

**UMATILLA PLANNING COMMISSION MEETING
AGENDA
COUNCIL CHAMBERS
SEPTEMBER 29, 2020
6:30 PM**

1. **CALL TO ORDER & ROLL CALL**

2. **PLEDGE OF ALLEGIANCE**

3. **APPROVAL OF MINUTES**

3.a [September 22, 2020 Minutes](#) *Suggested Action: Draft minutes for commission approval.*

4. **UNFINISHED BUSINESS**

5. **NEW BUSINESS**

5.a [Fastrack Inc, Ballard Subdivision \(SUB-2-20\)](#) *Suggested Action: The applicant, Fastrack Inc, request approval of a tentative plat for a residential subdivision to divide 3 existing parcels into 64-lots for residential development and 2 lots for future residential development. The applicant intends to develop the residential lots with single-family dwellings.*

6. **DISCUSSION ITEMS**

7. **INFORMATIONAL ITEMS**

7.a [Livestock Residential](#) *Suggested Action: Will be going to council soon*

8. **ADJOURNMENT**

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**CITY OF UMATILLA
PLANNING COMMISSION
September 22, 2020
DRAFT MINUTES
COUNCIL CHAMBERS**

- I. CALL TO ORDER:** Meeting called to order at 6:31 p.m.
- II. ROLL CALL:**
- A. **Present:** Commissioners; Boyd Sharp, Keith Morgan, Kelly Nobles, Bruce McLane, Heidi Sipe.
 - B. **Absent:** Jennifer Cooper, Hilda Martinez.
 - C. **Late arrival:**
 - D. **Staff present:** Community Development Director, Brandon Seitz and Associate Planner, Jacob Foutz.
- III. PLEDGE OF ALLEGIANCE: Moment of Silence asked for by Chair Sharp**
- IV. APPROVAL OF MINUTES:** Minutes August 25, 2020. Motion to approve with conditions by Commissioner Morgan, seconded by Commissioner Nobles. Motion carried.
- V. UNFINISHED BUSINESS:**

5.a [City of Umatilla Plan Amendment PA-1-20](#) *Suggested Action: The applicant, City of Umatilla, is proposing to amend Chapters 9 of the City of Umatilla Comprehensive Plan. The proposed text amendment of will replace Chapter 9 (Economic Development) in its entirety. Johnson Economics recently completed an Economic Opportunities Analysis and Buildable Lands Inventory for the City of Umatilla. The text amendment will incorporate relevant portion of the Economic Opportunities Analysis, the City's Destination Management Plan and Downtown Vision and Framework Plan.*

Chair Sharp reconvened the hearing.

Commissioner McLane declared that his spouse would be presenting and she is representing the applicant. It was determined that there is no conflict of interest.

Chair Sharp asked for the staff report.

Director Seitz explained the applications will build off each other. Explained the Housing Needs Analysis (HNA) will be adopted and replace chapter 9 of the comprehensive plan. Stated that there is a need for large lot industrial land as stated in the HNA. The adoption of the HNA as chapter 9 will allow for large lot industrial land to be added to the City's inventory.

Chair Sharp asked for the applicant's testimony.

Carla McLane of Carla McLane consulting stood to bear testimony as the representative of the Cleaver Land. She stated that the applicant strongly supports the recommendation of adoption for PA-1-20.

Steve Williams employee of Cleaver Land stated he was there to support the process and answer any questions that may come up.

Bob Waldher of Umatilla County planning department stated his support for the applications and plans to hold the hearings at the County level.

Chair Sharp called for a motion to close the hearing of PA-1-20. Motion to close by Commissioner Morgan. Seconded by Commissioner Sipe. Motion Carried 4-0

Chair Sharp called for a motion to recommend approval of PA-1-20. Motion to recommend approval by Commissioner Nobles. Seconded by Commissioner McLane. Motion Carried 4-0

5.b Cleaver UGB Expansion (PA-2-20) Suggested Action: The applicant, Cleaver Land, LLC, is requesting approval of an Urban Growth Boundary Expansion to include approximately 146.69 acres land. The applicant also submitted an Annexation and Zone Change applications with the desired outcome to have approximately 450 acres of land planned and zoned for industrial use. Current use of the property is agricultural. Crops under circle pivot irrigation regularly in rotation are potatoes, onions, corn, and grass seed. Improvements to the property include circle pivot irrigation systems and a general use storage building.

Chair Sharp reconvened the hearing and asked for staff report.

Director Seitz explained there is projected need of 450 acres. The City is not planning on meeting the bare minimum of 400 acres. He explained that a process by the applicant was followed to find areas that can accommodate the need. Three sites were found but only one, Cleaver Land, is the only viable option. This can be found in the staff report.

Chair Sharp asked for the applicant's testimony.

Carla McLane of Carla McLane consulting stood to bear testimony as the representative of the Cleaver Land. She explained what was outlined in the applicants report for PA-2-20.

Chair Sharp asked if what was being proposed to be added to the UGB is all Cleaver Land.

Carla McLane confirmed, and showed on two maps the proposed area to be added to the UGB.

Chair Sharp asked if Umatilla County supported PA-2-20.

County Planner Green stated the county supports the application and will take to their governing bodies upon approval of the Umatilla City Council.

Chair Sharp called for a motion to close the hearing for PA-2-20. Motion to close PA-2-20 by Commissioner Sipe. Seconded by Commissioner Nobles. Motion Carried 4-0.

Chair Sharp called for a motion to recommend approval of PA-2-20. Motion to recommend approval by Commissioner Nobles. Seconded by Commissioner McLane. Motion Carried 4-0

5.c Cleaver Zone Change (PA-3-20) *Suggested Action: The applicant, Cleaver Land, LLC, is requesting approval of a Zone Change that would rezone 294 acres of Single Family Residential designation to Light Industrial. The proposed zoning designation of Light Industrial will support the types of uses – data centers, warehousing and light manufacturing – outlined in the Economic Opportunities Analysis completed by Johnson Economics that clearly indicates that the City of Umatilla needs large lot industrial parcels. The applicant also submitted an Annexation and UGB applications with the desired outcome to have approximately 450 acres of land planned and zoned for industrial use. Current use of the property is agricultural. Crops under circle pivot irrigation regularly in rotation are potatoes, onions, corn, and grass seed. Improvements to the property include circle pivot irrigation systems and a general use storage building.*

Chair Sharp reconvened the hearing and asked for staff report.

Director Seitz outlined what was in the staff report.

Chair Sharp stated that this would be a legislative application and not a quasi-judicial application.

Director Seitz explained that it was considered both.

Chair Sharp asked for it to be included in the report that it is legislative and was not a decision by the Planning Commission.

Chair Sharp asked for the applicant's testimony.

Carla McLane of Carla McLane consulting stood to bear testimony as the representative of the Cleaver Land. She explained the application is considered as a Quasi-judicial and legislative decision. She explained what was outlined in the applicant's report.

Chair Sharp asked if removing residential land will negatively affect developer in the City of Umatilla.

Director Seitz stated that there are five or more large areas to develop as residential subdivisions. He explained that PA-3-20 will leave more than the required 20-year inventory of residential land.

Chair Sharp called for a motion to close the hearing for PA-3-20. Motion to close PA-3-20 by Commissioner McLane. Seconded by Commissioner Nobles. Motion Carried 4-0.

Chair Sharp called for a motion to recommend approval of PA-3-20. Motion to recommend approval by Commissioner Nobles. Seconded by Commissioner McLane. Motion Carried 4-0

5.d Cleaver Annexation (ANX-1-20) *Suggested Action: The applicant, Cleaver Land LLC, seeks approval to have a portion of a public street as well as two tax lots situated in the City of Umatilla's urban growth boundary (after adoption PA-2-20) annexed into the city limits.*

Chair Sharp reconvened the hearing and asked for staff report.

Director Seitz explained the annexation would be the final action to bring the subject property into City limits and explained the remained of the staff report.

Chair Sharp asked for the applicant's testimony.

Carla McLane of Carla McLane consulting stood to bear testimony as the representative of the Cleaver Land. She stated this application is the capstone of the application suite. She recommended including the light industrial designation in the recommendation to City Council.

Chair Sharp called for a motion to close the hearing for ANX-1-20. Motion to close ANX-1-20 by Commissioner Sipe. Seconded by Commissioner McLane. Motion Carried 4-0.

Director Seitz recommended to include the zoning designation in the motion.

Chair Sharp called for a motion to recommend approval of ANX-1-20 with the zoning of City Light Industrial. Motion to recommend approval by Commissioner Nobles. Seconded by Commissioner McLane. Motion Carried 4-0

VI. NEW BUSINESS: NONE

VII. DISCUSSION ITEMS:

VIII. INFORMATIONAL ITEMS:

7.a [Umatilla Industrial Area Utility Technical Memorandum \(March 2020\) \(J-U-B Engineers\)](#)

Suggested Action: Review as part of applications

7.b [Traffic Impact Analysis \(May 2020\) \(J-U-B Engineers\)](#) *Suggested Action: Review as part of applications*

7.c [Economic Opportunities Analysis \(October 2019\) \(Johnson Economics\)](#) *Suggested Action: Review as part of applications*

7.d [Housing and Residential Land Needs Assessment \(June 2019\) \(Angelo Planning Group and Johnson Economics\)](#) *Suggested Action: Review as part of applications*

IX. ADJOURNMENT: Adjourned at 7:58pm.

**CITY OF UMATILLA PLANNING COMMISSION
REPORT AND DECISION
FOR
TENTATIVE SUBDIVISION PLAT FOR SUB-2-20**

DATE OF HEARING: September 29, 2020

REPORT PREPARED BY: Jacob Foutz, Associate Planner

I. GENERAL INFORMATION

Applicant: Fastrack Inc, 4803 Catalonia Drive, Pasco, WA 99301

Property Owners: Fastrack Inc, 4803 Catalonia Drive, Pasco, WA 99301

Land Use Review: Tentative plat review for a 66-lot subdivision.

Property Description: Township 5N, Range 28, Section 20, Tax Lots 1300, 1700, 2300.

Location: The property is generally located southeast of the Powerline Road and Sparrow Ave intersection.

Existing Development: The subject property is currently undeveloped.

Proposed Development: To subdivide the property into 66-lots for residential development.

Zone Single-Family Residential (R-1)

Adjacent Land Use(s):

Adjacent Property	Zoning	Use
North	R1	Single-family dwellings (Hayden River Estates)
South	R1	Undeveloped land
East	R1	Undeveloped land
West	R1	Single-family dwellings

II. NATURE OF REQUEST

The applicant, Fastrack Inc, request approval of a tentative plat for a residential subdivision to divide 3 existing parcels into 64-lots for residential development and 2 lots for future residential development. The applicant intends to develop the residential lots with single-family dwellings. The proposal must comply with the applicable standards for the Single-Family Residential zoning district (R1) and the Land Division Ordinance (LDO).

III. ANALYSIS

The criteria applicable to this request are shown in underlined text and the responses are shown in standard text. All of the following criteria must be satisfied in order for this request to be approved.

CITY OF UMATILLA ZONING ORDINANCE:

SECTION 10-3A-4: DEVELOPMENT STANDARDS: DIMENSIONAL STANDARDS

Minimum lot area	7,000 square feet
Minimum lot width	50 feet
Minimum lot depth	90 feet
Minimum yard setbacks:	
Front and rear yard	10 feet
Side yard	5 feet
Side street yard	10 feet
Garage	18 feet from any street except an alley
Maximum building height	40 feet

(Ord. 688, 6-15-1999; amd. Ord. 840, 9-3-2019)

Findings: No development is proposed at this time and the minimum yard setbacks are not applicable to this request. The minimum lot area, width and depth are applicable to all of the proposed lots. All of the proposed lots meet or exceed the minimum lot standards listed above as shown on the applicant's submitted tentative plat.

Conclusion: All of the proposed lots exceed the minimum lot standards.

CITY OF UMATILLA LAND DIVISION ORDINANCE

SECTION 11-2-6: LAND DIVISION APPROVAL CRITERIA:

No plat for a subdivision or partition may be considered for approval until the city has approved a tentative plan. Approval of the tentative plan shall be binding upon the city and the applicant for the purposes of preparing the subdivision or partition plat. In each case, the applicant bears the burden of proof to demonstrate that the proposal satisfies applicable criteria and standards.

A. Approval Criteria: Land division tentative plans shall only be approved if found to comply with the following criteria:

1. The proposal shall comply with the city's comprehensive plan.

Findings: The City of Umatilla's Zoning Ordinance (CUZO) and Land Division Ordinance (LDO) implement the comprehensive plan goals and policies. If a request is

found to meet or be capable of meeting the applicable standards and criteria in the CUZO and LDO the request is considered to be consistent with the comprehensive plan.

Conclusion: This request is found to meet or be capable of meeting all of the applicable standards and criterion in the CUZO and LDO as addressed in this report.

2. The proposal shall comply with the I-82/U.S. 730 interchange area management plan (IAMP) and the access management plan in the IAMP (section 7) as applicable.

Findings: The Interchange Area Management Plan (IAMP) extends along U.S. Highway 730 from its intersection with U.S. Highway 395 west to Eisele Drive just west of the U.S. Post Office within City Limits. The property is not within the IAMP area.

Conclusion: The property is not located within the I-82/U.S. 730 IAMP. This criterion is not applicable.

3. The proposal shall comply with the city's zoning requirements.

Findings: The property is zoned R1, the applicable City zoning requirements are addressed above. This request complies with all of the dimensional standards as addressed in this report.

Conclusion: The request is for approval of a subdivision that would result in 66-lots. All of the proposed lots will meet the minimum dimensional standards as addressed in this report.

4. The proposal shall comply with the city's public works standards.

Findings: The City's public works standards are engineering design standards for construction of streets, sidewalks, curbs, water and sewer lines, other utilities, and safety standards for installation of such improvements. The applicant did not submit engineered construction plans for these facilities. Section 11-5-4 of the LDO provides the applicant/developer with the option of submitting engineered construction plans after tentative plat approval has been obtained. Engineered plans for all public facilities serving the proposed development will be reviewed by the public works director for compliance with the City's public work standards. The applicant is required to install these facilities in compliance with the approved plans and to submit a final set of "as-built" plans to the City upon completion of the improvements.

Conclusion: This requirement is best satisfied as a condition of approval that the applicant obtain approval of engineered construction plans for all public works and utility facilities prior to starting construction and to submit final "as-built" drawing after construction is completed.

5. The proposal shall comply with applicable state and federal regulations, including, but not limited to, Oregon Revised Statutes 92, 197, 227, and wetland regulations.

Findings: The CUZO and LDO implement the applicable provision of ORS 92, 197, 227. The subject property does not contain wetlands as shown on the National Wetlands Inventory (NWI) or figure 5-1.2 in the City's Comprehensive Plan. Except as implemented

through the City's ordinance, applicable state and federal regulations will be required to be met as a condition of approval.

Conclusion: This request is found to meet or be capable of meeting all of the standards and criteria as addressed in this report, the proposal will comply with applicable state and federal regulations, as implemented through the City's ordinances. The applicant will be required as a condition of approval to comply with all other state and federal requirements.

6. The proposal shall conserve inventoried natural resource areas and floodplains, including, but not limited to, mapped rivers, creeks, sloughs, and wetlands.

Findings: There are no known wetlands, as identified on the NWI, or flood zones on the subject property. The City of Umatilla's Comprehensive Plan does not identify any significant natural resources on the property and there are no known rivers, creeks or sloughs on the property.

Conclusion: There are no inventoried natural resource areas, waterways, water bodies or floodplain areas to conserve on the property. This criterion is not applicable.

7. The proposal shall minimize disruption of natural features of the site, including steep slopes or other features, while providing for safe and efficient vehicle, pedestrian, and bicycle access.

Findings: The subject property is not identified as having slope in Figure 7.1-2 of the City of Umatilla's Comprehensive Plan. There are no identified natural features on the subject property. The proposed streets, sidewalks and other public facilities will be reviewed for compliance with the City's public works standards which are intended to provide for and protect the public health, safety and welfare.

Conclusion: There are no inventoried or known natural features on the site. Therefore, no disruption of natural feature will occur as a result of the proposed subdivision. Vehicle and pedestrian access will be provided as part of the proposed subdivision; however, these will be reviewed against other applicable standards as addressed in this report. If found to meet or be capable of meeting the standards as addressed in this report the proposed subdivision will comply with this standard.

8. The proposal shall provide adjacent lands with access to public facilities and streets to allow its full development as allowed by the City's codes and requirements.

Findings: The applicants submitted site plan shows a tentative site plan that connects the new subdivision with the existing Hayden River Estates 4 subdivision to the north. It connects to Powerline Road via Eagle Avenue. The tentative plat shows connection points for the land to the east and south allowing for access to adjacent lands.

Conclusion: The applicants submitted plan includes a tentative street layout that complies with City standards and would provide adjacent lands with access to public facilities and streets to allow its full development.

9. The proposal shall be designed with streets that continue or connect to existing and planned land division plats on adjoining properties. All proposed streets shall comply with standards of this Title and the Public Works Standards.

Findings: The proposed subdivision includes a street layout that connects to the adjoining existing property to the north. The street layout clearly connects Ballard subdivision to the existing Hayden River Estates 4 subdivision via Killdeer Ave, Eagle Ave, and Oriole St. All proposed streets will be reviewed through this request and through the public works director's review of engineered construction plans to ensure the streets comply with the City's public works standards.

Conclusion: As addressed above, the proposed subdivision includes a street layout for the property that extends and connects to adjoining lands and existing land division plats. The proposed streets will be reviewed for compliance with the City's street standards as contained in the LDO and reviewed by the public works director for compliance with the City's public work standards.

SECTION 11-4-2: STREETS:

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

A. Street Arrangement: The arrangement of streets in and serving land divisions shall:

1. Maximize public safety, access, and minimize out of direction travel by utilizing a grid system or comparable design.
2. Avoid cul-de-sacs, except where there is no other practical alternative to serve a portion of the land area to be divided, due to topographical conditions, existing development, or similar circumstances.
3. Provide for the continuation of existing streets in surrounding areas.
4. Conform to any future street plan, neighborhood plan, or other street plan adopted by the City.

Findings: The proposed subdivision connects to the existing street system found in Hayden River Estates 4. The design will allow for future buildout of the property to connect to the existing street system. The proposed subdivision has five new streets proposed. These will still allow for the future extension of the existing three streets to the next phase of development.

Conclusion: The proposed subdivision provides a layout and design that maximizes public safety and can be extended to serve future phases. The proposed subdivision continues three existing streets and will create five new streets. There are no cul-de-sacs proposed. There are no street or neighborhood plans adopted by the City on adjacent properties.

B. Street Layout and Design:

1. All streets, alleys, bicycle, and pedestrian pathways shall connect to other streets within the land division and to existing and planned streets outside the land division. Streets shall terminate at other streets or at parks, schools, or other public uses within a neighborhood.

Findings: As addressed in this report the proposed streets will connect with three existing streets, Eagle Avenue, Curlew Street, and Oriole Street. The proposed subdivision includes two connection points for the existing streets to be extended to serve the remainder of the property. Eagle Avenue will not continue, although five new connection points for the proposed streets to be extended to serve the remainder of the property.

Conclusion: The proposed subdivision includes a tentative layout that would allow all of the proposed streets to connect to other streets or would allow for the proposed streets to be extended onto lands outside the proposed subdivision.

2. Local streets shall align and connect with other streets when crossing streets with higher level classifications.

Findings: The proposed street will not cross Powerline Road.

Conclusion: The proposed streets will not cross a street with a higher-level classification.

3. Cul-de-sacs and flag lots shall only be permitted when the following conditions are demonstrated:
 - a. Existing conditions, such as topographic features, water features, an irrigation canal, a railroad, a freeway, or other condition, that cannot be bridged or crossed prevents the extension of a street.
 - b. The existing development pattern on adjacent properties prevents a street connection.
 - c. An accessway is provided consistent with the standards for accessways.
 - d. A minor street is not a suitable alternative to multiple flag lots (more than 2 adjacent flags) due to size of the site, topographic features, or other physical constraint.

Findings: No Cul-de-sacs are proposed as part of this application.

Conclusion: No Cul-de-sacs are proposed.

4. Cul-de-sacs shall not exceed four hundred feet (400') in length.

Findings: No Cul-de-sacs are proposed.

Conclusion: No Cul-de-sacs are proposed.

5. Where a land division includes or is adjacent to land that can be divided and developed in the future, streets, bicycle paths, and pedestrian ways shall continue through the full length of the land division to provide connections for the adjacent land.

Findings: The proposed subdivision includes streets that continue through the full length of the proposed subdivision. The proposed streets and pedestrian ways continue through the full length of the land division to provide connections to the adjacent land.

Conclusion: The proposed subdivision is adjacent to lands that can be divided and developed, including the remained of the subject property. The proposed subdivision includes a proposed layout that continue the streets and pedestrian ways throughout the property, and connects to adjacent lands that may be divided and developed in the future.

6. Where proposed lots or parcels in a proposed land division exceed double the minimum lot size and can be redivided, the location of lot and parcel lines and other layout details shall be such that future land divisions may readily occur without interfering with the orderly extension of adjacent streets, bicycle paths, or pedestrian ways. Any building restrictions within future transportation locations, such as future street rights of way or future street setbacks, shall be made a matter of record for the purpose of future land divisions.

Findings: The proposed subdivision would create 64 new residential lots and 2 lots for future residential development on the subject property. The proposed street layout would allow for subsequent land division applications to develop the remainder of the adjacent property.

Conclusion: The remainder of the subject property, the 2 lots for future residential development, would be large enough to be divided in the future. The location and parcel lines are such that future land division may readily occur without interference.

7. Where there is a reasonable relationship between the impacts of the proposed development and the public need for accessways, such as direct connections to public schools or parks, the land divider shall be required to publicly dedicate accessways to:
 - a. Connect to cul-de-sacs;
 - b. Pass through oddly shaped or unusually long blocks; or
 - c. Provide for networks of public pedestrian and bicycle paths; or
 - d. Provide access to other transportation routes, businesses, residential, or public uses.

Findings: The proposed subdivision provides for the extension of existing streets and provides access onto Powerline Road, the primary transportation route from the south hill area to downtown via Eagle Ave. There are no existing parks, schools or other public facilities in the area that would require dedication of additional public access.

Conclusion: The proposed subdivision connects to existing streets and provides access onto Powerline Road, a minor arterial and primary north south connector in the south hill area. There are no public schools, parks or other public facilities in the area that would require dedication of additional public access.

8. New construction or reconstruction of collector and arterial streets shall include bicycle facilities and pedestrian sidewalks as required by applicable city plans.
9. Sidewalks shall be installed along the street frontage of arterial and collector streets and for any street within a multi-family, commercial, or industrial land division by the land divider. Sidewalks on local streets within a subdivision for single-family residential lots shall be provided with the construction of a structure on the lot and shall be completed prior to occupancy of the structure.

Findings: The proposed application includes the creation of new local streets within a single-family residential subdivision. Therefore, installation of sidewalks along the property frontage will be required at time of issuance of a building permit. There is one lot (38) along Powerline Road that is proposed for development. Powerline Road street improvements for lot 38 will be required. Lot 66 is not proposed for development at this time, but will require full street improvements along Powerline Road at time of permit issuance.

Conclusion: Although engineered construction plans were not submitted as part of this application street improvements along Powerline Road, a minor arterial, will require installation of a sidewalk. The proposed internal roads are considered local streets and sidewalks will be required as a condition of approval on a building permit to be installed prior to issuance of a certificate of occupancy.

10. An easement may be required to provide for all or part of sidewalks along one or both sides of a public right of way which lacks width to include sidewalks within the public right of way.

Findings: All of the proposed new streets will be required to dedicate right of way to a current city standard including sidewalks. Powerline Road is a sixty-foot (60') right of way and has sufficient space to include sidewalks within the public right of way.

Conclusion: All of the proposed new streets will be required to meet a current city standard including sidewalks within the public right of way. Powerline Road has sufficient area to accommodate sidewalks within the public right of way.

11. When a sidewalk in good repair does not exist, all applicants for building permits for a new structure or remodeling of more than a minor nature of an existing structure shall, in conjunction with the issuance of a building permit, obtain a permit to construct a sidewalk for the full frontage of the site. No final inspection or certificate of occupancy shall be issued for the building permit until a sidewalk has been constructed in accordance with the permit requirements.

Findings: As addressed in this report new sidewalk along Powerline Road will be required to be installed as part of the street improvements along lot 38 and then lot 66 when developed. All of the proposed roads are considered local streets and installation of a sidewalk will be required as a condition of approval on a building permit.

Conclusion: Sidewalks will be required to be installed along lot 38 on Powerline Road prior to the City accepting the proposed street improvements. All of the proposed local streets will be required to install sidewalks as a condition of approval upon issuance of a building permit.

12. Offsite pedestrian improvements may be required concurrent with a land division to ensure access between the land division and an existing developed facility such as a commercial center, school, park, or trail system. The approval authority must show a reasonable relationship between the impacts of the land division and the required improvement.

Findings: The majority of the proposed subdivision will be located east of Powerline Road. Powerline Road is the primary north/south road that connects the south hill area to downtown. There are no public lands or facilities adjacent to the proposed subdivision to provide access to or that would warrant dedication of off-site pedestrian improvements.

Conclusion: There are no public lands or facilities in the vicinity that would warrant dedication of off-site pedestrian improvements.

13. Structures are not allowed in any dedicated sidewalk areas which will obstruct movements on the sidewalk. The minimum widths of sidewalks shall conform to ADA standards.

Findings: No structures are identified on the preliminary plat. A new structure within a public right of way would be subject to review and approval by the City. All new sidewalks will be required to meet ADA standards.

Conclusion: The tentative plat does not show a structure within an area dedicated for sidewalks or that would obstruct movement on a sidewalk. The applicant's engineered construction plans will be reviewed to ensure new sidewalks meet City and ADA standards.

14. Sidewalks generally shall be parallel to adjacent streets in line and grade, except where existing features or topographical conditions warrant an alternative design.

Findings: As addressed in this report the applicant has not submitted construction plans with this application. However, the applicant has indicated that sidewalks will generally be parallel to the adjacent street as required by this standard.

Conclusion: As addressed in this report engineered construction drawings have not been submitted as part of this review. The construction drawings will show the location of curb and sidewalks within the new subdivision.

15. All sidewalks shall be adjacent to the curb as specified in the public works standards, unless impractical due to special circumstances of the site or adjacent street.

Findings: This provision seems to create some confusion and conflict with the City's adopted street standards in Section 12.2.510 of the City's Transportation System Plan (TSP) as adopted in the City Comprehensive Plan, specifically figure 12.2-10 and Table 12.2-10. The standards addressed in the TSP were intended to allow for greater flexibility enabling the City to apply sound engineering judgment to determine the appropriate functional classification for new streets. However, the TSP designates an optional planter strip for most road classifications that would provide for detached sidewalks set back from the curb. All of the proposed new streets would be considered local residential streets and are not required to provide a planter strip and will have sidewalks adjacent to the curb. Powerline Road is considered a minor arterial street and includes the optional planter strip.

Conclusion: All of the proposed new streets are considered local residential streets and do not require a planter strip and will have sidewalks adjacent to the curb. A planter strip is identified as an optional improvement for Powerline Road. However, as addressed in the report engineered construction plans will be required to be submitted and approved by the public works director. It is anticipated that proposed improvements will include a planter strip/landscape area but have sidewalks adjacent to the curb to match the existing improvements along Powerline Road to the north.

16. Street trees are required along both sides of new public streets, at a minimum of thirty feet (30') on center, with at least one tree for each new lot or parcel. Street tree locations shall be shown on construction plans and shall generally be located at the edge of the

right of way. Street trees shall be required with building permits for structures on approved lots and shall be installed prior to approval of occupancy.

Findings: Street trees are not identified on the preliminary plat and are typically not show on the construction plans. This criterion is best met through a condition of approval.

Conclusion: Installation of street trees are generally not shown on construction plans or the preliminary plat. The applicant is aware of this requirement and intends to comply. A condition of approval will be imposed requiring street trees to be installed in accordance with this standard prior to issuance of a certificate of occupancy.

C. Right Of Way And Roadway Widths: Generally, right of way and roadway widths for state highways and county roads shall be determined by these entities. Unless otherwise determined by the city administrator based on the recommendation of the city engineer and public works director, the widths of streets and roadways shall meet the following standards and, in addition, all street construction shall conform to the public works standards:

1. The city administrator may modify the width of a planter strip to accommodate drainage and public utilities.
2. Curbside sidewalks shall be required.
3. Bike lanes and shoulder bikeways along arterial and collector streets shall be five feet (5') wide and shall be provided for each direction of travel allowed on the street.
4. Sidewalk and bicycle path lighting shall be provided in conjunction with new road construction and new development.
5. Wheelchair ramps and other facilities shall be provided as required by the Americans with disabilities act (ADA).
6. Bikeways shall be designed and constructed consistent with the design standards in the Oregon bicycle plan, 1992, and ASSHTO's "Guide For The Development Of Bicycle Facilities, 1991".

Findings: As addressed in this report construction plans were not submitted as part of this request. Installation of improvements within the right of way will be reviewed by the public works director to ensure improvements meet City standards.

Conclusion: The required improvements within the right of way are typically shown on the construction plans not the preliminary plat. As addressed in this report the applicant will be required to submit engineered construction plans to the public works director prior to starting construction. All improvements will be required to meet City standards.

D. Reserve Strips: Public reserve strips or street plugs controlling access to streets may be approved where necessary for the protection of the public welfare or of substantial property rights.

Findings: The use of public reserve strips or street plugs is not proposed nor has the City identified the need for such access control measures.

Conclusion: No reserve strips or street plugs are proposed. This criterion is not applicable.

E. Alignment: Streets other than minor streets shall be in alignment with existing streets by continuations of the centerlines. Staggered street alignment resulting in "T" intersections

shall be avoided and in no case shall the distance between centerlines of offset streets be less than two hundred feet (200').

Findings: The proposed streets are in alignment with existing streets by the continuation of the centerlines. Three “T” intersections are proposed and are necessary to create a function road system within a neighborhood.

Conclusion: The proposed streets and future street layout is designed to connect to existing and proposed future streets. No “T” intersections that could be aligned to form continuations of existing streets are proposed and the distance between off set streets is not more than two hundred feet (200’).

- F. Future Extension Of Streets: Streets shall be extended to the boundary of the land division. A temporary turnaround may be required for emergency vehicle access if a dead end street results.

Findings: All of the proposed streets extend to the boundary of the proposed subdivision. There are seven dead end streets that will be extended in future development phases. Temporary turnarounds for the dead-end streets will be required as a condition of approval.

Conclusion: Seven dead end streets are shown on the preliminary plat. However, the dead-end streets are part of a future street extension. In addition, all dead-end streets do not serve as the primary access to any proposed lots. Temporary turnarounds for the dead-end streets will be required as a condition of approval.

- G. Intersection Angles: Streets shall be laid out to intersect at right angles as nearly as practical. In no case shall the intersection angle be less than seventy five degrees (75°). The intersection of arterial or collector streets with other arterial or collector streets shall have at least one hundred feet (100') of tangent adjacent to the intersection. Other streets, except alleys, shall have at least sixty feet (60') of tangent adjacent to the intersection.

Findings: The layout of the proposed street are nearly at right angles. No new arterial or collector street are proposed.

Conclusion: The proposed street intersections are laid out at nearly right angles.

- H. Existing Streets: When existing streets adjacent to or within a site have widths less than city standards, additional right of way shall be provided with the land division.

Findings: The three existing streets within the site and the one adjacent have widths that meet city standards. No additional right of way will be needed in this capacity.

Conclusion: The three existing streets within the site and the one adjacent have widths that meet city standards. No additional right of way will be needed in this capacity.

- I. Partial Street Dedication And Improvements: Half streets shall be avoided wherever possible. A partial street dedication may be permitted when a land division abuts undeveloped property which is likely to dedicate the remainder of the street. At minimum, two-thirds ($\frac{2}{3}$) of the street dedication and improvement shall be required for any partial street to accommodate two (2) travel lanes, one parking lane, and sidewalk on one side. Reserve strips and street plugs may be required to preserve the objectives of the partial street.

Findings: No partial street dedications/improvements are proposed.

Conclusion: No partial street dedications or improvements are proposed. This criterion is not applicable.

- J. Street Names: Except for extensions of existing streets, no street name shall be used which will duplicate or be confused with the name of existing streets. Street names and numbers shall conform to the established pattern in the city, applicable requirements, and shall be approved by the city.

Findings: There are five new streets and three existing in the proposed development. Eagle Ave, Curlew, and Oriole Street are continuations from the adjacent “Hayden River Estates 4” subdivision. The five new streets are labeled Road A, B, C, D, E on the tentative plat lot layout.

Conclusion: The five new streets labeled as Road A, B, C, D, E will need to be renamed with names that meet the above criteria. Therefore, the applicant will need to submit five new street names to be approved by the City and shown on the final plat.

- K. Grades And Curves: Centerline radii of curves shall not be less than three hundred feet (300') on arterial streets, two hundred feet (200') on collector streets, or one hundred feet (100') on local streets. Grades shall not exceed six percent (6%) on arterials, ten percent (10%) on collector streets, or twelve percent (12%) on any other street.

Findings: The submitted tentative plat show no centerline curve radius for the proposed streets. All of the proposed streets are considered local streets, and are straight. The grade of the streets is not shown on the tentative plan. The required construction plans will show grade of all of the proposed streets.

Conclusion: The required construction plans will be reviewed to ensure compliance with city standards including grade.

- L. Streets Adjacent To Railroad Rights Of Way: Wherever the proposed land division includes or is adjacent to a railroad right of way, provisions may be required for a street approximately parallel to and on each side of such right of way at a distance suitable for the appropriate use of the land between the streets and the railroad. The distance shall be determined with due consideration at cross streets of the minimum distance required for approach grades to a future grade separation and to provide sufficient depth to allow vegetative or other screening to be placed along the railroad right of way.

Findings: The proposed land division does not include and is not adjacent to a railroad right-of-way.

Conclusion: There are no railroad rights-of-way included or adjacent to the proposed subdivision. This criterion is not applicable.

- M. Marginal Access Streets: Where a land division abuts or contains an existing or proposed arterial street, the city may require marginal access streets, reverse frontage lots with additional depth, screen planting or other screening contained in a nonaccess reservation along the rear or side property line, or other treatment necessary for adequate protection of

residential properties and to afford separation of through and local traffic. Alleys are acceptable as a means of providing access to lots or parcels fronting state highways or county roads.

Findings: Two lots in the proposed subdivision abut Powerline Road a minor arterial street. As addressed in this report the applicant intends to provide a sidewalk, landscaping/planner strip and permeant barrier along powerline road for lot 38 and lot 66 at time of issuance of building permit. The applicant intends to provide a design consistent with similar barriers located along Powerline Road to the north of the property.

Conclusion: Construction plans were not submitted as part of this application but the applicant intends to provide a barrier including sidewalks, landscaping and a fence along the street frontage of Powerline Road for lot 38. Final design and approval will be included as part of the public works director review of the required engineered plans.

N. Alleys:

1. Alleys shall be provided in commercial and industrial districts, unless other permanent provisions for access to off street parking and loading facilities are approved by the city.
2. Alleys are encouraged to serve residential development that front along state highways or county roads to minimize congestion and traffic hazards.
3. The corners of alley intersections shall have a radius of not less than two feet (2').

Findings: There is no commercial or industrial district within the area of the proposed subdivision. The proposed subdivision does not front along a state highway or county road. This criterion does not apply.

Conclusion: There is no commercial or industrial district within the area of the proposed subdivision. The proposed subdivision does not front along a state highway or county road. This criterion does not apply.

SECTION 11-4-3: BLOCKS:

The length, width, and shape of blocks shall take into account the need for adequate lot size and street width. No block shall be more than eight hundred feet (800') in length between street corner lines, unless it is adjacent to an arterial street or unless justified by the location of adjoining streets. The recommended minimum length of blocks along an arterial street is one thousand six hundred feet (1,600'). Any block over eight hundred feet (800') in length may be required to provide pedestrian connections through the block and crosswalks dedicated and improved to city standards.

Findings: The proposed subdivision would in essentially create two new blocks and continues an existing one. The proposed blocks are approximately 300 feet by 200 feet. The proposed blocks are less than 800' in length.

Conclusion: As addressed in this report all of the proposed lots will be less than the maximum block dimensions. All of the proposed blocks will be less than 800 feet in length.

SECTION 11-4-4: EASEMENTS:

- A. Utility Lines: Utility lines shall generally be located within public rights of way unless other provisions are required to meet the specific needs of a particular utility provider. A ten foot (10') wide easement for public and private utilities shall be provided along property frontages

(measured from the right of way line) and a six foot (6') wide easement for public and private utilities shall be provided along side and rear lot lines, except as otherwise approved by the city administrator.

Findings: The applicant is proposing to dedicate a ten foot (10') public utility easement along all property frontages including side and rear lot lines.

Conclusion: The applicant is proposing to dedicate a ten foot (10') public utility easement along all property frontages including side and rear lot lines.

- B. Watercourses: If a land division is crossed by or adjacent to a natural water body, an easement conforming to the riparian area shall be provided to protect the watercourse.

Findings: The proposed subdivision is not crossed or adjacent to a water body.

Conclusion: The proposed subdivision is not crossed or adjacent to a water body. This criterion is not applicable.

11-4-5: LOTS:

Lot and parcel size, shape, and orientation shall be consistent with the applicable zoning district and for the type of use contemplated. No lot or parcel dimension shall include the adjacent public right of way.

- A. Through lots with public streets on both front and rear or both sides shall be avoided except when essential to provide separation of residential development from adjacent arterial or collector streets. An easement at least five feet (5') in width shall be located adjacent to the right of way and there shall be no right of access to the major street. A permanent barrier may be required along the right of way, within the easement.

Findings: There are no through lots with public streets on both front and rear.

Conclusion: There are no through lots with public streets on both front and rear. This criterion is applicable.

- B. Lot and parcel side lot lines shall be at right angles to fronting streets or radius to curved streets to the extent practical, in order to create lots and parcels with building sites which are nearly rectangular.

Findings: All of the proposed lots as show on the submitted preliminary plat are nearly rectangular in shape and will provide building sites which are rectangular in shape.

Conclusion: All of the proposed lots will provide a rectangular building area.

- C. Lots shall have a width to depth ratio not to exceed 2.5.

Findings: As shown on the submitted preliminary plat all of the proposed lots do not exceed a width to depth ratio of 2.5.

Conclusion: As shown on the submitted preliminary plat all of the proposed lots will have a width to depth ratio no exceeding 2.5.

- D. All lots and parcels shall have a minimum street frontage on a public street of fifty feet (50'), except that lots or parcels fronting a cul-de-sac or curved street may have a minimum street

frontage of forty feet (40'), so long as the minimum lot width required by the zoning district is provided at a distance equivalent to the required front yard setback.

Findings: As shown on the submitted preliminary plat all of the proposed lots will have a minimum street frontage on a public street of fifty feet (50').

Conclusion: As shown on the submitted preliminary plat all of the proposed lots will exceed the minimum street frontage standards.

- E. Flag lots shall not be acceptable for land divisions, but may be approved if the following circumstances apply:
1. For one or two (2) lot land divisions when it is not practical to create or extend a public street or partial public street due to the nature of surrounding development.
 2. When topographic conditions or other physical constraints make it impractical or infeasible to create or extend a public street.
 3. When the size and shape of the site limit the possible arrangement of new lots or parcels and prevent the creation or extension of a public street.
 4. When allowed, the flag portion of a new lot shall have a minimum width of fifteen feet (15') to accommodate a driveway a minimum of twelve feet (12') wide. Two (2) adjacent flag lots may reduce the street frontage and pole width to twelve feet (12') wide, if joint access easements are created and a driveway is provided with a minimum width of twenty feet (20').

Findings: No flag lots are proposed as part of this application.

Conclusion: No flag lots are proposed as part of this application. These criteria are not applicable.

City of Umatilla Zoning Ordinance Section 10-11-10(D) Traffic Impact Analysis Requirements and Approval Criteria

Section 10-11-10(B) of the City of Umatilla Zoning Ordinance (CUZO) requires a Traffic Impact Analysis (TIA) to be submitted with a land use application when certain conditions apply. Subsection 10-11-10(B)(b)(1) identifies an application with an increase in site traffic volume generation by two hundred fifty (250) average daily trips (ADT) or more as one of the conditions in which a TIA is required to be submitted. The applicant submitted a 66-lot subdivision application that will increase site traffic volume by more than 250 average daily trips. The applicant submitted a Traffic Impact Analysis report with the Subdivision application.

Section 10-11-10(C) specifies that a TIA must be prepared by an Oregon Registered Professional Engineer that is qualified to perform traffic engineering analysis.

Section 10-11-10(D) lists the following criteria under Section 10-13-3 of the Zoning Ordinance that must be satisfied and supported with findings and reasons as to how each criterion is met in order for this request to be approved.

1. *The Traffic Impact Analysis was prepared by an Oregon Registered Professional Engineer qualified to perform traffic engineering analysis.*

Findings: The Traffic Impact Analysis (TIA) submitted with the subdivision application shows it to have been prepared by the engineering firm, PBS, and is stamped by John Andrew Manix, who is both an Oregon Registered Professional Engineer and a Washington Registered Professional Engineer.

Conclusion: The Traffic Impact Analysis submitted with the land use application was prepared, reviewed and approved by an Oregon Registered Professional Engineer. This criterion is met.

2. *If the proposed action shall cause a significant effect pursuant to the Transportation Planning Rule, or other traffic hazard or negative impact to a transportation facility, the Traffic Impact Analysis shall include mitigation measures that meet the City's Level-of-Service and/or Volume/Capacity standards and are satisfactory to the City Engineer, and ODOT when applicable.*

Findings: According to the Traffic Impact Analysis (TIA) submitted by the applicant, development associated with the proposed single-family residential subdivision will have an impact on existing traffic facilities, as determined by the Level of Service (LOS) at the main intersections of Powerline road in the vicinity of the subject property. A review of the TIA by the City of Umatilla's engineer of record, JUB, states "The intersection of US 730 and Powerline Road is forecast to provide Level of Service "F" with the proposed developments in 2030.". There are several mitigation scenarios presented in the TIA submitted by the applicant. JUB states in their comments that "Installation of a traffic signal or roundabout will achieve the required LOS (level of service) standards." As stated in the applicants TIA "further consultation between city staff and ODOT to determine the ultimate intersection control and configuration" will need to happen. The applicant should contribute an amount (57% is found in the TIA on page VI) based on the increase of traffic caused by their development. In addition to this the TIA and JUB recommend that the City reduce the speed limit on Powerline Road to 35 MPH along the development frontage. The Study shows a need for five left turn lanes at four intersection along Powerline Road. The Study makes the recommendation to not install left turn lanes, whereas JUB states "It appears that the corridor may be well served with a two-way left-turn lane (TWLTL), at least through the areas of the proposed development where there are several local street connections."

Conclusion: As demonstrated by the TIA, mitigation of traffic impacts will be required for the Ballard Subdivision. The applicant will contribute 57% of the costs relating to the traffic mitigation affecting the Powerline Road/Highway 730 intersection caused by this development. In addition, 57% of the cost to construct five left turn lanes along Powerline Road. This will be enforced by a signed development agreement between the applicant and City, before the final plat is recorded. The City has already reduced the speed on Powerline Road to 35 MPH along the development frontage.

3. *The proposed site design and traffic and circulation design and facilities, for all transportation modes, including any mitigation measures, are designed to:*
 - a. *Have the least negative impact on all applicable transportation facilities;*
 - b. *Accommodate and encourage non-motor vehicular modes of transportation to the extent practicable;*

- c. *Make the most efficient use of land and public facilities as practicable;*
- d. *Provide the most direct, safe and convenient routes practicable between on-site destinations, and between on-site and off-site destinations; and*
- e. *Otherwise comply with applicable requirements of the City of Umatilla Code.*

Findings: The proposed subdivision site design and traffic design are able to be considered as having a low negative impact on transportations facilities. The negative impacts to the transportation facilities such as Powerline Road come from the number of trips that will be taken by the residents living in the proposed subdivision, this is a normal and expected consequence of residential growth. The actions listed above will allow for effective mitigation of the negative impacts to applicable transportation facilities. With the installation of sidewalks in the neighborhood and along the frontage of Powerline Road it can be reasonably assumed that the site and traffic design accommodate and encourage non-motor vehicular modes of transportation to the extent practicable. The site plan of the proposed subdivision is able to be considered as making efficient use of land and public facilities and providing the most direct, safe and convenient routes practicable between on-site destinations, and between on-site and off-site destinations.

Conclusion: As shown above the proposed site design and traffic and circulation design and facilities meet the criterion.

IV. PUBLIC COMMENT, SUMMARY AND DECISION

This request by the applicant, Fastrack Inc., for tentative subdivision plat approval for a 64-lot subdivision and 2 future residential lots on property in the Single-Family Residential (R-1) Zone appears to meet, or be capable of meeting with appropriate conditions of approval, all of the applicable development standards of the City of Umatilla Zoning Ordinance and the criteria and development standards in the City of Umatilla Land Division Ordinance. Therefore, based on the information in Sections I and II of this report, and the above criteria and standards, findings of fact and conclusions contained in Section III, this request, SUB-2-20, for tentative subdivision plat approval to create a 64-lot subdivision and 2 future residential lots on property in the Single-Family Residential (R-1) Zone is **APPROVED**, subject to the conditions of approval contained in Section V of this report.

V. CONDITIONS OF APPROVAL

1. The final plat must be approved and recorded within one year from the date of this approval. The final subdivision plat must comply with the requirements of ORS chapter 92, and the requirements under Section 11-3-1 and 11-3-2 of the City of Umatilla Land Division Ordinance which the City will use as a checklist.
2. The applicant/developer shall submit a preliminary copy of the preliminary plat to the County Surveyor and GIS Department for review prior to submitting the final plat to the City.

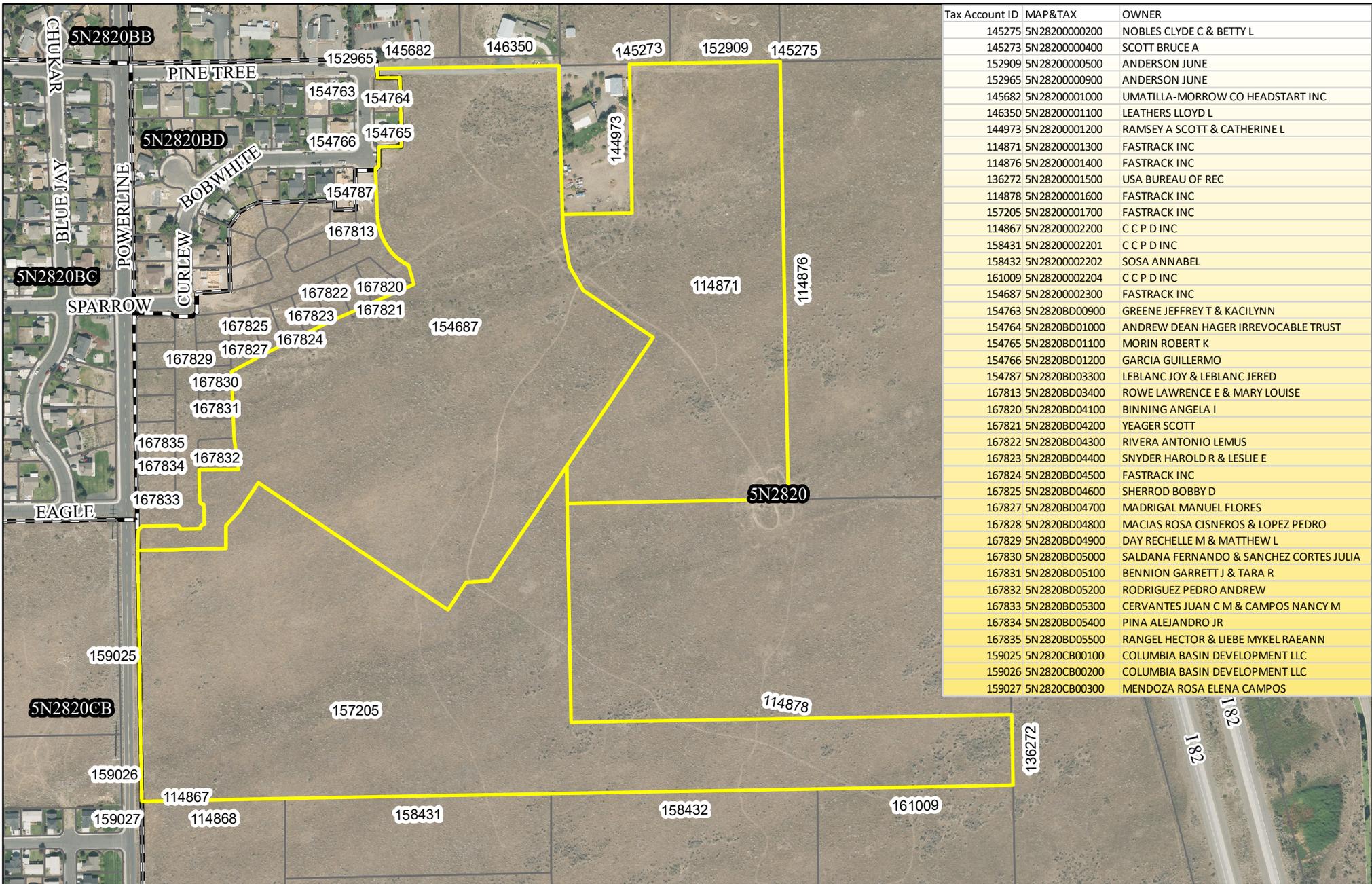
3. The applicant/developer shall submit engineered construction plans for streets, water, sewer, street lighting and all other improvements within the street rights-of-way to the City Public Works Director for review and approval. No construction shall begin until the construction plans have been approved.
4. Street trees shall be provided as required by the Land Division Ordinance and shall be required as a condition of approval on each building permit issued for a dwelling within the subdivision.
5. Street names approved by the City shall be shown on the final plat. No street name will be approved that is confusing, offensive or duplicates or sounds too similar to existing street names within the urban growth boundary.
6. If any historic, cultural or other archaeological artifacts, or human remains are discovered during construction the applicant shall immediately cease construction activity, secure the site, and notify appropriate agencies including but not limited to the City of Umatilla, and the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Cultural Resources Protection Program.
7. The applicant, or applicant's construction contractor, must obtain all federal, state and local permits, prior to starting construction.
8. The applicant shall be responsible for ensuring that all areas disturbed within existing street rights-of-way by construction are returned to their pre-construction condition or better after construction or installation of required improvements.
9. The applicant shall submit a copy of the final recorded plat of the subdivision and 'as-built' drawings of all required improvements to the City of Umatilla.
10. No building permit for a dwelling will be issued until final plat approval of the subdivision has been obtained and recorded in the Umatilla County Records Office.
11. Temporary turn-arounds will be constructed for the seven dead end streets to allow for Emergency vehicle access.
12. A signed development agreement for mitigation of impacted traffic facilities will be signed by the applicant and City prior to final plat approval by The City of Umatilla.
13. Failure to comply with the conditions of approval established herein may result in revocation of this approval.

VI. EXHIBITS

Exhibit A Notice Map

Exhibit B Tentative Plat

Exhibit C Applicants TIA
Exhibit D JUB Comments



Tax Account ID	MAP&TAX	OWNER
145275	5N28200000200	NOBLES CLYDE C & BETTY L
145273	5N28200000400	SCOTT BRUCE A
152909	5N28200000500	ANDERSON JUNE
152965	5N28200000900	ANDERSON JUNE
145682	5N28200001000	UMATILLA-MORROW CO HEADSTART INC
146350	5N28200001100	LEATHERS LLOYD L
144973	5N28200001200	RAMSEY A SCOTT & CATHERINE L
114871	5N28200001300	FASTRACK INC
114876	5N28200001400	FASTRACK INC
136272	5N28200001500	USA BUREAU OF REC
114878	5N28200001600	FASTRACK INC
157205	5N28200001700	FASTRACK INC
114867	5N28200002200	C C P D INC
158431	5N28200002201	C C P D INC
158432	5N28200002202	SOSA ANNABEL
161009	5N28200002204	C C P D INC
154687	5N28200002300	FASTRACK INC
154763	5N2820BD00900	GREENE JEFFREY T & KACILYNN
154764	5N2820BD01000	ANDREW DEAN HAGER IRREVOCABLE TRUST
154765	5N2820BD01100	MORIN ROBERT K
154766	5N2820BD01200	GARCIA GUILLERMO
154787	5N2820BD03300	LEBLANC JOY & LEBLANC JERED
167813	5N2820BD03400	ROWE LAWRENCE E & MARY LOUISE
167820	5N2820BD04100	BINNING ANGELA I
167821	5N2820BD04200	YEAGER SCOTT
167822	5N2820BD04300	RIVERA ANTONIO LEMUS
167823	5N2820BD04400	SNYDER HAROLD R & LESLIE E
167824	5N2820BD04500	FASTRACK INC
167825	5N2820BD04600	SHERROD BOBBY D
167827	5N2820BD04700	MADRIGAL MANUEL FLORES
167828	5N2820BD04800	MACIAS ROSA CISNEROS & LOPEZ PEDRO
167829	5N2820BD04900	DAY RECHELLE M & MATTHEW L
167830	5N2820BD05000	SALDANA FERNANDO & SANCHEZ CORTES JULIA
167831	5N2820BD05100	BENNION GARRETT J & TARA R
167832	5N2820BD05200	RODRIGUEZ PEDRO ANDREW
167833	5N2820BD05300	CERVANTES JUAN C M & CAMPOS NANCY M
167834	5N2820BD05400	PINA ALEJANDRO JR
167835	5N2820BD05500	RANGEL HECTOR & LIEBE MYKEL RAEANN
159025	5N2820CB00100	COLUMBIA BASIN DEVELOPMENT LLC
159026	5N2820CB00200	COLUMBIA BASIN DEVELOPMENT LLC
159027	5N2820CB00300	MENDOZA ROSA ELENA CAMPOS

Fastrack Inc, Ballard Subdivision(SUB-2-20)

Legend

- Subject Property
- Tax Lots 8/26/20



MAP DISCLAIMER: No warranty is made as to the accuracy, reliability or completeness of this data. Map should be used for reference purposes only. Not survey grade or for legal use. Created by Jacob Foutz, on 9/2/2020

BALLARD SUBDIVISION PHASE 1 TENTATIVE PLAN LOT LAYOUT

LOCATED IN A PORTION OF THE
SOUTHEAST 1/4 OF THE NORTHWEST 1/4,
THE SOUTHWEST 1/4 OF THE NORTHEAST
1/4, THE NORTHWEST 1/4 OF THE
SOUTHEAST 1/4 & THE NORTHEAST 1/4 OF
THE SOUTHWEST 1/4 OF SECTION 20,
TOWNSHIP 5 NORTH, RANGE 28 EAST OF
THE WILLAMETTE MERIDIAN, CITY AND
COUNTY OF UMATILLA, OREGON.

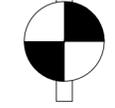


Scale 1" = 200'



BASES OF BEARINGS

BEARING OF N88°58'24"E, ALONG THE NORTH LINE OF THE NW 1/4 OF SECTION 20, TOWNSHIP 5 NORTH, RANGE 28 EAST OF THE WILLAMETTE MERIDIAN, BETWEEN TIED MONUMENTS. OREGON NORTH ZONE STATE PLANE DERIVED FROM OPUS SOLUTIONS FROM STATIC GPS DATA COLLECTED ON CONTROL POINTS. DISTANCES SHOWN ARE TRUE GROUND DISTANCES, USING A COMBINED GRID TO GROUND SCALE FACTOR OF 1.00004281770771.



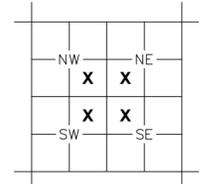
VERTICAL DATUM

NAVD88, HOLDING AN ELEVATION OF 397.19 ON THE 3" BRASS CAP AT THE N 1/4 COR. OF SEC. 20 DERIVED BY ESTABLISHING A GPS NETWORK CONSTRAINED TO POINT COORDINATES OBTAINED THROUGH GPS STATIC OBSERVATIONS ON CONTROL POINTS NEAR THE SITE AND POST PROCESSING THROUGH OPUS.

SHEET INDEX

- 1..... SITE BOUNDARY AND SECTION BREAKDOWN
- 2..... PROPOSED LOTS & ROADS, WEST HALF
- 3..... PROPOSED LOTS & ROADS, EAST HALF
- 4..... PROPOSED ORIOLE STREET EXTENSION / LEGEND / DATA TABLES
- 5..... NARRATIVE, NOTES & VICINITY MAP
- 6..... UTILITY LAYOUT

SECTION DIAGRAM



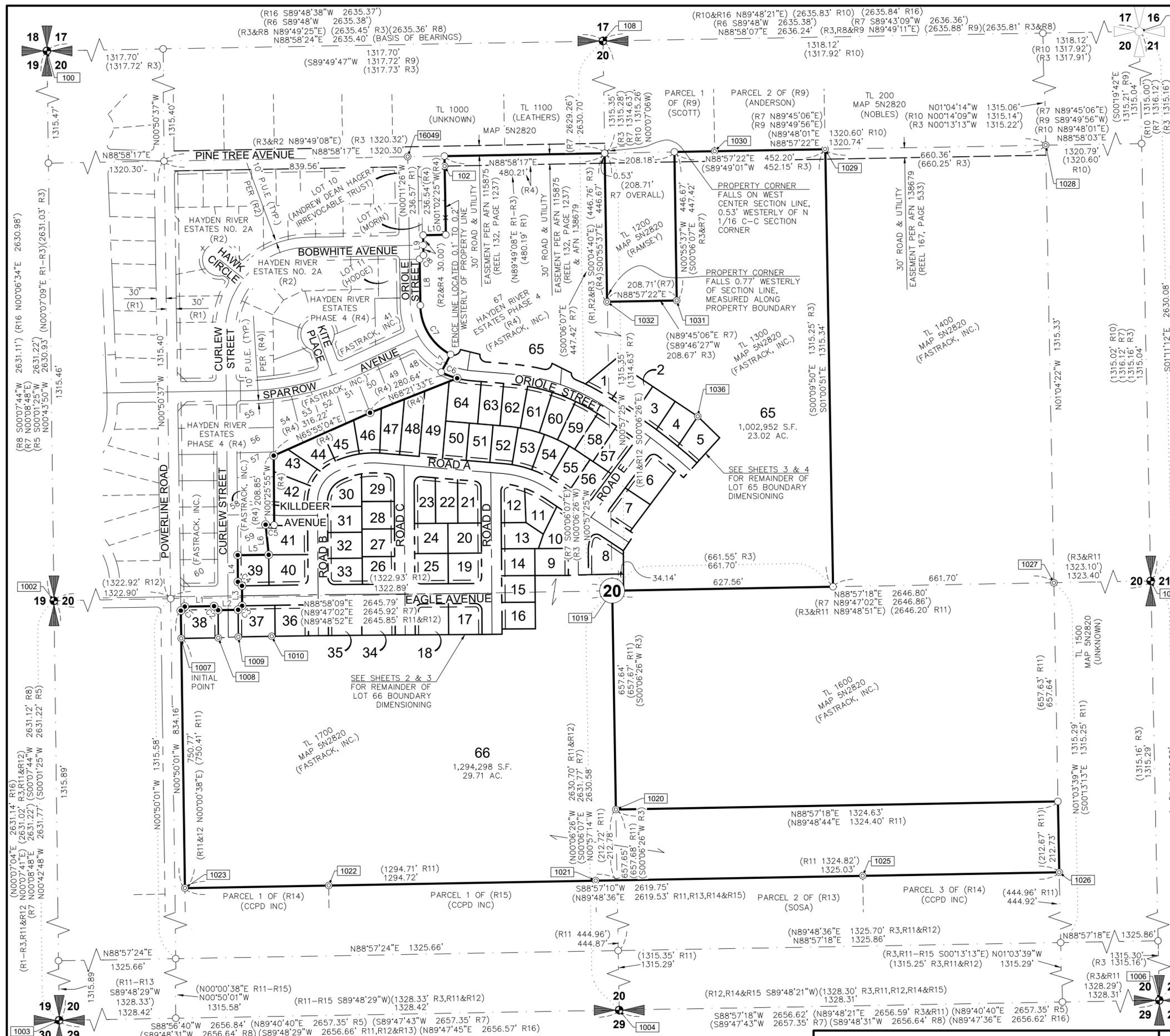
SECTION 20
T 5 N , R 28 E

REGISTERED
PROFESSIONAL
LAND SURVEYOR

PRELIMINARY

OREGON
JUNE 30, 1997
GREG E. FLOWERS
02820LS

RENEWS 12/31/2021



SURVEY REFERENCES

- (R1) HAYDEN RIVER ESTATES NO. 3 (BK. 14 OF PLATS, PG. 13) BY CUMMINGS
- (R2) HAYDEN RIVER ESTATES NO. 2A (BK. 13 OF PLATS, PG. 130) BY CUMMINGS
- (R3) BOUNDARY LINE ADJUSTMENT (SURVEY NO. 97-124-B) BY BAALMAN
- (R4) HAYDEN RIVER ESTATE'S PHASE 4 (BK. 16 OF PLATS, PG. 97) BY FLOWERS
- (R5) SURVEY FOR COUNTY ROAD DEPARTMENT (SURVEY NO. I-016-C) BY KRUMBEIN
- (R6) BUREAU OF LAND MANAGEMENT PLAT (SURVEY NO. Q-772-B) BY TUERS
- (R7) SURVEY FOR RAINBOW REALTY (SURVEY NO. 86-11-A) BY EDWARDS
- (R8) SURVEY FOR UMATILLA COUNTY AREA #1 (SURVEY NO. 91-01-B) BY EDWARDS

SURVEY REFERENCES

- (R9) SCOTT PARTITION PLAT (PARTITION PLAT NO. 1996-47) BY MCKINNIS
- (R10) BOUNDARY SURVEY FOR REFFETT (SURVEY NO. 98-234-C) BY ROBERTS
- (R11) BOUNDARY LINE ADJUSTMENT (SURVEY NO. 01-38-B) BY CUMMINGS
- (R12) LAMBERT PARTITION PLAT (PARTITION PLAT 2000-37)
- (R13) LAMBERT PARTITION PLAT (PARTITION PLAT 2003-04)
- (R14) LAMBERT PARTITION PLAT (PARTITION PLAT 2006-26)
- (R15) LAMBERT PARTITION PLAT (PARTITION PLAT 2006-27)
- (R16) SURVEY FOR UMATILLA COUNTY (SURVEY 98-101-C) BY WELLS



PBS Engineering and Environmental Inc.
400 Bradley Blvd, Ste 106
Richland, WA 99352
509.942.1600
pbsusa.com

CLIENT: FASTRACK, INC.	PROJECT NO.: 66127.000	
SURVEYOR: GREG E. FLOWERS	DATE: 08/26/2020	
CALC BY: ADM / ROP	DRAWN BY: ROP / DWW	SCALE: 1" = 200'
SECTION: 20	TOWNSHIP: 5 NORTH	RANGE: 28 EAST
CITY: UMATILLA	COUNTY: UMATILLA	SHEET 1 OF 6

SEE SHEET 4 FOR CONTINUATION

BALLARD SUBDIVISION PHASE 1 TENTATIVE PLAN LOT LAYOUT

LOCATED IN A PORTION OF THE
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1/4, THE NORTHWEST 1/4 OF THE
SOUTHEAST 1/4 & THE NORTHEAST 1/4 OF
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THE WILLAMETTE MERIDIAN, CITY AND
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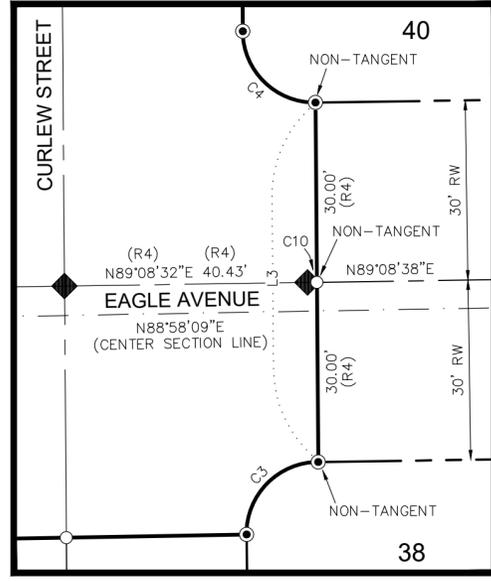
Scale 1" = 60'



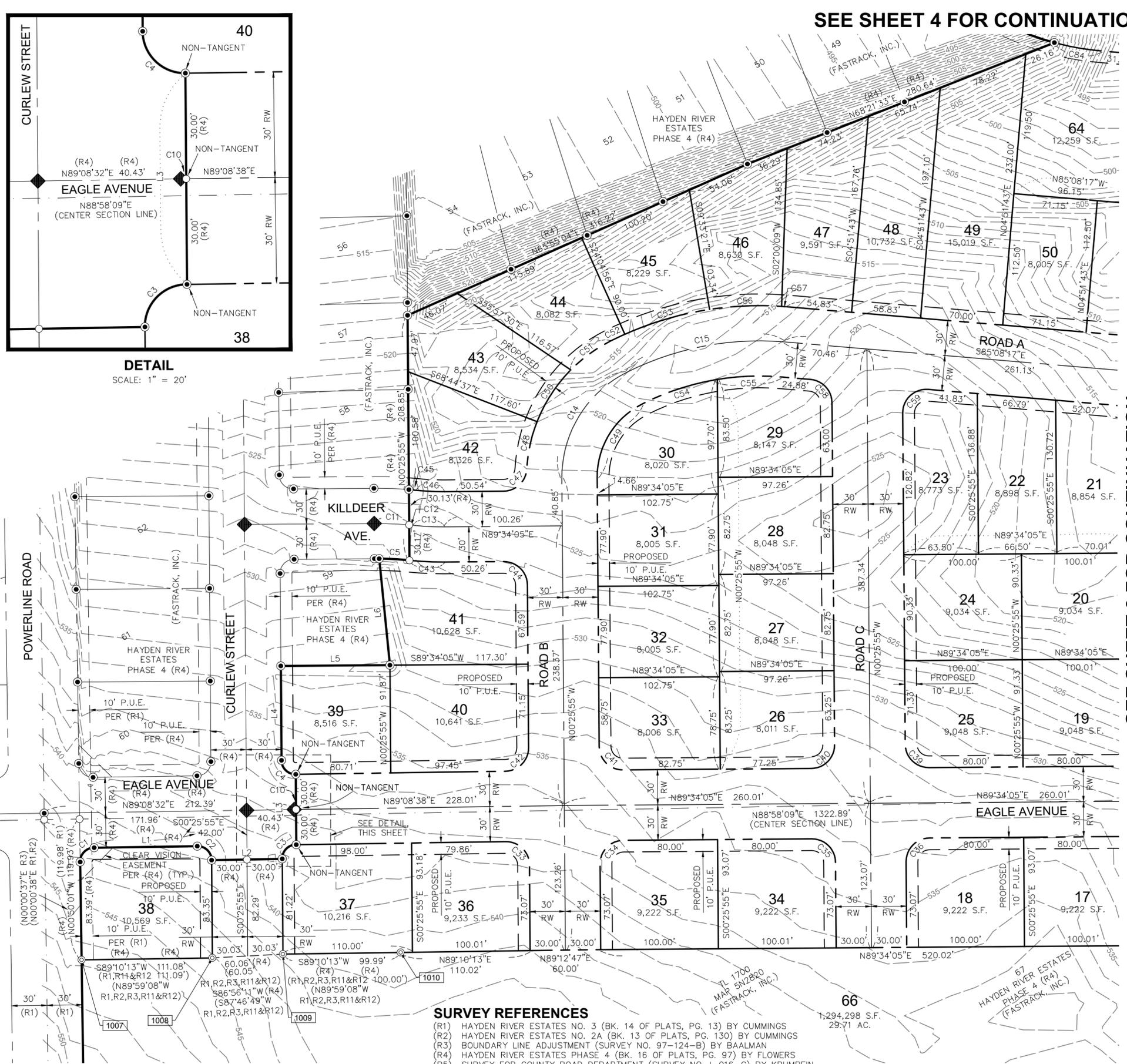
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PLANE DERIVED FROM OPUS SOLUTIONS FROM
STATIC GPS DATA COLLECTED ON CONTROL
POINTS. DISTANCES SHOWN ARE TRUE GROUND
DISTANCES, USING A COMBINED GRID TO
GROUND SCALE FACTOR OF 1.00004281770771.

SEE SHEET 3 FOR CONTINUATION



DETAIL
SCALE: 1" = 20'



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- (R1) HAYDEN RIVER ESTATES NO. 3 (BK. 14 OF PLATS, PG. 13) BY CUMMINGS
- (R2) HAYDEN RIVER ESTATES NO. 2A (BK. 13 OF PLATS, PG. 130) BY CUMMINGS
- (R3) BOUNDARY LINE ADJUSTMENT (SURVEY NO. 97-124-B) BY BAALMAN
- (R4) HAYDEN RIVER ESTATES PHASE 4 (BK. 16 OF PLATS, PG. 97) BY FLOWERS
- (R5) SURVEY FOR COUNTY ROAD DEPARTMENT (SURVEY NO. I-016-C) BY KRUMBEIN
- (R6) BUREAU OF LAND MANAGEMENT PLAT (SURVEY NO. Q-772-B) BY TUERS
- (R7) SURVEY FOR RAINBOW REALTY (SURVEY NO. 86-11-A) BY EDWARDS
- (R8) SURVEY FOR UMATILLA COUNTY AREA #1 (SURVEY NO. 91-01-B) BY EDWARDS
- (R9) SCOTT PARTITION PLAT (PARTITION PLAT NO. 1996-47) BY MCKINNIS
- (R10) BOUNDARY SURVEY FOR REFFETT (SURVEY NO. 98-234-C) BY ROBERTS
- (R11) BOUNDARY LINE ADJUSTMENT (SURVEY NO. 01-38-B) BY CUMMINGS
- (R12) LAMBERT PARTITION PLAT (PARTITION PLAT 2000-37)
- (R13) LAMBERT PARTITION PLAT (PARTITION PLAT 2003-04)
- (R14) LAMBERT PARTITION PLAT (PARTITION PLAT 2006-26)
- (R15) LAMBERT PARTITION PLAT (PARTITION PLAT 2006-27)
- (R16) SURVEY FOR UMATILLA COUNTY (SURVEY 98-101-C) BY WELLS

PRELIMINARY

REGISTERED
PROFESSIONAL
LAND SURVEYOR

OREGON
JUNE 30, 1997
GREG E. FLOWERS
02820LS

RENEWS 12/31/2021



**PBS Engineering and
Environmental Inc.**
400 Bradley Blvd, Ste 106
Richland, WA 99352
509.942.1600

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CLIENT: FASTRACK, INC.		PROJECT NO.: 66127.000	
SURVEYOR: GREG E. FLOWERS		DATE: 08/26/2020	
CALC BY: ADM / ROP	DRAWN BY: ROP / DWV	SCALE: 1" = 60'	
SECTION: 20	TOWNSHIP: 5 NORTH	RANGE: 28 EAST	
CITY: UMATILLA	COUNTY: UMATILLA	SHEET 2 OF 6	

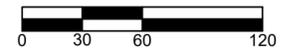
SEE SHEET 4 FOR CONTINUATION

BALLARD SUBDIVISION PHASE 1 TENTATIVE PLAN LOT LAYOUT

LOCATED IN A PORTION OF THE
SOUTHWEST 1/4 OF THE NORTHWEST 1/4,
THE SOUTHWEST 1/4 OF THE NORTHEAST
1/4, THE NORTHWEST 1/4 OF THE
SOUTHWEST 1/4 & THE NORTHEAST 1/4 OF
THE SOUTHWEST 1/4 OF SECTION 20,
TOWNSHIP 5 NORTH, RANGE 28 EAST OF
THE WILLAMETTE MERIDIAN, CITY AND
COUNTY OF UMATILLA, OREGON.



Scale 1" = 60'



BASIS OF BEARINGS

BEARING OF N88°58'24"E, ALONG THE NORTH LINE OF THE NW 1/4 OF SECTION 20, TOWNSHIP 5 NORTH, RANGE 28 EAST OF THE WILLAMETTE MERIDIAN, BETWEEN TIED MONUMENTS, OREGON NORTH ZONE STATE PLANE DERIVED FROM OPUS SOLUTIONS FROM STATIC GPS DATA COLLECTED ON CONTROL POINTS. DISTANCES SHOWN ARE TRUE GROUND DISTANCES, USING A COMBINED GRID TO GROUND SCALE FACTOR OF 1.00004281770771.

SEE SHEET 2 FOR CONTINUATION



SURVEY REFERENCES

- (R1) HAYDEN RIVER ESTATES NO. 3 (BK. 14 OF PLATS, PG. 13) BY CUMMINGS
- (R2) HAYDEN RIVER ESTATES NO. 2A (BK. 13 OF PLATS, PG. 130) BY CUMMINGS
- (R3) BOUNDARY LINE ADJUSTMENT (SURVEY NO. 97-124-B) BY BAALMAN
- (R4) HAYDEN RIVER ESTATES PHASE 4 (BK. 16 OF PLATS, PG. 97) BY FLOWERS
- (R5) SURVEY FOR COUNTY ROAD DEPARTMENT (SURVEY NO. I-016-C) BY KRUMBEIN
- (R6) BUREAU OF LAND MANAGEMENT PLAT (SURVEY NO. Q-772-B) BY TUERS
- (R7) SURVEY FOR RAINBOW REALTY (SURVEY NO. 86-11-A) BY EDWARDS
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- (R15) LAMBERT PARTITION PLAT (PARTITION PLAT 2006-27)
- (R16) SURVEY FOR UMATILLA COUNTY (SURVEY 98-101-C) BY WELLS

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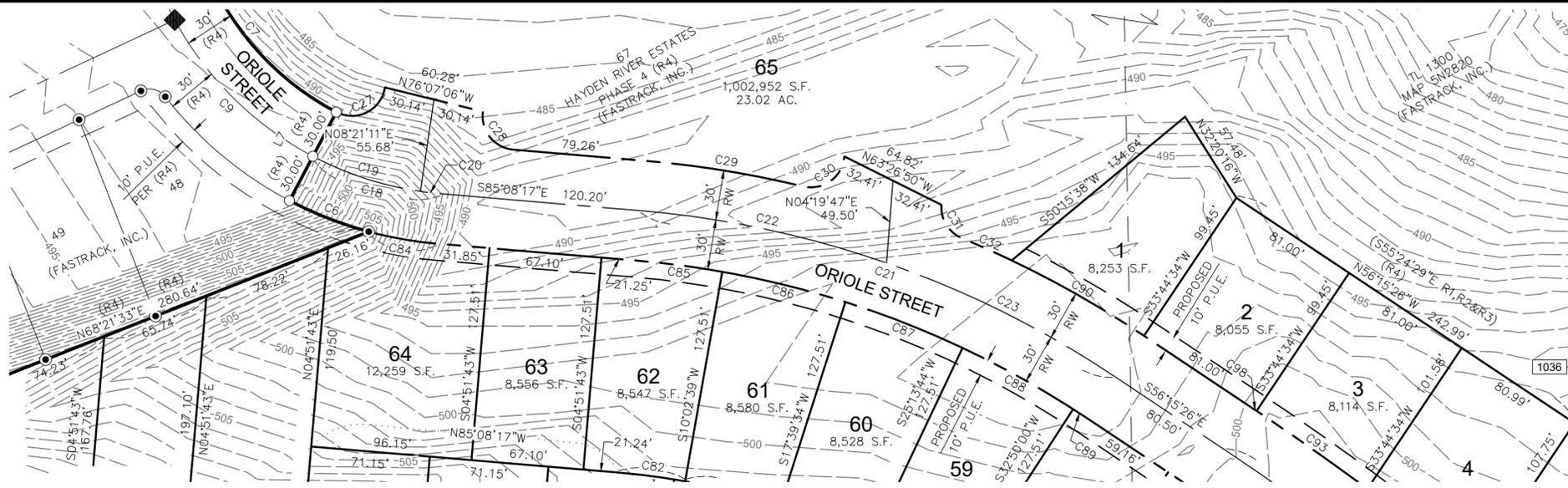
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CLIENT: FSTRACK, INC.		PROJECT NO.: 66127.000
SURVEYOR: GREG E. FLOWERS		DATE: 08/26/2020
CALC BY: ADM / ROP	DRAWN BY: ROP / DWW	SCALE: 1" = 60'
SECTION: 20	TOWNSHIP: 5 NORTH	RANGE: 28 EAST
CITY: UMATILLA	COUNTY: UMATILLA	SHEET 3 OF 6

BALLARD SUBDIVISION PHASE 1 TENTATIVE PLAN LOT LAYOUT

LOCATED IN A PORTION OF THE
SOUTHEAST 1/4 OF THE NORTHWEST 1/4,
THE SOUTHWEST 1/4 OF THE NORTHEAST
1/4, THE NORTHWEST 1/4 OF THE
SOUTHEAST 1/4 & THE NORTHEAST 1/4 OF
THE SOUTHWEST 1/4 OF SECTION 20,
TOWNSHIP 5 NORTH, RANGE 28 EAST OF
THE WILLAMETTE MERIDIAN, CITY AND
COUNTY OF UMATILLA, OREGON.

SEE SHEET 2 FOR
CONTINUATION



SEE SHEET 3 FOR CONTINUATION

CURVE TABLE

CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH	(RECORD ARC L)
C1	18.84'	12.00'	89°58'33"	N44°09'15"E	16.97'	(R4)
C2	18.94'	12.00'	90°25'33"	S45°38'42"E	17.03'	(R4)
C3	18.86'	12.00'	90°01'53"	N44°35'01"E	16.98'	(R4)
C4	18.85'	12.00'	89°58'46"	S45°25'19"E	16.97'	(R4)
C5	25.75'	270.00'	5°27'52"	S86°50'23"E	25.74'	(R4)
C6	51.07'	230.00'	12°43'20"	N68°32'09"W	50.97'	(R4)
C7	181.39'	170.00'	61°08'04"	S31°36'27"E	172.91'	(R4)
C8	18.85'	12.00'	90°00'00"	N43°57'35"E	16.97'	(R1,R2&R4)
C9	117.84'	200.00'	33°45'35"	N45°17'42"W	116.15'	(R4)
C10	1.57'	200.00'	0°27'03"	N89°22'03"E	1.57'	(R4)
C11	29.79'	300.00'	5°41'23"	S87°35'14"E	29.78'	(R4)
C12	3.32'	300.00'	0°38'05"	N84°25'30"W	3.32'	(R4)
C13	26.49'	240.00'	6°19'28"	N87°16'11"W	26.48'	(R4)
C14	110.95'	100.00'	63°33'58"	N31°21'04"E	105.35'	(R4)
C15	138.45'	250.01'	31°43'41"	N78°59'53"E	136.68'	(R4)
C16	151.23'	300.01'	28°52'54"	S70°41'50"E	149.63'	(R4)
C17	97.13'	150.01'	37°05'57"	S18°07'03"W	95.44'	(R4)
C18	80.16'	200.00'	22°57'47"	S73°39'23"E	79.62'	(R4)
C19	67.97'	200.00'	19°28'20"	S71°54'39"E	67.64'	(R4)
C20	12.19'	200.00'	3°29'27"	N83°23'33"W	12.18'	(R4)
C21	302.44'	600.00'	28°52'51"	N70°41'51"W	299.25'	(R4)
C22	150.45'	600.00'	14°22'01"	S77°57'16"E	150.06'	(R4)
C23	151.99'	600.00'	14°30'50"	N63°30'51"W	151.58'	(R4)
C24	236.17'	1600.07'	8°27'24"	N52°01'43"W	235.95'	(R4)
C25	81.66'	1600.07'	2°55'27"	S54°47'42"E	81.65'	(R4)
C26	154.51'	1600.07'	5°31'57"	N50°34'00"W	154.45'	(R4)
C27	38.21'	20.00'	109°28'20"	N63°05'21"E	32.66'	(R4)
C28	32.64'	20.00'	93°29'27"	S38°23'33"E	29.13'	(R4)
C29	95.65'	630.00'	8°41'55"	N80°47'19"W	95.55'	(R4)
C30	34.64'	20.00'	99°13'52"	N53°56'42"E	30.47'	(R4)
C31	25.02'	20.00'	71°41'00"	S31°30'43"E	23.42'	(R4)
C32	32.66'	630.00'	2°58'14"	S65°52'07"E	32.66'	(R4)
C33	31.57'	20.00'	90°25'27"	S45°38'39"E	28.39'	(R4)
C34	31.42'	20.00'	90°00'00"	S44°34'05"W	28.29'	(R4)
C35	31.42'	20.00'	90°00'00"	S45°25'55"W	28.29'	(R4)
C36	31.42'	20.00'	90°00'00"	N44°34'05"E	28.29'	(R4)
C37	31.42'	20.00'	90°00'00"	S45°25'55"W	28.29'	(R4)
C38	31.42'	20.00'	90°00'00"	S44°34'05"W	28.29'	(R4)
C39	31.42'	20.00'	90°00'00"	N45°25'55"W	28.29'	(R4)
C40	31.42'	20.00'	90°00'00"	S44°34'05"W	28.29'	(R4)
C41	31.42'	20.00'	90°00'00"	S45°25'55"W	28.29'	(R4)
C42	31.27'	20.00'	89°34'33"	S44°21'21"W	28.18'	(R4)
C43	29.80'	270.00'	6°19'28"	S87°16'11"E	29.79'	(R4)
C44	31.42'	20.00'	90°00'00"	S45°25'55"E	28.29'	(R4)
C45	6.64'	330.00'	1°09'12"	S84°41'03"E	6.64'	(R4)
C46	23.18'	210.00'	6°19'28"	N87°16'11"W	23.17'	(R4)
C47	30.20'	20.00'	86°30'10"	S46°19'00"W	27.41'	(R4)
C48	41.46'	130.00'	18°16'13"	S12°12'01"W	41.28'	(R4)
C49	77.66'	70.00'	63°33'58"	S31°21'04"W	73.74'	(R4)
C50	53.02'	130.00'	23°21'59"	S33°01'07"W	52.65'	(R4)
C51	41.82'	130.00'	18°25'55"	N53°55'05"E	41.64'	(R4)
C52	13.60'	280.01'	2°47'01"	N64°31'33"E	13.60'	(R4)
C53	75.18'	280.01'	15°23'03"	S73°36'35"W	74.96'	(R4)
C54	67.34'	220.01'	17°32'13"	N71°54'09"E	67.08'	(R4)
C55	54.49'	220.01'	14°11'28"	S87°45'59"W	54.35'	(R4)
C56	61.40'	280.01'	12°33'49"	S87°35'01"W	61.28'	(R4)
C57	4.87'	280.01'	0°59'48"	N85°38'11"W	4.87'	(R4)
C58	29.57'	20.00'	84°42'21"	N42°47'06"W	26.95'	(R4)
C59	33.27'	20.00'	95°17'39"	N47°12'54"E	29.56'	(R4)
C60	29.57'	20.00'	84°42'21"	N42°47'06"W	26.95'	(R4)
C61	34.73'	20.00'	99°30'08"	S49°19'09"W	30.53'	(R4)
C62	49.41'	270.01'	10°29'08"	N75°41'13"W	49.35'	(R4)
C63	24.91'	330.01'	4°19'30"	S82°58'31"E	24.91'	(R4)
C64	60.99'	330.01'	10°35'19"	N75°31'07"W	60.90'	(R4)
C65	60.83'	330.01'	10°33'40"	N64°56'37"W	60.74'	(R4)
C66	66.86'	270.01'	14°11'16"	N63°21'01"W	66.69'	(R4)
C67	28.57'	20.00'	81°49'48"	N15°20'28"W	26.20'	(R4)
C68	19.62'	330.01'	3°24'25"	S57°57'35"E	19.62'	(R4)
C69	30.40'	20.00'	87°04'36"	N80°12'19"E	27.55'	(R4)
C70	73.31'	180.01'	23°20'03"	N13°54'24"E	72.80'	(R4)
C71	8.39'	180.01'	2°40'18"	S00°54'14"W	8.39'	(R4)
C72	37.00'	120.01'	17°39'48"	S08°23'59"W	36.85'	(R4)

CURVE TABLE

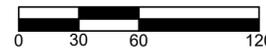
CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C73	37.18'	20.00'	106°30'45"	N70°29'15"E	32.05'
C74	32.44'	20.00'	92°55'24"	S09°47'41"E	29.00'
C75	7.04'	442.52'	0°54'40"	S56°42'42"E	7.04'
C76	58.73'	442.52'	7°36'14"	N60°58'09"W	58.68'
C77	26.31'	442.52'	3°24'25"	N57°57'35"W	26.31'
C78	81.57'	442.52'	10°33'40"	N64°56'37"W	81.45'
C79	58.46'	442.52'	7°34'10"	N68°33'21"W	58.42'
C80	58.82'	442.52'	7°36'55"	S76°08'53"E	58.77'
C81	81.78'	442.52'	10°35'19"	S75°31'07"E	81.66'
C82	40.02'	442.52'	5°10'56"	S82°32'49"E	40.01'
C83	33.40'	442.52'	4°19'30"	S82°58'31"E	33.40'
C84	41.11'	230.00'	10°14'27"	S80°01'03"E	41.05'
C85	51.55'	570.00'	5°10'54"	N82°32'50"W	51.53'
C86	75.76'	570.00'	7°36'57"	N76°08'54"W	75.71'
C87	75.31'	570.00'	7°34'11"	N68°33'20"W	75.25'
C88	75.65'	570.00'	7°36'16"	N60°58'07"W	75.60'
C89	9.05'	570.00'	0°54'34"	N56°42'43"W	9.05'
C90	91.12'	630.47'	8°16'50"	N60°14'30"W	91.04'
C91	32.06'	20.00'	91°50'55"	N09°15'26"W	28.74'
C92	32.06'	20.00'	91°50'55"	N82°35'29"E	28.74'
C93	81.04'	1630.07'	2°50'54"	N54°45'12"W	81.03'
C94	81.24'	1630.07'	2°51'20"	S51°54'05"E	81.24'
C95	76.05'	1630.07'	2°40'23"	N49°08'13"W	76.04'
C96	69.47'	1570.07'	2°32'06"	N50°13'01"W	69.46'
C97	29.47'	1570.07'	1°04'32"	S55°43'10"E	29.47'
C98	2.26'	1630.07'	0°04'47"	N56°13'02"W	2.26'
C99	31.49'	1570.07'	1°08'56"	S48°22'30"E	31.49'

LINE TABLE

LINE	BEARING	DISTANCE	(RECORD BEARING)	(RECORD DIST.)
L1	N89°08'32"E	87.67'	(R4)	(R4)
L2	N88°58'36"E	60.00'	(R4)	(R4)
L3	N00°26'33"W	60.00'	(R4)	(R4)
L4	N00°25'55"W	80.46'	(R4)	(R4)
L5	N89°34'05"E	92.70'	(R4)	(R4)
L6	N05°42'30"W	91.24'	(R4)	(R4)
L7	N27°49'31"E	60.00'	(R4)	(R4)
L8	N01°02'25"W	138.99'	(R4)	(R4)
L9	N01°02'25"W	60.00'	(R4)(S00°11'26"E R1&R2)	(R1,R2&R4)
L10	N88°57'35"E	68.00'	(R4)(S89°48'34"W R1&R2)	(R1,R2&R4)



Scale 1" = 60'



BASIS OF BEARINGS

BEARING OF N88°58'24"E, ALONG THE NORTH LINE OF THE NW 1/4 OF SECTION 20, TOWNSHIP 5 NORTH, RANGE 28 EAST OF THE WILLAMETTE MERIDIAN, BETWEEN TIED MONUMENTS. OREGON NORTH ZONE STATE PLANE DERIVED FROM OPUS SOLUTIONS FROM STATIC GPS DATA COLLECTED ON CONTROL POINTS. DISTANCES COLLECTED ARE TRUE GROUND DISTANCES, USING A COMBINED GRID TO GROUND SCALE FACTOR OF 1.00004281770771.

LEGEND & ABBREVIATIONS

- FOUND SURVEY MONUMENT / PROPERTY PIN, DENOTED WITH POINT NUMBER, SEE TABLE, SHEET 4
- FOUND 3" BRASS CAP WITH PUNCH IN CASE AND COVER STAMPED: "PBS LS 02820 2019" PER (R4)
- FOUND 5/8" IRON REBAR WITH YELLOW PLASTIC CAP STAMPED: "PBS OR 02820 LS" PER (R4)
- CALCULATED POINT ONLY, NOT FOUND OR SET
- DENOTES RECORD DATA PER SURVEY REFERENCE, SEE LIST / AUDITOR FILE NUMBER
- BLM / N/LY BUREAU OF LAND MANAGEMENT / NORTHERLY
- PP / PROP. PARTITION PLAT / PROPERTY
- P.U.E. PUBLIC UTILITY EASEMENT
- RW / TL DENOTES PROPOSED RIGHT-OF-WAY / TAX LOT
- S.F. / AC. / (TYP.) / W/ SQUARE FEET / ACRES / TYPICAL / WITH
- SITE BOUNDARY
- EXISTING RIGHT-OF-WAY BOUNDARY (ADJACENT)
- EXISTING RIGHT-OF-WAY CENTERLINE (ADJACENT)
- EXISTING PROPERTY LINE
- EXISTING EASEMENT
- EXISTING FENCE LINE
- 1-FOOT INTERVAL EXISTING GROUND CONTOURS
- PROPOSED RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY CENTERLINE
- PROPOSED LOT LINE
- PROPOSED EASEMENT, SEE P.U.E. NOTE, SHEET 5

FOUND MONUMENT & PROPERTY PIN TABLE (POSITION FROM CALCULATED TO MEASURED)

#	DESCRIPTION / SURVEY REFERENCE	BEARING	DISTANCE
100	3" BRASS CAP BY BLM, ESTABLISHED PER (R6)		HELD
102	REBAR W/ CAP: "OR LS 2316" (R2)		HELD
108	3" BRASS CAP BY BLM, ESTABLISHED PER (R6)		HELD
1002	2" ALUMINUM CAP ON 1" PIPE LS 951, ESTABLISHED PER (R8), CAP MATERIAL DOES NOT MATCH AS DESCRIBED ON (R8)		HELD
1003	2-1/2" BRASS CAP BY RPE 7728, ESTABLISHED PER (R5)		HELD
1004	2-1/2" BRASS CAP ON 1" PIPE LS 951, ESTABLISHED PER (R8)		HELD
1005	2-1/2" BRASS CAP ON 1" PIPE LS 951, ESTABLISHED PER (R8)		HELD
1006	3" BRASS CAP BY BLM, ESTABLISHED PER (R6)		HELD
1007	REBAR W/ CAP: "OR LS 2316" (R1)		HELD
1008	REBAR W/ CAP: "RSI JAB 02735 LS" (R3)		HELD
1009	REBAR W/ CAP: "RSI JAB 02735 LS" (R3)		HELD
1010	REBAR W/ CAP: "RSI JAB 02735 LS" (R3)		HELD
1019	REBAR W/ CAP: "OR LS 2316" ESTABLISHED PER (R3) & (R11)		HELD
1020	REBAR W/ CAP: "OR LS 2316" (R11)		HELD
1021	REBAR W/ CAP: "OR LS 2316" (R13)	0.14' N/LY OF PROP. LINE	
1022	REBAR W/OUT CAP (R13)	0.24' N/LY OF PROP. LINE	
1023	REBAR W/OUT CAP (R11)	N22"E	0.29'
1025	REBAR W/ CAP: "LS 2316" (R13)	0.11' N/LY OF PROP. LINE	
1026	REBAR W/OUT CAP (R11)	S61"W	0.16'
1027	REBAR W/ CAP: "OR LS 2316" NO RECORD	S3"W	0.25'
1028	REBAR W/ CAP: "PLS 2627" (R10)		HELD
1029	REBAR W/ CAP: "RV MCKINNIS PLS 2431" (R9)	N45"W	0.70'
1030	REBAR W/ CAP: "RV MCKINNIS PLS 2431" (R9)	0.15' N/LY OF PROP. LINE	
1031	FOUND REBAR W/OUT CAP (R7)	N14"W	0.11'
1032	FOUND REBAR W/OUT CAP (R7)		HELD
1036	REBAR W/ CAP: "RSI JAB 02735 LS" (R3)		HELD FOR NEW CORNER
16049	REBAR W/ CAP: ILLEGIBLE (R2)		HELD FOR ROAD CENTERLINE

NOTE: "HELD" DENOTES PIN WAS FOUND WITHIN 0.10' OF CALCULATED

REGISTERED
PROFESSIONAL
LAND SURVEYOR

PRELIMINARY

OREGON
JUNE 30, 1997
GREG E. FLOWERS
02820LS

RENEWS 12/31/2021



PBS Engineering and Environmental Inc.
400 Bradley Blvd, Ste 106
Richland, WA 99352
509.942.1600

pbsusa.com

CLIENT: FASTRACK, INC.	PROJECT NO.: 66127.000
SURVEYOR: GREG E. FLOWERS	DATE: 08/26/2020
CALC BY: ADM / ROP	DRAWN BY: ROP / DWW
SECTION: 20	TOWNSHIP: 5 NORTH
CITY: UMATILLA	COUNTY: UMATILLA
RANGE: 28 EAST	SHEET 4 OF 6

NARRATIVE

THIS SURVEY WAS PERFORMED AT THE REQUEST OF FASTRACK INC. TO DELINEATE AND SUBDIVIDE THE BOUNDARIES OF LOT 67 OF HAYDEN RIVER ESTATES PHASE 4, RECORDED IN BOOK 16, PAGE 97 AND OF TAX LOTS 1300 & 1700 OF TAX MAP 5N2820 ALL RECORDS OF UMATILLA COUNTY, OREGON. PORTIONS OF THIS BOUNDARY HAD BEEN PREVIOUSLY DEFINED AND MONUMENTED BY SAID HAYDEN RIVER ESTATES PHASE 4 AND PARTITION PLAT NO. 2000-37.

DURING OUR INITIAL FIELD WORK, WE RECOVERED AND TIED MANY OF THE PERIMETER LOT CORNERS AND CONTROLLING SECTION CORNERS. THE NORTHEAST CORNER OF THE SECTION WAS NOT RECOVERED DURING OUR FIELD WORK, WE HAVE RELIED ON A COMPUTED POSITION USING A BEARING-BEARING INTERSECTION USING DATA FROM SURVEY 98-101-C. THIS PROPERTY IS BORDERED BY TAX LOT 1200, DESCRIBED AS BEING THE NORTH 447.42 FEET OF THE WEST 208.71 FEET OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 20. OUR BREAKDOWN OF THE NORTHEAST QUARTER OF SECTION 20 DID NOT FIT THE MONUMENTED POSITION OF OF TAX LOT 1200, WE MADE THE DECISION TO HOLD THE PINS FOUND ALONG THE SOUTHERLY LINE OF TAX LOT 1200 FOR THE TRUE LOCATION OF THIS PARCEL. THIS ALSO AGREES WITH THE RECORD DIMENSIONS SHOWN ON HAYDEN RIVER ESTATES NO. 3.

THIS SURVEY WAS PERFORMED AS A REAL TIME KINEMATIC SURVEY USING TRIMBLE DUAL FREQUENCY GPS RECEIVERS WITH A PRECISION OF ONE CENTIMETER +/- 2 PPM TIMES MEASURED LENGTH. MONUMENTS WERE VISITED IN AUGUST AND SEPTEMBER 2018.

TITLE REPORT REFERENCE

ALL TITLE INFORMATION SHOWN ON THIS MAP HAS BEEN EXTRACTED FROM INFORMATION CONTAINED IN AMERITITLE, LOCATED IN PENDLETON, OREGON, TITLE REPORTS, FILE NUMBERS 240898AM & 277356AM, DATED MAY 30, 2018 & JANUARY 22, 2019, RESPECTIVELY. IN PREPARING THIS TENTATIVE PLAN, PBS ENGINEERING & ENVIRONMENTAL INC. HAS CONDUCTED NO INDEPENDENT TITLE SEARCH, NOR IS PBS ENGINEERING & ENVIRONMENTAL INC. AWARE OF ANY TITLE ISSUES AFFECTING THE PROPERTY OTHER THAN THOSE SHOWN ON THE TENTATIVE PLAN AND DISCLOSED BY THE REFERENCED AMERITITLE TITLE REPORTS. PBS ENGINEERING & ENVIRONMENTAL INC. HAS RELIED WHOLLY ON AMERITITLE'S REPRESENTATION OF THE TITLE'S CONDITION TO PREPARE THIS MAP AND THEREFORE PBS ENGINEERING & ENVIRONMENTAL INC. QUALIFIES THE MAP'S ACCURACY AND COMPLETENESS TO THAT EXTENT.

LEGAL DESCRIPTIONS

LOT 67:
LOT 67, HAYDEN RIVER ESTATES PHASE 4, A REPLAT OF LOT 41 IN HAYDEN RIVER ESTATE NO. 3, LYING WITHIN A PORTION OF SECTION 20, TOWNSHIP 5 NORTH, RANGE 28 EAST OF THE WILLAMETTE MERIDIAN, CITY OF UMATILLA, UMATILLA COUNTY, OREGON.

TRACT I (5N2820 LOT 1700):
A TRACT OF LAND LOCATED IN PARCEL 3, PARTITION PLAT NO. 2000-37 AND IN THE WEST HALF OF THE SOUTHEAST QUARTER OF SECTION 20, BEING DESCRIBED AS FOLLOWS:
A TRACT OF LAND LOCATED IN SECTION 20, TOWNSHIP 5 NORTH, RANGE 28, EAST OF THE WILLAMETTE MERIDIAN, UMATILLA COUNTY, OREGON AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:
BEGINNING AT THE CENTER QUARTER CORNER OF SAID SECTION 20; THENCE ALONG THE NORTH-SOUTH CENTERLINE OF SAID SECTION 20, SOUTH 00°06'26" EAST, A DISTANCE OF 657.67 FEET; THENCE NORTH 89°48'44" EAST A DISTANCE OF 1324.40 FEET, TO A POINT ON THE EAST LINE OF THE SOUTH HALF OF THE NORTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 20; THENCE ALONG SAID LINE, SOUTH 00°13'13" EAST, A DISTANCE OF 212.67 FEET; THENCE SOUTH 89°48'36" WEST, A DISTANCE OF 2619.53 FEET, TO A POINT ON THE EASTERLY RIGHT-OF-WAY OF POWERLINE ROAD; THENCE ALONG SAID RIGHT-OF-WAY, NORTH 00°00'38" EAST, A DISTANCE OF 750.41 FEET, TO A POINT ON THE SOUTHERLY BOUNDARY OF LOT 41, HAYDEN RIVER ESTATES PHASE 3, AS PER THE PLAT THEREOF IN BOOK 14, PAGE 13, PLAT RECORDS, UMATILLA COUNTY, OREGON; THENCE ALONG SAID SOUTHERLY LINE, THE FOLLOWING 10 CALLS: (1) SOUTH 89°59'08" EAST, A DISTANCE OF 111.09 FEET; (2) NORTH 87°46'49" EAST, A DISTANCE OF 60.05 FEET; (3) SOUTH 89°59'08" EAST, A DISTANCE OF 100.00 FEET; (4) NORTH 00°00'52" EAST, A DISTANCE OF 69.11 FEET; (5) NORTH 43°07'46" EAST, A DISTANCE OF 61.78 FEET; (6) NORTH 34°37'08" EAST, A DISTANCE OF 100.38 FEET; (7) SOUTH 55°24'49" EAST, A DISTANCE OF 686.04 FEET; (8) NORTH 34°35'11" EAST, A DISTANCE OF 100.00 FEET; (9) NORTH 66°56'02" EAST, A DISTANCE OF 71.02 FEET; (10) NORTH 34°35'11" EAST, A DISTANCE OF 414.69 FEET TO A POINT ON THE NORTH-SOUTH CENTERLINE OF SAID SECTION 20; THENCE ALONG SAID LINE, SOUTH 00°06'26" EAST, A DISTANCE OF 136.93 FEET TO THE POINT OF BEGINNING.

TRACT II (5N2820 LOT 1300):
THE WEST HALF OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 20, TOWNSHIP 5 NORTH, RANGE 28, EAST, WILLAMETTE MERIDIAN, COUNTY OF UMATILLA, STATE OF OREGON;
EXCEPTING THEREFROM THE NORTH 447.42 FEET OF THE WEST 208.71 FEET THEREOF;
ALSO EXCEPTING THEREFROM THAT PORTION DESCRIBED IN DEED RECORDED OCTOBER 30, 1997 IN MICROFILM R-318, PAGE 597, OFFICE OF COUNTY RECORDS, UMATILLA COUNTY, OREGON.

OWNER/DEVELOPER

FASTRACK, INC.
4803 CATALONIA DRIVE
PASCO, WA 99301

FLOOD PLAIN NOTE

FLOOD ZONE FOR THIS AREA IS LISTED AS ZONE X PER UMATILLA COUNTY, OREGON FIRM MAP NUMBER 41059C0265G, IN WHICH ZONE X IS DEFINED AS: AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.

ZONING

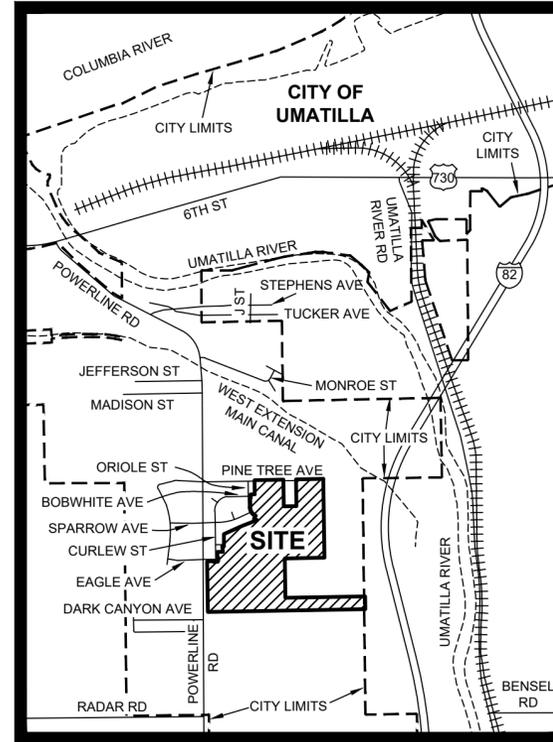
ZONING ON ADJACENT PROPERTIES IS AS FOLLOWS: SINGLE FAMILY RESIDENTIAL (R1) TO THE NORTH, EAST, SOUTH & WEST.

EXISTING USE OF PROPERTY

LAND IS CURRENTLY UNIMPROVED. THERE IS A GRAVEL ACCESS ROAD AND GAS MAIN RUNNING ACROSS THE NORTH END OF THE SITE IN THE ACCESS AND UTILITY EASEMENT (AFN 138679). ACCESS TO PUBLIC UTILITIES IS AVAILABLE TO THE NORTH AND WEST FROM ADJACENT DEVELOPMENTS AND IMPROVEMENTS.

PUBLIC UTILITY EASEMENT NOTE

UTILITIES SHALL HAVE THE RIGHT TO INSTALL, MAINTAIN AND OPERATE THEIR EQUIPMENT AND ALL OTHER RELATED FACILITIES ABOVE AND BELOW GROUND WITHIN THE PUBLIC UTILITY EASEMENTS IDENTIFIED ON THIS PLAT MAP AS MAY BE NECESSARY OR DESIRABLE IN PROVIDING UTILITY SERVICES WITHIN AND WITHOUT THE LOTS IDENTIFIED HEREIN, INCLUDING THE RIGHT OF ACCESS TO SUCH FACILITIES AND THE RIGHT TO REQUIRE REMOVAL OF ANY OBSTRUCTIONS INCLUDING STRUCTURES, TREES AND VEGETATION THAT MAY BE PLACED WITHIN THE PUE. THE UTILITY MAY REQUIRE THE LOT OWNER TO REMOVE ALL OBSTRUCTIONS AT THE OWNER'S EXPENSE, OR THE UTILITY MAY REMOVE SUCH OBSTRUCTIONS AT THE LOT OWNER'S EXPENSE. AT NO TIME MAY ANY PERMANENT STRUCTURES BE PLACED WITHIN THE PUE OR ANY OTHER OBSTRUCTION WHICH INTERFERES WITH THE USE OF THE PUE WITHOUT THE PRIOR WRITTEN APPROVAL OF THE UTILITIES WITH FACILITIES IN THE PUE.



VICINITY MAP
NOT TO SCALE

**BALLARD
SUBDIVISION PHASE 1
TENTATIVE PLAN
LOT LAYOUT**

LOCATED IN A PORTION OF THE SOUTHEAST 1/4 OF THE NORTHWEST 1/4, THE SOUTHWEST 1/4 OF THE NORTHEAST 1/4, THE NORTHWEST 1/4 OF THE SOUTHWEST 1/4 & THE NORTHEAST 1/4 OF SECTION 20, TOWNSHIP 5 NORTH, RANGE 28 EAST OF THE WILLAMETTE MERIDIAN, CITY AND COUNTY OF UMATILLA, OREGON.

REGISTERED
PROFESSIONAL
LAND SURVEYOR

PRELIMINARY

OREGON
JUNE 30, 1997
GREG E. FLOWERS
02820LS

RENEWS 12/31/2021

 <p>PBS Engineering and Environmental Inc. 400 Bradley Blvd, Ste 106 Richland, WA 99352 509.942.1600 pbsusa.com</p>	CLIENT: FASTRACK, INC.	PROJECT NO.: 66127.000	
	SURVEYOR: GREG E. FLOWERS	DATE: 08/26/2020	
	CALC BY: ADM / ROP	DRAWN BY: ROP / DWW	SCALE: N/A
	SECTION: 20	TOWNSHIP: 5 NORTH	RANGE: 28 EAST
	CITY: UMATILLA	COUNTY: UMATILLA	SHEET 5 OF 6

PUBLIC UTILITY EASEMENT NOTE

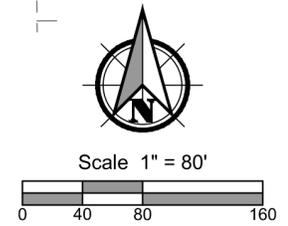
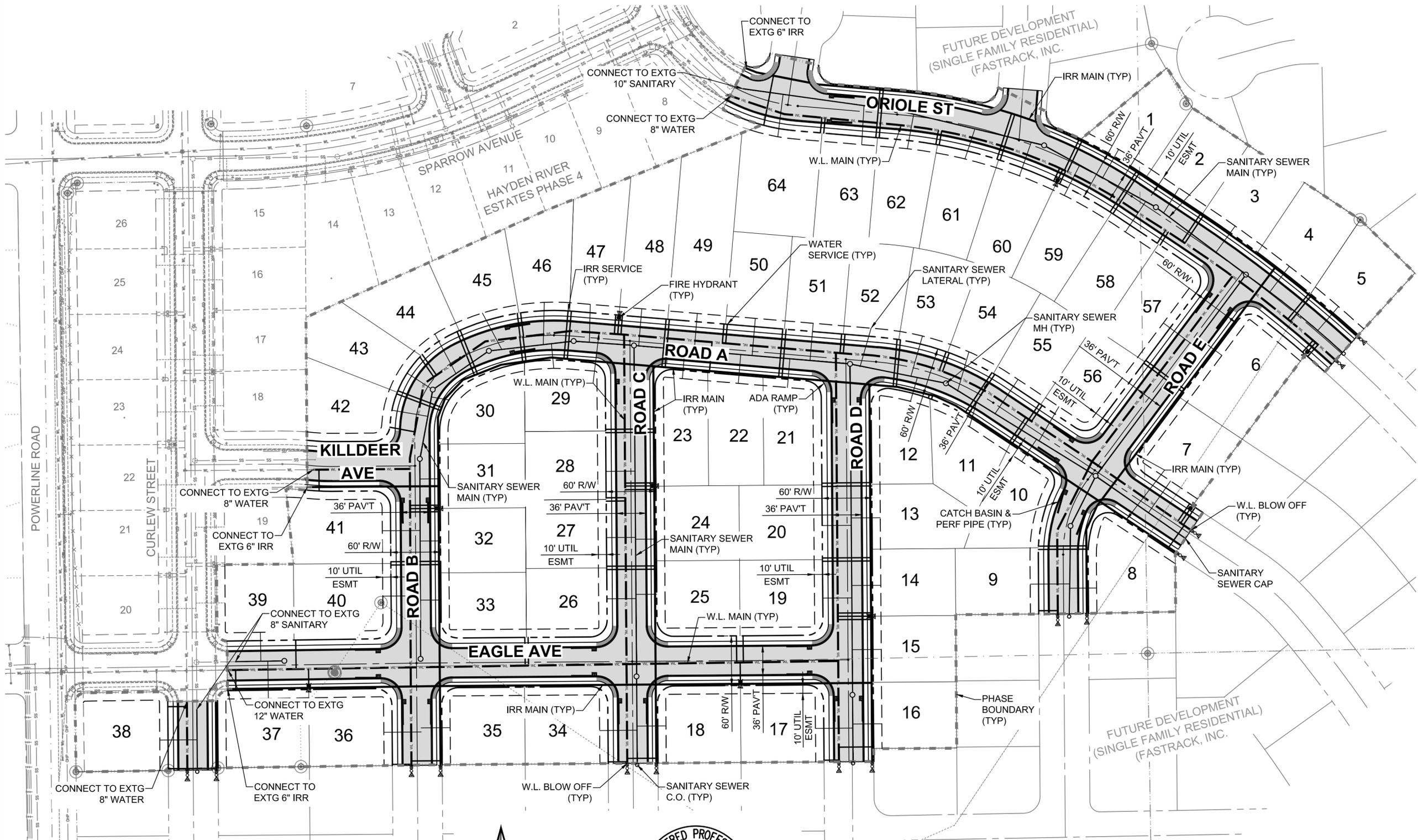
UTILITIES SHALL HAVE THE RIGHT TO INSTALL, MAINTAIN AND OPERATE THEIR EQUIPMENT AND ALL OTHER RELATED FACILITIES ABOVE AND BELOW GROUND WITHIN THE PUBLIC UTILITY EASEMENTS IDENTIFIED ON THIS PLAT MAP AS MAY BE NECESSARY OR DESIRABLE IN PROVIDING UTILITY SERVICES WITHIN AND WITHOUT THE LOTS IDENTIFIED HEREIN, INCLUDING THE RIGHT OF ACCESS TO SUCH FACILITIES AND THE RIGHT TO REQUIRE REMOVAL OF ANY OBSTRUCTIONS INCLUDING STRUCTURES, TREES AND VEGETATION THAT MAY BE PLACED WITHIN THE PUE. THE UTILITY MAY REQUIRE THE LOT OWNER TO REMOVE ALL OBSTRUCTIONS AT THE OWNER'S EXPENSE, OR THE UTILITY MAY REMOVE SUCH OBSTRUCTIONS AT THE LOT OWNER'S EXPENSE. AT NO TIME MAY ANY PERMANENT STRUCTURES BE PLACED WITHIN THE PUE OR ANY OTHER OBSTRUCTION WHICH INTERFERES WITH THE USE OF THE PUE WITHOUT THE PRIOR WRITTEN APPROVAL OF THE UTILITIES WITH FACILITIES IN THE PUE.

NOTES FOR UTILITY SERVICE PROVIDERS:

MUNICIPAL WATER.....CITY OF UMATILLA
MUNICIPAL SEWER.....CITY OF UMATILLA
MUNICIPAL IRRIGATION.....CITY OF UMATILLA (DRY SYSTEM)
POWER PROVIDER.....PACIFIC POWER
STORM WATER.....ON-SITE RETENTION, SYSTEMS IN RIGHT-OF-WAY

**BALLARD SUBDIVISION PHASE 1
TENTATIVE PLAN
UTILITY LAYOUT**

LOCATED IN A PORTION OF THE SOUTHEAST 1/4 OF THE NORTHWEST 1/4,
THE SOUTHWEST 1/4 OF THE NORTHEAST 1/4, THE NORTHWEST 1/4 OF
THE SOUTHEAST 1/4 & THE NORTHEAST 1/4 OF THE SOUTHWEST 1/4 OF
SECTION 20, TOWNSHIP 5 NORTH, RANGE 28 EAST OF THE WILLAMETTE
MERIDIAN, CITY AND COUNTY OF UMATILLA, OREGON.



PRELIMINARY
REGISTERED PROFESSIONAL ENGINEER
83506PE
OREGON
JASON LEE MATTOX
EXPIRES: Dec. 31, 2020



PBS Engineering and Environmental Inc.
400 Bradley Blvd, Ste 106
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pbsusa.com

CLIENT: FASTRACK, INC.		PROJECT NO.: 66127.000
ENGINEER: JASON L. MATTOX		DATE: 08/10/2020
DESIGNED BY: CAD	DRAWN BY: ROP	SCALE: 1" = 80'
SECTION: 20	TOWNSHIP: 5 N	RANGE: 28 E
CITY: UMATILLA	COUNTY: UMATILLA	SHEET 6 OF 6

MEMORANDUM

DATE: September 11, 2020

TO: Dave Stockdale, Umatilla City Manager
Scott Coleman, Umatilla Public Works Director
Brandon Seitz, Planning Director
Melissa Stockdale, Finance Director

FROM: J-U-B Engineers - Shae Talley P.E.
Spencer Montgomery

SUBJECT: **Umatilla Residential Development TIA Comments**

PROJECT: Ballard Subdivision

PROJECT NO.: 33-19-019

The intent of this memo is to provide comments on the Traffic Impact Analysis (TIA) submitted by PBS for the Umatilla Residential Development. J-U-B Engineers, Inc., reviewed the TIA dated April 20, 2020 and has the following comments:

1. J-U-B ENGINEERS read the above referenced Traffic Impact Analysis and has reviewed the following aspects of the report: background traffic growth, in-process trips, trip generation, trip distribution, pass-by trips, forecast traffic volumes with the development, forecast delay and Level of Service, capacity worksheets and turn-lane analysis.
2. We believe that the above mentioned components of the analysis are accurate and consistent with industry standards.
3. We concur with several recommendations included in Section 7 on page 23, specifically:
 - Reduce the speed limit on Powerline Road to 35 MPH along the development frontage.
 - Assure all driveways, sidewalks, and curb ramps constructed with the project comply with the current ADA guidelines.
 - Design proposed Powerline Road intersections consistent with Chapter 9.5.3 of the AASHTO Geometric Design Guide for intersection sight distance.
 - The intersection of US 730/Powerline Road is forecast to provide Level of Service "F" with the proposed developments in 2030. Several mitigation scenarios were presented, including adding an exclusive eastbound left turn lane and an exclusive northbound left turn lane, however this

will not achieve acceptable LOS standards. Installation of a traffic signal or roundabout will achieve LOS standards. The recommendation provided in the study is to “evaluate the US 730/Powerline Road intersection with further consultation between the City staff and ODOT to determine the ultimate intersection control and configuration. The study also indicates that the applicant should contribute an amount based on the increase in traffic from the 2030 condition without the project to 2030 with the project and the cost of an improvement that will meet ODOT operational standard” (which earlier in the report is stated to be 57%).

4. The study shows a need for left turn lanes at five locations at four intersections along Powerline Road (four southbound and one northbound). The recommendation is to “maintain the existing lane cross section on Powerline Road and not install left turn lanes. This recommendation is based on precedent established by prior developments’ frontage improvements, the turn lanes’ being unneeded for LOS, and the City’s plan for future bike lanes along the roadway. The City should continue to monitor conditions, especially collision patterns, along the roadway for safety concerns and should pursue a corridor-wide improvement with a consistent lane cross section.”

We believe that with multiple intersections on Powerline Road that suggest the need for a left turn lane for safety purposes that the City needs to determine the long-range vision for this facility. The TIA mentions that these developments will construct sidewalks along their frontage, and separately mentions that bike lanes are identified in the City of Umatilla Pedestrian and Bicycle Plan for Powerline Road. It appears that the corridor may be well served with a two-way left-turn lane (TWLTL), at least through the areas of the proposed development where there are several local street connections. There may not be enough existing right-of-way along Powerline Road to accommodate bike lanes, sidewalks and a TWLTL. However, if the proposed development constructs sidewalks it is unlikely that both bike lanes and a TWLTL will be included in the corridor. If both are desirable now is the time to make that decision so that the developers can make adjustments in the setback of the new lots and dedicate adequate right-of way for future improvements to the corridor.

Umatilla Residential Development Traffic Impact Analysis

Powerline Road
City of Umatilla, Oregon

Prepared for:
Fastrack, Inc.
4803 Catalonia Drive
Umatilla, Oregon 99301



Digitally signed by John Manix
DN: C=US,
E=john.manix@pbsusa.com,
O=PBS Engineering and
Environmental, OU=Traffic
Engineering, CN=John Manix
Date: 2020.04.13
16:50:56-07'00'

April 10, 2020
PBS Project 66127.000



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EXECUTIVE SUMMARY

Purpose and Scope

The applicants propose to develop 149± acres of vacant land into multiple uses that include single-family detached housing units and general commercial buildings. The site consists of three separate developments:

- Vandelay Meadows
 - Consists of 4.52 acres of commercial general and 49 lots of single-family detached housing
 - Located south of Eagle Avenue, north of Dark Canyon Road, and west of Powerline Road
- Cheryl's Place
 - Consists of 104 lots single-family detached housing
 - Located south of Dark Canyon Road and west of Powerline Road
- Ballard Property
 - Consists of 389 lots of single-family detached housing
 - Located south of Pine Tree Avenue and east of Powerline Road

The proposed developments are anticipated to be completely built and occupied by 2030. The developers are collaborating to compile this single traffic impact analysis report (TIA) for the benefit of all three developments, collectively referred to as the Umatilla Residential Development.

This TIA analyzes the traffic impacts generated by the completed developments as required by the City of Umatilla (City). The traffic count data constituting the basis of the analyses were collected on Wednesday, March 4, 2020, prior to the implementation of significant statewide restrictions on school hours and nonessential travel, so this study provides a snapshot of typical traffic conditions not possible now due to the ongoing effects of the novel coronavirus/COVID-19 pandemic.

The following intersections were identified for study within this TIA:

1. Powerline Road / US Highway 730 (Highway 730)
2. Powerline Road / Pine Tree Avenue
3. Powerline Road / Sparrow Avenue
4. Powerline Road / Eagle Avenue
5. Powerline Road / Street at Vandelay Meadows
6. Powerline Road / Street at Ballard Property
7. Powerline Road / Riley Avenue (Street at Cheryl's Place)
8. Powerline Road / Interstate 82 Southbound Ramp
9. Powerline Road / Interstate 82 Northbound Ramp

Findings

Traffic volumes in the study area will continue to increase without or with the project. Generic background growth (at 2.0% for 10 years, compounded) was assumed to add approximately 22.0% to the existing traffic counts to estimate 2030 volumes. In addition, three in-process projects will generate traffic on study area roadways.

Vehicular and pedestrian connections will be provided between the Powerline Road public right-of-way and the proposed developments via six local access roads.

Including all land uses and assuming full build-out of the entire project, the Umatilla Residential Development is anticipated to generate 630 net new vehicle trips during the PM peak hour. In addition, the Umatilla Residential Development is anticipated to generate 48 pass-by trips during the PM peak hour.

Nine intersections were evaluated for operational performance based on level of service (LOS) and volume-to-capacity (v/c) ratio, which measure traffic operations.

All studied intersections currently operate at an acceptable LOS during the weekday PM peak hour.

All studied intersections operate at an acceptable LOS during 2030 Without Project conditions in the weekday PM peak hour except for Powerline Road / Highway 730 which operates at a "marginally acceptable" LOS E for the stop-controlled single northbound lane.

All studied intersections operate at an acceptable LOS during 2030 With Project conditions in the weekday PM peak hour except for Powerline Road / Highway 730 which operates at LOS F and with a v/c ratio of 2.391 for the stop-controlled single northbound lane.

No studied intersection meets Oregon Department of Transportation (ODOT) preliminary traffic signal warrants.

Five approaches meet the volume criterion for a left-turn lane:

- Southbound Powerline Road at Pine Tree Avenue
- Southbound Powerline Road at Sparrow Avenue
- Southbound Powerline Road at Eagle Avenue
- Northbound Powerline Road at Eagle Avenue
- Southbound Powerline Road at Street at Ballard Property

One approach meets the volume criterion for a right-turn lane:

- Eastbound Highway 730 at Powerline Road

The 2013–2018 collision history at the study intersections was reviewed; all intersections have collision rates lower than the critical rate and no patterns of collision types or of severe collisions were identified.

Sidewalks, bike lanes, and off-street paths are available along several roadways within the study area. The development will construct new pedestrian and/or bicycle facilities along internal streets, connecting to current facilities where they exist and anticipating future connections.

For the proposed Umatilla Residential Development site accesses that do not currently exist, sight distance measurements are not presently possible.

The proposed Umatilla Residential Development site accesses that exist are assumed to have adequate sight distance measurements.

The project's impacts at the Powerline Road / Highway 730 intersection can be mitigated by upgrading the traffic control, either to a traffic signal with additional turn lanes or with a single-lane roundabout.

The project generates 57% of the total increase in trips from 2020 existing conditions to 2030 with project conditions.

Recommendations

Reduce the speed limit along Powerline Road to 35 miles per hour throughout the developments' frontages.

Assure all driveways, sidewalks, and curb ramps constructed with the project comply with the current Americans with Disabilities Act (ADA) guidelines.

Design the proposed intersections along Powerline Road consistent with Chapter 9.5.3 of the American Association of State Highway and Transportation Officials (AASHTO) Geometric Design Guide for intersection sight distance. Install no objects within the sight distance triangles that would block stopped drivers' view of approaching traffic.

Maintain the existing lane cross section on Powerline Road; do not install left-turn lanes. This recommendation is based on precedent established by prior developments' frontage improvements, the turn lanes' being unneeded for LOS, and the City's plan for future bike lanes along the roadway. The City should continue to monitor conditions, especially collision patterns, along the roadway for safety concerns and should pursue a corridor-wide improvement with a consistent lane cross section.

Evaluate the Powerline Road / Highway 730 intersection with further consultation with City staff and ODOT to determine the ultimate intersection control and configuration—traffic signal or roundabout, with or without additional approach lanes—necessary to mitigate the intersection performance to within ODOT operational standards.

The applicant should contribute to a future improvements at the Powerline Rd / Highway 730 intersection. The amount of the contribution should be based on the increase in traffic from the 2030 condition without the project to 2030 with the project and the cost of an improvement that will meet ODOT operational standard.

1 INTRODUCTION

The purpose of this study is to determine the impacts of the traffic generated by the Umatilla Residential Development project on the surrounding roadway infrastructure. The project site is shown on the vicinity map (Figure 1). This study will determine if mitigation is required to keep the roadways operating safely and at capacity levels acceptable under the current level of service standards. This report documents the findings and conclusions of a traffic impact analysis (TIA) conducted for the proposed site plan (Figure 2) application for property located in the City of Umatilla, Oregon (City).

1.1 Scope of Study

This study documents the existing and proposed conditions, traffic data, safety analysis, and intersection operations in accordance with the requirements of site TIA guidelines of lead agency or other agencies (Oregon Department of Transportation [ODOT]), when applicable.

The following intersections were identified for analysis:

1. Powerline Road / US Highway 730 (Highway 730)
2. Powerline Road / Pine Tree Avenue
3. Powerline Road / Sparrow Avenue
4. Powerline Road / Eagle Avenue
5. Powerline Road / Street at Vandelay Meadows
6. Powerline Road / Street at Ballard Property
7. Powerline Road / Riley Avenue (Street at Cheryl's Place)
8. Powerline Road / Interstate 82 Southbound (I-82 SB) Ramp
9. Powerline Road / Interstate 82 Northbound (I-82 NB) Ramp

This TIA includes analysis of future background conditions growth based on an assumed 2.0% annual growth rate and the addition of traffic from in-process projects.

This TIA is prepared for submission to the City of Umatilla. The traffic-related issues addressed in this report include:

- Existing traffic conditions
- Proposed site-generated traffic volumes and their distribution
- Build-out year (2030) conditions without and with the project
- Capacity analysis of the existing and future conditions for weekday AM and PM peak hours
- Safety analysis of the existing and future conditions
- Recommendations for mitigation of traffic impacts and conclusions

1.2 Existing Site Conditions

The existing sites span multiple tax lots along the east and west of Powerline Road, south of Pine Tree Avenue and north of CO 1226 Road. To the north of the site, there is a combination of undeveloped land and residential lots with "R-1 Single-Family Residential" zoning. To the south, there is an RV storage facility and undeveloped land. The south of the site has some "GC/CS General Commercial/Community Service" and "R-2 Medium Density Residential" zoning. To the west of the site, there is undeveloped land zoned as "R Residential Plan." To the east of the site, there is undeveloped land zoned as "EFU Exclusive Farm Use."

1.3 Existing Infrastructure

The existing infrastructure and operational traffic conditions in the study area were documented. Roadway conditions were studied to confirm that the roadway is currently operating in a safe and efficient manner.

1.3.1 Land Uses

The land uses surrounding the site are documented to help identify the site location and provide reference for any discussion of conditions that might impact the adjacent properties. The land uses surrounding the site are shown in Table 1.

Table 1. Land Uses Around the Site

North of Site	
Zoning	R-1
Description	Single-Family Residential
Existing Use	Residential Lots and Undeveloped Land

West of Site		S I T E	East of Site	
Zoning	EFU		Zoning	R
Description	Exclusive Farm Use		Description	Residential Plan
Existing Use	Undeveloped Land		Existing Use	Undeveloped Land

South of Site	
Zoning	GC/CS and R-2
Description	General Commercial/Community Service and Medium Density Residential
Existing Use	RV Storage and Undeveloped Land

1.3.2 Existing Roadways

The existing roadway providing access to the site is Powerline Road. Data were gathered on this and other roadways in the study area to inform operations analysis of the existing roadway system. The pertinent information regarding the study area roadways is tabulated in Table 2.

Table 2. Existing Roadway Information

Roadway Name	Classification	Speed Limit ^a	Lane Configuration		
			Lanes	Sidewalks	Bike Lanes
Highway 730	ODOT: Principal Arterial City: Major Arterial	40	2	No	No
Powerline Road	ODOT: Major Collector City: Minor Arterial	35 ^b or 50 ^c	2	Partial	No
Pine Tree Avenue	Local	25	2	Yes	No
Sparrow Avenue	Local	25	2	Yes	No
Eagle Avenue	Local	25	2	Yes	No
Interstate 82 Ramps	ODOT: Interstate	45 ^d	1	No	No

^a Values are stated in miles per hour (mph).

^b The posted speed along the developments' frontage is 45 mph; it is assumed the speed limit will change to 35 mph as development progresses, consistent with other residential segments of the roadway to the north.

^c The speed limit is not posted outside the Umatilla city limits; 50 mph is assumed for a rural road under county jurisdiction.

^d This is the advisory speed posted on each freeway off-ramp. The freeway mainline speed limit is 70 mph.

Recommendation: Reduce the speed limit along Powerline Road to 35 miles per hour (mph) throughout the developments' frontages to be consistent with nearby residential portions of the roadway.

1.3.3 Major Intersections and Traffic Control

The intersections being reviewed in the study area are noted above in the scope of study. The information shown in Table 3 was gathered and is relevant to the intersection operations analysis. Table 3 presents the existing geometrics and traffic controls at the existing study intersections.

Table 3. Major Intersections: Existing Lanes and Traffic Controls

Intersection	<i>Powerline Road / Highway 730</i>			
	NB	SB	WB	EB
Leg				
Control	Stop	NA	Unc.	Unc.
Number of Lanes	1	NA	2	1

Intersection	<i>Powerline Road / Pine Tree Avenue</i>			
	NB	SB	WB	EB
Leg				
Control	Unc.	Unc.	Stop	Stop
Number of Lanes	1	1	1	1

Intersection	<i>Powerline Road / Sparrow Avenue</i>			
	NB	SB	WB	EB
Leg				
Control	Unc.	Unc.	Stop	Stop
Number of Lanes	1	1	1	1

Intersection	<i>Powerline Road / Eagle Avenue</i>			
Leg	NB	SB	WB	EB
Control	Unc.	Unc.	Stop	Stop
Number of Lanes	1	1	1	1

Intersection	<i>Powerline Road / I-82 SB Ramp</i>			
Leg	NB	SB	WB	EB
Control	Unc.	Unc.	Stop	NA
Number of Lanes	1	1	1	NA

Intersection	<i>Powerline Road / I-82 NB Ramp</i>			
Leg	NB	SB	WB	EB
Control	Unc.	Unc.	NA	Stop
Number of Lanes	1	1	NA	1

Stop = Stop-controlled leg of intersection

Unc. = Uncontrolled leg approaching intersection – does not stop or yield

The project area is defined as the vicinity of the site encompassed by the study intersections. The operation of the intersections can be controlled by signing, roundabouts, or signalization. Table 3 refers to the type of control and number of approach lanes for each leg of each intersection. The existing lane configurations and traffic controls for all intersections are shown in Figure 3.

1.4 Traffic Volumes

1.4.1 Existing Traffic Volumes

Traffic volume data were gathered from various sources for the site vicinity for the weekday PM peak period (4:00–6:00 PM). PBS retained All Traffic Data (ATD) to gather the counts. ATD collected the data on Wednesday, March 4, 2020, which had a typical school schedule, meaning traffic patterns were also typical. Of note, the volumes were counted prior to significant statewide restrictions on school hours and nonessential travel, providing a snapshot of normal traffic conditions not possible now due to the ongoing effects of the novel coronavirus/COVID-19 pandemic. Copies of the count data used are provided in Appendix A. The peak hour volumes at each intersection were input to the intersection operations analyses addressed later in this TIA.

1.4.2 Background Growth

Background growth is a generic increase in traffic volumes that either is not attributable to specific developments or is attributable to influences outside the study area. As a conservative estimate, a background growth rate of 2.0% per year, compounded annually, was applied to all 2020 existing peak hour movement volumes between public roadways at the studied intersections. The background growth volumes were calculated in a spreadsheet and are available upon request.

1.4.3 In-Process Projects

In-process trips from approved projects were requested from the City of Umatilla. The in-process projects noted by the City are the following:

- Ambience Homes: 105 townhouse lots located 0.2 mile south of Powerline Road / Highway 730 and 0.2 mile west of Powerline road / Carolina Road (based on a TIA by Whipple Consulting Engineers, Inc., dated January 3, 2020)
- Vandelay Meadows: 26 single-family detached units located west of Powerline Road and north of Dark Canyon Road, projected to be occupied by or before 2030. No TIA was provided for the project, so trip generation was estimated by the dwelling unit count modeled with single-family detached housing (land use code 210) according to the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*. The subdivision is assumed to access Powerline Road. Trip distribution was estimated to match the pattern used for Umatilla Residential Development, as follows:
 - 75% to and from the north on Powerline Road, with the following splits:
 - 50% to and from the east on Highway 730
 - 25% to and from the west on Highway 730
 - 25% to and from the south on Powerline Road, with the following splits:
 - 5% to and from the southwest on I-82
 - 20% to and from the south on Powerline Road
- Cheryl's Place: 26 single-family detached units located west of Powerline Road and south of Dark Canyon Road, projected to be occupied by or before 2030. No TIA was provided for the project, so trip generation was estimated by the dwelling unit count modeled with single-family detached housing (land use code 210) according to the ITE *Trip Generation Manual*. The subdivision is assumed to access Powerline Road. Trip distribution was estimated to match the pattern used for Umatilla Residential Development, as follows:
 - 75% to and from the north on Powerline Road, with the following splits:
 - 50% to and from the east on Highway 730
 - 25% to and from the west on Highway 730
 - 25% to and from the south on Powerline Road, with the following splits:
 - 5% to and from the southwest on I-82
 - 20% to and from the south on Powerline Road

The in-process projects are understood to add some trips at all the studied intersections during the PM peak hour. The in-process trips assigned to the intersections are included in this analysis and are available upon request. A copy of the in-process project trip information is provided in Appendix B.

1.4.4 Future Volumes

The baseline volumes for 2030 intersection operations analysis, termed the 2030 Without Project volumes, represent the sum of existing traffic, background growth, and the in-process projects. Figure 5 presents the 2030 Without Project volumes for the weekday PM peak hour.

Findings: Traffic volumes in the study area will continue to increase without or with the project. Generic background growth (at 2.0% for 10 years) was assumed to add approximately 22.0% to the existing traffic counts to estimate 2030 volumes. In addition, three in-process projects will generate traffic on study area roadways.

2 PROPOSED CONDITIONS

The proposed development will add traffic to the roadway system. Where the project is located, the size of the project, and when it will be completed are all important elements that need to be considered to determine the impacts of this development on safety and capacity. It is also important to examine how the project will operate with the existing transportation system, estimate how much new traffic it will generate, and predict where traffic generated by the site will be distributed. Furthermore, this section will address any funded infrastructure changes planned by other agencies or developers. All of these elements are important in assessing the traffic impacts of this project.

2.1 Project Description

The project will consist of developing 149± acres of vacant land into multiple uses that include single-family detached housing units and general commercial buildings. The site consists of three separate developments:

- Vandelay Meadows
 - Consists of 4.52 acres of commercial general and 49 lots of single-family detached housing
 - Located south of Eagle Avenue, north of Dark Canyon Road, and west of Powerline Road
- Cheryl's Place
 - Consists of 104 lots single-family detached housing
 - Located south of Dark Canyon Road and west of Powerline Road
- Ballard Property
 - Consists of 389 lots of single-family detached housing
 - Located south of Pine Tree Avenue and east of Powerline Road

The proposed developments are anticipated to be completely built and occupied by year 2030. The developers are collaborating to compile this single TIA for the benefit of all three developments, collectively referred to as the Umatilla Residential Development. It will comprise 542 single-family dwelling units and 37,000 square feet of gross floor area of general commercial buildings. Floor area is estimated based on a typical floor-to-area ratio (FAR) of 0.20 for single-story suburban retail developments.

This TIA analyzes the traffic impacts generated by the completed developments as required by the City. The traffic count data constituting the basis of the analyses were collected on Wednesday, March 4, 2020, prior to the implementation of significant statewide restrictions on school hours and nonessential travel, so this study provides a snapshot of typical traffic conditions not possible now due to the ongoing effects of the novel coronavirus/COVID-19 pandemic.

2.2 Access and Circulation

Powerline Road currently provides access into and out of the development sites through three local access roads (Pine Tree Avenue, Sparrow Avenue, and Eagle Avenue) that intersect Powerline Road. The project proposes another three local access roads into and out of the site on Powerline Road, as shown in Figure 2. These consist of two local access roads south of Eagle Avenue and north of Dark Canyon Road plus one local access road south of Dark Canyon Road.

Pedestrian connections will be provided between the public rights-of-way and the developments' internal roadways.

Findings: Vehicular and pedestrian connections will be provided between the Powerline Road public right-of-way and the proposed developments via six local access roads.

2.3 Trip Generation and Distribution

The following sections rely on data provided in the ITE *Trip Generation Manual*. Detailed trip generation calculations are provided in Appendix C.

2.3.1 Proposed Trip Generation

The City of Umatilla roadway network will see some increase in traffic volume from the proposed Umatilla Residential Development. Table 4 presents the preliminary uses and corresponding ITE land use models organized by land zone. The conceptual site plan on Figure 2 provides location references.

Table 4. Umatilla Residential Development Uses

Zone Code	Zone Name	Developed Size^a	ITE Land Use Code	ITE Land Use Model	ITE Edition
R-1	Single-Family Residential	542 DU	210	Single-Family Detached Housing	10th
GC	General Commercial	37,000 SF ^b	820	Shopping Center	10th

^a DU = dwelling units; SF = square feet gross leas area; AC = acres

^b Floor area is estimated based on a typical floor-to-area ratio (FAR) of 0.20 for single-story suburban retail developments.

The total trip generation estimates for the Umatilla Residential Development were calculated using either the ITE weighted average trip rates or regression equations, following ITE guidelines.

Table 5 summarizes the project-generated trips, including the pass-by and primary trips. Detailed calculations are provided in Appendix C.

Table 5. Trip Generation Estimates for Umatilla Residential Development

Land Use (ITE Code)	Single-Family Detached Housing (210)			Shopping Center (820)	Total	
	Development Name	Vandelay Meadows	Cheryl's Place	Ballard Property		Vandelay Meadows
Total Average Weekday Trips (ADT)		463	982	3,672	1,397	6,514
Peak Hour		PM	PM	PM	PM	PM
In		31	65	243	68	407
Out		18	38	142	73	271
Total		49	103	385	141	678
Pass-By		0	0	0	48	48
2030 Primary Trips		49	103	385	93	630

Findings: Including all land uses and full build-out development, the Umatilla Residential Development is anticipated to generate 630 net new vehicle trips during the PM peak hour. In addition, Umatilla Residential Development is anticipated to generate 48 pass-by trips during the PM peak hour.

2.3.2 Proposed Trip Adjustments

Internal trip capture reductions were not evaluated in this TIA because the bulk of origin and destination trips are not within the site.

Pass-by trips were evaluated for the commercial general development at Vandelay Meadows. For the 37,000-square-foot shopping center (820) use, a pass-by trip rate of 34% was used, as published in the *ITE Trip Generation Handbook* (see References). Pass-by trips were applied to the PM peak periods.

2.3.3 Proposed Pass-By Trip Distribution and Assignment

The proposed distribution of pass-by trips is based on the volumes of vehicles driving past the site, specifically the northbound and southbound through-moving volumes at Powerline Road / Eagle Avenue in the 2030 Without Project conditions. Based on these volumes, the proposed pass-by trip distribution is as follows:

- 61% from northbound Powerline Road
- 39% from southbound Powerline Road

The pass-by trip assignments are as follows:

- 16 entering trips taken out from northbound-through movement at Powerline Road / Eagle Avenue intersection.
- 16 entering trips added to northbound left-turn movement at Powerline Road / Eagle Avenue intersection.

- 16 exiting trips added to eastbound left-turn movement at Powerline Road / Eagle Avenue intersection.
- 8 entering trips taken out from southbound-through movement at Powerline Road / Eagle Avenue intersection.
- 8 entering trips added to southbound right-turn movement at Powerline Road / Eagle Avenue intersection.
- 8 exiting trips added to eastbound right-turn movement at Powerline Road / Eagle Avenue intersection.

2.3.4 Proposed Trip Distribution

The proposed distribution of new (primary) trips is based on a review of the land uses within the study area, on the distribution of existing traffic patterns, and on engineering judgment. The proposed distribution pattern is as follows:

- 50% to and from east on Highway 730
- 25% to and from west on Highway 730
- 5% to and from southeast of I-82
- 20% to and from south of Powerline Road

The distribution pattern above represents an external distribution of the net new trips entering and exiting the study area. The distribution and assignment of the project's net new trips are shown on Figure 7.

2.3.5 Future Volumes with Project

Figure 8 presents the 2030 With Project volumes, or the sum of Without Project volumes and the net site-generated trips, for the weekday PM peak hour.

3 INTERSECTION OPERATIONS AND ROADWAY CAPACITY ANALYSES

3.1 Operations Description

Traffic operations are assessed in terms of level of service (LOS), a concept developed by transportation engineers to qualify the level of operation of intersections and roadways (*Highway Capacity Manual*, see References). LOS measures are classified in grades "A" through "F," indicating a range of operation, with LOS "A" signifying the best level of operation and LOS "F" representing the worst level.

LOS at unsignalized intersections is quantified in terms of average delay per vehicle. LOS "A" reflects full freedom of operation for a driver, while LOS "F" represents operational failure. The criteria are based on the theory of gap acceptance for stop-controlled approaches.

The volume-to-capacity (v/c) ratio quantifies the portion of the theoretical capacity consumed by traffic demand volume. A v/c ratio of zero (0.00) reflects none of the capacity is consumed and all the capacity is fully available. A v/c ratio of one (1.00) reflects all the capacity is consumed and represents operational failure. The v/c ratio can be calculated for an intersection approach lane or for a signalized intersection as a whole, with the latter calculation aggregating the v/c ratios of the critical movements.

3.2 Operation Standards

The *City of Umatilla Transportation System Plan* references ODOT's minimum requirements which has LOS D for signalized intersections and LOS E for unsignalized two-way-stop-controlled (TWSC) conditions. The LOS is based on the v/c for highways outside of the city's limit (Highway 730 and I-82 interchange) when the development is in full service.

ODOT has a mobility standard of a v/c ratio 0.85 or less for Highway 730 at Powerline Road based on its classification and location:

- Regional highway
- Outside a metropolitan planning organization (MPO)
- Outside any adopted Special Transportation Area (STA)
- Inside an urban growth boundary (UGB)
- With a posted speed greater than 35 mph and less than 45 mph

ODOT has a mobility standard of a v/c ratio 0.70 or less for interstate highways for locations outside a UGB and on rural lands. This is applicable to the I-82 interchange in this report.

3.3 Analysis Methodology

Traffic impacts were estimated to determine the extent of change in traffic conditions caused by future development. In order to make this determination, the following assumptions were employed:

- The individual peak hour volumes were analyzed for the 2020 existing year and 2030 future conditions.
- The analysis is based on the PM peak hour of the adjacent streets.
- In-process trips generated by 3 developments were included in the analysis.
- The peak hour factor (PHF) for the overall intersection, as calculated from the count data, was applied for each analysis scenario. At intersections that count data was estimated using engineering judgement, a peak hour factor of 0.85 was used.

- The heavy vehicle percentage (HV%) for each movement, as calculated from the count data, was applied for all analysis scenarios. For intersections that count data was estimated, 1.0% was assumed for each movement. A minimum value of 2.0% was assumed for each movement in the future conditions (2030).
- As noted previously, trip generation, distribution, and assignment estimates for the project were prepared for the weekday PM peak hour on the surrounding street system.
- Cumulative traffic impacts of the proposed project were determined by superimposing the project-generated traffic onto the baseline volumes for the weekday PM peak hour at studied intersections. This sum is termed the 2030 With Project conditions.
- The LOS for the signalized intersection was calculated with Trafficware’s Synchro software, Version 10, based on *Highway Capacity Manual* (HCM) 6th Edition (2016) methodologies. The ODOT protocol for Synchro analysis at signalized intersections was used to calculate the intersection v/c ratio.
 - TWSC intersection results report the critical movement LOS, delay, and v/c ratio.

LOS calculation reports for the study area intersections are provided in Appendix D. The key analysis findings are listed in the following tables.

3.4 Level of Service Analyses

3.4.1 2020 Existing Conditions

Table 6 presents the LOS analysis for the studied intersection for 2020 existing conditions during the PM peak hour. Detailed LOS calculation reports are provided in Appendix D.

Table 6. Estimated 2020 Level of Service for Existing Conditions for Study Area Intersections

INTERSECTION (critical lane group)	PM Peak Hour		
	LOS	Delay (sec/veh)	v/c
Powerline Road / Highway 730 (NB)	C	16.6	0.311
Powerline Road / Pine Tree Avenue (EB)	B	10.3	0.016
Powerline Road / Sparrow Avenue (EB)	B	10.1	0.011
Powerline Road / Eagle Avenue (EB)	A	9.9	0.006
Powerline Road / Street at Vandelay Meadows	-	-	-
Powerline Road / Street at Ballard Property	-	-	-
Powerline Road / Riley Avenue (Street at Cheryl's Place)	-	-	-
Powerline Road / I-82 SB Ramp (WB)	B	10.4	0.093
Powerline Road / I-82 NB Ramp (EB)	B	10.2	0.044

dash = intersection does not exist currently

As shown in Table 6, all studied intersections currently operate at an acceptable LOS during the weekday PM peak hour.

Findings: All studied intersections currently operate at an acceptable LOS during the weekday PM peak hour.

3.4.2 2030 Future Conditions Without Project

Table 7 presents the LOS analysis for the studied intersections for 2030 without the project during the PM peak hour. Detailed LOS calculation reports are provided in Appendix D.

Table 7. Estimated 2030 Level of Service without Project for Study Area Intersections

INTERSECTION (critical lane group)	PM Peak Hour		
	LOS	Delay (sec/veh)	v/c
Powerline Road / Highway 730 (NB)	E	37.1	0.687
Powerline Road / Pine Tree Avenue (EB)	B	11.4	0.024
Powerline Road / Sparrow Avenue (EB)	B	11.1	0.016
Powerline Road / Eagle Avenue (EB)	B	10.9	0.010
Powerline Road / Street at Vandelay Meadows (EB)	B	10.6	0.018
Powerline Road / Street at Ballard Property	-	-	-
Powerline Road / Riley Avenue (Street at Cheryl's Place) (EB)	B	10.4	0.017
Powerline Road / I-82 SB Ramp (WB)	B	11.2	0.126
Powerline Road / I-82 NB Ramp (EB)	B	11.1	0.067

dash = intersection does not exist in this analysis scenario

As shown in Table 7, all studied intersections will operate at an acceptable or marginally acceptable LOS in the 2030 Without Project conditions during the weekday PM peak hour. For Powerline Road / Highway 730, ODOT stipulates that LOS E is generally considered "marginally acceptable" based on a portion of City of Umatilla *Transportation System Plan, Section 12.2.204 Unsignalized Intersections* (TSP, see References).

Findings: All studied intersections will operate at an acceptable or marginally acceptable LOS during 2030 Without Project conditions in the weekday PM peak hour. The Powerline Road / Highway 730 intersection will operate at a "marginally acceptable" LOS E.

3.4.3 2030 Future Conditions With Project

Table 8 presents the LOS analysis for the studied intersection for 2030 with the project during the PM peak hour. Detailed LOS calculation reports are provided in Appendix D.

Table 8. Estimated 2030 Level of Service With Project for Study Area Intersections

INTERSECTION (critical lane group)	PM Peak Hour		
	LOS	Delay (sec/veh)	v/c
Powerline Road / Highway 730 (NB)	F	683.2	2.391
Powerline Road / Pine Tree Avenue (EB)	C	23.5	0.066
Powerline Road / Sparrow Avenue (EB)	C	17.6	0.032
Powerline Road / Eagle Avenue (EB)	C	22.9	0.328
Powerline Road / Street at Vandelay Meadows (EB)	B	13.7	0.061
Powerline Road / Street at Ballard Property (WB)	B	12.6	0.120
Powerline Road / Riley Avenue (Street at Cheryl's Place) (EB)	B	12.7	0.108
Powerline Road / I-82 SB Ramp (WB)	B	13.1	0.159
Powerline Road / I-82 NB Ramp (EB)	B	12.9	0.123

As shown in Table 8, all except one of the studied intersections will operate at an acceptable LOS in the 2030 With Project conditions during the weekday PM peak hour. The Powerline Road / Highway 730 intersection will operate at LOS F and with a v/c ratio of 2.391.

Findings: All studied intersections will operate at an acceptable LOS in the 2030 With Project conditions during the weekday PM peak hour except for Powerline Road / Highway 730, which will operate at LOS F and over capacity.

3.5 Signal Warrant Evaluation

The criteria for the analysis for traffic signal warrants at intersections is based on the ODOT *Analysis Procedures Manual* (APM, see References). The ODOT Transportation Planning Analysis Unit has also developed a set of "preliminary" traffic signal warrants, which are based on a portion of the *Manual on Uniform Traffic Control Devices* (MUTCD, see References) warrants but require less data for analysis.

Preliminary traffic signal warrants were evaluated at the Powerline Road / Highway 730 intersection for the 2030 With Project conditions. A traffic signal was found not to meet the warrant conditions. Output for ODOT Preliminary Signal Warrant (PSW) is attached in Appendix E. None of the other studied intersections exhibit LOS deficiencies, so none were evaluated for signal warrants.

Findings: No studied intersections meet ODOT preliminary traffic signal warrants.

4 SAFETY ANALYSIS

4.1 Left-Turn Lane Analysis

The criteria for the provision of left-turn lanes at uncontrolled intersection approaches are based on the ODOT *Analysis Procedure Manual* Version 2 (see References), Exhibit 12-1, Left-Turn Lane Criterion, Texas Transportation Institute curves. The exhibit provides guideline curves for posted speeds of 35, 45, and 55 mph. Appendix F presents the approaches that met the criteria for left-turn lanes. The posted speed along Powerline Road is assumed to be 35 mph following the project's development.

A left-turn lane is merited on the following approaches:

- Southbound Powerline Road at Pine Tree Avenue, at 2030 With Project conditions
- Southbound Powerline Road at Sparrow Avenue, at 2030 With Project conditions
- Southbound Powerline Road at Eagle Avenue, at 2030 With Project conditions
- Northbound Powerline Road at Eagle Avenue, at 2030 With Project conditions
- Southbound Powerline Road at Street at Ballard Property, at 2030 With Project conditions

As listed above, some of the existing and proposed intersections along Powerline Road merit left-turn lanes, while others do not. The provision of dedicated turn lanes on an uncontrolled roadway is a safety consideration; these turn lanes are not needed for LOS, as indicated in the Intersection Operations section above.

As noted in the Bicycle Facilities section below, the City has identified Powerline Road for future installation of bicycle lanes, yet the curb-to-curb width established by prior developments' frontage improvements does not accommodate both turn lanes and bicycle lanes at standard widths. The remaining options for Powerline Road include:

- Do nothing: retain the existing shared travel lanes.
- Install left-turn lanes at the locations noted or provide a continuous two-way left-turn lane.
- Install bicycle lanes alongside the existing shared travel lanes.
- Evaluate the feasibility of installing narrow (5 feet wide) bicycle lanes and narrow (10 feet wide) travel and turn lanes.

It is recommended to retain the existing shared travel lanes on Powerline Road at this time, consistent with the existing lane cross sections. This will allow for further evaluation of a consistent corridor treatment and for the City to determine which of the options above will be best suited to the community's goals.

Findings: Five approaches meet the volume criterion for a left-turn lane:

- Southbound Powerline Road at Pine Tree Avenue
- Southbound Powerline Road at Sparrow Avenue
- Southbound Powerline Road at Eagle Avenue
- Northbound Powerline Road at Eagle Avenue
- Southbound Powerline Road at Street at Ballard Property

Recommendation: Maintain the existing lane cross section on Powerline Road; do not install left-turn lanes. This recommendation is based on precedent established by prior developments' frontage improvements, the turn lanes' being unneeded for LOS, and the City's plan for future bike lanes along the roadway. The City should continue to monitor conditions, especially collision patterns, along the roadway for safety concerns and should pursue a corridor-wide improvement with a consistent lane cross section.

4.2 Right-Turn Lane Analysis

The criteria for the analysis of right-turn lanes at uncontrolled intersection legs are based on the ODOT *Analysis Procedure Manual Version 2* (see References), Right-Turn Lane Criterion (Exhibit 12-2). Appendix F presents the approach that meets the criteria for right-turn lanes.

A right-turn lane is merited on the following approach:

- Eastbound Highway 730 at Powerline Road, at 2030 Without Project conditions

A right-turn lane will be merited in 2030 Without Project conditions; therefore, the Umatilla Residential Development is not responsible for the cost associated with the addition on the eastbound right-turn lane.

Findings: One approach meets the volume criterion for a right-turn lane:

- Eastbound Highway 730 at Powerline Road

4.3 Collision Analysis

Collision data from the study area was obtained from ODOT for the five-year period spanning from December 2013 through December 2018. This analysis assumes that a collision rate less than the critical collision rate for the intersection is typically considered to be within acceptable parameters. A collision rate above the critical rate is worthy of further examination. The detailed collision data can be found in Appendix G. Table 9 presents the results of the collision analysis.

Table 9. Collision Analysis for Study Area Intersections (December 2013 through December 2018)

Intersection	Angle	Sideswipe	Overturn	Total Collisions	Critical Rate	Collision Rate
Powerline Road / Highway 730	1	-	-	1	0.87	0.05
Powerline Road / Pine Tree Avenue	1	1	-	2	1.07	0.41
Powerline Road / Sparrow Avenue	-	-	-	0	1.08	0.00
Powerline Road / Eagle Avenue	-	-	-	0	1.10	0.00
Powerline Road / I-82 SB Ramp	-	-	-	0	1.07	0.00
Powerline Road / I-82 NB Ramp	-	-	1	1	1.05	0.18

To calculate the collision rate, the PM peak hour total entering volumes from the existing turning movement counts were multiplied by 10 to provide an approximation of the average daily trips (ADT). Detailed calculations of critical rates and collision rates are provided in Appendix G.

As shown in Table 9, all the calculated collision rates are lower than the critical rates. Because of the low number of crashes and lack of serious injuries at the intersections within the study area, no significant pattern was found.

Findings: The 2013–2018 collision history at the study intersections was reviewed; all intersections have collision rates lower than the critical rate, and no patterns of collision types or of severe collisions were identified.

4.4 Transit, Pedestrian, and Bicycle Facilities

Most roadways within the study area have sidewalks or off-street paths for pedestrians, as noted in Table 2. On-street bike lanes currently do not exist along both sides of the several studied roadways, as noted in Table 2.

With the proposed development, sidewalks will be constructed along the Powerline Road frontage and internal residential streets. There is a pedestrian bridge approximately 0.6 mile north of Powerline Road and Pine Tree Avenue intersection that connects Powerline Road to the Clara A Brownell Middle School Campus. Sidewalks to the pedestrian bridge from Vandelay Meadows, Ballard Property, and Cheryl's Place do not connect. In the City of Umatilla's Pedestrian and Bicycle Plan (Appendix 12.4-B-1), there is a plan to have bicycle lanes on Powerline Road that would connect the proposed developments to the pedestrian bridge.

Transit services are provided by Kayak Public Transit in the central city of Umatilla, specifically the Hopper. This service is available but is not within walking range of the proposed developments.

Findings: Sidewalks, bike lanes, and off-street paths are available along several roadways within the study area. The development will construct new pedestrian and/or bicycle facilities along internal streets, connecting to current facilities where they exist and anticipating future connections.

Recommendations: Assure all driveways, sidewalks, and curb ramps constructed with the project comply with the current Americans with Disabilities Act (ADA) guidelines.

4.5 Intersection Sight Distance

Chapter 9.5.3 of the American Association of State Highway and Transportation Officials (AASHTO) Geometric Design Guide (see References) provides recommendations for intersection sight distance (ISD) at stop-controlled approaches to uncontrolled roadways (AASHTO case B). The proposed Umatilla Residential Development site accesses that exist (Pine Tree, Sparrow, and Eagle Avenues) are assumed to have adequate ISD. Based on this assumption and the alignment of Powerline Road, ISD is presumed to be available at the proposed Umatilla Residential Development site accesses that do not currently exist: Street at Vandelay Meadows, Street at Ballard Property, and Riley Avenue (Street at Cheryl's Place).

To assure compliant conditions, it is recommended to design the proposed intersections along Powerline Road in accordance with AASHTO guidelines for ISD. Install no objects within the sight distance triangles that would block stopped drivers' view of approaching traffic.

Findings: The proposed Umatilla Residential Development site accesses that exist are assumed to have adequate intersection sight distance. Adequate intersection sight distance is presumed to be available at the proposed Umatilla Residential Development accesses.

Recommendation: Design the proposed intersections along Powerline Road consistent with Chapter 9.5.3 of the AASHTO Geometric Design Guide for ISD. Install no objects within the sight distance triangles that would block stopped drivers' view of approaching traffic.

5 INTERSECTION MITIGATION

Table 10 presents some possible mitigations for the Powerline Road / Highway 730 intersection that operates below the acceptable LOS in the 2030 With Project scenario. A summary of LOS calculations for mitigated intersections are presented in Appendix H.

Table 10. Mitigated 2030 With Project Level of Service at Powerline Road / Highway 730 Intersection

INTERSECTION	Improvement	PM Peak Hour		
		LOS	Delay (sec/veh)	v/c (Critical Movement)
Powerline Road / Highway 730	None – 2030 Without Project Conditions	E	37.1	0.687 (NB)
	None – 2030 With Project Conditions	F	683.2	2.391 (NB)
	Add EB RT Lane + NB LT Lane	F	440.7	1.698 (NB-LT)
	Signal ^a + EB-RT Lane + NB LT Lane	B	12.7	0.47
	Single-Lane Roundabout ^b	C	18.0	0.841 (EB)

^aDoes not meet peak hour signal warrant

^bAdd eastbound right-turn lane and westbound left-turn lane with channelized westbound through lane

As shown in Table 10, conditions at the Powerline Road / Highway 730 intersection can be improved, but not sufficiently, by the addition of turn lanes to the existing stop-controlled configuration. Conditions can be mitigated by installation of a traffic signal and the addition of turn lanes; however, a traffic signal is not warranted. Conditions also can be mitigated by installation of a single-lane roundabout based on a preliminary roundabout analysis in Synchro; however, right-of-way is limited.

Based on this study, it is found that the Umatilla Residential Development generates 57% of the total increase in trips. Further study, consultation with City staff, and approval by ODOT are needed to determine the ultimate intersection control and configuration.

Finding: The project's impacts at the Powerline Road / Highway 730 intersection can be mitigated by upgrading the traffic control, either to a traffic signal with additional turn lanes or with a single-lane roundabout.

Finding: The project generates 57% of the total increase in trips from 2020 existing conditions to 2030 with project conditions.

Recommendation: Evaluate the Powerline Road / Highway 730 intersection with further consultation with City staff and ODOT to determine the ultimate intersection control and configuration—traffic signal or roundabout, with or without additional approach lanes—necessary to mitigate the intersection performance to within ODOT operational standards.

Recommendation: The applicant should contribute to a future improvements at the Powerline Rd / Highway 730 intersection. The amount of the contribution should be based on the increase in traffic from the 2030 condition without the project to 2030 with the project and the cost of an improvement that will meet ODOT operational standard.

6 STUDY FINDINGS

The findings of this TIA are listed below.

6.1 Future Traffic Volumes Increase

Traffic volumes in the study area will continue to increase without or with the project. Generic background growth (at 2.0% for 10 years, compounded annually) was assumed to add approximately 22.0% to the existing traffic counts to estimate 2030 volumes. In addition, three in-process projects will generate traffic on study area roadways.

6.2 Access and Circulation

Vehicular and pedestrian connections will be provided between the Powerline Road public right-of-way and the proposed developments via six local access roads.

6.3 Trip Generation

Including all land uses and full built-out development, the Umatilla Residential Development is anticipated to generate 630 net new vehicle trips during the PM peak hour. In addition, Umatilla Residential Development is anticipated to generate 48 pass-by trips during the PM peak hour.

6.4 Intersection Performance

Nine intersections were evaluated for operational performance based on LOS and v/c ratio, which measure traffic operations. All locations operate within the applicable LOS standard during all analysis scenarios, both without and with the project trips.

All studied intersections currently operate at an acceptable LOS during the weekday PM peak hour.

All studied intersections will operate at an acceptable LOS during the 2030 Without Project condition in the weekday PM peak hour except for Powerline Road / Highway 730 that operates at a "marginally acceptable" level.

All studied intersections currently operate at an acceptable LOS during the weekday PM peak hour except for Powerline Road / Highway 730 that operates at LOS F.

6.5 Signal Warrant Analysis

No studied intersections meet ODOT preliminary traffic signal warrants.

6.6 Left and Right Turn Analysis

Five approaches meet the volume criterion for a left-turn lane:

- Southbound Powerline Road at Pine Tree Avenue
- Southbound Powerline Road at Sparrow Avenue
- Southbound Powerline Road at Eagle Avenue
- Northbound Powerline Road at Eagle Avenue
- Southbound Powerline Road at Street at Ballard Property

Findings: One approach meets the volume criterion for a right-turn lane:

- Eastbound Highway 730 at Powerline Road

6.7 Collision Analysis

The 2013–2018 collision history at the study intersections was reviewed; all intersections have collision rates lower than the critical rate, and no patterns of collision types or of severe collisions were identified.

6.8 Transit, Pedestrian, and Bicycle Facilities

Sidewalks, bike lanes, and off-street paths are available along several roadways within the study area. The development will construct new pedestrian and/or bicycle facilities along internal streets, connecting to current facilities where they exist and anticipating future connections.

6.9 Intersection Sight Distance

The proposed Umatilla Residential Development site accesses that exist are assumed to have adequate sight distance available. Adequate intersection sight distance is presumed to be available at the proposed Umatilla Residential Development accesses.

6.10 Effective Project Mitigation

The project's impacts at the Powerline Road / Highway 730 intersection can be mitigated by upgrading the traffic control, either to a traffic signal with additional turn lanes or with a single-lane roundabout.

The project generates 57% of the total increase in trips from 2020 existing conditions to 2030 with project conditions.

7 RECOMMENDATIONS

The traffic impact analysis supports the following recommendations.

7.1 Speed Limit

Reduce the speed limit along Powerline Road to 35 mph throughout the developments' frontages.

7.2 Accessibility

Assure all driveways, sidewalks, and curb ramps constructed with the project comply with the current ADA guidelines.

7.3 Intersection Turn Lanes

Maintain the existing lane cross section on Powerline Road; do not install left-turn lanes. This recommendation is based on precedent established by prior developments' frontage improvements, the turn lanes' being unneeded for LOS, and the City's plan for future bike lanes along the roadway. The City should continue to monitor conditions, especially collision patterns, along the roadway for safety concerns and should pursue a corridor-wide improvement with a consistent lane cross section.

7.4 Driveway Sight Lines

Design the proposed Powerline Road intersections consistent with Chapter 9.5.3 of the AASHTO Geometric Design Guide for ISD. Install no objects within the sight distance triangles that would block stopped drivers' view of approaching traffic.

7.5 Intersection Mitigation

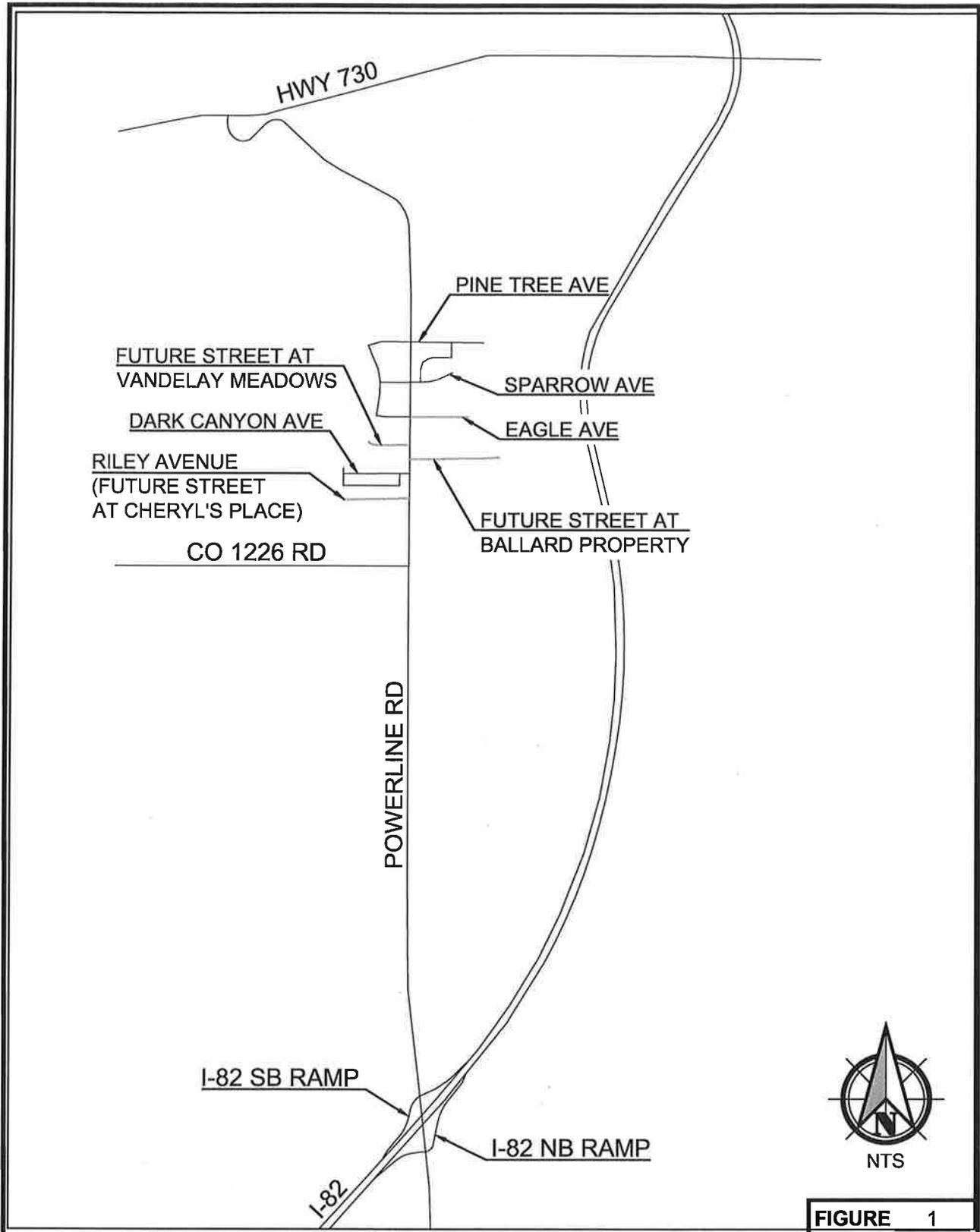
Evaluate the Powerline Road / Highway 730 intersection with further consultation with City staff and ODOT to determine the ultimate intersection control and configuration—traffic signal or roundabout, with or without additional approach lanes—necessary to mitigate the intersection performance to within ODOT operational standards.

The applicant should contribute to a future improvements at the Powerline Rd / Highway 730 intersection. The amount of the contribution should be based on the increase in traffic from the 2030 condition without the project to 2030 with the project and the cost of an improvement that will meet ODOT operational standard.

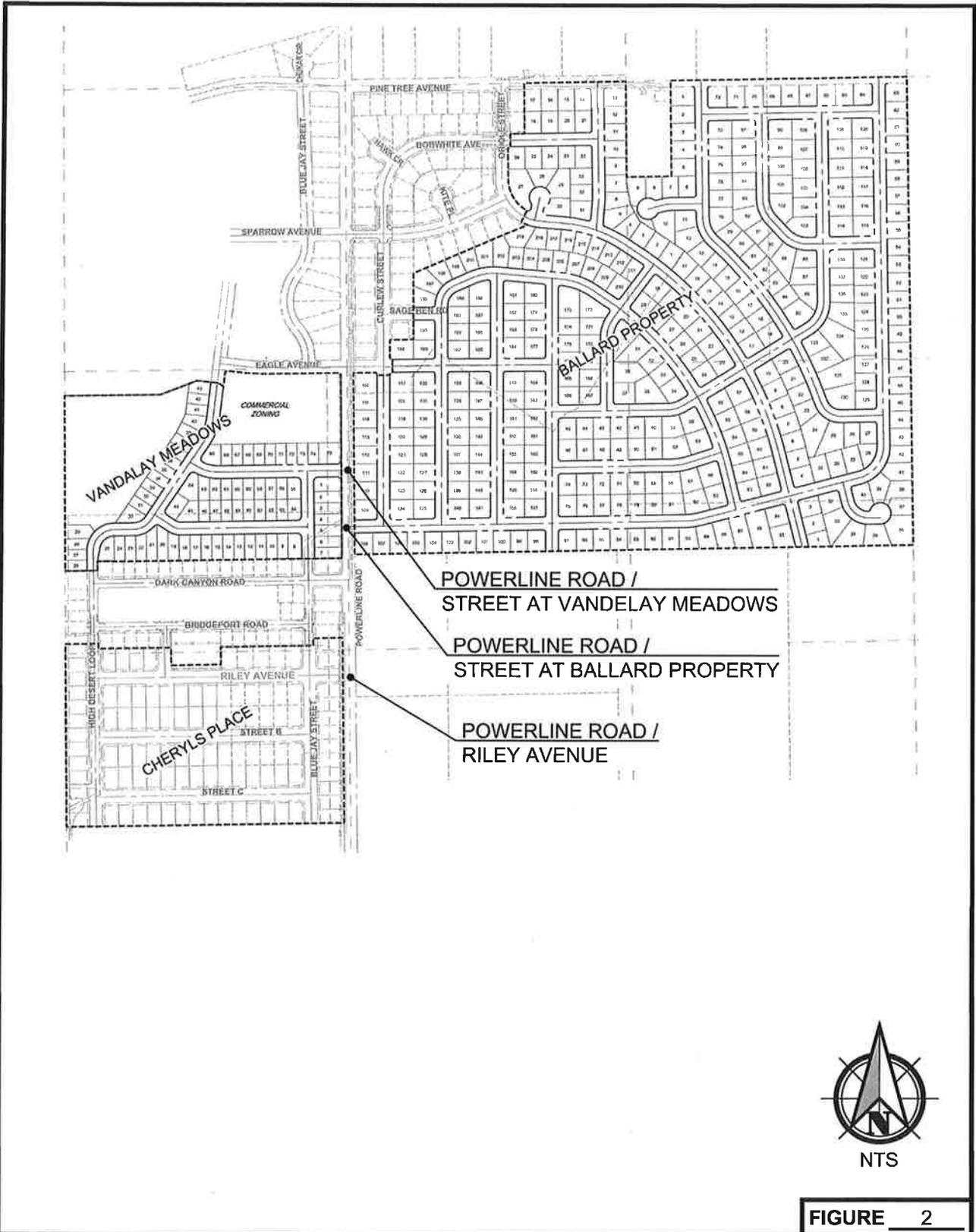
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Figures

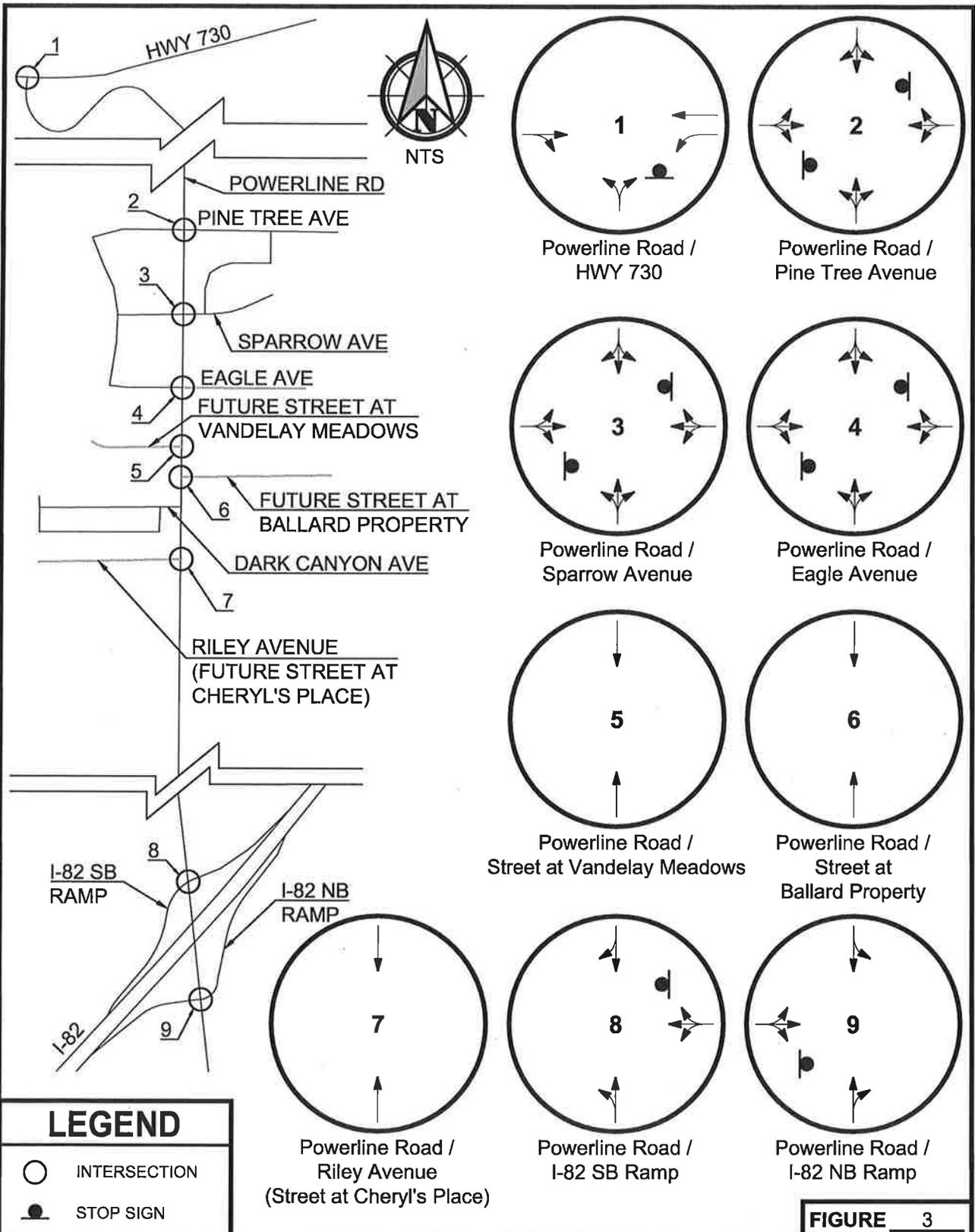


Vicinity Map
Umatilla Residential Development



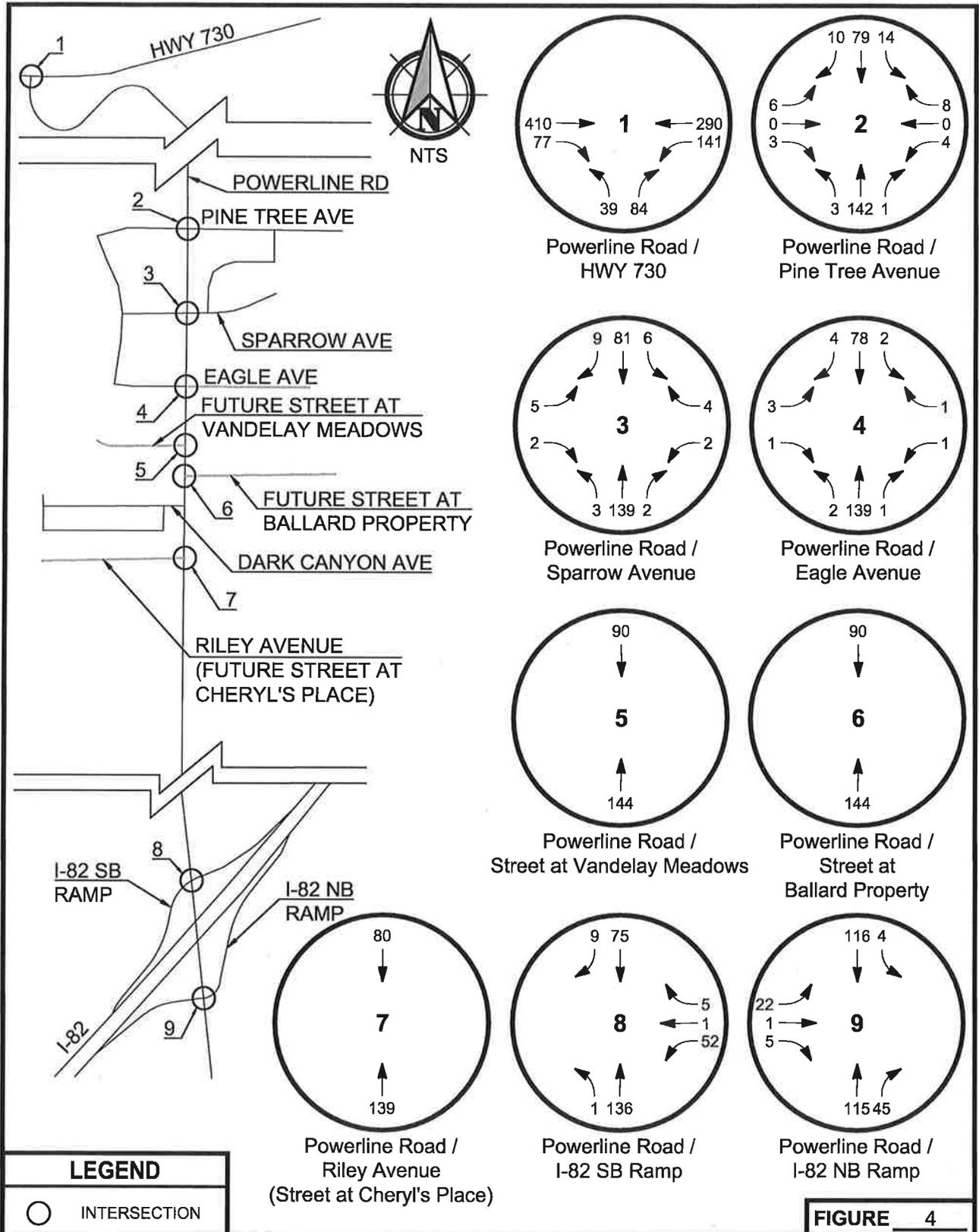
Site Plan

Umatilla Residential Development

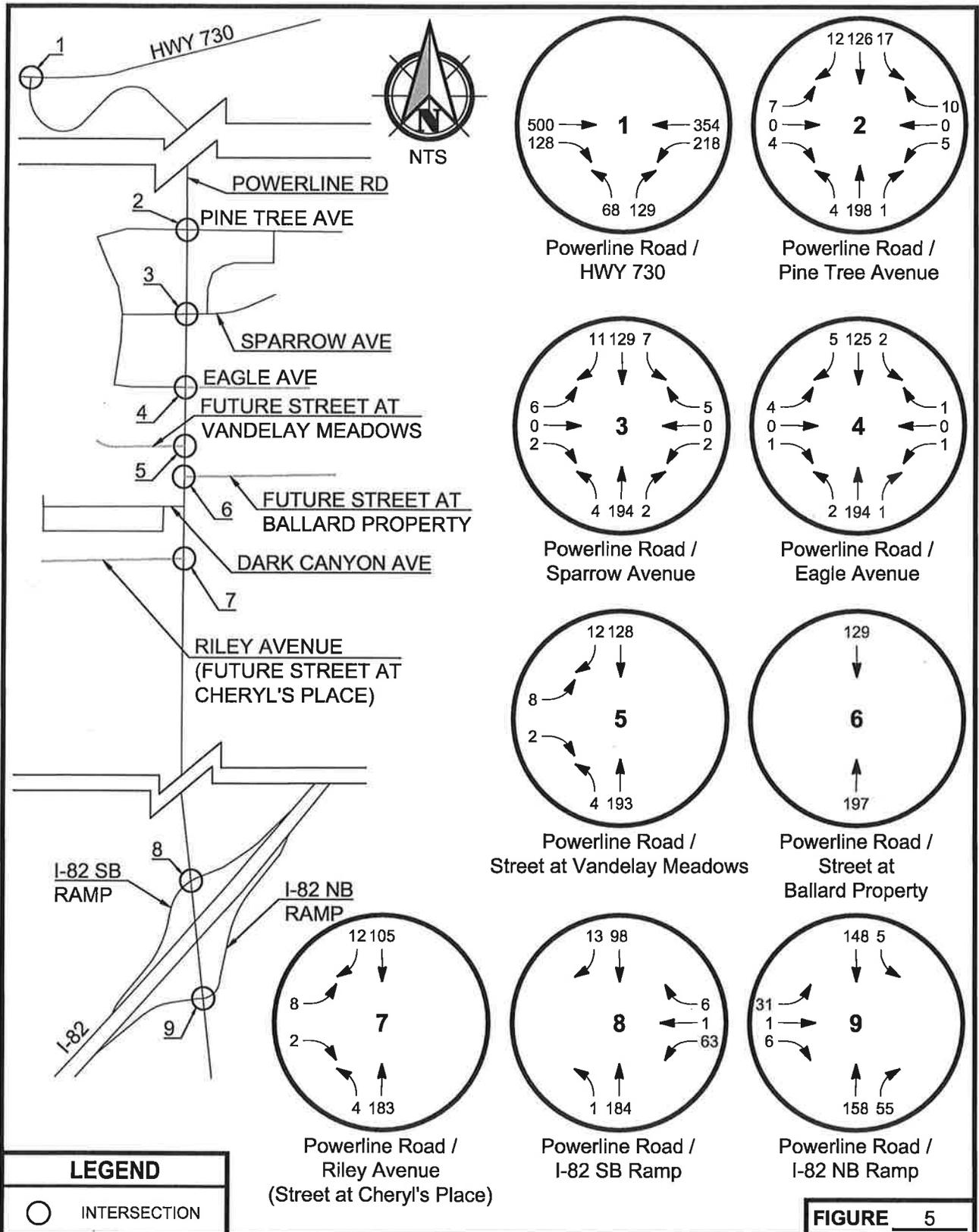


Existing Lane Configurations and Traffic Controls

Umatilla Residential Development



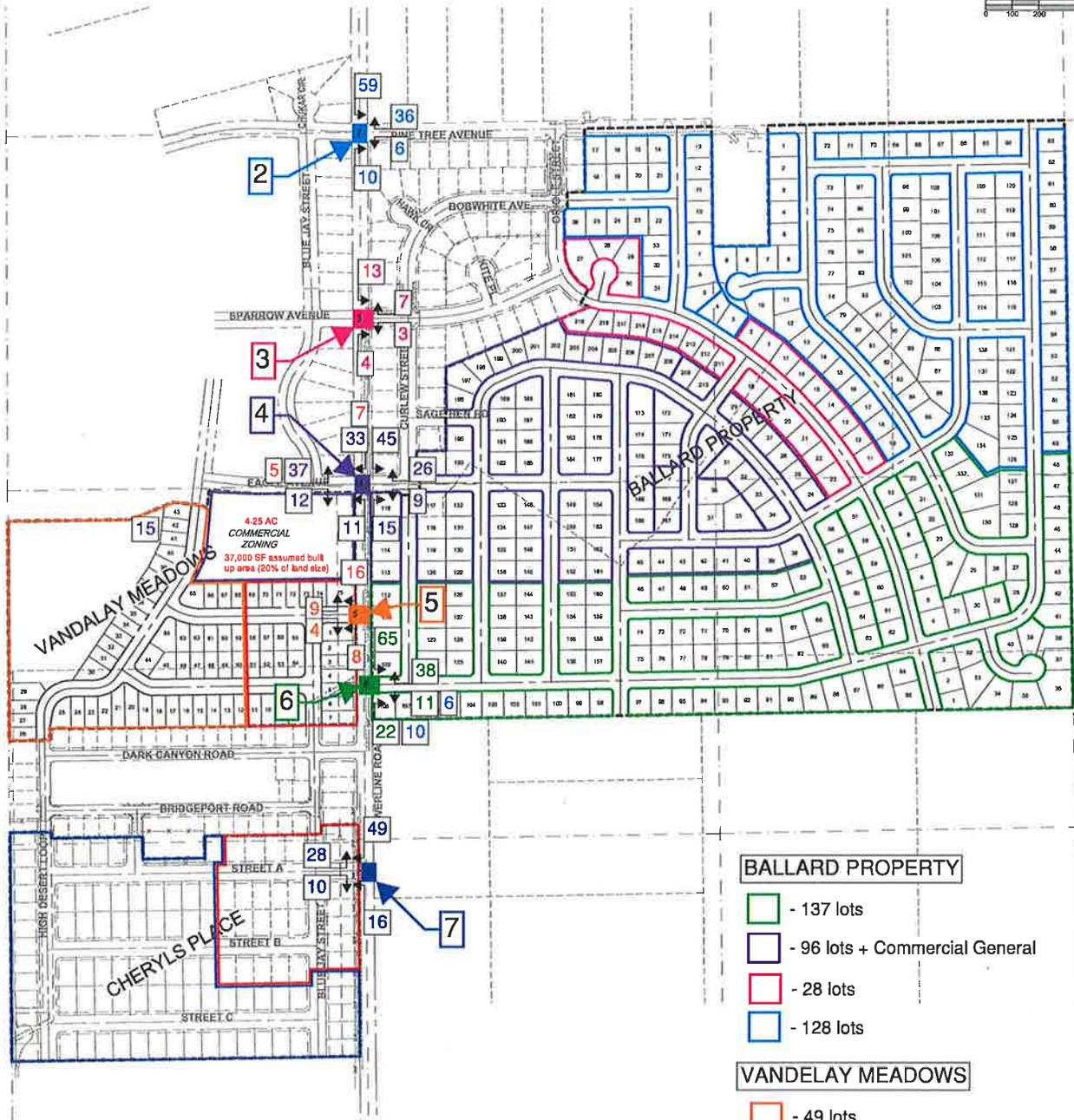
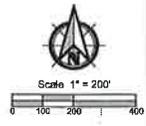
Existing 2020 Volumes Umatilla Residential Development



2030 Without Project Volumes Umatilla Residential Development

UMATILLA RESIDENTIAL DEVELOPMENTS MASTER PLAN

LOCATED IN SECTION 20, TOWNSHIP 5 NORTH, RANGE 28 EAST, W.M.
CITY OF UMATILLA, UMATILLA COUNTY, OREGON



BALLARD PROPERTY

- 137 lots
- 96 lots + Commercial General
- 28 lots
- 128 lots

VANDELAY MEADOWS

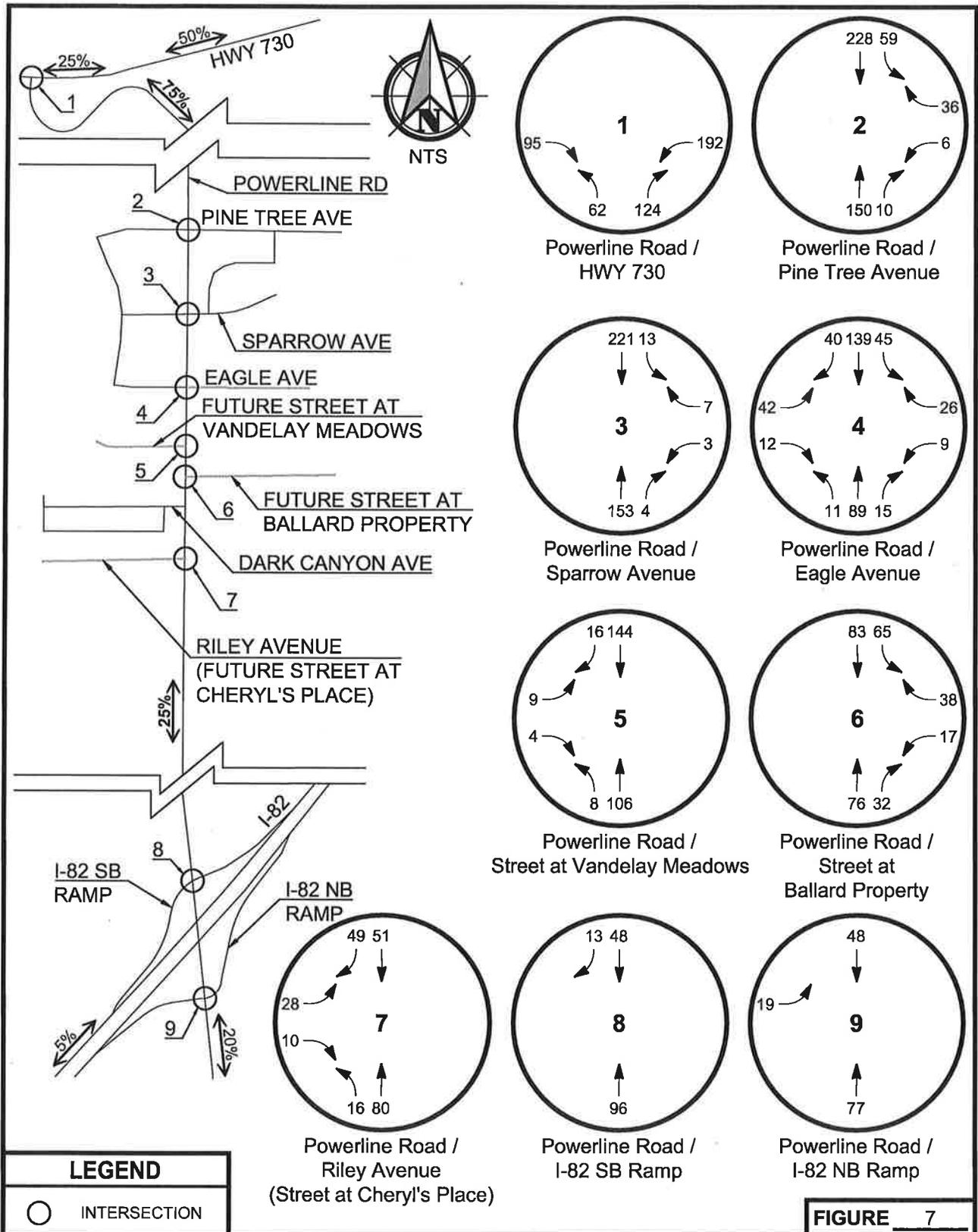
- 49 lots
- 26 lots (In-Process)

CHERYL'S PLACE

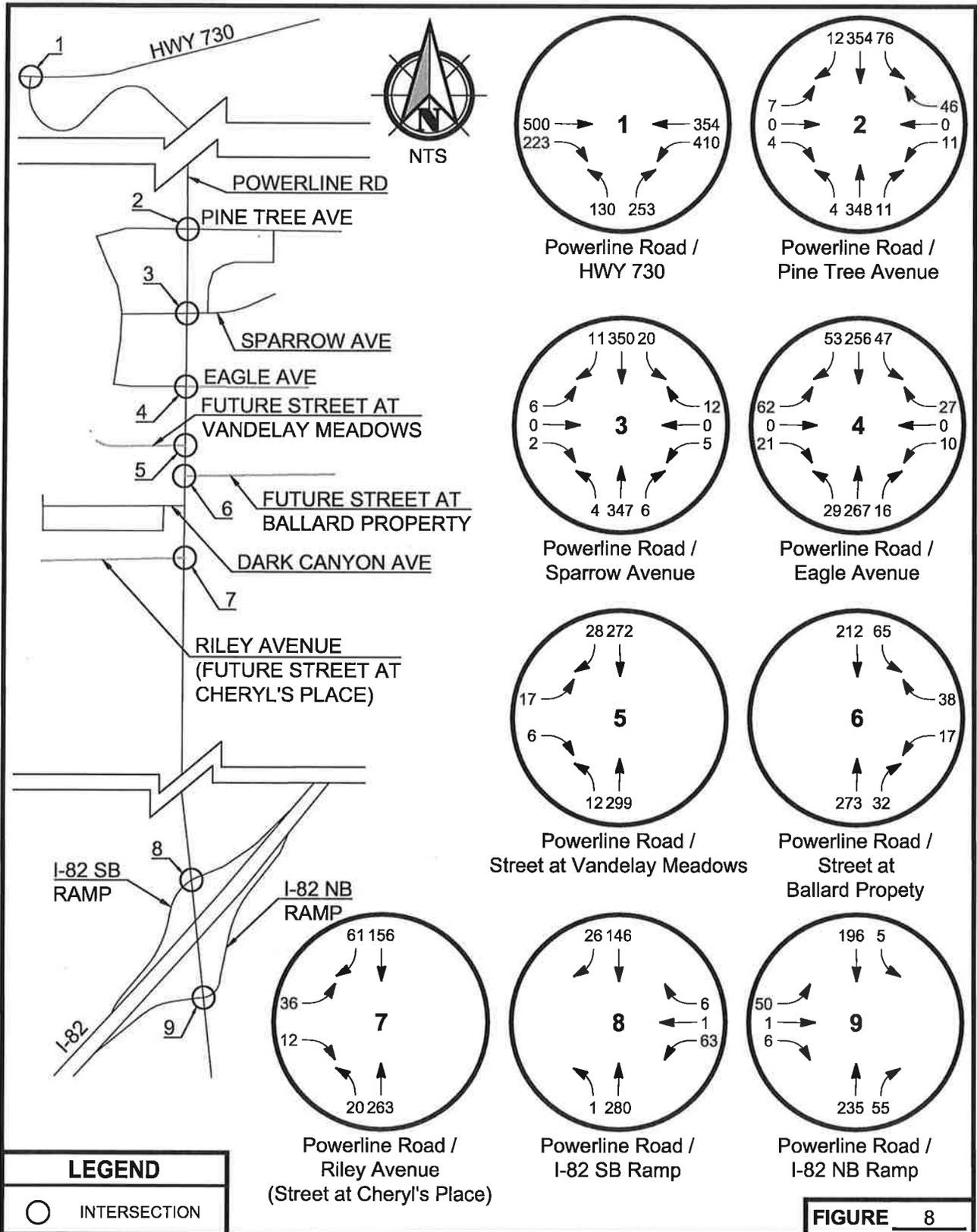
- 104 lots
- 26 lots (In-Process)

Access and Circulation
Umatilla Residential Development

FIGURE 6



2030 Primary Trip Distribution and Assignment Umatilla Residential Development



2030 With Project Volumes Umatilla Residential Development

Appendix A

Traffic Counts



Location: Powerline Rd & Dark Canyon Ave PM

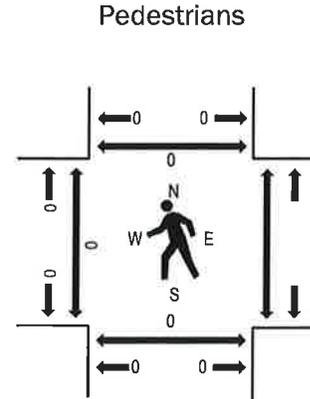
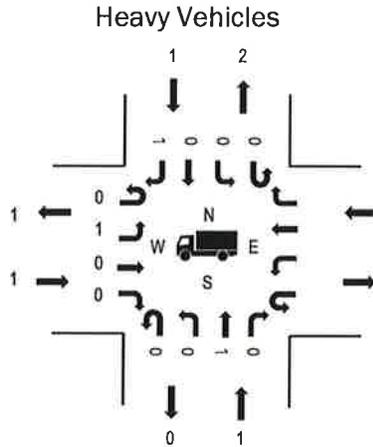
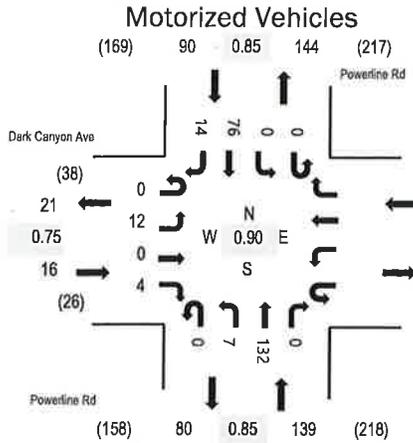
Date: Wednesday, March 4, 2020

Peak Hour: 04:40 PM - 05:40 PM

Peak 15-Minutes: 04:45 PM - 05:00 PM

(303) 216-2439
www.alltrafficdata.net

Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	6.3%	0.75
WB		
NB	0.7%	0.85
SB	1.1%	0.85
All	1.2%	0.90

Traffic Counts - Motorized Vehicles

Interval Start Time	Dark Canyon Ave Eastbound				Westbound				Powerline Rd Northbound				Powerline Rd Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	0	0					0	0	6	0	0	0	10	1	17	218
4:05 PM	0	0	0	0					0	3	6	0	0	0	9	1	19	216
4:10 PM	0	0	0	0					0	0	6	0	0	0	6	0	12	214
4:15 PM	0	0	0	2					0	0	11	0	0	0	9	3	25	220
4:20 PM	0	0	0	2					0	0	7	0	0	0	12	0	21	223
4:25 PM	0	0	0	0					0	2	6	0	0	0	7	0	15	220
4:30 PM	0	3	0	0					0	1	4	0	0	0	6	1	15	225
4:35 PM	0	0	0	0					0	0	3	0	0	0	4	0	7	226
4:40 PM	0	0	0	1					0	1	8	0	0	0	9	0	19	245
4:45 PM	0	4	0	0					0	0	12	0	0	0	9	1	26	240
4:50 PM	0	0	0	0					0	0	13	0	0	0	5	1	19	224
4:55 PM	0	2	0	0					0	0	10	0	0	0	9	2	23	218
5:00 PM	0	2	0	0					0	1	5	0	0	0	3	4	15	
5:05 PM	0	2	0	0					0	1	8	0	0	0	6	0	17	
5:10 PM	0	0	0	0					0	2	9	0	0	0	6	1	18	
5:15 PM	0	0	0	1					0	0	17	0	0	0	10	0	28	
5:20 PM	0	0	0	0					0	0	12	0	0	0	3	3	18	
5:25 PM	0	1	0	1					0	0	12	0	0	0	5	1	20	
5:30 PM	0	1	0	0					0	1	12	0	0	0	2	0	16	
5:35 PM	0	0	0	1					0	1	14	0	0	0	9	1	26	
5:40 PM	0	0	0	0					0	1	8	0	0	0	3	2	14	
5:45 PM	0	0	0	2					0	1	5	0	0	0	2	0	10	
5:50 PM	0	0	0	1					0	1	8	0	0	0	3	0	13	
Count Total	0	15	0	11					0	16	202	0	0	0	147	22	413	
Peak Hour	0	12	0	4					0	7	132	0	0	0	76	14	245	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0		0	0	4:00 PM	0	0		0	0	4:00 PM	0	0		0	0
4:05 PM	0	0		0	0	4:05 PM	0	0		0	0	4:05 PM	0	0		0	0
4:10 PM	0	0		0	0	4:10 PM	0	0		0	0	4:10 PM	0	0		0	0
4:15 PM	0	1		0	1	4:15 PM	0	0		0	0	4:15 PM	0	0		0	0
4:20 PM	0	0		0	0	4:20 PM	0	0		0	0	4:20 PM	0	0		0	0
4:25 PM	0	0		0	0	4:25 PM	0	0		0	0	4:25 PM	0	0		0	0
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4:35 PM	0	0		1	1	4:35 PM	0	0		0	0	4:35 PM	0	0		0	0
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4:45 PM	0	0		0	0	4:45 PM	0	0		0	0	4:45 PM	0	0		0	0
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5:45 PM	0	0		0	0	5:45 PM	0	0		0	0	5:45 PM	0	0		0	0
5:50 PM	0	0		1	1	5:50 PM	0	0		0	0	5:50 PM	0	0		0	0
Count Total	1	3		3	7	Count Total	0	0		0	0	Count Total	0	0		0	0
Peak Hour	1	1		1	3	Peak Hour	0	0		0	0	Peak Hour	0	0		0	0



Location: Powerline Rd & Hwy 730 PM
 Date: Wednesday, March 4, 2020
 Peak Hour: 04:05 PM - 05:05 PM
 Peak 15-Minutes: 04:40 PM - 04:55 PM

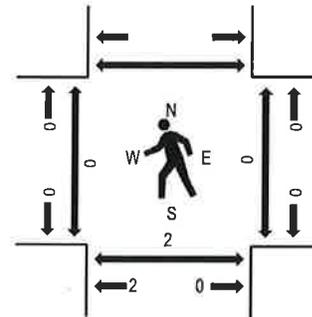
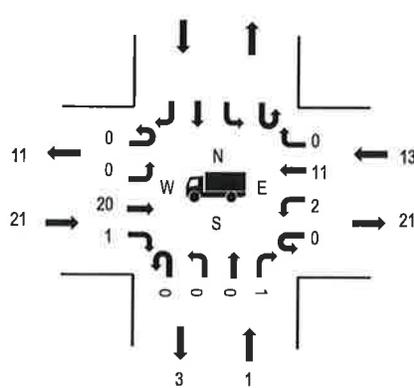
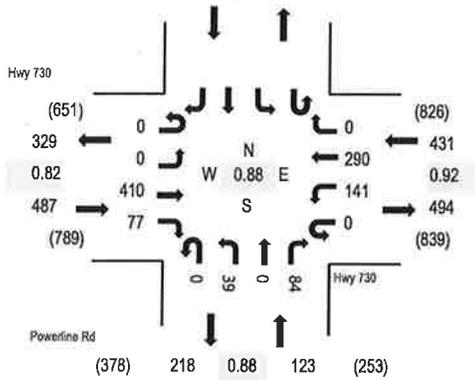
(303) 216-2439
 www.alltrafficdata.net

Peak Hour

Motorized Vehicles

Heavy Vehicles

Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	4.3%	0.82
WB	3.0%	0.92
NB	0.8%	0.88
SB		
All	3.4%	0.88

Traffic Counts - Motorized Vehicles

Interval Start Time	Hwy 730 Eastbound				Hwy 730 Westbound				Powerline Rd Northbound				Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	39	9	0	8	17	0	0	1	0	3					77	1,021
4:05 PM	0	0	38	6	0	10	21	0	0	3	0	7					85	1,041
4:10 PM	0	0	40	13	0	9	12	0	0	0	0	12					86	1,031
4:15 PM	0	0	38	9	0	8	22	0	0	6	0	6					89	1,023
4:20 PM	0	0	48	4	0	14	24	0	0	3	0	4					97	1,004
4:25 PM	0	0	34	13	0	9	17	0	0	8	0	7					88	975
4:30 PM	0	0	29	2	0	13	26	0	0	2	0	6					78	969
4:35 PM	0	0	23	6	0	7	24	0	0	2	0	3					65	963
4:40 PM	0	0	43	5	0	11	25	0	0	1	0	9					94	986
4:45 PM	0	0	43	5	0	18	35	0	0	2	0	11					114	980
4:50 PM	0	0	17	4	0	14	40	0	0	7	0	7					89	938
4:55 PM	0	0	27	4	0	11	13	0	0	0	0	4					59	906
5:00 PM	0	0	30	6	0	17	31	0	0	5	0	8					97	
5:05 PM	0	0	24	4	0	7	27	0	0	6	0	7					75	
5:10 PM	0	0	21	8	0	10	27	0	0	5	0	7					78	
5:15 PM	0	0	25	4	0	9	23	0	0	1	0	8					70	
5:20 PM	0	0	20	5	0	8	23	0	0	6	0	6					68	
5:25 PM	0	0	19	2	0	11	33	0	0	5	0	12					82	
5:30 PM	0	0	21	4	0	12	23	0	0	6	0	6					72	
5:35 PM	0	0	25	2	0	14	35	0	0	4	0	8					88	
5:40 PM	0	0	30	1	0	13	29	0	0	7	0	8					88	
5:45 PM	0	0	21	2	0	14	20	0	0	2	0	13					72	
5:50 PM	0	0	16	0	0	13	19	0	0	3	0	6					57	
Count Total	0	0	671	118	0	260	566	0	0	85	0	168					1,868	
Peak Hour	0	0	410	77	0	141	290	0	0	39	0	84					1,041	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	4	1	0		5	4:00 PM	0	0	0	0	4:00 PM	0	0	0	0	0	
4:05 PM	3	0	1		4	4:05 PM	0	0	0	0	4:05 PM	0	0	0	0	0	
4:10 PM	2	0	0		2	4:10 PM	0	0	0	0	4:10 PM	0	0	0	0	0	
4:15 PM	2	0	1		3	4:15 PM	0	0	0	0	4:15 PM	0	0	0	0	0	
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5:20 PM	1	0	2		3	5:20 PM	0	0	1	1	5:20 PM	0	0	0	0	0	
5:25 PM	2	0	1		3	5:25 PM	0	0	0	0	5:25 PM	0	0	0	0	0	
5:30 PM	0	0	1		1	5:30 PM	0	0	0	0	5:30 PM	0	0	0	0	0	
5:35 PM	1	0	3		4	5:35 PM	0	0	0	0	5:35 PM	0	0	0	0	0	
5:40 PM	3	0	2		5	5:40 PM	0	0	0	0	5:40 PM	0	0	0	0	0	
5:45 PM	1	0	1		2	5:45 PM	0	0	0	0	5:45 PM	0	2	0	0	2	
5:50 PM	1	0	3		4	5:50 PM	0	0	0	0	5:50 PM	0	0	0	0	0	
Count Total	39	3	28		70	Count Total	0	0	1	1	Count Total	0	4	0	0	4	
Peak Hour	21	1	13		35	Peak Hour	0	0	0	0	Peak Hour	0	2	0	0	2	



Location: Powerline Rd & I-82 NB Ramps PM

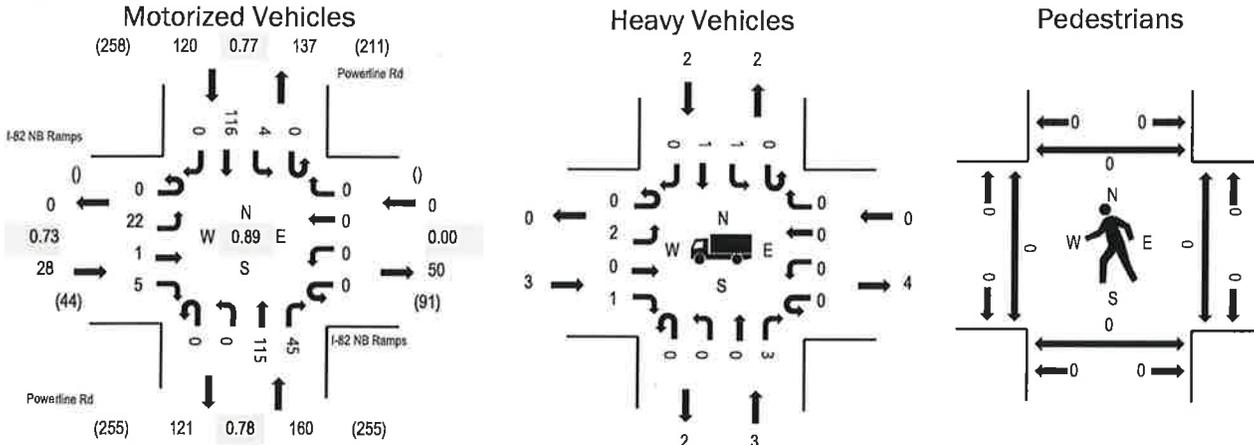
Date: Wednesday, March 4, 2020

Peak Hour: 04:45 PM - 05:45 PM

Peak 15-Minutes: 05:05 PM - 05:20 PM

(303) 216-2439
www.alltrafficdata.net

Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	10.7%	0.73
WB	0.0%	0.00
NB	1.9%	0.78
SB	1.7%	0.77
All	2.6%	0.89

Traffic Counts - Motorized Vehicles

Interval Start Time	I-82 NB Ramps Eastbound				I-82 NB Ramps Westbound				Powerline Rd Northbound				Powerline Rd Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right														
4:00 PM	0	0	0	0	0	0	0	0	0	0	8	0	0	1	11	0	20	285
4:05 PM	0	0	0	0	0	0	0	0	0	0	5	4	0	1	17	0	27	286
4:10 PM	0	1	0	0	0	0	0	0	0	0	6	2	0	0	15	0	24	284
4:15 PM	0	2	0	1	0	0	0	0	0	0	7	7	0	2	14	0	33	288
4:20 PM	0	3	0	0	0	0	0	0	0	0	7	1	0	2	14	0	27	289
4:25 PM	0	0	0	0	0	0	0	0	0	0	5	6	0	0	10	0	21	283
4:30 PM	0	1	0	0	0	0	0	0	0	0	3	4	0	0	11	0	19	284
4:35 PM	0	1	0	1	0	0	0	0	0	0	4	3	0	0	11	0	20	294
4:40 PM	0	3	0	0	0	0	0	0	0	0	4	3	0	0	14	0	24	306
4:45 PM	0	5	0	0	0	0	0	0	0	0	14	1	0	0	10	0	30	308
4:50 PM	0	1	0	1	0	0	0	0	0	0	6	4	0	0	6	0	18	295
4:55 PM	0	1	0	1	0	0	0	0	0	0	7	2	0	0	11	0	22	294
5:00 PM	0	2	0	0	0	0	0	0	0	0	9	2	0	0	8	0	21	
5:05 PM	0	1	0	1	0	0	0	0	0	0	4	4	0	0	15	0	25	
5:10 PM	0	1	0	0	0	0	0	0	0	0	12	5	0	2	8	0	28	
5:15 PM	0	2	0	0	0	0	0	0	0	0	18	4	0	0	10	0	34	
5:20 PM	0	4	0	0	0	0	0	0	0	0	7	1	0	0	9	0	21	
5:25 PM	0	1	0	0	0	0	0	0	0	0	8	1	0	1	11	0	22	
5:30 PM	0	1	1	0	0	0	0	0	0	0	12	9	0	0	6	0	29	
5:35 PM	0	2	0	1	0	0	0	0	0	0	9	5	0	1	14	0	32	
5:40 PM	0	1	0	1	0	0	0	0	0	0	9	7	0	0	8	0	26	
5:45 PM	0	1	0	0	0	0	0	0	0	0	6	4	0	0	6	0	17	
5:50 PM	0	1	1	0	0	0	0	0	0	0	6	0	0	0	9	0	17	
Count Total	0	35	2	7	0	0	0	0	0	0	176	79	0	10	248	0	557	
Peak Hour	0	22	1	5	0	0	0	0	0	0	115	45	0	4	116	0	308	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	0	1	0	1	2	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	1	1	0	0	2	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	0	0	0	1	1	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	1	0	0	0	1	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	1	1	0	0	2	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	0	1	0	1	2	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	1	0	0	0	1	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	1	0	1	2	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
Count Total	4	5	0	4	13	Count Total	0	0	0	0	0	Count Total	0	0	0	0	0
Peak Hour	3	3	0	2	8	Peak Hour	0	0	0	0	0	Peak Hour	0	0	0	0	0

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	0	1	1	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	0	0	0	1	1	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	0	1	0	0	1	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	0	0	1	1	2	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	0	1	0	1	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	0	1	0	0	1	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	0	0	0	1	1	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	0	1	0	0	1	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	0	0	1	1	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	0	0	1	0	1	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	0	1	0	1	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
Count Total	0	3	4	5	12	Count Total	0	0	0	0	0	Count Total	0	0	0	0	0
Peak Hour	0	2	2	2	6	Peak Hour	0	0	0	0	0	Peak Hour	0	0	0	0	0

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

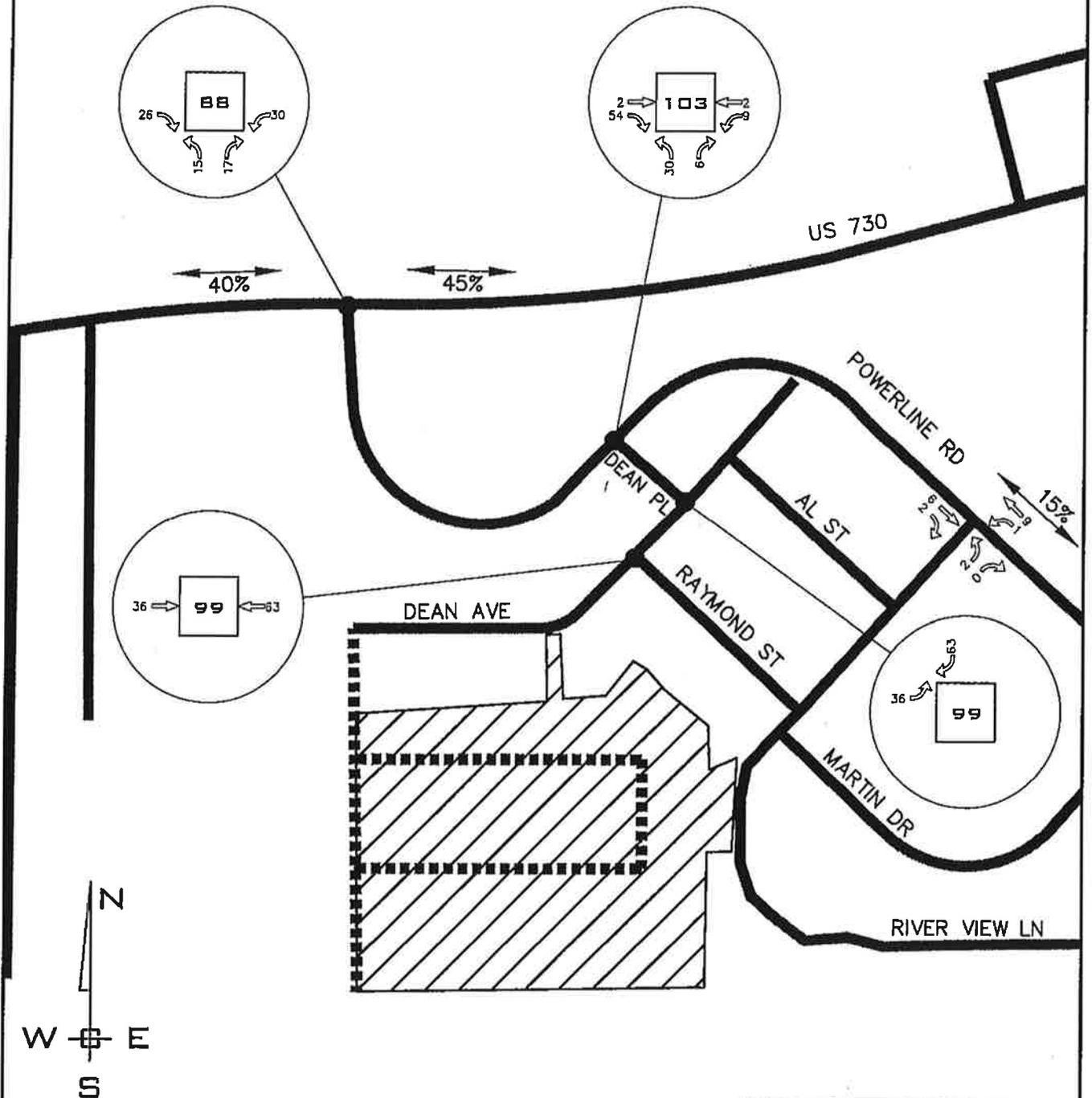
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	0	1	0	0	1	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	0	0	0	1	1	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	0	0	0	1	1	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	0	1	0	0	1	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
Count Total	0	2	0	2	4	Count Total	0	0	0	0	0	Count Total	0	0	0	0	0
Peak Hour	0	1	0	2	3	Peak Hour	0	0	0	0	0	Peak Hour	0	0	0	0	0

Appendix B

In-Process Projects

VOLUMES = TRIP GENERATION TABLE

PM PEAK HOUR			
	TOTAL	IN	OUT
TOTAL	104	66	38



NOT TO SCALE

PROJ #: 19-2493
 DATE: 11/25/19
 DRAWN: HJH
 APPROVED: TRW

**TRAFFIC IMPACT ANALYSIS
 AMBIENCE HOMES
 DEAN AVENUE & RAYMOND STREET
 UMATILLA, OREGON**



WHIPPLE CONSULTING ENGINEERS
 CIVIL AND TRANSPORTATION ENGINEERING
 21 SOUTH PINES ROAD
 SPOKANE VALLEY, WASHINGTON 99206
 PH: 509-893-2617 FAX: 509-925-0227

FIGURE 5

PM PROJECT TRIP DISTRIBUTION

Trip Generation Summary

Alternative: Alternative 1
 Phase:
 Project: Umatilla Residential Development Master Plan

Open Date: 3/25/2020
 Analysis Date: 3/25/2020

ITE	Land Use	Weekday Average Daily Trips			Weekday AM Peak Hour of Adjacent Street Traffic			Weekday PM Peak Hour of Adjacent Street Traffic		
		* Enter	* Exit	* Total	* Enter	* Exit	* Total	* Enter	* Exit	* Total
210	Vandelay Meadows SF Homes	123	122	245	5	14	19	16	10	26
26	Dwelling Units									
	Unadjusted Volume	123	122	245	5	14	19	16	10	26
	Internal Capture Trips	0	0	0	0	0	0	0	0	0
	Pass-By Trips	0	0	0	0	0	0	0	0	0
	Volume Added to Adjacent Streets	123	122	245	5	14	19	16	10	26

Total Weekday Average Daily Trips Internal Capture = 0 Percent

Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

* - Custom rate used for selected time period.

Trip Generation Summary

Alternative: Alternative 1

Phase:

Project: Umattilla Resedential Development Master Plan

Open Date: 3/26/2020
Analysis Date: 3/26/2020

ITE	Land Use	Weekday Average Daily Trips			Weekday AM Peak Hour of Adjacent Street Traffic			Weekday PM Peak Hour of Adjacent Street Traffic		
		* Enter	Exit	Total	* Enter	Exit	Total	* Enter	Exit	Total
210	Cheryl's Place SF Homes	123	122	245	5	14	19	16	10	26
26	Dwelling Units									
	Unadjusted Volume	123	122	245	5	14	19	16	10	26
	Internal Capture Trips	0	0	0	0	0	0	0	0	0
	Pass-By Trips	0	0	0	0	0	0	0	0	0
	Volume Added to Adjacent Streets	123	122	245	5	14	19	16	10	26

Total Weekday Average Daily Trips Internal Capture = 0 Percent

Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

* - Custom rate used for selected time period.

Source: Institute of Transportation Engineers, Trip Generation Manual 10th Edition
TRIP GENERATION 10, TRAFFICWARE, LLC

Appendix C

Trip Generation Calculations

Trip Generation Summary

Alternative: Alternative 1

Phase:

Project: Umattilla Resedential Development Master Plan

Open Date: 3/25/2020
Analysis Date: 3/25/2020

ITE	Land Use	Weekday Average Daily Trips			Weekday AM Peak Hour of Adjacent Street Traffic			Weekday PM Peak Hour of Adjacent Street Traffic		
		* Enter	* Exit	* Total	* Enter	* Exit	* Total	* Enter	* Exit	* Total
210	Vandelay Meadows SF Homes	232	231	463	9	27	36	31	18	49
49	Dwelling Units									
210	Cheryl's Place SF Homes	491	491	982	19	58	77	65	38	103
104	Dwelling Units									
210	Ballard Property SF Homes	1836	1836	3672	72	216	288	243	142	385
389	Dwelling Units									
820	Commercial General	699	698	1397	22	13	35	68	73	141
37	1000 Sq. Ft. GLA									
	Unadjusted Volume	3258	3256	6514	122	314	436	407	271	678
	Internal Capture Trips	0	0	0	0	0	0	0	0	0
	Pass-By Trips	0	0	0	0	0	0	24	24	48
	Volume Added to Adjacent Streets	3258	3256	6514	122	314	436	383	247	630

Total Weekday Average Daily Trips Internal Capture = 0 Percent

Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

* - Custom rate used for selected time period.

Source: Institute of Transportation Engineers, Trip Generation Manual 10th Edition

TRIP GENERATION 10, TRAFFICWARE, LLC

Umatilla Residential Development

Umatilla Residential Development - Total				ADT	PM		
ITE Code	Land Use	Total	Unit		Enter	Exit	Total
210	Single Family Residential	542	dwelling units	5,116	338	199	537
820	Commercial General	37	1,000 sf	1,397	68	73	141
				6,513	406	272	678

Umatilla Residential Development - Total					PM		
Land Use	Total	Unit			Enter	Exit	Total
2030	Vandelay Meadows SF Homes	49	dwelling units		31	18	49
	Cheryl's Place SF Homes	104	dwelling units		65	38	103
	Ballard Property	389	dwelling units		243	142	385
	External Trips/Primary Trips				339	198	537
	Commercial General	37	1,000 sf		68	73	141
	<i>Pass-By Trips</i>				-24	-24	-48
	External Trips/Primary Trips				44	49	93
Total Trips Generated					407	271	678
<i>Pass-By Trips</i>					-24	-24	-48
Primary Trips					383	247	630

Appendix D

Level of Service Calculations

Intersection						
Int Delay, s/veh	3.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑		↑	↑	↑	↑
Traffic Vol, veh/h	410	77	141	290	39	84
Future Vol, veh/h	410	77	141	290	39	84
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	180	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	4	0	0	3	0	1
Mvmt Flow	466	88	160	330	44	95

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	556	0	1162
Stage 1	-	-	-	-	512
Stage 2	-	-	-	-	650
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1025	-	218
Stage 1	-	-	-	-	606
Stage 2	-	-	-	-	523
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1023	-	184
Mov Cap-2 Maneuver	-	-	-	-	314
Stage 1	-	-	-	-	605
Stage 2	-	-	-	-	441

Approach	EB	WB	NB
HCM Control Delay, s	0	3	16.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	450	-	-	1023	-
HCM Lane V/C Ratio	0.311	-	-	0.157	-
HCM Control Delay (s)	16.6	-	-	9.2	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	1.3	-	-	0.6	-

HCM 6th TWSC
2: Powerline Road & Pine Tree Avenue

04/05/2020

Intersection

Int Delay, s/veh 1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	0	3	4	0	8	3	142	1	14	79	10
Future Vol, veh/h	6	0	3	4	0	8	3	142	1	14	79	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	1	0	1
Mvmt Flow	8	0	4	5	0	10	4	178	1	18	99	13

Major/Minor	Minor2	Minor1		Major1		Major2						
Conflicting Flow All	334	329	106	331	335	179	112	0	0	179	0	0
Stage 1	142	142	-	187	187	-	-	-	-	-	-	-
Stage 2	192	187	-	144	148	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.11	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.209	-	-
Pot Cap-1 Maneuver	623	593	954	626	589	869	1490	-	-	1403	-	-
Stage 1	866	783	-	819	749	-	-	-	-	-	-	-
Stage 2	814	749	-	864	779	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	608	583	954	615	579	869	1490	-	-	1403	-	-
Mov Cap-2 Maneuver	608	583	-	615	579	-	-	-	-	-	-	-
Stage 1	863	772	-	817	747	-	-	-	-	-	-	-
Stage 2	802	747	-	849	768	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	9.8	0.2	1
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1490	-	-	692	764	1403	-	-
HCM Lane V/C Ratio	0.003	-	-	0.016	0.02	0.012	-	-
HCM Control Delay (s)	7.4	0	-	10.3	9.8	7.6	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

HCM 6th TWSC
3: Powerline Road & Sparrow Avenue

04/05/2020

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	0	2	2	0	4	3	139	2	6	81	9
Future Vol, veh/h	5	0	2	2	0	4	3	139	2	6	81	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	6	0	2	2	0	5	4	164	2	7	95	11

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	291	289	101	289	293	165	106	0	0	166	0	0
Stage 1	115	115	-	173	173	-	-	-	-	-	-	-
Stage 2	176	174	-	116	120	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.11	6.51	6.21	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.509	4.009	3.309	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	663	623	957	665	620	882	1491	-	-	1418	-	-
Stage 1	892	802	-	831	758	-	-	-	-	-	-	-
Stage 2	828	757	-	891	798	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	656	618	957	659	615	882	1491	-	-	1418	-	-
Mov Cap-2 Maneuver	656	618	-	659	615	-	-	-	-	-	-	-
Stage 1	889	798	-	829	756	-	-	-	-	-	-	-
Stage 2	821	755	-	884	794	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.1	9.6	0.2	0.5
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1491	-	-	721	793	1418	-	-
HCM Lane V/C Ratio	0.002	-	-	0.011	0.009	0.005	-	-
HCM Control Delay (s)	7.4	0	-	10.1	9.6	7.6	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

HCM 6th TWSC
4: Powerline Road & Eagle Avenue

04/05/2020

Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	0	1	1	0	1	2	139	1	2	78	4
Future Vol, veh/h	3	0	1	1	0	1	2	139	1	2	78	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	4	0	1	1	0	1	2	164	1	2	92	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	268	268	95	268	270	165	97	0	0	165	0	0
Stage 1	99	99	-	169	169	-	-	-	-	-	-	-
Stage 2	169	169	-	99	101	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.11	6.51	6.21	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.509	4.009	3.309	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	687	640	964	687	638	882	1503	-	-	1419	-	-
Stage 1	910	815	-	835	761	-	-	-	-	-	-	-
Stage 2	835	761	-	910	813	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	685	639	964	685	637	882	1503	-	-	1419	-	-
Mov Cap-2 Maneuver	685	639	-	685	637	-	-	-	-	-	-	-
Stage 1	909	814	-	834	760	-	-	-	-	-	-	-
Stage 2	833	760	-	908	812	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.9	9.7	0.1	0.2
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1503	-	-	738	771	1419	-	-
HCM Lane V/C Ratio	0.002	-	-	0.006	0.003	0.002	-	-
HCM Control Delay (s)	7.4	0	-	9.9	9.7	7.5	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

HCM 6th TWSC
8: Powerline Road & I-82 SB Ramp

04/05/2020

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	
Traffic Vol, veh/h	0	0	0	52	1	5	1	136	0	0	75	9
Future Vol, veh/h	0	0	0	52	1	5	1	136	0	0	75	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	2	2	0	0	1	0	0	1	1
Mvmt Flow	0	0	0	62	1	6	1	162	0	0	89	11

Major/Minor	Minor1		Major1		Major2		
Conflicting Flow All	259	264	162	100	0	-	0
Stage 1	164	164	-	-	-	-	-
Stage 2	95	100	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	730	641	888	1505	-	0	-
Stage 1	865	762	-	-	0	0	-
Stage 2	929	812	-	-	0	0	-
Platoon blocked, %							
Mov Cap-1 Maneuver	729	0	888	1505	-	-	-
Mov Cap-2 Maneuver	729	0	-	-	-	-	-
Stage 1	864	0	-	-	-	-	-
Stage 2	929	0	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBTWBLn1	SBT	SBR
Capacity (veh/h)	1505	-	741	-
HCM Lane V/C Ratio	0.001	-	0.093	-
HCM Control Delay (s)	7.4	0	10.4	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0	-	0.3	-

HCM 6th TWSC
9: Powerline Road & I-82 NB Ramp

04/05/2020

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↕			↕	
Traffic Vol, veh/h	22	1	5	0	0	0	0	115	45	4	116	0
Future Vol, veh/h	22	1	5	0	0	0	0	115	45	4	116	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	7	0	4	0	0	0	0	0	2	1	1	0
Mvmt Flow	25	1	6	0	0	0	0	129	51	4	130	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	293	318	130	-	0	0	180	0	0
Stage 1	138	138	-	-	-	-	-	-	-
Stage 2	155	180	-	-	-	-	-	-	-
Critical Hdwy	6.47	6.5	6.24	-	-	-	4.11	-	-
Critical Hdwy Stg 1	5.47	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.47	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.563	4	3.336	-	-	-	2.209	-	-
Pot Cap-1 Maneuver	687	602	914	0	-	-	1402	-	0
Stage 1	876	786	-	0	-	-	-	-	0
Stage 2	861	754	-	0	-	-	-	-	0
Platoon blocked, %				-	-	-	-	-	-
Mov Cap-1 Maneuver	685	0	914	-	-	-	1402	-	-
Mov Cap-2 Maneuver	685	0	-	-	-	-	-	-	-
Stage 1	876	0	-	-	-	-	-	-	-
Stage 2	858	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	SBL	SBT
Capacity (veh/h)	-	-	718	1402	-
HCM Lane V/C Ratio	-	-	0.044	0.003	-
HCM Control Delay (s)	-	-	10.2	7.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection						
Int Delay, s/veh	6.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶		↷	↶	↷	
Traffic Vol, veh/h	500	128	218	354	68	129
Future Vol, veh/h	500	128	218	354	68	129
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	180	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	4	2	2	3	2	2
Mvmt Flow	568	145	248	402	77	147

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	715	0	1541 643
Stage 1	-	-	-	-	643 -
Stage 2	-	-	-	-	898 -
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	-	-	885	-	127 473
Stage 1	-	-	-	-	523 -
Stage 2	-	-	-	-	398 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	883	-	91 472
Mov Cap-2 Maneuver	-	-	-	-	206 -
Stage 1	-	-	-	-	522 -
Stage 2	-	-	-	-	286 -

Approach	EB	WB	NB
HCM Control Delay, s	0	4.1	37.1
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	326	-	-	883	-
HCM Lane V/C Ratio	0.687	-	-	0.281	-
HCM Control Delay (s)	37.1	-	-	10.7	-
HCM Lane LOS	E	-	-	B	-
HCM 95th %tile Q(veh)	4.8	-	-	1.2	-

HCM 6th TWSC
2: Powerline Road & Pine Tree Avenue

04/05/2020

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	0	4	5	0	10	4	198	1	17	126	12
Future Vol, veh/h	7	0	4	5	0	10	4	198	1	17	126	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	0	5	6	0	13	5	248	1	21	158	15

Major/Minor	Minor2	Minor1		Major1		Major2						
Conflicting Flow All	473	467	166	469	474	249	173	0	0	249	0	0
Stage 1	208	208	-	259	259	-	-	-	-	-	-	-
Stage 2	265	259	-	210	215	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	501	493	878	505	489	790	1404	-	-	1317	-	-
Stage 1	794	730	-	746	694	-	-	-	-	-	-	-
Stage 2	740	694	-	792	725	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	485	482	878	494	478	790	1404	-	-	1317	-	-
Mov Cap-2 Maneuver	485	482	-	494	478	-	-	-	-	-	-	-
Stage 1	791	717	-	743	691	-	-	-	-	-	-	-
Stage 2	725	691	-	773	712	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.4	10.6	0.1	0.9
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1404	-	-	579	658	1317	-	-
HCM Lane V/C Ratio	0.004	-	-	0.024	0.028	0.016	-	-
HCM Control Delay (s)	7.6	0	-	11.4	10.6	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

HCM 6th TWSC
3: Powerline Road & Sparrow Avenue

04/05/2020

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	0	2	2	0	5	4	194	2	7	129	11
Future Vol, veh/h	6	0	2	2	0	5	4	194	2	7	129	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	0	2	2	0	6	5	228	2	8	152	13

Major/Minor	Minor2	Minor1		Major1		Major2						
Conflicting Flow All	417	415	159	415	420	229	165	0	0	230	0	0
Stage 1	175	175	-	239	239	-	-	-	-	-	-	-
Stage 2	242	240	-	176	181	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	546	528	886	548	525	810	1413	-	-	1338	-	-
Stage 1	827	754	-	764	708	-	-	-	-	-	-	-
Stage 2	762	707	-	826	750	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	537	522	886	542	519	810	1413	-	-	1338	-	-
Mov Cap-2 Maneuver	537	522	-	542	519	-	-	-	-	-	-	-
Stage 1	824	749	-	761	705	-	-	-	-	-	-	-
Stage 2	753	704	-	818	745	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.1	10.1	0.2	0.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1413	-	-	596	710	1338	-	-
HCM Lane V/C Ratio	0.003	-	-	0.016	0.012	0.006	-	-
HCM Control Delay (s)	7.6	0	-	11.1	10.1	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

HCM 6th TWSC
4: Powerline Road & Eagle Avenue

04/05/2020

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	0	1	1	0	1	2	194	1	2	125	5
Future Vol, veh/h	4	0	1	1	0	1	2	194	1	2	125	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	0	1	1	0	1	2	228	1	2	147	6

Major/Minor	Minor2		Minor1			Major1		Major2				
Conflicting Flow All	387	387	150	388	390	229	153	0	0	229	0	0
Stage 1	154	154	-	233	233	-	-	-	-	-	-	-
Stage 2	233	233	-	155	157	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	572	547	896	571	545	810	1428	-	-	1339	-	-
Stage 1	848	770	-	770	712	-	-	-	-	-	-	-
Stage 2	770	712	-	847	768	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	570	545	896	569	543	810	1428	-	-	1339	-	-
Mov Cap-2 Maneuver	570	545	-	569	543	-	-	-	-	-	-	-
Stage 1	846	768	-	768	711	-	-	-	-	-	-	-
Stage 2	767	711	-	844	766	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.9		10.4		0.1		0.1	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1428	-	-	615	668	1339	-	-
HCM Lane V/C Ratio	0.002	-	-	0.01	0.004	0.002	-	-
HCM Control Delay (s)	7.5	0	-	10.9	10.4	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑	↓	
Traffic Vol, veh/h	8	2	4	193	128	12
Future Vol, veh/h	8	2	4	193	128	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	2	5	227	151	14

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	395	158	165	0	-	0
Stage 1	158	-	-	-	-	-
Stage 2	237	-	-	-	-	-
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	610	887	1413	-	-	-
Stage 1	871	-	-	-	-	-
Stage 2	802	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	608	887	1413	-	-	-
Mov Cap-2 Maneuver	608	-	-	-	-	-
Stage 1	868	-	-	-	-	-
Stage 2	802	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.6	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1413	-	649	-	-
HCM Lane V/C Ratio	0.003	-	0.018	-	-
HCM Control Delay (s)	7.6	0	10.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑	↑	
Traffic Vol, veh/h	8	2	4	183	105	12
Future Vol, veh/h	8	2	4	183	105	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	2	5	215	124	14

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	356	131	138	0	-	0
Stage 1	131	-	-	-	-	-
Stage 2	225	-	-	-	-	-
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	642	919	1446	-	-	-
Stage 1	895	-	-	-	-	-
Stage 2	812	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	639	919	1446	-	-	-
Mov Cap-2 Maneuver	639	-	-	-	-	-
Stage 1	891	-	-	-	-	-
Stage 2	812	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1446	-	680	-	-
HCM Lane V/C Ratio	0.003	-	0.017	-	-
HCM Control Delay (s)	7.5	0	10.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 6th TWSC
8: Powerline Road & I-82 SB Ramp

04/05/2020

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	
Traffic Vol, veh/h	0	0	0	63	1	6	1	184	0	0	98	13
Future Vol, veh/h	0	0	0	63	1	6	1	184	0	0	98	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	75	1	7	1	219	0	0	117	15

Major/Minor	Minor1		Major1		Major2			
Conflicting Flow All	346	353	219	132	0	-	-	0
Stage 1	221	221	-	-	-	-	-	-
Stage 2	125	132	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-
Pot Cap-1 Maneuver	651	572	821	1453	-	0	0	-
Stage 1	816	720	-	-	-	0	0	-
Stage 2	901	787	-	-	-	0	0	-
Platoon blocked, %					-	-	-	-
Mov Cap-1 Maneuver	650	0	821	1453	-	-	-	-
Mov Cap-2 Maneuver	650	0	-	-	-	-	-	-
Stage 1	815	0	-	-	-	-	-	-
Stage 2	901	0	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBTWBLn1	SBT	SBR
Capacity (veh/h)	1453	-	662	-
HCM Lane V/C Ratio	0.001	-	0.126	-
HCM Control Delay (s)	7.5	0	11.2	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0	-	0.4	-

HCM 6th TWSC
 9: Powerline Road & I-82 NB Ramp

04/05/2020

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔						↔			↔	
Traffic Vol, veh/h	31	1	6	0	0	0	0	158	55	5	148	0
Future Vol, veh/h	31	1	6	0	0	0	0	158	55	5	148	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	7	2	4	2	2	2	2	2	2	2	2	2
Mvmt Flow	35	1	7	0	0	0	0	178	62	6	166	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	387	418	166	-	0	0	240	0	0
Stage 1	178	178	-	-	-	-	-	-	-
Stage 2	209	240	-	-	-	-	-	-	-
Critical Hdwy	6.47	6.52	6.24	-	-	-	4.12	-	-
Critical Hdwy Stg 1	5.47	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.47	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.563	4.018	3.336	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	607	526	873	0	-	-	1327	-	0
Stage 1	841	752	-	0	-	-	-	-	0
Stage 2	814	707	-	0	-	-	-	-	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	604	0	873	-	-	-	1327	-	-
Mov Cap-2 Maneuver	604	0	-	-	-	-	-	-	-
Stage 1	841	0	-	-	-	-	-	-	-
Stage 2	810	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.1	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	SBL	SBT
Capacity (veh/h)	-	-	636	1327	-
HCM Lane V/C Ratio	-	-	0.067	0.004	-
HCM Control Delay (s)	-	-	11.1	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection						
Int Delay, s/veh	143.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶		↶	↶	↶	↶
Traffic Vol, veh/h	500	223	410	354	130	253
Future Vol, veh/h	500	223	410	354	130	253
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	180	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	4	2	2	3	2	2
Mvmt Flow	568	253	466	402	148	288

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	823	0	2031
Stage 1	-	-	-	-	697
Stage 2	-	-	-	-	1334
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	807	-	~ 63
Stage 1	-	-	-	-	494
Stage 2	-	-	-	-	246
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	805	-	~ 26
Mov Cap-2 Maneuver	-	-	-	-	~ 85
Stage 1	-	-	-	-	493
Stage 2	-	-	-	-	~ 104

Approach	EB	WB	NB
HCM Control Delay, s	0	8.3	\$ 683.2
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	182	-	-	805	-
HCM Lane V/C Ratio	2.391	-	-	0.579	-
HCM Control Delay (s)	\$ 683.2	-	-	15.4	-
HCM Lane LOS	F	-	-	C	-
HCM 95th %tile Q(veh)	36.2	-	-	3.8	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th TWSC
2: Powerline Road & Pine Tree Avenue

04/05/2020

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	0	4	11	0	46	4	348	11	76	354	12
Future Vol, veh/h	7	0	4	11	0	46	4	348	11	76	354	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	0	5	14	0	58	5	435	14	95	443	15

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1122	1100	451	1095	1100	442	458	0	0	449	0	0
Stage 1	641	641	-	452	452	-	-	-	-	-	-	-
Stage 2	481	459	-	643	648	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	183	212	608	191	212	615	1103	-	-	1111	-	-
Stage 1	463	469	-	587	570	-	-	-	-	-	-	-
Stage 2	566	566	-	462	466	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	151	187	608	172	187	615	1103	-	-	1111	-	-
Mov Cap-2 Maneuver	151	187	-	172	187	-	-	-	-	-	-	-
Stage 1	460	415	-	583	567	-	-	-	-	-	-	-
Stage 2	510	563	-	406	412	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	23.5	15.6	0.1	1.5
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1103	-	-	208	411	1111	-	-
HCM Lane V/C Ratio	0.005	-	-	0.066	0.173	0.086	-	-
HCM Control Delay (s)	8.3	0	-	23.5	15.6	8.5	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.6	0.3	-	-

HCM 6th TWSC
3: Powerline Road & Sparrow Avenue

04/05/2020

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	0	2	5	0	12	4	347	6	20	350	11
Future Vol, veh/h	6	0	2	5	0	12	4	347	6	20	350	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	0	2	6	0	14	5	408	7	24	412	13

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	896	892	419	890	895	412	425	0	0	415	0	0
Stage 1	467	467	-	422	422	-	-	-	-	-	-	-
Stage 2	429	425	-	468	473	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	261	281	634	264	280	640	1134	-	-	1144	-	-
Stage 1	576	562	-	609	588	-	-	-	-	-	-	-
Stage 2	604	586	-	575	558	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	249	271	634	256	270	640	1134	-	-	1144	-	-
Mov Cap-2 Maneuver	249	271	-	256	270	-	-	-	-	-	-	-
Stage 1	573	546	-	605	584	-	-	-	-	-	-	-
Stage 2	587	582	-	557	542	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.6	13.5	0.1	0.4
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1134	-	-	294	444	1144	-	-
HCM Lane V/C Ratio	0.004	-	-	0.032	0.045	0.021	-	-
HCM Control Delay (s)	8.2	0	-	17.6	13.5	8.2	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0.1	-	-

HCM 6th TWSC
4: Powerline Road & Eagle Avenue

04/05/2020

Intersection												
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	62	0	21	10	0	27	29	267	16	47	256	53
Future Vol, veh/h	62	0	21	10	0	27	29	267	16	47	256	53
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	73	0	25	12	0	32	34	314	19	55	301	62

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	850	843	332	847	865	324	363	0	0	333	0	0
Stage 1	442	442	-	392	392	-	-	-	-	-	-	-
Stage 2	408	401	-	455	473	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	280	300	710	282	292	717	1196	-	-	1226	-	-
Stage 1	594	576	-	633	606	-	-	-	-	-	-	-
Stage 2	620	601	-	585	558	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	249	273	710	254	266	717	1196	-	-	1226	-	-
Mov Cap-2 Maneuver	249	273	-	254	266	-	-	-	-	-	-	-
Stage 1	573	543	-	611	585	-	-	-	-	-	-	-
Stage 2	572	580	-	532	526	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.9	13.2	0.8	1.1
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1196	-	-	298	480	1226	-	-
HCM Lane V/C Ratio	0.029	-	-	0.328	0.091	0.045	-	-
HCM Control Delay (s)	8.1	0	-	22.9	13.2	8.1	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.4	0.3	0.1	-	-

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑	↑	
Traffic Vol, veh/h	17	6	12	299	272	28
Future Vol, veh/h	17	6	12	299	272	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	7	14	352	320	33

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	717	337	353	0	0
Stage 1	337	-	-	-	-
Stage 2	380	-	-	-	-
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	396	705	1206	-	-
Stage 1	723	-	-	-	-
Stage 2	691	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	390	705	1206	-	-
Mov Cap-2 Maneuver	390	-	-	-	-
Stage 1	713	-	-	-	-
Stage 2	691	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.7	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1206	-	441	-	-
HCM Lane V/C Ratio	0.012	-	0.061	-	-
HCM Control Delay (s)	8	0	13.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection						
Int Delay, s/veh	1.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		P			Y
Traffic Vol, veh/h	17	38	273	32	65	212
Future Vol, veh/h	17	38	273	32	65	212
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh'in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	45	321	38	76	249

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	741	340	0	0	359
Stage 1	340	-	-	-	-
Stage 2	401	-	-	-	-
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	384	702	-	-	1200
Stage 1	721	-	-	-	-
Stage 2	676	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	356	702	-	-	1200
Mov Cap-2 Maneuver	356	-	-	-	-
Stage 1	721	-	-	-	-
Stage 2	626	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.6	0	1.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	540	1200
HCM Lane V/C Ratio	-	-	0.12	0.064
HCM Control Delay (s)	-	-	12.6	8.2
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.4	0.2

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑	↑	
Traffic Vol, veh/h	36	12	20	263	156	61
Future Vol, veh/h	36	12	20	263	156	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	42	14	24	309	184	72

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	577	220	256	0	0
Stage 1	220	-	-	-	-
Stage 2	357	-	-	-	-
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	478	820	1309	-	-
Stage 1	817	-	-	-	-
Stage 2	708	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	467	820	1309	-	-
Mov Cap-2 Maneuver	467	-	-	-	-
Stage 1	799	-	-	-	-
Stage 2	708	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.7	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1309	-	523	-	-
HCM Lane V/C Ratio	0.018	-	0.108	-	-
HCM Control Delay (s)	7.8	0	12.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

HCM 6th TWSC
8: Powerline Road & I-82 SB Ramp

04/05/2020

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↔			↔	
Traffic Vol, veh/h	0	0	0	63	1	6	1	280	0	0	146	26
Future Vol, veh/h	0	0	0	63	1	6	1	280	0	0	146	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	75	1	7	1	333	0	0	174	31

Major/Minor	Minor1		Major1		Major2		
Conflicting Flow All	525	540	333	205	0	-	0
Stage 1	335	335	-	-	-	-	-
Stage 2	190	205	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	513	449	709	1366	-	0	0
Stage 1	725	643	-	-	-	0	0
Stage 2	842	732	-	-	-	0	0
Platoon blocked, %	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	512	0	709	1366	-	-	-
Mov Cap-2 Maneuver	512	0	-	-	-	-	-
Stage 1	724	0	-	-	-	-	-
Stage 2	842	0	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBTWBLn1	SBT	SBR
Capacity (veh/h)	1366	-	525	-
HCM Lane V/C Ratio	0.001	-	0.159	-
HCM Control Delay (s)	7.6	0	13.1	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0	-	0.6	-

HCM 6th TWSC
9: Powerline Road & I-82 NB Ramp

04/05/2020

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↕			↕	
Traffic Vol, veh/h	50	1	6	0	0	0	0	235	55	5	196	0
Future Vol, veh/h	50	1	6	0	0	0	0	235	55	5	196	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	7	2	4	2	2	2	2	2	2	2	2	2
Mvmt Flow	56	1	7	0	0	0	0	264	62	6	220	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	527	558	220	-	0	0	326	0	0
Stage 1	232	232	-	-	-	-	-	-	-
Stage 2	295	326	-	-	-	-	-	-	-
Critical Hdwy	6.47	6.52	6.24	-	-	-	4.12	-	-
Critical Hdwy Stg 1	5.47	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.47	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.563	4.018	3.336	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	503	438	815	0	-	-	1234	-	0
Stage 1	795	713	-	0	-	-	-	-	0
Stage 2	744	648	-	0	-	-	-	-	0
Platoon blocked, %				-	-	-	-	-	-
Mov Cap-1 Maneuver	500	0	815	-	-	-	1234	-	-
Mov Cap-2 Maneuver	500	0	-	-	-	-	-	-	-
Stage 1	795	0	-	-	-	-	-	-	-
Stage 2	740	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.9	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	SBL	SBT
Capacity (veh/h)	-	-	522	1234	-
HCM Lane V/C Ratio	-	-	0.123	0.005	-
HCM Control Delay (s)	-	-	12.9	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Appendix E

Preliminary Traffic Signal Warrant

Oregon Department of Transportation
Transportation Development Branch
Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis¹

Major Street: Highway 730	Minor Street: Powerline Road
Project: Umatilla Residential Developm	City/County: City of Umatilla
Year: 2030	Alternative: 0

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants		Percent of standard warrants	
		100	70	100	70

Case A: Minimum Vehicular Traffic

1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500

Case B: Interruption of Continuous Traffic

1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250

X 100 percent of standard warrants

70 percent of standard warrants²

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	2 or more	10600	13183	N
	Minor	1	2650	2176	
Case B	Major	2 or more	15900	13183	N
	Minor	1	1350	2176	

Analyst and Date:

Reviewer and Date:

¹ Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. When preliminary signal warrants are met, project analysts need to coordinate with Region Traffic to initiate the traffic signal engineering investigation as outlined in the Traffic Manual. Before a signal can be installed, the engineering investigation must be conducted or reviewed by the Region Traffic Manager who will forward signal recommendations to headquarters. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

² Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

Appendix F

Left- and Right-Turn Analysis

2030 With Project Conditions at Powerline Road / Pine Tree Avenue

(Southbound Left-Turn Lane)

Left Turn Lane Evaluation Process

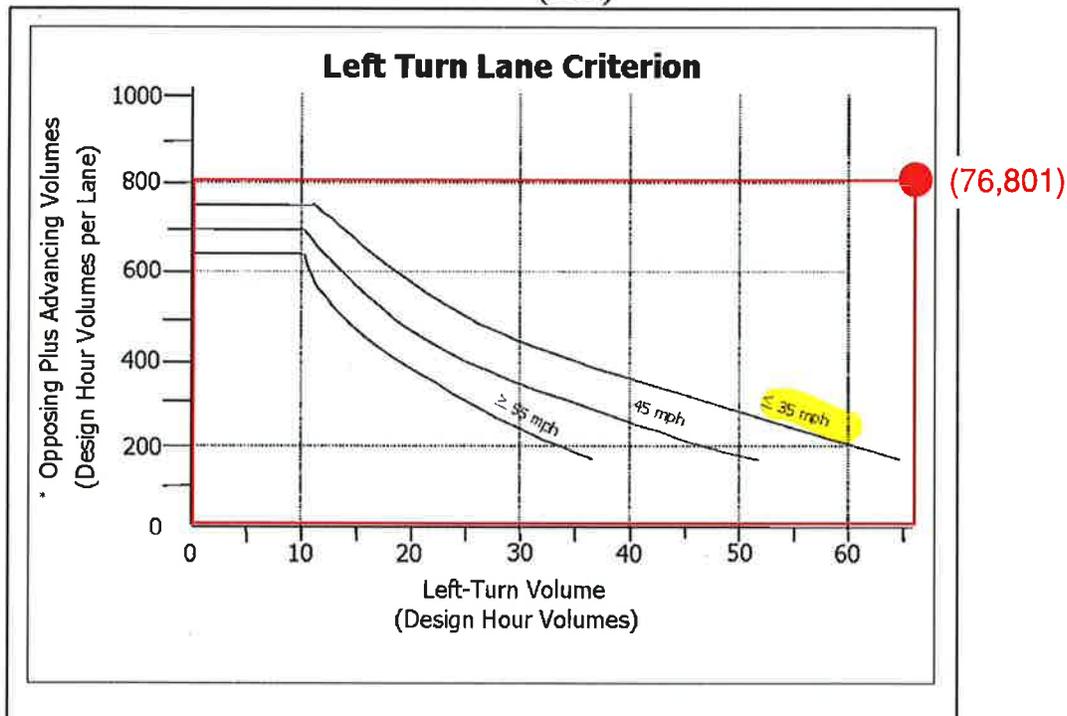
- A left turn lane should be installed, if criterion 1 (Volume) or 2 (Crash) or 3 (Special Cases) are met, unless a subsequent evaluation eliminate it as an option; and
- The Region Traffic Engineer must approve all proposed left turn lanes on state highways, regardless of funding source; and
- Left turn lane complies with Access Management Spacing Standards; and
- Left turn lane conforms to applicable local, regional and state plans.

Criterion 1: Vehicular Volume

The vehicular volume criterion is intended for application where the volume of intersecting traffic is the principal reason for considering installation of a left turn lane. The volume criterion is determined by the Texas Transportation Institute (TTI) curves in Exhibit 12-1.

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

Exhibit 12-1 Left Turn Lane Criterion (TTI)



*(Advancing Volume/Number of Advancing Through Lanes) + (Opposing Volume/Number of Opposing Through Lanes)

Opposing left turns are not counted as opposing volumes

2030 With Project Conditions at Powerline Road / Sparrow Avenue

(Southbound Left-Turn Lane)

Left Turn Lane Evaluation Process

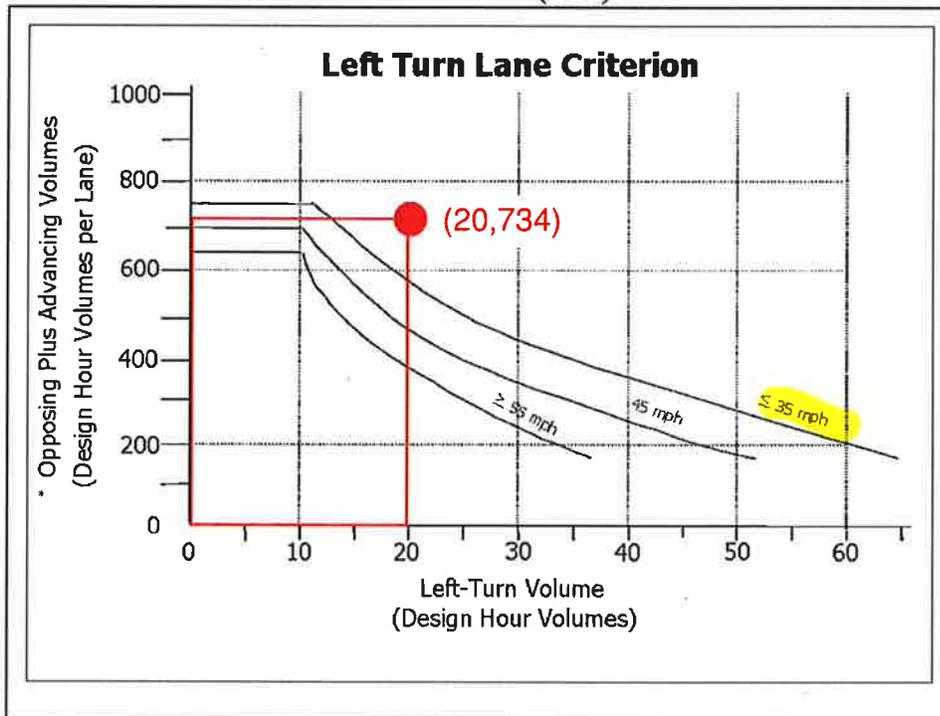
- A left turn lane should be installed, if criterion 1 (Volume) or 2 (Crash) or 3 (Special Cases) are met, unless a subsequent evaluation eliminate it as an option; and
- The Region Traffic Engineer must approve all proposed left turn lanes on state highways, regardless of funding source; and
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- Left turn lane conforms to applicable local, regional and state plans.

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

Exhibit 12-1 Left Turn Lane Criterion (TTI)



*(Advancing Volume/Number of Advancing Through Lanes) + (Opposing Volume/Number of Opposing Through Lanes)

Opposing left turns are not counted as opposing volumes

2030 With Project Conditions at Powerline Road / Eagle Avenue

(Southbound Left-Turn Lane)

Left Turn Lane Evaluation Process

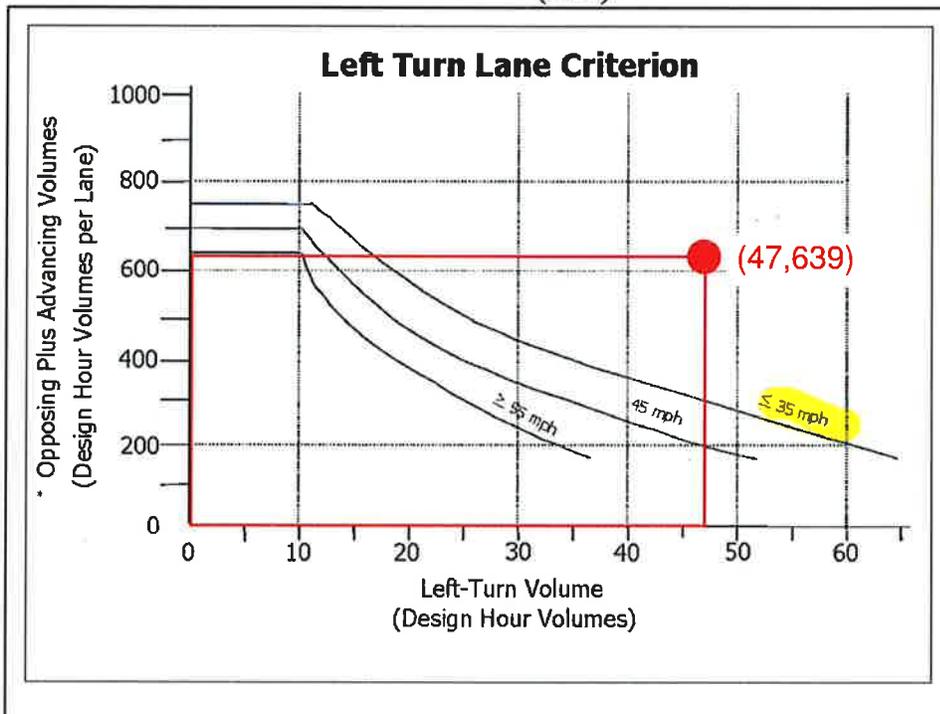
- A left turn lane should be installed, if criterion 1 (Volume) or 2 (Crash) or 3 (Special Cases) are met, unless a subsequent evaluation eliminate it as an option; and
- The Region Traffic Engineer must approve all proposed left turn lanes on state highways, regardless of funding source; and
- Left turn lane complies with Access Management Spacing Standards; and
- Left turn lane conforms to applicable local, regional and state plans.

Criterion 1: Vehicular Volume

The vehicular volume criterion is intended for application where the volume of intersecting traffic is the principal reason for considering installation of a left turn lane. The volume criterion is determined by the Texas Transportation Institute (TTI) curves in Exhibit 12-1.

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

Exhibit 12-1 Left Turn Lane Criterion (TTI)



*(Advancing Volume/Number of Advancing Through Lanes) + (Opposing Volume/Number of Opposing Through Lanes)

Opposing left turns are not counted as opposing volumes

2030 With Project Conditions at Powerline Road / Eagle Avenue

(Northbound Left-Turn Lane)

Left Turn Lane Evaluation Process

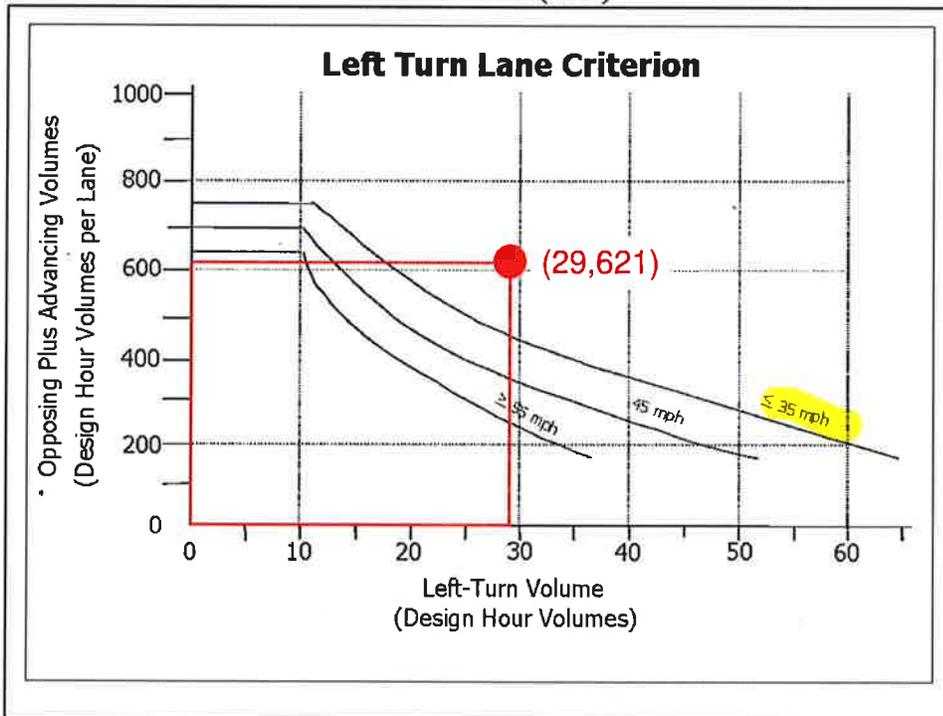
- A left turn lane should be installed, if criterion 1 (Volume) or 2 (Crash) or 3 (Special Cases) are met, unless a subsequent evaluation eliminate it as an option; and
- The Region Traffic Engineer must approve all proposed left turn lanes on state highways, regardless of funding source; and
- Left turn lane complies with Access Management Spacing Standards; and
- Left turn lane conforms to applicable local, regional and state plans.

Criterion 1: Vehicular Volume

The vehicular volume criterion is intended for application where the volume of intersecting traffic is the principal reason for considering installation of a left turn lane. The volume criterion is determined by the Texas Transportation Institute (TTI) curves in Exhibit 12-1.

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

Exhibit 12-1 Left Turn Lane Criterion (TTI)



*(Advancing Volume/Number of Advancing Through Lanes) + (Opposing Volume/Number of Opposing Through Lanes)

Opposing left turns are not counted as opposing volumes

(Southbound Left-Turn Lane)

Left Turn Lane Evaluation Process

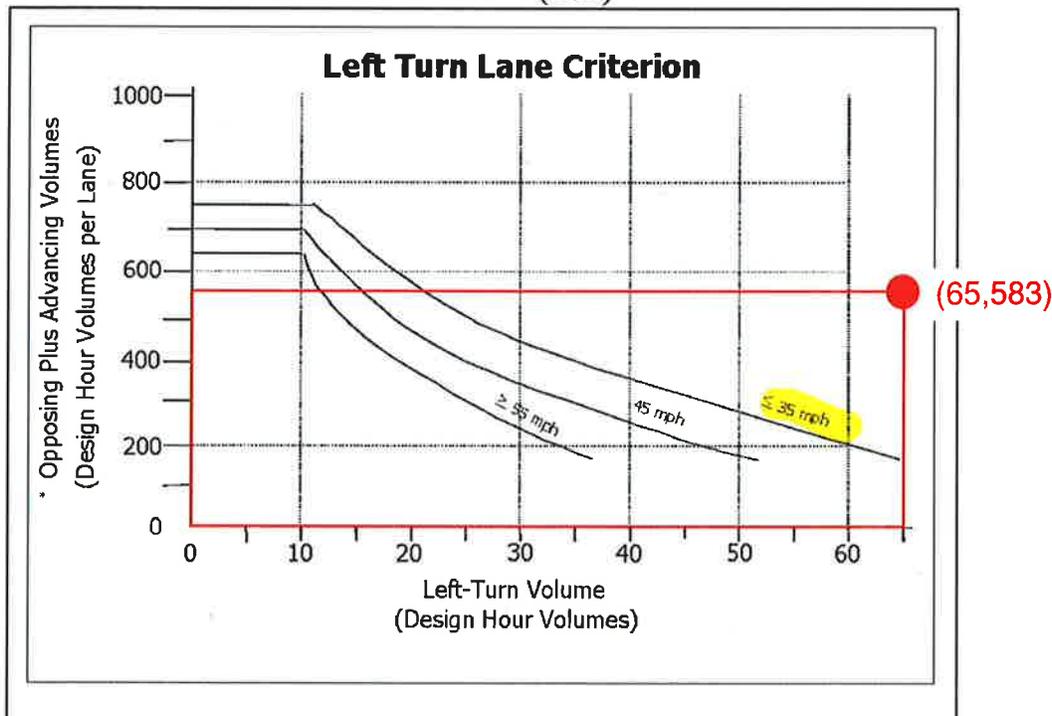
- A left turn lane should be installed, if criterion 1 (Volume) or 2 (Crash) or 3 (Special Cases) are met, unless a subsequent evaluation eliminate it as an option; and
- The Region Traffic Engineer must approve all proposed left turn lanes on state highways, regardless of funding source; and
- Left turn lane complies with Access Management Spacing Standards; and
- Left turn lane conforms to applicable local, regional and state plans.

Criterion 1: Vehicular Volume

The vehicular volume criterion is intended for application where the volume of intersecting traffic is the principal reason for considering installation of a left turn lane. The volume criterion is determined by the Texas Transportation Institute (TTI) curves in Exhibit 12-1.

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

Exhibit 12-1 Left Turn Lane Criterion (TTI)



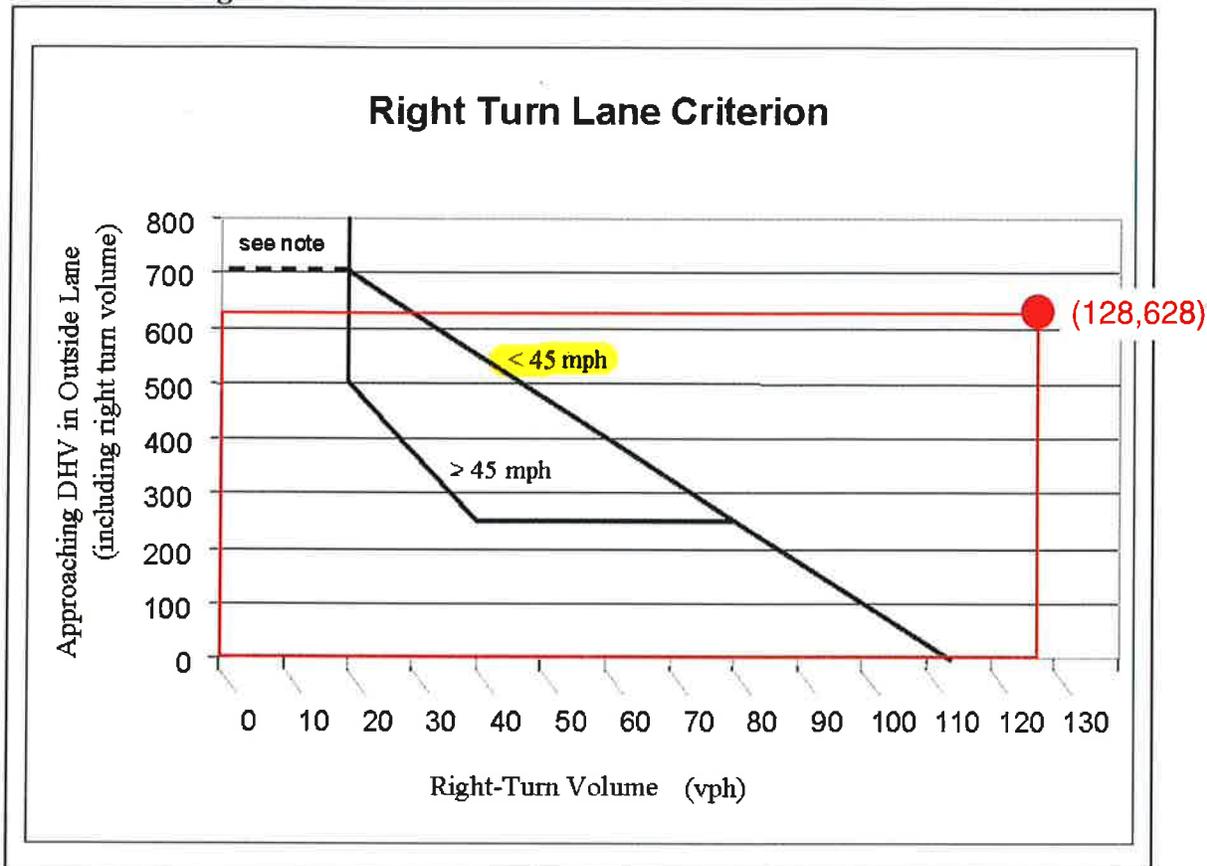
*(Advancing Volume/Number of Advancing Through Lanes) + (Opposing Volume/Number of Opposing Through Lanes)

Opposing left turns are not counted as opposing volumes

2030 Without Project Conditions at Powerline Road / Highway 730

(Eastbound Right-Turn Lane)

Exhibit 12-2 Right Turn Lane Criterion



Note: If there is no right turn lane, a shoulder needs to be provided. If this intersection is in a rural area and is a connection to a public street, a right turn lane is needed.

Criterion 2: Crash Experience

The crash experience criterion is satisfied when:

1. Adequate trial of other remedies with satisfactory observance and enforcement has failed to reduce the accident frequency; **and**
2. A history of crashes of the type susceptible to correction by a right turn lane; **and**
3. The safety benefits outweigh the associated improvements costs; **and**
4. The installation of the right turn lane minimizes impacts to the safety of vehicles, bicycles or pedestrians along the roadway.

Criterion 3: Special Cases

1. **Railroad Crossings:** If a railroad is parallel to the roadway and adversely affects right turns, a worst case scenario should be used in determining the storage requirements for the right turn lane design. The right turn lane storage length depends on the amount of time the roadway is closed, the expected number of vehicle arrivals and the location of the crossing or other obstruction. The analysis should consider all of the variables influencing the design of the right turn lane and may allow a design for conditions other than the worst case storage requirements, providing safety is not

Appendix G

Collision Rate Calculations and Data

ROAD ID	ROAD NAME	CITY	STATE	TYPE	STATUS	START DATE	END DATE	START MILE	END MILE	TOTAL MILE	START DATE	END DATE	START MILE	END MILE	TOTAL MILE	START DATE	END DATE	START MILE	END MILE	TOTAL MILE	START DATE	END DATE	START MILE	END MILE	TOTAL MILE	
183001	183001	183001	183001	183001	183001	183001	183001	183001	183001	183001	183001	183001	183001	183001	183001	183001	183001	183001	183001	183001	183001	183001	183001	183001	183001	183001

Collision Rate Calculations at
Powerline Road / HWY 730

Intersection: Powerline Road / HWY 730 Date 4/5/2020

Ra =	System Wide Average accident rate =	0.6
K =	Statistical Constant =	1.645
Average Daily cars passing Through intersection		
	ADT	0
		4310
		1230
		4870
M=	Millions of Vehicles for a five year period =	18.99825

Rc= Critical Accident Rate = 0.87

Accident Rate

Number of accidents =	1
Number of years =	5

Accident Rate = 0.05

$$R_c = R_a + (K * R_a / M)^{.5} - 1 / (2 * M)$$

ADT = 2020 PM Count X 10
PM Peak Hour= Approx. 10% ADT

Collision Rate Calculations at
Powerline Road / HWY 730

Intersection: Powerline Road / Pine Tree Avenue Date 4/5/2020

Ra =	System Wide Average accident rate =	0.6
K =	Statistical Constant =	1.645
Average Daily cars passing Through intersection		
	ADT	1030
		120
		1460
		90
M=	Millions of Vehicles for a five year period =	4.9275

Rc= Critical Accident Rate = 1.07

Accident Rate

Number of accidents =	2
Number of years =	5

Accident Rate = 0.41

$$R_c = R_a + (K * R_a / M)^{.5} - 1 / (2 * M)$$

ADT = 2020 PM Count X 10
PM Peak Hour= Approx. 10% ADT

Collision Rate Calculations at
Powerline Road / HWY 730

Intersection: Powerline Road / Sparrow Avenue Date 4/5/2020

Ra =	System Wide Average accident rate =	0.6
K =	Statistical Constant =	1.645
Average Daily cars passing Through intersection		
	ADT	960
		60
		1440
		70
M=	Millions of Vehicles for a five year period =	4.61725

Rc= Critical Accident Rate = 1.08

Accident Rate

Number of accidents =	0
Number of years =	5

Accident Rate = 0.00

$$R_c = R_a + (K * R_a / M)^{.5} - 1 / (2 * M)$$

ADT = 2020 PM Count X 10
PM Peak Hour= Approx. 10% ADT

Collision Rate Calculations at
Powerline Road / HWY 730

Intersection: Powerline Road / Eagle Avenue Date 4/5/2020

Ra =	System Wide Average accident rate =	0.6
K =	Statistical Constant =	1.645
Average Daily cars passing Through intersection ADT		840
		20
		1420
		40
M=	Millions of Vehicles for a five year period =	4.234
Rc=	Critical Accident Rate =	1.10

Accident Rate

Number of accidents =		0
Number of years =		5
Accident Rate =		0.00

$$R_c = R_a + (K * R_a / M)^{.5} - 1 / (2 * M)$$

ADT = 2020 PM Count X 10
PM Peak Hour= Approx. 10% ADT

Collision Rate Calculations at
Powerline Road / HWY 730

Intersection: Powerline Road / I-82 SB Ramp Date 4/5/2020

Ra = System Wide Average accident rate = 0.6

K = Statistical Constant = 1.645

Average Daily cars passing Through intersection
ADT 840

580

1370

0

M= Millions of Vehicles for a five year period = 5.09175

Rc= Critical Accident Rate = 1.07

Accident Rate

Number of accidents = 0

Number of years = 5

Accident Rate = 0.00

$$R_c = R_a + (K * R_a / M)^{.5} - 1 / (2 * M)$$

ADT = 2020 PM Count X 10

PM Peak Hour= Approx. 10% ADT

Collision Rate Calculations at
Powerline Road / HWY 730

Intersection: Powerline Road / I-82 NB Ramp Date 4/5/2020

Ra =	System Wide Average accident rate =	0.6
K =	Statistical Constant =	1.645
Average Daily cars passing Through intersection		
	ADT	1200
		0
		1600
		280
M=	Millions of Vehicles for a five year period =	5.621

Rc= Critical Accident Rate = 1.05

Accident Rate

Number of accidents =	1
Number of years =	5
Accident Rate =	0.18

$$Rc = Ra + (K * Ra / M)^{.5} - 1 / (2 * M)$$

ADT = 2020 PM Count X 10
PM Peak Hour= Approx. 10% ADT

Appendix H

Mitigated Level of Service Calculations

Intersection						
Int Delay, s/veh	36.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	500	223	410	354	130	253
Future Vol, veh/h	500	223	410	354	130	253
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	180	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	4	2	2	3	2	2
Mvmt Flow	568	253	466	402	148	288

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	823	0	1904
Stage 1	-	-	-	-	570
Stage 2	-	-	-	-	1334
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	807	-	~76
Stage 1	-	-	-	-	566
Stage 2	-	-	-	-	246
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	805	-	~32
Mov Cap-2 Maneuver	-	-	-	-	~87
Stage 1	-	-	-	-	565
Stage 2	-	-	-	-	~104

Approach	EB	WB	NB
HCM Control Delay, s	0	8.3	162.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	87	520	-	-	805	-
HCM Lane V/C Ratio	1.698	0.553	-	-	0.579	-
HCM Control Delay (s)	\$ 440.7	20.1	-	-	15.4	-
HCM Lane LOS	F	C	-	-	C	-
HCM 95th %tile Q(veh)	12.2	3.3	-	-	3.8	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th Signalized Intersection Summary
 1: Powerline Road & OR730

04/10/2020



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↖	↗
Traffic Volume (veh/h)	500	223	410	354	130	253
Future Volume (veh/h)	500	223	410	354	130	253
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1695	1723	1792	1709	1723	1723
Adj Flow Rate, veh/h	568	84	466	402	148	168
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	4	2	2	3	2	2
Cap, veh/h	695	597	561	1180	231	492
Arrive On Green	0.41	0.41	0.20	0.69	0.14	0.14
Sat Flow, veh/h	1695	1456	1706	1709	1641	1460
Grp Volume(v), veh/h	568	84	466	402	148	168
Grp Sat Flow(s),veh/h/ln	1695	1456	1706	1709	1641	1460
Q Serve(g_s), s	14.1	1.7	6.3	4.5	4.0	4.1
Cycle Q Clear(g_c), s	14.1	1.7	6.3	4.5	4.0	4.1
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	695	597	561	1180	231	492
V/C Ratio(X)	0.82	0.14	0.83	0.34	0.64	0.34
Avail Cap(c_a), veh/h	892	766	729	1547	311	563
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.4	8.8	8.5	3.0	19.3	11.8
Incr Delay (d2), s/veh	4.3	0.1	5.8	0.1	2.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.4	2.1	0.4	1.5	1.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	16.7	8.8	14.3	3.1	21.5	12.1
LnGrp LOS	B	A	B	A	C	B
Approach Vol, veh/h	652			868	316	
Approach Delay, s/veh	15.7			9.1	16.5	
Approach LOS	B			A	B	
Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		10.7	13.3	23.5		36.8
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s		8.5	13.5	24.5		42.5
Max Q Clear Time (g_c+l1), s		6.1	8.3	17.1		6.5
Green Ext Time (p_c), s		0.2	0.6	1.9		1.9
Intersection Summary						
HCM 6th Ctrl Delay			12.7			
HCM 6th LOS			B			

Critical Intersection Volume-to-Capacity Ratio

Powerline Road / US Highway 730

2030 With Project Conditions

PM Peak Hour

Critical Lane Group	EB		WB		NB	
	EBT	EBR	WBL	WBT	NBL	NBR
Adj Flow Rate (veh/h)	568	84	466	402	148	168
Sat Flow (veh/h)	1695	1456	1706	1709	1641	1460
Critical Flow Ratios	0.34	0.06	0.27	0.24	0.09	0.12
Sum of Critical Flow Ratios	0.36					
Cycle Length	51.6 seconds					
Lost Time per Phase	4 seconds					
Total Lost Time	12 seconds					

Critical Intersection V/C Ratio: 0.47

Method follows ODOT Analysis Procedures Manual, Version 2, Chapter 13.4.4.

HCM 2010 Roundabout
1: Powerline Road & OR730

04/10/2020

Intersection					
Intersection Delay, s/veh	18.0				
Intersection LOS	C				
Approach	EB		WB		NB
Entry Lanes	2		1		1
Conflicting Circle Lanes	1		1		1
Adj Approach Flow, veh/h	821		868		436
Demand Flow Rate, veh/h	849		889		445
Vehicles Circulating, veh/h	475		151		591
Vehicles Exiting, veh/h	151		885		733
Follow-Up Headway, s	3.186		3.186		3.186
Ped Vol Crossing Leg, #/h	0		0		2
Ped Cap Adj	1.000		1.000		1.000
Approach Delay, s/veh	24.7		9.3		22.6
Approach LOS	C		A		C
Lane	Left	Right	Left	Bypass	Left
Designated Moves	LT	R	L	R	LR
Assumed Moves	LT	R	L	R	LR
RT Channelized					Yield
Lane Util	0.696	0.304	1.000		1.000
Critical Headway, s	5.193	5.193	5.193		5.193
Entry Flow, veh/h	591	258	475	414	445
Cap Entry Lane, veh/h	703	703	972	972	626
Entry HV Adj Factor	0.962	0.981	0.981	0.971	0.980
Flow Entry, veh/h	568	253	466	402	436
Cap Entry, veh/h	676	689	953	943	613
V/C Ratio	0.841	0.367	0.489	0.426	0.711
Control Delay, s/veh	31.2	10.1	9.8	8.8	22.6
LOS	D	B	A	A	C
95th %tile Queue, veh	9	2	3	2	6

ARTICLE E. LIVESTOCK RESIDENTIAL (LR)

10-3E-1: PURPOSE:

10-3E-2: USES PERMITTED:

10-3E-3: CONDITIONAL USES PERMITTED:

10-3E-4: DEVELOPMENT STANDARDS:

10-3E-5: LIMITATIONS ON USE

10-3E-1: PURPOSE:

The LR District is intended for low density, rural single-family residential uses in the Power City Area and other applicable areas. The LR District corresponds to the LR designation of the Comprehensive Plan.

10-3E-2: USES PERMITTED:

The following uses and their accessory uses are permitted in the LR District:

- A. Single-family dwelling subject to the provision of section 10-11-9 of this title;
- B. One manufactured home on an individual lot subject to the provisions of section 10-11-8 of this title;
- C. Residential home;
- D. Family day care provider;
- E. Home occupation subject to the provision of section 10-11-1 of this title; and
- F. Accessory uses, including an accessory dwelling subject to the provisions of section 10-11-11 of this title.
- G. Keeping and raising of horses, cattle, goats, sheep, and chickens in accordance with the limitations on use listed below.

10-3E-3: CONDITIONAL USES PERMITTED:

The following primary uses and their accessory uses may be permitted when authorized in accordance with the requirements of chapter 12 of this title:

- A. Community services uses as provided by chapter 6 of this title.

10-3E-4: DEVELOPMENT STANDARDS:

DIMENSIONAL STANDARDS

Minimum lot area	10,000 square feet
Minimum lot width	60 feet

Minimum lot depth	100 feet
Minimum yard setbacks:	
Front and rear yard	15 feet
Side yard	10 feet
Side street yard	15 feet
Garage	18 feet from any street except an alley
Maximum building height	50 feet

10-3E-5: LIMITATIONS ON USE:

Permitted Animals. Unless classified as a household pet, only animals explicitly permitted in this Section (i.e., horses, cattle, goats, sheep, chickens) qualify as animals that may be kept as a Livestock Residential Animal.

Lot size requirement. Except as provided otherwise in this section, the total number of all animals (other than their young under the age of six months) allowed on a lot shall be limited to the square footages listed below for each adult animal or similar type of animal listed. These areas shall be exclusively for the animals.

(1)	Horses:	20,000 square feet
	Cattle:	20,000 square feet
	Llamas:	10,000 square feet
	Ostriches/emus:	10,000 square feet
	Sheep:	5,000 square feet
	Goats:	5,000 square feet

(2) The number of fowl or other poultry or rabbits over the age of six months shall not exceed one for each 2,000 square feet of unimproved lot area. The number of young (under the age of six months) allowed on the property at any time shall not exceed three times the allowable number of adults.

General Animal Care. Animals being kept in a residential environment must be cared for and monitored daily to maintain animal health and to prevent nuisance problems with

neighbors and the community. Animals may not be slaughtered in City Limits **except for personal use or animal welfare.**

Sanitation, Waste, and Odors. All animal structures and roaming areas must be kept sanitary and free from accumulations of animal excrement and objectionable odors. All structures and enclosures designed for animals shall be kept reasonably free and clean of flies, and accumulated animal waste materials, and shall be subject to health regulations (county, state or federal) as may be now hereafter established.

Animal Shelter. Barns, sheds, and other structures sheltering animals shall be located a minimum of 35 feet from a side or rear property line and 75 feet from the front property line; adequate fences and corrals shall be required of the animal owner to keep animals off adjacent lands.

~~Roosters.~~ Roosters are not allowed in city limits.

4-H or FFA. Domestic livestock kept solely for the purpose of a youth livestock project such as 4-H or FFA may be exempted from the square footage requirements of this section; provided, that the following conditions are complied with:

- (1) Evidence is provided to the City Planning Official that the youth is duly enrolled in a 4-H or FFA livestock project and an outline of the planned project, including animal types and numbers, is also provided.
- (2) Market/feeder hogs ~~and roosters~~ are permitted only when raised as an FFA or 4-H market animal project.
- (3) Failure to comply with the sanitation control and other requirements of this section may result in the cancellation of the exemption.

Two Options for discharge of firearm in city limits.

Option 1: Special shooting permit

The Chief of Police (or designee) may issue a special shooting permit to any resident in the LR Zone for the purpose of slaughtering an animal that resides on residents LR Zone property. Slaughter may only occur for personal use or animal welfare. A special shooting permit issued under this section shall include conditions and limitations as the Chief of Police or designee see fit for the protection of lives and property. A written request for a special shooting permit, in the form required by the City, must be submitted to the Chief of Police at least 7 calendar days prior to intended use.

Option 2: Two-hour notice

If the slaughtering of the animal involves the discharge of a firearm, notice shall be provided to the Umatilla police department at least two hours prior to the discharge of the firearm. The notice shall be made by phone to the Umatilla police department nonemergency number and shall include the location of the discharge, the time of the discharge, and the reason for discharge.

In both cases, the city code will need to be amended by the ordinance to allow the discharge of weapon. What will need to be changed:

5-1-3: USE OF WEAPONS:  

A. Discharging A Weapon:

1. It shall be unlawful for any person to discharge an air gun, BB gun, bow and arrow, bean shooter, blowgun, paintball gun, slingshot or other similar weapon or device on public property or any premises open to the public.
2. The offense described in this section, discharging air guns and nonfirearm weapons, is a class C violation.
3. It shall be unlawful for any person to discharge any type of firearm; provided, however, that nothing herein contained shall apply to any police officer while acting in the performance of duties or to any person lawfully using a firearm in defense of himself or protecting the life of another or to any person firing on a target range which has been constructed to standards as determined by pertinent building codes of the city, providing absolute entrapment of all fire rounds and control of all offensive noises.
4. The offense described in this section, discharging of firearms, is a class A violation. (Ord. 783, 8-5-2013)