City of Sandy

Agenda

Planning Commission Meeting

Meeting Location: Virtual via Zoom

Meeting Date: Wednesday, May 27, 2020

Meeting Time: 7:00 PM

Page

1. MEETING FORMAT NOTICE

Note: The Planning Commission will conduct this meeting electronically using the Zoom video conference platform. Members of the public may listen, view, and/or participate in this meeting using Zoom. Using Zoom is free of charge. See the instructions below:

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2. ROLL CALL

3. APPROVAL OF MINUTES

3.1. Minutes for April 27, 2020 3 - 12

Planning Commission - 27 Apr 2020 - Minutes - Pdf

4. REQUESTS FROM THE FLOOR - CITIZEN COMMUNICATION ON NON- AGENDA ITEMS

See instructions below for participating.

5. PUBLIC COMMENT

This meeting will include two public hearings. If you would like to offer testimony during the hearings, see the instructions below:

Testimony for each public hearing will be called for in three groups: testimony in favor of the proposal, testimony opposed to the proposal, and neutral testimony.

If you are participating online, click the "raise hand" button at the appropriate time

and wait to be recognized.

If you are participating via telephone, dial *9 to "raise your hand" at the appropriate time and wait to be recognized.

If you choose to submit testimony in written form, please send to planning@ci.sandy.or.us as soon as possible.

Thank you for your flexibility during the COVID-19 public health emergency. Please call City Hall with any questions: (503) 668-5533.

6. NEW BUSINESS

6.1. 20-001 ANN/CPA/ZC - Gunderson Road & Parkland Annexation 13 - 177

20-001 ANN/CPA ZC - Gunderson Road & Parkland Staff Report - Pdf

6.2. 20-010 DCA - Chapter 17.78 Annexation Code Amendments 178 - 186

20-010 DCA Chapter 17.78 Annexation Code Amendments - Pdf

7. ITEMS FROM COMMISSION AND STAFF

8. ADJOURN

MINUTES
Planning Commission Meeting
Monday, April 27, 2020 City Hall- Council Chambers, 39250 Pioneer Blvd., Sandy, Oregon 97055 7:00 PM

COMMISSIONERS PRESENT: Don Carlton, Commissioner, Ron Lesowski, Commissioner, Hollis MacLean-Wenzel, Commissioner, Jerry Crosby, Commissioner, John Logan, Commissioner, Chris Mayton, Commissioner, and Todd Mobley, Commissioner

COMMISSIONERS ABSENT: None

STAFF PRESENT: Kelly O'Neill, Development Services Director, Emily Meharg, Senior Planner, David Doughman, City Attorney, and Shelley Denison, Associate Planner

MEDIA PRESENT: None

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2. Roll Call

3. Approval of Minutes

3.1. Draft Planning Commission Minutes February 24, 2020

Motion: To approve minutes for February 24, 2020 with modification on page two to read February 24, 2021 instead of February 24, 2020.

Moved By: Commissioner Mayton
Seconded By: Commissioner Mobley
Yes votes: All Ayes
No votes: None
Abstentions: Commission Carlton
The motion passed.

4. Requests From the Floor - Citizen Communication on Non- Agenda Items
None

5. Public Comment
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6. NEW BUSINESS

6.1. **Sandy Vault Modification (19-046 MOD/VAR/DEV):**

Chairman Crosby opened the public hearing on File No. 19-046 MOD/VAR/DEV at 7:12 p.m. Crosby called for any abstentions, conflicts of interest, ex-parte contact, challenges to the jurisdiction of the Planning Commission, or any challenges to any individual member of the Planning Commission. No challenges were made, and no declarations were made by the Planning Commissioners. Commissioner Mayton stated he was not on the Commission when the original decision for Sandy Vault was made in 2019 but has read all of the information and feels comfortable in participating in the hearing.

Staff Report:
Senior Planner Emily Meharg summarized the staff report (i.e. the request), location of the proposal, and explained the difference between the original approval in 2019 and the modification before the Planning Commission. Commissioners Carlton, MacLean-Wenzel, and Mayton asked clarifying questions.

Applicant Testimony:
Tim Brunner
Owner of Axis Design Group
52 NW 2nd Street
Gresham, OR 97030
Mr. Brunner explained the site layout, showed the facades that address the public realm, and explained that the original approval from 2019 was not financeable according to banks Mr. Benson visited. The presentation included slides showing the site, building elevations relative to the site and surrounding streets, and proposed landscaping. Commissioner Mayton asked a clarifying question.

Emily Meharg shared a picture of the proposed metal siding. Commissioner Carlton asked a question about the metal siding. Mr. Brunner stated the metal siding finish will meet the approved color palette.

Proponent Testimony:
None

Opponent Testimony:
None

Neutral Testimony:
None

Staff Recap:
Meharg stated the code is clear it only wants metal siding as an accent. Activated frontages are not tied to frontages. O'Neill stated that the storage units should be denied as they do not meet the design code and also could block an existing easement. A question was asked how long the applicant would wait until reapplying for the storage units. Attorney David Doughman said he would have to review the development code.

Applicant Rebuttal:

Mark Benson
PO Box 241057
Honolulu, HI 96824
Contractors from the east side of the Portland Metro Area and local lenders will also be used. The development will create additional tax revenue.

Tim Brunner
Owner of Axis Design Group
52 NW 2nd Street
Gresham, OR 97030
Mr. Brunner stated the applicant is trying to enhance the sides of the buildings that are visible from Industrial Way and Champion Way.

Discussion:
Commissioner Carlton stated the code has requirements that shall be followed. If the commission grants variances we need to explain why we are allowing them. Commissioner Maclean-Wenzel said she was looking for more rationale than to have a 'bankable' building. Commissioner Mayton said that the code is not a one size fits all approach and we should consider unique aspects of different sites. Commissioner Lesowski said that the previous approval was very exhaustive, and the Commission made significant allowances. Commissioner Mobley said we should analyze the proposal further. Commissioner Logan said we did significant review and should relate the proposal to Chapter 17.66. Commissioner Carlton stated that past approvals were very detailed. Commissioner Mayton stated that the commission should review the code, but keep in mind flexibility in site design and building design. Commissioner Maclean-Wenzel stated that most building facades are not that big of a concern, but the north side of Building 1 should be articulated and designed more robust. Commissioner Mayton stated that north façade of Building 1 should be designed as previously approved. He also stated that he has concerns about existing vegetation remaining. Commissioner Logan stated that the north façade of Building 1 appears lower than was previously detailed. Commissioner Lesowski stated the north façade of Building 1 should remain as previously approved but is not against other elevation revisions. Commissioner Carlton mentioned Chapter 17.66 and how the proposal does and doesn't meet the criteria in Chapter 17.66. Chairman Crosby stated the code states one of the code criteria needs to be met, not all of the criteria. Meharg and Doughman stated you only have to meet one of the criteria in Section 17.66.80. Chairman Crosby stated that Criteria A. in Section 17.66.80 is the most applicable to the proposal. Doughman said the special variance criteria are unique to Sandy and the approval/denial of special variances should be tied to the criteria. Doughman stated that the decision

made with this application will not impact future applications but future applicants could reference this decision as a basis for their request. Commissioner Carlton read the preamble and stated that 'financially viable' is not an appropriate reason to approve a variance. Commissioner Mayton provided a recap of the four requests.

Kelly O'Neill Jr. stated that Mr. Brunner had his hand raised. Commissioner Lesowski and Crosby stated they should walk through the different proposals from the applicant. Doughman stated per Section 17.18.90 the applicant could submit a new application for the 34 modular units, and not necessarily wait for one year. Chairman Crosby stated the commission could make a finding that the modular units were not applied for. Doughman stated the 34 modular units were not included in the application. There was consensus that the 34 modular units did not contain adequate information for review and therefore a finding shall be made that the 34 modular units were not approved.

The commissioners discussed the different buildings and the proposed materials and changes to the elevations and came to the following conclusions:

Building 1:
North façade needs to stay as previously approved in File No. 18-047.
South façade modifications for metal are approved.
West façade modifications for metal are approved.
East façade needs to stay as previously approved in File No. 18-047.

Building 2:
North façade modifications for metal are approved.
South façade needs to stay as previously approved in File No. 18-047.
West façade modifications for metal are approved.
East façade modifications for metal are approved.

Building 3:
North façade needs to stay as previously approved in File No. 18-047.
South façade modifications for metal are approved.
West façade needs to stay as previously approved in File No. 18-047.
East façade modifications for metal are approved.

Building 4:
North façade modifications for metal are approved, but the parapet height needs to remain the same on the west end of Building 4 as the south

elevation.
South façade needs to stay as previously approved in File No. 18-047.
West façade needs to stay as previously approved in File No. 18-047.
East façade modifications for metal are approved.

Motion: Motion to close the public hearing at 9:32 p.m.
Moved By: Commissioner Carlton
Seconded By: Commissioner Mayton
Yes votes: Commissioners Carlton, Lesowski, Maclean-Wenzel, Logan, Mobley, Mayton, and Crosby.
No votes: None
Abstentions: None
The motion passed at 9:32 p.m.

Meharg asked clarifications on the window percentage changes to Buildings 3 and 4. The commissioners stated that they were no longer going to require an additional window on the west elevations of Buildings 3 and 4 as previously conditioned in File No. 18-047.

Motion: Motion to approve the modifications to the Sandy Vault facility for metal siding as summarized by staff, to deny the requested changes to activated frontages on Buildings 1 and 4, to deny the requested decrease in percent windows on Buildings 1 and 4, and to add a finding that the 34 modular units were not reviewed and therefore not approved.
Moved By: Commissioner Mayton
Seconded By: Commissioner Lesowski
Commissioners Carlton, Lesowski, Maclean-Wenzel, Logan, Mobley, Mayton, and Crosby.
No votes: None
Abstentions: None
The motion passed at 9:42 p.m.

5-minute recess

6.2. **Trillium Machine (19-017 DR/VAR/DEV/TREE):**

Chairman Crosby opened the public hearing on File No. 19-017 DR/VAR/DEV/TREE at 9:47 p.m. Crosby called for any abstentions, conflicts of interest, ex-parte contact, challenges to the jurisdiction of the Planning Commission, or any challenges to any individual member of the Planning Commission. No challenges were made, and no declarations were made by the Planning Commissioners.

Staff Report:

Senior Planner Emily Meharg summarized the proposed location, deviation and variance requests, and other proposed site features. Also, Meharg clarified that the proposal is in the I-2 zoning district which has less stringent design criteria than the I-1 zoning district as was analyzed in the Sandy Vault public hearing.

Applicant Testimony:

Jeffrey Beeson
Gallant Construction
PO Box 181
Banks, OR 97106

Mr. Beeson cited code sections in the staff report and why specific requests by the applicant were made. He stated the office portion of the new building is a separate structure than the large steel structure and wanted to know if that still qualified as a door to the interior of the building. Most of the proposal for the new building is to match the existing building. The applicant does not see an issue with meeting the color palette requirements for the roof and exterior walls. Mr. Beeson asked if an awning over the door on the north side of the building would be needed as it is an emergency exit only. There was also information regarding the existing trees and the proposal regarding installing a sidewalk. Mr. Beeson asked for a reduced sidewalk width of 4 feet.

Proponent Testimony:

None

Opponent Testimony:

None

Neutral Testimony:

None

Staff Recap:

Meharg stated that the door to the office is fine as the door to the interior. The code speaks more to the path from the right-of-way to the building. Not providing a pedestrian cover over the emergency exit should not be much of a problem. Some of the trees will need to be removed from the vegetated area along Industrial Way. The Public Works Director stated that the applicant can work with Public Works on alternative sidewalk alignment or planter strip width to preserve existing healthy trees.

Applicant Rebuttal:
Jeffrey Beeson said that he did not have anything additional.

Neil Smits
Owner of Trillium Machine
36535 Industrial Way
Sandy, OR 97055
Has owned Trillium Machine for some time now. Likes Sandy and believes the expansion to his site will help in the future.

Discussion:
Commissioner Carlton and Commissioner Lesowski asked what siding colors could be proposed. Mr. Beeson said they will order metal that is pre-painted. Chairman Crosby asked questions regarding the sidewalk width. O'Neill stated the Commission could condition that Public Works work with the applicant regarding sidewalk width and planter strip width.

Commissioner Lesowski asked questions regarding articulation. O'Neill stated that Section 17.90.130 was not updated when the Sandy Style was adopted, and the code section still has some old provisions that were not updated accordingly. Commissioner Carlton stated that the building could have several different wall colors that would provide differences in the wall elevations.

Commissioner Carlton asked a clarification about the planter strip.

Motion: Motion to close the public hearing at 10:36 p.m.
Moved By: Commissioner Lesowski
Seconded By: Commissioner Logan
Commissioners Carlton, Lesowski, Maclean-Wenzel, Logan, Mobley, Mayton, and Crosby.
No votes: None
Abstentions: None
The motion passed at 10:37 p.m.

Commissioner Carlton asked if the emergency exit should have an awning cover. The commissioners discussed the merits of the door awnings and determined that a pedestrian awning above the emergency only exit on the north elevation is not required.

Motion: Motion to approve the request with the findings of fact and staff

recommendations.
Moved By: Commissioner Lesowski
Seconded By: Commissioner Mayton
Commissioners Carlton, Lesowski, Maclean-Wenzel, Logan, Mobley, Mayton, and Crosby.
No votes: None
Abstentions: None
The motion passed at 10:42 p.m.

7. Items from Commission and Staff

The next Planning Commission hearing is Wednesday May 27, 2020, then the following meeting will be Tuesday June 30, 2020.

Crosby asked if staff could add bookmarks to staff reports in the PDF file. O'Neill stated they will try to add bookmarks. The May meeting will most likely be via Zoom.

8. Adjourn

Motion: To adjourn
Moved By: Commissioner Lesowski
Seconded By: Commissioner Maclean-Wenzel
Yes votes: All Ayes
No votes: None
Abstentions: None
The motion passed.

Chairman Crosby adjourned the meeting at 10:46 p.m.

Jerry Crosby

_____
Chair, Jerry Crosby

_____
Planning Director, Kelly O'Neill Jr

Staff Report

Meeting Date:	May 27, 2020
From	Kelly O'Neill, Development Services Director
SUBJECT:	20-001 ANN/CPA ZC - Gunderson Road & Parkland Staff Report

Background:
The applicant, Allied Homes and Development, proposes to annex 6.42 acres to meet a need for certain public facilities (a minor arterial road and parkland). The applicant proposed a comprehensive plan designation of Low Density Residential and Parks and Open Space, and a zoning designation of Single Family Residential (SFR) for the roads and associated facilities totaling 4.04 acres and Parks and Open Space (POS) for the 2.38 acre park.

Recommendation:
Staff recommends the Planning Commission forward a recommendation of approval to City Council, subject to: (1) the Clackamas County Board of Commissioners approving the UGB expansion on June 3; and (2) a condition limiting the future uses of the 4.04 acres zoned SFR to right-of-way and utility uses and associated facilities to support such uses.

Code Analysis:
See attached staff report.

WHERE INNOVATION MEETS ELEVATION

39250 Pioneer Blvd
Sandy, OR 97055
503-668-5533

SUBJECT: File No. 20-001 ANN/CPA/ZC Gunderson Road & Parkland Annexation

AGENDA DATE: May 27, 2020

DEPARTMENT: Development Services Department

STAFF CONTACT: Kelly O'Neill Jr., Development Services Director

EXHIBITS:

Applicant's Submittals:

A. Land Use Application
B. Supplemental Land Use Application Form No. 1
C. Supplemental Annexation Land Use Application Form No. 2
D. Written Consent Form
E. Narrative
F. Vicinity Map
G. Legal Description and Maps
H. Transportation Impact Analysis
I. Warranty Deed

Agency Comments:

None

Public Comments:

None

I. BACKGROUND

A. PROCEEDING

Type IV Annexation, Comprehensive Map Change, and Zoning Map Change

B. FACTUAL INFORMATION

1. APPLICANT: Allied Homes & Development
2. OWNERS: Lawrence Pullen, Richard Pullen, and Sherrene TenEyck
3. PROJECT NAME: Gunderson Road & Parkland Annexation
4. LEGAL DESCRIPTION: T2S R4E Section 23 Tax Lot 701
5. PROPERTY LOCATION: North of Highway 211 and South of Ponder Lane
6. PROPOSED AREA: 6.42 acres

7. PROPOSAL: The applicant, Allied Homes and Development, proposes to annex 6.42 acres to meet a need for certain public facilities (a minor arterial road and parkland). The applicant proposed a comprehensive plan designation of Low Density Residential and Parks and Open Space, and a zoning designation of Single Family Residential (SFR) for the roads and associated facilities totaling 4.04 acres and Parks and Open Space (POS) for the 2.38 acre park.

8. CITY COMPREHENSIVE PLAN DESIGNATIONS: Low Density Residential, Parks & Open Space

9. COUNTY COMPREHENSIVE PLAN DESIGNATION: Agriculture (AG)

10. CITY ZONING DISTRICT DESIGNATIONS: Single Family Residential (SFR), Parks & Open Space (POS)

11. COUNTY ZONING DISTRICT DESIGNATION: Exclusive Farm Use (EFU)

12. RESPONSE FROM GOVERNMENTAL AGENCIES, UTILITY PROVIDERS, CITY DEPARTMENTS AND THE GENERAL PUBLIC: None

C. APPLICABLE CRITERIA: Sandy Development Code: 17.12 Procedures for Decision Making; 17.18 Processing Applications; 17.22 Notices; 17.24 Comprehensive Plan Amendment Procedures; 17.26 Zoning District Amendments; 17.32 Parks and Open Space (POS); 17.34 Single Family Residential (SFR); 17.78 Annexation; 17.86 Parkland and Open Space.

D. BACKGROUND INFORMATION

The purpose of the UGB expansion is to accommodate Gunderson Road and parkland to the south of Bailey Meadows to fulfill anticipated conditions of approval from the Bailey Meadows land use application. The alignment for Gunderson Road is located on property (Tax Map 24E23 Tax Lot 701) that is located outside of Sandy's City limits and UGB. The subject property is currently designated Exclusive Farm Use (EFU) by Clackamas County, but is within the City of Sandy's Urban Reserve Area (URA). Under Oregon law, lands designated URA are "first priority" lands to be included in a UGB expansion. The portion of the property that is anticipated within the amended UGB is limited to areas necessary for parkland and land to construct the Gunderson Road extension, including land for the roadway, associated storm drainage improvements, accompanying utilities, grading, etc.

UGB expansions are subject to both city approval and county approval. On February 11, 2020 the Planning Commission recommended approval of the UGB expansion to the City Council. On March 2, 2020 the City Council passed Ordinance No. 2020-03 approving the expansion of the UGB. Then on March 9, 2020 the Clackamas County Planning Commission recommended approval of the UGB Expansion to the Clackamas County Board of Commissioners. On June 3, 2020 the Board of Commissioners will make a decision regarding the UGB expansion.

The areas being considered with this annexation are detailed in Exhibit G as follows:

Area 1 - Parkland Area: 2.38 acres
Areas 2 and 6 - Permanent Slope Easement/Temporary Construction Easement Area: 30,970 square feet
Area 3 - Public Right-of-Way Dedication (for Gunderson Road): 1.02 acres
Area 4 - Public Utility Easement: 4,802 square feet
Area 5 - Stormwater Facility: 30,143 square feet
Area 7 - Highway (211) Area: 2.05 acres

As explained by the applicant if you add the square footage and acreage, the sum is greater than 6.42 acres because Areas 2 and 4 overlap and are included within Area 1. The total acreage is the same when Areas 2 and 4 are removed from the equation.

E. PROCEDURAL CONSIDERATIONS

This request is being processed under a Type IV quasi-judicial review. Notification of the proposal was mailed to property owners within 500 feet of the subject property and to affected agencies on April 22, 2020. Notification of the proposal was sent to the Department of Land Conservation and Development (DLCD) on April 21, 2020 and a legal notice was published in the Sandy Post on May 6, 2020.

The Planning Commission will review the request at a public hearing on May 27, 2020 and forward a recommendation to the City Council for final decision on this request. If the Planning Commission recommends approval to the City Council, the recommendation should be subject to the Clackamas County Board of Commissioners approving the UGB expansion on June 3.

II. ANALYSIS OF CODE COMPLIANCE

1. Chapter 17.24 Comprehensive Plan Map Amendment

The applicant is not seeking to add land for additional residential, commercial or industrial development. Approving the proposed annexation would only allow a road and public parkland. The land is currently designated Urban Reserve, but the Clackamas County Board of Commissioners is considering a UGB Expansion on June 3, 2020.

Section 17.24.70 contains the review criteria for a comprehensive plan amendment. Criterion A states: "The change being proposed is the best means of meeting the identified public need" and Criterion B states: "The change conforms to all applicable Statewide Planning Goals." The purpose of the annexation proposal is to provide a second access to the proposed subdivision via Gunderson Road and to provide parkland, both of which are in intended to meet an identified public need. The TSP details Gunderson Road connecting to Highway 211 and the Parks Master Plan details a conceptual park location in close proximity to the proposed parkland. The proposed annexation conforms to the Sandy

Comprehensive Plan goals, which reflect the Statewide Planning Goals. Per the applicant's narrative, the application is consistent with the following goals:

Goal 1, Policies 1, 2, and 4: Per the narrative "The City of Sandy has an established citizen involvement program. The application will be processed according to Chapter 17.12 of the LDC, which involves public notification, public hearings, and decision appeal procedures, as established in City of Sandy LDC Section 17.12.30 and 17.12.40. Therefore, the application is consistent with Goal 1."

Goal 2, Policy 2: Per the narrative "Changes to the Comprehensive Plan Map are consistent with SDC Chapter 17.12 and the applicable policies of the Comprehensive Plan, as detailed in this written narrative. Consistency with applicable State statute and rules and the Urban Growth Management Agreement (UGMA) between City of Sandy and Clackamas County have been addressed in this document. Therefore, Policy 2 above is met."

Goal 2, Policy 14: Per the narrative "The alignment of the extension of Gunderson Road to OR 211, a proposed plan element in the City's TSP, is conceptual. The actual location should be determined through the development process, as outlined above. To provide this public transportation facility improvement, the road should be extended to match the conceptual alignment in the Sandy TSP. However, due to geometrical issues, safety concerns, and potential for transportation hazards, the alignment illustrated in the Sandy TSP is not practicable for construction. This application provides for a solution to extend Gunderson Road and determine the actual functionable location through site analysis and development review. The location shown in Exhibit C can be improved to provide the required site characteristics and execute the extension of the transportation network to satisfy the needs of citizens in the general area. Please see the TIA and Supplemental Materials of Exhibit C for further details. Additionally, according to the Sandy Parks Master Plan adopted May 15, 1997, there is not a conceptual location for a park on or near the subject site. Therefore, the location for the improvement should be determined through the development process. Though parkland dedication is not required of the Bailey Meadows Subdivision application, the Applicant is providing it and it must be brought within the Sandy UGB and annexed to allow for it. Policy 14 above is met."

Goal 6: Per the narrative "The City's Comprehensive Plan with respect to Goal 6 and its development regulations governing land, air, and water quality are not affected by the decision. The intent of extending Gunderson Road to OR 211 is to enhance neighborhood circulation and provide local parkland, thereby reducing congestion and delay in the area. This mitigates localized pollution impacts of vehicle activity in the area."

Goal 8, Policies 1, 2, and 10: Per the narrative "According to the Sandy Parks Master Plan adopted May 15, 1997, there is not a conceptual location for a park on or near the subject site. Therefore, the location for the improvement should be determined through the development process. Though parkland dedication is not required of the Bailey Meadows Subdivision application, the Applicant is providing it and it must be brought within the Sandy UGB and annexed to allow for it. The City's Comprehensive Plan with respect to Goal 8 above is met."

Goal 11: Per the narrative "The City's Comprehensive Plan contains an acknowledged Goal 11 element that includes policies to ensure sufficient and adequate public services are available (or will be available as appropriate) to serve lands within the UGB. The property north of the subject site, Bailey Meadows Subdivision, was found to be sufficiently served by public services at the time it was annexed into the City in June 2017. This application involves amending the City's UGB to permit the extension of a public transportation facility (i.e., Gunderson Road) to allow for a future connection to OR 211. If approved, the extension is intended as an additional access to the subdivision and to distribute traffic from local streets to the surrounding area. The extension is not required for subdivision approval. Additionally, providing parkland on the northeast portion of Tax Lot 701 will enhance quality of life for the residents in the area. The parkland dedication is not required for subdivision approval. Goal 11 is satisfied"

Goal 12, Policy 1: Per the narrative "This application involves the extension of a public transportation facility (i.e., Gunderson Road) to allow Bailey Meadows Subdivision a future connection to OR 211, as illustrated in the City of Sandy TSP. If approved, the extension is intended as an additional access to the subdivision and to distribute traffic from local streets to the surrounding area. The extension is planned to support a pattern of connected streets as stated above but is not required for subdivision approval."

Goal 12, Policy 2: Per the narrative "Appendix D, Section D107 of the Oregon Fire Code addresses standards regarding fire apparatus access roads for one or two-family developments. As discussed in the Bailey Meadows Subdivision application (City of Sandy Local File No. 19-023 SUB/VAR/TREE), the subdivision currently provides two separate and approved fire apparatus access roads (Melissa Avenue and SE Ponder Lane) and shall meet the requirements of Section D104.3. The extension of Gunderson Road would provide an additional access to the subdivision. Therefore, if approved, the Gunderson Road extension will provide the secondary access to the subdivision and SE Ponder Lane will not be utilized to serve as an emergency access as described above. Additionally, the nature of Policy 2 above requires coordination of the application by the City with affected governmental entities. Coordination requires notice of an application, an opportunity for an affected governmental entity to comment on the application, and the City's incorporation of the comments to a reasonable extent. The City can find that coordination of this application will be accomplished in two ways: by the Applicant prior to application submittal, and by the City in the review process for the application. Goal 12, Policy 2 is satisfied."

Goal 12, Policies 21 and 22: Per the narrative "The above criteria applies to City processes for noticing and coordinating with ODOT, as applicable. The standards above apply as the project plans to extend Gunderson Road to OR 211. Direct action by the Applicant will be taken as applicable. Policy 21 and 22 can be satisfied."

Goal 14, Policy 1: Per the narrative "This application to amend the City UGB is necessary to provide a public transportation facility (i.e., Gunderson Road) to support residential land north of the project site which was included within the UGB and subsequently annexed in 2017. Additionally, this application provides parkland dedication which will benefit

residential lands in the vicinity. As described above, the City is required to maintain a UGB with sufficient residential lands, as addressed in the February 2017 City of Sandy Urban Growth Boundary Expansion Analysis. This application will provide a public road as illustrated in the Sandy TSP that aligns with the existing transportation network in the area and implement a connection to OR 211."

Goal 14, Policies 2 and 3: Per the narrative "The project site is currently vacant, with pasture and vegetated areas. As stated above, urban growth should be directed in a contiguous manner and the planned Gunderson Road extension will facilitate growth north of the project site while having no impact on urban services or utilities. Per Goal 14, Policy 3(b) above, the City shall encourage the development of land which is contiguous to development areas where services can be easily and economically extended. The extension of Gunderson Road will provide access and distribute traffic from local streets to the surrounding area and provide parkland dedication, a benefit to lands north of the project site and those within the City limits."

Goal 14, Policy 4: Per the narrative "The property involved in this application, Tax Lot 701, is associated with an UGMA, as it is within the Sandy Adopted URA. The applicable elements are addressed within this written narrative."

Goal 14, Policy 6: Per the narrative "This application involves a property owner's (i.e., the Applicant's) request that Tax Lot 701, land within the designated Sandy URA, be included with the Sandy UGB. The applicable criteria, including Land Conservation and Development Commission (LCDC) Goal 14 noted above, have been addressed in this written document. Policy 6 is relevant and satisfied."

Goal 14, Policy 7: Per the narrative "The subject application involves property which is located within the URA. This written document contains analysis of the City's comprehensive plan goals and policies associated with the property. Therefore, Policy 7 is applicable."

Goal 14, Policy 8: Per the narrative "Tax Lot 701 is located within the Sandy Adopted URA. Therefore, Policy 8 is applicable, and the City of Sandy shall have the lead role in coordinating this application for the planned public transportation and parkland facilities"

Goal 14, Policy 9: Per the narrative "Tax Lot 701 is located within the Sandy Adopted URA and is currently designated with Clackamas County EFU zoning. An application for annexation and a comprehensive plan amendment is necessary to apply City zoning to allow for the public transportation and parkland facilities. Policy 9 is applicable and satisfied."

Goal 14, Policy 11: Per the narrative "Tax Lot 701 is located within the Sandy Adopted URA. Therefore, Policy 11 is applicable, and the City of Sandy shall coordinate with Clackamas County in processing the subject land use and development application for unincorporated lands within the URA."

Goal 14, Policy 12: Per the narrative "Tax Lot 701 is located within the Sandy Adopted URA and is currently designated with Clackamas County EFU zoning. An application for annexation and a comprehensive plan amendment is necessary to apply City zoning allowing this urban development (i.e., creation of a public transportation facility and a public parkland facility). Therefore, the subject application does not involve new commercial, industrial, or agricultural uses. The Applicant understands that City Low-Density Residential (LDR) Comprehensive Plan and Single-Family Residential (SFR) Zoning designations are intended for the property. Interim use and development, prior to annexation, is not associated with this application. The application complies with the applicable components of Policy 12 above."

As mentioned above, the Board of County Commissioners (BOC) will hold a hearing on June 3 to consider approving the UGB amendment. As part of its recommendation of approval to the BOC, the Clackamas County Planning Commission included a recommended condition of approval addressing the Historic Barlow Road. The suggested condition addressed road improvements in the expansion area in order to minimize impacts to the Barlow Road Historic Corridor through the location of construction staging activities; excavation of the stormwater facility; and preserving any portions of the road that are apparent in the park land.

2. Chapter 17.26 Zoning District Amendments

In association with the annexation request, the applicant requests Single Family Residential (SFR) zoning to apply to 4.04 acres and Parks & Open Space (POS) zoning to apply to 2.38 acres as designated in the UGB Expansion in File No. 20-002.

The applicant submitted a Traffic Impact Analysis (Exhibit H), which addresses the Transportation Planning Rule and associated approval criteria relative to the proposed UGB amendment, comprehensive plan and zone map amendments, and annexation application. The analysis determined a left-turn lane is warranted at the intersection of Gunderson Road at Highway 211 using the 2022 buildout scenario, therefore it is recommended that a left-turn lane be constructed as part of the intersection improvements. Traffic signal warrants are not met at the intersection of Gunderson Road at Highway 211 under the 2022 buildout scenario. The analysis concludes that "the proposed UGB amendment, comprehensive plan and zone map amendments, and annexation will implement the City of Sandy TSP and result in improved operation at the study area roadways and intersections. The connection will improve conditions for the existing neighborhood to the north of the Bailey Meadows subdivision by providing another means of vehicular access to the area."

3. Chapter 17.78 Annexation

Section 17.78.15 requires the annexation is processed as a Type A, Type B, or Type C.

***RESPONSE:** The applicant requests a Type C annexation to modify the comprehensive plan map and the zoning map. The applicant has submitted all the required materials to process the request as a Type C annexation.*

Section 17.78.20 requires that the following conditions must be met prior to beginning an annexation request:

A. The requirement of Oregon Revised Statutes, Chapters 199 and 222 for initiation of the annexation process are met;

B. The site must be within the City of Sandy Urban Growth Boundary (UGB);

C. The site must be contiguous to the city or separated from it only by a public right-of-way or a stream, bay, lake or other body of water;

D. The site has not violated Section 17.78.25.

RESPONSE: *Oregon Revised Statute Section 199 pertains to Local Government Boundary Commissions and City-County Consolidation. Oregon Revised Statute Section 222 pertains to City Boundary Changes; Mergers; Consolidations and Withdrawals. The proposal complies with applicable requirements at this time and all notices were mailed as necessary.*

The proposed annexation area is located within an area that is anticipated to be in the Urban Growth Boundary (UGB) and is contiguous to city limits on the north side of the subject property.

Section 17.78.25 requires review of tree retention requirements per SMC 17.102 and SMC 17.60 at the time of annexation to discourage property owners from removing trees prior to annexing as a way of avoiding Urban Forestry Ordinance provisions.

A. Properties shall not be considered for annexation for a minimum of five (5) years if any of the following apply:

1. Where any trees six (6) inches or greater diameter at breast height (DBH) have been removed within 25 feet of the high water level along a perennial stream in the five years prior to the annexation application.

2. Where more than two (2) trees (six (6) inches or greater DBH) per 500 linear feet have been removed in the area between 25 feet and 80 feet of the high water level of Tickle Creek in the five years prior to the annexation application.

3. Where more than two (2) trees (six (6) inches or greater DBH) per 500 linear feet have been removed in the area between 25 feet and 50 feet of the high water level along other perennial streams in the five years prior to the annexation application.

4. Where any trees six (6) inches or greater DBH have been removed on 25 percent or greater slopes in the five years prior to the annexation application.

5. Where more than ten (10) trees (11 inches or greater DBH) per gross acre have been removed in the five years prior to the annexation application, except as provided below:

    a. Sites under one (1) acre in area shall not remove more than five (5) trees in the five years prior to the annexation application.

    b. Sites where removal of ten (10) or fewer trees will result in fewer than three (3) trees per gross acre remaining on the site. Tree removal may not result in fewer than three (3) trees per gross acre remaining on the site. At least three (3) healthy, non-nuisance trees 11 inches DBH or greater must be retained for every one-acre of contiguous ownership.

    c. For properties in or adjacent to the Bornstedt Village Overlay (BVO), tree removal must not result in fewer than six (6) healthy 11 inch DBH or greater trees per acre. For properties in or adjacent to the BVO and within 300 feet of the FSH Overlay District, tree removal must not result in fewer than nine (9) healthy 11 inch DBH or greater trees per acre.

    Rounding: Site area shall be rounded to the nearest half acre and allowed tree removal shall be calculated accordingly. For example, a 1.5 acre site will not be allowed to remove more than fifteen (15) trees in the five years prior to the annexation application. A calculation of 1.2 acres is rounded down to one (1) acre and a calculation of 1.8 is rounded up to two (2) acres.

    Cumulative Calculation: Total gross acreage includes riparian areas and other sensitive habitat. Trees removed under Sections 17.78.25(A) 2. and 3. shall count towards tree removal under Section 17.78.25(A) 5.

B. Exceptions. The City Council may grant exceptions to this section where:

1. The property owner can demonstrate that Douglas Fir, Western Red Cedar, or other appropriate native trees were planted at a ratio of at least two trees for every one tree removed no less than five years prior to the submission of the annexation application, and at least 50 percent of these trees have remained healthy; or

2. The Council finds that tree removal was necessary due to hazards, or utility easements or access; or

3. The trees were removed because they were dead, dying, or diseased and their condition as such resulted from an accident or non-human cause, as determined by a certified arborist or other qualified professional; or

4. The trees removed were nuisance trees; or

5. The trees were removed as part of a stream restoration and enhancement program approved by the Oregon Department of Fish and Wildlife as improving riparian function; or

6. The trees removed were orchard trees, Christmas trees, or commercial nursery trees grown for commercial purposes; or

7. The application of this section will create an island of unincorporated area.

RESPONSE: *The subject property is 6.42 acres and requires retention of 19 trees 11-inches DBH or greater and in good condition. Per the submitted narrative (Exhibit E), the subject property has not violated Section 17.78.25. A review of aerial photos from the five years prior to submittal of this application (2015 to the present) reveals that tree canopy has remained in a similar condition. Based solely on aerial photos staff finds that no significant tree removal has occurred on the subject property.* ***Prior to any future tree removal on the subject property the applicant shall apply and receive approval for a tree removal permit in compliance with Chapter 17.102. Removal of trees without a permit prior to annexation approval shall result in the property not being considered for annexation for at least five (5) years. Removal of trees without a permit after annexation shall be enforced in compliance with Chapter 17.06.***

Section 17.78.50 contains required annexation criteria. Requests for annexation shall not have an adverse impact on the citizens of Sandy, either financially or in relation to the livability of the city or any neighborhoods within the annexation area. Generally, it is desirable for the city to annex an area if the annexation meets any of the following criteria:

A. A necessary control for development form and standards of an area adjacent to the city; or

B. A needed solution for existing problems, resulting from insufficient sanitation, water service, or other urban service related problems; or

C. Land for development to meet urban needs and that meets a logical growth pattern of the city and encourages orderly growth; or

D. Needed routes for utility and transportation networks.

RESPONSE: *The applicant's narrative (Exhibit E) indicates they believe annexation of the subject property meets Criterion C above. The annexation is to allow the extension of Gunderson Road (and urban public transportation facility) and parkland. Per the narrative, "The extension would provide an additional access to the Bailey Meadows Subdivision and distribute traffic in the area and meet needs for an area of planned, logical urban growth" in compliance with Criterion C. Staff agrees that the proposed annexation meets Criterion C.*

III. RECOMMENDATION

Staff recommends the Planning Commission forward a recommendation of approval to City Council, subject to: (1) the Clackamas County Board of Commissioners approving the UGB expansion on June 3; and (2) a condition limiting the future uses of the 4.04 acres zoned SFR to right-of-way and utility uses and associated facilities to support such uses.

EXHIBIT A

LAND USE APPLICATION FORM

(Please print or type the information below)

Planning Department
39250 Pioneer Blvd.
Sandy OR 97055
503-489-2160

Name of Project City of Sandy UGB Annexation, Comp. Plan, and Zone Map Amendments

Location or Address Southeast of Ponder Lane, northwest of Oregon Highway 211

Map & Tax Lot Number T 25 , R 4E , Section 23 ; Tax Lot(s) 701

Request: This application involves the Annexation, Comp Plan, and Zone Map Amendments regarding the expansion of the City of Sandy's Urban Growth Boundary to accommodate a public transportation facility (e.g. Gunderson Road).

Please contact the Applicant's consultant and legal counsel (below) with any inquiries:

AKS Engineering & Forestry, LLC - Chris Goodell: (503) 563-6151; chrisg@aks-eng.com
Schwabe, Williamson & Wyatt - Michael Robinson: (503) 796-3756; mrobinson@schwabe.com

I am the (check one) ☐ owner ☑ lessee of the property listed above, and the statements and information contained herein are in all respects true, complete and correct to the best of my knowledge and belief.

Applicant (if different than owner)	Owner **Richard L Pullen, Lawrence Pullen,** Sherrene Teneyck
Address 12404 SE Sunnyside Road, Suite 706	Address 37020 SE Deming Road
City/State/Zip Clackamas, OR 97015	City/State/Zip Sandy, OR 97055
Phone Please contact Applicant's consultant	Phone Please contact Applicant's consultant
Email Please contact Applicant's consultant	Email Please contact Applicant's consultant
Signature DocuSigned by: Cody Bygan 765397736D254E7...	Signature DocuSigned by: 5DFC8800F05A4E2... DocuSigned by: 1577A249EAE3446... DocuSigned by: 0DC135EFD2EE441...

If signed by Agent, owner's written authorization must be attached.

File No.	Date	Rec. No.	Fee $
Type of Review (circle one): Type I Type II Type III Type IV			

W:\City Hall\Planning\Planning Forms\Forms Updated 2018\General Land Use Application - updated 2019.doc

Fees Included: $6,033 (Annexation Type IV, Type C)

EXHIBIT B

CITY OF SANDY, OREGON

SUPPLEMENTAL
LAND USE APPLICATION FORM (No. 1)

(Please print or type the information below)

Planning Department
39250 Pioneer Blvd.
Sandy OR 97055
503-668-4886

☑ **ANNEXATION** ☑ **ZONE CHANGE** ☑ **COMPREHENSIVE PLAN AMENDMENT**

Property Identification			
Tax Lot Number	Township	Range	Section
24E23 00701	2S	4E	23

Existing and Proposed Land Use Designations				
Tax Lot Number(s)	Comprehensive Plan		Zoning Map	
	Existing	Proposed	Existing	Proposed
24E23 00701	County EFU	LDR	County EFU	SFR

IMPORTANT: Each section on this application must be fully completed or your application could be deemed incomplete.

Tax Lot Number	**Clackamas County Recording Number**	**Assessed Land Value**	**Size in Acres or Sq. Ft.**
24E23 00701	2018-068812	$304, 685.00	±14.30

LEGAL DESCRIPTION: Attach a separate page with the written metes and bounds legal description. Accuracy of the legal description(s) must be certified by a registered land surveyor for all annexation applications.

A legal description and map is included in Exhibit C.

DESCRIBE EXISTING USES
Tax Lot 701 is currently vacant and unimproved. The property is fairly flat with vegetated areas on the northwest half and pasture on the eastern half. The property does not contain structures and access is served from Oregon Highway 211 on the south side of the site.

DESCRIBE EXISTING BUILDINGS
How many buildings are located on the property? None.
Number of Total Dwelling Units : None. There are no dwelling units on the property.

DESCRIBE EXISTING TOPOGRAPHY	
Approximate acreage with slopes less than 14.9%	>5%
Approximate acreage with slopes 15% to 24.9%	None
Approximately acreage with slope in excess of 25%	None
Any creeks, water sources, drainageways or wetlands within the property? **Yes** ☐ **No** ☑	
Any steep slopes, ravines, draws or bluffs within or abutting the property? **Yes** ☐ **No** ☑	

DESCRIBE EXISTING ACCESS
Does the subject property abut a public right-of-way? **Yes** ☑ **No** ☐
Name of public right-of-way: Oregon Highway 211
Does the property abut a private road? **Yes** ☐ **No** ☑
Name of abutting private road(s): N/A
Describe any unusual difficulties in accessing the property: Currently the only access to the property is from Highway 211 on the south side of the site.

DESCRIBE SURROUNDING USES ON ADJACENT PROPERTIES
The surrounding area is composed of single family residential homes on large lots with vegetated areas and pasture. The property north of the site is currently vacant pasture land.

DESCRIBE PROPOSED USE OF THE PROPERTY OR LAND DIVISIONS **Include number of lots, densities, etc.**
The portion of the property that is planned to be annexed is limited to areas necessary to construct the Gunderson Road extension, including land for the roadway, associated storm drainage improvements, accompanying utilities, grading, etc. and area for parkland dedication. This application does not include a subdivision or development of homes or other structures.

EXHIBIT C

CITY OF SANDY, OREGON

SUPPLEMENTAL ANNEXATION
LAND USE APPLICATION FORM (No. 2)

List of all owners of property included in the application

Owner Information	Property Description TL, Section, Township, Range
Owner Sherrene TenEyck Address 37020 SE Deming Road City/State/Zip Sandy, OR 97055 Phone Please contact Applicant's consultant	TL 24E23 00701 Section 23, Township 2S, Range 4E
Owner Richard Pullen Address 36969 Deming Road City/State/Zip Sandy, OR 97055 Phone Please contact Applicant's consultant	TL 24E23 00701 Section 23, Township 2S, Range 4E
Owner Lawrence Pullen Address 36940 Deming Road City/State/Zip Sandy, OR 97055 Phone Please contact Applicant's consultant	TL 24E23 00701 Section 23, Township 2S, Range 4E
Owner Address City/State/Zip Phone	
Owner Address City/State/Zip Phone	

EXHIBIT D

Written Consent Form

We, the undersigned property owners of and/or registered voters in the area described below, hereby petition for, and give our consent to, annexation of the area to the City of Sandy.

Note: This petition may be signed by qualified persons even though they may not know their property description or precinct number.

Date	Signature	Printed Name	I am a: PO	RV	OV	Address	Property Description or Parcel ID	Precinct Number
12/20/2019	DocuSigned by: 5DFC9800F05A4E2...	Richard L Pullen	X			36969 Deming Road, Sandy, OR 97055		
12/27/2019	DocuSigned by:	Lawrence Pullen	X			36940 Deming Road, Sandy, OR 97055		
12/21/2019	DocuSigned by: 0DC135EFD2EE441...	Sherrene Lanette TenEyck	X			37020 SE Deming Rd, Sandy, OR 97055		

PO- Property Owner

RV – Registered Voter

OV – Owner and Registered Voter

EXHIBIT E

I. Executive Summary

The City of Sandy is currently processing a land use application for the Bailey Meadows subdivision (local file No. 19-023 SUB/VAR/TREE) and the amendment of the Sandy Urban Growth Boundary (UGB) to accommodate a future public transportation facility (i.e., Gunderson Road) and parkland dedication on Tax Lot 701 that is currently outside the City limits and UGB. The alignment for the Gunderson Road extension falls within property that is located outside of Sandy's City limits and UGB. This property is currently designated Exclusive Farm Use (EFU) by Clackamas County, but is within the City of Sandy's Urban Reserve Area (URA). The portion of the property that is planned to be included within the amended UGB is limited to areas necessary to construct the Gunderson Road extension, including land for the roadway, associated storm drainage improvements, accompanying utilities, grading, etc. and area for parkland dedication.

Allied Homes & Development (Applicant) is submitting this application for an Annexation, Comprehensive Plan Map Amendment, and Zone Map Amendment for the subject portion of Tax Lot 701 to allow for the public facilities. This consolidated application involves updating the City's comprehensive plan map designation for the subject portion of the property from existing Clackamas County Exclusive Farm Use (EFU) designation to Low Density Residential (LDR) and Single Family Residential (SFR) zoning designation.

The City of Sandy Land Development Code (LDC) requires this application be considered through a Quasi-Judicial Type IV procedure, which applies to an individual property, involving hearings before the Planning Commission and the City Council. The City should also comply with the Type III noticing requirements outlined in LDC Chapter 17.12. This application includes the City application forms and written materials necessary for the City of Sandy staff to review and determine compliance with the applicable approval criteria. The evidence is substantial and supports the approval of the application.

II. Site Description/Setting

The property (Tax Lot 701) included in this application has a total area of ±14.30 acres, though only the acreage required for the road right-of-way and associated improvements and parkland dedication are planned to be incorporated within the Sandy UGB. Tax Lot 701 is located outside of, but adjacent to the UGB, immediately south of the active Bailey Meadows Subdivision application (City of Sandy Local Case File No. 19-023 SUB/VAR/TREE), northwest of OR 211, and west of the intersection of SE Ponder Lane and OR 211.

The property is fairly flat with vegetated areas on the northwest half and pasture on the eastern half. The property does not contain structures and access is served from OR 211 on the south side of the site.

III. Applicable Review Criteria

SANDY COMPREHENSIVE PLAN GOALS AND POLICIES

Goal 1 – Citizen Involvement

POLICY 1: The City of Sandy shall maintain a citizen involvement program to allow opportunity for citizen involvement in the ongoing planning process.

POLICY 2: Comprehensive Plan changes shall include the opportunity for participation of citizens affected by the change.

POLICY 4: The City shall disseminate information and public notice to the residents of the Sandy area concerning on-going planning activities and pending actions.

Response: The City of Sandy has an established citizen involvement program. The application will be processed according to Chapter 17.12 of the LDC, which involves public notification, public hearings, and decision appeal procedures, as established in City of Sandy LDC Section 17.12.30 and 17.12.40. Therefore, the application is consistent with Goal 1.

Goal 2 – Land Use Planning

POLICY 2: **Changes to the Comprehensive Plan Map shall be consistent with the policies of the Comprehensive Plan, state law, and intergovernmental agreements.**

Response: Changes to the Comprehensive Plan Map are consistent with SDC Chapter 17.12 and the applicable policies of the Comprehensive Plan, as detailed in this written narrative. Consistency with applicable State statute and rules and the Urban Growth Management Agreement (UGMA) between City of Sandy and Clackamas County have been addressed in this document. Therefore, Policy 2 above is met.

POLICY 10: **Due to the demand which new development places upon the community's infrastructure, the city may impose off-site improvement requirements necessitated by a development. Each development shall provide for all onsite needs, and in areas which represent a critical link in the facility and service delivery systems, the city may require the over-sizing of these systems. The City may negotiate late-comer fees or other arrangements to compensate developers for over-sizing of facilities.**

Response: The Applicant is submitting this application to satisfy an anticipated condition of approval associated with City of Sandy Local File No. 19-023 SUB/VAR/TREE. Although Bailey Meadows Subdivision provides for and meets SDC criteria for on-site needs, in this case the City and Applicant agree to an off-site improvement requirement (i.e., Gunderson Road extension and parkland dedication). The off-site extension of Gunderson Road is outside the UGB, as described in this written document, and require a UGB amendment to allow an urban facility to be built on land currently within the County's jurisdiction. The policy above is understood and met by this application submittal.

POLICY 14: **Proposed plan elements such as parks, roadways, schools, etc., are intended to be conceptual. Actual locations and quantities should be determined through the development process.**

Response: The alignment of the extension of Gunderson Road to OR 211, a proposed plan element in the City's TSP, is conceptual. The actual location should be determined through the development process, as outlined above. To provide this public transportation facility improvement, the road should be extended to match the conceptual alignment in the Sandy TSP. However, due to geometrical issues, safety concerns, and potential for transportation hazards, the alignment illustrated in the Sandy TSP is not practicable for construction. This application provides for a solution to extend Gunderson Road and determine the actual functionable location through site analysis and development review. The location shown in Exhibit C can be improved to provide the required site characteristics and execute the extension of the transportation network to satisfy the needs of citizens in the general area. Please see the TIA and Supplemental Materials of Exhibit C for further details.

Additionally, according to the Sandy Parks Master Plan adopted May 15, 1997, there is not a conceptual location for a park on or near the subject site. Therefore, the location

for the improvement should be determined through the development process. Though parkland dedication is not required of the Bailey Meadows Subdivision application, the Applicant is providing it and it must be brought within the Sandy UGB and annexed to allow for it. Policy 14 above is met.

Goal 5 – Natural Resources

Response: Goal 5 is not applicable to the decision. The decision does not affect a Goal 5 resource under OAR 660-023-0250(3)(a)-(c) because:

a) The decision does not "create or amend" a resource list or a portion of an acknowledged plan or land use regulation adopted in order to protect a significant Goal 5 resource or to address specific requirements of Goal 5."

b) The decision does not "allow" new uses that could be conflicting uses with a particular significant Goal 5 resource site on an acknowledged resource list."

c) While the decision "amends an acknowledged UGB" no "factual information [was] submitted demonstrating that a resource site, or the impact areas of such a site, is included in the amended UGB area."

Goal 6 – Air, Water, and Land Resources Quality

POLICY 4: **Reduce congestion and delay on major streets to lessen localized pollution impacts of automobile travel through methods such as signal timing, access management, intersection improvements, etc.**

Response: The City's Comprehensive Plan with respect to Goal 6 and its development regulations governing land, air, and water quality are not affected by the decision. The intent of extending Gunderson Road to OR 211 is to enhance neighborhood circulation and provide local parkland, thereby reducing congestion and delay in the area. This mitigates localized pollution impacts of vehicle activity in the area.

Goal 7 – Areas Subject to Natural Hazards

Response: The City's Comprehensive Plan, with respect to Goal 7 and its development regulations governing natural hazards, is not affected by the decision. The subject site does not contain mapped areas of steep slopes 25 percent or greater or other known hazard areas.

Goal 8 – Recreational Needs

POLICY 1: **Ensure that new residential development contributes equitably to park land acquisition, development, and maintenance.**

POLICY 2: **Establish methods to maintain and enhance the quality and quantity of parks, open space, and recreational facilities and services. Ensure that these facilities and services serve the diverse recreational needs and interests of area residents and are accessible to all members of the community.**

POLICY 10: **The conceptual location of community and neighborhood parks and areas of open space have been indicated on the City of Sandy Land Use Map. Actual park locations may be determined based on more site-specific information.**

Response: According to the Sandy Parks Master Plan adopted May 15, 1997, there is not a conceptual location for a park on or near the subject site. Therefore, the location for the improvement should be determined through the development process. Though parkland

dedication is not required of the Bailey Meadows Subdivision application, the Applicant is providing it and it must be brought within the Sandy UGB and annexed to allow for it. The City's Comprehensive Plan with respect to Goal 8 above is met.

Goal 9 – Economic Development

Response: The City's Comprehensive Plan with respect to Goal 9 and its employment lands are not affected by the decision.

Goal 10 – Housing

Response: The subject property associated with this application to be incorporated within the UGB will be strictly for the purpose of constructing a public transportation facility and parkland improvements and is not planned to include land for residential use. Therefore, the City's Comprehensive Plan with respect to Goal 10 and residential land is not affected by the decision.

Goal 11 – Public Facilities and Services

Response: The City's Comprehensive Plan contains an acknowledged Goal 11 element that includes policies to ensure sufficient and adequate public services are available (or will be available as appropriate) to serve lands within the UGB. The property north of the subject site, Bailey Meadows Subdivision, was found to be sufficiently served by public services at the time it was annexed into the City in June 2017. This application involves amending the City's UGB to permit the extension of a public transportation facility (i.e., Gunderson Road) to allow for a future connection to OR 211. If approved, the extension is intended as an additional access to the subdivision and to distribute traffic from local streets to the surrounding area. The extension is not required for subdivision approval. Additionally, providing parkland on the northeast portion of Tax Lot 701 will enhance quality of life for the residents in the area. The parkland dedication is not required for subdivision approval. Goal 11 is satisfied.

POLICY 3: **Consider the needs of emergency service providers in the review of all development. Particular attention should be paid to:**

- **a) Street and driveway layout and site design features that ensure emergency vehicle access and building identification.**
- **b) Fire hydrant locations and fire flow.**
- **c) Security through appropriate lighting and landscape design.**

Response: Policy 3 above, regarding emergency service provider access, is discussed in detail under Goal 12, Policy 2.

Goal 12 – Transportation

POLICY 1: **Support a pattern of connected streets, sidewalks, and bicycle routes to: a) provide safe and convenient options for cars, bikes, and pedestrians; b) create a logical, recognizable pattern of circulation; and, c) spread traffic over local streets so that collector and arterial streets are not overburdened.**

Response: This application involves the extension of a public transportation facility (i.e., Gunderson Road) to allow Bailey Meadows Subdivision a future connection to OR 211, as illustrated in the City of Sandy TSP. If approved, the extension is intended as an additional access to

the subdivision and to distribute traffic from local streets to the surrounding area. The extension is planned to support a pattern of connected streets as stated above but is not required for subdivision approval.

POLICY 2: **Work with fire district, police, and other emergency service providers to ensure that adequate emergency access is possible on all streets.**

Response: Appendix D, Section D107 of the Oregon Fire Code addresses standards regarding fire apparatus access roads for one or two-family developments. As discussed in the Bailey Meadows Subdivision application (City of Sandy Local File No. 19-023 SUB/VAR/TREE), the subdivision currently provides two separate and approved fire apparatus access roads (Melissa Avenue and SE Ponder Lane) and shall meet the requirements of Section D104.3.

The extension of Gunderson Road would provide an additional access to the subdivision. Therefore, if approved, the Gunderson Road extension will provide the secondary access to the subdivision and SE Ponder Lane will not be utilized to serve as an emergency access as described above.

Additionally, the nature of Policy 2 above requires coordination of the application by the City with affected governmental entities. Coordination requires notice of an application, an opportunity for an affected governmental entity to comment on the application, and the City's incorporation of the comments to a reasonable extent. The City can find that coordination of this application will be accomplished in two ways: by the Applicant prior to application submittal, and by the City in the review process for the application. Goal 12, Policy 2 is satisfied.

POLICY 21: **Work with ODOT to determine locations for necessary traffic control signals. Proposed locations for future traffic signals have been determined for the downtown area in the City of Sandy Transportation System Plan. Other locations need to be determined in order to improve the safety and convenience of pedestrians, bicycles, and automobiles. The location of traffic signals should be consistent with the street network indicated in the Comprehensive Plan Map and current traffic engineering standards.**

POLICY 22: **Submit notice of development proposals impacting Highways 26 and 211 to ODOT for review and comment.**

Response: The above criteria applies to City processes for noticing and coordinating with ODOT, as applicable. The standards above apply as the project plans to extend Gunderson Road to OR 211. Direct action by the Applicant will be taken as applicable. Policy 21 and 22 can be satisfied.

Goal 13 – Energy Conservation

Response: The City's Comprehensive Plan with respect to Goal 13 and its standards governing energy conservation are not affected by the decision.

Goal 14 – Urbanization

POLICY 1: **Maintain an urban growth boundary with sufficient residential, commercial, industrial, and public use lands necessary to support forecast population and employment for a 20-year horizon. The City will evaluate and update the 20- year land supply at each periodic review plan update.**

Response: This application to amend the City UGB is necessary to provide a public transportation facility (i.e., Gunderson Road) to support residential land north of the project site which was included within the UGB and subsequently annexed in 2017. Additionally, this application provides parkland dedication which will benefit residential lands in the vicinity. As described above, the City is required to maintain a UGB with sufficient residential lands, as addressed in the February 2017 City of Sandy Urban Growth Boundary Expansion Analysis. This application will provide a public road as illustrated in the Sandy TSP that aligns with the existing transportation network in the area and implement a connection to OR 211.

POLICY 2: **Urban growth should be directed in a generally contiguous manner consistent with the city's ability to economically maintain and extend public services and facilities.**

POLICY 3: **The City of Sandy shall encourage the development of land according to the following priorities:**

- **a) Vacant, buildable lands or underutilized lands located within developed or developing areas.**
- **b) Lands contiguous to development areas where services can be easily and economically extended.**
- **c) Lands which are significantly separated from developing areas by vacant land, or areas which would place an undue burden on the city's infrastructure.**

Response: The project site is currently vacant, with pasture and vegetated areas. As stated above, urban growth should be directed in a contiguous manner and the planned Gunderson Road extension will facilitate growth north of the project site while having no impact on urban services or utilities. Per Goal 14, Policy 3(b) above, the City shall encourage the development of land which is contiguous to development areas where services can be easily and economically extended. The extension of Gunderson Road will provide access and distribute traffic from local streets to the surrounding area and provide parkland dedication, a benefit to lands north of the project site and those within the City limits.

POLICY 4: **An Urban Growth Boundary (UGB) and Urban Reserve Area (URA) shall be jointly adopted by the City of Sandy and Clackamas County. Procedures for coordinated management of the unincorporated lands within the UGB and URA shall be specified in an intergovernmental agreement adopted by the Sandy City Council and the Clackamas County Board of Commissioners.**

Response: The property involved in this application, Tax Lot 701, is associated with an UGMA, as it is within the Sandy Adopted URA. The applicable elements are addressed within this written narrative.

POLICY 6: **Designated URA lands will be considered for inclusion within the UGB on a phased basis, primary at periodic review. Legislative amendments to the UGB shall be large enough to facilitate cohesive neighborhood framework planning and efficient provision of public facilities. Property owners will also have the opportunity to request that land within the designated URA be included within the Sandy UGB, based on the criteria outlined in LCDC Goal 14 and the Urban Growth Management Agreement with Clackamas County.**

Response: This application involves a property owner's (i.e., the Applicant's) request that Tax Lot 701, land within the designated Sandy URA, be included with the Sandy UGB. The applicable criteria, including Land Conservation and Development Commission (LCDC)

Goal 14 noted above, have been addressed in this written document. Policy 6 is relevant and satisfied.

POLICY 7: **The City of Sandy shall have the lead role in designating planned land uses and densities for incorporated and unincorporated lands within the UGB and the URA. The Comprehensive Plan shall constitute the comprehensive plan for all land within the Urban Growth Boundary and Urban Reserve Area.**

Response: The subject application involves property which is located within the URA. This written document contains analysis of the City's comprehensive plan goals and policies associated with the property. Therefore, Policy 7 is applicable.

POLICY 8: **The City of Sandy shall have the lead role in coordinating public facility planning (streets, sanitary and storm sewers, water, parks and open space, schools) within the UGB and the URA.**

Response: Tax Lot 701 is located within the Sandy Adopted URA. Therefore, Policy 8 is applicable, and the City of Sandy shall have the lead role in coordinating this application for the planned public transportation and parkland facilities.

POLICY 9: **County zoning shall apply to unincorporated lands within the UGB and URA until annexation to the City of Sandy.**

Response: Tax Lot 701 is located within the Sandy Adopted URA and is currently designated with Clackamas County EFU zoning. An application for annexation and a comprehensive plan amendment is necessary to apply City zoning to allow for the public transportation and parkland facilities. Policy 9 is applicable and satisfied.

POLICY 11: **Clackamas County shall have the lead role in processing land use and development applications for unincorporated lands within the UGB and URA.**

Response: Tax Lot 701 is located within the Sandy Adopted URA. Therefore, Policy 11 is applicable, and the City of Sandy shall coordinate with Clackamas County in processing the subject land use and development application for unincorporated lands within the URA.

POLICY 12: **The City of Sandy will support development within the areas outside the city limits but within the Sandy Urban Growth Boundary or Urban Reserve Area based on the following standards and restrictions:**

- **a)** **County zoning in effect at the time of adoption of the Urban Reserve Area will be frozen until the unincorporated land is included within the UGB and annexed for urban development.**
- **b)** **New commercial and industrial uses will generally be discouraged outside the City limits and within the UGB or within the Urban Reserve Area.**
- **c)** **Agricultural and forest uses will be allowed in accordance with Clackamas County zoning.**
- **d)** **The City and County shall coordinate plans for interim rural residential development within the designated Urban Reserve Area. The following strategies will be used to ensure that interim rural development does not inhibit long-term urbanization of lands within the Sandy UGB and Urban Reserve Area:**
  - **1)** **shadow plats**
  - **2)** **cluster development**

3) redevelopment plans

4) non-remonstrance agreements or deed restrictions for annexation and provision of urban facilities

Response: Tax Lot 701 is located within the Sandy Adopted URA and is currently designated with Clackamas County EFU zoning. An application for annexation and a comprehensive plan amendment is necessary to apply City zoning allowing this urban development (i.e., creation of a public transportation facility and a public parkland facility). Therefore, the subject application does not involve new commercial, industrial, or agricultural uses. The Applicant understands that City Low-Density Residential (LDR) Comprehensive Plan and Single-Family Residential (SFR) Zoning designations are intended for the property. Interim use and development, prior to annexation, is not associated with this application. The application complies with the applicable components of Policy 12 above.

SANDY DEVELOPMENT CODE – REVISED ORDINANCE 2019-01

CHAPTER 17.24 - COMPREHENSIVE PLAN AMENDMENT PROCEDURES

17.24.00 BACKGROUND

The adopted Comprehensive Plan is the official statement of the City that sets forth major policies concerning desired future development of the community. The Comprehensive Plan is the controlling land use planning instrument for the City, and as such land development regulations and related actions are required to conform to the plan.

This chapter pertains to lands within the City limits. Those portions of the Comprehensive Plan that apply to areas outside the City limits but within the urban growth boundary shall be amended in accordance with the provisions of Clackamas County and the Sandy Urban Growth Management Agreement.

Response: Tax Lot 701 is currently located outside of the City limits and within the City of Sandy's Urban Reserve Area (URA). This application involves amending the Urban Growth Boundary in accordance with the provisions of Clackamas County and the Sandy Urban Growth Management Agreement (UGMA). This chapter is relevant to the project.

17.24.10 INTENT

This chapter sets forth review criteria and procedural requirements in order to:

A. Respond to changing conditions and community attitudes;

B. Ensure flexibility while at the same time maintain the integrity of the Comprehensive Plan; and

C. Establish procedures by which the Plan text and map may be amended.

17.24.20 INITIATION

Comprehensive Plan amendments may be initiated by one of the following:

A. An application submitted by a property's owners or their authorized agents for a specific property; or

B. A majority vote of the City Council.

Response: This application is submitted on behalf of the property owners of Tax Lot 701. The criteria are met.

17.24.30 FREQUENCY OF PLAN AMENDMENTS

Applications for Comprehensive Plan amendments initiated by property owners shall be reviewed semi-annually in March and September unless otherwise authorized by the City Council. The City Council may initiate amendments to the Comprehensive Plan at any time. Comprehensive Plan Amendments filed in conjunction with an annexation application shall be reviewed concurrently. Comprehensive Plan amendments are exempt from the time limits established in State law for development review processes and shall be exempt from time restrictions set in this Code.

Response: This application involves a Type C Annexation; therefore, the Comprehensive and Zone Map Amendments should be reviewed concurrently.

17.24.40 APPLICATION REQUIREMENTS

An application may be filed jointly by any or all of the property owners of record or their authorized agents within the area of the proposed Comprehensive Plan amendment. Applications shall be on forms provided by the Director and include a description and map of the area to be affected by the proposed change, a statement of the reasons for the change, and other information as may be necessary for an adequate review of the application. Notice shall be provided to the Land Conservation and Development Commission (LCDC) of any proposed amendment or new regulation as provided by State law. In addition, notice of any proposed amendment that may affect private access to state roads, or that may impact a state transportation facility, shall be provided to the Oregon Department of Transportation (ODOT).

Response: The application requirements are understood. Tax Lot 701 fronts on OR 211. It is understood that notice will be provided by the City to the Land Conservation and Development Commission (LCDC) and Oregon Department of Transportation (ODOT).

17.24.50 ACCEPTANCE OF APPLICATION

A. The Director shall review the application in accordance with Chapter 17.20-Public Hearings;

B. After accepting a complete application, the Director shall schedule a public hearing to be held by the Planning Commission. Notice of the hearing shall be provided in accordance with Chapter 17.22 Public Notices.

17.24.60 STAFF EVALUATION

The Director shall prepare a report that evaluates whether the proposal complies with the review criteria in Chapter 17.24.70. The report should include a recommendation for approval or denial.

17.24.70 REVIEW CRITERIA

Comprehensive Plan amendments shall be reviewed to assure consistency with the purposes of this chapter, policies of the Comprehensive Plan, and any other applicable policies and standards adopted by the City Council. Amendments shall be approved only when the following findings are made:

A. The change being proposed is the best means of meeting the identified public need; and

B. The change conforms to all applicable Statewide Planning Goals.

Response: This written document addresses applicable portions of the City of Sandy Land Development Code (SDC), Comprehensive Plan, and LCDC Statewide Planning Goals. The review criteria have been met.

17.24.80 ACTION BY THE HEARING BODY

A. Planning Commission. The Planning Commission shall conduct a public hearing in accordance with Chapter 17.20-Public Hearings. Following the close of the public hearing, the Commission shall make a recommendation to the City Council concerning the proposed Comprehensive Plan map amendment. The Commission's recommendations shall include findings that specify how the proposal has or has not complied with the above review criteria.

B. City Council. Upon receipt of the Planning Commission's recommendation the matter shall be set for a de novo public hearing before the City Council. Following the close of the public hearing, the City Council shall either deny the application or adopt an ordinance approving the proposed Comprehensive Plan map amendment or a modification thereof. The City Council's decision shall include findings that specify how the proposal has or has not complied with the above review criteria.

C. Notwithstanding any contrary code provision and in the City Council's sole discretion, it may allow an amendment to proceed directly to a public hearing before the City Council without a hearing or recommendation from the Planning Commission.

17.24.90 NOTICE OF DECISION

The Director shall provide the applicant with a notice of decision that includes a written statement of the City Council's decision, a reference to findings leading to it, and appeal period deadline. A notice of the decision shall also be mailed to persons who participated orally or in writing at the public hearing and who in writing requested notice of the decision.

Response: This above procedural standards are understood and do not require action by the Applicant.

…

CHAPTER 17.26 - ZONING DISTRICT AMENDMENTS

17.26.00 INTENT

This chapter sets forth review criteria and procedural requirements for quasi-judicial and legislative zoning map amendments to accomplish the following: A. Maintain sound, stable, and desirable development within the City;

B. Permit changes in zoning district boundaries where appropriate;

C. Ensure zoning changes are consistent with the community's land use policies and goals; and

D. Lessen the influence of private economic interests in the land use decision-making process.

17.26.10 BACKGROUND

The Zoning Map is consistent with the adopted Comprehensive Plan, as amended, and as such it is a reflection of the City's land use planning goals. The Zoning Map has been adopted as part of the Development Code. Frequent and piecemeal amendments to the Zoning Map can threaten the integrity of the Comprehensive Plan and the likelihood of its successful implementation. Nevertheless, it may be necessary to amend the Zoning Map from time to time to correct errors or to respond to changing conditions or unforeseen circumstances.

When a zoning district is amended there often must be a corresponding change to the Comprehensive Plan map. There are, however, instances where more than one zoning district matches the Comprehensive Plan designation. In these situations, the zoning district can be amended without a Plan map change. The table below illustrates the relationship between the Comprehensive Plan and the Zoning Map designations in the City.

Zoning district changes are classified as legislative or quasi-judicial, depending on the number of properties involved. Changes to the Zoning Map are reviewed initially by the Planning

Commission with a recommendation forwarded to the City Council. The City Council conducts a public hearing and considers adoption of changes. A Zoning Map application may be reviewed in conjunction with a Comprehensive Plan map amendment or other land use application.

17.26.20 COMPREHENSIVE PLAN & CORRESPONDING ZONING MAP DESIGNATIONS

PLAN MAP DESIGNATION	ZONING MAP DESIGNATION
RESIDENTIAL	RESIDENTIAL
LDR – Low Density Residential	SFR Single Family (3-5.8 units/net acre)
	R-1 Low Density (5-8 units/net acre)
MDR – Medium Density	R-2 Medium Density (8-14 units/net acre)
HDR – High Density	R-3 High Density (10-20 units/net acre)
COMMERCIAL	C-1 Central Business District
	C-2 General Commercial
	C-3 Village Commercial
INDUSTRIAL	INDUSTRIAL
	I-1 Industrial Park
	I-2 Light Industrial
	I-3 Heavy Industrial

Response: It is understood that the portion of the property that is planned to be annexed will be designated Low Density Residential (LDR) and Single Family Residential (SFR).

…

17.26.40 QUASI-JUDICIAL AMENDMENT PROCEDURES

All zoning district changes not deemed legislative shall be quasi-judicial.

A. Initiation-Quasi-Judicial. Initiation of a zoning district change that is quasi-judicial in nature may be accomplished by one of the following ways:

1. Filing of an application by the owner(s) of the subject property(ies); or

2. A majority vote of the City Council or Planning Commission following the same procedures used for legislative amendments discussed above.

Where a motion by either the City Council or Planning Commission involves a Planned Development designation, the motion need not include a conceptual or detailed development plan.

B. Review Criteria. Quasi-judicial zoning district changes shall be reviewed to:

1. Determine the effects on City facilities and services;

2. To assure consistency with the purposes of this chapter;

3. To assure consistency with the policies of the Comprehensive Plan;

4. To assure consistency with the Statewide Planning Goals as may be necessary, and any other applicable policies and standards adopted by the City Council.

Response: This application addresses City facilities and services, consistency with Chapter 17 and the policies of the Comprehensive Plan, and the applicable LCDC Statewide Planning Goals. The review criteria have been addressed and met.

C. Application Requirements. An application for quasi-judicial zoning district change shall be made on forms provided by the Director and shall include the following where applicable:

1. Description of the land (address, lot, block, or similar description);

2. Narrative addressing how the application meets the review criteria;

3. Maps, drawings, and such other information as may be needed for an adequate review of the application;

4. List of affected property owners, from current Clackamas County Assessor's Office records, within 300 feet of the boundaries of the parcel(s) proposed for a zoning district change; and

5. If a proposed zoning district change is to include land in more than one ownership, the application must be submitted jointly by all of the owners or authorized agents.

Response: The above-listed submittal items have been included within the application materials. The zoning district change involves land in more than one ownership; as such, the application is submitted jointly by the property owners.

17.26.60 ACTION BY THE HEARING BODY

A. Planning Commission. The Planning Commission shall conduct a public hearing in accordance with Chapter 17.20-Public Hearings. Following the close of the public hearing the Commission shall make a recommendation to the City Council concerning the proposed Zoning Map amendment. The Commission's recommendations shall include findings that specify how the proposal has or has not complied with the above review criteria;

B. City Council. Upon receipt of the Planning Commission's recommendation the matter shall be set for a public hearing before the City Council. Following the close of the public hearing the City Council shall either deny the application or adopt an ordinance approving the proposed Zoning Map amendment or a modification thereof. The City Council's decision shall include findings that specify how the proposal has or has not complied with the above review criteria.

C. Notwithstanding any contrary code provision and in the City Council's sole discretion, it may allow an amendment to the zoning map or to the development code to proceed directly to a public hearing before the City Council without a hearing or recommendation from the Planning Commission.

17.26.70 NOTICE OF DECISION

The Director shall provide the applicant with a notice of decision that includes a written statement of the City Council's decision, a reference to findings leading to it, and appeal period deadline. A notice of the decision shall also be mailed to persons who participated orally or in writing at the public hearing and, for legislative zone amendments, who in writing requested notice of the decision.

17.26.80 APPEALS

The decision of the hearing authority may be appealed in accordance with Chapter 17.28Appeals.

17.26.90 EFFECTIVE DATE

The decision of the City Council made in conjunction with a Zoning Map amendment shall become effective 30 days after passage of the ordinance. No zoning district changes will take effect, however, until and unless the necessary Comprehensive Plan amendment has been implemented by the City Council, if needed.

Response: The procedural standards listed above are understood.

...

CHAPTER 17.78 - ANNEXATION

17.78.00 INTENT

The procedures and standards established in this chapter are required for review of proposed annexations in order to:

A. Maximize citizen involvement in the annexation review process by holding a public hearing;

B. Establish a system for measuring the physical, environmental, fiscal and related social effects of proposed annexations; and,

C. Where possible and practical, avoid the creation of irregular boundaries or annexations that create "island," "cherry stem" or "shoestring" annexations.

Response: The above procedural standards are understood.

17.78.10 PROCEDURAL CONSIDERATIONS

A. The corporate limits of the City shall include all territory encompassed by its boundaries as they now exist or are modified as provided herein unless mandated by State Law.

B. The City may annex an island if it is less than 100 acres and has at least 80 percent of its boundary contiguous to the City; or the land is of any size and has at least 80 percent of its boundary contiguous to the City if the area to be annexed existed as an island before October 20, 1997.

Response: The subject property is not an island. The standard is not applicable.

C. The City may annex land for public facilities. Public facilities include but are not limited to schools, senior centers, roads, police and fire stations, parks or open space, and public water, sewer and storm drainage facilities.

Response: This application involves annexation of land for the extension of a public transportation facility (i.e., Gunderson Road) as illustrated in the City of Sandy TSP and parkland dedication. The property (Tax Lot 701) has a total area of ±14.30 acres, though only the acreage required for the road right-of-way and associated improvements, and area for parkland dedication are planned to be annexed to the City of Sandy; the total area planned for annexation is approximately 5.40 acres.

17.78.15 TYPES OF ANNEXATION

A. Type A: Annexation in conformance with conceptual zoning designation

B. Type B: Annexation + zone change

C. Type C: Annexation + plan map change + zone change

Response: This application involves a Type C Annexation.

17.78.20 CONDITIONS FOR ANNEXATION

The following conditions must be met prior to beginning an annexation request:

A. The requirement of Oregon Revised Statutes, Chapters 199 and 222 for initiation of the annexation process are met;

B. The site must be within the City of Sandy Urban Growth Boundary (UGB);

C. The site must be contiguous to the city or separated from it only by a public right-of-way or a stream, bay, lake or other body of water.

D. The site has not violated Section 17.78.25.

Response: An application for an amendment of the Sandy UGB to include Tax Lot 701 is being submitted for processing concurrently with this application. The site is contiguous to Tax Lot 803 of Clackamas County Assessor's Map 2 4E 23, which is located within the City limits, and has not violated Section 17.78.25.

17.78.25 TREE RETENTION

The intent of this section is to treat property with annexation potential (in the UGB) as if it had been subject, prior to annexation, to the tree retention provisions of the City's Urban Forestry Ordinance (Chapter 17.102) and Flood and Slope Hazard (FSH) Overlay District (Chapter 17.60), to discourage property owners from removing trees prior to annexation as a way of avoiding Urban Forestry Ordinance provisions, and to prevent unnecessary tree removal for future subdivision layout. In accordance with ORS 527.722, the State Forester shall provide the City with a copy of the notice or written plan when a forest operation is proposed within the UGB. The City shall review and comment on an individual forest operation and inform the landowner or operator of all other regulations that apply but that do not pertain to activities regulated under the Oregon Forest Practices Act.

A. Properties shall not be considered for annexation for a minimum of five (5) years if any of the following apply:

1. Where any trees six (6) inches or greater diameter at breast height (DBH) have been removed within 25 feet of the high water level along a perennial stream in the five years prior to the annexation application.

2. Where more than two (2) trees (six (6) inches or greater DBH) per 500 linear feet have been removed in the area between 25 feet and 80 feet of the high water level of Tickle Creek in the five years prior to the annexation application.

3. Where more than two (2) trees (six (6) inches or greater DBH) per 500 linear feet have been removed in the area between 25 feet and 50 feet of the high water level along other perennial streams in the five years prior to the annexation application.

4. Where any trees six (6) inches or greater DBH have been removed on 25 percent or greater slopes in the five years prior to the annexation application.

5. Where more than ten (10) trees (11 inches or greater DBH) per gross acre have been removed in the five years prior to the annexation application, except as provided below:

   a. Sites under one (1) acre in area shall not remove more than five (5) trees in the five years prior to the annexation application.

   b. Sites where removal of ten (10) or fewer trees will result in fewer than three (3) trees per gross acre remaining on the site. Tree removal may not result in fewer than three (3) trees per gross acre remaining on the site. At least three (3) healthy, nonnuisance trees 11 inches DBH or greater must be retained for every one-acre of contiguous ownership.

   c. For properties in or adjacent to the Bornstedt Village Overlay (BVO), tree removal must not result in fewer than six (6) healthy 11 inch DBH or greater trees per acre.

Response: The subject property has not violated Section 17.78.25, above, and the property should be considered for annexation.

B. Exceptions. The City Council may grant exceptions to this section where:

1. The property owner can demonstrate that Douglas Fir, Western Red Cedar, or other appropriate native trees were planted at a ratio of at least two trees for every one tree removed no less than five years prior to the submission of the annexation application, and at least 50 percent of these trees have remained healthy; or

2. The Council finds that tree removal was necessary due to hazards, or utility easements or access; or

3. The trees were removed because they were dead, dying, or diseased and their condition as such resulted from an accident or non-human cause, as determined by a certified arborist or other qualified professional; or

4. The trees removed were nuisance trees; or

5. The trees were removed as part of a stream restoration and enhancement program approved by the Oregon Department of Fish and Wildlife as improving riparian function; or

6. The trees removed were orchard trees, Christmas trees, or commercial nursery trees grown for commercial purposes; or

7. The application of this section will create an island of unincorporated area.

Response: This application does not require an exception to Section 17.78.25.

17.78.30 ZONING OF ANNEXED AREAS

A. All lands within the urban growth boundary of Sandy have been classified according to the appropriate city land use designation as noted on the comprehensive plan map (as per the city/county urban growth management area agreement). The zoning classification shall reflect the city land use classification as illustrated in Table 17.26.20.

B. Where only a single city zoning designation corresponds to the comprehensive plan designation (Type A) and the rezoning decision does not require the exercise of legal or policy judgment on the part of the City Council, amendment of the zoning map shall be a ministerial decision of the Director made without notice or any opportunity for a hearing.

Response: Tax Lot 701 is located within the Sandy Adopted URA and is currently designated with Clackamas County EFU zoning. This application includes a comprehensive plan amendment to apply City zoning to allow for creation of a public transportation facility and parkland dedication. Consistent with abutting property designations, the Applicant plans to obtain City Low-Density Residential (LDR) Comprehensive Plan and Single-Family Residential (SFR) Zoning designations for the property. The transportation facility/road and parkland are permitted uses under the above designation as minor public facilities.

17.78.40 EXISTING USE, ACTIVITY OR STRUCTURE

A. As of the effective date of annexation, no use or activity shall be considered non-conforming if the use or activity: (1) violates or conflicts with county zoning regulations and (2) is not classified as non-conforming under county zoning regulations. Any such use or activity shall constitute a violation of this ordinance.

B. Any use, activity or structure that is existing at the effective date of annexation, under a Clackamas County use permit with a time limit imposed, shall not be a non-conforming use, but may continue for the extent of the time limit. Such use permits may not be extended without City approval.

C. Any lot or parcel of land duly recorded in the Clackamas County Recorder's Office prior to the effective date of this Ordinance and having an area, width, depth, or street frontage less than that required in the Zoning District regulations in which such lot or parcel is situated, shall be deemed to be a lot and may be used as a building site, provided that all other regulations for the Zoning District shall apply.

Response: The subject property is unimproved with vegetated and pastured areas and is not associated with a current use or activity. There are no structures on site. The purpose of this application is to implement an anticipated condition of approval from the City for the Bailey Meadows Subdivision application. Together with an amendment to the City's UGB, this suite of applications (i.e., annexation, comprehensive plan map amendment, and zone map amendment), an offsite transportation facility improvement (e.g. Gunderson Road extension) can be realized. The configuration, area, and geometry of the land to be annexed is reflective of the Gunderson Road extension and not intended for other uses.

17.78.50 ANNEXATION CRITERIA

Requests for annexation shall not have an adverse impact on the citizens of Sandy, either financially or in relation to the livability of the city or any neighborhoods within the annexation area. Generally, it is desirable for the city to annex an area if the annexation meets any of the following criteria:

A. A necessary control for development form and standards of an area adjacent to the city; or

B. A needed solution for existing problems, resulting from insufficient sanitation, water service, or other urban service related problems; or

C. Land for development to meet urban needs and that meets a logical growth pattern of the city and encourages orderly growth; or

D. Needed routes for utility and transportation networks.

Response: This application involves an annexation to the to the Sandy UGB to allow the extension of Gunderson Road (i.e., an urban public transportation facility) pursuant to the Sandy TSP and dedication of parkland. The extension would provide an additional access to the Bailey Meadows Subdivision and distribute traffic in the area and meet needs for an area of planned, logical urban growth.

17.78.60 APPLICATION SUBMISSION REQUIREMENTS

Requests for annexation shall be made on forms provided by the city for such purposes and shall be accompanied by the following:

A. Written consent form to the annexation signed by the owners of all land to be annexed;

B. A legal description certified by a registered surveyor or engineer;

C. The application fee established by the city;

D. A list of property owners within three hundred (300) feet of the subject property on mailing labels;

E. Vicinity map showing the area to be annexed including adjacent city territory;

Response: The written consent form signed by the property owners, a legal description, fee, list of adjacent property owners, and vicinity map are included in the application materials. The submittal requirements have been met.

F. Site Plan (Type A=15 copies; Type B or C = 25 copies) drawn to scale (not greater than one inch = fifty feet), indicating:

1. The location of existing structures (if any);

2. The location of streets, sewer, water, electric and other utilities, on or adjacent to the property to be annexed;

3. Approximate location of areas subject to regulation under Chapter 17.60, Flood and Slope Hazard (FSH) Overlay District.

Response: The above listed information is provided, as applicable. There are no existing structures or areas of mapped Flood and Slope Hazard (FSH) overlay on the property. The submittal criteria are met.

G. Narrative Statement explaining the proposal and addressing:

1. Availability, capacity and status of existing water, sewer, drainage, transportation, fire, park and school facilities;

Response: The project involves annexation for the purpose of providing public facilities (e.g. transportation facility and parkland). Although Bailey Meadows Subdivision provides for and meets Sandy Development Code criteria for on-site needs, in this case the City and Applicant agree to off-site improvements (i.e., Gunderson Road extension and parkland dedication). Annexation will not create a demand for sewer, water, utility fire, or school needs, nor will the project allow residential density. The submittal criteria are met.

2. Additional facilities, if any, required to meet the increased demand and any proposed phasing of such facilities in accordance with projected demand; and,

Response: The project involves annexation for the purpose of providing public facilities as described above. Annexation will not create a demand for sewer, water, utility fire, or school needs, nor will the project allow residential density. The project is not planned to be phased. The submittal criteria are met.

3. Method and source of financing required to provide additional facilities, if any.

Response: As described above, the purpose of this annexation application is to provide public facilities (e.g. transportation and parkland dedication) that should be located within the City. Annexation does not create the need for additional facilities. Therefore, financing methods are not applicable.

17.78.70 REVIEW PROCEDURE

Type A, B & C

1. Pre-application conference;
2. Submission of completed application;
3. Review by Planning Commission with recommendation to City Council;
4. Review by City Council.

Response: The pre-application conference requirement was waived by the Sandy Planning Director in an email dated December 9, 2019. The applicable above procedural review items are understood.

17.78.80 EXCEPTIONS

Exceptions may be granted for identified health hazards and for those matters which the City Council determines that the public interest would not be served by undertaking the entire annexation process. The City Council may authorize an exception to any of the requirements of this chapter. An exception shall require a statement of findings that indicates the basis for the exception.

Response: This application does not require exceptions. The above criterion is understood and not applicable.

17.78.90 ANNEXATION CONDITIONS

A. All properties annexed are subject to inclusion within applicable advance financing districts and urban renewal districts.

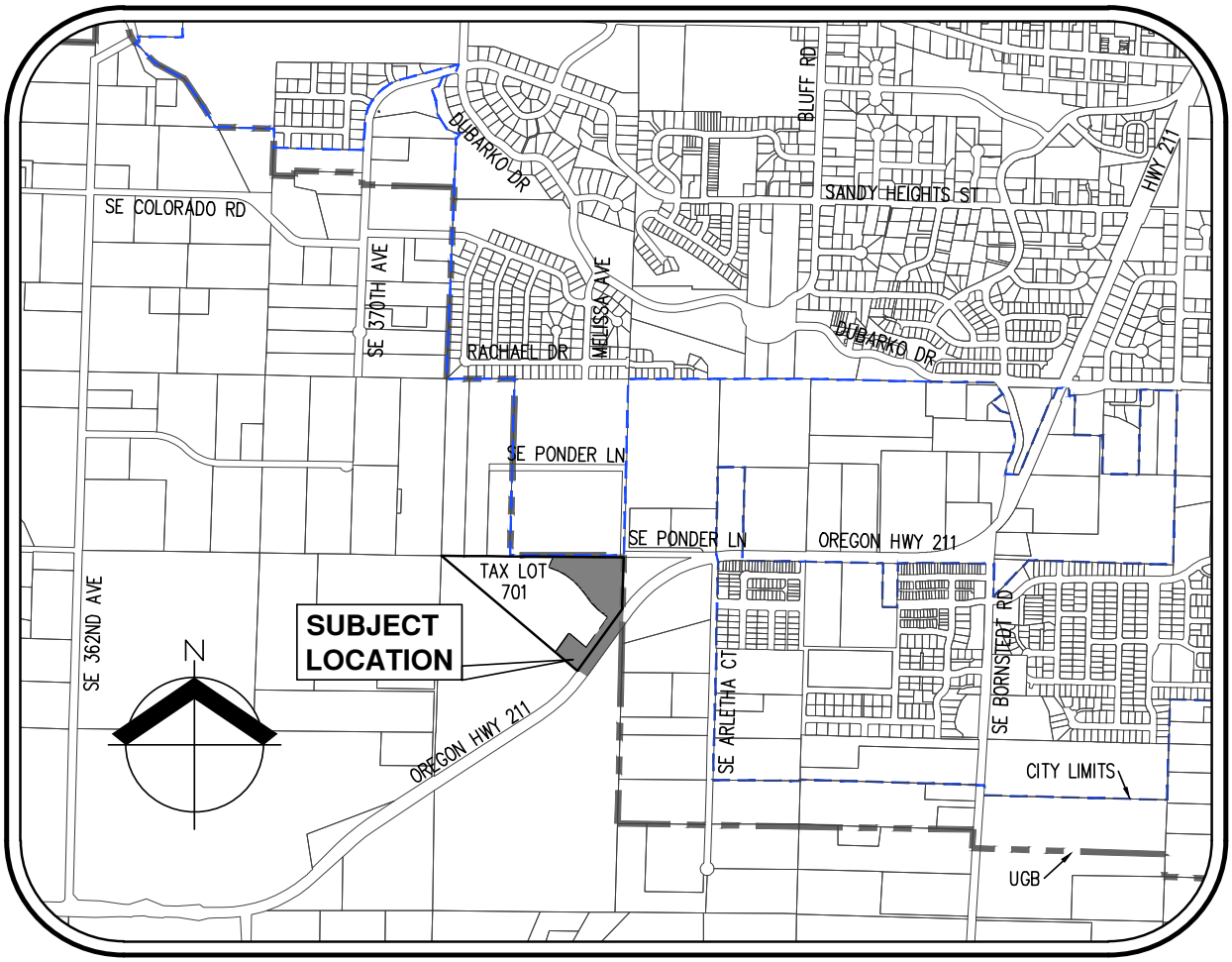
B. These conditions apply to all annexed properties regardless of transfers of the ownership of such properties.

Response: The subject property may be included within applicable districts, if any apply. The criteria can be met.

IV. Conclusion

The required findings have been made and this written narrative and accompanying documentation demonstrate that the application is consistent with the applicable provisions of the City of Sandy Development Code. The evidence in the record supports approval of the application and the City can rely upon it for its approval of the application.

EXHIBIT F



VICINITY MAP

NOT TO SCALE

EXHIBIT G

AKS ENGINEERING & FORESTRY, LLC
12965 SW Herman Road, Suite 100, Tualatin, OR 97062
P: (503) 563-6151 | www.aks-eng.com
AKS Job #7107
OFFICES IN: BEND, OR - KEIZER, OR - TUALATIN, OR - VANCOUVER, WA

EXHIBIT A

Legal Description

A tract of land, and a portion of right-of-way, located in the Northeast One-Quarter of Section 23, Township 2 South, Range 4 East, Willamette Meridian, Clackamas County, Oregon, and being more particularly described as follows:

Commencing at the northeast corner of Parcel 1 of Partition Plat 2018-030, Clackamas County Plat Records; thence along the north line of Document Number 93-28438, Clackamas County Deed Records, South 89º52'25" East 823.67 feet to the Point of Beginning; thence continuing along said north line, South 89°52'25" East 495.53 feet to the northeast corner of said deed; thence along the east line of said deed and the southerly extension thereof, South 01°24'04" West 532.91 feet to the southeasterly right-of-way line of Woodburn-Sandy Highway (40.00 feet from centerline); thence along said southeasterly right-of-way line, South 35°02'39" West 438.40 feet; thence leaving said southeasterly right-of-way line, North 54°57'21" West 80.00 feet to the northwesterly right-of-way line of Woodburn-Sandy Highway (40.00 feet from centerline), also being the southwesterly corner of said deed; thence along the southwesterly line of said deed, North 49°21'56" West 200.96 feet; thence leaving said southwesterly line, North 35°02'39" East 150.72 feet; thence South 49°21'56" East 160.76 feet to a line which is parallel with and 40.00 feet northwesterly of, when measured at right angles to, said northwesterly right-of-way line; thence along said parallel line, North 35°02'39" East 295.25 feet; thence leaving said parallel line, North 54°57'21" West 25.00 feet; thence along a curve to the right with a Radius of 533.00 feet, a Delta of 23°05'54", a Length of 214.88 feet, and a Chord of North 43°24'23" West 213.42 feet; thence along a curve to the left with a Radius of 467.00 feet, a Delta of 41°16'55", a Length of 336.48 feet, and a Chord of North 52°29'54" West 329.25 feet to a point of non-tangency (Radial Bearing of South 16°51'38" West); thence North 23°37'27" East 93.53 feet to the Point of Beginning.

The above described tract of land contains 5.29 acres, more or less.

1/7/2020

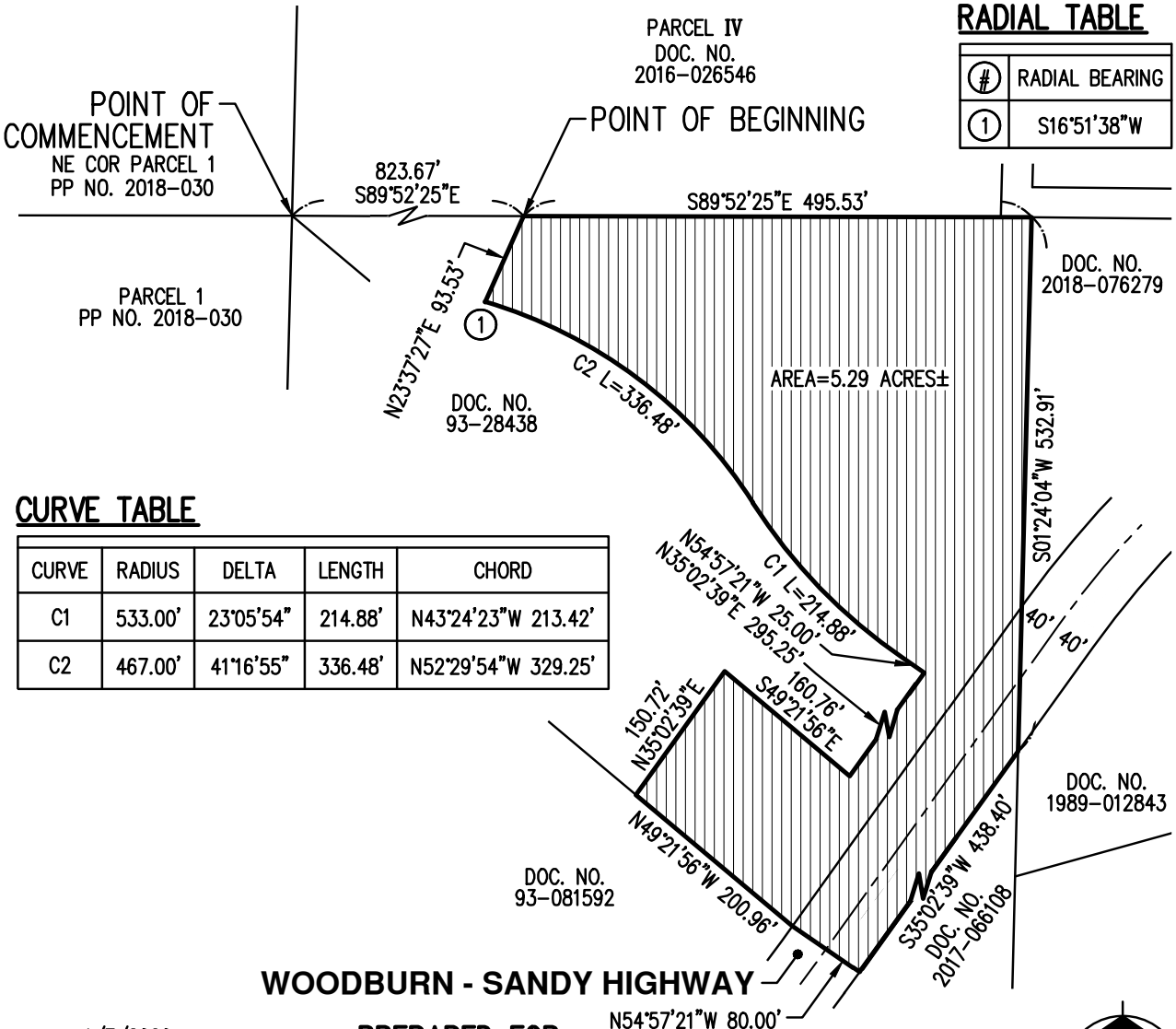
REGISTERED
PROFESSIONAL
LAND SURVEYOR

Benjamin R Huff

OREGON
MARCH 14, 2017
BENJAMIN R HUFF
84738PLS
RENEWS: 6/30/21

EXHIBIT B

A TRACT OF LAND, AND A PORTION OF RIGHT-OF-WAY,
LOCATED IN THE NORTHEAST 1/4 OF SECTION 23,
TOWNSHIP 2 SOUTH, RANGE 4 EAST, WILLAMETTE MERIDIAN,
CLACKAMAS COUNTY, OREGON



RADIAL TABLE

#	RADIAL BEARING
1	S16°51'38"W

CURVE TABLE

CURVE	RADIUS	DELTA	LENGTH	CHORD
C1	533.00'	23°05'54"	214.88'	N43°24'23"W 213.42'
C2	467.00'	41°16'55"	336.48'	N52°29'54"W 329.25'

SCALE: 1"=150 FEET

150 0 30 75 150

N

1/7/2020

REGISTERED PROFESSIONAL LAND SURVEYOR

Benjamin R Huff

OREGON
MARCH 14, 2017
BENJAMIN R HUFF
84738PLS
RENEWS: 6/30/21

PREPARED FOR

ALLIED HOMES & DEVELOPMENT
12042 SE SUNNYSIDE ROAD, SUITE 706
CLACKAMAS, OR 97015

EXHIBIT MAP

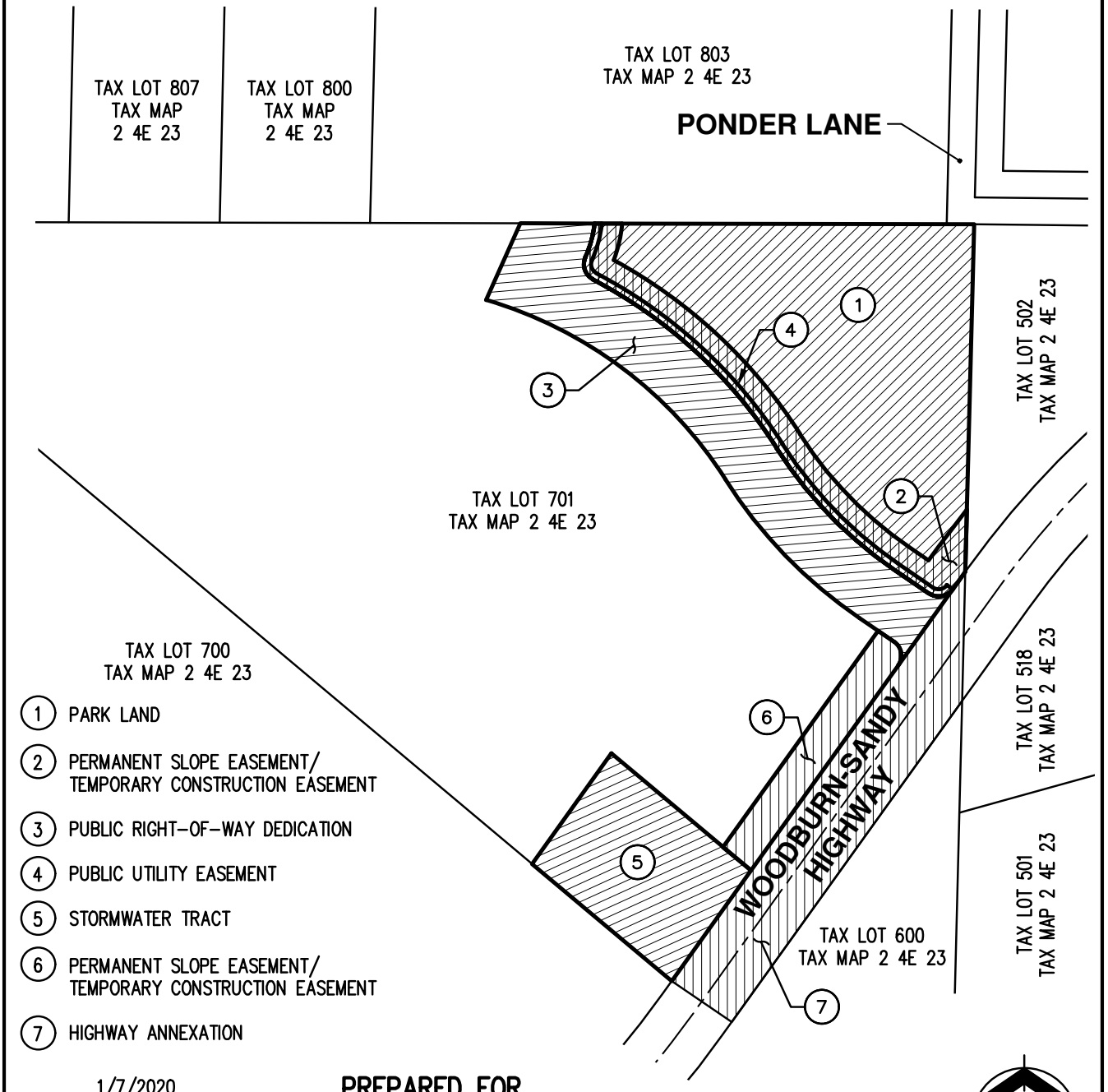
EXHIBIT B

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
503.563.6151 WWW.AKS-ENG.COM

DRWN: WCB
CHKD: BRH
AKS JOB: 7107

DWG: 7107 20191230 EXB | EXB10

EXHIBIT KEY MAP



1. PARK LAND
2. PERMANENT SLOPE EASEMENT/ TEMPORARY CONSTRUCTION EASEMENT
3. PUBLIC RIGHT-OF-WAY DEDICATION
4. PUBLIC UTILITY EASEMENT
5. STORMWATER TRACT
6. PERMANENT SLOPE EASEMENT/ TEMPORARY CONSTRUCTION EASEMENT
7. HIGHWAY ANNEXATION

SCALE: 1"=150 FEET

150 0 30 75 150

N

1/7/2020

REGISTERED PROFESSIONAL LAND SURVEYOR

Benjamin R Huff

OREGON
MARCH 14, 2017
BENJAMIN R HUFF
84738PLS
RENEWS: 6/30/21

PREPARED FOR

ALLIED HOMES & DEVELOPMENT
12042 SE SUNNYSIDE ROAD, SUITE 706
CLACKAMAS, OR 97015

SE PONDER LANE - SANDY	EXHIBIT KEY
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM	DRWN: WCB CHKD: BRH AKS JOB: 7107

DWG: 7107 20191230 EXB | EXHBIIT KEY MAP

EXHIBIT H

Technical Memorandum

LANCASTER
ENGINEERING

321 SW 4th Ave., Suite 400
Portland, OR 97204
phone: 503.248.0313
fax: 503.248.9251
lancasterengineering.com

To: Cody Bjugan, Allied Homes & Development

From: Jessica Hijar

Date: January 6, 2020

Subject: UGB Amendment & Gunderson Road Connection Traffic Impact Analysis, Addendum #1

This memorandum is written as an addendum to the Bailey Meadows Subdivision Traffic Impact Analysis prepared by Lancaster Engineering dated June 20, 2019. Specifically, analysis is provided regarding the potential new roadway connection to Highway 211. The current planning effort includes a connection of Gunderson Road to Highway 211 as considered in the City of Sandy's Transportation System Plan (TSP).

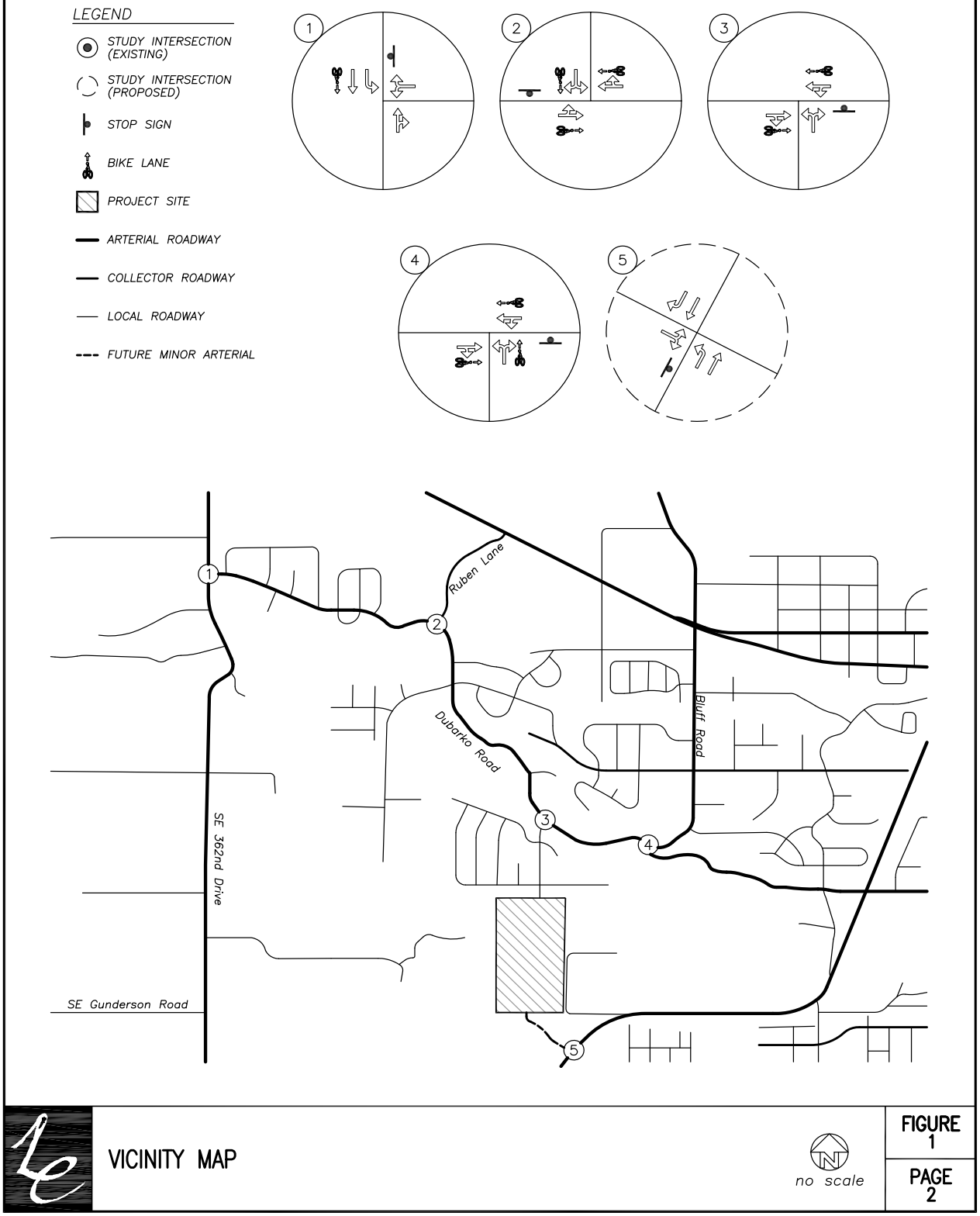
In addition, this memorandum addresses the Transportation Planning Rule and associated approval criteria relative to the proposed Urban Growth Boundary (UGB) amendment, comprehensive plan and zone map amendments, and annexation applications. All of these are necessary to accommodate a connection of Gunderson Road to Highway 211.

Future Roadway Connection

The planned connection of Gunderson Road to Highway 211 will provide an additional route into and out of the Bailey Meadows subdivision as well as the existing neighborhood to the north. This will reduce reliance on Melissa Avenue, which will provide access to the Bailey Meadows subdivision via Dubarko Road. The planned intersection of Gunderson Road at Highway 211 will be a three-legged intersection that is stop-controlled for the SE Gunderson Road approach. Future development on the south side of Highway 211 could extend the street to the east, to eventually connect with Cascadia Village Drive, as shown in the TSP. The existing characteristics of the subject roadways are shown in Table 1. The existing and future intersection configurations are shown in Figure 1 on page two.

Table 1: Vicinity Roadway Characteristics

Street Name	Jurisdiction	Classification	Speed (MPH)	Curbs	Sidewalks	Bicycle Lanes
Highway 211	ODOT	District Highway	45-55 mph posted	No	No	Partial
Gunderson Road (planned)	City of Sandy	Future Minor Arterial	Not Posted	Partial	Partial	Yes



VICINITY MAP

no scale

FIGURE 1

PAGE 2

Trip Distribution

The Gunderson connection to Highway 211 is expected to serve trips to and from the Bailey Meadows subdivision, as well as trips from the existing neighborhood north of Bailey Meadows, which currently uses only Melissa Avenue. Based on travel time studies, it is not expected that traffic from outside the immediate area (such as residents in Bornstedt Village or Cascadia Village) would use the new Gunderson Road connection as a bypass route. Those trips would have to use Gunderson Road, three different streets within Bailey Meadows, Melissa Avenue, and Dubarko Road. This would be a very circuitous route and would not be faster that existing travel routes serving these neighborhoods.

Bailey Meadows Trips

The overall directional distribution of site trips to and from Bailey Meadows was based on the the original TIS, but trip routing was modified to reflect the new street connection.

To & From the East

It is expected that the 15 percent of site trips in the TIS previously assigned to Dubarko Road to the east will all use the new Gunderson Road connection. Turning left onto Highway 211 at the new intersection will have significantly lower delay than turning left or crossing Highway 211 at Dubarko Road.

Contribution: 15% via Gunderson

To & From the South

A total of 10 percent of the trips are expected to be to and from the south, and all these trips will use the Gunderson Road connection to Highway 211, since that will be a much more direct route.

Contribution: 10% via Gunderson

To & From the West

Trips to and from the west (30%) were assigned primarily to 362nd Avenue, as this is the quickest route to shopping destinations as well as Highway 26 west of Sandy. Travel time studies show that the route using Dubarko Road to 362nd Avenue is identical in time to the route using Highway 211 to 362nd Avenue. Therefore, the 30% was split evenly via Melissa Avenue to the north and Gunderson Road to the south.

Contribution: 15% via Gunderson

The total percentage of site trips using Gunderson Road is 40 percent, or 378 of the site's 944 trips per day.

Rerouted Existing Trips

Since 40 percent of the Bailey Meadows trips are expected to use the Gunderson Road connection to Highway 211, it is expected that a similar, although slightly lower percentage of the existing neighborhood traffic would also use Gunderson. Since the existing neighborhood is north of the project site, the use of Gunderson could decrease from 40 percent to approximately 30 percent. As shown in the TIS, the existing traffic volume on Melissa Avenue was measured to be 1160 vehicles per day.

In total, 30 percent of the existing 1160 average daily traffic (ADT) on Melissa Avenue would reroute via Gunderson Road, or 348 trips per day.

In summary, the table below shows the total daily traffic volumes to the north (via Melissa Avenue) and to the south (via Gunderson Road) with the future street connection in place.

Table 2: Trip Distribution Summary

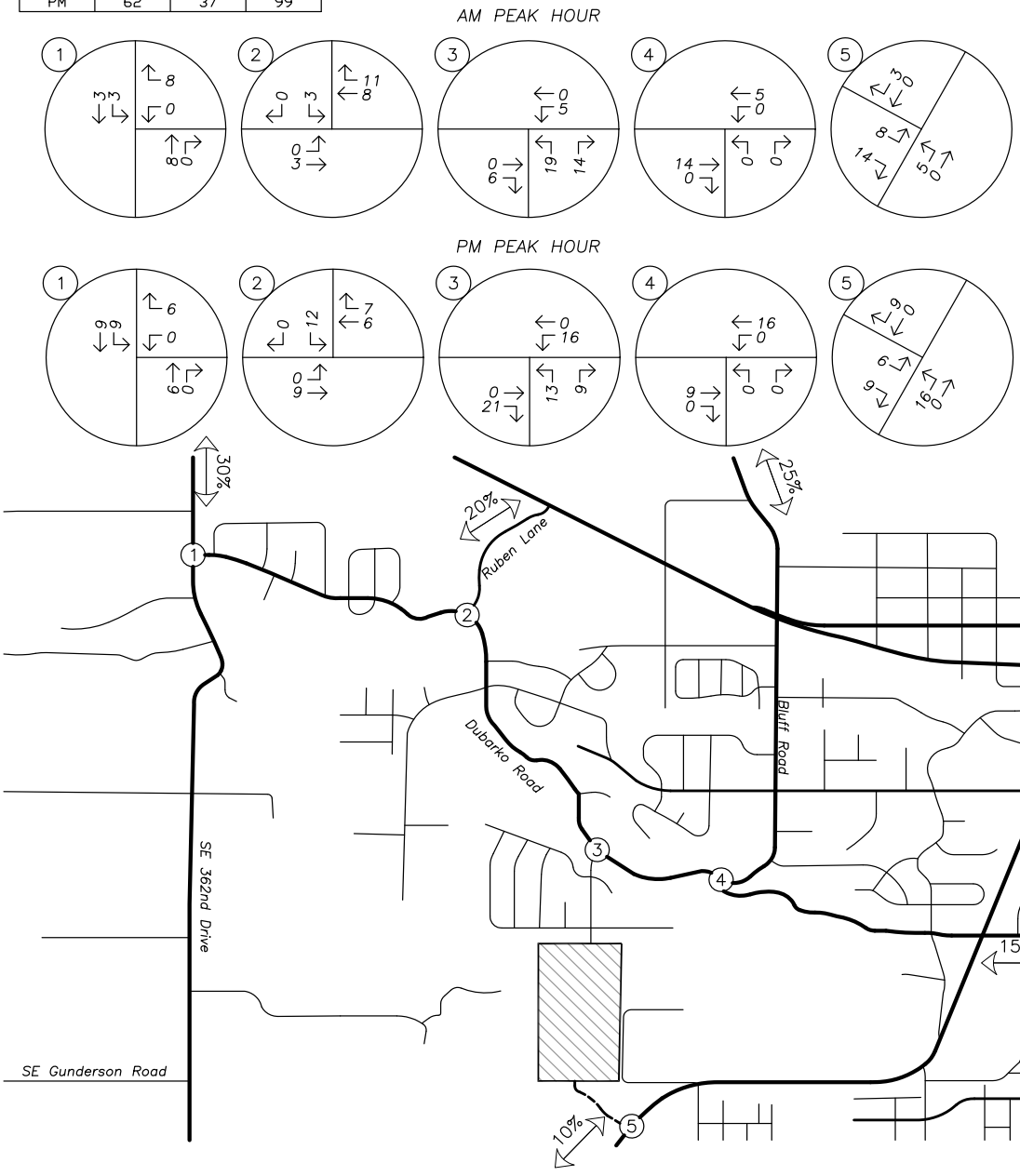
	Daily Traffic Volumes	
	Melissa Avenue	Gunderson Road
Existing neighborhood traffic	1160	0
Existing neighborhood traffic w/ Gunderson	812	348
Bailey Meadows site trips with Gunderson	566	378
Total Daily Volume with Gunderson	*1378*	*726*

The updated trip distribution and assignment during the morning and evening peak hours are shown in Figure 2 on page five.

LEGEND

XX% PERCENT OF PROJECT TRIPS

TRIP GENERATION			
	IN	OUT	TOTAL
AM	19	55	74
PM	62	37	99



SITE TRIP DISTRIBUTION & ASSIGNMENT
Proposed Development Plan – Site Trips
AM & PM Peak Hours

no scale

FIGURE 2

PAGE 5

Traffic Volumes

Existing Conditions

Twenty-four-hour speed data was collected on Highway 211 near the intersection with Ponder Lane on December 4th, 2018. The morning and evening peak hours of traffic occurred between 7:00 AM and 8:00 AM and between 4:00 PM and 5:00 PM, respectively.

Since Highway 211 is under the jurisdiction of ODOT, highway traffic volumes were seasonally adjusted to reflect the 30th highest hour per methodologies in ODOT's Analysis Procedures Manual (APM). Based on the commuter seasonal trend in ODOT's 2018 Seasonal Trend Table, a seasonal factor of 1.122 was calculated and applied to through volumes on Highway 211.

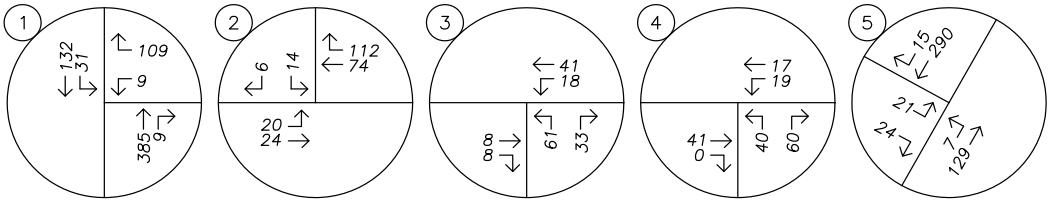
Buildout Conditions

A compounded growth rate of two percent per year was used to estimate growth on all streets under the City of Sandy jurisdiction as described within the TIS. Growth rates for traffic volumes on Highway 211 were derived using ODOT's 2037 Future Volume Tables in accordance with the APM. Using data corresponding to mileposts 3.75 and 5.07, a linear growth rate of 2.8 percent was calculated and applied to through volumes on the highway. Traffic volumes were projected over a period of four years in order to estimate the year 2022 buildout traffic volumes (traffic count data was collected in 2018).

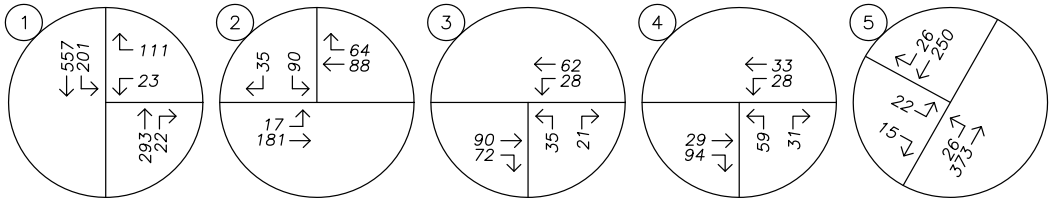
The year 2022 buildout scenario was updated to include a redistribution of existing trips that are likely to use the new Highway 211 roadway connection. Finally, site trips generated by the Bailey Meadows subdivision, discussed previously within the Trip Distribution section, were added to the projected year 2022 volumes in order to obtain the year 2022 buildout traffic volumes.

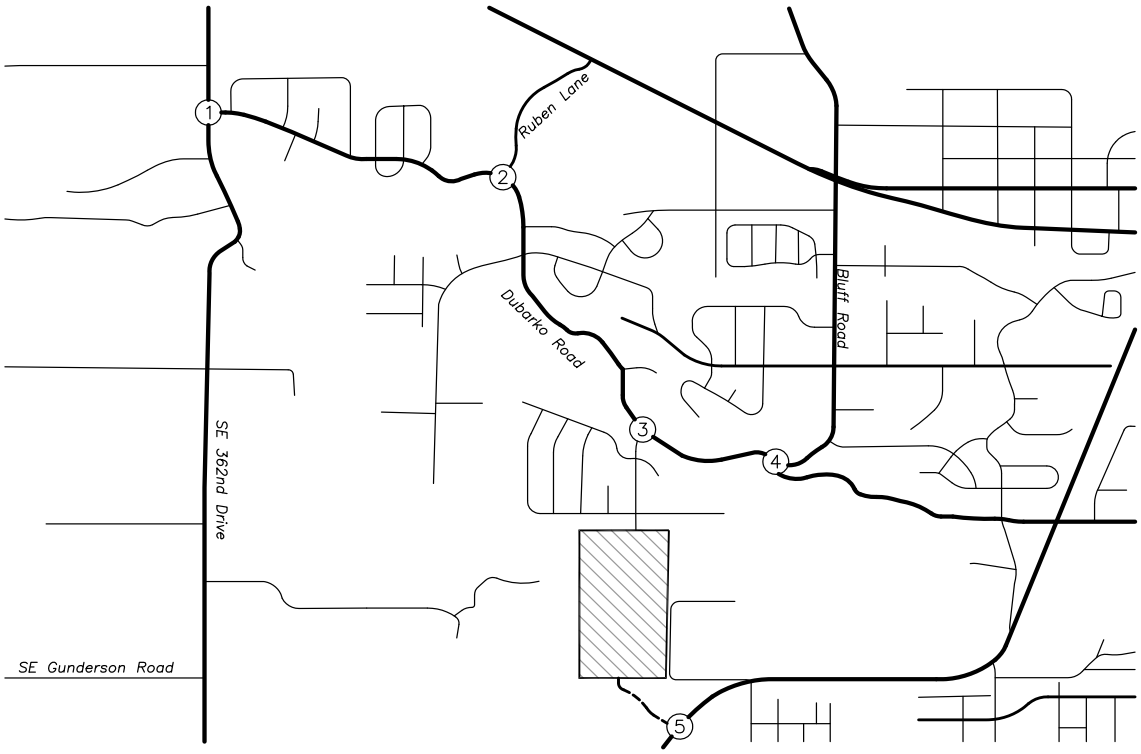
The year 2022 buildout traffic volumes are shown in Figure 3 on page seven.

AM PEAK HOUR



PM PEAK HOUR





TRAFFIC VOLUMES
Year 2022 Buildout Traffic Volumes
AM & PM Peak Hours

no scale

FIGURE 3

PAGE 7

Preliminary Traffic Signal Warrants

Preliminary traffic signal warrants were examined for all study intersections based on methodologies in the *Manual on Uniform Traffic Control Devices*[1] (MUTCD) and the Analysis Procedures Manual. Warrant 1, *Eight Hour Vehicular Volumes*, was used from the MUTCD. Warrants were evaluated based on the common assumption that traffic counted during the evening peak hour represents ten percent of the AADT and that the eighth-highest hour is 5.6 percent of the daily traffic. Volumes were used for the evening peak hour under the year 2022 buildout scenario.

For the intersection under ODOT jurisdiction, the APM dictates that minor-street right turns are only used if the volume exceeds 85 percent of the lane capacity, and even then, only the increment of volume in excess of 85 percent can be used. In this case, none of the right turns can be used for the purpose of the signal warrant analysis.

Due to insufficient minor street volumes, traffic signal warrants are not met at the intersection of SE Gunderson Road at Highway 211 under year 2022 buildout scenario.

Left-Turn Lane Warrants

Left-turn lane warrants were examined at the planned intersection of Highway 211 at SE Gunderson Road. A left-turn refuge is primarily a safety consideration for the major-street approach, removing left-turning vehicles from the through traffic stream.

Warrants were examined based on the design curves developed by the Texas Transportation Institute, as adopted by the APM. This methodology evaluates the need for a left-turn lane based on the number of left-turning vehicles, the number of travel lanes, the number of advancing and opposing vehicles, and the roadway travel speed.

A left-turn lane is warranted at the intersection of SE Gunderson Road at Highway 211 under the year 2022 buildout scenario and it is recommended that a left-turn lane be constructed as part of the intersection improvements.

[1] Federal Highway Administration (FTA), American Traffic Safety Services Association (ATSSA), Institute of Transportation Engineers (ITE), American Association of State Highway and Transportation Officials (AASHTO), *Manual of Uniform Traffic Control Devices for Streets and Highways* (MUTCD), 2009 Edition, 2010

Operational Analysis

A capacity analysis was conducted for the study intersection 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.

The City of Sandy's TSP states that both signalized and unsignalized intersections are required to operate at LOS D or better.

The applicable minimum operational standards for ODOT facilities are established under the Oregon Highway Plan and are based on the classification of the roadway and its v/c ratio. District highways located outside the Urban Growth Boundary and within an unincorporated community has a peak hour v/c ratio target of 0.80.

Table 3: Intersection Capacity Analysis Summary

	Morning Peak Hour			Evening Peak Hour		
	Delay	**LOS**	**V/C**	**Delay**	**LOS**	**V/C**
SE 362nd Drive at Dubarko Road						
Year 2022 Buildout Conditions	13	B	0.24	19	C	0.36
Ruben Lane at Dubarko Road						
Year 2022 Buildout Conditions	10	A	0.03	12	B	0.21
Dubarko Road at Melissa Avenue						
Year 2022 Buildout Conditions	9	A	0.13	10	B	0.09
Dubarko Road at Bluff Road						
Year 2022 Buildout Conditions	8	A	0.16	8	A	0.15
Highway 211 at SE Gunderson Road						
Year 2022 Buildout Conditions	11	B	0.08	13	B	0.08

All intersections are projected to operate within the City of Sandy and ODOT's operational standards under all analysis scenarios.

[2] Transportation Research Board, *Highway Capacity Manual, 6th Edition, 2016*.

Intersection Location

The City of Sandy TSP shows a planning-level depiction of the Gunderson Road extension that was outside of the UGB at the time the TSP was adopted but is within the current UGB. This is shown below in Figure 4.

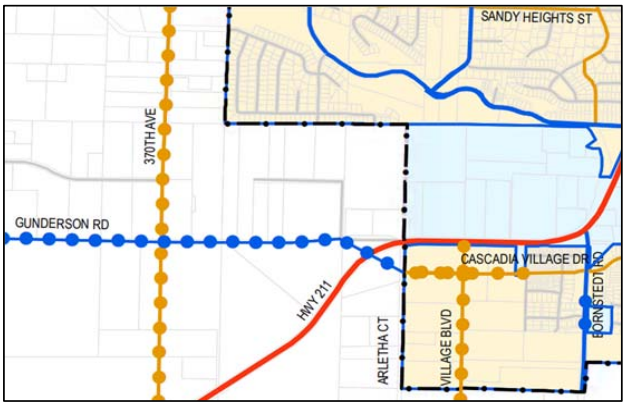


Figure 4: Alignment from Sandy TSP

However, upon closer investigation and engineering analysis, it was determined that the alignment shown on the TSP was not feasible for construction of an intersection with Highway 211, primarily due to poor sight distance, the need for a perpendicular intersection, and a very steep superelevated roadway section.

Looking to the northeast from the TSP-identified location, sight distance is limited by both horizontal and vertical curves on Highway 211. In addition, sight distance from the future fourth leg of the intersection would be particularly poor. At the TSP-identified location, the highway was designed for moving traffic, not for accommodation of an intersection. Due to the high design speed and the horizontal curve, superelevation (the banking of the roadway around the curve) is very steep. This facilitates through traffic on the highway, but makes an intersection at this location problematic, due to difficult turning and crossing movements across the steep curve.

Need for UGB Expansion

The nearest suitable intersection location was found to be farther to the southwest, at the location currently proposed for a UGB amendment. From this location, it is far enough from the horizontal and vertical curves to the northeast to have adequate sight distance and far enough southwest of the curve to not be in a

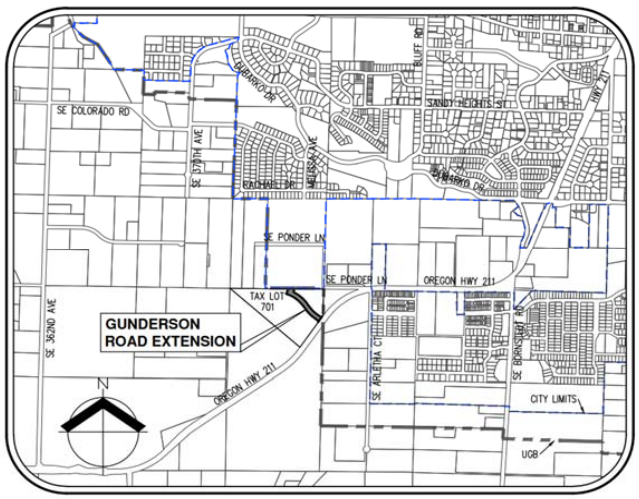


Figure 5: Planned Alignment

superelevated roadway section. However, this alignment is outside of the current UGB of the City of Sandy, as shown in Figure 5. As such, a UGB amendment is proposed to accommodate the road extension.

With the proposed UGB amendment, there will be a triangle-shaped remnant piece of property that will also be brought into the UGB. This remnant is approximately 2.38 acres in size and is proposed to be dedicated as a public neighborhood park. This will be a small, passive-use neighborhood park that will be used primarily by the residents in the area. Trips to and from the park will be primarily pedestrian and bicycle trips and no separate parking lot is planned.

Oregon Administrative Rules

The proposed UGB amendment, comprehensive plan and zone map amendments, and annexation applications trigger the need to address the Transportation Planning Rule (TPR) and associated criteria from the Oregon Administrative Rules. These are addressed below.

OAR 660-012-0060 Transportation Planning Rule

The primary purpose of the TPR is to account for the potential transportation impacts associated with any amendments to adopted plans and land use regulations. The TPR is quoted in *italics* below, with a response immediately following each section.

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);

Response: The proposed UGB amendment, comprehensive plan and zone map amendment, and annexation will not change the functional classification of any transportation facilities. In fact, it will implement planned roadway connections in the TSP.

   (b) Change standards implementing a functional classification system; or

Response: The standards that implement the functional classification system are contained in the TSP and will not change as part of this proposal.

   (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.

Response: The proposed UGB amendment and associated plan amendments will facilitate the Gunderson Road connection and will not result in developable property that will increase trip generation. In fact, by facilitating an important street connection it is implementing the City of Sandy TSP, will improve connectivity for the neighborhood, and will improve performance of the surrounding transportation system. The proposal will not result in a significant effect as defined by the TPR and no mitigations are necessary.

OAR 660-024-0065 Establishment of Study Area to Evaluate Land for Inclusion in the UGB

This section of the OAR is specific to UGB expansions and speaks to public facilities (such as transportation facilities) that require specific site characteristics. The OAR is quoted in *italics* below, with a response immediately following each section.

3. When the primary purpose for expansion of the UGB is to accommodate a particular industrial use that requires specific site characteristics, or to accommodate a public facility that requires specific site characteristics, and the site characteristics may be found in only a small number of locations, the preliminary study area may be limited to those locations within the distance described in section (1) or (2), whichever is appropriate, that have or could be improved to provide the required site characteristics. For purposes of this section:

(a) The definition of "site characteristics" in OAR 660-009-0005(11) applies for purposes of identifying a particular industrial use.

Response: In OAR 660-009-0005(11), "Site Characteristics" are defined by visibility, proximity to a particular transportation facility, and major transportation routes. In this case, the "site" for the UGB amendment is very narrowly defined and the location between the subdivision and Highway 211 is dictated by engineering standards that must be satisfied for a safe and efficient intersection location.

(b) A "public facility" may include a facility necessary for public sewer, water, storm water, transportation, parks, schools, or fire protection. Site characteristics may include but are not limited to size, topography and proximity.

Response: Since the primary purpose of the proposed UGB amendment is to accommodate the extension of Gunderson Road to Highway 211, it is by definition a "public facility". Site characteristics such as topography are what have dictated the need for the intersection in the location as proposed. Additionally, the applicant is providing area for a neighborhood park, a minor public facility.

Summary & Conclusions

The proposed UGB amendment, comprehensive plan and zone map amendments, and annexation will implement the City of Sandy TSP and result in improved operation at the study area roadways and intersections. The connection will improve conditions for the existing neighborhood to the north of the Bailey Meadows subdivision by providing another means of vehicular access to the area.

Appendix

Traffic Signal Warrant Analysis

Project: 18197 - Ponder Subdivision
Date: 1/6/2020
Scenario: Year 2022 Buildout Conditions - Evening Peak Hour

Major Street:	Highway 211	Minor Street:	SE Gunderson Road
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	675	PM Peak Hour Volumes:	22

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)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
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

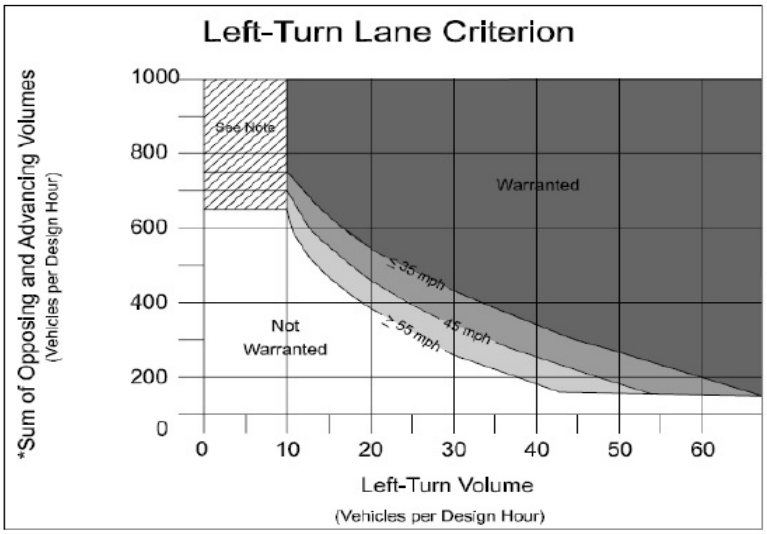
	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	6,750	8,850	
Minor Street*	220	2,650	**No**
Condition B: Interruption of Continuous Traffic			
Major Street	6,750	13,300	
Minor Street*	220	1,350	**No**
Combination Warrant			
Major Street	6,750	10,640	
Minor Street*	220	2,120	**No**

* Minor street right-turning traffic volumes reduced by 85% of the turn lane capacity.

Project: Bailey Meadows Subdivision
Intersection: Highway 211 at SE Gunderson Road
Date: 1/6/2020
Scenario: 2022 Buildout conditions

Speed? 45 mph

PM Peak Hour	
Left-Turn Volume	26
Approaching DHV	250
# of Advancing Through Lanes	1
Opposing DHV	399
# of Opposing Through Lanes	1
O+A DHV	**649**
Lane Needed?	**Yes**



Source: Oregon DOT Analysis Procedures Manual 2008

*(Advancing Vol/ # of Advancing Through Lanes)+
(Opposing Vol/ # of Opposing Through Lanes)

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	109	385	9	31	132
Future Volume (vph)	9	109	385	9	31	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	115	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.876		0.997			
Flt Protected	0.996				0.950	
Satd. Flow (prot)	1641	0	1857	0	1703	1792
Flt Permitted	0.996				0.950	
Satd. Flow (perm)	1641	0	1857	0	1703	1792
Link Speed (mph)	25		35			35
Link Distance (ft)	435		701			662
Travel Time (s)	11.9		13.7			12.9
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	1%	1%	2%	2%	6%	6%
Adj. Flow (vph)	11	128	453	11	36	155
Shared Lane Traffic (%)						
Lane Group Flow (vph)	139	0	464	0	36	155
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.7%		ICU Level of Service A	
Analysis Period (min) 15			

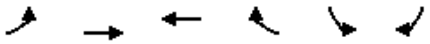
Intersection	
Int Delay, s/veh	2.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	109	385	9	31	132
Future Vol, veh/h	9	109	385	9	31	132
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	-	-	-	115	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	1	1	2	2	6	6
Mvmt Flow	11	128	453	11	36	155

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	686	459	0	0	464	0
Stage 1	459	-	-	-	-	-
Stage 2	227	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.16	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.254	-
Pot Cap-1 Maneuver	415	604	-	-	1077	-
Stage 1	638	-	-	-	-	-
Stage 2	813	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	401	604	-	-	1077	-
Mov Cap-2 Maneuver	401	-	-	-	-	-
Stage 1	617	-	-	-	-	-
Stage 2	813	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.1	0	1.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	582	1077	-
HCM Lane V/C Ratio	-	-	0.239	0.034	-
HCM Control Delay (s)	-	-	13.1	8.5	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.9	0.1	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	20	24	74	112	14	6
Future Volume (vph)	20	24	74	112	14	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.919		0.959	
Flt Protected		0.978			0.966	
Satd. Flow (prot)	0	1753	1712	0	1558	0
Flt Permitted		0.978			0.966	
Satd. Flow (perm)	0	1753	1712	0	1558	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		560	633		717	
Travel Time (s)		15.3	17.3		19.6	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	6%	6%	2%	2%	13%	13%
Adj. Flow (vph)	22	27	83	126	16	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	49	209	0	23	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 27.4%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	24	74	112	14	6
Future Vol, veh/h	20	24	74	112	14	6
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	89	89	89	89	89	89
Heavy Vehicles, %	6	6	2	2	13	13
Mvmt Flow	22	27	83	126	16	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	209	0	-	0	217	146
Stage 1	-	-	-	-	146	-
Stage 2	-	-	-	-	71	-
Critical Hdwy	4.16	-	-	-	6.53	6.33
Critical Hdwy Stg 1	-	-	-	-	5.53	-
Critical Hdwy Stg 2	-	-	-	-	5.53	-
Follow-up Hdwy	2.254	-	-	-	3.617	3.417
Pot Cap-1 Maneuver	1338	-	-	-	747	873
Stage 1	-	-	-	-	855	-
Stage 2	-	-	-	-	925	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1338	-	-	-	734	873
Mov Cap-2 Maneuver	-	-	-	-	734	-
Stage 1	-	-	-	-	840	-
Stage 2	-	-	-	-	925	-

Approach	EB	WB	SB
HCM Control Delay, s	3.5	0	9.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1338	-	-	-	771
HCM Lane V/C Ratio	0.017	-	-	-	0.029
HCM Control Delay (s)	7.7	0	-	-	9.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	8	8	18	41	61	33
Future Volume (vph)	8	8	18	41	61	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932				0.952	
Flt Protected				0.985	0.969	
Satd. Flow (prot)	1451	0	0	1835	1718	0
Flt Permitted				0.985	0.969	
Satd. Flow (perm)	1451	0	0	1835	1718	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	1479			1123	1279	
Travel Time (s)	40.3			30.6	34.9	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	22%	22%	2%	2%	2%	2%
Adj. Flow (vph)	10	10	23	52	77	42
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	0	0	75	119	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	21.9%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	8	8	18	41	61	33
Future Vol, veh/h	8	8	18	41	61	33
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	79	79	79	79	79	79
Heavy Vehicles, %	22	22	2	2	2	2
Mvmt Flow	10	10	23	52	77	42

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	20	0	113	15
Stage 1	-	-	-	-	15	-
Stage 2	-	-	-	-	98	-
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	-	-	1596	-	884	1065
Stage 1	-	-	-	-	1008	-
Stage 2	-	-	-	-	926	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1596	-	871	1065
Mov Cap-2 Maneuver	-	-	-	-	871	-
Stage 1	-	-	-	-	993	-
Stage 2	-	-	-	-	926	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	931	-	-	1596	-
HCM Lane V/C Ratio	0.128	-	-	0.014	-
HCM Control Delay (s)	9.4	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	41	0	19	17	40	60
Future Volume (vph)	41	0	19	17	40	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.919	
Flt Protected				0.974	0.980	
Satd. Flow (prot)	1696	0	0	1698	1645	0
Flt Permitted				0.974	0.980	
Satd. Flow (perm)	1696	0	0	1698	1645	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	750			780	615	
Travel Time (s)	20.5			21.3	16.8	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	12%	12%	9%	9%	4%	4%
Adj. Flow (vph)	59	0	27	24	57	86
Shared Lane Traffic (%)						
Lane Group Flow (vph)	59	0	0	51	143	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Stop			Stop	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	21.2%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	41	0	19	17	40	60
Future Vol, veh/h	41	0	19	17	40	60
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	12	12	9	9	4	4
Mvmt Flow	59	0	27	24	57	86
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.8	7.8	7.7
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	40%	0%	53%
Vol Thru, %	0%	100%	47%
Vol Right, %	60%	0%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	100	41	36
LT Vol	40	0	19
Through Vol	0	41	17
RT Vol	60	0	0
Lane Flow Rate	143	59	51
Geometry Grp	1	1	1
Degree of Util (X)	0.154	0.072	0.064
Departure Headway (Hd)	3.877	4.396	4.456
Convergence, Y/N	Yes	Yes	Yes
Cap	913	807	796
Service Time	1.95	2.466	2.528
HCM Lane V/C Ratio	0.157	0.073	0.064
HCM Control Delay	7.7	7.8	7.8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.5	0.2	0.2

Lane Group	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Volume (vph)	21	24	7	129	290	15
Future Volume (vph)	21	24	7	129	290	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Storage Length (ft)	0	0	100			100
Storage Lanes	1	0	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.928					0.850
Flt Protected	0.977		0.950			
Satd. Flow (prot)	1556	0	1630	1716	1716	1458
Flt Permitted	0.977		0.950			
Satd. Flow (perm)	1556	0	1630	1716	1716	1458
Link Speed (mph)	30			30	30	
Link Distance (ft)	827			1043	1164	
Travel Time (s)	18.8			23.7	26.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	26	8	140	315	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	49	0	8	140	315	16
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 26.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.1

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	21	24	7	129	290	15
Future Vol, veh/h	21	24	7	129	290	15
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	-	100	-	-	100
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	23	26	8	140	315	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	471	315	331	0	-	0
Stage 1	315	-	-	-	-	-
Stage 2	156	-	-	-	-	-
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	551	725	1228	-	-	-
Stage 1	740	-	-	-	-	-
Stage 2	872	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	547	725	1228	-	-	-
Mov Cap-2 Maneuver	547	-	-	-	-	-
Stage 1	735	-	-	-	-	-
Stage 2	872	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	11.2	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1228	-	629	-	-
HCM Lane V/C Ratio	0.006	-	0.078	-	-
HCM Control Delay (s)	8	-	11.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Lanes, Volumes, Timings
1: SE 362nd Drive & Dubarko Road 12/13/2019

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	23	111	293	22	201	557
Future Volume (vph)	23	111	293	22	201	557
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	115	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.888		0.991			
Flt Protected	0.992				0.950	
Satd. Flow (prot)	1641	0	1846	0	1787	1881
Flt Permitted	0.992				0.950	
Satd. Flow (perm)	1641	0	1846	0	1787	1881
Link Speed (mph)	25		35			35
Link Distance (ft)	435		701			662
Travel Time (s)	11.9		13.7			12.9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%
Adj. Flow (vph)	25	121	318	24	218	605
Shared Lane Traffic (%)						
Lane Group Flow (vph)	146	0	342	0	218	605
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		

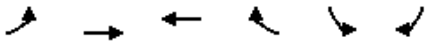
Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	23	111	293	22	201	557
Future Vol, veh/h	23	111	293	22	201	557
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	-	-	-	115	-
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	1	1
Mvmt Flow	25	121	318	24	218	605

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1371	330	0	0	342	0
Stage 1	330	-	-	-	-	-
Stage 2	1041	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.11	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.209	-
Pot Cap-1 Maneuver	161	712	-	-	1223	-
Stage 1	728	-	-	-	-	-
Stage 2	340	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	132	712	-	-	1223	-
Mov Cap-2 Maneuver	132	-	-	-	-	-
Stage 1	598	-	-	-	-	-
Stage 2	340	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.7	0	2.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	406	1223	-
HCM Lane V/C Ratio	-	-	0.359	0.179	-
HCM Control Delay (s)	-	-	18.7	8.6	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	1.6	0.6	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	17	181	88	64	90	35
Future Volume (vph)	17	181	88	64	90	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.943		0.962	
Flt Protected		0.996			0.965	
Satd. Flow (prot)	0	1874	1792	0	1746	0
Flt Permitted		0.996			0.965	
Satd. Flow (perm)	0	1874	1792	0	1746	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		560	633		717	
Travel Time (s)		15.3	17.3		19.6	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%
Adj. Flow (vph)	19	203	99	72	101	39
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	222	171	0	140	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	36.1%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	17	181	88	64	90	35
Future Vol, veh/h	17	181	88	64	90	35
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	89	89	89	89	89	89
Heavy Vehicles, %	1	1	0	0	1	1
Mvmt Flow	19	203	99	72	101	39

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	171	0	-	0	376	135
Stage 1	-	-	-	-	135	-
Stage 2	-	-	-	-	241	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1412	-	-	-	627	917
Stage 1	-	-	-	-	894	-
Stage 2	-	-	-	-	801	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1412	-	-	-	618	917
Mov Cap-2 Maneuver	-	-	-	-	618	-
Stage 1	-	-	-	-	881	-
Stage 2	-	-	-	-	801	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1412	-	-	-	680
HCM Lane V/C Ratio	0.014	-	-	-	0.207
HCM Control Delay (s)	7.6	0	-	-	11.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.8

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	90	72	28	62	35	21
Future Volume (vph)	90	72	28	62	35	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.940				0.949	
Flt Protected				0.985	0.970	
Satd. Flow (prot)	1768	0	0	1872	1749	0
Flt Permitted				0.985	0.970	
Satd. Flow (perm)	1768	0	0	1872	1749	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	1479			1123	1279	
Travel Time (s)	40.3			30.6	34.9	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%
Adj. Flow (vph)	106	85	33	73	41	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	191	0	0	106	66	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 27.3%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	90	72	28	62	35	21
Future Vol, veh/h	90	72	28	62	35	21
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	85	85	85	85	85	85
Heavy Vehicles, %	1	1	0	0	0	0
Mvmt Flow	106	85	33	73	41	25

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	191	0	288	149
Stage 1	-	-	-	-	149	-
Stage 2	-	-	-	-	139	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1395	-	707	903
Stage 1	-	-	-	-	884	-
Stage 2	-	-	-	-	893	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1395	-	689	903
Mov Cap-2 Maneuver	-	-	-	-	689	-
Stage 1	-	-	-	-	862	-
Stage 2	-	-	-	-	893	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	756	-	-	1395	-
HCM Lane V/C Ratio	0.087	-	-	0.024	-
HCM Control Delay (s)	10.2	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	29	94	28	33	59	31
Future Volume (vph)	29	94	28	33	59	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.897				0.954	
Flt Protected				0.978	0.968	
Satd. Flow (prot)	1704	0	0	1858	1737	0
Flt Permitted				0.978	0.968	
Satd. Flow (perm)	1704	0	0	1858	1737	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	750			780	615	
Travel Time (s)	20.5			21.3	16.8	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	0%	0%	0%	1%	1%
Adj. Flow (vph)	34	111	33	39	69	36
Shared Lane Traffic (%)						
Lane Group Flow (vph)	145	0	0	72	105	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Stop			Stop	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 25.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	29	94	28	33	59	31
Future Vol, veh/h	29	94	28	33	59	31
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	1	1
Mvmt Flow	34	111	33	39	69	36
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.4	7.8	7.9
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	66%	0%	46%
Vol Thru, %	0%	24%	54%
Vol Right, %	34%	76%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	90	123	61
LT Vol	59	0	28
Through Vol	0	29	33
RT Vol	31	94	0
Lane Flow Rate	106	145	72
Geometry Grp	1	1	1
Degree of Util (X)	0.124	0.148	0.086
Departure Headway (Hd)	4.213	3.682	4.29
Convergence, Y/N	Yes	Yes	Yes
Cap	841	959	825
Service Time	2.29	1.761	2.368
HCM Lane V/C Ratio	0.126	0.151	0.087
HCM Control Delay	7.9	7.4	7.8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.5	0.3

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	22	15	26	373	250	26
Future Volume (vph)	22	15	26	373	250	26
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Storage Length (ft)	0	0	100			100
Storage Lanes	1	0	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.946					0.850
Flt Protected	0.971		0.950			
Satd. Flow (prot)	1576	0	1630	1716	1716	1458
Flt Permitted	0.971		0.950			
Satd. Flow (perm)	1576	0	1630	1716	1716	1458
Link Speed (mph)	30			45	45	
Link Distance (ft)	1495			875	917	
Travel Time (s)	34.0			13.3	13.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	16	28	405	272	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	40	0	28	405	272	28
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 31.3%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	22	15	26	373	250	26
Future Vol, veh/h	22	15	26	373	250	26
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	-	100	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	16	28	405	272	28

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	733	272	300	0	-	0
Stage 1	272	-	-	-	-	-
Stage 2	461	-	-	-	-	-
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	388	767	1261	-	-	-
Stage 1	774	-	-	-	-	-
Stage 2	635	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	379	767	1261	-	-	-
Mov Cap-2 Maneuver	379	-	-	-	-	-
Stage 1	757	-	-	-	-	-
Stage 2	635	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.2	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1261	-	477	-	-
HCM Lane V/C Ratio	0.022	-	0.084	-	-
HCM Control Delay (s)	7.9	-	13.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Bailey Meadows Subdivision

Traffic Impact Analysis

Sandy, Oregon

Date:
June 20, 2019

Prepared for:
Cody Bjugan, Allied Homes & Development

Prepared by:
Jessica Hijar
Todd Mobley, PE

RENEWS: 12/31/2020

LANCASTER
ENGINEERING

321 SW 4th Ave., Suite 400 | Portland, OR 97204 | 503.248.0313 | lancasterengineering.com

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Executive Summary

1. A 100-lot single family detached swelling unit subdivision is proposed for the following tax lots in Sandy, Oregon: 24E23 800, 801, 802, 803, and 804.
2. Access to the project is planned via an existing right-of-way street stub on Melissa Avenue that was created to provide access to the subject site as part of the adjoining Nicholas Glen No. 2 subdivision.
3. The proposed subdivision is calculated to generate 74 trips during the morning peak hour, 99 trips during the evening peak hour, and 944 trips each weekday.
4. Based on a review of the most recent five years of crash history, no significant safety issues or trends are evident at the study intersections.
5. Due to insufficient major and minor street volumes, preliminary traffic signal warrants were not met at the study intersections under all analysis scenarios.
6. Left-turn lane warrants were analyzed for the intersection of Melissa Avenue at Dubarko Road and not met under any analysis scenario.
7. All study intersections, including the intersection of Melissa Avenue at Dubarko Road, are currently operating within the City's perfomance standards and are projected to continue operating acceptably through year 2022, with or without the addition of site trips from the proposed development.

Project Description

Introduction

The proposed development will include the construction of a 100-lot subdivision to be located on tax lots 24E23 800, 801, 802, 803, and 804 in Sandy, Oregon. The site is currently within the City of Sandy Urban Growth Boundary, the city limits, and is zoned Single Family Residential (SFR), which allows the subdivision as proposed. The project will be built in three phases, with the expected completion year of 2022.

This report includes traffic counts and a full operational analysis at the intersections listed below. This scope was developed based on City of Sandy's Traffic Impact Analysis (TIA) requirements and was approcved by Replinger and Associates, the City's consulting transportation engineer. Coordination of the scope of work with the Oregon Department of Transportation (ODOT) was not necessary since no intersections on the state highway are affected.

1. SE 362nd Drive at Dubarko Road,
2. Ruben Lane at Dubarko Road,
3. Dubarko Road at Melissa Avenue, and
4. Dubarko Road at Bluff Road.

The purpose of this study is to determine whether the transportation system within the vicinity of the site is capable of supporting the existing uses as well as the proposed subdivision and to determine if mitigation is necessary. Detailed information on traffic counts, trip generation calculations, safety analyses, and level-of-service calculations is included in the appendix to this report.

Location Description

The subject site is located south of Rachel Drive and west of Ponder Lane in Sandy, Oregon. Although roadway stubs will be provided within the site for future roadway connections, access to the project is planned via an existing right-of-way street stub on Melissa Avenue that was created to provide access to the subject site as part of the adjoining Nicholas Glen No. 2 subdivision.

Access to the subdivision cannot be provided via SE Ponder Lane in the southeast corner of the site since the existing right-of-way along SE Ponder Lane does not allow for two directions of travel and the current configuration of SE Ponder Lane at Highway 211 cannot support additional vehicle trips. There is not sufficient right-of-way available to realign Ponder Lane at its intersection with Highway 211. It is expected that additional access will be available to the east of the site as other properties develop.

Vicinity Streets

Five roadways have been identified in the traffic study scope. Table 1 provides a description of each of the roadways.

Table 1: Vicinity Roadway Descriptions

Street Name	Jurisdiction	Classification	Speed (MPH)	Curbs	Sidewalks	Bicycle Lanes
SE 362nd Drive	City of Sandy	Rural Minor Arterial	35 mph posted	Partial	Partial	Partial
Ruben Lane	City of Sandy	Collector	25 mph posted	Yes	Partial	Yes
Dubarko Road	City of Sandy	Minor Arterial	25 mph posted	Yes	Yes	Partial
Melissa Avenue	City of Sandy	Local Road	25 mph statutory	Yes	Yes	No
Bluff Road	City of Sandy	Minor Arterial	25 mph posted	Partial	Partial	Partial

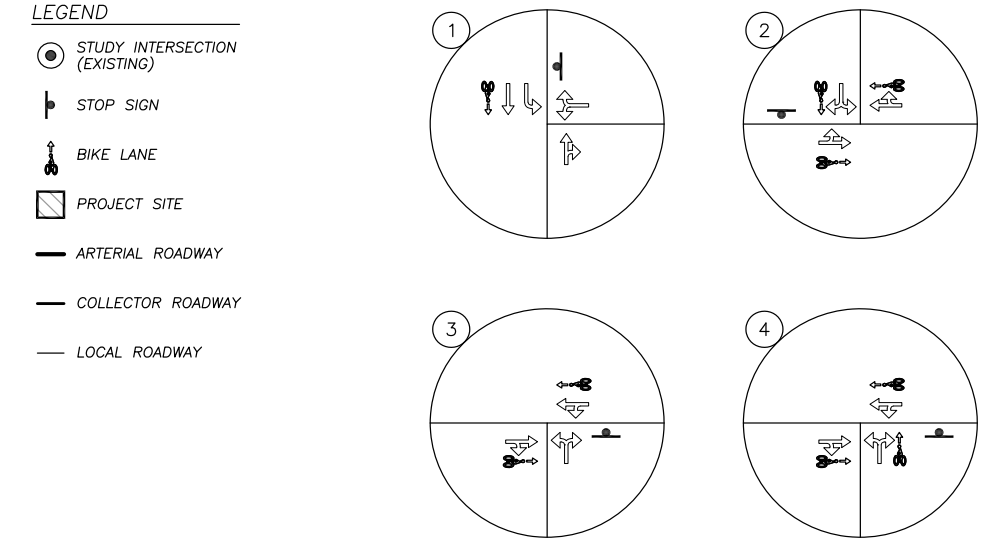
Study Intersections

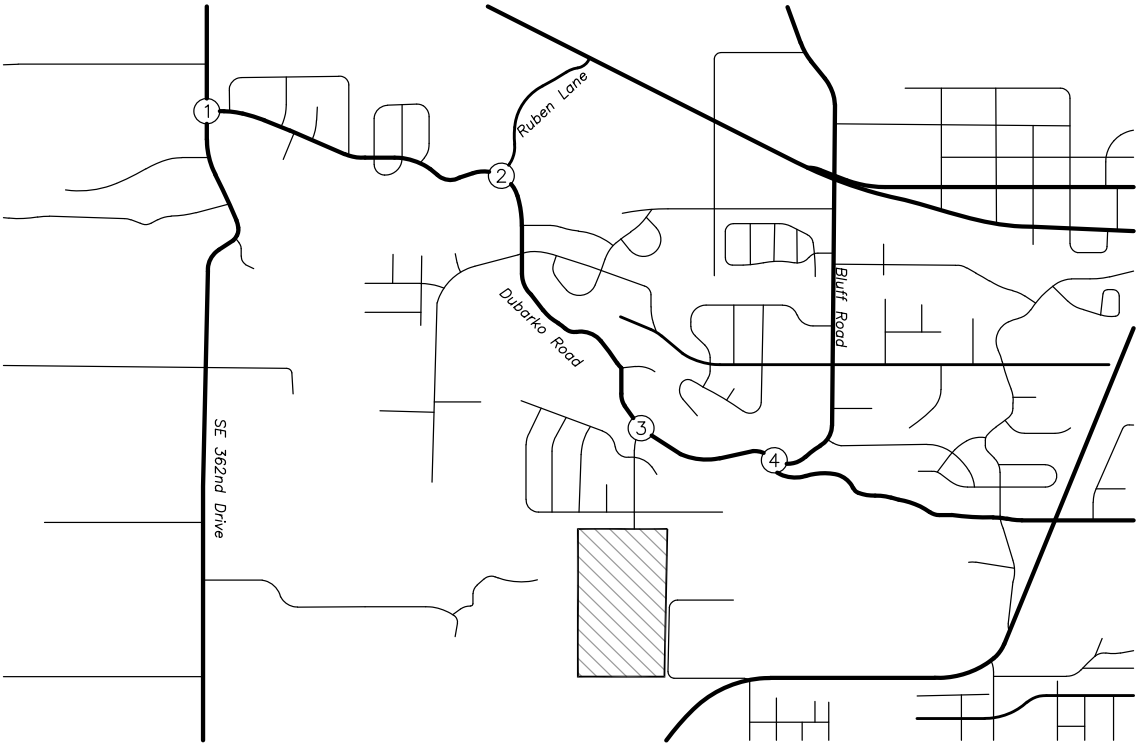
Four nearby intersections were identified in discussions with City staff that are expected to be impacted by the proposed project. Table 2 below provides a summary of each of the study intersections.

Table 2: Vicinity Intersection Descriptions

Number	Intersection	Geometry	Traffic Control	Stopped Approaches
1	SE 362nd Drive at Dubarko Road	Three-Legged	Two-Way Stop Controlled	Westbound
2	Ruben Lane at Dubarko Road	Three-Legged	Two-Way Stop Controlled	Southbound
3	Dubakro Road at Melissa Avenue	Three-Legged	Two-Way Stop Controlled	Northbound
4	Dubarko Road at Bluff Rod	Three-Legged	All-Way Stop Controlled	All

The figure on the following page shows the site vicinity and the study intersection configurations.





VICINITY MAP

no scale

FIGURE 1

PAGE 4

Site Trips

Trip Generation

To estimate the number of trips that will be generated by the proposed use, trip rates from the *Trip Generation Manual*[1] were used. Data from land use codes 210, *Single-Family Detached Housing*, was used to estimate the proposed development's trip generation based on the number of dwelling units.

The trip generation calculations show that the proposed subdivision is projected to generate 74 morning peak hour trips, 99 evening peak hour trips, and 944 average weekday trips. The trip generation estimates are summarized in Table 3 below and detailed trip generation calculations are included as an attachment to this report.

Table 3: Trip Generation Summary

Land Use Code	Size	Morning Peak Hour			Evening Peak Hour			Weekday Total
		In	Out	Total	In	Out	Total	
210 – Single-Family Detached Housing	100 units	19	55	74	62	37	99	944

Custom Trip Rates

Based on traffic counts collected at the existing intersection of Melissa Avenue at Dubarko Road and 24-hour counts collected along Melissa Avenue, a localized trip rate was derived for the existing subdivision that accesses Dubarko Road via Melissa Avenue. The custom trip rate was calculated to be 0.49 trips per unit during the morning peak hour, 0.63 trips per unit during the evening peak hour, and 6.90 trips per unit during each weekday. A comparison of the ITE trip rates and the trip rates based on localized data is provided in the following table.

Table 4: Trip Rate Comparison

Data	Morning Trip Rate	Evening Trip Rate	Weekday Trip Rate
ITE	0.74 trips/unit	0.99 trips/unit	9.44 trips/unit
Local Data	0.49 trips/unit	0.63 trips/unit	6.90 trips/unit

Since the localized data shows lower trip rates during all analysis periods, it can be expected that the proposed subdivision will yield site trips at a similar rate. Although this lower trip generation rate was not used for analysis, it should be noted that the trip generation based on ITE rates represents a conservative, worst-case analysis.

[1] Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 10th Edition, 2017.

Trip Distribution

The directional distribution of site trips to and from the proposed development was calculated based on travel patterns of trips to and from the existing neighborhood that is served by Melissa Avenue. In addition, the locations of likely trip destinations, locations of major transportation facilities in the site vicinity, and existing travel patterns at the study intersections.

The following trip distribution was estimated and used for analysis:

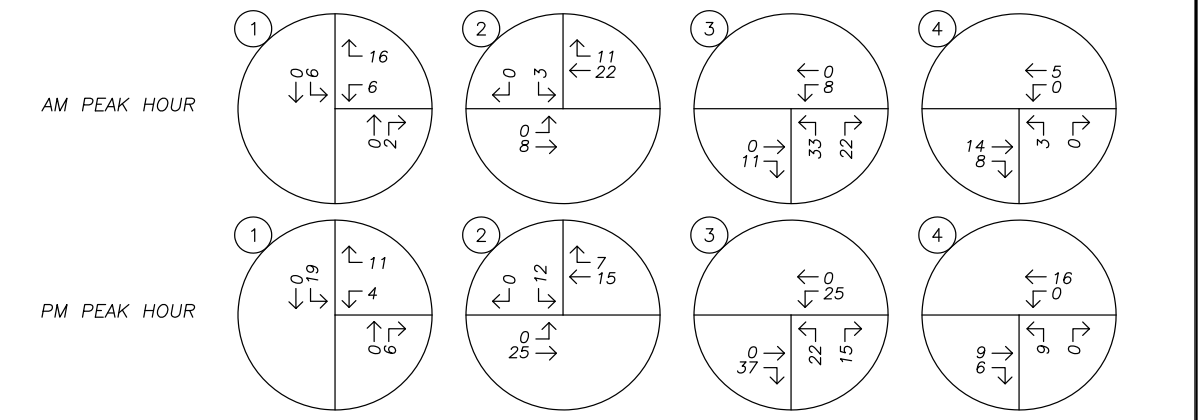
- Approximately 30 percent of site trips will travel to/from the north along SE 362nd Drive;
- Approximately 25 percent of site trips will travel to/from the north along Bluff Road;
- Approximately 20 percent of site trips will travel to/from the north on Ruben Lane;
- Approximately 15 percent of site trips will travel to/from the east along Dubarko Road; and
- Approximately 10 percent of site trips will travel to/from the south along SE 362nd Drive.

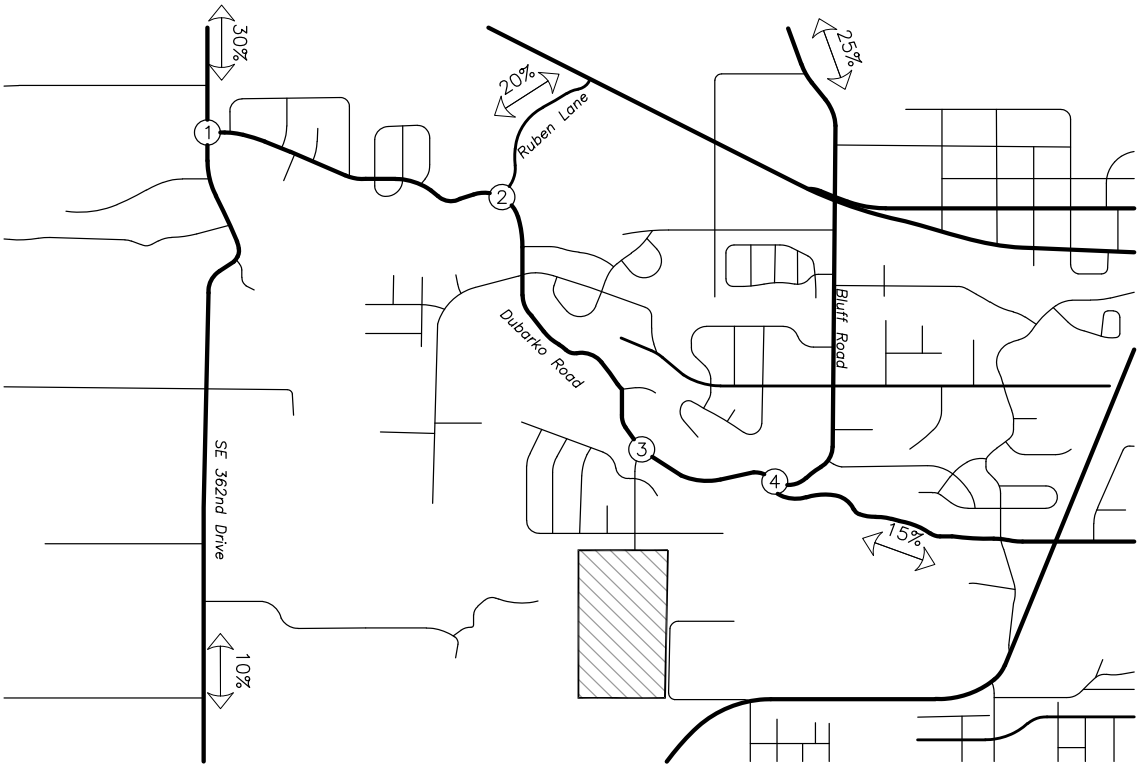
Figure 2 on page 7 shows the distribution and assignment of site trips for the proposed development.

LEGEND

XX% PERCENT OF PROJECT TRIPS

TRIP GENERATION			
	IN	OUT	TOTAL
AM	19	55	74
PM	62	37	99





SITE TRIP DISTRIBUTION & ASSIGNMENT
Proposed Development Plan – Site Trips
AM & PM Peak Hours

no scale

FIGURE 2

PAGE 7

Traffic Volumes

Existing Conditions

Traffic counts were conducted at the intersection of Melissa Avenue at Dubarko Road on Thursday, April 25th, 2019 from 7:00 AM to 9:00 AM, and from 4:00 PM to 6:00 PM. Traffic counts were conducted at all other study intersections on Wednesday, May 22nd, 2019 from 4:00 PM to 6:00 PM, and on Thursday, May 23rd, 2019 from 7:00 AM to 9:00 AM. Each intersection's respective morning and evening peak hours were used for analysis.

Background Conditions

In order to calculate the future traffic volumes on local streets, an exponential growth rate of two percent per year for an assumed period of three years was applied to the measured existing traffic volumes to approximate year 2022 background conditions.

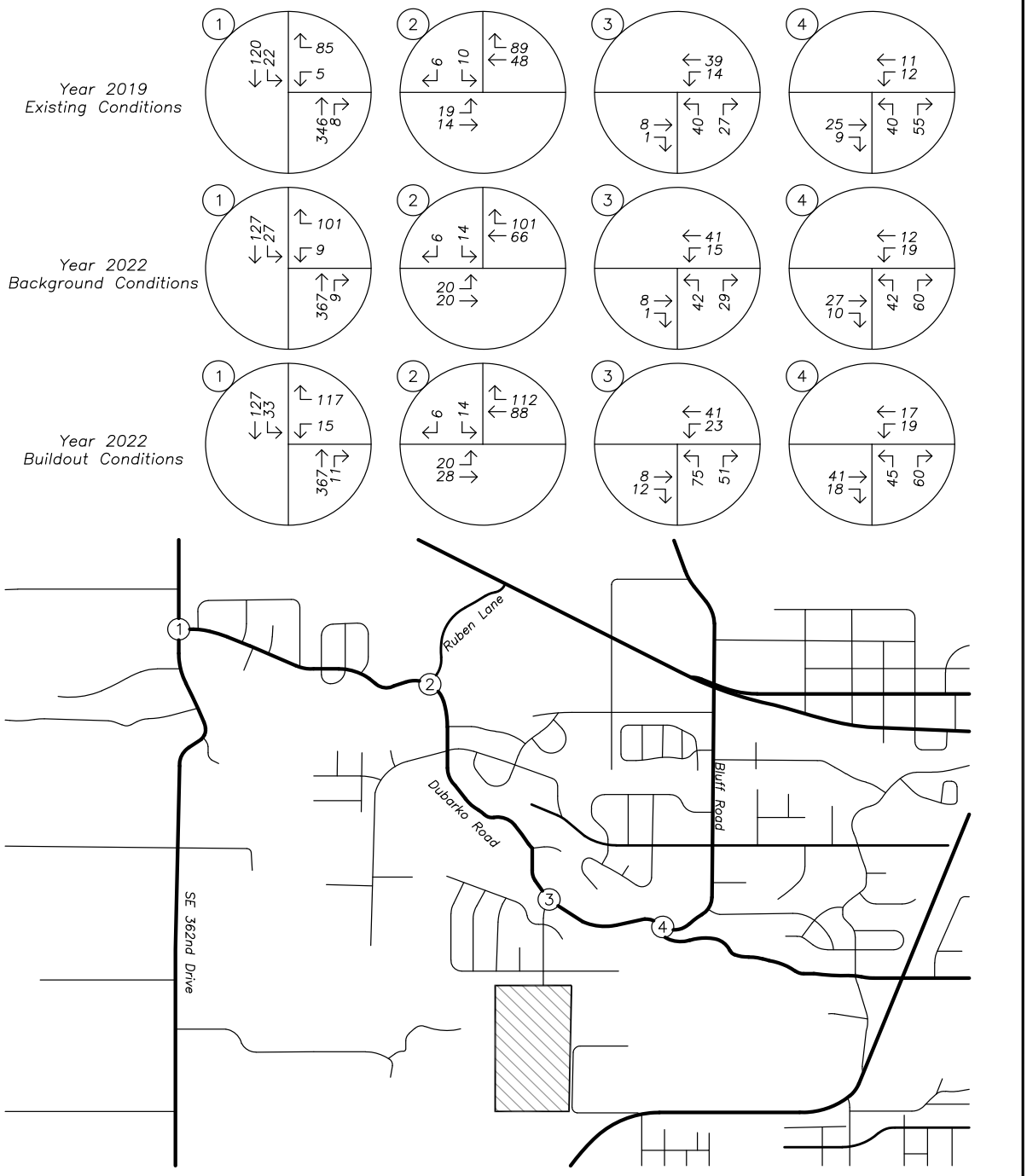
In-Process Trips

In-process trips associated with previously approved developments were added to the background volumes in order to represent future traffic volumes at the study intersections prior to the approval of the subject development. Trips associated with the approved 138-unit Sandy Heights Apartments were added to the study intersections.

Buildout Conditions

Trips to be generated by the proposed development, as described earlier within the *Site Trips* section, were added to the projected year 2022 background traffic volumes to obtain the expected year 2022 buildout volumes.

Figure 3 on page 9 shows the existing, year 2022 background, and year 2022 buildout traffic volumes for the morning peak hour. Figure 4 on page 10 shows the existing, year 2022 background, and year 2022 buildout traffic volumes for the evening peak hour.

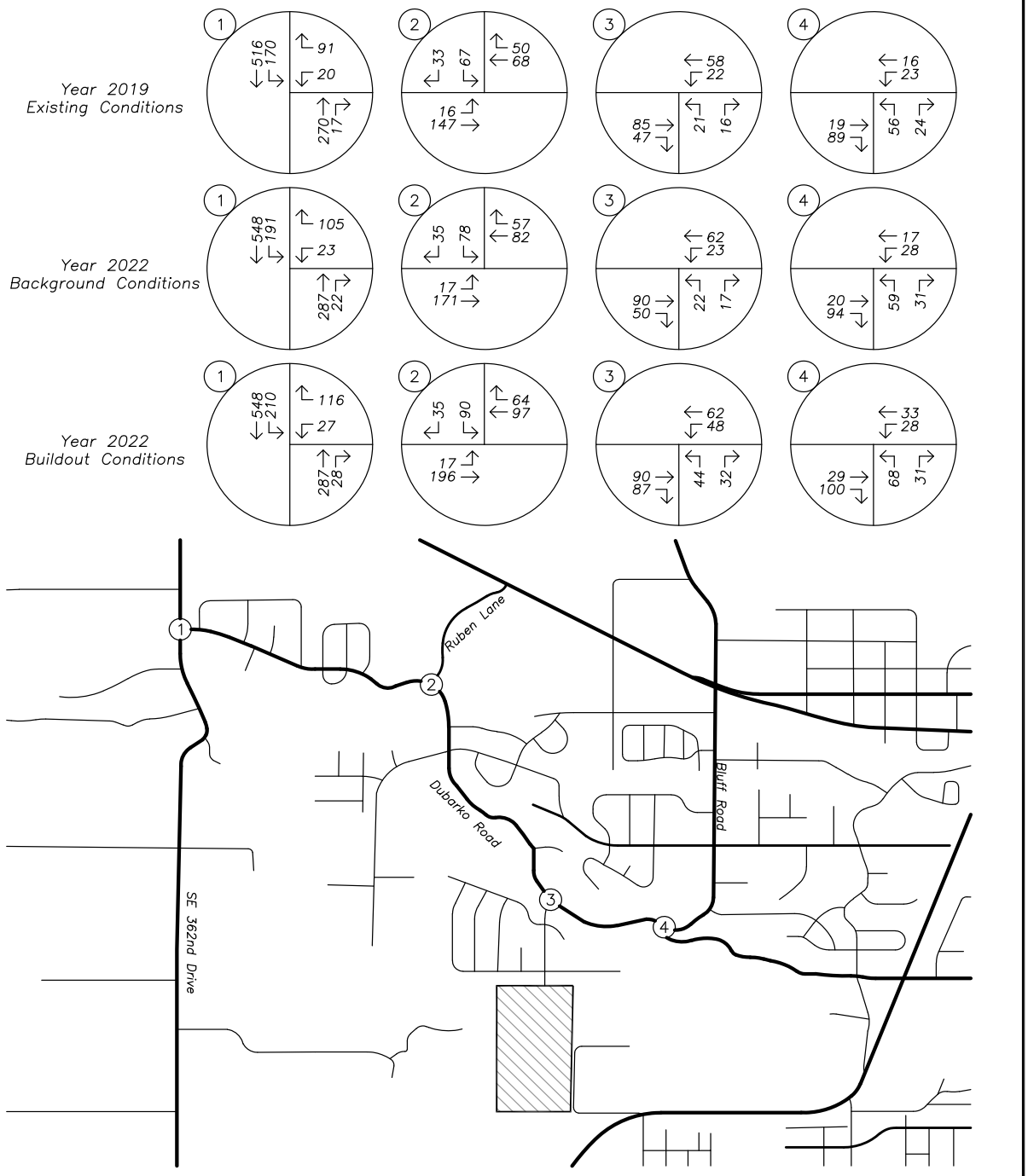


TRAFFIC VOLUMES
All Analysis Scenarios
AM Peak Hour

no scale

FIGURE 3

PAGE 9



TRAFFIC VOLUMES
All Analysis Scenarios
PM Peak Hour

no scale

FIGURE 4

PAGE 10

Safety Analysis

Crash History Review

Using data obtained from the ODOT's Crash Analysis and Reporting Unit, a review of the most recent available five years of crash history (January 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 hour represents approximately 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.

Table 5: Crash Analysis Summary

Intersection	Crash Type		Crash Severity	Total	AADT	Crash Rate
	Turn	Sideswipe	PDO			
Dubarko Road at SE 362nd Drive	0	1	1	1	10,840	0.05
Dubarko Road at Melissa Avenue	2	0	2	2	2,490	0.44

The calculated crash rates at the intersections of Dubarko Road at SE 362nd Drive and at Melissa Avenue are not indicative of safety deficiencies or design flaws. No mitigation is recommended.

No reported crashes were found at the intersections of Dubarko Road at Ruben Lane and Dubarko Road at Bluff Road during the analysis period. Accordingly, no safety concerns were identified at these study intersections.

Warrant Analysis

Traffic Signal Warrants

Traffic signal warrants were examined for all study intersections based on the methodologies in the *Manual on Uniform Traffic Control Devices*[2] (MUTCD). Warrant 1, *Eight Hour Vehicular Volumes,* was used from the MUTCD. Warrants were evaluated based on the common assumption that traffic counted during the evening peak hour represents ten percent of the AADT. Volumes were used for the year 2022 buildout conditions. Traffic signal warrants were not met at any of the study intersections due to low major and minor street

[2] Federal Highway Administration (FTA), America Traffic Safety Services Association (ATSSA), Institute of Transportation Engineers (ITE), American Association of State Highway and Transportation Officials (AASHTO), *Manual on Uniform Traffic Control Devices for Streets and Highways* (MUTCD), 2009 Edition, 2010.

traffic volumes. Detailed information on the traffic signal warrant analysis is included in the attached appendix.

Left-Turn Lane Warrants

Left-turn lane warrants were examined for the westbound left-turn lane at the intersection of Melissa Avenue at Dubarko Road. A left-turn refuge is primarily a safety consideration for the major-street approach, removing left-turning vehicles from the through traffic stream. Warrants were based on the methodology outlined in the National Cooperative Highway Research Program (NCHRP) Report Number 457[3]. These turn-lane warrants were evaluated based on the number of left-turning vehicles, the number of advancing and opposing vehicles, and the roadway travel speed.

Left-turn lanes were not warranted during any of the analysis scenarios. No new left-turn lanes are recommended.

[3] Bonneson, James A. and Michael D. Fontaine, *NCHRP Report 457: An Engineering Study Guide for Evaluating Intersection Improvements,* Transportation Research Board, 2001.

Operational Analysis

Delay & Capacity Analysis

A capacity and delay analysis was conducted for the study intersection per the unsignalized intersection analysis methodologies in the *Highway Capacity Manual*[4] (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.

The City of Sandy's Transportation System Plan states that both signalized and unsignalized intersections are required to operate at LOS D or better.

Based on the results of the operational analysis, shown in Table 6, the study intersections are currently operating acceptably and are projected to continue operating acceptably through the 2022 buildout year of the site. Detailed calculations as well as tables showing the relationship between delay and LOS are included in the appendix to this report.

Table 6: Intersection Capacity Analysis Summary

	Morning Peak Hour			Evening Peak Hour		
	Delay	LOS	V/C	Delay	LOS	V/C
SE 362nd Drive at Dubarko Road						
Existing Conditions	12	B	0.17	16	C	0.27
Year 2022 Background Conditions	13	B	0.22	18	C	0.34
Year 2022 Buildout Conditions	13	B	0.27	21	C	0.40
Ruben Lane at Dubarko Road						
Existing Conditions	9	A	0.02	11	B	0.15
Year 2022 Background Conditions	10	A	0.03	11	B	0.18
Year 2022 Buildout Conditions	10	A	0.03	12	B	0.21
Dubarko Road at Melissa Avenue						
Existing Conditions	9	A	0.09	10	A	0.05
Year 2022 Background Conditions	9	A	0.09	10	A	0.06
Year 2022 Buildout Conditions	10	A	0.17	11	B	0.12
Dubarko Road at Bluff Road						
Existing Conditions	8	A	0.15	8	A	0.13
Year 2022 Background Conditions	8	A	0.16	8	A	0.14
Year 2022 Buildout Conditions	8	A	0.17	8	A	0.16

[4] Transportation Research Board, *Highway Capacity Manual, 6th Edition, 2016.*

Conclusions

Based on a review of the most recent five years of crash history, no significant safety issues or trends are evident at the study intersections.

Due to insufficient major and minor street volumes, traffic signal warrants were not met at the study intersections under all analysis scenarios.

Left-turn lane warrants were analyzed for the intersection of Melissa Avenue at Dubarko Road and not estmiated to be met under any analysis scenario.

All study intersections, including the intersection of Melissa Avenue and Dubarko Road are currently operating within the City's perfomance standards and are projected to continue operating acceptably through year 2022, with or without the addition of site trips from the proposed development.

Appendix

1e

TRIP GENERATION CALCULATIONS

Land Use: Single-Family Detached Housing
Land Use Code: 210
Setting/Location General Urban/Suburban
Variable: Dwelling Units
Variable Value: 100

AM PEAK HOUR

Trip Rate: 0.74

	Enter	Exit	Total
Directional Distribution	25%	75%	
Trip Ends	**19**	**55**	**74**

PM PEAK HOUR

Trip Rate: 0.99

	Enter	Exit	Total
Directional Distribution	63%	37%	
Trip Ends	**62**	**37**	**99**

WEEKDAY

Trip Rate: 9.44

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**472**	**472**	**944**

SATURDAY

Trip Rate: 9.54

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**477**	**477**	**954**

Source: Trip Generation Manual, Tenth Edition

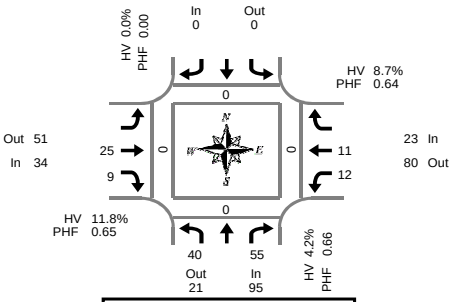
All Traffic Data Services, Inc.
alltrafficdata.net

Melissa Ave S-O Dubarko Rd

Start Time	25-Apr-19 Thu	NB	SB							Total
12:00 AM		2	5							7
01:00		1	1							2
02:00		1	0							1
03:00		7	2							9
04:00		20	1							21
05:00		30	5							35
06:00		57	11							68
07:00		**67**	15							**82**
08:00		37	17							54
09:00		30	17							47
10:00		25	18							43
11:00		23	**22**							45
12:00 PM		35	25							60
01:00		16	24							40
02:00		29	46							75
03:00		35	58							93
04:00		**44**	64							**108**
05:00		30	54							84
06:00		32	**74**							106
07:00		28	40							68
08:00		16	36							52
09:00		9	30							39
10:00		5	12							17
11:00		0	4							4
Total		579	581							1160
Percent		49.9%	50.1%							
AM Peak	-	07:00	11:00	-	-	-	-	-	-	07:00
Vol.	-	67	22	-	-	-	-	-	-	82
PM Peak	-	16:00	18:00	-	-	-	-	-	-	16:00
Vol.	-	44	74	-	-	-	-	-	-	108
Grand Total		579	581							1160
Percent		49.9%	50.1%							
ADT		ADT 11,874		AADT 11,874						

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



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

Dubarko Rd & Bluff Rd

Thursday, May 23, 2019
7:00 AM to 9:00 AM

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

Interval Start Time	Northbound Dubarko Rd				Southbound Dubarko Rd				Eastbound Bluff Rd			Westbound Bluff Rd				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes	T	R	Bikes	L	T		Bikes		North	South	East	West
7:00 AM	3		4	0				0	2	1	0	0	1		0	11	0	0	0	0
7:05 AM	1		8	0				0	2	0	0	1	0		0	12	0	0	0	0
7:10 AM	3		7	0				0	5	1	0	2	1		0	19	0	0	0	0
7:15 AM	8		6	0				0	4	0	0	0	1		0	19	0	0	0	0
7:20 AM	2		7	0				0	0	0	0	1	1		0	11	0	0	0	0
7:25 AM	6		7	0				0	3	2	0	4	2		0	24	0	0	0	0
7:30 AM	3		2	0				0	6	1	0	1	0		0	13	0	0	0	0
7:35 AM	1		3	0				0	1	0	0	1	1		0	7	0	0	0	0
7:40 AM	3		1	0				0	1	1	0	1	1		0	8	0	0	0	0
7:45 AM	1		2	0				0	0	2	0	1	0		0	6	0	0	0	0
7:50 AM	5		6	0				0	1	0	0	0	3		0	15	0	0	0	0
7:55 AM	4		2	0				0	0	1	0	0	0		0	7	0	0	0	0
8:00 AM	2		1	0				0	1	2	0	2	0		0	8	0	0	0	0
8:05 AM	2		1	0				0	0	1	0	0	0		0	4	0	0	0	0
8:10 AM	1		5	0				0	2	0	0	1	2		0	11	0	0	0	0
8:15 AM	2		7	0				0	0	0	0	2	1		0	12	0	0	0	0
8:20 AM	3		2	0				0	3	0	0	1	0		0	9	0	0	0	0
8:25 AM	3		5	0				0	1	3	0	1	0		0	13	0	0	0	0
8:30 AM	0		5	0				0	0	2	0	1	0		0	8	0	0	0	0
8:35 AM	3		0	0				0	0	2	0	0	0		0	5	0	0	0	0
8:40 AM	3		2	0				0	0	2	0	0	1		0	8	0	0	0	0
8:45 AM	1		1	0				0	1	1	0	3	1		0	8	0	0	0	0
8:50 AM	0		1	0				0	0	1	0	1	0		0	3	0	0	0	0
8:55 AM	1		0	0				0	0	2	0	0	0		0	3	0	0	0	0
Total Survey	61		85	0				0	33	25	0	24	16		0	244	0	0	0	0

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

Interval Start Time	Northbound Dubarko Rd				Southbound Dubarko Rd				Eastbound Bluff Rd			Westbound Bluff Rd				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes	T	R	Bikes	L	T		Bikes		North	South	East	West
7:00 AM	7		19	0				0	9	2	0	3	2		0	42	0	0	0	0
7:15 AM	16		20	0				0	7	2	0	5	4		0	54	0	0	0	0
7:30 AM	7		6	0				0	8	2	0	3	2		0	28	0	0	0	0
7:45 AM	10		10	0				0	1	3	0	1	3		0	28	0	0	0	0
8:00 AM	5		7	0				0	3	3	0	3	2		0	23	0	0	0	0
8:15 AM	8		14	0				0	4	3	0	4	1		0	34	0	0	0	0
8:30 AM	6		7	0				0	0	6	0	1	1		0	21	0	0	0	0
8:45 AM	2		2	0				0	1	4	0	4	1		0	14	0	0	0	0
Total Survey	61		85	0				0	33	25	0	24	16		0	244	0	0	0	0

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

By Approach	Northbound Dubarko Rd				Southbound Dubarko Rd				Eastbound Bluff Rd				Westbound Bluff 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	95	21	116	0	0	0	0	0	34	51	85	0	23	80	103	0	152	0	0	0	0
%HV	4.2%				0.0%				11.8%				8.7%				6.6%				
PHF	0.66				0.00				0.65				0.64				0.70				

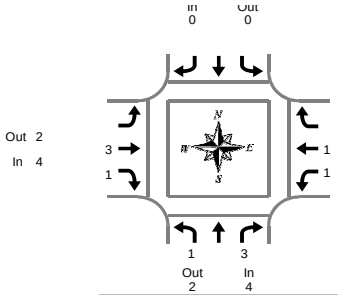
By Movement	Northbound Dubarko Rd				Southbound Dubarko Rd				Eastbound Bluff Rd				Westbound Bluff Rd				Total
	L		R	Total				Total	T	R	Total		L	T		Total	
Volume	40		55	95				0	25	9	34		12	11		23	152
%HV	2.5%	NA	5.5%	4.2%	NA	NA	NA	0.0%	12.0%	11.1%	11.8%		8.3%	9.1%	NA	8.7%	6.6%
PHF	0.63		0.65	0.66				0.00	0.57	0.75	0.65		0.50	0.69		0.64	0.70

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

Interval Start Time	Northbound Dubarko Rd				Southbound Dubarko Rd				Eastbound Bluff Rd			Westbound Bluff Rd				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes	T	R	Bikes	L	T		Bikes		North	South	East	West
7:00 AM	40		55	0				0	25	9	0	12	11		0	152	0	0	0	0
7:15 AM	38		43	0				0	19	10	0	12	11		0	133	0	0	0	0
7:30 AM	30		37	0				0	16	11	0	11	8		0	113	0	0	0	0
7:45 AM	29		38	0				0	8	15	0	9	7		0	106	0	0	0	0
8:00 AM	21		30	0				0	8	16	0	12	5		0	92	0	0	0	0

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Dubarko Rd & Bluff Rd

Thursday, May 23, 2019
7:00 AM to 9:00 AM

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

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

Interval Start Time	Northbound Dubarko Rd				Southbound Dubarko Rd				Eastbound Bluff Rd				Westbound Bluff Rd				Interval Total
	L		R	Total				Total		T	R	Total	L	T		Total	
7:00 AM	0		0	0				0		0	0	0	0	1		1	1
7:05 AM	0		1	1				0		0	0	0	1	0		1	2
7:10 AM	0		0	0				0		1	0	1	0	0		0	1
7:15 AM	1		0	1				0		1	0	1	0	0		0	2
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		1	0	1	0	0		0	1
7:35 AM	0		1	1				0		0	0	0	0	0		0	1
7:40 AM	0		0	0				0		0	1	1	0	0		0	1
7:45 AM	0		0	0				0		0	0	0	0	0		0	0
7:50 AM	0		1	1				0		0	0	0	0	0		0	1
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		1	1				0		0	0	0	0	0		0	1
8:15 AM	1		0	1				0		0	0	0	0	0		0	1
8:20 AM	0		0	0				0		1	0	1	0	0		0	1
8:25 AM	0		1	1				0		0	0	0	0	0		0	1
8:30 AM	0		1	1				0		0	0	0	0	0		0	1
8:35 AM	0		0	0				0		0	0	0	0	0		0	0
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	2		6	8				0		4	1	5	1	1		2	15

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

Interval Start Time	Northbound Dubarko Rd				Southbound Dubarko Rd				Eastbound Bluff Rd				Westbound Bluff Rd				Interval Total
	L		R	Total				Total		T	R	Total	L	T		Total	
7:00 AM	0		1	1				0		1	0	1	1	1		2	4
7:15 AM	1		0	1				0		1	0	1	0	0		0	2
7:30 AM	0		1	1				0		1	1	2	0	0		0	3
7:45 AM	0		1	1				0		0	0	0	0	0		0	1
8:00 AM	0		1	1				0		0	0	0	0	0		0	1
8:15 AM	1		1	2				0		1	0	1	0	0		0	3
8:30 AM	0		1	1				0		0	0	0	0	0		0	1
8:45 AM	0		0	0				0		0	0	0	0	0		0	0
Total Survey	2		6	8				0		4	1	5	1	1		2	15

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

By Approach	Northbound Dubarko Rd			Southbound Dubarko Rd			Eastbound Bluff Rd			Westbound Bluff Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	4	2	6	0	0	0	4	2	6	2	6	8	10
PHF	0.50			0.00			0.50			0.25			0.50

By Movement	Northbound Dubarko Rd				Southbound Dubarko Rd				Eastbound Bluff Rd				Westbound Bluff Rd				Total
	L		R	Total				Total		T	R	Total	L	T		Total	
Volume	1		3	4				0		3	1	4	1	1		2	10
PHF	0.25		0.75	0.50				0.00		0.38	0.25	0.50	0.25	0.25		0.25	0.50

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

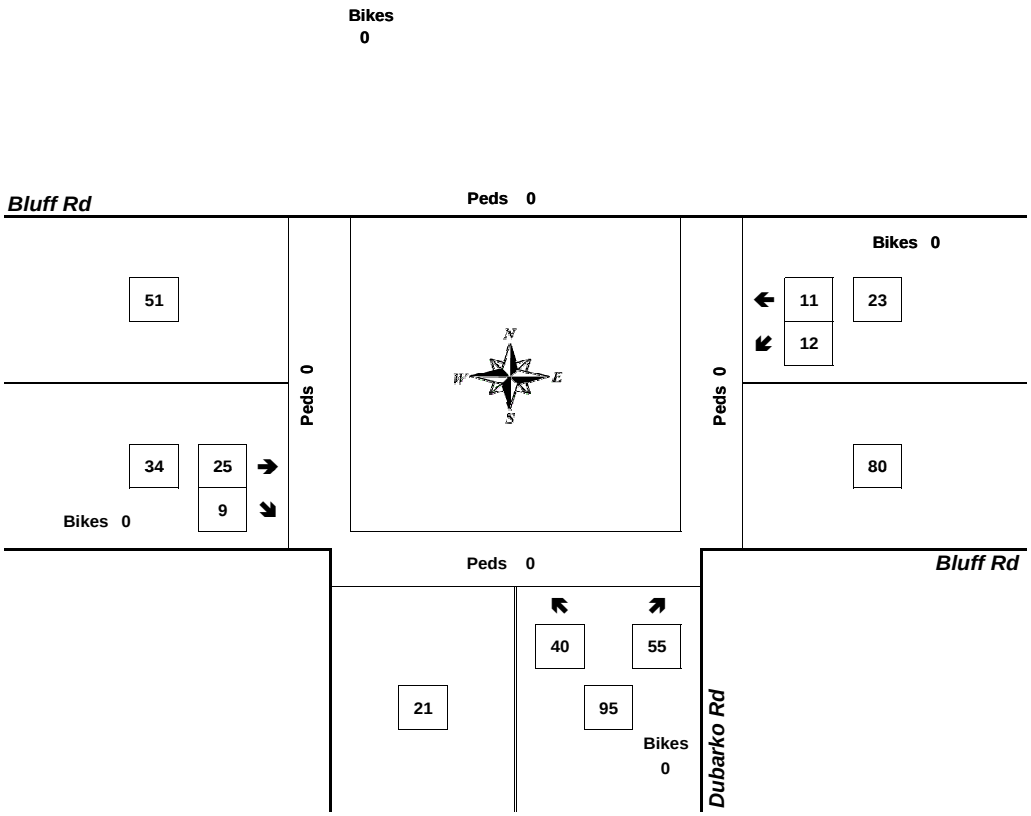
Interval Start Time	Northbound Dubarko Rd				Southbound Dubarko Rd				Eastbound Bluff Rd				Westbound Bluff Rd				Interval Total
	L		R	Total				Total		T	R	Total	L	T		Total	
7:00 AM	1		3	4				0		3	1	4	1	1		2	10
7:15 AM	1		3	4				0		2	1	3	0	0		0	7
7:30 AM	1		4	5				0		2	1	3	0	0		0	8
7:45 AM	1		4	5				0		1	0	1	0	0		0	6
8:00 AM	1		3	4				0		1	0	1	0	0		0	5

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

Dubarko Rd & Bluff Rd

7:00 AM to 8:00 AM
Thursday, May 23, 2019

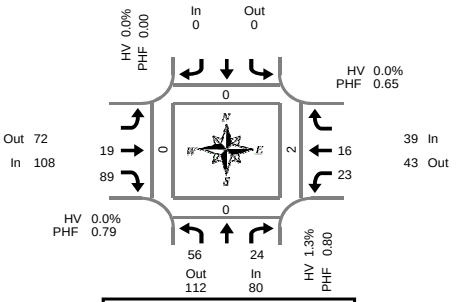


Approach	PHF	HV%	Volume
EB	0.65	11.8%	34
WB	0.64	8.7%	23
NB	0.66	4.2%	95
SB	0.00	0.0%	0
Intersection	0.70	6.6%	152

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

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
4:45 PM to 5:45 PM

Dubarko Rd & Bluff Rd

Wednesday, May 22, 2019
4:00 PM to 6:00 PM

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

Interval Start Time	Northbound Dubarko Rd				Southbound Dubarko Rd				Eastbound Bluff Rd				Westbound Bluff Rd				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes	T	R	Bikes	L	T		Bikes			North	South	East	West
4:00 PM	4		0	0				0	4	7	0	5	0		0	20		0	0	0	0
4:05 PM	2		0	0				0	1	4	0	3	3		0	13		0	0	0	0
4:10 PM	7		1	0				0	1	4	0	2	0		0	15		0	0	0	0
4:15 PM	5		1	0				0	2	7	0	1	1		0	17		0	0	0	0
4:20 PM	3		0	0				0	0	5	0	2	3		0	13		0	0	0	0
4:25 PM	7		2	0				0	3	8	0	3	0		0	23		0	0	0	0
4:30 PM	6		2	0				0	0	6	0	1	0		0	15		0	0	0	0
4:35 PM	2		2	0				0	3	9	0	1	0		0	17		0	0	0	0
4:40 PM	7		3	0				0	2	7	0	1	0		0	20		0	0	0	0
4:45 PM	7		0	0				0	0	10	0	3	0		0	20		0	0	0	0
4:50 PM	8		4	0				0	2	5	0	1	0		0	20		0	0	0	0
4:55 PM	3		1	0				0	0	6	0	0	1		0	11		0	0	0	0
5:00 PM	4		3	0				0	1	5	0	3	2		0	18		0	0	0	0
5:05 PM	6		1	1				0	3	8	0	1	2		0	21		0	0	1	0
5:10 PM	1		0	0				0	4	9	0	1	0		0	15		0	0	0	0
5:15 PM	3		0	0				0	1	9	0	1	2		0	16		0	0	0	0
5:20 PM	7		4	0				0	3	6	0	1	3		0	24		0	0	0	0
5:25 PM	1		2	0				0	0	8	0	3	1		0	15		0	0	0	0
5:30 PM	5		2	0				0	1	6	0	5	1		0	20		0	0	0	0
5:35 PM	3		0	0				0	2	9	0	2	3		0	19		0	0	0	0
5:40 PM	8		7	0				0	2	8	0	2	1		0	28		0	0	1	0
5:45 PM	7		1	0				0	0	3	0	0	1		0	12		0	0	0	0
5:50 PM	6		2	0				0	1	6	0	1	0		0	16		0	0	0	0
5:55 PM	3		0	0				0	1	2	0	1	2		0	9		0	0	0	0
Total Survey	115		38	1				0	37	157	0	44	26		0	417		0	0	2	0

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

Interval Start Time	Northbound Dubarko Rd				Southbound Dubarko Rd				Eastbound Bluff Rd				Westbound Bluff Rd				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes	T	R	Bikes	L	T		Bikes			North	South	East	West
4:00 PM	13		1	0				0	6	15	0	10	3		0	48		0	0	0	0
4:15 PM	15		3	0				0	5	20	0	6	4		0	53		0	0	0	0
4:30 PM	15		7	0				0	5	22	0	3	0		0	52		0	0	0	0
4:45 PM	18		5	0				0	2	21	0	4	1		0	51		0	0	0	0
5:00 PM	11		4	1				0	8	22	0	5	4		0	54		0	0	1	0
5:15 PM	11		6	0				0	4	23	0	5	6		0	55		0	0	0	0
5:30 PM	16		9	0				0	5	23	0	9	5		0	67		0	0	1	0
5:45 PM	16		3	0				0	2	11	0	2	3		0	37		0	0	0	0
Total Survey	115		38	1				0	37	157	0	44	26		0	417		0	0	2	0

Peak Hour Summary
4:45 PM to 5:45 PM

By Approach	Northbound Dubarko Rd				Southbound Dubarko Rd				Eastbound Bluff Rd				Westbound Bluff 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	80	112	192	1	0	0	0	0	108	72	180	0	39	43	82	0	227	0	0	2	0
%HV	1.3%				0.0%				0.0%				0.0%				0.4%				
PHF	0.80				0.00				0.79				0.65				0.85				

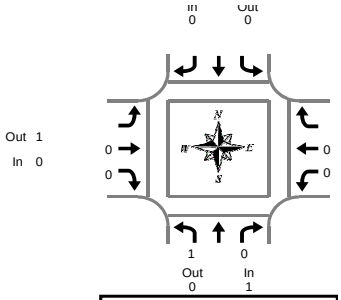
By Movement	Northbound Dubarko Rd				Southbound Dubarko Rd				Eastbound Bluff Rd				Westbound Bluff Rd				Total
	L		R	Total				Total	T	R	Total		L	T		Total	
Volume	56		24	80				0	19	89	108		23	16		39	227
%HV	1.8%	NA	0.0%	1.3%	NA	NA	NA	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	NA	0.0%	0.4%
PHF	0.78		0.67	0.80				0.00	0.59	0.86	0.79		0.58	0.67		0.65	0.85

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

Interval Start Time	Northbound Dubarko Rd				Southbound Dubarko Rd				Eastbound Bluff Rd				Westbound Bluff Rd				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes	T	R	Bikes	L	T		Bikes			North	South	East	West
4:00 PM	61		16	0				0	18	78	0	23	8		0	204		0	0	0	0
4:15 PM	59		19	1				0	20	85	0	18	9		0	210		0	0	1	0
4:30 PM	55		22	1				0	19	88	0	17	11		0	212		0	0	1	0
4:45 PM	56		24	1				0	19	89	0	23	16		0	227		0	0	2	0
5:00 PM	54		22	1				0	19	79	0	21	18		0	213		0	0	2	0

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Dubarko Rd & Bluff Rd

Wednesday, May 22, 2019
4:00 PM to 6:00 PM

Peak Hour Summary
4:45 PM to 5:45 PM

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

Interval Start Time	Northbound Dubarko Rd				Southbound Dubarko Rd				Eastbound Bluff Rd				Westbound Bluff Rd				Interval Total
	L		R	Total				Total	T	R	Total	L	T		Total	
4:00 PM	0		0	0				0	2	0	2	0	0		0	2
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	1	0		1	1
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	1	0		1	1
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	1		0	1				0	0	0	0	0	0		0	1
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	1		0	1				0	2	0	2	2	0		2	5

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

Interval Start Time	Northbound Dubarko Rd				Southbound Dubarko Rd				Eastbound Bluff Rd				Westbound Bluff Rd				Interval Total
	L		R	Total				Total	T	R	Total	L	T		Total	
4:00 PM	0		0	0				0	2	0	2	0	0		0	2
4:15 PM	0		0	0				0	0	0	0	1	0		1	1
4:30 PM	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
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	1		0	1				0	0	0	0	0	0		0	1
5:45 PM	0		0	0				0	0	0	0	0	0		0	0
Total Survey	1		0	1				0	2	0	2	2	0		2	5

Heavy Vehicle Peak Hour Summary
4:45 PM to 5:45 PM

By Approach	Northbound Dubarko Rd			Southbound Dubarko Rd			Eastbound Bluff Rd			Westbound Bluff Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	0	1	0	0	0	0	1	1	0	0	0	1
PHF	0.25			0.00			0.00			0.00			0.25

By Movement	Northbound Dubarko Rd				Southbound Dubarko Rd				Eastbound Bluff Rd				Westbound Bluff Rd				Total
	L		R	Total				Total	T	R	Total	L	T		Total	
Volume	1		0	1				0	0	0	0	0	0		0	1
PHF	0.25		0.00	0.25				0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.25

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

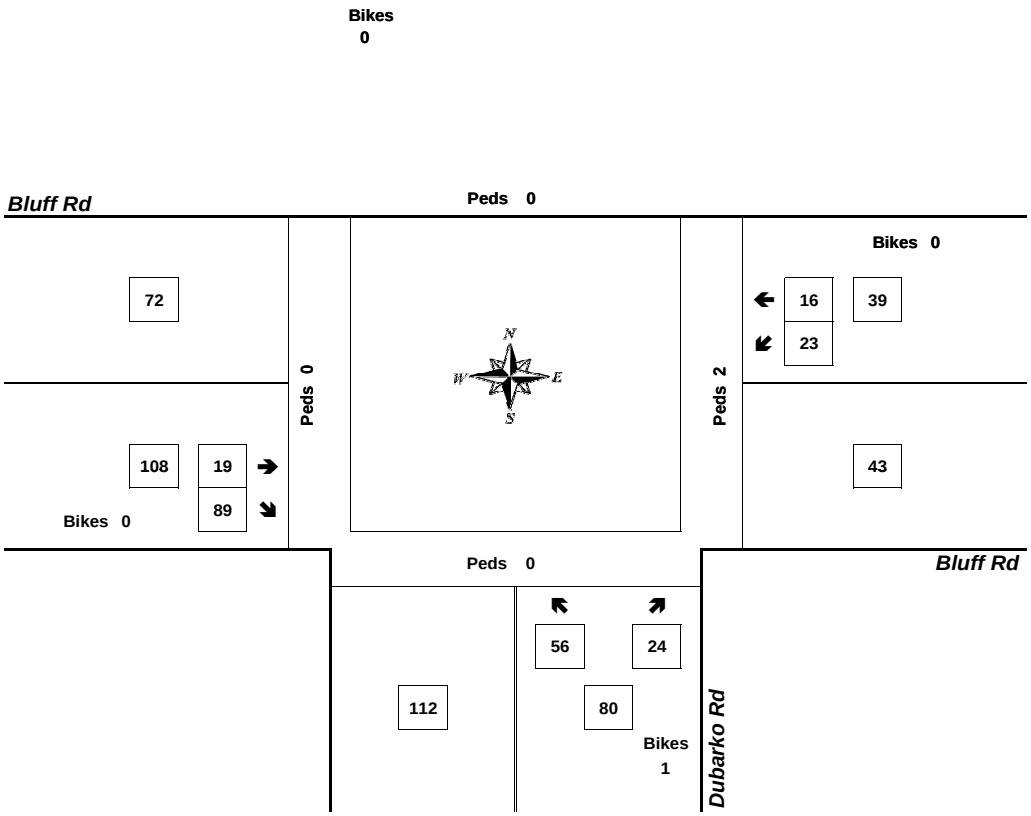
Interval Start Time	Northbound Dubarko Rd				Southbound Dubarko Rd				Eastbound Bluff Rd				Westbound Bluff Rd				Interval Total
	L		R	Total				Total	T	R	Total	L	T		Total	
4:00 PM	0		0	0				0	2	0	2	2	0		2	4
4:15 PM	0		0	0				0	0	0	0	2	0		2	2
4:30 PM	0		0	0				0	0	0	0	1	0		1	1
4:45 PM	1		0	1				0	0	0	0	0	0		0	1
5:00 PM	1		0	1				0	0	0	0	0	0		0	1

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

Dubarko Rd & Bluff Rd

4:45 PM to 5:45 PM
Wednesday, May 22, 2019

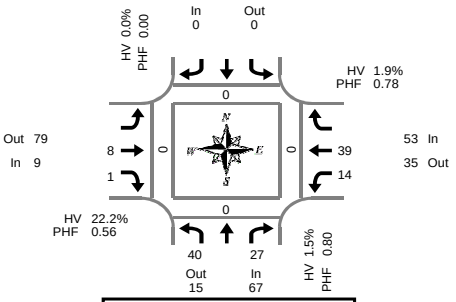


Approach	PHF	HV%	Volume
EB	0.79	0.0%	108
WB	0.65	0.0%	39
NB	0.80	1.3%	80
SB	0.00	0.0%	0
Intersection	0.85	0.4%	227

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

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



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

Melissa Ave & Dubarko Rd

Thursday, April 25, 2019
7:00 AM to 9:00 AM

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

Interval Start Time	Northbound Melissa Ave				Southbound Melissa Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes	T	R	Bikes	L	T		Bikes		North	South	East	West
7:00 AM	5		2	0				0	0	0	0	2	3		0	12	0	0	0	0
7:05 AM	4		6	0				0	0	0	0	2	4		0	16	0	0	0	0
7:10 AM	2		2	0				0	1	0	0	1	2		0	8	0	0	0	0
7:15 AM	4		1	0				0	0	0	0	0	4		0	9	0	0	0	0
7:20 AM	2		3	0				0	2	0	0	2	3		0	12	0	0	0	0
7:25 AM	2		3	0				0	0	1	0	0	6		0	12	0	0	0	0
7:30 AM	6		4	0				0	1	0	0	3	3		0	17	0	0	0	0
7:35 AM	0		0	0				0	1	0	0	1	3		0	5	0	0	0	0
7:40 AM	2		1	0				0	1	0	0	0	4		0	8	0	0	0	0
7:45 AM	4		1	0				0	0	0	0	0	2		0	7	0	0	0	0
7:50 AM	6		1	0				0	1	0	0	2	3		0	13	0	0	0	0
7:55 AM	3		3	0				0	1	0	0	1	2		0	10	0	0	0	0
8:00 AM	3		0	0				0	0	0	0	0	1		0	4	0	0	0	0
8:05 AM	4		0	0				0	1	0	0	1	2		0	8	0	0	0	0
8:10 AM	3		1	0				0	0	1	0	0	2		0	7	0	0	0	0
8:15 AM	1		0	0				0	1	1	0	1	3		0	7	0	0	0	0
8:20 AM	1		3	0				0	3	1	0	1	4		0	13	0	0	0	0
8:25 AM	3		2	0				0	2	0	0	1	4		0	12	0	0	0	0
8:30 AM	3		3	0				0	5	0	0	0	2		0	13	0	0	0	0
8:35 AM	2		1	0				0	4	1	0	0	1		0	9	0	0	0	0
8:40 AM	0		2	0				0	4	1	0	1	3		0	11	0	0	0	0
8:45 AM	0		2	0				0	5	1	0	0	5		0	13	0	0	0	0
8:50 AM	0		1	0				0	2	2	0	1	2		0	8	0	0	0	0
8:55 AM	2		0	0				0	0	0	0	3	3		0	8	0	0	0	0
Total Survey	62		42	0				0	35	9	0	23	71		0	242	0	0	0	0

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

Interval Start Time	Northbound Melissa Ave				Southbound Melissa Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes	T	R	Bikes	L	T		Bikes		North	South	East	West
7:00 AM	11		10	0				0	1	0	0	5	9		0	36	0	0	0	0
7:15 AM	8		7	0				0	2	1	0	2	13		0	33	0	0	0	0
7:30 AM	8		5	0				0	3	0	0	4	10		0	30	0	0	0	0
7:45 AM	13		5	0				0	2	0	0	3	7		0	30	0	0	0	0
8:00 AM	10		1	0				0	1	1	0	1	5		0	19	0	0	0	0
8:15 AM	5		5	0				0	6	2	0	3	11		0	32	0	0	0	0
8:30 AM	5		6	0				0	13	2	0	1	6		0	33	0	0	0	0
8:45 AM	2		3	0				0	7	3	0	4	10		0	29	0	0	0	0
Total Survey	62		42	0				0	35	9	0	23	71		0	242	0	0	0	0

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

By Approach	Northbound Melissa Ave				Southbound Melissa Ave				Eastbound Dubarko Rd				Westbound Dubarko 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	67	15	82	0	0	0	0	0	9	79	88	0	53	35	88	0	129	0	0	0	0
%HV	1.5%				0.0%				22.2%				1.9%				3.1%				
PHF	0.80				0.00				0.56				0.78				0.79				

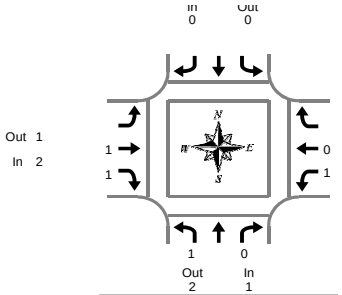
By Movement	Northbound Melissa Ave				Southbound Melissa Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Total
	L		R	Total				Total	T	R	Total		L	T		Total	
Volume	40		27	67				0	8	1	9		14	39		53	129
%HV	2.5%	NA	0.0%	1.5%	NA	NA	NA	0.0%	NA	12.5%	#####	22.2%	7.1%	0.0%	NA	1.9%	3.1%
PHF	0.77		0.68	0.80				0.00		0.67	0.25	0.56	0.70	0.75		0.78	0.79

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

Interval Start Time	Northbound Melissa Ave				Southbound Melissa Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes	T	R	Bikes	L	T		Bikes		North	South	East	West
7:00 AM	40		27	0				0	8	1	0	14	39		0	129	0	0	0	0
7:15 AM	39		18	0				0	8	2	0	10	35		0	112	0	0	0	0
7:30 AM	36		16	0				0	12	3	0	11	33		0	111	0	0	0	0
7:45 AM	33		17	0				0	22	5	0	8	29		0	114	0	0	0	0
8:00 AM	22		15	0				0	27	8	0	9	32		0	113	0	0	0	0

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Melissa Ave & Dubarko Rd

Thursday, April 25, 2019
7:00 AM to 9:00 AM

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

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

Interval Start Time	Northbound Melissa Ave				Southbound Melissa Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total
	L		R	Total				Total	T	R	Total	L	T		Total	
7:00 AM	1		0	1				0	0	0	0	1	0		1	2
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	1	1	0	0		0	1
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	1	0	1	0	0		0	1
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	1		0	1				0	0	0	0	0	0		0	1
8:15 AM	1		0	1				0	0	0	0	1	0		1	2
8:20 AM	0		1	1				0	0	0	0	0	0		0	1
8:25 AM	0		0	0				0	0	0	0	0	0		0	0
8:30 AM	0		1	1				0	0	0	0	0	0		0	1
8:35 AM	0		0	0				0	0	0	0	0	0		0	0
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	3		2	5				0	1	1	2	2	0		2	9

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

Interval Start Time	Northbound Melissa Ave				Southbound Melissa Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total
	L		R	Total				Total	T	R	Total	L	T		Total	
7:00 AM	1		0	1				0	0	0	0	1	0		1	2
7:15 AM	0		0	0				0	0	1	1	0	0		0	1
7:30 AM	0		0	0				0	0	0	0	0	0		0	0
7:45 AM	0		0	0				0	1	0	1	0	0		0	1
8:00 AM	1		0	1				0	0	0	0	0	0		0	1
8:15 AM	1		1	2				0	0	0	0	1	0		1	3
8:30 AM	0		1	1				0	0	0	0	0	0		0	1
8:45 AM	0		0	0				0	0	0	0	0	0		0	0
Total Survey	3		2	5				0	1	1	2	2	0		2	9

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

By Approach	Northbound Melissa Ave			Southbound Melissa Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	2	3	0	0	0	2	1	3	1	1	2	4
PHF	0.25			0.00			0.50			0.25			0.50

By Movement	Northbound Melissa Ave				Southbound Melissa Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Total
	L		R	Total				Total	T	R	Total	L	T		Total	
Volume	1		0	1				0	1	1	2	1	0		1	4
PHF	0.25		0.00	0.25				0.00	0.25	0.25	0.50	0.25	0.00		0.25	0.50

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

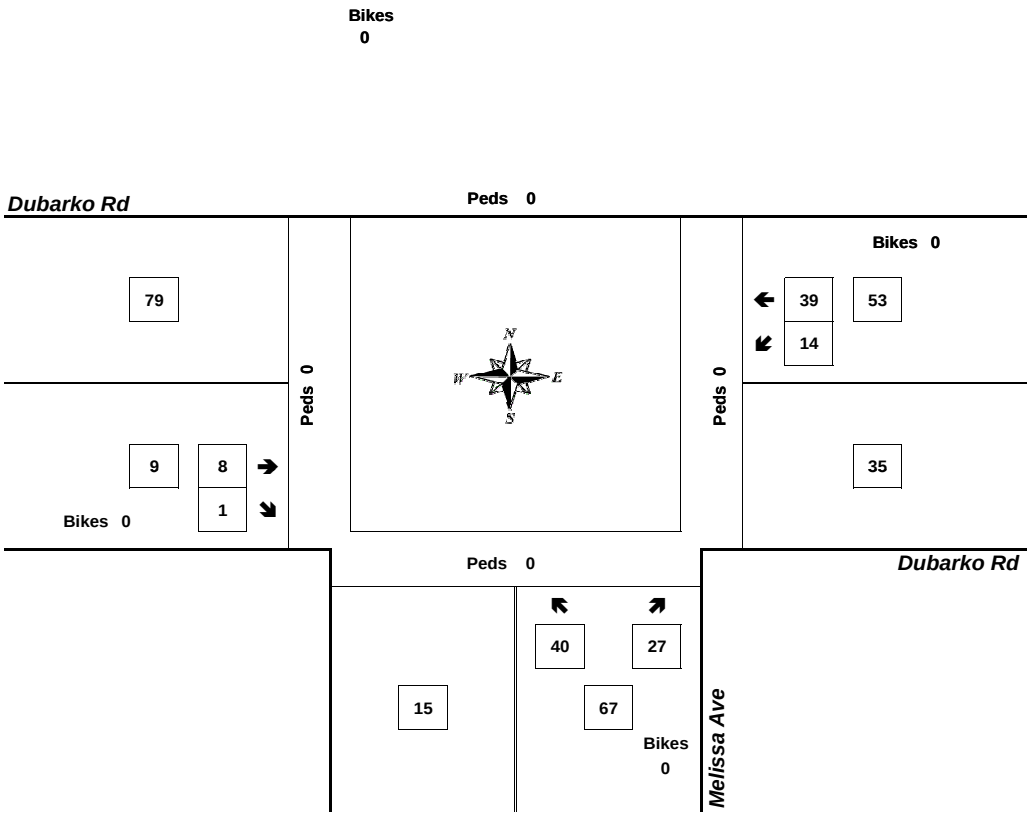
Interval Start Time	Northbound Melissa Ave				Southbound Melissa Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total
	L		R	Total				Total	T	R	Total	L	T		Total	
7:00 AM	1		0	1				0	1	1	2	1	0		1	4
7:15 AM	1		0	1				0	1	1	2	0	0		0	3
7:30 AM	2		1	3				0	1	0	1	1	0		1	5
7:45 AM	2		2	4				0	1	0	1	1	0		1	6
8:00 AM	2		2	4				0	0	0	0	1	0		1	5

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

Melissa Ave & Dubarko Rd

7:00 AM to 8:00 AM
Thursday, April 25, 2019

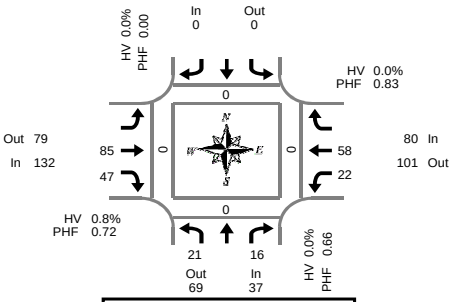


Approach	PHF	HV%	Volume
EB	0.56	22.2%	9
WB	0.78	1.9%	53
NB	0.80	1.5%	67
SB	0.00	0.0%	0
Intersection	0.79	3.1%	129

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

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



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

Melissa Ave & Dubarko Rd

Thursday, April 25, 2019
4:00 PM to 6:00 PM

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

Interval Start Time	Northbound Melissa Ave				Southbound Melissa Ave				Eastbound Dubarko Rd			Westbound Dubarko Rd				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes	T	R	Bikes	L	T		Bikes		North	South	East	West
4:00 PM	1		3	0				0	12	4	0	3	6		0	29	0	0	0	0
4:05 PM	0		2	0				0	4	2	0	0	3		0	11	0	0	0	0
4:10 PM	4		2	0				0	3	2	0	0	7		0	18	0	0	0	1
4:15 PM	2		2	0				0	5	4	0	2	2		0	17	0	1	0	0
4:20 PM	2		2	0				0	7	1	0	0	1		0	13	0	0	0	0
4:25 PM	3		2	0				0	5	2	0	0	5		0	17	0	0	0	0
4:30 PM	0		1	0				0	7	4	0	2	4		0	18	0	0	0	0
4:35 PM	1		0	0				0	8	2	0	3	5		0	19	0	0	0	0
4:40 PM	1		2	0				0	5	7	0	5	6		0	26	0	0	0	0
4:45 PM	5		2	0				0	4	5	0	0	4		0	20	0	0	0	0
4:50 PM	2		1	0				0	7	8	0	3	6		0	27	0	0	0	0
4:55 PM	2		2	0				0	7	5	0	0	5		0	21	0	0	0	0
5:00 PM	0		0	0				0	14	5	0	1	1		0	21	0	0	0	0
5:05 PM	1		0	0				0	9	1	0	0	5		0	16	0	0	0	0
5:10 PM	2		1	0				0	5	3	0	3	7		0	21	0	0	0	0
5:15 PM	0		1	0				0	4	1	0	1	3		0	10	0	0	0	0
5:20 PM	3		3	0				0	10	4	0	3	4		0	27	0	0	0	0
5:25 PM	1		1	0				0	4	2	0	1	5		0	14	0	0	0	0
5:30 PM	2		1	0				0	7	3	0	3	7		0	23	0	0	0	0
5:35 PM	2		2	0				0	9	3	0	2	5		0	23	0	0	0	0
5:40 PM	3		0	0				0	3	6	0	0	1		0	13	0	0	0	0
5:45 PM	1		1	0				0	8	2	0	4	5		0	21	0	0	0	1
5:50 PM	3		0	0				0	5	2	0	0	5		0	15	0	0	0	0
5:55 PM	2		0	0				0	9	4	0	0	2		0	17	0	0	0	1
Total Survey	43		31	0				0	161	82	0	36	104		0	457	0	1	0	3

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

Interval Start Time	Northbound Melissa Ave				Southbound Melissa Ave				Eastbound Dubarko Rd			Westbound Dubarko Rd				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes	T	R	Bikes	L	T		Bikes		North	South	East	West
4:00 PM	5		7	0				0	19	8	0	3	16		0	58	0	0	0	1
4:15 PM	7		6	0				0	17	7	0	2	8		0	47	0	1	0	0
4:30 PM	2		3	0				0	20	13	0	10	15		0	63	0	0	0	0
4:45 PM	9		5	0				0	18	18	0	3	15		0	68	0	0	0	0
5:00 PM	3		1	0				0	28	9	0	4	13		0	58	0	0	0	0
5:15 PM	4		5	0				0	18	7	0	5	12		0	51	0	0	0	0
5:30 PM	7		3	0				0	19	12	0	5	13		0	59	0	0	0	0
5:45 PM	6		1	0				0	22	8	0	4	12		0	53	0	0	0	2
Total Survey	43		31	0				0	161	82	0	36	104		0	457	0	1	0	3

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

By Approach	Northbound Melissa Ave				Southbound Melissa Ave				Eastbound Dubarko Rd				Westbound Dubarko 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	37	69	106	0	0	0	0	0	132	79	211	0	80	101	181	0	249	0	0	0	0
%HV	0.0%				0.0%				0.8%				0.0%				0.4%				
PHF	0.66				0.00				0.72				0.83				0.85				

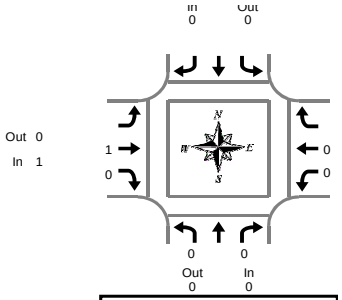
By Movement	Northbound Melissa Ave				Southbound Melissa Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Total
	L		R	Total				Total	T	R	Total		L	T		Total	
Volume	21		16	37				0	85	47	132		22	58		80	249
%HV	0.0%	NA	0.0%	0.0%	NA	NA	NA	0.0%	NA	1.2%	0.0%	0.8%	0.0%	0.0%	NA	0.0%	0.4%
PHF	0.58		0.80	0.66				0.00		0.71	0.59	0.72	0.69	0.85		0.83	0.85

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

Interval Start Time	Northbound Melissa Ave				Southbound Melissa Ave				Eastbound Dubarko Rd			Westbound Dubarko Rd				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes	T	R	Bikes	L	T		Bikes		North	South	East	West
4:00 PM	23		21	0				0	74	46	0	18	54		0	236	0	1	0	1
4:15 PM	21		15	0				0	83	47	0	19	51		0	236	0	1	0	0
4:30 PM	18		14	0				0	84	47	0	22	55		0	240	0	0	0	0
4:45 PM	23		14	0				0	83	46	0	17	53		0	236	0	0	0	0
5:00 PM	20		10	0				0	87	36	0	18	50		0	221	0	0	0	2

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Melissa Ave & Dubarko Rd

Thursday, April 25, 2019
4:00 PM to 6:00 PM

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

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

Interval Start Time	Northbound Melissa Ave				Southbound Melissa Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total
	L		R	Total				Total	T	R	Total	L	T		Total	
4:00 PM	0		0	0				0	0	1	1	0	1		1	2
4:05 PM	0		0	0				0	0	0	0	0	1		1	1
4:10 PM	1		0	1				0	0	0	0	0	0		0	1
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	1	0	1	0	0		0	1
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	1		0	1				0	1	1	2	0	2		2	5

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

Interval Start Time	Northbound Melissa Ave				Southbound Melissa Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total
	L		R	Total				Total	T	R	Total	L	T		Total	
4:00 PM	1		0	1				0	0	1	1	0	2		2	4
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	1	0	1	0	0		0	1
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	1		0	1				0	1	1	2	0	2		2	5

Heavy Vehicle Peak Hour Summary
4:40 PM to 5:40 PM

By Approach	Northbound Melissa Ave			Southbound Melissa Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	0	0	0	1	0	1	0	1	1	1
PHF	0.00			0.00			0.25			0.00			0.25

By Movement	Northbound Melissa Ave				Southbound Melissa Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Total
	L		R	Total				Total	T	R	Total	L	T		Total	
Volume	0		0	0				0	1	0	1	0	0		0	1
PHF	0.00		0.00	0.00				0.00	0.25	0.00	0.25	0.00	0.00		0.00	0.25

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

Interval Start Time	Northbound Melissa Ave				Southbound Melissa Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total
	L		R	Total				Total	T	R	Total	L	T		Total	
4:00 PM	1		0	1				0	0	1	1	0	2		2	4
4:15 PM	0		0	0				0	0	0	0	0	0		0	0
4:30 PM	0		0	0				0	1	0	1	0	0		0	1
4:45 PM	0		0	0				0	1	0	1	0	0		0	1
5:00 PM	0		0	0				0	1	0	1	0	0		0	1

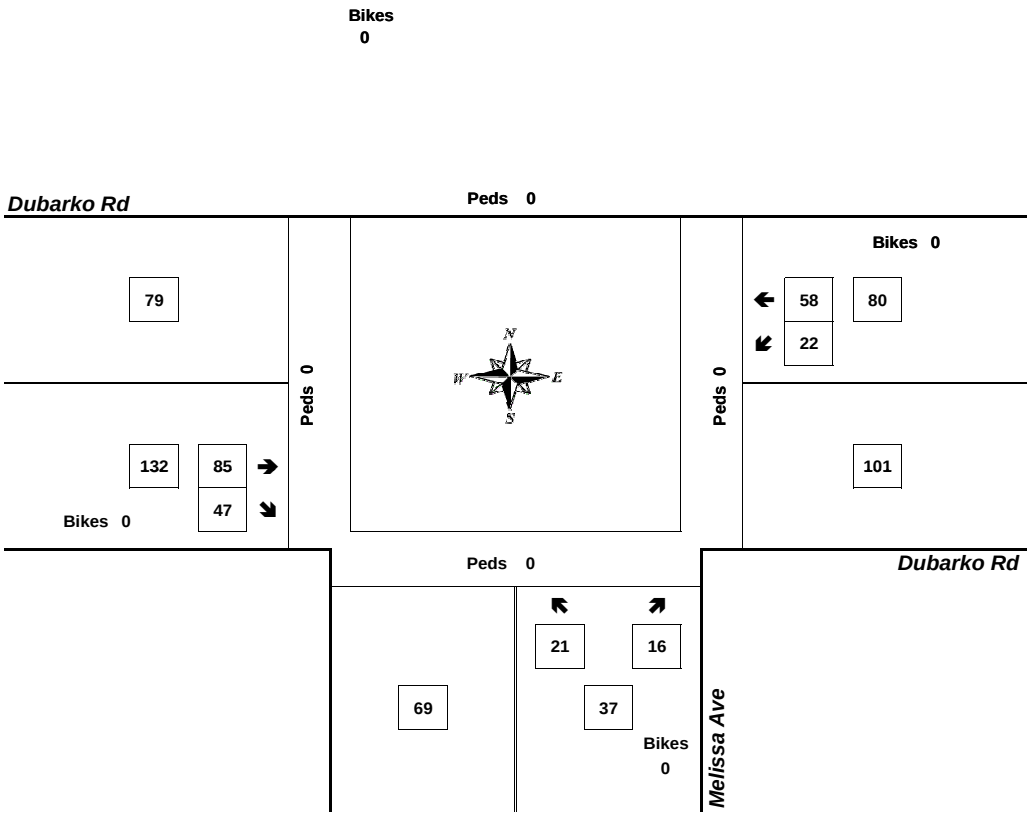
Peak Hour Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740

Melissa Ave & Dubarko Rd

4:40 PM to 5:40 PM
Thursday, April 25, 2019



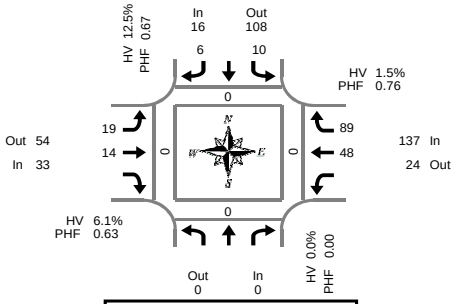
Approach	PHF	HV%	Volume
EB	0.72	0.8%	132
WB	0.83	0.0%	80
NB	0.66	0.0%	37
SB	0.00	0.0%	0
Intersection	0.85	0.4%	249

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

Total Vehicle Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740



Ruben Ln & Dubarko Rd

Thursday, May 23, 2019
7:00 AM to 9:00 AM

Peak Hour Summary
7:05 AM to 8:05 AM

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

Interval Start Time	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total	Pedestrians Crosswalk			
				Bikes	L		R	Bikes	L	T		Bikes		T	R	Bikes		North	South	East	West
7:00 AM				0	2		0	0	1	0		0		4	8	0	15	0	0	1	0
7:05 AM				0	0		0	0	0	1		0		5	9	0	15	0	0	0	0
7:10 AM				0	1		0	0	1	2		0		4	8	0	16	0	0	0	0
7:15 AM				0	1		0	0	1	0		0		7	12	0	21	0	0	0	0
7:20 AM				0	3		0	0	2	1		0		3	6	0	15	0	0	0	0
7:25 AM				0	0		1	0	2	1		0		4	6	0	14	0	0	0	0
7:30 AM				0	0		0	0	0	1		0		2	8	0	11	0	0	0	0
7:35 AM				0	1		4	0	3	3		0		2	5	0	18	0	0	0	0
7:40 AM				0	0		0	0	1	1		0		3	8	0	13	0	0	0	0
7:45 AM				0	0		0	0	4	1		0		4	4	0	13	0	0	0	0
7:50 AM				0	1		0	0	2	2		0		4	9	0	18	0	0	0	0
7:55 AM				0	1		0	0	1	0		0		4	10	0	16	0	0	0	0
8:00 AM				0	2		1	0	2	1		0		6	4	0	16	0	0	0	0
8:05 AM				0	2		1	0	1	2		0		0	5	0	11	0	0	0	0
8:10 AM				0	3		0	0	2	0		0		1	3	0	9	0	0	0	0
8:15 AM				0	0		0	0	3	4		0		4	2	0	13	0	0	0	0
8:20 AM				0	0		0	0	0	2		0		5	8	0	15	0	0	0	0
8:25 AM				0	0		0	0	3	2		0		2	5	0	12	0	0	0	0
8:30 AM				0	2		0	0	0	4		0		3	5	0	14	0	0	0	0
8:35 AM				0	1		1	0	2	1		0		1	4	0	10	0	0	0	0
8:40 AM				0	2		0	0	1	2		0		3	5	0	13	0	0	0	0
8:45 AM				0	3		2	0	2	2		0		2	4	0	15	0	0	0	0
8:50 AM				0	1		0	0	4	3		0		3	5	0	16	0	0	0	0
8:55 AM				0	2		1	0	1	3		0		2	5	0	14	0	0	0	0
Total Survey				0	28		11	0	39	39		0		78	148	0	343	0	0	1	0

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

Interval Start Time	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total	Pedestrians Crosswalk			
				Bikes	L		R	Bikes	L	T		Bikes		T	R	Bikes		North	South	East	West
7:00 AM				0	3		0	0	2	3		0		13	25	0	46	0	0	1	0
7:15 AM				0	4		1	0	5	2		0		14	24	0	50	0	0	0	0
7:30 AM				0	1		4	0	4	5		0		7	21	0	42	0	0	0	0
7:45 AM				0	2		0	0	7	3		0		12	23	0	47	0	0	0	0
8:00 AM				0	7		2	0	5	3		0		7	12	0	36	0	0	0	0
8:15 AM				0	0		0	0	6	8		0		11	15	0	40	0	0	0	0
8:30 AM				0	5		1	0	3	7		0		7	14	0	37	0	0	0	0
8:45 AM				0	6		3	0	7	8		0		7	14	0	45	0	0	0	0
Total Survey				0	28		11	0	39	39		0		78	148	0	343	0	0	1	0

Peak Hour Summary
7:05 AM to 8:05 AM

By Approach	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd				Westbound Dubarko 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	0	0	0	0	16	108	124	0	33	54	87	0	137	24	161	0	186	0	0	0	0
%HV	0.0%				12.5%				6.1%				1.5%				3.2%				
PHF	0.00				0.67				0.63				0.76				0.89				

By Movement	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd				Westbound Dubarko Rd				Total
				Total	L		R	Total	L	T		Total		T	R	Total	
Volume				0	10		6	16	19	14		33		48	89	137	186
%HV	NA	NA	NA	0.0%	20.0%	NA	0.0%	12.5%	0.0%	14.3%	NA	6.1%	NA	2.1%	1.1%	1.5%	3.2%
PHF				0.00	0.50		0.30	0.67	0.59	0.70		0.63		0.75	0.77	0.76	0.89

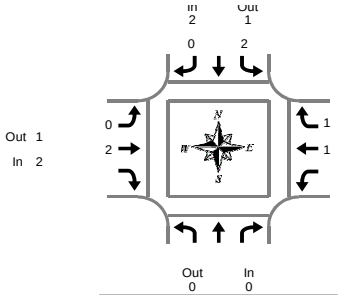
Rolling Hour Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total	Pedestrians Crosswalk			
				Bikes	L		R	Bikes	L	T		Bikes		T	R	Bikes		North	South	East	West
7:00 AM				0	10		5	0	18	13		0		46	93	0	185	0	0	1	0
7:15 AM				0	14		7	0	21	13		0		40	80	0	175	0	0	0	0
7:30 AM				0	10		6	0	22	19		0		37	71	0	165	0	0	0	0
7:45 AM				0	14		3	0	21	21		0		37	64	0	160	0	0	0	0
8:00 AM				0	18		6	0	21	26		0		32	55	0	158	0	0	0	0

Heavy Vehicle Summary

All Traffic Data
Services Inc.

Clay Carney
(503) 833-2740



Ruben Ln & Dubarko Rd

Thursday, May 23, 2019
7:00 AM to 9:00 AM

Peak Hour Summary
7:05 AM to 8:05 AM

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

Interval Start Time	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total
				Total	L		R	Total	L	T		Total		T	R	Total	
7:00 AM				0	0		0	0	0	0		0		0	1	1	1
7:05 AM				0	0		0	0	0	0		0		0	1	1	1
7:10 AM				0	1		0	1	0	0		0		0	0	0	1
7:15 AM				0	0		0	0	0	0		0		1	0	1	1
7:20 AM				0	1		0	1	0	0		0		0	0	0	1
7:25 AM				0	0		0	0	0	1		1		0	0	0	1
7:30 AM				0	0		0	0	0	0		0		0	0	0	0
7:35 AM				0	0		0	0	0	1		1		0	0	0	1
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	1	1	1
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		0	0	0	0
8:35 AM				0	0		0	0	0	0		0		0	0	0	0
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		1	0	1	1
8:55 AM				0	0		0	0	0	0		0		0	1	1	1
Total Survey				0	2		0	2	0	2		2		2	4	6	10

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

Interval Start Time	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total
				Total	L		R	Total	L	T		Total		T	R	Total	
7:00 AM				0	1		0	1	0	0		0		0	2	2	3
7:15 AM				0	1		0	1	0	1		1		1	0	1	3
7:30 AM				0	0		0	0	0	1		1		0	0	0	1
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	1	1	1
8:30 AM				0	0		0	0	0	0		0		0	0	0	0
8:45 AM				0	0		0	0	0	0		0		1	1	2	2
Total Survey				0	2		0	2	0	2		2		2	4	6	10

Heavy Vehicle Peak Hour Summary
7:05 AM to 8:05 AM

By Approach	Northbound Ruben Ln			Southbound Ruben Ln			Eastbound Dubarko Rd			Westbound Dubarko Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	2	1	3	2	1	3	2	4	6	6
PHF	0.00			0.25			0.25			0.25			0.50

By Movement	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd				Westbound Dubarko Rd				Total
				Total	L		R	Total	L	T		Total		T	R	Total	
Volume				0	2		0	2	0	2		2		1	1	2	6
PHF				0.00	0.25		0.00	0.25	0.00	0.25		0.25		0.25	0.25	0.25	0.50

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

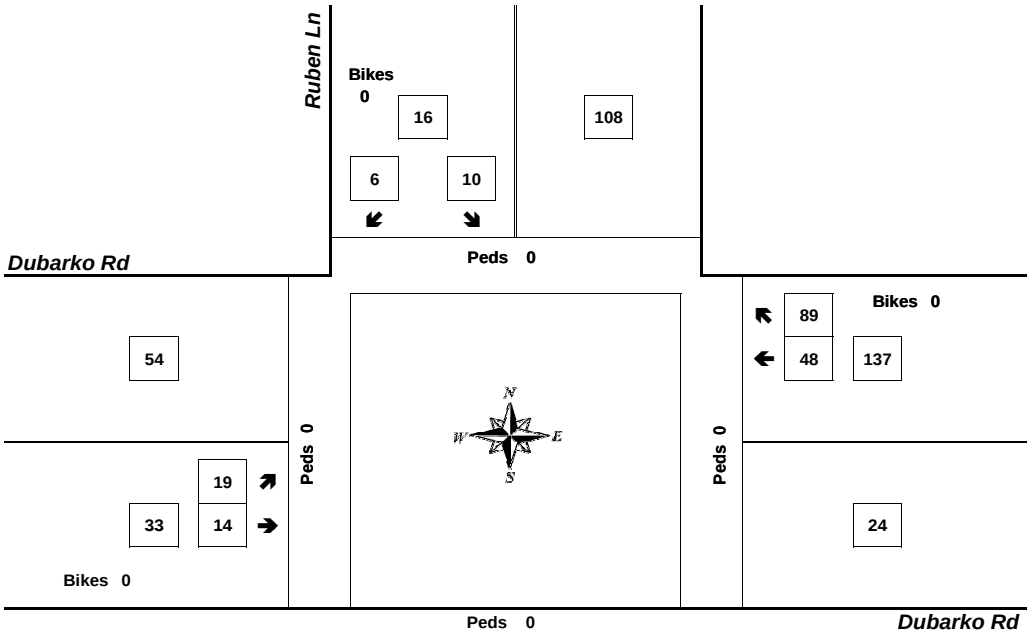
Interval Start Time	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total
				Total	L		R	Total	L	T		Total		T	R	Total	
7:00 AM				0	2		0	2	0	2		2		1	2	3	7
7:15 AM				0	1		0	1	0	2		2		1	0	1	4
7:30 AM				0	0		0	0	0	1		1		0	1	1	2
7:45 AM				0	0		0	0	0	0		0		0	1	1	1
8:00 AM				0	0		0	0	0	0		0		1	2	3	3

Peak Hour Summary

Clay Carney
(503) 833-2740

Ruben Ln & Dubarko Rd

7:05 AM to 8:05 AM
Thursday, May 23, 2019



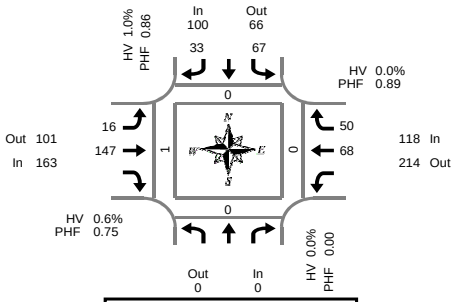
Bikes
0

Approach	PHF	HV%	Volume
EB	0.63	6.1%	33
WB	0.76	1.5%	137
NB	0.00	0.0%	0
SB	0.67	12.5%	16
Intersection	0.89	3.2%	186

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

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
4:25 PM to 5:25 PM

Ruben Ln & Dubarko Rd

Wednesday, May 22, 2019
4:00 PM to 6:00 PM

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

Interval Start Time	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total	Pedestrians Crosswalk			
				Bikes	L		R	Bikes	L	T		Bikes		T	R	Bikes		North	South	East	West
4:00 PM				0	3		1	0	1	6		0		6	2	0	19	0	0	0	0
4:05 PM				0	5		0	0	1	7		0		3	4	0	20	0	0	0	0
4:10 PM				0	8		2	0	1	11		0		5	4	0	31	0	0	0	1
4:15 PM				0	10		2	0	1	4		0		4	4	0	25	0	0	0	0
4:20 PM				0	9		0	0	0	13		0		4	2	0	28	0	0	0	0
4:25 PM				0	5		3	0	1	16		0		5	5	0	35	0	0	0	0
4:30 PM				0	6		2	0	0	15		0		7	6	0	36	0	0	0	1
4:35 PM				0	3		2	0	0	5		0		4	3	0	17	0	0	0	0
4:40 PM				0	5		5	0	2	13		0		7	6	0	38	0	0	0	0
4:45 PM				0	6		4	0	3	6		0		2	1	0	22	0	0	0	0
4:50 PM				0	5		1	0	1	7		0		7	5	0	26	0	0	0	0
4:55 PM				0	5		4	0	0	9		0		9	3	0	30	0	0	0	0
5:00 PM				0	8		2	0	0	16		0		3	5	0	34	0	0	0	0
5:05 PM				0	7		3	0	2	17		0		7	4	0	40	0	0	0	0
5:10 PM				0	6		1	0	3	16		0		2	3	0	31	0	0	0	0
5:15 PM				0	6		3	0	1	13		0		8	5	0	36	0	0	0	0
5:20 PM				0	5		3	0	3	14		0		7	4	0	36	0	0	0	0
5:25 PM				0	4		5	0	1	10		0		2	1	0	23	1	0	0	0
5:30 PM				0	2		2	0	1	14		0		7	4	0	30	0	0	0	0
5:35 PM				0	6		1	0	0	6		0		4	3	0	20	0	0	0	0
5:40 PM				0	3		2	0	0	7		0		6	11	0	29	0	0	0	0
5:45 PM				0	8		1	0	0	13		0		7	2	0	31	0	0	0	0
5:50 PM				0	6		3	0	2	12		0		5	3	0	31	0	0	0	0
5:55 PM				0	5		0	0	2	19		0		3	2	0	31	1	0	0	0
Total Survey				0	136		52	0	26	269		0		124	92	0	699	2	0	0	2

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

Interval Start Time	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total	Pedestrians Crosswalk			
				Bikes	L		R	Bikes	L	T		Bikes		T	R	Bikes		North	South	East	West
4:00 PM				0	16		3	0	3	24		0		14	10	0	70	0	0	0	1
4:15 PM				0	24		5	0	2	33		0		13	11	0	88	0	0	0	0
4:30 PM				0	14		9	0	2	33		0		18	15	0	91	0	0	0	1
4:45 PM				0	16		9	0	4	22		0		18	9	0	78	0	0	0	0
5:00 PM				0	21		6	0	5	49		0		12	12	0	105	0	0	0	0
5:15 PM				0	15		11	0	5	37		0		17	10	0	95	1	0	0	0
5:30 PM				0	11		5	0	1	27		0		17	18	0	79	0	0	0	0
5:45 PM				0	19		4	0	4	44		0		15	7	0	93	1	0	0	0
Total Survey				0	136		52	0	26	269		0		124	92	0	699	2	0	0	2

Peak Hour Summary
4:25 PM to 5:25 PM

By Approach	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd				Westbound Dubarko 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	0	0	0	0	100	66	166	0	163	101	264	0	118	214	332	0	381	0	0	0	1
%HV	0.0%				1.0%				0.6%				0.0%				0.5%				
PHF	0.00				0.86				0.75				0.89				0.89				

By Movement	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd				Westbound Dubarko Rd			Total
				Total	L		R	Total	L	T		Total		T	R	Total	
Volume				0	67		33	100	16	147		163		68	50	118	381
%HV	NA	NA	NA	0.0%	0.0%	NA	3.0%	1.0%	6.3%	0.0%	NA	0.6%	NA	0.0%	0.0%	0.0%	0.5%
PHF				0.00	0.80		0.75	0.86	0.57	0.75		0.75		0.89	0.83	0.89	0.89

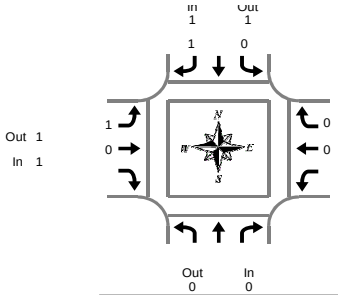
Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total	Pedestrians Crosswalk			
				Bikes	L		R	Bikes	L	T		Bikes		T	R	Bikes		North	South	East	West
4:00 PM				0	70		26	0	11	112		0		63	45	0	327	0	0	0	2
4:15 PM				0	75		29	0	13	137		0		61	47	0	362	0	0	0	1
4:30 PM				0	66		35	0	16	141		0		65	46	0	369	1	0	0	1
4:45 PM				0	63		31	0	15	135		0		64	49	0	357	1	0	0	0
5:00 PM				0	66		26	0	15	157		0		61	47	0	372	2	0	0	0

Heavy Vehicle Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740



Peak Hour Summary
4:25 PM to 5:25 PM

Ruben Ln & Dubarko Rd

Wednesday, May 22, 2019
4:00 PM to 6:00 PM

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

Interval Start Time	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total
				Total	L		R	Total	L	T		Total		T	R	Total	
4:00 PM				0	0		1	1	0	0		0		0	0	0	1
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	1		0	1	0	0		0		0	0	0	1
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		1	1	0	0		0		0	0	0	1
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	1	0		1		0	0	0	1
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	1		1		0	0	0	1
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	1	1	1
5:45 PM				0	0		0	0	0	0		0		0	0	0	0
5:50 PM				0	0		0	0	0	2		2		0	0	0	2
5:55 PM				0	0		0	0	0	0		0		0	0	0	0
Total Survey				0	1		2	3	1	3		4		0	1	1	8

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

Interval Start Time	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total
				Total	L		R	Total	L	T		Total		T	R	Total	
4:00 PM				0	0		1	1	0	0		0		0	0	0	1
4:15 PM				0	1		0	1	0	0		0		0	0	0	1
4:30 PM				0	0		1	1	0	0		0		0	0	0	1
4:45 PM				0	0		0	0	1	0		1		0	0	0	1
5:00 PM				0	0		0	0	0	0		0		0	0	0	0
5:15 PM				0	0		0	0	0	1		1		0	0	0	1
5:30 PM				0	0		0	0	0	0		0		0	1	1	1
5:45 PM				0	0		0	0	0	2		2		0	0	0	2
Total Survey				0	1		2	3	1	3		4		0	1	1	8

Heavy Vehicle Peak Hour Summary
4:25 PM to 5:25 PM

By Approach	Northbound Ruben Ln			Southbound Ruben Ln			Eastbound Dubarko Rd			Westbound Dubarko Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	1	1	2	1	1	2	0	0	0	2
PHF	0.00			0.25			0.25			0.00			0.50

By Movement	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd				Westbound Dubarko Rd				Total
				Total	L		R	Total	L	T		Total		T	R	Total	
Volume				0	0		1	1	1	0		1		0	0	0	2
PHF				0.00	0.00		0.25	0.25	0.25	0.00		0.25		0.00	0.00	0.00	0.50

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

Interval Start Time	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total
				Total	L		R	Total	L	T		Total		T	R	Total	
4:00 PM				0	1		2	3	1	0		1		0	0	0	4
4:15 PM				0	1		1	2	1	0		1		0	0	0	3
4:30 PM				0	0		1	1	1	1		2		0	0	0	3
4:45 PM				0	0		0	0	1	1		2		0	1	1	3
5:00 PM				0	0		0	0	0	3		3		0	1	1	4

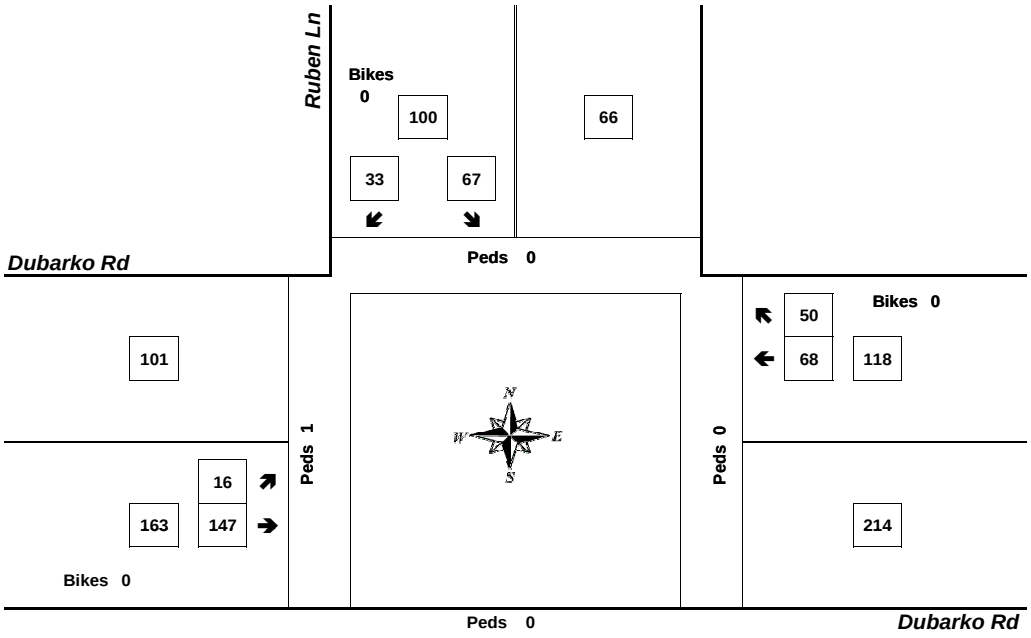
Peak Hour Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740

Ruben Ln & Dubarko Rd

4:25 PM to 5:25 PM
Wednesday, May 22, 2019

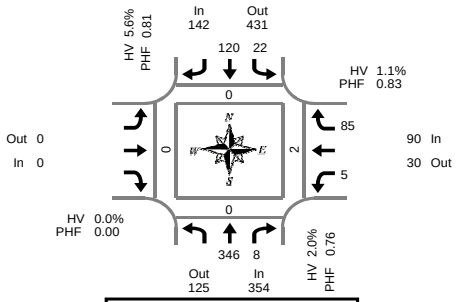


Approach	PHF	HV%	Volume
EB	0.75	0.6%	163
WB	0.89	0.0%	118
NB	0.00	0.0%	0
SB	0.86	1.0%	100
Intersection	0.89	0.5%	381

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

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



SE 362nd Ave & Dubarko Rd

Thursday, May 23, 2019
7:00 AM to 9:00 AM

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

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

Interval Start Time	Northbound SE 362nd Ave				Southbound SE 362nd Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total	Pedestrians Crosswalk			
	T	R	Bikes		L	T		Bikes				Bikes	L		R	Bikes		North	South	East	West
7:00 AM	33	0	0		0	10		0				0	1		11	0	55	0	0	0	0
7:05 AM	50	1	0		1	7		0				0	0		8	0	67	0	0	0	0
7:10 AM	32	0	0		3	9		0				0	1		6	0	51	0	0	0	0
7:15 AM	34	0	0		3	6		0				0	0		9	0	52	0	0	1	0
7:20 AM	32	1	0		4	13		0				0	0		6	0	56	0	0	0	0
7:25 AM	25	1	0		1	12		0				0	0		9	0	48	0	0	1	0
7:30 AM	21	0	0		2	12		0				0	1		7	0	43	0	0	0	0
7:35 AM	24	1	0		4	8		0				0	0		7	0	44	0	0	0	0
7:40 AM	34	0	0		1	8		0				0	2		4	0	49	0	0	0	0
7:45 AM	26	2	0		1	17		0				0	0		5	0	51	0	0	0	0
7:50 AM	17	2	0		2	11		0				0	0		10	0	42	0	0	0	0
7:55 AM	18	0	0		0	7		0				0	0		3	0	28	0	0	0	0
8:00 AM	26	0	0		4	7		0				0	1		8	0	46	0	0	0	0
8:05 AM	27	2	0		2	15		0				0	1		4	0	51	0	0	1	0
8:10 AM	33	0	0		1	6		0				0	1		0	0	41	0	0	0	0
8:15 AM	24	2	0		4	16		0				0	0		3	0	49	0	0	0	0
8:20 AM	29	0	0		4	6		0				0	1		6	0	46	0	0	0	0
8:25 AM	33	1	0		3	7		0				0	0		4	0	48	0	0	0	0
8:30 AM	21	2	0		3	11		0				0	0		6	0	43	0	0	0	0
8:35 AM	24	2	0		2	15		0				0	0		6	0	49	0	0	0	0
8:40 AM	21	2	0		1	12		0				0	1		2	0	39	0	0	0	0
8:45 AM	21	2	0		5	16		0				0	1		7	0	52	0	0	0	0
8:50 AM	26	2	0		5	16		0				0	0		3	0	52	0	0	0	0
8:55 AM	16	1	0		1	18		0				0	1		5	0	42	0	0	0	0
Total Survey	647	24	0		57	265		0				0	12		139	0	1,144	0	0	3	0

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

Interval Start Time	Northbound SE 362nd Ave				Southbound SE 362nd Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total	Pedestrians Crosswalk			
	T	R	Bikes		L	T		Bikes				Bikes	L		R	Bikes		North	South	East	West
7:00 AM	115	1	0		4	26		0				0	2		25	0	173	0	0	0	0
7:15 AM	91	2	0		8	31		0				0	0		24	0	156	0	0	2	0
7:30 AM	79	1	0		7	28		0				0	3		18	0	136	0	0	0	0
7:45 AM	61	4	0		3	35		0				0	0		18	0	121	0	0	0	0
8:00 AM	86	2	0		7	28		0				0	3		12	0	138	0	0	1	0
8:15 AM	86	3	0		11	29		0				0	1		13	0	143	0	0	0	0
8:30 AM	66	6	0		6	38		0				0	1		14	0	131	0	0	0	0
8:45 AM	63	5	0		11	50		0				0	2		15	0	146	0	0	0	0
Total Survey	647	24	0		57	265		0				0	12		139	0	1,144	0	0	3	0

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

By Approach	Northbound SE 362nd Ave				Southbound SE 362nd Ave				Eastbound Dubarko Rd				Westbound Dubarko 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	354	125	479	0	142	431	573	0	0	0	0	0	90	30	120	0	586	0	0	2	0
%HV	2.0%				5.6%				0.0%				1.1%				2.7%				
PHF	0.76				0.81				0.00				0.83				0.85				

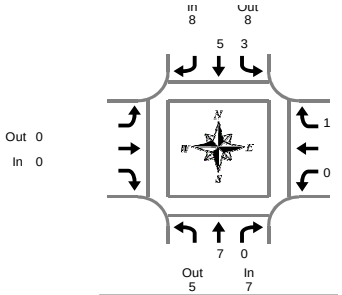
By Movement	Northbound SE 362nd Ave				Southbound SE 362nd Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd			Total
	T	R	Total		L	T		Total				Total	L		R	Total	
Volume	346	8	354		22	120		142				0	5		85	90	586
%HV	NA	2.0%	0.0%	2.0%	13.6%	4.2%	NA	5.6%	NA	NA	NA	0.0%	0.0%	NA	1.2%	1.1%	2.7%
PHF	0.75	0.50	0.76		0.55	0.81		0.81				0.00	0.42		0.85	0.83	0.85

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

Interval Start Time	Northbound SE 362nd Ave				Southbound SE 362nd Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total	Pedestrians Crosswalk			
	T	R	Bikes		L	T		Bikes				Bikes	L		R	Bikes		North	South	East	West
7:00 AM	346	8	0		22	120		0				0	5		85	0	586	0	0	2	0
7:15 AM	317	9	0		25	122		0				0	6		72	0	551	0	0	3	0
7:30 AM	312	10	0		28	120		0				0	7		61	0	538	0	0	1	0
7:45 AM	299	15	0		27	130		0				0	5		57	0	533	0	0	1	0
8:00 AM	301	16	0		35	145		0				0	7		54	0	558	0	0	1	0

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



SE 362nd Ave & Dubarko Rd

Thursday, May 23, 2019
7:00 AM to 9:00 AM

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

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

Interval Start Time	Northbound SE 362nd Ave				Southbound SE 362nd Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				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	2	0	2		0	0		0				0	0		0	0	2
7:10 AM	1	0	1		0	0		0				0	0		0	0	1
7:15 AM	1	0	1		0	0		0				0	0		0	0	1
7:20 AM	1	0	1		1	0		1				0	0		1	1	3
7:25 AM	0	0	0		0	0		0				0	0		0	0	0
7:30 AM	0	0	0		1	2		3				0	0		0	0	3
7:35 AM	1	0	1		1	0		1				0	0		0	0	2
7:40 AM	0	0	0		0	0		0				0	0		0	0	0
7:45 AM	1	0	1		0	2		2				0	0		0	0	3
7:50 AM	0	0	0		0	1		1				0	0		0	0	1
7:55 AM	0	0	0		0	0		0				0	0		0	0	0
8:00 AM	0	0	0		0	1		1				0	0		0	0	1
8:05 AM	1	0	1		0	0		0				0	0		0	0	1
8:10 AM	0	0	0		0	0		0				0	0		0	0	0
8:15 AM	3	1	4		0	1		1				0	0		0	0	5
8:20 AM	0	0	0		0	0		0				0	0		0	0	0
8:25 AM	0	0	0		0	2		2				0	0		1	1	3
8:30 AM	0	0	0		0	0		0				0	0		0	0	0
8:35 AM	0	0	0		0	2		2				0	0		0	0	2
8:40 AM	1	0	1		0	0		0				0	0		0	0	1
8:45 AM	1	0	1		0	0		0				0	0		0	0	1
8:50 AM	1	0	1		0	1		1				0	0		0	0	2
8:55 AM	6	0	6		0	1		1				0	0		1	1	8
Total Survey	20	1	21		3	13		16				0	0		3	3	40

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

Interval Start Time	Northbound SE 362nd Ave				Southbound SE 362nd Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total
	T	R	Total		L	T		Total				Total	L		R	Total	
7:00 AM	3	0	3		0	0		0				0	0		0	0	3
7:15 AM	2	0	2		1	0		1				0	0		1	1	4
7:30 AM	1	0	1		2	2		4				0	0		0	0	5
7:45 AM	1	0	1		0	3		3				0	0		0	0	4
8:00 AM	1	0	1		0	1		1				0	0		0	0	2
8:15 AM	3	1	4		0	3		3				0	0		1	1	8
8:30 AM	1	0	1		0	2		2				0	0		0	0	3
8:45 AM	8	0	8		0	2		2				0	0		1	1	11
Total Survey	20	1	21		3	13		16				0	0		3	3	40

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

By Approach	Northbound SE 362nd Ave			Southbound SE 362nd Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	7	5	12	8	8	16	0	0	0	1	3	4	16
PHF	0.44			0.50			0.00			0.25			0.67

By Movement	Northbound SE 362nd Ave				Southbound SE 362nd Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Total
	T	R	Total		L	T		Total				Total	L		R	Total	
Volume	7	0	7		3	5		8				0	0		1	1	16
PHF	0.44	0.00	0.44		0.38	0.42		0.50				0.00	0.00		0.25	0.25	0.67

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

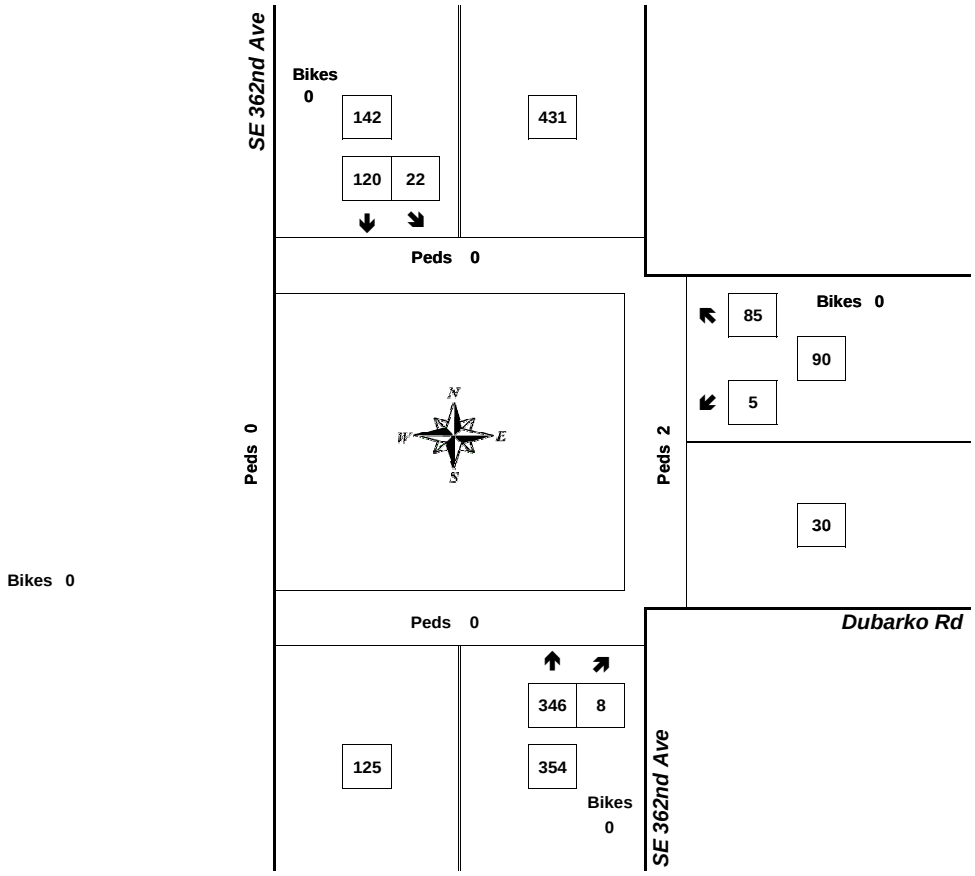
Interval Start Time	Northbound SE 362nd Ave				Southbound SE 362nd Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total
	T	R	Total		L	T		Total				Total	L		R	Total	
7:00 AM	7	0	7		3	5		8				0	0		1	1	16
7:15 AM	5	0	5		3	6		9				0	0		1	1	15
7:30 AM	6	1	7		2	9		11				0	0		1	1	19
7:45 AM	6	1	7		0	9		9				0	0		1	1	17
8:00 AM	13	1	14		0	8		8				0	0		2	2	24

Peak Hour Summary

Clay Carney
(503) 833-2740

SE 362nd Ave & Dubarko Rd

7:00 AM to 8:00 AM
Thursday, May 23, 2019

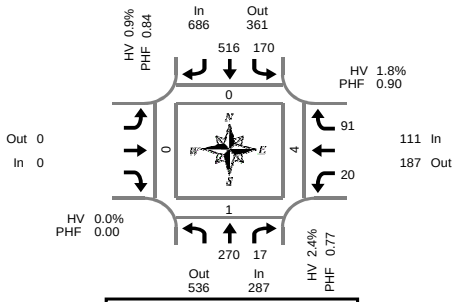


Approach	PHF	HV%	Volume
EB	0.00	0.0%	0
WB	0.83	1.1%	90
NB	0.76	2.0%	354
SB	0.81	5.6%	142
Intersection	0.85	2.7%	586

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

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



SE 362nd Ave & Dubarko Rd

Wednesday, May 22, 2019
4:00 PM to 6:00 PM

Peak Hour Summary
4:30 PM to 5:30 PM

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

Interval Start Time	Northbound SE 362nd Ave				Southbound SE 362nd Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total	Pedestrians Crosswalk			
	T	R	Bikes		L	T		Bikes				Bikes	L		R	Bikes		North	South	East	West
4:00 PM	25	0	0		11	35		0				0	1		6	0	78	1	0	3	0
4:05 PM	21	2	0		7	36		0				0	1		5	0	72	0	0	0	0
4:10 PM	19	2	0		8	36		0				0	1		6	0	72	0	0	0	0
4:15 PM	26	3	0		8	32		0				0	0		4	0	73	0	0	1	0
4:20 PM	22	1	0		14	45		0				0	3		4	0	89	0	0	0	0
4:25 PM	21	2	0		15	34		0				0	0		5	0	77	0	0	0	0
4:30 PM	19	2	0		18	30		0				0	1		8	0	78	0	0	2	0
4:35 PM	27	0	0		9	42		0				0	0		9	0	87	0	0	0	0
4:40 PM	17	3	0		12	33		0				0	2		9	0	76	0	0	0	0
4:45 PM	28	0	0		7	46		0				0	1		6	0	88	0	0	0	0
4:50 PM	28	2	0		14	33		0				0	3		7	0	87	0	0	0	0
4:55 PM	30	2	0		10	51		0				0	4		3	0	100	0	0	0	0
5:00 PM	30	1	0		15	42		0				0	3		11	0	102	0	0	0	0
5:05 PM	21	4	0		16	45		0				0	0		7	0	93	0	0	0	0
5:10 PM	21	1	0		20	49		0				0	2		6	0	99	0	0	0	0
5:15 PM	16	1	0		14	60		0				0	1		7	0	99	0	0	0	0
5:20 PM	17	1	0		19	42		0				0	2		12	0	93	0	1	0	0
5:25 PM	16	0	0		16	43		0				0	1		6	0	82	0	0	2	0
5:30 PM	19	0	0		16	24		0				0	2		4	0	65	0	0	0	0
5:35 PM	16	1	0		12	33		0				0	2		7	0	71	0	0	0	0
5:40 PM	26	0	0		9	39		0				0	1		6	0	81	0	0	0	0
5:45 PM	18	2	0		13	36		0				0	2		5	0	76	0	0	0	0
5:50 PM	19	2	0		17	43		0				0	1		7	0	89	0	0	0	0
5:55 PM	17	3	0		17	29		0				0	1		7	0	74	0	0	0	0
Total Survey	519	35	0		317	938		0				0	35		157	0	2,001	1	1	8	0

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

Interval Start Time	Northbound SE 362nd Ave				Southbound SE 362nd Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total	Pedestrians Crosswalk			
	T	R	Bikes		L	T		Bikes				Bikes	L		R	Bikes		North	South	East	West
4:00 PM	65	4	0		26	107		0				0	3		17	0	222	1	0	3	0
4:15 PM	69	6	0		37	111		0				0	3		13	0	239	0	0	1	0
4:30 PM	63	5	0		39	105		0				0	3		26	0	241	0	0	2	0
4:45 PM	86	4	0		31	130		0				0	8		16	0	275	0	0	0	0
5:00 PM	72	6	0		51	136		0				0	5		24	0	294	0	0	0	0
5:15 PM	49	2	0		49	145		0				0	4		25	0	274	0	1	2	0
5:30 PM	61	1	0		37	96		0				0	5		17	0	217	0	0	0	0
5:45 PM	54	7	0		47	108		0				0	4		19	0	239	0	0	0	0
Total Survey	519	35	0		317	938		0				0	35		157	0	2,001	1	1	8	0

Peak Hour Summary
4:30 PM to 5:30 PM

By Approach	Northbound SE 362nd Ave				Southbound SE 362nd Ave				Eastbound Dubarko Rd				Westbound Dubarko 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	287	536	823	0	686	361	1,047	0	0	0	0	0	111	187	298	0	1,084	0	1	4	0
%HV	2.4%				0.9%				0.0%				1.8%				1.4%				
PHF	0.77				0.84				0.00				0.90				0.92				

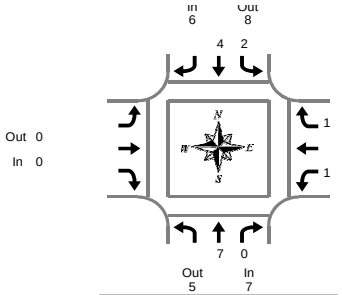
By Movement	Northbound SE 362nd Ave				Southbound SE 362nd Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd			Total
		T	R	Total	L	T		Total				Total	L		R	Total	
Volume		270	17	287	170	516		686				0	20		91	111	1,084
%HV	NA	2.6%	0.0%	2.4%	1.2%	0.8%	NA	0.9%	NA	NA	NA	0.0%	5.0%	NA	1.1%	1.8%	1.4%
PHF		0.77	0.61	0.77	0.80	0.84		0.84				0.00	0.50		0.88	0.90	0.92

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

Interval Start Time	Northbound SE 362nd Ave				Southbound SE 362nd Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total	Pedestrians Crosswalk			
	T	R	Bikes		L	T		Bikes				Bikes	L		R	Bikes		North	South	East	West
4:00 PM	283	19	0		133	453		0				0	17		72	0	977	1	0	6	0
4:15 PM	290	21	0		158	482		0				0	19		79	0	1,049	0	0	3	0
4:30 PM	270	17	0		170	516		0				0	20		91	0	1,084	0	1	4	0
4:45 PM	268	13	0		168	507		0				0	22		82	0	1,060	0	1	2	0
5:00 PM	236	16	0		184	485		0				0	18		85	0	1,024	0	1	2	0

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



SE 362nd Ave & Dubarko Rd

Wednesday, May 22, 2019
4:00 PM to 6:00 PM

Peak Hour Summary
4:30 PM to 5:30 PM

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

Interval Start Time	Northbound SE 362nd Ave				Southbound SE 362nd Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total
	T	R	Total		L	T		Total				Total	L		R	Total	
4:00 PM	2	0	2		0	1		1				0	0		0	0	3
4:05 PM	0	0	0		0	0		0				0	0		1	1	1
4:10 PM	2	0	2		0	1		1				0	0		0	0	3
4:15 PM	1	0	1		0	1		1				0	0		0	0	2
4:20 PM	0	0	0		0	1		1				0	0		0	0	1
4:25 PM	0	0	0		0	0		0				0	0		0	0	0
4:30 PM	0	0	0		0	3		3				0	0		0	0	3
4:35 PM	1	0	1		0	0		0				0	0		0	0	1
4:40 PM	0	0	0		1	0		1				0	1		0	1	2
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	1		1				0	0		0	0	1
5:00 PM	0	0	0		0	0		0				0	0		0	0	0
5:05 PM	2	0	2		0	0		0				0	0		0	0	2
5:10 PM	0	0	0		0	0		0				0	0		0	0	0
5:15 PM	1	0	1		0	0		0				0	0		0	0	1
5:20 PM	1	0	1		0	0		0				0	0		1	1	2
5:25 PM	2	0	2		1	0		1				0	0		0	0	3
5:30 PM	1	0	1		0	1		1				0	0		0	0	2
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		1	0		1				0	0		0	0	1
5:55 PM	1	0	1		0	1		1				0	0		0	0	2
Total Survey	14	0	14		3	10		13				0	1		2	3	30

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

Interval Start Time	Northbound SE 362nd Ave				Southbound SE 362nd Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total
	T	R	Total		L	T		Total				Total	L		R	Total	
4:00 PM	4	0	4		0	2		2				0	0		1	1	7
4:15 PM	1	0	1		0	2		2				0	0		0	0	3
4:30 PM	1	0	1		1	3		4				0	1		0	1	6
4:45 PM	0	0	0		0	1		1				0	0		0	0	1
5:00 PM	2	0	2		0	0		0				0	0		0	0	2
5:15 PM	4	0	4		1	0		1				0	0		1	1	6
5:30 PM	1	0	1		0	1		1				0	0		0	0	2
5:45 PM	1	0	1		1	1		2				0	0		0	0	3
Total Survey	14	0	14		3	10		13				0	1		2	3	30

Heavy Vehicle Peak Hour Summary
4:30 PM to 5:30 PM

By Approach	Northbound SE 362nd Ave			Southbound SE 362nd Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	7	5	12	6	8	14	0	0	0	2	2	4	15
PHF	0.44			0.38			0.00			0.50			0.63

By Movement	Northbound SE 362nd Ave				Southbound SE 362nd Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Total
	T	R	Total		L	T		Total				Total	L		R	Total	
Volume	7	0	7		2	4		6				0	1		1	2	15
PHF	0.44	0.00	0.44		0.50	0.33		0.38				0.00	0.25		0.25	0.50	0.63

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

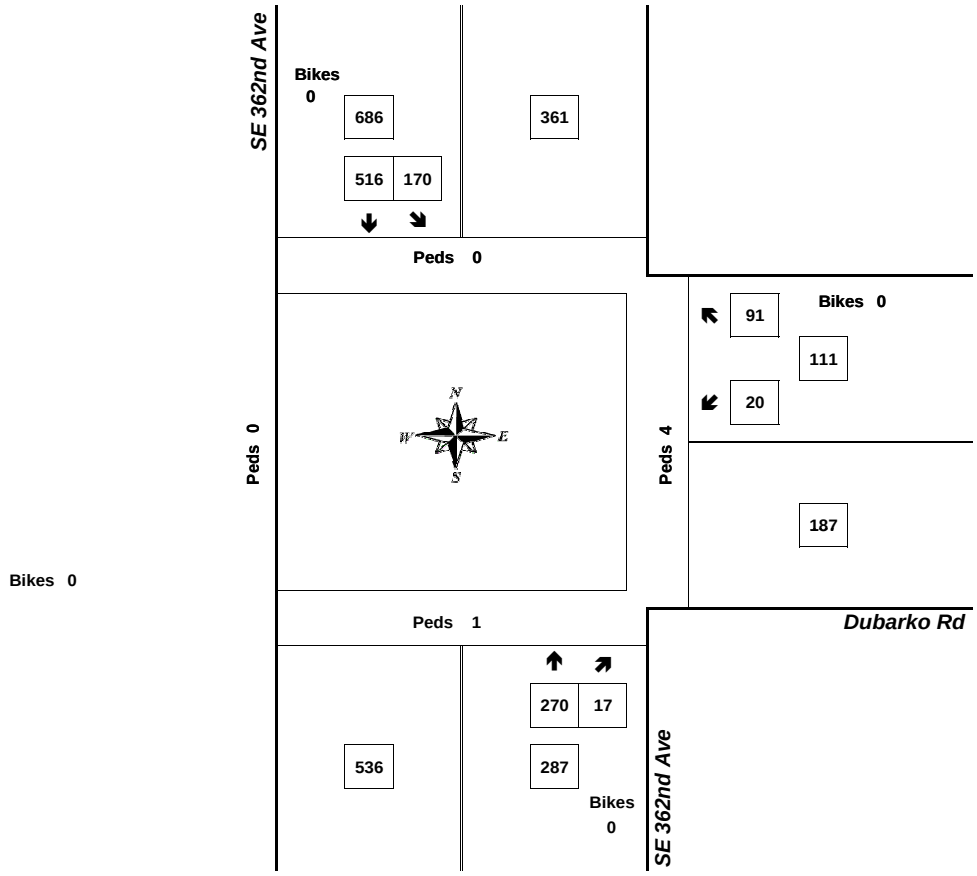
Interval Start Time	Northbound SE 362nd Ave				Southbound SE 362nd Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total
	T	R	Total		L	T		Total				Total	L		R	Total	
4:00 PM	6	0	6		1	8		9				0	1		1	2	17
4:15 PM	4	0	4		1	6		7				0	1		0	1	12
4:30 PM	7	0	7		2	4		6				0	1		1	2	15
4:45 PM	7	0	7		1	2		3				0	0		1	1	11
5:00 PM	8	0	8		2	2		4				0	0		1	1	13

Peak Hour Summary

Clay Carney
(503) 833-2740

SE 362nd Ave & Dubarko Rd

4:30 PM to 5:30 PM
Wednesday, May 22, 2019



Approach	PHF	HV%	Volume
EB	0.00	0.0%	0
WB	0.90	1.8%	111
NB	0.77	2.4%	287
SB	0.84	0.9%	686
Intersection	0.92	1.4%	1,084

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

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANAYLYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF SANDY, CLACKAMAS COUNTY

362ND DR at DUBARKO RD, City of Sandy, Clackamas County, 01/01/2012 to 12/31/2016

1 - 1 of 1 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	M D R G S	J U I N V	S C O H L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES / PED LOC	ERROR	ACT EVENT	CAUSE
00737	N	N	N				02/27/2015	17	DUBARKO RD	INTER	3-LEG	N	N	UNK	S-1STOP	01	NONE 0	STRGHT									29
NONE							FR	0	362ND DR	E		STOP SIGN	N	WET	SS-O		PRVTE	E -W								000	00
N							12P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	UNK	026	000	29
N							45 23 57.42	-122 17 27.9																OR<25			
																02	NONE 0	STOP									
																	PRVTE	E -W								011	00
																	PSNGR CAR		01	DRVR	NONE	22	M	OR-Y	000	000	00
																								OR<25			

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D R G S	M J U I V	S N L	W H K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE

CITY OF SANDY, CLACKAMAS COUNTY

DUBARKO RD at BLUFF RD, City of Sandy, Clackamas County, 01/01/2012 to 12/31/2016

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANAYLYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

DUBARKO RD at MELISSA AVE, City of Sandy, Clackamas County, 01/01/2012 to 12/31/2016

1 - 2 of 2 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	M D R G S	J U N V	S I H L	W C O K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
00557	N	N	N				02/07/2014	16	DUBARKO RD	INTER	3-LEG	N	N	SNOW	ANGL-STP	01	NONE 0	TURN-L										124	08
NONE							FR	0	MELISSA AVE	S		STOP SIGN	N	ICE	TURN		PRVTE	SE-S									000	124	00
N							3P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	59	M	OR-Y		002	017		08
N							45 23 30.2562959	-122 16 36.081048																OR<25					
																02	NONE 0	STOP											
																	PRVTE	S -N									011		00
																	PSNGR CAR		01	DRVR	NONE	57	F	OR-Y		000	000		00
																								OR<25					
01045	N	N	N				03/26/2015	16	DUBARKO RD	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
NONE							TH	0	MELISSA AVE	CN		STOP SIGN	N	DRY	TURN		PRVTE	NW-SE									000		00
N							8A			04	0		N	DAWN	PDO		PSNGR CAR		01	DRVR	NONE	23	F	OR-Y		000	000		00
N							45 23 30.26	-122 16 36.08																OR<25					
																02	NONE 0	TURN-L											
																	PRVTE	S -NW									015		00
																	PSNGR CAR		01	DRVR	NONE	00	F	UNK		028	000		02
																								UNK					

CITY OF SANDY, CLACKAMAS COUNTY

DUBARKO RD at MELISSA AVE, City of Sandy, Clackamas County, 01/01/2012 to 12/31/2016

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANAYLYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF SANDY, CLACKAMAS COUNTY

DUBARKO RD at RUBEN LN, City of Sandy, Clackamas County, 01/01/2012 to 12/31/2016

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D R G S	M J U I V	S N L	W H K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE

Traffic Signal Warrant Analysis

Project: 18197 - Ponder Subdivision
Date: 6/20/2019
Scenario: Year 2021 Buildout Conditions - Morning Peak Hour

Major Street:	SE 362nd Drive	Minor Street:	Dubarko Road
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	538	PM Peak Hour Volumes:	103

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)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
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			
Condition A: Minimum Vehicular Volume			
Major Street	5,380	8,850	
Minor Street*	1,030	2,650	**No**
Condition B: Interruption of Continuous Traffic			
Major Street	5,380	13,300	
Minor Street*	1,030	1,350	**No**
Combination Warrant			
Major Street	5,380	10,640	
Minor Street*	1,030	2,120	**No**

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

Traffic Signal Warrant Analysis

Project: 18197 - Ponder Subdivision
Date: 6/20/2019
Scenario: Year 2021 Buildout Conditions - Morning Peak Hour

Major Street:	Dubarko Road	Minor Street:	Ruben Lane
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	248	PM Peak Hour Volumes:	19

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)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
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			
Condition A: Minimum Vehicular Volume			
Major Street	2,480	8,850	
Minor Street*	190	2,650	**No**
Condition B: Interruption of Continuous Traffic			
Major Street	2,480	13,300	
Minor Street*	190	1,350	**No**
Combination Warrant			
Major Street	2,480	10,640	
Minor Street*	190	2,120	**No**

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

Traffic Signal Warrant Analysis

Project: 18197 - Ponder Subdivision
Date: 6/20/2019
Scenario: Year 2021 Buildout Conditions - Morning Peak Hour

Major Street:	Dubarko Road	Minor Street:	Melissa Avenue
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	84	PM Peak Hour Volumes:	113

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)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
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			
Condition A: Minimum Vehicular Volume			
Major Street	840	8,850	
Minor Street*	1,130	2,650	**No**
Condition B: Interruption of Continuous Traffic			
Major Street	840	13,300	
Minor Street*	1,130	1,350	**No**
Combination Warrant			
Major Street	840	10,640	
Minor Street*	1,130	2,120	**No**

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

Traffic Signal Warrant Analysis

Project: 18197 - Ponder Subdivision
Date: 6/20/2019
Scenario: Year 2021 Buildout Conditions - Morning Peak Hour

Major Street:	Dubarko Road	Minor Street:	Bluff Road
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	164	PM Peak Hour Volumes:	36

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)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
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			
Condition A: Minimum Vehicular Volume			
Major Street	1,640	8,850	
Minor Street*	360	2,650	**No**
Condition B: Interruption of Continuous Traffic			
Major Street	1,640	13,300	
Minor Street*	360	1,350	**No**
Combination Warrant			
Major Street	1,640	10,640	
Minor Street*	360	2,120	**No**

Traffic Signal Warrant Analysis

Project: 18197 - Ponder Subdivision
Date: 6/20/2019
Scenario: Year 2021 Buildout Conditions - Evening Peak Hour

Major Street:	SE 362nd Drive	Minor Street:	Dubarko Road
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	1073	PM Peak Hour Volumes:	114

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)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
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			
Condition A: Minimum Vehicular Volume			
Major Street	10,730	8,850	
Minor Street*	1,140	2,650	**No**
Condition B: Interruption of Continuous Traffic			
Major Street	10,730	13,300	
Minor Street*	1,140	1,350	**No**
Combination Warrant			
Major Street	10,730	10,640	
Minor Street*	1,140	2,120	**No**

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

Traffic Signal Warrant Analysis

Project: 18197 - Ponder Subdivision
Date: 6/20/2019
Scenario: Year 2021 Buildout Conditions - Evening Peak Hour

Major Street:	Dubarko Road	Minor Street:	Ruben Lane
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	374	PM Peak Hour Volumes:	116

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)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
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			
Condition A: Minimum Vehicular Volume			
Major Street	3,740	8,850	
Minor Street*	1,160	2,650	**No**
Condition B: Interruption of Continuous Traffic			
Major Street	3,740	13,300	
Minor Street*	1,160	1,350	**No**
Combination Warrant			
Major Street	3,740	10,640	
Minor Street*	1,160	2,120	**No**

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

Traffic Signal Warrant Analysis

Project: 18197 - Ponder Subdivision
Date: 6/20/2019
Scenario: Year 2021 Buildout Conditions - Evening Peak Hour

Major Street:	Dubarko Road	Minor Street:	Melissa Avenue
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	287	PM Peak Hour Volumes:	68

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)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
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			
Condition A: Minimum Vehicular Volume			
Major Street	2,870	8,850	
Minor Street*	680	2,650	**No**
Condition B: Interruption of Continuous Traffic			
Major Street	2,870	13,300	
Minor Street*	680	1,350	**No**
Combination Warrant			
Major Street	2,870	10,640	
Minor Street*	680	2,120	**No**

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

Traffic Signal Warrant Analysis

Project: 18197 - Ponder Subdivision
Date: 6/20/2019
Scenario: Year 2021 Buildout Conditions - Evening Peak Hour

Major Street:	Dubarko Road	Minor Street:	Bluff Road
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	220	PM Peak Hour Volumes:	61

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)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
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			
Condition A: Minimum Vehicular Volume			
Major Street	2,200	8,850	
Minor Street*	610	2,650	**No**
Condition B: Interruption of Continuous Traffic			
Major Street	2,200	13,300	
Minor Street*	610	1,350	**No**
Combination Warrant			
Major Street	2,200	10,640	
Minor Street*	610	2,120	**No**

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

Left-Turn Lane Warrant Analysis

Project: 18197 - Ponder Subdivision
Intersection: Melissa Avenue at Dubarko Road
Date: 6/20/2019
Scenario: 2021 Buildout AM

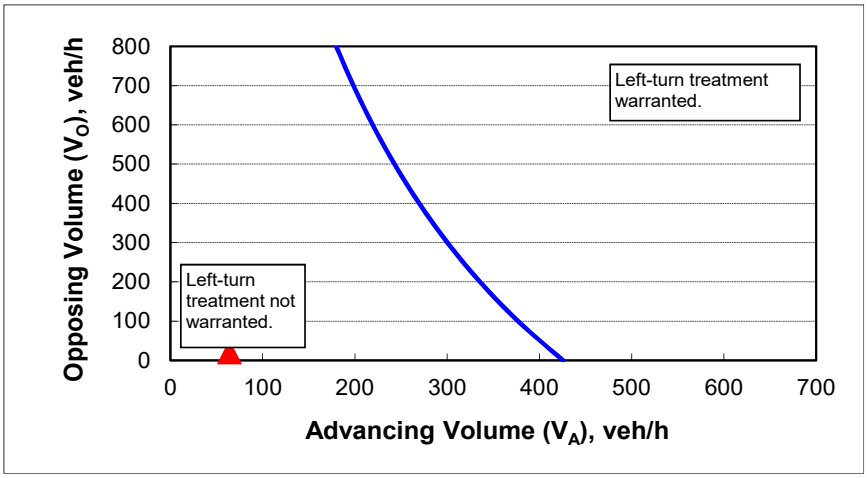
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	25
Left-turns in advancing volume (V_A), veh/hr:	23
Advancing volume (V_A), veh/h:	64
Opposing volume (V_O), veh/h:	20

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	415
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS (2-Lane Roadway)

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: 18197 - Ponder Subdivision
Intersection: Melissa Avenue at Dubarko Road
Date: 6/20/2019
Scenario: 2021 Buildout PM

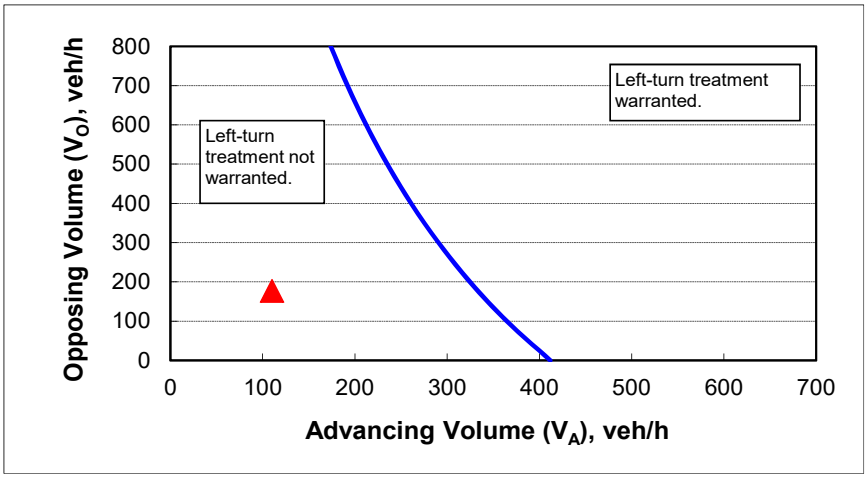
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	25
Left-turns in advancing volume (V_A), veh/hr:	48
Advancing volume (V_A), veh/h:	110
Opposing volume (V_O), veh/h:	177

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	333
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS (2-Lane Roadway)

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

Intersection	
Int Delay, s/veh	2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	85	346	8	22	120
Future Vol, veh/h	5	85	346	8	22	120
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	-	-	-	115	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	1	1	2	2	6	6
Mvmt Flow	6	100	407	9	26	141

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	605	412	0	0	416	0
Stage 1	412	-	-	-	-	-
Stage 2	193	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.16	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.254	-
Pot Cap-1 Maneuver	462	642	-	-	1122	-
Stage 1	671	-	-	-	-	-
Stage 2	842	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	451	642	-	-	1122	-
Mov Cap-2 Maneuver	451	-	-	-	-	-
Stage 1	671	-	-	-	-	-
Stage 2	822	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	1.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	627	1122	-
HCM Lane V/C Ratio	-	-	0.169	0.023	-
HCM Control Delay (s)	-	-	11.9	8.3	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	19	14	48	89	10	6
Future Vol, veh/h	19	14	48	89	10	6
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	89	89	89	89	89	89
Heavy Vehicles, %	6	6	2	2	13	13
Mvmt Flow	21	16	54	100	11	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	154	0	-	0	162	104
Stage 1	-	-	-	-	104	-
Stage 2	-	-	-	-	58	-
Critical Hdwy	4.16	-	-	-	6.53	6.33
Critical Hdwy Stg 1	-	-	-	-	5.53	-
Critical Hdwy Stg 2	-	-	-	-	5.53	-
Follow-up Hdwy	2.254	-	-	-	3.617	3.417
Pot Cap-1 Maneuver	1402	-	-	-	804	922
Stage 1	-	-	-	-	893	-
Stage 2	-	-	-	-	937	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1402	-	-	-	792	922
Mov Cap-2 Maneuver	-	-	-	-	792	-
Stage 1	-	-	-	-	893	-
Stage 2	-	-	-	-	923	-

Approach	EB	WB	SB
HCM Control Delay, s	4.4	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1402	-	-	-	836
HCM Lane V/C Ratio	0.015	-	-	-	0.022
HCM Control Delay (s)	7.6	0	-	-	9.4
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	5.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	8	1	14	39	40	27
Future Vol, veh/h	8	1	14	39	40	27
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	79	79	79	79	79	79
Heavy Vehicles, %	22	22	2	2	2	2
Mvmt Flow	10	1	18	49	51	34

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	11	0	96	11
Stage 1	-	-	-	-	11	-
Stage 2	-	-	-	-	85	-
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	-	903	1070
Stage 1	-	-	-	-	1012	-
Stage 2	-	-	-	-	938	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1608	-	892	1070
Mov Cap-2 Maneuver	-	-	-	-	892	-
Stage 1	-	-	-	-	1012	-
Stage 2	-	-	-	-	927	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.9	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	956	-	-	1608	-
HCM Lane V/C Ratio	0.089	-	-	0.011	-
HCM Control Delay (s)	9.1	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	25	9	12	11	40	55
Future Vol, veh/h	25	9	12	11	40	55
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	12	12	9	9	4	4
Mvmt Flow	36	13	17	16	57	79
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.5	7.7	7.6
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	42%	0%	52%
Vol Thru, %	0%	74%	48%
Vol Right, %	58%	26%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	95	34	23
LT Vol	40	0	12
Through Vol	0	25	11
RT Vol	55	9	0
Lane Flow Rate	136	49	33
Geometry Grp	1	1	1
Degree of Util (X)	0.145	0.057	0.04
Departure Headway (Hd)	3.844	4.21	4.435
Convergence, Y/N	Yes	Yes	Yes
Cap	927	844	801
Service Time	1.892	2.267	2.495
HCM Lane V/C Ratio	0.147	0.058	0.041
HCM Control Delay	7.6	7.5	7.7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.5	0.2	0.1

Intersection	
Int Delay, s/veh	2.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	91	270	17	170	516
Future Vol, veh/h	20	91	270	17	170	516
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	-	-	-	115	-
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	1	1
Mvmt Flow	22	99	293	18	185	561

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1233	303	0	0	312	0
Stage 1	303	-	-	-	-	-
Stage 2	930	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.11	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.209	-
Pot Cap-1 Maneuver	195	737	-	-	1254	-
Stage 1	749	-	-	-	-	-
Stage 2	384	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	166	737	-	-	1254	-
Mov Cap-2 Maneuver	166	-	-	-	-	-
Stage 1	749	-	-	-	-	-
Stage 2	327	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.7	0	2.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	455	1254	-
HCM Lane V/C Ratio	-	-	0.265	0.147	-
HCM Control Delay (s)	-	-	15.7	8.4	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	1.1	0.5	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	16	147	68	50	67	33
Future Vol, veh/h	16	147	68	50	67	33
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	89	89	89	89	89	89
Heavy Vehicles, %	1	1	0	0	1	1
Mvmt Flow	18	165	76	56	75	37

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	133	0	-	0	305	104
Stage 1	-	-	-	-	104	-
Stage 2	-	-	-	-	201	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1458	-	-	-	689	953
Stage 1	-	-	-	-	923	-
Stage 2	-	-	-	-	835	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1458	-	-	-	679	953
Mov Cap-2 Maneuver	-	-	-	-	679	-
Stage 1	-	-	-	-	923	-
Stage 2	-	-	-	-	823	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	10.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1458	-	-	-	750
HCM Lane V/C Ratio	0.012	-	-	-	0.15
HCM Control Delay (s)	7.5	0	-	-	10.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.5

Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	85	47	22	58	21	16
Future Vol, veh/h	85	47	22	58	21	16
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	85	85	85	85	85	85
Heavy Vehicles, %	1	1	0	0	0	0
Mvmt Flow	100	55	26	68	25	19

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	155	0	248	128
Stage 1	-	-	-	-	128	-
Stage 2	-	-	-	-	120	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1438	-	745	927
Stage 1	-	-	-	-	903	-
Stage 2	-	-	-	-	910	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1438	-	731	927
Mov Cap-2 Maneuver	-	-	-	-	731	-
Stage 1	-	-	-	-	903	-
Stage 2	-	-	-	-	893	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	805	-	-	1438	-
HCM Lane V/C Ratio	0.054	-	-	0.018	-
HCM Control Delay (s)	9.7	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	19	89	23	16	56	24
Future Vol, veh/h	19	89	23	16	56	24
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	1	1
Mvmt Flow	22	105	27	19	66	28
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.2	7.6	7.7
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	70%	0%	59%
Vol Thru, %	0%	18%	41%
Vol Right, %	30%	82%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	80	108	39
LT Vol	56	0	23
Through Vol	0	19	16
RT Vol	24	89	0
Lane Flow Rate	94	127	46
Geometry Grp	1	1	1
Degree of Util (X)	0.109	0.127	0.055
Departure Headway (Hd)	4.175	3.606	4.282
Convergence, Y/N	Yes	Yes	Yes
Cap	853	983	829
Service Time	2.228	1.668	2.345
HCM Lane V/C Ratio	0.11	0.129	0.055
HCM Control Delay	7.7	7.2	7.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.4	0.2

Intersection	
Int Delay, s/veh	2.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	101	367	9	27	127
Future Vol, veh/h	9	101	367	9	27	127
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	-	-	-	115	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	1	1	2	2	6	6
Mvmt Flow	11	119	432	11	32	149

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	650	437	0	0	442	0
Stage 1	437	-	-	-	-	-
Stage 2	213	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.16	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.254	-
Pot Cap-1 Maneuver	435	622	-	-	1097	-
Stage 1	653	-	-	-	-	-
Stage 2	825	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	422	622	-	-	1097	-
Mov Cap-2 Maneuver	422	-	-	-	-	-
Stage 1	653	-	-	-	-	-
Stage 2	801	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.7	0	1.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	599	1097	-
HCM Lane V/C Ratio	-	-	0.216	0.029	-
HCM Control Delay (s)	-	-	12.7	8.4	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.8	0.1	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	20	66	101	14	6
Future Vol, veh/h	20	20	66	101	14	6
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	89	89	89	89	89	89
Heavy Vehicles, %	6	6	2	2	13	13
Mvmt Flow	22	22	74	113	16	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	188	0	-	0	198	131
Stage 1	-	-	-	-	131	-
Stage 2	-	-	-	-	67	-
Critical Hdwy	4.16	-	-	-	6.53	6.33
Critical Hdwy Stg 1	-	-	-	-	5.53	-
Critical Hdwy Stg 2	-	-	-	-	5.53	-
Follow-up Hdwy	2.254	-	-	-	3.617	3.417
Pot Cap-1 Maneuver	1362	-	-	-	766	890
Stage 1	-	-	-	-	869	-
Stage 2	-	-	-	-	929	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1362	-	-	-	754	890
Mov Cap-2 Maneuver	-	-	-	-	754	-
Stage 1	-	-	-	-	869	-
Stage 2	-	-	-	-	914	-

Approach	EB	WB	SB
HCM Control Delay, s	3.8	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1362	-	-	-	790
HCM Lane V/C Ratio	0.016	-	-	-	0.028
HCM Control Delay (s)	7.7	0	-	-	9.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection	
Int Delay, s/veh	5.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	8	1	15	41	42	29
Future Vol, veh/h	8	1	15	41	42	29
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	79	79	79	79	79	79
Heavy Vehicles, %	22	22	2	2	2	2
Mvmt Flow	10	1	19	52	53	37

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	11	0	101	11
Stage 1	-	-	-	-	11	-
Stage 2	-	-	-	-	90	-
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	-	898	1070
Stage 1	-	-	-	-	1012	-
Stage 2	-	-	-	-	934	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1608	-	887	1070
Mov Cap-2 Maneuver	-	-	-	-	887	-
Stage 1	-	-	-	-	1012	-
Stage 2	-	-	-	-	923	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.9	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	954	-	-	1608	-
HCM Lane V/C Ratio	0.094	-	-	0.012	-
HCM Control Delay (s)	9.2	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	27	10	19	12	42	60
Future Vol, veh/h	27	10	19	12	42	60
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	12	12	9	9	4	4
Mvmt Flow	39	14	27	17	60	86
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.6	7.8	7.6
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	41%	0%	61%
Vol Thru, %	0%	73%	39%
Vol Right, %	59%	27%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	102	37	31
LT Vol	42	0	19
Through Vol	0	27	12
RT Vol	60	10	0
Lane Flow Rate	146	53	44
Geometry Grp	1	1	1
Degree of Util (X)	0.156	0.062	0.055
Departure Headway (Hd)	3.864	4.233	4.475
Convergence, Y/N	Yes	Yes	Yes
Cap	919	838	794
Service Time	1.923	2.299	2.54
HCM Lane V/C Ratio	0.159	0.063	0.055
HCM Control Delay	7.6	7.6	7.8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.6	0.2	0.2

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	23	105	287	22	191	548
Future Vol, veh/h	23	105	287	22	191	548
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	-	-	-	115	-
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	1	1
Mvmt Flow	25	114	312	24	208	596

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1335	324	0	0	336	0
Stage 1	324	-	-	-	-	-
Stage 2	1011	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.11	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.209	-
Pot Cap-1 Maneuver	169	717	-	-	1229	-
Stage 1	733	-	-	-	-	-
Stage 2	352	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	140	717	-	-	1229	-
Mov Cap-2 Maneuver	140	-	-	-	-	-
Stage 1	733	-	-	-	-	-
Stage 2	292	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.1	0	2.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	412	1229	-
HCM Lane V/C Ratio	-	-	0.338	0.169	-
HCM Control Delay (s)	-	-	18.1	8.5	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	1.5	0.6	-

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	17	171	82	57	78	35
Future Vol, veh/h	17	171	82	57	78	35
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	89	89	89	89	89	89
Heavy Vehicles, %	1	1	0	0	1	1
Mvmt Flow	19	192	92	64	88	39

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	156	0	-	0	354	124
Stage 1	-	-	-	-	124	-
Stage 2	-	-	-	-	230	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1430	-	-	-	646	929
Stage 1	-	-	-	-	904	-
Stage 2	-	-	-	-	811	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1430	-	-	-	636	929
Mov Cap-2 Maneuver	-	-	-	-	636	-
Stage 1	-	-	-	-	904	-
Stage 2	-	-	-	-	799	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	11.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1430	-	-	-	705
HCM Lane V/C Ratio	0.013	-	-	-	0.18
HCM Control Delay (s)	7.6	0	-	-	11.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.7

Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	90	50	23	62	22	17
Future Vol, veh/h	90	50	23	62	22	17
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	85	85	85	85	85	85
Heavy Vehicles, %	1	1	0	0	0	0
Mvmt Flow	106	59	27	73	26	20

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	165	0	262	135
Stage 1	-	-	-	-	135	-
Stage 2	-	-	-	-	127	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1426	-	731	919
Stage 1	-	-	-	-	896	-
Stage 2	-	-	-	-	904	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1426	-	716	919
Mov Cap-2 Maneuver	-	-	-	-	716	-
Stage 1	-	-	-	-	896	-
Stage 2	-	-	-	-	886	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	792	-	-	1426	-
HCM Lane V/C Ratio	0.058	-	-	0.019	-
HCM Control Delay (s)	9.8	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	20	94	28	17	59	31
Future Vol, veh/h	20	94	28	17	59	31
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	1	1
Mvmt Flow	24	111	33	20	69	36
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.3	7.7	7.8
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	66%	0%	62%
Vol Thru, %	0%	18%	38%
Vol Right, %	34%	82%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	90	114	45
LT Vol	59	0	28
Through Vol	0	20	17
RT Vol	31	94	0
Lane Flow Rate	106	134	53
Geometry Grp	1	1	1
Degree of Util (X)	0.122	0.135	0.063
Departure Headway (Hd)	4.162	3.631	4.314
Convergence, Y/N	Yes	Yes	Yes
Cap	854	975	822
Service Time	2.222	1.7	2.385
HCM Lane V/C Ratio	0.124	0.137	0.064
HCM Control Delay	7.8	7.3	7.7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.5	0.2

Intersection	
Int Delay, s/veh	3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	117	367	11	33	127
Future Vol, veh/h	15	117	367	11	33	127
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	-	-	-	115	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	1	1	2	2	6	6
Mvmt Flow	18	138	432	13	39	149

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	665	438	0	0	445	0
Stage 1	438	-	-	-	-	-
Stage 2	227	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.16	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.254	-
Pot Cap-1 Maneuver	427	621	-	-	1094	-
Stage 1	653	-	-	-	-	-
Stage 2	813	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	412	621	-	-	1094	-
Mov Cap-2 Maneuver	412	-	-	-	-	-
Stage 1	653	-	-	-	-	-
Stage 2	784	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.3	0	1.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	587	1094	-
HCM Lane V/C Ratio	-	-	0.265	0.035	-
HCM Control Delay (s)	-	-	13.3	8.4	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	1.1	0.1	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	28	88	112	14	6
Future Vol, veh/h	20	28	88	112	14	6
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	89	89	89	89	89	89
Heavy Vehicles, %	6	6	2	2	13	13
Mvmt Flow	22	31	99	126	16	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	225	0	-	0	238	162
Stage 1	-	-	-	-	162	-
Stage 2	-	-	-	-	76	-
Critical Hdwy	4.16	-	-	-	6.53	6.33
Critical Hdwy Stg 1	-	-	-	-	5.53	-
Critical Hdwy Stg 2	-	-	-	-	5.53	-
Follow-up Hdwy	2.254	-	-	-	3.617	3.417
Pot Cap-1 Maneuver	1320	-	-	-	727	855
Stage 1	-	-	-	-	841	-
Stage 2	-	-	-	-	920	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1320	-	-	-	715	855
Mov Cap-2 Maneuver	-	-	-	-	715	-
Stage 1	-	-	-	-	841	-
Stage 2	-	-	-	-	904	-

Approach	EB	WB	SB
HCM Control Delay, s	3.2	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1320	-	-	-	752
HCM Lane V/C Ratio	0.017	-	-	-	0.03
HCM Control Delay (s)	7.8	0	-	-	9.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection	
Int Delay, s/veh	6.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	8	12	23	41	75	51
Future Vol, veh/h	8	12	23	41	75	51
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	79	79	79	79	79	79
Heavy Vehicles, %	22	22	2	2	2	2
Mvmt Flow	10	15	29	52	95	65

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	25	0	128	18
Stage 1	-	-	-	-	18	-
Stage 2	-	-	-	-	110	-
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	-	-	1589	-	866	1061
Stage 1	-	-	-	-	1005	-
Stage 2	-	-	-	-	915	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1589	-	850	1061
Mov Cap-2 Maneuver	-	-	-	-	850	-
Stage 1	-	-	-	-	1005	-
Stage 2	-	-	-	-	898	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.6	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	924	-	-	1589	-
HCM Lane V/C Ratio	0.173	-	-	0.018	-
HCM Control Delay (s)	9.7	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	41	18	19	17	45	60
Future Vol, veh/h	41	18	19	17	45	60
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	12	12	9	9	4	4
Mvmt Flow	59	26	27	24	64	86
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.8	7.9	7.8
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	43%	0%	53%
Vol Thru, %	0%	69%	47%
Vol Right, %	57%	31%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	105	59	36
LT Vol	45	0	19
Through Vol	0	41	17
RT Vol	60	18	0
Lane Flow Rate	150	84	51
Geometry Grp	1	1	1
Degree of Util (X)	0.164	0.099	0.064
Departure Headway (Hd)	3.944	4.224	4.488
Convergence, Y/N	Yes	Yes	Yes
Cap	897	838	788
Service Time	2.024	2.302	2.572
HCM Lane V/C Ratio	0.167	0.1	0.065
HCM Control Delay	7.8	7.8	7.9
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.6	0.3	0.2

Intersection	
Int Delay, s/veh	3.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	27	116	287	28	210	548
Future Vol, veh/h	27	116	287	28	210	548
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	-	-	-	115	-
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	1	1
Mvmt Flow	29	126	312	30	228	596

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1379	327	0	0	342	0
Stage 1	327	-	-	-	-	-
Stage 2	1052	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.11	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.209	-
Pot Cap-1 Maneuver	159	714	-	-	1223	-
Stage 1	731	-	-	-	-	-
Stage 2	336	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	129	714	-	-	1223	-
Mov Cap-2 Maneuver	129	-	-	-	-	-
Stage 1	731	-	-	-	-	-
Stage 2	273	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.5	0	2.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	385	1223	-
HCM Lane V/C Ratio	-	-	0.404	0.187	-
HCM Control Delay (s)	-	-	20.5	8.6	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	1.9	0.7	-

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	17	196	97	64	90	35
Future Vol, veh/h	17	196	97	64	90	35
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	89	89	89	89	89	89
Heavy Vehicles, %	1	1	0	0	1	1
Mvmt Flow	19	220	109	72	101	39

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	181	0	-	0	403	145
Stage 1	-	-	-	-	145	-
Stage 2	-	-	-	-	258	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1400	-	-	-	605	905
Stage 1	-	-	-	-	885	-
Stage 2	-	-	-	-	787	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1400	-	-	-	596	905
Mov Cap-2 Maneuver	-	-	-	-	596	-
Stage 1	-	-	-	-	885	-
Stage 2	-	-	-	-	775	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1400	-	-	-	659
HCM Lane V/C Ratio	0.014	-	-	-	0.213
HCM Control Delay (s)	7.6	0	-	-	11.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.8

Intersection	
Int Delay, s/veh	3.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	90	87	48	62	44	32
Future Vol, veh/h	90	87	48	62	44	32
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	85	85	85	85	85	85
Heavy Vehicles, %	1	1	0	0	0	0
Mvmt Flow	106	102	56	73	52	38

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	208	0	343	157
Stage 1	-	-	-	-	157	-
Stage 2	-	-	-	-	186	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1375	-	657	894
Stage 1	-	-	-	-	876	-
Stage 2	-	-	-	-	851	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1375	-	629	894
Mov Cap-2 Maneuver	-	-	-	-	629	-
Stage 1	-	-	-	-	876	-
Stage 2	-	-	-	-	815	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.4	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	719	-	-	1375	-
HCM Lane V/C Ratio	0.124	-	-	0.041	-
HCM Control Delay (s)	10.7	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	29	100	28	33	68	31
Future Vol, veh/h	29	100	28	33	68	31
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	1	1
Mvmt Flow	34	118	33	39	80	36
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.5	7.8	8
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	69%	0%	46%
Vol Thru, %	0%	22%	54%
Vol Right, %	31%	78%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	99	129	61
LT Vol	68	0	28
Through Vol	0	29	33
RT Vol	31	100	0
Lane Flow Rate	116	152	72
Geometry Grp	1	1	1
Degree of Util (X)	0.137	0.156	0.086
Departure Headway (Hd)	4.249	3.695	4.316
Convergence, Y/N	Yes	Yes	Yes
Cap	833	955	819
Service Time	2.33	1.78	2.401
HCM Lane V/C Ratio	0.139	0.159	0.088
HCM Control Delay	8	7.5	7.8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.5	0.6	0.3

EXHIBIT I

WARRANTY DEED - STATUTORY FORM
(Individual or Corporation)

JOE B. PHILLIPS

Grantor, conveys and warrants to:

LAWRENCE L. PULLEN and RICHARD L. PULLEN and MARK D. TEN EYCK

Grantee, the following described real property free of encumbrances except as specifically set forth herein:

PLEASE SEE ATTACHED DESCRIPTION SHEET

This instrument will not allow use of the property described in this instrument in violation of applicable land use laws and regulations. Before signing or accepting this instrument, the person acquiring fee title to the property should check with the appropriate city or county planning department to verify approved uses.

ENCUMBRANCES:

NONE

The true consideration for this conveyance is $40,000.00.

Dated this 21st day of April, 1993; if a corporate grantor, it has caused its name to be signed by order of its board of directors.

R-108/08

CHICAGO TITLE INSURANCE COMPANY

JOE B. PHILLIPS

STATE OF OREGON,)
County of Clackamas)ss.
April 21, 1993.)

Personally appeared the above named JOE B. PHILLIPS and acknowledged the foregoing instrument to be his/her/their voluntary act and deed.

Before me:

Notary Public for Oregon
My commission expires: 3-2-94

NOTARY PUBLIC - STATE OF OREGON
LOUELLA J. LAY

After recording return and send tax statements to:
LAWRENCE L. PULLEN
36940 SE Deming
Sandy, OR 97055

Escrow No. 2300-00570-LF - Order No. 108108

93 28438

A portion of the Southwest one-quarter of the Northeast one-quarter of Section 23, Township 2 South, Range 4 East of the Willamette Meridian, in the County of Clackamas and State of Oregon, being more particularly described as follows:

Beginning at a stone marking the Northwest corner of said legal subdivision; thence N.88°26'40"E., along the North line thereof, a distance of 1321.91 feet to the Northeast corner of said legal subdivision; thence S.0°18'10"E., along the East line thereof, a distance of 388.20 feet to a point in the Northwesterly right-of-way line of Oregon State Highway No. 211; thence S.33°18'01"W., along said right-of-way line, a distance of 558.61 feet to an iron rod; thence N.51°08'54"W., leaving said right-of-way line, a distance of 1305.73 feet to the point of beginning.

2

STATE OF OREGON
County of Clackamas } ss.

I, John Kauffman, County Clerk, for the County of Clackamas, do hereby certify that the instrument of writing was received for recording in the records of said county at

93 APR 29 PM 2:00

Witness my hand and seal affixed

JOHN KAUFFMAN
County Clerk

Recording Certificate
CCF-R4 (Rev. 6-91)

93 28438

Staff Report

Meeting Date:	May 27, 2020
From	Emily Meharg, Senior Planner
SUBJECT:	20-010 DCA Chapter 17.78 Annexation Code Amendments

Background:
File No. 20-010 DCA amends Chapter 17.78 of the Development Code, which contains the procedures and conditions for annexation. The amendment clarifies annexation criteria and required submittal items and includes additional minor modifications. The Commission's role in this process is to review the proposed code amendments and forward a recommendation to the City Council.

Summary
The current Annexation code does not make it clear that properties requesting annexation will need to demonstrate that they can and will develop in a manner consistent with adopted City of Sandy plans such as the Comprehensive Plan, Transportation System Plan, Parks and Trails Master Plan, public facility plans, and other applicable area and master plans. The proposed amendments more clearly identify annexation criteria and required submittal items. The amendments have been reviewed by legal counsel. In addition, the amendments increase the annexation waiting period for a property from a minimum of 5 years to a minimum of 10 years in the event of significant tree removal.

Recommendation:
Staff recommends the Planning Commission hold a public hearing to take testimony regarding modifications to Chapter 17.78 and forward a recommendation of approval to the City Council.

Code Analysis:
See attached:

- Draft code changes
- Comments from Parks and Trails Advisory Board

Budgetary Impact:
None

CHAPTER 17.78
ANNEXATION

17.78.00 INTENT

The procedures and standards established in this chapter are required for review of proposed annexations in order to:

A. Maximize citizen involvement in the annexation review process by holding a public hearing;

B. Ensure that public facilities are or will be available to serve land annexed to the City;

~~B.~~C. Establish a system for measuring the physical, environmental, fiscal and related social effects of proposed annexations; and,

~~C.~~D. Where possible and practical, avoid the creation of irregular boundaries or annexations that create "island," "cherry stem" or "shoestring" annexations.

17.78.10 PROCEDURAL CONSIDERATIONS

A. The corporate limits of the City shall include all territory encompassed by its boundaries as they now exist or are modified as provided herein unless mandated by State Law.

B. The City may annex an unincorporated area that is surrounded by the City boundary.~~The City may annex an island if it is less than 100 acres and has at least 80 percent of its boundary contiguous to the City; or the land is of any size and has at least 80 percent of its boundary contiguous to the City if the area to be annexed existed as an island before October 20, 1997.~~

C. The City may annex land for public facilities. Public facilities include but are not limited to schools, senior centers, roads, police and fire stations, parks or open space, and public water, sewer and storm drainage facilities.

17.78.15 TYPES OF ANNEXATION

A. Type A: Annexation in conformance with conceptual zoning designation

~~A.~~B. Type B: Annexation + zone change, including Parks and Open Space (POS) and/or Flood and Slope Hazard (FSH) Overlay District

~~B.~~C. Type C: Annexation + plan map change + zone change

17.78.20 CONDITIONS FOR ANNEXATION

The following conditions must be met prior to beginning an annexation request:

A. The requirement of Oregon Revised Statutes, Chapters 199 and 222 for initiation of the annexation process are met;

B. The site must be within the City of Sandy Urban Growth Boundary (UGB);

C. The site must be contiguous to the city or separated from it only by a public right-of-way or a stream, bay, lake or other body of water; and.

D. The site has not violated Section 17.78.25.

17.78.25 TREE RETENTION

The intent of this section is to treat property with annexation potential (in the UGB) as if it had been subject, prior to annexation, to the tree retention provisions of the City's Urban Forestry Ordinance (Chapter 17.102) and Flood and Slope Hazard (FSH) Overlay District (Chapter 17.60), to discourage property owners from removing trees prior to annexation as a way of avoiding Urban Forestry Ordinance provisions, and to prevent unnecessary tree removal for future subdivision layout. In accordance with ORS 527.722, the State Forester shall provide the City with a copy of the notice or written plan when a forest operation is proposed within the UGB. The City shall review and comment on an individual forest operation and inform the landowner or operator of all other regulations that apply but that do not pertain to activities regulated under the Oregon Forest Practices Act.

A. Properties shall not be considered for annexation for a minimum of ~~five~~ ten (10~~5~~) years if any of the following apply:

1. Where any trees six (6) inches or greater diameter at breast height (DBH) have been removed within 25 feet of the high water level along a perennial stream in the ~~five~~ ten years prior to the annexation application.

2. Where more than two (2) trees (six (6) inches or greater DBH) per 500 linear feet have been removed in the area between 25 feet and 80 feet of the high water level of Tickle Creek in the ~~five~~ ten years prior to the annexation application.

3. Where more than two (2) trees (six (6) inches or greater DBH) per 500 linear feet have been removed in the area between 25 feet and 50 feet of the high water level along other perennial streams in the ~~five~~ ten years prior to the annexation application.

4. Where any trees six (6) inches or greater DBH have been removed on 25 percent or greater slopes in the ~~five~~ ten years prior to the annexation application.

5. Where more than ten (10) trees (11 inches or greater DBH) per gross acre have been removed in the ~~five~~ ten years prior to the annexation application, except as provided below:

    a. Sites under one (1) acre in area shall not remove more than five (5) trees in the ~~five~~ ten years prior to the annexation application.

    b. Sites where removal of ten (10) or fewer trees will result in ~~fewer than three (3) trees per gross acre remaining on the site. Tree removal may not result in fewer~~

~~than three (3) trees per gross acre remaining on the site. At least three (3) healthy, non-nuisance trees 11 inches DBH or greater must be retained for every one-acre of contiguous ownership~~the site not meeting the minimum tree retention requirements of Chapter 17.102, Urban Forestry.

c. For properties in or adjacent to the Bornstedt Village Overlay (BVO), tree removal must not result in fewer than six (6) healthy 11 inch DBH or greater trees per acre. For properties in or adjacent to the BVO and within 300 feet of the FSH Overlay District, tree removal must not result in fewer than nine (9) healthy 11 inch DBH or greater trees per acre.

Rounding: Site area shall be rounded to the nearest half acre and allowed tree removal shall be calculated accordingly. For example, a 1.5 acre site will not be allowed to remove more than fifteen (15) trees in the ~~five~~ ten years prior to the annexation application. A calculation of 1.2 acres is rounded down to one (1) acre and a calculation of 1.8 is rounded up to two (2) acres.

Cumulative Calculation: Total gross acreage includes riparian areas and other sensitive habitat. Trees removed under Sections 17.78.25(A) 2. and 3. shall count towards tree removal under Section 17.78.25(A) 5.

B. Exceptions. The City Council may grant exceptions to this section where:

1. The property owner can demonstrate that Douglas Fir, Western Red Cedar, or other appropriate native trees were planted at a ratio of at least two trees for every one tree removed no less than ~~five~~ ten years prior to the submission of the annexation application, and at least 50 percent of these trees have remained healthy; or

2. The Council finds that tree removal was necessary due to hazards, or right-of-way or utility facilities ~~easements~~ or access; or

3. The trees were removed because they were dead, dying, or diseased and their condition as such resulted from an accident or non-human cause, as determined by a certified arborist or other qualified professional; or

4. The trees removed were nuisance trees; or

5. The trees were removed as part of a stream restoration and enhancement program approved by the Oregon Department of Fish and Wildlife as improving riparian function; or

6. The trees removed were orchard trees, Christmas trees, or commercial nursery trees grown for commercial purposes; or

7. The application of this section will create an island of unincorporated area.

17.78.30 ZONING OF ANNEXED AREAS

A. All lands within the urban growth boundary of Sandy have been classified according to the appropriate city land use designation as noted on the comprehensive plan map (as per the city/county urban growth management area agreement). The zoning classification shall reflect the city land use classification as illustrated in Table 17.26.20.

~~B. Where only a single city zoning designation corresponds to the comprehensive plan designation (Type A) and the rezoning decision does not require the exercise of legal or policy judgment on the part of the City Council, amendment of the zoning map shall be a ministerial decision of the Director made without notice or any opportunity for a hearing.~~

17.78.40 EXISTING USE, ACTIVITY OR STRUCTURE

A. As of the effective date of annexation, no use or activity shall be considered non-conforming if the use or activity: (1) violates or conflicts with county zoning regulations and (2) is not classified as non-conforming under county zoning regulations. Any such use or activity shall constitute a violation of this ordinance.

B. Any use, activity or structure that is existing at the effective date of annexation, under a Clackamas County use permit with a time limit imposed, shall not be a non-conforming use, but may continue for the extent of the time limit. Such use permits may not be extended without City approval.

C. Any lot or parcel of land duly recorded in the Clackamas County Recorder's Office prior to the effective date of this Ordinance and having an area, width, depth, or street frontage less than that required in the Zoning District regulations in which such lot or parcel is situated, shall be deemed to be a lot and may be used as a building site, provided that all other regulations for the Zoning District shall apply.

17.78.50 ANNEXATION CRITERIA

~~Requests for annexation shall not have an adverse impact on the citizens of Sandy, either financially or in relation to the livability of the city or any neighborhoods within the annexation area. To demonstrate this, annexation requests~~ An application to annex property into the city shall meet the following criteria:

A. The annexation shall not have an adverse impact on the citizens of Sandy, either financially or in relation to the livability of the city or any neighborhoods within the annexation area.

~~A.~~B. The application demonstrates how the property will be served by adequate public facilities and services, including sanitary sewer, domestic water, transportation, internet and parks.~~,~~ Public facilities and services must be provided in a manner consistent with the City's adopted public facility plans, comprehensive plan, transportation system plan, parks and trails master plan, and any applicable area plan or master plan. The application must demonstrate how the public facilities and services will be provided to the property in an orderly, efficient, and timely manner.

~~—~~C. The application demonstrates how impacts to existing City public facilities and services (sewer, water, stormwater, and transportation) from development of the property will be

mitigated. Mitigation may include construction of on-site or off-site improvements or improvements to existing infrastructure to City standards and specifications. The application must demonstrate adequate funding for the mitigation. If the financing requires City funds, the funding must be approved by the City Council prior to annexation. The City may rely on the standards and criteria of SMC Chapter 17.84 (Improvements Required with Development) and other relevant standards and criteria in the comprehensive plan or development code to analyze an applicant's proposed mitigation of impacts. In order to ensure adequate public facilities and services will exist to serve property annexed to the City, an applicant may be required to enter into an agreement with the City that governs the extent and timing of infrastructure improvements.

D. The application demonstrates that the annexation and proposed zoning is consistent with the Transportation Planning Rule.

~~D.~~E. The annexation is in the best interest of the City. Generally, the annexation is in the best interest of the city if it ~~is desirable for the city to annex an area if the annexation~~ meets one or more ~~any~~ of the following criteria:

~~1. A necessary control for development form and standards of an area adjacent to the city; or~~

~~2.~~1. A needed solution for existing problems, resulting from insufficient sanitation, water service, or other urban service related problems; or

~~3.~~2. Land for development to meet urban needs and that meets a logical growth pattern of the city and encourages orderly growth; or

~~4.~~3. Needed routes for utility and transportation networks.

17.78.60 APPLICATION SUBMISSION REQUIREMENTS

Requests for annexation shall be made on forms provided by the city for such purposes and shall be accompanied by all of the following:

A. Written consent form to the annexation signed by the owners of all land to be annexed.~~;~~

B. A legal description certified by a registered surveyor or engineer.~~;~~

C. The application fee established by the city.~~;~~

D. A list of property owners within ~~three~~ one thousand~~hundred~~ (~~3~~1,000) feet of the subject property ~~on~~ and two sets of mailing labels.~~;~~

E. Vicinity map showing the area to be annexed including adjacent city territory.~~;~~

F. Site Plan ~~(Type A=15 copies; Type B or C = 25 copies)~~ drawn to scale (not greater than one inch = fifty feet), indicating:
   1. The location of existing structures (if any);

2. The location of streets, sewer, water, electric and other utilities, on or adjacent to the property to be annexed;
3. ~~Approximate~~ Surveyed location of areas subject to regulation under Chapter 17.60, Flood and Slope Hazard (FSH) Overlay District, including, but not limited to, wetland boundaries, streams, top of bank, buffers, areas of 25 percent or greater slope, restricted development areas, and the FSH analysis area.

G. Narrative Statement explaining the proposal and addressing:
1. Availability, capacity and status of existing water, sewer, drainage, transportation, fire, and park ~~and school~~ facilities;
2. Additional facilities, if any, required to meet the increased demand and any proposed phasing of such facilities in accordance with projected demand; ~~and,~~
~~2.~~3.Ability to adhere to adopted City plans including, but not limited to, the Transportation System Plan, Parks and Trails Master Plan, Comprehensive Plan, and Specific Area Plans; and,
4. Method and source of financing required to provide additional facilities, if any.

H. Transportation Planning Rule findings.

17.78.70 REVIEW PROCEDURE

Type A, B & C
1. Pre-application conference;
2. Submission of completed application;
3. Review by Planning Commission with recommendation to City Council;
4. Review by City Council~~.~~;
~~4.~~5.Approval or Denial by City Council.

17.78.80 EXCEPTIONS

Exceptions may be granted for identified health hazards and for those matters which the City Council determines that the public interest would not be served by undertaking the entire annexation process. The City Council may authorize an exception to any of the requirements of this chapter. An exception shall require a statement of findings that indicates the basis for the exception.

17.78.90 ANNEXATION CONDITIONS

A. All properties annexed are subject to inclusion within applicable advance financing districts and urban renewal districts.

B. These conditions apply to all annexed properties regardless of transfers of the ownership of such properties.

Emily Meharg <emeharg@ci.sandy.or.us>

Note from the Parks Board - Proposed code changes 17.78

Sarah Richardson <srichardson@ci.sandy.or.us> Mon, May 18, 2020 at 10:27 AM
To: Emily Meharg <emeharg@ci.sandy.or.us>, Kelly O'Neill <koneill@cityofsandy.com>

Hi Emily and Kelly,

I think I have captured the conversation but I am including the time stamp and link for the discussion during the meeting. They did want to be sure their intent was communicated.

They were not trying to figure out the correct language, but wanted to be sure the intent for the code was clear.

If you have any questions give me a call at my desk - 503-489-2150.

I hope this is helpful - Sarah

Note for code change

17.78.60 G

Would like it to read “Parks and Trails Master Plan”.

17.78.50 B in criteria – would like a more clearly spelled out reference to the Parks and Trails Master Plan.

Annexation criteria – if there is a park/trail in the master plan in the annexation area this is the place to say - we will consider annexing it if it will include the park area that is referenced in the Master Plan.

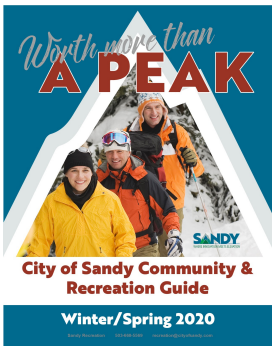
Want to ensure that annexation is compatible with the Parks and Trails and Master Plan. Would like it to be clear that the city has discretion to say “yes or no”. Annexation criteria should support that discretion. Concerned that once annexed in, there is no discretion available to the city and this is where the most leverage exists.

Want to be able to implement the parks and trails master plan where it exists within a proposed annexation. Conditions for approval – compatible with the Parks and Trails Master Plan if applicable.

https://www.youtube.com/watch?v=NbJS3EKtEBs

Time stamp 38.0-47.50

Sarah Richardson
City of Sandy
Recreation Manager
Direct 503-489-2150
Main 503-668-5569
srichardson@cityofsandy.com



Explore the Recreation Guide. City of Sandy Community & Recreation Guide CLICK HERE to view the Winter/Spring Community & Recreation Guide

Interested in activities for Older Adults? Click Here.

Check out the great programs at the Sandy/Hoodland Library