacent to existing development be subject to any or all of the requirements of 16.21.050 - Infill Homes. Furthermore, for subdivisions where the parent parcel(s) is less than two acres in size, the Planning Commission may require that all homes built on lots in the subdivision be subject to any or all of the requirements of 16.21.050. These requirements are to be shown on the subdivision plat or included in the deed restrictions. (Ord. 740 section 10.3.05(F) and 10.4.40(C)(4), 1984; Ord. 890 section 54, 1993; Ord. 1043 section 3, 2000; Ord. 1107, 2002; Ord. 1111 section 6, 2003; Ord. 1338, 2010)

Finding 87: These standards are not applicable to this proposal.

16.64.050 Parks and recreation. Subdivisions shall meet the requirements for park, open space and recreation as specified in Division VI.

Finding 88: The proposed development was not inventoried for parks and open space as part of the N. Holly DCP area. Construction of homes will require an SDC contribution to parks as part of the building permit process.

16.64.070 Improvements.

Finding 89: This section largely provides guidance and requirements for subdivision post approval. The applicant shall comply with applicable portions of the 16.64.070.

IV. Public / Agency Comments

Notice of this application and opportunity to provide comment was mailed to owners and residents of lots within 500 feet of the subject property and to all applicable public agencies. Staff has received comments from:

- City Engineer
- Canby Utility

V. Conclusion

Staff has reviewed the applicant's narrative and submitted application materials and finds that this Subdivision application conforms to the applicable review criteria and standards, subject to the applicable conditions of approval noted in Section VI of this report.

VI. Conditions of Approval

A. Process / Series

1. Comprehensive Plan Map Amendment (CPA 20-01) and Zone Change (ZC 20-01) must be free of appeals and final land use decisions as defined by ORS 197.015 prior to this subdivision gaining final approval. Any action on behalf of the applicant that invalidates or disqualifies CPA 20-01 and ZC 20-01 shall invalidate this subdivision approval. (Canby Planning – EF)
2. The applicant shall address any requisite changes to the plat or submittal that invalidate or otherwise prevent the subdivision plat as a result of a denied variance. This may require subsequent public hearings if changes proposed are substantial.

B. Public Improvements

3. Prior to the start of any public improvements work, the applicant shall provide preliminary construction plans to City of Canby Planning for initial redlines. A subsequent Pre-Construction Conference will be allowed once plans are sufficiently corrected by the reviewing agencies. (Canby Planning – EF)
4. All site development shall comply with all applicable City of Canby Public Works Design Standards. (City Engineer – HI/Public Works – JN)

Fees/Assurances:

5. All public improvements are typically installed prior to the recordation of the final plat. If the applicant wishes to forgo construction of any portion of the public improvements until after the recordation of the final plat, then the applicant shall provide the City with appropriate performance security (subdivision performance bond or cash escrow) in the amount of 125% of the cost of the remaining public improvements to be installed. (City Engineer – HI/Public Works – JN/Canby Planning - EF)
6. If the applicant chooses to provide a subdivision performance bond for some or all of the required public improvements, the applicant shall obtain a certificate from the city engineer that states:

- a. The applicant has complied with the requirements for bonding or otherwise assured completion of required public improvements.
 - b. The total cost or estimate of the total cost for the development of the subdivision is to accompany a final bid estimate of the subdivider's contractor if a contractor has been engaged to perform the work. The certificate of the total cost estimate shall be approved by the city engineer. (City Engineer – HI)
- 7. The applicant shall guarantee or warranty all public improvement work with a one (1) year Subdivision Maintenance Bond following written notice of acceptance by the city to the developer in accordance with Section 16.64.070(P) of the *Ordinance*. (Public Works – JN/Canby Planning – EF)
- 8. The applicant shall pay the city of Canby Master Fee authorized engineering plan review fee equal to 2% of public improvement costs prior to the construction of public improvements (approval of construction plans). (Canby Planning – EF)
- 9. All interior street corners shall have ADA ramps and at least one ADA ramp across the street to facilitate pedestrian crossings and shall be constructed as part of this development in conformance with PROWAG guidelines. (City Engineer – HI)

C. Streets, Easements, Signage & Striping:

- 10. The applicant shall construct / deed the entire remaining portions of the half right-of-way of NE Territorial Road. Half street improvements shall include curb, a minimum paved width of 46 feet, 6 feet wide concrete sidewalks, 6 feet wide bike lane, ADA ramps, streetlights, and utility extensions as needed. A minimum of a 12-foot wide public utility easement or width as required by Canby Utility abutting the right-of-way is also required. (City Engineer – HI)
- 11. N. Locust Street will become a City Street on May 6, 2021 and is classified a local street. Half street improvements will be required along the entire site frontage with a minimum ultimate half right-of-way dedication of 25 feet. The public improvements shall include curb, gutter, total paved surface of 34 feet, 5-foot wide planter with street trees, 6-foot wide sidewalks, streetlights and utilities in conformance with Chapter 2 of the City of Canby Public Works Design Standards, dated December 2019. A 12 feet wide public utility easement will also be required.
- 12. NE 17th and 18th Ave within the subdivision shall be designed to City local street standards with 34-foot paved width, formed concrete curbs and gutters, 4.5-foot wide planter strip with street trees, 6-foot wide concrete sidewalks, street lights and utilities in conformance with Chapter 2 of the City of Canby Public Works Design Standards, dated December 2019. The City Engineer shall determine compliance with this condition. (City Engineer – HI)
- 13. The proposed alley shall be constructed with 20 feet wide paved surface, curb and gutter on both sides and 5 feet wide curb tight sidewalk on one side of the alley. The access on N Locust Street shall have a commercial driveway approach consisting of a minimum of 6" concrete thickness with reinforcements or welded wire mesh fabric as referenced on City of Canby standard drawing No 104. (City Engineer – HI)

14. All interior street names and traffic signs shall be installed by the developer as part of this development. The developer's design engineer will be required to submit as part of the construction plans, a signing and striping plan. The City may supply the required traffic and street name signs based on a mutually agreed cost. (City Engineer – HI)
15. Temporary turnarounds will be required at the terminus of the proposed alley, NE 17th Ave and NE 18th Ave as required by the Canby Fire District.
16. As part of the final design, the developer's design engineer shall provide a minimum of 200-foot future centerline street profile design to assure future grades can be met. The City Engineer shall determine compliance with this condition. (City Engineer – HI)
17. Sight distance by a registered professional engineer shall be verified at all access points and documented as per the Transportation Analysis Letter, dated April 2021 and prepared by DKS Associates. (Planning – EF)

D. Grading and Erosion Control/Demolition:

18. The applicant shall obtain an Erosion Control permit from the City of Canby prior to any on-site disturbance. (City Engineer/Canby Public Works – HI)
19. The applicant shall obtain a demolition permit from Clackamas County, (with a release for permit from Canby Planning) prior to demolition of on-site existing structures. (City Engineer – HI/Canby Public Works/Canby Planning – EF)
20. The applicant shall obtain a grading permit from Clackamas County prior to any on-site disturbance and provide the City proof of permit. (Clackamas County/Coordination with City Public Works – JN)

E. Street Trees:

21. The applicant shall be responsible for selecting street trees from the City approved tree list. The developer shall install street trees at their own cost. Street trees shall be provided with (2) years of city maintenance, prior to final plat recordation. Property owners shall take over all responsibility of said street trees after the two (2) year period lapses. Canby Public Works in conjunction with Canby Planning, shall determine compliance with this condition. (Public Works - JN / Canby Planning - EF)

F. Sewer and Storm Drainage:

22. Sanitary sewer lines exist on NE Territorial Road. The applicant shall be required to extend and install a minimum 8-inch public sanitary sewer line to serve the development. The City Engineer and Public Works shall determine compliance with this condition. (City Engineer – HI/Public Works - JN)
23. All private storm drainage discharge shall be disposed on-site, design methodology shall be in conformance with the City of Canby Public Works Design Standards, February 2020. The City Engineer and Public Works shall determine compliance with this condition. (City Engineer – HI/Public Works - JN)

24. The applicant shall be required to submit a Storm Drainage Report that provides detailed analysis as part of the storm report. The developer's engineer shall demonstrate how the storm runoff generated from the new impervious surfaces will be disposed of. If drywells (UIC) are used as a means to discharge storm runoff from the private streets, they must meet the following criteria:
 - a. The UIC structures location shall meet at least one of two conditions:
 - i. The vertical separation distance between the UIC and seasonal high groundwater is more than 2.5 feet or;
 - ii. The horizontal separation distance between the UIC and any water well is a minimum of 267 feet in accordance with the City of Canby Stormwater master Plan, Appendix "C", Groundwater Protectiveness Demonstration and Risk Prioritization of Underground Injection Control (UIC) Devices.
25. The storm drainage report shall be in conformance with the requirements as stated in Chapter 4 of the City of Canby Public Works Design Standards, dated February 2020. The City Engineer and Public Works shall determine compliance with this condition. (City Engineer – HI/Public Works JN)
26. The applicant shall be responsible for the abandonment of any existing on-site domestic or irrigation wells in conformance with OAR 690—220-0030. A copy of the Oregon Water Rights Department (OWRD) Certificate shall be submitted to the City. The City Engineer and Public Works shall determine compliance with this condition (City Engineer – HI/Public Works - JN)
27. The applicant shall be responsible for the abandonment of any existing on-site sewage disposal system, in conformance with DEQ and Clackamas County Water Environmental Services (WES) regulations. A copy of the septic tank removal certificate shall be submitted to the City. The City Engineer and Public Works shall determine compliance with this condition. (City Engineer – HI/Public Works - JN)

G. Water & Electric Utility Services

28. Water services shall be constructed in conformance with Canby Utility's standards and specifications. Canby Utility, in conjunction with the City Engineer shall determine compliance with this condition. (City Engineer – HI/Canby Utility-JS)
29. The applicant shall submit drawings for all project water lines to Canby Utility for review and approval. Submittal shall meet the requirements of Canby Utility as well as the State of Oregon's requirements. Canby Utility shall determine compliance with this condition. (Canby Utility – JS)
30. Canby Utility, in coordination with the applicant will determine the electrical system layout to serve the subdivision. This shall include required streetlight placement which shall be represented on a utility service page of the construction plans for the subdivision by the applicant. Canby Utility shall determine compliance with this condition. (Canby Utility – JS)
31. The applicant shall schedule all water and electric utility construction and inspections at least 15-days in advance. Contact Canby Utility Operations Field Supervisor at 503-263-4331.
32. The applicant shall be required to provide 4-inch Schedule 40 PVC sleeves for all road crossings for DirectLink services where applicable. The applicant shall work with DirectLink for coordination of all sleeves and required open trenching scheduling for said communication

facilities. DirectLink shall determine compliance with this condition. (Contact DirectLink at 503-266-8242)

H. Fire Protection

33. All fire protection apparatus's such as fire hydrants placement and location shall be placed in accordance with the requirements of the Canby Fire District codes and regulations (Oregon Fire Code 2019, Chapter 33). The fire hydrants are not to be spaced further than 300 feet of travel distance. Canby Fire District shall determine compliance with all fire regulations. (Canby Fire District – ME)
34. Fire protection if required for sprinklers in lieu of other mitigation measures shall be required at the discretion of Canby Fire District for lots 17, 18, 19 and 20.
35. The applicant shall contact the Canby Fire District for review and inspection of placement of all fire hydrants, and placement of any and all flammable construction materials on-site, prior to placement of said materials. Canby Fire District shall determine compliance with all fire regulations. (Canby Fire District – ME)
36. Building Address shall be marked at the beginning of construction with a lot marker if needed for each lot under construction. Canby Fire District shall determine compliance with all fire regulations. (Canby Fire District – ME)
37. All fire hydrants shall all have Storz quick adapter couplings on the steamer port as required by Canby Utility. A Blue reflector will be in the center of the road to indicate the hydrant is in the vicinity. Canby Fire District shall determine compliance with all fire regulations. (Canby Fire District – ME)
38. Landscaping shall be low growing vegetation so as not to block visibility of hydrants, or addressing. Canby Fire District shall determine compliance with all fire regulations. (Canby Fire District – ME)
39. The applicant shall provide a PDF of approved prints for the Canby Fire District Pre-Fire Plan program of the development. Canby Fire District shall determine compliance with all fire regulations. (Canby Fire District – ME)
40. All Fire Lanes shall be painted red on curb with – “No Parking Fire Lane” in white - and signage, in accordance with the Oregon Fire Code 2019. Fire Lanes will be determined while on site for any access issues with Canby Fire and the builder. Canby Fire District shall determine compliance with all fire regulations. Fire land shall be permanently striped on the ‘flag’ portion of all flag lots. (Canby Fire District – ME)
41. Fire access shall always be part of the construction plan for the development. Canby Fire District shall determine compliance with all fire regulations. (Canby Fire District – ME)

I. Post Office (mailbox locations)

42. The applicant shall coordinate with USPS staff at Canby USPS for mailbox locations.

J. Final Plat:

43. A final plat application shall be accompanied with a complete and detailed narrative that demonstrates compliance with all conditions of approval. Accompanying diagrams, letters,

communications and other objective evidence shall be provided to bolster any claims that are not easily verified by the narrative itself. The narrative shall address:

- a. How the condition is met;
 - b. Who is responsible for verifying the condition;
 - c. When it is met; or if not met at the time of final plat, an ETA on completion.
44. The applicant shall apply for final plat approval at the City, and pay any applicable city fees associated with final plat review. Prior to the recordation of the final plat at Clackamas County, the plat must be approved by the City. If deemed necessary, the City will distribute the final plat to other applicable local service providers for comment prior to signing off on the final plat. Canby Planning shall determine compliance with this condition. (Canby Planning – EF)
 45. All public improvements or submittal of necessary performance security assurances shall be made prior to the signing and release of the final plat for filing of record. Canby Planning shall determine compliance with this condition. (Canby Planning – EF)
 46. The final plat shall conform to the necessary information and requirements of CMC 16.68.030, 16.68.040(B), and 16.68.050. The City Engineer or County Surveyor shall verify that these standards are met prior to the recordation of the subdivision plat. (Canby Planning – EF/City Engineer - HI)
 47. All “as-built plans” of City public improvements installed shall be filed with Canby Public Works within sixty (60) days of completion and acceptance of the improvements. (City Engineer – HI/Public Works - JN)
 48. Clackamas County Surveying reviews pending subdivision plat documents for Oregon Revised Statutes and county requirements. A subdivision final plat prepared in substantial conformance with the approved tentative plat must be submitted to the City for approval within two years of approval of the tentative plat, or formally request an extension of up to 6-months with a finding of good cause. Canby Planning shall determine compliance with this condition. (Canby Planning – EF)
 49. The applicant shall record the final plat at Clackamas County within 6-months of the date of the signature of the Planning Director. Canby Planning shall determine compliance with this condition. (Canby Planning – EF)
 50. The applicant shall assure that the City is provided with a copy of the final plat in a timely manner after it is recorded at Clackamas County, including any CC&Rs recorded in conjunction with the final plat. Canby Planning shall determine compliance with this condition. (Canby Planning – EF)
 51. The City shall assign addresses for each newly created subdivision lot and distribute those addresses to the developer, and other applicable agencies accordingly prior to home permitting. Canby Planning shall determine compliance with this condition. (Canby Planning – EF)

K. Easements

52. All public utility easements traversing the newly created residential lots related to water, sewer, electric, and gas service shall be noted on the final plat. Canby Planning in conjunction with the

City Engineer shall determine compliance with this condition. (Canby Planning – EF / City Engineer – HI)

L. Residential Building Permit(s):

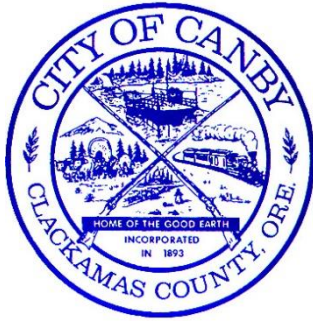
53. Construction of all required public improvements and the recordation of the Final Plat shall be completed prior to the issuance of building permits and comply with all applicable City Public Works Design Standards. The City Engineer and Public Works shall determine compliance with this condition. (City Engineer – HI / Public Works – JN/Canby Planning –EF)
54. The homebuilder shall apply for and submit a City of Canby Site Plan Permit application and Clackamas County Building permit for each home, and satisfy the residential design standards of CMC 16.21. Canby Planning shall determine compliance with this condition. (Canby Planning – EF)
55. All residential construction shall be in accordance with applicable Public Works Design Standards. Public Works shall determine compliance with this condition. (Public Works – JN)
56. Clackamas County Building Codes division will provide structural, electrical, plumbing, and mechanical plan review and inspection services for all new home construction. The applicable county building permits are required prior to the construction of a new single-family residence. (Canby Planning – EF)
57. Per the Canby Public Works Design Standards, minimum residential driveway widths at the inside edge of the sidewalk shall be 12-feet and the maximum width shall be 24 feet, with an allowed exception of 28 feet for a home with 3 or more garages. Canby Planning shall determine compliance with this condition. (Canby Planning – EF)
58. All usual System Development Charges (SDC) shall be collected with each new home permit within this development. Canby Planning shall determine compliance with this condition. (Canby Planning – EF)

M. Fencing

59. Placement of residential fences along any front or street-adjacent side yard property line are permitted to be a maximum of 3-feet, 6-inches in height, and must not exceed 30-inches in height when within the 30-foot Vision Clearance Triangle for all corner lots, and Vision Clearance Area of ten (10) feet from driveways to the street. Perimeter and rear yard fencing is not to exceed six (6) feet in maximum height. Please reference Section 16.08.110 of the Canby Land Development and Planning Ordinance, Chapter 16, of the Municipal Code. (Canby Planning – EF).

N. Parking

60. The applicant shall demonstrate that lots 17, 18, 19 and 20 can adequately accommodate guests as part of the off-street parking provided on the property. This should demonstrate that the driveways adequately accommodate 2.0 vehicles. This item will be addressed at the pre-construction phase and at individual building permit submittals.



City of Canby

File #: VAR 21-02 – Hemmerling Major Variance

HEARING DATE: May 10, 2021
STAFF REPORT DATE: May 3, 2021
TO: Planning Commission
STAFF: Erik Forsell, Associate Planner

Applicant Request

The applicant requests approval of a major variance. The applicant states the following verbatim as part of the request:

The Contract Purchaser is requesting variance approvals in order to provide more flexibility in the building area/dimensions (i.e. building envelop). Specifically, the Contract Purchaser/Applicant is requesting a variance to reduce the interior setbacks from 7 feet in wide to 5 feet in width (28.5% reduction to the required standard) for the interior lot setbacks on Lots #17, #18, #19 and #20. The Contract Purchaser is also requesting a reduction in the rear setback of Lot #18 from (20-feet for two story structures to 15-feet for two story structures – Staff’s language to provide clarification to the request). This represents a 25% reduction to the required standard. (Page D-34, Completeness Response Submittal).

Staff Recommendation

Based on the application submitted and the facts, findings, and conclusions of this report, staff recommends that the Planning Commission move to **Deny** VAR 21-02. Facts and findings regarding this determination are detailed below. Should the Planning Commission move to deny the application, the remainder of the approvals could move forward (CPA 21-01 / ZC 21-01 and SUB 21-02).

16.53.010 Minor Variances.

16.53.015 Minor Sign Variances.

Finding 90: The applicant is not requesting a minor variance or a minor sign variance. These standards are not applicable.

16.53.020 Major Variances.

These provisions are intended to prescribe procedures which allow variations from the strict application of the regulations of this title, by reason of exceptional circumstances and other specified conditions:

A. Authorization. The commission may authorize variances from the requirements of this title, other than Division VII, where it can be shown that, owing to special and unusual circumstances related to

a specific piece of property, the literal interpretation of the regulations would cause an undue or unnecessary hardship, except that no variance shall be granted to allow the use of property for purposes not authorized within the district in which the proposed use would be located. In granting a variance, the commission may attach conditions which it finds necessary to protect the best interests of the surrounding property or neighborhood and to otherwise achieve the purpose of this title.

Finding 91: The Planning Commission, should it accept the variance request and approve it, may impose conditions deemed appropriate to the request.

B. Standards and Criteria. A variance may be granted only upon determination that all of the following conditions are present:

1. Exceptional or extraordinary circumstances apply to the property which do not apply generally to other properties in the city and within the same zone. These exceptional or extraordinary circumstances result from tract size or shape, topography or other circumstances over which the owners of the property have no control. Actions of previous owners do not constitute other exceptional or extraordinary circumstances; and

Finding 92: The applicant states that “lots abutting NE Territorial Road create irregularly shaped building envelopes that limit the size and type of building products that can be placed on the individual lots.”

The code states that the variance must consider “circumstances (that) apply to the property which do not apply generally to other properties in the city and within the same zone.”

Staff does not find this is an extraordinary circumstance. Merriam Webster defines extraordinary as “going beyond what is usual, regular or customary; exceptional to a very marked extent”. There are a number of properties throughout the City that develop along collector roads and NE Territorial itself; almost all of them pursue a standard setback process. The simple fact that the subdivision is located near a linear road traversing along a common boundary line does not constitute an extraordinary or unusual circumstance.

2. The variance is necessary to assure that the applicant maintains substantially the same property rights as are possessed by the owners of other property in the city and within the same zone; and

Finding 93: The applicant states that:

This proposed request would result in the similar lot width/depth and density as other lots located throughout the City. The subject property contains 3.187 acres of land. If this acreage was divided by the minimum lot size in the R-1 District (i.e. 7,000 square feet), approximately 20 lots could be yielded. However, due to connectivity requirements and the large amount of right-of-way being exacted by the City, only 2.47 acres is available for development. This result in over 22% of the property is required to be public roadway. On average, 20% of the land in a subdivision is used for streets and/or utilities.

In order to yield the same density of lots, the Contract Purchaser has requested a

change is zoning from R-1 to R1.5 to yield the same number of lots. Again, granting the variance requests would enable the construction of a traditional house on Lot #17

Finding 94: Staff finds that the applicant has not substantially lost property rights that are otherwise allowed by the properties of similar character, and staff believes the dedication is not excessive, and the applicant has not provided evidence that the amount of dedication is excessive when compared to other similar developments in the city. The property rights are largely the same – homes can still be constructed on lots that are more constrained than others in the remainder of the subdivision. Staff believe the major variance is not a macro level tool used to make certain housing products easier to construct; rather, it should be treated as a surgical instrument for specific hardship relief.

Staff notes that the variance is not needed to achieve the minimum required density for the R-1.5 Zone itself and does not have a material impact of density requirements.

The purpose of the variance is to preserve property rights that would otherwise be lost. The applicant is requesting a comprehensive plan amendment and zone change to upzone the property and increase the density of the property. The argument that the applicant can then subsequently request a variance does not pass the ‘straight face test’.

3. Detrimental to the intent or purposes of the City's Comprehensive Plan or the Land Development and Planning Ordinance

Finding 95: Staff finds that variances of this type generally have the effect of eroding the intent of the City's Land Development and Planning Ordinance (e.g. spot zoning or the eroding of the R-1.5 zone to something approaching more similar to R-2). The setbacks are set for a variety of reasons: an acceptable distance between neighbors, buffers to allow access, a suburban medium density ‘feel and appearance’ among others. Should the applicant request a process to begin a discussion about the appropriateness of the current code, that option is available and may be a better public process by vetting such changes through the City Council.

4. Detrimental to other property:

Finding 96: While not necessarily directly impactful to other properties, the requested setback variance would create even less room for fencing, yard space, accessory structures and generally increases the massing and aesthetics of this portion of the subdivision. The city's setback requirements are intended to provide physical separation between houses for compatibility.

5. Minimum variance which will alleviate the hardship

Finding 97: Staff finds that the applicant has not demonstrated why a minor variance, a different building product or subdivision layout would not be better options for alleviating the applicant's described hardship.

6. Exceptional or unique conditions of the property which necessitate the issuance of a variance.

Finding 98: The applicant's statement is as follows:

Typically, dedications within subdivision does not exceed twenty (20) percent of the

subject property. In this particular case, the proposed subdivision is being required to provide a significant amount of right-of-way (over 22% of the parcel), to accommodate future connectivity and roadway widening along two frontages. Due to the larger than average amount of land dedication, the amount of developable land on this particular parcel has been reduced. This is unique to this property and beyond the control of the Contract Purchaser.

Finding 99: As mentioned above in **Finding 91**, staff do not agree with the applicant's assertion that this development project in its totality amount to a unique or exceptional conditions that necessitate a variance. The applicant states that dedications do not typically exceed 20 percent of a subdivision and in this instance approximately 22 percent of the parcel is required for dedication. While it may be true that this property fronts two streets that require dedication and improvements, the uniqueness or exceptionality of the requirements and the subject property itself are not so extreme as to support a major variance. Additionally, staff contend that the dedications and exactions have an appropriate nexus to the development project and are roughly proportional impacts.

General Summary of Findings and Reasoning for a Staff Recommendation of Denial

1. The intent of the setbacks is to ensure that properties have appropriate massing – this is especially the case with the rear yard 15-foot (1-story) and 20-foot (2-story) setbacks. Smaller lots with reduced setbacks increases the massing which impacts aesthetics, distance and acceptable distances from neighbors.
2. The applicant is requesting a Comprehensive Plan Map amendment and Zone Change which is essentially an upzone increasing the amount of buildable lots. This request when reviewed hand-in-hand with a major variance is difficult for staff to make positive findings. Prima facie evidence in the applicant's submittal, leads staff to believe that the applicant is seeking to not only gain additional lots but also special exceptions to fit a desired building product onto the subject property—a self-created hardship.
3. Staff acknowledges this property requires frontage dedications and public improvements. These are not unique; all recent subdivisions in the City require dedications and improvements so that roads can be built to standards the City of Canby has set forth. The fact that dedication and improvements are required does not constitute a unique or extraordinary circumstance.
4. Past practices are not an indicator nor a determinant in future land use decisions. Every land use decision should be evaluated on its own merits and circumstances and by the current staff and Planning Commission who evaluate land use decisions in Canby.
5. Not enough evidence was provided that indicates the applicant has gone through a thorough and exhaustive analysis that provide alternative options for building product or lot layout. The applicant could alter building product or reduce the frontage by one lot along Territorial and likely achieve all of the setbacks. Staff understand the applicant has economic analyses as part of their business model and likely want to maximize profit for the subdivision process; however, the code's plain language does not anticipate those considerations.

6. The applicant, future builder, or individual lot owners could pursue a variance on a case-by-case basis. Ideally, with arguments that sufficiently address staff's summary comments in 1 through 4 above.

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A. ***Introduction***

1. Development Team Members
2. Property and Zoning Summary
3. Project Summary
4. Prior Land Use Approvals
5. Land Use Reviews Requested
6. Application Fee Calculation

1. Development Team Members:

Listed below is a summary of the development team members for the ***Territorial Road Property*** planning application requests.

Owner:

Hemmerling Nursery, LLC.

1500 Cooper Street
Seaside, OR 97138
Telephone: (503) 717.3954
Contact: Lori Hemmerling
Email: rnparrrot@yahoo.com

Contract Purchaser/Applicant:

Venture Properties, Inc.

4230 Galewood Street, Suite 100
Lake Oswego, OR 97035
Contact: Kelly Ritz, President
kelly@ventureprop.com
Phone: (503) 387.7602

Contact: Al Jeck, Project Manger
al@ventureprop.com
Phone: (503) 387.7557

Applicant's Representative:

ATWELL, LLC.

9755 SW Barnes Road, Suite 150
Portland, OR 97225
Telephone: (971) 334.8961
Contact: Hal Keever, RLA, ALSA
Email: hkeever@atwell-group.com

Civil Engineering:

ATWELL, LLC.

9755 SW Barnes Road, Suite 150
Portland, OR 97225
Telephone: (971) 334.8962
Contact: Brady Berry, PE
Email: bberry@atwell-group.com

Planning:

ATWELL, LLC.

9755 SW Barnes Road, Suite 150
Portland, OR 97225
Telephone: (971) 334.8964
Contact: Kevin Apperson, RLA, ASLA
Email: kapperson@atwell-group.com

Traffic Engineer:**Lancaster Mobley**321 SW 4th Avenue, Suite 400

Portland, OR 97204

Telephone: (503) 248-0313

Contact: Todd Mobley, Principal

Email: tmobley@lancastermobley.com**Surveying:****Compass Land Surveying**

4107 SE International Way, Suite 705

Milwaukie, Oregon 97222

Telephone: (503) 653.9093

Contact: Joseph McAllister, PLS

Email: joem@compass-landsurveyors.com**2. Property and Zoning Summary**

Legal Description:	Tract of land located in Lots 26, 27 & 28 in the Plat of Pruneland, in Section 28, Township 3 South and Range 1 East.
Assessors Map	T3S R1E 28C, Tax Lot 401
Parcel Size:	2.86 Acres (<i>Per Assessor Map</i>) 3.187 Acres (138,852 SF) (<i>Per Survey</i>)
Comprehensive Plan Designation:	Low Density Residential (LDR)
Existing Zoning Designation:	Low Density Residential (R-1)
Proposed Zoning Designation:	Medium Density Residential (R-1.5)

3. Project Summary

The subject property is comprised of a tract of land located in Lots 26, 27 & 28 in the Plat of Pruneland, in Section 28, Township 3 South and Range 1 East. It consists of one tax lot containing 3.187 acres.

Area	Lot Coverage (<i>Expressed in Square Footage</i>)
Gross Site Area:	3.187 Ac. (138,852 SF)

The property is irregularly shaped and is bordered undeveloped property on the west and north, Locust Street on the east and Territorial Road on the south. The property address is 102 NE Territorial Road, Canby OR, 97013.

Currently, the subject property is currently zoned R-1 (Low Density Residential). The Applicant is requesting an approval of a Comprehensive Plan Amendment to change the designation from LDR- Low Density Residential to MDR – Medium Density Residential. Simultaneously, the Applicant is also requesting approval of a Zone Map Change to modify the zoning from R-1 – Low Density Residential to R-1.5 – Medium Residential.

With the approval of the proposed Comprehensive Plan Amendment/Zoning Map Change requests, the subject property would take on a similar density and character of the properties that exist on the northeast and southeast corners of the intersection of Northeast Territorial Road and North Locust. For this particular property, the effective increase in number of units would be limited to five (5) additional lots.

Concurrently, with the Comprehensive Plan Amendment/Zoning Map Change, the Applicant is also requesting approval of a preliminary subdivision application. Within the R-1.5 zoning district, the minimum lot size is five thousand (5,000) square feet minimum and the maximum is six thousand five hundred (6,500) square feet.

Area	Lot Coverage (Expressed in Square Footage)
Gross Site Area:	3.187 Ac. (138,852 SF)
<i>Proposed Roadway Dedication:</i>	
<i>ROW – Northeast Territorial Road Widening</i>	0.038 Ac. (1,684 SF)
<i>ROW – North Locust Street Widening</i>	0.148 Ac. (6,746 SF)
<i>ROW – Proposed “NE 17th” Street</i>	0.260 Ac. (11,316 SF)
<i>ROW – Proposed “NE 18th” Street</i>	0.260 Ac. (11,316 SF)
Net Site Area:	2.475 Ac. (107,790 SF)

Based on net site area, the subject property would yield 17-21 lots. The Applicant is proposing a twenty (20) lot subdivision with an average lot area of 5,165 square feet. Below is a table summarizing the size and buildable area within each lot:

Lot Number	Lot Size (Expressed in Square Footage)	Buildable Area (Expressed in Square Footage)
Lot 1	5,811	2,066
Lot 2	5,089	2,066
Lot 3	5,130	2,097
Lot 4	5,171	2,130
Lot 5	5,022	2,020
Lot 6	5,022	2,020
Lot 7	5,022	2,020
Lot 8	5,783	2,255

Lot 9	5,783	2,255
Lot 10	5,022	2,020
Lot 11	5,022	2,020
Lot 12	5,022	2,020
Lot 13	5,022	2,020
Lot 14	5,022	2,020
Lot 15	5,022	2,020
Lot 16	5,782	2,255
Lot 17	5,135	1,632
Lot 18	4,219	1,710
Lot 19	4,732	1,919
Lot 20	5,466	2,330
Tract A (Alley)	4,491	
Total	107,790 SF	
Average Lot Size	5,165 SF	

In order to provide a more flexible building area (i.e. building envelop), the Owner/Applicant is request a major variance to reduce the interior setbacks from 7 feet in wide to 5 feet in width (28.5% reduction to the required standard) for the interior lot setbacks on Lots #17, #18, #19 and #20. Similarly, the Owner/Applicant is request a reduction in the rear setback of Lot #18. This represents a 25% reduction to the required standard.

The table of contents of this application outlines all the application criteria, exhibit drawings and appendices submitted for review and approval. Please refer to the application text and drawings for more detailed information regarding the proposed application.

4. Prior Land Use Approvals

Below is a list of prior land use approvals affecting the subject property.

Reference	Type	Jurisdiction
File # SN-5050	Pruneland Subdivision	Clackamas County
File # 0076	Record of Survey	Clackamas County
Ord. 1501	Annexation	City of Canby

5. Land Use Reviews Requested

The City of Canby Development Code Standards identify various procedural reviews based upon the type of land use action being requested. For this application, the Owner/Applicant is requesting the following review.

Land Use Request	Type
Comprehensive Plan Amendment	IV
Major Variance ⁽¹⁾	III
Subdivision	III
Zoning Map Change	IV

(1) Requests a 28.5% reduction to the interior side setbacks for Lots #17, #18, #19 and #20 (from seven (7) feet to five (5) feet in width. Also requests 25% reduction to the rear setback for Lot #18 (from twenty (20) feet to fifteen (15) feet) .

6. Fee Calculations:

The proposed project is required to follow City standard and procedures. Based on City of Canby Fee Schedule (effective July 1, 2019), the applicable fees associated with this application are:

Land Use Fees	Fee
Comprehensive Plan Amendment	\$3,290.00
Major Variance	\$2,150.00
Subdivision ⁽¹⁾	\$4,035.00
Zoning Map Change	\$2,750.00
Total	\$12,225.00

(2) Calculated based on \$1,735 base fee plus \$115 per lot (20 lots total).

B.***Applicable Statewide Planning Goal Narrative***

The following information responds to applicable Statewide Planning Goal Compliance associated with the ***Territorial Road Property*** application requests. The applicant's comments to individual sections are highlighted in bold for each applicable standard or regulation. Sections addressed include:

Statewide Planning Goals	B-1
Goal 1 Citizen Involvement	
Goal 2 Land Use Planning.....	
Goal 3 Agricultural Lands <i>(This Goal Not Applicable to this Application)</i>	
Goal 4 Forest Lands <i>(This Goal Not Applicable to this Application)</i>	
Goal 5 Natural Resources, Scenic and Historic Areas, and Open Spaces <i>(This Goal Not Applicable to this Application)</i>	
Goal 6 Air, Water and Land Resources Quality	
Goal 7 Areas Subject to Natural Hazards <i>(This Goal Not Applicable to this Application)</i>	
Goal 8 Recreational Needs <i>(This Goal Not Applicable to this Application)</i>	
Goal 9 Economic Development	
Goal 10 Housing	
Goal 11 Public Facilities and Services	
Goal 12 Transportation	
Goal 13 Energy Conservation	
Goal 14 Urbanization <i>(This Goal Not Applicable to this Application)</i>	
Goal 15 Willamette River Greenway <i>(This Goal Not Applicable to this Application)</i>	
Goal 16 Estuarine Resources <i>(This Goal Not Applicable to this Application)</i>	
Goal 17 Coastal Shorelands <i>(This Goal Not Applicable to this Application)</i>	
Goal 18 Beaches and Dunes <i>(This Goal Not Applicable to this Application)</i>	

Statewide Planning Goals

Goal 1 – Citizen Involvement (OAR 660-015-0000(1))

“To develop a citizen involvement program that insures the opportunity for citizens to be involved in all phases of the planning process.”

The governing body charged with preparing and adopting a comprehensive plan shall adopt and publicize a program for citizen involvement that clearly defines the procedures by which the general public will be involved in the on-going land-use planning process.

The citizen involvement program shall be appropriate to the scale of the planning effort. The program shall provide for continuity of citizen participation and of information that enables citizens to identify and comprehend the issues.

Federal, state and regional agencies and special-purpose districts shall coordinate their planning efforts with the affected governing bodies and make use of existing local citizen involvement programs established by counties and cities.

Response: ***Goal 1 requires cities provide "the opportunity for citizens to be involved in all phases of the planning process." Based on this it requires the City of Canby to have a citizen involvement program that addresses:***

- ***Opportunities for widespread public involvement***
- ***Effective two-way communication with the public***
- ***The ability for the public to be involved in all phases of the planning process***
- ***Making technical information easy to understand***
- ***Feedback mechanisms for policy-makers to respond to public input, and***
- ***Adequate financial support for public involvement efforts***

For this particular land use proposal, the Applicant hosted a neighborhood meeting on December 23, 2020 to give neighbors an opportunity to comment on the proposed development. Mailing notices were sent out to neighbors within 500 feet of the subject property as well as the NE Canby Neighborhood Association contact.

Refer to Section F – Appendices, Appendix 13 - Neighborhood Boundary Map; Appendix 14 – Property Map with 500 Feet; Appendix 15 – Address List; Appendix 16 Mailing Labels; Appendix 17 – Neighborhood Mailing Notification and Appendix 18 – Neighborhood Meeting Minutes.

In addition the Neighborhood Meeting, the land use application requests will be decided by the City's Planning Commission at a public hearing. For the Comprehensive Plan Amendment and Zone Map Change, the Planning Commission will make a recommendation to the City Council to approve,

disapprove, or modification of the proposed amendment. Additional opportunities for public involvement will occur at each of these meetings.

Goal 2 – Land Use Planning OAR 660-015-0000(2)

“To establish a land use planning process and policy framework as a basis for all decision and actions related to use of land and to assure an adequate factual base for such decisions and actions.”

City, county, state and federal agency and special district plans and actions related to land use shall be consistent with the comprehensive plans of cities and counties and regional plans adopted under ORS Chapter 268.

All land use plans shall include identification of issues and problems, inventories and other factual information for each applicable statewide planning goal, evaluation of alternative courses of action and ultimate policy choices, taking into consideration social, economic, energy and environmental needs. The required information shall be contained in the plan document or in supporting documents. The plans, supporting documents and implementation ordinances shall be filed in a public office or other place easily accessible to the public. The plans shall be the basis for specific implementation measures. These measures shall be consistent with and adequate to carry out the plans. Each plan and related implementation measure shall be coordinated with the plans of affected governmental units.

All land-use plans and implementation ordinances shall be adopted by the governing body after public hearing and shall be reviewed and, as needed, revised on a periodic cycle to take into account changing public policies and circumstances, in accord with a schedule set forth in the plan. Opportunities shall be provided for review and comment by citizens and affected governmental units during preparation, review and revision of plans and implementation ordinances.

Response: ***Goal 2 requires the City of Canby to have and follow a comprehensive land use plan and implementing regulations. The City’s comprehensive plans on a factual base, and follow their plan when making decisions on appropriate zoning. Special district and state agency plans and programs must be coordinated with comprehensive plans.***

Comprehensive plans must comply with the requirements of each applicable statewide planning goal. The Land Conservation and Development Commission (LCDC) reviewed each city and county comprehensive plan for compliance with the goals, and when LCDC found that the plan, as a whole, was consistent with the goals, the commission "acknowledged," or approved, the plan. Once a plan is acknowledged, it replaces the statewide planning goals for the purposes of local land use decision-making.

Changes to comprehensive plans must also comply with the Oregon Statewide planning goals.

Currently, the subject property is currently zoned R-1 (Low Density Residential). The Applicant is requesting an approval of a Comprehensive Plan Amendment to change the designation from LDR-Low Density Residential to MDR – Medium Density Residential. Simultaneously, the Applicant is also requesting approval of a Zone Map Change to modify the zoning from R-1 – Low Density Residential to R-1.5 – Medium Residential.

With the approval of the proposed Comprehensive Plan Amendment/Zoning Map Change requests, the subject property would take on a similar density and character of the properties that exist on the northeast and southeast corners of the intersection of Northeast Territorial Road and North Locust.

Goal 3 – Agricultural Lands (OAR 660-015-0000(3))

“To preserve and maintain agricultural lands.”

Response: *Goal 3 requires jurisdictions to identify farmland, designate it as such on the comprehensive plan map, and zone it exclusive farm use (EFU). An EFU zone places restrictions on developments that are unrelated to agriculture in order to minimize uses that conflict with farming. Property owners who keep EFU land in agricultural production benefit by receiving lowered property taxes.*

Although the property is currently used for agricultural purposes, the property has been designated as low-density residential by the City in their Comprehensive Plan. Based on this, the property has been assigned a zoning designation of Low Density Residential (R-1) on the City Zoning Map.

The proposed rezoning from R-1 (Low Density Residential) to R1.5 (Medium Density Residential) use would not impact any agricultural lands zoned for Exclusive Farm Use (EFU).

Goal 4 – Forest Lands (OAR 660-015-0000(4))

“To conserve forest lands by maintaining the forest land base and to protect the state's forest economy by making possible economically efficient forest practices that assure the continuous growing and harvesting of forest tree species as the leading use on forest land consistent with sound management of soil, air, water, and fish and wildlife resources and to provide for recreational opportunities and agriculture. “

Forest lands are those lands acknowledged as forest lands as of the date of adoption of this goal amendment. Where a plan is not acknowledged or a plan amendment involving forest lands is proposed, forest land shall include lands which are suitable for commercial forest uses including adjacent or nearby lands which are necessary to permit forest operations or practices and other forested lands that maintain soil, air, water and fish and wildlife resources.

Response: *Goal 4 requires jurisdictions to identify forest land, designate it as such on the comprehensive plan map, and zone it consistently with state rules. This goal places development restrictions on forest lands. These restrictions seek to prevent activities that could conflict with forestry practices. Local zoning regulations prevent forest land from being divided into parcels too small to manage effectively for timber, habitat, recreation, watershed protection, and other purposes.*

Again, the property has been designated as low-density residential by the City in their Comprehensive Plan. Based on this, the property has been assigned a zoning designation of Low Density Residential (R-1) on the City Zoning Map.

The proposed rezoning from R-1 (Low Density Residential) to R1.5 (Medium Density Residential) use would not impact any forest lands.

Goal 5 – Open Spaces, Scenic and Historical Area and Natural Resources (OAR 660-015-0000(5))

“To protect natural resources and conserve scenic and historic areas and open spaces.”

Response: *Goal 5 is a broad statewide planning goal that covers more than a dozen resources. The resources range from wildlife habitat, to historic places, and gravel mines. To protect and plan for them, local governments are asked to create a number of inventories. The inventories in a local plan may address only a portion of the resources included in Goal 5.*

Resource sites are assessed and significant sites are protected. Some Goal 5 resource categories rely on inventories and assessments that have been conducted by state or federal entities. There are six Goal 5 resource categories that rely on state or federal inventories: wild and scenic rivers, state scenic water ways, ground water resources, Oregon recreation trails, Sage Grouse habitat, and wilderness areas. Three categories require local inventories.

There are no known environmental, historic or cultural resources within the boundaries of the subject property. However, if historic or cultural resources are discovered during construction activities, the Contract Purchaser/Applicant will immediately contact State and Federal authorities.

Goal 6 – Air, Water and Land Resources Quality

“To maintain and improve the quality of the air, water and land resources of the state.”

Response: *Goal 6 requires local governments to consider protection of air, water and land resources from pollution and pollutants when developing comprehensive plans. The pollutants addressed in Goal 6 include solid waste, water waste, noise and thermal pollution, air pollution, and industry-related contaminants.*

The goal asks cities and counties to designate areas suitable for use in controlling pollution.

At a federal level, the elements within Goal 6 correspond broadly to the Clean Air Act and Clean Water Act. At a state level, Goal 6 covers many areas regulated by the Oregon Department of Environmental Quality (DEQ) through its permitting actions. DEQ ensures its permitting decisions comply with the plan and zoning regulations of the affected local government and coordinates with DLCD and other agencies to be sure that city and county plans comply with state and federal laws.

Impacts to air, water and land resources will be negligible and will primarily associated with grading and utility activities during construction. However, some longer term impacts will occur once the individual lots are sold and subsequently developed with new residential units.

Any solid wastes generated from excavation or construction will be removed from the property and legally disposed of off-site. Solid waste from post-construction activities will primarily occur from trash generation from individual home owners. The local franchise solid waste provider with routinely collect trash and recycling from individual homes and process the materials in accordance with federal, state and local policies.

Waste water during construction and post-construction will be collected and conveyed to the City's Sanitary Sewer system where it will be treated and discharged in accordance federal, state and local regulations.

Any noise and air pollution will be temporary in nature and will primarily occur during excavation/grading activities and while the individual homes are being erected.

Once the subdivision is approved, the project will require a number of state and local permits. These permits will insure that the project will be developed in accordance federal, state and local regulations.

Goal 7 – Area Subject to Natural Disasters and Hazards

"To protect people and property from natural hazards."

Response: *Goal 7 requires local comprehensive plans to address Oregon's natural hazards. Protecting people and property from natural hazards requires knowledge, planning, coordination, and education. It focuses on development in places subject to natural hazards such as floods or landslides. It requires that jurisdictions apply "appropriate safeguards" when planning for development in these locations.*

This would include river and coastal floods, landslide, wildfires, and coastal erosion are a consistent presence in Oregon. In recent years, this has expanded to include the possibility of a major earthquake and tsunami from the Cascadia Subduction Zone (CSZ).

A local government addresses natural hazards in its comprehensive land use plan. They do this by adopting a natural hazard inventory, and supporting plans and policies.

To the Contract Purchaser/Applicants knowledge, there are no natural hazards known to exist within the boundaries of the subject property.

Goal 8 – Recreation Needs (OAR 660-015-0000(8))

“To satisfy the recreational needs of the citizens of the state and visitors and, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts.”

Response: *Goal 8 requires local governments to plan for the recreation needs of their residents and visitors. The goal places priority on non-motorized forms of recreation, and recreation areas that serve high-density populations with limited transportation options and limited financial resources. It also places priority on recreation areas that are free or available at a low cost to the public.*

This goal calls for each community to evaluate its areas and facilities for recreation and develop plans to deal with the projected demand for them. It also sets forth detailed standards for expedited siting of destination resorts.

The City of Canby has developed a Park System Plan and a Parks Acquisition Plan where they have identified the need for various types of park and recreation facilities within each of the City’s six neighborhood areas. The subject property is located in neighborhood #2. Based on the City’s plan, Locust Park is located north of the site and no park or recreational areas have been proposed in the vicinity of the subject property.

Destination resorts are self-contained developments that provide visitor-oriented lodging and developed recreational facilities in a setting with high natural amenities. The proposed development (i.e. twenty (20) lot subdivision is not considered a destination resort.

Goal 9 – Economic Development (OAR 660-015-0000(9))

“To provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon’s citizens.”

Comprehensive plans and policies shall contribute to a stable and healthy economy in all regions of the state. Such plans shall be based on inventories of areas suitable for increased economic growth and activity after taking into consideration the health of the current economic base; materials and

energy availability and cost; labor market factors; educational and technical training programs; availability of key public facilities; necessary support facilities; current market forces; location relative to markets; availability of renewable and non-renewable resources; availability of land; and pollution control requirements.

Response: *Goal 9 requires local governments provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon's citizens. This should include a working inventory of areas suitable for economic growth that can be provided with public services. These inventories primarily focus on planning for major industrial and commercial developments, and having a ready supply of land appropriately zoned and located for those opportunities and local investments. As with all areas of the comprehensive plan, the amount of land planned for economic development should be adequate for a 20-year supply.*

Currently, the subject property is currently zoned R-1 (Low Density Residential). The Applicant is requesting an approval of a Comprehensive Plan Amendment to change the designation from LDR-Low Density Residential to MDR – Medium Density Residential. Simultaneously, the Applicant is also requesting approval of a Zone Map Change to modify the zoning from R-1 – Low Density Residential to R-1.5 – Medium Residential.

With the development of the twenty (20) lot subdivision, some direct economic development may occur through the provision of temporary labor from construction jobs and the sale of building product. Long term, the residents of the subdivision will provide economic benefit to the community through patronage at local business and their contribution to property tax revenues.

Goal 10 – Housing (OAR 660-015-0000(10))

“To provide for the housing needs of citizens of the state.”

Buildable lands for residential use shall be inventoried and plans shall encourage the availability of adequate numbers of needed housing units at price ranges and rent levels which are commensurate with the financial capabilities of Oregon households and allow for flexibility of housing location, type and density.

Response: *This goal specifies that each city must plan for and accommodate needed housing types, such as multifamily and manufactured housing. It requires each city to inventory its buildable residential lands, project future needs for such lands, and plan and zone enough buildable land to meet those needs. It also prohibits local plans from discriminating against needed housing types.*

According to Oregon Housing and Community Services (OHCS), housing supplies are one the critical factors in affecting supply of affordable housing in Oregon. This particularly in the Portland Metropolitan Area. In their most

recent report, the OHCS indicated the lack of affordable housing has been further accentuated by the lower than normal inventory.

Prior to 2019, the subject property was located in Canby's urban growth boundary. As part of the Holly Annexation and Zoning Map Amendment application (which was approved), a housing analysis was completed and it was determined that the City of Canby has an insufficient supply of platted lots. Based on the detailed Needs Analysis included in that application, it was determined that the City of Canby at that time had an inventory of 91 SFR platted lots, which was insufficient to meet the need for an additional 342 single family detached residences through 2021 (as necessitated by the anticipated population growth over the same period). As of 2018, there was a deficiency of 251 SFR platted lots in the City of Canby to meet the demand through 2021.

In May of 2019, the property was annexed in to the City of Canby and subsequently rezoned for residential use in accordance with the annexation/zone map request. This provided additional supply of buildable land for the purpose of developing additional single family homes. Overall, it was determined that the annexed properties could accommodate approximately 177 new SFR lots but would not platted and/or developed instantaneously. With the approval of the subdivision request for the Dodds property to the north, approximately 81 new single family lots would be added to the inventory. This still leaves a significant shortage of platted single family lots.

As part of the Holly Annexation and Zone Map Amendment, the subject property was zoned R-1 (Low Density Residential). Given the R-1 zoning, the net acreage of 2.475 acres (107,790 SF) would yield a minimum of 11 units (at 10,000 sf lots) and a maximum of 15 units (at 7,000 sf lots).

The Applicant is requesting an approval of a Comprehensive Plan Amendment to change the designation from LDR-Low Density Residential to MDR – Medium Density Residential. Simultaneously, the Applicant is also requesting approval of a Zone Map Change to modify the zoning from R-1 – Low Density Residential to R-1.5 – Medium Residential.

If approved, the subject property could yield a minimum of 17 lots and a maximum of 21 lots based on the minimum and maximum lot sizes. The Applicant is currently proposing to subdivide the property into twenty (20) lots with the intent of developing single-family detached homes on each lot. This will contribute to the City's housing supply and potentially add five more units to the housing supply than what would be permitted under the R-1 district.

Goal 11 – Public Facilities and Services (OAR 660-015-0000(11))

“To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.”

Response: Goal 11 calls for efficient planning of public services such as sewers, water, law enforcement, and fire protection. The intent of this goal is to systematically plan for public services in accordance with a community's needs and capacities rather than be forced to respond to development as it occurs.

Public Facilities and Services include water and sewer services, police and fire protection, health services, recreation facilities, energy and communication services, and services provided by the local government like building permitting or public works.

The city's public facilities plan should plan for provision of public services to “urbanizable” areas, lands that are within the city's UGB but don’t have public facilities available to them yet. Additionally, a city's public facilities plan should consider the location of any urban reserves that may be adjacent to the city's UGB.

With the development of the twenty (20) lot subdivision, all of the public facilities and services are readily available. Water and sewer services, police and fire protection, health services, recreation facilities, energy and communication services, and services are all currently being provided to adjacent properties and could easily be available of expanded to serve the proposed development.

Goal 12 – Transportation (OAR 660-015-0000(12))

“To provide and encourage a safe, convenient and economic transportation system.”

Response: Goal 12 requires cities to provide "a safe, convenient and economic transportation system." It requires cities, counties and the state to create a transportation system plan that takes into account all relevant modes of transportation: mass transit, air, water, rail, highway, bicycle and pedestrian. The resulting plan should support a variety of transportation modes so residents are not limited in the ways they can access the jobs, goods, or services available in different parts of their community. A well designed transportation plan conserves energy while also minimizing adverse social and economic impacts for disadvantaged areas.

The Transportation Planning Rules (TPR) implements Goal 12. The TPR specifies what must be included in local planning efforts for transportation, and what must be addressed and included in a transportation system plan.

As part of the proposed subdivision, the Contract Purchaser/Applicant

will dedicate an additional seven feet along Northeast Territorial Road and improve the outer 22 feet of the right-of-way including eight (8) feet of pavement widening, curb, five (5) foot planter strip and a six foot sidewalk. Similarly, an additional twelve and half (12.5) feet along North Locust Street and improve the outer 19 feet of the right-of-way including six and half (6.5) feet of pavement widening, curb, five (5) foot planter strip and a six foot sidewalk.

Similarly, the two new roadways have been designed to meet the City's Public Works Standards for local roadways. Each of these roadways will contain a fifty (50) wide right-of-way and include a paved section for vehicles, curbs/gutters, a five (5) wide planter strip with street trees and sidewalks.

The Contract Purchaser/Applicant commissioned a traffic engineer to prepare a Transportation Analysis Letter (TAL). Based on TAL, the proposed Comprehensive Plan Amendment/Zone Map Change would not degrade the performance of any existing or planned transportation facility beyond what is currently allowed under the existing zone. As a result, no mitigation is required.

Goal 13 – Energy Conservation (OAR 660-015-0000(13))

"To conserve energy."

Response: *Goal 13 cites "land and uses developed on the land shall be managed and controlled so as to maximize the conservation of all forms of energy, based upon sound economic principles." The goal also directs cities and counties to have systems and incentives in place for recycling programs.*

The Contract Purchaser/Applicant is proposing to develop a twenty (20) lot subdivision on land that was annexed to the City. The proposed subdivision design seeks to make efficient use of the land by maximizing the development potential of the land. Individual lots have been arranged to allow for a wide range of two story building products that will be situated on the lots so they do not have negative impacts on passive heating and availability of natural light. Each new home will be designed to be energy efficient and conserve all forms of energy.

Goal 14 – Urbanization (OAR 660-015-0000(14))

"To provide for an orderly and efficient transition from rural to urban land use, to accommodate urban population and urban employment inside urban growth boundaries, to ensure efficient use of land, and to provide for livable communities."

Response: *This goal requires cities to estimate future growth and needs for land and then plan and zone enough land to meet those needs. It requires each city to*

establish an "urban growth boundary" (UGB) to "identify and separate urbanizable land from rural land." It specifies seven factors that must be considered in drawing up a UGB.

The UGB is a used to contain urban development, but also as a tool to plan for orderly growth. If land is inside a UGB, it is considered urbanizable. When designating an urban growth boundary, a city must plan to include a twenty year supply of land for housing, employment, industry, open space and recreational needs. A UGB should also provide plans for transition from urban to rural land uses, to avoid conflicts.

The subject property is currently located within the incorporated city limits. The property was removed from the urban growth boundary and annexed to the City of Canby in 2019. The urbanization of this property complies with the intent of Goal 14.

Goal 15 – Willamette Greenway (OAR 660-015-0005)

"To protect, conserve, enhance and maintain the natural, scenic, historical, agricultural, economic and recreational qualities of lands along the Willamette River as the Willamette River Greenway."

Response: *Goal 15 is focused on the Willamette River, and applies to cities and counties along the river. The Willamette River Greenway is a corridor of water and land in which development is planned and built with recognition of the unique qualities of the Willamette River. The Goal set tasks for both the state and local communities.*

Cities and counties adopted local greenway plans, along with criteria for new development, new uses, and the increase of uses along the river. Goal 15 also called for the state plan and local plans to identify parcels that might be acquired for the purpose of increasing the amount of park land near the river.

The subject property is lies outside of the Willamette River Greenway.

Goal 16 – Estuarine Resources (OAR 660-015-0010(1))

"To recognize and protect the unique environmental, economic, and social values of each estuary and associated wetlands; and to protect, maintain, where appropriate develop, and where appropriate restore the long-term environmental, economic, and social values, diversity and benefits of Oregon's estuaries."

Response: *Statewide Planning Goal 16 provides the principal guidance for the planning and management of Oregon's estuaries. The overall objective of Goal 16 is to "to recognize and protect the unique environmental, economic and social values of each estuary and associated wetlands; and to protect, maintain,*

where appropriate develop, and where appropriate restore the long term environmental, economic and social values, diversity and benefits of Oregon's estuaries". To accomplish this, the goal establishes detailed requirements for the preparation of plans and for the review of individual development projects and calls for coordinated management by local, state and federal agencies that regulate or have an interest in activities in Oregon's estuaries.

The goal requires individual estuary plans to designate appropriate uses for different areas within each estuary based on biological and physical characteristics and features, and to provide for review of proposed estuarine alterations to assure that they are consistent with overall management objectives and that adverse impacts are minimized.

The subject property does not contain any estuarine features.

Goal 17 – Coastal Shorelands (OAR 660-015-0010(2))

"To conserve, protect, where appropriate, develop and where appropriate restore the resources and benefits of all coastal shorelands, recognizing their value for protection and maintenance of water quality, fish and wildlife habitat, water-dependent uses, economic resources and recreation and aesthetics. The management of these shoreland areas shall be compatible with the characteristics of the adjacent coastal waters; and To reduce the hazard to human life and property, and the adverse effects upon water quality and fish and wildlife habitat, resulting from the use and enjoyment of Oregon's coastal shorelands."

Response: *Statewide Planning Goal 17 outlines planning and management requirements for the lands bordering estuaries (as well lands bordering the ocean shore and coastal lakes). In general, the requirements of Goal 17 apply in combination with other planning goals to direct the appropriate use of shoreland areas. Provisions in Goal 17 specifically focus on the protection and management of resources unique to shoreland areas; examples of such resources include areas of significant shoreland habitat, lands especially suited for water dependent uses, lands providing public access to coastal waters, and potential restoration or mitigation sites.*

The goal focuses on the management of shoreland areas and resources in a manner that is compatible with the characteristics of the adjacent coastal waters. Goal 17 requirements are implemented primarily through local comprehensive plans and zoning.

The subject property does not contain any coastal shorelines.

Goal 18 – Beaches and Dunes

"To conserve, protect, where appropriate develop, and where appropriate restore the resources and benefits of coastal beach and dune areas; and To reduce the hazard to human life and property from natural or man-induced actions associated with these areas."

Response: *Goal 18 focuses on conserving and protecting Oregon's beach and dune resources, and on recognizing and reducing exposure to hazards in this dynamic, sometime quickly changing environment. Goal 18 is central to the work of coastal communities in addressing the impacts of coastal hazards and climate change in areas along the ocean shore.*

Local governments are required to inventory beaches and dunes and describe the stability, movement, groundwater resources, hazards and values of the beach, dune, and interdune areas. Local governments must then apply appropriate beach and dune policies for use in these areas.

The subject property does not contain any beaches/dunes.

Goal 19 – Ocean Resources (OAR 660-015-0010(4))

“To conserve marine resources and ecological functions for the purpose of providing long-term ecological, economic, and social value and benefits to future generations.”

Response: *Goal 19 deals with matters such as dumping dredge spoils and discharge of waste products into the open sea, and prioritizes the protection of renewable marine resources over the development of non-renewable resources. It outlines state interest in conserving resources within the Ocean Stewardship Area, which includes Oregon's territorial sea out to 3 nautical miles as well as the continental margin seaward to the toe of the continental slope, and adjacent ocean areas.*

The subject property does not contain any ocean resources.

C.

Applicable Canby Comprehensive Plan Narrative

The following information responds to applicable Canby Comprehensive Plan Elements associated with the ***Territorial Road Property*** application requests. The applicant’s comments to individual sections are highlighted in bold for each applicable standard or regulation. Sections addressed include:

General Provisions	C-1
I. Citizen Involvement Element	
II. Urban Grown Element	
III. Land Use Element	
IV. Environmental Concerns Element	
V. Transportation Element	
VI. Public Facilities and Services Element	
VII. Economic Element	
VIII. Housing Element	
IX. Energy Conservation Element	

Citizen Involvement Element

Goal: *To Provide the Opportunity for Citizen Involvement throughout the Planning Process.*

Response: *The Citizen Involvement Element Goal intends "To Provide the Opportunity for Citizen Involvement throughout the Planning Process."*

For this particular land use proposal, the Applicant hosted a neighborhood meeting on December 23, 2020 to give neighbors an opportunity to comment on the proposed development. Mailing notices were sent out to neighbors within 500 feet of the subject property as well as the NE Canby Neighborhood Association contact.

Refer to Section F – Appendices, Appendix 13 - Neighborhood Boundary Map; Appendix 14 – Property Map with 500 Feet; Appendix 15 – Address List; Appendix 16 Mailing Labels; Appendix 17 – Neighborhood Mailing Notification and Appendix 18 – Neighborhood Meeting Minutes.

In addition the Neighborhood Meeting, the land use application requests will be decided by the City's Planning Commission at a public hearing. For the Comprehensive Plan Amendment and Zone Map Change, the Planning Commission will make a recommendation to the City Council to approve, disapprove, or modification of the proposed amendment. Additional opportunities for public involvement will occur at each of these meetings.

Urban Growth Element

Goals: *To preserve and maintain designated agricultural and forest lands by protecting them from urbanization; To provide adequate urbanizable area for the growth of the City, within the framework of an efficient system for the transition from rural to urban land use.*

Response: *The Urban Growth Element requires cities to estimate future growth and needs for land and then plan and zone enough land to meet those needs. It requires Canby to establish an "urban growth boundary" (UGB) to "identify and separate urbanizable land from rural land." It specifies seven factors that must be considered in drawing up a UGB.*

The UGB is used to contain urban development, but also as a tool to plan for orderly growth. If land is inside a UGB, it is considered urbanizable. When designating an urban growth boundary, a city must plan to include a twenty year supply of land for housing, employment, industry, open space and recreational needs. A UGB should provide plans for transition from urban to rural land uses, to avoid conflicts.

Prior to 2019, the subject property was located in Canby's urban growth boundary. In May of 2019, the property was annexed in to the City of Canby

and subsequently rezoned for residential use in accordance with the annexation/zone map request. This provided additional supply of buildable land for the purpose of developing additional single family homes. The urbanization of this property complies with the intent of Goal 14.

Land Use Element

Goal: To guide the development and uses of land so that they are orderly, efficient, aesthetically pleasing, and suitably related to one another.

Response: *The Land Use Element requires “development and uses of land so that they are orderly, efficient, aesthetically pleasing, and suitably related to one another.”*

Currently, the subject property is currently zoned R-1 (Low Density Residential). The Applicant is requesting an approval of a Comprehensive Plan Amendment to change the designation from LDR-Low Density Residential to MDR – Medium Density Residential. Simultaneously, the Applicant is also requesting approval of a Zone Map Change to modify the zoning from R-1 – Low Density Residential to R-1.5 – Medium Residential.

With the approval of the proposed Comprehensive Plan Amendment/Zoning Map Change requests, the subject property would take on a similar density and character of the properties that exist on the northeast and southeast corners of the intersection of Northeast Territorial Road and North Locust.

Environmental Concerns Element

Goals: To Protect identified natural and historical resources; To Prevent Air, Water, Land and Noise Pollution ; To Protect Lives and Property from Natural Hazards

Response: *The Environmental Concerns Element is intended “To Protect identified natural and historical resources; To Prevent Air, Water, Land and Noise Pollution; and To Protect Lives and Property from Natural Hazards.”*

There are no known environmental, historic or cultural resources within the boundaries of the subject property. However, if historic or cultural resources are discovered during construction activities, the Contract Purchaser/Applicant will immediately contact State and Federal authorities.

Any solid wastes generated from excavation or construction will be removed from the property and legally disposed of off-site. Solid waste from post-construction activities will primarily occur from trash generation from individual home owners. The local franchise solid waste provider with routinely collect trash and recycling from individual homes and process the materials in accordance with federal, state and local policies. Waste water

during construction and post-construction will be collected and conveyed to the City's Sanitary Sewer system where it will be treated and discharged in accordance federal, state and local regulations. Any noise and air pollution will be temporary in nature and will primarily occur during excavation/grading activities and while the individual homes are being erected. Once the subdivision is approved, the project will require a number of state and local permits. These permits will insure that the project will be developed in accordance federal, state and local regulations.

To the Contract Purchaser/Applicants knowledge, there are no natural hazards known to exist within the boundaries of the subject property.

Transportation Element

Goal: *To develop and maintain a transportation system which is safe, convenient and economical.*

Response: *The Transportation Element' Goal is: "To develop and maintain a transportation system which is safe, convenient and economical requires cities to provide "a safe, convenient and economic transportation system."*

As part of the proposed subdivision, the Contract Purchaser/Applicant will dedicate an additional seven feet along Northeast Territorial Road and improve the outer 22 feet of the right-of-way including eight (8) feet of pavement widening, curb, five (5) foot planter strip and a six foot sidewalk. Similarly, an additional twelve and half (12.5) feet along North Locust Street and improve the outer 19 feet of the right-of-way including six and half (6.5) feet of pavement widening, curb, five (5) foot planter strip and a six foot sidewalk.

Similarly, the two new roadways have been designed to meet the City's Public Works Standards for local roadways. Each of these roadways will contain a fifty (50) wide right-of-way and include a paved section for vehicles, curbs/gutters, a five (5) wide planter strip with street trees and sidewalks.

The Contract Purchaser/Applicant commissioned a traffic engineer to prepare a Transportation Analysis Letter (TAL). Based on TAL, the proposed Comprehensive Plan Amendment/Zone Map Change would not degrade the performance of any existing or planned transportation facility beyond what is currently allowed under the existing zone. As a result, no mitigation is required.

Public Facilities and Services Element

Goal 1: To assure the adequate provision of water services to meet the needs of the residents and property owners of Canby.

Goal 2: To assure the adequate provision of waste water services to meet the needs of the residents and property owners of Canby.

Goal 3: To assure the adequate provision of stormwater services to meet the needs of the residents and property owners of Canby.

Goal 4: To assure the adequate provision of transportation services to meet the needs of residents and property owners of Canby.

Goal 5: To assure the adequate provision of parks and recreation services to meet the needs of the residents and property owners of Canby.

Goal 6: To assure the provision of a full range of public facilities and services to meet the needs of the residents and property owners of Canby.

Applicant's Response: *The Public Facilities and Services Element has several goals:*

Within the proposed subdivision, water service is provided to each individual lot. Lots #1 through #16 are being served through a that connects with a new 8" water line in two locations. Both of the new eight (8) inch water lines will connect to an existing water service line that is North Locust Street and serve 8 lots each. Lots #17 through #20 will connect directly to a new water line that will be located in alley north of the lots.

Waste water during construction and post-construction will be collected and conveyed to the City's Sanitary Sewer system where it will be treated and discharged in accordance federal, state and local regulations. Within the proposed subdivision, sanitary sewer service is provided to each individual lot. Lots #1 through #16 are being served through a four (4) inch lateral that connects with a new 8" sewer main in two locations. Both of the new eight (8) inch mains that will connect to an existing sanitary service line that is North Locust Street and serve 8 lots each. Lots #17 through #20 will connect directly to an existing sanitary line located in Northeast Territorial Road.

Within the subdivision, water is drained to a series of curb inlets where it is collected and conveyed to a pollution control manhole and then to a primary and/or secondary drywell feature.

Refer to Section E – Exhibit Drawings, Sheet C300 – Composite Utility Plan (Preliminary) for additional information.

The City of Canby has developed a Park System Plan and a Parks Acquisition Plan where they have identified the need for various types of park and recreation facilities within each of the City's six neighborhood areas. The subject property is located in neighborhood #2. Based on the City's plan, Locust Park is located north of the site and no park or recreational areas have been proposed in the vicinity of the subject property.

With the development of the twenty (20) lot subdivision, all of the public facilities and services are readily available. Water and sewer services, police and fire protection, health services, recreation facilities, energy and communication services, and services are readily available.

Economic Element

Goal: *To diversity and improve the economy of the City of Canby*

Response: *The Economic Element Goal is to: To diversity and improve the economy of the City of Canby.*

Currently, the subject property is currently zoned R-1 (Low Density Residential). The Applicant is requesting an approval of a Comprehensive Plan Amendment to change the designation from LDR-Low Density Residential to MDR – Medium Density Residential. Simultaneously, the Applicant is also requesting approval of a Zone Map Change to modify the zoning from R-1 – Low Density Residential to R-1.5 – Medium Residential.

With the development of the twenty (20) lot subdivision, some direct economic development may occur through the provision of temporary labor from construction jobs and the sale of building product. Long term, the residents of the subdivision will provide economic benefit to the community through patronage at local business and their contribution to property tax revenues.

Housing Element

Goal: *To provide housing needs of the citizens of Canby*

Response: *The Housing Element' Goal is: " To provide housing needs of the citizens of Canby."*

The subject property is currently zoned R-1 (Low Density Residential). Given the R-1 zoning, the net acreage of 2.475 acres (107,790 SF) would yield a minimum of 11 units (at 10,000 sf lots) and a maximum of 15 units (at 7,000 sf lots).

According to Oregon Housing and Community Services (OHCS), housing supplies are one the critical factors in affecting supply of affordable housing in Oregon. This particularly in the Portland Metropolitan Area. In their most recent report, the OHCS indicated the lack of affordable housing has been further accentuated by the lower than normal inventory.

Prior to 2019, the subject property was located in Canby's urban growth boundary. As part of the Holly Annexation and Zoning Map Amendment application (which was approved), a housing analysis was completed and it was determined that the City of Canby has an insufficient supply of platted lots. Based on the detailed Needs Analysis provided in that application, it was determined that the City of Canby had an inventory of 91 SFR platted lots, which was determined to be insufficient to meet the needs. At the time this study was prepared, it was projected that there was a deficiency of 251 SFR platted lots in the City of Canby to meet the demand through 2021.

In May of 2019, the subject property (and other properties) were annexed in to the City of Canby and subsequently rezoned for residential use in accordance with the annexation/zone map request. This provided additional supply of buildable land for the purpose of developing additional single family homes. Overall, it was determined that the annexed properties could accommodate approximately 177 new SFR lots. With the approval of the subdivision request for the Dodds property to the north, approximately 81 new platted single family lots would be added to the inventory. This still leaves a significant shortage of platted single family lots within the City.

The Contract Purchaser is requesting an approval of a Comprehensive Plan Amendment to change the designation from LDR-Low Density Residential to MDR – Medium Density Residential. Simultaneously, the Applicant is also requesting approval of a Zone Map Change to modify the zoning from R-1 – Low Density Residential to R-1.5 – Medium Residential.

If approved, the subject property could yield a minimum of 17 lots and a maximum of 21 lots based on the minimum and maximum lot sizes. The Applicant is currently proposing to subdivide the property into twenty (20) lots with the intent of developing single-family detached homes on each lot. This will contribute to the City's housing supply and potentially add five more units to the housing supply than what would be permitted under the R-1 district. This will contribute to the City's housing supply. This would be consistent with the North Holly Concept Development Plan as well as the City's Housing goals.

Energy Conservation Element

Goal: To conserve energy and encourage the use of renewable resources in place of non-renewable resource.

Response: ***The Energy Conservation Element' Goal is: " To conserve energy and encourage the use of renewable resources in place of non-renewable resource."***

The Contract Purchaser/Applicant is proposing to develop a twenty (20) lot subdivision on land that was annexed to the City. The proposed subdivision design seeks to make efficient use of the land by maximizing the development potential of the land. Individual lots have been arranged to allow for a wide range of two story building products that will be situated on the lots so they do not have negative impacts on passive heating and availability of natural light. Each new home will be designed to be energy efficient and conserve all forms of energy.

D.***Applicable City of Canby Planning and Zoning Code Narrative***

The following information responds to applicable City of Canby Planning and Zoning Code associated with the ***Territorial Road Property*** application requests. The applicant's comments to individual sections are highlighted in bold for each applicable standard or regulation. Sections addressed include:

General Provisions	D-1
16.08.010 Compliance with title	
16.08.020 Zoning map	
16.08.030 Zone boundaries	
16.08.040 Zoning of annexed areas. This section is not applicable to this application <i>(Not Applicable to this Application)</i>	
16.08.050 Prohibited parking. This section is not applicable to this application <i>(Not Applicable to this Application)</i>	
16.08.070 Illegally created lots <i>(Not Applicable to this Application)</i>	
16.08.080 Area and yard reductions. This section is not applicable to this application <i>(Not Applicable to this Application)</i>	
16.08.090 Sidewalks required.....	
16.08.100 Height allowances <i>(Not Applicable to this Application)</i>	
16.08.110 Fences	
16.08.115 Arbors <i>(Not Applicable to this Application)</i>	
16.08.120 Siting and review process for Wireless Telecommunications Systems Facilities <i>(Not Applicable to this Application)</i>	
16.08.130 Standard transportation improvements.....	
16.08.140 Temporary vendor <i>(Not Applicable to this Application)</i>	
16.08.150 Traffic Impact Study (TIS).....	
16.08.160 Safety and Functionality Standards	
Classification of Zones	D-17
16.12.010 Zones designated	
16.12.020 Uses permitted	
Low Density Residential Zone	D-19
16.16.010 Uses permitted outright.....	
16.16.020 Conditional uses <i>(Not Applicable to this Application)</i>	
16.16.030 Development standards.....	
Medium Density Residential Zone	D-26
16.18.010 Uses permitted outright.....	
16.18.020 Conditional uses <i>(Not Applicable to this Application)</i>	
16.18.030 Development standards.....	

Variances.....	D-33
16.53.010 Minor Variances <i>(Not Applicable to this Application)</i>	
16.53.015 Minor Sign Variance <i>(Not Applicable to this Application)</i>	
16.53.020 Major Variances	
16.53.030 Revocation of Variances <i>(Not Applicable to this Application)</i>	
Amendments to Zoning Map	D-37
16.54.010 Authorization to initiate amendments	
16.54.020 Application and fee	
16.54.030 Public hearing on amendment.....	
16.54.040 Standards and criteria.....	
16.54.060 Improvement conditions	
16.54.070 Record of amendments	
Subdivisions - Applications	D-40
16.62.010 Filing procedures.....	
16.62.020 Standards and criteria.....	
Subdivision – Design Standards	D-43
16.64.010 Streets	
16.64.015 Access.....	
16.64.020 Blocks	
16.64.030 Easements.....	
16.64.040 Lots.....	
16.64.050 Public open spaces.....	
16.64.060 Grading of building sites	
16.64.070 Improvements.....	
16.64.080 Low Impact Development Incentives	
Subdivision Final Procedures and Recordation	D-70
16.68.010 Responsibilities of applicant	
16.68.020 Submittal of subdivision plat	
16.68.030 Information required on plat.....	
16.68.040 Information to accompany plat	
16.68.050 Technical plat review	
16.68.060 Planning Commission approval.....	
16.68.070 Filing of final plat	
General Standards	D-75
16.88.010 Applicability	
16.88.020 Action on application	
16.88.030 Applications and fees.....	
16.88.040 Temporary permits <i>(Not Applicable to this Application)</i>	
16.88.050 Business license review <i>(Not Applicable to this Application)</i>	
16.88.060 Council acceptance of dedicated land	
16.88.080 Administration and enforcement	

16.88.090 Revocation of conditional use permits and variances	
16.88.100 Interpretation	
16.88.110 Penalties and civil remedies <i>(Not Applicable to this Application)</i>	
16.88.120 Enforcement procedure.....	
16.88.160 Public officials	
16.88.170 Amendments to text of title	
16.88.180 Comprehensive Plan Amendments	
16.88.190 Conformance with Transportation System Plan and Transportation Planning Rule	

Application and Review Procedures D-84

16.89.010 Purpose	
16.89.020 Description and summary of processes.....	
16.89.030 Type I procedure <i>(Not Applicable to this Application)</i>	
16.89.040 Type II procedure <i>(Not Applicable to this Application)</i>	
16.89.050 Type III procedure.....	
16.89.060 Type IV procedure.....	
16.89.070 Neighborhood meetings	
16.89.080 Application requirements and completeness.....	
16.89.090 Modifications <i>(Not Applicable to this Application)</i>	
16.89.100 Administrative Reviews <i>(Not Applicable to this Application)</i>	

Chapter 16.08 – General Provisions

Sections Contains:

- 16.08.010 Compliance with title.
- 16.08.020 Zoning map.
- 16.08.030 Zone boundaries.
- 16.08.040 Zoning of annexed areas. *(Not applicable to this application)*
- 16.08.050 Prohibited parking. *(Not applicable to this application)*
- 16.08.070 Illegally created lots.
- 16.08.080 Area and yard reductions. *(Not applicable to this application)*
- 16.08.090 Sidewalks required.
- 16.08.100 Height allowances. *(Not applicable to this application)*
- 16.08.110 Fences.
- 16.08.115 Arbors. *(Not applicable to this application)*
- 16.08.120 Siting and review process for Wireless Telecommunications Systems Facilities. *(Not applicable to this application)*
- 16.08.130 Standard transportation improvements.
- 16.08.140 Temporary vendor. *(Not applicable to this application)*
- 16.08.150 Traffic Impact Study (TIS).
- 16.08.160 Safety and Functionality Standards.

16.08.010 Compliance with title.

No building, structure, or land shall hereafter be used or occupied, and no building, structure or part thereof shall hereafter be erected, constructed, reconstructed, moved or structurally altered contrary to the provisions of this title. No lot area, yard, or required off-street parking or loading area existing on or after the effective date of the ordinance codified in this title shall be reduced in area, dimension, or size below the minimums required by this title, nor shall any lot area, yard, or required off-street parking or loading area that is required by this title for one use be used to satisfy the lot area, yard, off-street parking or loading area requirement for any other use, except as may be provided in this title. (Ord. 740 section 10.3.05(A), 1984)

Applicant's Response: In accordance with this chapter of the City's Municipal Code, all proposed uses (i.e. single-family residential) and their subsequent development are required to be in compliance with this title. Each of the proposed lots will comply with the minimum lot area, lot width and lot depth. However, the setbacks on several of the lots will be subject to a major variance request in order to increase the size of the building area/dimensions.

16.08.020 Zoning map.

- A. The location and boundaries of the zones designated in this division are established as shown on the map entitled "Zoning Map of the City of Canby" dated with the effective date of the ordinance codified in this title and signed by the Mayor and the city recorder and hereafter referred to as the zoning map.

Applicant's Response: Based on the City's zoning map, the subject property is zoned R-1 (Low Density Residential). It should be noted that the Applicant is

requesting a Comprehensive Plan Amendment/Zone Map Change to modify the zoning designation from R-1 (Low Density Residential) to R1.5 (Medium Density Residential).

Refer to Section F – Appendices, Appendix 6 – Zoning Map for additional information.

- B. The signed copy of the zoning map shall be maintained on file in the office of the city recorder and is made a part of this title. (Ord. 740 section 10.3.05(B), 1984)

Applicant's Response: *The Contract Purchaser/Applicant acknowledges that the City's Zoning Map is dated September 2019.*

16.08.030 Zone boundaries.

Unless otherwise specified, zone boundaries are lot lines or the centerline of streets, railroad rights-of-way, or such lines extended. Where a zone boundary divides a lot into two or more zones, the entire lot shall be considered to be in the zone containing the greater lot area, provided the boundary adjustment is a distance of less than twenty feet. (Ord. 740 section 10.3.05(C), (1984))

Applicant's Response: *The Contract Purchaser/Applicant understands that the zone boundaries extend to the lot lines or the centerline of streets.*

16.08.040 Zoning of annexed areas. *This section is not applicable to this application since the subject property was previously annexed to the City in 2019 and has been zoned for residential use.*

16.08.050 Prohibited parking. *This section is not applicable to this application since no automobile, motorcycle, van or pickup trucks (rated larger than one ton) are expected to be parked on a local public street within the subject property.*

16.08.070 Illegally created lots.

In no case shall a lot which has been created in violation of state statute or city ordinance be considered as a lot of record for development purposes, until such violation has been legally remedied. (Ord. 740 section 10.3.05(G), 1984)

Applicant's Response: *The subject property was legally create through a subdivision process in Clackamas County, known as the Pruneland Subdivision. In 1964, a record of survey was prepared and the subject property was created.*

Refer to Section F – Appendices, Appendix 2 – Pruneland Subdivision and Appendix 3 – Record of Survey for additional information

16.08.080 Area and yard reductions. *This section is not applicable to this application since there are no existing residential structures within the subject property being retained. Based on this, no area or yard reductions are necessary.*

16.08.090 Sidewalks required.

- A. In all commercially zoned areas, the construction of sidewalks and curbs (with appropriate ramps for the handicapped on each corner lot) shall be required as a condition of the issuance of a building permit for new construction or substantial remodeling, where such work is estimated to exceed a valuation of twenty thousand dollars, as determined by the building code. Where multiple permits are issued for construction on the same site, this requirement shall be imposed when the total valuation exceeds twenty thousand dollars in any calendar year.

Applicant's Response: *Since the subject property is not located in a commercially zoned area, this criterion is not application to this application.*

- B. The Planning Commission may impose appropriate sidewalk and curbing requirements as a condition of approving any discretionary application it reviews. (Ord. 740 section 10.3.05(I), 1984)

Applicant's Response: *The Contract Purchaser/Applicant understands that the Planning Commission may impose sidewalks and curbing requirements as a condition of approval on any discretionary application, such as a subdivision.*

Currently, the north side of Territorial Road and the west side of Locust Street do not have curbs/gutter or sidewalks along the perimeter of subject property. As part of the subdivision application, curb/gutter, planter strips and sidewalks are proposed along the perimeter of each street as well as the two proposed interior roadways.

16.08.100 Height allowances.

The following types of structures or structural posts are not subject to the building height limitations: **chimneys**, cupolas, tanks, church spires, belfries, derricks, fire and hose towers, **flagpoles**, water tanks, elevators, windmills, **utility poles** and other similar projections. The height of wireless telecommunications systems facilities shall be in accordance with section 16.08.120. (Ord. 740 section 10.3.05(J), 1984; Ord. 981 section 18, 1997)

Applicant's Response: *The Owner/Applicant understands that certain types of structural elements are not subject to the building height limitations. Some of the anticipated elements might include chimneys, flagpoles and utility poles.*

16.08.110 Fences.

- A. **Fences not more than three and one-half feet in height may be constructed within the street setbacks of any R-1, R-1.5, R-2 or C-1 zone. Fences not more than six feet in height may be constructed in any interior yard, rear yard, or street yard along an alley;** provided, however, that in no case shall a fence be constructed in violation of the requirements of a vision clearance area.

Applicant's Response: *The Owner/Applicant understands that fence heights up to three and half feet in height may be constructed within the street setbacks*

within the R-1 and R-1.5 zones. Similarly, fences up to six feet in height may be constructed in any interior yard, rear yard, or street yard along an alley.

It is anticipated that each of the twenty (20) proposed lots will contain a six foot tall fence along the side yards and rear yards. Similarly, fences up to three and a half feet may be located along the street side setback, particularly along the corner lot side setback.

Refer to Section E – Exhibit Drawings, Sheet C100 – Site Plan (Preliminary) for fence locations.

- B. On corner lots, the 3.5-foot height limit will apply within the required setback along both street-facing yards.

Applicant's Response: *The Contract Purchaser/Applicant acknowledges that fence heights up to three and one-half feet in height will apply to both street facing yards along corner lots.*

Within the proposed subdivision, the three and one-half foot limitation would apply to both street facing side of lots #1, #8, #9, #16 and #17.

Refer to Section E – Exhibit Drawings, Sheet C100 – Site Plan (Preliminary) for additional information.

- C. No more than one row of fencing is allowed within a required street yard setback.

Applicant's Response: *In accordance with this section of the code, only one row of fencing is allowed within the required setback.*

Each of the twenty (20) proposed lots will contain only one fence within the yard setback. Depending upon the fence location, the fence will consist of a single row that ranges in height between three and one-half feet and six feet.

Refer to Section E – Exhibit Drawings, Sheet A100 – Details (Preliminary) for fence style and heights.

- D. The Planning Commission may require sight-blocking or noise mitigating fences for any development it reviews.

Applicant's Response: *The Contract Purchaser/Applicant understands that the Planning Commission may impose sight-blocking or noise mitigating fences requirements as a condition of approval on any development, such as a subdivision.*

The Applicant is proposing noise mitigating wall along the side of lots #17, #18, #19 and #20 adjacent to Northeast Territorial Road.

- E. Fences of up to eight feet in height are permitted for any development in C-2, C-M, M-1 or M-2, or Planned Unit Development zones.

Applicant's Response: *With the approval of Comprehensive Plan Amendment/Zone Map Changes, the property will have a zoning designation of R-1.5. Both the existing zoning of R-1 and proposed zoning of R-1.5 do not allow fences greater than six feet in height. Based on this, none of the fences are proposed at heights greater than six (6) feet.*

- F. No fence/wall shall be constructed throughout a subdivision, planned unit development or be part of a project that is/was subject to site and design review approval where the effect or purpose is to wall said project off from the rest of the community unless reviewed and approved by the Planning Commission. (Ord. 890 section 8, 1993; Ord. 740 section 10.3.05(K), 1984; Ord. 955 section 2, 1996; Ord. 981 section 43, 1997)

Applicant's Response: *A noise mitigating wall is proposed along south side of lots #17, #18, #19 and #20 adjacent to Northeast Territorial Road. In addition, each of the twenty (20) proposed lots will contain fencing within the required yard setbacks. Depending upon the fence location, the fence will consist of a single row that ranges in height between three and one-half feet and six feet. However, none of the walls/fences are intended to "wall" off the proposed project from the remainder of the community.*

- G. In all zones, private fences along a public pedestrian/bicycle pathway shall comply with the following in order to provide security and visibility for pathway users while maintaining privacy for the residence.
1. Fencing installed as part of a new subdivision shall comply with either (a) or (b) below.
 2. Fencing installed by a property owner on an individual lot shall comply with either (a), (b), or (c) below.
 - a. Solid fencing shall be no greater than four (4) feet in height; or
 - b. Fencing shall be constructed with black open wire material, wooden slats, or some other material that allows visual access between the pathway and adjacent uses; or
 - c. Solid fencing shall be set back at least three (3) feet from the property line that abuts the pathway.

Applicant's Response: *There are no public pedestrian/bicycle pathways proposed as part of the subdivision.*

- H. Use of hazardous materials.

1. Fences and walls shall not be constructed of or contain any material which will do bodily harm, such as electric or barbed wire, razor wire, broken glass, spikes, or any other hazardous or dangerous material, except as follows:
 - a. Barbed wire or electrified fences enclosing livestock are permitted in any zone permitting farm use. Electrified fences shall be posted or flagged at not less than 25-foot intervals with clearly visible warnings of the hazard when adjacent to developed areas.
 - b. In commercial and industrial zones barbed wire is permitted attached to the top of a fence that is at least six foot in height above grade; provided, that barbed wire shall not extend over a street, sidewalk, alley or roadway. The attached barbed wire shall be placed at least six inches above the top of the fence. (Ord. 890 section 8, 1993; Ord. 740 section 10.3.05(K), 1984; Ord. 955 section 2, 1996; Ord. 981 section 43, 1997; Ord. 1338, 2010; Ord. 1514, 2019)

Applicant's Response: *Each of the twenty (20) proposed lots will contain fences constructed of wood or recycled plastic. However, none of the fencing will contain electric or barbed wire, razor wire, broken glass, spikes, or any other hazardous or dangerous material will be used in the construction of the fencing.*

Refer to Section E – Exhibit Drawings, Sheet C400 – Details (Preliminary) for fence construction information.

16.08.115 Arbors. *This section is not applicable to this application since no arbors are being proposed within the subdivision. Once individual lots are sold, owners may opt to construct arbors that do not exceed eight feet in height and maintain a five foot setback from the property line.*

16.08.120 Siting and review process for Wireless Telecommunications Systems Facilities. *This section is not applicable to this application since not wireless telecommunication facilities are being proposed with the subdivision.*

16.08.130 Standard transportation improvements.

- A. Pursuant to the Transportation Planning Rule, projects that are specifically identified in the Canby Transportation System Plan, for which the City has made all the required land use and goal compliance findings, are permitted outright and subject only to the standards established by the Transportation System Plan. **This section pertains to additional transportation projects that may not be identified in the Canby Transportation System Plan, and whether the use is permitted outright** or permitted subject to the issuance of a conditional use permit.

1. Except where otherwise specifically regulated by this ordinance, the following improvements are permitted outright:
 - a. Normal operation, maintenance, repair, and preservation of existing transportation facilities.
 - b. Installation of culverts, pathways, medians, fencing, guardrails, lighting, and similar types of improvements within the existing right-of-way.**

- c. Projects specifically identified in the Transportation System Plan as not requiring further land use regulation.
 - d. Landscaping as part of a transportation facility.**
 - e. Emergency measures necessary for safety and the protection of property.
 - f. Acquisition of right-of-way for public roads, highways, and other transportation improvements designated in the Transportation System Plan**, except for those that are located in exclusive farm use or forest zones.
 - g. Construction of a local street or road as part of subdivision or land partition approved consistent with this Ordinance.**
2. Except where otherwise specifically regulated by this ordinance, the following improvements are permitted as a conditional use:
- a. Construction, reconstruction, or widening, and other projects authorized by the Transportation System Plan but not included in the list of projects in the Transportation System Plan. These projects shall comply with the Transportation System Plan and applicable standards, and shall address the following criteria. For State projects that require an Environmental Impact Statement (EIS) or Environmental Assessment (EA), the draft EIS or EA shall be reviewed and used as the basis for findings to comply with the following criteria:
 - i. The project is designed to be compatible with existing land use and social patterns, including noise generation, safety, and zoning.
 - ii. The project is designed to minimize avoidable environmental impacts to identified wetlands, wildlife habitat, air and water quality, cultural resources, and scenic qualities.
 - iii. The project preserves or improves the safety and function of the facility through access management, traffic calming, or other design features.
 - iv. The project includes provision for bicycle and pedestrian circulation as consistent with the Comprehensive Plan and other requirements of this ordinance.
 - b. If review under this section indicates that the use or activity is not clearly authorized by the Transportation System Plan or this ordinance, a plan amendment shall be undertaken prior to or in conjunction with the conditional use permit review. (*Ord. 1043 Section 3, 2000*)

Applicant's Response: *The Contract Purchaser/Applicant understands that this section of the code pertains to additional transportation projects that may not be identified in the Canby Transportation System Plan. This would include the acquisition of right-of-way along NE Territorial Road and North*

Locust Street in order to meet transportation standards, their associated improvements including curbs/gutters, landscaping and sidewalks, and the construction of local streets as part of subdivision requirements.

Partial widening, curbs/gutters, landscape strips and sidewalks are proposed along Northeast Territorial Road and North Locust Street. Full street improvements including full street, curbs/gutters, landscape strips and sidewalks

Refer to Section E – Exhibit Drawings, Sheet C100 – Site Plan (Preliminary) and C500 – Off-Street Improvement Plans for additional information.

16.08.140 Temporary vendor. *This section is not applicable to this application since there are no temporary goods or services offered for sale in a temporary manner proposed on the subject property.*

16.08.150 Traffic Impact Study (TIS).

- A. Purpose. The purpose of this section of the code is to implement Section 660-012-0045(2)(b) of the State Transportation Planning Rule, which requires the city to adopt a process to apply conditions to development proposals in order to minimize adverse impacts to and protect transportation facilities. This section establishes the standards to determine when a proposal must be reviewed for potential traffic impacts; when a Traffic Impact Study must be submitted with a development application in order to determine whether conditions are needed to minimize impacts to and protect transportation facilities: what information must be included in a Traffic Impact Study; and who is qualified to prepare the Study.

Applicant's Response: *The Contract Purchaser/Applicant understand that the “purpose” of this section of the code is to implement States Transportation Planning Rule, which requires the city to adopt a process to apply conditions to development proposals in order to minimize adverse impacts to and protect transportation facilities. It is also intended to identify what information is included in the Transportation Analysis Letter and who is qualified to prepare the report.*

- B. Initial scoping. During the pre-application conference, the city will review existing transportation data to determine whether a proposed development will have impacts on the transportation system. It is the responsibility of the applicant to provide enough detailed information for the city to make a determination. If the city cannot properly evaluate a proposed development's impacts without a more detailed study, a transportation impact study (TIS) will be required to evaluate the adequacy of the transportation system to serve the proposed development and determine proportionate mitigation of impacts. If a TIS is required, the city will provide the applicant with a “scoping checklist” to be used when preparing the TIS.

Applicant's Response: *An initial scoping letter was prepared and sent to the City for review on January 15, 2021.*

- C. Determination. Based on information provided by the applicant about the proposed development, the city will determine when a TIS is required and will consider the following when making that determination.

1. **Changes in land use designation, zoning designation**, or development standard.
2. **Changes in use or intensity of use.**
3. **Projected increase in trip generation.**
4. Potential impacts to residential areas and local streets.
5. Potential impacts to priority pedestrian and bicycle routes, including, but not limited to school routes and multimodal street improvements identified in the TSP.
6. Potential impacts to intersection level of service (LOS).

Applicant's Response: *A Traffic Impact Statement is a required element of the Comprehensive Plan Amendment/Zone Map Change application submittal. The proposal includes a change in zoning which will result in a slight increase in intensity of use. The proposed zone change of the subject property will increase the trip generation potential of the site by 7 morning peak hour trips, 7 evening peak hour trips, and 150 average weekday trips. Accordingly, the net increase in the traffic intensity of the site will not degrade the performance of any existing or planned transportation facility beyond what is currently allowed under the existing zone.*

D. TIS General Provisions

1. **All transportation impact studies, including neighborhood through-trip and access studies, shall be prepared and certified by a registered Traffic or Civil Engineer in the State of Oregon.**
2. Prior to TIS scope preparation and review, the **applicant shall pay to the city the fees and deposits associated with TIS scope preparation and review in accordance with the adopted fee schedule.** The city's costs associated with TIS scope preparation and review will be charged against the respective deposits. Additional funds may be required if actual costs exceed deposit amounts. Any unused deposit funds will be refunded to the applicant upon final billing.
3. For preparation of the TIS, the applicant may choose one of the following:
 - a. **The applicant may hire a registered Oregon Traffic or Civil Engineer to prepare the TIS for submittal to the city.** The city Traffic Engineer will then review the TIS and the applicant will be required to pay to the city any fees associated with the TIS review; or

- b. The applicant may request that the city Traffic Engineer prepare the TIS. The applicant will pay to the city any fees associated with preparation of the TIS by the city Traffic Engineer.
- 4. The **TIS shall be submitted with a concurrent land use application and associated with application materials.** The city will not accept a land use application for process if it does not include the required TIS.
- 5. The city may require a TIS review conference with the applicant to discuss the information provided in the TIS once it is complete. This conference would be in addition to any required pre-application conference. If such a conference is required, the city will not accept the land use application for processing until the conference has taken place. The applicant shall pay the TIS review conference fee at the time of conference scheduling, in accordance with the adopted fee schedule.
- 6. A TIS determination is not a land use action and may not be appealed.

Applicant's Response: *The Contract Purchaser/Applicant has contracted with a registered Traffic Engineer to prepare a Transportation Analysis Letter (TAL) for the proposed development proposal. This document will be submitted with the land use application materials.*

For additional information, refer to Section F – Appendices, Appendix 23 – Transportation Analysis Letter for additional information.

- E. TIS Scope. The city shall determine the study area, study intersections, trip rates, traffic distribution, and required content of the TIS based on information provided by the applicant about the proposed development.
 - 1. **The study area will generally comprise an area within a ½-mile radius of the development site. If the city determines that development impacts may extend more than ½ mile from the development site, a larger study area may be required. Required study intersections will generally include (in addition to the primary access points) collector/collector and above intersections with an anticipated peak hour traffic increase of five-percent from the proposed project.**
 - 2. If notice to ODOT or other agency is required pursuant to noticing requirements in Chapter 16.89, the city will coordinate with those agencies to provide a comprehensive TIS scope. ODOT may also require a TIS directly to support an OR 99E approach permit application.

Applicant's Response: *The City's Contract Engineer has determined the study area, study intersections, trip rates, traffic distribution, and required content of the TIS.*

Refer to Section F – Appendices, Appendix 23 – Transportation Analysis Letter (TAL) for additional information.

- F. TIS Content. A project-specific TIS checklist will be provided to the applicant by the city once the city has determined the TIS scope. A TIS shall include all of the following elements, unless waived by the city.

- 1. Introduction and Summary.** This section shall include existing and projected trip generation including vehicular trips and mitigation of approved development not built to date; existing level and proposed level of service standard for city and county streets and volume to capacity for state roads; project build year and average growth in traffic between traffic count year and build year; summary of transportation operations; traffic queuing and delays at study area intersections; and proposed mitigation(s).
- 2. Existing Conditions.** This section shall include a study area description, including information about existing study intersection level of service.
- 3. Impacts.** This section should include the proposed site plan, evaluation of the proposed site plan, and a project-related trip analysis. A figure showing the assumed future year roadway network (number and type of lanes at each intersection) also shall be provided. For subdivision and other developments, the future analysis shall be for the year of proposed site build-out. For proposed comprehensive plan and/or zoning map amendments, the future analysis year shall be 20 years from the date of the City's adopted TSP, or 15 years, whichever is greater.
4. Mitigation. This section shall include proposed site and area-wide specific mitigation measures. Mitigation measures shall be roughly proportional to potential impacts. See Subsection K below for rough proportionality determination.
5. Appendix. This section shall include traffic counts, capacity calculations, warrant analysis, and any other information necessary to convey a complete understanding of the technical adequacy of the TIS.

Applicant's Response: *The trip generation calculations show that under the existing R-1 zone, the subject site could reasonably generate up to 11 morning peak hour trips, 15 evening peak hour trips, and 142 average weekday trips. Under the proposed R-1.5 zone, the highest generating development that could reasonably be constructed on site is the apartment scenario, which would generate 18 morning peak hour trips, 22 evening peak hour trips, and 292 average weekday trips. Accordingly, the net change in the trip generation potential of the site after the proposed rezone is projected to be an increase of 7 morning peak hour trips, 7 evening peak hour trips, and 150 average weekday trips.*

The Contract Purchaser/Applicant is proposing a single family residential subdivision that will generate a lower amount of trips than apartments. The proposed Subdivision is projected to generate 15 morning peak hour trips, 20 evening peak hour trips, and 188 average weekday trips.

The net increase in the traffic intensity of the site will not degrade the performance of any existing or planned transportation facility beyond what is currently allowed under the existing zone.

Adequate sight distances can be made available to ensure safe operation of the three proposed access intersections.

Both City of and County standards will be met with respect to spacing between the proposed public access roads and other public road intersections. The proposed private access will also meet spacing standards with all other public intersections and driveways along North Locust Street.

No mitigation is required for trip generation, site distance or access spacing. Refer to Section F – Appendices, Appendix 23 – Transportation Analysis Letter (TAL) for additional information.

- G. TIS Methodology. The City will include the required TIS methodology with the TIS scope.

Applicant's Response: Refer to Section F – Appendices, Appendix 23 – Transportation Analysis Letter (TAL) for additional information.

- H. Neighborhood Through-Trip Study. Any development projected to add more than 30 through-vehicles in a peak hour or 300 through-vehicle per day to an adjacent residential local street or neighborhood route will be require assessment and mitigation of residential street impacts. Through-trips are defined as those to and from a proposed development that have neither an origin nor a destination in the neighborhood. The through-trip study may be required as a component of the TIS or may be a stand-alone study, depending on the level of study required in the scoping checklist. The through-trip study shall include all of the following:

1. Existing number of through-trips per day on adjacent residential local streets or neighborhood routes.
2. Projected number of through-trips per day on adjacent residential local streets or neighborhood routes that will be added by the proposed development.
3. Traffic management strategies to mitigate for the impacts of projected through-trip consistent.
 - a. If a residential street is significantly impacted, mitigation shall be required. Thresholds used to determine if residential streets are significantly impacted are:
 1. Local residential street volumes should not increase above 1,200 average daily trips
 2. Local residential street speeds should not exceed 28 miles per hour (85th percentile speed).

Applicant's Response: *The proposed subdivision will not meet the threshold for 30 through vehicles in a peak hour of 300 through vehicles per day to a residential or neighborhood route.*

- I. Mitigation. Transportation impacts shall be mitigated at the time of development when the TIS identifies an increase in demand for vehicular, pedestrian, bicycle, or transit transportation facilities within the study area. Mitigation measures may be suggested by the applicant or recommended by ODOT or Clackamas County in circumstances where a state or county facility will be impacted by a proposed development. The city shall determine if the proposed mitigation measures are adequate and feasible. ODOT must be consulted to determine if improvements proposed for OR 99E comply with ODOT standards and are supported by ODOT. The following measures may be used to meet mitigation requirements:

1. On-and off-site improvements beyond required standard frontage improvements.
2. Development of a transportation demand management program.
3. Payment of a fee in lieu of construction, if construction is not feasible.
4. Correction of off-site transportation deficiencies within the study area that are substantially exacerbated by development impacts.
5. Construction of on-site facilities or facilities located within the right-of-way adjoining the development site that exceed minimum required standards and that have a transportation benefit to the public.

Applicant's Response: *No mitigation is required for trip generation, site distance or access spacing. The net increase in the traffic intensity of the site will not degrade the performance of any existing or planned transportation facility beyond what is currently allowed under the existing zone.*

Access spacing standards, for both City of and County, will be met with respect to spacing between the proposed public access roads and other public road intersections. The proposed private access will also meet spacing standards with all other public intersections and driveways along North Locust Street.

Refer to Section F – Appendices, Appendix 23 – Transportation Analysis Letter (TAL) for additional information.

- J. Conditions of Approval. The city may deny, approve, or approve with appropriate conditions a development proposal in order to minimize impacts and protect transportation facilities.
1. Where the existing transportation system will be impacted by the proposed development, dedication of land for streets, transit facilities, sidewalks, bikeways, paths, or accessways may be required to ensure that the transportation system is adequate to handle the additional burden caused by the proposed use.

2. Where the existing transportation system is shown to be burdened by the proposed use, improvements such as paving, curbing, installation or contribution to traffic signals, traffic channelization, construction of sidewalks, bikeways, accessways, paths, or street that serve the proposed use may be required.
3. The city may require the development to grant a cross-over access easement(s) to adjacent parcel(s) to address access spacing standards on arterials and collector roadways or site-specific safety concerns. Construction of shared access may be required at the time of development if feasible, given existing adjacent land use. The access easement must be established by deed.

Applicant's Response: *The Contract Purchaser/Applicant acknowledges that the Planning Commission may deny, approve, or approve with appropriate conditions a development proposal in order to minimize impacts and protect transportation facilities.*

The Contract Purchaser/Applicant is dedicating approximately 0.7 acres for public street improvements. These are identified as follows:

Proposed Right-of-Way Dedication	Lot Coverage (Expressed in Square Footage)
ROW – Northeast Territorial Road Widening	0.038 Ac. (1,684 SF)
ROW – North Locust Street Widening	0.148 Ac. (6,746 SF)
ROW – Proposed “NE 17 th ” Street	0.260 Ac. (11,316 SF)
ROW – Proposed “NE 18 th ” Street	0.260 Ac. (11,316 SF)
Total Dedication	0.706 Ac. (31,062 SF)

- K. Rough Proportionality Determination. Improvements to mitigate impacts identified in the TIS shall be provided in rough proportion to the transportation impacts of the proposed development.
1. The TIS shall include information regarding how the proportional share of improvements was calculated, using the ratio of development trips to growth trips and the anticipated cost of the full Canby Transportation System Plan. The calculation is provided below:

Proportionate Share Contribution = [Net New Trips/(Planning Period Trips-Existing Trips)] X Estimated Construction Cost.

 - a. Net new trips means the estimated number of new trips that will be created by the proposed development within the study area.
 - b. Planning period trips means the estimated number of total trips within the study area within the planning period identified in the TSP.

- c. Existing trips means the estimated number of existing trips within the study area at the time of TIS preparation.
- d. Estimated construction cost means the estimated total cost of construction of identified improvements in the TSP. (Ord 1340, 2011)

Applicant's Response: *Based on the current subdivision plan, no mitigation is required for trip generation, site distance or access spacing. All intersections are operating at acceptable levels and the net increase in the traffic intensity of the site will not degrade the performance of any existing or planned transportation facility beyond what is currently allowed under the existing zone.*

Refer to Section F – Appendices, Appendix 23 – Transportation Analysis Letter (TAL) for additional information.

16.08.160 Safety and Functionality Standards.

The City will not issue any development permits unless the proposed development complies with the city's basic transportation safety and functionality standards, the purpose of which is to ensure that development does not occur in areas where the surrounding public facilities are inadequate. Upon submission of a development permit application, an applicant shall demonstrate that the development property has or will have the following:

- A. Adequate street drainage, as determined by the city.

Applicant's Response: *The Contract Purchaser/Applicant understands that the proposed development maintains adequate street drainage. The proposed improvements to NE Territorial Road and North Locust Street will provide sufficient drainage for these roadways. Similarly, the proposed construction of the local roadways within the development will also provide for sufficient drainage to collect and convey stormwater generated from the proposed development.*

Refer to Section E – Exhibit Drawings, Sheet C200 – Grading, Drainage and Erosion Control Plan (Preliminary) for additional information.

- B. Safe access and clear vision at intersections, as determined by the city.

Applicant's Response: *The proposed development will impact the intersection of NE Territorial Road as well as create two new intersections where the local street intersection North Locust Street. Vision triangles at each of these locations will be designed to meet the City's vision clearance requirements and standards.*

Refer to Section E – Exhibit Drawings, Sheet C100 – Site Plan (Preliminary) for additional information.

- C. Adequate public utilities, as determined by the city.

Applicant's Response: *The Contract Purchaser/Applicant understands that the proposed development maintains adequate public utilities. The proposed improvements to NE Territorial Road and North Locust Street will include sufficient utilities for these roadways. Similarly, the construction of the local roadways within the proposed development will also provide for sufficient public utilities.*

Refer to Section E – Exhibit Drawings, Sheet C300 – Composite Utility Plan (Preliminary) for additional information.

- D. Access onto a public street with the minimum paved widths as stated in Subsection E below.

Applicant's Response: *The construction of the local roadways within the proposed development will also provide for the minimum pavement widths.*

- E. Adequate frontage improvements as follows:

1. For local streets and neighborhood connectors, a minimum paved width of 16 feet along the site's frontage.
2. For collector and arterial streets, a minimum paved width of 20 feet along the site's frontage.
3. For all streets, a minimum horizontal right-of-way clearance of 20 feet along the site's frontage.

Applicant's Response: *The Contract Purchaser/Applicant will provide for the minimum pavement widths. All access and frontages will occur from either North Locust Street or the new local roadway proposed as part of the subdivision. For Northeast Territorial Road, the minimum paved width of 20 feet is required along the frontage. Similarly, along North Locust Street, the minimum pavement width is 16 feet along the frontage.*

- F. Compliance with mobility standards identified in the TSP. If a mobility deficiency already exists, the development shall not create further deficiencies. (Ord 1340, 2011)

Applicant's Response: *The proposed development will comply with mobility standards. Sidewalks along Northeast Territorial Road and North Locust Street will be ADA compliant. Similarly, sidewalks and crosswalk along the two proposed internal roadway and alley way will also be designed to meet ADA accessibility requirements.*

Refer to Section E – Exhibit Drawings, Sheet C100 – Site Plan (Preliminary) and Sheet C200 – Grading, Drainage and Erosion Control Plan (Preliminary) for additional information.

Chapter 16.12 - Classifications of Zones

Sections Contains:

- 16.12.010 Zones designated.
- 16.12.020 Uses permitted.

16.12.010 Zones designated.

In order to carry out the purposes and provisions of this title, the city is divided into zones designated as follows:

Applicant's Response: *The City's zoning map illustrates the zoning designation for all of the property within the City.*

Refer to Section F – Appendices, Appendix 6 – Zoning Map for additional information.

16.12.020 Uses Permitted

In each zone, the uses permitted outright or permitted subject to the issuance of a conditional use permit are outlined in the following chapters. (Ord. 740 section 10.3.15 [part], 1984)

Base Zones	Abbreviation
Low Density Residential	R-1
Medium Density Residential	R-1.5
High Density Residential	R-2
Downtown Commercial	C-1
Residential/Commercial	C-R
Highway Commercial	C-2
Commercial/Manufacturing	C-M
Light Industrial	M-1
Heavy Industrial	M-2
Overlay Zones	
Planned Unit Development	PUD
Historical Protection	A
Hazard	H
Canby Industrial Area	I-O
Wetland	WO
Riparian	RO

(Ord. 890 section 14, 1003; Ord. 740 section 10.3.15 [part], 1984; Ord. 1008 section 1, 1998; Ord 1237, 2007; Ord. 1514, 2019)

Applicant's Response: *The subject property is zoned R-1 (Low Density Residential). However, Contract Purchaser/Applicant is requesting a Comprehensive Plan*

Amendment/Zone Map Change to modify the zoning designation from R-1 (Low Density Residential) to R-1.5 (Medium Density Residential).

Section F – Appendices, Appendix 6 – Zoning Map for additional information.

Chapter 16.16 - R-1 Low Density Residential Zone

Sections Contains:

- 16.16.010 Uses permitted outright.
- 16.16.020 Conditional uses. *Not applicable to this application.*
- 16.16.030 Development standards.

16.16.010 Uses permitted outright.

Uses permitted outright in the R-1 zone shall be as follows:

A. Single-family dwelling; one single-family dwelling per lot;

Applicant's Response: *The intended use of the subject property will consist of single-family dwellings; one dwelling per lot. Given the R-1 zoning, the net acreage of 2.475 acres (107,790 SF) would yield a minimum of 11 units (at 10,000 sf lots) and a maximum of 15 units (at 7,000 sf lots).*

As part of the proposed application, the Contract Purchaser/Applicant is requesting a Comprehensive Plan Amendment and Zone Map Change to up zone the subject property from R-1 to R-1.5. If approved, this request will modify the amount of lots and subsequent home the property can accommodate.

- B. Vegetable gardens, orchards and crop cultivation for personal use only, including greenhouses. No large-scale commercial sale of produce is permitted unless continued as a non-conforming use that was in place prior to the existing zoning designation. Keeping of animals other than domestic pets requires a special permit from the City Administrator unless a continuation of a non-conforming agriculture use.

Applicant's Response: *Not Applicable. No large-scale commercial sale of produce uses are proposed.*

- C. Accessory uses and/or accessory structures;

Applicant's Response: *Not Applicable. No accessory structures are proposed as part of the development. However, this may be something that individual home owners build once the individual lots/homes are sold.*

- D. Accessory dwelling, subject to review and approval through a Type 1 procedure (pursuant to Chapter 16.89.030) and must conform to the following standards:

1. Compliance with the Oregon Structural Specialty Code;
2. A maximum of one accessory dwelling is allowed per legal single-family dwelling. The unit may be a detached building, in a portion of a detached accessory building (e.g. above a garage or workshop), or a unit attached or interior to a primary dwelling (e.g. an addition or the conversion of an existing floor).

3. A detached accessory dwelling may not exceed 800 square feet of floor area or 75% of the primary dwelling's floor area, whichever is smaller.
4. Accessory dwellings that result from the conversion of a level or floor (e.g. basement, attic, or second floor) of the primary dwelling may occupy the entire level or floor, even if the floor area of the accessory dwelling would be more than 800 square feet.
5. Accessory dwellings must meet all other development standards (e.g. height, setbacks, lot coverage, etc.) for buildings in the zoning district, except that:
 - a. Conversion of an existing legal non-conforming structure to an accessory dwelling is allowed, provided the conversion does not increase the non-conformity; and
 - b. Chapter 16.21, Residential Design Standards do not apply; and
 - c. An additional on-site parking space shall not be required but may be provided.

Applicant's Response: *No accessory dwellings are proposed.*

- E. Day care facility in a residential home, with twelve (12) or fewer children;

Applicant's Response: *Not Applicable. No day care facilities are proposed.*

- F. Manufactured and mobile home subdivisions, where developed as planned unit developments, subject to the requirements of Divisions IV and V;

Applicant's Response: *Not Applicable. No manufactured or mobile home subdivisions are proposed.*

- G. Minor public facilities;

Applicant's Response: *Not Applicable. No minor public facilities are proposed.*

- H. Manufactured home - with the following additional approval criteria:

1. Must be double-wide or wider and must enclose at least 1,000 square feet.
2. Must be located not more than twelve (12) inches above grade on an excavated and back-filled masonry foundation which is enclosed at the perimeter.
3. Must have a pitched roof with a minimum slope of at least a nominal three (3) feet in height for each twelve (12) feet in width.
4. Exterior siding and roofing must be similar in color, material and appearance to that used on surrounding dwellings within three hundred (300) feet of the lot.

5. The exterior thermal envelope must meet performance standards equivalent to those required for single family dwellings under the State Building Code.
6. Must not have bare metal siding or roofing.

Applicant's Response: *Not Applicable. No manufactured homes are proposed.*

- I. Home occupations which meet the strict definition of section 16.04.240.

Applicant's Response: *Not Applicable. No home occupations are proposed as part of the development. However, home occupations may occur as individual home owners request approval under a separation application once the individual lots/homes are sold.*

- J. Residential Home/Adult Foster Home - for five or fewer individuals. (Per ORS 197.665).

Applicant's Response: *Not Applicable. No residential home/adult foster homes are proposed.*

- K. Foster Care Home; as defined in Section 16.04 (Ord. 890 section 15, 1993; Ord. 859 section 1, 1991; Ord. 740 section 10.3.18(A), 1984; Ord. 1080, 2001; Ord 1237, 2007; Ord 1514, 2019)

Applicant's Response: *Not Applicable. No foster care homes are proposed.*

16.16.020 Conditional uses. *This criterion is not applicable to this application. All of the proposed uses (i.e. single-family homes) are permitted outright within the R-1 Low Density Residential Uses.*

16.16.030 Development standards.

The following subsections indicate the required development standards of the R-I zone:

- A. **Minimum and maximum lot area: seven thousand (7,000) square feet minimum, and ten thousand (10,000) square feet maximum, per single-family dwelling.** The maximum lot area standard does not apply to single family dwellings existing at the time of subdivision or partition plan approval; and the Planning Commission may approve smaller or larger lots in conformance with subsection B, below. Preexisting, legally created lots of record shall be considered to be legally buildable and separately saleable, provided they contain at least five thousand (5,000) square feet; and further provided, that any new structures on such lots meet the required setbacks.

Applicant's Response: *The Contract Purchaser/Applicant understands that within the R-1 zone that seven thousand (7,000) square feet is the minimum lot size and ten thousand (10,000) square feet maximum lot size per single-family dwelling.*

As part of the proposed application, the Contract Purchaser/Applicant is requesting a Comprehensive Plan Amendment and Zone Map Change to up zone the subject property from R-1 to R-1.5. If approved,

this request will modify the number of lots and subsequent homes the property can accommodate.

B. Lot area exceptions:

1. The Planning Commission may approve an exception to the minimum and maximum lot area standards in subsection 16.16.030.A as part of a subdivision or partition application when all of the following standards are met:
 - a. The average area of all lots created through the subject land division, excluding required public park land dedications, surface water management facilities and similar public use areas, shall be no less than seven thousand square feet and no greater than ten thousand square feet. Non-required significant natural resource areas shall be included in the average lot size calculation to enable a transfer of density onto buildable portions of the site.

Required areas include identified parks, wetland areas, riparian corridors, and other areas in which building is not permitted under local, state, or federal laws or regulations. For land in the North Redwood DCP area, the Planning Commission may allow public park land dedications to be included in the lot size averaging calculation in order to achieve community development goals and allow protection of natural resources; in this case, the resulting average lot size shall not be less than 5,000 square feet.
 - b. **No lot shall be created that contains less than six thousand square feet**, unless the alternative lot layout option provided in Section 16.64.040 is used;
 - c. The lot area standards for two-family dwellings, as provided in Sections 16.16.010 and 16.16.020, shall be met; and
 - d. As a condition of granting the exception, the city will require the owner to record a deed restriction with the final plat that prevents the re-division of over-sized lots (e.g., ten thousand square feet and larger), when such re-division would violate the average lot area provision in subsection 16.16.030.B.1.a. All lots approved for use by more than one dwelling shall be so designated on the final plat.
2. A public benefit must be demonstrated in order to allow more than ten percent of the lots to be outside of the minimum and maximum lot areas in subsection 16.16.030.A.
3. The Planning Commission may modify the maximum lot area requirements in 16.16.030.A if these cannot be met due to existing lot dimensions, road patterns, or other site characteristics.

Applicant's Response: No lot exceptions are being requested.

- C. Minimum width and frontage:** **Sixty feet**, except that the Planning Commission may approve lots having less frontage subject to special conditions to assure adequate access.

Applicant's Response: *The Contract Purchaser/Applicant acknowledges that within the R-1 zone that the minimum width and frontage is sixty (60) feet.*

As part of the proposed application, the Contract Purchaser/Applicant is requesting a Comprehensive Plan Amendment and Zone Map Change to up zone the subject property from R-1 to R-1.5. If approved, this request will modify the minimum required width and frontage to forty (40) feet.

All of the lots within the proposed subdivision are proposed to have a fifty (50) width.

D. Minimum yard requirements:

1. Street yard: **twenty feet on side with driveway; fifteen feet for all other street sides;** except that street yards may be reduced to ten feet for covered porches only;
2. Rear yard: **all corner lots, ten feet single story or fifteen feet two-story;** all other lots, fifteen feet single story or twenty feet two-story. One story building components must meet the single story setback requirements; two story building components must meet the two-story setback requirements;
3. Interior yard: **Seven feet,** except as otherwise provided for zero-lot line housing.
4. Interior and rear yards may be reduced to three feet, or the width of any existing utility easement, whichever is greater, for detached accessory structures erected sixty feet or more from any street other than an alley. The height limitations noted in subsection E.2 below apply to such structures. Detached accessory dwellings are not eligible for the three foot reduction. Utility easements may only be reduced with the approval of all utility providers.
5. Infill standards may also apply. See CMC 16.21.050.

Applicant's Response: *In accordance with this section, all street yards with driveways are required to be twenty (20) feet. Assuming each lot will contain a two-story home, the rear yards on corner lots are required to be fifteen (15) feet and the rear yards on all other lot is twenty (20) feet. Interior yards are required to be seven (7) feet.*

As part of the proposed application, the Contract Purchaser/Applicant is requesting a Comprehensive Plan Amendment and Zone Map Change to up zone the subject property from R-1 to R-1.5. The yard setbacks standards remain the same whether the lots are in a R-1 zoning district or a R-1.5 district.

Refer to Section E – Exhibit Drawings, Sheet C100 – Site Plan (Preliminary) for additional information. Also, refer to Section F – Appendices, Appendix 25 – Buildable Footprint Exhibit.

E. Maximum building height:

1. Principal building: **thirty-five feet.**
2. Detached accessory structure:
 - a. If located inside the allowed building footprint for the principal building, a detached accessory structure may be up to twenty-two feet tall, as measured to the highest point of the roof.
 - b. If located outside the allowed building footprint for the principal building, a detached accessory structure is subject to a step-up height standard, and is allowed outright only if it meets this standard. The structure shall not exceed eight feet tall, as measured to the highest point of the roof, at a distance of three feet from the property line. The structure may increase in height by one foot vertically for every one foot horizontally away from the three foot line, up to the maximum height of twenty-two feet.
 - c. A conditional use permit is required to locate the structure outside of the allowed building footprint for the principal building in violation of the step-up height standard.
 - d. Detached accessory structures over twenty-two feet tall are not permitted.
3. For detached accessory dwellings, the Planning Commission may approve building heights over twenty-two feet through the Conditional Use process, but in no case shall the accessory dwelling be higher than the principal building. The Planning Commission may only approve the use of buildings over twenty-two feet in the case of existing structures where no substantial changes to existing roof lines are proposed.

Applicant's Response: *The maximum height of any principal building is 35 feet within the R-1 zoning district.*

Again, as part of the proposed application, the Contract Purchaser/Applicant is requesting a Comprehensive Plan Amendment and Zone Map Change to up zone the subject property from R-1 to R-1.5. The principle building height standard remains the same whether the lots are in a R-1 zoning district or a R-1.5 district.

Refer to Section F – Appendices, Appendix 26 – Building Plans and Elevations – Prototypical for proposed structural heights.

F. **The maximum amount of impervious surface allowed the R-1 zone shall be 60 percent of the lot area.**

1. Impervious surface includes all surface areas that create a barrier to or hinder the entry of water into the soil in comparison with natural conditions prior to development. Impervious surfaces include, but are not limited to, buildings, paved parking areas and driveways, roads, sidewalks, patios, packed earth, and oiled surfaces. Open, uncovered retention/detention

facilities, green roofs, and permeable surfacing materials shall not be considered impervious surfaces. Roof surfaces are also considered 'pervious' when 100% of the annual average roof runoff is captured and reused on-site for irrigation or approved interior uses.

2. To limit impervious surface, alternative surfacing materials may be used. Alternative surfacing includes, but is not limited to paving blocks, turf block, pervious concrete, and porous asphalt. Other similar approved materials are encouraged. Utilization of alternative surfacing methods shall be subject to review by the City Public Works Department for compliance with applicable regulations and development standards. Maintenance of alternative surfacing materials located on private property are the responsibility of the property owner.

Applicant's Response: *The Contract Purchaser/Applicant acknowledges that within the R-1 zoning district, the maximum amount of impervious surface is 60%. While the building product for each individual lot has yet to be determined, the maximum is anticipated to be much lower.*

G. Other regulations:

1. **Vision clearance distance shall be ten feet from a street to an alley or a street to a driveway, and thirty feet from a street to any other street.**
2. All setbacks to be measured from the foundation line of the building; overhangs shall not exceed two feet; mechanical units, used for the heating/cooling of residential units are exempt from interior and/or rear yard setback requirements. A chimney for a fireplace or stove shall not exceed a two foot projection.
3. To provide shade, required yards on southern and western exposures may be reduced by not more than five feet for eaves, canopies, and covered patios if patio posts still comply with required five foot setbacks.
4. Accessory buildings shall not have a larger footprint than the primary building, unless lot area exceeds twelve thousand square feet. (Ord. 890 section 17, 1993; Ord. 740 section 10.3.18(C), 1984; Ord. 955 section 5, 1996; Ord. 981 section 45, 1997; Ord. 1080, 2001; Ord. 1111 section 7, 2003; Ord 1237, 2007; Ord. 1338, 2010; Ord. 1514, 2019)

Applicant's Response: *The vision clearance distance from a street to an alley or driveway is ten feet. Similarly, the vision distance from a street to a street is thirty (30) feet.*

Refer to Section E – Exhibit Drawings, Sheet C100 – Site Plan (Preliminary) for additional information

Chapter 16.18 - R-1.5 Medium Density Residential Zone

Sections Contains:

- 16.18.010 Uses permitted outright.
- 16.18.020 Conditional uses. *Not applicable to this application.*
- 16.18.030 Development standards.

16.18.010 Uses permitted outright.

Uses permitted outright in the R-1.5 zone shall be as follows:

- A. Uses permitted outright in the R-1 zone;

Applicant's Response: *The Contract Purchaser/Applicant is proposing to develop twenty (20) single-family detached homes. Single family homes are remitted outright within the R-1 zone.*

- B. Two-family or three-family dwellings. One duplex or triplex on each lot. (Ord. 740 sect. 10.3.20 (A), 1984)

Applicant's Response: *No duplexes or triplexes are proposed.*

- C. Single-family townhouse dwellings having common wall construction. The townhouse construction is limited to a maximum grouping of three dwelling units. If more than one group of dwellings is developed then a ten foot distance shall be maintained between an adjacent group of dwelling units. (Ord. 740 sect. 10.3.20(B), 1984; Ord. 1080, 2001; Ord. 1514, 2019)

Applicant's Response: *No single-family townhouse dwellings are proposed.*

16.18.020 Conditional uses. *This criterion is not applicable to this application. All of the proposed uses are permitted outright within the R-1 Low Density Residential Uses.*

16.18.030 Development standards.

The following subsections indicate the required development standards of the R-1.5 zone:

- A. Minimum and maximum lot area:

1. For single family dwellings: five thousand (5,000) square feet minimum and six thousand five hundred (6,500) square feet maximum.
2. For townhome dwelling units having common wall construction: three thousand (3000) square foot minimum lot size.
3. Minimum residential density: For two, three, and four family dwellings: new development shall achieve a minimum density of 6 units per acre and a maximum of 13 units per acre. Minimum density for a property is calculated by multiplying its area in acres (minus area required for street right-of-way and public park/open space areas) by the density standard.

For example, 0.32 acres x 6 units/acre = minimum of 1.92 units. Decimals are rounded to the nearest whole number (e.g., a minimum of 1.92 units becomes a minimum of 2 units per acre). The Planning Commission may modify the density standard if it cannot be met due to existing lot dimensions, road patterns, or other site characteristics.

4. The Planning Commission may approve smaller or larger lots in accordance with subsection B, below.

Applicant's Response: *The Contract Purchaser/Applicant understands that, within the R-1.5 zone, five thousand (5,000) square feet is the minimum lot size and six thousand five hundred (6,500) square feet maximum lot size.*

As previously indicated, the Contract Purchaser/Applicant is requesting a Comprehensive Plan Amendment and Zone Map Change to up zone the subject property from R-1 to R-1.5. If approved, the subject property could yield a minimum of 17 lots and a maximum of 21 lots based on the minimum and maximum lot sizes.

The Applicant is currently proposing to subdivide the property into twenty (20) lots with the intent of developing single-family detached homes on each lot. Below is a summary of each lot:

Lot Number	Lot Size (Expressed in Square Footage)
Lot 1	5,811
Lot 2	5,089
Lot 3	5,130
Lot 4	5,171
Lot 5	5,022
Lot 6	5,022
Lot 7	5,022
Lot 8	5,783
Lot 9	5,783
Lot 10	5,022
Lot 11	5,022
Lot 12	5,022
Lot 13	5,022
Lot 14	5,022
Lot 15	5,022
Lot 16	5,782
Lot 17	5,135
Lot 18	4,219
Lot 19	4,732
Lot 20	5,466

Tract A (Alley)	4,491
Total	107,790 SF
Average Lot Size	5,165 SF

B. Lot area exceptions:

1. The Planning Commission may approve an exception to the minimum and maximum lot area standards in subsection 16.18.030.A as part of a subdivision or partition application when all of the following standards are met:
 - a. **The average area of all lots and open space tracts created through the subject land division, excluding required public park land dedications, surface water management facilities and similar public use areas, shall be no less than five thousand square feet and no greater than six thousand five hundred square feet.** Non-required significant natural resource areas shall be included in the average lot size calculation to enable a transfer of density onto buildable portions of the site. Required areas include identified parks, wetland areas, riparian corridors, and other areas in which building is not permitted under local, state, or federal laws or regulations. For land in the North Redwood DCP area, the Planning Commission may allow public park land dedications to be included in the lot size averaging calculation in order to achieve community development goals and allow protection of natural resources; in this case, the resulting average lot size shall not be less than 4,000 square feet;
 - b. No lot shall be created that contains less than four thousand square feet, unless the alternative lot layout option provided in Section 16.64.040 is used; and
 - c. As a condition of granting the exception, the city will require the owner to record a deed restriction with the final plat that prevents the re-division of over-sized lots (six thousand five hundred square feet and larger), when such re-division would violate the average lot size provision in subsection 16.18.030.B.1.a. All lots approved for use by more than one dwelling shall be so designated on the final plat.
2. A public benefit must be demonstrated in order to allow more than ten percent of the lots to be outside of the minimum and maximum lot areas in subsection 16.18.030.B.1.a.
3. The Planning Commission may modify the maximum lot area requirements in subsection 16.18.030.B if these cannot be met due to existing lot dimensions, road patterns, or other site characteristics.
4. The maximum lot area standard does not apply to dwellings existing prior to subdivision or partition plan approval or to lots designated for open space.

Applicant's Response: No lot exceptions are required. With the exception of two lots (i.e. lots #18 & #19), each of the lots will exceed 5,000 square feet. None of the lots are less than four (4) thousand square feet. No more than two of

the lots or 10% of the lots deviate from the minimum and maximum lot size. The average lot size within the subdivision will be 5,165 square feet.

- C. Minimum width and frontage: forty feet, except that the Planning Commission may approve lots having less frontage subject to special conditions to assure adequate access. Twenty feet is permitted for single family attached (common wall) housing on interior lots.

Applicant's Response: *The Owner/Applicant acknowledges that within the R-1.5 zone that the minimum width and frontage is forty (40) feet.*

Again, as part of the proposed application, the Contractor Purchaser/Applicant is requesting a Comprehensive Plan Amendment and Zone Map Change to up zone the subject property from R-1 to R-1.5. If approved, this request will modify the minimum required width and frontage to forty (40) feet.

All of the lots within the proposed subdivision are proposed to have a fifty (50) width and exceed the forty (40) foot width requirement.

- D. Minimum yard requirements:

- 1. Street yard: twenty feet on side with driveway; fifteen feet for all other street sides;** except that street yards may be reduced to ten feet for covered porches only.
- 2. Rear yard: all corner lots,** ten feet single story or **fifteen feet two-story; all other lots:** fifteen feet single story or **twenty feet two-story.** One story building components must meet the single story setback requirements; two story building components must meet the two-story setback requirements;
- 3. Interior yard: seven feet,** except as otherwise provided for zero-lot line housing.
4. Interior and rear yards may be reduced to three feet, or the width of any existing utility easement, whichever is greater, for detached accessory structures, except accessory dwellings, erected sixty feet or more from any street other than an alley. The height limitations noted in subsection E.2 below apply. Utility easements may only be reduced with the approval of all utility providers.
5. Infill standards may also apply. See CMC 16.21.050.

Applicant's Response: *In accordance with this section, all street yards with driveways are required to be twenty (20) feet. Assuming each lot will contain a two-story home, the rear yards on corner lots are required to be fifteen (15) feet and the rear yards on all other lot is twenty (20) feet. Interior yards are required to be seven (7) feet.*

As previously mentioned, the Contractor Purchaser/Applicant is requesting a Comprehensive Plan Amendment and Zone Map Change

to up zone the subject property from R-1 to R-1.5. The yard setbacks standards remain the same whether the lots are in a R-1 zoning district or a R-1.5 district.

In order to provide to enable the construction of a traditional house on lot 17, the Contract Purchaser/Applicant is request a major variance to reduce the interior setbacks from 7 feet in wide to 5 feet in width (28.5% reduction to the required standard) for the interior lot setbacks on Lots #17, #18, #19 and #20. Similarly, the Contract Purchaser/Applicant is request a reduction in the rear setback of Lot #18. This represents a 25% reduction to the required standard.

Refer to Section E – Exhibit Drawings, Sheet C100 – Site Plan (Preliminary) for additional information. Also, refer to Section F – Appendices, Appendix 25 – Buildable Footprint Exhibit.

E. Maximum building height:

1. Principal building: thirty-five feet.

2. Detached accessory structure:

- a. If located inside the allowed building footprint for the principal building, a detached accessory structure may be up to twenty-two feet tall, as measured to the highest point of the roof.
 - b. If located outside the allowed building footprint for the principal building, a detached accessory structure is subject to a step-up height standard, and is allowed outright only if it meets this standard. The structure shall not exceed eight feet tall, as measured to the highest point of the roof, at a distance of three feet from the property line. The structure may increase in height by one foot vertically for every one foot horizontally away from the three foot line, up to the maximum height of twenty-two feet.
 - c. A conditional use permit is required to locate the structure outside of the allowed building footprint for the principal building in violation of the step-up height standard.
 - d. Detached accessory structures over twenty-two feet tall are not permitted.
- 3. For detached accessory dwellings, the Planning Commission may approve building heights over twenty-two feet through the Conditional Use process, but in no case shall the accessory dwelling be higher than the principal building. The Planning Commission may only approve the use of buildings over twenty-two feet in the case of existing structures where no substantial changes to existing roof lines are proposed.**

Applicant's Response: *The maximum height of any principal building is 35 feet within the R-1.5 zoning district.*

Again, as part of the proposed application, the Contract Purchaser/Applicant is requesting a Comprehensive Plan Amendment and Zone Map Change to up zone the subject property from R-1 to R-1.5. The principle building height standard remains the same whether the lots are in a R-1 or a R-1.5 zoning district.

Refer to Section F – Appendices, Appendix 26 – Building Plans and Elevations – Prototypical for proposed structural heights.

- F. The maximum amount of impervious surface allowed the R-1.5 zone shall be 70 percent of the lot area.
1. Impervious surface includes all surface areas that create a barrier to or hinder the entry of water into the soil in comparison with natural conditions prior to development. Impervious surface include, but are not limited to, buildings, parking areas, driveways, roads, sidewalks, patios, packed earth, and oiled surfaces. Open, uncovered retention/detention facilities, green roofs, and permeable surfacing materials shall not be considered impervious surfaces. Roof surfaces are also considered 'pervious' when 100% of the annual average roof runoff is captured and reused on-site for irrigation or approved interior uses.
 2. To limit impervious surface, alternative surfacing materials may be used. Alternative surfacing includes, but is not limited to paving blocks, turf block, pervious concrete, and porous asphalt. Other similar approved materials are encouraged. Utilization of alternative surfacing methods shall be subject to review and approval by the City Public Works Department for compliance with other applicable regulations and development standards. Maintenance of alternative surfacing materials located on private property are the responsibility of the property owner.

Applicant's Response: *The Contract Purchaser/Applicant acknowledges that within the R-1.5 zoning district, the maximum amount of impervious surface is 70%. While the building product for each individual lot has yet to be determined, the maximum is anticipated to be much lower. Below is a summary of the anticipated*

Lot Number	Lot Size (Expressed in Square Footage)	Buildable Footprint (Expressed in	Proposed Percent Impervious Surface ⁽¹⁾
Lot 1	5,811	2,276	44%
Lot 2	5,089	2,070	46%
Lot 3	5,130	2,100	46%
Lot 4	5,171	2,130	46%
Lot 5	5,022	2,020	45%
Lot 6	5,022	2,020	45%
Lot 7	5,022	2,020	45%
Lot 8	5,783	2,255	43%
Lot 9	5,783	2,255	43%

Lot 10	5,022	2,020	45%
Lot 11	5,022	2,020	45%
Lot 12	5,022	2,020	45%
Lot 13	5,022	2,020	45%
Lot 14	5,022	2,020	45%
Lot 15	5,022	2,020	45%
Lot 16	5,782	2,255	43%
Lot 17	5,135	1,635	37%
Lot 18	4,219	1,443	40%
Lot 19	4,732	1,887	45%
Lot 20	5,466	2,331	47%
Tract A (Alley)	4,491		100%
Total	107,790 SF		

(1) Includes Building Envelop square footage plus driveway

G. Other regulations:

- 1. Vision clearance distance shall be ten feet from a street to an alley or a street to a driveway, and thirty feet from a street to any other street.**
2. All setbacks to be measured from the foundation line of the building. Overhangs shall not exceed two feet; mechanical units, used for the heating/cooling of residential units are exempt from interior and/or rear yard setback requirements. A chimney for a fireplace or stove shall not exceed a two foot projection.
3. To provide shade, required yards on southern and western exposures may be reduced by not more than five feet for eaves, canopies, and patio covers, if the patio posts still comply with required setbacks.
4. Accessory buildings shall not have a larger footprint than the primary building. (Ord. 890 sect. 19, 1993; Ord. 740 sect. 10.3.20(C), 1984; Ord. 955 sect. 6, 1996; Ord. 981 sect. 46, 1997; Ord. 1019 sect. 8, 1999; Ord. 1080, 2001; Ord 1237, 2007; Ord. 1338, 2010; Ord. 1514, 2019)

Applicant's Response: *The vision clearance distance from a street to an alley or driveway is ten feet. Similarly, the vision distance from a street to a street is thirty (30) feet.*

Refer to Section E – Exhibit Drawings, Sheet C100 – Site Plan (Preliminary) for additional information.

Chapter 16.53 – Variances

Sections Contains:

- 16.53.010 Minor Variances. *(Not applicable to this application)*
- 16.53.015 Minor Sign Variance. *(Not applicable to this application)*
- 16.53.020 Major Variances.
- 16.53.030 Revocation of Variances *(Not applicable to this application)*

16.53.010 Minor Variances. *This criterion is not applicable to this application. The Contract Purchaser/Applicant is requesting a variance to reduce the rear setback up to 25% on three lots (i.e. lots #17, #18 & #19)*

16.53.015 Minor Sign Variance. *This criterion is not applicable to this application. No signage is proposed as part of this application.*

A. Authorization. The City Planner may authorize a Minor Variance from the requirements of this

16.53.020 Major Variances.

These provisions are intended to prescribe procedures which allow variations from the strict application of the regulations of this title, by reason of exceptional circumstances and other specified conditions:

A. Authorization. The commission may authorize variances from the requirements of this title, other than Division VII, where it can be shown that, owing to special and unusual circumstances related to a specific piece of property, the literal interpretation of the regulations would cause an undue or unnecessary hardship, except that no variance shall be granted to allow the use of property for purposes not authorized within the district in which the proposed use would be located. In granting a variance, the commission may attach conditions which it finds necessary to protect the best interests of the surrounding property or neighborhood and to otherwise achieve the purpose of this title.

Applicant's Response: *The Contract Purchaser/Applicant acknowledges that Planning Commission may authorize variances from the requirements where it can be shown, that due to special and unusual circumstances related to a specific piece of property, the literal interpretation of the regulations would cause an undue or unnecessary hardship.*

B. **Standards and Criteria.** **A variance may be granted only upon determination that all of the following conditions are present:**

- 1. Exceptional or extraordinary circumstances apply to the property which do not apply generally to other properties in the city and within the same zone.** These exceptional or extraordinary circumstances result from tract size or shape, topography or other circumstances over which the owners of the property have no control. Actions of previous owners do not constitute other exceptional or extraordinary circumstances; and

2. The variance is necessary to assure that the applicant maintains substantially the same property rights as are possessed by the owners of other property in the city and within the same zone; and
3. Granting of this variance will not be materially detrimental to the intent or purposes of the city's Comprehensive Plan or the Land Development and Planning Ordinance; and
4. Granting of this variance will not be materially detrimental to other property within the same vicinity; and
5. The variance requested is the minimum variance which will alleviate the hardship; and
6. The exceptional or unique conditions of the property which necessitate the issuance of a variance were not caused by the applicant, or the applicant's employees or relatives.

Applicant's Response: *The Contract Purchaser is requesting **variance approvals** in order to provide more flexible in the building area/dimensions (i.e. building envelop). Specifically, the Contract Purchaser/Applicant is requesting a variance to reduce the interior setbacks from 7 feet in wide to 5 feet in width (28.5% reduction to the required standard) for the interior lot setbacks on Lots #17, #18, #19 and #20. The Contract Purchaser is also requesting a reduction in the rear setback of Lot #18. This represents a 25% reduction to the required standard.*

Below is a summary response to the major variance approval criteria.

1. *Exceptional or extraordinary circumstances apply to the property which do not apply generally to other properties in the city and within the same zone:*

The subject property is an irregularly shaped parcel that has been influenced by the presence of a diagonal roadway (i.e. Northeast Territorial Road) which forms the southern border. The resulting roadway forms an obtuse angle with its intersection of North Locust Street.

Since the City requires side lot lines to be perpendicular to the streets which they face (or in this case a private alley), the resulting lots abutting NE Territorial Road create irregularly shaped building envelopes that limit the size and type of building products that can be placed on the individual lots. To help address this and enable the construction of a traditional house on lot 17, the Contract Purchaser is requesting a variance to reduce the interior setbacks from 7 feet in wide to 5 feet in width (28.5% reduction to the required standard) for the interior lot setbacks on Lots #17, #18, #19 and #20. This will allow the lots to be shifted to the west and allow the building envelope on Lot #17 to be enlarged. For similar reasons, the Contract Purchaser is also

requesting a reduction in the rear setback for Lot #18 only, which would reduce the rear building setback for a two story home from 20 feet to 15 feet. This represents a 25% reduction to the required standard. This would result in a setback would match the rear setback on Lot #17, a corner lot.

- 2. Assure that the applicant maintains substantially the same property rights as are possessed by the owners of other property:**

This proposed request would result in the similar lot width/depth and density as other lots located throughout the City. The subject property contains 3.187 acres of land. If this acreage was divided by the minimum lot size in the R-1 District (i.e. 7,000 square feet), approximately 20 lots could be yielded. However, due to connectivity requirements and the large amount of right-of-way being exacted by the City, only 2.47 acres is available for development. This result in over 22% of the property is required to be public roadway. On average, 20% of the land in a subdivision is used for streets and/or utilities.

In order to yield the same density of lots, the Contract Purchaser has requested a change is zoning from R-1 to R1.5 to yield the same number of lots. Again, granting the variance requests would enable the construction of a traditional house on Lot #17.

- 3. Detrimental to the intent or purposes of the City's Comprehensive Plan or the Land Development and Planning Ordinance.**

In granting a reduction in the interior side setbacks for lots #17, #18, #19 and #20 as well as a five foot reduction to the rear setback for a two story home on Lot #18, it would functionally remain the same as other lots throughout the City. All of the remaining development standards would be adhered to including lot size, lot dimensions and maximum building heights. The approval of the setback modifications would result in a homogenous detached single-family subdivision that would have a similar density and appearance as those subdivision located the east and south east of the subject property.

- 4. Detrimental to other property:**

The proposed variance requests only apply to four (4) lots within the proposed subdivision and would have no effect on adjacent property owners. The proposed modifications are internal to the project and would not have any detrimental impacts. The external side setbacks (street side setback along Lot #17 and exterior setback along the adjacent property along Lot #20) would not be

adversely impacted since these setbacks meet the required setbacks within the R1.5 zoning district.

5. Minimum variance which will alleviate the hardship:

A reduction in the interior side setbacks from seven (7) feet to five (5) feet would still provide adequate side setbacks. The slight reduction in the interior side setbacks of Lots #17, #18, #19 and #20 would allow the buildable footprint on Lot #17 to be enlarged to enable the construction of a traditional house. Similarly, a reduction in the rear setback from twenty (20) feet to fifteen (15) would match the rear setback on Lot #17 which is allowed outright because it is a corner lot. This is the minimum to alleviate the hardship.

6. Exceptional or unique conditions of the property which necessitate the issuance of a variance:

Typically, dedications within subdivision does not exceed twenty (20) percent of the subject property. In this particular case, the proposed subdivision is being required to provide a significant amount of right-of-way (over 22% of the parcel), to accommodate future connectivity and roadway widening along two frontages. Due to the larger than average amount of land dedication, the amount of developable land on this particular parcel has been reduced. This is unique to this property and beyond the control of the Contract Purchaser.

- C. Variance to Requirements of Hazard Overlay (H) Zone. Variances may be issued for non-residential buildings in very limited circumstances to allow a lesser degree of flood proofing than water-tight or dry-flood proofing, where it can be determined that such action will have a low damage potential, complies with all other variance criteria, and otherwise meets the requirements of the Hazard Overlay Zone. (Ord.805 section 4, 1987; Ord. 804 section 4(A), 1987; Ord. 740 section 10.8.50, 1984; Ord. 981 section 14, 1997; Renum. and mod. by Ord. 1080, 2001)

Applicant's Response: *The proposed major variance does not affect any property within the Hazard Overlay Zone.*

16.53.030 Revocation of variances. *This criterion is not applicable to this application. If a major variance is approved, the variance will be exercised within the one year.*

Chapter 16.54 – Amendments to Zoning Map

Sections Contains:

- 16.54.010 Authorization to initiate amendments.
- 16.54.020 Application and fee.
- 16.54.030 Public hearing on amendment.
- 16.54.040 Standards and criteria.
- 16.54.060 Improvement conditions.
- 16.54.070 Record of amendments.

16.54.010 Authorization to initiate amendments.

An amendment to the zoning map may be initiated by the City Council, by the Planning Commission, or by application of the property owner or his authorized agent. **The Planning Commission shall, within forty days after closing the hearing, recommend to the City Council, approval, disapproval or modification of the proposed amendment.** (Ord. 740 section 10.3.45 (A), 1984)

Applicant's Response: *The Contract Purchaser/Applicant understands that a Zoning Map Change may be initiated by the City Council, by the Planning Commission, or by application of the property owner or his authorized agent. Furthermore, the Planning Commission is required to make a recommendation to the City Council within forty (40) days after the*

In this particular case, the application for a Zone Map Change is being initiated by Contract Purchaser (who is an authorized agent of the Property Owner).

16.54.020 Application and fee.

Application procedures shall be as described in Chapter 16.89. (Ord. 740 section 10.3.85(B), 1984; Ord. 981 section 7, 1997; Ord. 1019 section 13, 1999; Ord. 1080, 2001)

Applicant's Response: *The Contract Purchaser/Applicant acknowledges that the application for a Zone Map Change will be processed in accordance with Chapter 16.89 of the City's Municipal Code.*

16.54.030 Public hearing on amendment.

Before taking final action on a proposed amendment, the Planning Commission shall hold a public hearing on the amendment following the requirements for advertising and conduct of hearing prescribed in Division VIII. (Ord. 740 section 10.3.85(C), 1984)

Applicant's Response: *The Contract Purchaser/Applicant understands that the Planning Commission is required to hold a public hearing on the Zone Map Change in accordance with the City's advertising/notification requirements and public meeting requirements.*

16.54.040 Standards and criteria.

In judging whether or not the zoning map should be amended or changed, the Planning Commission and City Council shall consider the following criteria:

- A. The Comprehensive Plan of the city, giving special attention to **Policy 6 of the land use element and implementation measures** therefore, and the plans and policies of the county, state and local districts in order to preserve functions and local aspects of land conservation and development;

Applicant's Response: *The Contract Purchaser/Applicant has addressed applicable Comprehensive Plan Elements as well as applicable Statewide Planning Goals as part of this submittal.*

Refer to Section B – Statewide Planning Goal Narrative and Section C – Comprehensive Plan Narrative for additional information.

- B. Whether all **required public facilities and services exist or will be provided concurrent with development** to adequately meet the needs of any use or development which would be permitted by the new zoning designation. (Ord. 749 section 1(B), 1984; Ord. 740 section 10.3.85(D), 1984; Ord. 1514, 2019)

Applicant's Response: *A majority of the required public services are already present along the boundary of the subject property. As part of the proposed subdivision development, required public services will be extended into the property to serve each of the proposed lots.*

16.54.050 (Ord. 740 section 10.3.85(E), 1984)

Applicant's Response: *Not applicable.*

16.54.060 Improvement conditions.

- A. In acting on an application for a zone change, the Planning Commission may recommend and the City Council may impose conditions to be met by the proponents of the change before the proposed change takes effect. Such conditions shall be limited to improvements or physical changes to the property which are directly related to the health, safety or general welfare of those in the area. Further, such conditions shall be limited to improvements which clearly relate to and benefit the area of the proposed zone change. Allowable conditions of approval may include, but are not necessarily limited to:

- 1. Street and sidewalk construction or improvements;**
- 2. Extension of water, sewer, or other forms of utility lines;**
- 3. Installation of fire hydrants.**

Applicant's Response: *The Contract Purchaser/Applicant acknowledges that the Planning Commission may recommend and that the City Council may impose*

conditions of approval that require improvements to the property that relate to the health, safety or general welfare of those in the area.

As part of the proposed Comprehensive Plan Amendment and Zone Map Changes requests, the Contract Purchaser/Applicant is also requesting approval of a 20 lot Subdivision. As part of the subdivision request, the Contract Purchaser/Applicant is proposing improvements to Northeast Territorial Road, North Locust Street and two new internal local roadways. This will include utility infrastructure improvements as necessary which would include water, fire service, sanitary sewer, storm sewer and other types of utility lines.

Refer to Section E – Exhibit Drawings, Sheet C300 – Composite Utility Plan (Preliminary) for additional information.

- B. The city will not use the imposition of improvement conditions as a means of preventing planned development, and will consider the potential impact of the costs or required improvements on needed housing. The Planning Commission and City Council will assure that the required improvements will not reduce housing densities below those anticipated in the Comprehensive Plan. (Ord. 749 section 1(C), 1984; Ord. 740 section 10.3.85 (F). 1984)

Applicant's Response: *In accordance with this section, the Contract Purchaser/Applicant understand that the City will not use the imposition of improvement conditions as a means of preventing development, and will consider the potential impact of the costs or required improvements on needed housing.*

16.54.070 Record of amendments.

The City Planner shall maintain a record of amendments to the zoning map in a form convenient for use of the public. (Ord. 749 section 10.85 (G), 1984)

Applicant's Response: *The Contract Purchaser/Applicant acknowledges that the City Planner will maintain a record of the proposed amendment, if approved, for convenient use by the public.*

Chapter 16.62 Subdivision - Applications

Sections Contains:

- 16.62.010 Filing procedures.
- 16.62.020 Standards and criteria.

16.62.010 Filing procedures.

- A. Application procedures shall be as described in Chapter 16.89. (Ord. 899 section 3, 1993; Ord. 740 section 10.4.40(A), 1984; Ord. 981 section 10, 1997; Ord. 1019 section 16, 1999; Ord. 1080, 2001; Ord. 1237, 2007)

Applicant's Response: *The Contract Purchaser/Applicant acknowledges that the application for a Subdivision will be processed in accordance with Chapter 16.89 of the City's Municipal Code.*

16.62.020 Standards and criteria.

Applications for a subdivision shall be evaluated based upon the following standards and criteria:

- A. Conformance with other applicable requirements of the Land Development and Planning Ordinance;

Applicant's Response: *The proposed Subdivision application has been prepared to conform with applicable requirements of the City's Land Development and Planning Ordinance to the extent possible.*

- B. The overall design and arrangement of lots shall be functional and shall adequately provide building sites, utility easements, and access facilities deemed necessary for the development of the subject property without unduly hindering the use or development of adjacent properties;

Applicant's Response: *The overall of layout of the proposed subdivision provides for an efficient arrangement of the lots, building sites, access and utility services. The layout reflects a typical "urban" layout with streets running north/south and east/west. The proposed local streets have been stubbed to connect with future development on the property to the west.*

Refer to Section E – Exhibit Drawings, Sheet C100 – Site Plan (Preliminary) for additional information.

- C. Subdivision design and layout shall incorporate Low Impact Development techniques where possible to achieve the following:
1. Manage stormwater through a land development strategy that emphasizes conservation and use of onsite natural features integrated with engineered stormwater controls to more closely mimic predevelopment hydrologic conditions.

2. Encourage creative and coordinated site planning, the conservation of natural conditions and features, the use of appropriate new technologies and techniques, and the efficient layout of open space, streets, utility networks and other public improvements.
3. Minimize impervious surfaces.
4. Encourage the creation or preservation of native vegetation and permanent open space.
5. Clustering of residential dwellings where appropriate to achieve (1-4) above. The arrangement of clustered dwellings shall be designed to avoid linear development patterns.

Applicant's Response: *To the extent possible, the layout of the subdivision will seek to minimize impervious surfaces and utilize low impact design.*

- D. It must be demonstrated that all required public facilities and services are available, or will become available through the development, to adequately meet the needs of the proposed land division.

Applicant's Response: *All public services are readily available along the existing street frontages.*

- E. The layout of subdivision streets, sidewalks, and pedestrian ways supports the objectives of the Safe Routes to Schools Program by providing safe and efficient walking and bicycling routes within the subdivision and between the subdivision and all schools within a one-mile radius. During review of a subdivision application, city staff will coordinate with the appropriate school district representative to ensure safe routes to schools are incorporated into the subdivision design to the greatest extent possible. (Ord. 890 section 53, 1993; Ord. 740 section 10.4.40(B), 1984; Ord. 1338, 2010)

Applicant's Response: *The layout of the subdivision will include sidewalk which will provide a safe route to schools.*

- F. A Traffic Impact Study (TIS) may be required in accordance with Section 16.08.150. (Ord. 1340, 2011)

Applicant's Response: *As part of the Comprehensive Plan Amendment/Zone Map Change, a Traffic Impact Study was required. To address this, the Contract Purchaser/Applicant's Traffic Engineer prepared a document that addressed the trip generation, access and sight distance requirements.*

The proposal includes a change in zoning which will result in a slight increase in intensity of use. However, the net increase in the traffic intensity of the site will not degrade the performance of any existing or planned transportation facility beyond what is currently allowed under the existing zone.

Based on this, no mitigation is required

Refer to Section F – Appendices, Appendix 23 – Transportation Analysis Letter (TAL) for additional information.

Chapter 16.64 Subdivisions – Design Standards

Sections Contains:

- 16.64.010 Streets.
- 16.64.015 Access.
- 16.64.020 Blocks.
- 16.64.030 Easements.
- 16.64.040 Lots.
- 16.64.050 Public open spaces.
- 16.64.060 Grading of building sites.
- 16.64.070 Improvements.
- 16.64.080 Low Impact Development Incentives

16.64.010 Streets.

- A. **Generally.** The location, width and grade of streets shall be considered in relation to existing and planned streets, to topographical conditions, to public convenience and safety, and to the proposed use of land to be served by the streets. The street system shall assure an adequate traffic circulation pattern with intersection angles, grades, tangents, and curves appropriate for the traffic to be carried. Where location is not shown in a development plan, the arrangement of streets shall either:
1. Provide for the continuation or appropriate projection of existing principal streets in surrounding areas; or
 2. Conform to a plan for the neighborhood approved or adopted by the commission to meet a particular situation where topographical or other conditions make continuance of conformance to existing street patterns impractical;
 3. Minimum right-of-way and roadway width shall follow the requirements of the Canby Public Works Design Standards;
 4. Consider opportunities to incrementally extend and connect local streets to provide for safe and convenient bike and pedestrian circulation.

Applicant's Response: *In accordance with this section, the location, width and grade of proposed streets were taken into consideration in the design of the proposed subdivision and are intended to meet the City of Canby's Public Works Design Standards. The proposed design reflects existing connectivity, topographical conditions, public safety, and potential future connectivity of local streets in the future.*

Refer to Section E – Exhibit Drawings, Sheet C100 – Site Plan (Preliminary) for additional information.

- B. **Permeable Surfaces.** Permeable surfacing alternatives and on-site stormwater management facilities, are encouraged for street improvements. Permeable surfacing and LID stormwater management facilities shall be constructed in accordance with the Canby Public Works Design Standards and the manufacturer's recommendations. Permeable surfacing includes, but is not limited to: paving blocks, turf block, pervious concrete, porous asphalt, and other similar approved materials. Alternative surfacing methods may be approved for public and private roads, road shoulders, pedestrian ways, driveways, and easement service roads unless site constraints make use of such materials detrimental to water quality. Use of permeable surfacing methods shall meet the imposed load requirements for fire apparatus, and shall be subject to review and approval by the Canby Public Works Department.

Applicant's Response: *The proposed design of the streets do not reflect the use of permeable surface, however stormwater is collected and conveyed to a series of drywells throughout the site.*

Refer to Section E – Exhibit Drawings, Sheet C300 – Composite Utility Plan (Preliminary) for additional information.

- C. **Reserve Strips.** Reserve strips or street plugs controlling the access to streets will not be approved unless such strips are necessary for the protection of the public welfare or of substantial property rights, or both, and in no case unless the control and disposal of the land composing such strips is placed within the jurisdiction of the city, under conditions approved by the commission.

Applicant's Response: *No reserve strips have been identified. If necessary and required by the Planning Commission, the Contract Purchaser/Applicant will provide reserve strips at the end of NE 17th Street and NE 18th Street.*

- D. **Alignment.** All streets other than minor streets or cul-de-sacs, shall, as far as possible, be in alignment with the existing streets by continuations of the center lines thereof. Jogs creating "T" intersections shall have centerline offsets of not less than one hundred fifty feet, unless it is found that community benefits of such an alignment outweigh its disadvantages.

Applicant's Response: *The two new local streets create "T" intersections with North Locust Street. The two intersections are offset 236 feet.*

Refer to Section E – Exhibit Drawings, Sheet C100 – Site Plan (Preliminary) for additional information.

- E. **Future Extension of Streets.** Where a subdivision adjoins unplatted acreage, streets which in the opinion of the commission should be continued in the event of the subdivision of the acreage, will be required to be provided through to the boundary lines of the tract. Reserve strips, street plugs and temporary turnaround areas may be required to preserve the objectives of street extensions. Reserve strips and street plugs shall be deeded to the city prior to final plat approval. The Planning Commission may require that the costs of title insurance and recordation fees, if any, for such areas be borne by the subdivider. If, in the opinion of the city engineer, a traffic pedestrian, or safety hazard temporarily exists by the construction of a dead-

end street, he may direct that a barricade of adequate design be installed at the developer's expense as one of the required improvement items for the subdivision.

Applicant's Response: *Within the proposed subdivision, two local streets are proposed to be extended into unplatted property to the west of the subject property. If necessary, a reserve strip will be provided at the terminus of each roadway.*

- F. **Intersection Angles.** Streets shall intersect one another at an angle as near to a right angle as possible, and no intersections of streets at angles of less than thirty degrees will be approved unless necessitated by topographic conditions. When intersections of other than ninety degrees are unavoidable, the right-of-way lines along the acute angle shall have a minimum corner radius of twelve feet. All right-of-way lines at intersections with arterial streets shall have a corner radius of not less than twelve feet.

Applicant's Response: *In accordance with this section, the two new local streets intersect with North Locust Street at right angles.*

Refer to Section E – Exhibit Drawings, Sheet C100 – Site Plan (Preliminary) for additional information.

- G. **Existing Streets.** Whenever existing streets, adjacent to or within a tract, are of inadequate width, dedication of additional right-of-way shall be provided at the time of subdivision.

Applicant's Response: *In accordance with this section, the Contract Purchaser/Applicant is proposing additional right-of-way dedication. This consists of the following:*

Proposed Right-of-Way Dedication	Lot Coverage (Expressed in Square
ROW – Northeast Territorial Road Widening	0.038 Ac. (1,684 SF)
ROW – North Locust Street Widening	0.148 Ac. (6,746 SF)
ROW – Proposed 17 th Avenue	0.260 Ac. (11,316 SF)
ROW – Proposed 18 th Avenue	0.260 Ac. (11,316 SF)
Total Dedication	0.706 Ac. (31,062 SF)

Refer to Section E – Exhibit Drawings, Sheet C100 – Site Plan (Preliminary) for additional information.

- H. **Half Streets.** Half streets, while generally not acceptable, may be approved where essential to the reasonable development of the subdivision, when in conformity with the other requirements of these regulations, and when the commission finds it will be practical to require the dedication of the other half when the adjoining property is subdivided. Whenever a half street is adjacent to a tract to be subdivided, the other half of the street shall be platted within

such tract. Reserve strips, street plugs, special signs and barricades may be required to preserve the objectives of half streets.

Applicant's Response: *No half streets are proposed as part of the subdivision proposal. However, the Contract Purchaser/Application will dedicate an additional seven feet along Northeast Territorial Road and improve the outer 22 feet of the right-of-way including eight (8) feet of pavement widening, curb, five (5) foot planter strip and a six foot sidewalk. Similarly, an additional twelve and half (12.5) feet along North Locust Street and improve the outer 19 feet of the right-of-way including six and half (6.5) feet of pavement widening, curb, five (5) foot planter strip and a six foot sidewalk.*

Refer to Section E – Exhibit Drawings, Sheet C100 – Site Plan (Preliminary) for additional information.

- I. **Cul-de-sacs.** A cul-de-sac shall only be allowed when environmental or topographical constraints, existing development patterns, or compliance with other standards in this code preclude street extension and through circulation. When cul-de-sacs are provided, all of the following shall be met:
 1. The cul-de-sac shall not exceed a length of 400 feet. Length of the cul-de-sac shall be measured along the centerline of the roadway from the near side of the intersecting street to the farthest point of the cul-de-sac;
 2. The cul-de-sac shall be designed in accordance with the Canby Public Works Design Standards.
 3. The cul-de-sac may have a vegetated center island that will serve to treat stormwater runoff generated by the cul-de-sac. Specifications for cul-de-sac design are located in the Public Works Design Standards.
 4. The cul-de-sac shall provide a pedestrian connection between it and adjacent streets, access ways, parks, or other right-of-way. Such pedestrian ways shall conform to Section 16.64.030(C).

Applicant's Response: *No cul-de-sacs are proposed as part of the subdivision proposal.*

- J. **Marginal Access Streets.** Where a subdivision abuts or contains an existing or proposed arterial street, the commission may require marginal access streets, through lots with suitable depth, screen planting contained in a nonaccess reservation along the rear 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.

Applicant's Response: *The proposed subdivision is not located adjacent to or include an arterial roadway.*

- K. **Alleys.**

1. Alleys shall be provided to commercial and industrial districts, unless other permanent provisions for access to off-street parking and loading facilities are made as approved by the commission.
2. Alleys shall be provided within residential subdivisions when streets are designed to meet the narrow “green” street standards in the Canby Public Works Design Standards. Visitor parking areas may be required by the city to mitigate the lack of on-street parking.
3. **When alleys are provided as part of a new residential subdivision, streets shall be designed in accordance with the narrow “green” street standards in the Canby Public Works Design Standards.** Visitor parking areas may be required by the city to mitigate the lack of on-street parking.
4. **Alley intersection corners shall have a minimum radius of ten feet.**

Applicant’s Response: *There are no public alleys within the proposed subdivision. However, there is one private alley which will be located in a private tract. The alley is proposed to be twenty (20) feet wide in accordance with the City’s minimum requirements. If necessary, the Contract Purchaser will propose to sprinkle Lots #17, #18, #19 and #20 to accommodate any Canby Fire District issues associated with an alley width less than twenty six (26) feet.*

Refer to Section E – Exhibit Drawings, Sheet C100 – Site Plan (Preliminary) for additional information. Also, refer to Exhibit Drawings, Sheet C060 – Tentative Plat (Preliminary) for location of Tract A.

- L. **Street Names.** No street name shall be used which will duplicate or be confused with the name of existing streets except for extensions of existing streets. Street names and numbers shall conform to the established pattern in the city and the surrounding area and shall be subject to the approval of the commission.

Applicant’s Response: *The proposed subdivision affects two existing streets: Northeast Territorial Road and North Locust Street. In addition, two new local streets are proposed.*

Historically, the nomenclature for the thoroughfares going north-south in the northeast portion of the City are “plants, trees, shrubs and the like” and thoroughfares running east-west are numbered streets. Since the new streets are orientated in an east-west direction, the street names are numbered streets. Based on the City’s grid, the street would closely align with Northeast 17th Avenue and Northeast 18th Avenue.

- M. **Planting Easements.** The Planning Commission may require additional easements for planting street trees or shrubs.

Applicant's Response: *As part of the right-of-way dedication and subsequent widening along Northeast Territorial Road and North Locust Street, five (5) planting strips are being provided. Similarly, the two new roadways have been designed to meet the City's Public Works Standards for local roadways. Each of these roadways will contain a fifty (50) wide right-of-way and includes a five (5) wide planter strip.*

Refer to Section E – Exhibit Drawings, Sheet C100 – Site Plan (Preliminary) for additional information.

- N. **Grades and Curbs.** **Grades shall not exceed** seven percent on arterials, ten percent on collector streets, or **fifteen percent on any other street. In flat areas allowance shall be made for finished street grades having a minimum slope of .5 percent. Centerline radii of curves shall not be less than** three hundred feet on major arterials, two hundred feet on secondary arterials, or **one hundred feet on other streets**, unless specifically approved by the City, and shall be to an even ten feet.

Applicant's Response: *The terrain in the vicinity of the subject property can be characterized as a slightly sloping with elevations ranging between 140 and 147 above sea level. The proposed roadways are generally level but have been designed with a slope of at least 0.5 percent.*

Refer to Section E – Exhibit Drawings, Sheet C200 – Grading, Drainage and Erosion Control Plan (Preliminary) for additional information.

- O. **Streets Adjacent to Highway 99-E or Railroad Right-of-Way.** Wherever the proposed subdivision contains or is adjacent to a railroad right-of-way or Highway 99-E, provisions may be required for a street approximately parallel to and on each side of such right-of-way at a distance suitable for the appropriate use of the land between the streets and the railroad or Highway 99-E. The distances shall be determined with due consideration of cross streets at a minimum distance required for approach grades to a future grade separation and to provide sufficient depth to allow screen planting along the railroad right-of-way.

Applicant's Response: *The proposed subdivision is not located near Highway 99 East or the railroad.*

- P. Private streets created within a new subdivision or partition shall be designated as separate "tract" on the submitted plat map. (Ord. 740 section 10.4.40(C)(1), 1984; Ord. 1043 section 3, 2000; Ord 1237, 2007; Ord. 1338, 2010; Ord. 1514, 2019)

Applicant's Response: *While there are no private streets, there is one private alley. This feature will be located in a private tract as indicated on the plat map*

Refer to Section E – Exhibit Drawings, Sheet C100 – Site Plan (Preliminary) for additional information. Also, refer to Exhibit Drawings, Sheet C060 – Tentative Plat (Preliminary) for location of Tract A.

16.64.015 Access

- A. 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 (See appendix G of the Transportation System Plan).

Applicant's Response: *The proposed subdivision does not involve access to a State Highway.*

- B. All proposed roads shall follow the natural topography and preserve natural features of the site as much as possible. Alignments shall be planned to minimize grading.

Applicant's Response: *Given the gentle topography and the lack of nature features, grading within the boundary of the subject property will be minimal.*

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

Applicant's Response: *Intersection sight distances were measured for the three proposed site access intersections along N Locust Street. Sight distances were measured and evaluated in accordance with standards established in A Policy on Geometric Design of Highways and Streets² as well as per the Clackamas County Roadway Standards. According to AASHTO, the driver's eye is assumed to be 14.5 feet from the near edge of the nearest travel lane (or traveled way) of the intersecting street and at a height of 3.5 feet above the minor-street approach pavement.*

The vehicle driver's eye-height along the major-street approach is assumed to be 3.5 feet above the cross-street pavement. Based on a posted speed of 25 mph, the minimum recommended intersection sight distance to ensure safe and efficient operation of the proposed access intersections is 280 feet to the north and south along N Locust Street. Provided any obstructing on-site foliage is removed upon development of the site, sight distances were measured to exceed 300 feet to the north and were measured back to NE Territorial Road to the south of all three proposed access locations.

Both the private access and the south public road access are located less than 280 feet from NE Territorial Road. Specific to the private access, sight distances to the south were measured to be greater than 115 feet for vehicles turning onto N Locust Street from NE Territorial Road. Given vehicles turning at the intersection are not expected to conduct this maneuver at speeds greater than 20 mph, the minimum stopping sight distance standard of 115 feet to ensure safe operation of the private access and south public road access will be met.

Based on the analysis and provided any obstructing on-site foliage is removed following development of the site, adequate sight distances

can be made available to ensure safe operation of the three proposed access intersections. No other sight distance related mitigation is necessary or recommended.

For additional information, refer to Section F – Appendices, Appendix 23 – Transportation Analysis Letter for additional information.

- D. The road system shall provide adequate access to buildings for residents, visitors, deliveries emergency vehicles, and garbage collection.

Applicant's Response: *The layout of the road system will provide adequate vehicular access to each of the proposed dwellings.*

- E. **Streets shall have sidewalks on both sides.** Pedestrian linkages should also be provided to the peripheral street system.

Applicant's Response: *As part of the proposed subdivision improvements, sidewalks will be construction on the north side of Northeast Territorial Road as well as the west side of North Locust Street. In addition, the two new private roadway within the subdivision will have sidewalks installed on both sides of the street. Sidewalks will also be installed on the south side of the private alley.*

- F. Access shall be consistent with the access management standards adopted in the Transportation System Plan. (Ord. 1043 section 3, 2000)

Applicant's Response: *Access to each of the proposed lots is consistent with eh City's Transportation System.*

16.64.020 Blocks.

- A. **Generally.** The lengths, widths and shapes of blocks shall be designed with due regard to providing adequate building sites suitable to the special needs of the type of use contemplated, needs for access, circulation, control and safety of street traffic and limitations and opportunities of topography.

Applicant's Response: *The Contract Purchaser/Applicant understands that the lengths, widths and shapes of blocks shall be designed with due regard to providing adequate building sites suitable to the special needs of the type of use contemplated, needs for access, circulation, control and safety of street traffic and limitations and opportunities of topography.*

- B. **Sizes.** **Block length shall be limited to** 300 feet in the C-1 zone, **400 feet in residential zones,** 600 feet in all other zones, except for 1,000 feet on arterials. Exceptions to this prescribed block standard shall be permitted where topography, barriers such as railroads or arterial roads, or environmental constraints prevent street extension. The block depth shall be sufficient to provide two lot depths appropriate to the sizes required by Division III. (Ord. 740 section 10.4.40(C)(2), 1984; Ord. 1043 section 3, 2000; Ord. 1076, 2001; Ord. 1338, 2010)

Applicant's Response: *In accordance with this section, block lengths are limited to 400 feet in residential zones. The proposed north public road access will be located approximately 235 feet north of the proposed south access and approximately 255 feet south of NE 19th Avenue. The proposed south public road access will be located approximately 230 feet north of NE Territorial Road. The proposed private access will be located at distances greater than 50 feet between existing/planned public roadways to the north and south and greater than 10 feet from other driveways along N Locust Street.*

Based on these findings, both City of and County standards will be met with respect to spacing between the proposed public access roads and other public road intersections. The proposed private access will also meet spacing standards with all other public intersections and driveways along N Locust Street.

Refer to Section E – Exhibit Drawings, Sheet C100 – Site Plan (Preliminary) for additional information. For additional information, refer to Section F – Appendices, Appendix 23 – Transportation Analysis Letter for additional information.

16.64.030 Easements.

- A. **Utility Lines.** **Easements for electric lines or other public utilities are required**, subject to the recommendations of the utility providing agency. **Utility easements twelve feet in width shall be required along all street lot lines unless specifically waived.** The commission may also require utility easements alongside or rear lot lines when required for utility provision. The construction of buildings or other improvements on such easements shall not be permitted unless specifically allowed by the affected utility providing agency.

Applicant's Response: *In accordance with this section, easements for electric lines are required along all street lot lines. The proposed subdivision identifies eight (8) wide Public Utility Easements (PUE) along the frontage of North Locust Street and twelve (12) foot side Public Utility Easements (PUE) along the new local roadways.*

Refer to Section E – Exhibit Drawings, Sheet C100 – Site Plan (Preliminary) for additional information. Also, refer to Exhibit Drawings, Sheet C060 – Tentative Plat (Preliminary) for location of Tract A.

- B. **Watercourses.** Where a subdivision is traversed by a watercourse, drainage way, channel or stream, there shall be provided a storm water easement or drainage right-of-way conforming substantially with the lines of such watercourse, and such further width as will be adequate for the purpose of assuring adequate flood control. Streets parallel to watercourses may be

Applicant's Response: *No watercourses are present within the proposed subdivision boundaries.*

- C. **Pedestrian Ways.** In any block over six hundred feet in length, a pedestrian way or combination pedestrian way and utility easement shall be provided through the middle of the block. If unusual conditions require blocks longer than one thousand two hundred feet, two pedestrian ways may be required. When essential for public convenience, such ways may be required to connect to cul-de-sacs, or between streets and other public or semipublic lands or through green way systems.

Sidewalks to city standards may be required in easements where insufficient right-of-way exists for the full street surface and the sidewalk. All pedestrian ways shall address the following standards to provide for the safety of users:

1. Length should be kept to a minimum and normally not in excess of two hundred feet;
2. Width should be maximized and shall not be below ten feet. For pathways over one hundred feet long, pathway width shall increase above the minimum by one foot for every twenty feet of length;
3. A minimum of three foot-candles illumination shall be provided. Lighting shall minimize glare on adjacent uses consistent with the outdoor lighting provisions in section 16.43 of this code;
4. Landscaping, grade differences, and other obstructions should not hinder visibility into the pedestrian way from adjacent streets and properties. Fencing along public pedestrian ways shall conform with the standards in Section 16.08.110;
5. Surrounding land uses should be designed to provide surveillance opportunities from those uses into the pedestrian way, such as with the placement of windows;
6. Exits shall be designed to maximize safety of users and traffic on adjacent streets; and
7. Use of permeable surfacing materials for pedestrian ways and sidewalks is encouraged whenever site and soil conditions make permeable surfacing feasible. Permeable surfacing includes, but is not limited to: paving blocks, turf block, pervious concrete, and porous asphalt. All permeable surfacing shall be designed, constructed, and maintained in accordance with the Canby Public Works Design Standards and the manufacturer's recommendations. Maintenance of permeable surfacing materials located on private property are the responsibility of the property owner.

Applicant's Response: *None of the blocks are over 600 feet in length.*

- D. Developments that abut the Molalla Forest Road multi-use path shall provide a pedestrian/bicycle access to the path. The city may determine the development to be exempt from this standard if there is an existing or planned access to the path within 300 feet of the development.

Applicant's Response: *The proposed subdivision does not abut the Molalla Forest Road Multi-use Path.*

- E. **Solar Easements.** Subdividers shall be encouraged to establish solar easements and utilize appropriate solar design in their development proposals. Solar easements shall be shown on the final plat and in the deed restrictions of the subdivision. The Planning Commission may require the recordation of special easements or other documents intended to protect solar access. (Ord. 740 section 10.4.40(C)(3), 1984; Ord. 1043 section 3, 2000; Ord 1237, 2007; Ord. 1338, 2010; Ord. 1340, 2011)

Applicant's Response: *The proposed subdivision has designed lots that are oriented in a north-south configuration. As necessary and required by the Planning Commission, the Contract Purchaser/Applicant will establish solar easements and be shown on the final plat and deed restrictions.*

16.64.040 Lots.

- A. **Size and Shape.** The lot size, width, shape and orientation shall be appropriate for the location of the subdivision and for the type of development and use contemplated. To provide for proper site design and prevent the creation of irregularly shaped parcels, the depth of any lot or parcel shall not exceed three times its width (or four times its width in rural areas) unless there is a topographical or environmental constraint or an existing man-made feature such as a railroad line.

Applicant's Response: *In accordance with this section, the lot size, width, shape and orientation shall be appropriate for the location of the subdivision and for the type of development and use contemplated.*

With the exception of two lots (i.e. lots #17 & #18), each of the lots will exceed 5,000 square feet. None of the lots are less than four (4) thousand square feet. No more than two of the lots or 10% of the lots deviate from the minimum and maximum lot size. The average lot size within the subdivision will be 5,164 square feet. All of the lots measure at least fifty (50) feet in width and are generally rectangular in shape. All of the homes are oriented in a north-south configuration.

B. Minimum Lot Sizes:

1. Lot sizes shall conform with requirements of Division III unless the applicant chooses to use an alternative lot layout per subsection (3) below to accommodate interconnected and continuous open space and or other natural resources. In this case, the average minimum lot size may be reduced by 5,000 square feet after subtracting access tracts. Overall development densities shall comply with the underlying maximum density allowed by the zone.
2. In areas that cannot be connected to sewer trunk lines, minimum lot sizes shall be greater than the minimum herein specified if necessary because of adverse soil structure for sewage disposal by septic systems. Such lot sizes shall conform to the requirements of Clackamas County for sewage disposal unless provisions are made for sanitary sewers.

3. Alternative lot layout. Applicants may deviate from standard lot setbacks and dimensions to accommodate dedicated interconnected open space or other natural areas. Clustered housing, lot-size averaging, and a mixture of approaches where building lots can be grouped into a smaller portion of the total development, reserving the remainder for open space or other natural areas. Alternative development layouts shall not exceed the underlying maximum density allowed by the zone.
4. When using the alternative lot layout option, the following must be met:
 - a. The arrangement of the alternative lot layout shall be designed to avoid development forms commonly known as linear, straight-line or highway strip patterns.
 - b. To the maximum extent possible, open space and natural areas, where used, shall be continuous, interconnected, and concentrated in large usable areas.
 - c. Where possible, open space shall be connected to adjacent off-site open space areas.
 - d. Open space and natural areas shall be maintained permanently by the property owner or the property owner's association.

Applicant's Response: *The Contract Purchaser/Applicant understands that, within the R-1.5 zone, five thousand (5,000) square feet is the minimum lot size and six thousand five hundred (6,500) square feet maximum lot size.*

As previously indicated, the Contract Purchaser/Applicant is requesting a Comprehensive Plan Amendment and Zone Map Change to up zone the subject property from R-1 to R-1.5. If approved, the subject property could yield a minimum of 17 lots and a maximum of 21 lots based on the minimum and maximum lot sizes.

The Applicant is currently proposing to subdivide the property into twenty (20) lots with the intent of developing single-family detached homes on each lot. Below is a summary of each lot:

Lot Number	Lot Size (Expressed in Square Footage)
Lot 1	5,811
Lot 2	5,089
Lot 3	5,130
Lot 4	5,171
Lot 5	5,022
Lot 6	5,022
Lot 7	5,022
Lot 8	5,783
Lot 9	5,783

Lot 10	5,022
Lot 11	5,022
Lot 12	5,022
Lot 13	5,022
Lot 14	5,022
Lot 15	5,022
Lot 16	5,782
Lot 17	5,135
Lot 18	4,219
Lot 19	4,732
Lot 20	5,466
Tract A (Alley)	4,491
Total	107,790 SF
Average Lot Size	5,165 SF

- C. **Lot Frontage.** All lots shall meet the requirements specified in Division III for frontage on a public street, except that the Planning Commission may allow the creation of flag lots, cul-de-sac lots and other such unique designs upon findings that access and building areas are adequate. Lots that front on more than one major street shall be required to locate motor vehicle accesses on the street with the lower functional classification.

Applicant's Response: *The Contract Purchaser/Applicant acknowledges that within the R-1.5 zone that the minimum width and frontage is forty (40) feet.*

Again, as part of the proposed application, the Contract Purchaser/Applicant is requesting a Comprehensive Plan Amendment and Zone Map Change to up zone the subject property from R-1 to R-1.5. If approved, this request will modify the minimum required width and frontage to forty (40) feet.

All of the lots within the proposed subdivision are proposed to have a fifty (50) width and exceed the forty (40) foot width requirement.

- D. **Double Frontage.** Double frontage or through lots should be avoided except where essential to provide separation of residential development from traffic arteries or to overcome specific disadvantages of topography and orientation.

Applicant's Response: *None of the lots have double frontage.*

- E. **Lot Side Lines.** The side lines of lots shall run at right angles to the street upon which the lots face, or on curved streets they shall be radial to the curve, unless there is some recognizable advantage to a different design.

Applicant's Response: *All twenty (20) lots within the subdivision have side lot lines that run perpendicular to their street frontage.*

- F. **Resubdivision.** In subdividing tracts into large lots which at some future time are likely to be resubdivided, the location of lot lines and other details of the layout shall be such that resubdivision may readily take place without violating the requirements of these regulations and without interfering with the orderly development of streets. Restriction of building locations in relationship to future street rights-of-way shall be made a matter of record if the commission considers it necessary.

Applicant's Response: *None of the lots in the subdivision are intended to be resubdivided.*

- G. **Building Lines.** If special building setback lines are to be established in the subdivision plat, they shall be shown on the subdivision plat or included in the deed restrictions. This includes lots where common wall construction is to be permitted between two single-family dwellings.

Applicant's Response: *No special building setback lines have been identified.*

- H. **Potentially Hazardous Lots or Parcels.** The commission shall utilize its prerogative to modify or deny a tentative plat or partition map where it is found that a proposed lot or parcel is potentially hazardous due to flooding or soil instability.

Applicant's Response: *None of the proposed lot present a hazard for flooding or soil instability.*

- I. **Flag Lots or Panhandle-shaped Lots.** The commission may allow the creation of flag lots provided that the following standards are met:
1. Not more than one flag lot shall be created to the rear of any conventional lot and having frontage on the same street unless it is found that access will be adequate and that multiple flag lots are the only reasonable method to allow for development of the site. Every flag lot shall have access to a public street.
 2. The access strip is to be a minimum of twenty feet in width and shall be paved for its full width from its connection with the public street to the main body of the lot. Except, however, that the width requirement may be reduced to twelve feet, for accessing a single flag lot, where the total length of the access strip does not exceed one hundred feet. Access strips not less than ten feet in width may be permitted where two such drives abut and are provided with reciprocal easements for use. For drives accessing more than two flag lots, the access strip shall be a minimum of twenty feet with reciprocal access and maintenance agreements for all lots.
 3. For residential flag lots, a minimum building setback of five feet from the access strip shall be maintained where such buildings exist prior to the creation of the flag lot.
 4. Design and locations of buildings on flag lots shall be such that normal traffic will have sufficient area to turn around, rather than necessitating backing motions down the access

strip. The commission may establish special setback requirements at the time of approving the creation of flag lots.

5. Flag lots shall not be permitted when the result would be to increase the number of properties requiring direct and individual access connections to the State Highway System or other arterials.
6. The area of a panhandle shaped or flag lot shall be considered to be the rear or buildable portion of the lot and shall not include the driveway or access strip.
7. For the purposes of defining setbacks, flag lots shall have three side yards and one yard of 20 feet generally on the garage access side of the dwelling.

Applicant's Response: *No flag lots or panhandle lots have been identified as part of the proposed subdivision.*

- J. **Designation of Lots as 'Infill Home' Sites.** The Planning Commission may require that homes built on one or more lots adjacent to existing development be subject to any or all of the requirements of 16.21.050 - Infill Homes. Furthermore, for subdivisions where the parent parcel(s) is less than two acres in size, the Planning Commission may require that all homes built on lots in the subdivision be subject to any or all of the requirements of 16.21.050. These requirements are to be shown on the subdivision plat or included in the deed restrictions. (*Ord. 740 section 10.3.05(F) and 10.4.40(C)(4), 1984; Ord. 890 section 54, 1993; Ord. 1043 section 3, 2000; Ord. 1107, 2002; Ord. 1111 section 6, 2003; Ord. 1338, 2010; Ord. 1514, 2019*)

Applicant's Response: *None of the proposed lots and/or subsequent development constitute "infill".*

16.64.050 Parks and recreation.

Subdivisions shall meet the requirements for park, open space and recreation as specified in Division VI.

Applicant's Response: *The total requirement of park, open space and recreational land is calculated at a rate of 0.01 of an acre per person based on the City standard of 10 acres of land per 1,000 residents. For the proposed single family residential subdivision, the formula is as follows:*

$$(20 \text{ Single Family Lots}) \times (2.7 \text{ person per unit for Single Family}) \times (0.01 \text{ acre per person}) = 0.54 \text{ acres.}$$

Since there is a future neighborhood park identified north of the subject property, no park/open space has been identified within the subject property. The Contract Purchaser/Application proposes to pay a cash in-lieu of to satisfy this requirement.

16.64.060 Grading of building sites.

The commission may impose bonding requirements, similar to those described in section 16.64.070, for the purpose of ensuring that grading work will create no public hazard nor endanger public facilities where either steep slopes or unstable soil conditions are known to exist. (Ord. 740 section 10.4.40(C)(6), 1984)

Applicant's Response: *Given that the subject property is already fairly level and is absent of steep slopes and unstable soils, grading activities associated with the individual building site is expected to be minimal.*

Refer to Section E – Exhibit Drawings, Sheet C200 – Grading, Drainage and Erosion Control Plan (Preliminary) for additional information.

16.64.070 Improvements.

- A. **Improvement Procedures.** In addition to other requirements, improvements installed by a land divider either as a requirement of these regulations, or at his own option, shall conform to the requirements of these regulations and improvement standards and specifications followed by the city, and shall be installed in accordance with the following procedure:
1. Improvement work shall not be commenced until plans have been checked for adequacy and approved by the city. To the extent necessary for evaluation of the proposal, the plans may be required before approval of the tentative plat of a subdivision or partition. No work shall commence until the developer has signed the necessary certificates and paid the subdivision development fees specified elsewhere in this division.
 2. Improvement work shall not commence until after the city is notified, and if work is discontinued for any reason it shall not be resumed until after the city is notified.
 3. Improvements shall be constructed under the inspection and to the satisfaction of the City. The city may require changes in typical sections and details in the public interest if unusual conditions arise during construction which warrant the change.
 4. Underground utilities, sanitary sewers and storm drains installed in streets 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 obviating the necessity for disturbing the street improvements when service connections are made.
 5. "As Built" construction plan revisions shall be filed with the city engineer within sixty days of the completion of any improvements.

Applicant's Response: *All improvements will be completed in accordance with the City's regulations and improvement standards and specifications.*

- B. The following improvements shall be installed at the expense of the subdivider unless specifically exempted by the Planning Commission:
1. Streets, including drainage and street trees;
 2. Complete sanitary sewer system;

3. Water distribution lines and fire hydrants;
4. Sidewalks and any special pedestrian ways;
5. Street name and traffic-control signs;
6. Streetlights;
7. Lot, street and perimeter monumentation;
8. Underground power lines and related facilities;
9. Underground telephone lines, CATV lines, natural gas lines, and related facilities;
10. Where dedicated or undedicated open space is proposed or provided, it shall be the subdivider's responsibility to provide standard public improvements to and through that open space.
11. If fencing is being proposed as part of subdivision development, the subdivider shall be responsible for installing fencing along public streets and pedestrian ways. Fencing shall be constructed in accordance with the standards in Section 16.08.10

Applicant's Response: *The Contract Purchaser/Applicant understand the preceding site and infrastructure improvements will be installed at the developers expense.*

C. Streets.

1. All streets, including alleys, within the subdivision and streets adjoining, but only partially within the subdivision shall be improved.
2. **All public and private streets shall be constructed to city standards for permanent street and alley construction.** LID alternatives, such as permeable surfacing and integrated stormwater management facilities, are required where site and soil conditions make it a feasible alternative. Upon completion of the street improvement, monuments shall be reestablished and protected in monument boxes at every street intersection and all points of curvature and points of tangency of street centerlines as required by Oregon Revised Statutes Chapter 92.
3. Street Trees. **Street trees shall be provided consistent with the provisions of Chapter 12.32.**
4. Prior to city approval of the final subdivision plat, all perimeter and back lot line monumentation shall be installed and the installation of the front lot monumentation (along and within street rights-of-way) shall be guaranteed. Any monuments destroyed during improvement installation shall be replaced at the developer's expense.

5. If any lot abuts a street right-of-way that does not conform to the design specifications of this ordinance, the owner may be required to dedicate up to one-half of the total right-of-way width required by this ordinance.
6. The proposed use shall not impose an undue burden on the transportation system. The City may require the applicant to provide adequate information, such as a traffic impact study, to demonstrate the level of impact to the surrounding street system. The developer shall be required to mitigate impacts attributable to the project.
7. The determination of impact or effect and the scope of the impact study should be coordinated with the provider of the affected transportation facility.
8. Dedication of land for streets, transit facilities, sidewalks, bikeways, paths, or access ways shall be required where the existing transportation system will be impacted by or is inadequate to handle the additional burden caused by the proposed use.
9. Improvements such as paving, curbing, installation or contribution to traffic signals, construction of sidewalks, bikeways, access ways, paths, or streets that serve the proposed use where the existing transportation system may be burdened by the proposed use.

Applicant's Response: *As part of the subdivision, the Contract Purchaser/Applicant will widen Northeast Territorial Road and North Locust Street to meet City and County standards. In addition, the local streets within the subdivision will be fully improved and include standard street section consisting of pavement, gutters/curbs, planting stripe with street trees, and sidewalks.*

Refer to Section E – Exhibit Drawings, Sheet C100 – Site Plan (Preliminary), Sheet 500 – Offsite Improvement Plans (Preliminary) and L100 – Landscape Plan for additional information.

D. Surface Drainage and Storm Sewer System.

1. Drainage facilities shall be provided within the subdivision and to connect the subdivision to drainage ways or storm sewers outside the subdivision, if necessary, as determined by the City.
2. Stormwater Management through Low Impact Development (LID). Low impact development is a stormwater management approach aimed at emulating predevelopment hydrologic conditions using a combination of site design and stormwater integrated management practices. This approach focuses on minimizing impervious surfaces, promoting rainfall evaporation and uptake by plants, and maximizing stormwater infiltration. Specific LID strategies and integrated management practices include:
 - a. Protection and restoration of native vegetation and soils,
 - b. Minimizing impervious surface area through use of pervious materials (e.g. pavers and pervious concrete).

- c. Vegetated roofs,
 - d. Rainfall reuse,
 - e. Stormwater dispersion and bioretention (recharge).
3. All new subdivisions in Canby are required to treat stormwater on site. Stormwater management using LID practices is required where feasible, pursuant to requirements of this chapter and other applicable sections of this code. LID facilities shall be constructed in accordance with Canby Public Works Design Standards.
4. **A conceptual stormwater management report must be submitted with the subdivision application.** The report must demonstrate how and where stormwater will be managed on site at the subdivision. Where LID practices are not used, the applicant must demonstrate why LID is not feasible. The report will be reviewed by the Canby Public Works Department and shall be consistent with the Public Works Design Standards. Generally, the stormwater management plan must include the following:
- a. A description of existing conditions including a map;
 - b. A description of the proposed stormwater system including a map;
 - c. An estimate of existing storm water runoff;
 - d. An estimate of proposed storm water runoff;
 - e. The detention/retention requirements; and
 - f. The discharge location, treatment method and sizing, and if discharging to the ground, the expected infiltration rates based upon soils mapping data.
5. Responsibility for maintenance of LID facilities shall be as follows:
- a. The Canby Public Works Department shall be responsible for maintaining all LID facilities located within the public right-of-way, and for providing for the safety of the public as related to LID facilities,
 - b. Private property owners shall be responsible for maintaining all LID facilities on their property. The city reserves the right to inspect such facilities at any time. Upon written notice by the city to the owner that the facility has been compromised to the point where the design capacity is no longer available or the facility is not functioning as designed and approved, the owner shall correct the problem. If the owner fails to respond to the written notice within 15 days, the city may undertake the work and bill all time and material to the owner.
 - c. For LID facilities that are not located in the public right-of-way and serve multiple private residential properties, a public easement for the LID facility shall be established

and the Canby Public Works Department shall be responsible for maintenance of the facility. All property owners served by the facility shall pay a stormwater maintenance fee to the city to cover the cost of maintenance of the facility.

Applicant's Response: *In accordance with this section, all new subdivisions in Canby are required to treat stormwater on site and utilize LID features where feasible. Drainage facilities are provided within the subdivision. Within the subdivision, water is drained to a series of curb inlets where it is collected and conveyed to a pollution control manhole and then to a primary and/or secondary drywell feature.*

Refer to Section E – Exhibit Drawings, Sheet C200 – Grading, Drainage and Erosion Control Plan (Preliminary) for additional information.

A stormwater report has been prepared that how and where stormwater will be managed on site at the subdivision.

Refer to Section F – Appendices, Appendix 22 - Stormwater Report for additional information.

- E. **Sanitary Sewers.** **Sanitary sewers shall be installed to serve the subdivision and to connect the subdivision to existing mains.** In the event it is impractical to connect the subdivision to the city sewer system, the commission may authorize the use of septic tanks if lot areas are adequate, considering the physical characteristics of the area. The commission may require the subdivider to install and seal sewer lines to allow for future connection to the city system.

Applicant's Response: *All new subdivisions are required install sanitary. Within the proposed subdivision, sanitary sewer service is provided to each individual lot. Lots #1 through #16 are being served through a four (4) inch lateral that connects with a new 8" sewer main in two locations. Both of the new eight (8) inch mains that will connect to an existing sanitary service line that is North Locust Street and serve 8 lots each. Lots #17 through #20 will connect directly to an existing sanitary line located in Northeast Territorial Road.*

Refer to Section E – Exhibit Drawings, Sheet C300 – Composite Utility Plan (Preliminary) for additional information.

- F. **Water System.** **Water lines and fire hydrants serving the subdivision and connecting the subdivision to city mains** shall be installed to the satisfaction of the supervisor of the water department and the Fire Marshal.

Applicant's Response: *Similar to the sanitary sewer requirements, all new subdivisions are required install water lines and fire hydrants. Within the proposed subdivision, water service is provided to each individual lot. Lots #1 through #16 are being served through a that connects with a new 8" water line in two locations. Both of the new eight (8) inch water lines will connect to an existing water service line that is North Locust Street*

and serve 8 lots each. Lots #17 through #20 will connect directly to a new water line that will be located in alley north of the lots.

Refer to Section E – Exhibit Drawings, Sheet C300 – Composite Utility Plan (Preliminary) for additional information.

- G. **Sidewalks.** **Sidewalks shall be required on both sides of a public street and in any special pedestrian way within the subdivision**, except that in the case of identified arterials, or industrial districts, the commission may approve a subdivision without sidewalks if alternative pedestrian routes are available. Sidewalk construction may be postponed until the actual construction of buildings on the lots, provided that adequate assurance is given that such sidewalks will be installed. Where LID practices are implemented in subdivision street design, alternative sidewalk design may be permitted with the approval from the city. Alternative sidewalk design resulting from LID best management practices may include, but not limited to: flat curb, LID bioretention areas incorporated in conjunction with required landscaping, and alternative sidewalk widths. LID best management practices shall be designed in accordance with the Canby Public Works Design Standards.
- H. **Bicycle Routes.** If appropriate to the extension of a system of bicycle routes, existing or planned, the commission may require the installation of bicycle lanes within streets or the construction of separate bicycle paths.

Applicant's Response: *As required, the roadway sections along Northeast Territorial Road and North Locust Street will incorporate bicycle routes as required.*

Refer to Section E – Exhibit Drawings, Sheet C500 – Offsite Improvement Plans (Preliminary) for additional information.

- I. **Street Name Signs.** Street name signs shall be installed at all intersections according to city standards or deposit made with the city of an amount equal to the cost of installation.

Applicant's Response: *As required, street name signs will be install at all the intersections or deposit made with the city of an amount equal to the cost of installation.*

- J. **Street Lighting System.** Streetlights shall be required to the satisfaction of the manager of the Canby Utility Board.

Applicant's Response: *All new subdivisions are required install streetlights. Within the proposed subdivision, streetlights will be provided at regular intervals along the existing roadways as well as the new road internal to the subdivision.*

Refer to Section E – Exhibit Drawings, Sheet C500 – Offsite Improvement Plans (Preliminary) and Sheet E100 – Lighting Plans (Preliminary) for additional information.

- K. Other Improvements.

1. Curb cuts and driveway installation are not required of the subdivider but, if installed, shall be according to city standards.
2. Street tree planting is required of the subdivider and shall be according to city requirements.
3. The developer shall make necessary arrangements with utility companies or other persons or corporations affected, for the installation of underground lines and facilities. Electrical lines and other wires, including but not limited to communication, street lighting and cable television, shall be placed underground, unless overhead installation has been specifically approved by the commission because of unique circumstances at the site.
4. Developments along existing rail lines may be required to provide barrier fences or walls if necessary ensure safety for development occupants. City may also require noise mitigation such as sound walls, or triple-pane windows in order to reduce the health impacts of train noises. Noise mitigation requirements shall be based on measured db levels when trains are in the vicinity and specific building construction features.

Applicant's Response: *All improvements will be completed in accordance with City's standard details and specifications.*

L. Improvements in Areas of Flood or Slope Hazard.

1. Any public utility or facility associated with a subdivision or partition within an area subject to flooding shall be designed, located, and constructed so as to minimize or mitigate flood damage and shall not result in raising the water elevation in a designated floodway beyond the limits prescribed by the Federal Flood Insurance Program.
2. A new or replacement water supply system shall be designed, located and constructed to minimize or eliminate infiltration of flood waters into the system.
3. A new or replacement sanitary sewage system shall be designed, located and constructed to minimize or eliminate infiltration of flood waters into the system.
4. An on-site septic tank system or other individual waste disposal shall be located to avoid impairment or contamination during flooding.
5. Any public utility or facility, including streets, associated with a subdivision or partition within an area which is subject to flooding or slope instability shall be designed, located and constructed so as to amply protect such public utility or facility from damage due to such natural hazards. Adverse impacts upon fish, wildlife, and open space resources shall also be considered in the design and construction of such facilities. The commission and council shall consider the potential repair or maintenance costs to be borne by the public when reviewing the proposed design, location, and construction of such public utilities or facilities.

Applicant's Response: *No part of the proposed subdivision is located in a Flood or Slope Hazard area.*

M. Survey Accuracy and Requirements. In addition to meeting the requirements as set forth in Oregon Revised Statutes relative to required lot, street and perimeter monumentation, the following shall be required:

1. An accuracy ratio of subdivision plat boundary line closure of one in ten thousand (.0001) feet as found in the field.
2. Two primary perimeter monuments (one of which can be the initial point) having the same physical characteristics as the initial point. The monuments are to be on a common line visible, if possible, one to the other at time of approval and preferably at angle points in the perimeter. They shall be points as far apart as practicable. A survey monument witness sign of a design acceptable to the city engineer shall be placed within eighteen inches of both monuments. The position for the initial point and other primary perimeter monuments shall be selected with due consideration to possible damage during construction and desirability of witness sign location.
3. Street centerline monumentation shall consist of a two-inch diameter brass cap set in a concrete base within and separate from a standard monument box with cover (standard city details applicable) at locations specified by the city engineer (generally at intersections with centerline of arterial or collector streets and within streets proposed to be greatly extended into adjacent future subdivisions). All other street centerline points (intersections, points of tangent intersections, cul-de-sac center lines, cul-de-sac off-set points) shall be monumented with a five-eighths-inch diameter steel rod thirty inches long with an approved metal cap driven over the rod and set visible just below the finish surface of the street. If any points of tangent intersection fall outside of a paved section street, the above monumentation will be required at point of curvature and point of tangency of the curve. All centerline monuments are to be accurately placed after street construction is complete.

Applicant's Response: *All survey monumentation will be completed in accordance with City and ORS statutes.*

N. Agreement for Improvements. Before commission approval of a subdivision plat or partition map, the land divider shall either install required improvements and repair existing streets and other public facilities damaged in the development of the property, or execute and file with the city engineer, an agreement specifying the period within which required improvements and repairs shall be completed and provided that, if the work is not completed within the period specified, the city may complete the work and recover the full cost and expense, together with court costs and reasonable attorney fees necessary to collect the amounts from the land divider. The agreement shall also provide for reimbursement to the city for the cost of inspection by the city which shall not exceed ten percent of the improvements to be installed.

Applicant's Response: *As required, the Contract Purchase/Applicant will enter into an agreement to install required improvements and repair existing streets and other public facilities damaged in the development of the property.*

O. Performance Bond.

1. The land divider shall file with the agreement, to assure his full and faithful performance thereof, one of the following:
 - a. A surety bond executed by a surety company authorized to transact business in the state in a form approved by the City Attorney;
 - b. A personal bond cosigned by at least one additional person, together with evidence of financial responsibility and resources of those signing the bond, sufficient to provide reasonable assurance of ability to proceed in accordance with the agreement;
 - c. Cash.
2. Such assurance of full and faithful performance shall be for a sum approved by the city engineer as sufficient to cover the cost of the improvements and repairs, including related engineering and incidental expenses, and to cover the cost of the city inspection.
3. If the land divider fails to carry out provisions of the agreement and the city has unreimbursed costs or expenses resulting from such failure, the city shall call on the bond or cash deposit for reimbursement. If the cost of expense incurred by the city exceeds the amount of the bond or cash deposit, the land divider shall be liable to the city for the difference.

Applicant's Response: *As required, the Contract Purchase/Applicant will provide a performance bond.*

- P. **Guarantee.** All improvements installed by the subdivider shall be guaranteed as to workmanship and materials for a period of one year following written notice of acceptance by the city to the developer. This guarantee can be warranted under the same options listed in Section O above.

Applicant's Response: *The Contract Purchase/Applicant will guarantee the workmanship and materials for a period of one year following written notice of acceptance by the City.*

- Q. **Large Scale or Solar Efficient Development.** The standards and requirements of this division may be modified by the commission in the case of a plan and program for a complete community, a neighborhood unit, a solar efficient design, a large scale shopping center, or large industrial development, which in the judgment of the commission provides adequate public spaces and improvements for the circulation, recreation, light, air and service needs of the developed tract and its relation to adjacent areas, and which also provides such covenants or other legal provisions as will assure conformity to and achievement of the intents and purposes of the Comprehensive Plan. (See Division V for information regarding a planned unit development.)

Applicant's Response: *The Contract Purchase/Applicant acknowledges that the Planning Commission may modify specific language in order to provide adequate public spaces and improvements for the circulation, recreation, light, air and service needs of the developed tract.*

- R. No fence/wall shall be constructed throughout a subdivision where the effect or purpose is to wall said project off from the rest of the community unless reviewed and approved by the Planning Commission. (Ord. 740 section 10.4.40(C)(7), 1984; Ord. 899 section 4, 1993 Ord. 955 sections 28 & 29, 1996; Ord. 1043 section 3, 2000; Ord 1237, 2007; Ord. 1338, 2010; Ord. 1340, 2011; Ord. 1514, 2019)

Applicant's Response: *No fence/wall are proposed that would "wall off" the proposed development from the remainder of the community.*

16.64.80 Low Impact Development Incentives

The purpose of this section is to encourage the use of certain low impact development (LID) practices in subdivision development beyond the minimum requirements of this code. The provisions in this section are voluntary and are not required of new subdivisions. These provisions are applicable only when an applicant elects to utilize the incentives provided in this section. Only one incentive is permitted at a time. For example, an applicant cannot utilize a height bonus and density bonus in the same subdivision application.

- A. **Building height bonus.** A building height bonus will be allowed for subdivision proposals that include one of the following:

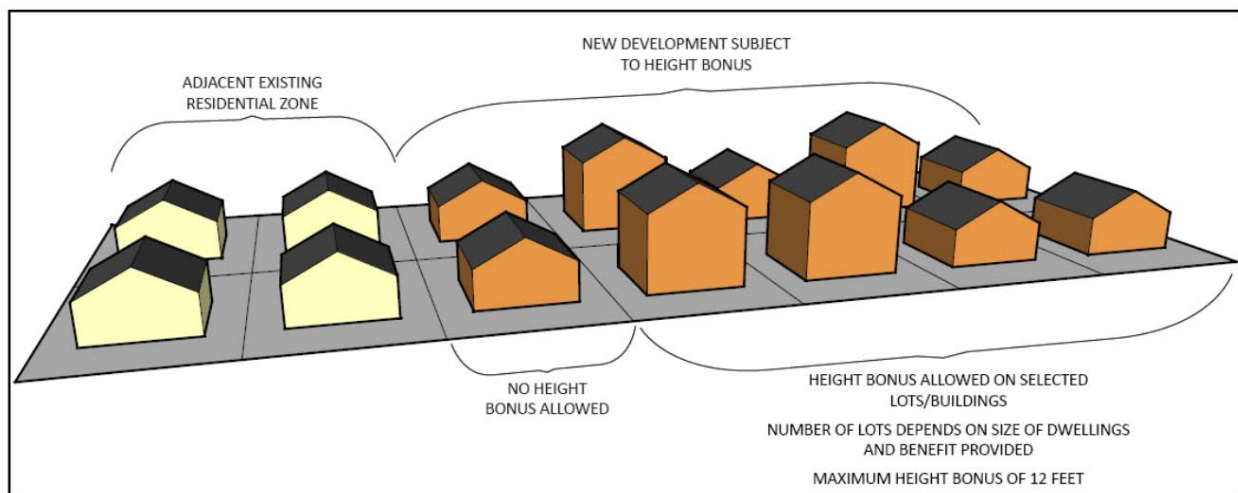
1. Additional park land beyond what is required in Chapter 16.120.
2. The use of pervious surfacing materials such as pavers or pervious concrete.
3. Provision of a rain garden that provides on-site stormwater management for all or part of the subdivision.
4. Mitigation of tree removal by replanting.

Applicant's Response: *The Contract Purchase/Applicant is not utilizing any LID Incentives in order to obtain bonus heights.*

- B. Standards for building height bonus (see Figure 16.64.1 for illustration). Proposals that utilize the building height bonus shall comply with the following:
1. A proposal that includes one of the LID practices listed in A (1-4) above may request an increase in building height up to 12 feet within the building footprint.
 2. The square footage of the building footprint allowed to receive the height increase shall be calculated using the following ratios:
 - a. For park land, the ratio is 1:1 square feet of additional park land to square feet of building footprint. For example, if 1,000 square feet of additional park land are provided, the height increase may be applied to 1,000 square feet of the building footprint.

- b. For pervious surfacing, the ratio is 1:0.5. For example, if 1,000 square feet of pervious surfacing are provided, the height increase may be applied to 500 square feet of the building footprint.
 - c. For rain gardens, the ratio is 1:0.75.
 - d. For mitigation of tree removal, the ratio is 10 caliper-inches to 1,000 square feet of building footprint. For example, if five 4-inch caliper mitigation trees are planted, the height increase may be applied to 2,000 square feet of building footprint. Caliper inches are measured by diameter at breast height (DBH). Tree mitigation must comply with Subsection (C) below.
3. The building height increase shall not result in buildings that exceed 12 feet of height above the maximum building height standard of the underlying zone.
 4. The building(s) receiving the height increase shall be located within the same subdivision where the LID benefit is being provided.
 5. The height bonus may not be used on buildings that are directly adjacent to an existing lot in a residential zone (R-1, R-1.5 or R-2).
 6. Additional park land provided to utilize the height bonus shall be consistent with all applicable standards and regulations of Chapter 16.120.

Figure 16.64.1: Height Bonus Diagram



Applicant's Response: *The Contract Purchase/Applicant is not utilizing any LID Incentives in order to obtain bonus heights.*

- C. Standards for mitigation of tree removal. Proposals that mitigate tree removal in order to utilize the height bonus shall comply with the following:

1. Only mitigation for removal of existing, healthy trees over six-inch caliper DBH shall be counted toward the height or density bonus.
2. Trees planted as mitigation for tree removal shall be at least two-inch caliper DBH and must be approved by the city arborist.
3. The subdivision application must show the location, size and species of exiting trees that will be removed and the location, size and species of trees to be planted as mitigation.
4. Trees planted to comply with the street tree requirements in Chapter 12.32 may not be counted toward the height or density bonus.

Applicant's Response: *Currently, there are only two trees located within the boundary of the proposed subdivision. Both of these are identified for removal in order to accommodate the road widening and mass grading of the subject property.*

- D. **Density bonus.** A density bonus will be allowed for subdivision proposals that provide additional park land beyond what is required in Chapter 16.120. Proposals that utilize the density bonus shall comply with the following:
1. To qualify for the density bonus, a proposal must provide at least 110% of the park land required in Chapter 16.120. For example, if Chapter 16.120 requires 1,000 square feet of park land, the proposal must provide at least 1,100 square feet of park land to qualify.
 2. The percent density bonus allowed will be as follows:
 - a. For provision of park land between 110 – 120% of the minimum requirement, a 5% density bonus will be allowed.
 - b. For provision of park land between 121 – 130% of the minimum requirement, a 10% density bonus will be allowed.
 - c. For provision of park land between 131 – 140% of the minimum requirement, a 15% density bonus will be allowed.
 - d. For provision of park land over 140% of the minimum requirement, a 20% density bonus will be allowed.
 3. No subdivision will be allowed to exceed 120% of the density standard for the underlying zone.
 4. Additional park land provided to utilize the density bonus shall be consistent with all applicable standards and regulations of Chapter 16.120. (Ord. 1338, 2010)

Applicant's Response: *No park or open space has been identified. Based on this, there is not density bonus available for the proposed subdivision.*

Chapter 16.68 - Subdivision Final Procedures and Recordation

Sections Contains:

- 16.68.010 Responsibilities of applicant.
- 16.68.020 Submittal of subdivision plat.
- 16.68.030 Information required on plat.
- 16.68.040 Information to accompany plat.
- 16.68.050 Technical plat review.
- 16.68.060 Planning Commission approval.
- 16.68.070 Filing of final plat.

16.68.010 Responsibilities of applicant.

Following the action of the city in approving or conditionally approving a tentative plat for a subdivision, the applicant shall be responsible for the completion of all required improvements, or the posting of adequate assurances in lieu thereof, to the satisfaction of the city, prior to transfer of title of any of the lots involved. (Ord. 740 section 10.4.40(C)(9)(a), 1984; Ord 1237, 2007)

Applicant's Response: *The Contract Purchaser/Applicant understands that they are responsible for the completion of all required improvements (or the posting of adequate assurances in lieu thereof) to the satisfaction of the city, prior to transfer of title of any of the lots involved.*

16.68.020 Submittal of subdivision plat.

Within two years after approval of the tentative plat, the subdivider shall cause the subdivision or any part thereof to be surveyed and a plat prepared in conformance with the tentative plat, as approved. The subdivider shall submit the original hardboard drawing, a Mylar copy, and any supplementary information to the city. If the subdivider wishes to proceed with the subdivision after the expiration of the two-year period following the approval of the tentative plat, he must formally request an extension of time, in writing, stating the reasons, therefore. The City shall review such requests and may, upon finding of good cause, allow a time extension of not more than six additional months, provided that the request for the time extension is properly filed before the end of the two-year approval period. (Ord. 40 section 10.4.40(C)(9)(b), 1984; Ord 1237, 2007; Ord. 1514, 2019)

Applicant's Response: *The Contract Purchaser/Applicant acknowledge that within two years after approval of the tentative plat, the property will be surveyed and a final plat will be completed.*

16.68.030 Information required on plat.

In addition to that required for the tentative plat or otherwise specified by law, the following information shall be shown on the plat:

- A. Date, north point and scale of drawing;

Applicant's Response: *This information is provided on the tentative plat and will be included on the final plat.*

- B. Legal description of the tract boundaries;

Applicant's Response: *This information will be included on the plat.*

- C. Name and address of the owner or owners, subdivider, engineer or surveyor, and land planner or landscape architect;

Applicant's Response: *This information will be included on the plat.*

- D. Tract boundary lines, right-of-way lines of streets and lot lines with dimensions, bearings or deflection angles and radii, arcs, points or curvature and tangent bearings. All bearings and angles shall be shown to the nearest one second and all dimensions to the nearest 0.01 foot. If circular curves are proposed in the plat, the following data must be shown in tabulation form: curve radius, central angles, arc length, length and bearing of long chord. All information shown on the face of the plat shall be mathematically accurate;

Applicant's Response: *This information will be included on the plat.*

- E. Easements denoted by fine dotted lines, clearly identified and, if already of record, their recorded reference. If an easement of record is not definitely located, a statement of the easement shall be given. The width of the easement, its length and bearing, and sufficient ties to locate the easement with respect to the subdivision shall be shown. If the easement is being dedicated by the map, it shall be properly referenced in the owner's certificates of dedication;

Applicant's Response: *This information will be included on the plat.*

- F. Name and right-of-way width of each street or other designated rights-of-way;

Applicant's Response: *This information will be included on the plat.*

- G. Any building setback lines, if more restrictive than otherwise required in Division III;

Applicant's Response: *This information will be included on the plat.*

- H. Numbering of blocks consecutively within the subdivision and numbering of lots within each block;

Applicant's Response: *This information will be included on the plat.*

- I. Location and purpose for which sites, other than residential lots, are dedicated or reserved;

Applicant's Response: *This information will be included on the plat.*

- J. Easements and any other areas for public use dedicated without any reservation or restriction whatever;

Applicant's Response: *This information will be included on the plat.*

- K. A copy of any deed restrictions written on the face of the plat or prepared to record with the plat with reference on the face of the plat;

Applicant's Response: *This information will be provided with the final plat.*

- L. The following certificates which may be combined where appropriate:

1. A certificate signed and acknowledged by all parties having any record title interest in the land, consenting to the preparation and recording of the plat,
2. A certificate signed and acknowledged as above, dedicating all land intended for public use except land which is intended for the exclusive use of the lot owners in the subdivision, their licensees, visitors, tenants and servants.
3. A certificate with the seal of, and signed by, the engineer or the surveyor responsible for the survey and final plat,
4. Other certifications now or hereafter required by law;

Applicant's Response: *This information will be included on the plat.*

- M. Where any portion of the platted area is subject to inundation in the event of a one-hundred-year flood, that area shall be clearly indicated on the final plat. (Ord. 740 section 10.4.40(C)(9)(c), 1984)

Applicant's Response: *No portion of the proposed subdivision is include within the hundred year flood boundary.*

16.68.040 Information to accompany plat.

The following data shall accompany the final plat:

- A. A preliminary title report issued by a title insurance company in the name of the owner of the land, showing all parties whose consent is necessary and their interest in the premises;

Applicant's Response: *Once the sale of the property is executed, a preliminary title report issued by a title insurance company in the name of the new Owner will be provided included with the final plat.*

- B. Sheets and drawings showing the following:

1. Traverse data including the coordinates of the boundary of the subdivision and ties to section corners and donation land claim corners, and showing the error of closing, if any,
2. The computation of distances, angles, and courses shown on the plat,
3. Ties to existing monuments, proposed monuments, adjacent subdivisions, street corners and state highway stationing;

Applicant's Response: *This information will be included on the plat.*

- C. A copy of any deed restrictions applicable to the subdivision;

Applicant's Response: *This information will be provided with the final plat.*

- D. A copy of any dedication requiring separate documents;

Applicant's Response: *This information will be provided with the final plat.*

- E. A certificate by the city engineer that the subdivider has complied with the requirements for bonding or otherwise assured completion of required improvements; and

Applicant's Response: *This information will be included on the plat.*

- F. A certificate of the subdivider of the total cost or estimate of the total cost for the development of the subdivision in accordance with the provisions and requirements of this title or any other ordinance or regulation of the city relating to subdivision development. This certificate is to be accompanied by a final bid estimate of the subdivider's contractor, if there is a contractor engaged to perform the work, and the certificate of the total cost estimate must be first approved by the city engineer. (Ord. 740 section 10.4.40(C)(9)(d), 1984; Ord. 1111 section 3, 2003)

Applicant's Response: *This information will be provided.*

16.68.050 Technical plat review.

- A. Upon receipt by the city, the plat and other data shall be reviewed to determine that the subdivision, as shown, is substantially the same as it appeared on the approved tentative plat and that there has been compliance with provisions of the law and of these regulations.

Applicant's Response: *The Contract Purchaser/Applicant understands the plat and other data will be reviewed to determine that the subdivision is substantially the same as it appeared on the approved tentative plat.*

- B. The City may make such checks in the field as are desirable to verify that the plat is sufficiently correct on the ground, and their representatives may enter the property for this purpose.

Applicant's Response: *The Contract Purchaser/Applicant acknowledges the City may make checks in the field to verify that the plat is sufficiently correct on the ground.*

- C. If the City determines that full conformity has not been made, the City shall advise the subdivider of the changes or additions that must be made and shall afford the subdivider an opportunity to make the changes or additions. (Ord. 740 section 10.4.40(C)(9)(e), 1984; Ord 1237, 2007)

Applicant's Response: *In accordance with this section, the Contract Purchaser/Applicant understands that if the City determines that full conformity has not*

been achieved, the City will advise the Contract Purchaser/Applicant of the changes or additions that must be made.

16.68.060 Planning Commission approval.

Approval of the plat shall be indicated by the signatures of the Planning Director or their designee. After the plat has been approved by all city and county officials, one reproducible copy of all data (plat face, dedications, certificates, approvals), one copy of all plat data in a "dxf" digital format, and one copy of recorded restrictive and protective covenants shall be returned to the City Planner. (Ord. 899 section 5, 1993; Ord. 740 section 10.4.40(C)(9)(f), 1984; Ord 1237, 2007)

Applicant's Response: *The Contract Purchaser/Applicant acknowledges that the approval of the plat will require the signatures of the Planning Director or their designee. Upon approval by all city and county officials, one reproducible copy of all data (plat face, dedications, certificates, approvals), one copy of all plat data in a "dxf" digital format, and one copy of recorded restrictive and protective covenants is required to be returned to the City Planner.*

16.68.070 Filing of final plat.

Approval of the plat by the city, as provided by this division, shall be conditioned on its prompt recording. The subdivider shall, without delay, submit the plat to the county assessor and the county governing body for signatures, as required by Oregon Revised Statutes Chapter 92. The plat shall be prepared as provided by Oregon Revised Statutes Chapter 92. Approval of the final plat shall be null and void if the plat is not recorded within six months of the date of the signature of the Planning Director. (Ord. 740 section 10.4.40(C)(9)(g), 1984; Ord 1237, 2007)

Applicant's Response: *The Contract Purchaser/Applicant understands that they are required to submit the plat for recording.*

Chapter 16.88 – General Standards

Sections Contains:

- 16.88.010 Applicability.
- 16.88.020 Action on application.
- 16.88.030 Applications and fees
- 16.88.040 Temporary permits.
- 16.88.050 Business license review.
- 16.88.060 Council acceptance of dedicated land.
- 16.88.080 Administration and enforcement.
- 16.88.090 Revocation of conditional use permits and variances.
- 16.88.100 Interpretation.
- 16.88.110 Penalties and civil remedies.
- 16.88.120 Enforcement procedure.
- 16.88.160 Public officials
- 16.88.170 Amendments to text of title.
- 16.88.180 Comprehensive Plan Amendments.
- 16.88.190 Conformance with Transportation System Plan and Transportation Planning Rule

16.88.010 Applicability.

The general standards and procedures set out in this chapter apply to the regulations of all sections of this title, except as may be specifically noted. (Ord. 740 10.8.10[part], 1984)

Applicant's Response: *The Contract Purchaser/Applicant understands that general standards and procedures set out in this chapter apply to the regulations in all the sections.*

16.88.020 Action on application.

- A. Any action taken by the commission or council on any application filed pursuant to the requirements of this title shall be based upon findings of fact entered by the commission or council in making the decision. Such findings of fact shall be based upon the standards and criteria listed in the pertinent section of this title and upon such other legal requirements as may exist.
 1. It is recognized that the burden of proof on all applications is upon the applicant in terms of justifying the proposal.
 2. The scope of the required findings of fact shall vary with the scope of the project such that a major project requires more extensive justification than does a minor project. (Ord. 740 section 10.8.10(A), 1984; Ord. 981 sections 54 & 55, 1997; Ord. 1080, 2001)

Applicant's Response: *The Contract Purchaser/Applicant acknowledges that any action taken by the commission or council on any application filed pursuant to the requirements of this title is required to be based upon findings of fact entered by the commission or council in making the decision.*

16.88.030 Applications and Fees

Applications for annexations, zone changes, variances, conditional use permits, design review, appeals, other permits or approvals and property divisions initiated by property owners or their agents shall be made in writing and submitted to the City Planner. Each application shall be accompanied by a fee. Said fees shall be set out by resolution approved by the City Council. Fees shall differentiate between various processes and applications and no part of which shall be refunded. (Ord. 850 sections 1 and 2, 1990; Ord. 740 section 10.8.10(B), 1984)

Applicant's Response: *The Contract Purchaser/Applicant will submit separate applications for the following applications:*

- 1) **Comprehensive Plan Amendment**
- 2) **Zone Map Change**
- 3) **Subdivision**
- 4) **Variance**

A summary of the fees and copies of the applications are located in Section A – Introduction.

16.88.040 Temporary permits.

The Building Official may issue temporary permits for buildings to be used for a construction office, storage incidental to construction of buildings on the property and for signs advertising a subdivision or tract of land or the lots therein. Such permits shall be issued for a specific time period and shall include a signed statement from the applicant agreeing to remove the structure or sign at the completion of that period. (Ord. 740 section 10.8.10(C), 1984)

Applicant's Response: *The Contract Purchaser/Applicant will likely require a temporary permits for a construction office and/or a temporary sales office and signs advertising a subdivision. These would be obtained by the Contract Purchaser/Applicant and issued by the Building Official.*

16.88.050 Business license review.

Applications for a business license shall be reviewed for compliance with these regulations. The administrative procedure established by the city administrator for review of business license applications shall be followed in order to assure that business operators are made aware of code requirements such as sign regulations, parking standards, and land use regulations. No business license shall be issued until it is found that the proposed business will comply with the requirements of this code. Except, however, that a change in the type of business in an area zoned for industrial use need not meet complete parking requirements unless required to do so as a part of a discretionary hearing process conducted by the commission or City Council. (Ord. 740 section 10.8.10(D), 1984)

Applicant's Response: *The Contract Purchaser/Applicant will likely require a business license to assure that business operators are aware of sign regulations, parking standards, and land use regulations.*

16.88.060 Council acceptance of dedicated land.

No property shall be considered to be dedicated to the city unless first accepted as such by the council, or shown as such on a legally recorded subdivision plat which has been signed by the City. The Planning Commission is empowered to accept dedication of land for public street purposes in a subdivision only, with all other dedications being the responsibility of the council. The applicant shall be responsible for furnishing adequate title insurance for any such land to be dedicated, unless this requirement is waived by the council for good cause. (Ord. 740 section 10.8.10(E), 1984; Ord 1237, 2007)

16.88.070

(Ord. 740 section 10.8.10(F), 1984; repealed by Ord. 981 section 12, 1997)

Applicant's Response: *The Contract Purchaser/Applicant acknowledges that no property will be considered to be dedicated to the city unless first accepted by the council, or shown as such on a legally recorded subdivision plat.*

16.88.080 Administration and enforcement.

- A. Purpose. Recognizing the need for fair and impartial administration and the importance of strict enforcement of these regulations, it is the intent of the council in adopting these regulations that all reasonable means of enforcement be utilized and maximum allowable penalties be sought for willful violations.
- B. Duty. It shall be the duty of the City Planner, with assistance from other city staff, to administer and enforce this title. (Ord. 740 section 10.8.20 (A) and (B), 1984)

Applicant's Response: *The Contract Purchaser/Applicant understands the intent of these regulations to reasonable provide a means of enforcement and the City Planner to administer and enforce this title.*

16.88.090 Revocation of conditional use permits and variances.

(Ord. 740 section 10.8.20(C), 1984; Ord. 955 section 31, 1996; renumber to 16.50.070 and 16.53.030; Ord 1237, 2007)

Applicant's Response: *Not applicable*

16.88.100 Interpretation.

The provisions of this title shall be held to be the minimum requirements fulfilling its objectives. (Ord. 740 section 10.8.20(D), 1984)

Applicant's Response: *The Contract Purchaser/Applicant acknowledges the provisions of this title will be held to be the minimum requirements fulfilling its objectives.*

16.88.110 Penalties and civil remedies.

- A. Unless otherwise provided, a person who knowingly violates this title is punishable upon conviction by a fine of not more than two thousand five hundred dollars. Each day a violation exists is a separate offense and may be punished as such.
- B. When costs (attorney fees, court costs, staff or consultant expenses) are accrued in the enforcement of this title, the city may institute appropriate civil action to recoup the costs from the violators.
- C. In case a building or other structure is, or is proposed to be located, constructed, maintained, repaired, altered, or used in violation of this title, the building or land in violation shall constitute a nuisance, and the city may, as an alternative for enforcing these requirements, institute injunction, mandamus, abatement, or other appropriate proceedings to prevent, enjoin temporarily or permanently, abate, or remove the unlawful location, construction, maintenance, repair, alteration or use.
- D. Individuals who have been victimized by illegal land development practices shall be encouraged to seek civil relief from the developers for any and all costs and inconveniences which they have suffered as a result of such illegal practices. (Ord. 830 section 14, 1989; Ord. 740 section 10.8.20(E), 1984)

Applicant's Response: *The Contract Purchaser/Applicant acknowledges that a person who knowingly violates this title is punishable upon conviction by a fine of not more than two thousand five hundred dollars.*

16.88.120 Enforcement procedures.

- A. City staff and officials will work closely with local title insurance companies, developers and members of the real estate profession to ensure fair and reasonable enforcement of these regulations.
- B. Upon finding any indication of a violation of state law relative to land division, city staff shall contact the Real Estate Division of the state Department of Commerce.
- C. Upon finding that the regulations of this title have apparently been violated, the City Planner shall cause the following steps to be taken:
 - 1. A member of the staff shall attempt to contact the property owner or apparent violator, explaining the requirements of this title and type of action which the city can be expected to take if the violation is not corrected.
 - 2. If the property owner and/or violator is willing to correct the violation, he/she shall be given a reasonable amount of time to make such corrections.
 - 3. If the owner and/or violator cannot be reached, is reached but does not intend to comply, or fails to comply within the time limits previously agreed to, the city shall take any of the following steps which are deemed appropriate in the situation:

- a. Record a document affecting the title of all properties involved in the violation, thereby clouding the title and stating that no further permits will be issued for the development of any of the subject property;
 - b. Withhold any and all permits for the development of the property;
 - c. Disconnect the property from city services;
 - d. Cite the individual into a court of competent jurisdiction;
4. The City Planner shall notify, by certified mail, all record owners of the property involved, stating the nature of the remedial actions which the city is taking to correct the apparent violation. (Ord. 740 section 10.8.20(F), 1984)

Applicant's Response: *In accordance with this section, the Contract Purchaser/Applicant understands the City staff and officials will work closely with local title insurance companies, developers and members of the real estate profession to ensure fair and reasonable enforcement of these regulations.*

16.88.130

(Ord. 740 section 10.8.30, 1984; Ord. 1019 section 12, 1999; Ord. 1043 section 3, 2000; mod. & renum. to 16.89 by Ord. 1080, 2001)

Applicant's Response: *Not applicable*

16.88.135

(Ord. 955 section 32, 1996; mod. & renum. to 16.89 by Ord. 1080, 2001)

Applicant's Response: *Not applicable*

16.88.140

(Ord. 740 section 10.8.40, 1984; Ord. 981 section 13, 1997; mod. & renum. to 16.89 by Ord. 1080, 2001)

Applicant's Response: *Not applicable*

16.88.150

(Mod. & renum. to 16.53 by Ord. 1080, 2001)

Applicant's Response: *Not applicable.*

16.88.160 Public officials.

The terms "City Administrator," "City Recorder," "City Engineer," "City Planner," and other references to individual employees by title, shall include any city staff member or consultant operating in an official

capacity for the city. The terms are offered for the convenience of the user of this title and are not intended to impair the validity of this title. (Ord. 740 section 10.8.70, 1984; Ord. 1514, 2019)

Applicant's Response:

16.88. 170 Amendments to text of title.

- A. Authorization to Initiate Amendments. An amendment to the text of this title may be initiated by the City Council, by the Planning Commission or by the application of a property owner or his authorized agent. The Planning Commission shall, within forty days after closing the hearing, recommend to the City Council, approval, disapproval, or modification of the proposed amendment.
- B. Application and Fee. Application procedures shall be as described in Chapter 16.89.
- C. Public Hearing on an Amendment. Before taking final action on a proposed amendment, the Planning Commission shall hold a public hearing on the amendment following the requirements for advertising and conduct of hearings prescribed in Division VIII.
- D. Standards and Criteria. In judging whether or not this title should be amended or changed, the Planning Commission and City Council shall consider:
 - 1. The Comprehensive Plan of the city, and the plans and policies of the county, state, and local districts, in order to preserve functions and local aspects of land conservation and development;
 - 2. A public need for the change;
 - 3. Whether the proposed change will serve the public need better than any other change which might be expected to be made;
 - 4. Whether the change will preserve and protect the health, safety and general welfare of the residents in the community;
 - 5. Statewide planning goals.
- E. Record of Amendments. The City Planner shall maintain a record of amendments to the text of this title in a form convenient for the use of the public. (Ord. 740 section 10.8.60, 1984; Ord. 981 section 15, 1997; Ord. 1080, 2001)

Applicant's Response: *The Contract Purchaser/Applicant understands that an amendment to the text of this title may be initiated by the City Council, by the Planning Commission or by the application of a property owner or his authorized agent.*

No amendments to Section 16 of the City's Code are being proposed.

16.88.180 Comprehensive Plan Amendments

- A. Authorization to Initiate Amendments. An amendment to the Comprehensive Plan may be initiated by the City Council, by the Planning Commission, or by the application of a property owner or his authorized agent. The Planning Commission shall, within forty days after closing the hearing, recommend to the City Council approval, disapproval, or modification of the proposed amendment.

Applicant's Response: *The Comprehensive Plan Amendment is being initiated by the Contract Purchaser/Applicant. The Contract Purchaser/Applicant understand that the Planning Commission shall, within forty days after closing the hearing, recommend to the City Council approval, disapproval, or modification of the proposed amendment.*

- B. Application. Application procedures shall be as described in Chapter 16.89.

Applicant's Response: *In accordance with this section, Comprehensive Plan Amendment and Zone Map Change applications have been completed and signed by the Owner and Contract Purchaser/Applicant.*

- C. Legislative Plan Amendment Standards and Criteria. In judging whether or not a legislative plan amendment shall be approved, the Planning Commission and City Council shall consider:

1. The remainder of the Comprehensive Plan of the city, and the plans and policies of the county, state, and local districts, in order to preserve functions and local aspects of land conservation and development;
2. A public need for the change;
3. Whether the proposed change will serve the public need better than any other change which might be expected to be made;
4. Whether the change will preserve and protect the health, safety and general welfare of the residents in the community;
5. Statewide planning goals.

Applicant's Response: *This criterion is not applicable to the proposed application since the Contract Purchaser/Application is requesting a Quasi-Judicial Plan Amendment.*

- D. Quasi-judicial Plan Amendment Standards and Criteria. In judging whether a quasi-judicial plan amendment shall be approved, the Planning Commission and City Council shall consider:

1. The remainder of the Comprehensive Plan of the city, as well as the plans and policies of the county, state, or any local school or service districts which may be affected by the amendments;

2. Whether all required public facilities and services exist, or will be provided concurrent with the anticipated development of the area.

Applicant's Response: *The Contract Purchaser/Application is requesting a Quasi-Judicial Plan Amendment to change to change the designation from LDR-Low Density Residential to MDR – Medium Density Residential. Simultaneously, the Contract Purchaser/Applicant is also requesting approval of a Zone Map Change to modify the zoning from R-1 – Low Density Residential to R-1.5 – Medium Residential.*

- E. For proposed comprehensive plan amendments, which must consider the long-term adequacy of the transportation system for TPR 660-10-060 compliance, ODOT must be consulted to determine whether a highway project is “reasonably likely to be funded” based on funding projections at that time. (Ord. 740 section 10.8.80, 1984; Ord. 981 section 16, 1997; Ord. 1080, 2001; Ord. 1340, 2011; Ord. 1514, 2019)

Applicant's Response: *In accordance with this section, a Traffic Analysis Letter (TAL) has been prepared by a registered traffic engineer.*

For additional information, refer to Section F – Appendices, Appendix 23 – Transportation Analysis Letter for additional information.

16.88.190 Conformance with Transportation System Plan and Transportation Planning Rule

- A. A proposed comprehensive plan amendment, zone change or land use regulation change, whether initiated by the city or by a private interest, shall be reviewed to determine whether it significantly affects a transportation facility, in accordance with the Transportation Planning Rule (OAR 660-012-0060).** A plan or land use regulation amendment significantly affects a transportation facility if it:

1. Changes the functional classification of an existing or planned transportation facility;
2. Changes standards implementing a functional classification system;
3. As measured at the end of the planning period identified in the adopted plan:
 - a. Allows types or levels of land use that would result in levels of travel or access that are inconsistent with the functional classification of a transportation facility; or
 - b. Would reduce the performance of the facility below the minimum acceptable performance standard identified in the Transportation System Plan;
 - c. Would worsen the performance of a facility that is otherwise projected to perform below the minimum acceptable performance standard identified in the Transportation System Plan.

Applicant's Response: *The proposed zone change of the site is projected to increase the trip generation potential of the site by 7 morning peak hour trips, 7 evening peak hour trips, and 150 average weekday trips. Accordingly, the net increase in the traffic intensity of the site will not degrade the performance of any existing or planned transportation facility beyond what is currently allowed under the existing zone. Accordingly, the Transportation Planning Rule is satisfied.*

For additional information, refer to Section F – Appendices, Appendix 23 – Transportation Analysis Letter for additional information.

- B. Amendments to the comprehensive plan and land use regulations which significantly affect a transportation facility shall assure that allowed land uses are consistent with the function, capacity, and performance standards (e.g., level of service, volume to capacity ratio, etc.) of the facility identified in the Transportation System Plan. This shall be accomplished by one of the following:
1. Adopting measures that demonstrate allowed land uses are consistent with the planned function, capacity, and performance standards of the transportation facility.
 2. Amending the TSP or comprehensive plan to provide transportation facilities, improvements or services adequate to support the proposed land uses consistent with the requirements of Section – 0060 of the TPR. Such amendments shall include a funding plan or other mechanism so that the facility, improvement or service will be provided by the end of the planning period.
 3. Altering land use designations, densities, or design requirements to reduce demand for vehicle travel and meet travel needs through other modes of transportation.
 4. Amending the TSP to modify the planned function, capacity or performance standards of the transportation facility.
 5. Providing other measures as a condition of development, including transportation system management measures, demand management or minor transportation improvements.

Applicant's Response: *Based on the Transportation Analysis Letter (TAL), the proposed change would not degrade the performance of any existing or planned transportation facility beyond what is currently allowed under the existing zone.*

- C. A Traffic Impact Study may be required by the City in accordance with Section 16.08.150. (Ord. 1043, section 3, 2000; Ord. 1237, 2007; Ord. 1340, 2011)

Applicant's Response: *In accordance with this section, a Traffic Analysis Letter (TAL) has been prepared by a registered traffic engineer.*

For additional information, refer to Section F – Appendices, Appendix 23 – Transportation Analysis Letter for additional information.

Chapter 16.89 – Application and Review Procedures

Sections Contains:

- 16.89.010 Purpose.
- 16.89.020 Description and summary of processes.
- 16.89.030 Type I procedure.
- 16.89.040 Type II procedure.
- 16.89.050 Type III procedure.
- 16.89.060 Type IV procedure.
- 16.89.070 Neighborhood meetings.
- 16.89.080 Application requirements and completeness.
- 16.89.090 Modifications.
- 16.89.100 Administrative Reviews

16.89.010 Purpose.

The purpose of this chapter is to establish standard decision-making procedures that will enable the City, the applicant, and the public to review applications and participate in the decision-making process in a timely and effective way. (Ord. 1080, 2001)

Applicant's Response: *The Contract Purchaser/Applicant understands that purpose of this chapter is to establish standard decision-making procedures that will enable the City, the applicant, and the public to review applications and participate in the decision-making process.*

16.89.020 Description and Summary of Processes.

All land use and development applications shall be decided by using the procedures contained in this Chapter. Specific procedures for each type of permit are contained in Sections 6.89.030 through 16.89.060. The procedure type assigned to each permit governs the decision-making process for that permit. Additional requirements may be found in the individual chapters governing each permit type. The four types of procedure are described below. Table 16.89.020 lists the City's land use and development applications and their required procedures.

- A. Type I Procedure (Ministerial). Type I decisions are made by the Planning Director without public notice and without a public hearing. The Type I procedure is used when there are clear and objective approval criteria or provisions and applying those criteria or provisions requires no use of discretion. The appeal of a Type I Planning Director's decision is heard by the Planning Commission.

Applicant's Response: *This criterion is not applicable to this application since the project will be review as a Type III and IV procedure.*

- B. Type II Procedure (Administrative). Type II decisions are made by the Planning Director with public notice and an opportunity for a public hearing. The appeal of a Type II decision is heard by the Planning Commission.

Applicant's Response: *This criterion is not applicable to this application since the project will be review as a Type III and IV procedure.*

- C. Type III Procedure (Quasi-Judicial/Legislative). Type III decisions are made by the Planning Commission after a public hearing, with appeals reviewed by the City Council. Type III procedures generally use discretionary approval criteria.

Applicant's Response: *Decisions on the Subdivision application and associated Variance application are made by the Planning Commission after a public hearing.*

- D. Type IV procedure (Council Decision). Type IV decisions generally apply to legislative matters, but include certain other applications as well. Legislative matters involve the creation, revision, or large-scale implementation of public policy (e.g., adoption of land use regulations, zone changes, and comprehensive plan amendments that apply to entire districts). Type IV matters are considered initially by the Planning Commission with final decisions made by the City Council. Annexations and certain quasi-judicial applications are also processed under the Type IV process. (Ord. 1080, 2001; Ord 1237, 2007; Ord. 1514, 2019)

Applicant's Response: *Decisions on the Comprehensive Plan Amendment and Zone Map Change are considered initially by the Planning Commission with final decisions made by the City Council.*

Table 16.89.020
Land Use and Development Application Procedures

Application Type	Process Type	Notice Radius (Feet)	Neighborhood Meeting
Access permit to public street	I	n/a	No
Administrative Review	I	n/a	No
Administrative Review	II	100	No
Amendments to Zoning Map	IV	500	Yes
Annexation, Minor and Major	IV	500	Yes
Appeals	III	200	No
Building Permit	I	n/a	No
Comprehensive Plan Amendment	IV	500	Yes
Conditional Use Permit	III	500	No
Condominium Construct (Less	I	n/a	No
Interpretation	See Section		
Lot Line Adjustment**	II	100	No
Modification	See Section		
Non-Conforming Structure/Use	II	100	No
Parking Lot/Paving projects	I	n/a	No
Partition	II	100	No
Planned Unit Development	III	200	Yes
Sign Permit (non-SDR)	I	n/a	No

Sign Permit – Discretionary	II	100	No
Site and Design Review – Type II	II	100	No
Site and Design Review – Type III	III	500	Yes
Site Plan Review	I	n/a	No
Temporary Permit (16.44.090)	See Chapter		
Temp. Hardship Permit	II	100	No
Subdivision	III	500	Yes
Text Amendment	IV	500	Yes
Variance, Minor	II	200	No
Variance, Major	III	200	No

NOTES: * See also Chapter 16.78

** See also Chapter 16.58.

16.89.030 Type I procedure. *This criterion is not applicable to this application since the project will be review as a Type III and IV procedure.*

16.89.040 Type II procedure. *This criterion is not applicable to this application since the project will be review as a Type III and IV procedure.*

16.89.050 Type III procedure.

- A. Pre-application conference. A pre-application conference may be required by the Planning Director for Type III applications.

Applicant's Response: *A pre-application meeting was held virtually on September 16, 2020. A copy of the pre-application meeting minutes were received on January 20, 2021.*

Refer to Section F – Appendices, Appendix 12 – Pre-Application Meeting Notes.

- B. Neighborhood meetings. As directed in Table 16.89.020, the applicant may be required to present their development proposal at a neighborhood meeting before the City accepts the application as complete. See Section 16.89.070.

Applicant's Response: *A neighborhood meeting was virtually conduct on December 23, 2020.*

Refer to Section F – Appendices, Appendix 13 - Neighborhood Boundary Map; Appendix 14 – Property Map with 500 Feet; Appendix 15 – Address List; Appendix 16 Mailing Labels; Appendix 17 – Neighborhood Mailing Notification and Appendix 18 – Neighborhood Meeting Minutes.

- C. Application requirements. Type III applications shall be made on forms provided by the Planning Director. The application shall be accompanied by all required information and fees.

Applicant's Response: *The Type III applications (i.e. Subdivision and Variance) have been submitted on form provided by the City.*

D. Public notice.

1. At least 20 days prior to a public hearing on a Type III decision or a Type II appeal decision, the Planning Director shall mail notice meeting the requirements of state law to:
 - a. All owners of real property and, if the owner's address is different from the site address, all residents of property, within the distance prescribed in Table 16.89.020;
 - b. The appointed chair of any neighborhood association whose boundaries include the subject property;
 - c. Any person who submits a written request to receive notice; and
 - d. Any governmental agency which is entitled to notice under an intergovernmental agreement entered into with the City.
 - e. For appeals, the appellant and all persons who provided testimony.
2. Notice of any proposal that includes a new transportation facility or improvement, and where these facilities or improvements included or may impact a collector or arterial street, will be sent to the ODOT and Clackamas County or any special interest transportation groups as appropriate. Special interest transportation groups could include trucking organizations, bicycle and pedestrian interest groups, and interest groups for people with disabilities. Information that should be conveyed with the notice includes the following:
 - a. Project location
 - b. Proposed land use action
 - c. Location of project access point(s)
3. The City shall prepare an affidavit of mailing for the public notice and make the affidavit part of the application file. Failure of any individual to receive notice as prescribed in this section does not invalidate the proceedings.
4. Written notice shall be published in a newspaper of general circulation in Canby once in either of the two consecutive weeks prior to the hearing.
5. At least ten (10) days before the hearing, written notice shall be posted at City Hall and such other conspicuous locations as the Council may determine to be appropriate.
6. At least ten (10) days before the hearing, the applicant shall post notice of the hearing on the property as directed by the Planning Director.
7. The Planning Director may expand the notice area or take other steps to assure that affected property owners or residents are made aware of the pending public hearing.

8. Any application that involves access to the state highway system must be provided to the Oregon Department of Transportation for their review and comment regarding conformance with state access management standards and requirements.

Applicant's Response: *The Contract Purchaser/Applicant understands that Type III procedures require public notice and subsequent hearing.*

E. Conduct of public hearing.

1. In all evidentiary hearings required by this title the following procedures shall be followed:
 - a. All interested persons in attendance shall be heard on the matter of hearing, and this fact shall be communicated to those in attendance;
 - b. A summary of the application or other matter for hearing shall be given by the presiding officer or their designee;
 - c. The staff report shall be made followed by questions, if any, of the staff by the hearings body;
 - d. The public hearing shall be opened and testimony shall be received in the following order:
 - i. Applicant;
 - ii. Proponents;
 - iii. Opponents; and
 - iv. Rebuttal by proponents or applicant;
 - e. Close public hearing;
 - f. Questions and discussion by hearing body;
 - g. Decision by the hearing body except that further discussions, decision, or reopening of the public hearing may be postponed to another meeting, the time, date, and place of which shall be announced before adjournment.
2. All persons who speak at the hearing shall identify themselves by name, address, and interest in the matter. Attorneys or other agents shall be allowed to speak on behalf of all participants.
3. Physical evidence in the form of written documents, photographs, or other exhibits may be accepted by the hearing body if deemed to be pertinent.
4. A record made at any prior evidentiary hearing may be accepted, considered, and used by the hearing body at any subsequent hearing, and said body, by majority vote of a quorum present, may deny to accept or hear any repetitious matter.
5. The hearing body may recess a hearing in order to obtain additional information or to serve further notice upon other property owners or persons it decides may be interested. Upon recessing for these purposes, the hearing body shall announce the time and date when the hearing will be resumed.

6. Before the conclusion of the initial evidentiary hearing, any participant may ask the hearings body for an opportunity to present additional relevant evidence or testimony that is within the scope of the hearing. The hearings body shall grant the request by scheduling a date to finish the hearing as follows:
 - a. If the hearings body grants a continuance, the completion of the hearing shall be continued to a date, time, and place at least seven days after the date of the first evidentiary hearing. An opportunity shall be provided at the second hearing for persons to present and respond to new written evidence and oral testimony. If new written evidence is submitted at the second hearing, any person may request, before the conclusion of the second hearing, that the record be left open for at least seven days, so that they can submit additional written evidence or testimony in response to the new written evidence; or
 - b. If the hearings body leaves the record open for additional written evidence or testimony, the record shall be left open for at least seven days after the hearing. Any participant may ask the City in writing for an opportunity to respond to new evidence submitted during the period the record was left open. If such a request is filed, the hearings body shall reopen the record as follows:
 - i. When the hearings body re-opens the record to admit new evidence or testimony, any person may raise new issues which relate to that new evidence or testimony.
 - ii. An extension of the hearing or record granted pursuant to this subsection is subject to the limitations of ORS 227.178 (120-day rule), unless the continuance or extension is requested or agreed to by the applicant.
 - iii. If requested by the applicant, the City shall allow the applicant at least seven days after the record is closed to all other persons to submit final written arguments in support of the application, unless the applicant expressly waives this right. The applicant's final submittal shall be part of the record but shall not include any new evidence.

Applicant's Response: *The Contract Purchaser/Applicant understands the procedures associated with the public hearing process.*

F. Decision process.

1. Approval or denial of a Type III decision or appeal of a Type II decision shall be based on standards and criteria located in the code.
2. The hearings body shall issue a final written order containing findings and conclusions that approve, approve with conditions, or deny the application.
3. The written decision shall explain the relevant criteria and standards, state the facts relied upon in rendering the decision, and justify the decision according to the criteria, standards, and facts.

4. In cases involving attorneys, the prevailing attorney shall prepare the findings, conclusions, and final order. Staff shall review and, if necessary, revise, these materials prior to submittal to the hearings body.

Applicant's Response: *The Contract Purchaser/Applicant acknowledges that an approval or denial of a Type III decision will be based on the standards and criteria located in the code.*

G. Notice of Decision.

1. The written findings shall be sent to:
 - a. Any person who submits a written request to receive notice, provides written comments during the application review period, or provides written or oral testimony in the public hearing;
 - b. The applicant and owner of the subject property;
 - c. Any governmental agency which is entitled to notice under an intergovernmental agreement entered into with the City.
2. The written findings shall include information on the application, the City's decision, and a statement explaining how an appeal of the decision may be filed.

Applicant's Response: *The Contract Purchaser/Applicant acknowledges that the written findings shall include information on the application, the City's decision, and a statement explaining how an appeal of the decision may be filed.*

H. Effective Date. A Type III decision is final for purposes of appeal when it is mailed by the City.

Applicant's Response: *The Contract Purchaser/Applicant understands that the effective date of the decision is the date it is mailed by the City.*

- I. Appeal. The Planning Commission's decision on a Type III decision or Type II appeal may be appealed to the City Council as follows:
 1. The following have legal standing to appeal:
 - a. The applicant;
 - b. Any person who was mailed notice of the decision;
 - c. Any other person who participated in the proceeding by testifying or submitting written comments; and
 - d. The City Council, on its own motion.
 2. Procedure.

- a. A Notice of Appeal shall be filed in writing, on forms provided for the purpose by the Planning Director, within 10 days of the date the Notice of Decision was mailed.
 - b. The Notice of Appeal shall be accompanied by all required information and fees.
 - c. The appeal shall be limited to the specific issues raised during the comment period and public hearing process unless the hearings body allows additional evidence or testimony concerning any other relevant issue. The hearings body may allow additional evidence if it determines that such evidence is necessary to resolve the case. The purpose of this requirement is to limit the scope of appeals by encouraging persons to be involved in the public hearing. Only in extraordinary circumstances should new issues be considered by the hearings body on an appeal.
3. The City Council shall overturn the decision of the Planning Commission only when one or more of the following findings are made:
- a. That the Commission did not correctly interpret the requirements of this title, the Comprehensive Plan, or other requirements of law;
 - b. That the Commission did not observe the precepts of good planning as interpreted by the Council; or
 - c. That the Commission did not adequately consider all of the information which was pertinent to the case.
4. The Council's action on an appeal shall be governed by the same general regulations, standards, and criteria as apply to the Commission in the original consideration of the application.

Applicant's Response: *The Contract Purchaser/Applicant understands that the procedures and requirements associated with an appeal.*

- J. Any decision of the Planning Commission may be appealed to the City Council unless otherwise specified in this Title. Such appeals will be processed using the Type III procedures unless otherwise specified in this Title.

Applicant's Response: *In accordance, the Contract Purchaser/Applicant acknowledge that the Planning Commission's decision can be appealed to the City Council.*

- K. The decision of the City Council regarding a Type IV decision, appeal of a Planning Commission decision, or any other process contained within this title, is the final decision of the City. (*Ord. 1080, 2001; Ord. 1111 section 5, 2003; Ord 1237, 2007*)

Applicant's Response: *The Contract Purchaser/Applicant understands that the decision of the City Council regarding a Type IV decision, or appeal of a Planning Commission decision is the final decision of the City.*

16.89.060 Type IV decision.

For certain applications, the City Council makes a final decision after a recommendation by the Planning Commission. These application types are referred to as Type IV decisions.

- A. Pre-application conference. A pre-application conference may be required by the Planning Director for Type IV applications.

Applicant's Response: *A pre-application meeting was held virtually on September 16, 2020. A copy of the pre-application meeting minutes were received on January 20, 2021.*

Refer to Section F – Appendices, Appendix 12 – Pre-Application Meeting Notes.

- B. Neighborhood meetings. The applicant may be required to present their development proposal at a neighborhood meeting (see Section 16.89.070). Table 16.89.020 sets the minimum guidelines for neighborhood review but the Planning Director may require other applications to go through neighborhood review as well.

Applicant's Response: *A neighborhood meeting was virtually conduct on December 23, 2020.*

Refer to Section F – Appendices, Appendix 13 - Neighborhood Boundary Map; Appendix 14 – Property Map with 500 Feet; Appendix 15 – Address List; Appendix 16 Mailing Labels; Appendix 17 – Neighborhood Mailing Notification and Appendix 18 – Neighborhood Meeting Minutes.

- C. Application requirements. Type IV applications shall be made on forms provided by the Planning Director. The application shall be accompanied by all required information and fees.

Applicant's Response: *The Type IV applications (i.e. Comprehensive Plan Amendment and Zone Map Change) have been submitted on form provided by the City.*

- D. Public notice and hearings. The public notice and hearings process for the Planning Commission's review of Type IV applications shall follow that for Type III applications, as provided in subsections 16.89.050.D and 16.89.050.E.

Applicant's Response: *The Contract Purchaser/Applicant understands that Type IV procedures require public notice and subsequent hearing.*

- E. Decision process.

1. Approval or denial of a Type IV decision shall be based on the standards and criteria located in the code.
2. The hearings body shall issue a final written order containing findings and conclusions recommending that the City Council approve, approve with conditions, or deny the application.

3. The written decision shall explain the relevant criteria and standards, state the facts relied upon in rendering the decision, and justify the decision according to the criteria, standards, and facts.
4. In cases involving attorneys, the prevailing attorney shall prepare the findings, conclusions, and final order. Staff shall review and, if necessary, revise, these materials prior to submittal to the hearings body.

Applicant's Response: *The Contract Purchaser/Applicant acknowledges that an approval or denial of a Type IV decision will be based on the standards and criteria located in the code.*

F. City Council proceedings:

1. Upon receipt of the record of the Planning Commission proceedings, and the recommendation of the Commission, the City Council shall conduct a review of that record and shall vote to approve, approve with conditions, or deny the recommendation of the Planning Commission.
2. The City Council may question those individuals who were a party to the public hearing conducted by the Planning Commission if the Commission's record appears to be lacking sufficient information to allow for a decision by the Council. The Council shall hear arguments based solely on the record of the Commission.
3. The City Council may choose to conduct public hearings on Comprehensive Plan amendments, amendments to the text of this title, zone map amendments, and annexations. If the Council elects to conduct such hearings, it may do so in joint session with the Planning Commission or after receiving the written record of the Commission. (Ord. 1080, 2001)

Applicant's Response: *The Contract Purchaser/Applicant acknowledges that upon receipt of the record of the Planning Commission proceedings, and the recommendation of the Commission, the City Council will conduct a review of that record and will vote to approve, approve with conditions, or deny the recommendation of the Planning Commission.*

16.89.070 Neighborhood Meetings.

- A. Applicants are encouraged to meet with adjacent property owners and neighborhood representatives prior to submitting their application in order to solicit input, identify issues, and exchange information about the proposed meeting.

Applicant's Response: *A neighborhood meeting was virtually conduct on December 23, 2020. The Contract Purchaser/Applicant hosted a virtual neighborhood meeting on December 23, 2020 to give neighbors an opportunity to comment on the proposed development. Mailing notices were sent*

out to neighbors within 500 feet of the subject property as well as the NE Canby Neighborhood Association contact.

Refer to Section F – Appendices, Appendix 13 - Neighborhood Boundary Map; Appendix 14 – Property Map with 500 Feet; Appendix 15 – Address List; Appendix 16 Mailing Labels; Appendix 17 – Neighborhood Mailing Notification and Appendix 18 – Neighborhood Meeting Minutes.

- B. The Planning Commission or Planning Director may require an applicant to hold a meeting in the neighborhood prior to accepting an application as complete. A neighborhood meeting is required for some application types, as shown in Table 16.89.020, unless this requirement is waived by the Planning Director.

Applicant's Response: *As required for Type III and Type IV applications, a neighborhood meeting was virtually conducted on December 23, 2020.*

Refer to Section F – Appendices, Appendix 13 - Neighborhood Boundary Map; Appendix 14 – Property Map with 500 Feet; Appendix 15 – Address List; Appendix 16 Mailing Labels; Appendix 17 – Neighborhood Mailing Notification and Appendix 18 – Neighborhood Meeting Minutes.

- C. At least two weeks prior to the neighborhood meeting, the applicant shall mail notice of the meeting to:
1. The appointed chair of any neighborhood association in whose boundaries the application lies; and
 2. All of those who would receive notice of the application's public hearing before the Planning Commission.

Applicant's Response: *Mailing notices were sent out to neighbors within 500 feet of the subject property as well as the NE Canby Neighborhood Association contact two weeks in advance.*

Refer to Section F – Appendices, Appendix 13 - Neighborhood Boundary Map; Appendix 14 – Property Map with 500 Feet; Appendix 15 – Address List; Appendix 16 Mailing Labels; Appendix 17 – Neighborhood Mailing Notification and Appendix 18 – Neighborhood Meeting Minutes.

- D. The meeting shall be held in a fully accessible location approved by the City.

Applicant's Response: *Due to the pandemic, the City did not require the meeting to be held in a fully accessible location.*

- E. Following a required neighborhood meeting, applicants shall prepare a written summary of pertinent issues raised and shall prepare a detailed response to each issue. This material shall be submitted to the Planning Department in electronic format at least two weeks before the initial public hearing.

Applicant's Response: *A neighborhood meeting was virtually conduct on December 23, 2020. Meeting minutes of the neighborhood meeting were prepared that summarized the questions and responses.*

Refer to Section F – Appendices, Appendix 18 – Neighborhood Meeting Minutes.

- F. Applicants or attendees may make audio or video recordings of the neighborhood meeting if desired. (Ord. 1080, 2001; Ord. 1111 section 5, 2003; Ord 1237, 2007; Ord. 1514, 2019)

Applicant's Response: *No audio or video recordings of the neighborhood meeting were made.*

16.89.080 Application Requirements and Completeness.

- A. Submittal. Applications for land use and development permits shall be filed on forms provided by the purpose by the Planning Director. The application shall be made with all required information and fees.

Applicant's Response: *Completed applications for each of the four (4) land use procedures (i.e. Comprehensive Plan Amendment, Zone Map Change, Subdivision and Variance) have been signed on forms provided by the City of Canby. A summary of the applications is located in Section A – Introduction.*

- B. Fees. Fees shall be set out by resolution adopted by the City Council. Fees shall differentiate between various processes and applications and no part of the fee shall be refunded unless approved by the Planning Director.

Applicant's Response: *Fees for each of the four (4) land use procedures (i.e. Comprehensive Plan Amendment, Zone Map Change, Subdivision and Variance) have been determined based on the City Fee Schedule. A summary of the fees is located in Section A – Introduction.*

- C. Amendments to forms. Application forms may be amended by the Planning Director. The Planning Commission shall first review and approve all proposed amendments as New Business Items.

Applicant's Response: *To the Contract Purchaser/Applicants knowledge, there are no amendments to the forms.*

- D. Completeness. In reviewing an application for completeness, the following procedure shall be used:

1. When an application is received by the City, the Planning Director shall immediately determine whether the following essential items are present. If they are not, the Planning Director may choose not to accept the application, in which case the application shall be immediately returned to the applicant:

- a. **The required form;**
- b. **The required fee;** and
- c. **The signature of the applicant on the form,** and signed written authorization of the property owner of record if the applicant is not the owner.

2. Completeness.

- a. **After the application is accepted, the Planning Director shall review the application for completeness.** If the application is incomplete, the Planning Director shall notify the applicant in writing exactly what information is missing within thirty (30) days of the application and allow the applicant 180 days to submit the missing information;
- b. In accordance with the application submittal requirements, the application shall be deemed complete upon the receipt by the Planning Director of all required information. The applicant shall have the option of withdrawing the application or refusing to submit information requested under (a), above. For the refusal to be valid, it shall be made in writing and received by the Planning Director no later than fourteen (14) days after the date on the letter of incompleteness. If the applicant refuses in writing to submit the missing information, the application shall be deemed complete for the purposes of processing on the 31st day after first acceptance of the application.

Applicant's Response: *The Contract Purchaser/Applicant acknowledges the requirements for application acceptance and completeness. In order for an application to be accepted, the submittal materials need to include a signed application form and fee. After the application is accepted, the Planning Director shall review the application for completeness. The application will be deemed complete upon the notification by the Planning Director of all required information.*

- E. The City shall take final action on permit applications which are subject to this chapter, including resolution of all appeals, within 120 days from the date the application is deemed complete. Any exceptions to this rule shall conform to the provisions of ORS 227.178. This 120-day rule does not apply to legislative comprehensive plan and text amendment applications as defined under ORS 227.178.

Applicant's Response: *By state statute, the City is required to take final action on applications including resolution of all appeals, within 120 days from the date the application is deemed complete.*

- F. Standards and criteria. Approval or denial of a complete application shall be based upon the standards and criteria that were applicable at the time the application was first accepted. (Ord. 1080, 2001)

Applicant's Response: *The Contract Purchaser/Applicant understand that the approval or denial of a complete application will be based upon the standards and criteria that were applicable at the time the application was first accepted.*

16.89.90 Modifications. *This criterion is not applicable to this application since there is no initial decision to be modified.*

16.89.100 Administrative Reviews. *This criterion is not applicable to this application since the project will be review as a quasi-judicial procedure.*

D.***Applicable City of Canby Planning and Zoning Code Narrative***

The following information responds to applicable City of Canby Planning and Zoning Code associated with the ***Territorial Road Property*** application requests. The applicant's comments to individual sections are highlighted in bold for each applicable standard or regulation. Sections addressed include:

General Provisions	D-1
16.08.010 Compliance with title	
16.08.020 Zoning map	
16.08.030 Zone boundaries	
16.08.040 Zoning of annexed areas. This section is not applicable to this application <i>(Not Applicable to this Application)</i>	
16.08.050 Prohibited parking. This section is not applicable to this application <i>(Not Applicable to this Application)</i>	
16.08.070 Illegally created lots <i>(Not Applicable to this Application)</i>	
16.08.080 Area and yard reductions. This section is not applicable to this application <i>(Not Applicable to this Application)</i>	
16.08.090 Sidewalks required.....	
16.08.100 Height allowances <i>(Not Applicable to this Application)</i>	
16.08.110 Fences	
16.08.115 Arbors <i>(Not Applicable to this Application)</i>	
16.08.120 Siting and review process for Wireless Telecommunications Systems Facilities <i>(Not Applicable to this Application)</i>	
16.08.130 Standard transportation improvements.....	
16.08.140 Temporary vendor <i>(Not Applicable to this Application)</i>	
16.08.150 Traffic Impact Study (TIS).....	
16.08.160 Safety and Functionality Standards	
Classification of Zones	D-17
16.12.010 Zones designated	
16.12.020 Uses permitted	
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16.16.010 Uses permitted outright.....	
16.16.020 Conditional uses <i>(Not Applicable to this Application)</i>	
16.16.030 Development standards.....	
Medium Density Residential Zone	D-26
16.18.010 Uses permitted outright.....	
16.18.020 Conditional uses <i>(Not Applicable to this Application)</i>	
16.18.030 Development standards.....	

Variances.....	D-33
16.53.010 Minor Variances <i>(Not Applicable to this Application)</i>	
16.53.015 Minor Sign Variance <i>(Not Applicable to this Application)</i>	
16.53.020 Major Variances	
16.53.030 Revocation of Variances <i>(Not Applicable to this Application)</i>	
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16.54.020 Application and fee	
16.54.030 Public hearing on amendment.....	
16.54.040 Standards and criteria.....	
16.54.060 Improvement conditions	
16.54.070 Record of amendments	
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16.62.010 Filing procedures.....	
16.62.020 Standards and criteria.....	
Subdivision – Design Standards	D-43
16.64.010 Streets	
16.64.015 Access.....	
16.64.020 Blocks	
16.64.030 Easements.....	
16.64.040 Lots.....	
16.64.050 Public open spaces.....	
16.64.060 Grading of building sites	
16.64.070 Improvements.....	
16.64.080 Low Impact Development Incentives	
Subdivision Final Procedures and Recordation	D-70
16.68.010 Responsibilities of applicant	
16.68.020 Submittal of subdivision plat	
16.68.030 Information required on plat.....	
16.68.040 Information to accompany plat	
16.68.050 Technical plat review	
16.68.060 Planning Commission approval.....	
16.68.070 Filing of final plat	
General Standards	D-75
16.88.010 Applicability	
16.88.020 Action on application	
16.88.030 Applications and fees.....	
16.88.040 Temporary permits <i>(Not Applicable to this Application)</i>	
16.88.050 Business license review <i>(Not Applicable to this Application)</i>	
16.88.060 Council acceptance of dedicated land	
16.88.080 Administration and enforcement	

16.88.090 Revocation of conditional use permits and variances	
16.88.100 Interpretation	
16.88.110 Penalties and civil remedies <i>(Not Applicable to this Application)</i>	
16.88.120 Enforcement procedure.....	
16.88.160 Public officials	
16.88.170 Amendments to text of title	
16.88.180 Comprehensive Plan Amendments	
16.88.190 Conformance with Transportation System Plan and Transportation Planning Rule	

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16.89.040 Type II procedure <i>(Not Applicable to this Application)</i>	
16.89.050 Type III procedure.....	
16.89.060 Type IV procedure.....	
16.89.070 Neighborhood meetings	
16.89.080 Application requirements and completeness.....	
16.89.090 Modifications <i>(Not Applicable to this Application)</i>	
16.89.100 Administrative Reviews <i>(Not Applicable to this Application)</i>	

LAND USE PLANS

FOR

TERRITORIAL ROAD SUBDIVISION

T3S, R1E, SECTIONS 28C, TAX LOT 401
CLACKAMAS COUNTY, OREGON

LEGEND

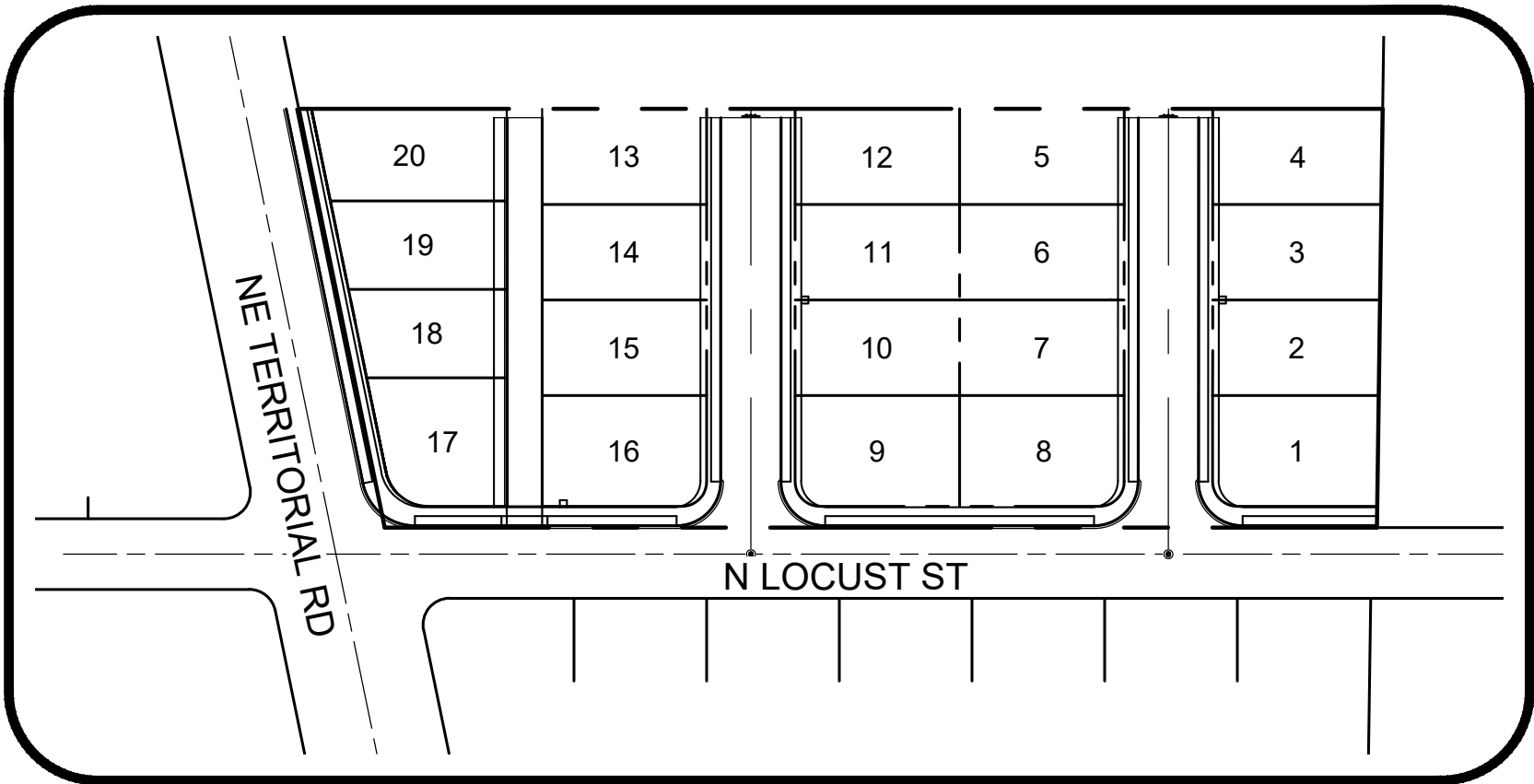
EXISTING	PROPOSED	
		CENTERLINE MONUMENT
		BIOFILTER BAGS FOR INLET PROTECTION
		SEWER MANHOLE
		STORM MANHOLE
		STORM DRAIN
		CATCH BASIN
		FLOW DIRECTION
		WATER VALVE
		FIRE HYDRANT
		AIR RELEASE VALVE
		WATER METER BOX
		STREET LIGHTS
		UNDERGROUND POWER VAULT
		GUY WIRE
		POWER POLE
		TELEPHONE PEDESTAL
		TREE
		RIP RAP
		STREET SIGN
		CONTOUR MAJOR
		CONTOUR MINOR

LINE TYPES

	MATCHLINE
	BOUNDARY
	CENTERLINE
	PROPOSED LOT
	PUBLIC UTILITY EASEMENT
	RIGHT OF WAY
	SEWER
	WATER
	STORM
	RETAINING WALL
	EXISTING CATV
	EXISTING ELECTRIC
	EXISTING EASEMENT
	EXISTING FENCE
	EXISTING GAS
	EXISTING LOT
	EXISTING PUBLIC UTILITY EASEMENT
	EXISTING RIGHT OF WAY
	EXISTING TELEPHONE
	EXISTING SEWER
	EXISTING WATER
	EXISTING STORM DRAIN
	EXISTING OVERHEAD UTILITY LINES
	SILT FENCE
	CHAIN LINK FENCE
	EXISTING UNDERGROUND POWER LINE
	EXISTING TELECOMMUNICATIONS

ABBREVIATIONS

(AB)	AS-BUILT
BND	BEND
BC OR B/C	BACK OF CURB
BOW	BOTTOM OF WALL
BW	BACK OF WALK
C&G	CURB & GUTTER
CB	CATCH BASIN
CL	CENTERLINE
C/O	CLEANOUT
DTL OR DTLs	DETAIL OR DETAILS
DRN	DRAINAGE
E	ELECTRIC
EA	EACH
EL	ELEVATION
EOP	EDGE OF PAVEMENT
ESMT	EASEMENT
EX	EXISTING
FC	FACE OF CURB
FF	FINISH FLOOR
FH	FIRE HYDRANT
FL	FLOW LINE
FLG	FLANGE
FP	FINISH PAD
G	GUTTER
GB	GRADE BREAK
HP	HIGH POINT
HZ	HORIZONTAL
INV	INVERT ELEVATION
LDR	LOW DENSITY RESIDENTIAL
LP	LOW POINT
MDR	MEDIUM DENSITY RESIDENTIAL
MECH	MECHANICAL
MH	MANHOLE
MJ	MECHANICAL JOINT
P	PAVEMENT
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PL	PROPERTY LINE
PRC	POINT OF REVERSE CURVATURE
PT	POINT OF TANGENCY
REST	RESTRAINT
R/W	RIGHT OF WAY
S=	SLOPE
SC	SCUPPER
SD	STORM DRAIN
STA	STATION
STD	STANDARD
SVT	SITE VISIBILITY TRIANGLE
SW OR S/W	SIDEWALK
SWR	SEWER
TC	TOP OF CURB
TL	TRUE LENGTH
TEL	TELEPHONE
TOW	TOP OF WALL
VC	VILLAGE CENTER
VERT	VERTICAL
VG	VALLEY GUTTER
W	WATER
C1	CURVE TABLE NUMBER
L1	LINE TABLE NUMBER
R	RIGHT
L	LEFT
LF	LINEAR FEET
SF	SQUARE FEET
SY	SQUARE YARDS
CY	CUBIC YARDS
W=	WIDTH



SITE MAP
SCALE: 1" = 100'



VICINITY MAP
1" = 400'

PROJECT LOCATION:

102 NE TERRITORIAL RD
CANBY, OREGON
CLACKAMAS COUNTY
LATITUDE = 45.277701
LONGITUDE = -122.69210

PROJECT DESCRIPTION

TAX LOT 401 (CLACKAMAS COUNTY TAX MAP)
LOCATED IN SECTION 28C, TOWNSHIP 3 SOUTH,
RANGE 1 EAST, W.M.
CLACKAMAS COUNTY, CITY OF CANBY,
OREGON

OWNER/DEVELOPER

VENTURE PROPERTIES, INC.
4230 GALEWOOD ST, STE 100
LAKE OSWEGO, OR 97035
CONTACT: AL JECK
PHONE: 503.387.7557
EMAIL: AL@VENTUREPROP.COM

CIVIL ENGINEERING FIRM

ATWELL, LLC.
9755 SW BARNES ROAD, SUITE 150
PORTLAND, OR 97225
CONTACT: BRADY BERRY, PE
PHONE: 971.334.8962
EMAIL: BBERRY@ATWELL-GROUP.COM

SURVEYOR

COMPASS LAND SURVEYING
4107 SE INTERNATIONAL WAY, STE 705
MILWAUKIE, OREGON 97222
CONTACT: JOSEPH MCALLISTER, PLS
PHONE: 503.496.1489
EMAIL: JOEM@COMPASS-LANDSURVEYORS.COM

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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COVER SHEET

LAND USE PLANS

TERRITORIAL ROAD SUBDIVISION

CANBY, OREGON



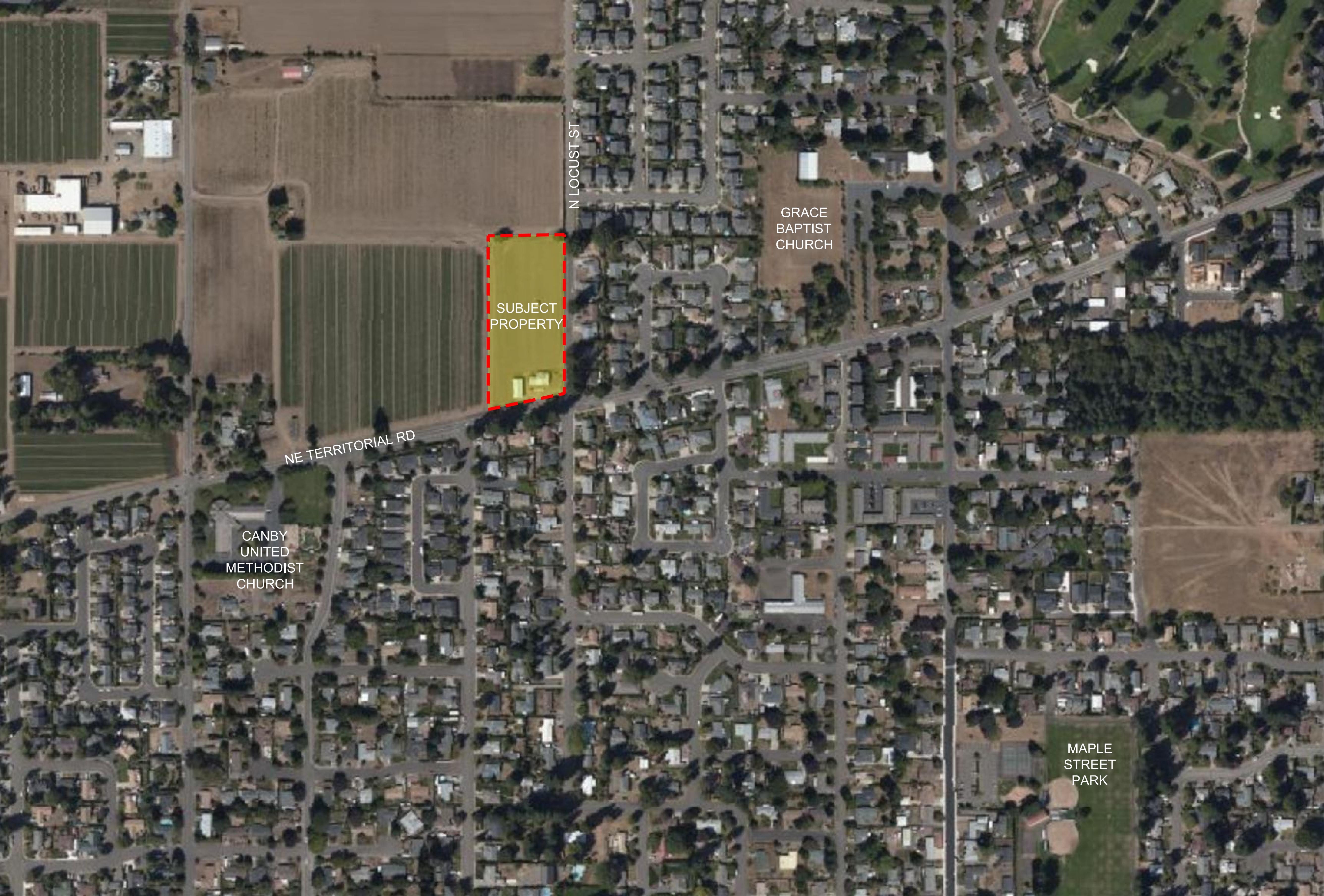
REVISIONS:

NOT FOR CONSTRUCTION

PM.	B. BERRY
DR.	B. BERRY
JOB NO.	20002753
FILE NO.	20002753-CS
DATE	2/12/2021

SHEET NO.

C000



THE LOCATIONS OF ~~EXISTING~~ UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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ATWELL
866.850.4200 www.atwell-group.com
9755 SW BARNES ROAD, SUITE 150
PORTLAND, OREGON 97225
P.O. BOX 134, 8060

AERIAL & OFFSITE ANALYSIS PLAN

LAND USE PLANS

TERRITORIAL ROAD SUBDIVISION

CANBY, OREGON



Know what's below.
Call before you dig.

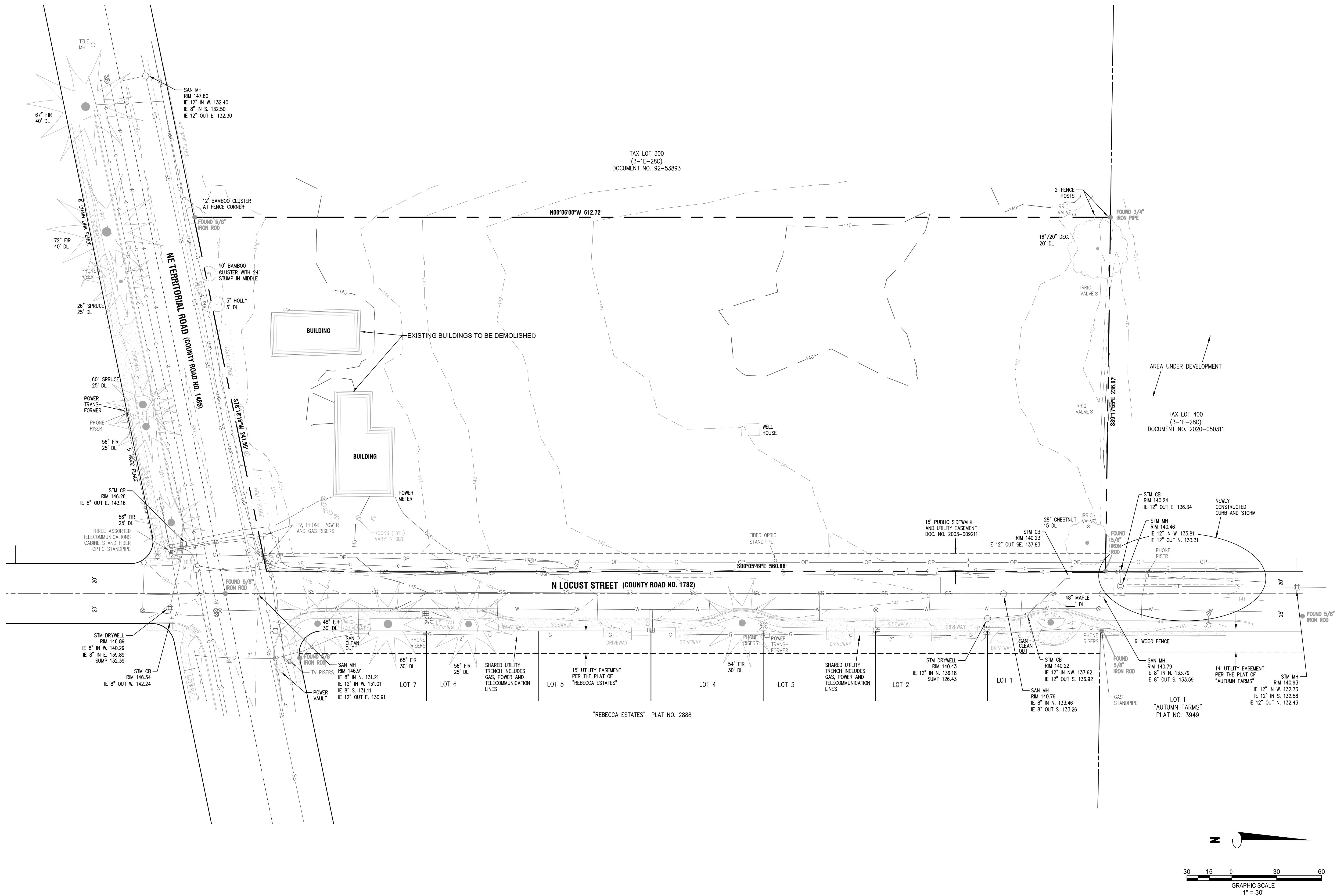
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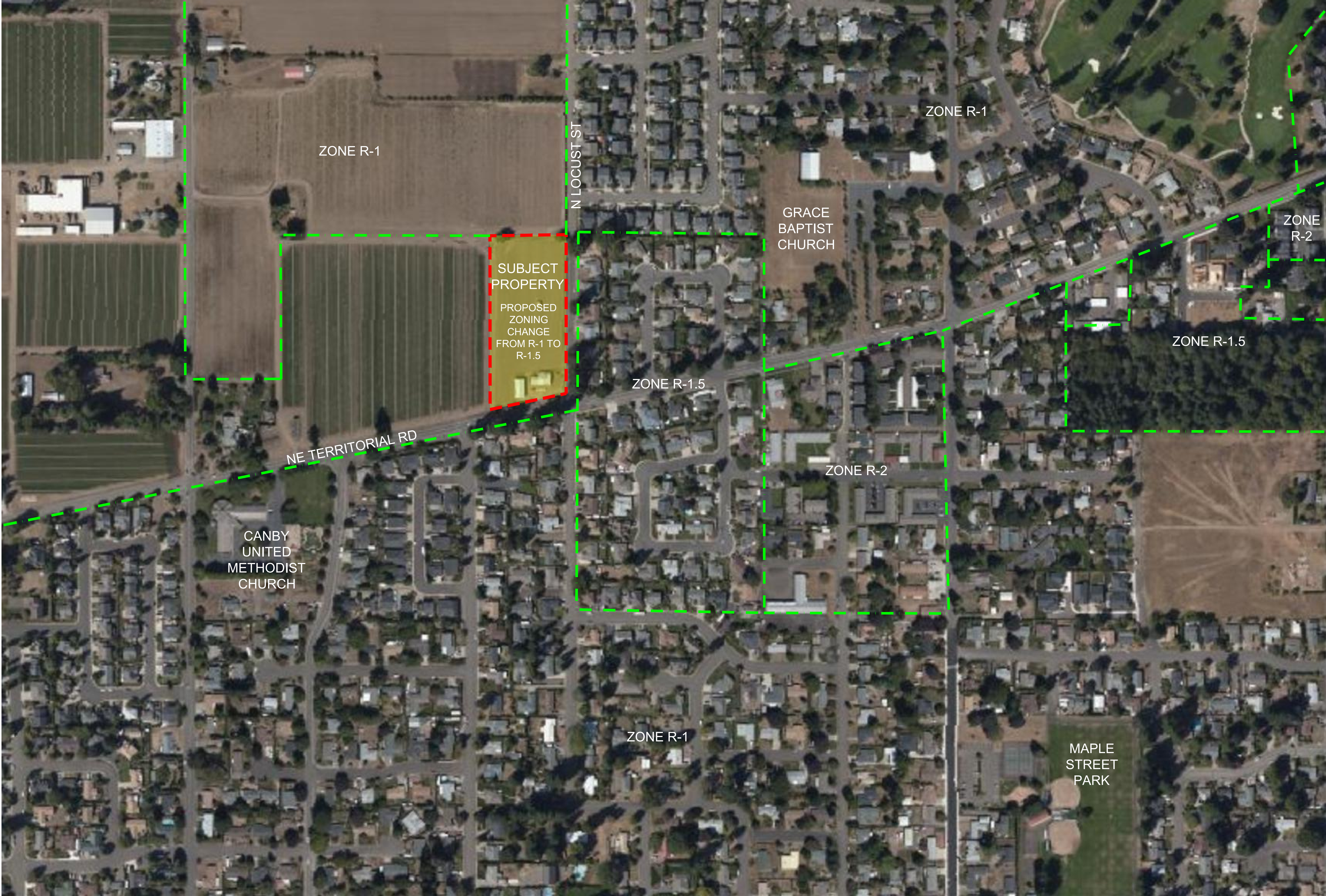
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PM.	B. BERRY
DR.	B. BERRY
JOB NO.	20002753
FILE NO.	20002753-VC
DATE	2/12/2021

SHEET NO.


C001





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ATWELL
866.850.4200 www.atwell-group.com
9755 SW BARNES ROAD, SUITE 150
PORTLAND, OREGON 97225
PH: 503.334.8860

PROPOSED LAND USE AMENDMENT

LAND USE PLANS

TERRITORIAL ROAD SUBDIVISION

CANBY, OREGON



Know what's below.
Call before you dig.

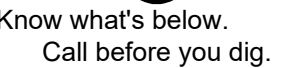
REVISIONS:

NOT FOR CONSTRUCTION

PM.	B. BERRY
DR.	B. BERRY
JOB NO.	20002753
FILE NO.	20002753-VC
DATE	2/12/2021

SHEET NO.

C003



REVISIONS:

NOT FOR CONSTRUCTION

M. B. BERRY

R. B. BERRY

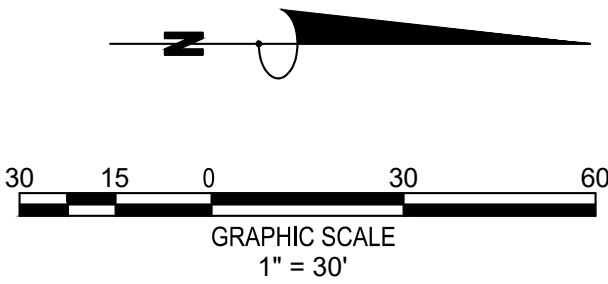
JOB NO.
20002753

FILE NO.
20002753-TPLAT

DATE
2/12/2021

SHEET NO.

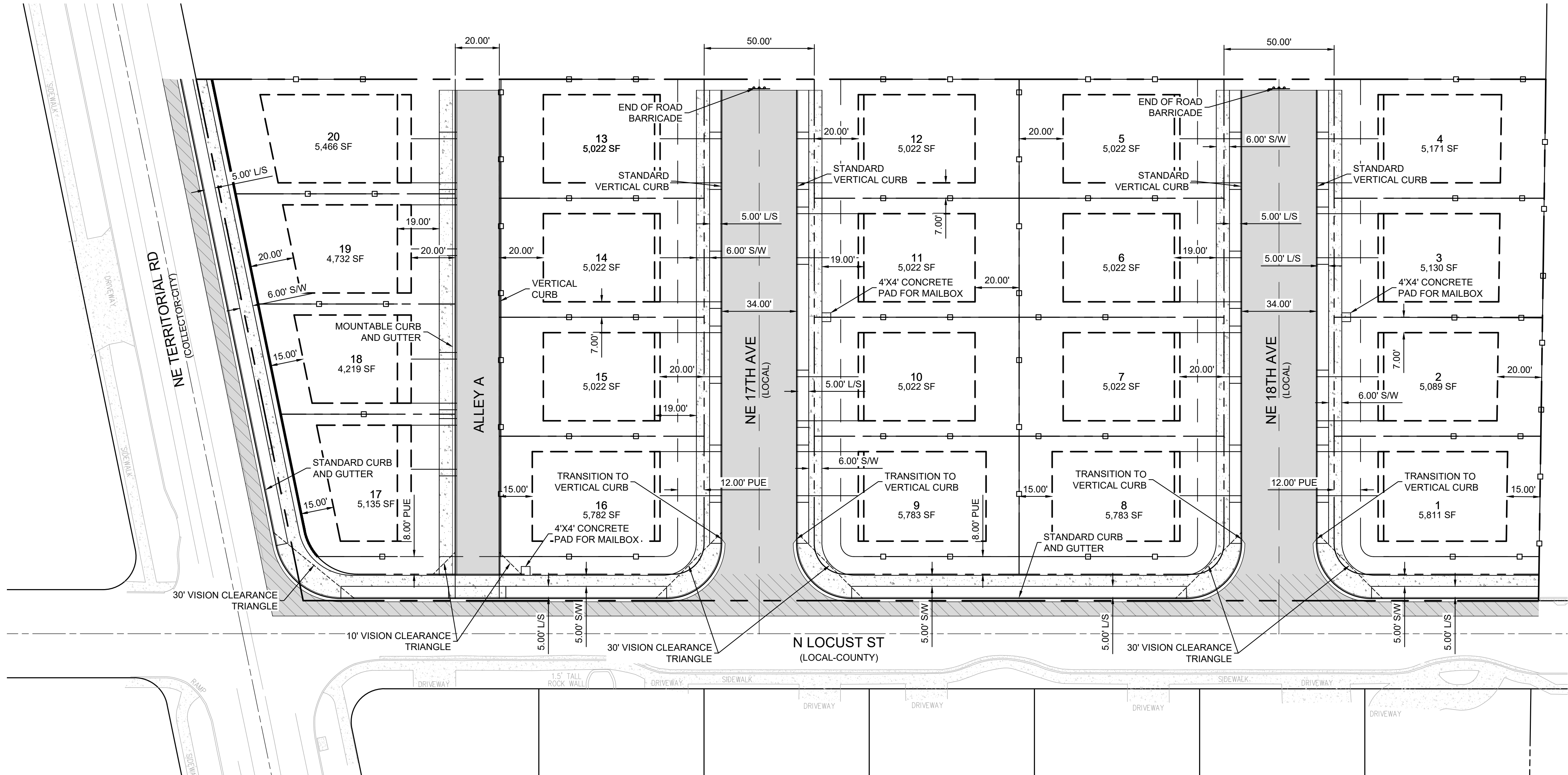
C060



CURVE DATA			
CURVE #	LENGTH	RADIUS	DELTA
C1	33.52'	24.50'	78°24'06"
C2	21.99'	14.00'	90°00'00"
C3	21.99'	14.00'	90°00'00"
C4	21.99'	14.00'	90°00'00"
C5	21.99'	14.00'	90°00'00"

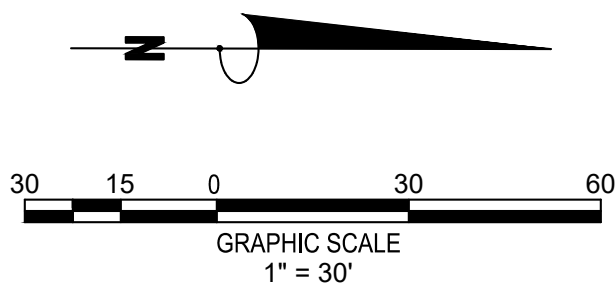
NOTES:

TRACT A TO BE DEDICATED TO THE HOMEOWNERS ASSOCIATION
UPON COMPLETION OF CONSTRUCTION FOR MAINTENANCE.



L/S = LANDSCAPE STRIP
S/W = SIDEWALK

- LEGEND:
- ASPHALT (ON-SITE STREET IMPROVEMENTS): 19,319 SF
 - ASPHALT (OFF-SITE STREET IMPROVEMENTS): 6,749 SF
 - CONCRETE SIDEWALK: 11,272 SF
 - 6' GOOD NEIGHBOR STYLE WOOD FENCE



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SITE PLAN
LAND USE PLANS
TERRITORIAL ROAD SUBDIVISION
CANBY, OREGON

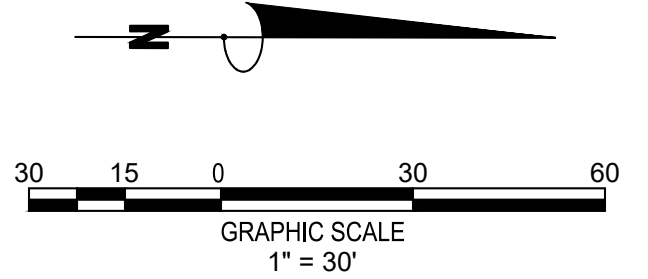


REVISIONS:

NOT FOR CONSTRUCTION

PM.	B. BERRY
DR.	B. BERRY
JOB NO.	20002753
FILE NO.	20002753-SP
DATE	2/12/2021

SHEET NO.
C100



INLET PROTECTION (SILT SACK)

SILT FENCE

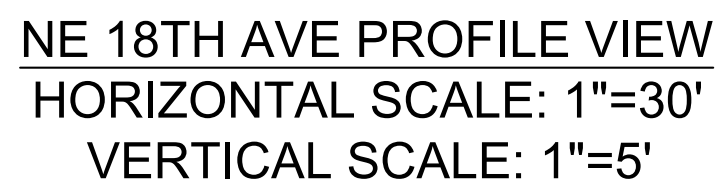
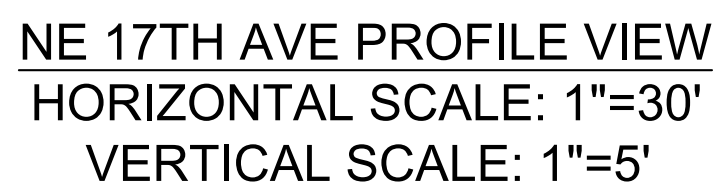
ORANGE CONSTRUCTION FENCE

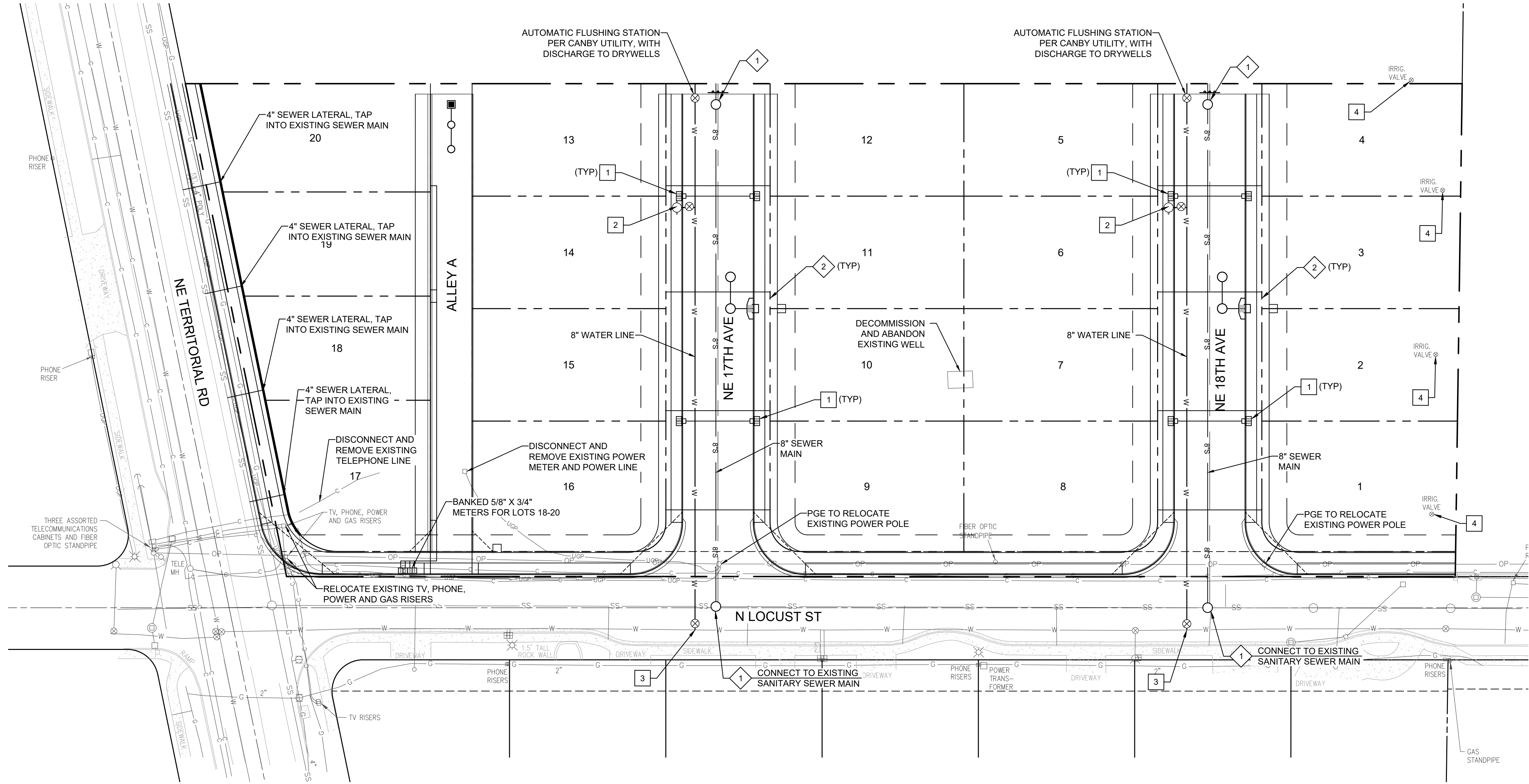
LIMITS OF DISTURBANCE

GRAVEL CONSTRUCTION ENTRANCE

NOTE:

SEE SHEET C500 FOR PROFILES FOR NE TERRITORIAL RD
AND N LOCUST ST

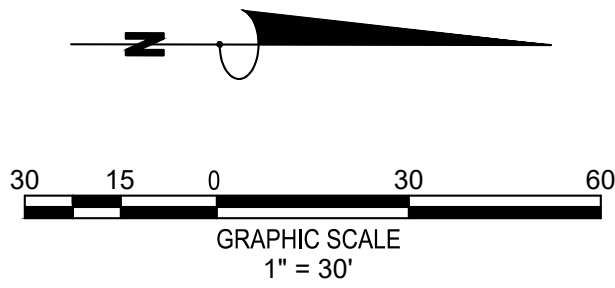




- SANITARY SEWER KEY NOTES**
1. SANITARY SEWER MANHOLE
 2. 4" SEWER LATERAL WITH CLEANOUT, TEE-WYE TO MAIN

- WATER AND FIRE KEYED NOTES**
1. DOUBLE 5/8" x 3/4" WATER METERS FOR SINGLE FAMILY RESIDENTIAL SERVICE, 18" BEHIND PLANTER STRIP
 2. FIRE HYDRANT
 3. 8" GATE VALVE, CONNECT TO EXISTING 8" WATER LINE
 4. DISCONNECT AND REMOVE EXISTING IRRIGATION VALVE AND ASSOCIATED SPRINKLER SYSTEM

- NOTES:**
1. STREET LIGHT DESIGN AND INSTALL BY CANBY UTILITY. CONTRACTOR TO EXCAVATE AT LIGHT POLE LOCATION.



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COMPOSITE UTILITY PLAN

LAND USE PLANS

TERRITORIAL ROAD SUBDIVISION

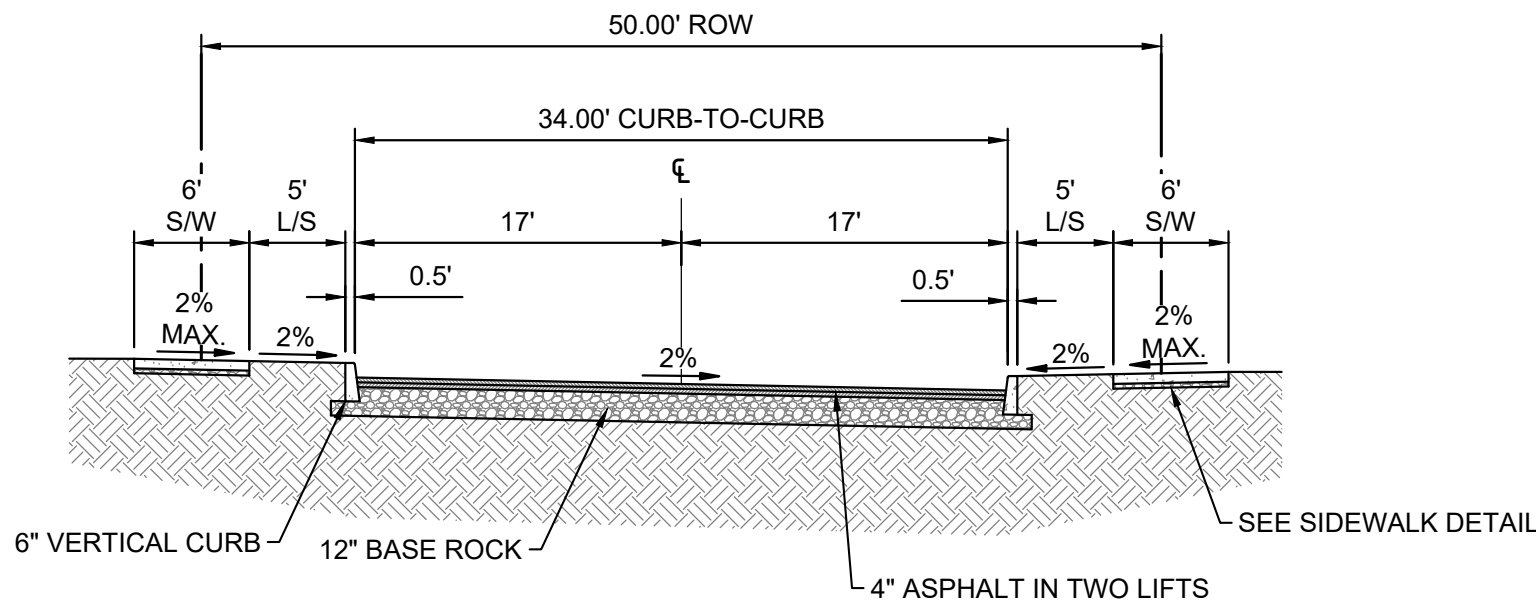
CANBY, OREGON



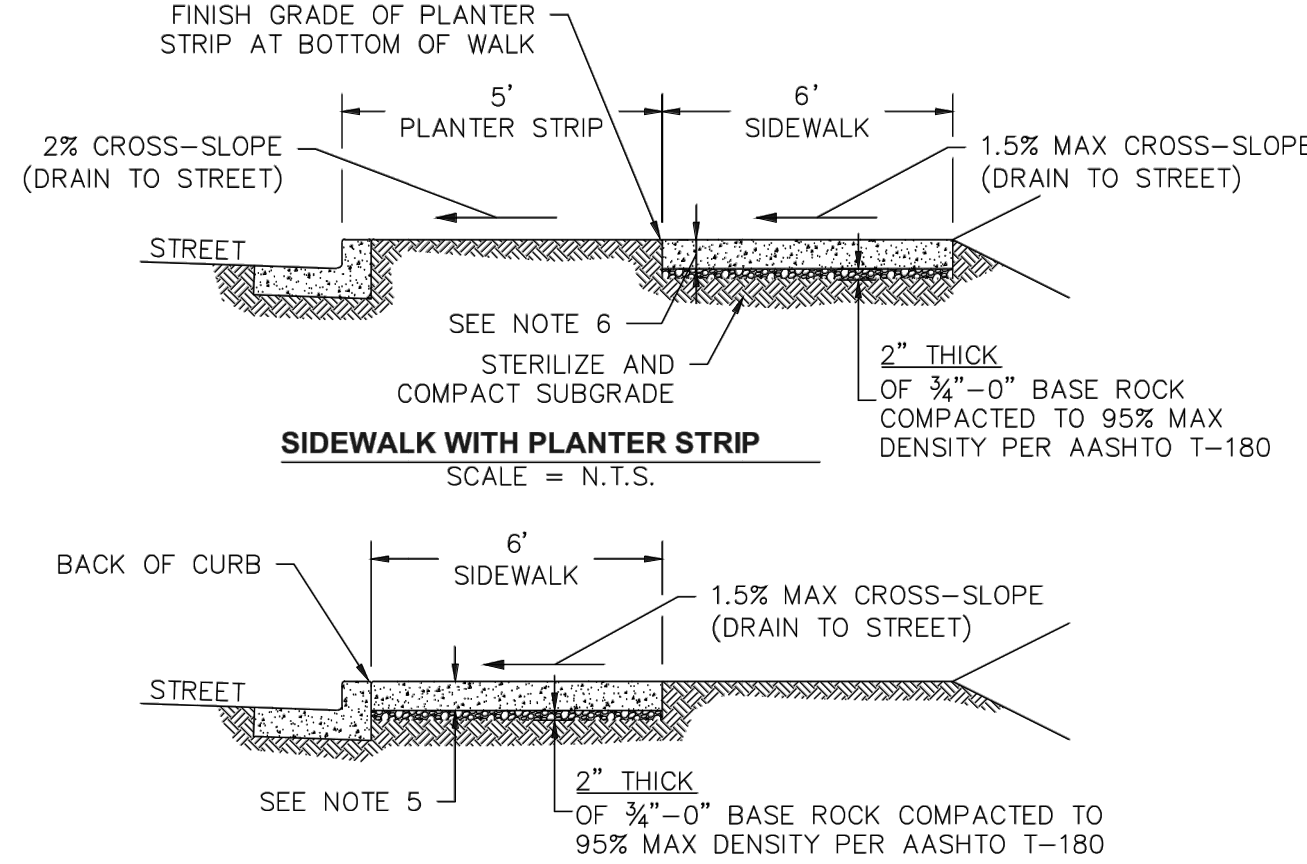
REVISIONS:

NOT FOR CONSTRUCTION

PM.	B. BERRY
DR.	B. BERRY
JOB NO.	20002753
FILE NO.	20002753-CU
DATE	2/12/2021
SHEET NO.	C300



LOCAL STREET
TYPICAL CROSS SECTION

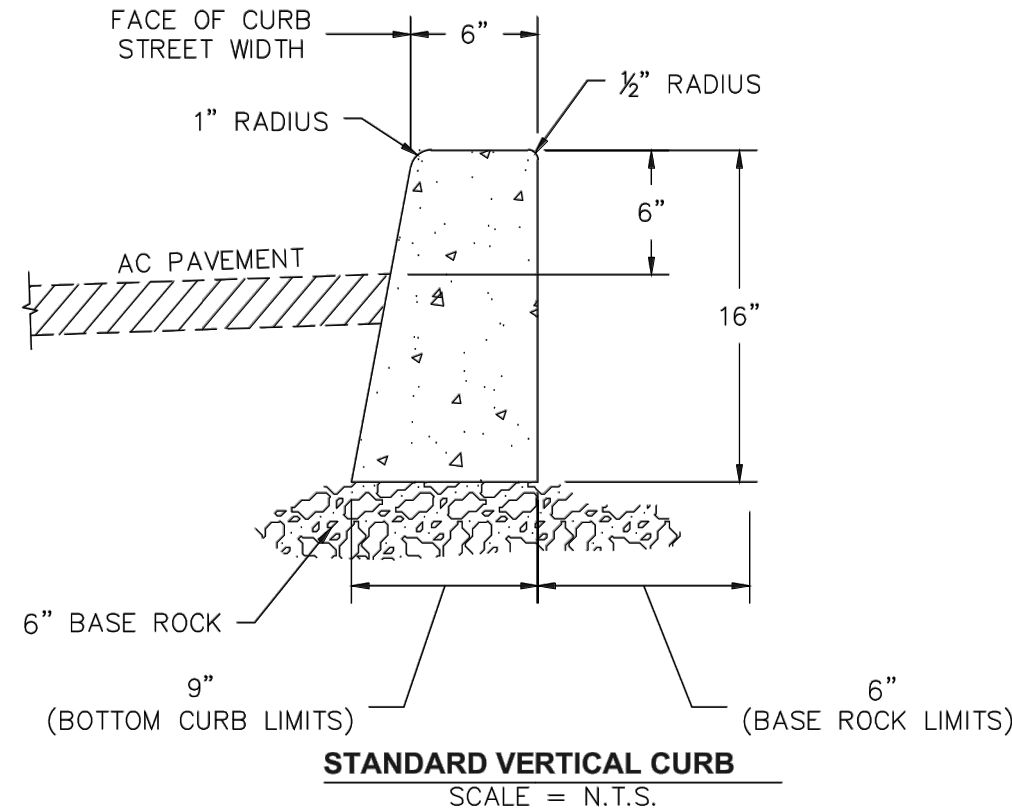


- NOTES:
- CONCRETE SHALL BE A COMMERCIAL MIX WITH A 28 DAY COMPRESSIVE STRENGTH OF 3500 PSI AND SHALL MEET ALL REQUIREMENTS FROM ODOT SECTION 00440.
 - SIDEWALK PANELS TO BE SQUARE (6' LONG x 6' WIDE TYP.).
 - EXPANSION JOINT MATERIAL SHALL BE PREFORMED FILLER NOT LESS THAN 1/2" WIDE AND SHALL MEET ALL REQUIREMENTS FROM ODOT SECTION 00759.
 - FOR SIDEWALKS ADJACENT TO THE CURB AND POURED AT THE SAME TIME AS THE CURB, THE JOINT BETWEEN THEM SHALL BE A TROWELED JOINT WITH A MINIMUM 1/2" RADIUS.
 - SIDEWALKS SHALL HAVE A MINIMUM THICKNESS OF 6" IF MOUNTABLE CURB IS USED, OR IF SIDEWALK IS INTENDED AS A PORTION OF A DRIVEWAY. OTHERWISE SIDEWALK SHALL HAVE A MINIMUM THICKNESS OF 4".
 - CONCRETE SHALL HAVE A BROOM FINISH, ALL JOINTS SHALL BE EDGED AND SHINED.
 - WIDTH OF PLANTER STRIP IS MEASURED FROM FACE OF CURB. WIDTH OF A CURT-TIGHT SIDEWALK IS MEASURED FROM BACK OF CURB.

CITY OF CANBY

SIDEWALK

BY: JT DATE: 12-06-19 DWG NO: 103

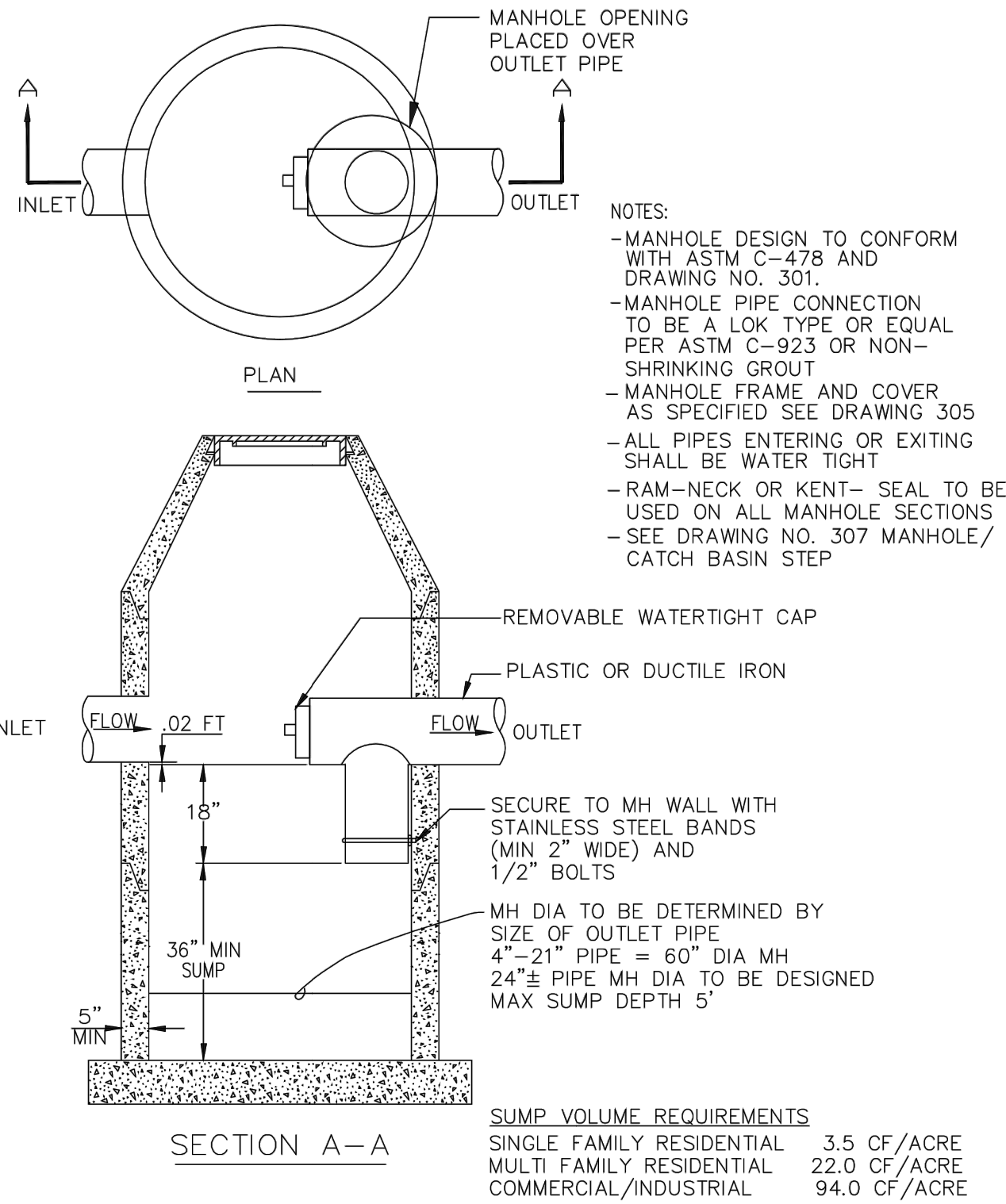


- NOTES:
- VERTICAL CURB MAY BE USED AT MEDIANS AND MEDIAN PLANTING STRIPS, OR IN REPLACEMENT OF DAMAGED EXISTING VERTICAL CURBS..
 - CONCRETE SHALL BE COMMERCIAL MIX WITH A 28-DAY COMPRESSIVE STRENGTH OF 3500 PSI AND SHALL MEET ALL REQUIREMENTS FROM ODOT SECTION 00440.
 - CONSTRUCT EXPANSION JOINTS AT 200' MAXIMUM SPACING, AND AT POINTS OF TANGENCY, AND AT ENDS OF EACH DRIVEWAY.
 - EXPANSION JOINT MATERIAL SHALL BE PREFORMED FILLER NOT LESS THAN 1/2" WIDE AND SHALL MEET ALL REQUIREMENTS FROM ODOT SECTION 00759.
 - CONTRACTION JOINTS SHALL HAVE:
A. SPACING OF NOT MORE THAN 15 FEET.
B. DEPTH OF JOINT OF AT LEAST 1-1/2".
 - BASE ROCK SHALL BE 3/4"-0", COMPACTED TO 95% OF MAXIMUM DENSITY PER AASHTO T-180. BASE ROCK SHALL BE TO SUBGRADE OF STREET STRUCTURES OR 4", WHICHEVER IS GREATER, AND SHALL EXTEND 12" BEHIND CURB.
 - WEEP HOLES ARE NOT ALLOWED THROUGH THE CURB UNLESS APPROVED BY THE CITY.
 - THIS OPTION IS TO BE USED ONLY WITH APPROVAL BY CITY'S PUBLIC WORKS DEPARTMENT.

CITY OF CANBY

VERTICAL CURB

BY: JT DATE: 12-06-19 DWG NO: 100

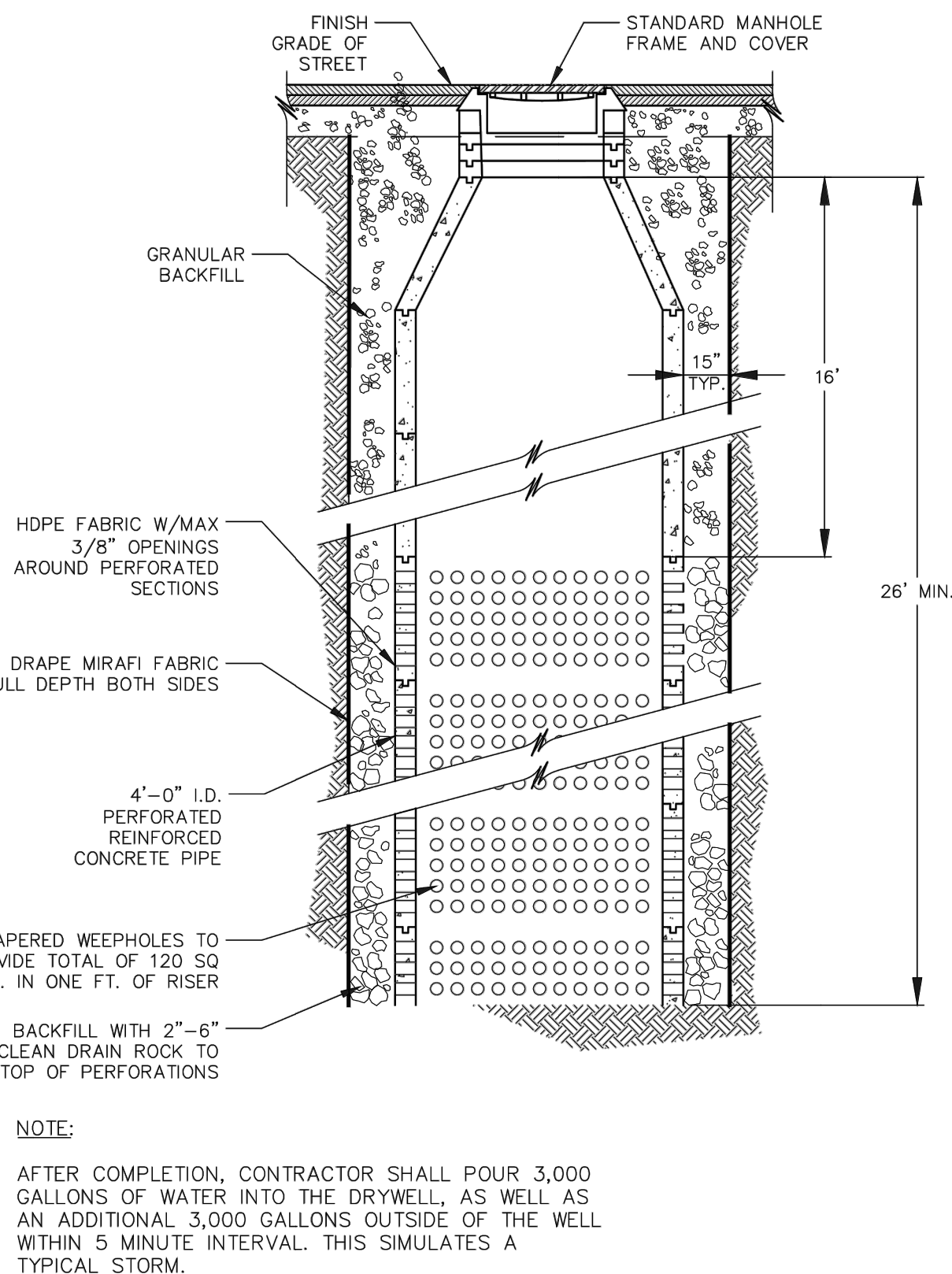


SUMP VOLUME REQUIREMENTS
SINGLE FAMILY RESIDENTIAL 3.5 CF/ACRE
MULTI FAMILY RESIDENTIAL 22.0 CF/ACRE
COMMERCIAL/INDUSTRIAL 94.0 CF/ACRE

CITY OF CANBY

POLLUTION CONTROL MANHOLE

BY: JT DATE: 12-06-19 DWG NO: 201

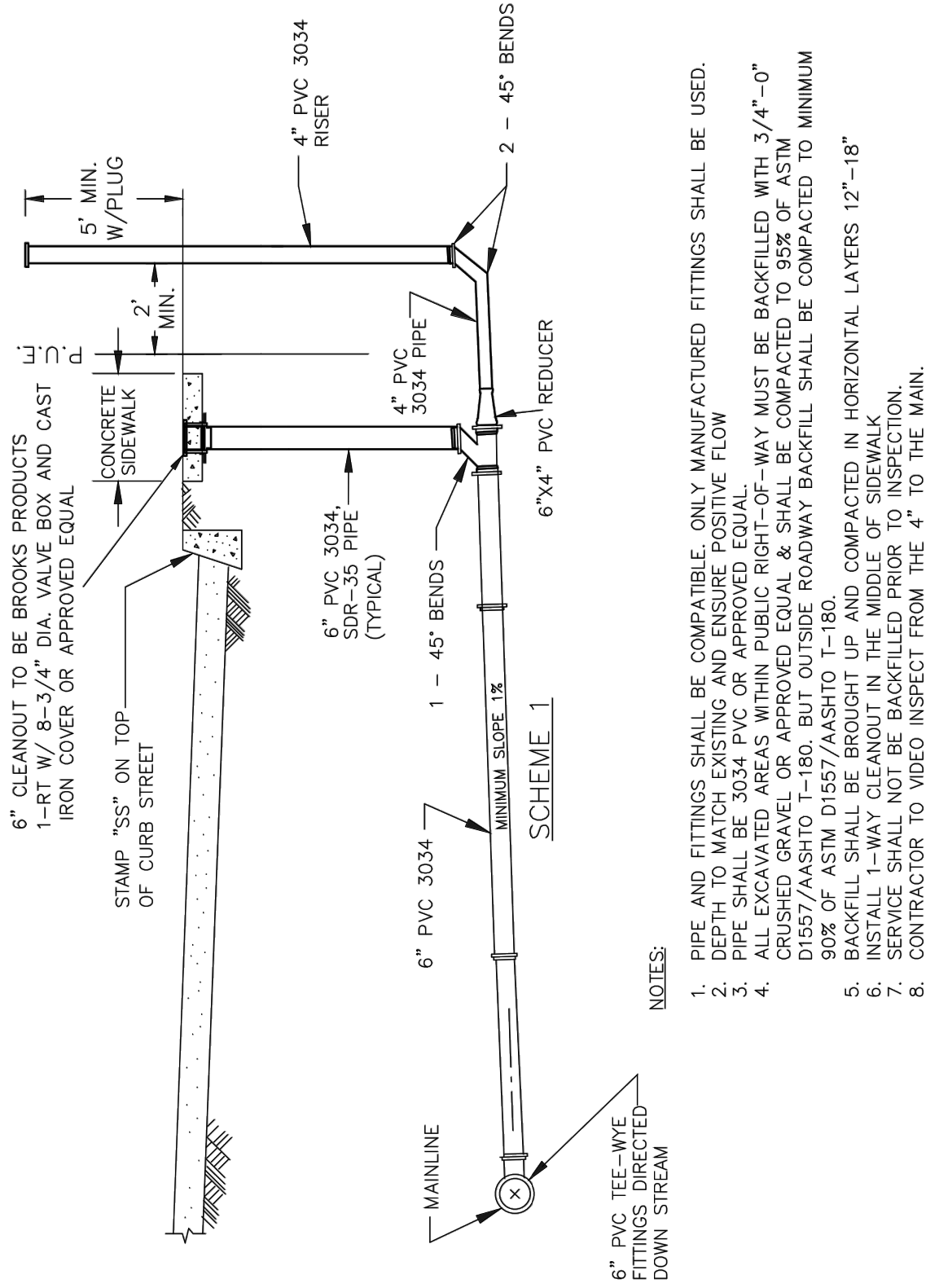


NOTE:
AFTER COMPLETION, CONTRACTOR SHALL POUR 3,000 GALLONS OF WATER INTO THE DRYWELL, AS WELL AS AN ADDITIONAL 3,000 GALLONS OUTSIDE OF THE WELL WITHIN 5 MINUTE INTERVAL. THIS SIMULATES A TYPICAL STORM.

CITY OF CANBY

48" DIAMETER DRYWELL

BY: JT DATE: 12-06-19 DWG NO: 204



- NOTES:
- PIPE AND FITTINGS SHALL BE COMPATIBLE, ONLY MANUFACTURED FITTINGS SHALL BE USED.
 - DEPTH TO MATCH EXISTING AND ENSURE POSITIVE FLOW
 - ALL EXCAVATED AREAS WITHIN PUBLIC RIGHT-OF-WAY MUST BE BACKFILLED WITH 3/4"-0" CRUSHED GRAVEL OR APPROVED EQUAL & SHALL BE COMPACTED TO 95% OF ASTM D1557/AASHTO T-180, BUT OUTSIDE ROADWAY BACKFILL SHALL BE COMPACTED TO MINIMUM 90% OF ASTM D1557/AASHTO T-180.
 - BACKFILL SHALL BE BROUGHT TO A MINIMUM OF 12" TO THE MAIN.
 - SERVICE SHALL NOT BE BACKFILLED PRIOR TO INSPECTION.
 - CONTRACTOR TO VIDEO INSPECT FROM THE 4" TO THE MAIN.

CITY OF CANBY

SANITARY SEWER LATERAL

BY: JT DATE: 12-06-19 DWG NO: 301

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DETAILS
LAND USE PLANS
TERRITORIAL ROAD SUBDIVISION
CANBY, OREGON



REVISIONS:	

NOT FOR CONSTRUCTION

PM. B. BERRY
DR. B. BERRY

JOB NO.
20002753

FILE NO.
20002753-DT

DATE
2/12/2021

SHEET NO.
C400

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OFFSITE IMPROVEMENT PLAN

LAND USE PLANS

TERRITORIAL ROAD SUBDIVISION

CANBY, OREGON



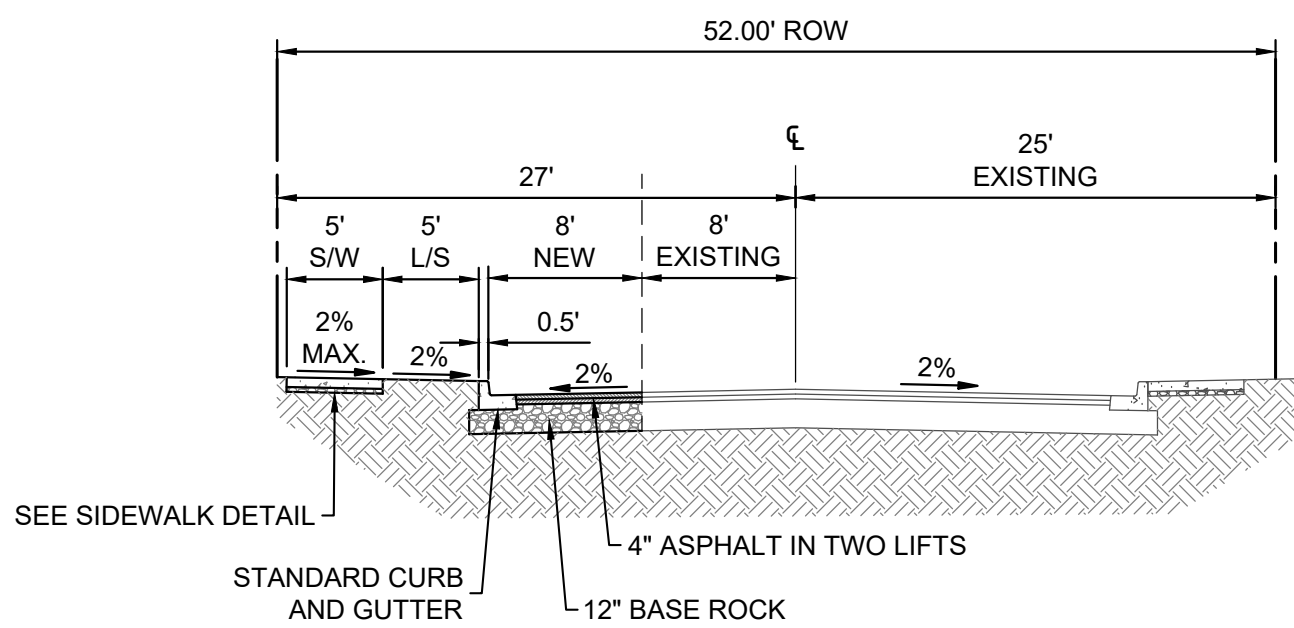
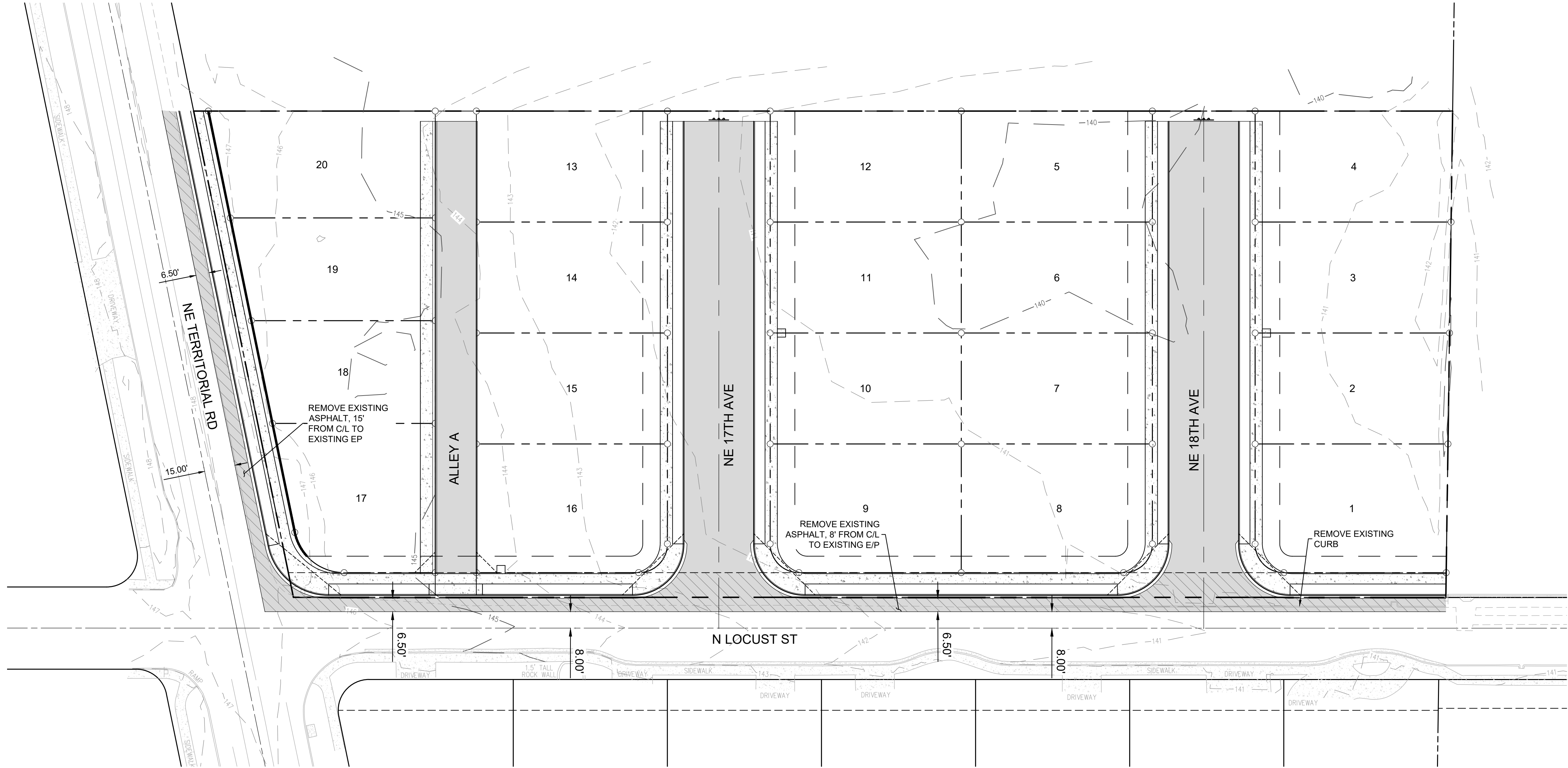
REVISIONS:

NOT FOR CONSTRUCTION

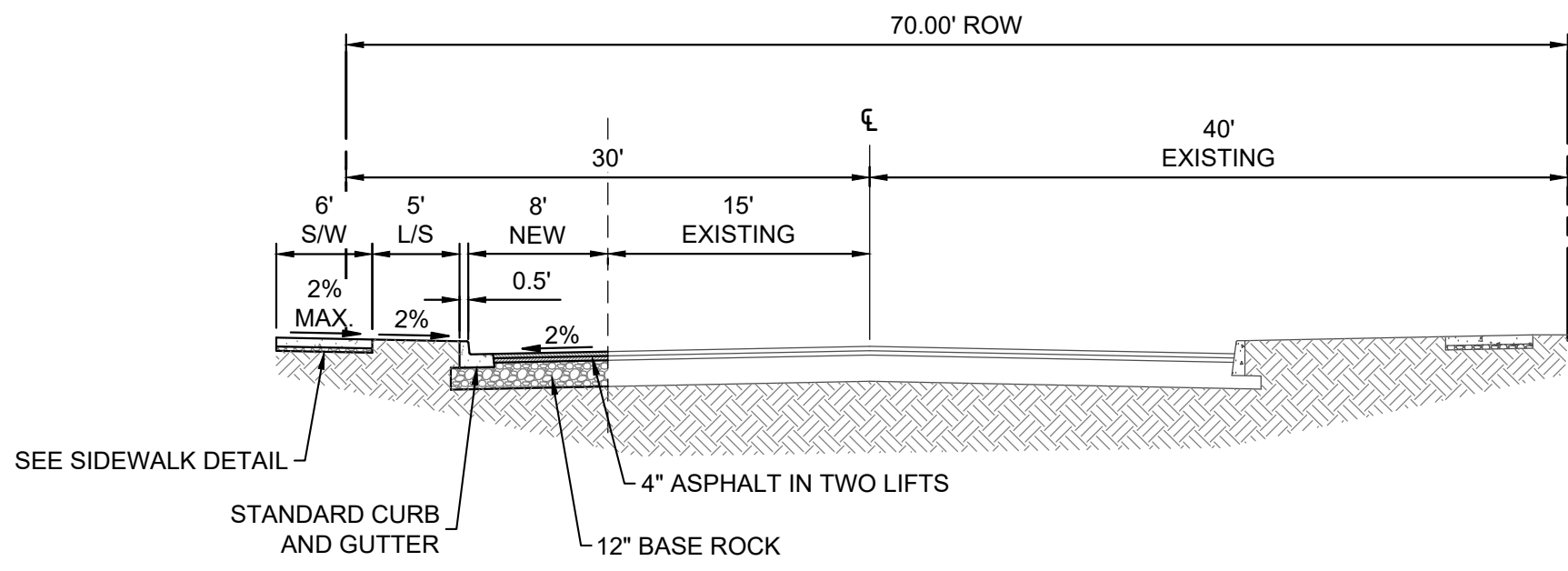
PM.	B. BERRY
DR.	B. BERRY
JOB NO.	20002753
FILE NO.	20002753-OI
DATE	2/12/2021

SHEET NO.

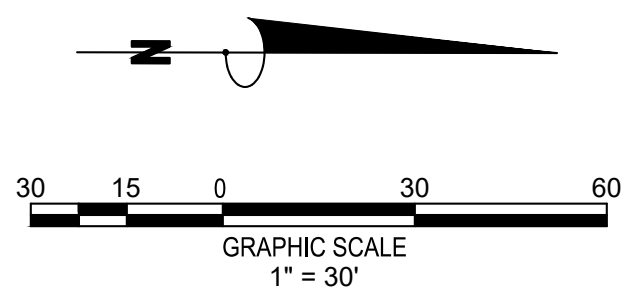
C500

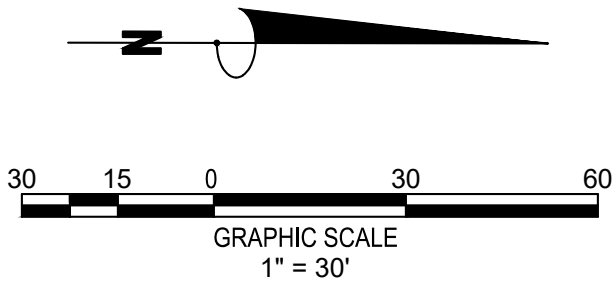


LOCAL STREET- COUNTY
N LOCUST ST
TYPICAL CROSS SECTION



COLLECTOR STREET- CITY
NE TERRITORIAL RD
TYPICAL CROSS SECTION





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LIGHTING PLAN
 LAND USE PLANS
 TERRITORIAL ROAD SUBDIVISION
 CANBY, OREGON

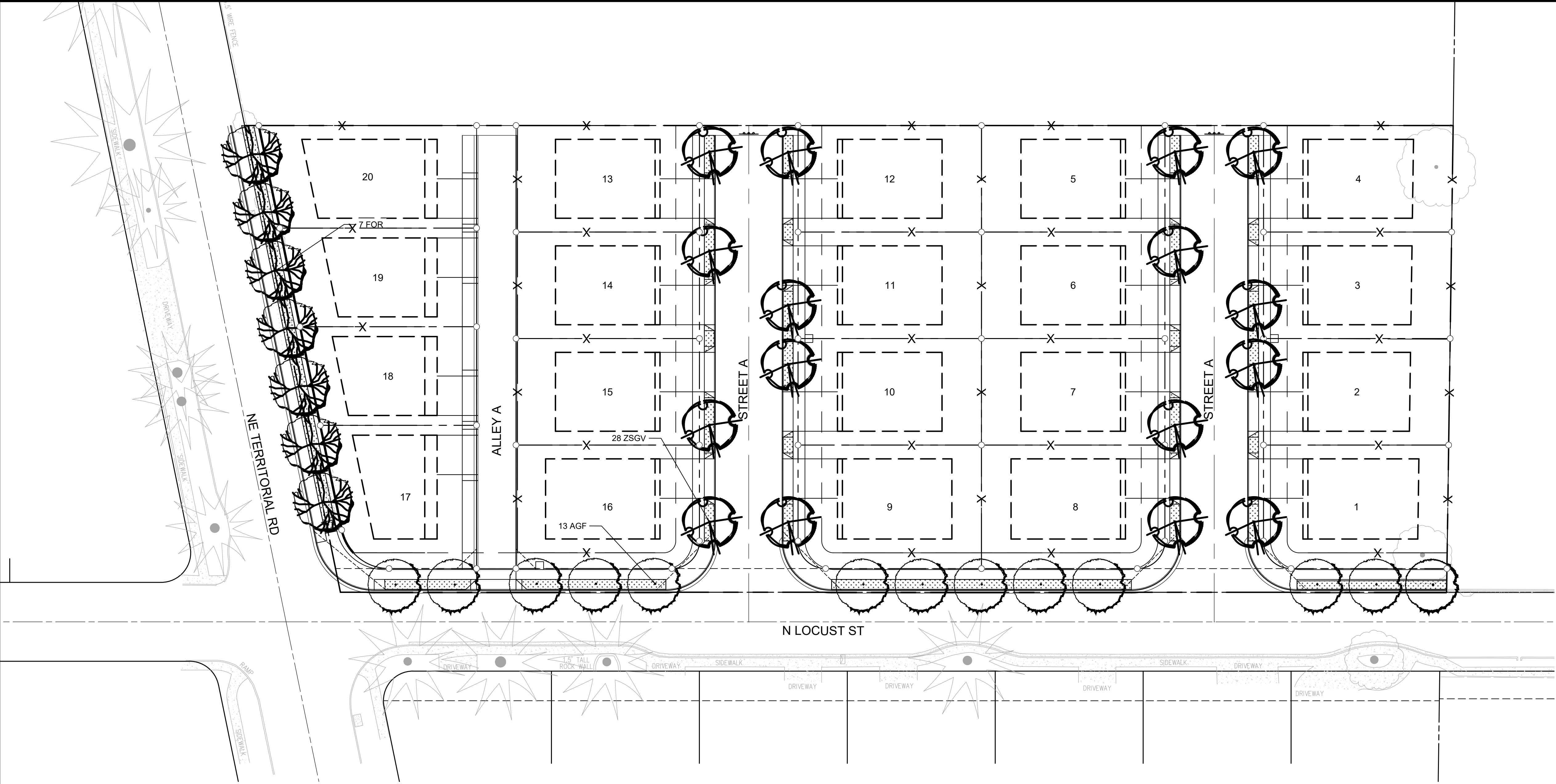


REVISIONS:

NOT FOR CONSTRUCTION

PM.	B. BERRY
DR.	B. BERRY
JOB NO.	20002753
FILE NO.	20002753-LT
DATE	2/12/2021

SHEET NO.
 E100

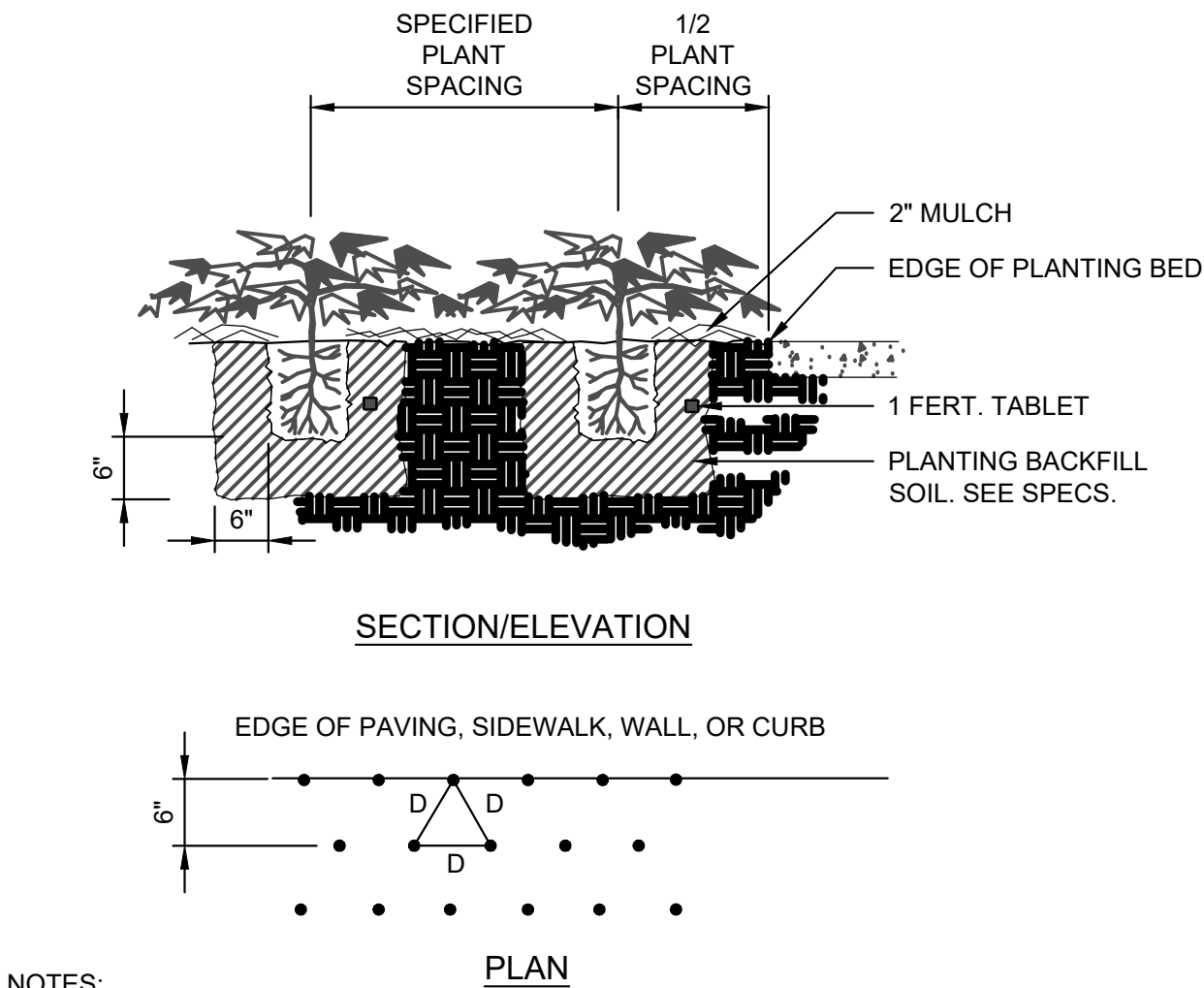
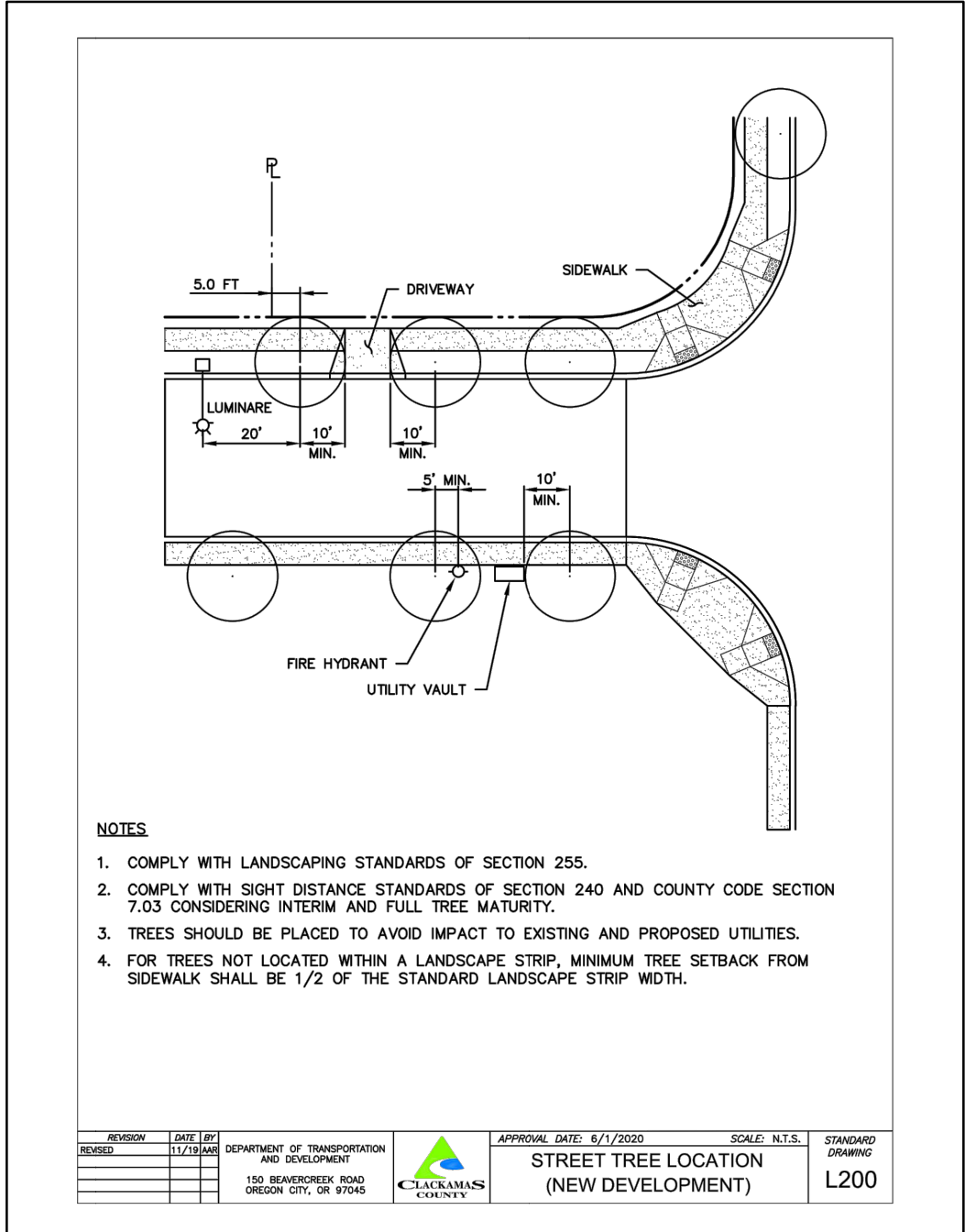
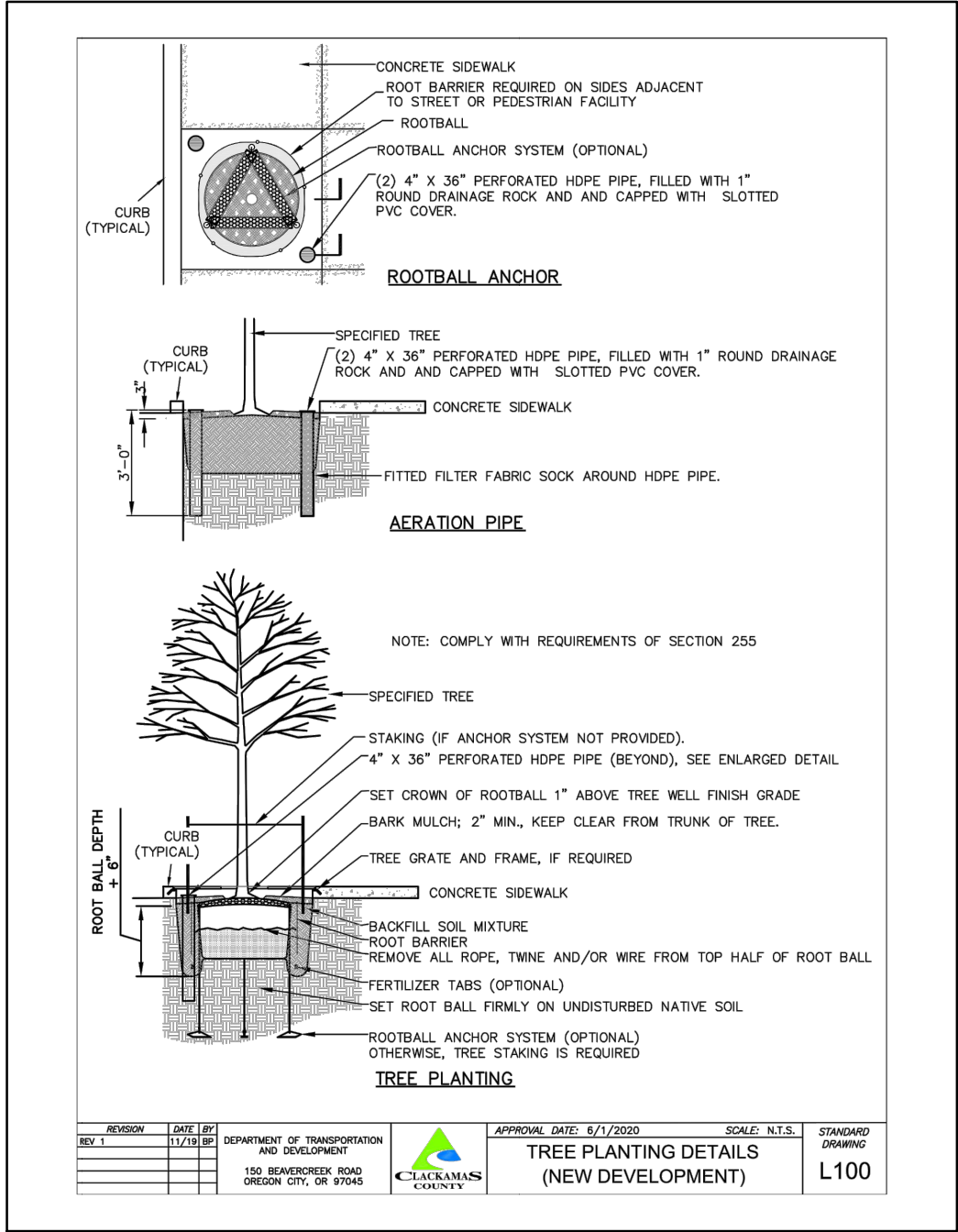


LANDSCAPE PLANT MATERIALS LIST

QTY	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
TREES					
13	AGF	ACER GINNALA 'FLAME'	FLAME GINNALA MAPLE	2" CAL., B&B	AS SHOWN
7	FOR	FRAXINUS OXYCARPA 'RAYWOOD'	RAYWOOD ASH	2" CAL., B&B	AS SHOWN
16	ZSGV	ZELKOVA SERRATA 'GREEN VASE'	GREEN VASE ZELKOVA	2" CAL., B&B	AS SHOWN
GROUND COVER					
--	AUU	ARCTOSTAPHYLOS UVA-URSI	KINNIKINNICK	1 GAL. CAN	30" O.C.

GENERAL PLANTING NOTES:

- INSTALL PLANT MATERIAL AFTER IRRIGATION SYSTEM HAS BEEN FULLY INSTALLED AND TESTED WITH OWNER'S REPRESENTATIVE FOR OPERABILITY.
- ALL PLANT MATERIAL SHALL BE HEALTHY, VIGOROUS, AND FREE OF PESTS AND DISEASE. STANDARDS SET FORTH IN "AMERICAN STANDARD FOR NURSERY STOCK" REPRESENT GUIDELINE SPECIFICATIONS ONLY AND SHALL CONSTITUTE MINIMUM QUALITY REQUIREMENTS FOR PLANT MATERIAL.
- REFER TO SPECIFICATIONS AND DETAILS FOR REQUIREMENTS FOR PLANTING SOILS WITHIN CULTIVATED PLANTING BEDS AND PLANTING PITS. ALL CULTIVATED PLANTING BEDS SHALL BE COMPLETELY MULCHED WITH 4" COMPOST MULCH AS SPECIFIED.
- ALL TREES SHALL HAVE A STRAIGHT TRUNK AND FULL HEAD AND MEET ALL REQUIREMENTS SPECIFIED.
- ALL TREES MUST BE INSTALLED WITH GUYING OR STAKED AS SHOWN IN THE DETAILS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL QUANTITIES SHOWN ON THESE PLANS BEFORE PRICING THE WORK.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR FULLY MAINTAINING (INCLUDING BUT NOT LIMITED TO: WATERING, MULCHING, FERTILIZING, PRUNING, REPLACING) ALL OF THE PLANT MATERIALS FOR THE PERIOD OF TIME INDICATED IN THE SPECIFICATIONS.



- NOTES:
- LOCATE PLANTS SPACED EQUAL DISTANCE (D) FROM EACH OTHER AS SHOWN. D - AS NOTED ON PLAN.

1 GROUND COVER PLANTING
SCALE: N.T.S.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.



LANDSCAPE PLAN (PRELIMINARY)
CANBY OREGON
TERRITORIAL ROAD SUBDIVISION
CANBY, OREGON



REVISIONS:	

NOT FOR CONSTRUCTION

PM.	B. BERRY
DR.	B. BERRY
JOB NO. 20002753	
FILE NO. 20002753-LA	
DATE 2/12/2021	

SHEET NO.
L100

Property Profile Report

102 NE TERRITORIAL RD CANBY, OR 97013-4559

Ownership Information

Owner Name:

LORI A HEMMERLING

Mailing Address:

33136 SAND DOLLAR LN WARRENTON, OR 97146-7229

Property Description

County: Clackamas

Map / Tax Lot: 31E28C /00401

Map Grid: 746-C4

Account Num: 00776271

Census:

Property ID: 00776271

Owner Occ.: Yes

Land Use: Agricultural / Rural (General)

Zoning:

Subdivision: PRUNELAND

Legal Description:

76 PRUNELAND PT LTS 26-28

Property Characteristics

Property Type: AGRICULTURAL

Building SF:

Heat:

House Style:

Living Area SF:

Cooling:

Year Built:

Square Feet:

Foundation:

Bedrooms:

1st Floor SF:

Exterior:

Bathrooms:

2nd Floor SF:

Roof Style:

Lot Size: 0

3rd Floor SF:

Roof Cover:

Acres: 0

Attic SF:

Fireplaces:

Garage Type:

Bsmnt SF:

Bsmnt Type:

Garage SF:

Fin Bsmt SF:

Assessment Information

Real Market Value: \$ 295,427

Taxes: \$ 741.67

Land Value: \$ 233,307

Imp. Value: \$ 62,120

Total Assessed Value: \$ 41,469

Levy Code: 086-002

Assessed Yr: 2019

Tax Year: 2020

M-5 Rate: 17.1520

Previous Sale Information

Sale Amount:

Sale Date:

Document Num:

Transaction History

208

Sale Date	Sale Amount	HPI Sale Amount	Document Type	Reception Num	Book/Page
5/13/2015	\$ 0		Rr	2015-044316	/
5/13/2015	\$ 0		It	2015-032967	/
11/24/2003	\$ 0		It	2003-158818	/

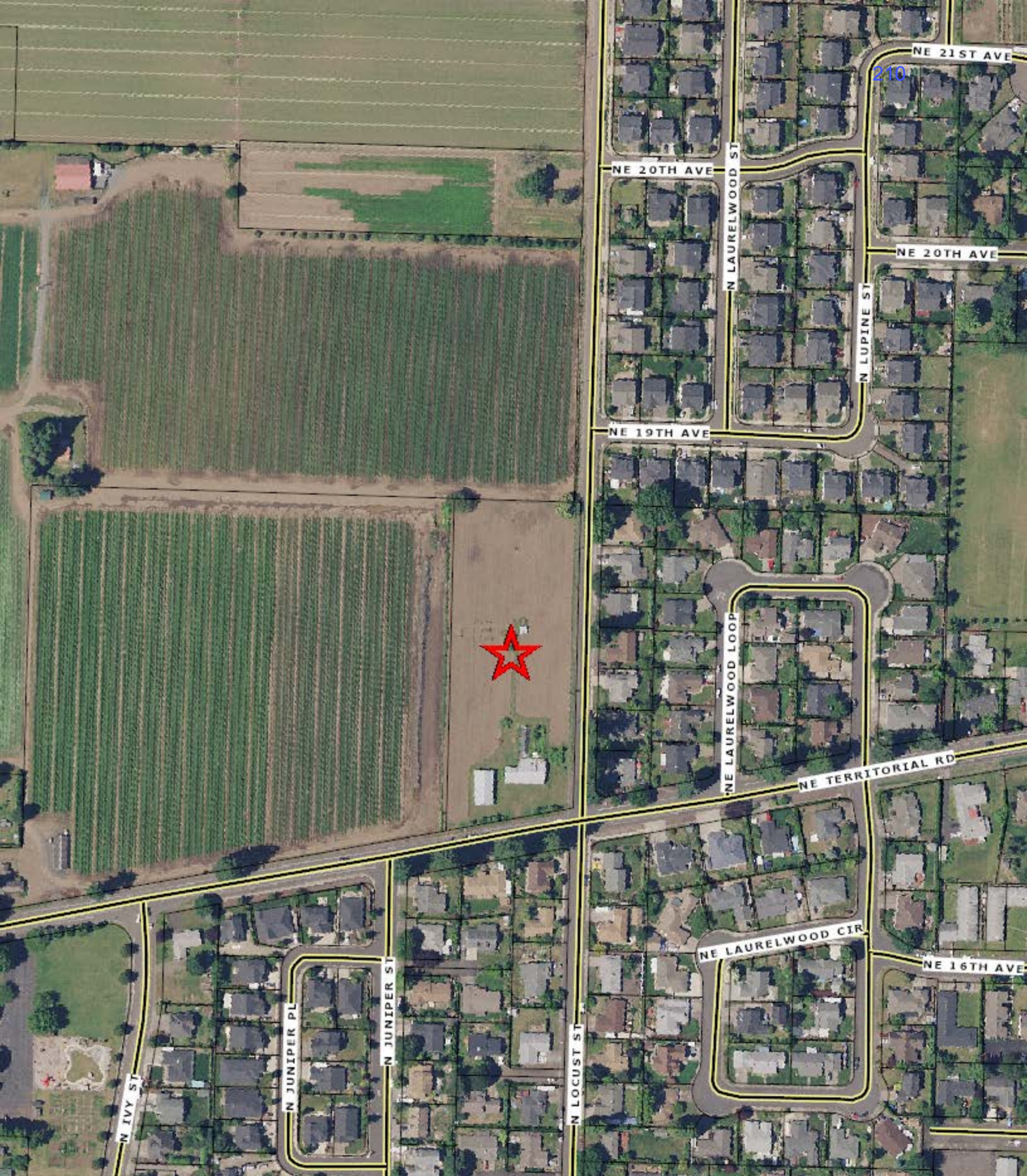
This information has been furnished, without charge, in conformance with the guidelines approved by the State of Oregon Insurance Commissioner. The Insurance division cautions intermediaries that this service is designed to benefit the ultimate insureds. Indiscriminate use only benefiting intermediaries will not be permitted. Said Services may be discontinued. No liability is assumed for any errors in this report.

*All information provided by ValueCheck, Inc is deemed reliable, but not guaranteed.
Accuracy of the information may vary by county.*

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This map/plat is being furnished as an aid in locating the herein described Land in relation to adjoining streets, natural boundaries and other land, and is not a survey of the land depicted. Except to the extent a policy of title insurance is expressly modified by endorsement, if any, the Company does not insure dimensions, distances, location of easements, acreage or other matters shown thereon.



This map/plat is being furnished as an aid in locating the herein described Land in relation to adjoining streets, natural boundaries and other land, and is not a survey of the land depicted. Except to the extent a policy of title insurance is expressly modified by endorsement, if any, the Company does not insure dimensions, distances, location of easements, acreage or other matters shown thereon.



150 Beavercreek Rd
Oregon City, OR 97045
503-655-8671

211

Property Account Summary

2/5/2021

Account Number	00776271	Property Address	102 NE TERRITORIAL RD , CANBY, OR 97013
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General Information

Alternate Property #	31E28C 00401
Property Description	76 PRUNELAND PT LTS 26-28
Last Sale Price	\$0.00
Last Sale Date	06/12/2015
Last Sale Excise Number	279524
Property Category	Land &/or Buildings
Status	Active, Locally Assessed, Use Assessed
Tax Code Area	086-002
Remarks	

Property Characteristics

Property Tax Deferral	Potential Additional Tax Liability
Neighborhood	13104: City of Canby all other
Land Class Category	541: Non EFU farmland improved
Change property ratio	5XX

Property Details

Living Area Sq Ft	Manf Struct Size	Year Built	Improvement Grade	Stories	Bedrooms	Full Baths	Half Baths

Parties

Role	Percent	Name	Address
Taxpayer	100	HEMMERLING LORI A	1500 COOPER ST, SEASIDE, OR 97138
Owner	100	HEMMERLING NURSERY LLC	NO MAILING ADDRESS, AVAILABLE,

Property Values

Value Type	Tax Year 2020	Tax Year 2019	Tax Year 2018	Tax Year 2017	Tax Year 2016
AVR Total	\$42,711	\$41,469	\$40,263	\$39,091	\$37,953
Exempt					
TVR Total	\$42,711	\$41,469	\$40,263	\$39,091	\$37,953

Real Mkt Land	\$266,911	\$233,307	\$213,865	\$194,423	\$178,515
Real Mkt Bldg	\$61,840	\$62,120	\$38,380	\$35,210	\$32,630
Real Mkt Total	\$328,751	\$295,427	\$252,245	\$229,633 ²¹²	\$211,145
M5 Mkt Land					
M5 Mkt Bldg	\$61,840	\$62,120	\$38,380	\$35,210	\$32,630
M5 SAV	\$30,994	\$31,105	\$29,678	\$28,614	\$24,788
SAVL (MAV Use Portion)	\$7,525	\$7,307	\$7,096	\$6,890	\$6,690
MAV (Market Portion)	\$35,186	\$34,162	\$33,167	\$32,201	\$31,263
Mkt Exception					
AV Exception					

Tax Rate

Description	Rate
Total Rate	17.3648

Tax Balance
No Charges are currently due. If you believe this is incorrect, please contact the Assessor's Office.

Parents						
Parcel No.	Seg/Merge No.	Status	From Date	To Date	Continued	Document Number
No Parents Found						

Children					
Parcel No.	Seg/Merge No.	Status	From Date	To Date	Document Number
No Children Found					

Related Properties
No Related Properties Found

Active Exemptions
No Exemptions Found

Events			
Effective Date	Entry Date-Time	Type	Remarks
05/06/2019	05/06/2019 15:48:00	Annexation Completed For Property	ANNEX TO CITY OF CANBY, ORD 1501-annexed by CITY OF CANBY for 2019-Revise District Membership by DEENAMEH
06/01/2015	06/12/2015 07:56:00	Taxpayer Changed	Property Transfer Filing No.: 279524 06/01/2015 by CINDYSIM
06/01/2015	06/12/2015 07:56:00	Recording Processed	Property Transfer Filing No.: 279524, Bargain & Sale, Recording No.: 2015-032967 06/01/2015 by CINDYSIM
09/22/2008	09/22/2008 12:15:00	Taxpayer Changed	Party/Property Relationship by CINDYSIM
12/04/2003	04/04/2006 15:09:00	Taxpayer Changed	Property Transfer Filing No.: 138127 12/04/2003 by AMANDAOLS
12/04/2003	04/04/2006 15:09:00	Recording Processed	Property Transfer Filing No.: 138127, Warranty Deed, Recording No.: 2003-158818 12/04/2003 by AMANDAOLS
02/26/2002	02/26/2002 15:49:00	Annexation Completed For Property	Trimet Withdrawal 086-020-annexed by TRANS TRI-COUNTY METRO for 2002-Withdrawal by JENMAYO

07/01/1999	07/01/1999 12:00:00	Ownership at Conversion	Conversion deed: 81-04300, , \$ 0							
Receipts213										
Date			Receipt No.		Amount Applied		Amount Due		Tendered	Change
11/09/2020 00:00:00			4847076		\$741.67		\$741.67		\$719.42	\$0.00
11/18/2019 00:00:00			4751526		\$706.30		\$706.30		\$685.11	\$0.00
11/07/2018 00:00:00			4477519		\$553.45		\$553.45		\$536.85	\$0.00
02/13/2018 00:00:00			4408655		\$547.13		\$547.13		\$547.13	\$0.00
11/17/2016 00:00:00			4182092		\$521.37		\$521.37		\$505.73	\$0.00
Sales History										
Sale Date	Entry Date	Recording Date	Recording Number	Sale Amount	Excise Number	Deed Type	Transfer Type	Grantor(Seller)	Grantee(Buyer)	Other Parcels
05/13/2015	06/12/2015	06/01/2015	2015-032967	\$0.00	279524		S	HEMMERLING BEULAH L TRUSTEE	HEMMERLING NURSERY LLC	No
11/24/2003	04/04/2006	12/04/2003	2003-158818	\$0.00	138127		S	HEMMERLING RICHARD PAUL & BEULAH	HEMMERLING BEULAH L TRUSTEE	No



150 Beavercreek Rd
Oregon City, OR 97045
503-655-8671

214

Detailed Statement

Parcel Number 00776271 Property Address 102 NE TERRITORIAL RD , CANBY, OR 97013

Click on the Recalculate button in order to
change the interest date then click calculate for
the results.

As Of
Date: 2/5/2021

Recalculate

Tax Year	Category	TCA/District	Charged	Minimum	Balance Due	Due Date
1993	Property Tax Principal	086-005	\$410.74	\$0.00	\$0.00	11/15/1993
1994	Property Tax Principal	086-005	\$347.97	\$0.00	\$0.00	11/15/1994
1995	Property Tax Principal	086-005	\$319.23	\$0.00	\$0.00	11/15/1995
1996	Property Tax Principal	086-005	\$368.94	\$0.00	\$0.00	11/15/1996
1997	Property Tax Principal	086-005	\$331.89	\$0.00	\$0.00	11/15/1997
1998	Property Tax Principal	086-005	\$337.82	\$0.00	\$0.00	11/15/1998
1999	Property Tax Principal	086-005	\$339.71	\$0.00	\$0.00	11/15/1999
2000	Property Tax Principal	086-005	\$391.63	\$0.00	\$0.00	11/15/2000
2001	Property Tax Principal	086-005	\$407.05	\$0.00	\$0.00	11/15/2001
2002	Property Tax Principal	086-020	\$411.10	\$0.00	\$0.00	11/15/2002
2003	Property Tax Principal	086-020	\$427.09	\$0.00	\$0.00	11/15/2003
2004	Property Tax Principal	086-020	\$439.89	\$0.00	\$0.00	11/15/2004
2005	Property Tax Principal	086-020	\$444.93	\$0.00	\$0.00	11/15/2005
2006	Property Tax Principal	086-020	\$438.91	\$0.00	\$0.00	11/15/2006
2007	Property Tax Principal	086-020	\$454.57	\$0.00	\$0.00	11/15/2007
2008	Property Tax Principal	086-020	\$464.69	\$0.00	\$0.00	11/15/2008
2009	Property Tax Principal	086-020	\$475.58	\$0.00	\$0.00	11/15/2009
2010	Property Tax Principal	086-020	\$445.30	\$0.00	\$0.00	11/15/2010
2011	Property Tax Principal	086-020	\$407.83	\$0.00	\$0.00	11/15/2011
2012	Property Tax Principal	086-020	\$395.84	\$0.00	\$0.00	11/15/2012
2013	Property Tax Principal	086-020	\$402.05	\$0.00	\$0.00	11/15/2013
2014	Property Tax Principal	086-020	\$447.70	\$0.00	\$0.00	11/15/2014
2015	Property Tax Principal	086-020	\$471.38	\$0.00	\$0.00	11/15/2015
2016	Property Tax Principal	086-020	\$521.37	\$0.00	\$0.00	11/15/2016
2017	Property Tax Interest	086-020	\$7.20	\$0.00	\$0.00	02/12/2018
2017	Property Tax Principal	086-020	\$539.93	\$0.00	\$0.00	11/15/2017
2018	Property Tax Principal	086-020	\$553.45	\$0.00	\$0.00	11/15/2018
2019	Property Tax Principal	086-002	\$706.30	\$0.00	\$0.00	11/15/2019
2020	Property Tax Principal	086-002	\$741.67	\$0.00	\$0.00	11/15/2020

TOTAL Due				
as of				\$0.00
02/05/2021				215

After recording, return to:

3^e
 Christian M. Oelke
 Attorney at Law
 Five Centerpointe Drive, Suite 240
 Lake Oswego, OR 97035-8682
c/o Stacey Flintjer

Send tax statements to:

Lori A. Hemmerling, Manager
 33136 Sanddollar Lane
 Warrenton, OR 97146

Grantor's Name and Address:

Hemmerling Nursery, LLC
 33136 Sanddollar Lane
 Warrenton, OR 97146

Grantee's Name and Address:

Lynn M. Hemmerling, Trustee
 2754 N Hampden #1002
 Chicago, IL 60614

Lori A. Hemmerling, Trustee
 33136 Sanddollar Lane
 Warrenton, OR 97146

Clackamas County Official Records
 Sherry Hall, County Clerk

2015-032967



\$63.00

D-D Cnt=1 Stn=1 JANIS
 \$15.00 \$10.00 \$16.00 \$22.00

06/01/2015 03:04:51 PM

Clackamas County Official Records
 Sherry Hall, County Clerk

2015-044316



\$63.00

D-D Cnt=1 Stn=9 COUNTER1
 \$15.00 \$10.00 \$16.00 \$22.00

07/08/2015 09:07:03 AM

Rerecorded at the request of Grantor to
 correct the legal description previously
 recorded as Document No. 2015-032967.

The true consideration for this conveyance is Zero Dollars [\$0].

BARGAIN AND SALE DEED

LYNN M. HEMMERLING and LORI A. HEMMERLING, Successor Trustees of the Beulah L. Hemmerling Revocable Living Trust u/t/a dated November 24, 2003, GRANTOR, convey to HEMMERLING NURSERY, LLC, an Oregon limited liability company, GRANTEE, all of the Trust's interest in the following described real property located in Clackamas County, Oregon, commonly known as 102 NE Territorial Road, Canby, Oregon, Reference Parcel Number 00776271:

See Exhibit A attached hereto

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, AND SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2

TO 7, CHAPTER 8, OREGON LAWS 2010. THIS INSTRUMENT DOES 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 THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR 215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930, AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010.

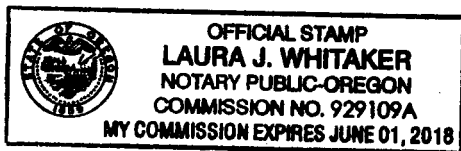
Dated: May 13, 2015.

Lynn M. Hemmerling
LYNN M. HEMMERLING

Lori A. Hemmerling
LORI A. HEMMERLING

STATE OF OREGON)
) ss.
County of Clackamas)

On the 13th day of May, 2015, personally appeared before me the above named **LYNN M. HEMMERLING** and **LORI A. HEMMERLING** and acknowledged the foregoing instrument to be their voluntary act and deed.



Laura J. Whitaker
Notary Public for Oregon
My commission expires: June 1, 2018

EXHIBIT A

~~Parcel 1~~~~Lot 19, and the North half of Lot 18, OLIVER ADDITION NO. 1 of Canby, Oregon.~~

Parcel 2

A tract of land located in Lots 26, 27 & 28, in the Plat of PRUNELAND, in Section 28, T. 3 S., R. 1 E., of the W.M. in the County of Clackamas and State of Oregon, described as follows:

Beginning at a bolt at the Southeast corner of Lot 28, PRUNELAND, said Southeast corner is at the intersection of Territorial Road and County Road 1780, also known as Hillcrest, from said point of beginning running thence North 0° 2' East along the center of said County Road 587.26 feet to a 1/2 inch iron bolt, said bolt is North 0° 2' East 8.0 feet from the Southeast corner of Lot 26, said Plat of PRUNELAND; thence North 89° 13' West parallel to and 8.0 feet distant from the South line of Lot 26 (said line is also the North line of Lot 27) 252.0 feet from a 1 inch iron pipe; thence South 0° 2' West thru Lot 26 and Lots 27 and 28, a distance of 642.3 feet to a 1/2 inch bolt (from which a 3/4 inch iron pipe bears North 0° 2' East 30.6 feet) in the center of Territorial Road; thence along the center of said road North 78° 24' East 257.3 feet to the place of beginning.

SUBJECT TO AND EXCEPTING: covenants, conditions, restrictions and easements of record.

PRUNELAND

SCALE 1"=400

STATE OF OREGON }
COUNTY OF CLACKAMAS } SS

THIS CERTIFIES, THAT ON THIS 16TH DAY OF FEBRUARY, 1891, PERSONALLY APPEARED BEFORE ME THE ABOVE NAMED JAMES A. CHASE AND ANNIE A. CHASE, HIS WIFE, KNOWN TO ME TO BE THE PERSONS WHO EXECUTED THE FOREGOING INSTRUMENT, AND ACKNOWLEDGED TO ME THAT THEY EXECUTED THE SAME FREELY AND VOLUNTARILY FOR THE USES AND PURPOSES THEREIN NAMED.

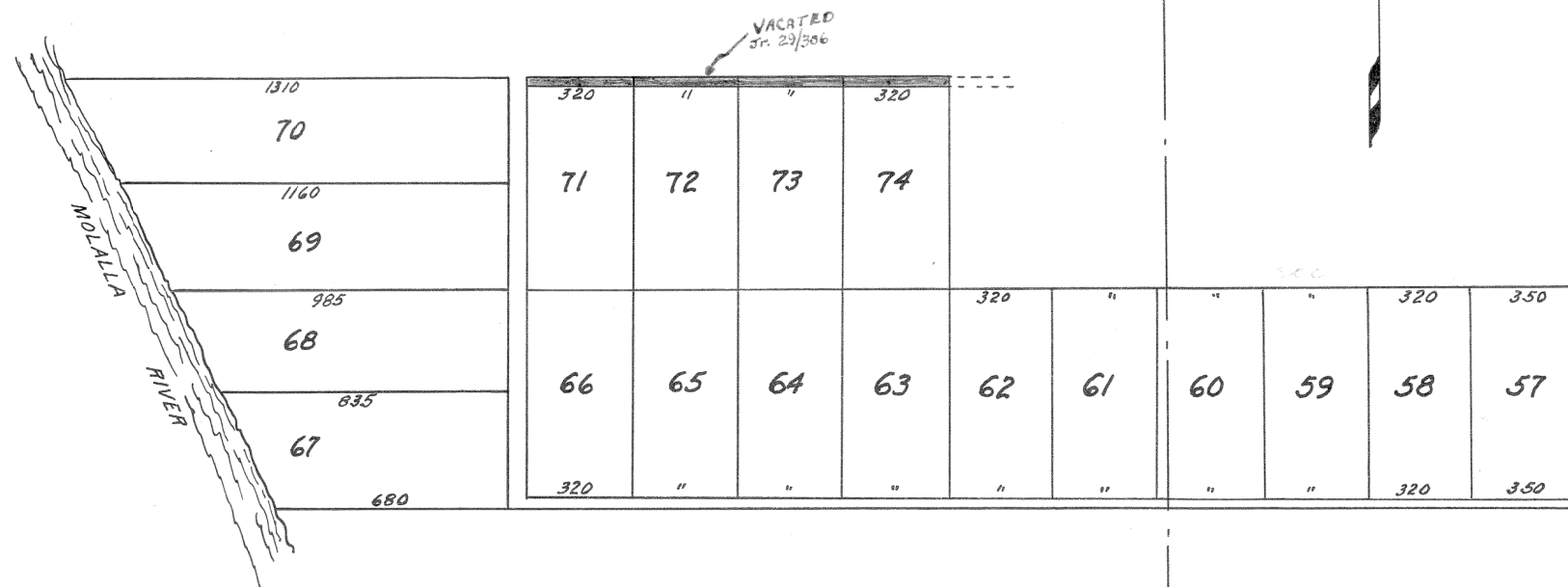
IN WITNESS WHEREOF I HAVE HEREUNTO SET MY HAND AND OFFICIAL SEAL THE DAY AND YEAR FIRST ABOVE WRITTEN.

SEAL OF
C. H. DYE, NOTARY PUBLIC IN AND FOR OREGON
OF
N. P.

I HEREBY CERTIFY, THAT I HAVE SURVEYED PRUNELAND AND THAT THIS IS A CORRECT MAP OF SUCH SURVEY.

THAT A STONE MONUMENT IS PLACED AT THE INITIAL POINT, AND THAT THE DISTANCES MARKED UPON THE MAP ARE CORRECT.

(SIGNED) N. O. WALDEN



KNOW ALL MEN BY THESE PRESENTS, THAT WE, JAMES A. CHASE AND ANNIE A. CHASE, DO HEREBY LAY OUT AND PLAT INTO ORCHARD LOTS THE FOLLOWING DESCRIBED TRACT OF LAND--

PARTS OF SECTIONS 21, 28, AND 29 IN TOWNSHIP 3 SOUTH OF RANGE 1 EAST OF THE WILLAMETTE MERIDIAN, CLACKAMAS COUNTY, STATE OF OREGON, BOUNDED AND DESCRIBED AS FOLLOWS--

BEGINNING AT A POINT 20 CHAINS EAST OF THE CORNER TO SECTIONS 20, 21, 28 & 29 AND RUNNING THENCE SOUTH 30 CHAINS, THENCE WEST 30 CHAINS, THENCE NORTH 10 CHAINS, THENCE WEST 39 CHAINS TO MOLLALA RIVER, THENCE WITH MEANDERS OF RIVER UP STREAM TO CENTER OF SEC. 29, THENCE EAST 60 CHAINS TO ROAD, THENCE SOUTH 32.50 CHAINS TO COUNTY ROAD, THENCE N. 78° 15' EAST 41.50 CHAINS TO CENTER LINE OF EAST HALF OF SEC. 28, THENCE NORTH TO 30 CHAINS, THENCE WEST 20 CHAINS, THENCE SOUTH 6 CHAINS, THENCE WEST 20 CHAINS TO PLACE OF BEGINNING, CONTAINING 385.00 ACRES.

AND WE, JAMES A. CHASE AND ANNIE A. CHASE, DONATE AND DEDICATE TO THE USE OF THE PUBLIC FOREVER ALL THE ROADS LAID OFF ON THIS PLAT, PROVIDED HOWEVER THAT THE TWO INSIDE ROADS ARE NOT TO BE OPENED FOR TWO YEARS FROM DATE.

ALL ROADS, EXCEPT COUNTY ROADS, ARE 30 FEET WIDE.

LOTS ARE 320 X 640 FEET, EXCEPT AS OTHERWISE SPECIFIED.

MONUMENTS ARE SHOWN BY SMALL CIRCLES.

WITNESSES--

C. H. DYE
H. L. KELLY

(SIGNED) JAMES A. CHASE SEAL
ANNIE A. CHASE

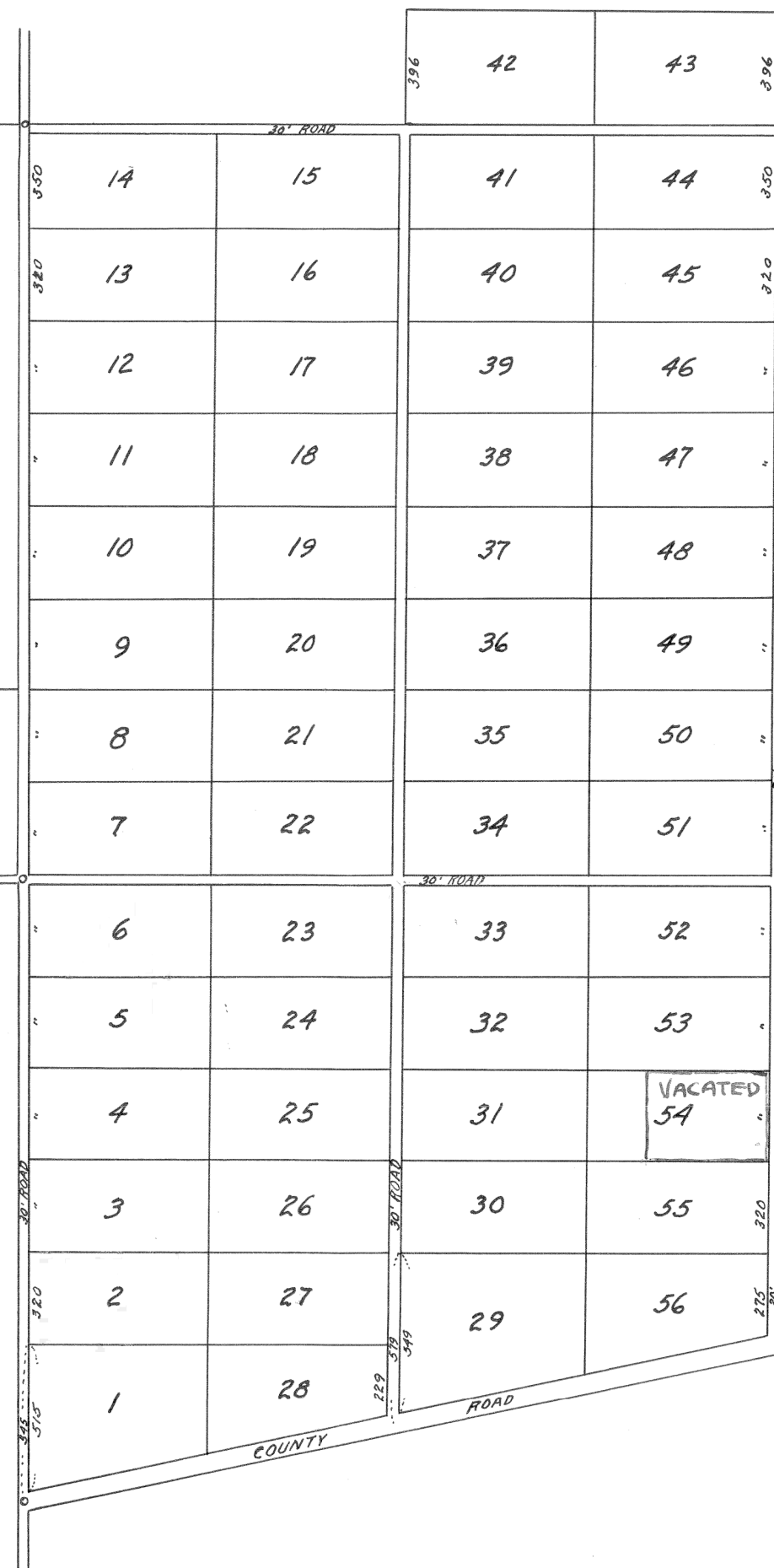
FILED MARCH 4TH 1891 AT 11 O'CLOCK A. M.
(SIGNED) W. T. WHITLOCK
RECORDER

SCALE OF ORIGINAL PLAT--300 FT TO THE INCH.
SCALE OF ABOVE (REDUCED)--400 FT TO THE INCH.

STATE OF OREGON }
COUNTY OF CLACKAMAS } SS

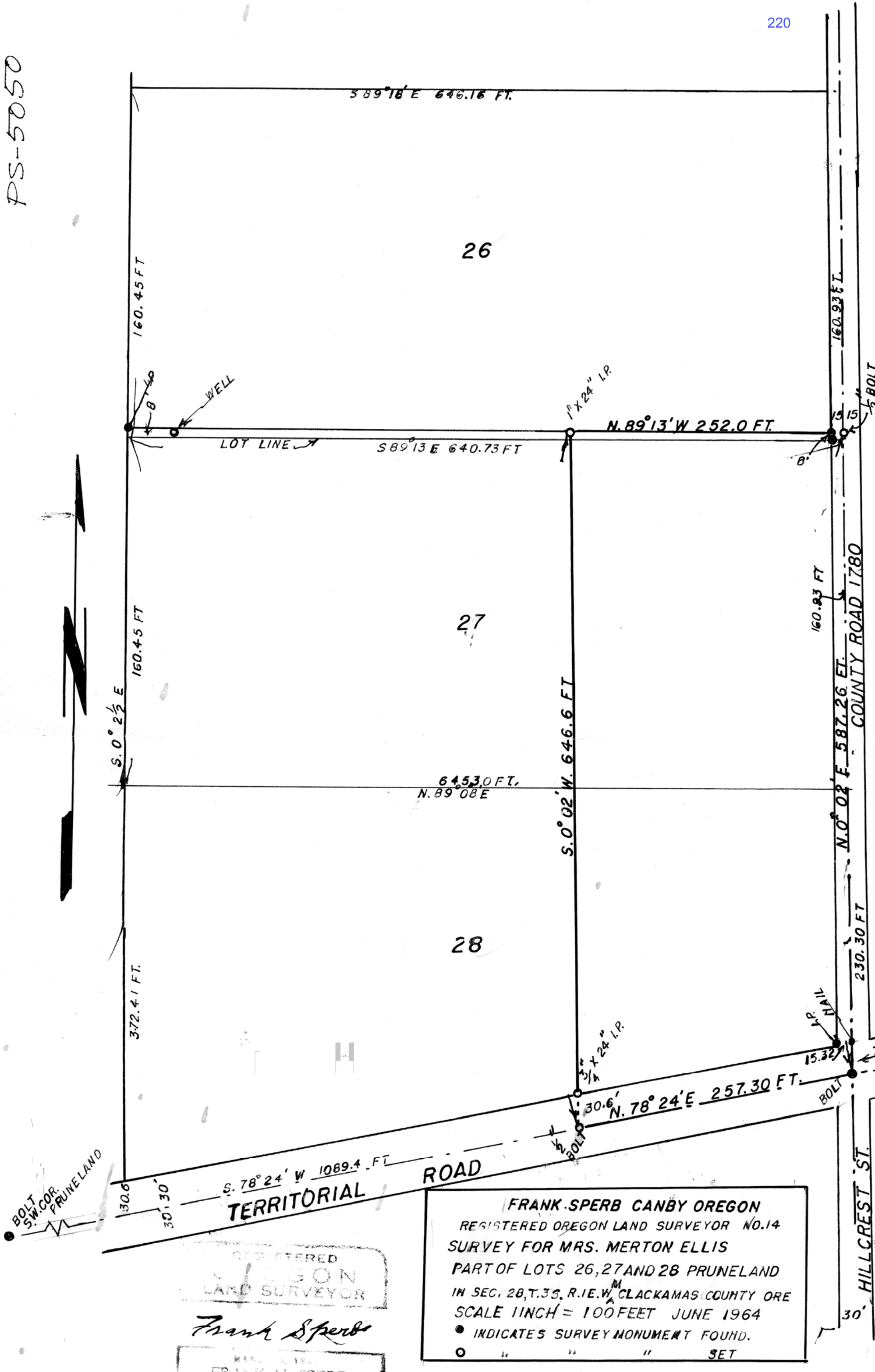
I, E. C. HACKETT, RECORDER OF SAID COUNTY, CERTIFY THE WITHIN AND FOREGOING TO BE A TRUE AND CORRECT COPY OF THE MAP NOW ON FILE IN MY OFFICE AND IN MY CARE AND CUSTODY. JULY 3, 1930.

E. C. Hackett
COUNTY RECORDER



PART OF LOT 54
VACATED BY Ord 12454
Recorded Book 661 at
Pg. 207. Records of Deeds
By John H. Keeley Jr.
John H. Keeley Jr.

PS-5050



REGISTERED
FRANK H. SPERB
LAND SURVEYOR

Frank Sperb

MARCH 1964
FRANK H. SPERB
14

FRANK SPERB CANBY OREGON
REGISTERED OREGON LAND SURVEYOR NO. 14
SURVEY FOR MRS. MERTON ELLIS
PART OF LOTS 26, 27 AND 28 PRUNELAND
IN SEC. 28, T. 33, R. 1 E. W. CLACKAMAS COUNTY ORE
SCALE 1 INCH = 100 FEET JUNE 1964
● INDICATES SURVEY MONUMENT FOUND.
○ " " " " SET

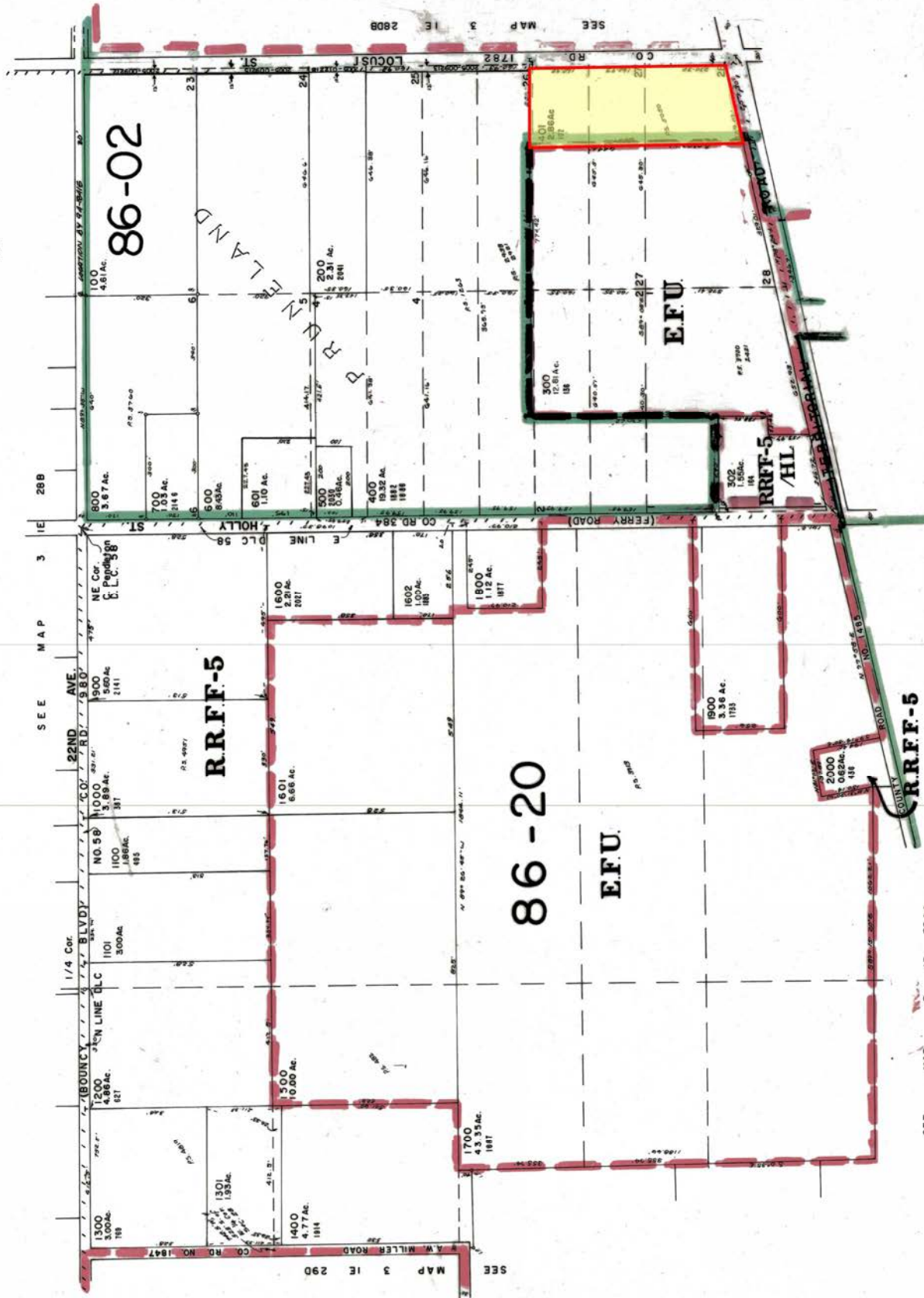
This map was prepared for assessment purpose only.

CANCELLED TAX LOTS

301
402
390

301
402
390

301
402
390



SEE MAP 3 IE 32AA

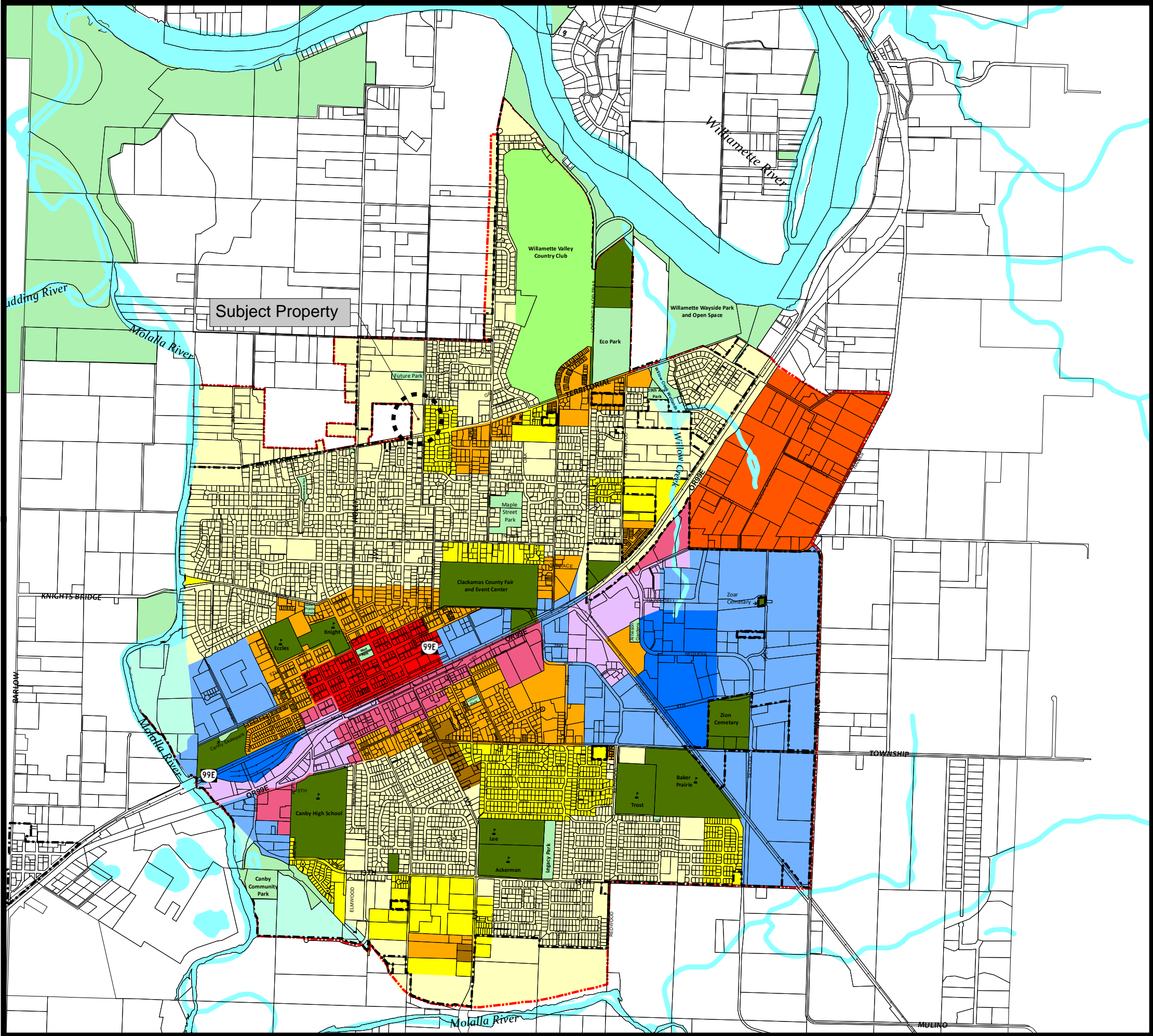
SEE MAP 3 IE 28CD

SEE MAP 3 IE 3388

29	28
32	33

City of Canby

Comprehensive Plan Map



- parks
- City Limits
- Urban Growth Boundary
- LDR-Low Density Residential
- MDR-Medium Density Residential
- HDR-High Density Residential
- Mixed Density Residential
- RC-Residential Commercial
- DC-Downtown Commercial
- HC-Highway Commercial
- CM-Commercial/Manufacturing
- LI-Light Industrial
- HI-Heavy Industrial
- P-Public
- PR-Private Recreation
- FL-Flood Prone/Steep Slopes

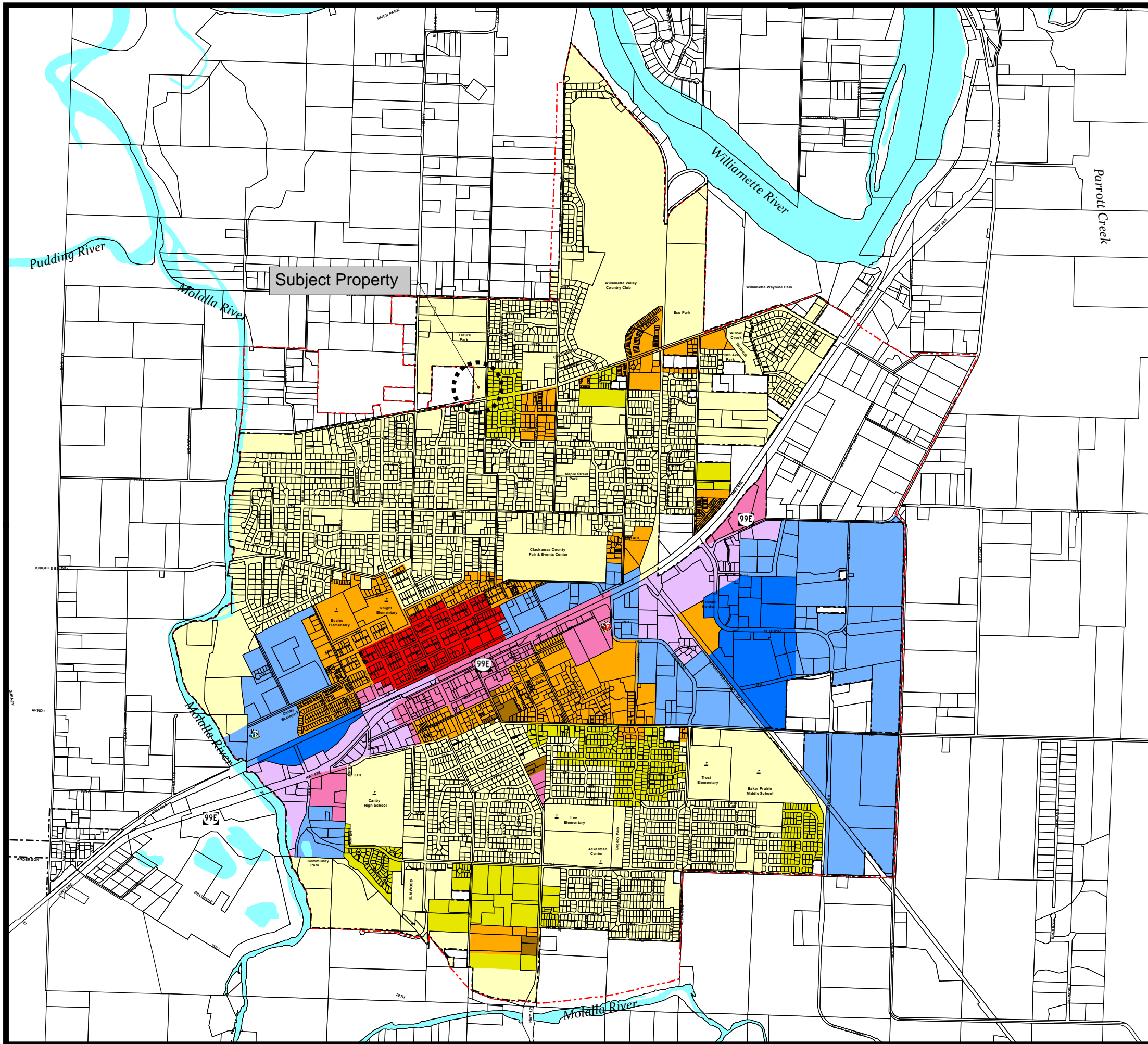


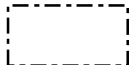










0 0.275 0.55 1.1 Miles

September 2019

The information depicted on this map is for general reference only. The City of Canby cannot accept any responsibility for errors, omissions, or positional accuracy. However, notification of errors would be appreciated.

City of Canby Zoning Map



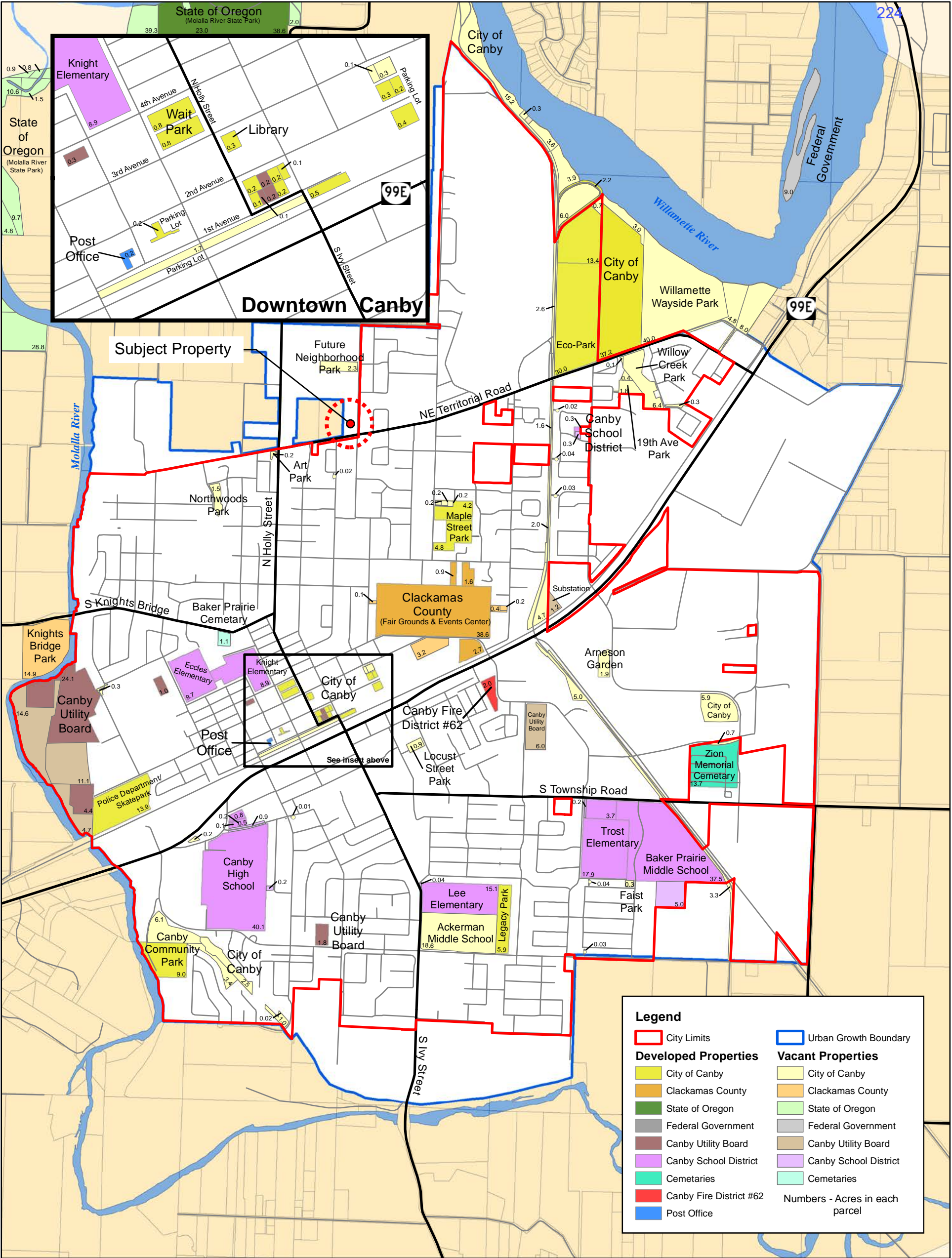
-  City Limits
-  Urban Growth Boundary
-  R-1 Low Density Residential
-  R-1.5 Medium Density Residential
-  R-2 High Density Residential
-  C-R Residential Commercial
-  C-1 Downtown Commercial
-  C-2 Highway Commercial
-  C-M Commercial Manufacturing
-  M-1 Light Industrial
-  M-2 Heavy Industrial

0 0.275 0.55 1.1 Miles

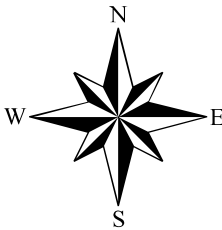
September 2019



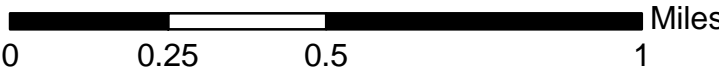
The information depicted on this map is for general reference only. The City of Canby cannot accept any responsibility for errors, omissions, or positional accuracy. However, notification of errors would be appreciated.



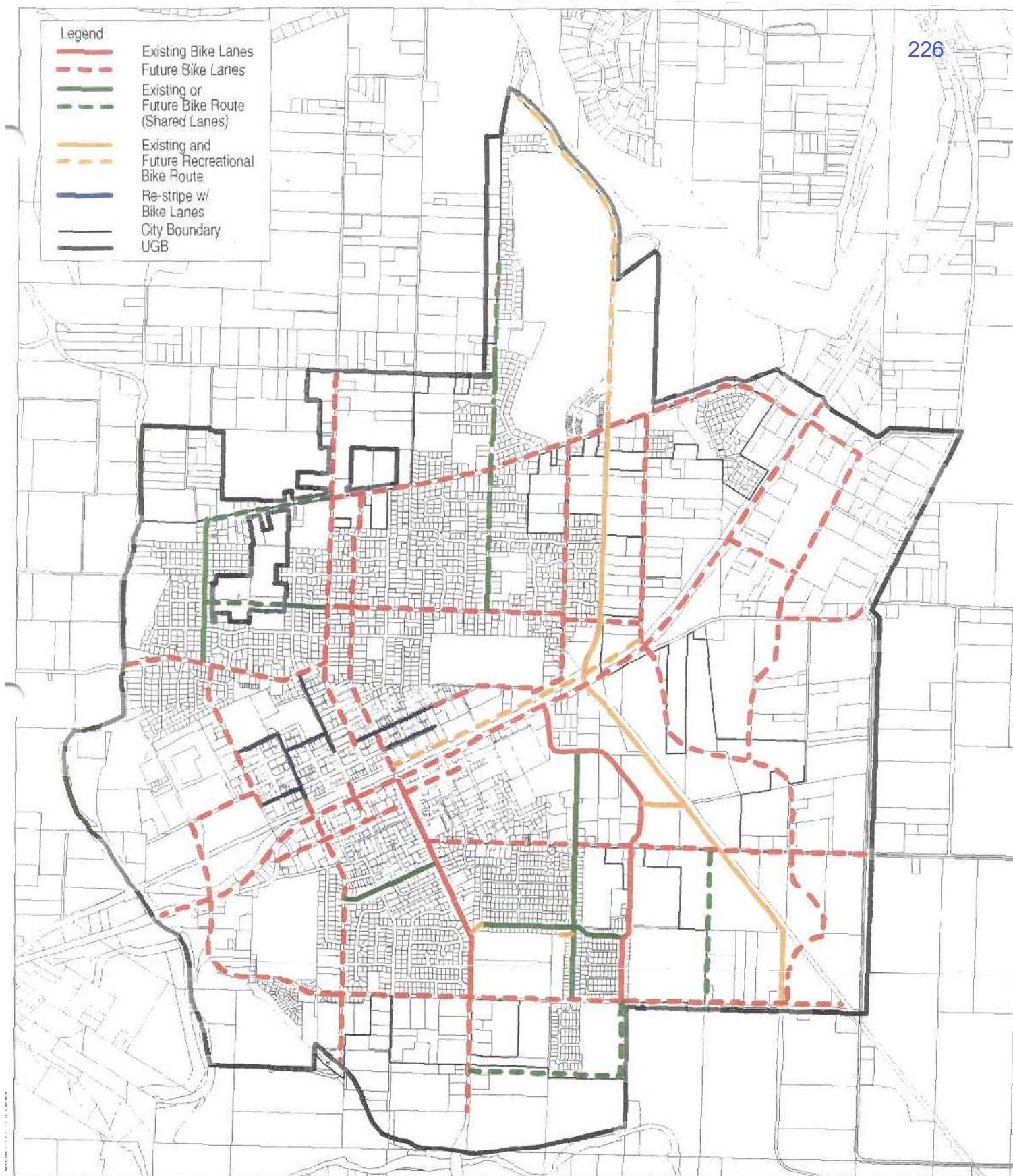
City of Canby Government Owned Properties Map



The information depicted on this map is for general reference only.
The City of Canby cannot accept any responsibility for errors, omissions, or positional accuracy.







Legend

Arterial / Collector Street Sidewalks

Existing

Both Sides of Street

One Side of Street

Future

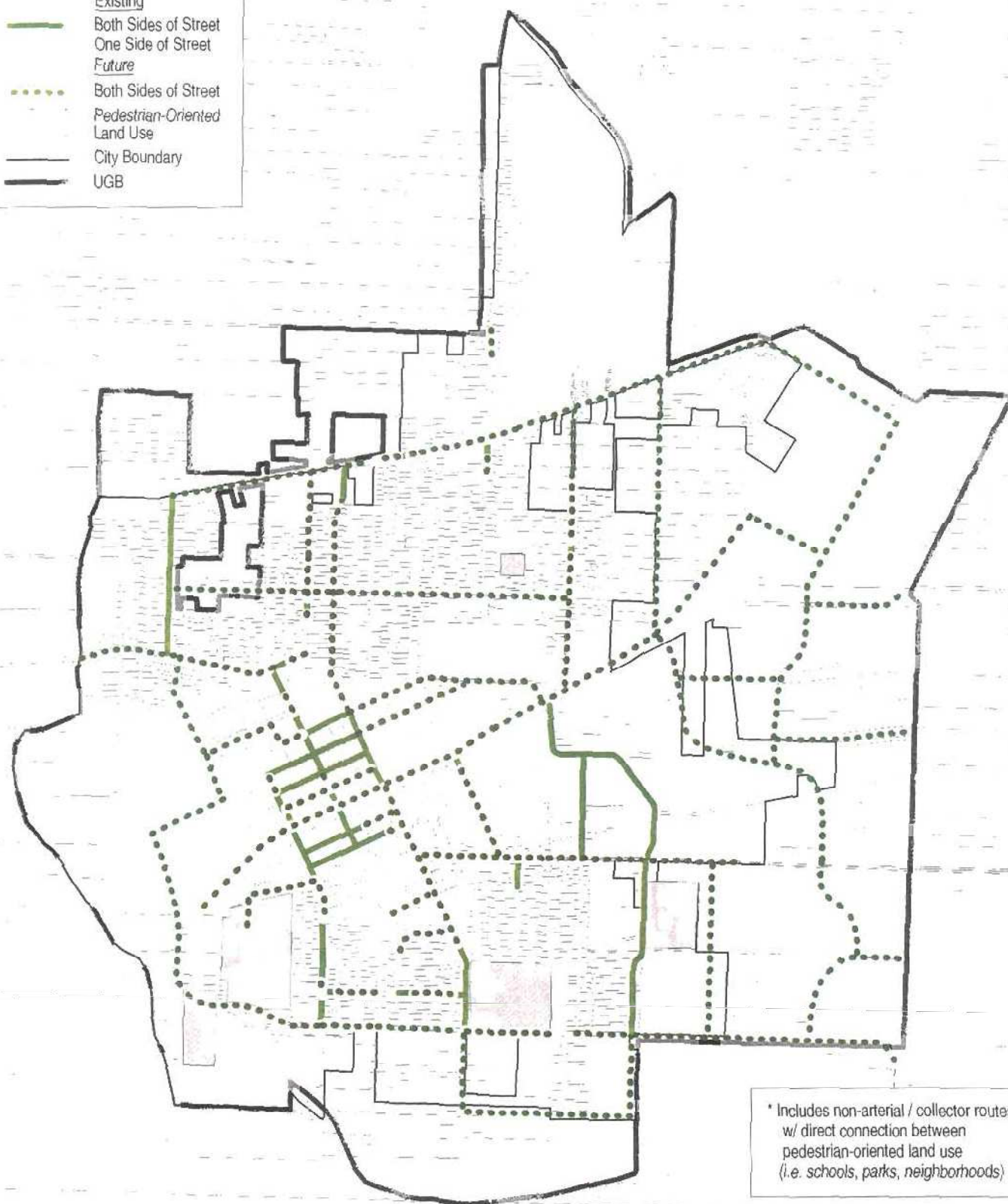
Both Sides of Street

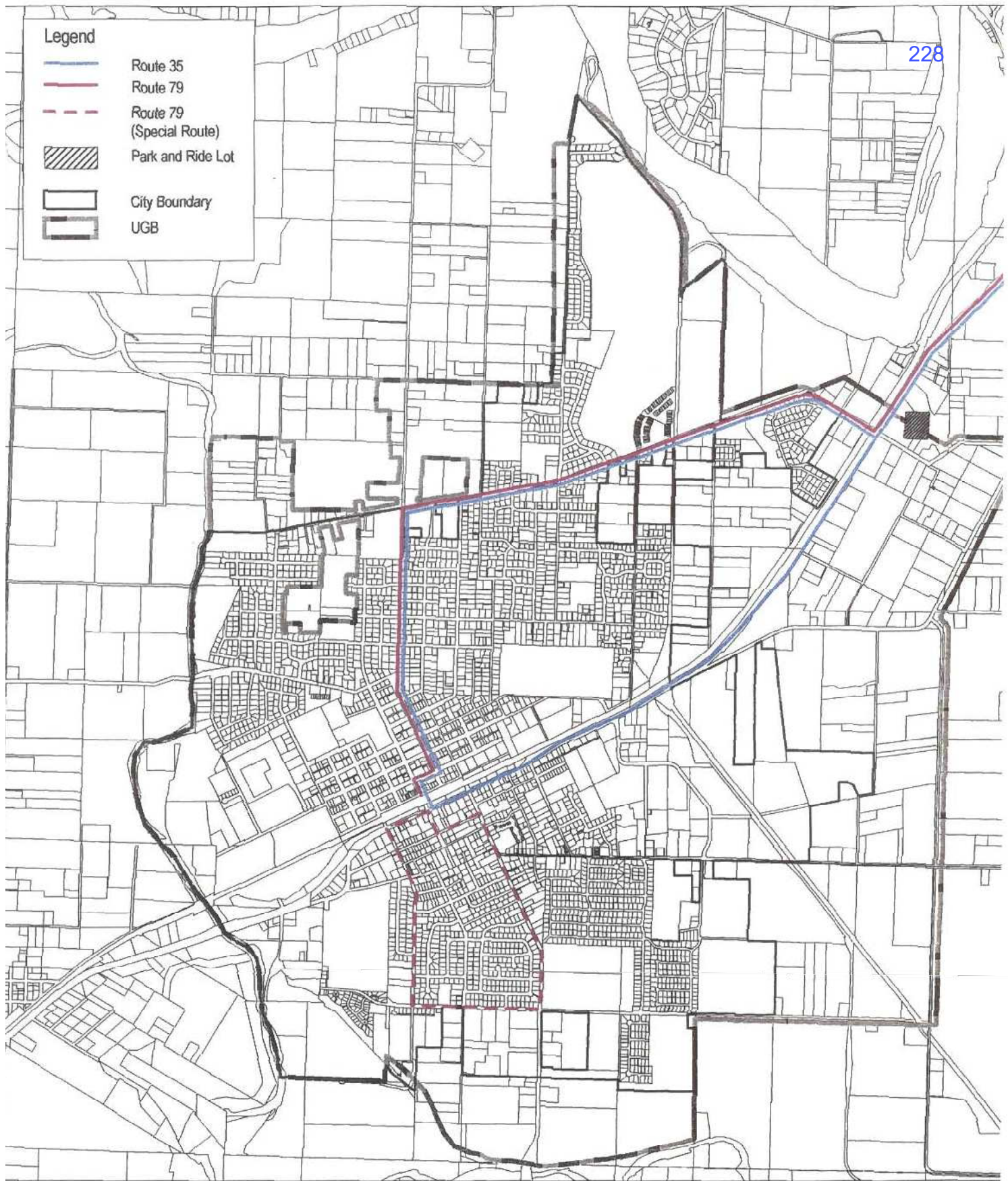
Pedestrian-Oriented

Land Use

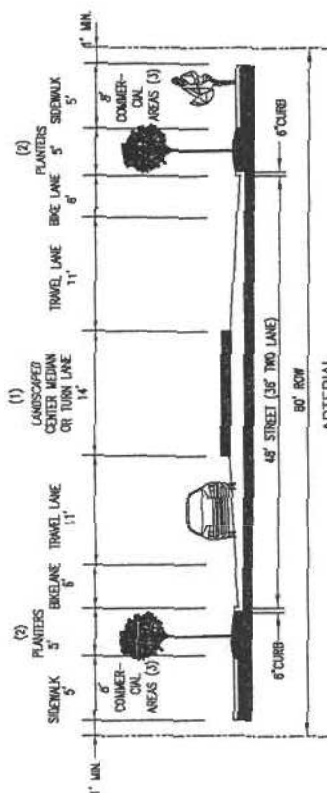
City Boundary

UGB

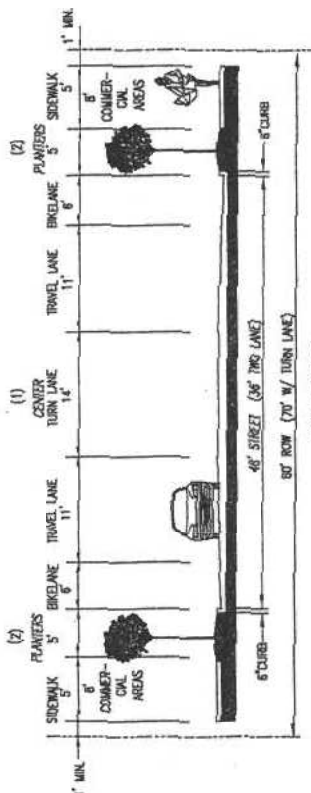




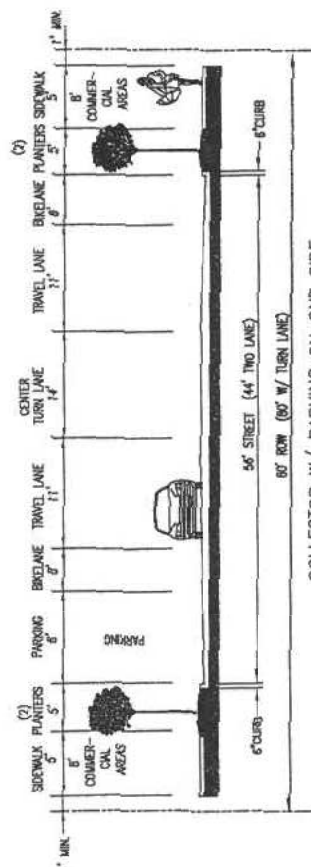
NEW CONSTRUCTION STANDARDS



- NOTES:
- (1) IF PROJECTED ADT < 4,000, TURN LANE / MEDIAN NOT REQUIRED
 - (2) IF PROJECTED ADT > 4,000, TURN LANE / MEDIAN NOT REQUIRED
 - (3) OPTIONAL IN COMMERCIAL AREAS IF SIDEWALK ≥ 10' WIDE
 - (4) DOWNTOWN COMMERCIAL TO BE 10' SIDEWALK w/ REDUCED PLANTER



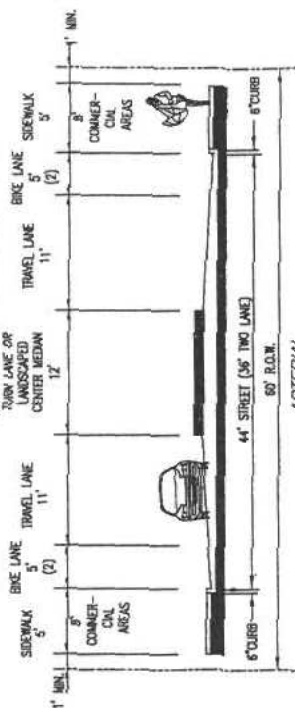
- NOTES:
- (1) AT ALL MAJOR INTERSECTIONS AND/OR IF PROJECTED ADT > 5,000
 - (2) OPTIONAL IN COMMERCIAL AREAS IF SIDEWALK ≥ 10' WIDE



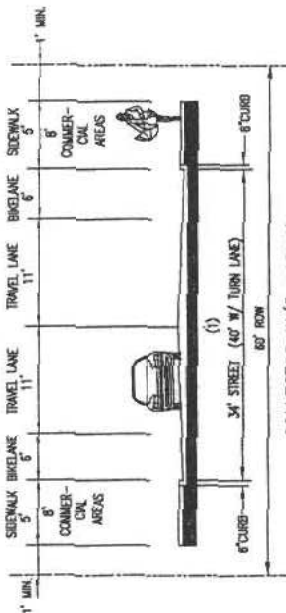
- NOTES:
- (1) AT ALL MAJOR INTERSECTIONS AND/OR IF PROJECTED ADT > 5,000
 - (2) OPTIONAL IN COMMERCIAL AREAS IF SIDEWALK ≥ 10' WIDE

ADEQUACY STANDARDS FOR EXISTING ROADWAYS

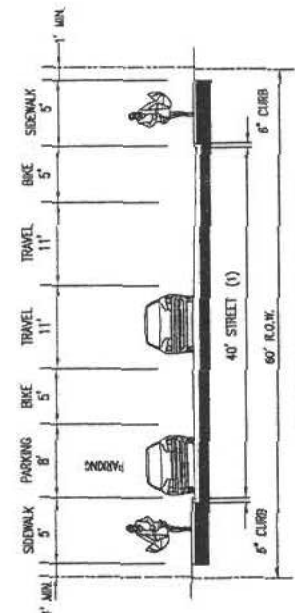
NOTES:
MINIMUM WIDTHS FOR EXISTING ROADWAY SECTIONS. ROADWAYS WIDER THAN THIS WILL BE SCHEDULED FOR WIDENING.



- NOTES:
- (1) IF PROJECTED ADT < 5,000, TURN LANE / MEDIAN NOT REQUIRED
 - (2) IF PROJECTED ADT > 5,000, BIKE LANE TO BE 5'



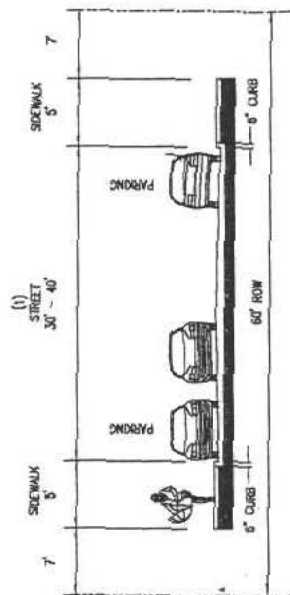
- NOTES:
- (1) TURN LANE NEEDED AT ALL INTERSECTIONS WITH ARTERIALS OR IF PROJECTED ADT > 8,000, SEE ARTERIAL SECTION



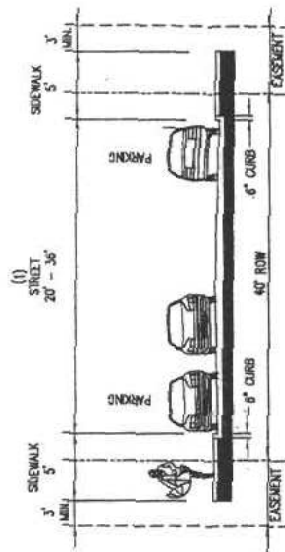
- NOTES:
- (1) TURN LANE NEEDED AT ALL INTERSECTIONS WITH ARTERIALS OR IF PROJECTED ADT > 8,000, SEE ARTERIAL SECTION



ADEQUACY STANDARDS
FOR EXISTING ROADWAYS

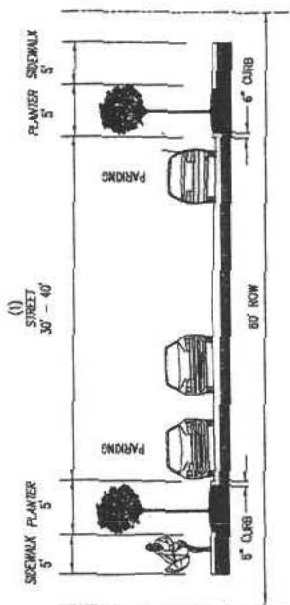


NEIGHBORHOOD CONNECTOR
NTS

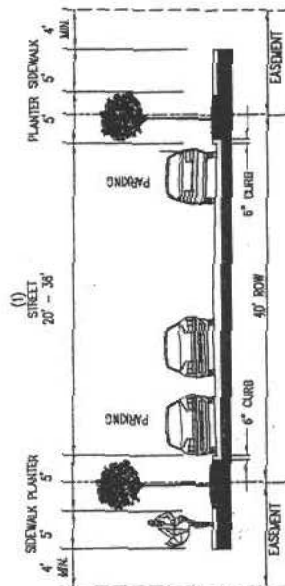


LOCAL STREET
NTS

NEW CONSTRUCTION STANDARDS



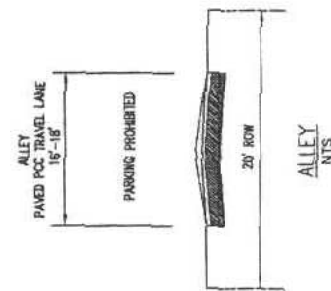
NEIGHBORHOOD CONNECTOR
NTS



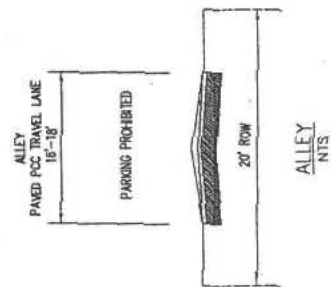
LOCAL STREET
NTS

(1) STREET WIDTH IS 40' WITH PARKING ON BOTH SIDES. 30' WITH PARKING ON ONE SIDE. STREETS NARROWER THAN 40' MAY BE ALLOWED ONLY ON A CASE BY CASE BASIS BY THE PLANNING COMMISSION OR CITY COUNCIL.

(1) STREET WIDTH IS 30' WITH PARKING ON BOTH SIDES. 20' WITH PARKING ON ONE SIDE. STREETS NARROWER THAN 30' MAY BE ALLOWED ONLY ON A CASE BY CASE BASIS BY THE PLANNING COMMISSIONS OR CITY COUNCIL.

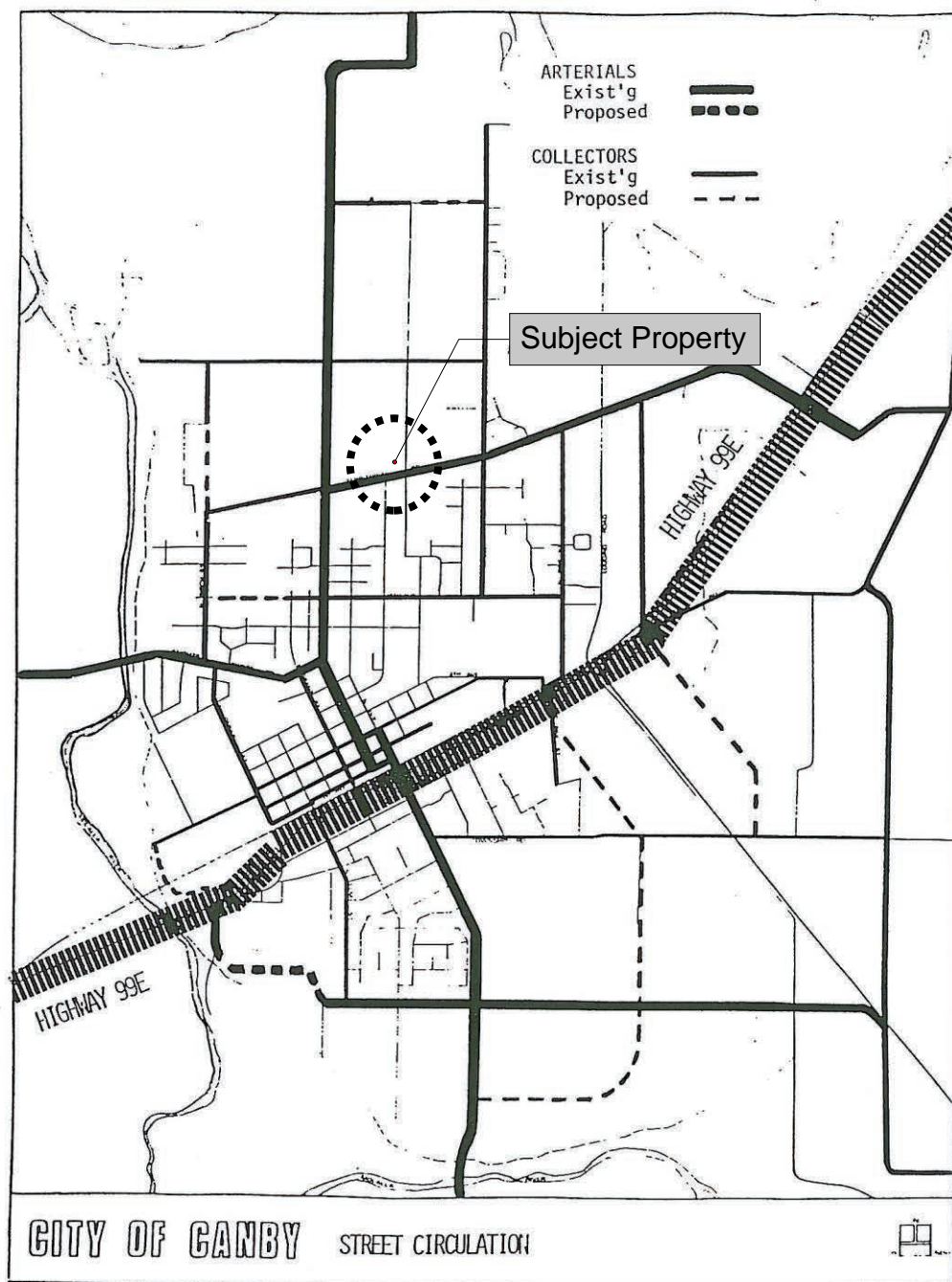


ALLEY
NTS

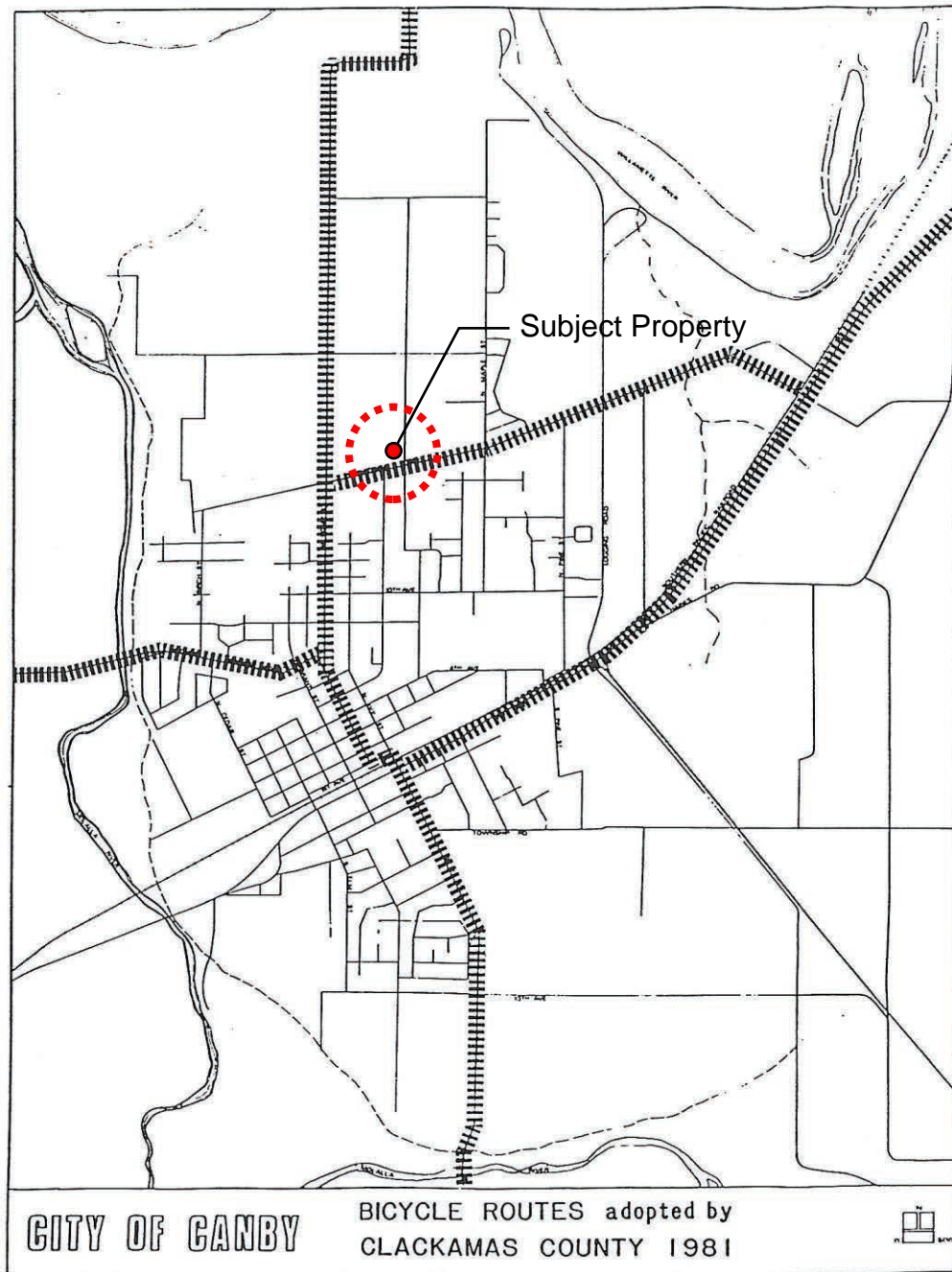


ALLEY
NTS

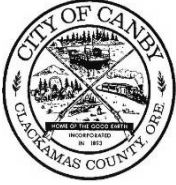




Canby Comprehensive Plan



Canby Comprehensive Plan



City of Canby
Planning Department
222 NE 2nd Avenue
PO Box 930
Canby, OR 97013
(503) 266-7001

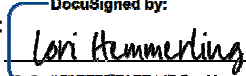
LAND USE APPLICATION

Pre-Application Conference

APPLICANT INFORMATION: (Check ONE box below for designated contact person regarding this application)

☐ Applicant Name: Venture Properties, Inc. Attn: Kelly Ritz Phone: 503.387.7602
Address: 4230 Galewood Street, Suite 100 Email: kelly@ventureprop.com
City/State: Lake Oswego, OR Zip: 97035

☒ Representative Name: Kevin Apperson Phone: 971.334.8964
Address: 9755 SW Barnes Road, Suite 150 Email: kapperson@atwell-group.com
City/State: Portland, Oregon Zip: 97225

☐ Property Owner Name(s)*: Hemmerling Nursery LLC Phone: Lori Hemmerling 503-717-3954
Signature:  DocuSigned by: 8/27/2020 | 10:49 AM PDT
Address: ~~33155 Sanderella Lane~~ 1500 Cooper Street Email: rnparrot@yahoo.com
City/State: ~~Warrenton, OR~~ Seaside, OR Zip: ~~97146~~ 97138

NOTE: Property owners or contract purchasers are required to authorize the filing of this application and must sign above

* All property owners represent they have full legal capacity to and hereby do authorize the filing of this application and certify that the information and exhibits herewith submitted are true and correct.

PROPERTY & PROJECT INFORMATION:

102 NE Territorial Road, Canby Oregon 97013 2.86 Acres T1S R3E Section 28C Tax Lot 00401
Street Address or Location of Subject Property Total Size of Assessor Tax Lot Numbers
8/27/2020 | 10:49 AM PDT Property
A home, barn and a small accessory building R-1 Low Density LDR - Low Density Residential
Existing Use, Structures, Other Improvements on Site Zoning Comp Plan Designation

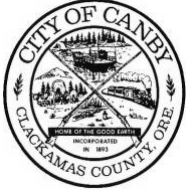
20 Lot Subdivision

Brief description of proposed development or use

Twenty (20) Lot Subdivision - Approval would require a Comprehensive Plan Amendment/ Zone Change application
to change the current zoning from from R-1 (Low Density Residential) to R-1.5 (Medium Density Residential)
and subsequent approvals of a Tentative Subdivision Plat application and Final Plat application.

STAFF USE ONLY

FILE #	DATE RECEIVED	RECEIVED BY	RECEIPT #	DATE APP COMPLETE



City of Canby
Planning Department
222 NE 2nd Avenue
P.O. Box 930
Canby, OR 97013
Ph: 503-266-7001
Fax: 503-266-1574

CHECKLIST

234

PRE-APPLICATION CONFERENCE

All required application submittals detailed below must also be submitted in *electronic format on a CD, flash drive or via email to: PlanningApps@canbyoregon.gov*

Pre-Application Conferences are designed to provide applicants the opportunity to present land use development proposals to City staff prior to the actual land use application process. This advance discussion allows applicants an opportunity to ask questions about the applicable city codes, required permits, hearing and noticing and estimated processing timelines. The Pre-Application Conference also allows City staff an opportunity to review preliminary plans, and to provide comments to applicants regarding the project and design. This feedback early in the planning process can help applicants avoid major plan revisions that are more cumbersome to change after an actual application submittal.

Applicants should keep in mind that, due to the preliminary nature of information discussed during Pre-Application Conferences; City staff reserves the right to determine permitting requirements upon receipt of an official application. Information obtained during a Pre-Application Conference is subject to subsequent changes in the Canby Comprehensive Plan, Canby Municipal Code, and/or any other applicable regulations. A Pre-Application Conference does not “vest” (lock in any fees or development requirements) a project in any way.

Once your pre-application has been submitted, it will be reviewed by the Planning Department. You will be notified of any changes and returned to the Planner for approval. The Office Specialist at Public Works will contact you to set up your pre-application conference. At this conference representatives from the following City departments and public agencies will be in attendance: Public Works, water, telephone, cable, gas, electric, Clackamas County (if needed), Canby Fire District, Oregon Department of Transportation (if needed), Planning, Engineering, and Parks.

Applicant City
Check Check

- ☒ ☐ Submit one copy of your proposed pre-application submittal, addressing the minimum pre- application requirements listed below, to the Planner for review and comments.
- ☒ ☐ Once you have made any needed changes per the Planning Department, submit two (2) paper copies of this application packet to the Planning Department
- ☒ ☐ Submit an electronic copy of the complete application packet to the Planning Department
- ☒ ☐ Payment of appropriate fees – cash or check only. Refer to the city’s Master Fee Schedule.
\$720.00 for Type III or IV application
- ☒ ☐ Narrative – A detailed narrative description of your proposal and any specific questions you want the City to respond to at the Pre-Application Conference.

☒ ☐ Site/Plot Plan drawn to scale showing:

- ☐ Property lines (legal lot of record boundaries)
- ☐ Lot area
- ☐ Impervious surface area
- ☐ Location and size of all proposed hardscape, including driveways, parking lots, compact cars and handicapped spaces, loading areas, bicycle paths, bicycle parking, sidewalks, and pedestrian ways
- ☐ Location, size, & heights of existing and proposed structures
- ☐ Proposed elevations
- ☐ Distances between structures and other significant features, including property lines, yards and setbacks, building area,
- ☐ Layout of all proposed structures, such as buildings, fences, signs, solid waste collection containers, mailboxes, exterior storage areas, and exterior mechanical and utility equipment
- ☐ Significant tree locations (all trees over 6 inches)
- ☐ Location and dimensions of easements
- ☐ Location of utilities – storm, sanitary sewers and water (including size of service and street location)
- ☐ Location, width, and names of all existing or planned streets, other public ways, and easements within or adjacent to the property, and other important features
- ☐ Existing and proposed driveway widths
- ☐ Location of any forested/wetland area, water bodies, or other significant natural features
- ☐ Location of and distance to fire hydrant(s)
- ☐ Location and profile drawings of all proposed exterior signage

☐ ☐ Slope map (if area is over 25% slope)

Nonresidential Projects Wastewater Information

***Businesses are required to complete an Environmental Survey from the City of Canby Public Works Department prior to receiving a business license.*

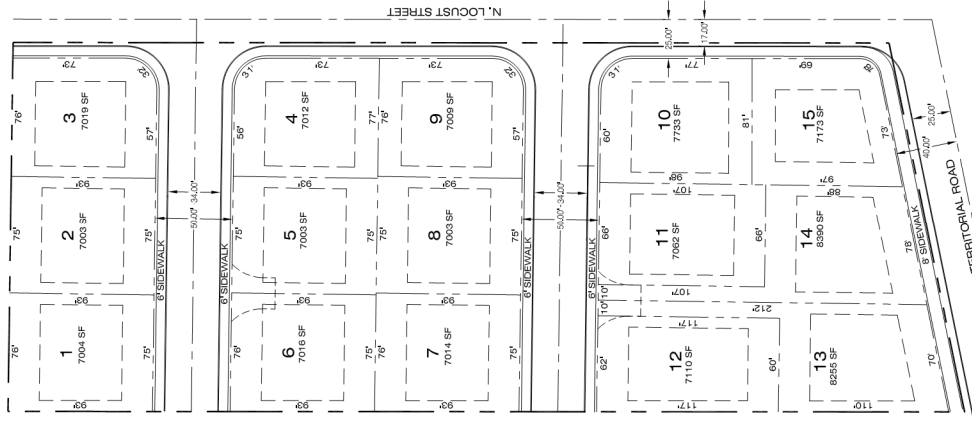
Do you plan on discharging anything other than domestic waste? ☐ Yes ☒ No

Will you be discharging any wastes that were produced during an industrial process or the manufacturing of a product? ☐ Yes ☒ No

Are you proposed to have floor drains that will be connected to sanitary sewer? ☐ Yes ☒ No

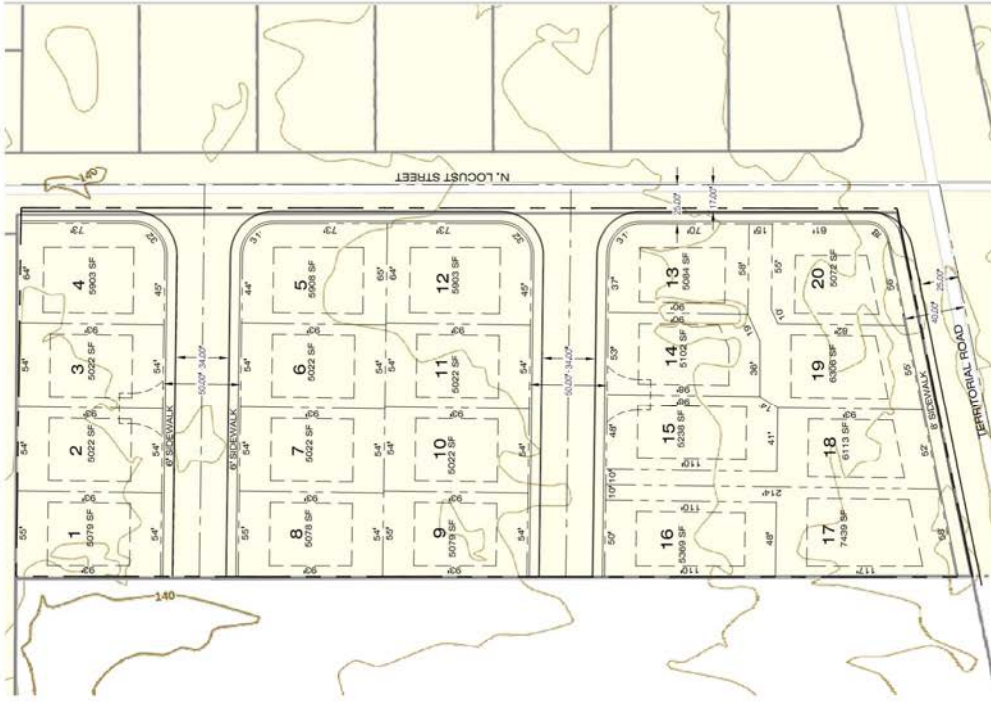
TERRITORIAL ROAD

A 15-20 LOT SUBDIVISION ON TAX LOT 401, TAX MAP 13E 28C
102 NE TERRITORIAL ROAD., CANBY, OREGON



(R-1) SETBACK REQUIREMENTS

FRONT PORCH: 10 FT.
STREET SIDE YARD - WITH DRIVEWAY: 20 FT.
STREET SIDE YARD - OTHER: 15 FT.
INTERIOR SIDE YARD: 7 FT.
REAR BUILDING - CORNER - 1STORY: 10 FT., - 1STORY, 15 FT., 2 STORY
REAR BUILDING - OTHER: 15 FT., - 1STORY, 20 FT., 2 STORY



(R-1.5) SETBACK REQUIREMENTS

FRONT PORCH: 10 FT.
STREET SIDE YARD - WITH DRIVEWAY: 20 FT.
STREET SIDE YARD - OTHER: 15 FT.
INTERIOR SIDE YARD: 7 FT.
REAR BUILDING - CORNER - 1STORY: 10 FT., - 1STORY, 15 FT., 2 STORY
REAR BUILDING - OTHER: 15 FT., - 1STORY, 20 FT., 2 STORY

SITE INFORMATION

TAX MAP: 13E 28C
TAX LOT: 401
SITE ADDRESS: 102 NE TERRITORIAL ROAD
SITE SIZE: 3.31 ACRES
ZONING: R-1

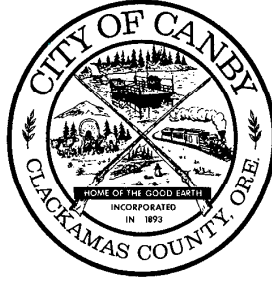
CONCEPT PLAN

CANBY, OREGON

Vert. Scale:
Project No.
Reviewed by
Date
Designed by
Date

By
Revision
Date

Project
No. 236
Type
Sheet P1.0



Pre-Construction Meeting

**102 NE Territorial Road
March 5, 2020**

Attended by:

Hassan Ibrahim, Curran-McLeod Engineering, 503-684-3478
Wayne Hayson, Pioneer Design Group, 503-643-8286
Brent Fitch, Pioneer Design Group, 503-643-8286
Keith Richards, Riverside Homes, 971-470-1153
Joe Keppner, DirectLink, 503-348-6097
Matt English, Canby Fire District, 503-878-0187

Doug Erkson, Canby Utility, 503-263-4331
Matt Sprague, Pioneer Design Group, 503-643-8286
Niki Munson, Riverside Homes, 503-645-0984
Bryan Brown, Planning Department, 503-266-0702
Jeff Peterson, Canby Realty, 503-704-4333
Jim Stuart, Canby Utility, 503-263-4322

This document is for preliminary use only and is not a contractual document.

PIONEER DESIGN GROUP, Matt Sprague

- We have two concept plans in front of you today and one is up-zoning to R-1.5 and has the topo in the background and the other is based on the current zoning, which is R-1. Both scenarios are a standard subdivision and we have limited access to Territorial Road and we have a couple of flag lot scenarios. We would like to explore with the city whether the comprehensive amendment would be required to up-zone and what their thoughts are on that and discuss a standard subdivision based as it sits today.
- We will complete improvements on N Locust Street and NE Territorial Road and there are improvements on both sides opposite the site. We would propose two additional public street extensions into this site for future extensions to the west as needed.

CURRAN-MCLEOD ENGINEERING, Hassan Ibrahim

- As you mentioned Territorial Road is a collector city road as per our Transportation System Plan (TSP) and I think it will require a minimum of 60 ft right-of-way (ROW). If I recall this parcel was a part of the Dodd's property at one point, there was a turn lane required as per the traffic study and what I am saying is we need to make the road wide enough to accommodate that turn lane at some point. Bryan said it means it will need to be a minimum 74 ft ROW when the turn lane is added. It was what we did on S Mulino Road and had those developments add the turn lane and the added ROW will accommodate the 12 ft turn lane. Matt said I showed an over dedication on the plans and the maximum width is 40 ft for the half street, which would have been 80 ft and Hassan said 40 ft would be adequate from centerline ROW. Matt said we could put it down to 37 and Hassan agreed. You will have a bike lane, 6-1/2 ft median, 11 ft lane and I am talking about half-street and I came up with 23 ft half-street from centerline to face of curb. You will also have 5 ft planter strip and 6 ft sidewalk and Bryan said if you have the room we would like a wider planter strip. Hassan said 37 ft would be adequate to accomplish what we are asking. Matt asked how

large of a planter strip do you want and Bryan said we do not need an 8 ft sidewalk you can do 6 ft and have the planter strip wider. Hassan said if utilities need to be extended along Territorial Road you will be required to do so like street lights, etc.

- Locust Street is a county road and the city does not own it yet and you will have to work with the county on it, but it is classified as a local street. Matt said we were looking at the comments we received from the county and I thought they made a mistake because they wrote the minimum width for a collector road is 54 and I figured they meant it to be a local road and Hassan agreed. Hassan said the two local street will also be local streets and you need to provide a minimum 50 ft and it will be a 34 ft paved wide street curb to curb and you will need to provide a 5 ft planter strip and a 6 ft sidewalk. Part of the 6 ft sidewalk can be in the 12 ft Public Utility Easement (PUE) and it does not have to be within the public ROW. However, if a utility needs a larger vault at some point you may have to give them more PUE and Bryan said you will have about 3 ft of sidewalk in the PUE. This can have an impact on your house planning on the lot because we have a requirement of 19 ft outside of the garage door to the inside edge of the sidewalk. Hassan said I do not know how long your streets are and you might need a temporary turn-around at the end of each street, but I will let Matt discuss his requirements. Matt said he did not bring that map with us today and we have put in some interim turn-around locations, for example, there would be one between lots 11 and 12 where there is a double flag lot and we will show the temporary turn-arounds on our preliminary plans. Matt English asked what type of material are you talking about and Matt said they would be paved unless you want it graveled and Matt said no, paving would be fine. Hassan said if they are outside the limits of the subdivision you will need a temporary easement. When you design those stubbed streets anywhere outside the boundary of the subdivision or the site you need to show us 200 ft minimum design so we meet the grades in the future.
- We will need to have signing plans, showing street names and sign placements and you can work with Jerry, Operations Supervisor for the Public Works Department and the city makes the signs. Jerry said when you contract with the company who you have doing your excavating, leave out the signage section and work directly with the city.
- In the planter strips, we require street trees and you might want to show the location of the driveway because you are paying per tree and this could minimize the number of trees. We have an ordinance where you pay a fee of \$250 per tree and the city plants the trees and will maintain them for two years and after that, it would be the responsibility of the homeowner to maintain. Niki said there will be no bond, we just pay you a maintenance fee of \$250 per tree. Jerry said if you submit a landscape plan showing the placement of the street trees could save you a lot of money because there are a lot of places trees cannot go like near water meters, sewer laterals and Bryan can tell you more during his turn.
- Are there any water wells or septic tanks and the answer was yes. Hassan said you will need to decommission them accordingly to Water Resources and Clackamas County and you will also need to supply a letter showing the decommissioning/abandonment of the septic and water to the City Of Canby and Canby Utility for the water well only. Niki said we would do that during development and Hassan said correct.
- If any structures are needing to be demolished you will need a demo permit.
- There is sanitary sewer on both Territorial Road and N Locust Street and you will be coming off of N Locust Street.

- As far as the individual lots the stormwater stays on site and does not come out onto our public street. Jerry said Clackamas County has several different drawings on ways to dispose of stormwater on site and I can email them to you. Hassan said for the public streets you can do a drywell and Jerry said what we have been doing lately for county roads in the city, is having it built to city standards and I will supply a letter to the county referring to our standards. We have been placing the drywells in the subdivisions and pipe all the stormwater from the basins to the drywells. Brent asked how deep are the drywells and Jerry said 26 ft deep and we just updated our Public Works Standards and Designs and they are located on the city's website. We want to be involved when the drywells are going in and we are flexible on the materials because sometimes it is hard to get and we want to look at the screens. Hassan said we use curb and gutter now and Brent asked if the testing requirements have changed and Jerry said yes. Brent said we do not have to dig three or four, it was one acre per test pit needed to be dug and if it is at the discharge location it was 26 ft and Hassan said it was half-an-acre per well. Jerry said we have worked with the developers and if you want to dig one to start and get a Geotech involved, test it, Hassan will review it and if we want to pipe to it to save on more drywells we are open to it. Matt asked if we were getting good infiltration here and Jerry said you will have good luck here. The problem you will have is putting in the sewer because there is a lot of sandy soil in this area. Hassan said we can take the run-off from the county street right now into our street as long as you put the pollution control manhole and the drywell in the city street, which is all in the updated design standards. Brent asked about NE Territorial Road and N Locust Street how do you want us to deal with it and Jerry said pipe it back by using a manhole pipe system, sedimentation manhole and connect everything to the drywell somewhere in your subdivision. We prefer the drywells in the middle of the street and Hassan said we go with curb inlets now not with type G-2 catch basins. Jerry said if there is a reason you cannot do a curb inlet we will review it and make changes to a G-2 if you have a legitimate case. Matt asked since you will be taking over N Locust Street in the future how much weight should be given to the comments we received from the Clackamas County today and Hassan said you should because we do not know when it will happen, but we want to build the street to our standards so it is compatible. We want the county to be involved, but ultimately if there is a dispute between us and them, we will resolve it. Jerry said we have already had this conversation with the county on this during discussions of the Dodd Subdivision.
- All the sewer laterals have to have a cleanout in the sidewalk. Jerry said we have the updated designs in our standards by having it reduced to 4 inches and getting it past the utilities and stubbing it up and out of the ground and your excavator will have to TV it after it is done. We have a good detail of it and we are going to a "T-Y" to the main, we have had a lot of problems with the low flow toilets.
- The sanitary sewer main extensions will need the approval from DEQ and Brent asked if we sent you the sewer plans first before DEQ. Hassan said you can do it simultaneously and we usually ever disagree with DEQ and Brent asked if David was doing it and Hassan said it was Randy Bailey and Michael Penney.

CITY OF CANBY, PUBLIC WORKS DEPARTMENT, Jerry Nelzen

- I think we are all up to speed on the storm system and we will work together on it and I like the idea of fewer drywells and more piping, which saves you money and us on the

maintenance and they work great. Brent said as long as we have storm mains and we were thinking of shallowing up the sanitary sewer because of the soil conditions and Hassan said we need to be mindful of how deep we go and not just shallow for the next person to the west of the site. Jerry said Hassan can authorize if you can do native back infill and you might be okay but the project to the north the trench line was 30 ft wide and we do not want anyone getting hurt. Tell your contractor we have had major problems in the sand and if the pipe is pulled apart we will make you dig up the entire line to fix it, we have run into it with one of the new subdivisions going in. Matt said if we are testing we have to dig down to the 26 ft depth is that correct and Hassan said yes. Matt stated just thinking about the logistics of our Geotech to go out there and Jerry said you want to put a drywell in and then test it and it will determine how many you will need and that is what we have been doing. Matt said what stage of the game are you doing that at and Jerry said a lot of the contractors are doing it first thing and Niki asked at development and Jerry said yes, before sewer, streets or anything else you would dig it and get it tested. Hassan said if you want to do a pothole and have your Geotech to see how much infiltration rate getting and Jerry said they mostly over design the storm system and when they start excavating they put one in and we review and then there is a possibility of having the drywells reduced, but it is piped together and all you are doing is removing drywells. Looking at your proposed plans I am thinking of at least two drywells. Jerry asked Hassan if we need them to stub a storm pipe out to the next site so we are not tearing up the new roadway if the other site decides they want to develop and Hassan said yes to the property line. Hassan said we have a Water Pollution Control Facility (WPCF) permit through DEQ and the city is paying for each drywell and if we do not need additional drywells we like to minimize if possible. Jerry said if there is capacity left we would need you to stub out.

- We have a different oil ratio we use in the mix design in our updated standards and you need to put it in your plans.
- Street lighting is done through Canby Utility and Doug will talk about it and I will review it with them.

CANBY FIRE DISTRICT, Matt English

- Chapter 33 of the fire code states hydrants will be installed and working before you do house construction and we are being proactive on that side.
- We are finding that people are parking vehicles on the flag lot access to the point where we cannot get our medic unit into the flag lots. We ran into this situation last night on a cardiac arrest call and anything that is going to be a flag lot we want to have the curbs painted red and signed “no parking” at any time. We have seen if this is done before occupancy the owners understand there is no parking.
- This is a small enough subdivision and I will wait to see how you have placed your fire hydrants. Niki asked how wide is the flag lot and Matt said it was 10 and 10 on each side for a total of 20 ft. Niki asked if that was enough and Matt said the fire access part in the code reads it needs to be 20 ft wide for a 13 ft 6 inch overhead cover. If there is a fire in the back of the house we can pull the engine right in front of the house pull out the ladder and put the fire out rather than standing on the street. Matt said he assumed it is a shared driveway and the answer was yes. Matt said if there is anything planted along the flag lot access, tree wise or anything else it cannot encroach inside as we are running into that periodically.

- We are going to start enforcing the 26 ft wide flag lot driveway access for our trucks and we determine it by the roof peak not by the eaves, so the way the fire code reads 30 ft peak and with our truck means 26 ft wide. It is a newer concept from the 20 ft wide and 13.6 ft height, but it is now changing. Brent said Tualatin Fire has been applying it lately because this lets them get a ladder to the eaves and Matt said we like it to the peak because there can be a 10 ft differential.

CANBY UTILITY, ELECTRIC/WATER, Doug Erkson

- We have a stub across N Locust on the SE corner of NE Territorial Road and we would put in a vault and disperse from there and we will need a little extra space on the corner like 4 x 6 ft. We would head north from there and eventually tie into whatever goes into the backside. Niki said I am used to getting power plans from Portland General Electric (PGE) and if we are dealing with you guys, are we coming up with the plan or do you and Doug said we do the plan and once the subdivision is finalized and we know where the fire hydrants are located and driveways are important especially if we have already placed transformers and boxes. Once this is set our design person, Gary will do a power design and Niki asked if there was a fee associated with that work and Doug said no. Gary will do an estimate and before we start work you will be required to pay half of that estimate and then we will settle up in the end. Doug handed out Canby Utility's requirements for subdivisions and as far as the electrical, Gary will need what is required at the building and also to provide that plan for you I will need all the required electrical needs for the electrical service, schedules and loading, etc. Niki said the fee we pay half of and then settle up with at the end and what would that cost be and Doug said we do the design for the entire subdivision, install the conduit, boxes, transformers, conductors, everything up to the permanent. Niki said can you put a number to this and Jim said we will not be able to tell you until we have a design. Keith said there are times where we can estimate \$2,500 to \$3,500 per lot for franchise utilities and Jim said I think you will find here in Canby it is running from \$3,500 to \$3,700. Hassan said the developer provides the staking, grades, trench lines and backfill and Niki said it is like PGE and I know what PGE charges for their work, I just do not know what you will be charging for your work.
- A question was asked about the street lighting and Hassan said Canby Utility will design it, you dig the hole and they will install the street light with the conduit. Jim said that goes along with the excavation they are required to do all the excavation and backfill and we provide the material and labor. Brent asked how much scheduled time do you need because there are times when light poles are not available and Doug said sometimes that can happen. Jim said we would like to get the design completed as soon as possible and the city has to approve the street light plan as well, once that is approved and you have paid your half of the estimate we can get the materials ordered because there can be backorders. Keith asked if they had any concerns about putting street lights under power lines and Jim said no, we put the street poles in accordance with the rules and test them appropriately. Jerry said we have a list of trees you can place under the power lines also. Matt asked how much time do you want from the contractor before the start of the work and Jim said we need at least two weeks before the start of the work to get on the schedule. A question was asked when they planned on starting work and the answer was the summer of 2021t.

- A question was asked if they installed the main lines and Doug said we do the main lines, primary, secondary and all services up to the house and if you look at the sheet you are responsible for the meter base and 3 ft into the ground with a 24 inch radius at the bottom. When you do the foundation have it aimed towards the secondary box so we do not have to do an extra 90.
- Water. N Locust Street has an 8 inch PVC water main and we will have to tap off of it and bring those lines down to feed those two feeder streets. At the end of those streets since we do not know when the other side of the site will develop they will require an automatic flushing station and we have all of our specifications and standards on our website, as well as our water specifications. Jim said some of it may be a little difficult to find until you are familiar with our website and if you have any issue do not hesitate to contact us. Jerry said you will need to work with Doug and me on the auto-flushing stations because that is why we want the pipe extending out of the drywells is for you to dump the water into. This flushing station will have an air gap and a gravity line and this water has to go somewhere and we prefer it into the storm system. Brent said it would be a gooseneck and drops and collects and Doug said it will be a hydro-guard 4 and we require them. Brent asked if there were any issues with the chlorination discharge and Doug said this unit will have a dechlorination unit and we will set them up for once a month discharge at 2 or 3 in the morning. Jim said we maintain them.
- All the water mains and lines up to the meter base you do and Jim said under our inspection you will have to pay for our inspector to be out at the site during all water pipe construction. Doug said all material needs to be domestic-made and Jim said we have to inspect all the materials before installation. Send your material sheets to us ahead of time so we do not have any conflicts. Matt asked what size is the water main in NE Territorial Road and Jim said it is a 10 inch ductile iron water main.
- The placement of all water meters will be 18 inches behind the planter strip and at the flag lot turn-around we do not want to see the water meter boxes in the wings, we have had issues with the fire trucks turnarounds. You will find all of our standards and specifications on our website. A representative said since the roadway width requirement is 20 ft for the turnaround it will eat up some of the space and I imagine we have some meter boxes set off in someone else's front yard and Doug said they can be close but in the PUE. The representative asked if there were easement requirements and Jim said it has to be in the PUE. Doug asked Matt if the site plan showing lots 19 and 20 as flag lots the width of the driveway is only 15 ft, is that a problem because my concern is with the water. If you go with this concept plan you will need to be in the ROW and you will be responsible for everything back of the meter.
- Driveways positions are important for us and when you flop the house it changes our point of contact and this can be especially difficult with both electric and water services.
- Niki asked who do we pay for the franchise fees and Jim said for all the electric and water fees they will be paid to Canby Utility. As far as the System Development Charges (SDC) for the build-out of the water system, you are designing and building it, the only thing you will pay for is our water inspector's time, which is quite a bit. Now, when each service develops there is an SDC charge for them and Niki asked if they were on line and Jim said yes. We also want you to send the water plans to Matt English for him to preview them for the placement of all the fire hydrants.

CANBY UTILITY, Jim Stuart

- As far as the electric goes we do things a little differently in Canby and we do a complete estimate for you and the estimate includes all of the infrastructure built out up to the secondary boxes. Once someone develops that piece of property they will be charged an installation fee just for the service box to the house, which has to meet the standards. Gary Stockwell does our electrical design and you will be in touch with him once the design is set with no further changes. All fees will be paid at our office at SE 3rd Avenue & S Pine Street address and if you need a temporary power service you will also go to our main office. The fee for the temp service is \$250.00 and is good for six months.
- Just a reminder that the mains in the side streets have to be a minimum of 8 inch ductile iron.

DIRECTLINK, Joe Keppner

- We provide the internet and TV and we do not charge any sort of development fee, we do ask for you to provide 4 inch road crossings. Other than that give us the open trench and we will provide the material, labor and we do have a duct run on the west side of N Locust and we will be asking you to protect in place during construction because of the road widening. It was asked how deep the utility was and Joe said at least 30 inches and is at least 2-4 inches.
- We will try to follow power as much as possible and on this one, we might have to go north of your property, 250 ft to make our connection to our maintenance vault, but if we can do it to the south on lot 20 we will.

CITY OF CANBY, PLANNING DEPARTMENT, Bryan Brown

- The street tree fee cost is \$250.00 per tree and the code reads if you do not do a street tree plan, we will charge you the \$250.00 per tree based upon 30 lineal feet of street frontage, in or adjacent to your subdivision. You will come out much better if you do a street tree plan and the idea is to plan the best you can and we know at times they flip driveway location, stay away from intersections, street lights, underground utility connections where meters are and sewer laterals, fire hydrants and that is in our ordinance in placing street trees to avoid these issues. Matt asked if you want that street tree plan by the meeting time for the planning commission and Bryan said we generally get it with the construction drawings and then we will know how much to charge you per tree. Jerry usually lets you have a choice sometimes on the street trees and Jerry said he does and are you going to build the houses yourself and the answer was yes. Bryan said if you have a concept of what you would like the trees to look like then share it with us and it has to be a tree on our master street tree list on our website or we can send it to you. It was asked when they wanted the trees in, either during development or with the house construction and Bryan said the city is going to plant them because you will be paying for the fee and the city will maintain the tree for two years and then after that it is the property owner's responsibility to keep the trees alive. Jerry said we will work with you, but if we can get them in before the homeowner's move in works better. Also, if you can keep the concrete trucks from using the planter strip as their personal washout work best for healthy trees.
- Since you have the two layouts for the subdivision and they look okay, I am still a little confused by the flag lots and it almost sounded like if your house is going to have a 30 ft roof and Matt is wanting a 26 ft rather than a 20 ft wide driveway. Matt said I looked it up on our

fire code and it reads overall height not eve line or anything like that. The thing is with access back there on flag lots at the 100 or so feet and bringing our truck is okay, but we are trying to start fixing the driveway widths for 26 ft on the new subdivisions for the newer fire trucks. Bryan said you back out your truck and Matt said yes. Bryan said the problem for us is we are not matching with your fire code because you are talking about having the flag lot driveways wider and our ordinance now does not support it. We may have to change it in our codes because everyone will be doing it wrong. After all, it is not in our code and Matt said he talked to Joe Lindsey about this and we were going to set this up so we adopt both the newest code for 2019. In our current code, we have right now it states anything from 1996 to current in the language, but it needs to be extrapolated or explained and I want to make it easy and we are both on the same Oregon Fire Code. Bryan said how did that pertain to the driveway over onto Locust only being 15 ft wide because this one does not work. Matt said it needs to be 20 or 26 depending on the building. Niki said unless we use fire sprinklers and Matt said we could discuss it. Jim stated that it would change the size of the water meters and SDC fees.

- You asked a question on what it would take for changing the zone to R-1.5, you have to do a comprehensive plan and it does complicate and increases the length of time because it goes onto the city council for approval. The comprehensive plan is for low-density residential and it corresponds with the R-1 zone right now, so you would be changing it to a medium-density designation on the comprehensive plan if you do that, we do not have any opposition to you attempting to do it. You might get a little push-back from surrounding property owners, do not know for certain, but we are more concerned with various types of housing, but the advantage of you rezoning to R-1.5 is we get more affordable housing and that is what you would be emphasizing in the application. It makes logical sense since streets make a good dividing line and someone can argue that N Locust should be the dividing line where we have R-1.5 higher density to the east and this whole area should be low density and someone might argue that. It was asked if there were any criteria for this and Bryan said yes there is and we can talk about it in more detail and we can send it to you, but they are very broad. It will add an extra month to our two-month review time. The question I have is are you conceivably wanting to submit the comprehensive plan/rezoning and a subdivision concurrently or the better thing would be to try to go through if you decide to rezone and do the comprehensive plan amendment. If you are successful then you can bring in your application for the subdivision and rezone together. Niki said we would want to do it concurrently because we think we would not make the summer 2021 construction season and again we have not worked with you guys before or it has been a long time and I do not know your review timeline for your construction drawings and planning approval. Bryan said if you are not trying to do the construction this summer you will not have any problems doing them separately. It takes two months to do a comprehensive amendment to see if you get it or not and then if you do you come back with your re-zoning and subdivision application. Niki said I assume people do not look at construction plans until after the land use has been approved and the answer was yes.
- Matt asked from the moment the application for a comprehensive amendment plan is deemed complete, so would you recommend the comprehensive plan and the zone change be done concurrently and a subdivision separately? Bryan said you could do it and Matt said if you get denied one you would be denied on the other and Bryan said that makes sense. Matt said

once you deem a comprehensive plan and change zone complete, how long before we can get to the planning commission? Bryan said once we declare it complete in 45 days you can have your initial public hearing in less than a month later and after that, you would have your council hearing. Just to recap you would have a little less than two months plus up to a 30 day completeness period. Niki asked if the subdivision application is a staff decision or does it go to the planning commission and Bryan said it goes to the planning commission and a rezoning stops at a planning commission as well, but you can certainly take it together. It is understood when you are doing the comprehensive plan and changing to the medium density residential designation that you end up with an R-1.5 zone, they will know that.

- When you are doing a comprehensive plan you will need to do a transportation plan rule analysis, traffic study and they are not that complicated. We have a traffic engineering firm, you provide us with a deposit, they will do a scope of work, tell you how much it will cost and then do a traffic plan analysis for you. There is going to be traffic study, but I think the traffic study will only be a traffic generation letter because we are going to go off the N Holly Concept Plan Traffic Study and it talked about having the left turn bay at Territorial and N Locust Street. We have the traffic study that was completed for 82 lot Dodd subdivision, which is just north of you and it will be at the planning commission on March 9th. You can go off of those traffic studies to keep from having to do a full blown traffic study, but we still want to have a traffic generation letter from this point. A representative asked who is supposed to install the left-hand turn pocket on NE Territorial Road, the Dodd subdivision, what are your thoughts? Bryan said the actual left turn lane into Territorial Road would not be needed towards the complete development of the entire N Holly Concept Plan area, which is twice as many lots as what is going in there. We just need to get the property ROW width so it can be accomplished in the future, this is why we do not need a study because this would not be enough lots to trigger the left turn lane and Dodd's was not enough.
- On your proposed map here you have setbacks listed and the second one reads front building and I do not know what that is and reads 15 ft and it is not correct. All the other setbacks are correct you have listed and the street side of the driveway is what we think of as a front building setback and Matt said that was what he was trying to indicate and it looks like I have it listed twice just different verbiage. Niki asked if the house can be in front or is it a straight front line setback, do you allow a house forward if the garage is back. Bryan said you are asking about residential design standards and you have to realize we do talk about the width of the garage compared to the rest of the facade of the house and how far it can be in front of the garage, but there are limitations. You will have to look at those before designing your houses and Keith asked can the front porch stick out a little bit further in the front and Bryan said that is what we prefer is to have part of the house in front of the garage.
- Wayne asked about the neighborhood meeting and Bryan said you will have to do a neighborhood meeting and of course, if you do them concurrently it is just one neighborhood meeting, so the neighbors have an opportunity to know about is happening before you make your land use application. You will need to take the minutes, write down the questions they ask and turn it into us, we usually do not attend these meetings. It is up to you to send out the mailing notices to a 500 ft radius and it will be the same list of names and addresses you will give us for the land use application notice we will send out to the same people again. You should send it out two weeks in advance when your meeting is going to be and it is a part of

the completeness of your land use application. Wayne asked if we had a neighborhood meeting packet on-line and Bryan said no and you will need to contact Laney at our office and she has some knowledge of locations used by other developers in the past. The Methodist church at the corner of N Holly and Territorial Road is a place where they have had neighborhood meetings before.

- A representative asked about the front street is 20 ft on the side with driveway and the 20 ft is for the garage and the house? Bryan said some people were confused about that and any part of a building has a 20 ft setback from the ROW and the representative said except a porch, which is 10 ft and Bryan said yes. A representative asked where do you measure the 20 ft from the ROW or property line and Bryan said it is always the property line, except for the garage facing. If you have a garage because we assume you want to park outside of your garage it would be illegal for the vehicle to be over the sidewalk.
- We are having some problems with the fence regulations on street side yards you cannot put a 6 ft tall fence along the public streets. They can only be 3-1/2 ft tall until you get behind the required street yards, which are 20 ft from the driveway and 15 ft on the other. If you want to fence the yard you have to be 15 ft back for a 6 ft tall fence and the representative stated on all the side yards along N Locust Street we will have to have 3-1/2 ft fences unless we move them back. Niki said for these homes we would leave those side yards open and start fencing at the rear corner and just fence in the rear backyard.



DAN JOHNSON
DIRECTOR

DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

DEVELOPMENT SERVICES BUILDING

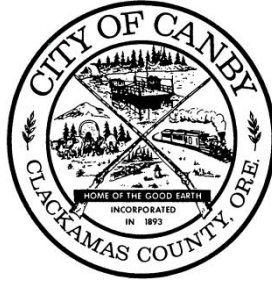
150 BEAVERCREEK ROAD OREGON CITY, OR 97045

TO: City of Canby Planning
FROM: Kenneth Kent, Clackamas County Engineering
DATE: March 5, 2020
RE: Pre-Application – 15-20-Lot Subdivision, 102 NE Territorial Road
31E28C 00401

This office has the following comments pertaining to this proposal:

1. The project site fronts on the west side of N Locust Street, which is under the jurisdiction of Clackamas County. Submittal of plans and issuance of a Development Permit from Clackamas County for access and frontage improvements on N Locust Street will be required.
2. N Locust Street is classified as a local roadway by Clackamas County. The minimum right-of-way width for a collector roadway is 54 feet. The applicant will be required to dedicate additional right-of-way along the entire site frontage as necessary to provide a minimum 27-foot one half right-of-way width from the right-of-way centerline. It appears a 7-foot wide dedication will be required
3. An 8-foot wide public easement for sign, slope and public utilities will be required along the entire frontage of N Locust Street.
4. The applicant will be required to design and construct improvements along the entire site frontage of N Locust Street to local roadway standards, per Clackamas County Roadway Standards, Standard Drawing C110. These improvements shall consist of:
 - a. Up to a one half-street improvement with a minimum paved width of 16 feet from the centerline of the right-of-way. The structural section shall be designed and constructed per Standard Drawing C100 for a local roadway.
 - b. Inbound and outbound tapers shall be provided per Section 250.6.4 of the Clackamas County Roadway Standards.
 - c. Standard curb, or curb and gutter if curblane slope is less than one percent, with the curb face located 16 feet from the centerline of the right-of-way.
 - d. A 5-foot wide sidewalk behind a 5-foot wide landscape strip, including street trees shall be constructed along the entire site frontage. Where the sidewalk does not connect to

- sidewalk on adjacent property, the end of the sidewalk requires and ADA compliant curb ramp, providing a transition from the new sidewalk to the edge of pavement.
- e. Dual Curb ramps shall be provide at the proposed intersection with N Locust Street, constructed per ODOT Standard Drawings.
 - f. Storm drainage facilities in conformance with *Clackamas County Roadway Standards* Chapter 4.
 - g. Utility Placement Permit shall be required for any utility work required within the right-of-way of N Locust Street.



Pre-Application Meeting

Hemmerling Property September 23, 2020

Attended by:

Hassan Ibrahim, Curran-McLeod Engineering, 503-684-3478
Doug Erkson, Canby Utility, 503-263-4331
Erik Forsell, Planning, 503-266-0723

Hal Keever, Venture Properties,
Kelly Ritz, Venture Properties, 503-387-7602
Kevin Apperson, Atwell Group, 971-334-8964

This document is for preliminary use only and is not a contractual document.

Applicants

- Hal Keever--We intend to use the same layout as the previous application with minor modifications. We prefer to have 20 lots rather than 15 which will instigate the Comprehensive Plan amendment and zone change to R-1.5. We would like to know the timeframe for that process.
- Kelly Ritz--We have heard there is a fire truck width requirement for the flag lots. It might be something we need to take a look at for the layout.

CITY OF CANBY, PLANNING DEPARTMENT, Erik Forsell

- The zone change will require a Comprehensive Plan amendment. This is not a fast process because we are bound by state law regarding noticing requirements. At bare minimum it will require a hearing with the Planning Commission and a hearing with the City Council with a first and second reading of an ordinance. In most cases it is preferable to do that process separately from the development proposal.

Applicant

- Mr. Keever said in an effort to expedite the additional five lots, we can run the scenarios parallel and have a fall back plan for 15 lots if the zone change doesn't go through. What is the City's take on up-zoning this parcel for an additional five lots?

CITY OF CANBY, PLANNING DEPARTMENT, Erik Forsell

- Up-zoning is better as downzoning would be a bigger hurdle. It is a relatively small increase and it might not be a big issue. Comprehensive Plan amendments are unusual in that applicants have to address the Statewide Planning Goals, which will sometimes apply and sometimes not. When addressing these goals, it is better to be thorough than to assume they don't apply at all. The more information that is objective and reasonable for staff to make findings for the staff report is better.

Applicant

- Mr. Keever said our approach is to write the findings so the City has all of the information they need to write the staff report.

CITY OF CANBY, PLANNING DEPARTMENT, Erik Forsell

- I anticipate the applicant will need to do a traffic impact analysis.

CURRAN-MCLEOD ENGINEERING, Hassan Ibrahim

- There was an analysis with the initial submittal. I don't know if the applicant needs to do another.

CITY OF CANBY, PLANNING DEPARTMENT, Erik Forsell

- The Statewide Planning Goals ask specific questions about transportation impacts. It might be worth doing a basic analysis using the data that has already been done to see if there are any significant changes. Both the Planning Commission and City Council are cautious and not always on board with the methodology of transportation engineering. It will help your case if you have an updated analysis that says things are not going to change much and there will not be impacts to intersections that were already analyzed. It will also directly address the Statewide Planning Goals that apply to transportation.
- There is a 35 day notice period to DLCD. It is a wrote process and it is uncommon that they comment. Concurrently we will schedule out a Planning Commission time and date certain. This is assuming the applicant provides a complete application. Realistically it will take 75 days at the minimum. I just processed a land use application for a subdivision, zone change, and annexation concurrently and it went pretty well. Canby is smaller than other jurisdictions and not quite as involved with interest groups that get into your procedures. I think you can do them concurrently, but there is a risk to it.
- Regarding the fire lane width and the flag lots, it is what the Fire Code says and it should be the standard the City should be working towards, but it doesn't say that in our zoning ordinance currently. I don't think we can require the applicant to do something that is not in our code. However, as a condition of approval, the applicant could offer the enhanced widths for the flag lot access.

CURRAN-MCLEOD ENGINEERING, Hassan Ibrahim

- There are other alternatives, such as a fire hydrant within a 500 foot reach or they can sprinkle the houses.

CITY OF CANBY, PLANNING DEPARTMENT, Erik Forsell

- The Fire Department was referring to roof height of the structure and the width of the access. It boils down to the ladder truck being able to get in there and put the ladders out to reach the eaves of a taller house. It is not in the code to have a 24 foot wide flag lot access. What is required is 20 feet.

CURRAN-MCLEOD ENGINEERING, Hassan Ibrahim

- This came up recently. It used to be a paved surface of 15 feet accessible with no obstructions and 20 foot wide unobstructed access.

CITY OF CANBY, PLANNING DEPARTMENT, Erik Forsell

- It is something we can work on together to get a clear path forward. I don't see any issues in the prior submitted plan. I understand the reason for the flag lots in this instance because you have no access onto Territorial. The notes capture the other development aspects pretty well. I assume those have not changed. At this juncture, I can answer any planning related questions.

Applicant

- Kevin Apperson asked, what are the neighborhood meeting requirements.

CITY OF CANBY, PLANNING DEPARTMENT, Erik Forsell

- COVID-19 has made it a little bit dicey. At this point we would like to see something similar to the way we notice our public hearings. A Zoom invite to the neighbors according to distance will suffice because the places where neighborhood meetings have been held are not open. The applicant will need to provide us a list of the people who received notice. We would also like to see a phone number contact to field any questions as they come up. He will let the applicant know in writing what we are expecting for a neighborhood meeting.

CURRAN-MCLEOD ENGINEERING, Hassan Ibrahim

- The comments are pretty clear. Are there any questions for me?

Applicant

- Ms. Ritz asked how they handle dry wells and stormwater in Canby.

CURRAN-MCLEOD ENGINEERING, Hassan Ibrahim

- The applicant will be dealing with the County on Locust Street and they do not allow dry wells. The City is willing to take the roadway runoff from the County and direct it to the site with a dry well on site. They do not have to do anything for public stormwater if they use a dry well. On the lots themselves it has to be injected on site such as using rain gardens or an infiltration trench to dispose of the rainwater and roof drainage for each lot. You should call Jerry Nelzen from the City about what is acceptable to the County. Are you going to change the street configuration? There is a master plan for this area and the other side of the roadways need to meet when they are eventually extended.

Applicant

- Ms. Ritz said the only question is the access to the four flag lots, but we will not be changing the road configuration.
- Mr. Keever asked if Canby is transitioning to electronic submittals for the planning documents and CDs.

CITY OF CANBY, PLANNING DEPARTMENT, Erik Forsell

- Yes, we will take any electronic submittals. Some of it needs to be on paper, such as the bigger plan sets for utilities, grading, streets, etc.

Applicant

- Mr. Keever asked about staff's review process.

CURRAN-MCLEOD ENGINEERING, Hassan Ibrahim

- After the plans are turned in, staff reviews them in 2-3 weeks and a pre-construction meeting is scheduled. He will go over the plans with the applicant at that meeting and tell the applicant about any issues. The applicant makes the corrections and there is a second meeting and if everything is addressed correctly, the applicant submits a set of plans to the City shops and all of the utility providers will sign off.

CANBY UTILITY, ELECTRIC/WATER, Doug Erkson

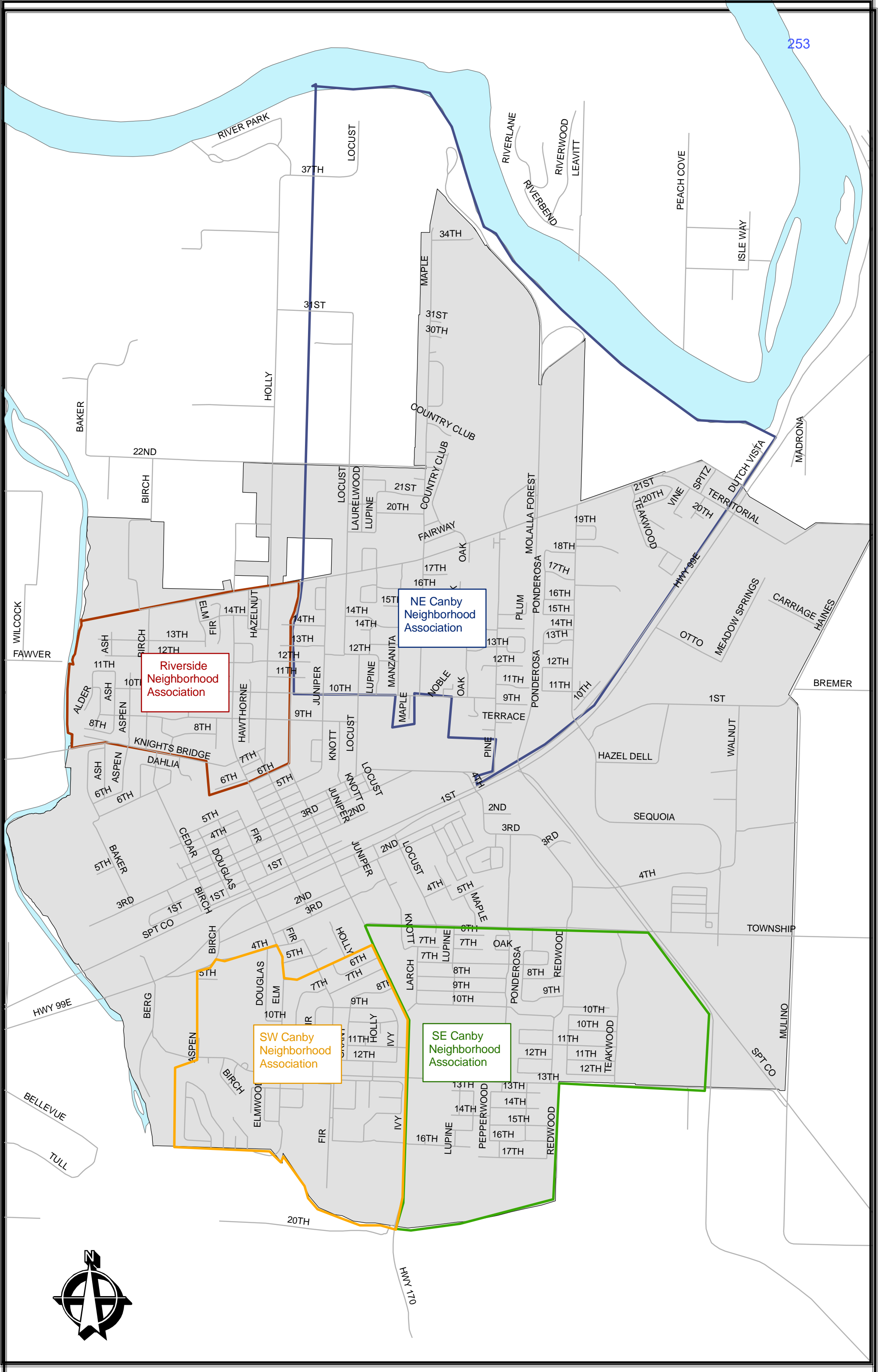
- For the transmission lines, it will be PGE to determine if the lines need to be relocated underground.

CURRAN-MCLEOD ENGINEERING, Hassan Ibrahim

- Usually any overhead power lines need to be underground as part of the development.

Applicant

- Ms. Ritz said she had come to agreements with other jurisdictions that if the fixture count drives a 3/4 inch meter or 5/8 inch meter but they have to put in sprinklers and get a 1 inch, they will still charge for the smaller meter. She thought Canby should consider that policy. She could help staff come up with language for an ordinance.





Lawyers Title

This map/plot is being furnished as an aid in locating the herein described land in relation to adjoining streets, natural boundaries and other land, and is not a survey of the land depicted. Except to the extent a policy of title insurance is expressly modified by endorsement, if any, the company does not insure dimensions, distances, location of easements, acreage or other matters shown thereon.

ParcelId	OwnerNameLabelFormat	SiteAddr	SiteCity	SiteState	SiteZIP
00776226	City Of Canby	2041 N Locust St	Canby	OR	97013
00776235	Ifa Nurseries Inc	136 NE Territorial Rd	Canby	OR	97013
00776262	Lennar Northwest Inc	1882 N Holly St	Canby	OR	97013
00776486	Christopher & Tymona Natelborg	1606 N Juniper St	Canby	OR	97013
00776495	Jeffrey & Pamela Barrow	1578 N Juniper St	Canby	OR	97013
00776501	Dennis & Nancy Moore	1558 N Juniper St	Canby	OR	97013
00776510	Barrow Jeffrey Trustee	1536 N Juniper St	Canby	OR	97013
00776529	Rocky & Susan Amick	1514 N Juniper St	Canby	OR	97013
00776538	Ed Martinez	1502 N Juniper St	Canby	OR	97013
00776547	Mack & Marilyn Bart	1488 N Juniper St	Canby	OR	97013
00776627	John Culpepper	1473 N Locust St	Canby	OR	97013
00776636	Sean & Barbara McVicker	1485 N Locust St	Canby	OR	97013
00776645	Laurel Shufelt	1505 N Locust St	Canby	OR	97013
00776654	Payback N L B Special NE Trust	1517 N Locust St	Canby	OR	97013
00776663	Alan & Gail Ashby	1555 N Locust St	Canby	OR	97013
00776672	Marie Ornelaz	1605 N Locust St	Canby	OR	97013
00776681	John Michael	1613 N Locust St	Canby	OR	97013
00776690	Bates Gary A Trustee	271 NE Territorial Rd	Canby	OR	97013
00776716	Richard Sutter	143 NE Territorial Rd	Canby	OR	97013
01340579	Gregory & Kimberli Theim	1490 N Locust St	Canby	OR	97013
01340588	Nicolle Harold	1510 N Locust St	Canby	OR	97013
01340597	Eric & Rachelle George	1530 N Locust St	Canby	OR	97013
01340604	Beyer Stephen Trustee	1560 N Locust St	Canby	OR	97013
01340613	Rodger & Patricia Busse	1610 N Locust St	Canby	OR	97013
01340622	Victoria Aguilar	1620 N Locust St	Canby	OR	97013
01340631	Mills Rosita B Trustee	323 NE Territorial Rd	Canby	OR	97013
01340640	Barbara McCullough	353 NE Territorial Rd	Canby	OR	97013
01340659	Gary & Tamara Canucci	373 NE Territorial Rd	Canby	OR	97013
01340668	Kathleen McVicker	1691 NE Laurelwood Cir	Canby	OR	97013
01367933	Lam Tran & Tram Ngoc	1501 NE Laurelwood Cir	Canby	OR	97013
01367942	Phillip & Karen Brusse	1505 NE Laurelwood Cir	Canby	OR	97013
01367951	Jimmy & Georgia Newton	1511 NE Laurelwood Cir	Canby	OR	97013
01367960	Ronald & Lois Copenhagen	1515 NE Laurelwood Cir	Canby	OR	97013
01367979	Trachsel Steven L Trustee	1519 NE Laurelwood Cir	Canby	OR	97013
01367988	Reynolds Karen Trustee	1527 NE Laurelwood Cir	Canby	OR	97013
01367997	Eric & Janet Walker	1529 NE Laurelwood Cir	Canby	OR	97013
01368095	Richard & Paula Jean	1510 NE Laurelwood Cir	Canby	OR	97013
01368139	Schmidt Charles I Trustee	1540 NE Laurelwood Cir	Canby	OR	97013
01368148	Shelly & Douglas Kivett	1530 NE Laurelwood Cir	Canby	OR	97013
01460234	Kenneth & Linda Daniels	1840 N Locust St	Canby	OR	97013
01460243	Michael Schmader	1822 N Locust St	Canby	OR	97013
01460252	Nancy Hall	1810 N Locust St	Canby	OR	97013
01460261	Feller Annette C Trustee	1786 N Locust St	Canby	OR	97013
01460270	Name Suppressed	1748 N Locust St	Canby	OR	97013
01460289	Nora Tallman	1736 N Locust St	Canby	OR	97013
01460298	Bryan Stickel	1720 N Locust St	Canby	OR	97013

01460305	Russel & Sandra Crisp	1725 NE Laurelwood Loop	Canby	OR	97013
01460314	Hun & Vansy Chuon	1737 NE Laurelwood Loop	Canby	OR	97013
01460323	Feller Annette C Trustee	1751 NE Laurelwood Loop	Canby	OR	97013
01460332	William Fowler	1785 NE Laurelwood Loop	Canby	OR	97013
01460341	Collins Judy T Trustee	1815 NE Laurelwood Loop	Canby	OR	97013
01460350	Ralph & Anna Crump	1821 NE Laurelwood Loop	Canby	OR	97013
01460369	Richard & Linda Schmidt	1830 NE Laurelwood Loop	Canby	OR	97013
01460378	Delbert Bradford	1832 NE Laurelwood Loop	Canby	OR	97013
01460387	Sheryl Harney & Michael Wheeler	1834 NE Laurelwood Loop	Canby	OR	97013
01460396	Burke Pegeen F Trustee	1836 NE Laurelwood Loop	Canby	OR	97013
01460467	Terry & Joan Walton	1735 NE Laurelwood Loop	Canby	OR	97013
01460476	Thomas & Melody Thompson	1747 NE Laurelwood Loop	Canby	OR	97013
01460485	Lais Beverly J Trustee	1771 NE Laurelwood Loop	Canby	OR	97013
01460494	Carl & Elsie Lawrence	1805 NE Laurelwood Loop	Canby	OR	97013
01460500	Cary Erkenbeck	1803 NE Laurelwood Loop	Canby	OR	97013
01460519	Dorothy & Clayton Trump	1764 NE Laurelwood Loop	Canby	OR	97013
01460528	Melinda Montecucco	1742 NE Laurelwood Loop	Canby	OR	97013
01460537	Emily & Daniel Tucker	1730 NE Laurelwood Loop	Canby	OR	97013
05011468	Terry Turner	1580 N Juniper Pl	Canby	OR	97013
05011469	Robert Belt	1574 N Juniper Pl	Canby	OR	97013
05011470	Larry & Rebecca Baker	1562 N Juniper Pl	Canby	OR	97013
05011471	Jess Richmond	1550 N Juniper Pl	Canby	OR	97013
05011472	Paula & James Shelly	1547 N Juniper Pl	Canby	OR	97013
05011473	Wintermantel Steven L Trustee	1535 N Juniper Pl	Canby	OR	97013
05011474	Gerald & Sharon Stutzman	1523 N Juniper Pl	Canby	OR	97013
05011484	Sean & Karen Kinslow	1516 N Juniper Pl	Canby	OR	97013
05011485	Jason & Sirena Welton	1528 N Juniper Pl	Canby	OR	97013
05011486	James & Cyndale Blake	1565 N Juniper Pl	Canby	OR	97013
05011487	Ables Mary Constance Trustee	1595 N Juniper Pl	Canby	OR	97013
05011851	Beatriz Gomez	309 NE 19th Ave	Canby	OR	97013
05011852	Dusty & Cindy Ross	339 NE 19th Ave	Canby	OR	97013
05011853	Kathleen Hill & Travis James	369 NE 19th Ave	Canby	OR	97013
05011854	Aaron Siewell	389 NE 19th Ave	Canby	OR	97013
05011855	Merriott Robert Trustee	409 NE 19th Ave	Canby	OR	97013
05011856	John & Carol Heidema	439 NE 19th Ave	Canby	OR	97013
05011857	Thomas & Joan Daudistel	469 NE 19th Ave	Canby	OR	97013
05011870	John & Brenda McKeon	1935 N Lupine St	Canby	OR	97013
05011871	Rufino Martinez	460 NE 19th Ave	Canby	OR	97013
05011872	Keith & Anita Starr	430 NE 19th Ave	Canby	OR	97013
05011873	Katrina & Ken Shiroma	410 NE 19th Ave	Canby	OR	97013
05011874	Bray & Heather Carl	360 NE 19th Ave	Canby	OR	97013
05011875	Keenan Booher	320 NE 19th Ave	Canby	OR	97013
05011876	Paul Sheward	310 NE 19th Ave	Canby	OR	97013
05013370	Robert & Bonnie Wakefield	1930 N Locust St	Canby	OR	97013
05013371	Cynthia Braddy	1954 N Locust St	Canby	OR	97013
05013372	David & Joann Beasley	1978 N Locust St	Canby	OR	97013
05013373	Simnitt Jerome A Co-Trustee	1986 N Locust St	Canby	OR	97013

05013374	Josh & Jan Johnson	373 NE 20th Ave	Canby	OR	97013
05013376	Rathmony Sar	1985 N Laurelwood St	Canby	OR	97013
05013377	Christopher Blaschke	1967 N Laurelwood St	Canby	OR	97013
05013378	Rick & Jennifer Ackerman	1933 N Laurelwood St	Canby	OR	97013
05013379	Richard Evans Jr & Lori Evans	1920 N Laurelwood St	Canby	OR	97013
05013380	James Davies	1942 N Laurelwood St	Canby	OR	97013
05013381	Wayne Cooley	1974 N Laurelwood St	Canby	OR	97013

00776226
31E28C 00200
City Of Canby
PO Box 930
Canby OR 97013

00776486
31E28CD00101
Christopher Natelborg
1606 N Juniper St
Canby OR 97013

00776510
31E28CD00104
Jeffrey Barrow
1578 N Juniper St
Canby OR 97013

00776547
31E28CD00107
Mack Bart
1488 N Juniper St
Canby OR 97013

00776645
31E28CD00117
Laurel Shufelt
1505 N Locust St
Canby OR 97013

00776672
31E28CD00121
Marie Ornelaz
1605 N Locust St
Canby OR 97013

00776716
31E28CD01500
Richard Sutter
938 N Baker St
Canby OR 97013

01340597
31E28DC01006
Eric George
1530 N Locust St
Canby OR 97013

01340622
31E28DC01009
Victoria Aguilar
1620 N Locust St
Canby OR 97013

01340659
31E28DC01012
Gary Canucci
373 NE Territorial Rd
Canby OR 97013

00776235
31E28C 00300
Ifa Nurseries Inc
9450 SW Commerce Cir Ste 460
Wilsonville OR 97070

00776495
31E28CD00102
Jeffrey Barrow
1578 N Juniper St
Canby OR 97013

00776529
31E28CD00105
Rocky Amick
1514 N Juniper St
Canby OR 97013

00776627
31E28CD00115
John Culpepper
1473 N Locust St
Canby OR 97013

00776654
31E28CD00118
Payback N L B Special NE Trust
1517 N Locust St
Canby OR 97013

00776681
31E28CD00122
John Michael
1613 N Locust St
Canby OR 97013

01340579
31E28DC01004
Gregory Theim
PO Box 3378
Wilsonville OR 97070

01340604
31E28DC01007
Stephen Beyer
3918 North Hampton Ct
West Linn OR 97068

01340631
31E28DC01010
Rosita Mills
323 NE Territorial Rd
Canby OR 97013

01340668
31E28DC01013
Kathleen Mcvicker
1691 NE Laurelwood Cir
Canby OR 97013

00776262
31E28C 00400
Lennar Northwest Inc
11807 NE 99Th St Ste 1170
Vancouver WA 98682

00776501
31E28CD00103
Dennis Moore
1558 N Juniper St
Canby OR 97013

00776538
31E28CD00106
Ed Martinez
1502 N Juniper St
Canby OR 97013

00776636
31E28CD00116
Sean Mcvicker
1485 N Locust St
Canby OR 97013

00776663
31E28CD00120
Alan Ashby
1555 N Locust St
Canby OR 97013

00776690
31E28CD00123
Gary Bates
271 NE Territorial Rd
Canby OR 97013

01340588
31E28DC01005
Nicolle Harold
1510 N Locust St
Canby OR 97013

01340613
31E28DC01008
Rodger Busse
1610 N Locust St
Canby OR 97013

01340640
31E28DC01011
Barbara Mccullough
353 NE Territorial Rd
Canby OR 97013

01367933
31E28DC01104
Lam Tran
1501 NE Laurelwood Cir
Canby OR 97013

01367942
31E28DC01105
Phillip Brusse
1505 NE Laurelwood Cir
Canby OR 97013

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31E28DC01108
Steven Trachsel
1519 NE Laurelwood Cir
Canby OR 97013

01368095
31E28DC01120
Richard Jean
1510 NE Laurelwood Cir
Canby OR 97013

01460234
31E28DC00901
Kenneth Daniels
1840 N Locust St
Canby OR 97013

01460261
31E28DC00904
Annette Feller
170 Kakahiaka St
Kailua HI 96734

01460298
31E28DC00907
Bryan Stickel
1720 N Locust St
Canby OR 97013

01460323
31E28DC00910
Annette Feller
170 Kakahiaka St
Kailua HI 96734

01460350
31E28DC00913
Ralph Crump
1821 N Laurelwood Loop
Canby OR 97013

01460387
31E28DC00916
Sheryl D Harney
700 NW Territorial Rd
Canby OR 97013

01460476
31E28DC00925
Thomas Thompson
1747 NE Laurelwood Loop
Canby OR 97013

01367951
31E28DC01106
Jimmy Newton
1511 NE Laurelwood Cir
Canby OR 97013

01367988
31E28DC01109
Karen Reynolds
1527 NE Laurelwood Cir
Canby OR 97013

01368139
31E28DC01124
Charles Schmidt
1540 NE Laurelwood Cir
Canby OR 97013

01460243
31E28DC00902
Michael Schmader
1830 N Birch St
Canby OR 97013

01460270
31E28DC00905
Name Suppressed
1748 N Locust St
Canby OR 97013

01460305
31E28DC00908
Russel Crisp
1725 NE Laurelwood Loop
Canby OR 97013

01460332
31E28DC00911
William Fowler
1785 NE Laurelwood Loop
Canby OR 97013

01460369
31E28DC00914
Richard Schmidt
1830 NE Laurelwood Loop
Canby OR 97013

01460396
31E28DC00917
Pegeen Burke
1836 NE Laurelwood Loop
Canby OR 97013

01460485
31E28DC00926
Beverly Lais
1771 NE Laurelwood Loop
Canby OR 97013

01367960
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Ronald Copenhagen
1515 NE Laurelwood Cir
Canby OR 97013

01367997
31E28DC01110
Eric Walker
1529 NE Laurelwood Cir
Canby OR 97013

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31E28DC01125
Shelly Kivett
1530 NE Laurelwood Cir
Canby OR 97013

01460252
31E28DC00903
Nancy Hall
1810 N Locust St
Canby OR 97013

01460289
31E28DC00906
Nora Tallman
2220 NE Country Club Dr
Canby OR 97013

01460314
31E28DC00909
Hun Chuon
1737 N Laurelwood Loop
Canby OR 97013

01460341
31E28DC00912
Judy Collins
2794 Scotts Valley Dr
Henderson NV 89052

01460378
31E28DC00915
Delbert Bradford
1832 NE Laurelwood Loop
Canby OR 97013

01460467
31E28DC00924
Terry Walton
1735 NE Laurelwood Loop
Canby OR 97013

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Carl Lawrence
1805 NE Laurelwood Loop
Canby OR 97013

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Cary Erkenbeck
1803 NE Laurelwood Loop
Canby OR 97013

01460537
31E28DC00931
Emily Tucker
1730 NE Laurelwood Loop
Canby OR 97013

05011470
31E28CD01403
Larry Baker
1562 N Juniper Pl
Canby OR 97013

05011473
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Wintermantel Steven L Trustee
1535 N Juniper Pl
Canby OR 97013

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Jason Welton
1528 N Juniper Pl
Canby OR 97013

05011851
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Beatriz Gomez
309 NE 19Th Ave
Canby OR 97013

05011854
31E28DB00804
Aaron Siewell
389 NE 19Th Ave
Canby OR 97013

05011857
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Thomas Daudistel
469 NE 19Th Ave
Canby OR 97013

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31E28DB00822
Keith Starr
430 NE 19Th Ave
Canby OR 97013

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Keenan Booher
320 NE 19Th Ave
Canby OR 97013

01460519
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Dorothy Trump
1764 NE Laurelwood Loop
Canby OR 97013

05011468
31E28CD01401
Terry Turner
1580 N Juniper Pl
Canby OR 97013

05011471
31E28CD01404
Jess Richmond
1550 N Juniper Pl
Canby OR 97013

05011474
31E28CD01407
Gerald Stutzman
1523 N Juniper Pl
Canby OR 97013

05011486
31E28CD01419
James Blake
1565 N Juniper Pl
Canby OR 97013

05011852
31E28DB00802
Dusty Ross
339 NE 19Th Ave
Canby OR 97013

05011855
31E28DB00805
Robert Merriott
409 NE 19Th Ave
Canby OR 97013

05011870
31E28DB00820
John Mckeon
1935 N Lupine St
Canby OR 97013

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Katrina Shiroma
410 NE 19Th Ave
Canby OR 97013

05011876
31E28DB00826
Paul Sheward
310 NE 19Th Ave
Canby OR 97013

01460528
31E28DC00930
Melinda Montecucco
1742 N Laurelwood Loop
Canby OR 97013

05011469
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Robert Belt
1574 N Juniper Pl
Canby OR 97013

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Paula Shelly
1547 N Juniper Pl
Canby OR 97013

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Sean Kinslow
1516 N Juniper Pl
Canby OR 97013

05011487
31E28CD01420
Mary Ables
1595 N Juniper Pl
Canby OR 97013

05011853
31E28DB00803
Kathleen Hill
369 NE 19Th Ave
Canby OR 97013

05011856
31E28DB00806
John Heidema
439 NE 19Th Ave
Canby OR 97013

05011871
31E28DB00821
Rufino Martinez
460 NE 19Th Ave
Canby OR 97013

05011874
31E28DB00824
Bray Carl
360 NE 19Th Ave
Canby OR 97013

05013370
31E28DB00501
Robert Wakefield
1930 N Locust St
Canby OR 97013

05013371
31E28DB00502
Cynthia Braddy
1954 N Locust St
Canby OR 97013

05013374
31E28DB00505
Josh Johnson
373 NE 20Th Ave
Canby OR 97013

05013378
31E28DB00509
Rick Ackerman
1933 N Laurelwood St
Canby OR 97013

05013381
31E28DB00512
Wayne Cooley
1974 N Laurelwood St
Canby OR 97013

05013372
31E28DB00503
David Beasley
1978 N Locust St
Canby OR 97013

05013376
31E28DB00507
Rathmony Sar
1985 N Laurelwood St
Canby OR 97013

05013379
31E28DB00510
Richard Evans Jr
1920 N Laurelwood St
Canby OR 97013

05013373
31E28DB00504
Simnitt Jerome A Co-Trustee
138 NE 22Nd Ave
Canby OR 97013

05013377
31E28DB00508
Christopher Blaschke
1967 N Laurelwood St
Canby OR 97013

05013380
31E28DB00511
James Davies
1942 N Laurelwood St
Canby OR 97013

Date 12/9/20

ON-LINE NEIGHBORHOOD MEETING ANNOUNCEMENT

Dear Property Owner or Northeast Canby Neighborhood Association Representative,

Atwell, LLC is representing the contract purchaser of the property referenced as T3S R1E Section 28C, Tax Lot 401. See attached Assessors Tax Map for location. The subject property is located northwest corner of NE Territorial Road and North Locust Street.

The Applicant is considering a development proposal consisting of a 20 lot residential subdivision. See attached R-1.5 Zoning conceptual layout. Prior to applying to the City for the necessary land use approvals, we would like to discuss the proposal in more detail with you.

Per the requirements of Canby Municipal Code, Chapter 16.89.070, you are invited to attend an on-line meeting on:

Date: **December 23, 2020**

Time: **6:00pm**

Options for joining the on-line meeting:

1. Enter this URL in your web browser to join the online meeting:

<https://atwell-group.zoom.us/j/95327771598?pwd=WXFiYmZtRUlRa0tGK3BieDB5M1FhQT09>

Meeting ID: 953 2777 1598

Passcode: 4590

2. Dial the Toll-Free Number and Access Code to join the On-Line Meeting at **+1 253 215 8782**

Please note that this will be an informational meeting on preliminary development plans. These plans may be altered prior to submittal of the application to the City.

Please email me at hal.keever@atwell-group.com if you have any questions. We look forward to discussing the proposal with you.

Sincerely,

Hal Keever, Project Manager
Atwell, LLC.

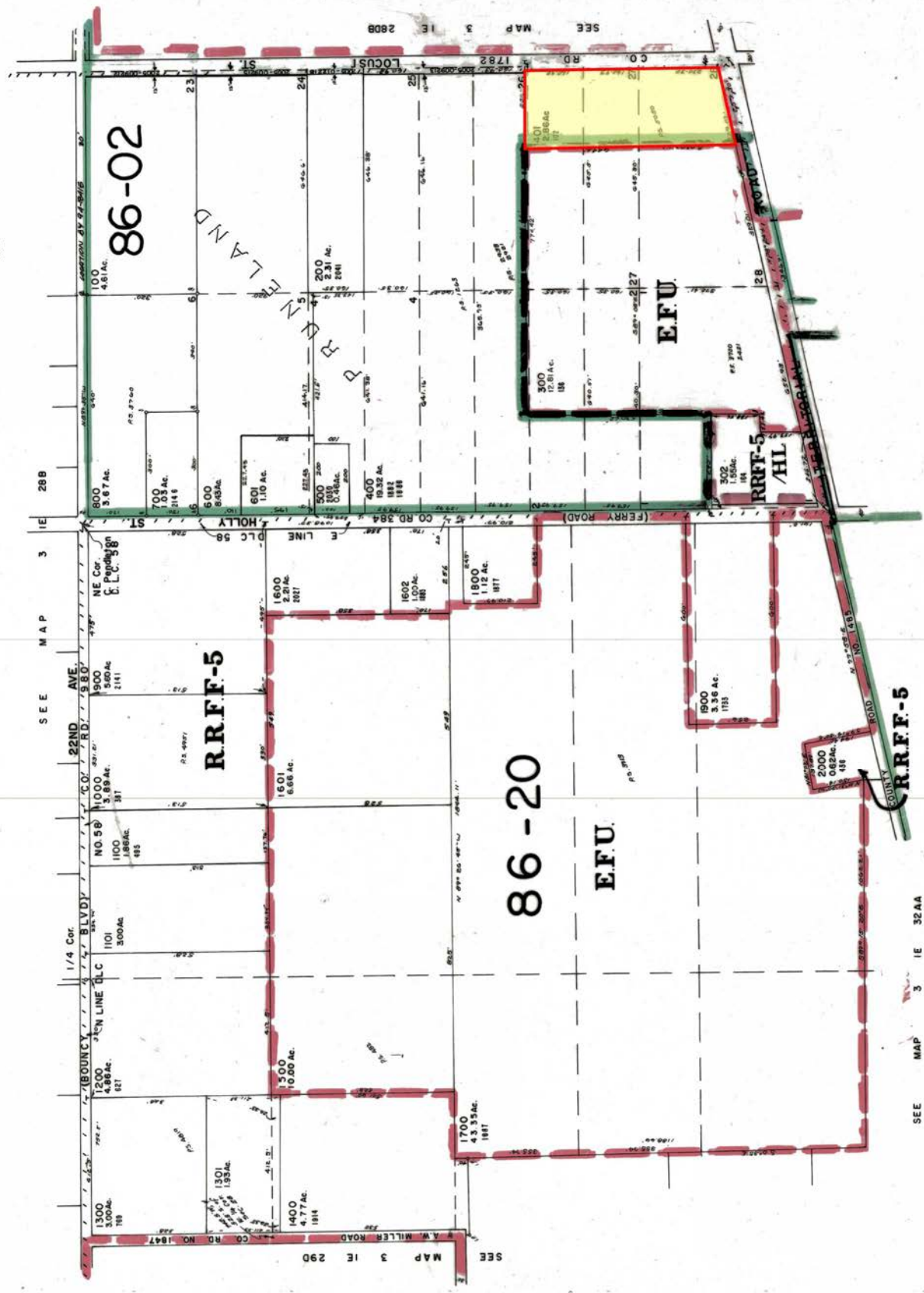
SW 1/4 SEC 28 T3S. R.1E. W.M.
CLACKAMAS COUNTY

D. L. C.
C. PENDLETON NO. 58

3 IE 28C

This map was prepared for
assessment purpose only.

CANCELLED TAX LOTS
301
302
390



SEE MAP 3 IE 32AA

SEE MAP 3 IE 28CD

29 28
32 53

3 IE 28C
BOOK 28



R-1.5 ZONING



CONSULTING. ENGINEERING. CONSTRUCTION.

NEIGHBORHOOD MEETING MINUTES

December 23rd, 2020

Attendees:

- Kelly Ritz, Venture Properties
- Al Jeck, Venture Properties
- Hal Kever, Atwell, LLC
- Kevin Apperson, Atwell, LLC
- Susan Myers
- Gary Bayes
- Unidentified Caller (503.730.3339)

- ❖ Meeting Start (6:05pm)
- ❖ Introduction – Hal Kever
- ❖ Process/Procedure – Kevin Apperson
- ❖ Question and Answer (Q & A) – All

1Q Do you plan on submitting Comprehensive Plan Amendment/Zone Change and Subdivision concurrently?

1A Yes

2Q Will the lots along Territorial Road have access off the street?

2A No, the lot fronting Territorial Road will have access from an alleyway along the north side of the lots.

3Q How will fire access be provided for the lots that front Territorial Road?

3A From a fire access standpoint, the lots will be accessible from the alley as well as Territorial Road.

4Q Will there be a left turn lane required along Locust?

4A The need for traffic improvements is currently being scoped and will be addressed in the Traffic Impact Analysis.

Page 2

5Q Will Locust Street be widened?

5A Yes, the west side of Locust Street will likely include half street improvements to meet the City's standards.

6Q Territorial Road is often used as a bypass when Highway is congested. Is anything going to be done to address this increased traffic?

6A The proposed development will only include 20 new homes which will add a nominal amount of new trips to the system. The additional traffic generated due to its use as an alternative route is a system wide issue.

7Q Are utilities available to the property?

7A Yes, all the necessary utilities are readily available or can be made available.

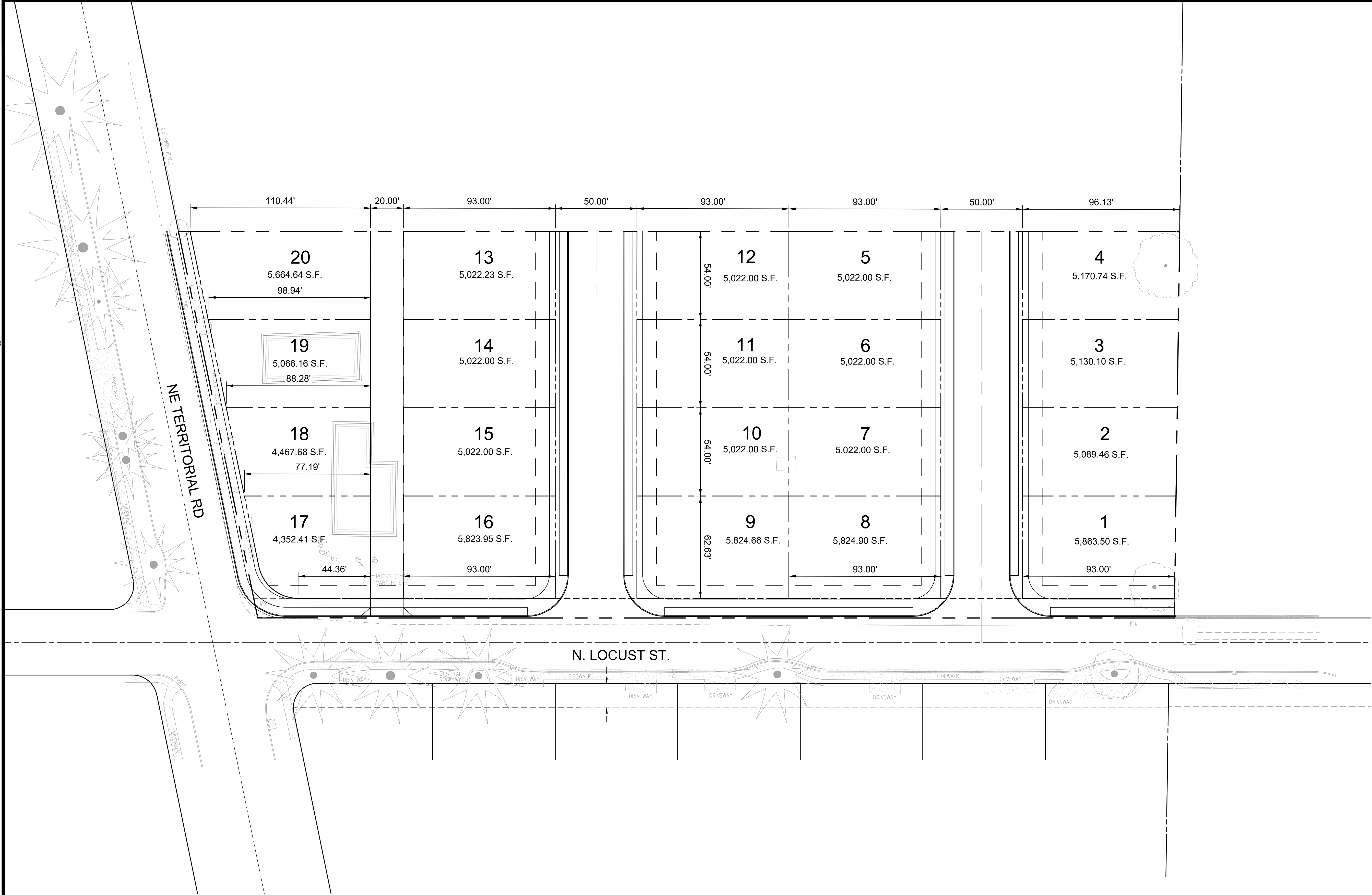
8Q What is the current zoning?

8A The current zoning is R-1 and the applicant will be requesting a change is zoning to R1.5. The net difference would allow the development of four (4) more homes.

❖ Meeting Adjournment (6:25p)


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k:\2002753 - territorial road subdivision\dwg\plan sets\site-preliminary\2002753-sp.dwg



THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE: CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.




ATWELL
866.850.4200 www.atwell-group.com
9755 SW BARNES ROAD, SUITE 150
PORTLAND, OREGON 97225
PHONE 503.254.8860

PRELIMINARY SITE PLAN

PRELAP

TERRITORIAL ROAD SUBDIVISION

CANBY, OREGON



Know what's below.
Call before you dig.

REVISIONS:	

PM.	----
DR.	----
JOB NO.	20002753
FILE NO.	##
DATE	12/16/2020


SHEET NO.

C100



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 1:20,000.

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: Clackamas County Area, Oregon

Survey Area Data: Version 16, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 1, 2019—Sep 12, 2019

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
12A	Canderly sandy loam, 0 to 3 percent slopes	2.9	100.0%
Totals for Area of Interest		2.9	100.0%

Dwellings and Small Commercial Buildings

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. This table shows the degree and kind of soil limitations that affect dwellings and small commercial buildings.

The ratings in the table are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Information in this table is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this table. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Report—Dwellings and Small Commercial Buildings

[Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The table shows only the top five limitations for any given soil. The soil may have additional limitations]

Dwellings and Small Commercial Buildings—Clackamas County Area, Oregon							
Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
12A—Canderly sandy loam, 0 to 3 percent slopes							
Canderly	90	Not limited		Not limited		Not limited	

Data Source Information

Soil Survey Area: Clackamas County Area, Oregon
Survey Area Data: Version 16, Jun 11, 2020

Roads and Streets, Shallow Excavations, and Lawns and Landscaping

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. This table shows the degree and kind of soil limitations that affect local roads and streets, shallow excavations, and lawns and landscaping.

The ratings in the table are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer.

Information in this table is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this table. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Report—Roads and Streets, Shallow Excavations, and Lawns and Landscaping

[Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The table shows only the top five limitations for any given soil. The soil may have additional limitations]

Roads and Streets, Shallow Excavations, and Lawns and Landscaping—Clackamas County Area, Oregon							
Map symbol and soil name	Pct. of map unit	Lawns and landscaping		Local roads and streets		Shallow excavations	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
12A—Canderly sandy loam, 0 to 3 percent slopes							
Canderly	90	Somewhat limited		Not limited		Somewhat limited	
		Dusty	0.01			Unstable excavation walls	0.01
						Dusty	0.01

Data Source Information

Soil Survey Area: Clackamas County Area, Oregon

Survey Area Data: Version 16, Jun 11, 2020



Real-World Geotechnical Solutions
Investigation • Design • Construction Support

December 16, 2020
Project No. 20-5589

Scott Newcombe
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Email: scott@ventureprop.com

SUBJECT: GEOTECHNICAL ENGINEERING REPORT & RESULTS OF INFILTRATION TESTING
TERRITORIAL ROAD SUBDIVISION
102 NE TERRITORIAL ROAD
CANBY, OREGON

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-7465, dated September 2, 2020 and P-7528 dated November 10, 2020, and your subsequent authorization of our proposal and *General Conditions for Geotechnical Services*.

SITE DESCRIPTION AND PROPOSED DEVELOPMENT

The subject site is located northwest of the intersection of NE Territorial Road and N. Locust Street in the City of Canby, Clackamas County, Oregon (Figures 1 & 2). The property is approximately 3.3 acres in size and topography is flat to very gently sloping. The site is currently occupied by three structures and vegetation consists primarily of short grasses, agricultural crops, and sparse trees.

It is our understanding that the proposed development will consist of a 15 to 20 lot subdivision for single family homes, new streets, and associated underground utilities. A grading plan has not been provided for our review; however, we anticipate maximum cuts and fills will be on the order of about 5 feet.

REGIONAL AND LOCAL 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.

The site is underlain by the Quaternary age (last 1.6 million years) Willamette Formation, a catastrophic flood deposit associated with repeated glacial outburst flooding of the Willamette Valley (Trimble, 1963; Schlicker and Finlayson, 1979; Gannett and Caldwell, 1998). The last of these outburst floods occurred about 10,000 years ago. These deposits typically consist of fluvial and lacustrine horizontally layered, micaceous, silt to coarse sand forming poorly-defined to distinct beds less than 3 feet thick.

Published regional geologic mapping indicates that the Willamette Formation is underlain by the Columbia River Basalt Formation (Schlicker and Finlayson, 1979; Gannett and Caldwell, 1998). The Miocene aged (about 14.5 to 16.5 million years ago) Columbia River Basalts are a thick sequence of lava flows which form the crystalline basement of the Tualatin Valley. The basalts are composed of dense, finely crystalline rock that is commonly fractured along blocky and columnar vertical joints. Individual basalt flow units typically range from 25 to 125 feet thick and interflow zones are typically vesicular, scoriaceous, brecciated, and sometimes include sedimentary rocks.

REGIONAL SEISMIC SETTING

At least three potential source zones capable of generating damaging earthquakes are thought to exist in the region. These include the Portland Hills Fault Zone, the Gales Creek-Newberg-Mt. Angel Structural Zone, and the Cascadia Subduction Zone, as discussed below.

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 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 approximately 9.8 miles northeast of the site. The East Bank Fault occurs along the eastern margin of the Willamette River and is located approximately 16.6 miles north of the site. The Oatfield Fault occurs along the western side of the Portland Hills and is approximately 8.3 miles northeast of the site. The accuracy of the fault mapping is stated to be within 500 meters (Wong, et al., 2000). 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).

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 approximately 12.9 miles west 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;

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).

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 50 miles west of the Portland Basin at depths of between 20 and 40 kilometers below the surface.

FIELD EXPLORATION

Our site-specific explorations for this report were conducted on September 17 and December 8, 2020 and consisted of four exploratory test pits and one exploratory boring. The test pits (designated TP-1 through TP-4) were excavated with a large sized trackhoe to depths ranging between 12 and 14 feet and one boring (B-1) was drilled with a sonic drill rig to a depth of 36.5 feet. The exploration locations are presented on Figure 2. 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.

The borehole was drilled using a track mounted drill rig and sonic drilling methods operated by Western States Soil Conservation, Inc. of Hubbard, Oregon. The nature of sonic drilling provides the opportunity to observe the subsurface material encountered between SPT sample depths. While these samples are slightly disturbed, a more complete profile of the material can be observed than with mud rotary techniques that just provide split spoon samples. Infiltration testing can also be performed in the borings since drilling mud is not used.

At each boring location, SPT (Standard Penetration Test) sampling was performed in general accordance with ASTM D1586 using a 2-inch outside diameter split-spoon sampler and a 140-pound hammer equipped with a rope and cathead mechanism. During the test, a sample is obtained by driving the sampler 18 inches into the soil with the hammer free-falling 30 inches. The number of blows for each 6 inches of penetration is recorded. The Standard Penetration Resistance ("N-value") of the soil is calculated as the number of blows required for the final 12 inches of penetration. If 50 or more blows are recorded within a single 6-inch interval, the test is terminated, and the blow count is recorded as 50 blows for the number of inches driven. This resistance, or N-value, provides a measure of the relative density of granular soils and the relative consistency of cohesive soils. At the completion of the boring, the hole was backfilled with bentonite.

A GeoPacific Engineering Geologist continuously monitored the field exploration program and logged the test pits and borings. Soils observed in the explorations were classified in general

accordance with the Unified Soil Classification System (USCS). During exploration, our geologist also noted geotechnical conditions such as soil consistency, moisture and groundwater conditions. Logs of the explorations are attached to this report. The following report sections are based on the exploration program and summarize subsurface conditions encountered at the site.

Undocumented Fill: Undocumented fill was not encountered in our explorations. It is likely that areas of undocumented fill may exist in the vicinity of the existing structures, driveway, and road rights-of-way.

Topsoil Horizon: The ground surface in test pits TP-1 through TP-4 and boring B-1 was directly underlain by a highly organic topsoil horizon. The brown topsoil consisted of sandy silt (OL-ML), was loose, and contained roots with organic debris tilled within. The topsoil horizon typically extended to a depth of 10 to 16 inches in explorations.

Willamette Formation: Underlying the topsoil horizon in test pits TP-1 through TP-4 and boring B-1 were catastrophic flood deposits belonging to the Willamette Formation. These soils generally consisted of medium dense to dense, micaceous, light brown to gray, silty sand (SM) to well graded sand (SW). The silty sand to well graded sand contained trace gravel below depths of 4.5 to 12 feet. The sand with gravel transitioned to sandy gravel (GM) below a depth of 15 feet in boring B-1. The sandy gravel contained trace silt and had a medium dense to very dense relative density. In test pits TP-1 through TP-4 and boring B-1, soils belonging to the Willamette Formation extended beyond the maximum depth of exploration (36.5 feet).

Soil Moisture and Groundwater

Soils encountered in explorations were damp to moist. Neither static groundwater nor perched groundwater seepage was encountered in explorations excavated to a maximum depth of 36.5 feet. Regional groundwater mapping indicates static groundwater is present at a depth of approximately 40 feet (Snyder, 2008). Experience has shown that temporary perched storm-related groundwater conditions often occur within the surface soils over fine-grained native deposits such as those beneath the site, particularly during the wet season. It is anticipated that groundwater conditions will vary depending on the season, local subsurface conditions, changes in site utilization, and other factors.

INFILTRATION TESTING

Soil infiltration testing was performed using the open-hole infiltration method in boring B-1 at depths of 26.5 and 30 feet. Due to rapid infiltration, soils in the boring were pre-saturated with approximately 50 to 100 gallons of water prior to performing the test. The water level was measured to the nearest tenth of an inch every minute to 5 minutes with reference to the ground surface. Table 1 presents the results of our falling head infiltration tests.

Table 1. Summary of Infiltration Test Results

Boring	Depth (feet)	Soil Type	Infiltration Rate (in/hr)	Hydraulic Head Range (inches)
B-1	26.5	Sandy Gravel (GP), trace silt	94	4-34
B-1	30	Sandy Gravel (GP), trace silt	145	6-24

Reported infiltration rates do not incorporate a factor of safety. An appropriate factor of safety should be applied by the system designer.

CONCLUSIONS AND RECOMMENDATIONS

Our investigation indicates that the proposed development is geotechnically feasible, provided that the recommendations of this report are incorporated into the design and construction phases of the project. The primary geotechnical constraints to development include:

1. The presence of a highly organic topsoil horizon into which abundant organic debris had been tilled. Our explorations indicate the topsoil horizon ranges between 10 to 16 inches in thickness.
2. The presence of medium dense, caving soils. Moderate to significant caving was observed in medium dense, sandy soils in test pits below depths of 4.5 to 7 feet. These soil conditions could make utility trenching difficult, especially in the winter months, and adequate shoring should be maintained.

Site Preparation

Areas of proposed buildings, streets, and areas to receive fill should be cleared of vegetation and any organic and inorganic debris. If encountered, areas of undocumented fill, existing drain tiles and buried structures such as septic tanks, should be demolished and any cavities structurally backfilled.

Organic-rich topsoil should then be stripped from native soil areas of the site. We recommend that the upper 6 inches of organic topsoil horizon is stripped with the underlying 12 inches of tilled zone overexcavated for reuse as structural fill. The subgrade should be dried and evaluated after completion of the tilled zone stripping and prior to the start of engineered fill placement. The material removed from the tilled zone may be reused as engineered fill provided it is blended with low organic soil to yield an organic content of less than 4 percent. Deeper removals, blending, and ripping may be necessary in areas of the property. The final depth of soil removal will be determined on the basis of a site inspection after the stripping/ excavation has been performed. Stripped topsoil should preferably be removed from the site due to the high density of the proposed development. 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.

If encountered, undocumented fill should be removed to firm inorganic native soils and replaced with properly compacted engineered fill. Organic or otherwise deleterious portions of the fill should be exported from the site. Portions of undocumented fill soils that do not contain significant

percentages of organics may be sorted, sieved, root picked, and stockpiled for later use as engineered fill provided they are properly moisture conditioned for compaction and not mixed with topsoil or other organic/unsuitable materials. The final depth of removal should be determined on the basis of a site inspection after the initial stripping / fill excavation has been performed.

Once topsoil stripping and removal of organic and inorganic debris are approved in a particular area, the area must be ripped or tilled to a depth of 12 inches, moisture conditioned, root-picked, and compacted in-place prior to the placement of engineered fill or crushed aggregate base for pavement. Exposed subgrade soils should be evaluated by the geotechnical engineer. For large areas, this evaluation is normally performed by proof-rolling the exposed subgrade with a fully loaded scraper or dump truck. For smaller areas where access is restricted, the subgrade should be evaluated by probing the soil with a steel probe. Soft/loose soils identified during subgrade preparation should be compacted to a firm and unyielding condition, over-excavated and replaced with engineered fill (as described below), or stabilized with rock prior to placement of engineered fill. The depth of overexcavation, if required, should be evaluated by the geotechnical engineer at the time of construction.

Engineered Fill

In general, we anticipate that soils from planned cuts and utility trench excavations will be suitable for use as engineered fill provided they are adequately moisture conditioned prior to compacting. All grading for the proposed construction should be performed as engineered grading in accordance with the applicable building code at time of construction with the exceptions and additions noted herein. Proper test frequency and earthwork documentation usually requires daily observation and testing during stripping, rough grading, and placement of engineered 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 8 inches using standard compaction equipment. We recommend that engineered fill be compacted to at least 95% of the maximum dry density determined by ASTM D698 (Standard Proctor) or equivalent. 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 yd³, 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 will be impacted by soil moisture and shallow groundwater conditions. Earthwork in wet weather would likely require extensive use of cement or lime treatment, or other special measures, at considerable additional cost compared to earthwork performed under dry-weather conditions.

Excavating Conditions and Utility Trenches

We anticipate that on-site soils can be excavated using conventional heavy equipment such as trackhoes to a depth of 14 feet. Moderate to significant caving was observed in the test pits below depths of 4.5 feet. These conditions could make utility trenching difficult, especially in the winter months, and adequate shoring should be maintained.

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 are classified as Type C Soils and temporary excavation side slope inclinations as steep as 1.5H:1V may be assumed for planning purposes. This cut slope inclination is applicable to excavations above groundwater seepage zones only. 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.

Soft, saturated soils and groundwater may be encountered in utility trenches, particularly during the wet season. We anticipate that dewatering systems consisting of ditches, sumps and pumps would be adequate for control of perched groundwater. Regardless of the dewatering system used, it should be installed and operated such that in-place soils are prevented from being removed along with the groundwater. Trench bottom stabilization, such as one to two feet of compacted crushed aggregate base, may be necessary in deeper 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.

PVC pipe should be installed in accordance with the procedures specified in ASTM D2321. We recommend that trench backfill be compacted to at least 95% of the maximum dry density determined by ASTM D698 (Standard Proctor) or equivalent. Initial backfill lift thickness 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, one density test is taken for every 4 vertical feet of backfill on each 200-lineal-foot section of trench.

Erosion Control Considerations

During our field exploration program, we did not observe soil types that would be 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 and silt fences. If used, these erosion control devices should be in place and 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.

Wet Weather Earthwork

Soils underlying the site are likely to be moisture sensitive and may 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 probably require expensive measures such as cement treatment or imported granular material to compact fill 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 fines. 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
- Straw wattles and/or geotextile silt fences 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.

Spread Foundations

The proposed residential structures may likely be supported on shallow foundations bearing on competent undisturbed, native low expansivity 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. The recommended minimum widths for continuous footings supporting wood-framed walls without masonry are 12 inches for single-story, 15 inches for two-story, and 18 inches for three-story structures. Minimum foundation reinforcement should consist of a No. 4 bar at the top of the stem walls, and a No. 4 bar at the bottom of the footings. Concrete slab-on-grade reinforcement should consist of No. 4 bars placed on 24-inch centers in a grid pattern.

The anticipated allowable soil bearing pressure is 1,500 lbs/ft² for footings bearing on competent, nonexpansive native soil and/or engineered fill. A maximum chimney and column load of 40 kips is recommended for the site. The recommended maximum allowable bearing pressure may be increased by 1/3 for short-term transient conditions such as wind and seismic loading. For heavier loads, the geotechnical engineer should be consulted. 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 loose 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 overexcavation of footings and backfill with compacted, crushed aggregate.

Our recommendations are for house construction incorporating raised wood floors and conventional spread footing foundations. If living space of the structures will incorporate basements, a geotechnical engineer should be consulted to make additional recommendations for retaining walls, water-proofing, underslab drainage and wall subdrains. After site development, a Final Soil Engineer's Report should either confirm or modify the above recommendations.

Concrete Slabs-on-Grade

Preparation of areas beneath concrete slab-on-grade floors should be performed as recommended in the *Site Preparation and Undocumented Fill Removal* section. 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 stiff native silt soils anticipated at subgrade depth. This value assumes the concrete slab system is designed and constructed as recommended herein, with a minimum thickness of crushed rock of 8 inches beneath the slab.

Interior slab-on-grade floors should be provided with an adequate moisture break. The capillary break material should consist of ODOT open graded aggregate per ODOT Standard Specifications 02630-2. The minimum recommended thickness of capillary break materials on re-compacted soil subgrade is 8 inches. 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 90% of its maximum dry density as determined by ASTM D1557 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.

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 55 pcf should be used in design, again assuming level backfill against the wall. These values assume that drainage provisions are incorporated, free draining gravel backfill is used, 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 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.

Pavement Design

For design purposes, we used an estimated resilient modulus of 9,000 for compacted native soil. Table 2 presents our recommended minimum pavement section for dry weather construction.

Table 2. Recommended Minimum Dry-Weather Pavement Section

Material Layer	Light-duty Public Streets	Compaction Standard
Asphaltic Concrete (AC)	3 in.	92% of Rice Density AASHTO T-209
Crushed Aggregate Base ¾"-0 (leveling course)	2 in.	95% of Modified Proctor AASHTO T-180
Crushed Aggregate Base 1½"-0	8 in.	95% of Modified Proctor AASHTO T-180
Subgrade	12 in.	95% of Standard Proctor AASHTO T-99 or equivalent

Any pockets of organic debris or loose fill encountered during ripping or tilling should be removed and replaced with engineered fill (see *Site Preparation* Section). In order to verify subgrade strength, we recommend proof-rolling directly on subgrade with a loaded dump truck during dry weather and on top of base course in wet weather. Soft areas that pump, rut, or weave should be stabilized prior to paving. If pavement areas are to be constructed during wet weather, the subgrade and construction plan should be reviewed by the project geotechnical engineer at the time of construction so that condition specific recommendations can be provided. The moisture sensitive subgrade soils make the site a difficult wet weather construction project.

During placement of pavement section materials, density testing should be performed to verify compliance with project specifications. Generally, one subgrade, one base course, and one asphalt compaction test is performed for every 100 to 200 linear feet of paving.

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 (Dogami HazVu, 2020). 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, Chapter 20, Table 20.3-1. Design values determined for the site using the ATC (Applied Technology Council) *ASCE7-16 Hazards by Location online Tool* website are summarized in Table 3.

Table 3. Recommended Earthquake Ground Motion Parameters (ATC 2020)

Parameter	Value
Location (Lat, Long), degrees	45.277, -122.692
Mapped Spectral Acceleration Values (MCE):	
Peak Ground Acceleration PGA_M	0.448 g
Short Period, S_s	0.797 g
1.0 Sec Period, S_1	0.369 g
Soil Factors for Site Class D:	
F_a	1.181
F_v	*1.931
$SD_s = 2/3 \times F_a \times S_s$	0.628 g
$SD_1 = 2/3 \times F_v \times S_1$	*0.475 g
Seismic Design Category	D

* The 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) of OSSC 2019 with the assumption that Exception 2 of ASCE 7-16 Chapter 11.4.8 is met. SD_1 is based on the F_v value. The structural engineer should evaluate exception 2 and determine whether or not the exception is met. 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.

Soil Liquefaction

Soil liquefaction is a phenomenon wherein saturated soil deposits temporarily lose strength and behave as a liquid in response to earthquake shaking. Soil liquefaction is generally limited to loose, granular soils located below the water table. The Oregon Department of Geology and Mineral Industries (DOGAMI), Oregon HazVu: 2020 Statewide GeoHazards Viewer indicates that the southern portion of the site is considered to have a low risk for soil liquefaction and the

northern portion is considered to have a moderate liquefaction risk. Our explorations indicate that the near surface soils underlying the site are not susceptible to liquefaction.

Other Potential Seismic Impacts

Other potential seismic impacts include fault rupture potential. However, based on our review of available geologic literature, we are not aware of any mapped active (demonstrating movement in the last 10,000 years) faults on the site. During our field investigation, we did not observe any evidence of surface rupture or recent faulting. Therefore, we conclude that the potential for fault rupture on site is very low.

Footing and Roof Drains

Construction should include typical measures for controlling subsurface water beneath the homes, including positive crawlspace drainage to an adequate low-point drain exiting the foundation, visqueen covering the expose ground in the crawlspace, and crawlspace ventilation (foundation vents). The homebuyers should be informed and educated that some slow flowing water in the crawlspaces is considered normal and not necessarily detrimental to the home given these other design elements incorporated into its construction. Appropriate design professionals should be consulting 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.

If the proposed structures will have a raised floor, and no concrete slab-on-grade floors in living spaces are used, perimeter footing drains would not be required 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 necessary, perimeter footing drains should consist of 3 or 4-inch diameter, perforated plastic pipe embedded in a minimum of 1 ft³ 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. 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.

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,

GEOPACIFIC ENGINEERING, INC.



Beth K. Rapp, C.E.G.
Senior Engineering Geologist



Reviewed by: James D. Imbrie, G.E., C.E.G.
Principal Geotechnical Engineer

Attachments: References
Figure 1 – Vicinity Map
Figure 2 – Site Plan and Exploration Locations
Test Pit Logs (TP-1 through TP-4)
Boring Log (B-1)

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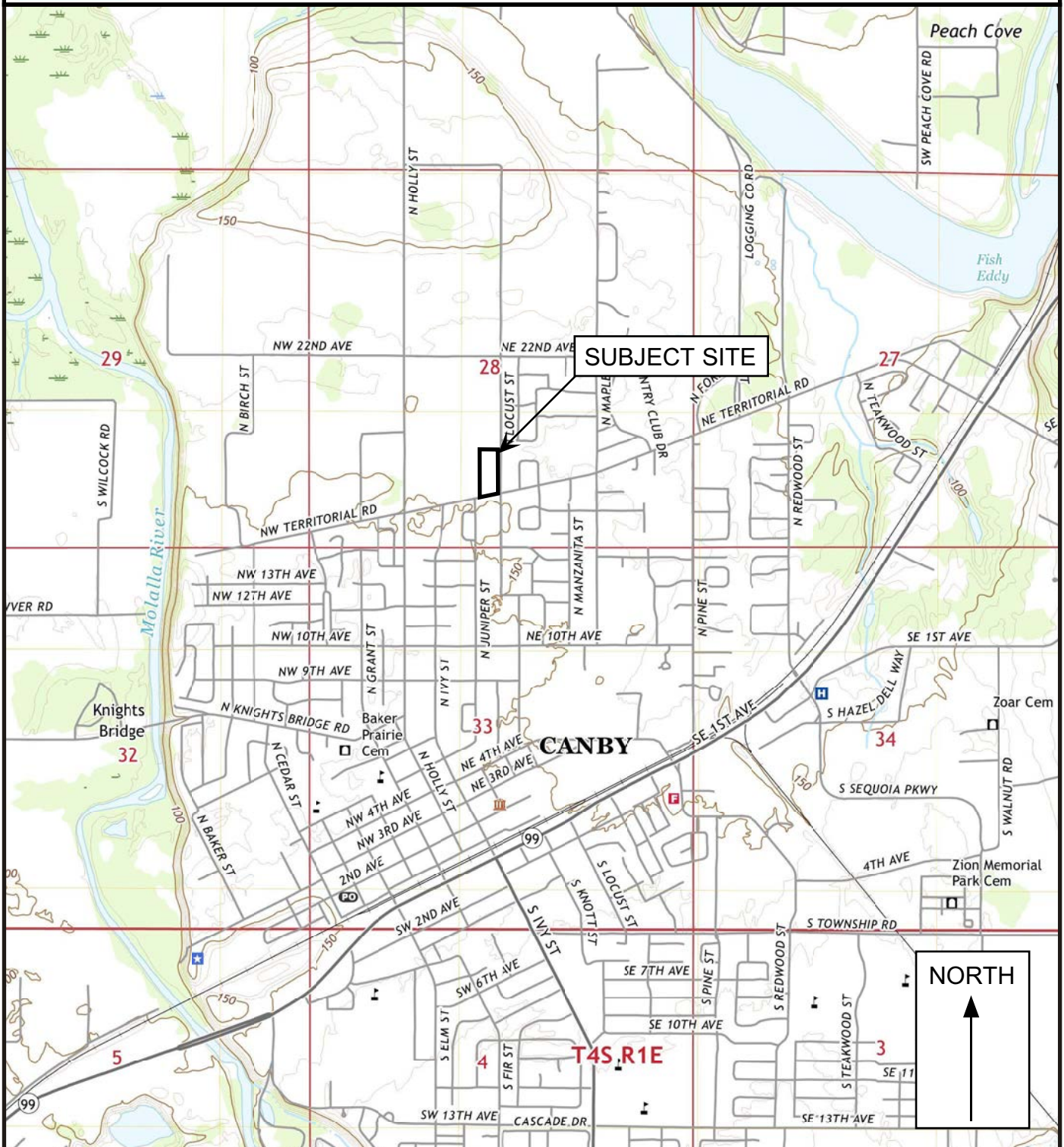
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VICINITY MAP



Legend

Approximate Scale 1 in = 2,000 feet

Date: 12/16/2020
Drawn by: EKR

Base map: U.S. Geological Survey 7.5 minute Topographic Map Series, Canby, Oregon Quadrangle, 2020.

Project: Territorial Road
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Project No. 20-5589

FIGURE 1



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SITE PLAN AND EXPLORATION LOCATIONS



Legend



TP-1 Test Pit Designation and
Approximate Location



B-1 Boring Designation and
Approximate Location

Date: 12/16/2020
Drawn by: EKR

0 100'
APPROXIMATE SCALE 1"=300'

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FIGURE 3



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TEST PIT LOG

Project: Territorial Road
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Project No. 20-5589

Test Pit No. **TP-1**

Depth (ft)	Pocket Penetrometer (tons/ft ²)	Sample Type	In-Situ Dry Density (lb/ft ³)	Sidewall Caving	Water Bearing Zone	Material Description
1						Highly organic, sandy SILT (OL-ML), brown, trace fine roots throughout, loose, organic debris tilled in, damp (Topsoil Horizon)
2						
3						Medium dense, silty SAND (SM), gray to brown, sand is fine to medium grained, trace roots to 3 feet, moderate sidewall caving below 6 feet, damp to moist (Willamette Formation)
4						
5						
6						
7						
8						
9						
10						Medium dense, SAND (SW), gray, sand is fine to coarse grained, damp to moist (Willamette Formation)
11						
12						Medium dense, SAND (SW), with subangular gravel, gray, sand is fine to coarse grained, damp to moist (Willamette Formation)
13						Test Pit Terminated at 13 Feet.
14						
15						Note: No groundwater or seepage encountered.
16						
17						

LEGEND



Bag Sample



5 Gal. Bucket



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 9/17/2020

Logged By: B. Rapp

Surface Elevation:



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TEST PIT LOG

Project: Territorial Road
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Test Pit No. **TP-2**

Depth (ft)	Pocket Penetrometer (tons/ft ²)	Sample Type	In-Situ Dry Density (lb/ft ³)	Sidewall Caving	Water Bearing Zone	Material Description
1						Highly organic, sandy SILT (OL-ML), brown, trace fine roots throughout, loose, organic debris tilled in, damp (Topsoil Horizon)
2						Medium dense to dense, silty SAND (SM), gray to brown, sand is fine to medium grained, trace roots to 3 feet, damp to moist (Willamette Formation)
3						
4						
5						
6						
7						
8						
9						Medium dense, SAND (SM), trace gravel, gray to brown, sand is fine to medium grained, moderate sidewall caving, damp to moist (Willamette Formation)
10						
11						
12						
13						
14						Test Pit Terminated at 14 Feet.
15						Note: No groundwater or seepage encountered.
16						
17						

LEGEND



Bag Sample



5 Gal. Bucket



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 9/17/2020

Logged By: B. Rapp

Surface Elevation:



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TEST PIT LOG

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Test Pit No. **TP-3**

Depth (ft)	Pocket Penetrometer (tons/ft ²)	Sample Type	In-Situ Dry Density (lb/ft ³)	Sidewall Caving	Water Bearing Zone	Material Description
1						Highly organic, sandy SILT (OL-ML), brown, trace fine roots throughout, loose, organic debris tilled in, damp (Topsoil Horizon)
2						Medium dense to dense, silty SAND (SM), gray to brown, sand is fine to medium grained, trace roots to 3 feet, damp to moist (Willamette Formation)
3						
4						
5						
6						Medium dense, SAND (SM), gray to brown, sand is fine to medium grained, moderate sidewall caving below 6 feet, damp to moist (Willamette Formation)
7						
8						
9						
10						
11						
12						
13						Medium dense to dense, SAND (SM), with gravel, gray to brown, sand is fine to medium grained, damp to moist (Willamette Formation)
14						Test Pit Terminated at 14 Feet.
15						Note: No groundwater or seepage encountered.
16						
17						

LEGEND



Bag Sample



5 Gal. Bucket



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 9/17/2020

Logged By: B. Rapp

Surface Elevation:



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TEST PIT LOG

Project: Territorial Road
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Project No. 20-5589

Test Pit No. **TP-4**

Depth (ft)	Pocket Penetrometer (tons/ft ²)	Sample Type	In-Situ Dry Density (lb/ft ³)	Sidewall Caving	Water Bearing Zone	Material Description
1						Highly organic, sandy SILT (OL-ML), brown, trace fine roots throughout, loose, organic debris tilled in, damp (Topsoil Horizon)
2						
3						Medium dense, silty SAND (SM), gray to brown, sand is fine to medium grained, trace roots to 2 feet, damp to moist (Willamette Formation)
4						
5						
6						
7						
8						Medium dense, SAND (SW), trace subangular gravel, gray, sand is fine to coarse grained, significant sidewall caving, damp to moist (Willamette Formation)
9						
10						
11						
12						
13						Test Pit Terminated at 12 Feet.
14						Note: No groundwater or seepage encountered.
15						
16						
17						

LEGEND



Bag Sample



5 Gal. Bucket



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 9/17/2020

Logged By: B. Rapp

Surface Elevation:










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BORING LOG

Project: Territorial Road
Canby, Oregon

Project No. 20-5589

Boring No. **B-1**

Depth (ft)	Sample Type	N-Value	Well Construction	Moisture Content (%)	Water Bearing Zone	Material Description
						Highly organic, sandy SILT (OL-ML), brown, loose, moist (Topsoil Horizon)
5		13				Medium dense, silty SAND (SM), gray to brown, sand is fine to coarse grained, damp to moist (Willamette Formation)
10		28				Medium dense, SAND (SW), trace gravel, gray, sand is fine to medium grained, moist (Willamette Formation)
15		64				
20		53				Medium dense to very dense, sandy GRAVEL (GP), trace silt, gray, sand is fine to coarse grained, moist (Willamette Formation)
25		50 for 4"				
30		50 for 2"				
35		25				
40						Boring Terminated at 36.5 feet. No Groundwater or Seepage Encountered

LEGEND



Bag Sample



Split-Spoon



Shelby Tube Sample



Static Water Table
at Drilling



Static Water Table



Water Bearing Zone

Date Drilled: 12/8/2020

Logged By: B. Rapp

Surface Elevation:

Territorial Road Subdivision Preliminary Drainage Report

Job No. 20002753

Prepared for:

Owner:

Venture Properties, Inc.

4230 Galewood St, Suite 100

Lake Oswego, OR 97035

Prepared by:

Atwell, LLC

9755 SW Barnes Road, Suite 150

Portland, OR 97225

February 25, 2020



**TERRITORIAL ROAD SUBDIVISION
PRELIMINARY DRAINAGE REPORT
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APPENDIX A

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APPENDIX B

HYDROCAD ANALYSIS

APPENDIX C

PRELIMINARY GRADING, DRAINAGE, AND ESC PLAN
STANDARD DETAILS

1.0 INTRODUCTION/PROJECT DESCRIPTION

Territorial Road Subdivision (“Project”) is a proposed single-family residential subdivision development within the jurisdiction of Canby, Oregon. The Project is located at 102 NE Territorial Rd (Tax Lot 31E28C 00401), i.e. NW corner of the intersection of NE Territorial Rd and N Locust St. The project is approximately 3.18 acres in size. The current zoning is “R-1” and the current Land Use is “Subdivision – Type III”. The Project is proposing the development of a 20-lot subdivision with an average lot area of 5,165 square feet.

The City of Canby Public Facility Improvements Design Manual and Standard Specifications, 2012, Chapter 4 – Storm Drainage Design will be used as the basis of design for the Project.

1.1 PROJECT ADDRESS

The Project area is located at 102 NE Territorial Rd in Canby, Oregon 97013.

1.2 GENERAL TOPOGRAPHY AND GENERAL HYDROLOGY

The Project site is very flat to very gently sloping. The Project site is undeveloped, and stormwater is directly infiltrated through existing ground within the project boundary.

2.0 EXISTING CONDITIONS

Land Cover and Land Use:

The Project is currently occupied by three building structures covering a total area of 4,387 square feet. The Project is otherwise undeveloped with scattered vegetation that consists primarily of short grasses, agricultural crops and sparse trees.

Abutting Uses:

The Project abuts similarly undeveloped lands to the north and west, and single-family subdivisions of R-1 and R-1.5 zoning to the south and east.

Offsite Drainage:

The Project currently accepts offsite drainage from NE Territorial Rd. Stormwater runoff on existing NE Territorial Rd is infiltrated through existing soil. Stormwater runoff from N Locust St is conveyed to existing catch basins and drywells.

Flood Zone:

The Project is not located in a flood zone.

Wetlands:

The Project is not located near any wetlands.

Soil Type(s):

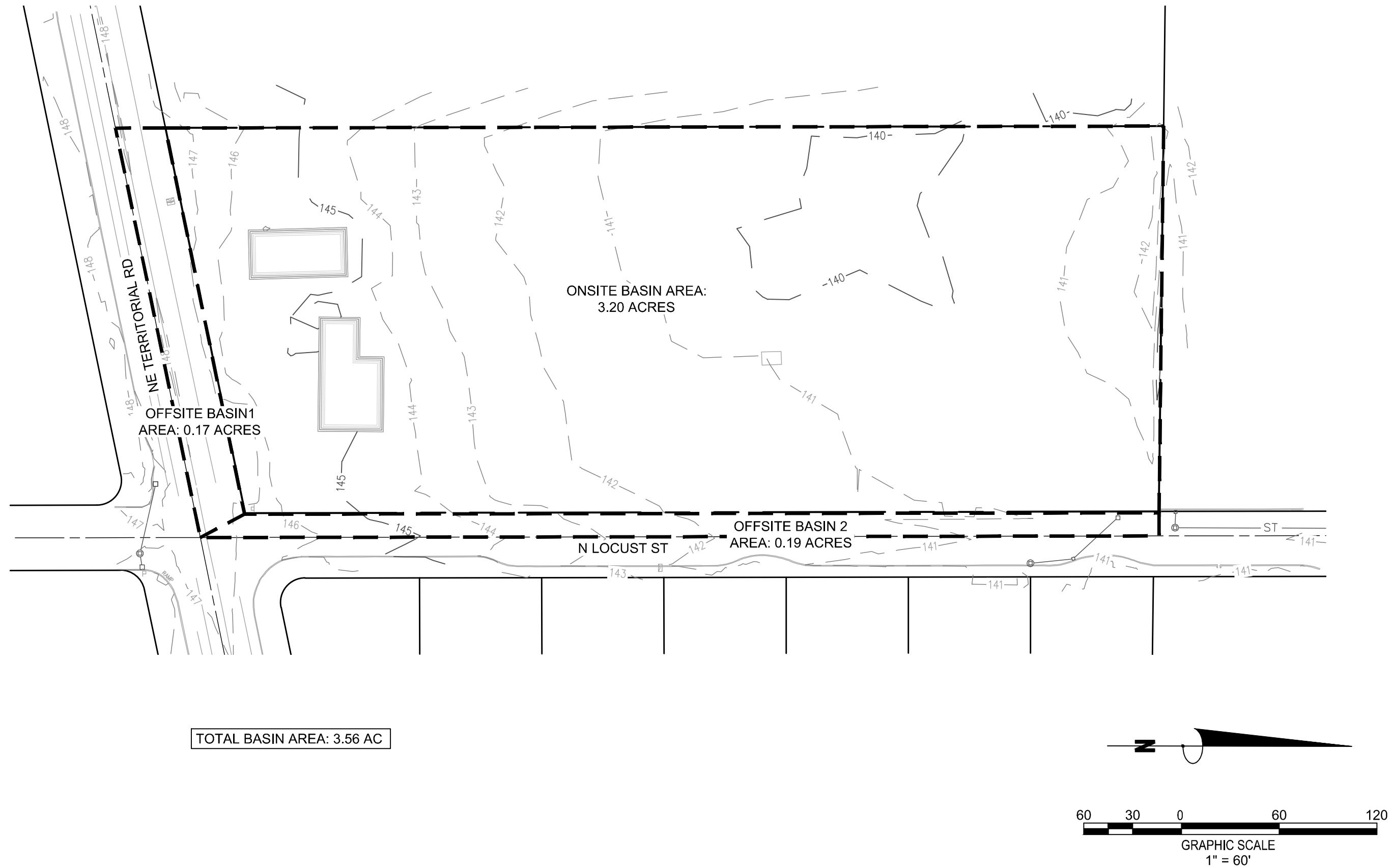
The entire project site consists of 12A-Canderly Sandy Loam, (NRCS hydrologic group A).

Results from infiltration tests in the geotechnical report show that the existing soil has a rapid infiltration rate of 94 in/hr to 145 in/hr at depths of 26.5-ft and 30-ft, respectively.

Existing Drainage Features:

The project site is undeveloped with no manmade drainage features. Flows from NE Territorial Rd and all on-site stormwater runoff is infiltrated through existing soil. Stormwater runoff from N Locust St is conveyed to existing catch basins and infiltrated through existing drywells into the ground north of the Project site.

See Figure 2-1 – Pre-developed Basin Map.



3.0 OFF-SITE ANALYSIS

3.1 EXISTING OFF-SITE FLOW CHARACTERISTICS

Stormwater runoff from N Locust St is conveyed to existing curb inlets and drywell near the north end of the project site. Stormwater runoff from NE Territorial Rd is conveyed to the Project site and infiltrated through existing ground.

3.2 PROPOSED OFF-SITE IMPROVEMENTS

Both NE Territorial Rd and N Locust St will be widened. Stormwater runoff from extended new pavement on NE Territorial will be conveyed to and infiltrated through a proposed infiltration planter. All stormwater runoff generated from the new pavement on N Locust St will be directed to proposed onsite drywell systems.

4.0 ON-SITE ANALYSIS

4.1 EXISTING ON-SITE FLOW CHARACTERISTICS

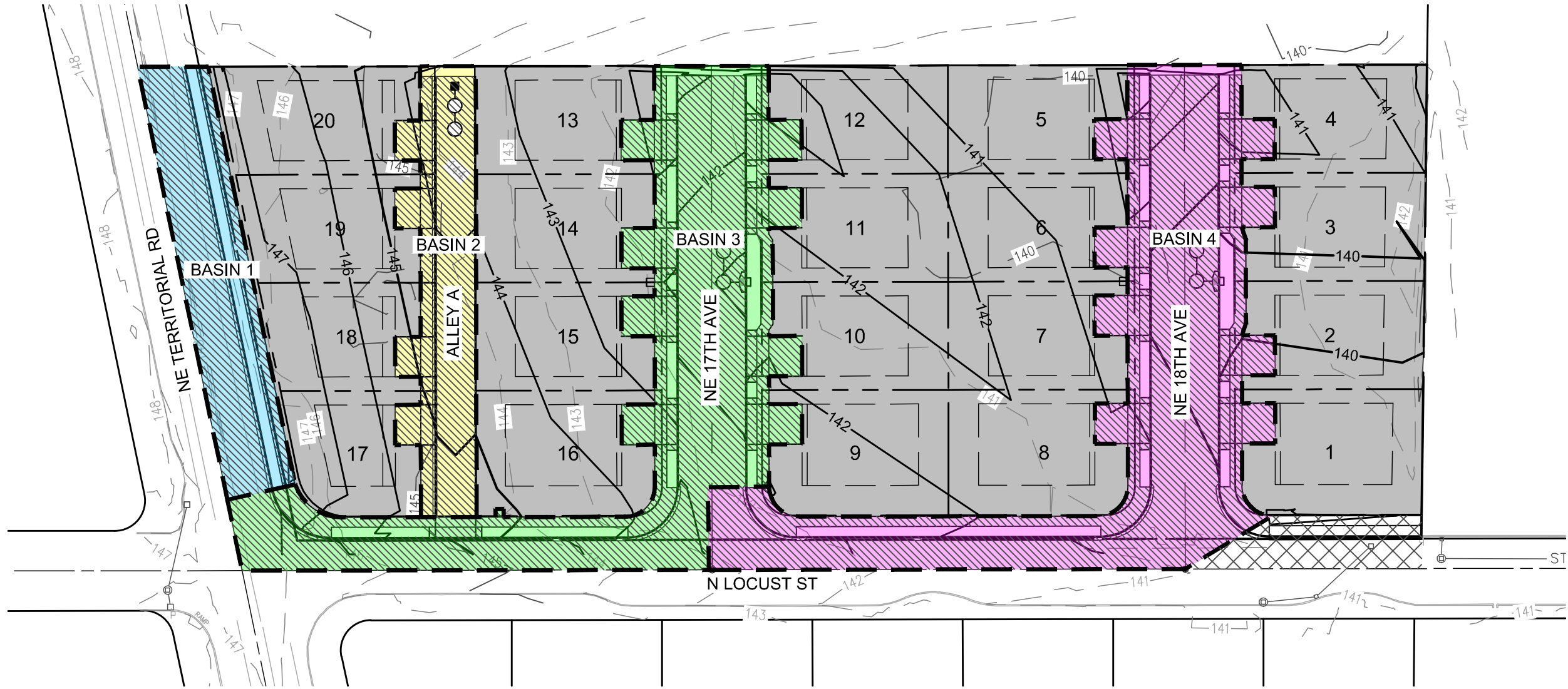
The current site does not have any on-site water quality or flow control facilities. Flows from the Project site are infiltrated directly into the ground.

4.2 METHODOLOGY AND CRITERIA

The proposed development will include the construction of two streets, a private alley, and the offsite widening of NE Territorial Rd and N Locust St. The improvements for NE Territorial Rd and N Locust St are included in this on-site analysis as stormwater runoff from those improvements will be treated on-site. The proposed public improvements will total an impervious area of 54,256-SF (1.25-AC) that will need to be treated and managed by the Project.

The proposed development areas have been divided into separate basins as seen in figure 4-1.

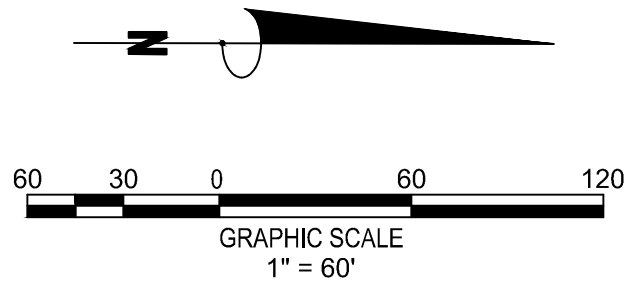
CAD FILE NAME: K:\20002753 - Territorial Road Subdivision\DWG\Exhibits\Stormwater\20002753-Developed Basins.dwg 02/24/2021



- UNTREATED AREAS (DIRECT EXFILTRATION INTO GROUND): 2.14 AC
- BASIN 1: 0.17 AC
- BASIN 2: 0.16 AC
- BASIN 3: 0.50 AC
- BASIN 4: 0.53 AC
- UNDETAINED AREA: 0.06 AC

TOTAL BASIN AREA = 3.56 AC

IMPERVIOUS AREA: 54,256 SF



TERRITORIAL RD SUBDIVISION

CANBY, OR

FIG 4-1. DEVELOPED BASIN MAP

JOB #	20002753
DATE	2/24/2021
SCALE	AS SHOWN
DRAWN	BLB
SHT	1 OF 1



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Due to the relatively flat topography of the Project site, runoff from NE Territorial Rd cannot travel to the nearest drywell and is captured by Basin 1. Stormwater runoff in Basin 1 will be treated by an infiltration planter at the frontage of the Project site.

The City of Canby Public Works Design Standards for Storm Drainage Design refers to the Clean Water Services (CWS) Design Manual for the design of infiltration planter. A sizing factor of 0.06 was used based on CWS' requirements for the proposed infiltration planter at Basin 1.

Basin 1 requires management of 6,414-SF of total impervious area, and the size of the infiltration planter was calculated as below:

$$0.06 \times 6,414 \text{ (SF)} = 384.84 \text{ (SF)}$$

A 5' x 80', or 400-SF infiltration planter was proposed.

Runoff from the proposed private alley is captured in Basin 2 and will be directed through a catch basin and conveyed to a pollution control manhole for treatment before discharge into a drywell.

Runoff from the proposed public improvements from Basins 3, and 4, which include constructions of the two new local streets and the widening of N Locust St, will be directed through curb inlets and conveyed to pollution control manholes for treatment before discharge into drywells.

Runoff from areas not exposed to contaminants (i.e. roof drains, interior courtyards etc.) will be allowed to convey directly into existing ground without being treated per discussion with the City of Canby.

Details for the design and construction of the infiltration planter and drywell systems can be found in Appendix C.

Stormwater Quality:

The City of Canby Public Works Design Standards requires stormwater runoff to be pretreated by a pollution control manhole prior to conveyance into a drywell.

Peak Flow Control:

The City of Canby Public Works Design Standards for Storm Drainage Design requires stormwater calculations based on discharge rates from 2, 5, 10, and 25-year storm events. The conveyance system shall be designed to pass the 10-year storm events without surcharge, and a 25-year event with surcharge.

Input Parameters/Analysis:

The Santa Barbara Urban Hydrograph (SBUH) Method was used to analyze stormwater runoff from the site to be conveyed to drywells for exfiltration, at a depth of 26-ft below ground. This method utilizes the SCS Type IA, 24-hour rainfall distribution. HydroCAD version 10.10-4a was used for the calculation of this storm system.

The proposed improvements include three drywell systems that will collect runoff from around the Project. The Santa Barbara Urban Hydrograph Method will be used to calculate 2-year, 5-year, 10-year, and 25-year peak flows for each inlet. The storm drain system will be designed to convey the peak 25-year flows below the inlet grade.

The following 24-hour rainfall depth and recurrence intervals (obtained from NOAA Atlas 2 – Volume 10) were utilized as the design storms:

Recurrence Interval	Total Precipitation Depth (Inches)
2-year	2.50
5-year	2.90
10-year	3.40
25-year	3.90

A curve number (CN) of 98 was used for all proposed and existing on-site and offsite impervious areas, including proposed pavement of new streets and alley, sidewalks and driveways. Impervious areas also included existing pavement of NE Territorial Rd and N Locust St from centerline to edge of new pavement after widening.

A CN of 39 was used for proposed pervious (landscape strip) areas within each basin.

The table below summarizes the pervious, and impervious areas of each basin.

Basin #	Pervious Area (AC)	Impervious Area (AC)	Totals
1	0.02	0.15	0.17
2	0.00	0.16	0.16
3	0.04	0.46	0.50
4	0.05	0.48	0.53
Totals	0.11	1.25	1.36

An infiltration rate of 47 in/hr was used based on the 94 in/hr result of an infiltration test at 26.5-ft depth from the geotechnical report and accounting for a safety factor of 2.

The condition of the soils is such that the proposed drywells can exfiltrate runoff from peak 2, 5, 10, and 25-year flows. Detailed results from the HydroCAD analysis can be found in Appendix B.

5.0 OPERATION AND MAINTENANCE

The two drywells in the public streets will be registered with Oregon Department of Environmental Quality (DEQ) through the City of Canby's existing Water Pollution Control Facility (WPCF) permit and will be maintained by the City of Canby.

The drywell serving the Project's private alley will be registered to DEQ through the future HOA and will be maintained by the HOA by means of yearly HOA fees from the subdivision.

6.0 SUMMARY AND CONCLUSIONS

The development of the Territorial Road Subdivision abides by the City of Canby and Clean Water Services stormwater requirements:

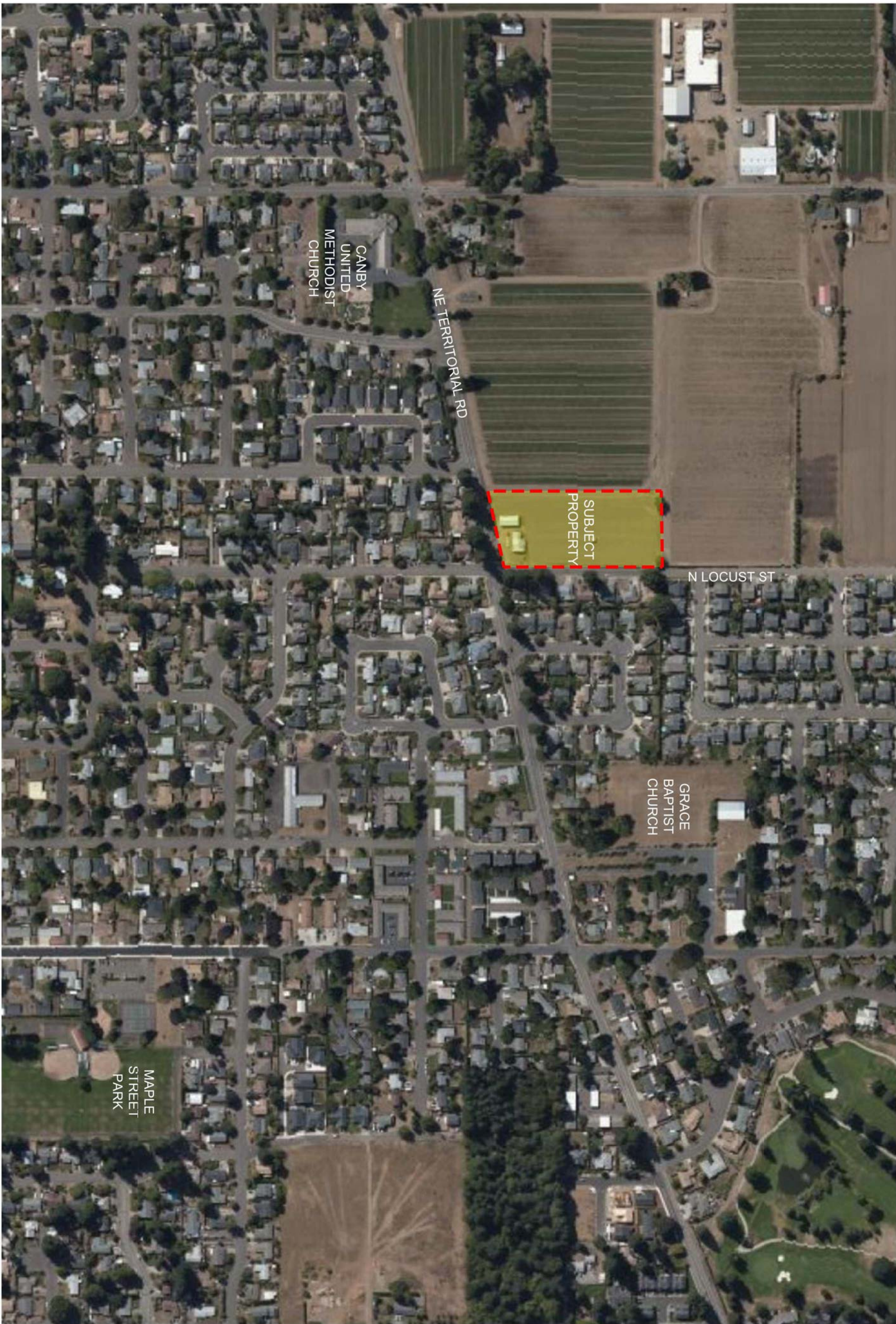
- The stormwater conveyance to drywells was designed to meet required standards.
- The infiltration stormwater planter was designed to meet required standards.
- Operation and maintenance will be per the City of Canby standard, and a HOA will be established with yearly fees for the maintenance of the private drywell system.

7.0 REFERENCES

1. City of Canby Public Facility Improvements, revised June 2012. *Chapter 4, Storm Drainage Design - Design Manual and Standard Specifications*.
2. Clean Water Services (CWS) Low Impact Development Approaches Handbook, 2016.

APPENDIX A

VICINITY MAP
EXISTING CONDITIONS
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THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN ON THE ATTACHED DRAWING. CONTRACTORS HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MAY BE INCURRED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.



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AERIAL & OFFSITE ANALYSIS PLAN

LAND USE PLANS
TERRITORIAL ROAD SUBDIVISION
CANBY, OREGON



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REVISIONS:

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DR.	B. BERRY

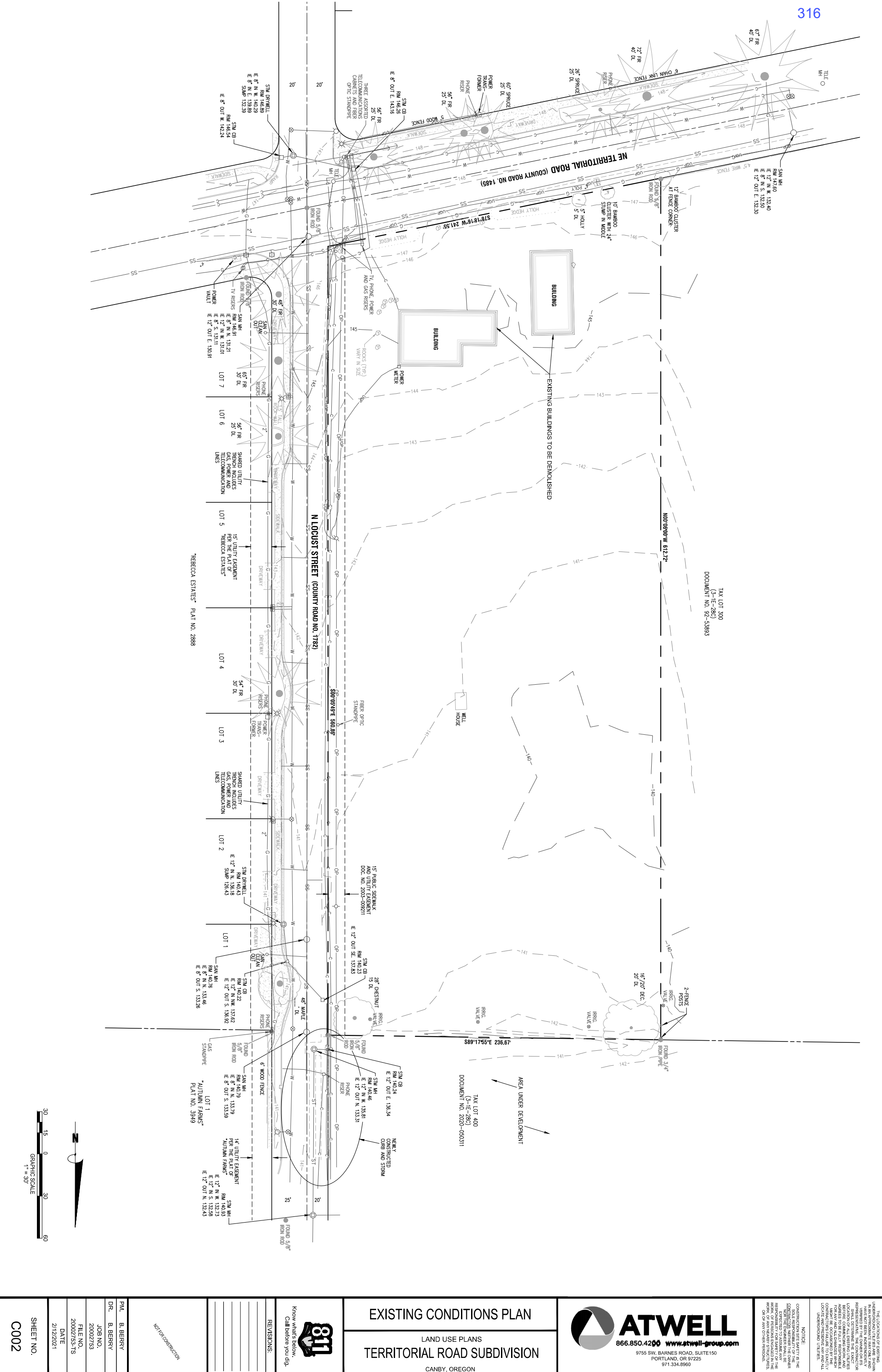
JOB NO.
20002753

FILE NO.
200002753-VC

DATE
2/12/2021

SHEET NO.

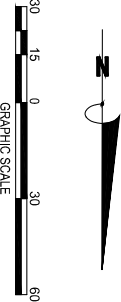
C0001



316

TAX LOT 300
(3-IE-280)
DOCUMENT NO. 92-55893

TAX LOT 400
(3-IE-280)
DOCUMENT NO. 2020-050311



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REVISIONS:

PM, B. BERRY

DR, B. BERRY

JOB NO. 20002753

FILE NO. 20002753-TS

DATE 2/12/2021

SHEET NO. C002

811

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EXISTING CONDITIONS PLAN

LAND USE PLANS

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NOTICE

CONSTRUCTION SITE SAFETY IS THE RESPONSIBILITY OF THE OWNER. THE ENGINEER SHALL BE RESPONSIBLE FOR THE SAFETY OF THE WORK OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

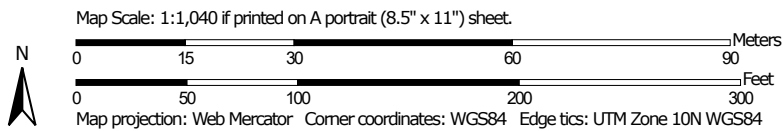
THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN FOR INFORMATION ONLY. THE ENGINEER HAS NOT BEEN INDEPENDENTLY REPRESENTATIVE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND FOR ANY AND ALL DAMAGES WHICH MAY BE INCURRED BY ANY AND ALL CONTRACTORS FAILURE TO EXCAVATE, DAMAGE, OR REMOVE ANY AND ALL UTILITIES SHOWN ON THIS PLAN.

Soil Map—Clackamas County Area, Oregon
(USDA Soil Map)

317



Soil Map may not be valid at this scale.




Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

2/17/2021
Page 1 of 3

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 1:20,000.

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: Clackamas County Area, Oregon

Survey Area Data: Version 16, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 1, 2019—Sep 12, 2019

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
12A	Canderly sandy loam, 0 to 3 percent slopes	3.0	100.0%
Totals for Area of Interest		3.0	100.0%

Engineering Properties

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Hydrologic soil group is a group of soils having similar runoff potential under similar storm and cover conditions. The criteria for determining Hydrologic soil group is found in the National Engineering Handbook, Chapter 7 issued May 2007(<http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba>). Listing HSGs by soil map unit component and not by soil series is a new concept for the engineers. Past engineering references contained lists of HSGs by soil series. Soil series are continually being defined and redefined, and the list of soil series names changes so frequently as to make the task of maintaining a single national list virtually impossible. Therefore, the criteria is now used to calculate the HSG using the component soil properties and no such national series lists will be maintained. All such references are obsolete and their use should be discontinued. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission rate. Changes in soil properties caused by land management or climate changes also cause the hydrologic soil group to change. The influence of ground cover is treated independently. There are four hydrologic soil groups, A, B, C, and D, and three dual groups, A/D, B/D, and C/D. In the dual groups, the first letter is for drained areas and the second letter is for undrained areas.

The four hydrologic soil groups are described in the following paragraphs:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Percentage of rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Report—Engineering Properties

Absence of an entry indicates that the data were not estimated. The asterisk "*" denotes the representative texture; other possible textures follow the dash. The criteria for determining the hydrologic soil group for individual soil components is found in the National Engineering Handbook, Chapter 7 issued May 2007(<http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba>). Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Engineering Properties—Clackamas County Area, Oregon														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			<i>In</i>				<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>
12A—Canderly sandy loam, 0 to 3 percent slopes														
Canderly	90	A	0-7	Sandy loam	SM	A-2, A-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	60-70-80	30-35-40	20-23-25	NP-3 -5
			7-46	Sandy loam, fine sandy loam, coarse sandy loam, loam	SM	A-2, A-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	60-70-80	30-35-40	20-23-25	NP-3 -5
			46-60	Stratified gravelly sand to coarse sandy loam	SM	A-1, A-2	0- 0- 0	0- 0- 0	75-88-100	70-85-100	35-55-75	15-23-30	0-5 -10	NP

Data Source Information

Soil Survey Area: Clackamas County Area, Oregon

Survey Area Data: Version 16, Jun 11, 2020





Real-World Geotechnical Solutions
Investigation • Design • Construction Support

December 16, 2020
Project No. 20-5589

Scott Newcombe
Venture Properties
4230 SW Galewood Street Suite 100
Lake Oswego, Oregon 97035
Email: scott@ventureprop.com

SUBJECT: GEOTECHNICAL ENGINEERING REPORT & RESULTS OF INFILTRATION TESTING
TERRITORIAL ROAD SUBDIVISION
102 NE TERRITORIAL ROAD
CANBY, OREGON

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-7465, dated September 2, 2020 and P-7528 dated November 10, 2020, and your subsequent authorization of our proposal and *General Conditions for Geotechnical Services*.

SITE DESCRIPTION AND PROPOSED DEVELOPMENT

The subject site is located northwest of the intersection of NE Territorial Road and N. Locust Street in the City of Canby, Clackamas County, Oregon (Figures 1 & 2). The property is approximately 3.3 acres in size and topography is flat to very gently sloping. The site is currently occupied by three structures and vegetation consists primarily of short grasses, agricultural crops, and sparse trees.

It is our understanding that the proposed development will consist of a 15 to 20 lot subdivision for single family homes, new streets, and associated underground utilities. A grading plan has not been provided for our review; however, we anticipate maximum cuts and fills will be on the order of about 5 feet.

REGIONAL AND LOCAL 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.

The site is underlain by the Quaternary age (last 1.6 million years) Willamette Formation, a catastrophic flood deposit associated with repeated glacial outburst flooding of the Willamette Valley (Trimble, 1963; Schlicker and Finlayson, 1979; Gannett and Caldwell, 1998). The last of these outburst floods occurred about 10,000 years ago. These deposits typically consist of fluvial and lacustrine horizontally layered, micaceous, silt to coarse sand forming poorly-defined to distinct beds less than 3 feet thick.

Published regional geologic mapping indicates that the Willamette Formation is underlain by the Columbia River Basalt Formation (Schlicker and Finlayson, 1979; Gannett and Caldwell, 1998). The Miocene aged (about 14.5 to 16.5 million years ago) Columbia River Basalts are a thick sequence of lava flows which form the crystalline basement of the Tualatin Valley. The basalts are composed of dense, finely crystalline rock that is commonly fractured along blocky and columnar vertical joints. Individual basalt flow units typically range from 25 to 125 feet thick and interflow zones are typically vesicular, scoriaceous, brecciated, and sometimes include sedimentary rocks.

REGIONAL SEISMIC SETTING

At least three potential source zones capable of generating damaging earthquakes are thought to exist in the region. These include the Portland Hills Fault Zone, the Gales Creek-Newberg-Mt. Angel Structural Zone, and the Cascadia Subduction Zone, as discussed below.

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 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 approximately 9.8 miles northeast of the site. The East Bank Fault occurs along the eastern margin of the Willamette River and is located approximately 16.6 miles north of the site. The Oatfield Fault occurs along the western side of the Portland Hills and is approximately 8.3 miles northeast of the site. The accuracy of the fault mapping is stated to be within 500 meters (Wong, et al., 2000). 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).

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 approximately 12.9 miles west 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;

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).

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 50 miles west of the Portland Basin at depths of between 20 and 40 kilometers below the surface.

FIELD EXPLORATION

Our site-specific explorations for this report were conducted on September 17 and December 8, 2020 and consisted of four exploratory test pits and one exploratory boring. The test pits (designated TP-1 through TP-4) were excavated with a large sized trackhoe to depths ranging between 12 and 14 feet and one boring (B-1) was drilled with a sonic drill rig to a depth of 36.5 feet. The exploration locations are presented on Figure 2. 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.

The borehole was drilled using a track mounted drill rig and sonic drilling methods operated by Western States Soil Conservation, Inc. of Hubbard, Oregon. The nature of sonic drilling provides the opportunity to observe the subsurface material encountered between SPT sample depths. While these samples are slightly disturbed, a more complete profile of the material can be observed than with mud rotary techniques that just provide split spoon samples. Infiltration testing can also be performed in the borings since drilling mud is not used.

At each boring location, SPT (Standard Penetration Test) sampling was performed in general accordance with ASTM D1586 using a 2-inch outside diameter split-spoon sampler and a 140-pound hammer equipped with a rope and cathead mechanism. During the test, a sample is obtained by driving the sampler 18 inches into the soil with the hammer free-falling 30 inches. The number of blows for each 6 inches of penetration is recorded. The Standard Penetration Resistance ("N-value") of the soil is calculated as the number of blows required for the final 12 inches of penetration. If 50 or more blows are recorded within a single 6-inch interval, the test is terminated, and the blow count is recorded as 50 blows for the number of inches driven. This resistance, or N-value, provides a measure of the relative density of granular soils and the relative consistency of cohesive soils. At the completion of the boring, the hole was backfilled with bentonite.

A GeoPacific Engineering Geologist continuously monitored the field exploration program and logged the test pits and borings. Soils observed in the explorations were classified in general

accordance with the Unified Soil Classification System (USCS). During exploration, our geologist also noted geotechnical conditions such as soil consistency, moisture and groundwater conditions. Logs of the explorations are attached to this report. The following report sections are based on the exploration program and summarize subsurface conditions encountered at the site.

Undocumented Fill: Undocumented fill was not encountered in our explorations. It is likely that areas of undocumented fill may exist in the vicinity of the existing structures, driveway, and road rights-of-way.

Topsoil Horizon: The ground surface in test pits TP-1 through TP-4 and boring B-1 was directly underlain by a highly organic topsoil horizon. The brown topsoil consisted of sandy silt (OL-ML), was loose, and contained roots with organic debris tilled within. The topsoil horizon typically extended to a depth of 10 to 16 inches in explorations.

Willamette Formation: Underlying the topsoil horizon in test pits TP-1 through TP-4 and boring B-1 were catastrophic flood deposits belonging to the Willamette Formation. These soils generally consisted of medium dense to dense, micaceous, light brown to gray, silty sand (SM) to well graded sand (SW). The silty sand to well graded sand contained trace gravel below depths of 4.5 to 12 feet. The sand with gravel transitioned to sandy gravel (GM) below a depth of 15 feet in boring B-1. The sandy gravel contained trace silt and had a medium dense to very dense relative density. In test pits TP-1 through TP-4 and boring B-1, soils belonging to the Willamette Formation extended beyond the maximum depth of exploration (36.5 feet).

Soil Moisture and Groundwater

Soils encountered in explorations were damp to moist. Neither static groundwater nor perched groundwater seepage was encountered in explorations excavated to a maximum depth of 36.5 feet. Regional groundwater mapping indicates static groundwater is present at a depth of approximately 40 feet (Snyder, 2008). Experience has shown that temporary perched storm-related groundwater conditions often occur within the surface soils over fine-grained native deposits such as those beneath the site, particularly during the wet season. It is anticipated that groundwater conditions will vary depending on the season, local subsurface conditions, changes in site utilization, and other factors.

INFILTRATION TESTING

Soil infiltration testing was performed using the open-hole infiltration method in boring B-1 at depths of 26.5 and 30 feet. Due to rapid infiltration, soils in the boring were pre-saturated with approximately 50 to 100 gallons of water prior to performing the test. The water level was measured to the nearest tenth of an inch every minute to 5 minutes with reference to the ground surface. Table 1 presents the results of our falling head infiltration tests.

Table 1. Summary of Infiltration Test Results

Boring	Depth (feet)	Soil Type	Infiltration Rate (in/hr)	Hydraulic Head Range (inches)
B-1	26.5	Sandy Gravel (GP), trace silt	94	4-34
B-1	30	Sandy Gravel (GP), trace silt	145	6-24

Reported infiltration rates do not incorporate a factor of safety. An appropriate factor of safety should be applied by the system designer.

CONCLUSIONS AND RECOMMENDATIONS

Our investigation indicates that the proposed development is geotechnically feasible, provided that the recommendations of this report are incorporated into the design and construction phases of the project. The primary geotechnical constraints to development include:

1. The presence of a highly organic topsoil horizon into which abundant organic debris had been tilled. Our explorations indicate the topsoil horizon ranges between 10 to 16 inches in thickness.
2. The presence of medium dense, caving soils. Moderate to significant caving was observed in medium dense, sandy soils in test pits below depths of 4.5 to 7 feet. These soil conditions could make utility trenching difficult, especially in the winter months, and adequate shoring should be maintained.

Site Preparation

Areas of proposed buildings, streets, and areas to receive fill should be cleared of vegetation and any organic and inorganic debris. If encountered, areas of undocumented fill, existing drain tiles and buried structures such as septic tanks, should be demolished and any cavities structurally backfilled.

Organic-rich topsoil should then be stripped from native soil areas of the site. We recommend that the upper 6 inches of organic topsoil horizon is stripped with the underlying 12 inches of tilled zone overexcavated for reuse as structural fill. The subgrade should be dried and evaluated after completion of the tilled zone stripping and prior to the start of engineered fill placement. The material removed from the tilled zone may be reused as engineered fill provided it is blended with low organic soil to yield an organic content of less than 4 percent. Deeper removals, blending, and ripping may be necessary in areas of the property. The final depth of soil removal will be determined on the basis of a site inspection after the stripping/ excavation has been performed. Stripped topsoil should preferably be removed from the site due to the high density of the proposed development. 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.

If encountered, undocumented fill should be removed to firm inorganic native soils and replaced with properly compacted engineered fill. Organic or otherwise deleterious portions of the fill should be exported from the site. Portions of undocumented fill soils that do not contain significant

percentages of organics may be sorted, sieved, root picked, and stockpiled for later use as engineered fill provided they are properly moisture conditioned for compaction and not mixed with topsoil or other organic/unsuitable materials. The final depth of removal should be determined on the basis of a site inspection after the initial stripping / fill excavation has been performed.

Once topsoil stripping and removal of organic and inorganic debris are approved in a particular area, the area must be ripped or tilled to a depth of 12 inches, moisture conditioned, root-picked, and compacted in-place prior to the placement of engineered fill or crushed aggregate base for pavement. Exposed subgrade soils should be evaluated by the geotechnical engineer. For large areas, this evaluation is normally performed by proof-rolling the exposed subgrade with a fully loaded scraper or dump truck. For smaller areas where access is restricted, the subgrade should be evaluated by probing the soil with a steel probe. Soft/loose soils identified during subgrade preparation should be compacted to a firm and unyielding condition, over-excavated and replaced with engineered fill (as described below), or stabilized with rock prior to placement of engineered fill. The depth of overexcavation, if required, should be evaluated by the geotechnical engineer at the time of construction.

Engineered Fill

In general, we anticipate that soils from planned cuts and utility trench excavations will be suitable for use as engineered fill provided they are adequately moisture conditioned prior to compacting. All grading for the proposed construction should be performed as engineered grading in accordance with the applicable building code at time of construction with the exceptions and additions noted herein. Proper test frequency and earthwork documentation usually requires daily observation and testing during stripping, rough grading, and placement of engineered 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 8 inches using standard compaction equipment. We recommend that engineered fill be compacted to at least 95% of the maximum dry density determined by ASTM D698 (Standard Proctor) or equivalent. 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 yd³, 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 will be impacted by soil moisture and shallow groundwater conditions. Earthwork in wet weather would likely require extensive use of cement or lime treatment, or other special measures, at considerable additional cost compared to earthwork performed under dry-weather conditions.

Excavating Conditions and Utility Trenches

We anticipate that on-site soils can be excavated using conventional heavy equipment such as trackhoes to a depth of 14 feet. Moderate to significant caving was observed in the test pits below depths of 4.5 feet. These conditions could make utility trenching difficult, especially in the winter months, and adequate shoring should be maintained.

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 are classified as Type C Soils and temporary excavation side slope inclinations as steep as 1.5H:1V may be assumed for planning purposes. This cut slope inclination is applicable to excavations above groundwater seepage zones only. 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.

Soft, saturated soils and groundwater may be encountered in utility trenches, particularly during the wet season. We anticipate that dewatering systems consisting of ditches, sumps and pumps would be adequate for control of perched groundwater. Regardless of the dewatering system used, it should be installed and operated such that in-place soils are prevented from being removed along with the groundwater. Trench bottom stabilization, such as one to two feet of compacted crushed aggregate base, may be necessary in deeper 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.

PVC pipe should be installed in accordance with the procedures specified in ASTM D2321. We recommend that trench backfill be compacted to at least 95% of the maximum dry density determined by ASTM D698 (Standard Proctor) or equivalent. Initial backfill lift thickness 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, one density test is taken for every 4 vertical feet of backfill on each 200-lineal-foot section of trench.

Erosion Control Considerations

During our field exploration program, we did not observe soil types that would be 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 and silt fences. If used, these erosion control devices should be in place and 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.

Wet Weather Earthwork

Soils underlying the site are likely to be moisture sensitive and may 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 probably require expensive measures such as cement treatment or imported granular material to compact fill 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 fines. 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
- Straw wattles and/or geotextile silt fences 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.

Spread Foundations

The proposed residential structures may likely be supported on shallow foundations bearing on competent undisturbed, native low expansivity 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. The recommended minimum widths for continuous footings supporting wood-framed walls without masonry are 12 inches for single-story, 15 inches for two-story, and 18 inches for three-story structures. Minimum foundation reinforcement should consist of a No. 4 bar at the top of the stem walls, and a No. 4 bar at the bottom of the footings. Concrete slab-on-grade reinforcement should consist of No. 4 bars placed on 24-inch centers in a grid pattern.

The anticipated allowable soil bearing pressure is 1,500 lbs/ft² for footings bearing on competent, nonexpansive native soil and/or engineered fill. A maximum chimney and column load of 40 kips is recommended for the site. The recommended maximum allowable bearing pressure may be increased by 1/3 for short-term transient conditions such as wind and seismic loading. For heavier loads, the geotechnical engineer should be consulted. 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 loose 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 overexcavation of footings and backfill with compacted, crushed aggregate.

Our recommendations are for house construction incorporating raised wood floors and conventional spread footing foundations. If living space of the structures will incorporate basements, a geotechnical engineer should be consulted to make additional recommendations for retaining walls, water-proofing, underslab drainage and wall subdrains. After site development, a Final Soil Engineer's Report should either confirm or modify the above recommendations.

Concrete Slabs-on-Grade

Preparation of areas beneath concrete slab-on-grade floors should be performed as recommended in the *Site Preparation and Undocumented Fill Removal* section. 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 stiff native silt soils anticipated at subgrade depth. This value assumes the concrete slab system is designed and constructed as recommended herein, with a minimum thickness of crushed rock of 8 inches beneath the slab.

Interior slab-on-grade floors should be provided with an adequate moisture break. The capillary break material should consist of ODOT open graded aggregate per ODOT Standard Specifications 02630-2. The minimum recommended thickness of capillary break materials on re-compacted soil subgrade is 8 inches. 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 90% of its maximum dry density as determined by ASTM D1557 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.

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 55 pcf should be used in design, again assuming level backfill against the wall. These values assume that drainage provisions are incorporated, free draining gravel backfill is used, 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 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.

Pavement Design

For design purposes, we used an estimated resilient modulus of 9,000 for compacted native soil. Table 2 presents our recommended minimum pavement section for dry weather construction.

Table 2. Recommended Minimum Dry-Weather Pavement Section

Material Layer	Light-duty Public Streets	Compaction Standard
Asphaltic Concrete (AC)	3 in.	92% of Rice Density AASHTO T-209
Crushed Aggregate Base ¾"-0 (leveling course)	2 in.	95% of Modified Proctor AASHTO T-180
Crushed Aggregate Base 1½"-0	8 in.	95% of Modified Proctor AASHTO T-180
Subgrade	12 in.	95% of Standard Proctor AASHTO T-99 or equivalent

Any pockets of organic debris or loose fill encountered during ripping or tilling should be removed and replaced with engineered fill (see *Site Preparation* Section). In order to verify subgrade strength, we recommend proof-rolling directly on subgrade with a loaded dump truck during dry weather and on top of base course in wet weather. Soft areas that pump, rut, or weave should be stabilized prior to paving. If pavement areas are to be constructed during wet weather, the subgrade and construction plan should be reviewed by the project geotechnical engineer at the time of construction so that condition specific recommendations can be provided. The moisture sensitive subgrade soils make the site a difficult wet weather construction project.

During placement of pavement section materials, density testing should be performed to verify compliance with project specifications. Generally, one subgrade, one base course, and one asphalt compaction test is performed for every 100 to 200 linear feet of paving.

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 (Dogami HazVu, 2020). 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, Chapter 20, Table 20.3-1. Design values determined for the site using the ATC (Applied Technology Council) *ASCE7-16 Hazards by Location online Tool* website are summarized in Table 3.

Table 3. Recommended Earthquake Ground Motion Parameters (ATC 2020)

Parameter	Value
Location (Lat, Long), degrees	45.277, -122.692
Mapped Spectral Acceleration Values (MCE):	
Peak Ground Acceleration PGA_M	0.448 g
Short Period, S_s	0.797 g
1.0 Sec Period, S_1	0.369 g
Soil Factors for Site Class D:	
F_a	1.181
F_v	*1.931
$SD_s = 2/3 \times F_a \times S_s$	0.628 g
$SD_1 = 2/3 \times F_v \times S_1$	*0.475 g
Seismic Design Category	D

* The 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) of OSSC 2019 with the assumption that Exception 2 of ASCE 7-16 Chapter 11.4.8 is met. SD_1 is based on the F_v value. The structural engineer should evaluate exception 2 and determine whether or not the exception is met. 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.

Soil Liquefaction

Soil liquefaction is a phenomenon wherein saturated soil deposits temporarily lose strength and behave as a liquid in response to earthquake shaking. Soil liquefaction is generally limited to loose, granular soils located below the water table. The Oregon Department of Geology and Mineral Industries (DOGAMI), Oregon HazVu: 2020 Statewide GeoHazards Viewer indicates that the southern portion of the site is considered to have a low risk for soil liquefaction and the

northern portion is considered to have a moderate liquefaction risk. Our explorations indicate that the near surface soils underlying the site are not susceptible to liquefaction.

Other Potential Seismic Impacts

Other potential seismic impacts include fault rupture potential. However, based on our review of available geologic literature, we are not aware of any mapped active (demonstrating movement in the last 10,000 years) faults on the site. During our field investigation, we did not observe any evidence of surface rupture or recent faulting. Therefore, we conclude that the potential for fault rupture on site is very low.

Footing and Roof Drains

Construction should include typical measures for controlling subsurface water beneath the homes, including positive crawlspace drainage to an adequate low-point drain exiting the foundation, visqueen covering the expose ground in the crawlspace, and crawlspace ventilation (foundation vents). The homebuyers should be informed and educated that some slow flowing water in the crawlspaces is considered normal and not necessarily detrimental to the home given these other design elements incorporated into its construction. Appropriate design professionals should be consulting 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.

If the proposed structures will have a raised floor, and no concrete slab-on-grade floors in living spaces are used, perimeter footing drains would not be required 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 necessary, perimeter footing drains should consist of 3 or 4-inch diameter, perforated plastic pipe embedded in a minimum of 1 ft³ 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. 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.

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,

GEOPACIFIC ENGINEERING, INC.



Beth K. Rapp, C.E.G.
Senior Engineering Geologist



Reviewed by: James D. Imbrie, G.E., C.E.G.
Principal Geotechnical Engineer

Attachments: References
Figure 1 – Vicinity Map
Figure 2 – Site Plan and Exploration Locations
Test Pit Logs (TP-1 through TP-4)
Boring Log (B-1)

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FIGURE 1



14835 SW 72nd Avenue
Portland, Oregon 97224
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SITE PLAN AND EXPLORATION LOCATIONS



Legend

TP-1 Test Pit Designation and
Approximate Location

B-1 Boring Designation and
Approximate Location

Date: 12/16/2020
Drawn by: EKR

0 100'
APPROXIMATE SCALE 1"=300'

Project: Territorial Road
Canby, Oregon

Project No. 20-5589

FIGURE 3



14835 SW 72nd Avenue
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TEST PIT LOG

Project: Territorial Road
Canby, Oregon

Project No. 20-5589

Test Pit No. **TP-1**

Depth (ft)	Pocket Penetrometer (tons/ft ²)	Sample Type	In-Situ Dry Density (lb/ft ³)	Sidewall Caving	Water Bearing Zone	Material Description
1						Highly organic, sandy SILT (OL-ML), brown, trace fine roots throughout, loose, organic debris tilled in, damp (Topsoil Horizon)
2						
3						Medium dense, silty SAND (SM), gray to brown, sand is fine to medium grained, trace roots to 3 feet, moderate sidewall caving below 6 feet, damp to moist (Willamette Formation)
4						
5						
6						
7						
8						
9						
10						Medium dense, SAND (SW), gray, sand is fine to coarse grained, damp to moist (Willamette Formation)
11						
12						Medium dense, SAND (SW), with subangular gravel, gray, sand is fine to coarse grained, damp to moist (Willamette Formation)
13						Test Pit Terminated at 13 Feet.
14						
15						Note: No groundwater or seepage encountered.
16						
17						

LEGEND



Bag Sample



Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 9/17/2020

Logged By: B. Rapp

Surface Elevation:



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TEST PIT LOG

Project: Territorial Road
Canby, Oregon

Project No. 20-5589

Test Pit No. **TP-2**

Depth (ft)	Pocket Penetrometer (tons/ft ²)	Sample Type	In-Situ Dry Density (lb/ft ³)	Sidewall Caving	Water Bearing Zone	Material Description
1						Highly organic, sandy SILT (OL-ML), brown, trace fine roots throughout, loose, organic debris tilled in, damp (Topsoil Horizon)
2						Medium dense to dense, silty SAND (SM), gray to brown, sand is fine to medium grained, trace roots to 3 feet, damp to moist (Willamette Formation)
3						
4						
5						
6						
7						
8						
9						Medium dense, SAND (SM), trace gravel, gray to brown, sand is fine to medium grained, moderate sidewall caving, damp to moist (Willamette Formation)
10						
11						
12						
13						
14						Test Pit Terminated at 14 Feet.
15						
16						Note: No groundwater or seepage encountered.
17						

LEGEND



Bag Sample



5 Gal. Bucket



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 9/17/2020

Logged By: B. Rapp

Surface Elevation:



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TEST PIT LOG

Project: Territorial Road
Canby, Oregon

Project No. 20-5589

Test Pit No. **TP-3**

Depth (ft)	Pocket Penetrometer (tons/ft ²)	Sample Type	In-Situ Dry Density (lb/ft ³)	Sidewall Caving	Water Bearing Zone	Material Description
1						Highly organic, sandy SILT (OL-ML), brown, trace fine roots throughout, loose, organic debris tilled in, damp (Topsoil Horizon)
2						Medium dense to dense, silty SAND (SM), gray to brown, sand is fine to medium grained, trace roots to 3 feet, damp to moist (Willamette Formation)
3						
4						
5						
6						Medium dense, SAND (SM), gray to brown, sand is fine to medium grained, moderate sidewall caving below 6 feet, damp to moist (Willamette Formation)
7						
8						
9						
10						
11						
12						
13						Medium dense to dense, SAND (SM), with gravel, gray to brown, sand is fine to medium grained, damp to moist (Willamette Formation)
14						Test Pit Terminated at 14 Feet.
15						Note: No groundwater or seepage encountered.
16						
17						

LEGEND



Bag Sample



5 Gal. Bucket



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 9/17/2020

Logged By: B. Rapp

Surface Elevation:



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345

TEST PIT LOG

Project: Territorial Road
Canby, Oregon

Project No. 20-5589

Test Pit No. **TP-4**

Depth (ft)	Pocket Penetrometer (tons/ft ²)	Sample Type	In-Situ Dry Density (lb/ft ³)	Sidewall Caving	Water Bearing Zone	Material Description
1						Highly organic, sandy SILT (OL-ML), brown, trace fine roots throughout, loose, organic debris tilled in, damp (Topsoil Horizon)
2						
3						Medium dense, silty SAND (SM), gray to brown, sand is fine to medium grained, trace roots to 2 feet, damp to moist (Willamette Formation)
4						
5						
6						
7						Medium dense, SAND (SW), trace subangular gravel, gray, sand is fine to coarse grained, significant sidewall caving, damp to moist (Willamette Formation)
8						
9						
10						
11						
12						
13						Test Pit Terminated at 12 Feet.
14						Note: No groundwater or seepage encountered.
15						
16						
17						

LEGEND



Bag Sample



5 Gal. Bucket



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 9/17/2020

Logged By: B. Rapp

Surface Elevation:










14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

346
BORING LOG

Project: Territorial Road
Canby, Oregon

Project No. 20-5589

Boring No. **B-1**

Depth (ft)	Sample Type	N-Value	Well Construction	Moisture Content (%)	Water Bearing Zone	Material Description
						Highly organic, sandy SILT (OL-ML), brown, loose, moist (Topsoil Horizon)
5		13				Medium dense, silty SAND (SM), gray to brown, sand is fine to coarse grained, damp to moist (Willamette Formation)
10		28				Medium dense, SAND (SW), trace gravel, gray, sand is fine to medium grained, moist (Willamette Formation)
15		64				
20		53				Medium dense to very dense, sandy GRAVEL (GP), trace silt, gray, sand is fine to coarse grained, moist (Willamette Formation)
25		50 for 4"				
30		50 for 2"				
35		25				
40						Boring Terminated at 36.5 feet. No Groundwater or Seepage Encountered

LEGEND



Bag Sample



Split-Spoon



Shelby Tube Sample



Static Water Table
at Drilling



Static Water Table



Water Bearing Zone

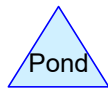
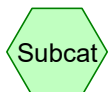
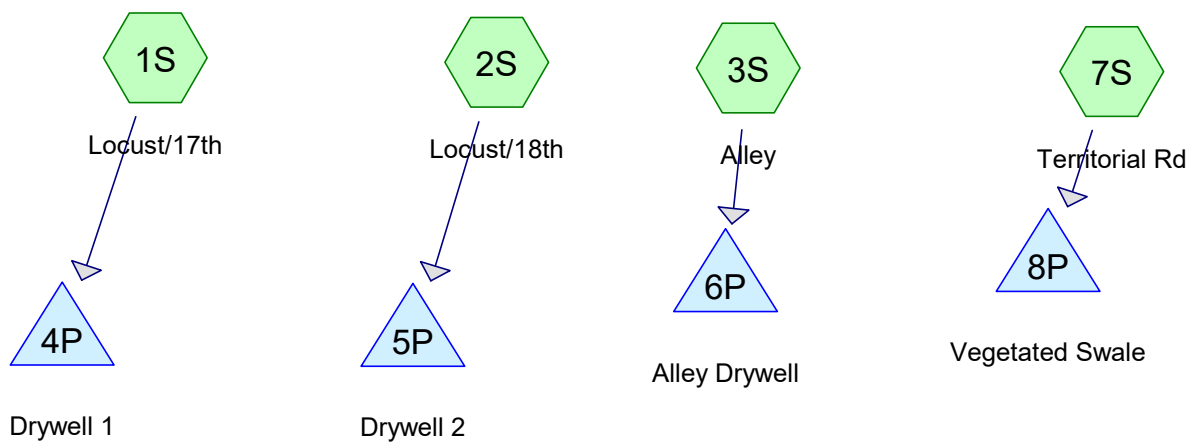
Date Drilled: 12/8/2020

Logged By: B. Rapp

Surface Elevation:

APPENDIX B

HYDROCAD ANALYSIS



Territorial HydroCAD Model

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Page 2

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-year	Type IA 24-hr		Default	24.00	1	2.50	2
2	5-year	Type IA 24-hr		Default	24.00	1	2.90	2
3	10-year	Type IA 24-hr		Default	24.00	1	3.40	2
4	25-year	Type IA 24-hr		Default	24.00	1	3.90	2

Territorial HydroCAD Model

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Page 3

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.110	39	>75% Grass cover, Good, HSG A (1S, 2S, 7S)
1.250	98	Paved roads w/curbs & sewers, HSG A (1S, 2S, 3S, 7S)
1.360	93	TOTAL AREA

Territorial HydroCAD Model

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Page 4

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
1.360	HSG A	1S, 2S, 3S, 7S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
1.360		TOTAL AREA

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Page 5

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.110	0.000	0.000	0.000	0.000	0.110	>75% Grass cover, Good	1S,
							2S,
							7S
1.250	0.000	0.000	0.000	0.000	1.250	Paved roads w/curbs & sewers	1S,
							2S,
							3S,
							7S
1.360	0.000	0.000	0.000	0.000	1.360	TOTAL AREA	

Territorial HydroCAD Model

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Page 6

Land-Use Listing (all nodes)

Area (acres)	Land Use	Subcatchment Numbers
0.110	Open Space	1S, 2S, 7S
1.250	Roadway	1S, 2S, 3S, 7S
1.360	TOTAL	

Territorial HydroCAD Model

Type IA 24-hr 2-year Rainfall=2.50"

Prepared by Atwell LLC

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Page 7

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points

Runoff by SBUH method, Split Pervious/Imperv.

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Locust/17th Runoff Area=0.500 ac 92.00% Impervious Runoff Depth=2.09"
 Flow Length=580' Slope=0.0100 '/' Tc=12.7 min CN=39/98 Runoff=0.24 cfs 0.087 af

Subcatchment 2S: Locust/18th Runoff Area=0.530 ac 90.57% Impervious Runoff Depth=2.06"
 Flow Length=366' Slope=0.0100 '/' Tc=9.2 min CN=39/98 Runoff=0.26 cfs 0.091 af

Subcatchment 3S: Alley Runoff Area=0.160 ac 100.00% Impervious Runoff Depth=2.27"
 Flow Length=215' Slope=0.0050 '/' Tc=6.2 min CN=0/98 Runoff=0.09 cfs 0.030 af

Subcatchment 7S: Territorial Rd Runoff Area=0.170 ac 88.24% Impervious Runoff Depth=2.00"
 Flow Length=200' Slope=0.0050 '/' Tc=8.3 min CN=39/98 Runoff=0.08 cfs 0.028 af

Pond 4P: Drywell 1 Peak Elev=141.00' Storage=327 cf Inflow=0.24 cfs 0.087 af
 Outflow=0.24 cfs 0.087 af

Pond 5P: Drywell 2 Peak Elev=139.00' Storage=0.008 af Inflow=0.26 cfs 0.091 af
 Outflow=0.26 cfs 0.091 af

Pond 6P: Alley Drywell Peak Elev=135.02' Storage=0.005 af Inflow=0.09 cfs 0.030 af
 Outflow=0.03 cfs 0.030 af

Pond 8P: Vegetated Swale Peak Elev=144.47' Storage=0.000 af Inflow=0.08 cfs 0.028 af
 Outflow=0.08 cfs 0.028 af

Total Runoff Area = 1.360 ac Runoff Volume = 0.237 af Average Runoff Depth = 2.09"
8.09% Pervious = 0.110 ac 91.91% Impervious = 1.250 ac

Territorial HydroCAD Model

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Type IA 24-hr 2-year Rainfall=2.50"

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Page 8

Summary for Subcatchment 1S: Locust/17th

Runoff = 0.24 cfs @ 7.99 hrs, Volume= 0.087 af, Depth= 2.09"

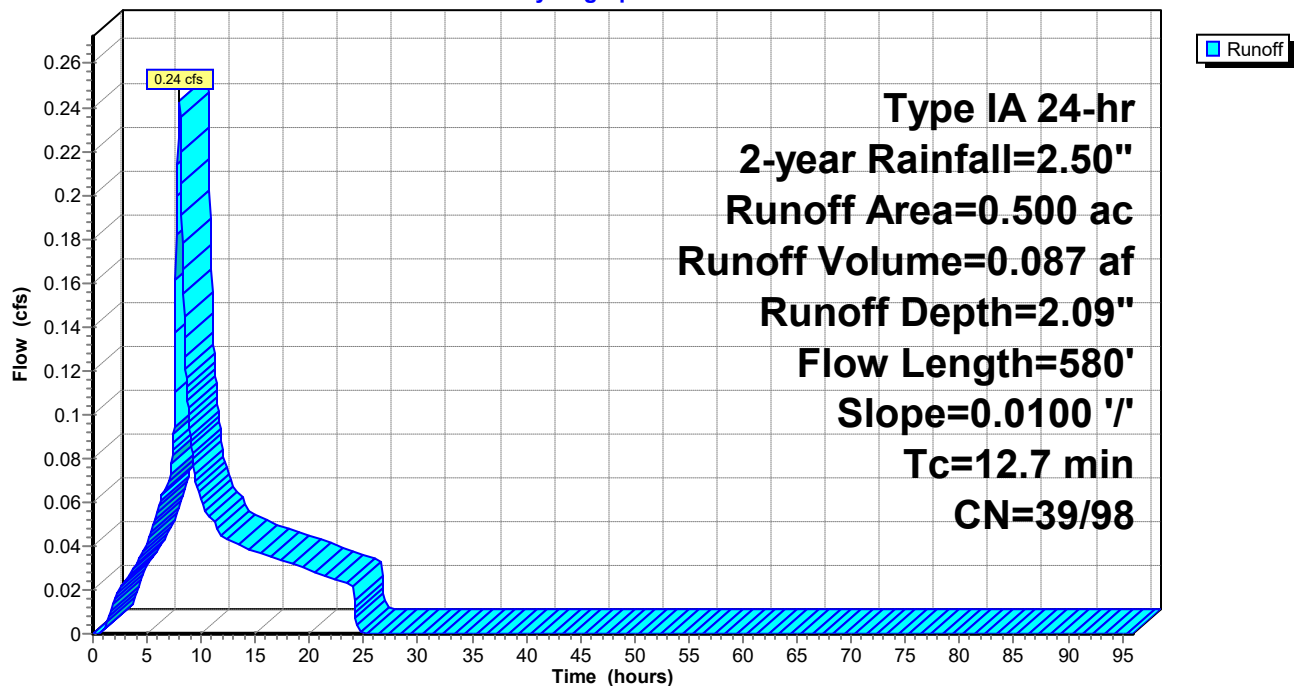
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type IA 24-hr 2-year Rainfall=2.50"

Area (ac)	CN	Description	Land Use
0.460	98	Paved roads w/curbs & sewers, HSG A	Roadway
0.040	39	>75% Grass cover, Good, HSG A	Open Space
0.500	93	Weighted Average	
0.040	39	8.00% Pervious Area	
0.460	98	92.00% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	580	0.0100	0.76		Lag/CN Method,

Subcatchment 1S: Locust/17th

Hydrograph



Territorial HydroCAD Model

Type IA 24-hr 2-year Rainfall=2.50"

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Hydrograph for Subcatchment 1S: Locust/17th

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.50	0.16	0.00	0.05	0.02
5.00	0.39	0.00	0.22	0.04
7.50	0.78	0.00	0.57	0.09
10.00	1.44	0.00	1.22	0.06
12.50	1.71	0.00	1.48	0.04
15.00	1.92	0.00	1.70	0.04
17.50	2.11	0.00	1.89	0.03
20.00	2.28	0.00	2.05	0.03
22.50	2.43	0.00	2.20	0.02
25.00	2.50	0.00	2.27	0.00
27.50	2.50	0.00	2.27	0.00
30.00	2.50	0.00	2.27	0.00
32.50	2.50	0.00	2.27	0.00
35.00	2.50	0.00	2.27	0.00
37.50	2.50	0.00	2.27	0.00
40.00	2.50	0.00	2.27	0.00
42.50	2.50	0.00	2.27	0.00
45.00	2.50	0.00	2.27	0.00
47.50	2.50	0.00	2.27	0.00
50.00	2.50	0.00	2.27	0.00
52.50	2.50	0.00	2.27	0.00
55.00	2.50	0.00	2.27	0.00
57.50	2.50	0.00	2.27	0.00
60.00	2.50	0.00	2.27	0.00
62.50	2.50	0.00	2.27	0.00
65.00	2.50	0.00	2.27	0.00
67.50	2.50	0.00	2.27	0.00
70.00	2.50	0.00	2.27	0.00
72.50	2.50	0.00	2.27	0.00
75.00	2.50	0.00	2.27	0.00
77.50	2.50	0.00	2.27	0.00
80.00	2.50	0.00	2.27	0.00
82.50	2.50	0.00	2.27	0.00
85.00	2.50	0.00	2.27	0.00
87.50	2.50	0.00	2.27	0.00
90.00	2.50	0.00	2.27	0.00
92.50	2.50	0.00	2.27	0.00
95.00	2.50	0.00	2.27	0.00

Territorial HydroCAD Model

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Type IA 24-hr 2-year Rainfall=2.50"

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Summary for Subcatchment 2S: Locust/18th

Runoff = 0.26 cfs @ 7.97 hrs, Volume= 0.091 af, Depth= 2.06"

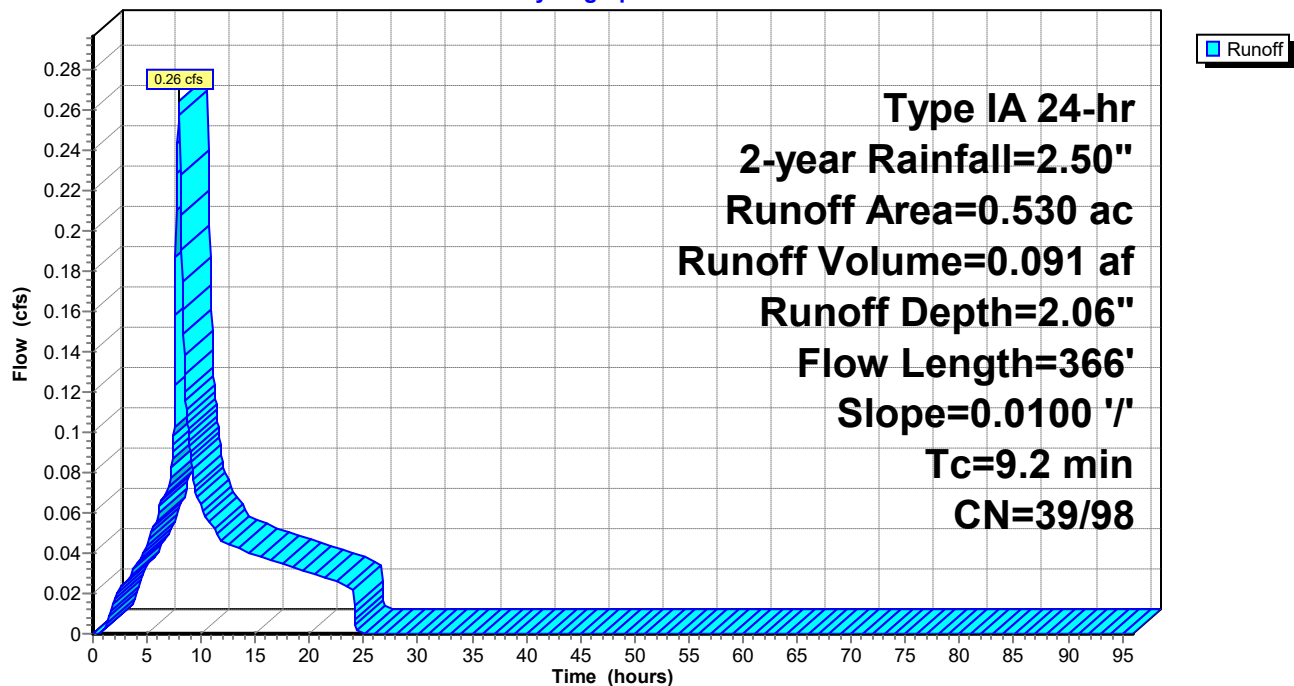
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type IA 24-hr 2-year Rainfall=2.50"

Area (ac)	CN	Description	Land Use
0.480	98	Paved roads w/curbs & sewers, HSG A	Roadway
0.050	39	>75% Grass cover, Good, HSG A	Open Space
0.530	92	Weighted Average	
0.050	39	9.43% Pervious Area	
0.480	98	90.57% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	366	0.0100	0.67		Lag/CN Method,

Subcatchment 2S: Locust/18th

Hydrograph



Territorial HydroCAD Model

Type IA 24-hr 2-year Rainfall=2.50"

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Hydrograph for Subcatchment 2S: Locust/18th

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.50	0.16	0.00	0.05	0.02
5.00	0.39	0.00	0.22	0.04
7.50	0.78	0.00	0.57	0.10
10.00	1.44	0.00	1.22	0.06
12.50	1.71	0.00	1.48	0.05
15.00	1.92	0.00	1.70	0.04
17.50	2.11	0.00	1.89	0.03
20.00	2.28	0.00	2.05	0.03
22.50	2.43	0.00	2.20	0.03
25.00	2.50	0.00	2.27	0.00
27.50	2.50	0.00	2.27	0.00
30.00	2.50	0.00	2.27	0.00
32.50	2.50	0.00	2.27	0.00
35.00	2.50	0.00	2.27	0.00
37.50	2.50	0.00	2.27	0.00
40.00	2.50	0.00	2.27	0.00
42.50	2.50	0.00	2.27	0.00
45.00	2.50	0.00	2.27	0.00
47.50	2.50	0.00	2.27	0.00
50.00	2.50	0.00	2.27	0.00
52.50	2.50	0.00	2.27	0.00
55.00	2.50	0.00	2.27	0.00
57.50	2.50	0.00	2.27	0.00
60.00	2.50	0.00	2.27	0.00
62.50	2.50	0.00	2.27	0.00
65.00	2.50	0.00	2.27	0.00
67.50	2.50	0.00	2.27	0.00
70.00	2.50	0.00	2.27	0.00
72.50	2.50	0.00	2.27	0.00
75.00	2.50	0.00	2.27	0.00
77.50	2.50	0.00	2.27	0.00
80.00	2.50	0.00	2.27	0.00
82.50	2.50	0.00	2.27	0.00
85.00	2.50	0.00	2.27	0.00
87.50	2.50	0.00	2.27	0.00
90.00	2.50	0.00	2.27	0.00
92.50	2.50	0.00	2.27	0.00
95.00	2.50	0.00	2.27	0.00

Territorial HydroCAD Model

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Type IA 24-hr 2-year Rainfall=2.50"

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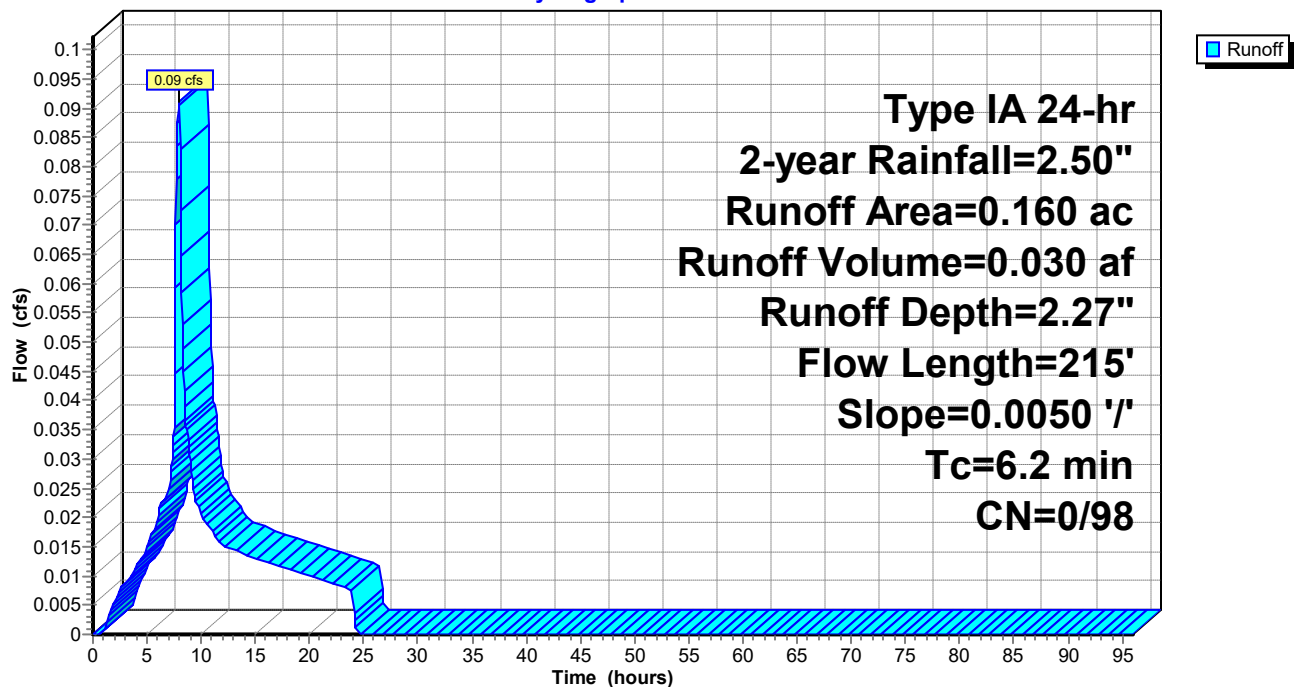
Summary for Subcatchment 3S: Alley

Runoff = 0.09 cfs @ 7.92 hrs, Volume= 0.030 af, Depth= 2.27"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type IA 24-hr 2-year Rainfall=2.50"

Area (ac)	CN	Description	Land Use
0.160	98	Paved roads w/curbs & sewers, HSG A	Roadway
0.160	98	100.00% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	215	0.0050	0.58		Lag/CN Method,

Subcatchment 3S: Alley**Hydrograph**

Territorial HydroCAD Model

Type IA 24-hr 2-year Rainfall=2.50"

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Hydrograph for Subcatchment 3S: Alley

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.50	0.16	0.00	0.05	0.01
5.00	0.39	0.00	0.22	0.01
7.50	0.78	0.00	0.57	0.04
10.00	1.44	0.00	1.22	0.02
12.50	1.71	0.00	1.48	0.02
15.00	1.92	0.00	1.70	0.01
17.50	2.11	0.00	1.89	0.01
20.00	2.28	0.00	2.05	0.01
22.50	2.43	0.00	2.20	0.01
25.00	2.50	0.00	2.27	0.00
27.50	2.50	0.00	2.27	0.00
30.00	2.50	0.00	2.27	0.00
32.50	2.50	0.00	2.27	0.00
35.00	2.50	0.00	2.27	0.00
37.50	2.50	0.00	2.27	0.00
40.00	2.50	0.00	2.27	0.00
42.50	2.50	0.00	2.27	0.00
45.00	2.50	0.00	2.27	0.00
47.50	2.50	0.00	2.27	0.00
50.00	2.50	0.00	2.27	0.00
52.50	2.50	0.00	2.27	0.00
55.00	2.50	0.00	2.27	0.00
57.50	2.50	0.00	2.27	0.00
60.00	2.50	0.00	2.27	0.00
62.50	2.50	0.00	2.27	0.00
65.00	2.50	0.00	2.27	0.00
67.50	2.50	0.00	2.27	0.00
70.00	2.50	0.00	2.27	0.00
72.50	2.50	0.00	2.27	0.00
75.00	2.50	0.00	2.27	0.00
77.50	2.50	0.00	2.27	0.00
80.00	2.50	0.00	2.27	0.00
82.50	2.50	0.00	2.27	0.00
85.00	2.50	0.00	2.27	0.00
87.50	2.50	0.00	2.27	0.00
90.00	2.50	0.00	2.27	0.00
92.50	2.50	0.00	2.27	0.00
95.00	2.50	0.00	2.27	0.00

Territorial HydroCAD Model

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Type IA 24-hr 2-year Rainfall=2.50"

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Summary for Subcatchment 7S: Territorial Rd

Runoff = 0.08 cfs @ 7.96 hrs, Volume= 0.028 af, Depth= 2.00"

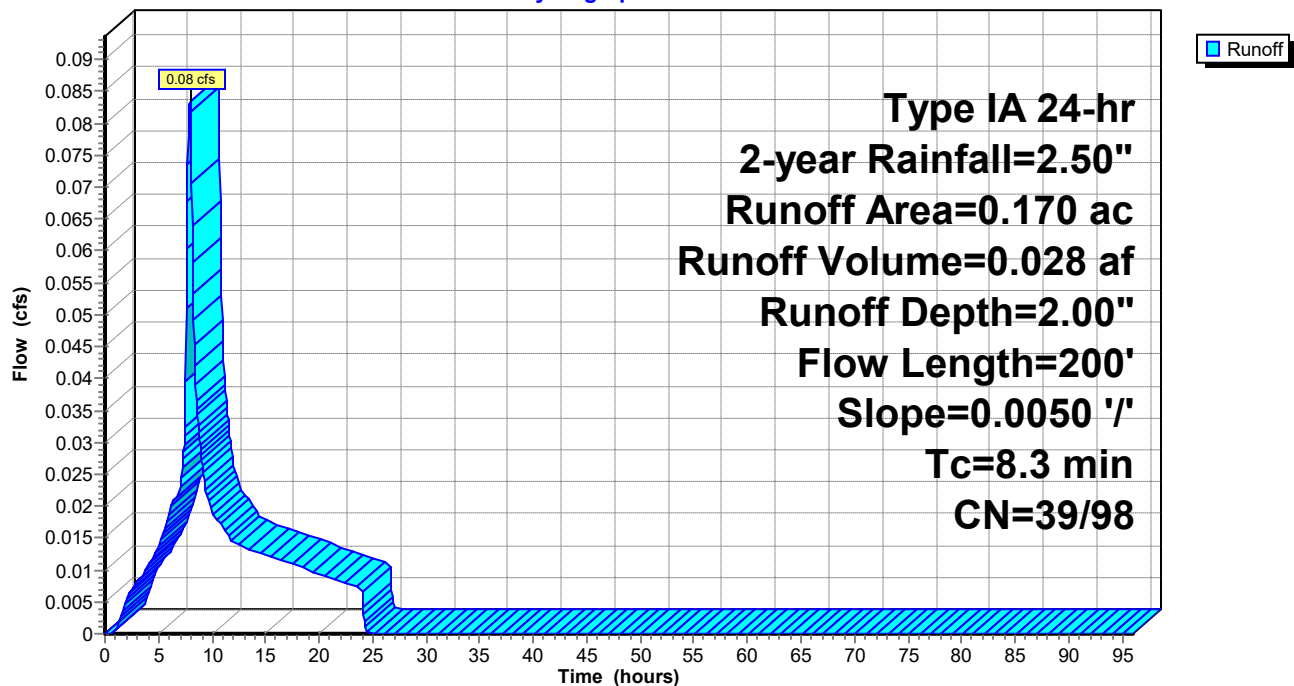
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type IA 24-hr 2-year Rainfall=2.50"

Area (ac)	CN	Description	Land Use
0.150	98	Paved roads w/curbs & sewers, HSG A	Roadway
0.020	39	>75% Grass cover, Good, HSG A	Open Space
0.170	91	Weighted Average	
0.020	39	11.76% Pervious Area	
0.150	98	88.24% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	200	0.0050	0.40		Lag/CN Method, territorial

Subcatchment 7S: Territorial Rd

Hydrograph



Territorial HydroCAD Model

Type IA 24-hr 2-year Rainfall=2.50"

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Hydrograph for Subcatchment 7S: Territorial Rd

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.50	0.16	0.00	0.05	0.01
5.00	0.39	0.00	0.22	0.01
7.50	0.78	0.00	0.57	0.03
10.00	1.44	0.00	1.22	0.02
12.50	1.71	0.00	1.48	0.01
15.00	1.92	0.00	1.70	0.01
17.50	2.11	0.00	1.89	0.01
20.00	2.28	0.00	2.05	0.01
22.50	2.43	0.00	2.20	0.01
25.00	2.50	0.00	2.27	0.00
27.50	2.50	0.00	2.27	0.00
30.00	2.50	0.00	2.27	0.00
32.50	2.50	0.00	2.27	0.00
35.00	2.50	0.00	2.27	0.00
37.50	2.50	0.00	2.27	0.00
40.00	2.50	0.00	2.27	0.00
42.50	2.50	0.00	2.27	0.00
45.00	2.50	0.00	2.27	0.00
47.50	2.50	0.00	2.27	0.00
50.00	2.50	0.00	2.27	0.00
52.50	2.50	0.00	2.27	0.00
55.00	2.50	0.00	2.27	0.00
57.50	2.50	0.00	2.27	0.00
60.00	2.50	0.00	2.27	0.00
62.50	2.50	0.00	2.27	0.00
65.00	2.50	0.00	2.27	0.00
67.50	2.50	0.00	2.27	0.00
70.00	2.50	0.00	2.27	0.00
72.50	2.50	0.00	2.27	0.00
75.00	2.50	0.00	2.27	0.00
77.50	2.50	0.00	2.27	0.00
80.00	2.50	0.00	2.27	0.00
82.50	2.50	0.00	2.27	0.00
85.00	2.50	0.00	2.27	0.00
87.50	2.50	0.00	2.27	0.00
90.00	2.50	0.00	2.27	0.00
92.50	2.50	0.00	2.27	0.00
95.00	2.50	0.00	2.27	0.00

Territorial HydroCAD Model

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Type IA 24-hr 2-year Rainfall=2.50"

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Summary for Pond 4P: Drywell 1

Inflow Area = 0.500 ac, 92.00% Impervious, Inflow Depth = 2.09" for 2-year event
 Inflow = 0.24 cfs @ 7.99 hrs, Volume= 0.087 af
 Outflow = 0.24 cfs @ 8.01 hrs, Volume= 0.087 af, Atten= 1%, Lag= 1.1 min
 Discarded = 0.24 cfs @ 8.01 hrs, Volume= 0.087 af

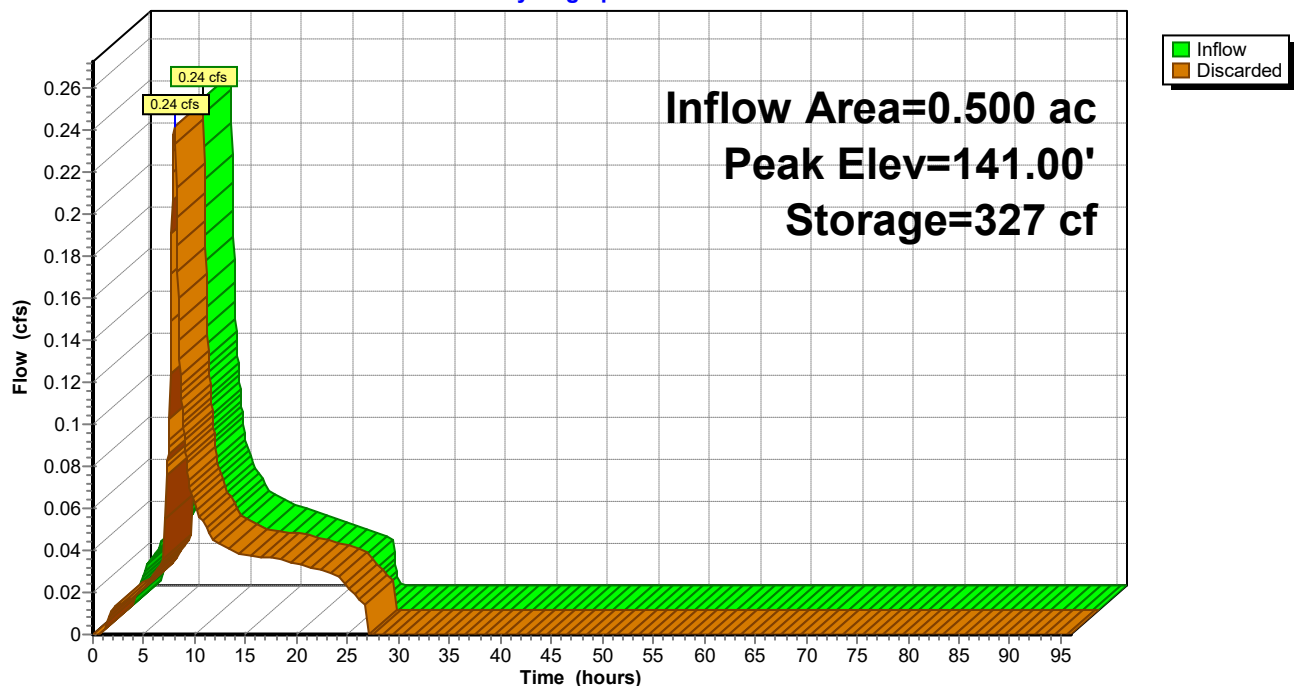
Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 141.00' @ 7.10 hrs Surf.Area= 13 sf Storage= 327 cf

Plug-Flow detention time= 94.6 min calculated for 0.087 af (100% of inflow)
 Center-of-Mass det. time= 94.9 min (776.4 - 681.5)

Volume	Invert	Avail.Storage	Storage Description
#1	115.00'	126 cf	4.00'D x 10.00'H Vertical Cone/Cylinder
#2	125.00'	201 cf	4.00'D x 16.00'H Vertical Cone/Cylinder -Impervious
		327 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#0	Discarded	141.00'	Automatic Storage Overflow (Discharged without head)
#1	Discarded	115.00'	47.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 100.00'

Discarded OutFlow Max=0.04 cfs @ 8.01 hrs HW=141.00' (Free Discharge)
 ↑1=Exfiltration (Controls 0.04 cfs)

Pond 4P: Drywell 1**Hydrograph**

Territorial HydroCAD Model

Type IA 24-hr 2-year Rainfall=2.50"

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Hydrograph for Pond 4P: Drywell 1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0	115.00	0.00
2.50	0.02	8	115.61	0.01
5.00	0.04	120	124.59	0.02
7.50	0.09	327	141.00	0.09
10.00	0.06	327	141.00	0.06
12.50	0.04	327	141.00	0.04
15.00	0.04	327	141.00	0.04
17.50	0.03	313	139.92	0.04
20.00	0.03	278	137.09	0.03
22.50	0.02	230	133.32	0.03
25.00	0.00	125	124.94	0.02
27.50	0.00	0	115.00	0.00
30.00	0.00	0	115.00	0.00
32.50	0.00	0	115.00	0.00
35.00	0.00	0	115.00	0.00
37.50	0.00	0	115.00	0.00
40.00	0.00	0	115.00	0.00
42.50	0.00	0	115.00	0.00
45.00	0.00	0	115.00	0.00
47.50	0.00	0	115.00	0.00
50.00	0.00	0	115.00	0.00
52.50	0.00	0	115.00	0.00
55.00	0.00	0	115.00	0.00
57.50	0.00	0	115.00	0.00
60.00	0.00	0	115.00	0.00
62.50	0.00	0	115.00	0.00
65.00	0.00	0	115.00	0.00
67.50	0.00	0	115.00	0.00
70.00	0.00	0	115.00	0.00
72.50	0.00	0	115.00	0.00
75.00	0.00	0	115.00	0.00
77.50	0.00	0	115.00	0.00
80.00	0.00	0	115.00	0.00
82.50	0.00	0	115.00	0.00
85.00	0.00	0	115.00	0.00
87.50	0.00	0	115.00	0.00
90.00	0.00	0	115.00	0.00
92.50	0.00	0	115.00	0.00
95.00	0.00	0	115.00	0.00

Territorial HydroCAD Model

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Type IA 24-hr 2-year Rainfall=2.50"

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Summary for Pond 5P: Drywell 2

Inflow Area = 0.530 ac, 90.57% Impervious, Inflow Depth = 2.06" for 2-year event
 Inflow = 0.26 cfs @ 7.97 hrs, Volume= 0.091 af
 Outflow = 0.26 cfs @ 7.98 hrs, Volume= 0.091 af, Atten= 0%, Lag= 0.7 min
 Discarded = 0.26 cfs @ 7.98 hrs, Volume= 0.091 af

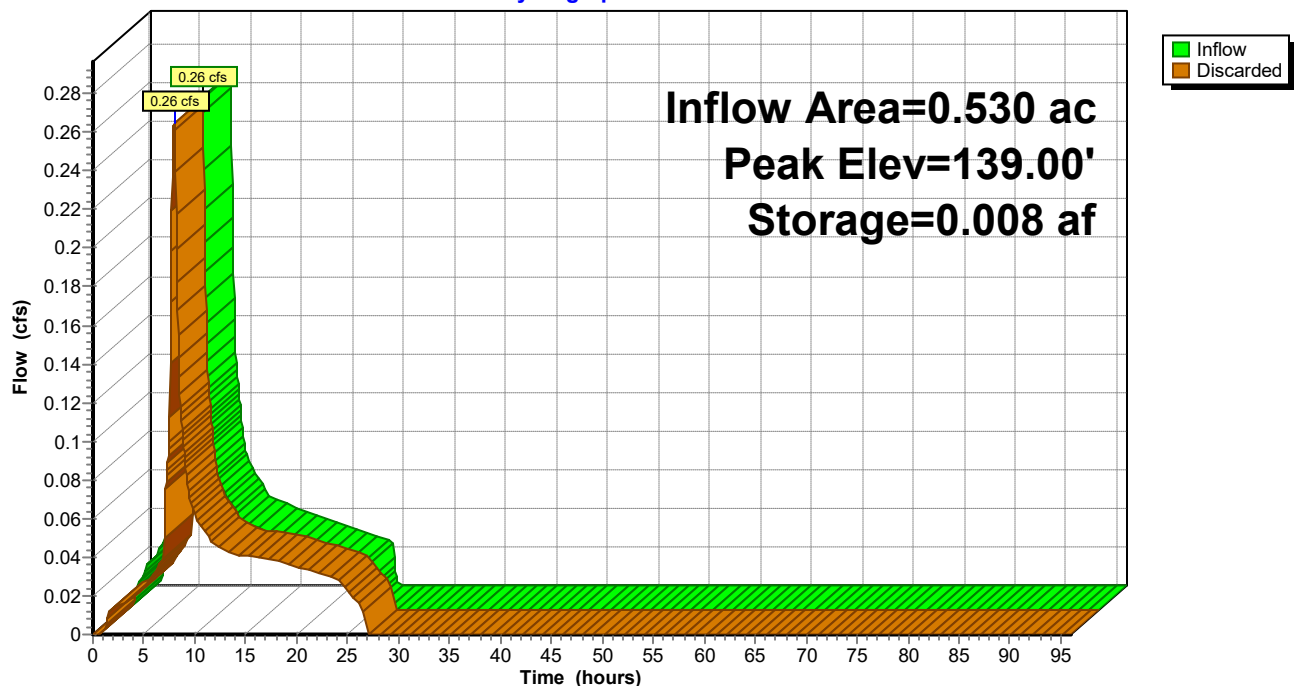
Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 139.00' @ 7.05 hrs Surf.Area= 0.000 ac Storage= 0.008 af

Plug-Flow detention time= 88.0 min calculated for 0.091 af (100% of inflow)
 Center-of-Mass det. time= 88.2 min (766.3 - 678.0)

Volume	Invert	Avail.Storage	Storage Description
#1	113.00'	0.003 af	4.00'D x 10.00'H Vertical Cone/Cylinder
#2	123.00'	0.005 af	4.00'D x 16.00'H Vertical Cone/Cylinder -Impervious
		0.008 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#0	Discarded	139.00'	Automatic Storage Overflow (Discharged without head)
#1	Discarded	113.00'	47.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 100.00'

Discarded OutFlow Max=0.04 cfs @ 7.98 hrs HW=139.00' (Free Discharge)
 ↑1=Exfiltration (Controls 0.04 cfs)

Pond 5P: Drywell 2**Hydrograph**

Territorial HydroCAD Model

Type IA 24-hr 2-year Rainfall=2.50"

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Hydrograph for Pond 5P: Drywell 2

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0.000	113.00	0.00
2.50	0.02	0.000	113.86	0.01
5.00	0.04	0.003	123.31	0.02
7.50	0.10	0.008	139.00	0.10
10.00	0.06	0.008	139.00	0.06
12.50	0.05	0.008	139.00	0.05
15.00	0.04	0.007	138.74	0.04
17.50	0.03	0.007	136.72	0.04
20.00	0.03	0.006	133.49	0.04
22.50	0.03	0.005	129.69	0.03
25.00	0.00	0.002	121.08	0.02
27.50	0.00	0.000	113.00	0.00
30.00	0.00	0.000	113.00	0.00
32.50	0.00	0.000	113.00	0.00
35.00	0.00	0.000	113.00	0.00
37.50	0.00	0.000	113.00	0.00
40.00	0.00	0.000	113.00	0.00
42.50	0.00	0.000	113.00	0.00
45.00	0.00	0.000	113.00	0.00
47.50	0.00	0.000	113.00	0.00
50.00	0.00	0.000	113.00	0.00
52.50	0.00	0.000	113.00	0.00
55.00	0.00	0.000	113.00	0.00
57.50	0.00	0.000	113.00	0.00
60.00	0.00	0.000	113.00	0.00
62.50	0.00	0.000	113.00	0.00
65.00	0.00	0.000	113.00	0.00
67.50	0.00	0.000	113.00	0.00
70.00	0.00	0.000	113.00	0.00
72.50	0.00	0.000	113.00	0.00
75.00	0.00	0.000	113.00	0.00
77.50	0.00	0.000	113.00	0.00
80.00	0.00	0.000	113.00	0.00
82.50	0.00	0.000	113.00	0.00
85.00	0.00	0.000	113.00	0.00
87.50	0.00	0.000	113.00	0.00
90.00	0.00	0.000	113.00	0.00
92.50	0.00	0.000	113.00	0.00
95.00	0.00	0.000	113.00	0.00

Territorial HydroCAD Model

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Type IA 24-hr 2-year Rainfall=2.50"

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Summary for Pond 6P: Alley Drywell

Inflow Area = 0.160 ac, 100.00% Impervious, Inflow Depth = 2.27" for 2-year event
 Inflow = 0.09 cfs @ 7.92 hrs, Volume= 0.030 af
 Outflow = 0.03 cfs @ 9.06 hrs, Volume= 0.030 af, Atten= 69%, Lag= 68.1 min
 Discarded = 0.03 cfs @ 9.06 hrs, Volume= 0.030 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 135.02' @ 9.06 hrs Surf.Area= 0.000 ac Storage= 0.005 af

Plug-Flow detention time= 65.7 min calculated for 0.030 af (100% of inflow)
 Center-of-Mass det. time= 65.7 min (740.7 - 675.0)

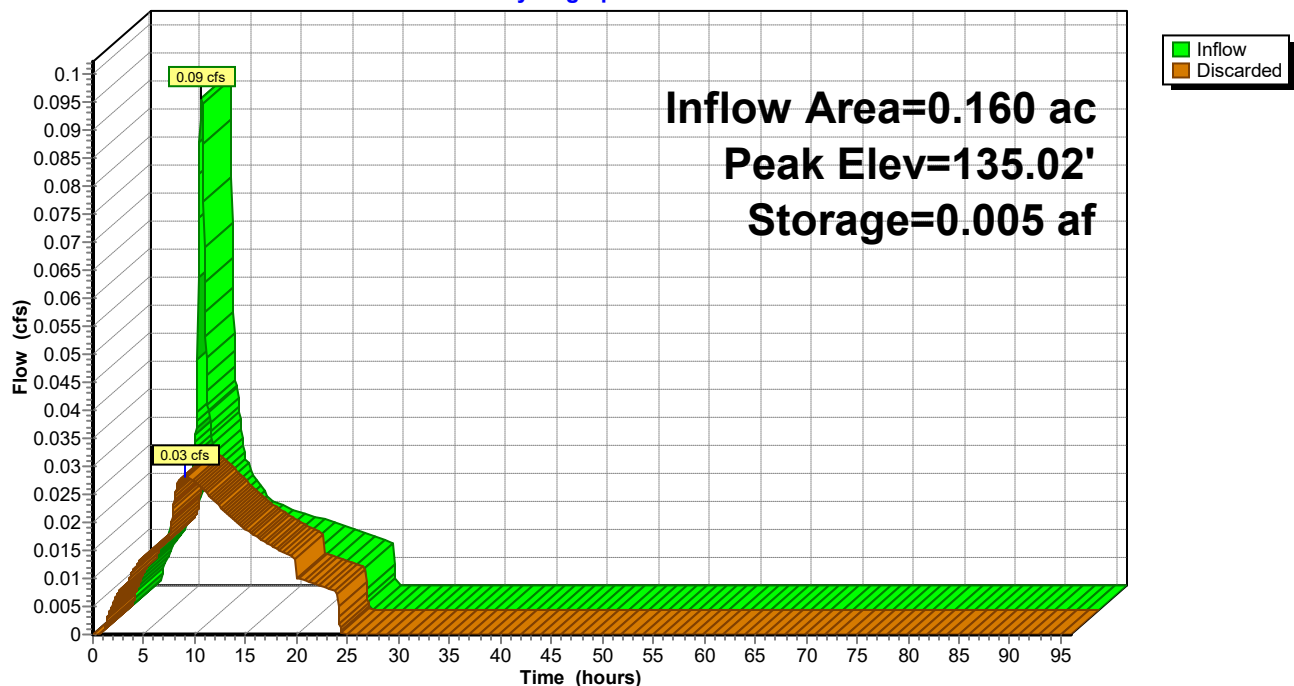
Volume	Invert	Avail.Storage	Storage Description
#1	117.00'	0.003 af	4.00'D x 10.00'H Vertical Cone/Cylinder
#2	127.00'	0.005 af	4.00'D x 16.00'H Vertical Cone/Cylinder -Impervious
		0.008 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#0	Discarded	143.00'	Automatic Storage Overflow (Discharged without head)
#1	Discarded	117.00'	47.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 100.00' Phase-In= 0.10'

Discarded OutFlow Max=0.03 cfs @ 9.06 hrs HW=135.02' (Free Discharge)
 ↑ **1=Exfiltration** (Controls 0.03 cfs)

Pond 6P: Alley Drywell

Hydrograph



Territorial HydroCAD Model

Type IA 24-hr 2-year Rainfall=2.50"

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Hydrograph for Pond 6P: Alley Drywell

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0.000	117.00	0.00
2.50	0.01	0.000	117.06	0.01
5.00	0.01	0.000	117.14	0.01
7.50	0.04	0.001	121.90	0.02
10.00	0.02	0.005	133.81	0.03
12.50	0.02	0.003	128.18	0.02
15.00	0.01	0.002	123.35	0.02
17.50	0.01	0.001	119.79	0.02
20.00	0.01	0.000	117.07	0.01
22.50	0.01	0.000	117.06	0.01
25.00	0.00	0.000	117.00	0.00
27.50	0.00	0.000	117.00	0.00
30.00	0.00	0.000	117.00	0.00
32.50	0.00	0.000	117.00	0.00
35.00	0.00	0.000	117.00	0.00
37.50	0.00	0.000	117.00	0.00
40.00	0.00	0.000	117.00	0.00
42.50	0.00	0.000	117.00	0.00
45.00	0.00	0.000	117.00	0.00
47.50	0.00	0.000	117.00	0.00
50.00	0.00	0.000	117.00	0.00
52.50	0.00	0.000	117.00	0.00
55.00	0.00	0.000	117.00	0.00
57.50	0.00	0.000	117.00	0.00
60.00	0.00	0.000	117.00	0.00
62.50	0.00	0.000	117.00	0.00
65.00	0.00	0.000	117.00	0.00
67.50	0.00	0.000	117.00	0.00
70.00	0.00	0.000	117.00	0.00
72.50	0.00	0.000	117.00	0.00
75.00	0.00	0.000	117.00	0.00
77.50	0.00	0.000	117.00	0.00
80.00	0.00	0.000	117.00	0.00
82.50	0.00	0.000	117.00	0.00
85.00	0.00	0.000	117.00	0.00
87.50	0.00	0.000	117.00	0.00
90.00	0.00	0.000	117.00	0.00
92.50	0.00	0.000	117.00	0.00
95.00	0.00	0.000	117.00	0.00

Territorial HydroCAD Model

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Type IA 24-hr 2-year Rainfall=2.50"

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Summary for Pond 8P: Vegetated Swale

Inflow Area = 0.170 ac, 88.24% Impervious, Inflow Depth = 2.00" for 2-year event
 Inflow = 0.08 cfs @ 7.96 hrs, Volume= 0.028 af
 Outflow = 0.08 cfs @ 7.99 hrs, Volume= 0.028 af, Atten= 1%, Lag= 1.9 min
 Discarded = 0.08 cfs @ 7.99 hrs, Volume= 0.028 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 144.47' @ 7.99 hrs Surf.Area= 0.001 ac Storage= 0.000 af

Plug-Flow detention time= 3.1 min calculated for 0.028 af (100% of inflow)
 Center-of-Mass det. time= 3.1 min (680.3 - 677.1)

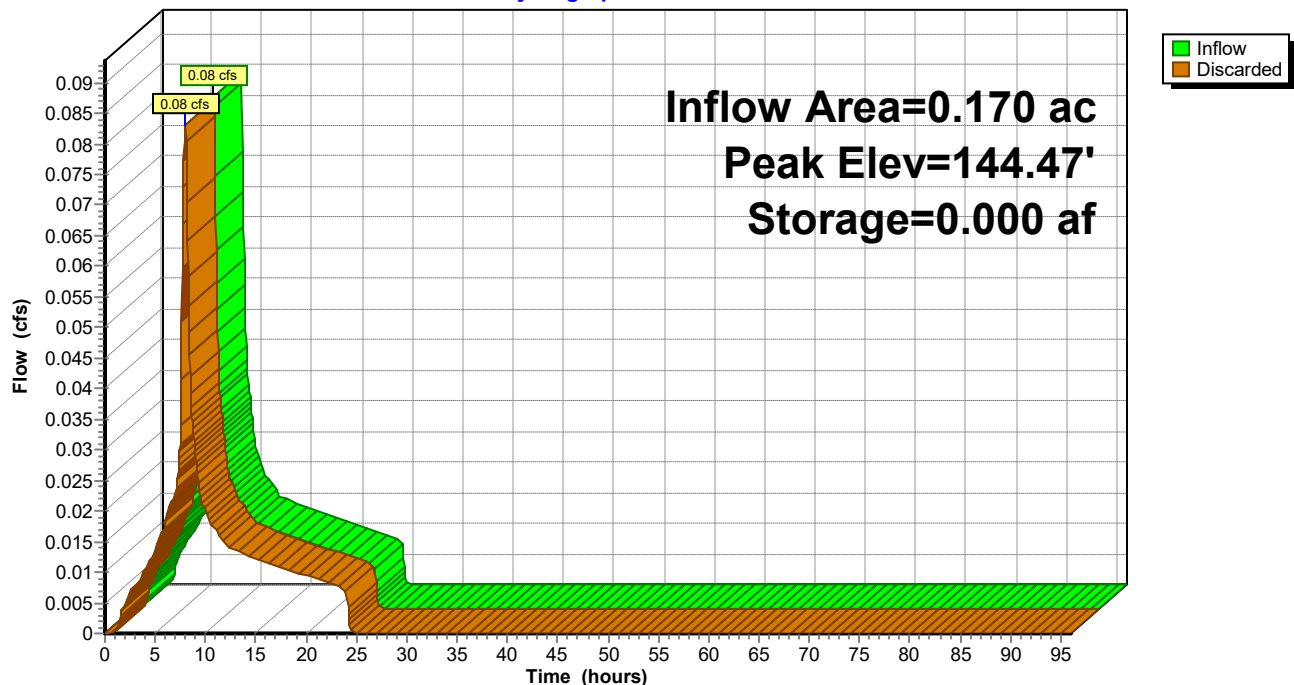
Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	0.001 af	5.0"W x 30.0"H x 80.00'L Parabolic Arch

Device	Routing	Invert	Outlet Devices
#1	Discarded	144.00'	47.000 in/hr Exfiltration over Wetted area from 144.00' - 147.00' Conductivity to Groundwater Elevation = 100.00' Excluded Wetted area = 0.001 ac

Discarded OutFlow Max=0.08 cfs @ 7.99 hrs HW=144.47' (Free Discharge)
 ↑1=Exfiltration (Controls 0.08 cfs)

Pond 8P: Vegetated Swale

Hydrograph



Territorial HydroCAD Model

Type IA 24-hr 2-year Rainfall=2.50"

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Hydrograph for Pond 8P: Vegetated Swale

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0.000	144.00	0.00
2.50	0.01	0.000	144.04	0.01
5.00	0.01	0.000	144.08	0.01
7.50	0.03	0.000	144.18	0.03
10.00	0.02	0.000	144.11	0.02
12.50	0.01	0.000	144.08	0.01
15.00	0.01	0.000	144.07	0.01
17.50	0.01	0.000	144.06	0.01
20.00	0.01	0.000	144.05	0.01
22.50	0.01	0.000	144.05	0.01
25.00	0.00	0.000	144.00	0.00
27.50	0.00	0.000	144.00	0.00
30.00	0.00	0.000	144.00	0.00
32.50	0.00	0.000	144.00	0.00
35.00	0.00	0.000	144.00	0.00
37.50	0.00	0.000	144.00	0.00
40.00	0.00	0.000	144.00	0.00
42.50	0.00	0.000	144.00	0.00
45.00	0.00	0.000	144.00	0.00
47.50	0.00	0.000	144.00	0.00
50.00	0.00	0.000	144.00	0.00
52.50	0.00	0.000	144.00	0.00
55.00	0.00	0.000	144.00	0.00
57.50	0.00	0.000	144.00	0.00
60.00	0.00	0.000	144.00	0.00
62.50	0.00	0.000	144.00	0.00
65.00	0.00	0.000	144.00	0.00
67.50	0.00	0.000	144.00	0.00
70.00	0.00	0.000	144.00	0.00
72.50	0.00	0.000	144.00	0.00
75.00	0.00	0.000	144.00	0.00
77.50	0.00	0.000	144.00	0.00
80.00	0.00	0.000	144.00	0.00
82.50	0.00	0.000	144.00	0.00
85.00	0.00	0.000	144.00	0.00
87.50	0.00	0.000	144.00	0.00
90.00	0.00	0.000	144.00	0.00
92.50	0.00	0.000	144.00	0.00
95.00	0.00	0.000	144.00	0.00

Territorial HydroCAD Model

Type IA 24-hr 5-year Rainfall=2.90"

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Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points

Runoff by SBUH method, Split Pervious/Imperv.

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Locust/17th Runoff Area=0.500 ac 92.00% Impervious Runoff Depth=2.46"
 Flow Length=580' Slope=0.0100 '/' Tc=12.7 min CN=39/98 Runoff=0.28 cfs 0.102 af

Subcatchment 2S: Locust/18th Runoff Area=0.530 ac 90.57% Impervious Runoff Depth=2.42"
 Flow Length=366' Slope=0.0100 '/' Tc=9.2 min CN=39/98 Runoff=0.31 cfs 0.107 af

Subcatchment 3S: Alley Runoff Area=0.160 ac 100.00% Impervious Runoff Depth=2.67"
 Flow Length=215' Slope=0.0050 '/' Tc=6.2 min CN=0/98 Runoff=0.11 cfs 0.036 af

Subcatchment 7S: Territorial Rd Runoff Area=0.170 ac 88.24% Impervious Runoff Depth=2.35"
 Flow Length=200' Slope=0.0050 '/' Tc=8.3 min CN=39/98 Runoff=0.10 cfs 0.033 af

Pond 4P: Drywell 1 Peak Elev=141.00' Storage=327 cf Inflow=0.28 cfs 0.102 af
 Outflow=0.28 cfs 0.102 af

Pond 5P: Drywell 2 Peak Elev=139.00' Storage=0.008 af Inflow=0.31 cfs 0.107 af
 Outflow=0.31 cfs 0.107 af

Pond 6P: Alley Drywell Peak Elev=140.08' Storage=0.007 af Inflow=0.11 cfs 0.036 af
 Outflow=0.03 cfs 0.036 af

Pond 8P: Vegetated Swale Peak Elev=144.55' Storage=0.000 af Inflow=0.10 cfs 0.033 af
 Outflow=0.10 cfs 0.033 af

Total Runoff Area = 1.360 ac Runoff Volume = 0.278 af Average Runoff Depth = 2.45"
8.09% Pervious = 0.110 ac 91.91% Impervious = 1.250 ac

Territorial HydroCAD Model

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Type IA 24-hr 5-year Rainfall=2.90"

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Summary for Subcatchment 1S: Locust/17th

Runoff = 0.28 cfs @ 7.99 hrs, Volume= 0.102 af, Depth= 2.46"

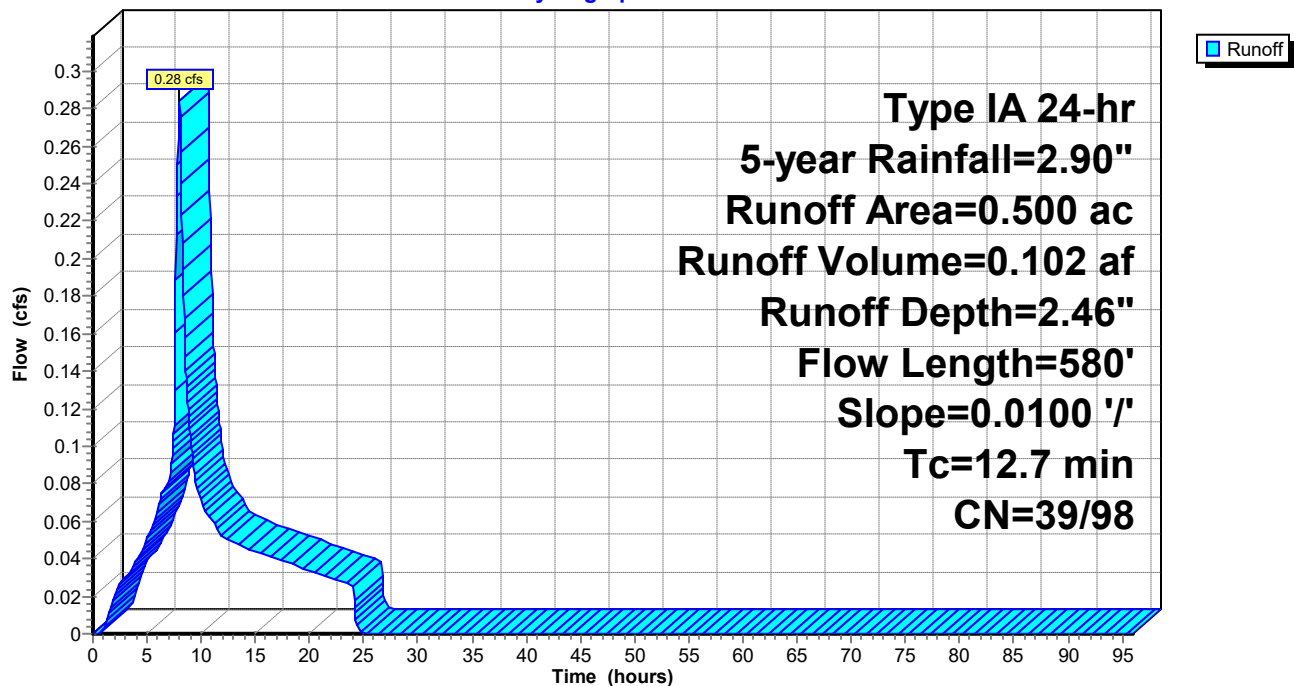
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type IA 24-hr 5-year Rainfall=2.90"

Area (ac)	CN	Description	Land Use
0.460	98	Paved roads w/curbs & sewers, HSG A	Roadway
0.040	39	>75% Grass cover, Good, HSG A	Open Space
0.500	93	Weighted Average	
0.040	39	8.00% Pervious Area	
0.460	98	92.00% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	580	0.0100	0.76		Lag/CN Method,

Subcatchment 1S: Locust/17th

Hydrograph



Territorial HydroCAD Model

Type IA 24-hr 5-year Rainfall=2.90"

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Hydrograph for Subcatchment 1S: Locust/17th

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.50	0.19	0.00	0.06	0.03
5.00	0.45	0.00	0.28	0.05
7.50	0.90	0.00	0.69	0.11
10.00	1.67	0.00	1.45	0.07
12.50	1.98	0.00	1.76	0.05
15.00	2.23	0.00	2.00	0.04
17.50	2.45	0.00	2.22	0.04
20.00	2.65	0.00	2.42	0.03
22.50	2.81	0.00	2.58	0.03
25.00	2.90	0.00	2.67	0.00
27.50	2.90	0.00	2.67	0.00
30.00	2.90	0.00	2.67	0.00
32.50	2.90	0.00	2.67	0.00
35.00	2.90	0.00	2.67	0.00
37.50	2.90	0.00	2.67	0.00
40.00	2.90	0.00	2.67	0.00
42.50	2.90	0.00	2.67	0.00
45.00	2.90	0.00	2.67	0.00
47.50	2.90	0.00	2.67	0.00
50.00	2.90	0.00	2.67	0.00
52.50	2.90	0.00	2.67	0.00
55.00	2.90	0.00	2.67	0.00
57.50	2.90	0.00	2.67	0.00
60.00	2.90	0.00	2.67	0.00
62.50	2.90	0.00	2.67	0.00
65.00	2.90	0.00	2.67	0.00
67.50	2.90	0.00	2.67	0.00
70.00	2.90	0.00	2.67	0.00
72.50	2.90	0.00	2.67	0.00
75.00	2.90	0.00	2.67	0.00
77.50	2.90	0.00	2.67	0.00
80.00	2.90	0.00	2.67	0.00
82.50	2.90	0.00	2.67	0.00
85.00	2.90	0.00	2.67	0.00
87.50	2.90	0.00	2.67	0.00
90.00	2.90	0.00	2.67	0.00
92.50	2.90	0.00	2.67	0.00
95.00	2.90	0.00	2.67	0.00

Territorial HydroCAD Model

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Type IA 24-hr 5-year Rainfall=2.90"

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Summary for Subcatchment 2S: Locust/18th

Runoff = 0.31 cfs @ 7.97 hrs, Volume= 0.107 af, Depth= 2.42"

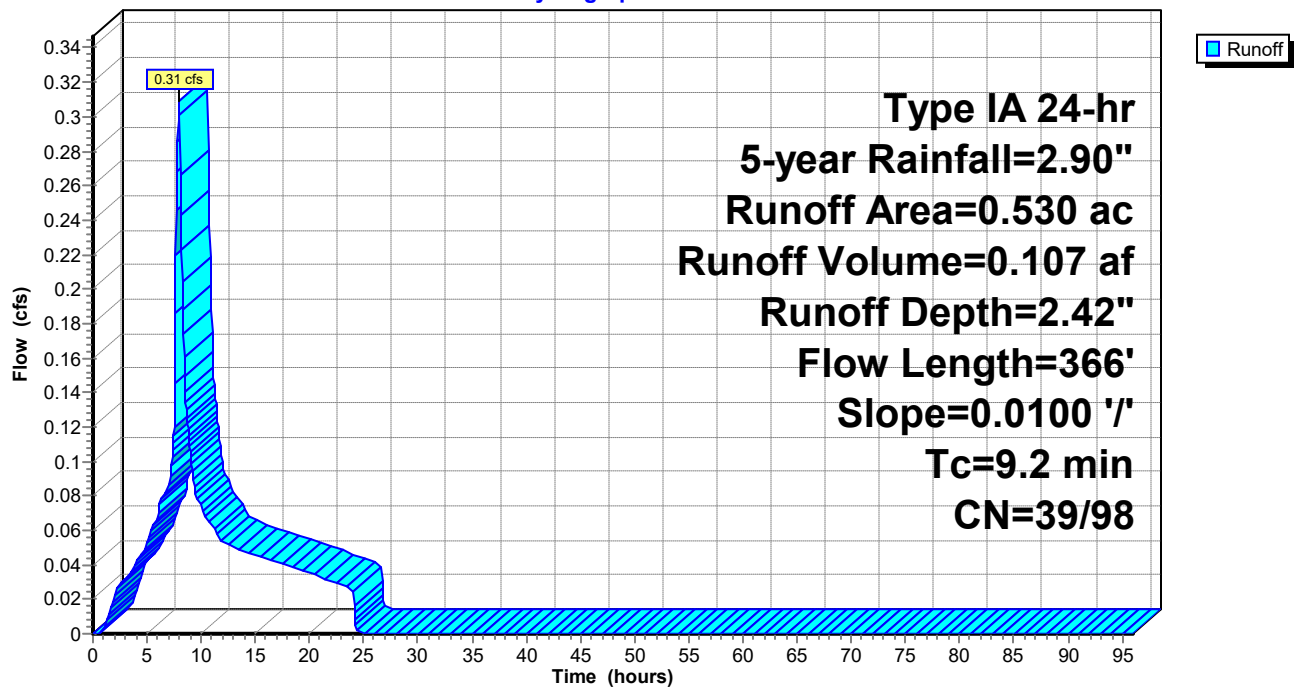
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type IA 24-hr 5-year Rainfall=2.90"

Area (ac)	CN	Description	Land Use
0.480	98	Paved roads w/curbs & sewers, HSG A	Roadway
0.050	39	>75% Grass cover, Good, HSG A	Open Space
0.530	92	Weighted Average	
0.050	39	9.43% Pervious Area	
0.480	98	90.57% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	366	0.0100	0.67		Lag/CN Method,

Subcatchment 2S: Locust/18th

Hydrograph



Territorial HydroCAD Model

Type IA 24-hr 5-year Rainfall=2.90"

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Hydrograph for Subcatchment 2S: Locust/18th

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.50	0.19	0.00	0.06	0.03
5.00	0.45	0.00	0.28	0.05
7.50	0.90	0.00	0.69	0.12
10.00	1.67	0.00	1.45	0.07
12.50	1.98	0.00	1.76	0.05
15.00	2.23	0.00	2.00	0.05
17.50	2.45	0.00	2.22	0.04
20.00	2.65	0.00	2.42	0.04
22.50	2.81	0.00	2.58	0.03
25.00	2.90	0.00	2.67	0.00
27.50	2.90	0.00	2.67	0.00
30.00	2.90	0.00	2.67	0.00
32.50	2.90	0.00	2.67	0.00
35.00	2.90	0.00	2.67	0.00
37.50	2.90	0.00	2.67	0.00
40.00	2.90	0.00	2.67	0.00
42.50	2.90	0.00	2.67	0.00
45.00	2.90	0.00	2.67	0.00
47.50	2.90	0.00	2.67	0.00
50.00	2.90	0.00	2.67	0.00
52.50	2.90	0.00	2.67	0.00
55.00	2.90	0.00	2.67	0.00
57.50	2.90	0.00	2.67	0.00
60.00	2.90	0.00	2.67	0.00
62.50	2.90	0.00	2.67	0.00
65.00	2.90	0.00	2.67	0.00
67.50	2.90	0.00	2.67	0.00
70.00	2.90	0.00	2.67	0.00
72.50	2.90	0.00	2.67	0.00
75.00	2.90	0.00	2.67	0.00
77.50	2.90	0.00	2.67	0.00
80.00	2.90	0.00	2.67	0.00
82.50	2.90	0.00	2.67	0.00
85.00	2.90	0.00	2.67	0.00
87.50	2.90	0.00	2.67	0.00
90.00	2.90	0.00	2.67	0.00
92.50	2.90	0.00	2.67	0.00
95.00	2.90	0.00	2.67	0.00

Territorial HydroCAD Model

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Type IA 24-hr 5-year Rainfall=2.90"

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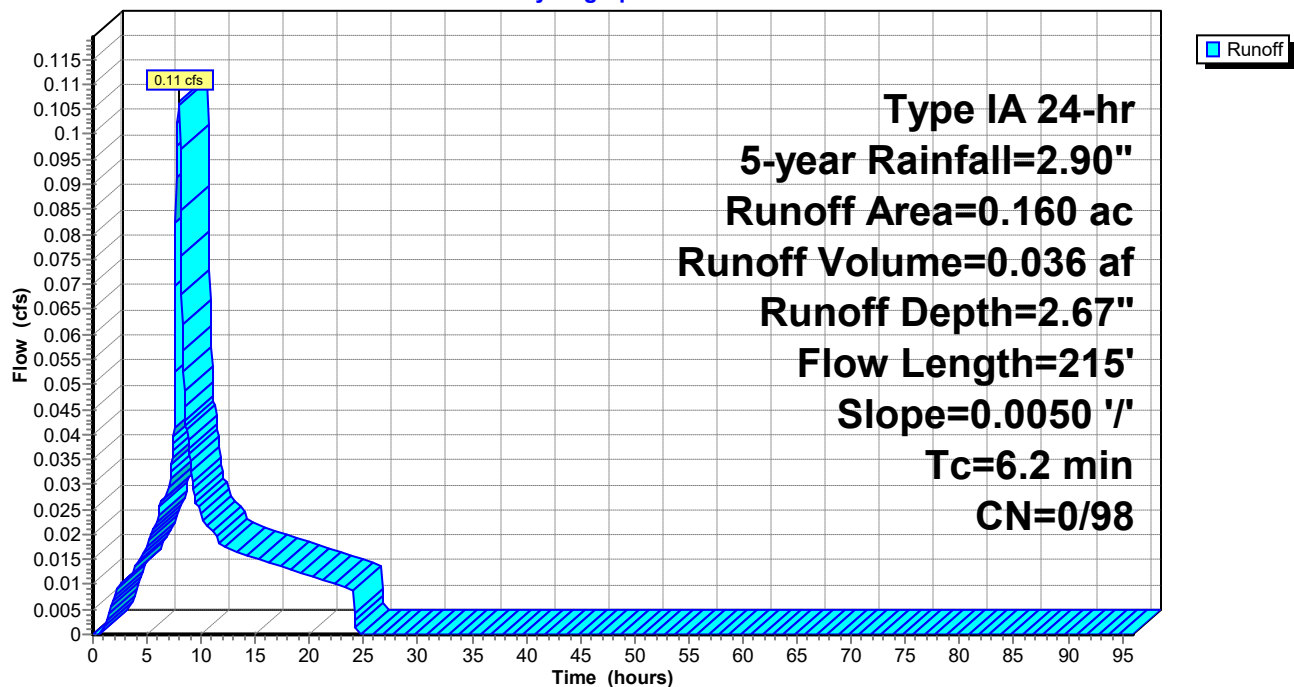
Summary for Subcatchment 3S: Alley

Runoff = 0.11 cfs @ 7.92 hrs, Volume= 0.036 af, Depth= 2.67"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type IA 24-hr 5-year Rainfall=2.90"

Area (ac)	CN	Description	Land Use
0.160	98	Paved roads w/curbs & sewers, HSG A	Roadway
0.160	98	100.00% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	215	0.0050	0.58		Lag/CN Method,

Subcatchment 3S: Alley**Hydrograph**

Territorial HydroCAD Model

Type IA 24-hr 5-year Rainfall=2.90"

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Hydrograph for Subcatchment 3S: Alley

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.50	0.19	0.00	0.06	0.01
5.00	0.45	0.00	0.28	0.02
7.50	0.90	0.00	0.69	0.04
10.00	1.67	0.00	1.45	0.02
12.50	1.98	0.00	1.76	0.02
15.00	2.23	0.00	2.00	0.02
17.50	2.45	0.00	2.22	0.01
20.00	2.65	0.00	2.42	0.01
22.50	2.81	0.00	2.58	0.01
25.00	2.90	0.00	2.67	0.00
27.50	2.90	0.00	2.67	0.00
30.00	2.90	0.00	2.67	0.00
32.50	2.90	0.00	2.67	0.00
35.00	2.90	0.00	2.67	0.00
37.50	2.90	0.00	2.67	0.00
40.00	2.90	0.00	2.67	0.00
42.50	2.90	0.00	2.67	0.00
45.00	2.90	0.00	2.67	0.00
47.50	2.90	0.00	2.67	0.00
50.00	2.90	0.00	2.67	0.00
52.50	2.90	0.00	2.67	0.00
55.00	2.90	0.00	2.67	0.00
57.50	2.90	0.00	2.67	0.00
60.00	2.90	0.00	2.67	0.00
62.50	2.90	0.00	2.67	0.00
65.00	2.90	0.00	2.67	0.00
67.50	2.90	0.00	2.67	0.00
70.00	2.90	0.00	2.67	0.00
72.50	2.90	0.00	2.67	0.00
75.00	2.90	0.00	2.67	0.00
77.50	2.90	0.00	2.67	0.00
80.00	2.90	0.00	2.67	0.00
82.50	2.90	0.00	2.67	0.00
85.00	2.90	0.00	2.67	0.00
87.50	2.90	0.00	2.67	0.00
90.00	2.90	0.00	2.67	0.00
92.50	2.90	0.00	2.67	0.00
95.00	2.90	0.00	2.67	0.00

Territorial HydroCAD Model

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Type IA 24-hr 5-year Rainfall=2.90"

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Summary for Subcatchment 7S: Territorial Rd

Runoff = 0.10 cfs @ 7.96 hrs, Volume= 0.033 af, Depth= 2.35"

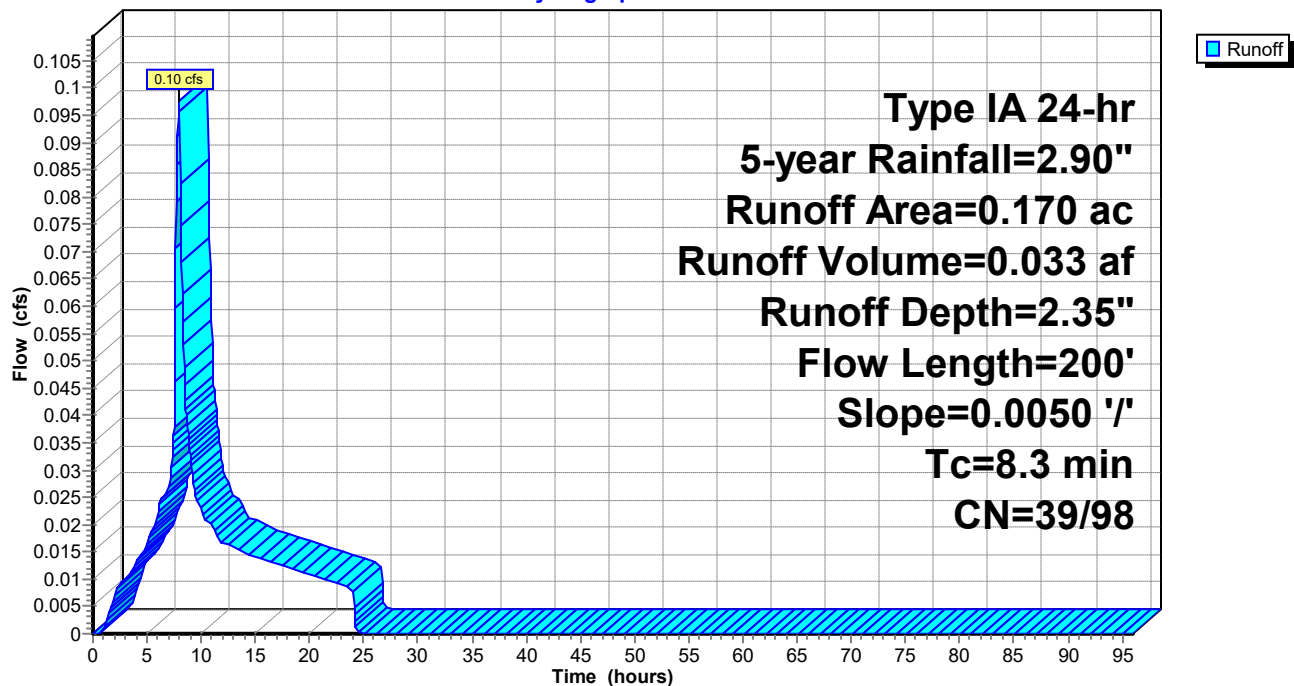
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type IA 24-hr 5-year Rainfall=2.90"

Area (ac)	CN	Description	Land Use
0.150	98	Paved roads w/curbs & sewers, HSG A	Roadway
0.020	39	>75% Grass cover, Good, HSG A	Open Space
0.170	91	Weighted Average	
0.020	39	11.76% Pervious Area	
0.150	98	88.24% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	200	0.0050	0.40		Lag/CN Method, territorial

Subcatchment 7S: Territorial Rd

Hydrograph



Territorial HydroCAD Model

Type IA 24-hr 5-year Rainfall=2.90"

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Hydrograph for Subcatchment 7S: Territorial Rd

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.50	0.19	0.00	0.06	0.01
5.00	0.45	0.00	0.28	0.02
7.50	0.90	0.00	0.69	0.04
10.00	1.67	0.00	1.45	0.02
12.50	1.98	0.00	1.76	0.02
15.00	2.23	0.00	2.00	0.01
17.50	2.45	0.00	2.22	0.01
20.00	2.65	0.00	2.42	0.01
22.50	2.81	0.00	2.58	0.01
25.00	2.90	0.00	2.67	0.00
27.50	2.90	0.00	2.67	0.00
30.00	2.90	0.00	2.67	0.00
32.50	2.90	0.00	2.67	0.00
35.00	2.90	0.00	2.67	0.00
37.50	2.90	0.00	2.67	0.00
40.00	2.90	0.00	2.67	0.00
42.50	2.90	0.00	2.67	0.00
45.00	2.90	0.00	2.67	0.00
47.50	2.90	0.00	2.67	0.00
50.00	2.90	0.00	2.67	0.00
52.50	2.90	0.00	2.67	0.00
55.00	2.90	0.00	2.67	0.00
57.50	2.90	0.00	2.67	0.00
60.00	2.90	0.00	2.67	0.00
62.50	2.90	0.00	2.67	0.00
65.00	2.90	0.00	2.67	0.00
67.50	2.90	0.00	2.67	0.00
70.00	2.90	0.00	2.67	0.00
72.50	2.90	0.00	2.67	0.00
75.00	2.90	0.00	2.67	0.00
77.50	2.90	0.00	2.67	0.00
80.00	2.90	0.00	2.67	0.00
82.50	2.90	0.00	2.67	0.00
85.00	2.90	0.00	2.67	0.00
87.50	2.90	0.00	2.67	0.00
90.00	2.90	0.00	2.67	0.00
92.50	2.90	0.00	2.67	0.00
95.00	2.90	0.00	2.67	0.00

Territorial HydroCAD Model

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Summary for Pond 4P: Drywell 1

Inflow Area = 0.500 ac, 92.00% Impervious, Inflow Depth = 2.46" for 5-year event
 Inflow = 0.28 cfs @ 7.99 hrs, Volume= 0.102 af
 Outflow = 0.28 cfs @ 8.01 hrs, Volume= 0.102 af, Atten= 1%, Lag= 1.1 min
 Discarded = 0.28 cfs @ 8.01 hrs, Volume= 0.102 af

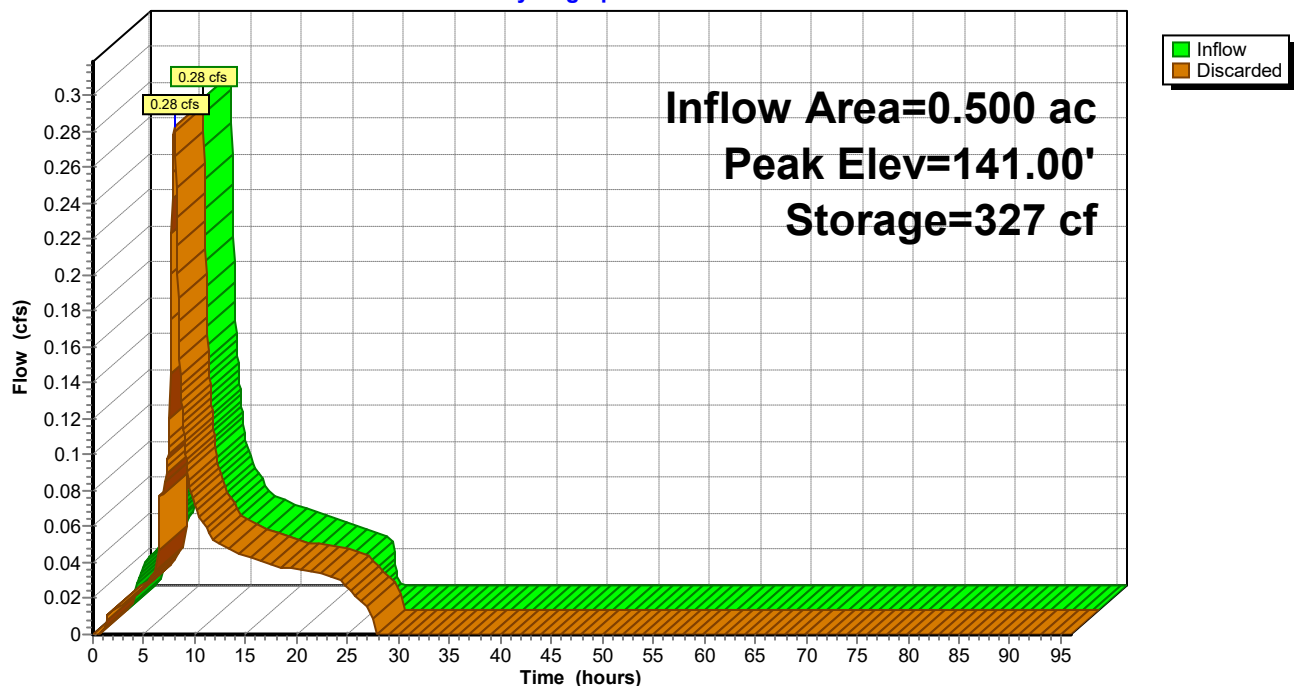
Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 141.00' @ 6.45 hrs Surf.Area= 13 sf Storage= 327 cf

Plug-Flow detention time= 88.5 min calculated for 0.102 af (100% of inflow)
 Center-of-Mass det. time= 88.6 min (765.6 - 676.9)

Volume	Invert	Avail.Storage	Storage Description
#1	115.00'	126 cf	4.00'D x 10.00'H Vertical Cone/Cylinder
#2	125.00'	201 cf	4.00'D x 16.00'H Vertical Cone/Cylinder -Impervious
		327 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#0	Discarded	141.00'	Automatic Storage Overflow (Discharged without head)
#1	Discarded	115.00'	47.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 100.00'

Discarded OutFlow Max=0.04 cfs @ 8.01 hrs HW=141.00' (Free Discharge)
 ↑1=Exfiltration (Controls 0.04 cfs)

Pond 4P: Drywell 1**Hydrograph**

Territorial HydroCAD Model

Type IA 24-hr 5-year Rainfall=2.90"

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Hydrograph for Pond 4P: Drywell 1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0	115.00	0.00
2.50	0.03	21	116.65	0.02
5.00	0.05	173	128.77	0.03
7.50	0.11	327	141.00	0.11
10.00	0.07	327	141.00	0.07
12.50	0.05	327	141.00	0.05
15.00	0.04	327	141.00	0.04
17.50	0.04	327	141.00	0.04
20.00	0.03	317	140.21	0.04
22.50	0.03	279	137.22	0.03
25.00	0.00	166	128.19	0.03
27.50	0.00	0	115.00	0.00
30.00	0.00	0	115.00	0.00
32.50	0.00	0	115.00	0.00
35.00	0.00	0	115.00	0.00
37.50	0.00	0	115.00	0.00
40.00	0.00	0	115.00	0.00
42.50	0.00	0	115.00	0.00
45.00	0.00	0	115.00	0.00
47.50	0.00	0	115.00	0.00
50.00	0.00	0	115.00	0.00
52.50	0.00	0	115.00	0.00
55.00	0.00	0	115.00	0.00
57.50	0.00	0	115.00	0.00
60.00	0.00	0	115.00	0.00
62.50	0.00	0	115.00	0.00
65.00	0.00	0	115.00	0.00
67.50	0.00	0	115.00	0.00
70.00	0.00	0	115.00	0.00
72.50	0.00	0	115.00	0.00
75.00	0.00	0	115.00	0.00
77.50	0.00	0	115.00	0.00
80.00	0.00	0	115.00	0.00
82.50	0.00	0	115.00	0.00
85.00	0.00	0	115.00	0.00
87.50	0.00	0	115.00	0.00
90.00	0.00	0	115.00	0.00
92.50	0.00	0	115.00	0.00
95.00	0.00	0	115.00	0.00

Territorial HydroCAD Model

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Type IA 24-hr 5-year Rainfall=2.90"

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Summary for Pond 5P: Drywell 2

Inflow Area = 0.530 ac, 90.57% Impervious, Inflow Depth = 2.42" for 5-year event
 Inflow = 0.31 cfs @ 7.97 hrs, Volume= 0.107 af
 Outflow = 0.31 cfs @ 7.98 hrs, Volume= 0.107 af, Atten= 0%, Lag= 0.7 min
 Discarded = 0.31 cfs @ 7.98 hrs, Volume= 0.107 af

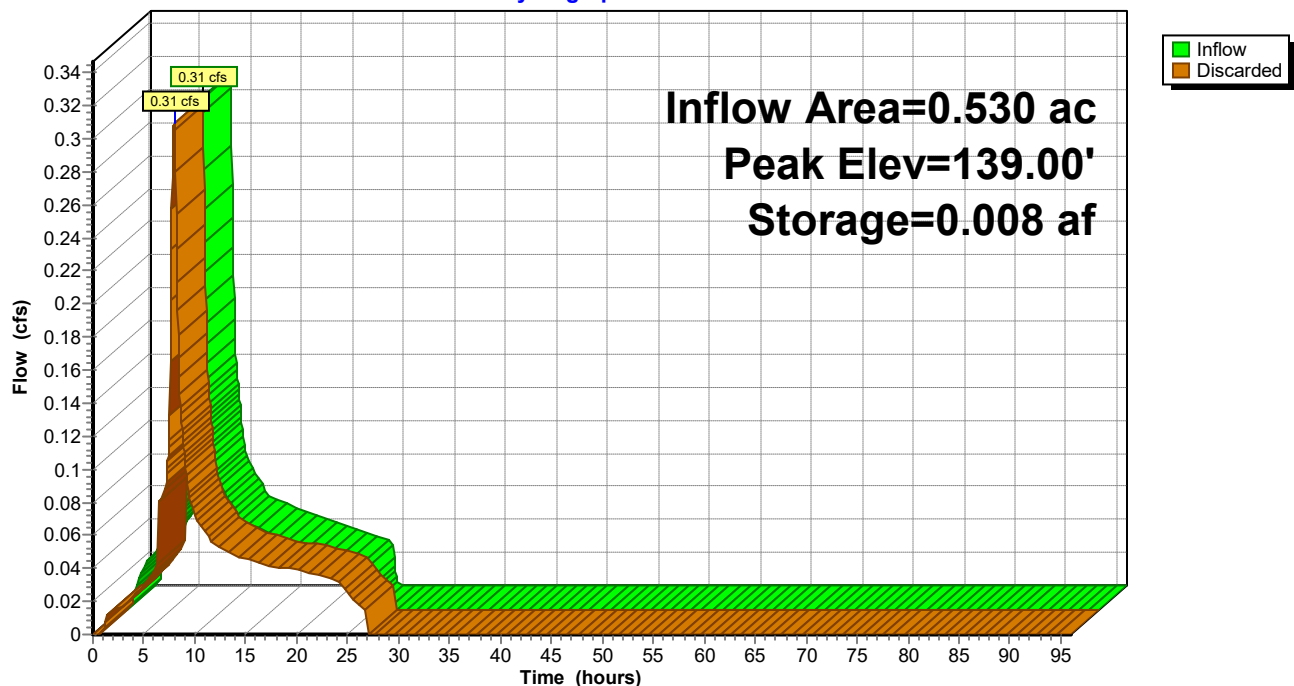
Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 139.00' @ 6.35 hrs Surf.Area= 0.000 ac Storage= 0.008 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 83.5 min (756.9 - 673.4)

Volume	Invert	Avail.Storage	Storage Description
#1	113.00'	0.003 af	4.00'D x 10.00'H Vertical Cone/Cylinder
#2	123.00'	0.005 af	4.00'D x 16.00'H Vertical Cone/Cylinder -Impervious
		0.008 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#0	Discarded	139.00'	Automatic Storage Overflow (Discharged without head)
#1	Discarded	113.00'	47.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 100.00'

Discarded OutFlow Max=0.04 cfs @ 7.98 hrs HW=139.00' (Free Discharge)
 ↑1=Exfiltration (Controls 0.04 cfs)

Pond 5P: Drywell 2**Hydrograph**

Territorial HydroCAD Model

Type IA 24-hr 5-year Rainfall=2.90"

Prepared by Atwell LLC

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Hydrograph for Pond 5P: Drywell 2

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0.000	113.00	0.00
2.50	0.03	0.001	115.07	0.02
5.00	0.05	0.004	127.55	0.03
7.50	0.12	0.008	139.00	0.12
10.00	0.07	0.008	139.00	0.07
12.50	0.05	0.008	139.00	0.05
15.00	0.05	0.008	139.00	0.05
17.50	0.04	0.007	138.97	0.04
20.00	0.04	0.007	137.18	0.04
22.50	0.03	0.006	133.68	0.04
25.00	0.00	0.003	124.10	0.03
27.50	0.00	0.000	113.00	0.00
30.00	0.00	0.000	113.00	0.00
32.50	0.00	0.000	113.00	0.00
35.00	0.00	0.000	113.00	0.00
37.50	0.00	0.000	113.00	0.00
40.00	0.00	0.000	113.00	0.00
42.50	0.00	0.000	113.00	0.00
45.00	0.00	0.000	113.00	0.00
47.50	0.00	0.000	113.00	0.00
50.00	0.00	0.000	113.00	0.00
52.50	0.00	0.000	113.00	0.00
55.00	0.00	0.000	113.00	0.00
57.50	0.00	0.000	113.00	0.00
60.00	0.00	0.000	113.00	0.00
62.50	0.00	0.000	113.00	0.00
65.00	0.00	0.000	113.00	0.00
67.50	0.00	0.000	113.00	0.00
70.00	0.00	0.000	113.00	0.00
72.50	0.00	0.000	113.00	0.00
75.00	0.00	0.000	113.00	0.00
77.50	0.00	0.000	113.00	0.00
80.00	0.00	0.000	113.00	0.00
82.50	0.00	0.000	113.00	0.00
85.00	0.00	0.000	113.00	0.00
87.50	0.00	0.000	113.00	0.00
90.00	0.00	0.000	113.00	0.00
92.50	0.00	0.000	113.00	0.00
95.00	0.00	0.000	113.00	0.00

Territorial HydroCAD Model

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Type IA 24-hr 5-year Rainfall=2.90"

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Summary for Pond 6P: Alley Drywell

Inflow Area = 0.160 ac, 100.00% Impervious, Inflow Depth = 2.67" for 5-year event
 Inflow = 0.11 cfs @ 7.92 hrs, Volume= 0.036 af
 Outflow = 0.03 cfs @ 9.09 hrs, Volume= 0.036 af, Atten= 70%, Lag= 69.9 min
 Discarded = 0.03 cfs @ 9.09 hrs, Volume= 0.036 af

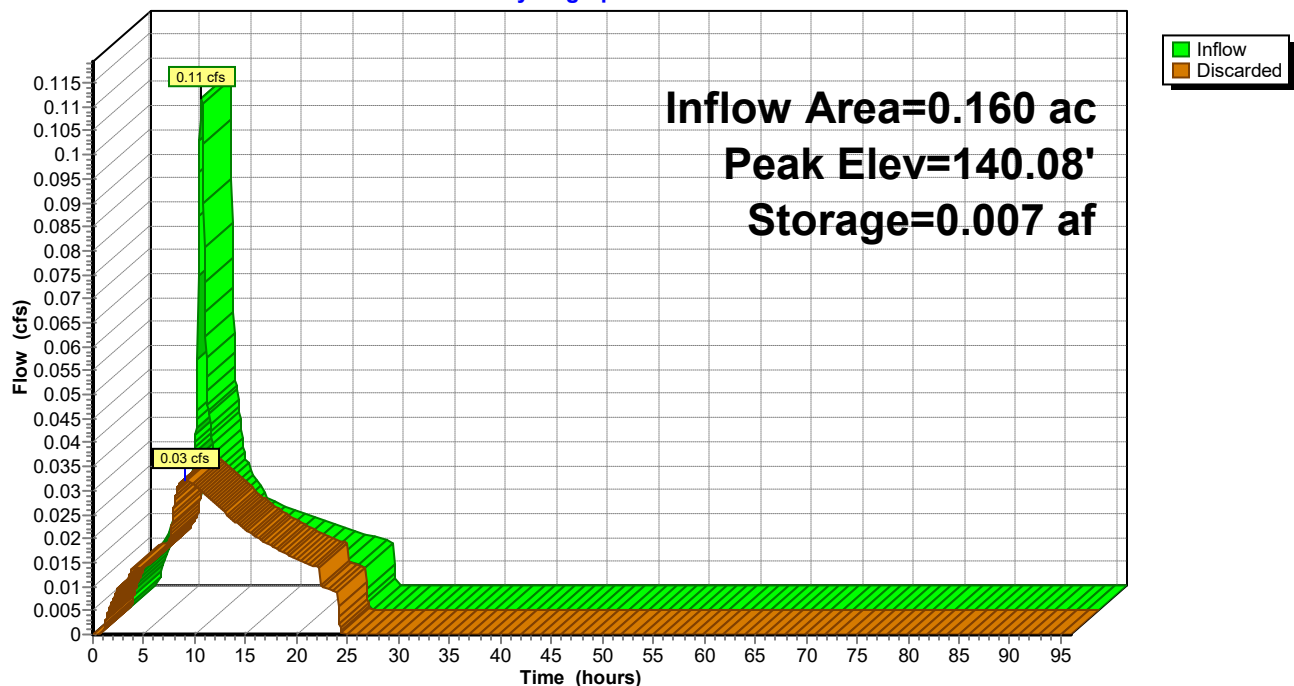
Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 140.08' @ 9.09 hrs Surf.Area= 0.000 ac Storage= 0.007 af

Plug-Flow detention time= 82.9 min calculated for 0.036 af (100% of inflow)
 Center-of-Mass det. time= 82.9 min (753.3 - 670.4)

Volume	Invert	Avail.Storage	Storage Description
#1	117.00'	0.003 af	4.00'D x 10.00'H Vertical Cone/Cylinder
#2	127.00'	0.005 af	4.00'D x 16.00'H Vertical Cone/Cylinder -Impervious
		0.008 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#0	Discarded	143.00'	Automatic Storage Overflow (Discharged without head)
#1	Discarded	117.00'	47.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 100.00' Phase-In= 0.10'

Discarded OutFlow Max=0.03 cfs @ 9.09 hrs HW=140.08' (Free Discharge)
 ↑1=Exfiltration (Controls 0.03 cfs)

Pond 6P: Alley Drywell**Hydrograph**

Territorial HydroCAD Model

Type IA 24-hr 5-year Rainfall=2.90"

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Hydrograph for Pond 6P: Alley Drywell

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0.000	117.00	0.00
2.50	0.01	0.000	117.07	0.01
5.00	0.02	0.000	117.62	0.01
7.50	0.04	0.002	124.39	0.02
10.00	0.02	0.006	138.82	0.03
12.50	0.02	0.004	132.50	0.03
15.00	0.02	0.003	127.00	0.02
17.50	0.01	0.002	122.92	0.02
20.00	0.01	0.001	119.67	0.02
22.50	0.01	0.000	117.07	0.01
25.00	0.00	0.000	117.00	0.00
27.50	0.00	0.000	117.00	0.00
30.00	0.00	0.000	117.00	0.00
32.50	0.00	0.000	117.00	0.00
35.00	0.00	0.000	117.00	0.00
37.50	0.00	0.000	117.00	0.00
40.00	0.00	0.000	117.00	0.00
42.50	0.00	0.000	117.00	0.00
45.00	0.00	0.000	117.00	0.00
47.50	0.00	0.000	117.00	0.00
50.00	0.00	0.000	117.00	0.00
52.50	0.00	0.000	117.00	0.00
55.00	0.00	0.000	117.00	0.00
57.50	0.00	0.000	117.00	0.00
60.00	0.00	0.000	117.00	0.00
62.50	0.00	0.000	117.00	0.00
65.00	0.00	0.000	117.00	0.00
67.50	0.00	0.000	117.00	0.00
70.00	0.00	0.000	117.00	0.00
72.50	0.00	0.000	117.00	0.00
75.00	0.00	0.000	117.00	0.00
77.50	0.00	0.000	117.00	0.00
80.00	0.00	0.000	117.00	0.00
82.50	0.00	0.000	117.00	0.00
85.00	0.00	0.000	117.00	0.00
87.50	0.00	0.000	117.00	0.00
90.00	0.00	0.000	117.00	0.00
92.50	0.00	0.000	117.00	0.00
95.00	0.00	0.000	117.00	0.00

Territorial HydroCAD Model

Prepared by Atwell LLC

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Type IA 24-hr 5-year Rainfall=2.90"

Printed 2/25/2021

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Summary for Pond 8P: Vegetated Swale

Inflow Area = 0.170 ac, 88.24% Impervious, Inflow Depth = 2.35" for 5-year event
 Inflow = 0.10 cfs @ 7.96 hrs, Volume= 0.033 af
 Outflow = 0.10 cfs @ 7.99 hrs, Volume= 0.033 af, Atten= 1%, Lag= 1.9 min
 Discarded = 0.10 cfs @ 7.99 hrs, Volume= 0.033 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 144.55' @ 7.99 hrs Surf.Area= 0.001 ac Storage= 0.000 af

Plug-Flow detention time= 3.1 min calculated for 0.033 af (100% of inflow)
 Center-of-Mass det. time= 3.1 min (675.7 - 672.5)

Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	0.001 af	5.0"W x 30.0"H x 80.00'L Parabolic Arch

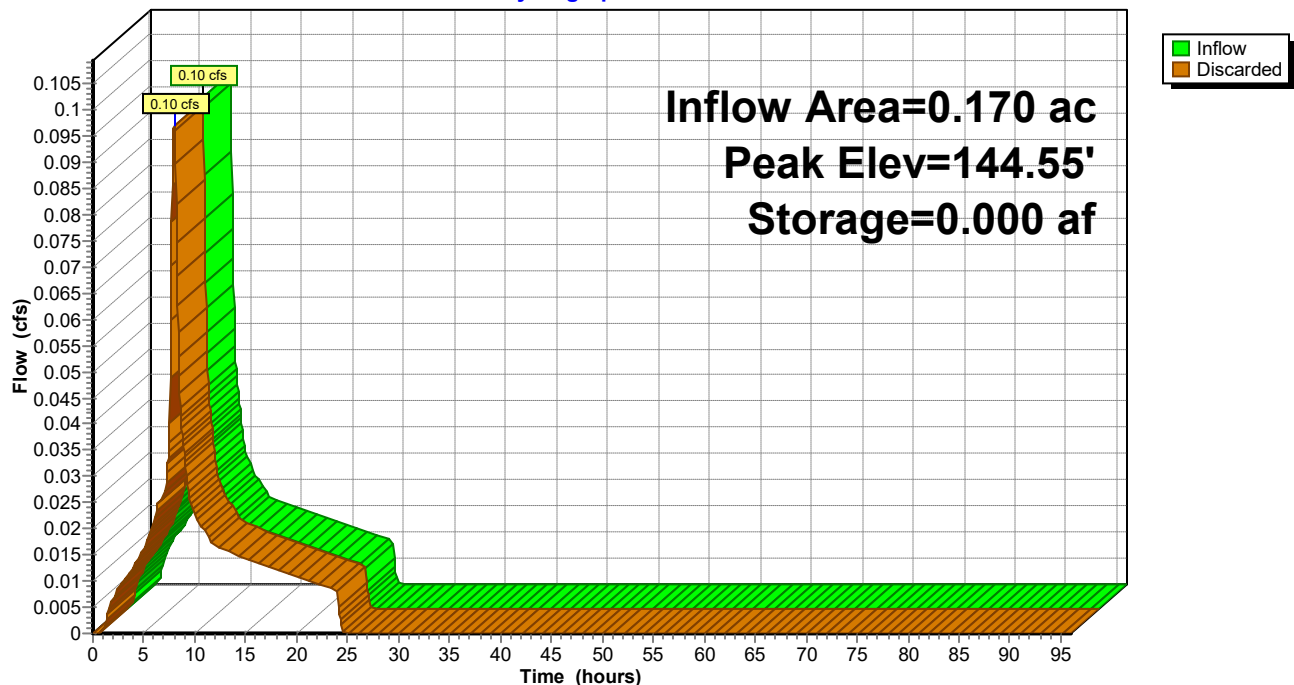
Device	Routing	Invert	Outlet Devices
#1	Discarded	144.00'	47.000 in/hr Exfiltration over Wetted area from 144.00' - 147.00' Conductivity to Groundwater Elevation = 100.00' Excluded Wetted area = 0.001 ac

Discarded OutFlow Max=0.10 cfs @ 7.99 hrs HW=144.55' (Free Discharge)

↑1=Exfiltration (Controls 0.10 cfs)

Pond 8P: Vegetated Swale

Hydrograph



Territorial HydroCAD Model

Type IA 24-hr 5-year Rainfall=2.90"

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Hydrograph for Pond 8P: Vegetated Swale

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0.000	144.00	0.00
2.50	0.01	0.000	144.05	0.01
5.00	0.02	0.000	144.09	0.02
7.50	0.04	0.000	144.21	0.04
10.00	0.02	0.000	144.13	0.02
12.50	0.02	0.000	144.10	0.02
15.00	0.01	0.000	144.08	0.01
17.50	0.01	0.000	144.07	0.01
20.00	0.01	0.000	144.06	0.01
22.50	0.01	0.000	144.05	0.01
25.00	0.00	0.000	144.00	0.00
27.50	0.00	0.000	144.00	0.00
30.00	0.00	0.000	144.00	0.00
32.50	0.00	0.000	144.00	0.00
35.00	0.00	0.000	144.00	0.00
37.50	0.00	0.000	144.00	0.00
40.00	0.00	0.000	144.00	0.00
42.50	0.00	0.000	144.00	0.00
45.00	0.00	0.000	144.00	0.00
47.50	0.00	0.000	144.00	0.00
50.00	0.00	0.000	144.00	0.00
52.50	0.00	0.000	144.00	0.00
55.00	0.00	0.000	144.00	0.00
57.50	0.00	0.000	144.00	0.00
60.00	0.00	0.000	144.00	0.00
62.50	0.00	0.000	144.00	0.00
65.00	0.00	0.000	144.00	0.00
67.50	0.00	0.000	144.00	0.00
70.00	0.00	0.000	144.00	0.00
72.50	0.00	0.000	144.00	0.00
75.00	0.00	0.000	144.00	0.00
77.50	0.00	0.000	144.00	0.00
80.00	0.00	0.000	144.00	0.00
82.50	0.00	0.000	144.00	0.00
85.00	0.00	0.000	144.00	0.00
87.50	0.00	0.000	144.00	0.00
90.00	0.00	0.000	144.00	0.00
92.50	0.00	0.000	144.00	0.00
95.00	0.00	0.000	144.00	0.00

Territorial HydroCAD Model

Type IA 24-hr 10-year Rainfall=3.40"

Prepared by Atwell LLC

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Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points

Runoff by SBUH method, Split Pervious/Imperv.

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Locust/17th Runoff Area=0.500 ac 92.00% Impervious Runoff Depth=2.91"
 Flow Length=580' Slope=0.0100 '/' Tc=12.7 min CN=39/98 Runoff=0.34 cfs 0.121 af

Subcatchment 2S: Locust/18th Runoff Area=0.530 ac 90.57% Impervious Runoff Depth=2.87"
 Flow Length=366' Slope=0.0100 '/' Tc=9.2 min CN=39/98 Runoff=0.37 cfs 0.127 af

Subcatchment 3S: Alley Runoff Area=0.160 ac 100.00% Impervious Runoff Depth=3.17"
 Flow Length=215' Slope=0.0050 '/' Tc=6.2 min CN=0/98 Runoff=0.13 cfs 0.042 af

Subcatchment 7S: Territorial Rd Runoff Area=0.170 ac 88.24% Impervious Runoff Depth=2.79"
 Flow Length=200' Slope=0.0050 '/' Tc=8.3 min CN=39/98 Runoff=0.12 cfs 0.040 af

Pond 4P: Drywell 1 Peak Elev=141.00' Storage=327 cf Inflow=0.34 cfs 0.121 af
 Outflow=0.33 cfs 0.121 af

Pond 5P: Drywell 2 Peak Elev=139.00' Storage=0.008 af Inflow=0.37 cfs 0.127 af
 Outflow=0.37 cfs 0.127 af

Pond 6P: Alley Drywell Peak Elev=143.00' Storage=0.008 af Inflow=0.13 cfs 0.042 af
 Outflow=0.08 cfs 0.042 af

Pond 8P: Vegetated Swale Peak Elev=144.65' Storage=0.000 af Inflow=0.12 cfs 0.040 af
 Outflow=0.11 cfs 0.040 af

Total Runoff Area = 1.360 ac Runoff Volume = 0.330 af Average Runoff Depth = 2.91"
8.09% Pervious = 0.110 ac 91.91% Impervious = 1.250 ac

Territorial HydroCAD Model

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Type IA 24-hr 10-year Rainfall=3.40"

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Summary for Subcatchment 1S: Locust/17th

Runoff = 0.34 cfs @ 7.99 hrs, Volume= 0.121 af, Depth= 2.91"

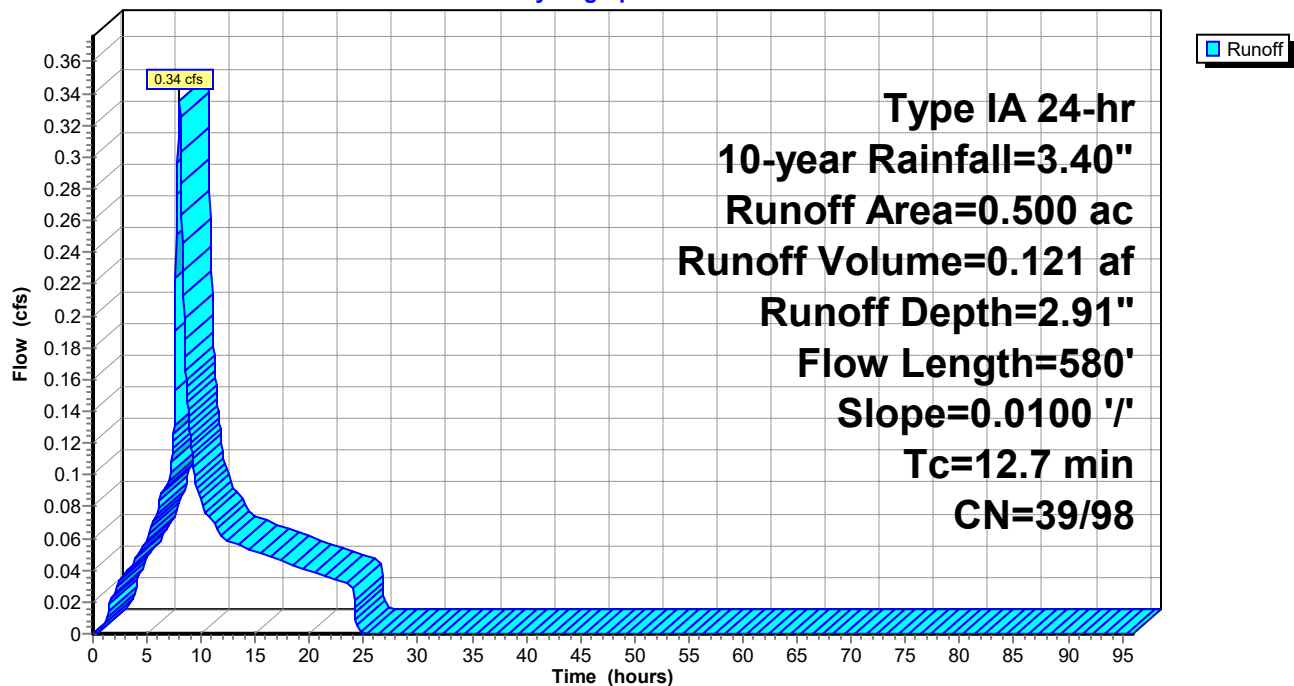
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10-year Rainfall=3.40"

Area (ac)	CN	Description	Land Use
0.460	98	Paved roads w/curbs & sewers, HSG A	Roadway
0.040	39	>75% Grass cover, Good, HSG A	Open Space
0.500	93	Weighted Average	
0.040	39	8.00% Pervious Area	
0.460	98	92.00% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	580	0.0100	0.76		Lag/CN Method,

Subcatchment 1S: Locust/17th

Hydrograph



Territorial HydroCAD Model

Type IA 24-hr 10-year Rainfall=3.40"

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Hydrograph for Subcatchment 1S: Locust/17th

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.50	0.22	0.00	0.09	0.03
5.00	0.53	0.00	0.35	0.06
7.50	1.05	0.00	0.84	0.13
10.00	1.96	0.00	1.74	0.08
12.50	2.32	0.00	2.09	0.06
15.00	2.62	0.00	2.39	0.05
17.50	2.88	0.00	2.64	0.05
20.00	3.10	0.00	2.87	0.04
22.50	3.30	0.00	3.07	0.03
25.00	3.40	0.00	3.17	0.00
27.50	3.40	0.00	3.17	0.00
30.00	3.40	0.00	3.17	0.00
32.50	3.40	0.00	3.17	0.00
35.00	3.40	0.00	3.17	0.00
37.50	3.40	0.00	3.17	0.00
40.00	3.40	0.00	3.17	0.00
42.50	3.40	0.00	3.17	0.00
45.00	3.40	0.00	3.17	0.00
47.50	3.40	0.00	3.17	0.00
50.00	3.40	0.00	3.17	0.00
52.50	3.40	0.00	3.17	0.00
55.00	3.40	0.00	3.17	0.00
57.50	3.40	0.00	3.17	0.00
60.00	3.40	0.00	3.17	0.00
62.50	3.40	0.00	3.17	0.00
65.00	3.40	0.00	3.17	0.00
67.50	3.40	0.00	3.17	0.00
70.00	3.40	0.00	3.17	0.00
72.50	3.40	0.00	3.17	0.00
75.00	3.40	0.00	3.17	0.00
77.50	3.40	0.00	3.17	0.00
80.00	3.40	0.00	3.17	0.00
82.50	3.40	0.00	3.17	0.00
85.00	3.40	0.00	3.17	0.00
87.50	3.40	0.00	3.17	0.00
90.00	3.40	0.00	3.17	0.00
92.50	3.40	0.00	3.17	0.00
95.00	3.40	0.00	3.17	0.00

Territorial HydroCAD Model

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Type IA 24-hr 10-year Rainfall=3.40"

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Summary for Subcatchment 2S: Locust/18th

Runoff = 0.37 cfs @ 7.97 hrs, Volume= 0.127 af, Depth= 2.87"

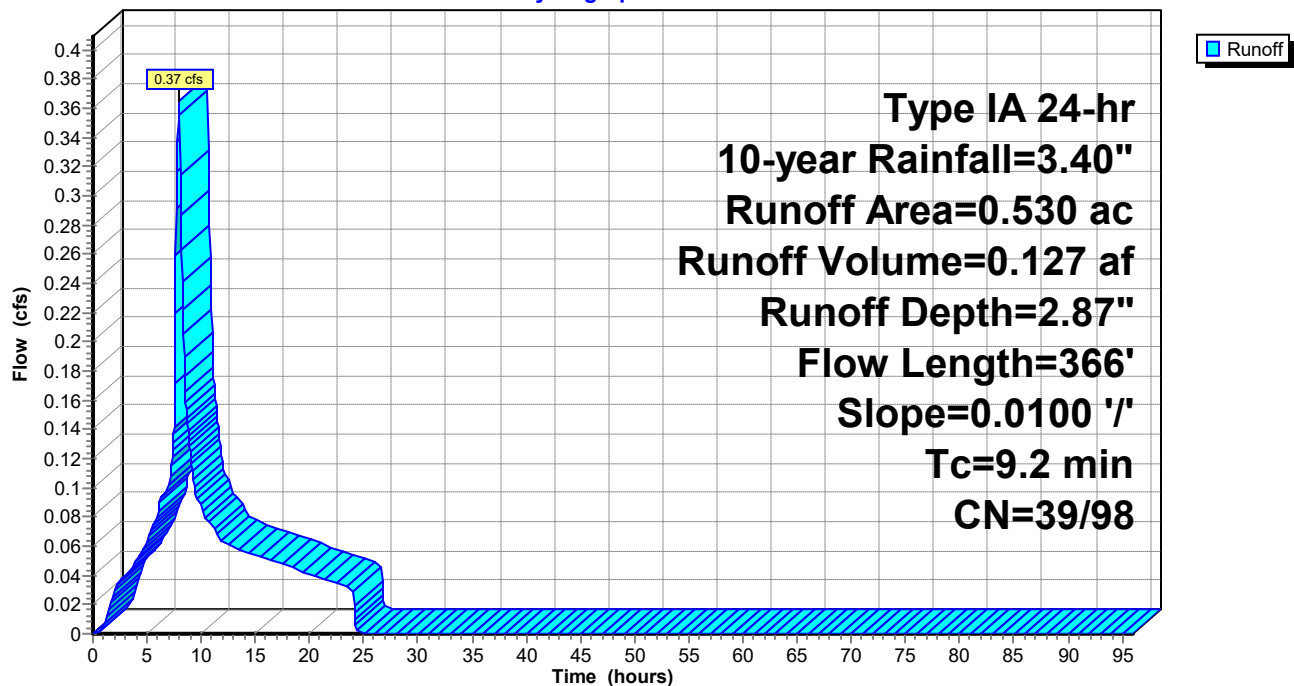
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10-year Rainfall=3.40"

Area (ac)	CN	Description	Land Use
0.480	98	Paved roads w/curbs & sewers, HSG A	Roadway
0.050	39	>75% Grass cover, Good, HSG A	Open Space
0.530	92	Weighted Average	
0.050	39	9.43% Pervious Area	
0.480	98	90.57% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	366	0.0100	0.67		Lag/CN Method,

Subcatchment 2S: Locust/18th

Hydrograph



Territorial HydroCAD Model

Type IA 24-hr 10-year Rainfall=3.40"

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Hydrograph for Subcatchment 2S: Locust/18th

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.50	0.22	0.00	0.09	0.04
5.00	0.53	0.00	0.35	0.06
7.50	1.05	0.00	0.84	0.14
10.00	1.96	0.00	1.74	0.09
12.50	2.32	0.00	2.09	0.06
15.00	2.62	0.00	2.39	0.05
17.50	2.88	0.00	2.64	0.05
20.00	3.10	0.00	2.87	0.04
22.50	3.30	0.00	3.07	0.04
25.00	3.40	0.00	3.17	0.00
27.50	3.40	0.00	3.17	0.00
30.00	3.40	0.00	3.17	0.00
32.50	3.40	0.00	3.17	0.00
35.00	3.40	0.00	3.17	0.00
37.50	3.40	0.00	3.17	0.00
40.00	3.40	0.00	3.17	0.00
42.50	3.40	0.00	3.17	0.00
45.00	3.40	0.00	3.17	0.00
47.50	3.40	0.00	3.17	0.00
50.00	3.40	0.00	3.17	0.00
52.50	3.40	0.00	3.17	0.00
55.00	3.40	0.00	3.17	0.00
57.50	3.40	0.00	3.17	0.00
60.00	3.40	0.00	3.17	0.00
62.50	3.40	0.00	3.17	0.00
65.00	3.40	0.00	3.17	0.00
67.50	3.40	0.00	3.17	0.00
70.00	3.40	0.00	3.17	0.00
72.50	3.40	0.00	3.17	0.00
75.00	3.40	0.00	3.17	0.00
77.50	3.40	0.00	3.17	0.00
80.00	3.40	0.00	3.17	0.00
82.50	3.40	0.00	3.17	0.00
85.00	3.40	0.00	3.17	0.00
87.50	3.40	0.00	3.17	0.00
90.00	3.40	0.00	3.17	0.00
92.50	3.40	0.00	3.17	0.00
95.00	3.40	0.00	3.17	0.00

Territorial HydroCAD Model

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Type IA 24-hr 10-year Rainfall=3.40"

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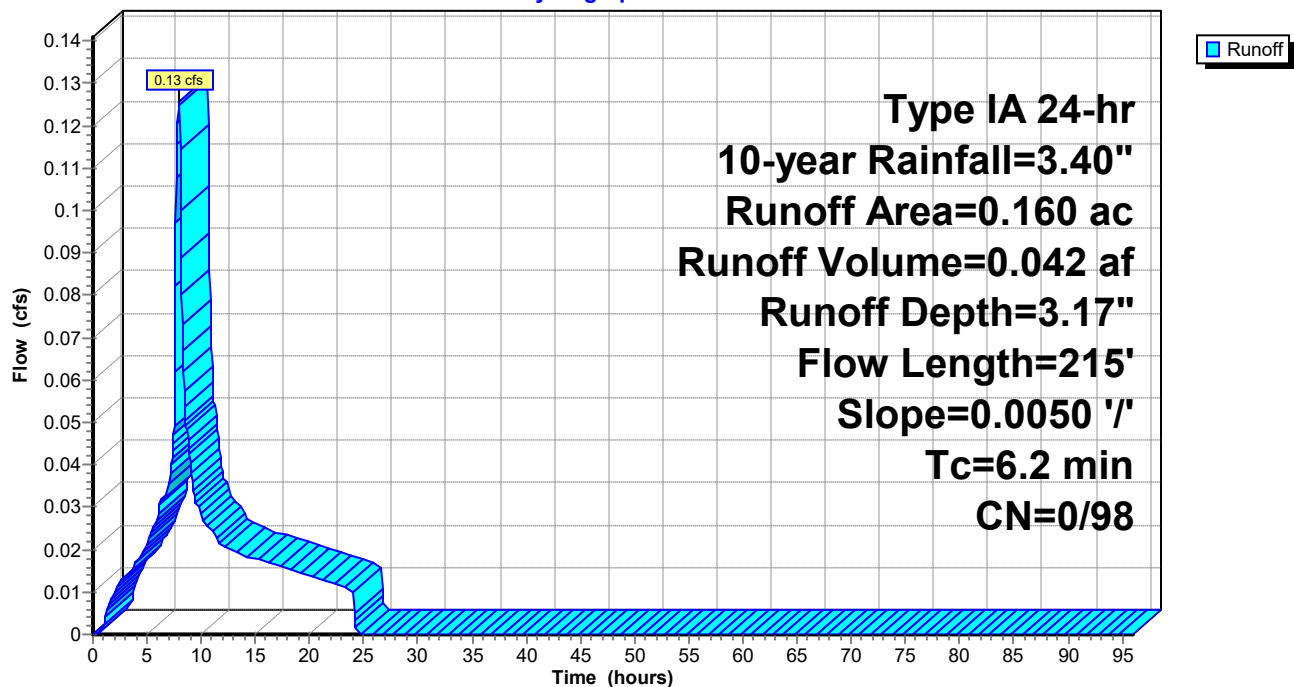
Summary for Subcatchment 3S: Alley

Runoff = 0.13 cfs @ 7.92 hrs, Volume= 0.042 af, Depth= 3.17"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10-year Rainfall=3.40"

Area (ac)	CN	Description	Land Use
0.160	98	Paved roads w/curbs & sewers, HSG A	Roadway
0.160	98	100.00% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	215	0.0050	0.58		Lag/CN Method,

Subcatchment 3S: Alley**Hydrograph**

Territorial HydroCAD Model

Type IA 24-hr 10-year Rainfall=3.40"

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Hydrograph for Subcatchment 3S: Alley

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.50	0.22	0.00	0.09	0.01
5.00	0.53	0.00	0.35	0.02
7.50	1.05	0.00	0.84	0.05
10.00	1.96	0.00	1.74	0.03
12.50	2.32	0.00	2.09	0.02
15.00	2.62	0.00	2.39	0.02
17.50	2.88	0.00	2.64	0.02
20.00	3.10	0.00	2.87	0.01
22.50	3.30	0.00	3.07	0.01
25.00	3.40	0.00	3.17	0.00
27.50	3.40	0.00	3.17	0.00
30.00	3.40	0.00	3.17	0.00
32.50	3.40	0.00	3.17	0.00
35.00	3.40	0.00	3.17	0.00
37.50	3.40	0.00	3.17	0.00
40.00	3.40	0.00	3.17	0.00
42.50	3.40	0.00	3.17	0.00
45.00	3.40	0.00	3.17	0.00
47.50	3.40	0.00	3.17	0.00
50.00	3.40	0.00	3.17	0.00
52.50	3.40	0.00	3.17	0.00
55.00	3.40	0.00	3.17	0.00
57.50	3.40	0.00	3.17	0.00
60.00	3.40	0.00	3.17	0.00
62.50	3.40	0.00	3.17	0.00
65.00	3.40	0.00	3.17	0.00
67.50	3.40	0.00	3.17	0.00
70.00	3.40	0.00	3.17	0.00
72.50	3.40	0.00	3.17	0.00
75.00	3.40	0.00	3.17	0.00
77.50	3.40	0.00	3.17	0.00
80.00	3.40	0.00	3.17	0.00
82.50	3.40	0.00	3.17	0.00
85.00	3.40	0.00	3.17	0.00
87.50	3.40	0.00	3.17	0.00
90.00	3.40	0.00	3.17	0.00
92.50	3.40	0.00	3.17	0.00
95.00	3.40	0.00	3.17	0.00

Territorial HydroCAD Model

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Type IA 24-hr 10-year Rainfall=3.40"

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Summary for Subcatchment 7S: Territorial Rd

Runoff = 0.12 cfs @ 7.96 hrs, Volume= 0.040 af, Depth= 2.79"

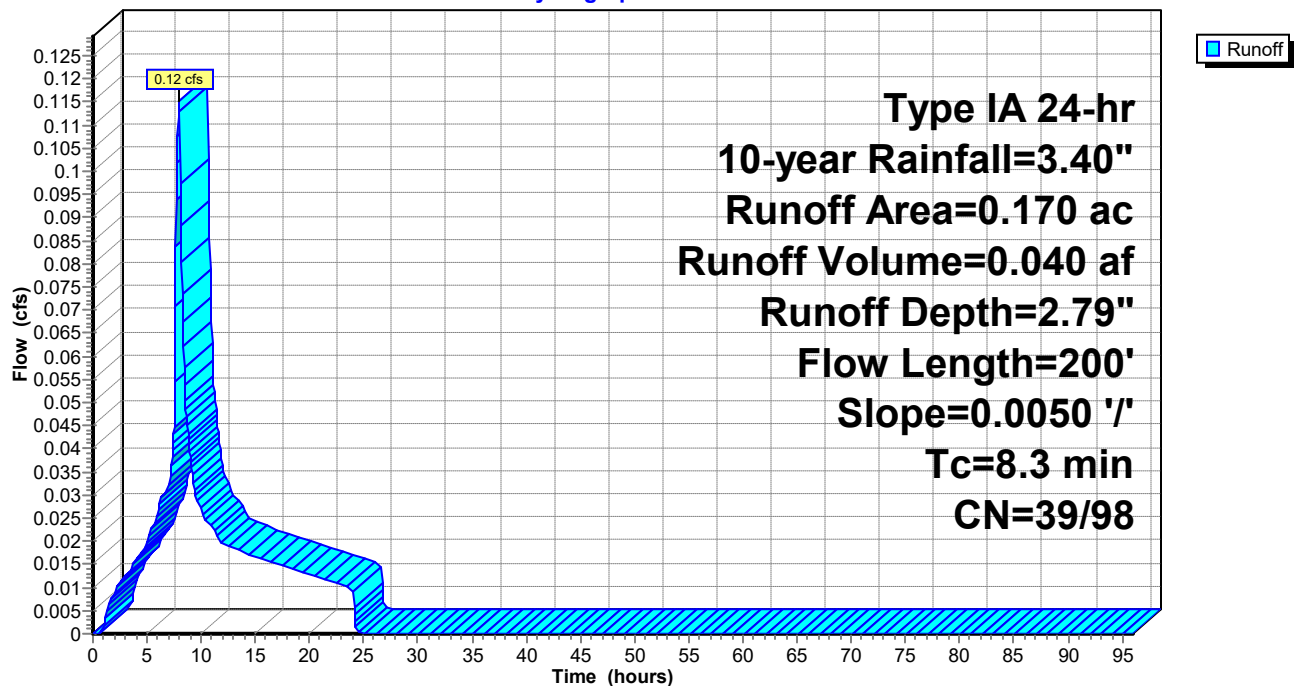
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10-year Rainfall=3.40"

Area (ac)	CN	Description	Land Use
0.150	98	Paved roads w/curbs & sewers, HSG A	Roadway
0.020	39	>75% Grass cover, Good, HSG A	Open Space
0.170	91	Weighted Average	
0.020	39	11.76% Pervious Area	
0.150	98	88.24% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	200	0.0050	0.40		Lag/CN Method, territorial

Subcatchment 7S: Territorial Rd

Hydrograph



Territorial HydroCAD Model

Type IA 24-hr 10-year Rainfall=3.40"

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Hydrograph for Subcatchment 7S: Territorial Rd

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.50	0.22	0.00	0.09	0.01
5.00	0.53	0.00	0.35	0.02
7.50	1.05	0.00	0.84	0.04
10.00	1.96	0.00	1.74	0.03
12.50	2.32	0.00	2.09	0.02
15.00	2.62	0.00	2.39	0.02
17.50	2.88	0.00	2.64	0.01
20.00	3.10	0.00	2.87	0.01
22.50	3.30	0.00	3.07	0.01
25.00	3.40	0.00	3.17	0.00
27.50	3.40	0.00	3.17	0.00
30.00	3.40	0.00	3.17	0.00
32.50	3.40	0.00	3.17	0.00
35.00	3.40	0.00	3.17	0.00
37.50	3.40	0.00	3.17	0.00
40.00	3.40	0.00	3.17	0.00
42.50	3.40	0.00	3.17	0.00
45.00	3.40	0.00	3.17	0.00
47.50	3.40	0.00	3.17	0.00
50.00	3.40	0.00	3.17	0.00
52.50	3.40	0.00	3.17	0.00
55.00	3.40	0.00	3.17	0.00
57.50	3.40	0.00	3.17	0.00
60.00	3.40	0.00	3.17	0.00
62.50	3.40	0.00	3.17	0.00
65.00	3.40	0.00	3.17	0.00
67.50	3.40	0.00	3.17	0.00
70.00	3.40	0.00	3.17	0.00
72.50	3.40	0.00	3.17	0.00
75.00	3.40	0.00	3.17	0.00
77.50	3.40	0.00	3.17	0.00
80.00	3.40	0.00	3.17	0.00
82.50	3.40	0.00	3.17	0.00
85.00	3.40	0.00	3.17	0.00
87.50	3.40	0.00	3.17	0.00
90.00	3.40	0.00	3.17	0.00
92.50	3.40	0.00	3.17	0.00
95.00	3.40	0.00	3.17	0.00

Territorial HydroCAD Model

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Type IA 24-hr 10-year Rainfall=3.40"

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Summary for Pond 4P: Drywell 1

Inflow Area = 0.500 ac, 92.00% Impervious, Inflow Depth = 2.91" for 10-year event
 Inflow = 0.34 cfs @ 7.99 hrs, Volume= 0.121 af
 Outflow = 0.33 cfs @ 8.01 hrs, Volume= 0.121 af, Atten= 1%, Lag= 1.1 min
 Discarded = 0.33 cfs @ 8.01 hrs, Volume= 0.121 af

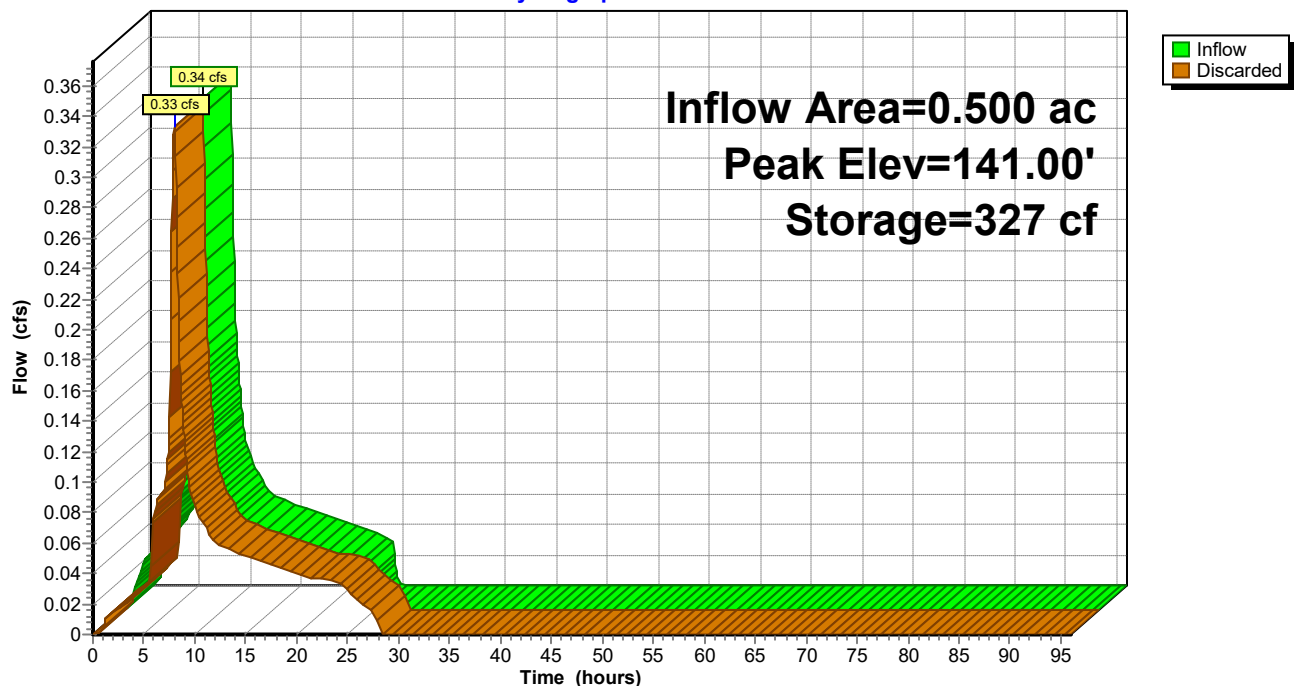
Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 141.00' @ 5.75 hrs Surf.Area= 13 sf Storage= 327 cf

Plug-Flow detention time= 80.0 min calculated for 0.121 af (100% of inflow)
 Center-of-Mass det. time= 80.1 min (752.7 - 672.6)

Volume	Invert	Avail.Storage	Storage Description
#1	115.00'	126 cf	4.00'D x 10.00'H Vertical Cone/Cylinder
#2	125.00'	201 cf	4.00'D x 16.00'H Vertical Cone/Cylinder -Impervious
		327 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#0	Discarded	141.00'	Automatic Storage Overflow (Discharged without head)
#1	Discarded	115.00'	47.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 100.00'

Discarded OutFlow Max=0.04 cfs @ 8.01 hrs HW=141.00' (Free Discharge)
 ↑1=Exfiltration (Controls 0.04 cfs)

Pond 4P: Drywell 1**Hydrograph**

Territorial HydroCAD Model

Type IA 24-hr 10-year Rainfall=3.40"

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Hydrograph for Pond 4P: Drywell 1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0	115.00	0.00
2.50	0.03	42	118.38	0.02
5.00	0.06	242	134.23	0.03
7.50	0.13	327	141.00	0.13
10.00	0.08	327	141.00	0.08
12.50	0.06	327	141.00	0.06
15.00	0.05	327	141.00	0.05
17.50	0.05	327	141.00	0.05
20.00	0.04	327	141.00	0.04
22.50	0.03	318	140.30	0.04
25.00	0.00	206	131.35	0.03
27.50	0.00	17	116.33	0.01
30.00	0.00	0	115.00	0.00
32.50	0.00	0	115.00	0.00
35.00	0.00	0	115.00	0.00
37.50	0.00	0	115.00	0.00
40.00	0.00	0	115.00	0.00
42.50	0.00	0	115.00	0.00
45.00	0.00	0	115.00	0.00
47.50	0.00	0	115.00	0.00
50.00	0.00	0	115.00	0.00
52.50	0.00	0	115.00	0.00
55.00	0.00	0	115.00	0.00
57.50	0.00	0	115.00	0.00
60.00	0.00	0	115.00	0.00
62.50	0.00	0	115.00	0.00
65.00	0.00	0	115.00	0.00
67.50	0.00	0	115.00	0.00
70.00	0.00	0	115.00	0.00
72.50	0.00	0	115.00	0.00
75.00	0.00	0	115.00	0.00
77.50	0.00	0	115.00	0.00
80.00	0.00	0	115.00	0.00
82.50	0.00	0	115.00	0.00
85.00	0.00	0	115.00	0.00
87.50	0.00	0	115.00	0.00
90.00	0.00	0	115.00	0.00
92.50	0.00	0	115.00	0.00
95.00	0.00	0	115.00	0.00

Territorial HydroCAD Model

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Type IA 24-hr 10-year Rainfall=3.40"

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Summary for Pond 5P: Drywell 2

Inflow Area = 0.530 ac, 90.57% Impervious, Inflow Depth = 2.87" for 10-year event
 Inflow = 0.37 cfs @ 7.97 hrs, Volume= 0.127 af
 Outflow = 0.37 cfs @ 7.98 hrs, Volume= 0.127 af, Atten= 0%, Lag= 0.8 min
 Discarded = 0.37 cfs @ 7.98 hrs, Volume= 0.127 af

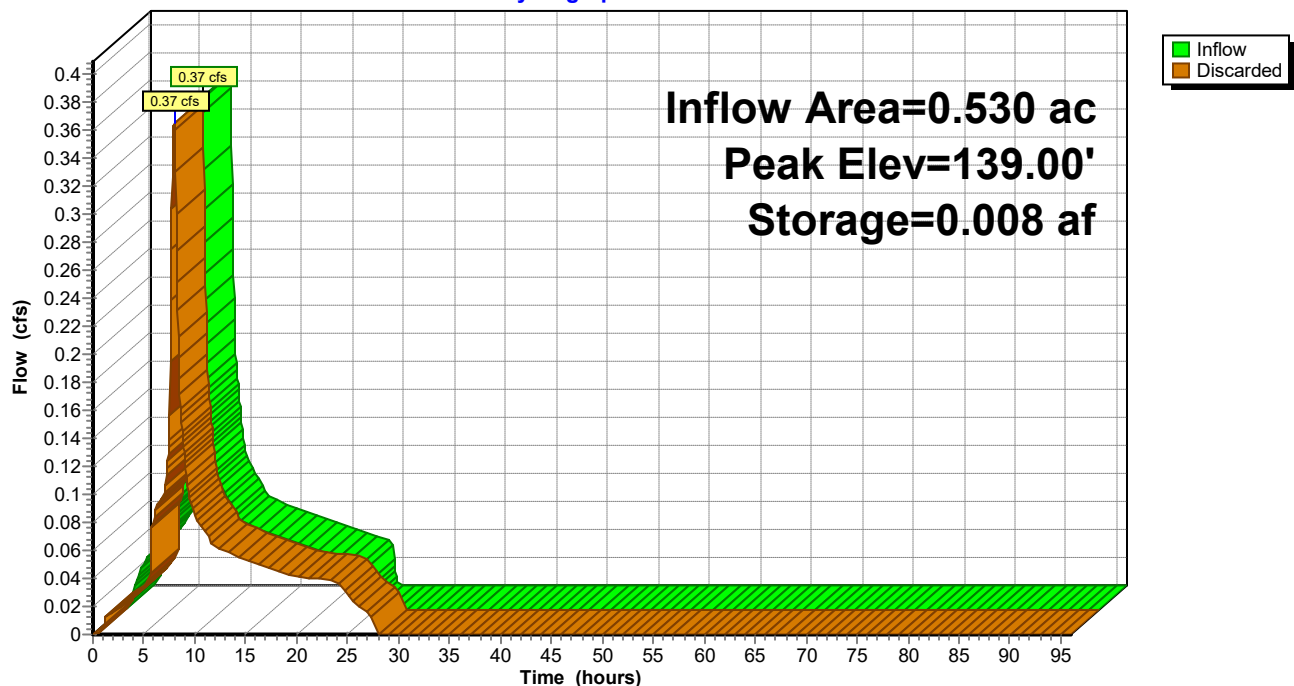
Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 139.00' @ 5.65 hrs Surf.Area= 0.000 ac Storage= 0.008 af

Plug-Flow detention time= 75.8 min calculated for 0.127 af (100% of inflow)
 Center-of-Mass det. time= 76.0 min (745.1 - 669.1)

Volume	Invert	Avail.Storage	Storage Description
#1	113.00'	0.003 af	4.00'D x 10.00'H Vertical Cone/Cylinder
#2	123.00'	0.005 af	4.00'D x 16.00'H Vertical Cone/Cylinder -Impervious
		0.008 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#0	Discarded	139.00'	Automatic Storage Overflow (Discharged without head)
#1	Discarded	113.00'	47.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 100.00'

Discarded OutFlow Max=0.04 cfs @ 7.98 hrs HW=139.00' (Free Discharge)
 ↑1=Exfiltration (Controls 0.04 cfs)

Pond 5P: Drywell 2**Hydrograph**

Territorial HydroCAD Model

Type IA 24-hr 10-year Rainfall=3.40"

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Hydrograph for Pond 5P: Drywell 2

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0.000	113.00	0.00
2.50	0.04	0.001	116.97	0.02
5.00	0.06	0.006	133.05	0.03
7.50	0.14	0.008	139.00	0.14
10.00	0.09	0.008	139.00	0.09
12.50	0.06	0.008	139.00	0.06
15.00	0.05	0.008	139.00	0.05
17.50	0.05	0.008	139.00	0.05
20.00	0.04	0.008	139.00	0.04
22.50	0.04	0.007	137.37	0.04
25.00	0.00	0.004	127.30	0.03
27.50	0.00	0.000	113.00	0.00
30.00	0.00	0.000	113.00	0.00
32.50	0.00	0.000	113.00	0.00
35.00	0.00	0.000	113.00	0.00
37.50	0.00	0.000	113.00	0.00
40.00	0.00	0.000	113.00	0.00
42.50	0.00	0.000	113.00	0.00
45.00	0.00	0.000	113.00	0.00
47.50	0.00	0.000	113.00	0.00
50.00	0.00	0.000	113.00	0.00
52.50	0.00	0.000	113.00	0.00
55.00	0.00	0.000	113.00	0.00
57.50	0.00	0.000	113.00	0.00
60.00	0.00	0.000	113.00	0.00
62.50	0.00	0.000	113.00	0.00
65.00	0.00	0.000	113.00	0.00
67.50	0.00	0.000	113.00	0.00
70.00	0.00	0.000	113.00	0.00
72.50	0.00	0.000	113.00	0.00
75.00	0.00	0.000	113.00	0.00
77.50	0.00	0.000	113.00	0.00
80.00	0.00	0.000	113.00	0.00
82.50	0.00	0.000	113.00	0.00
85.00	0.00	0.000	113.00	0.00
87.50	0.00	0.000	113.00	0.00
90.00	0.00	0.000	113.00	0.00
92.50	0.00	0.000	113.00	0.00
95.00	0.00	0.000	113.00	0.00

Territorial HydroCAD Model

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Type IA 24-hr 10-year Rainfall=3.40"

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Summary for Pond 6P: Alley Drywell

Inflow Area = 0.160 ac, 100.00% Impervious, Inflow Depth = 3.17" for 10-year event
 Inflow = 0.13 cfs @ 7.92 hrs, Volume= 0.042 af
 Outflow = 0.08 cfs @ 8.27 hrs, Volume= 0.042 af, Atten= 39%, Lag= 21.1 min
 Discarded = 0.08 cfs @ 8.27 hrs, Volume= 0.042 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 143.00' @ 8.25 hrs Surf.Area= 0.000 ac Storage= 0.008 af

Plug-Flow detention time= 95.1 min calculated for 0.042 af (100% of inflow)
 Center-of-Mass det. time= 95.1 min (761.1 - 666.0)

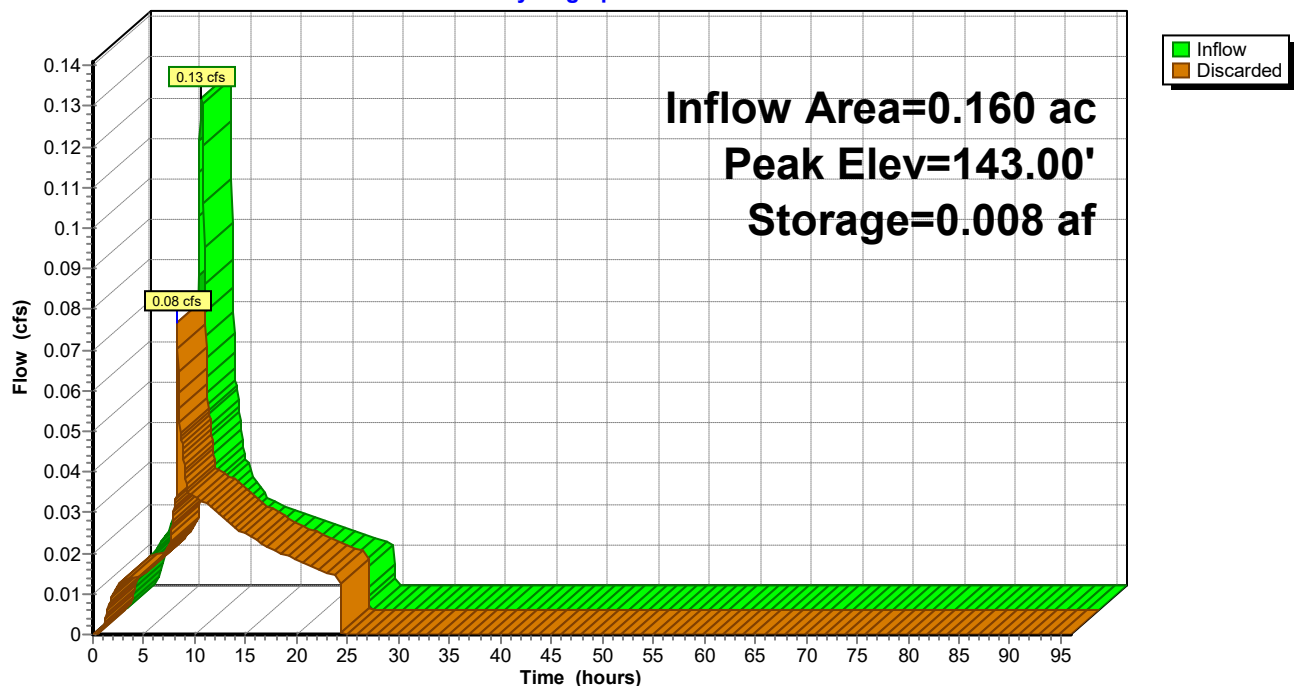
Volume	Invert	Avail.Storage	Storage Description
#1	117.00'	0.003 af	4.00'D x 10.00'H Vertical Cone/Cylinder
#2	127.00'	0.005 af	4.00'D x 16.00'H Vertical Cone/Cylinder -Impervious
		0.008 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#0	Discarded	143.00'	Automatic Storage Overflow (Discharged without head)
#1	Discarded	117.00'	47.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 100.00' Phase-In= 0.10'

Discarded OutFlow Max=0.03 cfs @ 8.27 hrs HW=143.00' (Free Discharge)
 ↑ **1=Exfiltration** (Controls 0.03 cfs)

Pond 6P: Alley Drywell

Hydrograph



Territorial HydroCAD Model

Type IA 24-hr 10-year Rainfall=3.40"

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Hydrograph for Pond 6P: Alley Drywell

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0.000	117.00	0.00
2.50	0.01	0.000	117.09	0.01
5.00	0.02	0.001	118.75	0.02
7.50	0.05	0.003	127.78	0.02
10.00	0.03	0.007	142.24	0.03
12.50	0.02	0.006	136.30	0.03
15.00	0.02	0.004	130.67	0.02
17.50	0.02	0.003	126.33	0.02
20.00	0.01	0.002	122.77	0.02
22.50	0.01	0.001	119.64	0.02
25.00	0.00	0.000	117.00	0.00
27.50	0.00	0.000	117.00	0.00
30.00	0.00	0.000	117.00	0.00
32.50	0.00	0.000	117.00	0.00
35.00	0.00	0.000	117.00	0.00
37.50	0.00	0.000	117.00	0.00
40.00	0.00	0.000	117.00	0.00
42.50	0.00	0.000	117.00	0.00
45.00	0.00	0.000	117.00	0.00
47.50	0.00	0.000	117.00	0.00
50.00	0.00	0.000	117.00	0.00
52.50	0.00	0.000	117.00	0.00
55.00	0.00	0.000	117.00	0.00
57.50	0.00	0.000	117.00	0.00
60.00	0.00	0.000	117.00	0.00
62.50	0.00	0.000	117.00	0.00
65.00	0.00	0.000	117.00	0.00
67.50	0.00	0.000	117.00	0.00
70.00	0.00	0.000	117.00	0.00
72.50	0.00	0.000	117.00	0.00
75.00	0.00	0.000	117.00	0.00
77.50	0.00	0.000	117.00	0.00
80.00	0.00	0.000	117.00	0.00
82.50	0.00	0.000	117.00	0.00
85.00	0.00	0.000	117.00	0.00
87.50	0.00	0.000	117.00	0.00
90.00	0.00	0.000	117.00	0.00
92.50	0.00	0.000	117.00	0.00
95.00	0.00	0.000	117.00	0.00

Territorial HydroCAD Model

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Type IA 24-hr 10-year Rainfall=3.40"

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Summary for Pond 8P: Vegetated Swale

Inflow Area = 0.170 ac, 88.24% Impervious, Inflow Depth = 2.79" for 10-year event
 Inflow = 0.12 cfs @ 7.96 hrs, Volume= 0.040 af
 Outflow = 0.11 cfs @ 7.99 hrs, Volume= 0.040 af, Atten= 0%, Lag= 1.9 min
 Discarded = 0.11 cfs @ 7.99 hrs, Volume= 0.040 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 144.65' @ 7.99 hrs Surf.Area= 0.001 ac Storage= 0.000 af

Plug-Flow detention time= 3.1 min calculated for 0.040 af (100% of inflow)
 Center-of-Mass det. time= 3.1 min (671.3 - 668.2)

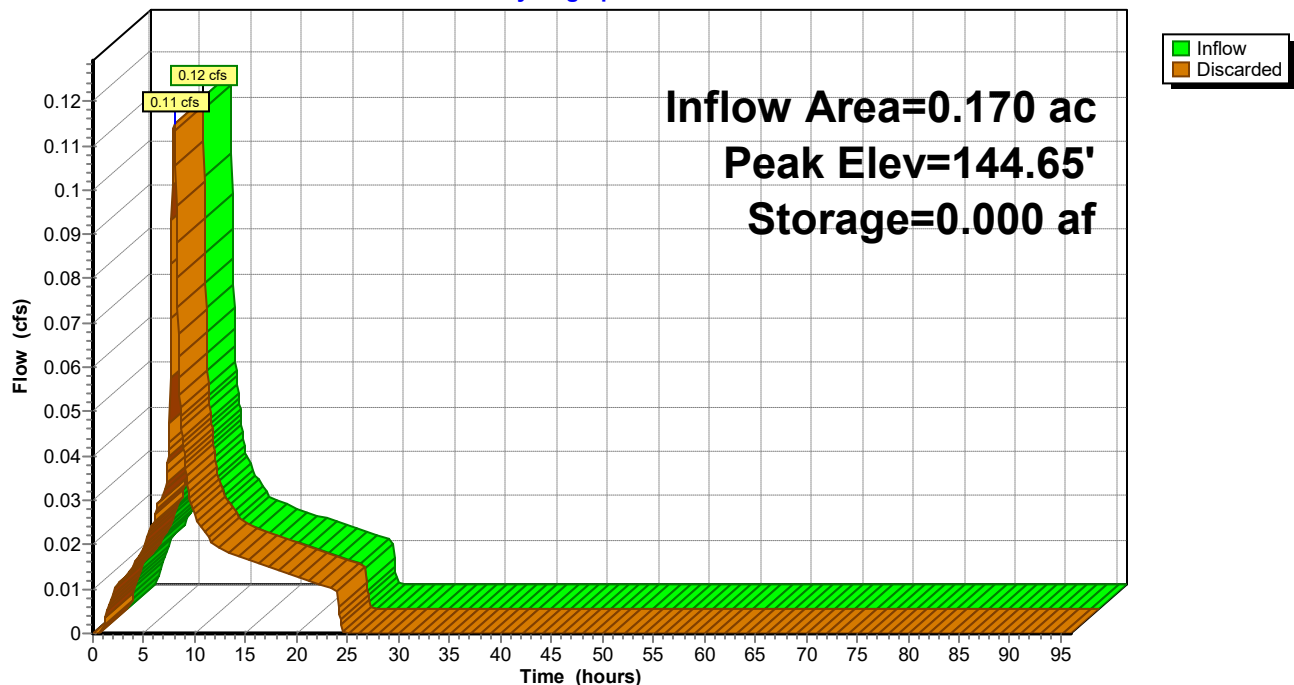
Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	0.001 af	5.0"W x 30.0"H x 80.00'L Parabolic Arch

Device	Routing	Invert	Outlet Devices
#1	Discarded	144.00'	47.000 in/hr Exfiltration over Wetted area from 144.00' - 147.00' Conductivity to Groundwater Elevation = 100.00' Excluded Wetted area = 0.001 ac

Discarded OutFlow Max=0.11 cfs @ 7.99 hrs HW=144.65' (Free Discharge)
 ↑1=Exfiltration (Controls 0.11 cfs)

Pond 8P: Vegetated Swale

Hydrograph



Territorial HydroCAD Model

Type IA 24-hr 10-year Rainfall=3.40"

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Hydrograph for Pond 8P: Vegetated Swale

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0.000	144.00	0.00
2.50	0.01	0.000	144.06	0.01
5.00	0.02	0.000	144.11	0.02
7.50	0.04	0.000	144.25	0.04
10.00	0.03	0.000	144.16	0.03
12.50	0.02	0.000	144.11	0.02
15.00	0.02	0.000	144.10	0.02
17.50	0.01	0.000	144.09	0.01
20.00	0.01	0.000	144.07	0.01
22.50	0.01	0.000	144.06	0.01
25.00	0.00	0.000	144.00	0.00
27.50	0.00	0.000	144.00	0.00
30.00	0.00	0.000	144.00	0.00
32.50	0.00	0.000	144.00	0.00
35.00	0.00	0.000	144.00	0.00
37.50	0.00	0.000	144.00	0.00
40.00	0.00	0.000	144.00	0.00
42.50	0.00	0.000	144.00	0.00
45.00	0.00	0.000	144.00	0.00
47.50	0.00	0.000	144.00	0.00
50.00	0.00	0.000	144.00	0.00
52.50	0.00	0.000	144.00	0.00
55.00	0.00	0.000	144.00	0.00
57.50	0.00	0.000	144.00	0.00
60.00	0.00	0.000	144.00	0.00
62.50	0.00	0.000	144.00	0.00
65.00	0.00	0.000	144.00	0.00
67.50	0.00	0.000	144.00	0.00
70.00	0.00	0.000	144.00	0.00
72.50	0.00	0.000	144.00	0.00
75.00	0.00	0.000	144.00	0.00
77.50	0.00	0.000	144.00	0.00
80.00	0.00	0.000	144.00	0.00
82.50	0.00	0.000	144.00	0.00
85.00	0.00	0.000	144.00	0.00
87.50	0.00	0.000	144.00	0.00
90.00	0.00	0.000	144.00	0.00
92.50	0.00	0.000	144.00	0.00
95.00	0.00	0.000	144.00	0.00

Territorial HydroCAD Model

Type IA 24-hr 25-year Rainfall=3.90"

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Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points

Runoff by SBUH method, Split Pervious/Imperv.

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Locust/17th Runoff Area=0.500 ac 92.00% Impervious Runoff Depth=3.38"
 Flow Length=580' Slope=0.0100 '/' Tc=12.7 min CN=39/98 Runoff=0.39 cfs 0.141 af

Subcatchment 2S: Locust/18th Runoff Area=0.530 ac 90.57% Impervious Runoff Depth=3.32"
 Flow Length=366' Slope=0.0100 '/' Tc=9.2 min CN=39/98 Runoff=0.42 cfs 0.147 af

Subcatchment 3S: Alley Runoff Area=0.160 ac 100.00% Impervious Runoff Depth=3.67"
 Flow Length=215' Slope=0.0050 '/' Tc=6.2 min CN=0/98 Runoff=0.14 cfs 0.049 af

Subcatchment 7S: Territorial Rd Runoff Area=0.170 ac 88.24% Impervious Runoff Depth=3.24"
 Flow Length=200' Slope=0.0050 '/' Tc=8.3 min CN=39/98 Runoff=0.13 cfs 0.046 af

Pond 4P: Drywell 1 Peak Elev=141.00' Storage=327 cf Inflow=0.39 cfs 0.141 af
 Outflow=0.38 cfs 0.141 af

Pond 5P: Drywell 2 Peak Elev=139.00' Storage=0.008 af Inflow=0.42 cfs 0.147 af
 Outflow=0.42 cfs 0.147 af

Pond 6P: Alley Drywell Peak Elev=143.00' Storage=0.008 af Inflow=0.14 cfs 0.049 af
 Outflow=0.15 cfs 0.049 af

Pond 8P: Vegetated Swale Peak Elev=144.75' Storage=0.001 af Inflow=0.13 cfs 0.046 af
 Outflow=0.13 cfs 0.046 af

Total Runoff Area = 1.360 ac Runoff Volume = 0.382 af Average Runoff Depth = 3.37"
8.09% Pervious = 0.110 ac 91.91% Impervious = 1.250 ac

Territorial HydroCAD Model

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Type IA 24-hr 25-year Rainfall=3.90"

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Summary for Subcatchment 1S: Locust/17th

Runoff = 0.39 cfs @ 7.99 hrs, Volume= 0.141 af, Depth= 3.38"

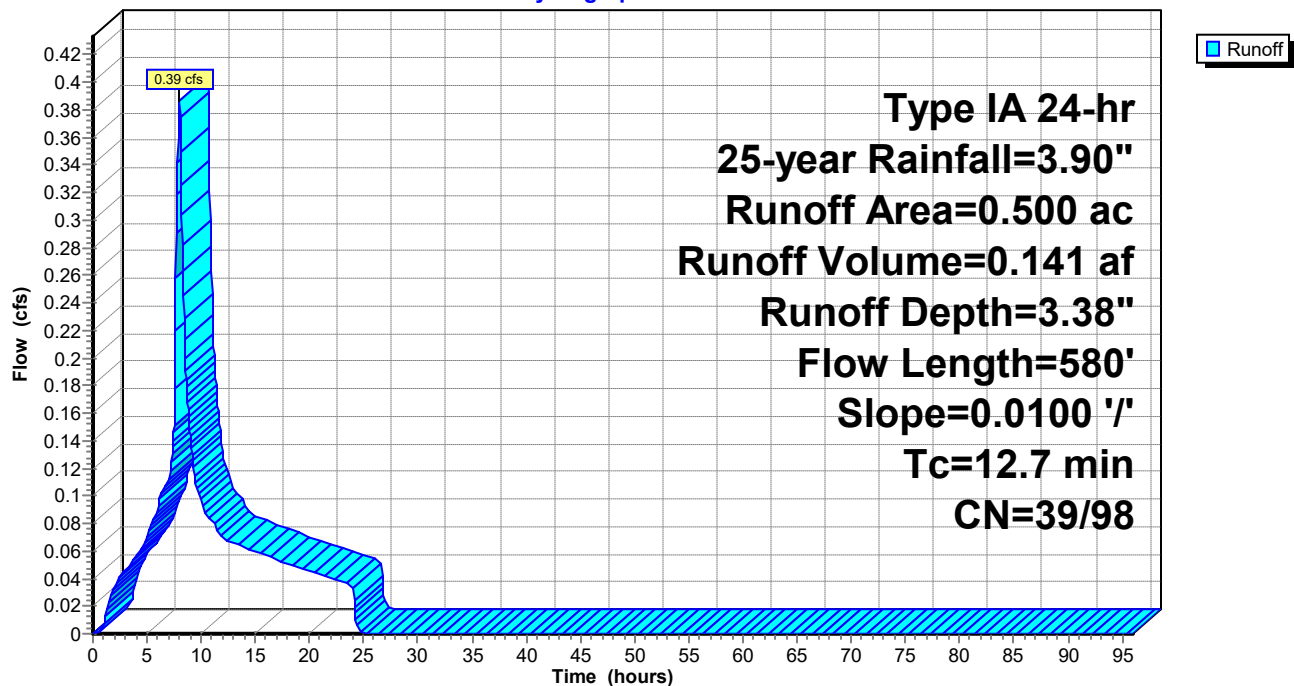
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type IA 24-hr 25-year Rainfall=3.90"

Area (ac)	CN	Description	Land Use
0.460	98	Paved roads w/curbs & sewers, HSG A	Roadway
0.040	39	>75% Grass cover, Good, HSG A	Open Space
0.500	93	Weighted Average	
0.040	39	8.00% Pervious Area	
0.460	98	92.00% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	580	0.0100	0.76		Lag/CN Method,

Subcatchment 1S: Locust/17th

Hydrograph



Territorial HydroCAD Model

Type IA 24-hr 25-year Rainfall=3.90"

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Hydrograph for Subcatchment 1S: Locust/17th

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.50	0.26	0.00	0.11	0.04
5.00	0.61	0.00	0.42	0.07
7.50	1.21	0.00	0.99	0.15
10.00	2.25	0.00	2.02	0.10
12.50	2.66	0.00	2.43	0.07
15.00	3.00	0.00	2.77	0.06
17.50	3.30	0.00	3.07	0.05
20.00	3.56	0.01	3.33	0.05
22.50	3.78	0.03	3.55	0.04
25.00	3.90	0.04	3.67	0.00
27.50	3.90	0.04	3.67	0.00
30.00	3.90	0.04	3.67	0.00
32.50	3.90	0.04	3.67	0.00
35.00	3.90	0.04	3.67	0.00
37.50	3.90	0.04	3.67	0.00
40.00	3.90	0.04	3.67	0.00
42.50	3.90	0.04	3.67	0.00
45.00	3.90	0.04	3.67	0.00
47.50	3.90	0.04	3.67	0.00
50.00	3.90	0.04	3.67	0.00
52.50	3.90	0.04	3.67	0.00
55.00	3.90	0.04	3.67	0.00
57.50	3.90	0.04	3.67	0.00
60.00	3.90	0.04	3.67	0.00
62.50	3.90	0.04	3.67	0.00
65.00	3.90	0.04	3.67	0.00
67.50	3.90	0.04	3.67	0.00
70.00	3.90	0.04	3.67	0.00
72.50	3.90	0.04	3.67	0.00
75.00	3.90	0.04	3.67	0.00
77.50	3.90	0.04	3.67	0.00
80.00	3.90	0.04	3.67	0.00
82.50	3.90	0.04	3.67	0.00
85.00	3.90	0.04	3.67	0.00
87.50	3.90	0.04	3.67	0.00
90.00	3.90	0.04	3.67	0.00
92.50	3.90	0.04	3.67	0.00
95.00	3.90	0.04	3.67	0.00

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Type IA 24-hr 25-year Rainfall=3.90"

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Summary for Subcatchment 2S: Locust/18th

Runoff = 0.42 cfs @ 7.97 hrs, Volume= 0.147 af, Depth= 3.32"

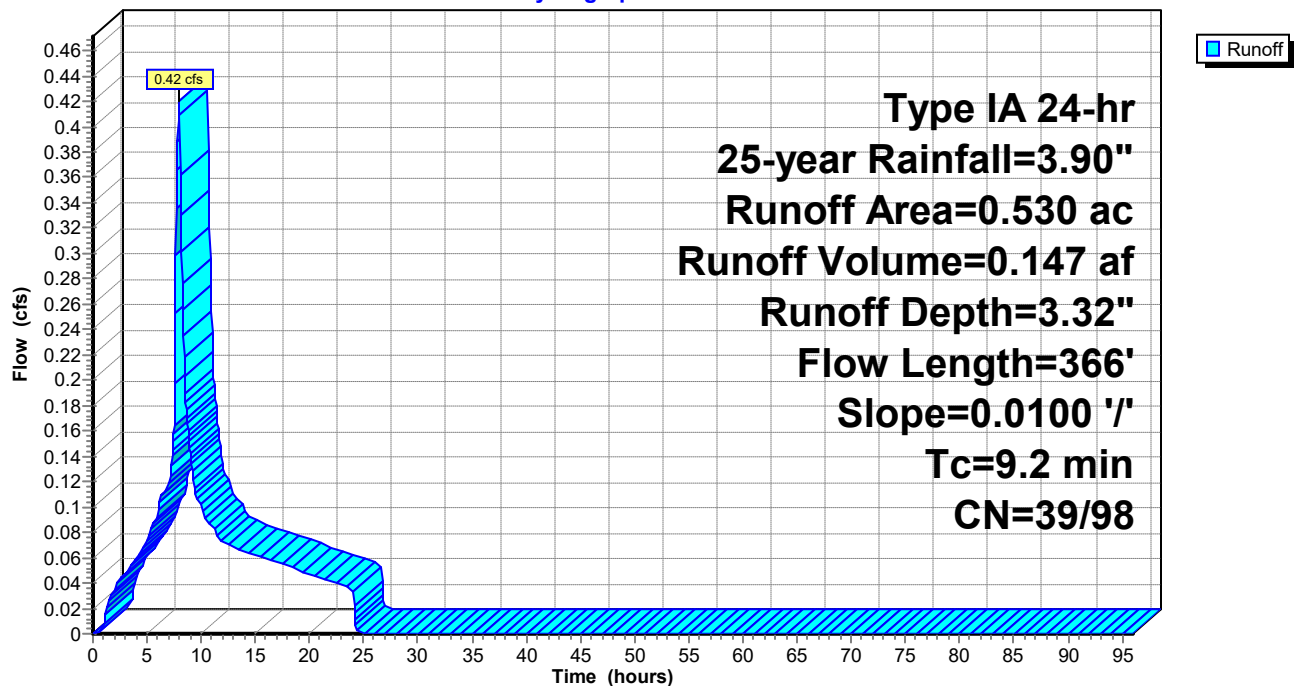
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type IA 24-hr 25-year Rainfall=3.90"

Area (ac)	CN	Description	Land Use
0.480	98	Paved roads w/curbs & sewers, HSG A	Roadway
0.050	39	>75% Grass cover, Good, HSG A	Open Space
0.530	92	Weighted Average	
0.050	39	9.43% Pervious Area	
0.480	98	90.57% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	366	0.0100	0.67		Lag/CN Method,

Subcatchment 2S: Locust/18th

Hydrograph



Territorial HydroCAD Model

Type IA 24-hr 25-year Rainfall=3.90"

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Hydrograph for Subcatchment 2S: Locust/18th

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.50	0.26	0.00	0.11	0.04
5.00	0.61	0.00	0.42	0.07
7.50	1.21	0.00	0.99	0.16
10.00	2.25	0.00	2.02	0.10
12.50	2.66	0.00	2.43	0.07
15.00	3.00	0.00	2.77	0.06
17.50	3.30	0.00	3.07	0.05
20.00	3.56	0.01	3.33	0.05
22.50	3.78	0.03	3.55	0.04
25.00	3.90	0.04	3.67	0.00
27.50	3.90	0.04	3.67	0.00
30.00	3.90	0.04	3.67	0.00
32.50	3.90	0.04	3.67	0.00
35.00	3.90	0.04	3.67	0.00
37.50	3.90	0.04	3.67	0.00
40.00	3.90	0.04	3.67	0.00
42.50	3.90	0.04	3.67	0.00
45.00	3.90	0.04	3.67	0.00
47.50	3.90	0.04	3.67	0.00
50.00	3.90	0.04	3.67	0.00
52.50	3.90	0.04	3.67	0.00
55.00	3.90	0.04	3.67	0.00
57.50	3.90	0.04	3.67	0.00
60.00	3.90	0.04	3.67	0.00
62.50	3.90	0.04	3.67	0.00
65.00	3.90	0.04	3.67	0.00
67.50	3.90	0.04	3.67	0.00
70.00	3.90	0.04	3.67	0.00
72.50	3.90	0.04	3.67	0.00
75.00	3.90	0.04	3.67	0.00
77.50	3.90	0.04	3.67	0.00
80.00	3.90	0.04	3.67	0.00
82.50	3.90	0.04	3.67	0.00
85.00	3.90	0.04	3.67	0.00
87.50	3.90	0.04	3.67	0.00
90.00	3.90	0.04	3.67	0.00
92.50	3.90	0.04	3.67	0.00
95.00	3.90	0.04	3.67	0.00

Territorial HydroCAD Model

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Type IA 24-hr 25-year Rainfall=3.90"

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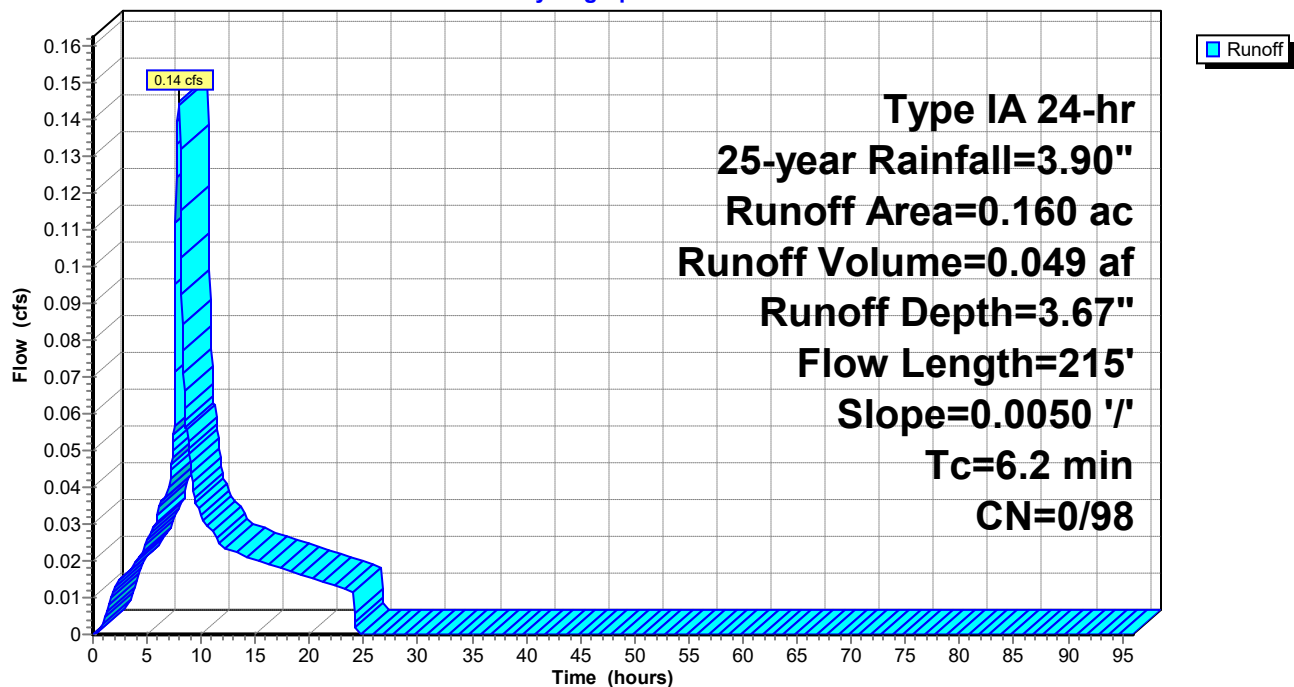
Summary for Subcatchment 3S: Alley

Runoff = 0.14 cfs @ 7.92 hrs, Volume= 0.049 af, Depth= 3.67"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type IA 24-hr 25-year Rainfall=3.90"

Area (ac)	CN	Description	Land Use
0.160	98	Paved roads w/curbs & sewers, HSG A	Roadway
0.160	98	100.00% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	215	0.0050	0.58		Lag/CN Method,

Subcatchment 3S: Alley**Hydrograph**

Territorial HydroCAD Model

Type IA 24-hr 25-year Rainfall=3.90"

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Hydrograph for Subcatchment 3S: Alley

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.50	0.26	0.00	0.11	0.02
5.00	0.61	0.00	0.42	0.03
7.50	1.21	0.00	0.99	0.06
10.00	2.25	0.00	2.02	0.03
12.50	2.66	0.00	2.43	0.02
15.00	3.00	0.00	2.77	0.02
17.50	3.30	0.00	3.07	0.02
20.00	3.56	0.00	3.33	0.02
22.50	3.78	0.00	3.55	0.01
25.00	3.90	0.00	3.67	0.00
27.50	3.90	0.00	3.67	0.00
30.00	3.90	0.00	3.67	0.00
32.50	3.90	0.00	3.67	0.00
35.00	3.90	0.00	3.67	0.00
37.50	3.90	0.00	3.67	0.00
40.00	3.90	0.00	3.67	0.00
42.50	3.90	0.00	3.67	0.00
45.00	3.90	0.00	3.67	0.00
47.50	3.90	0.00	3.67	0.00
50.00	3.90	0.00	3.67	0.00
52.50	3.90	0.00	3.67	0.00
55.00	3.90	0.00	3.67	0.00
57.50	3.90	0.00	3.67	0.00
60.00	3.90	0.00	3.67	0.00
62.50	3.90	0.00	3.67	0.00
65.00	3.90	0.00	3.67	0.00
67.50	3.90	0.00	3.67	0.00
70.00	3.90	0.00	3.67	0.00
72.50	3.90	0.00	3.67	0.00
75.00	3.90	0.00	3.67	0.00
77.50	3.90	0.00	3.67	0.00
80.00	3.90	0.00	3.67	0.00
82.50	3.90	0.00	3.67	0.00
85.00	3.90	0.00	3.67	0.00
87.50	3.90	0.00	3.67	0.00
90.00	3.90	0.00	3.67	0.00
92.50	3.90	0.00	3.67	0.00
95.00	3.90	0.00	3.67	0.00

Territorial HydroCAD Model

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Type IA 24-hr 25-year Rainfall=3.90"

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Summary for Subcatchment 7S: Territorial Rd

Runoff = 0.13 cfs @ 7.96 hrs, Volume= 0.046 af, Depth= 3.24"

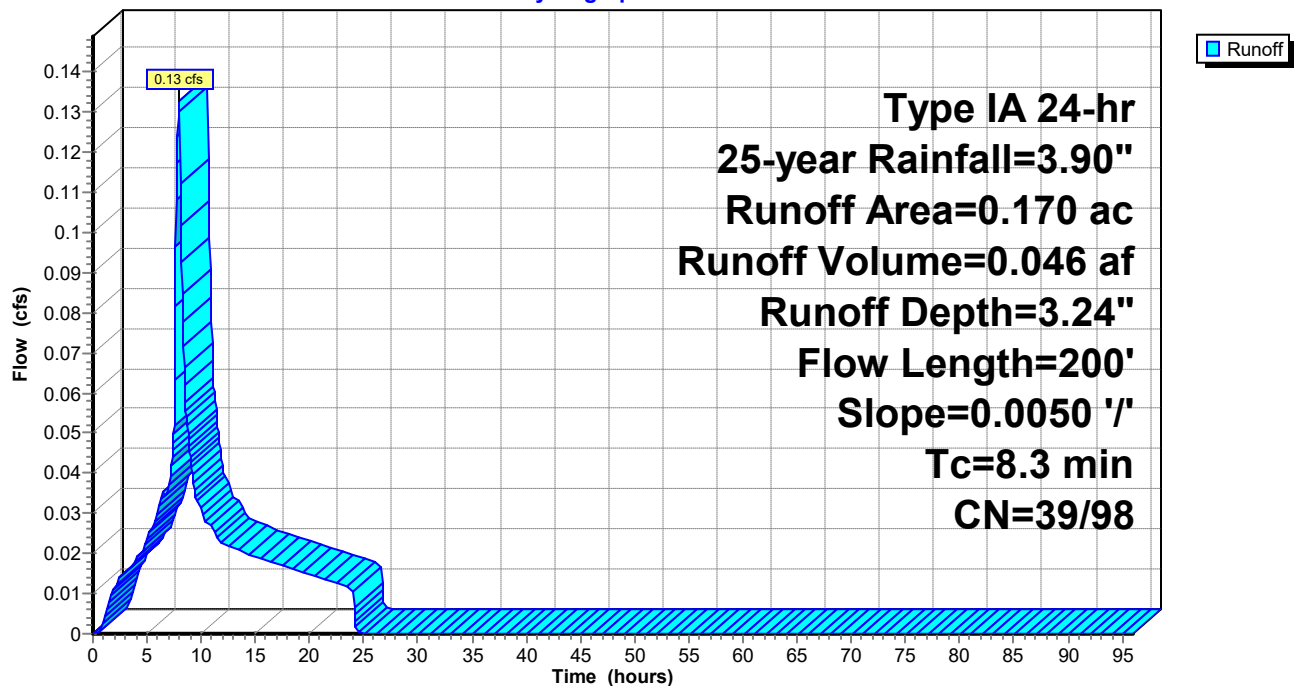
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type IA 24-hr 25-year Rainfall=3.90"

Area (ac)	CN	Description	Land Use
0.150	98	Paved roads w/curbs & sewers, HSG A	Roadway
0.020	39	>75% Grass cover, Good, HSG A	Open Space
0.170	91	Weighted Average	
0.020	39	11.76% Pervious Area	
0.150	98	88.24% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	200	0.0050	0.40		Lag/CN Method, territorial

Subcatchment 7S: Territorial Rd

Hydrograph



Territorial HydroCAD Model

Type IA 24-hr 25-year Rainfall=3.90"

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Hydrograph for Subcatchment 7S: Territorial Rd

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.50	0.26	0.00	0.11	0.01
5.00	0.61	0.00	0.42	0.02
7.50	1.21	0.00	0.99	0.05
10.00	2.25	0.00	2.02	0.03
12.50	2.66	0.00	2.43	0.02
15.00	3.00	0.00	2.77	0.02
17.50	3.30	0.00	3.07	0.02
20.00	3.56	0.01	3.33	0.01
22.50	3.78	0.03	3.55	0.01
25.00	3.90	0.04	3.67	0.00
27.50	3.90	0.04	3.67	0.00
30.00	3.90	0.04	3.67	0.00
32.50	3.90	0.04	3.67	0.00
35.00	3.90	0.04	3.67	0.00
37.50	3.90	0.04	3.67	0.00
40.00	3.90	0.04	3.67	0.00
42.50	3.90	0.04	3.67	0.00
45.00	3.90	0.04	3.67	0.00
47.50	3.90	0.04	3.67	0.00
50.00	3.90	0.04	3.67	0.00
52.50	3.90	0.04	3.67	0.00
55.00	3.90	0.04	3.67	0.00
57.50	3.90	0.04	3.67	0.00
60.00	3.90	0.04	3.67	0.00
62.50	3.90	0.04	3.67	0.00
65.00	3.90	0.04	3.67	0.00
67.50	3.90	0.04	3.67	0.00
70.00	3.90	0.04	3.67	0.00
72.50	3.90	0.04	3.67	0.00
75.00	3.90	0.04	3.67	0.00
77.50	3.90	0.04	3.67	0.00
80.00	3.90	0.04	3.67	0.00
82.50	3.90	0.04	3.67	0.00
85.00	3.90	0.04	3.67	0.00
87.50	3.90	0.04	3.67	0.00
90.00	3.90	0.04	3.67	0.00
92.50	3.90	0.04	3.67	0.00
95.00	3.90	0.04	3.67	0.00

Territorial HydroCAD Model

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Type IA 24-hr 25-year Rainfall=3.90"

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Summary for Pond 4P: Drywell 1

Inflow Area = 0.500 ac, 92.00% Impervious, Inflow Depth = 3.38" for 25-year event
 Inflow = 0.39 cfs @ 7.99 hrs, Volume= 0.141 af
 Outflow = 0.38 cfs @ 8.01 hrs, Volume= 0.141 af, Atten= 1%, Lag= 1.1 min
 Discarded = 0.38 cfs @ 8.01 hrs, Volume= 0.141 af

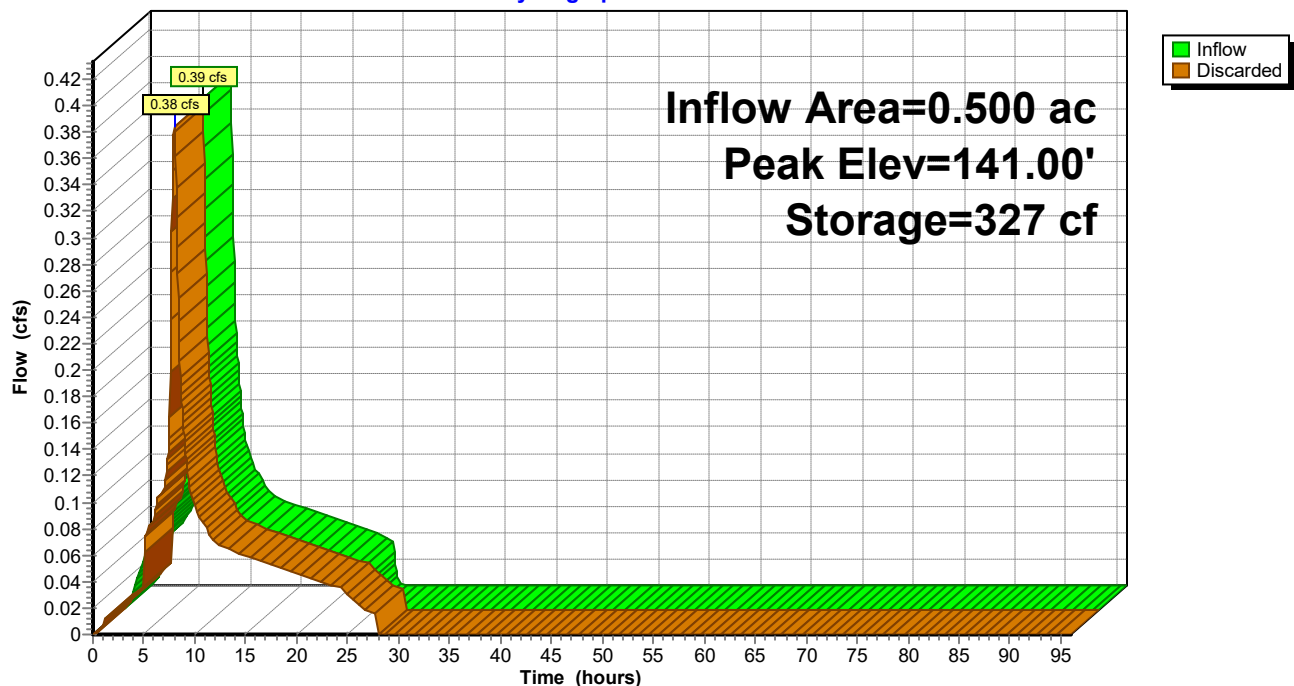
Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 141.00' @ 5.15 hrs Surf.Area= 13 sf Storage= 327 cf

Plug-Flow detention time= 72.0 min calculated for 0.141 af (100% of inflow)
 Center-of-Mass det. time= 72.2 min (741.7 - 669.6)

Volume	Invert	Avail.Storage	Storage Description
#1	115.00'	126 cf	4.00'D x 10.00'H Vertical Cone/Cylinder
#2	125.00'	201 cf	4.00'D x 16.00'H Vertical Cone/Cylinder -Impervious
		327 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#0	Discarded	141.00'	Automatic Storage Overflow (Discharged without head)
#1	Discarded	115.00'	47.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 100.00'

Discarded OutFlow Max=0.04 cfs @ 8.01 hrs HW=141.00' (Free Discharge)
 ↑1=Exfiltration (Controls 0.04 cfs)

Pond 4P: Drywell 1**Hydrograph**

Territorial HydroCAD Model

Type IA 24-hr 25-year Rainfall=3.90"

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Hydrograph for Pond 4P: Drywell 1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0	115.00	0.00
2.50	0.04	67	120.36	0.02
5.00	0.07	312	139.83	0.04
7.50	0.15	327	141.00	0.15
10.00	0.10	327	141.00	0.10
12.50	0.07	327	141.00	0.07
15.00	0.06	327	141.00	0.06
17.50	0.05	327	141.00	0.05
20.00	0.05	327	141.00	0.05
22.50	0.04	327	141.00	0.04
25.00	0.00	229	133.24	0.03
27.50	0.00	29	117.32	0.02
30.00	0.00	0	115.00	0.00
32.50	0.00	0	115.00	0.00
35.00	0.00	0	115.00	0.00
37.50	0.00	0	115.00	0.00
40.00	0.00	0	115.00	0.00
42.50	0.00	0	115.00	0.00
45.00	0.00	0	115.00	0.00
47.50	0.00	0	115.00	0.00
50.00	0.00	0	115.00	0.00
52.50	0.00	0	115.00	0.00
55.00	0.00	0	115.00	0.00
57.50	0.00	0	115.00	0.00
60.00	0.00	0	115.00	0.00
62.50	0.00	0	115.00	0.00
65.00	0.00	0	115.00	0.00
67.50	0.00	0	115.00	0.00
70.00	0.00	0	115.00	0.00
72.50	0.00	0	115.00	0.00
75.00	0.00	0	115.00	0.00
77.50	0.00	0	115.00	0.00
80.00	0.00	0	115.00	0.00
82.50	0.00	0	115.00	0.00
85.00	0.00	0	115.00	0.00
87.50	0.00	0	115.00	0.00
90.00	0.00	0	115.00	0.00
92.50	0.00	0	115.00	0.00
95.00	0.00	0	115.00	0.00

Territorial HydroCAD Model

Prepared by Atwell LLC

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Type IA 24-hr 25-year Rainfall=3.90"

Printed 2/25/2021

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Summary for Pond 5P: Drywell 2

Inflow Area = 0.530 ac, 90.57% Impervious, Inflow Depth = 3.32" for 25-year event
 Inflow = 0.42 cfs @ 7.97 hrs, Volume= 0.147 af
 Outflow = 0.42 cfs @ 7.98 hrs, Volume= 0.147 af, Atten= 0%, Lag= 0.8 min
 Discarded = 0.42 cfs @ 7.98 hrs, Volume= 0.147 af

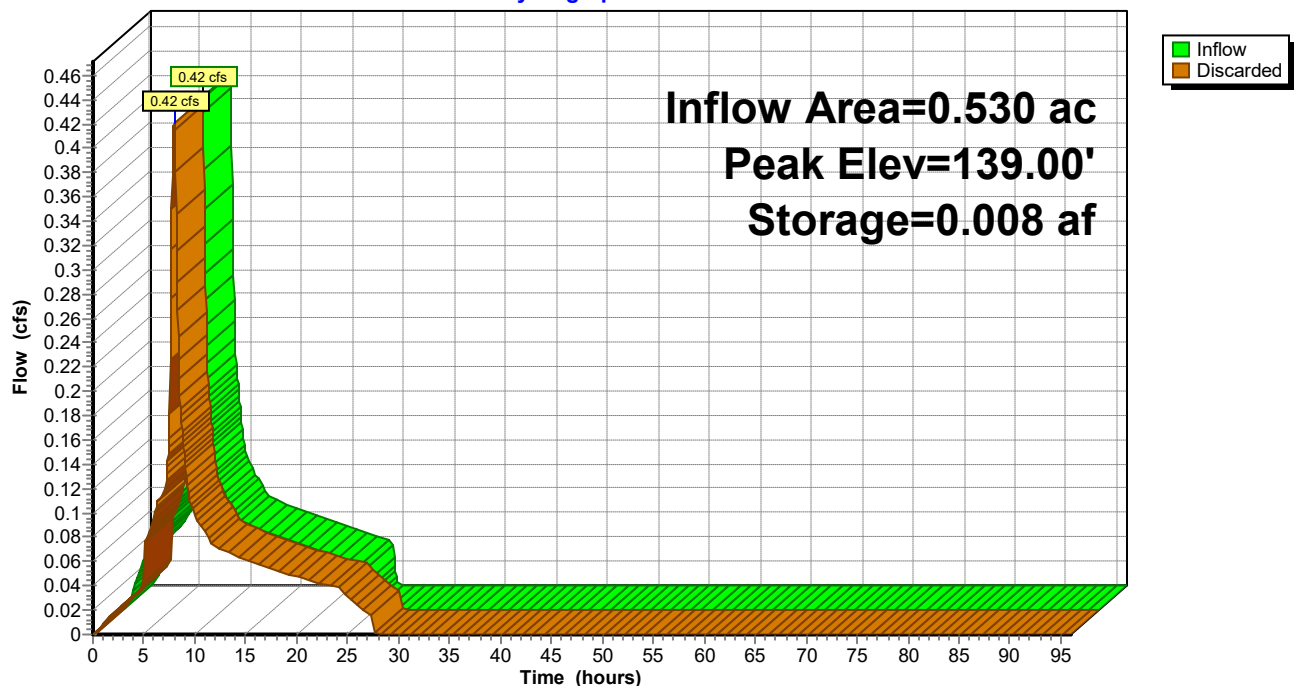
Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 139.00' @ 5.05 hrs Surf.Area= 0.000 ac Storage= 0.008 af

Plug-Flow detention time= 68.5 min calculated for 0.147 af (100% of inflow)
 Center-of-Mass det. time= 68.6 min (734.8 - 666.2)

Volume	Invert	Avail.Storage	Storage Description
#1	113.00'	0.003 af	4.00'D x 10.00'H Vertical Cone/Cylinder
#2	123.00'	0.005 af	4.00'D x 16.00'H Vertical Cone/Cylinder -Impervious
		0.008 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#0	Discarded	139.00'	Automatic Storage Overflow (Discharged without head)
#1	Discarded	113.00'	47.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 100.00'

Discarded OutFlow Max=0.04 cfs @ 7.98 hrs HW=139.00' (Free Discharge)
 ↑1=Exfiltration (Controls 0.04 cfs)

Pond 5P: Drywell 2**Hydrograph**

Territorial HydroCAD Model

Type IA 24-hr 25-year Rainfall=3.90"

Prepared by Atwell LLC

Printed 2/25/2021

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Hydrograph for Pond 5P: Drywell 2

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0.000	113.00	0.00
2.50	0.04	0.002	119.12	0.02
5.00	0.07	0.007	138.66	0.04
7.50	0.16	0.008	139.00	0.16
10.00	0.10	0.008	139.00	0.10
12.50	0.07	0.008	139.00	0.07
15.00	0.06	0.008	139.00	0.06
17.50	0.05	0.008	139.00	0.05
20.00	0.05	0.008	139.00	0.05
22.50	0.04	0.007	138.99	0.04
25.00	0.00	0.005	129.57	0.03
27.50	0.00	0.000	113.92	0.01
30.00	0.00	0.000	113.00	0.00
32.50	0.00	0.000	113.00	0.00
35.00	0.00	0.000	113.00	0.00
37.50	0.00	0.000	113.00	0.00
40.00	0.00	0.000	113.00	0.00
42.50	0.00	0.000	113.00	0.00
45.00	0.00	0.000	113.00	0.00
47.50	0.00	0.000	113.00	0.00
50.00	0.00	0.000	113.00	0.00
52.50	0.00	0.000	113.00	0.00
55.00	0.00	0.000	113.00	0.00
57.50	0.00	0.000	113.00	0.00
60.00	0.00	0.000	113.00	0.00
62.50	0.00	0.000	113.00	0.00
65.00	0.00	0.000	113.00	0.00
67.50	0.00	0.000	113.00	0.00
70.00	0.00	0.000	113.00	0.00
72.50	0.00	0.000	113.00	0.00
75.00	0.00	0.000	113.00	0.00
77.50	0.00	0.000	113.00	0.00
80.00	0.00	0.000	113.00	0.00
82.50	0.00	0.000	113.00	0.00
85.00	0.00	0.000	113.00	0.00
87.50	0.00	0.000	113.00	0.00
90.00	0.00	0.000	113.00	0.00
92.50	0.00	0.000	113.00	0.00
95.00	0.00	0.000	113.00	0.00

Territorial HydroCAD Model

Type IA 24-hr 25-year Rainfall=3.90"

Prepared by Atwell LLC

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Summary for Pond 6P: Alley Drywell

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 0.160 ac, 100.00% Impervious, Inflow Depth = 3.67" for 25-year event
 Inflow = 0.14 cfs @ 7.92 hrs, Volume= 0.049 af
 Outflow = 0.15 cfs @ 8.02 hrs, Volume= 0.049 af, Atten= 0%, Lag= 6.3 min
 Discarded = 0.15 cfs @ 8.02 hrs, Volume= 0.049 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 143.00' @ 8.00 hrs Surf.Area= 0.000 ac Storage= 0.008 af

Plug-Flow detention time= 99.3 min calculated for 0.049 af (100% of inflow)
 Center-of-Mass det. time= 99.3 min (761.8 - 662.5)

Volume	Invert	Avail.Storage	Storage Description
#1	117.00'	0.003 af	4.00'D x 10.00'H Vertical Cone/Cylinder
#2	127.00'	0.005 af	4.00'D x 16.00'H Vertical Cone/Cylinder -Impervious
		0.008 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#0	Discarded	143.00'	Automatic Storage Overflow (Discharged without head)
#1	Discarded	117.00'	47.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 100.00' Phase-In= 0.10'

Discarded OutFlow Max=0.03 cfs @ 8.02 hrs HW=143.00' (Free Discharge)
 ↑ **1=Exfiltration** (Controls 0.03 cfs)

Territorial HydroCAD Model

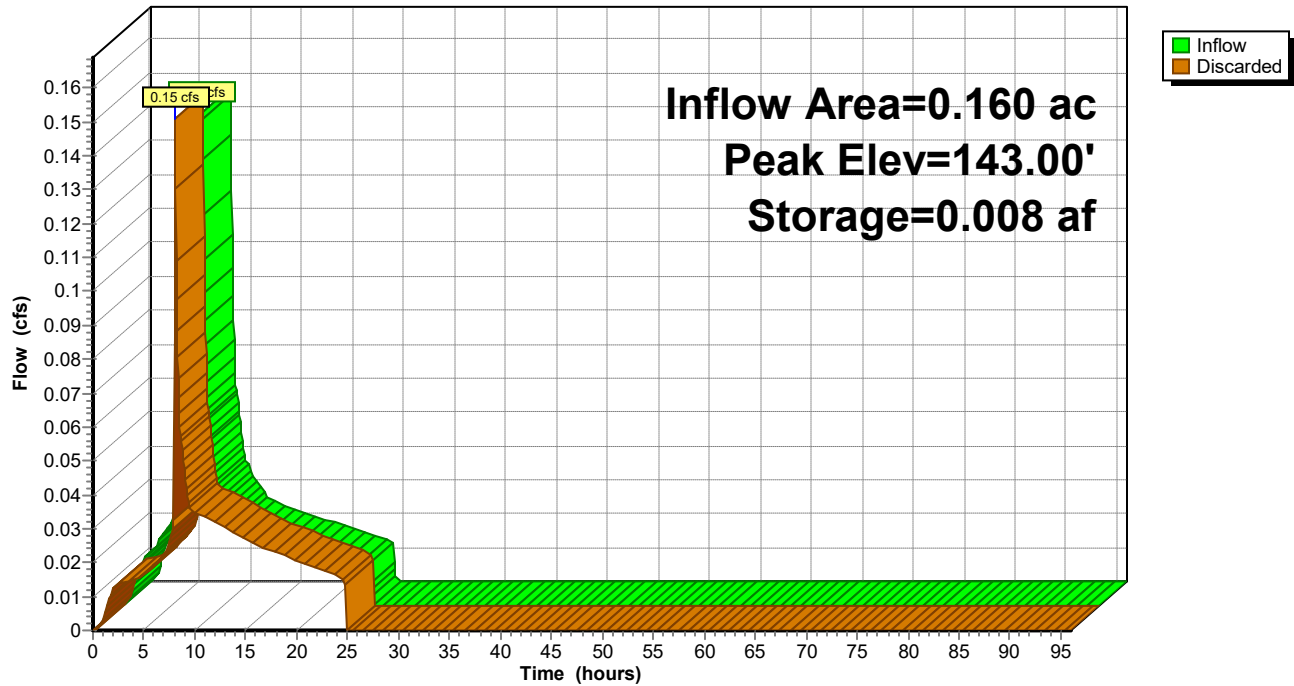
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Type IA 24-hr 25-year Rainfall=3.90"

Printed 2/25/2021

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Pond 6P: Alley Drywell**Hydrograph**

Territorial HydroCAD Model

Type IA 24-hr 25-year Rainfall=3.90"

Prepared by Atwell LLC

Printed 2/25/2021

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Hydrograph for Pond 6P: Alley Drywell

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0.000	117.00	0.00
2.50	0.02	0.000	117.16	0.01
5.00	0.03	0.001	120.38	0.02
7.50	0.06	0.004	131.45	0.03
10.00	0.03	0.007	142.94	0.03
12.50	0.02	0.006	138.56	0.03
15.00	0.02	0.005	133.47	0.03
17.50	0.02	0.004	129.25	0.02
20.00	0.02	0.002	125.59	0.02
22.50	0.01	0.002	122.24	0.02
25.00	0.00	0.000	117.00	0.00
27.50	0.00	0.000	117.00	0.00
30.00	0.00	0.000	117.00	0.00
32.50	0.00	0.000	117.00	0.00
35.00	0.00	0.000	117.00	0.00
37.50	0.00	0.000	117.00	0.00
40.00	0.00	0.000	117.00	0.00
42.50	0.00	0.000	117.00	0.00
45.00	0.00	0.000	117.00	0.00
47.50	0.00	0.000	117.00	0.00
50.00	0.00	0.000	117.00	0.00
52.50	0.00	0.000	117.00	0.00
55.00	0.00	0.000	117.00	0.00
57.50	0.00	0.000	117.00	0.00
60.00	0.00	0.000	117.00	0.00
62.50	0.00	0.000	117.00	0.00
65.00	0.00	0.000	117.00	0.00
67.50	0.00	0.000	117.00	0.00
70.00	0.00	0.000	117.00	0.00
72.50	0.00	0.000	117.00	0.00
75.00	0.00	0.000	117.00	0.00
77.50	0.00	0.000	117.00	0.00
80.00	0.00	0.000	117.00	0.00
82.50	0.00	0.000	117.00	0.00
85.00	0.00	0.000	117.00	0.00
87.50	0.00	0.000	117.00	0.00
90.00	0.00	0.000	117.00	0.00
92.50	0.00	0.000	117.00	0.00
95.00	0.00	0.000	117.00	0.00

Territorial HydroCAD Model

Prepared by Atwell LLC

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Type IA 24-hr 25-year Rainfall=3.90"

Printed 2/25/2021

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Summary for Pond 8P: Vegetated Swale

Inflow Area = 0.170 ac, 88.24% Impervious, Inflow Depth = 3.24" for 25-year event
 Inflow = 0.13 cfs @ 7.96 hrs, Volume= 0.046 af
 Outflow = 0.13 cfs @ 7.99 hrs, Volume= 0.046 af, Atten= 0%, Lag= 1.9 min
 Discarded = 0.13 cfs @ 7.99 hrs, Volume= 0.046 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 144.75' @ 7.99 hrs Surf.Area= 0.001 ac Storage= 0.001 af

Plug-Flow detention time= 3.1 min calculated for 0.046 af (100% of inflow)
 Center-of-Mass det. time= 3.1 min (668.6 - 665.4)

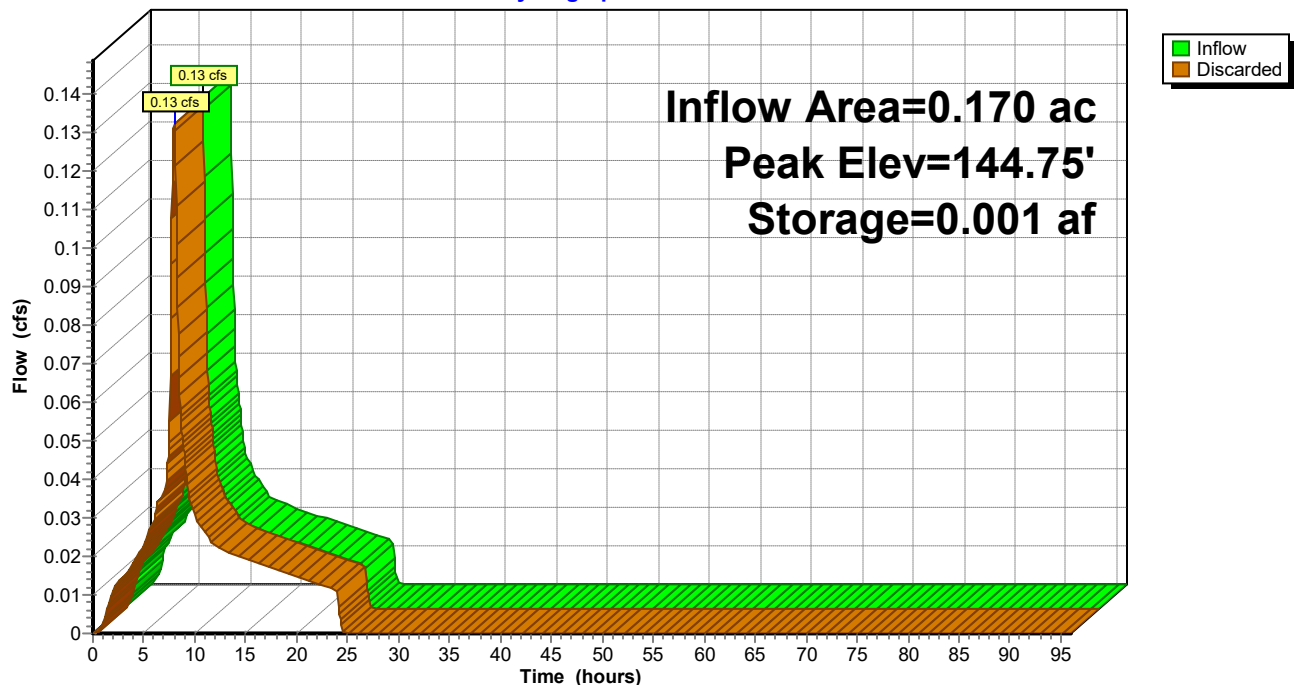
Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	0.001 af	5.0"W x 30.0"H x 80.00'L Parabolic Arch

Device	Routing	Invert	Outlet Devices
#1	Discarded	144.00'	47.000 in/hr Exfiltration over Wetted area from 144.00' - 147.00' Conductivity to Groundwater Elevation = 100.00' Excluded Wetted area = 0.001 ac

Discarded OutFlow Max=0.13 cfs @ 7.99 hrs HW=144.75' (Free Discharge)
 ↑1=Exfiltration (Controls 0.13 cfs)

Pond 8P: Vegetated Swale

Hydrograph



Territorial HydroCAD Model

Type IA 24-hr 25-year Rainfall=3.90"

Prepared by Atwell LLC

Printed 2/25/2021

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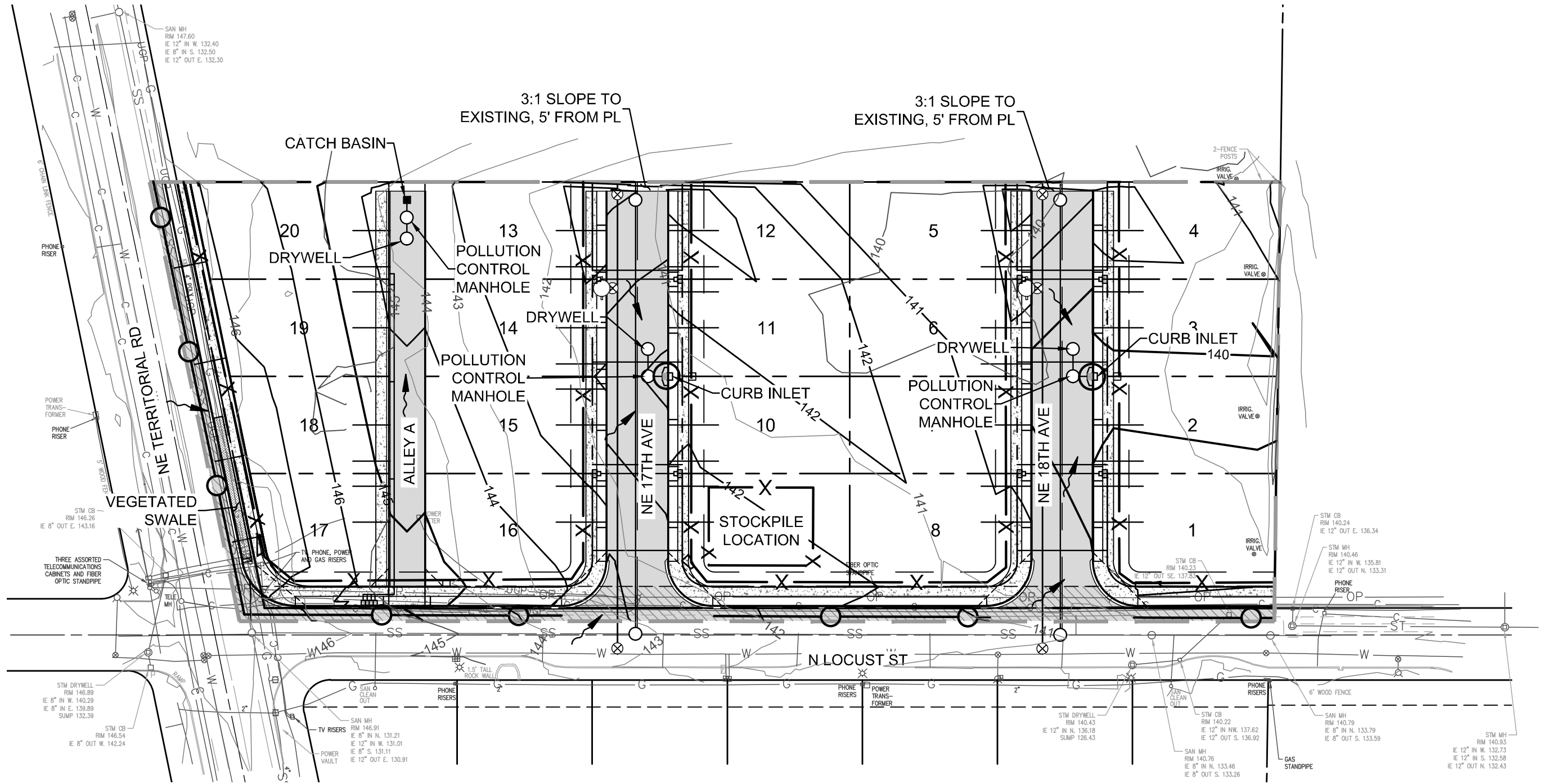
Hydrograph for Pond 8P: Vegetated Swale

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0.000	144.00	0.00
2.50	0.01	0.000	144.08	0.01
5.00	0.02	0.000	144.13	0.02
7.50	0.05	0.000	144.28	0.05
10.00	0.03	0.000	144.18	0.03
12.50	0.02	0.000	144.13	0.02
15.00	0.02	0.000	144.11	0.02
17.50	0.02	0.000	144.10	0.02
20.00	0.01	0.000	144.09	0.01
22.50	0.01	0.000	144.07	0.01
25.00	0.00	0.000	144.00	0.00
27.50	0.00	0.000	144.00	0.00
30.00	0.00	0.000	144.00	0.00
32.50	0.00	0.000	144.00	0.00
35.00	0.00	0.000	144.00	0.00
37.50	0.00	0.000	144.00	0.00
40.00	0.00	0.000	144.00	0.00
42.50	0.00	0.000	144.00	0.00
45.00	0.00	0.000	144.00	0.00
47.50	0.00	0.000	144.00	0.00
50.00	0.00	0.000	144.00	0.00
52.50	0.00	0.000	144.00	0.00
55.00	0.00	0.000	144.00	0.00
57.50	0.00	0.000	144.00	0.00
60.00	0.00	0.000	144.00	0.00
62.50	0.00	0.000	144.00	0.00
65.00	0.00	0.000	144.00	0.00
67.50	0.00	0.000	144.00	0.00
70.00	0.00	0.000	144.00	0.00
72.50	0.00	0.000	144.00	0.00
75.00	0.00	0.000	144.00	0.00
77.50	0.00	0.000	144.00	0.00
80.00	0.00	0.000	144.00	0.00
82.50	0.00	0.000	144.00	0.00
85.00	0.00	0.000	144.00	0.00
87.50	0.00	0.000	144.00	0.00
90.00	0.00	0.000	144.00	0.00
92.50	0.00	0.000	144.00	0.00
95.00	0.00	0.000	144.00	0.00

APPENDIX C

PRELIMINARY GRADING, DRAINAGE, AND ESC PLAN
STANDARD DETAILS

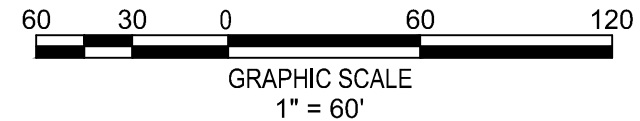
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LEGEND

- INLET PROTECTION (SILT SACK)
- SILT FENCE
- ORANGE CONSTRUCTION FENCE
- FLOW ARROWS (POST DEVELOPMENT)
- LIMITS OF DISTURBANCE

- GRAVEL CONSTRUCTION ENTRANCE
- ASPHALT (ON-SITE STREET IMPROVEMENTS)
- ASPHALT (OFF-SITE STREET IMPROVEMENTS)
- CONCRETE SIDEWALK

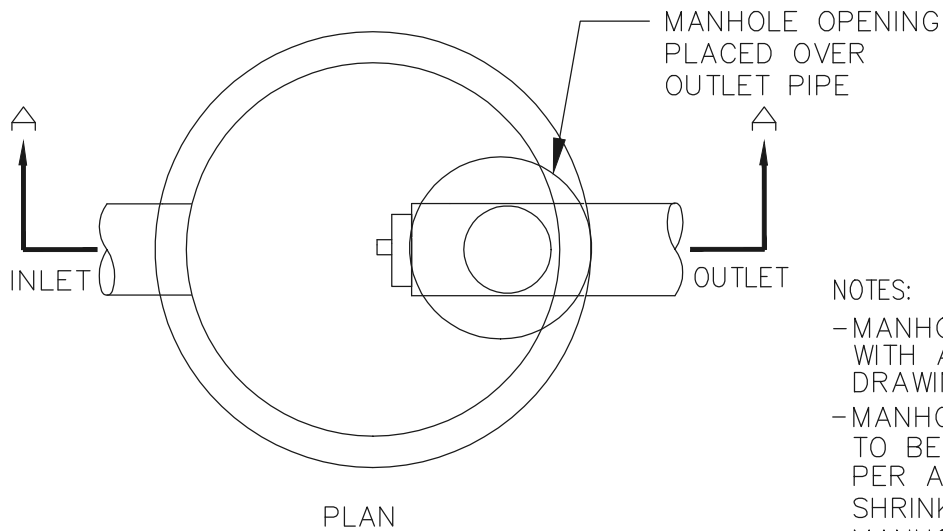


TERRITORIAL RD SUBDIVISION
CANBY, OR
EXISTING & PROPOSED DRAINAGE PLAN

JOB #	20002753
DATE	2/24/2021
SCALE	AS SHOWN
DRAWN	BLB
SHT	1 OF 1

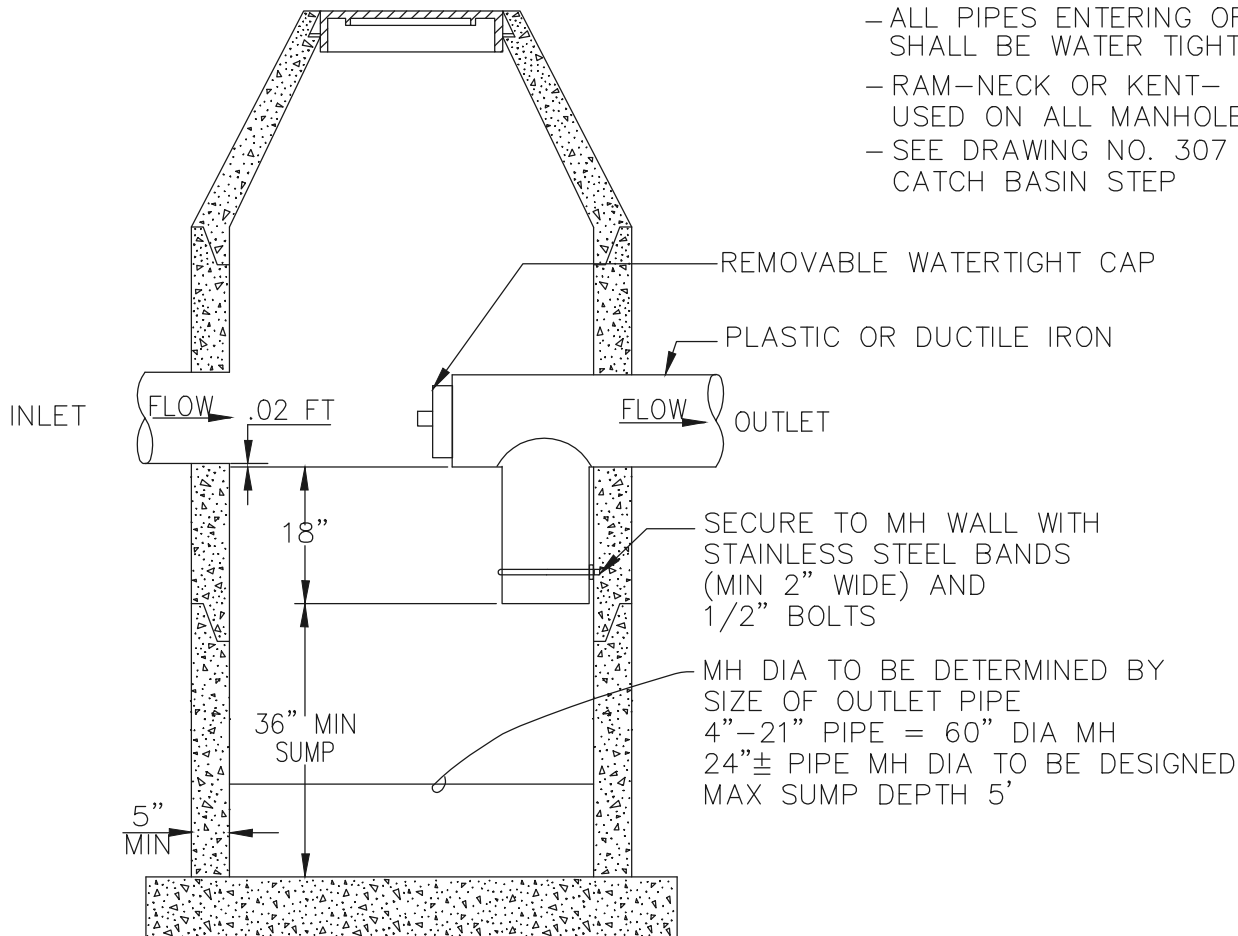


9755 SW BARNES ROAD, SUITE 150
PORTLAND, OR 97225
971.334.8960



NOTES:

- MANHOLE DESIGN TO CONFORM WITH ASTM C-478 AND DRAWING NO. 301.
- MANHOLE PIPE CONNECTION TO BE A LOK TYPE OR EQUAL PER ASTM C-923 OR NON-SHRINKING GROUT
- MANHOLE FRAME AND COVER AS SPECIFIED SEE DRAWING 305
- ALL PIPES ENTERING OR EXITING SHALL BE WATER TIGHT
- RAM-NECK OR KENT- SEAL TO BE USED ON ALL MANHOLE SECTIONS
- SEE DRAWING NO. 307 MANHOLE/ CATCH BASIN STEP



SECTION A-A

SUMP VOLUME REQUIREMENTS

SINGLE FAMILY RESIDENTIAL	3.5 CF/ACRE
MULTI FAMILY RESIDENTIAL	22.0 CF/ACRE
COMMERCIAL/INDUSTRIAL	94.0 CF/ACRE

CITY OF CANBY

POLLUTION CONTROL MANHOLE

BY: JT

DATE: 12-06-19

DWG NO: 201

FINISH GRADE OF STREET
STANDARD MANHOLE FRAME AND COVER

GRANULAR BACKFILL

15"
TYP.

16'

26' MIN.

HDPE FABRIC W/MAX
3/8" OPENINGS
AROUND PERFORATED
SECTIONS

DRAPE MIRAFI FABRIC
FULL DEPTH BOTH SIDES

4'-0" I.D.
PERFORATED
REINFORCED
CONCRETE PIPE

TAPERED WEEPHOLES TO
PROVIDE TOTAL OF 120 SQ
IN. IN ONE FT. OF RISER

BACKFILL WITH 2"-6"
CLEAN DRAIN ROCK TO
TOP OF PERFORATIONS

NOTE:

AFTER COMPLETION, CONTRACTOR SHALL POUR 3,000 GALLONS OF WATER INTO THE DRYWELL, AS WELL AS AN ADDITIONAL 3,000 GALLONS OUTSIDE OF THE WELL WITHIN 5 MINUTE INTERVAL. THIS SIMULATES A TYPICAL STORM.

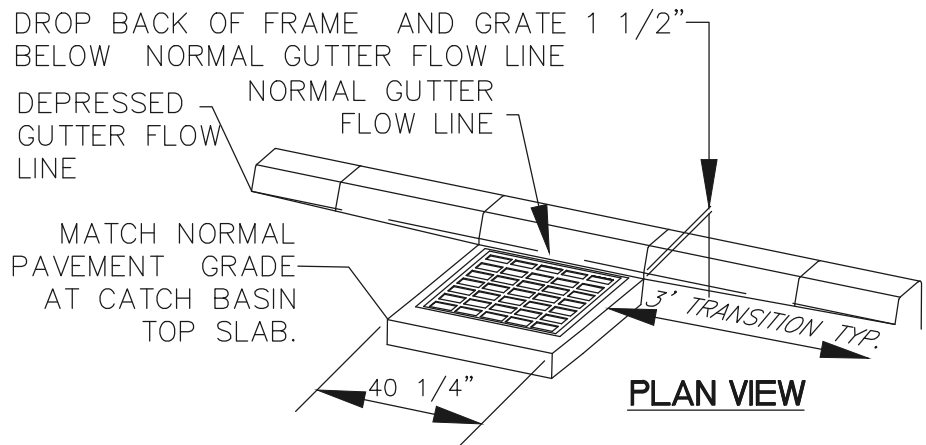
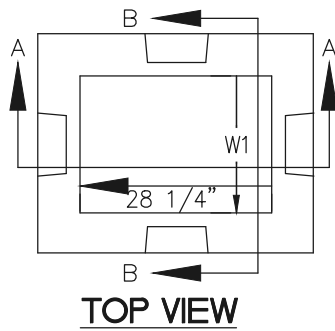
48" DIAMETER DRYWELL

CITY OF CANBY

BY: JT

DATE: 12-06-19

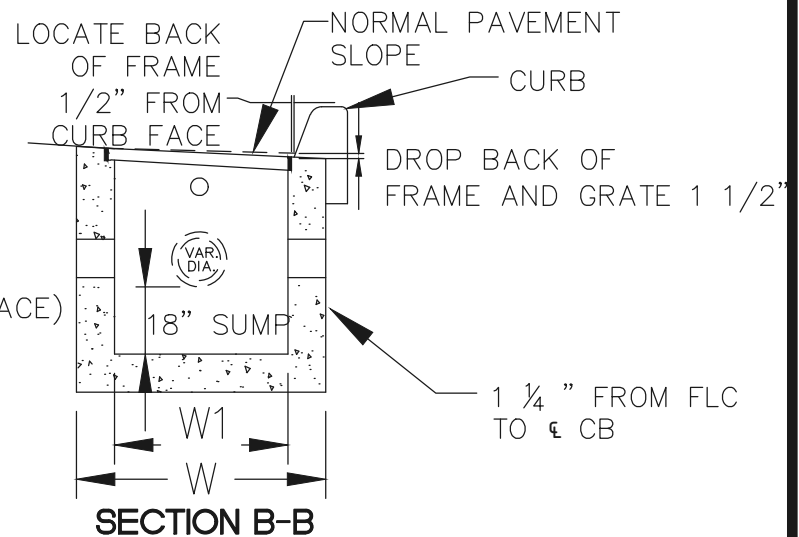
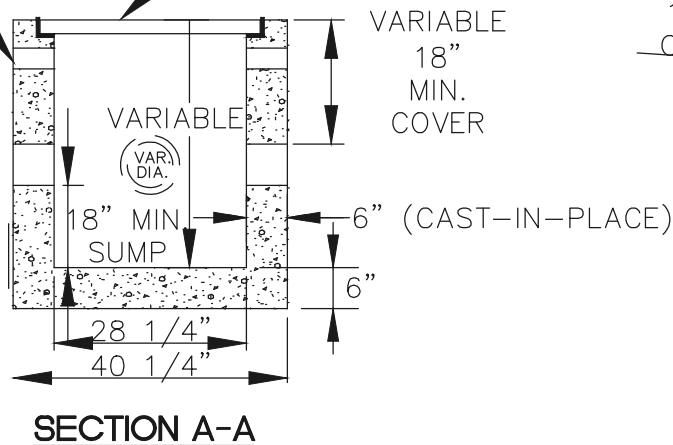
DWG NO: 204



OPTIONAL:

INSTALL 3" WEEP HOLES WITH FIELD INSTALLED MESH SCREEN FOR SUB-GRADE DRAINAGE

STEEL FRAME CAST IN TOP SLAB OR BASIN (IF TOP SLAB IS CAST-IN-PLACE)



INLET TYPE	W	W	X
G-2	3'-3 3/8"	2' 3 3/8"	16 9/16"

CATCH BASIN NOTES:

1. CONCRETE STRENGTH SHALL BE 3000 PSI.
2. PRECAST BASE WALLS SHALL BE A MINIMUM 4" THICK. CAST-IN-PLACE BASE WALLS SHALL BE 6" THICK.
3. THIS OPTION IS APPROVAL BASED BY THE CITY'S PUBLIC WORKS DEPARTMENT.

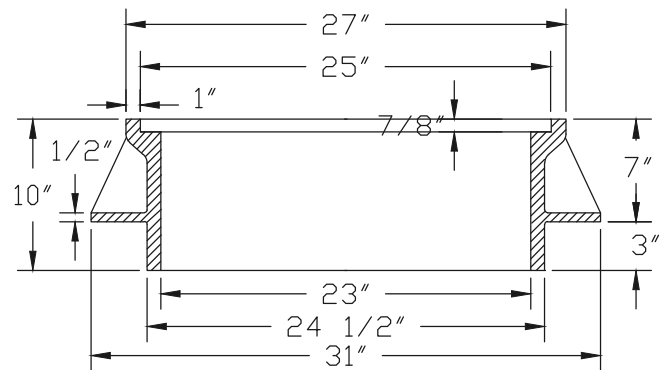
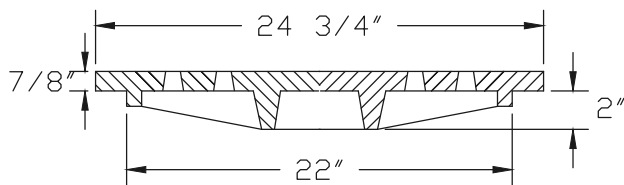
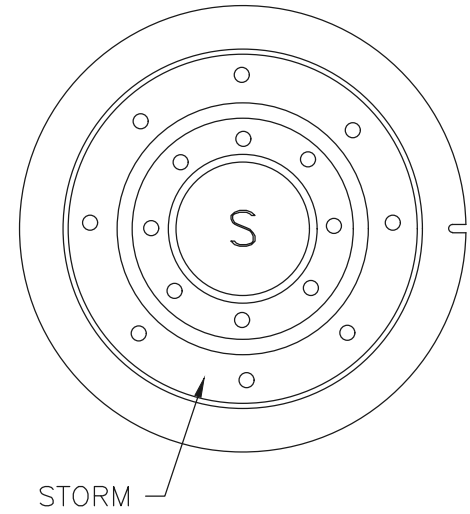
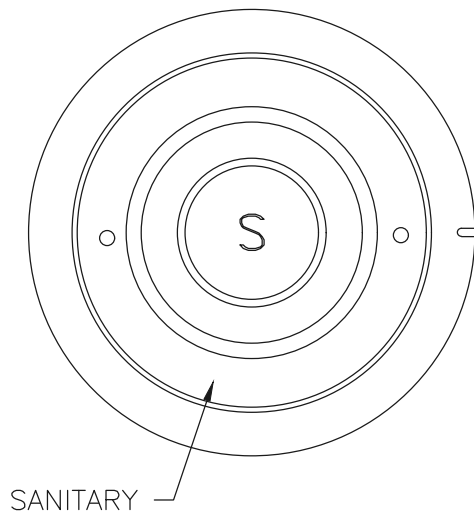
CITY OF CANBY

TYPE G-2 CATCH BASIN

BY: JT

DATE: 12-06-19

DWG NO: 207



CAST IRON STANDARD

APPROX. WT. - 387 LBS.

NOTES:

1. COVER AND FRAME TO BE MACHINED FOR TRUE BEARING.
2. MATERIAL SHALL BE GREY CAST IRON A.S.T.M. A-48 CLASS 30.
3. SUBURBAN FRAMES ARE ONLY AUTHORIZED TO BE USED IN NON-VEHICULAR AREAS.

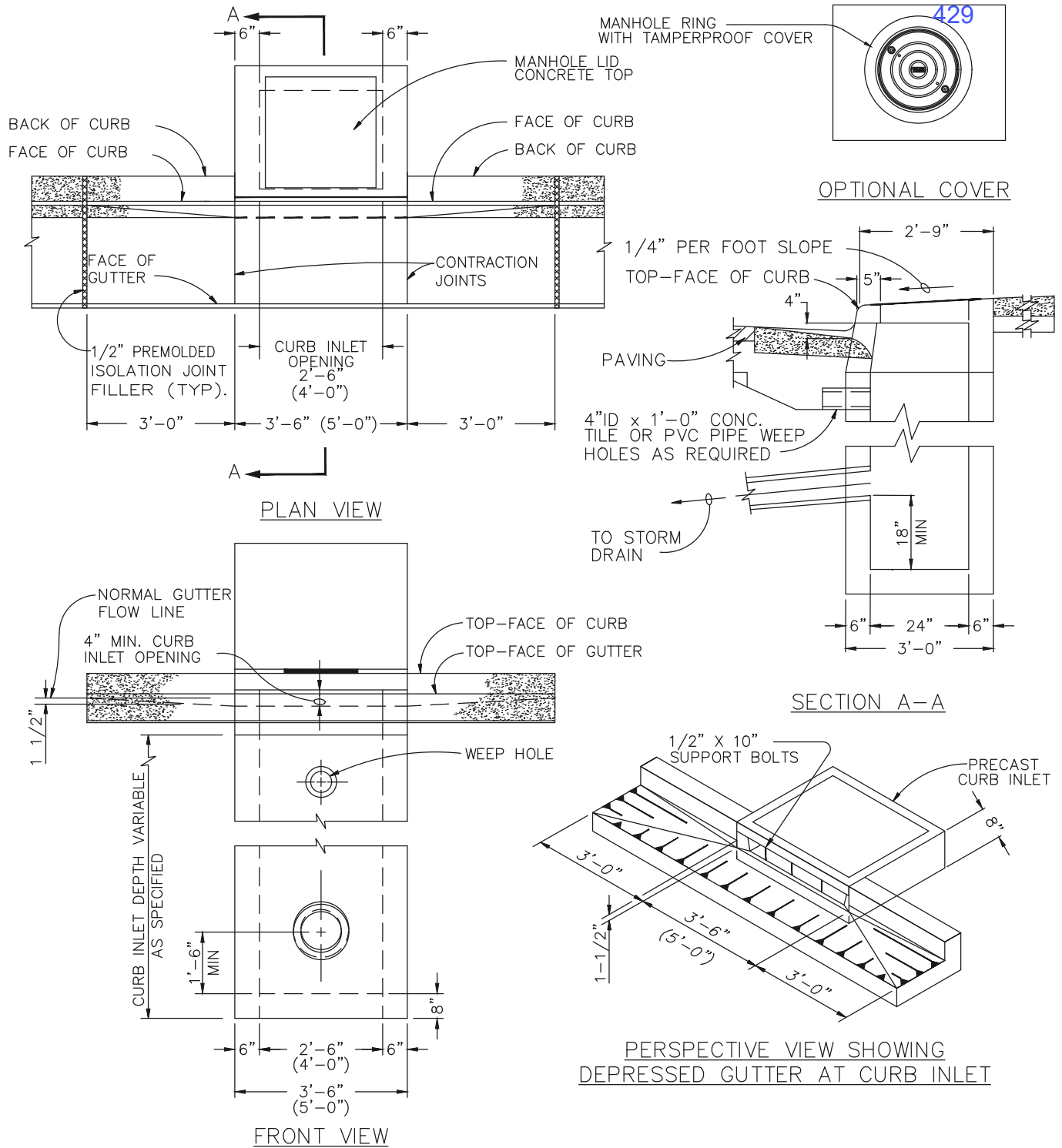
CITY OF CANBY

MANHOLE FRAMES & COVERS -
STORM & SANITARY SEWER

BY: JT

DATE: 12-06-19

DWG NO: 208



NOTES:

1. CURB INLET TOP AND BASE SHALL MEET H20 LOADING.
2. CONCRETE STRENGTH SHALL BE 3000 PSI.
3. ALL FABRICATED METAL PARTS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.
4. FOR STEEP GRADES USE STD. PRECAST INLET WITH 4'-0" OPENING OR TWO 2'-6" OPENING INLETS.
5. OPENING OR TWO 2'-6" OPENING INLETS.
6. DIMENSIONS SHOWN ABOVE IN PARENTHESES ARE FOR 4A INLETS. A 1 1/2 A INLET SHALL HAVE A CURB INLET OPENING WIDTH OF 1'-6" AND AN OUTSIDE WIDTH OF 2'-6"; ALL OTHER DIMENSIONS AND DETAILS SHALL BE AS SHOWN.
7. THIS IS OUR PRIMARY STANDARD FOR ALL CATCH BASINS AND NEW CONSTRUCTION.

CITY OF CANBY

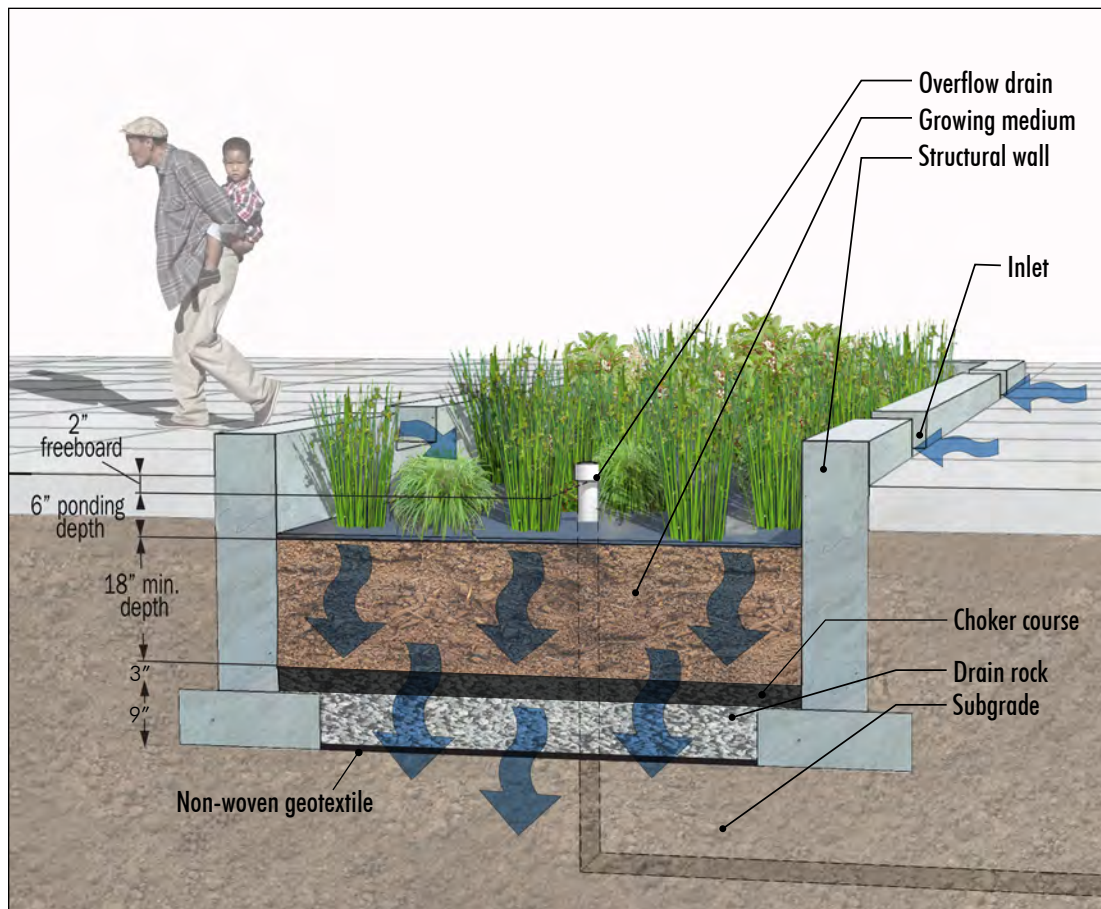
PRECAST CURB INLET

BY: JT

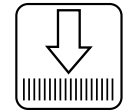
DATE: 12-06-19

DWG NO: 209

Infiltration Planter/Rain Garden



parking areas
& impermeable
landscape



permeable
soils

Description

Infiltration Planters (also known as rain gardens) are landscaped reservoirs that collect, filter, and infiltrate stormwater runoff, allowing pollutants to settle and filter out as the water percolates through planter soil and infiltrates into the ground. Infiltration planters typically require less piping than flow-through planters and a smaller facility size than traditional swales where native soils allow for infiltration. Depending on the site, infiltration planters can vary in shape and construction, with or without walls to contain the facility, or formed as a shallow, basin-like depression.

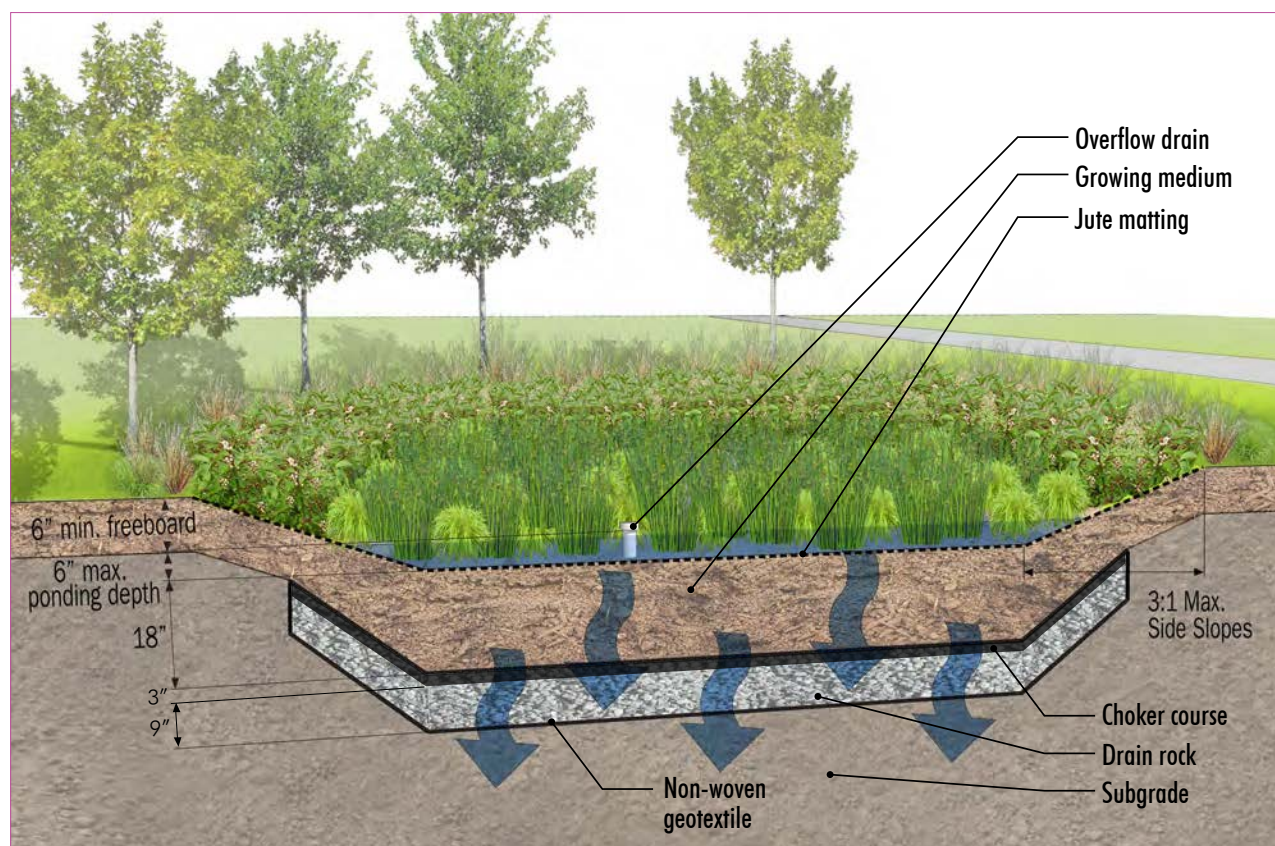
Application & Limitations

Infiltration planters should be integrated into the overall site design and may help fulfill the landscaping area requirement. Infiltration planters can be used to manage stormwater flowing from all types of impervious surfaces, from private property and within the public right-of-way. Check with the local jurisdiction if proposing to use infiltration planters in the public right-of-way. The size, depth, and use of infiltration planters are determined by the infiltration rates of the site's existing soils.



Beaumont Village Lofts, NE Portland

Infiltration Planter/Rain Garden



Design Factors

Soil Suitability and Facility Sizing

The size and depth of the infiltration planter will depend upon the infiltration rate of existing soils. A sizing factor of 0.06 assumes the site infiltration rate is less than 2 in/hr.

For example, the size of an infiltration planter managing 1,500 square feet of total impervious area would be 90 square feet ($1,500 \times 0.06$).

Size may be decreased if:

- Demonstrated infiltration rate is greater than 2 in/hr using ASTM D3395-09 method; or
- Amended soil depth is increased

Geometry/Slopes

The shape may be circular, square, rectangular, etc. to suit the site design requirements. Regardless of the shape, a minimum planter width of 30 inches is needed to achieve sufficient time for treatment and avoid short-circuiting. Planters in a relatively flat landscaped open area should not slope more than 0.5% in any direction.

Piping for Infiltration Planters

Follow Plumbing Code requirements for piping that directs stormwater from impervious surfaces to planters. Stormwater

may flow directly from the public street right-of-way or adjacent parking lot areas via curb openings. For infiltration planters with walls, install an overflow drain to allow not more than 6 inches of water to pond. Infiltration planters with side slopes, such as rain gardens, need an overflow drain to ensure no more than 6 inches of water will pond. On private property, follow Plumbing Code requirements for this overflow drain and piping, and direct excess stormwater to an approved disposal point as identified on permit drawings. Check with local jurisdiction or use Clean Water Services Design and Construction Standards for additional information on piping material for use in the public right-of-way.

Setbacks

Check with the local building department to confirm site-specific requirements.

- Generally, a minimum setback of 10 feet from building structures is recommended.
- Planters should not be located immediately upslope of building structures.

Before site work begins, clearly mark infiltration planter areas to avoid soil disturbance during construction. No vehicular traffic should be allowed within 10 feet of infiltration planter areas,

Infiltration Planter/Rain Garden



Buckman Terrace Apartments, Portland



New Seasons, 20th and SE Division St., Portland

Design Factors (continued)

except as necessary to construct the facility. Consider construction of infiltration planter areas before construction of other impervious surfaces to avoid unnecessary traffic loads.

Soil Amendment/Mulch

Amended soils with appropriate compost and sand provide numerous benefits: infiltration; detention; retention; better plant establishment and growth; reduced summer irrigation needs; reduced fertilizer need; increased physical/chemical/microbial pollution reduction; and, reduced erosion potential. Primary treatment will occur in the top 18 inches of the infiltration planter. Amended soil in the treatment area is composed of organic compost, gravelly sand and topsoil. Compost is weed-free, decomposed, non-woody plant material; animal waste is not allowed. Check with the local jurisdiction or Clean Water Services for Seal of Testing Approval Program (STA) Compost provider.

To avoid erosion, use approved erosion control BMPs for non-structural infiltration planters.

Vegetation

Planted vegetation helps to attenuate stormwater flows and break down pollutants by interactions with bacteria, fungi, and other organisms in the planter soil. Vegetation also traps sediments, reduces erosion, and limits the spread of weeds. Appropriate, carefully selected plantings enhance the aesthetic and habitat value. For a complete list of allowable plants refer to see page 76.

The entire water quality treatment area should be planted appropriately for the soil conditions. Walled infiltration run-on planters will be inundated periodically. Therefore the entire planter

should be planted with herbaceous rushes, sedges, perennials, ferns and shrubs that are well-suited to wet-to-moist soil conditions.

If the infiltration planter has side slopes (basin without vertical walls), soil conditions will vary from wet to relatively dry; several planting zones should be considered. The flat bottom area will be moist-to-wet, and the side slopes will vary from moist at the bottom to relatively dry near the top where inundation rarely occurs. The moisture gradient will depend upon the designed maximum water depth, total depth of the planter, and steepness of the side slopes. This moisture gradient is a transition zone and should be planted with species that tolerate occasional standing water, and plants that prefer drier conditions toward the top of the slope. Areas above the side slopes, immediately adjacent to the basin, and above the designed high water line will not be inundated and should be planted with self-sustaining, low maintenance grasses, perennials, and shrubs suitable for the local climate.

Native plants are encouraged, but non-invasive ornamentals that add aesthetic and functional value are acceptable. All vegetation should be planted densely and evenly to ensure proper hydrological function of the infiltration planter.

Quantities per 100 square feet:

- 115 herbaceous plants, 1' on center spacing, ½-gal container size; or
- 100 herbaceous plants, 1' on center, and 4 shrubs, 1-gal container size 2' on center.

Trees are optional; if used, minimum 2 gallon by 2 feet tall.

Trees are allowed in infiltration planters and should be selected by their adaptability to wet-to-moist conditions and full size at maturity. An area twice the width of tree rootball and the depth of the rootball plus 12" (or total depth of 30", whichever is greater) should be backfilled with amended soil for optimal growth, with no sub-surface rock layer. For infiltration planters with side slopes, trees should be placed along the side slopes of the facility rather than at the bottom.

Infiltration Planter/Rain Garden



Mississippi Commons, NE Portland



Fowler Middle School, Tigard

Required Maintenance Period

- Water-efficient irrigation should be applied for the first two years after construction of the facility, particularly during the dry summer months, while plantings become established. Irrigation after these two years is at the discretion of the owner.
- If public, the permittee is responsible for the maintenance of the infiltration planter for a minimum of two years following construction and acceptance of the facility.

Long Term Maintenance

If private, the property owner will be responsible for ongoing maintenance per a recorded maintenance agreement (see page 88 for example maintenance agreement).

For detailed Operation and Maintenance Plans that describe proper maintenance activities please refer to page 91.

All publicly maintained facilities not located in the public right-of-way must have a public easement to ensure access for maintenance.

References

Clean Water Services Design and Construction Standards



12th and Montgomery St., Portland

Memorandum

To: Kelly Ritz
Stone Bridge Homes NW, LLC

From: Daniel Stumpf, PE

Date: February 10, 2021

Subject: Hemmerling Subdivision
Transportation Analysis Letter



Introduction

This Transportation Analysis Letter (TAL) reports the findings of a limited transportation analysis conducted for the proposed Hemmerling Subdivision, located at 102 NE Territorial Road in Canby, Oregon. The proposed subdivision will include the construction of 20 single-family detached houses, with two public road accesses and a 20-foot-wide private access onto N Locust Street. In addition, the project will include rezoning the site from *Low Density Residential Zone (R-1)* to *Medium Density Residential Zone (R-1.5)*, with a corresponding change to the Comprehensive Plan designation from Low Density Residential (LDR) to Medium Density Residential (MDR).

The purpose of this memorandum is to examine the change in the trip generation potential of the site following a change in zoning from R-1 to R-1.5. The study will review the change in the trip generation potential of the site following the zone change as well as examine peak hour and daily trip generation associated with the proposed development. In addition, sight distances were evaluated at the proposed site access locations along N Locust Road, and a review of nearby transportation facilities and planned projects were conducted in accordance with the *Scope of Work – Canby Hemmerling Subdivision* scoping memorandum, dated January 25, 2020 and prepared by the City of Canby's transportation consultant.

Location Description

Project Site Description

The subject site is located north of NE Territorial Road and west of N Locust Street in Canby, Oregon. The site consists of tax lot 401, which encompasses approximately 3.11 acres. It is surrounded by single-family detached houses to the east and south, an in-process residential subdivision to the north, and agricultural land to the west. Currently, there are two storage structures built on-site, both of which will be removed upon redevelopment of the property. Access to the proposed development will be provided via two proposed public road intersections and a 20-foot-wide private access along N Locust Street.

Vicinity Roadways

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

Table 1: Vicinity Roadway Descriptions

Street Name	Jurisdiction	Functional Classification	Speed (MPH)	On-Street Parking	Curbs & Sidewalks	Bicycle Lanes
NE/NW Territorial Road	City of Canby	Arterial/ Neighborhood Connector	25/30 Posted	Partially Permitted	Partial Both Sides	Partial Both Sides
N Locust Street	City of Canby/ Clackamas County	Local Street	25 Posted	Partially Permitted	Partial Both Sides	None

Notes: Functional Classification and Jurisdiction based on City of Canby TSP.

Figure 1 below presents an aerial image of the nearby vicinity with the project site outlined in yellow.



Figure 1: Aerial Photo of Site Vicinity (Image from Google Earth)

Site Trips

Trip Generation

The proposed Hemmerling Subdivision project will include a change in zoning of the site from R-1 to R-1.5 and the subsequent construction of 20 single-family detached houses. To determine the impacts of the proposed change in zoning, reasonable worst-case development scenarios for the existing and proposed zones were determined utilizing data for the most traffic-intensive uses permitted within each zone. To estimate the number of trips that will be generated by the proposed development, trips rates from the *Trip Generation Manual*¹ were used.

Zone Change

To determine a reasonable worst-case development scenario under the existing and proposed zones, City of Canby's municipal code sections *16.16 R-1 Low Density Residential Zone* and *16.18 R-1.5 Medium Density Residential Zone*, respectively, were referenced and compared to land uses provided within the *Trip Generation Manual*. Following an assessment of permitted uses under both zones, data from the following land use codes were used based on the number of dwelling units that could be developed on the site:

- Existing R-1 Zone – Land use code 210, *Single-Family Detached Housing*.
- Proposed R-1.5 Zone – Land use codes 210 and 220, *Multifamily Housing (Low-Rise)*.

For the existing R-1 zone, the minimum allowed lot area for single-family houses is 7,000 square feet. Assuming approximately 20 to 25 percent of the 3.11 project site area (approximately 135,000 square feet) is dedicated to internal roadways and right-of-way improvements, under the existing zone the site could be developed with up to 15 single-family houses.

For the proposed R-1.5 zone, the minimum allowed lot area for single-family houses is 5,000 square feet. Per the above assumptions, under the proposed zone the site could be developed with up to 20 single-family houses. Alternatively, for attached residential units the maximum dwelling unit density is 13 units per acre for a total of 40 dwelling units.

Based on the above, the trip generation calculations show that under the existing R-1 zone, the subject site could reasonably generate up to 11 morning peak hour trips, 15 evening peak hour trips, and 142 average weekday trips. Under the proposed R-1.5 zone, the highest generating development that could reasonably be constructed on site is the apartment scenario, which would generate 18 morning peak hour trips, 22 evening peak hour trips, and 292 average weekday trips. Accordingly, the net change in the trip generation potential of the site after the proposed rezone is projected to be an increase of 7 morning peak hour trips, 7 evening peak hour trips, and 150 average weekday trips. The trip generation estimates are summarized in Table 2 and detailed trip generation calculations are included as an attachment to this memorandum.

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



Table 2: Trip Generation Summary

	ITE Code	Size	Morning Peak Hour			Evening Peak Hour			Weekday Total
			Enter	Exit	Total	Enter	Exit	Total	
Existing R-1 Zone									
Single-Family Houses	210	15 units	3	8	11	9	6	15	142
Proposed R-1.5 Zone									
Single-Family Houses	210	20 units	4	11	15	13	7	20	188
Multifamily Housing	220	40 units	4	14	18	14	8	22	292
Net Change Between Highest Trip Generating Land Uses Per Zone			1	6	7	5	2	7	150

Proposed Development

The proposed development will include the construction of 20 single-family detached houses, whereby data from land use code 210 from the *Trip Generation Manual* was used, based on the number of dwelling units. As shown in Table 2 above, the proposed development is projected to generate 15 morning peak hour trips, 20 evening peak hour trips, and 188 average weekday trips.

Trip Distribution

Per the direction of DKS Associates, the directional distribution of proposed development site trips to/from the project site was referenced from the estimated distribution utilized in the *Holly Development Concept Plan Transportation Impact Study (TIS)* and *Dodds Subdivision TIS*. The distribution in the two TIS's was based on the City of Canby's TSP Travel Forecasting Tool, for which data was supplied by DKS Associates. The following trip distribution was used for analysis:

- Approximately 45 percent of site trips will travel to/from the south along N Holly Street.
 - At the intersection of OR-99E at N Elm Street, approximately 35 percent of site trips will travel to/from the west along OR-99E and approximately 10 percent will travel to/from the south along S Elm Street.
- Approximately 40 percent of site trips will travel to/from the east along NE Territorial Road.
 - At the intersection of OR-99E at NE Territorial Road, approximately 40 percent of site trips will travel to/from the north along OR-99E.
- Approximately 10 percent of site trips will travel to/from the south along N Ivy Street.
 - At the intersection of OR-99E at N Ivy Street, approximately 10 percent of site trips will travel to/from the south along S Ivy Street.
- Approximately 5 percent of site trips will travel to/from the west along NW Territorial Road.

Based on these distribution percentages, impacts to intersections of significance within City limits are reported below in Table 3.



Table 3: Development Impacts at Intersections of Significance

Approach/ Movement		Net Zone Change Trips		Proposed Development Trips	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
OR-99E at NE Territorial Road					
SB	RT	1	2	2	5
EB	LT	2	1	4	3
Total		3	3	6	8
OR-99E at N Ivy Street					
NB	Th	0	1	0	1
SB	Th	1	0	1	1
Total		1	1	1	2
OR-99E at N Elm Street					
NB	Th	0	1	0	1
SB	Th	1	0	1	1
	RT	2	1	4	2
EB	LT	0	1	2	5
Total		3	3	7	9
N Holly Street at NW Territorial Road					
NB	RT	0	2	2	6
EB	Th	0	0	0	1
WB	LT	3	1	5	3
	Th	0	0	1	0
Total		3	3	8	10

For a conservative assessment of trip impacts, no trip ends/origins were assumed to occur between the site and the intersections in Table 3.



Transportation System and Planned Projects

As requested by the *Scope of Work – Canby Hemmerling Subdivision* scoping memorandum, the City's Transportation System Plan (TSP) was referenced to identify the following:

- Comparison of traffic volumes along NW/NE Territorial Road between existing conditions, project buildout conditions, and the TSP volumes, to evaluate growth along the roadway
- Relevant Capital Improvement Plan (CIP) and TSP improvement projects in the site vicinity

NW/NE Territorial Road Volumes

To determine traffic volumes along NW/NE Territorial Road, traffic volumes were referenced from the following sources:

- TSP Volumes: Year 2009 and year 2030 volumes
- 2021 Existing Conditions
 - Utilize historical daily traffic counts and evening peak hour traffic counts, both collected on August 9, 2018.
 - Apply a 5.97 percent per year linear growth rate over a three-year period to reflect existing 2021 conditions without the influence of COVID-19. Note the 5.97 percent per year growth rate was determine based on a comparison of the year 2009 and 2030 TSP volumes.
 - Add additional trips associated with school traffic based on available data that was utilized in the *Holly DCP TIS* and *Dodds Subdivision TIS*.
- 2023 Buildout Conditions
 - Utilizing the 2018 volumes, apply a 5.97 percent per year linear growth rate over a five-year period to reflect existing 2023 conditions without the influence of COVID-19.
 - Add additional trips associated with school traffic based on available data that was utilized in the *Holly DCP TIS* and *Dodds Subdivision TIS*.
 - Add additional trips associated with the proposed development, as described in the *Site Trips* section.

Table 4 provides a comparison of evening peak hour and daily volumes along NW/NE Territorial Road, between N Holly Street and N Locust Street, based on the above assumptions.



Table 4: Territorial Road Volume Summary

	TSP Volumes			Existing & Buildout Volumes		Percent Difference Between 2023 TSP and Buildout Volumes
	2009	2030	Calculated 2023 Per TSP	2021	2023	
Evening Peak Hour						
NW/NE Territorial Road	355	800	652	586	655	0.46%
Average Daily Volumes						
NW/NE Territorial Road	3,550*	8,000*	6,520*	6,672	7,438	12.34%

* Volumes determine under the assumption the evening peak hour is approximately 10 percent of the total daily volumes.

Transportation Improvement Projects

Several transportation improvement projects described in the City's TSP and CIP are planned within the site vicinity. Table 5 summarizes these planned projects.

Table 5: Development Impacts at Intersections of Significance

Category	ID Code	Location	Description	Planning Level Cost
Transportation System Plan				
Pedestrian	S7	N Holly Street, between Knights Bridge Road and NW Territorial Road	Fill in sidewalk gaps	\$550,000
Pedestrian	S8	NW/NE Territorial Road, between N Holly Street at OR-99E	Fill in sidewalk gaps	\$1,230,000
Bicycle	B3	N Holly Street, between NW 22nd Avenue and NW 6th Avenue	Stripe bike lanes (widen as needed)	\$663,000
Functional Classification	-	NW/NE Territorial Road, between N Holly Street at OR-99E	Downgrade from Arterial	-
Functional Classification	-	N Holly Street, NW Territorial Road and NW 22nd Avenue	Downgrade from Arterial	-
Functional Classification	-	N Ivy Street, between N 6th Avenue and NW/NE Territorial Road	Downgrade from Arterial	-
Capital Improvement Plan (2020-2021)				
Transportation	-	S Ivy Street Sidewalk Project	-	\$1,920,000



Site Access and Circulation Review

Sight Distance Analysis

Intersection sight distances were measured for the three proposed site access intersections along N Locust Street. Sight distances were measured and evaluated in accordance with standards established in *A Policy on Geometric Design of Highways and Streets*² as well as per the *Clackamas County Roadway Standards*. According to AASHTO, the driver's eye is assumed to be 14.5 feet from the near edge of the nearest travel lane (or traveled way) of the intersecting street and at a height of 3.5 feet above the minor-street approach pavement. The vehicle driver's eye-height along the major-street approach is assumed to be 3.5 feet above the cross-street pavement.

Based on a posted speed of 25 mph, the minimum recommended intersection sight distance to ensure safe and efficient operation of the proposed access intersections is 280 feet to the north and south along N Locust Street. Provided any obstructing on-site foliage is removed upon development of the site, sight distances were measured to exceed 300 feet to the north and were measured back to NE Territorial Road to the south of all three proposed access locations.

Both the private access and the south public road access are located less than 280 feet from NE Territorial Road. Specific to the private access, sight distances to the south were measured to be greater than 115 feet for vehicles turning onto N Locust Street from NE Territorial Road. Given vehicles turning at the intersection are not expected to conduct this maneuver at speeds greater than 20 mph, the minimum stopping sight distance standard of 115 feet to ensure safe operation of the private access and south public road access will be met.

Based on the analysis and provided any obstructing on-site foliage is removed following development of the site, adequate sight distances can be made available to ensure safe operation of the three proposed access intersections. No other sight distance related mitigation is necessary or recommended.

Access Spacing

According to the TSP, the segment of N Locust Street north of NE Territorial Road is classified as a local street under the jurisdiction of Clackamas County. However, assuming the roadway segment has or will be transferred to the City, the following access spacing standards are applicable per the City of Canby Municipal Code 16.46.030 (measured centerline to centerline considering accesses on both sides of the street):

- Maximum spacing between roadways: 600 feet
- Minimum spacing between roadways: 150 feet
- Minimum spacing between a roadway and driveway: 50 feet (not applicable for single-family residential driveways per 16.10.070)
- Minimum spacing between driveways: 10 feet

Regarding the *Clackamas County Roadway Standards*:

² American Association of State Highway and Transportation Officials (AASHTO), *A Policy on Geometric Design of Highways and Streets*, 6th Edition, 2011.



- Maximum spacing between full street public connections: 530 feet
- Minimum spacing between full street public connections: 100 feet
- Minimum access spacing along local streets: 25 feet

Relative to the nearest existing and planned public roadways, the proposed north public road access will be located approximately 235 feet north of the proposed south access and approximately 255 feet south of NE 19th Avenue. The proposed south public road access will be located approximately 230 feet north of NE Territorial Road. The proposed private access will be located at distances greater than 50 feet between existing/planned public roadways to the north and south and greater than 10 feet from other driveways along N Locust Street. Based on these findings, both City of and County standards will be met with respect to spacing between the proposed public access roads and other public road intersections. The proposed private access will also meet spacing standards with all other public intersections and driveways along N Locust Street.

On-Site Circulation

The proposed site plan depicts two public road access locations along N Locust Street and a private access between NE Territorial Road and the proposed south public road access. Both public road accesses are intended to serve residents of the proposed subdivision; however, both roadways will extend to the west edge of the project site. Subsequently, the two planned roadways will allow access to the adjacent property to the west if future development were to occur.

Local streets constructed within the City of Canby are required to provide a six-foot sidewalk on both sides of the street. Additionally, improvements along portions of the site frontage with N Locust Street and NE Territorial Road will include new sidewalks. Accordingly, adequate pedestrian facilities are expected to be provided with the proposed development and the overall pedestrian infrastructure/connectivity will be improved in the surrounding area.

Transportation Planning Rule

The Transportation Planning Rule (TPR) is in place to ensure that the transportation system is capable of supporting possible increases in traffic intensity that could result from changes to adopted plans and land-use regulations. The applicable elements of the TPR are each quoted directly in italics below, with responses following.

660-012-0060

- (1) *If an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation (including a zoning map) would significantly affect an existing or planned transportation facility, then the local government must put in place measures as provided in section (2) of this rule, unless the amendment is allowed under section (3), (9) or (10) of this rule. A plan or land use regulation amendment significantly affects a transportation facility if it would:*
- (a) *Change the functional classification of an existing or planned transportation facility (exclusive of correction of map errors in an adopted plan);*



- (b) *Change standards implementing a functional classification system; or*
- (c) *Result in any of the effects listed in paragraphs (A) through (C) of this subsection based on projected conditions measured at the end of the planning period identified in the adopted TSP. As part of evaluating projected conditions, the amount of traffic projected to be generated within the area of the amendment may be reduced if the amendment includes an enforceable, ongoing requirement that would demonstrably limit traffic generation, including, but not limited to, transportation demand management. This reduction may diminish or completely eliminate the significant effect of the amendment.*
- (A) *Types or levels of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility;*
- (B) *Degrade the performance of an existing or planned transportation facility such that it would not meet the performance standards identified in the TSP or comprehensive plan; or*
- (C) *Degrade the performance of an existing or planned transportation facility that is otherwise projected to not meet the performance standards identified in the TSP or comprehensive plan.*

Subsections (a) and (b) are not triggered since the proposed zone change will not impact or alter the functional classification of any existing or planned facility and the proposal does not include a change to any functional classification standards.

Regarding subsection (c), the Oregon Department of Transportation (ODOT) defines a threshold at which a project would “significantly affect” a transportation facility in relation to mobility targets. This threshold is detailed in the Oregon Highway Plan (OHP) Action 1F.5, with the relevant sections quoted below:

If an amendment subject to OAR 660-012-0060 increases the volume to capacity ratio further, or degrades the performance of a facility so that it does not meet an adopted mobility target at the planning horizon, it will significantly affect the facility unless it falls within the thresholds listed below for a small increase in traffic.

...

In applying “avoid further degradation” for state highway facilities already operating above the mobility targets in Table 6 or Table 7 or those otherwise approved by the Oregon Transportation Commission, or facilities projected to be above the mobility targets at the planning horizon, a small increase in traffic does not cause “further degradation” of the facility.

The threshold for a small increase in traffic between the existing plan and the proposed amendment is defined in terms of the increase in total average daily trip volumes as follows:

- *Any proposed amendment that does not increase the average daily trips by more than 400.*

As described in the *Trip Generation* section, the projected net increase in potential daily traffic resulting from the proposed zone change will be 150 trips. This daily trip generation is within the 400-trip impact threshold that is considered a “small increase” in traffic; therefore, the zone change and subsequent development project will not cause further degradation of the nearby transportation facilities. Accordingly, the TPR is satisfied.



Conclusions

The proposed zone change of the site is projected to increase the trip generation potential of the site by 7 morning peak hour trips, 7 evening peak hour trips, and 150 average weekday trips. Accordingly, the net increase in the traffic intensity of the site will not degrade the performance of any existing or planned transportation facility beyond what is currently allowed under the existing zone. Accordingly, the Transportation Planning Rule is satisfied.

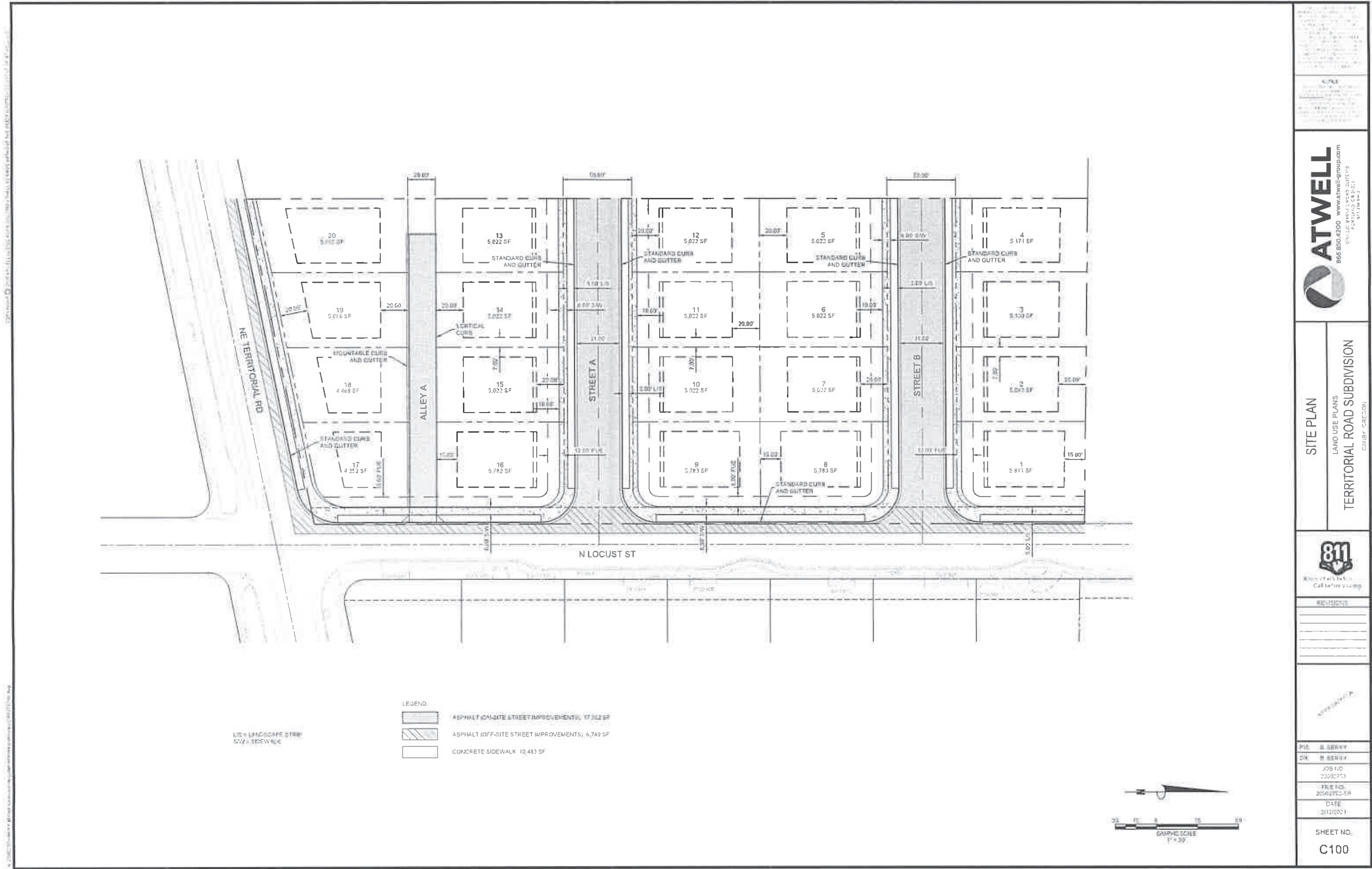
The proposed Hemmerling Subdivision is projected to generate 15 morning peak hour trips, 20 evening peak hour trips, and 188 average weekday trips.

Provided any obstructing on-site foliage is removed following development of the site, adequate sight distances can be made available to ensure safe operation of the three proposed access intersections. No other sight distance related mitigation is necessary or recommended.

Following a review of access spacing standards, both City of and County standards will be met with respect to spacing between the proposed public access roads and other public road intersections. The proposed private access will also meet spacing standards with all other public intersections and driveways along N Locust Street.

If you have any questions or concerns regarding this analysis or need further assistance, please do not hesitate to contact us.







TRIP GENERATION CALCULATIONS

Existing R-1 Zone

Land Use: Single-Family Detached Housing
Land Use Code: 210
Setting/Location: General Urban/Suburban
Variable: Dwelling Units
Variable Value: 15

AM PEAK HOUR

Trip Rate: 0.74

	Enter	Exit	Total
Directional Distribution	25%	75%	
Trip Ends	3	8	11

PM PEAK HOUR

Trip Rate: 0.99

	Enter	Exit	Total
Directional Distribution	63%	37%	
Trip Ends	9	6	15

WEEKDAY

Trip Rate: 9.44

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	71	71	142

SATURDAY

Trip Rate: 9.54

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	72	72	144



TRIP GENERATION CALCULATIONS

Proposed R-1.5 Zone/Development

Land Use: Single-Family Detached Housing

Land Use Code: 210

Setting/Location: General Urban/Suburban

Variable: Dwelling Units

Variable Value: 20

AM PEAK HOUR

Trip Rate: 0.74

	Enter	Exit	Total
Directional Distribution	25%	75%	
Trip Ends	4	11	15

PM PEAK HOUR

Trip Rate: 0.99

	Enter	Exit	Total
Directional Distribution	63%	37%	
Trip Ends	13	7	20

WEEKDAY

Trip Rate: 9.44

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	94	94	188

SATURDAY

Trip Rate: 9.54

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	95	95	190



TRIP GENERATION CALCULATIONS

Proposed R-1.5 Zone

Land Use: Multifamily Housing (Low-Rise)
Land Use Code: 220
Setting/Location: General Urban/Suburban
Variable: Dwelling Units
Variable Value: 40

AM PEAK HOUR

Trip Rate: 0.46

	Enter	Exit	Total
Directional Distribution	23%	77%	
Trip Ends	4	14	18

PM PEAK HOUR

Trip Rate: 0.56

	Enter	Exit	Total
Directional Distribution	63%	37%	
Trip Ends	14	8	22

WEEKDAY

Trip Rate: 7.32

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	146	146	292

SATURDAY

Trip Rate: 8.14

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	163	163	326

Total Vehicle Summary

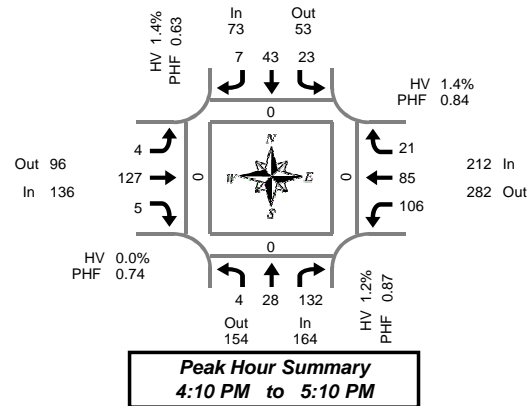


Clay Carney
(503) 833-2740

N Holly St & Territorial Rd

Thursday, August 09, 2018

4:00 PM to 6:00 PM



5-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				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	0	11	0	5	0	0	1	0	8	0	0	17	7	0	0	48	0	0	0	0
4:05 PM	0	0	9	0	1	2	0	0	3	8	0	1	7	6	1	0	37	0	0	0	0
4:10 PM	0	5	11	0	1	1	0	0	0	6	0	0	15	13	1	0	53	0	0	0	0
4:15 PM	0	1	14	0	0	3	2	0	2	8	0	0	10	5	1	0	46	0	0	0	0
4:20 PM	0	2	7	0	6	1	1	0	0	13	0	0	4	11	3	0	48	0	0	0	0
4:25 PM	0	0	10	0	1	3	1	2	0	8	1	0	11	1	1	0	37	0	0	0	0
4:30 PM	0	2	8	0	0	2	0	1	0	13	0	0	13	10	4	0	52	0	0	0	0
4:35 PM	1	6	12	0	4	12	2	0	0	12	0	0	5	4	0	0	58	0	0	0	0
4:40 PM	0	1	14	0	1	2	1	0	0	15	1	0	7	6	1	0	49	0	0	0	0
4:45 PM	1	2	10	0	3	4	0	0	2	16	0	0	9	7	1	0	55	0	0	0	0
4:50 PM	0	0	16	0	1	2	0	0	0	7	2	0	11	3	0	0	42	0	0	0	0
4:55 PM	1	1	5	0	1	4	0	1	0	9	0	0	8	7	2	1	38	0	0	0	0
5:00 PM	1	3	12	0	2	4	0	1	0	10	1	0	6	10	4	0	53	0	0	0	0
5:05 PM	0	5	13	0	3	5	0	0	0	10	0	0	7	8	3	0	54	0	0	0	0
5:10 PM	0	1	14	0	1	0	0	0	0	13	1	0	7	6	4	0	47	0	0	0	0
5:15 PM	0	2	3	0	2	2	0	0	0	10	0	0	9	10	1	0	39	0	0	1	0
5:20 PM	0	2	11	0	5	3	1	1	0	6	0	0	11	8	1	0	48	0	0	0	0
5:25 PM	0	1	11	0	1	0	0	0	1	15	0	0	8	7	2	0	46	0	0	0	0
5:30 PM	0	2	10	0	2	4	0	0	0	10	0	0	8	9	2	0	47	0	0	0	0
5:35 PM	0	2	6	0	4	4	1	0	0	9	1	0	6	10	3	0	46	0	0	0	0
5:40 PM	0	2	8	0	3	4	0	0	3	3	0	0	9	1	1	1	34	0	0	0	0
5:45 PM	0	4	6	0	4	4	0	1	0	5	1	0	7	8	3	0	42	0	2	0	0
5:50 PM	2	4	6	0	2	0	0	0	2	6	0	0	4	5	1	0	32	0	2	0	0
5:55 PM	0	5	6	0	3	6	1	0	0	8	0	0	3	3	2	0	37	0	0	0	0
Total Survey	6	53	233	0	56	72	10	8	13	228	8	1	202	165	42	2	1,088	0	4	1	0

15-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				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	5	31	0	7	3	0	1	3	22	0	1	39	26	2	0	138	0	0	0	0
4:15 PM	0	3	31	0	7	7	4	2	2	29	1	0	25	17	5	0	131	0	0	0	0
4:30 PM	1	9	34	0	5	16	3	1	0	40	1	0	25	20	5	0	159	0	0	0	0
4:45 PM	2	3	31	0	5	10	0	1	2	32	2	0	28	17	3	1	135	0	0	0	0
5:00 PM	1	9	39	0	6	9	0	1	0	33	2	0	20	24	11	0	154	0	0	0	0
5:15 PM	0	5	25	0	8	5	1	1	1	31	0	0	28	25	4	0	133	0	0	1	0
5:30 PM	0	6	24	0	9	12	1	0	3	22	1	0	23	20	6	1	127	0	0	0	0
5:45 PM	2	13	18	0	9	10	1	1	2	19	1	0	14	16	6	0	111	0	4	0	0
Total Survey	6	53	233	0	56	72	10	8	13	228	8	1	202	165	42	2	1,088	0	4	1	0

Peak Hour Summary

4:10 PM to 5:10 PM

By Approach	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	164	154	318	0	73	53	126	5	136	96	232	0	212	282	494	1	585	0	0	0	0
%HV	1.2%				1.4%				0.0%				1.4%				1.0%				
PHF	0.87				0.63				0.74				0.84				0.90				

By Movement	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	4	28	132	164	23	43	7	73	4	127	5	136	106	85	21	212	585
%HV	0.0%	0.0%	1.5%	1.2%	0.0%	2.3%	0.0%	1.4%	0.0%	0.0%	0.0%	0.0%	1.9%	1.2%	0.0%	1.4%	1.0%
PHF	0.50	0.78	0.83	0.87	0.72	0.60	0.44	0.63	0.50	0.74	0.42	0.74	0.91	0.73	0.58	0.84	0.90

Rolling Hour Summary

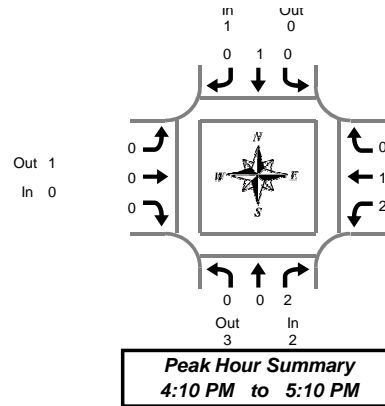
4:00 PM to 6:00 PM

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				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	3	20	127	0	24	36	7	5	7	123	4	1	117	80	15	1	563	0	0	0	0
4:15 PM	4	24	135	0	23	42	7	5	4	134	6	0	98	78	24	1	579	0	0	0	0
4:30 PM	4	26	129	0	24	40	4	4	3	136	5	0	101	86	23	1	581	0	0	1	0
4:45 PM	3	23	119	0	28	36	2	3	6	118	5	0	99	86	24	2	549	0	0	1	0
5:00 PM	3	33	106	0	32	36	3	3	6	105	4	0	85	85	27	1	525	0	4	1	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



N Holly St & Territorial Rd

Thursday, August 09, 2018

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 Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
4:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:10 PM	0	0	1	1	0	0	0	0	0	0	0	0	1	1	0	2	3
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:25 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
4:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
4:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
5:40 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
5:45 PM	0	0	0	0	1	0	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	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	0	1	2	3	1	2	0	3	1	0	0	1	3	1	0	4	11

Heavy Vehicle 15-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	1	1	0	0	0	0	0	0	0	0	2	1	0	3	4
4:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
4:45 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 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	1	0	1	1	0	0	1	0	0	0	0	2
5:45 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
Total Survey	0	1	2	3	1	2	0	3	1	0	0	1	3	1	0	4	11

Heavy Vehicle Peak Hour Summary

4:10 PM to 5:10 PM

By Approach	Northbound N Holly St			Southbound N Holly St			Eastbound Territorial Rd			Westbound Territorial Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	2	3	5	1	0	1	0	1	1	3	2	5	6
PHF	0.50			0.25			0.00			0.38			0.50

By Movement	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	2	2	0	1	0	1	0	0	0	0	2	1	0	3	6
PHF	0.00	0.00	0.50	0.50	0.00	0.25	0.00	0.25	0.00	0.00	0.00	0.00	0.50	0.25	0.00	0.38	0.50

Heavy Vehicle Rolling Hour Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	2	2	0	1	0	1	0	0	0	0	3	1	0	4	7
4:15 PM	0	0	1	1	0	1	0	1	0	0	0	0	1	0	0	1	3
4:30 PM	0	1	1	2	0	0	0	0	0	0	0	0	1	0	0	1	3
4:45 PM	0	1	1	2	0	1	0	1	1	0	0	1	0	0	0	0	4
5:00 PM	0	1	0	1	1	1	0	2	1	0	0	1	0	0	0	0	4

Peak Hour Summary

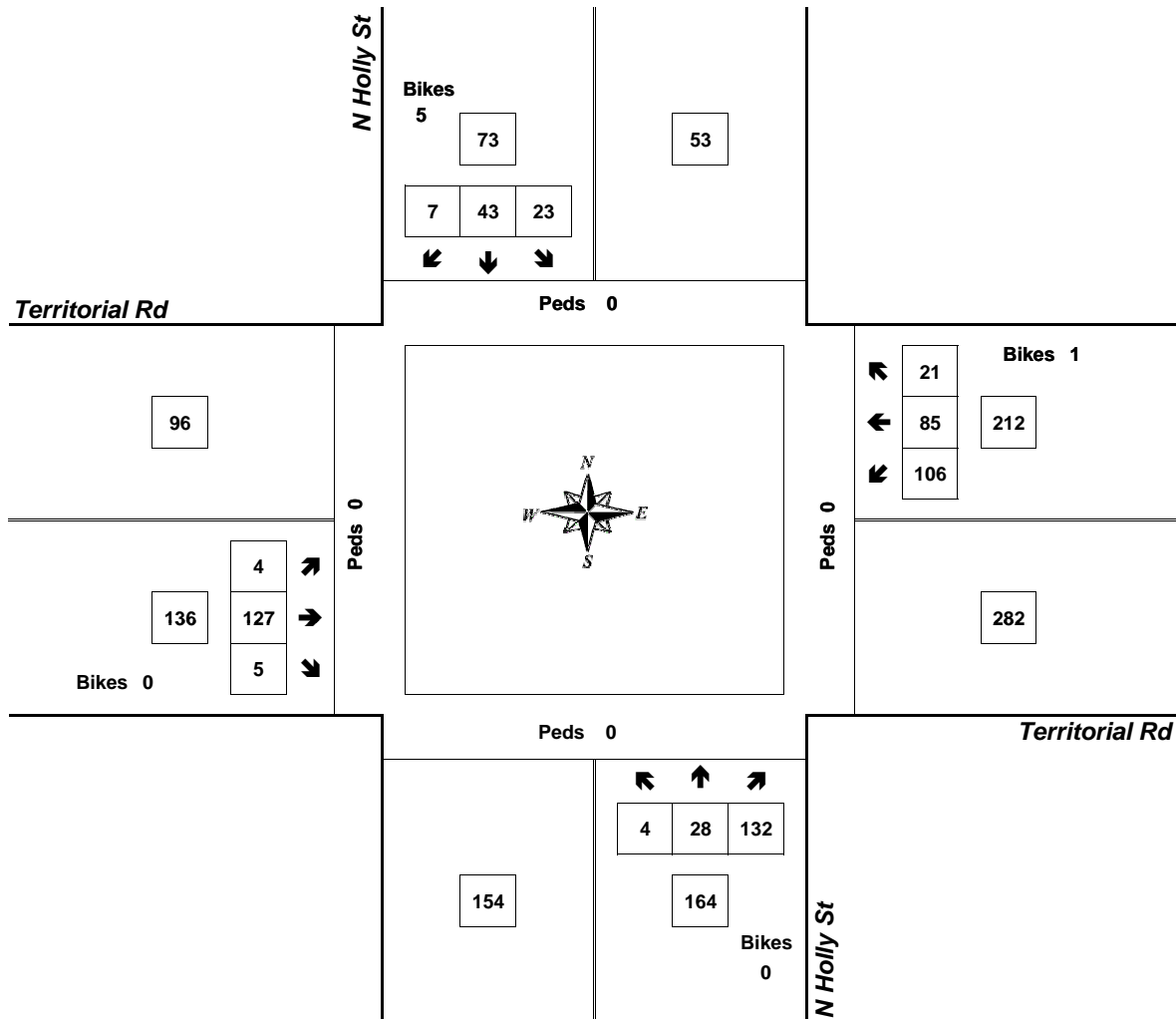


Clay Carney
(503) 833-2740

N Holly St & Territorial Rd

4:10 PM to 5:10 PM

Thursday, August 09, 2018



Approach	PHF	HV%	Volume
EB	0.74	0.0%	136
WB	0.84	1.4%	212
NB	0.87	1.2%	164
SB	0.63	1.4%	73
Intersection	0.90	1.0%	585

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

All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740

Site Code: 1
Territorial Rd W-O Locust St

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
08/09/18	0	7	1	0	0	0	0	0	0	0	0	0	0	1	9
01:00	0	7	0	0	0	0	0	0	0	0	0	0	0	0	7
02:00	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
03:00	0	4	1	0	1	0	0	0	0	0	0	0	0	0	6
04:00	0	13	2	0	3	0	0	0	0	0	0	0	0	0	18
05:00	0	23	12	0	5	0	0	0	0	0	0	0	0	0	40
06:00	2	53	17	0	4	1	0	0	0	0	0	0	0	0	77
07:00	2	91	27	0	7	0	0	0	0	0	0	0	0	2	129
08:00	4	81	25	1	9	0	0	0	0	0	0	0	0	8	128
09:00	5	84	32	0	13	1	0	0	0	0	0	0	0	2	137
10:00	4	96	30	0	6	2	0	0	0	0	0	0	0	4	142
11:00	4	100	39	0	20	0	0	0	0	0	0	0	0	1	164
12 PM	2	144	22	2	5	0	0	0	0	0	0	0	0	8	183
13:00	8	139	33	1	12	1	0	1	1	0	0	0	0	8	204
14:00	5	166	32	0	13	2	0	0	0	0	0	0	0	3	221
15:00	3	176	36	0	15	0	0	1	0	0	0	0	0	2	233
16:00	9	202	48	0	15	1	0	0	0	0	0	0	0	6	281
17:00	4	188	36	0	17	1	0	0	0	0	0	0	0	8	254
18:00	4	161	32	0	7	0	0	0	0	0	0	0	0	1	205
19:00	3	105	17	0	5	0	0	0	0	0	0	0	0	1	131
20:00	1	101	11	0	5	0	0	0	0	0	0	0	0	2	120
21:00	2	70	11	0	2	0	0	0	1	0	0	0	0	0	86
22:00	0	38	7	0	3	0	0	0	0	0	0	0	0	0	48
23:00	0	18	0	0	1	0	0	0	0	0	0	0	0	0	19
Total	62	2068	472	4	168	9	0	2	2	0	0	0	0	57	2844
Percent	2.2%	72.7%	16.6%	0.1%	5.9%	0.3%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	2.0%	
AM Peak	09:00	11:00	11:00	08:00	11:00	10:00								08:00	
Vol.	5	100	39	1	20	2								8	
PM Peak	16:00	16:00	16:00	12:00	17:00	14:00		13:00	13:00					12:00	
Vol.	9	202	48	2	17	2		1	1					8	
Grand Total	62	2068	472	4	168	9	0	2	2	0	0	0	0	57	2844
Percent	2.2%	72.7%	16.6%	0.1%	5.9%	0.3%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	2.0%	

All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740

Site Code: 1
Territorial Rd W-O Locust St

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
08/09/18	0	7	1	0	0	0	0	0	0	0	0	0	0	0	8
01:00	0	3	2	0	1	0	0	0	0	0	0	0	0	0	6
02:00	0	2	1	0	1	0	0	0	0	0	0	0	0	0	4
03:00	0	8	0	0	1	0	0	0	0	0	0	0	0	0	9
04:00	0	13	4	0	2	0	0	0	0	0	0	0	0	0	19
05:00	4	47	15	0	7	1	0	0	0	0	0	0	0	0	74
06:00	1	83	31	0	14	0	0	0	0	0	0	0	0	0	129
07:00	3	90	25	0	12	1	0	1	0	0	0	0	0	4	136
08:00	0	99	31	1	11	0	0	0	1	0	0	0	0	3	146
09:00	1	128	34	0	22	1	0	0	0	0	0	0	0	4	190
10:00	2	75	43	1	13	2	0	1	0	0	0	0	0	5	142
11:00	5	118	38	0	20	1	0	1	2	0	0	0	0	1	186
12 PM	5	127	30	2	12	0	0	0	0	0	0	0	0	8	184
13:00	3	118	35	2	10	1	0	0	0	0	0	0	0	8	177
14:00	2	164	46	0	14	1	0	1	1	0	0	0	0	9	238
15:00	1	140	39	1	15	0	0	1	0	0	0	0	0	5	202
16:00	6	132	34	0	33	0	0	0	0	0	0	0	0	14	219
17:00	2	141	38	0	10	0	0	0	0	0	0	0	0	11	202
18:00	0	119	34	0	9	0	0	0	0	0	0	0	0	3	165
19:00	1	76	29	0	4	0	0	0	1	0	0	0	0	1	112
20:00	2	70	24	0	5	0	0	0	0	0	0	0	0	2	103
21:00	1	54	9	0	3	0	0	0	0	0	0	0	0	0	67
22:00	0	25	8	0	0	0	0	0	0	0	0	0	0	0	33
23:00	0	24	4	0	2	0	0	0	0	0	0	0	0	0	30
Total	39	1863	555	7	221	8	0	5	5	0	0	0	0	78	2781
Percent	1.4%	67.0%	20.0%	0.3%	7.9%	0.3%	0.0%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	2.8%	
AM Peak	11:00	09:00	10:00	08:00	09:00	10:00		07:00	11:00					10:00	
Vol.	5	128	43	1	22	2		1	2					5	
PM Peak	16:00	14:00	14:00	12:00	16:00	13:00		14:00	14:00					16:00	
Vol.	6	164	46	2	33	1		1	1					14	
Grand Total	39	1863	555	7	221	8	0	5	5	0	0	0	0	78	2781
Percent	1.4%	67.0%	20.0%	0.3%	7.9%	0.3%	0.0%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	2.8%	

All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740

Site Code: 1
Territorial Rd W-O Locust St

EB

Start Time	15	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	85th Percent	95th Percent
08/09/18	1	0	2	5	1	0	0	0	0	0	0	0	0	0	9	29	32
01:00	0	0	0	7	0	0	0	0	0	0	0	0	0	0	7	29	29
02:00	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	34	34
03:00	0	0	2	3	1	0	0	0	0	0	0	0	0	0	6	30	33
04:00	0	0	0	10	7	1	0	0	0	0	0	0	0	0	18	33	35
05:00	0	0	4	17	17	2	0	0	0	0	0	0	0	0	40	33	35
06:00	0	1	4	28	35	9	0	0	0	0	0	0	0	0	77	34	37
07:00	2	1	12	76	34	3	1	0	0	0	0	0	0	0	129	32	34
08:00	8	3	15	60	30	11	1	0	0	0	0	0	0	0	128	33	37
09:00	2	3	25	55	42	8	2	0	0	0	0	0	0	0	137	33	36
10:00	5	0	17	71	36	12	1	0	0	0	0	0	0	0	142	33	37
11:00	2	0	17	48	80	16	1	0	0	0	0	0	0	0	164	34	37
12 PM	9	2	31	91	44	6	0	0	0	0	0	0	0	0	183	32	34
13:00	8	4	37	91	56	8	0	0	0	0	0	0	0	0	204	32	34
14:00	3	0	23	118	68	9	0	0	0	0	0	0	0	0	221	33	34
15:00	3	0	18	90	95	24	3	0	0	0	0	0	0	0	233	34	38
16:00	8	1	15	112	124	18	3	0	0	0	0	0	0	0	281	34	36
17:00	8	1	14	109	92	27	3	0	0	0	0	0	0	0	254	34	38
18:00	2	0	15	84	91	12	1	0	0	0	0	0	0	0	205	34	36
19:00	2	0	24	56	41	4	3	1	0	0	0	0	0	0	131	33	36
20:00	3	1	18	68	28	2	0	0	0	0	0	0	0	0	120	32	34
21:00	0	0	10	51	25	0	0	0	0	0	0	0	0	0	86	32	34
22:00	0	0	7	25	12	2	2	0	0	0	0	0	0	0	48	33	39
23:00	0	0	1	13	5	0	0	0	0	0	0	0	0	0	19	32	34
Total	66	17	311	1288	966	174	21	1	0	0	0	0	0	0	2844		
Percent	2.3%	0.6%	10.9%	45.3%	34.0%	6.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	08:00	08:00	09:00	07:00	11:00	11:00	09:00								11:00		
Vol.	8	3	25	76	80	16	2								164		
PM Peak	12:00	13:00	13:00	14:00	16:00	17:00	15:00	19:00							16:00		
Vol.	9	4	37	118	124	27	3	1							281		
Grand Total	66	17	311	1288	966	174	21	1	0	0	0	0	0	0	2844		
Percent	2.3%	0.6%	10.9%	45.3%	34.0%	6.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

15th Percentile : 25 MPH
50th Percentile : 28 MPH
85th Percentile : 33 MPH
95th Percentile : 36 MPH

Statistics 10 MPH Pace Speed : 26-35 MPH
Number in Pace : 2254
Percent in Pace : 79.3%
Number of Vehicles > 55 MPH : 0
Percent of Vehicles > 55 MPH : 0.0%
Mean Speed(Average) : 29 MPH

All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740

Site Code: 1
Territorial Rd W-O Locust St

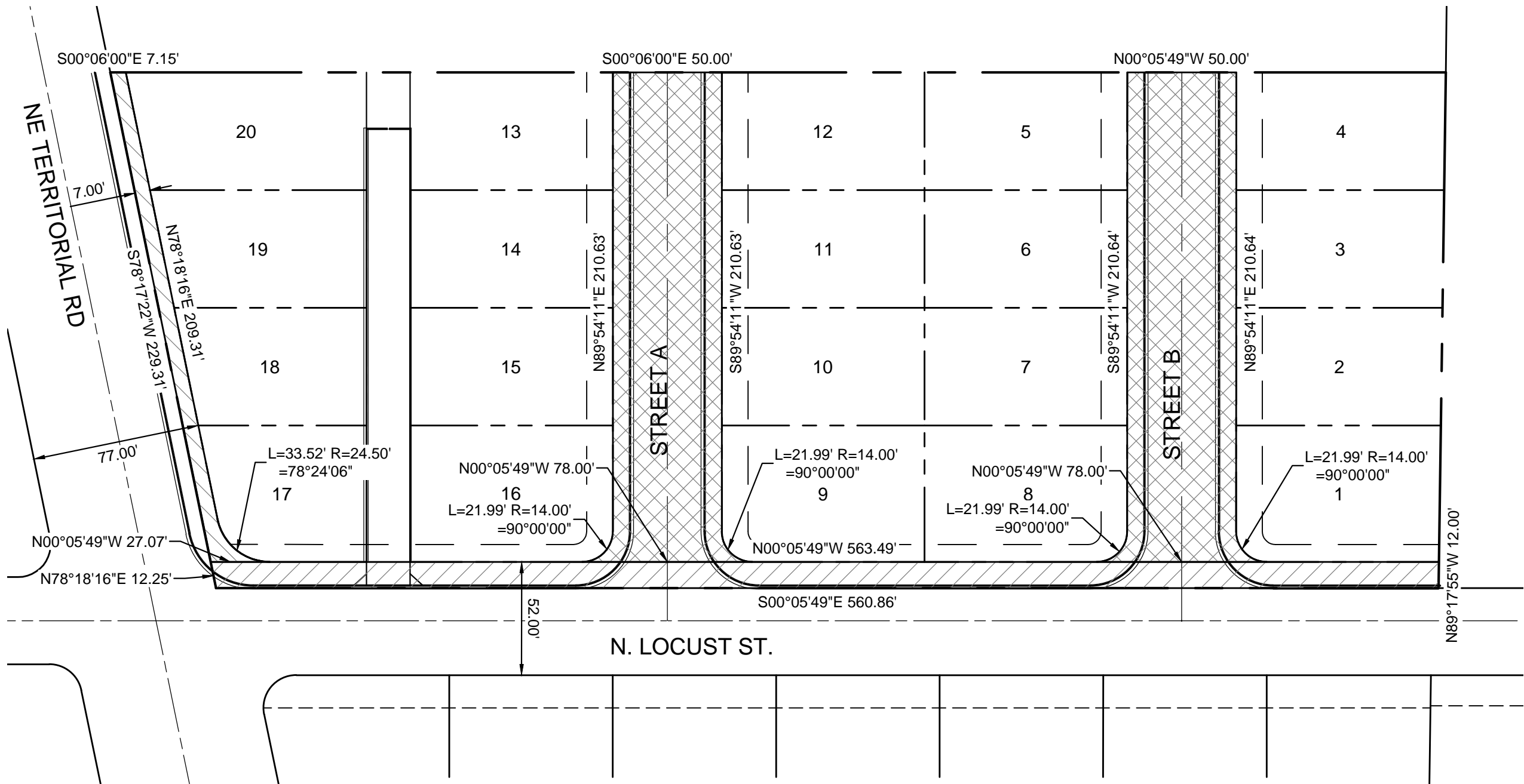
WB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	85th Percent	95th Percent
08/09/18	0	0	0	5	3	0	0	0	0	0	0	0	0	0	8	33	34
01:00	0	0	0	3	2	0	1	0	0	0	0	0	0	0	6	40	43
02:00	0	0	0	1	2	1	0	0	0	0	0	0	0	0	4	37	39
03:00	0	0	0	2	6	1	0	0	0	0	0	0	0	0	9	34	37
04:00	0	1	2	4	9	2	0	1	0	0	0	0	0	0	19	35	45
05:00	0	1	3	20	28	18	3	1	0	0	0	0	0	0	74	38	40
06:00	0	0	4	24	72	27	1	1	0	0	0	0	0	0	129	36	39
07:00	4	1	7	33	67	21	3	0	0	0	0	0	0	0	136	35	39
08:00	3	1	14	55	61	11	1	0	0	0	0	0	0	0	146	34	37
09:00	4	1	9	55	95	25	1	0	0	0	0	0	0	0	190	34	38
10:00	5	0	13	39	60	23	1	1	0	0	0	0	0	0	142	35	38
11:00	1	0	11	39	99	30	6	0	0	0	0	0	0	0	186	36	39
12 PM	8	2	7	79	62	22	4	0	0	0	0	0	0	0	184	34	38
13:00	8	0	11	55	77	26	0	0	0	0	0	0	0	0	177	34	38
14:00	9	1	10	68	128	19	3	0	0	0	0	0	0	0	238	34	37
15:00	5	1	4	51	98	37	5	0	0	0	1	0	0	0	202	36	39
16:00	16	1	11	58	109	19	4	1	0	0	0	0	0	0	219	34	38
17:00	11	0	6	56	101	25	1	2	0	0	0	0	0	0	202	34	38
18:00	3	0	7	39	87	26	3	0	0	0	0	0	0	0	165	35	38
19:00	1	1	6	38	54	10	2	0	0	0	0	0	0	0	112	34	38
20:00	3	0	7	35	46	9	3	0	0	0	0	0	0	0	103	34	38
21:00	0	1	5	23	21	15	2	0	0	0	0	0	0	0	67	37	39
22:00	0	0	3	14	11	4	1	0	0	0	0	0	0	0	33	35	39
23:00	0	0	1	12	15	0	1	1	0	0	0	0	0	0	30	34	42
Total	81	12	141	808	1313	371	46	8	0	0	1	0	0	0	2781		
Percent	2.9%	0.4%	5.1%	29.1%	47.2%	13.3%	1.7%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	10:00	04:00	08:00	08:00	11:00	11:00	11:00	04:00							09:00		
Vol.	5	1	14	55	99	30	6	1							190		
PM Peak	16:00	12:00	13:00	12:00	14:00	15:00	15:00	17:00			15:00				14:00		
Vol.	16	2	11	79	128	37	5	2			1				238		
Grand Total	81	12	141	808	1313	371	46	8	0	0	1	0	0	0	2781		
Percent	2.9%	0.4%	5.1%	29.1%	47.2%	13.3%	1.7%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

15th Percentile : 26 MPH
50th Percentile : 31 MPH
85th Percentile : 35 MPH
95th Percentile : 38 MPH

Statistics 10 MPH Pace Speed : 26-35 MPH
Number in Pace : 2121
Percent in Pace : 76.3%
Number of Vehicles > 55 MPH : 1
Percent of Vehicles > 55 MPH : 0.0%
Mean Speed(Average) : 31 MPH

CAD FILE NAME: K:\20002753 - Territorial Road Subdivision\DWG\Exhibits\20002753-ROW Dedication.dwg 02/06/2021



STREET A R.O.W. DEDICATION: 11,316 SF
STREET B R.O.W. DEDICATION: 11,316 SF

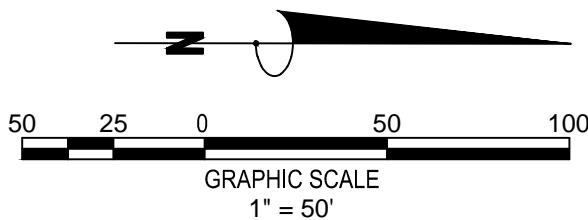


N. LOCUST ST R.O.W. DEDICATION: 6,746 SF



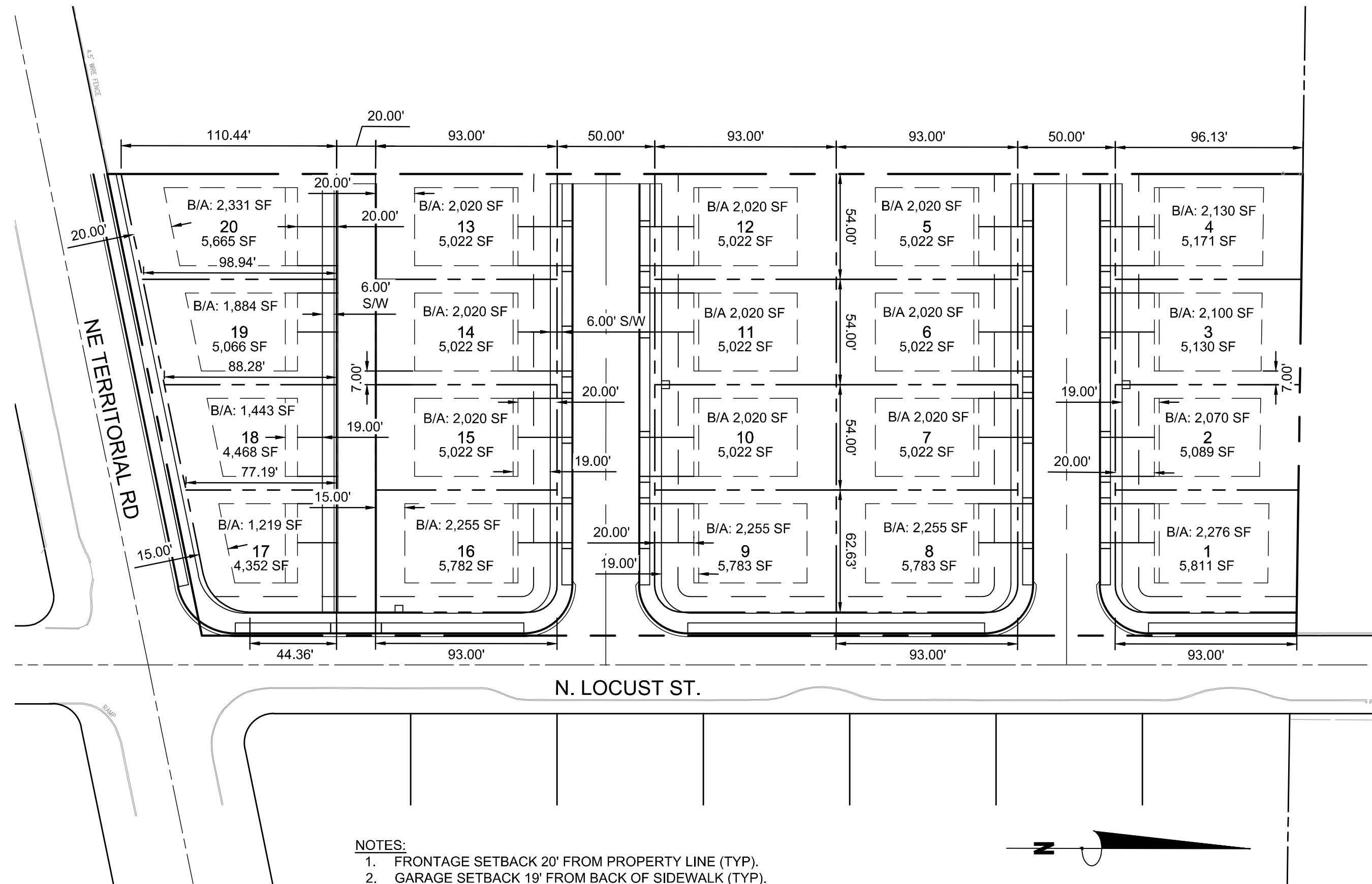
NE TERRITORIAL RD R.O.W. DEDICATION: 1,684 SF

TOTAL R.O.W. DEDICATION: 31,062 SF



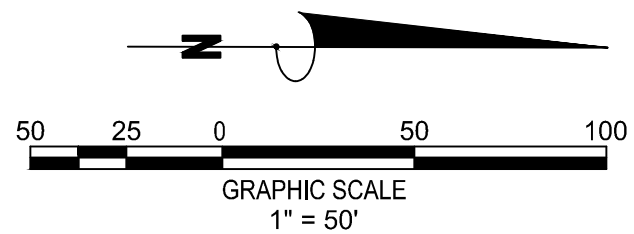
TERRITORIAL ROAD SUBDIVISION
CANBY, OREGON
R.O.W. DEDICATION EXHIBIT

JOB #	20002753
DATE	02/04/2021
SCALE	1" = 50'
DRAWN	JZHANG
SHT	1 OF 1



B/A = BUILDABLE AREA (FROM GARAGE
SETBACK TO REAR SETBACK)
S/W = SIDEWALK

- NOTES:**
1. FRONTAGE SETBACK 20' FROM PROPERTY LINE (TYP).
 2. GARAGE SETBACK 19' FROM BACK OF SIDEWALK (TYP).
 3. REAR YARD SETBACK 20' FROM PROPERTY LINE, EXCEPT FOR CORNER LOTS, WHICH ARE 15' FOR TWO-STORY BUILDINGS(TYP).
 4. SIDE YARD SETBACKS 7' FROM PROPERTY LINE (TYP).





FRONT ELEVATION

1/4"=1'-0"

ELEV No.	P3
DRAWN BY:	MCS
DATE:	10/19/18
SCALE:	1/4"=1'-0"
FILE:	2552-1

DRAWINGS:
EXTERIOR
ELEVATION

PRAIRIE
COLLECTION
ELEV#:P3

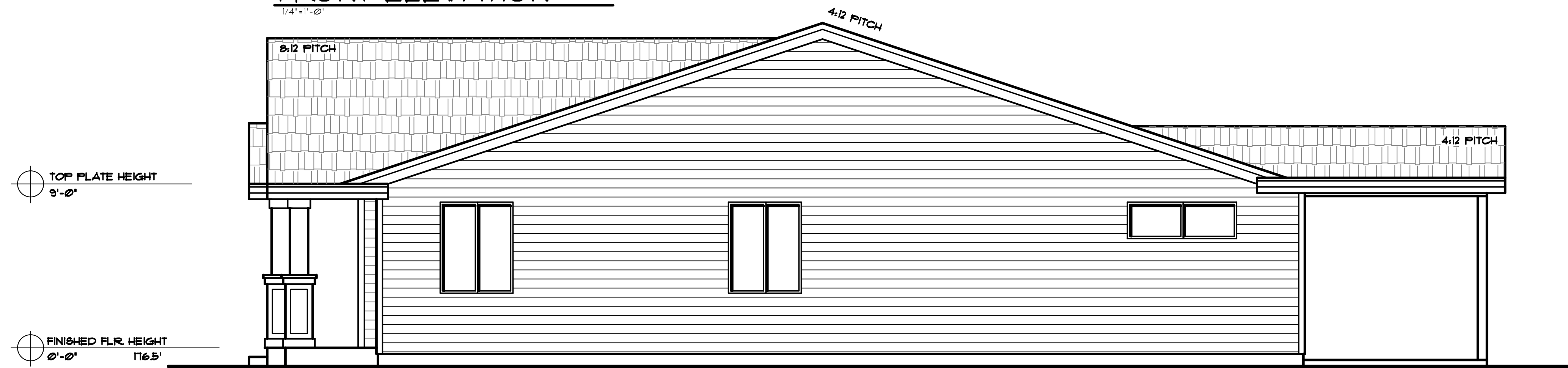
SHEET No.

1

*SQUARE FOOTAGE IS AN ESTIMATED FIGURE, IT MAY VARY.
 *ALL DIMENSIONS ARE ESTIMATES, SOME MAY VARY.
 *PLANS ARE DESIGNED FOR FLAT LOTS. IF MAINTENANCE IS INCLUDED IN PLAN, THERE IS AN ADDITIONAL CHARGE IF HOME SITE IS NOT FLAT.
 *ARCHITECTURAL DRAWINGS ARE ESTIMATES OF HOW HOME WILL LOOK.



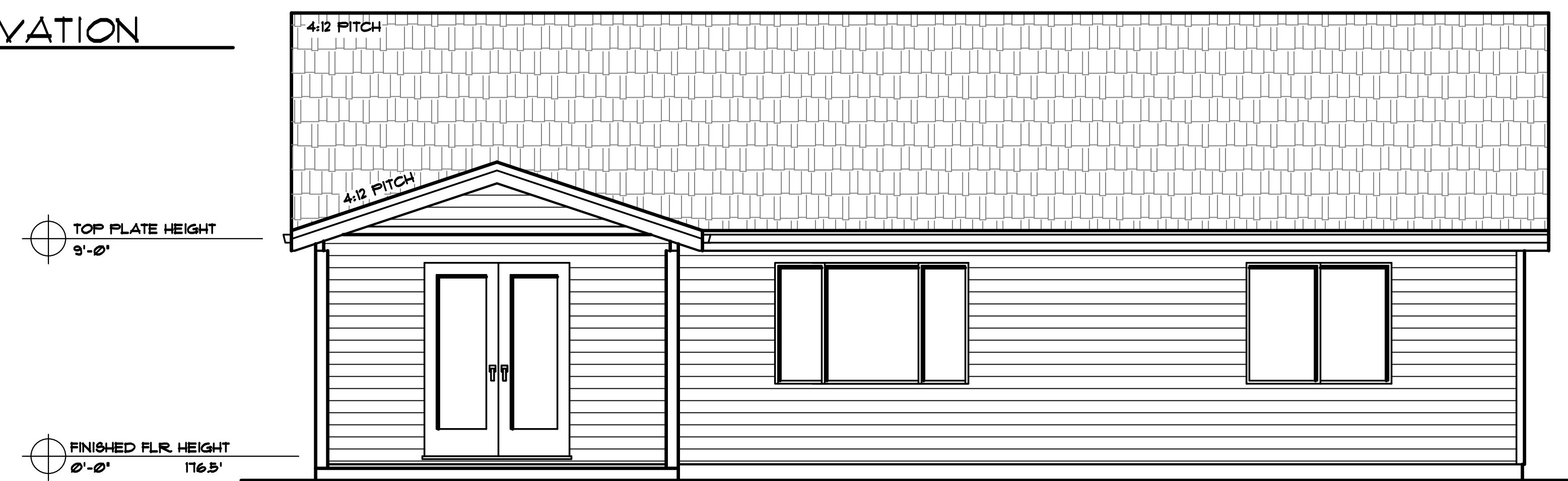
FRONT ELEVATION
 1/4"=1'-0"



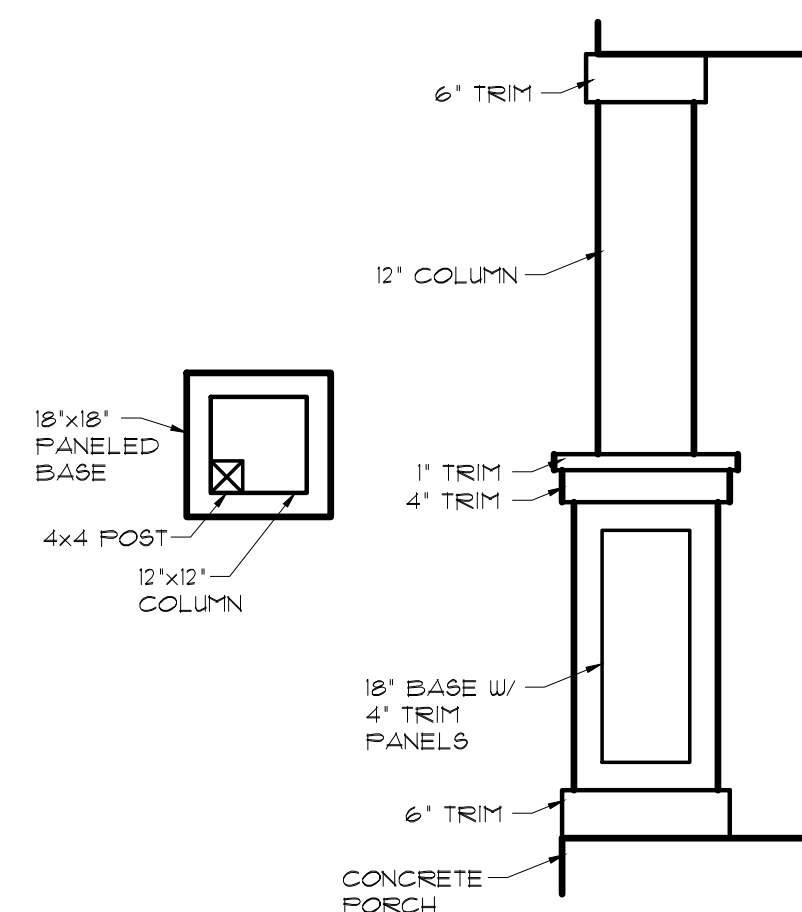
RIGHT ELEVATION
 1/4"=1'-0"



LEFT ELEVATION
 1/4"=1'-0"



REAR ELEVATION
 1/4"=1'-0"



COLUMN DETAILS
 1/2"=1'-0"

STONE BRIDGE
SB
 HOMES NW

PLAN No. 355-STD
 DRAWN BY: QM
 DATE: 9/17/19
 SCALE: 1/4"=1'-0"
 FILE: 2553-1
 DRAWINGS:

**EXTERIOR
 ELEVATION**

SHEET No.

1

**355-STD.
 1,885 SQ.FT.**

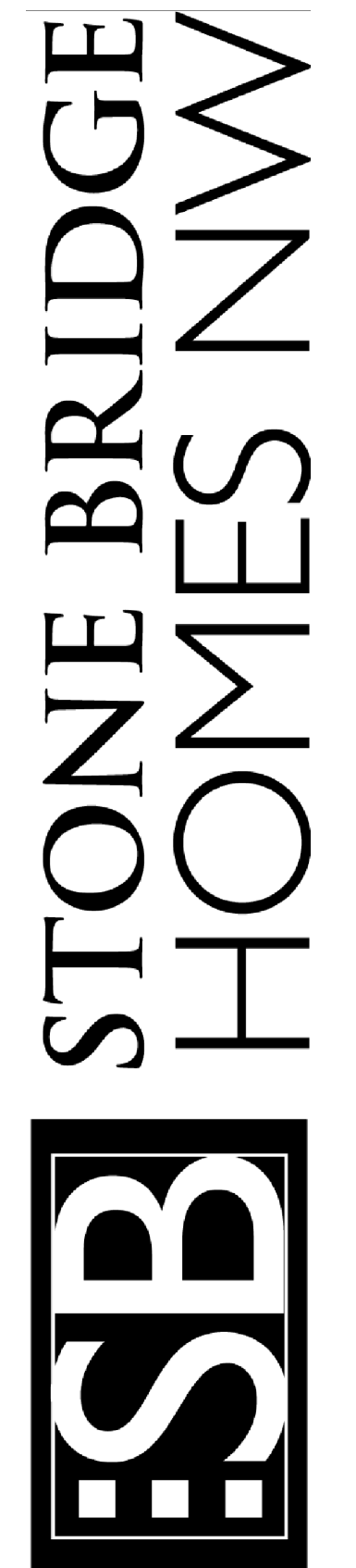
*SQUARE FOOTAGE IS AN ESTIMATED FIGURE, IT MAY VARY.
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FRONT ELEVATION
1/4"=1'-0"



REAR ELEVATION
1/4"=1'-0"



PLAN No. 414MOD-OPT.-11
DRAWN BY: GF/D.BRITT
DATE: R:11/19/18
SCALE: 1/4"=1'-0"
FILE: 2554-1

DRAWINGS:
EXTERIOR ELEVATION

SHEET No.
1
414mod
OPTION 11
3,550 SQ.FT.

*SQUARE FOOTAGE IS AN ESTIMATED FIGURE, IT MAY VARY.
*ALL DIMENSIONS ARE ESTIMATES, SOME MAY VARY.
*PLANS ARE DESIGNED FOR FLAT LOTS. IF MASONRY IS INCLUDED IN PLAN, THERE IS AN ADDITIONAL CHARGE IF HOME SITE IS NOT FLAT.
*ARCHITECTURAL DRAWINGS ARE ESTIMATES OF HOW HOME WILL LOOK.

TOP PLATE HEIGHT
19'-1 1/8"

LAP SIDING W/ 6" REVEAL, TYP.

SECOND FLR HEIGHT
10'-1 1/8"

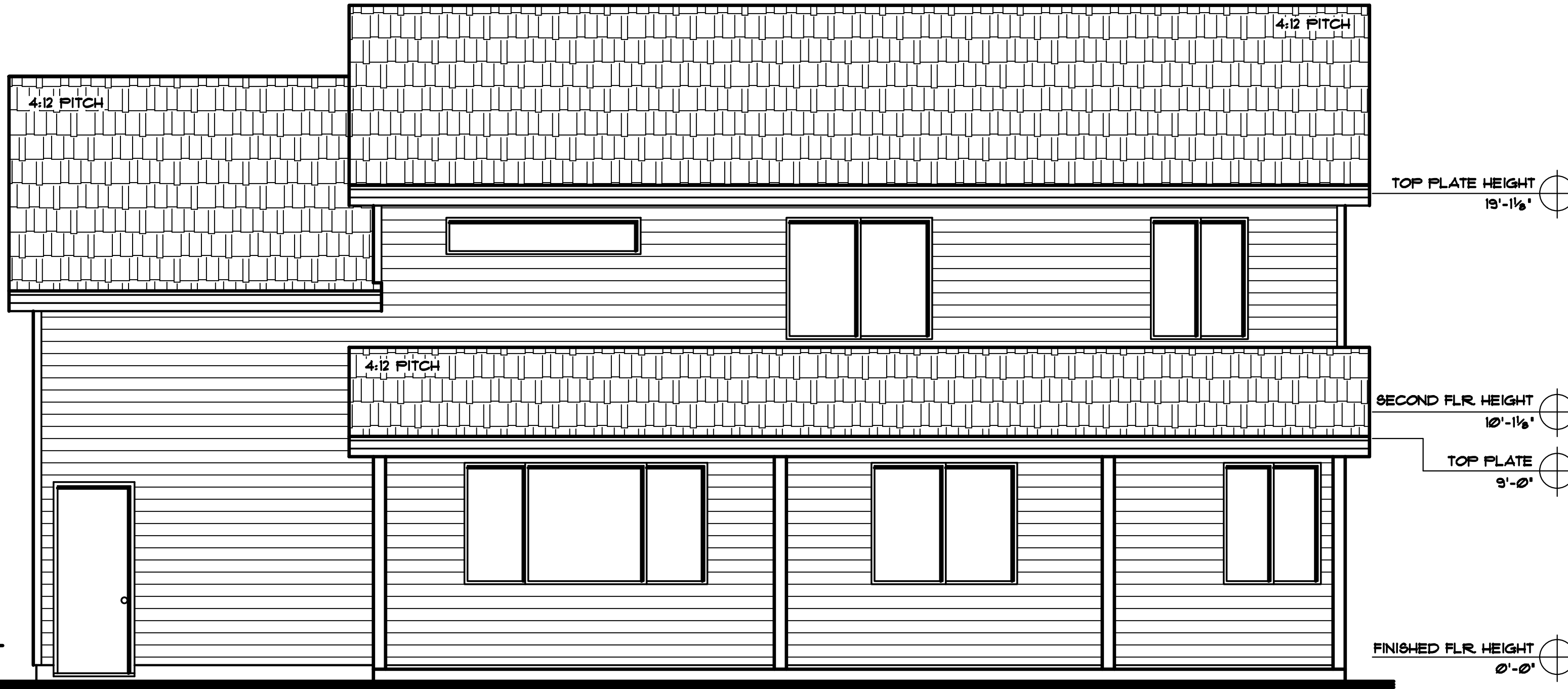
TOP PLATE
9'-0"

FINISHED FLR HEIGHT
0'-0"



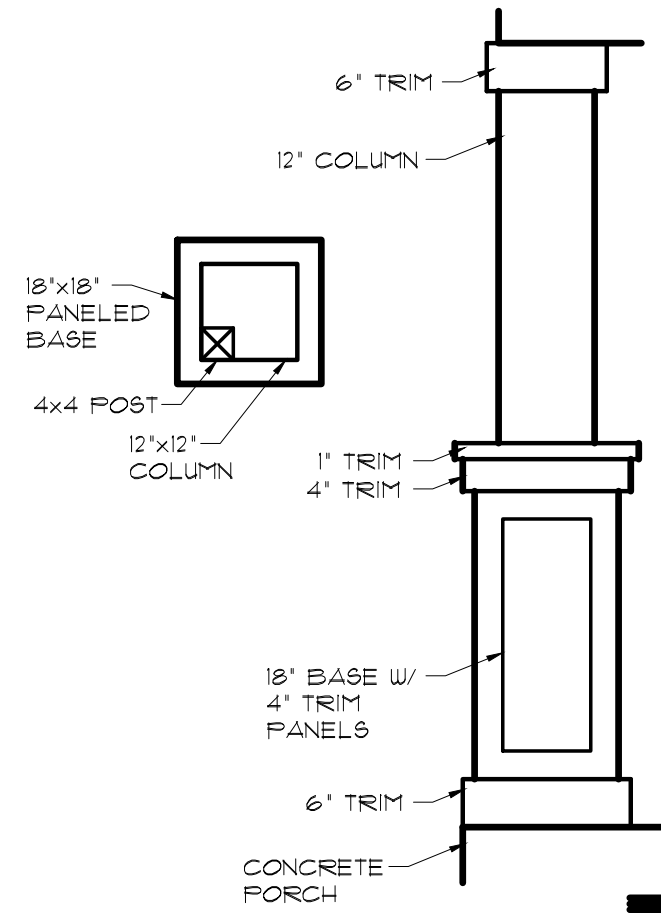
FRONT ELEVATION

1/4"=1'-0"



REAR ELEVATION

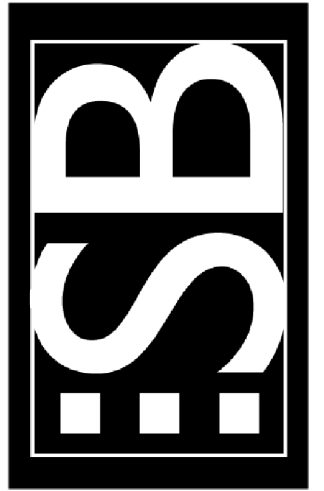
1/4"=1'-0"



COLUMN DETAILS

1/2"=1'-0"

STONE BRIDGE
HOMES NW



PLAN No.	402-RV-STD.
DRAWN BY:	GF
DATE:	10/5/18
SCALE:	1/4"=1'-0"
FILE:	2555-1

DRAWINGS:

EXTERIOR
ELEVATION

SHEET No.

1

402 RV
STANDARD
3,062 SQ.FT.

*SQUARE FOOTAGE IS AN ESTIMATED FIGURE, IT MAY VARY.
*ALL DIMENSIONS ARE ESTIMATES, SOME MAY VARY.
*PLANS ARE DESIGNED FOR FLAT LOTS. IF MASONRY IS INCLUDED IN PLAN, THERE IS AN ADDITIONAL CHARGE IF HOME SITE IS NOT FLAT.
*ARCHITECTURAL DRAWINGS ARE ESTIMATES OF HOW HOME WILL LOOK

STONE BRIDGE
HOMES NW

SB

PLAN No.	303Amod-STD.
DRAWN BY:	GF
DATE:	10/14/19
SCALE:	1/4"=1'-0"
FILE:	2558-1

DRAWINGS:

EXTERIOR
ELEVATION

SHEET No.

1

303Amod
STD.
2,345 SQ.FT.

TOP PLATE HEIGHT
10'-1 1/8"

SECOND FLR HEIGHT
10'-1 1/8"

TOP PLATE
9'-0"

FINISHED FLR HEIGHT
0'-0"



FRONT ELEVATION
1/4"=1'-0"

TOP PLATE HEIGHT
10'-1 1/8"

SECOND FLR HEIGHT
10'-1 1/8"

TOP PLATE
9'-0"

FINISHED FLR HEIGHT
0'-0"



REAR ELEVATION
1/4"=1'-0"

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*ARCHITECTURAL DRAWINGS ARE ESTIMATES OF HOW HOME WILL LOOK.

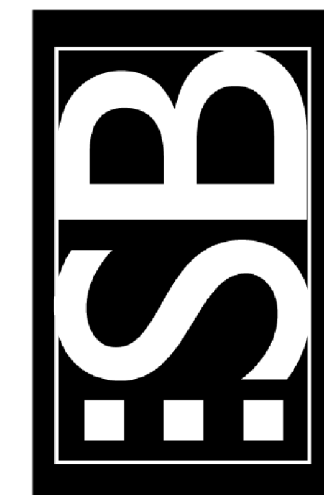


FRONT ELEVATION
1/4"=1'-0"



REAR ELEVATION
1/4"=1'-0"

STONE BRIDGE HOMES NW



PLAN No.	312
DRAWN BY:	GF
DATE:	1/31/19
SCALE:	1/4"=1'-0"
FILE:	2561-1

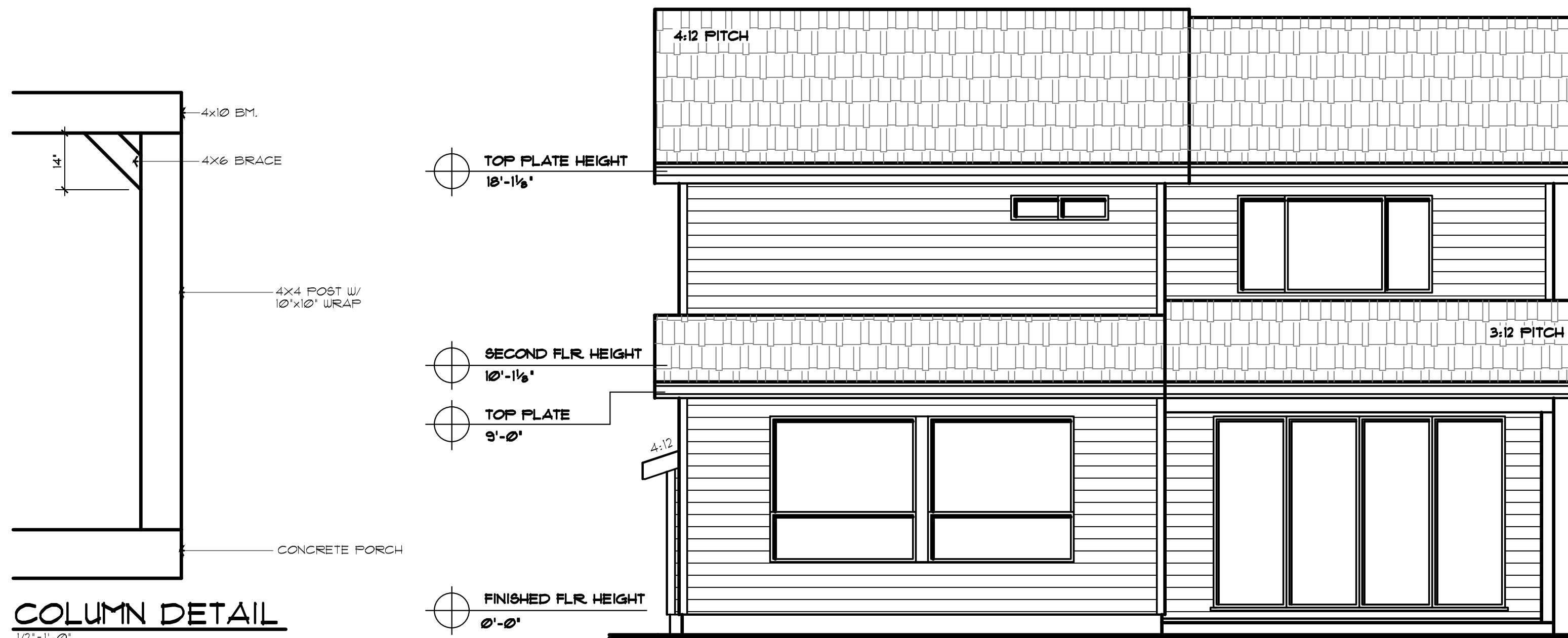
DRAWINGS:
**EXTERIOR
ELEVATION**

SHEET No.
1
PLAN 312
STANDARD
2,820 SQ.FT.

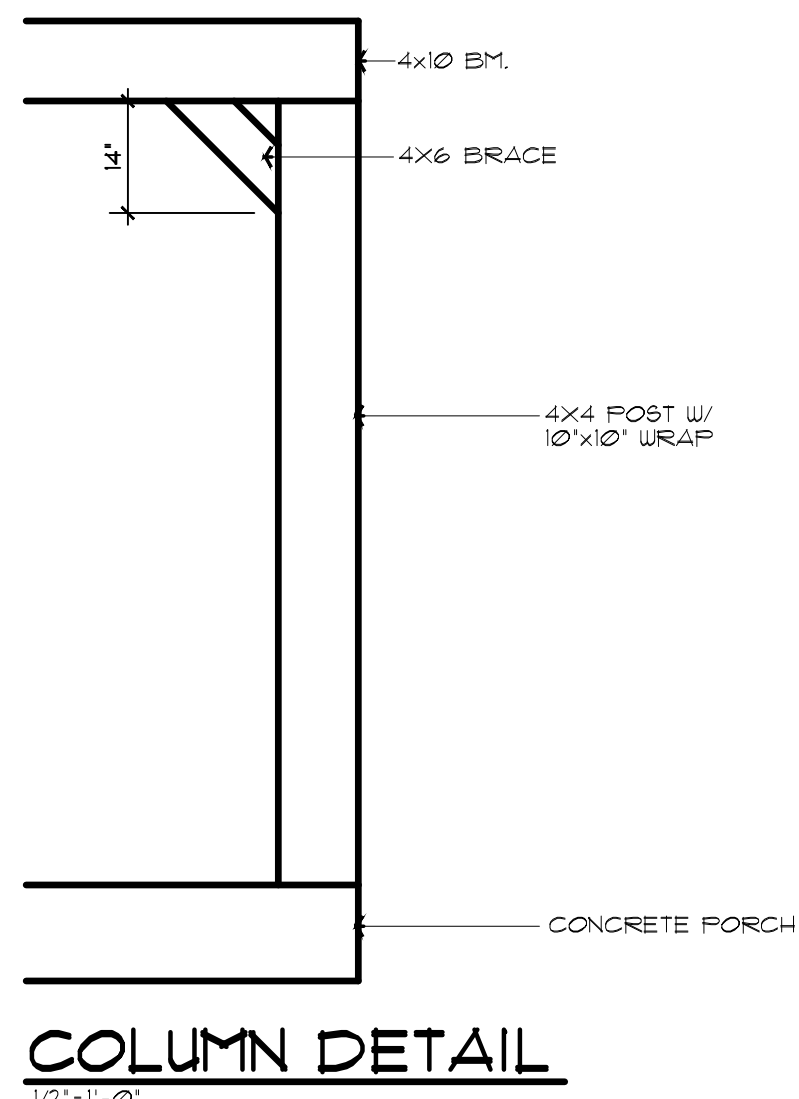
*SQUARE FOOTAGE IS AN ESTIMATED FIGURE, IT MAY VARY.
*ALL DIMENSIONS ARE ESTIMATES, SOME MAY VARY.
*PLANS ARE DESIGNED FOR FLAT LOTS. IF MASONRY IS INCLUDED IN PLAN, THERE IS AN ADDITIONAL CHARGE IF HOME SITE IS NOT FLAT.
*ARCHITECTURAL DRAWINGS ARE ESTIMATES OF HOW HOME WILL LOOK.



FRONT ELEVATION
1/4" = 1'-0"



REAR ELEVATION
1/4" = 1'-0"



COLUMN DETAIL
1/2" = 1'-0"

STONE BRIDGE
HOMES NW



ELEV No.	333-FH
DRAWN BY:	QM
DATE:	5/12/20
SCALE:	1/4" = 1'-0"
FILE:	2562-1

DRAWINGS:
EXTERIOR
ELEVATION

SHEET No.
1
333
FARMHOUSE
2,662 SQ.FT.

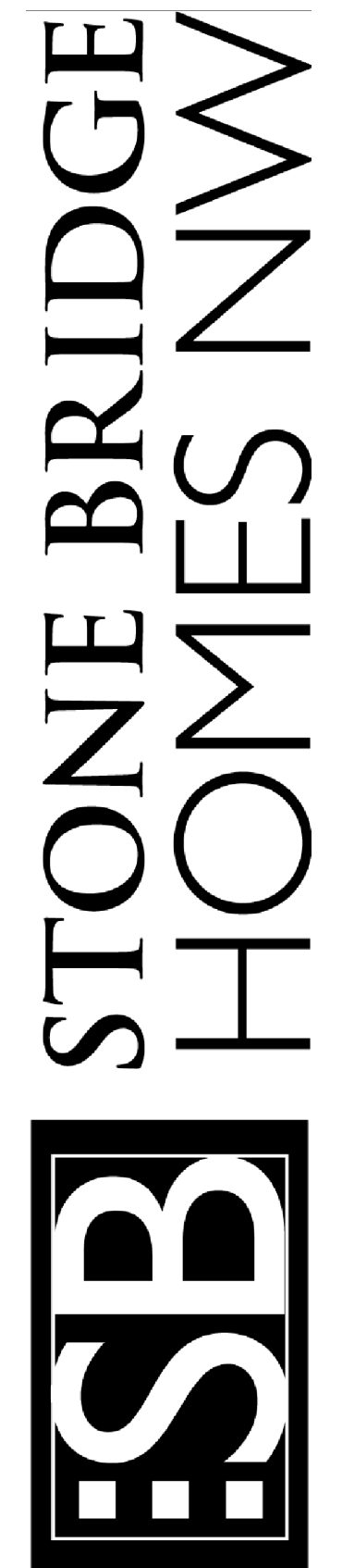
*SQUARE FOOTAGE IS AN ESTIMATED FIGURE, IT MAY VARY.
*ALL DIMENSIONS ARE ESTIMATES, SOME MAY VARY.
*PLANS ARE DESIGNED FOR FLAT LOTS. IF MASONRY IS INCLUDED IN PLAN, THERE IS AN ADDITIONAL CHARGE IF HOME SITE IS NOT FLAT.
*ARCHITECTURAL DRAWINGS ARE ESTIMATES OF HOW HOME WILL LOOK.



FRONT ELEVATION
1/4"=1'-0"



REAR ELEVATION
1/4"=1'-0"



PLAN No.	327
DRAWN BY:	GF
DATE:	1/17/19
SCALE:	1/4"=1'-0"
FILE:	2563-327-1

DRAWINGS:

**EXTERIOR
ELEVATION**

SHEET No.

1

327
2,544 SQ.FT.

*SQUARE FOOTAGE IS AN ESTIMATED FIGURE, IT MAY VARY.
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FRONT ELEVATION

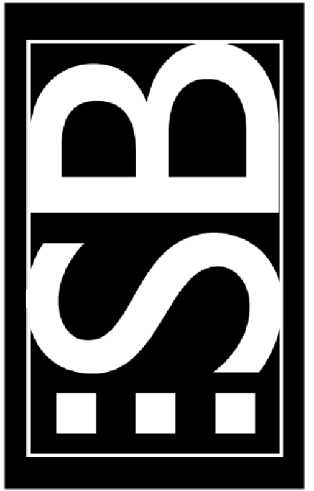
1/4" = 1'-0"



REAR ELEVATION

1/4" = 1'-0"

STONE BRIDGE
HOMES NW



PLAN No.	302-OPT.4
DRAWN BY:	QM/D.BRITT
DATE:	R:6/16/20
SCALE:	1/4" = 1'-0"
FILE:	2564-1

DRAWINGS:

EXTERIOR
ELEVATION

SHEET No.

1

302
OPTION 4
2,260 SQ.FT.

*SQUARE FOOTAGE IS AN ESTIMATED FIGURE, IT MAY VARY.
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*ARCHITECTURAL DRAWINGS ARE ESTIMATES OF HOW HOME WILL LOOK.

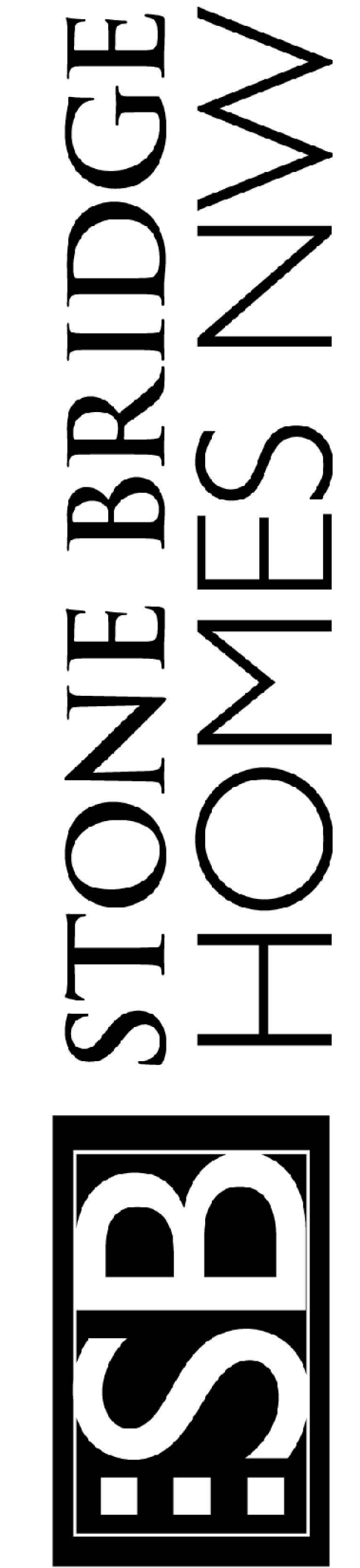


FRONT ELEVATION
1/4" = 1'-0"



REAR ELEVATION
1/4" = 1'-0"

336Amod
STANDARD
3,480 SQ.FT.



PLAN No.	336AMOD
DRAWN BY:	GF
DATE:	10/31/18
SCALE:	1/4"=1'-0"
FILE:	256T-1

**EXTERIOR
ELEVATIONS**

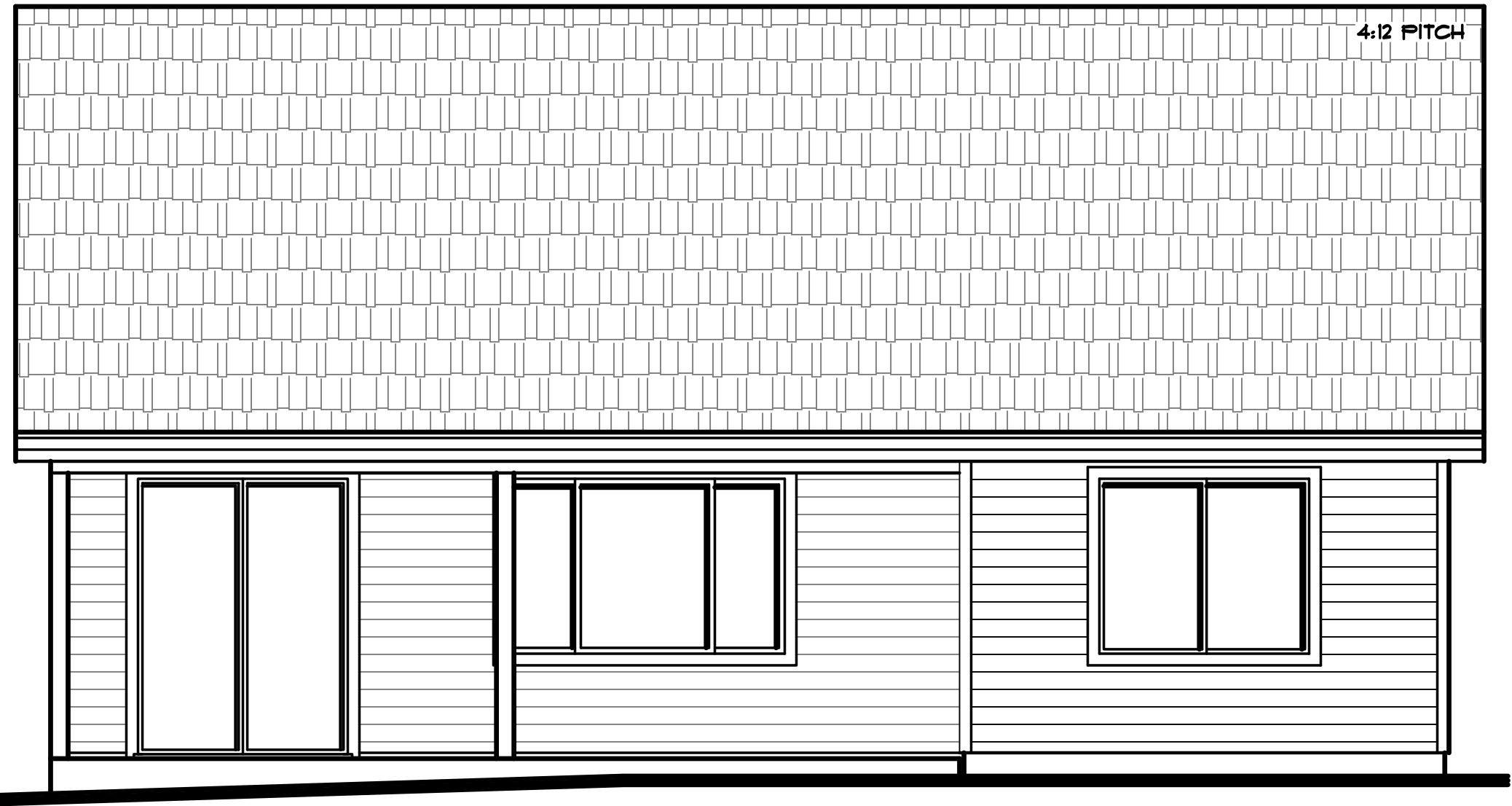
SHEET No.

1

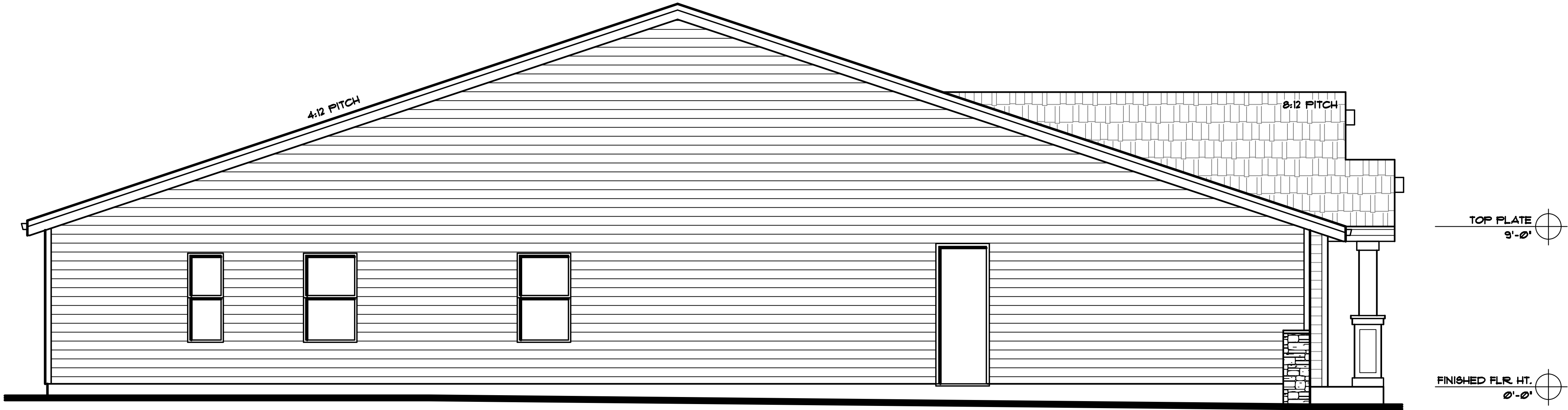
*SQUARE FOOTAGE IS AN ESTIMATED FIGURE, IT MAY VARY.
*ALL DIMENSIONS ARE ESTIMATES, SOME MAY VARY.
*PLANS ARE DESIGNED FOR FLAT LOTS. IF MASONRY IS INCLUDED IN PLAN, THERE IS AN ADDITIONAL CHARGE IF HOME SITE IS NOT FLAT.
*ARCHITECTURAL DRAWINGS ARE ESTIMATES OF HOW HOME WILL LOOK.



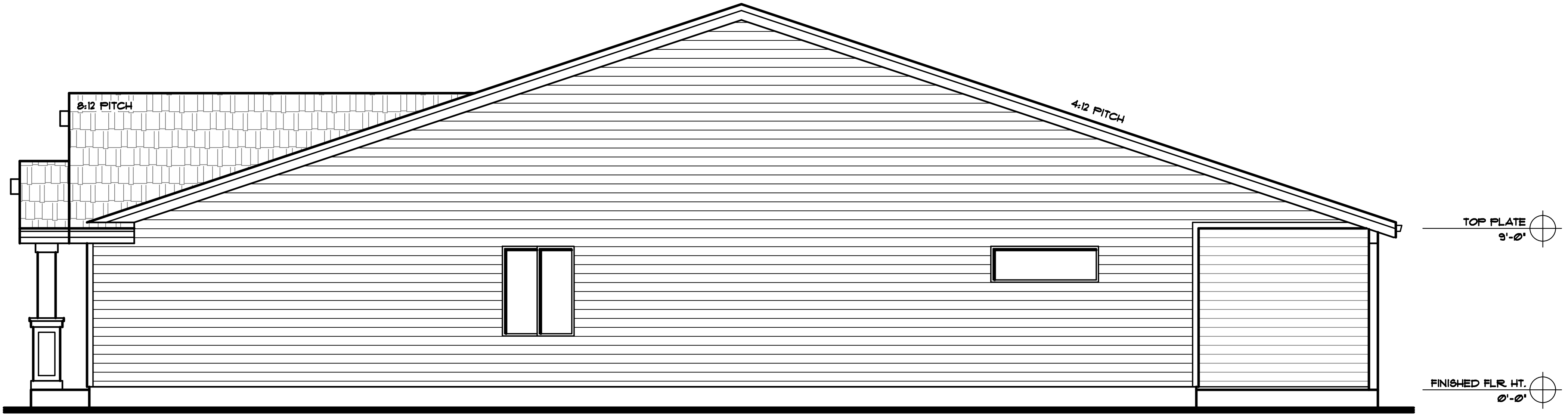
FRONT ELEVATION
1/4"=1'-0"



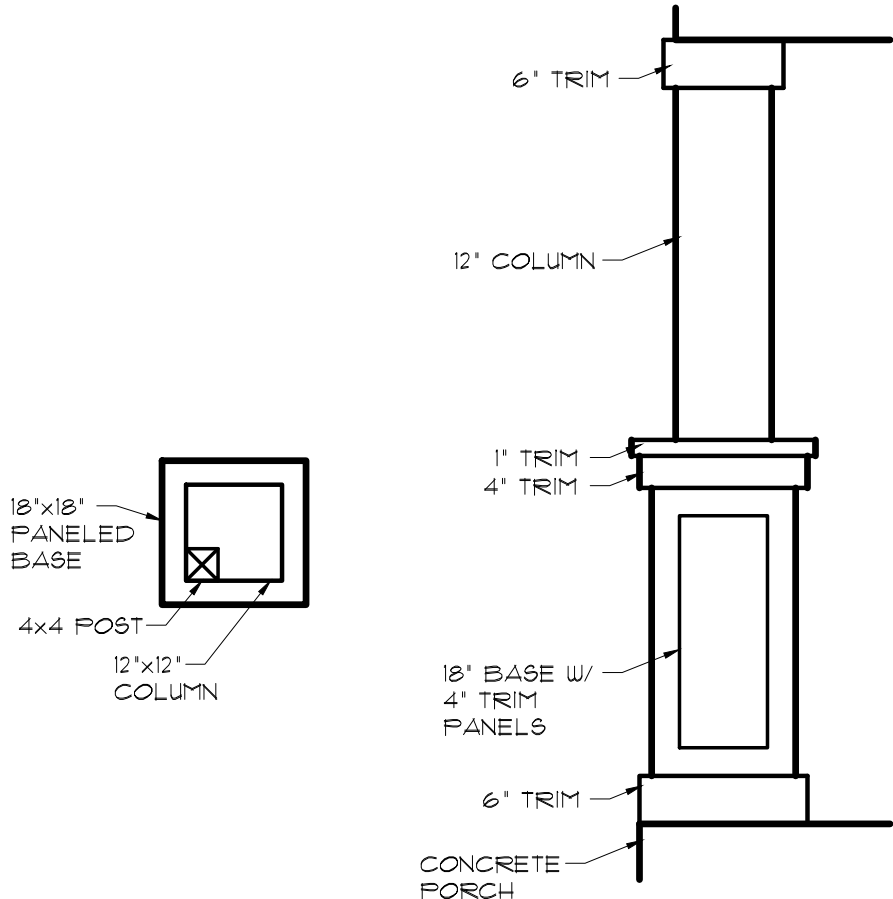
REAR ELEVATION
1/4"=1'-0"



LEFT ELEVATION
1/4"=1'-0"

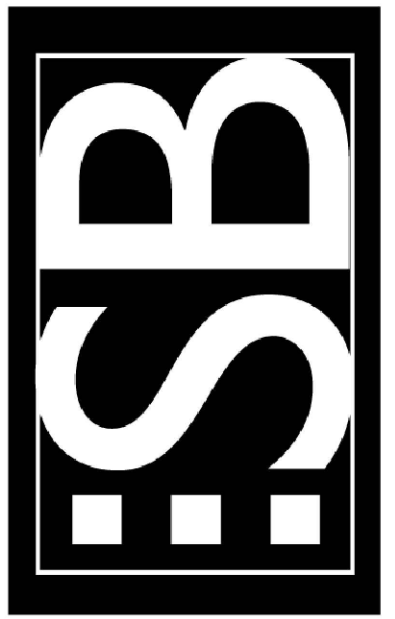


RIGHT ELEVATION
1/4"=1'-0"



COLUMN DETAILS
1/2"=1'-0"

STONE BRIDGE
HOMES NW



PLAN No.	400MOD-STD.
DRAWN BY:	KLH
DATE:	7/26/2019
SCALE:	1/4"=1'-0"
FILE:	2568-1
DRAWINGS:	

EXTERIOR
ELEVATIONS

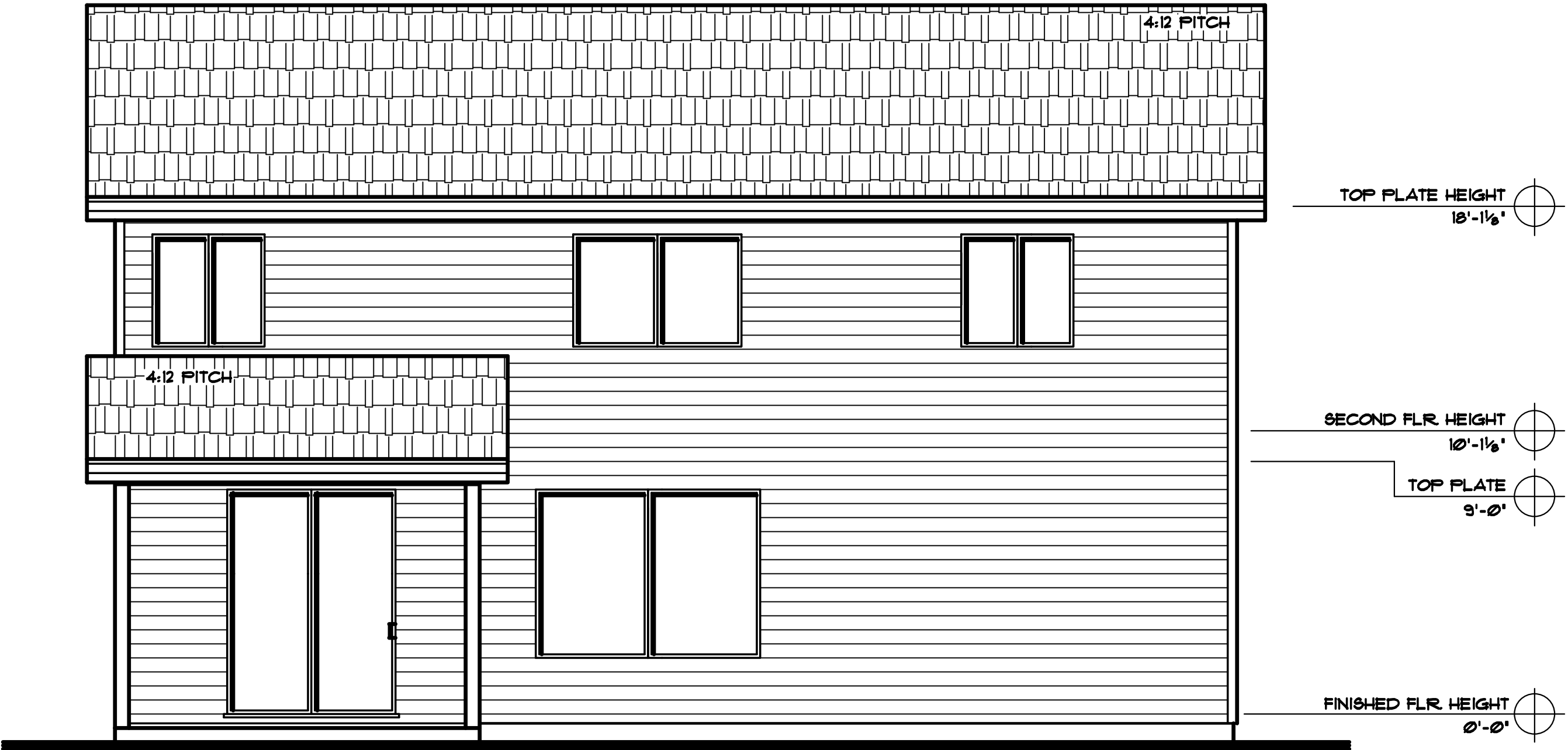
SHEET No.

1
400mod
STANDARD
1,932 SF

*SQUARE FOOTAGE IS AN ESTIMATED FIGURE, IT MAY VARY.
*ALL DIMENSIONS ARE ESTIMATES, SOME MAY VARY.
*PLANS ARE DESIGNED FOR FLAT LOTS. IF MASONRY IS INCLUDED IN PLAN, THERE IS AN ADDITIONAL CHARGE IF HOME SITE IS NOT FLAT.
*ARCHITECTURAL DRAWINGS ARE ESTIMATES OF HOW HOME WILL LOOK.



FRONT ELEVATION
1/4" = 1'-0"



REAR ELEVATION
1/4" = 1'-0"

PLAN 309
2,613 SQ.FT.

STONE BRIDGE
HOMES NW

PLAN No.	309
DRAWN BY:	GF
DATE:	4/4/19
SCALE:	1/4" = 1'-0"
FILE:	2570-309-1

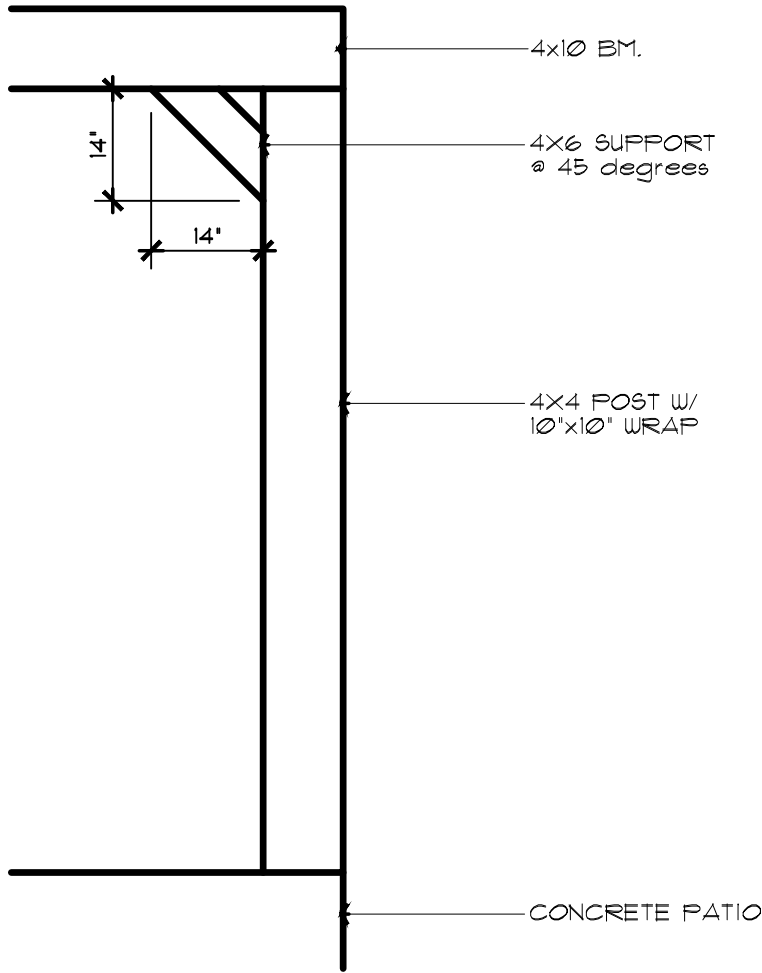
DRAWINGS:

EXTERIOR
ELEVATION

SHEET No.

1

*SQUARE FOOTAGE IS AN ESTIMATED FIGURE, IT MAY VARY.
*ALL DIMENSIONS ARE ESTIMATES, SOME MAY VARY.
*PLANS ARE DESIGNED FOR FLAT LOTS. IF MASONRY IS INCLUDED IN PLAN, THERE IS AN ADDITIONAL CHARGE IF HOME SITE IS NOT FLAT.
*ARCHITECTURAL DRAWINGS ARE ESTIMATES OF HOW HOME WILL LOOK.



COLUMN DETAIL
1/2"=1'-0"



FRONT ELEVATION
1/4"=1'-0"



REAR ELEVATION
1/4"=1'-0"



PLAN No.	308C-FH
DRAWN BY:	KK
DATE:	7/18/19
SCALE:	1/4"=1'-0"
FILE:	2511-1

DRAWINGS:

EXTERIOR
ELEVATION

SHEET No.

1

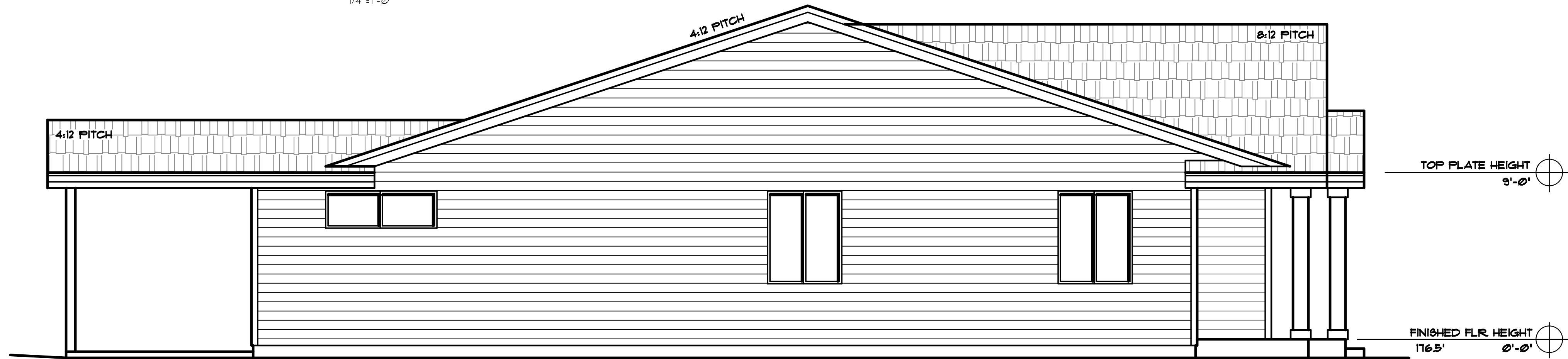
308C
FARMHOUSE
2,924 SQ.FT.

*SQUARE FOOTAGE IS AN ESTIMATED FIGURE, IT MAY VARY.
*ALL DIMENSIONS ARE ESTIMATES, SOME MAY VARY.
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FRONT ELEVATION

1/4"=1'-0"



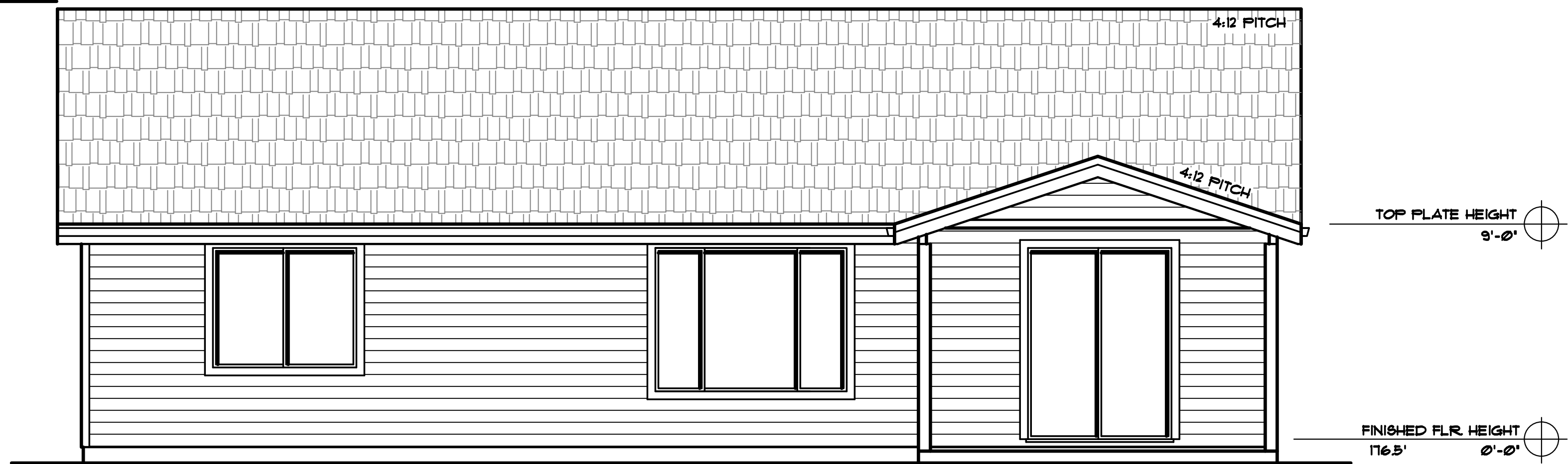
RIGHT ELEVATION

1/4"=1'-0"



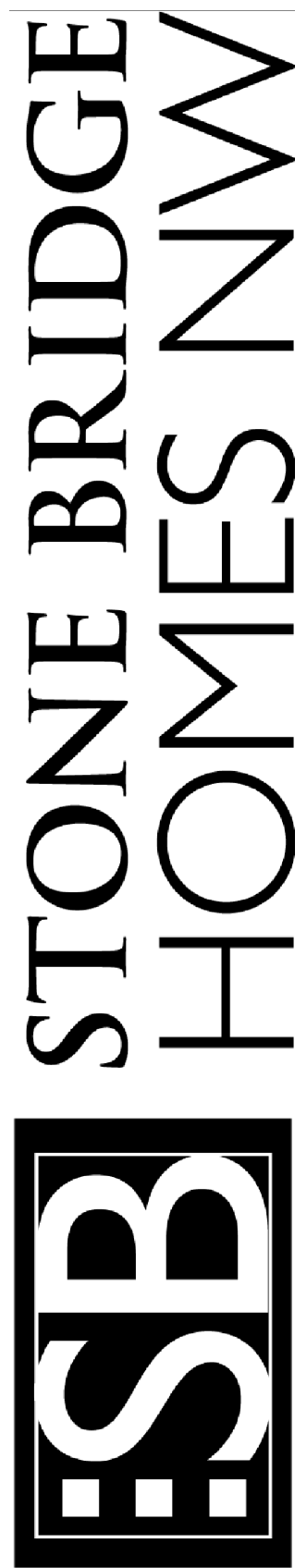
LEFT ELEVATION

1/4"=1'-0"



REAR ELEVATION

1/4"=1'-0"



PLAN No.	355-STD
DRAWN BY:	KLH
DATE:	10/12/18
SCALE:	1/4"=1'-0"
FILE:	2572-1
DRAWINGS:	

EXTERIOR
ELEVATION

SHEET No.
1

355 STD.
1,866 SQ.FT.

*SQUARE FOOTAGE IS AN ESTIMATED FIGURE, IT MAY VARY.
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TOP PLATE HEIGHT
18'-0³/₄"

SECOND FLR HEIGHT
10'-0³/₄"

TOP PLATE
9'-0"

FINISHED FLR HEIGHT
0'-0"



FRONT ELEVATION

1/4"=1'-0"



REAR ELEVATION

1/4"=1'-0"

RIDGELINE
24'-11¹/₈" AFF.

TOP PLATE HEIGHT
18'-1¹/₈"

SECOND FLR HEIGHT
10'-1¹/₈"

TOP PLATE
9'-0"

FINISHED FLR HEIGHT
0'-0"

STONE BRIDGE
HOMES NW

PLAN No.	304
DRAWN BY:	KLH
DATE:	1/14/20
SCALE:	1/4"=1'-0"
FILE:	2582-1

DRAWINGS:

EXTERIOR
ELEVATION

SHEET No.

1

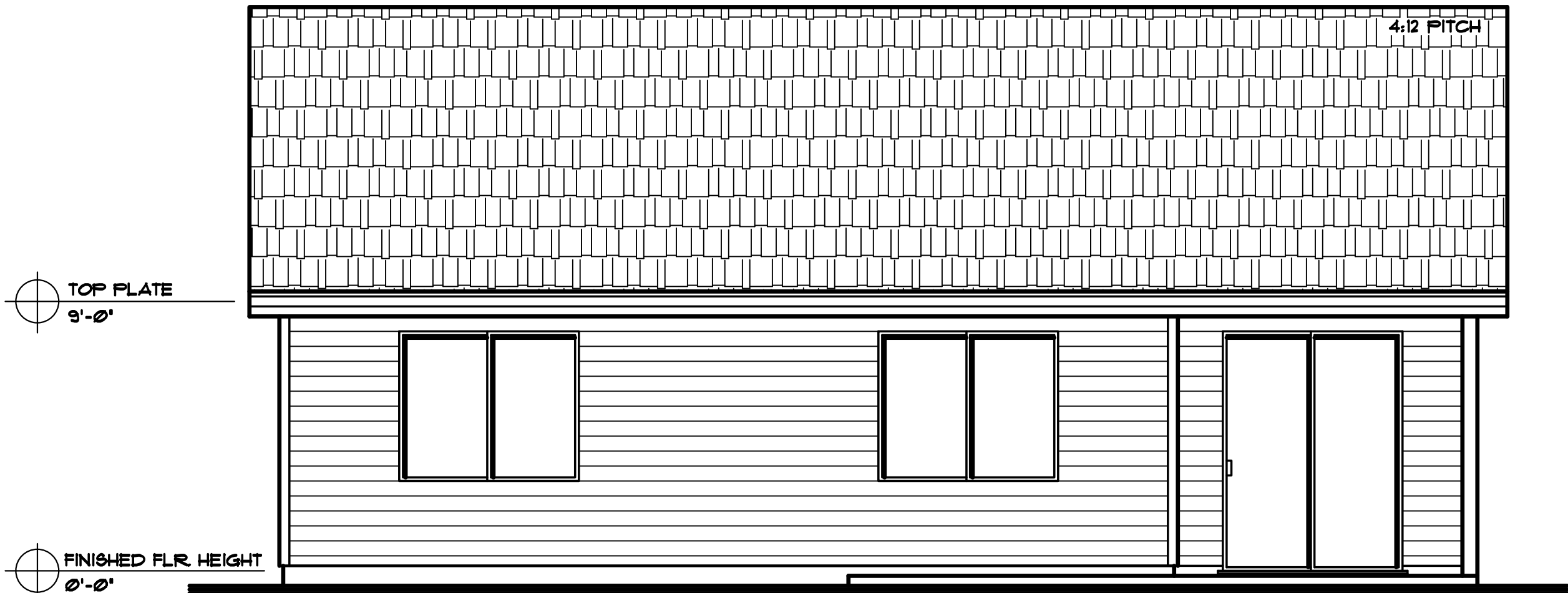
304
STANDARD
2,704 SQ.FT.

*SQUARE FOOTAGE IS AN ESTIMATED FIGURE, IT MAY VARY.
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FRONT ELEVATION

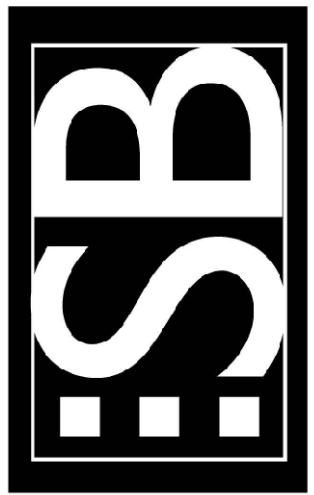
1/4" = 1'-0"



REAR ELEVATION

1/4" = 1'-0"

STONE BRIDGE
HOMES NW



PLAN No.	300-STD.
DRAWN BY:	GF
DATE:	5/18/20
SCALE:	1/4" = 1'-0"
FILE:	2583-1

DRAWINGS:

EXTERIOR
ELEVATION

SHEET No.

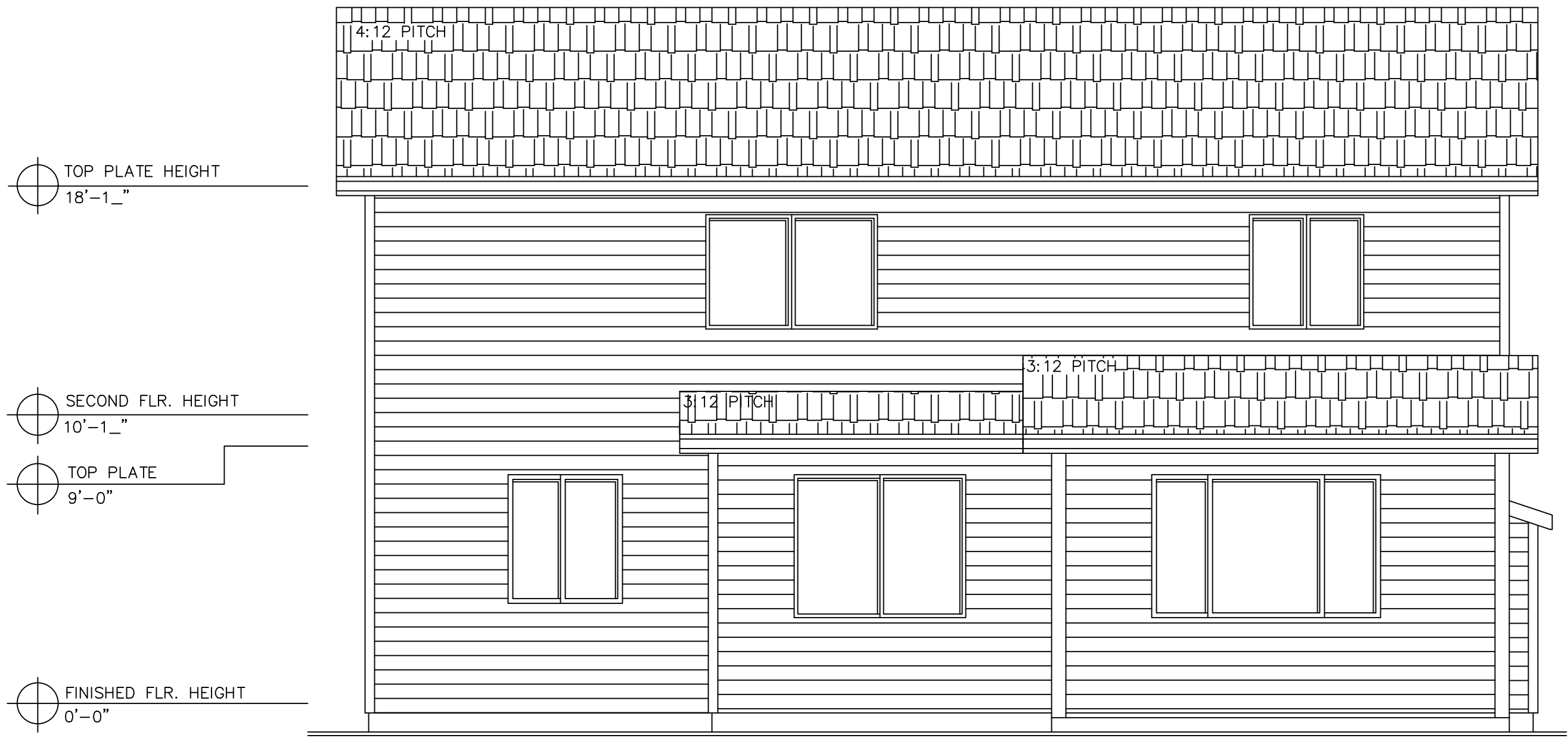
1

300
STANDARD
1,760 SQ.FT.

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FRONT ELEVATION
1/4"=1'-0"



REAR ELEVATION
1/4"=1'-0"

476

STONE BRIDGE
HOMES NW

SB

PLAN No.	438A-STD.
DRAWN BY:	QM
DATE:	3/30/20
SCALE:	1/4"=1'-0"
FILE:	2584-1

DRAWINGS:
EXTERIOR
ELEVATION

SHEET No.

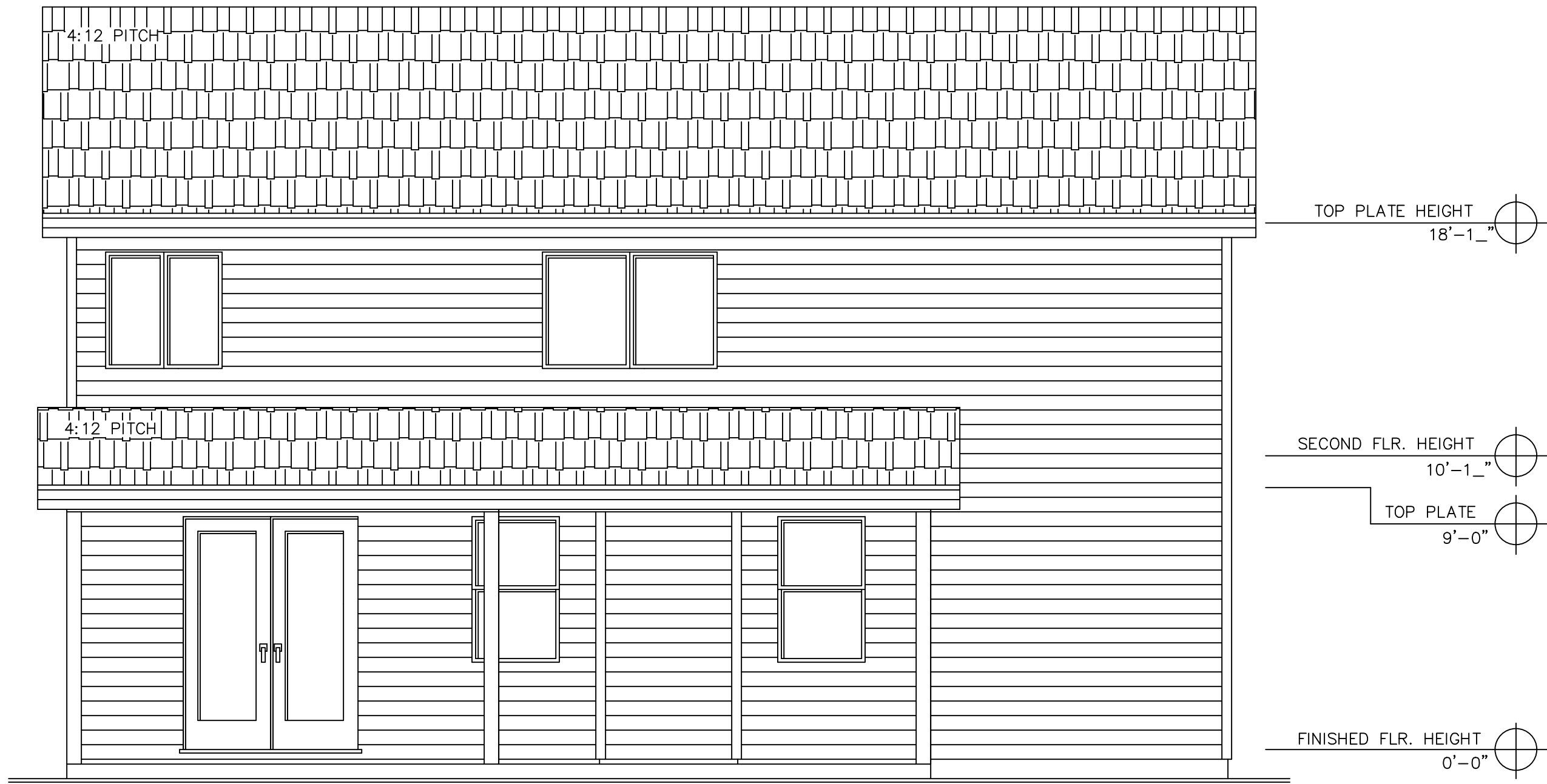
1

438A
STANDARD
2,684 SQ.FT.

*SQUARE FOOTAGE IS AN ESTIMATED FIGURE, IT MAY VARY.
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FRONT ELEVATION
1/4"=1'-0"



REAR ELEVATION
1/4"=1'-0"



PLAN No.	309C
DRAWN BY:	QM/GF
DATE:	5/14/20REV
SCALE:	1/4"=1'-0"
FILE:	2585-1

DRAWINGS:

EXTERIOR ELEVATION

SHEET No.

1

309C STD
2,720 SQ.FT.

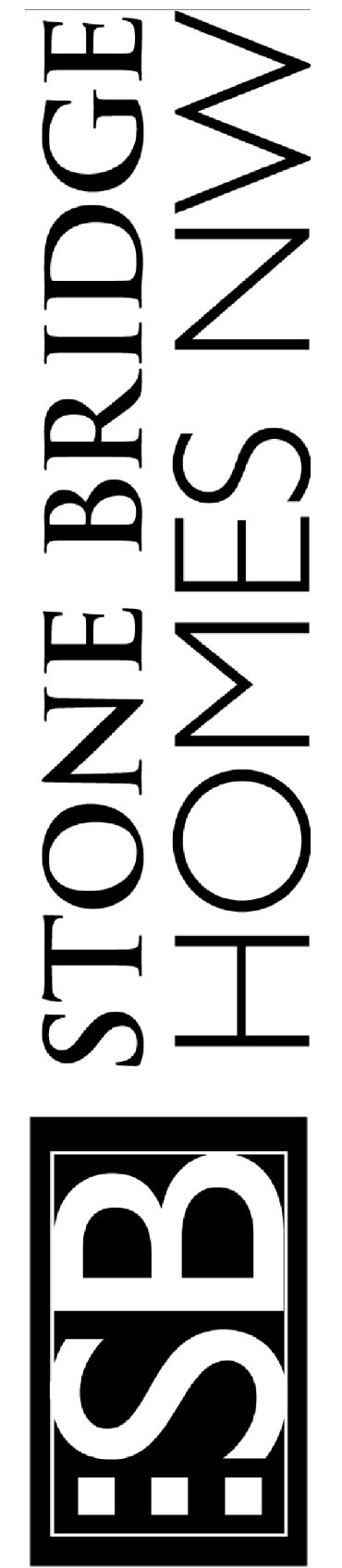
*SQUARE FOOTAGE IS AN ESTIMATED FIGURE, IT MAY VARY.
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FRONT ELEVATION
1/4"=1'-0"



REAR ELEVATION
1/4"=1'-0"



PLAN No.	309A
DRAWN BY:	GF
DATE:	10/10/19
SCALE:	1/4"=1'-0"
FILE:	2586-1

DRAWINGS:

**EXTERIOR
ELEVATION**

SHEET No.

1

309A STD.
2,685 SQ.FT.

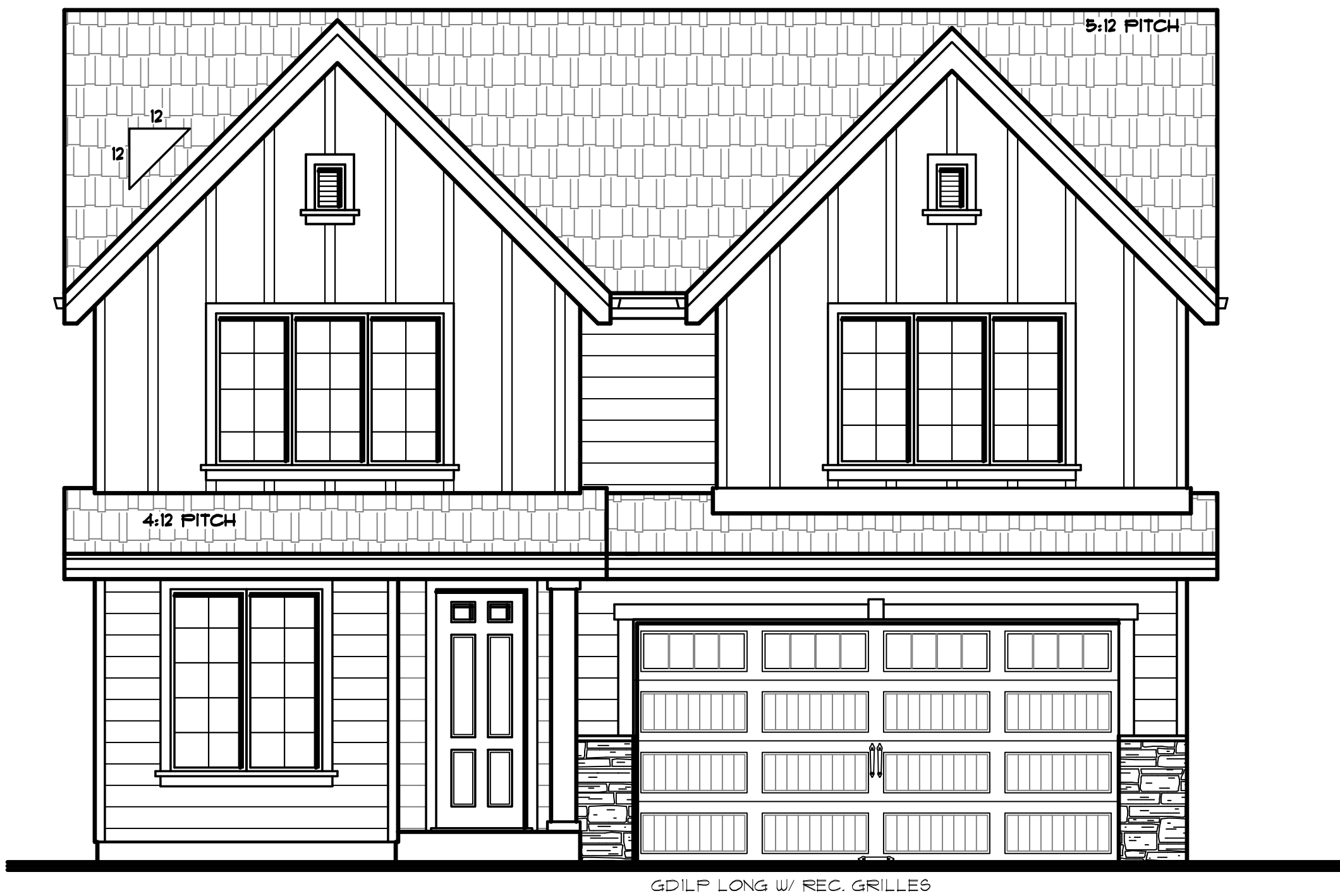
*SQUARE FOOTAGE IS AN ESTIMATED FIGURE, IT MAY VARY.
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TOP PLATE HEIGHT
10'-1 1/8"

SECOND FLR. HEIGHT
10'-1 1/8"

TOP PLATE
9'-0"

FINISHED FLR. HEIGHT
0'-0"



FRONT ELEVATION

1/4" = 1'-0"



REAR ELEVATION

1/4" = 1'-0"

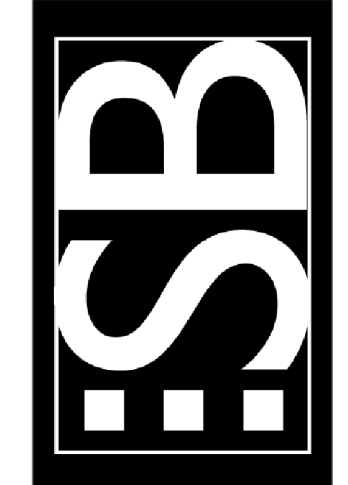
TOP PLATE HEIGHT
10'-1 1/8"

SECOND FLR. HEIGHT
10'-1 1/8"

TOP PLATE
9'-0"

FINISHED FLR. HEIGHT
0'-0"

STONE BRIDGE
HOMES NW



PLAN No.	321A
DRAWN BY:	QM
DATE:	3/14/19
SCALE:	1/4" = 1'-0"
FILE:	2509-321A-1

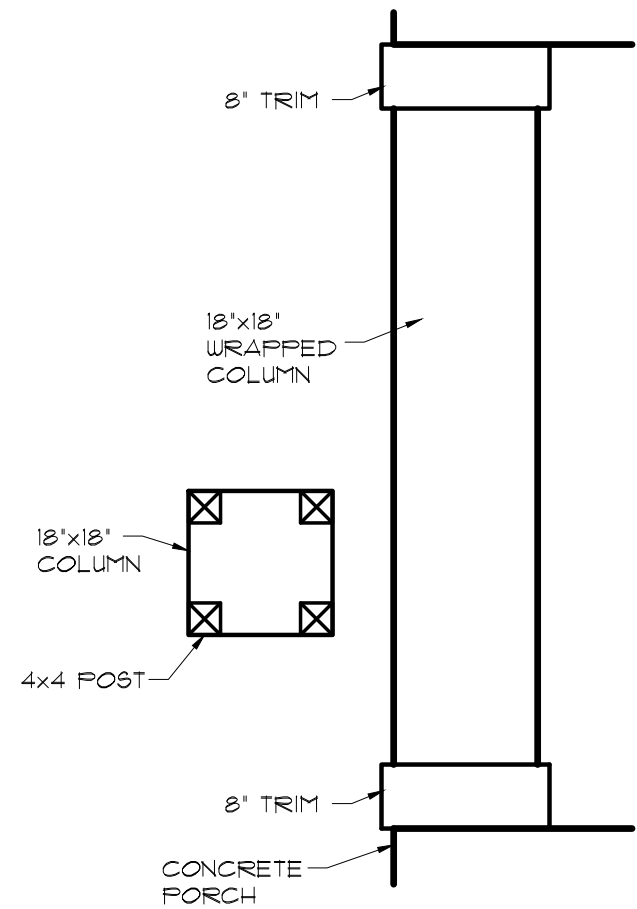
DRAWINGS:
EXTERIOR
ELEVATION

SHEET No.

1

321A-STD.
2,535 SqFt.

*SQUARE FOOTAGE IS AN ESTIMATED FIGURE, IT MAY VARY.
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COLUMN DETAILS
1/2"=1'-0"

TOP PLATE HEIGHT
18'-0 3/4"

SECOND FLR HEIGHT
10'-0 3/4"

TOP PLATE
9'-0"

FINISHED FLR HEIGHT
0'-0"

6" WINDOW TRIM @ FRONT ONLY, TYP.



FRONT ELEVATION
1/4"=1'-0"

TOP PLATE HEIGHT
18'-0 3/4"

SECOND FLR HEIGHT
10'-0 3/4"

TOP PLATE
9'-0"

FINISHED FLR HEIGHT
0'-0"



REAR ELEVATION
1/4"=1'-0"



PLAN No.	302mod-3
DRAWN BY:	KLH
DATE:	2/1/20
SCALE:	1/4"=1'-0"
FILE:	2590-1

DRAWINGS:

EXTERIOR
ELEVATION

SHEET No.

1

302mod
OPTION 3
2,370 SQ.FT.

*SQUARE FOOTAGE IS AN ESTIMATED FIGURE, IT MAY VARY.
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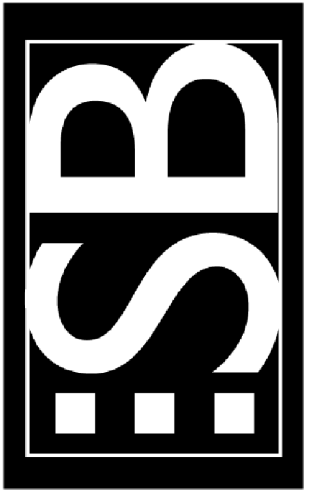


FRONT ELEVATION
1/4" = 1'-0"



REAR ELEVATION
1/4" = 1'-0"

STONE BRIDGE
HOMES NW



PLAN No.	303AMOD-STD.
DRAWN BY:	GF
DATE:	5/18/20
SCALE:	1/4" = 1'-0"
FILE:	2592-1

DRAWINGS:

**EXTERIOR
ELEVATION**

SHEET No.

1

**303Amod
STANDARD
2,278 SQ.FT.**

*SQUARE FOOTAGE IS AN ESTIMATED FIGURE, IT MAY VARY.
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STONE BRIDGE
HOMES NW

SB

PLAN No.	356-STD.
DRAWN BY:	GF
DATE:	1/8/19
SCALE:	1/4"=1'-0"
FILE:	2594-1

DRAWINGS:

EXTERIOR
ELEVATION

SHEET No.

1

356-STD.
2,460 SQ.FT.

- UPPER FLOOR TOP PLATE HT.
18'-1 1/8"
- UPPER FLR. FINISHED FLR. HT.
10'-1 1/8"
- MAIN FLOOR TOP PLATE HT.
9'-0"
- MAIN FLR. FINISHED FLR. HT.
0'-0"



FRONT ELEVATION

1/4"=1'-0"

- UPPER FLOOR TOP PLATE HT.
18'-1 1/8"
- UPPER FLR. FINISHED FLR. HT.
10'-1 1/8"
- MAIN FLOOR TOP PLATE HT.
9'-0"
- MAIN FLR. FINISHED FLR. HT.
0'-0"



REAR ELEVATION

1/4"=1'-0"

2021 Paint Color Trends



 porchdaydreamer.com

REQUEST TO RESERVE SUBDIVISION / CONDOMINIUM NAME

Clackamas County Surveyor's Office
 150 Beaver Creek Road, #325
 Oregon City, OR 97045
 (503) 742-4475
 E-mail address: surveyor@clackamas.us

PLAT NAME REQUESTED:
Location of Plat:
TWP/RANGE:
SECTION#:
TAX LOT#(s):

I understand that if the above name plat is not pending or recorded within two years, the name will be removed from the reserved list.

RESERVED BY:
DATE:
TELEPHONE:
FAX:

() -

() -

EMAIL ADDRESS:
PLAT SURVEYOR: #
NAME OF DEVELOPER:
ADDRESS:
TELEPHONE:
FAX:

() -

() -

EMAIL ADDRESS:
APPROVED BY:
APPROVAL DATE:

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.



EXISTING CONDITIONS PLAN
LAND USE PLANS
TERRITORIAL ROAD SUBDIVISION
CANBY, OREGON

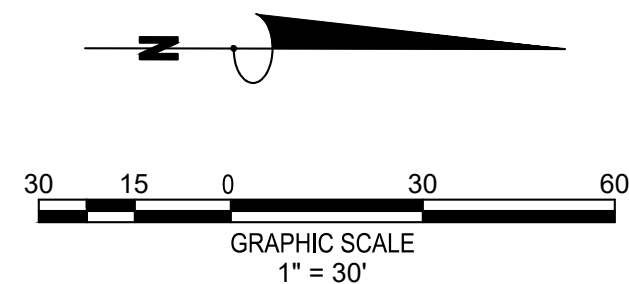
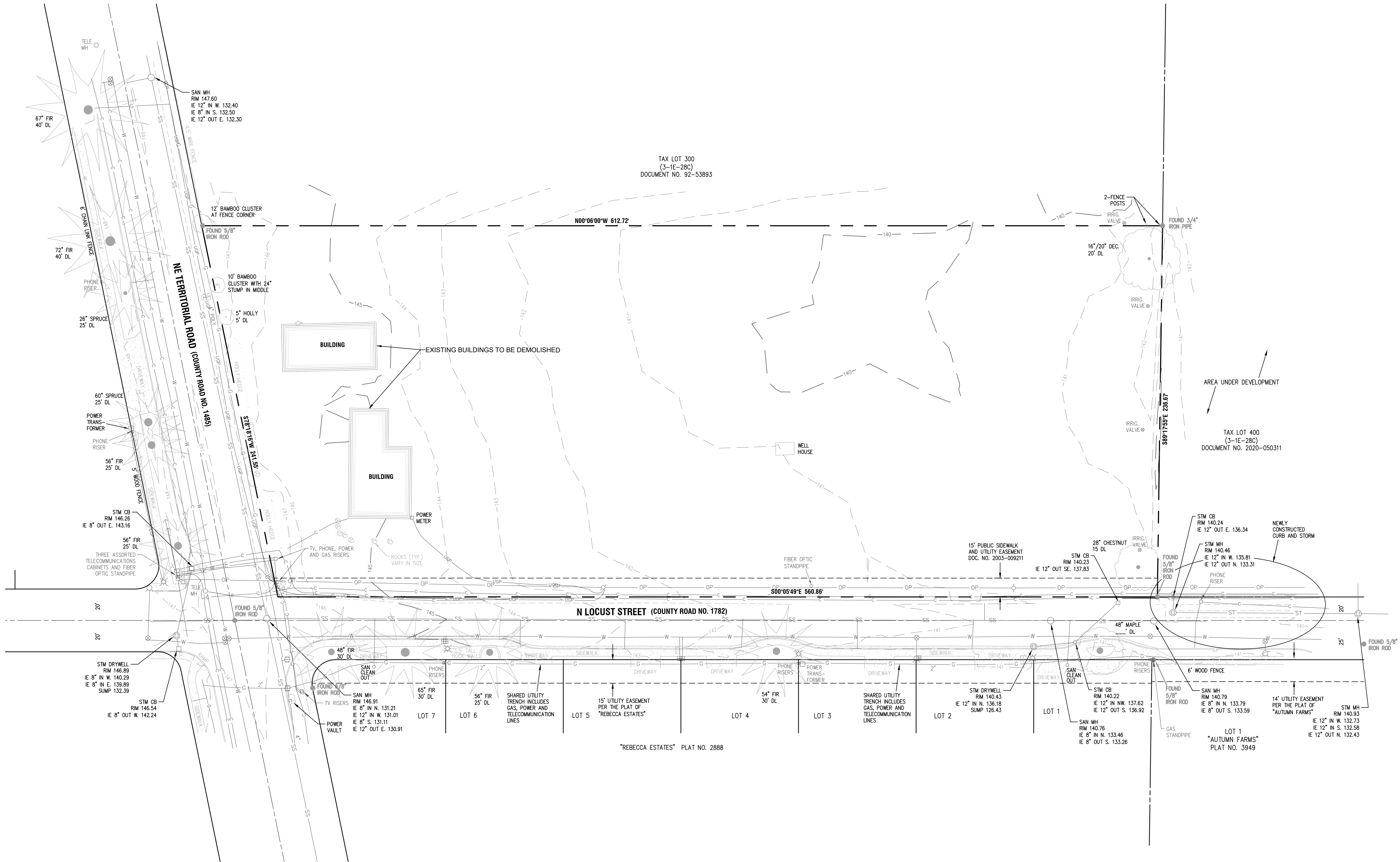


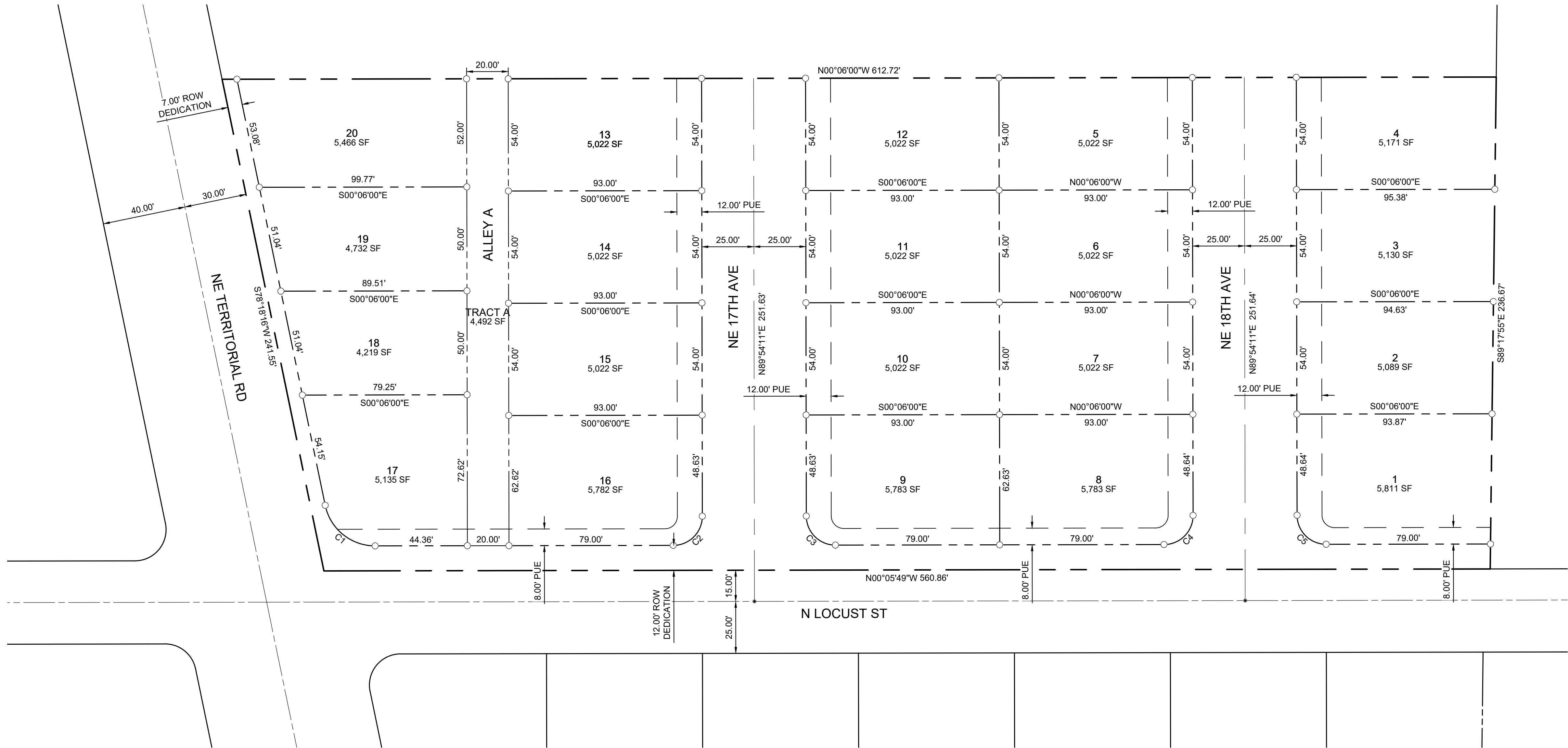
REVISIONS:	

NOT FOR CONSTRUCTION

PM.	B. BERRY
DR.	B. BERRY
JOB NO.	20002753
FILE NO.	20002753-TS
DATE	2/12/2021

SHEET NO.
C002

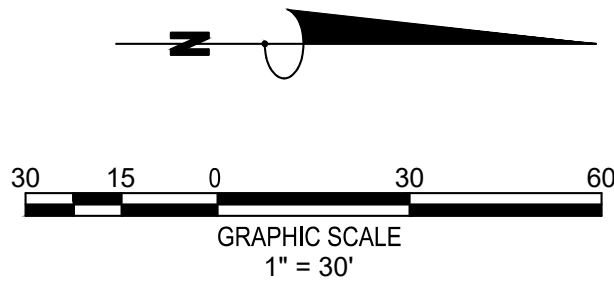




CURVE DATA			
CURVE #	LENGTH	RADIUS	DELTA
C1	33.52'	24.50'	78°24'06"
C2	21.99'	14.00'	90°00'00"
C3	21.99'	14.00'	90°00'00"
C4	21.99'	14.00'	90°00'00"
C5	21.99'	14.00'	90°00'00"

NOTES:

TRACT A TO BE DEDICATED TO THE HOMEOWNERS ASSOCIATION
UPON COMPLETION OF CONSTRUCTION FOR MAINTENANCE.



THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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TENTATIVE PLAT
LAND USE PLANS
TERRITORIAL ROAD SUBDIVISION
CANBY, OREGON

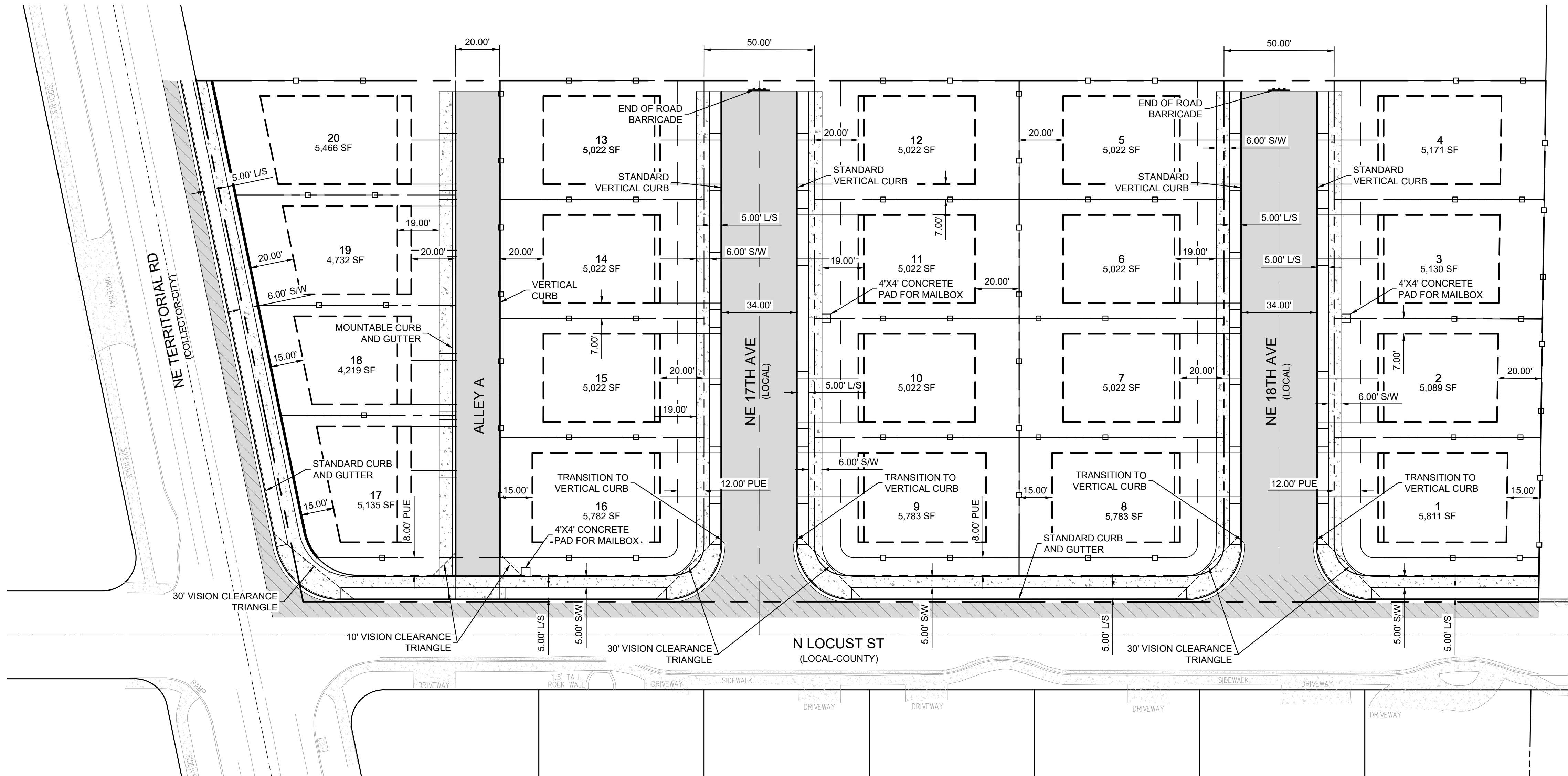


REVISIONS:

NOT FOR CONSTRUCTION

PM.	B. BERRY
DR.	B. BERRY
JOB NO.	20002753
FILE NO.	20002753-TPLAT
DATE	2/12/2021

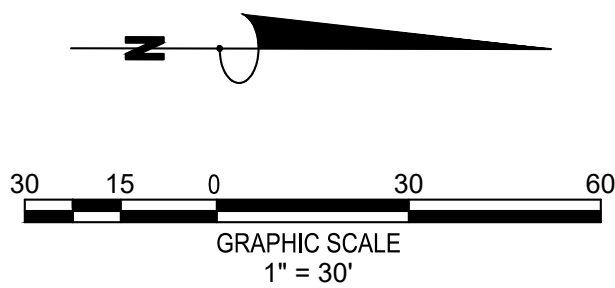
SHEET NO.
C060



L/S = LANDSCAPE STRIP
S/W = SIDEWALK

LEGEND:

- ASPHALT (ON-SITE STREET IMPROVEMENTS): 19,319 SF
- ASPHALT (OFF-SITE STREET IMPROVEMENTS): 6,749 SF
- CONCRETE SIDEWALK: 11,272 SF
- 6' GOOD NEIGHBOR STYLE WOOD FENCE



THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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SITE PLAN
LAND USE PLANS
TERRITORIAL ROAD SUBDIVISION
CANBY, OREGON



REVISIONS:

NOT FOR CONSTRUCTION

PM.	B. BERRY
DR.	B. BERRY
JOB NO.	20002753
FILE NO.	20002753-SP
DATE	2/12/2021

SHEET NO.
C100

Memorandum

To: Kelly Ritz
Stone Bridge Homes NW, LLC

From: Daniel Stumpf, PE

Date: February 10, 2021

Subject: Hemmerling Subdivision
Transportation Analysis Letter



Introduction

This Transportation Analysis Letter (TAL) reports the findings of a limited transportation analysis conducted for the proposed Hemmerling Subdivision, located at 102 NE Territorial Road in Canby, Oregon. The proposed subdivision will include the construction of 20 single-family detached houses, with two public road accesses and a 20-foot-wide private access onto N Locust Street. In addition, the project will include rezoning the site from *Low Density Residential Zone (R-1)* to *Medium Density Residential Zone (R-1.5)*, with a corresponding change to the Comprehensive Plan designation from Low Density Residential (LDR) to Medium Density Residential (MDR).

The purpose of this memorandum is to examine the change in the trip generation potential of the site following a change in zoning from R-1 to R-1.5. The study will review the change in the trip generation potential of the site following the zone change as well as examine peak hour and daily trip generation associated with the proposed development. In addition, sight distances were evaluated at the proposed site access locations along N Locust Road, and a review of nearby transportation facilities and planned projects were conducted in accordance with the *Scope of Work – Canby Hemmerling Subdivision* scoping memorandum, dated January 25, 2020 and prepared by the City of Canby's transportation consultant.

Location Description

Project Site Description

The subject site is located north of NE Territorial Road and west of N Locust Street in Canby, Oregon. The site consists of tax lot 401, which encompasses approximately 3.11 acres. It is surrounded by single-family detached houses to the east and south, an in-process residential subdivision to the north, and agricultural land to the west. Currently, there are two storage structures built on-site, both of which will be removed upon redevelopment of the property. Access to the proposed development will be provided via two proposed public road intersections and a 20-foot-wide private access along N Locust Street.

Vicinity Roadways

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

Table 1: Vicinity Roadway Descriptions

Street Name	Jurisdiction	Functional Classification	Speed (MPH)	On-Street Parking	Curbs & Sidewalks	Bicycle Lanes
NE/NW Territorial Road	City of Canby	Arterial/ Neighborhood Connector	25/30 Posted	Partially Permitted	Partial Both Sides	Partial Both Sides
N Locust Street	City of Canby/ Clackamas County	Local Street	25 Posted	Partially Permitted	Partial Both Sides	None

Notes: Functional Classification and Jurisdiction based on City of Canby TSP.

Figure 1 below presents an aerial image of the nearby vicinity with the project site outlined in yellow.



Figure 1: Aerial Photo of Site Vicinity (Image from Google Earth)

Site Trips

Trip Generation

The proposed Hemmerling Subdivision project will include a change in zoning of the site from R-1 to R-1.5 and the subsequent construction of 20 single-family detached houses. To determine the impacts of the proposed change in zoning, reasonable worst-case development scenarios for the existing and proposed zones were determined utilizing data for the most traffic-intensive uses permitted within each zone. To estimate the number of trips that will be generated by the proposed development, trips rates from the *Trip Generation Manual*¹ were used.

Zone Change

To determine a reasonable worst-case development scenario under the existing and proposed zones, City of Canby's municipal code sections *16.16 R-1 Low Density Residential Zone* and *16.18 R-1.5 Medium Density Residential Zone*, respectively, were referenced and compared to land uses provided within the *Trip Generation Manual*. Following an assessment of permitted uses under both zones, data from the following land use codes were used based on the number of dwelling units that could be developed on the site:

- Existing R-1 Zone – Land use code 210, *Single-Family Detached Housing*.
- Proposed R-1.5 Zone – Land use codes 210 and 220, *Multifamily Housing (Low-Rise)*.

For the existing R-1 zone, the minimum allowed lot area for single-family houses is 7,000 square feet. Assuming approximately 20 to 25 percent of the 3.11 project site area (approximately 135,000 square feet) is dedicated to internal roadways and right-of-way improvements, under the existing zone the site could be developed with up to 15 single-family houses.

For the proposed R-1.5 zone, the minimum allowed lot area for single-family houses is 5,000 square feet. Per the above assumptions, under the proposed zone the site could be developed with up to 20 single-family houses. Alternatively, for attached residential units the maximum dwelling unit density is 13 units per acre for a total of 40 dwelling units.

Based on the above, the trip generation calculations show that under the existing R-1 zone, the subject site could reasonably generate up to 11 morning peak hour trips, 15 evening peak hour trips, and 142 average weekday trips. Under the proposed R-1.5 zone, the highest generating development that could reasonably be constructed on site is the apartment scenario, which would generate 18 morning peak hour trips, 22 evening peak hour trips, and 292 average weekday trips. Accordingly, the net change in the trip generation potential of the site after the proposed rezone is projected to be an increase of 7 morning peak hour trips, 7 evening peak hour trips, and 150 average weekday trips. The trip generation estimates are summarized in Table 2 and detailed trip generation calculations are included as an attachment to this memorandum.

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



Table 2: Trip Generation Summary

	ITE Code	Size	Morning Peak Hour			Evening Peak Hour			Weekday Total
			Enter	Exit	Total	Enter	Exit	Total	
Existing R-1 Zone									
Single-Family Houses	210	15 units	3	8	11	9	6	15	142
Proposed R-1.5 Zone									
Single-Family Houses	210	20 units	4	11	15	13	7	20	188
Multifamily Housing	220	40 units	4	14	18	14	8	22	292
Net Change Between Highest Trip Generating Land Uses Per Zone			1	6	7	5	2	7	150

Proposed Development

The proposed development will include the construction of 20 single-family detached houses, whereby data from land use code 210 from the *Trip Generation Manual* was used, based on the number of dwelling units. As shown in Table 2 above, the proposed development is projected to generate 15 morning peak hour trips, 20 evening peak hour trips, and 188 average weekday trips.

Trip Distribution

Per the direction of DKS Associates, the directional distribution of proposed development site trips to/from the project site was referenced from the estimated distribution utilized in the *Holly Development Concept Plan Transportation Impact Study (TIS)* and *Dodds Subdivision TIS*. The distribution in the two TIS's was based on the City of Canby's TSP Travel Forecasting Tool, for which data was supplied by DKS Associates. The following trip distribution was used for analysis:

- Approximately 45 percent of site trips will travel to/from the south along N Holly Street.
 - At the intersection of OR-99E at N Elm Street, approximately 35 percent of site trips will travel to/from the west along OR-99E and approximately 10 percent will travel to/from the south along S Elm Street.
- Approximately 40 percent of site trips will travel to/from the east along NE Territorial Road.
 - At the intersection of OR-99E at NE Territorial Road, approximately 40 percent of site trips will travel to/from the north along OR-99E.
- Approximately 10 percent of site trips will travel to/from the south along N Ivy Street.
 - At the intersection of OR-99E at N Ivy Street, approximately 10 percent of site trips will travel to/from the south along S Ivy Street.
- Approximately 5 percent of site trips will travel to/from the west along NW Territorial Road.

Based on these distribution percentages, impacts to intersections of significance within City limits are reported below in Table 3.



Table 3: Development Impacts at Intersections of Significance

Approach/ Movement		Net Zone Change Trips		Proposed Development Trips	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
OR-99E at NE Territorial Road					
SB	RT	1	2	2	5
EB	LT	2	1	4	3
Total		3	3	6	8
OR-99E at N Ivy Street					
NB	Th	0	1	0	1
SB	Th	1	0	1	1
Total		1	1	1	2
OR-99E at N Elm Street					
NB	Th	0	1	0	1
SB	Th	1	0	1	1
	RT	2	1	4	2
EB	LT	0	1	2	5
Total		3	3	7	9
N Holly Street at NW Territorial Road					
NB	RT	0	2	2	6
EB	Th	0	0	0	1
WB	LT	3	1	5	3
	Th	0	0	1	0
Total		3	3	8	10

For a conservative assessment of trip impacts, no trip ends/origins were assumed to occur between the site and the intersections in Table 3.



Transportation System and Planned Projects

As requested by the *Scope of Work – Canby Hemmerling Subdivision* scoping memorandum, the City's Transportation System Plan (TSP) was referenced to identify the following:

- Comparison of traffic volumes along NW/NE Territorial Road between existing conditions, project buildout conditions, and the TSP volumes, to evaluate growth along the roadway
- Relevant Capital Improvement Plan (CIP) and TSP improvement projects in the site vicinity

NW/NE Territorial Road Volumes

To determine traffic volumes along NW/NE Territorial Road, traffic volumes were referenced from the following sources:

- TSP Volumes: Year 2009 and year 2030 volumes
- 2021 Existing Conditions
 - Utilize historical daily traffic counts and evening peak hour traffic counts, both collected on August 9, 2018.
 - Apply a 5.97 percent per year linear growth rate over a three-year period to reflect existing 2021 conditions without the influence of COVID-19. Note the 5.97 percent per year growth rate was determine based on a comparison of the year 2009 and 2030 TSP volumes.
 - Add additional trips associated with school traffic based on available data that was utilized in the *Holly DCP TIS* and *Dodds Subdivision TIS*.
- 2023 Buildout Conditions
 - Utilizing the 2018 volumes, apply a 5.97 percent per year linear growth rate over a five-year period to reflect existing 2023 conditions without the influence of COVID-19.
 - Add additional trips associated with school traffic based on available data that was utilized in the *Holly DCP TIS* and *Dodds Subdivision TIS*.
 - Add additional trips associated with the proposed development, as described in the *Site Trips* section.

Table 4 provides a comparison of evening peak hour and daily volumes along NW/NE Territorial Road, between N Holly Street and N Locust Street, based on the above assumptions.



Table 4: Territorial Road Volume Summary

	TSP Volumes			Existing & Buildout Volumes		Percent Difference Between 2023 TSP and Buildout Volumes
	2009	2030	Calculated 2023 Per TSP	2021	2023	
Evening Peak Hour						
NW/NE Territorial Road	355	800	652	586	655	0.46%
Average Daily Volumes						
NW/NE Territorial Road	3,550*	8,000*	6,520*	6,672	7,438	12.34%

* Volumes determine under the assumption the evening peak hour is approximately 10 percent of the total daily volumes.

Transportation Improvement Projects

Several transportation improvement projects described in the City's TSP and CIP are planned within the site vicinity. Table 5 summarizes these planned projects.

Table 5: Development Impacts at Intersections of Significance

Category	ID Code	Location	Description	Planning Level Cost
Transportation System Plan				
Pedestrian	S7	N Holly Street, between Knights Bridge Road and NW Territorial Road	Fill in sidewalk gaps	\$550,000
Pedestrian	S8	NW/NE Territorial Road, between N Holly Street at OR-99E	Fill in sidewalk gaps	\$1,230,000
Bicycle	B3	N Holly Street, between NW 22nd Avenue and NW 6th Avenue	Stripe bike lanes (widen as needed)	\$663,000
Functional Classification	-	NW/NE Territorial Road, between N Holly Street at OR-99E	Downgrade from Arterial	-
Functional Classification	-	N Holly Street, NW Territorial Road and NW 22nd Avenue	Downgrade from Arterial	-
Functional Classification	-	N Ivy Street, between N 6th Avenue and NW/NE Territorial Road	Downgrade from Arterial	-
Capital Improvement Plan (2020-2021)				
Transportation	-	S Ivy Street Sidewalk Project	-	\$1,920,000



Site Access and Circulation Review

Sight Distance Analysis

Intersection sight distances were measured for the three proposed site access intersections along N Locust Street. Sight distances were measured and evaluated in accordance with standards established in *A Policy on Geometric Design of Highways and Streets*² as well as per the *Clackamas County Roadway Standards*. According to AASHTO, the driver's eye is assumed to be 14.5 feet from the near edge of the nearest travel lane (or traveled way) of the intersecting street and at a height of 3.5 feet above the minor-street approach pavement. The vehicle driver's eye-height along the major-street approach is assumed to be 3.5 feet above the cross-street pavement.

Based on a posted speed of 25 mph, the minimum recommended intersection sight distance to ensure safe and efficient operation of the proposed access intersections is 280 feet to the north and south along N Locust Street. Provided any obstructing on-site foliage is removed upon development of the site, sight distances were measured to exceed 300 feet to the north and were measured back to NE Territorial Road to the south of all three proposed access locations.

Both the private access and the south public road access are located less than 280 feet from NE Territorial Road. Specific to the private access, sight distances to the south were measured to be greater than 115 feet for vehicles turning onto N Locust Street from NE Territorial Road. Given vehicles turning at the intersection are not expected to conduct this maneuver at speeds greater than 20 mph, the minimum stopping sight distance standard of 115 feet to ensure safe operation of the private access and south public road access will be met.

Based on the analysis and provided any obstructing on-site foliage is removed following development of the site, adequate sight distances can be made available to ensure safe operation of the three proposed access intersections. No other sight distance related mitigation is necessary or recommended.

Access Spacing

According to the TSP, the segment of N Locust Street north of NE Territorial Road is classified as a local street under the jurisdiction of Clackamas County. However, assuming the roadway segment has or will be transferred to the City, the following access spacing standards are applicable per the City of Canby Municipal Code 16.46.030 (measured centerline to centerline considering accesses on both sides of the street):

- Maximum spacing between roadways: 600 feet
- Minimum spacing between roadways: 150 feet
- Minimum spacing between a roadway and driveway: 50 feet (not applicable for single-family residential driveways per 16.10.070)
- Minimum spacing between driveways: 10 feet

Regarding the *Clackamas County Roadway Standards*:

² American Association of State Highway and Transportation Officials (AASHTO), *A Policy on Geometric Design of Highways and Streets*, 6th Edition, 2011.



- Maximum spacing between full street public connections: 530 feet
- Minimum spacing between full street public connections: 100 feet
- Minimum access spacing along local streets: 25 feet

Relative to the nearest existing and planned public roadways, the proposed north public road access will be located approximately 235 feet north of the proposed south access and approximately 255 feet south of NE 19th Avenue. The proposed south public road access will be located approximately 230 feet north of NE Territorial Road. The proposed private access will be located at distances greater than 50 feet between existing/planned public roadways to the north and south and greater than 10 feet from other driveways along N Locust Street. Based on these findings, both City of and County standards will be met with respect to spacing between the proposed public access roads and other public road intersections. The proposed private access will also meet spacing standards with all other public intersections and driveways along N Locust Street.

On-Site Circulation

The proposed site plan depicts two public road access locations along N Locust Street and a private access between NE Territorial Road and the proposed south public road access. Both public road accesses are intended to serve residents of the proposed subdivision; however, both roadways will extend to the west edge of the project site. Subsequently, the two planned roadways will allow access to the adjacent property to the west if future development were to occur.

Local streets constructed within the City of Canby are required to provide a six-foot sidewalk on both sides of the street. Additionally, improvements along portions of the site frontage with N Locust Street and NE Territorial Road will include new sidewalks. Accordingly, adequate pedestrian facilities are expected to be provided with the proposed development and the overall pedestrian infrastructure/connectivity will be improved in the surrounding area.

Transportation Planning Rule

The Transportation Planning Rule (TPR) is in place to ensure that the transportation system is capable of supporting possible increases in traffic intensity that could result from changes to adopted plans and land-use regulations. The applicable elements of the TPR are each quoted directly in italics below, with responses following.

660-012-0060

- (1) *If an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation (including a zoning map) would significantly affect an existing or planned transportation facility, then the local government must put in place measures as provided in section (2) of this rule, unless the amendment is allowed under section (3), (9) or (10) of this rule. A plan or land use regulation amendment significantly affects a transportation facility if it would:*
- (a) *Change the functional classification of an existing or planned transportation facility (exclusive of correction of map errors in an adopted plan);*



- (b) *Change standards implementing a functional classification system; or*
- (c) *Result in any of the effects listed in paragraphs (A) through (C) of this subsection based on projected conditions measured at the end of the planning period identified in the adopted TSP. As part of evaluating projected conditions, the amount of traffic projected to be generated within the area of the amendment may be reduced if the amendment includes an enforceable, ongoing requirement that would demonstrably limit traffic generation, including, but not limited to, transportation demand management. This reduction may diminish or completely eliminate the significant effect of the amendment.*
- (A) *Types or levels of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility;*
- (B) *Degrade the performance of an existing or planned transportation facility such that it would not meet the performance standards identified in the TSP or comprehensive plan; or*
- (C) *Degrade the performance of an existing or planned transportation facility that is otherwise projected to not meet the performance standards identified in the TSP or comprehensive plan.*

Subsections (a) and (b) are not triggered since the proposed zone change will not impact or alter the functional classification of any existing or planned facility and the proposal does not include a change to any functional classification standards.

Regarding subsection (c), the Oregon Department of Transportation (ODOT) defines a threshold at which a project would "significantly affect" a transportation facility in relation to mobility targets. This threshold is detailed in the Oregon Highway Plan (OHP) Action 1F.5, with the relevant sections quoted below:

If an amendment subject to OAR 660-012-0060 increases the volume to capacity ratio further, or degrades the performance of a facility so that it does not meet an adopted mobility target at the planning horizon, it will significantly affect the facility unless it falls within the thresholds listed below for a small increase in traffic.

...

In applying "avoid further degradation" for state highway facilities already operating above the mobility targets in Table 6 or Table 7 or those otherwise approved by the Oregon Transportation Commission, or facilities projected to be above the mobility targets at the planning horizon, a small increase in traffic does not cause "further degradation" of the facility.

The threshold for a small increase in traffic between the existing plan and the proposed amendment is defined in terms of the increase in total average daily trip volumes as follows:

- *Any proposed amendment that does not increase the average daily trips by more than 400.*

As described in the *Trip Generation* section, the projected net increase in potential daily traffic resulting from the proposed zone change will be 150 trips. This daily trip generation is within the 400-trip impact threshold that is considered a "small increase" in traffic; therefore, the zone change and subsequent development project will not cause further degradation of the nearby transportation facilities. Accordingly, the TPR is satisfied.



Conclusions

The proposed zone change of the site is projected to increase the trip generation potential of the site by 7 morning peak hour trips, 7 evening peak hour trips, and 150 average weekday trips. Accordingly, the net increase in the traffic intensity of the site will not degrade the performance of any existing or planned transportation facility beyond what is currently allowed under the existing zone. Accordingly, the Transportation Planning Rule is satisfied.

The proposed Hemmerling Subdivision is projected to generate 15 morning peak hour trips, 20 evening peak hour trips, and 188 average weekday trips.

Provided any obstructing on-site foliage is removed following development of the site, adequate sight distances can be made available to ensure safe operation of the three proposed access intersections. No other sight distance related mitigation is necessary or recommended.

Following a review of access spacing standards, both City of and County standards will be met with respect to spacing between the proposed public access roads and other public road intersections. The proposed private access will also meet spacing standards with all other public intersections and driveways along N Locust Street.

If you have any questions or concerns regarding this analysis or need further assistance, please do not hesitate to contact us.



[illegible]



TRIP GENERATION CALCULATIONS

Existing R-1 Zone

Land Use: Single-Family Detached Housing
Land Use Code: 210
Setting/Location: General Urban/Suburban
Variable: Dwelling Units
Variable Value: 15

AM PEAK HOUR

Trip Rate: 0.74

	Enter	Exit	Total
Directional Distribution	25%	75%	
Trip Ends	3	8	11

PM PEAK HOUR

Trip Rate: 0.99

	Enter	Exit	Total
Directional Distribution	63%	37%	
Trip Ends	9	6	15

WEEKDAY

Trip Rate: 9.44

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	71	71	142

SATURDAY

Trip Rate: 9.54

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	72	72	144



TRIP GENERATION CALCULATIONS

Proposed R-1.5 Zone/Development

Land Use: Single-Family Detached Housing

Land Use Code: 210

Setting/Location: General Urban/Suburban

Variable: Dwelling Units

Variable Value: 20

AM PEAK HOUR

Trip Rate: 0.74

	Enter	Exit	Total
Directional Distribution	25%	75%	
Trip Ends	4	11	15

PM PEAK HOUR

Trip Rate: 0.99

	Enter	Exit	Total
Directional Distribution	63%	37%	
Trip Ends	13	7	20

WEEKDAY

Trip Rate: 9.44

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	94	94	188

SATURDAY

Trip Rate: 9.54

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	95	95	190



TRIP GENERATION CALCULATIONS

Proposed R-1.5 Zone

Land Use: Multifamily Housing (Low-Rise)

Land Use Code: 220

Setting/Location: General Urban/Suburban

Variable: Dwelling Units

Variable Value: 40

AM PEAK HOUR

Trip Rate: 0.46

	Enter	Exit	Total
Directional Distribution	23%	77%	
Trip Ends	4	14	18

PM PEAK HOUR

Trip Rate: 0.56

	Enter	Exit	Total
Directional Distribution	63%	37%	
Trip Ends	14	8	22

WEEKDAY

Trip Rate: 7.32

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	146	146	292

SATURDAY

Trip Rate: 8.14

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	163	163	326

Total Vehicle Summary

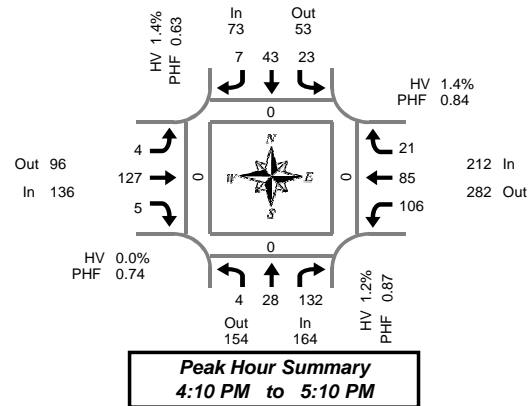


Clay Carney
(503) 833-2740

N Holly St & Territorial Rd

Thursday, August 09, 2018

4:00 PM to 6:00 PM



5-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				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	0	11	0	5	0	0	1	0	8	0	0	17	7	0	0	48	0	0	0	0
4:05 PM	0	0	9	0	1	2	0	0	3	8	0	1	7	6	1	0	37	0	0	0	0
4:10 PM	0	5	11	0	1	1	0	0	0	6	0	0	15	13	1	0	53	0	0	0	0
4:15 PM	0	1	14	0	0	3	2	0	2	8	0	0	10	5	1	0	46	0	0	0	0
4:20 PM	0	2	7	0	6	1	1	0	0	13	0	0	4	11	3	0	48	0	0	0	0
4:25 PM	0	0	10	0	1	3	1	2	0	8	1	0	11	1	1	0	37	0	0	0	0
4:30 PM	0	2	8	0	0	2	0	1	0	13	0	0	13	10	4	0	52	0	0	0	0
4:35 PM	1	6	12	0	4	12	2	0	0	12	0	0	5	4	0	0	58	0	0	0	0
4:40 PM	0	1	14	0	1	2	1	0	0	15	1	0	7	6	1	0	49	0	0	0	0
4:45 PM	1	2	10	0	3	4	0	0	2	16	0	0	9	7	1	0	55	0	0	0	0
4:50 PM	0	0	16	0	1	2	0	0	0	7	2	0	11	3	0	0	42	0	0	0	0
4:55 PM	1	1	5	0	1	4	0	1	0	9	0	0	8	7	2	1	38	0	0	0	0
5:00 PM	1	3	12	0	2	4	0	1	0	10	1	0	6	10	4	0	53	0	0	0	0
5:05 PM	0	5	13	0	3	5	0	0	0	10	0	0	7	8	3	0	54	0	0	0	0
5:10 PM	0	1	14	0	1	0	0	0	0	13	1	0	7	6	4	0	47	0	0	0	0
5:15 PM	0	2	3	0	2	2	0	0	0	10	0	0	9	10	1	0	39	0	0	1	0
5:20 PM	0	2	11	0	5	3	1	1	0	6	0	0	11	8	1	0	48	0	0	0	0
5:25 PM	0	1	11	0	1	0	0	0	1	15	0	0	8	7	2	0	46	0	0	0	0
5:30 PM	0	2	10	0	2	4	0	0	0	10	0	0	8	9	2	0	47	0	0	0	0
5:35 PM	0	2	6	0	4	4	1	0	0	9	1	0	6	10	3	0	46	0	0	0	0
5:40 PM	0	2	8	0	3	4	0	0	3	3	0	0	9	1	1	1	34	0	0	0	0
5:45 PM	0	4	6	0	4	4	0	1	0	5	1	0	7	8	3	0	42	0	2	0	0
5:50 PM	2	4	6	0	2	0	0	0	2	6	0	0	4	5	1	0	32	0	2	0	0
5:55 PM	0	5	6	0	3	6	1	0	0	8	0	0	3	3	2	0	37	0	0	0	0
Total Survey	6	53	233	0	56	72	10	8	13	228	8	1	202	165	42	2	1,088	0	4	1	0

15-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				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	5	31	0	7	3	0	1	3	22	0	1	39	26	2	0	138	0	0	0	0
4:15 PM	0	3	31	0	7	7	4	2	2	29	1	0	25	17	5	0	131	0	0	0	0
4:30 PM	1	9	34	0	5	16	3	1	0	40	1	0	25	20	5	0	159	0	0	0	0
4:45 PM	2	3	31	0	5	10	0	1	2	32	2	0	28	17	3	1	135	0	0	0	0
5:00 PM	1	9	39	0	6	9	0	1	0	33	2	0	20	24	11	0	154	0	0	0	0
5:15 PM	0	5	25	0	8	5	1	1	1	31	0	0	28	25	4	0	133	0	0	1	0
5:30 PM	0	6	24	0	9	12	1	0	3	22	1	0	23	20	6	1	127	0	0	0	0
5:45 PM	2	13	18	0	9	10	1	1	2	19	1	0	14	16	6	0	111	0	4	0	0
Total Survey	6	53	233	0	56	72	10	8	13	228	8	1	202	165	42	2	1,088	0	4	1	0

Peak Hour Summary

4:10 PM to 5:10 PM

By Approach	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	164	154	318	0	73	53	126	5	136	96	232	0	212	282	494	1	585	0	0	0	0
%HV	1.2%				1.4%				0.0%				1.4%				1.0%				
PHF	0.87				0.63				0.74				0.84				0.90				

By Movement	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	4	28	132	164	23	43	7	73	4	127	5	136	106	85	21	212	585
%HV	0.0%	0.0%	1.5%	1.2%	0.0%	2.3%	0.0%	1.4%	0.0%	0.0%	0.0%	0.0%	1.9%	1.2%	0.0%	1.4%	1.0%
PHF	0.50	0.78	0.83	0.87	0.72	0.60	0.44	0.63	0.50	0.74	0.42	0.74	0.91	0.73	0.58	0.84	0.90

Rolling Hour Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				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	3	20	127	0	24	36	7	5	7	123	4	1	117	80	15	1	563	0	0	0	0
4:15 PM	4	24	135	0	23	42	7	5	4	134	6	0	98	78	24	1	579	0	0	0	0
4:30 PM	4	26	129	0	24	40	4	4	3	136	5	0	101	86	23	1	581	0	0	1	0
4:45 PM	3	23	119	0	28	36	2	3	6	118	5	0	99	86	24	2	549	0	0	1	0
5:00 PM	3	33	106	0	32	36	3	3	6	105	4	0	85	85	27	1	525	0	4	1	0

Heavy Vehicle Summary

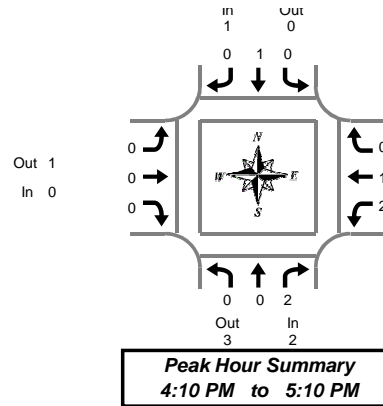


Clay Carney
(503) 833-2740

N Holly St & Territorial Rd

Thursday, August 09, 2018

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 Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
4:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:10 PM	0	0	1	1	0	0	0	0	0	0	0	0	1	1	0	2	3
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:25 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
4:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
4:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
5:40 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
5:45 PM	0	0	0	0	1	0	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	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	0	1	2	3	1	2	0	3	1	0	0	1	3	1	0	4	11

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

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	1	1	0	0	0	0	0	0	0	0	2	1	0	3	4
4:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
4:45 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 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	1	0	1	1	0	0	1	0	0	0	0	2
5:45 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
Total Survey	0	1	2	3	1	2	0	3	1	0	0	1	3	1	0	4	11

Heavy Vehicle Peak Hour Summary 4:10 PM to 5:10 PM

By Approach	Northbound N Holly St			Southbound N Holly St			Eastbound Territorial Rd			Westbound Territorial Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	2	3	5	1	0	1	0	1	1	3	2	5	6
PHF	0.50			0.25			0.00			0.38			0.50

By Movement	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	2	2	0	1	0	1	0	0	0	0	2	1	0	3	6
PHF	0.00	0.00	0.50	0.50	0.00	0.25	0.00	0.25	0.00	0.00	0.00	0.00	0.50	0.25	0.00	0.38	0.50

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

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	2	2	0	1	0	1	0	0	0	0	3	1	0	4	7
4:15 PM	0	0	1	1	0	1	0	1	0	0	0	0	1	0	0	1	3
4:30 PM	0	1	1	2	0	0	0	0	0	0	0	0	1	0	0	1	3
4:45 PM	0	1	1	2	0	1	0	1	1	0	0	1	0	0	0	0	4
5:00 PM	0	1	0	1	1	1	0	2	1	0	0	1	0	0	0	0	4

Peak Hour Summary

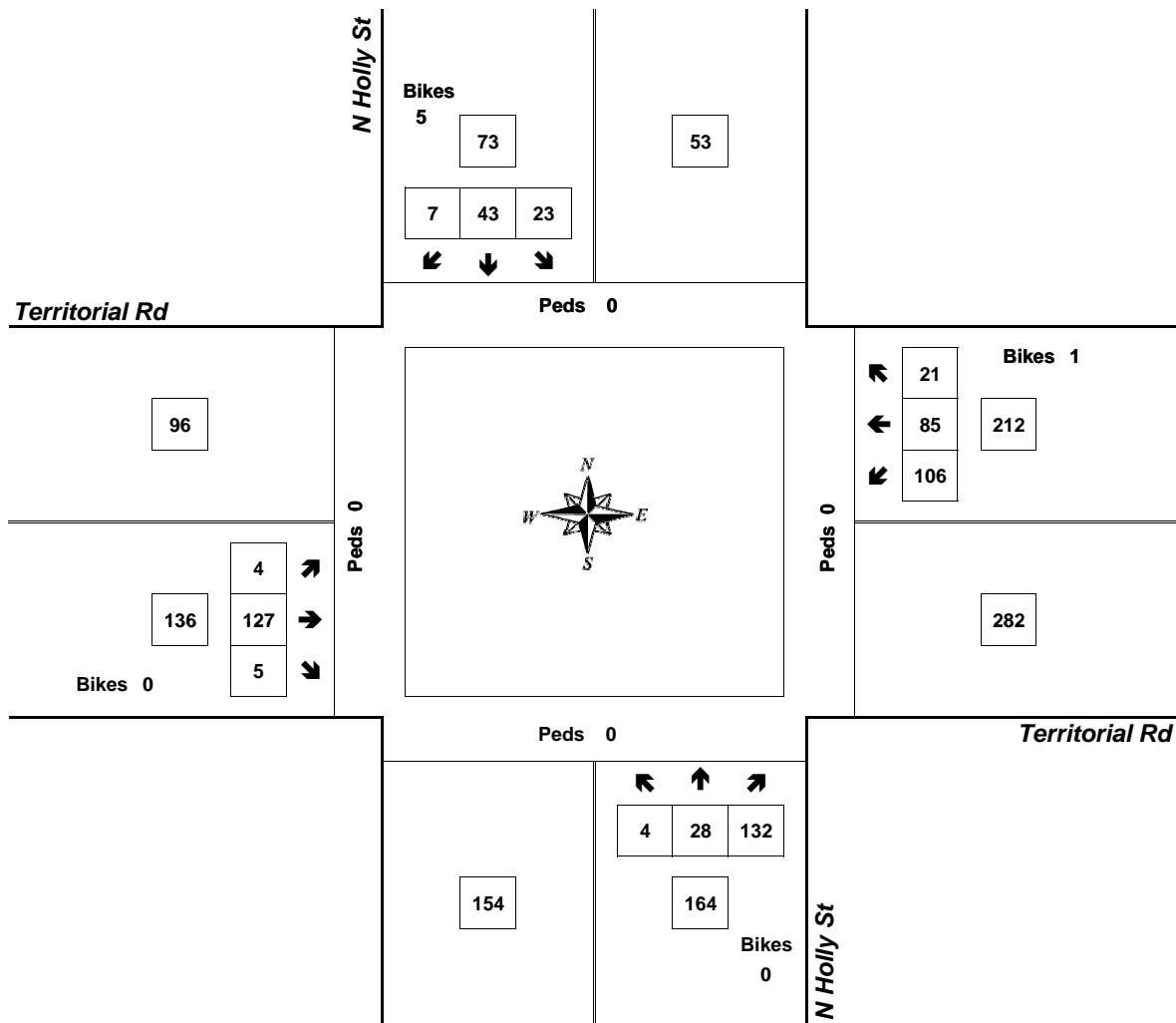


Clay Carney
(503) 833-2740

N Holly St & Territorial Rd

4:10 PM to 5:10 PM

Thursday, August 09, 2018



Approach	PHF	HV%	Volume
EB	0.74	0.0%	136
WB	0.84	1.4%	212
NB	0.87	1.2%	164
SB	0.63	1.4%	73
Intersection	0.90	1.0%	585

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

All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740

Site Code: 1
Territorial Rd W-O Locust St

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
08/09/18	0	7	1	0	0	0	0	0	0	0	0	0	0	1	9
01:00	0	7	0	0	0	0	0	0	0	0	0	0	0	0	7
02:00	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
03:00	0	4	1	0	1	0	0	0	0	0	0	0	0	0	6
04:00	0	13	2	0	3	0	0	0	0	0	0	0	0	0	18
05:00	0	23	12	0	5	0	0	0	0	0	0	0	0	0	40
06:00	2	53	17	0	4	1	0	0	0	0	0	0	0	0	77
07:00	2	91	27	0	7	0	0	0	0	0	0	0	0	2	129
08:00	4	81	25	1	9	0	0	0	0	0	0	0	0	8	128
09:00	5	84	32	0	13	1	0	0	0	0	0	0	0	2	137
10:00	4	96	30	0	6	2	0	0	0	0	0	0	0	4	142
11:00	4	100	39	0	20	0	0	0	0	0	0	0	0	1	164
12 PM	2	144	22	2	5	0	0	0	0	0	0	0	0	8	183
13:00	8	139	33	1	12	1	0	1	1	0	0	0	0	8	204
14:00	5	166	32	0	13	2	0	0	0	0	0	0	0	3	221
15:00	3	176	36	0	15	0	0	1	0	0	0	0	0	2	233
16:00	9	202	48	0	15	1	0	0	0	0	0	0	0	6	281
17:00	4	188	36	0	17	1	0	0	0	0	0	0	0	8	254
18:00	4	161	32	0	7	0	0	0	0	0	0	0	0	1	205
19:00	3	105	17	0	5	0	0	0	0	0	0	0	0	1	131
20:00	1	101	11	0	5	0	0	0	0	0	0	0	0	2	120
21:00	2	70	11	0	2	0	0	0	1	0	0	0	0	0	86
22:00	0	38	7	0	3	0	0	0	0	0	0	0	0	0	48
23:00	0	18	0	0	1	0	0	0	0	0	0	0	0	0	19
Total	62	2068	472	4	168	9	0	2	2	0	0	0	0	57	2844
Percent	2.2%	72.7%	16.6%	0.1%	5.9%	0.3%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	2.0%	
AM Peak	09:00	11:00	11:00	08:00	11:00	10:00								08:00	
Vol.	5	100	39	1	20	2								8	
PM Peak	16:00	16:00	16:00	12:00	17:00	14:00		13:00	13:00					12:00	
Vol.	9	202	48	2	17	2		1	1					8	
Grand Total	62	2068	472	4	168	9	0	2	2	0	0	0	0	57	2844
Percent	2.2%	72.7%	16.6%	0.1%	5.9%	0.3%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	2.0%	

All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740

Site Code: 1
Territorial Rd W-O Locust St

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
08/09/18	0	7	1	0	0	0	0	0	0	0	0	0	0	0	8
01:00	0	3	2	0	1	0	0	0	0	0	0	0	0	0	6
02:00	0	2	1	0	1	0	0	0	0	0	0	0	0	0	4
03:00	0	8	0	0	1	0	0	0	0	0	0	0	0	0	9
04:00	0	13	4	0	2	0	0	0	0	0	0	0	0	0	19
05:00	4	47	15	0	7	1	0	0	0	0	0	0	0	0	74
06:00	1	83	31	0	14	0	0	0	0	0	0	0	0	0	129
07:00	3	90	25	0	12	1	0	1	0	0	0	0	0	4	136
08:00	0	99	31	1	11	0	0	0	1	0	0	0	0	3	146
09:00	1	128	34	0	22	1	0	0	0	0	0	0	0	4	190
10:00	2	75	43	1	13	2	0	1	0	0	0	0	0	5	142
11:00	5	118	38	0	20	1	0	1	2	0	0	0	0	1	186
12 PM	5	127	30	2	12	0	0	0	0	0	0	0	0	8	184
13:00	3	118	35	2	10	1	0	0	0	0	0	0	0	8	177
14:00	2	164	46	0	14	1	0	1	1	0	0	0	0	9	238
15:00	1	140	39	1	15	0	0	1	0	0	0	0	0	5	202
16:00	6	132	34	0	33	0	0	0	0	0	0	0	0	14	219
17:00	2	141	38	0	10	0	0	0	0	0	0	0	0	11	202
18:00	0	119	34	0	9	0	0	0	0	0	0	0	0	3	165
19:00	1	76	29	0	4	0	0	0	1	0	0	0	0	1	112
20:00	2	70	24	0	5	0	0	0	0	0	0	0	0	2	103
21:00	1	54	9	0	3	0	0	0	0	0	0	0	0	0	67
22:00	0	25	8	0	0	0	0	0	0	0	0	0	0	0	33
23:00	0	24	4	0	2	0	0	0	0	0	0	0	0	0	30
Total	39	1863	555	7	221	8	0	5	5	0	0	0	0	78	2781
Percent	1.4%	67.0%	20.0%	0.3%	7.9%	0.3%	0.0%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	2.8%	
AM Peak	11:00	09:00	10:00	08:00	09:00	10:00		07:00	11:00					10:00	
Vol.	5	128	43	1	22	2		1	2					5	
PM Peak	16:00	14:00	14:00	12:00	16:00	13:00		14:00	14:00					16:00	
Vol.	6	164	46	2	33	1		1	1					14	
Grand Total	39	1863	555	7	221	8	0	5	5	0	0	0	0	78	2781
Percent	1.4%	67.0%	20.0%	0.3%	7.9%	0.3%	0.0%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	2.8%	

All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740

Site Code: 1
Territorial Rd W-O Locust St

EB

Start Time	15	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	85th Percent	95th Percent
08/09/18	1	0	2	5	1	0	0	0	0	0	0	0	0	0	9	29	32
01:00	0	0	0	7	0	0	0	0	0	0	0	0	0	0	7	29	29
02:00	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	34	34
03:00	0	0	2	3	1	0	0	0	0	0	0	0	0	0	6	30	33
04:00	0	0	0	10	7	1	0	0	0	0	0	0	0	0	18	33	35
05:00	0	0	4	17	17	2	0	0	0	0	0	0	0	0	40	33	35
06:00	0	1	4	28	35	9	0	0	0	0	0	0	0	0	77	34	37
07:00	2	1	12	76	34	3	1	0	0	0	0	0	0	0	129	32	34
08:00	8	3	15	60	30	11	1	0	0	0	0	0	0	0	128	33	37
09:00	2	3	25	55	42	8	2	0	0	0	0	0	0	0	137	33	36
10:00	5	0	17	71	36	12	1	0	0	0	0	0	0	0	142	33	37
11:00	2	0	17	48	80	16	1	0	0	0	0	0	0	0	164	34	37
12 PM	9	2	31	91	44	6	0	0	0	0	0	0	0	0	183	32	34
13:00	8	4	37	91	56	8	0	0	0	0	0	0	0	0	204	32	34
14:00	3	0	23	118	68	9	0	0	0	0	0	0	0	0	221	33	34
15:00	3	0	18	90	95	24	3	0	0	0	0	0	0	0	233	34	38
16:00	8	1	15	112	124	18	3	0	0	0	0	0	0	0	281	34	36
17:00	8	1	14	109	92	27	3	0	0	0	0	0	0	0	254	34	38
18:00	2	0	15	84	91	12	1	0	0	0	0	0	0	0	205	34	36
19:00	2	0	24	56	41	4	3	1	0	0	0	0	0	0	131	33	36
20:00	3	1	18	68	28	2	0	0	0	0	0	0	0	0	120	32	34
21:00	0	0	10	51	25	0	0	0	0	0	0	0	0	0	86	32	34
22:00	0	0	7	25	12	2	2	0	0	0	0	0	0	0	48	33	39
23:00	0	0	1	13	5	0	0	0	0	0	0	0	0	0	19	32	34
Total	66	17	311	1288	966	174	21	1	0	0	0	0	0	0	2844		
Percent	2.3%	0.6%	10.9%	45.3%	34.0%	6.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	08:00	08:00	09:00	07:00	11:00	11:00	09:00								11:00		
Vol.	8	3	25	76	80	16	2								164		
PM Peak	12:00	13:00	13:00	14:00	16:00	17:00	15:00	19:00							16:00		
Vol.	9	4	37	118	124	27	3	1							281		
Grand Total	66	17	311	1288	966	174	21	1	0	0	0	0	0	0	2844		
Percent	2.3%	0.6%	10.9%	45.3%	34.0%	6.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

15th Percentile : 25 MPH
50th Percentile : 28 MPH
85th Percentile : 33 MPH
95th Percentile : 36 MPH

Statistics 10 MPH Pace Speed : 26-35 MPH
Number in Pace : 2254
Percent in Pace : 79.3%
Number of Vehicles > 55 MPH : 0
Percent of Vehicles > 55 MPH : 0.0%
Mean Speed(Average) : 29 MPH

All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740

Site Code: 1
Territorial Rd W-O Locust St

WB

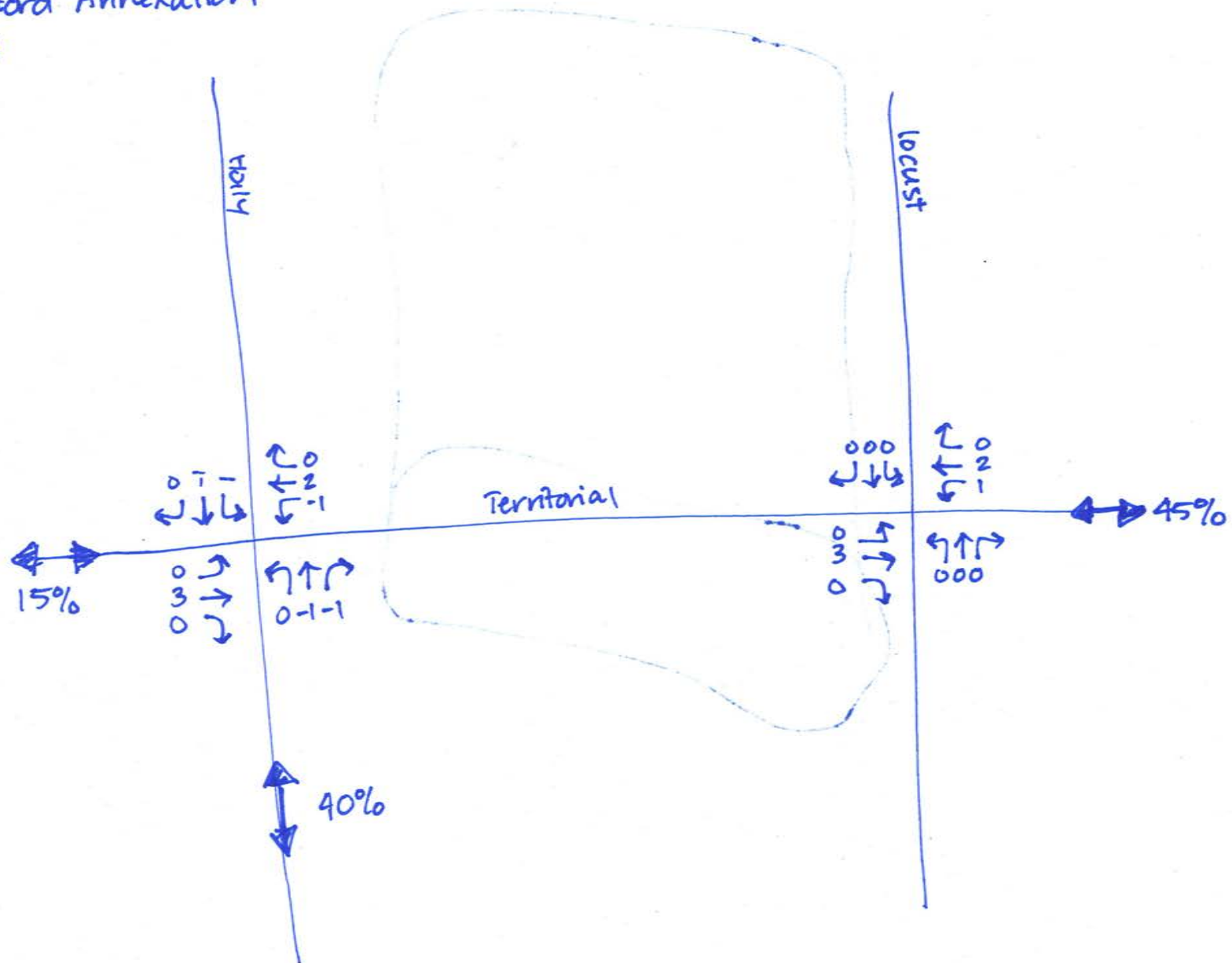
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	85th Percent	95th Percent
08/09/18	0	0	0	5	3	0	0	0	0	0	0	0	0	0	8	33	34
01:00	0	0	0	3	2	0	1	0	0	0	0	0	0	0	6	40	43
02:00	0	0	0	1	2	1	0	0	0	0	0	0	0	0	4	37	39
03:00	0	0	0	2	6	1	0	0	0	0	0	0	0	0	9	34	37
04:00	0	1	2	4	9	2	0	1	0	0	0	0	0	0	19	35	45
05:00	0	1	3	20	28	18	3	1	0	0	0	0	0	0	74	38	40
06:00	0	0	4	24	72	27	1	1	0	0	0	0	0	0	129	36	39
07:00	4	1	7	33	67	21	3	0	0	0	0	0	0	0	136	35	39
08:00	3	1	14	55	61	11	1	0	0	0	0	0	0	0	146	34	37
09:00	4	1	9	55	95	25	1	0	0	0	0	0	0	0	190	34	38
10:00	5	0	13	39	60	23	1	1	0	0	0	0	0	0	142	35	38
11:00	1	0	11	39	99	30	6	0	0	0	0	0	0	0	186	36	39
12 PM	8	2	7	79	62	22	4	0	0	0	0	0	0	0	184	34	38
13:00	8	0	11	55	77	26	0	0	0	0	0	0	0	0	177	34	38
14:00	9	1	10	68	128	19	3	0	0	0	0	0	0	0	238	34	37
15:00	5	1	4	51	98	37	5	0	0	0	1	0	0	0	202	36	39
16:00	16	1	11	58	109	19	4	1	0	0	0	0	0	0	219	34	38
17:00	11	0	6	56	101	25	1	2	0	0	0	0	0	0	202	34	38
18:00	3	0	7	39	87	26	3	0	0	0	0	0	0	0	165	35	38
19:00	1	1	6	38	54	10	2	0	0	0	0	0	0	0	112	34	38
20:00	3	0	7	35	46	9	3	0	0	0	0	0	0	0	103	34	38
21:00	0	1	5	23	21	15	2	0	0	0	0	0	0	0	67	37	39
22:00	0	0	3	14	11	4	1	0	0	0	0	0	0	0	33	35	39
23:00	0	0	1	12	15	0	1	1	0	0	0	0	0	0	30	34	42
Total	81	12	141	808	1313	371	46	8	0	0	1	0	0	0	2781		
Percent	2.9%	0.4%	5.1%	29.1%	47.2%	13.3%	1.7%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	10:00	04:00	08:00	08:00	11:00	11:00	11:00	04:00							09:00		
Vol.	5	1	14	55	99	30	6	1							190		
PM Peak	16:00	12:00	13:00	12:00	14:00	15:00	15:00	17:00			15:00				14:00		
Vol.	16	2	11	79	128	37	5	2			1				238		
Grand Total	81	12	141	808	1313	371	46	8	0	0	1	0	0	0	2781		
Percent	2.9%	0.4%	5.1%	29.1%	47.2%	13.3%	1.7%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

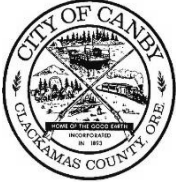
15th Percentile : 26 MPH
50th Percentile : 31 MPH
85th Percentile : 35 MPH
95th Percentile : 38 MPH

Statistics 10 MPH Pace Speed : 26-35 MPH
Number in Pace : 2121
Percent in Pace : 76.3%
Number of Vehicles > 55 MPH : 1
Percent of Vehicles > 55 MPH : 0.0%
Mean Speed(Average) : 31 MPH

School Trips and Trips Distribution from Canby Small Community Pool
 Canby Stafford Annexation
 DKS, 8/14/18

510





City of Canby
Planning Department
222 NE 2nd Avenue
PO Box 930
Canby, OR 97013
(503) 266-7001

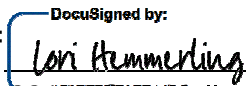
LAND USE APPLICATION

Pre-Application Conference

APPLICANT INFORMATION: (Check ONE box below for designated contact person regarding this application)

☐ Applicant Name: Venture Properties, Inc. Attn: Kelly Ritz Phone: 503.387.7602
Address: 4230 Galewood Street, Suite 100 Email: kelly@ventureprop.com
City/State: Lake Oswego, OR Zip: 97035

☒ Representative Name: Kevin Apperson Phone: 971.334.8964
Address: 9755 SW Barnes Road, Suite 150 Email: kapperson@atwell-group.com
City/State: Portland, Oregon Zip: 97225

☐ Property Owner Name(s)*: Hemmerling Nursery LLC Phone: Lori Hemmerling 503-717-3954
Signature:  DocuSigned by: 8/27/2020 | 10:49 AM PDT
Address: ~~33155 Sanderella Lane~~ 1500 Cooper Street Email: rnparrot@yahoo.com
City/State: ~~Warrenton, OR~~ Seaside, OR Zip: ~~97146~~ 97138

NOTE: Property owners or contract purchasers are required to authorize the filing of this application and must sign above

* All property owners represent they have full legal capacity to and hereby do authorize the filing of this application and certify that the information and exhibits herewith submitted are true and correct.

PROPERTY & PROJECT INFORMATION:

102 NE Territorial Road, Canby Oregon 97013 2.86 Acres T1S R3E Section 28C Tax Lot 00401
Street Address or Location of Subject Property Total Size of Assessor Tax Lot Numbers
8/27/2020 | 10:49 AM PDT Property
A home, barn and a small accessory building R-1 Low Density LDR - Low Density Residential
Existing Use, Structures, Other Improvements on Site Zoning Comp Plan Designation

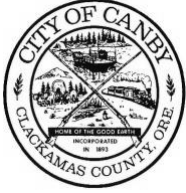
20 Lot Subdivision

Brief description of proposed development or use

Twenty (20) Lot Subdivision - Approval would require a Comprehensive Plan Amendment/ Zone Change application
to change the current zoning from from R-1 (Low Density Residential) to R-1.5 (Medium Density Residential)
and subsequent approvals of a Tentative Subdivision Plat application and Final Plat application.

STAFF USE ONLY

FILE #	DATE RECEIVED	RECEIVED BY	RECEIPT #	DATE APP COMPLETE



City of Canby
Planning Department
222 NE 2nd Avenue
P.O. Box 930
Canby, OR 97013
Ph: 503-266-7001
Fax: 503-266-1574

CHECKLIST

512

PRE-APPLICATION CONFERENCE

All required application submittals detailed below must also be submitted in electronic format on a CD, flash drive or via email to: PlanningApps@canbyoregon.gov

Pre-Application Conferences are designed to provide applicants the opportunity to present land use development proposals to City staff prior to the actual land use application process. This advance discussion allows applicants an opportunity to ask questions about the applicable city codes, required permits, hearing and noticing and estimated processing timelines. The Pre-Application Conference also allows City staff an opportunity to review preliminary plans, and to provide comments to applicants regarding the project and design. This feedback early in the planning process can help applicants avoid major plan revisions that are more cumbersome to change after an actual application submittal.

Applicants should keep in mind that, due to the preliminary nature of information discussed during Pre-Application Conferences; City staff reserves the right to determine permitting requirements upon receipt of an official application. Information obtained during a Pre-Application Conference is subject to subsequent changes in the Canby Comprehensive Plan, Canby Municipal Code, and/or any other applicable regulations. A Pre-Application Conference does not “vest” (lock in any fees or development requirements) a project in any way.

Once your pre-application has been submitted, it will be reviewed by the Planning Department. You will be notified of any changes and returned to the Planner for approval. The Office Specialist at Public Works will contact you to set up your pre-application conference. At this conference representatives from the following City departments and public agencies will be in attendance: Public Works, water, telephone, cable, gas, electric, Clackamas County (if needed), Canby Fire District, Oregon Department of Transportation (if needed), Planning, Engineering, and Parks.

Applicant City
Check Check

- ☒ ☐ Submit one copy of your proposed pre-application submittal, addressing the minimum pre- application requirements listed below, to the Planner for review and comments.
- ☒ ☐ Once you have made any needed changes per the Planning Department, submit two (2) paper copies of this application packet to the Planning Department
- ☒ ☐ Submit an electronic copy of the complete application packet to the Planning Department
- ☒ ☐ Payment of appropriate fees – cash or check only. Refer to the city’s Master Fee Schedule.
\$720.00 for Type III or IV application
- ☒ ☐ Narrative – A detailed narrative description of your proposal and any specific questions you want the City to respond to at the Pre-Application Conference.

☒ ☐ Site/Plot Plan drawn to scale showing:

- ☐ Property lines (legal lot of record boundaries)
- ☐ Lot area
- ☐ Impervious surface area
- ☐ Location and size of all proposed hardscape, including driveways, parking lots, compact cars and handicapped spaces, loading areas, bicycle paths, bicycle parking, sidewalks, and pedestrian ways
- ☐ Location, size, & heights of existing and proposed structures
- ☐ Proposed elevations
- ☐ Distances between structures and other significant features, including property lines, yards and setbacks, building area,
- ☐ Layout of all proposed structures, such as buildings, fences, signs, solid waste collection containers, mailboxes, exterior storage areas, and exterior mechanical and utility equipment
- ☐ Significant tree locations (all trees over 6 inches)
- ☐ Location and dimensions of easements
- ☐ Location of utilities – storm, sanitary sewers and water (including size of service and street location)
- ☐ Location, width, and names of all existing or planned streets, other public ways, and easements within or adjacent to the property, and other important features
- ☐ Existing and proposed driveway widths
- ☐ Location of any forested/wetland area, water bodies, or other significant natural features
- ☐ Location of and distance to fire hydrant(s)
- ☐ Location and profile drawings of all proposed exterior signage

☐ ☐ Slope map (if area is over 25% slope)

Nonresidential Projects Wastewater Information

***Businesses are required to complete an Environmental Survey from the City of Canby Public Works Department prior to receiving a business license.*

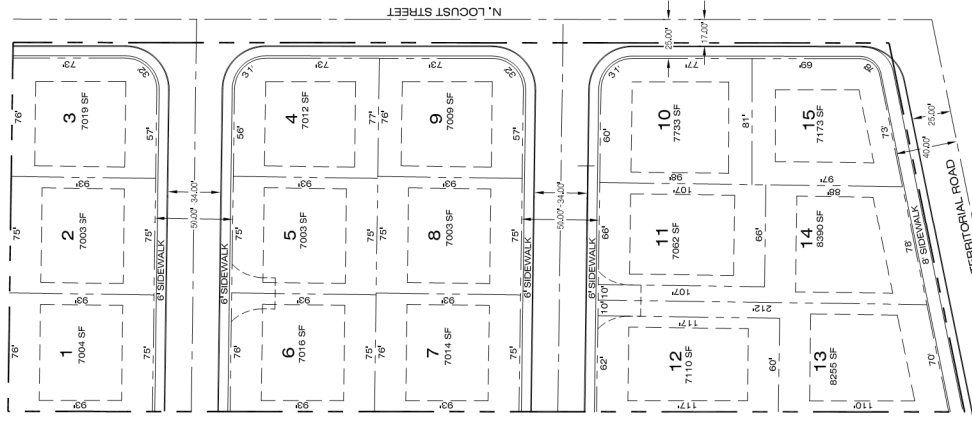
Do you plan on discharging anything other than domestic waste? ☐ Yes ☒ No

Will you be discharging any wastes that were produced during an industrial process or the manufacturing of a product? ☐ Yes ☒ No

Are you proposed to have floor drains that will be connected to sanitary sewer? ☐ Yes ☒ No

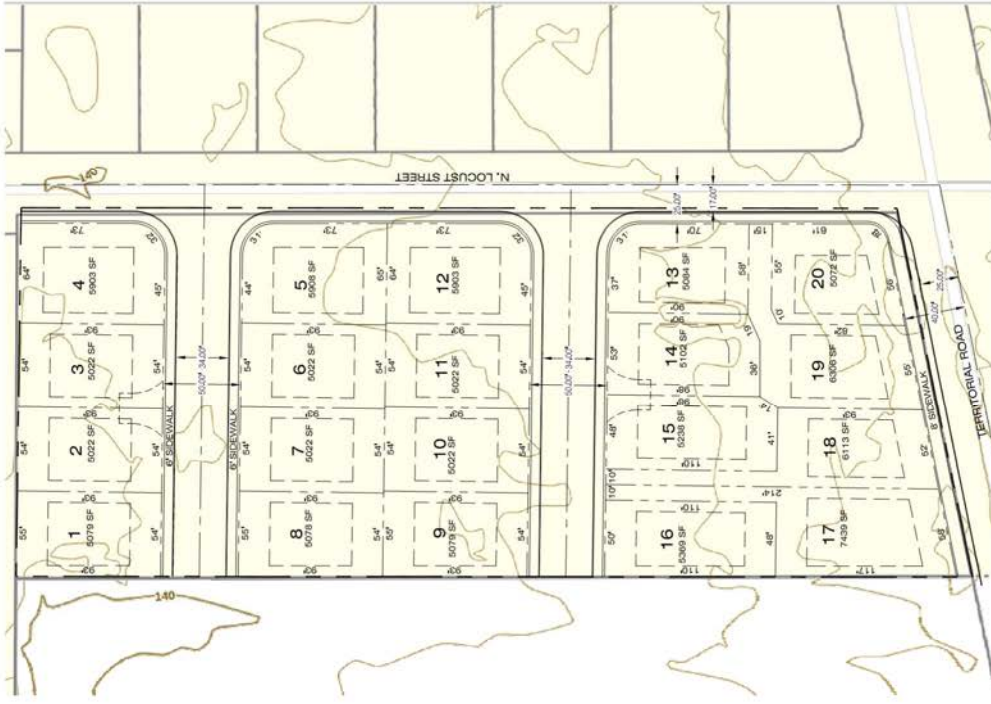
TERRITORIAL ROAD

A 15-20 LOT SUBDIVISION ON TAX LOT 401, TAX MAP 13E 28C
102 NE TERRITORIAL ROAD., CANBY, OREGON



(R-1) SETBACK REQUIREMENTS

FRONT PORCH: 10 FT.
STREET SIDE YARD - WITH DRIVEWAY: 20 FT.
STREET SIDE YARD - OTHER: 15 FT.
INTERIOR SIDE YARD: 7 FT.
REAR BUILDING - CORNER - 1STORY: 10 FT., - 1STORY, 15 FT., 2 STORY
REAR BUILDING - OTHER: 15 FT., - 1STORY, 20 FT., 2 STORY



(R-1.5) SETBACK REQUIREMENTS

FRONT PORCH: 10 FT.
STREET SIDE YARD - WITH DRIVEWAY: 20 FT.
STREET SIDE YARD - OTHER: 15 FT.
INTERIOR SIDE YARD: 7 FT.
REAR BUILDING - CORNER - 1STORY: 10 FT., - 1STORY, 15 FT., 2 STORY
REAR BUILDING - OTHER: 15 FT., - 1STORY, 20 FT., 2 STORY

SITE INFORMATION

TAX MAP: 13E 28C
TAX LOT: 401
SITE ADDRESS: 102 NE TERRITORIAL ROAD
SITE SIZE: 3.31 ACRES
ZONING: R-1

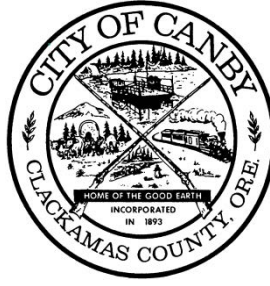
CONCEPT PLAN

CANBY, OREGON

Vert. Scale:
Project No.
Reviewed by
Date
Designed by
Date

No. Date Revision By

Project No. 514
Type Sheet
P1.0



Pre-Application Meeting

**Hemmerling Property
September 23, 2020**

Attended by:

Hassan Ibrahim, Curran-McLeod Engineering, 503-684-3478
Doug Erkson, Canby Utility, 503-263-4331
Erik Forsell, Planning, 503-266-0723

Hal Keever, Venture Properties,
Kelly Ritz, Venture Properties, 503-387-7602
Kevin Apperson, Atwell Group, 971-334-8964

This document is for preliminary use only and is not a contractual document.

Applicants

- Hal Keever--We intend to use the same layout as the previous application with minor modifications. We prefer to have 20 lots rather than 15 which will instigate the Comprehensive Plan amendment and zone change to R-1.5. We would like to know the timeframe for that process.
- Kelly Ritz--We have heard there is a fire truck width requirement for the flag lots. It might be something we need to take a look at for the layout.

CITY OF CANBY, PLANNING DEPARTMENT, Erik Forsell

- The zone change will require a Comprehensive Plan amendment. This is not a fast process because we are bound by state law regarding noticing requirements. At bare minimum it will require a hearing with the Planning Commission and a hearing with the City Council with a first and second reading of an ordinance. In most cases it is preferable to do that process separately from the development proposal.

Applicant

- Mr. Keever said in an effort to expedite the additional five lots, we can run the scenarios parallel and have a fall back plan for 15 lots if the zone change doesn't go through. What is the City's take on up-zoning this parcel for an additional five lots?

CITY OF CANBY, PLANNING DEPARTMENT, Erik Forsell

- Up-zoning is better as downzoning would be a bigger hurdle. It is a relatively small increase and it might not be a big issue. Comprehensive Plan amendments are unusual in that applicants have to address the Statewide Planning Goals, which will sometimes apply and sometimes not. When addressing these goals, it is better to be thorough than to assume they don't apply at all. The more information that is objective and reasonable for staff to make findings for the staff report is better.

Applicant

- Mr. Keever said our approach is to write the findings so the City has all of the information they need to write the staff report.

CITY OF CANBY, PLANNING DEPARTMENT, Erik Forsell

- I anticipate the applicant will need to do a traffic impact analysis.

CURRAN-MCLEOD ENGINEERING, Hassan Ibrahim

- There was an analysis with the initial submittal. I don't know if the applicant needs to do another.

CITY OF CANBY, PLANNING DEPARTMENT, Erik Forsell

- The Statewide Planning Goals ask specific questions about transportation impacts. It might be worth doing a basic analysis using the data that has already been done to see if there are any significant changes. Both the Planning Commission and City Council are cautious and not always on board with the methodology of transportation engineering. It will help your case if you have an updated analysis that says things are not going to change much and there will not be impacts to intersections that were already analyzed. It will also directly address the Statewide Planning Goals that apply to transportation.
- There is a 35 day notice period to DLCD. It is a wrote process and it is uncommon that they comment. Concurrently we will schedule out a Planning Commission time and date certain. This is assuming the applicant provides a complete application. Realistically it will take 75 days at the minimum. I just processed a land use application for a subdivision, zone change, and annexation concurrently and it went pretty well. Canby is smaller than other jurisdictions and not quite as involved with interest groups that get into your procedures. I think you can do them concurrently, but there is a risk to it.
- Regarding the fire lane width and the flag lots, it is what the Fire Code says and it should be the standard the City should be working towards, but it doesn't say that in our zoning ordinance currently. I don't think we can require the applicant to do something that is not in our code. However, as a condition of approval, the applicant could offer the enhanced widths for the flag lot access.

CURRAN-MCLEOD ENGINEERING, Hassan Ibrahim

- There are other alternatives, such as a fire hydrant within a 500 foot reach or they can sprinkle the houses.

CITY OF CANBY, PLANNING DEPARTMENT, Erik Forsell

- The Fire Department was referring to roof height of the structure and the width of the access. It boils down to the ladder truck being able to get in there and put the ladders out to reach the eaves of a taller house. It is not in the code to have a 24 foot wide flag lot access. What is required is 20 feet.

CURRAN-MCLEOD ENGINEERING, Hassan Ibrahim

- This came up recently. It used to be a paved surface of 15 feet accessible with no obstructions and 20 foot wide unobstructed access.

CITY OF CANBY, PLANNING DEPARTMENT, Erik Forsell

- It is something we can work on together to get a clear path forward. I don't see any issues in the prior submitted plan. I understand the reason for the flag lots in this instance because you have no access onto Territorial. The notes capture the other development aspects pretty well. I assume those have not changed. At this juncture, I can answer any planning related questions.

Applicant

- Kevin Apperson asked, what are the neighborhood meeting requirements.

CITY OF CANBY, PLANNING DEPARTMENT, Erik Forsell

- COVID-19 has made it a little bit dicey. At this point we would like to see something similar to the way we notice our public hearings. A Zoom invite to the neighbors according to distance will suffice because the places where neighborhood meetings have been held are not open. The applicant will need to provide us a list of the people who received notice. We would also like to see a phone number contact to field any questions as they come up. He will let the applicant know in writing what we are expecting for a neighborhood meeting.

CURRAN-MCLEOD ENGINEERING, Hassan Ibrahim

- The comments are pretty clear. Are there any questions for me?

Applicant

- Ms. Ritz asked how they handle dry wells and stormwater in Canby.

CURRAN-MCLEOD ENGINEERING, Hassan Ibrahim

- The applicant will be dealing with the County on Locust Street and they do not allow dry wells. The City is willing to take the roadway runoff from the County and direct it to the site with a dry well on site. They do not have to do anything for public stormwater if they use a dry well. On the lots themselves it has to be injected on site such as using rain gardens or an infiltration trench to dispose of the rainwater and roof drainage for each lot. You should call Jerry Nelzen from the City about what is acceptable to the County. Are you going to change the street configuration? There is a master plan for this area and the other side of the roadways need to meet when they are eventually extended.

Applicant

- Ms. Ritz said the only question is the access to the four flag lots, but we will not be changing the road configuration.
- Mr. Keever asked if Canby is transitioning to electronic submittals for the planning documents and CDs.

CITY OF CANBY, PLANNING DEPARTMENT, Erik Forsell

- Yes, we will take any electronic submittals. Some of it needs to be on paper, such as the bigger plan sets for utilities, grading, streets, etc.

Applicant

- Mr. Keever asked about staff's review process.

CURRAN-MCLEOD ENGINEERING, Hassan Ibrahim

- After the plans are turned in, staff reviews them in 2-3 weeks and a pre-construction meeting is scheduled. He will go over the plans with the applicant at that meeting and tell the applicant about any issues. The applicant makes the corrections and there is a second meeting and if everything is addressed correctly, the applicant submits a set of plans to the City shops and all of the utility providers will sign off.

CANBY UTILITY, ELECTRIC/WATER, Doug Erkson

- For the transmission lines, it will be PGE to determine if the lines need to be relocated underground.

CURRAN-MCLEOD ENGINEERING, Hassan Ibrahim

- Usually any overhead power lines need to be underground as part of the development.

Applicant

- Ms. Ritz said she had come to agreements with other jurisdictions that if the fixture count drives a 3/4 inch meter or 5/8 inch meter but they have to put in sprinklers and get a 1 inch, they will still charge for the smaller meter. She thought Canby should consider that policy. She could help staff come up with language for an ordinance.

Date 12/9/20

ON-LINE NEIGHBORHOOD MEETING ANNOUNCEMENT

Dear Property Owner or Northeast Canby Neighborhood Association Representative,

Atwell, LLC is representing the contract purchaser of the property referenced as T3S R1E Section 28C, Tax Lot 401. See attached Assessors Tax Map for location. The subject property is located northwest corner of NE Territorial Road and North Locust Street.

The Applicant is considering a development proposal consisting of a 20 lot residential subdivision. See attached R-1.5 Zoning conceptual layout. Prior to applying to the City for the necessary land use approvals, we would like to discuss the proposal in more detail with you.

Per the requirements of Canby Municipal Code, Chapter 16.89.070, you are invited to attend an on-line meeting on:

Date: **December 23, 2020**

Time: **6:00pm**

Options for joining the on-line meeting:

1. Enter this URL in your web browser to join the online meeting:

<https://atwell-group.zoom.us/j/95327771598?pwd=WXFiYmZtRUlRa0tGK3BieDB5M1FhQT09>

Meeting ID: 953 2777 1598

Passcode: 4590

2. Dial the Toll-Free Number and Access Code to join the On-Line Meeting at **+1 253 215 8782**

Please note that this will be an informational meeting on preliminary development plans. These plans may be altered prior to submittal of the application to the City.

Please email me at hal.keever@atwell-group.com if you have any questions. We look forward to discussing the proposal with you.

Sincerely,

Hal Keever, Project Manager
Atwell, LLC.

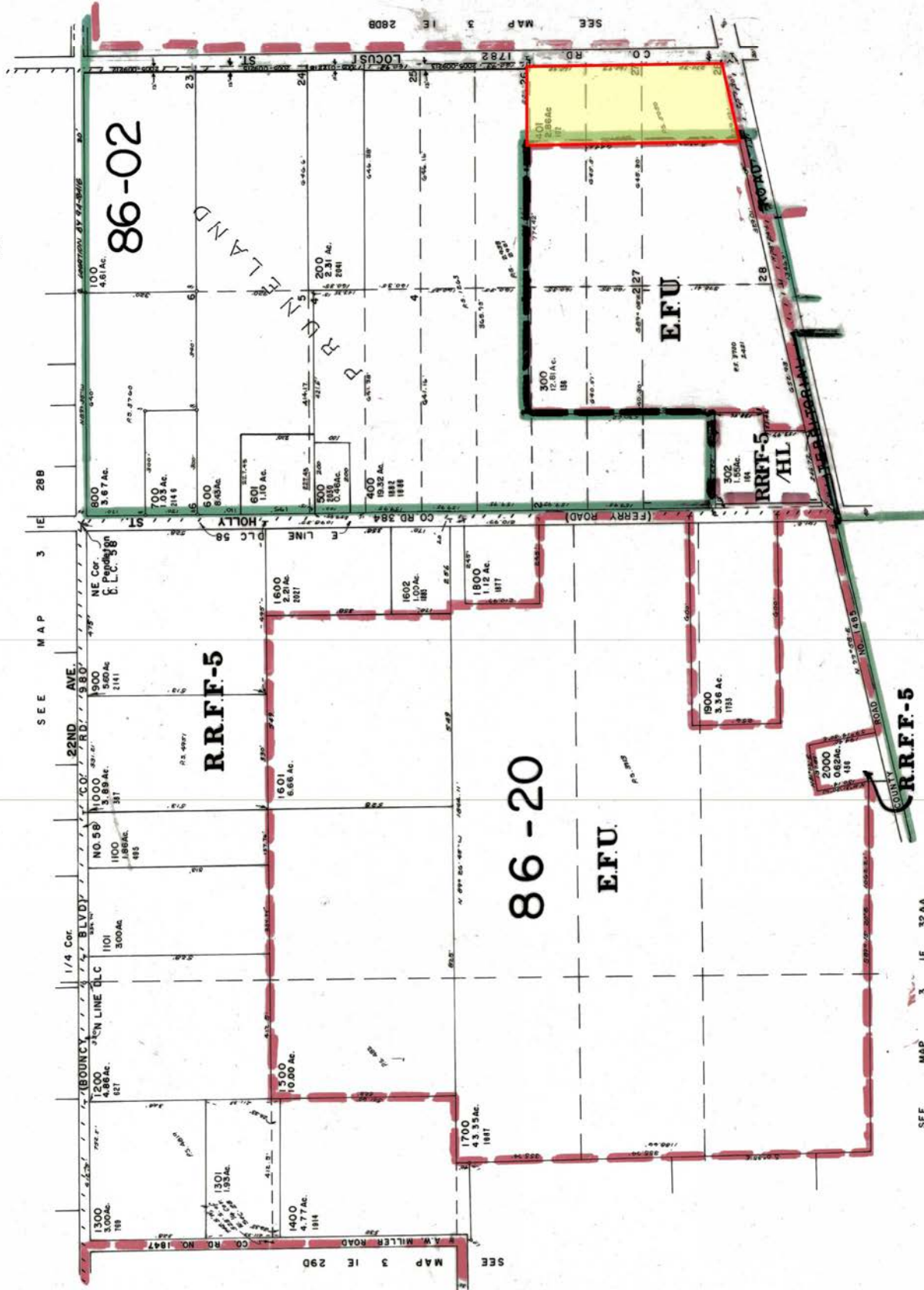
SW 1/4 SEC 28 T3S. R1E. W.M.
CLACKAMAS COUNTY

D. L. C.
C. PENDLETON NO. 58

3 IE 28C

This map was prepared for
assessment purpose only.

CANCELLED TAX LOTS
301
302
390



SEE MAP 3 IE 32AA

SEE MAP 3 IE 28CD

SEE MAP 3 IE 33BB

29 28
32 33

3 IE 28C
BOOK 28



R-1.5 ZONING



CONSULTING. ENGINEERING. CONSTRUCTION.

NEIGHBORHOOD MEETING MINUTES

December 23rd, 2020

Attendees:

- Kelly Ritz, Venture Properties
- Al Jeck, Venture Properties
- Hal Kever, Atwell, LLC
- Kevin Apperson, Atwell, LLC
- Susan Myers
- Gary Bayes
- Unidentified Caller (503.730.3339)

❖ Meeting Start (6:05pm)

❖ Introduction – Hal Kever

❖ Process/Procedure – Kevin Apperson

❖ Question and Answer (Q & A) – All

1Q Do you plan on submitting Comprehensive Plan Amendment/Zone Change and Subdivision concurrently?

1A Yes

2Q Will the lots along Territorial Road have access off the street?

2A No, the lot fronting Territorial Road will have access from an alleyway along the north side of the lots.

3Q How will fire access be provided for the lots that front Territorial Road?

3A From a fire access standpoint, the lots will be accessible from the alley as well as Territorial Road.

4Q Will there be a left turn lane required along Locust?

4A The need for traffic improvements is currently being scoped and will be addressed in the Traffic Impact Analysis.

Page 2

5Q Will Locust Street be widened?

5A Yes, the west side of Locust Street will likely include half street improvements to meet the City's standards.

6Q Territorial Road is often used as a bypass when Highway is congested. Is anything going to be done to address this increased traffic?

6A The proposed development will only include 20 new homes which will add a nominal amount of new trips to the system. The additional traffic generated due to its use as an alternative route is a system wide issue.

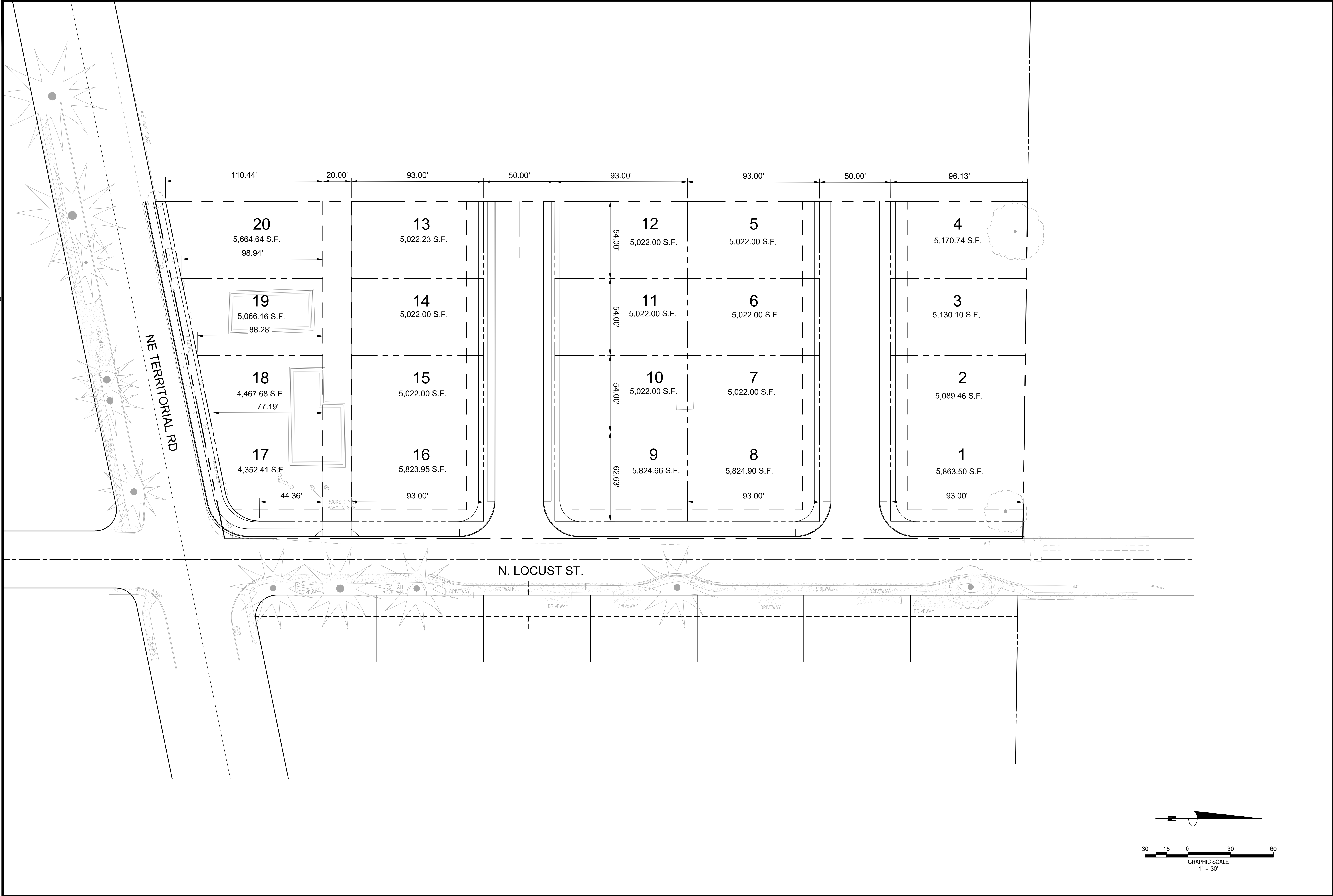
7Q Are utilities available to the property?

7A Yes, all the necessary utilities are readily available or can be made available.

8Q What is the current zoning?

8A The current zoning is R-1 and the applicant will be requesting a change is zoning to R1.5. The net difference would allow the development of four (4) more homes.

❖ Meeting Adjournment (6:25p)



THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE: CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

ATWELL
866.850.4200 www.atwell-group.com
9755 SW BARNES ROAD, SUITE 150
PORTLAND, OREGON 97225
PHONE 503.254.8860

PRELIMINARY SITE PLAN
PRELAP
TERRITORIAL ROAD SUBDIVISION
CANBY, OREGON

811
Know what's below.
Call before you dig.

REVISIONS:

PM. ----
DR. ----
JOB NO. 20002753
FILE NO. ##
DATE 12/16/2020

SHEET NO.
C100

HOLLY ANNEXATION & ZONING MAP AMENDMENT APPLICATION

Submitted: October 18, 2018



APPLICANT:

Stafford Development Company, LLC
485 S State Street, Lake Oswego, OR 97034
Levi Levasa, Project Manager
levi@staffordlandcompany.com
(971) 206-8614

CONSULTANT:

Planning & Land Design, LLC
1862 NE Estate Drive, Hillsboro, OR 97214
Ryan O'Brien, Planner
ryanobrien1@frontier.com
(503) 780-4061

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LIST OF EXHIBITS

- Exhibit 1: Vicinity Map
- Exhibit 2: Canby Annexation Development Map
- Exhibit 3: Annexation, Zone Change & Ownership Map
- Exhibit 4: Holly DCP Plan Set
 - Exhibit 4.1: Site Aerial
 - Exhibit 4.2: Perspective Aerial
 - Exhibit 4.3: Ownership, Acreage & Future Zoning
 - Exhibit 4.4: Existing Conditions and Topography
 - Exhibit 4.5: Street Pattern Master Plan
 - Exhibit 4.6: Street Pattern with Aerial Overlay
 - Exhibit 4.7: Sanitary Sewer Master Plan
 - Exhibit 4.8: Water Line Master Plan
- Exhibit 5: Pre-Application Meeting Materials
 - Exhibit 5.1: Pre-Application Meeting Minutes
 - Exhibit 5.2: Pre-Application Submittal Narrative
 - Exhibit 5.3: Pre-Application Submittal Exhibits
- Exhibit 6: Neighborhood Meeting Materials
 - Exhibit 6.1: Neighborhood Meeting Minutes
 - Exhibit 6.2: Neighborhood Meeting Invite Letter
 - Exhibit 6.3: Neighborhood Meeting Exhibits
 - Exhibit 6.4: Neighborhood Meeting Attendance Roster
 - Exhibit 6.5: Mailing Labels
 - Exhibit 6.6: Notification Area Map
 - Exhibit 6.7: Neighborhood Association Map
- Exhibit 7: DCP Owner Meeting Materials
 - Exhibit 7.1: Owner Meeting Invite Letter
 - Exhibit 7.2: Owner Meeting Attendance Roster
- Exhibit 8: Needs Analysis
- Exhibit 9: City Planning Maps
 - Exhibit 9.1: Canby Comprehensive Plan Map
 - Exhibit 9.2: Canby Zoning Map
- Exhibit 10: Legal Description & Map
- Exhibit 11: Holly DCP Traffic Impact Study
- Exhibit 12: Owner Consent Forms

ANNEXATION & ZONING MAP AMENDMENT NARRATIVE

I. Introduction

The purpose of this application is to request approval for the Annexation of the subject properties and relevant adjacent rights-of-way from unincorporated Clackamas County into the City of Canby and apply local zoning designations, consistent with the Comprehensive Plan, through the process of a Zoning Map Amendment.

TABLE 1: SUBJECT PROPERTIES (Excluding R-O-W)

Property Owner	APN	Tax Map	Tax Lot	Acres	Current Zoning	Comp Plan Designation	Proposed Zoning
Dodds	0776262	3S 1E 28C	00400	19.32	RRFF-5	LDR	R-1
Dodds	0776280	3S 1E 28C	00500	0.46	RRFF-5	LDR	R-1
Montecucco Rentals, LLC	0776217	3S 1E 28C	00100	4.61	RRFF-5	LDR	R-1
Montecucco Rentals, LLC	0776315	3S 1E 28C	00800	3.67	RRFF-5	LDR	R-1
Burkert	0776299	3S 1E 28C	00600	8.43	RRFF-5	LDR	R-1
Burkert	1374989	3S 1E 28C	00601	1.10	RRFF-5	LDR	R-1
Gordon	0776306	3S 1E 28C	00700	1.03	RRFF-5	LDR	R-1
Hemmerling Nursery, LLC	0776271	3S 1E 28C	00401	2.86	RRFF-5	LDR	R-1
Residential Annexation Area Subtotal				41.48		LDR	R-1
City of Canby	0776226	3S 1E 28C	00200	2.31		Park	Park
TOTAL PROPERTY AREA				43.79			

As seen in the Vicinity Map attached as Exhibit 1, the subject properties are located in the north Canby UGB area. More specifically the properties are located north of NE/NW Territorial Road, south of NE/NW 22nd Avenue, and between N Locust Street and N Holly Street. The properties make up the majority of the Holly Development Concept Plan (DCP) area as identified on the City of Canby Annexation Development Map which is attached as Exhibit 2. The Holly DCP area has been identified as a Priority “A” growth area in the Canby Comprehensive Plan since 1984 (Canby Comp Plan, pg. 32). The Applicant and property owners have determined that annexation of the subject properties is prudent, and some will address the need for low density residential land in the City of Canby as suggested by the evidence presented later in this application. Subject to approval of annexation, the subject properties are proposed to be rezoned from the Clackamas County designation of Rural Residential Farm Forest 5-Acre (RRFF-5) to existing City of Canby zoning designations that are consistent with the Comprehensive Plan as shown in the table above.

As explained in more detail later in this application, the Dodds property could provide an additional 81 new R-1 lots when developed, the Hemmerling Nursery property could provide an additional 15 lots, and the Burkert and Montecucco properties together could provide an additional 81 lots. Altogether the annexation properties could accommodate an eventual 177 units, but only some are anticipated to develop in the next few years.

With the intent to subdivide and develop only the Dodds properties, the Applicant engaged the surrounding property owners in the Holly DCP area to determine who would like to have their property included in this application as is customary in the City of Canby. Although some property owners have decided to defer

annexation, they were involved in the planning efforts to meet the requirements of the DCP. The creation of the Development Concept Plan for this area is a requirement of annexation and is addressed in greater detail in the Holly DCP Narrative later in this application. The following narrative and exhibits are a result of a collaborative effort between the Applicant and property owners included in this annexation and zone change application and/or within the Holly DCP area.

This application will provide explanatory material and address the relevant sections of the Canby Municipal Code (CMC) and the subsequent provisions of the Canby Comprehensive Plan. The relevant sections of these controlling documents will be quoted or summarized throughout the application in *italics* and followed by a **COMMENT** from the Applicant to exemplify the compliance of this application and proposal with the applicable approval criteria. To be concise, text from certain sections and subsections have been omitted as they are either explanatory in nature or not applicable.

II. Site Description

The subject properties are identified in the Annexation, Zone Change & Ownership Map (Exhibit 3) and are located within the Holly DCP area (Exhibit 4.1 and 4.2). The boundary of the annexation properties follows the Urban Growth Boundary (UGB) on the north, N Holly St. to the west, and the existing city limits on the south and east. The annexation area includes nine tax lots that total approximately 43.79 acres. The subject properties are accessed and bounded by NE/NW Territorial Rd., N Holly St., NE/NW 22nd Ave., and N Locust St.; portions of these street rights-of-way will also be included in the annexation, as indicated in the Table 2 below and in Exhibit 3.

TABLE 2: RIGHT-OF-WAY ANNEXATION

Right-of-Way Name	Acres
N Holly Street	0.83
NW Territorial Road	0.18
N Locust Street	0.83
NW 22nd Avenue	0.46
TOTAL R-O-W AREA	2.29

The subject properties are very flat. Existing conditions can be seen in Exhibit 4.4. The subject properties include three single family residences and land used for agricultural purposes. Adjacent properties to the north and west are rural with a few single-family residences surrounded by active farming operations. The subject properties surround two parcels, tax lots 00300 and 00390, that are outside of the UGB and have a County Exclusive Farm Use (EFU) zoning. The properties on the south side of Territorial Rd. and east side of N Locust St are within the City limits and have existing urban subdivisions with Canby R-1 zoning designations.

III. Facilities and Services

Annexation of the subject properties is a reasonable expansion of the City of Canby based on the level of development in the surrounding area and the existing facilities and services that are available to serve the annexation and DCP area. The City of Canby staff indicated at a pre-application meeting that all utility service providers and utilities are available in the DCP area or can be made available through development of the site. Pre-application meeting materials and minutes can be found in Exhibit 5. Public water and sanitary sewer are available to the annexation and DCP area in Territorial Road and Locust Street. A more detailed description of the public, private, and franchise utility services can be found in the Holly DCP Narrative later in this application with additional commentary pertaining to schools, parks, police protection, and fire protection.

IV. Neighborhood Involvement

One of the requirements of submitting for annexation is holding an informative neighborhood meeting. The purpose of the meeting is to inform neighbors of the Applicant's intent to propose an Annexation and a Zoning

Map Amendment along with a Development Concept Plan. The notice/invite letter sent to the neighbors included a draft road layout for the Holly DCP area. The mailing list was prepared by a title company and was based on Clackamas County Assessor's records.

The Applicant held a neighborhood meeting in compliance with the requirements of CMC 16.89.070 on Tuesday, July 31, 2018 at the Canby United Methodist Church. The notice was sent to all property owners and occupants within 500 feet of the Holly DCP area and the representatives of the Riverside and NE Canby Neighborhood Associations a minimum of two weeks prior to the date of the meeting. Approximately 80 people attended, but not everyone signed in. The Applicant gave a presentation and explained the proposed Annexations, Zoning Map Amendment, and Development Concept Plan and answered questions from attendees. Neighborhood meeting materials and a summary of the discussion are included as Exhibit 6. The requirement to host a neighborhood meeting has been satisfied by the Applicant.

In addition to the required neighborhood meeting, the Applicant invited all the property owners within the DCP boundaries to a meeting to have a more focused discussion with those who are most affected by the proposed DCP. The meeting was held on Monday, August 27, 2018 at the Canby United Methodist Church. There were approximately 20 attendees, but not everyone signed in. the DCP owner's meeting materials are attached as Exhibit 7.

V. Approval Criteria

This section will address the applicable standards and criteria for approval of annexation into the City of Canby and a Zoning Map Amendment and the subsequent criteria of the Comprehensive Plan, Urban Growth Management Agreement between Clackamas County and the City of Canby, and the Oregon Revised Statutes. Code sections will be quoted in *italic*, followed by a comment from the applicant evidencing the compliance of this request and proposal. Text from certain sections of the quoted codes have been omitted because they are explanatory in nature, are not the responsibility of the Applicant, or do not apply to this application.

Canby Municipal Code

ANNEXATION: DIVISION VI. – CHAPTER 16.84 – ANNEXATIONS

16.84.005 Background [omitted]

16.84.010 Purpose [omitted]

16.84.020 State regulations

The regulations and requirements of Oregon Revised Statutes Chapter 222 are adopted by reference and made a part of this division. (Ord. 740 section 10.6.20, 1984)

COMMENT:

The Applicant will meet all state requirements they are responsible for and expects that the City will do the same. This criterion can be met.

16.84.030 Filing procedure**[omitted]****16.84.040 Standards and criteria.**

A. The following criteria shall apply to all annexation requests.

1. The City of Canby Annexation Development Map shall determine which properties are required to submit either (See Figure 16.84.040):

a. A Development Agreement (DA) binding for all properties located within the boundaries of a designated DA area as shown on the City of Canby Annexation Development Map. The terms of the Development Agreement may include, but are not limited to: [portions of this subsection omitted for brevity]

COMMENT:

The subject properties are not within a Development Agreement area as identified on the City of Canby Annexation Development Map. This criterion is not applicable.

b. A Development Concept Plan (DCP) binding for all properties located within the boundaries of a designated DCP area as shown on the City of Canby Annexation Development Map. A Development Concept Plan shall address City of Canby infrastructure requirements including:

- 1. Water*
- 2. Sewer*
- 3. Stormwater*
- 4. Access*
- 5. Internal Circulation*
- 6. Street Standards*
- 7. Fire Department requirements*
- 8. Parks and open space*

For newly annexed properties that are within the boundaries of a DCP area as designated on the City of Canby Annexation Development Map: A Development Concept Plan shall be adopted by the Canby City Council prior to granting a change in zoning classification. (Ord 1294, 2008)

COMMENT:

The subject properties are part of a Development Concept Plan (DCP) area as identified on the City of Canby Annexation Development Map (Exhibit 2). The Applicant has prepared a DCP for the Holly DCP area and included a narrative and exhibits addressing the infrastructure requirements, including a Traffic Study attached as Exhibit 9. The Holly DCP Narrative begins in the next portion of the application and the Holly DCP Plans are attached as Exhibit 4. A review of the Holly DCP will show that these criteria have been met.

2. Analysis of the need for additional property within the city limits shall be provided. The analysis shall include the amount of developable land (within the same class of zoning - low density residential, light industrial, etc.) Currently within the city limits; the approximate rate of development of those lands; and how the proposed annexation will affect the supply of

developable land within the city limits. A supply of developable residential land to provide for the anticipated population growth over the following three years is considered to be sufficient;

COMMENT:

The applicant has reviewed available data as of October 6, 2018 and determined that the City of Canby has an insufficient supply of platted lots in the same class of zoning that would be applied to the subject properties upon Annexation and approval of a Zoning Map Amendment. Based on the detailed Needs Analysis attached as Exhibit 8, the City of Canby has an inventory of 91 SFR platted lots, 84 of which were created through a subdivision and 7 of which were created through a partition, which is insufficient to meet the need for an additional 342 single family detached residences through 2021 as necessitated by the anticipated population growth over the same period. A more detailed analysis of the population growth can be found in Exhibit 8. Table 3 below summarizes the Needs Analysis.

TABLE 8-7: ANALYSIS SUMMARY

Description	Count
SFR Housing Needed Through 2021	342
Available Platted SFR Lots	91
Current Deficiency of SFR Lots	251

Based on the analysis, there is currently a deficiency of 251 SFR platted lots in the City of Canby. Furthermore, only 17 of the available SFR lots are in the R-1 zone which is the class of zoning proposed for the subject properties. This criterion is met.

Annexation of the subject properties will not add to the inventory, but future subdivisions would. The subject properties can accommodate approximately 177 new SFR lots but would not develop simultaneously. The Applicant only has plans to develop approximately 81 new SFR lots on the Dodds properties over time. A more detailed schedule of when these properties might develop and contribute to the needed inventory is discussed in Exhibit 8 with an analysis of the absorption of current and future projects through 2021. The figure below summarizes this analysis and compares the projected lot inventory with the 3-year lot supply needed at any given time.

Based on the analysis in Exhibit 8 and the tables and graph above, the 3-year SFR lot supply will not be eclipsed by future development of the subject properties and other currently approved or future projects. The graph above further exemplifies that the requirements of this section have been satisfied.

3. *Statement of potential physical, aesthetic and related social effects of the proposed development on the community as a whole and on the neighborhood of which it will become a part; and proposed actions to mitigate identified concerns, if any. A neighborhood meeting is required as per Table 16.89.020 of the City of Canby Land Development and Planning Ordinance.*

COMMENT:

The Applicant has identified and recognizes the physical and aesthetic changes that may result from future development of the subject properties. The most significant change will be the obvious shift from rural housing and agricultural uses to urban density housing. While the current agricultural uses provide a benefit of their own outside the Canby city limits, the Applicant believes that eventual development and the associated changes will have an overall positive social and economic effect on the City of Canby by providing an area for growth that can happen in a well-planned and efficient manner regardless of timing. Future development of the properties included in this annexation and in the DCP area will be consistent with the existing character of properties inside the north Canby City Limits. Future development on any of the subject properties will substantially conform to the Holly Development Concept Plan which has been submitted as a part of this application.

It should also be noted that the Applicant only has plans to propose a subdivision for tax lot 400 in a future application. Despite other properties joining the annexation, they may elect to continue agricultural use of the property indefinitely.

The additional needs coincident to any development regarding transportation, park space, and other utility and city services is addressed in detail in other parts of this application and in the Holly DCP Narrative.

The Applicant held a neighborhood meeting in compliance with the requirements of CMC 16.89.070 on Tuesday, July 31, 2018. Additional information about neighborhood involvement is available in Section IV of this application and Exhibits 6 and 7.

The subject properties are within the City of Canby UGB and identified as an area of priority growth in the Comprehensive Plan. As such, the physical, aesthetic and social impacts of annexation and potential future development of the subject properties is consistent with the growth planned for this area.

4. Statement of availability, capacity and status of existing water, sewer, drainage, transportation, park and school facilities;

COMMENT:

The availability of water, sanitary sewer, storm sewer and drainage, transportation, parks, schools, and other necessary facilities is covered in greater detail in the Holly DCP Narrative. In summary, there are no known capacity issues, and the necessary services, utilities, and facilities can be made available to the subject properties and DCP area and will not inhibit future expansion. Plans indicating the location of existing and proposed facilities are included in the DCP Plans in Exhibit 4.

5. Statement of increased demand for such facilities to be generated by the proposed development, if any, at this time;

COMMENT:

Annexation of the subject properties will not increase demand on existing facilities. However, future subdivision of the property will increase the demand on all facilities and services. Increased demand can be met by reasonable extension of facilities and services as there are no capacity issues with the existing facilities. Extension or expansion of such facilities is depicted in the DCP plans.

6. Statement of additional facilities, if any, required to meet the increased demand and any proposed phasing of such facilities in accordance with projected demand;

COMMENT:

Annexation of the subject properties will not require additional facilities. Additional facilities and services will be required to serve the subject properties if and when subdivided in the future. Proposed locations for additions that would serve the entire Holly DCP can be seen on the DCP Plans in Exhibit 4. Sanitary sewer, water service, storm drainage management, and street improvements will be constructed by the developers. These improvements will occur when the site is developed, not with the annexation.

7. Statement outlining method and source of financing required to provide additional facilities, if any;

COMMENT:

Developers will pay for the improvement costs for their own projects.

8. Statement indicating the type and nature of any comprehensive Plan text or map amendments or Zoning text or map amendments that may be required to complete the proposed development. (Ord 1292, 2008)

COMMENT:

No Comprehensive Plan text or map amendment is requested. Subject to annexation approval, the Applicant is proposing a Zoning Map Amendment to rezone the subject properties to Canby zoning designations in accordance with the Comprehensive Plan. The proposed Zoning Map Amendment is addressed later in this application.

9. Compliance with other applicable city ordinances or policies;

COMMENT:

Other official documents that are applicable to the requested annexation include portions of the Comprehensive Plan and the Urban Growth Management Agreement (UGMA) between Clackamas County and the City of Canby. The applicant will comply with the relevant sections of the UGMA and expects that the City will do the same. This criterion can and will be met.

10. Compliance of the application with the applicable sections of Oregon Revised Statutes Chapter 222. (Ord. 740 section 10.6.40, 1984; Ord. 981 section 37, 1997; Ord. 1294, 2008)

COMMENT:

The Applicant will comply with the applicable sections of the Oregon Revised Statutes Chapter 222 that they are responsible for and expects that the City will do the same. This criterion can and will be met.

16.84.050 - 16.84.090

[omitted]

ZONING MAP AMENDMENT: DIVISION III. – CHAPTER 16.54 – AMENDMENTS TO ZONING MAP

16.54.010 Authorization to initiate amendments.

An amendment to the zoning map may be initiated by the City Council, by the Planning Commission, or by application of the property owner or his authorized agent. The Planning Commission shall, within forty days after closing the hearing, recommend to the City Council, approval, disapproval or modification of the proposed amendment. (Ord. 740 section 10.3.45 (A), 1984)

COMMENT:

The Applicant requesting an amendment to the zoning map is an authorized agent of the owners of the subject properties. Property owner consent forms are signed and included as Exhibit 12. This criterion is met.

16.54.020 Application and fee.

Application procedures shall be as described in Chapter 16.89. (Ord. 740 section 10.3.85(B), 1984; Ord. 981 section 7, 1997; Ord. 1019 section 13, 1999; Ord. 1080, 2001)

COMMENT:

The application for an amendment to the zoning map to apply the R-1 zoning designation to the subject properties is submitted to the City as a part of this application along with the required fee. The City will follow the procedures set forth in CMC 16.89. This criterion is satisfied.

16.54.030 Public hearing on amendment

Before taking final action on a proposed amendment, the Planning Commission shall hold a public hearing on the amendment following the requirements for advertising and conduct of hearing prescribed in Division VIII. (Ord. 740 section 10.3.85(C), 1984)

COMMENT:

The Planning Commission will schedule a public hearing once the application is deemed complete. Following the Planning Commission's public hearing and recommendation, the City Council will hold its own public hearing to make a final decision. By holding these public hearings, this criterion will be met.

16.54.040 Standards and criteria.

In judging whether or not the zoning map should be amended or changed, the Planning Commission and City Council shall consider:

- A. The Comprehensive Plan of the city, giving special attention to Policy 6 of the land use element and implementation measures therefore, and the plans and policies of the county, state and local districts in order to preserve functions and local aspects of land conservation and development;*

COMMENT:

This zone change would allow the subject properties to be developed with single family detached houses. Policy 6 is addressed in the Comprehensive Plan section below. Future development of the subject properties is consistent with plans, goals and policies of the city, county, state and local districts. The subject properties

are identified in the Comprehensive Plan as an area of priority growth. The proposed DCP will allow and encourage efficient and compact development in compliance with function and land conservation goals.

- B. Whether all required public facilities and services exist or will be provided concurrent with development to adequately meet the needs of any use or development which would be permitted by the new zoning designation. (Ord. 749 section 1(B), 1984; Ord. 740 section 10.3.85(D), 1984)*

COMMENT:

The Holly DCP demonstrates that all required public facilities and services can be made available to serve the subject properties.

16.54.050 (Ord. 740 section 10.3.85(E), 1984 [omitted]

16.54.060 Improvement conditions.

A. In acting on an application for a zone change, the Planning Commission may recommend and the City Council may impose conditions to be met by the proponents of the change before the proposed change takes effect. Such conditions shall be limited to improvements or physical changes to the property which are directly related to the health, safety or general welfare of those in the area. Further, such conditions shall be limited to improvements which clearly relate to and benefit the area of the proposed zone change. Allowable conditions of approval may include, but are not necessarily limited to:

- 1. Street and sidewalk construction or improvements;*
- 2. Extension of water, sewer, or other forms of utility lines;*
- 3. Installation of fire hydrants.*

B. The city will not use the imposition of improvement conditions as a means of preventing planned development, and will consider the potential impact of the costs or required improvements on needed housing. The Planning Commission and City Council will assure that the required improvements will not reduce housing densities below those anticipated in the Comprehensive Plan. (Ord. 749 section 1(C), 1984; Ord. 740 section 10.3.85 (F). 1984)

COMMENT:

The developers will provide reasonable improvement of public and private facilities and services for the subject properties if and when a development is approved by the City. The developers will pay for those improvements if required. When oversizing or “reimbursement districts” are appropriate, the developers will request a pay back of some funds expended for expansion of facilities and services when the improvements are more than required for the development of the subject property. The requirements of this subsection will be satisfied when Conditions of Approval are imposed by the City with approval of a more detailed development application. No improvements are required or necessary as a result of this zone change application. Future improvements will not cause a reduction of the housing densities anticipated by the Comprehensive Plan. These criteria can be met.

16.54.070 Record of amendments. [omitted]

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Canby Comprehensive Plan

URBAN GROWTH ELEMENT

GOAL 1: To preserve and maintain designated agricultural and forest lands by protecting them from urbanization.

GOAL 2: To provide adequate urbanizable area for the growth of the city, within the framework of an efficient system for the transition from rural to urban land use.

Policy 1: Canby shall coordinate its growth and development plans with Clackamas County.

Policy 2: Canby shall provide the opportunity for amendments to the Urban Growth Boundary....where warranted by unforeseen changes in circumstances.

Policy 3: Canby shall discourage the urban development of properties until they have been annexed to the city and provided with all necessary urban services.

COMMENT:

The Goals and Policies of the Urban Growth Element as they relate to this application are satisfied by the City as it has maintained a Comprehensive Plan and Comp Plan Map with a designated Urban Growth Boundary that identifies areas of growth within the UGB and dictates the types of uses anticipated for the properties within the UGB, but outside of the City. Furthermore, urban development is not permitted outside the UGB by Clackamas County, which protects agricultural and forest uses. The City does not permit urban development until properties already within the UGB are annexed to the City and reviewed/approved per the Canby Municipal Code which ensures that urban services are made available to the subject properties. The Goals and Policies of the Urban Growth Element are met.

LAND USE ELEMENT

GOAL: To guide the development and uses of land so that they are orderly, efficient, aesthetically pleasing, and suitably related to one another.

Policy 1: Canby shall guide the course of growth and development so as to separate conflicting or incompatible uses while grouping compatible uses.

Policy 2: Canby shall encourage a general increase in the intensity and density of permitted development as a means of minimizing urban sprawl.

Policy 3: Canby shall discourage any development which will result in overburdening any of the community's public facilities and services.

Policy 4: Canby shall limit development in areas identified as having an unacceptable level of risk because of natural hazards.

Policy 5: Canby shall utilize the land use map as the basis of zoning and other planning or public facility decisions.

Policy 6: Canby shall recognize the unique character of certain areas and will utilize the following special requirements, in conjunction with the requirements of the land development and planning ordinance, in guiding the use and development of these unique areas.

COMMENT:

The Goal and Policies of the Land Use Element are satisfied by the City as the Canby Municipal Code (CMC), Comprehensive Plan Map, and Zoning Map implement these goals and policies with detailed requirements. This annexation and zone change application is evidence of that fact. The creation of the Holly DCP, which is a requirement of the CMC, helps accomplish the goal of the land use element by ensuring that a master plan for the DCP area is created that is well planned. The adoption of a DCP concurrent with the annexation and zone change results in a more efficient layout that allows for a higher density than would otherwise occur if planning occurred in a piecemeal manner. Additionally, the DCP ensures feasible and logical extensions of urban transportation and services. The proposed zoning of the subject properties is consistent with the Canby Comprehensive Plan Map and Zoning Map and will match the designation of adjacent properties already developed within the City. The Goal and Policies of the Land Use Element are satisfied by the proposed annexation, zone change, and DCP.

ENVIRONMENTAL CONCERNS ELEMENT

GOAL 1: To protect identified natural and historical resources.

GOAL 2: To prevent air, water, land, and noise pollution.

GOAL 3: To protect lives and property from natural hazards.

Policy 1-R-A: Canby shall direct urban growth such that viable agricultural uses within the urban growth boundary can continue as long as it is economically feasible for them to do so.

Implementation Measures:

- A) Maintain zoning provisions which allow agricultural operation within the City limits.*
- B) Conduct development reviews such that agricultural operations are regarded as part of the accepted pattern of local land use rather than a nuisance to residents.*

Policy 1-R-B: Canby shall encourage the urbanization of the least productive agricultural area within the urban growth boundary as a first priority.

Implementation Measures:

- A) Coordinate water and sewerage planning to facilitate this Policy.*
- B) Coordinate street and road improvements with this Policy.*
- C) Encourage growth into areas where land is fragmented into small parcels which are not conducive to productive agricultural use.*
- D) Review annexation proposals in light of the growth phasing strategies of the Urban Growth Element.*

COMMENT:

The subject properties do not have any natural or historical resources or hazards on site. Like much of the remaining developable land within the UGB that is designated LDR, the subject properties are currently used for agricultural purposes. Upon annexation, some of the subject properties could continue with agricultural uses indefinitely, consistent with Implementation Measure A of Policy 1-R-A. The subject properties have Class II soils per the Agricultural Soil Capabilities Map on page 89 of the Comprehensive Plan. This is the lowest classification that any of the remaining LDR land has within the UGB. Other developable LDR or R-1 properties within the UGB and/or City limits that have higher Class I soil capabilities include the Clackamas County Fairgrounds, parts of the Redwood area, the undeveloped properties on N Pine (Holmes & Hollar properties), the Tofte Farms properties, the Cutsforth properties, and portions of the Willamette Valley Country Club. The only other area within the UGB that is almost entirely identified as Class II soils includes the DCP area to the west of the subject properties, on either side of N Birch St. The only other area inside the UGB that permits residential development is the property designated as Mixed Density Residential located southeast of 99E and north of SE 1st Ave. However, the soils on these properties are also identified as Class I. With few alternatives for expansion of the City boundaries, annexation of the subject properties is consistent with the Goals and Policies of the Environmental Concerns Element.

Policy 2-R through Policy 6-R: [generally related to industrial uses and historic sites]

Policy 7-R and 10-R: [scenic/aesthetic qualities, open space, fish and wildlife, & natural resources]

Policy 1-H through 3-H [Hazards]

COMMENT:

There are no known hazards or natural resources located on the subject properties. Annexation of the subject properties will not change the current use of the properties and will not have an immediate impact on any of the issues discussed in Policies 2-R through 10-R. Future development will underground utilities and provide or enhance open space within future developments as permitted or required by the City. The Holly DCP shows no additional open space beyond the existing City property per the direction of City Staff. The Applicant would, however, in anticipation of a future subdivision application, would like to construct improvements on the City Property to enhance the open space for current and future residents when the Dodds property is developed. The policies of the Environmental Concerns Element above can be satisfied at the time of development.

TRANSPORTATION ELEMENT

GOAL: To develop and maintain a transportation system which is safe, convenient and economical.

Policy 1-12: [Improve all transportation infrastructure for all modes of travel]

COMMENT:

Annexation of the subject properties will not have an impact on the transportation facilities. However, future development will help the City accomplish its goals of creating a safe, convenient and economical

transportation system for multimodal travel as road frontage improvements and warranted traffic safety measures will be paid for by the developer where warranted and possibly facilitated by the developer where they are able. The Goals and Policies of the Transportation Element can be satisfied by future development. A traffic study for the Holly DCP is included as Exhibit 11. Future developments will be required to provide additional traffic studies for their specific project to ensure the goals of the Transportation Element are satisfied.

PUBLIC FACILITIES AND SERVICES ELEMENT

GOAL: To assure the provision of a full range of public facilities and services to meet the needs of the residents and property owners of Canby

COMMENT:

Public facilities and services are addressed in more detail throughout this application. All public facilities and services are available or can be expanded to serve future developments on the Annexation properties.

HOUSING ELEMENT

GOAL: To provide for the housing needs of the Citizens of Canby.

COMMENT:

The subject properties are within the Urban Growth Boundary and identified as an area of priority growth in the Comprehensive Plan. There is currently a deficiency of platted lots available in the City of Canby to accommodate the population growth over the next three years as discussed earlier in this narrative. Future development of the subject properties will provide for the future housing needs of Canby citizens. The proposed annexation satisfies the Goal of the Housing Element.

Urban Growth Management Agreement (UGMA)

The UGMA between Canby and Clackamas County is codified as part of Resolution 519, dated Sept. 23, 1992, and requires certain actions and procedures for a variety of actions relative to lands within the Urban Growth Management Boundary area. The UGMA contains seven specific issues on which the City of Canby and Clackamas County agree. Rather than quote each of the seven issues, they will be identified by title and addressed:

1. *Boundary*

COMMENT:

The subject site is within the Urban Growth Boundary of Canby, thus satisfying this criterion.

2. *Comprehensive Planning, Plan Amendments and Public Facilities Planning for Lands in Unincorporated UGMB;*

COMMENT:

The subject site is within the UGB, and has been included in long range planning for land use, traffic, services and facilities, utilities, and all similar and appropriate elements. The planning designation proposed for this site is consistent with the designations on the Canby Comprehensive Plan map (Low Density Residential). Proposed zoning (R-1) is consistent with the Comprehensive Plan. Upon annexation, the city will assume all planning responsibilities for the subject property. Once the site is annexed to the city by final legislative action, Clackamas County will have no further jurisdiction over or interest in the subject property. Therefore, this criterion is fulfilled.

3. *Development Proposals for Unincorporated UGMB Areas;*

COMMENT:

This criterion does not apply because the property will already be annexed to the city before development applications are submitted to the city for review.

4. *County Notice to and Coordination with the City;*

COMMENT:

This criterion is not applicable because any development action will occur within the City of Canby and not in the jurisdiction of Clackamas County.

5. *City Notice to and Coordination with the County;*

COMMENT:

Because this is a proposed annexation and zone change, the City is required under Subsection A to notify Clackamas County of the impending action.

6. *City Annexation and Sewer, Water and Road Service;*

COMMENT:

Subsection A: The City agrees to undertake any annexations in accordance with process and procedures agreed to by the County. The adjacent right-of-way is required to be included in the annexation and the county will not oppose such annexations.

Subsection B: The City is required to accept jurisdiction of adjacent rights-of-way. The developer will be required to construct “half street improvements” along the frontage of these streets to current City of Canby standards when development is proposed.

Subsection E: Public water and sanitary sewer are not currently available to the site for use in site development, but can be made available upon approval of the annexation application. This subject site is not, however, a health hazard.

7. *Terms of Agreement*

COMMENT:

This UGMA is between the City of Canby and Clackamas County. However, no part or measure of the proposed annexation of the subject site, nor the future development violates or otherwise circumvents the measures required under this UGMA. Therefore, the requirements of this UGMA have been satisfied and/or fulfilled.

HOLLY DEVELOPMENT CONCEPT PLAN NARRATIVE

I. Purpose

The subject properties are identified on the Canby Annexation Development Map (CMC Figure 16.8 4.040) as being within a Development Concept Plan (DCP) area. The purpose of this Holly DCP is to address the specific requirements of the City of Canby Municipal Code (CMC) Section 16.84.040 (1)(b).

b. A Development Concept Plan (DCP) binding for all properties located within the boundaries of a designated DCP area as shown on the City of Canby Annexation Development Map. A Development Concept Plan shall address City of Canby infrastructure requirements including:

- 1. Water*
- 2. Sewer*
- 3. Stormwater*
- 4. Access*
- 5. Internal Circulation*
- 6. Street Standards*
- 7. Fire Department requirements*
- 8. Parks and open space*

For newly annexed properties that are within the boundaries of a DCP area as designated on the City of Canby Annexation Development Map: A Development Concept Plan shall be adopted by the Canby City Council prior to granting a change in zoning classification. (Ord 1294, 2008)

The above requirements will be addressed throughout this narrative. Sixteen (16) tax lots are included within the Holly DCP boundaries totaling approximately 58.79 acres which could accommodate between 230 and 240 future single family detached homes. The property owners and acreage are shown by Exhibit 4.3. When the UGB was determined in this area, only properties zoned RRFF-5 were included within the boundary. Tax Lots 300 and 390 which have a Clackamas County EFU zoning designation are excluded from UGB and DCP and are surrounded by the DCP properties and Territorial Road. Property west of the Holly DCP is also zoned EFU and outside the UGB. Inclusion of these properties in the UGB would require a new land use analysis approved by DLCD and would require a separate review.

Street stubs are provided to the surrounding property outside of the UGB in the event these properties are included in the Canby UGB in the future. The street stubs are shown by Exhibit 4.5. A street pattern was designed for the properties outside the UGB to ensure that the street stubs allow for continued logical extension, but are not shown on the exhibits to avoid confusion.

II. Existing Conditions

The DCP site is very flat with an 8-foot difference in topography from the southwest corner of the site to the northeast corner as shown by Exhibit 4.4. The elevation of the DCP area ranges from approximately 146 feet at the southwest corner to 138 feet at the northwest corner of the site. The land is primarily used for agriculture

with eight existing houses which are shown on the plans. The street pattern was designed to allow these houses to remain if the property is developed in the future.

The site is similar in character to surrounding property in north Canby. Surrounding property to the north and west are rural in nature and contain large lot single-family houses and agricultural uses. Urban uses and residential subdivisions are located to the south and east. Annexation of this DCP area is a logical extension of urban development and a reasonable transition from rural to urban uses. Most of the property in this DCP is included in the annexation application. The street pattern was designed so most of the property owners can develop independently in the future. Property included in the annexation area can develop independently of property outside the annexation area.

A total of 4 public streets provide access to the site; Holly Street, 22nd Avenue, Locust Street and Territorial Road. Holly and Territorial are designated collector streets with no direct access from future subdivision lots. The future right-of-way is 70 feet.

Urban infrastructure is available south and east of the DCP area and can be extended. Water lines and gravity sanitary sewer lines are available in Territorial Road, Locust Street and 22nd Avenue. None of these utility lines are located in Holly Street. Electrical lines, storm sewer line and other dry utilities will be extended into the DCP area as identified in Section "V" of this report.

III. Opportunities and Constraints

The DCP area is similar to the character of surrounding development areas prior to urban development. This DCP area is one of the best opportunities for future development in Canby because of the number of property owners that could develop independently. This property has no constraints. Stafford Development Company is planning to develop the Dodds properties which contain approximately 19.78 acres, or 34% of the Holly DCP. No other properties are identified for development in the near future. The city owns 2.31 acres for a city park but does not currently have a plan for development of this park. However, the Applicant would like to propose improvements during the future development of the Dodds property.

Schools - Schools are available to the Holly DCP area. A representative from the Canby School District indicated adequate capacity is available to accommodate students generated from development the Holly DCP area. The schools have athletic fields which provide active recreational opportunities on weekends, during summers, and when school is not in session. The students would attend the following schools:

Eccles Elementary located off 5th Avenue and south of Knights Bridge Road

Baker Prairie Middle School is located on Teakwood Street, south of SE Township Road

Canby High School is located at the southeast corner of Highway 99E and 4th Avenue.

Bike and Walking Trails - A bicycle and walking trail will be provided to the City Park. The DCP Master plan (Exhibit 4.5) shows pedestrian access tracts in all direction into the park. Bike paths will be provided along Holly Street and Territorial Road.

Holly Street and Territorial - Both of these streets are designated collector streets on the City Transportation System Plan.

East-West Connection - Exhibit 4.5 shows 2 east-west street connections between Holly and Locust Streets. These streets were designed to reduced speeding in the subdivision with offset roads rather than straight roads between Holly and Locust Streets, as the. The intent is to encourage residents to use Territorial Road and Holly Streets rather than interior streets in the DCP area. The Lancaster Engineering Traffic Report shows no major traffic confits with the develop of this DCP property.

Fire Department Requirements - The Master Plan has been designed to provide adequate fire truck access to all dwelling units. All streets are through streets except the 2 cul-de-sacs south of the city park. Water lines will be designed to provide adequate fire hydrant flows and pressure. All water lines are looped to existing 8, 10 and 12-inch diameter water lines except the 2 cul-de-sacs (See Exhibit 4.8).

IV. Concept Plan

Zoning: The DCP land use designation is the same as the City of Canby Comprehensive Plan. The Comprehensive Plan identifies all the property as **LDR** - Low Density Residential with **R-1** Low Density Residential Zoning. Since the proposed Zoning designations are the same as the Comprehensive Plan, no Comprehensive Plan Amendment is required with this application.

Canby Municipal Code (CMC) Chapter 16.16 (R-1 Low Density Residential Zone) permits one single family dwelling per lot in addition to other Conditional Uses. Lots in the R-1 zone are required to be 7,000 sf in area unless a PUD or lot averaging is proposed.

Streets: The proposed street pattern (Exhibit 4.5) shows connections to 4 existing streets. All interior and exterior local streets will be developed with the Standard Local Street Section; 34 feet of pavement, 50 feet of right-of-way and parking on both sides of the street. This local street section is consistent with Figure 7-6 of the Canby TSP. Holly Street and Territorial Road will develop in accordance with the Collector Street Section (Figure 7-5 in the TSP). The collector streets will have 70 feet of right-of-way and 46 feet of pavement. Sidewalks will be 6 feet, landscape planters 5 feet, bike lane 6 feet on both side of the street, travel lanes 11 feet and the center turn lane 12 feet.

Parks: City staff indicated that the city does not want a new park to be developed in this DCP area since there is the existing City Property is designated for use as a park. As a result, Park SDCs will be paid to the city when house construction permits are issued. City, County and State Parks located in and nearby the Holly DCP boundary are as follows:

1. **Locust Street Park** in located in the Holly DCP boundary and currently undeveloped. The city does not have a time line for development of this park.
2. **Molalla River State Park** is located to the northwest. This park features hiking, picnicking, fishing, boating and wildlife viewing and located at the confluence of the Willamette, Molalla and Pudding Rivers.
3. **Community River Park** is located at 1348 S. Berg Parkway southwest of Canby High School. This is a nature park with picnic facilities, barbecue pits, playground equipment, ball fields and a fishing pond for youth age 17 and under.
4. **Community Swim Center** is located at 1150 S. Ivy Street just north of 13th Avenue.
5. **Adult Center** is located at 1250 S. Ivy Street at the northeast intersection of 13th Avenue and Ivy Street.

6. **Ecco Park** is located on the north side of Territorial Road just east of Willamette Valley Country Club Golf Course.
7. **Logging Road Trail** extends from southeastern Canby up to the Willamette River between Ecco Park and the Willamette Golf Course. The trail is 3.5 miles long.
8. **Willow Creek Park** is located on the south side of Territorial Road east of Redwood Street.
9. **Willamette Wayside Park** is located on the north side of Territorial Road, east of Ecco Park. This park generally contains trails. Future improvements are in the planning phase.
10. **Maple Street Park** is located at 1300 North Maple Street, south of Territorial Road and west of Pine Street. This park features multiple ball fields, tennis courts, covered picnic tables and playgrounds.
11. **Clackamas County Fairgrounds** is available for many community events. It is located just northeast of downtown Canby.
12. **Wait Park** is located in downtown Canby at the corner of Grant Street and 3rd Avenue. This park features a gazebo and playground equipment.

See Section VI (Park Dedication), for additional information about parks.

V. Utility Service

Annexation of the subject properties is a reasonable expansion of the City of Canby based on the level of development in the surrounding area and existing facilities and services available to serve the Holly DCP area. At a pre-application meeting, the City of Canby staff indicated all utility services and utilities are available in this DCP area or will be available when the property is developed.

Water: Water is provided by the Canby Utility's Water Department. An 8-inch water line is available in Locust Street and a 12-inch water line in Territorial Road. The city Water Department requested extension of a 12-inch water line along Holly Street and 10-inch water lines in the center of the DCP area and along 22nd Avenue. All the interior streets will have 8-inch water lines. All the water lines will be looped except the 2 cul-de-sacs south of the park (See Exhibit 4.8).

Sanitary Sewer: Sanitary sewer is provided by the City of Canby. Three existing sanitary sewer line connections are available to this DCP area (See Exhibit 4.7). All property in the Holly DCP area can be served with either the existing sanitary sewer lines or extension of new sanitary sewer lines.

The **first existing sewer** line is 10-inches in diameter and located at the intersection of Territorial Road and Holly Street. A 10-inch sewer line can be extended north in Holly Street to 22nd Avenue. A second 10-sewer line can extend into the DCP area to provide a flatter grade as shown by Exhibit 4.7.

The **second existing sewer line** is 8-inches in diameter and located at the intersection of Locust Street and 19th and extends south to Territorial Road.

The **third existing sewer line** is 8-inches in diameter and located in Locust Street between 19th Avenue and 22nd Avenue.

Storm Drainage: Roof drains from homes will flow to privately owned and maintained infiltration facilities on each individual lot. Street drainage will flow to shallow roadside swales where feasible and sumped catch basins and pollution control manholes for water quality treatment elsewhere. After treatment, stormwater will then flow to dry wells for disposal through underground injection. All street storm drainage facilities are proposed to be public facilities designed in compliance with the adopted City of Canby Stormwater Master Plan and the Canby Public Works Design Standards. When development proposals are submitted, storm water management plans and drywell locations will be provided.

Private Utilities: Private utility service such as telephone, natural gas, cable, garbage, recycling collection are all available. These utilities generally operate on a franchise basis. Electrical power is provided through Canby Utility. Extension of these utility lines will occur with each development phase.

VI. Park Dedication

Park SDC Obligation: Per the City of Canby's park dedication formula, a park dedication of 6.24 acres is required to satisfy the Park SDC obligations for 231 lots (expected number of future lots). The city will collect SDCs with the house building permits and determine in the future where to spend the collected fees. However, during the neighborhood meeting, it was clear that surrounding property owners and community members would like to see future developments improve the existing park area within the DCP.

Anticipated Amenities: Construction of park amenities in the existing city park off Locust Street will require approval by the City Parks Board or City Parks Staff prior to construction. These amenities may include walkways, playground equipment, picnic tables, benches and a restroom facility. The list of these facilities could be modified based on the desires of the City at the time of park development. Landscaping and informational signage would be provided to create an aesthetically pleasing park entrance along the public streets.

CONCLUSION

This narrative has addressed the relevant requirements of the Canby Municipal Code, Canby Comprehensive Plan, Urban Growth Management Agreement, and Oregon Revised Statutes; demonstrating that the proposed Annexation and Zoning Map Amendment have met or can meet each of those requirements. The Holly DCP narrative and exhibits address the City of Canby infrastructure requirements and satisfies the requirements of CMC 16.84.040(1)(b). As such the Holly DCP should be adopted in conjunction with the proposed Annexation and Zoning Map Amendment to ensure that future development generally conforms to the Holly DCP to take advantage of the efficiencies created by the master planning efforts considered during this process and incorporated into the DCP plans which are attached as Exhibit 4.

HOLLY ANNEXATION & ZONING MAP AMENDMENT APPLICATION

Submitted: October 18, 2018



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LIST OF EXHIBITS

- Exhibit 1: Vicinity Map
- Exhibit 2: Canby Annexation Development Map
- Exhibit 3: Annexation, Zone Change & Ownership Map
- Exhibit 4: Holly DCP Plan Set
 - Exhibit 4.1: Site Aerial
 - Exhibit 4.2: Perspective Aerial
 - Exhibit 4.3: Ownership, Acreage & Future Zoning
 - Exhibit 4.4: Existing Conditions and Topography
 - Exhibit 4.5: Street Pattern Master Plan
 - Exhibit 4.6: Street Pattern with Aerial Overlay
 - Exhibit 4.7: Sanitary Sewer Master Plan
 - Exhibit 4.8: Water Line Master Plan
- Exhibit 5: Pre-Application Meeting Materials
 - Exhibit 5.1: Pre-Application Meeting Minutes
 - Exhibit 5.2: Pre-Application Submittal Narrative
 - Exhibit 5.3: Pre-Application Submittal Exhibits
- Exhibit 6: Neighborhood Meeting Materials
 - Exhibit 6.1: Neighborhood Meeting Minutes
 - Exhibit 6.2: Neighborhood Meeting Invite Letter
 - Exhibit 6.3: Neighborhood Meeting Exhibits
 - Exhibit 6.4: Neighborhood Meeting Attendance Roster
 - Exhibit 6.5: Mailing Labels
 - Exhibit 6.6: Notification Area Map
 - Exhibit 6.7: Neighborhood Association Map
- Exhibit 7: DCP Owner Meeting Materials
 - Exhibit 7.1: Owner Meeting Invite Letter
 - Exhibit 7.2: Owner Meeting Attendance Roster
- Exhibit 8: Needs Analysis
- Exhibit 9: City Planning Maps
 - Exhibit 9.1: Canby Comprehensive Plan Map
 - Exhibit 9.2: Canby Zoning Map
- Exhibit 10: Legal Description & Map
- Exhibit 11: Holly DCP Traffic Impact Study
- Exhibit 12: Owner Consent Forms

ANNEXATION & ZONING MAP AMENDMENT NARRATIVE

I. Introduction

The purpose of this application is to request approval for the Annexation of the subject properties and relevant adjacent rights-of-way from unincorporated Clackamas County into the City of Canby and apply local zoning designations, consistent with the Comprehensive Plan, through the process of a Zoning Map Amendment.

TABLE 1: SUBJECT PROPERTIES (Excluding R-O-W)

Property Owner	APN	Tax Map	Tax Lot	Acres	Current Zoning	Comp Plan Designation	Proposed Zoning
Dodds	0776262	3S 1E 28C	00400	19.32	RRFF-5	LDR	R-1
Dodds	0776280	3S 1E 28C	00500	0.46	RRFF-5	LDR	R-1
Montecucco Rentals, LLC	0776217	3S 1E 28C	00100	4.61	RRFF-5	LDR	R-1
Montecucco Rentals, LLC	0776315	3S 1E 28C	00800	3.67	RRFF-5	LDR	R-1
Burkert	0776299	3S 1E 28C	00600	8.43	RRFF-5	LDR	R-1
Burkert	1374989	3S 1E 28C	00601	1.10	RRFF-5	LDR	R-1
Gordon	0776306	3S 1E 28C	00700	1.03	RRFF-5	LDR	R-1
Hemmerling Nursery, LLC	0776271	3S 1E 28C	00401	2.86	RRFF-5	LDR	R-1
Residential Annexation Area Subtotal				41.48		LDR	R-1
City of Canby	0776226	3S 1E 28C	00200	2.31		Park	Park
TOTAL PROPERTY AREA				43.79			

As seen in the Vicinity Map attached as Exhibit 1, the subject properties are located in the north Canby UGB area. More specifically the properties are located north of NE/NW Territorial Road, south of NE/NW 22nd Avenue, and between N Locust Street and N Holly Street. The properties make up the majority of the Holly Development Concept Plan (DCP) area as identified on the City of Canby Annexation Development Map which is attached as Exhibit 2. The Holly DCP area has been identified as a Priority “A” growth area in the Canby Comprehensive Plan since 1984 (Canby Comp Plan, pg. 32). The Applicant and property owners have determined that annexation of the subject properties is prudent, and some will address the need for low density residential land in the City of Canby as suggested by the evidence presented later in this application. Subject to approval of annexation, the subject properties are proposed to be rezoned from the Clackamas County designation of Rural Residential Farm Forest 5-Acre (RRFF-5) to existing City of Canby zoning designations that are consistent with the Comprehensive Plan as shown in the table above.

As explained in more detail later in this application, the Dodds property could provide an additional 81 new R-1 lots when developed, the Hemmerling Nursery property could provide an additional 15 lots, and the Burkert and Montecucco properties together could provide an additional 81 lots. Altogether the annexation properties could accommodate an eventual 177 units, but only some are anticipated to develop in the next few years.

With the intent to subdivide and develop only the Dodds properties, the Applicant engaged the surrounding property owners in the Holly DCP area to determine who would like to have their property included in this application as is customary in the City of Canby. Although some property owners have decided to defer

annexation, they were involved in the planning efforts to meet the requirements of the DCP. The creation of the Development Concept Plan for this area is a requirement of annexation and is addressed in greater detail in the Holly DCP Narrative later in this application. The following narrative and exhibits are a result of a collaborative effort between the Applicant and property owners included in this annexation and zone change application and/or within the Holly DCP area.

This application will provide explanatory material and address the relevant sections of the Canby Municipal Code (CMC) and the subsequent provisions of the Canby Comprehensive Plan. The relevant sections of these controlling documents will be quoted or summarized throughout the application in *italics* and followed by a **COMMENT** from the Applicant to exemplify the compliance of this application and proposal with the applicable approval criteria. To be concise, text from certain sections and subsections have been omitted as they are either explanatory in nature or not applicable.

II. Site Description

The subject properties are identified in the Annexation, Zone Change & Ownership Map (Exhibit 3) and are located within the Holly DCP area (Exhibit 4.1 and 4.2). The boundary of the annexation properties follows the Urban Growth Boundary (UGB) on the north, N Holly St. to the west, and the existing city limits on the south and east. The annexation area includes nine tax lots that total approximately 43.79 acres. The subject properties are accessed and bounded by NE/NW Territorial Rd., N Holly St., NE/NW 22nd Ave., and N Locust St.; portions of these street rights-of-way will also be included in the annexation, as indicated in the Table 2 below and in Exhibit 3.

TABLE 2: RIGHT-OF-WAY ANNEXATION

Right-of-Way Name	Acres
N Holly Street	0.83
NW Territorial Road	0.18
N Locust Street	0.83
NW 22nd Avenue	0.46
TOTAL R-O-W AREA	2.29

The subject properties are very flat. Existing conditions can be seen in Exhibit 4.4. The subject properties include three single family residences and land used for agricultural purposes. Adjacent properties to the north and west are rural with a few single-family residences surrounded by active farming operations. The subject properties surround two parcels, tax lots 00300 and 00390, that are outside of the UGB and have a County Exclusive Farm Use (EFU) zoning. The properties on the south side of Territorial Rd. and east side of N Locust St are within the City limits and have existing urban subdivisions with Canby R-1 zoning designations.

III. Facilities and Services

Annexation of the subject properties is a reasonable expansion of the City of Canby based on the level of development in the surrounding area and the existing facilities and services that are available to serve the annexation and DCP area. The City of Canby staff indicated at a pre-application meeting that all utility service providers and utilities are available in the DCP area or can be made available through development of the site. Pre-application meeting materials and minutes can be found in Exhibit 5. Public water and sanitary sewer are available to the annexation and DCP area in Territorial Road and Locust Street. A more detailed description of the public, private, and franchise utility services can be found in the Holly DCP Narrative later in this application with additional commentary pertaining to schools, parks, police protection, and fire protection.

IV. Neighborhood Involvement

One of the requirements of submitting for annexation is holding an informative neighborhood meeting. The purpose of the meeting is to inform neighbors of the Applicant's intent to propose an Annexation and a Zoning

Map Amendment along with a Development Concept Plan. The notice/invite letter sent to the neighbors included a draft road layout for the Holly DCP area. The mailing list was prepared by a title company and was based on Clackamas County Assessor's records.

The Applicant held a neighborhood meeting in compliance with the requirements of CMC 16.89.070 on Tuesday, July 31, 2018 at the Canby United Methodist Church. The notice was sent to all property owners and occupants within 500 feet of the Holly DCP area and the representatives of the Riverside and NE Canby Neighborhood Associations a minimum of two weeks prior to the date of the meeting. Approximately 80 people attended, but not everyone signed in. The Applicant gave a presentation and explained the proposed Annexations, Zoning Map Amendment, and Development Concept Plan and answered questions from attendees. Neighborhood meeting materials and a summary of the discussion are included as Exhibit 6. The requirement to host a neighborhood meeting has been satisfied by the Applicant.

In addition to the required neighborhood meeting, the Applicant invited all the property owners within the DCP boundaries to a meeting to have a more focused discussion with those who are most affected by the proposed DCP. The meeting was held on Monday, August 27, 2018 at the Canby United Methodist Church. There were approximately 20 attendees, but not everyone signed in. the DCP owner's meeting materials are attached as Exhibit 7.

V. Approval Criteria

This section will address the applicable standards and criteria for approval of annexation into the City of Canby and a Zoning Map Amendment and the subsequent criteria of the Comprehensive Plan, Urban Growth Management Agreement between Clackamas County and the City of Canby, and the Oregon Revised Statutes. Code sections will be quoted in *italic*, followed by a comment from the applicant evidencing the compliance of this request and proposal. Text from certain sections of the quoted codes have been omitted because they are explanatory in nature, are not the responsibility of the Applicant, or do not apply to this application.

Canby Municipal Code

ANNEXATION: DIVISION VI. – CHAPTER 16.84 – ANNEXATIONS

16.84.005 Background [omitted]

16.84.010 Purpose [omitted]

16.84.020 State regulations

The regulations and requirements of Oregon Revised Statutes Chapter 222 are adopted by reference and made a part of this division. (Ord. 740 section 10.6.20, 1984)

COMMENT:

The Applicant will meet all state requirements they are responsible for and expects that the City will do the same. This criterion can be met.

16.84.030 Filing procedure**[omitted]****16.84.040 Standards and criteria.**

A. The following criteria shall apply to all annexation requests.

1. The City of Canby Annexation Development Map shall determine which properties are required to submit either (See Figure 16.84.040):

a. A Development Agreement (DA) binding for all properties located within the boundaries of a designated DA area as shown on the City of Canby Annexation Development Map. The terms of the Development Agreement may include, but are not limited to: [portions of this subsection omitted for brevity]

COMMENT:

The subject properties are not within a Development Agreement area as identified on the City of Canby Annexation Development Map. This criterion is not applicable.

b. A Development Concept Plan (DCP) binding for all properties located within the boundaries of a designated DCP area as shown on the City of Canby Annexation Development Map. A Development Concept Plan shall address City of Canby infrastructure requirements including:

- 1. Water*
- 2. Sewer*
- 3. Stormwater*
- 4. Access*
- 5. Internal Circulation*
- 6. Street Standards*
- 7. Fire Department requirements*
- 8. Parks and open space*

For newly annexed properties that are within the boundaries of a DCP area as designated on the City of Canby Annexation Development Map: A Development Concept Plan shall be adopted by the Canby City Council prior to granting a change in zoning classification. (Ord 1294, 2008)

COMMENT:

The subject properties are part of a Development Concept Plan (DCP) area as identified on the City of Canby Annexation Development Map (Exhibit 2). The Applicant has prepared a DCP for the Holly DCP area and included a narrative and exhibits addressing the infrastructure requirements, including a Traffic Study attached as Exhibit 9. The Holly DCP Narrative begins in the next portion of the application and the Holly DCP Plans are attached as Exhibit 4. A review of the Holly DCP will show that these criteria have been met.

2. Analysis of the need for additional property within the city limits shall be provided. The analysis shall include the amount of developable land (within the same class of zoning - low density residential, light industrial, etc.) Currently within the city limits; the approximate rate of development of those lands; and how the proposed annexation will affect the supply of

developable land within the city limits. A supply of developable residential land to provide for the anticipated population growth over the following three years is considered to be sufficient;

COMMENT:

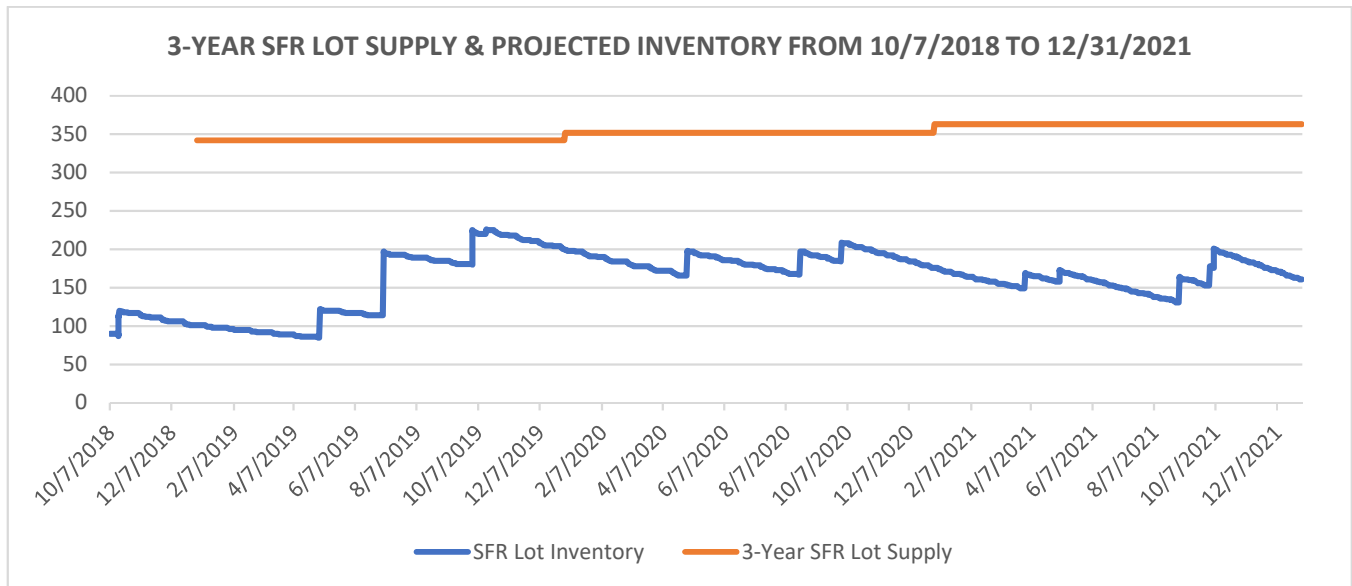
The applicant has reviewed available data as of October 6, 2018 and determined that the City of Canby has an insufficient supply of platted lots in the same class of zoning that would be applied to the subject properties upon Annexation and approval of a Zoning Map Amendment. Based on the detailed Needs Analysis attached as Exhibit 8, the City of Canby has an inventory of 91 SFR platted lots, 84 of which were created through a subdivision and 7 of which were created through a partition, which is insufficient to meet the need for an additional 342 single family detached residences through 2021 as necessitated by the anticipated population growth over the same period. A more detailed analysis of the population growth can be found in Exhibit 8. Table 3 below summarizes the Needs Analysis.

TABLE 8-7: ANALYSIS SUMMARY

Description	Count
SFR Housing Needed Through 2021	342
Available Platted SFR Lots	91
Current Deficiency of SFR Lots	251

Based on the analysis, there is currently a deficiency of 251 SFR platted lots in the City of Canby. Furthermore, only 17 of the available SFR lots are in the R-1 zone which is the class of zoning proposed for the subject properties. This criterion is met.

Annexation of the subject properties will not add to the inventory, but future subdivisions would. The subject properties can accommodate approximately 177 new SFR lots but would not develop simultaneously. The Applicant only has plans to develop approximately 81 new SFR lots on the Dodds properties over time. A more detailed schedule of when these properties might develop and contribute to the needed inventory is discussed in Exhibit 8 with an analysis of the absorption of current and future projects through 2021. The figure below summarizes this analysis and compares the projected lot inventory with the 3-year lot supply needed at any given time.



Based on the analysis in Exhibit 8 and the tables and graph above, the 3-year SFR lot supply will not be eclipsed by future development of the subject properties and other currently approved or future projects. The graph above further exemplifies that the requirements of this section have been satisfied.

3. Statement of potential physical, aesthetic and related social effects of the proposed development on the community as a whole and on the neighborhood of which it will become a part; and proposed actions to mitigate identified concerns, if any. A neighborhood meeting is required as per Table 16.89.020 of the City of Canby Land Development and Planning Ordinance.

COMMENT:

The Applicant has identified and recognizes the physical and aesthetic changes that may result from future development of the subject properties. The most significant change will be the obvious shift from rural housing and agricultural uses to urban density housing. While the current agricultural uses provide a benefit of their own outside the Canby city limits, the Applicant believes that eventual development and the associated changes will have an overall positive social and economic effect on the City of Canby by providing an area for growth that can happen in a well-planned and efficient manner regardless of timing. Future development of the properties included in this annexation and in the DCP area will be consistent with the existing character of properties inside the north Canby City Limits. Future development on any of the subject properties will substantially conform to the Holly Development Concept Plan which has been submitted as a part of this application.

It should also be noted that the Applicant only has plans to propose a subdivision for tax lot 400 in a future application. Despite other properties joining the annexation, they may elect to continue agricultural use of the property indefinitely.

The additional needs coincident to any development regarding transportation, park space, and other utility and city services is addressed in detail in other parts of this application and in the Holly DCP Narrative.

The Applicant held a neighborhood meeting in compliance with the requirements of CMC 16.89.070 on Tuesday, July 31, 2018. Additional information about neighborhood involvement is available in Section IV of this application and Exhibits 6 and 7.

The subject properties are within the City of Canby UGB and identified as an area of priority growth in the Comprehensive Plan. As such, the physical, aesthetic and social impacts of annexation and potential future development of the subject properties is consistent with the growth planned for this area.

4. Statement of availability, capacity and status of existing water, sewer, drainage, transportation, park and school facilities;

COMMENT:

The availability of water, sanitary sewer, storm sewer and drainage, transportation, parks, schools, and other necessary facilities is covered in greater detail in the Holly DCP Narrative. In summary, there are no known capacity issues, and the necessary services, utilities, and facilities can be made available to the subject properties and DCP area and will not inhibit future expansion. Plans indicating the location of existing and proposed facilities are included in the DCP Plans in Exhibit 4.

5. Statement of increased demand for such facilities to be generated by the proposed development, if any, at this time;

COMMENT:

Annexation of the subject properties will not increase demand on existing facilities. However, future subdivision of the property will increase the demand on all facilities and services. Increased demand can be met by reasonable extension of facilities and services as there are no capacity issues with the existing facilities. Extension or expansion of such facilities is depicted in the DCP plans.

6. Statement of additional facilities, if any, required to meet the increased demand and any proposed phasing of such facilities in accordance with projected demand;

COMMENT:

Annexation of the subject properties will not require additional facilities. Additional facilities and services will be required to serve the subject properties if and when subdivided in the future. Proposed locations for additions that would serve the entire Holly DCP can be seen on the DCP Plans in Exhibit 4. Sanitary sewer, water service, storm drainage management, and street improvements will be constructed by the developers. These improvements will occur when the site is developed, not with the annexation.

7. Statement outlining method and source of financing required to provide additional facilities, if any;

COMMENT:

Developers will pay for the improvement costs for their own projects.

8. Statement indicating the type and nature of any comprehensive Plan text or map amendments or Zoning text or map amendments that may be required to complete the proposed development. (Ord 1292, 2008)

COMMENT:

No Comprehensive Plan text or map amendment is requested. Subject to annexation approval, the Applicant is proposing a Zoning Map Amendment to rezone the subject properties to Canby zoning designations in accordance with the Comprehensive Plan. The proposed Zoning Map Amendment is addressed later in this application.

9. Compliance with other applicable city ordinances or policies;

COMMENT:

Other official documents that are applicable to the requested annexation include portions of the Comprehensive Plan and the Urban Growth Management Agreement (UGMA) between Clackamas County and the City of Canby. The applicant will comply with the relevant sections of the UGMA and expects that the City will do the same. This criterion can and will be met.

10. Compliance of the application with the applicable sections of Oregon Revised Statutes Chapter 222. (Ord. 740 section 10.6.40, 1984; Ord. 981 section 37, 1997; Ord. 1294, 2008)

COMMENT:

The Applicant will comply with the applicable sections of the Oregon Revised Statutes Chapter 222 that they are responsible for and expects that the City will do the same. This criterion can and will be met.

16.84.050 - 16.84.090

[omitted]

ZONING MAP AMENDMENT: DIVISION III. – CHAPTER 16.54 – AMENDMENTS TO ZONING MAP**16.54.010 Authorization to initiate amendments.**

An amendment to the zoning map may be initiated by the City Council, by the Planning Commission, or by application of the property owner or his authorized agent. The Planning Commission shall, within forty days after closing the hearing, recommend to the City Council, approval, disapproval or modification of the proposed amendment. (Ord. 740 section 10.3.45 (A), 1984)

COMMENT:

The Applicant requesting an amendment to the zoning map is an authorized agent of the owners of the subject properties. Property owner consent forms are signed and included as Exhibit 12. This criterion is met.

16.54.020 Application and fee.

Application procedures shall be as described in Chapter 16.89. (Ord. 740 section 10.3.85(B), 1984; Ord. 981 section 7, 1997; Ord. 1019 section 13, 1999; Ord. 1080, 2001)

COMMENT:

The application for an amendment to the zoning map to apply the R-1 zoning designation to the subject properties is submitted to the City as a part of this application along with the required fee. The City will follow the procedures set forth in CMC 16.89. This criterion is satisfied.

16.54.030 Public hearing on amendment

Before taking final action on a proposed amendment, the Planning Commission shall hold a public hearing on the amendment following the requirements for advertising and conduct of hearing prescribed in Division VIII. (Ord. 740 section 10.3.85(C), 1984)

COMMENT:

The Planning Commission will schedule a public hearing once the application is deemed complete. Following the Planning Commission's public hearing and recommendation, the City Council will hold its own public hearing to make a final decision. By holding these public hearings, this criterion will be met.

16.54.040 Standards and criteria.

In judging whether or not the zoning map should be amended or changed, the Planning Commission and City Council shall consider:

- A. The Comprehensive Plan of the city, giving special attention to Policy 6 of the land use element and implementation measures therefore, and the plans and policies of the county, state and local districts in order to preserve functions and local aspects of land conservation and development;*

COMMENT:

This zone change would allow the subject properties to be developed with single family detached houses. Policy 6 is addressed in the Comprehensive Plan section below. Future development of the subject properties is consistent with plans, goals and policies of the city, county, state and local districts. The subject properties

are identified in the Comprehensive Plan as an area of priority growth. The proposed DCP will allow and encourage efficient and compact development in compliance with function and land conservation goals.

- B. Whether all required public facilities and services exist or will be provided concurrent with development to adequately meet the needs of any use or development which would be permitted by the new zoning designation. (Ord. 749 section 1(B), 1984; Ord. 740 section 10.3.85(D), 1984)*

COMMENT:

The Holly DCP demonstrates that all required public facilities and services can be made available to serve the subject properties.

16.54.050 (Ord. 740 section 10.3.85(E), 1984 [omitted]

16.54.060 Improvement conditions.

A. In acting on an application for a zone change, the Planning Commission may recommend and the City Council may impose conditions to be met by the proponents of the change before the proposed change takes effect. Such conditions shall be limited to improvements or physical changes to the property which are directly related to the health, safety or general welfare of those in the area. Further, such conditions shall be limited to improvements which clearly relate to and benefit the area of the proposed zone change. Allowable conditions of approval may include, but are not necessarily limited to:

- 1. Street and sidewalk construction or improvements;*
- 2. Extension of water, sewer, or other forms of utility lines;*
- 3. Installation of fire hydrants.*

B. The city will not use the imposition of improvement conditions as a means of preventing planned development, and will consider the potential impact of the costs or required improvements on needed housing. The Planning Commission and City Council will assure that the required improvements will not reduce housing densities below those anticipated in the Comprehensive Plan. (Ord. 749 section 1(C), 1984; Ord. 740 section 10.3.85 (F). 1984)

COMMENT:

The developers will provide reasonable improvement of public and private facilities and services for the subject properties if and when a development is approved by the City. The developers will pay for those improvements if required. When oversizing or “reimbursement districts” are appropriate, the developers will request a pay back of some funds expended for expansion of facilities and services when the improvements are more than required for the development of the subject property. The requirements of this subsection will be satisfied when Conditions of Approval are imposed by the City with approval of a more detailed development application. No improvements are required or necessary as a result of this zone change application. Future improvements will not cause a reduction of the housing densities anticipated by the Comprehensive Plan. These criteria can be met.

16.54.070 Record of amendments. [omitted]

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Canby Comprehensive Plan

URBAN GROWTH ELEMENT

GOAL 1: To preserve and maintain designated agricultural and forest lands by protecting them from urbanization.

GOAL 2: To provide adequate urbanizable area for the growth of the city, within the framework of an efficient system for the transition from rural to urban land use.

Policy 1: Canby shall coordinate its growth and development plans with Clackamas County.

Policy 2: Canby shall provide the opportunity for amendments to the Urban Growth Boundary....where warranted by unforeseen changes in circumstances.

Policy 3: Canby shall discourage the urban development of properties until they have been annexed to the city and provided with all necessary urban services.

COMMENT:

The Goals and Policies of the Urban Growth Element as they relate to this application are satisfied by the City as it has maintained a Comprehensive Plan and Comp Plan Map with a designated Urban Growth Boundary that identifies areas of growth within the UGB and dictates the types of uses anticipated for the properties within the UGB, but outside of the City. Furthermore, urban development is not permitted outside the UGB by Clackamas County, which protects agricultural and forest uses. The City does not permit urban development until properties already within the UGB are annexed to the City and reviewed/approved per the Canby Municipal Code which ensures that urban services are made available to the subject properties. The Goals and Policies of the Urban Growth Element are met.

LAND USE ELEMENT

GOAL: To guide the development and uses of land so that they are orderly, efficient, aesthetically pleasing, and suitably related to one another.

Policy 1: Canby shall guide the course of growth and development so as to separate conflicting or incompatible uses while grouping compatible uses.

Policy 2: Canby shall encourage a general increase in the intensity and density of permitted development as a means of minimizing urban sprawl.

Policy 3: Canby shall discourage any development which will result in overburdening any of the community's public facilities and services.

Policy 4: Canby shall limit development in areas identified as having an unacceptable level of risk because of natural hazards.

Policy 5: Canby shall utilize the land use map as the basis of zoning and other planning or public facility decisions.

Policy 6: Canby shall recognize the unique character of certain areas and will utilize the following special requirements, in conjunction with the requirements of the land development and planning ordinance, in guiding the use and development of these unique areas.

COMMENT:

The Goal and Policies of the Land Use Element are satisfied by the City as the Canby Municipal Code (CMC), Comprehensive Plan Map, and Zoning Map implement these goals and policies with detailed requirements. This annexation and zone change application is evidence of that fact. The creation of the Holly DCP, which is a requirement of the CMC, helps accomplish the goal of the land use element by ensuring that a master plan for the DCP area is created that is well planned. The adoption of a DCP concurrent with the annexation and zone change results in a more efficient layout that allows for a higher density than would otherwise occur if planning occurred in a piecemeal manner. Additionally, the DCP ensures feasible and logical extensions of urban transportation and services. The proposed zoning of the subject properties is consistent with the Canby Comprehensive Plan Map and Zoning Map and will match the designation of adjacent properties already developed within the City. The Goal and Policies of the Land Use Element are satisfied by the proposed annexation, zone change, and DCP.

ENVIRONMENTAL CONCERNS ELEMENT

GOAL 1: To protect identified natural and historical resources.

GOAL 2: To prevent air, water, land, and noise pollution.

GOAL 3: To protect lives and property from natural hazards.

Policy 1-R-A: Canby shall direct urban growth such that viable agricultural uses within the urban growth boundary can continue as long as it is economically feasible for them to do so.

Implementation Measures:

- A) Maintain zoning provisions which allow agricultural operation within the City limits.*
- B) Conduct development reviews such that agricultural operations are regarded as part of the accepted pattern of local land use rather than a nuisance to residents.*

Policy 1-R-B: Canby shall encourage the urbanization of the least productive agricultural area within the urban growth boundary as a first priority.

Implementation Measures:

- A) Coordinate water and sewerage planning to facilitate this Policy.*
- B) Coordinate street and road improvements with this Policy.*
- C) Encourage growth into areas where land is fragmented into small parcels which are not conducive to productive agricultural use.*
- D) Review annexation proposals in light of the growth phasing strategies of the Urban Growth Element.*

COMMENT:

The subject properties do not have any natural or historical resources or hazards on site. Like much of the remaining developable land within the UGB that is designated LDR, the subject properties are currently used for agricultural purposes. Upon annexation, some of the subject properties could continue with agricultural uses indefinitely, consistent with Implementation Measure A of Policy 1-R-A. The subject properties have Class II soils per the Agricultural Soil Capabilities Map on page 89 of the Comprehensive Plan. This is the lowest classification that any of the remaining LDR land has within the UGB. Other developable LDR or R-1 properties within the UGB and/or City limits that have higher Class I soil capabilities include the Clackamas County Fairgrounds, parts of the Redwood area, the undeveloped properties on N Pine (Holmes & Hollar properties), the Tofte Farms properties, the Cutsforth properties, and portions of the Willamette Valley Country Club. The only other area within the UGB that is almost entirely identified as Class II soils includes the DCP area to the west of the subject properties, on either side of N Birch St. The only other area inside the UGB that permits residential development is the property designated as Mixed Density Residential located southeast of 99E and north of SE 1st Ave. However, the soils on these properties are also identified as Class I. With few alternatives for expansion of the City boundaries, annexation of the subject properties is consistent with the Goals and Policies of the Environmental Concerns Element.

Policy 2-R through Policy 6-R: [generally related to industrial uses and historic sites]

Policy 7-R and 10-R: [scenic/aesthetic qualities, open space, fish and wildlife, & natural resources]

Policy 1-H through 3-H [Hazards]

COMMENT:

There are no known hazards or natural resources located on the subject properties. Annexation of the subject properties will not change the current use of the properties and will not have an immediate impact on any of the issues discussed in Policies 2-R through 10-R. Future development will underground utilities and provide or enhance open space within future developments as permitted or required by the City. The Holly DCP shows no additional open space beyond the existing City property per the direction of City Staff. The Applicant would, however, in anticipation of a future subdivision application, would like to construct improvements on the City Property to enhance the open space for current and future residents when the Dodds property is developed. The policies of the Environmental Concerns Element above can be satisfied at the time of development.

TRANSPORTATION ELEMENT

GOAL: To develop and maintain a transportation system which is safe, convenient and economical.

Policy 1-12: [Improve all transportation infrastructure for all modes of travel]

COMMENT:

Annexation of the subject properties will not have an impact on the transportation facilities. However, future development will help the City accomplish its goals of creating a safe, convenient and economical

transportation system for multimodal travel as road frontage improvements and warranted traffic safety measures will be paid for by the developer where warranted and possibly facilitated by the developer where they are able. The Goals and Policies of the Transportation Element can be satisfied by future development. A traffic study for the Holly DCP is included as Exhibit 11. Future developments will be required to provide additional traffic studies for their specific project to ensure the goals of the Transportation Element are satisfied.

PUBLIC FACILITIES AND SERVICES ELEMENT

GOAL: To assure the provision of a full range of public facilities and services to meet the needs of the residents and property owners of Canby

COMMENT:

Public facilities and services are addressed in more detail throughout this application. All public facilities and services are available or can be expanded to serve future developments on the Annexation properties.

HOUSING ELEMENT

GOAL: To provide for the housing needs of the Citizens of Canby.

COMMENT:

The subject properties are within the Urban Growth Boundary and identified as an area of priority growth in the Comprehensive Plan. There is currently a deficiency of platted lots available in the City of Canby to accommodate the population growth over the next three years as discussed earlier in this narrative. Future development of the subject properties will provide for the future housing needs of Canby citizens. The proposed annexation satisfies the Goal of the Housing Element.

Urban Growth Management Agreement (UGMA)

The UGMA between Canby and Clackamas County is codified as part of Resolution 519, dated Sept. 23, 1992, and requires certain actions and procedures for a variety of actions relative to lands within the Urban Growth Management Boundary area. The UGMA contains seven specific issues on which the City of Canby and Clackamas County agree. Rather than quote each of the seven issues, they will be identified by title and addressed:

1. *Boundary*

COMMENT:

The subject site is within the Urban Growth Boundary of Canby, thus satisfying this criterion.

2. *Comprehensive Planning, Plan Amendments and Public Facilities Planning for Lands in Unincorporated UGMB;*

COMMENT:

The subject site is within the UGB, and has been included in long range planning for land use, traffic, services and facilities, utilities, and all similar and appropriate elements. The planning designation proposed for this site is consistent with the designations on the Canby Comprehensive Plan map (Low Density Residential). Proposed zoning (R-1) is consistent with the Comprehensive Plan. Upon annexation, the city will assume all planning responsibilities for the subject property. Once the site is annexed to the city by final legislative action, Clackamas County will have no further jurisdiction over or interest in the subject property. Therefore, this criterion is fulfilled.

3. *Development Proposals for Unincorporated UGMB Areas;*

COMMENT:

This criterion does not apply because the property will already be annexed to the city before development applications are submitted to the city for review.

4. *County Notice to and Coordination with the City;*

COMMENT:

This criterion is not applicable because any development action will occur within the City of Canby and not in the jurisdiction of Clackamas County.

5. *City Notice to and Coordination with the County;*

COMMENT:

Because this is a proposed annexation and zone change, the City is required under Subsection A to notify Clackamas County of the impending action.

6. *City Annexation and Sewer, Water and Road Service;*

COMMENT:

Subsection A: The City agrees to undertake any annexations in accordance with process and procedures agreed to by the County. The adjacent right-of-way is required to be included in the annexation and the county will not oppose such annexations.

Subsection B: The City is required to accept jurisdiction of adjacent rights-of-way. The developer will be required to construct “half street improvements” along the frontage of these streets to current City of Canby standards when development is proposed.

Subsection E: Public water and sanitary sewer are not currently available to the site for use in site development, but can be made available upon approval of the annexation application. This subject site is not, however, a health hazard.

7. *Terms of Agreement*

COMMENT:

This UGMA is between the City of Canby and Clackamas County. However, no part or measure of the proposed annexation of the subject site, nor the future development violates or otherwise circumvents the measures required under this UGMA. Therefore, the requirements of this UGMA have been satisfied and/or fulfilled.

HOLLY DEVELOPMENT CONCEPT PLAN NARRATIVE

I. Purpose

The subject properties are identified on the Canby Annexation Development Map (CMC Figure 16.8 4.040) as being within a Development Concept Plan (DCP) area. The purpose of this Holly DCP is to address the specific requirements of the City of Canby Municipal Code (CMC) Section 16.84.040 (1)(b).

b. A Development Concept Plan (DCP) binding for all properties located within the boundaries of a designated DCP area as shown on the City of Canby Annexation Development Map. A Development Concept Plan shall address City of Canby infrastructure requirements including:

- 1. Water*
- 2. Sewer*
- 3. Stormwater*
- 4. Access*
- 5. Internal Circulation*
- 6. Street Standards*
- 7. Fire Department requirements*
- 8. Parks and open space*

For newly annexed properties that are within the boundaries of a DCP area as designated on the City of Canby Annexation Development Map: A Development Concept Plan shall be adopted by the Canby City Council prior to granting a change in zoning classification. (Ord 1294, 2008)

The above requirements will be addressed throughout this narrative. Sixteen (16) tax lots are included within the Holly DCP boundaries totaling approximately 58.79 acres which could accommodate between 230 and 240 future single family detached homes. The property owners and acreage are shown by Exhibit 4.3. When the UGB was determined in this area, only properties zoned RRFF-5 were included within the boundary. Tax Lots 300 and 390 which have a Clackamas County EFU zoning designation are excluded from UGB and DCP and are surrounded by the DCP properties and Territorial Road. Property west of the Holly DCP is also zoned EFU and outside the UGB. Inclusion of these properties in the UGB would require a new land use analysis approved by DLCD and would require a separate review.

Street stubs are provided to the surrounding property outside of the UGB in the event these properties are included in the Canby UGB in the future. The street stubs are shown by Exhibit 4.5. A street pattern was designed for the properties outside the UGB to ensure that the street stubs allow for continued logical extension, but are not shown on the exhibits to avoid confusion.

II. Existing Conditions

The DCP site is very flat with an 8-foot difference in topography from the southwest corner of the site to the northeast corner as shown by Exhibit 4.4. The elevation of the DCP area ranges from approximately 146 feet at the southwest corner to 138 feet at the northwest corner of the site. The land is primarily used for agriculture

with eight existing houses which are shown on the plans. The street pattern was designed to allow these houses to remain if the property is developed in the future.

The site is similar in character to surrounding property in north Canby. Surrounding property to the north and west are rural in nature and contain large lot single-family houses and agricultural uses. Urban uses and residential subdivisions are located to the south and east. Annexation of this DCP area is a logical extension of urban development and a reasonable transition from rural to urban uses. Most of the property in this DCP is included in the annexation application. The street pattern was designed so most of the property owners can develop independently in the future. Property included in the annexation area can develop independently of property outside the annexation area.

A total of 4 public streets provide access to the site; Holly Street, 22nd Avenue, Locust Street and Territorial Road. Holly and Territorial are designated collector streets with no direct access from future subdivision lots. The future right-of-way is 70 feet.

Urban infrastructure is available south and east of the DCP area and can be extended. Water lines and gravity sanitary sewer lines are available in Territorial Road, Locust Street and 22nd Avenue. None of these utility lines are located in Holly Street. Electrical lines, storm sewer line and other dry utilities will be extended into the DCP area as identified in Section “V” of this report.

III. Opportunities and Constraints

The DCP area is similar to the character of surrounding development areas prior to urban development. This DCP area is one of the best opportunities for future development in Canby because of the number of property owners that could develop independently. This property has no constraints. Stafford Development Company is planning to develop the Dodds properties which contain approximately 19.78 acres, or 34% of the Holly DCP. No other properties are identified for development in the near future. The city owns 2.31 acres for a city park but does not currently have a plan for development of this park. However, the Applicant would like to propose improvements during the future development of the Dodds property.

Schools - Schools are available to the Holly DCP area. A representative from the Canby School District indicated adequate capacity is available to accommodate students generated from development the Holly DCP area. The schools have athletic fields which provide active recreational opportunities on weekends, during summers, and when school is not in session. The students would attend the following schools:

Eccles Elementary located off 5th Avenue and south of Knights Bridge Road

Baker Prairie Middle School is located on Teakwood Street, south of SE Township Road

Canby High School is located at the southeast corner of Highway 99E and 4th Avenue.

Bike and Walking Trails - A bicycle and walking trail will be provided to the City Park. The DCP Master plan (Exhibit 4.5) shows pedestrian access tracts in all direction into the park. Bike paths will be provided along Holly Street and Territorial Road.

Holly Street and Territorial - Both of these streets are designated collector streets on the City Transportation System Plan.

East-West Connection - Exhibit 4.5 shows 2 east-west street connections between Holly and Locust Streets. These streets were designed to reduced speeding in the subdivision with offset roads rather than straight roads between Holly and Locust Streets, as the. The intent is to encourage residents to use Territorial Road and Holly Streets rather than interior streets in the DCP area. The Lancaster Engineering Traffic Report shows no major traffic confits with the develop of this DCP property.

Fire Department Requirements - The Master Plan has been designed to provide adequate fire truck access to all dwelling units. All streets are through streets except the 2 cul-de-sacs south of the city park. Water lines will be designed to provide adequate fire hydrant flows and pressure. All water lines are looped to existing 8, 10 and 12-inch diameter water lines except the 2 cul-de-sacs (See Exhibit 4.8).

IV. Concept Plan

Zoning: The DCP land use designation is the same as the City of Canby Comprehensive Plan. The Comprehensive Plan identifies all the property as **LDR** - Low Density Residential with **R-1** Low Density Residential Zoning. Since the proposed Zoning designations are the same as the Comprehensive Plan, no Comprehensive Plan Amendment is required with this application.

Canby Municipal Code (CMC) Chapter 16.16 (R-1 Low Density Residential Zone) permits one single family dwelling per lot in addition to other Conditional Uses. Lots in the R-1 zone are required to be 7,000 sf in area unless a PUD or lot averaging is proposed.

Streets: The proposed street pattern (Exhibit 4.5) shows connections to 4 existing streets. All interior and exterior local streets will be developed with the Standard Local Street Section; 34 feet of pavement, 50 feet of right-of-way and parking on both sides of the street. This local street section is consistent with Figure 7-6 of the Canby TSP. Holly Street and Territorial Road will develop in accordance with the Collector Street Section (Figure 7-5 in the TSP). The collector streets will have 70 feet of right-of-way and 46 feet of pavement. Sidewalks will be 6 feet, landscape planters 5 feet, bike lane 6 feet on both side of the street, travel lanes 11 feet and the center turn lane 12 feet.

Parks: City staff indicated that the city does not want a new park to be developed in this DCP area since there is the existing City Property is designated for use as a park. As a result, Park SDCs will be paid to the city when house construction permits are issued. City, County and State Parks located in and nearby the Holly DCP boundary are as follows:

1. **Locust Street Park** in located in the Holly DCP boundary and currently undeveloped. The city does not have a time line for development of this park.
2. **Molalla River State Park** is located to the northwest. This park features hiking, picnicking, fishing, boating and wildlife viewing and located at the confluence of the Willamette, Molalla and Pudding Rivers.
3. **Community River Park** is located at 1348 S. Berg Parkway southwest of Canby High School. This is a nature park with picnic facilities, barbecue pits, playground equipment, ball fields and a fishing pond for youth age 17 and under.
4. **Community Swim Center** is located at 1150 S. Ivy Street just north of 13th Avenue.
5. **Adult Center** is located at 1250 S. Ivy Street at the northeast intersection of 13th Avenue and Ivy Street.

6. **Ecco Park** is located on the north side of Territorial Road just east of Willamette Valley Country Club Golf Course.
7. **Logging Road Trail** extends from southeastern Canby up to the Willamette River between Ecco Park and the Willamette Golf Course. The trail is 3.5 miles long.
8. **Willow Creek Park** is located on the south side of Territorial Road east of Redwood Street.
9. **Willamette Wayside Park** is located on the north side of Territorial Road, east of Ecco Park. This park generally contains trails. Future improvements are in the planning phase.
10. **Maple Street Park** is located at 1300 North Maple Street, south of Territorial Road and west of Pine Street. This park features multiple ball fields, tennis courts, covered picnic tables and playgrounds.
11. **Clackamas County Fairgrounds** is available for many community events. It is located just northeast of downtown Canby.
12. **Wait Park** is located in downtown Canby at the corner of Grant Street and 3rd Avenue. This park features a gazebo and playground equipment.

See Section VI (Park Dedication), for additional information about parks.

V. Utility Service

Annexation of the subject properties is a reasonable expansion of the City of Canby based on the level of development in the surrounding area and existing facilities and services available to serve the Holly DCP area. At a pre-application meeting, the City of Canby staff indicated all utility services and utilities are available in this DCP area or will be available when the property is developed.

Water: Water is provided by the Canby Utility's Water Department. An 8-inch water line is available in Locust Street and a 12-inch water line in Territorial Road. The city Water Department requested extension of a 12-inch water line along Holly Street and 10-inch water lines in the center of the DCP area and along 22nd Avenue. All the interior streets will have 8-inch water lines. All the water lines will be looped except the 2 cul-de-sacs south of the park (See Exhibit 4.8).

Sanitary Sewer: Sanitary sewer is provided by the City of Canby. Three existing sanitary sewer line connections are available to this DCP area (See Exhibit 4.7). All property in the Holly DCP area can be served with either the existing sanitary sewer lines or extension of new sanitary sewer lines.

The **first existing sewer** line is 10-inches in diameter and located at the intersection of Territorial Road and Holly Street. A 10-inch sewer line can be extended north in Holly Street to 22nd Avenue. A second 10-sewer line can extend into the DCP area to provide a flatter grade as shown by Exhibit 4.7.

The **second existing sewer line** is 8-inches in diameter and located at the intersection of Locust Street and 19th and extends south to Territorial Road.

The **third existing sewer line** is 8-inches in diameter and located in Locust Street between 19th Avenue and 22nd Avenue.

Storm Drainage: Roof drains from homes will flow to privately owned and maintained infiltration facilities on each individual lot. Street drainage will flow to shallow roadside swales where feasible and sumped catch basins and pollution control manholes for water quality treatment elsewhere. After treatment, stormwater will then flow to dry wells for disposal through underground injection. All street storm drainage facilities are proposed to be public facilities designed in compliance with the adopted City of Canby Stormwater Master Plan and the Canby Public Works Design Standards. When development proposals are submitted, storm water management plans and drywell locations will be provided.

Private Utilities: Private utility service such as telephone, natural gas, cable, garbage, recycling collection are all available. These utilities generally operate on a franchise basis. Electrical power is provided through Canby Utility. Extension of these utility lines will occur with each development phase.

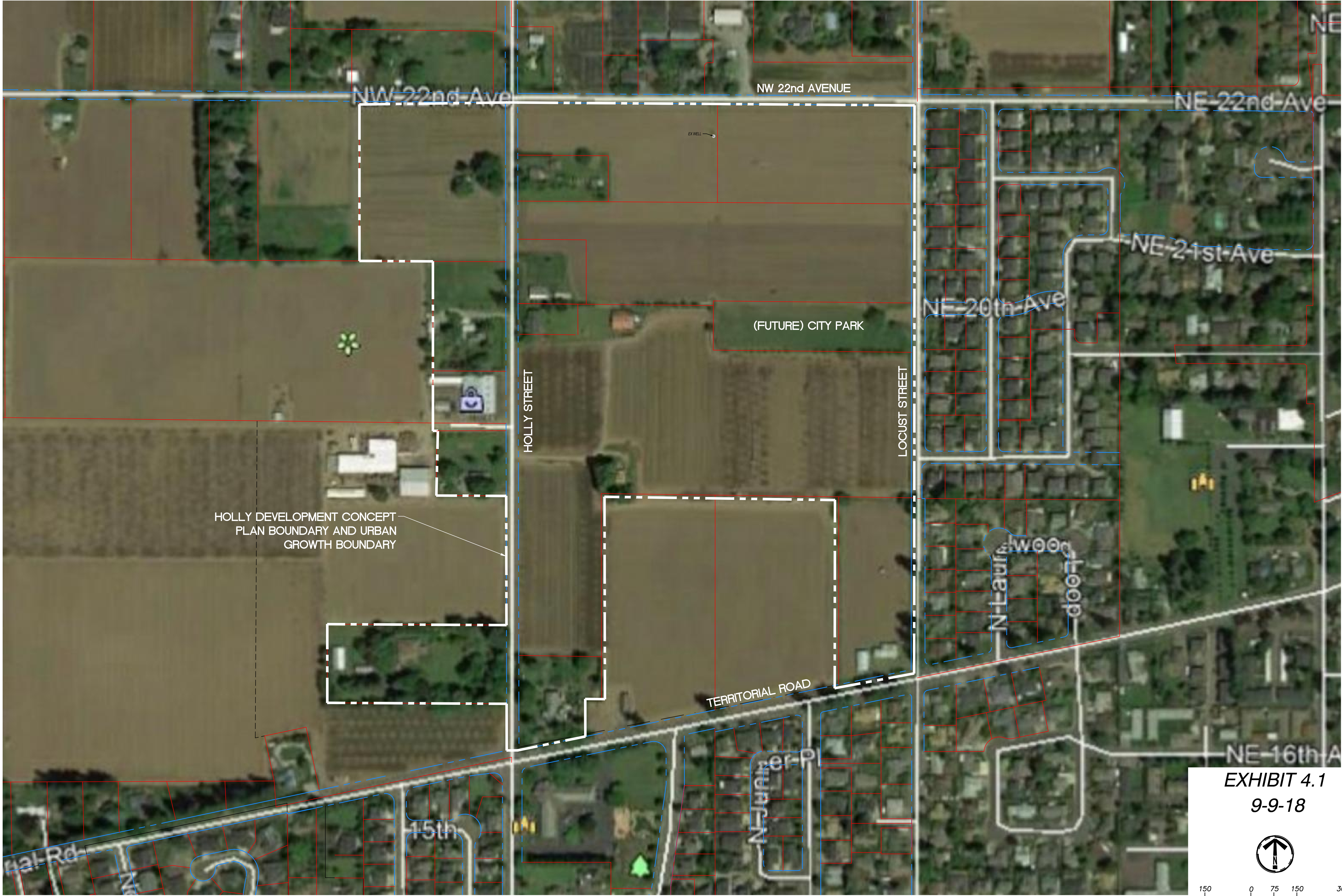
VI. Park Dedication

Park SDC Obligation: Per the City of Canby's park dedication formula, a park dedication of 6.24 acres is required to satisfy the Park SDC obligations for 231 lots (expected number of future lots). The city will collect SDCs with the house building permits and determine in the future where to spend the collected fees. However, during the neighborhood meeting, it was clear that surrounding property owners and community members would like to see future developments improve the existing park area within the DCP.

Anticipated Amenities: Construction of park amenities in the existing city park off Locust Street will require approval by the City Parks Board or City Parks Staff prior to construction. These amenities may include walkways, playground equipment, picnic tables, benches and a restroom facility. The list of these facilities could be modified based on the desires of the City at the time of park development. Landscaping and informational signage would be provided to create an aesthetically pleasing park entrance along the public streets.

CONCLUSION

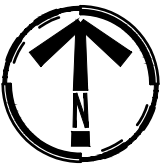
This narrative has addressed the relevant requirements of the Canby Municipal Code, Canby Comprehensive Plan, Urban Growth Management Agreement, and Oregon Revised Statutes; demonstrating that the proposed Annexation and Zoning Map Amendment have met or can meet each of those requirements. The Holly DCP narrative and exhibits address the City of Canby infrastructure requirements and satisfies the requirements of CMC 16.84.040(1)(b). As such the Holly DCP should be adopted in conjunction with the proposed Annexation and Zoning Map Amendment to ensure that future development generally conforms to the Holly DCP to take advantage of the efficiencies created by the master planning efforts considered during this process and incorporated into the DCP plans which are attached as Exhibit 4.



HOLLY DEVELOPMENT CONCEPT
PLAN BOUNDARY AND URBAN
GROWTH BOUNDARY

EXHIBIT 4.1

9-9-18



150 0 75 150 300

1 inch = 150 ft.
1 inch = 300 ft. (11"x17")

PLANNING & LAND DESIGN
1862 NE ESTATE DRIVE
HILLSBORO, OREGON 97124
RYAN O'BRIEN
(503)780-4061

SHEET

1

OF

8

REVISIONS

DESCRIPTION

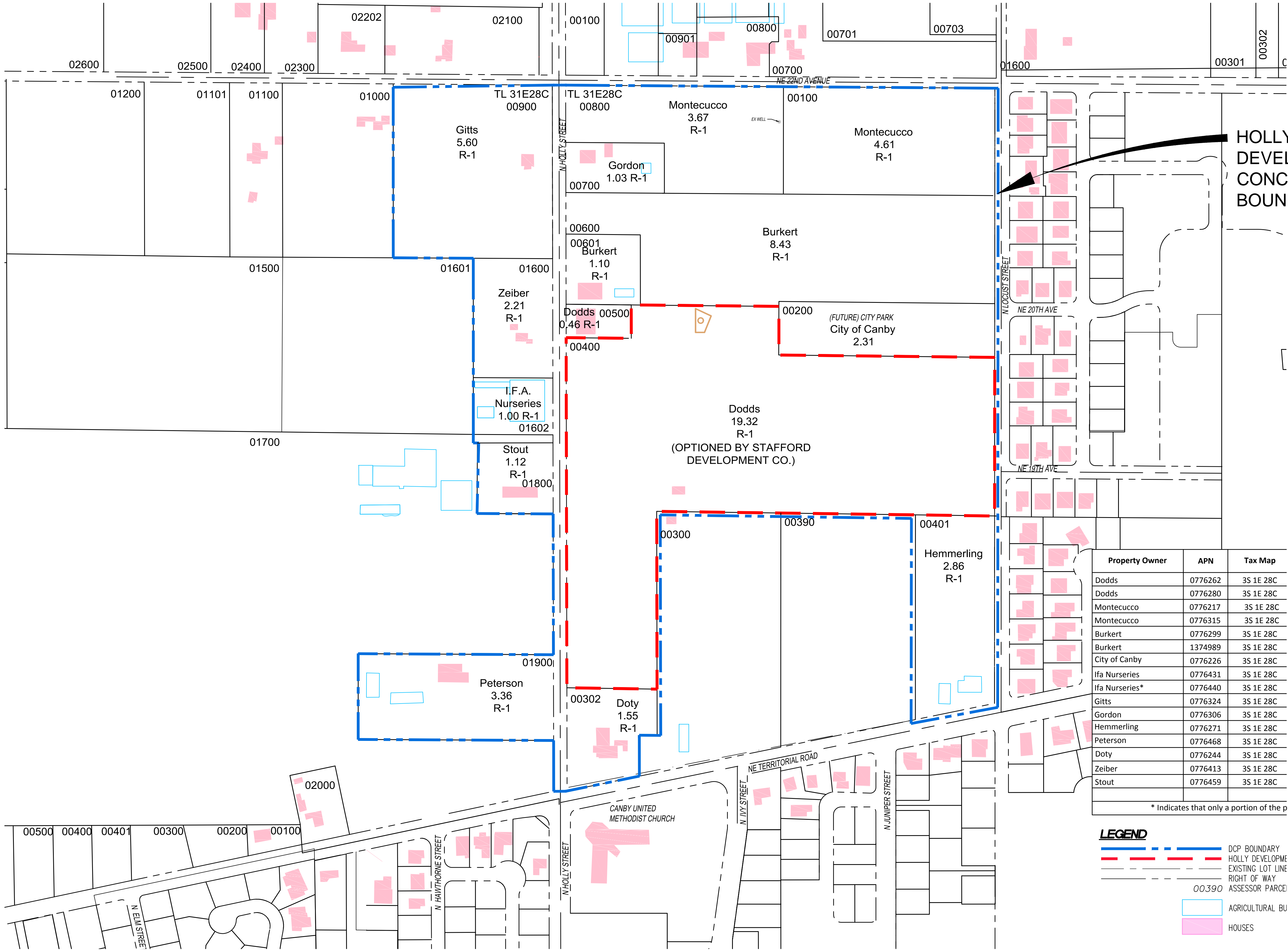
NO. DATE

HOLLY DCP
AERIAL PHOTO

STAFFORD
DEVELOPMENT COMPANY, LLC
485 SOUTH STATE STREET
LAKE OSWEGO, OREGON 97034

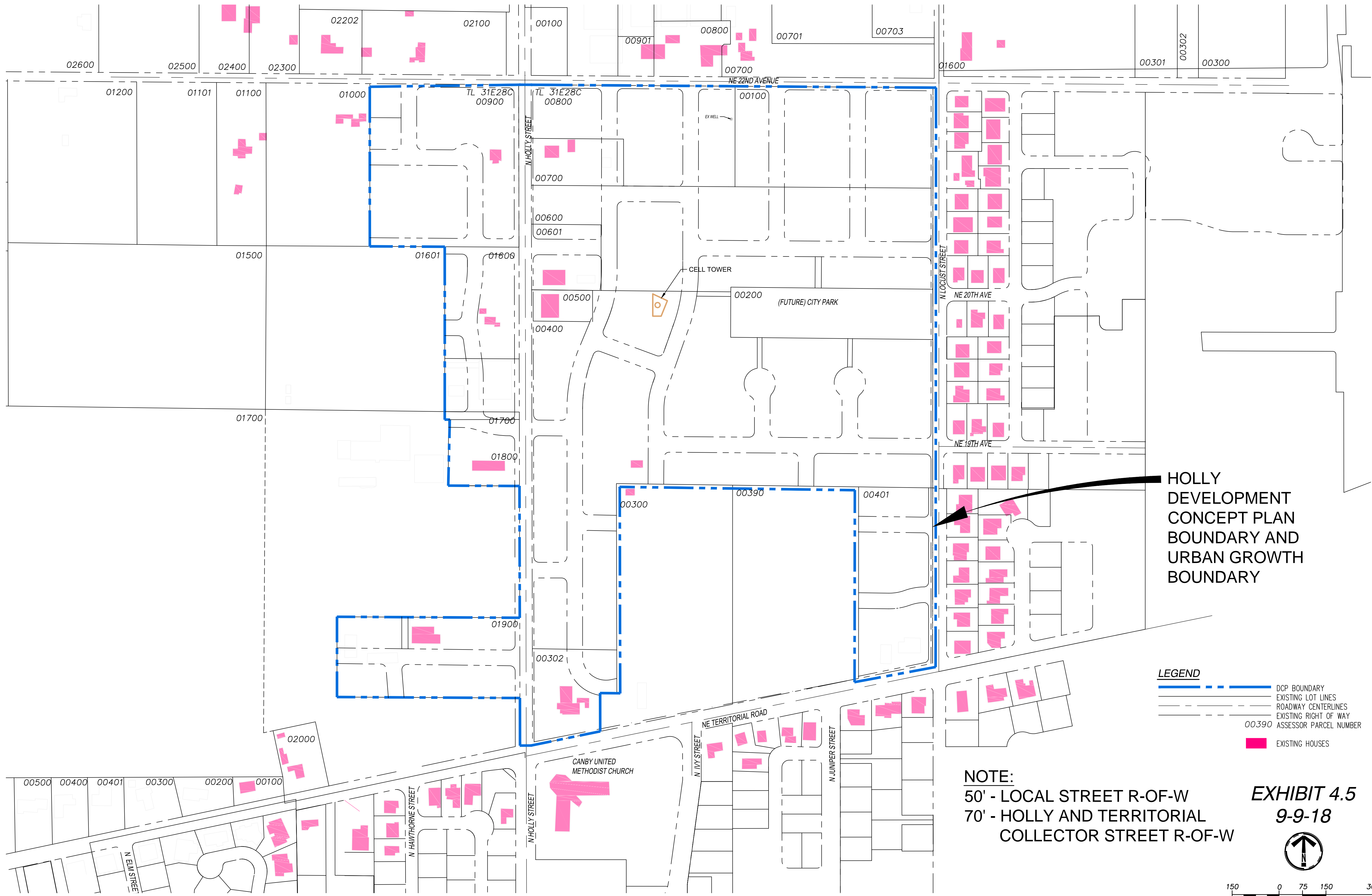
DEVELOPMENT CONCEPT PLAN
FOR SW 1/4, T3S, R1E, W.M.
TAX LOTS 400 AND 401, OF
TAX MAP 3-1E-28C

585



HOLLY
DEVELOPMENT
CONCEPT PLAN
BOUNDARY

DEVELOPMENT CONCEPT PLAN AND STREET PATTERN



HOLLY DEVELOPMENT CONCEPT PLAN BOUNDARY AND URBAN GROWTH BOUNDARY

EXHIBIT 4.5
9-9-18

150 0 75 150 300
1 inch = 150 ft.
1 inch = 300 ft. (11"x17")

DEVELOPMENT CONCEPT PLAN FOR SW 1/4, T3S, R1E, W1M. OF TAX LOTS 400 AND 401, OF TAX MAP 3-1E-28C

STAFFORD DEVELOPMENT COMPANY, LLC
485 SOUTH STATE STREET
LAKE OSWEGO, OREGON 97034

HOLLY DCP DEVELOPMENT CONCEPT PLAN AND STREET PATTERN

REVISIONS	
NO.	DATE
1	08/20/2018

PLANNING & LAND DESIGN
1862 NE ESTATE DRIVE
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SHEET 5 OF 8

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Holly Development Concept Plan

Transportation Impact Study
Canby, Oregon

Date:

September 13, 2018

Prepared for:

Levi Levasa
Stafford Land Company

Prepared by:

Daniel Stumpf, EI
William Farley, PE



LANCASTER
ENGINEERING

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Executive Summary

1. The proposed Holly Development Concept Plan (DCP) includes properties located north of NE/NW Territorial Road, south of NE/NW 22nd Avenue, west of N Locust Street, and along both sides of N Holly Street near Canby, Oregon. Upon annexation, properties within the Holly DCP area must be rezoned from their existing zoning of *Rural Residential Farm Forest 5-Acre (RRFF-5)* to *Low Density Residential (R-1)* for development as a maximum 240-lot residential subdivision.
2. The trip generation calculations show that under the proposed zoning, the site could reasonably generate up to 178 morning peak hour trips, 238 evening peak hour trips, and 2,266 weekday trips.
3. No significant trends or crash patterns were identified at any of the study intersections that were indicative of safety concerns.
4. Left-turn lane warrants are projected to be met for the eastbound approach at the intersection of NE Territorial Road at N Locust Street by the 2030 planning horizon year with the full buildout of the DCP area. No other new turn lanes are necessary or recommended.
5. Due to insufficient main and side-street traffic volumes, traffic signal warrants are not projected to be met at the study intersections along NE/NW Territorial Road under any of the analysis scenarios.
6. All study intersections are currently operating acceptably per their respective jurisdictional standards and are projected to continue operating acceptably through the 2030 planning horizon with the full buildout of the DCP area.
7. The future development of the Holly DCP is not projected to degrade the performance of any existing or planned transportation facility below acceptable City of Canby or Clackamas County standards. In addition, the proposal is consistent with the City's Transportation System Plan and Comprehensive Plan. Accordingly, the Transportation Planning Rule is satisfied.

Project Description and Location

Introduction

The proposed Holly Development Concept Plan (DCP) includes properties located north of NE/NW Territorial Road, south of NE/NW 22nd Avenue, west of N Locust Street, and along both sides of N Holly Street near Canby, Oregon. Upon annexation, properties within the Holly DCP area must be rezoned from their existing zoning of *Rural Residential Farm Forest 5-Acre* (RRFF-5) to *Low Density Residential* (R-1) for development as a maximum 240-lot residential subdivision. Based on correspondence with City of Canby staff, the report conducts safety and capacity/level of service analyses at the following intersections:

- N Holly Street at NW Territorial Road;
- N Locust Street at NE Territorial Road; and
- N Locust Street at NE 19th Avenue (future site access).

The purpose of this study is to assess the potential impacts of the proposed DCP and address the transportation analysis requirements of the City of Canby and Oregon's Transportation Planning Rule. The report will identify the potential net increase in site generated traffic and examine the transportation impacts of the added trips at the planning horizon. The report will also include level of service calculations and volume-to-capacity calculations for existing conditions as well as year 2030 traffic conditions, both with and without the development of the proposed DCP. Additionally, a review and assessment of crash history at the study intersections was conducted. Detailed information on traffic counts, trip generation calculations, safety analyses, and level of service calculations is included in the appendix to this report.

Project and Location Description

The project site is located just north of Canby City limits, within the urban growth boundary, in unincorporated Clackamas County, Oregon. The subject site is situated in a developing residential area, with single-family houses to the east and south, and agricultural land-uses to the north and west.

The project site includes 15 tax lots which encompass an approximate total of 57.93 acres. The site is currently developed as low density commercial/residential agricultural land-uses. The DCP will include the construction of 13 future public access intersections onto vicinity roadways: specifically, 5 access intersections onto NE 22nd Avenue, 4 access intersections onto N Holly Street, and 4 access intersections onto N Locust Street.

Vicinity Streets

Development of the proposed DCP is expected to primarily impact four nearby, existing vicinity roadways. Table 1 provides a description of each of the vicinity roadways.

Table 1: Vicinity Roadway Descriptions

Roadway	Jurisdiction	Functional Classification	Cross-Section	Speed	On-street Parking	Bicycle Lanes	Curbs	Sidewalks
NE/NW 22nd Avenue	City of Canby/ Clackamas County	Local Street	2 Lanes/ Gravel	25 mph Statutory	Partially Permitted	None	Partial Both Sides	Partial Both Sides
NE/NW Territorial Road	City of Canby	Arterial/ Neighborhood Connector	2 Lanes	25/35 mph Posted	Partially Permitted	Partial Both Sides	Partial Both Sides	Partial Both Sides
N Holly Street	City of Canby/ Clackamas County	Arterial/ Collector/Local Street	2 Lanes	25/45 mph Posted	Partially Permitted	None	Partial Both Sides	Partial Both Sides
N Locust Street	City of Canby/ Clackamas County	Local Street	2 Lanes	25 mph Posted	Partially Permitted	None	Partial Both Sides	Partial Both Sides

Note: Functional Classification and Jurisdiction based on City of Canby's *Transportation System Plan*.

Study Intersections

A majority of site trips generated by the proposed development are expected to impact three nearby, existing intersections of significance. A summarized description of these intersections is provided in Table 2.

Table 2: Study Intersection Descriptions

Number	Name	Geometry	Traffic Control	Phasing/Stopped Approaches
1	N Holly Street at NW Territorial Road	Four-Legged	Stop-Controlled	All-Way Stop-Controlled
2	N Locust Street at NE Territorial Road	Four-Legged	Stop-Controlled	NB/SB Stop-Controlled
5	N Locust Street at NE 19th Avenue	Three-Legged	Stop-Controlled	WB Stop-Controlled

A vicinity map displaying the project site, vicinity streets, and the study intersections with their associated lane configurations is shown in Figure 1 on page 5.

Traffic Counts

Intersection Counts

Traffic counts were conducted at the study intersections on Thursday, August 9th, 2018, from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM. Data was used from each intersection's respective morning and evening peak hours. To estimate existing traffic volumes at the proposed site access intersections along NE 22nd Avenue, N Holly Street, and N Locust Street, volumes were balanced with the study intersections as well as the intersections of N Holly Street at NW 22nd Avenue and N Locust Street at NE 22nd Avenue, where additional count data was collected.

School Traffic

At the time of conducting traffic counts, local schools were closed for the summer months. In order to reflect typical weekday traffic conditions with school in session, additional volumes were added to the collected count data utilizing the City of Canby's Small Community Model. The modeling data was provided by DKS Associates and is included within the technical appendix to this report.

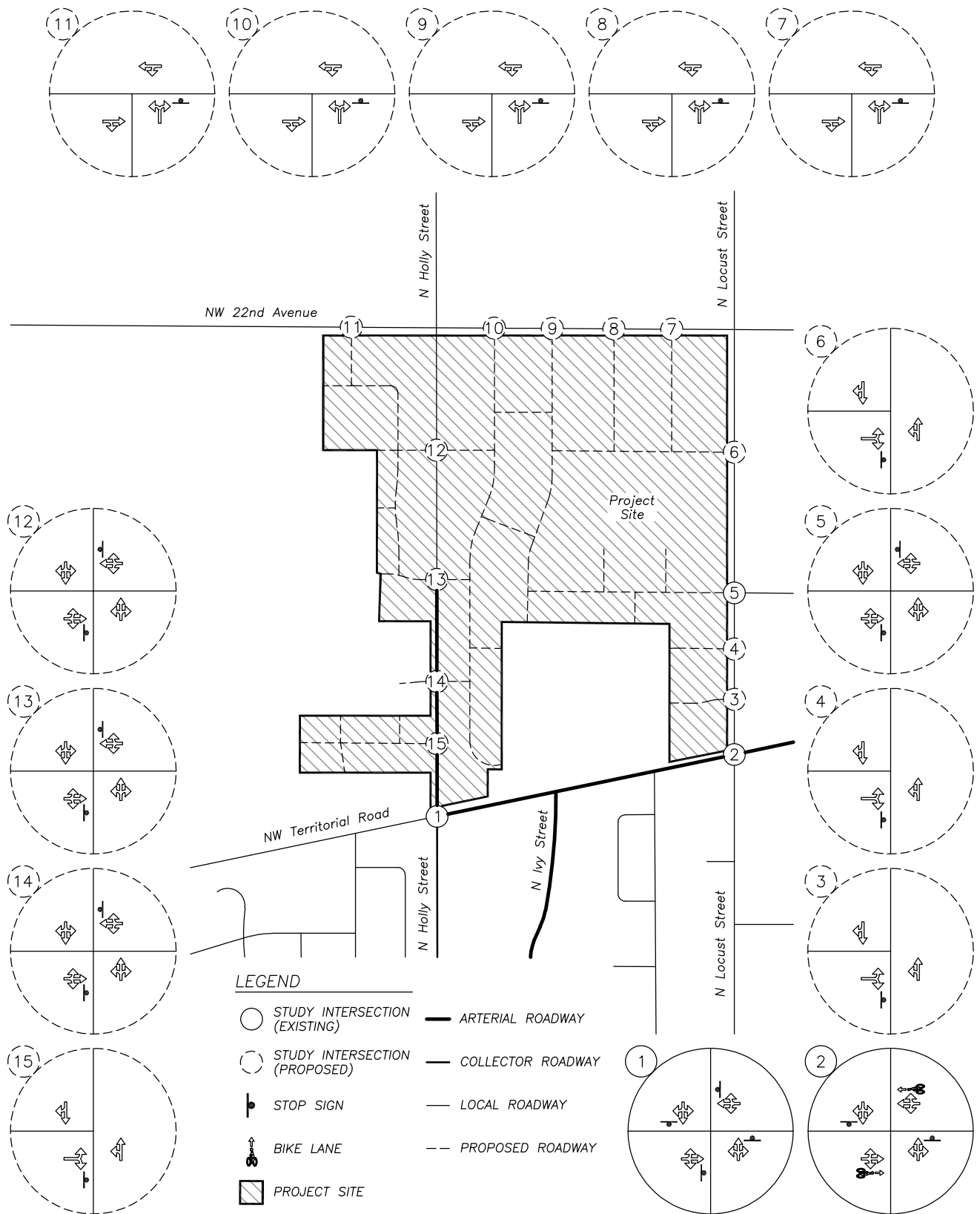
NE/NW Territorial Road Data Collection

Per direction by the City of Canby, 24-hour vehicle volume, classification, and speed data was collected along NE/NW Territorial Road on Thursday, August 9th, 2018. Table 3 summarizes the reported findings of the collected data.

Table 3: Territorial Road Volume Summary

	Classification (Daily Count)							Speed (mph)		
	Bikes	Cars & Trailers	2 Axle (Long)	Buses	2 Axle (6 Tires)	3+ Axle (Single & Multi)	Not Classed	ADT	50th Percentile	85th Percentile
EB	62	2,068	472	4	168	13	57	2,844	28	33
WB	39	1,863	555	7	221	18	78	2,781	31	35
Total	101	3,931	1,027	11	389	31	135	5,625	-	-

Figure 2 on page 6 and Figure 3 on page 7 show the existing morning and evening peak hour traffic volumes at the study intersections, respectively.



VICINITY MAP



FIGURE 1

PAGE 5

NOTE: EXISTING TRAFFIC VOLUMES INCLUDE SCHOOL TRAFFIC
BASED ON THE CANBY SMALL COMMUNITY MODEL.



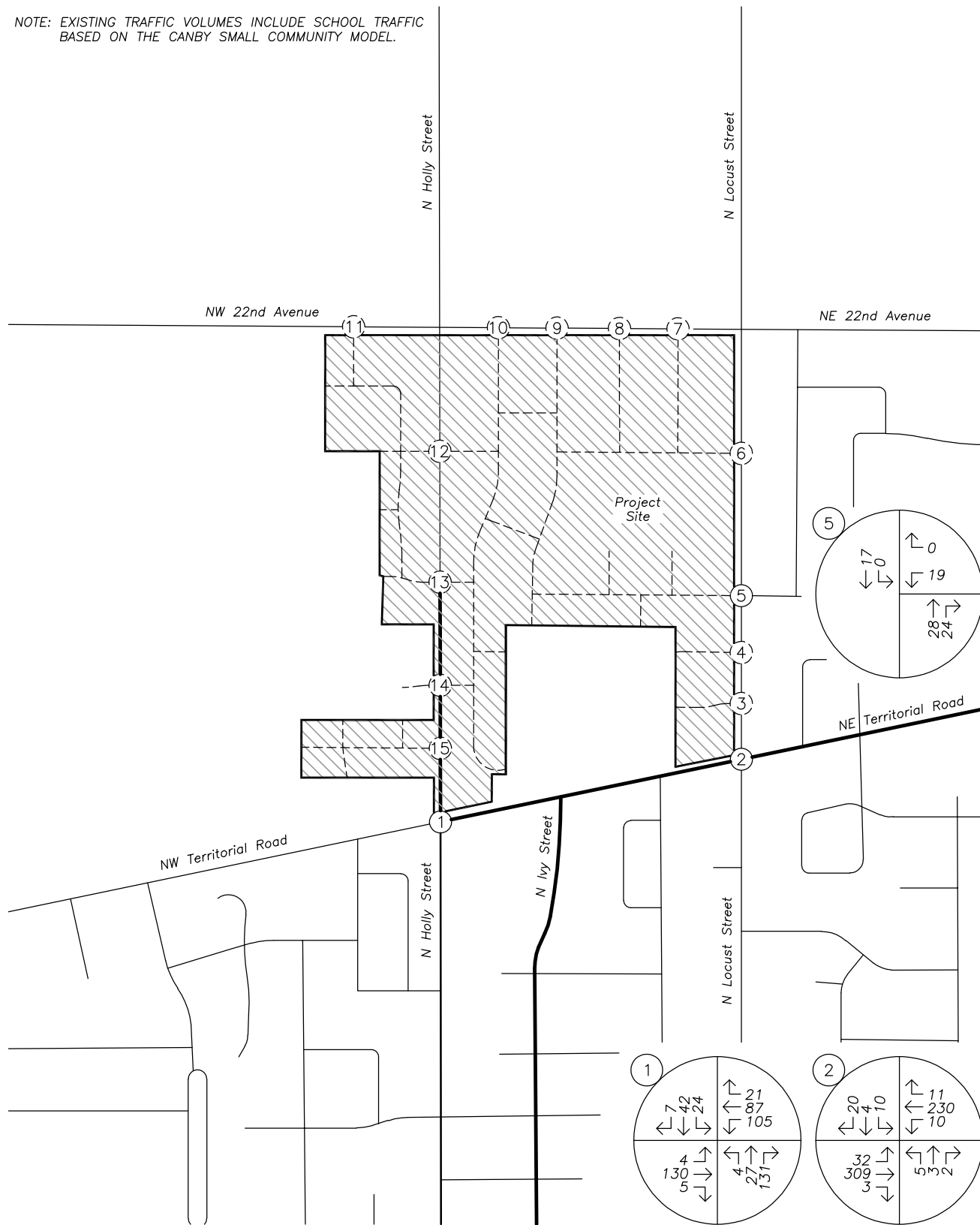
TRAFFIC VOLUMES
Existing Conditions
AM Peak Hour



FIGURE
2

PAGE
6

NOTE: EXISTING TRAFFIC VOLUMES INCLUDE SCHOOL TRAFFIC
BASED ON THE CANBY SMALL COMMUNITY MODEL.



TRAFFIC VOLUMES
Existing Conditions
PM Peak Hour



FIGURE
3

PAGE
7

Site Trips

Trip Generation

The proposed Holly DCP includes properties currently zoned as *Rural Residential Farm Forest 5-Acre* (RRFF-5) by Clackamas County and, upon annexation into the City, would be rezoned to *Low Density Residential* (R-1) in conformance with the City's Comprehensive Plan. To determine the impacts of the proposed change in zoning, a "reasonable worst-case" development scenario for the proposed zone was determined by comparing land use data provided within the *Trip Generation Manual*¹ with the most traffic-intensive uses permitted within the zone.

Typically, when conducting an annexation/zone change analysis, "reasonable worst-case" development scenarios under existing and proposed zones are determined. The net trip generation between both zones is then calculated in order to determine the change in additional trip generation intensity that could impact that nearby transportation system. For the purposes of simplicity as well as maintaining a conservative analysis of potential site trip impacts, no reductions associated with the existing zone's "reasonable worst-case" development scenario were made.

It should be noted that the subject site is located within the City of Canby's urban growth boundary and the City's Transportation System Plan (TSP) has accounted for the annexation/zone change. Therefore, impacts associated with the proposed annexation have already been analyzed and acknowledged by the City of Canby.

Proposed R-1 Zone

To determine a "reasonable worst-case" development scenario under the proposed R-1 zoning, City of Canby's Municipal Code *Chapter 16.16 R-1 Low Density Residential Zone*, was referenced and compared to a variety of land-uses provided within the *Trip Generation Manual*. Based on an assessment of permitted uses under the R-1 zone, data from land-use code 210, *Single-Family Detached Housing*, was used to estimate a potential, "reasonable worst-case" development scenario under the proposed zoning. According to the applicant, the maximum number of units that could be developed within the DCP area may include the construction of 240 single-family dwellings. Therefore, a 240-lot subdivision was treated as the "reasonable worst-case" development scenario under the proposed zone.

It should be noted that the final lot count of the DCP will likely be less than the analyzed 240 maximum lot count when developed. Accordingly, the transportation impacts related to the proposed DCP are expected to be less than those analyzed within this study and will be further evaluated in future transportation impact studies.

Analysis Results

The trip generation calculations show that under the proposed zoning, the site could reasonably generate up to 178 morning peak hour trips, 238 evening peak hour trips, and 2,266 weekday trips. The trip generation

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

estimates are summarized in Table 4. Detailed trip generation calculations are included in the technical appendix to this report.

Table 4: Trip Generation Summary

	ITE Code	Size	Morning Peak Hour			Evening Peak Hour			Weekday Total
			Enter	Exit	Total	Enter	Exit	Total	
Proposed Conditions									
Single-Family Detached Housing	210	240 units	45	133	178	150	88	238	2,266

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:

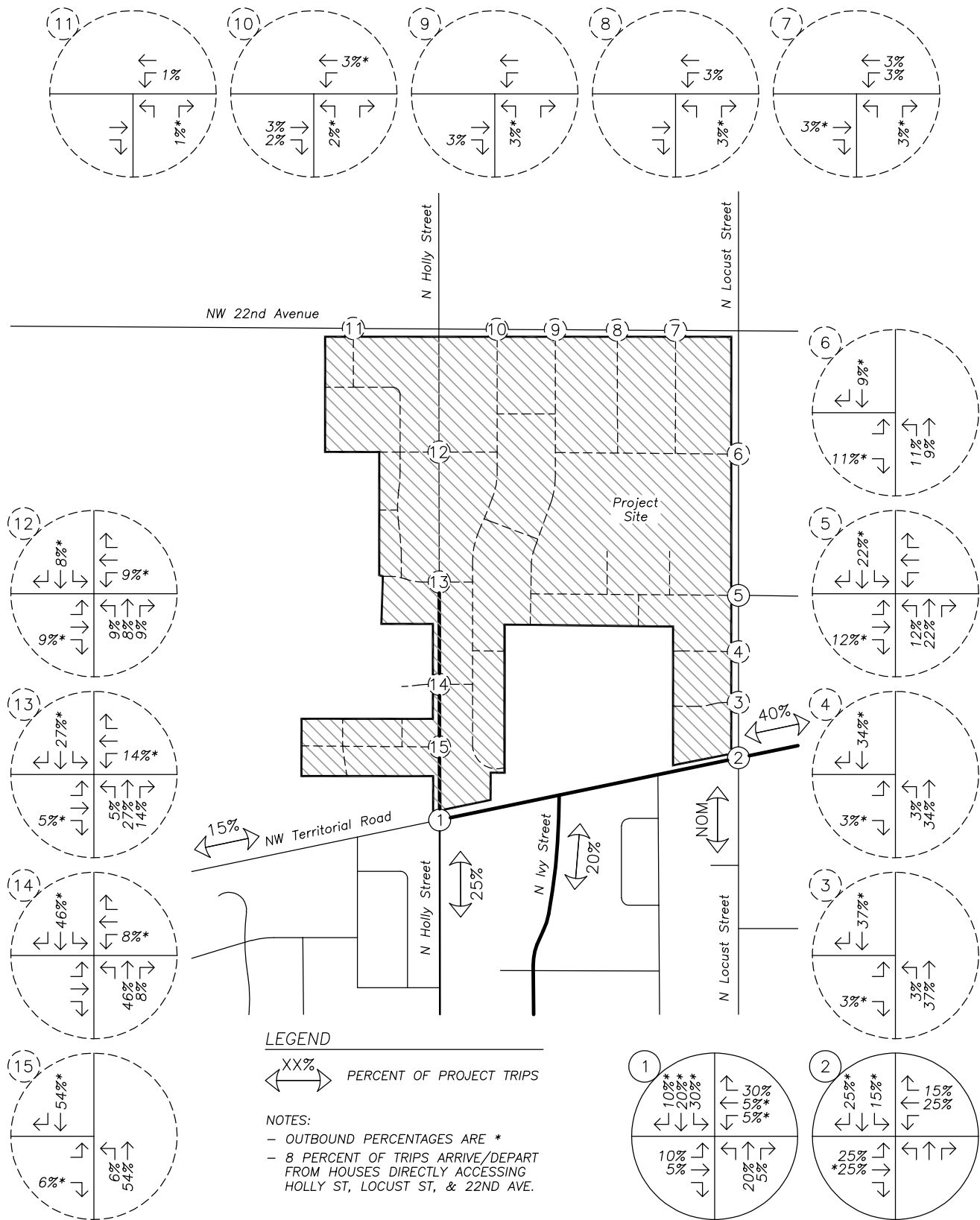
- Approximately 40 percent of site trips will travel to/from the east along NE Territorial Road;
- Approximately 25 percent of site trips will travel to/from the south along N Holly Street;
- Approximately 20 percent of site trips will travel to/from the south along N Ivy Street; and
- Approximately 15 percent of site trips will travel to/from the west along NW Territorial Road.

Based on the preliminary site plan and locations of proposed accesses, site trips are expected to utilize site accesses as follows:

- Approximately 3 percent of site trips will travel to/from the west at Intersection 3;
- Approximately 3 percent of site trips will travel to/from the west at Intersection 4;
- Approximately 12 percent of site trips will travel to/from the west at Intersection 5;
- Approximately 11 percent of site trips will travel to/from the west at Intersection 6;
- Approximately 3 percent of site trips will travel to/from the south at Intersection 7;
- Approximately 3 percent of site trips will travel to/from the south at Intersection 8;
- Approximately 3 percent of site trips will travel to/from the south at Intersection 9;
- Approximately 2 percent of site trips will travel to/from the south at Intersection 10;
- Approximately 1 percent of site trips will travel to/from the south at Intersection 11;
- Approximately 9 percent of site trips will travel to/from the east at Intersection 12;
- Approximately 9 percent of site trips will travel to/from the west at Intersection 12;

- Approximately 14 percent of site trips will travel to/from the east at Intersection 13;
- Approximately 5 percent of site trips will travel to/from the west at Intersection 13;
- Approximately 8 percent of site trips will travel to/from the east at Intersection 14;
- Approximately 6 percent of site trips will travel to/from the west at Intersection 15; and
- Approximately 8 percent of site trips will travel to/from houses which take direct access to N Holly Street, N Locust Street, and NE/NW 22nd Avenue.

The trip distribution utilized for site trips generated by the subject site are shown in Figure 4 on page 11. The trip assignment for the site trips generated during the morning and evening peak hours is shown in Figure 5 on page 12 and Figure 6 on page 13, respectively.

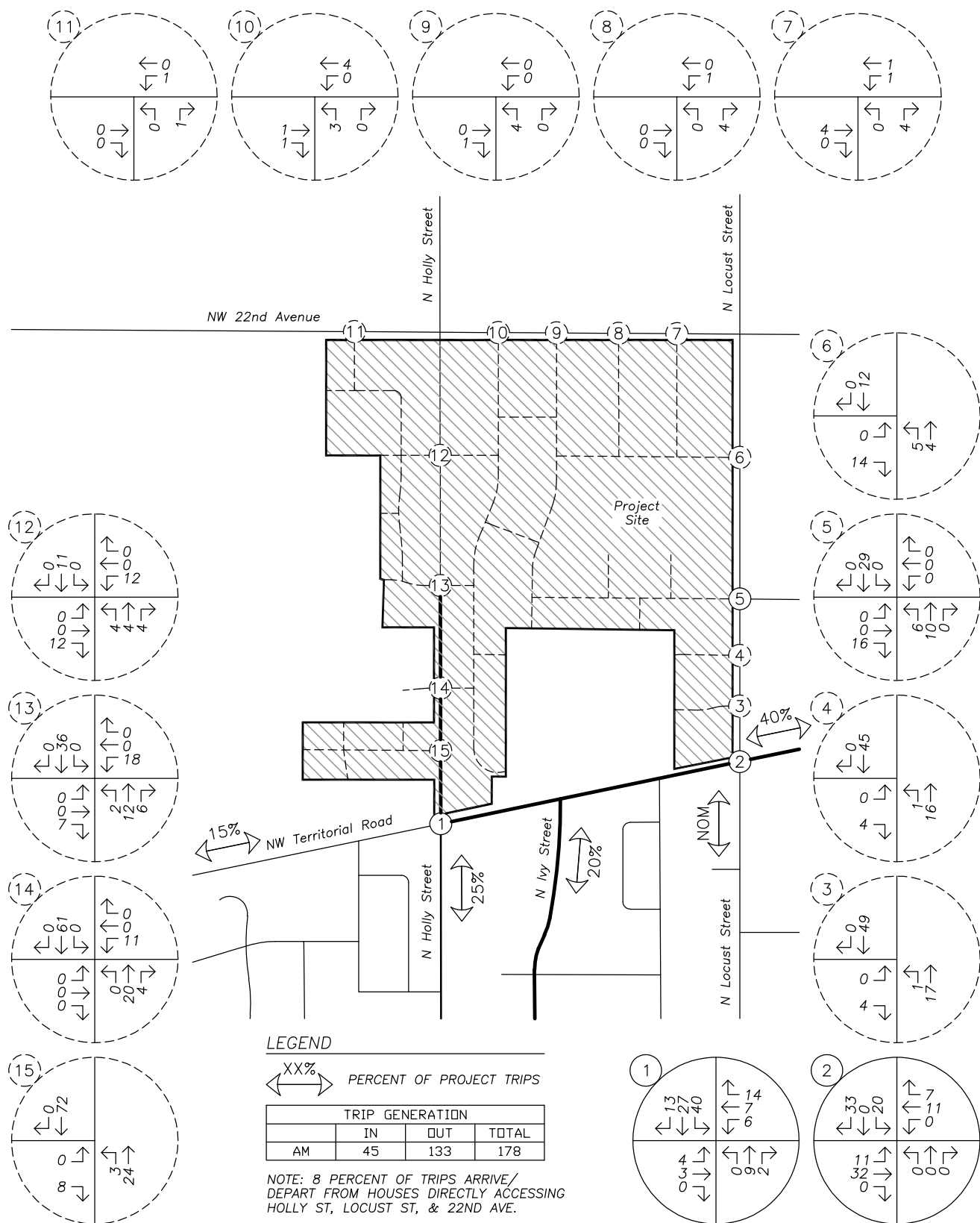


SITE TRIP DISTRIBUTION
Inbound & Outbound Percentages
AM & PM Peak Hours



FIGURE
4

PAGE
11

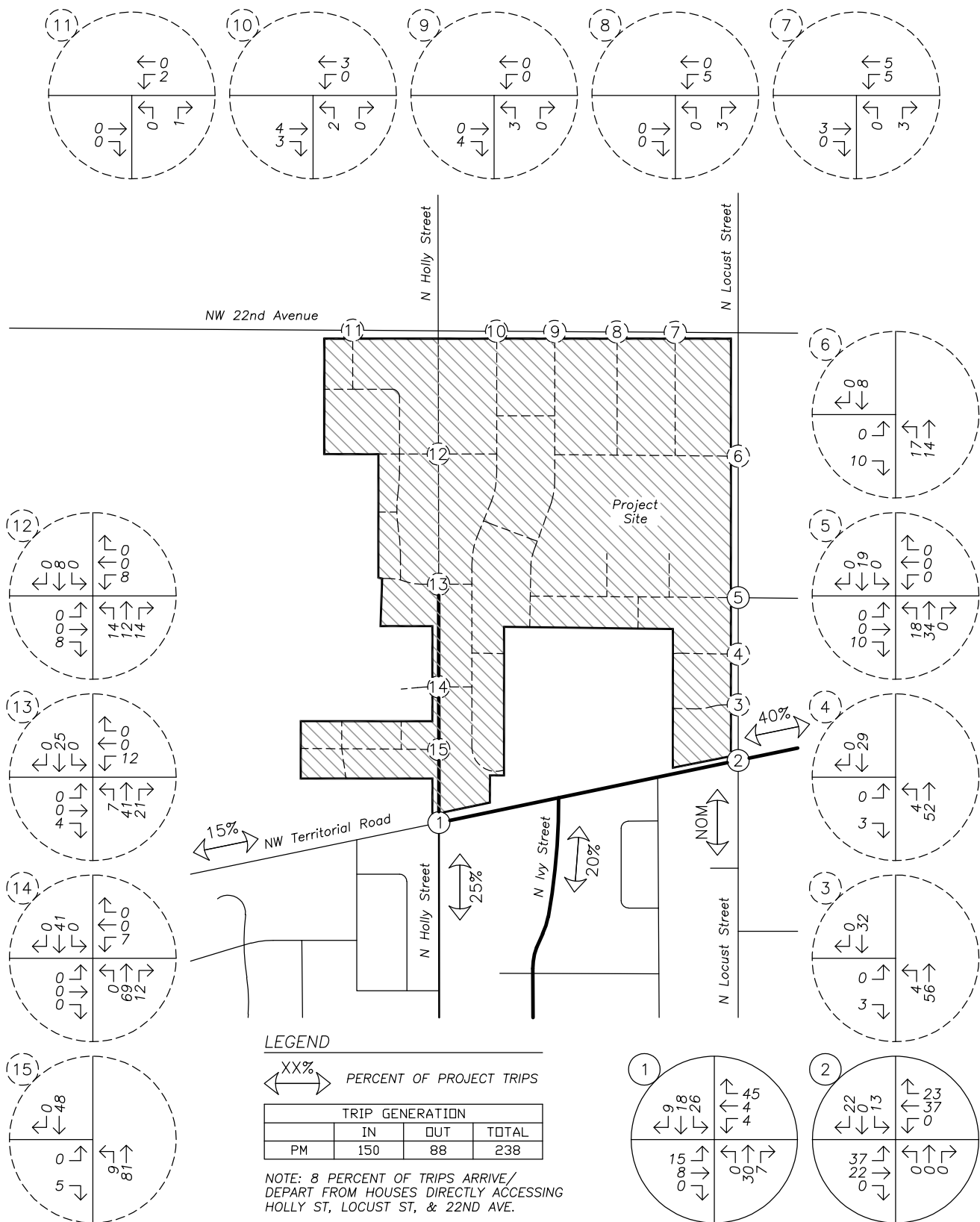


SITE TRIP ASSIGNMENT
Reasonable Worst-Case Development Scenario – R-1 Zone
AM Peak Hour



FIGURE
5

PAGE
12



SITE TRIP ASSIGNMENT
Reasonable Worst-Case Development Scenario – R-1 Zone
PM Peak Hour



FIGURE
6

PAGE
13

Future Traffic Volumes

2030 Planning Horizon Volumes

To provide analysis of the impact of the proposed DCP on the nearby transportation facilities, an estimate of future traffic volumes is required.

In order to calculate the future traffic volumes, a compounded growth rate of 2.62 percent per year was applied to the measured existing traffic volumes over a 12-year period to approximate the year 2030 planning horizon traffic conditions. The assumed 2.62 percent per year growth rate was calculated based on the expected population growth within the City between 2009 and 2030, as reported in the City of Canby's TSP.

Figure 7 on page 15 and Figure 8 on page 16 show the projected year 2030 planning horizon volumes, without development of the proposed DCP, at the study intersections during the morning and evening peak hours, respectively.

2030 Planning Horizon Volumes with Annexation

Peak hour trips calculated to be generated by the proposed DCP, as described earlier within the *Site Trips* section, were added to the projected year 2030 planning horizon volumes to obtain the expected 2030 planning year volumes with the proposed DCP.

It should be noted that the City's TSP already accounts for the proposed DCP area, where projected 2030 planning year traffic volumes at the intersection of N Holly Street at NW Territorial Road are provided in Figure 4-2b of the City's TSP. To maintain consistency with the TSP, as well as provide a conservative assessment of intersection operation, all turning movement volumes at the intersection of N Holly Street at NW Territorial Road were further increased to at least match the minimum volumes reported in the TSP after applying the peak hour trips.

Figure 9 on page 17 and Figure 10 on page 18 show the projected 2030 planning year traffic volumes, with full development of the proposed DCP, at the study intersections during the morning and evening peak hours, respectively.

GROWTH RATE: 2.62 PERCENT PER YEAR COMPOUNDED



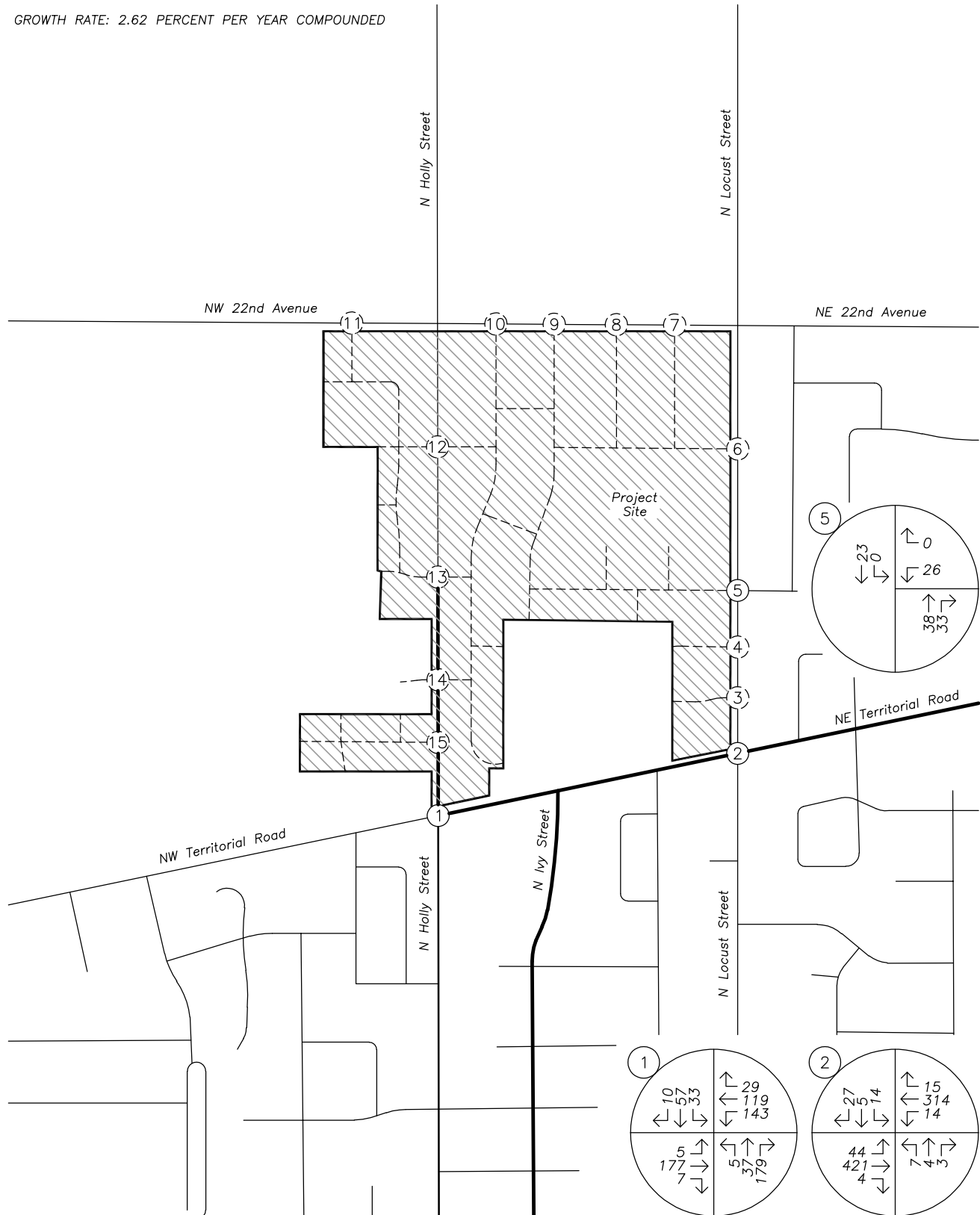
TRAFFIC VOLUMES
Year 2030 Planning Horizon w/o Annexation
AM Peak Hour



FIGURE
7

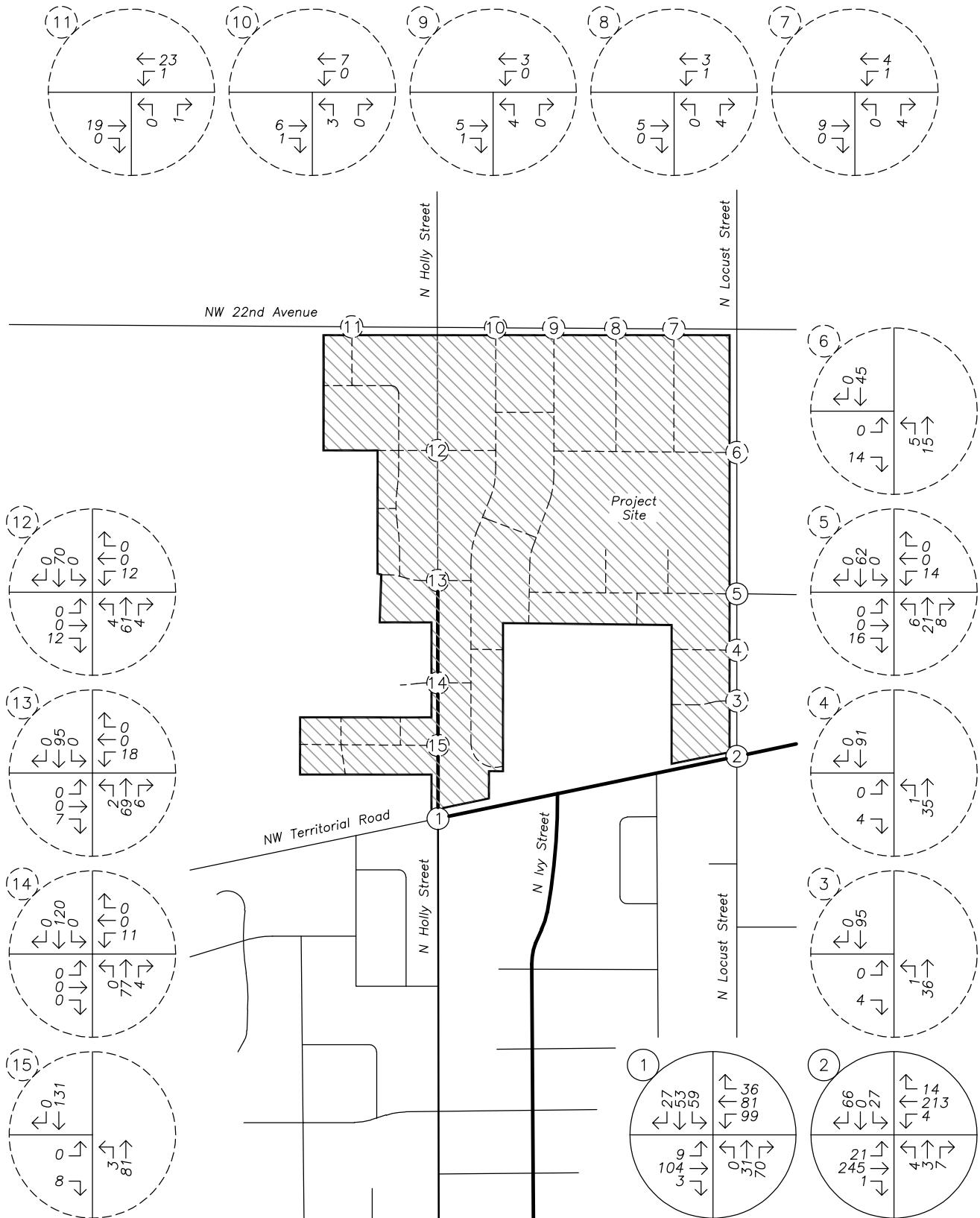
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GROWTH RATE: 2.62 PERCENT PER YEAR COMPOUNDED



TRAFFIC VOLUMES
Year 2030 Planning Horizon w/o Annexation
PM Peak Hour

FIGURE
8PAGE
16

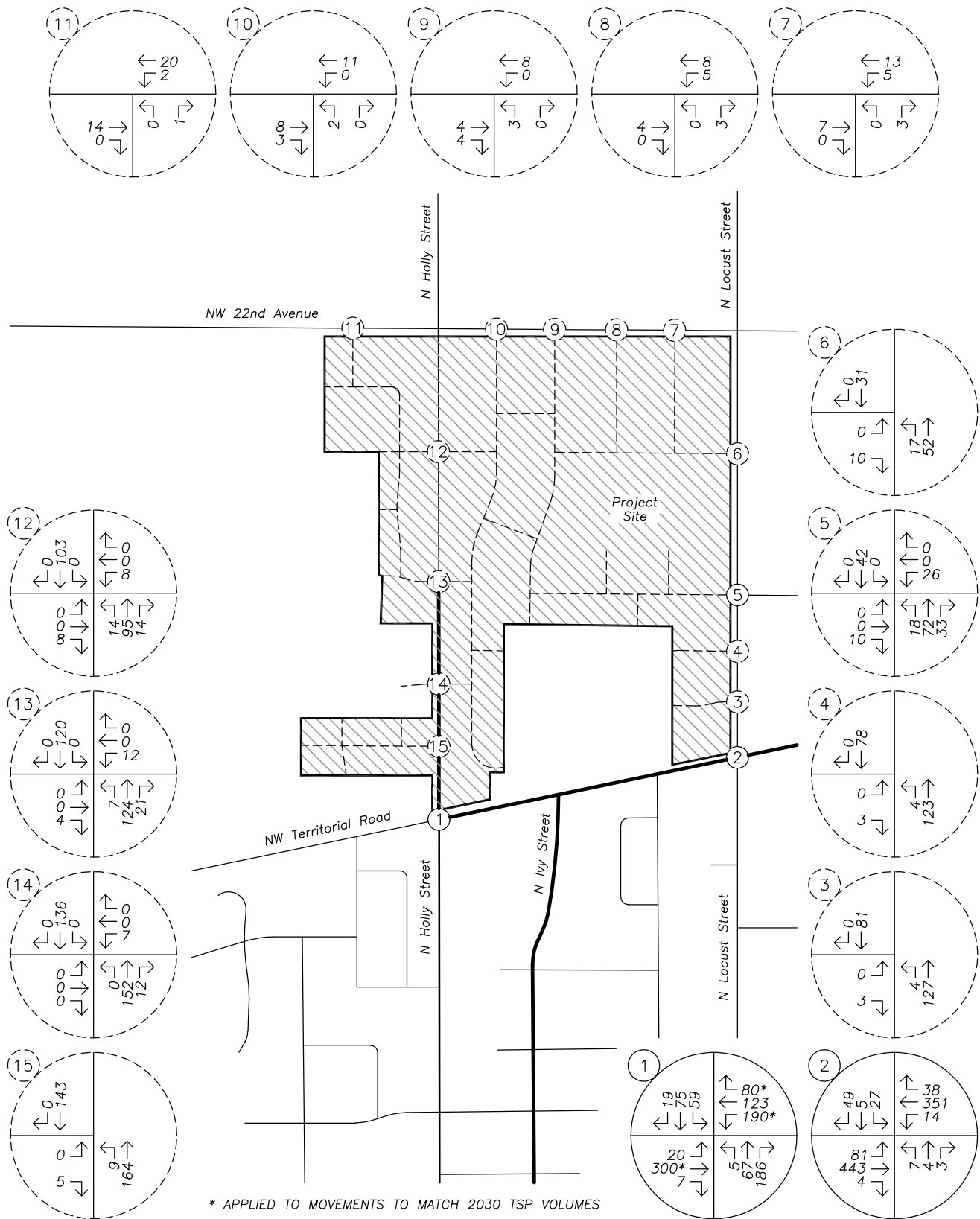


TRAFFIC VOLUMES
 Year 2030 Planning Horizon with Annexation
 AM Peak Hour



FIGURE
 9

PAGE
 17



TRAFFIC VOLUMES
Year 2030 Planning Horizon with Annexation
PM Peak Hour



FIGURE
10

PAGE
18

Safety Analysis

Crash Data Analysis

Using data obtained from the Oregon Department of Transportation's (ODOT) Crash Analysis and Reporting Unit, a review of the most recent available five years of crash history (January 2012 to December 2016) at the study intersections 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. Crash rates provide the ability to compare safety risks at different intersections by accounting for both the number of crashes that have occurred during the study period and the number of vehicles that typically travel through the intersection. Crash rates were calculated using the common assumption that traffic counted during the evening peak period represents 10 percent of the annual average daily traffic (AADT) at the intersection. Crash rates in excess of 1.0 crashes per million entering vehicles (CMEV) may be indicative of design deficiencies and therefore require a need for further investigation and possible mitigation.

N Holly Street at NW Territorial Road

The intersection of N Holly Street at NW Territorial Road had four reported crashes during the analysis period. The crashes consisted of two angle-type collisions, one rear-end collision, and one bicycle related crash. Of the reported crashes, two were classified as "Property Damage Only" (*PDO*), one was classified as "Possible Injury – Complaint of Pain" (*Injury C*), and one was classified as "Non-Incapacitating Injury" (*Injury B*). The crash rate at the intersection was calculated to be 0.37 CMEV.

One of the crashes at the intersection involved a bicyclist. The crash occurred when a north/south traveling bicyclist disregarded an intersection stop sign and collided with a westbound passenger car. The bicyclist sustained injuries consistent with *Injury B* classification.

N Locust Street at NW Territorial Road

The intersection of N Locust Street at NW Territorial Road had five reported crashes during the analysis period. The crashes consisted of three angle-type collisions and two rear-end collisions. Of the reported crashes, two were classified as *PDO*, two were classified as *Injury C*, and one was classified as *Injury B*. The crash rate at the intersection was calculated to be 0.43 CMEV.

N Locust Street at NE 19th Avenue

The intersection of N Locust Street at NE 19th Avenue had no reported crashes during the analysis period.

Based on the most recent five years of available crash data, no significant trends or crash patterns were identified at any of the study intersections that were indicative of safety concerns.

Warrant Analysis

Left-turn lane and traffic signal warrants were examined for the study intersections where such treatments would be applicable.

A left-turn refuge lane is primarily a safety consideration for the major-street, removing left-turning vehicles from the through traffic stream. The left-turn lane warrants were examined using methodologies provided within the *National Cooperative Highway Research Program's* (NCHRP) *Report 457*. Turn lane warrants were evaluated based on the number of advancing and opposing vehicles as well as the number of turning vehicles, the travel speed, and the number of through lanes.

Left-turn lane warrants are projected to be met for the eastbound approach at the intersection of NE Territorial Road at N Locust Street by the 2030 planning horizon year with the full buildout of the proposed DCP during the evening peak hour. No other new turn lanes are necessary or recommended.

Preliminary traffic signal warrants were examined for the unsignalized study intersections along NE/NW Territorial Road to determine whether the installation of a new traffic signal will be warranted at these intersections by the 2030 planning horizon. Due to insufficient main and side-street traffic volumes, traffic signal warrants are not projected to be met at these intersections under any of the analysis scenarios.

Operational Analysis

A capacity and delay analysis was conducted for each of the study intersections per the unsignalized intersection analysis methodologies in the *Highway Capacity Manual*² (HCM). 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.

According to the City of Canby's TSP, the following minimum acceptable operation standards apply to intersections under City jurisdiction:

- Signalized and all-way stop-controlled intersections are required to operate at LOS D or better.
- Two-way stop-controlled intersections are required to operate at LOS E or better.

Additionally, the roadways of N Holly Street and N Locust Street (north of NE/NW Territorial Road) as well as NE/NW 22nd Avenue (east of N Locust Street and west of N Holly Street) are under the jurisdiction of Clackamas County. Therefore, intersections along these roadways must operate acceptably per County standards. According to the Clackamas County Comprehensive Plan, *Chapter 5 – Transportation System Plan*, the following operational standards apply to study intersections along these roadways:

- Unsignalized rural intersections (i.e. intersections outside the Portland Metropolitan Urban Growth Boundary) outside of Cities are required to operate at LOS E or better during the morning and evening peak hours.
- Signalized and roundabout rural intersections outside of Cities are required to operate with a v/c ratio of 0.90 or less during the morning and evening peak hours.

The v/c, delay, and LOS results of the capacity analysis are shown in Table 5 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.

² Transportation Research Board, *Highway Capacity Manual*, 6th Edition, 2016.

Table 5: Intersection Capacity Analysis Summary

	Morning Peak Hour			Evening Peak Hour		
	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c
1. N Holly Street at NW Territorial Road						
2018 Existing Conditions	A	8	-	A	9	-
2028 Background Conditions	A	9	-	B	12	-
2028 Buildout Conditions	A	10	-	C	21	-
2. N Locust Street at NE Territorial Road						
2018 Existing Conditions	B	11	0.04	B	15	0.07
2028 Background Conditions	B	12	0.06	C	19	0.13
2028 Buildout Conditions	B	13	0.17	C	25	0.27
3. Site Access at N Locust Street						
2028 Buildout Conditions	A	9	0.01	A	9	0.01
4. Site Access at N Locust Street						
2028 Buildout Conditions	A	9	0.01	A	9	0.01
5. N Locust Street at NE 19th Avenue						
2018 Existing Conditions	A	9	0.01	A	9	0.03
2028 Background Conditions	A	9	0.02	A	9	0.04
2028 Buildout Conditions*	A	10	0.02	B	10	0.05
6. Site Access at N Locust Street						
2028 Buildout Conditions	A	9	0.02	A	9	0.01
7. Site Access at NW 22nd Avenue						
2028 Buildout Conditions	A	8	0.01	A	9	0.01
8. Site Access at NW 22nd Avenue						
2028 Buildout Conditions	A	8	0.01	A	8	0.01
9. Site Access at NW 22nd Avenue						
2028 Buildout Conditions	A	9	0.01	A	9	0.01

* Converted from three-legged to four-legged intersection.

Table 5: Intersection Capacity Analysis Summary (Continued)

	Morning Peak Hour			Evening Peak Hour		
	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c
10. Site Access at NW 22nd Avenue						
2028 Buildout Conditions	A	9	0.01	A	9	0.01
11. Site Access at NW 22nd Avenue						
2028 Buildout Conditions	A	9	0.01	A	9	0.01
12. Site Access at N Holly Street						
2028 Buildout Conditions	A	10	0.02	B	10	0.02
13. Site Access at N Holly Street						
2028 Buildout Conditions	A	10	0.03	B	11	0.02
14. Site Access at N Holly Street						
2028 Buildout Conditions	A	10	0.02	B	11	0.01
15. Site Access at N Holly Street						
2028 Buildout Conditions	A	9	0.01	A	9	0.01

Based on the results of the operational analysis, all study intersections are currently operating acceptably per their respective jurisdictional standards and are projected to continue operating acceptably through the 2030 planning horizon with the proposed annexation. No operational mitigation is necessary or recommended.

Transportation Planning Rule Analysis

A Transportation Planning Rule (TPR) analysis is required for the proposed DCP due to the annexation of the subject properties into the City of Canby. The TPR is intended to ensure that the transportation system is capable of supporting possible increases in traffic intensity that could result from changes to adopted plans and land-use regulations. The applicable portions of the TPR are quoted in italics below, with responses following.

660-012-0060

- (1) *If an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation (including a zoning map) would significantly affect an existing or planned transportation facility, then the local government must put in place measures as provided in section (2) of this rule, unless the amendment is allowed under section (3), (9) or (10) of this rule. A plan or land use regulation amendment significantly affects a transportation facility if it would:*

- (a) *Change the functional classification of an existing or planned transportation facility (exclusive of correction of map errors in an adopted plan);*

The annexation and zone change of properties within the proposed Holly DCP will not necessitate changes to the functional classification of existing or planned transportation facilities. Accordingly, this section is not triggered.

- (b) *Change standards implementing a functional classification system; or*

The annexation and zone change of properties within the proposed Holly DCP will not change any standards implementing the functional classification system. Accordingly, this section is also not triggered.

- (c) *Result in any of the effects listed in paragraphs (A) through (C) of this subsection based on projected conditions measured at the end of the planning period identified in the adopted TSP. As part of evaluating projected conditions, the amount of traffic projected to be generated within the area of the amendment may be reduced if the amendment includes an enforceable, ongoing requirement that would demonstrably limit traffic generation, including, but not limited to, transportation demand management. This reduction may diminish or completely eliminate the significant effect of the amendment.*
 - (A) *Types or levels of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility;*
 - (B) *Degrade the performance of an existing or planned transportation facility such that it would not meet the performance standards identified in the TSP or comprehensive plan; or*
 - (C) *Degrade the performance of an existing or planned transportation facility that is otherwise projected to not meet the performance standards identified in the TSP or comprehensive plan.*

The annexation and zone change of properties within the proposed Holly DCP is not projected to degrade the performance of any study intersection below acceptable levels of operation per City of Canby and Clackamas County standards. Additionally, the proposed annexation of the DCP area and subsequent zone change have already been accounted for within the City's TSP; therefore, expected vehicle types and levels of travel/access are consistent with the functional classification of nearby existing/planned transportation facilities.

In addition to section 1 described above, the TPR also includes the following language:

- (9) *Notwithstanding section (1) of this rule, a local government may find that an amendment to a zoning map does not significantly affect an existing or planned transportation facility if all of the following requirements are met.*
 - (a) *The proposed zoning is consistent with the existing comprehensive plan map designation and the amendment does not change the comprehensive plan map;*
 - (b) *The local government has an acknowledged TSP and the proposed zoning is consistent with the TSP; and*
 - (c) *The area subject to the zoning map amendment was not exempted from this rule at the time of an urban growth boundary amendment as permitted in OAR 660-024-0020(1)(d), or the area was exempted from this rule but*

the local government has a subsequently acknowledged TSP amendment that accounted for urbanization of the area.

In this instance, the proposed zoning is consistent with the Comprehensive Plan Map designation, the City of Canby has an acknowledged TSP that accounts for future development under the proposed zoning, and the area was not exempted from the rule at the time of the urban growth boundary amendment. Accordingly, the City may find that any proposed annexation and zone change of properties within the Holly DCP is consistent with the City's adopted plans and does not significantly affect any existing or planned transportation facility.

Based on the above TPR analysis, the full buildout of the proposed Holly DCP will not degrade the performance of any existing or planned transportation facility below acceptable City or County standards. In addition, the proposal is consistent with the City's TSP and Comprehensive Plan. Accordingly, the TPR is satisfied.

Conclusions

No significant trends or crash patterns were identified at any of the study intersections that were indicative of safety concerns.

Left-turn lane warrants are projected to be met for the eastbound approach at the intersection of NE Territorial Road at N Locust Street by the 2030 planning horizon year with the proposed DCP during the evening peak hour. No other new turn lanes are necessary or recommended.

Due to insufficient main and side-street traffic volumes, traffic signal warrants are not projected to be met at the study intersections along NE/NW Territorial Road under any of the analysis scenarios.

All study intersections are currently operating acceptably per their respective jurisdictional standards and are projected to continue operating acceptably through the 2030 planning horizon with the proposed DCP.

The proposed DCP is not projected to degrade the performance of any existing or planned transportation facility below acceptable City of Canby or Clackamas County standards. In addition, the proposal is consistent with the City's Transportation System Plan and Comprehensive Plan. Accordingly, the Transportation Planning Rule is satisfied.

Appendix



Total Vehicle Summary

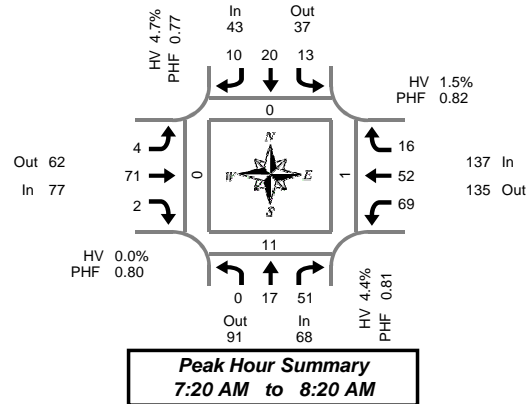


Clay Carney
(503) 833-2740

N Holly St & Territorial Rd

Thursday, August 09, 2018

7:00 AM to 9:00 AM



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

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				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	0	3	0	0	0	3	0	0	5	0	0	8	5	0	0	24	0	0	0	0
7:05 AM	2	2	4	0	0	0	0	0	1	4	0	0	4	7	3	0	27	0	3	0	0
7:10 AM	0	1	0	0	0	3	0	0	1	4	0	0	4	7	1	0	21	0	1	0	0
7:15 AM	0	0	6	0	0	0	0	0	1	5	0	0	3	5	1	0	21	0	0	0	0
7:20 AM	0	0	3	0	1	0	0	0	1	9	0	0	6	8	0	0	28	0	3	0	0
7:25 AM	0	2	5	0	2	4	1	0	0	7	0	0	6	5	2	0	34	0	4	0	0
7:30 AM	0	2	4	2	1	2	1	0	0	1	1	0	5	4	1	0	22	0	0	0	0
7:35 AM	0	1	6	0	0	2	1	0	0	7	0	0	12	7	0	0	36	0	1	1	0
7:40 AM	0	1	7	0	0	0	1	0	0	6	0	0	0	9	0	0	24	0	0	0	0
7:45 AM	0	1	2	0	0	3	0	0	0	9	0	0	6	3	1	0	25	0	0	0	0
7:50 AM	0	3	5	0	2	0	2	0	1	8	0	0	2	4	4	0	31	0	1	0	0
7:55 AM	0	2	6	0	1	1	0	0	0	5	0	0	5	2	3	0	25	0	0	0	0
8:00 AM	0	1	3	0	2	2	1	0	0	7	0	0	9	1	4	0	30	0	1	0	0
8:05 AM	0	1	4	0	1	1	2	0	0	4	0	0	2	3	0	1	18	0	1	0	0
8:10 AM	0	1	4	0	2	2	1	3	2	4	0	1	9	2	0	0	27	0	0	0	0
8:15 AM	0	2	2	0	1	3	0	0	0	4	1	0	7	4	1	0	25	0	0	0	0
8:20 AM	0	1	3	0	0	2	0	0	1	7	0	0	6	8	0	0	28	0	1	0	0
8:25 AM	0	2	2	0	1	1	0	0	2	7	0	0	4	1	1	0	21	0	0	0	0
8:30 AM	0	0	5	0	2	2	1	0	0	0	0	0	4	11	1	0	26	0	1	0	0
8:35 AM	0	1	7	0	4	1	0	0	0	3	0	0	6	3	2	1	27	0	1	0	0
8:40 AM	0	2	3	0	3	2	1	0	0	7	0	0	5	5	2	0	30	0	0	0	0
8:45 AM	0	0	6	0	1	1	2	0	2	4	0	0	6	7	2	0	31	0	0	0	0
8:50 AM	0	4	5	0	0	1	0	0	0	3	0	0	8	2	0	0	23	0	0	0	0
8:55 AM	0	3	5	0	3	2	0	0	1	5	0	0	7	5	1	0	32	0	0	0	0
Total Survey	2	33	100	2	27	38	14	3	13	125	2	1	134	118	30	2	636	0	18	1	0

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

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				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	2	3	7	0	0	6	0	0	2	13	0	0	16	19	4	0	72	0	4	0	0
7:15 AM	0	2	14	0	3	4	1	0	2	21	0	0	15	18	3	0	83	0	7	0	0
7:30 AM	0	4	17	2	1	4	3	0	0	14	1	0	17	20	1	0	82	0	1	1	0
7:45 AM	0	6	13	0	3	4	2	0	1	22	0	0	13	9	8	0	81	0	1	0	0
8:00 AM	0	3	11	0	5	5	4	3	2	15	0	1	20	6	4	1	75	0	2	0	0
8:15 AM	0	5	7	0	2	6	0	0	3	18	1	0	17	13	2	0	74	0	1	0	0
8:30 AM	0	3	15	0	9	5	2	0	0	10	0	0	15	19	5	1	83	0	2	0	0
8:45 AM	0	7	16	0	4	4	2	0	3	12	0	0	21	14	3	0	86	0	0	0	0
Total Survey	2	33	100	2	27	38	14	3	13	125	2	1	134	118	30	2	636	0	18	1	0

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

By Approach	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	68	91	159	2	43	37	80	3	77	62	139	1	137	135	272	1	325	0	11	1	0
%HV	4.4%				4.7%				0.0%				1.5%				2.2%				
PHF	0.81				0.77				0.80				0.82				0.88				

By Movement	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	17	51	68	13	20	10	43	4	71	2	77	69	52	16	137	325
%HV	0.0%	5.9%	3.9%	4.4%	7.7%	5.0%	0.0%	4.7%	0.0%	0.0%	0.0%	0.0%	2.9%	0.0%	0.0%	1.5%	2.2%
PHF	0.00	0.71	0.75	0.81	0.65	0.63	0.63	0.77	0.50	0.77	0.50	0.80	0.75	0.65	0.36	0.82	0.88

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

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				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	2	15	51	2	7	18	6	0	5	70	1	0	61	66	16	0	318	0	13	1	0
7:15 AM	0	15	55	2	12	17	10	3	5	72	1	1	65	53	16	1	321	0	11	1	0
7:30 AM	0	18	48	2	11	19	9	3	6	69	2	1	67	48	15	1	312	0	5	1	0
7:45 AM	0	17	46	0	19	20	8	3	6	65	1	1	65	47	19	2	313	0	6	0	0
8:00 AM	0	18	49	0	20	20	8	3	8	55	1	1	73	52	14	2	318	0	5	0	0

Heavy Vehicle Summary

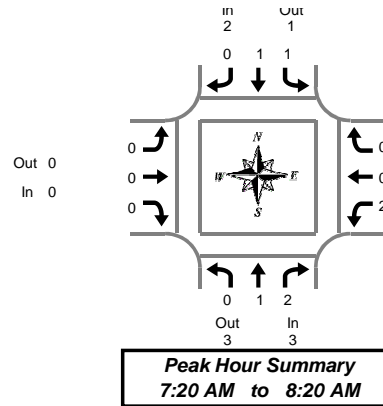


Clay Carney
(503) 833-2740

N Holly St & Territorial Rd

Thursday, August 09, 2018

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 Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:05 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
7:20 AM	0	0	0	0	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	1	0	0	1	1
7:30 AM	0	0	1	1	0	1	0	1	0	0	0	0	0	0	0	0	2
7:35 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
7:40 AM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:50 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
7:55 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:05 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
8:20 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:25 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:35 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
8:40 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1
8:45 AM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
8:50 AM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
8:55 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	0	2	5	7	1	1	0	2	0	0	0	0	2	2	0	4	13

Heavy Vehicle 15-Minute Interval Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	1	2
7:30 AM	0	0	2	2	0	1	0	1	0	0	0	0	1	0	0	1	4
7:45 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	1	2
8:30 AM	0	1	0	1	0	0	0	0	0	0	0	0	1	0	1	2	2
8:45 AM	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Total Survey	0	2	5	7	1	1	0	2	0	0	0	0	2	2	0	4	13

Heavy Vehicle Peak Hour Summary

7:20 AM to 8:20 AM

By Approach	Northbound N Holly St			Southbound N Holly St			Eastbound Territorial Rd			Westbound Territorial Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	3	3	6	2	1	3	0	0	0	2	3	5	7
PHF	0.38			0.50			0.00			0.25			0.44

By Movement	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	1	2	3	1	1	0	2	0	0	0	0	2	0	0	2	7
PHF	0.00	0.25	0.25	0.38	0.25	0.25	0.00	0.50	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.25	0.44

Heavy Vehicle Rolling Hour Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	1	3	4	0	1	0	1	0	0	0	0	2	0	0	2	7
7:15 AM	0	1	3	4	0	1	0	1	0	0	0	0	2	0	0	2	7
7:30 AM	0	1	2	3	1	1	0	2	0	0	0	0	1	1	0	2	7
7:45 AM	0	2	0	2	1	0	0	1	0	0	0	0	0	2	0	2	5
8:00 AM	0	1	2	3	1	0	0	1	0	0	0	0	0	2	0	2	6

Peak Hour Summary

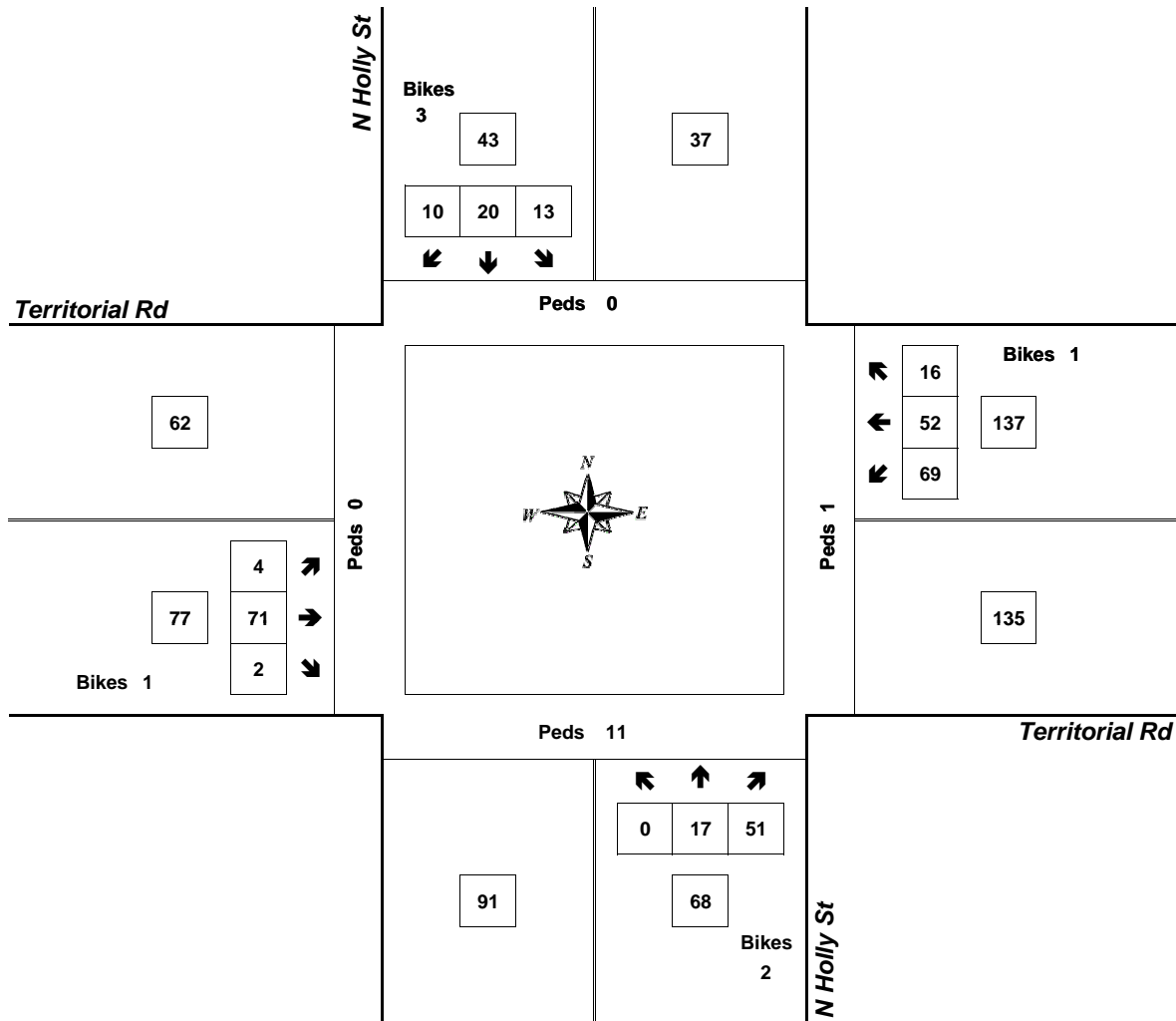


Clay Carney
(503) 833-2740

N Holly St & Territorial Rd

7:20 AM to 8:20 AM

Thursday, August 09, 2018



Approach	PHF	HV%	Volume
EB	0.80	0.0%	77
WB	0.82	1.5%	137
NB	0.81	4.4%	68
SB	0.77	4.7%	43
Intersection	0.88	2.2%	325

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

Total Vehicle Summary

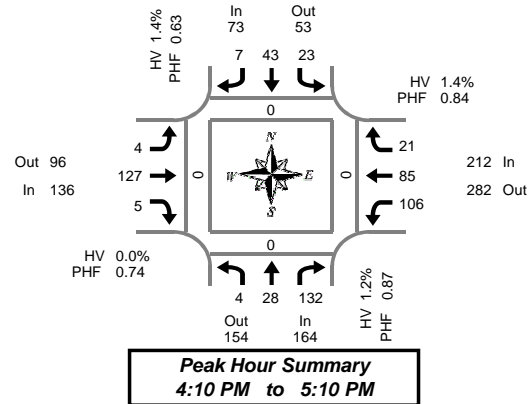


Clay Carney
(503) 833-2740

N Holly St & Territorial Rd

Thursday, August 09, 2018

4:00 PM to 6:00 PM



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

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				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	0	11	0	5	0	0	1	0	8	0	0	17	7	0	0	48	0	0	0	0
4:05 PM	0	0	9	0	1	2	0	0	3	8	0	1	7	6	1	0	37	0	0	0	0
4:10 PM	0	5	11	0	1	1	0	0	0	6	0	0	15	13	1	0	53	0	0	0	0
4:15 PM	0	1	14	0	0	3	2	0	2	8	0	0	10	5	1	0	46	0	0	0	0
4:20 PM	0	2	7	0	6	1	1	0	0	13	0	0	4	11	3	0	48	0	0	0	0
4:25 PM	0	0	10	0	1	3	1	2	0	8	1	0	11	1	1	0	37	0	0	0	0
4:30 PM	0	2	8	0	0	2	0	1	0	13	0	0	13	10	4	0	52	0	0	0	0
4:35 PM	1	6	12	0	4	12	2	0	0	12	0	0	5	4	0	0	58	0	0	0	0
4:40 PM	0	1	14	0	1	2	1	0	0	15	1	0	7	6	1	0	49	0	0	0	0
4:45 PM	1	2	10	0	3	4	0	0	2	16	0	0	9	7	1	0	55	0	0	0	0
4:50 PM	0	0	16	0	1	2	0	0	0	7	2	0	11	3	0	0	42	0	0	0	0
4:55 PM	1	1	5	0	1	4	0	1	0	9	0	0	8	7	2	1	38	0	0	0	0
5:00 PM	1	3	12	0	2	4	0	1	0	10	1	0	6	10	4	0	53	0	0	0	0
5:05 PM	0	5	13	0	3	5	0	0	0	10	0	0	7	8	3	0	54	0	0	0	0
5:10 PM	0	1	14	0	1	0	0	0	0	13	1	0	7	6	4	0	47	0	0	0	0
5:15 PM	0	2	3	0	2	2	0	0	0	10	0	0	9	10	1	0	39	0	0	1	0
5:20 PM	0	2	11	0	5	3	1	1	0	6	0	0	11	8	1	0	48	0	0	0	0
5:25 PM	0	1	11	0	1	0	0	0	1	15	0	0	8	7	2	0	46	0	0	0	0
5:30 PM	0	2	10	0	2	4	0	0	0	10	0	0	8	9	2	0	47	0	0	0	0
5:35 PM	0	2	6	0	4	4	1	0	0	9	1	0	6	10	3	0	46	0	0	0	0
5:40 PM	0	2	8	0	3	4	0	0	3	3	0	0	9	1	1	1	34	0	0	0	0
5:45 PM	0	4	6	0	4	4	0	1	0	5	1	0	7	8	3	0	42	0	2	0	0
5:50 PM	2	4	6	0	2	0	0	0	2	6	0	0	4	5	1	0	32	0	2	0	0
5:55 PM	0	5	6	0	3	6	1	0	0	8	0	0	3	3	2	0	37	0	0	0	0
Total Survey	6	53	233	0	56	72	10	8	13	228	8	1	202	165	42	2	1,088	0	4	1	0

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

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				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	5	31	0	7	3	0	1	3	22	0	1	39	26	2	0	138	0	0	0	0
4:15 PM	0	3	31	0	7	7	4	2	2	29	1	0	25	17	5	0	131	0	0	0	0
4:30 PM	1	9	34	0	5	16	3	1	0	40	1	0	25	20	5	0	159	0	0	0	0
4:45 PM	2	3	31	0	5	10	0	1	2	32	2	0	28	17	3	1	135	0	0	0	0
5:00 PM	1	9	39	0	6	9	0	1	0	33	2	0	20	24	11	0	154	0	0	0	0
5:15 PM	0	5	25	0	8	5	1	1	1	31	0	0	28	25	4	0	133	0	0	1	0
5:30 PM	0	6	24	0	9	12	1	0	3	22	1	0	23	20	6	1	127	0	0	0	0
5:45 PM	2	13	18	0	9	10	1	1	2	19	1	0	14	16	6	0	111	0	4	0	0
Total Survey	6	53	233	0	56	72	10	8	13	228	8	1	202	165	42	2	1,088	0	4	1	0

Peak Hour Summary 4:10 PM to 5:10 PM

By Approach	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	164	154	318	0	73	53	126	5	136	96	232	0	212	282	494	1	585	0	0	0	0
%HV	1.2%				1.4%				0.0%				1.4%				1.0%				
PHF	0.87				0.63				0.74				0.84				0.90				

By Movement	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	4	28	132	164	23	43	7	73	4	127	5	136	106	85	21	212	585
%HV	0.0%	0.0%	1.5%	1.2%	0.0%	2.3%	0.0%	1.4%	0.0%	0.0%	0.0%	0.0%	1.9%	1.2%	0.0%	1.4%	1.0%
PHF	0.50	0.78	0.83	0.87	0.72	0.60	0.44	0.63	0.50	0.74	0.42	0.74	0.91	0.73	0.58	0.84	0.90

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

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				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	3	20	127	0	24	36	7	5	7	123	4	1	117	80	15	1	563	0	0	0	0
4:15 PM	4	24	135	0	23	42	7	5	4	134	6	0	98	78	24	1	579	0	0	0	0
4:30 PM	4	26	129	0	24	40	4	4	3	136	5	0	101	86	23	1	581	0	0	1	0
4:45 PM	3	23	119	0	28	36	2	3	6	118	5	0	99	86	24	2	549	0	0	1	0
5:00 PM	3	33	106	0	32	36	3	3	6	105	4	0	85	85	27	1	525	0	4	1	0

Heavy Vehicle Summary

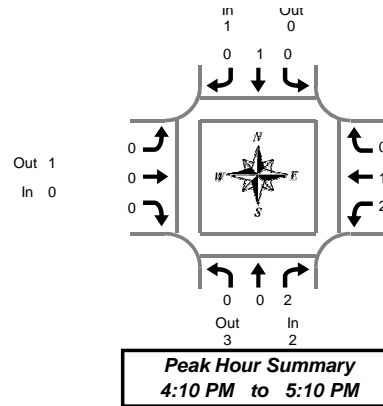


Clay Carney
(503) 833-2740

N Holly St & Territorial Rd

Thursday, August 09, 2018

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 Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
4:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:10 PM	0	0	1	1	0	0	0	0	0	0	0	0	1	1	0	2	3
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:25 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
4:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
4:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
5:40 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
5:45 PM	0	0	0	0	1	0	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	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	0	1	2	3	1	2	0	3	1	0	0	1	3	1	0	4	11

Heavy Vehicle 15-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	1	1	0	0	0	0	0	0	0	0	2	1	0	3	4
4:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
4:45 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 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	1	0	1	1	0	0	1	0	0	0	0	2
5:45 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
Total Survey	0	1	2	3	1	2	0	3	1	0	0	1	3	1	0	4	11

Heavy Vehicle Peak Hour Summary

4:10 PM to 5:10 PM

By Approach	Northbound N Holly St			Southbound N Holly St			Eastbound Territorial Rd			Westbound Territorial Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	2	3	5	1	0	1	0	1	1	3	2	5	6
PHF	0.50			0.25			0.00			0.38			0.50

By Movement	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	2	2	0	1	0	1	0	0	0	0	2	1	0	3	6
PHF	0.00	0.00	0.50	0.50	0.00	0.25	0.00	0.25	0.00	0.00	0.00	0.00	0.50	0.25	0.00	0.38	0.50

Heavy Vehicle Rolling Hour Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound Territorial Rd				Westbound Territorial Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	2	2	0	1	0	1	0	0	0	0	3	1	0	4	7
4:15 PM	0	0	1	1	0	1	0	1	0	0	0	0	1	0	0	1	3
4:30 PM	0	1	1	2	0	0	0	0	0	0	0	0	1	0	0	1	3
4:45 PM	0	1	1	2	0	1	0	1	1	0	0	1	0	0	0	0	4
5:00 PM	0	1	0	1	1	1	0	2	1	0	0	1	0	0	0	0	4

Peak Hour Summary

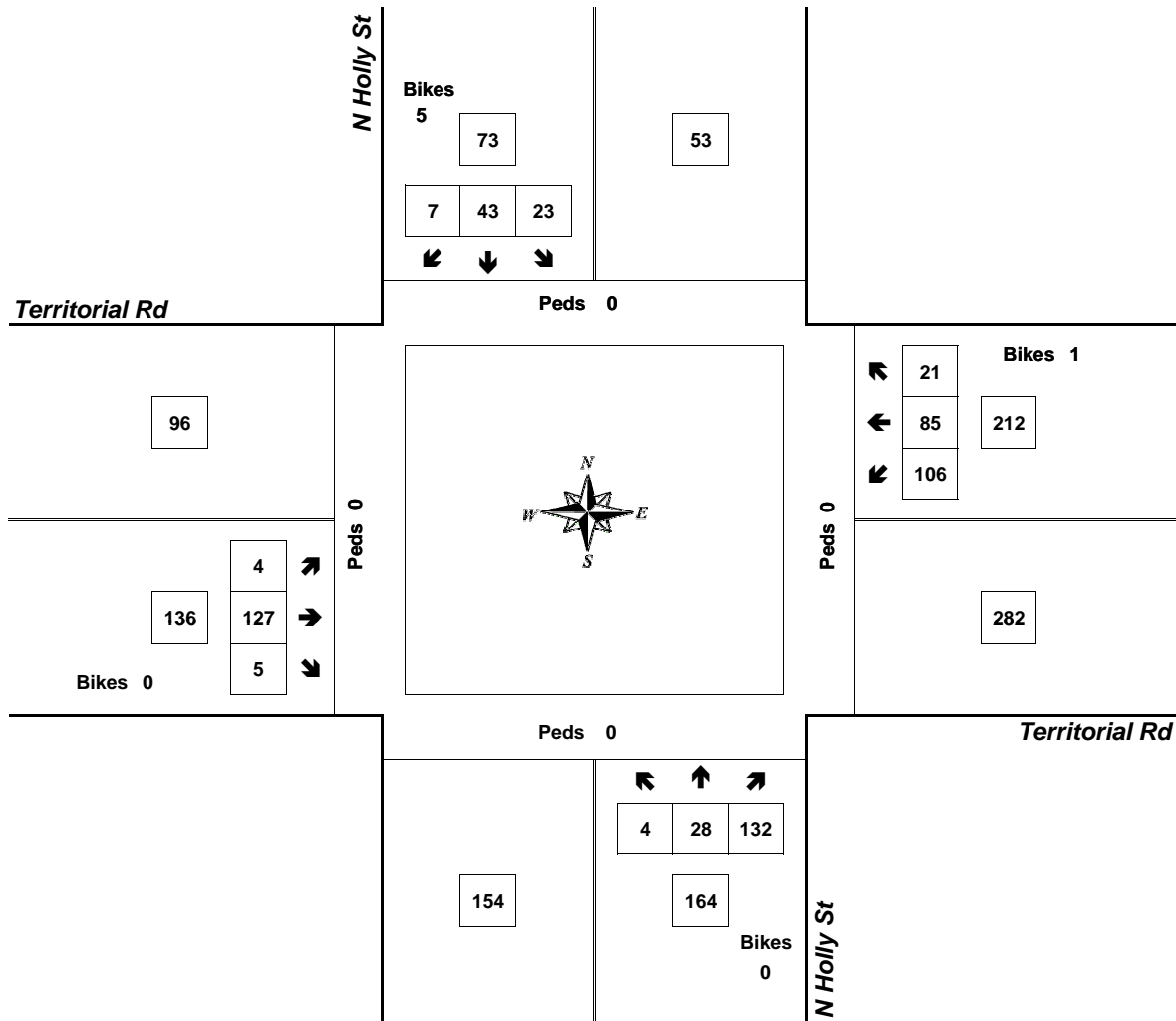


Clay Carney
(503) 833-2740

N Holly St & Territorial Rd

4:10 PM to 5:10 PM

Thursday, August 09, 2018



Approach	PHF	HV%	Volume
EB	0.74	0.0%	136
WB	0.84	1.4%	212
NB	0.87	1.2%	164
SB	0.63	1.4%	73
Intersection	0.90	1.0%	585

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

Total Vehicle Summary

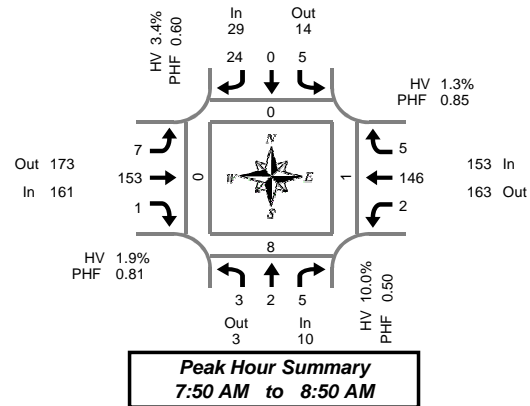


Clay Carney
(503) 833-2740

N Locust St & Territorial Rd

Thursday, August 09, 2018

7:00 AM to 9:00 AM



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

Interval Start Time	Northbound N Locust St				Southbound N Locust St				Eastbound Territorial Rd				Westbound Territorial Rd				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	0	1	0	1	0	1	0	0	6	0	0	0	13	0	0	22	0	0	0	0
7:05 AM	0	0	1	0	0	0	2	0	0	10	0	0	1	18	0	0	32	0	1	0	0
7:10 AM	0	0	0	0	1	0	1	0	0	6	0	0	0	10	0	0	18	0	0	0	2
7:15 AM	0	0	1	0	0	0	0	0	1	8	0	0	0	8	0	0	18	0	0	0	0
7:20 AM	1	0	0	0	0	1	1	0	1	13	0	0	0	11	0	0	28	0	0	0	0
7:25 AM	1	0	0	0	0	0	2	0	2	16	0	0	0	12	0	0	33	0	2	0	0
7:30 AM	0	0	1	0	1	0	3	0	0	12	0	2	0	10	1	0	28	0	3	0	0
7:35 AM	0	0	0	0	0	1	4	0	0	14	0	0	1	15	0	0	35	0	0	0	0
7:40 AM	0	0	0	0	1	0	2	0	0	14	0	0	0	9	0	0	26	0	0	0	0
7:45 AM	0	0	0	0	0	1	3	0	0	11	0	0	0	9	1	0	25	0	1	0	0
7:50 AM	0	0	0	0	0	0	0	0	1	20	0	0	0	8	1	0	30	0	0	0	0
7:55 AM	1	0	1	0	2	0	1	0	1	13	0	0	0	10	0	0	29	0	1	1	0
8:00 AM	0	0	0	0	1	0	1	0	1	14	0	0	1	16	0	0	34	0	0	0	0
8:05 AM	0	0	0	0	0	0	1	0	3	5	0	0	0	7	2	1	18	0	0	0	0
8:10 AM	0	0	1	0	0	0	3	0	0	7	0	3	0	16	0	0	27	0	1	0	0
8:15 AM	0	1	0	0	0	0	4	0	0	17	0	2	0	14	0	1	36	0	0	0	0
8:20 AM	0	0	0	0	0	0	2	0	1	9	0	0	1	12	0	0	25	0	0	0	0
8:25 AM	0	0	2	1	0	0	1	0	0	12	0	0	0	7	1	1	23	0	2	0	0
8:30 AM	0	0	1	0	0	0	1	0	0	13	0	0	0	19	0	0	34	0	1	0	0
8:35 AM	2	0	0	0	0	0	2	0	0	12	0	0	0	14	1	1	31	0	2	0	0
8:40 AM	0	1	0	0	0	0	1	0	0	12	1	0	0	11	0	0	26	0	1	0	0
8:45 AM	0	0	0	0	2	0	7	0	0	19	0	0	0	12	0	0	40	0	0	0	0
8:50 AM	0	0	1	0	1	0	3	0	0	9	0	0	0	12	1	0	27	0	0	0	0
8:55 AM	1	0	0	0	0	1	1	0	3	11	0	0	0	11	3	0	31	0	0	1	0
Total Survey	6	2	10	1	10	4	47	0	14	283	1	7	4	284	11	4	676	0	15	2	2

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

Interval Start Time	Northbound N Locust St				Southbound N Locust St				Eastbound Territorial Rd				Westbound Territorial Rd				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	0	2	0	2	0	4	0	0	22	0	0	1	41	0	0	72	0	1	0	2
7:15 AM	2	0	1	0	0	1	3	0	4	37	0	0	0	31	0	0	79	0	2	0	0
7:30 AM	0	0	1	0	2	1	9	0	0	40	0	2	1	34	1	0	89	0	3	0	0
7:45 AM	1	0	1	0	2	1	4	0	2	44	0	0	0	27	2	0	84	0	2	1	0
8:00 AM	0	0	1	0	1	0	5	0	4	26	0	3	1	39	2	1	79	0	1	0	0
8:15 AM	0	1	2	1	0	0	7	0	1	38	0	2	1	33	1	2	84	0	2	0	0
8:30 AM	2	1	1	0	0	0	4	0	0	37	1	0	0	44	1	1	91	0	4	0	0
8:45 AM	1	0	1	0	3	1	11	0	3	39	0	0	0	35	4	0	98	0	0	1	0
Total Survey	6	2	10	1	10	4	47	0	14	283	1	7	4	284	11	4	676	0	15	2	2

Peak Hour Summary 7:50 AM to 8:50 AM

By Approach	Northbound N Locust St				Southbound N Locust St				Eastbound Territorial Rd				Westbound Territorial Rd				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	10	3	13	1	29	14	43	0	161	173	334	5	153	163	316	4	353	0	8	1	0
%HV	10.0%				3.4%				1.9%				1.3%				2.0%				
PHF	0.50				0.60				0.81				0.85				0.91				

By Movement	Northbound N Locust St				Southbound N Locust St				Eastbound Territorial Rd				Westbound Territorial Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	3	2	5	10	5	0	24	29	7	153	1	161	2	146	5	153	353
%HV	0.0%	0.0%	20.0%	10.0%	0.0%	0.0%	4.2%	3.4%	0.0%	2.0%	0.0%	1.9%	0.0%	0.7%	20.0%	1.3%	2.0%
PHF	0.38	0.50	0.42	0.50	0.42	0.00	0.60	0.60	0.35	0.81	0.25	0.81	0.50	0.83	0.63	0.85	0.91

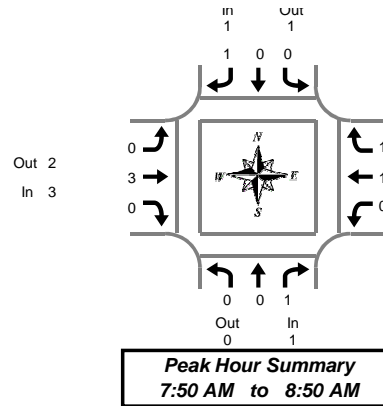
Rolling Hour Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound N Locust St				Southbound N Locust St				Eastbound Territorial Rd				Westbound Territorial Rd				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	3	0	5	0	6	3	20	0	6	143	0	2	2	133	3	0	324	0	8	1	2
7:15 AM	3	0	4	0	5	3	21	0	10	147	0	5	2	131	5	1	331	0	8	1	0
7:30 AM	1	1	5	1	5	2	25	0	7	148	0	7	3	133	6	3	336	0	8	1	0
7:45 AM	3	2	5	1	3	1	20	0	7	145	1	5	2	143	6	4	338	0	9	1	0
8:00 AM	3	2	5	1	4	1	27	0	8	140	1	5	2	151	8	4	352	0	7	1	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



N Locust St & Territorial Rd

Thursday, August 09, 2018

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 Locust St				Southbound N Locust St				Eastbound Territorial Rd				Westbound Territorial Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:05 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	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	0	0	0	0
7:25 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:35 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:40 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
7:50 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:55 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:05 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
8:20 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:25 AM	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0	2
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:35 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
8:40 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1
8:45 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
8:50 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
8:55 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	0	0	1	1	0	0	1	1	0	7	0	7	0	2	1	3	12

Heavy Vehicle 15-Minute Interval Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound N Locust St				Southbound N Locust St				Eastbound Territorial Rd				Westbound Territorial Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
7:30 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	1	1	0	0	1	1	0	2	0	2	0	0	0	0	4
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2	2
8:45 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
Total Survey	0	0	1	1	0	0	1	1	0	7	0	7	0	2	1	3	12

Heavy Vehicle Peak Hour Summary

7:50 AM to 8:50 AM

By Approach	Northbound N Locust St			Southbound N Locust St			Eastbound Territorial Rd			Westbound Territorial Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	0	1	1	1	2	3	2	5	2	4	6	7
PHF	0.25			0.25			0.38			0.25			0.44

By Movement	Northbound N Locust St			Southbound N Locust St			Eastbound Territorial Rd			Westbound Territorial Rd			Total
	L	T	R	L	T	R	L	T	R	L	T	R	
Volume	0	0	1	0	0	1	0	3	0	3	0	1	2
PHF	0.00	0.00	0.25	0.00	0.00	0.25	0.00	0.38	0.00	0.38	0.00	0.25	0.44

Heavy Vehicle Rolling Hour Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound N Locust St				Southbound N Locust St				Eastbound Territorial Rd				Westbound Territorial Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	3	0	3	0	1	0	1	4
7:15 AM	0	0	0	0	0	0	0	0	0	3	0	3	0	1	0	1	4
7:30 AM	0	0	1	1	0	0	1	1	0	4	0	4	0	0	0	0	6
7:45 AM	0	0	1	1	0	0	1	1	0	3	0	3	0	1	1	2	7
8:00 AM	0	0	1	1	0	0	1	1	0	4	0	4	0	1	1	2	8

Peak Hour Summary

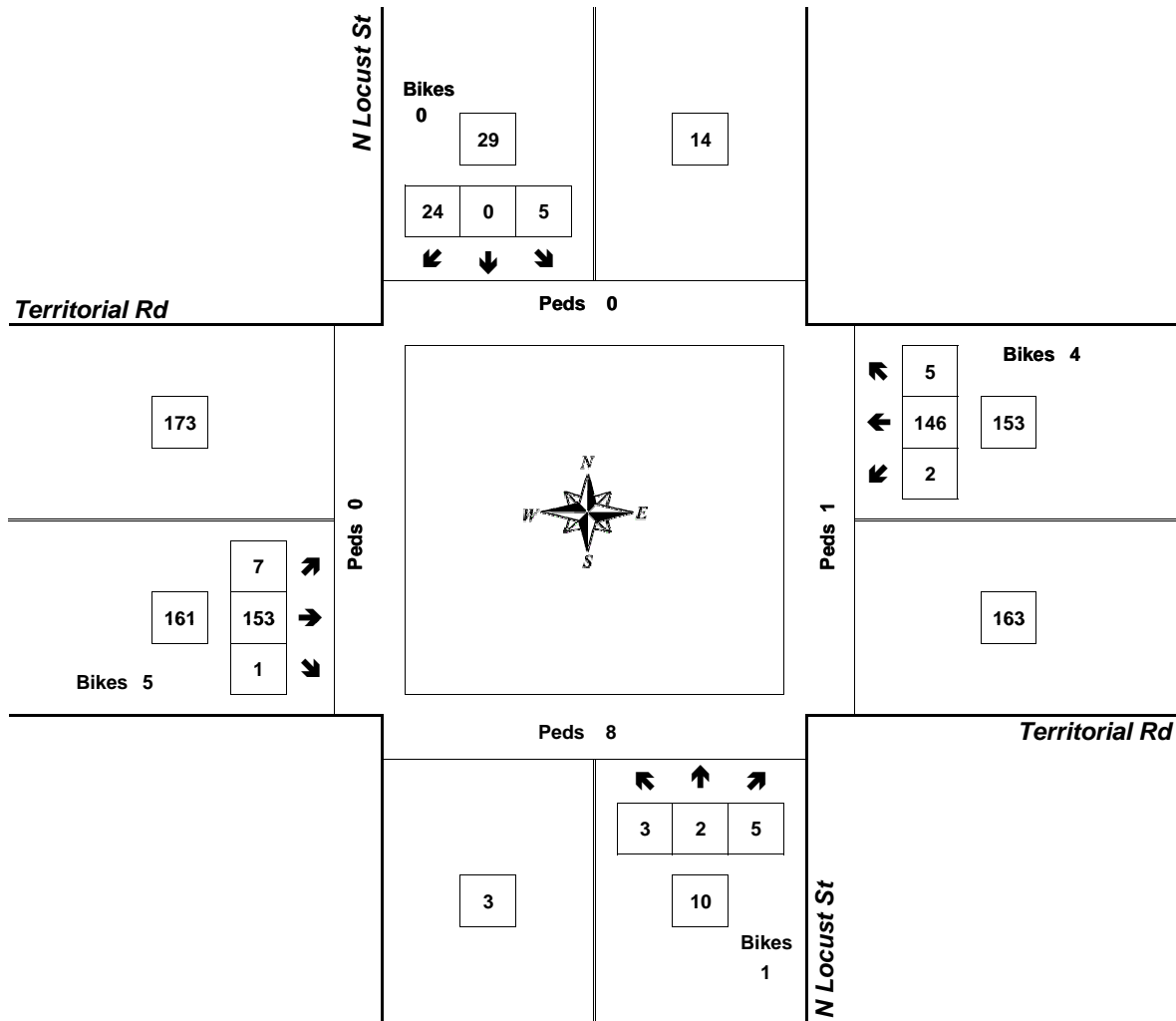


Clay Carney
(503) 833-2740

N Locust St & Territorial Rd

7:50 AM to 8:50 AM

Thursday, August 09, 2018



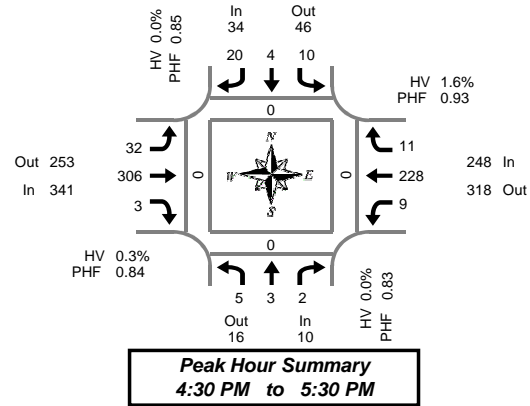
Approach	PHF	HV%	Volume
EB	0.81	1.9%	161
WB	0.85	1.3%	153
NB	0.50	10.0%	10
SB	0.60	3.4%	29
Intersection	0.91	2.0%	353

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

Total Vehicle Summary



Clay Carney
(503) 833-2740



N Locust St & Territorial Rd

Thursday, August 09, 2018

4:00 PM to 6:00 PM

5-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound N Locust St				Southbound N Locust St				Eastbound Territorial Rd				Westbound Territorial Rd				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	0	1	0	1	0	4	0	5	23	1	1	1	21	0	0	57	0	0	0	0
4:05 PM	0	4	1	0	0	0	0	0	1	20	0	2	0	14	0	0	40	0	0	2	0
4:10 PM	0	0	0	0	0	2	1	0	5	16	1	0	2	31	1	0	59	0	0	0	0
4:15 PM	0	0	0	0	0	1	4	0	1	31	0	0	0	14	1	0	52	0	0	0	0
4:20 PM	0	0	0	0	0	1	3	0	5	17	1	0	0	19	1	0	47	0	0	0	0
4:25 PM	0	0	1	0	0	1	1	0	5	17	0	1	0	13	1	0	39	0	0	0	0
4:30 PM	0	1	1	0	0	2	2	0	4	21	0	0	2	32	1	0	66	0	0	0	0
4:35 PM	0	0	0	1	1	0	2	0	3	29	0	1	0	14	0	0	49	0	0	0	0
4:40 PM	1	0	0	0	1	1	1	0	3	28	0	0	3	15	0	0	53	0	0	0	0
4:45 PM	0	1	0	0	2	0	2	0	2	35	1	0	1	18	1	0	63	0	0	0	0
4:50 PM	0	0	0	0	0	0	1	0	3	26	0	0	0	16	0	0	46	0	0	0	0
4:55 PM	2	0	0	0	1	0	3	0	2	14	0	0	1	17	1	0	41	0	0	0	0
5:00 PM	1	0	0	0	1	1	1	0	1	24	0	0	0	22	4	2	55	0	0	0	0
5:05 PM	0	0	0	0	1	0	2	0	5	29	0	0	0	18	1	0	56	0	0	0	0
5:10 PM	0	0	0	0	1	0	0	0	0	36	0	0	1	17	1	0	56	0	0	0	0
5:15 PM	0	1	0	0	0	0	3	0	4	17	0	0	1	22	0	0	48	0	0	0	0
5:20 PM	1	0	1	0	2	0	1	0	2	20	2	0	0	19	0	0	48	0	0	0	0
5:25 PM	0	0	0	0	0	0	2	0	3	27	0	0	0	18	2	0	52	0	0	0	0
5:30 PM	0	0	0	0	0	0	1	0	3	27	0	0	0	25	1	0	57	0	0	0	0
5:35 PM	1	0	1	0	0	0	4	0	2	20	1	0	1	15	0	0	45	0	0	0	0
5:40 PM	0	1	0	0	0	0	1	0	1	14	1	0	0	11	0	2	29	0	0	0	0
5:45 PM	0	0	1	0	0	0	6	0	2	18	0	0	1	23	2	0	53	0	2	2	0
5:50 PM	1	0	0	0	0	0	1	0	3	11	0	0	0	8	1	0	25	0	0	0	0
5:55 PM	0	1	1	0	0	0	1	0	3	16	0	0	2	9	0	0	33	0	0	0	0
Total Survey	7	9	8	1	11	9	47	0	68	536	8	5	16	431	19	4	1,169	0	2	4	0

15-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound N Locust St				Southbound N Locust St				Eastbound Territorial Rd				Westbound Territorial Rd				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	4	2	0	1	2	5	0	11	59	2	3	3	66	1	0	156	0	0	2	0
4:15 PM	0	0	1	0	0	3	8	0	11	65	1	1	0	46	3	0	138	0	0	0	0
4:30 PM	1	1	1	1	2	3	5	0	10	78	0	1	5	61	1	0	168	0	0	0	0
4:45 PM	2	1	0	0	3	0	6	0	7	75	1	0	2	51	2	0	150	0	0	0	0
5:00 PM	1	0	0	0	3	1	3	0	6	89	0	0	1	57	6	2	167	0	0	0	0
5:15 PM	1	1	1	0	2	0	6	0	9	64	2	0	1	59	2	0	148	0	0	0	0
5:30 PM	1	1	1	0	0	0	6	0	6	61	2	0	1	51	1	2	131	0	0	0	0
5:45 PM	1	1	2	0	0	0	8	0	8	45	0	0	3	40	3	0	111	0	2	2	0
Total Survey	7	9	8	1	11	9	47	0	68	536	8	5	16	431	19	4	1,169	0	2	4	0

Peak Hour Summary

4:30 PM to 5:30 PM

By Approach	Northbound N Locust St				Southbound N Locust St				Eastbound Territorial Rd				Westbound Territorial Rd				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	10	16	26	1	34	46	80	0	341	253	594	1	248	318	566	2	633	0	0	0	0
%HV	0.0%				0.0%				0.3%				1.6%				0.8%				
PHF	0.83				0.85				0.84				0.93				0.94				

By Movement	Northbound N Locust St				Southbound N Locust St				Eastbound Territorial Rd				Westbound Territorial Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	5	3	2	10	10	4	20	34	32	306	3	341	9	228	11	248	633
%HV	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.3%	11.1%	1.3%	0.0%	1.6%	0.8%
PHF	0.42	0.75	0.50	0.83	0.63	0.33	0.83	0.85	0.80	0.83	0.38	0.84	0.45	0.93	0.46	0.93	0.94

Rolling Hour Summary

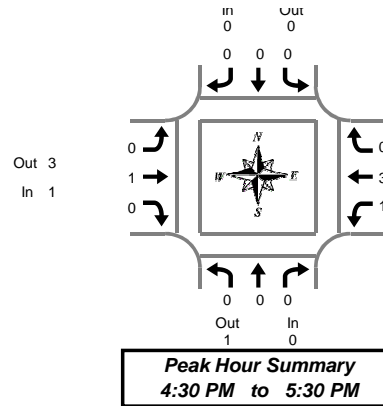
4:00 PM to 6:00 PM

Interval Start Time	Northbound N Locust St				Southbound N Locust St				Eastbound Territorial Rd				Westbound Territorial Rd				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	3	6	4	1	6	8	24	0	39	277	4	5	10	224	7	0	612	0	0	2	0
4:15 PM	4	2	2	1	8	7	22	0	34	307	2	2	8	215	12	2	623	0	0	0	0
4:30 PM	5	3	2	1	10	4	20	0	32	306	3	1	9	228	11	2	633	0	0	0	0
4:45 PM	5	3	2	0	8	1	21	0	28	289	5	0	5	218	11	4	596	0	0	0	0
5:00 PM	4	3	4	0	5	1	23	0	29	259	4	0	6	207	12	4	557	0	2	2	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



N Locust St & Territorial Rd

Thursday, August 09, 2018

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 Locust St				Southbound N Locust St				Eastbound Territorial Rd				Westbound Territorial Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
4:05 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
4:10 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	2	3
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
4:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
4:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
4:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
5:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:50 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
5:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	0	0	0	0	0	0	0	0	0	5	0	5	1	6	0	7	12

Heavy Vehicle 15-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound N Locust St				Southbound N Locust St				Eastbound Territorial Rd				Westbound Territorial Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	3	0	3	5
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2	2
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
Total Survey	0	0	0	0	0	0	0	0	0	5	0	5	1	6	0	7	12

Heavy Vehicle Peak Hour Summary

4:30 PM to 5:30 PM

By Approach	Northbound N Locust St			Southbound N Locust St			Eastbound Territorial Rd			Westbound Territorial Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	1	1	0	0	0	1	3	4	4	1	5	5
PHF	0.00			0.00			0.25			0.50			0.63

By Movement	Northbound N Locust St				Southbound N Locust St				Eastbound Territorial Rd				Westbound Territorial Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	0	0	0	0	0	0	0	1	0	1	1	3	0	4	5
PHF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.25	0.25	0.38	0.00	0.50	0.63

Heavy Vehicle Rolling Hour Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound N Locust St				Southbound N Locust St				Eastbound Territorial Rd				Westbound Territorial Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	4	0	4	0	6	0	6	10
4:15 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	3	0	3	5
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	1	3	0	4	5
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	2	3
5:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	1	2

Peak Hour Summary

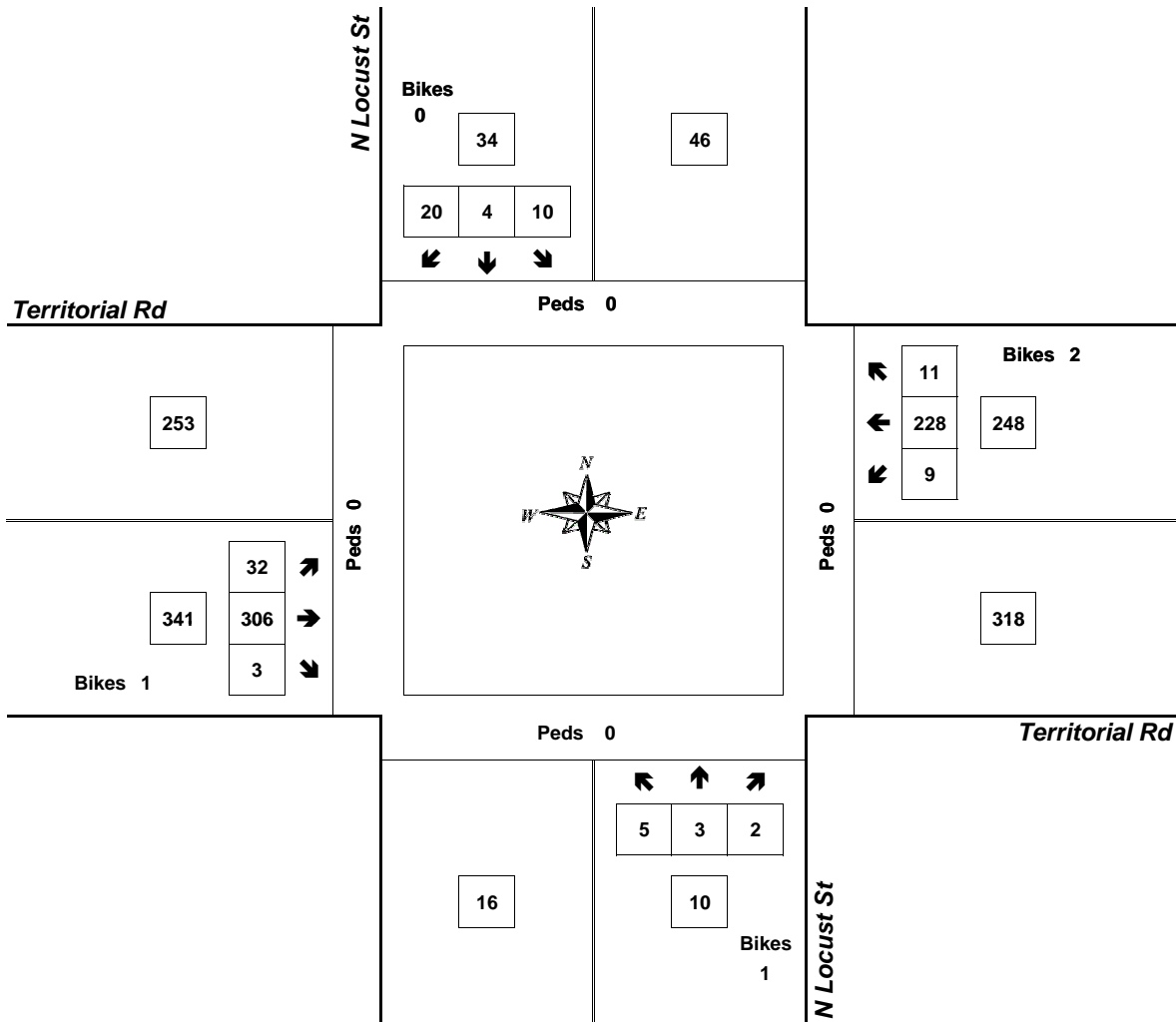


Clay Carney
(503) 833-2740

N Locust St & Territorial Rd

4:30 PM to 5:30 PM

Thursday, August 09, 2018



Approach	PHF	HV%	Volume
EB	0.84	0.3%	341
WB	0.93	1.6%	248
NB	0.83	0.0%	10
SB	0.85	0.0%	34
Intersection	0.94	0.8%	633

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

Total Vehicle Summary

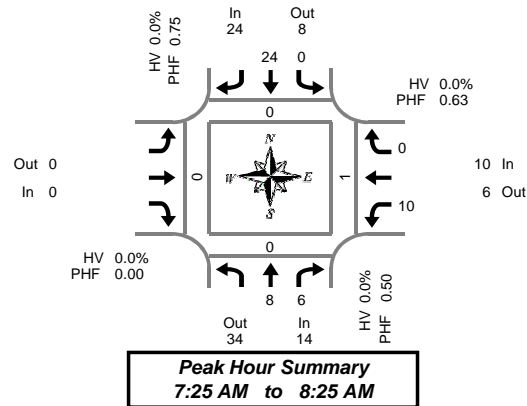


Clay Carney
(503) 833-2740

N Locust St & NE 19th Ave

Thursday, August 09, 2018

7:00 AM to 9:00 AM



5-Minute Interval Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound N Locust St			Southbound N Locust St			Eastbound NE 19th Ave			Westbound NE 19th Ave			Interval Total	Pedestrians Crosswalk			
	T	R	Bikes	L	T	Bikes			Bikes	L		R	Bikes	North	South	East	West
7:00 AM	0	0	0	0	1	0			0	1		0	0	0	0	0	0
7:05 AM	0	0	0	0	1	0			0	1		0	0	0	0	0	0
7:10 AM	0	0	0	0	0	0			0	1		0	0	0	0	0	0
7:15 AM	0	1	0	0	0	0			0	1		0	0	0	0	0	0
7:20 AM	0	0	0	0	1	0			0	0		0	0	0	0	0	0
7:25 AM	2	0	0	0	1	0			0	2		0	0	0	0	0	0
7:30 AM	1	1	0	0	2	0			0	2		0	0	0	0	0	0
7:35 AM	0	0	0	0	4	0			0	0		0	0	0	0	0	0
7:40 AM	0	0	0	0	2	0			0	1		0	0	0	0	0	0
7:45 AM	1	0	0	0	2	0			0	1		0	0	0	0	0	0
7:50 AM	0	1	0	0	2	0			0	0		0	0	0	0	0	0
7:55 AM	0	0	0	0	2	0			0	1		0	0	0	1	0	0
8:00 AM	2	0	0	0	2	0			0	0		0	0	0	0	0	0
8:05 AM	1	2	0	0	1	0			0	0		0	0	0	0	0	0
8:10 AM	1	1	0	0	1	0			0	0		0	0	0	0	0	0
8:15 AM	0	1	0	0	3	0			0	3		0	0	0	0	0	0
8:20 AM	0	0	1	0	2	0			0	0		0	0	0	0	0	0
8:25 AM	1	0	1	0	0	0			0	0		0	0	0	0	0	0
8:30 AM	1	1	0	0	1	0			0	1		0	0	0	0	0	0
8:35 AM	1	0	0	0	3	0			0	0		0	0	0	0	0	0
8:40 AM	1	0	0	0	1	0			0	0		0	0	0	0	0	0
8:45 AM	0	0	0	0	3	0			0	4		0	0	0	0	0	0
8:50 AM	1	0	0	0	3	0			0	2		0	0	0	0	0	0
8:55 AM	3	0	0	0	1	0			0	0		0	0	0	0	0	0
Total Survey	16	8	2	0	39	0			0	21		0	0	0	1	0	0

15-Minute Interval Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound N Locust St			Southbound N Locust St			Eastbound NE 19th Ave			Westbound NE 19th Ave			Interval Total	Pedestrians Crosswalk			
	T	R	Bikes	L	T	Bikes			Bikes	L		R	Bikes	North	South	East	West
7:00 AM	0	0	0	0	2	0			0	3		0	0	0	0	0	0
7:15 AM	2	1	0	0	2	0			0	3		0	0	0	0	0	0
7:30 AM	1	1	0	0	8	0			0	3		0	0	0	0	0	0
7:45 AM	1	1	0	0	6	0			0	2		0	0	0	1	0	0
8:00 AM	4	3	0	0	4	0			0	0		0	0	0	0	0	0
8:15 AM	1	1	2	0	5	0			0	3		0	0	0	0	0	0
8:30 AM	3	1	0	0	5	0			0	1		0	0	0	0	0	0
8:45 AM	4	0	0	0	7	0			0	6		0	0	0	0	0	0
Total Survey	16	8	2	0	39	0			0	21		0	0	0	1	0	0

Peak Hour Summary

7:25 AM to 8:25 AM

By Approach	Northbound N Locust St			Southbound N Locust St			Eastbound NE 19th Ave			Westbound NE 19th Ave			Total	Pedestrians Crosswalk			
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total		North	South	East	West
Volume	14	34	48	24	8	32	0	0	0	10	6	16	48	0	0	1	0
%HV	0.0%			0.0%			0.0%			0.0%			0.0%	0.0%			
PHF	0.50			0.75			0.00			0.63			0.80	0.0%			

By Movement	Northbound N Locust St			Southbound N Locust St			Eastbound NE 19th Ave			Westbound NE 19th Ave			Total
	T	R	Total	L	T	Total			Total	L		R	Total
Volume	8	6	14	0	24	24			0	10		0	10
%HV	NA	0.0%	0.0%	0.0%	0.0%	NA	0.0%	NA	0.0%	0.0%	NA	0.0%	0.0%
PHF	0.50	0.38	0.50	0.00	0.75	0.75	0.00	0.63	0.00	0.63	0.00	0.63	0.80

Rolling Hour Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound N Locust St			Southbound N Locust St			Eastbound NE 19th Ave			Westbound NE 19th Ave			Interval Total	Pedestrians Crosswalk			
	T	R	Bikes	L	T	Bikes			Bikes	L		R	Bikes	North	South	East	West
7:00 AM	4	3	0	0	18	0			0	11		0	0	0	0	0	0
7:15 AM	8	6	0	0	20	0			0	8		0	0	0	0	0	0
7:30 AM	7	6	2	0	23	0			0	8		0	0	0	0	0	0
7:45 AM	9	6	2	0	20	0			0	6		0	0	0	0	0	0
8:00 AM	12	5	2	0	21	0			0	10		0	0	0	0	0	0

Heavy Vehicle Summary

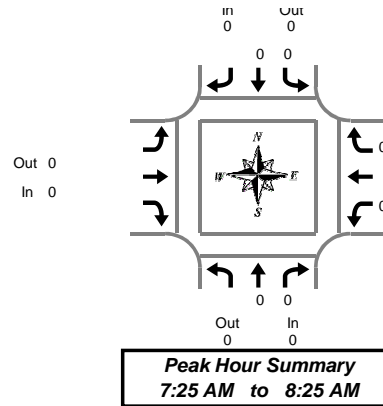


Clay Carney
(503) 833-2740

N Locust St & NE 19th Ave

Thursday, August 09, 2018

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 Locust St			Southbound N Locust St			Eastbound NE 19th Ave			Westbound NE 19th Ave			Interval Total	
	T	R	Total	L	T	Total			Total	L	R	Total		
7:00 AM	0	0	0	0	0	0			0	0		0	0	0
7:05 AM	0	0	0	0	0	0			0	0		0	0	0
7:10 AM	0	0	0	0	0	0			0	0		0	0	0
7:15 AM	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
7:25 AM	0	0	0	0	0	0			0	0		0	0	0
7:30 AM	0	0	0	0	0	0			0	0		0	0	0
7:35 AM	0	0	0	0	0	0			0	0		0	0	0
7:40 AM	0	0	0	0	0	0			0	0		0	0	0
7:45 AM	0	0	0	0	0	0			0	0		0	0	0
7:50 AM	0	0	0	0	0	0			0	0		0	0	0
7:55 AM	0	0	0	0	0	0			0	0		0	0	0
8:00 AM	0	0	0	0	0	0			0	0		0	0	0
8:05 AM	0	0	0	0	0	0			0	0		0	0	0
8:10 AM	0	0	0	0	0	0			0	0		0	0	0
8:15 AM	0	0	0	0	0	0			0	0		0	0	0
8:20 AM	0	0	0	0	0	0			0	0		0	0	0
8:25 AM	0	0	0	0	0	0			0	0		0	0	0
8:30 AM	0	0	0	0	0	0			0	1		0	1	1
8:35 AM	1	0	1	0	0	0			0	0		0	0	1
8:40 AM	0	0	0	0	0	0			0	0		0	0	0
8:45 AM	0	0	0	0	0	0			0	0		0	0	0
8:50 AM	0	0	0	0	0	0			0	0		0	0	0
8:55 AM	0	0	0	0	0	0			0	0		0	0	0
Total Survey	1	0	1	0	0	0			0	1		0	1	2

Heavy Vehicle 15-Minute Interval Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound N Locust St			Southbound N Locust St			Eastbound NE 19th Ave			Westbound NE 19th Ave			Interval Total
	T	R	Total	L	T	Total			Total	L	R	Total	
7:00 AM	0	0	0	0	0	0			0	0	0	0	0
7:15 AM	0	0	0	0	0	0			0	0	0	0	0
7:30 AM	0	0	0	0	0	0			0	0	0	0	0
7:45 AM	0	0	0	0	0	0			0	0	0	0	0
8:00 AM	0	0	0	0	0	0			0	0	0	0	0
8:15 AM	0	0	0	0	0	0			0	0	0	0	0
8:30 AM	1	0	1	0	0	0			0	1	0	1	2
8:45 AM	0	0	0	0	0	0			0	0	0	0	0
Total Survey	1	0	1	0	0	0			0	1	0	1	2

Heavy Vehicle Peak Hour Summary

7:25 AM to 8:25 AM

By Approach	Northbound N Locust St			Southbound N Locust St			Eastbound NE 19th Ave			Westbound NE 19th Ave			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.00			0.00			0.00			0.00			0.00

By Movement	Northbound N Locust St			Southbound N Locust St			Eastbound NE 19th Ave			Westbound NE 19th Ave			Total
	T	R	Total	L	T	Total		Total	L	R	Total		
Volume	0	0	0	0	0	0		0	0		0	0	0
PHF	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00

Heavy Vehicle Rolling Hour Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound N Locust St			Southbound N Locust St			Eastbound NE 19th Ave			Westbound NE 19th Ave			Interval Total	
	T	R	Total	L	T	Total			Total	L		R		Total
7:00 AM	0	0	0	0	0	0			0	0		0	0	0
7:15 AM	0	0	0	0	0	0			0	0		0	0	0
7:30 AM	0	0	0	0	0	0			0	0		0	0	0
7:45 AM	1	0	1	0	0	0			0	1		0	1	2
8:00 AM	1	0	1	0	0	0			0	1		0	1	2

Peak Hour Summary

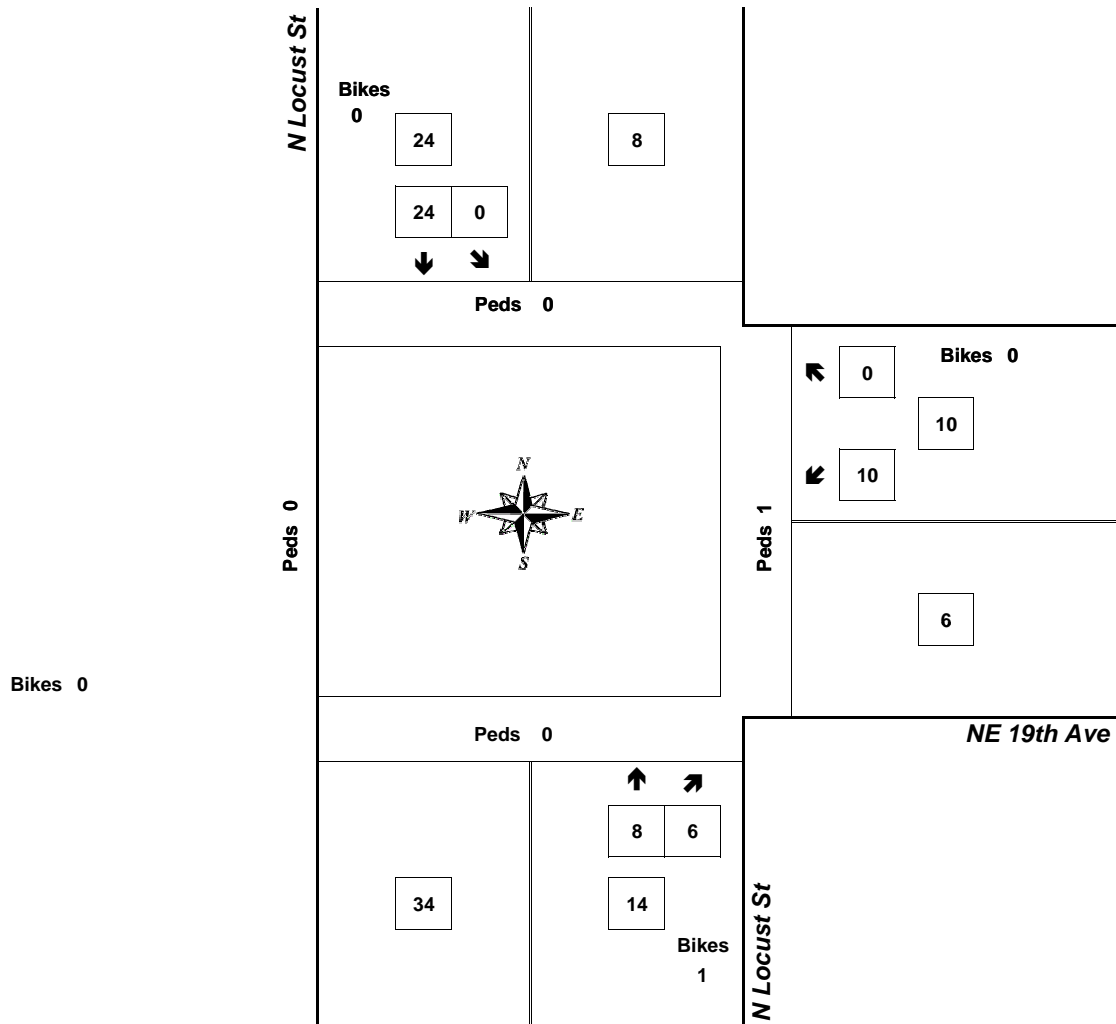


Clay Carney
(503) 833-2740

N Locust St & NE 19th Ave

7:25 AM to 8:25 AM

Thursday, August 09, 2018



Approach	PHF	HV%	Volume
EB	0.00	0.0%	0
WB	0.63	0.0%	10
NB	0.50	0.0%	14
SB	0.75	0.0%	24
Intersection	0.80	0.0%	48

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

Total Vehicle Summary

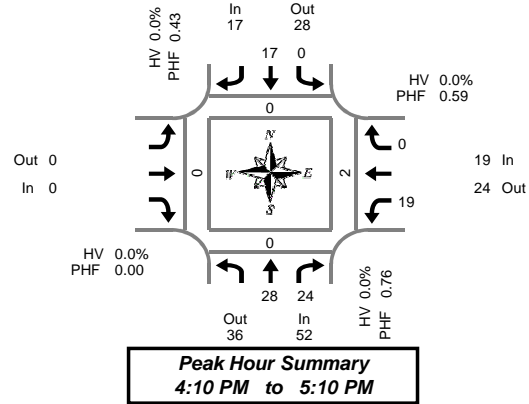


Clay Carney
(503) 833-2740

N Locust St & NE 19th Ave

Thursday, August 09, 2018

4:00 PM to 6:00 PM



5-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound N Locust St			Southbound N Locust St			Eastbound NE 19th Ave			Westbound NE 19th Ave			Interval Total	Pedestrians Crosswalk			
	T	R	Bikes	L	T	Bikes			Bikes	L		R	Bikes	North	South	East	West
4:00 PM	0	1	0	0	2	0			0	0		0	0	0	0	0	0
4:05 PM	3	2	0	0	3	0			0	0		0	0	0	0	0	0
4:10 PM	2	3	0	0	0	0			0	2		0	0	0	0	0	0
4:15 PM	2	3	0	0	0	1			0	1		0	0	0	0	0	0
4:20 PM	2	1	0	0	7	0			0	0		0	0	0	0	0	0
4:25 PM	5	2	0	0	1	0			0	1		0	0	0	1	0	0
4:30 PM	3	1	0	0	2	0			0	2		0	0	0	0	0	0
4:35 PM	2	4	0	0	1	0			0	2		0	0	0	0	0	0
4:40 PM	1	2	0	0	1	0			0	2		0	0	0	0	0	0
4:45 PM	0	3	0	0	0	0			0	4		0	0	0	1	0	0
4:50 PM	4	1	0	0	0	0			0	0		0	1	0	0	0	0
4:55 PM	1	1	0	0	3	0			0	2		0	0	0	0	0	0
5:00 PM	1	3	0	0	0	0			0	1		0	1	0	0	0	0
5:05 PM	5	0	0	0	2	0			0	2		0	0	0	0	0	0
5:10 PM	4	0	0	0	2	0			0	0		0	0	0	0	0	0
5:15 PM	2	2	0	0	1	0			0	1		0	0	0	0	0	0
5:20 PM	0	2	0	0	1	0			0	2		0	0	0	0	0	0
5:25 PM	2	3	0	0	0	0			0	2		0	0	0	0	0	0
5:30 PM	1	2	0	0	0	0			0	1		0	0	0	0	0	0
5:35 PM	2	1	0	0	1	0			0	3		0	0	0	0	0	0
5:40 PM	3	0	0	0	1	0			0	0		1	0	0	0	0	0
5:45 PM	2	2	0	0	2	0			0	2		0	0	0	2	0	0
5:50 PM	1	2	0	0	1	0			0	2		0	0	0	0	0	0
5:55 PM	2	1	0	0	0	0			0	0		0	0	0	0	0	0
Total Survey	50	42	0	0	31	1			0	32		1	2	0	0	4	0

15-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound N Locust St			Southbound N Locust St			Eastbound NE 19th Ave			Westbound NE 19th Ave			Interval Total	Pedestrians Crosswalk			
	T	R	Bikes	L	T	Bikes			Bikes	L		R	Bikes	North	South	East	West
4:00 PM	5	6	0	0	5	0			0	2		0	0	0	0	0	0
4:15 PM	9	6	0	0	8	1			0	2		0	0	0	1	0	0
4:30 PM	6	7	0	0	4	0			0	6		0	0	0	0	0	0
4:45 PM	5	5	0	0	3	0			0	6		0	1	0	1	0	0
5:00 PM	10	3	0	0	4	0			0	3		0	1	0	0	0	0
5:15 PM	4	7	0	0	2	0			0	5		0	0	0	0	0	0
5:30 PM	6	3	0	0	2	0			0	4		1	0	0	0	0	0
5:45 PM	5	5	0	0	3	0			0	4		0	0	0	2	0	0
Total Survey	50	42	0	0	31	1			0	32		1	2	0	0	4	0

Peak Hour Summary

4:10 PM to 5:10 PM

By Approach	Northbound N Locust St			Southbound N Locust St			Eastbound NE 19th Ave			Westbound NE 19th Ave			Total	Pedestrians Crosswalk			
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total		North	South	East	West
Volume	52	36	88	0	17	28	45	1	0	0	0	0	88	0	0	2	0
%HV	0.0%			0.0%			0.0%			0.0%			0.0%	0.0%			
PHF	0.76			0.43			0.00			0.59			0.81				

By Movement	Northbound N Locust St			Southbound N Locust St			Eastbound NE 19th Ave			Westbound NE 19th Ave			Total
	T	R	Total	L	T	Total			Total	L		R	Total
Volume	28	24	52	0	17	17			0	19		0	19
%HV	NA	0.0%	0.0%	0.0%	0.0%	NA	0.0%	NA	0.0%	0.0%	NA	0.0%	0.0%
PHF	0.70	0.67	0.76	0.00	0.43	0.43			0.00	0.59		0.00	0.59

Rolling Hour Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound N Locust St			Southbound N Locust St			Eastbound NE 19th Ave			Westbound NE 19th Ave			Interval Total	Pedestrians Crosswalk			
	T	R	Bikes	L	T	Bikes			Bikes	L		R	Bikes	North	South	East	West
4:00 PM	25	24	0	0	20	1			0	16		0	1	0	0	2	0
4:15 PM	30	21	0	0	19	1			0	17		0	2	0	0	2	0
4:30 PM	25	22	0	0	13	0			0	20		0	2	0	0	1	0
4:45 PM	25	18	0	0	11	0			0	18		1	2	0	0	1	0
5:00 PM	25	18	0	0	11	0			0	16		1	1	0	0	2	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740

N Locust St & NE 19th Ave

Thursday, August 09, 2018

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 Locust St			Southbound N Locust St			Eastbound NE 19th Ave			Westbound NE 19th Ave			Interval Total	
	T	R	Total	L	T	Total			Total	L	R	Total		
4:00 PM	0	0	0	0	0	0			0	0		0	0	0
4:05 PM	0	0	0	0	0	0			0	0		0	0	0
4:10 PM	0	0	0	0	0	0			0	0		0	0	0
4:15 PM	0	0	0	0	0	0			0	0		0	0	0
4:20 PM	0	0	0	0	0	0			0	0		0	0	0
4:25 PM	0	0	0	0	0	0			0	0		0	0	0
4:30 PM	0	0	0	0	0	0			0	0		0	0	0
4:35 PM	0	0	0	0	0	0			0	0		0	0	0
4:40 PM	0	0	0	0	0	0			0	0		0	0	0
4:45 PM	0	0	0	0	0	0			0	0		0	0	0
4:50 PM	0	0	0	0	0	0			0	0		0	0	0
4:55 PM	0	0	0	0	0	0			0	0		0	0	0
5:00 PM	0	0	0	0	0	0			0	0		0	0	0
5:05 PM	0	0	0	0	0	0			0	0		0	0	0
5:10 PM	0	0	0	0	0	0			0	0		0	0	0
5:15 PM	0	0	0	0	0	0			0	0		0	0	0
5:20 PM	0	0	0	0	0	0			0	0		0	0	0
5:25 PM	0	0	0	0	0	0			0	0		0	0	0
5:30 PM	0	0	0	0	0	0			0	0		0	0	0
5:35 PM	0	0	0	0	0	0			0	0		0	0	0
5:40 PM	0	0	0	0	0	0			0	0		0	0	0
5:45 PM	0	0	0	0	0	0			0	0		0	0	0
5:50 PM	0	0	0	0	0	0			0	0		0	0	0
5:55 PM	0	0	0	0	0	0			0	0		0	0	0
Total Survey	0	0	0	0	0	0			0	0		0	0	0

Heavy Vehicle 15-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound N Locust St			Southbound N Locust St			Eastbound NE 19th Ave			Westbound NE 19th Ave			Interval Total
	T	R	Total	L	T	Total			Total	L	R	Total	
4:00 PM	0	0	0	0	0	0			0	0	0	0	0
4:15 PM	0	0	0	0	0	0			0	0	0	0	0
4:30 PM	0	0	0	0	0	0			0	0	0	0	0
4:45 PM	0	0	0	0	0	0			0	0	0	0	0
5:00 PM	0	0	0	0	0	0			0	0	0	0	0
5:15 PM	0	0	0	0	0	0			0	0	0	0	0
5:30 PM	0	0	0	0	0	0			0	0	0	0	0
5:45 PM	0	0	0	0	0	0			0	0	0	0	0
Total Survey	0	0	0	0	0	0			0	0	0	0	0

Heavy Vehicle Peak Hour Summary

4:10 PM to 5:10 PM

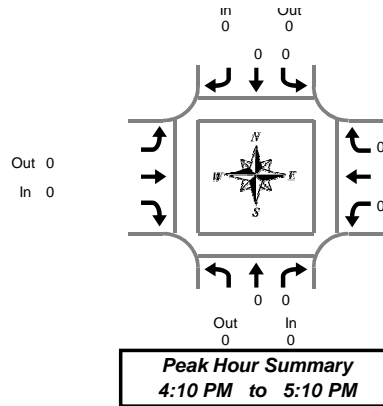
By Approach	Northbound N Locust St			Southbound N Locust St			Eastbound NE 19th Ave			Westbound NE 19th Ave			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.00			0.00			0.00			0.00			0.00

By Movement	Northbound N Locust St			Southbound N Locust St			Eastbound NE 19th Ave			Westbound NE 19th Ave			Total
	T	R	Total	L	T	Total		Total	L	R	Total		
Volume	0	0	0	0	0	0		0	0		0	0	0
PHF	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00

Heavy Vehicle Rolling Hour Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound N Locust St			Southbound N Locust St			Eastbound NE 19th Ave			Westbound NE 19th Ave			Interval Total	
	T	R	Total	L	T	Total			Total	L		R		Total
4:00 PM	0	0	0	0	0	0			0	0		0	0	0
4:15 PM	0	0	0	0	0	0			0	0		0	0	0
4:30 PM	0	0	0	0	0	0			0	0		0	0	0
4:45 PM	0	0	0	0	0	0			0	0		0	0	0
5:00 PM	0	0	0	0	0	0			0	0		0	0	0



Peak Hour Summary

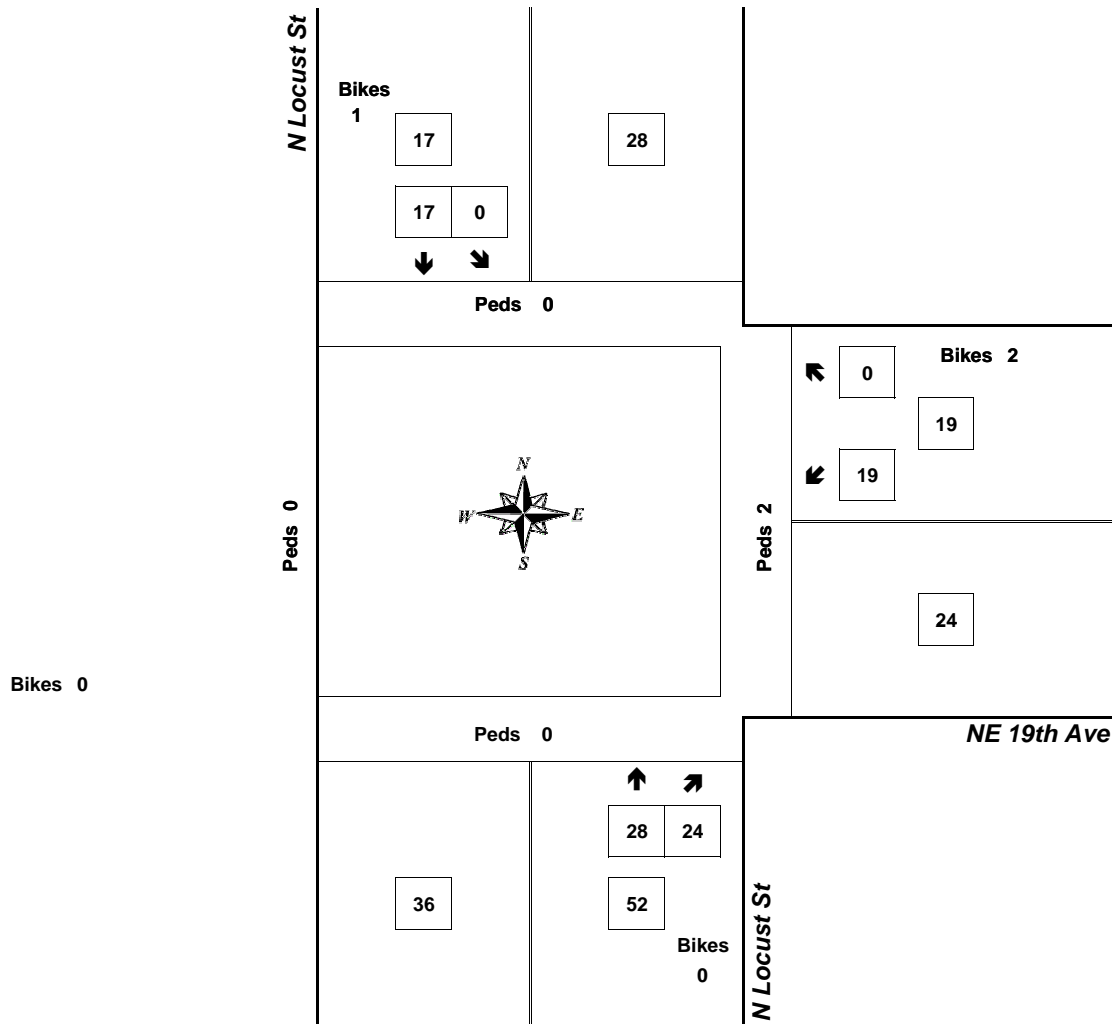


Clay Carney
(503) 833-2740

N Locust St & NE 19th Ave

4:10 PM to 5:10 PM

Thursday, August 09, 2018



Approach	PHF	HV%	Volume
EB	0.00	0.0%	0
WB	0.59	0.0%	19
NB	0.76	0.0%	52
SB	0.43	0.0%	17
Intersection	0.81	0.0%	88

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

Total Vehicle Summary

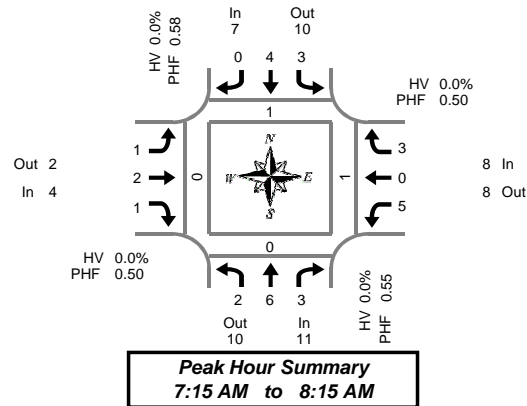


Clay Carney
(503) 833-2740

N Locust St & NE 22nd Ave

Thursday, August 09, 2018

7:00 AM to 9:00 AM



5-Minute Interval Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound N Locust St				Southbound N Locust St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				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	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
7:05 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
7:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
7:20 AM	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3	1	0	1	0
7:25 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0
7:30 AM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	2	0	5	0	0	0	0
7:35 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
7:40 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0
7:45 AM	0	0	1	0	1	0	0	0	0	1	0	0	1	0	0	0	4	0	0	0	0
7:50 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:55 AM	0	1	0	0	0	1	0	0	0	0	1	0	0	0	1	0	4	0	0	0	0
8:00 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
8:05 AM	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	3	0	0	0	0
8:10 AM	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	3	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:20 AM	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0
8:25 AM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:35 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1
8:40 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
8:50 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
8:55 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Total Survey	4	6	5	2	4	4	0	0	1	2	1	1	7	1	4	1	39	1	1	1	1

15-Minute Interval Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound N Locust St				Southbound N Locust St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				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	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0
7:15 AM	1	3	0	0	0	0	0	0	0	1	0	1	1	0	0	0	6	1	0	1	0
7:30 AM	0	2	0	0	1	1	0	0	0	0	0	0	2	0	2	0	8	0	0	0	0
7:45 AM	0	1	1	0	1	1	0	0	0	1	1	0	1	0	1	0	8	0	0	0	0
8:00 AM	1	0	2	0	1	2	0	0	1	0	0	0	1	0	0	0	8	0	0	0	0
8:15 AM	1	0	0	2	0	0	0	0	0	0	0	0	1	0	0	1	2	0	0	0	0
8:30 AM	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	1
8:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	3	0	0	0	0
Total Survey	4	6	5	2	4	4	0	0	1	2	1	1	7	1	4	1	39	1	1	1	1

Peak Hour Summary

7:15 AM to 8:15 AM

By Approach	Northbound N Locust St				Southbound N Locust St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	11	10	21	0	7	10	17	0	4	2	6	1	8	8	16	0	30	1	0	1	0
%HV	0.0%				0.0%				0.0%				0.0%				0.0%				
PHF	0.55				0.58				0.50				0.50				0.75				

By Movement	Northbound N Locust St				Southbound N Locust St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	2	6	3	11	3	4	0	7	1	2	1	4	5	0	3	8	30
%HV	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
PHF	0.50	0.38	0.38	0.55	0.38	0.50	0.00	0.58	0.25	0.50	0.25	0.50	0.42	0.00	0.38	0.50	0.75

Rolling Hour Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound N Locust St				Southbound N Locust St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				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	1	6	1	0	3	2	0	0	0	2	1	1	4	0	4	0	24	1	0	1	0
7:15 AM	2	6	3	0	3	4	0	0	1	2	1	1	5	0	3	0	30	1	0	1	0
7:30 AM	2	3	3	2	3	4	0	0	1	1	1	0	5	0	3	1	26	0	0	0	0
7:45 AM	3	1	4	2	2	3	0	0	1	1	1	0	3	0	1	1	20	0	1	0	1
8:00 AM	3	0	4	2	1	2	0	0	1	0	0	0	3	1	0	1	15	0	1	0	1

Heavy Vehicle Summary

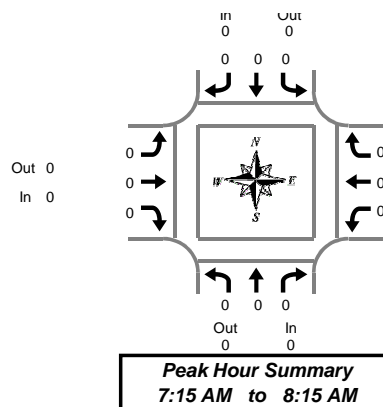


Clay Carney
(503) 833-2740

N Locust St & NE 22nd Ave

Thursday, August 09, 2018

7:00 AM to 9:00 AM



Heavy Vehicle 5-Minute Interval Summary

7:00 AM to 9:00 AM

[illegible]

Heavy Vehicle 15-Minute Interval Summary

7:00 AM to 9:00 AM

[illegible]

Heavy Vehicle Peak Hour Summary

7:15 AM to 8:15 AM

By Approach	Northbound N Locust St			Southbound N Locust St			Eastbound NE 22nd Ave			Westbound NE 22nd Ave			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.00			0.00			0.00			0.00			0.00

[illegible]**Heavy Vehicle Rolling Hour Summary**

7:00 AM to 9:00 AM

[illegible]

Peak Hour Summary

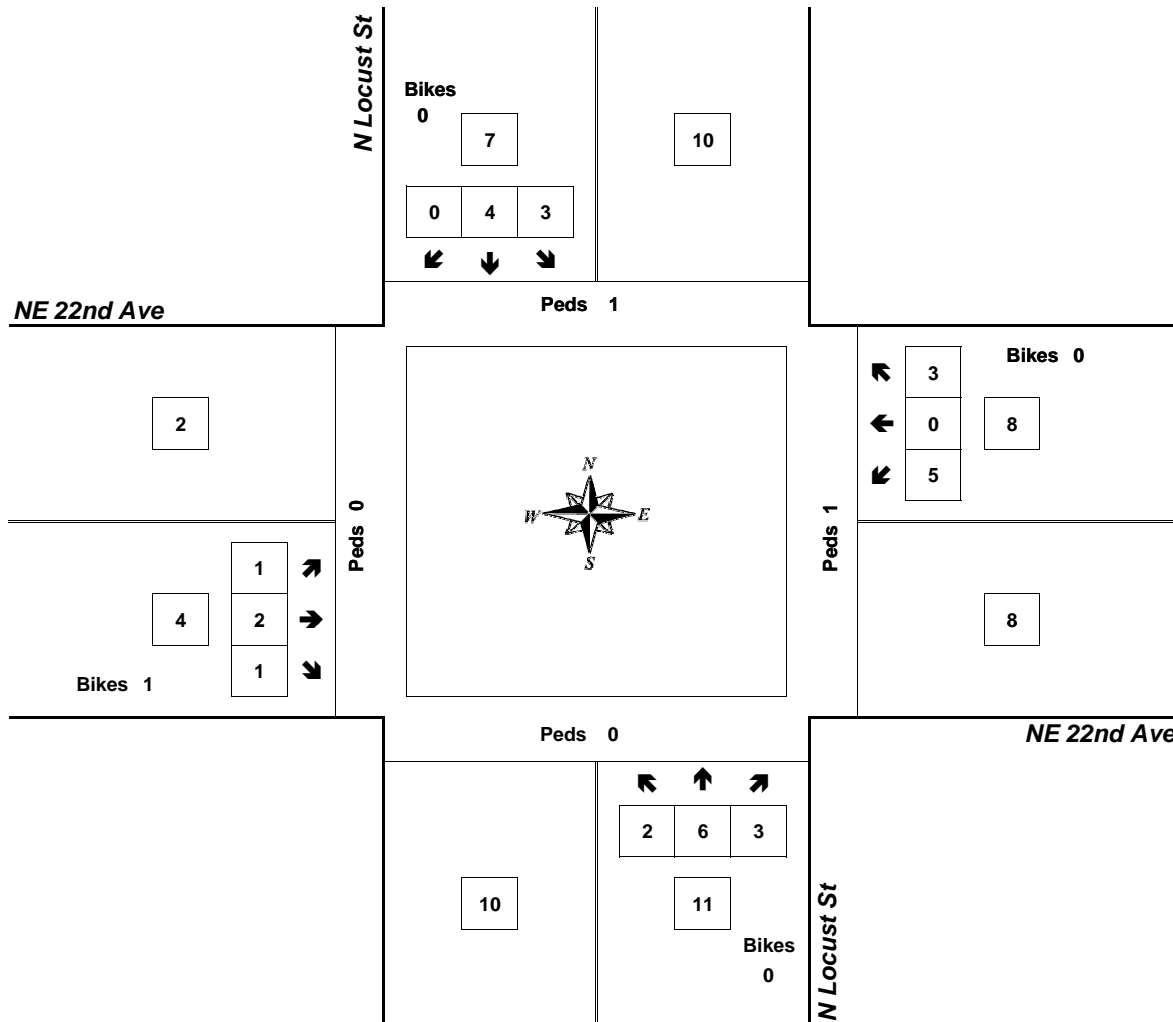


Clay Carney
(503) 833-2740

N Locust St & NE 22nd Ave

7:15 AM to 8:15 AM

Thursday, August 09, 2018



Approach	PHF	HV%	Volume
EB	0.50	0.0%	4
WB	0.50	0.0%	8
NB	0.55	0.0%	11
SB	0.58	0.0%	7
Intersection	0.75	0.0%	30

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

Total Vehicle Summary

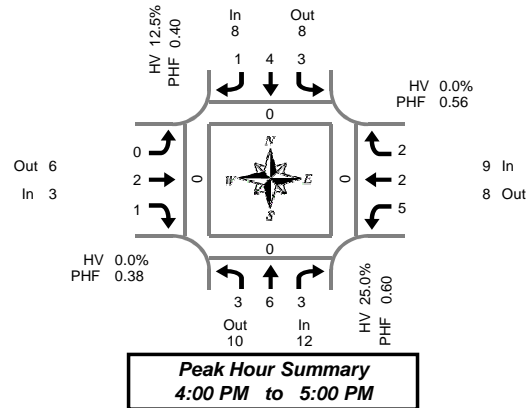


Clay Carney
(503) 833-2740

N Locust St & NE 22nd Ave

Thursday, August 09, 2018

4:00 PM to 6:00 PM



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

Interval Start Time	Northbound N Locust St				Southbound N Locust St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				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	1	0	0	0	1	0	0	0	0	1	0	2	0	0	1	5	0	0	0	0
4:05 PM	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0
4:10 PM	0	0	0	0	2	0	1	0	0	0	0	1	0	1	0	0	4	0	0	0	0
4:15 PM	0	1	0	0	0	2	0	0	0	0	0	0	2	0	0	0	5	0	0	0	0
4:20 PM	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0	0	0
4:25 PM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	2	0	0	0	0
4:35 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0
4:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:50 PM	0	1	1	0	1	0	0	0	0	0	0	0	0	0	1	0	4	0	0	0	0
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
5:00 PM	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	3	0	0	0	0
5:05 PM	1	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0
5:10 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0
5:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
5:20 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0
5:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
5:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:40 PM	0	1	2	0	0	0	0	0	0	0	0	0	1	0	0	0	4	1	0	1	0
5:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0
5:50 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
5:55 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0
Total Survey	5	10	7	0	7	5	1	0	0	4	2	1	8	4	2	1	55	1	0	1	0

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

Interval Start Time	Northbound N Locust St				Southbound N Locust St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				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	2	2	1	0	2	1	1	0	0	0	1	1	2	1	0	1	13	0	0	0	0
4:15 PM	1	3	1	0	0	3	0	0	0	0	0	0	2	0	1	0	11	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	3	0	0	0	0
4:45 PM	0	1	1	0	1	0	0	0	0	0	0	0	0	1	1	0	5	0	0	0	0
5:00 PM	1	1	2	0	2	0	0	0	0	1	1	0	0	1	0	0	9	0	0	0	0
5:15 PM	0	0	0	0	2	0	0	0	0	0	0	0	1	1	0	0	4	0	0	0	0
5:30 PM	0	2	2	0	0	0	0	0	0	0	0	0	1	0	0	0	5	1	0	1	0
5:45 PM	1	1	0	0	0	1	0	0	0	1	0	0	1	0	0	0	5	0	0	0	0
Total Survey	5	10	7	0	7	5	1	0	0	4	2	1	8	4	2	1	55	1	0	1	0

Peak Hour Summary 4:00 PM to 5:00 PM

By Approach	Northbound N Locust St				Southbound N Locust St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	12	10	22	0	8	8	16	0	3	6	9	1	9	8	17	1	32	0	0	0	0
%HV	25.0%				12.5%				0.0%				0.0%				12.5%				
PHF	0.60				0.40				0.38				0.56				0.62				

By Movement	Northbound N Locust St				Southbound N Locust St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	3	6	3	12	3	4	1	8	0	2	1	3	5	2	2	9	32
%HV	66.7%	16.7%	0.0%	25.0%	0.0%	25.0%	0.0%	12.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	12.5%
PHF	0.38	0.50	0.75	0.60	0.38	0.33	0.25	0.40	0.00	0.25	0.25	0.38	0.63	0.50	0.50	0.56	0.62

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

Interval Start Time	Northbound N Locust St				Southbound N Locust St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				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	3	6	3	0	3	4	1	0	0	2	1	1	5	2	2	1	32	0	0	0	0
4:15 PM	2	5	4	0	3	3	0	0	0	3	1	0	3	2	2	0	28	0	0	0	0
4:30 PM	1	2	3	0	5	0	0	0	0	3	1	0	2	3	1	0	21	0	0	0	0
4:45 PM	1	4	5	0	5	0	0	0	0	1	1	0	2	3	1	0	23	1	0	1	0
5:00 PM	2	4	4	0	4	1	0	0	0	2	1	0	3	2	0	0	23	1	0	1	0

Heavy Vehicle Summary

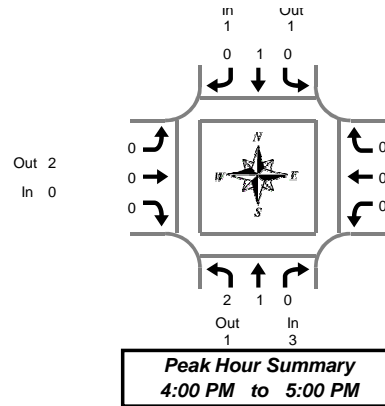


Clay Carney
(503) 833-2740

N Locust St & NE 22nd Ave

Thursday, August 09, 2018

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 Locust St				Southbound N Locust St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				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	0	0	0	0	0	0	0	0	0	0	0	1
4:05 PM	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
4:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
4:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:55 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total Survey	2	1	0	3	0	2	0	2	0	0	0	0	0	1	0	1	6

Heavy Vehicle 15-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound N Locust St				Southbound N Locust St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	2	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
4:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total Survey	2	1	0	3	0	2	0	2	0	0	0	0	0	1	0	1	6

Heavy Vehicle Peak Hour Summary

4:00 PM to 5:00 PM

By Approach	Northbound N Locust St			Southbound N Locust St			Eastbound NE 22nd Ave			Westbound NE 22nd Ave			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	3	1	4	1	1	2	0	2	2	0	0	0	4
PHF	0.25			0.25			0.00			0.00			0.33

By Movement	Northbound N Locust St			Southbound N Locust St			Eastbound NE 22nd Ave			Westbound NE 22nd Ave			Total
	L	T	R	L	T	R	L	T	R	L	T	R	
Volume	2	1	0	3	0	1	0	0	0	0	0	0	4
PHF	0.25	0.25	0.00	0.25	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.33

Heavy Vehicle Rolling Hour Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound N Locust St				Southbound N Locust St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	2	1	0	3	0	1	0	1	0	0	0	0	0	0	0	0	4
4:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2

Peak Hour Summary

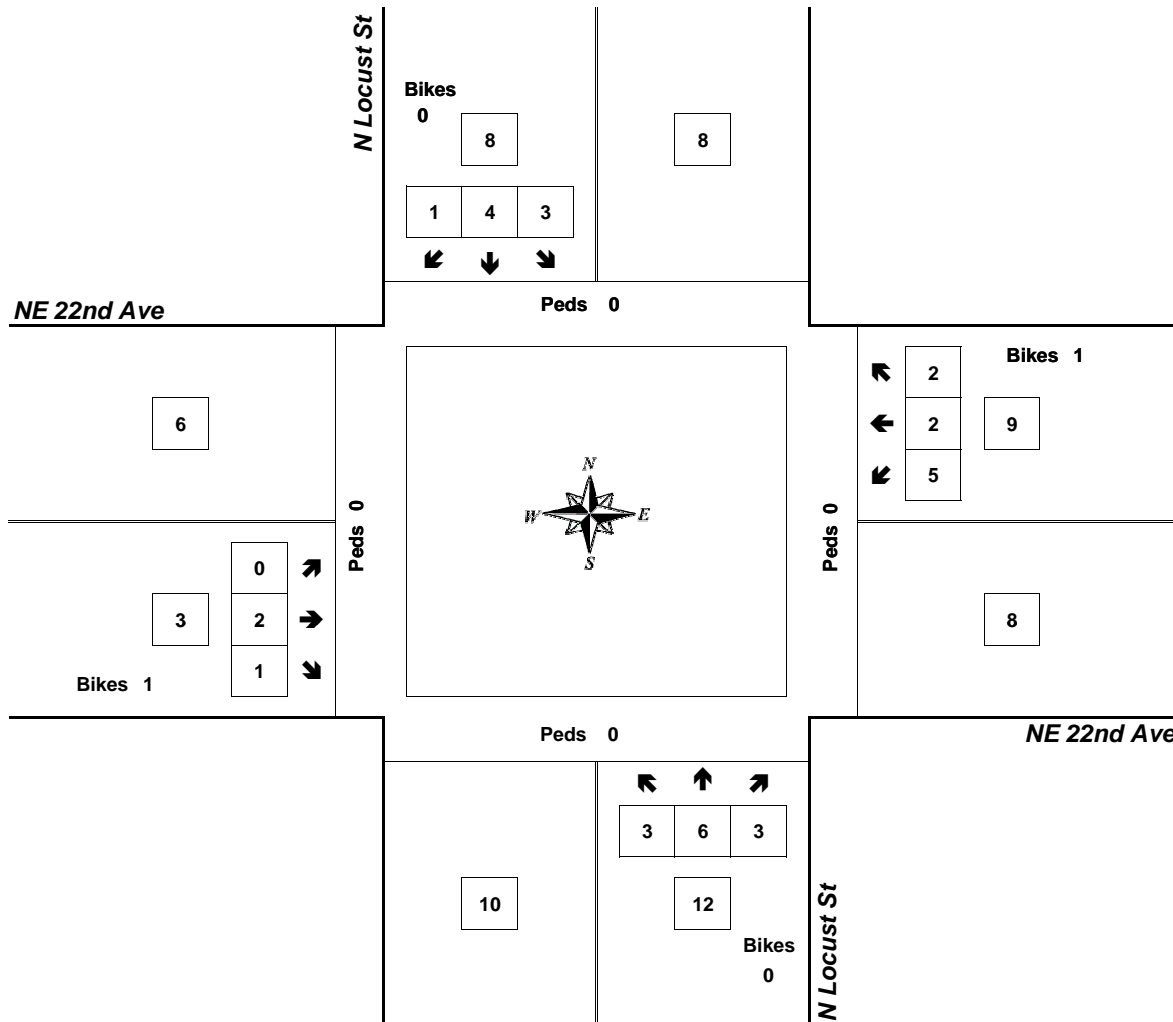


Clay Carney
(503) 833-2740

N Locust St & NE 22nd Ave

4:00 PM to 5:00 PM

Thursday, August 09, 2018



Approach	PHF	HV%	Volume
EB	0.38	0.0%	3
WB	0.56	0.0%	9
NB	0.60	25.0%	12
SB	0.40	12.5%	8
Intersection	0.62	12.5%	32

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

Total Vehicle Summary

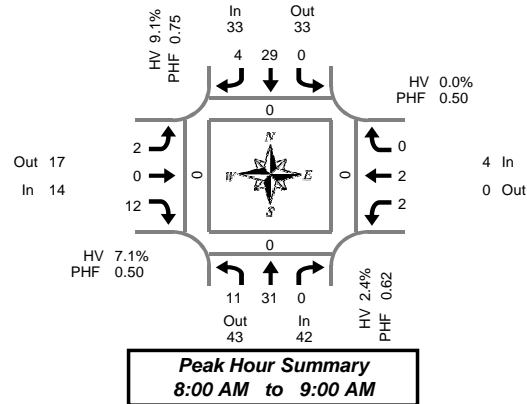


Clay Carney
(503) 833-2740

N Holly St & NE 22nd Ave

Thursday, August 09, 2018

7:00 AM to 9:00 AM



5-Minute Interval Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				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	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	3	0	0	0	0
7:05 AM	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	1	0
7:10 AM	0	5	0	0	0	1	0	0	0	0	1	0	0	0	0	0	7	0	0	0	0
7:15 AM	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0
7:20 AM	3	1	0	0	1	0	0	0	0	0	0	0	1	1	1	0	7	0	0	0	0
7:25 AM	0	4	0	0	0	5	0	0	0	0	1	0	1	0	0	0	11	1	0	1	0
7:30 AM	3	2	0	0	0	3	0	0	0	0	1	0	0	0	0	0	9	0	1	0	0
7:35 AM	0	2	0	0	0	4	1	0	1	0	1	0	1	0	0	0	10	0	0	0	0
7:40 AM	1	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	4	0	0	0	0
7:45 AM	1	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	4	0	0	0	0
7:50 AM	1	3	0	0	0	1	0	0	0	0	4	0	0	0	0	0	9	0	0	0	0
7:55 AM	1	6	0	0	1	0	0	0	0	0	1	0	0	0	0	0	9	0	0	0	0
8:00 AM	2	2	0	0	0	1	1	0	0	0	2	0	0	0	0	0	8	0	0	0	0
8:05 AM	3	2	0	1	0	3	2	0	0	0	0	0	0	0	0	0	10	0	0	0	0
8:10 AM	1	0	0	0	0	1	0	3	0	0	3	0	0	0	0	0	5	0	0	0	0
8:15 AM	1	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0
8:20 AM	1	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	4	0	0	0	0
8:25 AM	0	4	0	0	0	1	0	1	0	0	0	0	1	1	0	0	7	0	0	0	0
8:30 AM	0	2	0	0	0	3	0	0	0	0	2	0	0	0	0	0	7	0	0	0	0
8:35 AM	0	2	0	0	0	4	0	0	1	0	1	0	0	0	0	0	8	0	0	0	0
8:40 AM	0	3	0	0	0	2	0	0	0	0	3	0	0	0	0	0	8	0	0	0	0
8:45 AM	1	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0
8:50 AM	1	5	0	0	0	2	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0
8:55 AM	1	4	0	0	0	3	1	0	0	0	1	0	1	1	0	0	12	0	0	0	0
Total Survey	21	60	0	1	2	47	7	4	3	0	23	1	5	3	1	0	172	1	1	2	0

15-Minute Interval Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				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	9	0	0	0	2	0	0	0	0	2	0	1	0	0	0	14	0	0	1	0
7:15 AM	3	7	0	0	1	5	0	0	0	0	1	1	1	1	1	0	20	1	0	1	0
7:30 AM	4	4	0	0	0	8	3	0	1	0	2	0	1	0	0	0	23	0	1	0	0
7:45 AM	3	9	0	0	1	3	0	0	0	0	6	0	0	0	0	0	22	0	0	0	0
8:00 AM	6	4	0	1	0	5	3	3	0	0	5	0	0	0	0	0	23	0	0	0	0
8:15 AM	2	6	0	0	0	5	0	1	1	0	0	0	1	1	0	0	16	0	0	0	0
8:30 AM	0	7	0	0	0	9	0	0	1	0	6	0	0	0	0	0	23	0	0	0	0
8:45 AM	3	14	0	0	0	10	1	0	0	0	1	0	1	1	0	0	31	0	0	0	0
Total Survey	21	60	0	1	2	47	7	4	3	0	23	1	5	3	1	0	172	1	1	2	0

Peak Hour Summary

8:00 AM to 9:00 AM

By Approach	Northbound N Holly St				Southbound N Holly St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	42	43	85	1	33	33	66	4	14	17	31	0	4	0	4	0	93	0	0	0	0
%HV	2.4%				9.1%				7.1%				0.0%				5.4%				
PHF	0.62				0.75				0.50				0.50				0.75				

By Movement	Northbound N Holly St				Southbound N Holly St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	11	31	0	42	0	29	4	33	2	0	12	14	2	2	0	4	93
%HV	0.0%	3.2%	0.0%	2.4%	0.0%	3.4%	50.0%	9.1%	50.0%	0.0%	0.0%	7.1%	0.0%	0.0%	0.0%	0.0%	5.4%
PHF	0.46	0.55	0.00	0.62	0.00	0.66	0.33	0.75	0.50	0.00	0.50	0.50	0.50	0.50	0.00	0.50	0.75

Rolling Hour Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				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	10	29	0	0	2	18	3	0	1	0	11	1	3	1	1	0	79	1	1	2	0
7:15 AM	16	24	0	1	2	21	6	3	1	0	14	1	2	1	1	0	88	1	1	1	0
7:30 AM	15	23	0	1	1	21	6	4	2	0	13	0	2	1	0	0	84	0	1	0	0
7:45 AM	11	26	0	1	1	22	3	4	2	0	17	0	1	1	0	0	84	0	0	0	0
8:00 AM	11	31	0	1	0	29	4	4	2	0	12	0	2	2	0	0	93	0	0	0	0

Heavy Vehicle Summary

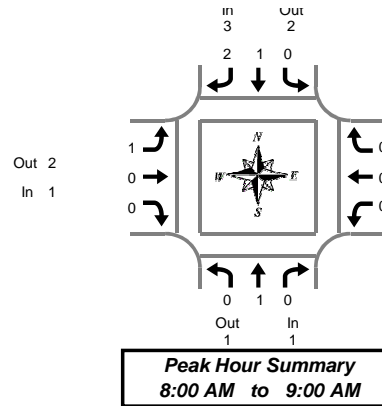


Clay Carney
(503) 833-2740

N Holly St & NE 22nd Ave

Thursday, August 09, 2018

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 Holly St				Southbound N Holly St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:05 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
7:20 AM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
7:25 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
7:35 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
7:40 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:50 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
7:55 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:05 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
8:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
8:20 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
8:25 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:35 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
8:40 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:50 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:55 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
Total Survey	1	4	0	5	0	3	2	5	1	0	0	1	0	0	0	0	11

Heavy Vehicle 15-Minute Interval Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
7:30 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
7:45 AM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
8:00 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0	2
8:30 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
Total Survey	1	4	0	5	0	3	2	5	1	0	0	1	0	0	0	0	11

Heavy Vehicle Peak Hour Summary

8:00 AM to 9:00 AM

By Approach	Northbound N Holly St			Southbound N Holly St			Eastbound NE 22nd Ave			Westbound NE 22nd Ave			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	1	2	3	2	5	1	2	3	0	0	0	5
PHF	0.25			0.38			0.25			0.00			0.63

By Movement	Northbound N Holly St				Southbound N Holly St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	1	0	1	0	1	2	3	1	0	0	1	0	0	0	0	5
PHF	0.00	0.25	0.00	0.25	0.00	0.25	0.50	0.38	0.25	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.63

Heavy Vehicle Rolling Hour Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	1	3	0	4	0	2	0	2	0	0	0	0	0	0	0	0	6
7:15 AM	1	3	0	4	0	2	1	3	0	0	0	0	0	0	0	0	7
7:30 AM	0	2	0	2	0	3	1	4	1	0	0	1	0	0	0	0	7
7:45 AM	0	3	0	3	0	1	1	2	1	0	0	1	0	0	0	0	6
8:00 AM	0	1	0	1	0	1	2	3	1	0	0	1	0	0	0	0	5

Peak Hour Summary

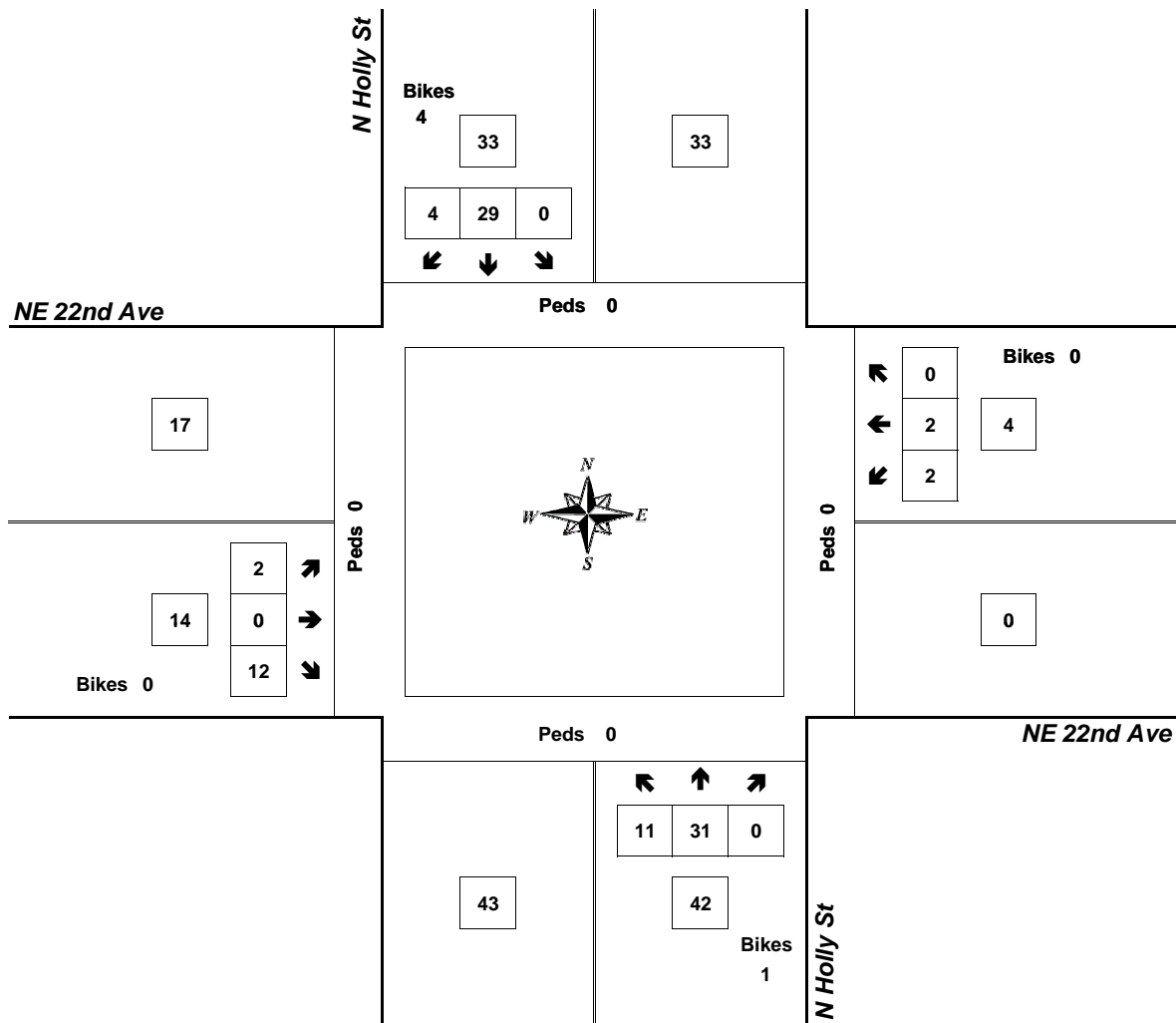


Clay Carney
(503) 833-2740

N Holly St & NE 22nd Ave

8:00 AM to 9:00 AM

Thursday, August 09, 2018



Approach	PHF	HV%	Volume
EB	0.50	7.1%	14
WB	0.50	0.0%	4
NB	0.62	2.4%	42
SB	0.75	9.1%	33
Intersection	0.75	5.4%	93

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

Total Vehicle Summary

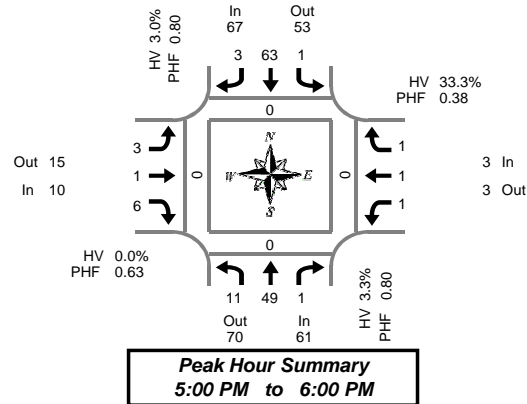


Clay Carney
(503) 833-2740

N Holly St & NE 22nd Ave

Thursday, August 09, 2018

4:00 PM to 6:00 PM



5-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				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	1	0	0	0	3	0	0	0	0	0	1	0	0	0	0	4	0	0	0	0
4:05 PM	0	2	0	0	0	6	0	1	0	0	1	0	1	0	2	0	12	0	0	0	0
4:10 PM	0	4	0	0	0	1	0	0	0	0	1	0	0	1	0	0	7	0	0	0	0
4:15 PM	1	4	0	0	0	2	0	0	0	0	1	0	0	0	0	0	8	0	0	0	0
4:20 PM	3	2	0	0	0	10	0	0	1	0	0	2	0	0	0	0	16	0	0	0	0
4:25 PM	1	1	0	0	0	1	0	0	0	0	1	0	0	1	0	0	5	0	0	0	0
4:30 PM	3	2	0	0	0	5	1	1	0	1	2	0	0	0	0	0	14	0	0	0	2
4:35 PM	3	5	1	0	0	9	0	0	0	1	3	0	0	0	0	0	22	0	0	0	2
4:40 PM	1	0	1	0	0	9	0	0	2	0	2	0	0	0	0	0	15	0	0	0	0
4:45 PM	0	4	0	0	0	7	0	0	1	0	0	0	0	0	0	0	12	0	0	0	0
4:50 PM	1	0	0	0	0	3	0	1	0	0	1	0	0	0	0	0	5	0	0	0	0
4:55 PM	0	2	0	0	0	3	0	0	0	0	0	0	0	1	0	0	6	0	0	0	0
5:00 PM	0	3	0	0	1	5	0	1	1	0	1	0	0	0	0	0	11	0	0	0	0
5:05 PM	1	8	0	0	0	3	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0
5:10 PM	2	3	0	0	0	7	0	0	1	0	0	0	0	0	1	0	14	0	0	0	0
5:15 PM	1	1	0	0	0	2	1	1	0	0	0	0	1	0	0	0	6	0	0	0	0
5:20 PM	0	3	0	0	0	8	0	1	0	0	0	0	0	0	0	0	11	0	0	0	0
5:25 PM	1	4	0	0	0	2	0	0	0	0	0	0	0	1	0	0	8	0	0	0	0
5:30 PM	1	3	1	0	0	6	2	0	0	0	0	0	0	0	0	0	13	0	0	0	0
5:35 PM	0	4	0	0	0	6	0	0	1	0	2	0	0	0	0	0	13	0	0	0	0
5:40 PM	2	4	0	0	0	7	0	1	0	0	1	0	0	0	0	0	14	0	0	0	0
5:45 PM	0	4	0	0	0	7	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0
5:50 PM	1	7	0	0	0	3	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0
5:55 PM	2	5	0	0	0	7	0	0	0	1	2	0	0	0	0	0	17	0	0	0	0
Total Survey	24	76	3	0	1	122	4	7	7	3	18	3	2	4	3	0	267	0	0	0	4

15-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				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	7	0	0	0	10	0	1	0	0	2	1	1	1	2	0	23	0	0	0	0
4:15 PM	5	7	0	0	0	13	0	0	1	0	2	2	0	1	0	0	29	0	0	0	0
4:30 PM	7	7	2	0	0	23	1	1	2	2	7	0	0	0	0	0	51	0	0	0	4
4:45 PM	1	6	0	0	0	13	0	1	1	0	1	0	0	1	0	0	23	0	0	0	0
5:00 PM	3	14	0	0	1	15	0	1	2	0	1	0	0	0	1	0	37	0	0	0	0
5:15 PM	2	8	0	0	0	12	1	2	0	0	0	0	1	1	0	0	25	0	0	0	0
5:30 PM	3	11	1	0	0	19	2	1	1	0	3	0	0	0	0	0	40	0	0	0	0
5:45 PM	3	16	0	0	0	17	0	0	0	1	2	0	0	0	0	0	39	0	0	0	0
Total Survey	24	76	3	0	1	122	4	7	7	3	18	3	2	4	3	0	267	0	0	0	4

Peak Hour Summary

5:00 PM to 6:00 PM

By Approach	Northbound N Holly St				Southbound N Holly St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	61	70	131	0	67	53	120	4	10	15	25	0	3	3	6	0	141	0	0	0	0
%HV	3.3%				3.0%				0.0%				33.3%				3.5%				
PHF	0.80				0.80				0.63				0.38				0.88				

By Movement	Northbound N Holly St				Southbound N Holly St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	11	49	1	61	1	63	3	67	3	1	6	10	1	1	1	3	141
%HV	0.0%	4.1%	0.0%	3.3%	0.0%	3.2%	0.0%	3.0%	0.0%	0.0%	0.0%	0.0%	0.0%	####	0.0%	33.3%	3.5%
PHF	0.69	0.77	0.25	0.80	0.25	0.79	0.38	0.80	0.38	0.25	0.50	0.63	0.25	0.25	0.25	0.38	0.88

Rolling Hour Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				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	13	27	2	0	0	59	1	3	4	2	12	3	1	3	2	0	126	0	0	0	4
4:15 PM	16	34	2	0	1	64	1	3	6	2	11	2	0	2	1	0	140	0	0	0	4
4:30 PM	13	35	2	0	1	63	2	5	5	2	9	0	1	2	1	0	136	0	0	0	4
4:45 PM	9	39	1	0	1	59	3	5	4	0	5	0	1	2	1	0	125	0	0	0	0
5:00 PM	11	49	1	0	1	63	3	4	3	1	6	0	1	1	1	0	141	0	0	0	0

Heavy Vehicle Summary

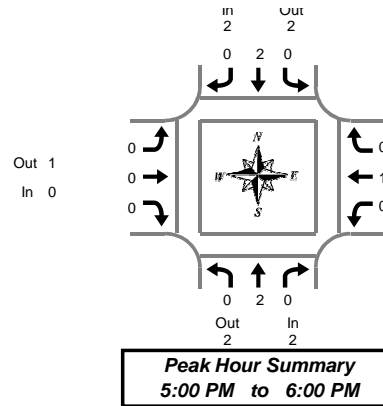


Clay Carney
(503) 833-2740

N Holly St & NE 22nd Ave

Thursday, August 09, 2018

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 Holly St				Southbound N Holly St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	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	0	0	0	0	2	2	2
4:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
4:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:40 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:25 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:35 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
5:40 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:50 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
5:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	0	2	0	2	0	3	0	3	1	0	0	1	0	1	2	3	9

Heavy Vehicle 15-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2
5:30 PM	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total Survey	0	2	0	2	0	3	0	3	1	0	0	1	0	1	2	3	9

Heavy Vehicle Peak Hour Summary

5:00 PM to 6:00 PM

By Approach	Northbound N Holly St			Southbound N Holly St			Eastbound NE 22nd Ave			Westbound NE 22nd Ave			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	2	2	4	2	2	4	0	1	1	1	0	1	5
PHF	0.50			0.50			0.00			0.25			0.42

By Movement	Northbound N Holly St				Southbound N Holly St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	2	0	2	0	2	0	2	0	0	0	0	0	1	0	1	5
PHF	0.00	0.50	0.00	0.50	0.00	0.50	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.25	0.42

Heavy Vehicle Rolling Hour Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound N Holly St				Southbound N Holly St				Eastbound NE 22nd Ave				Westbound NE 22nd Ave				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	1	0	1	1	0	0	1	0	0	2	2	4
4:15 PM	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0	2
4:30 PM	0	1	0	1	0	1	0	1	1	0	0	1	0	1	0	1	4
4:45 PM	0	2	0	2	0	1	0	1	0	0	0	0	0	1	0	1	4
5:00 PM	0	2	0	2	0	2	0	2	0	0	0	0	0	1	0	1	5

Peak Hour Summary

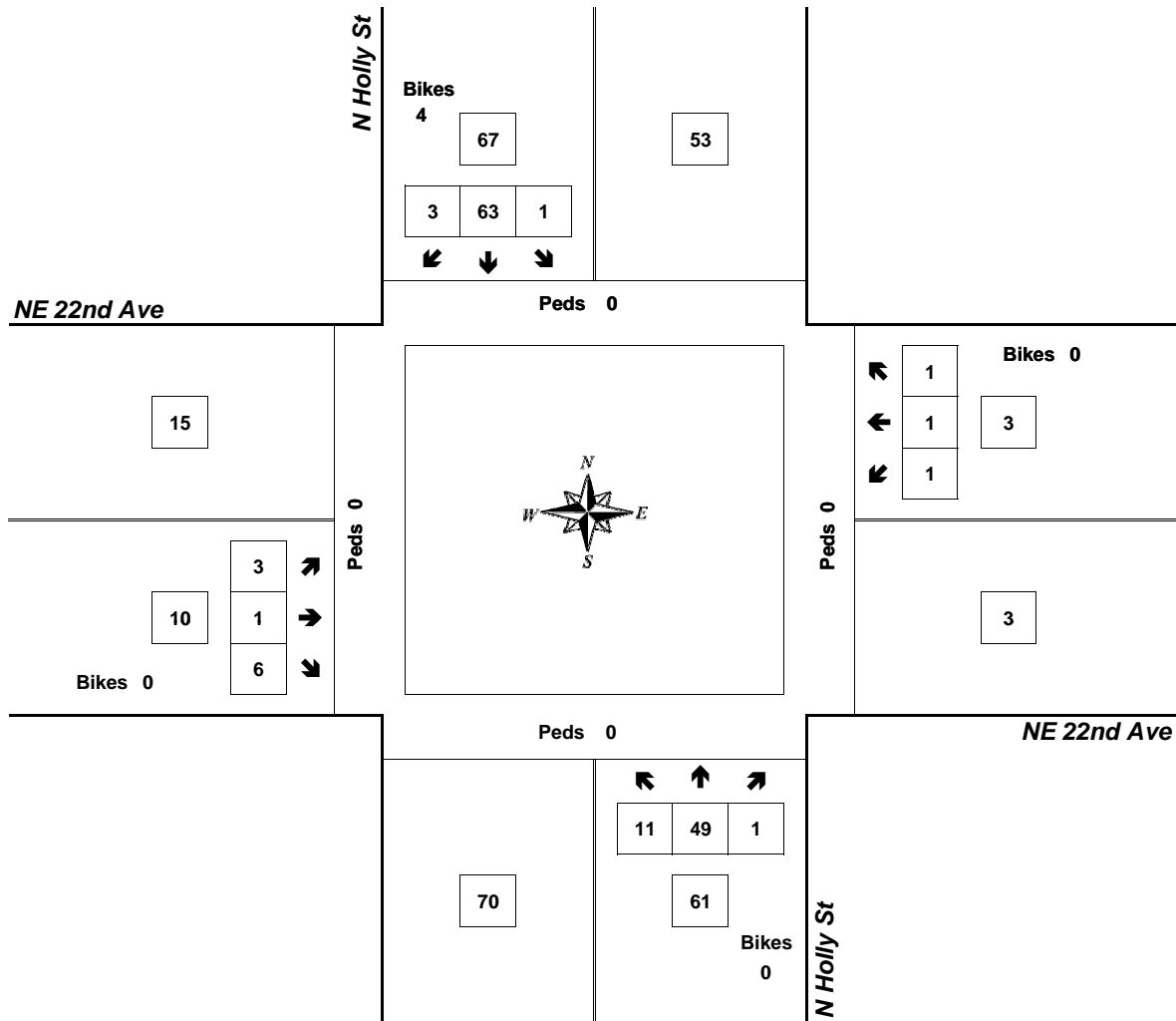


Clay Carney
(503) 833-2740

N Holly St & NE 22nd Ave

5:00 PM to 6:00 PM

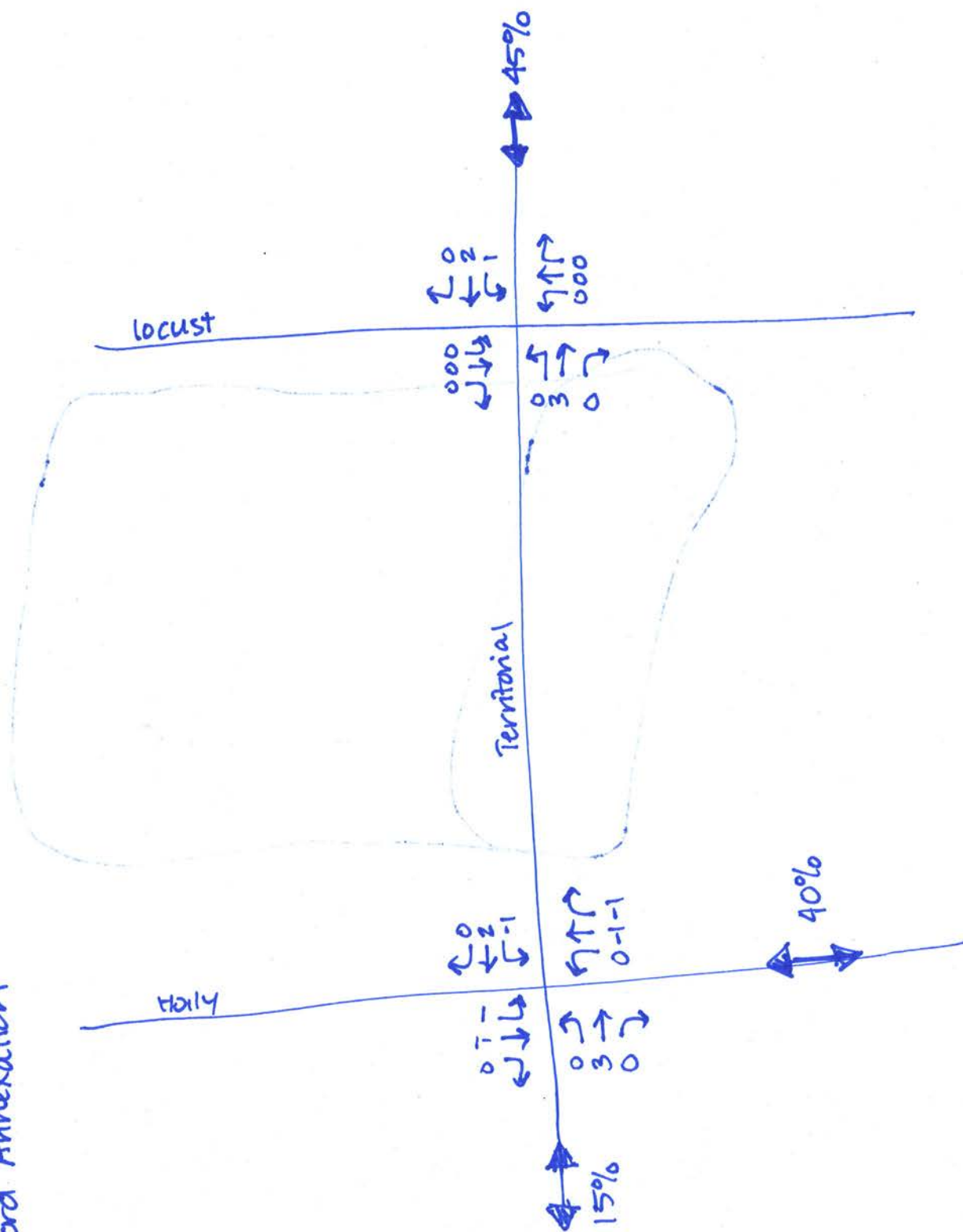
Thursday, August 09, 2018



Approach	PHF	HV%	Volume
EB	0.63	0.0%	10
WB	0.38	33.3%	3
NB	0.80	3.3%	61
SB	0.80	3.0%	67
Intersection	0.88	3.5%	141

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

School Trips and Trips Distribution from Canby Small Community Pool
Canby Stafford Annexation
DKS, 8/14/18



All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740

Site Code: 1
Territorial Rd W-O Locust St

EB	Start Time	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Classed	Not	Total
	08/09/18	7	1	0	0	0	0	0	0	0	0	0	0	0	1	9
	01:00	7	0	0	0	0	0	0	0	0	0	0	0	0	0	7
	02:00	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2
	03:00	4	1	0	1	0	0	0	0	0	0	0	0	0	0	6
	04:00	13	2	0	3	0	0	0	0	0	0	0	0	0	0	18
	05:00	23	12	0	5	0	0	0	0	0	0	0	0	0	40	77
	06:00	53	17	0	4	1	0	0	0	0	0	0	0	0	0	77
	07:00	91	27	0	7	0	0	0	0	0	0	0	0	0	2	129
	08:00	81	25	1	9	0	0	0	0	0	0	0	0	0	8	128
	09:00	84	32	0	13	1	0	0	0	0	0	0	0	0	2	137
	10:00	96	30	0	6	2	0	0	0	0	0	0	0	0	4	142
	11:00	100	39	0	20	0	0	0	0	0	0	0	0	0	1	164
	12 PM	144	22	2	5	0	0	0	0	0	0	0	0	0	8	183
	13:00	139	33	1	12	1	0	1	1	0	0	0	0	0	8	204
	14:00	166	32	0	13	2	0	0	0	0	0	0	0	0	3	221
	15:00	176	36	0	15	0	0	1	0	0	0	0	0	0	2	233
	16:00	202	48	0	15	1	0	0	0	0	0	0	0	0	6	281
	17:00	188	36	0	17	1	0	0	0	0	0	0	0	0	8	254
	18:00	161	32	0	7	0	0	0	0	0	0	0	0	0	1	205
	19:00	105	17	0	5	0	0	0	0	0	0	0	0	0	1	131
	20:00	1	11	0	5	0	0	0	0	0	0	0	0	0	2	120
	21:00	70	11	0	2	0	0	0	1	0	0	0	0	0	0	86
	22:00	38	7	0	3	0	0	0	0	0	0	0	0	0	0	48
	23:00	18	0	0	1	0	0	0	0	0	0	0	0	0	0	19
	Total	2068	472	4	168	9	0	2	2	0	0	0	0	0	57	2844
	Percent	72.7%	16.6%	0.1%	5.9%	0.3%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	2.0%	08:00	
	AM Peak	11:00	11:00	08:00	11:00	10:00										
	Vol.	100	39	1	20	2									8	
	PM Peak	16:00	16:00	12:00	17:00	14:00		13:00	13:00						12:00	
	Vol.	9	48	2	17	2		1	1						8	
	Grand Total	2068	472	4	168	9	0	2	2	0	0	0	0	0	57	2844
	Percent	72.7%	16.6%	0.1%	5.9%	0.3%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	2.0%		

All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740

Site Code: 1
Territorial Rd W-O Locust St

WB Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Classed	Not	Total
08/09/18	0	7	1	0	0	0	0	0	0	0	0	0	0	0	0	8
01:00	0	3	2	0	1	0	0	0	0	0	0	0	0	0	0	6
02:00	0	2	1	0	1	0	0	0	0	0	0	0	0	0	0	4
03:00	0	8	0	0	1	0	0	0	0	0	0	0	0	0	0	9
04:00	0	13	4	0	2	0	0	0	0	0	0	0	0	0	0	19
05:00	4	47	15	0	7	1	0	0	0	0	0	0	0	0	74	19
06:00	1	83	31	0	14	0	0	0	0	0	0	0	0	0	0	129
07:00	3	90	25	0	12	1	0	1	0	0	0	0	0	4	4	136
08:00	0	99	31	1	11	0	0	0	0	0	0	0	0	3	3	146
09:00	1	128	34	0	22	1	0	0	1	0	0	0	0	4	4	190
10:00	2	75	43	1	13	2	0	1	0	0	0	0	0	5	5	142
11:00	5	118	38	0	20	1	0	1	2	0	0	0	0	1	1	186
12 PM	5	127	30	2	12	0	0	0	0	0	0	0	0	8	8	184
13:00	3	118	35	2	10	1	0	0	0	0	0	0	0	8	8	177
14:00	2	164	46	1	14	1	0	1	1	0	0	0	0	9	9	238
15:00	1	140	39	1	15	0	0	1	0	0	0	0	0	5	5	202
16:00	6	132	34	0	33	0	0	0	0	0	0	0	0	14	14	219
17:00	2	141	38	0	10	0	0	0	0	0	0	0	0	11	11	202
18:00	0	119	34	0	9	0	0	0	0	0	0	0	0	3	3	165
19:00	1	76	29	0	4	0	0	0	1	0	0	0	0	1	1	112
20:00	2	70	24	0	5	0	0	0	0	0	0	0	0	2	2	103
21:00	1	54	9	0	3	0	0	0	0	0	0	0	0	0	0	67
22:00	0	25	8	0	0	0	0	0	0	0	0	0	0	0	0	33
23:00	0	24	4	0	2	0	0	0	0	0	0	0	0	0	0	30
Total	39	1863	555	7	221	8	0	5	5	5	0	0	0	78	78	2781
Percent	1.4%	67.0%	20.0%	0.3%	7.9%	0.3%	0.0%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	2.8%	2.8%	
AM Peak	11:00	09:00	10:00	08:00	09:00	10:00		07:00	11:00					10:00		
Vol.	5	128	43	1	22	2		1	2					5		
PM Peak	16:00	14:00	14:00	12:00	16:00	13:00		14:00	14:00					16:00		
Vol.	6	164	46	2	33	1		1	1					14		
Grand Total	39	1863	555	7	221	8	0	5	5	5	0	0	0	78	78	2781
Percent	1.4%	67.0%	20.0%	0.3%	7.9%	0.3%	0.0%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	2.8%	2.8%	

All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740

Site Code: 1
Territorial Rd W-O Locust St

EB	Start Time	1	15	16	20	21	25	26	30	31	35	36	40	41	45	46	50	51	55	56	60	61	65	66	70	71	75	76	999	Total	85th Percent	95th Percent
	08/09/18	1	15	16	20	21	25	26	30	31	35	36	40	41	45	46	50	51	55	56	60	61	65	66	70	71	75	76	999	Total	85th Percent	95th Percent
	01:00	0	0	0	0	2	0	5	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	29	32
	02:00	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	29	29
	03:00	0	0	0	0	2	0	3	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	34	34
	04:00	0	0	0	0	0	0	10	0	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	30	33
	05:00	0	0	0	0	4	0	17	0	17	17	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	33	35
	06:00	0	0	1	0	4	0	28	0	35	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	33	35
	07:00	2	1	1	1	12	0	76	0	34	3	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	77	34	37
	08:00	8	3	3	3	15	0	60	0	30	11	11	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	129	32	34
	09:00	2	3	3	3	25	0	55	0	42	8	12	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	128	33	37
	10:00	5	0	0	0	17	0	71	0	36	12	12	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	137	33	36
	11:00	2	0	0	0	17	0	48	0	80	16	16	16	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	142	33	37
	12 PM	9	2	2	2	31	0	91	0	44	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	164	34	37
	13:00	8	4	4	4	37	0	91	0	56	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	183	32	34
	14:00	3	0	0	0	23	0	118	0	68	9	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	204	32	34
	15:00	3	0	0	0	18	0	90	0	95	24	24	24	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	221	33	34
	16:00	8	1	1	1	15	0	112	0	124	18	18	18	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	233	34	38
	17:00	8	1	1	1	14	0	109	0	92	27	27	27	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	281	34	36
	18:00	2	0	0	0	15	0	84	0	91	12	12	12	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	254	34	38
	19:00	2	0	0	0	24	0	56	0	41	4	4	4	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	205	34	36
	20:00	3	1	1	1	18	0	68	0	28	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	131	33	36
	21:00	0	0	0	0	10	0	51	0	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	120	32	34
	22:00	0	0	0	0	7	0	25	0	12	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	86	32	34
	23:00	0	0	0	0	1	0	13	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48	33	39
	Total	66	17	17	17	311	0	1288	0	966	174	174	174	21	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	19	32	34
	Percent	2.3%	0.6%	0.6%	0.6%	10.9%	0	45.3%	0	34.0%	6.1%	6.1%	6.1%	0.7%	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	2844		
	AM Peak	08:00	08:00	08:00	08:00	09:00	09:00	07:00	07:00	11:00	11:00	11:00	11:00	09:00	09:00	09:00	09:00	09:00	09:00	09:00	09:00	09:00	09:00	09:00	09:00	09:00	09:00	09:00	09:00	11:00		
	Vol.	8	3	3	3	25	0	76	0	80	16	16	16	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	164		
	PM Peak	12:00	13:00	13:00	13:00	13:00	13:00	14:00	14:00	16:00	16:00	17:00	17:00	15:00	15:00	15:00	19:00	19:00	19:00	19:00	19:00	19:00	19:00	19:00	19:00	19:00	19:00	19:00	19:00	16:00		
	Vol.	9	4	4	4	37	0	118	0	124	27	27	27	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	281		
	Grand Total	66	17	17	17	311	0	1288	0	966	174	174	174	21	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2844		
	Percent	2.3%	0.6%	0.6%	0.6%	10.9%	0	45.3%	0	34.0%	6.1%	6.1%	6.1%	0.7%	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	2844		

Statistics

10 MPH Pace Speed : 26-35 MPH

Number in Pace : 2254

Percent in Pace : 79.3%

Number of Vehicles > 55 MPH : 0

Percent of Vehicles > 55 MPH : 0.0%

Mean Speed(Average) : 29 MPH

All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740

Site Code: 1
Territorial Rd W-O Locust St

WB	Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	85th Percent	95th Percent
		15	20	25	30	35	40	45	50	55	60	65	70	75	999			
	08/09/18	0	0	0	5	3	0	0	0	0	0	0	0	0	0	8	33	34
	01:00	0	0	0	3	2	0	1	0	0	0	0	0	0	0	6	40	43
	02:00	0	0	0	1	2	1	0	0	0	0	0	0	0	0	4	37	39
	03:00	0	0	0	2	6	1	0	0	0	0	0	0	0	0	9	34	37
	04:00	0	1	2	4	9	2	0	1	0	0	0	0	0	0	19	35	45
	05:00	0	1	3	20	28	18	3	1	0	0	0	0	0	0	74	38	40
	06:00	0	0	4	24	72	27	1	1	0	0	0	0	0	0	129	36	39
	07:00	4	1	7	33	67	21	3	0	0	0	0	0	0	0	136	35	39
	08:00	3	1	14	55	61	11	1	0	0	0	0	0	0	0	146	34	37
	09:00	4	1	9	55	95	25	1	0	0	0	0	0	0	0	190	34	38
	10:00	5	0	13	39	60	23	1	1	0	0	0	0	0	0	142	35	38
	11:00	1	0	11	39	99	30	6	0	0	0	0	0	0	0	186	36	39
	12 PM	8	2	7	79	62	22	4	0	0	0	0	0	0	0	184	34	38
	13:00	8	0	11	55	77	26	0	0	0	0	0	0	0	0	177	34	38
	14:00	9	1	10	68	128	19	3	0	0	0	0	0	0	0	238	34	37
	15:00	5	1	4	51	98	37	5	0	0	0	1	0	0	0	202	36	39
	16:00	16	1	11	58	109	19	4	1	0	0	0	0	0	0	219	34	38
	17:00	11	0	6	56	101	25	1	2	0	0	0	0	0	0	202	34	38
	18:00	3	0	7	39	87	26	3	0	0	0	0	0	0	0	165	35	38
	19:00	1	1	6	38	54	10	2	0	0	0	0	0	0	0	112	34	38
	20:00	3	0	7	35	46	9	3	0	0	0	0	0	0	0	103	34	38
	21:00	0	1	5	23	21	15	2	0	0	0	0	0	0	0	67	37	39
	22:00	0	0	3	14	11	4	1	0	0	0	0	0	0	0	33	35	39
	23:00	0	0	1	12	15	0	1	1	0	0	0	0	0	0	30	34	42
	Total	81	12	141	808	1313	371	46	8	0	0	1	0	0	0	2781		
	Percent	2.9%	0.4%	5.1%	29.1%	47.2%	13.3%	1.7%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
	AM Peak	10:00	04:00	08:00	08:00	11:00	11:00	11:00	04:00							09:00		
	Vol.	5	1	14	55	99	30	6	1							190		
	PM Peak	16:00	12:00	13:00	12:00	14:00	15:00	15:00	17:00			15:00				14:00		
	Vol.	16	2	11	79	128	37	5	2			1				238		
	Grand Total	81	12	141	808	1313	371	46	8	0	0	1	0	0	0	2781		
	Total Percent	2.9%	0.4%	5.1%	29.1%	47.2%	13.3%	1.7%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

Statistics

10 MPH Pace Speed : 26-35 MPH

Number in Pace : 2121

Percent in Pace : 76.3%

Number of Vehicles > 55 MPH : 1

Percent of Vehicles > 55 MPH : 0.0%

Mean Speed(Average) : 31 MPH



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: 240

AM PEAK HOUR

Trip Rate: 0.74

	Enter	Exit	Total
Directional Distribution	25%	75%	
Trip Ends	45	133	178

PM PEAK HOUR

Trip Rate: 0.99

	Enter	Exit	Total
Directional Distribution	63%	37%	
Trip Ends	150	88	238

WEEKDAY

Trip Rate: 9.44

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	1,133	1,133	2,266

SATURDAY

Trip Rate: 9.54

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	1,145	1,145	2,290

CRASH SUMMARIES BY YEAR BY COLLISION TYPE

TERRITORIAL RD at HOLLY ST, City of Canby, Clackamas County, 01/01/2012 to 12/31/2016

COLLISION TYPE	FATAL CRASHES	NON- FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER- SECTION RELATED	INTER- SECTION RELATED	OFF- ROAD
YEAR: 2016														
ANGLE	0	0	1	1	0	0	0	1	0	1	0	1	0	0
YEAR 2016 TOTAL	0	0	1	1	0	0	0	1	0	1	0	1	0	0
YEAR: 2014														
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	0	1	1	0	0
YEAR 2014 TOTAL	0	1	0	1	0	1	0	1	0	0	1	1	0	0
YEAR: 2013														
ANGLE	0	0	1	1	0	0	0	1	0	1	0	1	0	0
YEAR 2013 TOTAL	0	0	1	1	0	0	0	1	0	1	0	1	0	0
YEAR: 2012														
REAR-END	0	1	0	1	0	1	0	0	1	0	1	1	0	0
YEAR 2012 TOTAL	0	1	0	1	0	1	0	0	1	0	1	1	0	0
FINAL TOTAL	0	2	2	4	0	2	0	3	1	2	2	4	0	0

655

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

CDS380
08/10/2018

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CITY OF CANBY, CLACKAMAS COUNTY
URBAN NON-SYSTEM CRASH LISTING
TERRITORIAL RD at HOLLY ST, City of Canby, Clackamas County, 01/01/2012 to 12/31/2016
1 - 4 of 4 Crash records shown.

SER#	P R S W DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE (MEDIAN)	INT-REL	CRASH	SPCL USE	MOVE	TRLR QTY	FROM	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE
RD DPT	E L G H R TIME	FROM	SECOND STREET	DIRECT	LEGS	TRAF -	COLL	OWNER	FROM	OWNER	FROM	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE
UNLOC?	D C S L K LAT	LONG	LES	LOCIN	(#LANES)	CONTL	SVRTY	V#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE					
02235	N Y N N 06/22/2012	16	NW HOLLY ST	INTER	CROSS	N	S-1STOP	01 NONE	0	STRGHT	UN-UN	0	01	DRVR	NONE	37	F	SUSP	OR<25	026,043	000	07	
CITY	FR	0	NE TERRITORIAL RD	UN	0	STOP SIGN	REAR	PRVTE	UN-UN												000	00	
N	9P							PSNGR CAR														00	
N	45 16	-122 41		06	0		INI	02 NONE	0	STOP	UN-UN										011	00	
N	30.9428157	49.1990836						PRVTE	UN-UN												000	00	
N								PSNGR CAR														00	
00788	N N N 03/07/2013	16	NW HOLLY ST	INTER	CROSS	N	ANGL-OTH	01 NONE	0	STRGHT	SW-NE										015	00	
NONE	TH	0	NE TERRITORIAL RD	CN	STOP SIGN	ANGL		PRVTE														00	
N	7A			01	0	DAY	PDO	PSNGR CAR													026	02	
N	45 16	-122 41						02 NONE	0	STRGHT	N -S											00	
N	30.9973439	49.291656						PRVTE													015	00	
								PSNGR CAR													000	00	
00948	N N N 03/07/2014	16	NW HOLLY ST	INTER	CROSS	N	BIKE														110	03	
CITY	FR	0	NE TERRITORIAL RD	CN	STOP SIGN	TURN																	
N	5P			02	0	DUSK	INI														034	03	
N	45 16	-122 41						01 NONE	0	STRGHT	S N												
N	30.9973439	49.291656						PRVTE		STRGHT	NE-SW										015	00	
								PSNGR CAR													000	00	
00637	N N N 02/08/2016	16	NW HOLLY ST	INTER	CROSS	N	ANGL-OTH	01 NONE	9	STRGHT	NE-SW											02	
NO RPT	MO	0	NE TERRITORIAL RD	CN	STOP SIGN	ANGL		N/A													015	00	
N	7A			01	0	DAY	PDO	PSNGR CAR													000	00	
N	45 16 31	-122 41						02 NONE	9	STRGHT	S -N												
N	49.29							N/A													015	00	
								PSNGR CAR													000	00	

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash reports is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer crashes being eligible for inclusion in the Statewide Crash Data File.

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CRASH SUMMARIES BY YEAR BY COLLISION TYPE

TERRITORIAL RD at LOCUST ST, City of Canby, Clackamas County, 01/01/2012 to 12/31/2016

COLLISION TYPE	FATAL CRASHES	NON- FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER- SECTION RELATED	INTER- SECTION RELATED	OFF- ROAD
YEAR: 2015														
ANGLE	0	1	1	2	0	1	0	1	1	1	1	2	0	0
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
YEAR 2015 TOTAL	0	1	2	3	0	1	0	2	1	2	1	3	0	0
YEAR: 2013														
ANGLE	0	1	0	1	0	1	0	0	0	1	0	1	0	0
YEAR 2013 TOTAL	0	1	0	1	0	1	0	0	0	1	0	1	0	0
YEAR: 2012														
REAR-END	0	1	0	1	0	2	0	1	0	1	0	1	0	0
YEAR 2012 TOTAL	0	1	0	1	0	2	0	1	0	1	0	1	0	0
FINAL TOTAL	0	3	2	5	0	4	0	3	1	4	1	5	0	0

CDS380
08/10/2018

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CITY OF CANBY, CLACKAMAS COUNTY
URBAN NON-SYSTEM CRASH LISTING
TERRITORIAL RD at LOCUST ST, City of Canby, Clackamas County, 01/01/2012 to 12/31/2016
1 - 4 of 5 Crash records shown.

SER#	P	R	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	TRLR QTY	OWNER	A	S	PRTC	INI	G	E	LICNS	PED	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT. EVENT	CAUSE	
INVEST	E	A	U	C	O	DAY	FIRST STREET	DIRECT	(MEDIAN)	TRAF-	RNDBT	SURF	COLL	STRGHT	FROM																					
RD DPT	E	L	G	H	R	TIME	SECOND STREET	LOCN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO																				
UNLOC?	D	C	S	L	K	LAT	LRS	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	0	STRGHT																			
04931	N	N	N	N	11/20/2015	16	NE LOCUST ST	NE	UNKNOWN	N	N	DRY	REAR	PRVTE	NE-SW																				29	
NONE					FR	0	NE TERRITORIAL RD	06	0		N	DAY	PDO	PSNGR CAR																						
N					3P						N	DAY	PDO	PSNGR CAR																						
N					45 16 33.69 -122 41						N	DAY	PDO	PSNGR CAR																						
N					30.78																															
01665	N	N	N	N	05/07/2012	16	NE LOCUST ST	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	0	STRGHT																		07	
COUNTY					MO	0	NE TERRITORIAL RD	E	UNKNOWN	N	N	DRY	REAR	PRVTE	E -W																					
N					12P			06	0		N	DAY	INJ	PSNGR CAR																						
N					45 16 -122 41																															
N					33.6262505 30.7583797																															
00885	N	N	N	N	03/16/2013	16	NE LOCUST ST	INTER	CROSS	N	N	UNK	ANGL-OTH	01	NONE	0	STRGHT																			
NONE					SA	0	NE TERRITORIAL RD	CN	STOP SIGN	N	N	UNK	ANGL	PRVTE	SW-NE																					
N					6P			04	0		N	DAY	INJ	PSNGR CAR																						
N					45 16 -122 41																															
N					33.6930959 30.781572																															
01814	N	N	N	N	05/13/2015	16	NE LOCUST ST	INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE	0	STRGHT																			
CITY					WE	0	NE TERRITORIAL RD	CN	STOP SIGN	N	N	WET	ANGL	PRVTE	S -N																					
N					8P			02	0		N	DLIT	INJ	PSNGR CAR																						
N					45 16 33.69 -122 41																															
N					30.78																															
05086	N	N	N	N	12/01/2015	16	NE LOCUST ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE	0	STRGHT																			
CITY					TU	0	NE TERRITORIAL RD	CN	STOP SIGN	N	N	DRY	ANGL	PRVTE	N -S																					
N					11A			03	0		N	DAY	PDO	PSNGR CAR																						
N					45 16 33.69 -122 41																															
N					30.78																															

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OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

URBAN NON-SYSTEM CRASH LISTING
TERRITORIAL RD at LOCUST ST, City of Canby, Clackamas County, 01/01/2012 to 12/31/2016
5 - 5 of 5 Crash records shown.

CDS380
08/10/2018

CITY OF CANBY, CLACKAMAS COUNTY

S D		P R S W DATE		CLASS		CITY STREET		INT-TYPE		RD CHAR		INT-REL		OFFRD		WTHR		CRASH		SPCL USE		MOVE		A S		PRTC		INI		SVRTY		E X RES		LOC		ERROR		ACT. EVENT		CAUSE	
SER#	P	E A U C O DAY	DIST	FROM	LONG	FIRST STREET	SECOND STREET	(MEDIAN)	LEGS	TRAF -	CONTL	DRVWY	LIGHT	SVRTY	COLL	OWNER	TRLR QTY	02 NONE	0	PRVTE	PSNGR CAR	W -E	01 DRVR	NONE	38 F	OR-Y	OR<25	000	000	000	000	000	000	000	000	000	000	000	000	000	
INVEST	E A U C O DAY	DIST	FROM	LONG	FIRST STREET	SECOND STREET	LRS	LOCNTN	DRVWY	LIGHT	SVRTY	COLL	OWNER	TRLR QTY	SPCL USE	MOVE	FROM	PRTC	INI	SVRTY	E X RES	LOC	ERROR	ACT. EVENT	CAUSE																
RD DPT	E L G H R TIME	FROM	LONG	FIRST STREET	SECOND STREET	LRS	LOCNTN	DRVWY	LIGHT	SVRTY	COLL	OWNER	TRLR QTY	SPCL USE	MOVE	FROM	PRTC	INI	SVRTY	E X RES	LOC	ERROR	ACT. EVENT	CAUSE																	
UNLOC?	D C S L K LAT	FROM	LONG	FIRST STREET	SECOND STREET	LRS	LOCNTN	DRVWY	LIGHT	SVRTY	COLL	OWNER	TRLR QTY	SPCL USE	MOVE	FROM	PRTC	INI	SVRTY	E X RES	LOC	ERROR	ACT. EVENT	CAUSE																	

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash reports is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer damage only crashes being eligible for inclusion in the Statewide Crash Data File.

Left-Turn Lane Warrant Analysis



Project: Holly DCP
 Intersection: 2. NE Territorial Road at N Locust Street
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation - AM Peak Hour (EB)

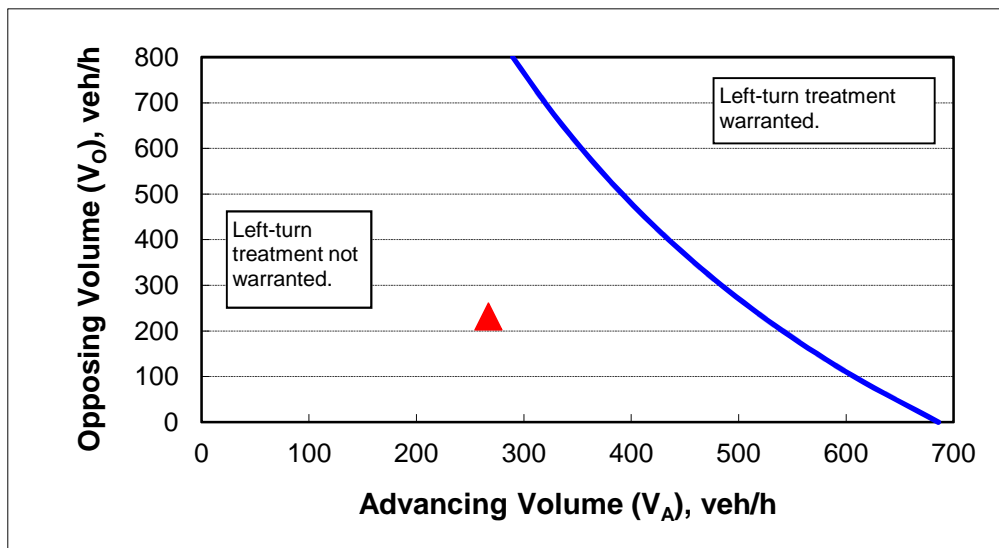
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	35
Percent of left-turns in advancing volume (V_A), %:	8%
Advancing volume (V_A), veh/h:	267
Opposing volume (V_O), veh/h:	231

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	522
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



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: Holly DCP
 Intersection: 2. NE Territorial Road at N Locust Street
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation - AM Peak Hour (WB)

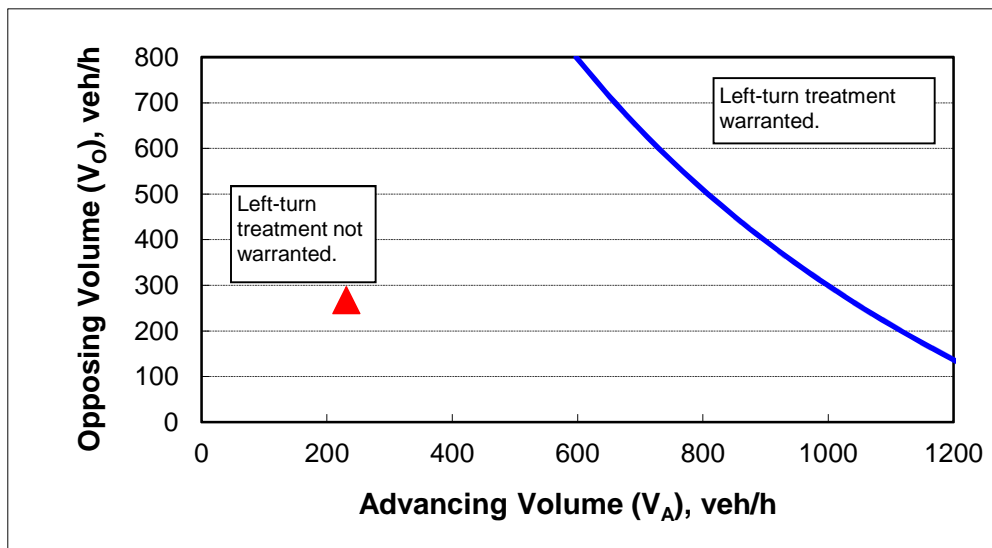
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	35
Percent of left-turns in advancing volume (V_A), %:	2%
Advancing volume (V_A), veh/h:	231
Opposing volume (V_O), veh/h:	267

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1036
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



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: Holly DCP
 Intersection: 2. NE Territorial Road at N Locust Street
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon w/o Annexation - PM Peak Hour (EB)

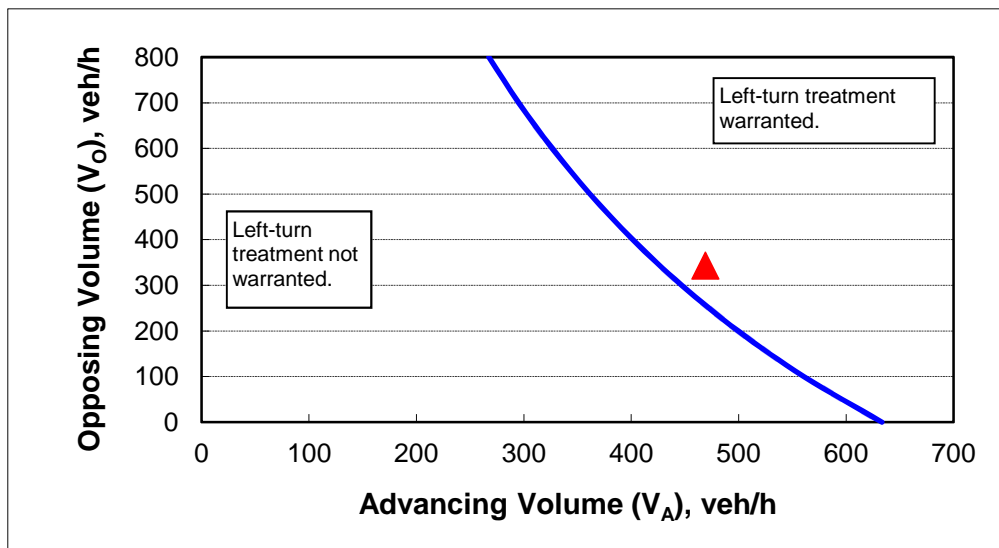
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	35
Percent of left-turns in advancing volume (V_A), %:	9%
Advancing volume (V_A), veh/h:	469
Opposing volume (V_O), veh/h:	343

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	427
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



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: Holly DCP
 Intersection: 2. NE Territorial Road at N Locust Street
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation - PM Peak Hour (WB)

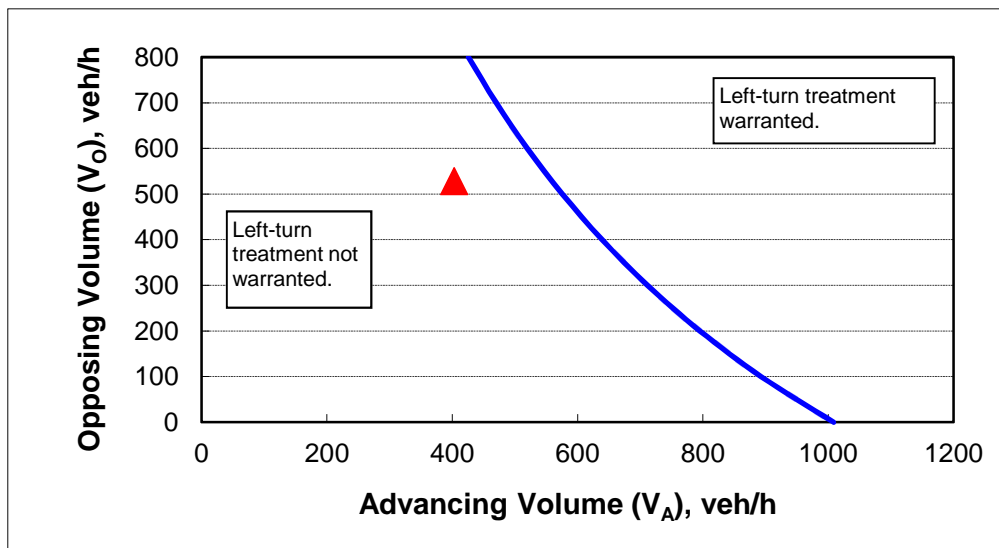
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	35
Percent of left-turns in advancing volume (V_A), %:	3%
Advancing volume (V_A), veh/h:	403
Opposing volume (V_O), veh/h:	528

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	559
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



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: Holly DCP
 Intersection: 3. Site Access at N Locust Street
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation - AM Peak Hour

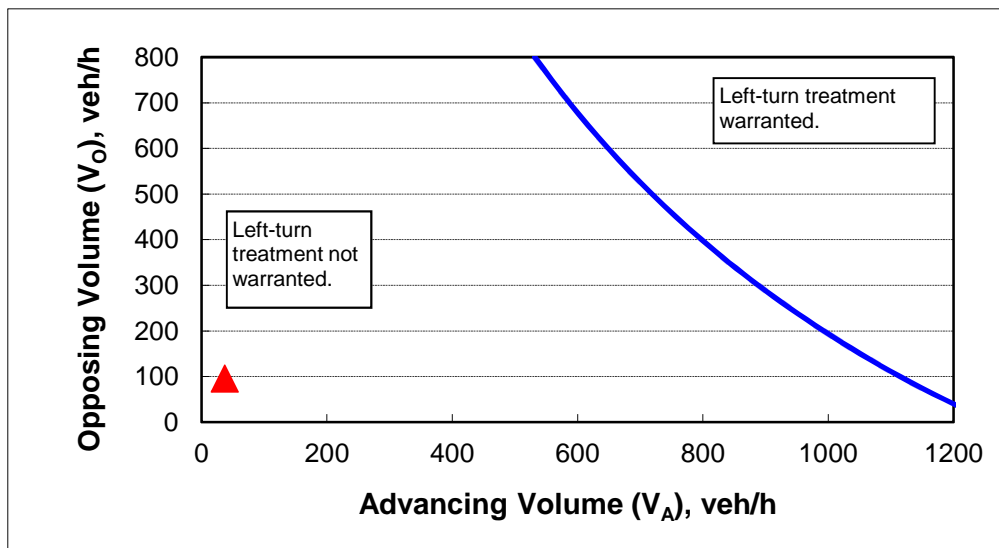
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	25
Percent of left-turns in advancing volume (V_A), %:	3%
Advancing volume (V_A), veh/h:	37
Opposing volume (V_O), veh/h:	95

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1121
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



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: Holly DCP
 Intersection: 3. Site Access at N Locust Street
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation - PM Peak Hour

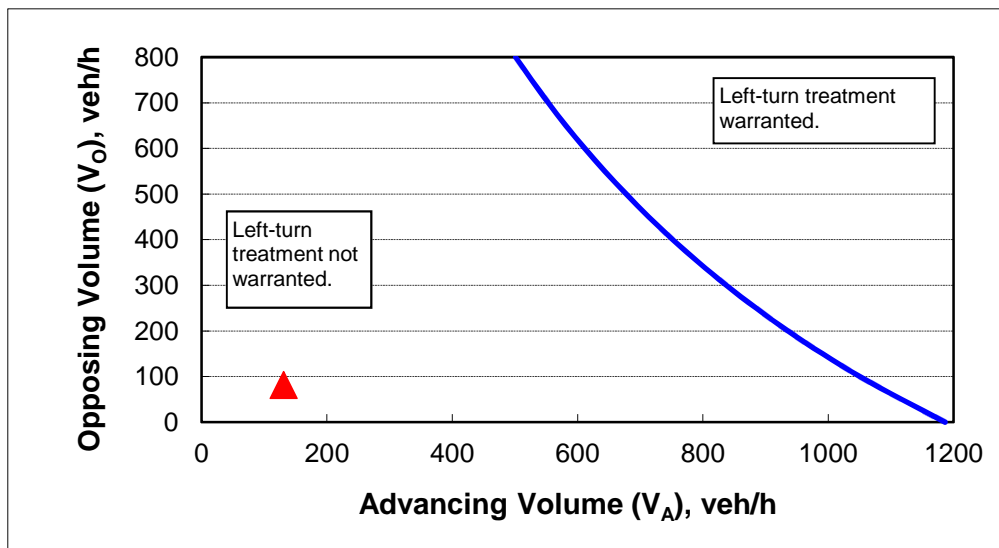
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	25
Percent of left-turns in advancing volume (V_A), %:	3%
Advancing volume (V_A), veh/h:	131
Opposing volume (V_O), veh/h:	81

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1075
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



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: Holly DCP
 Intersection: 4. Site Access at N Locust Street
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation - AM Peak Hour

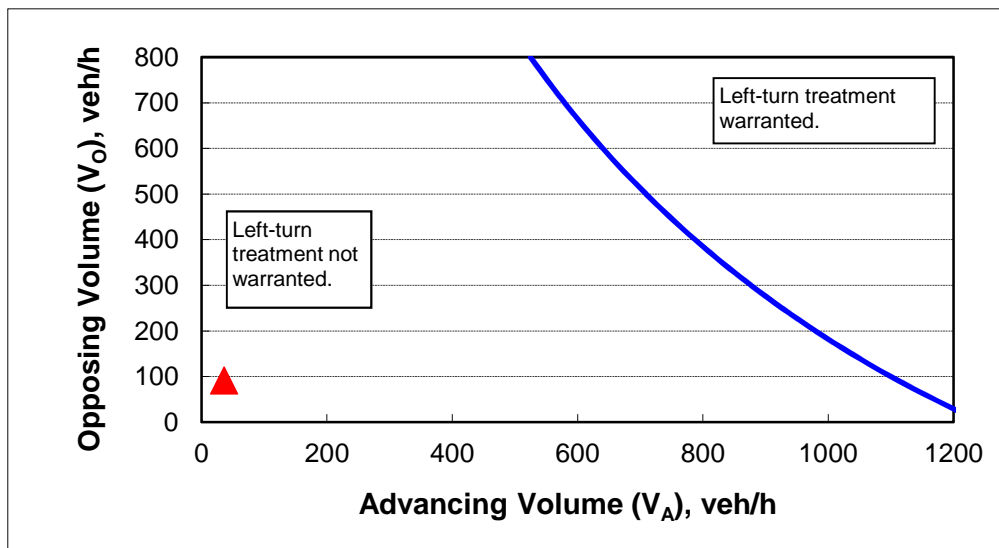
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	25
Percent of left-turns in advancing volume (V_A), %:	3%
Advancing volume (V_A), veh/h:	36
Opposing volume (V_O), veh/h:	91

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1112
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



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: Holly DCP
 Intersection: 4. Site Access at N Locust Street
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation - PM Peak Hour

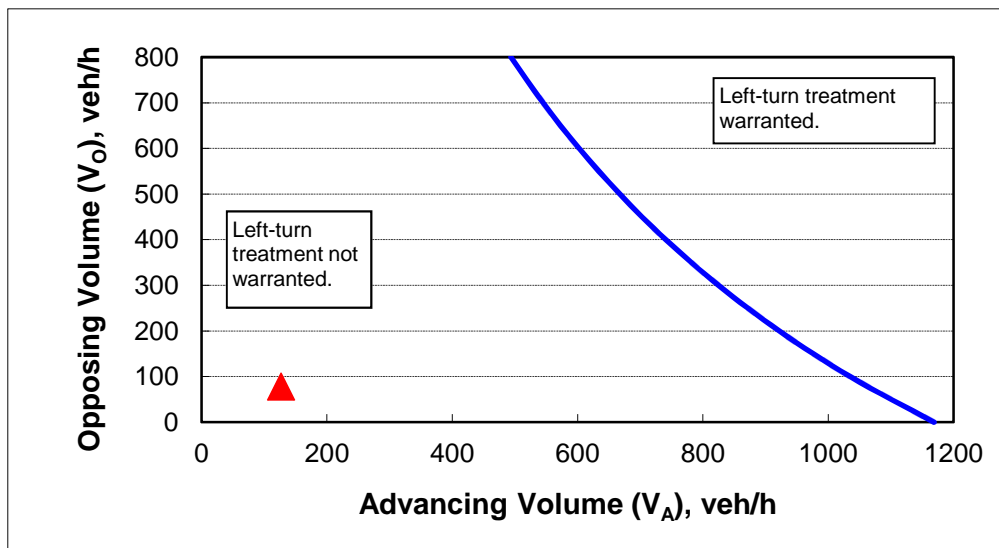
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	25
Percent of left-turns in advancing volume (V_A), %:	3%
Advancing volume (V_A), veh/h:	127
Opposing volume (V_O), veh/h:	78

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1062
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



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: Holly DCP
 Intersection: 5. NE 19th Avenue at N Locust Street
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation - AM Peak Hour (NB)

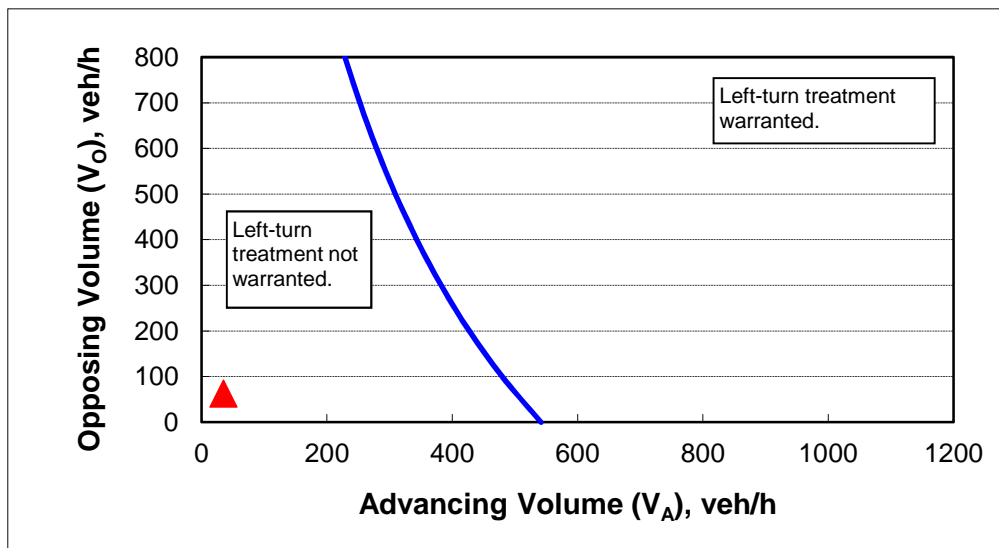
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	25
Percent of left-turns in advancing volume (V_A), %:	17%
Advancing volume (V_A), veh/h:	35
Opposing volume (V_O), veh/h:	62

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	502
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



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: Holly DCP
 Intersection: 5. NE 19th Avenue at N Locust Street
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation - AM Peak Hour (SB)

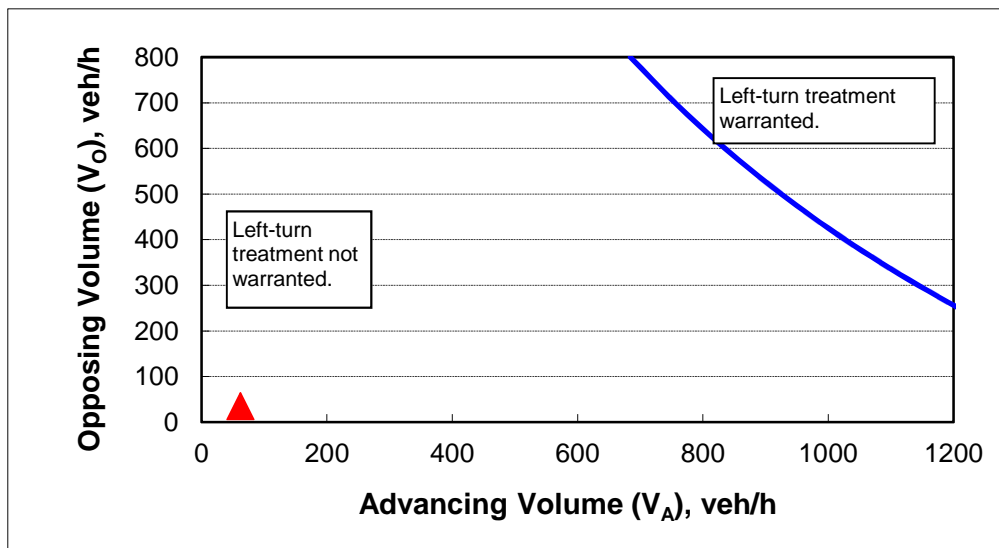
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	25
Percent of left-turns in advancing volume (V_A), %:	2%
Advancing volume (V_A), veh/h:	62
Opposing volume (V_O), veh/h:	35

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1552
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



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: Holly DCP
 Intersection: 5. NE 19th Avenue at N Locust Street
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation - PM Peak Hour (NB)

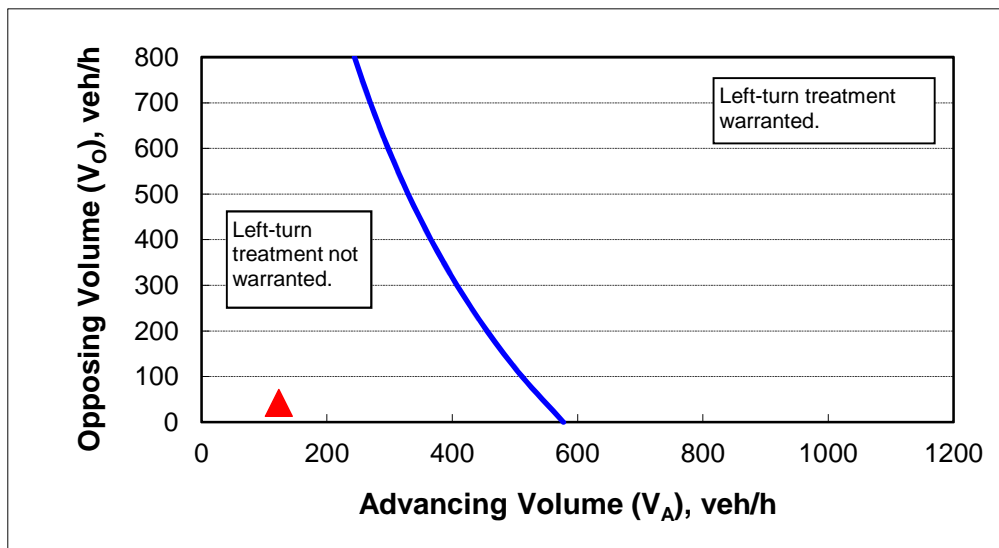
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	25
Percent of left-turns in advancing volume (V_A), %:	15%
Advancing volume (V_A), veh/h:	123
Opposing volume (V_O), veh/h:	42

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	548
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



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: Holly DCP
 Intersection: 5. NE 19th Avenue at N Locust Street
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation - PM Peak Hour (SB)

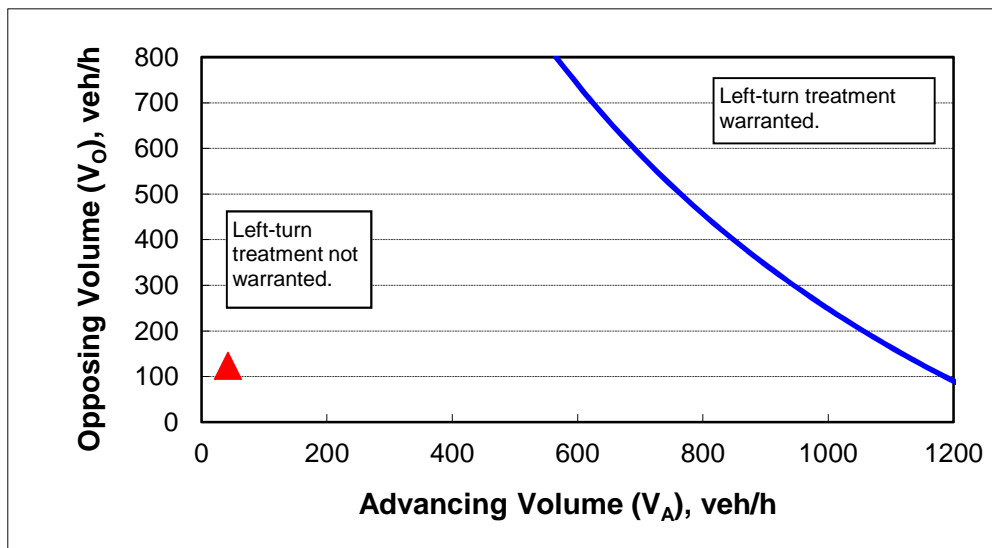
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	25
Percent of left-turns in advancing volume (V_A), %:	2%
Advancing volume (V_A), veh/h:	42
Opposing volume (V_O), veh/h:	123

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1154
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



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: Holly DCP
 Intersection: 6. Site Access at N Locust Street
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation - AM Peak Hour

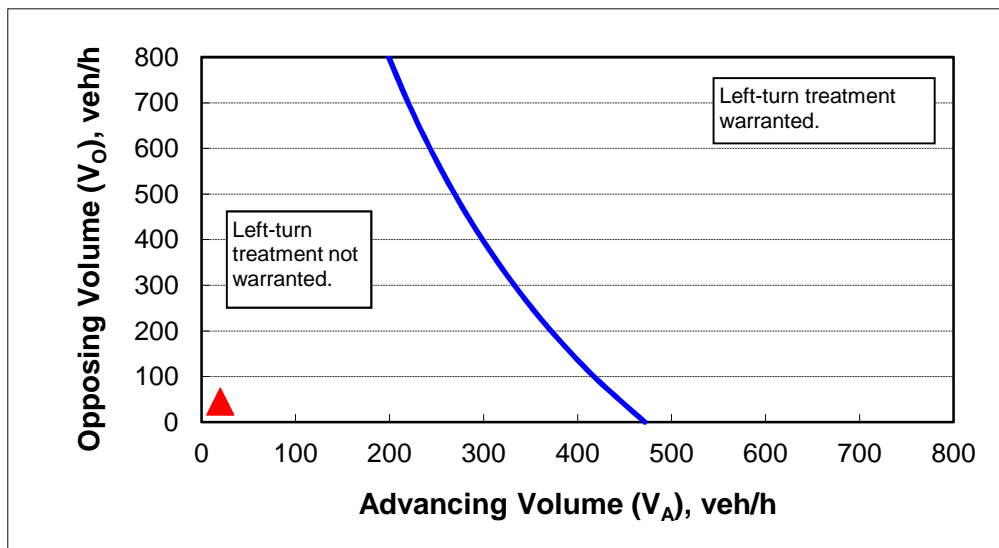
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	25
Percent of left-turns in advancing volume (V_A), %:	25%
Advancing volume (V_A), veh/h:	20
Opposing volume (V_O), veh/h:	45

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	446
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



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: Holly DCP
 Intersection: 6. Site Access at N Locust Street
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation - PM Peak Hour

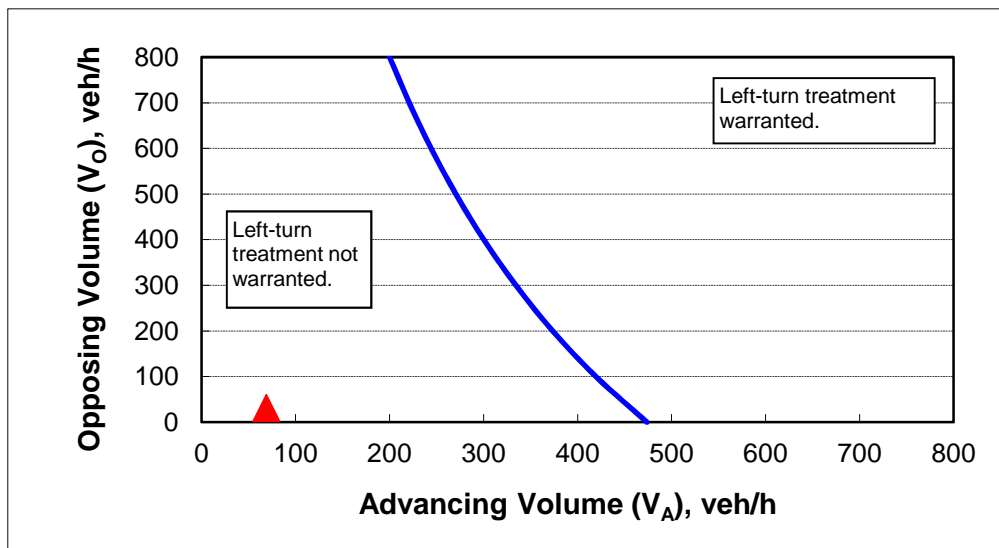
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	25
Percent of left-turns in advancing volume (V_A), %:	25%
Advancing volume (V_A), veh/h:	69
Opposing volume (V_O), veh/h:	31

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	456
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



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: Holly DCP
 Intersection: 12. Site Access at N Locust Street
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation - AM Peak Hour (NB)

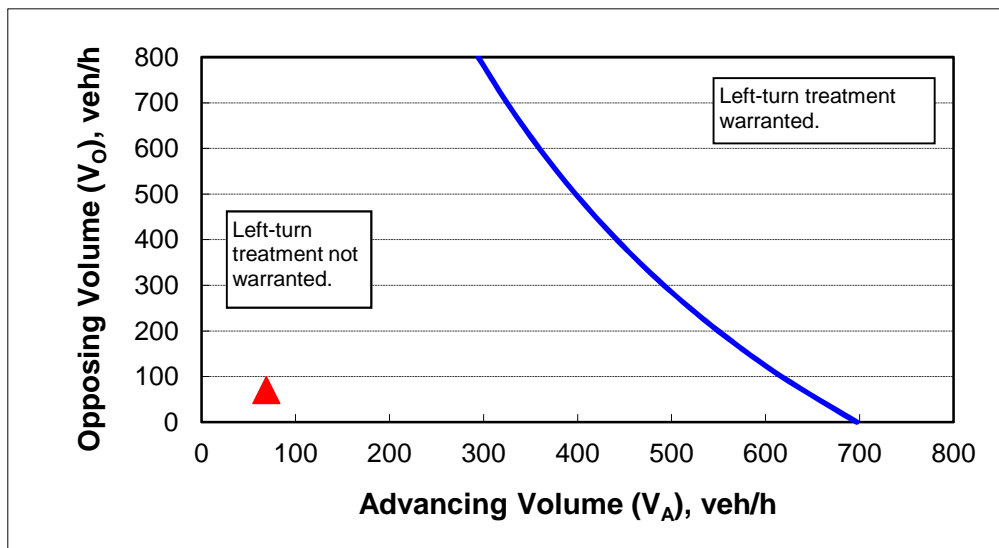
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	6%
Advancing volume (V_A), veh/h:	69
Opposing volume (V_O), veh/h:	70

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	640
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



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: Holly DCP
 Intersection: 12. Site Access at N Locust Street
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation - AM Peak Hour (SB)

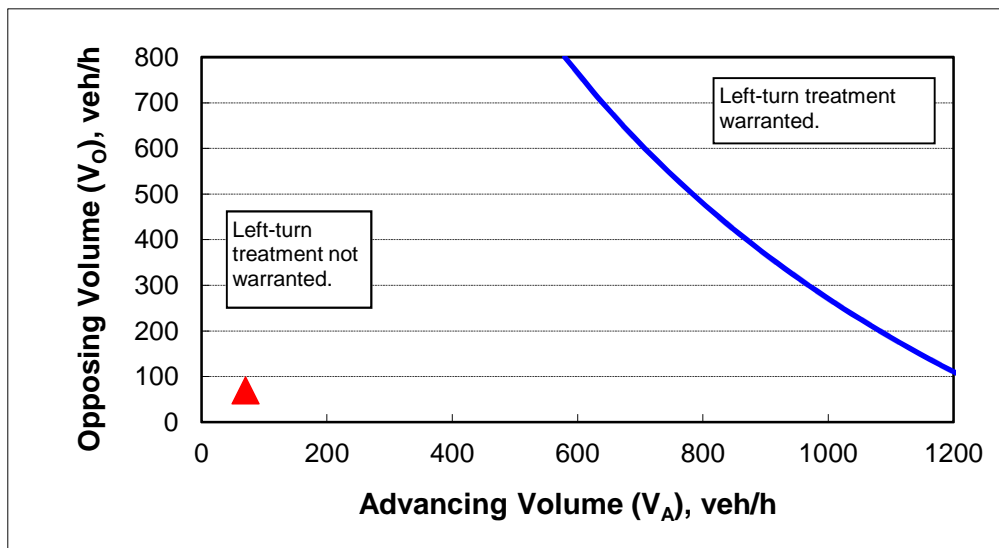
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	1%
Advancing volume (V_A), veh/h:	70
Opposing volume (V_O), veh/h:	69

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1261
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



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: Holly DCP
 Intersection: 12. Site Access at N Locust Street
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation - PM Peak Hour (NB)

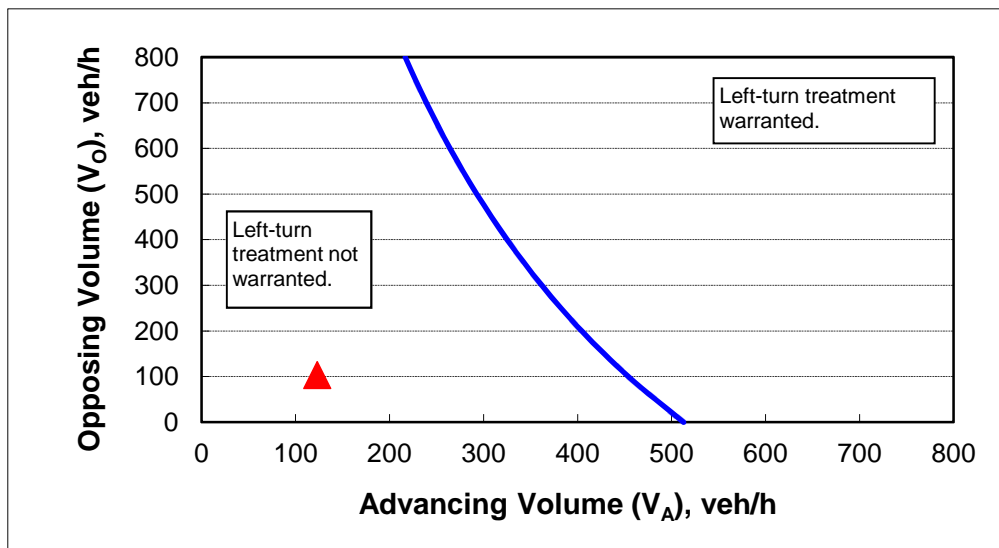
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	11%
Advancing volume (V_A), veh/h:	123
Opposing volume (V_O), veh/h:	103

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	452
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



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: Holly DCP
 Intersection: 12. Site Access at N Locust Street
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation - PM Peak Hour (SB)

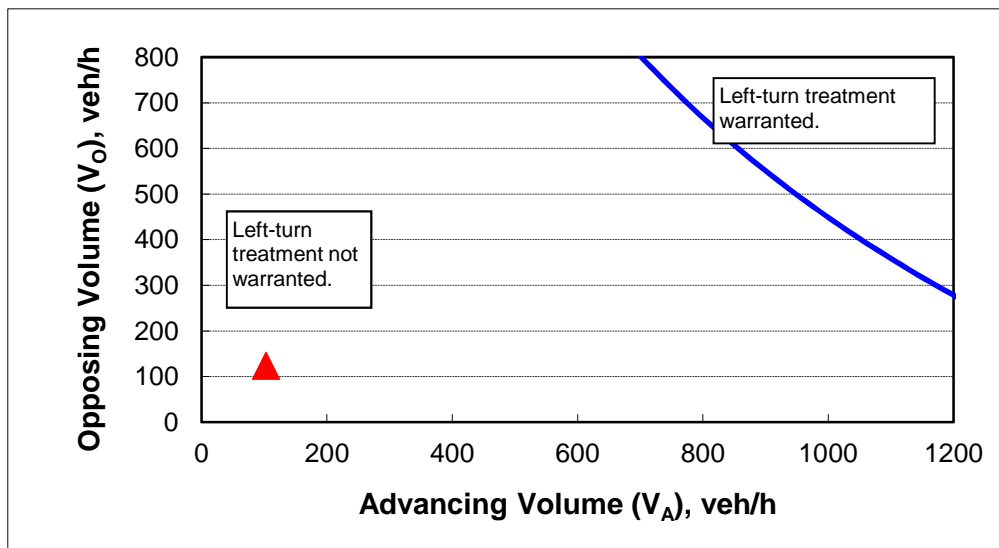
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	1%
Advancing volume (V_A), veh/h:	103
Opposing volume (V_O), veh/h:	123

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1431
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



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: Holly DCP
 Intersection: 13. Site Access at N Locust Street
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation - AM Peak Hour (NB)

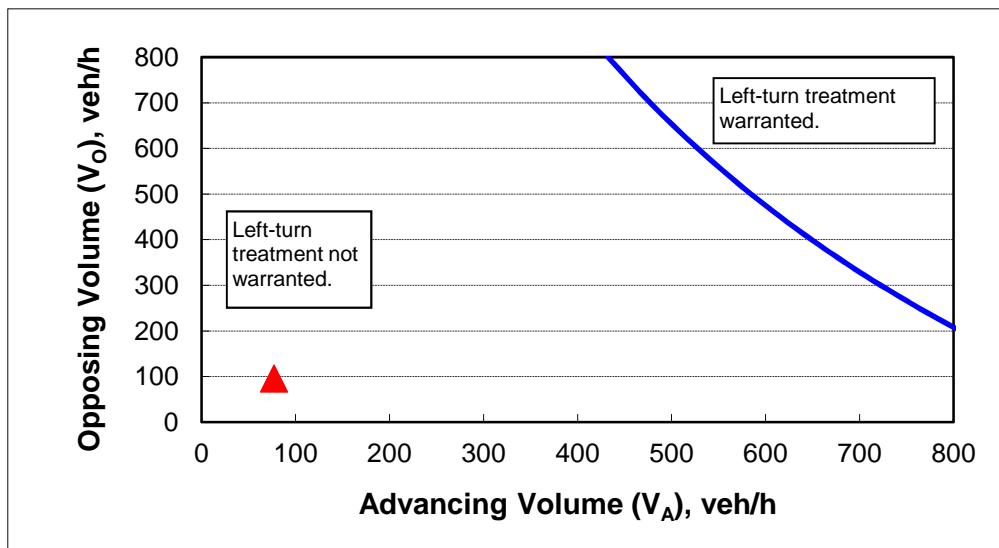
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	3%
Advancing volume (V_A), veh/h:	77
Opposing volume (V_O), veh/h:	95

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	912
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



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: Holly DCP
 Intersection: 13. Site Access at N Locust Street
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation - AM Peak Hour (SB)

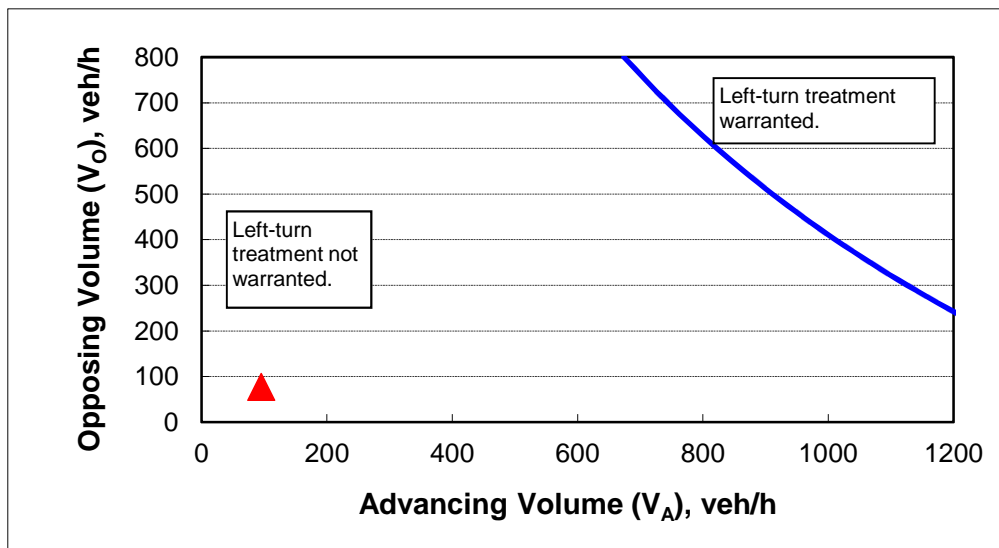
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	1%
Advancing volume (V_A), veh/h:	95
Opposing volume (V_O), veh/h:	77

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1452
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



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: Holly DCP
 Intersection: 13. Site Access at N Locust Street
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation - PM Peak Hour (NB)

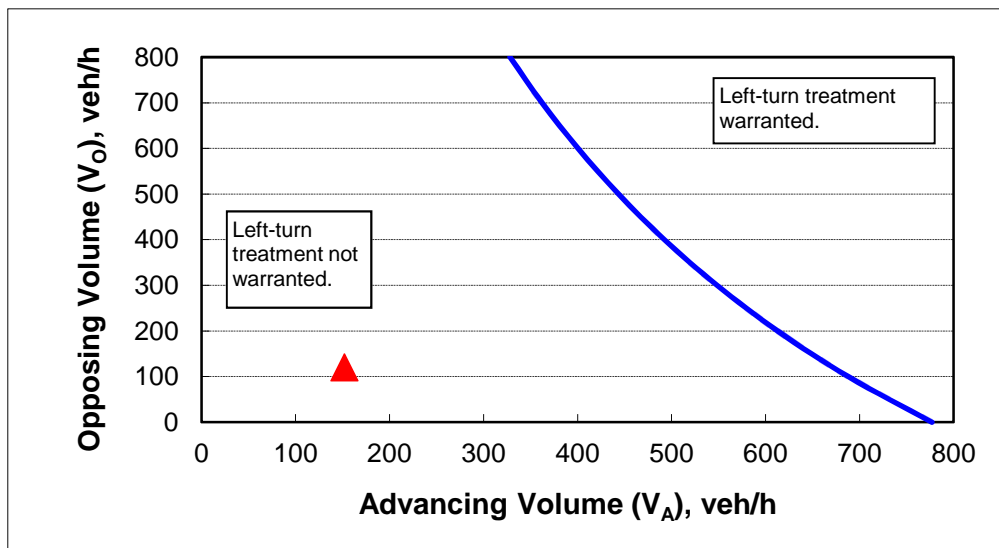
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	5%
Advancing volume (V_A), veh/h:	152
Opposing volume (V_O), veh/h:	120

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	672
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



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: Holly DCP
 Intersection: 13. Site Access at N Locust Street
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation - PM Peak Hour (SB)

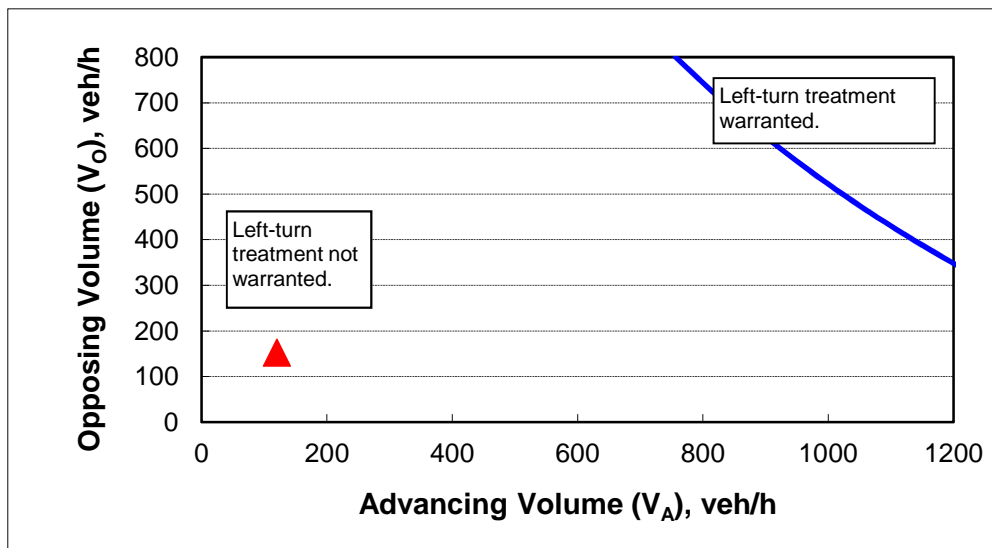
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	1%
Advancing volume (V_A), veh/h:	120
Opposing volume (V_O), veh/h:	152

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1493
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



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: Holly DCP
 Intersection: 14. Site Access at N Locust Street
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation - AM Peak Hour (SB)

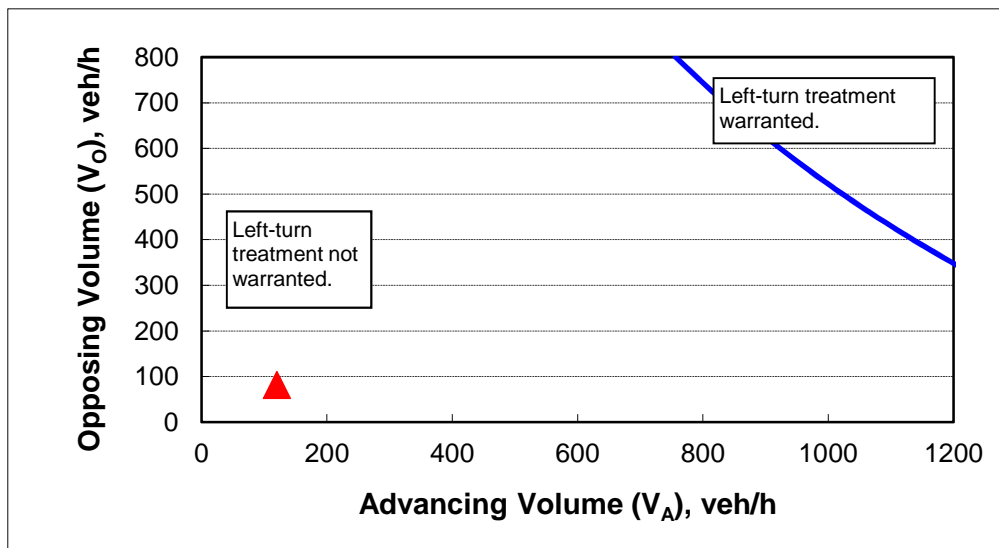
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	1%
Advancing volume (V_A), veh/h:	120
Opposing volume (V_O), veh/h:	81

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1622
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



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: Holly DCP
 Intersection: 14. Site Access at N Locust Street
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation - PM Peak Hour (SB)

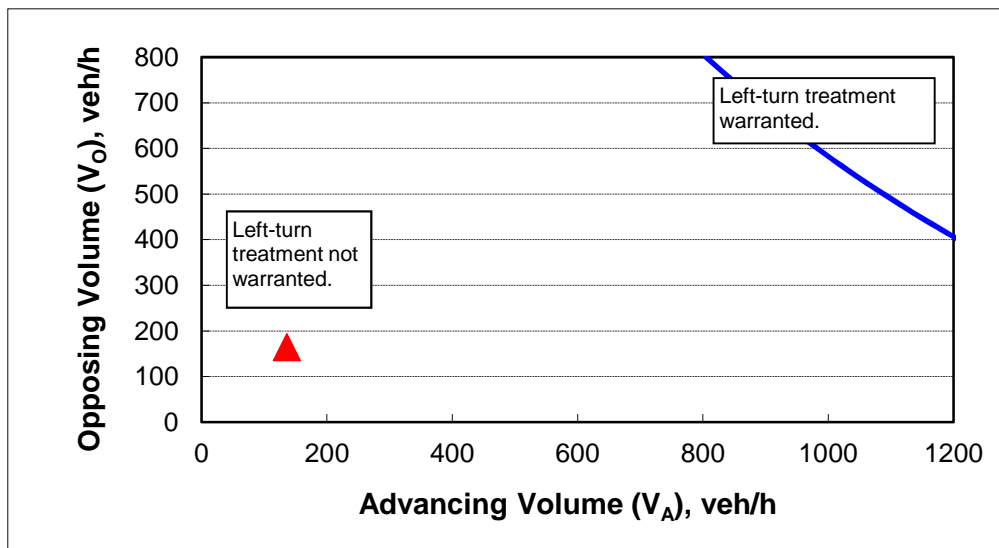
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	1%
Advancing volume (V_A), veh/h:	136
Opposing volume (V_O), veh/h:	164

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1566
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



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: Holly DCP
 Intersection: 15. Site Access at N Locust Street
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation - AM Peak Hour

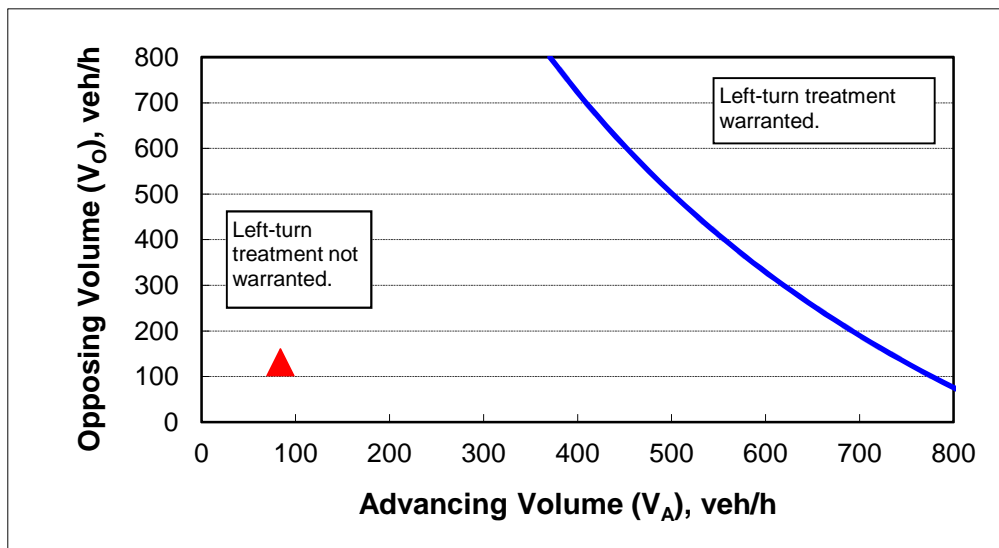
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	4%
Advancing volume (V_A), veh/h:	84
Opposing volume (V_O), veh/h:	131

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	749
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



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: Holly DCP
 Intersection: 15. Site Access at N Locust Street
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation - PM Peak Hour

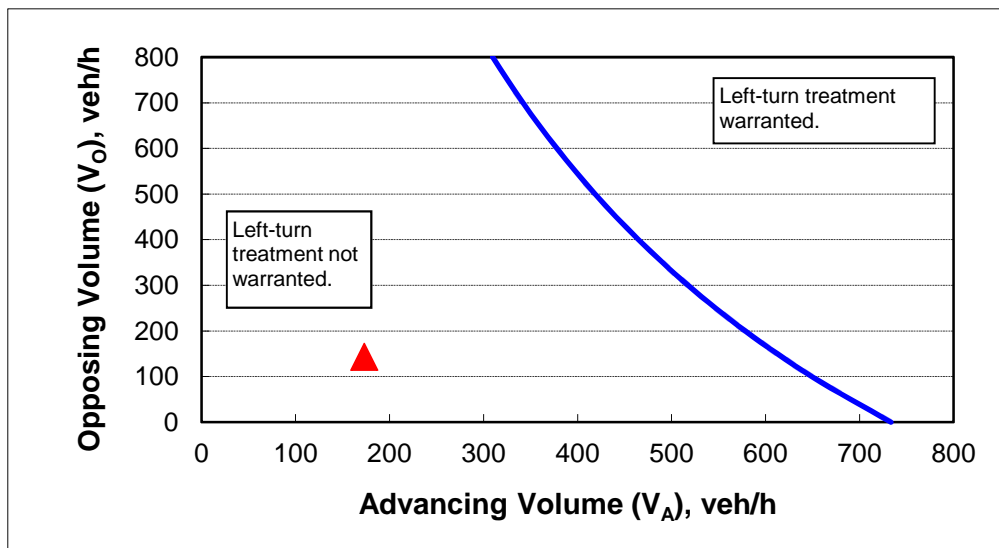
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	5%
Advancing volume (V_A), veh/h:	173
Opposing volume (V_O), veh/h:	143

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	617
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



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



Traffic Signal Warrant Analysis

Project: Holly DCP
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation

Major Street:	NW Territorial Road	Minor Street:	N Holly Street
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	720	PM Peak Hour Volumes:	212

Warrant Used:

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

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
		100%	70%	100%	70%
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500

<u>WARRANT 1, CONDITION B</u>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

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

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	7,200	8,850	
Minor Street*	2,120	2,650	No
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	7,200	13,300	
Minor Street*	2,120	1,350	No
<i>Combination Warrant</i>			
Major Street	7,200	10,640	
Minor Street*	2,120	2,120	No

Note: Minor street right-turning traffic volumes reduced by 25%.

Traffic Signal Warrant Analysis

Project: Holly DCP
 Date: 9/5/2018
 Scenario: 2030 Planning Horizon with Annexation

Major Street:	NE Territorial Road	Minor Street:	N Locust Street
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	931	PM Peak Hour Volumes:	69

Warrant Used:

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

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

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

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	9,310	8,850	
Minor Street*	690	2,650	No
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	9,310	13,300	
Minor Street*	690	1,350	No
<i>Combination Warrant</i>			
Major Street	9,310	10,640	
Minor Street*	690	2,120	No

Note: 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




Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	74	2	68	54	16	1	16	50	14	19	10
Future Vol, veh/h	4	74	2	68	54	16	1	16	50	14	19	10
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	0	0	0	2	2	2	4	4	4	5	5	5
Mvmt Flow	5	84	2	77	61	18	1	18	57	16	22	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.9	8.4	7.6	7.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	5%	49%	33%
Vol Thru, %	24%	93%	39%	44%
Vol Right, %	75%	3%	12%	23%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	67	80	138	43
LT Vol	1	4	68	14
Through Vol	16	74	54	19
RT Vol	50	2	16	10
Lane Flow Rate	76	91	157	49
Geometry Grp	1	1	1	1
Degree of Util (X)	0.088	0.11	0.19	0.062
Departure Headway (Hd)	4.138	4.34	4.353	4.552
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	867	827	830	788
Service Time	2.156	2.357	2.353	2.571
HCM Lane V/C Ratio	0.088	0.11	0.189	0.062
HCM Control Delay	7.6	7.9	8.4	7.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.4	0.7	0.2

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	156	1	3	148	5	3	2	5	5	1	24
Future Vol, veh/h	7	156	1	3	148	5	3	2	5	5	1	24
Conflicting Peds, #/hr	0	0	8	8	0	0	0	0	1	1	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	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	1	1	1	10	10	10	3	3	3
Mvmt Flow	8	171	1	3	163	5	3	2	5	5	1	26
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	168	0	0	180	0	0	381	370	181	364	368	166
Stage 1	-	-	-	-	-	-	196	196	-	172	172	-
Stage 2	-	-	-	-	-	-	185	174	-	192	196	-
Critical Hdwy	4.12	-	-	4.11	-	-	7.2	6.6	6.3	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.2	5.6	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.2	5.6	-	6.13	5.53	-
Follow-up Hdwy	2.218	-	-	2.209	-	-	3.59	4.09	3.39	3.527	4.027	3.327
Pot Cap-1 Maneuver	1410	-	-	1402	-	-	563	547	841	590	559	876
Stage 1	-	-	-	-	-	-	788	724	-	828	755	-
Stage 2	-	-	-	-	-	-	799	740	-	807	737	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1410	-	-	1391	-	-	538	538	834	580	550	876
Mov Cap-2 Maneuver	-	-	-	-	-	-	538	538	-	580	550	-
Stage 1	-	-	-	-	-	-	777	714	-	823	753	-
Stage 2	-	-	-	-	-	-	772	739	-	794	727	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.1			10.6			9.7		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	654	1410	-	-	1391	-	-	793				
HCM Lane V/C Ratio	0.017	0.005	-	-	0.002	-	-	0.042				
HCM Control Delay (s)	10.6	7.6	0	-	7.6	0	-	9.7				
HCM Lane LOS	B	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1				

Intersection						
Int Delay, s/veh	2.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	1	8	6	1	24
Future Vol, veh/h	10	1	8	6	1	24
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	13	1	10	8	1	30

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	47	15	0	0	19
Stage 1	15	-	-	-	-
Stage 2	32	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	968	1070	-	-	1611
Stage 1	1013	-	-	-	-
Stage 2	996	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	966	1069	-	-	1609
Mov Cap-2 Maneuver	966	-	-	-	-
Stage 1	1011	-	-	-	-
Stage 2	996	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	0.3
HCM LOS	A		





Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	975	1609
HCM Lane V/C Ratio	-	-	0.014	0.001
HCM Control Delay (s)	-	-	8.7	7.2
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0




Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	4	130	5	105	87	21	4	27	131	24	42	7
Future Vol, veh/h	4	130	5	105	87	21	4	27	131	24	42	7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	0	0	0	1	1	1	1	1	1	1	1	1
Mvmt Flow	4	144	6	117	97	23	4	30	146	27	47	8
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.1	10	8.8	8.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	2%	3%	49%	33%
Vol Thru, %	17%	94%	41%	58%
Vol Right, %	81%	4%	10%	10%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	162	139	213	73
LT Vol	4	4	105	24
Through Vol	27	130	87	42
RT Vol	131	5	21	7
Lane Flow Rate	180	154	237	81
Geometry Grp	1	1	1	1
Degree of Util (X)	0.224	0.205	0.312	0.114
Departure Headway (Hd)	4.475	4.782	4.751	5.079
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	797	746	753	701
Service Time	2.529	2.842	2.808	3.145
HCM Lane V/C Ratio	0.226	0.206	0.315	0.116
HCM Control Delay	8.8	9.1	10	8.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.9	0.8	1.3	0.4

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	32	309	3	10	230	11	5	3	2	10	4	20
Future Vol, veh/h	32	309	3	10	230	11	5	3	2	10	4	20
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	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	2	2	2	0	0	0	0	0	0
Mvmt Flow	34	329	3	11	245	12	5	3	2	11	4	21
Major/Minor	Major1		Major2			Minor1			Minor2			
Conflicting Flow All	257	0	0	332	0	0	685	678	331	674	673	251
Stage 1	-	-	-	-	-	-	399	399	-	273	273	-
Stage 2	-	-	-	-	-	-	286	279	-	401	400	-
Critical Hdwy	4.1	-	-	4.12	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.218	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1320	-	-	1227	-	-	365	377	715	371	379	793
Stage 1	-	-	-	-	-	-	631	606	-	737	688	-
Stage 2	-	-	-	-	-	-	726	683	-	630	605	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1320	-	-	1227	-	-	341	361	715	356	363	793
Mov Cap-2 Maneuver	-	-	-	-	-	-	341	361	-	356	363	-
Stage 1	-	-	-	-	-	-	611	587	-	713	681	-
Stage 2	-	-	-	-	-	-	695	676	-	605	586	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	0.7		0.3			14.5			12.3			
HCM LOS						B			B			
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	388	1320	-	-	1227	-	-	529				
HCM Lane V/C Ratio	0.027	0.026	-	-	0.009	-	-	0.068				
HCM Control Delay (s)	14.5	7.8	0	-	8	0	-	12.3				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.2				

Intersection						
Int Delay, s/veh	2.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	1	28	24	1	17
Future Vol, veh/h	19	1	28	24	1	17
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	23	1	35	30	1	21

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	75	52	0	0	67
Stage 1	52	-	-	-	-
Stage 2	23	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	933	1021	-	-	1547
Stage 1	976	-	-	-	-
Stage 2	1005	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	930	1019	-	-	1544
Mov Cap-2 Maneuver	930	-	-	-	-
Stage 1	973	-	-	-	-
Stage 2	1005	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	0	0.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	934	1544
HCM Lane V/C Ratio	-	-	0.026	0.001
HCM Control Delay (s)	-	-	9	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0




Intersection	
Intersection Delay, s/veh	8.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	5	101	3	93	74	22	1	22	68	19	26	14
Future Vol, veh/h	5	101	3	93	74	22	1	22	68	19	26	14
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	0	0	0	2	2	2	4	4	4	5	5	5
Mvmt Flow	6	115	3	106	84	25	1	25	77	22	30	16
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0





Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.4	9.2	8.1	8.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	5%	49%	32%
Vol Thru, %	24%	93%	39%	44%
Vol Right, %	75%	3%	12%	24%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	91	109	189	59
LT Vol	1	5	93	19
Through Vol	22	101	74	26
RT Vol	68	3	22	14
Lane Flow Rate	103	124	215	67
Geometry Grp	1	1	1	1
Degree of Util (X)	0.126	0.156	0.268	0.09
Departure Headway (Hd)	4.385	4.528	4.495	4.809
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	817	791	799	744
Service Time	2.416	2.559	2.525	2.843
HCM Lane V/C Ratio	0.126	0.157	0.269	0.09
HCM Control Delay	8.1	8.4	9.2	8.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0.6	1.1	0.3

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	213	1	4	202	7	4	3	7	7	1	33
Future Vol, veh/h	10	213	1	4	202	7	4	3	7	7	1	33
Conflicting Peds, #/hr	0	0	8	8	0	0	0	0	1	1	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	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	1	1	1	10	10	10	3	3	3
Mvmt Flow	11	234	1	4	222	8	4	3	8	8	1	36
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	230	0	0	243	0	0	518	503	244	497	499	226
Stage 1	-	-	-	-	-	-	265	265	-	234	234	-
Stage 2	-	-	-	-	-	-	253	238	-	263	265	-
Critical Hdwy	4.12	-	-	4.11	-	-	7.2	6.6	6.3	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.2	5.6	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.2	5.6	-	6.13	5.53	-
Follow-up Hdwy	2.218	-	-	2.209	-	-	3.59	4.09	3.39	3.527	4.027	3.327
Pot Cap-1 Maneuver	1338	-	-	1329	-	-	456	460	776	482	472	811
Stage 1	-	-	-	-	-	-	723	675	-	767	709	-
Stage 2	-	-	-	-	-	-	734	694	-	740	688	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1338	-	-	1319	-	-	428	451	769	470	463	811
Mov Cap-2 Maneuver	-	-	-	-	-	-	428	451	-	470	463	-
Stage 1	-	-	-	-	-	-	711	664	-	760	707	-
Stage 2	-	-	-	-	-	-	698	692	-	722	676	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.1			11.6			10.4		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	558	1338	-	-	1319	-	-	710				
HCM Lane V/C Ratio	0.028	0.008	-	-	0.003	-	-	0.063				
HCM Control Delay (s)	11.6	7.7	0	-	7.7	0	-	10.4				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2				

Intersection						
Int Delay, s/veh	2.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	1	11	8	1	33
Future Vol, veh/h	14	1	11	8	1	33
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	18	1	14	10	1	41
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	63	20	0	0	25	0
Stage 1	20	-	-	-	-	-
Stage 2	43	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	948	1064	-	-	1603	-
Stage 1	1008	-	-	-	-	-
Stage 2	985	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	946	1063	-	-	1601	-
Mov Cap-2 Maneuver	946	-	-	-	-	-
Stage 1	1006	-	-	-	-	-
Stage 2	985	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	8.9	0		0.2		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	- 953		1601	-	
HCM Lane V/C Ratio	-	- 0.02		0.001	-	
HCM Control Delay (s)	-	- 8.9		7.2	0	
HCM Lane LOS	-	- A		A	A	
HCM 95th %tile Q(veh)	-	- 0.1		0	-	

Intersection	
Intersection Delay, s/veh	11.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	177	7	143	119	29	5	37	179	33	57	10
Future Vol, veh/h	5	177	7	143	119	29	5	37	179	33	57	10
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	0	0	0	1	1	1	1	1	1	1	1	1
Mvmt Flow	6	197	8	159	132	32	6	41	199	37	63	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.8	12.9	10.8	10.1
HCM LOS	B	B	B	B




Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	2%	3%	49%	33%
Vol Thru, %	17%	94%	41%	57%
Vol Right, %	81%	4%	10%	10%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	221	189	291	100
LT Vol	5	5	143	33
Through Vol	37	177	119	57
RT Vol	179	7	29	10
Lane Flow Rate	246	210	323	111
Geometry Grp	1	1	1	1
Degree of Util (X)	0.345	0.312	0.472	0.178
Departure Headway (Hd)	5.054	5.351	5.251	5.761
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	710	670	685	621
Service Time	3.098	3.394	3.288	3.812
HCM Lane V/C Ratio	0.346	0.313	0.472	0.179
HCM Control Delay	10.8	10.8	12.9	10.1
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	1.5	1.3	2.5	0.6

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	44	421	4	14	314	15	7	4	3	14	5	27
Future Vol, veh/h	44	421	4	14	314	15	7	4	3	14	5	27
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	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	2	2	2	0	0	0	0	0	0
Mvmt Flow	47	448	4	15	334	16	7	4	3	15	5	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	350	0	0	452	0	0	933	924	450	920	918	342
Stage 1	-	-	-	-	-	-	544	544	-	372	372	-
Stage 2	-	-	-	-	-	-	389	380	-	548	546	-
Critical Hdwy	4.1	-	-	4.12	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.218	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1220	-	-	1109	-	-	248	271	613	254	274	705
Stage 1	-	-	-	-	-	-	527	522	-	653	622	-
Stage 2	-	-	-	-	-	-	639	617	-	524	521	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1220	-	-	1109	-	-	222	253	613	237	256	705
Mov Cap-2 Maneuver	-	-	-	-	-	-	222	253	-	237	256	-
Stage 1	-	-	-	-	-	-	500	495	-	620	611	-
Stage 2	-	-	-	-	-	-	597	607	-	490	494	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.3	19.2	15.5
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	268	1220	-	-	1109	-	-	393
HCM Lane V/C Ratio	0.056	0.038	-	-	0.013	-	-	0.125
HCM Control Delay (s)	19.2	8.1	0	-	8.3	0	-	15.5
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.4

Intersection						
Int Delay, s/veh	2.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	26	1	38	33	1	23
Future Vol, veh/h	26	1	38	33	1	23
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	32	1	47	41	1	28

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	100	70	0	0	90
Stage 1	70	-	-	-	-
Stage 2	30	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	904	998	-	-	1518
Stage 1	958	-	-	-	-
Stage 2	998	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	901	996	-	-	1515
Mov Cap-2 Maneuver	901	-	-	-	-
Stage 1	955	-	-	-	-
Stage 2	998	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	0.3
HCM LOS	A		





Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	904	1515
HCM Lane V/C Ratio	-	-	0.037	0.001
HCM Control Delay (s)	-	-	9.1	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0




Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	9	104	3	99	81	36	1	31	70	59	53	27
Future Vol, veh/h	9	104	3	99	81	36	1	31	70	59	53	27
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	0	0	0	2	2	2	4	4	4	5	5	5
Mvmt Flow	10	118	3	113	92	41	1	35	80	67	60	31
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9	10.1	8.6	9.5
HCM LOS	A	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	8%	46%	42%
Vol Thru, %	30%	90%	38%	38%
Vol Right, %	69%	3%	17%	19%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	102	116	216	139
LT Vol	1	9	99	59
Through Vol	31	104	81	53
RT Vol	70	3	36	27
Lane Flow Rate	116	132	245	158
Geometry Grp	1	1	1	1
Degree of Util (X)	0.15	0.178	0.324	0.219
Departure Headway (Hd)	4.673	4.869	4.753	5
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	762	732	751	714
Service Time	2.741	2.933	2.809	3.064
HCM Lane V/C Ratio	0.152	0.18	0.326	0.221
HCM Control Delay	8.6	9	10.1	9.5
HCM Lane LOS	A	A	B	A
HCM 95th-tile Q	0.5	0.6	1.4	0.8




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	21	245	1	4	213	14	4	3	7	27	1	66
Future Vol, veh/h	21	245	1	4	213	14	4	3	7	27	1	66
Conflicting Peds, #/hr	0	0	8	8	0	0	0	0	1	1	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	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	1	1	1	10	10	10	3	3	3
Mvmt Flow	23	269	1	4	234	15	4	3	8	30	1	73
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	249	0	0	278	0	0	611	581	279	572	574	242
Stage 1	-	-	-	-	-	-	324	324	-	250	250	-
Stage 2	-	-	-	-	-	-	287	257	-	322	324	-
Critical Hdwy	4.12	-	-	4.11	-	-	7.2	6.6	6.3	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.2	5.6	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.2	5.6	-	6.13	5.53	-
Follow-up Hdwy	2.218	-	-	2.209	-	-	3.59	4.09	3.39	3.527	4.027	3.327
Pot Cap-1 Maneuver	1317	-	-	1291	-	-	395	414	741	429	428	794
Stage 1	-	-	-	-	-	-	672	636	-	752	698	-
Stage 2	-	-	-	-	-	-	703	680	-	688	648	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1317	-	-	1281	-	-	349	400	735	414	414	794
Mov Cap-2 Maneuver	-	-	-	-	-	-	349	400	-	414	414	-
Stage 1	-	-	-	-	-	-	653	618	-	736	695	-
Stage 2	-	-	-	-	-	-	635	677	-	662	629	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.6			0.1			12.6			11.9		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	491	1317	-	-	1281	-	-	624				
HCM Lane V/C Ratio	0.031	0.018	-	-	0.003	-	-	0.166				
HCM Control Delay (s)	12.6	7.8	0	-	7.8	0	-	11.9				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.6				

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	4	1	36	95	1
Future Vol, veh/h	1	4	1	36	95	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	4	1	39	103	1

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	145	104	104	0	-	0
Stage 1	104	-	-	-	-	-
Stage 2	41	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	847	951	1488	-	-	-
Stage 1	920	-	-	-	-	-
Stage 2	981	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	846	951	1488	-	-	-
Mov Cap-2 Maneuver	846	-	-	-	-	-
Stage 1	919	-	-	-	-	-
Stage 2	981	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1488	-	928	-	-
HCM Lane V/C Ratio	0.001	-	0.006	-	-
HCM Control Delay (s)	7.4	0	8.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-




Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	4	1	35	91	1
Future Vol, veh/h	1	4	1	35	91	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	4	1	38	99	1

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	140	100	100	0	-	0
Stage 1	100	-	-	-	-	-
Stage 2	40	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	853	956	1493	-	-	-
Stage 1	924	-	-	-	-	-
Stage 2	982	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	852	956	1493	-	-	-
Mov Cap-2 Maneuver	852	-	-	-	-	-
Stage 1	923	-	-	-	-	-
Stage 2	982	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1493	-	933	-	-
HCM Lane V/C Ratio	0.001	-	0.006	-	-
HCM Control Delay (s)	7.4	0	8.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-




Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	1	16	14	1	1	6	21	8	1	62	1
Future Vol, veh/h	1	1	16	14	1	1	6	21	8	1	62	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	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	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	0	0	0	0	0	0	0	0	0
Mvmt Flow	1	1	20	18	1	1	8	26	10	1	78	1
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	129	134	79	139	129	32	79	0	0	37	0	0
Stage 1	81	81	-	48	48	-	-	-	-	-	-	-
Stage 2	48	53	-	91	81	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	844	757	981	836	765	1048	1532	-	-	1587	-	-
Stage 1	927	828	-	971	859	-	-	-	-	-	-	-
Stage 2	965	851	-	921	832	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	838	752	981	813	760	1047	1532	-	-	1585	-	-
Mov Cap-2 Maneuver	838	752	-	813	760	-	-	-	-	-	-	-
Stage 1	922	827	-	965	854	-	-	-	-	-	-	-
Stage 2	958	846	-	900	831	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	8.9		9.5		1.3		0.1					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1532	-	-	956	821	1585	-	-				
HCM Lane V/C Ratio	0.005	-	-	0.024	0.024	0.001	-	-				
HCM Control Delay (s)	7.4	0	-	8.9	9.5	7.3	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-				




Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	14	5	15	45	1
Future Vol, veh/h	1	14	5	15	45	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	15	5	16	49	1

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	76	50	50
Stage 1	50	-	-
Stage 2	26	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	927	1018	1557
Stage 1	972	-	-
Stage 2	997	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	924	1018	1557
Mov Cap-2 Maneuver	924	-	-
Stage 1	969	-	-
Stage 2	997	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.6	1.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1557	-	1011	-	-
HCM Lane V/C Ratio	0.003	-	0.016	-	-
HCM Control Delay (s)	7.3	0	8.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-




Intersection						
Int Delay, s/veh	2.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	9	1	1	4	1	4
Future Vol, veh/h	9	1	1	4	1	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	1	1	4	1	4
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	11	0	17	11
Stage 1	-	-	-	-	11	-
Stage 2	-	-	-	-	6	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1608	-	1001	1070
Stage 1	-	-	-	-	1012	-
Stage 2	-	-	-	-	1017	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1608	-	1000	1070
Mov Cap-2 Maneuver	-	-	-	-	1000	-
Stage 1	-	-	-	-	1011	-
Stage 2	-	-	-	-	1017	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.4		8.4	
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	1055	-	-	1608	-	
HCM Lane V/C Ratio	0.005	-	-	0.001	-	
HCM Control Delay (s)	8.4	-	-	7.2	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0	-	-	0	-	

Intersection						
Int Delay, s/veh	3.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	5	1	1	3	1	4
Future Vol, veh/h	5	1	1	3	1	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	1	1	3	1	4

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	6	0	11
Stage 1	-	-	-	-	6
Stage 2	-	-	-	-	5
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1615	-	1009
Stage 1	-	-	-	-	1017
Stage 2	-	-	-	-	1018
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1615	-	1008
Mov Cap-2 Maneuver	-	-	-	-	1008
Stage 1	-	-	-	-	1016
Stage 2	-	-	-	-	1018

Approach	EB	WB	NB
HCM Control Delay, s	0	1.8	8.4
HCM LOS			A




Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1062	-	-	1615	-
HCM Lane V/C Ratio	0.005	-	-	0.001	-
HCM Control Delay (s)	8.4	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-




Intersection						
Int Delay, s/veh	3.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	5	1	1	3	4	1
Future Vol, veh/h	5	1	1	3	4	1
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	1	1	3	4	1

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	6	0	11
Stage 1	-	-	-	-	6
Stage 2	-	-	-	-	5
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1615	-	1009
Stage 1	-	-	-	-	1017
Stage 2	-	-	-	-	1018
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1615	-	1008
Mov Cap-2 Maneuver	-	-	-	-	1008
Stage 1	-	-	-	-	1016
Stage 2	-	-	-	-	1018

Approach	EB	WB	NB
HCM Control Delay, s	0	1.8	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1021	-	-	1615	-
HCM Lane V/C Ratio	0.005	-	-	0.001	-
HCM Control Delay (s)	8.5	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection						
Int Delay, s/veh	2.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	6	1	1	7	3	1
Future Vol, veh/h	6	1	1	7	3	1
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	1	1	8	3	1
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	8	0	18	8
Stage 1	-	-	-	-	8	-
Stage 2	-	-	-	-	10	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1612	-	1000	1074
Stage 1	-	-	-	-	1015	-
Stage 2	-	-	-	-	1013	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1612	-	999	1074
Mov Cap-2 Maneuver	-	-	-	-	999	-
Stage 1	-	-	-	-	1014	-
Stage 2	-	-	-	-	1013	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.9		8.6	
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	1017	-	-	1612	-	
HCM Lane V/C Ratio	0.004	-	-	0.001	-	
HCM Control Delay (s)	8.6	-	-	7.2	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0	-	-	0	-	

Intersection						
Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	19	1	1	23	1	1
Future Vol, veh/h	19	1	1	23	1	1
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	1	1	25	1	1
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	22	0	49	22
Stage 1	-	-	-	-	22	-
Stage 2	-	-	-	-	27	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1593	-	960	1055
Stage 1	-	-	-	-	1001	-
Stage 2	-	-	-	-	996	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1593	-	959	1055
Mov Cap-2 Maneuver	-	-	-	-	959	-
Stage 1	-	-	-	-	1000	-
Stage 2	-	-	-	-	996	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.3		8.6	
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1		EBT	EBR	WBL	WBT
Capacity (veh/h)	1005		-	-	1593	-
HCM Lane V/C Ratio	0.002		-	-	0.001	-
HCM Control Delay (s)	8.6		-	-	7.3	0
HCM Lane LOS	A		-	-	A	A
HCM 95th %tile Q(veh)	0		-	-	0	-

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	1	1	12	12	1	1	4	61	4	1	70	1
Future Vol, veh/h	1	1	12	12	1	1	4	61	4	1	70	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	13	13	1	1	4	66	4	1	76	1
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	156	157	77	162	155	68	77	0	0	70	0	0
Stage 1	79	79	-	76	76	-	-	-	-	-	-	-
Stage 2	77	78	-	86	79	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	810	735	984	803	737	995	1522	-	-	1531	-	-
Stage 1	930	829	-	933	832	-	-	-	-	-	-	-
Stage 2	932	830	-	922	829	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	806	732	984	789	734	995	1522	-	-	1531	-	-
Mov Cap-2 Maneuver	806	732	-	789	734	-	-	-	-	-	-	-
Stage 1	927	828	-	930	830	-	-	-	-	-	-	-
Stage 2	927	828	-	908	828	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	8.9		9.6		0.4		0.1					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1522	-	-	946	797	1531	-	-				
HCM Lane V/C Ratio	0.003	-	-	0.016	0.019	0.001	-	-				
HCM Control Delay (s)	7.4	0	-	8.9	9.6	7.4	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-				

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	1	7	18	1	1	2	69	6	1	95	1
Future Vol, veh/h	1	1	7	18	1	1	2	69	6	1	95	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	8	20	1	1	2	75	7	1	103	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	190	192	104	193	189	79	104	0	0	82	0	0
Stage 1	106	106	-	83	83	-	-	-	-	-	-	-
Stage 2	84	86	-	110	106	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	770	703	951	767	706	981	1488	-	-	1515	-	-
Stage 1	900	807	-	925	826	-	-	-	-	-	-	-
Stage 2	924	824	-	895	807	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	767	702	951	759	705	981	1488	-	-	1515	-	-
Mov Cap-2 Maneuver	767	702	-	759	705	-	-	-	-	-	-	-
Stage 1	899	806	-	924	825	-	-	-	-	-	-	-
Stage 2	921	823	-	886	806	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.1		9.8		0.2		0.1	
HCM LOS	A		A					




Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1488	-	-	892	765	1515	-
HCM Lane V/C Ratio	0.001	-	-	0.011	0.028	0.001	-
HCM Control Delay (s)	7.4	0	-	9.1	9.8	7.4	0
HCM Lane LOS	A	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	0	0	11	0	1	0	77	4	1	120	0
Future Vol, veh/h	0	0	0	11	0	1	0	77	4	1	120	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	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	12	0	1	0	84	4	1	130	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	219	220	130	218	218	86	130	0	0	88	0	0
Stage 1	132	132	-	86	86	-	-	-	-	-	-	-
Stage 2	87	88	-	132	132	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	737	678	920	738	680	973	1455	-	-	1508	-	-
Stage 1	871	787	-	922	824	-	-	-	-	-	-	-
Stage 2	921	822	-	871	787	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	736	677	920	737	679	973	1455	-	-	1508	-	-
Mov Cap-2 Maneuver	736	677	-	737	679	-	-	-	-	-	-	-
Stage 1	871	786	-	922	824	-	-	-	-	-	-	-
Stage 2	920	822	-	870	786	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	9.9	0	0.1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1455	-	-	-	752	1508	-
HCM Lane V/C Ratio	-	-	-	-	0.017	0.001	-
HCM Control Delay (s)	0	-	-	0	9.9	7.4	0
HCM Lane LOS	A	-	-	A	A	A	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0	-

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	8	3	81	131	1
Future Vol, veh/h	1	8	3	81	131	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	9	3	88	142	1
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	237	143	143	0	-	0
Stage 1	143	-	-	-	-	-
Stage 2	94	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	751	905	1440	-	-	-
Stage 1	884	-	-	-	-	-
Stage 2	930	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	749	905	1440	-	-	-
Mov Cap-2 Maneuver	749	-	-	-	-	-
Stage 1	882	-	-	-	-	-
Stage 2	930	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.1	0.3		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1440	-	885	-	-	
HCM Lane V/C Ratio	0.002	-	0.011	-	-	
HCM Control Delay (s)	7.5	0	9.1	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

Intersection	
Intersection Delay, s/veh	20.8
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	20	300	7	190	123	80	5	67	186	59	75	19
Future Vol, veh/h	20	300	7	190	123	80	5	67	186	59	75	19
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	0	0	0	1	1	1	1	1	1	1	1	1
Mvmt Flow	22	333	8	211	137	89	6	74	207	66	83	21
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	20.7	26.5	16.3	14.1
HCM LOS	C	D	C	B




Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	2%	6%	48%	39%
Vol Thru, %	26%	92%	31%	49%
Vol Right, %	72%	2%	20%	12%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	258	327	393	153
LT Vol	5	20	190	59
Through Vol	67	300	123	75
RT Vol	186	7	80	19
Lane Flow Rate	287	363	437	170
Geometry Grp	1	1	1	1
Degree of Util (X)	0.514	0.647	0.758	0.346
Departure Headway (Hd)	6.456	6.41	6.253	7.32
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	553	560	572	495
Service Time	4.555	4.507	4.346	5.32
HCM Lane V/C Ratio	0.519	0.648	0.764	0.343
HCM Control Delay	16.3	20.7	26.5	14.1
HCM Lane LOS	C	C	D	B
HCM 95th-tile Q	2.9	4.6	6.7	1.5




Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	81	443	4	14	351	38	7	4	3	27	5	49
Future Vol, veh/h	81	443	4	14	351	38	7	4	3	27	5	49
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	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	2	2	2	0	0	0	0	0	0
Mvmt Flow	86	471	4	15	373	40	7	4	3	29	5	52





Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	413	0	0	475	0	0	1097	1088	473	1072	1070	393
Stage 1	-	-	-	-	-	-	645	645	-	423	423	-
Stage 2	-	-	-	-	-	-	452	443	-	649	647	-
Critical Hdwy	4.1	-	-	4.12	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.218	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1157	-	-	1087	-	-	192	218	595	200	223	660
Stage 1	-	-	-	-	-	-	464	471	-	613	591	-
Stage 2	-	-	-	-	-	-	591	579	-	462	470	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1157	-	-	1087	-	-	158	192	595	178	197	660
Mov Cap-2 Maneuver	-	-	-	-	-	-	158	192	-	178	197	-
Stage 1	-	-	-	-	-	-	417	423	-	551	580	-
Stage 2	-	-	-	-	-	-	530	569	-	409	423	-




Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	0.3	24.5	20.2
HCM LOS			C	C




Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	199	1157	-	-	1087	-	-	322
HCM Lane V/C Ratio	0.075	0.074	-	-	0.014	-	-	0.268
HCM Control Delay (s)	24.5	8.4	0	-	8.4	0	-	20.2
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0.2	-	-	0	-	-	1.1

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	3	4	127	81	1
Future Vol, veh/h	1	3	4	127	81	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	3	4	138	88	1
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	235	89	89	0	-	0
Stage 1	89	-	-	-	-	-
Stage 2	146	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	753	969	1506	-	-	-
Stage 1	934	-	-	-	-	-
Stage 2	881	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	751	969	1506	-	-	-
Mov Cap-2 Maneuver	751	-	-	-	-	-
Stage 1	931	-	-	-	-	-
Stage 2	881	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9	0.2		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1506	-	903	-	-	
HCM Lane V/C Ratio	0.003	-	0.005	-	-	
HCM Control Delay (s)	7.4	0	9	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	3	4	123	78	1
Future Vol, veh/h	1	3	4	123	78	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	3	4	134	85	1
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	228	86	86	0	-	0
Stage 1	86	-	-	-	-	-
Stage 2	142	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	760	973	1510	-	-	-
Stage 1	937	-	-	-	-	-
Stage 2	885	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	758	973	1510	-	-	-
Mov Cap-2 Maneuver	758	-	-	-	-	-
Stage 1	934	-	-	-	-	-
Stage 2	885	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9	0.2		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1510	-	909	-	-	
HCM Lane V/C Ratio	0.003	-	0.005	-	-	
HCM Control Delay (s)	7.4	0	9	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	1	10	26	1	1	18	72	33	1	42	1
Future Vol, veh/h	1	1	10	26	1	1	18	72	33	1	42	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	2	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	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	0	0	0	0	0	0	0	0	0
Mvmt Flow	1	1	12	32	1	1	22	89	41	1	52	1
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	210	231	53	217	211	112	53	0	0	132	0	0
Stage 1	55	55	-	156	156	-	-	-	-	-	-	-
Stage 2	155	176	-	61	55	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	747	669	1014	744	690	947	1566	-	-	1466	-	-
Stage 1	957	849	-	851	772	-	-	-	-	-	-	-
Stage 2	847	753	-	955	853	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	736	657	1014	724	678	945	1566	-	-	1463	-	-
Mov Cap-2 Maneuver	736	657	-	724	678	-	-	-	-	-	-	-
Stage 1	943	848	-	837	759	-	-	-	-	-	-	-
Stage 2	832	740	-	941	852	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	8.9		10.2			1.1			0.2			
HCM LOS	A		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1566	-	-	942	728	1463	-	-				
HCM Lane V/C Ratio	0.014	-	-	0.016	0.047	0.001	-	-				
HCM Control Delay (s)	7.3	0	-	8.9	10.2	7.5	0	-				
HCM Lane LOS	A	A	-	A	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-				




Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	10	17	52	31	1
Future Vol, veh/h	1	10	17	52	31	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	11	18	57	34	1
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	128	35	35	0	-	0
Stage 1	35	-	-	-	-	-
Stage 2	93	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	866	1038	1576	-	-	-
Stage 1	987	-	-	-	-	-
Stage 2	931	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	856	1038	1576	-	-	-
Mov Cap-2 Maneuver	856	-	-	-	-	-
Stage 1	975	-	-	-	-	-
Stage 2	931	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.6	1.8		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1576	-	1018	-	-	
HCM Lane V/C Ratio	0.012	-	0.012	-	-	
HCM Control Delay (s)	7.3	0	8.6	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

Intersection						
Int Delay, s/veh	2.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	7	1	5	13	1	3
Future Vol, veh/h	7	1	5	13	1	3
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	1	5	14	1	3

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	9
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2	8.5
HCM LOS			A




Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1047	-	-	1611	-
HCM Lane V/C Ratio	0.004	-	-	0.003	-
HCM Control Delay (s)	8.5	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection						
Int Delay, s/veh	3.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	4	1	5	8	1	3
Future Vol, veh/h	4	1	5	8	1	3
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	1	5	9	1	3

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	5	0	24
Stage 1	-	-	-	-	5
Stage 2	-	-	-	-	19
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1616	-	992
Stage 1	-	-	-	-	1018
Stage 2	-	-	-	-	1004
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1616	-	989
Mov Cap-2 Maneuver	-	-	-	-	989
Stage 1	-	-	-	-	1015
Stage 2	-	-	-	-	1004

Approach	EB	WB	NB
HCM Control Delay, s	0	2.8	8.4
HCM LOS			A




Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1054	-	-	1616	-
HCM Lane V/C Ratio	0.004	-	-	0.003	-
HCM Control Delay (s)	8.4	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection						
Int Delay, s/veh	2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	4	4	1	8	3	1
Future Vol, veh/h	4	4	1	8	3	1
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	4	1	9	3	1

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	8	0	17
Stage 1	-	-	-	-	6
Stage 2	-	-	-	-	11
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1612	-	1001
Stage 1	-	-	-	-	1017
Stage 2	-	-	-	-	1012
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1612	-	1000
Mov Cap-2 Maneuver	-	-	-	-	1000
Stage 1	-	-	-	-	1016
Stage 2	-	-	-	-	1012

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	8.6
HCM LOS			A




Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1018	-	-	1612	-
HCM Lane V/C Ratio	0.004	-	-	0.001	-
HCM Control Delay (s)	8.6	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection						
Int Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	8	3	1	11	2	1
Future Vol, veh/h	8	3	1	11	2	1
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	3	1	12	2	1

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	12
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1607
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1607
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1015	-	-	1607	-
HCM Lane V/C Ratio	0.003	-	-	0.001	-
HCM Control Delay (s)	8.6	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	14	1	2	20	1	1
Future Vol, veh/h	14	1	2	20	1	1
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	1	2	22	1	1
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	16	0	42	16
Stage 1	-	-	-	-	16	-
Stage 2	-	-	-	-	26	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1602	-	969	1063
Stage 1	-	-	-	-	1007	-
Stage 2	-	-	-	-	997	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1602	-	968	1063
Mov Cap-2 Maneuver	-	-	-	-	968	-
Stage 1	-	-	-	-	1006	-
Stage 2	-	-	-	-	997	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.7		8.6	
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	1013	-	-	1602	-	
HCM Lane V/C Ratio	0.002	-	-	0.001	-	
HCM Control Delay (s)	8.6	-	-	7.2	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0	-	-	0	-	

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	8	8	1	1	14	95	14	1	103	1
Future Vol, veh/h	1	1	8	8	1	1	14	95	14	1	103	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	9	9	1	1	15	103	15	1	112	1
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	257	263	113	261	256	111	113	0	0	118	0	0
Stage 1	115	115	-	141	141	-	-	-	-	-	-	-
Stage 2	142	148	-	120	115	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	696	642	940	692	648	942	1476	-	-	1470	-	-
Stage 1	890	800	-	862	780	-	-	-	-	-	-	-
Stage 2	861	775	-	884	800	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	688	634	940	678	640	942	1476	-	-	1470	-	-
Mov Cap-2 Maneuver	688	634	-	678	640	-	-	-	-	-	-	-
Stage 1	880	799	-	853	771	-	-	-	-	-	-	-
Stage 2	849	766	-	874	799	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9.2		10.3		0.8		0.1					
HCM LOS	A		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1476	-	-	866	693	1470	-	-				
HCM Lane V/C Ratio	0.01	-	-	0.013	0.016	0.001	-	-				
HCM Control Delay (s)	7.5	0	-	9.2	10.3	7.5	0	-				
HCM Lane LOS	A	A	-	A	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-				




Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	1	4	12	1	1	7	124	21	1	120	1
Future Vol, veh/h	1	1	4	12	1	1	7	124	21	1	120	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	4	13	1	1	8	135	23	1	130	1
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	297	307	131	298	296	147	131	0	0	158	0	0
Stage 1	133	133	-	163	163	-	-	-	-	-	-	-
Stage 2	164	174	-	135	133	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	655	607	919	654	616	900	1454	-	-	1422	-	-
Stage 1	870	786	-	839	763	-	-	-	-	-	-	-
Stage 2	838	755	-	868	786	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	650	603	919	647	612	900	1454	-	-	1422	-	-
Mov Cap-2 Maneuver	650	603	-	647	612	-	-	-	-	-	-	-
Stage 1	865	785	-	834	758	-	-	-	-	-	-	-
Stage 2	831	750	-	862	785	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9.6		10.6		0.3		0.1					
HCM LOS	A		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1454	-	-	795	658	1422	-	-				
HCM Lane V/C Ratio	0.005	-	-	0.008	0.023	0.001	-	-				
HCM Control Delay (s)	7.5	0	-	9.6	10.6	7.5	0	-				
HCM Lane LOS	A	A	-	A	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-				

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	7	0	1	0	152	12	1	136	0
Future Vol, veh/h	0	0	0	7	0	1	0	152	12	1	136	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	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	8	0	1	0	165	13	1	148	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	322	328	148	322	322	172	148	0	0	178	0	0
Stage 1	150	150	-	172	172	-	-	-	-	-	-	-
Stage 2	172	178	-	150	150	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	631	591	899	631	595	872	1434	-	-	1398	-	-
Stage 1	853	773	-	830	756	-	-	-	-	-	-	-
Stage 2	830	752	-	853	773	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	630	590	899	630	594	872	1434	-	-	1398	-	-
Mov Cap-2 Maneuver	630	590	-	630	594	-	-	-	-	-	-	-
Stage 1	853	772	-	830	756	-	-	-	-	-	-	-
Stage 2	829	752	-	852	772	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.6	0	0.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1434	-	-	-	653	1398	-
HCM Lane V/C Ratio	-	-	-	-	0.013	0.001	-
HCM Control Delay (s)	0	-	-	0	10.6	7.6	0
HCM Lane LOS	A	-	-	A	B	A	A
HCM 95th %tile Q(veh)	0	-	-	-	0	0	-

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	5	9	164	143	1
Future Vol, veh/h	1	5	9	164	143	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	5	10	178	155	1
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	354	156	156	0	-	0
Stage 1	156	-	-	-	-	-
Stage 2	198	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	644	890	1424	-	-	-
Stage 1	872	-	-	-	-	-
Stage 2	835	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	639	890	1424	-	-	-
Mov Cap-2 Maneuver	639	-	-	-	-	-
Stage 1	865	-	-	-	-	-
Stage 2	835	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.3	0.4		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1424	-	835	-	-	
HCM Lane V/C Ratio	0.007	-	0.008	-	-	
HCM Control Delay (s)	7.5	0	9.3	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

ORDINANCE NO. 1501

AN ORDINANCE, PROCLAIMING ANNEXATION INTO THE CITY OF CANBY, OREGON 47.647 ACRES INCLUDING 43.79 ACRES OF REAL PROPERTY DESCRIBED AS TAX LOTS 100, 200, 400, 401, 500, 600, 601, 700 AND 800 SITUATED IN THE SE ¼ & SW ¼, SEC. 35, T.3S., R.1E., W.M. (TAX MAP 31E28C); AND APPROX. 3.857 ACRES OF ADJACENT ROAD RIGHT-OF-WAY; AND AMENDING THE EXISTING COUNTY ZONING FROM RURAL RESIDENTIAL FARM FOREST FIVE ACRE (RRFF-5) TO CITY LOW DENSITY RESIDENTIAL (R-1) FOR THE ENTIRE AREA; AND SETTING THE BOUNDARIES OF THE PROPERTY TO BE INCLUDED WITHIN THE CANBY CITY LIMITS.

WHEREAS, on January 16, 2019, at a public hearing the City Council of the City of Canby approved by a vote of 5 to 0, Annexation (ANN 18-05/ZC 18-06) which called for the annexation of 47.647 acres into the City of Canby. The applicant is Stafford Development Company, LLC. The co-applicant's and owners of the Tax Lots which are part of the annexation are Dodds (Tax Lots 400 & 500), Montecucco Rentals, LLC (Tax Lots 100 & 800), Burkert (Tax Lots 600 & 601), Gordon (Tax Lot 700), Hemmerling Nursery, LLC (Tax Lot 401) and City of Canby (Tax Lot 200), all of Tax Map 31E28C. A complete legal description and survey map that delineates the tax lots and portions of applicable adjacent abutting street right-of-ways to be annexed and is attached hereto as Exhibit A & B respectively and by this reference are incorporated herein; and

WHEREAS, Pursuant to CMC 16.84.080, the City must proclaim by ordinance or resolution, the annexation of said property into the City and set the boundaries of the property by legal description; and

WHEREAS, the zoning of the annexed land shall be designated as R-1 Low Density Residential to conform with the Canby Comprehensive Plan Map, and such zoning shall be indicated on the official zoning map for the City of Canby; and

WHEREAS, an application was filed with the City by the applicants listed above to change the zoning of nine parcels as indicated herein and where applicable within the City's Urban Growth Boundary the city zoning will be extended to the centerline of the annexed adjacent public streets; and

WHEREAS, a public hearing was conducted by the Canby Planning Commission on December 10, 2018 after public notices were mailed, posted and published in the Canby Herald, as required by law; and

WHEREAS, the Canby Planning Commission heard and considered testimony regarding the annexation, accompanying zone change and the proposed Development Concept Plan required for this annexation by Figure 16.84.040 of Chapter 16.84 of the Land Development and Planning Ordinance at the public hearing. At the conclusion of the public hearing, the Planning Commission by a vote of 3 to 3 with one abstention failed to garner a majority vote, therefore forwarding a

recommendation that the City Council deny the applications with the Planning Commission written Findings, Conclusions and Order to be approved on January 14, 2019; and

WHEREAS, the Canby City Council considered the matter and the recommendation of the Planning Commission following their own public hearing held at a regular meeting on January 16, 2019; and

WHEREAS, the Canby City Council, after considering the applicant's submittal, the staff report, the Planning Commission's hearing record and their recommendation documented in their written Findings, Conclusions and Order and after conducting its own public hearing; voted to approve the annexation and associated zoning designation for the properties and adopted a the N Holly Concept Development Plan for the area which is required prior to granting a zone change; and

WHEREAS, the written Findings, Conclusions and Order of the Council action is to be approved by the City Council at the next regular Council meeting on February 6, 2019; and

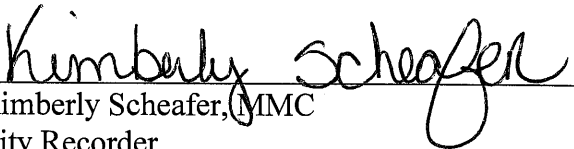
NOW, THEREFORE, THE CITY OF CANBY ORDAINS AS FOLLOWS:

Section 1. It is hereby proclaimed by the City Council of Canby that 47.647 acres of property described, set, and shown in Exhibit A & B and attached hereto, is annexed into the corporate limits of the City of Canby, Oregon.

Section 2. The annexed land shall be rezoned from the county Rural Residential Farm Forest (RRFF-5) to city Low Density Residential (R-1) as reflected on the Canby's Comprehensive Plan Map and as indicated by Tax Lot and legal description in this Ordinance. The Mayor, attested by the City Recorder, is hereby authorized and directed to have the zone change made to the official zoning map for the City of Canby.

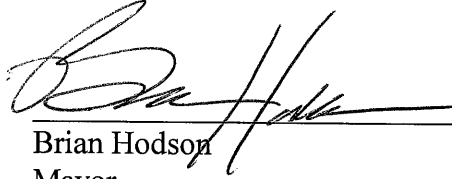
Section 3. A Concept Development Plan for the area is adopted with any revisions specified within the written Council Findings, Conclusion and Order.

SUBMITTED to the Council and read the first time at a regular meeting thereof on January 16, 2019 and ordered posted in three (3) public and conspicuous places in the City of Canby as specified in the Canby City Charter, and scheduled for second reading before the City Council for final reading and action at a regular meeting thereof on February 6, 2019, commencing at the hour of 7:00 PM at the Council Meeting Chambers located at 222 NE 2nd Avenue, 1st Floor, Canby, Oregon.


 Kimberly Scheafer, MMC
 City Recorder

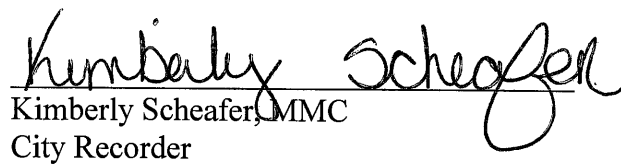
PASSED on the second and final reading by the Canby City Council at a regular meeting thereof on February 6, 2019 by the following vote:

YEAS 6 NAYS 0



Brian Hodson
Mayor

ATTEST:



Kimberly Scheafer, MMC
City Recorder

EXHIBIT A

Legal Description For:

Annexation of lands into the City of Canby

A tract of land, situated in the southeast one-quarter and southwest one-quarter of Section 28, Township 3 South, Range 1 East of the Willamette Meridian in Clackamas County, Oregon, the perimeter of said tract being more particularly described as follows:

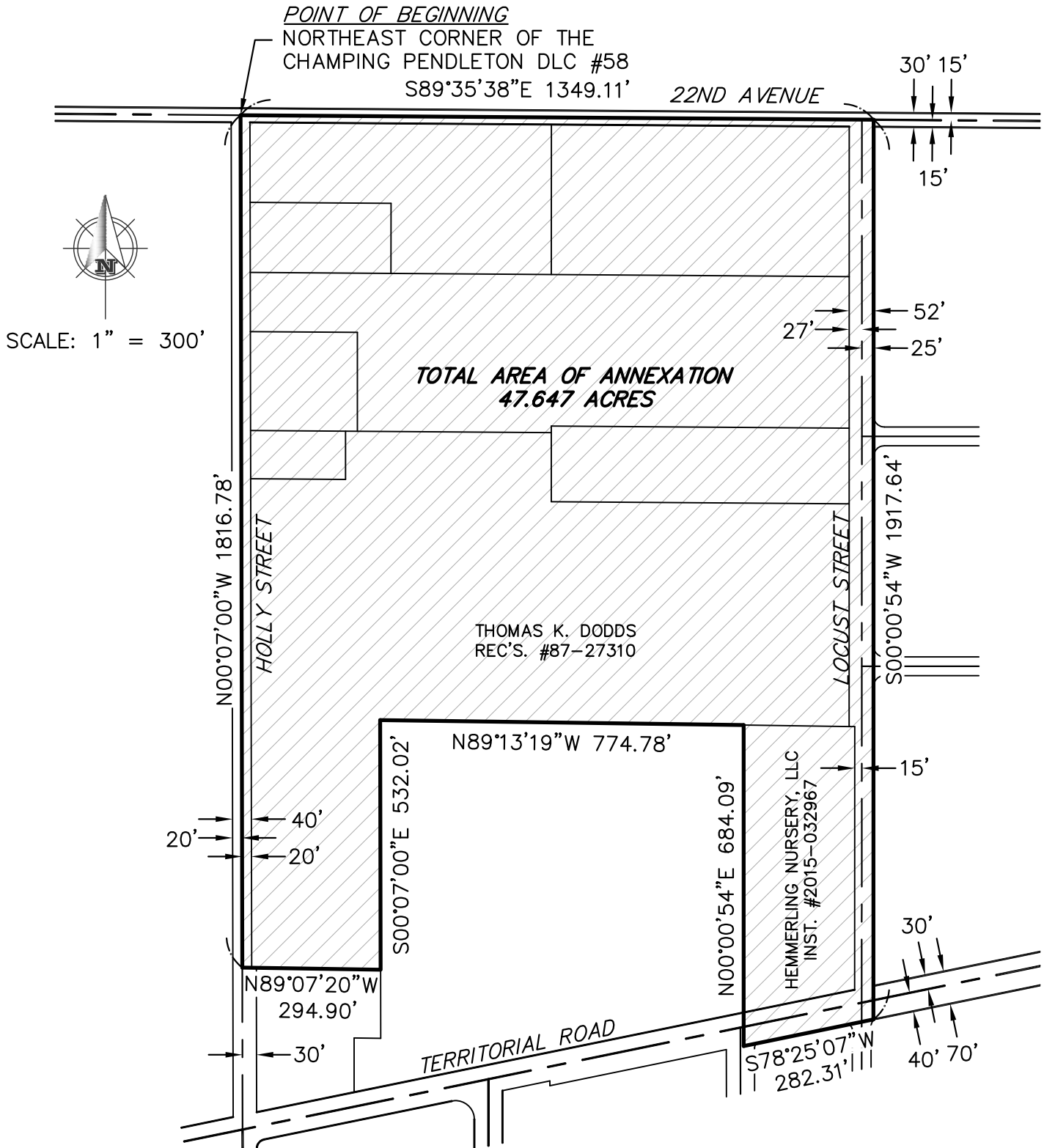
Beginning at the northeast corner of the CHAMPING PENDLETON Donation Land Claim Number 58, said corner also being the intersection of the centerlines of HOLLY STREET and 22ND AVENUE; thence South $89^{\circ}35'38''$ East 1349.11 feet along the centerline of said 22ND AVENUE to a point on the northerly extension of the east right of way of LOCUST STREET that is 25.00 feet easterly of the centerline of said LOCUST STREET when measured at right angles thereto; thence South $00^{\circ}00'54''$ West 1917.64 feet along said east right of way and the northerly and southerly extensions thereof to a point that is 40.00 feet southerly of the centerline of TERRITORIAL ROAD when measured at right angles thereto; thence South $78^{\circ}25'07''$ West 282.31 feet parallel with said centerline to a point on the southerly extension of the west line of that tract of land described in deed to HEMMERLING NURSERY, LLC, recorded June 1, 2015 in Instrument Number 2015-032967, Clackamas County Deed Records; thence North $00^{\circ}00'54''$ East 684.09 feet along said west line and the southerly extension thereof to a point on the south line of that tract of land described in deed to THOMAS K. DODDS, recorded June 17, 1987 in Recorder's Number 87-27310, Clackamas County Deed Records; thence North $89^{\circ}13'19''$ West 774.78 feet along said south line to the re-entrant corner of said south line; thence South $00^{\circ}07'00''$ East 532.02 feet along the north-south portion of said south line to the most southerly southeast corner of said THOMAS K. DODDS tract; thence North $89^{\circ}07'20''$ West 294.90 feet along the south line of said THOMAS K. DODDS tract to the southwest corner of said tract, being a point on the centerline of HOLLY STREET; thence North $00^{\circ}07'00''$ West 1816.78 feet along said centerline to the Point of Beginning, containing 47.647 acres of land more or less, as shown on attached Exhibit B.

EXCEPTING THEREFROM any portion of the above described lands already lying within the city limits of the City of Canby, Clackamas County, Oregon.

EXHIBIT B

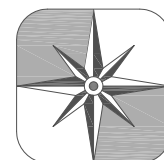
736

FOR: ANNEXATION OF LANDS INTO THE CITY OF CANBY
LOCATED IN THE SE 1/4 AND SW 1/4 OF SEC. 28, T. 3 S., R. 1 E., W.M.
CLACKAMAS COUNTY, OREGON



SCALE: 1" = 300'

3657 KASHMIR WAY SE
SALEM, OREGON 97317
PHONE (503) 588-8800
FAX (503) 363-2469
EMAIL: INFO@BARKERWILSON.COM




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SURVEYING**

**CURRAN-McLEOD, INC.
CONSULTING ENGINEERS**6655 S.W. HAMPTON STREET, SUITE 210
PORTLAND, OREGON 97223

April 22, 2021

MEMORANDUM

TO: Erik Forsell
City of Canby Planning Department

FROM: Hassan Ibrahim, P.E. 
Curran-McLeod, Inc.

RE: **CITY OF CANBY
TERRITORIAL ROAD SUBDIVISION**

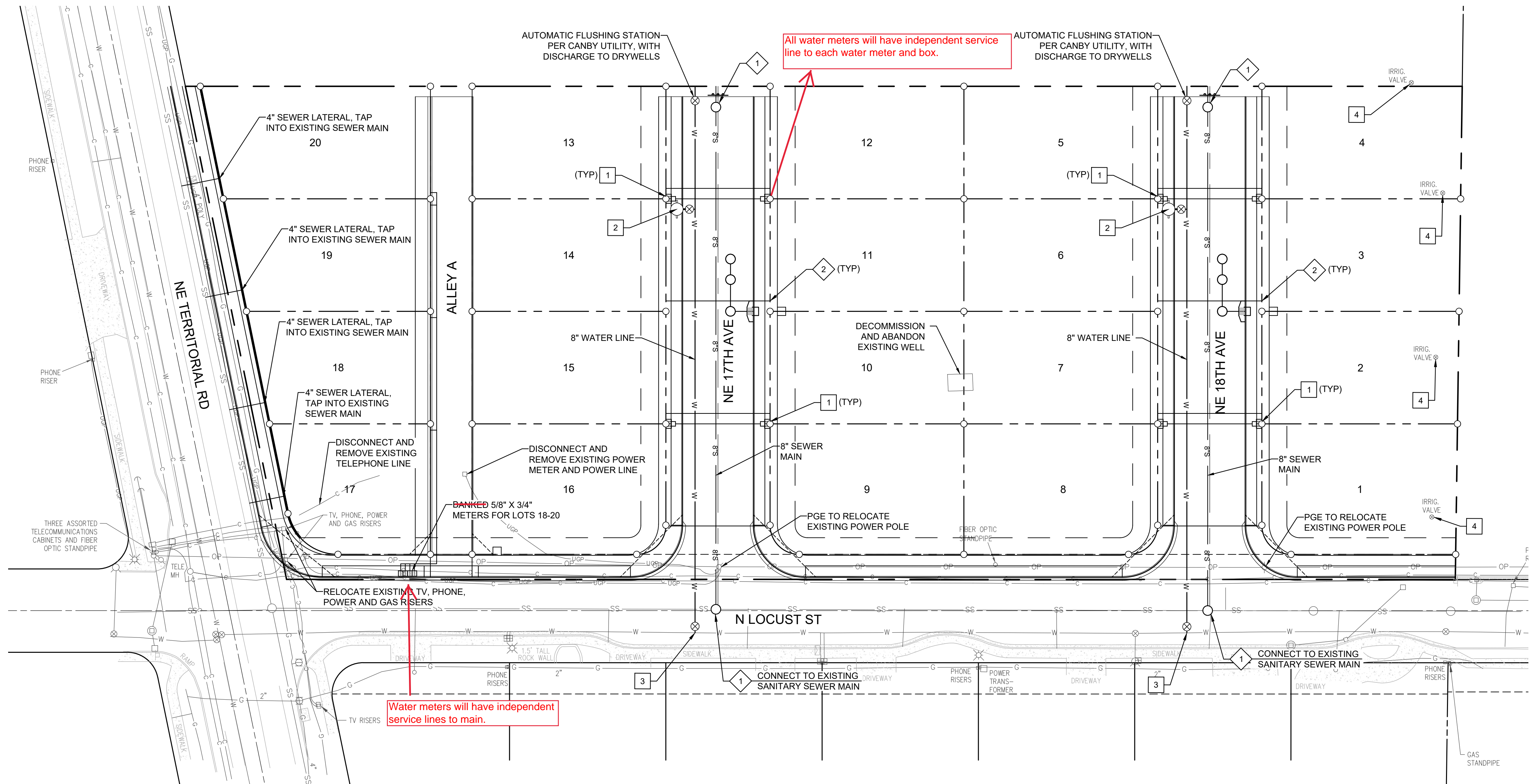
We have reviewed the submitted preliminary plans and materials on the above referenced project and have the following comments:

1. NE Territorial Rd is a City road and is classified by the City Transportation System Plan (TSP) as a collector road. The existing right-of-way along the entire site frontage is 60 feet wide, additional right of way may be required to accommodate the paved width. Half street improvements to include curb, a minimum paved width of 46 feet, 6 feet wide concrete sidewalks, 6 feet wide bike lane, ADA ramps, streetlights and utilities extensions as needed. The public improvements shall be constructed in conformance with section 2.207 of the City of Canby Public Works Design Standards, dated December 2019. A 12 feet wide public utility easement will also be required.
2. N Locust Street will become a City street on May 6, 2021 and is classified as a local street. Half street improvements will be required along the entire site frontage with a minimum ultimate half right of way dedication of 25 feet. The public improvements shall include curb and gutter, total paved surface of 34 feet, 5 feet wide planter with street trees, 6 feet wide sidewalks, streetlights and utilities in conformance with Chapter 2 of the City of Canby Public Works Design Standards, dated December 2019. A 12 feet wide public utility easement will also be required.
3. NE 17th Ave and NE 18th Ave shall be designed and constructed to City local street standards with 34-foot paved width, curb and gutter, 5 feet wide planter with street trees, 6 feet wide sidewalks, streetlights and utilities in conformance with Chapter 2 of the City of Canby Public Works Design Standards, dated December 2019. A 12 feet wide public utility easement will also be required.

4. The proposed alley shall be constructed with 20 feet wide paved surface, curb and gutter on both sides and 5 feet wide curb tight sidewalk on one side of the alley. The access on N Locust Street shall have a commercial driveway approach consisting of a minimum 6" concrete thickness with reinforcements or welded wire mesh fabric as referenced on City of Canby standard drawing no. 104.
5. All interior striping, street names and traffic signs shall be installed by the developer as part of this development. The developer's design engineer will be required to submit as part of the construction plans a signing and striping plan. The City may supply the required traffic and street name signs based on a mutually agreed cost.
6. Temporary turnarounds will be required at the terminus of the proposed alley, NE 17th Ave and NE 18th Ave as required by Canby Fire District.
7. As part of the final design, the developer's design engineer shall provide a minimum of 200-foot future centerline street profile extension in each direction on Territorial Rd, Alley, NE 17th Ave, NE 18th Ave and N Locust street to assure future grades can be met at all the adjoining properties or match the existing centerline along existing streets.
8. Street trees shall be selected from the City approved tree list. The street tree ordinance requires the developer to pay the City \$250 per tree for installation and two (2) year period maintenance, the property owners will take over all of the responsibilities after that date.
9. A demolition permit will be required from Clackamas County prior to demoing the existing garage on-site.
10. An erosion control permit will be required from the City of Canby prior to any on-site disturbance.
11. Sanitary sewer lines exist on NE Territorial Rd and N Locust Street. A minimum of 8-inch public sanitary sewer line will be required to extend and serve this development.
12. All private storm drainage discharge shall be disposed on-site, the design methodology shall be in conformance with the City of Canby, as per Chapter 4-4.113 of the City of Canby Public Works Design Standards dated December 2019.
13. All the ADA ramps shall be designed and inspected to meet the current Public Right of Way Accessibility Guidelines (PROWAG).

14. Storm drainage analysis weren't submitted with this application. The developer's engineer will be required to demonstrate how the storm runoff generated from the new impervious surfaces will be disposed. If drywells (UIC) are used as a means to discharge storm runoff from the private streets, they must meet the following criteria: The UIC structures location shall meet at least one of the two conditions: (1) the vertical separation distance between the UIC and seasonal high groundwater is more than 2.5 feet or (2) the horizontal separation distance between the UIC and any water well is a minimum of 267 feet in accordance of the City of Canby Stormwater Master Plan, Appendix "C", Groundwater Protectiveness Demonstration and Risk Prioritization for Underground Injection Control (UIC) Devices. The storm drainage report shall be in conformance with the requirements as stated in Chapter 4 of the City of Canby Public Works Design Standards dated December 2019.
15. Any existing domestic or irrigation wells shall be abandoned in conformance with OAR 690-220-0030. A copy of Oregon water Rights Department (OWRD) abandonment certificate shall be submitted to the City.
16. Any existing on-site sewage disposal system shall be abandoned in conformance with DEQ and Clackamas County Water Environmental Services (WES) regulations. A copy of the septic tank removal certificate shall be submitted to the City.
17. Water Services/ Fire Protection shall also be constructed in conformance with Canby Utility and Canby Fire Department requirements.

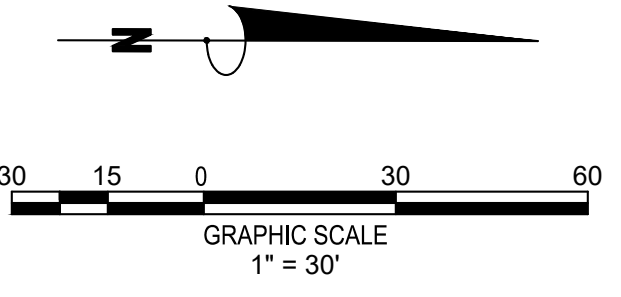
Should you have any questions or need additional information, please let me know.



- SANITARY SEWER KEY NOTES**
- 1. SANITARY SEWER MANHOLE
 - 2. 4" SEWER LATERAL WITH CLEANOUT, TEE-WYE TO MAIN

- WATER AND FIRE KEYED NOTES**
- 1. DOUBLE 5/8" x 3/4" WATER METERS FOR SINGLE FAMILY RESIDENTIAL SERVICE, 18" BEHIND PLANTER STRIP
 - 2. FIRE HYDRANT
 - 3. 8" GATE VALVE, CONNECT TO EXISTING 8" WATER LINE
 - 4. DISCONNECT AND REMOVE EXISTING IRRIGATION VALVE AND ASSOCIATED SPRINKLER SYSTEM

- NOTES:**
- 1. STREET LIGHT DESIGN AND INSTALL BY CANBY UTILITY. CONTRACTOR TO EXCAVATE AT LIGHT POLE LOCATION.



THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

ATWELL
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PORTLAND, OR 97225
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COMPOSITE UTILITY PLAN
LAND USE PLANS
TERRITORIAL ROAD SUBDIVISION
CANBY, OREGON

811
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REVISIONS:

NOT FOR CONSTRUCTION

PM.	B. BERRY
DR.	B. BERRY
JOB NO.	20002753
FILE NO.	20002753-CU
DATE	2/12/2021
SHEET NO.	C300