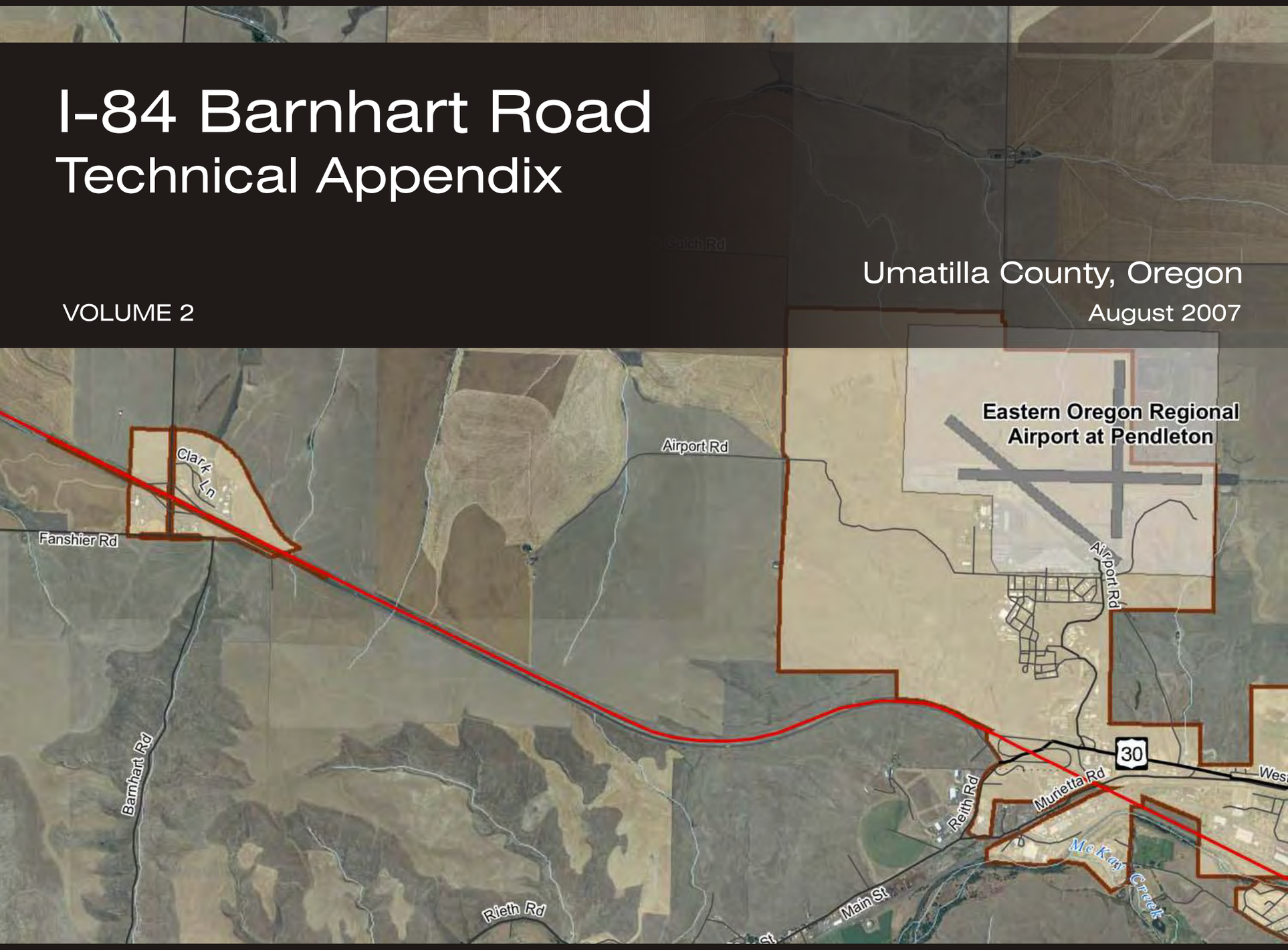
I-84 Barnhart Road
Technical Appendix

Umatilla County, Oregon

VOLUME 2

August 2007



KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

Volume 2

I-84 Barnhart Road IAMP Technical Appendix

Umatilla County, Oregon

ADOPTED August 16, 2007

August 2007

Volume 2

I-84/Barnhart Road Technical Appendix

Umatilla County, Oregon

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Project No. 7930.00

August 2007

Table of Appendices

Preface

This document is Volume II of the I-84/Barnhart Road IAMP. The development of the I-84/Barnhart Road IAMP has been an extensive process that began in June of 2006. From this point, the consultant team and the Project Planning Management Team (PPMT) has undertaken an iterative process to uncover many of the transportation planning, land use, and design issues that are important in the alteration of a highway interchange usage. To document this work effort, technical memorandums were prepared throughout the process for review by the PPMT and the general public. Volume II of the I-84/Barnhart Road IAMP contains a summary of the Project Planning Management Team (PPMT) and Public Workshop meetings and final copies of these technical memorandums, which have been provided to support the findings and conclusions of I-84/Barnhart Road IAMP.

Appendix "A"

Appendix "A" contains a summary of the Project Planning Management Team (PPMT) and Public Workshop meetings.

Appendix "B"

Appendix "B" contains an overview of the plan for this project, communication within the team, and presentation of the I-84/Barnhart Road IAMP to the public. (Technical Memorandum #1)

Appendix "C"

Appendix "C" documents the current plans for the state, city and country regarding the IAMP study area. (Technical Memorandum #2)

Appendix "D"

Appendix "D" documents the current land use conditions as well as the operational and geometric characteristics of the transportation facilities within the IAMP study area. (Technical Memorandum #3)

Appendix "E"

Appendix "E" documents the future baseline conditions analysis under a "no-build" scenario as well as offers several scenarios of future "build". (Technical Memorandum #4)

Appendix "F"

Appendix "F" documents the development and preliminary evaluation of eight access and alignment concepts for the Barnhart Road to Airport Road Connector Roadway and two access concepts for the area south of the I-84/Barnhart Road interchange. (Technical Memorandum #5)

Appendix A

Project Planning
Management Team and
Public Involvement
Summary

Project Planning Management Team and Public Involvement Summary

To ensure that adequate project coordination and public participation occurred throughout the development of the I-84/Barnhart Road Interchange Area Management Plan, a series of Project Planning Management Team (PPMT) and Public Workshop meetings were held over the course of the project. These meeting dates and objectives are summarized below:

Table 1-1
Meeting Summary

Meeting Event	Date	Meeting Purpose/Objectives
PPMT Meeting #1	September 21, 2006	The purpose of the PPMT Meeting #1 was to introduce the Barnhart Road to Airport Road Connector project and the consultant team, overview the IAMP process, discuss the goals of the project, review the evaluation criteria, discuss the project schedule, and set near-term deliverable dates.
PPMT Meeting #2	October 19, 2006	The purpose of the PPMT Meeting #2 was to review Technical Memorandum 3 (Existing Conditions), present the tools that can be used in an IAMP, discuss the options for the upcoming future conditions technical memorandum.
PPMT Meeting #3	November 13, 2006	The purpose of the PPMT Meeting #3 was to review Technical Memorandum 4(Future Conditions), present the initial Connector Roadway alignment concepts developed prior to this project, review the qualitative evaluation for the various future conditions, and prepare for public workshop #1.
Public Workshop (#1) Pendleton City Hall	November 13, 2006	The purpose of the first Public Workshop was to introduce the I-84/Barnhart Road Interchange Area Management Plan study to adjacent property owners and interested citizens. Those in attendance were asked to participate in a mini design charette that focused on potential alignment and access design and circulation alternatives for the adjacent IAMP study area.
PPMT Employment Assumptions Meeting	December 13, 2006	The purpose of the PPMT Employment Assumptions Meeting was to discuss the discrepancy in the various future trip generation studies and to make decisions regarding the PPMT's plan to move forward with the IAMP process.
Public Workshop (#2) Pendleton City Hall	January 17, 2007	The purpose of the second Public Meeting was to provide an overview of the process to date, present the alignment and access alternatives, and discuss the thoughts and opinions of the participants
PPMT Meeting #4	January 18, 2007	The purpose of the PPMT Meeting #4 was to review Technical Memorandum #5 (Opportunities & Constraints Analysis). The meeting also discussed the opinions represented at the second Public Meeting. The discussion moved through each Concept and reached a conclusion to further evaluate the Concepts #N2A and #N4. The Concept #S1 was decided to be the preferred option.
PPMT Meeting #5	March 6, 2007/ Conference Call	The purpose of PPMT Meeting #5 was to review the complete Draft IAMP document and receive recommendations for the Final IAMP Document.

– PPMT – Project Planning Management Team

Meeting Minutes and Presentation materials from all the PPMT Meetings and Public Workshops are included in the remainder of this appendix.

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Meeting Summary

I-84 Barnhart Road IAMP
PPMT Meeting #1
(9/21/06)

Date: September 28, 2006 **Project** #: 7930

To: I-84 Barnhart Road PPMT
From: Susan Wright, P.E., Marc Butorac, P.E., P.T.O.E., Matt Wiesenfeld

cc: Howard Perry, Anderson Perry and Associates, Inc

The following documents the participants and discussion items from September 21, 2006 I-84/Barnhart Road PPMT Meeting #1 conference call.

Participants:

ODOT La Grand Office:

Teresa Penninger, Region 5 Planning Director
Doug Wright, Federal Aid Specialist
Don Fine –Traffic Engineer

Umatilla County:

Tamra Mabbott, County Planner
Hal Phillips, Public Works Director, Roadmaster

City of Pendleton:

Mike Muller, City Planner
Tim Simons, City Engineer
Bob Patterson, Public Works Director
Pete Wells, City Attorney/Planning Director

DLCD:

Jon Jinings, Rep to Umatilla County
Darren Nichols, Rep to City of Pendleton
Bob Cortwright, Transportation Planning Coordinator
Matthew Crall, DLCD, Transportation Planner

Consultants:

Marc Butorac, Kittelson & Associates
Susan Wright, Kittelson & Associates
Matt Wiesenfeld, Kittelson & Associates
Howard Perry, Anderson Perry & Associates Inc

Agenda Items:

Project Process / Review Schedule

- The PPMT Meetings have been scheduled in order to receive input and direction from the PPMT and the public at specific milestones in the project. Receiving input on the draft deliverables and direction to proceed at each meeting is critical to the project schedule.

- Dates have been set for each of the PPMT meetings and Public Workshops. Kittelson will coordinate with Umatilla County and DLCD to refine the dates and timelines for the County Commission and Oregon Transportation Commission hearings. The OTC hearings require at least one month of notice.

Future Meeting Locations

- Kittelson worked off-line with the City of Pendleton and Umatilla County to establish future meeting locations. All future PPMT meetings and Public Workshops will be held at the City of Pendleton City Hall in the Community Room located on the first floor at 501 SE Emigrant, Pendleton, Oregon.

Goal Exception Process

- The IAMP and Goal Exception processes needs to be running simultaneously and will require aggressive coordination. Kittelson, Umatilla County, the City of Pendleton, and DLCD discussed coordination of these efforts further off-line. The City of Pendleton anticipates submitting the goal exception application in early December but will bring a refined schedule to PPMT#2 for further discussion.

- Using an envelope approach for the roadway alignment alternatives within the vicinity of the interchange was discussed for the goal exception application. Kittelson believes that roadway alternatives and corresponding goal exception area envelope may be able to be reduced further by November. *The roadway alignment alternatives within the IAMP study area are provided in the attached materials.*

- Obtaining the goal exception and OTC approval of the IAMP by May 2007 is critical to the bid letting and funding for the roadway project.

- As requested by the DLCD, the City of Pendleton, Umatilla County, and the consultant team will engage DLCD early in the goal exception application process and with the roadway and IAMP alternatives.

Land Use Study Area

- The land use study area was agreed upon; however, three options were discussed with regard to how to analyze the EFU land on the south side of the future roadway alignment that will become isolated between the new roadway and Interstate-84. The three options were to:

    - 1) Assume no land use change of the partitioned EFU land

    - 2) Complete a threshold analysis on the preferred alternative as to how much development of the isolated EFU land could be accommodated by the selected alternative without harming the performance of the new roadway or the interchange.

    - 3) Assume the EFU land will be rezoned as part of the project.

- The consensus of the PPMT was that Option 2, complete a threshold analysis, is the most acceptable approach and would best serve all parties.

Property Owners Participation in the PPMT

- Inclusion of property owners on the PPMT was discussed but the consensus was that they have been sufficiently informed throughout the roadway connector project, will continue to be informed by the City and County, and will have further opportunities to participate as stakeholders during the Public Workshops.

Memo #1

Goals and Objectives Review

- Concerns about the goals not covering the protection of natural resources were raised along with the other statewide planning goals identified in Memo #2. A goal will be added to the project that incorporates all of the statewide planning goals identified in Memo #2.

- The need for a problem statement to frame the goals and objectives was identified and will be added to Memo #1.

Memo #2

- ODOT roadway mobility standards will be added to Memo #2.

- The City of Pendleton does not have standards for a rural road of this character and therefore will use AASHTO standards for this roadway.

- The County's access management standards will be added to Memo #2.

City of Pendleton's Goal 9 Update

- The City of Pendleton hopes to add a maximum of 330 acres of industrial land in the vicinity of the airport through an on-going Goal 9 update process. The IAMP must assume the adopted comprehensive plan land uses for the future conditions analysis but will evaluate the additional 330 acres of industrial land as an alternative.

Measure 37

- Measure 37 will be addressed to Memo #2.

- Potential Measure 37 claims will not be evaluated as part of the IAMP; however, a Measure 37 Management Plan should be included as part of the IAMP to identify how to handle a Measure 37 claim in the event that one is filed.

- The potential impacts of Measure 37 claims can be reduced through purchasing access control within the study area.

IAMP STUDY AREA
PENDLETON, OR

FIGURE
0-1

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Meeting Summary

I-84 Barnhart Road IAMP
PPMT Meeting #2
(10/19/06)

Date: October 19, 2006 **Project** #: 7930

To: I-84 Barnhart Road PPMT

From: P.E., Marc Butorac, P.E., P.T.O.E. and Matt Wiesenfeld

cc: Howard Perry, Anderson Perry and Associates, Inc

This memorandum documents the participants and discussion items from October 19, 2006 I-84/Barnhart Road PPMT Meeting #2.

Participants:

ODOT La Grand Office:

Teresa Penninger, Region 5 Planning Manager
Doug Wright, Federal Aid Specialist
Don Fine –Traffic Engineer

ODOT District 12:

George Ruby, District 12 Maintenance Manager

Umatilla County:

Tamra Mabbott, County Planning Director
Hal Phillips, Public Works Director, Roadmaster

City of Pendleton:

Mike Muller, City Planner
Tim Simons, City Engineer
Bob Patterson, Public Works Director
Pete Wells, City Attorney/Planning Director

Consultants:

Marc Butorac, Kittelson & Associates
Matt Wiesenfeld, Kittelson & Associates
Howard Perry, Anderson Perry & Associates Inc

Agenda Items:

1) Review Technical Memorandum #3 – Existing Conditions

- Marc Butorac presented the existing conditions technical memorandum to the PPMT. The memorandum included sections on the study area, current land uses, existing transportation infrastructure, existing traffic conditions characteristics, including: operations and safety, existing access locations, and cultural and environmental heritage.

- Several questions and requests for clarification were raised by the PPMT, including:

  - The study area should be expanded to include the entire portion of Barnhart Road within 1,320 feet of the westbound I-84 interchange terminal.

  - The specific zoning of the utility substation needs to be verified.

  - A section within the memorandum should be developed to document the existing geometrics and conditions of the I-84 and Barnhart Road interchange.

  - The ownership of Clark Lane needs to be determined.

  - The existing access route to the substation should be specifically defined and illustrated with the access figures.

  - Howard Perry indicated that a complete cultural survey would be conducted as part of the project.

- Action Items

  - The PPMT is to provide Kittelson & Associates, Inc. with all additional comments on the Existing Conditions technical memorandum by Friday, October 27th.

  - Howard will coordinate the naming of the new connector street with City and County staff.

  - KAI will incorporate meeting comments into Technical Memorandum #3.

2) IAMP 101 Presentation

- Marc presented an Interchange Area Management Plan (IAMP) background presentation highlighting the purpose and available tools. (see attached copy for reference)

- A similar presentation will be delivered at the first public workshop on November 13th.

3) Memo #4 - Future Conditions

- Technical Memorandum #4 will address future conditions in the IAMP study area. Key factors that will drive the future forecast are the potential development and redevelopment of land within the IAMP study area and projected growth based on development in the industrial zone land near the airport.

- The area around the airport will contribute a certain percentage of trips to the Barnhart Interchange if the connector is built. The group decided that a conservative estimate to move forward with was to include 100% of the trips currently travel to/from the Airport Road and old Airport Road intersections with US 30 intersection and I-84 west of the City of Pendleton's Urban Growth Boundary.

- City of Pendleton's Goal 9 Update - The City of Pendleton hopes to add a maximum of 330 acres of industrial land in the vicinity of the airport through an on-going Goal 9 update process. The IAMP must assume the adopted comprehensive plan land uses for the future conditions analysis but will evaluate the additional 330 acres of industrial land as an alternative.

- Action Items

    - Larry Dalrymple will provide KAI with information regarding the future development of the industrial lands near the airport.

4) Future Meeting Locations

- All future PPMT meetings and Public Workshops will be held at the City of Pendleton City Hall in the Community Room located on the first floor at 501 SW Emigrant, Pendleton, Oregon.

5) Goal Exception Process

- The IAMP and Goal Exception processes needs to be running simultaneously and will require a high level of coordination. Kittelson, Umatilla County, the City of Pendleton, and DLCD discussed coordination of these efforts further off-line. The City of Pendleton anticipates submitting the goal exception application in early December but will bring a refined schedule to PPMT#3 for further discussion.

- Action Items

- Mike and Tamra will work on the goal exception and provide an updated schedule at the November 13th PPMT meeting.

6) Goals and Objectives

- As requested by the DLCD, the City of Pendleton, Umatilla County, and the consultant team will engage DLCD early in the goal exception application process and with the roadway and IAMP alternatives.

1. The IAMP should be clear about the objective(s) for constructing the Barnhart Road extension;
2. The IAMP should provide a high level of assurance that those objectives are consistent with the design and use of the roadway; and
3. The IAMP should identify design alternatives, deed restrictions and policy protections consistent with the land use objectives of an eventual exception(s).

7) Alternative Land Use Study

- Based on the possible Barnhard Road alignments within the IAMP study area, it is possible that small areas of EFU land will become isolated and be bounded by I-84, Barnhart Road, and the existing County zoned industrial lands in the northeast quadrant of the interchange. As such, it was recommended that potential conversions of the land to industrial zoning be analyzed and quantified from a transportation perspective.

- Action Item

  - Kittelson & Associates will evaluate potential land use changes based on the potential rezoning of the EFU land that becomes isolated as part of the Barnhart Road alignment alternatives.

8) Public Workshop and Notification

- The Notification list will be updated with combine efforts will KAI and the county for the obtaining the address information. The notification list will be combined with the TSP notification being handled by the city.

- Previously, in PPMT #1 the inclusion of property owners on the PPMT was discussed but the consensus was that they have been sufficiently informed throughout the roadway connector project, will continue to be informed by the City and County, and will have further opportunities to participate as stakeholders during the Public Workshops.

- Action Items

  - An updated Notification List will be provide by Tamra by Friday, October 27th

Summary of Action Items

1. Howard Perry will coordinate the naming of the new connector road with County and City staff.

2. Larry Dalrymple will provide information regarding the potential buildout of industrial lands near the airport.

3. KAI will provide trip generation and operations alternative based on the land use alternatives

4. The Notification List will be updated by the County by Friday, October 27th

5. KAI will incorporate meeting comments into Technical Memorandum #3.

6. Mike and Tamra will work on the goal exception and provide an updated schedule at the November 13th PPMT meeting..

Next Steps

PPMT Meeting #3 will be held in Pendleton, Oregon on Monday, November 13th, 2006 from 3:00 to 5:00 p.m. and will be followed that same evening by Public Workshop #1 from 7:00 to 9:00 p.m.

The preliminary agenda for PPMT #3 meeting is to review the future forecast land use and traffic operations and brainstorm potential local circulation and access management alternatives for each roadway alternative and the existing roadway system.

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Meeting Summary

I-84 Barnhart Road IAMP
PPMT Meeting #3
(11/13/06)

Date: November 13, 2006 **Project** #: 7930

To: I-84 Barnhart Road PPMT
From: P.E., Marc Butorac, P.E., P.T.O.E. and Matt Wiesenfeld

cc: Howard Perry, Anderson Perry and Associates, Inc

This memorandum documents the participants and discussion items from November 13, 2006 I-84/Barnhart Road PPMT Meeting #3.

Participants:

ODOT La Grand Office:

Teresa Penninger, Region 5 Planning Manager
Doug Wright, Federal Aid Specialist
Don Fine –Traffic Engineer

ODOT District 12:

George Ruby, District 12 Maintenance Manager

Umatilla County:

Tamra Mabbott, County Planning Director

City of Pendleton:

Mike Muller, City Planner
Tim Simons, City Engineer
Bob Patterson, Public Works Director
Pete Wells, City Attorney/Planning Director

DLCD:

Darren Nichols, DLCD Representative for the City of Pendleton

Consultants:

Marc Butorac, Kittelson & Associates

Matt Wiesenfeld, Kittelson & Associates
Howard Perry, Anderson Perry & Associates Inc

Agenda Items:

1) Review Technical Memorandum #4 – Future Conditions

- Marc Butorac presented the future conditions technical memorandum to the PPMT. The memorandum included discussions on the changes in development which could potentially occur in study area, future growth potential relevant to existing traffic volumes, and potential transportation infrastructure improvements that maybe required in the future. As part of this analysis, four scenarios were evaluated, including:

  - Scenario #0 – No Build. This scenario accounts for the highest expected growth without changing zoning and with no new roadway construction.

  - Scenario #1 – This scenario is identical to Scenario #0 except that the new connector is in-place. Appropriate volumes are redirected onto the connector.

  - Scenario #2 – This scenario includes all the prior growth associated with Scenario #1 as well as full build out of 330 additional acres of industrial land which could be added to the UGB in the proximity of the airport industrial area.

  - Scenario #3 – This scenario includes all the prior growth associated with Scenarios #1 and #2, and additional industrial growth on the 34 acres which could be isolated with the construction of the connector roadway near the existing interchange.

- Several issues were put forth by the PPMT, including:

  - The presumed full build out of industrial lands may be unrealistically aggressive and not representative of year 2025 conditions.

  - Scenario #3 includes the conversion of farm land to industrial land which is not consistent with the states land use goals.

  - Further scenarios may be needed to cover the full range of possibilities including the potential of growth in the Northwest Quadrant of the study area due to a Measure 37 claim.

  - Concerns were expressed that the identified mitigation measures, especially at the Westgate [Pendleton Highway (US 30)]/Airport Road intersection maybe difficult to achieve.

- Action Items

  - The PPMT is to provide Kittelson & Associates, Inc. (KAI) with all additional Technical Memorandum #4 – Future Condition comments by Wednesday, November 23, 2006.

  - Bob Patterson will provide more detailed information on the available and developable industrial acreage, as well as information regarding changes in the UGB expansion plan.

  - KAI will provide growth projections in terms of number of employees.

  - Tamra Mabbott will provide a copy of the Measure 37 claim as well as a list of the allowed uses on the subject site per the previous code to KAI.

  - KAI will update Technical Memroandum #4 to include the following additional items:

    - The various scenarios will be numbered with the No-Build scenario being referred to as Scenario #0.

    - A threshold analysis under Scenario #1 with a slower and/or lower coverage ratio to determine if any changes would occur regarding necessary mitigation measures.

    - A threshold analysis under Scenario #1 will be conducted to determine the potential impacts of the Measure 37 claim in the northwest quadrant of the I-84/Barnhart Road interchange.

    - Follow-up comments provided by the PPMT.

2) Access Management 101 Presentation

- Marc presented on the importance of access management for both the safety and business.

- A similar presentation was delivered at the first public workshop.

3) Discussion Workshop and Alternative Development

- Marc lead a workshop where each PPMT member present was provided an aerial photo of the interchange, a scale to measure access spacing and visual identify the 1,320-foot spacing standard, and red and blue pens to illustrated potential public and private accesses along the new connector roadway.
- Each participant in the exercise was able to develop a possible alternative to be evaluated which balanced their representative considerations.

4) Provide an overview of the Goal Exception Discussion

- The city voiced concerned with moving forward in the goal exception process without a finalized roadway alignment.
- DLCD indicated that they would review any materials provided to date, but cannot make a decision until the final report is provided.
- DLCD requested that the exception document include at a minimum one alternative that does not impact EFU and provide information on why this alternative would potentially be inadequate before considering alternatives that do impact EFU.
- The PPMT agreed that the goal exception should include language that makes it clear that accesses to the new connector roadway from EFU properties will be farm use only accesses.
- Marc Butorac suggested that the City consider hiring a land use and/or legal consultant (i.e., Mark Greenfield) to help either write or review the goal exception. The county and city felt the exception could be written internally.
- The ODOT requested that all alternatives with the required 1,320 feet of access spacing be proven inadequate before alternatives requiring variances are investigated.

- Action Item
    - Mike Muller and Tamra Mabbott will produce a goal exception document that will fulfill the needs of the DLCD and ODOT.

5) Technical Memorandum #5 – Alternative Analysis

- Marc described that Technical Memorandum #5 will address the possible access and approach alternatives within the IAMP study area. These alternatives will be initially seeded through those concepts developed during PPMT #3 and Public Workshop #1.

- As part of the alternatives analysis, each access and approach alternative will be reviewed against the adopted evaluation criteria to determine a preferred alternative. The evaluation will also include cost estimates regarding right-of-way and construction as well as the number of acres of EFU and industrial zoned property.

- Action Items
    - KAI and Anderson Perry will develop preliminary alternatives for the PPMT to review during the week of November 20th in order to determine if an appropriate range of alternatives have been explored.
    - Howard Perry will evaluate the cost, right of way impacts, and impacts to EFU and existing businesses.
    - KAI will evaluate the alternatives for operations, safety, and access.

Public Workshop #1 Summary

- The public workshop was attended and participation occurred. Marc Butorac presented on an array of topics helping educate the public on the nature of IAMPs, the importance of an IAMP and how an IAMP would affect the Barnhart to Airport Connector project. (see attached copy for reference) The presentation included:

  - Project Need
  - Project Elements
  - Preliminary Alignment
  - Goal Exception Process
  - Interchange Area Management Plan
  - Project Schedule
  - Interchange Area Management Plan 101
  - Access Management/Local Circulation 101
  - Local Circulation/Access Workshop

- The local circulation/access workshop element was the participants opportunity to use the tools that were provided the PPMT earlier that day to design the roadway that they wished to see built and incorporate what had been taught earlier in the evening. The diagramed suggestions will be considered as part of the alternatives creation.

Participants:

Bill and Connie Caplinger
Pete Wells
Eli and Lavonne Stephens
Michael Graves
Larry Rew
Richard and Coralee Courson
Phillip W. Houk, Mayor
Don Pinkerton
Wes Grilley
Phil Evert

Summary of Action Items

- The PPMT is to provide Kittelson & Associates, Inc. (KAI) with all additional Technical Memorandum #4 – Future Condition comments by Wednesday, November 23, 2006.

- Bob Patterson will provide more detailed information on the available and developable industrial acreage, as well as information regarding changes in the UGB expansion plan.

- KAI will provide growth projections in terms of number of employees.

- Tamra Mabbott will provide a copy of the Measure 37 claim as well as a list of the allowed uses on the subject site per the previous code to KAI.

- KAI will update Technical Memroandum #4 to include the following additional items:

    - The various scenarios will be numbered with the No-Build scenario being referred to as Scenario #0.

    - A threshold analysis under Scenario #1 with a slower and/or lower coverage ratio to determine if any changes would occur regarding necessary mitigation measures.

    - A threshold analysis under Scenario #1 will be conducted to determine the potential impacts of the Measure 37 claim in the northwest quadrant of the I-84/Barnhart Road interchange.

    - Follow-up comments provided by the PPMT.

- Mike Muller and Tamra Mabbott will produce a goal exception document that will fulfill the needs of the DLCD and ODOT.
- KAI and Anderson Perry will develop preliminary alternatives for the PPMT to review during the week of November 20th in order to determine if an appropriate range of alternatives have been explored.

- Howard Perry will evaluate the cost, right of way impacts, and impacts to EFU and existing businesses.

- KAI will evaluate the alternatives for operations, safety, and access.

Next Steps

PPMT Meeting #4 will be held in Pendleton, Oregon on Thursday, January 18th, 2007 at 1:30 to 3:30 p.m. and will be followed the same evening with the Public Workshop #2 at the same location from 7:00 to 9:00 p.m.

The agenda for PPMT Meeting #4 meeting is to review the access and approach alternatives and recommendations developed by the consultant team

I-84/Barnhart Road Interchange Area Management Plan

Public Workshop #1

November 13, 2006

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Presentation Overview

- Barnhart Road-Airport Road Connector Project
  - Project Need
  - Project Elements
    - Preliminary Alignment
    - Goal Exception Process
    - Interchange Area Management Plan
  - Project Schedule
- Interchange Area Management Plan 101
- Access Management/Local Circulation 101
- Local Circulation/Access Workshop

Project Need

- To provide a connection between the Airport Industrial Area and the existing I-84/Barnhart Road interchange in order to facilitate industrial development and to provide improved access to the interstate freeway due to the existing topographical constraints along the current Airport Road-Pendleton Highway route to I-84

Project Elements & Schedule

- Preliminary Alignments
- Goal Exception Process
- Interchange Area Management Plan

- Schedule
  - IAMP Completed and Adopted by May 2007
  - Design Completed by November 2007
  - Construction Initiated by Spring 2008
  - Construction Complete by Fall 2008

Interchange Area Management Plan (IAMP) 101

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Why Prepare an IAMP?

- Many interchanges were built 30 to 40 years ago to serve low levels of development
- Many interchange areas were committed to development before state land use program created
- Existing, improved and new interchanges are attractive locations for development and provide access to market areas and increase land values
- Interchange issues stem from conflicting needs of providing long-distance travel and accommodating local growth demands
- There is a need to protect the significant state investment in an interchange

What is an IAMP?

- Long-range (20+ year) plan, strategy and agreement to protect function of highway interchange and the major highway investment
- Process to make land use and transportation decisions about how interchange will be managed to protect the long-term function within the interchange area
- Applied to new interchanges or major changes to existing interchanges (OHP Policy 3C)
- Incorporates the access management rule that requires ODOT to develop plans for new interchanges and major changes to interchanges (OAR 734-051)

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What are the Objectives of an IAMP?

- Prolong the useful life of the state's investment in the interchange
- Balance the need for the interchange to support community development interests with the need for safe and efficient operations within the interchange area
- Establish the desired function of the interchange
- Establish agreements with local governments on how to effectively manage the long-term function of the interchange
- Monitor how the interchange capacity is managed through cooperation with local governments
- Provide certainty for property and business owners and local governments

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What are the Elements of an IAMP?

- Interchange Design
  - Determine Function / Purpose of Interchange
  - Balance regional (through) traffic with local traffic
- Access Management
  - Significant tool to manage long-term function
  - Minimize conflicts in the influence area
- Land Use Compatibility
  - Serve land uses in Comprehensive Plan
  - Agreement to maintain compatible land uses
- Environmental Impacts
  - Provide early work for NEPA in project development
  - Identify needed land use actions to authorize project
- Agreement with local governments
  - Mutually adopted by OTC and local government(s)
  - Agreement to implement the IAMP

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Case Study Example

- Jackson School Road
  - North Plains, Oregon

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Jackson School Road/US Highway 26 (cont.)

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Jackson School Road/US Highway 26 (cont.)

The Jackson School Road IAMP was designed to:

- Protect the function of the Jackson School Road Interchange to serve farm-to-market traffic and provide safe and efficient access for long-distance, regional trips (e.g., between Hillsboro/North Plains and the Portland metropolitan area)
- Provide capacity and safe operations to accommodate this function over the twenty-year planning period
- Provide safe and efficient operations between connecting roadways (i.e., US 26 and Jackson School Road)
- Ensure ODOT is involved in land use and transportation decisions that could affect the function of the interchange.
- Provide ODOT a role in protecting resource lands and preventing, to the extent possible, growth-induced development on exception lands or UGB expansions in the vicinity of the interchange.

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Jackson School Road/US Highway 26 (cont.)

To protect the purpose and function of the Jackson School Road Interchange, the following design elements were included:

- **Rural interchange design**
  - Four lanes (two 14-foot travel lanes and two side by side 12 foot left turn lanes)
  - 8-foot shoulders on each side
  - "Tight Diamond Design"
- **Access control for at least 1,320 feet north and south of ramp terminals**
- **Ramp meters installed on eastbound entrance ramp to US 26**
- **Existing Jackson School Road alignment south of US 26 will be used as a frontage road to connect with new alignment**
- **Frontage road access to the new Jackson School Road alignment will be at least 1,320 feet from interchange ramp terminals**

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Jackson School Road/US Highway 26 (cont.)

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Jackson School Road/US Highway 26 (cont.)

- **The IAMP:**
  - Developed in concert with affected local jurisdictions
  - Establishes the Purpose and Function of the JSR Interchange
  - Fully implements the OHP Access Standard
  - Requires Washington County, the cities of North Plains and Hillsboro, and Metro to coordinate with ODOT prior to any land use or transportation action that would affect the JSR Interchange
- **The IAMP amended the US 26 Corridor Plan**
  - Washington County adopted the IAMP strategies in its Transportation Plan
  - North Plains amended its Transportation Plan to improve east/west connectivity in new UGB areas

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I-84/Barnhart Road IAMP Possible Outcomes

- **Activities to Maintain Interchange Function**
  - Comprehensive Plan and Transportation System Plan policies and implementation strategies that support interchange management
  - Zoning / Land Division Ordinances / Conditions of Approval on future development to implement interchange management measures
  - Realignments of Barnhart Road and Clark Lane
  - Local street network improvements to add capacity for local trips off of the state system
  - Local plans, ordinances and UGB amendments to maintain balance between land use and interchange capacity to serve future needs.

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I-84/Barnhart Road IAMP Adoption

- **The IAMP is adopted by the Oregon Transportation Commission and the affected local jurisdictions.**
  - Adopted as a Facility Plan by the OTC.
  - Adopted as an element of the Umatilla County and City of Pendleton Transportation System Plans and possibly the comprehensive plan and local ordinances.
- **Additional IGAs maybe needed to guide implementation of IAMP**

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Access Management 101

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What is Access Management?

- Access management is the careful planning of the location, design, and operation of:
  - Driveways
  - Median openings
  - Interchanges, and
  - Local street connections

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The Purpose of Access Management?

- The purpose of Access Management is to provide access to land development while preserving the safety and efficiency of Oregon's highways, roadways, and city streets.

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The Benefits of Access Management?

- Reduces congestion and the potential for crashes.
- Preserves road capacity
- Reduces travel time
- Provides more efficient movement to destinations
- Can promote economic development
- Ensures more timely movement of freight

Approximately one person dies each week in an intersection or driveway related crash on Oregon's highways

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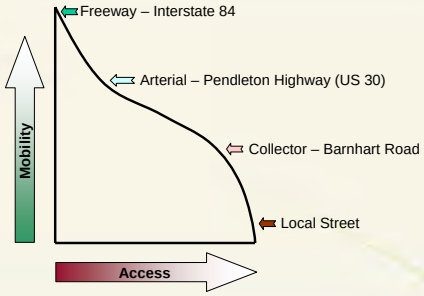
Different Road - Different Functions:



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Different Road - Different Functions

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Different Road - Different Functions

- Local Streets Emphasize Access over Mobility

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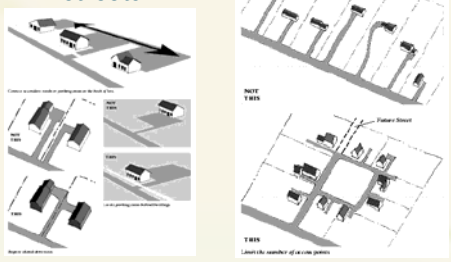
Different Road - Different Functions

- Local Streets

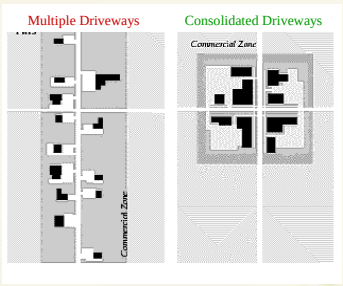


Different Road - Different Functions

- Arterials Emphasize Mobility over Access

Different Road - Different Functions

- Arterial Access
  - Avoid multiple contiguous driveways along an arterial.
  - Plan for consolidated or shared driveway locations that serve multiple properties.



Different Road - Different Functions

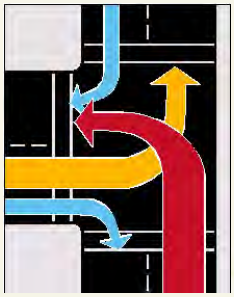
- Freeways maximize mobility

What Contributes to Unsafe Situations?

- Poorly designed or spaced driveways

What Contributes to Unsafe Situations?

- Of all driveway or intersection crashes, 75% involve the two left-turn movements.



Access Management Tools and Techniques

- Aligned and Properly Spaced Intersections
- Medians
- Frontage and Backage Roads
- Managed Access
- Well Designed Local Circulation Routes
- Crossover Easements

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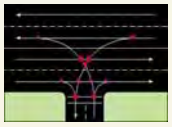
Access Management Tools and Techniques

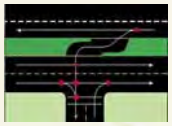
- Types of Accesses
  - Full Access
  - Left-in / Right-in / Right-out
  - Right-in / Right-out
  - Right-in Only

Before



11 Conflict Points

After



6 Conflict Points

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Key Access Management Parameters for the Barnhart Road Interchange

- Functional Area Considerations
  - Reaction Time
  - Deceleration Needs
  - Queuing Needs
- Factors to Evaluate When Locating Access Points
  - Adjacent Driveway Locations
  - Topographical Constraints
- Access Spacing Requirements
  - ¼ mile Access Spacing from Interchange

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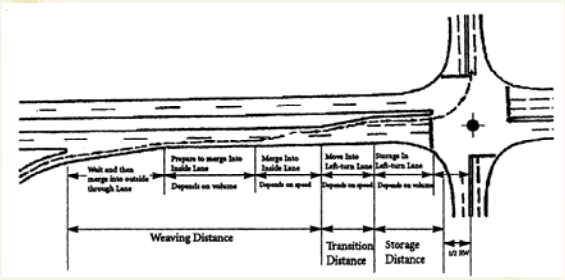

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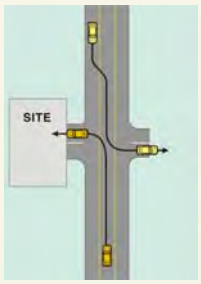
Factors to Evaluate When Locating Access Points

- Aligned



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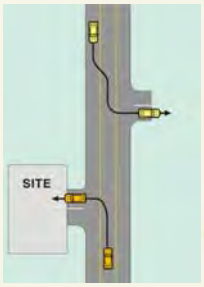
Factors to Evaluate When Locating Access Points

- Aligned
- Positive Offset



Driveways Do Not Align, But There Are No Turning Movement Conflicts.

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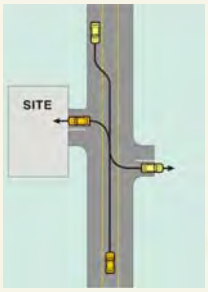
Factors to Evaluate When Locating Access Points

- Aligned
- Positive Offset
- Negative Offset



Results in Turning Movement Conflicts and is Considered Poor Design

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Factors to Evaluate When Locating Access Points

- Vehicular Queuing
  - Existing Conditions

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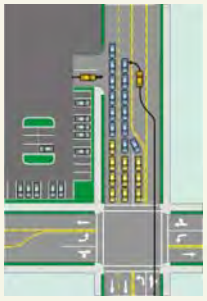
Factors to Evaluate When Locating Access Points

- Vehicular Queuing
  - Future Conditions



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ODOT Interchange Access Spacing Requirements

- 1999 Oregon Highway Plan – Policy 3C
  - "It is the policy of the State of Oregon to plan for and manage grade-separated interchange areas to ensure safe and efficient operation between connecting roadways.
  - It is the goal (at the time of any redevelopment, change of use, or highway construction, reconstruction or modernization of an interchange) to meet the appropriate spacing standards, if possible, but, at the very least, to improve the current conditions by moving in the direction of the spacing standards.

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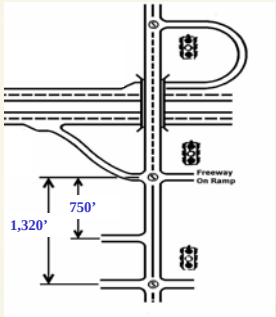
ODOT Interchange Access Spacing Requirements

- Minimum distance to first major intersection – 1,320'
- Minimum distance to first driveway beyond ramp terminal (limited to right-in/right-out) – 750'.



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Local Circulation / Access Workshop

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Lets Create Some Local Circulation/Access Concepts for I-84/Barnhart Road Interchange Area

Blue = Connector Road Alignment Red = Access/Street Connection

Access and Local Circulation Tools

- Median locations
- Access locations
- Types of Access
- Access easements
- Frontage / Backage roads
- Pedestrian / Bike connections

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Access and Local Circulation Considerations

- Existing and Future Land Uses
- Future Traffic Volumes (735 vehicles per hour weekday p.m. peak hour)
- Location of Access
- Types of Access
- Existing and Plan Street Network
- Access Spacing Standards
- Impacted Property Access
- Land Use Parameters (e.g., UGB)

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Meeting Summary

I-84 Barnhart Road IAMP
PPMT Meeting #4
(1/18/07)

Date: January 29, 2007 **Project** #: 7930

To: I-84/Barnhart Road PPMT
From: Marc Butorac, P.E., P.T.O.E. and Matt Wiesenfeld

cc: Howard Perry, Anderson Perry and Associates, Inc

This memorandum documents the participants and discussion items from January 18, 2007 I-84/Barnhart Road PPMT Meeting #4.

Participants:

ODOT La Grand Office:

Teresa Penninger, Region 5 Planning Manager
Doug Wright, Federal Aid Specialist
Don Fine –Traffic Engineer

ODOT District 12:

George Ruby, District 12 Maintenance Manager

Umatilla County:

Tamra Mabbott, County Planning Director
Hal Philips, County Public Works Director, Roadmaster

City of Pendleton:

Mike Muller, City Planner
Tim Simons, City Engineer
Bob Patterson, Public Works Director
Pete Wells, City Attorney/Planning Director

DLCD:

Jon Jinnings, DLCD Representative for the Umatilla County
Bob Cortwright, DLCD Transportation Planning Coordinator (via telephone)

Consultants:

Marc Butorac, Kittelson & Associates
Matt Wiesenfeld, Kittelson & Associates
Howard Perry, Anderson Perry & Associates Inc

Agenda Items:

1) Review Technical Memorandum #5 – Opportunities and Constraints Analysis

- Marc Butorac acknowledged that the PPMT was familiar with Technical Memorandum #5 and that the time could be better spent on a discussion of the Road Alignment and Access Concepts and Land Use Management Strategies based on team's understanding of the concepts. When questions were brought forth, details on each concept were re-visited to keep the team informed and refreshed on the material.

2) Public Workshop #2 Summary

- The public workshop was well attended and participation occurred. Marc Butorac presented an update on the IAMP and other ongoing processes in the area. The presentation continued in discussing each of the new Connector Roadway's alignment and access concepts. The Connector Roadway's cross-section and short- and long-term traffic control devices and lane configurations were presented by Marc after the concepts. Matt Wiesenfeld presented on the Land Use Management Strategies which could be used potentially to mitigate the effects of the new roadway on current land uses. The presentation then moved into an open forum on each concept and allowed the public participants to comment on their concerns and consideration which are summarized in Attachment "A".

Participants:

Participants:
Bill and Connie Caplinger
Eli and Lavonne Stephens
Terry and Jayne Clarke
Rick Thomas
Richard Courson

General Commentary on the Northern Concepts

At the Public Workshop concerns were voiced about the grade in the interchange area, the icy conditions the Connector Roadway would likely face, and the need to accommodate trucks that will wish to 'stack' at the interchange during inclement weather conditions and wait for better driving conditions.

3) Review of the Alignment and Access Concepts

Concept # N8

- Concept #N8 was not introduced during the public workshops as the PPMT was not yet familiar with this concept due to its late development.
- The DLCD voiced concerns that the concept created a parcel that was:
  - Irregularly shaped
  - Smaller than desirable for farming practices

  - Likely to entice future rezoning and development applications
- County Planning wanted it to be considered if it provided a better overall engineering solution. A conclusion was made by the PPMT that Concept #N8 was not superior to other existing concepts from a peer engineering perspective.
- As a result, the PPMT recommended that the final IAMP document include Concept #N8 and note its characteristics.
- Bob Cartwright via phone interjected that the goal exception needed to be based on an adequate concept and not necessarily the best concept.

Southerly Roadway Alignment and Access Concept Discussion

Concepts #S1 and #S2

The PPMT reached complete consensus that Concept #S1 be recommended as the preferred roadway alignment and access concept for the southerly side of the interchange. Concept #S2 was determined to be unacceptable from an access spacing perspective.

PREFERRED CONCEPT: ***Concept #S1***

Northerly Roadway Alignment and Access Concept Discussion

To facilitate the discussion, Marc indicated that the Consultant Team recommendation indicated that Concepts #N2A, #N2B and #N4 were the initial preferred concepts for the northerly side of the interchange. The other Concepts were discussed as to their merit and then removed from further consideration.

Concepts #N1A and #N1B failed primarily from a safety perspective due to the sharp horizontal curve at the end of a long straight segment of the proposed Connector Roadway. These concepts were also deemed less preferable due to the low design speed, rate of curvature, amount of industrial impacts, and clear zone concerns from I-84.

Concept #N3 was deemed too impactive to EFU lands north of the industrial property. It also was less preferable due to its higher cost that was associated with its length, cut and fill requirements, and the extra main roadway intersection that would be created.

Concept #N5 failed on account of its impacts to the industrial land and its difficult grading aspects. Although access spacing standards would be met, the intersection would be in a difficult location for trucks, especially during inclement weather conditions.

Concept #N2B was discussed further and found to have no advantages when compared to Concept #N2A beside that it exceeded ODOT spacing standard of 1,320 feet. Overall grade and cost concerns led the team to remove it from the preferred list of concepts.

PREFERRED CONCEPT: ***Concept #N2A and #N4***

Comparative Analysis of Concepts #N2A and #N4

- Access spacing is a non-differentiating factor between the two concepts
- Concept #N2A takes more EFU; Concept #N4 takes both EFU and Industrial Land
- Concept #N4 requires the relocation of utilities and potentially requires removing contaminated soil within the northeastern quadrant of the existing industrial zoned property.

- The cost differential between the two concepts was deemed a non-differentiating factor at this time.
- In addition to the comparative analysis, Marc confirmed the extents of ODOT and the City of Pendleton's access control acquisition and also defined the points of access to the properties north of the interchange. Attachments "B" and "C" illustrate the access management characteristics of both designs. In addition, the attachments summarized the unresolved issues associated with zoning.

3) Land Use Management Strategy Discussion

- Marc quickly summarized the following four land use strategies on the north side of the interchange:

  A. No Change
  B. Conversion of isolated EFU to RLI
  C. Swapping of interchange RLI with EFU
  D. Swapping of airport RLI with interchange EFU

    - Strategy 'D' was ruled out by all parties as unnecessary given the amount of acreage affected under the preferred northerly roadway alignment and access concepts.
    - Strategy 'C' was deemed as a possible solution to be explored further
    - Strategy 'B' was deemed as a possible solution to be explored further
    - Strategy 'A' was deemed ideal but unlikely due to the preferred northerly roadway alignment and access concepts being contemplated

The PPMT decided that the discussion of takings needed to include ODOT's Right-of-Way department before further presumptions were made regarding the potential land use management strategies.

4) Roadway Cross-Section and Long-Term Traffic Control & Lane Configurations Discussion

- The Connector Roadway and subsequent minor road's cross-sections and long term traffic control and lane configurations, as presented in Technical Memorandum #5, were agreed upon as acceptable by the PPMT.

5) Land Use Management and Coordination Discussion

- Either of the preferred concepts for the north side of the interchange would isolate pieces of both EFU land and segment the existing industrial property. Multiple possibilities were discussed, but the PPMT decided that ODOT's Right-of-Way group should be consulted before the options were evaluated further.

6) Project Schedule Discussion

- The PPMT updated the project schedule and added several new items to the schedule which have been added to an updated version which can be found in Attachment "D".

7) Goal Exception and Travel Demand Modeling Update Discussion

- The goal exception process is underway and Tamra Mabbott and Mike Muller should have the exception draft completed by the end of January. The travel demand model will require further assistance from Larry Daryrmple and Rich Arnold.

8) Summary of Action Items

a. The PPMT is to provide Kittelson & Associates, Inc. (KAI) with all additional Technical Memorandum #5 – Opportunities and Constraints Analysis comments by Friday, January 26, 2007.

b. Howard Perry will provide further information regarding the land needed for the construction process and the land that will be detached from its current parcels under Concepts #N2A and #N4.

c. KAI will follow up with Rich Arnold regarding the employment growth assumptions and new future year traffic modeling forecasts.

d. ODOT will discuss the preferred concepts with the Right-of-Way department and determine the proper procedure for moving forward on either Concepts #N2A and #N4

e. The city will contact the industrial land owner to ascertain his position to the preferred concepts. This piece should come after the ODOT discussion with the Right-of-Way department.

f. Mike Muller and Tamra Mabbott will complete a draft of the goal exception document by the end of January, 2007.

g. KAI will provide a draft summary IAMP plan document as well as Technical Memorandums #1 through #5 to Tamra Mabbott by February 1st in order for the County to issue the 45-day notice procedure

9) Next Steps

PPMT will meet by conference call on January 29, 2007 at 3:00 p.m. to discuss which of the remaining two concepts will be the PPMT preferred concept.

Please see attached updated schedule for details regarding future meetings.

I-84/Barnhart Road Interchange Area Management Plan

Public Workshop #2

January 17, 2007

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Presentation Overview

- Barnhart Road-Airport Road Connector Project
- Roadway Alignment and Access Concept Development Process
  - Proposed Concepts
  - Roadway Cross-Section
  - Land Use Management Strategies
- Workshop Session
  - Identification of Each Concept's Advantages and Disadvantages
- Next Step
  - Future PPMT Meetings
  - Planning Commission Meetings

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Barnhart Road to Airport Road Connector

- A roadway to link the industrial area near the airport with the I-84/Barnhart Road Interchange.

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Proposed Alignment and Access Concepts

- Each Concept has unique advantages and disadvantages that we will discuss tonight.
- 7 Concepts illustrate possible options for the north side of the interchange
- 2 Concepts illustrate possible options for the south side of the interchange
- The north and south-side concepts are independent of each other.

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Concept N1A

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Concept N1B

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Concept N2A

Concept N2B

Concept N3

Concept N4

Concept N5

Concept N6

Concept S1

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Concept S2

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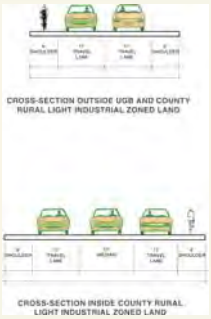
Roadway Cross-Sections



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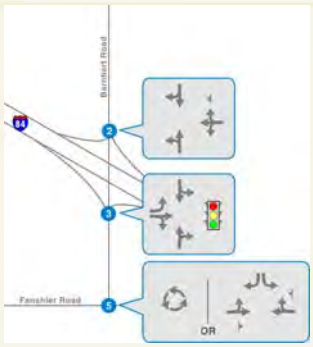
Future Traffic Control



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Land Use Alternatives

- **Land Use Management Strategy Alternatives**
  - *A. No Change*
  - *B. Conversion of Isolated Exclusive Farm Use (EFU) to Rural Light Industrial (RLI)*
  - *C. Interchange Area Zone Swap*
  - *D. Interchange Area and Airport Industrial Area Zone Swap -*

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Land Use Alternatives

- **Land Use Management Strategy Alternatives**
  - *A. No Change* - The base strategy is to leave the zoning the same as it is today. Although this strategy is available for every Concept, it is the preferred strategy for Concepts #N1A, #N1B, and #N5.

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Land Use Alternatives

- **Land Use Management Strategy Alternatives**
  - *B. Conversion of Isolated Exclusive Farm Use (EFU) to Rural Light Industrial (RLI)* - This strategy accounts for the land which would become separated from current farming patterns and have limited or no viability as future sustainable farm land. The quantity of land converted from EFU to RLI would have no appreciable effect on the operation of the surrounding transportation facilities as documented in Technical Memorandum #4. This strategy is most applicable for the Concepts #N2A, #N2B, #N3, and #N4.

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Land Use Alternatives

- **Land Use Management Strategy Alternatives**
  - *C. Interchange Area Zone Swap* - This strategy would take land located north of the of the new Connector Roadway and currently zoned RLI and convert it to EFU under the Concepts which extend outs the RLI zoned land. Land currently zoned EFU and located between the new connector roadway and I-84 would be converted to RLI as it would have potentially limited viability as future sustainable farm land. This strategy is most applicable for the Concepts #N2A, #N2B, and #N4.

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Land Use Alternatives

- **Land Use Management Strategy Alternatives**
  - *D. Interchange Area and Airport Industrial Area Zone Swap* - This strategy would allow EFU separated from current farming patterns by the new Connector Roadway in the vicinity of the interchange to be converted to RLI. To offset this impact and maintain the same amount of EFU land in the local area and within the extents of the Connecter Roadway, existing City controlled light industrial land of the same quantity near the airport would be converted back to EFU. This strategy is most applicable for the Concepts #N2A, #N2B, #N3, and #N4.

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Workshop Session

- **Advantages and Disadvantages as seen by you.**

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Next Steps

- **PPMT Meetings**
- **Planning Commission Meetings**

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Meeting Summary

I-84 Barnhart Road IAMP
PPMT Meeting #5
(3/6/07)

Date: March 6, 2007 **Project** #: 7930

To: I-84/Barnhart Road PPMT
From: Marc Butorac, P.E., P.T.O.E. and Susan Wright, P.E.

cc: Howard Perry, Anderson Perry and Associates, Inc

This memorandum documents the participants and discussion items from March 6, 2007 I-84/Barnhart Road PPMT Meeting #5.

Participants:

ODOT La Grand Office:

Teresa Penninger, Region 5 Planning Manager
Doug Wright, Federal Aid Specialist
Don Fine –Traffic Engineer

ODOT District 12:

George Ruby, District 12 Maintenance Manager

Umatilla County:

Not Present

City of Pendleton:

Bob Patterson, Public Works Director
Pete Wells, City Attorney/Planning Director

DLCD:

Jon Jinnings, DLCD Representative for the Umatilla County
Bob Cortwright, DLCD Transportation Planning Coordinator

Consultants:

Marc Butorac, Kittelson & Associates
Susan Wright, Kittelson & Associates

Matt Wiesenfeld, Kittelson & Associates
Howard Perry, Anderson Perry & Associates Inc

Agenda Items:

1) Discuss Recommendation to Planning Commission

- Recommending one northern alternative (instead of two: N2A2 and N4A) in the Draft IAMP and to the Planning Commission was discussed. However, the City would prefer to let the property owners and the DLCD present their case to the Planning Commission and let the Planning Commission make a determination without a staff recommendation.

2) Review Draft IAMP

- Chapters 6 and 7 of the Draft IAMP were reviewed and discussed. The following summarized the changes that will be made.

    - All Chapter 6 figures will be presented with a "6A" and "6B" version providing the information on a basemap for Alternative N2A2 and N4A.

    - Access NA5 will be modified throughout the report (including Table 6-3) to indicate that it will also provide access to the two remnant EFU parcels on the north and south side of the Woodpecker access road.

    - The left-turn lanes at NA2 and NA5 are not warranted from a volume perspective but were recommended by the Consultant due to the anticipated travel speeds and grades along the Connector Roadway. The City will discuss and make a determination about including the left-turn lanes as long-term projects that can be completed by development as opposed to short-term projects.

    - The roadway cross-section in Figure 6-2 will be modified to show a 14-foot median, include the 2-foot gravel shoulder, not show bicyclists, and to show some trucks as opposed to all passenger vehicles.

    - The ramp realignments will be called out on Figure 6-3 but will not be drawn out.

    - Figure 6-8 will be modified to remove the "Airport Road" title on a private road and modify the UGB boundary.

    - The reference to Oregon Highway Plan mobility standards will be updated per ODOT's current practice (Theresa to follow-up) and the current mobility standard will be identified.

    - The City still finds the creation of an SDC acceptable without the need to fund a traffic signal. This needs to be confirmed with the County.

    - ODOT will confirm the timeline for processing the access spacing deviation.

- Discussed the need to update the development review standards for the City/County prior to adoption of the IAMP.

Next Steps

PPMT will provide additional comments to Kittelson & Associates by close of business Monday, March 12th.

Attachment 'A'

I-84/Barnhart Road Interchange Area Management Plan

Public Workshop #2 Summary

General Concerns Voiced By the Public:

- Will a new roadway cause further runoff directed to the north of the interchange?
    - The project will address runoff and it will maintain or enhance existing conditions.
- How will wildlife in the area be affected?
    - The project environment component will address wildlife needs in the area.

Discussion on Northerly Concepts:

Concept North 1A –

- The tight curves along the new roadway would be difficult to navigate in icy conditions
- The roadside storage area for trucks in inclement weather would not be present.

Concept North 1B –

- The need for an extra stop controlled intersection was disliked generally.
- The tight curves along the new roadway would be difficult to navigate in icy conditions
- The roadside storage area for trucks in inclement weather would not be present.

Concept North 2A –

- This concept was generally well liked and was felt to fit well with land use alternative 'C' the local area zone swaps.

Concept North 2B –

- This alignment would require vehicles from the north to cross the lowest point in the terrain twice.
- The access spaces for this concept is the best
- The drainage for the Connector Roadway would be hampered by the northern minor road.
- The Connector Roadway/Barnhart Road intersection would be in a difficult location for sight distance.

Concept North 3 -

- The need for an extra stop controlled intersection was disliked generally.
- The location of the stop controlled intersection would make truck acceleration up the hill slower and more difficult than desired.
- The right-in/ right out access was generally unpopular.

Concept North 4 –

- The corner of the industrial property might be too small for a roadway to come through without effecting existing structures.
- For general information it was added that the bays on the scrap building open on the east and west edges. It was further noted that this part of the property is used for scraps which have a low aesthetic value.
- Roadside storage for trucks waiting out inclement weather would be limited.

Concept North 5 -

- The Connector Roadway Alignment would require the moving of a building and fill near the additional stop.
- The need for an extra stop controlled intersection was disliked generally.
- The location of the stop controlled intersection would make truck acceleration up the hill slower and more difficult than desired.

Discussion on Southerly Concepts:

Concept South 1-

- No concerns were raised with this concept.

Concept South 2-

- Concern was voiced that trucks drivers in this area would not be in favor of the roundabout.

Appendix B

Technical Memorandum #1
Interagency and Public
Involvement Program

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TECHNICAL MEMORANDUM

I-84 Barnhart Road Interchange Area Management Plan
Technical Memo #1
Interagency and Public Involvement Program

Date: October 17, 2006 **Project** #: 7930

To: I-84 Barnhart Road PPMT
From: Susan Wright, P.E., Marc Butorac, P.E., P.T.O.E., Matt Wiesenfeld

cc: Howard Perry, Anderson Perry and Associates, Inc.

As part of the Barnhart Road-Airport Road Connector project, an Interchange Area Management Plan (IAMP) is being conducted at the I-84/Barnhart Road interchange to ensure that the interchange area continues to operate and function as designed with the new connection between Barnhart Road and Airport Road. The following technical memorandum provides an overview of the Interchange Area Management Plan (IAMP) study area, describes the members and activities of the Project Planning Management Team (PPMT), provides an overview of the PPMT meeting and overall project schedule, and provides draft project goals, objectives, and evaluation criteria that will be revised following input from the first PPMT meeting.

INTERCHANGE AREA MANAGEMENT PLAN (IAMP) STUDY AREA

At a minimum, the IAMP study area is required to include all land uses and roadways located within approximately 1,320 feet of the existing I-84 / Barnhart Road interchange. This distance corresponds to the spacing standard outlined in the Oregon Administration Rule (OAR) 734, Division 51 rules for interchanges. The Barnhart Road-Airport Road Connector alignment alternatives and the roadway network and land use patterns surrounding the I-84/Barnhart Road interchange were reviewed to determine the need to extend beyond the 1,320 feet minimum requirement. Based on this review, the study area was extended to the north to include the most northern potential alignment option and the EFU land that would become segmented between I-84 and the new Barnhart Road-Airport Road Connector roadway alignment. The study area roadways include Interstate-84, Barnhart Road, Clark Lane (north of the interchange), and Fanshier Road (south of the interchange). The study roadways and properties included within the proposed Barnhart Road IAMP study area are shown in Figure 1-1.

IAMP STUDY AREA
PENDLETON, OR

FIGURE
0-1

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING / TRAFFIC ENGINEERING

K:\Kittelson\Pendleton_IAMP\MXD\IAMP_Study_Area_081006_11x17.mxd, Date: August 14, 2006 10:25:17 AM

PROJECT PLANNING MANAGEMENT TEAM

The Planning Project Management Team (PPMT) has the responsibility for guiding the planning work of the Contractor and is responsible for reviewing all work projects, providing input on all planning recommendations such as the project study area, goals and objectives, level of public involvement, technical analysis, and the proposed alternatives, and ultimately helping to select the preferred local circulation/access, land use management, and coordination elements of the IAMP.

A draft PPMT was established based on input from City, County, and ODOT representatives. The draft PPMT was presented at the August 8th, 2006 combined kick-off meeting for the Barnhart Road-Airport Road Connector and IAMP projects. Based on feedback from the participants of the combined kick-off meeting, the PPMT shown in Table 1-1 was established.

Table 1-1 Project Planning Management Team

Agency	Name	Position/Title	Role
ODOT – La Grand/Region 5	Teresa Penninger	Region 5 Planning Manager	ODOT Project Manager
	Doug Wright	Federal Aid Specialist	ODOT Project Manager
	Tom Kuhlman	Region 5 Traffic Engineer	Informed
	Craig Sipp	Assistant Traffic Manager	Informed
	Don Fine	Traffic Engineer	PPMT member
ODOT- Pendleton/District 12	George Ruby	District 12 Maintenance Manager	PPMT member
	Marilyn Holt		Informed
Umatilla County	Tamra Mabbott	County Planning Director	County Project Manager
	Hal Phillips	Public Works Director	PPMT member
	Dennis Doherty	Commissioner	Informed
City of Pendleton	Mike Muller	City Planner	PPMT member
	Tim Simons	City Engineer	PPMT member
	Bob Patterson	Public Works Director	PPMT member
	Pete Wells	City Attorney/Planning Director	Informed
DLCD	Jon Jinings	Representative to Umatilla County	PPMT member
	Darren Nichols	Representative to City of Pendleton	PPMT member
	Bob Cortwright	Transportation Planning Coordinator	Informed
	Matt Crall	Transportation Planner	Informed

DLCD – Department of Land Conservation and Development

The PPMT members were selected in order to provide representation from planning and traffic engineering for agency involved. Team members identified as "Informed" will be copied on all PPMT project correspondence, review materials, and meeting notices and agendas. The informed members were included at the request of the respective agencies because their PPMT members may request their input, desire they attend PPMT meetings as an alternate, or will be requiring their approval of the final project. An outline of all of the PPMT meetings is included in the next section.

Public Involvement Plan

To ensure that adequate project coordination and public participation occurs throughout the development of the Barnhart Road Interchange Area Management Plan, a series of Project Planning Management Team (PPMT) Meetings and Public Workshops (PW) will be held over the course of the project. The public workshops will be combined stakeholder workshops and public open houses due to the limited number of property owners within the study area. The PPMT and Public Workshop meeting dates and objectives are summarized in Table 1-2.

In addition to the PPMT meetings and Public Workshops there will also be opportunities for public comment during the IAMP adoption process at the Planning Commission Hearing, Board of County Commissioners Hearings, and the Oregon Transportation Commission Hearing.

Table 1-2 Meeting Summary

Meeting Event	Date/Location	Meeting Purpose/Objectives
PPMT Meeting #1	September 21st, 2006/ Conference Call	-Review Technical Memo #1: Interagency and Public Involvement Program -Review Technical Memo #2: Document Review The purpose of the PPMT Meeting #1 is to introduce the I-84 Barnhart Road interchange project and the consultant team, review the project schedule, review the project goals, objectives, and evaluation criteria, confirm the study area, confirm the project schedule, and review the project's policy framework.
PPMT Meeting #2	October 19th, 2006/ Pendleton	-Presentation: IAMP 101 -Review Technical Memo #3: Existing Conditions The purpose of PPMT Meeting #2 is to overview the IAMP process, review the existing land use and traffic operations, and adopt the evaluation criteria.
PPMT Meeting #3	November 16, 2006/ Pendleton	-Presentation: Local Circulation/Access 101 -Review Technical Memo #4: Future Conditions -Brainstorm Local Circulation/Access Management Alternatives The purpose of the PPMT #3 is to review the future forecast land use and traffic operations and brainstorm potential local circulation and access management alternatives for each roadway alternative and the existing roadway system.
Public Workshop #1	November 16, 2006/ Pendleton	-Presentation: IAMP 101and Local Circulation/Access 101 -Review Technical Memos #1-4 -Brainstorm Local Circulation/Access Management Alternatives, The purpose of the first stakeholder meeting/public workshop is to present the goals and objectives and findings to date, educate the public and stakeholders on the IAMP process and access management practices, and engage the participants to help develop potential local circulation and access management alternatives.

Meeting Event	Date/Location	Meeting Purpose/Objectives
PPMT Meeting #4	January 18, 2007/ Pendleton	-Presentation: Land Use Management 101 -Brainstorm Land Use Management and Coordination Alternatives Review Technical Memo #5 – Alternatives Analysis -Select a Preferred Alternative The purpose of PPMT Meeting #4 is to review Technical Memo #5: Alternatives Analysis, review the qualitative evaluations of the alternative access management strategies for the Interchange Area developed during PPMT #3 and PW #1, brainstorm land use management alternatives, and select a preferred access management alterative to carry forward for the Draft IAMP document.
Public Workshop #2	January 18, 2007/ Pendleton	-Review Technical Memo #5 – Alternatives Analysis -Receive Input on the Preferred Alternative The purpose of the second stakeholder meeting/public workshop is to present the qualitative evaluations of the access management alternatives for the Interchange Area developed during Public Workshop #1 and collect input on a preferred alternative for the Draft IAMP. The participants will have the opportunity to comment on and score each alternative.
PPMT Meeting #5	March 8, 2007/ Conference Call	Conference call, Draft IAMP

Project Schedule

The draft IAMP is anticipated to be completed in early March 2007. The draft IAMP will be followed by a summary of land use recommendations, a final IAMP document, and adoption by the Umatilla Planning Commission and Board of County Commissioners followed by adoption by the Oregon Transportation Commission. Full adoption is anticipated to occur by June 2007. The detailed schedule including deliverables and meetings is shown in Attachment A.

Problem Statement

The I-84/Barnhart Road Interchange is a rural interchange primarily provides access to farm land as well as several Rural Industrial and Rural Tourist Commercial properties. The proposed Airport Road-Barnhart Road Connector roadway project will change the nature of this interchange as it will provide a direct connection from an existing rural interchange to the Pendleton Airport; a growing industrial area within the City of Pendleton's urban growth boundary.

Today, all vehicle travel to and from the airport and surrounding industrial lands and Interstate-84 must use Airport Road to access I-84. This roadway has several steep grades, is difficult to travel, and can be impassible for trucks during inclement weather. The Airport Road-Barnhart Road Connector roadway project will provide a direct route without steep grades for traffic headed to/from the west. This connection is anticipated to significantly increase the amount of traffic as well as the number of freight vehicles through the I-84/Barnhart Road Interchange.

Goals, Objectives, and Evaluation Criteria

The IAMP process is intended to protect the function of interchanges, and the needs of the property owners who rely on the interchange for local access, when a significant modification is planned, such as a new roadway connection to an interchange. As stated in Policy 3C of the 1999 Oregon Highway Plan, "it is the policy of the State of Oregon to plan for and manage grade-separated interchange areas to ensure safe and efficient operation between connecting roadways." From this definition, the generalized goals and objectives of the I-84 Barnhart Road IAMP are to:

- Protect the function and operation of the Barnhart Road interchange and Interstate-84 as a facility of statewide significance.
- Develop an access management plan for the Barnhart Road interchange that is compatible with the Barnhart Road-Airport Road Connector through a collaborative effort involving design professionals, jurisdictional representatives, and local citizens and business owners.
- Ensure that the access management plan meets projected near-term and long-term travel demands between I-84, Barnhart Road, and the Barnhart Road-Airport Road Connector.
- Protect the long-term function of the interchange through access management techniques and the development of a planned supporting local roadway infrastructure.
- Protect the function and operation of the existing local street network within the IAMP study area.
- Ensure changes to the planned land use system are consistent with protecting the long-term function of the interchange and the local street system.
- Ensure that the interchange will function to support local economic development.
- Comply with the intent of Statewide Planning Goal 2: Land Use Planning, 3: Agricultural Lands, 5: Natural Resources, 11: Public Facilities, 12: Transportation, and 14: Urban Growth Boundaries.

Based on the above objectives, the following draft evaluation criteria were assembled to ensure that each concept would be evaluated for consistency with the overall intent of the community and the project. Five recommended evaluation criteria are as outlined below.

- Transportation Operations: This category consists of those criteria that assess the ability for vehicles to travel through and within the study area. Special considerations within this category include safety, mobility, truck accommodation, and local circulation.
- Land Use: This category consists of those criteria that assess right-of-way impacts, the consistency with adopted land use plans, impacts to utilities, and economic development impacts.
- Cost: This category consists of those criteria that assess the practicality of a design concept from a construction cost and feasibility perspective.

- Environmental/Social: This category consists of those criteria that assess the degree to which an alternative is compatible with the natural and built environment.
- Accessibility: This category consists of those criteria that assess the ability to access properties and businesses within the study area to/from the regional infrastructure network.

The project study area and draft goals, objectives, and evaluation criteria will be finalized after PPMT #1 and adopted at PPMT #2.

Attachment A: Project Schedule

I-84 Barnhart Road IAMP Schedule																							
Project Week		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Month		August				September				October					November				December					
Start of Week Date		6	13	20	27	3	10	17	24	1	8	15	22	29	5	12	19	26	3	10	17	24	31	7
Public Involvement																								
	PPMT Meeting							PPMT #1 (9/21/06) (conf call)				PPMT #2 (10/19/06)				PPMT#3 (11/16/06)								
	Public Workshop															PW#1								
	45 Notice																							
	Joint Worksession																							
	City Planning Commission																							
	County Planning Commission																							
	City Council																							
	County Commission																							
	OTC																							
	IAMP 101											X				X - PW								
	Land Use Tools 101																							
	Local Circulation 101															X - PW & PPMT								
IAMP Memos/Deliverables																								
1	Public Involvement						Draft	Review	Finalize															
2	Policy Review						Draft	Review	Finalize															
3	Existing Conditions										Draft	Review	Finalize											
4	Future Conditions														Draft	Review	Finalize							
5	Alternatives Analysis (1st Round)																							Draft
Plan	Draft IAMP Document																							
OTC	Oregon Transportation Commission Report																							
6	Land Use Recommendation & Summary																							Draft
Plan	Finalized IAMP Document																							

	Contractor Preparation Time	
	Agency Review Time	
	Contractor Finalization Time	
	City Planning Comission Meetings	eventings, 1st and 3rd Thursdays, need 2 week notice
	City Council Meetings	evenings, 1st and 3rd Tuesdays, need 2 week notice
	County Planning Comission Meetings	afternoons, 3rd Thursdays
	County Board of Comissioners	afternoons, any day, typically Tuesday or Wednesday

I-84 Barnhart Road IAMP Schedule

Project Week		24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Month		January			February				March				April					May				June	
Start of Week Date		14	21	28	4	11	18	25	4	11	18	25	1	8	15	22	29	6	13	20	27	3	10
Public Involvement																							
	PPMT Meeting	PPMT #4 (1/18/07)		PPMT #4B (1/29/07 - 3pm conf. call)					PPMT#5 (3/6/07 - 1:30 pm conf call)														
	Public Workshop	PW #2																					
	45 Notice			DLCD 45 Day Notice Period sent by County on February 1st																			
	Joint Worksession				JW#1 (2/08/07 @ 6:30 in Justice Center)																		
	City Planning Commission																						
	County Planning Commission										Planning Commission Hearing (3/22/06 - 6:30pm Justice Center		Planning Commission Hearing (4/5/07 -if necessary)	Planning Commission Hearing (4/12/07 -if necessary)									
	City Council																						
	County Commission															1st Reading (4/24/07)	2nd Reading (5/1/107)						
	OTC																OTC Hearing						
	IAMP 101																						
	Land Use Tools 101	X - PW & PPMT																					
	Local Circulation 101																						
IAMP Memos/Deliverables																							
1	Public Involvement																						
2	Policy Review																						
3	Existing Conditions																						
4	Future Conditions																						
5	Alternatives Analysis (1st Round)	Review	Finalize																				
Plan	Draft IAMP Document							Draft	Review	Finalize													
OTC	Oregon Transportation Commission Report													Draft	Review	Finalize							
6	Land Use Recommendation & Summary	Review	Finalize																				
Plan	Finalized IAMP Document														Review	Finalize							
	Contractor Preparation Time																						
	Agency Review Time																						
	Contractor Finalization Time																						
	City Planning Comission Meetings																						
	City Council Meetings																						
	County Planning Comission Meetings																						
	County Board of Comissioners																						

Appendix C

Technical Memorandum #2
Plan and Policy Review

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TECHNICAL MEMORANDUM

Barnhart Road Interchange Area Management Plan
Technical Memorandum #2
Plan and Policy Review

Date: October 17, 2006 **Project** #: 7930

To: I-84 Barnhart Road PPMT
From: Susan Wright, P.E., Marc Butorac, P.E., P.T.O.E., Matt Wiesenfeld

cc: Howard Perry, Anderson Perry and Associates, Inc.

This memorandum is the second in a series of memorandums for the Barnhart Road IAMP that provides an overview of the regulatory framework associated with the area in the vicinity of the I-84/Barnhart Road interchange in Umatilla County outside of Pendleton, Oregon. The regulatory context involves state and local levels of governance that directly impact transportation planning associated with the I-84/Barnhart Road Interchange Area Management Plan (IAMP).

Background Information

The City of Pendleton has initiated a roadway project that will provide a new roadway connection between Barnhart Road near I-84 and Airport Road. While the final design for future transportation improvement has not been selected, the new roadway may intersect Barnhart Road north of the I-84/Barnhart Road interchange within the interchange influence area of ¼ mile. As such, Oregon Administrative Rule 734-051-0155 requires an IAMP as part of the connection design process. The IAMP will be developed following state guidelines to help preserve interchange capacity for planned land uses that are expected to develop in the vicinity of the interchange. Land use assumptions used to forecast needed interchange capacity will be based on adopted county land use plans and allowed land uses as described in the following sections.

Interchange Area Management Plan (IAMP) Study Area

At a minimum, the IAMP study area is required to include all land uses and roadways located within approximately 1,320 feet of the existing I-84 / Barnhart Road interchange. This distance corresponds to the spacing standard outlined in the Oregon Administrative Rule 734, Division 51 rules for interchanges. The Barnhart Road-Airport Road Connector alignment alternatives and

rules for interchanges. The Barnhart Road-Airport Road Connector alignment alternatives and the roadway network and land use patterns surrounding the Barnhart Road IAMP were reviewed to determine the need to extend beyond the 1,320 feet minimum requirement. Based on this review, the study area was extended to the north to include the most northern potential alignment option and the EFU land that would become segmented between I-84 and the new Barnhart Road-Airport Road Connector roadway alignment. The study area roadways include Interstate-84, Barnhart Road, Clark Lane (north of the interchange), and Fanshier Road (south of the interchange). The study area land uses include existing rural agricultural, industrial, and commercial uses around of the interchange.

Regulatory Framework

The Statewide Planning Goals relevant to the IAMP express the state's policies on land use and the related topics of resource lands, public facilities, transportation, and urbanization. Oregon's statewide goals are achieved through local comprehensive planning. State law requires each city and county to adopt a comprehensive plan and the zoning and land-division ordinances needed to put the plan into effect. The local comprehensive plans must be consistent with the Statewide Planning Goals. Plans are reviewed for such consistency by the state's Land Conservation and Development Commission (LCDC). When LCDC officially approves a local government's plan, it becomes the controlling document for land use in the area covered by that plan.

For both the City and the County, the local comprehensive plan documents contain objectives and policies that are intended to guide growth and development over the 20-year planning horizon. They are based on the specific qualities and characteristics of the community and reflect their desires for future improvements. The comprehensive plans are intended to be consistent with the Statewide Planning Goals.

A transportation system plan (TSP) is the transportation element of a comprehensive plan. TSPs contain policies relating to the transportation system, including streets and bicycle/pedestrian facilities. The Transportation Planning Rule ("TPR") requires that land use plans and transportation are consistent with one another. It requires cities, counties, and the state to adopt Transportation System Plans linking land use and transportation plans.

Land use and zoning ordinances are used to implement the policies identified in comprehensive plans. They specify the different zoning districts and provide standards, regulations, and review procedures for all development within those zones.

Documents Reviewed

The following transportation and land use plans were reviewed for policies and regulations applicable to the development of a new roadway connection near the Barnhart Road/I-84 interchange. The page number (__p.) where each document's review begins in this memorandum is included for quick reference in the list below.

State/ODOT

- Statewide Planning Goals 2 (Land Use Planning), 3 (Agricultural Lands), 5 (Open Space and Natural Resources), 11 (Public Facilities and Services), 12 (Transportation), and 14 (Urbanization) – p. 3
- Transportation Planning Rule (TPR) Oregon Administrative Rule 660 Division 12 - p.6
- Oregon Administrative Rule 731, Division 15, Department of Transportation Coordination Rules – p. 7
- Oregon Transportation Plan (2006 draft) – p. 8
- Oregon Highway Plan (as amended through 2006) – p. 8
- Oregon Administrative Rule (OAR) 734-051 (Highway Approaches, Access Control, Spacing Standards and Medians) – p. 11
- Ballot Measure 37. Oregon Revised Statutes 197.352 – p. 13

Local

- Umatilla County Comprehensive Plan (1987) – p. 14
- Umatilla County Transportation Plan (2002) – p. 16
- Umatilla County Road Design Standards (2002) – p. 18
- Umatilla County Access Management Standards (2002) – p. 21
- Umatilla County Development Code (2005) – p. 21
- City of Pendleton Transportation System Plan (1996) – p. 26
- City of Pendleton Roadway Design Standards (1996) – p. 26

State of Oregon

Statewide Planning Goals

Statewide Planning Goal 2

Goal 2, Land Use Planning, requires that a land use planning process and policy framework be established as a basis for all decisions and actions relating to the use of land. This Goal is one of six statewide planning goals that play a key role in management planning for the Barnhart Road interchange area. The other goals are Goals 3 (Agricultural Lands), 5 (Open Space and Natural Resources), 11 (Public Facilities Planning), 12 (Transportation), and 14 (Urbanization).

Goal 2 is important for four reasons. First, Goal 2 requires planning coordination between those local governments and state agencies "which have programs, land ownerships, or responsibilities within the area included in the plan." As part of this project, Goal 2 will require that ODOT coordinate with Umatilla County and the City of Pendleton, which have planning authority over the area impacted by the interchange and roadway improvements. Coordination is particularly

important because land development in the County will impact the interchange and, in particular, could affect the function and operation of the interchange.

A second important element of Goal 2 is its provision that land use decisions and actions be supported by an "adequate factual base." This requirement applies to both legislative and quasi-judicial land use actions and requires that such actions be supported by "substantial evidence." In essence, it requires that a reasonable person would find the evidence to be adequate to support "findings of fact" that a proposed land use action complies with the applicable review standards.

Third, Goal 2 requires that plans and actions related to land use of city, county, and state and federal agency and special districts be "consistent with the comprehensive plans of cities and counties and regional plans adopted under ORS Chapter 268." This provision is important because elements of an interchange area management plan (IAMP) developed for the Barnhart Road interchange will need to be adopted by Umatilla County as an element of their transportation system plan (TSP).

Finally, Goal 2 includes standards for taking an "exception" to one or more statewide planning goals. The Goal 2 exception standards apply when a local government or property owner proposes to use property in a manner otherwise prohibited by one or more statewide planning goals. The Goal 2 exception standards require the individual or local government taking the exception to demonstrate how the following standards are met:

- Reasons justify why the state policy embodied in the applicable goals should not apply;
- Areas which do not require a new exception cannot reasonably accommodate the use;
- The long term environmental, economic, social and energy consequences resulting from the use at the proposed site with measures designed to reduce adverse impacts are not significantly more adverse than would typically result from the same proposal being located in areas requiring a goal exception other than the proposed site; and
- The proposed uses are compatible with other adjacent land uses or will be so rendered through measures designed to reduce adverse impacts.

The Goal 2 exceptions standards are interpreted in significant detail in **OAR 660, Division 4**. Rule sections particularly relevant to developing an IAMP for the Barnhart Road interchange are:

- OAR 660-004-0022, which establishes standards under which uses such as residential or industrial development may be justified on rural lands; and
- OAR 660-004-0020(2)(b), which requires demonstration why a proposed use cannot reasonably be accommodated on non-resource land or inside a UGB.

The Goal 2 exceptions criteria provide resource lands with a very high level of protection from higher intensity rural non-farm uses. The exception requirements related to transportation facilities are further refined in the Oregon Transportation Planning Rule, codified in OAR 660-012-0070 (see discussion below).

Statewide Planning Goal 3

Statewide Planning Goal 3, Agricultural Lands, requires that agricultural lands be preserved and maintained for farm use. The goal is implemented through zoning that limits uses on agricultural lands to "farm uses and those non-farm uses defined by commission rule that will not have significant adverse effects on accepted farm or forest practices." Such zoning is commonly referred to as "exclusive farm use" zoning.

Goal 3 and **ORS 215.780** also require counties to establish minimum sizes for new lots or parcels in each agricultural land designation. ORS 215.780(1)(a) provides that for land zoned for exclusive farm use and not designated rangeland, the minimum lot or parcel size shall be at least 80 acres. This is the minimum lot size applicable to the EFU-zoned lands in the County.

Because Umatilla County is a "nonmarginal lands" county for purposes of Goal 3 compliance, the uses identified in ORS 215.283 may be permitted on EFU-zoned lands in the county. Those uses include:

- Schools, churches, certain utility facilities, farm dwellings, reconstruction or modification of public roads, certain other roadway improvements, wineries, farm stands, and facilities for processing farm crops, which are permitted under ORS 215.283(1);
- Mining activities, community centers, public and private parks, playgrounds, golf courses, commercial activities in conjunction with farm use, and additional roadway improvements, which are permitted under ORS 215.283(2); and
- Road, highway and other transportation improvements not allowed under ORS 215.283(1) or (2), which are permitted under ORS 215.283(3).

OAR 660, Division 33 is the Land Conservation and Development Commission's (LCDC) rule establishing limitations on uses statutorily permitted in EFU zones. It includes limitations on uses permitted under ORS 215.283(1) that counties otherwise could not have adopted. It also includes limitations on uses allowed under ORS 215.283(2) that counties may further regulate.

Like ORS 215.780, OAR 660-033-0100(1) requires counties to establish minimum parcel sizes of at least 80 acres for land zoned for exclusive farm use. OAR 660-033-0120 and OAR 660-033-0130 respectively address uses authorized on high value agricultural lands and establish minimum standards applicable to those allowed uses. Under these rules, for example, new public and private schools, churches, golf courses, and private parks, playgrounds and campgrounds are not permitted. Moreover, new schools and churches, and most private campgrounds, are not permitted within three miles of a UGB unless an exception is approved pursuant to ORS 197.732 and OAR 660, Division 4. See OAR 660-033-0120, Table 1, and 660-033-0130(2), (19). Commercial uses in conjunction with farm use are permitted only where such uses will not force a significant change in, or significantly increase the cost of, accepted farm or forest practices on surrounding lands devoted to farm or forest uses.

Statewide Planning Goal 5

Statewide Planning Goal 5: Natural Resources, Scenic and Historic Resources, and Open Spaces, requires local governments to adopt programs that will protect natural, historic, and scenic resources for present and future generations. The goal lists resources that must be inventoried,

which include riparian areas, wetlands, wildlife habitat, and natural areas. The goal requirements are set forth in OAR 660-015-0000. Subsection B. of the goal includes guidelines for implementing the goal through local programs. The goal states that "fish and wildlife areas and habitat should be protected and managed in accordance with Oregon Wildlife Commission' fish and wildlife management plans."

Statewide Planning Goal 11

Statewide Land Use Planning Goal 11 - Public Facilities requires cities and counties to plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development. The goal requires that urban and rural development be "guided and supported by types and levels of urban and rural public facilities and services appropriate for, but limited to, the needs and requirements of the urban, urbanizable and rural areas to be served."

Goal 11 prohibits the establishment of sewer systems outside urban growth boundaries and the extension of sewer lines from within UGBs to serve lands outside UGBs, except where a new or extended system is the only practicable alternative to mitigate a public health hazard and will not adversely affect farm or forest land. This effectively limits the ability to establish urban scale land uses in the southern part of the study area. Also, Goal 11 is implemented by OAR 660, Division 11, which prohibits local governments from using the presence, establishment or extension of a water system on rural lands to allow an increase in the allowable density of residential development (see OAR 660-011-0065). This means that to provide urban-scale facilities in the rural agricultural and residential areas adjacent to the interchange, a Goal 11 exception is required.[1]

Statewide Planning Goal 12

Statewide Planning Goal 12, Transportation, requires cities, counties, metropolitan planning organizations, and ODOT to provide and encourage a safe, convenient, and economic transportation system. This is accomplished through development of transportation system plans (TSPs) based on inventories of local, regional and state transportation needs.

Goal 12 is implemented through **OAR 660, Division 12**, the Transportation Planning Rule ("TPR"). The TPR contains numerous requirements governing transportation planning and project development, several of which are relevant to planning a replacement interchange.

The TPR requires local governments to adopt land use regulations consistent with state and federal requirements "to protect transportation facilities, corridors and sites for their identified functions OAR 660-012-0045(2)." This policy is achieved through a variety of measures, including:

- Access control measures which are consistent with the functional classification of roads and consistent with limiting development on rural lands to rural uses and densities;
- Standards to protect future operations of roads;

[1] Public facilities needed to serve urban scale uses would also be considered urban in scale.

- A process for coordinated review of future land use decisions affecting transportation facilities, corridors or sites;
- A process to apply conditions to development proposals in order to minimize impacts and protect transportation facilities, corridors or sites;
- Regulations to provide notice to ODOT of land use applications that require public hearings, involve land divisions, or affect private access to roads; and
- Regulations assuring that amendments to land use designations, densities and design standards are consistent with the functions, capacities and performance standards of facilities identified in the TSP. (See also OAR 660-012-0060.)

LCDC rules implementing Goal 12 do not regulate access management. ODOT adopted OAR 734, Chapter 51, to address access management and it is expected that ODOT, as part of this project, will engage in access management consistent with its Access Management Rule. This could involve the purchase of access rights within one-quarter mile of the interchange ramps.

The TPR requires local governments to adopt land use regulations consistent with state and federal requirements "to protect transportation facilities, corridors, and sites for their identified functions OAR 660-012-0045(2)."

Statewide Planning Goal 14

Goal 14 requires that urban growth boundaries be established and maintained by cities, counties and regional governments in order to provide land for urban development needs and to identify and separate urban and urbanizable land from rural land.

Goal 14 was amended by the Land Conservation and Development Commission in December 2005, to address rural industrial development. These amendments were in response to recent House Bill 2458, which authorizes commercial development in buildings of any size and type on certain lands outside the Willamette Valley and outside the urban growth boundaries of cities.[2]

Goal 14 states that “not withstanding other provisions of this goal restricting urban uses on rural land, a county may authorize industrial development, and accessory uses subordinate to the industrial development, in buildings of any size and type, on certain lands outside urban growth boundaries specified in ORS 197.713 and 197.714, consistent with the requirements of those statutes and any applicable administrative rules adopted by the Commission.”

Oregon Administrative Rule 731, Division 15, Department of Transportation Coordination Rules

ODOT’s Division 15, Coordination Rules, (OAR 731-015) ensures that the procedures used in developing highway improvement projects and other ODOT actions affecting land use comply with Oregon’s Statewide Planning Goals and are consistent with applicable acknowledged comprehensive plans, as required by ORS 197.180. This administrative rule provides coordination procedures to be used when adopting Final Facility Plans, such as an interchange area management plan (OAR-731-015-0065).

[2] House Bill 2458 became effective July 29, 2005.

Oregon Transportation Plan (2006 draft)

The Oregon Transportation Plan (OTP) is a policy document developed by ODOT in response to the federal and state mandates for systematic planning for the future of Oregon's transportation system. The OTP is intended to meet statutory requirements (ORS 184.618(1)) to develop a state transportation policy and comprehensive long-range plan for a multi-modal transportation system that addresses economic efficiency, orderly economic development, safety, and environmental quality.

The OTP consists of two elements: the Policy Element and the System Element. The Policy Element defines goals, policies, and actions for the state for the next 40 years. The Plan's System Element identifies a coordinated multi-modal transportation system, to be developed over the next 20 years, which is intended to implement the goals and policies of the Plan.

The OTP was adopted in 1998 but a draft of an updated OTP is under development and the plan is scheduled to be adopted by the Oregon Transportation Commission (OTC) in October of 2006.

Oregon Highway Plan

The Oregon Highway Plan (OHP), which is a modal element of the OTP, guides the planning, operations, and financing of ODOT's Highway Division. Policies in the OHP emphasize the efficient management of the highway system to increase safety and to extend highway capacity, partnerships with other agencies and local governments, and the use of new techniques to improve road safety and capacity. These policies also link land use and transportation, set standards for highway performance and access management, and emphasize the relationship between state highways and local road, bicycle, pedestrian, transit, rail, and air systems. The OHP is amended from time to time by the OTC when it adopts special facility plans including IAMPs and refinement plans for specific ODOT facilities like those being prepared for the Barnhart Road Interchange.

The policies found within the OHP that apply to the Barnhart Road IAMP include:

- Policy 1A: State Highway Classification System;
- Policy 1B: Land Use and Transportation;
- Policy 1C: State Highway Freight System;
- Policy 1F: Highway Mobility Standards;
- Policy 1G: Major Improvements;
- Policy 2B: Off-System Improvements;
- Policy 2F: Traffic Safety;
- Policy 3A: Classification and Spacing Standards;
- Policy 3C: Interchange Access Management Areas;
- Policy 4A: Efficiency of Freight Movement;

- Policy 5B: Scenic Resources

Policy 1A: State Highway Classification System. The state highway classification system includes five classifications: Interstate, Statewide, Regional, District, and Local Interest Roads. In addition, there are four special purpose categories that overlay the basic classifications: special land use areas, statewide freight route, scenic byways, and lifeline routes. Interstate-84 is an Interstate Highway and is part of the National Highway System (NHS). The Policy 1A definition states: "Interstate Highways provide connections to major cities, regions of the state, and other states. A secondary function in urban areas is to provide connections for regional trips within the metropolitan area. The Interstate Highways are major freight routes and their objective is to provide mobility. The management objective is to provide for safe and efficient high-speed continuous-flow operation in urban and rural areas."

Policy 1B: Land Use and Transportation. This policy recognizes the role of both the State and local governments related to the state highway system and calls for a coordinated approach to land use and transportation planning.

Policy 1C: State Highway Freight System. This policy recognizes the need for the efficient movement of freight through the state. Interstate 84 is a designated freight route.

Policy 1F: Highway Mobility Standards Access Management Policy. This policy addresses state highway performance expectations, providing guidance for managing access and traffic control systems related to interchanges.

The mobility standards for the I-84/Barnhart Road interchange based on *Oregon Highway Plan* (OHP) Table 6 are identified below in Table 1. These standards for the maximum volume to capacity ratio (v/c) apply to areas outside of Metro and outside of an Urban Growth Boundary in Rural Lands. Barnhart Road is not an ODOT facility and the mobility standard is therefore based on the District Highway/Local Interest Road designation.

Table 1 I-84/Barnhart Road Interchange Mobility Standards

Intersection	Type	OHP V/C Ratio
I-84 Exit 202 EB Ramp and Barnhart Road	Local Interest Road/Interstate Ramp terminal	0.75
I-84/Exit 202 WB Ramp and Barnhart Road	Local Interest Road/Interstate Ramp terminal	0.75
I-84 Mainline Segment	Interstate	0.70

Policy 1G: Major Improvements. This policy requires maintaining performance and improving safety by improving efficiency and management before adding capacity.

Policy 2B: Off-System Improvements. This policy recognizes that the state may provide financial assistance to local jurisdictions to make improvements to local transportation systems if the improvements would provide a cost-effective means of improving the operations of the state highway system. As part of the Barnhart Road IAMP process, ODOT will be working with

Umatilla County and the City of Pendleton to complete the development of an access management plan to ensure the efficient and effective operation of the improved interchange.

Policy 2F: Traffic Safety. This policy emphasizes the state's efforts to improve safety of all uses of the highway system. Action 2F.4 addresses the development and implementation of the Safety Management System to target resources to sites with the most significant safety issues.

Policy 3A: Classification and Spacing Standards. This policy addresses the location, spacing and type of road and street intersections and approach roads on state highways. The adopted standards can be found in Appendix C of the Oregon Highway Plan. It includes standards for each highway classification; Barnhart Road is a rural interchange on an Interstate Highway with an existing two-lane crossroad. There are currently no plans for improvements to the interchange. Generally, the access spacing distance increases as either the highway's importance or posted speed increases. The current adopted spacing standard from the end of the Barnhart Road interchange entrance/exit ramps to the first major intersection is 1,320 feet.

Policy 3C: Interchange Access Management Areas. This policy addresses management of grade-separated interchange areas to ensure safe and efficient operation between connecting roadways. Action items include developing interchange area management plans to protect the function of the interchange to provide safe and efficient operations between connecting roadways and to minimize the need for major improvements of existing interchanges. The local jurisdiction's role in access management is stated in Policy 3C as follows: "necessary supporting improvements, such as road networks, channelization, medians and access control in the interchange management area must be identified in the local comprehensive plan and committed with an identified funding source, or must be in place (Action 3C.2)."

Access management standards are detailed in Policy 3C and include the distance required between an interchange and approaches and intersections. The most stringent standards apply in interchange areas. Table 16 contains the minimum spacing standards applicable to the proposed Barnhart Road interchange, a freeway interchange that has an existing two-lane crossroad. The spacing standards in a rural area for this type of interchange are:

2 miles (3.2 km)	Distance between the start and end of tapers of adjacent interchanges.
1,320 feet (400 m)	Distance to the first approach on the right (right in/right out only)
1,320 feet (400 m)	Distance to the first major intersection or approach (no left turns allowed).
1,320 feet (400 m)	Distance between the last right in/right out approach road and the start of the taper for the on-ramp.

Policy 4A: Efficiency of Freight Movement. This policy emphasizes the need to maintain and improve the efficiency of freight movement on the state highway system. Interstate 84 is a designated Freight Route.

Policy 5B: Scenic Resources. This policy applies to all state highways and commits the State to using best management practices to protect and enhance scenic resources in all phases of highway project planning, development, construction, and maintenance.

Access Management Rule (OAR 734-051)

This Administrative Rule defines the State's role in managing access to highway facilities in order to maintain functional use, safety and preserve public investment.

The purpose of Division 51 rules is to provide a safe and efficient transportation system through the preservation of public safety, the improvement and development of transportation facilities, the protection of highway traffic from the hazards of unrestricted and unregulated entry from adjacent property, and the elimination of hazards due to highway grade intersections. These rules establish procedures and criteria used by the Department to govern highway approaches, access control, spacing standards, medians and restriction of turning movements in compliance with statewide planning goals and in a manner compatible with acknowledged comprehensive plans and consistent with Oregon Revised Statutes (ORS), Oregon Administrative Rules (OAR), and the 1999 Oregon Highway Plan (OHP).

Section 734-051-0125, *Access Management Spacing Standards for Approaches in an Interchange Area*, outlines how the State will manage grade-separated interchange areas to ensure safe and efficient operation between connecting roadways.

(1) Access management spacing standards for approaches in an interchange area:

(a) Are based on classification of highway and highway segment designation, type of area, and posted speed;

(b) Apply to properties abutting state highways, highway or interchange construction and modernization projects, planning processes involving state highways, or other projects determined by the Region Manager; and

(c) Do not apply to approaches in existence prior to April 1, 2000 except where any of the following occur:

(A) These standards will apply to private approaches at the time of a change of use.

(B) If infill development or redevelopment occurs, spacing and safety factors will improve by moving in the direction of the access management spacing standards, with the goal of meeting or improving compliance with the access management spacing standards.

(C) For a highway or interchange construction or modernization project or other roadway or interchange project determined by the Region Manager, the project will improve spacing and safety factors by moving in the direction of the

access management spacing standards, with the goal of meeting or improving compliance with the access management spacing standards.

(2) Spacing standards in Tables 5, 6, 7, and 8 and Figures 1, 2, 3, and 4, adopted and made a part of this rule, identify the spacing standards for approaches in an interchange area.

(3) When the Department approves an application:

(a) Access management spacing standards for approaches in an interchange area must be met or approaches must be combined or eliminated resulting in a net reduction of approaches to the state highway and an improvement of existing interchange management areas spacing standards; and

(b) The approach must be consistent with any applicable access management plan for an interchange.

(4) Deviations must meet the criteria in OAR 734-051-0135.

(5) Location of traffic signals within an interchange management area must meet the criteria of OAR 734-020-0400 through 734-020-0500.

(6) The Department should acquire access control on crossroads around interchanges for a distance of 1320 feet. In some cases it may be appropriate to acquire access control beyond 1320 feet.

Section – 0155 identifies when, how and why ODOT will develop access management plans for particular sections of a highway. The Rules states that:

(5) The Department encourages the development of Interchange Area Management Plans to plan for and manage grade-separated interchange areas to ensure safe and efficient operation between connecting roadways:

(a) Interchange Area Management Plans are developed by the Department and local governmental agencies to protect the function of interchanges by maximizing the capacity of the interchanges for safe movement from the mainline facility, to provide safe and efficient operations between connecting roadways, and to minimize the need for major improvements of existing interchanges;

(b) The Department will work with local governments to prioritize the development of Interchange Area Management Plans to maximize the operational life and preserve and improve safety of existing interchanges not scheduled for significant improvements; and

(c) Priority should be placed on those facilities on the Interstate system with cross roads carrying high volumes or providing important statewide or regional connectivity.

(6) Interchange Area Management Plans are required for new interchanges and should be developed for significant modifications to existing interchanges consistent with the following:

(a) Should be developed no later than the time an interchange is designed or is being redesigned;

(b) Should identify opportunities to improve operations and safety in conjunction with roadway projects and property development or redevelopment and adopt strategies and development standards to capture those opportunities;

(c) Should include short, medium, and long-range actions to improve operations and safety in the interchange area;

(d) Should consider current and future traffic volumes and flows, roadway geometry, traffic control devices, current and planned land uses and zoning, and the location of all current and planned approaches;

(e) Should provide adequate assurance of the safe operation of the facility through the design traffic forecast period, typically 20 years;

(f) Should consider existing and proposed uses of the all property in the interchange area consistent with its comprehensive plan designations and zoning;

(g) Are consistent with any adopted Transportation System Plan, Corridor Plan, Local Comprehensive Plan, or Special Transportation Area or Urban Business Area designation, or amendments to the Transportation System Plan unless the jurisdiction is exempt from transportation system planning requirements under OAR 660-012-0055;

(h) Are consistent with the 1999 Oregon Highway Plan; and

(i) Are approved by the Department through an intergovernmental agreement and adopted by the local government, and adopted into a Transportation System Plan unless the jurisdiction is exempt from transportation system planning requirements under OAR 660-012-0055.

Ballot Measure 37, Oregon Revised Statutes 197.352

Ballot Measure 37 added provisions to ORS Chapter 197 that require all public entities that enact new land use regulations to compensate property owners for any loss in property value as a result of the new regulation or forgo enforcement of the regulation. Claims may only be filed by property owners that owned the property at the time the regulations were put into effect. Ballot Measure 37 claims must be filed within two years of the date a regulation is enacted, or by December 2, 2006 on any regulation enacted prior to the approval of Measure 37. After the two year rolling timeframe (or after December 2, 2006 on pre-Ballot Measure 37 claims), applicants must complete a development application and be denied based on the existing land use regulations to file a Measure 37 claim.

Umatilla County

Umatilla County Comprehensive Plan (1987)

In 1973, the Oregon Legislature adopted Senate Bill 100, the Oregon Land Use Act, which required local jurisdictions prepare comprehensive and coordinated land use plans. The Umatilla County Comprehensive Plan was adopted in 1983 and has been updated as recently as 1987. The Comprehensive Plan for the county includes the need for the Barnhart Road-Airport Road Connector project as an important freight connection.

The plan is broken into three sections: Introduction; Plan Elements - Findings, Recommended Policies; and the Plan Map. The introduction gives a general description of Umatilla County (historical and current) and explains the need for a Comprehensive Plan. The Plan Elements section is broken into sections dealing with Umatilla County's fourteen goals. Among these is a Transportation Element with findings and recommended policies. The Plan Map section breaks the County into land use classifications. It maps and discusses the unique characteristics of the different regions of Umatilla County. It also describes and maps exception areas.

Agriculture

Umatilla County's primary industry is agriculture. Agriculture not only provides jobs for the county but is an integral part the way of life in the region. The comprehensive plan considers agriculture as an irreplaceable natural resource. The plan lists findings and policies to address agricultural considerations. Several of these apply to the I-84/Barnhart Road IAMP and are included below.

Finding: Agriculture is important economically in Umatilla County and to the state.

Policy 1

Umatilla County will protect, with Exclusive Farm Use zoning pursuant to ORS 215, lands meeting the definition of farm land in this plan and designated Agricultural on the Comprehensive Plan Map.

Finding: Inventory review and local testimony identifies several categories of agriculture in the county: (a) North/South County Agriculture Region; (b) West County Irrigation Districts; (c) Special Agriculture; and (d) Orchards/Forks of Walla Walla River Districts.

Policy 2

Establish four agricultural designations with several regulations to protect and maintain the existing agricultural economy character of the county.

Finding: Not all non-farm uses allowed in ORS 215 are compatible or desirable in all farming areas of the county (e.g. Uses that increase potentially incompatibilities). For example, schools generate large groups of people on the same days when farming activities occur, whereas churches attract people on days when farming practices are not necessarily occurring.

Policy 9

Require the following outright permitted uses in ORS 215 (Exclusive Farm Use Zoning Laws) to be conditional uses within the intensive Orchards District areas to secure neighborhood input and apply standards assuring compatibility:

- Intensive livestock farming;
- Churches;
- Utility Facilities;

In the North South County Agricultural Regions and special Agricultural Districts, schools shall not be allowed and churches shall be conditional uses.

Finding: Irrigated farming affords greater diversified crop and animal production, thereby requiring new support / processing facilities.

Policy 16

Ensure availability of necessary supportive services sites through allowed conditional uses in EFU zones and commercial activities allowed on industrial lands.

Open Space

The county has a large supply of open space and wishes to maintain this resource. The comprehensive plan findings and policies which relate to the Barnhart Road IAMP are included below.

Finding: Having only a sparse rural population, Umatilla County is predominately open space.

Policy 1

(a)The County shall maintain this resource by limiting development mainly to existing built up areas. (b) The County shall cooperate with the many public agencies which manage open land in the county. Special contracts will be sought when development proposals are in the vicinity of large tracts of public land.

Transportation

The overall transportation goal for the County is *to provide and encourage a safe, convenient and economic transportation system*. The transportation element of the comprehensive plan lists twenty-five findings and associated recommended policies. Some of the findings and policies which relate to the Barnhart Road IAMP are included below.

Finding: There is a lack of coordinated planning which addresses the specific relationships of all modes of transportation (e.g., air, water, rail, bicycle, road, footpaths, etc.)

Policy 1

Develop a Transportation Master Plan which integrates the cities' and regional system.

Finding: Transportation planning within urban growth boundaries is important to ensure adequate transportation facilities in the County.

Policy 2

Plans within UGBs shall be coordinated with during the formulation of the Transportation Master Plan.

Finding: A major cost in development of freeways, highways and county roads is the purchase of right-of-way and displacement of existing uses along the right-of-way.

Policy 5

As part of the Transportation Master Plan, develop a Future Road Zone to be applied between the time a road location is determined and the right-of-way is acquired.

Finding: An important airport industrial complex lies in the northeast corner of the city of Pendleton's UGB where topography and location require a well-planned transportation system to ensure its full and efficient development.

Policy 7

When developing and finalizing the Transportation Master Plan, consider designating an arterial road from Barnhart Interchange on I-84 to the west side of this industrial park, to provide a level and more energy efficient route for business and manufacture-related traffic.

Policy 8

Access onto state highways shall be limited, consolidated, and otherwise be controlled as much as feasible. Access control shall emphasize coordination of traffic and land use patterns through the use of frontage roads and access collection points.

Other important findings and policies have to do with specific areas of the County. For instance, the plan calls for supporting the continued growth and maintenance of the Pendleton and Hermiston airports. The Plan also recommends that subdivision of land only be approved if roads are constructed to County standards and that impacts to the transportation system be considered when determining land use designations. The Urbanization Element of the Plan calls for the strong coordination between the County and cities in respect to transportation planning and land use decisions that will impact transportation systems.

Umatilla County Transportation Plan (2002)

The purpose of the TSP is to provide a guide for Umatilla County to meet its transportation goals and objectives. As noted in the comprehensive plan summary, the overall transportation goal for the County is *to provide and encourage a safe, convenient and economic transportation system.*

The goals and objectives of the Transportation Plan were developed from information contained in the county's comprehensive plan and reflect public concerns expressed during public meetings. Several of these apply to the I-84/Barnhart Road IAMP and are included below.

Goal 1

Preserve the function, capacity, level of service, and safety of the local streets, county roads, and state highways.

Objectives:

A. Develop access management standards.

B. Develop alternative, parallel routes.

C. Promote alternative modes of transportation.

D. Promote transportation demand management programs.

E. Promote transportation system management.

F. Develop procedures to minimize impacts to and protect transportation facilities, corridors, or sites during the development review process.

Goal 3

Improve coordination among the cities of Umatilla County, the Oregon Department of Transportation (ODOT), the US Forest Service (USFS), the Federal Highway Administration (FHWA), and the county.

Objectives:

A. Promote county concerns with USFS regarding road matters, including the construction of permanent roads in conjunction with timber sales.

B. Cooperate with ODOT in the implementation of the Statewide Transportation Improvement Program (STIP).

C. Work with cities in establishing right of way needed for new roads identified in the transportation system plans.

D. Take advantage of federal and state highway funding programs.

E. Encourage the federal government to improve the existing road system and bridges within the National Recreation Area.

F. Continue to work with cities planning for the county land within their urban growth boundaries.

G. Seek notification of special hazardous materials shipment for county review, comment, and possible control.

H. Work with Umatilla Army Depot on any emergency evacuation plans for possible chemical weapons accidents.

Goal 5

Support efforts to maintain the airport facilities for commercial, small aircraft, and charter services.

Objectives:

A. Encourage the state and local municipalities to improve and maintain airport facilities.

B. Continue to cooperate with cities to protect airports from incompatible neighboring land uses through the use of airport hazard overlay zones and joint management agreements with the cities.

C. Cooperate with airport master planning efforts.

D. Incorporate airport master plans into local comprehensive plans.

E. Provide good overland access to important air facilities. In particular, consider designating an arterial road classification from the Barnhart Road interchange on I-84, to the industrial park near the Pendleton Airport.

Umatilla County Road Functional Classifications and Road Design Standards

Road functional classifications and road design standards identified in the Umatilla County TSP apply to the sections of county roads which lie outside the urban growth boundaries of incorporated cities. Within the urban growth boundaries of cities, adopted city street classifications and design standards are to be employed, even along county-maintained roads.

The county road classification system includes four road classes. All interstate, national, and state highways in Umatilla County are designated as arterials. Rural county roads are classified as rural major collectors, rural minor collectors, or rural local roads and are assigned a County Road Number by the County Public Works Department. *Barnhart Road and Fanshier Road are both designated rural local roads.*

All other roads, not identified as an arterial or collector, which are not located inside the urban growth boundary of a city, are **private roads or public rights of way. These roads are not County Roads** and are not maintained by the County. Umatilla County allows for the establishment of easements to provide legal access to parcels according to partitioning standards.

The road design standards for rural county roads are summarized in Table 2. Right of way widths identified above allow for safe conditions because of the extra clearance for vehicles on the road and the elimination of drivers' perception of a narrow road. Recommended shoulder widths, based on the amount of traffic expected along the road, are summarized in Table 3.

Table 2 Umatilla County Rural Road Design Standards

Classification	Surface Width	Right of way Width	Min. Posted Speed
Private Roads and Public Rights of Way			
Option 1	16 feet	30 feet	--
Option 2	22 feet	60 feet	--
Local Road			
Option 1 - residential	26-28 feet	60 feet	15-25 mph
Option 2 - industrial	30 feet	60 feet	15-25 mph
Major and Minor Collector			
Option 1	32-40 feet	60 feet	25-35 mph
Option 2 - Urban	40 feet	60 feet	35-55 mph
Arterial Roads			
Option 1	36-40 feet	60 feet	35-55 mph
Option 2 – Urban	40 feet	60 feet	35-55 mph

Note: The rural arterial road design standards above apply only to roadways that are under county jurisdiction, and do not apply to state highways.

Table 3 Shoulder Widths on Rural Roads

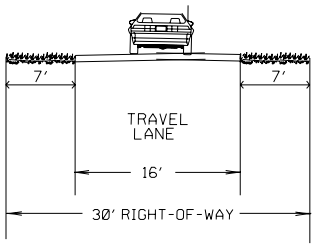
Road Use	Local Roads	Major and Minor Collectors	Arterial Roads
ADT under 400	2 ft	2 ft	4 ft
ADT over 400 DHV* under 100	2 ft	4 ft	6 ft
DHV 100-200	4 ft	6 ft	6 ft
DHV 200-400	6 ft	8 ft	8 ft
DHV over 400	8 ft	8 ft	8 ft

*DHV (Design Hour Volume) is the expected traffic volume in the peak design hour (usually at commuter times).

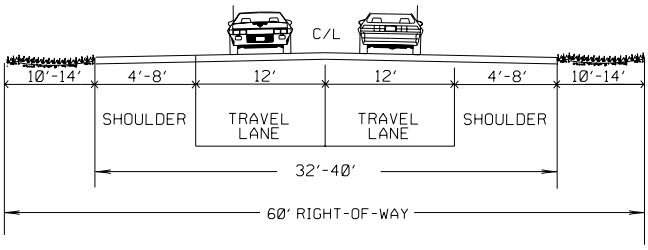
Based on the above tables, Barnhart Road should have a surface width of 30 feet with 60 feet of right-of-way. Under existing conditions two-foot shoulders would be appropriate. Future design hour volumes and recommended shoulder widths have not yet been determined. The proposed Barnhart Road-Airport Road connector roadway will be designed as a collector roadway. Collector roadway standards should be considered for any improvements to Barnhart Road between the new connection and the interchange as this section of Barnhart Road will no longer serve in only a local roadway capacity.

The road design standards for rural county roads are summarized shown in Figure 1.

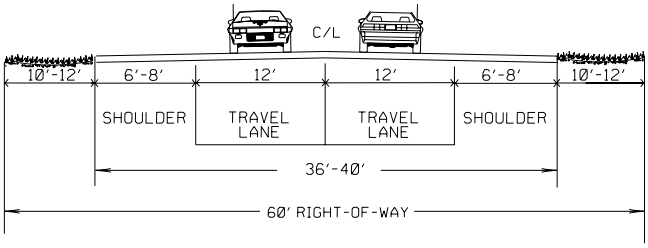
Figure 1 Umatilla County Rural Road Design Standards



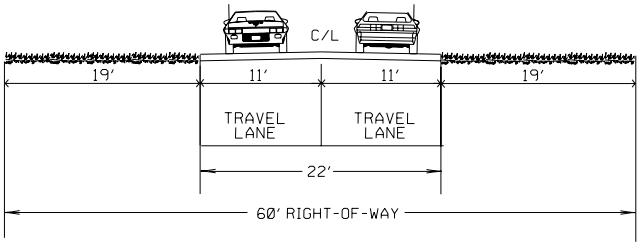
OPTION 1: PRIVATE ROADS AND PUBLIC RIGHT-OF-WAY



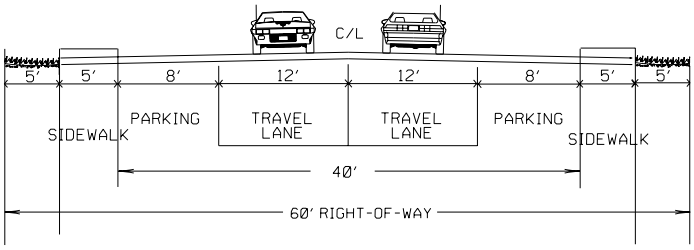
RURAL MAJOR AND MINOR COLLECTOR ROADS



RURAL ARTERIAL ROADS



OPTION 2: PRIVATE ROADS AND PUBLIC RIGHT-OF-WAY



URBAN ARTERIAL ROADS

Umatilla County Access Management Standards

Umatilla County access management standards for new construction are noted in Table 4 (Umatilla County TSP table 7-5). Barnhart Road is currently designated as local road with both public and private access on either side of Interstate -84. Sections of Barnhart Road could become designated as a collector roadway once connected to Airport Road.

Table 4 Access Management Standards

	Intersections			
	Public Road		Private Drive	
Functional Classification	Type	Spacing	Type	Spacing
Major Collectors (listed in Umatilla County TSP Table 7-2)	At-grade	¼ mile	L/R Turns	500 ft.
Major and Minor Collectors (listed in Umatilla County TSP Table 7-2)	At-grade	500 ft.	L/R Turns	250 ft.
Local Road	At-grade	250 ft.	L/R Turns	Access to Each Lot

Umatilla County Development Code (2005)

The Umatilla County Development Code contains standards and regulations for development that are intended to implement the policies set forth in the County's Comprehensive Plan and Transportation Plan. It defines the use of each zoning type in the county. There are three zoning types within the I-84/Barnhart IAMP study area. They include Exclusive Farm Use, Rural Light Industrial, and Rural Tourist Commercial. These zones are described below.

EFU - EXCLUSIVE FARM USE ZONE

The purposes of the EFU, Exclusive Farm Use Zone, are to preserve and maintain agricultural lands for farm use, including range and grazing uses, consistent with existing and future needs for agricultural products, forest and open spaces; to conserve and protect scenic resources; to maintain and improve the quality of air, water and land resources of the county and to establish criteria and standards for farm uses and related and supportive uses which are deemed appropriate. It is also the purpose of this use zone to provide the automatic farm use valuation for farms, which qualify under the provisions of ORS Chapter 308. The provisions in this use zone are subject to automatic legislative amendments as described in Section 152.004.

The land uses which are permitted outright on EFU lands include:

- Farm use referring to soil and not auxiliary structures
- Forest products
- On-site filming for forty-five days or less
- Temporary road detours
- Projects identified in the TSP

- Landscaping for transportation
- Emergency measures for protection of property
- Construction of a road
- Utility facilities
- Maintenance of utility lines

A farm exempt permitted can be used to legally have and use "agricultural building" such as workshops, barns, storage, elevators and other farm oriented structures. With a zoning permit other uses may also occur in this zone. These uses are permitted to facilitate the use of the land for its initial purpose of agricultural production.

The uses permitted with a zoning permit on EFU lands include:

- Minor betterment or repair as outlined in the Recreational Policy 11
- Exploration and research for geothermal recourses, oil, and gas
- Exploration for minerals
- A winery
- Farm Stands for the sale of products grown on the farm, excluding structures for occupancy
- Alteration, restoration or replacement of a lawfully established dwelling that:
    - Has intact exterior walls and roof
    - Has indoor plumbing consisting of a kitchen sink, toilet, and bathing facilities connected to a sanitary waste disposal system;
    - Has interior wiring for interior lights
    - Has a heating system: and
    - The time period is 3 months or less
    - Any part of the property may be used that complies with normal siting standards
    - May not be moved from a non-EFU part of a property to an EFU part
    - A Covenant Not to Sue with regard to normal farming practices shall be recorded as a requirement for approval.
    - Permits are valid for four years after which a two year extension may be added
- Signs Type 2,3,4,5,6
- Buildings and structures accessory to dwellings (e.g. garages, storage sheds, carports, swimming pools)
- On site filming and activities accessory to onsite filming for 45 days or less
- A site for the takeoff and landing of model aircraft, including such buildings or facilities as may reasonably be necessary not be more than 500 square feet in floor area

- Fire service facilities providing rural fire protection services
- The breeding, kenneling and training of greyhounds for racing on a parcel or tract not meeting the definition of high-value farmland
- A gathering of fewer than 3,000 persons that is not anticipated to continue for more than 120 hours in any three month period is not a "land use decision"

RLI - RURAL LIGHT INDUSTRIAL ZONE

The RLI Rural Light Industrial Zone is designed to provide areas for industrial uses that are appropriate for rural locations, less intensive than heavy industrial uses, are less offensive to adjacent land uses, and are compatible with certain commercial uses. It is designed to help the county expand and diversify its economic base. The RLI Zone is appropriate for areas near major transportation facilities which are generally suited for industry and include highways, railroads and waterways. This zone is applied to lands zoned industrial prior to January 1, 2004, that are outside unincorporated communities and urban growth boundaries. The intent of the Rural Light Industrial Zone is to permit the continuation and expansion of existing uses and to provide rural employment opportunities for new uses that are generally rural-scale and low impact or provide for the processing and manufacturing of resource products such as timber and forest related products, farm crops and produce, mineral and aggregate resources, or the maintenance and repair of mechanical equipment related to farm or forest uses.

The land uses which are permitted outright on RLI lands include:

- Preservation activities associated with transportation facilities
- Safety and drainage improvements on existing right of ways
- Projects specified in the TSP as requiring no further land use regulation
- Landscaping transportation facilities
- Emergency measures
- Acquisition of right-of-way for transportation designated in the TSP
- Construction of street or road as part of approved sub division or land ordinance

Land uses permitted with a zoning permit on RLI lands include:

- Blacksmith or machine shop
- Bottling works, if agriculturally related
- Contractor's equipment storage yard
- Custom meat cutting and cold storage locker
- Food products processing, except meat processing and rendering plants
- Grain elevator or flour mill
- Greenhouse or nursery

- Hauling, freighting, and trucking yard or terminal (excluding truck stops)
- Ice or Cold storage plant
- Primary processing of raw materials produced in rural areas
- Information kiosk
- Manufacturing, compounding, assembling or treatment of products
- Mini-warehouse
- Plumbing or sheet metal shop
- Industrial uses in conjunction with farm, forest or aggregate use
- Signs: Type 3,4,5,7,8,9,10,11
- Tire recapping, with building size
- Truck sales, services, storage and maintenance
- Veterinary Clinic or animal hospital primarily devoted to the treatment of large animals, but not kennels
- Welding shop
- Wholesale business, storage building or warehouse, in conjunction with farm or forest use

Business being conducted on RLI shall be conducted inside the built facility or more than 50 feet from surrounding public or private properties. Storage of farm or forest products or equipment is no subject to this limitation. Loading areas will be screened from view of any residentially zoned property adjacent to the site. All noise, vibration, dust, odor, smoke or other objectionable factors must comply with appropriate state and federal regulations. Lawful structures considered existing as of November 12, 2005 will be considered conforming and may be restored in case of damage.

Dimensional Standards for RLI zoning require that lots be a minimum of one acre, at a width of 100 feet. Setbacks around the structure require a 25 foot fronting for county or state roads, a 20 foot spacing to property lines, and a minimum of 55 feet from the centerline of a right of way. Yard sizing of at least 20 feet on all sides is required unless parking exist in front in which case the setback is 40 feet for the front. In the case of a waterway on or adjacent to property a setback of 100 feet is required for the healthy preservation of the body of water.

RTC - RURAL TOURIST COMMERCIAL

The RTC Rural Tourist Commercial Zone is designed to serve the traveling public along major traffic corridors or at appropriate recreational locations outside unincorporated communities and urban growth boundaries. Facilities may include service stations, eating establishments or over-night accommodations. The RTC Zone is appropriate along major interstate interchanges as discussed in the Comprehensive Plan. This zone is applied to commercial lands outside unincorporated communities and urban growth boundaries for which an exception to Goal 14 has not been approved. The intent of the Rural Tourist Commercial Zone is to permit the

continuation and expansion of existing uses and to provide rural scale tourism related employment uses.

The land uses which are permitted outright on RTC lands include:

- Preservation activities associated with transportation facilities
- Safety and drainage improvements on existing right of ways
- Projects specified in the TSP as requiring no further land use regulation
- Landscaping transportation Facilities
- Emergency measures
- Acquisition of right-of-way for transportation designated in the TSP
- Construction of street or road as part of approved sub division or land ordinance

Land uses permitted with a zoning permit on RTC lands include:

- Automobile service station
- Boarding, lodging or rooming house
- Eating or drinking establishment
- Food store
- Gift shop
- Information center
- Laundromat
- Motel, hotel (up to 30 units)
- Sporting goods or bait shop
- Signs: Type 3,4,5,6,7,8,9,10,11

Rural Tourist Commercial activities are required to limit there in use in ways defined by the development code. The outdoor storage areas must be screened from site of outside people or properties. The maximum floor space is 3,500 square feet. Motels that existed prior to July 1, 2005 may expand to the large of either 35 units or fifty percent of the current existing with no limitation on square footage. Structures that existed before July 1, 2005 may expand to the large of either to 4,500 square feet or a size fifty percent larger than the building that existed on July 1, 2005. Any structure that is lawfully approved and constructed, if destroyed or substantially damaged, can be reconstructed to its prior state.

Dimensional Standards for RTC zoning require that lots be a minimum of one acre with a minimum width of 100 feet. Setbacks around the structure require a 25 feet fronting for county or state roads, 20 feet spacing to property lines, and a minimum of 55 feet from the centerline of a right of way. Yard sizing of at least 20 feet on all sides is required. In the case of a waterway

on or adjacent to property a setback of 100 feet is required for the healthy preservation of the body of water.

City of Pendleton

The City of Pendleton Comprehensive Plan and Development Codes were not included in the policy review because the IAMP study area is outside of the city limits and urban growth boundary of the City of Pendleton. However, the sections of the City of Pendleton's Transportation System Plan that relate to the Barnhart Road-Airport Road Connector project and roadway design standards are included because the proposed connector project is a City of Pendleton project and ownership of the proposed roadway is still being negotiated.

City of Pendleton Transportation System Plan (1996)

Section 9 of the City of Pendleton Transportation System Plan outlines the need for a future route to be constructed from the existing 'A' Avenue to Barnhart Road connecting north of the I-84/Barnhart Road interchange. This new roadway would be a mitigation helping freight reach the airport and surrounding industrial lands.

City of Pendleton Roadway Design Standards (1996)

The City of Pendleton roadway design standards are shown in Table 5 and Table 6. Table 6 also provides minimum private driveway access spacing standards. The design standards are to be used as a guideline for the development of future roadway facilities within the Pendleton urban area. These standards will apply to the portion of the Airport Road-Barnhart Road Connector roadway within the Pendleton urban area.

Table 5 Roadway Cross-Sections

Right-of-Way	Pavement Width	Travel Lanes	Parking Lanes	Planting, Utility and Sidewalk Areas (Each Side)
Arterial Streets				
60'	44'	2-12'	2-10'	8'
80'	44'	2-12'	2-10'	18'
80'	56'	4-12'	1-8'	18'
80'	64'	4-11'	2-10'	8'
100'	80'	5-12'	2-10'	10'
Collector Streets				
60'	36'	2-10'	2-8'	12'
60'	44'	2-12'	2-10'	8'
60'	44'	2-12'	2-10'	18'

[1]The pavement width shall only be permissible on dead end or cud-a-sac streets and approved by the Planning Commission
[2]Where the street serves as a collector and has been designated by the Planning Commission and approved by the City Council.

Table 6 Pendleton Urban Area Roadway Standards

Class	ADT Volumes	Speed	# and Width of Travel Lanes	Median Turn Lane	Bike Lanes?	Parking?	Paved Width	Side-walks	Planting Utility Area	R.O.W.	Minimum Private Access Spacing
2-3-Lane Arterial	10,000 - 16,000	30-45	2-12'	14'[1]	2-5'[2]	2-10[1]	34'-58'	5'-8'	3'-10'	50'-80'	150'-300'
Collector	4,000 – 10,000	25-35	2-10'-12'	12'[1]	2-5'[2]	2-8'-10[1]	24-56'	5'-8'	3'-10'	60'-80'	75'-100'

[1]Optional, not required
[2]Optional only if not included in the Pendleton Bicycle Master Plan

In general, the portions of the Airport Road-Barnhart Road Connector roadway outside of the existing urban area, including the sections near Barnhart Road, will be designed based on current AASHTO roadway design standards. The proposed roadway is assumed to be a rural collector with a design speed of 65 mph in the straight sections (posted at 55 mph) and 45 mph in the curved section near Barnhart Road (posted at 35 mph). The applicable AASHTO standards are shown in Table 7.

Table 7 AASHTO Standards for Rural Collectors

Design Speed	Travel Width		Shoulder Width		Clear Zone Width
	1500-2000 ADT	> 2000 ADT	1500-2000 ADT	> 2000 ADT	
45 mph	22 ft	24 ft	6.0 ft	8.0 ft	10 ft
65 mph	24 ft	24 ft	6.0 ft	8.0 ft	26-28 ft

Appendix D

Technical Memorandum#3
Transportation/Land Use
Inventory of Existing
Conditions

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING/TRAFFIC ENGINEERING
610 SW ALDER, SUITE 700 • PORTLAND, OR 97205 • (503) 228-5230 • FAX (503) 273-8169

TECHNICAL MEMORANDUM

I-84/Barnhart Road Interchange Area Management Plan
Technical Memorandum #3
Transportation / Land Use Inventory of Existing Conditions

Date: October 12, 2006 **Project** #: 7930

To: I-84 / Barnhart Road PPMT

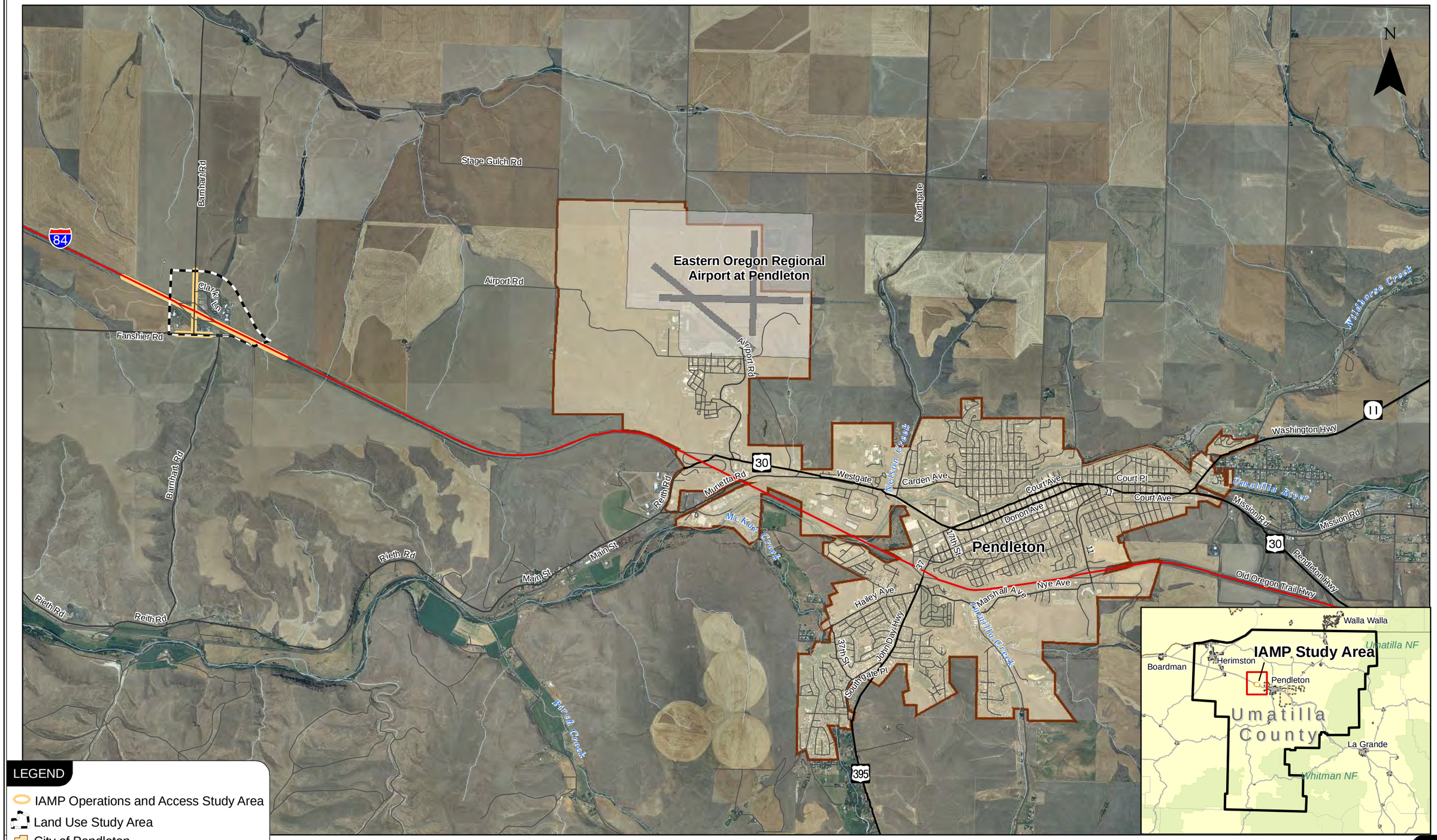
From: Susan Wright, P.E., Marc Butorac, P.E., P.T.O.E. and Matthew Wiesenfeld

cc: Howard Perry, Anderson Perry and Associates, Inc.

This technical memorandum is the third in a series of memorandums that are being prepared for the Barnhart Road Interchange Area Management Plan. This memorandum documents the current land use conditions as well as the operational and geometric characteristics of the transportation facilities within the study area. The study area vicinity map is shown in Figure 3-1.

INTERCHANGE AREA MANAGEMENT PLAN (IAMP) STUDY AREA

The study area for the Barnhart Road IAMP was selected based on a review of the surrounding roadway network and land use patterns, existing and future travel patterns, a review of the proposed Barnhart Road-Airport Road Connector roadway alignments within the study area vicinity, and input from the Project Planning Management Team (PPMT) including staff from the Oregon Department of Transportation (ODOT), City of Pendleton, and Umatilla County. At a minimum, the IAMP study area is required to include all land uses and roadways located within approximately 1,320 feet of the existing I-84 / Barnhart Road interchange. This distance corresponds to the spacing standard outlined in the OAR 734-051 Division 51 rules for interchange ramps (Reference 1). The Barnhart Road-Airport Road Connector roadway alignment alternatives and the roadway network and land use patterns surrounding the I-84/Barnhart Road interchange were reviewed to determine the need to extend beyond the 1,320 feet minimum requirement.



LEGEND

- IAMP Operations and Access Study Area
- Land Use Study Area
- City of Pendleton
- Eastern Oregon Regional Airport

0 0.5 1 2 3 Miles

I-84 / BARNHART ROAD IAMP - STUDY AREA VICINITY MAP
UMATILLA COUNTY, OREGON

FIGURE **3-1**

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

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Based on this review, the study area was extended to the north to include the most northern potential alignment option of the proposed Barnhart Road-Airport Road Connector roadway and the EFU land that would become segmented between I-84 and the proposed roadway alignment. The study area roadways include Interstate-84, Barnhart Road, Clark Lane (north of the interchange), and Fanshier Road (south of the interchange).

The land use study area includes approximately 66 acres of Rural Light Industrial zoned land and 13.33 acres of Rural Tourist Commercial zoned land surrounding the I-84/Barnhart Road interchange as well as the Exclusive Farm Use (EFU) land which has existing access within the access study area. Also included in the land use study area is the EFU land that may become segmented by the proposed Barnhart Road-Airport Road Connector roadway. The study roadways and properties included within the study area map are shown in Figure 3-2.

EXISTING LAND USE INVENTORY

Pursuant to the requirements stated in the Oregon Administrative Rule 734-051-0155 for the preparation of an IAMP, a land use inventory has been prepared for the Barnhart Road IAMP study area. This section provides a description of the existing land use patterns and zoning regulations that currently exist within the interchange study area.

The I-84 Barnhart Interchange is located in Umatilla County. All of the land uses within the IAMP study area are zoned per the Umatilla County zoning code. The proposed roadway project is not intended to change the jurisdiction of any of the land located within the IAMP study area.

For the purposes of developing future development potential and access alternatives, the study area has been broken up into two sub-areas, as illustrated in Figure 3-3. Sub-Area “A” includes the area north of Interstate-84 and Sub-Area “B” includes the area south of Interstate-84. However, the land uses within Sub-Area “A” and Sub-Area “B”, shown in Figure 3-4, are best described by the specific quadrant of the I-84 Barnhart interchange.

Sub-Area “A”

The northwest quadrant of the interchange is currently exclusive farm use only. There is currently an access to a barn related to farm use on this parcel located on Barnhart Road across from Clark Lane. Access to this parcel will need to be considered in the access alternatives.

The northeast quadrant of the I-84/Barnhart Road interchange currently has four parcels, two of which are zoned Rural Light Industrial (RLI) and two of which is Exclusive Farm Use (EFU). The Woodpecker Truck and Equipment currently owns the two RLI parcels and operates a business that accesses Barnhart Road and the I-84 interchange via Clark Lane. The small EFU parcel adjacent to the northeast corner of Woodpecker Truck and Equipment is owned by Subcarrier Communications, Inc. Access to this site is currently provided by an access roadway immediately north and adjacent to the Woodpecker Truck and Equipment property line.

LEGEND

- IAMP Operations and Access Study Area
- Land Use Study Area

0 200 400 800 1,200 1,600 2,000 Feet

I-84 / BARNHART ROAD IAMP - STUDY AREA MAP
UMATILLA COUNTY, OREGON

FIGURE **3-2**

KITTELSON & ASSOCIATES, INC.
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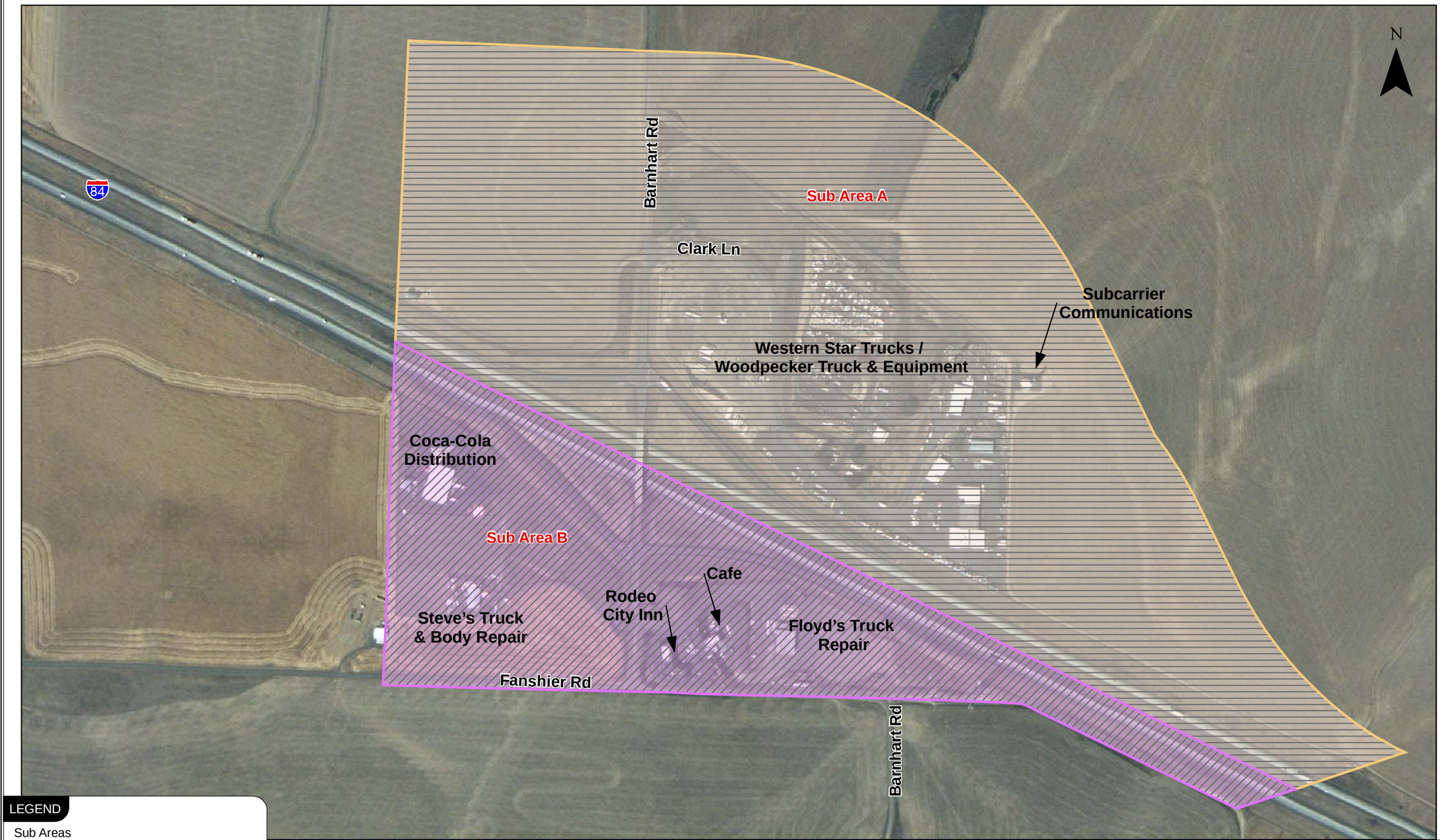

LEGEND

Sub Areas

- A (North)
- B (South)

0 200 400 800 1,200 1,600 2,000 Feet

I-84 / BARNHART ROAD IAMP - STUDY AREA MAP
UMATILLA COUNTY, OREGON

FIGURE **3-3**

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

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LEGEND

- IAMP Operations and Access Study Area
- Land Use Study Area
- Tax lot

County Zoning Designations

- Exclusive Farm Use
- Rural Light Industrial
- Rural Tourist Commercial

0 200 400 800 1,200 1,600 2,000 Feet

EXISTING ZONING CLASSIFICATIONS
UMATILLA COUNTY, OREGON

FIGURE **3-4**

Kittelson & Associates, Inc.
Transportation Engineering/Planning

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Sub-Area "B"

The southwest quadrant of the I-84/Barnhart Road interchange consists of seven parcels which are all zoned Rural Light Industrial (RLI); however, there are only two businesses located on these parcels. They include a Coca-Cola distribution center and a truck repair and welding shop. Access to all of these parcels is provided via a shared access roadway that intersects Barnhart Road south of the I-84 eastbound off-ramp. This quadrant has the potential for increased land use intensity.

The southeast quadrant of the I-84/Barnhart Road interchange consists of three parcels which are all zoned Rural Tourist Commercial (RTC). These parcel are currently occupied a motel, café (currently vacant), and a truck maintenance/repair shop. Access to all of these parcels is provided via a shared access roadway (directly across Barnhart Road from the access roadway serving the southwest quadrant) that intersects Barnhart Road south of the I-84 eastbound off-ramp. All parcels in this quadrant have the potential for increased land use intensity.

EXISTING TRANSPORTATION INVENTORY

The second major component of the Barnhart Road IAMP existing conditions evaluation process is the transportation system. The existing transportation inventory provides a detailed description of all transportation facilities and travel modes within the study area. In addition, the inventory identifies the current operational, traffic control, and geometric characteristics of roadways and other transportation facilities. A detailed description of these facilities is provided in the following sections.

Roadway Facilities

The roadways within the study area include Interstate-84 and three other Umatilla County roadways. A description of each of the roadway facilities is summarized below and in Table 3-1. Figure 3-5 illustrates the existing lane configurations and traffic control devices at the respective study intersections.

Interstate-84

I-84 is a four-lane interstate highway that runs along the southern edge of the City of Pendleton. I-84 is the main east-west travel route within the State of Oregon providing connections between Portland, Oregon and Boise, Idaho. I-84 is designated in the *1999 Oregon Highway Plan* (Reference 2) as an *Interstate Highway*, *Freight Route*, and is part of the National Highway System. Interstate-84 is in good conditions in the vicinity of the Barnhart Road Interchange.

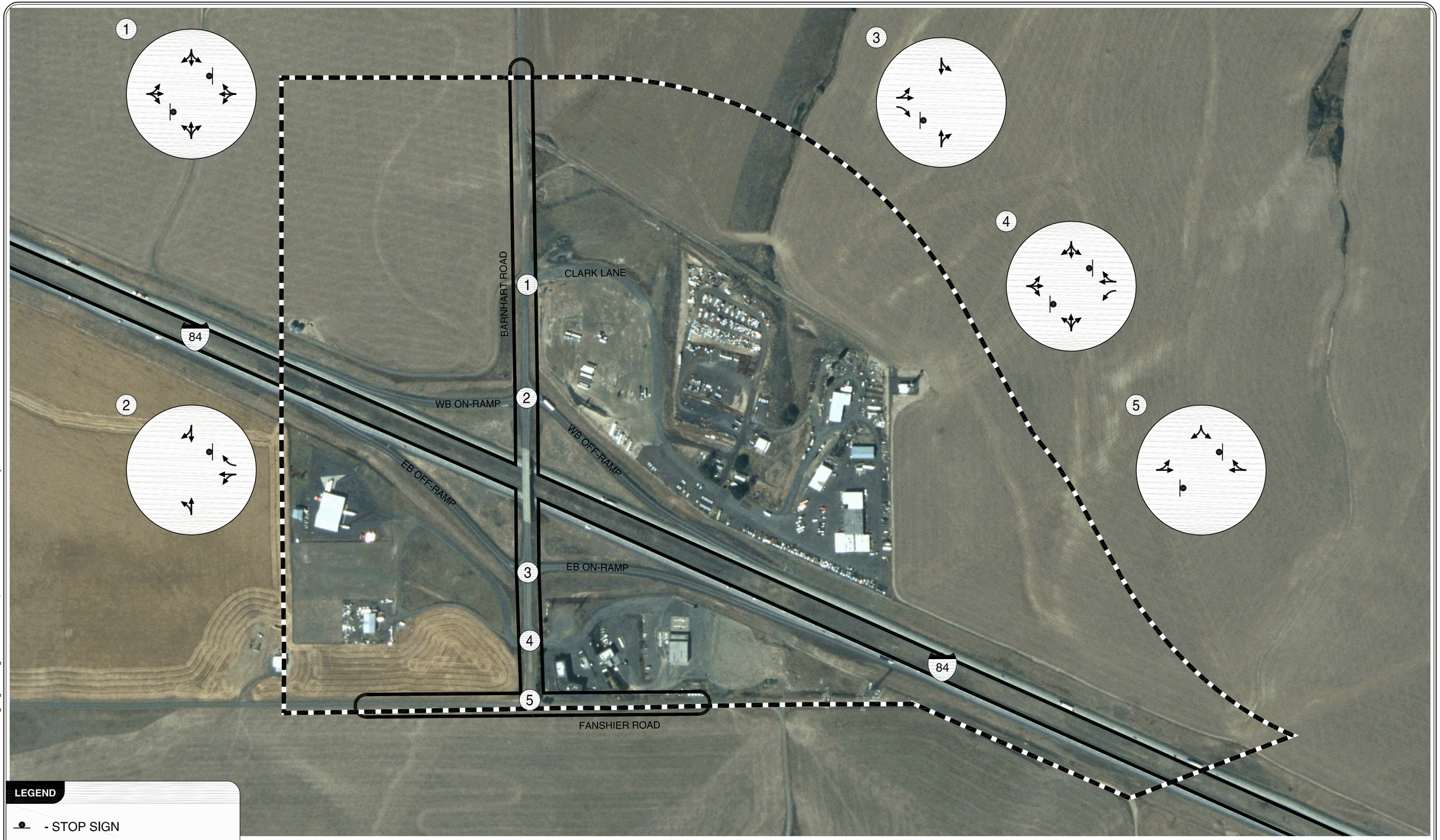
Interstate Ramps

The interstate ramps are single lane paved connections between the right lane of travel for I-84 and Barnhart Road. The ramps on the northeast and southwest corners of the interchange allow traffic to slow as it approaches Barnhart Road. The ramps terminating at Barnhart Road flare to width providing single car storage for both a left/through movement and a right turning movement. The ramps on the northwest and southeast corners of the interchange allow traffic to accelerate as it approaches the moving Interstate and drivers prepare to merge. The ramp

placement at Barnhart Road provides for driver expectancy as the pattern forms a traditional diamond structure.

Barnhart Road

Barnhart Road (County Road 1101) is a two-lane, two directional County Route. The roadway has asphalt pavement from Clark Lane south to the access roadways serving the RLI and RTC zoned properties south of the interchange. North of Clark Lane and south of the access roadways, Barnhart Road changes to a gravel roadway. Outside the study area, Barnhart Road provides access to EFU zoned land and connects to Reith Road approximately 2.5 miles south of the I-84 interchange (as shown in Figure 3-1).



LEGEND

- STOP SIGN
- IAMP OPERATIONS AND ACCESS STUDY AREA
- LAND USE STUDY AREA

EXISTING LANE CONFIGURATIONS
UMATILLA COUNTY, OREGON

FIGURE **3-5**

Kittelson & Associates, Inc.
Transportation Engineering / Planning

H:\projfile\7930 - I-84 Barnhart Road IAMP\dwgs\figs\7930figs.DWG Mar 09, 2007 - 7:53am - mwiesenfeld Layout Tab: 3-FIG05

Fanshier Road

Fanshier Road (County Road 1108) is a gravel roadway that forms the southern boundary the study area. It originates just east of the study area and extends west beyond the study area to Old Pendleton River Highway.

Clark Lane

Clark Lane is a paved roadway that originates at Barnhart Road and extends to the east. The roadway operates primarily as a private driveway serving Woodpecker Truck & Equipment. Clark Lane does not intersect any other roadways.

Table 3-1 Existing Transportation Facilities and Roadway Designations

Roadway	Existing Roadway Ownership/ Functional Classification	Cross-section	Surface Type	Posted Speed	Side-walks?	Bicycle Lanes?	On-Street Parking?
Interstate-84	ODOT/ Interstate Highway	4-lanes	Paved	65 mph	No	No	No
On/Off Ramps	ODOT/ Limit Access Interchange	1-lane	Paved	Not Posted	No	No	No
Barnhart Road	Umatilla County/ Rural Local Road	2-lanes	Paved at Interchange[1]	Not Posted	No	No	No
Fanshier Road	Umatilla County/ Rural Local Road	2-lanes	Gravel	Not Posted	No	No	No
Clark Lane	Umatilla County/ Rural Local Road	2-lanes	Paved	Not Posted	No	No	No

[1] Gravel north of Clark Lane and south of the interchange just north of Fanshier Road. The paved section ranges from 27 feet to 32 feet across the bridge.

Public Transportation Facilities

There are no public transportation facilities that operate within the study area. The City of Pendleton provides free taxi tickets to citizens over the age of sixty or disabled; however, the tickets are good for travel within Pendleton only.

Pedestrian and Bicycle Facilities

There are currently no dedicated bicycle or pedestrian amenities located along any of the roadways within the study area. Field observations revealed no pedestrian or bicycle activity. This lack of pedestrian and bicycle activity is to be expected in this type of rural environment with little commercial activity.

EXISTING TRAFFIC VOLUMES AND PEAK HOUR OPERATIONS

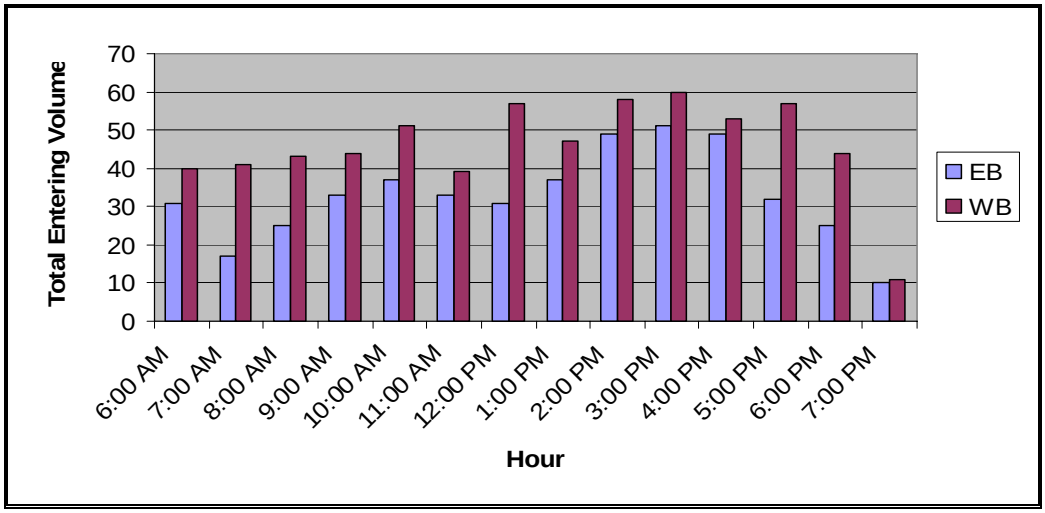
To assess the operational performance and characteristics within the study area, manual intersection turning movement counts were conducted at each of the study intersections located within the study area and 14-hour manual turning movement counts were collected at the two interchange ramp terminals. These counts were conducted on mid-week days in July 2006. A

description of the data as it was utilized for the purposes of this report is summarized in the following sections.

Peak Hour Intersection Volumes

The 14-hour turning movement counts revealed that the peak hour at the interchange occurs from approximately 3:00 to 4:00 p.m. as shown in Exhibit 1. However, these volumes were only marginally higher (less than ten entering vehicles) as compared to the weekday evening peak hour (between 4:00 – 6:00 p.m.). Therefore, weekday morning (7:00 – 9:00 a.m.) and evening (4:00 – 6:00 p.m.) peak hour traffic conditions were summarized for the purposes of evaluating the existing traffic operations at the key study intersections. These time periods represent the time periods with the best available data for projected future travel demand in the study area. In addition, future traffic growth created with the Barnhart Road project and local development is likely to coincide with the traditional weekday morning and evening peak hour periods. *The existing traffic counts are provided in Attachment "A"*

Exhibit 1 I-84/Barnhart Road Interchange Ramp Terminal Daily Traffic Volumes



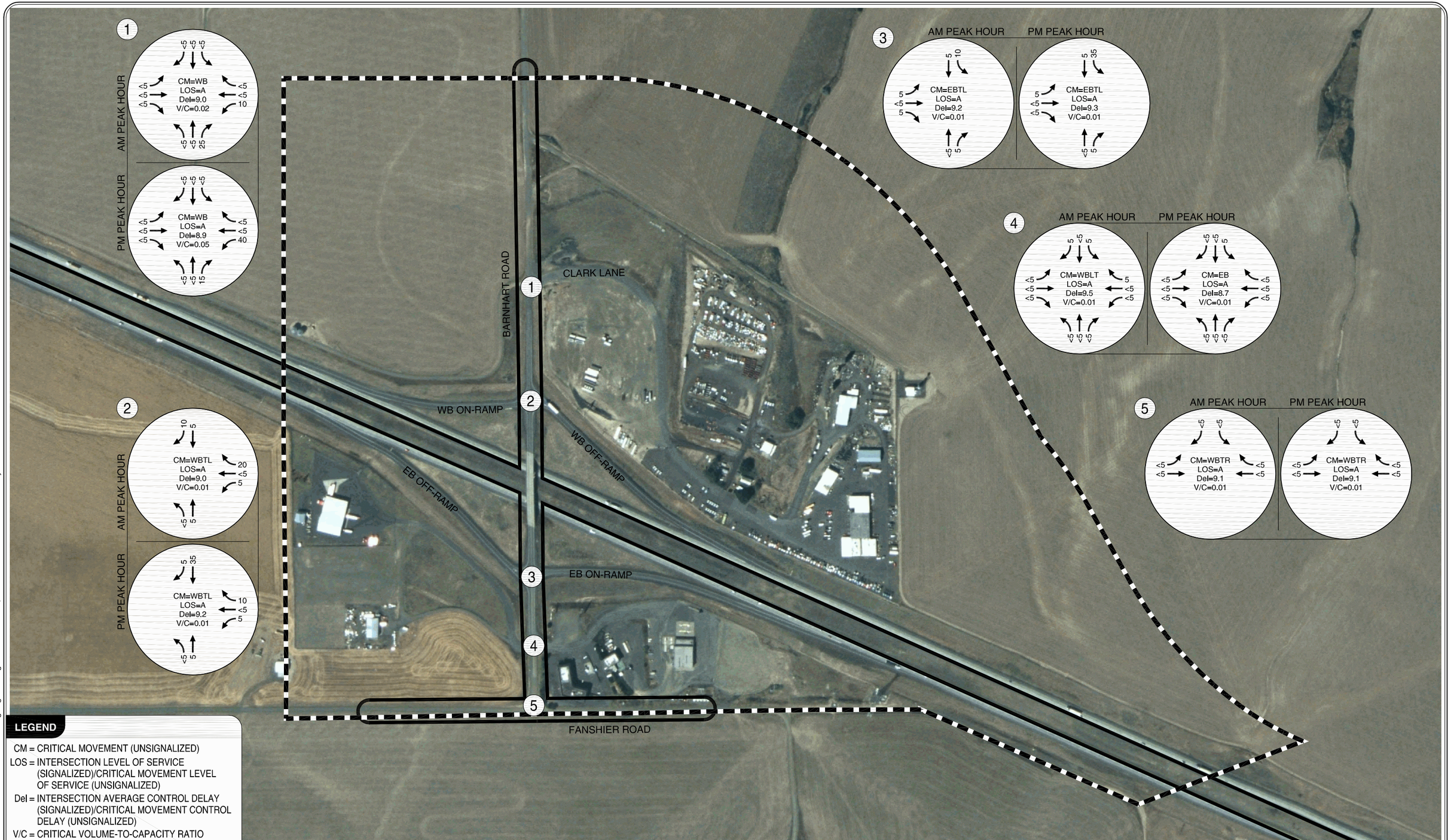
Seasonal Adjustments

Roadways in eastern Oregon are prone to traffic volume fluctuations due to the effects of seasonal variation. Typically, the summer months experience higher traffic volumes due to additional recreational traffic while the winter months tend to experience the lowest traffic volumes. Using the methodology outlined by ODOT's Transportation Planning Analysis Unit, a seasonal adjustment factor was not applied to the traffic counts collected for the existing conditions analysis as they were collected during the peak traffic volume month of the year in the study area according to the ODOT Automatic Traffic Recorder data in the area (Reference 3). The weekday a.m. and p.m. intersection turning movement counts used for the existing conditions analysis are shown in Figure 3-6.

Existing Intersection Operations

All level of service analyses described in this analysis were performed in accordance with the procedures stated in the *2000 Highway Capacity Manual* (Reference 4). The operational standard for the I-84 Barnhart Road interchange ramp terminals is 0.75 based on Barnhart Road being a local facility that is outside of the UGB and located in rural lands. Umatilla County does

not currently have adopted operational thresholds for their intersections. As shown in Figure 3-6, all study intersections currently operate at a level of service "A" and very low volume-to-capacity



LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

IAMP OPERATIONS AND ACCESS STUDY AREA

LAND USE STUDY AREA

EXISTING TRAFFIC CONDITIONS WEEKDAY AM AND PM PEAK HOUR
UMATILLA COUNTY, OREGON

FIGURE 3-6

Kittelson & Associates, Inc.
Transportation Engineering / Planning

ratios (meeting the ODOT volume-to-capacity thresholds at the ramp terminals) during both the weekday a.m. and p.m. peak hours. *The existing conditions level-of-service worksheets are provided in Attachment "B".*

TRAFFIC SAFETY

The crash histories at the respective study intersections were reviewed in an effort to identify potential intersection safety issues. Crash records were obtained from ODOT for the five-year period from January 1, 2001 through December 31, 2005. There were no records of any crashes occurring at any of the study intersections. Reasons for this lack of data might be that the property damage limit was not exceeded or that the motorists did not report some crashes. *The ODOT crash data sheets are provided in Attachment "C".*

The crash history presented in the *Barnhart Road Extension Transportation and Engineering Analysis,* from a three-year period prior to 2001, indicated four crashes occurred at the Barnhart Road interchange. All four crashes occurred along the I-84 mainline and were identified to have occurred during icy or snowy conditions with a cause listed as driving too fast.

EXISTING ROADWAY ACCESS CONDITIONS

There are currently five access points located within the access study area located along Barnhart Road. (There are no existing access points located along Fanshier Road within the access study area.) The existing access points are a combination of public and private approaches and demonstrate past efforts to consolidate access as many serve multiple properties. All of the access points have relatively large cross-sections due to the rural nature of the area and large percentage of heavy vehicles. Figure 3-7 shows the location and type (public or private) of each of the access locations within the access study area. Table 3-2 identifies the tax lots and existing businesses served by each of the access points.

Oregon Administrative Rule 734 Division 51 and the Oregon Highway Plan identify ODOT's access management standards that apply to Barnhart Road within the vicinity of the interchange as 1,350 feet from the ramp terminals from for any type of access (partial or full). The 'IAMP Operations and Access Study Area Boundary' identified in Figure 3-2 represents the 1,350 feet access control area south of Interstate-84. North of Interstate-84, the 1,350 foot access control area ends approximately 150 feet south of the IAMP Operations and Access Study Area Boundary. Therefore, none of the access points (public or private) identified within the study area meet ODOT's current access management standards for the I-84/Barnhart Road interchange.

Umatilla County's access spacing standards for Barnhart Road (local roadway) is 250 feet between public roadways. There are no spacing standards for private driveways which are allowed to access each property. If Barnhart Road were to become designated as a minor collector, the spacing requirement would be 500 feet between public roadways and 250 feet between driveways and between driveways and public roadways. Currently there is approximately 500 feet between the westbound ramp terminal and Clark Lane and over 250 feet between the eastbound ramp terminal and the private access roadway south of the interchange and between the private access roadway and Fanshier Road (measured center-to-center).

EXISTING ACCESS LOCATIONS
UMATILLA COUNTY, OREGON

FIGURE **3-7**

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

File Path: K:\Kittelson\Pendleton_IAMP\MXD\Figures\Figure3-7_Existing_Roadway_Access_Locations_092806_11x17.mxd, Date: March 8, 2007 4:00:29 PM

Table 3-2 Barnhart Road Public/Private Approach Inventory

Approach Type	Figure 3-7 Access Number	Intersection Name	Side	Property Owner/ Business Name	Serves (Tax Map) & Tax Lot Number	Zoning	Acreage
Public	1E	Barnhart Road/ Clark Lane	East	Woodpecker Truck & Equipment Inc.	400, 500	RLI	15, 25
				Clark E M Woody	500	RLI	25
Private	1W	Barnhart Road/ Clark Lane	West	Rew Ranches Inc.	100	EFU	160
				USA (Fedral Aviation Administration)	100	EFU	160
Public	2	Westbound Off-Ramp	East	ODOT	Interstate-84	NA	NA
		Westbound On-Ramp	West			NA	NA
Public	3	Eastbound Off-Ramp	West	ODOT	Interstate-84	NA	NA
		Eastbound On-Ramp	East			NA	NA
Private	4	Barnhart Road/ Private Access Roadway	East	Rattu Jaswant & Kumari Santosh	700	RTC	2.05
				Stephens, Eli F	800, 900	RTC	1.57, 9.17
Private	4	Barnhart Road/ Private Access Roadway	West	Coca-Cola Bottling Co	300	RLI	9.17
				Woodpecker Truck & Equip. Inc	500, 700	RLI	0.27, 0.73
				Graves Russell E & Graves Doris L (TRS)	400, 600, 801	RLI	5.05, 4.36, 2.17
				Kilkenny Christopher John & Loretta Lynn	800	RLI	3.71
Public	5	Barnhart Road/ Fanshier Rd	East / West	Umatilla County	Fanshier Rd	NA	NA

RLI – Rural Light Industrial
RTC – Rural Tourist Commercial
NA – Not Applicable

EXISTING ROADWAY DEFICIENCIES

No significant existing roadway deficiencies were identified within the study area along the paved sections of roadway. The Umatilla County design standards require a twelve foot travel lane in each direction with a four to eight foot shoulder and a sixty foot of right-of-way on Barnhart Road and a thirty foot right-of-way on Clark Lane. Right-of-way maps were not available from Umatilla County in the study area; however, the right-of-way requirements appear to be met based on field observations.

The paved section of Barnhart Road does not extend beyond the access points of the properties within the IAMP study area boundary; however Barnhart Road appears to meet the existing needs of the surrounding property owners.

Traffic operations at each of the study intersections are currently acceptable during both the weekday a.m. and p.m. peak hours and there are no identified safety issues based on the crash history.

NATURAL AND CULTURAL RESOURCES

At this time no fish or wildlife habitat, flood plains, historic properties, archeological resources, hazardous materials, or major utilities have been identified within the IAMP study area boundary. The presence of these resources is currently being investigated along the Barnhart Road-Airport Road Connector roadway study area.

SUMMARY

- The roadways within the study area include Interstate-84 and three Umatilla County Rural Local Roads including Barnhart Road, Fanshier Road, and Clark Lane.

- All of the study roadways have a two-lane cross-section with the exception of Interstate-84 which is a four-lane facility.

- Barnhart Road is currently a gravel roadway beyond the access points to the properties within the study area.

- There are no pedestrian or bicycle facilities along the roadways within the study area.

- All of the study intersections operate at a Level-of-Service “A” during the weekday a.m. and p.m. peak hours and the ODOT volume-to-capacity thresholds are also met at the ramp terminals during both peak periods.

- There are no identified safety issues within the study area based on a review of the most recent five years of available crash data.

- There are currently five access points located within the access study area located along Barnhart Road. The existing access points are a combination of public and private approaches and demonstrate past efforts to consolidate access as many serve multiple properties.

- ODOT's access spacing standard for Barnhart Road within the vicinity of the interchange is 1,320 feet from the ramp terminals to any type of access (partial or full). None of the access points (public or private) identified within the study area meet ODOT's current access spacing standard.

- Although Barnhart Road is currently designated as a local roadway, all of the access points identified within the study area meet Umatilla County's access spacing standards for a minor collector roadway.

- There are no identified existing roadway deficiencies within the study area along the paved sections of roadway. The existing gravel sections appear to meet the needs of property owners outside of the IAMP study area.

- There are no identified fish or wildlife habitat, flood plains, historic properties, archeological resources, hazardous materials, or major utilities within the IAMP study area boundary.

REFERENCES

1. Oregon Department of Transportation. *Division 51: Highway Approaches, Access Control, Spacing Standards and Medians*. Oregon Administrative Rules 734-051. 2000.

2. Oregon Department of Transportation. *1999 Oregon Highway Plan*. 1999.

3. Oregon Department of Transportation. *Traffic Volume Tables*. http://www.oregon.gov/ODOT/TD/TDATA/tsm/docs/2005_ATR_Trend_Summary.pdf

4. Transportation Research Board. *2000 Highway Capacity Manual - HCM 2000*. 2000.

ATTACHMENTS

Attachment "A" – Existing Traffic Counts

Attachment "B" – Existing Conditions Level-of-Service Worksheets

Attachment "C" – Crash Data

Attachment A: Existing Traffic Counts

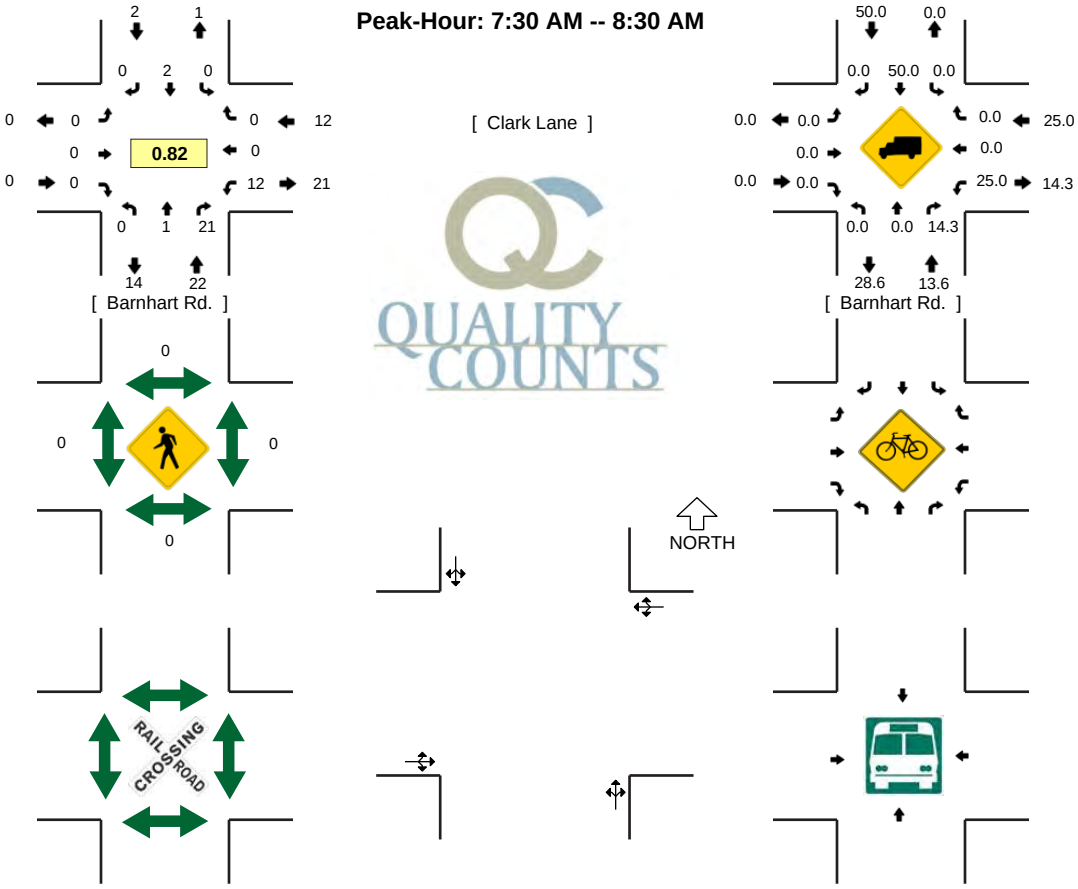
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Barnhart Rd.--Clark Lane
WEATHER:

QC JOB #: 10178203
DATE: 7/13/2006

Peak-Hour: 7:30 AM -- 8:30 AM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Barnhart Rd. (Northbound)				Barnhart Rd. (Southbound)				Clark Lane (Eastbound)				Clark Lane (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	4		0	0	0		0	0	0		1	0	0		5	
7:05 AM	0	0	1		0	0	0		0	0	0		1	0	0		2	
7:10 AM	0	0	0		0	0	0		0	0	0		1	0	0		1	
7:15 AM	0	0	2		0	1	0		0	0	0		0	0	0		3	
7:20 AM	0	0	1		0	0	0		0	0	0		0	0	0		1	
7:25 AM	0	0	2		0	0	0		0	0	0		1	0	0		3	
7:30 AM	0	0	4		0	0	0		0	0	0		1	0	0		5	
7:35 AM	0	0	2		0	0	0		0	0	0		0	0	0		2	
7:40 AM	0	0	1		0	0	0		0	0	0		0	0	0		1	
7:45 AM	0	0	3		0	0	0		0	0	0		1	0	0		4	
7:50 AM	0	0	2		0	0	0		0	0	0		1	0	0		3	
7:55 AM	0	1	1		0	0	0		0	0	0		1	0	0		3	33
8:00 AM	0	0	2		0	0	0		0	0	0		0	0	0		2	30
8:05 AM	0	0	0		0	0	0		0	0	0		4	0	0		4	32
8:10 AM	0	0	2		0	0	0		0	0	0		1	0	0		3	34
8:15 AM	0	0	3		0	0	0		0	0	0		1	0	0		4	35
8:20 AM	0	0	0		0	1	0		0	0	0		0	0	0		1	35
8:25 AM	0	0	1		0	1	0		0	0	0		2	0	0		4	36
8:30 AM	0	0	2		0	0	0		0	0	0		0	0	0		2	33
8:35 AM	0	1	0		0	0	0		0	0	0		1	0	0		2	33
8:40 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	32
8:45 AM	0	0	3		0	0	0		0	0	0		0	0	0		3	31
8:50 AM	0	0	2		0	0	0		0	0	0		0	0	0		2	30
8:55 AM	0	0	0		0	0	0		0	0	0		4	0	0		4	31

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	20		0	0	0		0	0	0		24	0	0		44
Heavy Trucks	0	0	4		0	0	0		0	0	0		4	0	0		8
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 9/13/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

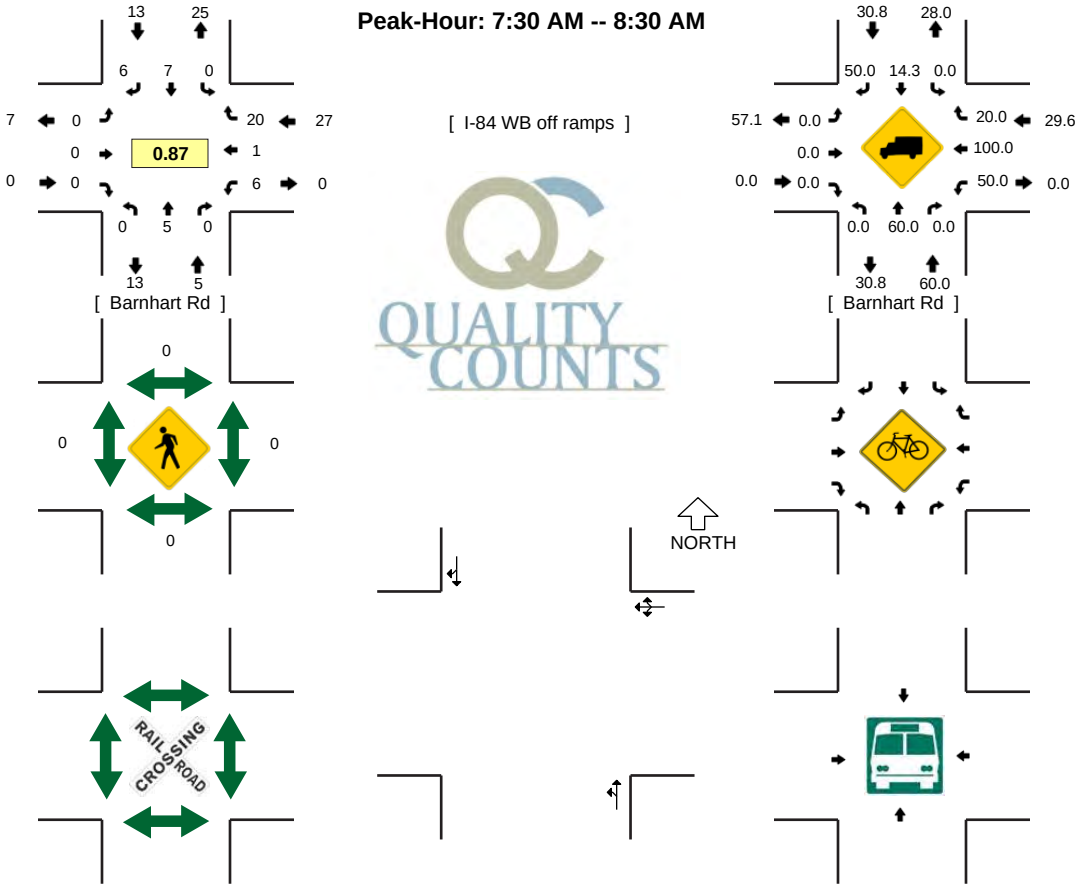
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Barnhart Rd--I-84 WB off ramps
WEATHER:

QC JOB #: 10178101
DATE: 7/12/2006

Peak-Hour: 7:30 AM -- 8:30 AM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Barnhart Rd (Northbound)				Barnhart Rd (Southbound)				I-84 WB off ramps (Eastbound)				I-84 WB off ramps (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0		0	2	3		0	0	0		3	0	3		11	46
7:05 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	46
7:10 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	46
7:15 AM	0	0	0		0	2	0		0	0	0		0	0	5		7	47
7:20 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	47
7:25 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	47
7:30 AM	0	4	0		0	0	1		0	0	0		0	0	5		10	43
7:35 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	43
7:40 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	43
7:45 AM	0	0	0		0	0	2		0	0	0		3	1	7		13	41
7:50 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	41
7:55 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	41
8:00 AM	0	1	0		0	4	1		0	0	0		1	0	3		10	40
8:05 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	40
8:10 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	40
8:15 AM	0	0	0		0	3	2		0	0	0		2	0	5		12	45
8:20 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	45
8:25 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	45
8:30 AM	2	0	0		0	1	1		0	0	0		1	2	2		9	44
8:35 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	44
8:40 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	44
8:45 AM	1	1	0		0	1	2		0	0	0		1	2	4		12	43
8:50 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	43
8:55 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	43

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0		0	0	8		0	0	0		12	4	28		52
Heavy Trucks	0	0	0		0	0	4		0	0	0		8	4	4		20
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 9/14/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

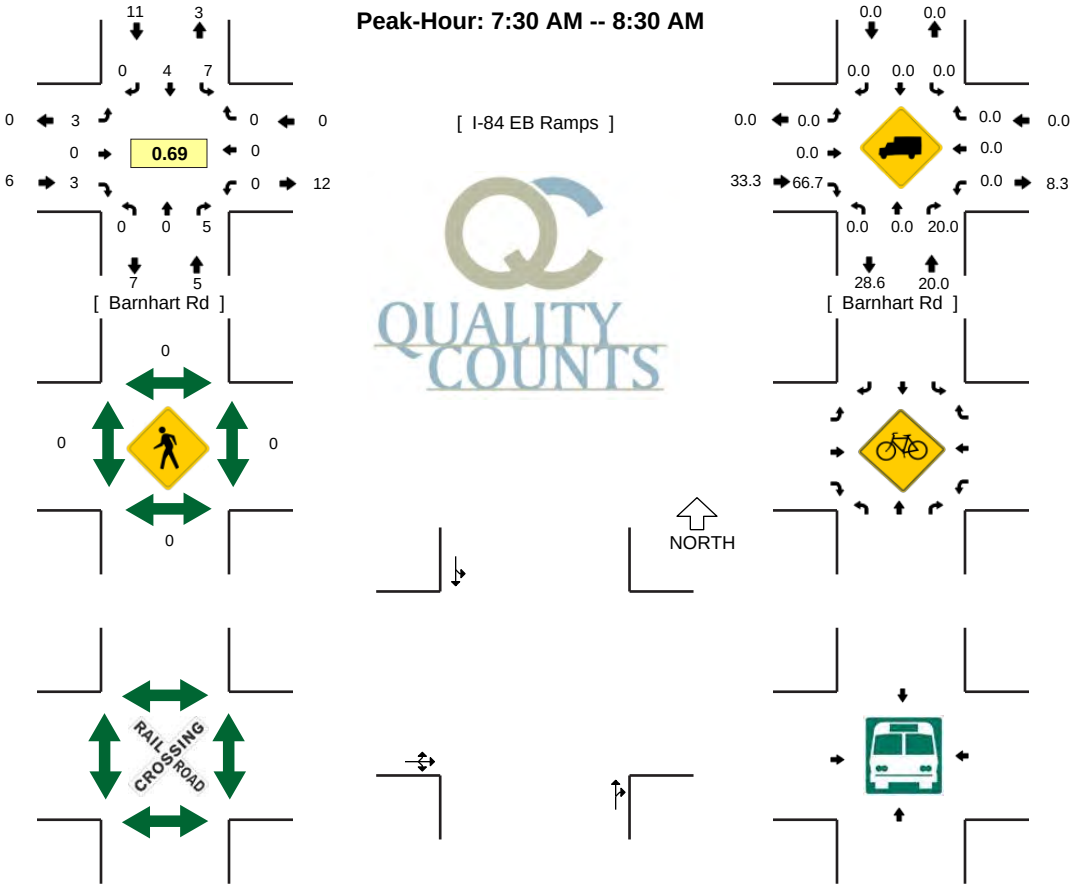
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Barnhart Rd--I-84 EB Ramps
WEATHER:

QC JOB #: 10178102
DATE: 7/12/2006

Peak-Hour: 7:30 AM -- 8:30 AM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Barnhart Rd (Northbound)				Barnhart Rd (Southbound)				I-84 EB Ramps (Eastbound)				I-84 EB Ramps (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0		1	1	0		0	0	0		0	0	0		2	33
7:05 AM	0	0	0		0	1	0		0	0	0		0	0	0		1	31
7:10 AM	0	0	0		0	1	0		0	0	0		0	0	0		1	30
7:15 AM	0	0	0		1	0	0		0	0	0		0	0	0		1	29
7:20 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	28
7:25 AM	0	0	0		1	0	0		0	0	1		0	0	0		2	30
7:30 AM	0	0	2		0	0	0		1	0	0		0	0	0		3	29
7:35 AM	0	0	0		0	0	0		1	0	0		0	0	0		1	25
7:40 AM	0	0	2		0	0	0		1	0	0		0	0	0		3	24
7:45 AM	0	0	1		0	0	0		0	0	0		0	0	0		1	24
7:50 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	19
7:55 AM	0	0	0		0	1	0		0	0	1		0	0	0		2	17
8:00 AM	0	0	0		1	1	0		0	0	0		0	0	0		2	17
8:05 AM	0	0	0		2	0	0		0	0	0		0	0	0		2	18
8:10 AM	0	0	0		1	0	0		0	0	1		0	0	0		2	19
8:15 AM	0	0	0		2	2	0		0	0	0		0	0	0		4	22
8:20 AM	0	0	0		0	0	0		0	0	1		0	0	0		1	23
8:25 AM	0	0	0		1	0	0		0	0	0		0	0	0		1	22
8:30 AM	0	1	1		0	1	0		0	0	0		0	0	0		3	22
8:35 AM	0	0	0		1	0	0		0	0	0		0	0	0		1	22
8:40 AM	0	1	0		0	1	0		0	0	0		0	0	0		2	21
8:45 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	20
8:50 AM	0	0	0		0	2	0		1	0	0		0	0	0		3	23
8:55 AM	0	2	0		1	0	0		0	0	1		0	0	0		4	25

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0		20	8	0		0	0	4		0	0	0		32
Heavy Trucks	0	0	0		0	0	0		0	0	4		0	0	0		4
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 8/30/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

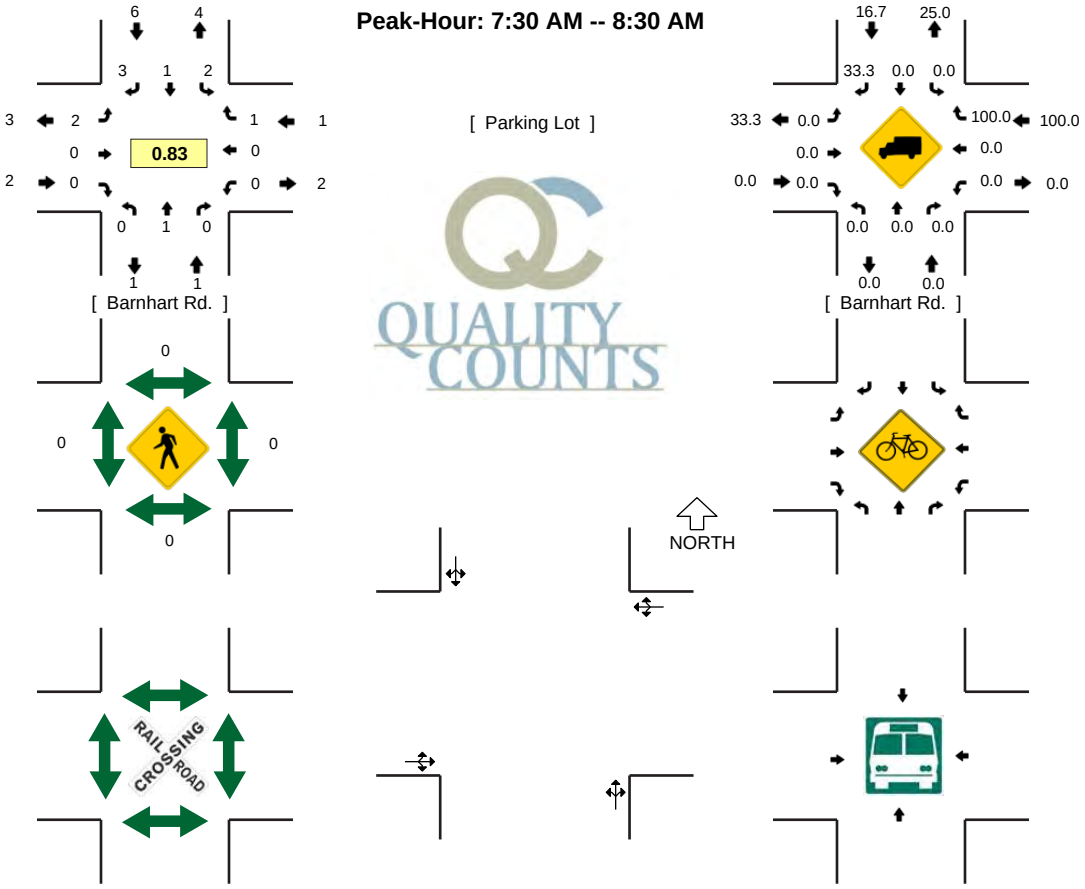
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Barnhart Rd.--Parking Lot
WEATHER:

QC JOB #: 10178201
DATE: 7/13/2006

Peak-Hour: 7:30 AM -- 8:30 AM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Barnhart Rd. (Northbound)				Barnhart Rd. (Southbound)				Parking Lot (Eastbound)				Parking Lot (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0		2	1	0		0	0	0		0	0	0		3	
7:15 AM	0	0	0		1	0	0		0	0	0		0	0	0		1	
7:30 AM	0	0	0		0	0	0		2	0	0		0	0	1		3	
7:45 AM	0	1	0		0	1	1		0	0	0		0	0	0		3	10
8:00 AM	0	0	0		1	0	0		0	0	0		0	0	0		1	8
8:15 AM	0	0	0		1	0	2		0	0	0		0	0	0		3	10
8:30 AM	0	1	0		1	0	1		2	0	0		0	0	0		5	12
8:45 AM	0	2	0		1	0	1		0	0	0		0	0	0		4	13

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0		0	0	0		8	0	0		0	0	4		12
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	4		4
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 9/28/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

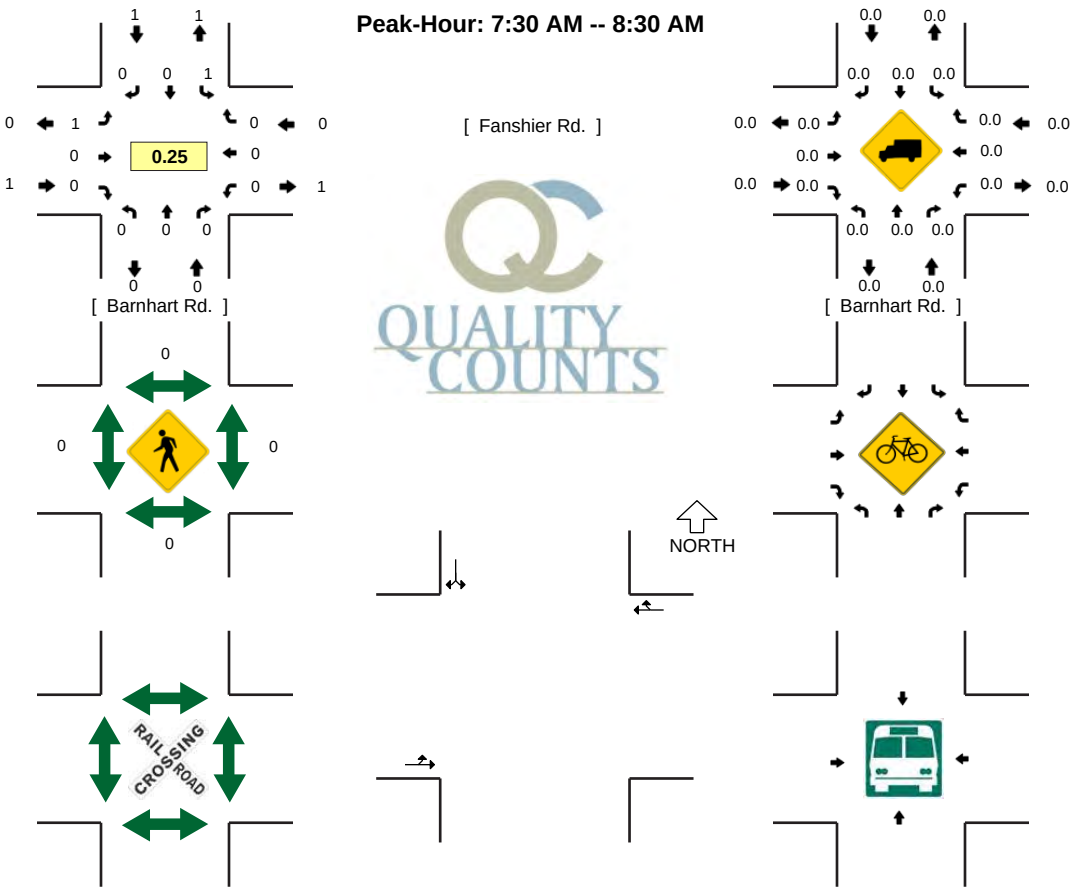
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Barnhart Rd.--Fanshier Rd.
WEATHER:

QC JOB #: 10178205
DATE: 7/13/2006

Peak-Hour: 7:30 AM -- 8:30 AM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Barnhart Rd. (Northbound)				Barnhart Rd. (Southbound)				Fanshier Rd. (Eastbound)				Fanshier Rd. (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0		1	0	0		0	0	0		0	0	0		1	
7:15 AM	0	0	0		0	0	0		0	0	0		0	0	1		1	
7:30 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	
7:45 AM	0	0	0		1	0	0		1	0	0		0	0	0		2	4
8:00 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	3
8:15 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	2
8:30 AM	0	0	0		0	0	0		0	0	0		0	0	1		1	3
8:45 AM	0	0	0		0	0	0		0	0	0		0	0	1		1	2

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0		4	0	0		4	0	0		0	0	0		8
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 9/28/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

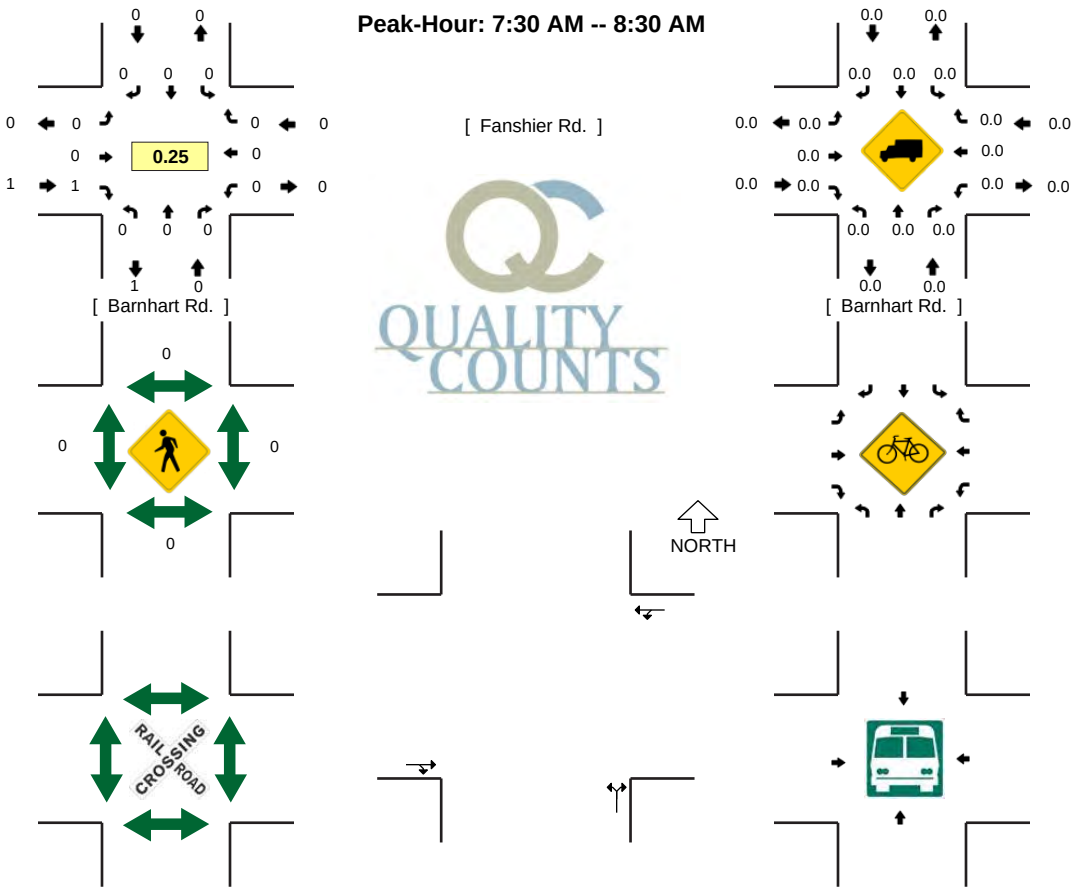
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Barnhart Rd.--Fanshier Rd.
WEATHER:

QC JOB #: 10178207
DATE: 7/13/2006

Peak-Hour: 7:30 AM -- 8:30 AM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Barnhart Rd. (Northbound)				Barnhart Rd. (Southbound)				Fanshier Rd. (Eastbound)				Fanshier Rd. (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0		0	0	0		0	0	1		0	0	0		1	
7:15 AM	1	0	0		0	0	0		0	0	0		0	0	0		1	
7:30 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	
7:45 AM	0	0	0		0	0	0		0	0	1		0	0	0		1	3
8:00 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	2
8:15 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	1
8:30 AM	1	0	0		0	0	0		0	0	0		0	0	0		1	2
8:45 AM	1	0	0		0	0	0		0	0	0		0	0	0		1	2

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0		0	0	0		0	0	4		0	0	0		4
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 9/28/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

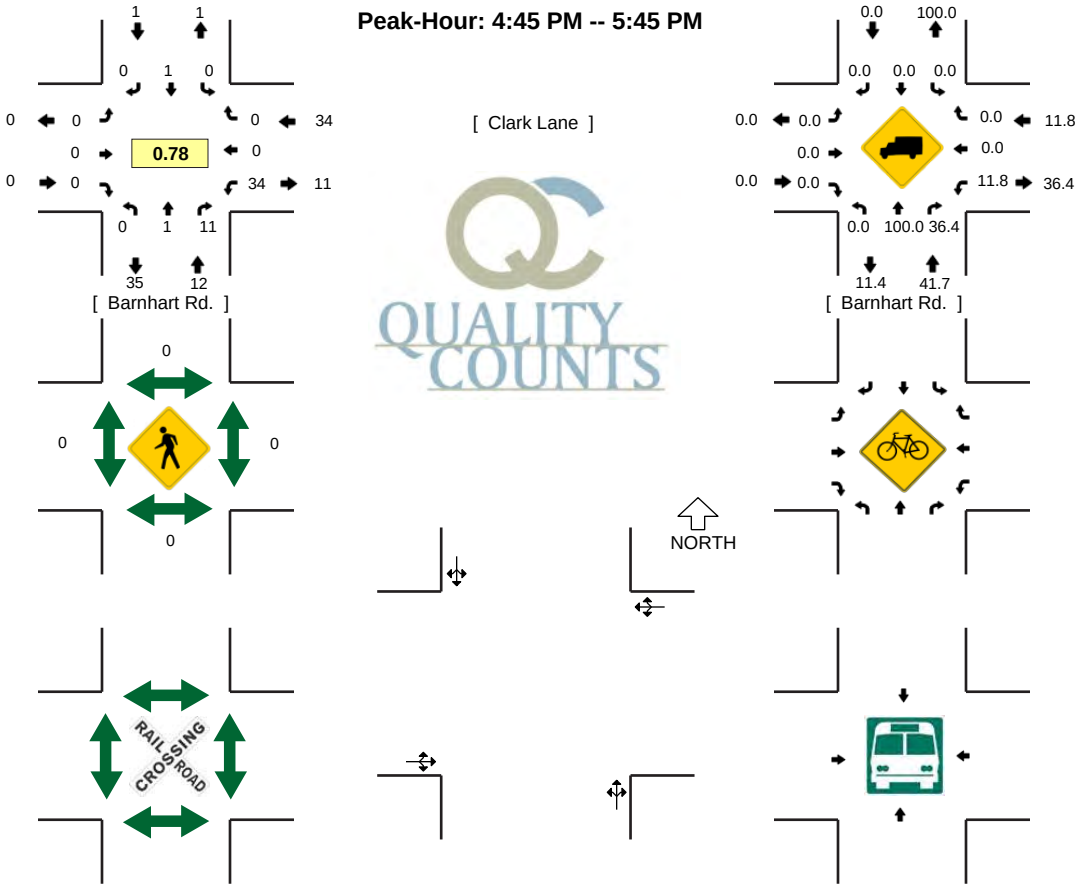
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Barnhart Rd.--Clark Lane
WEATHER:

QC JOB #: 10178204
DATE: 7/12/2006

Peak-Hour: 4:45 PM -- 5:45 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Barnhart Rd. (Northbound)				Barnhart Rd. (Southbound)				Clark Lane (Eastbound)				Clark Lane (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	2		0	0	0		0	0	0		3	0	0		5	
4:15 PM	0	0	3		0	0	0		0	0	0		3	0	0		6	
4:30 PM	0	0	5		0	1	0		0	0	0		3	0	0		9	
4:45 PM	0	0	1		0	0	0		0	0	0		8	0	0		9	29
5:00 PM	0	0	4		0	1	0		0	0	0		10	0	0		15	39
5:15 PM	0	1	2		0	0	0		0	0	0		8	0	0		11	44
5:30 PM	0	0	4		0	0	0		0	0	0		8	0	0		12	47
5:45 PM	0	0	2		0	0	0		0	0	0		7	0	0		9	47

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	16		0	4	0		0	0	0		40	0	0		60
Heavy Trucks	0	0	8		0	0	0		0	0	0		0	0	0		8
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 9/28/2006

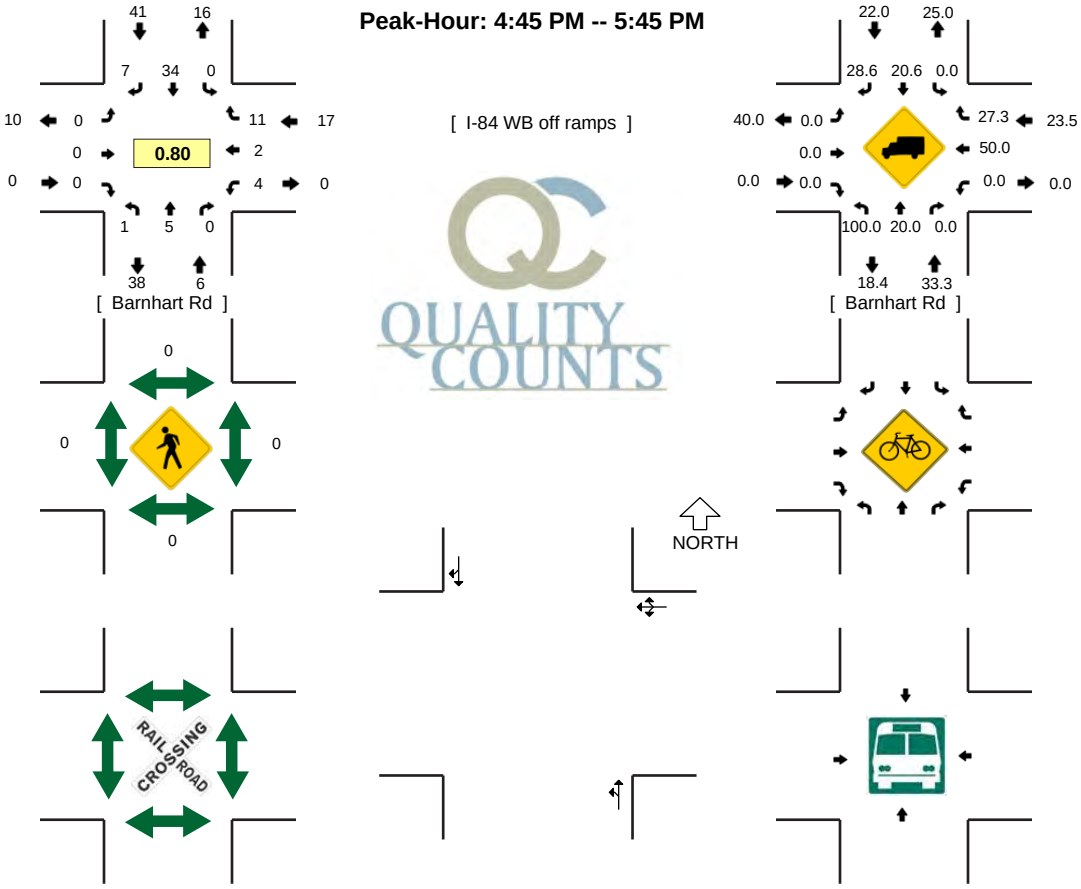
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Barnhart Rd--I-84 WB off ramps
WEATHER:

QC JOB #: 10178101
DATE: 7/12/2006



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Barnhart Rd (Northbound)				Barnhart Rd (Southbound)				I-84 WB off ramps (Eastbound)				I-84 WB off ramps (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:15 PM	1	5	0		0	2	1		0	0	0		2	1	4		16	60
2:30 PM	1	0	0		0	4	0		0	0	0		1	3	1		10	50
2:45 PM	1	1	0		0	8	1		0	0	0		2	0	4		17	58
3:00 PM	1	2	0		0	3	1		0	0	0		3	0	3		13	56
3:15 PM	3	2	0		0	4	0		0	0	0		3	3	1		16	56
3:30 PM	0	2	0		0	13	0		0	0	0		3	1	0		19	65
3:45 PM	0	2	0		0	4	2		0	0	0		0	2	2		12	60
4:00 PM	0	0	0		0	1	0		0	0	0		0	0	4		5	52
4:15 PM	0	4	0		0	5	2		0	0	0		1	1	5		18	54
4:30 PM	0	2	0		0	5	2		0	0	0		1	0	5		15	50
4:45 PM	1	1	0		0	9	1		0	0	0		1	0	2		15	53
5:00 PM	0	1	0		0	6	1		0	0	0		0	0	1		9	57
5:15 PM	0	1	0		0	11	2		0	0	0		2	2	2		20	59
5:30 PM	0	2	0		0	8	3		0	0	0		1	0	6		20	64
5:45 PM	0	1	0		0	2	3		0	0	0		0	1	1		8	57
6:00 PM	2	1	0		0	7	4		0	0	0		3	0	3		20	68
6:15 PM	1	0	0		0	5	5		0	0	0		2	1	2		16	64
6:30 PM	1	0	0		0	0	0		0	0	0		0	1	0		2	46
6:45 PM	0	0	0		0	3	1		0	0	0		0	1	1		6	44
7:00 PM	0	0	0		0	0	0		0	0	0		1	1	1		3	27
7:15 PM	1	0	0		0	0	0		0	0	0		0	0	0		1	12
7:30 PM	0	0	0		0	0	0		0	0	0		1	0	1		2	12
7:45 PM	0	1	0		0	0	0		0	0	0		2	0	2		5	11
8:00 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	8

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	4	0		0	44	8		0	0	0		8	8	8		80
Heavy Trucks	0	0	0		0	8	4		0	0	0		0	4	0		16
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 9/28/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

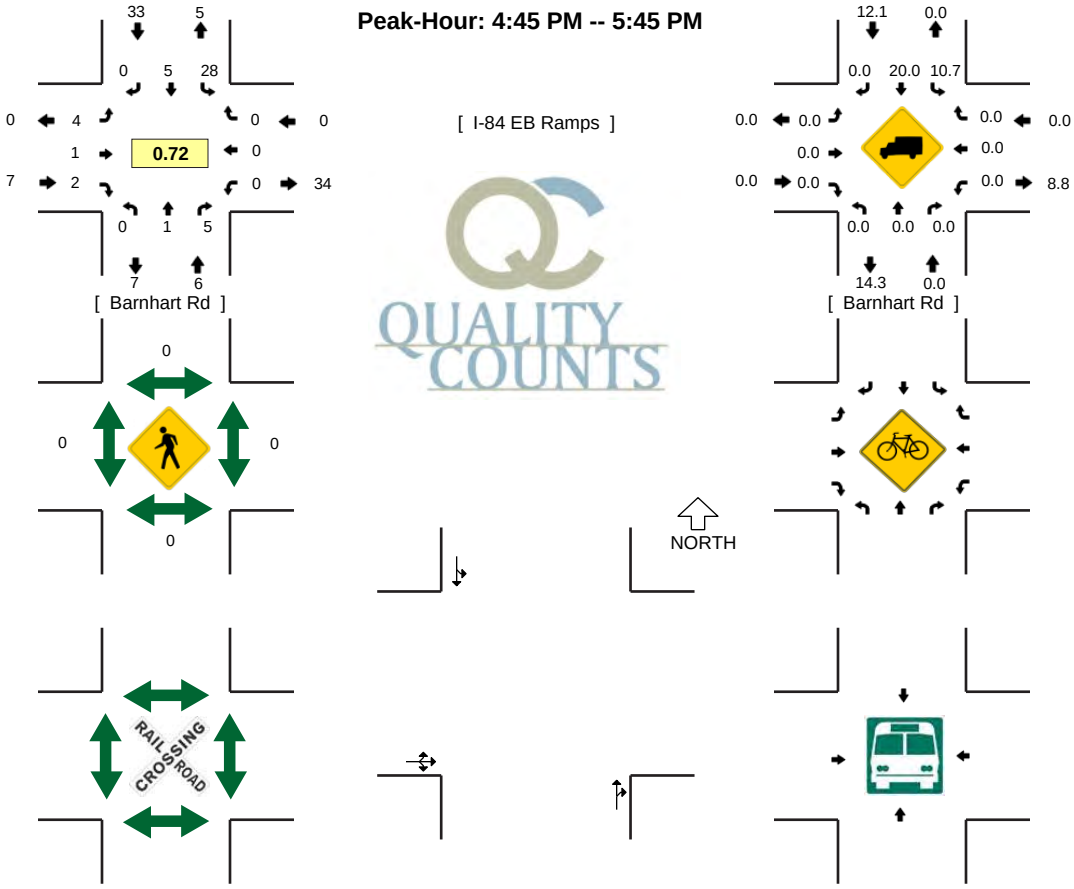
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Barnhart Rd--I-84 EB Ramps
WEATHER:

QC JOB #: 10178102
DATE: 7/12/2006

Peak-Hour: 4:45 PM -- 5:45 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Barnhart Rd (Northbound)				Barnhart Rd (Southbound)				I-84 EB Ramps (Eastbound)				I-84 EB Ramps (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	1	0		9	0	0		3	0	0		0	0	0		13	44
2:15 PM	0	2	0		2	2	0		4	0	0		0	0	0		10	45
2:30 PM	0	1	4		4	0	0		0	0	2		0	0	0		11	43
2:45 PM	0	1	2		7	3	0		1	0	1		0	0	0		15	49
3:00 PM	0	2	0		5	2	0		1	0	0		0	0	0		10	46
3:15 PM	0	1	0		3	3	0		1	0	1		0	0	0		9	45
3:30 PM	0	3	3		11	1	0		1	1	0		0	0	0		20	54
3:45 PM	0	1	2		5	2	0		1	0	1		0	0	0		12	51
4:00 PM	0	0	3		1	1	0		0	0	0		0	0	0		5	46
4:15 PM	0	0	5		4	2	0		4	0	3		0	0	0		18	55
4:30 PM	0	1	2		2	3	0		1	0	1		0	0	0		10	45
4:45 PM	0	1	3		8	1	0		1	0	2		0	0	0		16	49
5:00 PM	0	0	2		5	1	0		1	1	0		0	0	0		10	54
5:15 PM	0	0	0		9	2	0		1	0	0		0	0	0		12	48
5:30 PM	0	0	0		6	1	0		1	0	0		0	0	0		8	46
5:45 PM	0	0	0		1	0	0		1	0	0		0	0	0		2	32
6:00 PM	0	2	0		7	2	0		1	0	0		0	0	0		12	34
6:15 PM	0	0	1		5	1	0		0	1	1		0	0	0		9	31
6:30 PM	0	1	1		0	0	0		0	0	0		0	0	0		2	25
6:45 PM	0	0	0		2	0	0		0	0	0		0	0	0		2	25
7:00 PM	0	0	0		1	0	0		0	0	0		0	0	0		1	14
7:15 PM	0	1	1		0	0	0		0	0	1		0	0	0		3	8
7:30 PM	0	0	0		0	1	0		2	0	0		0	0	0		3	9
7:45 PM	0	1	0		0	1	0		0	0	1		0	0	0		3	10

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	4	12		32	4	0		4	0	8		0	0	0		64
Heavy Trucks	0	0	0		8	0	0		0	0	0		0	0	0		8
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 9/28/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

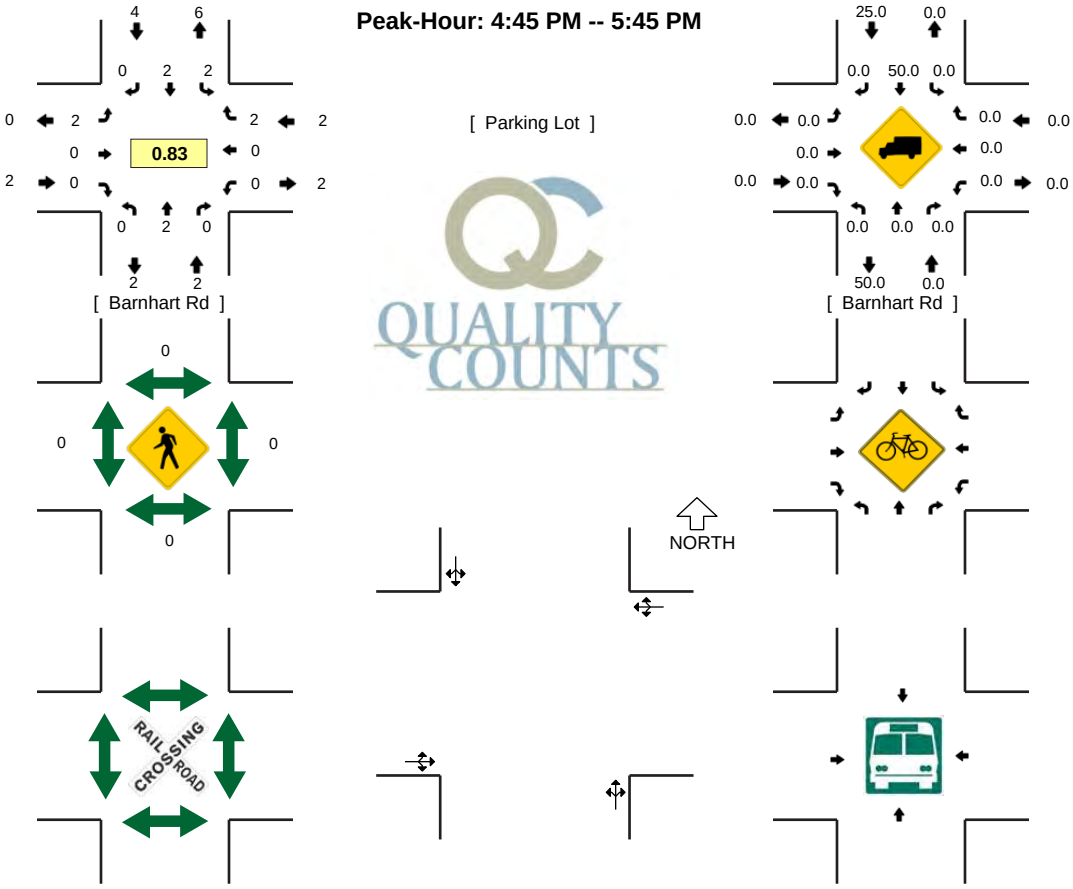
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Barnhart Rd--Parking Lot
WEATHER:

QC JOB #: 10178202
DATE: 7/12/2006

Peak-Hour: 4:45 PM -- 5:45 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Barnhart Rd (Northbound)				Barnhart Rd (Southbound)				Parking Lot (Eastbound)				Parking Lot (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	1	0		0	0	0		0	0	0		0	0	3		4	
4:15 PM	0	0	0		0	0	0		0	0	0		0	0	2		2	
4:30 PM	0	2	0		1	1	1		2	0	0		0	0	1		8	
4:45 PM	0	0	0		0	0	0		1	0	0		0	0	0		1	15
5:00 PM	0	2	0		0	0	0		1	0	0		0	0	0		3	14
5:15 PM	0	0	0		1	2	0		0	0	0		0	0	0		3	15
5:30 PM	0	0	0		1	0	0		0	0	0		0	0	2		3	10
5:45 PM	0	0	0		1	0	0		1	0	0		0	0	1		3	12

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	8	0		0	0	0		4	0	0		0	0	0		12
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 9/28/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

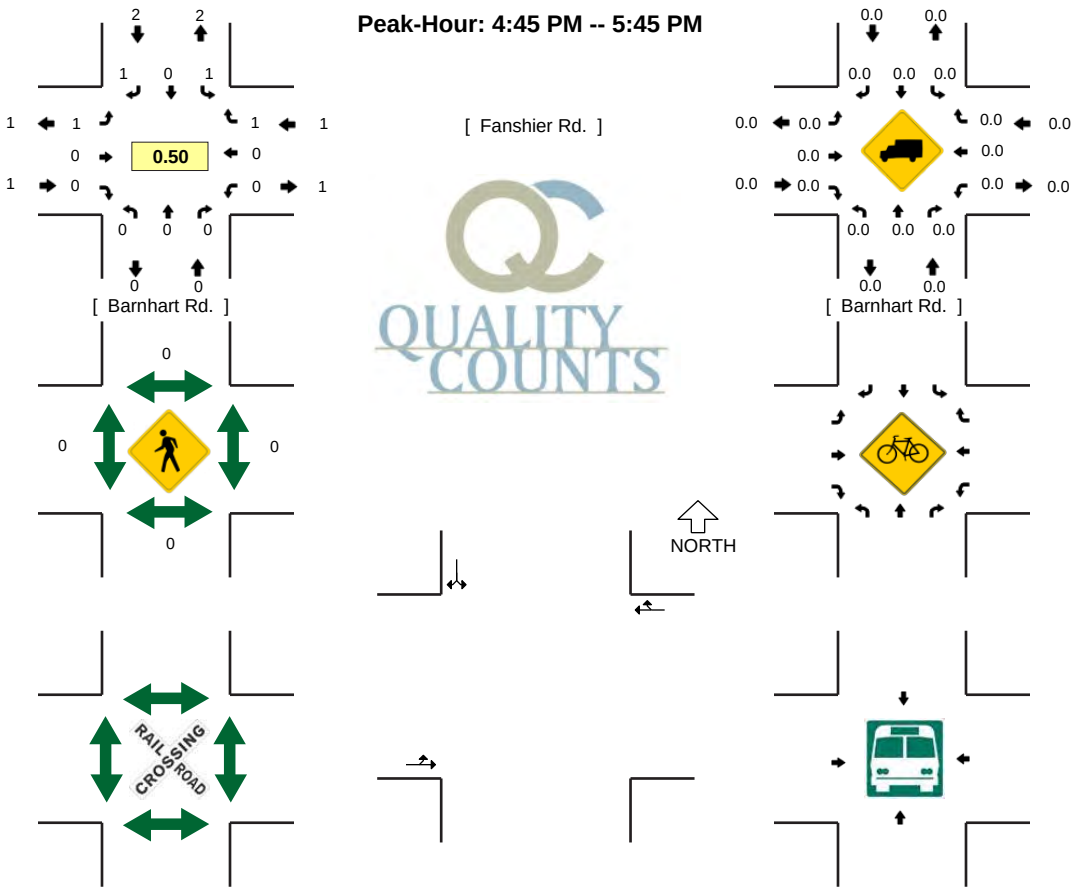
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Barnhart Rd.--Fanshier Rd.
WEATHER:

QC JOB #: 10178206
DATE: 7/12/2006

Peak-Hour: 4:45 PM -- 5:45 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Barnhart Rd. (Northbound)				Barnhart Rd. (Southbound)				Fanshier Rd. (Eastbound)				Fanshier Rd. (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	
4:15 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	
4:30 PM	0	0	0		0	0	1		2	0	0		0	0	0		3	
4:45 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	3
5:00 PM	0	0	0		0	0	0		1	0	0		0	0	1		2	5
5:15 PM	0	0	0		1	0	1		0	0	0		0	0	0		2	7
5:30 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	4
5:45 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	4

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0		0	0	0		4	0	0		0	0	4		8
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 9/28/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

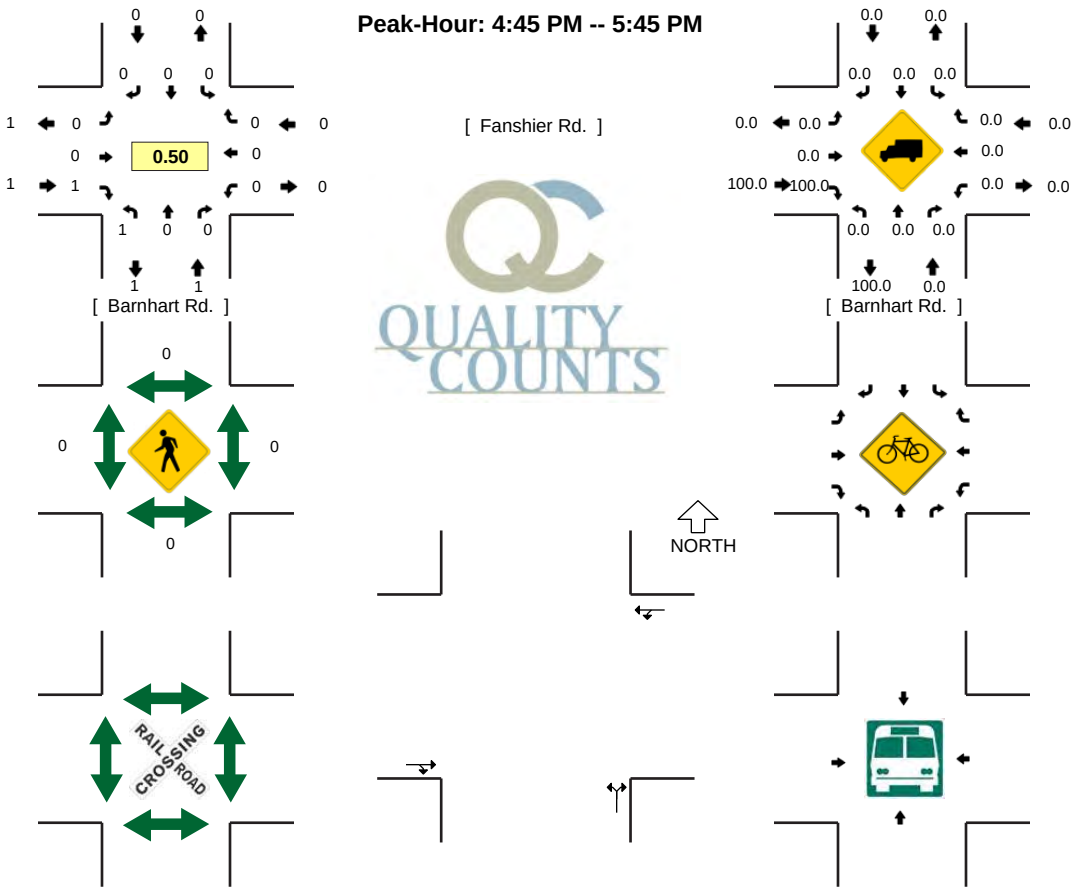
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Barnhart Rd.--Fanshier Rd.
WEATHER:

QC JOB #: 10178208
DATE: 7/12/2006

Peak-Hour: 4:45 PM -- 5:45 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Barnhart Rd. (Northbound)				Barnhart Rd. (Southbound)				Fanshier Rd. (Eastbound)				Fanshier Rd. (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	
4:15 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	
4:30 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	
4:45 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	
5:00 PM	1	0	0		0	0	0		0	0	0		0	0	0		1	1
5:15 PM	0	0	0		0	0	0		0	0	1		0	0	0		1	2
5:30 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	2
5:45 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	2

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	0	0		0	0	0		0	0	0		0	0	0		4
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 9/28/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Attachment B: Existing Conditions Level-of-Service Worksheets

Kittelson & Associates, Inc. - Project #
-
Year 2006 Existing Traffic Conditions, Weekday PM Peak Hour

Scenario Report

Scenario:	AM
Command:	AM
Volume:	AM
Geometry:	AM
Impact Fee:	Default Impact Fee
Trip Generation:	Default Trip Generation
Trip Distribution:	Default Trip Distribution
Paths:	Default Paths
Routes:	Default Routes
Configuration:	Default Configuration

Kittelson & Associates, Inc. - Project #
-
Year 2006 Existing Traffic Conditions, Weekday PM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 Barnhart Rd./Clark Lane	A	9.0	0.000	A	9.0	0.000	+ 0.000 D/V
# 2 Barnhart Rd/I-84 WB off ramps	A	8.8	0.000	A	8.8	0.000	+ 0.000 D/V
# 3 Barnhart Rd/I-84 EB Ramps	A	9.0	0.000	A	9.0	0.000	+ 0.000 D/V
# 4 Barnhart Rd/Parking Lot	A	9.4	0.000	A	9.4	0.000	+ 0.000 D/V
# 5 Barnhart Rd./Fanshier Rd.	A	9.1	0.000	A	9.1	0.000	+ 0.000 D/V
# 6 Barnhart Rd./Fanshier Rd.	A	8.6	0.000	A	8.6	0.000	+ 0.000 D/V

Kittelson & Associates, Inc. - Project #

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Year 2006 Existing Traffic Conditions, Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #1 Barnhart Rd./Clark Lane

Average Delay (sec/veh): 3.6 Worst Case Level Of Service: A[9.0]

Street Name:	Barnhart Rd.						Clark Lane					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 13 Jul 2006 << 7:30 AM to 8:30 AM												
Base Vol:	1	1	23	1	2	1	1	1	1	12	1	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	1	23	1	2	1	1	1	1	12	1	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
PHF Volume:	1	1	28	1	2	1	1	1	1	15	1	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	1	1	28	1	2	1	1	1	1	15	1	1
Critical Gap Module:												
Critical Gp:	4.2	xxxx	xxxxx	4.6	xxxx	xxxxx	7.1	6.5	6.2	7.4	6.8	6.5
FollowUpTim:	2.3	xxxx	xxxxx	2.7	xxxx	xxxxx	3.5	4.0	3.3	3.7	4.2	3.5
Capacity Module:												
Cnflict Vol:	4	xxxx	xxxxx	29	xxxx	xxxxx	24	37	3	24	24	15
Potent Cap.:	1543	xxxx	xxxxx	1323	xxxx	xxxxx	992	859	1087	931	826	1001
Move Cap.:	1543	xxxx	xxxxx	1323	xxxx	xxxxx	988	858	1087	928	825	1001
Volume/Cap:	0.00	xxxx	xxxx	0.00	xxxx	xxxx	0.00	0.00	0.00	0.02	0.00	0.00
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.3	xxxx	xxxxx	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	968	xxxxx	xxxx	924	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.0	xxxxx	xxxxx	0.1	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	8.7	xxxxx	xxxxx	9.0	xxxxx
Shared LOS:	*	*	*	*	*	*	*	A	*	*	A	*
ApproachDel:	xxxxxx			xxxxxx			8.7			9.0		
ApproachLOS:	*			*			A			A		

Note: Queue reported is the number of cars per lane.

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Year 2006 Existing Traffic Conditions, Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #1 Barnhart Rd./Clark Lane

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HevVeh:	14%			50%			0%			25%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

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Year 2006 Existing Traffic Conditions, Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 Barnhart Rd/I-84 WB off ramps

Average Delay (sec/veh): 5.1 Worst Case Level Of Service: A[8.8]

Street Name:	Barnhart Rd						I-84 WB off ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 1	0	0 0	0	0 0 1	0	0	0 0	0 0	0	1 0	0 1
Volume Module: >> Count Date: 13 Jul 2006 << 7:30 AM to 8:30 AM												
Base Vol:	1	5	0	0	7	8	0	0	0	6	1	20
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	5	0	0	7	8	0	0	0	6	1	20
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
PHF Volume:	1	6	0	0	8	9	0	0	0	7	1	23
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	1	6	0	0	8	9	0	0	0	7	1	23
Critical Gap Module:												
Critical Gp:	4.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.7	6.8	6.5
FollowUpTim:	2.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.8	4.3	3.6
Capacity Module:												
Cnflict Vol:	17	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	21	25	6
Potent Cap.:	1420	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	929	816	1001
Move Cap.:	1420	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	928	815	1001
Volume/Cap:	0.00	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	0.00	0.02
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	0.1
Control Del:	7.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	8.7
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	A
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	910	xxxx	xxxxx
SharedQueue:	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	7.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	9.0	xxxx	xxxxx
Shared LOS:	A	*	*	*	*	*	*	*	*	A	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			8.8		
ApproachLOS:	*			*			*			A		

Note: Queue reported is the number of cars per lane.

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Kittelson & Associates, Inc. - Project #

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Year 2006 Existing Traffic Conditions, Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #2 Barnhart Rd/I-84 WB off ramps

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
HevVeh:	33%			31%			60%			30%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #3 Barnhart Rd/I-84 EB Ramps

Average Delay (sec/veh): 4.9 Worst Case Level Of Service: A[9.0]

Street Name:	Barnhart Rd						I-84 EB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 1 0 0 1			0 0 0 0 0		
Volume Module: >> Count Date: 13 Jul 2006 << 7:30 AM to 8:30 AM												
Base Vol:	0	2	5	9	4	0	4	1	3	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	2	5	9	4	0	4	1	3	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
PHF Volume:	0	3	7	13	6	0	6	1	4	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	3	7	13	6	0	6	1	4	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	6.7	6.8	6.5	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	3.8	4.3	3.6	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	10	xxxx	xxxxx	38	42	6	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	1623	xxxx	xxxxx	900	793	993	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	1623	xxxx	xxxxx	895	787	993	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.01	xxxx	xxxx	0.01	0.00	0.00	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	0.0	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	7.2	xxxx	xxxxx	xxxxx	xxxx	8.6	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	A	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	871	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	7.2	xxxx	xxxxx	9.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	A	*	*	A	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			9.0			xxxxxx		
ApproachLOS:	*			*			A			*		

Note: Queue reported is the number of cars per lane.

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Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #3 Barnhart Rd/I-84 EB Ramps

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
HevVeh:	20%			0%			33%			0%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

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Kittelson & Associates, Inc. - Project #
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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #4 Barnhart Rd/Parking Lot

Average Delay (sec/veh): 6.0 Worst Case Level Of Service: A[9.4]

Street Name:	Barnhart Rd						Parking Lot					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			1 0 0 1 0		
Volume Module: >> Count Date: 13 Jul 2006 << 7:30 AM to 8:30 AM												
Base Vol:	1	1	1	3	1	3	2	1	1	1	1	4
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	1	1	3	1	3	2	1	1	1	1	4
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
PHF Volume:	1	1	1	4	1	4	2	1	1	1	1	5
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	1	1	1	4	1	4	2	1	1	1	1	5
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.3	xxxx	xxxxx	7.1	6.5	6.2	8.1	7.5	7.2
FollowUpTim:	2.2	xxxx	xxxxx	2.4	xxxx	xxxxx	3.5	4.0	3.3	4.4	4.9	4.2
Capacity Module:												
Cnflict Vol:	5	xxxx	xxxxx	2	xxxx	xxxxx	17	15	3	16	16	2
Potent Cap.:	1630	xxxx	xxxxx	1527	xxxx	xxxxx	1002	883	1087	797	718	855
Move Cap.:	1630	xxxx	xxxxx	1527	xxxx	xxxxx	993	880	1087	794	716	855
Volume/Cap:	0.00	xxxx	xxxx	0.00	xxxx	xxxx	0.00	0.00	0.00	0.00	0.00	0.01
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	7.2	xxxx	xxxxx	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	9.5	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	983	xxxxx	xxxx	xxxx	823
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.0	xxxxx	xxxxx	xxxx	0.0
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	8.7	xxxxx	xxxxx	xxxx	9.4
Shared LOS:	*	*	*	*	*	*	*	A	*	*	*	A
ApproachDel:	xxxxxx			xxxxxx			8.7			9.4		
ApproachLOS:	*			*			A			A		

****
Note: Queue reported is the number of cars per lane.
****

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Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #4 Barnhart Rd/Parking Lot

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HevVeh:	0%			17%			0%			100%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

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         Year 2006 Existing Traffic Conditions,  Weekday PM Peak Hour
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                       Level Of Service Computation Report
              2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #5 Barnhart Rd./Fanshier Rd. [Gravel  'T']
********************************************************************************
Average Delay (sec/veh):      7.9       Worst Case Level Of Service: A[  9.1]
********************************************************************************
Street Name:           Barnhart Rd.                     Fanshier Rd.
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  0  0  0  0    0  0  1! 0  0    0  1  0  0  0    0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 13 Jul 2006 << 7:30 AM to 8:30 AM
Base Vol:        0    0     0     2    0     1     1    1     0     0    1     2
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0    0     0     2    0     1     1    1     0     0    1     2
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.25 0.25  0.25  0.25 0.25  0.25  0.25 0.25  0.25  0.25 0.25  0.25
PHF Volume:      0    0     0     8    0     4     4    4     0     0    4     8
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:      0    0     0     8    0     4     4    4     0     0    4     8
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5 xxxxx xxxxx  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0 xxxxx xxxxx  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx     0 xxxx xxxxx    20   18 xxxxx  xxxx   20     0
Potent Cap.: xxxx xxxx xxxxx   900 xxxx xxxxx   998  880 xxxxx  xxxx  878   900
Move Cap.:   xxxx xxxx xxxxx   900 xxxx xxxxx   979  872 xxxxx  xxxx  870   900
Volume/Cap:  xxxx xxxx  xxxx  0.01 xxxx  xxxx  0.00 0.00  xxxx  xxxx 0.00  0.01
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx   9.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   *    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx   923 xxxx xxxxx  xxxx xxxx   890
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx   0.0
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.9 xxxx xxxxx xxxxx xxxx   9.1
Shared LOS:    *    *     *     *    *     *     A    *     *     *    *     A
ApproachDel:    xxxxxx           xxxxxx              8.9              9.1
ApproachLOS:         *                *               A                A
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************


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         Year 2006 Existing Traffic Conditions,  Weekday PM Peak Hour
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                  Level Of Service Detailed Computation Report
                        2000 HCM Unsignalized Method
                           Base Volume Alternative
********************************************************************************
Intersection #5 Barnhart Rd./Fanshier Rd. [Gravel  'T']
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
----------|---------------|---------------|---------------|---------------|
HevVeh:              0%               0%               0%               0%
Grade:               0%               0%               0%               0%
Peds/Hour:           0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:        12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
```

Kittelson & Associates, Inc. - Project #
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Year 2006 Existing Traffic Conditions, Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #6 Barnhart Rd./Fanshier Rd.

Average Delay (sec/veh): 3.5 Worst Case Level Of Service: A[8.6]

Street Name:	Barnhart Rd.						Fanshier Rd.					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	1 0	0	0 1	0	0 0	0 0	0	0 0	1 0	0	1 0	0 0
Volume Module: >> Count Date: 13 Jul 2006 << 7:30 AM to 8:30 AM												
Base Vol:	2	0	0	0	0	0	0	1	2	1	1	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	2	0	0	0	0	0	0	1	2	1	1	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
PHF Volume:	8	0	0	0	0	0	0	4	8	4	4	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	8	0	0	0	0	0	0	4	8	4	4	0
Critical Gap Module:												
Critical Gp:	6.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	20	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	12	xxxx	xxxxx
Potent Cap.:	1002	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1620	xxxx	xxxxx
Move Cap.:	1000	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1620	xxxx	xxxxx
Volume/Cap:	0.01	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.00	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	8.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.2	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.2	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	A	*	*
ApproachDel:	8.6			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	A			*			*			*		

Note: Queue reported is the number of cars per lane.

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Kittelson & Associates, Inc. - Project #
-
Year 2006 Existing Traffic Conditions, Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #6 Barnhart Rd./Fanshier Rd.

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
HevVeh:	0%			0%			100%			0%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Existing Traffic Operations -- AM and PM Peak Hour

Scenario Report

Scenario:	PM
Command:	PM
Volume:	PM
Geometry:	PM
Impact Fee:	Default Impact Fee
Trip Generation:	Default Trip Generation
Trip Distribution:	Default Trip Distribution
Paths:	Default Paths
Routes:	Default Routes
Configuration:	Default Configuration

Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Existing Traffic Operations -- AM and PM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 Barnhart Rd./Clark Lane	A	8.9	0.000	A	8.9	0.000	+ 0.000 D/V
# 2 Barnhart Rd/I-84 WB off ramps	A	8.8	0.000	A	8.8	0.000	+ 0.000 D/V
# 3 Barnhart Rd/I-84 EB Ramps	A	9.0	0.000	A	9.0	0.000	+ 0.000 D/V
# 4 Barnhart Rd/Parking Lot	A	8.7	0.000	A	8.7	0.000	+ 0.000 D/V
# 5 Barnhart Rd./Fanshier Rd.	A	9.1	0.000	A	9.1	0.000	+ 0.000 D/V
# 6 Barnhart Rd./Fanshier Rd.	A	8.6	0.000	A	8.6	0.000	+ 0.000 D/V

Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Existing Traffic Operations -- AM and PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #1 Barnhart Rd./Clark Lane

Average Delay (sec/veh): 6.5 Worst Case Level Of Service: A[8.9]

Street Name:	Barnhart Rd.						Clark Lane					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 12 Jul 2006 << 4:45 PM to 5:45 PM												
Base Vol:	1	1	14	1	1	1	1	1	1	39	1	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	1	14	1	1	1	1	1	1	39	1	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
PHF Volume:	1	1	18	1	1	1	1	1	1	50	1	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	1	1	18	1	1	1	1	1	1	50	1	1
Critical Gap Module:												
Critical Gp:	4.5	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.2	6.6	6.3
FollowUpTim:	2.6	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.6	4.1	3.4
Capacity Module:												
Cnflict Vol:	3	xxxx	xxxxx	19	xxxx	xxxxx	19	26	2	19	18	10
Potent Cap.:	1393	xxxx	xxxxx	1610	xxxx	xxxxx	1001	871	1088	970	857	1043
Move Cap.:	1393	xxxx	xxxxx	1610	xxxx	xxxxx	997	869	1088	967	855	1043
Volume/Cap:	0.00	xxxx	xxxx	0.00	xxxx	xxxx	0.00	0.00	0.00	0.05	0.00	0.00
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.6	xxxx	xxxxx	7.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	976	xxxxx	xxxx	965	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.0	xxxxx	xxxxx	0.2	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	8.7	xxxxx	xxxxx	8.9	xxxxx
Shared LOS:	*	*	*	*	*	*	*	A	*	*	A	*
ApproachDel:	xxxxxx			xxxxxx			8.7			8.9		
ApproachLOS:	*			*			A			A		

Note: Queue reported is the number of cars per lane.

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Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Existing Traffic Operations -- AM and PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #1 Barnhart Rd./Clark Lane

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HevVeh:	42%			0%			0%			12%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Existing Traffic Operations -- AM and PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 Barnhart Rd/I-84 WB off ramps

Average Delay (sec/veh): 2.5 Worst Case Level Of Service: A[8.8]

Street Name:	Barnhart Rd						I-84 WB off ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 1	0	0 0	0	0 0	1 0	0	0 0	0 0	0	1 0	0 1
Volume Module: >> Count Date: 12 Jul 2006 << 4:45 PM to 5:45 PM												
Base Vol:	1	5	0	0	34	7	0	0	0	4	2	11
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	5	0	0	34	7	0	0	0	4	2	11
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
PHF Volume:	1	6	0	0	43	9	0	0	0	5	3	14
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	1	6	0	0	43	9	0	0	0	5	3	14
Critical Gap Module:												
Critical Gp:	4.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.6	6.7	6.4
FollowUpTim:	2.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.7	4.2	3.5
Capacity Module:												
Cnflict Vol:	51	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	56	60	6
Potent Cap.:	1378	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	900	790	1016
Move Cap.:	1378	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	899	790	1016
Volume/Cap:	0.00	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	0.00	0.01
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	0.0
Control Del:	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	8.6
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	A
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	859	xxxx	xxxxx
SharedQueue:	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	9.2	xxxx	xxxxx
Shared LOS:	A	*	*	*	*	*	*	*	*	A	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			8.8		
ApproachLOS:	*			*			*			A		

Note: Queue reported is the number of cars per lane.

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Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Existing Traffic Operations -- AM and PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #2 Barnhart Rd/I-84 WB off ramps

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
HevVeh:	33%			22%			0%			24%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

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Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Existing Traffic Operations -- AM and PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #3 Barnhart Rd/I-84 EB Ramps

Average Delay (sec/veh): 6.0 Worst Case Level Of Service: A[9.0]

Street Name:	Barnhart Rd						I-84 EB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 1 0 0 1			0 0 0 0 0		
Volume Module: >> Count Date: 12 Jul 2006 << 4:45 PM to 5:45 PM												
Base Vol:	0	1	5	33	5	0	4	1	2	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1	5	33	5	0	4	1	2	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
PHF Volume:	0	1	7	46	7	0	6	1	3	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	1	7	46	7	0	6	1	3	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.2	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	2.3	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	8	xxxx	xxxxx	103	107	7	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	1549	xxxx	xxxxx	900	787	1081	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	1549	xxxx	xxxxx	879	763	1081	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.03	xxxx	xxxx	0.01	0.00	0.00	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	0.0	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx	xxxxx	xxxx	8.3	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	A	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	853	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx	9.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	A	*	*	A	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			9.0			xxxxxx		
ApproachLOS:	*			*			A			*		

Note: Queue reported is the number of cars per lane.

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Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Existing Traffic Operations -- AM and PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #3 Barnhart Rd/I-84 EB Ramps

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
HevVeh:	0%			12%			0%			0%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

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Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Existing Traffic Operations -- AM and PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #4 Barnhart Rd/Parking Lot

Average Delay (sec/veh): 5.6 Worst Case Level Of Service: A[8.7]

Street Name:	Barnhart Rd						Parking Lot					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			1 0 0 1 0		
Volume Module: >> Count Date: 12 Jul 2006 << 4:45 PM to 5:45 PM												
Base Vol:	1	2	1	4	2	1	2	1	1	1	1	2
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	2	1	4	2	1	2	1	1	1	1	2
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
PHF Volume:	1	2	1	5	2	1	2	1	1	1	1	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	1	2	1	5	2	1	2	1	1	1	1	2
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.3	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.4	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	4	xxxx	xxxxx	4	xxxx	xxxxx	20	19	3	19	19	3
Potent Cap.:	1631	xxxx	xxxxx	1480	xxxx	xxxxx	999	879	1087	1000	879	1087
Move Cap.:	1631	xxxx	xxxxx	1480	xxxx	xxxxx	992	876	1087	994	876	1087
Volume/Cap:	0.00	xxxx	xxxx	0.00	xxxx	xxxx	0.00	0.00	0.00	0.00	0.00	0.00
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	7.2	xxxx	xxxxx	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.6	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	981	xxxxx	xxxx	xxxx	1006
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.0	xxxxx	xxxxx	xxxx	0.0
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	8.7	xxxxx	xxxxx	xxxx	8.6
Shared LOS:	*	*	*	*	*	*	*	A	*	*	*	A
ApproachDel:	xxxxxx			xxxxxx				8.7			8.6	
ApproachLOS:	*			*				A			A	

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Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Existing Traffic Operations -- AM and PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #4 Barnhart Rd/Parking Lot

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HevVeh:	0%			25%			0%			0%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

Note: Queue reported is the number of cars per lane.

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------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. --Project #:7930
                      Barnhart Road IAMP -- Pendleton, OR
               Existing Traffic Operations -- AM and PM Peak Hour
------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Unsignalized Method (Base Volume Alternative)
******************************************************************************
Intersection #5 Barnhart Rd./Fanshier Rd. [Gravel  'T']
******************************************************************************
Average Delay (sec/veh):      7.2       Worst Case Level Of Service: A[  9.1]
******************************************************************************
Street Name:           Barnhart Rd.                     Fanshier Rd.
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  0  0  0  0    0  0  1! 0  0    0  1  0  0  0    0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 12 Jul 2006 << 4:45 PM to 5:45 PM
Base Vol:        0    0     0     2    0     2     2    1     0     0    1     2
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0    0     0     2    0     2     2    1     0     0    1     2
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.50 0.50  0.50  0.50 0.50  0.50  0.50 0.50  0.50  0.50 0.50  0.50
PHF Volume:      0    0     0     4    0     4     4    2     0     0    2     4
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:      0    0     0     4    0     4     4    2     0     0    2     4
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5 xxxxx xxxxx  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0 xxxxx xxxxx  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx     0 xxxx xxxxx    11   10 xxxxx  xxxx   12     0
Potent Cap.: xxxx xxxx xxxxx   900 xxxx xxxxx  1012  889 xxxxx  xxxx  887   900
Move Cap.:   xxxx xxxx xxxxx   900 xxxx xxxxx  1002  885 xxxxx  xxxx  883   900
Volume/Cap:  xxxx xxxx  xxxx  0.00 xxxx  xxxx  0.00 0.00  xxxx  xxxx 0.00  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx   9.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   *    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx   960 xxxx xxxxx  xxxx xxxx   894
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx   0.0
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.8 xxxx xxxxx xxxxx xxxx   9.1
Shared LOS:    *    *     *     *    *     *     A    *     *     *    *     A
ApproachDel:    xxxxxx           xxxxxx              8.8              9.1
ApproachLOS:         *                *               A                A
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************


  Traffix 7.8.0515 (c) 2006 Dowling Assoc. Licensed to KITTELSON, PORTLAND

PM                          Thu Oct 12, 2006 09:39:32                Page 12-1
------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. --Project #:7930
                      Barnhart Road IAMP -- Pendleton, OR
               Existing Traffic Operations -- AM and PM Peak Hour
------------------------------------------------------------------------------
                 Level Of Service Detailed Computation Report
                        2000 HCM Unsignalized Method
                           Base Volume Alternative
******************************************************************************
Intersection #5 Barnhart Rd./Fanshier Rd. [Gravel  'T']
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:              0%               0%               0%               0%
Grade:               0%               0%               0%               0%
Peds/Hour:           0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:        12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
```

```
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.2 xxxx xxxxx
Shared LOS:    *    *     *     *    *     *     *    *     *     A    *     *
ApproachDel:       8.6           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        A               *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



```
                  Kittelson & Associates, Inc. --Project #:7930
                       Barnhart Road IAMP -- Pendleton, OR
                Existing Traffic Operations -- AM and PM Peak Hour
--------------------------------------------------------------------------------
                       Level Of Service Computation Report
              2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #6 Barnhart Rd./Fanshier Rd.
********************************************************************************
Average Delay (sec/veh):      3.5       Worst Case Level Of Service: A[  8.6]
********************************************************************************
Street Name:           Barnhart Rd.                    Fanshier Rd.
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        1  0  0  0  1    0  0  0  0  0    0  0  0  1  0    0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 12 Jul 2006 << 4:45 PM to 5:45 PM
Base Vol:       2    0     0     0    0     0     0    1     2     1    1     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    2    0     0     0    0     0     0    1     2     1    1     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.50 0.50  0.50  0.50 0.50  0.50  0.50 0.50  0.50  0.50 0.50  0.50
PHF Volume:     4    0     0     0    0     0     0    2     4     2    2     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     4    0     0     0    0     0     0    2     4     2    2     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   10 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx     6 xxxx xxxxx
Potent Cap.: 1015 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  1628 xxxx xxxxx
Move Cap.:   1014 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  1628 xxxx xxxxx
Volume/Cap:  0.00 xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.00 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx
Control Del:  8.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.2 xxxx xxxxx
LOS by Move:   A    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx
```



```
                  Kittelson & Associates, Inc. --Project #:7930
                       Barnhart Road IAMP -- Pendleton, OR
                Existing Traffic Operations -- AM and PM Peak Hour
--------------------------------------------------------------------------------
                       Level Of Service Detailed Computation Report
                              2000 HCM Unsignalized Method
                                 Base Volume Alternative
********************************************************************************
Intersection #6 Barnhart Rd./Fanshier Rd.
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             0%               0%              100%              0%
Grade:              0%               0%                0%              0%
Peds/Hour:          0                0                 0               0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
```

Attachment C: Crash Data

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Barnhart Road at Clark Lane in Umatilla County

2001 - 2005

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR:														
TOTAL														
FINAL TOTAL														

Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CRASH SUMMARIES BY YEAR BY COLLISION TYPE

I-84 (Route 84, Hwy #6) WB ramps at Barnhart Road in Umatilla County

2001 - 2005

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR:														
TOTAL														
FINAL TOTAL														

Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CRASH SUMMARIES BY YEAR BY COLLISION TYPE

I-84 (Route 84, Hwy #6) EB ramps at Barnhart Road in Umatilla County

2001 - 2005

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR:														
TOTAL														
FINAL TOTAL														

Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

All driveways on that portion of Fanshier Rd, Clark Ln, & both Barnhart Roads in Umatilla County
2001 - 2005

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR:														
TOTAL														
FINAL TOTAL														

Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Westernmost Barnhart Road at Fanshier Road in Umatilla County

2001 - 2005

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR:														
TOTAL														
FINAL TOTAL														

Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Fanshier Road at easternmost Barnhart Road in Umatilla County
2001 - 2005

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR:														
TOTAL														
FINAL TOTAL														

Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

Appendix E

Technical Memorandum #4
Future Conditions

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING/TRAFFIC ENGINEERING
610 SW ALDER, SUITE 700 • PORTLAND, OR 97205 • (503) 228-5230 • FAX (503) 273-8169

TECHNICAL MEMORANDUM

I-84/Barnhart Road Interchange Area Management Plan
Technical Memorandum #4
Future Conditions

Date: November 13, 2006 **Project** #: 7930

To: I-84 / Barnhart Road PPMT

From: Marc Butorac, P.E., P.T.O.E. and Matthew Wiesenfeld, Susan Wright, P.E.

cc: Howard Perry, Anderson Perry and Associates, Inc.

This technical memorandum is the fourth in a series of memorandums that are being prepared for the I-84/Barnhart Road Interchange Area Management Plan (IAMP). This memorandum documents the future traffic condition conditions as well as a possible future land use scenario in the vicinity of the interchange and the airport industrial areas. Based on this land use scenario, an assessment of future year 2025 "No-Build" (without the Connector Roadway) and a "Build" forecast is provided for the proposed Barnhart Road-Airport Road Connector Project and the I-84/Barnhart Road IAMP. The remainder of this memorandum summarizes the land use, regional traffic growth, and traffic reassignment assumptions as well as the forecasted year 2025 traffic operations.

FUTURE CONDITIONS STUDY AREA

The future conditions study area will focus on the three identified sub-areas 'A', 'B' and 'C'. The sub-area 'A' is comprised of those land uses located north of Interstate 84 in the vicinity of the Barnhart Road interchange. The sub-area 'B' comprises the lands located to the south of the interstate near the interchange. Sub-area 'C' reflects land currently within and proposed to be within the Urban Growth Boundary in the vicinity of the airport that would generate traffic and affect the operations of the Barnhart Interchange with the construction of the Barnhart Road-Airport Road Connector.

The IAMP study area comprised of Sub-areas 'A' and 'B' is focused on the specific connector roadway alignment and the related traffic impacts and property accessibility issues within the immediate vicinity of the interchange.

PLANNED TRANSPORTATION IMPROVEMENTS

With the exception of the Barnhart Road-Airport Road Connector Project, no additional transportation improvements inside the IAMP study area are identified in the ODOT's Statewide Transportation Improvement Plan (STIP) or the City of Pendleton and Umatilla County Transportation System Plans. The Pendleton TSP calls for the Barnhart Road-Airport Road Connector to provide a connection between the airport industrial area and the existing I-84/Barnhart Road interchange in order to allow for additional industrial development, and to provide improved access to the interstate freeway due to the existing topographical constraints along the current Airport Road-Westgate (US 30) route to I-84.

YEAR 2025 NO-BUILD TRAFFIC VOLUMES FORECAST METHODOLOGY

Year 2025 "No-Build" (Without the Connector Road) traffic volume forecasts for intersection turning movements and street segments were developed in order to analyze the effects of traffic growth on the I-84/Barnhart Road interchange and the surrounding transportation system that serve adjacent urban and rural land uses. For this assessment, a year 2025 "No-Build" scenario was developed based on the currently adopted Umatilla County and City of Pendleton comprehensive plans. The remainder of this section describes the methodology and assumptions used to develop year 2025 forecasts.

Year 2025 No-Build Scenario

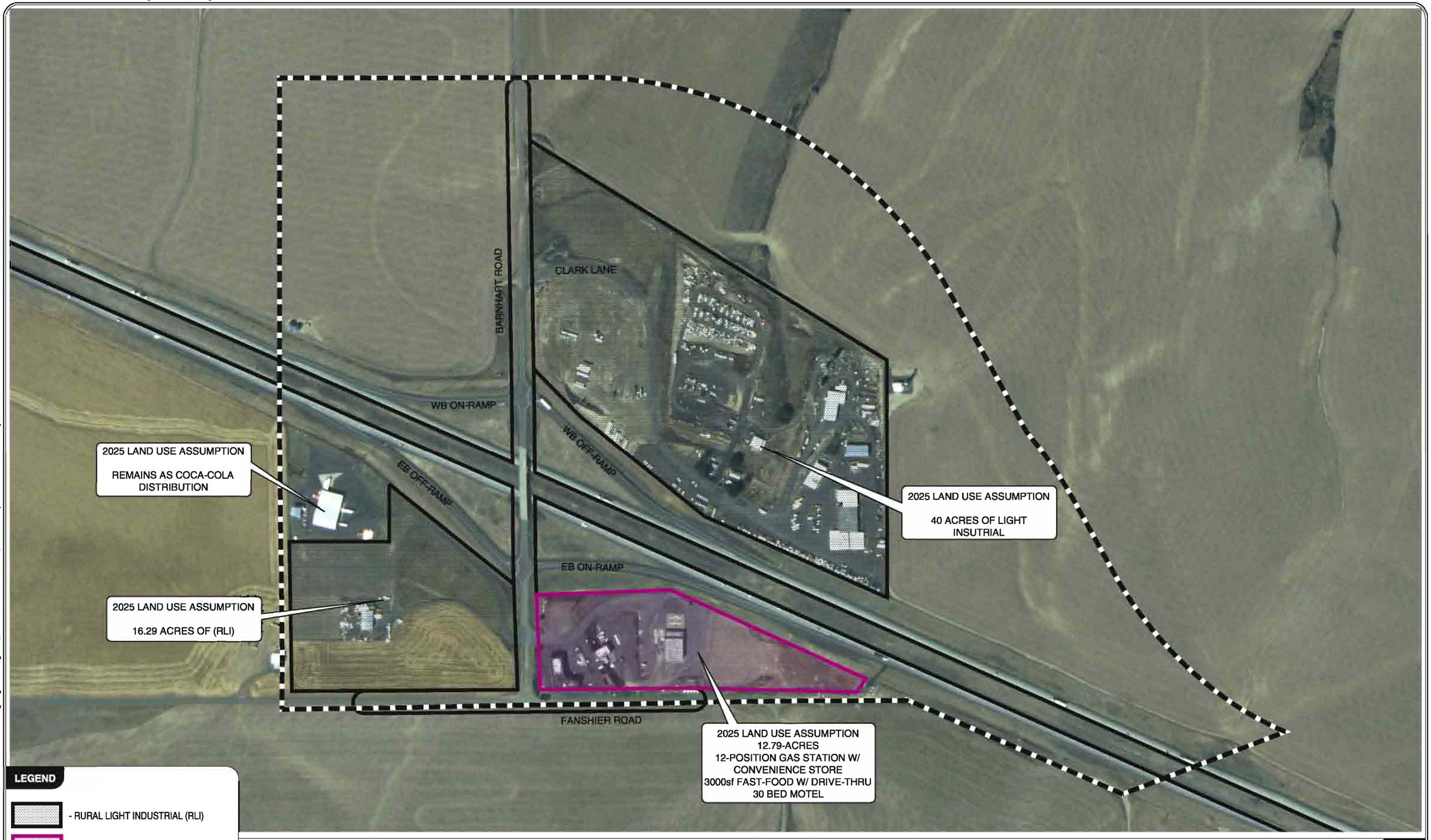
The year 2025 No-Build Scenario was developed by considering the following three types of traffic growth:

- Future traffic growth related to development and redevelopment of the Umatilla County rural light industrial and rural tourist commercial exception land in the vicinity of the I-84/Barnhart Road interchange.
- Future traffic growth related to development and redevelopment of the land located currently within the Pendleton UGB in the immediate vicinity of the Airport.
- Future traffic related to regional growth focusing on the increase use of the Westgate (US 30) and I-84 corridors for intercity and interstate travel.

The specific assumptions used in each of these traffic growth components are summarized below.

I-84/Barnhart Road Interchange Area Traffic Growth Assumptions

To account for local traffic growth attributed to the development and redevelopment of the Umatilla County rural light industrial and rural tourist commercial exception land in the vicinity of the I-84/Barnhart Road interchange, the project team calculated the reasonable "worst-case" trip generating potential of the properties based on development assumptions summarized in Table 4-1 and illustrated in Figure 4-1.



I-84/BARNHART ROAD INTERCHANGE AREA-LAND USE ASSUMPTIONS
UMATILLA COUNTY, OREGON

FIGURE 4-1

Kittelson & Associates, Inc.
Transportation Engineering / Planning

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Table 4-1
I-84/Barnhart Road Interchange Area Land Use Assumptions

Land Use Assumption	Zoning	Acreage	Size	Net New Peak Hour Trips	
				Weekday AM	Weekday PM
Sub-Area A – North of Interchange					
Complete Redevelopment	RLI	40	330,000	300	290
Sub-Area B – South of Interchange					
Maintain Coca-Cola Property	RLI	4.27	Existing	n/a	n/a
Complete Redevelopment of Remaining Industrial Land	RLI	16.29	179,000	122	118
Complete Redevelopment of all RTC Property	RTC	12.79	12-Position Gas Station w/Convenience Store, 3,000sf Fast-Food w/ Drive-Thru and a 30 Bed Motel	146	125
Sub-Area "B" Total	RLI/RTC	33.35		268	243

As shown in Table 4-1, it was assumed that all the existing properties with the exception of the existing Coca-Cola property within the I-84/Barnhart Road interchange area would redevelop over the next 20 years. Based on the existing zoning and average lot coverage rates of 40 percent for RLI and 25 percent for RTC, the reasonable "worst-case" trip generating potential for each sub-area was calculated for the weekday a.m. and p.m. peak hour. Tables 4-A1 and 4-A2 and Figures 4-A1 and 4-A2 in the appendix summarize the specific land use assumptions, trip generation calculations, and trip assignments onto the local transportation system for the I-84/Barnhart Road Interchange Area.

Airport Area and Background Traffic Growth Assumptions

To account for local traffic growth attributed to the development and redevelopment of the currently zoned industrial land in Airport Industrial Area, the project team used the Pendleton travel demand model and its TAZ (Traffic Analysis Zone) data to calculate a probable growth scenario for this area. The model reflects the travel demand caused by a 5% continuous growth in employment in the industrial zoned land south and west of the airport. The traffic generated by the employment growth is reflected in the growth rates along Airport Road and Westgate (US 30). Airport Road was assumed to have a 10% per year growth rate. Westgate (US 30) was assumed to have a 3% per year growth rate. These growth rates also account for background growth in the region.

YEAR 2025 NO-BUILD TRAFFIC CONDITIONS

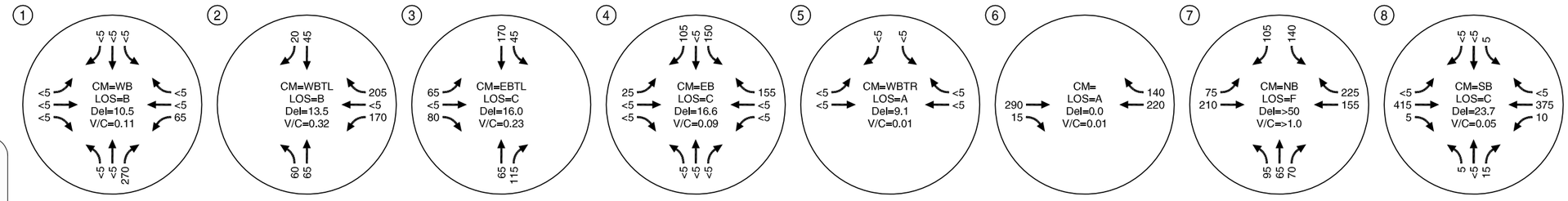
Future year 2025 No-Build weekday a.m. and p.m. peak hour traffic volumes were determined by increasing the existing 2006 traffic in the network by growth rates and trip generation estimates at the I-84 Barnhart Road Interchange. (Figures 4-A3 through 4-A5 in the appendix summarize the existing 2006 lane configurations and traffic control devices, weekday a.m. peak hour traffic conditions, and weekday p.m. peak hour traffic conditions, respectively). The resulting year 2025 No-Build weekday a.m. and p.m. peak hour traffic volumes are shown in Figures 4-2 and 4-3. It should be noted that these forecasts are somewhat conservative due the building coverage and full-buildout assumptions applied to the developable lands within sub-area 'A' and 'B'. the growth rates applied in the airport area are based on the Travel Demand Model data provided by ODOT.

Year 2025 No–Build Intersection Operations Analysis

A traffic operations analysis was performed for the study intersections using the forecast year 2025 "No-Build" weekday a.m. and p.m. peak hour traffic volumes shown in Figure 4-2 and 4-3, respectively. As shown in the figures, by the year 2025, assuming no transportation improvements are made within the study area all study intersections are expected to operate acceptably with the exception of the Airport Road/Westgate (US 30) intersection during the weekday a.m. and p.m. peak hours. This identified operational deficiency and the possible mitigation solutions are discussed below.

Airport Road/Westgate (US 30)

The Airport Road/Westgate (US 30) intersection fails to meet operational standards during weekday a.m. and p.m. peak hour because of the high southbound left-turn demand created by growth in employment within the Airport Industrial Area. This level of traffic would likely require signalization of the Airport Road/Westgate (US 30) intersection to accommodate for this movement. This action can be undertaken at a future date when traffic volumes warrant the signalization.

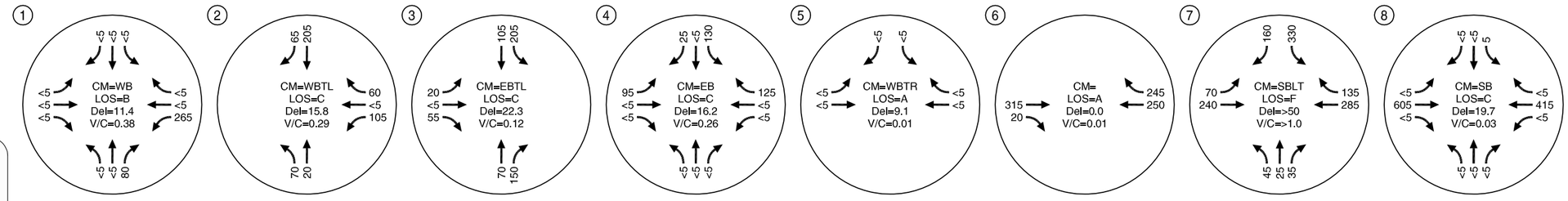


LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

YEAR 2025 NO BUILD WEEKDAY AM PEAK HOUR TRAFFIC CONDITIONS
UMATILLA COUNTY, OREGON

FIGURE **4-2**



LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

YEAR 2025 NO BUILD WEEKDAY PM PEAK HOUR TRAFFIC CONDITIONS
UMATILLA COUNTY, OREGON

FIGURE **4-3**

Kittelson & Associates, Inc.
Transportation Engineering / Planning

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YEAR 2025 BUILD (WITH CONNECTOR ROAD) TRAFFIC VOLUMES FORECAST METHODOLOGY

A year 2025 "Build" scenario was developed in order to predict the needs of the interchange and airport area considering the presence of the Connector Roadway and increases in the travel demand described in the 'No Build' scenario. The remainder of this section describes the methodology and assumption used to develop year 2025 build forecast scenario.

Connector Roadway Scenario

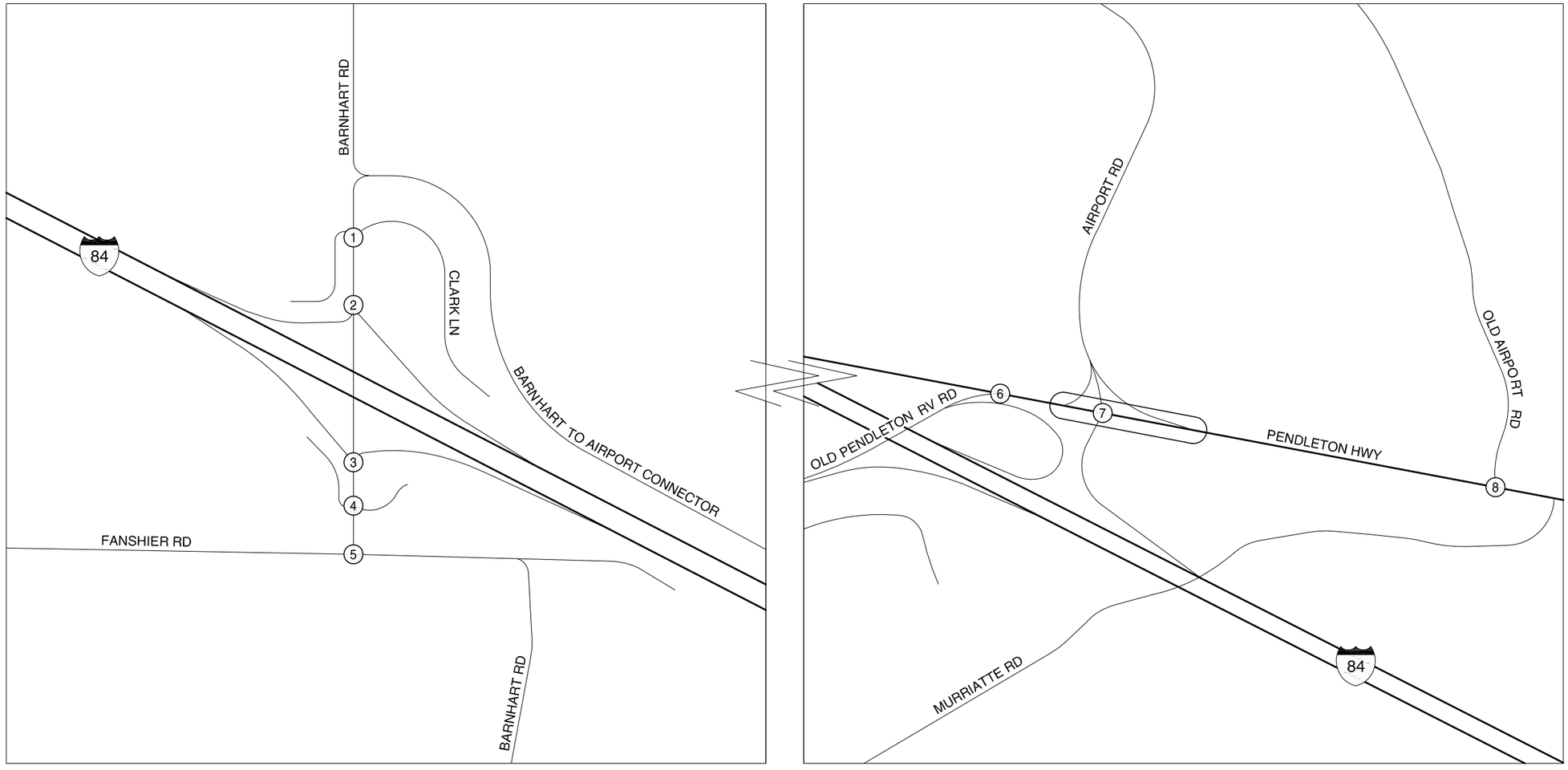
This 'Build' scenario is identical to the land use assumptions previously documented in the Year 2025 "No-Build" scenario; however, it assumes that the Barnhart Road-Airport Road Connector is in-place. As a result of this connection, it was assumed that all of the traffic created by new development with the Airport Industrial Area would utilize the new connector road to gain access to I-84 to travel to/from the west of Pendleton. This distribution conservatively estimates the capacity needs of the I-84/Barnhart Road Interchange. In addition, it was assumed that 50 percent of the traffic currently traveling to/from the west via Airport Road and Westgate (US 30) would be re-routed to the connector roadway. Figures 4-A6 and 4-A7 in the appendix illustrates the proposed re-routed traffic.

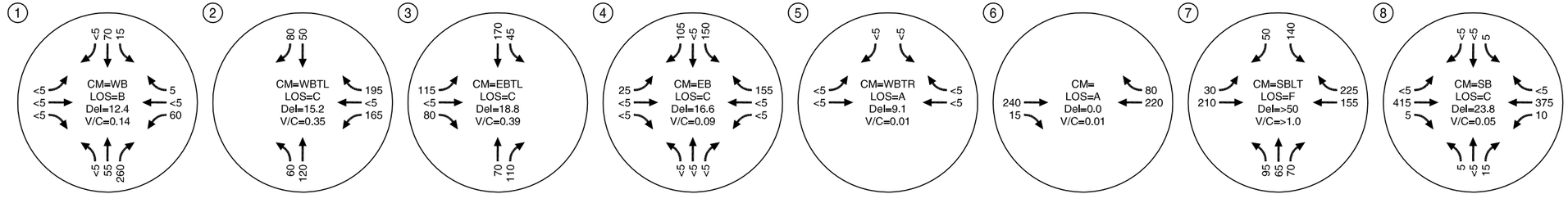
Operational Analysis

A traffic operations analysis was performed for the study intersections under the Connector Roadway Scenario using the forecasted weekday a.m. and p.m. peak hour traffic volumes shown in Figures 4-4 and 4-5, respectively. As shown in the figures, all study intersections are expected to operate acceptably with the proposed connector roadway in-place, except for the Airport Road/Westgate (US 30) intersection during both the weekday a.m. and p.m. peak hours. These identified operational deficiencies and the possible mitigation solutions are discussed below.

Airport Road/Westgate (US 30)

The Airport Road/Westgate (US 30) intersection fails to meet operational standards during weekday a.m. and p.m. peak hour because of the high southbound left-turn demand created by growth in employment within the Airport Industrial Area. This level of traffic would likely require signalization of the Airport Road/Westgate (US 30) intersection to accommodate for this movement. This action can be undertaken at a future date when traffic volumes warrant the signalization.



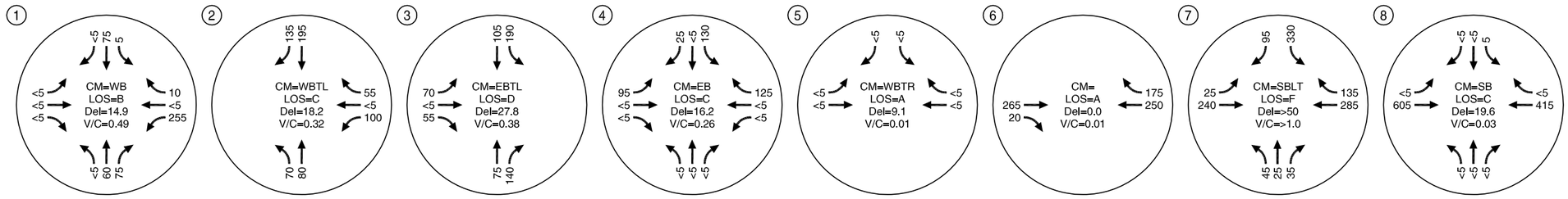


LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

YEAR 2025 TOTAL WEEKDAY AM PEAK HOUR TRAFFIC CONDITIONS WITH CONNECTOR BUILT
UMATILLA COUNTY, OREGON

FIGURE 4-4



LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

YEAR 2025 TOTAL WEEKDAY PM PEAK HOUR TRAFFIC CONDITIONS WITH CONNECTOR BUILT
UMATILLA COUNTY, OREGON

FIGURE 4-5

Kittelson & Associates, Inc.
Transportation Engineering / Planning

SUMMARY OF YEAR 2025 FUTURE YEAR CONDITIONS

The year 2025 "No-Build" and "Build" forecasts and analysis resulted in the following findings:

- Trip generation for both the No-Build and Connector Roadway scenarios is based on the reasonable highest development at the I-84/Barnhart Road Interchange and predicted growth in the Airport Industrial area. Reasonable worst-case development of existing properties that are likely to redevelop and vacant properties within the I-84/Barnhart Road Interchange area will result in approximately 509,000 square-feet of industrial space and several service related uses per the adopted Umatilla County comprehensive plans. The growth for the Airport Industrial Area is in accordance with the City of Pendleton's employment model for the area.

- In the year 2025 "No Build" (Connector Roadway not built) all study intersections are found to operate acceptably with the exception of the Airport Road/Westgate (US 30) intersection. The Airport Road/Westgate (US 30) intersection fails to meet operational standards during weekday a.m. and p.m. peak hour because of the high southbound left-turn demand created by growth in employment within the Airport Industrial Area. This level of traffic would likely require signalization of the Airport Road/Westgate (US 30) intersection to accommodate for this movement. This action can be undertaken at a future date when traffic volumes warrant the signalization

- Trip generation and forecast growth for the year 2025 "Build" (with Connector Roadway) scenario is identical to the year 2025 "No-Build" forecast. Trips generated from the Airport Industrial Area's employment growth with origins or destinations west of Pendleton are modeled to use the new Connector Roadway.

- In the year 2025 Connector Roadway scenario, all study area intersections operate acceptably under total traffic forecast with the exception of the Airport Road/Westgate (US 30) intersection. The Airport Road/Westgate (US 30) intersection fails to meet operational standards during weekday a.m. and p.m. peak hour because of the high southbound left-turn demand created by growth in employment within the Airport Industrial Area. (The Connector Roadway does not reduce the number of southbound left turns at this intersection.) This level of traffic would likely require signalization of the Airport Road/Westgate (US 30) intersection to accommodate for this movement. This action can be undertaken at a future date when traffic volumes warrant the signalization

- The year 2025 Connector Roadway scenario's total traffic forecasts indicate that a two-lane Connector Roadway will be sufficient enough to accommodate the estimated 1,000 – 1,500 daily trips between Barnhart Road and the Airport Industrial area. It should be noted that the roadway will likely require a median (turn lane) within the I-84/Barnhart Road interchange and Airport Industrial areas to facilitate left-turn movements; however, no turn lanes will be necessary along the section accessing EFU lands.

Next Steps

The next phase of the I-84/Barnhart Road IAMP, *Alternatives Evaluation,* will investigate potential alignments for the Connector Roadway to connect to Barnhart Road as well as local circulation and access strategies and transportation improvement alternatives that will address the identified future year deficiencies and ensure that the overall transportation network will meet the needs of the study area through the 2025 horizon year.

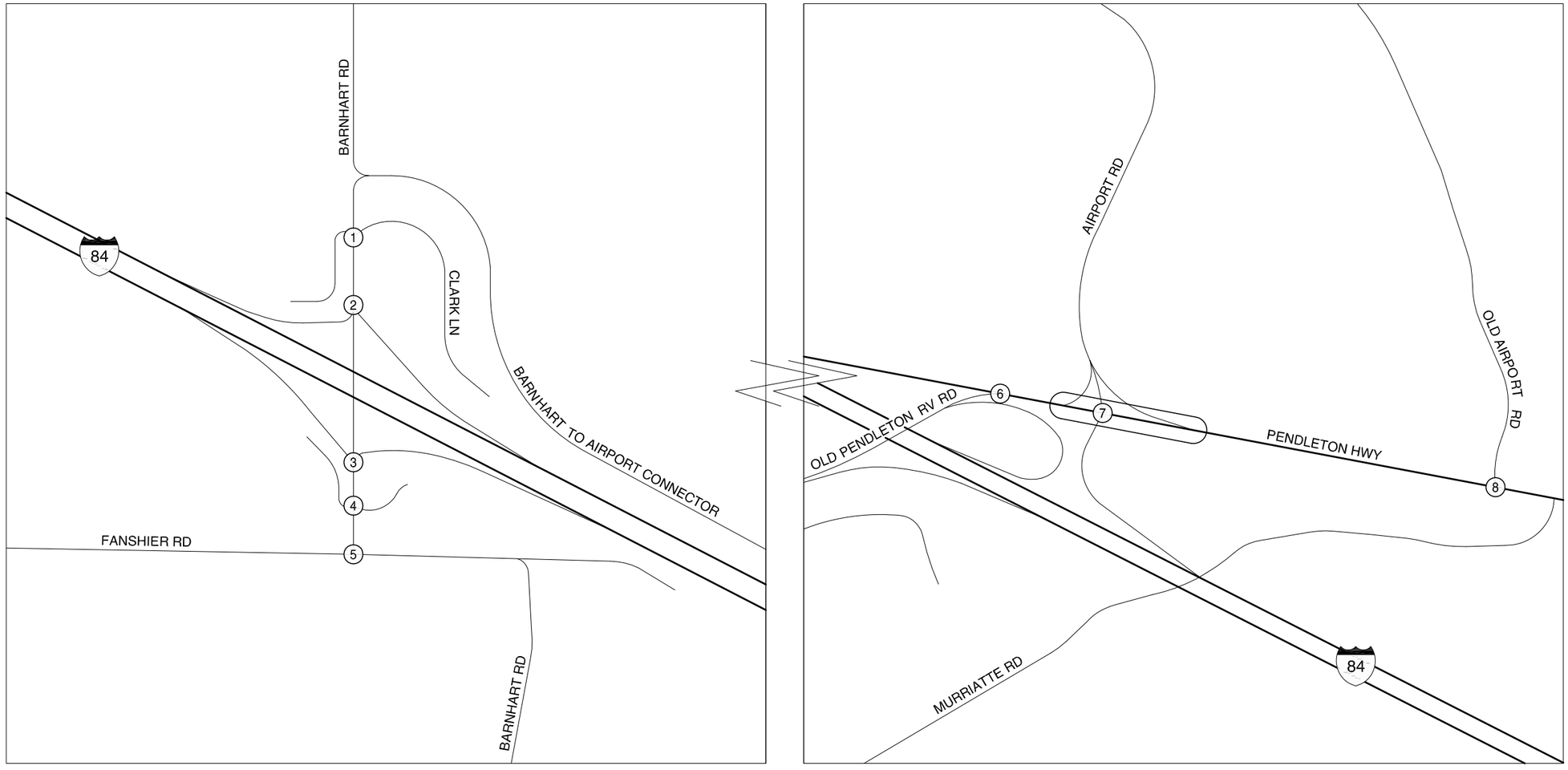
Draft Technical Memorandum #4 ATTACHMENTS

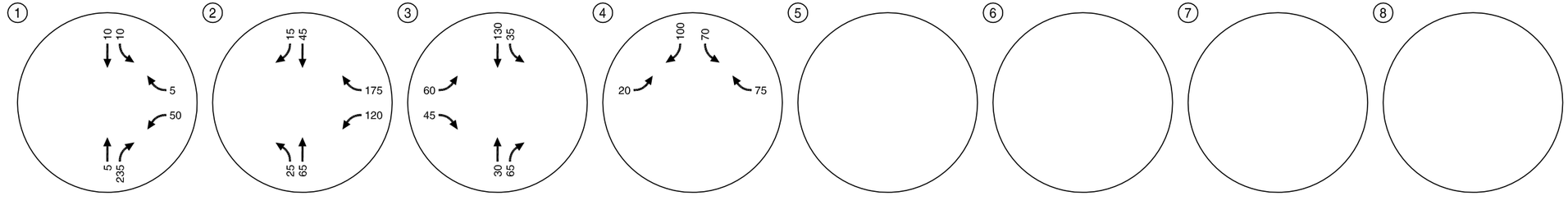
Attachment “A” – Supplemental Attached Figures

Attachment “B” – Growth Estimate Tables

Attachment “C” – Future Conditions and Level-of-Service Worksheets

Attachment A: Supplemental Attached Figures



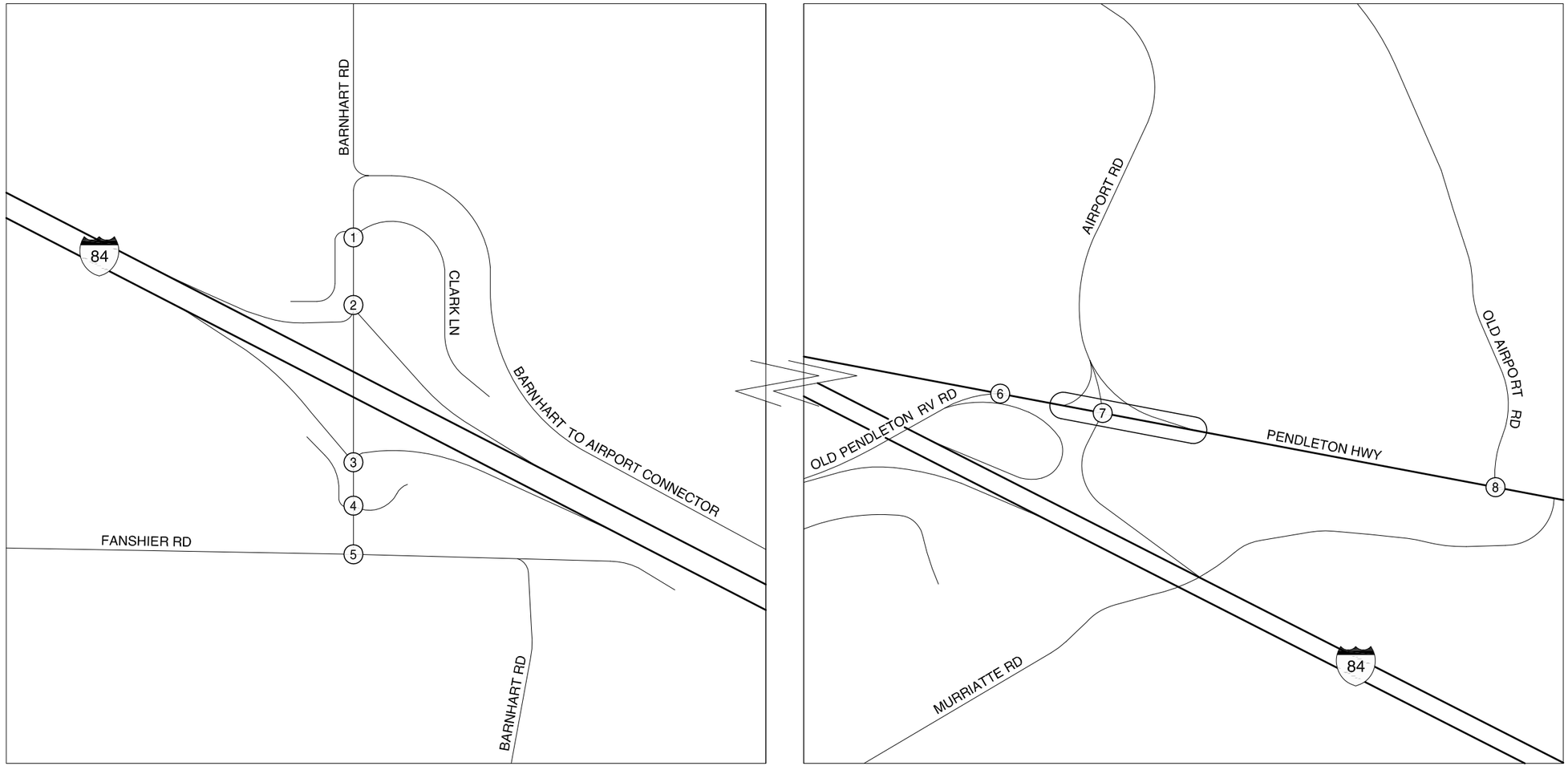


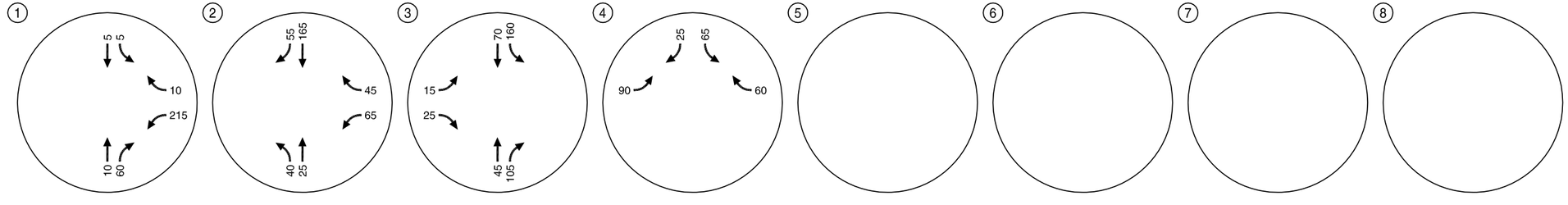
I-84/BARNHART ROAD INTERCHANGE AREA SITE GENERATED TRIPS
WEEKDAY AM PEAK HOUR
UMATILLA COUNTY, OREGON

FIGURE **4-A1**

Kittelson & Associates, Inc.
Transportation Engineering / Planning

H:\projfile\7930 - I-84 Barnhart Road IAMP\dwgs\figs\7930figs_rev4.DWG Mar 08, 2007 - 10:51am - mwiesenfeld Layout Tab: 4-A1_IAMP_AM



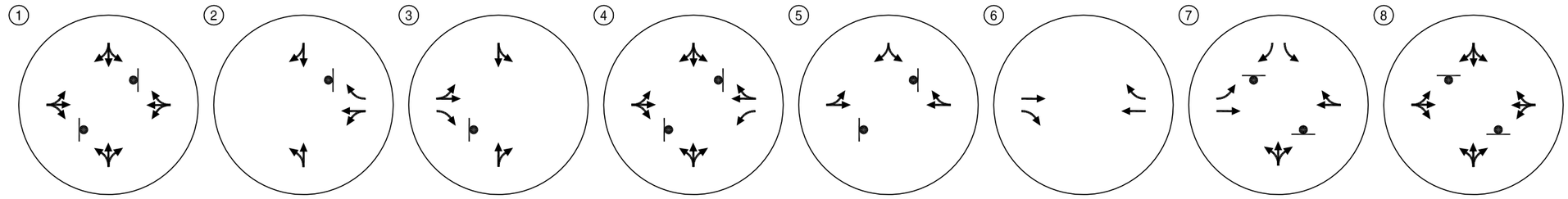


I-84/BARNHART ROAD INTERCHANGE AREA SITE GENERATED TRIPS
WEEKDAY PM PEAK HOUR
UMATILLA COUNTY, OREGON

FIGURE **4-A2**

Kittelson & Associates, Inc.
Transportation Engineering / Planning

H:\projfile\7930 - I-84 Barnhart Road IAMP\dwgs\figs\7930figs_rev4.DWG Mar 08, 2007 - 10:51am - mwiesenfeld Layout Tab: 4-A2_IAMP_PM

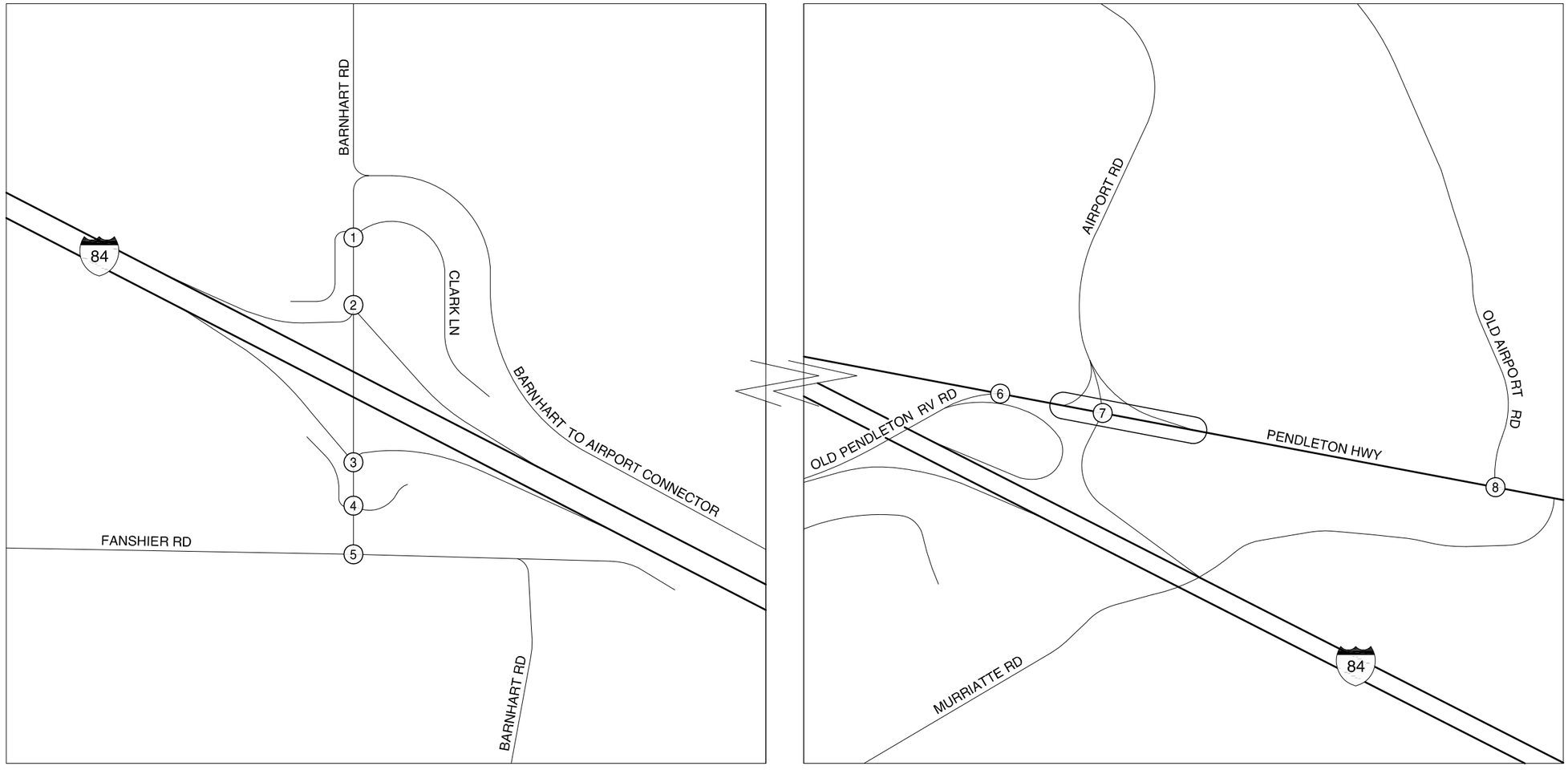


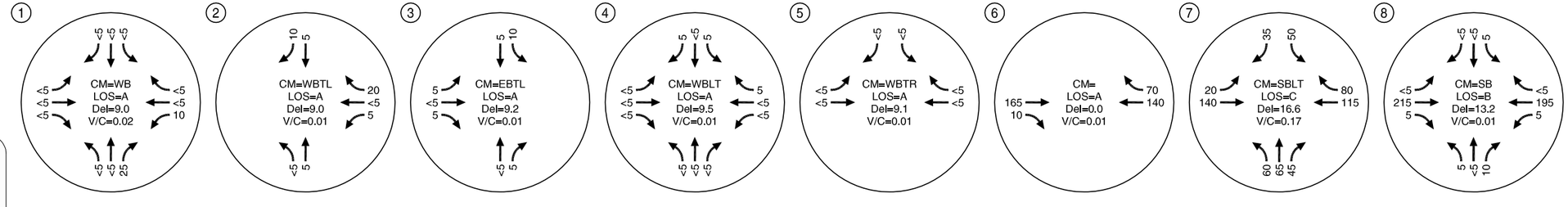
LEGEND

- STOP SIGN

YEAR 2006 EXISTING LANE CONFIGURATION AND TRAFFIC CONTROL DEVICES
UMATILLA COUNTY, OREGON

FIGURE
4-A3





LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

YEAR 2006 EXISTING WEEKDAY AM PEAK HOUR TRAFFIC CONDITIONS
UMATILLA COUNTY, OREGON

FIGURE
4-A4

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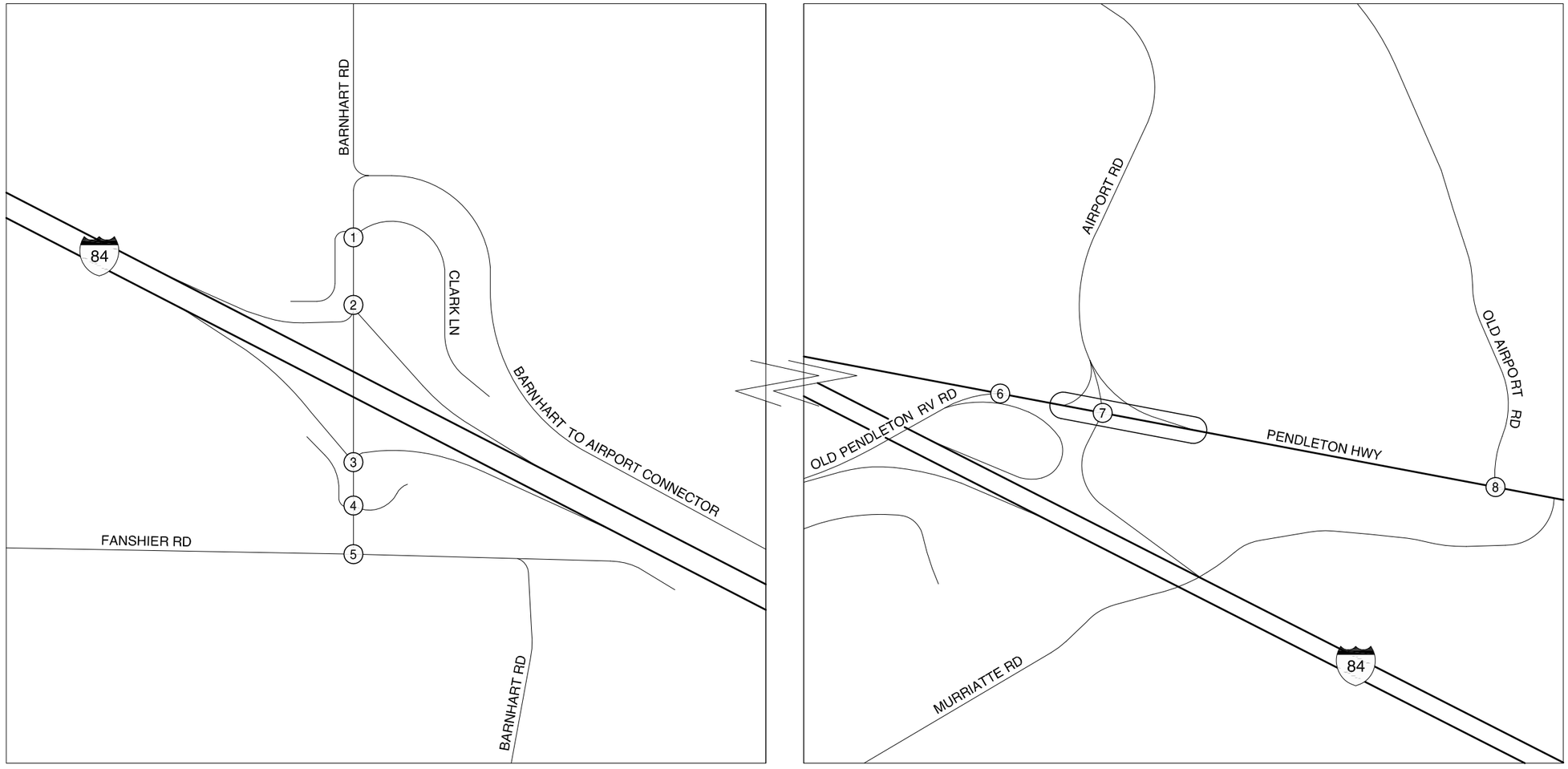

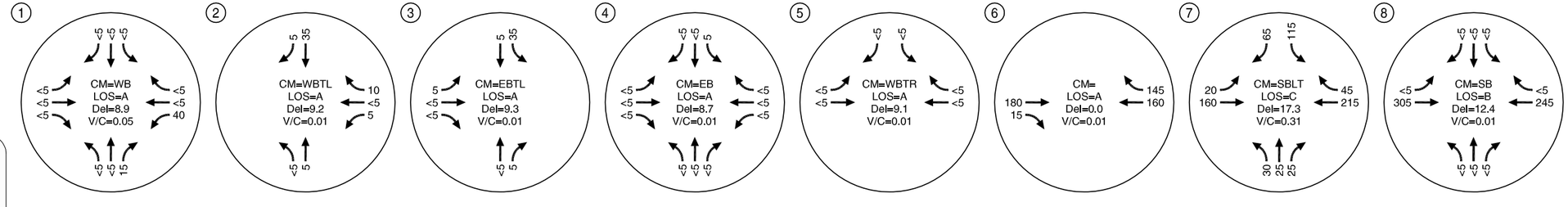

LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

YEAR 2006 EXISTING WEEKDAY PM PEAK HOUR TRAFFIC CONDITIONS
UMATILLA COUNTY, OREGON

FIGURE **4-A5**

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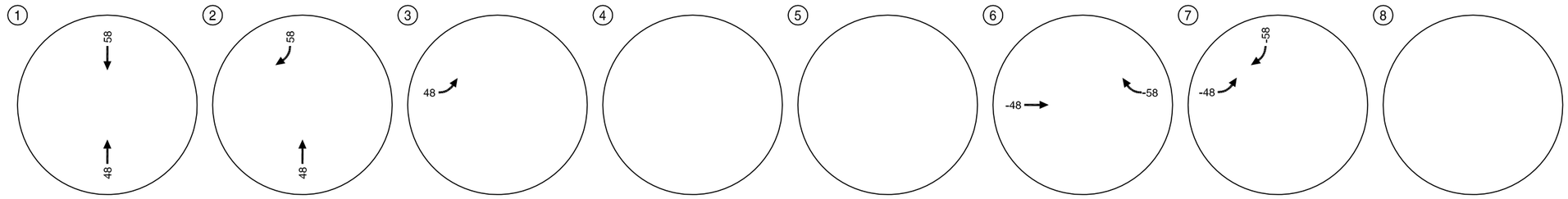
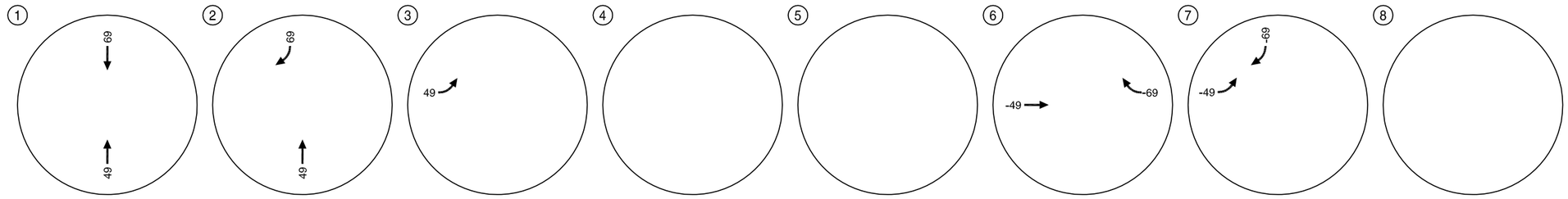


RE-ROUTED AIRPORT INDUSTRIAL AREA TRIPS TO THE CONNECTOR WEEKDAY AM PEAK HOUR
UMATILLA COUNTY, OREGON

FIGURE **4-A6**



RE-ROUTED AIRPORT INDUSTRIAL AREA TRIPS TO THE CONNECTOR WEEKDAY PM PEAK HOUR
UMATILLA COUNTY, OREGON

FIGURE
4-A7

Attachment B: Growth Estimate Tables

TABLE 4-A1 2025 AM Peak Hour Trip Generation

Uses Permitted Outright	ITE Code	Description of Unit	Quantity	Trip Generation Rate	Trip Generation	Entering %	Exiting %	Entering Volume	Exiting Volume	Pass-By Ave	Pass-By reduced	SF based on Generated Trips
RTC - Rural Tourist Commercial												
Motel	591	up to 30 beds	30	trips = 0.64 * occupied beds	19	36%	64%	7	12			
Gas Station	945	12 pump w/ convience	12	trips = 10.06 * positions	121	50%	50%	60	60	62%	75	
Pass By					-75			-37	-37			
Fast-food Restraunt	934	3,000 sf	3	trips = 53.11 * 1000sf	159	51%	49%	81	78	49%	78	
Pass By					-78			-40	-38			
Base Total					299			149	151			
New Trips					146			71	75			
RLI - Rural Light Industrial												
Light Industrial Woodpecker	110	acres	40	trips =7.51 *acres	300	83%	17%	249	51			330,000
Light Industrial not Coke	110	acres	16.29	trips =7.51 *acres	122	83%	17%	102	21			179,000

With Connector Assumes that the Barnhart Interchange Area will redevelop to its maximum allowable potential

TABLE 4-A2	2025 PM Peak Hour Trip Generation											
Uses Permitted Outright	ITE Code	Description of Unit	Quantity	Trip Generation Rate	Trip Generation	Entering %	Exiting %	Entering Volume	Exiting Volume	Pass-By Ave	Pass-By reduced	SF based on Generated Trips
RTC - Rural Tourist Commercial												
Motel	320	up to 30 beds	30	trips = 0.58 * occupied beds	17	53%	47%	9	8			
Gas Station	945	12 pump w/ convience	12	trips = 10.56 * positions	127	50%	50%	63	63	56%	71	
Pass By					-71			-35	-35			
Fast-food Restraunt	934	3,000 sf	3	trips = 34.64 * 1000sf	104	52%	48%	54	50	50%	52	
Pass By					-52			-27	-25			
Base Total					248			127	121			
New Trips					125			65	61			
RLI - Rural Light Industrial												
Light Industrial Woodpecker	110	acres	40	trips = 7.26 * acres	290	22%	78%	64	227			317,000
Light Industrial not Coke	110	acres	16.29	trips = 7.26 * acres	118	22%	78%	26	92			197,000
With Connector Assumes that the Barnhart Interchange Area will redevelop to its maximum allowable potential												

Attachment C: Future Conditions and Level-of-Service Worksheets

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 No Build Traffic Conditions, Weekday AM Peak Hour

Scenario Report

Scenario:	AM
Command:	AM
Volume:	AM
Geometry:	AM
Impact Fee:	Default Impact Fee
Trip Generation:	AM
Trip Distribution:	Defaut Distribution
Paths:	Default Paths
Routes:	Default Routes
Configuration:	Default Configuration

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 No Build Traffic Conditions, Weekday AM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 Barnhart Rd./Clark Lane	A	9.0	0.000	B	10.5	0.000	+ 1.523 D/V
# 2 Barnhart Rd/I-84 WB off ramps	A	8.8	0.000	B	11.8	0.000	+ 2.997 D/V
# 3 Barnhart Rd/I-84 EB Ramps	A	9.0	0.000	B	13.3	0.000	+ 4.284 D/V
# 4 Barnhart Rd/Parking Lot	A	9.4	0.000	C	16.6	0.000	+ 7.212 D/V
# 5 Barnhart Rd./Fanshier Rd.	A	9.1	0.000	A	9.1	0.000	+ 0.000 D/V
# 12 Pendleton Highway Westbound On	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 13 Main Airport Road Intersection	F	929.9	0.000	F	OVRFL	0.000	+ 1.0E+0308
# 14 Old Airport Road with Pendllet	C	23.7	0.000	C	23.7	0.000	+ 0.000 D/V

Traffix 7.8.0515 (c) 2006 Dowling Assoc. Licensed to KITTELSON, PORTLAND

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 No Build Traffic Conditions, Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 Barnhart Rd./Clark Lane

Average Delay (sec/veh): 2.1 Worst Case Level Of Service: B[10.5]

Street Name:	Barnhart Rd.						Clark Lane					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 13 Jul 2006 << 7:30 AM to 8:30 AM												
Base Vol:	1	1	23	1	2	1	1	1	1	12	1	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	1	23	1	2	1	1	1	1	12	1	1
Added Vol:	0	0	249	0	0	0	0	0	0	51	0	0
PasserBy:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	1	1	272	1	2	1	1	1	1	63	1	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
PHF Volume:	1	1	332	1	2	1	1	1	1	77	1	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	1	1	332	1	2	1	1	1	1	77	1	1
Critical Gap Module:												
Critical Gp:	4.2	xxxx	xxxxx	4.6	xxxx	xxxxx	7.1	6.5	6.2	7.4	6.8	6.5
FollowUpTim:	2.3	xxxx	xxxxx	2.7	xxxx	xxxxx	3.5	4.0	3.3	3.7	4.2	3.5
Capacity Module:												
Cnflict Vol:	4	xxxx	xxxxx	333	xxxx	xxxxx	176	341	3	176	176	167
Potent Cap.:	1543	xxxx	xxxxx	1001	xxxx	xxxxx	791	584	1087	738	678	821
Move Cap.:	1543	xxxx	xxxxx	1001	xxxx	xxxxx	787	583	1087	735	677	821
Volume/Cap:	0.00	xxxx	xxxx	0.00	xxxx	xxxx	0.00	0.00	0.00	0.10	0.00	0.00
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.3	xxxx	xxxxx	8.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	768	xxxxx	xxxx	735	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.0	xxxxx	xxxxx	0.4	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	9.7	xxxxx	xxxxx	10.5	xxxxx
Shared LOS:	*	*	*	*	*	*	*	A	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			9.7			10.5		
ApproachLOS:	*			*			A			B		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 No Build Traffic Conditions, Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

Intersection #1 Barnhart Rd./Clark Lane

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HevVeh:	14%			50%			0%			25%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 No Build Traffic Conditions, Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Barnhart Rd/I-84 WB off ramps

Average Delay (sec/veh): 8.6 Worst Case Level Of Service: B[11.8]

Street Name:	Barnhart Rd						I-84 WB off ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 1 0	0	0	0	0 0 1	0	0	0 0 0	0	0	1 0	0 1
Volume Module: >> Count Date: 13 Jul 2006 << 7:30 AM to 8:30 AM												
Base Vol:	1	5	0	0	7	8	0	0	0	6	1	20
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	5	0	0	7	8	0	0	0	6	1	20
Added Vol:	24	62	0	0	38	13	0	0	0	130	0	187
RTC:	37	0	0	0	0	0	0	0	0	36	0	0
Initial Fut:	62	67	0	0	45	21	0	0	0	172	1	207
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
PHF Volume:	71	77	0	0	52	24	0	0	0	198	1	238
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	71	77	0	0	52	24	0	0	0	198	1	238
Critical Gap Module:												
Critical Gp:	4.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.7	6.8	6.5
FollowUpTim:	2.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.8	4.3	3.6
Capacity Module:												
Cnflict Vol:	76	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	283	295	77
Potent Cap.:	1348	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	651	572	911
Move Cap.:	1348	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	624	541	911
Volume/Cap:	0.05	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.32	0.00	0.26
Level Of Service Module:												
2Way95thQ:	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	1.0
Control Del:	7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	10.3
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	B
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	623	xxxx	xxxxx
SharedQueue:	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	1.4	xxxx	xxxxx
Shrd ConDel:	7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	13.5	xxxx	xxxxx
Shared LOS:	A	*	*	*	*	*	*	*	*	B	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			11.8		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 No Build Traffic Conditions, Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

Intersection #2 Barnhart Rd/I-84 WB off ramps

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HevVeh:	33%			31%			60%			30%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 No Build Traffic Conditions, Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #3 Barnhart Rd/I-84 EB Ramps

Average Delay (sec/veh): 4.3 Worst Case Level Of Service: B[13.3]

Street Name:	Barnhart Rd						I-84 EB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 1 0 0 1			0 0 0 0 0		
Volume Module: >> Count Date: 13 Jul 2006 << 7:30 AM to 8:30 AM												
Base Vol:	0	2	5	9	4	0	4	1	3	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	2	5	9	4	0	4	1	3	0	0	0
Added Vol:	0	24	72	38	130	0	62	0	43	0	0	0
RTC:	0	37	38	0	36	0	0	0	35	0	0	0
Initial Fut:	0	63	115	47	170	0	66	1	81	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
PHF Volume:	0	91	167	68	246	0	96	1	117	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	91	167	68	246	0	96	1	117	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	6.7	6.8	6.5	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	3.8	4.3	3.6	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	258	xxxx	xxxxx	557	641	246	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	1318	xxxx	xxxxx	442	355	722	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	1318	xxxx	xxxxx	424	336	722	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.05	xxxx	xxxx	0.23	0.00	0.16	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	0.6	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	7.9	xxxx	xxxxx	xxxxx	xxxx	11.0	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	B	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	423	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	0.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	7.9	xxxx	xxxxx	16.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	A	*	*	C	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			13.3			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 No Build Traffic Conditions, Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

Intersection #3 Barnhart Rd/I-84 EB Ramps

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HevVeh:	20%			0%			33%			0%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 No Build Traffic Conditions, Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 Barnhart Rd/Parking Lot

Average Delay (sec/veh): 7.3 Worst Case Level Of Service: C[16.6]

Street Name:	Barnhart Rd						Parking Lot					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			1 0 0 1 0		
Volume Module: >> Count Date: 13 Jul 2006 << 7:30 AM to 8:30 AM												
Base Vol:	1	1	3	1	3		2	1	1	1	1	4
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	1	3	1	3		2	1	1	1	1	4
Added Vol:	0	0	71	0	102		21	0	0	0	0	75
PasserBy:	0	0	77	0	0		0	0	0	0	0	75
Initial Fut:	1	1	151	1	105		23	1	1	1	1	154
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
PHF Volume:	1	1	182	1	127		28	1	1	1	1	186
Reduct Vol:	0	0	0	0	0		0	0	0	0	0	0
Final Vol.:	1	1	182	1	127		28	1	1	1	1	186
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.3	xxxx	xxxxx	7.1	6.5	6.2	8.1	7.5	7.2
FollowUpTim:	2.2	xxxx	xxxxx	2.4	xxxx	xxxxx	3.5	4.0	3.3	4.4	4.9	4.2
Capacity Module:												
Cnflict Vol:	128	xxxx	xxxxx	2	xxxx	xxxxx	526	433	64	434	496	2
Potent Cap.:	1471	xxxx	xxxxx	1527	xxxx	xxxxx	466	519	1005	397	360	855
Move Cap.:	1471	xxxx	xxxxx	1527	xxxx	xxxxx	326	450	1005	356	312	855
Volume/Cap:	0.00	xxxx	xxxx	0.12	xxxx	xxxx	0.08	0.00	0.00	0.00	0.00	0.22

Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.4	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	7.4	xxxx	xxxxx	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	15.2	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	C	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	339	xxxxx	xxxx	xxxx	845
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.3	xxxxx	xxxxx	xxxx	0.8
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	16.6	xxxxx	xxxxx	xxxx	10.5
Shared LOS:	*	*	*	*	*	*	*	C	*	*	*	B
ApproachDel:	xxxxxx			xxxxxx			16.6			10.5		
ApproachLOS:	*			*			C			B		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 No Build Traffic Conditions, Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

Intersection #4 Barnhart Rd/Parking Lot

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HevVeh:	0%			17%			0%			100%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

Traffix 7.8.0515 (c) 2006 Dowling Assoc. Licensed to KITTELSON, PORTLAND

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 No Build Traffic Conditions, Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 Barnhart Rd./Fanshier Rd. [Gravel 'T']

Average Delay (sec/veh): 7.9 Worst Case Level Of Service: A[9.1]

Street Name:	Barnhart Rd.						Fanshier Rd.					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0	0	0	0 0	1!	0	0 1	0	0	0 0	0	1 0
Volume Module: >> Count Date: 13 Jul 2006 << 7:30 AM to 8:30 AM												
Base Vol:	0	0	0	2	0	1	1	1	0	0	1	2
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	2	0	1	1	1	0	0	1	2
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserBy:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	2	0	1	1	1	0	0	1	2
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
PHF Volume:	0	0	0	8	0	4	4	4	0	0	4	8
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	0	0	8	0	4	4	4	0	0	4	8
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	xxxxx	xxxxx	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	xxxxx	xxxxx	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	0	xxxx	xxxxx	20	18	xxxxx	xxxx	20	0
Potent Cap.:	xxxx	xxxx	xxxxx	900	xxxx	xxxxx	998	880	xxxxx	xxxx	878	900
Move Cap.:	xxxx	xxxx	xxxxx	900	xxxx	xxxxx	979	872	xxxxx	xxxx	870	900
Volume/Cap:	xxxx	xxxx	xxxx	0.01	xxxx	xxxx	0.00	0.00	xxxx	xxxx	0.00	0.01
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	9.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	923	xxxx	xxxxx	xxxx	xxxx	890
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	0.0
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.9	xxxx	xxxxx	xxxxx	xxxx	9.1
Shared LOS:	*	*	*	*	*	*	A	*	*	*	*	A
ApproachDel:	xxxxxx			xxxxxx			8.9			9.1		
ApproachLOS:	*			*			A			A		

Note: Queue reported is the number of cars per lane.

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Barnhart Road IAMP -- Pendleton, OR
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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 Pendleton Highway Westbound On Ramp

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Street Name:	WB On-Ramps						Pendleton Hwy					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0	0	0	0 0	0	0	0 0	1	0	1 0	1	0
Volume Module: >> Count Date: 12 Oct 2006 << 7:30am to 8:30am												
Base Vol:	0	0	0	0	0	0	0	154	11	0	140	52
Growth Adj:	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57
Initial Bse:	0	0	0	0	0	0	0	242	17	0	220	82
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserBy:	0	0	0	0	0	0	0	48	0	0	0	58
Initial Fut:	0	0	0	0	0	0	0	290	17	0	220	140
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
PHF Volume:	0	0	0	0	0	0	0	397	24	0	301	191
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	0	0	0	0	0	0	397	24	0	301	191
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			*			*		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 No Build Traffic Conditions, Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

Intersection #12 Pendleton Highway Westbound On Ramp

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
HevVeh:	0%	0%	0%	0%
Grade:	0%	0%	0%	0%
Peds/Hour:	0	0	0	0

Pedestrian Walk Speed: 4.00 feet/sec

LaneWidth:	12 feet	12 feet	12 feet	12 feet

Time Period: 0.25 hour

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 No Build Traffic Conditions, Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Main Airport Road Intersection

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F[xxxxx]

Street Name:	Airport Rd						Pendleton Hwy					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1!	0	0	1	0	0	0 1	1	0	1	0	0	0	0	0	1	0
Volume Module: >> Count Date: 12 Oct 2006 << 7:30am to 8:30am																	
Base Vol:	59	67	43	49	0	17	10	141	0	0	113	78
Growth Adj:	1.57	2.90	1.57	2.90	2.90	2.90	2.90	1.50	1.57	1.57	1.37	2.90
Initial Bse:	93	194	68	142	0	49	29	212	0	0	155	226
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserBy:	0	0	0	0	0	58	48	0	0	0	0	0
Initial Fut:	93	194	68	142	0	107	77	212	0	0	155	226
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
PHF Volume:	122	256	89	187	0	141	101	278	0	0	204	298
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	122	256	89	187	0	141	101	278	0	0	204	298
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	xxxx	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	xxxx	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	904	982	278	1006	xxxx	353	501	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	260	251	765	222	xxxx	696	1073	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	192	227	765	0	xxxx	696	1073	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.63	1.12	0.12	xxxx	xxxx	0.20	0.09	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.8	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	11.5	8.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	B	A	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	249	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	32.6	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	442	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	F	*	*	*	*	*	*	*	*	*	*
ApproachDel:	442.1			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	F			F			*			*		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 No Build Traffic Conditions, Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

Intersection #13 Main Airport Road Intersection

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HevVeh:		0%			0%			0%			0%	
Grade:		0%			0%			0%			0%	
Peds/Hour:		0			0			0			0	

Pedestrian Walk Speed: 4.00 feet/sec

LaneWidth:	12 feet	12 feet	12 feet	12 feet

Time Period: 0.25 hour

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 No Build Traffic Conditions, Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #14 Old Airport Road with Pendlleton Hwy [Intersections aligned for

Average Delay (sec/veh): 0.8 Worst Case Level Of Service: C[23.7]

Street Name:	Old Airport Road						Pendleton Hwy					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 12 Oct 2006 << 7:30am to 8:30am												
Base Vol:	4	0	9	3	1	1	1	216	4	7	197	1
Growth Adj:	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.92	1.57	1.57	1.90	1.57
Initial Bse:	6	0	14	5	2	2	2	415	6	11	374	2
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserBy:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	6	0	14	5	2	2	2	415	6	11	374	2
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
PHF Volume:	9	0	20	7	2	2	2	576	9	15	520	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	9	0	20	7	2	2	2	576	9	15	520	2
Critical Gap Module:												
Critical Gp:	7.1	xxxx	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1138	xxxx	580	1146	1141	521	522	xxxx	xxxxx	585	xxxx	xxxxx
Potent Cap.:	180	xxxx	518	178	202	559	1055	xxxx	xxxxx	1000	xxxx	xxxxx
Move Cap.:	176	xxxx	518	169	199	559	1055	xxxx	xxxxx	1000	xxxx	xxxxx
Volume/Cap:	0.05	xxxx	0.04	0.04	0.01	0.00	0.00	xxxx	xxxx	0.02	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.4	xxxx	xxxxx	8.7	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	324	xxxxx	xxxx	203	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.3	xxxxx	xxxxx	0.2	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	17.2	xxxxx	xxxxx	23.7	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	C	*	*	C	*	*	*	*	*	*	*
ApproachDel:		17.2			23.7		xxxxxx			xxxxxx		
ApproachLOS:		C			C		*			*		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 No Build Traffic Conditions, Weekday PM Peak Hour

Scenario Report

Scenario:	PM
Command:	PM
Volume:	PM
Geometry:	PM
Impact Fee:	Default Impact Fee
Trip Generation:	PM
Trip Distribution:	Defaut Distribution
Paths:	Default Paths
Routes:	Default Routes
Configuration:	Default Configuration

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Barnhart Road IAMP -- Pendleton, OR
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Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 Barnhart Rd./Clark Lane	A	8.9	0.000	B	11.4	0.000	+ 2.409 D/V
# 2 Barnhart Rd/I-84 WB off ramps	A	8.8	0.000	B	13.3	0.000	+ 4.519 D/V
# 3 Barnhart Rd/I-84 EB Ramps	A	9.0	0.000	B	12.9	0.000	+ 3.870 D/V
# 4 Barnhart Rd/Parking Lot	A	8.7	0.000	C	16.2	0.000	+ 7.513 D/V
# 5 Barnhart Rd./Fanshier Rd.	A	9.1	0.000	A	9.1	0.000	+ 0.000 D/V
# 12 Pendleton Highway Westbound On	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 13 Main Airport Road Intersection	F	279.0	0.000	F	406.3	0.000	+127.347 D/V
# 14 Old Airport Road with Pendllet	C	19.7	0.000	C	19.7	0.000	+ 0.000 D/V

Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 No Build Traffic Conditions, Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 Barnhart Rd./Clark Lane

Average Delay (sec/veh): 8.7 Worst Case Level Of Service: B[11.4]

Street Name:	Barnhart Rd.						Clark Lane					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 12 Jul 2006 << 4:45 PM to 5:45 PM												
Base Vol:	1	1	14	1	1	1	1	1	1	39	1	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	1	14	1	1	1	1	1	1	39	1	1
Added Vol:	0	0	64	0	0	0	0	0	0	227	0	0
PasserBy:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	1	1	78	1	1	1	1	1	1	266	1	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
PHF Volume:	1	1	100	1	1	1	1	1	1	341	1	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	1	1	100	1	1	1	1	1	1	341	1	1
Critical Gap Module:												
Critical Gp:	4.5	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.2	6.6	6.3
FollowUpTim:	2.6	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.6	4.1	3.4
Capacity Module:												
Cnflict Vol:	3	xxxx	xxxxx	101	xxxx	xxxxx	60	108	2	60	59	51
Potent Cap.:	1393	xxxx	xxxxx	1504	xxxx	xxxxx	941	786	1088	912	813	989
Move Cap.:	1393	xxxx	xxxxx	1504	xxxx	xxxxx	938	784	1088	909	812	989
Volume/Cap:	0.00	xxxx	xxxx	0.00	xxxx	xxxx	0.00	0.00	0.00	0.38	0.00	0.00
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.6	xxxx	xxxxx	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	920	xxxxx	xxxx	908	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.0	xxxxx	xxxxx	1.8	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	8.9	xxxxx	xxxxx	11.4	xxxxx
Shared LOS:	*	*	*	*	*	*	*	A	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			8.9			11.4		
ApproachLOS:	*			*			A			B		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 No Build Traffic Conditions, Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

Intersection #1 Barnhart Rd./Clark Lane

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
HevVeh:	42%			0%			0%			12%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

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Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 No Build Traffic Conditions, Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Barnhart Rd/I-84 WB off ramps

Average Delay (sec/veh): 5.3 Worst Case Level Of Service: B[13.3]

Street Name:	Barnhart Rd						I-84 WB off ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 1 0	0	0	0	0 0 1	0	0	0 0 0	0	0	1 0	1
Volume Module: >> Count Date: 12 Jul 2006 << 4:45 PM to 5:45 PM												
Base Vol:	1	5	0	0	34	7	0	0	0	4	2	11
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	5	0	0	34	7	0	0	0	4	2	11
Added Vol:	38	16	0	0	170	57	0	0	0	68	0	48
PasserBy:	30	0	0	0	0	0	0	0	0	31	0	0
Initial Fut:	69	21	0	0	204	64	0	0	0	103	2	59
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
PHF Volume:	86	26	0	0	255	80	0	0	0	129	3	74
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	86	26	0	0	255	80	0	0	0	129	3	74
Critical Gap Module:												
Critical Gp:	4.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.6	6.7	6.4
FollowUpTim:	2.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.7	4.2	3.5
Capacity Module:												
Cnflict Vol:	335	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	494	534	26
Potent Cap.:	1070	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	497	423	989
Move Cap.:	1070	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	465	387	989
Volume/Cap:	0.08	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.28	0.01	0.07
Level Of Service Module:												
2Way95thQ:	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	0.2
Control Del:	8.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	8.9
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	A
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	463	xxxx	xxxxx
SharedQueue:	0.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	1.2	xxxx	xxxxx
Shrd ConDel:	8.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	15.8	xxxx	xxxxx
Shared LOS:	A	*	*	*	*	*	*	*	*	C	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			13.3		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 No Build Traffic Conditions, Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

Intersection #2 Barnhart Rd/I-84 WB off ramps

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HevVeh:	33%			22%			0%			24%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

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Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #3 Barnhart Rd/I-84 EB Ramps

Average Delay (sec/veh): 4.6 Worst Case Level Of Service: B[12.9]

Street Name:	Barnhart Rd						I-84 EB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 1 0 0 1			0 0 0 0 0		
Volume Module: >> Count Date: 12 Jul 2006 << 4:45 PM to 5:45 PM												
Base Vol:	0	1	5	33	5	0	4	1	2	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1	5	33	5	0	4	1	2	0	0	0
Added Vol:	0	38	115	170	68	0	16	0	23	0	0	0
RTC:	0	30	30	0	31	0	0	0	31	0	0	0
Initial Fut:	0	69	150	203	104	0	20	1	56	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
PHF Volume:	0	96	208	282	144	0	28	1	78	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	96	208	282	144	0	28	1	78	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.2	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	2.3	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	304	xxxx	xxxxx	908	1013	144	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	1202	xxxx	xxxxx	308	241	908	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	1202	xxxx	xxxxx	242	174	908	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.23	xxxx	xxxx	0.11	0.01	0.09	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.9	xxxx	xxxxx	xxxx	xxxx	0.3	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	8.9	xxxx	xxxxx	xxxxx	xxxx	9.3	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	A	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	237	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.9	xxxx	xxxxx	0.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.9	xxxx	xxxxx	22.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	A	*	*	C	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			12.9			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 No Build Traffic Conditions, Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

Intersection #3 Barnhart Rd/I-84 EB Ramps

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HevVeh:	0%			12%			0%			0%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

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Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 Barnhart Rd/Parking Lot

Average Delay (sec/veh): 9.6 Worst Case Level Of Service: C[16.2]

Street Name:	Barnhart Rd						Parking Lot					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			1 0 0 1 0		
Volume Module: >> Count Date: 12 Jul 2006 << 4:45 PM to 5:45 PM												
Base Vol:	1	2	1	4	2	1	2	1	1	1	1	2
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	2	1	4	2	1	2	1	1	1	1	2
Added Vol:	0	0	0	65	0	26	92	0	0	0	0	61
RTC:	0	0	0	62	0	0	0	0	0	0	0	60
Initial Fut:	1	2	1	131	2	27	94	1	1	1	1	123
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
PHF Volume:	1	2	1	158	2	33	113	1	1	1	1	148
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	1	2	1	158	2	33	113	1	1	1	1	148
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.3	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.4	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	35	xxxx	xxxxx	4	xxxx	xxxxx	414	340	19	341	356	3
Potent Cap.:	1589	xxxx	xxxxx	1480	xxxx	xxxxx	552	585	1065	617	573	1087
Move Cap.:	1589	xxxx	xxxxx	1480	xxxx	xxxxx	433	516	1065	560	506	1087
Volume/Cap:	0.00	xxxx	xxxx	0.11	xxxx	xxxx	0.26	0.00	0.00	0.00	0.00	0.14

Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.4	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	7.3	xxxx	xxxxx	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	11.4	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	B	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	436	xxxxx	xxxx	xxxx	1077
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.1	xxxxx	xxxxx	xxxx	0.5
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	16.2	xxxxx	xxxxx	xxxx	8.9
Shared LOS:	*	*	*	*	*	*	*	C	*	*	*	A
ApproachDel:	xxxxxx			xxxxxx			16.2			8.9		
ApproachLOS:	*			*			C			A		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 No Build Traffic Conditions, Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

Intersection #4 Barnhart Rd/Parking Lot

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HevVeh:	0%			25%			0%			0%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 Barnhart Rd./Fanshier Rd. [Gravel 'T']

Average Delay (sec/veh): 7.2 Worst Case Level Of Service: A[9.1]

Street Name:	Barnhart Rd.						Fanshier Rd.					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 1 0 0 0			0 0 0 1 0		
Volume Module: >> Count Date: 12 Jul 2006 << 4:45 PM to 5:45 PM												
Base Vol:	0	0	0	2	0	2	2	1	0	0	1	2
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	2	0	2	2	1	0	0	1	2
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserBy:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	2	0	2	2	1	0	0	1	2
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
PHF Volume:	0	0	0	4	0	4	4	2	0	0	2	4
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	0	0	4	0	4	4	2	0	0	2	4
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	xxxxx	xxxxx	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	xxxxx	xxxxx	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	0	xxxx	xxxxx	11	10	xxxxx	xxxx	12	0
Potent Cap.:	xxxx	xxxx	xxxxx	900	xxxx	xxxxx	1012	889	xxxxx	xxxx	887	900
Move Cap.:	xxxx	xxxx	xxxxx	900	xxxx	xxxxx	1002	885	xxxxx	xxxx	883	900
Volume/Cap:	xxxx	xxxx	xxxx	0.00	xxxx	xxxx	0.00	0.00	xxxx	xxxx	0.00	0.00
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	9.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	960	xxxx	xxxxx	xxxx	xxxx	894
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	0.0
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.8	xxxx	xxxxx	xxxxx	xxxx	9.1
Shared LOS:	*	*	*	*	*	*	A	*	*	*	*	A
ApproachDel:	xxxxxx			xxxxxx			8.8			9.1		
ApproachLOS:	*			*			A			A		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 Pendleton Highway Westbound On Ramp

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Street Name:	WB On-Ramps						Pendleton Hwy					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 0 0 0 0			0 0 1 0 1			0 0 1 0 1		
Volume Module: >> Count Date: 12 Oct 2006 << 4:15pm to 5:15pm												
Base Vol:	0	0	0	0	0	0	0	170	13	0	160	112
Growth Adj:	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57
Initial Bse:	0	0	0	0	0	0	0	267	20	0	251	176
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserBy:	0	0	0	0	0	0	0	49	0	0	0	69
Initial Fut:	0	0	0	0	0	0	0	316	20	0	251	245
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
PHF Volume:	0	0	0	0	0	0	0	355	23	0	282	275
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	0	0	0	0	0	0	355	23	0	282	275
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			*			*		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 No Build Traffic Conditions, Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

Intersection #12 Pendleton Highway Westbound On Ramp

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
HevVeh:	0%	0%	0%	0%
Grade:	0%	0%	0%	0%
Peds/Hour:	0	0	0	0
Pedestrian Walk Speed: 4.00 feet/sec				
LaneWidth:	12 feet	12 feet	12 feet	12 feet
Time Period: 0.25 hour				

Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 No Build Traffic Conditions, Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Main Airport Road Intersection

Average Delay (sec/veh): 150.5 Worst Case Level Of Service: F[406.3]

Street Name:	Airport Rd						Pendleton Hwy					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1!	0	0	1	0	0	0 1	1	0	1	0	0	0	0	0	1	0
Volume Module: >> Count Date: 12 Oct 2006 << 4:15pm to 5:15pm																	
Base Vol:	29	26	23	113	0	32	7	159	0	0	216	46
Growth Adj:	1.57	2.90	1.57	2.90	2.90	2.90	2.90	1.51	1.57	1.57	1.32	2.90
Initial Bse:	46	75	36	328	0	93	20	240	0	0	285	133
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserBy:	0	0	0	0	0	69	49	0	0	0	0	0
Initial Fut:	46	75	36	328	0	162	69	240	0	0	285	133
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
PHF Volume:	52	87	42	377	0	186	80	276	0	0	328	153
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	52	87	42	377	0	186	80	276	0	0	328	153
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	xxxx	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	xxxx	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	933	916	276	904	xxxx	404	481	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	249	274	768	260	xxxx	651	1092	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	168	254	768	171	xxxx	651	1092	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.31	0.34	0.05	2.20	xxxx	0.29	0.07	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	30.3	xxxx	1.2	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	600.7	xxxx	12.7	8.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	F	*	B	A	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	255	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	4.8	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	47.2	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	E	*	*	*	*	*	*	*	*	*	*
ApproachDel:	47.2			406.3			xxxxxx			xxxxxx		
ApproachLOS:	E			F			*			*		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 No Build Traffic Conditions, Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

Intersection #13 Main Airport Road Intersection

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
HevVeh:	0%	0%	0%	0%
Grade:	0%	0%	0%	0%
Peds/Hour:	0	0	0	0
Pedestrian Walk Speed: 4.00 feet/sec				
LaneWidth:	12 feet	12 feet	12 feet	12 feet
Time Period: 0.25 hour				

Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 No Build Traffic Conditions, Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #14 Old Airport Road with Pendlleton Hwy [Intersections aligned for

Average Delay (sec/veh): 0.1 Worst Case Level Of Service: C[19.7]

Street Name:	Old Airport Road						Pendleton Hwy					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 12 Oct 2006 << 4:15pm to 5:15pm												
Base Vol:	0	0	0	2	1	1	1	303	1	1	246	1
Growth Adj:	1.57	1.57	1.57	1.57	1.57	1.57	1.57	2.00	1.57	1.57	1.69	1.57
Initial Bse:	0	0	0	3	2	2	2	606	2	2	416	2
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserBy:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	3	2	2	2	606	2	2	416	2
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
PHF Volume:	0	0	0	4	2	2	2	681	2	2	467	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	0	0	4	2	2	2	681	2	2	467	2
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	1157	1158	468	469	xxxx	xxxxx	683	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	219	198	599	1103	xxxx	xxxxx	920	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	219	197	599	1103	xxxx	xxxxx	920	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.02	0.01	0.00	0.00	xxxx	xxxx	0.00	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.3	xxxx	xxxxx	8.9	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	0	xxxxx	xxxx	252	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	0.1	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	19.7	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	C	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			19.7			xxxxxx			xxxxxx		
ApproachLOS:	*			C			*			*		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 with Connector Traffic Conditions, Weekday AM Peak Hour

Scenario Report

Scenario:	AM
Command:	AM
Volume:	AM
Geometry:	AM
Impact Fee:	Default Impact Fee
Trip Generation:	AM
Trip Distribution:	Defaut Distribution
Paths:	Default Paths
Routes:	Default Routes
Configuration:	Default Configuration

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 with Connector Traffic Conditions, Weekday AM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 Barnhart Rd./Clark Lane	A	9.2	0.000	B	12.4	0.000	+ 3.183 D/V
# 2 Barnhart Rd/I-84 WB off ramps	A	8.8	0.000	B	12.8	0.000	+ 3.978 D/V
# 3 Barnhart Rd/I-84 EB Ramps	A	9.1	0.000	C	15.6	0.000	+ 6.478 D/V
# 4 Barnhart Rd/Parking Lot	A	9.4	0.000	C	16.6	0.000	+ 7.212 D/V
# 5 Barnhart Rd./Fanshier Rd.	A	9.1	0.000	A	9.1	0.000	+ 0.000 D/V
# 12 Pendleton Highway Westbound On	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 13 Main Airport Road Intersection	F	911.7	0.000	F	911.7	0.000	+ 0.000 D/V
# 14 Old Airport Road with Pendllet	C	23.8	0.000	C	23.8	0.000	+ 0.000 D/V

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 with Connector Traffic Conditions, Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 Barnhart Rd./Clark Lane

Average Delay (sec/veh): 2.1 Worst Case Level Of Service: B[12.4]

Street Name:	Barnhart Rd.						Clark Lane					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 13 Jul 2006 << 7:30 AM to 8:30 AM												
Base Vol:	1	12	23	1	20	1	1	1	1	12	1	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	12	23	1	20	1	1	1	1	12	1	1
Added Vol:	0	5	237	12	9	0	0	0	0	48	0	3
Conncetor:	0	37	0	0	40	0	0	0	0	0	0	0
Initial Fut:	1	54	260	13	69	1	1	1	1	60	1	4
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
PHF Volume:	1	66	317	16	84	1	1	1	1	73	1	5
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	1	66	317	16	84	1	1	1	1	73	1	5
Critical Gap Module:												
Critical Gp:	4.2	xxxx	xxxxx	4.6	xxxx	xxxxx	7.1	6.5	6.2	7.4	6.8	6.5
FollowUpTim:	2.3	xxxx	xxxxx	2.7	xxxx	xxxxx	3.5	4.0	3.3	3.7	4.2	3.5
Capacity Module:												
Cnflict Vol:	85	xxxx	xxxxx	383	xxxx	xxxxx	346	502	85	345	344	224
Potent Cap.:	1439	xxxx	xxxxx	956	xxxx	xxxxx	612	474	980	569	543	761
Move Cap.:	1439	xxxx	xxxxx	956	xxxx	xxxxx	599	466	980	559	534	761
Volume/Cap:	0.00	xxxx	xxxx	0.02	xxxx	xxxx	0.00	0.00	0.00	0.13	0.00	0.01

Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.5	xxxx	xxxxx	8.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	620	xxxxx	xxxx	568	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.0	xxxxx	xxxxx	0.5	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	10.8	xxxxx	xxxxx	12.4	xxxxx
Shared LOS:	*	*	*	*	*	*	*	B	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			10.8			12.4		
ApproachLOS:	*			*			B			B		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 with Connector Traffic Conditions, Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

Intersection #1 Barnhart Rd./Clark Lane

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HevVeh:	14%			50%			0%			25%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		

Time Period: 0.25 hour

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Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 with Connector Traffic Conditions, Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Barnhart Rd/I-84 WB off ramps

Average Delay (sec/veh): 7.6 Worst Case Level Of Service: B[12.8]

Street Name:	Barnhart Rd						I-84 WB off ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 1 0	0	0	0 0	0	1 0	0 0	0	0	0 1	0	1
Volume Module: >> Count Date: 13 Jul 2006 << 7:30 AM to 8:30 AM												
Base Vol:	1	16	0	0	7	28	0	0	0	6	1	20
Growth Adj:	1.00 1.00	1.00	1.00 1.00	1.00	1.00 1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	16	0	0	7	28	0	0	0	6	1	20
Added Vol:	24	67	0	0	44	13	0	0	0	121	0	174
RTC:	37	37	0	0	0	40	0	0	0	36	0	0
Initial Fut:	62	120	0	0	51	81	0	0	0	163	1	194
User Adj:	1.00 1.00	1.00	1.00 1.00	1.00	1.00 1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.87 0.87	0.87	0.87 0.87	0.87	0.87 0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
PHF Volume:	71	138	0	0	59	93	0	0	0	187	1	223
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	71	138	0	0	59	93	0	0	0	187	1	223
Critical Gap Module:												
Critical Gp:	4.4 xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		6.7	6.8	6.5
FollowUpTim:	2.5 xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		3.8	4.3	3.6
Capacity Module:												
Cnflict Vol:	152 xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		386	432	138
Potent Cap.:	1260 xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		566	476	841
Move Cap.:	1260 xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		541	448	841
Volume/Cap:	0.06 xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx		0.35	0.00	0.27
Level Of Service Module:												
2Way95thQ:	0.2 xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx		1.1
Control Del:	8.0 xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx		10.8
LOS by Move:	A	*	*	*	*	*	*	*	*	*		B
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		540	xxxx	xxxxx
SharedQueue:	0.2 xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		1.6	xxxx	xxxxx
Shrd ConDel:	8.0 xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		15.2	xxxx	xxxxx
Shared LOS:	A	*	*	*	*	*	*	*	*	C	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			12.8		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 with Connector Traffic Conditions, Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

Intersection #2 Barnhart Rd/I-84 WB off ramps

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HevVeh:	33%			31%			60%			30%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 with Connector Traffic Conditions, Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #3 Barnhart Rd/I-84 EB Ramps

Average Delay (sec/veh): 5.8 Worst Case Level Of Service: C[15.6]

Street Name:	Barnhart Rd						I-84 EB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 1 0 0 1			0 0 0 0 0		
Volume Module: >> Count Date: 13 Jul 2006 << 7:30 AM to 8:30 AM												
Base Vol:	0	2	5	9	4	0	15	1	3	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	2	5	9	4	0	15	1	3	0	0	0
Added Vol:	0	29	67	36	130	0	62	0	43	0	0	0
RTC:	0	37	38	0	36	0	37	0	35	0	0	0
Initial Fut:	0	68	110	45	170	0	114	1	81	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
PHF Volume:	0	99	159	65	246	0	165	1	117	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	99	159	65	246	0	165	1	117	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	6.7	6.8	6.5	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	3.8	4.3	3.6	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	258	xxxx	xxxxx	555	635	246	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	1318	xxxx	xxxxx	444	358	722	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	1318	xxxx	xxxxx	426	340	722	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.05	xxxx	xxxx	0.39	0.00	0.16	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	0.6	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	7.9	xxxx	xxxxx	xxxxx	xxxx	11.0	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	B	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	425	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	1.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	7.9	xxxx	xxxxx	18.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	A	*	*	C	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			15.6			xxxxxx		
ApproachLOS:	*			*			C			*		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 with Connector Traffic Conditions, Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

Intersection #3 Barnhart Rd/I-84 EB Ramps

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HevVeh:	20%			0%			33%			0%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 with Connector Traffic Conditions, Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 Barnhart Rd/Parking Lot

Average Delay (sec/veh): 7.3 Worst Case Level Of Service: C[16.6]

Street Name:	Barnhart Rd						Parking Lot					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			1 0 0 1 0		
Volume Module: >> Count Date: 13 Jul 2006 << 7:30 AM to 8:30 AM												
Base Vol:	1	1	3	1	3		2	1	1	1	1	4
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	1	3	1	3		2	1	1	1	1	4
Added Vol:	0	0	71	0	102		21	0	0	0	0	75
PasserBy:	0	0	77	0	0		0	0	0	0	0	75
Initial Fut:	1	1	151	1	105		23	1	1	1	1	154
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
PHF Volume:	1	1	182	1	127		28	1	1	1	1	186
Reduct Vol:	0	0	0	0	0		0	0	0	0	0	0
Final Vol.:	1	1	182	1	127		28	1	1	1	1	186
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.3	xxxx	xxxxx	7.1	6.5	6.2	8.1	7.5	7.2
FollowUpTim:	2.2	xxxx	xxxxx	2.4	xxxx	xxxxx	3.5	4.0	3.3	4.4	4.9	4.2
Capacity Module:												
Cnflict Vol:	128	xxxx	xxxxx	2	xxxx	xxxxx	526	433	64	434	496	2
Potent Cap.:	1471	xxxx	xxxxx	1527	xxxx	xxxxx	466	519	1005	397	360	855
Move Cap.:	1471	xxxx	xxxxx	1527	xxxx	xxxxx	326	450	1005	356	312	855
Volume/Cap:	0.00	xxxx	xxxx	0.12	xxxx	xxxx	0.08	0.00	0.00	0.00	0.00	0.22

Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.4	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	7.4	xxxx	xxxxx	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	15.2	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	C	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	339	xxxxx	xxxx	xxxx	845
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.3	xxxxx	xxxxx	xxxx	0.8
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	16.6	xxxxx	xxxxx	xxxx	10.5
Shared LOS:	*	*	*	*	*	*	*	C	*	*	*	B
ApproachDel:	xxxxxx			xxxxxx			16.6			10.5		
ApproachLOS:	*			*			C			B		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 with Connector Traffic Conditions, Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

Intersection #4 Barnhart Rd/Parking Lot

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HevVeh:	0%			17%			0%			100%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 with Connector Traffic Conditions, Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 Barnhart Rd./Fanshier Rd. [Gravel 'T']

Average Delay (sec/veh): 7.9 Worst Case Level Of Service: A[9.1]

Street Name:	Barnhart Rd.						Fanshier Rd.					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0	0	0	0 0	1!	0	0 1	0	0	0 0	1	0
Volume Module: >> Count Date: 13 Jul 2006 << 7:30 AM to 8:30 AM												
Base Vol:	0	0	0	2	0	1	1	1	0	0	1	2
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	2	0	1	1	1	0	0	1	2
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserBy:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	2	0	1	1	1	0	0	1	2
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
PHF Volume:	0	0	0	8	0	4	4	4	0	0	4	8
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	0	0	8	0	4	4	4	0	0	4	8
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	xxxxx	xxxxx	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	xxxxx	xxxxx	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	0	xxxx	xxxxx	20	18	xxxxx	xxxx	20	0
Potent Cap.:	xxxx	xxxx	xxxxx	900	xxxx	xxxxx	998	880	xxxxx	xxxx	878	900
Move Cap.:	xxxx	xxxx	xxxxx	900	xxxx	xxxxx	979	872	xxxxx	xxxx	870	900
Volume/Cap:	xxxx	xxxx	xxxx	0.01	xxxx	xxxx	0.00	0.00	xxxx	xxxx	0.00	0.01
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	9.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	923	xxxx	xxxxx	xxxx	xxxx	890
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	0.0
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.9	xxxx	xxxxx	xxxxx	xxxx	9.1
Shared LOS:	*	*	*	*	*	*	A	*	*	*	*	A
ApproachDel:	xxxxxx			xxxxxx			8.9			9.1		
ApproachLOS:	*			*			A			A		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 with Connector Traffic Conditions, Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 Pendleton Highway Westbound On Ramp

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Street Name:	WB On-Ramps						Pendleton Hwy					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0	0	0	0 0	0	0	0 0	1	0	1 0	1	0
Volume Module: >> Count Date: 12 Oct 2006 << 7:30am to 8:30am												
Base Vol:	0	0	0	0	0	0	0	154	11	0	140	52
Growth Adj:	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57
Initial Bse:	0	0	0	0	0	0	0	242	17	0	220	82
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserBy:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	0	0	0	0	242	17	0	220	82
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
PHF Volume:	0	0	0	0	0	0	0	331	24	0	301	112
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	0	0	0	0	0	0	331	24	0	301	112
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			*			*		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 with Connector Traffic Conditions, Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Main Airport Road Intersection

Average Delay (sec/veh): 221.2 Worst Case Level Of Service: F[911.7]

Street Name:	Airport Rd						Pendleton Hwy					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			1 0 0 0 1			1 0 1 0 0			0 0 0 1 0		
Volume Module: >> Count Date: 12 Oct 2006 << 7:30am to 8:30am												
Base Vol:	59	67	43	49	0	17	10	141	0	0	113	78
Growth Adj:	1.57	2.90	1.57	2.90	2.90	2.90	2.90	1.49	1.57	1.57	1.37	2.90
Initial Bse:	93	194	68	142	0	49	29	210	0	0	155	226
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserBy:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	93	194	68	142	0	49	29	210	0	0	155	226
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
PHF Volume:	122	256	89	187	0	65	38	276	0	0	204	298
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	122	256	89	187	0	65	38	276	0	0	204	298
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	xxxx	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	xxxx	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	738	854	276	878	xxxx	353	501	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	336	298	767	271	xxxx	696	1073	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	297	288	767	55	xxxx	696	1073	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.41	0.89	0.12	3.38	xxxx	0.09	0.04	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	20.0	xxxx	0.3	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	1224	xxxx	10.7	8.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	F	*	B	A	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	329	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	24.3	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	235	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	F	*	*	*	*	*	*	*	*	*	*
ApproachDel:	234.8			911.7			xxxxxx			xxxxxx		
ApproachLOS:	F			F			*			*		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 with Connector Traffic Conditions, Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #14 Old Airport Road with Pendlleton Hwy [Intersections aligned for

Average Delay (sec/veh): 0.8 Worst Case Level Of Service: C[23.8]

Street Name:	Old Airport Road						Pendleton Hwy					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 12 Oct 2006 << 7:30am to 8:30am												
Base Vol:	4	0	9	3	1	1	1	216	4	7	197	1
Growth Adj:	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.93	1.57	1.57	1.90	1.57
Initial Bse:	6	0	14	5	2	2	2	417	6	11	374	2
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserBy:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	6	0	14	5	2	2	2	417	6	11	374	2
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
PHF Volume:	9	0	20	7	2	2	2	579	9	15	520	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	9	0	20	7	2	2	2	579	9	15	520	2
Critical Gap Module:												
Critical Gp:	7.1	xxxx	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1141	xxxx	583	1149	1144	521	522	xxxx	xxxxx	588	xxxx	xxxxx
Potent Cap.:	179	xxxx	516	177	202	559	1055	xxxx	xxxxx	997	xxxx	xxxxx
Move Cap.:	175	xxxx	516	168	198	559	1055	xxxx	xxxxx	997	xxxx	xxxxx
Volume/Cap:	0.05	xxxx	0.04	0.04	0.01	0.00	0.00	xxxx	xxxx	0.02	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.4	xxxx	xxxxx	8.7	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	322	xxxxx	xxxx	203	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.3	xxxxx	xxxxx	0.2	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	17.2	xxxxx	xxxxx	23.8	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	C	*	*	C	*	*	*	*	*	*	*
ApproachDel:	17.2			23.8			xxxxxx			xxxxxx		
ApproachLOS:	C			C			*			*		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 with Connector Traffic Conditions, Weekday PM Peak Hour

Scenario Report

Scenario:	PM
Command:	PM
Volume:	PM
Geometry:	PM
Impact Fee:	Default Impact Fee
Trip Generation:	PM
Trip Distribution:	Defaut Distribution
Paths:	Default Paths
Routes:	Default Routes
Configuration:	Default Configuration

Kittelson & Associates, Inc. --Project #:7930
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Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 Barnhart Rd./Clark Lane	A	9.3	0.000	B	14.9	0.000	+ 5.626 D/V
# 2 Barnhart Rd/I-84 WB off ramps	A	8.9	0.000	C	15.0	0.000	+ 6.099 D/V
# 3 Barnhart Rd/I-84 EB Ramps	A	9.1	0.000	C	19.6	0.000	+10.468 D/V
# 4 Barnhart Rd/Parking Lot	A	8.7	0.000	C	16.2	0.000	+ 7.513 D/V
# 5 Barnhart Rd./Fanshier Rd.	A	9.1	0.000	A	9.1	0.000	+ 0.000 D/V
# 12 Pendleton Highway Westbound On	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 13 Main Airport Road Intersection	F	298.2	0.000	F	298.2	0.000	+ 0.000 D/V
# 14 Old Airport Road with Pendllet	C	19.6	0.000	C	19.6	0.000	+ 0.000 D/V

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Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 with Connector Traffic Conditions, Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 Barnhart Rd./Clark Lane

Average Delay (sec/veh): 8.4 Worst Case Level Of Service: B[14.9]

Street Name:	Barnhart Rd.						Clark Lane					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 12 Jul 2006 << 4:45 PM to 5:45 PM												
Base Vol:	1	10	14	1	33	1	1	1	1	39	1	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	10	14	1	33	1	1	1	1	39	1	1
Added Vol:	0	8	61	3	5	0	0	0	0	216	0	11
Barnhart Co:	0	40	0	0	37	0	0	0	0	0	0	0
Initial Fut:	1	58	75	4	75	1	1	1	1	255	1	12
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
PHF Volume:	1	74	96	5	96	1	1	1	1	327	1	15
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	1	74	96	5	96	1	1	1	1	327	1	15
Critical Gap Module:												
Critical Gp:	4.5	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.2	6.6	6.3
FollowUpTim:	2.6	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.6	4.1	3.4
Capacity Module:												
Cnflict Vol:	97	xxxx	xxxxx	171	xxxx	xxxxx	240	280	97	233	233	122
Potent Cap.:	1279	xxxx	xxxxx	1419	xxxx	xxxxx	718	632	965	701	650	902
Move Cap.:	1279	xxxx	xxxxx	1419	xxxx	xxxxx	702	629	965	696	647	902
Volume/Cap:	0.00	xxxx	xxxx	0.00	xxxx	xxxx	0.00	0.00	0.00	0.47	0.00	0.02

Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.8	xxxx	xxxxx	7.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	741	xxxxx	xxxx	703	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.0	xxxxx	xxxxx	2.7	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	9.9	xxxxx	xxxxx	14.9	xxxxx
Shared LOS:	*	*	*	*	*	*	*	A	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			9.9			14.9		
ApproachLOS:	*			*			A			B		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 with Connector Traffic Conditions, Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

Intersection #1 Barnhart Rd./Clark Lane

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HevVeh:	42%			0%			0%			12%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

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Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 with Connector Traffic Conditions, Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Barnhart Rd/I-84 WB off ramps

Average Delay (sec/veh): 4.7 Worst Case Level Of Service: C[15.0]

Street Name:	Barnhart Rd						I-84 WB off ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 1 0	0	0	0	0 0 1	0	0	0 0 0	0	0	1 0	0 1
Volume Module: >> Count Date: 12 Jul 2006 << 4:45 PM to 5:45 PM												
Base Vol:	1	14	0	0	34	39	0	0	0	4	2	11
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	14	0	0	34	39	0	0	0	4	2	11
Added Vol:	38	24	0	0	163	57	0	0	0	64	0	45
Barnhart Co:	30	40	0	0	0	37	0	0	0	31	0	0
Initial Fut:	69	78	0	0	197	133	0	0	0	99	2	56
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
PHF Volume:	86	98	0	0	246	166	0	0	0	124	3	70
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	86	98	0	0	246	166	0	0	0	124	3	70
Critical Gap Module:												
Critical Gp:	4.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.6	6.7	6.4
FollowUpTim:	2.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.7	4.2	3.5
Capacity Module:												
Cnflict Vol:	413	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	599	683	98
Potent Cap.:	998	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	430	346	902
Move Cap.:	998	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	400	314	902
Volume/Cap:	0.09	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.31	0.01	0.08
Level Of Service Module:												
2Way95thQ:	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	0.3
Control Del:	8.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.3
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	A
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	398	xxxx	xxxxx
SharedQueue:	0.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	1.3	xxxx	xxxxx
Shrd ConDel:	8.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	18.2	xxxx	xxxxx
Shared LOS:	A	*	*	*	*	*	*	*	*	C	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			15.0		
ApproachLOS:	*			*			*			C		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 with Connector Traffic Conditions, Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

Intersection #2 Barnhart Rd/I-84 WB off ramps

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HevVeh:	33%			22%			0%			24%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #3 Barnhart Rd/I-84 EB Ramps

Average Delay (sec/veh): 6.5 Worst Case Level Of Service: C[19.6]

Street Name:	Barnhart Rd						I-84 EB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 1 0 0 1			0 0 0 0 0		
Volume Module: >> Count Date: 12 Jul 2006 << 4:45 PM to 5:45 PM												
Base Vol:	0	1	5	33	5	0	13	1	2	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1	5	33	5	0	13	1	2	0	0	0
Added Vol:	0	46	107	159	68	0	16	0	23	0	0	0
RTC:	0	30	30	0	31	0	40	0	31	0	0	0
Initial Fut:	0	77	142	192	104	0	69	1	56	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
PHF Volume:	0	107	197	267	144	0	96	1	78	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	107	197	267	144	0	96	1	78	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.2	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	2.3	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	304	xxxx	xxxxx	883	982	144	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	1202	xxxx	xxxxx	319	251	908	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	1202	xxxx	xxxxx	255	186	908	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.22	xxxx	xxxx	0.38	0.01	0.09	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.8	xxxx	xxxxx	xxxx	xxxx	0.3	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	8.8	xxxx	xxxxx	xxxxx	xxxx	9.3	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	A	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	253	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.8	xxxx	xxxxx	1.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.8	xxxx	xxxxx	27.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	A	*	*	D	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			19.6			xxxxxx		
ApproachLOS:	*			*			C			*		

Note: Queue reported is the number of cars per lane.

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Barnhart Road IAMP -- Pendleton, OR
Year 2025 with Connector Traffic Conditions, Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

Intersection #3 Barnhart Rd/I-84 EB Ramps

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HevVeh:	0%			12%			0%			0%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 Barnhart Rd/Parking Lot

Average Delay (sec/veh): 9.6 Worst Case Level Of Service: C[16.2]

Street Name:	Barnhart Rd						Parking Lot					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			1 0 0 1 0		
Volume Module: >> Count Date: 12 Jul 2006 << 4:45 PM to 5:45 PM												
Base Vol:	1	2	1	4	2	1	2	1	1	1	1	2
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	2	1	4	2	1	2	1	1	1	1	2
Added Vol:	0	0	0	65	0	26	92	0	0	0	0	61
RTC:	0	0	0	62	0	0	0	0	0	0	0	60
Initial Fut:	1	2	1	131	2	27	94	1	1	1	1	123
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
PHF Volume:	1	2	1	158	2	33	113	1	1	1	1	148
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	1	2	1	158	2	33	113	1	1	1	1	148
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.3	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.4	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	35	xxxx	xxxxx	4	xxxx	xxxxx	414	340	19	341	356	3
Potent Cap.:	1589	xxxx	xxxxx	1480	xxxx	xxxxx	552	585	1065	617	573	1087
Move Cap.:	1589	xxxx	xxxxx	1480	xxxx	xxxxx	433	516	1065	560	506	1087
Volume/Cap:	0.00	xxxx	xxxx	0.11	xxxx	xxxx	0.26	0.00	0.00	0.00	0.00	0.14

Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.4	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	7.3	xxxx	xxxxx	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	11.4	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	B	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	436	xxxxx	xxxx	xxxx	1077
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.1	xxxxx	xxxxx	xxxx	0.5
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	16.2	xxxxx	xxxxx	xxxx	8.9
Shared LOS:	*	*	*	*	*	*	*	C	*	*	*	A
ApproachDel:	xxxxxx			xxxxxx			16.2			8.9		
ApproachLOS:	*			*			C			A		

Note: Queue reported is the number of cars per lane.

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Barnhart Road IAMP -- Pendleton, OR
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Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

Intersection #4 Barnhart Rd/Parking Lot

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HevVeh:	0%			25%			0%			0%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 Barnhart Rd./Fanshier Rd. [Gravel 'T']

Average Delay (sec/veh): 7.2 Worst Case Level Of Service: A[9.1]

Street Name:	Barnhart Rd.						Fanshier Rd.					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 1 0 0 0			0 0 0 1 0		
Volume Module: >> Count Date: 12 Jul 2006 << 4:45 PM to 5:45 PM												
Base Vol:	0	0	0	2	0	2	2	1	0	0	1	2
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	2	0	2	2	1	0	0	1	2
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserBy:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	2	0	2	2	1	0	0	1	2
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
PHF Volume:	0	0	0	4	0	4	4	2	0	0	2	4
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	0	0	4	0	4	4	2	0	0	2	4
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	xxxxx	xxxxx	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	xxxxx	xxxxx	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	0	xxxx	xxxxx	11	10	xxxxx	xxxx	12	0
Potent Cap.:	xxxx	xxxx	xxxxx	900	xxxx	xxxxx	1012	889	xxxxx	xxxx	887	900
Move Cap.:	xxxx	xxxx	xxxxx	900	xxxx	xxxxx	1002	885	xxxxx	xxxx	883	900
Volume/Cap:	xxxx	xxxx	xxxx	0.00	xxxx	xxxx	0.00	0.00	xxxx	xxxx	0.00	0.00
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	9.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	960	xxxx	xxxxx	xxxx	xxxx	894
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	0.0
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.8	xxxx	xxxxx	xxxxx	xxxx	9.1
Shared LOS:	*	*	*	*	*	*	A	*	*	*	*	A
ApproachDel:	xxxxxx			xxxxxx			8.8			9.1		
ApproachLOS:	*			*			A			A		

Note: Queue reported is the number of cars per lane.

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Barnhart Road IAMP -- Pendleton, OR
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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 Pendleton Highway Westbound On Ramp

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Street Name:	WB On-Ramps						Pendleton Hwy					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 0 0 0 0			0 0 1 0 1			0 0 1 0 1		
Volume Module: >> Count Date: 12 Oct 2006 << 4:15pm to 5:15pm												
Base Vol:	0	0	0	0	0	0	0	170	13	0	160	112
Growth Adj:	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57
Initial Bse:	0	0	0	0	0	0	0	267	20	0	251	176
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserBy:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	0	0	0	0	267	20	0	251	176
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
PHF Volume:	0	0	0	0	0	0	0	300	23	0	282	198
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	0	0	0	0	0	0	300	23	0	282	198
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			*			*		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 with Connector Traffic Conditions, Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Main Airport Road Intersection

Average Delay (sec/veh): 103.0 Worst Case Level Of Service: F[298.2]

Street Name:	Airport Rd						Pendleton Hwy					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			1 0 0 0 1			1 0 1 0 0			0 0 0 1 0		
Volume Module: >> Count Date: 12 Oct 2006 << 4:15pm to 5:15pm												
Base Vol:	29	26	23	113	0	32	9	159	0	0	216	46
Growth Adj:	1.57	2.90	1.57	2.90	2.90	2.90	2.90	1.51	1.57	1.57	1.32	2.90
Initial Bse:	46	75	36	328	0	93	26	240	0	0	285	133
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserBy:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	46	75	36	328	0	93	26	240	0	0	285	133
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
PHF Volume:	52	87	42	377	0	107	30	276	0	0	328	153
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	52	87	42	377	0	107	30	276	0	0	328	153
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	xxxx	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	xxxx	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	794	817	276	804	xxxx	404	481	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	309	313	768	303	xxxx	651	1092	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	253	305	768	219	xxxx	651	1092	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.21	0.28	0.05	1.72	xxxx	0.16	0.03	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	25.2	xxxx	0.6	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	379.3	xxxx	11.6	8.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	F	*	B	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	331	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	3.1	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	28.2	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	D	*	*	*	*	*	*	*	*	*	*
ApproachDel:		28.2			298.2			xxxxxx			xxxxxx	
ApproachLOS:		D			F			*			*	

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. --Project #:7930
Barnhart Road IAMP -- Pendleton, OR
Year 2025 with Connector Traffic Conditions, Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #14 Old Airport Road with Pendlleton Hwy [Intersections aligned for

Average Delay (sec/veh): 0.1 Worst Case Level Of Service: C[19.6]

Street Name:	Old Airport Road						Pendleton Hwy					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 1 0 0 0			0 0 0 1 0		
Volume Module: >> Count Date: 12 Oct 2006 << 4:15pm to 5:15pm												
Base Vol:	0	0	0	2	1	1	1	303	0	0	246	1
Growth Adj:	1.57	1.57	1.57	1.57	1.57	1.57	1.57	2.00	1.57	1.57	1.69	1.57
Initial Bse:	0	0	0	3	2	2	2	606	0	0	416	2
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserBy:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	3	2	2	2	606	0	0	416	2
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
PHF Volume:	0	0	0	4	2	2	2	681	0	0	467	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	0	0	4	2	2	2	681	0	0	467	2
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	1152	1152	468	469	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	220	199	599	1103	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	220	199	599	1103	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.02	0.01	0.00	0.00	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	0	xxxxx	xxxx	253	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	0.1	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	19.6	xxxxx	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	C	*	A	*	*	*	*	*
ApproachDel:		xxxxxx			19.6			xxxxxx			xxxxxx	
ApproachLOS:		*			C			*			*	

Note: Queue reported is the number of cars per lane.

Appendix F

Technical Memorandum #5
Opportunities and
Constraints Analysis

KITTELSON & ASSOCIATES, INC.
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TECHNICAL MEMORANDUM

I-84/Barnhart Road IAMP
Technical Memorandum #5
Opportunities and Constraints Analysis

Date: February 22, 2007 **Project** #: 7930

To: I-84 / Barnhart Road PPMT

From: Marc Butorac, P.E., P.T.O.E. and Matt Wiesenfeld

cc: Howard Perry, Anderson Perry and Associates, Inc.

This technical memorandum is the fifth in a series of memorandums that are being prepared for the I-84/Barnhart Road Interchange Area Management Plan (IAMP). This memorandum documents the development and preliminary evaluation of eight northerly roadway alignments around the Barnhart Road to Airport Road Connector (Connector Roadway) and the two southerly roadway alignment and access concepts that have been developed as part of the IAMP process. In addition, specific roadway improvement needs and potential land use management strategies are presented. This evaluation includes a description of the process used to develop the nine concepts and a detailed description of each, a qualitative assessment discussing the advantages and disadvantages of each, and a quantitative analysis of each concepts roadway alignment and access characteristics.

The purpose of this memorandum is to provide the PPMT with a quantitative and qualitative assessment and feasibility analysis of each roadway alignment and access concepts, and to assist in the screening process that will ultimately result in a preferred northerly and southerly concept. These concepts cover the alignment of the new Barnhart Road to Airport Road Connector Roadway (Connector Roadway), the minor access roads which will need to be constructed, and modifications that can be made to the existing roadways south of the I-84/Barnhart Road Interchange to bring that area closer to meeting ODOT's access spacing standards. Once the PPMT agrees upon the preferred concepts, these concepts will then go forward as the recommend access and circulation plans in the Interchange Area Management Plan and will be included in the environmental assessment and Goal Exception process.

CONCEPT DEVELOPMENT PROCESS

The development of the initial roadway alignment and access concepts for the I-84/Barnhart Road IAMP began with two separate design workshops. The first workshop was held for members of the PPMT, while the second workshop was held for interested citizens, business owners, and landowners in a public open house setting. Both of these workshops were held on November 13, 2006.

Within each workshop, participants were presented with an overview of applicable design parameters and local circulation/access management techniques. Following these presentation overviews, participants were asked to sketch their ideas for the future transportation network in terms of a new I-84/Barnhart Road interchange and a supporting collector/local street circulation network.

Following the completion of the PPMT and public workshops, the consultant team developed a series of individual roadway alignment and access concepts for the north and south sides of the interchange based on the ideas generated during the workshop's exercises. These concepts are described in the following sections.

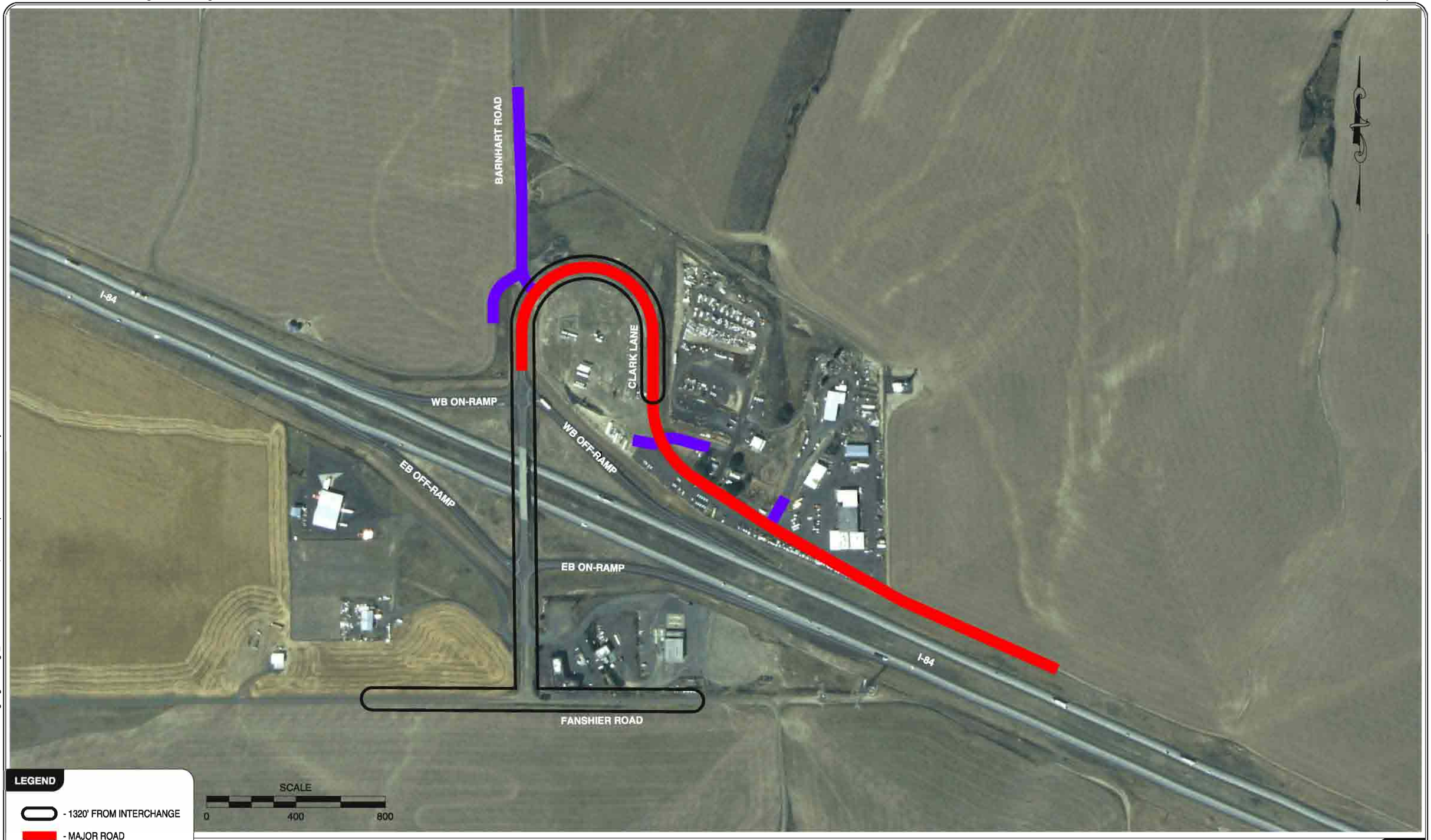
ROADWAY ALIGNMENT AND ACCESS DESIGN CONCEPTS

Based on the general design ideas developed as part of the workshop exercises, the consultant team developed a set of eight northerly and two southerly roadway alignment and access concepts. These concepts represent a culmination of the individual design ideas developed by the workshop participants. Technical refinements to these ideas were made by the consultant team to ensure proper design parameters and constructability of the proposed Connector Roadway. Each of the concepts and the key design components are described below.

Northerly Interchange Roadway Alignments and Access Design Concepts

Concept #N1A

Figure 5-1A shows the roadway alignment and access design for Concept #N1A. This concept is defined by new connector roadway utilizing the existing Clark Lane alignment through the industrial zoned property in the northeast quadrant of the interchange. The Clark Lane and Barnhart Road intersection is moved slightly to the northeast onto the existing industrial property along a continuous horizontal curve starting immediately north of the westbound interchange terminal. The connector roadway would be the through movement and the existing segment of Barnhart Road north of the new intersection will form a stop-controlled 'T' intersection. In addition, the existing farm access roadway serving the property in the northwest quadrant of the intersection would be realigned to the north and tie into the northern segment of Barnhart Road via a second stop-controlled "T" intersection.



I-84/BARNHART ROAD INTERCHANGE AREA
NORTH ROADWAY ALIGNMENT & ACCESS CONCEPT #N1A
UMATILLA COUNTY, OREGON

FIGURE
5-N1A

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Concept #N1B

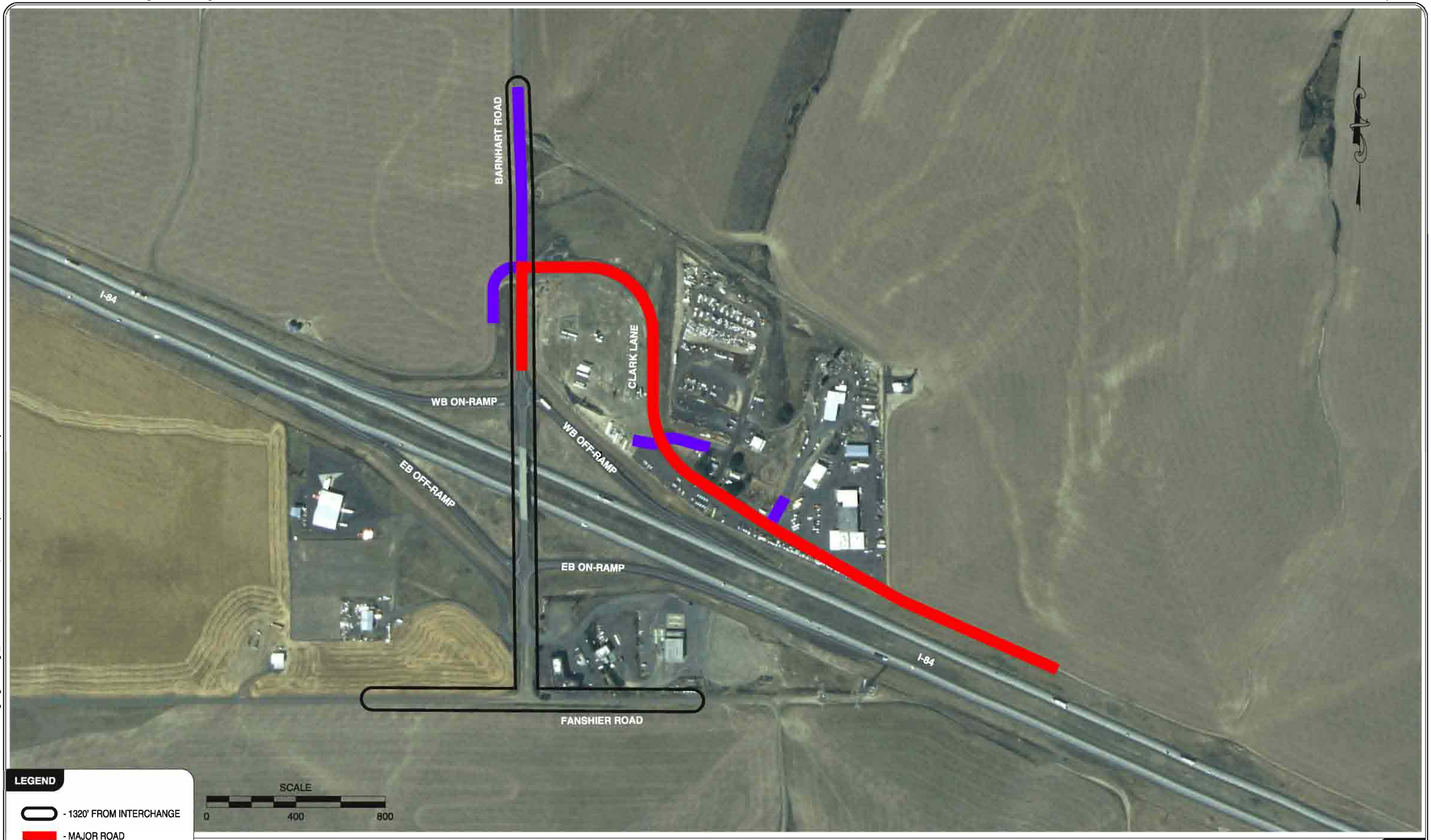
Figure 5-1B shows the roadway alignment and access design for Concept #N1B. This concept is similar to Concept #N1A; however, instead of two "T" intersections being formed, the new connector and existing farm access create a four legged stop-controlled intersection with the existing Barnhart Road alignment. The new connector roadway again utilizes the existing Clark Lane alignment through the industrial property. The primary movement through the Barnhart Road/Connector roadway intersection remains Barnhart Road under this concept. .

Concept #N2A

Figure 5-2A illustrates the roadway alignment and access design for Concept #N2A. The principle feature of this concept is the large horizontal curvature of the new roadway which extends Barnhart Road northeasterly from the westbound interchange terminal through the northwest corner of the existing industrial land and into the EFU land adjacent of the industrial area. The remaining northerly segment of the Barnhart Road alignment forks at the northwest corner of the industrial property. The southwesterly fork provides access to the farm use in the northwest corner of the interchange. The northeasterly fork crosses the new alignment at 1100' from the interchange and extends into the industrial area to provide driveway access to this property along the Clark Lane alignment. The alignment of this access road north of the new Connector Roadway was chose to provide adequate site distance as this intersection. For the purpose of providing an intersection at a lesser grade, access to the industrial property would also be provided near the southeast corner of the industrial property.

Concept #N2B

Figure 5-2B depicts the roadway alignment and access design for Concept #N2B. The new Connector Roadway would follow the same alignment as in Concept #N2A. The existing Barnhart Road north of the interchange would be re-routed to the east so that the intersection of the Connector Roadway and Barnhart Road is at approximately 1600 feet from the interchange. There would be a four way intersection at this location to provide access to the industrial property



I-84/BARNHART ROAD INTERCHANGE AREA
NORTH ROADWAY ALIGNMENT & ACCESS CONCEPT #N1B
UMATILLA COUNTY, OREGON

FIGURE
5-N1B

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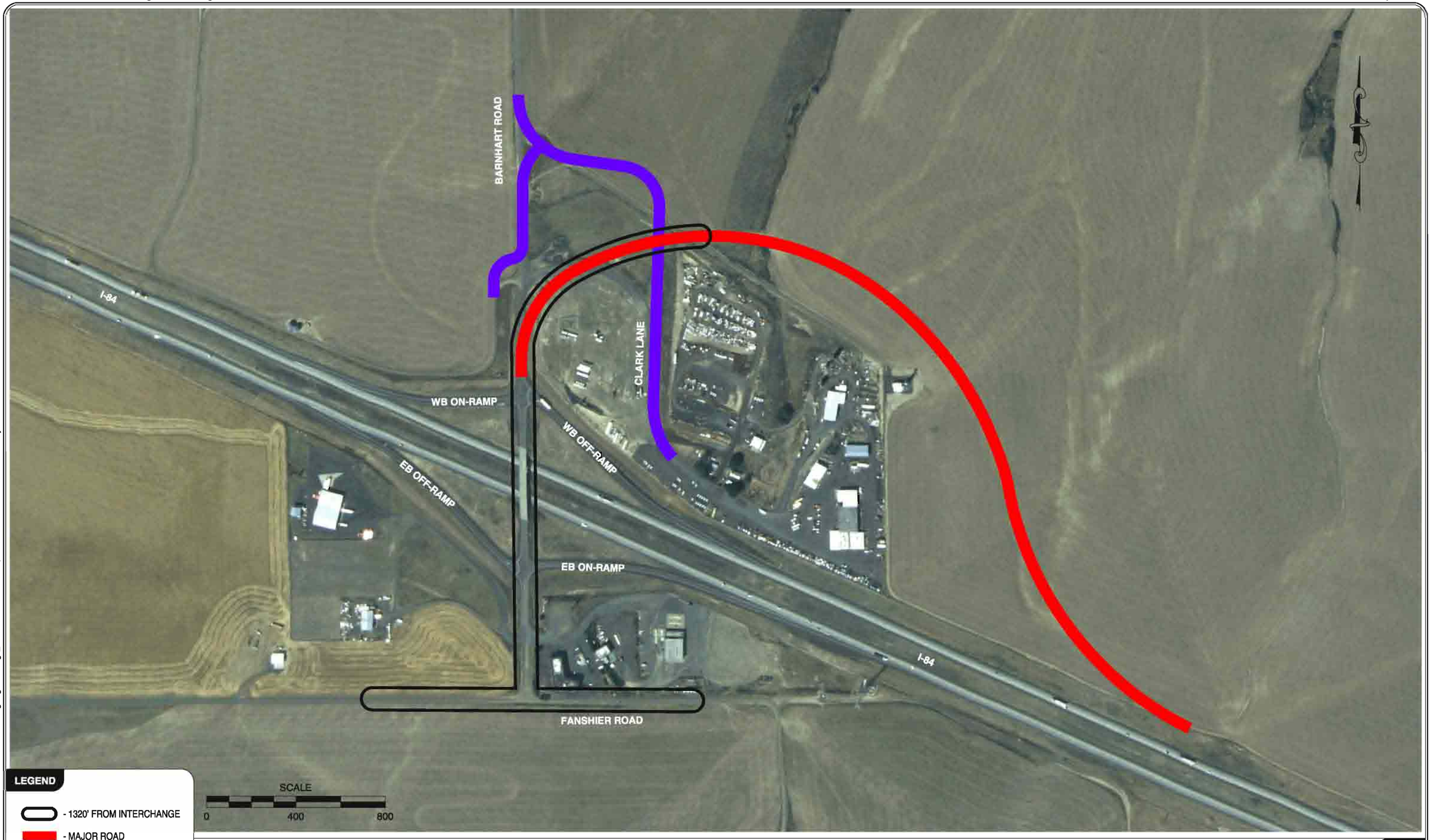

I-84/BARNHART ROAD INTERCHANGE AREA
NORTH ROADWAY ALIGNMENT & ACCESS CONCEPT #N2A
UMATILLA COUNTY, OREGON

FIGURE 5-N2A

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http://portland.craigslist.org/search/car?query=ford%20focus

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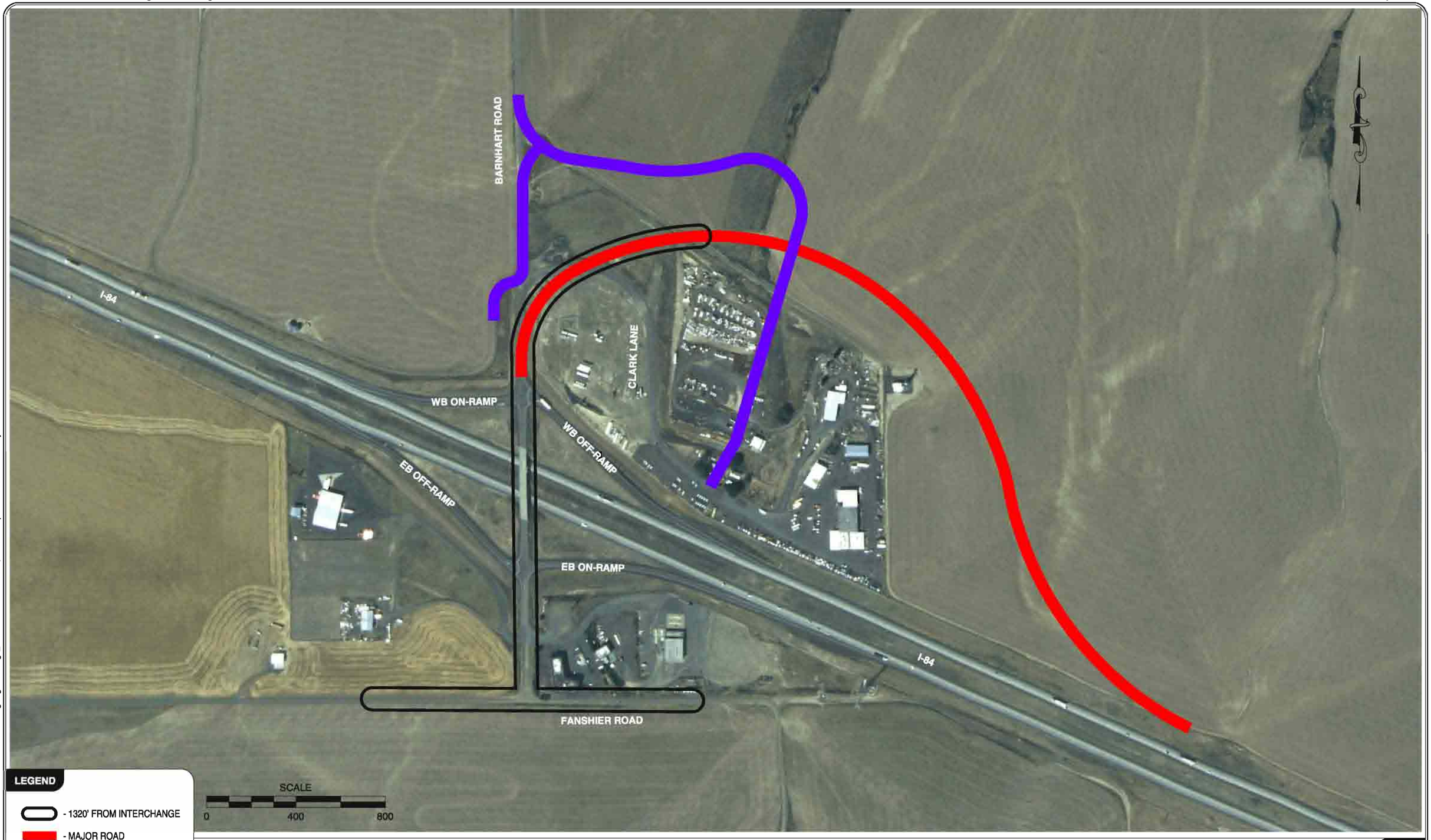

I-84/BARNHART ROAD INTERCHANGE AREA
NORTH ROADWAY ALIGNMENT & ACCESS CONCEPT #N2B
UMATILLA COUNTY, OREGON

FIGURE 5-N2B

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Concept #N3

Figure 5-N3 shows the roadway alignment and access for Concept #N3. This concept achieves 1320' and takes a large horizontal curving path, north of all current development, as it meets as a four-way intersection with the existing Barnhart Road north of the industrial site. The existing farm access on the west side is extended to the north to complete the fourth leg of this intersection. Clark Lane will be a right in-right out intersection at its current intersection with Barnhart Road. Full access to the industrial property will be provided by an access road which comes to a 'T' intersection with the new roadway north of the industrial property.

Concept #N4

Figure 5-N4 shows the roadway alignment and access for Concept #N4. This concept places the new road through the industrial land with a larger horizontal curvature than the existing Clark Lane. The new roadway would meet with the existing Barnhart Road at the westbound ramp terminals. The new roadway would curve back to the south in such a manner to clip the industrial property's northeast corner 'inside' of the substation. The existing northern piece of the Barnhart Road alignment forks at the northwest corner of the industrial property. The western fork provides access the farm use in the northwest corner of the interchange. The eastern fork crosses the new roadway alignment along the northern edge of the industrial property and extends south intersecting and then following the Clark Lane roadway alignment. The angle of the roadways approach was chosen to improve site distance the intersection of Barnhart Road and the new Connector Roadway. The current Clark Lane alignment will no longer access where it had previously, but will have full access long the western fork of the new access roadway forking from Barnhart Road. For the purpose of providing an intersection at a lesser grade, access to the industrial property would also be provided near the southeast corner of the industrial property.

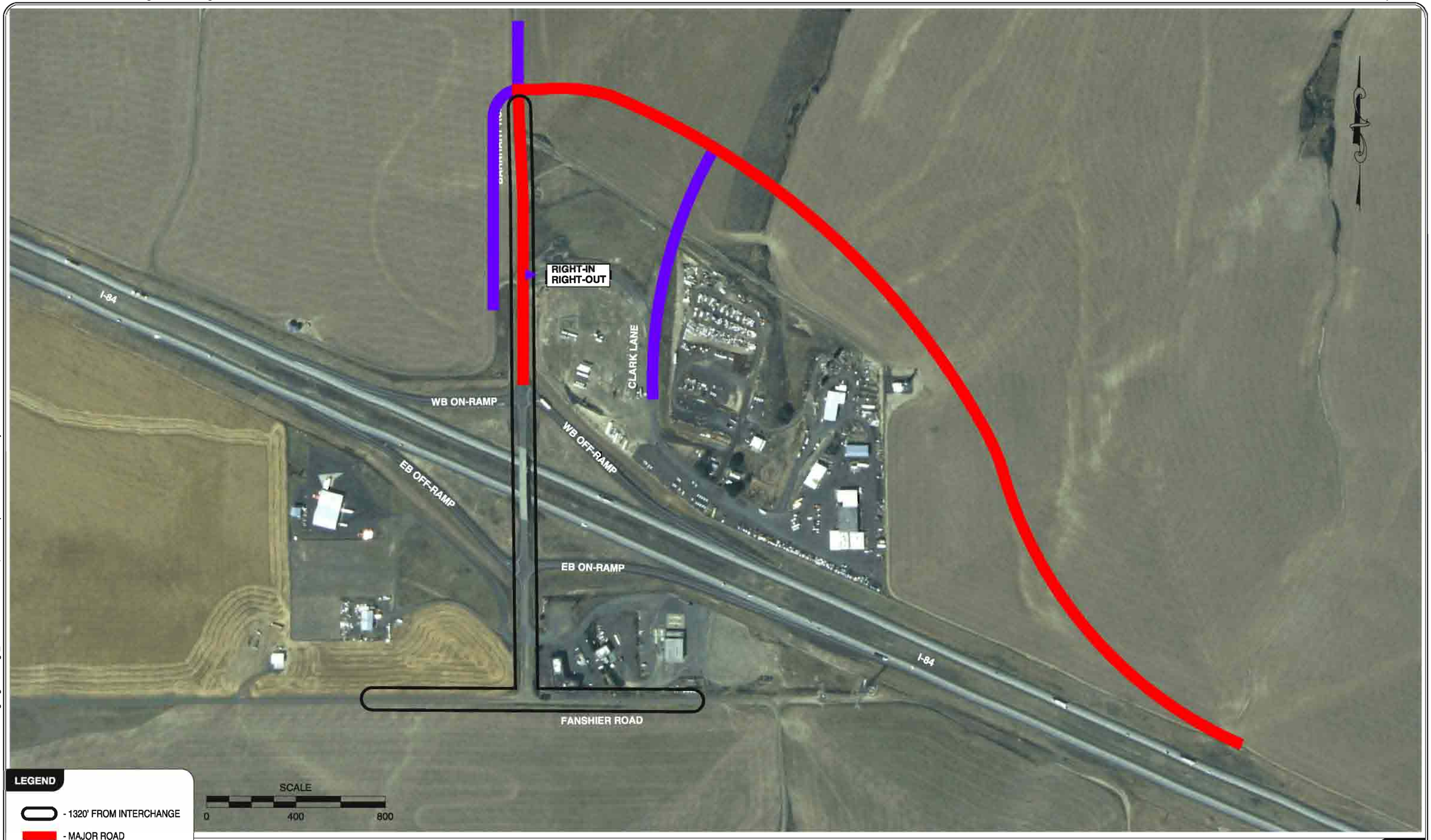
Concept #N5

Figure 5-N5 shows the roadway alignment and access for Concept #N5. This concept uses the existing Clark Lane roadway for most of the alignment. Instead of meeting Barnhart Road at its current location, the new roadway would stretch north intersecting Barnhart Road at the 1320 foot mark. The existing farm access on the west side of this existing intersection is extended north to complete the new four legged intersection. Local access to the industrial property will be provided by two short spurs off the new roadway inside the existing property lines.

Concept #N8[1]

Figure 5-N8 shows the roadway alignment and access for Concept #N8. This concept's defining feature is a large horizontal curvature along the Connector Roadway which would isolate approximately 40 acres of EFU land. The intent of the isolation is that this much land would remain as a farmable remnant. The new Connector Roadway would extend Barnhart Road northeasterly from the westbound interchange terminal through the northwest corner of the existing industrial land and into the EFU land adjacent of the industrial area. The remaining northerly segment of the Barnhart Road alignment forks at the northwest corner of the industrial

[1] Concept #N6 and #N7 were renamed to #N1B and #N2B due to their similarities with Concepts #N1 and #N2.



I-84/BARNHART ROAD INTERCHANGE AREA
NORTH ROADWAY ALIGNMENT & ACCESS CONCEPT #N3
UMATILLA COUNTY, OREGON

FIGURE
5-N3

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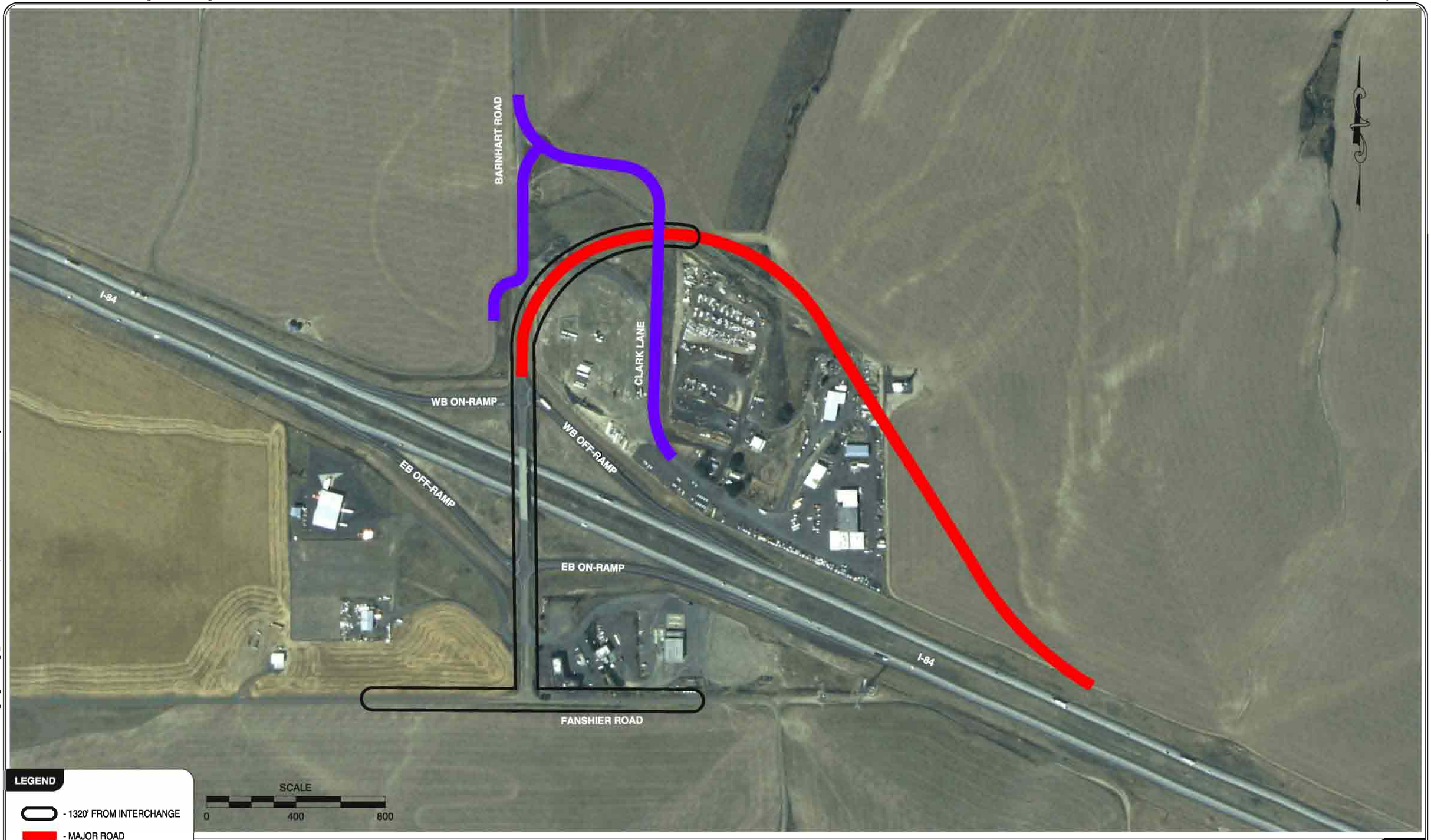

I-84/BARNHART ROAD INTERCHANGE AREA
NORTH ROADWAY ALIGNMENT & ACCESS CONCEPT #N4
UMATILLA COUNTY, OREGON

FIGURE **5-N4**

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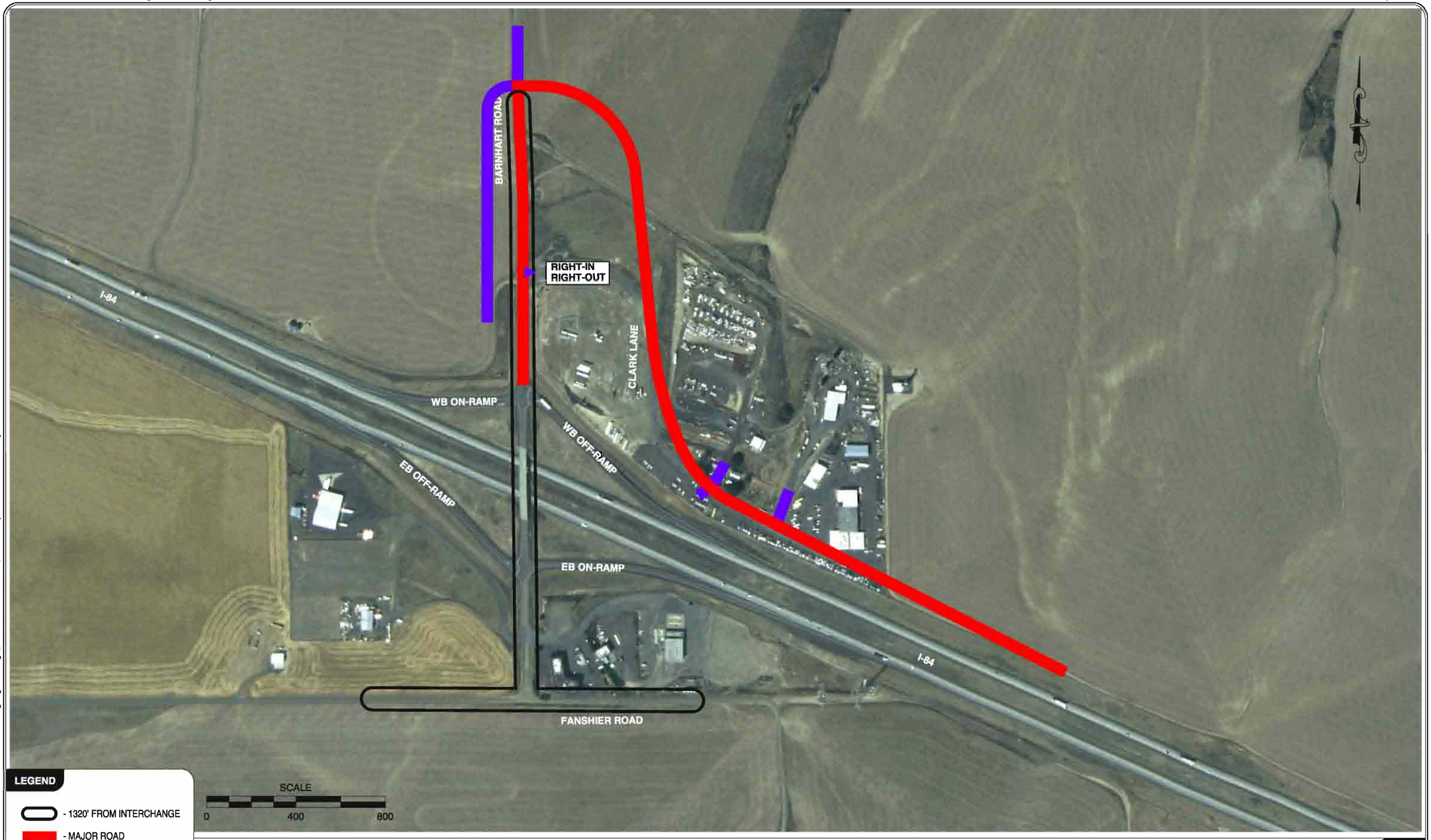

I-84/BARNHART ROAD INTERCHANGE AREA
NORTH ROADWAY ALIGNMENT & ACCESS CONCEPT #N5
UMATILLA COUNTY, OREGON

FIGURE
5-N5

Kittelson & Associates, Inc.
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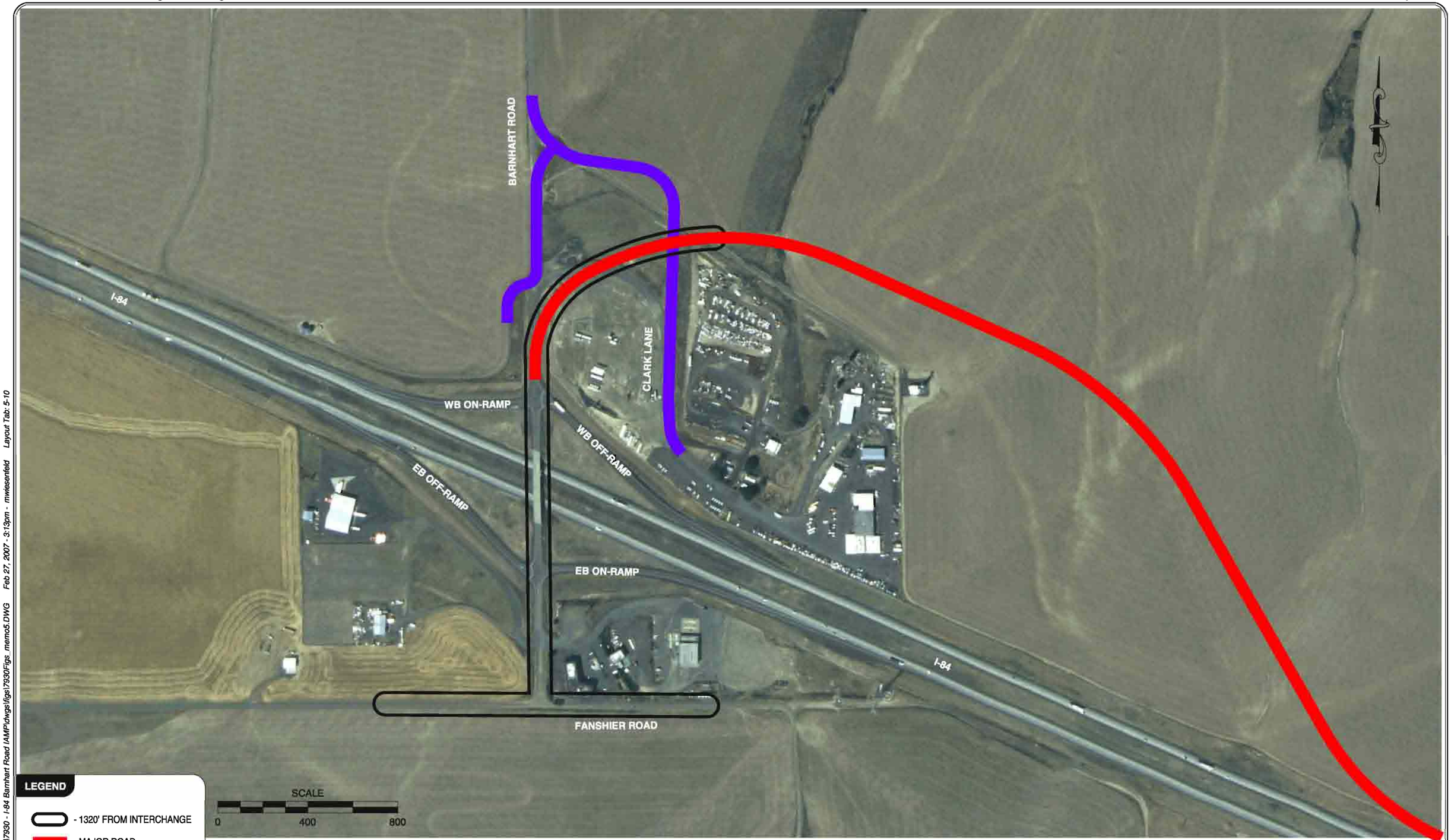

I-84/BARNHART ROAD INTERCHANGE AREA
NORTH ROADWAY ALIGNMENT & ACCESS CONCEPT #N8
UMATILLA COUNTY, OREGON

FIGURE
5-N8

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property. The southwesterly fork provides access the farm use in the northwest corner of the interchange. The northeasterly fork crosses the new alignment at 1100' from the interchange and extends into the industrial area to provide driveway access to this property along the Clark Lane alignment. The alignment of this access road north of the new Connector Roadway was chose to provide adequate site distance as this intersection.

Southerly Interchange Roadway Alignments and Access Design Concepts

Concept #S1

Figure 5-S1 shows the roadway alignment and access design for Concept #S1. Concept #S1 proposes that the property access on the southern side of I-84 be relocated from Barnhart Road to Fanshier Road. The existing private approaches to Barnhart Road located approximately 250 feet south of the eastbound interchange terminal would be relocated to three locations along Fanshier Road. The relocation of access would result in the Barnhart Road/Fanshier Road intersection, located 500' feet south of the interchange terminal, being the first access point south of the interchange.

Concept #S2

Figure 5-S2 shows the roadway alignment and access design for Concept #S2. Concept #S2 proposes that a median be implemented along Barnhart Road between the eastbound interchange terminal and Fanshier Road, converting the existing easterly and westerly private access approaches to right-in/right-out out. Through the median installation the total number of conflict points south of I-84 is reduced from 32 to 4 points. Full access would be made available along Fanshier Road. In addition, a roundabout could be considered at the Barnhart Road/Fanshier Road intersection to help facilitate the U-turning movements generated by the right-in/right-out access control along Barnhart Road.

I-84/BARNHART ROAD INTERCHANGE AREA
SOUTH ROADWAY ALIGNMENT & ACCESS CONCEPT #S1
UMATILLA COUNTY, OREGON

FIGURE 5-S1

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I-84/BARNHART ROAD INTERCHANGE AREA
SOUTH ROADWAY ALIGNMENT & ACCESS CONCEPT #S2
UMATILLA COUNTY, OREGON

FIGURE 5-S2

Kittelson & Associates, Inc.
TRANSPORTATION ENGINEERING / PLANNING

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QUANTITATIVE ANALYSIS OF ROADWAY ALIGNMENT AND ACCESS CONCEPT CHARACTERISTICS

To provide a better understanding of impacts of each concept, the consultant team analyzed the specific right-of-way and land use impact, conceptual cost, roadway and operational, and access spacing characteristics of each concept. Each element of these four fundamental concept characteristics is described below and summarized in Table 5-1.

Right of Way and Land Use Impact Characteristics

The right-of-way and land use impacts characteristics were quantified by the following four elements:

Overall Right-of-Way (ROW) Acquisition Area – This defines the total amount of ROW acquisition, in acres, necessary to develop the new Connector Roadway and minor roadway connections within the interchange study area.

Impacted Exclusive Farm Use (EFU) Land – This defines the total amount of EFU land, in acres, impacted directly by the ROW acquisition necessary to develop the new Connector Roadway and minor roadway connections within the interchange study area. It should also be noted that indirect impacts, in those areas that become separated and/or isolated from the large existing EFU plots may occur but have not been accounted for in this analysis.

Impacted Rural Light Industrial (RLI) Land – This defines the total amount of RLI land, in acres, impacted directly by the ROW acquisition necessary to develop the new Connector Roadway and minor roadway connections within the interchange study area.

Impacted Buildings – This defines the number of existing structures impacted directly by the ROW acquisition necessary to develop the new Connector Roadway and minor roadway connections within the interchange study area.

Conceptual Cost Characteristics

The conceptual cost characteristics are based on preliminary roadway alignment layouts and were quantified by the following five elements:

Right-of-Way (ROW) Acquisition Cost – This is the estimated cost to acquire all the necessary right-of-way needed for the new Connector Roadway and minor roadway connections within the interchange study area.

Construction Cost – This is the estimated cost to construct new Connector Roadway and minor roadway connections within the interchange study area.

Engineering Cost – This is the estimated cost to design and oversee the construction of the new Connector Roadway and minor roadway connections within the interchange study area.

Contingency Cost – This is the estimated amounted need to cover for unforeseen cost that may evolve throughout the design and construction of the new Connector Roadway and minor roadway connections within the interchange study area.

Total Cost – This is the sum of the estimated cost of acquisition, construction, engineering, and contingency in the creating of the new Connector Roadway and minor roadway connections within the interchange study area.

Roadway and Operational Characteristics

The conceptual roadway and operational characteristics were quantified by the following four elements:

Main Roadway Length – This is the length of the new Connector Roadway which will be built within the interchange study area.

New Access Roadway Length – This is the length of the new access roadways which will be built within the interchange study area.

Minimum Design Speed – This is the minimum speed which the new Connector Roadway will be built to accommodate within the interchange study area.

Maximum Grade – This is the steepest grade which will be accepted along the new Connector Roadway within the interchange study area.

Access Spacing Characteristics

The conceptual access spacing characteristics were quantified by the following two elements:

Distance to First Right-In Right-Out – This is the length from the interchange ramp terminal to the first right-in/right-out intersection.

Distance to First Full Access – This is the length from the interchange ramp terminal to the first full access intersection.

Table 5-1 Roadway Alignment and Access Concept Characteristics

	Right of Way & Land Use Impact & Characteristics				Conceptual Cost Characteristics	Roadway & Operational Characteristics				Access Spacing Characteristics	
Concept	TOTAL REQ'D R/W (Acres)	EFU R/W (Acres)	ML R/W (Acres)	NUMBER OF BUILDINGS IMPACTED	TOTAL PROJECT COST ($)	LENGTH MAIN RD (FT)	LENGTH NEW ACCESS RD (FT)	MINIMUM DESIGN SPEED (MPH)	MAXIMUM GRADE (%)	DISTANCE TO FIRST RIGHT-IN RIGHT-OUT (FT.)	DISTANCE TO FIRST FULL ACCESS (FT.)
N1A	10.5	4.7	5.8	-	$2,505,000	4,950	900 Gravel	30	6%	NA	500
N1B	10.3	4.7	5.6	-	$2,070,000	5,070	-	30 Additional[2] Stop	6%	NA	500
N2A	17.8	13.8	4	-	$3,200,000	5,155	750 Paved 1,000 Gravel	40	6%	NA	1,100
N2B	23.4	18	5.4	2±	$5,515,000	5,155	1,100 Paved 1,600 Gravel	40	6%	NA	1,650
N3	18.6	16.8	1.8	-	$3,750,000	6,180	1,000 Paved	65 Additional[2] Stop	6%	500	1,320
N4	16.4	11.8	4.6	-	$3,625,000	5,240	750 Paved 1,000 Gravel	40	6%	NA	1,100
N5	12.3	7.2	5.1	-	$2,362,000	6,548	500 Gravel	35 Additional[2] Stop	6%	500	1,320
N8	19	15	4	-	$3,520,000	5,200	750 Paved 1,000 Gravel	40	6%	NA	1,100
S1[1]	-	-	-	-	<$50.000	-	-	-	-	NA	500’
S2[1]	-	-	-	-	<$50.000	-	-	-	-	250	500’

[1] The Concepts for the Southside of the interchange do not require the construction of a new roadway.

[2] These concepts require the westbound Connector Roadway to stop @ a two-way stop-controlled intersection.

Quantitative Analysis of Roadway Alignment and Access Concept Characteristics

In order to more easily assess the information summarized in Table 5-1, the following findings have been made regarding each roadway alignment and access characteristics.

Right of Way and Land Use Impact Characteristics

The right-of-way and land use impacts characteristics found that Concept #N2B is the most impactive while #N1B is the least impactive.

Overall Right-of-Way (ROW) Acquisition Area – Concept #N2B impacts the most land area by nearly 5 acres and is more than twice as impactive as the Concepts # N1A and N1B.

Impacted Exclusive Farm Use (EFU) Land – The EFU impact for Concepts #N1A and #N1B are less than half of the EFU impact of Concepts #N2A, #N2B, #N3, #N4, and #N8.

Impacted Rural Light Industrial (RLI) Land – The RLI impacted by concept #N3 is less than half that of any other concept. Concepts #N1A, #N1B, #N2B, and #N5 are the most impactive.

Impacted Buildings – The only concept which impacted any existing structures was concept #N2B which will affect a minimum of 2 structures.

Conceptual Cost Characteristics

The conceptual cost characteristics found that Concept #N2B is the most costly while #N1B is the least costly.

Right-of-Way (ROW) Acquisition Cost – The cost of ROW for Concept #N3 at $216,000 is less than half of the other concepts

Construction Cost – The cost of construction is minimized in concepts that use the existing Clark Lane roadbed. Concept #N2B is considerably more expensive to construct than the other concepts.

Total Cost – The total project cost for concepts #N1A and N1B are less than half of that Concept #N2B

Roadway and Operational Characteristics

The conceptual roadway and operational characteristics are similar for each concept with exception of minimum design speed.

Minimum Design Speed – The minimum design speed for Concept #N3 is considerably higher than the other alternatives. However, these design speeds do not account for whether the option requires an additional stop prior to the interchange. In concepts #N1B, #N3, and #N5, an additional stop is required and this would cause extra delay in movement from the airport to the Barnhart Road interchange.

Access Spacing Characteristics

The conceptual access spacing exceeds the 1,320 foot standard under Concept #N2B. For Concepts #N3 and # N5, the Connector Roadway spacing achieves the standard. For the remaining Concepts, the provided access spacing was below the 1,320-foot access spacing standard. Concepts #N2A, #N4, and #N8 are shy of achieving standard, while Concepts #N1A and #N1B are far below the standard.

ROADWAY IMPROVEMENTS NEEDS

Based on the finding of the future conditions analysis, the consultant team developed proposed roadway cross-sections and traffic control and lane configurations for the Connector Roadway. These roadway improvement needs are described below.

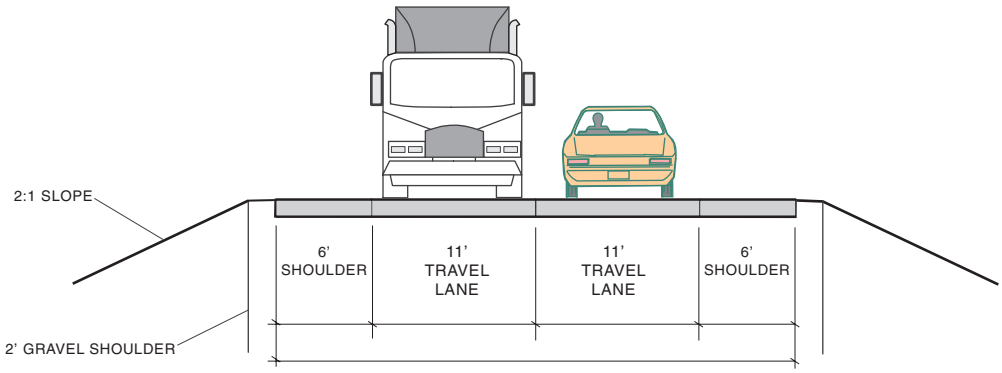
Connector Roadway Cross-Section

The proposed Connector Roadway is projected to carry less than 4,000 vehicles per day at full buildout of the existing Rural Light Industrial (RLI) and Rural Tourist Commercial (RTC) zoned land in the vicinity of the interchange and the Light Industrial (M-1) and Airport Light Industrial (AA) zoned land in the vicinity of the Airport. Based on this volume level and the limited access between the Airport and the interchange area, a two-lane roadway with 11-foot travel lanes and 6-foot paved shoulders was deemed appropriate outside of the interchange area. Within the interchange area, it is recommended that the roadway cross-section be expanded to include a 12-foot median in order to accommodate the existing and future turning movements. Figure 5-11 illustrates the two proposed roadway cross-sections for the Connector Roadway.

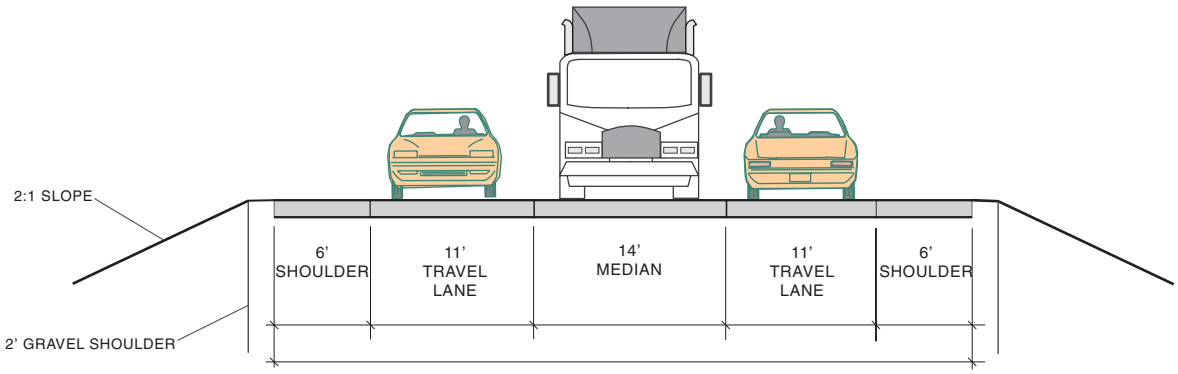
Lane Configurations and Traffic Control Devices

To accommodate the forecasted turning movements at the interchange terminals and Barnhart Road/Fanshier Road intersection, near-term and long-term lane configuration and traffic control needs have been identified. The needs of each individual intersection is described below and illustrated in Figure 5-12.

(NO SCALE)



CROSS-SECTION OUTSIDE INTERCHANGE MANAGEMENT AREA



CROSS-SECTION INSIDE INTERCHANGE MANAGEMENT AREA

*APPLIES ONLY WHERE SHOWN IN THE "FINAL IAMP".

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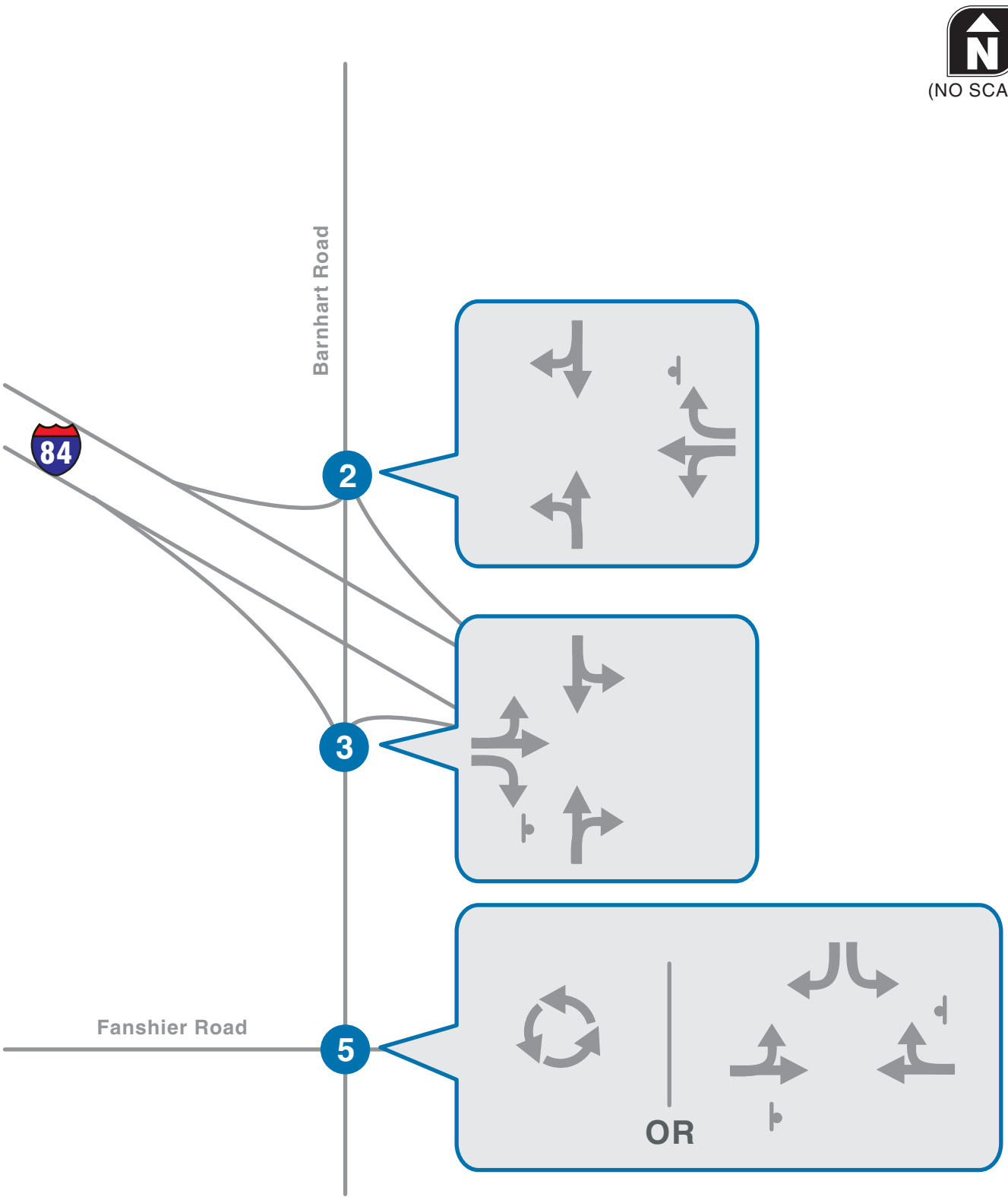
I-84/BARNHART ROAD INTERCHANGE AREA MANAGEMENT PLAN
BARNHART ROAD-CONNECTOR ROADWAY CROSS-SECTIONS
UMATILLA COUNTY, OREGON

FIGURE 5-11



Long-Term Lane Configureation & Traffic Control Device Needs

FIGURE 5-12

I-84 Westbound Ramp/Barnhart Road Terminal – This intersection can continue to operate under both near-term and long-term conditions using the existing lane and two-way stop-controlled configuration.

I-84 Eastbound Ramp/Barnhart Road Terminal – This intersection can continue to operate under near-term conditions using the existing lane and two-way stop-controlled configuration. However, future growth over the horizon year will require the eventual development of an exclusive eastbound left-turn lane and the eventual need for signalization. An exclusive eastbound left-turn lane could be provided at the intersection without reconstruction of the off-ramp; however, it would have limited queue storage. It should be noted that a traffic signal will not be installed prior to the intersection achieving signal warrants based on future traffic demands.

Barnhart Road/Fanshier Road – This intersection can continue to operate under both near-term and long-term conditions using the existing lane and two-way stop-controlled configuration. It may be advantageous to explore the installation of a roundabout at this intersection in the future to potentially facilitate southbound u-turn movements on Barnhart Road.

LAND USE MANAGEMENT STRATEGIES

As illustrated in the eight northerly roadway alignment and access design concepts, the primary components of each involve the alignment of the new Barnhart Road to Airport Road Connector Roadway and the location of site accesses to various land uses within the vicinity of the interchange. In developing the various concepts, it has become evident that the competing objectives (i.e., to minimize impacts to existing businesses and exclusive farm uses within the vicinity of the interchange and to achieve the operational performance needs of the Connector Roadway and access spacing requirement of the Oregon Highway Plan) cannot be simultaneously achieved. However, the roadway alignment and access design concepts in conjunction with potential land use management strategies could lead to solutions that move closer to or fully achieve these objectives.

Land Use Management Strategy Alternatives

In reviewing the various impacts to the Exclusive Farm Uses, the consultant team developed four alternative land use management strategies that could be utilized as part of the IAMP process. Each strategy has been crafted to deal with the specific impacts created by the concepts that require the Connector Roadway alignment to extend outside of the existing Rural Light Industrial zoned land in the northeast quadrant of the interchange (i.e., Concepts #N2A, #N2B, #N3, #N4, and #N8). These strategies include:

A. *No Change* - The base strategy is to leave the zoning the same as it is today. Although this strategy is available for every Concept, it is the preferred strategy for Concepts #N1A, #N1B, #N5, and #N8.

B. *Conversion of Isolated Exclusive Farm Use (EFU) to Rural Light Industrial (RLI)* - This strategy accounts for the land which would become separated from current farming patterns and have limited or no viability as future sustainable farm land. The quantity of

land converted from EFU to RLI would have no appreciable effect on the operation of the surrounding transportation facilities as documented in Technical Memorandum #4. This strategy is applicable for the Concepts except #N1A and #N1B.

C. *Interchange Area Zone Swap* - This strategy would take land located north of the new Connector Roadway and currently zoned RLI and convert it to EFU under the Concepts which extend outs the RLI zoned land. Land currently zoned EFU and located between the new connector roadway and I-84 would be converted to RLI as it would have potentially limited viability as future sustainable farm land. This strategy is most applicable for the Concepts #N2A, #N2b, and #N4.

D. *Interchange Area and Airport Industrial Area Zone Swap* - This strategy would allow EFU separated from current farming patterns by the new Connector Roadway in the vicinity of the interchange to be converted to RLI. To offset this impact and maintain the same amount of EFU land in the local area and within the extents of the Connecter Roadway, existing City controlled light industrial land of the same quantity near the airport would be converted back to EFU. This strategy is most applicable for the Concepts #N2A, #N2B, #N3, #N4, and #N5.

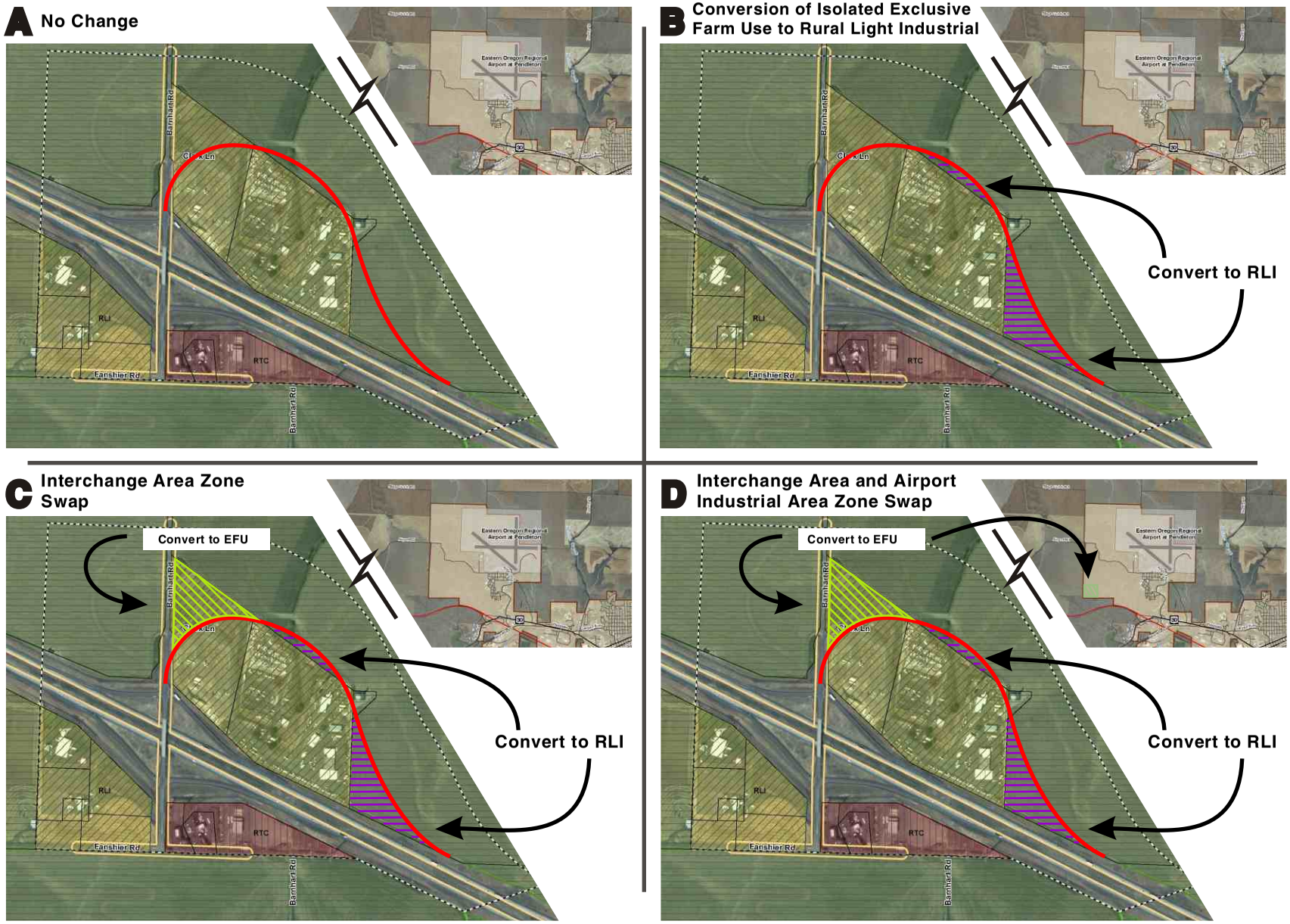
Table 5-2 summarizes the applicability of the four proposed land use management strategies under the eight northerly roadway alignment and access concepts. It should be noted that land use management strategies were not deemed applicable for the southerly roadway alignment and access concepts because both concepts utilize existing right-of-way.

Table 5-2 Applicability of Alternative Land Use Management Strategies

Land Use Strategy / Concept #	Strategy 'A'	Strategy 'B'	Strategy 'C'	Strategy 'D'
Concept #N1A	Yes	No	No	No
Concept #N1B	Yes	No	No	No
Concept #N2A	Yes[1]	Yes	Yes	Yes
Concept #N2B	Yes[1]	Yes	Yes	Yes
Concept #N3	Yes[1]	Yes	No	Yes
Concept #N4	Yes[1]	Yes	Yes	Yes
Concept #N5	Yes	Yes	No	Yes
Concept #N8	Yes	Yes	Yes	Yes

[1] While Strategy "A" could be deployed under Concepts #N2A, #N2B, #N3, and #N4, it would result in isolated EFU parcels that would remain between the new Connector Roadway and the existing Rural Light Industrial land.

In reviewing the various land use management strategies described above, it becomes clear that the potential impacts to EFU land Concepts #N2A, #N2B, #N3, #N4, and #N5 can be minimized to a certain degree under Strategies "B" or "C" and potentially negated through the implementation of Strategy "D".



I-84/BARNHART ROAD INTERCHANGE AREA MANAGEMENT PLAN
POTENTIAL LAND USE MANAGEMENT
UMATILLA COUNTY, OREGON

FIGURE 5-13

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PRELIMINARY QUALITATIVE EVALUATION

After the development of the eight northerly and two southerly roadway alignment and access design concepts, and completing the quantitative analysis of the specific right-of-way and land use impact, conceptual cost, roadway and operational, and access spacing characteristics of each concept, the next step is to begin a detailed qualitative evaluation of each concept. This detailed evaluation centered on the formally adopted set of evaluation criteria developed during the initial stages of the I-84/Barnhart Road IAMP process. These evaluation criteria, as summarized in Table 5-3, were developed and refined through consultation with members of the PPMT.

Table 5-3 Evaluation Criteria

Main Criteria Heading	Criteria
Transportation Operations	Enhance multimodal options
	Provide safe traveling speeds
	Provide connectivity to local road network
	Provide mobility with adequate capacity
	Provide accommodations for through truck movements
	Maintain local circulation network
Land Use	Provide consistency with statewide planning rules
	Minimize right-of-way impacts
	Provide consistency with adopted land use plans
	Minimize existing and future utility impacts
	Support economic development
	Minimize Impact to EFU resources
Cost	Estimated Cost
	Construction Feasibility
Environmental/Social Impacts	Minimize environmental and social impacts
	Provide for stormwater drainage
	Comply with land use planning regulations
	Hazardous Waste Impact
Accessibility	Balance access to local properties with the function of the new roadway.
	Provide consistency with adopted access plans
	Provide future access to undeveloped properties

To help determine how to rank each of the Concepts according to the evaluation criteria, a scoring system was developed. In essence, each evaluation criterion was assigned a range of numerical values (+2, +1, 0, -1, -2 for example). A definition specific to the evaluation criterion was then assigned to each value, (i.e. "+2 for a Significant Increase…" and a -2 for a "Significant Decrease…"). The specific scoring definitions for each criterion are also provided in *Appendix "A"*. Using the unique scoring system for each evaluation criterion, the eight

northerly and two southerly concepts were carefully evaluated and scored by the consultant team. The following paragraphs summarize the overall process that was undertaken for each evaluation criterion followed by the evaluation summary tables.

Transportation Operations Scoring

The transportation related evaluation criteria included the enhancement of multimodal options, travel safety, connectivity of the local roadway network, capacity, accommodation of through trucks, and the provision of a local circulation network. Of these six sub-criteria, only the accommodation of through trucks and capacity offered a numerical comparison. The remaining transportation sub-criteria were evaluated based on a thorough review of the Concepts and general transportation related observations. Table 5-4 summarizes the Transportation Operations evaluation for each Concept.

Land Use Scoring

To characterize the land use impacts, the project team quantitatively assessed the consistency with statewide planning goals estimated right-of-way and residential/business displacements for each concept. Qualitative assessments were made for the utility impacts, the consistency with adopted land use plans, and the ability of each concept to support economic development. Table 5-5 summarizes the Land Use evaluation for each Concept.

Cost

To evaluate the overall cost component, a detailed preliminary cost estimate was prepared for each Concept. Table 5-6 summarizes the conceptual cost estimate each Concept Summary. In addition, the feasibility to build the new connector roadway and accesses were reviewed for each Concept.

Environmental / Social Impacts

To characterize the environment/social impacts, the project team conducted a windshield inventory of environmental resources in the project area. Environmental resources evaluated included wetlands, threatened and endangered species, cultural resources, socioeconomics, water quality and hydrology, geology and soils, hazardous material and waste sites, land use, and EFU impacts. Table 5-7 summarizes the Environmental / Social Impacts evaluation for each Concept.

Accessibility

To evaluate the overall accessibility of properties and businesses within the study area, a qualitative review process was applied to each concept that focused on the application of adopted access management policies imposed by ODOT, the City of Pendleton, and Umatilla County. Table 5-8 summarizes the Accessibility evaluation for each Concept.

Table 5-4 Transportation Operations

Evaluation Criterion: Transportation Operations

Concept Scoring										
Specific Criteria	**North 1A**	**North 1B**	**North 2A**	**North 2B**	**North 3**	**North 4**	**North 5**	**North 8**	**South 1**	**South 2**
Enhance Multimodal Options	1	1	1	1	1	1	1	1	1	1
Provide Safe Traveling Speeds	-1	-1	1	1	0	1	-1	1	1	1
Provide Connectivity Throughout the Local Road Network	0	0	-1	-1	-2	-1	-2	-1	-2	-1
Provide Mobility with Adequate Capacity	1	-1	1	1	1	1	1	1	1	1
Accommodation of Through Trucks	0	-1	1	1	0	1	-1	1	0	0
Maintain a Local Circulation Network	-1	-1	1	0	-1	1	-1	1	-2	-1
System Perspective (Average Score)	**0.00**	**-0.17**	**0.67**	**0.50**	**-0.17**	**0.67**	**-0.50**	**0.67**	**-0.17**	**0.17**

		Performance Evaluation Notes	
Concept	**Specific Criteria**	**Positives**	**Negatives**
North 1A	Enhance Multimodal Options	– The new Barnhart Road to Airport Road Connector will have shoulders adequate for pedestrian and bicycle travel.	–
	Provide Safe Traveling Speeds	– The lesser grades will allow for easier decision making and quicker response, especially for large freight moving vehicles.	– Ice formed in the curves will be difficult to prepare for or remove
	Provide Connectivity Throughout the Local Road Network	– The new Barnhart Road to Airport Road Connector provides connectivity to the existing roadway network north of the interchange.	–
	Provide Mobility with Adequate Capacity	– The new roadway would provide acceptable long-term traffic operations under either industrial or agricultural build out scenarios. – The continuous path of the new roadway to the interchange allows non-stop through movements to the interstate from the airport.	– Space for Truck 'stacking' would not be available in case of inclimate weather.
	Accommodation of Through Trucks	– The new roadway connector would smoothly permit trucks bound for the airport area arriving from the west.	– The smaller radii curves near the interchange will force a slower truck movement to the highway. (30 mph Design Speed)
	Maintain a Local Circulation Network	– Local and collector streets can be provided to serve all study area land parcels.	–
North 1B	Enhance Multimodal Options	– The new Barnhart Road to Airport Road Connector will have shoulders adequate for pedestrian and bicycle travel.	–
	Provide Safe Traveling Speeds	– The lesser grades will allow for easier decision making and quicker response, especially for large freight moving vehicles.	– This alternative would require westbound movement along the Connector Roadway to stop in the study area, prior to reaching the interchange. The eastbound movement would require vehicles slowing below 15mph to make a comfortable right turn.
	Provide Connectivity to the Local Road Network	– The new Barnhart Road to Airport Road Connector provides connectivity to the existing roadway network north of the interchange	–
	Provide Mobility with Adequate Capacity	– The new roadway would provide acceptable long-term traffic operations under either industrial or agricultural build out scenarios.	– Space for Truck 'stacking' would not be available in case of inclimate weather.
	Accommodation of Through Trucks	– The new roadway connector would smoothly permit trucks bound for the airport area arriving from the west.	– The additional stop and the smaller radii curves near the interchange will force a slower truck movement to the highway. (30mph Design Speed)
	Maintain a Local Circulation Network	– Local and collector streets can be provided to serve all study area land parcels.	– Use of Connector Roadway required to travel between parcels.

		Performance Evaluation Notes	
Concept	**Specific Criteria**	**Positives**	**Negatives**
North 2A	Enhance Multimodal Options	– The new Barnhart Road to Airport Road Connector will have shoulders adequate for pedestrian and bicycle travel.	–
	Provide Safe Traveling Speeds	– The lesser grades will allow for easier decision making and quicker response, especially for large freight moving vehicles. – Improved spacing from interchange ramps will lessen the potential of queuing on I-84.	–
	Provide Connectivity to the Local Road Network	– The new Barnhart Road to Airport Road Connector provides connectivity to the existing roadway network north of the interchange	–
	Provide Mobility with Adequate Capacity	– The new roadway would provide acceptable long-term traffic operations under either industrial or agricultural build out scenarios. – The continuous path of the new roadway to the interchange allows non-stop through movements to the interstate from the airport.	–
	Accommodation of Through Trucks	– The new roadway connector would smoothly permit trucks bound for the airport area arriving from the west.	–
	Maintain a Local Circulation Network	– Local and collector streets can be provided to serve all study area land parcels.	– Use of Connector Roadway required to travel between parcels.
North 2B	Enhance Multimodal Options	– The new Barnhart Road to Airport Road Connector will have shoulders adequate for pedestrian and bicycle travel.	–
	Provide Safe Traveling Speeds	– The lesser grades will allow for easier decision making and quicker response, especially for large freight moving vehicles. – Improved spacing from interchange ramps will lessen the potential of queuing on I-84.	–
	Provide Connectivity to the Local Road Network	– The new Barnhart Road to Airport Road Connector provides connectivity to the existing roadway network north of the interchange	–
	Provide Mobility with Adequate Capacity	– The new roadway would provide acceptable long-term traffic operations under either industrial or agricultural build out scenarios. – The continuous path of the new roadway to the interchange allows non-stop through movements to the interstate from the airport.	–
	Accommodation of Through Trucks	– The new roadway connector would smoothly permit trucks bound for the airport area arriving from the west.	–
	Maintain a Local Circulation Network	– Local and collector streets can be provided to serve all study area land parcels.	– Vehicles from the north would be required to travel up and down a large grade twice before reaching the interchange.
North 3	Enhance Multimodal Options	– The new Barnhart Road to Airport Road Connector will have shoulders adequate for pedestrian and bicycle travel.	– .
	Provide Safe Traveling Speeds	– The lesser grades will allow for easier decision making and quicker response, especially for large freight moving vehicles. – Improved spacing from interchange ramps will lessen the potential of queuing on I-84.	– This alternative would require westbound movement along the Connector Roadway to stop in the study area, prior to reaching the interchange. The eastbound movement would require vehicles slowing below 15mph to make a comfortable right turn.
	Provide Connectivity to the Local Road Network	– The new Barnhart Road to Airport Road Connector provides connectivity to the existing roadway network north of the interchange	–
	Provide Mobility with Adequate Capacity	– The new roadway would provide acceptable long-term traffic operations under either industrial or agricultural build out scenarios.	–
	Accommodation of Through Trucks	– The new roadway connector would smoothly permit trucks bound for the airport area arriving from the west.	– The additional stop and the smaller radii curves near the interchange will force a slower truck movement to the highway. (30mph Design Speed)
	Maintain a Local Circulation Network	– Local and collector streets can be provided to serve all study area land parcels.	– The right-in/right-out access will cause confusion and may be disregarded by drivers.
North 4	Enhance Multimodal Options	– The new Barnhart Road to Airport Road Connector will have shoulders adequate for pedestrian and bicycle travel.	–

		Performance Evaluation Notes	
Concept	**Specific Criteria**	**Positives**	**Negatives**
	Provide Safe Traveling Speeds	– The lesser grades will allow for easier decision making and quicker response, especially for large freight moving vehicles. – Improved spacing from interchange ramps will lessen the potential of queuing on I-84.	–
	Provide Connectivity to the Local Road Network	– The new Barnhart Road to Airport Road Connector provides connectivity to the existing roadway network north of the interchange	–
	Provide Mobility with Adequate Capacity	– The new roadway would provide acceptable long-term traffic operations under either industrial or agricultural build out scenarios. – The continuous path of the new roadway to the interchange allows non-stop through movements to the interstate from the airport.	– Space for Truck 'stacking' would not be available in case of inclimate weather.
	Accommodation of Through Trucks	– The new roadway connector would smoothly permit trucks bound for the airport area arriving from the west.	–
	Maintain a Local Circulation Network	– Local and collector streets can be provided to serve all study area land parcels.	–
North 5	Enhance Multimodal Options	– The new Barnhart Road to Airport Road Connector will have shoulders adequate for pedestrian and bicycle travel.	–
	Provide Safe Traveling Speeds	– The lesser grades will allow for easier decision making and quicker response, especially for large freight moving vehicles. – Improved spacing from interchange ramps will lessen the potential of queuing on I-84.	– This alternative would require westbound movement along the Connector Roadway to stop in the study area, prior to reaching the interchange. The eastbound movement would require vehicles slowing below 15mph to make a comfortable right turn.
	Provide Connectivity to the Local Road Network	– The new Barnhart Road to Airport Road Connector provides connectivity to the existing roadway network north of the interchange	–
	Provide Mobility with Adequate Capacity	– The new roadway would provide acceptable long-term traffic operations under either industrial or agricultural build out scenarios.	– Space for Truck 'stacking' would not be available in case of inclimate weather.
	Accommodation of Through Trucks	– The new roadway connector would smoothly permit trucks bound for the airport area arriving from the west.	– The additional stop near the interchange will force a slower truck movement to the highway.
	Maintain a Local Circulation Network	– Local and collector streets can be provided to serve all study area land parcels.	– Use of Connector Roadway required to travel between parcels.
North 8	Enhance Multimodal Options	– The new Barnhart Road to Airport Road Connector will have shoulders adequate for pedestrian and bicycle travel.	–
	Provide Safe Traveling Speeds	– The lesser grades will allow for easier decision making and quicker response, especially for large freight moving vehicles. – Improved spacing from interchange ramps will lessen the potential of queuing on I-84.	–
	Provide Connectivity to the Local Road Network	– The new Barnhart Road to Airport Road Connector provides connectivity to the existing roadway network north of the interchange	–
	Provide Mobility with Adequate Capacity	– The new roadway would provide acceptable long-term traffic operations under either industrial or agricultural build out scenarios. – The continuous path of the new roadway to the interchange allows non-stop through movements to the interstate from the airport.	–
	Accommodation of Through Trucks	– The new roadway connector would smoothly permit trucks bound for the airport area arriving from the west.	–
	Maintain a Local Circulation Network	– Local and collector streets can be provided to serve all study area land parcels.	–
South 1	Enhance Multimodal Options	–	–
	Provide Safe Traveling Speeds	– Improved spacing from interchange ramps will lessen the potential of queuing on I-84.	–
	Provide Connectivity to the Local Road Network	–	–
	Provide Mobility with Adequate Capacity	– The roadway system south of the interchange would provide acceptable long-term traffic operations under either industrial or agricultural build out scenarios.	–

		Performance Evaluation Notes	
Concept	**Specific Criteria**	**Positives**	**Negatives**
	Accommodation of Through Trucks	–	–
	Maintain a Local Circulation Network	– Local and collector streets can be provided to serve all study area land parcels.	– Though access is maintained, the local business will be accessed further from the interchange and may require signing to indicate where these locations are.
South 2	Enhance Multimodal Options	–	–
	Provide Safe Traveling Speeds	– Improved spacing from interchange ramps will lessen the potential of queuing on I-84.	–
	Provide Connectivity to the Local Road Network	–	–
	Provide Mobility with Adequate Capacity	– The roadway system south of the interchange would provide acceptable long-term traffic operations under either industrial or agricultural build out scenarios.	–
	Accommodation of Through Trucks	–	– A roundabout will not meet the needs of the vehicle population using the Barnhart Road/Fanshier Road intersection.
	Maintain a Local Circulation Network	– Local and collector streets can be provided to serve all study area land parcels.	–

Table 5-5
Land Use Evaluation Matrix

Evaluation Criterion: Land Use

Concept Scoring										
Specific Criteria	**North 1A**	**North 1B**	**North 2A**	**North 2B**	**North 3**	**North 4**	**North 5**	North 8	**South 1**	**South 2**
Minimize Right of Way Impacts	0	0	0	-1	0	-1	0	0	1	1
Provide Consistency with Statewide Planning Rules and/or Adopted Land Use Plans	1	1	0	0	-1	0	0	-1	1	1
Minimize Existing and Future Utility Impacts	-1	-1	0	0	0	-1	-1	0	0	0
Supports Economic Development	-1	-1	1	-1	1	0	-1	0	0	0
Minimize Impacts to EFU Resources	1	1	0	0	-1	0	0	0	0	0
System Perspective (Average Score)	**0.00**	**0.00**	**0.20**	**-0.40**	**-0.20**	**-0.40**	**-0.40**	**-0.20**	**0.40**	**0.40**

		Performance Evaluation Notes	
Concept	**Specific Criteria**	**Positives**	**Negatives**
North 1A	Provide Consistency with Statewide Planning Rules and/or Adopted Land Use Plans	– Generally consistent with Statewide Planning Rules by keeping the alignment inside the rural light industrial land.	–
	Minimize Right of Way Impacts	– This Concept uses a similar alignment to the existing Clark Lane and will require minimal expansion in the study area.	– The main building of the existing business would either need to be removed or considerably altered in use
		–	–
	Minimize Existing and Future Utility Impacts	–	– Utilities that run along the eastern edge of the industrial property would need to be relocated during construction.
	Supports Economic Development	– This alignment will not have a direct affect on the economic situation in the study area.	– This alignment will have a negative effect in the near future for existing business.
	Minimize Impact to EFU Resources	– No EFU is impacted in the study area.	–
North 1B	Provide Consistency with Statewide Planning Rules and/or Adopted Land Use Plans	– Generally consistent with Statewide Planning Rules by keeping the alignment inside the rural light industrial land.	–
	Minimize Right of Way Impacts	– This Concept uses a similar alignment to the existing Clark Lane and will require minimal expansion in the study area.	– The main building of the existing business would either need to be removed or considerably altered in use
		–	–
	Minimize Existing and Future Utility Impacts	–	– Utilities that run along the eastern edge of the industrial property would need to be relocated during construction.
	Supports Economic Development	– .	– This alignment will have a negative effect in the near future for existing business.
	Minimize Impact to EFU Resources	– No EFU is impacted in the study area.	–

Concept	Specific Criteria	Performance Evaluation Notes: Positives	Performance Evaluation Notes: Negatives
North 2A	Provide Consistency with Statewide Planning Rules and/or Adopted Land Use Plans	–	– Not fully consistent with Statewide Planning Rules due to the alignment extending into the EFU area.
	Minimize Right of Way Impacts	– Avoids developed light industrial property	–
		–	–
	Minimize Existing and Future Utility Impacts	– No utility impacts were noted in for this Concept.	–
	Supports Economic Development	– Potentially Increase the developable area of the existing rural light industrial property.	–
	Minimize Impact to EFU Resources	–	– A portion of EFU is impacted on the eastern and northern portions of the study area
North 2B	Provide Consistency with Statewide Planning Rules and/or Adopted Land Use Plans	–	– Not fully consistent with Statewide Planning Rules due to the alignment extending into the EFU area.
	Minimize Right of Way Impacts	–	– The minor access road would require the removal of two existing buildings.
		–	–
	Minimize Existing and Future Utility Impacts	– No utility impacts were noted in for this Concept.	–
	Supports Economic Development	– .	– The removal of two or more buildings will have an immediate negative effect on the existing business in the study area
	Minimize Impact to EFU Resources	–	– A portion of EFU is impacted on the eastern and northern portions of the study area
North 3	Provide Consistency with Statewide Planning Rules and/or Adopted Land Use Plans	–	– Not fully consistent with Statewide Planning Rules due to the alignment extending into the EFU area.
	Minimize Right of Way Impacts	– Avoids all light industrial zoned property.	–
		–	–
	Minimize Existing and Future Utility Impacts	– No utility impacts were noted in for this Concept.	–
	Supports Economic Development	– Potentially could increase the developable area of the existing rural light industrial property.	–
	Minimize Impact to EFU Resources	–	– EFU is impacted throughout the northeast quadrant of the study area.
North 4	Provide Consistency with Statewide Planning Rules and/or Adopted Land Use Plans	–	– Not fully consistent with Statewide Planning Rules due to the alignment extending into the EFU area.
	Minimize Right of Way Impacts	–	– The alignment of the Connector Roadway would require the use of the northeast corner of the industrial property.
		–	–
	Minimize Existing and Future Utility Impacts	–	– A considerable number of utilities will need to be relocated in durning the construction or the Conncetor Roadway
	Supports Economic Development	–	– This alignment would require a change in use for the building and space in the northeast corner of the existing building.
	Minimize Impact to EFU Resources	– A conservative amount of EFU is impacted on the eastern and northern portions of the study area	–

Concept		Performance Evaluation Notes	
	Specific Criteria	**Positives**	**Negatives**
North 5	Provide Consistency with Statewide Planning Rules and/or Adopted Land Use Plans	–	– Not fully consistent with Statewide Planning Rules due to the alignment extending into the EFU area.
	Minimize Right of Way Impacts	– This alignment uses the minimum right of way required to achieve the 1320' ODOT spacing standard.	–
		–	–
	Minimize Existing and Future Utility Impacts	–	– Utilities that run along the eastern edge of the industrial property would need to be relocated during construction.
	Supports Economic Development	– This alignment will not have a direct affect on the economic situation in the study area.	–
	Minimize Impact to EFU Resources	– A conservative amount of EFU is impacted on the northern portion of the study area	–
North 8	Provide Consistency with Statewide Planning Rules and/or Adopted Land Use Plans	–	– Not fully consistent with Statewide Planning Rules due to the alignment extending into the EFU area.
	Minimize Right of Way Impacts	– Avoids developed light industrial property	–
		–	–
	Minimize Existing and Future Utility Impacts	– No utility impacts were noted in for this Concept.	–
	Supports Economic Development	– Provides a farmable space south of the Connector Roadway	–
	Minimize Impact to EFU Resources	– The EFU remnant would still be large enough to potentially be farmed.	– A 40 acre potortion of EFU would be disconnected from the existing EFU parcel in the northeast quadrant.
South 1	Provide Consistency with Statewide Planning	– Generally consistent with Statewide Planning Rules by keeping the alignment inside the rural light industrial land.	–
	Minimize Right of Way Impacts	– The only Right of Way take is in the accesses along Barnhart for safety and functionality.	–
	Provide Consistency with Adopted Land Use Plans	–	–
	Minimize Existing and Future Utility Impacts	– No utility impacts were noted in for this Concept.	–
	Supports Economic Development	– This alignment will not have a direct affect on the economic situation in the study area.	–
	Minimize Impact to EFU Resources	– No EFU is impacted in the study area.	–
South 2	Provide Consistency with Statewide Planning	– Generally consistent with Statewide Planning Rules by keeping the alignment inside the rural light industrial land.	–
	Minimize Right of Way Impacts	– Limiting the Barnhart Road access to right-in/right-out will be the only right of way action with this Concept.	–
	Provide Consistency with Adopted Land Use Plans	–	–
	Minimize Existing and Future Utility Impacts	– No utility impacts were noted in for this Concept.	–
	Supports Economic Development	– This alignment will not have a direct affect on the economic situation in the study area.	–
	Minimize Impact to EFU Resources	– No EFU is impacted in the study area.	–

Table 5-6
Cost Evaluation Matrix

Evaluation Criterion: Cost / Implementation

Concept Scoring										
Specific Criteria	**North 1A**	**North 1B**	**North 2A**	**North 2B**	**North 3**	**North 4**	**North 5**	**North 8**	**South 1**	**South 2**
Estimated Cost	1	1	-1	-2	-1	-1	1	-1	1	1
Construction Feasibility	0	0	0	0	0	0	0	0	0	0
System Perspective (Average Score)	**0.50**	**0.50**	**-.50**	**-1.0**	**-0.50**	**-0.50**	**0.50**	**-0.50**	**0.50**	**0.50**

		Performance Evaluation Notes	
Concept	**Specific Criteria**	**Positives**	**Negatives**
North 1A	Estimated Cost	– The overall cost for this Concept is $2,505,000	–
	Construction Feasibility	– This Concept is feasible to construct.	–
North 1B	Estimated Cost	– The overall cost for this Concept is $2,070,000	–
	Construction Feasibility	– This Concept is feasible to construct.	–
North 2A	Estimated Cost	– The overall cost for this Concept is $3,200,000	–
	Construction Feasibility	– This Concept is feasible to construct.	–
North 2B	Estimated Cost	– The overall cost for this Concept is $5,515,000	– Over twice the cost of the least expensive Concept
	Construction Feasibility	– This Concept is feasible to construct.	–
North 3	Estimated Cost	– The overall cost for this Concept is $3,750,000	–
	Construction Feasibility	– This Concept is feasible to construct.	–
North 4	Estimated Cost	– The overall cost for this Concept is $3,625,000	–
	Construction Feasibility	– This Concept is feasible to construct.	–
North 5	Estimated Cost	– The overall cost for this Concept is $2,362,000	–
	Construction Feasibility	– This Concept is feasible to construct.	–
North 8	Estimated Cost	– The overall cost for this Concept is $3,520,000	–
	Construction Feasibility	– This Concept is feasible to construct.	–
South 1	Estimated Cost	– The overall cost for this Concept is less than $50,000	–
	Construction Feasibility	– This Concept is feasible to construct.	–
South 2	Estimated Cost	– The overall cost for this Concept is less than $50,000	–
	Construction Feasibility	– This Concept is feasible to construct.	–

Table 5-7
Environmental/Social Impacts Evaluation Matrix

Evaluation Criterion: Environmental / Social Impacts

Concept Scoring										
Specific Criteria	**North 1A**	**North 1B**	**North 2A**	**North 2B**	**North 3**	**North 4**	**North 5**	**North 8**	**South 1**	**South 2**
Minimize Environmental Impacts	0	0	-1	-1	-1	-1	-1	-1	0	0
Minimize Social/Economic Impacts	-1	-1	0	-1	0	0	-1	0	0	0
Provide For Stormwater Drainage	1	1	1	1	1	1	1	1	0	0
Hazardous Waste Impacts	0	0	1	1	1	-1	0	1	0	0
System Perspective (Average Score)	**0**	**0**	**0.25**	**0**	**0.25**	**-0.25**	**-0.25**	**0.25**	**0**	**0**

		Performance Evaluation Notes	
Concept	**Specific Criteria**	**Positives**	**Negatives**
North 1A	Minimize Environmental Impacts	– There will be minimal disruption to the environment through this alternative as previously used roadway will be utilized.	–
	Minimize Social/Economic Impacts	–	– The new connector roadway will impact the business already situated on Clark Lane.
	Provide For Stormwater Drainage	– New construction will include drainage	–
	Hazardous Waste Impacts	–	–
North 1B	Minimize Environmental Impacts	– There will be minimal disruption to the environment through this alternative as previously used roadway will be utilized.	–
	Minimize Social/Economic Impacts	–	– The new connector roadway will impact the business already situated on Clark Lane.
	Provide For Stormwater Drainage	– New construction will include drainage	–
	Hazardous Waste Impacts	–	–
North 2A	Minimize Environmental Impacts	–	– There will be some disruption to farming practices in the IAMP study area during construction and due to isolation caused by the roadway.
	Minimize Social/Economic Impacts	– The businesses already located on Clark Lane will be minimally impacted.	– The new connector roadway will impact the farmland in the IAMP study area.
	Provide For Stormwater Drainage	– New construction will include drainage	–
	Hazardous Waste Impacts	–	–
North 2B	Minimize Environmental Impacts	–	There will be some disruption to farming practices in the IAMP study area during construction and due to isolation caused by the roadway.
	Minimize Social/Economic Impacts	–	– The new connector roadway will impact both the farmland and the business in the IAMP study area.
	Provide For Stormwater Drainage	– New construction will include drainage	–
	Hazardous Waste Impacts	–	–

		Performance Evaluation Notes	
Concept	**Specific Criteria**	**Positives**	**Negatives**
North 3	Minimize Environmental Impacts	–	– There will be some disruption to farming practices in the IAMP study area during construction and due to isolation caused by the roadway.
	Minimize Social/Economic Impacts	–	– The new connector roadway will impact a significant amount of farmland in the IAMP study area.
	Provide For Stormwater Drainage	– New construction will include drainage	–
	Hazardous Waste Impacts	–	–
North 4	Minimize Environmental Impacts	–	– There will be some disruption to farming practices in the IAMP study area during construction and due to isolation caused by the roadway.
	Minimize Social/Economic Impacts	–	– The new connector roadway will slightly impact both the farmland and the business in the IAMP study area.
	Provide For Stormwater Drainage	– New construction will include drainage	–
	Hazardous Waste Impacts	–	– Hazardous waste mitigation will be required on the Woodpecker property.
North 5	Minimize Environmental Impacts	–	There will be some disruption to farming practices in the IAMP study area during construction and due to isolation caused by the roadway.
	Minimize Social/Economic Impacts	–	– The new connector roadway will impact both the farmland and the business in the IAMP study area.
	Provide For Stormwater Drainage	– New construction will include drainage	–
	Hazardous Waste Impacts	–	–
North 8	Minimize Environmental Impacts	–	– There will be some disruption to farming practices in the IAMP study area during construction and due to isolation caused by the roadway.
	Minimize Social/Economic Impacts	–	– The new connector roadway will impact a significant amount of farmland and the business in the IAMP study area.
	Provide For Stormwater Drainage	– New construction will include drainage	–
		–	–
South 1	Minimize Environmental Impacts	– Minimal intrusion to the environment will occur on the south side of I-84	–
	Minimize Social/Economic Impacts	–	– Access to the business on the southeast and southwest quadrants will be moved from Barnhart Road to Fanshier Road which may prove less desirable for the business owners.
	Provide For Stormwater Drainage	– Minimal intrusion to the environment will occur on the south side of I-84	–
	Hazardous Waste Impacts	–	–
South 2	Minimize Environmental Impacts	– Minimal intrusion to the environment will occur on the south side of I-84	–
	Minimize Social/Economic Impacts	–	– The current business access points on Barnhart Road south of I-84 for will be made Right-in/right-out only. Full access will be granted off of Fanshier Road.
	Provide For Stormwater Drainage	– Minimal intrusion to the environment will occur on the south side of I-84	–
	Hazardous Waste Impacts	–	–

Table 5-8
Accessibility Evaluation Matrix

Evaluation Criterion: Accessibility

Concept Scoring										
Specific Criteria	**North 1A**	**North 1B**	**North 2A**	**North 2B**	**North 3**	**North 4**	**North 5**	**North 8**	**South 1**	**South 2**
Balance Local Property Access with Function of the Connector Roadway	-2	-2	1	1	1	1	1	1	1	-1
Provide Future Access to Undeveloped Properties	1	1	1	1	1	1	1	1	1	1
Meets Interchange Access Spacing Standards	-2	-2	0	1	1	0	1	0	-2	-3
System Perspective (Average Score)	**-1.0**	**-1.0**	**0.67**	**1.0**	**1.0**	**0.67**	**1.0**	**0.67**	**0.0**	**-1.0**

		Performance Evaluation Notes	
Concept	**Specific Criteria**	**Positives**	**Negatives**
North 1A	Balance Local Property Access with Function of the Connector Roadway	–	– The Connector Roadway is intended to facilitate in freight movement from the interchange to the airport. The radii used on Clark Lane compromises that capacity.
	Provide Future Access to Undeveloped Properties	– All of the concepts provide access to undeveloped properties to the extent warranted.	–
	Meets Interchange Access Spacing Standards	–	– The original Clark Lane access point is less than half the distance required by ODOT for new construction. Using this point would compromise ODOT's standards by over 50%.
North 1B	Balance Local Property Access with Function of the Connector Roadway	–	– The Connector Roadway is intended to facilitate in freight movement from the interchange to the airport. The radii used on Clark Lane compromises that capacity. The movement is further degraded by the extra stop that will be required at the intersection between the new Connector Roadway and Barnhart Road.
	Provide Future Access to Undeveloped Properties	– All of the concepts provide access to undeveloped properties to the extent warranted.	–
	Meets Interchange Access Spacing Standards	–	– The original Clark Lane access point is less than half the distance required by ODOT for new construction. Using this point would compromise ODOT's standards by over 50%.
North 2A	Balance Local Property Access with Function of the Connector Roadway	– The larger horizontal curves allow for more efficient freight movement.	– The access provided to the existing facilities is only minimally degraded.
	Provide Future Access to Undeveloped Properties	– All of the concepts provide access to undeveloped properties to the extent warranted.	–
	Meets Interchange Access Spacing Standards	–	– The proposed first access point for this alternative is within 20% of ODOT's access standard.
North 2B	Balance Local Property Access with Function of the Connector Roadway	– The larger horizontal curves allow for more efficient freight movement.	– The access provided to the existing facilities is degraded.
	Provide Future Access to Undeveloped Properties	–	–
	Meets Interchange Access Spacing Standards	– The first access in shown in this concept is more than 20% further than required by ODOT's access standard.	–

		Performance Evaluation Notes	
Concept	**Specific Criteria**	**Positives**	**Negatives**
North 3	Balance Local Property Access with Function of the Connector Roadway	– The larger horizontal curves allow for more efficient freight movement.	– The efficient travel along the new Connector Roadway is compromised as a stop occurs where the Connector Roadway intersects with Barnhart Road. – The access provided to the existing facilities is only minimally degraded.
	Provide Future Access to Undeveloped Properties	– All of the concepts provide access to undeveloped properties to the extent warranted.	–
	Meets Interchange Access Spacing Standards	– The first full access meets ODOT's access standard.	– The right-in/right-out is located closer to the interchange than prescribed by ODOT's access standard.
North 4	Balance Local Property Access with Function of the Connector Roadway	– The larger horizontal curves allow for more efficient freight movement.	– The access provided to the existing facilities is only minimally degraded.
	Provide Future Access to Undeveloped Properties	– All of the concepts provide access to undeveloped properties to the extent warranted.	–
	Meets Interchange Access Spacing Standards	–	– The proposed first access point for this alternative is within 20% of ODOT's access standard.
North 5	Balance Local Property Access with Function of the Connector Roadway	–	– The small horizontal curves degrade the new Connector Roadway's ability to facilitate freight movement. – The access to the industrial development and the farm use in the northwest quadrant are marginal degraded by the increased distance from the interchange.
	Provide Future Access to Undeveloped Properties	– All of the concepts provide access to undeveloped properties to the extent warranted.	–
	Meets Interchange Access Spacing Standards	– The first full access meets ODOT's access standard.	– The right-in/right-out is located closer to the interchange than prescribed by ODOT's access standard.
North 8	Balance Local Property Access with Function of the Connector Roadway	– The larger horizontal curves allow for more efficient freight movement.	– The access provided to the existing facilities is only minimally degraded.
	Provide Future Access to Undeveloped Properties	– All of the concepts provide access to undeveloped properties to the extent warranted.	–
	Meets Interchange Access Spacing Standards	–	– The proposed first access point for this alternative is within 20% of ODOT's access standard.
South 1	Balance Local Property Access with Function of the Connector Roadway	– Barnhart Road would have a better access spacing under this alternative than currently exists.	–
	Provide Future Access to Undeveloped Properties	– All of the concepts provide access to undeveloped properties to the extent warranted.	–
	Meets Interchange Access Spacing Standards	–	– The first full intersection falls more than 50% short of the ODOT's access standard.
South 2	Balance Local Property Access with Function of the Connector Roadway	– Barnhart Road would have a better access spacing under this alternative than currently exists.	–
	Provide Future Access to Undeveloped Properties	– All of the concepts provide access to undeveloped properties to the extent warranted.	–
	Meets Interchange Access Spacing Standards	–	– The first full intersection falls more than 50% short of the ODOT's access standard. – The Right-in/right-out access is less than 50% of the distance from the interchange that is required by ODOT's access standard.

EVALUATION CRITERIA SUMMARY

Based on the detailed assessment of each Concept, a summary overview of the key findings are included in the following sections.

Transportation Operations

From a transportation operations perspective, the detailed assessment of each Concept revealed the following:

- All of the Concepts equally enhance the multimodal transportation options within the study area.
- With the exception of Concepts #N1A, #N1B, and #N5, all of the Concepts improve upon the speed at which trucks and freight movement can travel though the study area. Concepts #N1A, #N1B, and #N8 generally maintain the current Barnhart Road alignment and provide minimal improvement.
- All of the Concepts either reduce connectivity or are neutral in their effect. Concepts #N2B and #S1 are the most limiting. Concepts #N1B and #N3 have a neutral effect on connectivity inside the study area. The remaining concepts have a moderate effect on reducing connectivity.
- The traffic operations analysis conducted for Technical Memorandum #4 concludes that all the given concepts will be equally effective in providing adequate traffic operations.
- All of the Concepts accommodate through truck movements; however, it was noted that Concepts #N1B, #N3, and #N5 require vehicles to make an additional stop inside the study area.

Land Use

From a land use perspective, the detailed assessment of each Concept revealed the following:

- Concept #N3 will have considerable more impacts to the farm uses relative to the other concepts.
- All of the Concepts will require a compromise in protection of industrial and farm land.
- Utility impacts are minimal and similar in each Concept.
- Existing businesses could be negatively impacted economically by access in Concept #N1A and #N1B and by building impacts in #N2B and #N4. Concept #N2A and #N3 have the potential to have a positive economic effect if the amount of light industrial land were to be increased. Concept #N5 and #N8 are not foreseen to have a significant economic impact.

Cost

From a cost and constructability perspective, the detailed assessment of each Concept revealed the following:

- Concept #N2B has the highest estimated construction cost at $5.5 million while Concept #N1B has the lowest estimated construction cost at $2.1 million.
- All of the Concepts possess certain construction staging challenges; however, there are no design features that completely inhibit the ability to maintain existing traffic flows.

Environmental / Social

From an environmental / social perspective, the detailed assessment of each Concept revealed the following:

- All of the Concepts will have some level of negative environmental impacts.
- All of the Concepts will require a compromise with Land Use Planning Regulations
- Concepts #N1A and #N1B minimize impact to EFU land. Concept #N3 would consume the largest quantity of this resource.

Accessibility

From an accessibility perspective, the detailed assessment of each Concept revealed the following:

- Concepts #N1A, #N1B, #N5 and #S2 will degrade the balance between the function of the Connector Road/Barnhart Road and local access. This is either because the roadways alignment does not provide a high enough design speed to serve its purpose, or accesses are space to closely and compromise the main roadways operational and safety characteristics.
- The access spacing standard of 1,320 feet is exceeded only under Concept #N2B. For Concepts #N3 and #N5, the access spacing meets the standard. For the remaining concepts, the access spacing was below the prescribe access spacing standard. Concepts #N2A, #N4, and #N8, measuring approximately 1,100 feet, are just below the access spacing standards, while Concept #N1A and #N1B are substantially below the standard at 500 feet.
- All of the Concepts provide equal access opportunities to undeveloped properties within the study area.

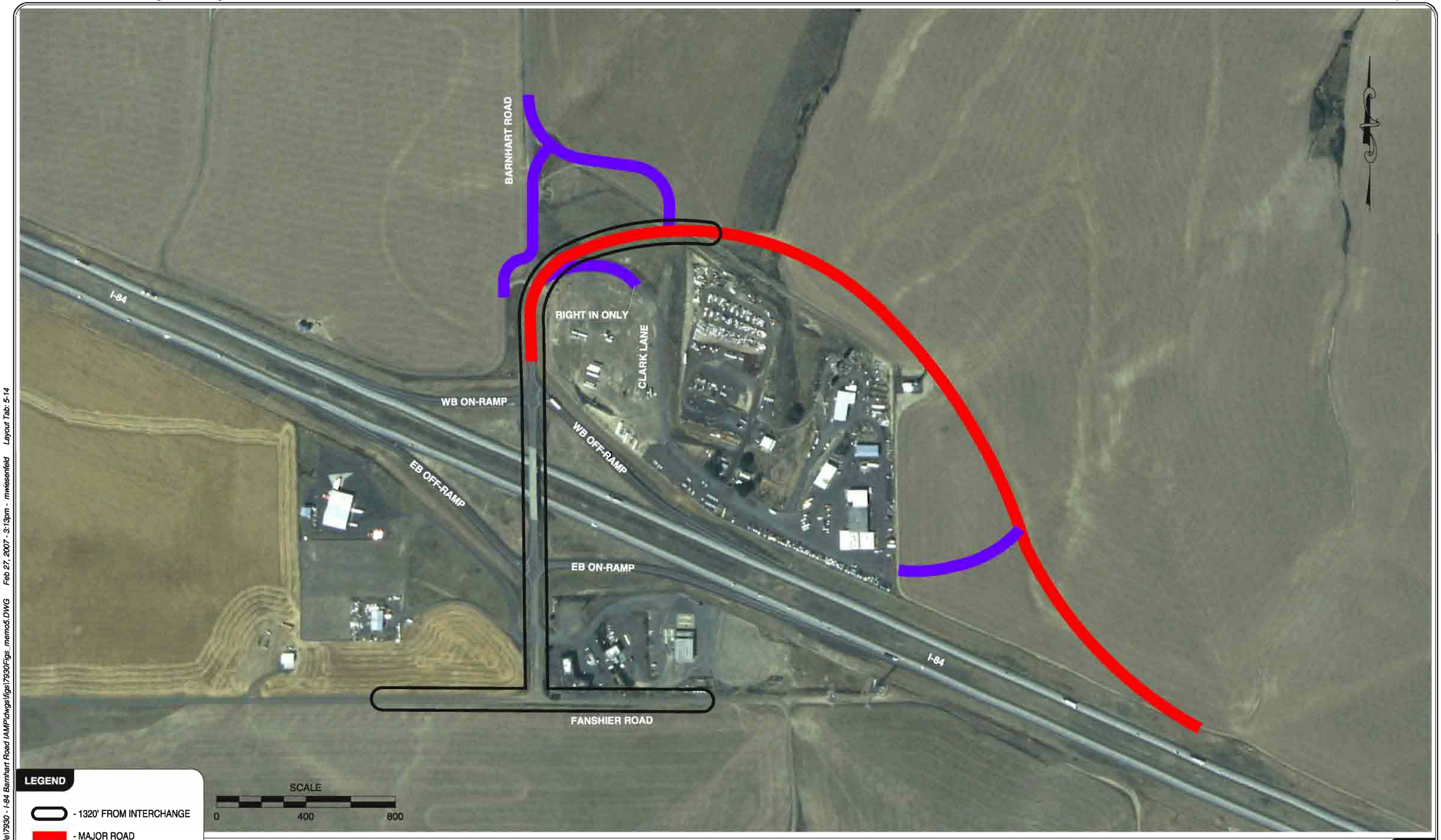
Table 5-9 summarizes the primary evaluation criteria scoring for each concept. This process was followed to provide an initial comparison between each Concept for the PPMT to consider in their selection process.

Table 5-9
Evaluation Criteria Scoring Summary

Evaluation Criteria/ Concepts	Transportation Operations	Land Use	Cost	Environmental /Social Impacts	Accessibility	Total Score
North 1A	0.00	0.00	0.50	0.00	-1.00	-0.5
North 1B	-0.17	0.00	0.50	0.00	-1.00	-0.67
North 2A	0.67	0.20	-0.50	0.25	0.67	1.29
North 2B	0.50	-0.40	-1.00	0.00	1.00	0.10
North 3	-0.17	-0.20	-0.50	+0.25	1.00	0.38
North 4	0.67	-0.40	-0.50	-0.25	0.67	0.19
North 5	-0.50	-0.40	0.50	-0.25	1.00	0.35
North 8	0.67	-0.20	-0.50	+0.25	0.67	0.89
South 1	-0.17	0.40	0.50	0.00	0.00	0.73
South 2	0.17	0.40	0.50	0.00	-1.00	0.07

Based on the evaluation criteria scoring, Concept #N2A and Concept #S1 received the highest total scores. Given the similarities between Concept #N2A and #N4, a more detailed comparison of these two alternatives was completed.

Upon on further review from ODOT, the City of Pendleton, and Umatilla County, the proposed access to the rural light industrial properties in the northeast quadrant of the interchange was modified for both potential preferred northern Concepts. As shown in Figure 5-N2A2 and Figure 5-N4A, a northbound right-in only access was added to Barnhart Road approximately 500 feet north of the interchange to connect to the existing Clark Lane and access to the to the Woodpecker property 1,100 feet from the interchange was removed and replaced with a full access via a new two-way connector road at the east end of the Woodpecker property across the EFU zoned land.



I-84/BARNHART ROAD INTERCHANGE AREA
NORTH ROADWAY ALIGNMENT & ACCESS CONCEPT #N2A
UMATILLA COUNTY, OREGON

FIGURE
5-N2A2

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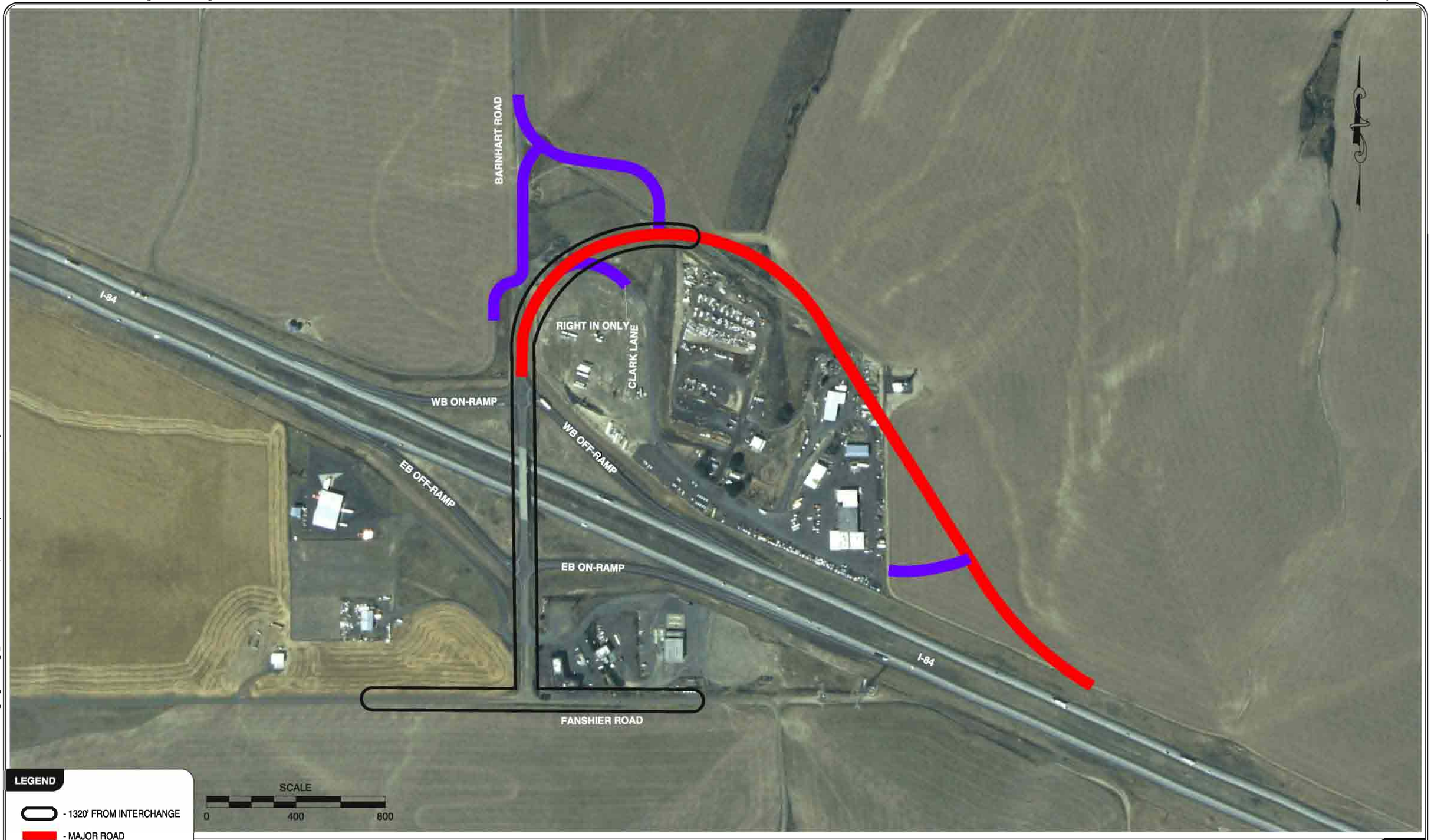

I-84/BARNHART ROAD INTERCHANGE AREA
NORTH ROADWAY ALIGNMENT & ACCESS CONCEPT #N4
UMATILLA COUNTY, OREGON

FIGURE 5-N4A

Kittelson & Associates, Inc.
TRANSPORTATION ENGINEERING / PLANNING

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Concept #N2A2 and #N4A Comparison

Similar to Concepts #N2A and #N4, Concepts #N2A2 and #N4A differ in their alignment in the northeast quadrant of the interchange. Concept #N2A2 continues outside of the rural industrial zoned land (and proceeds 'outside' the existing substation) where Concept #N4A clips the industrial property's northeast corner 'inside' of the substation. This minor change of alignment has significant tradeoffs between the two concepts in costs and impacts to EFU land. To provide a better understanding of impacts of each concept, the consultant team analyzed the specific right-of-way and land use impact, conceptual cost, roadway and operational, and access spacing characteristics of each concept. Each element of these four fundamental concept characteristics is summarized in Table 5-10.

Table 5-10
Concept #N2A and #N4 Roadway Alignment and Access Concept Characteristics

	Right of Way & Land Use Impact & Characteristics				Conceptual Cost Characteristics	Roadway & Operational Characteristics				Access Spacing Characteristics	
Concept	TOTAL REQ'D R/W (Acres)	EFU R/W (Acres)	ML R/W (Acres)	NUMBER OF BUILDINGS IMPACTED	TOTAL PROJECT COST ($)	LENGTH MAIN RD (FT)	LENGTH NEW ACCESS RD (FT)	MINIMUM DESIGN SPEED (MPH)	MAXIMUM GRADE (%)	DISTANCE TO FIRST RIGHT-IN RIGHT-OUT (FT.)	DISTANCE TO FIRST FULL ACCESS (FT.)
N2A2	17.0	15.4	1.6	-	$3,200,000	5,200	1,000 Gravel, 450 Paved	40	6%	500	1,100
N4A	15.3	12.4	2.9	-	$3,530,000	5,260	1,000 Gravel, 250 Paved	40	6%	500	1,100

As shown in Table 5-10, Concept #N2A2 requires more overall right-of-way as well as more EFU right-of-way but is anticipated to have lower total project costs. A more detailed comparison of costs and land impacts, including information from the Hazardous Materials Corridor Study (see Appendix B) was completed for Concept #N2A2 and #N4A and is shown in Table 5-11.

According to the Hazardous Materials Corridor Study, Concept #N4A would require some environmental clean up in the northeast corner of the Woody Clark property. The extent of the potential environmental mitigation is a significant unknown with Concept #N4A. However, as shown in Table 5-11, Concept #N4A has three acres less EFU land in the proposed right-of-way and an EFU remnant less than half the size as compared to Concept #N2A2. Both Concepts have the potential threat of litigation; Concept #N2A2 by the LCDC or other interests and Concept #N4A by the local property owners.

Table 5-11
Concept #N2A and #N4 Comparison

	Concept #N2A – North of Industrial Site	Concept #N4 – Through NE corner of industrial site
Environmental Mitigation	No	Yes
Additional Utility Relocation		+/- $40,000
Additional Right-of-Way Acquisition		Yes
Additional EFU in Right of Way	3 acres	
EFU in SE remnant	+/- 9.2 acres	+/- 4.0 acres
ML in SE Remnant	+/- 1.7 acres	+/- 1.4 acres
Threat of Land Use Litigation	LCDC or others interested in strict interpretation of exception requirements	Owner of industrial property to be taken

PPMT Recommendation

The PPMT deliberated and decided that based on both land use and engineering concerns that Concepts #N2A2 and #N4A, north of the interchange, and Concept #S1, south of the interchange, maximized the benefit of the new Connector Roadway while minimizing the impacts to both the EFU resource and the existing business at the I-84/Barnhart Road Interchange.

NEXT STEPS

As previously stated, the purpose of the memorandum is to provide the PPMT members with a qualitative and quantitative assessment of the eight northerly and two southerly roadway alignment and access concepts. Based on input from the Public Workshop on January 17th and the information contained herein, the PPMT recommends either Concept #N2A2 or #N4A for a preferred northerly alignment and access plan and Concept #S1 for a preferred southerly roadway alignment and access plan for the IAMP. These preferred Concepts will be utilized to complete the Goal Exception and Environmental process associated with the Barnhart Road to Airport Road Connector Project. The Draft IAMP will contain each of these preferred concepts; however, ultimately one northerly alignment will be selected by the Umatilla Planning Commission and included in the final IAMP.

Appendix A

Evaluation Criteria
Descriptions
and
Scoring Definitions

Appendix A
Evaluation Criteria Descriptions & Scoring Definitions

EVALUATION CRITERIA

Transportation Operations

Multimodal: Enhance multimodal transportation options through the provision of an interconnected system of roadway, pedestrian, and bicycle facilities. [Meets OAR 660-012-0035(3)(d) and (3)(e)]

Safety: Provide an efficient system that safely accommodates all modes of transportation in all weather conditions by meeting design standards. [Meets OHP Goal 2 (System Management), Policy 2F (Traffic Safety)]

Connectivity: Develop or redevelop an interconnected roadway network for areas that are likely to be redeveloped in order to provide alternate travel routes, reduce trip lengths, and encourage walking and bicycling. [Meets OAR 660-012-0035(3)(e)]

Mobility: Provide a transportation system that has sufficient capacity to serve all forms of vehicular traffic, including trucks. [Meets OHP Goal 1 (System Definition), Policy 1F (Highway Mobility Standards) and Highway Design Manual]

Truck Accommodation: Maintain the function and capacity of the Connector Roadway to efficiently serve truck and freight movements to and from I-84. [Meets OHP Goal 4 (Travel Alternatives), Policy 4A (Efficiency of Freight Movement)]

Local Circulation: Maintain an adequate local circulation network to meet the needs of adjacent land uses. [Meets OAR 660-012-0035(3)(a)]

Land Use

Right-of-Way Impacts: Minimize displacements and right-of-way impacts to existing land uses.

Consistency with Adopted Land Use Plans: Support local land use objectives by developing a Connector Roadway alignment that implements the objectives of the acknowledged Comprehensive Plans of Umatilla County and the City of Pendleton. [Meets OAR 660-012-0035(3)(a)]

Utility Impacts: Minimize impacts to existing and accommodate future utility infrastructure including water, sewer, power lines, etc.

Economic Development: Provide transportation improvements that support future economic development in the Airport industrial Area. [(Consistent the Transportation Planning Rule, OAR 660-012-0060 and meets OHP Goal 1 (System Definition), Policy 1G (Major Improvements)]

Cost

Cost/Implementation: Develop design alternatives that allow for a cost effective and timely implementation strategy that will efficiently meet permitting requirements.

Environmental/Social Impacts

Environmental/Social Impacts: Develop design alternatives that minimize the natural resource, air, noise, and cultural/historical impacts to the surrounding area. [Meets OAR 660-012-0035(3)(b) and Meets OHP Goal 5 (Environmental and Scenic Resources), Policy 5A (Environmental Resources)]

Stormwater drainage: Integrate drainage plan to provide adequate stormwater management so that the interchange or adjacent beltline do not deteriorate the flooding or standing water situation on private properties.

Accessibility

Local Properties: Balance local access to the Connector Roadway with the need to maintain the function and capacity of the roadway and the interchange to provide an efficient route between the interchange and the Airport industrial area. [Meets OHP Goal 1 (System Definition), Policy 1G (Major Improvements)]

Consistency with Adopted Access Plans: Maintain safe and efficient access to adjacent properties and public streets while adhering to the OAR Division 51 and Umatilla County access management guidelines. [Meets OHP Goal 3 (Access Management), Policy 3A (Classification and Spacing Standards) and Policy 3C (Interchange Access Management Areas)]

Future Access to Undeveloped Properties: Provide property access via the local road network to support future development patterns.

EVALUATION CRITERIA SCORING DEFINITIONS

Transportation Operations

Enhance Multimodal Options

+2 Large improvement over existing conditions
+1 Small improvement over existing conditions
0 No significant change from existing conditions
-1 Small reduction over existing conditions
-2 Large reduction over existing conditions

Provide Safe Traveling Speed

+1 Provides Connector Roadway design speeds equal or greater to 40 mph without a stop
0 Provides Connector Roadway design speeds equal or greater to 40 mph with stops or under 40 without a stop
-1 Provides Connector Roadway design speeds under to 40 mph with a stop

Provide Connectivity Throughout the Local Road Network

+2 Significantly shortens out of direction travel within the study area
+1 Shortens out of direction travel within the study area
0 No significant change to out of direction travel within the study area
-1 Increases out of direction travel within the study area
-2 Significantly increases out of direction travel within the study area

Provide Mobility with Adequate Capacity

+2 Provides more than adequate roadway and intersection capacity
+1 Provides adequate roadway and intersection capacity
0 No significant change to the existing roadway and intersection capacity
-1 Decreases roadway and intersection capacity
-2 Significantly decreases roadway and intersection capacity

Truck Accommodation

+1 Provides high speed and no stops for truck and freight movements to and from I-84
0 Provides low speed or a stop for truck and freight movements to and from I-84
-1 Provides low speed and a stop for truck and freight movements to and from I-84

Maintain a Local Circulation Network

+2 Significantly enhances local street circulation within the study area
+1 Improves local street circulation within the study area
0 No significant change from existing conditions within the study area
-1 Decreases local street circulation within the study area
-2 Significantly decreases local street circulation within the study area

Land Use

Right-of-Way Impacts

+1 No right-of-way acquisitions or displacements are necessary
0 Right-of-way acquisitions and displacements are limited to both exclusive farm uses and local businesses.
-1 Right-of-way acquisitions and displacements are considerable for both exclusive farm uses and local businesses.

Consistency with Adopted Land Use Plans
+1 Supports all objectives of the adopted land use plans
0 Supports some objectives of the adopted land use plans
-1 Conflicts with the objectives of the adopted land use plans

Utility Impacts
+1 No utility impacts are anticipated
0 Utility impacts are anticipated to be minimal
-1 Major utility impacts are anticipated

Supports Economic Development
+1 Improvements enhance and support economic development
0 Improvements provide no change from existing conditions
-1 Improvements decrease the chances of economic development

Cost

Cost
+1 Least expensive or within 25% of the least expensive
0 Within 50% of the least expensive
-1 50 to 100% higher than the least expensive
-2 Greater than 100% of the least expensive

Construction Feasibility
+1 Limited impact on existing traffic flow and lowest anticipated complexity of construction staging activities.
0 Moderate Impact on existing traffic flows and moderate anticipated complexity of construction staging activities.
-1 Major impact on existing traffic flow and highest anticipated complexity of construction staging activities.

Environmental / Social

Environmental Impacts
+2 Creates no environmental impacts
+1 Environmental impacts are minimal
0 No significant change from existing conditions
-1 Creates some negative environmental impacts
-2 Creates significant negative environmental impacts

Social/Economic Impacts
+2 Creates no social/economic impacts
+1 Social/economic impacts are minimal
0 No significant change from existing conditions
-1 Creates some negative social/economic impacts
-2 Creates significant negative social/economic impacts

Stormwater Drainage
+1 Stormwater drainage impacts to existing properties are minimized
+0 no change from existing conditions
-1 Stormwater drainage impacts to existing properties are further degraded

Accessibility

Balance Local Property Access with Function of the new Barnhart Road to Airport Road Connector.

+2 Maintains all existing local property access to the new connector roadway while maintaining the function of highway.
+1 Effectively consolidates local property access to the new connector roadway while maintaining the function of the highway
0 No significant change from existing conditions
-1 Consolidates local property access to the new connector roadway at the expense of compromising the function of the highway
-2 Maintains all existing local property access at the expense of compromising the function of the highway

Future Access to Undeveloped Properties

+1 Local roadway network provides adequate access to future undeveloped properties
0 Local roadway network creates minimal access opportunities to undeveloped properties
-1 Local roadway network negates access to opportunities to undeveloped properties

Meets Interchange Access Spacing Standards

+2 Exceeds standard by over 20%.
+1 Exceeds standards by up to 20%
0 Meets standard
-1 Within 20% of the standard
-2 20 to 75% below the standard
-3 More than 75% below the standard

Appendix B

Hazardous Materials Study

CES
Natural Solutions for Water
A WALHONT INDUSTRIES COMPANY

Using natural systems to take the waste out of water

Phone: 541.963.7758 Fax: 541.963.2132
107 Island Avenue La Grande, OR 97850

January 22, 2006

Mr. Howard Perry
Anderson-Perry & Associates
1901 N Fir
La Grande, OR 97850

SUBJECT: Preliminary Update for Hazardous Materials Corridor Study, Barnhart Road/Pendleton Airport Access Road, Pendleton, Oregon

Dear Mr. Perry,

Cascade Earth Sciences (CES) is currently completing a Hazardous Materials Corridor Study to investigate the potential existence of environmental concerns located along the potential routes being considered by the Oregon Department of Transportation (ODOT) for a new road to connect the Pendleton Airport with the interstate near Barnhart Road. Although the report, with all the various documentation, will not be finalized until next week, this preliminary update is being provided by CES to assist ODOT in its decision making process regarding two new routes that are being considered near the Woody Clark property (Alternative Routes N2-A and N4 as shown on figures 2A and 4 attached).

Site Description

The Woody Clark property (a.k.a. Woodpecker Trucking) is located near the intersection of Interstate 84 and Barnhart Road in Section 34 of Township 3 North/Range 31 East. The approximately 45 acre site is used as a truck service and repair facility with various shop buildings and outside storage areas. The main truck salvaging operations are conducted in the northeast corner of the property while maintenance/repair shops and parts warehouses are positioned along the eastern boundary. Residual debris from the salvage and repair operations are stored in a large "bone yard" located in the north central portion of the site. Additional observations include underground storage tanks in the southwest portion of the property, a truck washing facility near the center, and a set of aboveground storage tanks near the eastern property boundary. The site is surrounded by agricultural land in all directions and bordered by Barnhart Road to the west and Interstate 84 to the south.

Environmental Characteristics

The soils at the site are expected to be sandy loam underlain by a gravelly sublayer overlying Columbia River Basalt. From a hydrogeological standpoint, the gravelly sublayer may or may not contain groundwater above the basalt layer which is estimated to be approximately 45 to 50 feet below ground surface. Groundwater sources are known to exist in the basalt formations at approximately 500 to 800 feet below ground surface based on the logs of surrounding water wells. Based on a cursory review of surrounding topography, the groundwater flow direction is assumed to be in the northerly direction. While there are intermittent stream drainages in the area, the nearest body of surface water is the westerly flowing Umatilla River located about 2.5 miles to the south. The topography of the site indicates that surface runoff is directed primarily to the north and northwest.

Environmental Concerns

Based on the observations obtained during the site reconnaissance, the Woody Clark property is assumed to have environmental concerns involving petroleum products, antifreeze, and metals associated with used motor oil. Although access to the site was limited to the making of observations from the surrounding public right-of-ways, the current site activities and overall upkeep of the site indicates a high potential for petroleum impacted soil to be present. While the determination of the magnitude of soil contamination at the site is beyond the scope of this

assessment, it is, in our opinion, doubtful that any potential petroleum releases have moved off-site or has lead to water resource impacts given the soil type (i.e., sandy soils that will readily absorb any spilled material), climate (i.e., relatively dry with very little runoff or leaching to be expected), absence of any nearby surface water, and depth to groundwater (i.e., assumed to be over 40 ft below ground surface).

Route Assessment

Of the two routes being assessed at this time, Alternative Route N2-A will avoid the environmental concerns discussed above since it bypasses the suspect areas within the boundaries of the Woody Clark property. On the other hand, Alternative Route N4 passes directly through the center of truck salvaging operations and near the maintenance/repair shops; two areas that have a high potential for petroleum contaminated soil and other automotive contaminants. If Alternative Route N4 is selected, CES would recommend that a Phase II Environmental Site Assessment (ESA) be completed to confirm the presence or absence of environmental concerns and to quantify the extent and magnitude of any discovered contamination. After being fully characterized, the site would then need to be remediated to mitigate the discovered contamination prior to, or in conjunction with, road construction activities. A conceptual cost estimate for completing the environmental cleanup actions is provided below.

Conceptual Cleanup Budget

Activity	Low-End	High-End	Description
Phase II Assessment			Confirm and Delineate Potential Impacts
Initial Assessment	$2,000	$4,000	Field check site for specific areas of impact
Work Plan	$2,000	$3,000	Describe field work and procedures for meeting Phase II goals
Subsurface Investigation	$3,000	$15,000	Range from one day with a backhoe to core sampling with a drill rig.
Laboratory Analysis	$1,000	$5,000	Range from typical petroleum analysis to sampling for waste oil constituents
Reporting	$2,000	$5,000	Mapping, data interpretation, final report
Total	**$10,000**	**$32,000**	
Cleanup			Remediate site in accordance with Oregon State standards
Work Plan	$2,000	$4,000	Describe field work and procedures for meeting Cleanup goals
Mobilization	$1,000	$4,000	Equipment mobilization and decontamination
Excavate and Haul	$5,000	$20,000	Range from 50 to 200 cubic yards
Confirmation Sampling	$1,000	$5,000	Range from typical petroleum analysis to sampling for waste oil constituents
Backfill	$1,000	$5,000	Range from 50 to 200 cubic yards
Reporting	$3,000	$5,000	Mapping, data interpretation, final report
Total	**$13,000**	**$43,000**	
Grand Total	**$23,000**	**$75,000**	

Please note that this budget is for the remediation of contaminated soil using typical removal techniques (i.e., excavate and disposal at a certified landfill). If extensive contamination is discovered or if groundwater contamination is present, the cost estimate for the remediation could double or triple depending on the type of remediation approach needed.

If you have any questions or require any additional information concerning these results, please do not hesitate to call me at (541) 963-7758.

Sincerely,

CASCADE EARTH SCIENCES

Greg L. Thurman, PE
Sr. Project Manager/Managing Engineer

Att: Figures 2A & 4
c: Project File 2623018
Doc: 01-22-07 Update Letter.doc