I-82/US 730 IAMP

Umatilla, Oregon

Technical Appendix

Prepared by:

Kittelson & Associates, Inc.

In association with:

Angelo Planning Group

Anderson Perry & Associates, Inc.

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

Appendix A

Meetings Summaries

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

MEETING SUMMARY

January 6, 2010 – I-82 / US 730 IAMP
(Project Kick-Off Meeting)

TEAM MEMBERS PRESENT:
Matt Hughart, Kittelson & Associates, Inc.
Marc Butorac, Kittelson & Associates, Inc.
Nick Foster, Kittelson & Associates, Inc.
Teresa Penninger, ODOT Region 5
Done Fine, ODOT Region 5
Ken Patterson, ODOT District 12
Darla Huxel, Umatilla Police Department
Roger Frances, City of Umatilla
George Ruby, ODOT District 12
Dennis Schilling, ODOT Motor Carrier
Guadalupe Moya Jr, ODOT Motor Carrier
Rich Lani, ODOT Maintenance
JR Cook, City of Umatilla
Darci Rudzinski, Angelo Planning Group (Attending by Phone)
Jeremy Morris, Anderson-Perry & Associates (Attending by Phone)
Shelly Schmidt, Anderson-Perry & Associates (Attending by Phone)

FROM: Matt Hughart and Nick Foster

DATE: January 7, 2010

The project kick-off meeting was held on January 6, 2010 in Umatilla. The purpose of the meeting was to discuss the project's process, schedule, committee membership, and general study area issues related to the development of an IAMP for the I-82/US 730 interchange.

Project Process

- Teresa and JR provided some background for the project, how it has been funded, and how they came to select the Kittelson consultant team to lead the planning effort.
- Matt explained the Interchange Area Management Plan (IAMP) process, its history, and how it would be applied to the I-82/US 730 interchange.

Committee Membership

- There will be three project committees that will help guide the planning process, a steering committee (SC), technical advisory committee (TAC), and a public advisory committee (PAC).

  - The individuals meeting as part of the kick-off meeting will make up the SC. They will be the key decision making body. The SC committee will meet individually a few times throughout the course of the planning project. It is expected that SC committee members will integrate themselves into either the TAC and/or PAC committees.
  - The TAC will primarily consist of key technical staff from the City of Umatilla, ODOT, and Umatilla County. Other agency representatives will make up the remainder.
  - The PAC will primarily consist of key property owners, business owners, and interested citizens who may have a vested interest in the planning project.

- Securing freight representatives in the committees to ensure that freight mobility needs are being met will be important.
- Potential TAC membership was discussed and representatives from the following were preliminarily targeted:
  - ODOT Region 5
  - ODOT District
  - ODOT Motor Carrier
  - ODOT Rail
  - Port of Entry
  - City of Umatilla (planning, public works)
  - Umatilla County (planning, public works)
  - Umatilla Rural Fire
  - School District (may potentially fall under PAC)
  - DLCD
  - Dave Warrick – ODOT
  - CSEP
- Potential PAC membership was discussed and representatives from the following were preliminarily targeted:
  - Army Corps of Engineers
  - City Planning Commission member
  - City Council member
  - ConAgra rep
  - Port of Umatilla
  - Truck Stop representatives (Tesoro, Crossroads)
  - Chamber of Commerce
  - Residential representatives

  - BPA representative
  - Umatilla Tribe representative
  - Speedway representative
  - PP&L representative
  - COLO representative
  - Jones Scott representative
  - Department of Corrections
- JR and Teresa will contact potential representatives from these organizations. It was asked that they try and secure membership names within two weeks to ensure we can hold future meeting dates.

Project Schedule

- A draft schedule of upcoming meetings and deliverables was presented to the group.
- Members were asked to review the schedule for major conflicts.
  - It was noted that the September meeting date occurs during the Pendleton Round-up, so it will need to be rescheduled.
- Wednesdays are generally the preferred date for meetings.

Keys to Success and Potential Issues

- The goals for either side of the interchange are different. The west side has existing issues due to closely spaced signalized intersections and driveways that will need to be addressed. The east side has developable land, so it will be important to plan for future access to it and avoid a situation as has occurred on the west side.
- The weigh-in-motion program has significantly reduced truck volumes coming in and out of the POE by between 350 and 450 trucks per day.
- Need to engage decision makers early and often and ensure that all pertinent viewpoints are represented.
- Need to examine the opportunity to provide alternate routes across I-82.
- Find out issues early to avoid late surprises.
- Find a way to eliminate the current trucks crossing trucks issue at the POE.
- There are a number of existing accesses within the ¼ mile limits of the interchange on US 730.
- A true fix will likely be expensive and impactive.

Next Steps

- KAI will prepare the meeting notes and send Teresa/JR a summary of the preliminarily identified TAC and PAC roster.

- Teresa and JR will start to contact the potential TAC and PAC members and get final rosters back to the consultant team by no later than January 21st.
- Our first scheduled TAC and PAC meeting will be Wednesday, February 17, 2010.
- Ken Patterson will send KAI the highway access research summary for US 730.
- KAI will work with Don Fine to collect traffic count volumes for the study intersections.
- Angelo Planning Group will contact JR to collect remaining background planning documents for Tech Memo #2.

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

MEETING SUMMARY

February 17, 2010 – I-82 / US 730 IAMP
(PAC Meeting #1)

TEAM MEMBERS PRESENT:	Matt Hughart, Kittelson & Associates, Inc. Marc Butorac, Kittelson & Associates, Inc. Nick Foster, Kittelson & Associates, Inc. Shayna Rehberg, Angelo Planning Sam Nobles, UGA Land Owner Teresa Penninger, ODOT Region 5 Pasquale Anolfo Terry Warhol, CTUIR Jason Achqiger, Army Corps of Engineers Michael Francis, Army Corps of Engineers JR Cook, City of Umatilla Karen Hutchinson Talaski, Umatilla Chamber Bob Martinez, TRCI Ben Derby, Umatilla Port of Entry Lyle Smith, Umatilla Planning Commission Mel Ray, Port of Umatilla
FROM:	Matt Hughart and Nick Foster
DATE:	February 19, 2010

The first Public Advisory Committee (PAC) was held on February 17, 2010 in Umatilla. The purpose of the meeting was to kick off the IAMP project, discuss project study area, and review Technical Memorandums #1 and #2.

IAMP 101& Project Background

- Teresa Penninger provided a summary of the background behind the project
- Matt Hughart gave a presentation covering the purpose of IAMPs

IMSA Map Review

- A draft IMSA map was presented to the PAC for its review
    - Changes made in the TAC meeting were discussed (Bucks Corner should included in the Land Use Study Area in place of the area between I-82 and Umatilla River). The PAC committed concurred with these changes.

- It was explained that the operations/access study area includes the businesses along US 730.

Technical Memo #1: Definition and Background

- Presented the contents of the draft version of Technical Memorandum #1.
- Zoning is a potential tool to manage future land uses to ensure that the interchange can adequately accommodate future development.
- The Port of Umatilla does have some plans that may affect truck traffic in the area. This information will be sent to the project team.

Technical Memo #2: Adopted Plans and Regulations

- The contents of the draft version of Technical Memorandum #2.
- The ODOT Rail Plan, Bike/Ped Plan Update, and ORS 366.215 should also be reviewed as part of the adopted plans and regulations.
    - Angelo Planning Group will review and add these documents as part of a revised draft.

Concluding Comments/Next Steps

- Upcoming schedule and PAC responsibilities were discussed.
- PAC comments on memos #1 and #2 are due by the end of the week (February 19th). Please e-mail those comments back to Matt Hughart or JR Cook. Following the receipt of any comments, the project team will finalize the memos and redistribute them as Final.
- Following finalization of memo's #1 and #2, the project team will be working on the existing land use and transportation conditions (memo's #3 and #4), environmental constraints (memo #5) and future land use/transportation conditions (memo #6).
- Next PAC Meeting scheduled for April 14th, 2010 along with an open house. This meeting will also include the opportunity for members of the PAC to develop interchange improvement concepts.

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

MEETING SUMMARY

February 17, 2010 – I-82 / US 730 IAMP
(TAC Meeting #1)

IN ATTENDANCE:
Matt Hughart, Kittelson & Associates, Inc.
Marc Butorac, Kittelson & Associates, Inc.
Nick Foster, Kittelson & Associates, Inc.
Shayna Rehberg, Angelo Planning
Darla Huxel, UPD Chief of Police
Tamra Mabbott, Umatilla County
Bill Meade, Columbia Harvest Foods & Umatilla City Council
Don Fine, ODOT Region 5
Dave Warrick, ODOT
Teressa Penninger, ODOT Region 5
Randal Thomas, ODOT Statewide Traffic Mobility Manager
Rich Lani, ODOT
Tom Fellows, Umatilla County
JR Cook, City of Umatilla
Roger Frances, City of Umatilla
Michael Roxby, Umatilla Rural Fire District
Cindy Roxby, Umatilla Public Works Committee & Umatilla City Council

FROM: Matt Hughart and Nick Foster

DATE: February 19, 2010

The first Technical Advisory Committee (TAC) was held on February 17, 2010 in Umatilla. The purpose of the meeting was to kick off the IAMP project, discuss project study area, and review Technical Memorandums #1 and #2.

IAMP 101& Project Background

- Matt Hughart gave a presentation covering the purpose of IAMPs

IMSA Map Review

- A draft IMSA map was presented to the TAC for its review:
  - 140 acre "Old Town" site will likely access on 6th, but may impact 3rd and Brownell.
  - County concurred with using the southern UGB boundary as the Land Use Study Area boundary east of I-82.

- The SE quadrant of the interchange is in the County
  - Tamra Mabbott mentioned that Umatilla County can provide landowner information for the County areas.
- Bucks Corner should included in the Land Use Study Area in place of the area between I-82 and Umatilla River.
- The study area north of US 730 and Bucks Corner should also be modified.
- It was explained that limits do need to be established to areas that are highly likely to affect the interchange and will be examined at a high level.
- Southern operations/access boundary should be extended down to the Umatilla River due to the truck on-ramp.

Technical Memo #1: Definition and Background

- Presented the contents of the draft version of Technical Memorandum #1:
  - The mention of safety in the goals is related to geometric issues associated with design, can be subjective and related to driver comfort, and is related to traffic operations.
  - Accesses will be inventoried within the study area based on ODOT records.
  - Switzler Road should be considered as a study intersection. If modifications are made to Brownell, it will be used more frequently due to its connection to 3rd.
    - The ability to obtain counts will be examined
  - A previous study examined bringing truck traffic through the railroad underpass. There are a number of barriers to this option, including the structure's form itself.
    - ODOT's Rail division will be on the TAC to help with options such as this

Technical Memo #2: Adopted Plans and Regulations

- Presented the contents of the draft version of Technical Memorandum #2:
  - Of note, US 730 west of the interchange is designated as an Urban Business Area by ODOT, which allows for more lenient access and mobility standards
  - The ODOT Rail Plan, Bike/Ped Plan Update, and ORS 366.215 should also be reviewed as part of the adopted plans and regulations.
    - Angelo Planning Group will review and add these documents as part of a revised draft.

Concluding Comments/Next Steps

- TAC comments on memos #1 and #2 are due by the end of the week (February 19th). Please e-mail those comments back to Matt Hughart or JR Cook. Following the receipt of any comments, the project team will finalize the memos and redistribute them as Final.

- Following finalization of memo's #1 and #2, the project team will be working on the existing land use and transportation conditions (memo's #3 and #4), environmental constraints (memo #5) and future land use/transportation conditions (memo #6).
- Next TAC Meeting is scheduled for April 14th 2010 along with an open house. This meeting will also include the opportunity for members of the TAC to develop concepts.

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

MEETING SUMMARY

April 21, 2010 – I-82 / US 730 IAMP
(PAC Meeting #2)

IN ATTENDANCE:
Matt Hughart, Kittelson & Associates, Inc.
Marc Butorac, Kittelson & Associates, Inc.
Nick Foster, Kittelson & Associates, Inc.
Darci Rudzinski, Angelo Planning Group
Teresa Penninger, ODOT
Don Fine, ODOT
Dave Warrick, ODOT
JR Cook, City of Umatilla
Ben Derby, Umatilla Port of Entry
Lyle Smith
Sam Nobles
Mel Ray
Karen Hutchinson-Talaski
David McDermott
Don Traner
Clarice Stevens
Sharon Dobbins
James Dobbins
Roger Gay

FROM: Matt Hughart and Nick Foster

DATE: April 22, 2010

The second Public Advisory Committee (PAC) was held on April 21, 2010 in Umatilla. The purpose of the meeting was to review Technical Memorandums #3/4 (Existing Land Use/Transportation Conditions), #5 (Environmental), and #6 (Future Land Use/Transportation Conditions). Following the memo review, interchange design and access design characteristics were discussed and participants were given the opportunity to explore improvement scenarios for the interchange and surrounding local transportation network.

Introduction

- A brief summary of the IAMP process was provided for the benefit of attendees that are new to the project
- The comments on Tech Memos #1 and #2 were relatively minor and the memos have been finalized

Existing Land Use, Environmental, and Transportation Conditions

- Project team summarized the existing land use, environmental, and transportation conditions
- The existing transportation issues revolve around the interaction of the closely spaced intersections of the I-82 Southbound ramp terminals, Brownell Blvd, and the POE entrance and the truck traffic that backs up through the intersections
    - The issue is not with the actual interchange configuration itself, but with the vehicles backing up through intersections in the interchange area
- Cultural resources, including the Lewis & Clark Trail, are the primary environmental concern within the study area and will have to examined when an interchange design moves forward
    - A detailed alternatives analysis will be required if they are impacted
    - A question was asked why the viewpoint around US 395/US 730 was not considered in Tech Memo #5
- 2 residential areas are nearby the study roadways
- The Brownell Ditch is the most significant water body within the IMSA
- There is one HAZMAT site at Buck's Corner
- There were a number of questions regarding the impact of moving the POE
    - It is an option that can be explored

Future Land Use and Transportation Conditions

- The process by which future land uses were determined was summarized
- The operational issues identified under existing conditions will only worsen as traffic volumes increase and additional intersections will begin to experience significant congestion
- The Green Light program has significantly reduced truck volumes and may continue to reduce traffic
    - If it were to remove a significant amount more, it would help reduce issues
    - There will always be a need for the POE to some degree since the usage of the program will likely not reach 100% and there will be the need to perform inspections
    - There will still be through truck traffic on US 730 and US 395

Interchange Design 101

- A presentation was given on fundamentals of interchange design and local circulation issues.
- PAC members were asked to sketch some ideas for improving the interchange and/or local street networks to better address existing and future conditions.

Next Steps

- Comments on the memos should be submitted to JR Cook by next Monday, the 26th by noon
- The improvement ideas from today's meetings will be summarized and evaluated over the next month.
- The next PAC meeting is currently set for June 16th

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

MEETING SUMMARY

April 21, 2010 – I-82 / US 730 IAMP
(TAC Meeting #2)

IN ATTENDANCE:
Matt Hughart, Kittelson & Associates, Inc.
Marc Butorac, Kittelson & Associates, Inc.
Nick Foster, Kittelson & Associates, Inc.
Darci Rudzinski, Angelo Planning Group
Teresa Penninger, ODOT
Don Fine, ODOT
Dave Warrick, ODOT
JR Cook, City of Umatilla
Roger Frances, City of Umatilla
Shelly Schmidt, Anderson Perry & Associates, Inc.
Jeremy Morris, Anderson Perry & Associates, Inc.
Michael Roxbury, Umatilla Fire
Rich Lani, ODOT
Tom Fellows, Umatilla County
Grant Young, DLCD

FROM: Matt Hughart and Nick Foster

DATE: April 22, 2010

The second Technical Advisory Committee (TAC) was held on April 21, 2010 in Umatilla. The purpose of the meeting was to review Technical Memorandums #3/4 (Existing Land Use/Transportation Conditions), #5 (Environmental), and #6 (Future Land Use/Transportation Conditions). Following the memo review, interchange design and access design characteristics were discussed and participants were given the opportunity to explore improvement scenarios for the interchange and surrounding local transportation network.

Introduction

- The comments on Tech Memos #1 and #2 were relatively minor and the memos have been finalized.

Existing Land Use, Environmental, and Transportation Conditions

- Project team summarized the existing land use, environmental, and transportation conditions

- The existing transportation issues revolve around the interaction of the closely spaced intersections of the I-82 Southbound ramp terminals, Brownell Blvd, and the POE entrance and the truck traffic that backs up through the intersections
- Cultural resources, including the Lewis & Clark Trail, are the primary environmental concern within the study area and will have to examined when an interchange design moves forward
    - A detailed alternatives analysis will be required if they are impacted
- 2 residential areas are nearby the study roadways
- The Brownell Ditch is the most significant water body within the IMSA
- There is one HAZMAT site at Buck's Corner
    - There is also a HAZMAT containment area on the POE site

Future Land Use and Transportation Conditions

- The process by which future land uses were determined was summarized, including both Scenarios #1 and #2
    - Scenario #2 is not official since the City has not formally pursued the annexation and rezoning that would be necessary
    - Scenario #2 generates nearly 66% additional trips during the weekday p.m. peak hour
- The operational issues identified under existing conditions will only worsen as traffic volumes increase and additional intersections will begin to experience significant congestion

Interchange Design 101

- A presentation was given on fundamentals of interchange design and local circulation issues.
- TAC members were asked to sketch some ideas for improving the interchange and/or local street networks to better address existing and future conditions.

Next Steps

- Comments on the memos should be submitted to JR Cook by next Monday, the 26th by noon
- The improvement ideas from today's meetings will be summarized and evaluated over the next month.
- The next TAC meeting is currently set for June 16th

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

MEETING SUMMARY

June 16, 2010 – I-82 / US 730 IAMP
(PAC Meeting #3)

IN ATTENDANCE:
Matt Hughart, Kittelson & Associates, Inc.
Nick Foster, Kittelson & Associates, Inc.
Shayna Rehberg, Angelo Planning Group
Teresa Penninger, ODOT
Don Fine, ODOT
Dave Warrick, ODOT
Jeremy Morris, Anderson-Perry & Associates, Inc.
Karen Hutchinson-Talaski, Umatilla Chamber of Commerce
Bob Martinez, Two Rivers Correctional Institution

FROM: Matt Hughart and Nick Foster

DATE: June 17, 2010

The third Public Advisory Committee (PAC) was held on June 16, 2010 in Umatilla. The purpose of the meeting was to review the initial evaluation of the concepts developed at the previous set of TAC, PAC, and public meetings and determine which should be moved forward for further analysis. A preliminary screening was conducted by the project team and reviewed with the PAC for their feedback.

Introduction

- Matt discussed the events that have occurred since the last meeting to develop the 14 concepts shown in Tech Memo #7a, including:
    - Grouping similar concepts
    - Refining concepts
    - Applying high level evaluation criteria

Interchange Concepts

- East side comments
    - A signal will likely be warranted at the I-82 NB ramp terminals within the 20-year planning horizon
- 1a

  - The ability to construct a road through the railroad underpass of US 730 would be a significant challenge, would serve relatively low volumes, and induce out-of-direction travel

- 1b
  - The difference from #1a is that Brownell Blvd connects opposite the ramp terminal and remains open, as opposed to rerouting under US 730
  - The grade of the ramp into the POE may cause issues due to how steep it would need to be

- 2
  - The new truck on-ramp would require modifications to the existing SB on-ramp and necessitate the widening of the I-82 bridge over the Umatilla River
  - The closure of the Brownell Blvd access to US 730 would induce rerouting for residents north of the POE

- 3
  - The difference between this loop ramp and the one shown in #1a and #1b is the shape of it allows it to avoid impacting the Cross Roads building
  - The elongated shape provides extra storage for trucks
  - The I-82 structure over the Umatilla River bridge will need to be widened for the majority of its length (*any concept that requires widening this bridge would invoke an environmental process*)

- 4
  - Avoids any serious construction to the interchange itself
  - The ability to construct a road through the railroad underpass of US 730 would be a significant challenge
  - Circulation within the POE would need to be examined in greater detail

- 5
  - The ability to construct the new US 730 underpass is likely not feasible due to the presence of the Brownell Ditch

- 6
  - Fitting the single-point intersection underneath I-82 is likely not feasible without significantly modifying the existing structure
  - Does not increase the spacing to the Brownell Blvd signalized intersection by a significant amount

- 7
  - Access to the properties along the south-side of US 730 would be an issue due to the location of the loop ramp
    - May create more access problems than it solves

    - Cuts off access to Brownell Blvd, creating significant out-of-direction travel for residents north of the POE or for accessing the marina or Welcome Center
        - The Welcome Center might need to be relocated (*this applies to all concepts where access to Brownell Blvd is cut off*)
- 8a
    - Trucks need to weave on US 730 to make the left-turn onto Eisele Drive
    - Trucks travel further west on US 730 than they do today
    - Eisele Drive would need to be widened
        - Right-of-way impacts to neighboring businesses
- 8b
    - Provides more direct access from I-82 to the POE than 8a
        - ODOT is looking into whether this would be permissible from a Federal perspective
    - Opens up the chance that passenger traffic may accidentally drive to the POE in attempting to get back on I-82 SB
    - Eisele Drive would need to be widened
        - Right-of-way impacts to neighboring businesses
    - The impact of the increase in usage of transponders may limit the benefits of moving the POE
- 9
    - Different than #1a or #1b in that there is a truck off-ramp that connects to the POE
        - Cross Roads is still impacted, as it was in #1a and 1b
    - The westbound right-turn onto Brownell Blvd would need to be restricted due to the truck ramp
        - A new roadway might be able to be constructed around the west end of the POE to mitigate this
- 10
    - Requires overpasses over Brownell Blvd and the railroad
    - Brings POE truck traffic onto a residential street
- 11
    - Likely the most expensive concept
    - The roundabout could be a signal
    - The US 730 underpass would be difficult to modify
    - An underpass may be better at the south end of the split diamond
- 12

- The spacing of the intersections and amount of truck traffic make it unlikely that the roundabouts could function acceptably

Qualitative Concept Screening

- Matt presented the draft qualitative screening table
- Concepts #3, 8b, and 9 are recommended by the consultant team
  - Other concepts have fatal flaws or significant constructability, cost, policy, and/or right-of-way challenges
- PAC comments
  - Try to avoid impacting Cross Roads if possible
    - Concept #3 looks good for this
  - Concepts #3, 8b, and 9 seem to be the most
  - Moving the POE may be more than is needed
  - POE comments:
    - The length of the exiting loop ramp on Concept #3 may not be sufficient for peak harvest periods
    - Enforcement of truckers avoiding the POE may be more difficult under Concepts #8a and 8b
      - #8b is efficient for truck access
    - Likes Concept #9 the most
  - The TAC was interested in Concept #11 since it scores well compared to the others and would be simple to construct
    - Eliminate the US 730 underpass
    - Examine a signal instead of a roundabout
    - Consultant team will look at a cost estimate for this
    - PAC members agreed getting rid of the US 730 underpass was a good idea
    - It looks good for low impacts
- Draft cost estimates for Concepts #3, 8b, and 9 were presented

Next Steps

- More quantitative analysis of Concepts #3, 8b, 9, and 11
- Identification of access management strategies
- The next PAC meeting is currently set for July 28th and a recommended concept will be chosen at this meeting
- Comments are due on Tech Memo #7a by next Friday (June 25th)

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

MEETING SUMMARY

June 16, 2010 – I-82 / US 730 IAMP
(TAC Meeting #3)

IN ATTENDANCE:
Matt Hughart, Kittelson & Associates, Inc.
Nick Foster, Kittelson & Associates, Inc.
Shayna Rehberg, Angelo Planning Group
Teresa Penninger, ODOT
Don Fine, ODOT
Dave Warrick, ODOT
Swede Hays, ODOT Rail
Ken Patterson, ODOT
Rich Lani, ODOT
Randall Thomas, ODOT
Jeremy Morris, Anderson Perry & Associates, Inc.
Grant Young, DLCD
Bill Clemens, Pacific Power
Bill Meade, Columbia Harvest Foods & Umatilla City Council
Roger Frances, City of Umatilla

FROM: Matt Hughart and Nick Foster

DATE: June 17, 2010

The third Technical Advisory Committee (TAC) was held on June 16, 2010 in Umatilla. The purpose of the meeting was to review the initial evaluation of the concepts developed at the previous set of TAC, PAC, and public meetings and determine which should be moved forward for further analysis. A preliminary screening was conducted by the project team and reviewed with the TAC for their feedback.

Introduction

- Matt discussed the events that have occurred since the last meeting to develop the 14 concepts shown in Tech Memo #7a, including:
    - Grouping similar concepts
    - Refining concepts
    - Applying high level evaluation criteria

Interchange Concepts

- East-side Comments
  - ODOT's Rail Division may object to allowing any new at-grade crossings of the rail (e.g. the east-side crossing shown on all concepts should be grade-separated)
  - The new Scaplehorn Road intersection may be a signal, but current projections do not warrant one and the grade of US 730 makes it difficult as well
- 1a
  - The ability to construct a road through the railroad underpass of US 730 would be a significant challenge, would serve relatively low volumes, and induce out-of-direction travel
  - Widening the I-82 railroad bridge would be relatively simple, but widening the bridge over US 730 would be difficult and likely require the construction of a new structure instead (*this affects multiple concepts that feature a southbound exiting loop ramp*)
- 1b
  - The difference from #1a is that Brownell Blvd connects opposite the ramp terminal and remains open, as opposed to rerouting under US 730
  - WB truck access to the POE would need to be worked out
  - The POE may have a hard time maintaining operations during construction
  - The grade of the ramp into the POE may cause issues due to how steep it would need to be
- 2
  - The new truck on-ramp would require modifications to the existing SB on-ramp and necessitate the widening of the I-82 bridge over the Umatilla River
  - Trucks could not return to EB US 730
  - The closure of the Brownell Blvd access to US 730 would induce rerouting for residents north of the POE
- 3
  - The difference between this loop ramp and the one shown in #1a and #1b is the shape of it allows it to avoid impacting the Cross Roads building
  - The elongated shape provides extra storage for trucks
  - The I-82 structure over the Umatilla River bridge will need to be widened for the majority of its length (*any concept that requires widening this bridge would invoke an environmental process*)
- 4
  - Avoids any serious construction to the interchange itself
  - The ability to construct a road through the railroad underpass of US 730 would be a significant challenge

- 5
  - The ability to construct the new US 730 underpass is likely not feasible due to the presence of the Brownell Ditch
    - An overpass might be more feasible
  - The new on-ramp would also require the widening of the I-82 bridge over the Umatilla River
- 6
  - Fitting the single-point intersection underneath I-82 is likely not feasible without significantly modifying the existing structure
  - Does not increase the spacing to the Brownell Blvd signalized intersection by a significant amount
- 7
  - Access to the properties along the south-side of US 730 would be an issue due to the location of the loop ramp
    - May create more access problems than it solves
  - Creates another rail crossing on the west side
- 8a
  - Trucks need to weave on US 730 to make the left-turn onto Eisele Drive
  - Creates some additional out-of-direction travel and may be difficult to direct trucks to enter and encourage more evasion
- 8b
  - Provides more direct access from I-82 to the POE than 8a
    - ODOT is looking into whether this would be permissible from a Federal perspective
  - The relocation of the POE may encourage more evasion
  - Opens up the chance that passenger traffic may accidentally drive to the POE in attempting to get back on I-82 SB
- 9
  - Different than #1a or #1b in that there is a truck off-ramp that connects to the POE
  - There is likely adequate spacing from US 730 to the at-grade railroad crossing on Brownell Blvd for forecast queuing
  - The westbound right-turn onto Brownell Blvd would need to be restricted due to the truck ramp
- 10
  - Requires overpasses over Brownell Blvd and the railroad
  - Brings POE truck traffic onto a residential street

- 11
    - Likely the most expensive concept
    - The US 730 underpass would be difficult to modify
- 12
    - The spacing of the intersections and amount of truck traffic make it unlikely that the roundabouts could function acceptably

Qualitative Concept Screening

- Matt presented the draft qualitative screening table
- Concepts #3, 8b, and 9 are recommended by the consultant team
- TAC comments
    - 8b is good because
        - It removes truck traffic from US 730
        - Opens up good land for development
        - Preserves access to residential neighborhoods north of US 730
    - The design of Brownell Blvd alignments will need to be able to accommodate trucks hauling boats and RVs
    - Access to businesses and residences needs to be examined carefully
    - The length of the exiting loop ramp on Concept #3 may not be sufficient for peak harvest periods
    - Does moving the POE make sense if transponder usage continues to rise?
    - Issues with Concept #9
        - Inability to provide access to Brownell Blvd from westbound US 730
            - Could a road be constructed around the west end of the POE to provide access?
        - Impacts to the Cross Roads property
    - Rail comments
        - These three concepts make the most sense – likely no objections
        - #8b makes the most sense functionally, but #3 makes more sense cost-wise
        - #3 stays out of UP right-of-way, which is good
    - City comments
        - Likes #8b the most since it removes the truck traffic and removes the problem instead of just controlling it better
        - Interested in making sure that the preferred concept has adequate capacity for additional development beyond projections

- Concept #11 scores well compared to the others and would be simple to construct
  - Would a signalized intersection have the same impacts as a roundabout?
  - Just how much more expensive is it?
  - Is the US 730 underpass necessary?
  - City doesn't like the truck traffic coming in further west on US 730
  - Consultant team will look at a cost estimate for this

- Draft cost estimates for Concepts #3, 8b, and 9 were presented

Next Steps

- More quantitative analysis of Concepts #3, 8b, 9, and 11
- Identification of access management strategies
- The next TAC meeting is currently set for July 28th and a recommended concept will be chosen at this meeting
- Comments are due on Tech Memo #7a by next Friday (June 25th)

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

MEETING SUMMARY

August 12, 2010 – I-82 / US 730 IAMP
(PAC Meeting #4)

TEAM MEMBERS PRESENT:

Matt Hughart, Kittelson & Associates, Inc.
Nick Foster, Kittelson & Associates, Inc.
Darci Rudzinski, Angelo Planning
Teresa Penninger, ODOT
Don Fine, ODOT
Tom Kuhlman, ODOT
Roger Francis, City of Umatilla
Dave Warrick, ODOT
Stephanie Anderson, ODOT
Heidi Sipe
Boyd Sharp
Andy Lindsey
Ben Derby
Karen Hutchinson-Taleski
Jennifer Colton

FROM: Matt Hughart and Nick Foster

DATE: August 12, 2010

The fourth Public Advisory Committee (PAC) was held on August 12, 2010 Umatilla. The purpose of the meeting was to review Technical Memorandum #7b and discuss the next steps in the development of the IAMP.

Following a brief overview of events since the last meeting, four concepts were discussed in greater detail. A summary of the discussion is included below.

Concept #3

- Brownell Blvd. would have better access off of the freeway which is important for economic/recreational reasons.
- ROW/property impacts are limited, especially to the cross roads facility.

Concept #8b/c

- The POE would likely have an enforcement issue with this concept.
- A variation of Concept #8 that incorporates a direct off-ramp connection to the relocated POE is worthy of consideration.
- The POE will (in the foreseeable future) continue to have an important function.

Concept #9

- Lack of access to Brownell would be problematic for residents and marina traffic. It would also impact the future development of the river water front.
- This concept may lead to a higher occurrence of passenger cars in the POE.

Concept #11

- The POE would have to be completely reoriented under this concept.
- The POE would become more of a focal point for the City given the signalized access at Eisele. Not what the City wants.
- Property impacts (from a cost standpoint) are large, but the cost is minimal because the land is not commercially zoned and it is outside the City limits.

Summary

- The city should look to the long-term for economic reasons. Moving the POE makes sense and helps work towards that goal.
- Moving the POE opens up a huge economic opportunity for the City.
- Can a combination of #3 and #8b/c be investigated for phasing opportunities?
- Can Concept #8c (new off-ramp directly into the POE) be investigated?

Concluding Comments/Next Steps

- A contingency task will likely be authorized that will allow the project team to fully investigate the hybrid variations identified for Concepts #3 and #8b/c and to obtain more detailed comments from the Motor Carriers Division.
- The next TAC meeting will likely be scheduled for late September.

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

MEETING SUMMARY

August 12, 2010 – I-82 / US 730 IAMP
(TAC Meeting #4)

TEAM MEMBERS PRESENT:	Matt Hughart, Kittelson & Associates, Inc. Nick Foster, Kittelson & Associates, Inc. Darci Rudzinski, Angelo Planning Teresa Penninger, ODOT Don Fine, ODOT Tom Kuhlman, ODOT J.R. Cook, Outgoing City Manager Roger Francis, City of Umatilla Dave Warrick, ODOT Swede Hays, ODOT Rail Stephanie Anderson, ODOT Andy Lindsey, Anderson Perry & Associates Dave Trott, City of Umatilla (former outgoing mayor) Rich Lani, ODOT Bill Meade, Umatilla City Council Darla Huzel, City of Umatilla Police Steve Johnson, Umatilla City Council
FROM:	Matt Hughart and Nick Foster
DATE:	August 12, 2010

The fourth Technical Advisory Committee (TAC) was held on August 12, 2010 Umatilla. The purpose of the meeting was to review Technical Memorandum #7b and discuss the next steps in the development of the IAMP.

Following a brief overview of events since the last meeting, four concepts were discussed in greater detail. A summary of the discussion is included below.

Concept #3

- A comment was made that the new I-84 interchange ramp terminal would have a wide intersection and that the width could be difficult for pedestrian crossings.
- A comment was made that the operations analysis should include a roundabout at the ramp terminal and Eisele Drive locations.

- The graphics should provide notations on the local street sections that show lane widths, sidewalks, bike lanes, etc.

Concept #8b/c

- A new variation of Concept #8c could include a new braided southbound offramp to the new relocated POE. This would help prevent trucks bypassing the POE and might resolve a concern raised by the Motor Carriers Division.

Concept #9

- Probably the least preferred by the residents and PC/CC given the Brownell access limitation and likely continued congestion at the I-84 SB ramp terminal.
- ODOT rail sees no issues with the railroad overpass widening.
- This concept would have more out of direction travel compared to the other concepts.
- Railroad bridge widening may impact the Brownell alignment. This should be checked in the double line drawings.
- This concept may lead to a higher occurrence of passenger cars in the POE.
    - This may be tempered if the concept were to be modified with a single exit lane that then splits with an exit to the POE and loop ramp.

Concept #11

- This concept will require a reorientation of the POE setup that isn't depicted in the graphic.
- A roundabout at Eisele would be large and impactive to adjacent property owners.
- Property impacts (from a cost standpoint) are large, but the cost is minimal because the land is not commercially zoned and it is outside the City limits.

Summary

- Can a combination of #3 and #8b/c be investigated?
- Relocating the POE will remove the congestion and allow the value of the POE land to help recoup the cost of relocation.
- If the concepts are phased, perhaps Concept #3 could be considered a near-term phase and a relocation of the POE could be considered for the long-term.

Concluding Comments/Next Steps

- A contingency task will likely be authorized that will allow the project team to fully investigate the hybrid variations identified for Concepts #3 and #8b/c and to obtain more detailed comments from the Motor Carriers Division.
- The next TAC meeting will likely be scheduled for late September.

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

MEETING SUMMARY

October 6, 2010 – I-82 / US 730 IAMP
(PAC Meeting #5)

TEAM MEMBERS PRESENT:

Matt Hughart, Kittelson & Associates, Inc.
Nick Foster, Kittelson & Associates, Inc.
Teresa Penninger, ODOT
Don Fine, ODOT
Tom Kuhlman, ODOT
Zach Landen, City of Umatilla
Dave Warrick, ODOT
Frank Reading, ODOT
Jeremy Morris, Anderson-Perry & Associates, Inc.
W. Edward Scrivner, ODOT
Ben Derby, ODOT – Umatilla POE
Karen Hutchinson-Talaski, Umatilla Chamber of Commerce
Bob Martinez, Two Rivers Correctional Institute
Al Koppany, Crossroads truck stop/restaurant

FROM: Matt Hughart and Nick Foster

DATE: October 11, 2010

The fifth Public Advisory Committee (PAC) was held on October 6, 2010 Umatilla. The purpose of the meeting was to review Technical Memorandum #7c and discuss the next steps in the development of the IAMP.

Following a brief overview of the project background for the new participants and a summary of events since the last meeting, three new concepts were discussed. A summary of the discussion is included below.

Concept #8d

- Variation of Concept #8c with a direct ramp from I-82 SB to the relocated POE.
- The connection from the relocated POE to Eisele Drive that is shown under Concepts #8c/d/e would not be supported by FHWA. They also questioned whether these concepts

were disproportionately complicated and expensive compared to the problem. Even Concept #3 (the least expensive) would require alternate sources of funding.

Concept #8e

- Similar to Concept #8d, but has a slip ramp from the I-82 SB on-ramp into the POE as well.

Concept #3 w/ POE Relocation

- The POE relocation will have similar issues to those described for the #8c/d/e concepts.
- Significantly more expensive than the other concepts due to the complicated ramp configurations and new structures.
- The impacts of Concept #3 to the Crossroads parking lot would need to be mitigated somehow since the parking is needed.
- Relocating the POE would impact business to the Crossroads.

Summary Thoughts from Committee Members

- The realignment of the off-ramp in Concept #3 would be good for the Visitor's Center.
- Other concepts would eliminate the feasibility of the Crossroads business.
- The backage road from Eisele Drive to the Crossroads may not be a feasible substitute for the US 730 accesses since the site design may not allow for sufficient on-site circulation with only the backage road access. It would alleviate some traffic though.
    - If the accesses are needed, then ODOT would not close them. They would be reexamined if/when the property redevelops.
- Moving the POE may not be as much as a boon since it channels traffic away from the City and locations that currently draw on the POE (e.g. Crossroads and Tesoro).
- Reconfiguring the POE may be the best solution.
    - This does not address the spacing between Brownell Blvd and the I-82 ramp terminal.
- Concept #3 looks good, especially if major impacts to business can be avoided.
- Concept #3 seems to accomplish the project goals and could increase visitor traffic to the area.
- Concept #3 seems reasonable, but redoing the POE circulation could be the best way to go.
    - Moving the POE may be a bad idea.

Concluding Comments/Next Steps

- The Steering Committee will weigh feedback from the committees and make a determination as to whether or not Concept #3 (or some variation) will be moved forward for inclusion in the IAMP.

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

MEETING SUMMARY

October 6, 2010 – I-82 / US 730 IAMP
(TAC Meeting #5)

TEAM MEMBERS PRESENT:
Matt Hughart, Kittelson & Associates, Inc.
Nick Foster, Kittelson & Associates, Inc.
Teresa Penninger, ODOT
Don Fine, ODOT
Tom Kuhlman, ODOT
Roger Francis, City of Umatilla
Zach Landen, City of Umatilla
Tamra Mabbott, Umatilla County
Dave Warrick, ODOT
Swede Hays, ODOT Rail
Darla Huxel, City of Umatilla Police
Frank Reading, ODOT
Jeremy Morris, Anderson-Perry & Associates, Inc.
W. Edward Scrivner, ODOT
Ben Derby, ODOT – Umatilla POE
Bill Meade, City Council/acting mayor (arrived late)

FROM: Matt Hughart and Nick Foster

DATE: October 11, 2010

The fifth Technical Advisory Committee (TAC) was held on October 6, 2010 Umatilla. The purpose of the meeting was to review Technical Memorandum #7c and discuss the next steps in the development of the IAMP.

Following a brief overview of the project background for the new participants and a summary of events since the last meeting, three new concepts were discussed. A summary of the discussion is included below.

Concept #8d

- Variation of Concept #8c with a direct ramp from I-82 SB to the relocated POE.
- The connection from the relocated POE to Eisele Drive that is shown under Concepts #8c/d/e would not be supported by FHWA. They also questioned whether these concepts

were disproportionately complicated and expensive compared to the problem. Even Concept #3 (the least expensive) would require alternate sources of funding.

Concept #8e

- Similar to Concept #8d, but has a slip ramp from the I-82 SB on-ramp into the POE as well.
- A question was asked about relocating the POE to a slightly different location and whether that would reduce costs. It possibly would, but it's likely that the bridge over the Umatilla River would still need to be widened. The ROW costs could also increase.

Concept #3 w/ POE Relocation

- The POE relocation will have similar issues to those described for the #8c/d/e concepts.
- There are a number of variations that could be done, but they do not significantly alter the cost or feasibility of the relocation.
- Significantly more expensive than the other concepts due to the complicated ramp configurations and new structures.

Summary Thoughts from Committee Members

- Concept #3 does solve the problem this project was originally meant to address.
- It was good that we examined all the different concepts to determine if it was feasible to relocate the POE.
- The City would like the POE relocated to keep the trucks out of the interchange, but understands that the cost is tremendous and possibly infeasible.
- Concept #3 does open up opportunity for a gateway treatment next to the realigned Brownell Blvd and there does not appear to be a tremendous amount of throwaway if the POE does need to be relocated (e.g. the new US 730 overpass would need to be designed with the ability to expand to two lanes).
- Concept #3 does meet the horizon requirements.
- The cost estimate for Concept #3 is conservative and more detailed information may reveal that it is cheaper.
- Could potentially split POE duties between a relocated POE (SB I-82 traffic only) and the existing location (US 730 traffic).
- Concept #3 is still viable to the City if the potential for relocation is retained.
- ODOT Rail has no issues with Concept #3.
- Even Concept #3 does seem expensive.
- The POE could be relocated further south some day and the City could annex if they still wanted the funding. Scales would need to be built on US 730 west of town to weigh trucks bypassing I-82.

- Unless a number of changes occur to the transponder system and the Oregon taxing system, electronic bypasses will not be enough to reduce the need for the current size of the POE.
- Relocating the POE to the south would likely impact the existing fueling stations on US 730, especially given the pending truck stop development at the I-84/I-82 confluence.
- It would be nice if there was a less complicated solution.
- Is there something that could be done with POE circulation that would cost less? It's not likely given how much in-depth we've explored that issue already.
- The plan can be revisited and refined at a later time if need be.
- A majority of the TAC supported Concept #3 so long as the option for relocation was retained. However, some did so since it was the one with the least amount of flaws, not since it was desirable.

Concluding Comments/Next Steps

- The Steering Committee will weight feedback from the PAC and make a determination as to whether or not Concept #3 (or some variation) will be included as the formal IAMP improvement.

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

MEETING SUMMARY

December 15, 2010 – I-82 / US 730 IAMP
(PAC Meeting #6)

TEAM MEMBERS PRESENT:
Matt Hughart, Kittelson & Associates, Inc.
Nick Foster, Kittelson & Associates, Inc.
Teresa Penninger, ODOT
Don Fine, ODOT
Tom Kuhlman, ODOT
Zach Landen, City of Umatilla
Dave Warrick, ODOT
Ben Derby, ODOT – Umatilla POE
Grant Young, DLCD
Bob Ward, City of Umatilla
Rich Lani, ODOT
Bob Martinez, Two Rivers Correctional Institute
Lyle Smith, City of Umatilla Planning Commission

FROM: Matt Hughart and Nick Foster

DATE: December 21, 2010

The sixth Public Advisory Committee (PAC) was held on December 15, 2010 in Umatilla. The purpose of the meeting was to review potential modifications to the preferred alternative and next steps in drafting the IAMP. A summary of the discussion is included below.

Recent Events

- A brief update on recent events and how the POE relocation came to be included in the preferred alternative was provided.

- FHWA and ODOT staff reviewed the preferred alternative. There were some issues with the access to the potentially relocated POE that would not meet federal policy for access to interstate facilities.

- Some of the issues were misinterpretations, while others were valid concerns about the design.

- The relocation of the POE would not be an official part of the plan, but the design would not preclude it. FHWA and ODOT do not have issues with the interchange design, but do with the location of the potential POE relocation and access to it as shown currently. Issues include:
    - Potential for driver confusion for vehicles exiting and entering SB I-82.
    - Trucks on the POE on-ramp conflicting with vehicles at higher speed already on the on-ramp to SB I-82 when merging.
    - Trucks entering the POE don't have a direct route back to Umatilla, which would impact businesses that serve trucks and could lead to trucks bypassing the POE. Also inconvenient for trucks needing to travel on US 730 since they will incur out-of-direction travel to get back to US 730 (another station would likely need to be constructed somewhere down US 730).
    - Trucks waiting to enter the relocated POE could stack back onto the ramps.

Revised Drawings

- A revised drawing of the preferred alternative addressing the above concerns was prepared by ODOT and handed out. Key characteristics include:
    - Total separation of trucks from other traffic.
    - The only access to the POE would be to/from SB I-82. (Could potentially do a parking lot off of US 730 for employees with a walking path to the POE – this is similar to something being planned for a relocated rest area in the Siskiyou mountains).
- These drawings are planning-level guidance and there would be further work done to identify all the particulars of a future POE relocation that would involve coordination with the City and general public.
- The revised drawing has not had a cost estimate done yet, but it will be more expensive than the original concept.
- Traffic entering the POE from westbound US 730 not coming from I-82 is relatively limited.
- Any POE relocation would necessitate a weigh station on US 730 as well.
- There is potential to relocate the POE further south within the UGB on the south side of the Umatilla River.
    - More investigation would be required to determine its feasibility.

- Moving the POE would impact the Crossroads, which tempers some of the enthusiasm for relocating it.

PAC Opinions

- The PAC was presented with the option to either show the POE location in its current level of detail, as a "cloud" referencing a more generic potential relocation option, or showing the southerly location either in the document or in an appendix. Their thoughts are as follows:
    - Residents of the City would be onboard so long as the potential for POE relocation is left open.
    - Showing the POE relocation in appendix is the cleanest way to show it, meet the intent of the IAMP, and address the public's concern.
    - It would be nice to have a cost estimate for both of the options for POE relocation to help obtain buy in.
    - The southerly option may be more functional.

Concluding Comments/Next Steps

- KAI will redraft the IAMP based on this feedback to show text in the document and the locations graphically in an appendix. It will be brought back to the PAC at a final meeting. The draft will be presented during that same trip to the public, Planning Commission, and City Council at a joint work-session/open house (likely late January).
- The revisions discussed at the meeting will be brought up to Planning Commission next week.

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

MEETING SUMMARY

December 15, 2010 – I-82 / US 730 IAMP
(TAC Meeting #6)

TEAM MEMBERS PRESENT:
Matt Hughart, Kittelson & Associates, Inc.
Nick Foster, Kittelson & Associates, Inc.
Teresa Penninger, ODOT
Don Fine, ODOT
Tom Kuhlman, ODOT
Roger Frances, City of Umatilla
Zach Landen, City of Umatilla
Dave Warrick, ODOT
Ben Derby, ODOT – Umatilla POE
Grant Young, DLCD
Tamra Mabbot, Umatilla County
Bob Ward, City of Umatilla
Bill Meade, City Council and Acting Mayor

FROM: Matt Hughart and Nick Foster

DATE: December 21, 2010

The sixth Technical Advisory Committee (TAC) was held on December 15, 2010 in Umatilla. The purpose of the meeting was to review potential modifications to the preferred alternative and next steps in drafting the IAMP. A summary of the discussion is included below.

Recent Events

- FHWA and ODOT staff reviewed the preferred alternative. There were some issues with the access to the potentially relocated POE that would not meet federal policy for access to interstate facilities.

- Some of the issues were misinterpretations, while others were valid concerns about the design.

- The relocation of the POE would not be an official part of the plan, but the design would not preclude it. FHWA and ODOT do not have issues with the interchange design, but do with the location of the potential POE relocation and access to it as shown currently. Issues include:

- Potential for driver confusion for vehicles exiting and entering SB I-82.
- Trucks on the POE on-ramp conflicting with vehicles at higher speed already on the on-ramp to SB I-82 when merging.
- Trucks entering the POE don't have a direct route back to Umatilla, which would impact businesses that serve trucks and could lead to trucks bypassing the POE. Also inconvenient for trucks needing to travel on US 730 since they will incur out-of-direction travel to get back to US 730 (another station would likely need to be constructed somewhere down US 730).
- Trucks waiting to enter the relocated POE could stack back onto the ramps.

Revised Drawings

- A revised drawing of the preferred alternative addressing the above concerns was prepared by ODOT and handed out. Key characteristics include:
  - Total separation of trucks from other traffic.
  - The only access to the POE would be to/from SB I-82. (Could potentially do a parking lot off of US 730 for employees with a walking path to the POE – this is similar to something being planned for a relocated rest area in the Siskiyou mountains).
- These drawings are planning-level guidance and there would be further work done to identify all the particulars of a future POE relocation that would involve coordination with the City and general public.
- The revised drawing has not had a cost estimate done yet, but it will be more expensive than the original concept.
- There is potential to relocate the POE further south within the UGB on the south side of the Umatilla River.
  - More investigation would be required to determine its feasibility.
- Relocating the POE to a location where it would not affect existing businesses may not be feasible, although the more southerly option would likely not affect them to the same degree.

TAC Opinions

- The TAC was presented with the option to either show the POE location in its current level of detail, as a "cloud" referencing a more generic potential relocation option, or showing the southerly location. Their thoughts are as follows:

- Any POE relocation would necessitate a weigh station on US 730 as well.
- The location of the POE within the interchange may be impractical due to cost, complexity, and impacts to local businesses.
- Don't put either option in the IAMP graphically, but discuss with text and put the figures in an appendix.
- The southerly alternative for relocation probably makes the most sense to the City and the other could potentially be eliminated.
- City Council should weigh in before a final decision is made.
- Definitely keep the relocation options in the appendix so that the work is not lost if and when relocation is examined.

Concluding Comments/Next Steps

- KAI will redraft the IAMP based on this feedback and bring it back to the TAC at a final meeting. The draft will be presented during that same trip to the public, Planning Commission, and City Council at a joint work-session/open house.

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

MEETING SUMMARY

May 31, 2011 – I-82 / US 730 IAMP
(TAC/PAC Meeting #7)

TEAM MEMBERS PRESENT:
Matt Hughart, Kittelson & Associates, Inc.
Nick Foster, Kittelson & Associates, Inc.
Jeremy Morris, Anderson-Perry & Associates
Teresa Penninger, ODOT
Tom Kuhlman, ODOT
Roger Frances, City of Umatilla
Zach Landen, City of Umatilla
Dave Warrick, ODOT
Ben Derby, ODOT – Umatilla POE
Bob Ward, City of Umatilla
Bill Meade, City Council and Acting Mayor
Boyd Sharp
Bill Clemens
David McDermott, Army Corps of Engineers
Heidi Sipe, Umatilla Planning Commission
Marvin John
Mel Ray, Umatilla Planning Commission

FROM: Matt Hughart and Nick Foster

DATE: November 18, 2011

The seventh Technical Advisory Committee (TAC) was held on May 31, 2011 in Umatilla. The purpose of the meeting was to review the concept that would relocate the POE south on I-82 and next steps in drafting the IAMP. A summary of the discussion is included below.

Recent Events

- The project team presented the previous preferred concept to the Umatilla City Council.
    - They directed the project team to consider the option of relocating the POE south of the study area on I-82.
    - The POE relocation was discussed in an overview fashion at this meeting, but more analysis was needed to determine costs, feasibility, and operations.

Relocated POE

- The location shown is great for traffic that wants to continue southbound on I-82, but not for catching traffic that uses US 730 or US 395.
    - Accessory weighing facilities will be necessary on US 730 and US 395.
    - Trucks could still bypass the alternate US 730 facility by traveling south on Umatilla River Road.
    - There would not be staff to run the alternate scales throughout the entire 24-hour day.
- Land use modifications or code changes will be necessary for a POE to be allowed, based on the current zoning for the proposed site.
- The detailed drawing is not necessarily an approved design yet, it is a conservative designed based on what the POE might want and is only a concept at this point.
    - It includes a large section for overnight truck parking.
    - The design would be refined at a further point with more information.
- The refined estimate is higher than the original preliminary estimate, since a more conservative estimate was made of some of the components as they were broken out for specific costing.
    - There's a range to this estimate, depending on the final size and other variables.
    - The cost estimate does not include removal of the current POE or the realignment of Brownell Boulevard.
    - The cost estimate does not include utilities to the site either.
- Traffic operations were examined assuming that the POE site redevelops as a commercial site and Brownell Boulevard is realigned.
    - The existing signal at Brownell Boulevard would be removed.
    - The alignment shown does not reflect the radii necessary to accommodate boats and RVs going to the river.
    - Whoever develops the property would likely need to pay for the relocation and would have a say in its alignment.
    - The realignment needs to be in the IAMP in some fashion, otherwise the same problem will reappear when development occurs.

  - A system development charge (SDC) is one way the City/State could build elements of the plan now and be reimbursed by development later on.

- Access management on both sides of US 730 will be part of the IAMP.

- An overlay is a possibility that would allow the City to better manage development on the site.

  - The City is interested in guiding how the site develops.

- Triggers will be outlined in the IAMP to ensure it is implemented and that there are opportunities to provide further define specifics as the timing gets closer and more information is made available (e.g., setting an overlay zone).

  - The initial phase of this is contingent upon when funding is available, since the problem situation does exist today.

- Costs could be recovered to an extent by selling the land that the POE is on.

- POE relocation would potentially come from different funding sources than a traditional interchange project.

- Visitors to the marina or RV park often miss Brownell Boulevard because it is so close to the interchange ramp terminal.

TAC/PAC Opinions

- Members of the TAC/PAC agreed that they could support relocating the POE as shown as the preferred option.

Concluding Comments/Next Steps

- The project team will have a conversation with City Council tonight.
- Assuming agreement from the Council, the team will begin work on the draft IAMP document.
- Next meeting will be in the 6 weeks or so and will cover the draft IAMP.

Appendix B

Technical Memorandum #1 – Definition and Background

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
610 SW Alder Street, Suite 700, Portland, OR 97205 P 503.228.5230 F 503.273.8169

TECHNICAL MEMORANDUM #1 (Final)

I-82 / US 730 Interchange Area Management Plan

Definition & Background

Date: February 26, 2010

To: Teresa Penninger, ODOT Region 5

From: Matt Hughart, AICP; Nick Foster; and Marc Butorac, PE, PTOE

cc: JR Cook, City of Umatilla

The purpose of this technical memorandum is to define the intent of the Interchange Area Management Plan (IAMP), define the interchange function, the project goals and objectives, and the proposed Interchange Management Study Area (IMSA) for the existing I-82/US 730 interchange in Umatilla, Oregon.

PURPOSE AND INTENT

The IAMP is a strategic transportation plan that is designed to protect the long-term function of the Interstate 82 (I-82) / US 730 interchange by preserving the capacity of the interchange while providing safe and efficient operations between connecting roadways. The IAMP will identify land use management strategies, short-term and long-term transportation improvements, access management goals, and strategies to fund identified improvements.

The intent is that the IAMP planning efforts will result in policies, ordinances, and other provisions that will be adopted into the City of Umatilla and Umatilla County's Transportation System Plan (TSP) and Comprehensive Plan. The IAMP will also be adopted by the Oregon Transportation Commission (OTC) as an amendment to the Oregon Highway Plan.

PROBLEM STATEMENT

The signalized intersections of Brownell Boulevard/US 730 and the southbound I-82/US 730 terminal are located within close proximity of one another resulting in undesirable operations. The signals have been coordinated in an effort to improve intersection operations. Nevertheless, queuing problems associated with truck traffic accessing the Umatilla Port of Entry weigh station continue to occur at the two intersections. This condition varies by season due to increase of trucks during mid-summer and fall harvests.

The Port of Entry and weigh station is located on the northwest corner of Brownell Boulevard/US 730 intersection which coincides with the northwest quadrant of the I-82/US 730 interchange. A truck stop, restaurant, fueling station and other commercial development is located in the southwest quadrant. East of the interchange is primarily vacant land within the City of Umatilla Urban Growth Area. This land is zoned exclusive farm use, tourism commercial or public facilities. The City is interested in the economic development potential of this area and would like to develop a local street network plan that supports the safe and efficient operation of the interchange and the US 730/US 395 intersection located within the interchange influence area.

INTERCHANGE FUNCTION AND CLASSIFICATION

The primary function of the I-82/US 730 interchange is to facilitate statewide and inter-urban and inter-regional travel to/from the I-82 corridor. A secondary function is to provide east-west inter-regional connectivity across I-82 for the City of Umatilla and surrounding rural land uses. I-82 is a short, but significant interstate highway that connects the state of Washington to the I-84 corridor. I-82 is classified as at Interstate Highway by the Oregon Highway Plan (OHP) and designated as an Expressway and Statewide Freight Route. US 730 is a Regional Highway that provides regional connectivity between numerous local jurisdictions and the I-82/I-84 interstate highways.

GOALS AND OBJECTIVES

The primary goal of the IAMP process is to protect the function of the interchange by anticipating changes in land use and traffic patterns and planning for necessary improvements over a 20-year planning horizon. 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 objectives of the I-82 / US 730 IAMP are to:

- Refine and prioritize improvements needed to maintain acceptable traffic operations at the interchange while providing safe access to adjacent land uses;
- Provide for efficient connectivity, right-of-way, and access control in the Interchange Management Study Area (IMSA);
- Consider the surrounding contextual land use and roadway network;
- Provide plans for improved local street connectivity in the IMSA (see definition below) while limiting cul-de-sacs or other non-connected streets;
- Evaluate existing and potential land use designations, intensities, conditions, and actions that could have favorable effect on the facility or an adverse effect on the facility;
- Collaborate throughout the planning process with design professionals, jurisdictional representatives, developers, and local property owners.
- Comply with the intent of Statewide Planning Goal 1: Public Involvement, 2: Land Use Planning, 5: Natural Resources, 6: Air, Water and Land Resources Quality, 7: Areas

Subject to Natural hazards, 8: Recreation Needs, 9: Economic Development, 12: Transportation, and 14: Urban Growth Boundaries.

- Develop policies and implementation measures that support the goals of this project for local consideration and adoption into the City and County comprehensive plans, transportation system plans, and zoning ordinances, as appropriate.

Evaluation Criteria

Based on the above objectives, the following evaluation criteria were assembled to ensure that each concept developed throughout the project would be evaluated for consistency with the overall intent of the community and the project. The six proposed evaluation criteria categories are outlined below:

- Transportation Operations: This category consists of those criteria that assess the ability for all modes to travel through and within the study area. Special considerations within this category include safety, local connectivity and mobility, including freight mobility.
- Land Use: This category consists of those criteria that assess right-of-way impacts, consistency with adopted land use and economic development plans, transportation capacity impacts of changes in land use intensity, impacts to utilities, and impacts to existing and proposed developments.
- Economic Development: This category consists of those criteria that assess the potential for near-term (1-5 years), mid-term (5-15 years), and long-term growth (15-25 years) for areas within the vicinity of the interchange.
- Cost: This category consists of those criteria that assess the practicality of a design concept from a construction cost and feasibility perspective.
- Environmental, Social, and Equity factors: This category consists of those criteria that assess the degree to which a concept is compatible with the natural and built environment including environmental (i.e., storm water drainage and hazardous waste) and socio-economic (i.e., stakeholders' needs) impacts.
- Accessibility: This category consists of those criteria that assess the ability to access properties and businesses within the IMSA to/from the regional infrastructure network including the balance between local access and roadway function, future access for undeveloped properties, and adherence to the access spacing standards.

INTERCHANGE MANAGEMENT STUDY AREA (IMSA)

To provide a comprehensive study and to achieve effective and meaningful results, the IMSA needs to include an assessment of developable and re-developable properties and major roadways that would significantly affect the interchange function over the next 20 years. At a minimum, the IMSA should include properties within ½-mile from the existing I-82/US 730

interchange as defined by the IAMP Guidelines.[1] The study area should also take into account facilities and properties that will impact the operations of the interchange and any natural or cultural resources in the vicinity of the interchange.

A proposed draft Interchange Management Study Area (IMSA) map is shown in Figure 1. Figure 1 identifies key features and boundaries of the area to be included in the IAMP. As shown on the IMSA map, two study boundaries are identified: the IAMP Operations and Access Study Area and the Land Use Study Area. The following describes the criteria used to create the IMSA map.

Operations and Access Study Area

The Operations and Access Study Area includes all access points and intersections within ¼-mile of the existing I-82/US 730 interchange and encompass key intersections that have potential to affect traffic operations in the interchange area over the planning period. This study boundary identifies the area for which operational analysis will be completed and the area that will be considered in the Access Management Plan element of the IAMP. The proposed study intersections include:

- I-82/US 730 Northbound Terminal
- I-82/US 730 Southbound Terminal
- US 730 / US 395
- US 730 / Lind Road
- US 730 / Scaplehorn Road
- US 730 / Private Driveway (Umatilla Self Storage business) between Scapelhorn Road and Northbound I-82 ramp
- US 730 / Brownell Boulevard
- US 730 / Port or Entry Entrance Driveway
- US 730 / two private business driveways (Crossroads)
- US 730 / Eisele Drive
- US 730 / River Road
- US 395 / Margaret Avenue
- US 395 / Power City Road

Land Use Study Area

The Land Use Study Area includes all properties located roughly within a ½-mile of the interchange. The Land Use Study Area extends beyond a ½-mile in places to incorporate

[1] http://www.oregon.gov/ODOT/TD/TP/docs/publications/iampGuidelines.pdf

developable and re-developable properties that are expected to significantly affect the interchange function over the next 20 years. Properties identified with potential to affect the interchange include those that are expected to utilize the interchange as their primary connection to I-82 or those that may be necessary to examine to improve local circulation.

TABLE OF CONTENTS

The IAMP will be documented in several technical memorandums throughout the course of the project. The draft and final IAMP document will include a compilation of all material presented in the following order (subject to change):

1) Definition and Background
   a. IAMP Purpose and Background Purpose and Intent
   b. Problem Statement
   c. Interchange Function
   d. Goals and Objectives
   e. Interchange Management Study Area (IMSA) Map
2) Review of Adopted Plans and Regulations
3) Existing Conditions Analysis
   a. Land Use
   b. Transportation Facilities and Traffic Operations
   c. Natural and Cultural Resources
4) Future Conditions Analysis
   a. Land Use
   b. Transportation Facilities and Traffic Operations
   c. Natural and Cultural Resources
5) Concept Development and Analysis
6) Interchange Area Management Plan
   a. Selected Concept and Findings
   b. Access Management Plan
7) Adoption and Implementation Tools
8) IAMP Monitoring and Updates

LEGEND

- Minimum 1320' IAMP Limits
- Land Use Study Area
- IAMP Operations/Access Study Area
- Umatilla UGB

INTERCHANGE MANAGEMENT STUDY AREA
UMATILLA, OREGON

FIGURE **1**

H:\projfile\10369 - I-82 US 730 IAMP\GIS\UmatillaBaseMap.mxd

Appendix C

Technical Memorandum #2 – Review of Adopted Plans and Regulations

Angelo planning group

LAND USE PLANNING • TRANSPORTATION PLANNING • PROJECT MANAGEMENT

Memorandum

TO: Technical Advisory Committee and Public Advisory Committee

FROM: Darci Rudzinski, AICP
Serah Breakstone, AICP

DATE: March 1, 2010

CC: Frank Angelo, Principal

FILE #: 024-021

RE: I-82 / US 730 Umatilla Interchange Area Management Plan
Technical Memo #2: Review of Adopted Plans and Regulations – FINAL DRAFT

INTRODUCTION

This memorandum provides an overview of the regulatory framework pertaining to the land use and transportation systems in the vicinity of the Interstate 82 (I-82) / US 730 interchange in the City of Umatilla (see Figure 1, Interchange Management Study Area). The following sections define the Interchange Management Study Area (IMSA), explore the land uses allowed in the vicinity of the interchange, and summarize the plans, policies, and regulatory documents that govern the area. The regulatory context involves state and local levels of governance that directly impact transportation planning associated with the I-82/US 730 Interchange Area Management Plan (IAMP). This memorandum provides a policy framework for the IAMP planning process. Additionally, this memorandum assesses the relationships between the policy framework and potential alternatives and management strategies that may be recommended in the IAMP. Understanding these relationships will help identify any policy or regulation amendments that may need to be made to local policies and ordinances in order to implement the IAMP.

Background

The signalized intersection of Brownell Boulevard and US 730 is located just west of the intersection of southbound I-82 ramp and US 730. The close proximity of the two intersections has resulted in queuing problems associated with truck traffic accessing the Umatilla Port of Entry weigh station. This condition varies by season due to increase of trucks during mid-summer and fall harvests. Signals have been coordinated in an effort to improve intersection operations; however, problems continue to occur.

The area east of the interchange is mostly vacant or underdeveloped and is not currently experiencing traffic problems. However, this area is within Umatilla's UGB and the city expects this area will begin to develop over the next 20 years. An access management plan and local circulation plan to guide future development will help to avoid a situation similar to that on the west side of the interchange.

To address the above issues, the Oregon Department of Transportation (ODOT), in conjunction with the City of Umatilla, is preparing an IAMP for the I-82/US 730 interchange. The IAMP is a strategic transportation plan that is designed to protect the long-term function of the interchange by preserving its capacity while providing safe and efficient operations between connecting roadways. The IAMP will identify land use management strategies, short-term and long-term transportation improvements, necessary access management, and strategies to fund identified improvements.

The intent is that the IAMP planning efforts will result in policies, ordinances, and other provisions that will be adopted into the City of Umatilla's Comprehensive Plan through an amendment to the city's Transportation System Plan (TSP). The IAMP will be adopted by the Oregon Transportation Commission (OTC) as an amendment to the Oregon Highway Plan.

Study Area Description

An IAMP Land Use Study Area as shown in Figure 1 has been delineated around land in the vicinity of the I-82/US 730 interchange. The Land Use Study Area ("study area") can be described as the area in which land uses may have an affect on the design and function of the interchange. The boundaries of the study area largely coincides with the city's urban growth boundary in the southeast quadrant, an area currently zoned for county land uses, but governed by a joint management agreement ("JMA") between the city and county (see Joint Management Agreement section of this memorandum). The study area includes land just east of US 395, as well as land in the vicinity of the intersection of Power City Road with the Highway and the Brownell Boulevard/US 730 intersection, which lies outside the UGB and within Umatilla County jurisdiction.[1] The area in the south west quadrant of the study area, as well as land north of the interchange, lies both within and outside of the current city limits, with areas outside the city governed by the JMA and the land use designations on the City of Umatilla Comprehensive Plan Map.

The study area includes all properties located roughly within a ½ mile of the interchange. In some instances, the study area extends beyond ½ mile to incorporate developed, developable, and re-developable properties that have the potential to impact the function of the interchange over a 20 year-planning horizon. Properties identified with potential to affect the interchange include those that are expected to utilize the interchange as their primary connection to I-82 or those that may be necessary to include in local circulation plans.

[1] If the ultimate recommendations of the IAMP impact county land, local implementation policies, standards, or requirements may be proposed for adoption into Umatilla County land use and transportation plans and ordinances.

The Port of Entry weigh station is located on the northwest corner of Brownell Boulevard/US 730 intersection which coincides with the northwest quadrant of the I-82/US 730 interchange. A truck stop, restaurant, fueling station and other commercial development are located in the southwest quadrant. East of the interchange is primarily vacant land within the City of Umatilla Urban Growth Area. This land is zoned for exclusive farm use, tourism commercial uses, or public facilities. The City is interested in the economic development potential of this area and would like to develop a local street network plan that supports the safe and efficient operations of the interchange and the US 730/US 395 intersection located within the study area.

REGULATORY FRAMEWORK

Documents Reviewed

This memorandum summarizes relevant state and local regulatory documents, long-range plans, and adopted policies and identifies how they influence transportation planning in the vicinity of the interchange and possible future interchange improvements.

The Statewide Planning Goals relevant to the IAMP express the state's policies on land use and related topics such as economic development, 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.

The Transportation Planning Rule (TPR) requires that land use plans and the transportation system plan are consistent with one another. It requires cities, counties, and the state to adopt transportation system plans that integrate land use and transportation planning.[2]

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. The OTP, with all of the associated modal plans, constitutes the state transportation system plan (TSP).

[2] Elements of IAMPs, such as policies addressing interchange planning and access management plans, are typically adopted into local plans and ordinances and the IAMP document itself is adopted by the Oregon Transportation Commission as a Facility Plan of the Oregon Highway Plan. The IAMP planning process considers how existing and planned land uses are likely to impact the future function of the subject interchange. In addition to transportation improvements, recommendations in IAMPs can include land use restrictions. Restrictions on what uses are allowed in the vicinity of the interchange, for example, could be adopted as part of an IAMP to ensure that future development will not generate traffic that will exceed the capacity of the facility.

The 1999 Oregon Highway Plan (OHP) implements the OTP by establishing long-range policies and investment strategies for the State Highway System. As an element and modal plan of the OTP, the OHP guides the planning, operations, and financing of ODOT's Highway Division. Related transportation administrative rules establish procedures and criteria used by ODOT to coordinate with other jurisdictions and to govern aspects of highway design 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 OHP.

For both the City of Umatilla and the Umatilla County, the local comprehensive plan documents contain objectives and policies that are intended to guide growth and development over a 20-year planning horizon. They are based on the specific qualities and characteristics of the community and reflect local plans and needs for future improvements. The comprehensive plans are intended to be consistent with the Statewide Planning Goals. The city and county TSPs, the transportation element of the local comprehensive plans, are also reviewed here. TSPs contain policies relating to the transportation system, including streets and bicycle/pedestrian facilities. TSPs also outline planned transportation improvements.

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.

The following transportation and land use plans were reviewed for policies and regulations applicable to the I-82/US 730 interchange.

Plan / Policy Document	Page Number
State	
Oregon Statewide Planning Goals	5
- Goal 1 Public Involvement	5
- Goal 2 Land Use Planning	5
- Goal 3 Agriculture	6
- Goal 5 Natural Resources, Scenic and Historical Areas, and Open Spaces	6
- Goal 6 Air, Water and Land Resources Quality	7
- Goal 7 Areas Subject to Natural Hazards	7
- Goal 8 Recreational Needs	7
- Goal 9 Economic Development	7
- Goal 12 Transportation and Oregon Administrative Rule 660, Division 12 (TPR)	8
- Goal 14 Urbanization	9
Oregon Administrative Rule 731, Division 15	9
Oregon Transportation Plan (2006)	9
Oregon Highway Plan (1999)	11
Oregon Bicycle and Pedestrian Plan (1995)	14
Oregon Rail Plan (2001)	15
Oregon Administrative Rule 734, Division 51 Access Management Rule	16
Oregon Revised Statute Title 31 Highways, Roads, Bridges and Ferries	19

Highway Design Manual	20
Local	
Joint Management Agreement, City of Umatilla and Umatilla County	20
Umatilla County	
- Comprehensive Plan	20
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- Development Code	26
City of Umatilla	
- Comprehensive Plan	26
- Transportation System Plan	29
- Zoning Code	32

STATE OF OREGON

Statewide Planning Goals

Statewide Planning Goal 1: Citizen Involvement

Goal 1, Citizen Involvement, requires those jurisdictions that prepare, adopt, and maintain comprehensive plans to provide the "opportunity for citizens to be involved in all phases of the planning process." According to the goal, the planning process includes preparation of plans and implementation measures, adoption of plans and implementation measures, and minor and major amendments to adopted plans. Technical information associated with the planning process must be available to citizens in an understandable form; accessible means for providing feedback must also be available.

Developing and adopting the I-82/US 730 IAMP will involve meetings of a Steering Committee (SC), Technical Advisory Committee (TAC), and Public Advisory Committee (PAC). The PAC will consist of key property owners, business owners, and interested citizens who may have a vested interest in the planning project. The PAC will provide local input into the process, using their knowledge of the area and issues related to the interchange to guide the project. In addition, three public workshops will be held during various stages of IAMP development to provide information and updates on the IAMP planning process. The required public hearings for adoption of the IAMP at both the local and state level will also provide opportunity for public comment. All of these public involvement activities will be guided by and assessed according to Goal 1.

Statewide Planning Goal 2: Land Use Planning

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. 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." For the I-82/US 730 IAMP, Goal 2 will require that ODOT coordinate with the City of Umatilla and Umatilla County, which have planning authority over the area in the vicinity of the interchange. Coordination is particularly important because land use decisions in the vicinity of the interchange could affect its future use and operation.

A second important element of Goal 2 is that land use decisions and actions must 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 there be evidence that a reasonable person would find to be adequate to support findings of fact that a land use action complies with the applicable review standards.

Third, Goal 2 requires that city, county, state, and federal plans and actions related to land use 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 the IAMP developed for the I-82/US 730 interchange will need to be consistent with the locally adopted TSPs. To meet this state requirement, the IAMP may include recommendations for amendments to the city and county's TSPs.

In the case of the exclusive farm land east of the interchange, Goal 2 also provides a framework for allowing additional growth outside Umatilla city limits, in the vicinity of the interchange. Goal 2 includes standards for taking an "exception" to one or more statewide planning goals. Exception standards would need to be met before a more intensive land use designation could be adopted on parcels currently designated as Exclusive Farm Use by the county. 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 exceptions standards are interpreted in significant detail in **OAR 660, Division 4**. Rule sections particularly relevant to developing an IAMP for the I-82/US 730 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 nonresource 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. See page 27 of this memorandum for the county's ordinance regulating farm land (Exclusive Farm Use/A-1 zone).

Statewide Planning Goal 3: Agricultural Lands

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 nonfarm 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.

Statewide Planning Goal 5: Natural Resources, Scenic and Historic Areas, and Open Spaces

The purpose of Goal 5, Natural Resources, Scenic and Historic Areas, and Open Spaces, is to "protect natural resources and conserve scenic and historic areas and open spaces." This goal requires local governments to inventory natural and cultural resources in their jurisdictions and to develop and adopt programs to conserve and protect them. Among the resources to be inventoried are: riparian corridors, wetlands, federal Wild and Scenic Rivers, state Scenic Waterways, groundwater resources, wildlife habitat, natural areas, wilderness areas, open spaces, scenic views and sites, mineral and aggregate resource areas, energy sources, and historic and cultural areas.

Goal 5 resources on land in the county or city will need to be identified in the I-82/US 730 IAMP study area. Improvements proposed in the IAMP must comply with this goal and city and county Goal 5 policies and programs accordingly.

Statewide Planning Goal 6: Air, Water and Land Use Resources Quality

Jurisdictions must comply with state and federal environmental agency regulations. Goal 6, Air, Water and Land Resources Quality, calls for jurisdictions to "maintain and improve the quality of the air, water and land resources of the state." Waste and process discharges within a jurisdiction may not exceed the carrying capacity of the local air shed and water shed in the long-term, nor degrade the quality or otherwise threaten the availability of the air shed and water shed services.

This goal and corresponding policies in the county and city comprehensive plans must be taken into account in developing and selecting alternatives for the I-82/US 730 IAMP.

Statewide Planning Goal 7: Areas Subject to Natural Hazards

Goal 7, Areas Subject to Natural Hazards, was adopted to "protect people and property from natural hazards." The goal requires local jurisdictions to adopt comprehensive plans, including inventories, policies, and implementation measures, for identifying natural hazard areas and prohibiting or limiting development in these areas. Although local jurisdictions may define others, the goal defines natural hazard areas as those subject to floods (both coastal and riparian), landslides, earthquakes and related events, and wildfires.

Similar to Goal 5 resources, natural hazards will need to be identified in the I-82/US 730 IAMP study area. Improvements proposed in the IAMP must comply with this goal and the local jurisdictions' Goal 7 policies and programs accordingly.

Statewide Planning Goal 8: Recreational Needs

Goal 8, Recreational Needs, was adopted to "satisfy the recreational needs of the citizens of the state and visitors, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts." The goal requires that local governments conduct comprehensive recreational planning by identifying recreational needs, planning for facilities in sufficient

quantities and locations to meet these needs, and working with private companies and other partners in meeting these needs. The goal provides specific guidance on destination resort siting.

Statewide Planning Goal 9: Economic Development

The intent of Goal 9, Economic Development, is to "provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon's citizens." Local comprehensive plans and policies must support this goal and should include an assessment of existing economic conditions and comparative advantages along with policies addressing economic development and development opportunities. Plans must also identify an adequate supply of sites with characteristics suitable for a variety of employment and economic development, and limit development around identified industrial sites to that which is compatible with uses allowed on the sites. The goal suggests implementation measures such as tax incentives and disincentives, preferential assessments, land use regulations, capital improvement planning and programming, and fee or partial fee acquisition.

The IAMP must demonstrate the ways in which the preferred alternative selected for future interchange improvements supports this goal and the economic development policies adopted in the city and county comprehensive plans. The city has identified the area east of the interchange for future employment development. Transportation analysis performed for the IAMP will rely on existing land use designations (i.e. planned land uses). Future plans for intensification of land uses in the area that may require re-zoning will depend on the transportation and land use implementation measures adopted as part of the IAMP, and will need to comply in particular with Goal 12 and the Transportation Planning Rule (TPR) so that employment development in the area can occur in a way that protects the capacity and safe function of the interchange and any future state transportation investments.

Statewide Planning Goal 12: Transportation

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 interchange improvements.

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;

- 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's 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 will involve a review of existing access points within at least one-quarter mile of the interchange ramps. See OAR 734, Division 51 on page 16 of this memorandum for a review of these access management rules.

Statewide Planning Goal 14: Urbanization

Goal 14 regulates urban growth boundaries. The goal provides that establishment and change of a UGB shall be based upon consideration of the following four factors:

1. Efficient accommodation of identified land needs;
2. Orderly and economic provision of public facilities and services;
3. Comparative environmental, energy, economic, and social consequences;
4. Compatibility of the proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB.

Additionally, **ORS 197.298** establishes priorities for including land inside urban growth boundaries. The first (highest) priority for inclusion is land that is designated "urban reserve" land. The second priority is land adjacent to a UGB that is identified as "an exception area or nonresource land." The third priority is land that is designated as "marginal land" and the final (lowest) priority is land that is designated for agriculture, forestry, or both.

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).

Oregon Transportation Plan (2006)

Originally adopted in 1992, the Oregon Transportation Plan (OTP) is a policy document developed by ODOT in response to 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 2006 OTP expands on the policy objectives of the 1992 plan, with an emphasis on maintaining assets in place, [3] optimizing existing system performance through technology and better system integration, creating sustainable funding, and investing in strategic capacity enhancements.

The OTP's goals, policies, and strategies guide the development of state multimodal, modal/topic[4] and facility plans and regional and local transportation system plans. The OTP provides the framework for prioritizing transportation improvements and funding, but it does not identify specific projects for development.[5] As required by Oregon and federal statutes, the OTP guides development and investment in the transportation system through:

- Transportation goals and policies,
- Transportation investment scenarios and an implementation framework, and
- Key initiatives to implement the vision and policies.

Goals in the OTP include: Mobility and Accessibility; Management of the System; Economic Vitality; Sustainability; Safety and Security; Funding the Transportation System; and Coordination, Communication and Cooperation. Policies and strategies under many of these goals emphasize increasing coordination and cooperation among federal and state agencies, regional and local governments and private entities to achieve these goals.

The Implementation Framework section of the OTP describes the implementation process and how state multimodal, modal/topic plans, regional and local transportation system plans and master plans will further refine the OTP's broad policies and investment levels. Local transportation system plans can further OTP implementation by defining standards, instituting performance measures, and requiring that operational strategies be developed.[6]

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[3] The OTP defines "asset management" as a "systematic process of maintaining, upgrading and operating physical assets cost-effectively. It combines engineering principles with sound business practices and economic theory, and it provides tools to facilitate a more organized, logical approach to decision-making. Asset management provides a framework for handling both short- and long-range planning."

[4] Modal or topic plans, as developed by ODOT and other state agencies, include plans for aviation, bicycle and pedestrian facilities, highways, marine ports and waterways, public transportation and rail.

[5] Projects are identified through facility plans and regional and local transportation system plans, and sometimes through modal plans.

[6] As stated in the Implementation section of the OTP, requirements for regional and local transportation system plans (TSPs) are found in the Transportation Planning Rule (OAR 660-012). Regional and local TSPs must be consistent with the state TSP (the OTP), state multimodal, modal/topic and transportation facility plans.

The Implementation section also describes three investment levels, examples of the investment priorities for each level of investment, and their impacts on the transportation system. These levels are described as "flat funding" (Level 1), "maintaining and improving existing infrastructure" (Level 2), and "expanding facilities and services" (Level 3). The recommendation in the OTP is for the State to invest at levels closer to Level 3 "in order to be competitive economically and to have the transportation infrastructure and services that allow communities to function well."

Finally, a list of "key initiatives" describes the OTP's implementation priorities. The key initiatives are intended to help frame plan implementation and reflect the directions of the OTP including system optimization, integration of transportation modes, integration of transportation, land use, the environment and the economy, and the need to make strategic investments using a sustainable funding structure. The key initiatives envision creating the sustainable funding plan using both traditional and new revenue sources. The I-82/US 730 IAMP will likely draw on traditional and innovative revenue sources to fund its proposed improvements. Project funding will be addressed in the IAMP.

Oregon Highway Plan (1999, last amended 2006)

The 1999 Oregon Highway Plan (OHP), an element and modal plan of the state's comprehensive transportation plan, 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 policies found within the OHP that are relevant to the I-82/US 730 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 3A: Classification and Spacing Standards;
- Policy 3B: Medians;
- Policy 3C: Interchange Access Management Areas;
- Policy 4A: Efficiency of Freight Movement;
- Policy 4B: Alternative Passenger Modes;

<u>Policy 1A: State Highway Classification System</u>. 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: land use, statewide freight route, scenic byways, and lifeline routes.

The OHP (Appendix D) designates I-82, also called McNary Highway (No. 70) within the IAMP study area, as an Interstate and State Freight Route. US 730, also called the Columbia River Highway (No. 2), has multiple designations within the study area. West of I-82, US 730 is classified as a Regional Highway with an urban business area (UBA) designation between Sloan Avenue and Brownell Boulevard. East of I-82, US 730 is classified as a Statewide Highway and Freight Route up to the US 395 intersection. Both segments of US 730 are part of the National Highway System and are Federally Designated Truck Routes.

The Policy 1A Action 1A.1 definition states:

> *"Interstate Highways (NHS) 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."*

The federal Intermodal Surface Transportation Efficiency Act of 1991 required the establishment of a National Highway System to provide an interconnected system of principal arterial routes that will serve "interstate and inter-regional travel." ODOT has an obligation to ensure that the National Highway System in Oregon adequately performs this function of serving a larger geographic area.

<u>Policy 1B: Land Use and Transportation</u>. 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. The UBA designation on US 730 recognizes the dual objectives of providing local access to meet the needs of abutting properties while maintaining existing speeds to move through traffic. This designation allows modification of ODOT's access spacing standards for the highway, potentially allowing more frequent access than would otherwise be permitted. The UBA designation also raise the maximum volume-to-capacity (V/C) ratio permitted at intersections along US 730, allowing a greater level of congestion before improvements would be required.

<u>Policy 1C: State Highway Freight System</u>. This policy recognizes the need for the efficient movement of freight through the state. I-82 is a designated freight route. A main function of the interchange is to provide safe and efficient freight movements by providing free-flow movements for through-traffic on I-82 and for traffic moving on or off I-82.

<u>Policy 1F: Highway Mobility Standards Access Management Policy</u>. This policy addresses state highway performance expectations, providing guidance for managing access and traffic control systems related to state facilities. It provides mobility standards in terms of traffic volume compared to roadway capacity (a V/C ratio). According to Policy 1F, the mobility standard for I-82 in the IMSA, an Interstate Highway in an area outside of an MPO and STA (Special Transportation Area) where non-freeway posted speeds are greater than 35 miles per hour (mph) or equal to or greater than 45 mph, is a V/C ratio of 0.70 (including the US 730 ramp terminals).

The mobility standard for US 730 is 0.85 between Brownell Boulevard and Sloan Avenue (a Regional Highway with a UBA designation and posted speed of 35 mph or less) to the west and 0.70 from the I-82 ramp terminals to US 395 (a Statewide Highway, Freight Route, and posted speed of 45 mph).

Policy 1G: Major Improvements. This policy requires maintaining performance and improving safety by improving efficiency and management on the existing roadway network before adding capacity. The state's highest priority is to preserve the functionality of the existing highway system. Tools that could be employed to improve the function of the existing interchange include access management, transportation demand management, improved traffic operations, and changes to local land use designations or development restrictions. After existing system preservation, the second priority is to make minor improvements to existing highway facilities such as adding ramp signals or making improvements to the local street network to minimize local trips on the state facility. The third priority is to make major roadway, or in this case, interchange, improvements. As part of this IAMP process, ODOT will work with the City of Umatilla and Umatilla County to determine how future improvements at the interchange can implement this policy.

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 this IAMP process, ODOT will work with the City of Umatilla and Umatilla County to identify improvements to the local road system that support the planned land use designations in the vicinity of the I-82/US 730 interchange and that will help preserve capacity and ensure the long-term efficient and effective operation of the interchange.

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 spacing standards can be found in Appendix C of the *Oregon Highway Plan.* It includes standards for each highway classification; generally, the access spacing distance increases as either the highway's importance or posted speed increases. Table 12 specifies that the interchange spacing on interstate freeways through urban areas is 3 miles. For Statewide Highways, interchange spacing is 1.9 miles in urban areas. As shown on Table 17 in the OHP, the spacing standard from the I-82/US 730 interchange, an urban interchange with a multi-lane crossroad, to the first major intersection of a crossroad is 1,320 feet.

Policy 3B: Medians. This policy acknowledges the use of medians in controlling turn movements and access to properties adjacent to state roadways in order to ensure safe and efficient operations of state facilities. Medians are to be used according to roadway classification and surrounding land uses and land use designations, and the policy likewise addresses appropriate openings in medians. There are no medians in the IMSA currently, but because of the importance of supporting safe and efficient traffic operations in the study area, medians may be considered during the IAMP process where appropriate.

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 17 contains the minimum spacing standards applicable to the I-82/US 730 interchange, an urban highway interchange that has a multi-lane crossroad. The spacing standards in an urban area for this type of interchange are:

1 mile (1.6 km)	Distance between the start and end of tapers of adjacent interchanges.
1,320 feet (400 m)	Distance to first intersections where left turns are allowed.
1,320 feet (400 m)	Distance between the last 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. I-82 is a designated Freight Route. A principal function of the interchange is to accommodate safe and efficient freight movements by providing free-flow movements for through-traffic on I-82 and for traffic moving on or off I-82.

Policy 4B: Alternative Passenger Modes. This policy encourages the development of alternative passenger services and systems as part of broader corridor strategies and promotes the development of alternative passenger transportation services located off the highway system to help preserve the performance and function of the state highway system.

Oregon Bicycle and Pedestrian Plan (1995)

The Oregon Bicycle and Pedestrian Plan, as a modal element of the Oregon Transportation Plan, provides guidance for planning, design and operation of facilities for bicycle and pedestrian travel. ORS 366.514, passed by the Oregon Legislature in 1971, requires the inclusion of facilities for pedestrians and bicyclists wherever a road, street or highway is built or rebuilt by ODOT or a local jurisdiction. The Oregon Bicycle and Pedestrian Plan contains the standards and designs used on state highway projects for these facilities.

The plan includes two parts: the Policy and Action Plan, and Planning, Design, Maintenance, and Safety. The policy section provides background information, including relevant state and federal laws, and contains the goals, actions, and implementation strategies proposed by ODOT to improve bicycle and pedestrian transportation.

The plan states that bikeway and walkway systems will be established on rural highways by widening shoulders as part of modernization projects, as well as on many preservation overlays, where warranted. For urban highways, implementation may take place:

- As part of modernization projects (bike lanes and sidewalks will be included);
- As part of preservation projects, where minor upgrades can be made;
- By restriping roads with bike lanes;
- With minor betterment projects, such as completing short missing segments of sidewalks;
- As bikeway or walkway modernization projects;
- By developers as part of permit conditions, where warranted.

The second part ("Second Part") of the Oregon Bicycle and Pedestrian Plan governs the design of bicycle and pedestrian facilities on state-owned facilities. The Facility and Design Standards section includes subsection G. Interchanges (under II.7. Intersections). Guidelines included here address considerations and improvements necessary to safely accommodate pedestrian and bicycle movements at both at-grade and grade-separated crossings. Illustrations show how to accommodate pedestrian and bicycle movements in ramp, turn lane, and roundabout design.

ODOT is currently updating the design section of the Oregon Bicycle and Pedestrian Plan. A public review draft was made available in 2007 but the Oregon Transportation Commission has not adopted a final document. Many new pedestrian and bicycle treatments have been developed and incorporated into the update. Specific to interchange development and upgrades, the new guidelines and standards address how to integrate pedestrian and bicycle facilities into different interchange designs. Once adopted, the Oregon Bicycle and Pedestrian Plan Design Standards and Guidelines will be referenced where bicycle and pedestrian facilities are planned as part of I82/US 730 interchange improvements.

Oregon Rail Plan (2001)

As summarized later in this report, the City of Umatilla's TSP includes information regarding the Union Pacific Railroad operated local freight rail line that runs through the northwestern quadrant of the IAMP study area and forms its northeastern boundary. The Oregon Rail Plan is a modal element of the OTP. It is intended to implement the OTP's long-range vision of a viable freight and passenger rail system in Oregon.

Chapter 1, Rail Policies and Planning, includes federal requirements for rail freight. This chapter includes a section addressing compliance with Statewide Planning Goals. ODOT's certified State Agency Coordination (SAC) Program and Oregon Administrative Rules Chapter 31, Division 15 describe the procedures that ODOT will follow when developing and adopting plans to ensure that they comply with the statewide planning goals and are compatible with acknowledged comprehensive plans. Policy 1 under Freight Rail is "increase economic opportunities for the State by having a viable and competitive rail system."

Chapter 2 is the Freight Element of the Oregon Rail Plan. The element has four major purposes: (1) describe Oregon's freight rail system in terms of the carriers and the individual properties that make up the state railroad system, (2) describe the commodities transported by rail in Oregon, (3) identify funding needs and potential funding sources for railroads in Oregon, (4) assess what shippers require of rail service in Oregon. Rail activity in Northeastern Oregon is dominated by the main line operations of the Union Pacific and its connection to the east. The railroad's hump yard at Hinkle is located in Hermiston, at the junction of the UP's Overland route main line and the line to Spokane, and is the largest UP classification facility in the Pacific Northwest. Hinkle is also the UP's major locomotive servicing and maintenance facility in the region. The "Umatilla Turn" connects local manufacturers to the Hinkle Yard and the UP mainline south, to Ontario and into Idaho. The UP main line between Nampa, Idaho and Hinkle is maintained in Federal Railroad Administration (Track) Class 5 condition that permits operation of freight trains up to 80 mph.[7] There are no weight or dimensional restrictions on the mainline.

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, *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. Pursuant to 734-051-0125(1), spacing standards for approaches in the area of an interchange:

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

[7] The Federal Railroad Administration has established nine classes of track and safety standards that prescribe the maximum speed of operation for both freight and passenger trains. The classes of track and prescribed speed limits for each are presented in Table 2-2 of the Oregon Rail Plan.

(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.

In order for ODOT to approve an application, the requirements of 734-051-0125(2) must be met:

a) Access spacing standards for approaches in the area of an interchange shown in Figures 1, 2, 3 and 4 must be met or approaches must be combined or eliminated to result in a net reduction of approaches to the state highway and improve compliance with spacing standards; and

(b) The approach must be consistent with any applicable Access Management Plan or Interchange Area Management Plan.

Additional Section -0125 standards applicable to interchange areas include:

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

(4) Location of traffic signals within an interchange area illustrated in Figures 1, 2, 3 and 4 must meet the criteria of OAR 734-020-0400 through 734-020-0500.

(5) 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 and interchange area management plans for particular sections of a highway. The Rules states that:

(1) The Department encourages the development of Access Management Plans and Interchange Area Management Plans to maintain and improve highway performance and safety by improving system efficiency and management before

adding capacity. Access Management Plans and Interchange Area Management Plans:

(a) Must be consistent with Oregon Highway Plan;

(b) Must be used to evaluate development proposals; and

(c) May be used to determine mitigation for development proposals.

(2) Access Management Plans and Interchange Area Management Plans must be adopted by the Oregon Transportation Commission as a transportation facility plan consistent with the provisions of OAR 731-015-0065. Prior to adoption by the Oregon Transportation Commission, the Department will work with local governments on any amendments to local comprehensive plans and transportation system plans and local land use and subdivision codes to ensure the proposed Access Management Plan and Interchange Area Management Plan is consistent with the local plan and codes.

(3) The priority for developing Access Management Plans should be placed on facilities with high traffic volumes or facilities that provide important statewide or regional connectivity where:

(a) Existing developments do not meet spacing standards;

(b) Existing development patterns, land ownership patterns, and land use plans are likely to result in a need for deviations; or

(c) An Access Management Plan would preserve or enhance the safe and efficient operation of a state highway or interchange.

(4) An Access Management Plan may be developed:

(a) By the Department;

(b) By local jurisdictions; or

(c) By consultants.

(5) An Access Management Plan must comply with all of the following criteria, unless the Plan documents why a criterion is not applicable:

(a)Include sufficient area to address highway operation and safety issues and development of adjoining properties including local access and circulation.

(b) Describe the roadway network, right-of-way, access control, and land parcels in the analysis area.

(c) Be developed in coordination with local governments and property owners in the affected area.

(d) Be consistent with any applicable Interchange Area Management Plan, corridor plan, or other facility plan adopted by the Oregon Transportation Commission.

(e) Include polices, provisions and standards from local comprehensive plans, transportation system plans, and land use and subdivision codes that are relied upon for consistency and that are relied upon to implement the Access Management Plan.

(f) Contain short, medium, and long-range actions to improve operations and safety and preserve the functional integrity of the highway system.

(g) Consider whether improvements to local street networks are feasible.

(h) Promote safe and efficient operation of the state highway consistent with the highway classification and the highway segment designation.

(i) Consider the use of the adjoining property consistent with the comprehensive plan designation and zoning of the area.

(j) Provide a comprehensive, area-wide solution for local access and circulation that minimizes use of the state highway for local access and circulation.

(6) The Department encourages the development of an Interchange Area Management Plan 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.

(7) An Interchange Area Management Plan is required for new interchanges and should be developed for significant modifications to existing interchanges. An Interchange Area Management Plan must comply with the following criteria, unless the Plan documents why compliance with a criterion is not applicable:

(a) Be developed no later than the time an interchange is designed or is being redesigned.

(b) Identify opportunities to improve operations and safety in conjunction with roadway projects and property development or redevelopment and adopt policies, provisions, and development standards to capture those opportunities.

(c) Include short, medium, and long-range actions to improve operations and safety within the designated study area.

(d) 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) Provide adequate assurance of the safe operation of the facility through the design traffic forecast period, typically 20 years.

(f) Consider existing and proposed uses of all the property within the designated study area consistent with its comprehensive plan designations and zoning.

(g) Be consistent with any applicable Access Management Plan, corridor plan or other facility plan adopted by the Oregon Transportation Commission.

(h) Include polices, provisions and standards from local comprehensive plans, transportation system plans, and land use and subdivision codes that are relied upon for consistency and that are relied upon to implement the Interchange Area Management Plan.

Oregon Revised Statute Title 31 Highways, Roads, Bridges and Ferries

Pursuant to ORS 366.215, the Oregon Transportation Commission may select, establish, adopt, lay out, locate, alter, relocate, change, and realign primary and secondary state highways. The

OTC may not permanently reduce the vehicle-carrying capacity of an identified freight route when altering, relocating, changing or realigning a state highway unless safety or access considerations require the reduction. A local government may apply for, and the OTC may grant, an exemption to this requirement if it is found that the best interest of the state is met and that freight movement is not unreasonably impeded by the exemption.

Highway Design Manual

The Highway Design Manual includes ODOT standards and procedures for the location and design of new construction, major reconstruction, and resurfacing, restoration or rehabilitation (3R) projects. The Highway Design Manual is used for all projects that are located on state highways. Section 9.6, Interchange Design, includes the design standards, guidelines, and processes for designing interchanges for State Highways. ODOT, through the Engineering Services Unit, and FHWA must approve the reconstruction of an interchange on the Interstate system. The proposed interchange design must be prepared on the Standard Interchange Layout Sheet by the Engineering Services Unit or authorized representative. The approved design is then used for contract plans. Modifications to the I-82/US 730 interchange would be subject to the standards in 9.6.1, Freeway Interchange Design.

LOCAL PLANNING DOCUMENTS

Joint Management Agreement between City of Umatilla and Umatilla County (1996)

The Joint Management Agreement (JMA) outlines the responsibilities of the city and county for managing land within the Urban Growth Area (UGA). The UGA is defined as the land that is outside the city limits, but inside the UGB. Most of the land south of the I-82/US 730 interchange is within the UGA. At the time of the JMA adoption, the city's comprehensive plan was in effect for the UGA and the county zoning code was in effect for the UGA. This gives the city the lead role in reviewing and adopting comprehensive plan text amendments for the UGA. Per the JMA, the city and county have agreed to jointly develop and adopt a single set of land use regulations and plan and zone map designations for the UGA. The county has the lead role in reviewing and adopting amendments to land use regulations and the plan and zoning map for the UGA. The county retains responsibility for land use actions within the UGA until land is annexed into the city limits. Upon annexation, the city will amend its plan and zoning maps as necessary to include the annexed property. Unless plan and zone map amendments are processed simultaneously, the city will assign plan and zoning designations that most closely approximate the county's designations prior to annexation.

Umatilla County Comprehensive Plan (1983, Amended)

The policies developed as part of the comprehensive planning process for the county are found in Chapters 4-17 of the plan document. Those policies that are relevant to land use and transportation planning in the IAMP study area are provided below.

Chapter 4: The Planning Process

> 8. *Conversion of resource lands to non-resource uses shall follow procedures for plan amendments and Section 19a, Chapter 827 of Oregon Laws.*
>
> 9. *Conversion of resource lands (agricultural) to a non-resource designation shall follow procedures described in the Plan Map Section for Non-Resource lands. Umatilla County will not permit lands designated as Non-Resource to be converted to another designation that would allow a more intense level of use.*

A portion of the southeast quadrant of the IAMP study area falls under Umatilla County jurisdiction. This land is designated as part of West County Irrigation District and is therefore considered resource/agricultural land by the county. The policies above establish a planning process that ultimately serves to protect designated resource lands from more intensive types of development.

Chapter 5: Citizen Involvement

> 1. *Provide information to the public on planning issues and programs, and encourage continuing citizen input to planning efforts.*
>
> 3. *The County will, when revising and updating the Plan, appoint area citizen committee with members representing the broadest possible interest and concerns to take advantage of their valuable information and knowledge*.

The IAMP planning process will be aided by a Technical Advisory Committee. County planning and public works representation on this committee will ensure that Umatilla County interests are included in the planning process. The IAMP planning process also will include a Public Advisory Committee (PAC), the makeup of which will include key property owners, business owners, and interested citizens who may have a vested interest in the planning project. Membership on the PAC will reflect county as well as city interests, as they relate to the function and design of the interchange. Finally, a probable outcome of the project is an IAMP that recommends specific policy, and possibly regulatory, changes to county plans and transportation documents. Amendments to county plans and code provisions will require a legislative adoption

process, consistent with adopted county policies, as well as land use procedures, and Statewide Planning Goal 1.[8]

Chapter 6: Agriculture

> 2. *Establish four agricultural designations with several types of management regulations to protect and maintain the existing agricultural economy character of the county. The following Comprehensive Plan Designations are identified and corresponding preservation measures listed (see Plan and Zoning Map for locations of agricultural designations and EFU zone types):*
>
> *(b) West County Irrigation District - 40 acre minimum lot parcel size;*

As stated earlier, part of the IAMP study is outside of Umatilla city limits and has a county exclusive farm use (EFU) land use designation. This land is designated as part of the West County Irrigation District and is restricted by a minimum lot size, as well as the types of uses allowed (see discussion under the Statewide Planning Goal 3 section in this memorandum).

Chapter 9: Air, Water and Land Quality

1. *Discharges from existing and future developments shall not exceed applicable environmental standards.*

This policy is consistent with Statewide Planning Goal 6, Air, Water and Land Resources Quality, which directs that waste and process discharges within a jurisdiction can not exceed the carrying capacity, or degrade the quality, of the local air shed and water shed in the long-term. The environmental impacts of any proposed changes to the interchange or the local transportation system related to the function of the interchange will be taken into account in developing and selecting alternatives for the interchange area.

Chapter 12: Economy of the County

5. *In close proximity to cities, yet outside of urbanizable areas, limit commercial development to those areas that meet the requirements of Goal 2 and ORS 197.732 for an exception in resource areas. Commercial development shall also be limited to land demanding activities that require few public services.*

This policy recognizes the pressure to urbanize land in close proximity to cities. It is consistent with the county's policies protecting EFU lands, stating only those lands that meet the requirements of a goal exception to Statewide Planning Goal 3 will be considered for

[8] Note, Policy 3 under Citizen Involvement is likely addressing more comprehensive updates to the Plan and not more focused policy change recommendations that may result from the IAMP planning process.

commercial development. In addition, commercial development must be limited to those uses that put the least demand on public services.

Chapter 15: Transportation

1. *The Transportation System Plan (TSP) is an element of this Comprehensive Plan and identifies the general location of transportation improvements, changes in specific alignment of proposed County Road and highway projects that will be permitted without plan amendment.*

2. *To facilitate transportation system coordination within urban growth boundaries, the cities' TSPs shall apply within the UGB and shall be co-adopted by the County and addressed in the city/county joint management agreements.*

4. *Operation, maintenance, repair, and preservation of existing transportation facilities shall be allowed without land use review, except where specifically regulated.*

5A. *New development proposals will be reviewed for consistency with the County and Cities' Transportation System Plans.*

5B. *County shall protect the function of existing or planned roadways or roadway corridors through the application of appropriate land use regulations.*

7. *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 (see OAR 734.051). ODOT will be provided notice of land use applications and development permits that have access or frontage onto State Highways.*

25A. *Examine interchanges and other potential commercial and industrial locations for appropriateness of development taking into consideration access, sewer and water availability and environmental conditions.*

These transportation policies largely direct county actions as they relate to county facilities and are important to consider if the recommendations of the IAMP include changes to the local transportation system or access management measures on local roadways. Policies 7 and 25A relate closely to the IAMP planning process, highlighting the county's commitment to access management on state facilities and the need to balance land uses with the transportation system, as well as taking into account other factors.

Chapter 18 of the Comprehensive Plan describes the different land use designations established by the county and where the designations apply. The portion of county land within the I-82/US 730 IAMP study area is designated West County Irrigation District, which applies to small and medium farms (40-acre lot size) located on the outer edges of the Hermiston and Westland Irrigation Districts. The intent of this designation is to recognize a particular pattern of parcelization that has occurred in these areas and to protect those agricultural enterprises that

have developed there. These designated areas serve as a transition between smaller Special Agriculture uses (20-39 acres in size), and the larger, more extensive agricultural operations found in the North/South County Agricultural Regions (160-acre minimum lot size).

For the West County Irrigation District, the Comprehensive Plan states that:

> *A combination of parcel size regulations and non-farm review measures shall be implemented to maintain the existing mixture of part-time and full-time farming operations. However, a 40 acre minimum parcel size will be used as the specific measure to adhere to ORS 215.780.*

As discussed elsewhere in this memorandum, EFU policies limit the developablity of a portion of the IMSA, which in turn has implications on the expected demand placed on the interchange from this area.

Umatilla County Transportation System Plan (2002)

The Umatilla County TSP guides the management of existing transportation facilities and the design and implementation of future facilities in Umatilla County for the next 20 years. This TSP constitutes the transportation element of the county's Comprehensive Plan and satisfies the requirements of the Oregon Transportation Planning Rule (TPR) (OAR 660-12-045). It identifies transportation projects for implementation under a Umatilla County Capital Improvement Program (CIP) and inclusion in the Oregon Department of Transportation (ODOT) Statewide Transportation Improvement Program (STIP).

Among the goals and objectives in the adopted TSP that are most relevant to the I-82/US 730 IAMP are those that address transportation mobility, access, and the relationship between transportation and planned land uses. Those goals and objectives are found in Chapter 2 of the TSP 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 2***
> *Ensure that the road system within the county is adequate to meet public needs, including those of the transportation disadvantaged.*

Objectives

A. Develop a countywide transportation plan.
B. Meet identified maintenance level of service standards on the county and state highway systems.
C. Evaluate the transportation needs and land use characteristics of the unincorporated communities within the county to ensure adequate mobility for these areas.
D. Develop and adhere to a 20-year road program for maintenance and improvement of the existing county road system (including bridges).
E. Review and revise, if necessary, road cross-section standards for local, collector, and arterial roads to enhance safety and mobility.
F. Work with ODOT to develop access management strategies for Highways US 395, US 730, OR 11, OR 37, OR 74, OR 204, OR 207, OR 244, and Highways 332, 334, 335, and 339.
G. Evaluate the need for traffic control devices, particularly along the highways. Umatilla County Transportation Plan April 2002
H. Evaluate areas where safety is a concern.
I. Use the development review process to protect future right of way and to ensure roadway improvements are provided in a timely manner and are constructed to county standards.

Goal 4

Increase the use of alternative modes of transportation (walking, bicycling, and public transportation) through improved access, safety, and service.

Objectives

B. Provide sidewalks or shoulders and safe crossings on collectors and arterials.

D. Seek Transportation and Growth Management (TGM) and other funding for projects evaluating and improving the environment for alternative modes of transportation.

An inventory of the existing transportation system, including level of service criteria and a summary of operations by road type is provided in Chapter 4. Umatilla River Road, which runs south from US 730 along the western edge of the IAMP study area, is listed as an "important county road" (Table 4-1). This road provides an alternative route to the City of Umatilla and provides access to rural residential uses. Table 4-5 summarizes the operations of freeways in Umatilla County for 1996 average conditions and peak summer conditions. I-82, in the vicinity of the IAMP study area, is identified as having a level of service (LOS) of A under both conditions.

Chapter 5 contains traffic volume forecasts for Umatilla County based on historic growth on the state highway system and historic and projected population growth. Forecasts were only prepared for the state highway system in the county, since the volumes on these roadways are much higher than on any of the county roads. Traffic volumes on I-82 in the vicinity of the IAMP study area are expected to increase by approximately 52 percent by the year 2018 (Table

5-4). Volumes on US 730 in the vicinity of the study area are expected to increase by 20-60 percent, depending on where measurements were taken.

Chapter 7 contains detail operational plans for the transportation systems in Umatilla County, including roadway classifications, design standards, and access management standards. This chapter does not contain any standards for I-82 or US 730 because they are under ODOT jurisdiction and state standards in the OHP and Design Manual apply.

Chapter 9 contains recommended policy and ordinance language for adoption into the Umatilla County Comprehensive Plan and Development Code. Recommended policy and code language pertains to the approval process for transportation facilities, protection of transportation facilities, access management, and a process for coordinated review of land use decisions.

Umatilla County Development Code (Revised, 2009)

The County Development Code implements the land use and transportation policies contained within the County Comprehensive Plan and TSP. The predominant county zoning designation within the I-82/US 730 IAMP study area is Exclusive Farm Use (EFU), which is used to implement the resource protection policies of the West County Irrigation District, as identified in the Comprehensive Plan. Uses are permitted in the EFU zone consistent with state law; the county has identified certain uses that are permitted outright, while others require a zoning permit or land use decision. Per section 152.751 of the code, any amendments to the code text or zoning map must be consistent with the County Comprehensive Plan and Land Use Map. Other County zoning designations accommodate rural (F2), residential (R1-A and R-1), industrial (M-1 and M-2) and commercial (GC) land uses. Permitted uses and development requirements of these zones will be explored in Technical Memorandum #3.

City of Umatilla Comprehensive Plan

The Comprehensive Plan for the City of Umatilla is a policy document that serves to guide growth and development in the city over the 20-year planning horizon. The Comprehensive Plan is comprised of the following sections: Goals, Objectives and Policies; Plan Elements; Background; and Implementation. Most relevant to the I-82/US 730 IAMP are the policies concerning land use and transportation planning. This section provides a discussion of those policies.

Citizen Involvement

The City will maintain a Citizen Involvement Program that offers citizens the opportunity to be involved in all phases of the planning process. This program will provide for:

- *Distribution of planning information*
- *Coordination of public involvement*
- *Opportunities for citizen involvement in regional, state, and federal programs at the local level.*

Land Use

The City will maintain a Comprehensive Plan which designates a range of land use areas based on findings with respect to:

- *Natural resource capacity*
- *Projected population and economic growth*
- *Location and capacity of services*
- *Existing land use patterns*
- *Projected land use needs*

The Comprehensive Plan also states that review of land use actions must be coordinated with ODOT, Umatilla County, and other public agencies or utilities, as appropriate. The review process allows the incorporation of reasonable and appropriate conditions of approval to development proposals to minimize impacts and protect public facilities or transportation corridors, as recommended by service providers. Further, the city intends for industrial growth to occur in the Port of Umatilla where transportation facilities and public facilities are available, rather than in other areas of the city where conflicts with existing and planned residential and commercial uses are more likely.

Open Space, Scenic and Historic Areas, and Natural Resources

The City will protect natural resource areas and require that the long-range availability and use of the following will not be limited or impaired by development.

- *Mineral and aggregate deposits*
- *Energy resources*
- *Domestic water supplies*
- *Fish and wildlife habitats*
- *Ecologically and scientifically significant natural areas*
- *Agricultural land not needed for urbanization*
- *Historically significant sites/areas*
- *Wetland and riparian areas*

The Open Space, Scenic and Historic Areas, and Natural Resources policy will be taken into consideration as part of the IAMP planning process to the extent that these resources are present in the IMSA.

Transportation

The City will require uses fronting on arterial and collector streets to limit the points of access consistent with the traffic needs of the proposed use and physical features of the subject site.

The City will support efforts to construct a street connection between Powerline Road and US 395.

The City will coordinate with ODOT in implementing its improvement program. *(Ord. 544)*

Development proposals, plan amendments, or zone changes shall conform to the adopted Transportation System Plan.

Amendments to the comprehensive plan, zoning map, and land use regulations that significantly affect a transportation facility shall assure that allowed uses are consistent with the function, capacity, and level of service of the facility identified in the Transportation System Plan. This shall be accomplished by one of the following:

a. *Limiting allowed land uses to be consistent with the planned function of the transportation facility;*
b. *Amending the Transportation System Plan to ensure that existing improved, or new transportation facilities are adequate to support the proposed land uses consistent with the requirement of the Transportation Planning Rule; or,*
c. *Altering land use designations, densities, or design requirements to reduce demand for automobile travel and meet travel needs through other modes.*

A proposed comprehensive plan amendment or zoning change significantly affects a transportation facility if:

a. *It changes the functional classification of an existing or planned transportation facility;*
b. *Changes the standards implementing a functional classification system;*
c. *Allows types or levels of land use that would result in levels of travel or access that are inconsistent with the functional classification of a transportation facility; or*
d. *Would reduce the level of service of the facility below the minimum acceptable level identified in the Transportation System Plan.*

The city's transportation policies are consistent with the Transportation Planning Rule (in particular TPR Section -0060, regarding plan and zoning changes). Policies also emphasize coordination with ODOT. This coordination is exemplified by the IAMP planning process, for both the development of alternatives for improvements on state facilities, as well as improvements to the planned local street network in the vicinity of the interchange and the US 730/US 395 intersection located within the study area.

The City of Umatilla has adopted a Plan Map, which serves as both the Comprehensive Plan Map and Zoning Map for the city. Within the IAMP study area, the following Plan Map designations apply.

Residential (R) - This Comprehensive Plan designation will only apply outside of the City limits, within the Urban Growth Boundary. It is intended to identify land that is suitable for future residential development at urban densities upon annexation to the City.

Medium Density Residential (R-2) - This district allows single family attached and detached residences on smaller lots and multi-family development at a density of one dwelling for each 3,500 square feet.

Commercial (C) - This designation will be applied to land intended for future commercial use outside of the city limits and within the Urban Growth Boundary. The appropriate

commercial designation will be established when a site is annexed. Generally, land located along Highway 395 will be designated General Commercial.

Downtown Commercial (DC) – This district is the City's civic, commercial, and service center that is intended to be the focus of community activities. Commercial and services uses should support a pedestrian friendly environment. Downtown developments should incorporate pedestrian friendly features such as street level windows and parking designed to minimize conflicts with pedestrians.

General Commercial (GC) – This district provides areas for a full range of commercial uses which require large sites and high visibility. Due to the uses allowed and the high number of people served, these areas should be located along major travel routes and at major intersections.

Industrial (M) – This designation will be applied to land intended for future industrial use outside of the city limits and within the Urban Growth Boundary. The appropriate industrial designation will be established when a site is annexed, based upon site suitability and location, including classification of adjacent streets.

Flood Plain (FP) – The Flood Plain district corresponds to the boundaries of the 100-year flood plain as identified on maps of the Federal Emergency Management Agency (FEMA). Uses are limited within the Flood Plain District to minimize hazard to life and property that may occur during a regulator flood.

Natural Resource (NR) – This district applies outside of the city limits, within the Urban Growth Boundary, to areas that contain high quality aggregate and basalt. The district is intended to identify the general location of aggregate deposits and to protect the aggregate and basalt supply for future needs. It is not intended to restrict current land use, which is subject to Umatilla County Zoning, and presently includes a variety of industrial and residential uses.

Public Facilities (PF) – This designation identifies land that is occupied by public facilities such as power lines or generation and related facilities. The land is generally held in government agency ownership.

Recreation/Open Space (R/OS) – This district is applied to publicly owned land that is available for recreational use or which, due to its ownership, is unlikely to be developed.

How land is currently being used in the vicinity of the interchange and the future developability of land within the IMSA based on the planned land uses will be explored in a subsequent memorandum.

City of Umatilla Transportation System Plan (1999, Updated 2001)

The City of Umatilla Transportation System Plan serves as the management document for existing and future transportation facilities within the city and its urban growth boundary. The

TSP was developed based on the land uses and projected population and employment growth identified in the Comprehensive Plan. The TSP contains an inventory of exiting facilities and transportation conditions, as well as forecasted transportation demands for the area. Recommended improvements to the transportation system are provided along with a funding plan and implementation measures. Those elements of the TSP that are directly relevant to the I-82/US 730 IAMP are discussed in this section.

The existing conditions analysis identifies both I-82 and US 730 as follows:

> *Interstate 82. I-82 is a Category 1 interstate freeway of an Interstate Level of Importance, as described in ODOT's 1991 Oregon Highway Plan (Reference 1). I-82 is oriented north-south through the City and provides connections between Interstate 84 (I-84) to the south and the Tri-Cities (Kennewick, Richland, Pasco, Washington) to the north. Interstate 82 is an essential intra- and interstate commerce route.*
>
> *Interstate 82 is a four-lane facility (two lanes in each direction) with two grade-separated interchanges (Highway 730 and Powerline Road) providing easy access to the City.*
>
> *Highway 730. Highway 730, also called the Columbia River Highway, is a state highway of a Regional Level of Importance (Reference 1). The primary function of a Regional Highway is to provide connections and links to areas within regions of the state, between small urbanized areas and larger population centers, and to higher level facilities. The highway generally parallels the Columbia River, providing a continuous east-west route between Interstate 84 and Washington and serves as a city-to-city link between such neighboring cities as Irrigon, Umatilla, and Cold Springs Junction.*

County roads that are considered important to the city transportation network and travel through the IAMP study area are described below.

> *Brownell Boulevard provides a north-south connection between Highway 730 and the shore of the Columbia River. This two-lane facility was divided into two segments as a result of the construction of Interstate 82. The southern segment of Brownell Boulevard connects Highway 730 with 3rd Street while the northern segment connects 3rd Street with a wildlife refuge that extends to the shore of the Columbia River. The southern terminus of Brownell Boulevard intersects with Highway 730 at a signalized intersection immediately east of the Umatilla Port of Entry and is used as the sole egress route for truck traffic passing through the Port of Entry's weigh station. On-street parking is allowed along Brownell Boulevard, though no bicycle or pedestrian facilities are available.*
>
> *Third Street is a two-lane east-west roadway that extends from Avenue "A" to the McNary Dam area. Although this facility parallels Highway 730 throughout a large portion of the City, its location does not directly serve the major residential areas. Consequently, its use is currently largely limited to trips related to the McNary Dam area and local business uses along the roadway such as the Bonneville Power Authority. No bicycle or pedestrian facilities are provided along 3rd Street.*

Power City Road provides two-lane access for gravel quarries and residential areas west of Highway 395, intersecting with Highway 395 at an unsignalized intersection. Large portions of Power City Road are not paved and no bicycle or pedestrian facilities are provided.

Union Pacific Railroad operates a local freight rail line through portions of the IAMP study area. The "Umatilla Turn" connects local manufacturers with Union Pacific's Hinkle Rail Yard and main rail line to the south in Hermiston. Because the rail line terminates along the banks of the Columbia River at the Port of Umatilla, it is operated as a spur and the frequency of freight trains varies based upon demand. The Railroad System Plan in Section 5 of the TSP states that freight rail service will continue to be a prominent component of the City's transportation system. Based on existing rail capacity between Hinkle Rail Yard and the Port of Umatilla, the TSP anticipates increased frequency of trains coinciding with future development at the Port.

The existing conditions analysis also noted that the Brownell Boulevard/US 730 and the southbound I-82 ramp/US 730 are located extremely close to each other and ODOT has coordinated the signals in an effort to improve intersection operations. Nevertheless, it was noted that queuing problems associated with truck traffic accessing the truck weigh station occurred at these two intersections during the weekday p.m. peak hour conditions. Based on the future traffic volume forecast, these intersections are anticipated to require mitigation measures. Similarly, the unsignalized intersections of Umatilla River Road/US 730 and the Northbound I-82 Ramp/US 730 also are expected to require mitigation. In addition, the signalized intersection of US 395/US 730, which is just inside the eastern edge of the IAMP study area, will require mitigation to address level of service issues.

The Roadway System Plan in Section 5 of the TSP establishes functional classifications, design standards, access management standards, and roadway improvements/additions. Figure 13 of the TSP shows the recommended roadway network and functional classifications. Within the IAMP study area, the following roadway classifications are identified:

- I-82, Freeway
- US 730 and US 395, Major Arterial
- Umatilla River Road and Brownell Boulevard, Minor Arterial
- Third Street and Power City Road, Collector

Figure 13 also identifies a future Collector road running north-south through the IAMP study area connecting Bensel Road to Power City Road.

Section 6 of the TSP provides a listing of recommended future roadway improvements and a funding plan for implementation. Future roadway improvements relevant to the IAMP study area are summarized below:

- Additional northbound left-turn lane be provided at the US 730/US 395 intersection.
- Potential signalization at Umatilla River Road/US 730 and I-82 Northbound Ramp/US 730.

- Modify the ODOT Weigh Station internal circulation and relocate the Brownell Boulevard/US 730 intersection signal to the Eiselle Drive/Weigh Station entrance intersection.
- Provision of pedestrian crossings on US 730, particularly between the western city limits and the I-82 interchange.
- Provision of sidewalks along certain sections of US 730 and Brownell Boulevard.

The final section (Section 7) of the TSP provides policy and code language intended to implement the TSP and ensure consistency with the TPR. Recommended policy language has been adopted into the city's Comprehensive Plan, and recommended code language has been adopted into the city zoning code. Improvements associated with the recommendations of the IAMP will need to be consistent with recommended policies in the TSP that amend the Transportation section of the Comprehensive Plan. Relevant policies include those that address the city's intent to promote safe, convenient, and direct bicycle and pedestrian circulation within the community and policies related to plan or zoning amendments that significantly affect a transportation facility (TPR Section -0060).

City of Umatilla Zoning Code

The City of Umatilla Zoning Code contains all the standards and regulations for development within the city limits. As mentioned previously, land use designations are established by the Comprehensive Plan Map, which also serves as the Zoning Map for the city. Land use designations found with the I-82/US 730 IAMP study area were summarized in the discussion of the city's Comprehensive Plan and won't be repeated here. Not included in the Comprehensive Plan is the Community Service (CS) designation and the Downtown Transitional (DT) zone, both of which apply to a small portion of the IAMP study area. The CS designation provides procedures and standards for the review of special uses which, by reason of their public convenience, necessity, unusual character, technical need or effect on the neighborhood, may be appropriate in any district but not suitable for listing within the other sections of the code. The purpose of the DT district is to provide a transition between general commercial and downtown commercial uses. Basically a downtown commercial district, this zone allows certain general commercial activities as conditional uses.

Chapter 14 outlines the administrative procedures for land use decisions in the city. An amendment to the Comprehensive Plan, Plan Map, or Zoning Code text requires a Type IV procedure, which involves the greatest amount of discretion and evaluation of subjective approval criteria. Adoption of the I-82/US 730 IAMP into the Comprehensive Plan (and implementation language into the zoning code) will be subject to this procedure type. The approval criteria for this procedure are:

> *1. The proposed designation is consistent with and supports the purposes of the portions of the City's Comprehensive Plan not proposed for amendment, or circumstances have changed to justify a change in the Comprehensive Plan.*
>
> *2. The proposed change will not affect the land supply for the existing zoning designation as related to projected need for the particular land use.*

3. The proposed designation will not negatively impact existing or planned public facilities and services.

4. The site is suitable for the proposed use, considering the topography, adjacent streets, access, size of the site, availability of public facilities, and any other pertinent physical features.

5. Other sites in the City or the vicinity are unsuitable for the proposed use. In other words, ownership and desire to develop a particular use in themselves provide insufficient rationale for changing a zoning designation that does not support the interests of the City as a whole. (Ord. 688, 6-15-1999)

Appendix D

Technical Memorandum #3/4 – Existing Land Use and Transportation Conditions

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TECHNICAL MEMORANDUM #3/4

I-82 / US 730 Interchange Area Management Plan

Existing Land Use and Transportation Conditions

Date: May 3, 2010 Project #: 10369.0

To: Teresa Penninger, ODOT Region 5

From: Matt Hughart, AICP; Nick Foster; and Marc Butorac, PE

cc: Technical Advisory Committee (TAC)
Public Advisory Committee (PAC)

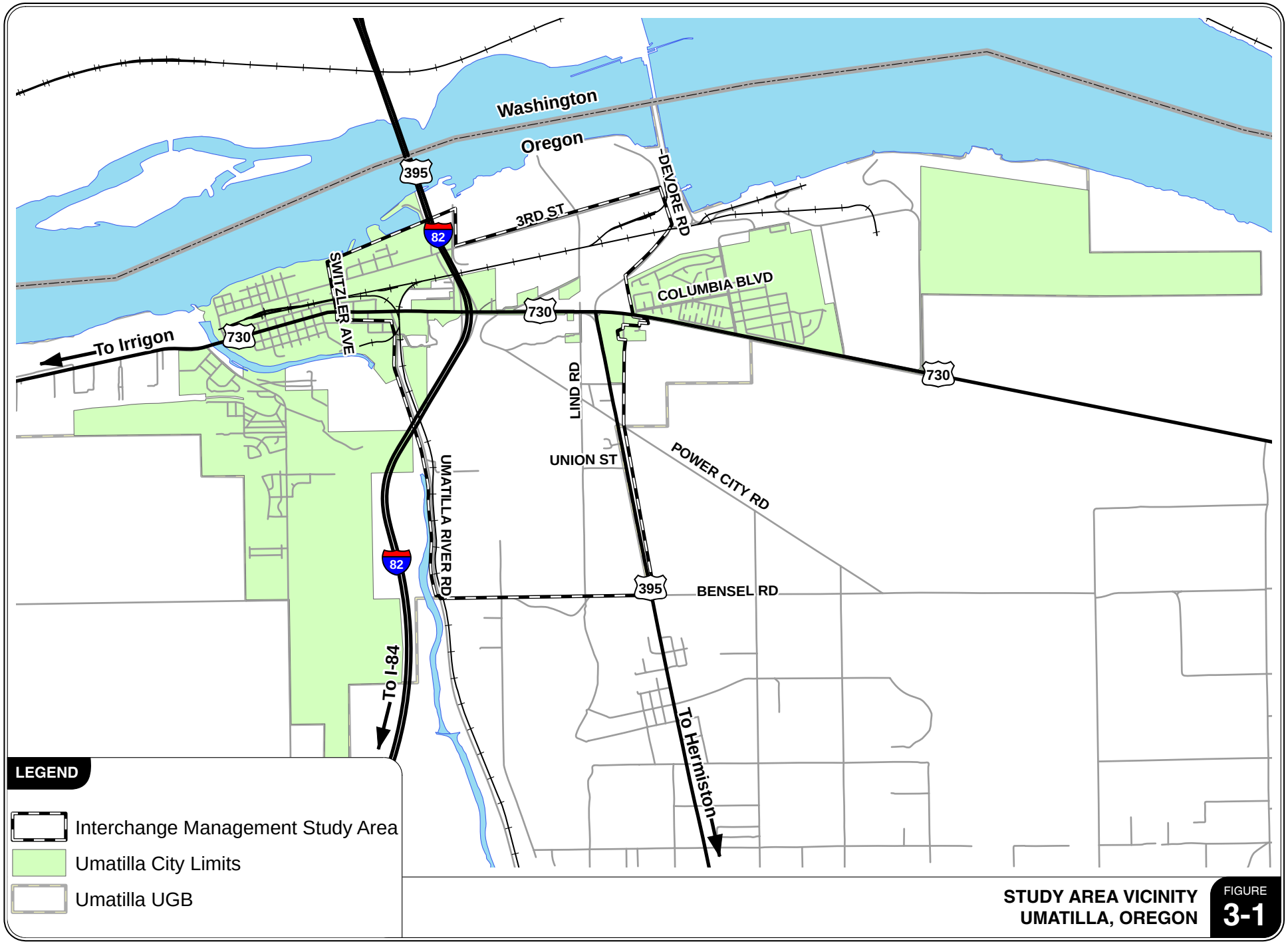
INTRODUCTION

This memorandum provides a review of existing land uses and transportation facilities within the vicinity of the I-82/US 730 interchange in Umatilla, Oregon. The information identified in this memorandum is intended to provide a basis for identifying opportunities and constraints for meeting the goals and objectives of the IAMP.

INTERCHANGE MANAGEMENT STUDY AREA

The I-82/US 730 interchange is the first full interchange on I-82 south of the Oregon-Washington state line. As shown in Figure 3-1, it is also the only interchange serving the City of Umatilla. To help define the extent of the land use and traffic operations review for this study effort, an Interchange Management Study Area (IMSA) has been defined as depicted in Figure 3-2. As the figure shows, the IMSA has been drawn to include those areas within the vicinity of the interchange that have, or are expected to have a direct impact on the daily function of the I-82/US 730 interchange. Generally speaking, land uses outside of the IMSA area are not anticipated to directly impact the function of the interchange. This is because these properties do not directly access the interchange, have other travel route options within Umatilla besides US 730, or have limited potential to generate new trips (e.g. the land is already developed, the land has limited redevelopment potential, or the land is outside of Umatilla's Urban Growth Boundary [UGB]).

Figure 3-2 also displays the Interchange Operations and Access Study Area. The operations and access management of intersections and accesses within this area is the subject of analysis described later in this memorandum.



STUDY AREA VICINITY
UMATILLA, OREGON

FIGURE 3-1

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KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

LEGEND

- Minimum 1320' IAMP Limits
- Land Use Study Area
- Operations/Access Study Area
- Umatilla UGB

INTERCHANGE MANAGEMENT STUDY AREA
UMATILLA, OREGON

FIGURE **3-2**

H:\projfile\10369 - I-82 US 730 IAMP\GIS\UmatillaBaseMap.mxd

EXISTING LAND USE

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 IMSA. This section provides a description of the existing land-use patterns and zoning regulations that currently exist within the IMSA. The following describes existing zoning and how the land is currently being used within the IMSA. Areas of special interest, including natural and cultural resources, are included in the description of existing land use conditions. Land use-related information will be combined with findings about existing transportation system conditions in an overall existing conditions section of the IAMP.

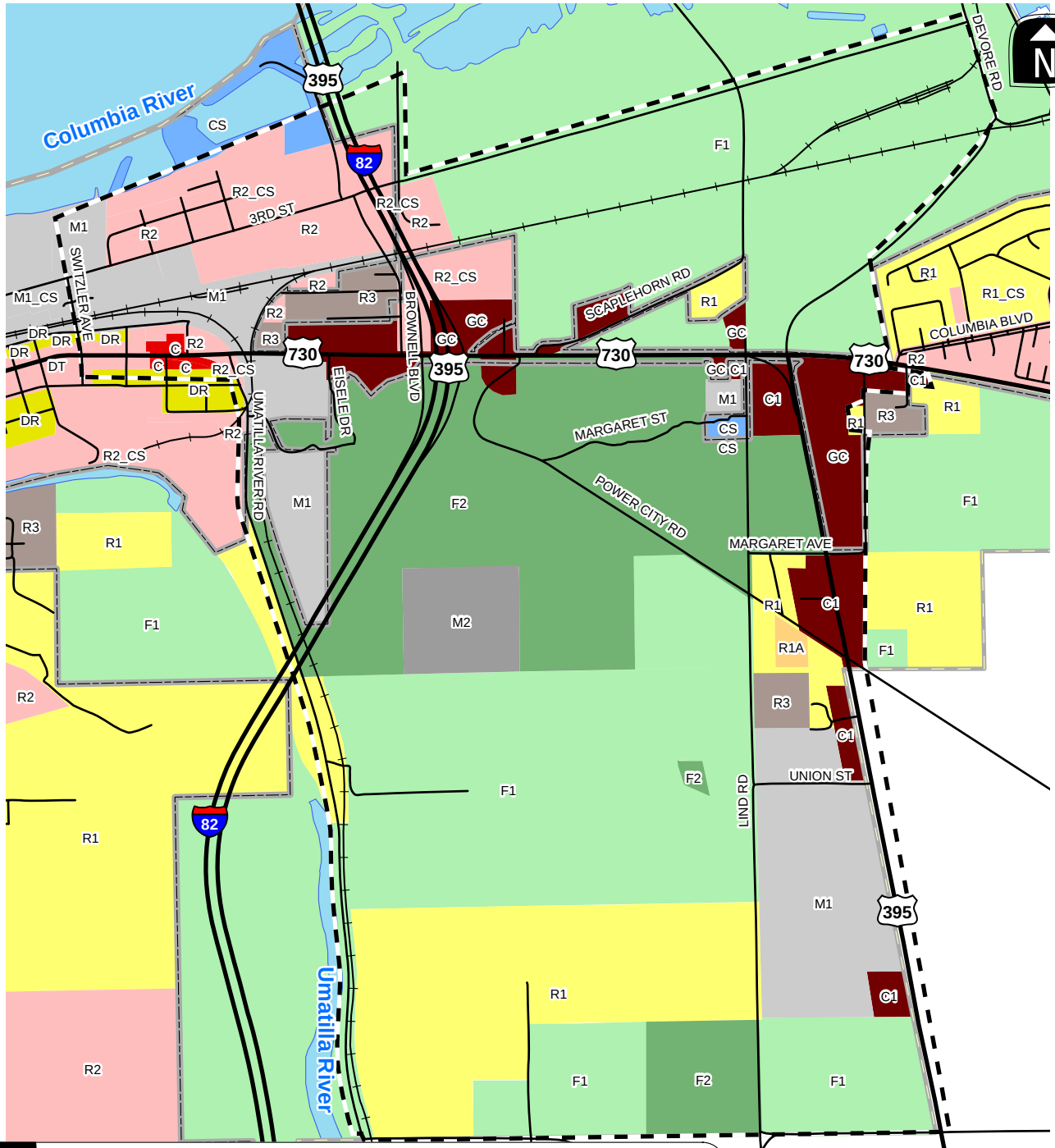
Land within the IMSA is a patchwork of incorporated parcels, unincorporated land within the City of Umatilla's urban growth boundary (UGB), and unincorporated, county land. As discussed in the regulatory review provided in Technical Memorandum 2, a large portion of the IMSA is county zoned, but within the city's UGB, and governed by a Joint Management Agreement (JMA). Areas within the UGB that are not yet annexed to the city are considered part of the Urban Growth Area (UGA). [1]

Most of the land in the IMSA is within the city's UGB. The study area includes land just east of US 395, at US 730 as well as land in the vicinity of the intersection of Power City Road, which lies outside the City limits, but within the UGB. The area east of the I-82/US 730 interchange is largely vacant or underdeveloped, but is almost entirely within Umatilla's urban growth boundary (UGB). East of the interchange, in an area south of US 730 and north of Union Street, is an area that the city expects to begin to develop over the next 20 years.

Existing Zoning and Development Standards

Any development in the vicinity of the interchange will have some impact on the facility, so it is important to review the existing zoning for parcels surrounding the interchange and connecting roads. Permitted land uses and the applicable standards associated with the zone designations are an indicator of the potential for growth in the area. Recommendations for restricting uses or modifying development standards (e.g. restricting uses with high traffic generation rates or limiting building size) are a possible outcome of the IAMP process. Zoning for areas within the IMSA are shown in Figure 3-3. This map includes both city and county zoning, as the IMSA includes unincorporated areas of Umatilla County (areas inside the city's UGB, but outside the city limits).

[1] Areas outside city limits within the UGB retain county zoning, but are governed by the JMA and future urban zoning would be determined by the City of Umatilla's Comprehensive Plan Map land use designations. Currently, a locally adopted "City of Umatilla Plan Map" depicts both City zoning and plan map designations. However, the plan designations more closely resemble existing (i.e., low intensity rural) uses and do not reflect the City's future growth needs. The City is currently in the process of developing a work program that will analyze the City's future economic development and employment needs. A legislative amendment updating the City's plan map is expected to be one of the outcomes of the work program but this City-initiated process is not expected to be complete prior to the completion of the IAMP.



LEGEND

- Land Use Study Area
- Umatilla UGB
- Umatilla City Limits

Zone

- Commercial (C)
- Community Service (CS)
- Downtown Residential (DR)
- Downtown Transitional (DT)
- Exclusive Farm Use (F1)
- General Commercial (C1, GC)
- General Rural (F2)
- Heavy Industrial (M2)
- Light Industrial (M1)
- Residential, Multi-Family - Apartments (R3)
- Residential, Multi-Family (R2)
- Single Family Residential (R1)
- Two Acre Residential (R1A)

STUDY AREA ZONING
UMATILLA, OREGON

FIGURE **3-3**

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Umatilla County Zoning

For unincorporated areas within the IMSA, County zoning and development regulations apply. County zoning within the City's UGB lies east of I-82 and west of Devore Road (north of US 730) and west of US 395 (south of US 730). While it is clear from the inclusion of these areas in the UGB that urban uses are intended, until which time land is annexed to the City and City zoning is applied, development and redevelopment are dictated by what is allowed by County ordinances. In the case of areas governed by the JMA, the County's 1972 Zoning Ordinance is the regulating document. Below is an overview of County zone designations in the IMSA.

- *Exclusive Farm Use (F1)* - EFU zoning is designed to maintain the agricultural economy of the county by reserving farmland for exclusive agricultural use. In addition to the propagation and harvesting of farm or forest products and associated residential and farm buildings, schools and churches are permitted outright in this zone. Uses permitted conditionally include commercial activities associated with farm and forest uses, parks and playgrounds, golf courses, and personal use airports.
- *General Rural (F2)* - Land zoned F2 is so designated to maintain the "openness and rural nature of the country-side" and is applied to land not suited for EFU classification. The F2 zoning is intended to provide areas "appropriate for most kinds of typical rural development" and where the Planning Commission has the ability to attach special conditions (i.e., dimensional standards) to certain uses to minimize potentially detrimental effects on neighboring lands. Single-family dwelling units, as well as planned unit developments are permitted outright. The minimum lot size for the "principal dwelling unit" is 19 acres, with the Department of Environmental Quality determining all other lot sized based on public health. Other permitted uses include farm and forest product propagating, harvesting, and processing (using portable equipment for forest products), veterinary services, boarding houses, schools, churches, playgrounds, and golf courses. Conditional uses include airports, dog kennels, hog farms, landfills, livestock lots, asphalt plants, and mobile home parks.
- *Agricultural-Residential Zone (R-1)* - This zone is intended to provide areas suitable for very low density residential along with the continuation of agricultural uses. Other uses permitted conditionally include commercial greenhouses and nurseries, nursing homes, and mobile home parks. Utilities are not anticipated to be available to these areas "in the foreseeable future." Minimum lot area is four acres for residential uses; for non-residential uses the code states that minimum lot area will be determined by what is necessary "for the protection of public health," as determined by the Department of Environmental Quality.
- *Two Acre Residential (R1-A)* – The R-1A zone is intended to provide land for low density residential development within farming areas where City utilities are not anticipated "in the foreseeable future" and where conditions necessitate "spaced residential uses." Two-acres is the minimum lot area for residential uses in this zone; minimum lot area for non-residential uses is determined by the Department of Environmental Quality. In addition to single-family residential and farm uses, other uses permitted outright include noncommercial outdoor recreation, schools, noncommercial greenhouses and nurseries, and public or semi-public uses. Uses allowed conditionally include boarding houses, churches, mobile home parks,

community centers, veterinary clinics, horse boarding stables, nursing and convalescence homes, and commercial nurseries.

- *General Commercial (C-1)* - The C-1 zone district provides areas for rural retail and commercial services. A diversity of commercial uses are permitted, including eating and drinking establishments, banking institutions, hotel/motels, office buildings, sporting goods stores, automotive service stations, amusement parks, and greenhouses and nurseries. Conditional uses expand what is allowed in the C-1 to include such uses as mobile home parks, veterinarians, mini-warehouses, and welding shops. Minimum lot area is determined by the Department of Environmental Quality based on what is necessary to protect public health.
- *Light Industrial (M-1)* - The County's M-1 zone is intended to provide land for industrial uses which are compatible with nearby homes, businesses or farm operations. Locational criteria in the code also state that M-1 zoning is appropriate near major transportation facilities. A wide variety of industrial uses are permitted, including mini-warehouses, bottling, food products manufacturing (including meat processing and storage), machine shops, and the manufacturing, compounding, and assembling of products made from a specified list of prepared materials. Conditional uses expand the list of uses that may be permitted in the M-1 zone to include some uses more commercial in nature (such as greenhouses and nurseries, commercial gravel pits, and eating and drinking establishments), support services (such as financial institutions and veterinarians), and any type of major industrial use if it meets threshold criteria (employs more than 200, has land needs of over 20 acres of land, or uses a given number of energy BTUs). Junkyards and wrecking yards are also permitted conditionally. Minimum lot area is determined by the Department of Environmental Quality based on what is necessary to protect public health.
- *Heavy Industrial (M-2)* - The intent of the County M-2 zoning is to provide for areas where industrial development with "potential nuisances" will have a minimum negative effect on adjacent property. With a few limitations, all manner of manufacturing, repairing, compounding, fabricating, assembling, processing, treating and storage of products is permitted in this zone. Sand and gravel yards, welding, and materials storage is permitted. Conditional uses are similar to those allowed in the M-1 zone. Minimum lot area is determined by the Department of Environmental Quality based on what is necessary to protect public health.

City of Umatilla Zoning

The City of Umatilla Zoning Ordinance (Title 10) implements policy established in the Comprehensive Plan and regulates development through zoning designations and provisions that apply generally to all development and specifically to land divisions within the city.

The City of Umatilla's Zoning Ordinance implements zoning "districts" to regulate land use (see Chapter 2, Plan Designations and Map, in Title 10). Chapters 2 through Chapter 5 of the Zoning Ordinance establish permitted uses and development standards for residential, commercial, and industrial zones. Below is an overview of these provisions for the zoning districts within the study area.

- *Single-Family Residential (R-1)* - R-1 is the City's low density, single-family residential zone. Besides single-family dwellings, family daycare providers and residential homes are permitted uses. Community services uses are permitted conditionally (see below for types of uses). The minimum lot area is 8,000 square feet and maximum building height is 35 feet.
- *Medium Density Residential (R-2)* - R-2 zoning is intended for medium density (one dwelling per 3,500 square feet) residential uses. In addition to single-family detached houses, attached residences on smaller lots, two-family, and multi-family housing is permitted. Boarding houses, manufactured home parks, and limited office use (office or clinic for doctor, dentist or other practitioner of the healing arts, attorney, architect, engineer, surveyor or accountant) are permitted conditionally. Maximum residential density in this zone is one dwelling per three thousand five hundred (3,500) square feet; minimum lot area is 5,000 square feet and the height limit is 35 feet.
- *Multi-family Residential (R-3)* - R-3 zoning permits residential housing types that include apartments, townhouses, and cluster developments at a density of one dwelling per two thousand (2,000) square feet. Family daycare providers, residential homes and residential facilities are also permitted outright. Conditional uses include boarding houses, community services (see below for types of uses), and professional offices, including medical, law, accountant, architect, and engineering. Minimum lot area in this zone is 5,000 square feet and the height limit is 35 feet.
- *Downtown Residential (DR)* - The purpose of the downtown residential district is to accommodate higher density residential developments and office uses in the downtown area. Permitted housing types include attached housing, apartments, and townhouses. Existing single-family houses are permitted and may be improved. Expansion of existing commercial businesses is also permitted, with restrictions. Family daycare providers, residential homes, and residential facilities are permitted outright, as are professional offices (financial, business, medical/dental), with restrictions. Community services uses are permitted conditionally (see below for types of uses). For residential uses, the maximum allowable density is one dwelling unit per two thousand (2,000) square feet. For freestanding dwellings or structures the minimum lot area is 5,000 square feet; minimum lot area for attached structures is 2,000 square feet.
- *Downtown Commercial (DC)* - The purpose of the downtown commercial district is to provide a concentrated central business district centered on 6th Street (US 730). This zone allows a mix of civic, retail, service, office and residential uses. Any commercial use is permitted, provided it is conducted wholly within an enclosed building, and residential uses are allowed above or behind ground-floor, street-frontage retail. Community services uses are permitted conditionally (see below for types of uses). There is no minimum lot area requirement and 100% building coverage is allowed. Residential uses are permitted at a density of one dwelling per two thousand (2,000) square feet (R-3 requirements).
- *General Commercial (C-1)* - The stated purpose of the General Commercial District is to provide areas for a full range of commercial uses and, in particular, to accommodate uses which require large sites and high visibility. The Zoning Code directs that General Commercial areas should be located along major travel routes and at major intersections. Commercial uses that are both conducted wholly within an enclosed building, as well as those that require outdoor

storage or display of products such as lumberyards, motor vehicle sales lots, and plant nurseries, are allowed. Beyond this description, a list of permitted uses is not provided. Automobile service stations, community services (see below and Zoning Ordinance Chapter 6) and recreational vehicle parks are called out as conditional uses. In addition to commercial uses, apartments are permitted in multi-storied buildings on the second floor or above, provided the ground floor is occupied by a commercial use. The minimum lot area requirement is 5,000 square feet and the maxim site coverage is 90 percent; there is no maximum lot area requirement. Building height is limited to 35 feet.

- *Downtown Transitional (DT)* - Downtown commercial uses are permitted in this district and subject to the some standards and limitations. General commercial uses are permitted conditionally and are listed in Article D (Downtown Transitional) as including the following:
    - Commercial uses that are not conducted wholly within an enclosed building, including a use that requires outdoor storage or display of products, such as lumberyards, motor vehicle sales lots, and plant nurseries.
    - Commercial uses that are conducted wholly within an enclosed building.
    - Temporary outside displays and promotional activities directly related and subordinate to the primary business.
    - Drive through windows for any use.

  There is no minimum or maximum lot area requirement and the maximum site coverage is 100 percent. Building height is limited to 35 feet.

- *Light Industrial (M1)* - The M1 district allows for a variety of industrial uses, including manufacturing, processing, packing, assembly, distribution, repair, finishing or refinishing, testing, fabrication, research and development, warehousing, and servicing activities. Minimum lot size is 5,000 square feet; maximum site coverage is 60%. Up to one hundred percent (100%) of the total floor area may consist of these manufacturing and distribution uses; storage area may not exceed fifty percent (50%) of the site.

In addition to permitted uses listed above, Community Services are a conditional use in all the zones within the IMSA. As stated in the Zoning Ordinance, the CS designation provides "a procedure and standards for the review of special uses which, by reason of their public convenience, necessity, unusual character, technical need or effect on the neighborhood, may be appropriate in any district but not suitable for listing within the other sections of the code." The complete list of Community Services is as follows:

- Adult or senior center.
- Boat moorage, marina, or houseboat moorage.
- Building used for religious worship.
- Cemetery, crematory, mausoleum, mortuary, or funeral home.
- Childcare facility for thirteen (13) or more children.
- Drug and alcohol treatment facility.

- Elderly housing.
- Helicopter landing facility.
- Hospital and medical offices developed in conjunction with a hospital facility.
- Public building or use, including, but not limited to, a City hall, post office, or library.
- Public or private park, including a golf course, trail system, or similar recreational facility.
- Public or private preschool or kindergarten, elementary school, middle school, high school, or college (schools that are customarily commercial rather than academic in nature such as business, dance, karate, and other similar schools shall not be considered a Community Services use).
- Sewerage or drainage way system structures.
- Utility facility, including generating facilities, substations, telephone switching stations, and other facilities required for the transmission of power or communications.
- Water system structures.

LAND USE INVENTORY

For purposes of describing existing zoning and land uses within the IMSA, the narrative below will consider each "quadrant" that is formed by the interchange and the study area boundary.

Northwest of the Interchange

The northwest quadrant of the IMSA extends north to the Columbia River and west to Switzler Avenue. The majority of the land in this quadrant is within the city limits. This area includes Community Service zoning on land owned by the Port of Umatilla. South from the Port there is an area zoned Downtown Transitional. Land surrounding Union Pacific Railroad's "Umatilla Turn" is zoned Light Industrial. General Commercial lies north of US 730, west of the interchange.

Existing uses in the northwest quadrant include a combination of residential, recreation, and transportation-related uses. The ODOT Port of Entry weigh station directly northwest of the interchange is probably the most significant use in the quadrant. The facility takes access on US 730 at a distance that is less than spacing standards for interchange ramps and the nearest intersections. The sub-standard spacing is exacerbated by the heavy volume of large truck traffic using this access.

Older single-family homes are located directly north of the Port of Entry, a high retaining wall separating the two sets of uses. The railroad borders the other side of this cluster of homes. North of the railroad and 3rd Street, which parallel the Columbia River, is Port of Umatilla land with an RV camp and boat launch.

The area to the west and occupying the rest of the northwest quadrant is a mixture of predominantly low-density, single-family residential uses and multi-family residential uses, where buildings are in fair to poor condition. Amongst the residential uses and closer to US 730 are self-storage units, which are sometimes used as a way of reserving land for future development.

Northeast of the Interchange

Land in the northeast quadrant of the interchange is within the city's UGB and lies both within and outside of the current city limits. A large portion of this quadrant, west to Devore Road, is zoned EFU. The pockets of city land include General Commercial zoning in Sharps Corner, just northeast of the interchange, and along Scaplehorn Road and General Commercial zoning just west of US 395, north of 3rd Street and east of Brownell Boulevard.

City's R2 zoning lies north of Sharps Corner, between the railroad tracks and the commercial uses in the northeast quadrant of the interchange. Another area of residential is accessed off of Scaplehorn Road and is zoned R1.

Existing uses identified in a site visit consist mainly of public facilities or utilities and open space. There is a small cluster of single-family homes directly northeast of the interchange in Sharps Corner and along Scaplehorn Road to the east, the only areas of the northeast quadrant within the city limits. An irrigation ditch runs northeast/southwest under the interchange. Land in this quadrant slopes from US 730 down to the river. The McNary substation and an Army Corps of Engineers park and trails are found north of the railroad, leading up to the river. There is a large concentration of Bonneville Power Authority (BPA) electricity transmission lines north of US 730 in the central portion of the northeast quadrant.

Southwest of the Interchange

The area in the southwest quadrant of the study area is within the city's UGB and lies both within and outside of the current city limits. City zoning here includes Light Industrial and a small portion of General Commercial directly west of the interchange, on both sides of US 730. South of this commercial area and west of I-82 is General Rural County zoning.

There is a heavy concentration of highway- and motor vehicle-oriented commercial uses along US 730 west of the interchange. The Crossroads Lounge, gas station, convenience stores, and restaurants found here are largely oriented toward the freight truck traffic passing through the interchange and using the Port of Entry across US 730. A post office is also located amongst these uses, which is federally owned or leased.

The Union Pacific Railroad travels along the western edge of the study area in this quadrant, and a spur line passes under US 730 on the north side of the quadrant and under I-82 on the east side. Land along US 730 and east of the railroad spur line is within the city limits in the quadrant. The railroad spur line also parallels the Umatilla River and Umatilla River Road. The riverfront, wetlands, and woodland areas are predominant in this corridor with sparse residential uses, which are mostly manufactured single-family homes.

Southeast of the Interchange

The southeast quadrant contains the largest portion of the IMSA. This area east of the I-82/US 730 interchange is mostly vacant or underdeveloped and is almost entirely within Umatilla's UGB. Land

in the immediate vicinity of the US 730/US 395 intersection is included in this quadrant, and south of Power City Road, US 395 forms the eastern boundary of the IMSA, south to the city's UGB line.

This is the largest quadrant in the IMSA and it is mostly unincorporated, vacant land. On its eastern end, the quadrant includes part of the intersection of US 730 and US 395, Buck's Corner. Land directly south of US 730 slopes up from the highway, is vacant, and has a heavy concentration of transmission lines. The City is interested in the economic development potential of this area and intends to develop a local street network plan that supports the safe and efficient operations of the interchange and the US 730/US 395 intersection.

County zoning in this area includes General Commercial and Light Industrial uses at the intersection of US 730 and US 395. City General Commercial zoning is concentrated south of 730, in a small parcel west of existing County commercial land. A small flag-lot of land zoned Community Service is also in this area. The unincorporated community of Power City lies to the east of US 395; Power City Road cuts diagonally through the southeast quadrant of the interchange, starting at US 730 and heading south to US 395.

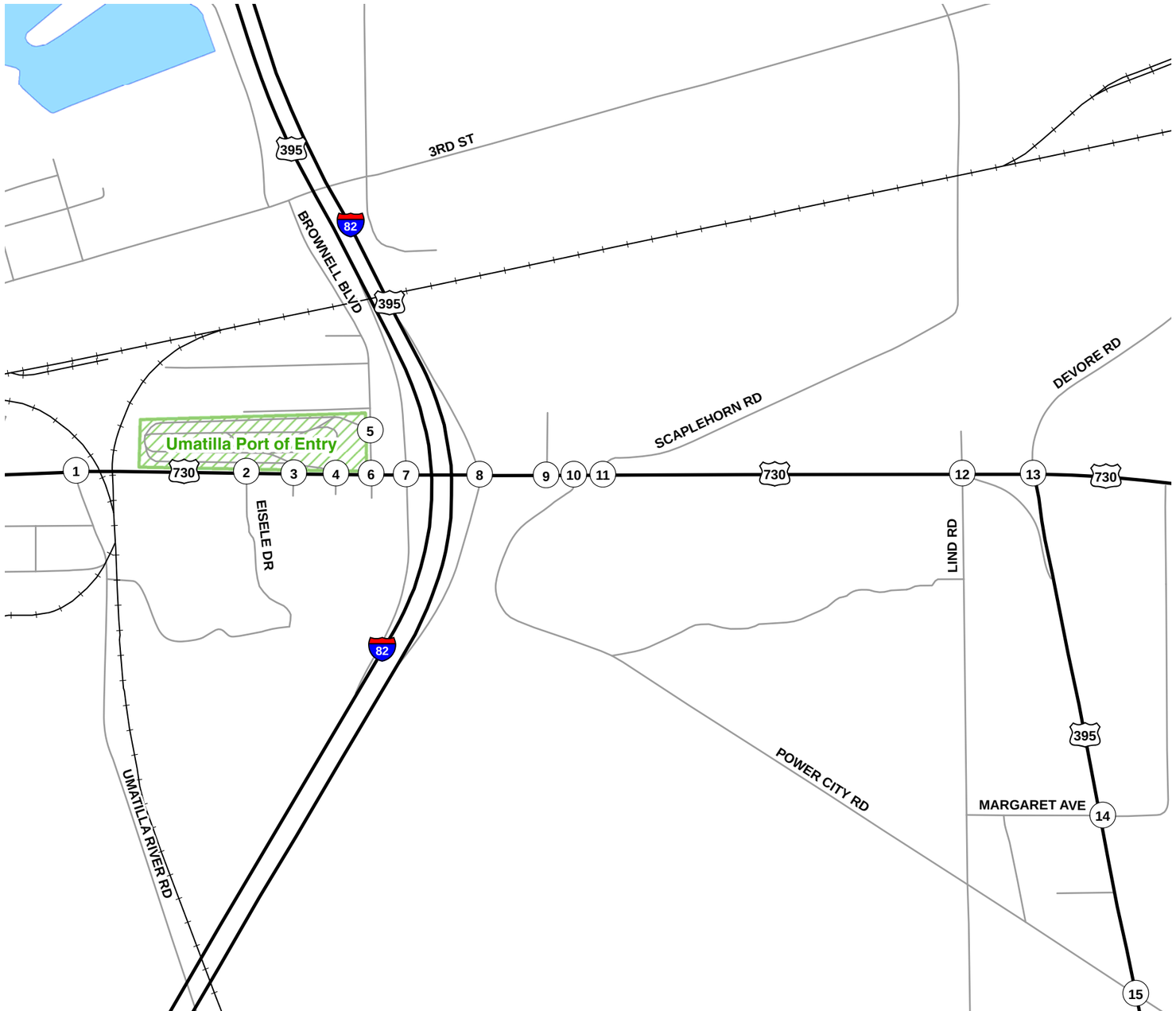
Farmland and aggregate mining are the predominant uses in the southern portion of southeast quadrant. There are a few scattered homes closer to I-82 and a cluster of rural low-density single-family homes in the southeast corner of the quadrant. The transmission lines that are thick directly south of US 730 in this quadrant branch and thin out in the southern portion of the quadrant.

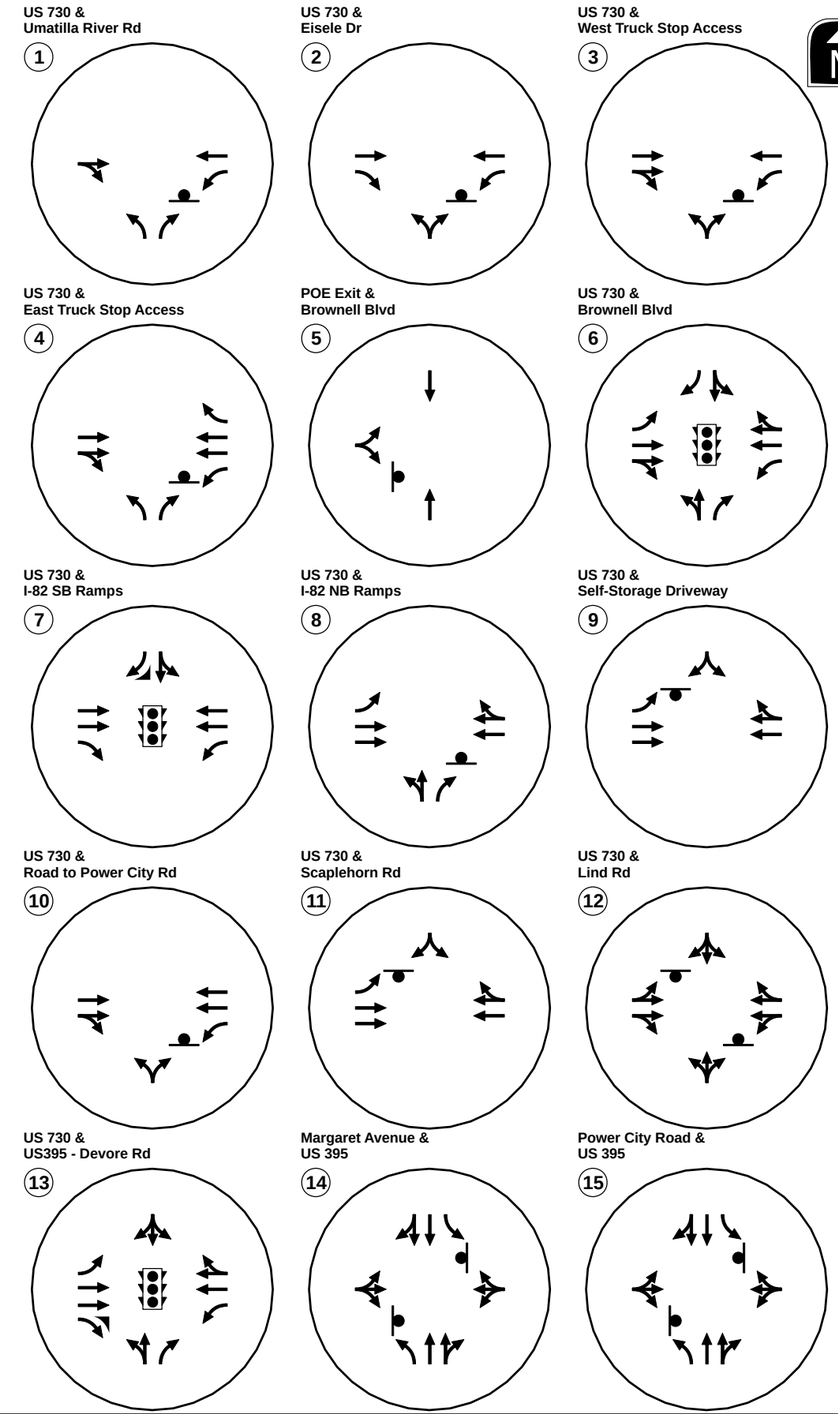
EXISTING TRANSPORTATION INVENTORY

The second major component of the I-82/US 730 IAMP existing conditions evaluation process is to document 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 within the IMSA. A detailed description of these facilities is provided in the following sections.

ROADWAY FACILITIES

The roadways within the IMSA include state, county, and city roadways. A description of each of the functionally classified roadway facilities is summarized below in Table 3-1. Figure 3-4 illustrates the existing lane configurations and traffic control devices at the study intersections.





LEGEND

- STOP SIGN
- TRAFFIC SIGNAL

EXISTING LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVICES UMATILLA, OREGON

FIGURE **3-4**

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Table 3-1 Existing Transportation Facilities and Roadway Designations

Roadway	Existing Roadway Ownership/ Functional Classification[1]	Cross-section	Posted Speed (mph)	Side-walks?	Bicycle Lanes?	On-Street Parking?
Interstate-82	ODOT/ Interstate Highway	4-lane	65	No	No	No
US 730 (6th Street)	ODOT/ Statewide/Regional Highway-Freight Route[3]-STA-UBA[2]	4/5-lane	45/35/25	Partial	Shoulders	No
US 395	ODOT/ Statewide Highway – Freight Route[3]	4/5-lane	55	No	Shoulders	No
Umatilla River Road	County/Minor Arterial	2-lane	25/30	Partial	No	No
Brownell Boulevard	County/ Minor Arterial	2-lane	None	No	No	Yes
Power City Road	County/Minor Arterial –Collector[4]	2-lane	None	No	No	No
Scaplehorn Road	County/Collector	2-lane	None	No	No	No
Lind Road	County/Minor Arterial-Collector-Local Street[5]	2-lane	None	No	No	No
Devore Road	City/Collector	2-lane	25	No	No	No
Margaret Avenue	County/Minor Arterial	2-lane	None	No	No	No
Eisele Drive	City/Local	2-lane	None	No	No	No

[1]County-owned roadways within the City of Umatilla's Urban Growth Boundary retain the City's functional classification.
[2]US 730 is classified as a regional highway west of the I-82 ramps and a statewide highway from the SB I-82 ramp to US 395. The STA designation applies west of Sloan Avenue, the UBA designation applies from Sloan Avenue to Brownell Boulevard, and the Freight Route designation applies from US 395 to the NB I-82 ramp.
[3]As Freight Routes, US 730 and US 395 are subject to the provisions of ORS 366.215 which states that Oregon "may not permanently reduce the vehicle-carrying capacity of an identified freight route when altering, relocating, changing or realigning a state highway unless safety or access considerations require the reduction."
[4]Power City Road is classified as a collector from west of Lind Road and a minor arterial from Lind Road to US 395.
[5]Lind Road is classified as a minor arterial south of Margaret Avenue, a collector north of Margaret Avenue to the canal, and a local street north of the canal to US 730.

Interstate-82

I-82 is a four-lane interstate highway that runs north-south through Umatilla. It connects I-84 in Oregon to I-90 in Washington and travels through Yakima and the Tri-Cities in Washington. I-82 is part of the National Highway System and is designated in the 1999 Oregon Highway Plan (Reference 1) as an Interstate Highway, Freight Route, and Truck Route.

Interstate-82/US 730 Interchange Ramps

The I-82/US-730 interchange ramps are currently configured in a diamond interchange form. The southbound ramp terminal is signalized, while the northbound ramp terminal is stop-controlled on the off-ramp approach. Due to the area's topography, I-82 is elevated over US 730. South of US 730, I-82 has an uphill grade from north to south. Consequently, vehicles, many of which are trucks, entering I-82 southbound must travel up a grade while accelerating to merge onto I-82.

Operations at the southbound ramp terminals intersection with US 730 are directly influenced by nearby intersections. Exhibit 3-1, displayed below, shows the spacing between the I-82 ramp terminals and the neighboring intersections. As the exhibit shows, the signalized US 730/Brownell Boulevard intersection is located approximately 170 feet west of the southbound ramp terminal. Furthermore, the entrance to the Umatilla Port of Entry (POE) is located only 150 feet west of the Brownell Boulevard intersection. Spacing this close presents the opportunity for vehicular queues to spillback from one intersection into the other intersection(s). While the POE entrance is not signalized at US 730, its flow is controlled by the internal weigh station, which can cause queues to back-up during peak periods. A significant portion of the traffic volume in the outer lanes of US 730 in both directions between the southbound ramp terminal and Brownell Boulevard is made up of heavy trucks traveling between I-82 southbound and the POE.

Exhibit 3-1 Intersection Spacing Near I-82 SB Ramp Terminals

US 730 (6th Street)

US 730, the Columbia River Highway, is classified by the Oregon Highway Plan as a Statewide Highway from the southbound I-82 ramp terminal east to US 395. West of the southbound terminal, it is classified as a Regional Highway and is not a National Highway System (NHS) route. Between the I-82 northbound ramp and US 395, it is designated as a Freight Route and a Truck Route. It travels primarily east-west along the Columbia River from I-84 east of Boardman to US 12 in Washington, passing through Irrigon and Umatilla along the way. Locally, it is also known as 6th Street through Umatilla. 3rd Street and US 730 provide the only east-west connections between downtown Umatilla and the McNary area of Umatilla, making US 730 a vital connection to Umatilla. Within the study area, US 730 has signalized intersections at the southbound I-82 ramp terminal, Brownell Boulevard, and US 395.

US 395

US 395, the Umatilla-Stanfield Highway, is classified as a Statewide Highway by the Oregon Highway Plan. It is also a designated Freight Route and Truck Route. This highway provides a connection between US 730, the cities of Hermiston and Stanfield, and I-84.

Umatilla River Road

Umatilla River Road is a County roadway that runs along the Umatilla River and provides a connection between US 730 and Hermiston, essentially serving as a parallel route to US 395 through this area. It is a two-lane roadway with narrow shoulders that are partially paved and partially gravel. There are a handful of residential and farm properties that connect to Umatilla River Road. It is classified as a minor arterial by the City of Umatilla Transportation System Plan (TSP, Reference 2). The TSP notes that this roadway is the first choice for many residents traveling between Umatilla and Hermiston.

Brownell Boulevard

Brownell Boulevard is a two-lane County roadway connecting US 730 to 3rd Street on the west side of I-82. East of I-82 (the roadway was divided due to the construction of I-82), Brownell Boulevard continues north from 3rd Street to a wildlife refuge on the Columbia River shore. All traffic from the Umatilla Port of Entry exits the facility onto Brownell Boulevard before returning to US 730 and I-82. It is classified as a minor arterial. On-street parking is permitted on Brownell Boulevard.

Power City Road

Power City Road provides access to the gravel quarries in the southeast quadrant of the I-82/US 730 interchange and to residential areas west of US 395. Access to US 730 is provided via a private driveway between I-82 and Scaplehorn Road. Power City Road is a two-lane roadway and is classified as a minor arterial east of Lind Road to US 395 and as a collector west of Lind Road. The roadway is not paved west of Lind Road.

Scaplehorn Road

Scaplehorn Road is a two-lane County roadway that provides access to several home sites and a number of undeveloped parcels that have the potential for commercial development. Scaplehorn Road is classified as a collector.

Lind Road

Lind Road parallels US 395 from US 730 to Bensel Road, which is located at the southern boundary of the IMSA. Lind Road is two-lane County roadway classified as a minor arterial from Bensel Road to Margaret Avenue, a collector from Margaret Avenue to the irrigation canal, and then as a local street from the canal to US 730.

Devore Road

Devore Road is a two-lane City roadway and is the northern approach of the US 730/US 395 intersection. Devore Road is a collector and provides access to 3rd Street and the McNary Dam.

Margaret Avenue

Margaret Avenue provides access to residential properties on the west side of US 395. It is two-lane roadway and is classified as a minor arterial.

Eisele Drive

Eisele Drive is a two-lane City roadway. It provides access to commercial properties and the Post Office south of US 730. Eisele Drive is also sometimes referred to as Draper Street.

PUBLIC TRANSPORTATION FACILITIES

There are no fixed line public transportation facilities that operate within the IMSA. Regional dial-a-ride providers, such as RSVP of Eastern Oregon, provide limited service for elderly and/or disabled Umatilla residents. These providers are located outside of Umatilla. Intercity bus service is provided by Greyhound. Daily service is provided at a stop located at the US 730/Switzler Avenue intersection on an as-needed basis, meaning passengers waiting at the stop must flag-down the bus. There is no shelter or obvious markings at the stop location. The service provides connections to Portland and Pendleton, Oregon, and Tri-Cities, Washington.

PEDESTRIAN AND BICYCLE FACILITIES

Sidewalks and shoulders make up the exclusive pedestrian and bicycle facilities inventory along the study roadways. Sidewalks are present on both sides of US 730 west of the Umatilla River and on the south side only from the bridge over the river to Brownell Boulevard. There is also a sidewalk on the west side of Umatilla River Road between US 730 and 7th Street. Generally, pedestrian activity in the study area is the highest on US 730 between the Umatilla River and Brownell Boulevard (it should be noted that pedestrian counts were not conducted on US 395 except at its intersection with US 730). The western driveway from the truck stop onto US 730 had the highest amount of pedestrian activity, with 27 pedestrians walking through the intersection from 6 a.m. to 10 p.m. The highest hour occurred from 2:00 to 3:00 p.m. when 6 pedestrians were observed.

Marked bicycle lanes are not present on any of the study roadways. Shoulders are provided along the majority of US 730 and US 395, as well as sections of Umatilla River Road and Devore Road, though they are often either narrow or gravel. The highest bicycle volumes were observed at the US 730/Brownell Boulevard intersection, where 12 bicycles passed through between 6 a.m. and 10 p.m. Six bicycles passed through US 730/Lind Road and the Port of Entry exit onto Brownell Boulevard as well. No bicycles were observed along US 395, during the count months.

EXISTING TRAFFIC VOLUMES AND PEAK HOUR OPERATIONS

Manual intersection turning movement counts were obtained from ODOT at each of the study intersections to assess the operational performance and characteristics within the study area. These counts were conducted on mid-week days in June and September 2009, as well as January 2010. A description of the analysis conducted with this data is summarized in the following sections.

Intersection Volumes

Turning movement counts at each intersection were recorded from 6:00 a.m. to 10:00 p.m. Because of the close proximity of the intersections, a system-wide peak hour is identified based on the volumes at all study intersections. The weekday p.m. peak hour in the IMSA occurs from 4:30–5:30 p.m. The turning movement volumes at each study intersection are balanced during this hour to account for the differences in data collection dates and locations where some data is missing. *The existing unadjusted turning movement traffic counts are provided in Attachment "A."*

Seasonal Adjustments

Following the methodology outlined by ODOT's Analysis Procedures Manual (APM, Reference 3), a seasonal adjustment factor was applied to the traffic counts collected for the existing conditions analysis in order to estimate 30th highest hour volumes. The counts were collected in June, September, and January, so seasonal adjustment factors were calculated for all three months. An exception to this is that volumes for I-82 were taken from ODOT automatic traffic recorder (ATR) #30-025, 0.58 mile south of the Washington border. These volumes are from the month of August, so no seasonal adjustment was necessary. There is not an ATR on a section of US 730 or US 395 in the vicinity of the study area that exhibits similar characteristics to the highways within the study area. In consultation with ODOT staff, ATR #05-006, located on at milepost 53.33 on US 30 near Rainier, was determined to have the most similar characteristics to US 730 within the study area. The factors for US 730 and US 395 for June and September are 1.08, while the factor for January is 1.39. To ensure that these factors adequately represent the peak harvest period traffic volumes experienced in this area, they were compared to factors calculated from nearby ATR #30-025 on I-82. This comparison showed that the factors calculated from the US 30 ATR are similar to those that would be calculated from the I-82 ATR. Generally factors greater than 1.30 are to be avoided according to the APM; however, in this instance the January counts are balanced against neighboring June and September counts (e.g. if a seasonally adjusted January count is different than a seasonally adjusted June or September count, then the January count is corrected). Furthermore, the exiting volume from the Port of Entry was verified with Port of Entry staff to ensure it accurately reflects a peak volume experienced during the peak season.

Exhibits 3-2 through 3-4 illustrate the 16-hour volume peaking characteristics of the I-82 ramp traffic and I-82 through traffic. Exhibits 3-5 and 3-6 illustrate the 16-hour volume peaking characteristics of US 730 on either side of I-82. The volumes shown in these exhibits have been seasonally adjusted.

Exhibit 3-2 16-Hour Volume Profile for I-82 SB Ramps at US 730

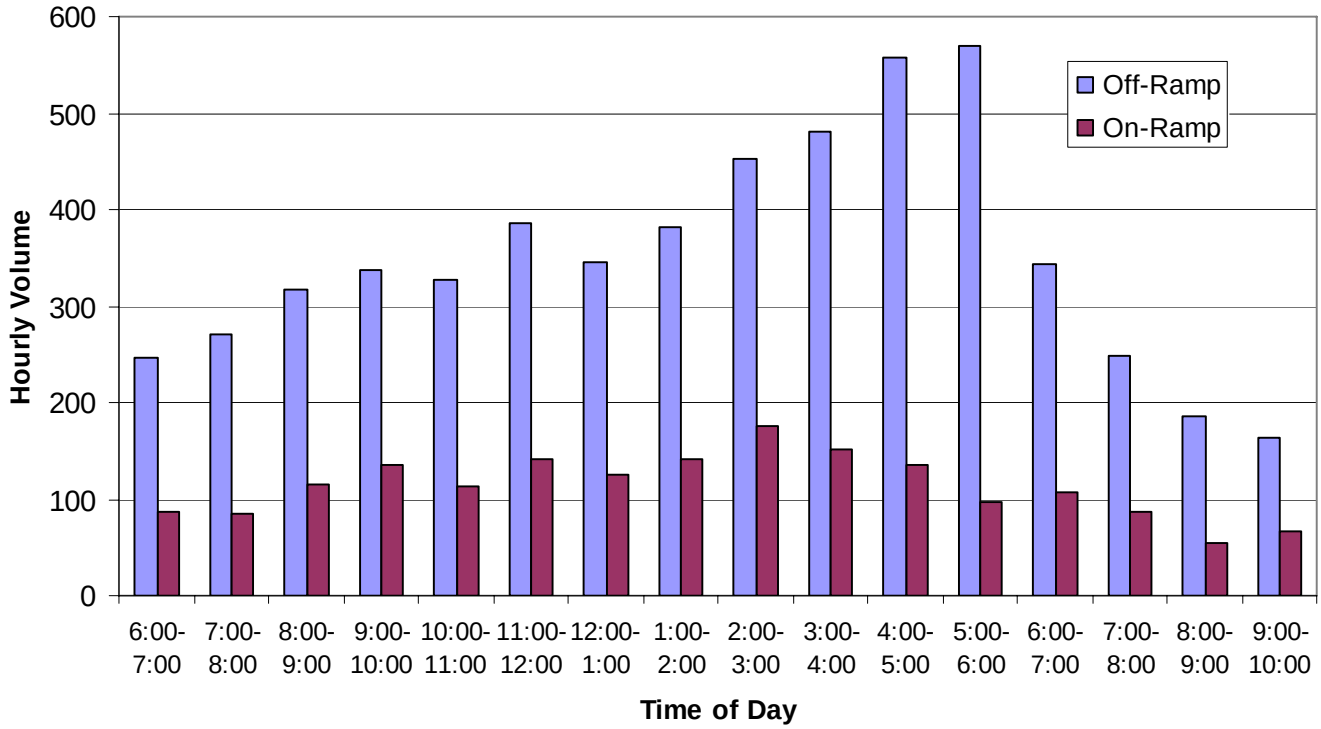


Exhibit 3-3 16-Hour Traffic Volume Profile for I-82 NB Ramps at US 730

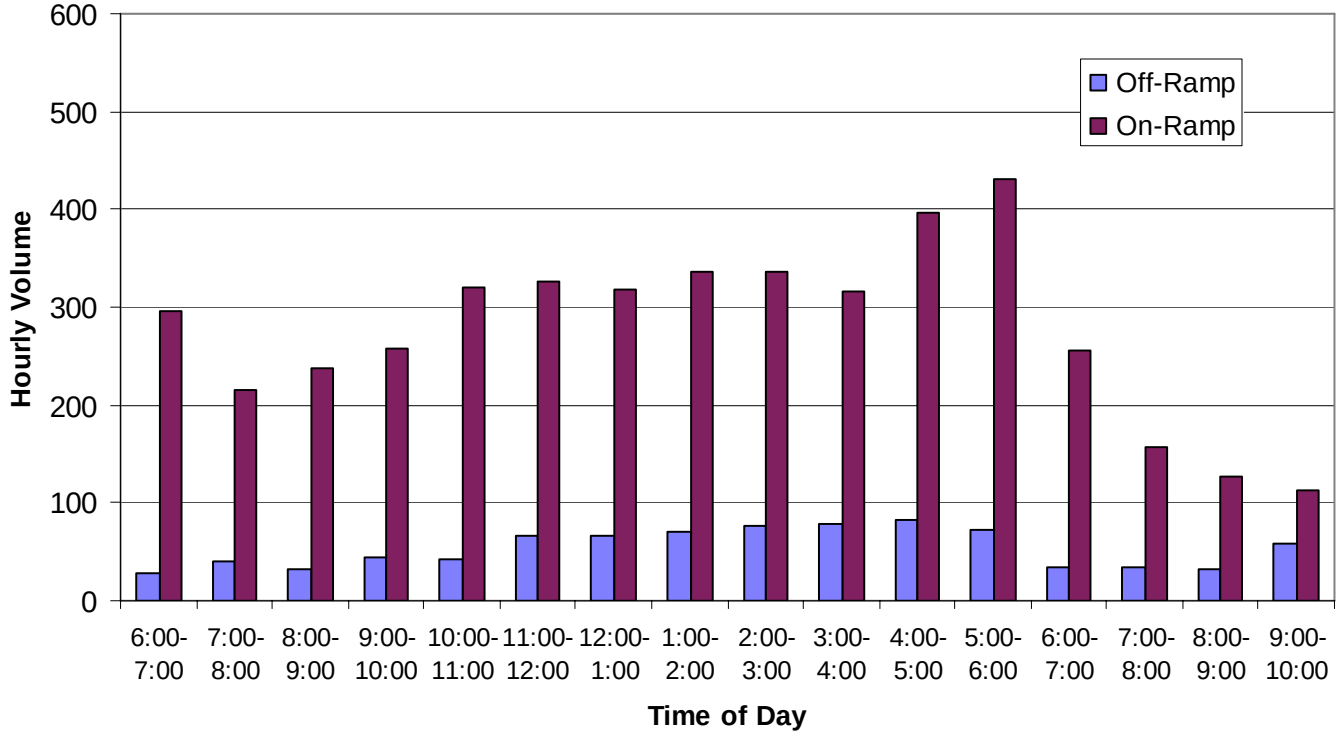


Exhibit 3-4 16-Hour Traffic Volume Profile for I-82 North of US 730

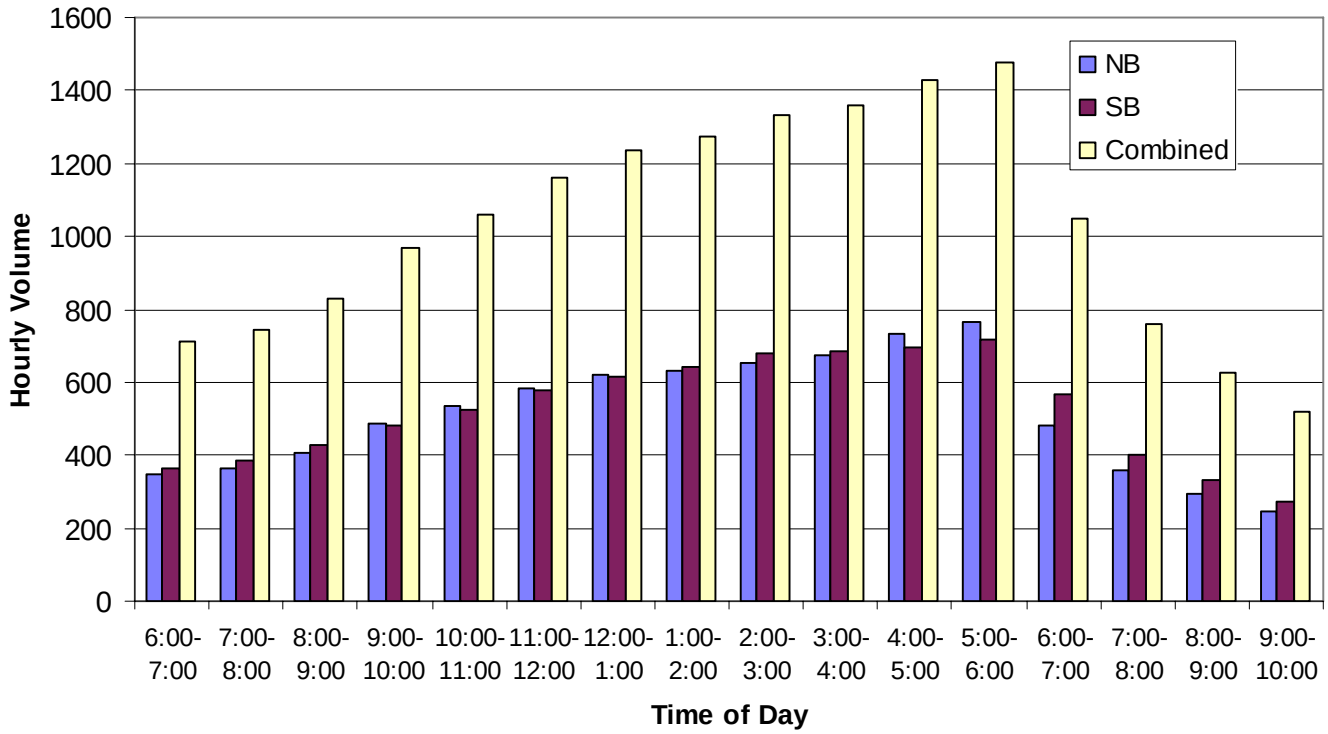


Exhibit 3-5 16-Hour Traffic Volume Profile on US 730 East of I-82

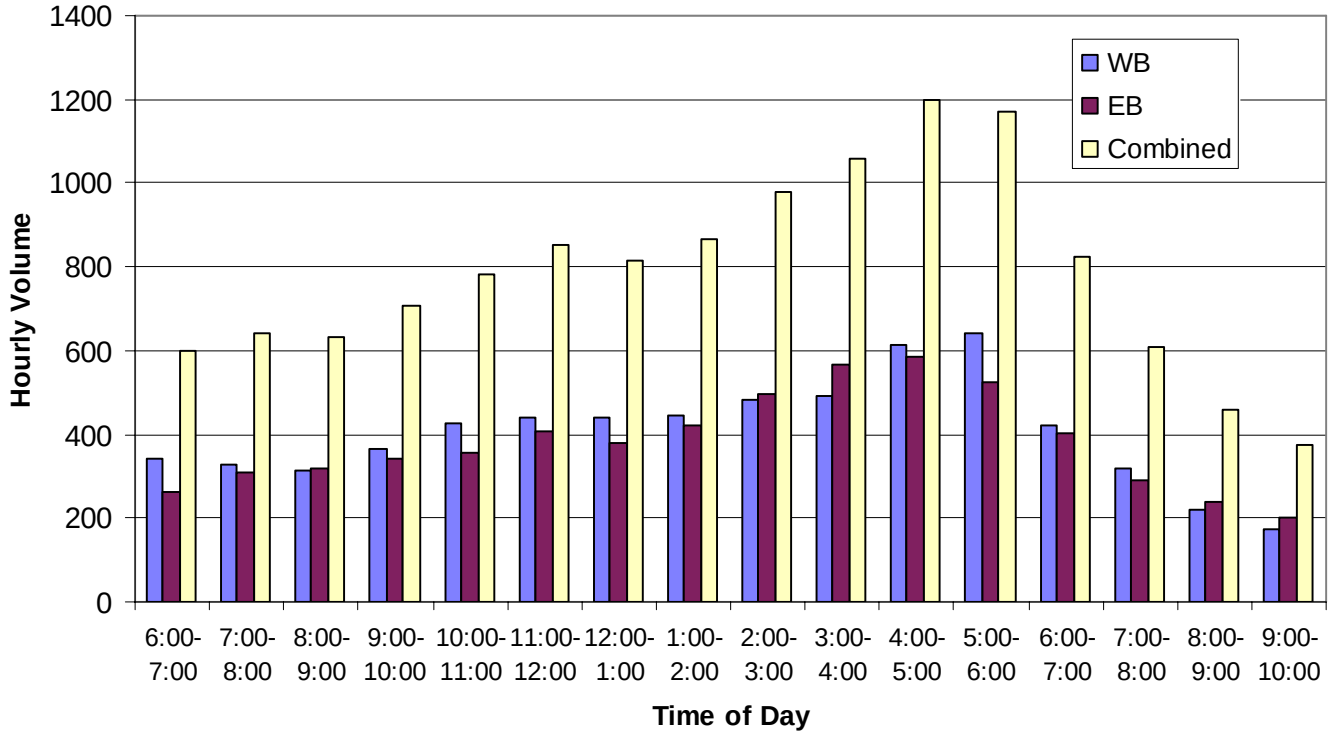
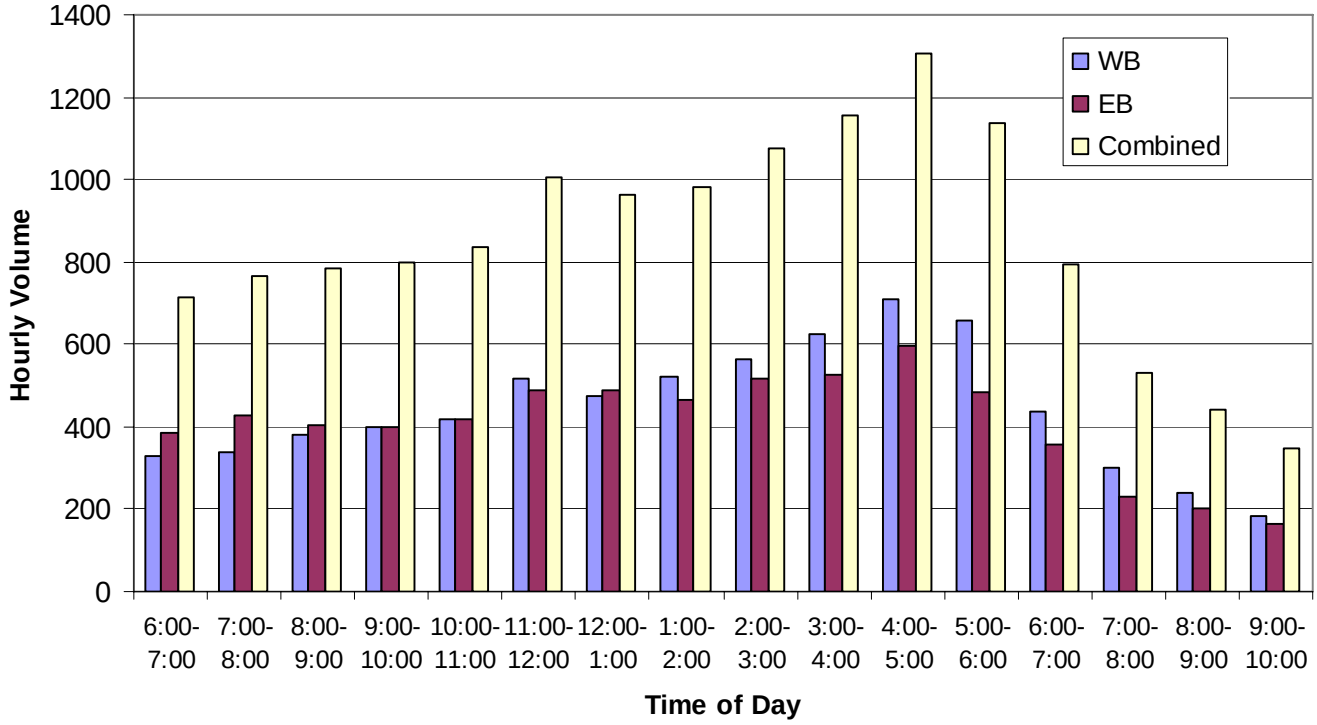


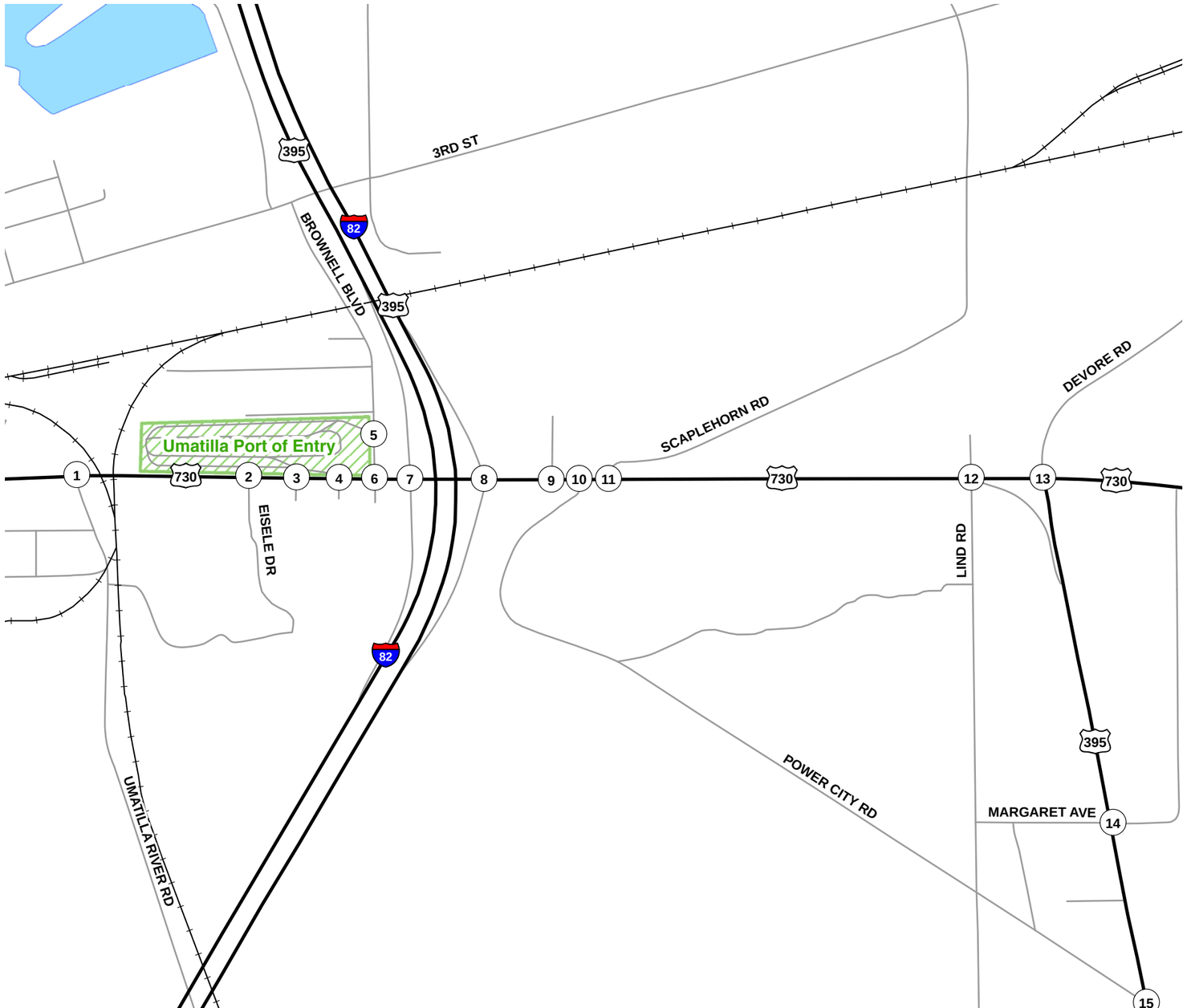
Exhibit 3-6 16-Hour Traffic Volume Profile on US 730 West of I-82

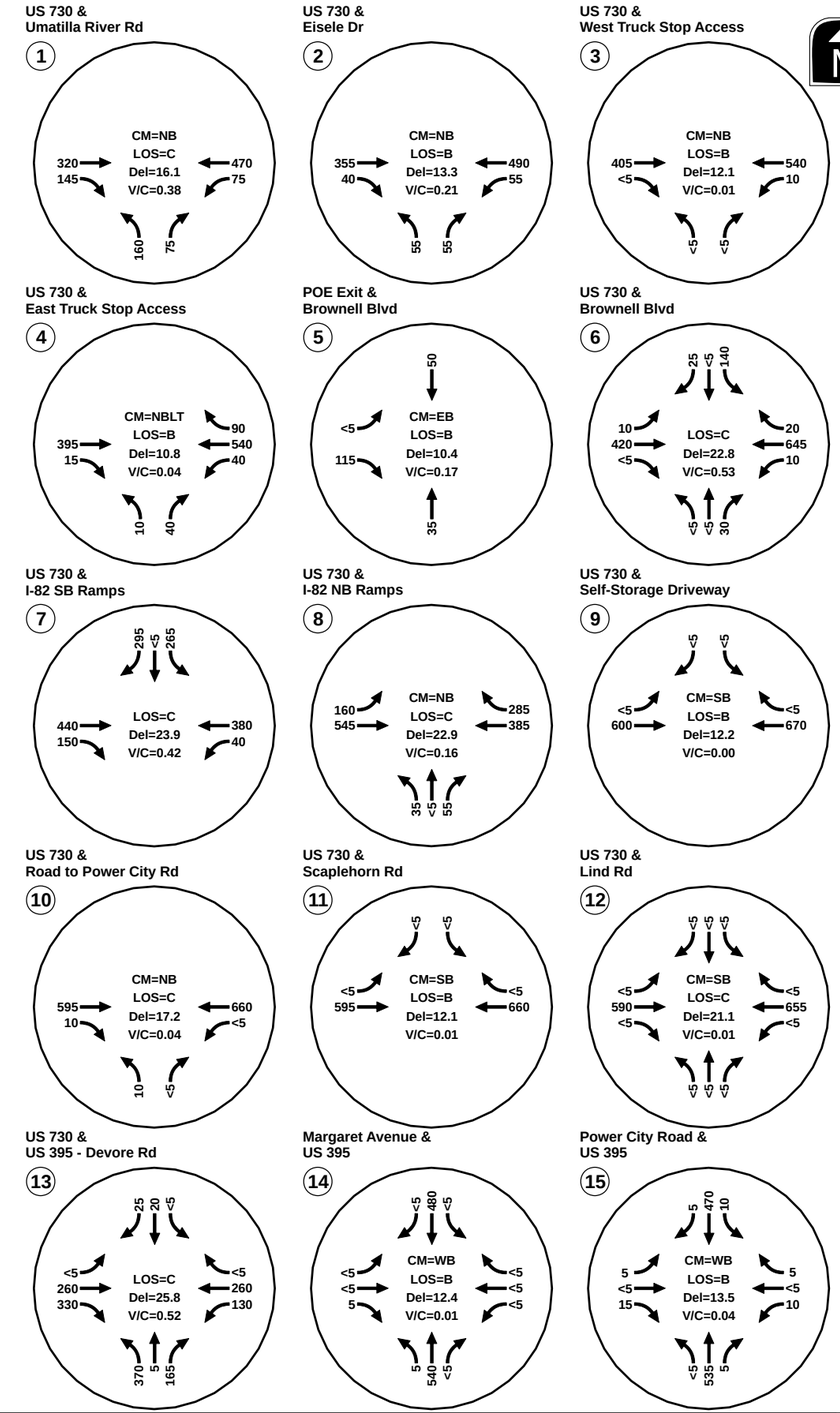


Traffic traveling to and from I-82 significantly influences traffic volumes on US 730. As the exhibits show, the peak hour volumes on each of the I-82 ramps are approximately 40-50% of the volumes on US 730 during that same period. Essentially, nearly half of the traffic on US 730 in the proximity of I-82 is traveling to or from the interstate.

Exhibits 3-2 and 3-3 show that the I-82 ramps each have a dominant traffic pattern that lasts throughout the day. Traffic volumes on the I-82 southbound off-ramp are significantly higher than volumes on the southbound on-ramp throughout the 16-hour period that counts were conducted. The exact reverse pattern occurs on the northbound ramps, where the off-ramp has significantly lower volumes than the on-ramp. These patterns are indicative of the region-wide, and even statewide, travel that is served by US 730 and US 395. Southbound traffic on I-82 that exits at this interchanges utilizes US 730 and US 395 to reach other regional (e.g. Hermiston and Irrigon) and statewide (e.g. I-84) destinations. Traffic entering northbound I-82 at this interchange reaches the interchange in a reverse pattern along these same routes.

The weekday 30th highest hour intersection turning movement counts used for the existing conditions analysis are shown in Figure 3-5.





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

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EXISTING TRAFFIC CONDITIONS
30TH HIGHEST HOUR
UMATILLA, OREGON

FIGURE **3-5**

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

Existing Intersection Operations

All operations analyses described in this report were performed in accordance with the procedures stated in the *Highway Capacity Manual 2000* (Reference 4). The OHP sets operational standards based on volume-to-capacity (v/c) ratios for the interchange ramp terminals (v/c of 0.80 for the northbound ramp terminal and 0.85 for the southbound ramp terminal), intersections of US 730 (v/c of 0.85 between Brownell Boulevard and Sloan Avenue and v/c of 0.70 east of I-82), and US 395 (v/c of 0.70). These standards apply to the overall v/c ratio at signalized intersections and to the state highway approaches at unsignalized intersections. The minor street approaches that are stop-controlled at signalized intersections have a standard of a v/c ratio of 0.90.

As shown in Figure 3-5, all study intersections currently meet applicable operation standards when evaluated in isolation. *The existing conditions operations worksheets are provided in Attachment "B."* While overall intersection standards are met, there are operational and queuing concerns associated with the closely spaced signalized intersections on US 730 at Brownell Boulevard and the I-82 Southbound ramp terminal.

Brownell Boulevard and I-82 Southbound Ramp Terminal Intersections

The US 730 signalized intersections of Brownell Boulevard and the US 730/I-82 Southbound ramp terminal are located within close proximity, with approximately 170 feet between them (only approximately 110 feet between the southbound right-turn from the I-82 ramp to Brownell Boulevard). The signals have been coordinated and operate using the same controller as one signal in an effort to improve intersection operations. Nevertheless, queuing problems associated with truck traffic accessing the Umatilla Port of Entry weigh station continue to occur at the two intersections. This condition varies by season due to increase of trucks during mid-summer and fall harvests. During these times, it is not uncommon for sudden spikes in truck traffic to cause significant queuing from the Port of Entry station back onto US 730 and further back onto the I-82 SB off-ramp. These situations force the Port of Entry staff to close down their weigh scales for a short period in order for the back-up to dissipate. Additionally, many of these trucks exit the Port of Entry and return to I-82 SB (see Exhibit 3-7). Only a few trucks are able to make the maneuver from Brownell Boulevard onto I-82 SB per signal cycle; therefore, queues on Brownell Boulevard back up to the Port of Entry exit during these peak times.

Exhibit 3-7 Trucks Exiting the Port of Entry to return to I-82 SB

Weigh-in-Motion

As was mentioned above, commercial truck traffic exiting I-82 to be weighed at the POE influences traffic operations in the interchange vicinity. Commercial truck traffic must be weighed when entering Oregon from another state. Historically, this has primarily occurred at weigh stations, which has required trucks to exit the mainline of the highway in order to be weighed. For trucks entering Oregon from Washington via I-82, this has occurred at the Umatilla POE. This process adds to the time it takes to transport goods, and in the case of Umatilla, contributes heavy truck traffic to the non-Interstate system. In order to facilitate this process and reduce its impacts, ODOT implemented the Oregon Green Light program in 1997. This program allows commercial truck drivers that register with the program and install the supplied transponder to weigh-in-motion on the roadway and bypass the off-system weigh station. Such a bypass exists on I-82 at Umatilla, which reduces the amount of truck traffic utilizing the POE. In September 2009, approximately 30,700 trucks were weighed at Umatilla, with approximately 14,300 trucks, or approximately 47% of all trucks, being granted a bypass by the Green Light system. These are trucks that would have otherwise had to stop at the Umatilla POE. Statewide, the use of the Oregon Green Light program is steadily increasing, with the number of trucks being granted bypasses increasing by nearly 20% from 2006 to 2009. ODOT staff expect use of the program to continue to rise until the industry is saturated.

TRAFFIC SAFETY

The crash histories at the study area intersections and along the study area highways (i.e. I-82, US 730, and US 395) were reviewed in an effort to identify potential safety issues. Crash records were obtained from ODOT for the five-year period from January 1, 2004 through December 31, 2008. Table 3-2 contains the summary of reported crashes at the intersections and Table 3-3 contains the summary of reported crashes along the roadways.

Table 3-2 Intersection Crash Histories (January 1, 2004 through December 31, 2008)

Intersection	# of Crashes	Crash Rate[1]	Crash Type				Severity		
			Angle	Rear-End	Turning	Other	PDO	Injury	Fatality
I-82 SB Ramp Terminal/ US 730	11	0.3	2	8	0	1	10	1	0
I-82 NB Ramp Terminal/ US 730	2	0.1	2	0	0	0	0	2	0
Umatilla River Rd/ US 730	3	0.1	1	0	0	1	2	1	0
Eisele Dr/US 730	1	0.1	0	0	0	1	0	1	0
West Truck Stop Access/US 730	None Reported								
East Truck Stop Access/US 730	None Reported								
Brownell Blvd/US 730	8	0.3	1	5	1	1	4	4	0
Self Storage Driveway/US 730	None Reported								
Road to Power City Road/US 730	None Reported								
Scaplehorn Rd/US 730	None Reported								
Lind Rd/US 730	None Reported								
US 395-Devore Rd/ US 730	11	0.4	5	3	2	1	7	4	0
Margaret Ave/US 395	None Reported								
Power City Rd/US 395	2	0.1	0	0	1	1	1	1	0

[1]Crash rate is expressed in terms of crashes per million entering vehicles

Table 3-3 Roadway Segment Crash Histories (January 1, 2004 through December 31, 2008)

Roadway	# of Crashes	Crash Rate[1]	Crash Type					Severity		
			Angle / Turning	Rear-End	Sideswipe	Fixed Object	Other	PDO	Injury	Fatality
I-82: WA State Line –Umatilla River Bridge	23	0.37	1	0	1	13	8	10	12	1
US 730: Sloan Ave – Columbia Blvd	46	1.32	14	23	4	1	4	29	17	0
US 395: US 730 – Union St	15	0.76	4	4	1	3	3	11	4	0

[1]Crash rate is expressed in terms of crashes per million vehicle miles

The US 395-Devore Rd/US 730 intersection exhibits the highest crash rate in Table 3-2. Seven of the eleven reported crashes are angle or turning crashes. The majority of these seven crashes involve the southern US 395 approach. This approach is controlled using split-phasing, so no other movements on the other approaches at the intersection are permitted during the same phase. Field observations did not reveal any notable sight distance deficiencies. A more detailed review of the crash data at this intersection did not reveal any weather-related or time of day patterns. That the southern US 395 approach is involved in the majority of the turning and angle crashes reported at this intersection is consistent with the higher traffic volumes and higher speeds on US 395.

The US 730/I-82 Southbound ramp terminal also had 11 reported crashes. The predominant crash pattern at this intersection is rear-end crashes. Five of the rear-end crashes occurred on the westbound approach, while the other three occurred on the southbound off-ramp. These patterns are fairly typical at signalized intersections, especially where traffic on certain approaches has been traveling uncontrolled for some distance (e.g. on I-82 or US 730 between US 395 and I-82). It is also worth noting that the I-82 bridge over US 730 obstructs the view of the traffic signal heads at this intersection for westbound traffic. Motorists traveling westbound on US 730 are generally not able to see the signal heads until US 730 begins to flatten just east of the northbound ramp terminals. This may be a contributing factor to rear-end crashes on the westbound approach.

Vehicular queues on the westbound approach at the US 730/I-82 Southbound ramp terminal do sometimes back up in front of the northbound ramp terminals during peak periods. The crash data at this intersection does not indicate that this is currently causing a significant number of crashes. However, this may become more of a safety issue as traffic volumes increase, and in turn, so do these instances of blockage.

As Table 3-3 shows, US 730 has the highest crash rate of the roadway segments within the study area. This is likely due to the greater presence of signalized intersections and driveways on this roadway compared to other two roadways. Rear-end and angle/turning crashes are the most common crash type along US 730, and the majority of these crashes were reported at one of the three signalized intersections. The fatality crash on I-82 occurred when the driver of a passenger car traveling northbound overturned. According to the crash report, the driver was traveling too fast for conditions, over-corrected, and skidded off the road. Pavement conditions were dry at the time,

though it was at night. No other vehicles were involved in this crash. *ODOT crash data summary sheets are provided in Attachment "C".*

EXISTING ROADWAY ACCESS CONDITIONS

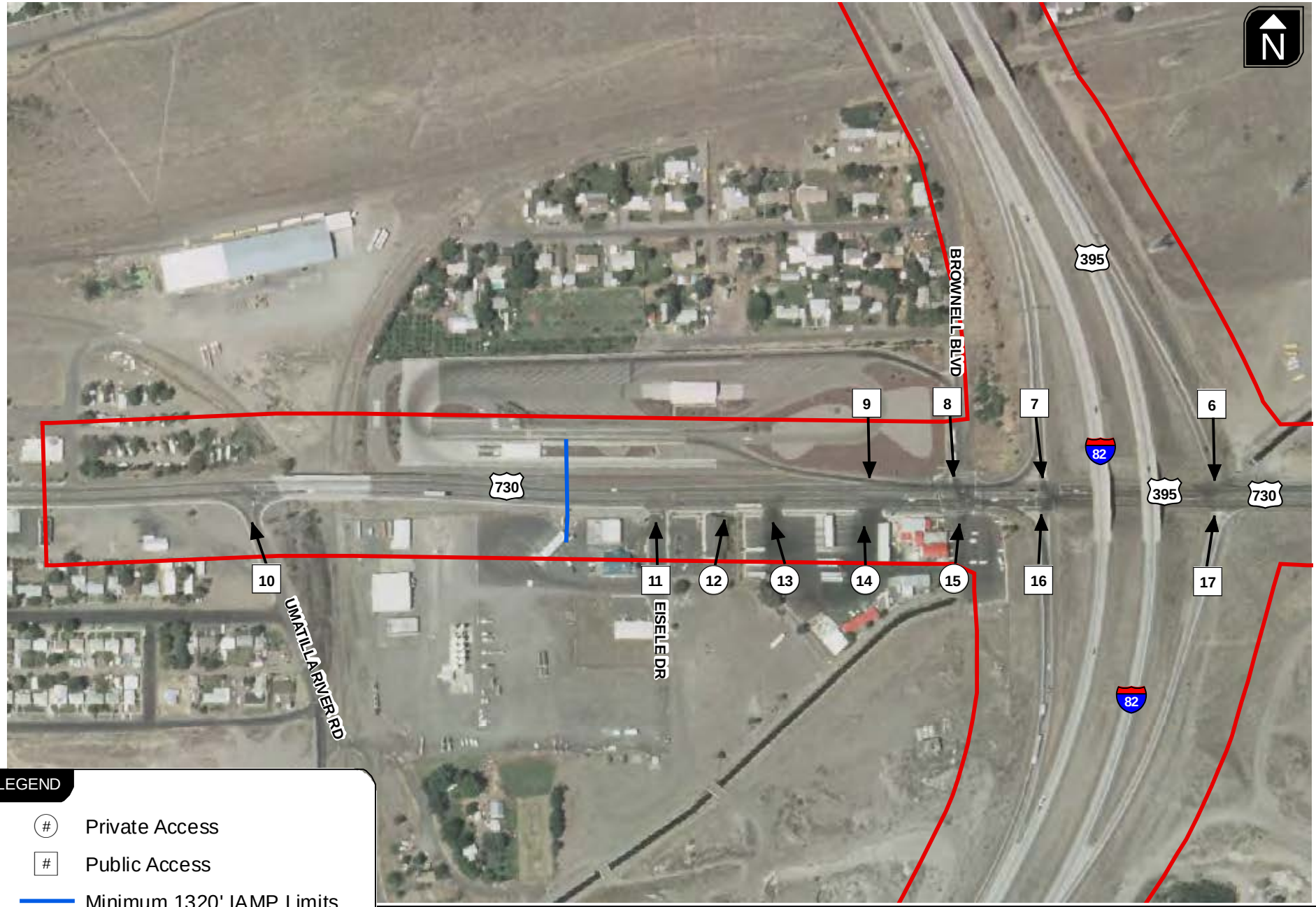
Along the US 730 study corridor, there is no existing access control. There are currently 21 public and private access points (excluding the interchange ramp terminals) located within the US 730 Operations and Access Study Area (roughly ½ mile to the east and west of the interchange). Of these access points, 8 are located west of the interchange, while the remaining 13 access points are located east of the interchange. Access is somewhat limited on the west side by the presence of the Umatilla River, the Umatilla Port of Entry, which occupies the entire northern frontage along US 730 between Brownell Boulevard and the river, and the railroad tracks. Figure 3-6 illustrates the location and type (public or private) of each of the access locations within the Operations and Access Study Area. Table 3-4 summarizes the tax lots and existing businesses served by each of the access points as well as other miscellaneous descriptive information such as driveway width, mile point location, and permit number (if applicable).

Oregon Administrative Rule 734, Division 51 and the Oregon Highway Plan (OHP) identify ODOT's access management standards within the vicinity of interchanges. Based on an outright application of the standards, no full public or private access is allowed within 1,320 feet (¼ mile) from the ramp terminals. Figures 3-6a and 3-6b show the 1,320 feet access control area as measured from the Interstate-82 ramp terminal intersections. As shown, 6 private and 4 public accesses are located within the 1,320-feet control area on either side of the interchange. The presence of the signalized Brownell Boulevard intersection located less than 200 feet west of the southbound ramp terminal, along with the existing private driveways and Port of Entry entrance, will be important access planning elements to be explored as part of future alternatives analyses.

Table 3-4 I-82/US 730 IAMP Public/Private Approach Inventory

Figure 3-6 ID	Roadway	Approach Type	Side of Roadway	Serves Tax Lot Number	Property Owner/ Business Name	Mile Point	Approach Width	Permitted?/ Permit #	Date of Permit
1	US 730	Public	North	-	DeVore Road	184.87	83’	19417	1/14/1972
2	US 730	Private	North	5N 28 16AA, 1100, 1101, 1102, 1103	Residential	184.779	16’	Not Permitted	-
3	US 730	Private	North	5N 28 16AA, 102	Residential	184.695	25’	Not Permitted	-
4	US 730	Public	North	-	Scaplehorn Road	184.32	67’	Not Permitted	-
5	US 730	Private	North	5N 28 16 , 700, 800, 900, 1000, 1100	Commercial (Umatilla Self Storage)	184.248	38’	22356	4/16/1976
6	US 730	Public	North	-	I-82 NB Ramp Terminal (On-ramp)	184.17		-	-
7	US 730	Public	North	-	I-82 SB Ramp Terminal (Off-ramp)	184.08		-	-
8	US 730	Public	North	-	Brownell Boulevard	184.03	111’	Not Permitted	-
9	US 730	Public	North	5N 28 16BC, 100	Port of Entry Entrance	184.01	130’	Not Permitted	-
10	US 730	Public	South	-	Umatilla River Road	183.66	105’	Not Permitted	-
11	US 730	Public	South	-	Eisele Drive	183.88	50’	Not Permitted	-
12	US 730	Private	South	5N 28 16BC, 500	Commercial (US Post Office Employee Entrance)	183.92	18’	12A35034	10/01/1993
13	US 730	Private	South	5N 28 16, 1300, 1400	Commercial (Crossroads Truck Stop)	183.94	40’	29165	5/10/1986
14	US 730	Private	South	5N 28 16, 1300, 1400	Commercial (Crossroads Truck Strop)	183.991	67’	29165	5/10/1986
15	US 730	Private	South	5N 28 16, 1500	Commercial (Crossroads Truck Strop)	184.03	65’	Not Permitted	-
16	US 730	Public	South	-	I-82 SB Ramp Terminal (On-ramp)	184.08	-	-	-
17	US 730	Public	South	-	I-82 NB Ramp Terminal	184.17	-	-	-

Figure 3-6 ID	Roadway	Approach Type	Side of Roadway	Serves Tax Lot Number	Property Owner/ Business Name	Mile Point	Approach Width	Permitted?/ Permit #	Date of Permit
					(Off-ramp)				
18	US 730	Private	South	5N 28 16, 1700	Commercial (Road to Rock Pit)	184.29	44’	Not Permitted	-
19	US 730	Private	South	5N 28 16AD, 400	ODOT Stockpile site	184.692	23’	Not Permitted	-
20	US 730	Private	South	5N 28 16AD, 200	Commercial (closed fruit stand)	184.696	20’	Not Permitted	-
21	US 730	Private	South	5N 28 16AD, 200	Commercial (closed fruit stand)	184.731	48’	Not Permitted	-
22	US 730	Private	South	5N 28 16AD, 100	Residence	184.771	29’	Not Permitted	-
23	US 730	Public	South	-	Lind Road	184.78	29’	Not Permitted	-
24	US 730	Public	South	-	Connection to US 395	184.81	-	Not Permitted	-
25	US 730	Public	South	-	US 395	184.87	-	Not Permitted	-



LEGEND

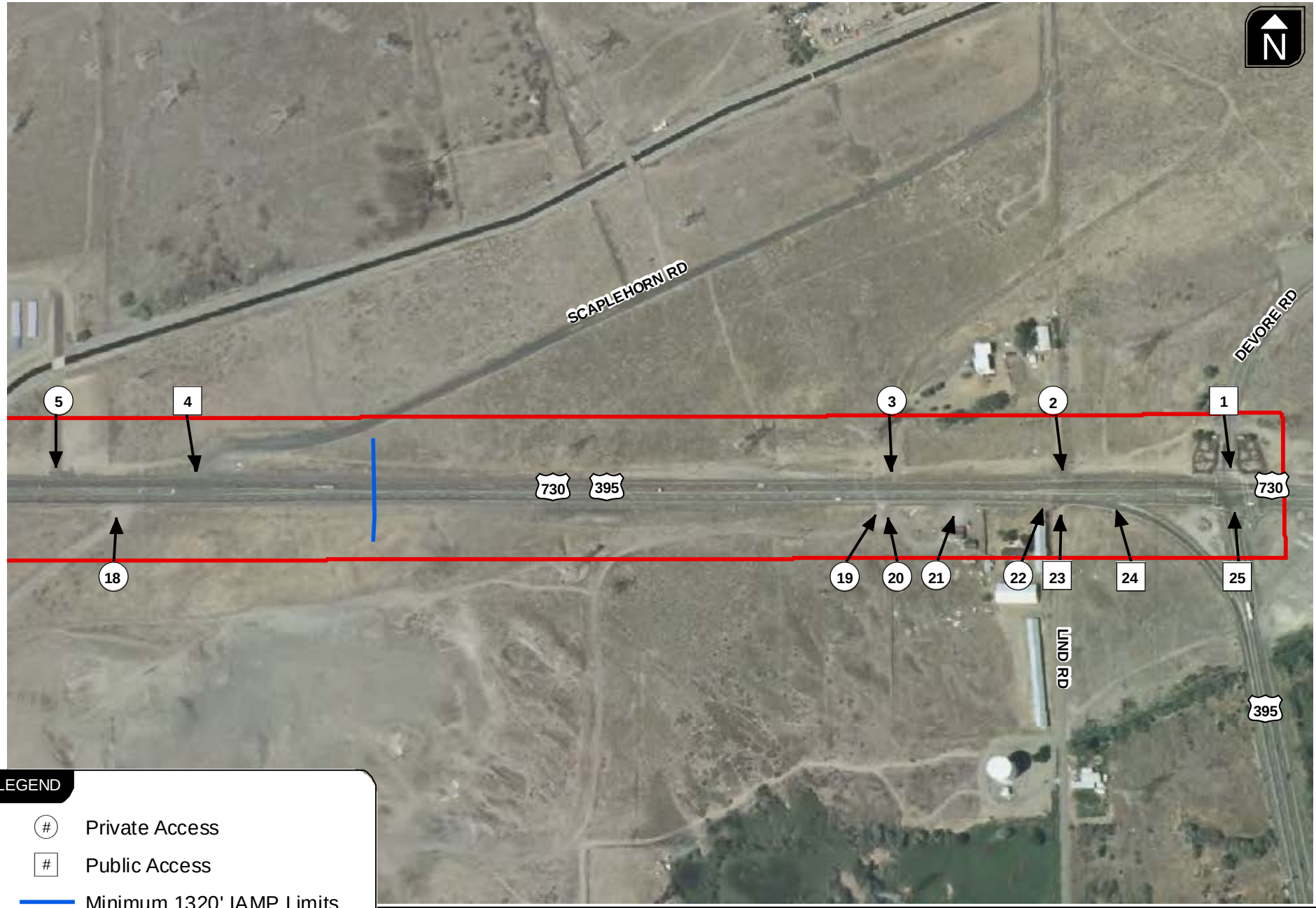
- (#) Private Access
- [#] Public Access
- Minimum 1320' IAMP Limits
- Operations/Access Study Area

ACCESS INVENTORY
WEST OF I-82 AND I-82 RAMPS
UMATILLA, OREGON

FIGURE 3-6a

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/ PLANNING

H:\projfile\10369 - I-82 US 730 IAMP\GIS\UmatillaAccessInventoryA.mxd



LEGEND

- (#) Private Access
- [#] Public Access
- Minimum 1320' IAMP Limits
- Operations/Access Study Area

ACCESS INVENTORY
EAST OF I-82
UMATILLA, OREGON

FIGURE 3-6b

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/ PLANNING

H:\projfile\10369 - I-82 US 730 IAMP\GIS\UmatillaAccessInventoryB.mxd

EXISTING ROADWAY DEFICIENCIES

No significant existing roadway deficiencies were identified within the study area along the paved sections of roadway.

SUMMARY

- The primary roadways within the Interchange Management Study Area (IMSA) include Interstate-82, US 730, and US 395.
- All of the study intersections meet their respective ODOT mobility standard; however, the primary issue in the area is truck traffic circulation to and from the Umatilla Port of Entry. For inbound truck traffic, the problem is the close spacing of the Brownell Boulevard and I-82 Southbound terminal signalized intersections and the Umatilla Port of Entry entrance. Queues back up from the Port of Entry onto US 730 and the I-82 SB off-ramp, which forces the Port of Entry to close its weigh scales to allow the queue to clear. Outbound truck traffic queues up on Brownell Boulevard back to the Port of Entry exit during peak times, as well.
- There are no identified safety issues within the study area based on a review of the most recent five years of available crash data. However, it has been noted that there is a sight line issue for vehicles traveling westbound on US 730 and the ability to see in advance the traffic signal heads at the SB ramp terminal.
- Pedestrian and bicycle facilities are limited in the study area.
- There are currently 21 access points located within the Operations and Access Study Area (roughly ½-mile to the north and south of the interchange) along US 730. The existing access points are a combination of public and private approaches.
- ODOT's access spacing standard within the vicinity of the interchange is 1,320 feet (¼-mile) from the ramp terminals to any type of access (partial or full). Within this ¼-mile control area there are 6 private access points and 4 public accesses.

REFERENCES

1. Oregon Department of Transportation. *1999 Oregon Highway Plan*. 1999.
2. Kittelson & Associates, Inc. *City of Umatilla Transportation System Plan*. 1999.
3. Transportation Research Board. *Highway Capacity Manual*. 2000.
4. Oregon Department of Transportation. *Analysis Procedures Manual*. 2006.

ATTACHMENTS

A. Traffic Counts

B. Existing Conditions Worksheets

C. Crash Data

Attachment A

Traffic Counts

Summary of Traffic Count
Transportation Development Division

Site: 30052009
County: Umatilla
City: Umatilla

Milepoint: 184.87
Count Number: 1.00

Date: 9/28/2009
Hours: 6:00 AM-10:00 PM
Highway #: 002
@ Umatilla-Stanfield Hwy(US395)
Location: & Devore Rd.
Weather: Clear;Cloudy

	Summary By Movements														Entering Volumes			
Time of Day	N-E	N-S	N-W	E-N	E-S	E-W	S-N	S-E	S-W	W-N	W-E	W-S		TOTAL	North	East	South	West
6:00	0	1	2	0	81	185	17	19	147	9	141	110		712	3	266	183	260
6:15	1	0	0	0	0	0	0	0	0	0	0	0		1	1	0	0	0
6:30	1	0	0	0	0	0	0	0	0	0	0	0		1	1	0	0	0
6:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
7:00	0	0	1	1	19	44	4	24	36	2	36	28		195	1	64	64	66
7:15	1	1	0	0	22	35	4	25	29	1	38	34		190	2	57	58	73
7:30	0	3	0	1	32	41	3	22	38	2	40	49		231	3	74	63	91
7:45	0	1	1	0	27	32	1	43	38	0	36	47		226	2	59	82	83
8:00	0	1	0	0	21	29	2	23	48	0	46	45		215	1	50	73	91
8:15	0	0	0	1	33	39	1	21	55	2	29	43		224	0	73	77	74
8:30	0	1	1	0	31	34	2	19	58	2	30	67		245	2	65	79	99
8:45	0	0	1	2	23	27	4	20	47	2	28	44		198	1	52	71	74
9:00	3	12	9	3	96	98	6	74	190	11	95	174		771	24	197	270	280
9:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
9:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
9:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
10:00	0	19	7	1	89	130	17	99	195	3	108	192		860	26	220	311	303
10:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
11:00	0	2	2	0	36	21	2	26	54	0	28	60		231	4	57	82	88
11:15	0	3	4	1	33	32	4	33	45	3	27	48		233	7	66	82	78
11:30	1	4	1	1	22	41	3	25	56	1	32	46		233	6	64	84	79
11:45	3	3	2	1	28	22	6	27	55	2	27	50		226	8	51	88	79
12:00	0	4	1	0	27	34	2	33	71	1	40	32		245	5	61	106	73
12:15	1	3	3	0	31	35	2	32	45	2	30	53		237	7	66	79	85
12:30	0	6	4	2	18	31	0	34	44	4	33	56		232	10	51	78	93
12:45	0	2	3	2	27	43	8	34	51	1	57	58		286	5	72	93	116
13:00	1	11	13	2	116	129	8	121	235	4	150	211		1001	25	247	364	365
13:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
14:00	0	10	11	1	127	168	7	158	255	7	184	231		1159	21	296	420	422
14:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0	1	0	0		1	0	0	0	1
15:00	0	7	11	1	192	208	6	155	265	8	192	244		1289	18	401	426	444
15:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
16:00	0	1	3	2	45	51	2	39	72	2	53	72		342	4	98	113	127
16:15	1	2	0	0	33	43	2	32	85	2	50	78		328	3	76	119	130
16:30	0	2	0	0	29	49	2	30	79	0	57	74		322	2	78	111	131
16:45	0	3	1	0	25	54	1	37	84	3	70	82		360	4	79	122	155
17:00	1	10	20	0	38	61	2	39	81	0	40	66		358	31	99	122	106
17:15	0	4	2	0	28	54	0	44	67	0	62	71		332	6	82	111	133
17:30	0	1	6	1	36	47	2	40	58	0	57	86		334	7	84	100	143
17:45	1	2	3	1	18	29	2	28	57	2	52	71		266	6	48	87	125
18:00	0	9	9	1	92	139	5	132	185	3	182	205		962	18	232	322	390
18:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
19:00	0	7	8	2	84	91	2	100	169	1	131	161		756	15	177	271	293
19:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
19:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
19:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
20:00	0	1	0	0	51	56	1	82	114	0	92	108		505	1	107	197	200
20:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
20:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
20:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
21:00	0	0	0	0	40	49	0	47	64	0	64	82		346	0	89	111	146
21:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
21:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
21:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
Total Count	15	136	129	27	1650	2181	130	1717	3172	81	2337	3078		14653	280	3858	5019	5496
24hr Factor	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1		1.1	1.1	1.1	1.1	1.1
24hr Volume	17	150	142	30	1815	2400	143	1889	3490	90	2571	3386		16119	308	4244	5521	6046

Summary of Traffic Count
Transportation Development Division

Site: 30042010
County: Umatilla
City: RURAL

Milepoint: 0.70
Count Number: 1.00

Date: 1/19/2010
Hours: 6:00 AM-10:00 PM
Highway #: 054
Bowden Lane (e)
Location:
Weather: Cloudy;Rain

	Summary By Movements														Entering Volumes			
Time of Day	N-SE	N-S	N-NW	SE-N	SE-S	SE-NW	S-N	S-SE	S-NW	NW-N	NW-SE	NW-S		TOTAL	North	South-East	South	North-West
6:00	0	155	2	2	2	0	267	0	7	3	0	1		439	157	4	274	4
6:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
6:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
6:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
7:00	0	60	1	0	0	0	62	0	1	0	0	1		125	61	0	63	1
7:15	0	56	1	0	0	0	65	0	2	0	0	0		124	57	0	67	0
7:30	3	63	0	0	0	0	62	0	2	0	0	0		130	66	0	64	0
7:45	1	88	0	1	0	0	58	1	0	1	0	2		152	89	1	59	3
8:00	0	56	0	1	0	0	69	0	0	1	0	1		128	56	1	69	2
8:15	1	72	2	2	0	1	70	0	0	1	0	1		150	75	3	70	2
8:30	1	54	0	1	2	0	40	1	1	1	0	1		102	55	3	42	2
8:45	1	61	1	0	1	0	53	0	0	0	0	2		119	63	1	53	2
9:00	1	279	2	3	3	1	230	7	7	2	0	7		542	282	7	244	9
9:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
9:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
9:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
10:00	3	290	1	3	4	1	305	5	1	0	0	5		618	294	8	311	5
10:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
11:00	0	74	0	1	0	0	83	1	1	0	0	0		160	74	1	85	0
11:15	0	77	0	0	0	0	92	0	3	0	0	2		174	77	0	95	2
11:30	3	97	0	1	2	0	69	2	3	1	0	0		178	100	3	74	1
11:45	1	71	0	3	2	0	73	0	1	0	0	0		151	72	5	74	0
12:00	1	85	2	1	0	0	88	0	1	1	0	1		180	88	1	89	2
12:15	1	80	1	1	1	0	71	7	0	1	0	2		165	82	2	78	3
12:30	1	88	0	1	2	0	90	2	1	1	0	1		187	89	3	93	2
12:45	0	67	0	2	0	0	91	2	1	2	0	2		167	67	2	94	4
13:00	8	347	1	3	2	0	343	4	6	1	0	5		720	356	5	353	6
13:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
14:00	3	357	4	5	7	0	410	7	5	0	0	7		805	364	12	422	7
14:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
15:00	1	433	1	2	6	0	372	11	10	3	0	6		845	435	8	393	9
15:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
16:00	2	123	0	0	1	0	87	1	4	0	1	5		224	125	1	92	6
16:15	1	102	1	3	0	0	84	1	0	0	0	4		196	104	3	85	4
16:30	2	96	2	2	3	0	100	3	1	3	0	2		214	100	5	104	5
16:45	3	93	2	1	1	0	79	1	0	0	0	0		180	98	2	80	0
17:00	0	125	1	0	0	0	117	0	1	0	0	2		246	126	0	118	2
17:15	1	103	0	0	4	0	113	0	1	0	0	6		228	104	4	114	6
17:30	0	84	1	0	0	0	72	0	0	0	0	0		157	85	0	72	0
17:45	0	81	2	1	0	0	95	0	0	2	0	0		181	83	1	95	2
18:00	3	252	2	1	0	0	248	0	2	1	0	2		511	257	1	250	3
18:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
19:00	1	116	1	4	0	0	161	1	1	2	0	1		288	118	4	163	3
19:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
19:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
19:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
20:00	0	92	1	1	0	0	131	1	2	0	0	2		230	93	1	134	2
20:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
20:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
20:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
21:00	0	79	0	0	0	0	114	0	1	1	0	0		195	79	0	115	1
21:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
21:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
21:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
Total Count	43	4356	32	46	43	3	4464	58	66	28	1	71		9211	4431	92	4588	100
24hr Factor	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1		1.1	1.1	1.1	1.1	1.1
24hr Volume	48	4792	36	51	48	4	4911	64	73	31	2	79		10133	4875	102	5047	110

Summary of Traffic Count
Transportation Development Division

Site: 30032010
County: Umatilla
City: Umatilla
Milepoint: 183.66
Count Number: 1.00

Date: 1/13/2010
Hours: 6:00 AM-10:00 PM
Highway #: 002
Hwy(US730) @ Umatilla
Location: River Rd.
Weather: Cloudy

	Summary By Movements								Entering Volumes		
Time of Day	E-S	E-W	S-E	S-W	W-E	W-S		TOTAL	East	South	West
6:00	12	130	56	33	179	44		454	142	89	223
6:15	0	0	0	0	0	0		0	0	0	0
6:30	0	0	0	0	0	0		0	0	0	0
6:45	0	0	0	0	0	0		0	0	0	0
7:00	9	52	9	10	40	8		128	61	19	48
7:15	10	31	8	11	57	28		145	41	19	85
7:30	8	21	6	8	65	30		138	29	14	95
7:45	6	38	3	12	54	26		139	44	15	80
8:00	6	42	6	16	48	25		143	48	22	73
8:15	10	41	8	11	49	16		135	51	19	65
8:30	13	46	6	7	42	30		144	59	13	72
8:45	3	36	5	8	56	15		123	39	13	71
9:00	32	147	34	41	169	87		510	179	75	256
9:15	0	0	0	0	0	0		0	0	0	0
9:30	0	0	0	0	0	0		0	0	0	0
9:45	0	0	0	0	0	0		0	0	0	0
10:00	32	171	37	51	179	75		545	203	88	254
10:15	0	0	0	0	0	0		0	0	0	0
10:30	0	0	0	0	0	0		0	0	0	0
10:45	0	0	0	0	0	0		0	0	0	0
11:00	10	52	7	17	63	13		162	62	24	76
11:15	4	50	14	20	55	20		163	54	34	75
11:30	8	58	5	12	69	25		177	66	17	94
11:45	9	50	7	20	53	27		166	59	27	80
12:00	8	51	10	15	57	23		164	59	25	80
12:15	10	51	9	20	69	14		173	61	29	83
12:30	9	55	5	17	54	18		158	64	22	72
12:45	7	56	5	17	60	32		177	63	22	92
13:00	34	229	36	79	216	84		678	263	115	300
13:15	0	0	0	0	0	0		0	0	0	0
13:30	0	0	0	0	0	0		0	0	0	0
13:45	0	0	0	0	0	0		0	0	0	0
14:00	54	278	41	98	240	96		807	332	139	336
14:15	0	0	0	0	0	0		0	0	0	0
14:30	0	0	0	0	0	0		0	0	0	0
14:45	0	0	0	0	0	0		0	0	0	0
15:00	48	300	38	103	251	100		840	348	141	351
15:15	0	0	0	0	0	0		0	0	0	0
15:30	0	0	0	0	0	0		0	0	0	0
15:45	0	0	0	0	0	0		0	0	0	0
16:00	19	89	14	15	66	27		230	108	29	93
16:15	14	93	9	32	73	26		247	107	41	99
16:30	8	78	14	25	74	31		230	86	39	105
16:45	17	80	7	23	63	17		207	97	30	80
17:00	16	86	19	37	50	28		236	102	56	78
17:15	10	86	13	30	63	30		232	96	43	93
17:30	14	88	12	26	53	21		214	102	38	74
17:45	13	78	3	26	47	18		185	91	29	65
18:00	28	223	25	78	157	70		581	251	103	227
18:15	0	0	0	0	0	0		0	0	0	0
18:30	0	0	0	0	0	0		0	0	0	0
18:45	0	0	0	0	0	0		0	0	0	0
19:00	23	133	13	52	95	36		352	156	65	131
19:15	0	0	0	0	0	0		0	0	0	0
19:30	0	0	0	0	0	0		0	0	0	0
19:45	0	0	0	0	0	0		0	0	0	0
20:00	20	98	15	51	86	36		306	118	66	122
20:15	0	0	0	0	0	0		0	0	0	0
20:30	0	0	0	0	0	0		0	0	0	0
20:45	0	0	0	0	0	0		0	0	0	0
21:00	14	81	15	34	58	25		227	95	49	83
21:15	0	0	0	0	0	0		0	0	0	0
21:30	0	0	0	0	0	0		0	0	0	0
21:45	0	0	0	0	0	0		0	0	0	0
Total Count	538	3198	514	1055	3010	1201		9516	3736	1569	4211
24hr Factor	1.1	1.1	1.1	1.1	1.1	1.1		1.1	1.1	1.1	1.1
24hr Volume	592	3518	566	1161	3311	1322		10468	4110	1726	4633

Summary of Traffic Count
Transportation Development Division

Site: 30032009
County: Umatilla
City: Umatilla
Milepoint:
Count Number: 1.00

Date: 9/29/2009
Hours: 6:00 AM-10:00 PM
Highway #: _
Entry Exit
Location: passenger cars & other 2
Weather: Clear

	Summary By Movements						Entering Volumes		
Time of Day	N-S	S-N	W-N	W-S		TOTAL	North	South	West
6:00	33	23	0	55		111	33	23	55
6:15	0	0	0	0		0	0	0	0
6:30	0	0	0	0		0	0	0	0
6:45	0	0	0	0		0	0	0	0
7:00	7	2	0	24		33	7	2	24
7:15	5	1	0	14		20	5	1	14
7:30	1	4	0	15		20	1	4	15
7:45	7	5	0	15		27	7	5	15
8:00	1	7	0	22		30	1	7	22
8:15	4	8	0	17		29	4	8	17
8:30	7	2	1	24		34	7	2	25
8:45	4	2	0	14		20	4	2	14
9:00	9	17	1	93		120	9	17	94
9:15	0	0	0	0		0	0	0	0
9:30	0	0	0	0		0	0	0	0
9:45	0	0	0	0		0	0	0	0
10:00	18	22	0	87		127	18	22	87
10:15	0	0	0	0		0	0	0	0
10:30	0	0	0	0		0	0	0	0
10:45	0	0	0	0		0	0	0	0
11:00	6	8	0	23		37	6	8	23
11:15	6	5	0	31		42	6	5	31
11:30	10	16	0	28		54	10	16	28
11:45	9	6	0	26		41	9	6	26
12:00	9	9	0	25		43	9	9	25
12:15	5	12	0	24		41	5	12	24
12:30	3	5	0	23		31	3	5	23
12:45	5	6	0	20		31	5	6	20
13:00	20	20	1	108		149	20	20	109
13:15	0	0	0	0		0	0	0	0
13:30	0	0	0	0		0	0	0	0
13:45	0	0	0	0		0	0	0	0
14:00	40	32	0	110		182	40	32	110
14:15	0	0	0	0		0	0	0	0
14:30	0	0	0	0		0	0	0	0
14:45	0	0	0	0		0	0	0	0
15:00	35	29	0	105		169	35	29	105
15:15	0	0	0	0		0	0	0	0
15:30	0	0	0	0		0	0	0	0
15:45	0	0	1	0		1	0	0	1
16:00	6	10	0	29		45	6	10	29
16:15	9	17	0	25		51	9	17	25
16:30	6	1	0	30		37	6	1	30
16:45	19	11	0	23		53	19	11	23
17:00	9	13	0	25		47	9	13	25
17:15	10	6	0	27		43	10	6	27
17:30	11	2	0	25		38	11	2	25
17:45	7	10	0	26		43	7	10	26
18:00	26	31	0	79		136	26	31	79
18:15	0	0	0	0		0	0	0	0
18:30	0	0	0	0		0	0	0	0
18:45	0	0	0	0		0	0	0	0
19:00	18	8	0	72		98	18	8	72
19:15	0	0	0	0		0	0	0	0
19:30	0	0	0	0		0	0	0	0
19:45	0	0	0	0		0	0	0	0
20:00	19	15	0	58		92	19	15	58
20:15	0	0	0	0		0	0	0	0
20:30	0	0	0	0		0	0	0	0
20:45	0	0	0	0		0	0	0	0
21:00	8	11	0	46		65	8	11	46
21:15	0	0	0	0		0	0	0	0
21:30	0	0	0	0		0	0	0	0
21:45	0	0	0	0		0	0	0	0
Total Count	392	376	4	1368		2140	392	376	1372
24hr Factor	1.1	1.1	1.1	1.1		1.1	1.1	1.1	1.1
24hr Volume	432	414	5	1505		2354	432	414	1510

Summary of Traffic Count
Transportation Development Division

Site: 30012010
County: Umatilla
City: RURAL
Milepoint: 0.47
Count Number: 1.00

Date: 1/13/2010
Hours: 6:00 AM-10:00 PM
Highway #: 054
Hwy(US395) @ Magaret
Location: Ave.
Weather: Cloudy;Rain

	Summary By Movements								Entering Volumes		
Time of Day	N-S	N-W	S-N	S-W	W-N	W-S		TOTAL	North	South	West
6:00	156	0	270	0	0	1		427	156	270	1
6:15	0	0	0	0	0	0		0	0	0	0
6:30	0	0	0	0	0	0		0	0	0	0
6:45	0	0	0	0	0	0		0	0	0	0
7:00	61	0	60	0	0	0		121	61	60	0
7:15	42	0	65	0	0	0		107	42	65	0
7:30	75	1	64	0	0	0		140	76	64	0
7:45	73	0	53	0	0	0		126	73	53	0
8:00	54	0	54	0	0	0		108	54	54	0
8:15	76	0	63	0	0	0		139	76	63	0
8:30	67	0	60	0	1	0		128	67	60	1
8:45	69	0	47	0	1	0		117	69	47	1
9:00	272	0	261	0	0	0		533	272	261	0
9:15	0	0	0	0	0	0		0	0	0	0
9:30	0	0	0	0	0	0		0	0	0	0
9:45	0	0	0	0	0	0		0	0	0	0
10:00	287	0	286	1	0	0		574	287	287	0
10:15	0	0	0	0	0	0		0	0	0	0
10:30	0	0	0	0	0	0		0	0	0	0
10:45	0	0	0	0	0	0		0	0	0	0
11:00	74	0	75	0	2	0		151	74	75	2
11:15	66	0	85	0	0	0		151	66	85	0
11:30	91	0	91	0	0	0		182	91	91	0
11:45	72	0	90	1	0	0		163	72	91	0
12:00	69	0	97	1	0	0		167	69	98	0
12:15	73	1	94	0	1	0		169	74	94	1
12:30	79	0	84	0	0	0		163	79	84	0
12:45	74	0	86	1	0	0		161	74	87	0
13:00	308	1	351	0	1	2		663	309	351	3
13:15	0	0	0	0	0	0		0	0	0	0
13:30	0	0	0	0	0	0		0	0	0	0
13:45	0	0	0	0	0	0		0	0	0	0
14:00	351	0	387	1	0	1		740	351	388	1
14:15	0	0	0	0	0	0		0	0	0	0
14:30	0	0	0	0	0	0		0	0	0	0
14:45	0	0	0	0	0	0		0	0	0	0
15:00	398	1	368	2	0	3		772	399	370	3
15:15	0	0	0	0	0	0		0	0	0	0
15:30	0	0	0	0	0	0		0	0	0	0
15:45	0	0	0	0	0	0		0	0	0	0
16:00	127	0	90	0	0	0		217	127	90	0
16:15	104	0	88	0	0	0		192	104	88	0
16:30	128	2	93	0	0	2		225	130	93	2
16:45	100	0	108	2	0	1		211	100	110	1
17:00	90	0	126	1	1	0		218	90	127	1
17:15	111	0	106	1	0	1		219	111	107	1
17:30	99	0	113	0	0	0		212	99	113	0
17:45	89	0	93	1	0	0		183	89	94	0
18:00	227	0	258	1	1	0		487	227	259	1
18:15	0	0	0	0	0	0		0	0	0	0
18:30	0	0	0	0	0	0		0	0	0	0
18:45	0	0	0	0	0	0		0	0	0	0
19:00	160	0	181	0	0	0		341	160	181	0
19:15	0	0	0	0	0	0		0	0	0	0
19:30	0	0	0	0	0	0		0	0	0	0
19:45	0	0	0	0	0	0		0	0	0	0
20:00	123	0	165	0	0	0		288	123	165	0
20:15	0	0	0	0	0	0		0	0	0	0
20:30	0	0	0	0	0	0		0	0	0	0
20:45	0	0	0	0	0	0		0	0	0	0
21:00	100	0	107	0	1	0		208	100	107	1
21:15	0	0	0	0	0	0		0	0	0	0
21:30	0	0	0	0	0	0		0	0	0	0
21:45	0	0	0	0	0	0		0	0	0	0
Total Count	4345	6	4619	13	9	11		9003	4351	4632	20
24hr Factor	1.1	1.1	1.1	1.1	1.1	1.1		1.1	1.1	1.1	1.1
24hr Volume	4780	7	5081	15	10	13		9904	4787	5096	22

Summary of Traffic Count
Transportation Development Division

Site: 30012009
County: Umatilla
City: Umatilla

Milepoint: 184.03
Count Number: 1.00

Date: 6/29/2009
Hours: 6:00 AM-10:00 PM
Highway #: 002
Columbia River hwy (US730/395)
Location: @ Brownell Blvd.
Weather: Clear

	Summary By Movements														Entering Volumes			
Time of Day	N-E	N-S	N-W	E-N	E-S	E-W	S-N	S-E	S-W	W-N	W-E	W-S		TOTAL	North	East	South	West
6:00	22	0	14	19	7	159	0	10	1	0	193	2		427	36	185	11	195
6:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
6:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
6:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
7:00	4	0	2	2	2	33	0	2	4	0	29	1		79	6	37	6	30
7:15	4	0	3	2	1	48	0	1	0	1	58	0		118	7	51	1	59
7:30	6	0	6	4	2	51	0	1	0	1	49	1		121	12	57	1	51
7:45	11	0	3	1	5	67	0	2	0	0	62	0		151	14	73	2	62
8:00	6	0	3	0	1	65	0	3	1	0	62	0		141	9	66	4	62
8:15	7	0	2	0	3	65	0	4	0	0	49	1		131	9	68	4	50
8:30	8	0	5	2	0	62	0	3	1	1	52	1		135	13	64	4	54
8:45	5	0	2	3	5	58	0	2	1	1	55	0		132	7	66	3	56
9:00	21	2	0	7	10	276	0	13	7	8	235	3		582	23	293	20	246
9:15	0	0	21	0	0	0	0	0	0	0	0	0		21	21	0	0	0
9:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
9:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
10:00	36	1	21	8	9	319	0	6	3	9	218	3		633	58	336	9	230
10:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
11:00	21	1	24	26	8	392	0	14	2	6	289	0		783	46	426	16	295
11:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
12:00	22	1	29	17	15	398	0	4	1	6	299	0		792	52	430	5	305
12:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
13:00	35	3	28	27	24	485	2	7	5	6	303	6		931	66	536	14	315
13:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
14:00	33	4	29	18	13	424	1	20	4	8	346	0		900	66	455	25	354
14:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
15:00	33	2	17	31	9	459	2	17	5	8	295	2		880	52	499	24	305
15:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
16:00	12	0	9	4	2	147	0	8	0	2	72	1		257	21	153	8	75
16:15	4	0	7	3	4	139	0	11	2	1	74	3		248	11	146	13	78
16:30	6	0	5	2	3	138	0	13	0	2	101	2		272	11	143	13	105
16:45	11	0	11	6	1	129	0	4	1	3	75	0		241	22	136	5	78
17:00	5	0	1	8	2	134	1	8	3	1	87	1		251	6	144	12	89
17:15	7	0	4	2	5	124	1	5	0	3	96	0		247	11	131	6	99
17:30	8	0	13	5	4	107	0	3	0	1	70	1		212	21	116	3	72
17:45	7	1	8	7	4	122	1	3	0	3	68	0		224	16	133	4	71
18:00	16	2	22	13	3	437	0	15	7	15	268	1		799	40	453	22	284
18:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
19:00	16	3	23	13	6	284	0	15	0	3	198	4		565	42	303	15	205
19:15	0	0	0	0	0	0	0	0	3	0	0	0		3	0	0	3	0
19:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
19:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
20:00	13	1	17	10	5	216	0	15	5	6	133	4		425	31	231	20	143
20:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
20:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
20:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
21:00	16	0	8	14	2	165	0	8	1	3	118	1		336	24	181	9	122
21:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
21:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
21:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
Total Count	395	21	337	254	155	5503	8	217	57	98	3954	38		11037	753	5912	282	4090
24hr Factor	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1		1.1	1.1	1.1	1.1	1.1
24hr Volume	435	24	371	280	171	6054	9	239	63	108	4350	42		12141	829	6504	311	4499

US 730/West Truck Stop Entrance

			14	13	12	21	24	23	32	31	34	43	42	41					
			SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL	TOTAL	Hourly Tota	SB	NB	Bikes
SBR	14	06:00-07:00A	0	0	0	0	168	7	1	0	2	4	208	0	390				0
SBT	13	07:00-08:00A	0	0	0	2	197	7	3	0	1	3	210	0	423				0
SBL	12	08:00-09:00A	0	0	0	2	190	3	0	0	1	2	222	0	420				0
WBR	21	09:00-10:00A	1	0	0	0	246	12	1	0	1	8	232	0	501				0
WBT	24	10:00-11:00A	0	0	0	2	258	7	0	0	5	8	289	0	569				0
WBL	23	11:00-12:00P	0	0	0	0	278	5	2	0	1	7	278	0	571				0
NBR	32	12:00-01:00P	0	0	0	0	278	7	0	0	9	2	283	1	580				2
NBT	31	01:00-02:00P	0	0	0	0	289	8	3	0	3	6	309	0	618				0
NBL	34	02:00-03:00P	0	0	0	0	357	9	2	0	2	6	324	0	700				0
EBR	43	03:00-04:00P	0	0	0	0	412	10	3	0	5	8	340	0	778				0
EBT	42	04:00-05:00P	0	0	0	0	463	7	4	0	2	1	345	0	822				0
EBL	41	05:00-06:00P	0	0	0	0	456	8	1	0	5	3	338	0	811				0
		06:00-07:00P	0	0	0	0	302	4	1	0	2	4	233	0	546				0
		07:00-08:00P	0	0	0	0	277	7	0	0	3	2	221	0	510				0
		08:00-09:00P	0	0	0	0	223	5	0	0	1	4	156	0	389				0
		09:00-10:00P	0	0	0	0	153	5	0	0	0	1	123	0	282				1
			0	0	0	0	0	0	0	0	0	0	0	0	0				0
			0	0	0	0	0	0	0	0	0	0	0	0	0				0
			0	0	0	0	0	0	0	0	0	0	0	0	0				0
			0	0	0	0	0	0	0	0	0	0	0	0	0				0
			0	0	0	0	0	0	0	0	0	0	0	0	0				0
			0	0	0	0	0	0	0	0	0	0	0	0	0				0
			0	0	0	0	0	0	0	0	0	0	0	0	0				0
			0	0	0	0	0	0	0	0	0	0	0	0	0				0
			0	0	0	0	0	0	0	0	0	0	0	0	0				0
			0	0	0	0	0	0	0	0	0	0	0	0	0				0
			0	0	0	0	0	0	0	0	0	0	0	0	0				0
			0	0	0	0	0	0	0	0	0	0	0	0	0				0
			0	0	0	0	0	0	0	0	0	0	0	0	0				0
			0	0	0	0	0	0	0	0	0	0	0	0	0				0
			0	0	0	0	0	0	0	0	0	0	0	0	0				0
			0	0	0	0	0	0	0	0	0	0	0	0	0				0
			0	0	0	0	0	0	0	0	0	0	0	0	0				0

Pedestrians	HEAVY VEHICLES			14 SBR	13 SBT	12 SBL	21 WBR	24 WBT	23 WBL	32 NBR	31 NBT	34 NBL	43 EBR	42 EBT	41 EBL	TOTAL	Hourly Total
0	SBR	14	06:00-07:00A	0	0	0	0	17	3	1	0	0	0	13	0	34	34
0	SBT	13	07:00-08:00A	0	0	0	0	19	6	2	0	0	1	15	0	43	
1	SBL	12	08:00-09:00A	0	0	0	0	24	3	0	0	0	1	19	0	47	
1	WBR	21	09:00-10:00A	0	0	0	0	28	12	1	0	0	3	29	0	73	
0	WBT	24	10:00-11:00A	0	0	0	0	23	3	0	0	0	3	23	0	52	215
2	WBL	23	11:00-12:00P	0	0	0	0	23	2	2	0	0	3	20	0	50	222
2	NBR	32	12:00-01:00P	0	0	0	0	15	4	0	0	0	2	19	0	40	215
2	NBT	31	01:00-02:00P	0	0	0	0	24	5	0	0	0	1	35	0	65	207
6	NBL	34	02:00-03:00P	0	0	0	0	17	7	2	0	2	5	25	0	58	213
0	EBR	43	03:00-04:00P	0	0	0	0	21	5	1	0	0	2	25	0	54	54
1	EBT	42	04:00-05:00P	0	0	0	0	12	5	2	0	1	0	26	0	46	46
3	EBL	41	05:00-06:00P	0	0	0	0	13	5	1	0	1	1	22	0	43	
2			06:00-07:00P	0	0	0	0	13	3	1	0	0	1	8	0	26	
0			07:00-08:00P	0	0	0	0	8	5	0	0	0	0	13	0	26	
4			08:00-09:00P	0	0	0	0	9	2	0	0	0	3	7	0	21	116
3			09:00-10:00P	0	0	0	0	10	4	0	0	0	1	10	0	25	98
0				0	0	0	0	0	0	0	0	0	0	0	0	0	72
0				0	0	0	0	0	0	0	0	0	0	0	0	0	46
0				0	0	0	0	0	0	0	0	0	0	0	0	0	25
0				0	0	0	0	0	0	0	0	0	0	0	0	0	0
0				0	0	0	0	0	0	0	0	0	0	0	0	0	0
0				0	0	0	0	0	0	0	0	0	0	0	0	0	0
0				0	0	0	0	0	0	0	0	0	0	0	0	0	
0				0	0	0	0	0	0	0	0	0	0	0	0	0	
0				0	0	0	0	0	0	0	0	0	0	0	0	0	
0				0	0	0	0	0	0	0	0	0	0	0	0	0	0
0				0	0	0	0	0	0	0	0	0	0	0	0	0	0
0				0	0	0	0	0	0	0	0	0	0	0	0	0	0
0				0	0	0	0	0	0	0	0	0	0	0	0	0	0
0				0	0	0	0	0	0	0	0	0	0	0	0	0	0
0				0	0	0	0	0	0	0	0	0	0	0	0	0	0
0				0	0	0	0	0	0	0	0	0	0	0	0	0	0
0				0	0	0	0	0	0	0	0	0	0	0	0	0	0
0				0	0	0	0	0	0	0	0	0	0	0	0	0	0

US 730/Eastern Shell Driveway

			14	13	12	21	24	23	32	31	34	43	42	41			
			SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL	TOTAL	Hourly Total	Bikes
SBR	14	06:00-07:00A	0	0	0	0	197	19	13	0	8	8	194	0	439	439	1
SBT	13	07:00-07:15A	0	0	0	0	52	4	4	0	2	0	54	0	116		0
SBL	12	07:15-07:30A	0	0	0	0	64	0	1	0	2	0	53	0	120		0
WBR	21	07:30-07:45A	0	0	0	0	67	4	3	0	2	2	60	0	138		0
WBT	24	07:45-08:00A	0	0	0	0	72	7	5	0	1	1	60	0	146	520	0
WBL	23	08:00-08:15A	0	0	0	0	68	4	2	0	0	1	53	0	128	532	0
NBR	32	08:15-08:30A	0	0	0	0	47	6	3	0	0	2	55	0	113	525	0
NBT	31	08:30-08:45A	0	0	0	0	59	6	4	0	1	1	61	0	132	519	0
NBL	34	08:45-09:00A	0	0	0	0	60	1	4	0	2	0	52	0	119	492	0
EBR	43	09:00-10:00A	0	0	0	0	313	18	25	0	4	4	249	0	613	613	0
EBT	42	10:00-11:00A	0	0	0	0	285	23	21	0	7	4	283	0	623	623	0
EBL	41	11:00-12:00P	0	0	0	0	388	32	26	0	11	12	281	0	750		2
		12:00-01:00P	0	0	0	0	385	37	27	0	7	9	312	0	777		1
		01:00-02:00P	0	0	0	0	409	38	31	0	11	10	276	0	775		0
		02:00-03:00P	0	0	0	0	471	34	19	0	12	13	308	0	857		0
		03:00-04:00P	0	0	0	0	490	30	32	0	6	17	322	0	897		0
		04:00-04:15P	0	0	0	0	146	12	4	0	0	3	113	0	278		0
		04:15-04:30P	0	0	0	0	133	11	12	0	1	2	101	0	260		0
		04:30-04:45P	0	0	0	0	125	8	10	0	3	3	99	0	248		0
		04:45-05:00P	0	0	0	0	128	11	8	0	3	5	100	0	255	1041	0
		05:00-05:15P	0	0	0	0	156	10	9	0	2	1	78	0	256	1019	0
		05:15-05:30P	0	0	0	0	133	9	9	0	1	5	87	0	244	1003	0
		05:30-05:45P	0	0	0	0	136	5	3	0	2	4	94	0	244	999	0
		05:45-06:00P	0	0	0	0	108	4	2	0	0	2	75	0	191	935	0
		06:00-07:00P	0	0	0	0	444	26	24	0	12	9	275	0	790		1
		07:00-08:00P	0	0	0	0	258	26	22	0	3	6	194	0	509		0
		08:00-09:00P	0	0	0	0	256	21	20	0	7	10	176	0	490		0
		09:00-10:00P	0	0	0	0	181	24	17	0	8	7	125	0	362		0
			0	0	0	0	0	0	0	0	0	0	0	0			0
			0	0	0	0	0	0	0	0	0	0	0	0			0
			0	0	0	0	0	0	0	0	0	0	0	0			0
			0	0	0	0	0	0	0	0	0	0	0	0			0
			0	0	0	0	0	0	0	0	0	0	0	0			0
			0	0	0	0	0	0	0	0	0	0	0	0			0

Pedestrians	HEAVY VEHICLES			14 SBR	13 SBT	12 SBL	21 WBR	24 WBT	23 WBL	32 NBR	31 NBT	34 NBL	43 EBR	42 EBT	41 EBL	TOTAL	Hourly Total
1	SBR	14	06:00-07:00A	0	0	0	0	56	1	3	0	0	0	15	0	75	75
0	SBT	13	07:00-07:15A	0	0	0	0	14	1	3	0	0	0	2	0	20	
3	SBL	12	07:15-07:30A	0	0	0	0	20	0	0	0	0	0	7	0	27	
0	WBR	21	07:30-07:45A	0	0	0	0	21	1	2	0	0	0	16	0	40	
0	WBT	24	07:45-08:00A	0	0	0	0	28	0	2	0	0	1	6	0	37	124
0	WBL	23	08:00-08:15A	0	0	0	0	26	1	2	0	0	0	6	0	35	139
0	NBR	32	08:15-08:30A	0	0	0	0	12	0	3	0	0	0	9	0	24	136
0	NBT	31	08:30-08:45A	0	0	0	0	19	0	0	0	0	0	12	0	31	127
2	NBL	34	08:45-09:00A	0	0	0	0	18	0	1	0	1	0	10	0	30	120
0	EBR	43	09:00-10:00A	0	0	0	0	92	1	8	0	1	0	26	0	128	128
1	EBT	42	10:00-11:00A	0	0	0	0	96	0	7	0	0	0	29	0	132	132
1	EBL	41	11:00-12:00P	0	0	0	0	110	1	3	0	1	0	21	0	136	
0			12:00-01:00P	0	0	0	0	98	3	4	0	1	0	17	0	123	
0			01:00-02:00P	0	0	0	0	113	3	8	0	2	0	33	0	159	
0			02:00-03:00P	0	0	0	0	125	2	1	0	2	0	29	0	159	577
0			03:00-04:00P	0	0	0	0	103	2	5	0	1	0	17	0	128	569
0			04:00-04:15P	0	0	0	0	22	1	0	0	0	0	9	0	32	478
0			04:15-04:30P	0	0	0	0	33	2	2	0	0	0	3	0	40	359
0			04:30-04:45P	0	0	0	0	28	0	1	0	0	0	3	0	32	232
0			04:45-05:00P	0	0	0	0	25	0	1	0	0	0	5	0	31	31
0			05:00-05:15P	0	0	0	0	27	1	2	0	0	0	7	0	37	37
0			05:15-05:30P	0	0	0	0	23	0	1	0	0	0	7	0	31	31
0			05:30-05:45P	0	0	0	0	23	1	0	0	0	0	0	0	24	
0			05:45-06:00P	0	0	0	0	21	0	1	0	0	0	7	0	29	
0			06:00-07:00P	0	0	0	0	108	1	8	0	2	0	14	0	133	
0			07:00-08:00P	0	0	0	0	64	2	10	0	0	0	14	0	90	276
0			08:00-09:00P	0	0	0	0	65	1	3	0	0	0	9	0	78	330
0			09:00-10:00P	0	0	0	0	14	1	5	0	0	0	8	0	28	329
0				0	0	0	0	0	0	0	0	0	0	0	0		
0				0	0	0	0	0	0	0	0	0	0	0	0		
0				0	0	0	0	0	0	0	0	0	0	0	0		
0				0	0	0	0	0	0	0	0	0	0	0	0		
0				0	0	0	0	0	0	0	0	0	0	0	0		
0				0	0	0	0	0	0	0	0	0	0	0	0		

US 730/Lind Road

			14	13	12	21	24	23	32	31	34	43	42	41					
			SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL	TOTAL	Hourly Tota	SB	NB	Bikes
SBR	14	06:00-07:00A	0	0	0	0	272	1	0	0	0	0	251	0	524		0	0	1
SBT	13	07:00-08:00A	0	0	0	0	314	0	1	0	0	2	287	0	604				0
SBL	12	08:00-09:00A	0	0	0	0	554	0	0	0	1	2	550	0	1107				0
WBR	21	09:00-10:00A	0	0	0	0	366	0	1	0	4	5	312	0	688				0
WBT	24	10:00-11:00A	0	0	0	0	388	0	1	0	2	2	358	0	751		0	0	0
WBL	23	11:00-12:00P	0	0	0	0	453	1	0	0	0	1	355	0	810				0
NBR	32	12:00-01:00P	0	0	0	0	402	0	3	0	4	0	385	0	794				0
NBT	31	01:00-02:00P	0	0	0	0	432	0	1	0	2	1	454	0	890				1
NBL	34	02:00-03:00P	0	0	0	0	449	1	2	0	3	4	426	0	885		0	0	0
EBR	43	03:00-04:00P	0	0	0	0	493	1	1	0	2	3	494	0	994		0	0	2
EBT	42	04:00-05:00P	0	0	0	0	523	0	1	0	5	8	532	0	1069		0	0	0
EBL	41	05:00-06:00P	0	0	0	0	566	2	2	0	3	2	512	0	1087				2
		06:00-07:00P	0	0	0	0	362	1	0	0	3	3	369	0	738				0
		07:00-08:00P	0	0	0	0	240	0	1	0	1	2	295	0	539				0
		08:00-09:00P	0	0	0	0	199	0	0	0	1	1	196	0	397		0	0	0
		09:00-10:00P	0	0	0	0	172	0	0	0	0	1	211	0	384				0
			0	0	0	0	0	0	0	0	0	0	0	0	0				0
			0	0	0	0	0	0	0	0	0	0	0	0	0				0
			0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
			0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
			0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
			0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
			0	0	0	0	0	0	0	0	0	0	0	0	0				0
			0	0	0	0	0	0	0	0	0	0	0	0	0				0
			0	0	0	0	0	0	0	0	0	0	0	0	0				0
			0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
			0	0	0	0	0	0	0	0	0	0	0	0	0				0
			0	0	0	0	0	0	0	0	0	0	0	0	0				0
			0	0	0	0	0	0	0	0	0	0	0	0	0				0
			0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
			0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
			0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
			0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
			0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0

Pedestrians	HEAVY VEHICLES			14 SBR	13 SBT	12 SBL	21 WBR	24 WBT	23 WBL	32 NBR	31 NBT	34 NBL	43 EBR	42 EBT	41 EBL	TOTAL	Hourly Total
8	SBR	14	06:00-07:00A	0	0	0	0	35	0	0	0	0	0	29	0	64	64
2	SBT	13	07:00-08:00A	0	0	0	0	40	0	0	0	0	0	37	0	77	
0	SBL	12	08:00-09:00A	0	0	0	0	55	0	0	0	0	0	42	0	97	
1	WBR	21	09:00-10:00A	0	0	0	0	41	0	0	0	0	0	30	0	71	
0	WBT	24	10:00-11:00A	0	0	0	0	38	0	0	0	0	0	51	0	89	334
0	WBL	23	11:00-12:00P	0	0	0	0	49	0	0	0	0	0	42	0	91	348
0	NBR	32	12:00-01:00P	0	0	0	0	39	0	0	0	0	0	33	0	72	323
0	NBT	31	01:00-02:00P	0	0	0	0	38	0	0	0	0	0	52	0	90	342
0	NBL	34	02:00-03:00P	0	0	0	0	43	0	0	0	0	0	42	0	85	338
0	EBR	43	03:00-04:00P	0	0	0	0	30	0	0	0	0	0	35	0	65	65
0	EBT	42	04:00-05:00P	0	0	0	0	30	0	0	0	0	0	41	0	71	71
0	EBL	41	05:00-06:00P	0	0	0	0	42	0	0	0	0	0	39	0	81	
0			06:00-07:00P	0	0	0	0	27	0	0	0	0	0	16	0	43	
0			07:00-08:00P	0	0	0	0	17	0	0	0	0	0	26	0	43	
0			08:00-09:00P	0	0	0	0	17	0	0	0	0	0	15	0	32	199
0			09:00-10:00P	0	0	0	0	16	0	0	0	0	0	13	0	29	147
0				0	0	0	0	0	0	0	0	0	0	0	0	0	104
0				0	0	0	0	0	0	0	0	0	0	0	0	0	61
0				0	0	0	0	0	0	0	0	0	0	0	0	0	29
0				0	0	0	0	0	0	0	0	0	0	0	0	0	0
0				0	0	0	0	0	0	0	0	0	0	0	0	0	0
0				0	0	0	0	0	0	0	0	0	0	0	0	0	0
0				0	0	0	0	0	0	0	0	0	0	0	0	0	
0				0	0	0	0	0	0	0	0	0	0	0	0	0	
0				0	0	0	0	0	0	0	0	0	0	0	0	0	
0				0	0	0	0	0	0	0	0	0	0	0	0	0	0
0				0	0	0	0	0	0	0	0	0	0	0	0	0	0
0				0	0	0	0	0	0	0	0	0	0	0	0	0	0
0				0	0	0	0	0	0	0	0	0	0	0	0	0	0
0				0	0	0	0	0	0	0	0	0	0	0	0	0	0
0				0	0	0	0	0	0	0	0	0	0	0	0	0	0
0				0	0	0	0	0	0	0	0	0	0	0	0	0	0
0				0	0	0	0	0	0	0	0	0	0	0	0	0	0
0				0	0	0	0	0	0	0	0	0	0	0	0	0	0

US 730/Eisele Dr

			14	13	12	21	24	23	32	31	34	43	42	41			
			SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL	TOTAL	Hourly Total	Bikes
SBR	14	06:00-07:00A	0	0	0	0	145	28	42	0	15	24	179	0	433	433	0
SBT	13	07:00-07:15A	0	0	0	0	32	4	7	0	2	7	41	0	93		0
SBL	12	07:15-07:30A	0	0	0	0	49	10	11	0	3	8	45	0	126		0
WBR	21	07:30-07:45A	0	0	0	0	93	17	19	0	10	14	86	0	239		0
WBT	24	07:45-08:00A	0	0	0	0	46	4	4	0	3	5	52	0	114	572	0
WBL	23	08:00-08:15A	0	0	0	0	43	7	5	0	5	9	51	0	120	599	0
NBR	32	08:15-08:30A	0	0	0	0	24	8	5	0	2	4	37	0	80	553	0
NBT	31	08:30-08:45A	0	0	0	0	42	7	11	0	7	7	57	0	131	445	0
NBL	34	08:45-09:00A	0	0	0	0	52	12	14	0	10	8	49	0	145	476	0
EBR	43	09:00-10:00A	0	0	0	0	249	54	54	0	57	52	248	0	714	714	0
EBT	42	10:00-11:00A	0	0	0	0	215	33	49	0	35	46	206	0	584	584	0
EBL	41	11:00-12:00P	0	0	0	0	235	47	57	0	32	48	222	0	641		1
		12:00-01:00P	0	0	0	0	259	40	66	0	32	49	232	0	678		2
		01:00-02:00P	0	0	0	0	250	43	54	0	34	55	258	0	694		0
		02:00-03:00P	0	0	0	0	307	56	54	0	46	33	295	0	791		1
		03:00-04:00P	0	0	0	0	366	44	58	0	40	51	300	0	859		0
		04:00-04:15P	0	0	0	0	97	14	18	0	12	15	69	0	225		0
		04:15-04:30P	0	0	0	0	100	11	15	0	7	7	91	0	231		0
		04:30-04:45P	0	0	0	0	124	14	10	0	13	10	73	0	244		0
		04:45-05:00P	0	0	0	0	114	15	13	0	13	11	76	0	242	942	0
		05:00-05:15P	0	0	0	0	100	9	12	0	11	8	87	0	227	944	0
		05:15-05:30P	0	0	0	0	114	14	15	0	12	8	63	0	226	939	0
		05:30-05:45P	0	0	0	0	105	15	9	0	9	13	82	0	233	928	0
		05:45-06:00P	0	0	0	0	96	17	8	0	12	5	65	0	203	889	0
		06:00-07:00P	0	0	0	0	298	34	45	0	29	32	209	0	647		0
		07:00-08:00P	0	0	0	0	263	23	22	0	22	17	203	0	550		0
		08:00-09:00P	0	0	0	0	191	26	35	0	16	25	127	0	420		0
		09:00-10:00P	0	0	0	0	121	11	11	0	12	7	108	0	270		1
			0	0	0	0	0	0	0	0	0	0	0	0			0
			0	0	0	0	0	0	0	0	0	0	0	0			0
			0	0	0	0	0	0	0	0	0	0	0	0			0
			0	0	0	0	0	0	0	0	0	0	0	0			0
			0	0	0	0	0	0	0	0	0	0	0	0			0
			0	0	0	0	0	0	0	0	0	0	0	0			0

Pedestrians	HEAVY VEHICLES			14 SBR	13 SBT	12 SBL	21 WBR	24 WBT	23 WBL	32 NBR	31 NBT	34 NBL	43 EBR	42 EBT	41 EBL	TOTAL	Hourly Total
2	SBR	14	06:00-07:00A	0	0	0	0	14	2	0	0	0	0	14	0	30	30
0	SBT	13	07:00-07:15A	0	0	0	0	5	0	0	0	0	0	2	0	7	
0	SBL	12	07:15-07:30A	0	0	0	0	4	0	0	0	0	1	5	0	10	
0	WBR	21	07:30-07:45A	0	0	0	0	8	0	2	0	0	0	4	0	14	
1	WBT	24	07:45-08:00A	0	0	0	0	5	0	0	0	0	0	5	0	10	41
0	WBL	23	08:00-08:15A	0	0	0	0	8	1	1	0	0	1	6	0	17	51
0	NBR	32	08:15-08:30A	0	0	0	0	3	0	0	0	0	0	4	0	7	48
1	NBT	31	08:30-08:45A	0	0	0	0	6	1	1	0	1	0	9	0	18	52
0	NBL	34	08:45-09:00A	0	0	0	0	9	0	1	0	0	0	5	0	15	57
0	EBR	43	09:00-10:00A	0	0	0	0	33	0	1	0	0	1	36	0	71	71
1	EBT	42	10:00-11:00A	0	0	0	0	19	1	0	0	1	2	25	0	48	48
0	EBL	41	11:00-12:00P	0	0	0	0	21	3	2	0	2	1	23	0	52	
1			12:00-01:00P	0	0	0	0	20	3	3	0	2	3	26	0	57	
4			01:00-02:00P	0	0	0	0	26	2	3	0	1	2	34	0	68	
1			02:00-03:00P	0	0	0	0	19	0	0	0	0	0	34	0	53	230
0			03:00-04:00P	0	0	0	0	22	1	1	0	0	1	28	0	53	231
0			04:00-04:15P	0	0	0	0	2	0	0	0	0	1	6	0	9	183
0			04:15-04:30P	0	0	0	0	4	1	2	0	0	0	11	0	18	133
0			04:30-04:45P	0	0	0	0	3	1	0	0	0	0	5	0	9	89
0			04:45-05:00P	0	0	0	0	5	0	0	0	1	0	9	0	15	15
0			05:00-05:15P	0	0	0	0	2	0	1	0	0	1	9	0	13	13
0			05:15-05:30P	0	0	0	0	6	0	1	0	0	0	4	0	11	11
0			05:30-05:45P	0	0	0	0	4	1	0	0	0	0	7	0	12	
0			05:45-06:00P	0	0	0	0	3	1	2	0	0	0	8	0	14	
2			06:00-07:00P	0	0	0	0	14	0	1	0	0	0	13	0	28	
0			07:00-08:00P	0	0	0	0	11	3	2	0	0	0	11	0	27	81
2			08:00-09:00P	0	0	0	0	9	2	0	0	2	0	12	0	25	94
2			09:00-10:00P	0	0	0	0	9	0	1	0	0	1	10	0	21	101
0				0	0	0	0	0	0	0	0	0	0	0	0		
0				0	0	0	0	0	0	0	0	0	0	0	0		
0				0	0	0	0	0	0	0	0	0	0	0	0		
0				0	0	0	0	0	0	0	0	0	0	0	0		
0				0	0	0	0	0	0	0	0	0	0	0	0		
0				0	0	0	0	0	0	0	0	0	0	0	0		

Summary of Traffic Count
Transportation Development Division

Site: 30022010
County: Umatilla
City: Umatilla
Milepoint: 184.13
Count Number: 1.00

Date: 1/13/2010
Hours: 6:00 AM-10:00 PM
Highway #: 002
Hwy(US730) @ McNary
Location: Hwy(I-82) s/b on/off
Weather: Cloudy;Rain

	Summary By Movements									Entering Volumes		
Time of Day	N-E	N-S	N-W	E-S	E-W	W-E	W-S		TOTAL	North	East	West
6:00	89	0	89	31	147	246	31		633	178	178	277
6:15	0	0	0	0	0	0	0		0	0	0	0
6:30	0	0	0	0	0	0	0		0	0	0	0
6:45	0	0	0	0	0	0	0		0	0	0	0
7:00	28	0	24	2	64	67	10		195	52	66	77
7:15	17	0	26	10	27	71	7		158	43	37	78
7:30	29	0	21	10	26	68	7		161	50	36	75
7:45	24	0	26	4	30	66	11		161	50	34	77
8:00	35	0	30	6	30	58	5		164	65	36	63
8:15	22	0	31	5	49	61	17		185	53	54	78
8:30	22	1	28	8	48	54	18		179	51	56	72
8:45	27	0	32	7	26	60	16		168	59	33	76
9:00	98	1	144	22	144	213	75		697	243	166	288
9:15	0	0	0	0	0	0	0		0	0	0	0
9:30	0	0	0	0	0	0	0		0	0	0	0
9:45	0	0	0	0	0	0	0		0	0	0	0
10:00	109	0	127	17	174	236	64		727	236	191	300
10:15	0	0	0	0	0	0	0		0	0	0	0
10:30	0	0	0	0	0	0	0		0	0	0	0
10:45	0	0	0	0	0	0	0		0	0	0	0
11:00	28	1	40	3	47	63	22		204	69	50	85
11:15	24	0	34	8	60	77	18		221	58	68	95
11:30	25	0	33	16	44	76	11		205	58	60	87
11:45	24	0	68	4	47	66	19		228	92	51	85
12:00	25	0	37	9	58	63	13		205	62	67	76
12:15	22	0	28	3	54	84	17		208	50	57	101
12:30	35	0	50	5	35	80	17		222	85	40	97
12:45	22	1	28	13	50	65	13		192	51	63	78
13:00	113	0	161	21	214	252	81		842	274	235	333
13:15	0	0	0	0	0	0	0		0	0	0	0
13:30	0	0	0	0	0	0	0		0	0	0	0
13:45	0	0	0	0	0	0	0		0	0	0	0
14:00	142	0	184	46	220	291	80		963	326	266	371
14:15	0	0	0	0	0	0	0		0	0	0	0
14:30	0	0	0	0	0	0	0		0	0	0	0
14:45	0	0	0	0	0	0	0		0	0	0	0
15:00	160	0	186	38	265	308	71		1028	346	303	379
15:15	0	0	0	0	0	0	0		0	0	0	0
15:30	0	0	0	0	0	0	0		0	0	0	0
15:45	0	0	0	0	0	0	0		0	0	0	0
16:00	27	0	64	6	73	90	25		285	91	79	115
16:15	44	0	56	3	68	86	21		278	100	71	107
16:30	55	0	67	6	56	97	21		302	122	62	118
16:45	41	0	47	4	80	79	11		262	88	84	90
17:00	41	0	49	10	69	78	14		261	90	79	92
17:15	53	0	48	4	69	84	15		273	101	73	99
17:30	55	1	61	2	63	77	9		268	117	65	86
17:45	51	2	49	2	65	59	11		239	102	67	70
18:00	114	0	133	12	181	191	66		697	247	193	257
18:15	0	0	0	0	0	0	0		0	0	0	0
18:30	0	0	0	0	0	0	0		0	0	0	0
18:45	0	0	0	0	0	0	0		0	0	0	0
19:00	74	2	103	8	112	115	52		466	179	120	167
19:15	0	0	0	0	0	0	0		0	0	0	0
19:30	0	0	0	0	0	0	0		0	0	0	0
19:45	0	0	0	0	0	0	0		0	0	0	0
20:00	61	0	72	7	99	113	32		384	133	106	145
20:15	0	0	0	0	0	0	0		0	0	0	0
20:30	0	0	0	0	0	0	0		0	0	0	0
20:45	0	0	0	0	0	0	0		0	0	0	0
21:00	46	0	71	7	62	78	41		305	117	69	119
21:15	0	0	0	0	0	0	0		0	0	0	0
21:30	0	0	0	0	0	0	0		0	0	0	0
21:45	0	0	0	0	0	0	0		0	0	0	0
Total Count	1782	9	2247	359	2856	3772	941		11966	4038	3215	4713
24hr Factor	1.1	1.1	1.1	1.1	1.1	1.1	1.1		1.1	1.1	1.1	1.1
24hr Volume	1961	10	2472	395	3142	4150	1036		13163	4442	3537	5185

US 730/I-82 NB Ramps

			14	13	12	21	24	23	32	31	34	43	42	41			
			SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL	TOTAL	Hourly Total	Bikes
SBR	14	06:00-07:00A	0	0	0	173	142	0	19	1	7	0	223	100	665	665	0
SBT	13	07:00-07:15A	0	0	0	25	32	0	5	0	2	0	52	22	138		0
SBL	12	07:15-07:30A	0	0	0	35	50	0	9	0	4	0	53	23	174		0
WBR	21	07:30-07:45A	0	0	0	30	55	0	5	0	3	0	74	16	183		0
WBT	24	07:45-08:00A	0	0	0	30	49	0	8	0	1	0	82	18	188	683	0
WBL	23	08:00-08:15A	0	0	0	25	37	0	6	0	2	0	69	23	162	707	0
NBR	32	08:15-08:30A	0	0	0	38	30	0	5	0	1	0	49	22	145	678	0
NBT	31	08:30-08:45A	0	0	0	35	47	0	8	0	2	0	74	19	185	680	0
NBL	34	08:45-09:00A	0	0	0	36	43	0	4	0	2	0	79	22	186	678	0
EBR	43	09:00-10:00A	0	0	0	137	201	0	25	0	17	0	290	101	771	771	0
EBT	42	10:00-11:00A	0	0	0	174	221	0	22	1	17	0	306	122	863	863	2
EBL	41	11:00-12:00P	0	0	0	183	226	0	41	4	16	0	337	116	923		0
		12:00-01:00P	0	0	0	169	237	0	39	2	20	0	310	124	901		2
		01:00-02:00P	0	0	0	181	233	0	38	1	27	0	352	130	962		0
		02:00-03:00P	0	0	0	197	250	0	46	0	25	0	413	114	1045		1
		03:00-04:00P	0	0	0	180	275	0	47	0	25	0	476	113	1116		0
		04:00-04:15P	0	0	0	51	81	0	11	1	4	0	99	46	293		0
		04:15-04:30P	0	0	0	59	92	0	16	0	5	0	128	30	330		0
		04:30-04:45P	0	0	0	60	89	0	10	0	4	0	129	29	321		0
		04:45-05:00P	0	0	0	51	86	0	13	0	13	0	136	40	339	1283	0
		05:00-05:15P	0	0	0	79	80	0	15	0	6	0	122	47	349	1339	0
		05:15-05:30P	0	0	0	76	100	0	14	0	10	0	117	34	351	1360	0
		05:30-05:45P	0	0	0	57	84	0	6	2	6	0	114	42	311	1350	0
		05:45-06:00P	0	0	0	35	84	0	4	0	5	0	95	26	249	1260	0
		06:00-07:00P	0	0	0	145	246	0	17	2	13	0	356	89	868		0
		07:00-08:00P	0	0	0	73	222	0	17	3	12	0	253	70	650		0
		08:00-09:00P	0	0	0	65	138	0	19	1	10	0	202	51	486		0
		09:00-10:00P	0	0	0	51	108	0	36	1	17	0	151	52	416		0
			0	0	0	0	0	0	0	0	0	0	0	0			0
			0	0	0	0	0	0	0	0	0	0	0	0			0
			0	0	0	0	0	0	0	0	0	0	0	0			0
			0	0	0	0	0	0	0	0	0	0	0	0			0
			0	0	0	0	0	0	0	0	0	0	0	0			0
			0	0	0	0	0	0	0	0	0	0	0	0			0

Pedestrians	HEAVY VEHICLES			14 SBR	13 SBT	12 SBL	21 WBR	24 WBT	23 WBL	32 NBR	31 NBT	34 NBL	43 EBR	42 EBT	41 EBL	TOTAL	Hourly Total
0	SBR	14	06:00-07:00A	0	0	0	30	17	0	4	0	0	0	26	8	85	85
0	SBT	13	07:00-07:15A	0	0	0	3	5	0	2	0	0	0	4	1	15	
0	SBL	12	07:15-07:30A	0	0	0	9	6	0	1	0	1	0	5	3	25	
0	WBR	21	07:30-07:45A	0	0	0	7	6	0	2	0	0	0	10	0	25	
0	WBT	24	07:45-08:00A	0	0	0	6	6	0	5	0	0	0	4	3	24	89
0	WBL	23	08:00-08:15A	0	0	0	2	7	0	2	0	0	0	8	2	21	95
0	NBR	32	08:15-08:30A	0	0	0	4	1	0	4	0	0	0	7	3	19	89
1	NBT	31	08:30-08:45A	0	0	0	6	12	0	3	0	0	0	4	3	28	92
0	NBL	34	08:45-09:00A	0	0	0	9	5	0	4	0	0	0	10	3	31	99
0	EBR	43	09:00-10:00A	0	0	0	31	28	0	12	0	1	0	41	20	133	133
0	EBT	42	10:00-11:00A	0	0	0	31	22	0	11	0	3	0	25	15	107	107
1	EBL	41	11:00-12:00P	0	0	0	28	23	0	11	0	2	0	42	14	120	
0			12:00-01:00P	0	0	0	26	17	0	16	0	4	0	37	13	113	
1			01:00-02:00P	0	0	0	23	21	0	11	0	4	0	38	15	112	
0			02:00-03:00P	0	0	0	27	15	0	14	0	3	0	43	13	115	460
0			03:00-04:00P	0	0	0	26	11	0	10	0	0	0	30	12	89	429
0			04:00-04:15P	0	0	0	4	7	0	1	0	0	0	7	6	25	341
0			04:15-04:30P	0	0	0	4	1	0	6	0	1	0	18	5	35	264
0			04:30-04:45P	0	0	0	3	3	0	3	0	1	0	5	3	18	167
0			04:45-05:00P	0	0	0	4	2	0	2	0	2	0	9	3	22	22
0			05:00-05:15P	0	0	0	7	3	0	1	0	0	0	9	8	28	28
0			05:15-05:30P	0	0	0	6	6	0	4	0	0	0	6	3	25	25
0			05:30-05:45P	0	0	0	5	5	0	0	0	0	0	5	3	18	
0			05:45-06:00P	0	0	0	5	4	0	1	0	1	0	8	2	21	
0			06:00-07:00P	0	0	0	13	15	0	5	0	2	0	15	9	59	
0			07:00-08:00P	0	0	0	8	9	0	3	1	2	0	20	6	49	147
1			08:00-09:00P	0	0	0	7	8	0	4	0	1	0	12	5	37	166
3			09:00-10:00P	0	0	0	7	5	0	12	1	1	0	7	8	41	186
0				0	0	0	0	0	0	0	0	0	0	0	0		
0				0	0	0	0	0	0	0	0	0	0	0	0		
0				0	0	0	0	0	0	0	0	0	0	0	0		
0				0	0	0	0	0	0	0	0	0	0	0	0		
0				0	0	0	0	0	0	0	0	0	0	0	0		
0				0	0	0	0	0	0	0	0	0	0	0	0		

Summary of Traffic Count
Transportation Development Division

Site: 30072009
County: Umatilla
City: Umatilla

Milepoint: 184.29
Count Number: 2.00

Date: 6/29/2009
Hours: 6:00 AM-6:00 PM
Highway #: 002
City
Location:
Weather: Clear

	Summary By Movements						Entering Volumes		
Time of Day	E-S	S-E	S-W	W-S		TOTAL	East	South	West
6:00	0	0	0	1		1	0	0	1
6:15	1	0	0	1		2	1	0	1
6:30	0	0	0	0		0	0	0	0
6:45	0	0	1	4		5	0	1	4
7:00	0	0	0	2		2	0	0	2
7:15	0	0	4	0		4	0	4	0
7:30	0	0	2	0		2	0	2	0
7:45	0	0	0	6		6	0	0	6
8:00	0	0	4	0		4	0	4	0
8:15	0	0	4	0		4	0	4	0
8:30	0	0	0	7		7	0	0	7
8:45	0	0	5	0		5	0	5	0
9:00	0	0	2	1		3	0	2	1
9:15	0	0	4	1		5	0	4	1
9:30	0	0	4	0		4	0	4	0
9:45	0	0	0	3		3	0	0	3
10:00	0	0	2	1		3	0	2	1
10:15	0	0	2	2		4	0	2	2
10:30	0	0	1	4		5	0	1	4
10:45	0	0	4	0		4	0	4	0
11:00	0	0	1	2		3	0	1	2
11:15	0	0	1	5		6	0	1	5
11:30	0	0	5	0		5	0	5	0
11:45	0	0	2	1		3	0	2	1
12:00	0	0	1	3		4	0	1	3
12:15	0	0	3	4		7	0	3	4
12:30	0	0	5	1		6	0	5	1
12:45	0	0	0	1		1	0	0	1
13:00	0	0	1	5		6	0	1	5
13:15	0	0	5	1		6	0	5	1
13:30	0	0	2	1		3	0	2	1
13:45	0	0	2	2		4	0	2	2
14:00	0	0	1	3		4	0	1	3
14:15	0	0	4	2		6	0	4	2
14:30	0	0	2	2		4	0	2	2
14:45	0	0	2	4		6	0	2	4
15:00	0	0	6	2		8	0	6	2
15:15	0	0	1	2		3	0	1	2
15:30	0	0	1	2		3	0	1	2
15:45	0	0	2	3		5	0	2	3
16:00	0	0	4	2		6	0	4	2
16:15	0	0	3	3		6	0	3	3
16:30	0	0	2	1		3	0	2	1
16:45	0	0	3	4		7	0	3	4
17:00	0	0	3	1		4	0	3	1
17:15	0	0	2	1		3	0	2	1
17:30	0	0	1	0		1	0	1	0
17:45	0	1	0	0		1	0	1	0
Total Count	1	1	104	91		197	1	105	91
24hr Factor	1.25	1.25	1.25	1.25		1.25	1.25	1.25	1.25
24hr Volume	2	2	130	114		247	2	132	114

Summary of Traffic Count
Transportation Development Division

Site: 30082009
County: Umatilla
City: Umatilla
Milepoint: 184.01
Count Number: 1.00

Date: 6/29/2009
Hours: 6:00 AM-10:00 PM
Highway #: 002
(US730) @ ramp to Port iof
Location: Entry
Weather: Clear

	Summary By Movements					Entering	
Time of Day	E-N	E-W	W-E		TOTAL	East	West
6:00	46	154	194		394	200	194
6:15	0	0	0		0	0	0
6:30	0	0	0		0	0	0
6:45	0	0	0		0	0	0
7:00	12	41	55		108	53	55
7:15	13	47	48		108	60	48
7:30	13	54	62		129	67	62
7:45	20	51	58		129	71	58
8:00	20	44	52		116	64	52
8:15	18	51	59		128	69	59
8:30	16	45	59		120	61	59
8:45	13	49	64		126	62	64
9:00	67	237	242		546	304	242
9:15	0	0	0		0	0	0
9:30	0	0	0		0	0	0
9:45	0	0	0		0	0	0
10:00	82	218	279		579	300	279
10:15	0	0	0		0	0	0
10:30	0	0	0		0	0	0
10:45	0	0	0		0	0	0
11:00	14	73	70		157	87	70
11:15	19	80	63		162	99	63
11:30	26	68	72		166	94	72
11:45	23	86	65		174	109	65
12:00	20	71	72		163	91	72
12:15	25	84	88		197	109	88
12:30	15	77	77		169	92	77
12:45	26	75	84		185	101	84
13:00	88	321	285		694	409	285
13:15	0	0	0		0	0	0
13:30	0	0	0		0	0	0
13:45	0	0	0		0	0	0
14:00	91	381	300		772	472	300
14:15	0	0	0		0	0	0
14:30	0	0	0		0	0	0
14:45	0	0	0		0	0	0
15:00	87	401	322		810	488	322
15:15	0	0	0		0	0	0
15:30	0	0	0		0	0	0
15:45	0	0	0		0	0	0
16:00	18	128	109		255	146	109
16:15	26	101	93		220	127	93
16:30	20	118	99		237	138	99
16:45	23	107	100		230	130	100
17:00	22	135	83		240	157	83
17:15	17	115	86		218	132	86
17:30	18	120	96		234	138	96
17:45	18	88	76		182	106	76
18:00	85	364	270		719	449	270
18:15	0	0	0		0	0	0
18:30	0	0	0		0	0	0
18:45	0	0	0		0	0	0
19:00	51	216	197		464	267	197
19:15	0	0	0		0	0	0
19:30	0	0	0		0	0	0
19:45	0	0	0		0	0	0
20:00	53	203	176		432	256	176
20:15	0	0	0		0	0	0
20:30	0	0	0		0	0	0
20:45	0	0	0		0	0	0
21:00	1	190	131		322	191	131
21:15	0	0	0		0	0	0
21:30	0	0	0		0	0	0
21:45	0	0	0		0	0	0
Total Count	1106	4593	4186		9885	5699	4186
24hr Factor	1.1	1.1	1.1		1.1	1.1	1.1
24hr Volume	1217	5053	4605		10874	6269	4605

Attachment B

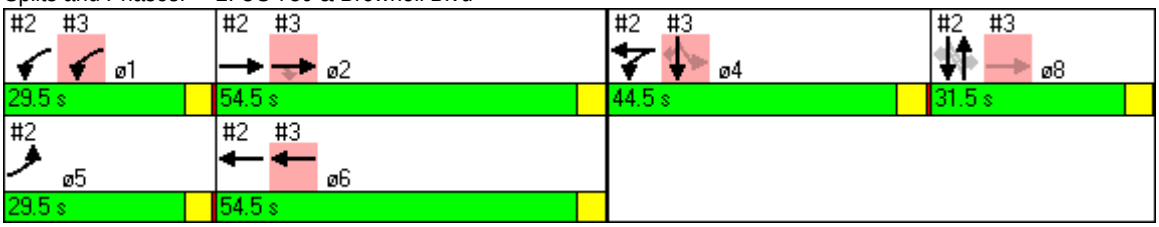
Existing Conditions Worksheets

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	ø1	ø4
Lane Configurations												
Volume (vph)	10	419	12	643	4	2	32	138	1	23		
Turn Type	Prot		Prot		Perm		Perm	Perm		Perm		
Protected Phases	5	2	1 4	6 4		8			8		1	4
Permitted Phases					8		8	8		8		
Detector Phase	5	2	1 4	6 4	8	8	8	8	8	8		
Switch Phase												
Minimum Initial (s)	5.0	10.0			5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	14.5	25.5			31.5	31.5	31.5	31.5	31.5	31.5	9.5	22.5
Total Split (s)	29.5	54.5	74.0	99.0	31.5	31.5	31.5	31.5	31.5	31.5	29.5	44.5
Total Split (%)	18.4%	34.1%	46.3%	61.9%	19.7%	19.7%	19.7%	19.7%	19.7%	19.7%	18%	28%
Yellow Time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.5	0.5			0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		
Lead/Lag	Lead	Lag			Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min			Min	Min	Min	Min	Min	Min	None	Min
Act Effct Green (s)	6.9	24.6	34.9	63.9		27.7	27.7		27.7	27.7		
Actuated g/C Ratio	0.07	0.24	0.34	0.62		0.27	0.27		0.27	0.27		
v/c Ratio	0.09	0.55	0.02	0.36		0.01	0.08		0.73	0.08		
Control Delay	54.1	38.8	16.1	4.1		36.0	12.8		61.4	14.7		
Queue Delay	0.0	0.0	0.0	0.1		0.0	0.0		0.0	0.0		
Total Delay	54.1	38.8	16.1	4.2		36.0	12.8		61.4	14.7		
LOS	D	D	B	A		D	B		E	B		
Approach Delay		39.2		4.4		16.3			54.7			
Approach LOS		D		A		B			D			

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 102.9
Natural Cycle: 105
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 22.5 Intersection LOS: C
Intersection Capacity Utilization 40.2% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 2: US 730 & Brownell Blvd



Lane Group	ø6
Lane Configurations	
Volume (vph)	
Turn Type	
Protected Phases	6
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	10.0
Minimum Split (s)	34.5
Total Split (s)	54.5
Total Split (%)	34%
Yellow Time (s)	4.0
All-Red Time (s)	0.5
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Recall Mode	Min
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	419	3	12	643	19	4	2	32	138	1	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5			4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00		0.95	1.00
Satd. Flow (prot)	1770	3468		1656	3136			1803	1583		992	1062
Flt Permitted	0.95	1.00		0.95	1.00			0.89	1.00		0.72	1.00
Satd. Flow (perm)	1770	3468		1656	3136			1667	1583		754	1062
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	451	3	13	691	20	4	2	34	148	1	25
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	25	0	0	18
Lane Group Flow (vph)	11	454	0	13	710	0	0	6	9	0	149	7
Heavy Vehicles (%)	2%	4%	2%	9%	15%	2%	2%	2%	2%	83%	2%	52%
Turn Type	Prot			Prot			Perm		Perm	Perm		Perm
Protected Phases	5	2		1 4	6 4			8			8	
Permitted Phases							8		8	8		8
Actuated Green, G (s)	1.3	27.3		33.2	63.7			27.7	27.7		27.7	27.7
Effective Green, g (s)	1.3	27.3		33.2	63.7			27.7	27.7		27.7	27.7
Actuated g/C Ratio	0.01	0.26		0.31	0.60			0.26	0.26		0.26	0.26
Clearance Time (s)	4.5	4.5						4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.5	4.6						5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	22	891		518	1881			435	413		197	277
v/s Ratio Prot	c0.01	c0.13		0.01	c0.23							
v/s Ratio Perm								0.00	0.01		c0.20	0.01
v/c Ratio	0.50	0.51		0.03	0.38			0.01	0.02		0.76	0.02
Uniform Delay, d1	52.1	33.7		25.3	11.0			29.1	29.2		36.1	29.2
Progression Factor	1.00	1.00		1.37	0.37			1.00	1.00		1.00	1.00
Incremental Delay, d2	19.6	0.8		0.0	0.3			0.0	0.0		17.8	0.1
Delay (s)	71.7	34.6		34.6	4.4			29.1	29.2		54.0	29.3
Level of Service	E	C		C	A			C	C		D	C
Approach Delay (s)		35.4			4.9			29.2			50.4	
Approach LOS		D			A			C			D	

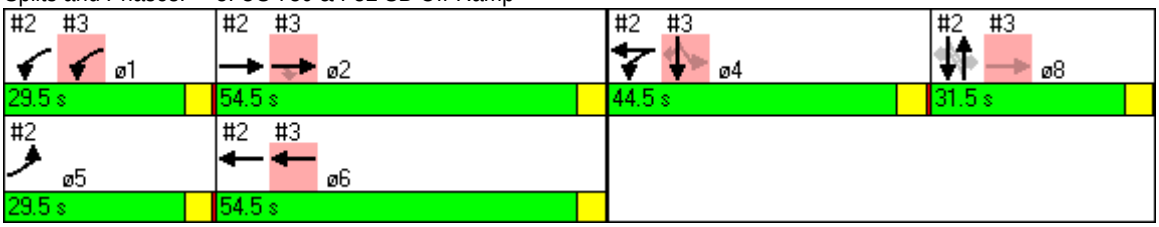
Intersection Summary			
HCM Average Control Delay	21.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	106.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	40.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	SBT	SBR	ø5	ø8
Lane Configurations								
Volume (vph)	442	147	38	381	1	293		
Turn Type		Perm	Prot			Perm		
Protected Phases	2		1	6	4		5	8
Permitted Phases	8	2				4		
Detector Phase	2	2	1	6	4	4		
Switch Phase								
Minimum Initial (s)	10.0	10.0	5.0	10.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.5	25.5	9.5	34.5	22.5	22.5	14.5	31.5
Total Split (s)	54.5	54.5	29.5	54.5	44.5	44.5	29.5	31.5
Total Split (%)	34.1%	34.1%	18.4%	34.1%	27.8%	27.8%	18%	20%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5		
Lead/Lag	Lag	Lag	Lead	Lag	Lead	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	Min	None	Min	Min	Min	None	Min
Act Effct Green (s)	53.5	24.6	8.9	33.3	25.9	25.9		
Actuated g/C Ratio	0.52	0.24	0.09	0.32	0.25	0.25		
v/c Ratio	0.27	0.48	0.30	0.37	0.68	0.57		
Control Delay	2.4	6.4	54.7	29.0	44.2	8.0		
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0		
Total Delay	2.5	6.6	54.7	29.0	44.2	8.0		
LOS	A	A	D	C	D	A		
Approach Delay	3.5			31.3	25.2			
Approach LOS	A			C	C			

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 102.9	
Natural Cycle: 105	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 18.7	Intersection LOS: B
Intersection Capacity Utilization 42.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: US 730 & I-82 SB Off-Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	442	147	38	381	0	0	0	0	264	1	293
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5						4.5	4.5
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3406	912	1597	3539						1708	1282
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3406	912	1597	3539						1708	1282
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	486	162	42	419	0	0	0	0	290	1	322
RTOR Reduction (vph)	0	0	120	0	0	0	0	0	0	0	0	243
Lane Group Flow (vph)	0	486	42	42	419	0	0	0	0	0	291	79
Heavy Vehicles (%)	2%	6%	77%	13%	2%	2%	2%	2%	2%	6%	2%	26%
Turn Type			Perm	Prot						Perm		Perm
Protected Phases		2		1	6						4	
Permitted Phases		8	2							4		4
Actuated Green, G (s)		55.0	27.3	7.3	33.3						25.9	25.9
Effective Green, g (s)		55.0	27.3	7.3	33.3						25.9	25.9
Actuated g/C Ratio		0.52	0.26	0.07	0.31						0.24	0.24
Clearance Time (s)		4.5	4.5	4.5	4.5						4.5	4.5
Vehicle Extension (s)		4.6	4.6	3.5	5.6						3.5	3.5
Lane Grp Cap (vph)		1764	234	110	1110						417	313
v/s Ratio Prot		c0.07		c0.03	c0.12							
v/s Ratio Perm		0.07	0.05								0.17	0.06
v/c Ratio		0.28	0.18	0.38	0.38						0.70	0.25
Uniform Delay, d1		14.4	30.7	47.3	28.4						36.6	32.3
Progression Factor		0.22	0.31	1.00	1.00						1.00	1.00
Incremental Delay, d2		0.1	0.6	2.6	0.5						5.2	0.5
Delay (s)		3.3	10.1	49.9	28.9						41.8	32.8
Level of Service		A	B	D	C						D	C
Approach Delay (s)		5.0			30.8			0.0			37.1	
Approach LOS		A			C			A			D	

Intersection Summary			
HCM Average Control Delay	23.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	106.2	Sum of lost time (s)	13.5
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Volume (veh/h)	0	393	15	41	540	89	10	0	39	0	0
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	405	15	42	557	92	10	0	40	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		TWLTL			None						
Median storage veh)		2									
Upstream signal (ft)					220						
pX, platoon unblocked	0.91						0.91	0.91		0.91	0.91
vC, conflicting volume	557			421			776	1054	210	884	1062
vC1, stage 1 conf vol							413	413		641	641
vC2, stage 2 conf vol							363	641		243	421
vCu, unblocked vol	316			421			556	862	210	675	871
tC, single (s)	4.1			4.2			7.5	6.5	7.2	7.5	6.5
tC, 2 stage (s)							6.5	5.5		6.5	5.5
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0
p0 queue free %	100			96			98	100	95	100	100
cM capacity (veh/h)	1130			1128			539	442	759	461	429

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	WB 4	NB 1	NB 2
Volume Total	270	151	42	278	278	92	24	27
Volume Left	0	0	42	0	0	0	10	0
Volume Right	0	15	0	0	0	92	13	27
cSH	1700	1700	1128	1700	1700	1700	645	759
Volume to Capacity	0.16	0.09	0.04	0.16	0.16	0.05	0.04	0.04
Queue Length 95th (ft)	0	0	3	0	0	0	3	3
Control Delay (s)	0.0	0.0	8.3	0.0	0.0	0.0	10.8	9.9
Lane LOS			A				B	A
Approach Delay (s)	0.0		0.5				10.3	
Approach LOS							B	

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	28.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	1	600	670	1	1	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	632	705	1	1	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)		797				
pX, platoon unblocked						
vC, conflicting volume	706				1024	353
vC1, stage 1 conf vol					706	
vC2, stage 2 conf vol					318	
vCu, unblocked vol	706				1024	353
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	888				413	643

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	1	316	316	470	236	2
Volume Left	1	0	0	0	0	1
Volume Right	0	0	0	0	1	1
cSH	888	1700	1700	1700	1700	503
Volume to Capacity	0.00	0.19	0.19	0.28	0.14	0.00
Queue Length 95th (ft)	0	0	0	0	0	0
Control Delay (s)	9.1	0.0	0.0	0.0	0.0	12.2
Lane LOS	A					B
Approach Delay (s)	0.0			0.0		12.2
Approach LOS						B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	28.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	404	1	8	542	2	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	421	1	8	565	2	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				522		
pX, platoon unblocked					0.86	
vC, conflicting volume			422		1003	211
vC1, stage 1 conf vol					421	
vC2, stage 2 conf vol					581	
vCu, unblocked vol			422		920	211
tC, single (s)			5.5		7.8	7.9
tC, 2 stage (s)					6.8	
tF (s)			2.9		4.0	3.8
p0 queue free %			99		99	99
cM capacity (veh/h)			765		354	665

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	281	141	8	565	6
Volume Left	0	0	8	0	2
Volume Right	0	1	0	0	4
cSH	1700	1700	765	1700	514
Volume to Capacity	0.17	0.08	0.01	0.33	0.01
Queue Length 95th (ft)	0	0	1	0	1
Control Delay (s)	0.0	0.0	9.8	0.0	12.1
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		12.1
Approach LOS					B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	351	40	56	488	53	54
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	366	42	58	508	55	56
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				848		
pX, platoon unblocked					0.87	
vC, conflicting volume			407		991	366
vC1, stage 1 conf vol					366	
vC2, stage 2 conf vol					625	
vCu, unblocked vol			407		912	366
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			95		88	92
cM capacity (veh/h)			1151		452	675

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	366	42	58	508	111
Volume Left	0	0	58	0	55
Volume Right	0	42	0	0	56
cSH	1700	1700	1151	1700	542
Volume to Capacity	0.22	0.02	0.05	0.30	0.21
Queue Length 95th (ft)	0	0	4	0	19
Control Delay (s)	0.0	0.0	8.3	0.0	13.3
Lane LOS			A		B
Approach Delay (s)	0.0		0.9		13.3
Approach LOS					B

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	318	147	71	470	160	74
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	331	153	74	490	167	77
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						2
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			484		1045	408
vC1, stage 1 conf vol					408	
vC2, stage 2 conf vol					638	
vCu, unblocked vol			484		1045	408
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			93		62	88
cM capacity (veh/h)			1078		435	643

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	484	74	490	244
Volume Left	0	74	0	167
Volume Right	153	0	0	77
cSH	1700	1078	1700	636
Volume to Capacity	0.28	0.07	0.29	0.38
Queue Length 95th (ft)	0	6	0	45
Control Delay (s)	0.0	8.6	0.0	16.1
Lane LOS		A		C
Approach Delay (s)	0.0	1.1		16.1
Approach LOS				C

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	48.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	113	0	33	48	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1	133	0	39	56	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				300		
pX, platoon unblocked						
vC, conflicting volume	95	56	56			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	95	56	56			
tC, single (s)	6.4	7.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	4.2	2.2			
p0 queue free %	100	83	100			
cM capacity (veh/h)	904	798	1548			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	134	39	56
Volume Left	1	0	0
Volume Right	133	0	0
cSH	799	1700	1700
Volume to Capacity	0.17	0.02	0.03
Queue Length 95th (ft)	15	0	0
Control Delay (s)	10.4	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.4	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	17.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	162	544	0	0	383	287	36	1	56	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	167	561	0	0	395	296	37	1	58	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)		484										
pX, platoon unblocked				0.97			0.97	0.97	0.97	0.97	0.97	
vC, conflicting volume	691			561			1092	1586	280	1215	1438	345
vC1, stage 1 conf vol							895	895		543	543	
vC2, stage 2 conf vol							197	691		673	895	
vCu, unblocked vol	691			479			1028	1538	189	1155	1385	345
tC, single (s)	4.3			4.1			7.7	6.5	7.3	7.5	6.5	6.9
tC, 2 stage (s)							6.7	5.5		6.5	5.5	
tF (s)	2.3			2.2			3.6	4.0	3.5	3.5	4.0	3.3
p0 queue free %	80			100			84	100	92	100	100	100
cM capacity (veh/h)	842			1045			238	216	743	284	268	651

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	NB 2
Volume Total	167	280	280	263	427	38	58
Volume Left	167	0	0	0	0	37	0
Volume Right	0	0	0	0	296	0	58
cSH	842	1700	1700	1700	1700	237	743
Volume to Capacity	0.20	0.16	0.16	0.15	0.25	0.16	0.08
Queue Length 95th (ft)	18	0	0	0	0	14	6
Control Delay (s)	10.3	0.0	0.0	0.0	0.0	23.1	10.3
Lane LOS	B					C	B
Approach Delay (s)	2.4			0.0		15.4	
Approach LOS						C	

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	593	8	1	660	11	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	624	8	1	695	12	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)	1113					
pX, platoon unblocked						
vC, conflicting volume			633		978	316
vC1, stage 1 conf vol					628	
vC2, stage 2 conf vol					349	
vCu, unblocked vol			633		978	316
tC, single (s)			4.1		8.4	6.9
tC, 2 stage (s)					7.4	
tF (s)			2.2		4.3	3.3
p0 queue free %			100		96	100
cM capacity (veh/h)			946		293	679

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	416	216	1	347	347	13
Volume Left	0	0	1	0	0	12
Volume Right	0	8	0	0	0	1
cSH	1700	1700	946	1700	1700	307
Volume to Capacity	0.24	0.13	0.00	0.20	0.20	0.04
Queue Length 95th (ft)	0	0	0	0	0	3
Control Delay (s)	0.0	0.0	8.8	0.0	0.0	17.2
Lane LOS			A			C
Approach Delay (s)	0.0		0.0			17.2
Approach LOS						C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	28.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	1	593	659	1	2	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	624	694	1	2	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	None			
Median storage veh)		2				
Upstream signal (ft)		1319				
pX, platoon unblocked						
vC, conflicting volume	695				1008	347
vC1, stage 1 conf vol					694	
vC2, stage 2 conf vol					314	
vCu, unblocked vol	695				1008	347
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	897				419	649

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	1	312	312	462	232	4
Volume Left	1	0	0	0	0	2
Volume Right	0	0	0	0	1	2
cSH	897	1700	1700	1700	1700	509
Volume to Capacity	0.00	0.18	0.18	0.27	0.14	0.01
Queue Length 95th (ft)	0	0	0	0	0	1
Control Delay (s)	9.0	0.0	0.0	0.0	0.0	12.1
Lane LOS	A					B
Approach Delay (s)	0.0			0.0		12.1
Approach LOS						B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	28.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	592	2	2	656	1	3	1	2	1	1	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	623	2	2	691	1	3	1	2	1	1	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					459							
pX, platoon unblocked												
vC, conflicting volume	692			625			977	1322	313	1012	1323	346
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	692			625			977	1322	313	1012	1323	346
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			98	99	100	99	99	100
cM capacity (veh/h)	899			952			203	155	683	191	155	650

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	313	314	347	346	6	3
Volume Left	1	0	2	0	3	1
Volume Right	0	2	0	1	2	1
cSH	899	1700	952	1700	248	227
Volume to Capacity	0.00	0.18	0.00	0.20	0.03	0.01
Queue Length 95th (ft)	0	0	0	0	2	1
Control Delay (s)	0.0	0.0	0.1	0.0	19.9	21.1
Lane LOS	A		A		C	C
Approach Delay (s)	0.0		0.0		19.9	21.1
Approach LOS					C	C

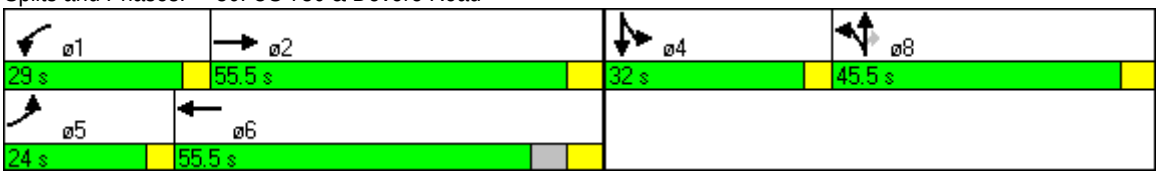
Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	29.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Configurations							
Volume (vph)	3	259	130	260	5	162	21
Turn Type	Prot		Prot			Perm	
Protected Phases	5	2	1	6	8		4
Permitted Phases						8	
Detector Phase	5	2	1	6	8	8	4
Switch Phase							
Minimum Initial (s)	4.0	10.0	4.0	10.0	5.0	5.0	4.0
Minimum Split (s)	8.5	31.5	8.5	27.5	37.0	37.0	32.0
Total Split (s)	24.0	55.5	29.0	55.5	45.5	45.5	32.0
Total Split (%)	14.8%	34.3%	17.9%	34.3%	28.1%	28.1%	19.8%
Yellow Time (s)	4.0	5.0	4.0	5.0	5.0	5.0	4.0
All-Red Time (s)	0.0	0.5	0.0	0.5	0.0	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.5	4.0	5.5	5.0	5.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			
Recall Mode	None	Min	None	Min	None	None	None
Act Effct Green (s)	5.5	16.2	12.4	31.3	28.1	28.1	6.7
Actuated g/C Ratio	0.07	0.20	0.15	0.39	0.35	0.35	0.08
v/c Ratio	0.02	0.43	0.51	0.22	0.65	0.27	0.30
Control Delay	44.3	33.4	42.3	20.0	29.4	7.3	28.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.3	33.4	42.3	20.0	29.4	7.3	28.7
LOS	D	C	D	B	C	A	C
Approach Delay		33.6		27.4	22.7		28.7
Approach LOS		C		C	C		C

Intersection Summary

Cycle Length: 162
Actuated Cycle Length: 80.2
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 26.7 Intersection LOS: C
Intersection Capacity Utilization 55.2% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 30: US 730 & Devore Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	259	0	130	260	1	372	5	162	1	21	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.5		4.0	5.5			5.0	5.0		4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (prot)	1770	3167		1736	3166			1741	1524		1701	
Flt Permitted	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (perm)	1770	3167		1736	3166			1741	1524		1701	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	3	273	0	137	274	1	392	5	171	1	22	28
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	93	0	26	0
Lane Group Flow (vph)	3	273	0	137	275	0	0	397	78	0	25	0
Heavy Vehicles (%)	2%	14%	12%	4%	14%	2%	4%	2%	6%	2%	5%	2%
Turn Type	Prot			Prot			Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases									8			
Actuated Green, G (s)	0.9	19.8		12.4	31.3			28.0	28.0		5.1	
Effective Green, g (s)	0.9	19.8		12.4	31.3			28.0	28.0		5.1	
Actuated g/C Ratio	0.01	0.24		0.15	0.37			0.33	0.33		0.06	
Clearance Time (s)	4.0	5.5		4.0	5.5			5.0	5.0		4.0	
Vehicle Extension (s)	2.5	5.4		2.5	5.4			3.5	3.5		2.5	
Lane Grp Cap (vph)	19	748		257	1183			582	509		104	
v/s Ratio Prot	0.00	c0.09		c0.08	0.09			c0.23			c0.01	
v/s Ratio Perm									0.05			
v/c Ratio	0.16	0.36		0.53	0.23			0.68	0.15		0.24	
Uniform Delay, d1	41.1	26.7		33.0	18.0			24.1	19.6		37.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	2.8	0.7		1.7	0.2			3.4	0.2		0.9	
Delay (s)	43.9	27.5		34.7	18.3			27.5	19.7		38.4	
Level of Service	D	C		C	B			C	B		D	
Approach Delay (s)		27.6			23.7			25.2			38.4	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	25.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	83.8	Sum of lost time (s)	18.5
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	1	6	1	1	1	6	538	1	1	480	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	1	1	6	1	1	1	6	555	1	1	495	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	790	1066	249	824	1068	278	498			556		
vC1, stage 1 conf vol	498	498		568	568							
vC2, stage 2 conf vol	291	568		256	500							
vCu, unblocked vol	790	1066	249	824	1068	278	498			556		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	100	100	100	99			100		
cM capacity (veh/h)	466	409	751	434	408	719	1062			1011		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	8	3	6	370	186	1	330	168
Volume Left	1	1	6	0	0	1	0	0
Volume Right	6	1	0	0	1	0	0	3
cSH	636	488	1062	1700	1700	1011	1700	1700
Volume to Capacity	0.01	0.01	0.01	0.22	0.11	0.00	0.19	0.10
Queue Length 95th (ft)	1	0	0	0	0	0	0	0
Control Delay (s)	10.7	12.4	8.4	0.0	0.0	8.6	0.0	0.0
Lane LOS	B	B	A			A		
Approach Delay (s)	10.7	12.4	0.1			0.0		
Approach LOS	B	B						

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	24.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	1	14	11	1	4	4	535	6	8	471	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	5	1	16	12	1	5	5	608	7	9	535	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	876	1181	272	923	1182	307	543			615		
vC1, stage 1 conf vol	557	557		620	620							
vC2, stage 2 conf vol	318	624		302	561							
vCu, unblocked vol	876	1181	272	923	1182	307	543			615		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	98	97	100	99	100			99		
cM capacity (veh/h)	425	375	726	398	377	689	1022			961		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	22	18	5	405	209	9	357	186
Volume Left	5	12	5	0	0	9	0	0
Volume Right	16	5	0	0	7	0	0	8
cSH	606	443	1022	1700	1700	961	1700	1700
Volume to Capacity	0.04	0.04	0.00	0.24	0.12	0.01	0.21	0.11
Queue Length 95th (ft)	3	3	0	0	0	1	0	0
Control Delay (s)	11.2	13.5	8.5	0.0	0.0	8.8	0.0	0.0
Lane LOS	B	B	A			A		
Approach Delay (s)	11.2	13.5	0.1			0.1		
Approach LOS	B	B						

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	25.0%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment C
Crash Data

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

US 730 (Hwy 002) MP 183.50 to 185.15
January 1, 2004 through December 31, 2008

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: 2008														
ANGLE	0	0	1	1	0	0	0	1	0	1	0	0	0	0
NON-COLLISION	0	1	0	1	0	1	0	1	0	1	0	1	0	0
REAR-END	0	3	3	6	0	3	1	6	0	5	1	2	2	0
SIDESWIPE - OVERTAKING	0	0	2	2	0	0	1	2	0	2	0	1	0	0
TURNING MOVEMENTS	0	1	1	2	0	3	0	1	1	2	0	2	0	0
2008 TOTAL	0	5	7	12	0	7	2	11	1	11	1	6	2	0
YEAR: 2007														
FIXED / OTHER OBJECT	0	0	1	1	0	0	0	0	0	1	0	0	0	1
HEAD-ON	0	0	1	1	0	0	0	1	0	1	0	0	0	0
REAR-END	0	4	4	8	0	5	0	7	1	7	1	4	2	1
TURNING MOVEMENTS	0	2	1	3	0	4	0	3	0	1	2	3	0	0
2007 TOTAL	0	6	7	13	0	9	0	11	1	10	3	7	2	2
YEAR: 2006														
NON-COLLISION	0	1	1	2	0	1	1	0	2	1	1	1	0	2
REAR-END	0	1	4	5	0	2	0	3	1	4	1	0	0	0
TURNING MOVEMENTS	0	0	3	3	0	0	2	3	0	2	1	3	0	0
2006 TOTAL	0	2	8	10	0	3	3	6	3	7	3	4	0	2
YEAR: 2005														
REAR-END	0	1	2	3	0	3	0	2	1	1	2	1	2	0
TURNING MOVEMENTS	0	1	2	3	0	2	1	3	0	3	0	3	0	0
2005 TOTAL	0	2	4	6	0	5	1	5	1	4	2	4	2	0
YEAR: 2004														
ANGLE	0	0	1	1	0	0	0	0	1	1	0	1	0	0
REAR-END	0	1	0	1	0	1	0	1	0	1	0	0	1	0
SIDESWIPE - OVERTAKING	0	0	2	2	0	0	0	2	0	2	0	0	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2004 TOTAL	0	2	3	5	0	2	0	4	1	5	0	2	1	0
FINAL TOTAL	0	17	29	46	0	26	6	37	7	37	9	23	7	4

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
CONTINUOUS SYSTEM CRASH LISTING

002 COLUMBIA RIVER

US 730 (Hwy 002) MP 183.50 to 185.15
January 1, 2004 through December 31, 2008

SER# INVEST	SPEED	ALCOHOL	DRUG	SCHOOL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00502	N	N	N			07/12/2004	UMATILLA	1	02		STRGHT		N	N	CLR	S-STRGHT	01	NONE 0	STRGHT										044	13
NO RPT						Mon	UMATILLA	0	0	6TH ST	E	(RSDMD)	UNKNOWN	N	DRY	SS-O		PRVTE	E W									000		00
						12P		183.53		SLOAN AVE	05			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	84	M	OTH-Y	045	000		13
												(04)													N-RES					
																	02	NONE 0	STRGHT											
																		PRVTE	E W								000	044	00
																		PSNGR CAR		01	DRVR	NONE	31	M	OR-Y	000	000		00
																									OR<25				
00658	N	N	N			10/27/2005	UMATILLA	1	02		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	TURN-L											02
NONE						Thu	UMATILLA	0	0	RIVER RD	CN		STOP SIGN	N	DRY	TURN		PRVTE	SE W								015		00
						4P		183.66		6TH ST	02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	UNK	028	000		02
																									OR<25				
																	02	NONE 0	TURN-L											
																		PRVTE	E SE								000		00
																		PSNGR CAR		01	DRVR	NONE	57	F	OR-Y	000	000		00
																									OR<25				
00544	N	N	N			08/27/2008	UMATILLA	1	02		INTER	CROSS	N	N	CLR	S-STRGHT	01	NONE 1	TURN-L											02
NO RPT						Wed	UMATILLA	0	0	RIVER RD	CN		STOP SIGN	N	DRY	SS-O		PRVTE	W N								000		00
						1P		183.66		6TH ST	04	0		N	DAY	PDO		SEMI TOW		01	DRVR	NONE	33	M	OR-Y	028	000		02
																									OR<25				
																	02	NONE 0	STRGHT											
																		PRVTE	W E								000		00
																		PSNGR CAR		01	DRVR	NONE	27	F	OR-Y	000	000		00
																									OR<25				
00676	N	N	N			10/11/2008	UMATILLA	1	02		INTER	3-LEG	N	N	CLR	NON-COLL	01	NONE 0	STRGHT										092	26
NO RPT						Sat	UMATILLA	0	0	EISELE ST	CN		UNKNOWN	N	DRY	NCOL		PRVTE	W E								007	092	26
						2P		183.88		6TH ST	03	0		N	DAY	INJ		MTRCYCLE		01	DRVR	INJB	47	M	OR-Y	000	000	092	26
																									OR<25				
00018	Y	N	N	N	N	01/04/2006	UMATILLA	1	02		GRADE		N	Y	CLD	OVERTURN	01	NONE 0	STRGHT										124,079	01
STATE						Wed	UMATILLA	0	0	6TH ST	W	(NONE)	UNKNOWN	N	ICE	NCOL		PRVTE	W E								000	124,079	00
						8A		184.00		BROWNELL BLVD	01			N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	28	F	OTH-Y	047	000		01
												(04)													N-RES				
00539	N	N	N			08/13/2006	UMATILLA	1	02		STRGHT		N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE						Sun	UMATILLA	0	0	6TH ST	W	(NONE)	UNKNOWN	N	DRY	REAR		PRVTE	E W								000		00
						7A		184.00		BROWNELL BLVD	05			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	25	M	OR-Y	026	000		07
												(04)													OR<25				
																	02	NONE 0	STOP											
																		PRVTE	E W								011		00
																		PSNGR CAR		01	DRVR	NONE	26	F	OR-Y	000	000		00
																									OR<25				
																				02	PSNG	NO<5	03	F		000	000		00

002 COLUMBIA RIVER

US 730 (Hwy 002) MP 183.50 to 185.15
January 1, 2004 through December 31, 2008

SER# INVEST	SPEED	ALCOHOL	DRUG	SCHOOL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00230	N	N	N			04/01/2004	UMATILLA	1	02		STRGHT		Y	N	CLR	S-1STOP	01	NONE 0	STRGHT											27
NO RPT						Thu	UMATILLA	0	0	6TH ST	W	(NONE)	UNKNOWN	N	DRY	REAR		PRVTE	W E									000		00
						6P		184.01		BROWNELL BLVD	03			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	48	M	OR-Y	014	000		27
												(04)													OR<25					
																	02	NONE 0	STOP											
																		PRVTE	W E								011		00
																		PSNGR CAR		01	DRVR	INJC	41	F	OR-Y	000	000		00
																									OR<25					
00712	N	N	N			11/13/2008	UMATILLA	1	02		STRGHT		N	N	CLR	S-STRGHT	01	NONE 0	STRGHT									003		27
NO RPT						Thu	UMATILLA	0	0	6TH ST	W	(NONE)	UNKNOWN	N	DRY	REAR		PRVTE	E W								000		00
						3P		184.02		SB EX 6TH ST C1	06			N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	57	F	OR-Y	016	026	003	27
												(04)													OR<25					
																	02	NONE 1	STRGHT											
																		PRVTE	E W								000		00
																		SEMI TOW		01	DRVR	NONE	36	M	OTH-Y	000	000		00
																									N-RES					
00110	N	N	N			02/10/2007	UMATILLA	1	02		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NO RPT						Sat	UMATILLA	0	0	BROWNELL BLVD	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E W								000		00
						11A		184.03		6TH ST	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	61	F	OR-Y	026	000		07
																									OR<25					
																	02	NONE 0	STOP											
																		PRVTE	E W								011		00
																		PSNGR CAR		01	DRVR	INJC	25	M	OR-Y	000	000		00
																									OR<25					
00880	N	N	N			12/21/2006	UMATILLA	1	02		INTER	CROSS	N	N	CLR	S-OTHER	01	NONE 1	TURN-R											08
NO RPT						Thu	UMATILLA	0	0	BROWNELL BLVD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N W								000		00
						5P		184.03		6TH ST	01	1		N	DLIT	PDO		SEMI TOW		01	DRVR	NONE	00	M	OTH-Y	007	000		08
																									N-RES					
																	02	NONE 0	TURN-R											
																		PRVTE	N W								000		00
																		PSNGR CAR		01	DRVR	NONE	25	M	OR-Y	000	000		00
																									OR<25					
00831	Y	N	N			11/19/2007	UMATILLA	1	02		STRGHT		N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											30,32
CITY						Mon	UMATILLA	0	0	08006	E	(NONE)	UNKNOWN	N	WET	REAR		PRVTE	E W								000		00
						6P		184.05		BROWNELL BLVD	05			N	DLIT	INJ		PSNGR CAR		01	DRVR	INJB	22	F	SUSP	050,052	000		30,32
												(04)													OR<25					
																	02	NONE 0	STOP											
																		PRVTE	E W								011		00
																		PSNGR CAR		01	DRVR	NONE	56	M	OR-Y	000	000		00
																									OR<25					
00182	N	N	N			03/12/2008	UMATILLA	1	02		STRGHT		N	N	CLR	ANGL-OTH	01	NONE 0	UNK											02
NO RPT						Wed	UMATILLA	0	0	6TH ST	UN	(NONE)	NONE	N	DRY	ANGL		PRVTE	UN UN								000		00
						5P		184.06		SB EF 6TH ST C1	03			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	57	F	OTH-Y	028	000		02
												(04)													N-RES					

002 COLUMBIA RIVER

US 730 (Hwy 002) MP 183.50 to 185.15
January 1, 2004 through December 31, 2008

SER# INVEST	SPEED	ALCOHOL	DRUG	SCHOOL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																	02	NONE 0	STRGHT											
																		PRVTE	W E									000		00
																		PSNGR CAR		01	DRVR	NONE	18	M	OR-Y	000		000		00
																									OR<25					
00098	N	N	N			01/26/2005	UMATILLA	1	02		STRGHT		Y	N	CLR	S-1STOP	01	NONE 0	STRGHT											12
NO RPT						Wed	UMATILLA	0	0	6TH ST	W	(NONE)	UNKNOWN	N	WET	REAR		PRVTE	W E									000		11
						7P		184.06		BROWNELL BLVD	03			N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	43	M	OR-Y	026		000		12
												(04)													OR<25					
																	02	NONE 0	STOP											
																		PRVTE	W E									011		00
																		PSNGR CAR		01	DRVR	NONE	63	F	OR-Y	000		000		00
																									OR<25					
00691	N	N	N			10/23/2006	UMATILLA	1	02		STRGHT		N	N	UNK	S-1STOP	01	NONE 0	STRGHT											07
NO RPT						Mon	UMATILLA	0	0	6TH ST	W	(NONE)	TRF SIGNAL	N	UNK	REAR		PRVTE	W E									000		00
						4P		184.07		SB EF 6TH ST C1	03			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	88	F	OTH-Y	026		000		07
												(04)													N-RES					
																	02	NONE 0	STOP											
																		PRVTE	W E									011		00
																		PSNGR CAR		01	DRVR	NONE	58	F	OR-Y	000		000		00
																									OR<25					
00728	Y	N	N			11/07/2005	UMATILLA	1	02		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											01
NO RPT						Mon	UMATILLA	0	0	6TH ST	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E W									001		00
						6P		184.08		SB EX 6TH ST C1	06	0		N	DUSK	PDO		PSNGR CAR		01	DRVR	NONE	30	F	OR-Y	026		000		01
																									OR<25					
																	02	NONE 0	STOP											
																		PRVTE	E W									011		00
																		PSNGR CAR		01	DRVR	NONE	29	M	OR-Y	000		000		00
																									OR<25					
00088	N	N	N			01/28/2007	UMATILLA	1	02		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE						Sun	UMATILLA	0	0	6TH ST	E		L-TURN REF	N	DRY	REAR		PRVTE	E W									000		00
						3P		184.08		SB EX 6TH ST C1	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	31	F	OR-Y	014		000		07
																									OR<25					
																				02	PSNG	NO<5	03	M		000		000		00
																	02	NONE 0	STOP											
																		PRVTE	E W									012		00
																		PSNGR CAR		01	DRVR	NONE	00	F	OR-Y	000		000		00
																									OR<25					
00299	N	N	N			04/19/2007	UMATILLA	1	02		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											10
NO RPT						Thu	UMATILLA	0	0	6TH ST	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E W									000		00
						4P		184.08		SB EX 6TH ST C1	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	54	M	OR-Y	026		000		10
																									OR<25					

002 COLUMBIA RIVER

US 730 (Hwy 002) MP 183.50 to 185.15
January 1, 2004 through December 31, 2008

SER# INVEST	SPEED	ALCOHOL	DRUG	SCHOOL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																	02	NONE 0 PRVTE PSNGR CAR	STOP E W	01	DRVR	NONE	68	F	OR-Y OR>25	000	011 000		00 00
00220 NO RPT	N	N	N			04/15/2008 Tue 11P	UMATILLA UMATILLA	1 0 184.08	02 0	6TH ST SB EX 6TH ST C1	INTER E 06	CROSS 0	N TRF SIGNAL	N DRY N DLIT	CLR REAR PDO	S-1STOP	01	NONE 0 PRVTE PSNGR CAR	STRGHT E W	01	DRVR	NONE	28	F	OR-Y OR<25	026	000 000		07 00 07
																	02	NONE 0 PRVTE PSNGR CAR	STOP E W	01	DRVR	NONE	41	M	OR-Y OR<25	000	011 000		00 00
00683 STATE	N	N	N	N	N	10/19/2006 Thu 7A	UMATILLA UMATILLA	1 0 184.08	02 0	6TH ST SB EF 6TH ST C1	INTER SE 06	CROSS 0	N TRF SIGNAL	Y N N	RAIN WET DAWN	NON-COLL NCOL PDO	01	NONE 0 PRVTE TRUCK	TURN-R W SE	01	DRVR	NONE	23	M	OR-Y OR<25	017	000 000	020,010,028 020,010,028	11 11 12
00288 NO RPT	N	N	N			05/20/2005 Fri 8A	UMATILLA UMATILLA	1 0 184.08	02 0	6TH ST SB EX 6TH ST C1	INTER CN 01	CROSS 0	N TRF SIGNAL	N N N	CLR DRY DAY	ANGL-OTH TURN PDO	01	NONE 0 PRVTE PSNGR CAR	STRGHT E W	01	DRVR	NONE	42	F	OR-Y OR<25	020	000 000		04 00 04
																	02	NONE 0 PRVTE PSNGR CAR	TURN-L N E	01	DRVR	NONE	43	F	OR-Y OR<25	000	000 000		00 00
00412 NO RPT	N	N	N			07/01/2006 Sat 7P	UMATILLA UMATILLA	1 0 184.08	02 0	6TH ST SB EF 6TH ST C1	INTER CN 01	CROSS 0	N TRF SIGNAL	N N N	CLR DRY DAY	ANGL-OTH TURN PDO	01	NONE 1 PRVTE PSNGR CAR	STRGHT E W	01	DRVR	NONE	59	M	OTH-Y N-RES	020	000 000		22 22 04
																	02	NONE 1 PRVTE PSNGR CAR	TURN-L NW E	01	DRVR	NONE	36	M	OR-Y OR>25	000	000 000		00 00
00368 NO RPT	Y	N	N			06/02/2006 Fri 11A	UMATILLA UMATILLA	1 0 184.09	02 0	6TH ST SB EX 6TH ST C1	STRGHT E 05	(NONE) (04)	N TRF SIGNAL	N N N	RAIN WET DAY	S-1STOP REAR PDO	01	NONE 1 PRVTE PSNGR CAR	STRGHT E W	01	DRVR	NONE	59	M	OTH-Y N-RES	047	001 000		01 00 01
																	02	NONE 0 PRVTE PSNGR CAR	STOP E W	01	DRVR	NONE	25	F	OR-Y OR>25	000	011 000		00 00
00625 NO RPT	N	N	N			08/29/2007 Wed 5P	UMATILLA UMATILLA	1 0 184.10	02 0	6TH ST SB EX 6TH ST C1	STRGHT UN 04	(NONE) (02)	Y UNKNOWN	N N N	CLR DRY DAY	S-1STOP REAR PDO	01	NONE 0 PRVTE PSNGR CAR	STRGHT E W	01	DRVR	NONE	32	F	OTH-Y N-RES	052	000 026		32 00 32

002 COLUMBIA RIVER

US 730 (Hwy 002) MP 183.50 to 185.15
January 1, 2004 through December 31, 2008

SER# INVEST	SPEED	ALCOHOL	DRUG	SCHOOL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																	02	NONE 0	STOP											
																		PRVTE	E W								011			00
																		PSNGR CAR		01	DRVR	NONE	21	M	OR-Y	000	000			00
																									OR<25					
00394	N	N	N			06/21/2008	UMATILLA	1	02		STRGHT		Y	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NO RPT						Sat	UMATILLA	0	0	6TH ST	E	(NONE)	UNKNOWN	N	DRY	REAR		PRVTE	E W								000			00
						5P		184.10		SB EX 6TH ST C1	05			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	28	M	NONE	026	000			07
												(04)													OR<25					
																	02	NONE 0	STOP											
																		PRVTE	E W								011			00
																		PSNGR CAR		01	DRVR	NONE	66	F	OR-Y	000	000			00
																									OR<25					
00579	N	N	N			09/08/2006	UMATILLA	1	02		STRGHT		N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NO RPT						Fri	UMATILLA	0	0	6TH ST	W	(NONE)	UNKNOWN	N	DRY	REAR		PRVTE	W E								000			00
						3P		184.16		NB EF 6TH ST C2	03			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	OTH-Y	026	000			07
												(04)													N-RES					
																	02	NONE 1	STOP											
																		PUBLC	W E								011			00
																		PSNGR CAR		01	DRVR	NONE	30	M	OR-Y	000	000			00
																									OR<25					
00900	N	N	N			12/19/2004	UMATILLA	1	02		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
NO RPT						Sun	UMATILLA	0	0	6TH ST	CN		STOP SIGN	N	DRY	TURN		PRVTE	W E								000			00
						2P		184.17		NB EX 6TH ST C2	04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	45	F	OR-Y	000	000			00
																									OR<25					
																	02	NONE 0	TURN-L											
																		PRVTE	SW W								015			00
																		PSNGR CAR		01	DRVR	NONE	36	F	OTH-Y	028	000			02
																									N-RES					
00245	N	N	N			04/16/2008	UMATILLA	1	02		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
NO RPT						Wed	UMATILLA	0	0	6TH ST	CN		STOP SIGN	N	DRY	TURN		PRVTE	W E								000			00
						5P		184.17		NB EX 6TH ST C2	04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	22	F	OR-Y	000	000			00
																									OR<25					
																				02	PSNG	INJC	22	M		000	000			00
																				03	PSNG	INJC	01	M		000	000			00
																	02	NONE 0	TURN-L											
																		PRVTE	SW W								015			00
																		PSNGR CAR		01	DRVR	NONE	20	M	OTH-Y	028	000			02
																									N-RES					
00761	N	N	N			11/21/2008	UMATILLA	1	02		STRGHT		Y	N	CLR	S-1STOP	01	NONE 0	STRGHT										013	07
NO RPT						Fri	UMATILLA	0	0	6TH ST	E	(NONE)	UNKNOWN	N	DRY	REAR		PRVTE	E W								001			00
						11A		184.21		NB EF 6TH ST C2	06			N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	69	F	OTH-Y	026	000			07
												(04)													N-RES					

002 COLUMBIA RIVER

US 730 (Hwy 002) MP 183.50 to 185.15
January 1, 2004 through December 31, 2008

SER# INVEST	SPEED	ALCOHOL	DRUG	SCHOOL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																	02	NONE 0 PRVTE PSNGR CAR	STOP E W	01	DRVR	NONE	65	F	OR-Y OR<25	000	011 000	013	00 00
																	03	NONE 0 PRVTE PSNGR CAR	STOP E W	01	DRVR	NONE	53	M	OR-Y OR<25	000	011 000		00 00
00299	N	N	N			05/19/2008	UMATILLA	1	02		STRGHT		N		N CLR	S-1STOP	01	NONE 0 PRVTE PSNGR CAR	STRGHT E W	01	DRVR	NONE	51	M	OTH-Y N-RES	026	000	030	07 07
NO RPT						Mon	UMATILLA	0	0	6TH ST	UN	(NONE)	UNKNOWN		N DRY	REAR														00
						4P		184.50		POWER CITY RD	05	(04)			N DAY	PDO														
																	02	NONE 0 PRVTE PSNGR CAR	STOP E W	01	DRVR	NONE	54	M	OTH-Y N-RES	000	011 000	030	00 00
00555	N	N	N			08/01/2007	UMATILLA	1	02		STRGHT		N		N CLR	O-STRGHT	01	NONE 0 PRVTE PSNGR CAR	STRGHT W E	01	DRVR	NONE	00	M	UNK OR<25	039	000		05 05
NO RPT						Wed	UMATILLA	0	0	COLUMBIA RIVER HY	W	(NONE)	UNKNOWN		N DRY	HEAD														00
						8P		184.61		EB EXTO HY54 C1	05	(04)			N DAY	PDO														
																	02	NONE 0 PRVTE PSNGR CAR	STRGHT E W	01	DRVR	NONE	55	F	OR-Y OR<25	000	000		00 00
00180	N	N	N			03/24/2004	UMATILLA	1	02		STRGHT		N		N CLR	S-STRGHT	01	NONE 0 PUBLC PSNGR CAR	STRGHT W E	01	DRVR	NONE	62	M	OTH-Y N-RES	045	000		13 00 13
NO RPT						Wed	UMATILLA	0	0	COLUMBIA RIVER HY	W	(NONE)	UNKNOWN		N DRY	SS-O														
						3P		184.81		UMATILLA-STANFLD HY	03	(04)			N DAY	PDO														
																	02	NONE 0 PRVTE PSNGR CAR	STRGHT W E	01	DRVR	NONE	50	M	OTH-Y N-RES	000	000		00 00
00217	Y	N	N			03/02/2007	UMATILLA	1	02		STRGHT		Y		N CLR	S-1STOP	01	NONE 0 PRVTE PSNGR CAR	STRGHT W E	01	DRVR	NONE	17	M	OR-Y OR<25	026	001 000	013	01 00 01
CITY						Fri	UMATILLA	0	0	COLUMBIA RIVER HY	W	(NONE)	UNKNOWN		N DRY	REAR														
						1P		184.85		UMATILLA-STANFLD HY	04	(04)			N DAY	INJ														
																	02	NONE 0 PRVTE PSNGR CAR	STOP W E	01	DRVR	INJC	17	M	OR-Y OR<25	000	011 000	013	00 00
																	03	NONE 0 PRVTE PSNGR CAR	STOP W E	01	DRVR	NONE	16	F	OR-Y OR<25	000	011 000		00 00

002 COLUMBIA RIVER

US 730 (Hwy 002) MP 183.50 to 185.15
January 1, 2004 through December 31, 2008

SER# INVEST	SPEED	ALCOHOL	DRUG	SCHOOL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00265	N	N	N			04/13/2005	UMATILLA	1	02		STRGHT		Y		N CLR	S-1STOP	01	NONE 0	STRGHT											10
NO RPT						Wed	UMATILLA	0	0	COLUMBIA RIVER HY	W	(NONE)	UNKNOWN		N DRY	REAR		PRVTE	W E									000		00
						4P		184.86		UMATILLA-STANFLD HY	03				N DAY	INJ		PSNGR CAR		01	DRVR	NONE	23	M	OR-Y	026	000		10
												(04)														OR<25				
																	02	NONE 0	STOP											
																		PRVTE	W E									011		00
																		PSNGR CAR		01	DRVR	INJC	32	F	OR-Y	000	000		00
																									OR<25				
																				02	PSNG	INJC	13	F		000	000		00
																				03	PSNG	INJC	02	M		000	000		00
00486	N	N	N			07/09/2007	UMATILLA	1	02		INTER	3-LEG	N		N CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE						Mon	UMATILLA	0	0	COLUMBIA RIVER HY	N		TRF SIGNAL		N DRY	REAR		PRVTE	N S									000		00
						11A		184.87		UMATILLA-STANFLD HY	06	0			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	42	F	OR-Y	014	000		00
																									OR<25				
																	02	NONE 0	STOP											
																		PRVTE	N S									011		00
																		PSNGR CAR		01	DRVR	NONE	67	M	OTH-Y	000	000		00
																									N-RES				
00424	N	N	N			06/15/2007	UMATILLA	1	06		INTER	3-LEG	N		N CLR	O-OTHER	01	NONE 0	TURN-R											08
NO RPT						Fri	UMATILLA	0	0	COLUMBIA RIVER HY	E		L-TURN REF		N DRY	TURN		PRVTE	S E									000		00
						10P		184.87		UMATILLA-STANFLD HY	06	0			N DLIT	INJ		PSNGR CAR		01	DRVR	NONE	55	M	OR-Y	001	000		08
																									OR<25				
																	02	NONE 0	STRGHT											
																		PRVTE	E W									000		00
																		PSNGR CAR		01	DRVR	INJC	44	F	OR-Y	000	000		00
																									OR<25				
																				02	PSNG	INJB	06	M		000	000		00
																				03	PSNG	INJB	03	F		000	000		00
00260	N	N	N			04/17/2008	UMATILLA	1	06		INTER	CROSS	N		N CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE						Thu	UMATILLA	0	0	COLUMBIA RIVER HY	E		TRF SIGNAL		N DRY	REAR		PRVTE	E W									000		00
						1P		184.87		UMATILLA-STANFLD HY	06	0			N DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	F	OTH-Y	014	000		07
																									N-RES				
																	02	NONE 0	STOP											
																		PRVTE	E W									011		00
																		PSNGR CAR		01	DRVR	INJC	66	M	OR-Y	000	000		00
																									OR<25				
00374	Y	N	N	N	N	06/10/2008	UMATILLA	1	02		INTER	CROSS	N		N RAIN	ANGL-STP	01	NONE 0	TURN-L										124	01
STATE						Tue	UMATILLA	0	0	COLUMBIA RIVER HY	S		TRF SIGNAL		N WET	TURN		PRVTE	E S									000	124	00
						2P		184.87		UMATILLA-STANFLD HY	06	0			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	18	F	OR-Y	083	017		01
																									OR<25				
																	02	NONE 0	STOP											
																		PRVTE	S N									012		00
																		PSNGR CAR		01	DRVR	NONE	68	M	OR-Y	000	000		00
																									OR<25				

002 COLUMBIA RIVER

US 730 (Hwy 002) MP 183.50 to 185.15
January 1, 2004 through December 31, 2008

SER# INVEST	SPEED	ALCOHOL	DRUGS	SCHOOL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00922	N	N	N			12/29/2004	UMATILLA	1	02		INTER	CROSS	N		N FOG	ANGL-OTH	01	NONE 0	STRGHT										010	02
NO RPT						Wed	UMATILLA	0	0	COLUMBIA RIVER HY	CN		TRF SIGNAL		N WET	ANGL		PRVTE	S N								000	010	00
						11A		184.87		UMATILLA-STANFLD HY	02	0			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	49	M	OTH-Y	000	000		00
																									N-RES					
																	02	NONE 0	STRGHT											
																		PRVTE	E W								000		00
																		PSNGR CAR		01	DRVR	NONE	00	M	UNK	028	000		02
																									UNK					
00683	N	N	N			10/07/2005	UMATILLA	1	02		INTER	CROSS	N		N CLR	ANGL-OTH	01	NONE 1	STRGHT											04
NO RPT						Fri	UMATILLA	0	0	COLUMBIA RIVER HY	CN		TRF SIGNAL		N DRY	TURN		PRVTE	W E								000		22
						10A		184.87		UMATILLA-STANFLD HY	04	0			N DAY	INJ		SEMI TOW		01	DRVR	NONE	39	M	OR-Y	020	000		04
																									OR<25					
																	02	NONE 0	TURN-L											
																		PRVTE	S W								000		00
																		PSNGR CAR		01	DRVR	INJB	16	M	OR-Y	000	000		00
																									OR<25					
																				02	PSNG	INJA	46	M		000	000		00
00287	N	N	N			05/15/2006	UMATILLA	1	02		INTER	CROSS	N		N CLR	O-1TURN	01	NONE 0	STRGHT											02
NONE						Mon	UMATILLA	0	0	COLUMBIA RIVER HY	CN		TRF SIGNAL		N DRY	TURN		PRVTE	W E								000		00
						2P		184.87		UMATILLA-STANFLD HY	04	0			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	45	M	OR-Y	000	000		00
																									OR<25					
																	02	LOG 1	TURN-L											
																		PRVTE	E S								000		00
																		SEMI TOW		01	DRVR	NONE	56	M	OTH-Y	004	000		02
																									N-RES					
00412	N	N	N			06/09/2007	UMATILLA	1	02		INTER	3-LEG	N		N CLR	ANGL-OTH	01	NONE 0	STRGHT											04,33
COUNTY						Sat	UMATILLA	0	0	COLUMBIA RIVER HY	CN		TRF SIGNAL		N DRY	TURN		PRVTE	W E								000		00
						11P		184.87		UMATILLA-STANFLD HY	04	0			N DLIT	PDO		PSNGR CAR		01	DRVR	NONE	42	M	SUSP	020,073,052	000		04,33
																									OR>25					
																	02	NONE 0	TURN-L											
																		PRVTE	S W								000		00
																		PSNGR CAR		01	DRVR	NONE	33	M	OTH-Y	000	000		00
																									N-RES					
00905	N	N	N	N	N	12/08/2007	UMATILLA	1	06		INTER	CROSS	N		N CLR	ANGL-OTH	01	NONE 0	STRGHT											04
STATE						Sat	UMATILLA	0	0	COLUMBIA RIVER HY	CN		TRF SIGNAL		N DRY	TURN		PRVTE	W E								000		00
						8A		184.87		UMATILLA-STANFLD HY	04	0			N DAY	INJ		PSNGR CAR		01	DRVR	INJC	51	F	OR-Y	020	000		04
																									OR<25					
																	02	NONE 0	TURN-L											
																		PRVTE	S W								000		00
																		PSNGR CAR		01	DRVR	NONE	57	M	OR-Y	000	000		00
																									OR<25					

002 COLUMBIA RIVER

US 730 (Hwy 002) MP 183.50 to 185.15
January 1, 2004 through December 31, 2008

SER# INVEST	SPEED	ALCOHOL	DRUGS	SCHOOL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00620	N	N	N	N	N	08/26/2007	UMATILLA	1	06		STRGHT		N	Y	CLR	PRKD MV	01	NONE 0	STRGHT											05
STATE						Sun	UMATILLA	0	0	COLUMBIA RIVER HY	E	(NONE)	UNKNOWN	N	DRY	REAR		PRVTE	E W								000		00
						3P		184.97		UMATILLA-STANFLD HY	02			N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	73	M	OR-Y	080	000		05
												(04)														OR>25				
																				02	PSNG	INJB	73	F		000	000		00
																	02	NONE 0	PRKD-P											
																		PRVTE	W E								008		00
																		PSNGR CAR												
																	03	NONE 0	PRKD-P											
																		PRVTE	W E								008		00
																		PSNGR CAR												
																	04	NONE 0	PRKD-P											
																		PRVTE	W E								008		00
																		PSNGR CAR												
00724	N	N	N			11/05/2008	UMATILLA	1	06		STRGHT		N	N	CLD	S-STRGHT	01	NONE 0	STRGHT											13
NO RPT						Wed	UMATILLA	0	0	COLUMBIA RIVER HY	E	(NONE)	UNKNOWN	N	DRY	SS-O		PRVTE	W E								000		00
						11A		185.00		UMATILLA-STANFLD HY	03			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	50	M	OR-Y	045	000		13
												(04)														OR<25				
																	02	NONE 0	STRGHT											
																		PRVTE	W E								000		00
																		PSNGR CAR		01	DRVR	NONE	62	M	OR-Y	000	000		00
																										OR<25				
00691	Y	N	N			09/08/2007	UMATILLA	1	06		STRGHT		N	Y	CLR	FIX OBJ	01	NONE 0	STRGHT									088		01
NO RPT						Sat	UMATILLA	0	0	COLUMBIA RIVER HY	E	(NONE)	UNKNOWN	N	UNK	FIX		PRVTE	UN UN								000	088		00
						6P		185.06		MARGARET AVE	00			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	18	F	OR-Y	045	017		01
												(04)														OR<25				
00700	N	N	N			10/28/2006	UMATILLA	1	06		STRGHT		N	N	CLR	S-STRGHT	01	NONE 0	STRGHT											07
NO RPT						Sat	UMATILLA	0	0	COLUMBIA RIVER HY	E	(NONE)	UNKNOWN	N	DRY	REAR		PRVTE	W E								000		00
						8P		185.12		COLUMBIA AVE	03			N	DARK	INJ		PSNGR CAR		01	DRVR	INJC	21	F	OR-Y	042	000		07
												(02)														OR<25				
																	02	NONE 0	STRGHT											
																		PRVTE	W E								000		00
																		PSNGR CAR		01	DRVR	NONE	23	F	OR-Y	000	000		00
																										OR<25				
																				02	PSNG	INJB	00	M		000	000		00

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

I-82 (Hwy 070) MP 0.00 to 2.07
January 1, 2004 through December 31, 2008

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: 2008														
FIXED / OTHER OBJECT	0	2	1	3	0	2	1	2	1	1	2	0	0	3
NON-COLLISION	0	0	1	1	0	0	0	0	1	0	1	0	0	1
2008 TOTAL	0	2	2	4	0	2	1	2	2	1	3	0	0	4
YEAR: 2007														
FIXED / OTHER OBJECT	0	1	2	3	0	2	0	1	2	1	2	0	0	3
HEAD-ON	0	1	0	1	0	2	0	1	0	1	0	0	0	0
NON-COLLISION	0	1	0	1	0	2	0	0	1	0	1	0	0	1
2007 TOTAL	0	3	2	5	0	6	0	2	3	2	3	0	0	4
YEAR: 2006														
FIXED / OTHER OBJECT	0	1	0	1	0	1	0	1	0	1	0	0	0	1
NON-COLLISION	1	1	0	2	1	1	0	1	1	1	1	0	0	2
2006 TOTAL	1	2	0	3	1	2	0	2	1	2	1	0	0	3
YEAR: 2005														
FIXED / OTHER OBJECT	0	1	1	2	0	3	0	0	2	1	1	0	0	2
NON-COLLISION	0	1	1	2	0	1	0	1	1	0	2	0	0	2
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2005 TOTAL	0	2	3	5	0	4	0	2	3	2	3	1	0	4
YEAR: 2004														
FIXED / OTHER OBJECT	0	2	2	4	0	2	1	2	2	1	3	0	0	3
NON-COLLISION	0	1	0	1	0	2	0	1	0	0	1	0	0	0
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	1	1	0	1	0	0	0	0
2004 TOTAL	0	3	3	6	0	4	2	4	2	2	4	0	0	3
FINAL TOTAL	1	12	10	23	1	18	3	12	11	9	14	1	0	18

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
CONTINUOUS SYSTEM CRASH LISTING

070 MCNARY

I-82 (Hwy 070) MP 0.00 to 2.07
January 1, 2004 through December 31, 2008

SER# INVEST	SPED	ALCS	DRUG	SCHL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00962	Y	N	N	N	N	12/22/2007	UMATILLA	2	01		BRIDGE		N	Y	CLR	FIX OBJ	01	NONE 0	STRGHT										046,124	01
STATE						Sat		0	0		UN	(RSDMD)	ONE-WAY	N	ICE	FIX		PRVTE	E W									000	046,124	00
						11P		0.00			05			N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	34	F	OTH-Y		047,080	017		01
												(04)													N-RES					
00804	N	N	N	N	N	11/12/2007	UMATILLA	1	01		BRIDGE		N	Y	CLD	FIX OBJ	01	NONE 0	STRGHT										046,092	26
STATE						Mon		0	0		UN	(RSDMD)	ONE-WAY	N	DRY	FIX		RENTL	W E									007	092,046	26
						7A		0.01			04			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	47	M	OTH-Y		080,081	000		26
												(04)													N-RES					
00960	Y	N	N	N	N	12/22/2007	UMATILLA	2	01		BRIDGE		N	Y	CLR	FIX OBJ	01	NONE 0	STRGHT										046,124	01
STATE						Sat		0	0		UN	(RSDMD)	ONE-WAY	N	ICE	FIX		PRVTE	E W									000	046,124	00
						11P		0.01			07			N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	33	M	OTH-Y		047,080	017		01
												(04)													N-RES					
																				02	PSNG	INJC	43	M			000	000		00
00746	Y	N	N	N	N	10/22/2004	UMATILLA	1	01		BRIDGE		N	Y	CLR	FIX OBJ	01	NONE 1	STRGHT										046	01
STATE						Fri		0	0		UN	(NONE)	UNKNOWN	N	DRY	FIX		PRVTE	S N									000	046	00
						11A		0.20			01			N	DAY	PDO		SEMI TOW		01	DRVR	NONE	32	M	OR-Y		052	000		01
												(02)													OR<25					
00762	Y	N	N	N	N	11/19/2005	UMATILLA	2	01		STRGHT		N	Y	CLD	OVERTURN	01	NONE 0	STRGHT											26
STATE						Sat		0	0		UN	(DIVMD)	ONE-WAY	N	WET	NCOL		PRVTE	S N									007		26
						10P		0.20			01			N	DARK	INJ		PSNGR CAR		01	DRVR	INJC	60	M	OR-Y		083	017		01
												(04)													OR>25					
00293	N	N	N	N	N	05/21/2005	UMATILLA	1	01		STRGHT		N	Y	CLR	OVERTURN	01	NONE 0	STRGHT										058	27
STATE						Sat	UMATILLA	0	0	MCNARY HY I-82	S	(DIVMD)	ONE-WAY	N	DRY	NCOL		PRVTE	N S									000	058	00
						4A		0.50		SB EX 6TH ST C1	06			N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	16	M	OR-Y		081	025		27
												(04)													OR<25					
00966	Y	N	N	N	N	12/22/2007	UMATILLA	1	01		GRADE		N	Y	CLD	OVERTURN	01	NONE 0	STRGHT										124	01
STATE						Sat	UMATILLA	0	0	MCNARY HY I-82	S	(DIVMD)	ONE-WAY	N	ICE	NCOL		PRVTE	N S									000	124	00
						11P		0.70		SB EX 6TH ST C1	05			N	DARK	INJ		PSNGR CAR		01	DRVR	NONE	36	M	OR-Y		047,080	017		01
												(04)													OR<25					
																				02	PSNG	INJA	31	F			000	000		00
																				03	PSNG	NO<5	03	M			000	000		00
																				04	PSNG	INJB	14	M			000	000		00
00249	N	N	N			04/04/2005	UMATILLA	1	01		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	TURN-R											08
NO RPT						Mon	UMATILLA	0	0	MCNARY HY I-82	N		UNKNOWN	N	DRY	TURN		PRVTE	E N									000		00
						9A		0.79		NB EF 6TH ST C2	05	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	42	M	OR-Y		028	000		02
																									OR<25					
																	02	NONE 0	STRGHT											
																		PRVTE	S N									000		00
																		PSNGR CAR		01	DRVR	NONE	40	M	OR-Y		000	000		00
																									OR<25					
00526	N	N	N	N	N	07/27/2004	UMATILLA	2	01		BRIDGE		N	N	CLR	S-STRGHT	01	NONE 1	STRGHT											13
STATE						Tue	UMATILLA	0	0	MCNARY HY I-82	S	(DIVMD)	ONE-WAY	N	DRY	SS-O		PRVTE	S N									000		00
						3P		0.80		NB EF 6TH ST C2	03			N	DAY	PDO		SEMI TOW		01	DRVR	NONE	51	M	OR-Y		045	000		13
												(04)													OR<25					

070 MCNARY

I-82 (Hwy 070) MP 0.00 to 2.07
January 1, 2004 through December 31, 2008

SER# INVEST	SPEED	ALCOHOL	DRUG	SCHOOL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																	02	NONE 0	STRGHT											
																		PRVTE	S N								000		00
																		PSNGR CAR		01	DRVR	NONE	28	F	OTH-Y	000	000		00
																									N-RES				
00107	Y	N	N	N	N	02/01/2008	UMATILLA	2	01		BRIDGE		N	Y	CLD	FIX OBJ	01	NONE 0	STRGHT									047,010	32,16,01
STATE						Fri	UMATILLA	0	0	MCNARY HY I-82	UN	(DIVMD)	ONE-WAY	N	DRY	FIX		PRVTE	N S								000	047,010	00
						9P		0.98		NB EF 6TH ST C2	08			N	DARK	INJ		PSNGR CAR		01	DRVR	INJB	40	M	OR-Y	052,047,083	025		32,16,01
												(04)													OR<25				
00841	Y	N	N	N	N	12/15/2005	UMATILLA	1	01		BRIDGE		N	Y	FOG	FIX OBJ	01	NONE 0	STRGHT									046	01
STATE						Thu		0	0		UN	(RSDMD)	UNKNOWN	N	ICE	FIX		PRVTE	S N								000	046	00
						6A		1.02			06			N	DARK	INJ		PSNGR CAR		01	DRVR	INJC	22	F	OR-Y	017,081	000		01
												(04)													OR<25				
																				02	PSNG	INJC	23	F		000	000		00
																				03	PSNG	INJC	28	F		000	000		00
00709	N	N	N	N	N	10/05/2004	UMATILLA	2	01		STRGHT		N	N	CLR	OVERTURN	01	NONE 0	STRGHT										27
STATE						Tue		0	0		UN	(DIVMD)	UNKNOWN	N	DRY	NCOL		PRVTE	S N								000		00
						4A		1.04			02			N	DARK	INJ		PSNGR CAR		01	DRVR	INJC	25	F	OTH-Y	083	025		27
												(02)													N-RES				
																				02	PSNG	INJC	06	M		000	000		00
00071	Y	N	N	N	N	01/16/2005	UMATILLA	1	01		STRGHT		N	Y	SNOW	FIX OBJ	01	NONE 0	STRGHT									060,010	01
STATE						Sun		0	0		UN	(DIVMD)	ONE-WAY	N	ICE	FIX		PRVTE	N S								001	060,010	00
						9A		1.10			01			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	48	M	OTH-Y	052	000		01
												(04)													N-RES				
00477	Y	N	N	N	N	10/03/2006	UMATILLA	2	01		CURVE		N	Y	CLD	OVERTURN	01	NONE 0	STRGHT									043,001	01
STATE						Tue		0	0		UN	(DIVMD)	ONE-WAY	N	DRY	NCOL		PRVTE	S N								000	043	00
						5A		1.10			01			N	DARK	FAT		PSNGR CAR		01	DRVR	KILL	43	M	OR-Y	081,083	000	001	01
												(04)													OR>25				
00333	Y	N	N	N	N	06/18/2006	UMATILLA	1	01		CURVE		N	Y	CLR	FIX OBJ	01	NONE 1	STRGHT									020,043,010	01
STATE						Sun		0	0		UN	(DIVMD)	ONE-WAY	N	DRY	FIX		PRVTE	S N								000	020,043,021	00
						4P		1.20			01			N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	49	F	OR-Y	047	017		01
												(04)													OR>25				
00493	N	N	N	N	N	07/07/2004	UMATILLA	1	01		STRGHT		N	Y	CLR	FIX OBJ	01	NONE 0	STRGHT									043,010	27
STATE						Wed		0	0		UN	(DIVMD)	ONE-WAY	N	DRY	FIX		PRVTE	S N								000	043,010	00
						10P		1.20			06			N	DARK	INJ		PSNGR CAR		01	DRVR	INJA	63	M	OTH-Y	083,052	025		27
												(04)													N-RES				
00552	N	N	N	N	N	08/11/2007	UMATILLA	1	01		STRGHT		N	N	CLR	O-STRGHT	01	NONE 0	STRGHT										05
STATE						Sat		0	0		UN	(DIVMD)	ONE-WAY	N	DRY	HEAD		PRVTE	N S								033		00
						3P		1.25			03			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	19	F	OTH-Y	080	000		05
												(04)													N-RES				
																	02	NONE 0	STRGHT										
																		PRVTE	N S								000		00
																		PSNGR CAR		01	DRVR	INJC	18	M	OTH-Y	000	000		00
																									N-RES				
																				02	PSNG	INJC	07	M		000	000		00

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CONTINUOUS SYSTEM CRASH LISTING

070 MCNARY

I-82 (Hwy 070) MP 0.00 to 2.07

January 1, 2004 through December 31, 2008

SER# INVEST	SPEED	ALCOHOL	DRUGS	SCHOOL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00930	Y	N	N			12/30/2004	UMATILLA	2	01		STRGHT		N	N	FOG	FIX OBJ	01	NONE 0	STRGHT										043	01
NONE						Thu		0	0		UN	(DIVMD)	ONE-WAY	N	ICE	FIX		PRVTE	S N								001	043	00
						7P		1.26			06			N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	37	F	OR-Y	081	017		01
												(04)													OR<25				
00918	Y	N	N	N	N	12/28/2004	UMATILLA	1	01		STRGHT		N	Y	CLD	FIX OBJ	01	NONE 0	STRGHT										045	01
STATE						Tue		0	0		UN	(DIVMD)	ONE-WAY	N	ICE	FIX		PRVTE	N S								001	045	00
						6A		1.51			01			N	DARK	INJ		PSNGR CAR		01	DRVR	INJB	57	M	OR-Y	047	000		01
												(04)													OR<25				
00101	Y	N	N	N	N	02/03/2008	UMATILLA	1	01		STRGHT		N	Y	SNOW	FIX OBJ	01	NONE 1	STRGHT										035,043	01
STATE						Sun		0	0		UN	(DIVMD)	ONE-WAY	N	SNO	FIX		PRVTE	N S								007	035,043	00
						4A		1.70			01			N	DARK	INJ		SEMI TOW		01	DRVR	INJC	41	M	OTH-Y	047	017		01
												(04)													N-RES				
00432	N	N	N	N	N	07/03/2008	UMATILLA	2	01		CURVE		N	Y	CLR	FIX OBJ	01	NONE 0	STRGHT										079,010	11
STATE						Thu		0	0		UN	(DIVMD)	ONE-WAY	N	DRY	FIX		PRVTE	S N								000	079,010	11
						5A		2.00			06			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	18	M	OR-Y	083	017		10
												(04)													OR<25				
00155	Y	N	N	N	N	02/24/2008	UMATILLA	2	01		STRGHT		N	Y	RAIN	NON-COLL	01	NONE 0	STRGHT											16,01
STATE						Sun		0	0		UN	(NONE)	ONE-WAY	N	WET	NCOL		PRVTE	E W								000		00
						4A		2.00			08			N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	23	M	OTH-Y	047,080,081	025		16,01
												(04)													N-RES				
00744	Y	N	N	N	N	11/26/2006	UMATILLA	1	01		GRADE		N	Y	RAIN	OVERTURN	01	NONE 0	STRGHT										093	30
STATE						Sun	UMATILLA	0	0	MCNARY HY I-82	S	(DIVMD)	UNKNOWN	N	WET	NCOL		PRVTE	W E								000		00
						3P		2.00		SB EX 6TH ST C1	01			N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	26	F	OTH-Y	050	000	093	30
												(04)													N-RES				

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

US 395 (Hwy 054) @ Margaret Avenue
January 1, 2004 through December 31, 2008

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

US 395 (Hwy 054) @ Power City Road
January 1, 2004 through December 31, 2008

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: 2005														
FIXED / OTHER OBJECT	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2005 TOTAL	0	1	1	2	0	1	0	2	0	2	0	2	0	0
FINAL TOTAL	0	1	1	2	0	1	0	2	0	2	0	2	0	0

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
CONTINUOUS SYSTEM CRASH LISTING

054 UMATILLA-STANFIELD

US 395 (Hwy 054) @ Power City Road
January 1, 2004 through December 31, 2008

SER# INVEST	SPED	ALCS	DRUG	SCHL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00514	N	N	N			08/04/2005	UMATILLA	1	02		INTER	CROSS	N	N	CLR	O-1TURN	01	NONE 0	TURN-L											02
STATE						Thu		0	0		CN		STOP SIGN	N	DRY	TURN		PRVTE	E S									000		00
						7A		0.70			03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	50	M	OR-Y		004	000		02
																									OR<25					
																	02	NONE 0	STRGHT											
																		PRVTE	W E									000		00
																		PSNGR CAR		01	DRVR	INJB	18	F	OR-Y		000	000		00
																									OR<25					
00191	N	N	N	N	N	03/18/2005	UMATILLA	1	02		INTER	3-LEG	N	N	CLD	FIX OBJ	01	NONE 0	STRGHT										057	26
STATE						Fri		0	0		CN		STOP SIGN	N	DRY	FIX		PRVTE	S N									007	057	26
						9A		0.70			04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	27	M	OR-Y		081	000		26
																									OR<25					

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

US 395 (Hwy 054) MP 0.00 to 1.00
January 1, 2004 through December 31, 2008

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: 2008														
MISCELLANEOUS	0	0	1	1	0	0	0	1	0	0	1	0	0	0
REAR-END	0	0	1	1	0	0	0	1	0	1	0	0	0	0
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	0	1	0	1	0	0	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	1	1	0	0	1	0	0	0
2008 TOTAL	0	1	3	4	0	1	1	4	0	2	2	0	0	0
YEAR: 2007														
FIXED / OTHER OBJECT	0	1	0	1	0	1	0	1	0	1	0	0	0	1
TURNING MOVEMENTS	0	0	2	2	0	0	1	2	0	2	0	1	0	0
2007 TOTAL	0	1	2	3	0	1	1	3	0	3	0	1	0	1
YEAR: 2006														
BACKING	0	0	1	1	0	0	0	1	0	0	1	1	0	0
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2006 TOTAL	0	0	2	2	0	0	0	2	0	1	1	2	0	0
YEAR: 2005														
FIXED / OTHER OBJECT	0	0	1	1	0	0	0	1	0	1	0	1	0	0
MISCELLANEOUS	0	0	1	1	0	0	0	1	0	1	0	0	0	0
REAR-END	0	1	0	1	0	6	0	1	0	1	0	0	1	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2005 TOTAL	0	2	2	4	0	7	0	4	0	4	0	2	1	0
YEAR: 2004														
FIXED / OTHER OBJECT	0	0	1	1	0	0	0	0	1	0	1	0	0	1
REAR-END	0	0	1	1	0	0	0	1	0	1	0	0	0	0
2004 TOTAL	0	0	2	2	0	0	0	1	1	1	1	0	0	1
FINAL TOTAL	0	4	11	15	0	9	2	14	1	11	4	5	1	2

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
CONTINUOUS SYSTEM CRASH LISTING

054 UMATILLA-STANFIELD

US 395 (Hwy 054) MP 0.00 to 1.00
January 1, 2004 through December 31, 2008

SER# INVEST	SPED	DARCLK	SWOHK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00272	N	N	N	N	05/04/2006	UMATILLA	1	02		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										32
STATE					Thu	UMATILLA	0	0	COLUMBIA RIVER HY	S		TRF SIGNAL	N	DRY	REAR		PRVTE	S N								001		00
					12P		0.04		UMATILLA-STANFLD HY	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	19	M	OR-Y	052	000		32
																								OR<25				
																02	NONE 0	STOP										
																	GOVMT	S N								011		00
																	PSNGR CAR		01	DRVR	NONE	38	M	OR-Y	000	000		00
																								OR<25				
00457	N	N	N	N	07/22/2006	UMATILLA	1	02		INTER	CROSS	N	N	CLR	O-1STOP	01	NONE 0	BACK										10
STATE					Sat	UMATILLA	0	0	COLUMBIA RIVER HY	S		TRF SIGNAL	N	DRY	BACK		PRVTE	N S								000		00
					10P		0.04		UMATILLA-STANFLD HY	06	0		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	73	M	OTH-Y	011	000		10
																								N-RES				
																02	NONE 0	STOP										
																	PRVTE	S N								011		00
																	MTRCYCLE		01	DRVR	NONE	49	M	OR-Y	000	000		00
																								OR<25				
00498	Y	N	N		08/02/2005	UMATILLA	1	02		STRGHT		Y	N	CLR	S-1STOP	01	NONE 0	STRGHT									013	01
STATE					Tue		0	0		UN	(NONE)	UNKNOWN	N	DRY	REAR		PRVTE	S N								001		00
					2P		0.06			05			N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	44	F	OR-Y	047	000		01
											(04)													OR<25				
																02	NONE 0	STOP										
																	PRVTE	S N								012	013	00
																	PSNGR CAR		01	DRVR	INJB	53	F	OTH-Y	000	000		00
																								N-RES				
																			02	PSNG	INJB	11	M		000	000		00
																03	NONE 0	STOP										
																	PRVTE	S N								012	013	00
																	PSNGR CAR		01	DRVR	INJC	79	M	OR-Y	000	000		00
																								OR<25				
																			02	PSNG	INJC	74	F		000	000		00
																04	NONE 0	STOP										
																	PRVTE	S N								012	013	00
																	PSNGR CAR		01	DRVR	INJB	55	F	OR-Y	000	000		00
																								OR<25				
																05	NONE 0	STOP										
																	PRVTE	S N								012		00
																	PSNGR CAR		01	DRVR	NONE	47	F	OTH-Y	000	000		00
																								N-RES				
00750	N	N	N	N	10/24/2004	UMATILLA	1	02		STRGHT		N	N	CLR	S-STRGHT	01	NONE 0	STRGHT										13
STATE					Sun		0	0		UN	(NONE)	UNKNOWN	N	DRY	REAR		PRVTE	S N								001		00
					12P		0.14			06			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	18	M	OR-Y	052	000		13
											(04)													OR<25				

054 UMATILLA-STANFIELD

US 395 (Hwy 054) MP 0.00 to 1.00
January 1, 2004 through December 31, 2008

SER# INVEST	SPEED	ALCOHOL	DRUG	SCHOOL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST SECOND	STREET STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																		02	NONE 0	STRGHT											
																			PRVTE	S N									000		00
																			PSNGR CAR		01	DRVR	NONE	18	M	OR-Y	000	000			00
																										OR<25					
00927	Y	N	N			12/29/2004	UMATILLA	1	02			STRGHT		N	Y	SNOW	FIX OBJ	01	NONE 0	STRGHT										088	01
STATE						Wed		0	0			UN	(NONE)	UNKNOWN	N	ICE	FIX		PRVTE	N S									001	088	00
						6A		0.25				01			N	DAWN	PDO		PSNGR CAR		01	DRVR	NONE	25	M	OTH-Y	047	000			01
													(04)													N-RES						
00603	N	N	N	N	N	08/23/2007	UMATILLA	1	02			ALLEY		N	N	CLR	S-1TURN	01	NONE 0	STRGHT											08
STATE						Thu		0	0			UN	(NONE)	UNKNOWN	N	DRY	TURN		PRVTE	N S									000		00
						3P		0.68				03			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	20	F	OTH-Y	000	000			00
													(04)													OR<25					
																					02	PSNG	NO<5	02	M		000	000			00
																					03	PSNG	NO<5	01	M		000	000			00
																		02	NONE 0	TURN-R											
																			PRVTE	N W									019		00
																			PSNGR CAR		01	DRVR	NONE	00	M	UNK	006	000			08
																										UNK					
00179	N	N	N	N	N	03/06/2008	UMATILLA	1	02			STRGHT		N	N	CLR	S-1TURN	01	NONE 1	STRGHT											02,07
STATE						Thu		0	0			UN	(NONE)	UNKNOWN	N	DRY	TURN		PRVTE	N S									000		00
						6P		0.69				03			N	DARK	INJ		SEMI TOW		01	DRVR	NONE	45	M	OR-Y	028	000			02,07
													(04)													OR<25					
																		02	NONE 0	TURN-R											
																			PRVTE	N W									019		00
																			PSNGR CAR		01	DRVR	INJC	40	M	OR-Y	000	000			00
																										OR<25					
00655	N	N	N	N	Y	09/26/2007	UMATILLA	1	02			STRGHT		N	Y	CLR	OTH OBJ	01	NONE 0	STRGHT										069	10
STATE						Wed		0	0			UN	(NONE)	OFCR/FLAG	N	DRY	FIX		PRVTE	N S									000	069	00
						11A		0.70				01			N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	31	M	OR-Y	081	028			10
													(04)													OR<25					
00514	N	N	N			08/04/2005	UMATILLA	1	02			INTER	CROSS	N	N	CLR	O-1TURN	01	NONE 0	TURN-L											02
STATE						Thu		0	0			CN		STOP SIGN	N	DRY	TURN		PRVTE	E S									000		00
						7A		0.70				03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	50	M	OR-Y	004	000			02
																										OR<25					
																		02	NONE 0	STRGHT											
																			PRVTE	W E									000		00
																			PSNGR CAR		01	DRVR	INJB	18	F	OR-Y	000	000			00
																										OR<25					
00191	N	N	N	N	N	03/18/2005	UMATILLA	1	02			INTER	3-LEG	N	N	CLD	FIX OBJ	01	NONE 0	STRGHT										057	26
STATE						Fri		0	0			CN		STOP SIGN	N	DRY	FIX		PRVTE	S N									007	057	26
						9A		0.70				04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	27	M	OR-Y	081	000			26
																										OR<25					

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CONTINUOUS SYSTEM CRASH LISTING

054 UMATILLA-STANFIELD

US 395 (Hwy 054) MP 0.00 to 1.00

January 1, 2004 through December 31, 2008

SER# INVEST	SPEED	ALCOHOL	DRUG	SCHOOL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST SECOND	STREET STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00412	N	N	N			06/08/2005	UMATILLA	1	02			STRGHT		N		N	CLR	ANIMAL	01	NONE	0	STRGHT								032	12
STATE						Wed		0	0			UN	(NONE)	UNKNOWN		N	DRY	OTH		PRVTE		S N							001	032	00
						6P		0.90				06				N	DAY	PDO		PSNGR CAR			01	DRVR	NONE	44	M	OR-Y	000	000		12
													(04)															OR<25				
00351	N	N	N	N	N	06/08/2008	UMATILLA	1	02			STRGHT		N		N	CLR	S-STRGHT	01	NONE	0	STRGHT									13
STATE						Sun		0	0			UN	(NONE)	UNKNOWN		N	DRY	SS-O		PRVTE		S N							000		00
						1P		0.92				06				N	DAY	PDO		PSNGR CAR			01	DRVR	NONE	53	M	OR-Y	045	000		13
													(04)															OR<25				
																			02	NONE	0	STRGHT									
																				PRVTE		S N							000	079	00
																				PSNGR CAR			01	DRVR	NONE	29	F	OR-Y	000	000		00
																												OR<25				
00718	N	N	N	N	N	10/02/2007	UMATILLA	1	02			INTER	3-LEG	N		N	CLD	ANGL-OTH	01	NONE	0	TURN-L									02
COUNTY						Tue		0	0			N		UNKNOWN		N	DRY	TURN		PRVTE		W N							000		00
						4P		0.96				05	0			N	DAY	PDO		PSNGR CAR			01	DRVR	NONE	27	F	NONE	028	000		02
																												OR>25				
																			02	NONE	1	STRGHT									
																				PRVTE		S N							000		00
																				SEMI TOW			01	DRVR	NONE	40	M	OTH-Y	000	000		00
																												N-RES				
00201	N	N	N	N	N	03/22/2008	UMATILLA	1	02			STRGHT		N		N	CLD	S-1STOP	01	NONE	0	STRGHT									07
STATE						Sat		0	0			UN	(NONE)	ONE-WAY		N	DRY	REAR		PRVTE		S N							000		00
						12P		1.00				04				N	DAY	PDO		PSNGR CAR			01	DRVR	NONE	20	M	OTH-Y	043	000		07
													(02)															N-RES				
																			02	NONE	0	STOP									
																				PRVTE		S N							012		00
																				PSNGR CAR			01	DRVR	NONE	55	F	OR-Y	000	000		00
																												OR<25				
00228	N	N	N	N	N	04/06/2008	UMATILLA	1	02			STRGHT		N		N	CLR	ANIMAL	01	NONE	0	STRGHT								035	12
STATE						Sun		0	0			UN	(NONE)	NONE		N	DRY	OTH		PRVTE		S N							000	035	00
						10P		1.00				04				N	DARK	PDO		PSNGR CAR			01	DRVR	NONE	26	F	OR-Y	000	000		12
													(04)															OR<25				

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

US 730 (Hwy 002) @ Brownell Boulevard
January 1, 2004 through December 31, 2008

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: 2007														
REAR-END	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2007 TOTAL	0	1	0	1	0	1	0	1	0	1	0	1	0	0
YEAR: 2006														
TURNING MOVEMENTS	0	0	1	1	0	0	1	1	0	0	1	1	0	0
2006 TOTAL	0	0	1	1	0	0	1	1	0	0	1	1	0	0
FINAL TOTAL	0	1	1	2	0	1	1	2	0	1	1	2	0	0

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
CONTINUOUS SYSTEM CRASH LISTING

002 COLUMBIA RIVER

US 730 (Hwy 002) @ Brownell Boulevard
January 1, 2004 through December 31, 2008

SER# INVEST	SPED	DALC	RSUGLS	CWHOLR	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00110	N	N	N		02/10/2007	UMATILLA	1	02		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NO RPT					Sat	UMATILLA	0	0	BROWNELL BLVD	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E W									000		00
					11A		184.03		6TH ST	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	61	F	OR-Y		026	000		07
																								OR<25					
																02	NONE 0	STOP											
																	PRVTE	E W									011		00
																	PSNGR CAR		01	DRVR	INJC	25	M	OR-Y		000	000		00
																								OR<25					
00880	N	N	N		12/21/2006	UMATILLA	1	02		INTER	CROSS	N	N	CLR	S-OTHER	01	NONE 1	TURN-R											08
NO RPT					Thu	UMATILLA	0	0	BROWNELL BLVD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N W									000		00
					5P		184.03		6TH ST	01	1		N	DLIT	PDO		SEMI TOW		01	DRVR	NONE	00	M	OTH-Y		007	000		08
																								N-RES					
																02	NONE 0	TURN-R											
																	PRVTE	N W									000		00
																	PSNGR CAR		01	DRVR	NONE	25	M	OR-Y		000	000		00
																								OR<25					

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

US 730 (Hwy 002) @ Bud Draper Road
January 1, 2004 through December 31, 2008

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

US 730 (Hwy 002) @ I-82 (Hwy 070) Northbound Ramps
January 1, 2004 through December 31, 2008

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: 2008														
TURNING MOVEMENTS	0	1	0	1	0	3	0	1	0	1	0	1	0	0
2008 TOTAL	0	1	0	1	0	3	0	1	0	1	0	1	0	0
YEAR: 2004														
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2004 TOTAL	0	1	0	1	0	1	0	1	0	1	0	1	0	0
FINAL TOTAL	0	2	0	2	0	4	0	2	0	2	0	2	0	0

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
CONTINUOUS SYSTEM CRASH LISTING

002 COLUMBIA RIVER

US 730 (Hwy 002) @ I-82 (Hwy 070) Northbound Ramps
January 1, 2004 through December 31, 2008

SER# INVEST	SPED	ALCS	DRUG	SCHL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00900	N	N	N			12/19/2004	UMATILLA	1	02		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
NO RPT						Sun	UMATILLA	0	0	6TH ST	CN		STOP SIGN	N	DRY	TURN		PRVTE	W E									000		00
						2P		184.17		NB EX 6TH ST C2	04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	45	F	OR-Y	000		000		00
																									OR<25					
																	02	NONE 0	TURN-L											
																		PRVTE	SW W									015		00
																		PSNGR CAR		01	DRVR	NONE	36	F	OTH-Y	028		000		02
																									N-RES					
00245	N	N	N			04/16/2008	UMATILLA	1	02		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
NO RPT						Wed	UMATILLA	0	0	6TH ST	CN		STOP SIGN	N	DRY	TURN		PRVTE	W E									000		00
						5P		184.17		NB EX 6TH ST C2	04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	22	F	OR-Y	000		000		00
																									OR<25					
																				02	PSNG	INJC	22	M		000		000		00
																				03	PSNG	INJC	01	M		000		000		00
																	02	NONE 0	TURN-L											
																		PRVTE	SW W									015		00
																		PSNGR CAR		01	DRVR	NONE	20	M	OTH-Y	028		000		02
																									N-RES					

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

US 730 (Hwy 002) @ I-82 (Hwy 070) Southbound Ramps
January 1, 2004 through December 31, 2008

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: 2008														
REAR-END	0	0	1	1	0	0	0	1	0	0	1	1	0	0
2008 TOTAL	0	0	1	1	0	0	0	1	0	0	1	1	0	0
YEAR: 2007														
REAR-END	0	0	3	3	0	0	1	3	0	3	0	3	0	0
2007 TOTAL	0	0	3	3	0	0	1	3	0	3	0	3	0	0
YEAR: 2006														
NON-COLLISION	0	0	1	1	0	0	1	0	1	0	1	1	0	1
REAR-END	0	0	1	1	0	0	0	0	1	1	0	1	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2006 TOTAL	0	0	3	3	0	0	1	1	2	2	1	3	0	1
YEAR: 2005														
REAR-END	0	0	1	1	0	0	0	1	0	0	1	1	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2005 TOTAL	0	0	2	2	0	0	0	2	0	1	1	2	0	0
YEAR: 2004														
REAR-END	0	0	1	1	0	0	1	1	0	1	0	1	0	0
2004 TOTAL	0	0	1	1	0	0	1	1	0	1	0	1	0	0
FINAL TOTAL	0	0	10	10	0	0	3	8	2	7	3	10	0	1

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
CONTINUOUS SYSTEM CRASH LISTING

002 COLUMBIA RIVER

US 730 (Hwy 002) @ I-82 (Hwy 070) Southbound Ramps
January 1, 2004 through December 31, 2008

SER# INVEST	SPED	DALC	RUSC	SGHL	WOR K	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00728	Y	N	N			11/07/2005	UMATILLA	1	02		INTER	CROSS	N		N CLR	S-1STOP	01	NONE 0	STRGHT											01
NO RPT						Mon	UMATILLA	0	0	6TH ST	E		TRF SIGNAL		N DRY	REAR		PRVTE	E W									001		00
						6P		184.08		SB EX 6TH ST C1	06	0			N DUSK	PDO		PSNGR CAR		01	DRVR	NONE	30	F	OR-Y		026	000		01
																									OR<25					
																	02	NONE 0	STOP											
																		PRVTE	E W									011		00
																		PSNGR CAR		01	DRVR	NONE	29	M	OR-Y		000	000		00
																									OR<25					
00088	N	N	N			01/28/2007	UMATILLA	1	02		INTER	CROSS	N		N CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE						Sun	UMATILLA	0	0	6TH ST	E		L-TURN REF		N DRY	REAR		PRVTE	E W									000		00
						3P		184.08		SB EX 6TH ST C1	06	0			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	31	F	OR-Y		014	000		07
																									OR<25					
																				02	PSNG	NO<5	03	M			000	000		00
																	02	NONE 0	STOP											
																		PRVTE	E W									012		00
																		PSNGR CAR		01	DRVR	NONE	00	F	OR-Y		000	000		00
																									OR<25					
00299	N	N	N			04/19/2007	UMATILLA	1	02		INTER	CROSS	N		N CLR	S-1STOP	01	NONE 0	STRGHT											10
NO RPT						Thu	UMATILLA	0	0	6TH ST	E		TRF SIGNAL		N DRY	REAR		PRVTE	E W									000		00
						4P		184.08		SB EX 6TH ST C1	06	0			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	54	M	OR-Y		026	000		10
																									OR<25					
																	02	NONE 0	STOP											
																		PRVTE	E W									011		00
																		PSNGR CAR		01	DRVR	NONE	68	F	OR-Y		000	000		00
																									OR>25					
00220	N	N	N			04/15/2008	UMATILLA	1	02		INTER	CROSS	N		N CLR	S-1STOP	01	NONE 0	STRGHT											07
NO RPT						Tue	UMATILLA	0	0	6TH ST	E		TRF SIGNAL		N DRY	REAR		PRVTE	E W									000		00
						11P		184.08		SB EX 6TH ST C1	06	0			N DLIT	PDO		PSNGR CAR		01	DRVR	NONE	28	F	OR-Y		026	000		07
																									OR<25					
																	02	NONE 0	STOP											
																		PRVTE	E W									011		00
																		PSNGR CAR		01	DRVR	NONE	41	M	OR-Y		000	000		00
																									OR<25					
00683	N	N	N	N	N	10/19/2006	UMATILLA	1	02		INTER	CROSS	N		Y RAIN	NON-COLL	01	NONE 0	TURN-R										020,010,028	11
STATE						Thu	UMATILLA	0	0	6TH ST	SE		TRF SIGNAL		N WET	NCOL		PRVTE	W SE									000	020,010,028	11
						7A		184.08		SB EF 6TH ST C1	06	0			N DAWN	PDO		TRUCK		01	DRVR	NONE	23	M	OR-Y		017	000		12
																									OR<25					
00288	N	N	N			05/20/2005	UMATILLA	1	02		INTER	CROSS	N		N CLR	ANGL-OTH	01	NONE 0	STRGHT											04
NO RPT						Fri	UMATILLA	0	0	6TH ST	CN		TRF SIGNAL		N DRY	TURN		PRVTE	E W									000		00
						8A		184.08		SB EX 6TH ST C1	01	0			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	42	F	OR-Y		020	000		04
																									OR<25					

002 COLUMBIA RIVER

US 730 (Hwy 002) @ I-82 (Hwy 070) Southbound Ramps
January 1, 2004 through December 31, 2008

SER# INVEST	SPEED	ALCOHOL	DRUGS	SCHOOL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																	02	NONE 0 PRVTE PSNGR CAR	TURN-L N E	01	DRVR	NONE	43	F	OR-Y OR<25	000	000	000	00 00
00412 NO RPT	N	N	N			07/01/2006 Sat 7P	UMATILLA UMATILLA	1 0 184.08	02 0	6TH ST SB EF 6TH ST C1	INTER CN 01	CROSS 0	N TRF SIGNAL	N N N	CLR DRY DAY	ANGL-OTH TURN PDO	01	NONE 1 PRVTE PSNGR CAR	STRGHT E W	01	DRVR	NONE	59	M	OTH-Y N-RES	020	000	000	22 22 04
																	02	NONE 1 PRVTE PSNGR CAR	TURN-L NW E	01	DRVR	NONE	36	M	OR-Y OR>25	000	000	000	00 00

070 MCNARY

US 730 (Hwy 002) @ I-82 (Hwy 070) Southbound Ramps
January 1, 2004 through December 31, 2008

SER# INVEST	SPEED	ALCOHOL	DRUG	SCHOOL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
00305	N	N	N			04/25/2004	UMATILLA	1	09	1	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										10
NO RPT						Sun	UMATILLA	6	0	6TH ST	NE		TRF SIGNAL	N	DRY	REAR		PRVTE	N S									000	00
						11A		0.99		SB EX 6TH ST C1	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	62	M	OTH-Y	026	000	10
																									N-RES				
																	02	NONE 1	STOP										
																		PRVTE	N S									011	00
																		SEMI TOW		01	DRVR	NONE	40	M	OTH-Y	000	000	00
																									N-RES				
00394	Y	N	N			06/13/2006	UMATILLA	1	01	1	INTER	CROSS	N	N	FOG	S-1STOP	01	NONE 0	STRGHT										01
NO RPT						Tue	UMATILLA	6	0	6TH ST	NE		TRF SIGNAL	N	WET	REAR		PRVTE	NE SW									001	00
						10A		0.99		SB EX 6TH ST C1	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	83	M	OR-Y	026	000	01
																									OR>25				
																	02	NONE 0	STOP										
																		PRVTE	NE SW									011	00
																		PSNGR CAR		01	DRVR	NONE	19	F	OTH-Y	000	000	00
																									N-RES				
00715	N	N	N	N	N	10/01/2007	UMATILLA	1	09	1	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 1	STRGHT										07
STATE						Mon	UMATILLA	6	0	SB EX 6TH ST C1	NE		REG-SIGN	N	DRY	REAR		PRVTE	NE SW									000	00
						5P		0.99		6TH ST	06	0		N	DAY	PDO		SEMI TOW		01	DRVR	NONE	48	M	OTH-Y	014	000	07
																									N-RES				
																	02	NONE 0	STOP										
																		PRVTE	NE SW									011	00
																		PSNGR CAR		01	DRVR	NONE	61	F	OR-Y	000	000	00
																									OR<25				

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

US 730 (Hwy 002) @ Lind Road
January 1, 2004 through December 31, 2008

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

US 730 (Hwy 002) @ Scaplehorn Road
January 1, 2004 through December 31, 2008

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

US 730 (Hwy 002) @ Umatilla River Road aka River Road
January 1, 2004 through December 31, 2008

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: 2008														
NON-COLLISION	0	1	0	1	0	1	0	1	0	1	0	1	0	0
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	1	1	0	1	0	1	0	0
2008 TOTAL	0	1	1	2	0	1	1	2	0	2	0	2	0	0
YEAR: 2005														
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2005 TOTAL	0	0	1	1	0	0	0	1	0	1	0	1	0	0
FINAL TOTAL	0	1	2	3	0	1	1	3	0	3	0	3	0	0

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
CONTINUOUS SYSTEM CRASH LISTING

002 COLUMBIA RIVER

US 730 (Hwy 002) @ Umatilla River Road aka River Road
January 1, 2004 through December 31, 2008

SER# INVEST	SPEED	ALCOHOL	DRUG	SCHOOL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00658	N	N	N			10/27/2005	UMATILLA	1	02		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	TURN-L											02
NONE						Thu	UMATILLA	0	0	RIVER RD	CN		STOP SIGN	N	DRY	TURN		PRVTE	SE W									015		00
						4P		183.66		6TH ST	02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	UNK		028	000		02
																									OR<25					
																	02	NONE 0	TURN-L											
																		PRVTE	E SE									000		00
																		PSNGR CAR		01	DRVR	NONE	57	F	OR-Y		000	000		00
																									OR<25					
00614	N	N	N			09/27/2008	UMATILLA	1	02		INTER	CROSS	N	N	CLR	NON-COLL	01	NONE 0	STRGHT											26
NO RPT						Sat	UMATILLA	0	0	RIVER RD	CN		UNKNOWN	N	DRY	NCOL		PRVTE	W E									007		26
						6P		183.66		6TH ST	03	0		N	DAY	INJ		MTRCYCLE		01	DRVR	INJC	43	M	OR-Y		000	000		26
																									OR<25					
00544	N	N	N			08/27/2008	UMATILLA	1	02		INTER	CROSS	N	N	CLR	S-STRGHT	01	NONE 1	TURN-L											02
NO RPT						Wed	UMATILLA	0	0	RIVER RD	CN		STOP SIGN	N	DRY	SS-O		PRVTE	W N									000		00
						1P		183.66		6TH ST	04	0		N	DAY	PDO		SEMI TOW		01	DRVR	NONE	33	M	OR-Y		028	000		02
																									OR<25					
																	02	NONE 0	STRGHT											
																		PRVTE	W E									000		00
																		PSNGR CAR		01	DRVR	NONE	27	F	OR-Y		000	000		00
																									OR<25					

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

US 730 (Hwy 002) @ US 395 (Hwy 054)
January 1, 2004 through December 31, 2008

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: 2008														
REAR-END	0	1	0	1	0	1	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	0	1	1	0	1	0	0
2008 TOTAL	0	1	1	2	0	1	0	1	1	2	0	2	0	0
YEAR: 2007														
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	2	1	3	0	4	0	3	0	1	2	3	0	0
2007 TOTAL	0	2	2	4	0	4	0	4	0	2	2	4	0	0
YEAR: 2006														
BACKING	0	0	1	1	0	0	0	1	0	0	1	1	0	0
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	1	1	0	1	0	1	0	0
2006 TOTAL	0	0	3	3	0	0	1	3	0	2	1	3	0	0
YEAR: 2005														
TURNING MOVEMENTS	0	1	0	1	0	2	1	1	0	1	0	1	0	0
2005 TOTAL	0	1	0	1	0	2	1	1	0	1	0	1	0	0
YEAR: 2004														
ANGLE	0	0	1	1	0	0	0	0	1	1	0	1	0	0
2004 TOTAL	0	0	1	1	0	0	0	0	1	1	0	1	0	0
FINAL TOTAL	0	4	7	11	0	7	2	9	2	8	3	11	0	0

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
CONTINUOUS SYSTEM CRASH LISTING

002 COLUMBIA RIVER

US 730 (Hwy 002) @ US 395 (Hwy 054)
January 1, 2004 through December 31, 2008

SER# INVEST	SPED	ALCS	DRUG	SCHL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF- CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00486	N	N	N			07/09/2007	UMATILLA	1	02		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE						Mon	UMATILLA	0	0	COLUMBIA RIVER HY	N		TRF SIGNAL	N	DRY	REAR		PRVTE	N S											00
						11A		184.87		UMATILLA-STANFLD HY	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	42	F	OR-Y	014	000			00
																									OR<25					
																	02	NONE 0	STOP											
																		PRVTE	N S								011			00
																		PSNGR CAR		01	DRVR	NONE	67	M	OTH-Y	000	000			00
																									N-RES					
00424	N	N	N			06/15/2007	UMATILLA	1	06		INTER	3-LEG	N	N	CLR	O-OTHER	01	NONE 0	TURN-R											08
NO RPT						Fri	UMATILLA	0	0	COLUMBIA RIVER HY	E		L-TURN REF	N	DRY	TURN		PRVTE	S E								000			00
						10P		184.87		UMATILLA-STANFLD HY	06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	55	M	OR-Y	001	000			08
																									OR<25					
																	02	NONE 0	STRGHT											
																		PRVTE	E W								000			00
																		PSNGR CAR		01	DRVR	INJC	44	F	OR-Y	000	000			00
																									OR<25					
																				02	PSNG	INJB	06	M		000	000			00
																				03	PSNG	INJB	03	F		000	000			00
00260	N	N	N			04/17/2008	UMATILLA	1	06		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE						Thu	UMATILLA	0	0	COLUMBIA RIVER HY	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E W								000			00
						1P		184.87		UMATILLA-STANFLD HY	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	F	OTH-Y	014	000			07
																									N-RES					
																	02	NONE 0	STOP											
																		PRVTE	E W								011			00
																		PSNGR CAR		01	DRVR	INJC	66	M	OR-Y	000	000			00
																									OR<25					
00374	Y	N	N	N	N	06/10/2008	UMATILLA	1	02		INTER	CROSS	N	N	RAIN	ANGL-STP	01	NONE 0	TURN-L										124	01
STATE						Tue	UMATILLA	0	0	COLUMBIA RIVER HY	S		TRF SIGNAL	N	WET	TURN		PRVTE	E S								000	124		00
						2P		184.87		UMATILLA-STANFLD HY	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	18	F	OR-Y	083	017			01
																									OR<25					
																	02	NONE 0	STOP											
																		PRVTE	S N								012			00
																		PSNGR CAR		01	DRVR	NONE	68	M	OR-Y	000	000			00
																									OR<25					
00922	N	N	N			12/29/2004	UMATILLA	1	02		INTER	CROSS	N	N	FOG	ANGL-OTH	01	NONE 0	STRGHT									010		02
NO RPT						Wed	UMATILLA	0	0	COLUMBIA RIVER HY	CN		TRF SIGNAL	N	WET	ANGL		PRVTE	S N								000	010		00
						11A		184.87		UMATILLA-STANFLD HY	02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	49	M	OTH-Y	000	000			00
																									N-RES					
																	02	NONE 0	STRGHT											
																		PRVTE	E W								000			00
																		PSNGR CAR		01	DRVR	NONE	00	M	UNK	028	000			02
																									UNK					

002 COLUMBIA RIVER

US 730 (Hwy 002) @ US 395 (Hwy 054)
January 1, 2004 through December 31, 2008

SER# INVEST	SPEED	ALCOHOL	DRUG	SCHOOL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00683	N	N	N			10/07/2005	UMATILLA	1	02		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 1	STRGHT											04
NO RPT						Fri	UMATILLA	0	0	COLUMBIA RIVER HY	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	W E									000		22
						10A		184.87		UMATILLA-STANFLD HY	04	0		N	DAY	INJ		SEMI TOW		01	DRVR	NONE	39	M	OR-Y		020	000		04
																									OR<25					
																	02	NONE 0	TURN-L											
																		PRVTE	S W									000		00
																		PSNGR CAR		01	DRVR	INJB	16	M	OR-Y		000	000		00
																									OR<25					
																				02	PSNG	INJA	46	M			000	000		00
00287	N	N	N			05/15/2006	UMATILLA	1	02		INTER	CROSS	N	N	CLR	O-1TURN	01	NONE 0	STRGHT											02
NONE						Mon	UMATILLA	0	0	COLUMBIA RIVER HY	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	W E									000		00
						2P		184.87		UMATILLA-STANFLD HY	04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	45	M	OR-Y		000	000		00
																									OR<25					
																	02	LOG 1	TURN-L											
																		PRVTE	E S									000		00
																		SEMI TOW		01	DRVR	NONE	56	M	OTH-Y		004	000		02
																									N-RES					
00412	N	N	N			06/09/2007	UMATILLA	1	02		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											04,33
COUNTY						Sat	UMATILLA	0	0	COLUMBIA RIVER HY	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	W E									000		00
						11P		184.87		UMATILLA-STANFLD HY	04	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	42	M	SUSP		020,073,052	000		04,33
																									OR>25					
																	02	NONE 0	TURN-L											
																		PRVTE	S W									000		00
																		PSNGR CAR		01	DRVR	NONE	33	M	OTH-Y		000	000		00
																									N-RES					
00905	N	N	N	N	N	12/08/2007	UMATILLA	1	06		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											04
STATE						Sat	UMATILLA	0	0	COLUMBIA RIVER HY	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	W E									000		00
						8A		184.87		UMATILLA-STANFLD HY	04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	51	F	OR-Y		020	000		04
																									OR<25					
																	02	NONE 0	TURN-L											
																		PRVTE	S W									000		00
																		PSNGR CAR		01	DRVR	NONE	57	M	OR-Y		000	000		00
																									OR<25					

054 UMATILLA-STANFIELD

US 730 (Hwy 002) @ US 395 (Hwy 054)
January 1, 2004 through December 31, 2008

SER# INVEST	SPEED	ALCOHOL	DRUGS	SCHOOL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00272	N	N	N	N	N	05/04/2006	UMATILLA	1	02		INTER	CROSS	N		N	CLR	S-1STOP	01	NONE 0	STRGHT										32
STATE						Thu	UMATILLA	0	0	COLUMBIA RIVER HY	S		TRF SIGNAL		N	DRY	REAR		PRVTE	S N								001	00
						12P		0.04		UMATILLA-STANFLD HY	06	0			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	19	M	OR-Y	052	000	32
																										OR<25			
																		02	NONE 0	STOP									
																			GOVMT	S N								011	00
																			PSNGR CAR		01	DRVR	NONE	38	M	OR-Y	000	000	00
																										OR<25			
00457	N	N	N	N	N	07/22/2006	UMATILLA	1	02		INTER	CROSS	N		N	CLR	O-1STOP	01	NONE 0	BACK										10
STATE						Sat	UMATILLA	0	0	COLUMBIA RIVER HY	S		TRF SIGNAL		N	DRY	BACK		PRVTE	N S								000	00
						10P		0.04		UMATILLA-STANFLD HY	06	0			N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	73	M	OTH-Y	011	000	10
																										N-RES			
																		02	NONE 0	STOP									
																			PRVTE	S N								011	00
																			MTRCYCLE		01	DRVR	NONE	49	M	OR-Y	000	000	00
																										OR<25			

Appendix E

Technical Memorandum #5– Environmental Technical Memorandum

anderson perry & associates, inc.

MEMO

DRAFT

To:	I-82/US 730 Interchange Area Management Plan TAC
From:	Shelly Schmidt, Anderson·Perry & Associates, Inc. SS
Subject:	**Environmental Technical Memorandum**
Date:	April 16, 2010
Job/File No.	863-112-31
cc:	Matt Hughart, Kittelson and Associates, Inc.

This technical memorandum is the fifth in a series of memoranda being prepared for the I-82/US 730 Interchange Area Management Plan (IAMP). This memorandum is a preliminary step in the overall natural resource documentation process. It documents the environmental baseline along with the potential environmental issues and constraints as they relate to the IAMP alternatives design. Land use and rights-of-way (ROW) are addressed in a separate technical memorandum. Additional investigation, permits, etc., will be necessary during the project design engineering phase.

INTERCHANGE AREA MANAGEMENT PLAN STUDY AREA

The study area for the I-82/US 730 IAMP was selected on a review of the surrounding roadway network and land use patterns, existing and future travel patterns, input from the Technical Advisory Committee (TAC) and Public Advisory Committee (PAC), the Oregon Department of Transportation (ODOT), the City of Umatilla, 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-82/US 730 interchange.

For the purpose of this technical memorandum, the environmental study area was limited to a 200-foot corridor beyond the existing ROW (see Figure 1). Exceptions include the 2-mile radius searches in the Oregon Natural Heritage Information Center (ORNHIC) database for known threatened or endangered species and a 1-mile radius search in the State Historic Preservation Office (SHPO) records for cultural resources.

ENVIRONMENTAL BASELINE CONDITIONS

Socioeconomics and Environmental Justice. Socioeconomics and environmental justice issues are primarily concerned with disproportionately impacting low-income, minority, and elderly communities within a project area. The IAMP study area does not contain elderly, low-income, or minority communities, according to the U.S. Census Bureau (U.S. Census, 2000). There are two residential areas adjacent to or included in the IAMP study area, based on the site visit. The first is located on the east side of I-82, south of 3rd Avenue. This

residential area is immediately adjacent to the IAMP study area, northeast of the I-82/US 730 intersection. The other residential area includes the Umatilla RV Park located immediately adjacent to Hwy 730 on the west end of the IAMP study area (see Figure 1).

Clean Water Act Section 404/Wetlands/Waters of U.S. Based on the site visit, National Wetland Inventory (NWI) maps, and Local Wetland Inventory (LWI) maps, there are no wetlands located within the IAMP study area (USFWS, 2010). The Brownell Ditch runs through the study area from southwest to northeast. This ditch is a concrete-lined irrigation canal that runs from the Columbia River to the holding pond southwest of the IAMP study area. Pumps then move water from the storage pond to the West Extension Canal. Any overflow is returned to the Umatilla River. The Brownell Ditch may be considered jurisdictional by both the Oregon Department of State Lands (DSL) and the U.S. Army Corps of Engineers (USACE) because of the direct connection to both the Columbia River and the Umatilla River. A site visit on April 15, 2010, revealed a wetland complex associated with the ditch on the north end of the IAMP study area under the I-82 bridge.

Water Quality. The IAMP study area is located adjacent to the Columbia River and approximately 500 feet from the Umatilla River. The Umatilla River is listed on the Oregon Department of Environmental Quality (DEQ) 303(d) list for water quality limited streams for alkalinity, ammonia, antimony, arsenic, barium, beryllium, cadmium, chloride, chlorophyll a, chromium, copper, dissolved oxygen, E. coli, fecal coliform, iron, lead, manganese, nickel, pH, phosphate, phosphorus, sedimentation, selenium, silver, temperatures, and zinc (DEQ, 2004/2006).

Endangered Species Act/Threatened and Endangered Species. A request for a search of the ORNHIC database was submitted on March 12, 2010. The response received on April 1, 2010, identified two federally threatened species within a 2-mile radius of the IAMP study area: Middle Columbia River steelhead (*Oncorhynchus mykiss*) and Columbia River bull trout (*Salvelinus confluentus*). The IAMP study area does not contain any threatened or endangered species or designated critical habitat. The Brownell Ditch, which runs through the project area, is screened and does not contain fish (ODFW, 2010; Boyce, 1986). According to the Oregon Department of Fish and Wildlife (ODFW), Brownell Ditch has not taken water from the Umatilla River in 10 years and the intake was screened at that time. The water is now taken from the Columbia River and the intake is screened (ODFW, 2010).

Cultural Resources. The IAMP study area is considered a high probability area for cultural resources. This is largely because of the proximity to the confluence of the Columbia River and the Umatilla River, and the existing relatively flat landform. Umatilla has been known to be a gathering place both before white settlement and after. Research conducted in SHPO records and the National Register of Historic Places indicated nearly 30 cultural resource sites and 15 isolated finds within a 1-mile radius of the IAMP study area (Churchill, 2010).

Visual Resources. There are no sensitive visual areas such as parks, scenic highways, or viewpoints within the IAMP study area. The Lewis and Clark Commemorative Trail, a soccer

field, and basketball court are in view of the interchange, along with the Oregon Visitors Center, but the existing visual setting already includes the existing I-82/US 730 interchange. Views of the proposed project from public spaces are possible along I-82 and US 730 and the commercial developments adjacent to the existing interchange. There are residences adjacent to the IAMP study area but, as mentioned earlier, the existing visual setting already includes the existing I-82/US 730 interchange.

Section 4(f) and Section 6(f)(3). Section 4(f) is a special provision included in the Department of Transportation Act of 1966, which identifies that the Federal Highway Administration (FHWA) and state transportation departments cannot approve the use of publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites without determining (1) there is no feasible and prudent alternative to using the land; and (2) the proposed project includes all possible measures to minimize impacts to the property if avoidance is not feasible (FHWA, 2010). Section 6(f)(3) refers to the rules and regulations of the Land and Water Conservation Fund Act and associated property acquired or developed for public outdoor recreation with those funds. The purpose of Section 6(f) is to prevent property from being converted from outdoor recreation to any other use. There are no Section 6(f)(3) resources located within the IAMP study area. The Lewis and Clark Commemorative Trail is located within the IAMP study area on the northwest corner. This trail is paved and contains interpretive signs and a kiosk within the IAMP study area and immediately adjacent. The trail ties into a soccer field and basketball court with public restrooms outside of the IAMP study area. The McNary Wildlife Natural Area lies at the north end of the IAMP study area; however, the boundary appears to be outside the actual study area. Until an in-depth cultural resource survey is conducted, it is unknown whether cultural resources occur in the project area. If the survey should locate an historic or prehistoric site within the IAMP study area, a Section 4(f) analysis would be required.

Air and Noise. The IAMP study area is not located within an air quality nonattainment area or maintenance area (DEQ, 2010c). A nonattainment area is a region where pollutant concentrations exceed the National Ambient Air Quality Standards (NAAQS). According to the Oregon Department of Transportation (ODOT) Air Quality Manual, "if a project is located within the nonattainment or maintenance area boundary, it is subject to conformity analysis requirements. Conformity compliance does not always involve quantitative, or even qualitative, analysis but always requires documentation of compliance" (ODOT, 2008).

Due to the nature of the IAMP study area, ambient noise levels are already fairly high given the proximity to both I-82 and Hwy 730, the truck stop, the ODOT weigh station, the commercial and industrial land use in the area, and the railroad that crosses the IAMP study area on the north end. According to the ODOT Noise Manual, "noise studies are required for Environmental Impact Statements (EIS) and Environmental Assessments (EA) whenever an additional through travel lane is proposed to an existing highway, a highway will be constructed on a new alignment, an acoustically significant change in the horizontal or vertical alignment of the roadway occurs, or when the project itself results in a traffic noise impact. An acoustically significant change is defined as a change of 2-3 decibels. In addition, a noise study may be done for

other Class 1 or 3 projects if the project team feels that noise is an issue that should be addressed" (ODOT, 2009).

HAZMAT. Results of the Leaking Underground Storage Tank (LUST), the Underground Storage Tank (UST), and the Environmental Cleanup Site Information (ECSI) database search revealed one site within the IAMP study area. This site, called "Buck's Corner," has been identified as a potential petroleum brown field and is located on the southeast corner of Hwy 730 and Hwy 395. The site operated as a service station and truck stop for 33 years and has been inactive for the last 8 to 10 years. Four documented releases and at least three soil removals occurred between 1989 and 1991. There are three aboveground storage tanks (ASTs) on the property. This site is also on the Confirmed Release Site list (DEQ, 2010a; DEQ, 2010b). In addition, there are two gas stations near the west end of the IAMP study area, the Shell station at the intersection signals and the Tesoro station.

POTENTIAL ENVIRONMENTAL ISSUES/PERMITS AND POSSIBLE ADDITIONAL ACTIONS

Clean Water Act Section 404/Wetlands/Waters of U.S. A Section 404 Permit and a Removal/Fill Permit may be needed if the project crosses the Brownell Ditch or impacts the wetlands on the north end of the IAMP study area. Clear-spanning the Brownell Ditch would be the preferred option to avoid impacts and eliminate the need for the permits.

Cultural Resources. The SHPO records search revealed nearly 30 cultural resources sites within a 1-mile radius of the IAMP study area. Locations of known cultural resources sites, along with coordination with the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) should be included as part of the alternative design process to avoid known sites to the extent possible.

Section 4(f). Given the amount of cultural resources and the Lewis and Clark Commemorative Trail within and adjacent to the IAMP study area, a Section 4(f) analysis will be required as part of the environmental review for the project if these facilities are impacted. These resources should be considered during the alternative design to avoid impacting them to the extent possible.

Socioeconomic and Environmental Justice. Care should be taken when designing alternatives to avoid creating a disproportionately high and adverse effect on minority or low-income populations (if any) and the two residential areas of concern mentioned earlier.

HAZMAT. There is a HAZMAT site at the intersection of Hwy 395 and US 730 at the east end of the IAMP study area. This property and the potential issues associated with impacting it should be taken into consideration during the alternative design.

REFERENCES

Boyce, Raymond. R. (1986). Oregon Department of Fish and Wildlife, A Comprehensive Plan for Rehabilitation of Anadromous Fish Stocks in the Umatilla River Basin, Final Report to Bonneville Power Administration, Contract No. 1984BP18008, Project No. 198401000, 282 pages (BPA Report DOE/BP-18008-1). <http://www.efw.bpa.gov/egi-bin/efw/FW/publications.cgi.>

Churchill, Tom (2010). I-82/US 730 Interchange Area Management Plan Archival Background Research Results (SHPO). 15 April 2010.

Federal Highway Administration (FHWA) (2010). Environmental Review Toolkit–Section 4(f). 1 April 2010. <http://www.environment.fhwa.dot.gov/4f/index.asp>

Oregon Natural Heritage Information Center (ORNHIC). Data Records Search for Rare, Threatened, and Endangered Plant and Animal Records for I-82/US 730 IAMP. 1 April 2010.

Oregon Department of Environmental Quality (DEQ) (2010a). Underground Storage Tank Cleanup Database Search. 22 March 2010. <http://www.deq.state.or.us/lq/tanks/lust/LustPublicList.asp>

Oregon Department of Environmental Quality (DEQ) (2010b). Environmental Quality Cleanup Site Information (ECSI). 22 March 2010. <http://www.deq.state.or.us.lq//ecsi/ecssilist.asp>

Oregon Department of Environmental Quality (DEQ) (2010c). Air Quality Maintenance and Nonattainment Areas. 23 March 2010. <http://www.deq.state.or.us/aq/planning/maintenance.htmStreamNet (2010)>

Oregon Department of Environmental Quality (DEQ) (2004/2006). Water Quality Assessment - Oregon's 2004/2006 Integrated Report Database. 14 April 2010. <http://www.deq.state.or.us/wq/assessment>

Oregon Department of Fish and Wildlife (ODFW) (2010). Personal communication between Bill Duke, District Fish Biologist and Shelly Schmidt, Biologist at Anderson·Perry & Associates, Inc., 13 April 2010.

Oregon Department of Transportation (ODOT) (2009). Noise Manual March 2009, 1 April 2010.
<ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Environmental/Procedural%20Manuals/Air%20and%20Noise/ODOT%20Noise%20Manual.pdf>

Oregon Department of Transportation (ODOT) (2008). Air Quality Manual 26 September 2008, 1 April 2010 <ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Environmental/Procedural%20Manuals/Air%20and%20Noise/ODOT%20Air%20Quality%20Manual.pdf.

U.S. Fish and Wildlife Service (USFWS) (2010a). National Wetland Inventory Map. Online Mapper. Umatilla, Oregon. 19 March 2010. <http://www.fws.gov/wetlands/Data/mapper.html>.

U.S. Fish and Wildlife Service (USFWS) (2010b). Species List for Umatilla County. 22 March 2010.

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Enclosures
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Appendix F

Technical Memorandum #6 – Future Land Use and Transportation Conditions

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TECHNICAL MEMORANDUM #6

I-82 / US 730 Interchange Area Management Plan

Future Land Use and Transportation Conditions

Date: June 9, 2010 Project #: 10369.0

To: Teresa Penninger, ODOT; JR Cook, City of Umatilla

From: Matt Hughart, AICP, Nick Foster, & Marc Butorac, PE, PTOE

cc: Technical Advisory Committee (TAC)
Public Advisory Committee (PAC)

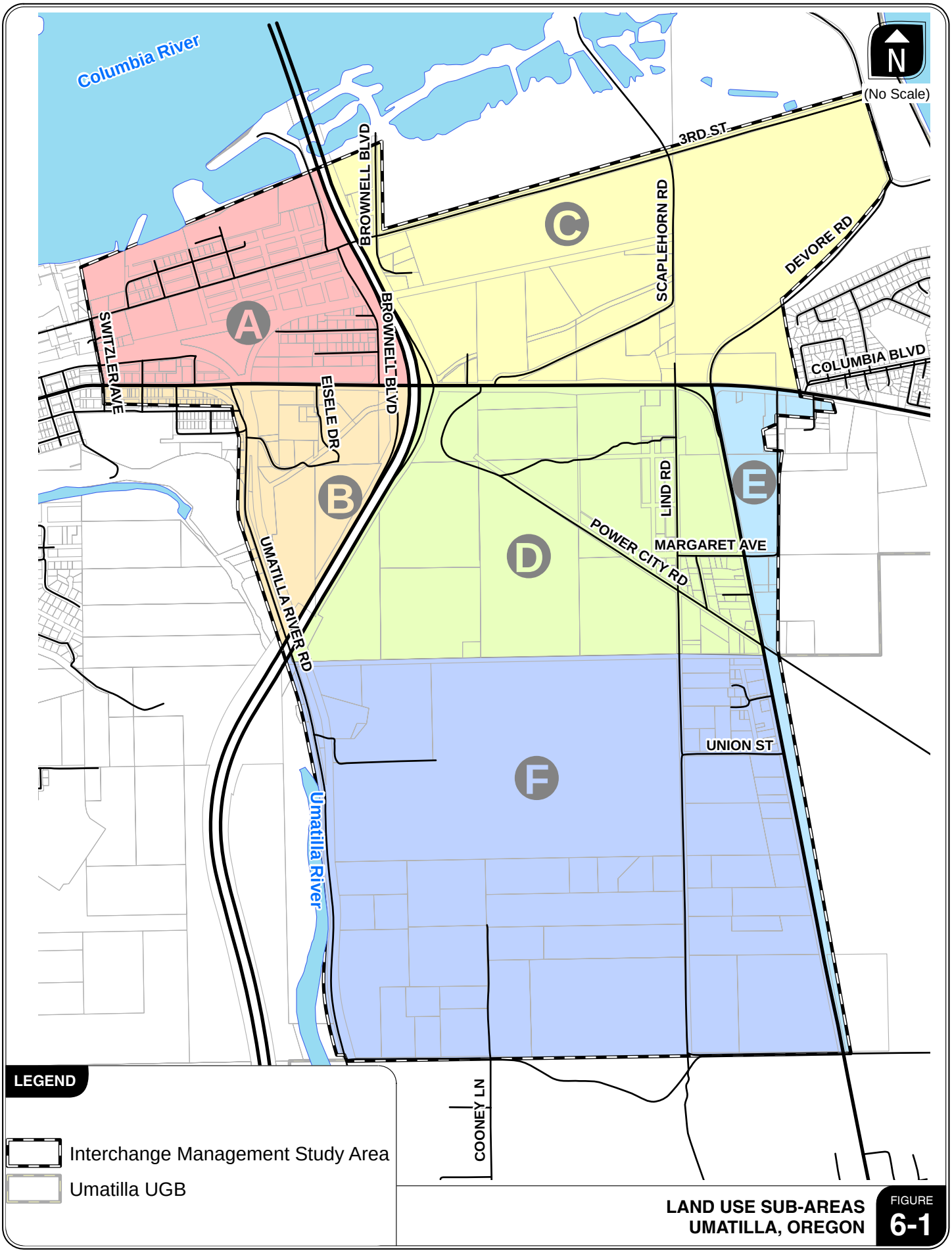
This memorandum documents the future land use as well as the forecast traffic operations in the vicinity of the I-82/US 730 interchange. Two future land use scenarios were developed for the purposes of projecting traffic conditions, in addition to the assumed regional growth outside of the Interchange Management Study Area (IMSA). The first land use scenario (Land Use Scenario #1) focuses on a reasonable full build-out of all vacant or re-developable land within the study area using the current City of Umatilla and Umatilla County zoning. Recognizing the potential for future City annexation and land use intensification in various parts of the study area, a second future sensitivity land use scenario (Land Use Scenario #2) was developed for informational purposes and to help the City establish future annexation thresholds. Both land use scenarios were assessed in year 2030 assuming no improvements are made to the transportation system.

FUTURE LAND USES

The analysis of future land uses within the vicinity of the I-82 / US 730 interchange was focused on parcels that are expected to have development or redevelopment potential that would generate traffic within the I-82/US 730 interchange study area. The IMSA defined in Figure 6-1 includes land both inside and outside the city limits and contains a variety of land uses, including commercial, residential, light industrial, general rural, and exclusive farm use. *Attachment "A" includes the tax lot data provided by Umatilla County.*

Sub-Area Analysis

For the purposes of forecasting future development potential and access alternatives, the study area has been divided into six sub-areas, as illustrated in Figure 6-1. The sub-areas were defined based on current zoning (shown in Figure 6-2), the travel shed served, and point of primary



LAND USE SUB-AREAS
UMATILLA, OREGON

FIGURE 6-1

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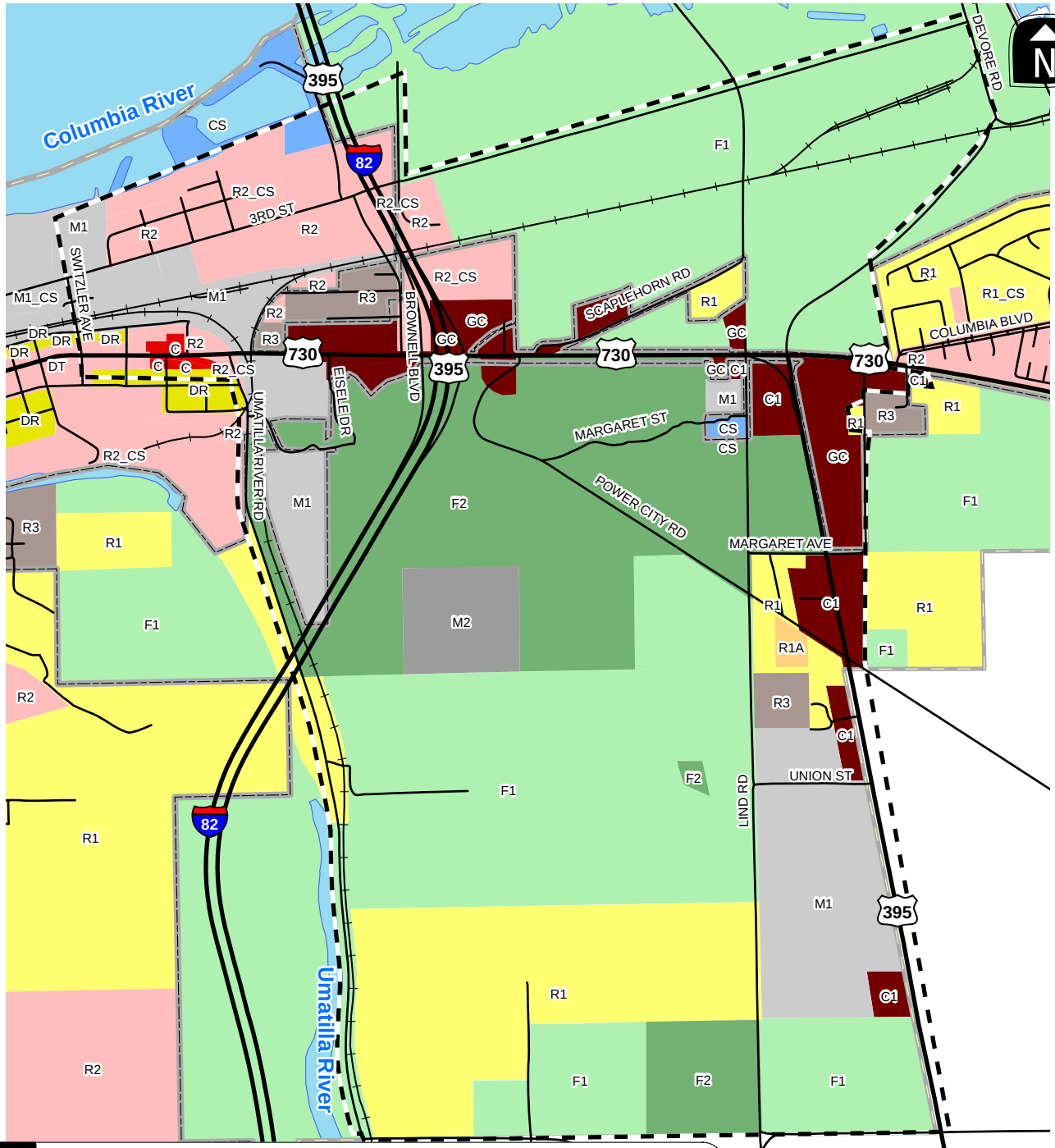

LEGEND

- Land Use Study Area
- Umatilla UGB
- Umatilla City Limits

Zone

- Commercial (C)
- Community Service (CS)
- Downtown Residential (DR)
- Downtown Transitional (DT)
- Exclusive Farm Use (F1)
- General Commercial (C1, GC)
- General Rural (F2)
- Heavy Industrial (M2)
- Light Industrial (M1)
- Residential, Multi-Family - Apartments (R3)
- Residential, Multi-Family (R2)
- Single Family Residential (R1)
- Two Acre Residential (R1A)

STUDY AREA ZONING
UMATILLA, OREGON

FIGURE **6-2**

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access to the regional transportation network.

Sub-Area "A"

Sub-area "A" is located in the northwest corner of the IMSA and is bordered by I-82 to the east, US 730 to the south, the Columbia River to the north, and Switzler Avenue to the east. The majority of land within Sub-Area "A" is within the City of Umatilla city limits and is zoned R-2 (Multi-Family Residential), M-1 (Light Industrial), or GC (General Commercial). A small section of land that is Umatilla County zoned R-3 (Multi-Family Residential) resides just north of the GC zone. Vacant/re-developable land in Sub-Area "A" is limited to the R-2 and M-1 zones.

Sub-Area "B"

Sub-Area "B" is located in the southwest corner of the IMSA and is bordered by I-82 to the east, US 730 to the north, and Umatilla River Road to the south and west. With the exception of City zoned GC and M-1 land along the US 730 and Umatilla River Road corridors, the majority of the remaining land in Sub-Area "B" is Umatilla County zoned F-2 (General Rural).

Sub-Area "C"

Sub-Area "C" is located in the northeast corner of the IMSA and is bordered by US 730 to the south, I-82 to the west, the Columbia River to the north, and the McNary residential area to the east. The vast majority of Sub-Area "C" is comprised of Umatilla County zoned F-1 (Exclusive Farm Use) land. Some smaller pockets of City zoned R-1 (Single-Family Residential), R-2, and GC land exists along the US 730 corridor and along Scaplehorn Road.

Sub-Area "D"

Sub-Area "D" is located in the southeast corner of the IMSA and is bordered by US 730 to the north, I-82 to the west, US 395 to the east, and Union Street to the south. Almost all of the land within Sub-Area "D" is outside the Umatilla City limits and is zoned primarily under the Umatilla County F-1, M-1, M-2, and C-1 (Commercial) zones.

Sub-Area "E"

Sub-Area "E" is located in the southeast quadrant of the US 730/US 395 intersection. Known locally as Buck's Corner, all of the land within this Sub-Area is located in the Umatilla City limits and is zoned GC.

Sub-Area "F"

Sub-Area "F" is located directly south of Sub-Area "D" and is bordered on the west by Umatilla River Road, on the south by Bensel Road, and on the east by US 395. Much of this land is Umatilla

County zoned F-1 and F-2 and is not likely to develop or redevelop within the timeframe of this study. Therefore no additional development or redevelopment was examined in this sub-area.

FUTURE TRAFFIC CONDITIONS

Based on the potential levels of development and redevelopment in the land use sub-areas described above, and factoring in regional growth from outside the IMSA, future year 2030 traffic conditions were estimated along the study area roadways for both Land Use Scenario #1 and Land Use Scenario #2.

YEAR 2030 NO-BUILD TRAFFIC VOLUMES FORECAST METHODOLOGY

Year 2030 "No-Build" traffic volume forecasts for intersection turning movements and street segments were developed in order to analyze the effects of traffic growth on the I-82 / US 730 interchange and the surrounding transportation system. The year 2030 No-Build scenario was developed based on the currently adopted City of Umatilla and Umatilla County comprehensive plans. The remainder of this section describes the methodology and assumptions used to develop year 2030 forecasts.

Future year 2030 no-build traffic volumes were developed by considering the following traffic growth through year 2030:

- Future traffic growth related to development and redevelopment of land in the vicinity of the I-82/US 730 Interchange (including sub-areas "A" through "E").
- Future traffic related to regional growth within the larger context of the City of Umatilla, Umatilla County, and along the US 730, US 395, and I-82 corridors.

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

Development and Redevelopment Traffic – Land Use Scenario #1

Based on a detailed review of the study area and conversations with City staff, Table 6-1 identifies the estimated re-developable acreage in each sub-area, its corresponding zoning, and the primary points of access to the regional transportation network.

Table 6-1 Future Conditions Sub-Area Analysis Zones – Land Use Scenario #1

Sub-area	Zoning Classifications	Estimated Re-Developable Land (Acres)	Non-Buildable (Acres)	Net Total Re-Developable Land (Acres)	Primary Access
A	GC (City)	0[1]	0	0	
	R-2 (City)	31.00	0	31.00	Brownell Boulevard and 3rd Street
	M-1 (City)	25.63	12.15[3]	13.48	3rd Street
	R-3 (County)	0[2]	0	0	
B	GC (City)	0[2]	0	0	
	M-1 (City)	0[2]	0	0	
	F-2 (County)	57.04	49.42[4]	7.62	Eisele Drive
C	GC (City)	15.10	9.00[2]	6.10	US 730 and Scaplehorn Road
	R-2 (City)	13.09	10.90[5]	2.19	3rd Street
	R-1 (City)	6.40	0	6.40	Scaplehorn Road
	F-1 (County)	453.20	453.20[2]	0	
D	F-1 (County)	34.30	0	34.30	Power City Road & Lind Road
	F-2 (County)	175.50	175.50[2,5]	0	
	M-1 (County)	4.80	4.80[2]	0	
	M-2 (County)	35.70	35.70[6]	0	Power City Road & Margaret St
	C-1 (County)	7.80	0	7.80	Lind Road
E	GC (City)	27.00	10.00[3]	17.00	US 730 and US 395
Total		886.56	760.67	125.89	

[1]This land is currently occupied by the Port of Entry
[2]Land is currently built out or owned/occupied by an existing use that is likely to remain in the long-term
[3]Portion of the land is likely constrained by geographic, environmental, or cultural resources
[4]Future intensification of development likely inhibited due to lack of access across irrigation canal
[5]Future development likely limited by presence of utility towers and powerline easements
[6]Future intensification of development likely inhibited due to lack of water infrastructure

As shown in Table 6-1, portions of sub-areas 'A', 'C', and 'E' have the greatest potential for development and each gain access to the I-82/US 730 interchange via direct or indirect connections to US 730. To account for local traffic growth attributed to the development in these sub-areas, the project team assumed future land uses based on current zoning and calculated the reasonable build-out trip-generating potential of the properties.

The reasonable build-out trip-generation potential of each parcel was estimated using a two-step approach. Step one included reducing the developable or re-developable area (summarized in Table 6-1) by 20 percent to account for utility and roadway right-of-way. Step two applied a Floor Area Ratio (FAR) of 0.25 for commercial zones and 0.40 for industrial lands. Table 6-2 provides a summary of the development assumed to occur under this process.

Table 6-2 I-82/US 730 Development Assumptions – Land Use Scenario #1

Land Use	Total Re-Developable Land (Acres)	Industrial or Commercial				Residential	
		Utilities and ROW (20%)	Net Re-developable Land Area (Acres)	FAR	Size (1,000 Sq. Feet GLA)	Allowable Density	Units
Sub-Area "A"							
R-2 Multi-Family	31.00					[1]	**31-acre Athletic Field Complex[1]**
M-1 Light Industrial	13.48	(2.70)	10.78	0.40	**188**		
Sub-Area "B"							
F-2 (County General Rural)	7.62					0.05 unit/ acre	**10,000 of Industrial Storage Yard[2]**
Sub-Area "C"							
GC General Commercial	6.10	(1.22)	4.88	0.25	**53**		
R-2 Multi-Family Residential	2.19					12.4 units/acre	**27 Apartments**
R-1 Single Family Residential	6.40					5.4 units/acre	**34 homes**
Sub-Area "D"							
F-1 Exclusive Farm use	34.30					0.05 units/ acre	**2 homes**
C-1 General Commercial	7.80	(1.56)	6.24	0.25	**68**		
Sub-Area "E"							
GC General Commercial	17.00	(3.40)	13.60	0.25	**148**		
Total	125.89	(8.88)	35.50		**457**		

[1]Although zoned for multi-family residential, discussions with City staff concluded that this site is likely better suited for recreational athletic fields which is an allowed conditional use under the R-2 zoning.
[2]Given the location of the F-2 zoned land near the US 730 corridor, it was assumed that the site is less desirable for residential uses and more appropriate for a higher intensive use such as an industrial storage yard.

Based on the information contained in Table 6-2, the trip generation potential for each of the land uses was calculated for the weekday p.m. peak hour using the 8th Edition of *Trip Generation*, published by the Institute of Transportation Engineers (ITE, Reference 1). The total trip generation potential of Land Use Scenario #1 was estimated to be 832 total net new trip ends (371 incoming and 461 outgoing) during the weekday p.m. peak hour. *Attachment "B" contains the estimates of net new trips generated by each sub-area.* The assumed distribution patterns of trips

generated within each sub-area were based on the existing zoning, existing travel patterns, and relative attractions within the overall study area.

Future Sensitivity Analysis – Land Use Scenario #2

Based on discussions with the City of Umatilla, it is likely that the City will pursue annexation and land use modifications for portions of the study area at some point beyond the development and adoption of the IAMP. The purpose of the land use modifications would be to incorporate additional land into the city limits and rezone it for new commercial (general and highway oriented uses) and industrial purposes. Given that the IAMP can only forecast future traffic based on current adopted land use regulations, a second future sensitivity land use scenario was developed in an attempt to quantify traffic impacts from this potential land use intensification process. The theoretical intensification of land use and the traffic that it would potentially generate could then be used to quantify the impacts to future interchange improvements and help the City establish land use modification thresholds if and when they decide to pursue that endeavor.

To help quantify the degree of potential land use intensification, conversations were had with City staff regarding where the land use modifications would most likely occur. From this feedback, it was generally concluded that land uses in Sub-Areas "C" and "D" are best suited for future city annexation and land use intensification. To account for local traffic growth attributed to the intensification of land uses, the project team calculated the reasonable build-out trip-generating potential of the properties. The development assumptions are described in Table 6-3.

Table 6-3 I-82/US 730 Development Assumptions – Land Use Scenario #2

Land Use	Total Re-Developable Land (Acres)	Industrial or Commercial				Residential	
		Utilities and ROW (20%)	Net Re-developable Land Area (Acres)	FAR	Size (1,000 Sq. Feet GLA)	Allowable Density	Units
Sub-Area "A"							
R-2 Multi-Family	31.00					[1]	**31-acre Athletic Field Complex[1]**
M-1 Light Industrial	13.48	(2.70)	10.78	0.40	**188**		
Sub-Area "B"							
F-2 (County General Rural)	7.62					0.05 unit/ acre	**10,000 of Industrial Storage Yard[2]**
Sub-Area "C"							
GC General Commercial	6.10	(1.22)	4.88	0.25	**53**		
R-2 Multi-Family Residential	2.19					12.4 units/acre	**27 Apartments**
R-1 Single Family Residential	6.40					5.4 units/acre	**34 homes**
GC General Commercial	11.60	(2.32)	9.28	0.25	**101**		
Sub-Area "D"							
F-1 Exclusive Farm use	34.30					0.05 units/ acre	**2 homes**
C-1 General Commercial	7.80	(1.56)	6.24	0.25	**68**		
GC General Commercial	24.50	(4.90)	19.60	0.25	**171**		
M-1 Light Industrial	11.50	(2.30)	9.20	0.40	**160**		
Sub-Area "E"							
GC General Commercial	17.00	(3.40)	13.60	0.25	**148**		
Total	173.43	(18.40)	73.58		**889**		

[1]Although zoned for multi-family residential, discussions with City staff concluded that this site is likely better suited for recreational athletic fields which is an allowed conditional use under the R-2 zoning.
[2]Given the location of the F-2 zoned land near the US 730 corridor, it was assumed that the site is less desirable for residential uses and more appropriate for a higher intensive use such as an industrial storage yard.

Based on the information contained in Table 6-3, the trip generation potential for each of the land uses was calculated for the weekday p.m. peak hour in the same manner as was done for Land Use Scenario #1. The total trip generation potential of Land Use Scenario #2 was estimated to be 1,382 total net new trip ends (596 incoming and 786 outgoing) during the weekday p.m. peak hour. *Attachment "B" contains the estimates of net new trips generated by each sub-area*. This represents an increase of 550 net new weekday p.m. peak hour trip ends, an approximately 66% increase, due to the increased development assumed in Land Use Scenario #2. The assumed distribution patterns of trips generated within each sub-area were based on the existing zoning, existing travel patterns, and relative attractions within the overall study area.

Background Traffic Growth

The proposed annual growth rates were determined based on a review of ODOT's Future Year Volume Tables, historical ADT counts, and future development assumptions within the study area. The growth was applied to the existing traffic volumes shown in Technical Memorandum #3/4 to obtain future year forecast volumes.

US 730 & US 395

An annual Local Growth rate was applied to the existing through volumes along US 730, all turning movements at the I-82 ramp terminals, and turning movements to/from US 395. Based on a review of ODOT's Future Volume Tables (which are based on historic traffic volumes), a Local Growth rate was estimated for the I-82/US 730 IMSA based on three data point locations along the US 730 corridor as shown in Table 6-4. Upon reviewing the data points, the project team and ODOT staff concluded that an annual growth rate of 1.3% is the most reasonable and conservative estimate for the study corridor given the degree of variation in the other two data points. Therefore, through traffic volumes on US 730 from 2009 will be increased by 27% to the forecast year 2030.

Table 6-4 Background Growth Rate Calculations on US 730

Mile Point	Location	Average Annual Daily Traffic		R-Squared Value	Per Year Growth Rate (2008-2028)[1]
		2008	2028		
~~183.63~~	~~0.50 mile west of I-82~~	~~8,300~~	~~9,600~~	~~0.58~~	~~0.8%~~
184.63	0.50 mile east of I-82	10,100	12,800	0.76	1.3%
~~184.97~~	~~0.10 mile east of US 395~~	~~7,700~~	~~10,100~~	~~0.89~~	~~1.6%~~

[1] Per Year Growth Rate = [(2028 AADT– 2008 AADT) / (2008 AADT)] / (2028 – 2008)

I-82

The I-82 Traffic Growth rate will be applied to the existing through traffic volumes to forecast future traffic projections for I-82. A review of Traffic Volume Tables on I-82 north and south of the

I-82 / US 730 interchange indicates that the interstate traffic volume have been increasing over the past 10 years. Based on a review of ODOT's Future Volume Tables (which are based on historic traffic volumes), a background growth rate was estimated for I-82 near the US 730 interchange. Two data points on I-82 were used in the calculation, one on each side of the interchange. To determine a growth rate estimate, volumes for the year 2008 were compared with ODOT's 2028 estimates. Table 6-5 illustrates the estimated growth rates.

Table 6-5 Background Growth Rate Calculations on I-82

Mile Point	Location	Average Annual Daily Traffic		R-Squared Value	Per Year Growth Rate (2008-2028)[1]
		2008	2028		
0.58	Umatilla Bridge ATR 0.58 mile south of Oregon-Washington State line	16,400	18,700	0.96	0.7%
1.30	0.30 mile south of US 730	10,400	12,400	0.90	1.0%
Average					**0.85%**

[1] Per Year Growth Rate = [(2028 AADT– 2008 AADT) / (2008 AADT)] / (2028 – 2008)

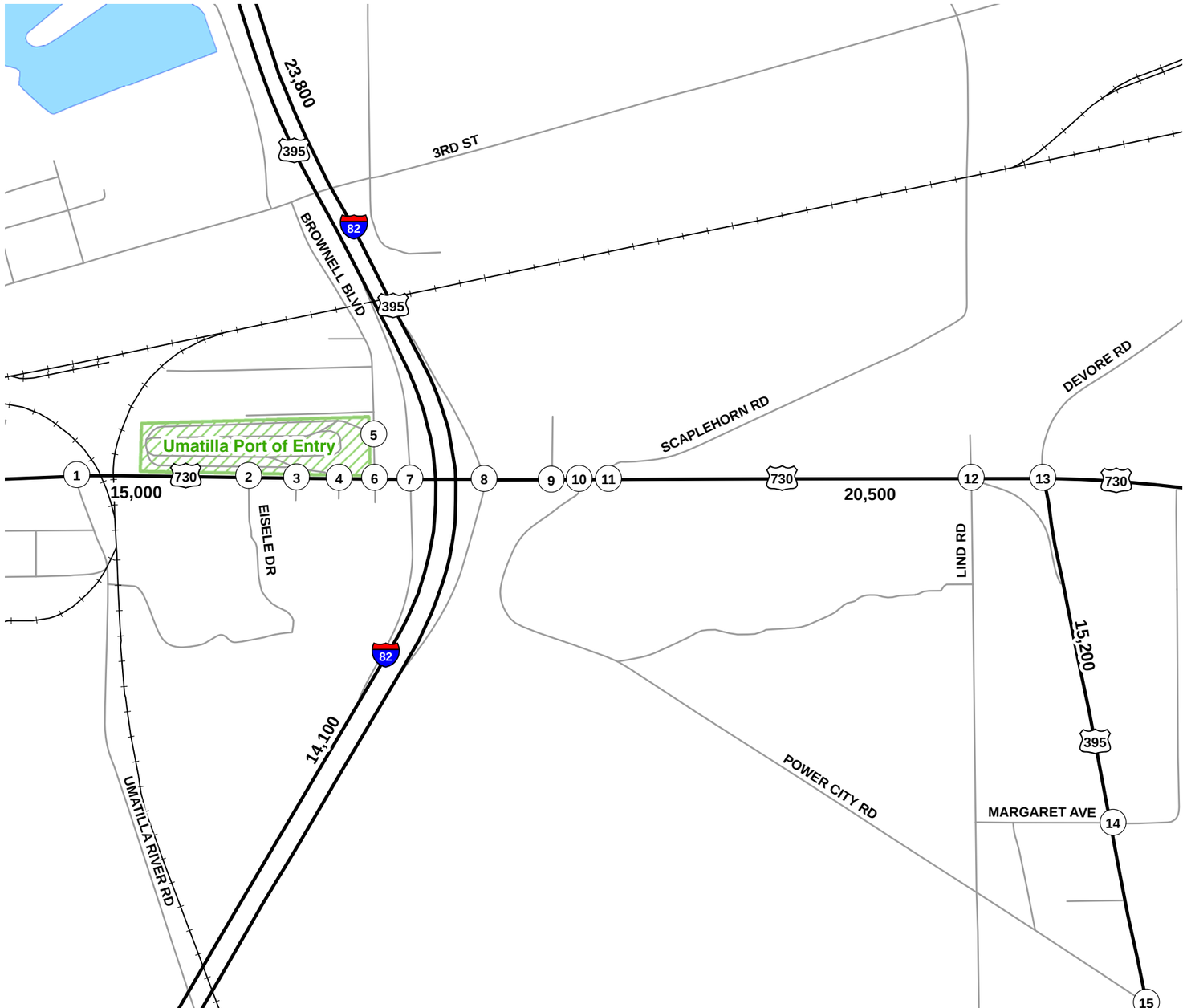
The R-Squared Value indicates the degree of correlation between the dependent variable (historical traffic volume) and the independent variable (time). ODOT's Analysis Procedures Manual (Reference 2) states that values over 0.75 are preferred, which indicates that the chosen locations are acceptable for this analysis. As shown in Table 6-5, a 0.85% annual growth rate was identified for background traffic volumes on I-82 in the vicinity of the US 730 Interchange. Therefore, through traffic volumes on I-82 from 2009 will be increased by 18% to the forecast year 2030.

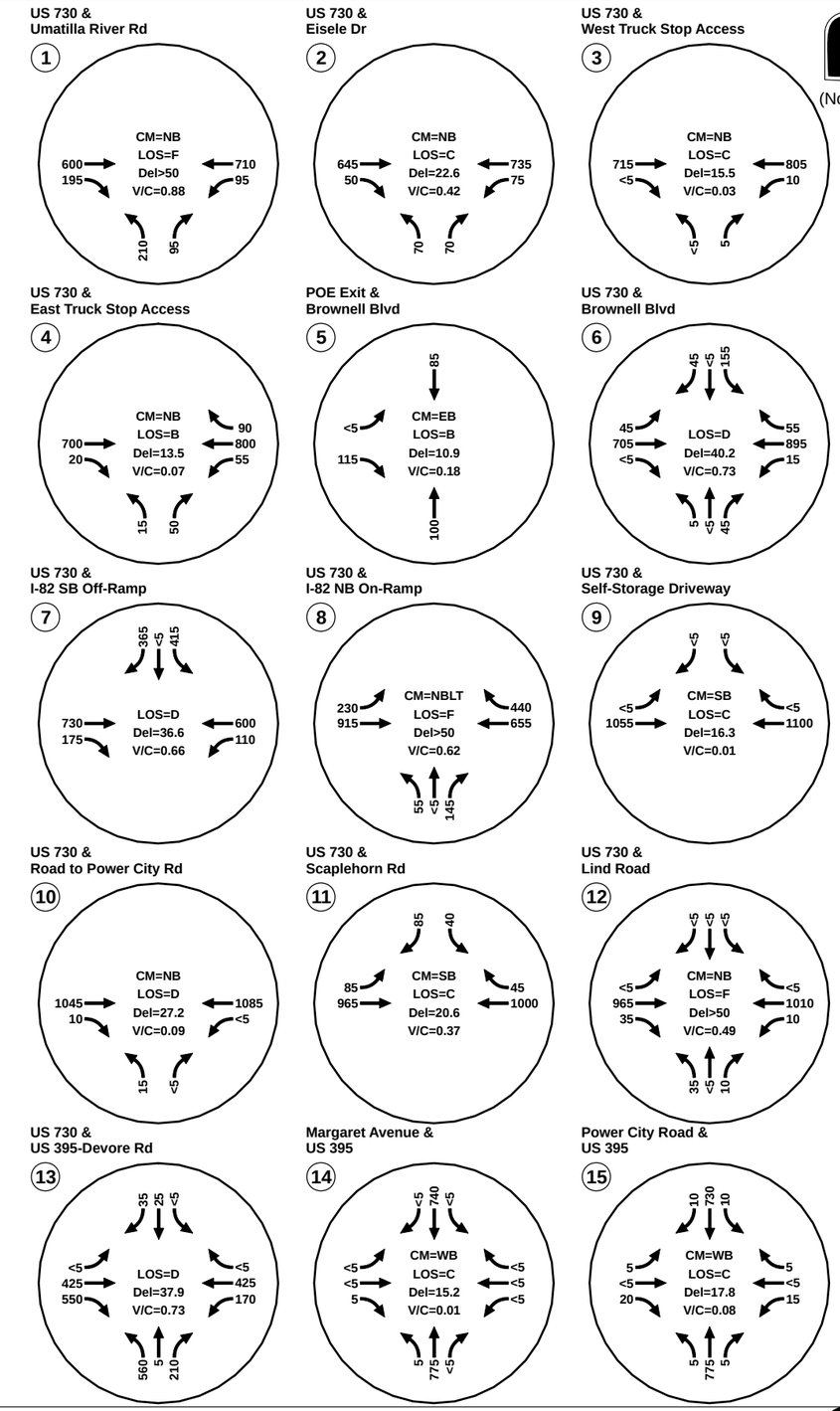
PLANNED TRANSPORTATION IMPROVEMENTS

In general, there are no transportation improvements inside the IMSA that are identified in ODOT's Statewide Transportation Improvement Plan (STIP) or Umatilla County's Transportation System Plan. However, the City of Umatilla's Transportation System Plan has identified the need for signalization of the US 730/Umatilla River Road intersection when warranted by traffic volumes. There are currently no plans to install a traffic signal at this location in the near future.

YEAR 2030 NO-BUILD TRAFFIC CONDITIONS

Future year 2030 No-Build weekday p.m. peak hour traffic volumes were determined for each future scenario by applying growth rates and trip generation estimates to the existing traffic network. The resulting year 2030 No-Build weekday p.m. peak hour traffic volumes for Land Use Scenarios #1 and #2 are shown in Figures 6-3 and 6-4, respectively.





LEGEND

15,000 = APPROXIMATE ADT VOLUME

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

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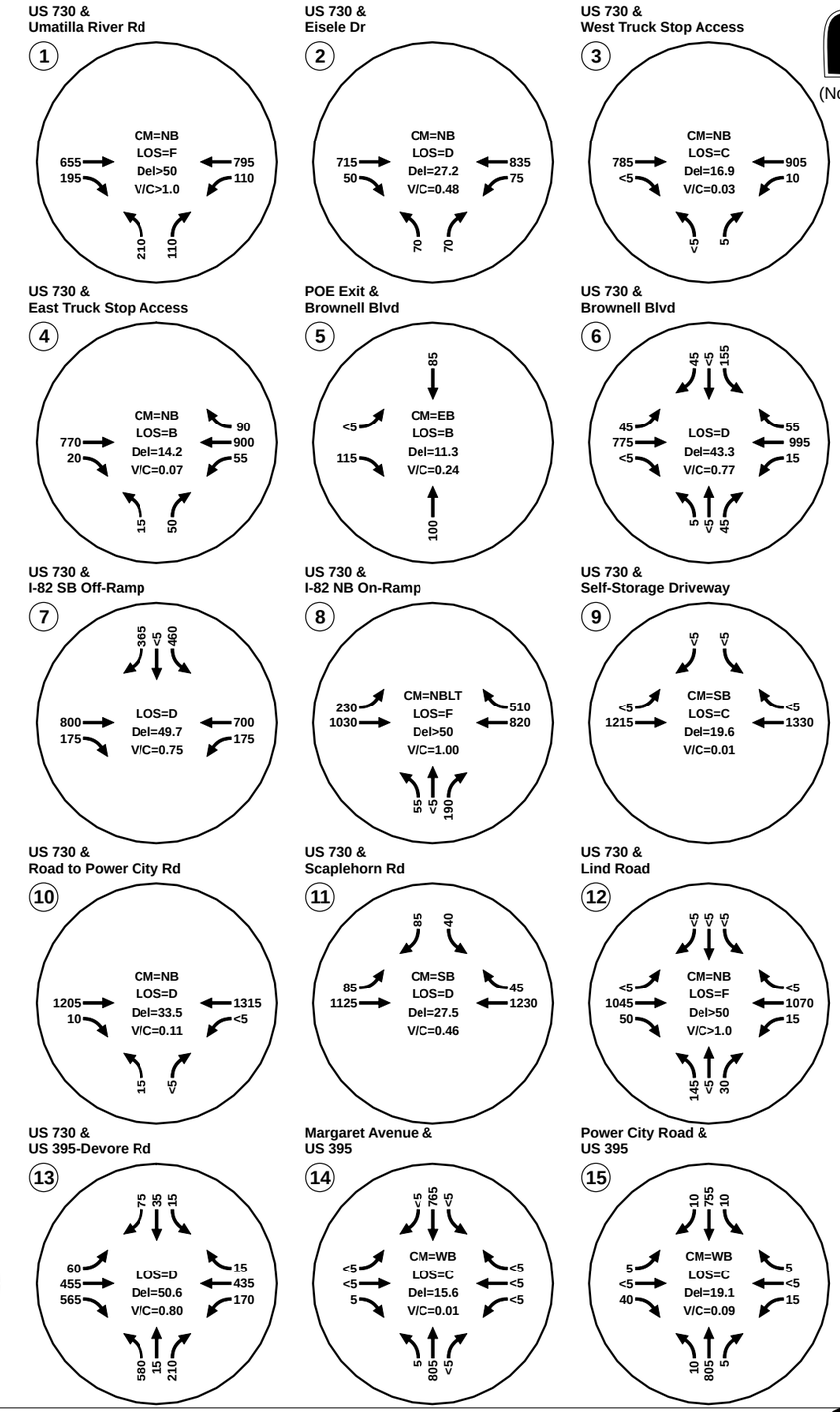
YEAR 2030 TRAFFIC CONDITIONS - LAND USE SCENARIO #1
30TH HIGHEST HOUR
UMATILLA, OREGON

FIGURE **6-3**



LEGEND

15,000 = APPROXIMATE ADT VOLUME

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 2030 TRAFFIC CONDITIONS - LAND USE SCENARIO #2
30TH HIGHEST HOUR
UMATILLA, OREGON

FIGURE **6-4**

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All operational analyses were performed in accordance with the procedures stated in the 2000 *Highway Capacity Manual* (Reference 3). The Oregon Highway Plan (OHP, Reference 4) sets operational standards based on volume-to-capacity (v/c) ratios for the interchange ramp terminals (v/c of 0.80 for the northbound ramp terminal and 0.85 for the southbound ramp terminal), intersections of US 730 (v/c of 0.85 between Brownell Boulevard and Sloan Avenue and v/c of 0.70 east of I-82), and US 395 (v/c of 0.70). These standards apply to the overall v/c ratio at signalized intersections and to the state highway approaches at unsignalized intersections. The minor street approaches that are stop-controlled at unsignalized intersections have a standard of a v/c ratio of 0.90.

Traffic operations analyses were performed for the study intersections using the forecast year 2030 "No-Build" weekday p.m. peak hour traffic volumes for Land Use Scenarios #1 and #2, as shown in Figures 6-3 and 6-4, respectively. Table 6-6 below summarizes the deficiencies projected under each scenario. *Attachment "C" includes a summary of the 2030 No-Build operational analyses worksheets.*

Table 6-6 Forecast Deficiencies

Intersection	Land Use Scenario #1	Land Use Scenario #2	Land Use Scenario #1	Land Use Scenario #2
	Fails to Meet Applicable OHP Standard		Meets Standard, but Lengthy Delays[1]	
US 730/Umatilla River Rd		X	X	
US 730/Brownell Blvd			X	X
US 730/I-82 SB Ramps			X	X
US 730/I-82 NB Ramps		X	X	
US 730/Lind Rd		X	X	
US 730/US 395-Devore Rd	X	X		
US 730/New Driveway to Development		X		

[1]Level-of-service "D" or worse for signalized intersections and LOS "E" or worse for unsignalized intersections

As Table 6-6 shows, the US 730/US 395-Devore Road intersection is forecast to operate over the applicable OHP mobility standard under both scenarios. The left-turn from the I-82 Northbound ramp terminal onto US 730 is forecast to operate with lengthy delays (LOS "F") under both scenarios. However, the OHP mobility standard is based on v/c ratio and this movement is forecast to have an acceptable v/c ratio under Land Use Scenario #1. The Umatilla River Road and Lind Road intersections, along with the new driveway to additional development assumed under Land Use Scenario #2, are forecast to not meet their applicable OHP mobility standard under Land Use Scenario #2 as well.

It is important to note that these results examine the intersections in isolation. Issues related to queue spillback and signal coordination between the closely spaced signalized I-82 Southbound ramp terminals and Brownell Boulevard intersections were discussed in Technical Memorandum #3/4. These problems that exist today will be exacerbated by the increasing traffic volumes at these intersections if no improvements are made.

Detailed alternatives for addressing the forecast deficiencies will be provided in Technical Memorandum #7. These alternatives may include the realignment of intersections to improve spacing, changes to the interchange ramp configuration to better accommodate critical traffic flows, signalization of intersections, and changes to land use patterns that might help alleviate traffic demand at the interchange.

SUMMARY OF YEAR 2030 FUTURE YEAR CONDITIONS

The year 2030 No-Build forecasts and analysis resulted in the following findings:

- The total trip generation potential of Land Use Scenario #2 is estimated to be greater than the trip generation potential of Land Use Scenario #1 by 550 net new weekday p.m. peak hour trip ends, which is approximately 66% additional trip ends.
- The following table summarizes the operational deficiencies projected under each Land Use Scenario:

Intersection	Land Use Scenario #1	Land Use Scenario #2	Land Use Scenario #1	Land Use Scenario #2
	Fails to Meet Applicable OHP Standard		Meets Standard, but Lengthy Delays[1]	
US 730/Umatilla River Rd		X	X	
US 730/Brownell Blvd			X	X
US 730/I-82 SB Ramps			X	X
US 730/I-82 NB Ramps		X	X	
US 730/Lind Rd		X	X	
US 730/US 395-Devore Rd	X	X		
US 730/New Driveway to Development		X		

- The queue spillback issues that exist today at the closely spaced signalized I-82 Southbound ramp terminals and Brownell Boulevard intersections will be exacerbated by the increasing traffic volumes

REFERENCES

1. Institute of Transportation Engineers. *Trip Generation* (*8th Edition*). 2008.

2. Oregon Department of Transportation. *Analysis Procedures Manual*. 2006.

3. Transportation Research Board. *Highway Capacity Manual*. 2000.

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

ATTACHMENTS

A. Tax Lot Data

B. Net New Trip Generation by Sub-Area

C. 2030 No-Build Operational Analysis Worksheets

Attachment A
Tax Lot Data

1 inch = 900 feet

0 450 900 1,800 Feet

N

LEGEND

Interchange Management Study Area

Tax Lots

SUBAREA A TAX LOTS
UMATILLA, OREGON

FIGURE **A-1**

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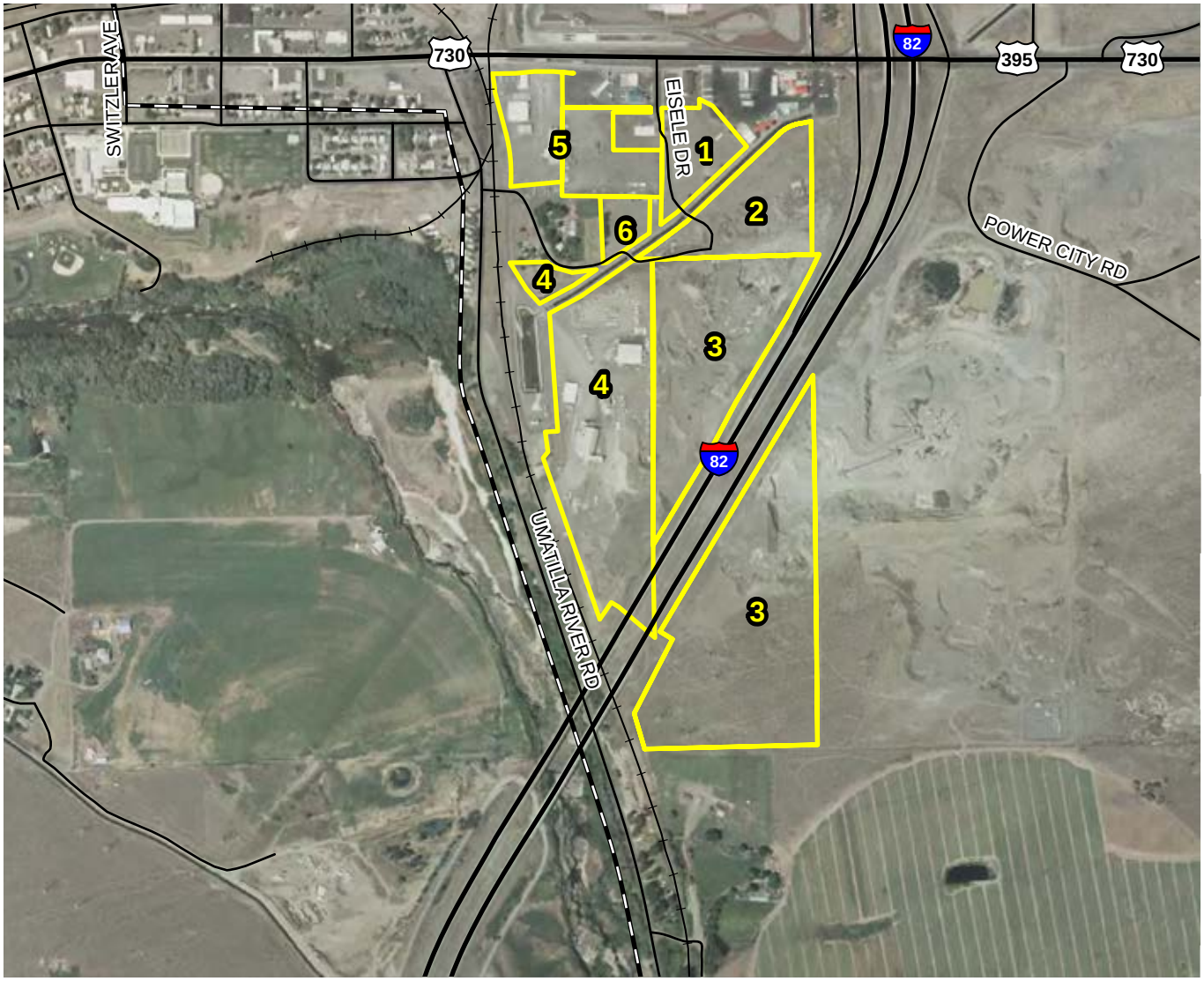
1 inch = 900 feet

0 445 890 1,780 Feet

N



LEGEND

Tax Lots

Interchange Management Study Area

SUBAREA B TAX LOTS
UMATILLA, OREGON

FIGURE **A-2**

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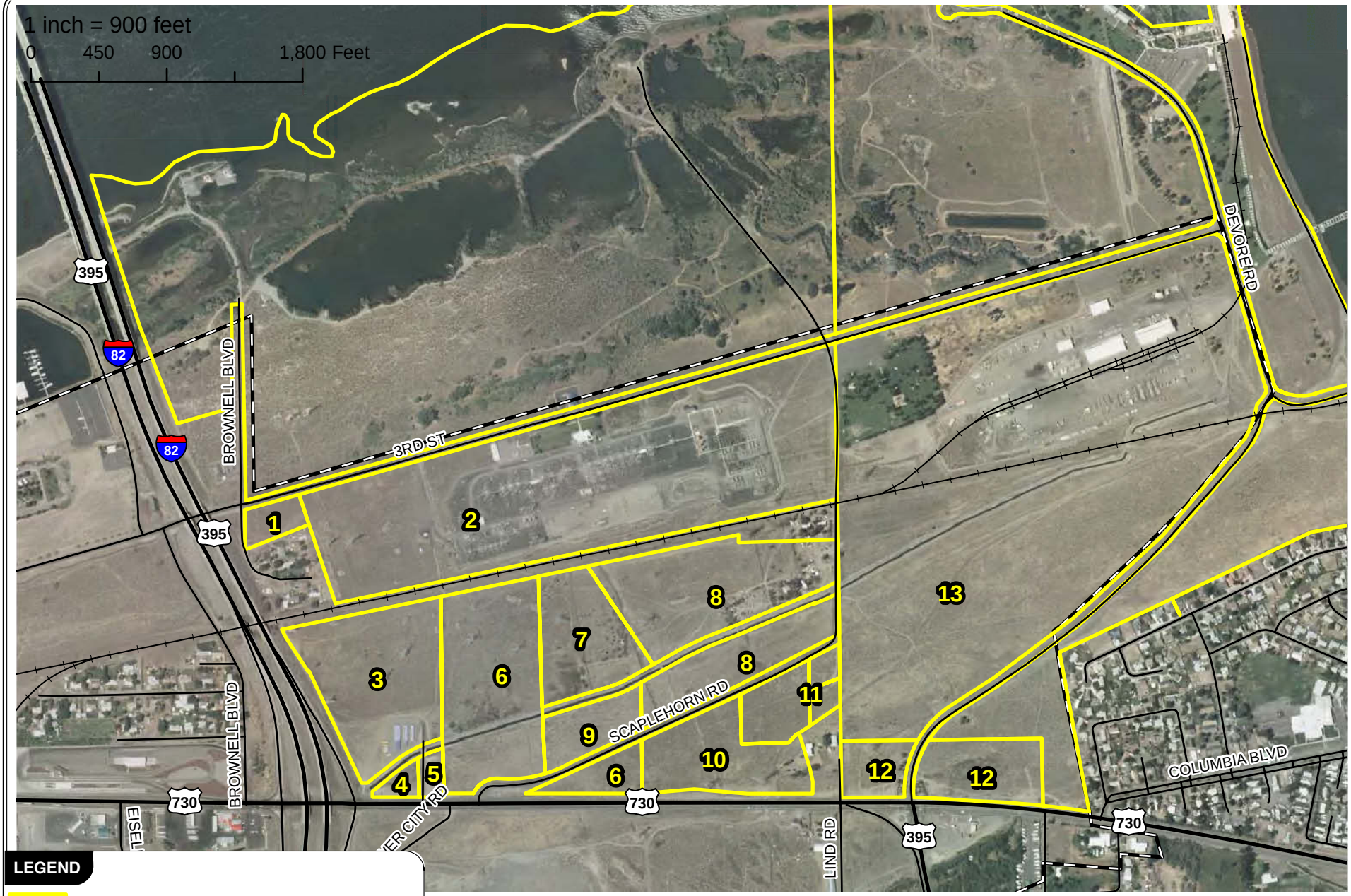

LEGEND

- Tax Lots
- Interchange Management Study Area

SUBAREA C TAX LOTS
UMATILLA, OREGON

FIGURE
A-3

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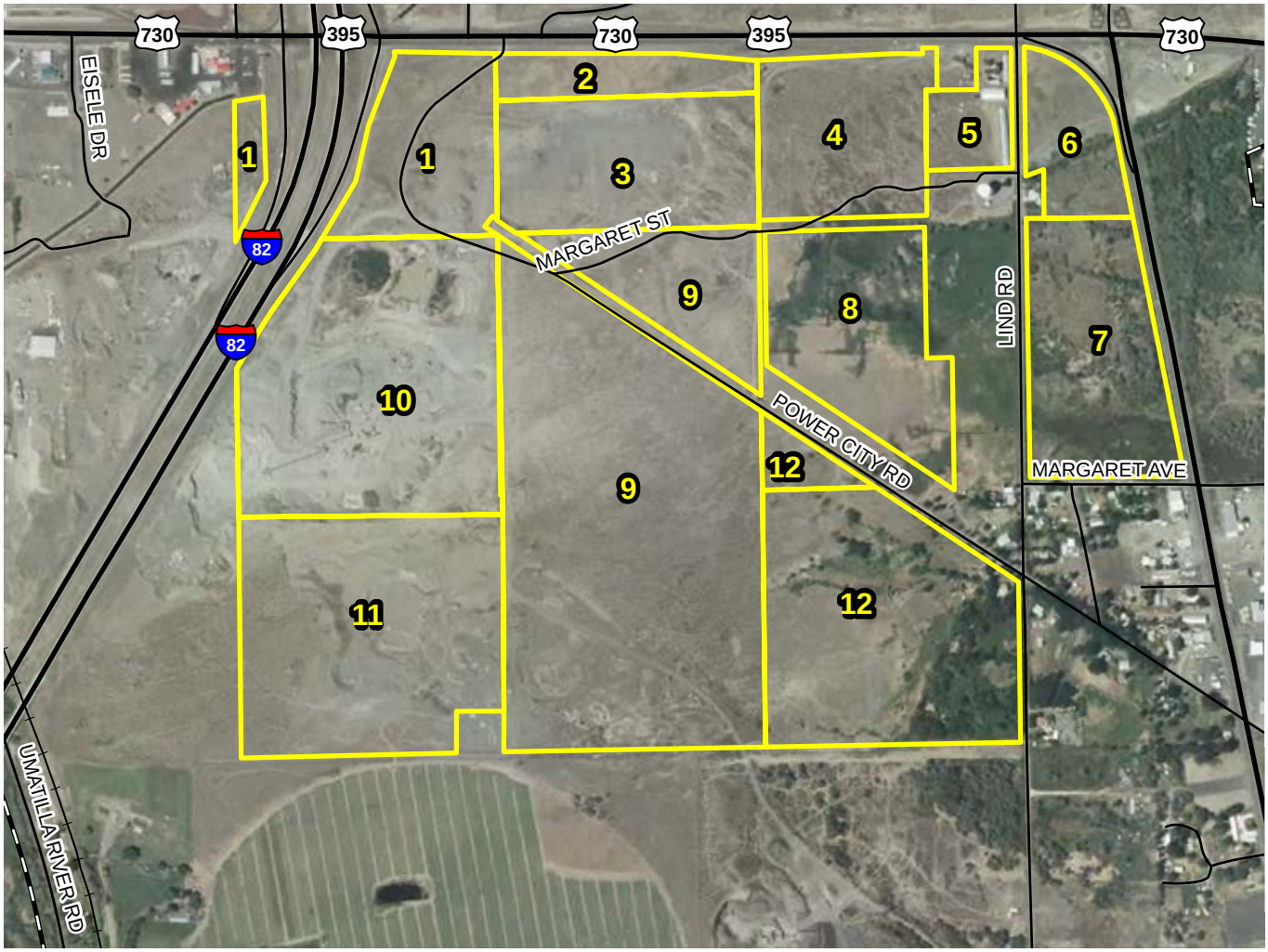
TRANSPORTATION ENGINEERING / PLANNING

1 inch = 900 feet

0 460 920 1,840 Feet

N



LEGEND

Tax Lots

Interchange Management Study Area

SUBAREA D TAX LOTS
UMATILLA, OREGON

FIGURE **A-4**

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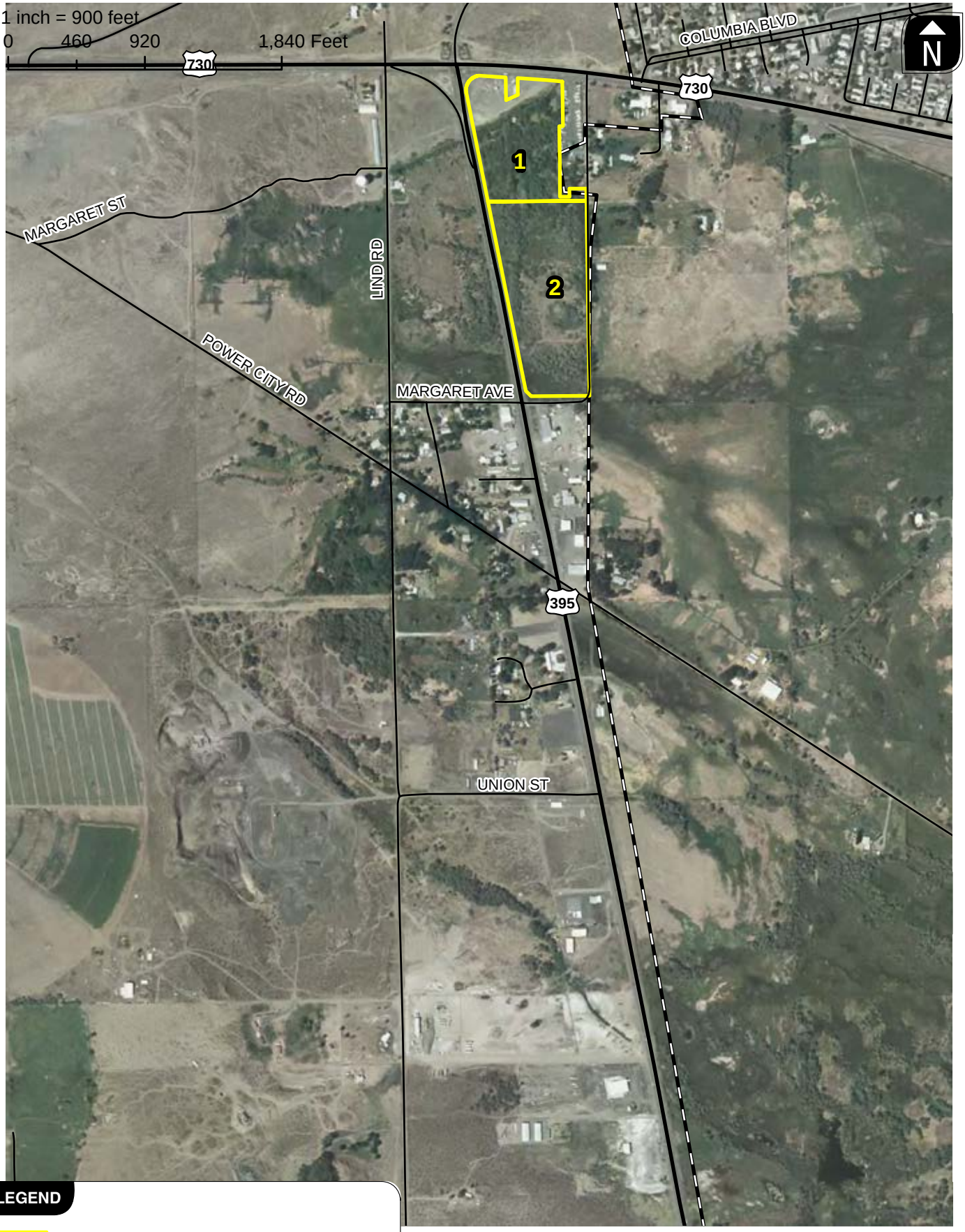
KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING



LEGEND

Tax Lots

Interchange Management Study Area

SUBAREA E TAX LOTS
UMATILLA, OREGON

FIGURE **A-5**

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Attachment B
Net New Trip Generation
by Sub-Area

Table 6B-1 Forecasted Trip Generation – Land Use Scenario #1

Land Use	ITE Code	Size (sq. feet)	Weekday PM Peak Hour		
			Total	In	Out
Sub-Area "A"					
(1) Industrial	110	45,580	45	5	40
(2) Light Industrial	110	82,940	80	10	70
(3) Light Industrial	110	74,225	70	10	60
(5) Soccer Complex	488	3 soccer fields	60	40	20
(6) RV Park	416	60 occupied spots	20	15	5
Net New Trips			275	80	195
Sub-Area "B"					
(1) Industrial	110	10,000	10	5	5
Sub-Area "C"					
(5) Fast Food Restaurant	934	3,000	100	50	50
Pass-by Reduction (20%)			*(20)*	*(10)*	*(10)*
(9) Shopping Center	820	35,000	130	65	65
(11) Single-Family Homes	210	35 homes	35	20	15
Net New Trips			245	125	120
Sub-Area "D"					
(6) Motel	320	161 rooms	75	40	35
(12) Single Family Home	210	2 homes	2	1	1
Net New Trips			77	41	36
Sub-Area "E"					
(1) Gas Station	945	20 fueling positions	270	135	135
Pass-by Reduction (40%)			*(110)*	*(55)*	*(55)*
(2) Sit Down Restaurant	932	6,000	65	40	25
Net New Trips			225	120	105
Net New Trips			832	371	461

Table 6B-2 Forecasted Trip Generation – Land Use Scenario #2

Land Use	ITE Code	Size (sq. feet)	Weekday PM Peak Hour		
			Total	In	Out
Sub-Area "A"					
(1) Industrial	110	45,580	45	5	40
(2) Light Industrial	110	82,940	80	10	70
(3) Light Industrial	110	74,225	70	10	60
(5) Soccer Complex	488	3 soccer fields	60	40	20
(6) RV Park	416	60 occupied spots	20	15	5
Net New Trips			275	80	195
Sub-Area "B"					
(1) Industrial	110	10,000	10	5	5
Sub-Area "C"					
(5) Fast Food Restaurant	934	3,000	100	50	50
Pass-by Reduction (20%)			*(20)*	*(10)*	*(10)*
(9) Shopping Center	820	35,000	130	65	65
(11) Single-Family Homes	210	35 homes	35	20	15
(12) Sit Down Restaurant	932	6,000	65	40	25
Pass-by Reduction (43%)			*(30)*	*(15)*	*(15)*
(12) Motel	320	161 room	75	40	35
Net New Trips			355	190	165
Sub-Area "D"					
(6) Motel	320	161 rooms	75	40	35
(12) Single Family Home	210	2 homes	2	1	1
(1-3) Fast Food Restaurant	934	3,000	100	50	50
Pass-by Reduction (50%)			*(50)*	*(25)*	*(25)*
(1-3) Shopping Center	820	71,600	265	130	135
Pass-by Reduction (34%)			*(90)*	*(45)*	*(45)*
(1-3) Gas Station	945	10 fueling positions	130	65	65
Pass-by Reduction (56%)			*(70)*	*(35)*	*(35)*
(1-3) Tire Superstore	849	13,000	25	10	15
(4-5) General Office	710	50,570	75	40	35
(4-5) Medical Office	720	20,000	70	35	35
(9) Light Industrial	110	160,300	155	20	135
Net New Trips			517	201	316
Sub-Area "E"					

(1) Gas Station *Pass-by Reduction (40%)*	945	20 fueling positions	270 *(110)*	135 *(55)*	135 *(55)*
(2) Sit Down Restaurant	932	6,000	65	40	25
Net New Trips			225	120	105
Net New Trips			1,382	596	786

Attachment C
2030 No-Build
Operational Analysis
Worksheets

HCM Signalized Intersection Capacity Analysis
2: US 730 & Brownell Blvd

4/14/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	706	4	16	895	53	6	3	42	156	1	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5			4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00		0.95	1.00
Satd. Flow (prot)	1770	3469		1656	3133			1803	1583		992	1062
Flt Permitted	0.95	1.00		0.95	1.00			0.86	1.00		0.72	1.00
Satd. Flow (perm)	1770	3469		1656	3133			1604	1583		751	1062
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	46	759	4	17	962	57	6	3	45	168	1	47
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	37	0	0	38
Lane Group Flow (vph)	46	763	0	17	1017	0	0	9	8	0	169	9
Heavy Vehicles (%)	2%	4%	2%	9%	15%	2%	2%	2%	2%	83%	2%	52%
Turn Type	Prot			Prot			Perm		Perm	Perm		Perm
Protected Phases	5	2		1 4	6 4			8			8	
Permitted Phases							8		8	8		8
Actuated Green, G (s)	8.3	43.1		57.3	96.6			27.2	27.2		27.2	27.2
Effective Green, g (s)	8.3	43.1		57.3	96.6			27.2	27.2		27.2	27.2
Actuated g/C Ratio	0.06	0.30		0.39	0.66			0.19	0.19		0.19	0.19
Clearance Time (s)	4.5	4.5						4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.5	4.6						5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	101	1027		652	2079			300	296		140	198
v/s Ratio Prot	c0.03	c0.22		0.01	c0.32							
v/s Ratio Perm								0.01	0.01		c0.23	0.01
v/c Ratio	0.46	0.74		0.03	0.49			0.03	0.03		1.21	0.04
Uniform Delay, d1	66.5	46.3		27.1	12.2			48.4	48.4		59.2	48.5
Progression Factor	1.00	1.00		1.83	0.31			1.00	1.00		1.00	1.00
Incremental Delay, d2	3.8	3.4		0.0	0.4			0.1	0.1		142.3	0.2
Delay (s)	70.3	49.6		49.6	4.1			48.5	48.5		201.5	48.7
Level of Service	E	D		D	A			D	D		F	D
Approach Delay (s)		50.8			4.9			48.5			168.3	
Approach LOS		D			A			D			F	

Intersection Summary			
HCM Average Control Delay	40.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	145.6	Sum of lost time (s)	18.0
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	729	176	112	598	0	0	0	0	415	1	367
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5						4.5	4.5
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3406	912	1597	3539						1707	1282
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3406	912	1597	3539						1707	1282
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	801	193	123	657	0	0	0	0	456	1	403
RTOR Reduction (vph)	0	0	116	0	0	0	0	0	0	0	0	210
Lane Group Flow (vph)	0	801	77	123	657	0	0	0	0	0	457	193
Heavy Vehicles (%)	2%	6%	77%	13%	2%	2%	2%	2%	2%	6%	2%	26%
Turn Type			Perm	Prot						Perm		Perm
Protected Phases		2		1	6						4	
Permitted Phases		8	2							4		4
Actuated Green, G (s)		70.3	43.1	17.0	51.8						40.3	40.3
Effective Green, g (s)		70.3	43.1	17.0	51.8						40.3	40.3
Actuated g/C Ratio		0.48	0.30	0.12	0.36						0.28	0.28
Clearance Time (s)		4.5	4.5	4.5	4.5						4.5	4.5
Vehicle Extension (s)		4.6	4.6	3.5	5.6						3.5	3.5
Lane Grp Cap (vph)		1645	270	186	1259						472	355
v/s Ratio Prot		c0.14		c0.08	c0.19							
v/s Ratio Perm		0.09	0.08								0.27	0.15
v/c Ratio		0.49	0.28	0.66	0.52						0.97	0.54
Uniform Delay, d1		25.5	39.4	61.5	37.1						52.0	44.8
Progression Factor		0.18	0.14	1.00	1.00						1.00	1.00
Incremental Delay, d2		0.3	0.7	8.9	0.9						33.1	1.9
Delay (s)		4.8	6.4	70.4	38.0						85.1	46.7
Level of Service		A	A	E	D						F	D
Approach Delay (s)		5.1			43.1			0.0			67.1	
Approach LOS		A			D			A			E	

Intersection Summary			
HCM Average Control Delay	36.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	145.6	Sum of lost time (s)	13.5
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Volume (veh/h)	0	702	20	54	801	89	13	0	51	0	0
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	724	21	56	826	92	13	0	53	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		TWLTL			None						
Median storage veh)		2									
Upstream signal (ft)					220						
pX, platoon unblocked	0.86						0.86	0.86		0.86	0.86
vC, conflicting volume	826			744			1258	1671	372	1352	1681
vC1, stage 1 conf vol							734	734		937	937
vC2, stage 2 conf vol							524	937		414	744
vCu, unblocked vol	459			744			965	1447	372	1074	1459
tC, single (s)	4.1			4.2			7.5	6.5	7.2	7.5	6.5
tC, 2 stage (s)							6.5	5.5		6.5	5.5
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0
p0 queue free %	100			93			96	100	91	100	100
cM capacity (veh/h)	940			853			349	300	592	309	279

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	WB 4	NB 1	NB 2
Volume Total	482	262	56	413	413	92	31	35
Volume Left	0	0	56	0	0	0	13	0
Volume Right	0	21	0	0	0	92	18	35
cSH	1700	1700	853	1700	1700	1700	455	592
Volume to Capacity	0.28	0.15	0.07	0.24	0.24	0.05	0.07	0.06
Queue Length 95th (ft)	0	0	5	0	0	0	5	5
Control Delay (s)	0.0	0.0	9.5	0.0	0.0	0.0	13.5	11.5
Lane LOS			A				B	B
Approach Delay (s)	0.0		0.5				12.4	
Approach LOS							B	

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	36.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	1	1057	1098	1	1	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	1113	1156	1	1	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)		797				
pX, platoon unblocked					0.88	
vC, conflicting volume	1157				1715	578
vC1, stage 1 conf vol					1156	
vC2, stage 2 conf vol					558	
vCu, unblocked vol	1157				1547	578
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	600				246	459

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	1	556	556	771	386	2
Volume Left	1	0	0	0	0	1
Volume Right	0	0	0	0	1	1
cSH	600	1700	1700	1700	1700	320
Volume to Capacity	0.00	0.33	0.33	0.45	0.23	0.01
Queue Length 95th (ft)	0	0	0	0	0	0
Control Delay (s)	11.0	0.0	0.0	0.0	0.0	16.3
Lane LOS	B					C
Approach Delay (s)	0.0			0.0		16.3
Approach LOS						C

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	714	1	10	804	3	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	744	1	10	838	3	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				522		
pX, platoon unblocked					0.80	
vC, conflicting volume			745		1603	372
vC1, stage 1 conf vol					744	
vC2, stage 2 conf vol					858	
vCu, unblocked vol			745		1628	372
tC, single (s)			5.5		7.8	7.9
tC, 2 stage (s)					6.8	
tF (s)			2.9		4.0	3.8
p0 queue free %			98		98	99
cM capacity (veh/h)			526		206	506

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	496	249	10	838	10
Volume Left	0	0	10	0	3
Volume Right	0	1	0	0	7
cSH	1700	1700	526	1700	352
Volume to Capacity	0.29	0.15	0.02	0.49	0.03
Queue Length 95th (ft)	0	0	2	0	2
Control Delay (s)	0.0	0.0	12.0	0.0	15.5
Lane LOS			B		C
Approach Delay (s)	0.0		0.1		15.5
Approach LOS					C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	645	52	74	733	69	71
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	672	54	77	764	72	74
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				848		
pX, platoon unblocked					0.80	
vC, conflicting volume			726		1590	672
vC1, stage 1 conf vol					672	
vC2, stage 2 conf vol					918	
vCu, unblocked vol			726		1612	672
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			91		74	84
cM capacity (veh/h)			877		281	452

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	672	54	77	764	146
Volume Left	0	0	77	0	72
Volume Right	0	54	0	0	74
cSH	1700	1700	877	1700	348
Volume to Capacity	0.40	0.03	0.09	0.45	0.42
Queue Length 95th (ft)	0	0	7	0	50
Control Delay (s)	0.0	0.0	9.5	0.0	22.6
Lane LOS			A		C
Approach Delay (s)	0.0		0.9		22.6
Approach LOS					C

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	601	193	93	710	210	97
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	626	201	97	740	219	101
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						2
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			827		1660	727
vC1, stage 1 conf vol					727	
vC2, stage 2 conf vol					933	
vCu, unblocked vol			827		1660	727
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			88		22	76
cM capacity (veh/h)			804		282	424

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	827	97	740	320
Volume Left	0	97	0	219
Volume Right	201	0	0	101
cSH	1700	804	1700	364
Volume to Capacity	0.49	0.12	0.44	0.88
Queue Length 95th (ft)	0	10	0	213
Control Delay (s)	0.0	10.1	0.0	55.8
Lane LOS		B		F
Approach Delay (s)	0.0	1.2		55.8
Approach LOS				F

Intersection Summary			
Average Delay	9.5		
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	113	0	99	87	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1	133	0	116	102	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				300		
pX, platoon unblocked						
vC, conflicting volume	219	102	102			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	219	102	102			
tC, single (s)	6.4	7.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	4.2	2.2			
p0 queue free %	100	82	100			
cM capacity (veh/h)	769	748	1490			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	134	116	102
Volume Left	1	0	0
Volume Right	133	0	0
cSH	748	1700	1700
Volume to Capacity	0.18	0.07	0.06
Queue Length 95th (ft)	16	0	0
Control Delay (s)	10.9	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.9	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	18.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	231	914	0	0	657	441	53	1	143	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	238	942	0	0	677	455	55	1	147	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)		484										
pX, platoon unblocked				0.87			0.87	0.87	0.87	0.87	0.87	
vC, conflicting volume	1132			942			1757	2551	471	2000	2323	566
vC1, stage 1 conf vol							1419	1419		905	905	
vC2, stage 2 conf vol							339	1132		1095	1419	
vCu, unblocked vol	1132			630			1569	2482	88	1848	2221	566
tC, single (s)	4.3			4.1			7.7	6.5	7.3	7.5	6.5	6.9
tC, 2 stage (s)							6.7	5.5		6.5	5.5	
tF (s)	2.3			2.2			3.6	4.0	3.5	3.5	4.0	3.3
p0 queue free %	58			100			41	97	81	100	100	100
cM capacity (veh/h)	564			823			93	37	780	122	120	467

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	NB 2
Volume Total	238	471	471	452	680	56	147
Volume Left	238	0	0	0	0	55	0
Volume Right	0	0	0	0	455	0	147
cSH	564	1700	1700	1700	1700	90	780
Volume to Capacity	0.42	0.28	0.28	0.27	0.40	0.62	0.19
Queue Length 95th (ft)	52	0	0	0	0	73	17
Control Delay (s)	16.0	0.0	0.0	0.0	0.0	95.2	10.7
Lane LOS	C					F	B
Approach Delay (s)	3.2			0.0		33.9	
Approach LOS						D	

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1047	10	1	1083	14	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1102	11	1	1140	15	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)	1113					
pX, platoon unblocked			0.90		0.90	0.90
vC, conflicting volume			1113		1679	556
vC1, stage 1 conf vol					1107	
vC2, stage 2 conf vol					572	
vCu, unblocked vol			907		1536	290
tC, single (s)			4.1		8.4	6.9
tC, 2 stage (s)					7.4	
tF (s)			2.2		4.3	3.3
p0 queue free %			100		91	100
cM capacity (veh/h)			673		170	637

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	735	378	1	570	570	16
Volume Left	0	0	1	0	0	15
Volume Right	0	11	0	0	0	1
cSH	1700	1700	673	1700	1700	178
Volume to Capacity	0.43	0.22	0.00	0.34	0.34	0.09
Queue Length 95th (ft)	0	0	0	0	0	7
Control Delay (s)	0.0	0.0	10.4	0.0	0.0	27.1
Lane LOS			B			D
Approach Delay (s)	0.0		0.0			27.1
Approach LOS						D

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	85	963	1000	43	42	85
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	89	1014	1053	45	44	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	None			
Median storage veh)		2				
Upstream signal (ft)		1319				
pX, platoon unblocked					0.95	
vC, conflicting volume	1098				1761	549
vC1, stage 1 conf vol					1075	
vC2, stage 2 conf vol					686	
vCu, unblocked vol	1098				1692	549
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	86				82	81
cM capacity (veh/h)	631				243	480

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	89	507	507	702	396	134
Volume Left	89	0	0	0	0	44
Volume Right	0	0	0	0	45	89
cSH	631	1700	1700	1700	1700	363
Volume to Capacity	0.14	0.30	0.30	0.41	0.23	0.37
Queue Length 95th (ft)	12	0	0	0	0	41
Control Delay (s)	11.6	0.0	0.0	0.0	0.0	20.6
Lane LOS	B					C
Approach Delay (s)	0.9			0.0		20.6
Approach LOS						C

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	966	37	9	1008	1	34	1	9	1	1	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	1017	39	9	1061	1	36	1	9	1	1	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					459							
pX, platoon unblocked	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	1062			1056			1589	2119	528	1601	2138	531
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	898			1056			1470	2045	528	1482	2065	321
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			55	98	98	99	98	100
cM capacity (veh/h)	693			655			79	50	495	76	49	621

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	509	547	540	532	46	3
Volume Left	1	0	9	0	36	1
Volume Right	0	39	0	1	9	1
cSH	693	1700	655	1700	94	85
Volume to Capacity	0.00	0.32	0.01	0.31	0.49	0.04
Queue Length 95th (ft)	0	0	1	0	53	3
Control Delay (s)	0.0	0.0	0.4	0.0	75.4	48.8
Lane LOS	A		A		F	E
Approach Delay (s)	0.0		0.2		75.4	48.8
Approach LOS					F	E

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	425	0	170	423	1	560	7	212	1	27	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.5		4.0	5.5			5.0	5.0		4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (prot)	1770	3167		1736	3166			1741	1524		1699	
Flt Permitted	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (perm)	1770	3167		1736	3166			1741	1524		1699	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	4	447	0	179	445	1	589	7	223	1	28	37
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	76	0	32	0
Lane Group Flow (vph)	4	447	0	179	446	0	0	596	147	0	34	0
Heavy Vehicles (%)	2%	14%	12%	4%	14%	2%	4%	2%	6%	2%	5%	2%
Turn Type	Prot			Prot			Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases									8			
Actuated Green, G (s)	1.0	26.9		16.1	42.0			41.4	41.4		6.1	
Effective Green, g (s)	1.0	26.9		16.1	42.0			41.4	41.4		6.1	
Actuated g/C Ratio	0.01	0.25		0.15	0.39			0.38	0.38		0.06	
Clearance Time (s)	4.0	5.5		4.0	5.5			5.0	5.0		4.0	
Vehicle Extension (s)	2.5	5.4		2.5	5.4			3.5	3.5		2.5	
Lane Grp Cap (vph)	16	782		256	1220			661	579		95	
v/s Ratio Prot	0.00	c0.14		c0.10	0.14			c0.34			c0.02	
v/s Ratio Perm									0.10			
v/c Ratio	0.25	0.57		0.70	0.37			0.90	0.25		0.36	
Uniform Delay, d1	53.6	36.0		44.1	24.0			31.9	23.2		49.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	5.9	1.8		7.5	0.4			15.8	0.3		1.7	
Delay (s)	59.5	37.8		51.6	24.4			47.7	23.5		51.2	
Level of Service	E	D		D	C			D	C		D	
Approach Delay (s)		38.0			32.2			41.1			51.2	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM Average Control Delay	37.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	109.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	1	7	1	1	1	7	777	1	1	741	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	2	1	7	1	1	1	7	801	1	1	764	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1185	1585	384	1208	1586	401	768			802		
vC1, stage 1 conf vol	768	768		816	816							
vC2, stage 2 conf vol	416	816		392	770							
vCu, unblocked vol	1185	1585	384	1208	1586	401	768			802		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	99	100	100	100	99			100		
cM capacity (veh/h)	321	292	614	303	290	599	842			817		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	10	3	7	534	268	1	509	259
Volume Left	2	1	7	0	0	1	0	0
Volume Right	7	1	0	0	1	0	0	4
cSH	475	357	842	1700	1700	817	1700	1700
Volume to Capacity	0.02	0.01	0.01	0.31	0.16	0.00	0.30	0.15
Queue Length 95th (ft)	2	1	1	0	0	0	0	0
Control Delay (s)	12.7	15.2	9.3	0.0	0.0	9.4	0.0	0.0
Lane LOS	B	C	A			A		
Approach Delay (s)	12.7	15.2	0.1			0.0		
Approach LOS	B	C						

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	31.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	1	18	15	1	5	5	774	7	11	728	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	6	1	20	17	1	6	6	880	8	12	827	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1315	1756	419	1355	1757	444	838			888		
vC1, stage 1 conf vol	857	857		895	895							
vC2, stage 2 conf vol	457	899		460	862							
vCu, unblocked vol	1315	1756	419	1355	1757	444	838			888		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	96	94	100	99	99			98		
cM capacity (veh/h)	279	256	583	267	259	562	793			759		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	27	24	6	586	301	12	552	286
Volume Left	6	17	6	0	0	12	0	0
Volume Right	20	6	0	0	8	0	0	10
cSH	455	304	793	1700	1700	759	1700	1700
Volume to Capacity	0.06	0.08	0.01	0.34	0.18	0.02	0.32	0.17
Queue Length 95th (ft)	5	6	1	0	0	1	0	0
Control Delay (s)	13.4	17.8	9.6	0.0	0.0	9.8	0.0	0.0
Lane LOS	B	C	A			A		
Approach Delay (s)	13.4	17.8	0.1			0.1		
Approach LOS	B	C						

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix G

Technical Memorandum #7a – Preliminary Concept Development & Analysis

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TECHNICAL MEMORANDUM #7a

I-82 / US 730 IAMP

Preliminary Concept Development & Analysis

Date: July 19, 2010 Project #: 10369

To: Teresa Penninger, ODOT Region 5

From: Matt Hughart, AICP, Nick Foster, Marc Butorac, P.E., P.T.O.E.

cc: Technical Advisory Committee (TAC)
Public Advisory Committee (PAC)

This technical memorandum documents the development and preliminary evaluation of the interchange/local circulation design concepts that have been developed as part of the IAMP process. Included in this memorandum is a description of the process used to develop the initial concepts, a qualitative assessment of each interchange form concept, and a preliminary consultant team ranking of each concept.

The purpose of this memorandum is to provide the TAC and PAC committee members with an assessment and feasibility analysis of the initial interchange concepts, and to assist in the screening process that will pare the number of concepts down for a more detailed quantitative assessment.

CONCEPT DEVELOPMENT PROCESS

The development of the initial interchange concepts for the IAMP began with three separate design workshops. The first two workshops were held for members of the TAC and PAC committees, while the third workshop was held for interested citizens, business owners, and landowners in a public open house setting. All three workshops were held on April 21, 2010.

Within each workshop, participants were presented with an overview of applicable interchange design forms and basic design parameters. Following these presentation overviews, participants were asked to sketch their ideas for improving circulation at the interchange and within the immediate interchange study area.

Following the completion of the TAC, PAC, and public workshops, the project team took all of the individual design ideas and grouped them into various interchange forms. After the initial grouping, each group was further sorted into common and unique interchange concepts. Based

on this process, a representative interchange diagram was developed from the common and unique interchange form concepts. As part of this process, the project team made some technical refinements to the interchange form concepts to ensure basic design parameters were being met. This process resulted in 12 different interchange form diagrams/concepts, which are presented in *Appendix "A"*.

PRELIMINARY PROBLEM STATEMENT SCREENING

The project team first performed a preliminary assessment to determine if any of the concepts were not meeting the basic intent of the project purpose and problem statement. The official Purpose and Problem Statement, as approved by the TAC and PAC is outlined below:

> ***Purpose of the Project:***
>
> *The IAMP is a strategic transportation plan that is designed to protect the long-term function of the Interstate 82 (I-82) / US 730 interchange by preserving the capacity of the interchange while providing safe and efficient operations between connecting roadways. The IAMP will identify land use management strategies, short-term and long-term transportation improvements, access management goals, and strategies to fund identified improvements.*
>
> ***Problem Statement:***
>
> *The signalized intersections of Brownell Boulevard/US 730 and the southbound I-82/US 730 terminal are located within close proximity of one another resulting in undesirable operations. The signals have been coordinated in an effort to improve intersection operations. Nevertheless, queuing problems associated with truck traffic accessing the Umatilla Port of Entry weigh station continue to occur at the two intersections. This condition varies by season due to increase of trucks during mid-summer and fall harvests.*
>
> *The Port of Entry (POE) is located on the northwest corner of Brownell Boulevard/US 730 intersection which coincides with the northwest quadrant of the I-82/US 730 interchange. A truck stop, restaurant, fueling station and other commercial development is located in the southwest quadrant. East of the interchange is primarily vacant land within the City of Umatilla Urban Growth Area. This land is zoned exclusive farm use, tourism commercial or public facilities. The City is interested in the economic development potential of this area and would like to develop a local street network plan that supports the safe and efficient operation of the interchange and the US 730/US 395 intersection located within the interchange influence area.*

Based on the project's purpose, it was generally concluded that all of the 12 interchange concepts met the meet the basic intent of the project purpose and problem statement.

BASIC QUALATATIVE CONCEPT SCREENING

To assist in the evaluation process, the project team reviewed the adopted evaluation criteria and developed a screening level evaluation process by which each of the interchange form concepts

could be evaluated at a high level qualitative perspective. As a part of this process, it was recognized that at this particular level of evaluation, certain evaluation criteria could not be applied to each concept because the criterion was determined to be too specific, required a higher level of detailed information, or was a non-differentiating factor. In these instances, a screening level evaluation was not applied to the concepts. The following outline lists the five screening level categories and the selected evaluation criteria within each category that were investigated as part of this process.

Category #1 – Transportation

Evaluation Criteria – Addresses the existing operational performance issues created by the close spacing between Brownell Boulevard and the southbound ramp terminal

Evaluation Criteria – Improves non-vehicular east-west travel through the interchange

Category #2 – Land Use

Evaluation Criteria – Level of right-of-way (ROW) impacts

Evaluation Criteria – Supports businesses and future economic development

Category #3 – Cost/Implementation

Evaluation Criteria – Level of construction costs

Evaluation Criteria – Construction feasibility

Category #4 – Environmental/Livability

Evaluation Criteria – Level of environmental impacts

Evaluation Criteria – Livability impacts

Category #5 – Accessibility

Evaluation Criteria – Meets or moves in the direction of the access spacing standards

Evaluation Criteria – Supports the development of a complimentary local circulation network that minimizes local travel demand through the interchange and maintains or improves access to the marina.

Based on the criteria outlined above, an evaluation matrix for each concept was created. These matrices are contained within *Appendix "B."* A summary of the qualitative screening process is provided in Table 7-1 below. *(Note: In general, a "+" indicates the interchange concept is positively meeting the basic parameters of the evaluation criterion, a "-" indicates the interchange concept is not meeting the basic parameters of the evaluation criteria, and a "0" indicates the interchange concept is neither positively nor negatively meeting the basic intent of the evaluation criterion. See Appendix "B" for a detailed explanation of the screening level scoring definitions).*

Table 7-1 Summary of Qualitative Screening Process

Evaluation Criteria	Concept													
	#1a	#1b	#2	#3	#4	#5	#6	#7	#8a	#8b	#9	#10	#11	#12
Operations	+	+	+	+	+	+	-	+	+	+	+	-	+	-
Non-Vehicular Travel	+	+	0	0	0	0	0	+	+	+	+	+	+	-
ROW Impacts	-	-	+	0	-	+	+	-	-	-	0	-	-	0
Cost	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Construction Feasibility	-	-	-	-	-	-	-	-	-	-	-	-	-	+
Environmental Impacts	0	0	+	+	+	-	+	0	0	0	0	+	0	+
Livability Impacts	-	+	+	+	+	+	+	-	+	+	+	-	-	+
Access Spacing	0	0	+	+	+	+	-	0	+	+	0	-	+	-
Local Circulation	+	+	-	+	-	-	+	-	+	+	+	+	+	+

Summary Findings

From the qualitative assessment of the twelve interchange concepts, a summary of key findings is outlined below:

Concepts with Significant Constructability Challenges or Fatal Flaws

Through the evaluation process, the following concepts have been deemed to have significant constructability challenges or fatal operational flaws. As such, these concepts are not recommended for further evaluation.

- Concept #1a and #4 would require a US 730 underpass widening adjacent to the railroad. A preliminary assessment from ODOT indicates that it may not be feasible to make this connection due to the way the bridge is constructed. Access to/from Brownell Boulevard is also limited.
- Concept #2 would have a constructability challenge associated with ramp length and grades needed to develop the direct-connect access ramp to I-82 southbound. This concept also cuts off Brownell Boulevard from US 730.
- Concept #5 can not be realistically constructed as the underpass associated with the POE exit road would conflict with the Brownell irrigation ditch. This concept also cuts off Brownell Boulevard from US 730.
- Concepts #6, #10, and #12 are operationally challenged, have some significant physical constraints, and don't address the intersection spacing issues between Brownell Boulevard and the southbound ramp terminal.

Concepts with Cost, Policy, and Right-of-Way Constraints

Through the evaluation process, the following concepts have been deemed to have significant cost, policy, and right-of-way constraints. As such, these concepts are not recommended for further evaluation.

- The freeway exit ramp serving the POE in Concept #1b would necessitate a complete reconstruction of the POE that may not be possible given the need to accommodate acceptable ramp grades and truck queuing lanes.
- Concept #7 would require a complete widening of the Umatilla River overpass while other loop ramp concepts would only require a partial widening. This coupled with the need for a new US 730 overpass bridge, a railroad overpass bridge widening, and POE reconfiguration would be a costly concept with minimal operational and access management benefits.
- Concept #8a would funnel a large amount of truck and vehicular traffic through US 730/Eisele Drive intersection, necessitating a large widening to this intersection.
- Concept #11 would be the most expensive concept with the split diamond and the need to widen to both sides of the Umatilla River overpass.

Preliminary Project Team Recommendations

As a result of the evaluation process, the consultant project team recommends that Concepts #3, #8b, and #9 undergo further technical and quantitative evaluation.

NEXT STEPS

Assuming concurrence from members of the TAC and PAC, the concepts recommended above will be further evaluated. This more detailed evaluation will be more quantitative than this first screening. It will include double-line sketches and cost estimates. From this evaluation, a recommended concept, or set of concepts will be determined.

Appendix A
Interchange Design Forms

INTERCHANGE IMPROVEMENT
CONCEPT #1
SINGLE LINE DRAWING

FIGURE 7a-1a

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INTERCHANGE IMPROVEMENT
CONCEPT #1
SINGLE LINE DRAWING

FIGURE
7a-1b

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INTERCHANGE IMPROVEMENT
CONCEPT #2
SINGLE LINE DRAWING

FIGURE
7a-2

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INTERCHANGE IMPROVEMENT
CONCEPT #3
SINGLE LINE DRAWING

FIGURE
7a-3

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INTERCHANGE IMPROVEMENT
CONCEPT #4
SINGLE LINE DRAWING

FIGURE
7a-4

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INTERCHANGE IMPROVEMENT
CONCEPT #5
SINGLE LINE DRAWING

FIGURE
7a-5

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INTERCHANGE IMPROVEMENT
CONCEPT #6
SINGLE LINE DRAWING

FIGURE 7a-6

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INTERCHANGE IMPROVEMENT
CONCEPT #7
SINGLE LINE DRAWING

FIGURE 7a-7

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INTERCHANGE IMPROVEMENT
CONCEPT #8
SINGLE LINE DRAWING

FIGURE 7a-8a

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INTERCHANGE IMPROVEMENT
CONCEPT #8
SINGLE LINE DRAWING

FIGURE 7a-8b

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INTERCHANGE IMPROVEMENT
CONCEPT #9
SINGLE LINE DRAWING

FIGURE 7a-9

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INTERCHANGE IMPROVEMENT
CONCEPT #10
SINGLE LINE DRAWING

FIGURE 7a-10

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INTERCHANGE IMPROVEMENT
CONCEPT #11
SINGLE LINE DRAWING

FIGURE 7a-11

INTERCHANGE IMPROVEMENT
CONCEPT #11
SINGLE LINE DRAWING

FIGURE 7a-12

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Pedestrian Improvements – All Concepts

Pedestrian facilities along US 730 in the study are currently limited to the south side of US 730 on the west side of the interchange. Sidewalks along with curb and gutter will be constructed on the north side of US 730 from the interchange to the bridge over the Umatilla River as development occurs and/or roadway improvements are made. They will also be constructed on both sides of US 730 east of the interchange to the US 395 intersection as development occurs and/or roadway improvements are made.

Concept #1a:

This concept would involve the following changes/improvements:

- The existing southbound off-ramp would be modified to accommodate trucks entering the POE. This would involve disconnecting the off-ramp from US 730 and keeping it elevated to cross over Brownell Boulevard before touching down in the POE near the existing weigh scales. The internal POE circulation system and weigh scales would need to be modified as a result.
- A new southbound exiting loop ramp and on-ramp would be constructed in the southwest quadrant of the intersection.
- Brownell Boulevard would be disconnected from US 730 and rerouted along the Locus Street corridor, travel under US 730 via a widened underpass (currently utilized by the adjacent rail line), and routed along a new roadway that would connect to Eisele Drive on the south side of US 730.
- A new north-south roadway would be constructed along the east side of I-82 to provide better north-south connectivity between US 730 and 3rd Street.
- A new backage road accessed via Eisele Drive would be constructed to provide access and circulation for properties along the south side of US 730.

Concept #1b:

This concept would involve the following changes/improvements:

- The existing southbound off-ramp would be modified to accommodate trucks entering the POE. This would involve disconnecting the off-ramp from US 730 and keeping it elevated to cross over Brownell Boulevard before touching down in the POE near the existing weigh scales. The internal POE circulation system and weigh scales would need to be modified as a result.
- Trucks leaving the POE would continue to access Brownell Boulevard via the current method.
- A new southbound exiting loop ramp and on-ramp would be constructed in the southwest quadrant of the intersection.

- A new north-south roadway would be constructed along the east side of I-82 to provide better north-south connectivity between US 730 and 3rd Street.
- A new backage road accessed via Eisele Drive would be constructed to provide access and circulation for properties along the south side of US 730.

Concept #2

This concept would involve the following changes/improvements:

- A new on-ramp to I-82 southbound would be constructed for trucks exiting the POE. This on-ramp would be elevated coming out of the POE in order to clear the existing southbound off-ramp and connect to I-82.
- The existing southbound on-ramp would be lengthened in order to provide the necessary separation from the new southbound POE on-ramp.
- Brownell would be disconnected from US 730 and gain access via 3rd Street to US 730 both east and west of I-82.
- A new north-south roadway would be constructed along the east side of I-82 to provide better north-south connectivity between US 730 and 3rd Street.
- A new backage road accessed via Eisele Drive would be constructed to provide access and circulation for properties along the south side of US 730.

Concept #3

This concept would involve the following changes/improvements:

- The existing southbound off-ramp would be closed.
- A new exiting loop ramp and on-ramp would be constructed in the southwest quadrant of the intersection.
- Brownell Boulevard would be realigned to the east to connect to US 730 in the approximate location of the existing southbound ramp terminal. As part of this, the existing Brownell Boulevard intersection with US 730 would be closed.
- A new exiting roadway would be provided from the POE to the realigned Brownell Boulevard.
- A new backage road accessed via Eisele Drive would be constructed to provide access and circulation for properties along the south side of US 730.

Concept #4

This concept would involve the following changes/improvements:

- A new driveway for exiting POE trucks would be constructed along the western side. This new exiting roadway would travel under US 730 via a widened underpass (currently utilized by the adjacent rail line), and routed along a new roadway that would connect to Eisele Drive south of US 730.
- The existing traffic signal at the Brownell Boulevard/US 730 intersection would be removed and Brownell Boulevard would be restricted to right-in/right-out movements.
- A new backage road accessed via Eisele Drive would be constructed to provide access and circulation for properties along the south side of US 730.

Concept #5

This concept would involve the following changes/improvements:

- Brownell Boulevard would be disconnected from US 730 and gain access via 3rd Street to US 730 both east and west of I-82.
- A new on-ramp to I-82 southbound would be constructed for trucks exiting the POE. This on-ramp would begin at the POE and travel under US 730 and parallel the existing southbound on-ramp before merging onto I-82.
- A new north-south roadway would be constructed along the east side of I-82 to provide better north-south connectivity between US 730 and 3rd Street.
- A new backage road accessed via Eisele Drive would be constructed to provide access and circulation for properties along the south side of US 730.

Concept #6

This concept would involve the following changes/improvements:

- A single point diamond interchange would be constructed at the existing I/82/US 730 interchange.
- A new backage road accessed via Eisele Drive would be constructed to provide access and circulation for properties along the south side of US 730.

Concept #7

This concept would involve the following changes/improvements:

- A new exiting loop ramp and on-ramp would be constructed in the southwest quadrant of the intersection with a connection to US 730 at the existing Eisele Drive intersection.

- Brownell Boulevard would be disconnected from US 730 and gain access via 3rd Street to US 730 both east and west of I-82.
- The existing southbound off-ramp would be modified for POE entry traffic. Rather than exit onto US 730, a new alignment would be constructed that would access the POE at the approximate location of the existing POE exiting driveway. This would be accompanied by an internal modification to the POE.
- A new backage road accessed via Eisele Drive would be constructed to provide access and circulation for properties along the south side of US 730.

Concept #8a

This concept would involve the following changes/improvements:

- The POE would be relocated to the southwest quadrant of the interchange south of the irrigation canal.
- A new extension and widening of Eisele Drive would provide access to the relocated POE from US 730.
- The existing Brownell Boulevard intersection with US 730 would be closed.
- A new roadway would be constructed through the old POE site and connect Brownell Boulevard to the US 730/Eisele Drive intersection.
- A new backage road accessed via Eisele Drive would be constructed to provide access and circulation for properties along the south side of US 730.

Concept #8b

This concept would involve the following changes/improvements:

- The POE would be relocated to the southwest quadrant of the interchange south of the irrigation canal.
- A new extension and widening of Eisele Drive would provide access to the relocated POE from US 730.
- A new truck entrance to the relocated POE would be constructed off of the existing southbound on-ramp. For trucks exiting the POE, a new southbound on-ramp would be constructed to I-82.
- The existing Brownell Boulevard intersection with US 730 would be closed.
- A new roadway would be constructed through the old POE site and connect to Brownell Boulevard to the US 730/Eisele Drive intersection.

- A new backage road accessed via Eisele Drive would be constructed to provide access and circulation for properties along the south side of US 730.

Concept #9

This concept would involve the following changes/improvements:

- A new truck only slip lane would be constructed off of the existing southbound off-ramp forming a separate westbound travel lane on US 730. This new westbound travel lane would cross Brownell Boulevard and feed into the POE.
- A new exiting loop ramp on on-ramp would be constructed in the southwest quadrant of the intersection with a new ramp terminal constructed at the existing Brownell Boulevard intersection with US 730.
- A new backage road accessed via Eisele Drive would be constructed to provide access and circulation for properties along the south side of US 730.

Concept #10

This concept would involve the following changes/improvements:

- A new southbound off-ramp would be constructed for POE traffic. This off-ramp would be elevated over Brownell Boulevard and the adjacent railroad tracks and touch down along the west side of the adjacent residential neighborhood and POE.
- Internal circulation within the POE would be modified to accommodate the new off-ramp and a new exiting driveway that would be routed along the Cherry Street corridor.
- A new backage road accessed via Eisele Drive would be constructed to provide access and circulation for properties along the south side of US 730.

Concept #11

This concept would involve the following changes/improvements:

- A new split diamond interchange would be constructed along I-82 with a new northbound off-ramp and southbound on-ramp being located approximately 1,600 feet south of US 730.
- The new ramp terminal would connect to US 730 via an extension of Eisele Drive.
- Internal circulation within the POE would be modified to accommodate a new entering and exiting driveway to US 730 across from the existing Eisele Drive intersection.

- At the Eisele Drive/US 730 intersection, a roundabout would be constructed to facilitate traffic along Eisele Drive and the POE driveway.
- The Brownell Boulevard intersection would be limited to right-in/right-out movements.
- A new backage road accessed via Eisele Drive would be constructed to provide access and circulation for properties along the south side of US 730.

Concept #12

This concept would involve the following changes/improvements:

- A double roundabout would constructed at the southbound ramp terminal and Brownell Boulevard intersection with US 730.
- A new backage road accessed via Eisele Drive would be constructed to provide access and circulation for properties along the south side of US 730.

Appendix B
Evaluation Matrix

Category	Evaluation Criteria	Scoring Key		Score	Comments
Concept 1a					
Transportation	Addresses the close spacing between the southbound ramp terminal and Brownell Boulevard	+	Improves the spacing and performance of the interchange	+	The closure of Brownell Boulevard at US 730 and development of a southbound PARCLO B loop ramp eliminates the existing interchange/local circulation spacing problem and creates a long-term operational improvement for the interchange. The spacing between the new ramp terminal and Eisele Drive would be approximately 800 feet.
		-	Fails to address the spacing and performance of the interchange.		
	Improves non-vehicular travel	+	Improvements Would Enhance the Comfort and Safety of Pedestrians and Bicyclists	+	The grade separated direct access ramp from I-82 southbound into the POE will eliminate the existing entrance driveway to the POE and increase the comfort and safety for bicyclists along US 730.
		0	Likely an Insignificant Impact on Pedestrians and Bicyclists		
		-	Would Negatively Impact the Comfort and Safety of Pedestrians and Bicyclists		
Land Use	Level of Right-of-Way Impacts	+	Minimal right-of-way impacts (no homes or businesses impacted)	-	The PARCLO B ramp terminal will likely impact the existing gas station/restaurant business on the south side of US 730. The extension of Locust Street beneath US 730 will require use of railroad right-of-way while the Eisele Drive extension will have right-of-way impacts to existing properties.
		0	Moderate right-of-way impacts (1-5 residences or commercial buildings impacted)		
		-	Substantial right-of-way impacts (>5 residences or commercial buildings impacted)		
Cost	Level of Construction Costs and Feasibility	+	Low Construction Costs	-	The PARCLO B ramp terminal and associated components, extension of Eisele Drive, and US 730 railroad underpass widening will have substantial infrastructure costs.
		0	Moderate Construction Costs		
		-	Substantial Construction Costs		
	Constructability	+	Improvements Can be Constructed with Minimal Physical Challenges	-	The POE will need to be reconfigured to accommodate the grade separated direct access ramp. The Locust Street extension will require modification and widening of the railroad underpass beneath US 730. To accommodate the PARCLO B loop ramp, a separate US 730 overpass bridge structure will need to be constructed adjacent to the existing overpass bridge. The alignment of the PARCLO B loop ramp has some topographic challenges that will require significant earthwork modifications. To provide sufficient acceleration length for trucks, the new southbound I-82 on-ramp alignment will likely require some widening to the existing Umatilla River bridge.
		-	Construction of Improvements will be a Physical Challenge		
Environmental / Livability Factors	Environmental Impacts	+	No Impacts to Environmentally Sensitive Areas	0	The PARCLO B ramp terminal may require modifications to the existing Brownell Ditch irrigation canal.
		0	Minimal Impacts to Environmentally Sensitive Areas		
		-	Moderate-Substantial Impacts to Environmentally Sensitive Areas		
	Livability Impacts	+	Concept fits in the context of the built environment	-	The identified improvements generally fit within the context of the interchange study area. However, the rerouting of Brownell Boulevard traffic on Locust Street will have some indirect impacts on neighborhood livability.
		-	Concept does not fit in the context of the built environment		
Accessibility	Spacing Standards	+	Meets ODOT's Spacing Standards	0	The concept works in the direction of the spacing standards on the west side of the interchange. The spacing between the new southbound ramp terminal and Eisele Drive would be approximately 800 feet.
		0	Works Toward ODOT Spacing Standards		
		-	No Improvement Over Existing Conditions		
	Local Circulation	+	Improves local circulation	+	A local circulation network is developed to serve existing and future land uses along the south side of US 730. Access to/from Brownell Boulevard is maintained.
		-	Fails to improve local circulation		

Category	Evaluation Criteria	Scoring Key		Score	Comments
Concept 1b					
Transportation	Addresses the close spacing between the southbound ramp terminal and Brownell Boulevard	+	Improves the spacing and performance of the interchange	+	The development of a southbound PARCLO B loop ramp eliminates the existing interchange/local circulation spacing problem and creates a long-term operational improvement for the interchange. The spacing between the new ramp terminal and Eisele Drive would be approximately 800 feet.
		-	Fails to address the spacing and performance of the interchange.		
	Improves non-vehicular travel	+	Improvements Would Enhance the Comfort and Safety of Pedestrians and Bicyclists	+	The grade separated direct access ramp from I-82 southbound into the POE will eliminate the existing entrance driveway to the POE and increase the comfort and safety for bicyclists along US 730.
		0	Likely an Insignificant Impact on Pedestrians and Bicyclists		
		-	Would Negatively Impact the Comfort and Safety of Pedestrians and Bicyclists		
Land Use	Level of Right-of-Way Impacts	+	Minimal right-of-way impacts (no homes or businesses impacted)	-	The PARCLO B ramp terminal will likely impact the existing gas station/restaurant business on the south side of US 730. The Eisele Drive extension will have right-of-way impacts to existing properties.
		0	Moderate right-of-way impacts (1-5 residences or commercial buildings impacted)		
		-	Substantial right-of-way impacts (>5 residences or commercial buildings impacted)		
Cost	Level of Construction Costs and Feasibility	+	Low Construction Costs	-	The PARCLO B ramp terminal (and associated components) and extension of Eisele Drive will have substantial infrastructure costs.
		0	Moderate Construction Costs		
		-	Substantial Construction Costs		
	Constructability	+	Improvements Can be Constructed with Minimal Physical Challenges	-	The POE will need to be reconfigured to accommodate the grade separated direct access ramp. To accommodate the PARCLO B loop ramp, a separate US 730 overpass bridge structure will need to be constructed adjacent to the existing overpass bridge. The alignment of the PARCLO B loop ramp has some topographic challenges that will require significant earthwork modifications. To provide sufficient acceleration length for trucks, the new southbound I-82 on-ramp alignment will likely require some widening to the existing Umatilla River overpass.
		-	Construction of Improvements will be a Physical Challenge		
Environmental / Livability Factors	Environmental Impacts	+	No Impacts to Environmentally Sensitive Areas	0	The PARCLO B ramp terminal may require modifications to the existing Brownell Ditch irrigation canal.
		0	Minimal Impacts to Environmentally Sensitive Areas		
		-	Moderate-Substantial Impacts to Environmentally Sensitive Areas		
	Livability Impacts	+	Concept fits in the context of the built environment	+	The identified improvements generally fit within the context of the interchange study area and have no disproportional impacts to surrounding land uses.
		-	Concept does not fit in the context of the built environment		
Accessibility	Spacing Standards	+	Meets ODOT's Spacing Standards	0	The concept works in the direction of the spacing standards on the west side of the interchange. The spacing between the new southbound ramp terminal and Eisele Drive would be approximately 800 feet.
		0	Works Toward ODOT Spacing Standards		
		-	No Improvement Over Existing Conditions		
	Local Circulation	+	Improves local circulation	+	A local circulation network is developed to serve existing and future land uses along the south side of US 730. Access to/from Brownell Boulevard is maintained.
		-	Fails to improve local circulation		

Category	Evaluation Criteria	Scoring Key		Score	Comments
Concept 2					
Transportation	Addresses the close spacing between the southbound ramp terminal and Brownell Boulevard	+	Improves the spacing and performance of the interchange	+	The closure of Brownell Boulevard at US 730 and development of a direct-connect access ramp from the POE to I-82 southbound helps to improve the long-term operational performance of the interchange.
		-	Fails to address the spacing and performance of the interchange.		
	Improves non-vehicular travel	+	Improvements Would Enhance the Comfort and Safety of Pedestrians and Bicyclists	0	No significant improvements for bicycle/pedestrian travel are associated with this concept.
		0	Likely an Insignificant Impact on Pedestrians and Bicyclists		
		-	Would Negatively Impact the Comfort and Safety of Pedestrians and Bicyclists		
Land Use	Level of Right-of-Way Impacts	+	Minimal right-of-way impacts (no homes or businesses impacted)	+	The infrastructure improvements associated with interchange are likely to have minimal to no impacts to existing businesses or residences.
		0	Moderate right-of-way impacts (1-5 residences or commercial buildings impacted)		
		-	Substantial right-of-way impacts (>5 residences or commercial buildings impacted)		
Cost	Level of Construction Costs and Feasibility	+	Low Construction Costs	-	The cost of the new direct-connect access ramp from the POE to I-82 and associated on-ramp improvements (widening of the US 730 overpass and on-ramp lengthening) will have substantial construction costs.
		0	Moderate Construction Costs		
		-	Substantial Construction Costs		
	Constructability	+	Improvements Can be Constructed with Minimal Physical Challenges	-	The direct-connect access ramp from the POE to I-82 southbound will require a long ramp to clear the southbound exit ramp and avoid steep grades for trucks. This will necessitate some internal circulation modifications to the POE. The direct-connect access ramp will also require a separate bridge structure over US 730, a long acceleration lane, and necessitate modifications to the existing on-ramp that will likely require a widening to the Umatilla River overpass.
		-	Construction of Improvements will be a Physical Challenge		
Environmental / Livability Factors	Environmental Impacts	+	No Impacts to Environmentally Sensitive Areas	+	No known impacts to environmentally sensitive areas or features.
		0	Minimal Impacts to Environmentally Sensitive Areas		
		-	Moderate-Substantial Impacts to Environmentally Sensitive Areas		
	Livability Impacts	+	Concept fits in the context of the built environment	+	The identified improvements generally fit within the context of the interchange study area and have no disproportional impacts to surrounding land uses.
		-	Concept does not fit in the context of the built environment		
Accessibility	Spacing Standards	+	Meets ODOT's Spacing Standards	+	The concept generally meets the ODOT interchange spacing standards on both sides of the interchange. The spacing between the southbound ramp terminal and Eisele Drive would be approximately 1,050 feet.
		0	Works Toward ODOT Spacing Standards		
		-	No Improvement Over Existing Conditions		
	Local Circulation	+	Improves local circulation	-	Despite the development of a local circulation network to serve land uses along the south side of US 730, the closure of Brownell Boulevard will cut off efficient access to the marina and adjacent land uses.
		-	Fails to improve local circulation		

Category	Evaluation Criteria	Scoring Key		Score	Comments
Concept 3					
Transportation	Addresses the close spacing between the southbound ramp terminal and Brownell Boulevard	+	Improves the spacing and performance of the interchange	+	The development of a southbound PARCLO B loop ramp and realignment of Brownell Boulevard eliminates the existing interchange/local circulation spacing problem and creates a long-term operational improvement for the interchange.
		-	Fails to address the spacing and performance of the interchange.		
	Improves non-vehicular travel	+	Improvements Would Enhance the Comfort and Safety of Pedestrians and Bicyclists	0	No significant improvements for bicycle/pedestrian travel are associated with this concept.
		0	Likely an Insignificant Impact on Pedestrians and Bicyclists		
		-	Would Negatively Impact the Comfort and Safety of Pedestrians and Bicyclists		
Land Use	Level of Right-of-Way Impacts	+	Minimal right-of-way impacts (no homes or businesses impacted)	0	The PARCLO B ramp terminal will require significant right-of-way acquisition, but its elongated ramps will minimize impacts to the existing gas station/restaurant business on the south side of US 730.
		0	Moderate right-of-way impacts (1-5 residences or commercial buildings impacted)		
		-	Substantial right-of-way impacts (>5 residences or commercial buildings impacted)		
Cost	Level of Construction Costs and Feasibility	+	Low Construction Costs	-	The PARCLO B ramp terminal, realignment of Brownell Boulevard, and new southbound on-ramp costs are likely to be substantial. A Pacific Power radical feed under the interchange may need to be moved or altered.
		0	Moderate Construction Costs		
		-	Substantial Construction Costs		
	Constructability	+	Improvements Can be Constructed with Minimal Physical Challenges	-	The alignment of the PARCLO B loop ramp has some topographic challenges that will require significant earthwork modifications. The PARCLO B loop ramp will require a separate overpass bridge structure over US 730. To provide sufficient acceleration length for trucks, the new southbound I-82 on-ramp alignment will require some widening to the existing Umatilla River overpass.
		-	Construction of Improvements will be a Physical Challenge		
Environmental / Livability Factors	Environmental Impacts	+	No Impacts to Environmentally Sensitive Areas	+	No known impacts to environmentally sensitive areas or features.
		0	Minimal Impacts to Environmentally Sensitive Areas		
		-	Moderate-Substantial Impacts to Environmentally Sensitive Areas		
	Livability Impacts	+	Concept fits in the context of the built environment	+	The identified improvements generally fit within the context of the interchange study area and have no disproportional impacts to surrounding land uses.
		-	Concept does not fit in the context of the built environment		
Accessibility	Spacing Standards	+	Meets ODOT's Spacing Standards	+	The concept generally meets the ODOT interchange spacing standards on both sides of the interchange. The spacing between the southbound ramp terminal and Eisele Drive would be approximately 1,050 feet.
		0	Works Toward ODOT Spacing Standards		
		-	No Improvement Over Existing Conditions		
	Local Circulation	+	Improves local circulation	+	A local circulation network is developed to serve existing and future land uses along the south side of US 730 and access to/from Brownell Boulevard is maintained.
		-	Fails to improve local circulation		

Category	Evaluation Criteria	Scoring Key		Score	Comments
Concept 4					
Transportation	Addresses the close spacing between the southbound ramp terminal and Brownell Boulevard	+	Improves the spacing and performance of the interchange	+	The modification of Brownell Boulevard at US 730 to right-in/right-out movements eliminates the existing interchange/local circulation spacing problem and creates a long-term operational improvement for the interchange.
		-	Fails to address the spacing and performance of the interchange.		
	Improves non-vehicular travel	+	Improvements Would Enhance the Comfort and Safety of Pedestrians and Bicyclists	0	No significant improvements for bicycle/pedestrian travel are associated with this concept.
		0	Likely an Insignificant Impact on Pedestrians and Bicyclists		
		-	Would Negatively Impact the Comfort and Safety of Pedestrians and Bicyclists		
Land Use	Level of Right-of-Way Impacts	+	Minimal right-of-way impacts (no homes or businesses impacted)	-	The development of a new POE exit lane and associated railroad underpass widening will require use of railroad right-of-way while the extension of Eisele Drive will have right-of-way impacts to a large number of existing businesses.
		0	Moderate right-of-way impacts (1-5 residences or commercial buildings impacted)		
		-	Substantial right-of-way impacts (>5 residences or commercial buildings impacted)		
Cost	Level of Construction Costs and Feasibility	+	Low Construction Costs	-	The POE reconfiguration, extension of Eisele Drive, and railroad underpass widening costs will be substantial.
		0	Moderate Construction Costs		
		-	Substantial Construction Costs		
	Constructability	+	Improvements Can be Constructed with Minimal Physical Challenges	-	The POE exit loop road will require widening of the railroad underpass beneath US 730.
		-	Construction of Improvements will be a Physical Challenge		
Environmental / Livability Factors	Environmental Impacts	+	No Impacts to Environmentally Sensitive Areas	+	No known impacts to environmentally sensitive areas or features.
		0	Minimal Impacts to Environmentally Sensitive Areas		
		-	Moderate-Substantial Impacts to Environmentally Sensitive Areas		
	Livability Impacts	+	Concept fits in the context of the built environment	+	The identified improvements generally fit within the context of the interchange study area and have no disproportional impacts to surrounding land uses.
		-	Concept does not fit in the context of the built environment		
Accessibility	Spacing Standards	+	Meets ODOT's Spacing Standards	+	The concept generally meets the ODOT interchange spacing standards on both sides of the interchange. The spacing between the southbound ramp terminal and Eisele Drive would be approximately 1,050 feet.
		0	Works Toward ODOT Spacing Standards		
		-	No Improvement Over Existing Conditions		
	Local Circulation	+	Improves local circulation	-	Partial access to/from Brownell Boulevard in the form of a right-in/right-out access at US 730 would be provided. A local circulation network is developed to serve existing and future land uses along the south side of US 730.
		-	Fails to improve local circulation		

Category	Evaluation Criteria	Scoring Key		Score	Comments
Concept 5					
Transportation	Addresses the close spacing between the southbound ramp terminal and Brownell Boulevard	+	Improves the spacing and performance of the interchange	+	The closure of Brownell Boulevard at US 730 and development of a separate access ramp from the POE to I-82 southbound helps to improve the long-term operational performance of the interchange.
		-	Fails to address the spacing and performance of the interchange.		
	Improves non-vehicular travel	+	Improvements Would Enhance the Comfort and Safety of Pedestrians and Bicyclists	0	No significant improvements for bicycle/pedestrian travel are associated with this concept.
		0	Likely an Insignificant Impact on Pedestrians and Bicyclists		
		-	Would Negatively Impact the Comfort and Safety of Pedestrians and Bicyclists		
Land Use	Level of Right-of-Way Impacts	+	Minimal right-of-way impacts (no homes or businesses impacted)	+	The infrastructure improvements associated with interchange are likely to have minimal to no impacts to existing businesses or residences.
		0	Moderate right-of-way impacts (1-5 residences or commercial buildings impacted)		
		-	Substantial right-of-way impacts (>5 residences or commercial buildings impacted)		
Cost	Level of Construction Costs and Feasibility	+	Low Construction Costs	-	The costs of the new access ramp underpass from the POE to I-82 and associated modifications to the POE infrastructure will be substantial.
		0	Moderate Construction Costs		
		-	Substantial Construction Costs		
	Constructability	+	Improvements Can be Constructed with Minimal Physical Challenges	- (fatal flaw)	Construction of a POE exit ramp beneath US 730 is likely not be possible given the presence of the Brownell irrigation ditch. The length of the associated on-ramp to I-82 will in turn need to be longer than the current on-ramp in order to separate the two merge areas. This additional length will require widening of the Umatilla River overpass.
		-	Construction of Improvements will be a Physical Challenge		
Environmental / Livability Factors	Environmental Impacts	+	No Impacts to Environmentally Sensitive Areas	-	The POE exit ramp beneath US 730 would impact the existing Brownell irrigation ditch.
		0	Minimal Impacts to Environmentally Sensitive Areas		
		-	Moderate-Substantial Impacts to Environmentally Sensitive Areas		
	Livability Impacts	+	Concept fits in the context of the built environment	+	The identified improvements generally fit within the context of the interchange study area and have no disproportional impacts to surrounding land uses.
		-	Concept does not fit in the context of the built environment		
Accessibility	Spacing Standards	+	Meets ODOT's Spacing Standards	+	The concept generally meets the ODOT interchange spacing standards on both sides of the interchange. The spacing between the southbound ramp terminal and Eisele Drive would be approximately 1,050 feet.
		0	Works Toward ODOT Spacing Standards		
		-	No Improvement Over Existing Conditions		
	Local Circulation	+	Improves local circulation	-	Despite the development of a local circulation network to serve land uses along the south side of US 730, the closure of Brownell Boulevard will cut off efficient access to the marina and adjacent land uses.
		-	Fails to improve local circulation		

Category	Evaluation Criteria	Scoring Key		Score	Comments
Concept 6					
Transportation	Addresses the close spacing between the southbound ramp terminal and Brownell Boulevard	+	Improves the spacing and performance of the interchange	- (fatal flaw)	The development of a single point interchange would likely tighten up the ramp terminal spacing from Brownell Boulevard, but not significantly enough to improve the long-term operational performance of the interchange.
		-	Fails to address the spacing and performance of the interchange.		
	Improves non-vehicular travel	+	Improvements Would Enhance the Comfort and Safety of Pedestrians and Bicyclists	0	No significant improvements for bicycle/pedestrian travel are associated with this concept.
		0	Likely an Insignificant Impact on Pedestrians and Bicyclists		
		-	Would Negatively Impact the Comfort and Safety of Pedestrians and Bicyclists		
Land Use	Level of Right-of-Way Impacts	+	Minimal right-of-way impacts (no homes or businesses impacted)	+	The infrastructure improvements associated with interchange are likely to have minimal to no impacts to existing businesses or residences.
		0	Moderate right-of-way impacts (1-5 residences or commercial buildings impacted)		
		-	Substantial right-of-way impacts (>5 residences or commercial buildings impacted)		
Cost	Level of Construction Costs and Feasibility	+	Low Construction Costs	-	The costs of retrofitting the interchange to accommodate a single point interchange will be substantial.
		0	Moderate Construction Costs		
		-	Substantial Construction Costs		
	Constructability	+	Improvements Can be Constructed with Minimal Physical Challenges	-	There is likely insufficient width underneath the I-82 overpass to physically construct a single point interchange.
		-	Construction of Improvements will be a Physical Challenge		
Environmental / Livability Factors	Environmental Impacts	+	No Impacts to Environmentally Sensitive Areas	+	No known impacts to environmentally sensitive areas or features.
		0	Minimal Impacts to Environmentally Sensitive Areas		
		-	Moderate-Substantial Impacts to Environmentally Sensitive Areas		
	Livability Impacts	+	Concept fits in the context of the built environment	+	The identified improvements generally fit within the context of the surrounding land uses and built environment.
		-	Concept does not fit in the context of the built environment		
Accessibility	Spacing Standards	+	Meets ODOT's Spacing Standards	-	The concept does not meet or significantly work in the direction of meeting the spacing standards as it does not address the close intersection spacing with Brownell Boulevard. The functional area of the single point intersection would only be 300 feet from the existing Brownell Boulevard intersection.
		0	Works Toward ODOT Spacing Standards		
		-	No Improvement Over Existing Conditions		
	Local Circulation	+	Improves local circulation	+	A local circulation network is developed to serve existing and future land uses along the south side of US 730 and access to/from Brownell Boulevard is maintained.
		-	Fails to improve local circulation		

Category	Evaluation Criteria	Scoring Key		Score	Comments
Concept 7					
Transportation	Addresses the close spacing between the southbound ramp terminal and Brownell Boulevard	+	Improves the spacing and performance of the interchange	+	The closure of Brownell Boulevard at US 730, the development of a dedicated freeway exit ramp to the POE, and development of a southbound PARCLO B loop ramp along the Eisele Drive corridor eliminates the existing interchange/local circulation spacing problem and creates a long-term operational improvement for the interchange.
		-	Fails to address the spacing and performance of the interchange.		
	Improves non-vehicular travel	+	Improvements Would Enhance the Comfort and Safety of Pedestrians and Bicyclists	+	The dedicated freeway exit ramp to the POE will eliminate the existing entrance driveway to the POE and increase the comfort and safety for bicyclists along US 730.
		0	Likely an Insignificant Impact on Pedestrians and Bicyclists		
		-	Would Negatively Impact the Comfort and Safety of Pedestrians and Bicyclists		
Land Use	Level of Right-of-Way Impacts	+	Minimal right-of-way impacts (no homes or businesses impacted)	-	While the PARCLO B ramp terminal won't impact a large number of existing business structures, it will require a significant amount of right-of-way compared to other loop ramp concepts.
		0	Moderate right-of-way impacts (1-5 residences or commercial buildings impacted)		
		-	Substantial right-of-way impacts (>5 residences or commercial buildings impacted)		
Cost	Level of Construction Costs and Feasibility	+	Low Construction Costs	-	The PARCLO B ramp terminal, POE reconfiguration, and new southbound on-ramp will have substantial construction costs.
		0	Moderate Construction Costs		
		-	Substantial Construction Costs		
	Constructability	+	Improvements Can be Constructed with Minimal Physical Challenges	-	To accommodate the PARCLO B loop ramp, a separate US 730 overpass bridge structure will need to be constructed adjacent to the existing overpass bridge. The alignment of the PARCLO B loop ramp has some topographic challenges that will require significant earthwork modifications. To provide sufficient acceleration length for trucks, the new southbound I-82 on-ramp alignment will require some widening to the existing Umatilla River overpass.
		-	Construction of Improvements will be a Physical Challenge		
Environmental / Livability Factors	Environmental Impacts	+	No Impacts to Environmentally Sensitive Areas	0	The PARCLO B ramp terminal will require a new Brownell Ditch irrigation canal crossing.
		0	Minimal Impacts to Environmentally Sensitive Areas		
		-	Moderate-Substantial Impacts to Environmentally Sensitive Areas		
	Livability Impacts	+	Concept fits in the context of the built environment	-	The PARCLO B loop ramp is large and very impactive to the surrounding land uses.
		-	Concept does not fit in the context of the built environment		
Accessibility	Spacing Standards	+	Meets ODOT's Spacing Standards	0	The concept moves in the direction of meeting the ODOT interchange spacing standards, but it does isolate large sections of the south side of US 730 forcing direct access to/from the highway.
		0	Works Toward ODOT Spacing Standards		
		-	No Improvement Over Existing Conditions		
	Local Circulation	+	Improves local circulation	-	Access to/from Brownell Boulevard is not maintained and the large loop ramp isolates large sections of the south side of US 730 from an access standpoint.
		-	Fails to improve local circulation		

Category	Evaluation Criteria	Scoring Key		Score	Comments
Concept 8a					
Transportation	Addresses the close spacing between the southbound ramp terminal and Brownell Boulevard	+	Improves the spacing and performance of the interchange	+	The relocation of the POE and realignment of Brownell Boulevard at US 730 eliminates the existing interchange/local circulation spacing problem and creates a long-term operational improvement for the interchange. The POE relocation would require a substantial intersection widening improvement at the US 730/Eisele Drive intersection.
		-	Fails to address the spacing and performance of the interchange.		
	Improves non-vehicular travel	+	Improvements Would Enhance the Comfort and Safety of Pedestrians and Bicyclists	+	A more conventional highway cross section with focused points of access to/from US 730 is created which can improve the walking and biking environment.
		0	Likely an Insignificant Impact on Pedestrians and Bicyclists		
		-	Would Negatively Impact the Comfort and Safety of Pedestrians and Bicyclists		
Land Use	Level of Right-of-Way Impacts	+	Minimal right-of-way impacts (no homes or businesses impacted)	-	Relocating the POE would be very impactive from a right-of-way standpoint, however the existing POE site could be realigned for future development within the City.
		0	Moderate right-of-way impacts (1-5 residences or commercial buildings impacted)		
		-	Substantial right-of-way impacts (>5 residences or commercial buildings impacted)		
Cost	Level of Construction Costs and Feasibility	+	Low Construction Costs	-	The POE relocation and extension of Eisele Drive will have substantial cost implications.
		0	Moderate Construction Costs		
		-	Substantial Construction Costs		
	Constructability	+	Improvements Can be Constructed with Minimal Physical Challenges	-	The identified location of the relocated POE will require substantial earthwork modifications.
		-	Construction of Improvements will be a Physical Challenge		
Environmental / Livability Factors	Environmental Impacts	+	No Impacts to Environmentally Sensitive Areas	0	The extension of Eisele Drive to the relocated POE require a new Brownell Ditch irrigation canal crossing.
		0	Minimal Impacts to Environmentally Sensitive Areas		
		-	Moderate-Substantial Impacts to Environmentally Sensitive Areas		
	Livability Impacts	+	Concept fits in the context of the built environment	+	The identified improvements generally fit within the context of the surrounding land uses and built environment.
		-	Concept does not fit in the context of the built environment		
Accessibility	Spacing Standards	+	Meets ODOT's Spacing Standards	+	The concept generally meets the ODOT interchange spacing standards on both sides of the interchange. The spacing between the southbound ramp terminal and Eisele Drive would be approximately 1,050 feet.
		0	Works Toward ODOT Spacing Standards		
		-	No Improvement Over Existing Conditions		
	Local Circulation	+	Improves local circulation	+	A local circulation network is developed to serve existing and future land uses along the south side of US 730 and access to/from Brownell Boulevard is maintained.
		-	Fails to improve local circulation		

Category	Evaluation Criteria	Scoring Key		Score	Comments
Concept 8b					
Transportation	Addresses the close spacing between the southbound ramp terminal and Brownell Boulevard	+	Improves the spacing and performance of the interchange	+	The relocation of the POE and realignment of Brownell Boulevard at US 730 eliminates the existing interchange/local circulation spacing problem, creates a long-term operational improvement for the interchange, and eliminates some truck traffic along the US 730 corridor. Intersection widening improvements at the US 730/Eisele Drive intersection would be less than Concept 8a.
		-	Fails to address the spacing and performance of the interchange.		
	Improves non-vehicular travel	+	Improvements Would Enhance the Comfort and Safety of Pedestrians and Bicyclists	+	A more conventional highway cross section for US 730 is created which can improve the walking and biking environment.
		0	Likely an Insignificant Impact on Pedestrians and Bicyclists		
		-	Would Negatively Impact the Comfort and Safety of Pedestrians and Bicyclists		
Land Use	Level of Right-of-Way Impacts	+	Minimal right-of-way impacts (no homes or businesses impacted)	-	Relocating the POE would be very impactive from a right-of-way standpoint, however the existing POE site could be realigned for future development within the City.. The new on-ramp to I-82 would also require significant right-of-way acquisition.
		0	Moderate right-of-way impacts (1-5 residences or commercial buildings impacted)		
		-	Substantial right-of-way impacts (>5 residences or commercial buildings impacted)		
Cost	Level of Construction Costs and Feasibility	+	Low Construction Costs	-	The POE relocation, extension of Eisele Drive, and new ramps to/from I-82 will have substantial cost implications above and beyond Concept 8a.
		0	Moderate Construction Costs		
		-	Substantial Construction Costs		
	Constructability	+	Improvements Can be Constructed with Minimal Physical Challenges	-	The identified location of the relocated POE will require substantial earthwork modifications.
		-	Construction of Improvements will be a Physical Challenge		
Environmental / Livability Factors	Environmental Impacts	+	No Impacts to Environmentally Sensitive Areas	0	The extension of Eisele Drive to the relocated POE require a new Brownell Ditch irrigation canal crossing.
		0	Minimal Impacts to Environmentally Sensitive Areas		
		-	Moderate-Substantial Impacts to Environmentally Sensitive Areas		
	Livability Impacts	+	Concept fits in the context of the built environment	+	The identified improvements generally fit within the context of the surrounding land uses and built environment.
		-	Concept does not fit in the context of the built environment		
Accessibility	Spacing Standards	+	Meets ODOT's Spacing Standards	+	The concept generally meets the ODOT interchange spacing standards on both sides of the interchange. The spacing between the southbound ramp terminal and Eisele Drive would be approximately 1,050 feet.
		0	Works Toward ODOT Spacing Standards		
		-	No Improvement Over Existing Conditions		
	Local Circulation	+	Improves local circulation	+	A local circulation network is developed to serve existing and future land uses along the south side of US 730 and access to/from Brownell Boulevard is maintained.
		-	Fails to improve local circulation		

Category	Evaluation Criteria	Scoring Key		Score	Comments
Concept 9					
Transportation	Addresses the close spacing between the southbound ramp terminal and Brownell Boulevard	+	Improves the spacing and performance of the interchange	+	The modification of the existing southbound off-ramp to a dedicated POE entrance lane and the development of a southbound PARCLO B loop ramp eliminates the existing interchange/local circulation spacing problem and creates a long-term operational improvement for the interchange. However, it should be noted that the dedicated POE truck lane would require an additional exclusive westbound right-turn phase or the restriction of westbound right-turns at Brownell Boulevard.
		-	Fails to address the spacing and performance of the interchange.		
	Improves non-vehicular travel	+	Improvements Would Enhance the Comfort and Safety of Pedestrians and Bicyclists	+	The dedicated POE entrance lane will eliminate the existing entrance driveway to the POE and increase the comfort and safety for bicyclists along US 730.
		0	Likely an Insignificant Impact on Pedestrians and Bicyclists		
		-	Would Negatively Impact the Comfort and Safety of Pedestrians and Bicyclists		
Land Use	Level of Right-of-Way Impacts	+	Minimal right-of-way impacts (no homes or businesses impacted)	0	The PARCLO B ramp terminal will likely impact the existing gas station/restaurant business on the south side of US 730.
		0	Moderate right-of-way impacts (1-5 residences or commercial buildings impacted)		
		-	Substantial right-of-way impacts (>5 residences or commercial buildings impacted)		
Cost	Level of Construction Costs and Feasibility	+	Low Construction Costs	-	The new exiting loop ramp and on-ramp costs will be substantial. A Pacific Power radical feed under the interchange may need to be moved or altered.
		0	Moderate Construction Costs		
		-	Substantial Construction Costs		
	Constructability	+	Improvements Can be Constructed with Minimal Physical Challenges	-	To accommodate the PARCLO B loop ramp, a separate US 730 overpass bridge structure will need to be constructed adjacent to the existing overpass bridge. The railroad overpass will need to be widened for the dedicated truck exit ramp in order to get the proper spacing for consecutive exit ramps. The alignment of the PARCLO B loop ramp has some topographic challenges that will require significant earthwork modifications. To provide sufficient acceleration length for trucks, the new southbound I-82 on-ramp alignment will likely require some widening to the existing Umatilla River overpass.
		-	Construction of Improvements will be a Physical Challenge		
Environmental / Livability Factors	Environmental Impacts	+	No Impacts to Environmentally Sensitive Areas	0	The PARCLO B ramp terminal may require modifications to the existing Brownell Ditch irrigation canal.
		0	Minimal Impacts to Environmentally Sensitive Areas		
		-	Moderate-Substantial Impacts to Environmentally Sensitive Areas		
	Livability Impacts	+	Concept fits in the context of the built environment	+	The identified improvements generally fit within the context of the surrounding land uses and built environment.
		-	Concept does not fit in the context of the built environment		
Accessibility	Spacing Standards	+	Meets ODOT's Spacing Standards	0	The concept works in the direction of the spacing standards on the west side of the interchange. The spacing between the new southbound ramp terminal and Eisele Drive would be approximately 800 feet.
		0	Works Toward ODOT Spacing Standards		
		-	No Improvement Over Existing Conditions		
	Local Circulation	+	Improves local circulation	+	A local circulation network is developed to serve existing and future land uses along the south side of US 730 and access to/from Brownell Boulevard is maintained.
		-	Fails to improve local circulation		

Category	Evaluation Criteria	Scoring Key		Score	Comments
Concept 10					
Transportation	Addresses the close spacing between the southbound ramp terminal and Brownell Boulevard	+	Improves the spacing and performance of the interchange	-	Although a new dedicated freeway exit ramp to the POE would improve the ability to get trucks into the POE without having to travel through the existing interchange, all existing trucks would have to take essentially the same travel path. This does not address the existing spacing or long-term operational issues of the interchange.
		-	Fails to address the spacing and performance of the interchange.		
	Improves non-vehicular travel	+	Improvements Would Enhance the Comfort and Safety of Pedestrians and Bicyclists	+	The dedicated freeway exit ramp to the POE will eliminate the existing entrance driveway to the POE and increase the comfort and safety for bicyclists along US 730.
		0	Likely an Insignificant Impact on Pedestrians and Bicyclists		
		-	Would Negatively Impact the Comfort and Safety of Pedestrians and Bicyclists		
Land Use	Level of Right-of-Way Impacts	+	Minimal right-of-way impacts (no homes or businesses impacted)	-	The dedicated freeway exit ramp to the POE and the modification of the Cherry Street corridor for POE exiting traffic would have substantial right-of-way impacts to the existing residential neighborhood.
		0	Moderate right-of-way impacts (1-5 residences or commercial buildings impacted)		
		-	Substantial right-of-way impacts (>5 residences or commercial buildings impacted)		
Cost	Level of Construction Costs and Feasibility	+	Low Construction Costs	-	The dedicated exit ramp to the POE and reconstruction of the POE infrastructure would have substantial construction costs.
		0	Moderate Construction Costs		
		-	Substantial Construction Costs		
	Constructability	+	Improvements Can be Constructed with Minimal Physical Challenges	-	The new dedicated POE freeway off-ramp would require widening of the 3rd Street overpass and a horizontal/vertical bridge structure that would need to span Brownell Boulevard and the adjacent railroad tracks. The POE would need to be temporarily closed and reconfigured to accommodate the new off-ramp/access road.
		-	Construction of Improvements will be a Physical Challenge		
Environmental / Livability Factors	Environmental Impacts	+	No Impacts to Environmentally Sensitive Areas	+	No known impacts to environmentally sensitive areas or features.
		0	Minimal Impacts to Environmentally Sensitive Areas		
		-	Moderate-Substantial Impacts to Environmentally Sensitive Areas		
	Livability Impacts	+	Concept fits in the context of the built environment	-	The dedicated freeway exit ramp alignment through the adjacent residential neighborhood would have a substantial impact on its livability. The use of the Cherry Street corridor for existing POE traffic does not fit the context of the residential neighborhood.
		-	Concept does not fit in the context of the built environment		
Accessibility	Spacing Standards	+	Meets ODOT's Spacing Standards	-	The concept does not meet or significantly work in the direction of meeting the spacing standards as it does not address the close intersection spacing with Brownell Boulevard.
		0	Works Toward ODOT Spacing Standards		
		-	No Improvement Over Existing Conditions		
	Local Circulation	+	Improves local circulation	+	A local circulation network is developed to serve existing and future land uses along the south side of US 730 and access to/from Brownell Boulevard is maintained.
		-	Fails to improve local circulation		

Category	Evaluation Criteria	Scoring Key		Score	Comments
Concept 11					
Transportation	Addresses the close spacing between the southbound ramp terminal and Brownell Boulevard	+	Improves the spacing and performance of the interchange	+	The development of a split diamond interchange using the extension of the Eisele Drive corridor and modification of the Brownell Boulevard intersection eliminates the existing interchange/local circulation spacing problem and creates a long-term operational improvement for the interchange.
		-	Fails to address the spacing and performance of the interchange.		
	Improves non-vehicular travel	+	Improvements Would Enhance the Comfort and Safety of Pedestrians and Bicyclists	+	A more conventional highway cross section for US 730 is created which can improve the walking and biking environment.
		0	Likely an Insignificant Impact on Pedestrians and Bicyclists		
		-	Would Negatively Impact the Comfort and Safety of Pedestrians and Bicyclists		
Land Use	Level of Right-of-Way Impacts	+	Minimal right-of-way impacts (no homes or businesses impacted)	-	The slit diamond interchange will have substantial right-of-way impacts along both sides of I-82. New right-of-way acquisition would be necessary to create an extension of the Eisele Drive corridor and a new POE exit lane underneath US 730.
		0	Moderate right-of-way impacts (1-5 residences or commercial buildings impacted)		
		-	Substantial right-of-way impacts (>5 residences or commercial buildings impacted)		
Cost	Level of Construction Costs and Feasibility	+	Low Construction Costs	-	The development of the split diamond interchange and reconfiguration of the POE is likely to be the most expensive of all the interchange improvement concepts.
		0	Moderate Construction Costs		
		-	Substantial Construction Costs		
	Constructability	+	Improvements Can be Constructed with Minimal Physical Challenges	-	The split diamond interchange would have significant topographical challenges. The ramps associated with the new split diamond terminal would necessitate a widening of the Umatilla River overpass. The POE would need to be temporarily closed and its internal circulation reconfigured.
		-	Construction of Improvements will be a Physical Challenge		
Environmental / Livability Factors	Environmental Impacts	+	No Impacts to Environmentally Sensitive Areas	0	The PARCLO B ramp terminal may require modifications to the existing Brownell Ditch irrigation canal.
		0	Minimal Impacts to Environmentally Sensitive Areas		
		-	Moderate-Substantial Impacts to Environmentally Sensitive Areas		
	Livability Impacts	+	Concept fits in the context of the built environment	-	The identified improvements would necessitate a fundamental shift in how traffic utilizes the existing interchange and surrounding land uses.
		-	Concept does not fit in the context of the built environment		
Accessibility	Spacing Standards	+	Meets ODOT's Spacing Standards	+	The concept generally meets the ODOT interchange spacing standards on both sides of the interchange. The spacing between the southbound ramp terminal and Eisele Drive would be approximately 1,050 feet.
		0	Works Toward ODOT Spacing Standards		
		-	No Improvement Over Existing Conditions		
	Local Circulation	+	Improves local circulation	+	A local circulation network is developed to serve existing and future land uses along the south side of US 730 and partial access to/from Brownell Boulevard is maintained. The roundabout can help facilitate additional movements from the POE to I-82.
		-	Fails to improve local circulation		

Category	Evaluation Criteria	Scoring Key		Score	Comments
Concept 12					
Transportation	Addresses the close spacing between the southbound ramp terminal and Brownell Boulevard	+	Improves the spacing and performance of the interchange	-	The development of a double roundabout at the southbound ramp terminal and Brownell Boulevard intersection would be insufficient to accommodate the large numbers of trucks entering and leaving the POE.
		-	Fails to address the spacing and performance of the interchange.		
	Improves non-vehicular travel	+	Improvements Would Enhance the Comfort and Safety of Pedestrians and Bicyclists	-	The double roundabout design is an unconventional intersection treatment and the large number of trucks traveling through the intersection may create an uncomfortable environment for pedestrians and bicyclists.
		0	Likely an Insignificant Impact on Pedestrians and Bicyclists		
		-	Would Negatively Impact the Comfort and Safety of Pedestrians and Bicyclists		
Land Use	Level of Right-of-Way Impacts	+	Minimal right-of-way impacts (no homes or businesses impacted)	0	The roundabouts would likely have some moderate right-of-way impacts to the existing gas station/restaurant business on the south side of US 730.
		0	Moderate right-of-way impacts (1-5 residences or commercial buildings impacted)		
		-	Substantial right-of-way impacts (>5 residences or commercial buildings impacted)		
Cost	Level of Construction Costs and Feasibility	+	Low Construction Costs	0	The roundabout interchange terminal treatments would only have moderate costs compared to the other concepts.
		0	Moderate Construction Costs		
		-	Substantial Construction Costs		
	Constructability	+	Improvements Can be Constructed with Minimal Physical Challenges	+	Construction of the roundabouts would not require substantial modifications to the interchange and would be limited to the existing US 730 corridor.
		-	Construction of Improvements will be a Physical Challenge		
Environmental / Livability Factors	Environmental Impacts	+	No Impacts to Environmentally Sensitive Areas	+	No known impacts to environmentally sensitive areas or features.
		0	Minimal Impacts to Environmentally Sensitive Areas		
		-	Moderate-Substantial Impacts to Environmentally Sensitive Areas		
	Livability Impacts	+	Concept fits in the context of the built environment	+	The identified improvements generally fit within the context of the interchange study area and have no disproportional impacts to surrounding land uses.
		-	Concept does not fit in the context of the built environment		
Accessibility	Spacing Standards	+	Meets ODOT's Spacing Standards	-	The concept does not meet or significantly work in the direction of meeting the spacing standards as it does not address the close intersection spacing with Brownell Boulevard.
		0	Works Toward ODOT Spacing Standards		
		-	No Improvement Over Existing Conditions		
	Local Circulation	+	Improves local circulation	+	A local circulation network is developed to serve existing and future land uses along the south side of US 730 and partial access to/from Brownell Boulevard is maintained.
		-	Fails to improve local circulation		

Appendix H

Technical Memorandum #7b – Detailed Concept Analysis

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
610 SW Alder Street, Suite 700, Portland, OR 97205 P 503.228.5230 F 503.273.8169

TECHNICAL MEMORANDUM #7b

I-82 / US 730 IAMP

Detailed Concept Analysis

Date: August 6, 2010 Project #: 10369.0

To: Teresa Penninger, ODOT Region 5

From: Matt Hughart, AICP, Nick Foster, Marc Butorac, P.E., P.T.O.E.

cc: Technical Advisory Committee (TAC)
Public Advisory Committee (PAC)

This technical memorandum documents the more detailed evaluation of the interchange/local circulation design concepts that have been recommended for this analysis by the TAC and PAC. Included in this memorandum is an overview of the screening process that pared the original set of twelve concepts down to the four concepts discussed in this memorandum.

The purpose of this memorandum is to provide the TAC and PAC committee members with a detailed assessment of the pared down concepts, and to assist in the process that will ultimately select a preferred interchange and local circulation form for inclusion in the interchange area management plan (IAMP).

INITIAL SCREENING RESULTS

As presented in Technical Memorandum #7a, twelve interchange and local circulation concepts were developed through three separate workshop exercises involving members of the TAC, PAC, and attendees at a public open house held on April 21, 2010. These concepts represented a culmination of individual design ideas, roadway alignment preferences, and technical design parameters developed by the workshop participants and the consultant team. At meetings on June 16, 2010, the TAC and PAC were presented with general descriptions, graphical layout illustrations, and a qualitative assessment of the various advantages/disadvantages of the concepts. Upon reviewing the preliminary interchange layouts and advantages and disadvantages of each, both the TAC and PAC committee members assisted in the screening of concepts that would move forward for a more detailed quantitative evaluation.

After going through the screening process, the TAC and PAC committees determined that a number of concepts either did not adequately address current and future operational issues or posed significant cost/constructability problems. Those concepts and the main issues behind their

elimination for further study are detailed in Technical Memorandum 7a. For summary purposes, they are briefly outlined in Table 7b-1 below.

Table 7b-1 Recommended List of Concepts to Move Forward in the Evaluation Process

Concepts	Recommended for Further Evaluation by the TAC and PAC	Final Selection / Primary Disadvantages to Concept
1a	No	No – Constructability
1b	No	No – Constructability
2	No	No – Constructability
3	Yes	Yes
4	No	No – Constructability
5	No	No – Constructability
6	No	No – Constructability, Operations
7	No	No – Cost
8a	No	No – Cost
8b	Yes	Yes
9	Yes	Yes
10	No	No – Constructability, Operations
11	Yes	Yes
12	No	No – Constructability, Operations

SELECTED INTERCHANGE/LOCAL CIRCULATION CONCEPTS

As shown in Table 7b-1, the TAC and PAC committees recommended that Concepts 3, 8b, 9, and 11 move forward for a more detailed quantitative evaluation. Based on this direction, the consultant team performed additional cost and operations analyses of each of these concepts.

These analyses are described below. *Detailed double-line drawings of each concept are contained within Appendix "A."*

Operational Analyses

All operational analyses were performed in accordance with the procedures stated in the 2000 *Highway Capacity Manual* (Reference 1). The Oregon Highway Plan (OHP, Reference 2) sets operational standards based on volume-to-capacity (v/c) ratios for the interchange ramp terminals (v/c of 0.80 for the northbound ramp terminal and 0.85 for the southbound ramp terminal), intersections of US 730 (v/c of 0.85 between Brownell Boulevard and Sloan Avenue and v/c of 0.70 east of I-82), and US 395 (v/c of 0.70). These standards apply to the overall v/c ratio at signalized intersections and to the state highway approaches at unsignalized intersections. The minor street

approaches that are stop-controlled at unsignalized intersections have a standard of a v/c ratio of 0.90. Furthermore, the Oregon *Highway Design Manual* (HDM, Reference 3) requires that all new interchanges be constructed to operate at a v/c ratio of 0.70. This standard applies to the I-82 Southbound ramp terminal in Concepts 3 and 9, where it is reconfigured. *Appendix "B" contains the detailed operational analysis worksheets.*

There are some common results between all concepts. The US 730/Umatilla River Road and US 730/US 395-Devore Road intersections are forecast to operate above their applicable standards. This is consistent with the future conditions analysis described in Technical Memorandum #6. Neither intersection was addressed by these concepts due to their distance from the I-82 ramp terminals. The unsignalized US 730/Scaplehorn Road and US 730/Bucks Lane intersections are forecast to operate with high delays for the stop-controlled side-street approaches. However, both are forecast to operate well under the applicable v/c ratio standard of 0.90 due to the relatively low volumes that are forecast to utilize those approaches.

The following sections highlight the operational analysis of each concept.

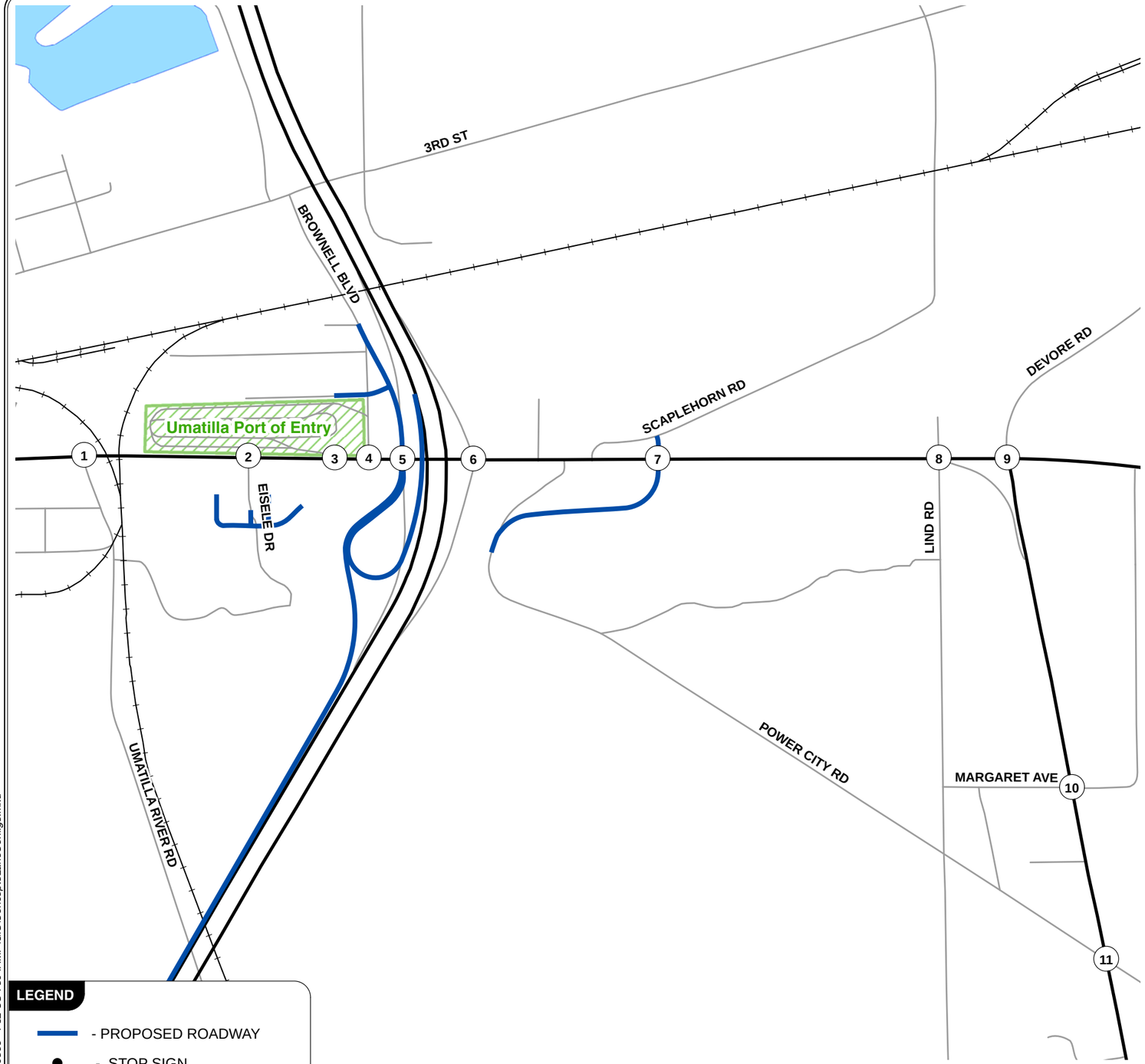
Concept 3

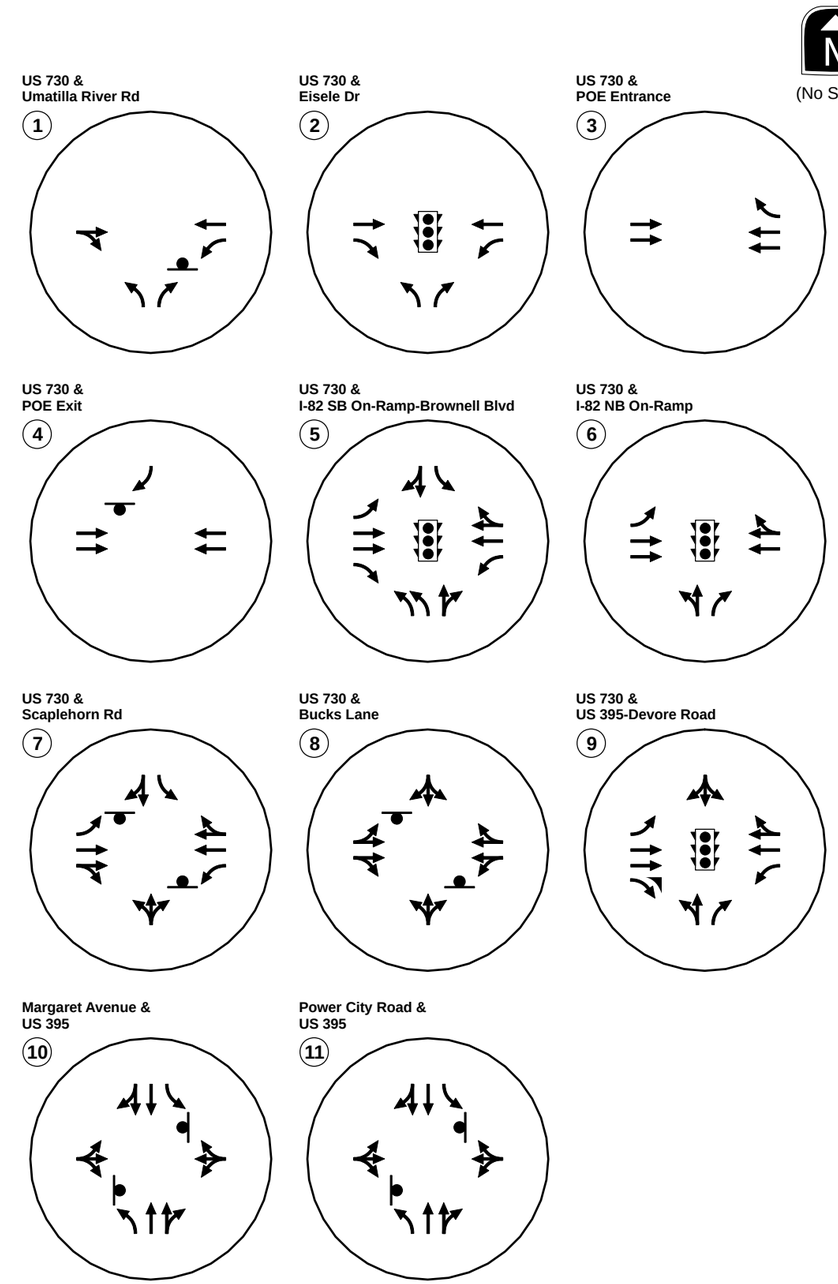
Figure 7b-1 illustrates the assumed lane configurations and traffic control devices for Concept 3, while Figure 7b-2 shows the resulting operations analysis results. As the figures show the reconfigured I-82 Southbound ramp terminal will require dual left-turns from the Southbound off-ramp onto US 730. The dual left-turn lanes will allow the intersection to meet the HDM v/c standard and will help prevent vehicular queues from stacking back into the curve of the loop ramp.

Concept 8b

The assumed lane configurations and traffic control devices and the operations analysis results for Concept 8b are shown in Figures 7b-3 and 7b-4. This concept will require that the I-82 Southbound off-ramp be widened from its existing configuration to include an exclusive left-turn lane in addition to the existing through/left-turn lane. The additional lane will help prevent vehicles from stacking back on the off-ramp to the mainline of the freeway. This lane is necessitated by the shift of truck volumes from the right-turn lane to the through/left-turn lane since the POE is in a new location south of US 730 and accessed from the I-82 Southbound on-ramp.

Discussions with ODOT and Federal Highway Administration (FHWA) indicate that Concept 8b in its shown form will likely be unacceptable. This is due to the ability for vehicles to potentially access the POE from US 730 and from there access the I-82 Southbound on-ramp, which violates FHWA policy. A potential solution to this is to eliminate inbound access to the POE from US 730 and to only allow traffic exiting the POE to access US 730 via Eisele Drive. This configuration is shown as Concept 8c in Appendix "A." The Concept 8c modification does not materially affect the operations results for Concept 8b shown in Figure 7b-4.





LEGEND

- PROPOSED ROADWAY
- STOP SIGN
- TRAFFIC SIGNAL

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CONCEPT 3 LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVICES UMATILLA, OREGON

FIGURE **7b-1**

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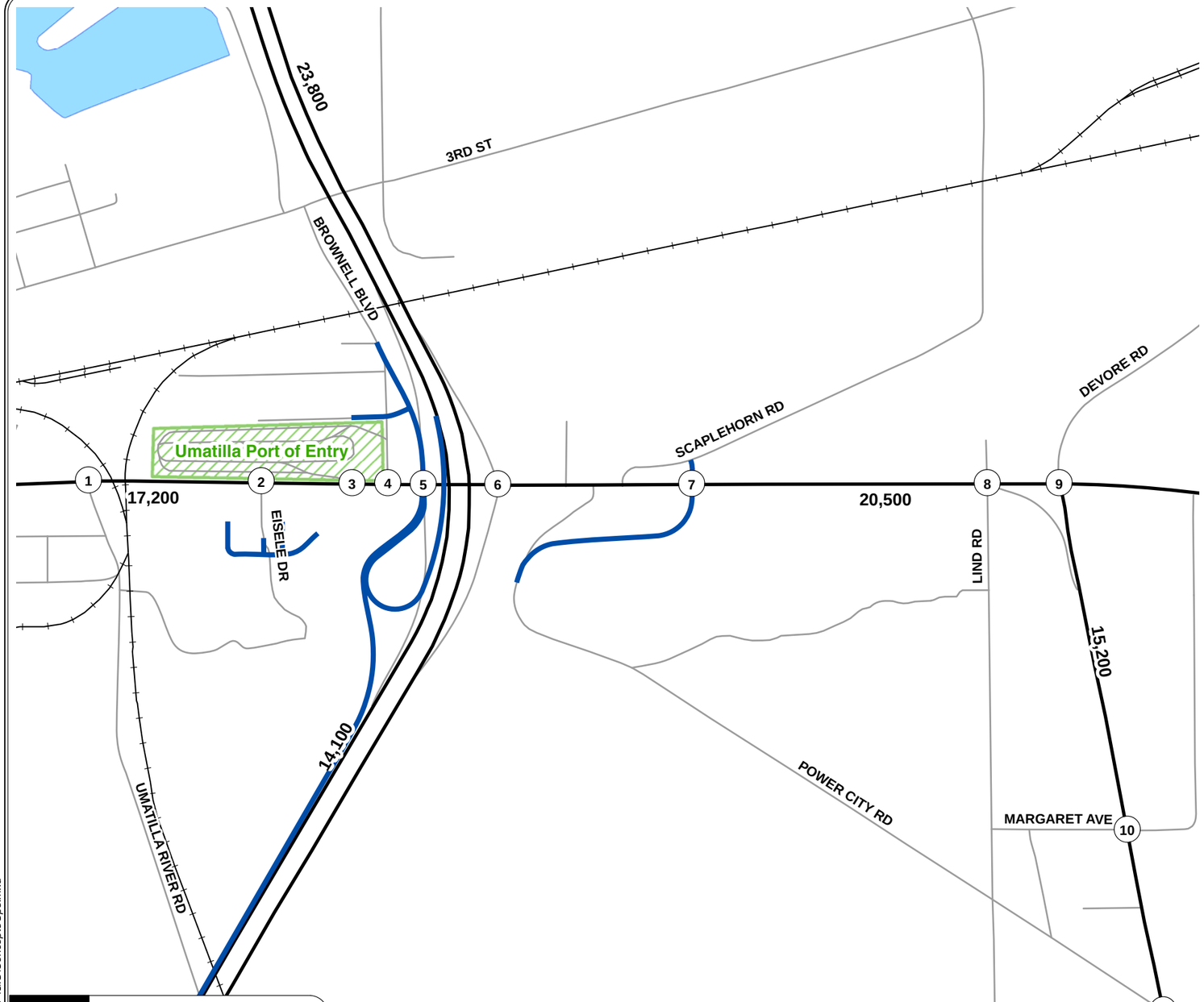

(No Scale)

US 730 & Umatilla River Rd (1): CM=NB, LOS=F, Del=>50, V/C=0.97; 600, 195, 210, 95, 710, 95

US 730 & Eisele Dr (2): LOS=B, Del=16.6, V/C=0.60; 620, 75, 90, 175, 710, 155

US 730 & POE Entrance (3): 795; 90, 865

US 730 & POE Exit (4): CM=SB, LOS=B, Del=11.1, V/C=0.03; 15; 795; 935

US 730 & I-82 SB On-Ramp-Brownell Blvd (5): LOS=C, Del=26.5, V/C=0.70; 25, 100, 60; 45, 670, 80; 45, 555, 110; 355, 10, 415

US 730 & I-82 NB On-Ramp (6): LOS=B, Del=11.0, V/C=0.57; 230, 915; 440, 655; 55, <5, 145

US 730 & Scaplehorn Rd (7): CM=NB, LOS=F, Del=>50, V/C=0.21; 85, <5, 40; 85, 965, 10; 45, 1000, <5; 15, <5, <5

US 730 & Bucks Lane (8): CM=NB, LOS=F, Del=>50, V/C=0.49; <5, <5, <5; <5, 965, 35; <5, 1010, 10; 35, <5, 10

US 730 & Devore Road (9): LOS=D, Del=38.1, V/C=0.73; 35, 25, <5; <5, 425, 550; <5, 425, 170; 560, 5, 210

Margaret Avenue & US 395-Devore Road (10): CM=WB, LOS=C, Del=15.2, V/C=0.01; <5, 740, <5; <5, <5, 5; <5, <5, <5; 5, 775, <5

Power City Road & US 395 (11): CM=WB, LOS=C, Del=17.8, V/C=0.08; 10, 730, 10; 5, <5, 20; 5, <5, 15; 5, 775, 5

LEGEND

PROPOSED ROADWAY

15,000 = APPROXIMATE ADT VOLUME

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

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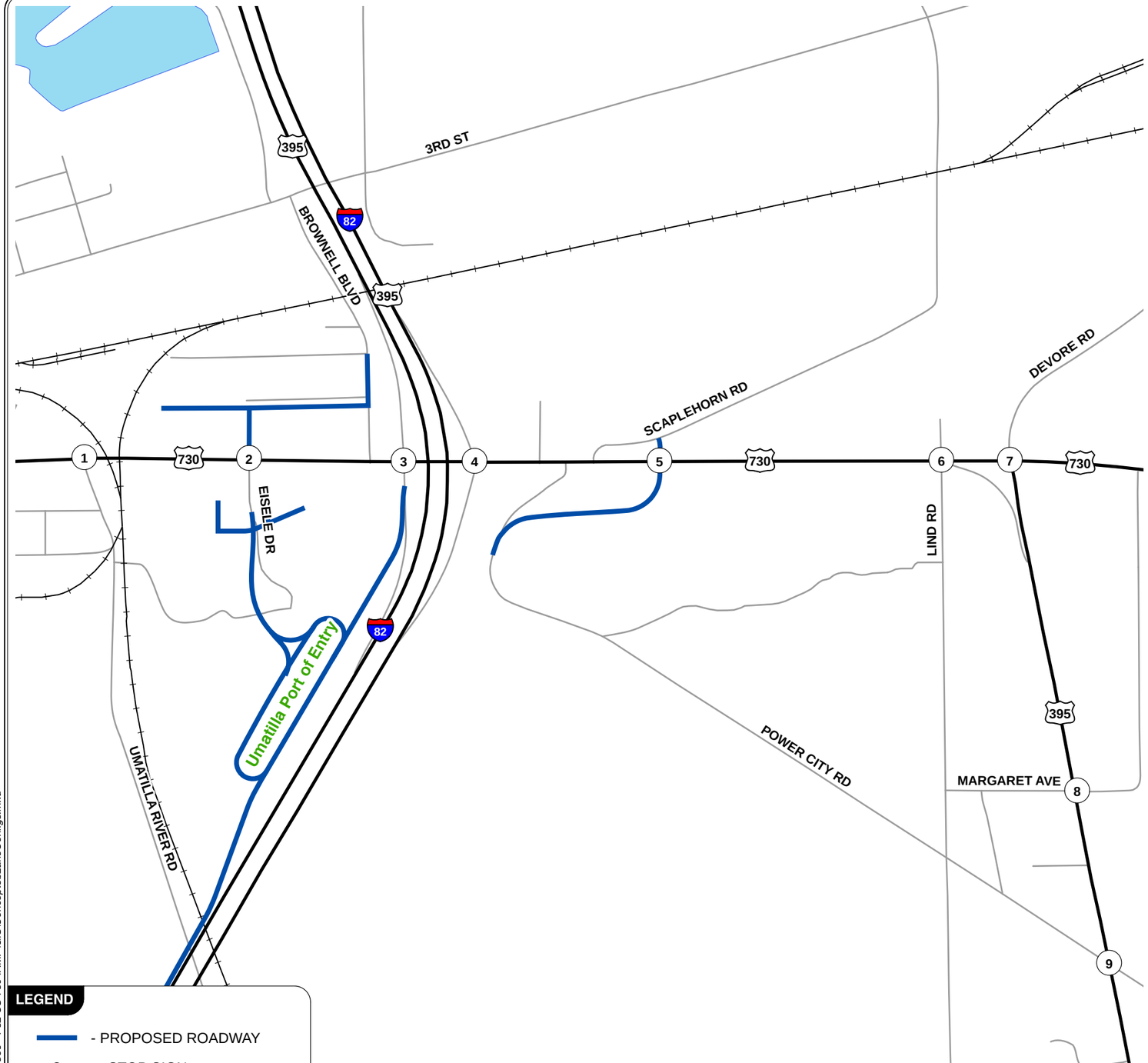
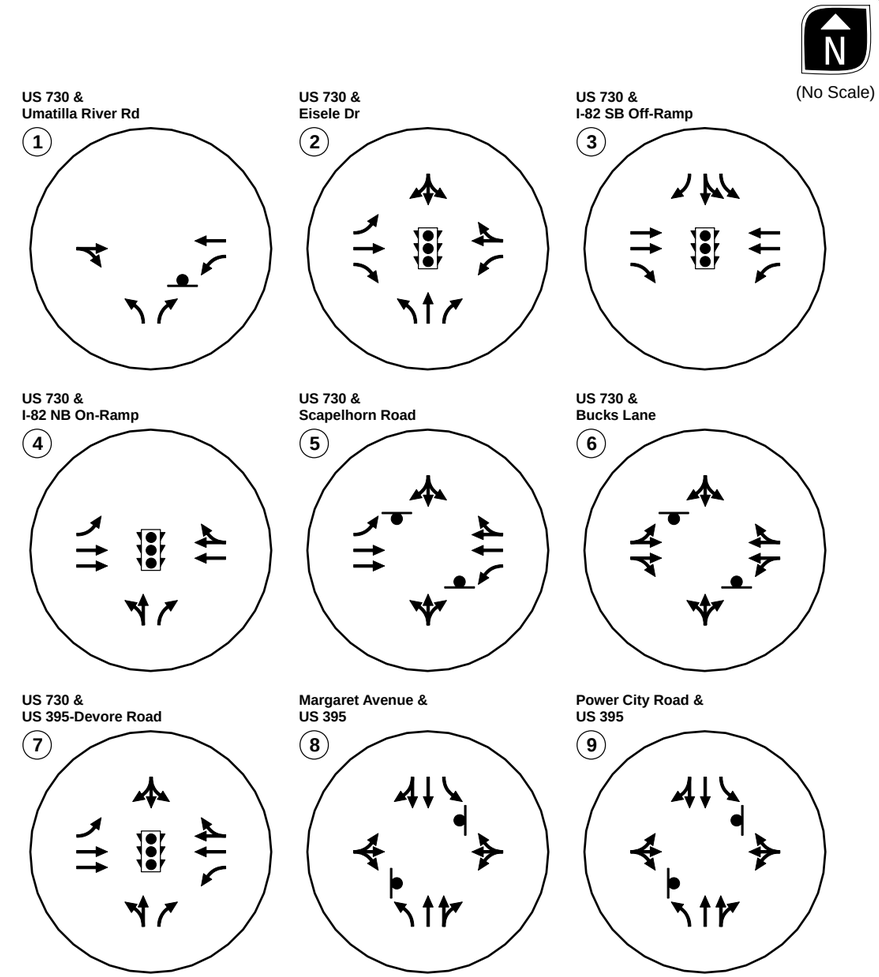
YEAR 2030 TRAFFIC CONDITIONS-CONCEPT #3
30TH HIGHEST HOUR
UMATILLA, OREGON

FIGURE **7b-2**





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CONCEPT #8B LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVICES UMATILLA, OREGON

FIGURE **7b-3**

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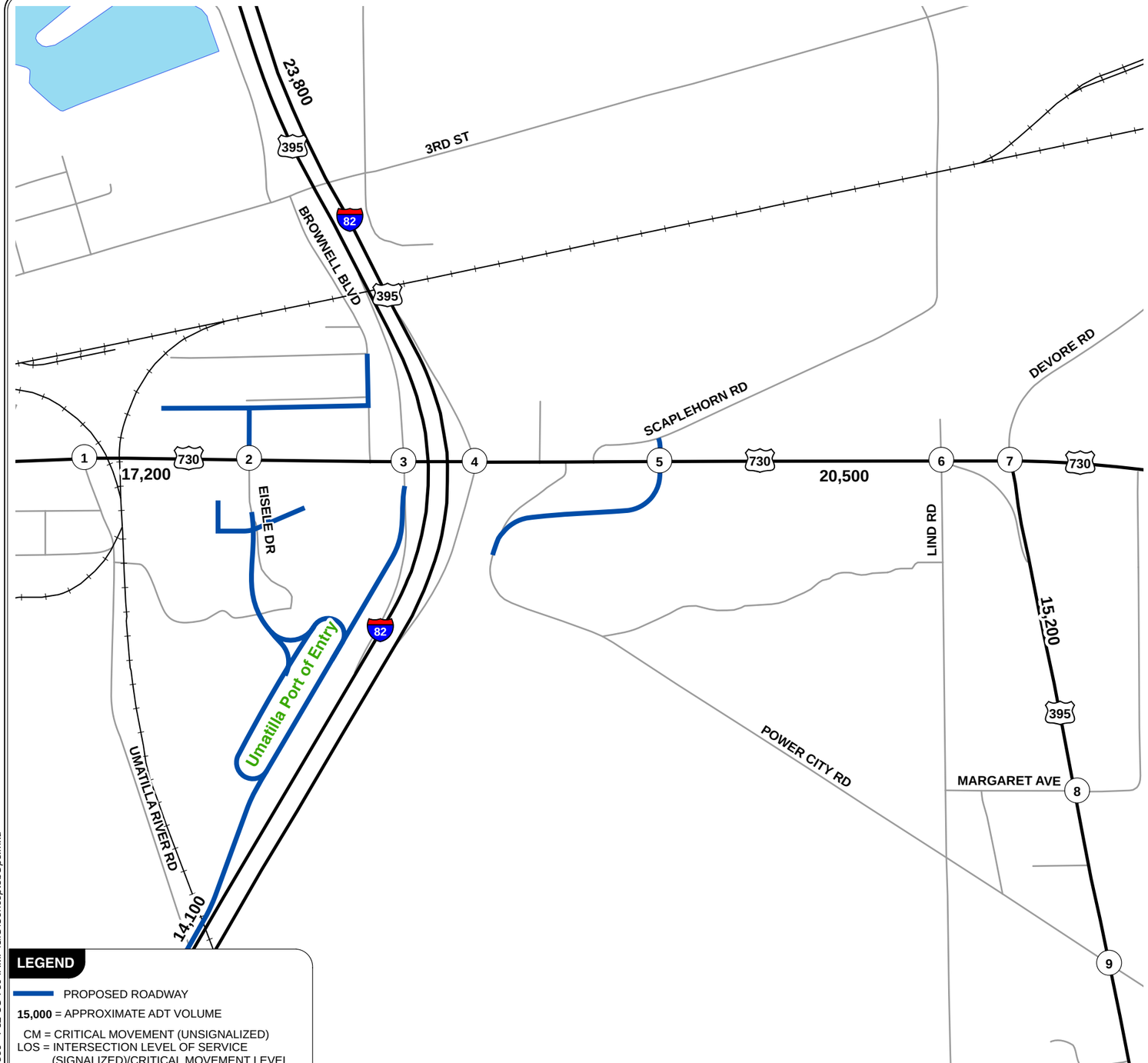

(No Scale)

US 730 & Umatilla River Rd
1
CM=NB
LOS=F
Del=>50
V/C=0.97
600 195 710 95 210 95

US 730 & Eisele Dr
2
LOS=B
Del=13.2
V/C=0.65
25 5 55 45 575 75 55 665 155 110 <5 175

US 730 & I-82 SB Off-Ramp
3
LOS=C
Del=23.6
V/C=0.73
280 90 415 730 80 600 110

US 730 & I-82 NB On-Ramp
4
LOS=B
Del=10.7
V/C=0.57
230 915 440 655 55 <5 145

US 730 & Scaplehorn Road
5
CM=NB
LOS=F
Del=>50
V/C=0.20
85 <5 40 85 965 10 45 1000 <5 15 <5 <5

US 730 & Bucks Lane
6
CM=NB
LOS=F
Del=>50
V/C=0.49
<5 <5 <5 <5 965 35 <5 1010 10 35 <5 10

US 730 & US 395-Devore Road
7
LOS=D
Del=38.1
V/C=0.73
35 25 <5 <5 425 550 <5 425 170 560 5 210

Margaret Avenue & US 395
8
CM=WB
LOS=C
Del=15.2
V/C=0.01
<5 740 <5 <5 <5 5 <5 <5 <5 5 775 <5

Power City Road & US 395
9
CM=WB
LOS=C
Del=17.8
V/C=0.08
10 730 10 5 <5 20 5 <5 15 5 775 5

LEGEND

PROPOSED ROADWAY

15,000 = APPROXIMATE ADT VOLUME

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

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YEAR 2030 TRAFFIC CONDITIONS-CONCEPT #8B
30TH HIGHEST HOUR
UMATILLA, OREGON

FIGURE **7b-4**

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Concept 9

Figure 7b-5 illustrates the assumed lane configurations and traffic control devices for Concept 9, while Figure 7b-6 shows the resulting operations analysis results. Similar to Concept 3, this concept would reconfigure the I-82 Southbound ramp terminal. However, under Concept 9, truck traffic bound for the POE is provided with its own off-ramp that becomes a third westbound lane onto US 730 feeding directly into the POE. Since this traffic is removed from the ramp terminal intersection, dual left-turn lanes onto US 730 are not needed in order to meet the HDM v/c ratio standard.

Concept 11

The assumed lane configurations and traffic control devices and the operations analysis results for Concept 11 are shown in Figures 7b-7 and 7b-8. At the last set of TAC and PAC meetings, several variations of this concept were discussed. The first variation involves the US 730/Eisele Drive-POE access intersection as either a roundabout or a full access traffic signal. The second variation is the connection from the POE underneath US 730 to Eisele Drive and whether this is needed or not. The results shown in Figure 7b-8 assume a traffic signal and that the connection underneath US 730 exists. Removing this underpass connection does not significantly affect operations at the traffic signal and a single-roundabout would be sufficient assuming that this underpass is in place. However, if the underpass is not in place, then a double-lane roundabout would be required due to the introduction of the truck traffic exiting the POE.

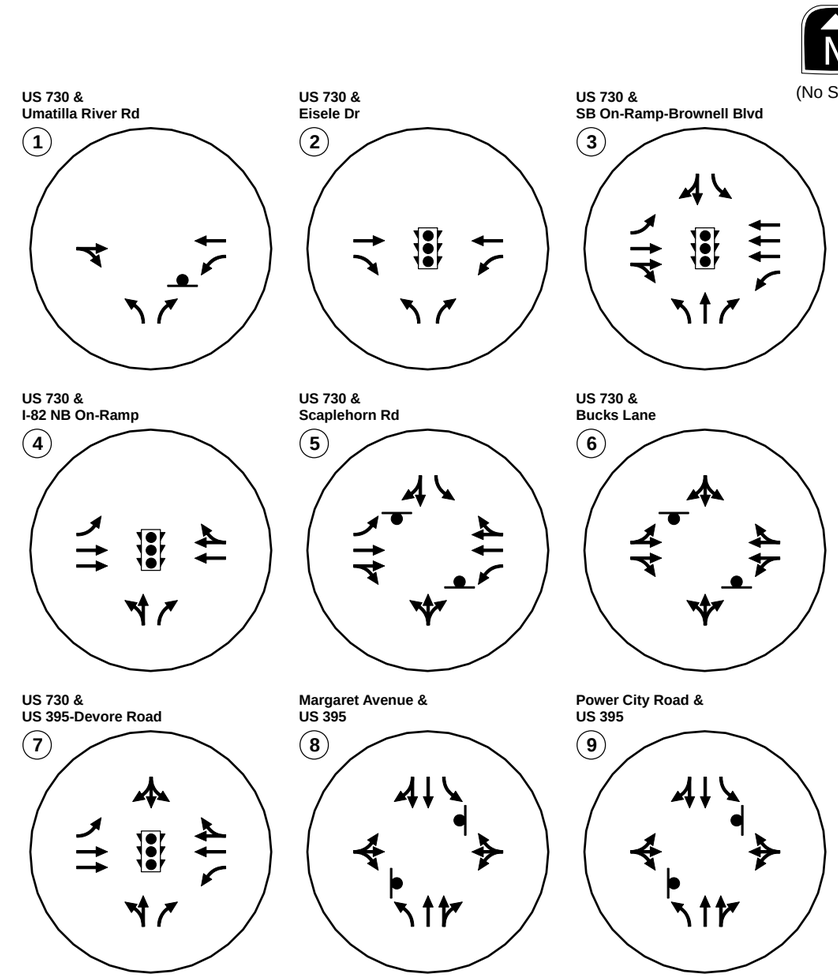
Preliminary Cost Estimates

Preliminary cost estimates were prepared for each concept. The project team developed the construction cost estimates, while ODOT prepared approximate right-of-way (ROW) estimates. These estimates are preliminary and subject to change as the concepts move into more detailed development. Table 7b-2 summarizes the preliminary construction and ROW cost estimates. *Appendix "C" contains the detailed cost estimate sheets.*

Table 7b-2 Preliminary Cost Estimates

Concept	Preliminary Cost Estimate		
	Construction	ROW	Total
3	$17,600,000	$600,000	$18,200,000
8b/8c	$23,700,000	$2,900,000	$26,600,000
9	$18,100,000	$2,400,000	$20,500,000
11	$25,100,000	$800,000	$25,900,000

As Table 7b-2 shows, concepts 8b/8c and 11 are estimated to have similar costs and to be the most expensive concepts. Concept 9 is approximately $5.4 – 6.1 million less than these two concepts



LEGEND

- PROPOSED ROADWAY
- STOP SIGN
- TRAFFIC SIGNAL

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CONCEPT #9 LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVICES UMATILLA, OREGON

FIGURE **7b-5**

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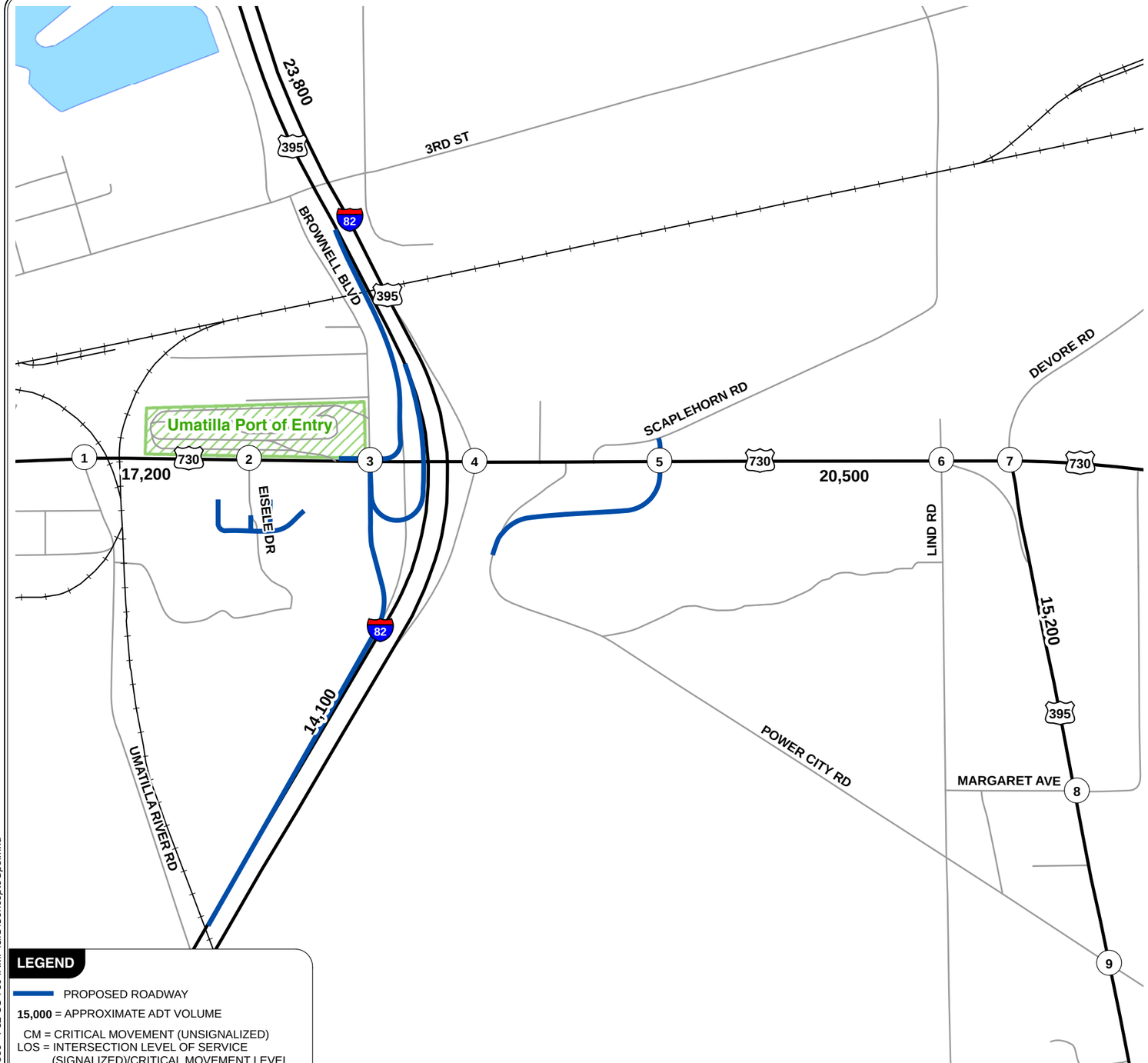

(No Scale)

US 730 & Umatilla River Rd

1

CM=NB
LOS=F
Del=>50
V/C=0.95

600 195 710 95 210 95

US 730 & Eisele Dr

2

LOS=B
Del=10.1
V/C=0.64

620 75 710 155 90 175

US 730 & SB On-Ramp-Brownell Blvd

3

LOS=C
Del=26.7
V/C=0.68

45 100 60 45 670 80 640 110 270 10 415

US 730 & I-82 NB On-Ramp

4

LOS=B
Del=10.4
V/C=0.55

230 915 440 610 55 <5 145

US 730 & Scaplehorn Rd

5

CM=NB
LOS=F
Del=>50
V/C=0.20

85 <5 40 85 965 10 45 955 <5 15 <5 <5

US 730 & Bucks Lane

6

CM=NB
LOS=F
Del=>50
V/C=0.47

<5 <5 <5 <5 965 35 <5 965 10 35 <5 10

US 730 & US 395-Devore Road

7

LOS=D
Del=38
V/C=0.73

35 25 <5 <5 425 550 <5 425 170 515 50 210

Margaret Avenue & US 395

8

CM=WB
LOS=C
Del=15.2
V/C=0.01

<5 740 <5 <5 <5 5 <5 <5 <5 5 775 <5

Power City Road & US 395

9

CM=WB
LOS=C
Del=17.8
V/C=0.08

10 730 10 5 <5 20 5 <5 15 5 775 5

LEGEND

PROPOSED ROADWAY

15,000 = APPROXIMATE ADT VOLUME

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

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YEAR 2030 TRAFFIC CONDITIONS-CONCEPT #9
30TH HIGHEST HOUR
UMATILLA, OREGON

FIGURE **7b-6**

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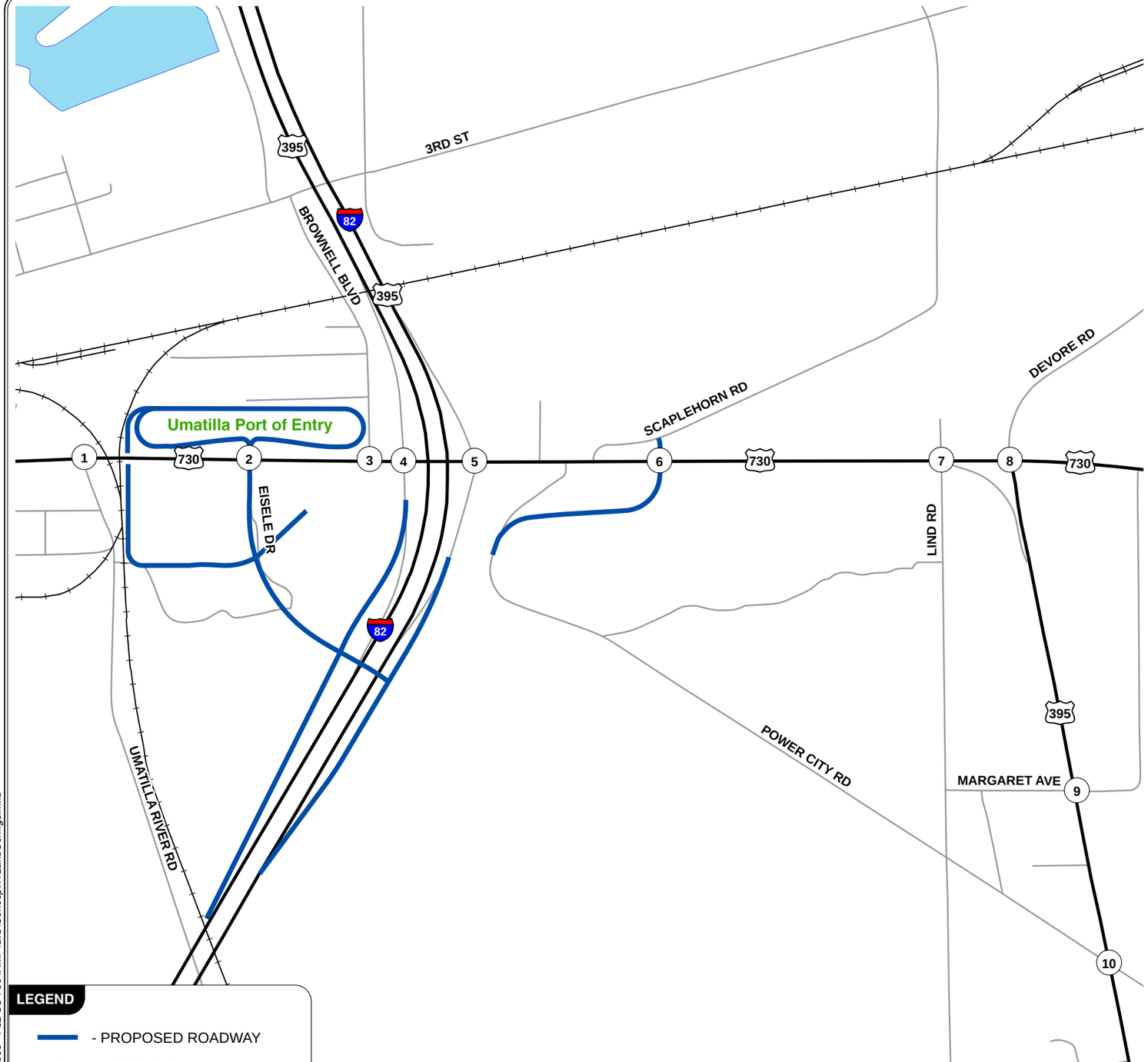

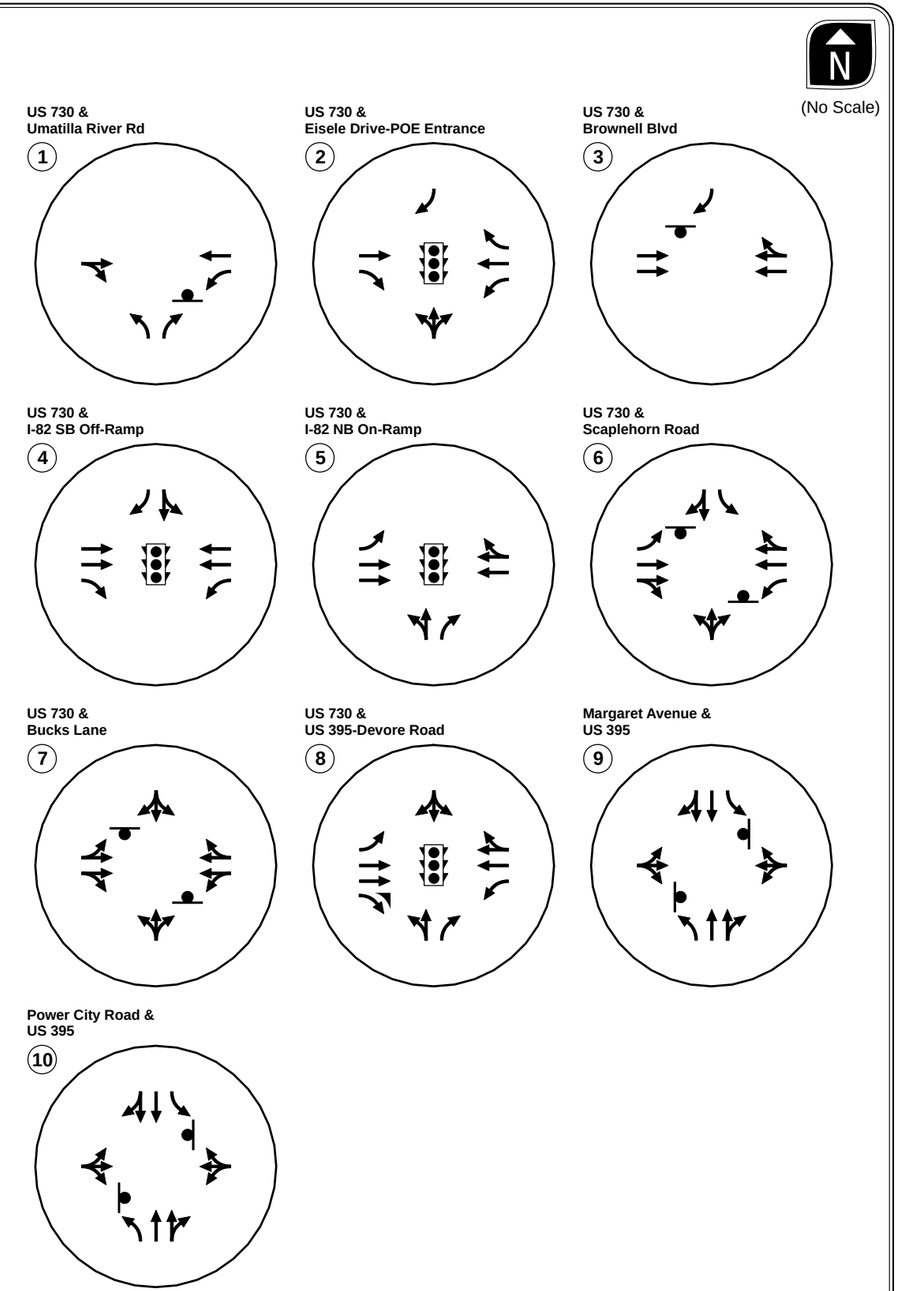

LEGEND

- PROPOSED ROADWAY
- STOP SIGN
- TRAFFIC SIGNAL

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CONCEPT #11 LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVICES UMATILLA, OREGON

FIGURE **7b-7**

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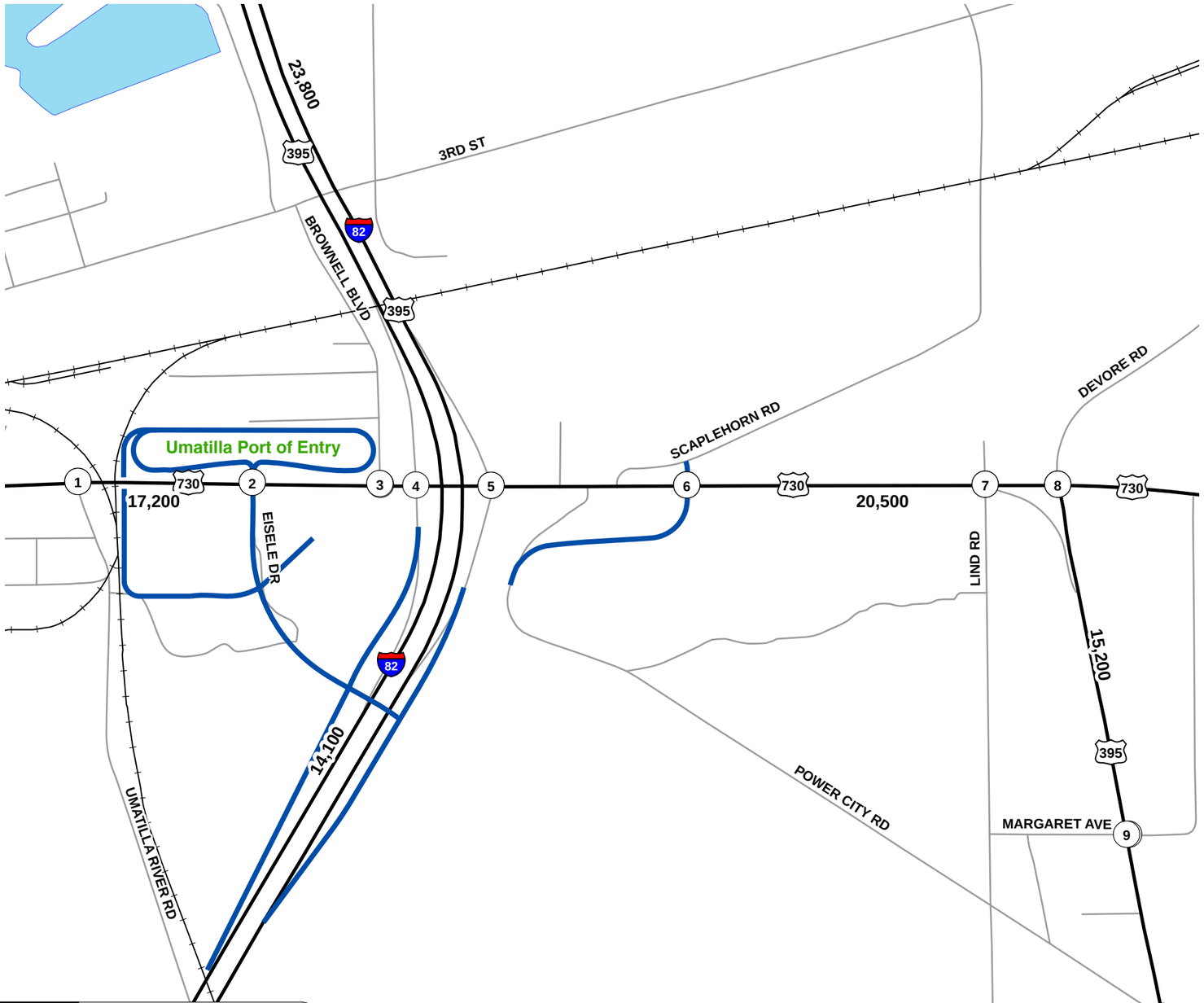

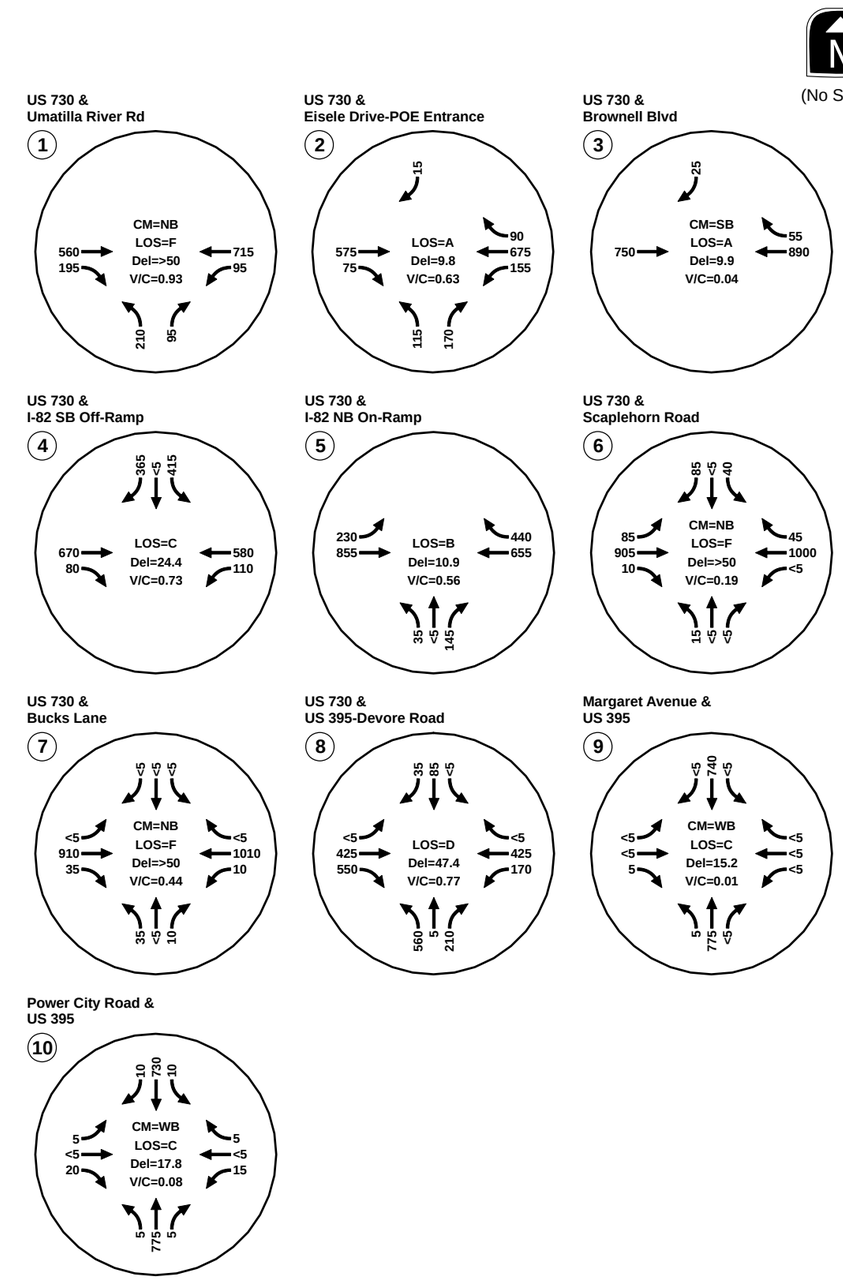

LEGEND

PROPOSED ROADWAY

15,000 = APPROXIMATE ADT VOLUME

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

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YEAR 2030 TRAFFIC CONDITIONS-CONCEPT #11
30TH HIGHEST HOUR
UMATILLA, OREGON

FIGURE **7b-8**

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TRANSPORTATION ENGINEERING / PLANNING

and $2.3 million more than Concept 3. The difference in costs between Concept 3 and 9 is due to Concept 3 being expected to have lower ROW cost estimates.

NEXT STEPS

As previously stated, the purpose of the memorandum is to provide the TAC and PAC committee members with a quantitative assessment of the selected concepts. Based on input from the TAC and PAC, one concept will be selected to move forward as part of the formal I-82/US 730 IAMP.

Appendix A
Concept Double Line Drawings

Appendix B
Synchro Output Sheets

HCM Unsignalized Intersection Capacity Analysis
2: US 730 & POE Exit

8/5/2010

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	794	937	0	0	17
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	854	1008	0	0	18
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)		848	214			
pX, platoon unblocked	0.86				0.86	0.86
vC, conflicting volume	1008				1434	504
vC1, stage 1 conf vol					1008	
vC2, stage 2 conf vol					427	
vCu, unblocked vol	681				1178	95
tC, single (s)	4.1				6.8	8.8
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	4.2
p0 queue free %	100				100	97
cM capacity (veh/h)	780				354	612

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	427	427	504	504	18
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	18
cSH	1700	1700	1700	1700	612
Volume to Capacity	0.25	0.25	0.30	0.30	0.03
Queue Length 95th (ft)	0	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	0.0	11.1
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.1
Approach LOS					B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	35.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	670	78	112	553	45	357	10	415	58	98	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5		4.0	4.5		4.0	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		*0.67	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.85		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3406	1583	1597	3500		1920	1531		1770	1802	
Flt Permitted	0.32	1.00	1.00	0.19	1.00		0.95	1.00		0.50	1.00	
Satd. Flow (perm)	602	3406	1583	328	3500		1920	1531		922	1802	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	51	736	86	123	608	49	392	11	456	64	108	30
RTOR Reduction (vph)	0	0	39	0	6	0	0	160	0	0	10	0
Lane Group Flow (vph)	51	736	47	123	651	0	392	307	0	64	128	0
Heavy Vehicles (%)	2%	6%	2%	13%	2%	2%	26%	2%	6%	2%	2%	2%
Turn Type	pm+pt		Perm	pm+pt			Prot			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6						4		
Actuated Green, G (s)	29.1	27.0	27.0	35.3	30.1		21.9	30.1		18.4	13.3	
Effective Green, g (s)	29.1	27.0	27.0	35.3	30.1		21.9	30.1		18.4	13.3	
Actuated g/C Ratio	0.34	0.32	0.32	0.42	0.36		0.26	0.36		0.22	0.16	
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5		4.0	4.5		4.0	4.5	
Vehicle Extension (s)	3.0	4.6	4.6	3.0	5.6		3.0	5.0		3.0	3.5	
Lane Grp Cap (vph)	237	1090	506	215	1248		498	546		252	284	
v/s Ratio Prot	0.01	c0.22		c0.04	0.19		c0.20	c0.20		0.02	0.07	
v/s Ratio Perm	0.07		0.03	0.20						0.04		
v/c Ratio	0.22	0.68	0.09	0.57	0.52		0.79	0.56		0.25	0.45	
Uniform Delay, d1	18.8	24.9	20.1	17.0	21.5		29.1	21.9		26.8	32.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	2.0	0.1	3.6	0.9		8.0	2.2		0.5	1.3	
Delay (s)	19.3	26.9	20.3	20.6	22.4		37.1	24.0		27.3	33.6	
Level of Service	B	C	C	C	C		D	C		C	C	
Approach Delay (s)		25.8			22.1			30.0			31.6	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	26.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	84.4	Sum of lost time (s)	16.5
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Volume (veh/h)	0	794	865	89	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	819	892	92	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)		628	434			
pX, platoon unblocked	0.88				0.88	0.88
vC, conflicting volume	892				1301	446
vC1, stage 1 conf vol					892	
vC2, stage 2 conf vol					409	
vCu, unblocked vol	615				1078	110
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	849				391	815

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3
Volume Total	409	409	446	446	92
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	92
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.24	0.24	0.26	0.26	0.05
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0		0.0		
Approach LOS					

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	27.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	620	77	154	711	91	174
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1743	1568	1770	1827	1770	1553
Flt Permitted	1.00	1.00	0.17	1.00	0.95	1.00
Satd. Flow (perm)	1743	1568	312	1827	1770	1553
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	646	80	160	741	95	181
RTOR Reduction (vph)	0	32	0	0	0	129
Lane Group Flow (vph)	646	48	160	741	95	52
Heavy Vehicles (%)	9%	3%	2%	4%	2%	4%
Turn Type		Perm	pm+pt			Perm
Protected Phases	4		3	8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	31.9	31.9	42.0	42.0	20.4	20.4
Effective Green, g (s)	31.9	31.9	42.0	42.0	20.4	20.4
Actuated g/C Ratio	0.45	0.45	0.60	0.60	0.29	0.29
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	790	711	312	1090	513	450
v/s Ratio Prot	c0.37		0.04	c0.41	c0.05	
v/s Ratio Perm		0.03	0.26			0.03
v/c Ratio	0.82	0.07	0.51	0.68	0.19	0.12
Uniform Delay, d1	16.7	10.9	10.4	9.6	18.8	18.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.6	0.0	1.4	1.7	0.8	0.5
Delay (s)	23.3	10.9	11.9	11.3	19.6	18.9
Level of Service	C	B	B	B	B	B
Approach Delay (s)	21.9			11.4	19.1	
Approach LOS	C			B	B	

Intersection Summary			
HCM Average Control Delay	16.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	70.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	601	193	93	710	210	97
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	626	201	97	740	219	101
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						2
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				1142		
pX, platoon unblocked					0.74	
vC, conflicting volume			827		1660	727
vC1, stage 1 conf vol					727	
vC2, stage 2 conf vol					933	
vCu, unblocked vol			827		1717	727
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			88		15	76
cM capacity (veh/h)			804		258	424

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	827	97	740	320
Volume Left	0	97	0	219
Volume Right	201	0	0	101
cSH	1700	804	1700	328
Volume to Capacity	0.49	0.12	0.44	0.97
Queue Length 95th (ft)	0	10	0	261
Control Delay (s)	0.0	10.1	0.0	80.0
Lane LOS		B		F
Approach Delay (s)	0.0	1.2		80.0
Approach LOS				F

Intersection Summary			
Average Delay	13.4		
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	231	914	0	0	657	441	53	1	143	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0			4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95			1.00	1.00			
Frt	1.00	1.00			0.94			1.00	0.85			
Flt Protected	0.95	1.00			1.00			0.95	1.00			
Satd. Flow (prot)	1626	3406			3212			1663	1346			
Flt Permitted	0.13	1.00			1.00			0.95	1.00			
Satd. Flow (perm)	217	3406			3212			1663	1346			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	238	942	0	0	677	455	55	1	147	0	0	0
RTOR Reduction (vph)	0	0	0	0	120	0	0	0	128	0	0	0
Lane Group Flow (vph)	238	942	0	0	1012	0	0	56	19	0	0	0
Heavy Vehicles (%)	11%	6%	2%	2%	4%	8%	9%	2%	20%	2%	2%	2%
Turn Type	pm+pt						Perm		Perm			
Protected Phases	7	4			8			2				
Permitted Phases	4						2		2			
Actuated Green, G (s)	46.2	46.2			27.6			8.1	8.1			
Effective Green, g (s)	46.2	46.2			27.6			8.1	8.1			
Actuated g/C Ratio	0.74	0.74			0.44			0.13	0.13			
Clearance Time (s)	4.0	4.0			4.0			4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0			
Lane Grp Cap (vph)	491	2526			1423			216	175			
v/s Ratio Prot	c0.11	0.28			c0.32							
v/s Ratio Perm	0.25							0.03	0.01			
v/c Ratio	0.48	0.37			0.71			0.26	0.11			
Uniform Delay, d1	8.0	2.9			14.1			24.4	23.9			
Progression Factor	1.00	1.00			1.00			1.00	1.00			
Incremental Delay, d2	0.8	0.1			1.7			0.6	0.3			
Delay (s)	8.7	3.0			15.8			25.0	24.2			
Level of Service	A	A			B			C	C			
Approach Delay (s)		4.1			15.8			24.4			0.0	
Approach LOS		A			B			C			A	

Intersection Summary			
HCM Average Control Delay	11.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	62.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	85	963	10	1	1000	43	14	1	1	42	1	85
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	92	1014	11	1	1053	45	15	1	1	44	1	89
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		1295										
pX, platoon unblocked												
vC, conflicting volume	1098			1024			1822	2304	512	1771	2286	549
vC1, stage 1 conf vol							1204	1204		1077	1077	
vC2, stage 2 conf vol							618	1100		693	1209	
vCu, unblocked vol	1098			1024			1822	2304	512	1771	2286	549
tC, single (s)	4.1			4.1			9.1	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							8.1	5.5		6.5	5.5	
tF (s)	2.2			2.2			4.3	4.0	3.3	3.5	4.0	3.3
p0 queue free %	85			100			80	99	100	77	99	81
cM capacity (veh/h)	631			674			75	144	507	191	171	480

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2
Volume Total	92	676	348	1	702	396	17	44	91
Volume Left	92	0	0	1	0	0	15	44	0
Volume Right	0	0	11	0	0	45	1	0	89
cSH	631	1700	1700	674	1700	1700	82	191	470
Volume to Capacity	0.15	0.40	0.20	0.00	0.41	0.23	0.21	0.23	0.19
Queue Length 95th (ft)	13	0	0	0	0	0	18	22	18
Control Delay (s)	11.7	0.0	0.0	10.4	0.0	0.0	60.0	29.4	14.5
Lane LOS	B			B			F	D	B
Approach Delay (s)	1.0			0.0			60.0	19.4	
Approach LOS							F	C	

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	966	37	9	1008	1	34	1	9	1	1	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	1017	39	9	1061	1	36	1	9	1	1	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					459							
pX, platoon unblocked	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	1062			1056			1589	2119	528	1601	2138	531
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	898			1056			1470	2045	528	1483	2066	322
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			55	98	98	99	98	100
cM capacity (veh/h)	693			655			79	50	495	76	49	621

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	509	547	540	532	46	3
Volume Left	1	0	9	0	36	1
Volume Right	0	39	0	1	9	1
cSH	693	1700	655	1700	94	85
Volume to Capacity	0.00	0.32	0.01	0.31	0.49	0.04
Queue Length 95th (ft)	0	0	1	0	53	3
Control Delay (s)	0.0	0.0	0.4	0.0	75.5	48.9
Lane LOS	A		A		F	E
Approach Delay (s)	0.0		0.2		75.5	48.9
Approach LOS					F	E

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	425	0	170	423	1	560	7	212	1	27	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.5		4.0	5.5			5.0	5.0		4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (prot)	1770	3167		1736	3166			1741	1524		1699	
Flt Permitted	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (perm)	1770	3167		1736	3166			1741	1524		1699	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	4	447	0	179	445	1	589	7	223	1	28	37
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	76	0	32	0
Lane Group Flow (vph)	4	447	0	179	446	0	0	596	147	0	34	0
Heavy Vehicles (%)	2%	14%	12%	4%	14%	2%	4%	2%	6%	2%	5%	2%
Turn Type	Prot			Prot			Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases									8			
Actuated Green, G (s)	1.0	27.5		16.1	42.6			41.5	41.5		6.1	
Effective Green, g (s)	1.0	27.5		16.1	42.6			41.5	41.5		6.1	
Actuated g/C Ratio	0.01	0.25		0.15	0.39			0.38	0.38		0.06	
Clearance Time (s)	4.0	5.5		4.0	5.5			5.0	5.0		4.0	
Vehicle Extension (s)	2.5	5.4		2.5	5.4			3.5	3.5		2.5	
Lane Grp Cap (vph)	16	794		255	1229			659	577		94	
v/s Ratio Prot	0.00	c0.14		c0.10	0.14			c0.34			c0.02	
v/s Ratio Perm									0.10			
v/c Ratio	0.25	0.56		0.70	0.36			0.90	0.26		0.36	
Uniform Delay, d1	54.0	35.9		44.5	23.9			32.2	23.5		49.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	5.9	1.7		7.9	0.4			16.2	0.3		1.7	
Delay (s)	59.9	37.5		52.4	24.3			48.4	23.7		51.6	
Level of Service	E	D		D	C			D	C		D	
Approach Delay (s)		37.7			32.4			41.7			51.6	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM Average Control Delay	38.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	109.7	Sum of lost time (s)	18.5
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	1	7	1	1	1	7	777	1	1	741	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	2	1	7	1	1	1	7	801	1	1	764	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1185	1585	384	1208	1586	401	768			802		
vC1, stage 1 conf vol	768	768		816	816							
vC2, stage 2 conf vol	416	816		392	770							
vCu, unblocked vol	1185	1585	384	1208	1586	401	768			802		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	99	100	100	100	99			100		
cM capacity (veh/h)	321	292	614	303	290	599	842			817		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	10	3	7	534	268	1	509	259
Volume Left	2	1	7	0	0	1	0	0
Volume Right	7	1	0	0	1	0	0	4
cSH	475	357	842	1700	1700	817	1700	1700
Volume to Capacity	0.02	0.01	0.01	0.31	0.16	0.00	0.30	0.15
Queue Length 95th (ft)	2	1	1	0	0	0	0	0
Control Delay (s)	12.7	15.2	9.3	0.0	0.0	9.4	0.0	0.0
Lane LOS	B	C	A			A		
Approach Delay (s)	12.7	15.2	0.1			0.0		
Approach LOS	B	C						

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	31.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	1	18	15	1	5	5	774	7	11	728	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	6	1	20	17	1	6	6	880	8	12	827	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1315	1756	419	1355	1757	444	838			888		
vC1, stage 1 conf vol	857	857		895	895							
vC2, stage 2 conf vol	457	899		460	862							
vCu, unblocked vol	1315	1756	419	1355	1757	444	838			888		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	96	94	100	99	99			98		
cM capacity (veh/h)	279	256	583	267	259	562	793			759		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	27	24	6	586	301	12	552	286
Volume Left	6	17	6	0	0	12	0	0
Volume Right	20	6	0	0	8	0	0	10
cSH	455	304	793	1700	1700	759	1700	1700
Volume to Capacity	0.06	0.08	0.01	0.34	0.18	0.02	0.32	0.17
Queue Length 95th (ft)	5	6	1	0	0	1	0	0
Control Delay (s)	13.4	17.8	9.6	0.0	0.0	9.8	0.0	0.0
Lane LOS	B	C	A			A		
Approach Delay (s)	13.4	17.8	0.1			0.1		
Approach LOS	B	C						

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
3: US 730 & I-82 SB Off-Ramp

8/5/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	728	78	112	598	0	0	0	0	415	89	278
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (prot)		3406	1583	1597	3539					1618	1278	1583
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (perm)		3406	1583	1597	3539					1618	1278	1583
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	800	86	123	657	0	0	0	0	456	98	305
RTOR Reduction (vph)	0	0	63	0	0	0	0	0	0	0	0	223
Lane Group Flow (vph)	0	800	23	123	657	0	0	0	0	274	280	82
Heavy Vehicles (%)	2%	6%	2%	13%	2%	2%	2%	2%	2%	6%	94%	2%
Turn Type			Perm	Prot						Perm		Perm
Protected Phases		2		1	6						4	
Permitted Phases		8	2							4		4
Actuated Green, G (s)		25.6	18.1	5.5	28.1					18.1	18.1	18.1
Effective Green, g (s)		25.6	18.1	5.5	28.1					18.1	18.1	18.1
Actuated g/C Ratio		0.38	0.27	0.08	0.42					0.27	0.27	0.27
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5
Vehicle Extension (s)		4.6	4.6	3.5	5.6					3.5	3.5	3.5
Lane Grp Cap (vph)		1298	426	131	1480					436	344	426
v/s Ratio Prot		c0.17		c0.08	0.19							
v/s Ratio Perm		0.07	0.01							0.17	0.22	0.05
v/c Ratio		0.62	0.05	0.94	0.44					0.63	0.81	0.19
Uniform Delay, d1		16.8	18.2	30.7	14.0					21.6	23.0	18.9
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		1.2	0.1	59.9	0.5					3.0	14.0	0.3
Delay (s)		18.0	18.3	90.6	14.5					24.6	37.0	19.2
Level of Service		B	B	F	B					C	D	B
Approach Delay (s)		18.0			26.5			0.0			26.7	
Approach LOS		B			C			A			C	

Intersection Summary			
HCM Average Control Delay	23.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	67.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	577	77	154	667	53	108	3	176	53	5	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.85			0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1770	1743	1568	1770	1809		1736	1557			1729	
Flt Permitted	0.24	1.00	1.00	0.26	1.00		0.78	1.00			0.72	
Satd. Flow (perm)	443	1743	1568	479	1809		1419	1557			1284	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	45	601	80	160	695	55	112	3	183	55	5	28
RTOR Reduction (vph)	0	0	30	0	4	0	0	147	0	0	17	0
Lane Group Flow (vph)	45	601	50	160	746	0	112	39	0	0	71	0
Heavy Vehicles (%)	2%	9%	3%	2%	4%	2%	4%	4%	4%	2%	2%	2%
Turn Type	pm+pt		Perm	pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	31.4	29.4	29.4	37.6	32.5		11.4	11.4			11.4	
Effective Green, g (s)	31.4	29.4	29.4	37.6	32.5		11.4	11.4			11.4	
Actuated g/C Ratio	0.54	0.51	0.51	0.65	0.56		0.20	0.20			0.20	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	286	885	796	425	1015		279	307			253	
v/s Ratio Prot	0.01	0.34		c0.03	c0.41			0.03				
v/s Ratio Perm	0.08		0.03	0.21			c0.08				0.06	
v/c Ratio	0.16	0.68	0.06	0.38	0.74		0.40	0.13			0.28	
Uniform Delay, d1	7.3	10.7	7.2	5.8	9.5		20.3	19.2			19.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.3	2.1	0.0	0.6	2.8		0.9	0.2			0.6	
Delay (s)	7.6	12.8	7.3	6.4	12.3		21.2	19.3			20.4	
Level of Service	A	B	A	A	B		C	B			C	
Approach Delay (s)		11.9			11.3			20.0			20.4	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	57.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	601	193	93	710	210	97
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	626	201	97	740	219	101
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						2
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				1142		
pX, platoon unblocked					0.76	
vC, conflicting volume			827		1660	727
vC1, stage 1 conf vol					727	
vC2, stage 2 conf vol					933	
vCu, unblocked vol			827		1711	727
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			88		16	76
cM capacity (veh/h)			804		260	424

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	827	97	740	320
Volume Left	0	97	0	219
Volume Right	201	0	0	101
cSH	1700	804	1700	330
Volume to Capacity	0.49	0.12	0.44	0.97
Queue Length 95th (ft)	0	10	0	258
Control Delay (s)	0.0	10.1	0.0	78.4
Lane LOS		B		F
Approach Delay (s)	0.0	1.2		78.4
Approach LOS				F

Intersection Summary			
Average Delay	13.1		
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	231	914	0	0	657	441	53	1	143	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0			4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95			1.00	1.00			
Frt	1.00	1.00			0.94			1.00	0.85			
Flt Protected	0.95	1.00			1.00			0.95	1.00			
Satd. Flow (prot)	1626	3406			3212			1663	1346			
Flt Permitted	0.13	1.00			1.00			0.95	1.00			
Satd. Flow (perm)	224	3406			3212			1663	1346			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	238	942	0	0	677	455	55	1	147	0	0	0
RTOR Reduction (vph)	0	0	0	0	130	0	0	0	128	0	0	0
Lane Group Flow (vph)	238	942	0	0	1002	0	0	56	19	0	0	0
Heavy Vehicles (%)	11%	6%	2%	2%	4%	8%	9%	2%	20%	2%	2%	2%
Turn Type	pm+pt						Perm		Perm			
Protected Phases	7	4			8			2				
Permitted Phases	4						2		2			
Actuated Green, G (s)	44.4	44.4			26.6			8.0	8.0			
Effective Green, g (s)	44.4	44.4			26.6			8.0	8.0			
Actuated g/C Ratio	0.74	0.74			0.44			0.13	0.13			
Clearance Time (s)	4.0	4.0			4.0			4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0			
Lane Grp Cap (vph)	485	2504			1415			220	178			
v/s Ratio Prot	c0.11	0.28			c0.31							
v/s Ratio Perm	0.25							0.03	0.01			
v/c Ratio	0.49	0.38			0.71			0.25	0.11			
Uniform Delay, d1	7.5	2.9			13.7			23.5	23.1			
Progression Factor	1.00	1.00			1.00			1.00	1.00			
Incremental Delay, d2	0.8	0.1			1.6			0.6	0.3			
Delay (s)	8.3	3.0			15.4			24.1	23.3			
Level of Service	A	A			B			C	C			
Approach Delay (s)		4.1			15.4			23.6			0.0	
Approach LOS		A			B			C			A	

Intersection Summary			
HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	60.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	85	963	10	1	1000	43	14	1	1	42	1	85
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	89	1014	11	1	1053	45	15	1	1	44	1	89
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		1239										
pX, platoon unblocked												
vC, conflicting volume	1098			1024			1816	2298	512	1765	2281	549
vC1, stage 1 conf vol							1198	1198		1077	1077	
vC2, stage 2 conf vol							618	1100		687	1203	
vCu, unblocked vol	1098			1024			1816	2298	512	1765	2281	549
tC, single (s)	4.1			4.1			9.1	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							8.1	5.5		6.5	5.5	
tF (s)	2.2			2.2			4.3	4.0	3.3	3.5	4.0	3.3
p0 queue free %	86			100			81	99	100	77	99	81
cM capacity (veh/h)	631			674			76	146	507	192	172	480

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	89	676	348	1	702	396	17	135
Volume Left	89	0	0	1	0	0	15	44
Volume Right	0	0	11	0	0	45	1	89
cSH	631	1700	1700	674	1700	1700	83	319
Volume to Capacity	0.14	0.40	0.20	0.00	0.41	0.23	0.20	0.42
Queue Length 95th (ft)	12	0	0	0	0	0	18	51
Control Delay (s)	11.6	0.0	0.0	10.4	0.0	0.0	58.9	24.3
Lane LOS	B			B			F	C
Approach Delay (s)	0.9			0.0			58.9	24.3
Approach LOS							F	C

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	966	37	9	1008	1	34	1	9	1	1	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	1017	39	9	1061	1	36	1	9	1	1	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					459							
pX, platoon unblocked	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	1062			1056			1589	2119	528	1601	2138	531
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	898			1056			1470	2045	528	1483	2066	322
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			55	98	98	99	98	100
cM capacity (veh/h)	693			655			79	50	495	76	49	621

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	509	547	540	532	46	3
Volume Left	1	0	9	0	36	1
Volume Right	0	39	0	1	9	1
cSH	693	1700	655	1700	94	85
Volume to Capacity	0.00	0.32	0.01	0.31	0.49	0.04
Queue Length 95th (ft)	0	0	1	0	53	3
Control Delay (s)	0.0	0.0	0.4	0.0	75.5	48.9
Lane LOS	A		A		F	E
Approach Delay (s)	0.0		0.2		75.5	48.9
Approach LOS					F	E

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	425	0	170	423	1	560	7	212	1	27	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.5		4.0	5.5			5.0	5.0		4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (prot)	1770	3167		1736	3166			1741	1524		1699	
Flt Permitted	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (perm)	1770	3167		1736	3166			1741	1524		1699	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	4	447	0	179	445	1	589	7	223	1	28	37
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	76	0	32	0
Lane Group Flow (vph)	4	447	0	179	446	0	0	596	147	0	34	0
Heavy Vehicles (%)	2%	14%	12%	4%	14%	2%	4%	2%	6%	2%	5%	2%
Turn Type	Prot			Prot			Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases									8			
Actuated Green, G (s)	1.0	27.5		16.1	42.6			41.5	41.5		6.1	
Effective Green, g (s)	1.0	27.5		16.1	42.6			41.5	41.5		6.1	
Actuated g/C Ratio	0.01	0.25		0.15	0.39			0.38	0.38		0.06	
Clearance Time (s)	4.0	5.5		4.0	5.5			5.0	5.0		4.0	
Vehicle Extension (s)	2.5	5.4		2.5	5.4			3.5	3.5		2.5	
Lane Grp Cap (vph)	16	794		255	1229			659	577		94	
v/s Ratio Prot	0.00	c0.14		c0.10	0.14			c0.34			c0.02	
v/s Ratio Perm									0.10			
v/c Ratio	0.25	0.56		0.70	0.36			0.90	0.26		0.36	
Uniform Delay, d1	54.0	35.9		44.5	23.9			32.2	23.5		49.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	5.9	1.7		7.9	0.4			16.2	0.3		1.7	
Delay (s)	59.9	37.5		52.4	24.3			48.4	23.7		51.6	
Level of Service	E	D		D	C			D	C		D	
Approach Delay (s)		37.7			32.4			41.7			51.6	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM Average Control Delay	38.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	109.7	Sum of lost time (s)	18.5
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	1	7	1	1	1	7	777	1	1	741	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	2	1	7	1	1	1	7	801	1	1	764	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1185	1585	384	1208	1586	401	768			802		
vC1, stage 1 conf vol	768	768		816	816							
vC2, stage 2 conf vol	416	816		392	770							
vCu, unblocked vol	1185	1585	384	1208	1586	401	768			802		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	99	100	100	100	99			100		
cM capacity (veh/h)	321	292	614	303	290	599	842			817		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	10	3	7	534	268	1	509	259
Volume Left	2	1	7	0	0	1	0	0
Volume Right	7	1	0	0	1	0	0	4
cSH	475	357	842	1700	1700	817	1700	1700
Volume to Capacity	0.02	0.01	0.01	0.31	0.16	0.00	0.30	0.15
Queue Length 95th (ft)	2	1	1	0	0	0	0	0
Control Delay (s)	12.7	15.2	9.3	0.0	0.0	9.4	0.0	0.0
Lane LOS	B	C	A			A		
Approach Delay (s)	12.7	15.2	0.1			0.0		
Approach LOS	B	C						

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	31.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	1	18	15	1	5	5	774	7	11	728	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	6	1	20	17	1	6	6	880	8	12	827	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1315	1756	419	1355	1757	444	838			888		
vC1, stage 1 conf vol	857	857		895	895							
vC2, stage 2 conf vol	457	899		460	862							
vCu, unblocked vol	1315	1756	419	1355	1757	444	838			888		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	96	94	100	99	99			98		
cM capacity (veh/h)	279	256	583	267	259	562	793			759		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	27	24	6	586	301	12	552	286
Volume Left	6	17	6	0	0	12	0	0
Volume Right	20	6	0	0	8	0	0	10
cSH	455	304	793	1700	1700	759	1700	1700
Volume to Capacity	0.06	0.08	0.01	0.34	0.18	0.02	0.32	0.17
Queue Length 95th (ft)	5	6	1	0	0	1	0	0
Control Delay (s)	13.4	17.8	9.6	0.0	0.0	9.8	0.0	0.0
Lane LOS	B	C	A			A		
Approach Delay (s)	13.4	17.8	0.1			0.1		
Approach LOS	B	C						

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
3: US 730 & Brownell Blvd

8/5/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	670	78	112	642	0	268	10	415	58	98	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		4.0	4.5		4.0	4.5	4.5	4.0	4.5	
Lane Util. Factor	1.00	0.95		1.00	*0.71		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	1.00		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3366		1597	3968		1770	1863	1524	1770	1776	
Flt Permitted	0.95	1.00		0.18	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3366		300	3968		1770	1863	1524	1770	1776	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	50	728	85	122	698	0	291	11	451	63	107	48
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	134	0	18	0
Lane Group Flow (vph)	50	803	0	122	698	0	291	11	317	63	137	0
Heavy Vehicles (%)	2%	6%	2%	13%	2%	2%	2%	2%	6%	2%	2%	2%
Turn Type	Prot			pm+pt			Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7		
Permitted Phases		2		6					8		4	
Actuated Green, G (s)	3.0	25.8		31.8	27.3		16.8	25.9	25.9	4.5	13.6	
Effective Green, g (s)	3.0	25.8		31.8	27.3		16.8	25.9	25.9	4.5	13.6	
Actuated g/C Ratio	0.04	0.33		0.41	0.35		0.22	0.33	0.33	0.06	0.18	
Clearance Time (s)	4.0	4.5		4.0	4.5		4.0	4.5	4.5	4.0	4.5	
Vehicle Extension (s)	3.0	4.6		3.0	5.6		3.0	5.0	5.0	3.0	3.5	
Lane Grp Cap (vph)	68	1118		198	1394		383	621	508	103	311	
v/s Ratio Prot	0.03	c0.24		c0.04	0.18		c0.16	0.01		0.04		
v/s Ratio Perm				0.22					c0.21		0.08	
v/c Ratio	0.74	0.72		0.62	0.50		0.76	0.02	0.62	0.61	0.44	
Uniform Delay, d1	37.0	22.8		16.1	19.8		28.6	17.4	21.8	35.7	28.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	33.4	2.6		5.6	0.7		8.4	0.0	3.4	10.3	1.2	
Delay (s)	70.4	25.4		21.7	20.6		37.0	17.4	25.2	46.0	29.8	
Level of Service	E	C		C	C		D	B	C	D	C	
Approach Delay (s)		28.0			20.7			29.6			34.5	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	26.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	77.7	Sum of lost time (s)	12.5
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	620	77	154	711	91	174
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1743	1568	1770	1827	1770	1553
Flt Permitted	1.00	1.00	0.22	1.00	0.95	1.00
Satd. Flow (perm)	1743	1568	413	1827	1770	1553
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	646	80	160	741	95	181
RTOR Reduction (vph)	0	29	0	0	0	150
Lane Group Flow (vph)	646	51	160	741	95	31
Heavy Vehicles (%)	9%	3%	2%	4%	2%	4%
Turn Type		Perm	pm+pt			Perm
Protected Phases	4		3	8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	26.3	26.3	34.8	34.8	9.0	9.0
Effective Green, g (s)	26.3	26.3	34.8	34.8	9.0	9.0
Actuated g/C Ratio	0.51	0.51	0.67	0.67	0.17	0.17
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	885	796	395	1227	308	270
v/s Ratio Prot	c0.37		0.04	c0.41	c0.05	
v/s Ratio Perm		0.03	0.24			0.02
v/c Ratio	0.73	0.06	0.41	0.60	0.31	0.12
Uniform Delay, d1	10.0	6.5	5.5	4.7	18.7	18.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.0	0.0	0.7	0.8	0.6	0.2
Delay (s)	13.0	6.5	6.2	5.5	19.3	18.2
Level of Service	B	A	A	A	B	B
Approach Delay (s)	12.3			5.7	18.6	
Approach LOS	B			A	B	

Intersection Summary			
HCM Average Control Delay	10.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	51.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	601	193	93	710	210	97
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	626	201	97	740	219	101
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						2
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				1142		
pX, platoon unblocked					0.84	
vC, conflicting volume			827		1660	727
vC1, stage 1 conf vol					727	
vC2, stage 2 conf vol					933	
vCu, unblocked vol			827		1690	727
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			88		18	76
cM capacity (veh/h)			804		267	424

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	827	97	740	320
Volume Left	0	97	0	219
Volume Right	201	0	0	101
cSH	1700	804	1700	338
Volume to Capacity	0.49	0.12	0.44	0.95
Queue Length 95th (ft)	0	10	0	247
Control Delay (s)	0.0	10.1	0.0	72.2
Lane LOS		B		F
Approach Delay (s)	0.0	1.2		72.2
Approach LOS				F

Intersection Summary			
Average Delay	12.1		
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	231	914	0	0	612	441	53	1	143	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0			4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95			1.00	1.00			
Frt	1.00	1.00			0.94			1.00	0.85			
Flt Protected	0.95	1.00			1.00			0.95	1.00			
Satd. Flow (prot)	1626	3406			3201			1663	1346			
Flt Permitted	0.14	1.00			1.00			0.95	1.00			
Satd. Flow (perm)	238	3406			3201			1663	1346			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	238	942	0	0	631	455	55	1	147	0	0	0
RTOR Reduction (vph)	0	0	0	0	147	0	0	0	127	0	0	0
Lane Group Flow (vph)	238	942	0	0	939	0	0	56	20	0	0	0
Heavy Vehicles (%)	11%	6%	2%	2%	4%	8%	9%	2%	20%	2%	2%	2%
Turn Type	pm+pt						Perm		Perm			
Protected Phases	7	4			8			2				
Permitted Phases	4						2		2			
Actuated Green, G (s)	42.4	42.4			24.8			8.0	8.0			
Effective Green, g (s)	42.4	42.4			24.8			8.0	8.0			
Actuated g/C Ratio	0.73	0.73			0.42			0.14	0.14			
Clearance Time (s)	4.0	4.0			4.0			4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0			
Lane Grp Cap (vph)	496	2473			1359			228	184			
v/s Ratio Prot	c0.11	0.28			c0.29							
v/s Ratio Perm	0.24							0.03	0.01			
v/c Ratio	0.48	0.38			0.69			0.25	0.11			
Uniform Delay, d1	6.4	3.0			13.7			22.5	22.1			
Progression Factor	1.00	1.00			1.00			1.00	1.00			
Incremental Delay, d2	0.7	0.1			1.5			0.6	0.3			
Delay (s)	7.2	3.1			15.2			23.1	22.3			
Level of Service	A	A			B			C	C			
Approach Delay (s)		3.9			15.2			22.5			0.0	
Approach LOS		A			B			C			A	

Intersection Summary			
HCM Average Control Delay	10.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	58.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	85	963	10	1	955	43	14	1	1	42	1	85
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	89	1014	11	1	1005	45	15	1	1	44	1	89
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		1295										
pX, platoon unblocked												
vC, conflicting volume	1051			1024			1793	2251	512	1717	2233	525
vC1, stage 1 conf vol							1198	1198		1030	1030	
vC2, stage 2 conf vol							595	1053		687	1203	
vCu, unblocked vol	1051			1024			1793	2251	512	1717	2233	525
tC, single (s)	4.1			4.1			9.1	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							8.1	5.5		6.5	5.5	
tF (s)	2.2			2.2			4.3	4.0	3.3	3.5	4.0	3.3
p0 queue free %	86			100			81	99	100	78	99	82
cM capacity (veh/h)	658			674			78	152	507	202	176	497

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2
Volume Total	89	676	348	1	670	380	17	44	91
Volume Left	89	0	0	1	0	0	15	44	0
Volume Right	0	0	11	0	0	45	1	0	89
cSH	658	1700	1700	674	1700	1700	85	202	487
Volume to Capacity	0.14	0.40	0.20	0.00	0.39	0.22	0.20	0.22	0.19
Queue Length 95th (ft)	12	0	0	0	0	0	17	20	17
Control Delay (s)	11.3	0.0	0.0	10.4	0.0	0.0	57.2	27.7	14.1
Lane LOS	B			B			F	D	B
Approach Delay (s)	0.9			0.0			57.2	18.6	
Approach LOS							F	C	

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	966	37	9	963	1	34	1	9	1	1	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	1017	39	9	1014	1	36	1	9	1	1	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					459							
pX, platoon unblocked	0.93						0.93	0.93		0.93	0.93	0.93
vC, conflicting volume	1015			1056			1566	2072	528	1554	2091	507
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	859			1056			1454	1999	528	1440	2020	312
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			56	98	98	99	98	100
cM capacity (veh/h)	721			655			82	54	495	83	52	634

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	509	547	516	508	46	3
Volume Left	1	0	9	0	36	1
Volume Right	0	39	0	1	9	1
cSH	721	1700	655	1700	98	92
Volume to Capacity	0.00	0.32	0.01	0.30	0.47	0.03
Queue Length 95th (ft)	0	0	1	0	51	3
Control Delay (s)	0.0	0.0	0.4	0.0	71.4	45.7
Lane LOS	A		A		F	E
Approach Delay (s)	0.0		0.2		71.4	45.7
Approach LOS					F	E

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	425	0	170	423	1	515	52	212	1	27	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.5		4.0	5.5			5.0	5.0		4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		1.00	
Satd. Flow (prot)	1770	3167		1736	3166			1751	1524		1699	
Flt Permitted	0.95	1.00		0.95	1.00			0.96	1.00		1.00	
Satd. Flow (perm)	1770	3167		1736	3166			1751	1524		1699	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	4	447	0	179	445	1	542	55	223	1	28	37
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	76	0	32	0
Lane Group Flow (vph)	4	447	0	179	446	0	0	597	147	0	34	0
Heavy Vehicles (%)	2%	14%	12%	4%	14%	2%	4%	2%	6%	2%	5%	2%
Turn Type	Prot			Prot			Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases									8			
Actuated Green, G (s)	1.0	27.5		16.1	42.6			41.5	41.5		6.1	
Effective Green, g (s)	1.0	27.5		16.1	42.6			41.5	41.5		6.1	
Actuated g/C Ratio	0.01	0.25		0.15	0.39			0.38	0.38		0.06	
Clearance Time (s)	4.0	5.5		4.0	5.5			5.0	5.0		4.0	
Vehicle Extension (s)	2.5	5.4		2.5	5.4			3.5	3.5		2.5	
Lane Grp Cap (vph)	16	794		255	1229			662	577		94	
v/s Ratio Prot	0.00	c0.14		c0.10	0.14			c0.34			c0.02	
v/s Ratio Perm									0.10			
v/c Ratio	0.25	0.56		0.70	0.36			0.90	0.26		0.36	
Uniform Delay, d1	54.0	35.9		44.5	23.9			32.2	23.5		49.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	5.9	1.7		7.9	0.4			15.8	0.3		1.7	
Delay (s)	59.9	37.5		52.4	24.3			48.0	23.7		51.6	
Level of Service	E	D		D	C			D	C		D	
Approach Delay (s)		37.7			32.4			41.4			51.6	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM Average Control Delay	38.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	109.7	Sum of lost time (s)	18.5
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	1	7	1	1	1	7	777	1	1	741	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	2	1	7	1	1	1	7	801	1	1	764	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1185	1585	384	1208	1586	401	768			802		
vC1, stage 1 conf vol	768	768		816	816							
vC2, stage 2 conf vol	416	816		392	770							
vCu, unblocked vol	1185	1585	384	1208	1586	401	768			802		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	99	100	100	100	99			100		
cM capacity (veh/h)	321	292	614	303	290	599	842			817		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	10	3	7	534	268	1	509	259
Volume Left	2	1	7	0	0	1	0	0
Volume Right	7	1	0	0	1	0	0	4
cSH	475	357	842	1700	1700	817	1700	1700
Volume to Capacity	0.02	0.01	0.01	0.31	0.16	0.00	0.30	0.15
Queue Length 95th (ft)	2	1	1	0	0	0	0	0
Control Delay (s)	12.7	15.2	9.3	0.0	0.0	9.4	0.0	0.0
Lane LOS	B	C	A			A		
Approach Delay (s)	12.7	15.2	0.1			0.0		
Approach LOS	B	C						

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	31.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	1	18	15	1	5	5	774	7	11	728	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	6	1	20	17	1	6	6	880	8	12	827	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1315	1756	419	1355	1757	444	838			888		
vC1, stage 1 conf vol	857	857		895	895							
vC2, stage 2 conf vol	457	899		460	862							
vCu, unblocked vol	1315	1756	419	1355	1757	444	838			888		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	96	94	100	99	99			98		
cM capacity (veh/h)	279	256	583	267	259	562	793			759		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	27	24	6	586	301	12	552	286
Volume Left	6	17	6	0	0	12	0	0
Volume Right	20	6	0	0	8	0	0	10
cSH	455	304	793	1700	1700	759	1700	1700
Volume to Capacity	0.06	0.08	0.01	0.34	0.18	0.02	0.32	0.17
Queue Length 95th (ft)	5	6	1	0	0	1	0	0
Control Delay (s)	13.4	17.8	9.6	0.0	0.0	9.8	0.0	0.0
Lane LOS	B	C	A			A		
Approach Delay (s)	13.4	17.8	0.1			0.1		
Approach LOS	B	C						

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
2: US 730 & Brownell Blvd

8/5/2010

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	748	891	53	0	27
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	804	958	57	0	29
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		848	214			
pX, platoon unblocked	0.87				0.87	0.87
vC, conflicting volume	1015				1389	508
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	723				1152	141
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	96
cM capacity (veh/h)	763				167	768

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	402	402	639	376	29
Volume Left	0	0	0	0	0
Volume Right	0	0	0	57	29
cSH	1700	1700	1700	1700	768
Volume to Capacity	0.24	0.24	0.38	0.22	0.04
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	0.0	0.0	9.9
Lane LOS					A
Approach Delay (s)	0.0		0.0		9.9
Approach LOS					A

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	36.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	671	78	112	578	0	0	0	0	415	1	367
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5						4.5	4.5
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3406	1583	1597	3539						1707	1282
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3406	1583	1597	3539						1707	1282
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	737	86	123	635	0	0	0	0	456	1	403
RTOR Reduction (vph)	0	0	66	0	0	0	0	0	0	0	0	269
Lane Group Flow (vph)	0	737	20	123	635	0	0	0	0	0	457	134
Heavy Vehicles (%)	2%	6%	2%	13%	2%	2%	2%	2%	2%	6%	2%	26%
Turn Type			Perm	Prot						Perm		Perm
Protected Phases		2		1	6						4	
Permitted Phases		8	2							4		4
Actuated Green, G (s)		25.6	18.1	7.9	30.5						25.6	25.6
Effective Green, g (s)		25.6	18.1	7.9	30.5						25.6	25.6
Actuated g/C Ratio		0.33	0.23	0.10	0.40						0.33	0.33
Clearance Time (s)		4.5	4.5	4.5	4.5						4.5	4.5
Vehicle Extension (s)		4.6	4.6	3.5	5.6						3.5	3.5
Lane Grp Cap (vph)		1131	372	164	1400						567	426
v/s Ratio Prot		c0.15		c0.08	0.18							
v/s Ratio Perm		0.06	0.01								0.27	0.10
v/c Ratio		0.65	0.05	0.75	0.45						0.81	0.31
Uniform Delay, d1		21.9	22.9	33.6	17.2						23.5	19.2
Progression Factor		1.00	1.00	1.00	1.00						1.00	1.00
Incremental Delay, d2		1.7	0.1	17.9	0.6						8.4	0.5
Delay (s)		23.6	23.0	51.5	17.8						31.9	19.7
Level of Service		C	C	D	B						C	B
Approach Delay (s)		23.6			23.2			0.0			26.2	
Approach LOS		C			C			A			C	

Intersection Summary			
HCM Average Control Delay	24.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	77.1	Sum of lost time (s)	18.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	577	77	154	674	89	114	0	171	0	0	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00
Frt		1.00	0.85	1.00	1.00	0.85	1.00		0.85			0.86
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95		1.00			1.00
Satd. Flow (prot)		1743	1568	1770	1827	832	1770		1553			839
Flt Permitted		1.00	1.00	0.24	1.00	1.00	0.95		1.00			1.00
Satd. Flow (perm)		1743	1568	445	1827	832	1770		1553			839
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	601	80	160	702	93	119	0	178	0	0	18
RTOR Reduction (vph)	0	0	31	0	0	32	0	0	144	0	0	15
Lane Group Flow (vph)	0	601	49	160	702	61	119	0	34	0	0	3
Heavy Vehicles (%)	2%	9%	3%	2%	4%	94%	2%	2%	4%	2%	2%	96%
Turn Type			Perm	pm+pt		Perm	custom		custom			custom
Protected Phases		4		3	8							
Permitted Phases			4	8		8	2		2			6
Actuated Green, G (s)		24.7	24.7	33.1	33.1	33.1	9.6		9.6			9.6
Effective Green, g (s)		24.7	24.7	33.1	33.1	33.1	9.6		9.6			9.6
Actuated g/C Ratio		0.49	0.49	0.65	0.65	0.65	0.19		0.19			0.19
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0		3.0			3.0
Lane Grp Cap (vph)		849	764	406	1193	543	335		294			159
v/s Ratio Prot		c0.34		0.03	c0.38							
v/s Ratio Perm			0.03	0.22		0.07	c0.07		0.02			0.00
v/c Ratio		0.71	0.06	0.39	0.59	0.11	0.36		0.11			0.02
Uniform Delay, d1		10.2	6.9	5.4	5.0	3.3	17.9		17.0			16.7
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00
Incremental Delay, d2		2.7	0.0	0.6	0.7	0.1	0.6		0.2			0.1
Delay (s)		12.9	6.9	6.1	5.7	3.4	18.5		17.2			16.8
Level of Service		B	A	A	A	A	B		B			B
Approach Delay (s)		12.2			5.5			17.7			16.8	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	50.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	558	193	93	713	210	97
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	581	201	97	743	219	101
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						2
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				1142		
pX, platoon unblocked					0.86	
vC, conflicting volume			782		1618	682
vC1, stage 1 conf vol					682	
vC2, stage 2 conf vol					936	
vCu, unblocked vol			782		1637	682
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			88		20	78
cM capacity (veh/h)			836		274	450

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	782	97	743	320
Volume Left	0	97	0	219
Volume Right	201	0	0	101
cSH	1700	836	1700	357
Volume to Capacity	0.46	0.12	0.44	0.90
Queue Length 95th (ft)	0	10	0	222
Control Delay (s)	0.0	9.9	0.0	59.7
Lane LOS		A		F
Approach Delay (s)	0.0	1.1		59.7
Approach LOS				F

Intersection Summary			
Average Delay	10.3		
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	231	856	0	0	657	441	33	1	143	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0			4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95			1.00	1.00			
Frt	1.00	1.00			0.94			1.00	0.85			
Flt Protected	0.95	1.00			1.00			0.95	1.00			
Satd. Flow (prot)	1626	3406			3212			1665	1346			
Flt Permitted	0.13	1.00			1.00			0.95	1.00			
Satd. Flow (perm)	219	3406			3212			1665	1346			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	238	882	0	0	677	455	34	1	147	0	0	0
RTOR Reduction (vph)	0	0	0	0	120	0	0	0	129	0	0	0
Lane Group Flow (vph)	238	882	0	0	1012	0	0	35	18	0	0	0
Heavy Vehicles (%)	11%	6%	2%	2%	4%	8%	9%	2%	20%	2%	2%	2%
Turn Type	pm+pt						Perm		Perm			
Protected Phases	7	4			8			2				
Permitted Phases	4						2		2			
Actuated Green, G (s)	45.9	45.9			27.3			7.6	7.6			
Effective Green, g (s)	45.9	45.9			27.3			7.6	7.6			
Actuated g/C Ratio	0.75	0.75			0.44			0.12	0.12			
Clearance Time (s)	4.0	4.0			4.0			4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0			
Lane Grp Cap (vph)	497	2542			1426			206	166			
v/s Ratio Prot	c0.11	0.26			c0.32							
v/s Ratio Perm	0.24							0.02	0.01			
v/c Ratio	0.48	0.35			0.71			0.17	0.11			
Uniform Delay, d1	7.7	2.7			13.9			24.1	23.9			
Progression Factor	1.00	1.00			1.00			1.00	1.00			
Incremental Delay, d2	0.7	0.1			1.6			0.4	0.3			
Delay (s)	8.4	2.8			15.5			24.5	24.2			
Level of Service	A	A			B			C	C			
Approach Delay (s)		4.0			15.5			24.3			0.0	
Approach LOS		A			B			C			A	

Intersection Summary			
HCM Average Control Delay	10.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	61.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	85	905	10	1	1000	43	14	1	1	42	1	85
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	89	953	11	1	1053	45	15	1	1	44	1	89
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		1287										
pX, platoon unblocked												
vC, conflicting volume	1098			963			1755	2237	482	1734	2219	549
vC1, stage 1 conf vol							1137	1137		1077	1077	
vC2, stage 2 conf vol							618	1100		657	1142	
vCu, unblocked vol	1098			963			1755	2237	482	1734	2219	549
tC, single (s)	4.1			4.1			9.1	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							8.1	5.5		6.5	5.5	
tF (s)	2.2			2.2			4.3	4.0	3.3	3.5	4.0	3.3
p0 queue free %	86			100			82	99	100	77	99	81
cM capacity (veh/h)	631			710			83	150	531	195	180	480

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2
Volume Total	89	635	328	1	702	396	17	44	91
Volume Left	89	0	0	1	0	0	15	44	0
Volume Right	0	0	11	0	0	45	1	0	89
cSH	631	1700	1700	710	1700	1700	90	195	470
Volume to Capacity	0.14	0.37	0.19	0.00	0.41	0.23	0.19	0.23	0.19
Queue Length 95th (ft)	12	0	0	0	0	0	16	21	18
Control Delay (s)	11.6	0.0	0.0	10.1	0.0	0.0	54.0	28.8	14.5
Lane LOS	B			B			F	D	B
Approach Delay (s)	1.0			0.0			54.0	19.2	
Approach LOS							F	C	

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	908	37	9	1008	1	34	1	9	1	1	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	956	39	9	1061	1	36	1	9	1	1	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					459							
pX, platoon unblocked	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	1062			995			1528	2058	497	1571	2077	531
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	889			995			1397	1974	497	1443	1995	310
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			60	98	98	99	98	100
cM capacity (veh/h)	696			691			90	56	518	82	54	629

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	479	517	540	532	46	3
Volume Left	1	0	9	0	36	1
Volume Right	0	39	0	1	9	1
cSH	696	1700	691	1700	106	93
Volume to Capacity	0.00	0.30	0.01	0.31	0.44	0.03
Queue Length 95th (ft)	0	0	1	0	46	3
Control Delay (s)	0.0	0.0	0.4	0.0	62.8	45.2
Lane LOS	A		A		F	E
Approach Delay (s)	0.0		0.2		62.8	45.2
Approach LOS					F	E

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	425	0	170	423	1	560	7	212	1	85	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.5		4.0	5.5			5.0	5.0		4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (prot)	1770	3167		1736	3166			1741	1524		1753	
Flt Permitted	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (perm)	1770	3167		1736	3166			1741	1524		1753	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	4	447	0	179	445	1	589	7	223	1	89	37
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	79	0	10	0
Lane Group Flow (vph)	4	447	0	179	446	0	0	596	144	0	117	0
Heavy Vehicles (%)	2%	14%	12%	4%	14%	2%	4%	2%	6%	2%	5%	2%
Turn Type	Prot			Prot			Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases									8			
Actuated Green, G (s)	1.0	28.4		17.0	44.4			41.2	41.2		12.9	
Effective Green, g (s)	1.0	28.4		17.0	44.4			41.2	41.2		12.9	
Actuated g/C Ratio	0.01	0.24		0.14	0.38			0.35	0.35		0.11	
Clearance Time (s)	4.0	5.5		4.0	5.5			5.0	5.0		4.0	
Vehicle Extension (s)	2.5	5.4		2.5	5.4			3.5	3.5		2.5	
Lane Grp Cap (vph)	15	762		250	1191			608	532		192	
v/s Ratio Prot	0.00	c0.14		c0.10	0.14			c0.34			c0.07	
v/s Ratio Perm									0.09			
v/c Ratio	0.27	0.59		0.72	0.37			0.98	0.27		0.61	
Uniform Delay, d1	58.1	39.6		48.2	26.7			38.0	27.6		50.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	6.8	2.0		8.8	0.5			31.5	0.3		4.8	
Delay (s)	65.0	41.6		57.0	27.2			69.5	27.9		55.0	
Level of Service	E	D		E	C			E	C		D	
Approach Delay (s)		41.8			35.7			58.1			55.0	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM Average Control Delay	47.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	1	7	1	1	1	7	777	1	1	741	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	2	1	7	1	1	1	7	801	1	1	764	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1185	1585	384	1208	1586	401	768			802		
vC1, stage 1 conf vol	768	768		816	816							
vC2, stage 2 conf vol	416	816		392	770							
vCu, unblocked vol	1185	1585	384	1208	1586	401	768			802		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	99	100	100	100	99			100		
cM capacity (veh/h)	321	292	614	303	290	599	842			817		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	10	3	7	534	268	1	509	259
Volume Left	2	1	7	0	0	1	0	0
Volume Right	7	1	0	0	1	0	0	4
cSH	475	357	842	1700	1700	817	1700	1700
Volume to Capacity	0.02	0.01	0.01	0.31	0.16	0.00	0.30	0.15
Queue Length 95th (ft)	2	1	1	0	0	0	0	0
Control Delay (s)	12.7	15.2	9.3	0.0	0.0	9.4	0.0	0.0
Lane LOS	B	C	A			A		
Approach Delay (s)	12.7	15.2	0.1			0.0		
Approach LOS	B	C						

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	31.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	1	18	15	1	5	5	774	7	11	728	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	6	1	20	17	1	6	6	880	8	12	827	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1315	1756	419	1355	1757	444	838			888		
vC1, stage 1 conf vol	857	857		895	895							
vC2, stage 2 conf vol	457	899		460	862							
vCu, unblocked vol	1315	1756	419	1355	1757	444	838			888		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	96	94	100	99	99			98		
cM capacity (veh/h)	279	256	583	267	259	562	793			759		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	27	24	6	586	301	12	552	286
Volume Left	6	17	6	0	0	12	0	0
Volume Right	20	6	0	0	8	0	0	10
cSH	455	304	793	1700	1700	759	1700	1700
Volume to Capacity	0.06	0.08	0.01	0.34	0.18	0.02	0.32	0.17
Queue Length 95th (ft)	5	6	1	0	0	1	0	0
Control Delay (s)	13.4	17.8	9.6	0.0	0.0	9.8	0.0	0.0
Lane LOS	B	C	A			A		
Approach Delay (s)	13.4	17.8	0.1			0.1		
Approach LOS	B	C						

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix C
Cost Estimates

PRELIMINARY COST ESTIMATE

Project: Umatilla IAMP
Date: 8/4/2010
Prepared By: Jeremy Morris, P.E.

				Alternative 3	
	ITEM DESCRIPTION	**UNIT OF MEASURE**	**QUANTITY**	**UNIT PRICE**	**TOTAL**
Item No.	**Locust Improvements**				
1	Mobilization	LS	All	$ 11,000	$ 11,000
2	Earthwork	C.Y.	670	$ 20	$ 13,400
3	4" Asphalt	Ton	350	$ 100	$ 35,000
4	12" Base Rock	C.Y.	500	$ 30	$ 15,000
5	Signage	LS	All	$ 1,000	$ 1,000
6	Striping	LS	All	$ 1,000	$ 1,000
7	Storm Drain	LF	400	$ 40	$ 16,000
8	8" Water	LF	400	$ 55	$ 22,000
9	8" Sewer	LF	400	$ 40	$ 16,000
				Subtotal	$ 130,400
	Brownell Blvd & Cherry Street				
1	Mobilization	LS	All	$ 38,000	$ 38,000
2	Earthwork	C.Y.	2000	$ 20	$ 40,000
3	Curb and Gutter	LF	2000	$ 15	$ 30,000
4	6' Sidewalk (one side)	SF	6000	$ 3	$ 18,000
5	4" Asphalt	Ton	1030	$ 100	$ 103,000
6	12" Base Rock	C.Y.	1400	$ 30	$ 42,000
7	Signage	LS	All	$ 5,000	$ 5,000
8	Striping	LS	All	$ 5,000	$ 5,000
9	Storm Drain	LF	1000	$ 40	$ 40,000
10	8" Water	LF	1000	$ 55	$ 55,000
11	8" Sewer	LF	1000	$ 40	$ 40,000
				Subtotal	$ 416,000
	Local Streets SW of Gas Stations				
1	Mobilization	LS	All	$ 64,000	$ 64,000
2	Earthwork	C.Y.	1840	$ 20	$ 36,800
3	Curb and Gutter	LF	2200	$ 15	$ 33,000
4	6' Sidewalk (one side)	SF	6600	$ 3	$ 19,800
5	4" Asphalt	Ton	950	$ 100	$ 95,000
6	12" Base Rock	C.Y.	1300	$ 30	$ 39,000
7	Signage	LS	All	$ 5,000	$ 5,000
8	Striping	LS	All	$ 5,000	$ 5,000
9	Storm Drain	LF	1100	$ 40	$ 44,000
10	8" Water	LF	1100	$ 55	$ 60,500
11	8" Sewer	LF	1100	$ 40	$ 44,000
12	Signal	LS	All	$ 250,000	$ 250,000
				Subtotal	$ 696,100
	Scapelhorn Road				
1	Mobilization	LS	All	$ 9,000	$ 9,000
2	Earthwork	C.Y.	670	$ 20	$ 13,400
3	4" Asphalt	Ton	350	$ 100	$ 35,000
4	12" Base Rock	C.Y.	500	$ 30	$ 15,000
5	Signage	LS	All	$ 1,000	$ 1,000
6	Striping	LS	All	$ 1,000	$ 1,000
7	Storm Drain	LF	400	$ 40	$ 16,000
				Subtotal	$ 90,400
	Gravel Road SE of Interchange				
1	Mobilization	LS	All	$ 8,000	$ 8,000
2	Earthwork	C.Y.	1870	$ 20	$ 37,400
3	12" Base Rock	C.Y.	1300	$ 30	$ 39,000
4	Signage	LS	All	$ 1,000	$ 1,000
5	Striping	LS	All	$ 1,000	$ 1,000
				Subtotal	$ 86,400
	SB Exit Ramp				
1	Mobilization	LS	All	$ 486,000	$ 486,000
2	Earthwork	C.Y.	4550	$ 20	$ 91,000
3	Signal	LS	All	$ 250,000	$ 250,000
4	Bridge (300' x 30' @ $420/SF)	LS	All	$ 3,800,000	$ 3,800,000
5	12" Asphalt	Ton	5270	$ 100	$ 527,000
6	12" Base Rock	C.Y.	2300	$ 30	$ 69,000
7	Signage	LS	All	$ 50,000	$ 50,000
8	Striping	LS	All	$ 25,000	$ 25,000
9	Storm Drain	LF	400	$ 40	$ 16,000
10	Illumination (10 poles at $2,500)	LS	All	$ 25,000	$ 25,000
				Subtotal	$ 5,339,000
	SB Entrance Ramp				
1	Mobilization	LS	All	$ 461,000	$ 461,000
2	Earthwork	C.Y.	7230	$ 20	$ 144,600
3	12" Asphalt	Ton	8380	$ 100	$ 838,000
4	12" Base Rock	C.Y.	3700	$ 30	$ 111,000
5	Signage	LS	All	$ 50,000	$ 50,000
6	Striping	LS	All	$ 25,000	$ 25,000
7	Storm Drain	LF	1200	$ 40	$ 48,000
8	Illumination (10 poles at $2,500)	LS	All	$ 25,000	$ 25,000
9	Bridge (400' x 20' @ $420/SF)	LS	All	$ 3,360,000	$ 3,360,000
				Subtotal	$ 5,062,600
	NB Etrance/Exit Ramp				
1	Mobilization	LS	All	$ 25,000	$ 25,000
2	Signal	LS	All	$ 250,000	$ 250,000
				Subtotal	$ 275,000
	POE Exit Road				
1	Mobilization	LS	All	$ 15,000	$ 15,000
2	Earthwork	C.Y.	670	$ 20	$ 13,400
3	12" Asphalt	Ton	1030	$ 100	$ 103,000
4	12" Base Rock	C.Y.	500	$ 30	$ 15,000
5	Signage	LS	All	$ 1,000	$ 1,000
6	Striping	LS	All	$ 1,000	$ 1,000
7	Storm Drain	LF	400	$ 40	$ 16,000
8					
				Subtotal	$ 164,400
	Removal				
1	SB Exit Ramp	SF	24000	$ 3	$ 72,000
2	SB Entrance Ramp	SF	48000	$ 3	$ 144,000

Construction Subtotal (2010)	**$**	**12,476,300**
Project Contingency (20%)	$	2,496,000
Design Engineering (10%)		1,248,000
Construction Engineering and Inspection (10%)	$	1,248,000
Environmental Review, Permits, Cultrual Resources (0.5%)	$	63,000
Right-of-Way	$	632,786
Total Estimated Project Cost (2010 Dollars)	**$**	**18,164,086**

PRELIMINARY COST ESTIMATE

Project: Umatilla IAMP
Date: 8/4/2010
Prepared By: Jeremy Morris, P.E.

				Alternative 8b	
	ITEM DESCRIPTION	**UNIT OF MEASURE**	**QUANTITY**	**UNIT PRICE**	**TOTAL**
Item No.	**Locust & Brownell Improvements**				
1	Mobilization	LS	All	$ 41,000	$ 41,000
2	Earthwork	C.Y.	2670	$ 20	$ 53,400
3	4" Asphalt	Ton	1380	$ 100	$ 138,000
4	12" Base Rock	C.Y.	1800	$ 30	$ 54,000
5	Signage	LS	All	$ 2,000	$ 2,000
6	Striping	LS	All	$ 2,000	$ 2,000
7	Storm Drain	LF	1600	$ 40	$ 64,000
8	8" Water	LF	1600	$ 55	$ 88,000
9	8" Sewer	LF	1600	$ 40	$ 64,000
				Subtotal	$ 506,400
	Eisele Drive (to Canal Bridge)				
1	Mobilization	LS	All	$ 221,000	$ 221,000
2	Earthwork	C.Y.	1780	$ 20	$ 35,600
3	Curb and Gutter	LF	1600	$ 15	$ 24,000
4	6' Sidewalk (both sides)	SF	9600	$ 3	$ 28,800
5	12" Asphalt	Ton	4120	$ 100	$ 412,000
6	12" Base Rock	C.Y.	1800	$ 30	$ 54,000
7	Signage	LS	All	$ 50,000	$ 50,000
8	Striping	LS	All	$ 10,000	$ 10,000
9	Storm Drain	LF	800	$ 40	$ 32,000
10	8" Water	LF	800	$ 55	$ 44,000
11	8" Sewer	LF	800	$ 40	$ 32,000
12	Signal	LS	All	$ 250,000	$ 250,000
13	Bridge (60' x 48' @ $420/SF)	LS	All	$ 1,210,000	$ 1,210,000
14	Illumination (10 poles at $2,500)	LS	All	$ 25,000	$ 25,000
				Subtotal	$ 2,428,400
	Local Streets SW of Gas Stations				
1	Mobilization	LS	All	$ 28,000	$ 28,000
2	Earthwork	C.Y.	1170	$ 20	$ 23,400
3	Curb and Gutter	LF	1400	$ 15	$ 21,000
4	6' Sidewalk (one side)	SF	4200	$ 3	$ 12,600
5	6" Asphalt	Ton	910	$ 100	$ 91,000
6	12" Base Rock	C.Y.	800	$ 30	$ 24,000
7	Signage	LS	All	$ 5,000	$ 5,000
8	Striping	LS	All	$ 5,000	$ 5,000
9	Storm Drain	LF	700	$ 40	$ 28,000
10	8" Water	LF	700	$ 55	$ 38,500
11	8" Sewer	LF	700	$ 40	$ 28,000
				Subtotal	$ 304,500
	POE Road (Bridge to POE)				
1	Mobilization	LS	All	$ 28,000	$ 28,000
2	Earthwork	C.Y.	890	$ 20	$ 17,800
3	Curb and Gutter	LF	800	$ 15	$ 12,000
4	6' Sidewalk (one side)	SF	2400	$ 3	$ 7,200
5	4" Asphalt	Ton	1380	$ 100	$ 138,000
6	12" Base Rock	C.Y.	600	$ 30	$ 18,000
7	Signage	LS	All	$ 15,000	$ 15,000
8	Striping	LS	All	$ 5,000	$ 5,000
9	Storm Drain	LF	400	$ 40	$ 16,000
10	8" Water	LF	400	$ 55	$ 22,000
11	8" Sewer	LF	400	$ 40	$ 16,000
12	Illumination (5 poles at $2,500)	LS	All	$ 12,500	$ 12,500
				Subtotal	$ 307,500
	Port of Entry Relocation				
1	Estimated Cost	LS	All	$ 5,000,000	$ 5,000,000
				Subtotal	$ 5,000,000
	Gravel Road SE of Interchange				
1	Mobilization	LS	All	$ 8,000	$ 8,000
2	Earthwork	C.Y.	1870	$ 20	$ 37,400
3	12" Base Rock	C.Y.	1300	$ 30	$ 39,000
4	Signage	LS	All	$ 1,000	$ 1,000
5	Striping	LS	All	$ 1,000	$ 1,000
				Subtotal	$ 86,400
	SB Exit Ramp				
1	Mobilization	LS	All	$ 55,000	$ 55,000
2	Earthwork	C.Y.	1600	$ 20	$ 32,000
3	Signal	LS	All	$ 250,000	$ 250,000
4	12" Asphalt	Ton	1860	$ 100	$ 186,000
5	12" Base Rock	C.Y.	800	$ 30	$ 24,000
6	Signage	LS	All	$ 10,000	$ 10,000
7	Striping	LS	All	$ 5,000	$ 5,000
8	Storm Drain	LF	600	$ 40	$ 24,000
9	Illumination (5 poles at $2,500)	LS	All	$ 12,500	$ 12,500
				Subtotal	$ 598,500
	SB Entrance Ramp (both sides of POE)				
1	Mobilization	LS	All	$ 662,000	$ 662,000
2	Earthwork	C.Y.	5040	$ 20	$ 100,800
3	12" Asphalt	Ton	5840	$ 100	$ 584,000
4	12" Base Rock	C.Y.	2600	$ 30	$ 78,000
5	Signage	LS	All	$ 5,000	$ 5,000
6	Striping	LS	All	$ 5,000	$ 5,000
7	Storm Drain	LF	1600	$ 40	$ 64,000
8	Illumination (5 poles at $2,500)	LS	All	$ 12,500	$ 12,500
9	Bridge Widening (572' x 24' @ $420/sq ft)	LS	All	$ 5,765,760	$ 5,765,760
				Subtotal	$ 7,277,060
	NB Etrance/Exit Ramp				
1	Mobilization	LS	All	$ 25,000	$ 25,000
2	Signal	LS	All	$ 250,000	$ 250,000
				Subtotal	$ 275,000

Construction Subtotal (2010)	**$**	**16,783,760**
Project Contingency (20%)	$	3,357,000
Design Engineering (10%)		1,679,000
Construction Engineering and Inspection (10%)	$	1,679,000
Environmental Review, Permits, Cultrual Resources (1%)	$	168,000
Right-of-Way	$	2,897,143
Total Estimated Project Cost (2010 Dollars)	**$**	**26,563,903**

PRELIMINARY COST ESTIMATE

Project: Umatilla IAMP
Date: 8/4/2010
Prepared By: Jeremy Morris, P.E.

				Alternative 9	
	ITEM DESCRIPTION	**UNIT OF MEASURE**	**QUANTITY**	**UNIT PRICE**	**TOTAL**
	Port of Entry				
1	Mobilization	LS	All	$ 64,000	$ 64,000
2	Earthwork	C.Y.	1840	$ 20	$ 36,800
3	Curb and Gutter	LF	2200	$ 15	$ 33,000
4	6' Sidewalk (one side)	SF	6600	$ 3	$ 19,800
5	4" Asphalt	Ton	950	$ 100	$ 95,000
6	12" Base Rock	C.Y.	1300	$ 30	$ 39,000
7	Signage	LS	All	$ 5,000	$ 5,000
8	Striping	LS	All	$ 5,000	$ 5,000
9	Storm Drain	LF	1100	$ 40	$ 44,000
10	8" Water	LF	1100	$ 55	$ 60,500
11	8" Sewer	LF	1100	$ 40	$ 44,000
12	Signal	LS	All	$ 250,000	$ 250,000
				Subtotal	$ 696,100
	Scapelhorn Road				
1	Mobilization	LS	All	$ 10,000	$ 10,000
2	Earthwork	C.Y.	840	$ 20	$ 16,800
3	4" Asphalt	Ton	430	$ 100	$ 43,000
4	12" Base Rock	C.Y.	600	$ 30	$ 18,000
5	Signage	LS	All	$ 1,000	$ 1,000
6	Striping	LS	All	$ 1,000	$ 1,000
7	Storm Drain	LF	500	$ 40	$ 20,000
				Subtotal	$ 109,800
	Gravel Road SE of Interchange				
1	Mobilization	LS	All	$ 8,000	$ 8,000
2	Earthwork	C.Y.	1870	$ 20	$ 37,400
3	12" Base Rock	C.Y.	1300	$ 30	$ 39,000
4	Signage	LS	All	$ 1,000	$ 1,000
5	Striping	LS	All	$ 1,000	$ 1,000
				Subtotal	$ 86,400
	SB Exit Ramp (Vehicles)				
1	Mobilization	LS	All	$ 458,000	$ 458,000
2	Earthwork	C.Y.	2580	$ 20	$ 51,600
3	Signal	LS	All	$ 250,000	$ 250,000
4	Bridge (300' x 30' @ $420/SF)	LS	All	$ 3,800,000	$ 3,800,000
5	12" Asphalt	Ton	2990	$ 100	$ 299,000
6	12" Base Rock	C.Y.	1300	$ 30	$ 39,000
7	Signage	LS	All	$ 50,000	$ 50,000
8	Striping	LS	All	$ 25,000	$ 25,000
9	Storm Drain	LF	800	$ 40	$ 32,000
10	Illumination (10 poles at $2,500)	LS	All	$ 25,000	$ 25,000
				Subtotal	$ 5,029,600
	SB Exit Ramp (Port of Entry)				
1	Mobilization	LS	All	$ 442,000	$ 442,000
2	Earthwork	C.Y.	3120	$ 20	$ 62,400
3	Illumination (10 poles at $2,500)	LS	All	$ 25,000	$ 25,000
4	Bridge (300' x 30' @ $420/SF)	LS	All	$ 3,800,000	$ 3,800,000
5	12" Asphalt	Ton	3610	$ 100	$ 361,000
6	12" Base Rock	C.Y.	1600	$ 30	$ 48,000
7	Signage	LS	All	$ 50,000	$ 50,000
8	Striping	LS	All	$ 25,000	$ 25,000
9	Storm Drain	LF	1000	$ 40	$ 40,000
				Subtotal	$ 4,853,400
	SB Entrance Ramp				
1	Mobilization	LS	All	$ 145,000	$ 145,000
2	Earthwork	C.Y.	8600	$ 20	$ 172,000
3	12" Asphalt	Ton	9960	$ 100	$ 996,000
4	12" Base Rock	C.Y.	4300	$ 30	$ 129,000
5	Signage	LS	All	$ 50,000	$ 50,000
6	Striping	LS	All	$ 25,000	$ 25,000
7	Storm Drain	LF	1200	$ 40	$ 48,000
8	Illumination (10 poles at $2,500)	LS	All	$ 25,000	$ 25,000
				Subtotal	$ 1,590,000
	NB Etrance/Exit Ramp				
1	Mobilization	LS	All	$ 25,000	$ 25,000
2	Signal	LS	All	$ 250,000	$ 250,000
				Subtotal	$ 275,000
	Removal				
1	SB Exit Ramp	SF	24000	$ 3	$ 72,000
2	SB Entrance Ramp	SF	48000	$ 3	$ 144,000

Construction Subtotal (2010)	**$**	**12,856,300**
Project Contingency (20%)	$	2,572,000
Design Engineering (10%)		1,286,000
Construction Engineering and Inspection (10%)	$	1,286,000
Environmental Review, Permits, Cultrual Resources (1%)	$	129,000
Right-of-Way	$	2,401,120
Total Estimated Project Cost (2010 Dollars)	**$**	**20,530,420**

PRELIMINARY COST ESTIMATE

Project: Umatilla IAMP
Date: 8/4/2010
Prepared By: Jeremy Morris, P.E.

				Alternative 11	
	ITEM DESCRIPTION	**UNIT OF MEASURE**	**QUANTITY**	**UNIT PRICE**	**TOTAL**
	Port of Entry				
1	Mobilization	LS	All	$ 71,000	$ 71,000
2	Earthwork	C.Y.	2490	$ 20	$ 49,800
3	Demolition	LS	All	$ 25,000	$ 25,000
4	6" Asphalt	Ton	1930	$ 100	$ 193,000
5	12" Base Rock	C.Y.	1700	$ 30	$ 51,000
6	Signage	LS	All	$ 5,000	$ 5,000
7	Striping	LS	All	$ 5,000	$ 5,000
8	Storm Drain	LF	3200	$ 40	$ 128,000
9	Signal	LS	All	$ 250,000	$ 250,000
				Subtotal	$ 777,800
	Scapelhorn Road				
1	Mobilization	LS	All	$ 10,000	$ 10,000
2	Earthwork	C.Y.	840	$ 20	$ 16,800
3	4" Asphalt	Ton	430	$ 100	$ 43,000
4	12" Base Rock	C.Y.	600	$ 30	$ 18,000
5	Signage	LS	All	$ 1,000	$ 1,000
6	Striping	LS	All	$ 1,000	$ 1,000
7	Storm Drain	LF	500	$ 40	$ 20,000
				Subtotal	$ 109,800
	Gravel Road SE of Interchange				
1	Mobilization	LS	All	$ 8,000	$ 8,000
2	Earthwork	C.Y.	1870	$ 20	$ 37,400
3	12" Base Rock	C.Y.	1300	$ 30	$ 39,000
4	Signage	LS	All	$ 1,000	$ 1,000
5	Striping	LS	All	$ 1,000	$ 1,000
				Subtotal	$ 86,400
	Local Streets SW of Gas Stations to Interchange Intersection				
1	Mobilization	LS	All	$ 457,000	$ 457,000
2	Earthwork	C.Y.	6670	$ 20	$ 133,400
3	Modify Signal at Freeway Exit/Entry Ramp	LS	All	$ 125,000	$ 125,000
4	Remove Signal at Brownell	LS	All	$ 50,000	$ 50,000
5	Bridge (100' x 75' @ $420/SF)	LS	All	$ 3,200,000	$ 3,200,000
6	12" Asphalt	Ton	7730	$ 100	$ 773,000
7	12" Base Rock	C.Y.	3400	$ 30	$ 102,000
8	Signage	LS	All	$ 50,000	$ 50,000
9	Striping	LS	All	$ 25,000	$ 25,000
10	Storm Drain	LF	2000	$ 40	$ 80,000
11	Illumination (10 poles at $2,500)	LS	All	$ 25,000	$ 25,000
				Subtotal	$ 5,020,400
	Overpass and Enter/Exit Ramps				
1	Mobilization	LS	All	$ 680,000	$ 680,000
2	Earthwork	C.Y.	23100	$ 20	$ 462,000
3	Illumination (10 poles at $2,500)	LS	All	$ 25,000	$ 25,000
4	Bridge (300' x 36' @ $420/SF)	LS	All	$ 4,600,000	$ 4,600,000
5	12" Asphalt	Ton	12500	$ 100	$ 1,250,000
6	12" Base Rock	C.Y.	5400	$ 30	$ 162,000
7	Signage	LS	All	$ 50,000	$ 50,000
8	Striping	LS	All	$ 25,000	$ 25,000
9	Storm Drain	LF	5600	$ 40	$ 224,000
10	Bridge Widening (572' x 16' @ $420/SF)	LS	All	$ 3,900,000	$ 3,900,000
				Subtotal	$ 7,478,000
	NB Entrance/Exit Ramp				
1	Mobilization	LS	All	$ 25,000	$ 25,000
2	Signal	LS	All	$ 250,000	$ 250,000
				Subtotal	$ 275,000
	Removal				
1	SB Entrance Ramp	SF	46000	$ 3	$ 138,000
				Subtotal	$ 138,000

Construction Subtotal (2010)	**$**	**17,785,400**
Project Contingency (20%)	$	3,558,000
Design Engineering (10%)		1,779,000
Construction Engineering and Inspection (10%)	$	1,779,000
Environmental Review, Permits, Cultrual Resources (1%)	$	178,000
Right-of-Way	$	805,534
Total Estimated Project Cost (2010 Dollars)	**$**	**25,884,934**

Appendix I

Technical Memorandum #7c – Additional Concept Analysis

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
610 SW Alder Street, Suite 700, Portland, OR 97205 P 503.228.5230 F 503.273.8169

TECHNICAL MEMORANDUM 7c

I-82 / US 730 IAMP

Additional Concept Analysis

Date: November 22, 2010 Project : 10369.0

To: Teresa Penninger, ODOT Region 5

From: Matt Hughart, AICP, Nick Foster, Marc Butorac, P.E., P.T.O.E.

cc: Technical Advisory Committee (TAC)
Public Advisory Committee (PAC)

This technical memorandum documents the evaluation of two additional interchange/local circulation design concepts that have been recommended for further review by the TAC and PAC at the last set of meetings.

The purpose of this memorandum is to provide the TAC and PAC committee members with a detailed assessment of the two additional concepts, and to assist in the process that will ultimately select a preferred interchange and local circulation form for inclusion in the interchange area management plan (IAMP).

ADDITIONAL CONCEPTS

The fourth TAC/PAC meeting was held in Umatilla on August 12, 2010. Four design concepts (Concept #3, Concept #8c, Concept #9, and Concept #11) were reviewed in detail at this meeting. These four concepts had previously been recommended for further consideration by the TAC/PAC committees. At the conclusion of these meetings both committees expressed interest in two additional concepts. One is a variation of Concept #8c (herein referred to as Concept #8d) that would include a direct freeway off ramp connection to the relocated Umatilla Port of Entry (POE). The second requested concept involves the potential for combining Concept #3 with the idea of relocating the POE as depicted in one of the Concept #8 variations. The remainder of this memorandum documents the analysis that went into these concepts and the preliminary project team findings.

Concept #8d

Like Concept #8c, Concept #8d shows the POE relocated south of US 730, Brownell Boulevard realigned to intersect US 730 across from Eisele Drive, and Eisele Drive extended south to the

relocated POE to accommodate egress movements. However, as shown in the attached figure, Concept #8d includes a direct access ramp from I-82 Southbound to the relocated POE. As this connection would need to work within the configuration of the existing interchange, it would likely need a new overpass structure over US 730 and then another overpass structure over the existing I-82 Southbound on-ramp.

The benefits of this concept as compared to Concept #8c include:

- Truck traffic destined for the POE is completely removed from the US 730/I-82 southbound ramp terminal intersection, improving its long-term operational performance.
- The direct flyover ramp would reduce the potential for driver confusion that could occur in Concept #8c with the POE access occurring off of the I-82 southbound on-ramp.
- It would be easier for the POE staff to monitor trucks potentially bypassing the POE with the dedicated flyover ramp.

However, Concept #8d has one significant limitation. Specifically, with the direct access ramp from I-82 southbound into the POE, there is no longer a way for trucks and employees to access the POE from US 730. Because of this limitation and the importance of this secondary connection, a fifth variation of Concept #8 was developed (herein referred to as Concept #8e).

Concept #8e

As shown in the attached figure, Concept #8e builds upon #8d and illustrates a secondary connection to the POE from the existing I-82 southbound on-ramp. With the added benefit of this connection, Concept #8e has the same benefits outlined in Concept #8d.

Operational Analyses for Concept #8d/e

It is forecast that Concepts #8d/e will have relatively similar operations to Concept #8c. With the exception of the I-82 southbound ramp terminal intersection, operations along US 730 should be similar to what has been estimated for Concept #8c. Table 7c-1 compares the operational analysis results for the weekday p.m. peak hour at the I-82 southbound ramp terminal for Concepts #8c, #8d, and #8e.

Table 7c-1 Operational Analysis of Concept #8d/#8e at I-82 Southbound Ramp Terminal

Concept	V/C[1] Ratio	LOS	Delay (s)
8c	0.73	C	23.6
8d/e	0.63	C	20.5

[1]V/C = volume-to-capacity

As Table 7c-1 shows, Concepts #8d/e are anticipated to operate with more available capacity and less delay at the I-82 southbound ramp terminal than Concept #8c. The improvement in operations is attributable to the removal of truck traffic bound for the POE from this intersection.

Cost Estimates - Concepts #8d and #8e

Table 7c-2 summarizes the cost estimates for Concept #8d and Concept #8e. For comparison purposes, the cost of the original Concept #8c has been included.

Table 7c-2 Preliminary Cost Estimates

Concept	Preliminary Cost Estimate		
	Construction	ROW	Total
Original Concept			
#8c	$24,000,000	$2,900,000	$26,900,000
Additional Concepts			
#8d	$33,600,000	$2,900,000	$36,500,000
#8e	$34,600,000	$2,900,000	$37,500,000

As Table 7c-2 shows, Concept #8d and #8e are estimated to be approximately $36-38M. This is approximately $10M more than the original Concept #8c. The cost difference between #8c and #8d/e is due to the new off-ramp connecting I-82 Southbound to the POE and the additional US 730 overpass structure.

Concept #3 with POE Relocation

When reviewing the original four interchange concepts, the TAC and PAC committees noted the operational benefits of Concept #3 and its ability to more easily accommodate POE traffic. At the same time, both committees also noted the long-term value of potentially relocating the POE as depicted in the #8 concepts. As such, it was suggested that a hybrid variation of these two concepts be investigated under the potential that they could be phased over time. This phasing could include the development of Concept #3 in the near-term with the ability to accommodate a relocated POE at some point in the future.

Based on this suggestion, a hybrid of Concepts #3 and #8 was investigated under this potential phasing scenario. A single line sketch of this general form is illustrated in the attached figure. To accommodate a relocated POE at some point in the future, the original Concept #3 would need to be modified as follows:

- A new southbound exit ramp would need to be constructed further north along I-82 just south of the 3rd Street overpass.
- This exit ramp would parallel I-82 (requiring a separate railroad overpass structure) where it would then split, providing access to the exiting loop ramp (depicted in Concept #3) and access to a separate POE access road.
- To accommodate the exit ramp split, the location of the exiting loop ramp would need to be shifted further to the west where it would likely have more substantial impacts to the Crossroads restaurant parking lot.
- The I-82 southbound on-ramp depicted in Concept #3 would need to be relocated further to the west in order to accommodate the future POE. The relocated ramp would need a separate bridge structure over the Umatilla River.
- The Eisele Drive extension as a back-door out of the relocated POE would need to be grade separated (under or over) from the I-82 southbound on-ramp. Due to the anticipated flat grade, grade separation may be difficult to accomplish.
- The I-82 southbound exit out of the relocated POE would require a widening of the existing Umatilla River bridge.

As outlined above and illustrated in the attached figure, substantial modifications would be needed to the original Concept #3 to ultimately accommodate a relocated POE at some point in the future. From a cost perspective, it is estimated that developing Concept #3 (to accommodate a future relocated POE) would cost approximately $19.7M, while the relocation of the POE would cost an additional $23.6M.

Table 7c-3 Concept #3 with POE Relocation

Concept	Preliminary Cost Estimate		
	Construction	ROW	Total
Original Concept			
#3	$17,600,000	$600,000	$18,200,000
Under POE Relocation Scenario			
#3 (near-term)	$19,100,000	$600,000	$19,700,000
POE relocation (long-term)	$20,700,000	$2,900,000	$23,600,000
Total	**$39,800,000**	**$3,500,000**	**$43,300,000**

As shown in Table 7c-3, Concept #3 (developed to accommodate a future POE relocation) would cost approximately $1.5M more than the original Concept #3.

EAST SIDE OF THE INTERCHANGE

All of the concepts considered included a common set of improvements to be made to the east of the I-82/US 730 interchange. The primary purpose of these improvements is to improve local circulation and access spacing along US 730, which originally was planned to be accomplished through relocating Scaplehorn Road further east. However, the geography of the area precludes moving the Scaplehorn Road access east to better meet access spacing standards. Instead, as development occurs north of US 730 on the east side of the interchange, the perpendicular section of the Scaplehorn Road approach to US 730 will be lengthened to approximately 200 feet to provide stacking distance for vehicles turning onto US 730. Scaplehorn Road will also be extended to serve as a frontage road that provides access for these properties. Analyses have shown that queues of vehicles are not expected to stack up from the Scaplehorn Road intersection back in front of the I-82 Northbound ramp terminal and vice versa.

Attachment A
Concept Double Line Drawings

8' 8' SIDEWALK
8' SHOULDER
12' LANE
12' LANE
3' SHOULDER
8' SIDEWALK
CHERRY STREET
8' SHOULDER
12' LANE
12' LANE
3' SHOULDER
LOCUST STREET
12' LANE
TO WASHINGTON
BROADWAY BLVD
INTERSTATE 82
NEW BRIDGE
30' ASPHALT ROAD
TO DOWNTOWN UMATILLA
HIGHWAY 730
8' SHOULDER
12' LANE
12' LANE
12' LANE
8' SHOULDER
TO US 395 HERMISTON
8' SHOULDER
12' LANE
14' LANE
4' MEDIAN
12' LANE
12' LANE
12' LANE
5' SHOULDER
8' SHOULDER
12' LANE
12' LANE
8' SHOULDER
4' SHOULDER
16' LANE
8' SHOULDER
20' GRAVEL ROAD
4' SHOULDER
12' LANE
12' LANE
8' SHOULDER
INTERSTATE 82
TO I-84
PRELIMINARY COPY
INFORMATION ONLY
anderson perry & associates, inc.
I-82/US 730 INTERCHANGE AREA
MANAGEMENT PLAN
CONCEPT 3
FIGURE
7a-3

anderson perry & associates, inc.

I-82/US 730 INTERCHANGE AREA MANAGEMENT PLAN

CONCEPT 8c

FIGURE

7a-8c

anderson perry & associates, inc.

I-82/US 730 INTERCHANGE AREA MANAGEMENT PLAN

CONCEPT 8d

FIGURE

7a-8d

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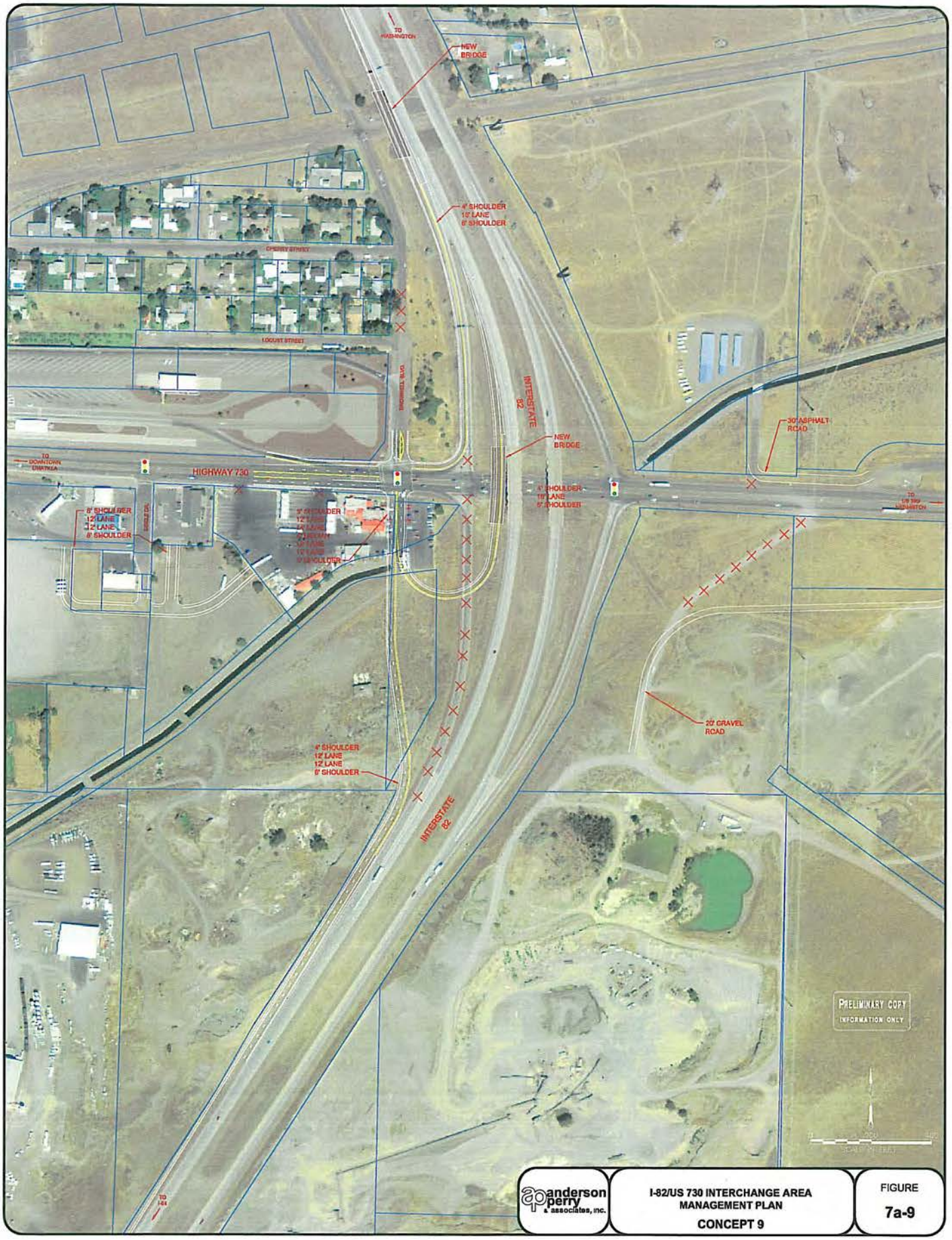
I-82/US 730 INTERCHANGE AREA MANAGEMENT PLAN

CONCEPT 8e

FIGURE

7a-8e



anderson perry & associates, inc.

I-82/US 730 INTERCHANGE AREA MANAGEMENT PLAN

CONCEPT 9

FIGURE

7a-9

anderson perry & associates, inc.

I-82/US 730 INTERCHANGE AREA MANAGEMENT PLAN

CONCEPT 11

FIGURE

7a-11

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Attachment B
Cost Estimates

PRELIMINARY COST ESTIMATE

Project: Umatilla IAMP
Date: 10/01/2010
Prepared By: Jeremy Morris, P.E.

anderson perry & associates, inc.

				Alternative 3	
	ITEM DESCRIPTION	**UNIT OF MEASURE**	**QUANTITY**	**UNIT PRICE**	**TOTAL**
Item No.	**Locust Improvements**				
1	Mobilization	LS	All	$ 11,000	$ 11,000
2	Earthwork	C.Y.	670	$ 20	$ 13,400
3	4" Asphalt	Ton	350	$ 100	$ 35,000
4	12" Base Rock	C.Y.	500	$ 30	$ 15,000
5	Signage	LS	All	$ 1,000	$ 1,000
6	Striping	LS	All	$ 1,000	$ 1,000
7	Storm Drain	LF	400	$ 40	$ 16,000
8	8" Water	LF	400	$ 55	$ 22,000
9	8" Sewer	LF	400	$ 40	$ 16,000
				Subtotal	$ 130,400
	Brownell Blvd & Cherry Street				
1	Mobilization	LS	All	$ 40,000	$ 40,000
2	Earthwork	C.Y.	2230	$ 20	$ 44,600
3	Curb and Gutter	LF	2000	$ 15	$ 30,000
4	6' Sidewalk (one side)	SF	6000	$ 3	$ 18,000
5	4" Asphalt	Ton	1150	$ 100	$ 115,000
6	12" Base Rock	C.Y.	1500	$ 30	$ 45,000
7	Signage	LS	All	$ 5,000	$ 5,000
8	Striping	LS	All	$ 5,000	$ 5,000
9	Storm Drain	LF	1000	$ 40	$ 40,000
10	8" Water	LF	1000	$ 55	$ 55,000
11	8" Sewer	LF	1000	$ 40	$ 40,000
				Subtotal	$ 437,600
	Local Streets SW of Gas Stations				
1	Mobilization	LS	All	$ 64,000	$ 64,000
2	Earthwork	C.Y.	1840	$ 20	$ 36,800
3	Curb and Gutter	LF	2200	$ 15	$ 33,000
4	6' Sidewalk (one side)	SF	6600	$ 3	$ 19,800
5	4" Asphalt	Ton	950	$ 100	$ 95,000
6	12" Base Rock	C.Y.	1300	$ 30	$ 39,000
7	Signage	LS	All	$ 5,000	$ 5,000
8	Striping	LS	All	$ 5,000	$ 5,000
9	Storm Drain	LF	1100	$ 40	$ 44,000
10	8" Water	LF	1100	$ 55	$ 60,500
11	8" Sewer	LF	1100	$ 40	$ 44,000
12	Signal	LS	All	$ 250,000	$ 250,000
				Subtotal	$ 696,100
	Scapelhorn Road				
1	Mobilization	LS	All	$ 9,000	$ 9,000
2	Earthwork	C.Y.	670	$ 20	$ 13,400
3	4" Asphalt	Ton	350	$ 100	$ 35,000
4	12" Base Rock	C.Y.	500	$ 30	$ 15,000
5	Signage	LS	All	$ 1,000	$ 1,000
6	Striping	LS	All	$ 1,000	$ 1,000
7	Storm Drain	LF	400	$ 40	$ 16,000
				Subtotal	$ 90,400
	Gravel Road SE of Interchange				
1	Mobilization	LS	All	$ 8,000	$ 8,000
2	Earthwork	C.Y.	1870	$ 20	$ 37,400
3	12" Base Rock	C.Y.	1300	$ 30	$ 39,000
4	Signage	LS	All	$ 1,000	$ 1,000
5	Striping	LS	All	$ 1,000	$ 1,000
				Subtotal	$ 86,400
	SB Exit Ramp				
1	Mobilization	LS	All	$ 492,000	$ 492,000
2	Earthwork	C.Y.	5000	$ 20	$ 100,000
3	Signal	LS	All	$ 250,000	$ 250,000
4	Bridge (300' x 30' @ $420/SF)	LS	All	$ 3,800,000	$ 3,800,000
5	12" Asphalt	Ton	5790	$ 100	$ 579,000
6	12" Base Rock	C.Y.	2500	$ 30	$ 75,000
7	Signage	LS	All	$ 50,000	$ 50,000
8	Striping	LS	All	$ 25,000	$ 25,000
9	Storm Drain	LF	400	$ 40	$ 16,000
10	Illumination (10 poles at $2,500)	LS	All	$ 25,000	$ 25,000
				Subtotal	$ 5,412,000
	SB Entrance Ramp				
1	Mobilization	LS	All	$ 461,000	$ 461,000
2	Earthwork	C.Y.	7230	$ 20	$ 144,600
3	12" Asphalt	Ton	8380	$ 100	$ 838,000
4	12" Base Rock	C.Y.	3700	$ 30	$ 111,000
5	Signage	LS	All	$ 50,000	$ 50,000
6	Striping	LS	All	$ 25,000	$ 25,000
7	Storm Drain	LF	1200	$ 40	$ 48,000
8	Illumination (10 poles at $2,500)	LS	All	$ 25,000	$ 25,000
9	Bridge (400' x 20' @ $420/SF)	LS	All	$ 3,360,000	$ 3,360,000
				Subtotal	$ 5,062,600
	NB Etrance/Exit Ramp				
1	Mobilization	LS	All	$ 25,000	$ 25,000
2	Signal	LS	All	$ 250,000	$ 250,000
				Subtotal	$ 275,000
	POE Exit Road				
1	Mobilization	LS	All	$ 15,000	$ 15,000
2	Earthwork	C.Y.	670	$ 20	$ 13,400
3	12" Asphalt	Ton	1030	$ 100	$ 103,000
4	12" Base Rock	C.Y.	500	$ 30	$ 15,000
5	Signage	LS	All	$ 1,000	$ 1,000
6	Striping	LS	All	$ 1,000	$ 1,000
7	Storm Drain	LF	400	$ 40	$ 16,000
8					
				Subtotal	$ 164,400
	Removal				
1	SB Exit Ramp	SF	24000	$ 3	$ 72,000
2	SB Entrance Ramp	SF	48000	$ 3	$ 144,000

Construction Subtotal (2010)	**$ 12,570,900**
Project Contingency (20%)	$ 2,515,000
Design Engineering (10%)	1,258,000
Construction Engineering and Inspection (10%)	$ 1,258,000
Environmental Review, Permits, Cultrual Resources (0.5%)	$ 63,000
Right-of-Way	$ 632,000
Total Estimated Project Cost (2010 Dollars)	**$ 18,296,900**

PRELIMINARY COST ESTIMATE

Project: Umatilla IAMP
Date: 10/01/2010
Prepared By: Jeremy Morris, P.E.

anderson perry & associates, inc.

				Alternative 8c	
	ITEM DESCRIPTION	**UNIT OF MEASURE**	**QUANTITY**	**UNIT PRICE**	**TOTAL**
Item No.	**Locust & Brownell Improvements**				
1	Mobilization	LS	All	$ 41,000	$ 41,000
2	Earthwork	C.Y.	2670	$ 20	$ 53,400
3	4" Asphalt	Ton	1380	$ 100	$ 138,000
4	12" Base Rock	C.Y.	1800	$ 30	$ 54,000
5	Signage	LS	All	$ 2,000	$ 2,000
6	Striping	LS	All	$ 2,000	$ 2,000
7	Storm Drain	LF	1600	$ 40	$ 64,000
8	8" Water	LF	1600	$ 55	$ 88,000
9	8" Sewer	LF	1600	$ 40	$ 64,000
				Subtotal	$ 506,400
	Eisele Drive (Locust to Canal Bridge)				
1	Mobilization	LS	All	$ 248,000	$ 248,000
2	Earthwork	C.Y.	4770	$ 20	$ 95,400
3	Curb and Gutter	LF	2500	$ 15	$ 37,500
4	6' Sidewalk (both sides)	SF	15000	$ 3	$ 45,000
5	Asphalt	Ton	5080	$ 100	$ 508,000
6	12" Base Rock	C.Y.	2600	$ 30	$ 78,000
7	Signage	LS	All	$ 50,000	$ 50,000
8	Striping	LS	All	$ 10,000	$ 10,000
9	Storm Drain	LF	1250	$ 40	$ 50,000
10	8" Water	LF	1250	$ 55	$ 68,750
11	8" Sewer	LF	1250	$ 40	$ 50,000
12	Signal	LS	All	$ 250,000	$ 250,000
13	Bridge (60' x 48' @ $420/SF)	LS	All	$ 1,210,000	$ 1,210,000
14	Illumination (10 poles at $2,500)	LS	All	$ 25,000	$ 25,000
				Subtotal	$ 2,725,650
	Local Streets SW of Gas Stations				
1	Mobilization	LS	All	$ 28,000	$ 28,000
2	Earthwork	C.Y.	1170	$ 20	$ 23,400
3	Curb and Gutter	LF	1400	$ 15	$ 21,000
4	6' Sidewalk (one side)	SF	4200	$ 3	$ 12,600
5	6" Asphalt	Ton	910	$ 100	$ 91,000
6	12" Base Rock	C.Y.	800	$ 30	$ 24,000
7	Signage	LS	All	$ 5,000	$ 5,000
8	Striping	LS	All	$ 5,000	$ 5,000
9	Storm Drain	LF	700	$ 40	$ 28,000
10	8" Water	LF	700	$ 55	$ 38,500
11	8" Sewer	LF	700	$ 40	$ 28,000
				Subtotal	$ 304,500
	POE Road (Canal Bridge to POE)				
1	Mobilization	LS	All	$ 24,000	$ 24,000
2	Earthwork	C.Y.	630	$ 20	$ 12,600
3	Curb and Gutter	LF	800	$ 15	$ 12,000
4	6' Sidewalk (one side)	SF	2400	$ 3	$ 7,200
5	12" Asphalt	Ton	970	$ 100	$ 97,000
6	12" Base Rock	C.Y.	500	$ 30	$ 15,000
7	Signage	LS	All	$ 15,000	$ 15,000
8	Striping	LS	All	$ 5,000	$ 5,000
9	Storm Drain	LF	400	$ 40	$ 16,000
10	8" Water	LF	400	$ 55	$ 22,000
11	8" Sewer	LF	400	$ 40	$ 16,000
12	Illumination (5 poles at $2,500)	LS	All	$ 12,500	$ 12,500
				Subtotal	$ 254,300
	Port of Entry Relocation				
1	Estimated Cost	LS	All	$ 5,000,000	$ 5,000,000
				Subtotal	$ 5,000,000
	Gravel Road SE of Interchange				
1	Mobilization	LS	All	$ 8,000	$ 8,000
2	Earthwork	C.Y.	1870	$ 20	$ 37,400
3	12" Base Rock	C.Y.	1300	$ 30	$ 39,000
4	Signage	LS	All	$ 1,000	$ 1,000
5	Striping	LS	All	$ 1,000	$ 1,000
				Subtotal	$ 86,400
	SB Exit Ramp				
1	Mobilization	LS	All	$ 55,000	$ 55,000
2	Earthwork	C.Y.	1600	$ 20	$ 32,000
3	Signal	LS	All	$ 250,000	$ 250,000
4	12" Asphalt	Ton	1860	$ 100	$ 186,000
5	12" Base Rock	C.Y.	800	$ 30	$ 24,000
6	Signage	LS	All	$ 10,000	$ 10,000
7	Striping	LS	All	$ 5,000	$ 5,000
8	Storm Drain	LF	600	$ 40	$ 24,000
9	Illumination (5 poles at $2,500)	LS	All	$ 12,500	$ 12,500
				Subtotal	$ 598,500
	SB Entrance Ramp (both sides of POE)				
1	Mobilization	LS	All	$ 662,000	$ 662,000
2	Earthwork	C.Y.	5040	$ 20	$ 100,800
3	12" Asphalt	Ton	5840	$ 100	$ 584,000
4	12" Base Rock	C.Y.	2600	$ 30	$ 78,000
5	Signage	LS	All	$ 5,000	$ 5,000
6	Striping	LS	All	$ 5,000	$ 5,000
7	Storm Drain	LF	1600	$ 40	$ 64,000
8	Illumination (5 poles at $2,500)	LS	All	$ 12,500	$ 12,500
9	Bridge Widening (572' x 24' @ $420/sq ft)	LS	All	$ 5,765,760	$ 5,765,760
				Subtotal	$ 7,277,060
	NB Etrance/Exit Ramp				
1	Mobilization	LS	All	$ 25,000	$ 25,000
2	Signal	LS	All	$ 250,000	$ 250,000
				Subtotal	$ 275,000

Construction Subtotal (2010)	**$ 17,027,810**
Project Contingency (20%)	$ 3,406,000
Design Engineering (10%)	1,703,000
Construction Engineering and Inspection (10%)	$ 1,703,000
Environmental Review, Permits, Cultrual Resources (1%)	$ 171,000
Right-of-Way	$ 2,900,000
Total Estimated Project Cost (2010 Dollars)	**$ 26,910,810**

PRELIMINARY COST ESTIMATE

Project: Umatilla IAMP
Date: 10/01/2010
Prepared By: Jeremy Morris, P.E.

anderson perry & associates, inc.

				Alternative 8d	
	ITEM DESCRIPTION	**UNIT OF MEASURE**	**QUANTITY**	**UNIT PRICE**	**TOTAL**
Item No.	**Locust & Brownell Improvements**				
1	Mobilization	LS	All	$ 41,000	$ 41,000
2	Earthwork	C.Y.	2670	$ 20	$ 53,400
3	4" Asphalt	Ton	1380	$ 100	$ 138,000
4	12" Base Rock	C.Y.	1800	$ 30	$ 54,000
5	Signage	LS	All	$ 2,000	$ 2,000
6	Striping	LS	All	$ 2,000	$ 2,000
7	Storm Drain	LF	1600	$ 40	$ 64,000
8	8" Water	LF	1600	$ 55	$ 88,000
9	8" Sewer	LF	1600	$ 40	$ 64,000
				Subtotal	$ 506,400
	Eisele Drive (Locust to Canal Bridge)				
1	Mobilization	LS	All	$ 248,000	$ 248,000
2	Earthwork	C.Y.	4770	$ 20	$ 95,400
3	Curb and Gutter	LF	2500	$ 15	$ 37,500
4	6' Sidewalk (both sides)	SF	15000	$ 3	$ 45,000
5	Asphalt	Ton	5080	$ 100	$ 508,000
6	12" Base Rock	C.Y.	2600	$ 30	$ 78,000
7	Signage	LS	All	$ 50,000	$ 50,000
8	Striping	LS	All	$ 10,000	$ 10,000
9	Storm Drain	LF	1250	$ 40	$ 50,000
10	8" Water	LF	1250	$ 55	$ 68,750
11	8" Sewer	LF	1250	$ 40	$ 50,000
12	Signal	LS	All	$ 250,000	$ 250,000
13	Bridge (60' x 48' @ $420/SF)	LS	All	$ 1,210,000	$ 1,210,000
14	Illumination (10 poles at $2,500)	LS	All	$ 25,000	$ 25,000
				Subtotal	$ 2,725,650
	Local Streets SW of Gas Stations				
1	Mobilization	LS	All	$ 28,000	$ 28,000
2	Earthwork	C.Y.	1170	$ 20	$ 23,400
3	Curb and Gutter	LF	1400	$ 15	$ 21,000
4	6' Sidewalk (one side)	SF	4200	$ 3	$ 12,600
5	6" Asphalt	Ton	910	$ 100	$ 91,000
6	12" Base Rock	C.Y.	800	$ 30	$ 24,000
7	Signage	LS	All	$ 5,000	$ 5,000
8	Striping	LS	All	$ 5,000	$ 5,000
9	Storm Drain	LF	700	$ 40	$ 28,000
10	8" Water	LF	700	$ 55	$ 38,500
11	8" Sewer	LF	700	$ 40	$ 28,000
				Subtotal	$ 304,500
	POE Road (Canal Bridge to POE)				
1	Mobilization	LS	All	$ 24,000	$ 24,000
2	Earthwork	C.Y.	630	$ 20	$ 12,600
3	Curb and Gutter	LF	800	$ 15	$ 12,000
4	6' Sidewalk (one side)	SF	2400	$ 3	$ 7,200
5	12" Asphalt	Ton	970	$ 100	$ 97,000
6	12" Base Rock	C.Y.	500	$ 30	$ 15,000
7	Signage	LS	All	$ 15,000	$ 15,000
8	Striping	LS	All	$ 5,000	$ 5,000
9	Storm Drain	LF	400	$ 40	$ 16,000
10	8" Water	LF	400	$ 55	$ 22,000
11	8" Sewer	LF	400	$ 40	$ 16,000
12	Illumination (5 poles at $2,500)	LS	All	$ 12,500	$ 12,500
				Subtotal	$ 254,300
	Port of Entry Relocation				
1	Estimated Cost	LS	All	$ 5,000,000	$ 5,000,000
				Subtotal	$ 5,000,000
	Gravel Road SE of Interchange				
1	Mobilization	LS	All	$ 8,000	$ 8,000
2	Earthwork	C.Y.	1870	$ 20	$ 37,400
3	12" Base Rock	C.Y.	1300	$ 30	$ 39,000
4	Signage	LS	All	$ 1,000	$ 1,000
5	Striping	LS	All	$ 1,000	$ 1,000
				Subtotal	$ 86,400
	SB Exit Ramp				
1	Mobilization	LS	All	$ 55,000	$ 55,000
2	Earthwork	C.Y.	1600	$ 20	$ 32,000
3	Signal	LS	All	$ 250,000	$ 250,000
4	12" Asphalt	Ton	1860	$ 100	$ 186,000
5	12" Base Rock	C.Y.	800	$ 30	$ 24,000
6	Signage	LS	All	$ 10,000	$ 10,000
7	Striping	LS	All	$ 5,000	$ 5,000
8	Storm Drain	LF	600	$ 40	$ 24,000
9	Illumination (5 poles at $2,500)	LS	All	$ 12,500	$ 12,500
				Subtotal	$ 598,500
	SB Entrance Ramp (both sides of POE)				
1	Mobilization	LS	All	$ 662,000	$ 662,000
2	Earthwork	C.Y.	5040	$ 20	$ 100,800
3	12" Asphalt	Ton	5840	$ 100	$ 584,000
4	12" Base Rock	C.Y.	2600	$ 30	$ 78,000
5	Signage	LS	All	$ 5,000	$ 5,000
6	Striping	LS	All	$ 5,000	$ 5,000
7	Storm Drain	LF	1600	$ 40	$ 64,000
8	Illumination (5 poles at $2,500)	LS	All	$ 12,500	$ 12,500
9	Bridge Widening (572' x 24' @ $420/sq ft)	LS	All	$ 5,765,760	$ 5,765,760
				Subtotal	$ 7,277,060
	SB Freeway Exit Ramp & Bridges				
1	Mobilization	LS	All	$ 446,000	$ 446,000
2	Earthwork	C.Y.	16230	$ 20	$ 324,600
3	12" Asphalt	Ton	2320	$ 100	$ 232,000
4	12" Base Rock	C.Y.	1000	$ 30	$ 30,000
5	Signage	LS	All	$ 25,000	$ 25,000
6	Striping	LS	All	$ 10,000	$ 10,000
7	Storm Drain	LF	900	$ 40	$ 36,000
8	Illumination (5 poles at $2,500)	LS	All	$ 12,500	$ 12,500
9	Bridge Over Hwy 730 (300' x 30' @ $420/sq ft)	LS	All	$ 3,780,000	$ 3,780,000
10	Bridge Over SB Entrance Ramp (150' x 30' @ $420/sq ft)	LS	All	$ 1,890,000	$ 1,890,000
				Subtotal	$ 6,786,100
	NB Etrance/Exit Ramp				
1	Mobilization	LS	All	$ 25,000	$ 25,000
2	Signal	LS	All	$ 250,000	$ 250,000
				Subtotal	$ 275,000

Construction Subtotal (2010)	**$ 23,813,910**
Project Contingency (20%)	$ 4,763,000
Design Engineering (10%)	2,382,000
Construction Engineering and Inspection (10%)	$ 2,382,000
Environmental Review, Permits, Cultrual Resources (1%)	$ 239,000
Right-of-Way	$ 2,900,000
Total Estimated Project Cost (2010 Dollars)	**$ 36,479,910**

PRELIMINARY COST ESTIMATE

Project: Umatilla IAMP
Date: 10/04/2010
Prepared By: Jeremy Morris, P.E.

anderson perry & associates, inc.

				Alternative 8e	
	ITEM DESCRIPTION	**UNIT OF MEASURE**	**QUANTITY**	**UNIT PRICE**	**TOTAL**
Item No.	**Locust & Brownell Improvements**				
1	Mobilization	LS	All	$ 31,000	$ 31,000
2	Earthwork	C.Y.	2000	$ 20	$ 40,000
3	4" Asphalt	Ton	1030	$ 100	$ 103,000
4	12" Base Rock	C.Y.	1400	$ 30	$ 42,000
5	Signage	LS	All	$ 2,000	$ 2,000
6	Striping	LS	All	$ 2,000	$ 2,000
7	Storm Drain	LF	1200	$ 40	$ 48,000
8	8" Water	LF	1200	$ 55	$ 66,000
9	8" Sewer	LF	1200	$ 40	$ 48,000
				Subtotal	$ 382,000
	Eisele Drive (Locust to Canal Bridge)				
1	Mobilization	LS	All	$ 248,000	$ 248,000
2	Earthwork	C.Y.	4770	$ 20	$ 95,400
3	Curb and Gutter	LF	2500	$ 15	$ 37,500
4	6' Sidewalk (both sides)	SF	15000	$ 3	$ 45,000
5	Asphalt	Ton	5080	$ 100	$ 508,000
6	12" Base Rock	C.Y.	2600	$ 30	$ 78,000
7	Signage	LS	All	$ 50,000	$ 50,000
8	Striping	LS	All	$ 10,000	$ 10,000
9	Storm Drain	LF	1250	$ 40	$ 50,000
10	8" Water	LF	1250	$ 55	$ 68,750
11	8" Sewer	LF	1250	$ 40	$ 50,000
12	Signal	LS	All	$ 250,000	$ 250,000
13	Bridge (60' x 48' @ $420/SF)	LS	All	$ 1,210,000	$ 1,210,000
14	Illumination (10 poles at $2,500)	LS	All	$ 25,000	$ 25,000
				Subtotal	$ 2,725,650
	Local Streets SW of Gas Stations				
1	Mobilization	LS	All	$ 28,000	$ 28,000
2	Earthwork	C.Y.	1170	$ 20	$ 23,400
3	Curb and Gutter	LF	1400	$ 15	$ 21,000
4	6' Sidewalk (one side)	SF	4200	$ 3	$ 12,600
5	6" Asphalt	Ton	910	$ 100	$ 91,000
6	12" Base Rock	C.Y.	800	$ 30	$ 24,000
7	Signage	LS	All	$ 5,000	$ 5,000
8	Striping	LS	All	$ 5,000	$ 5,000
9	Storm Drain	LF	700	$ 40	$ 28,000
10	8" Water	LF	700	$ 55	$ 38,500
11	8" Sewer	LF	700	$ 40	$ 28,000
				Subtotal	$ 304,500
	POE Road (Canal Bridge to POE)				
1	Mobilization	LS	All	$ 82,000	$ 82,000
2	Earthwork	C.Y.	2490	$ 20	$ 49,800
3	Curb and Gutter	LF	3200	$ 15	$ 48,000
4	6' Sidewalk (one side)	SF	9600	$ 3	$ 28,800
5	12" Asphalt	Ton	3850	$ 100	$ 385,000
6	12" Base Rock	C.Y.	1700	$ 30	$ 51,000
7	Signage	LS	All	$ 15,000	$ 15,000
8	Striping	LS	All	$ 5,000	$ 5,000
9	Storm Drain	LF	1600	$ 40	$ 64,000
10	8" Water	LF	1600	$ 55	$ 88,000
11	8" Sewer	LF	1600	$ 40	$ 64,000
12	Illumination (5 poles at $2,500)	LS	All	$ 12,500	$ 12,500
				Subtotal	$ 893,100
	Port of Entry Relocation				
1	Estimated Cost	LS	All	$ 5,000,000	$ 5,000,000
				Subtotal	$ 5,000,000
	Gravel Road SE of Interchange				
1	Mobilization	LS	All	$ 8,000	$ 8,000
2	Earthwork	C.Y.	1870	$ 20	$ 37,400
3	12" Base Rock	C.Y.	1300	$ 30	$ 39,000
4	Signage	LS	All	$ 1,000	$ 1,000
5	Striping	LS	All	$ 1,000	$ 1,000
				Subtotal	$ 86,400
	SB Entrance Ramp & Truck Exit Ramp to POE				
1	Mobilization	LS	All	$ 732,000	$ 732,000
2	Earthwork	C.Y.	9490	$ 20	$ 189,800
3	12" Asphalt	Ton	10990	$ 100	$ 1,099,000
4	12" Base Rock	C.Y.	4800	$ 30	$ 144,000
5	Signage	LS	All	$ 20,000	$ 20,000
6	Striping	LS	All	$ 10,000	$ 10,000
7	Storm Drain	LF	1600	$ 40	$ 64,000
8	Illumination (10 poles at $2,500)	LS	All	$ 25,000	$ 25,000
9	Umatilla River Bridge Widening (572' x 24' @ $420/sq ft)	LS	All	$ 5,765,760	$ 5,765,760
				Subtotal	$ 8,049,560
	SB Freeway Exit Ramp & Bridges (Trucks Only to POE)				
1	Mobilization	LS	All	$ 446,000	$ 446,000
2	Earthwork	C.Y.	16230	$ 20	$ 324,600
3	12" Asphalt	Ton	2320	$ 100	$ 232,000
4	12" Base Rock	C.Y.	1000	$ 30	$ 30,000
5	Signage	LS	All	$ 25,000	$ 25,000
6	Striping	LS	All	$ 10,000	$ 10,000
7	Storm Drain	LF	900	$ 40	$ 36,000
8	Illumination (5 poles at $2,500)	LS	All	$ 12,500	$ 12,500
9	Bridge Over Hwy 730 (300' x 30' @ $420/sq ft)	LS	All	$ 3,780,000	$ 3,780,000
10	Bridge Over SB Entrance Ramp (150' x 30' @ $420/sq ft)	LS	All	$ 1,890,000	$ 1,890,000
				Subtotal	$ 6,786,100
	NB Etrance/Exit Ramp				
1	Mobilization	LS	All	$ 25,000	$ 25,000
2	Signal	LS	All	$ 250,000	$ 250,000
				Subtotal	$ 275,000

Construction Subtotal (2010)	**$ 24,502,310**
Project Contingency (20%)	$ 4,901,000
Design Engineering (10%)	2,451,000
Construction Engineering and Inspection (10%)	$ 2,451,000
Environmental Review, Permits, Cultrual Resources (1%)	$ 246,000
Right-of-Way	$ 2,900,000
Total Estimated Project Cost (2010 Dollars)	**$ 37,451,310**

PRELIMINARY COST ESTIMATE

Project: Umatilla IAMP
Date: 11/16/2010
Prepared By: Jeremy Morris, P.E.

anderson perry & associates, inc.

				Alternative 12 (Short Term)	
	ITEM DESCRIPTION	**UNIT OF MEASURE**	**QUANTITY**	**UNIT PRICE**	**TOTAL**
	NEAR TERM IMPROVEMENTS				
	Brownell Blvd & Locust Street				
1	Mobilization	LS	All	$ 75,000	$ 75,000
2	Earthwork	C.Y.	4000	$ 20	$ 80,000
3	Curb and Gutter	LF	4000	$ 15	$ 60,000
4	6' Sidewalk (one side)	SF	12000	$ 3	$ 36,000
5	4" Asphalt	Ton	2060	$ 100	$ 206,000
6	12" Base Rock	C.Y.	2700	$ 30	$ 81,000
7	Signage	LS	All	$ 5,000	$ 5,000
8	Striping	LS	All	$ 5,000	$ 5,000
9	Storm Drain	LF	2000	$ 40	$ 80,000
10	8" Water	LF	2000	$ 55	$ 110,000
11	8" Sewer	LF	2000	$ 40	$ 80,000
				Subtotal	$ 818,000
	Local Streets SW of Gas Stations				
1	Mobilization	LS	All	$ 64,000	$ 64,000
2	Earthwork	C.Y.	1840	$ 20	$ 36,800
3	Curb and Gutter	LF	2200	$ 15	$ 33,000
4	6' Sidewalk (one side)	SF	6600	$ 3	$ 19,800
5	4" Asphalt	Ton	950	$ 100	$ 95,000
6	12" Base Rock	C.Y.	1300	$ 30	$ 39,000
7	Signage	LS	All	$ 5,000	$ 5,000
8	Striping	LS	All	$ 5,000	$ 5,000
9	Storm Drain	LF	1100	$ 40	$ 44,000
10	8" Water	LF	1100	$ 55	$ 60,500
11	8" Sewer	LF	1100	$ 40	$ 44,000
12	Signal	LS	All	$ 250,000	$ 250,000
				Subtotal	$ 696,100
	Scapelhorn Road				
1	Mobilization	LS	All	$ 9,000	$ 9,000
2	Earthwork	C.Y.	670	$ 20	$ 13,400
3	4" Asphalt	Ton	350	$ 100	$ 35,000
4	12" Base Rock	C.Y.	500	$ 30	$ 15,000
5	Signage	LS	All	$ 1,000	$ 1,000
6	Striping	LS	All	$ 1,000	$ 1,000
7	Storm Drain	LF	400	$ 40	$ 16,000
				Subtotal	$ 90,400
	Gravel Road SE of Interchange				
1	Mobilization	LS	All	$ 8,000	$ 8,000
2	Earthwork	C.Y.	1870	$ 20	$ 37,400
3	12" Base Rock	C.Y.	1300	$ 30	$ 39,000
4	Signage	LS	All	$ 1,000	$ 1,000
5	Striping	LS	All	$ 1,000	$ 1,000
				Subtotal	$ 86,400
	SB Exit Ramp				
1	Mobilization	LS	All	$ 355,000	$ 355,000
2	Earthwork	C.Y.	5490	$ 20	$ 109,800
3	Signal	LS	All	$ 250,000	$ 250,000
4	Bridge (300' x 18' @ $420/SF) @ Hwy 730 Overpass	LS	All	$ 2,300,000	$ 2,300,000
5	12" Asphalt	Ton	6350	$ 100	$ 635,000
6	12" Base Rock	C.Y.	2800	$ 30	$ 84,000
7	Signage	LS	All	$ 50,000	$ 50,000
8	Striping	LS	All	$ 25,000	$ 25,000
9	Storm Drain	LF	1000	$ 40	$ 40,000
10	Illumination (20 poles at $2,500)	LS	All	$ 50,000	$ 50,000
				Subtotal	$ 3,898,800
	SB Entrance Ramp				
1	Mobilization	LS	All	$ 134,000	$ 134,000
2	Earthwork	C.Y.	7830	$ 20	$ 156,600
3	12" Asphalt	Ton	9070	$ 100	$ 907,000
4	12" Base Rock	C.Y.	4000	$ 30	$ 120,000
5	Signage	LS	All	$ 50,000	$ 50,000
6	Striping	LS	All	$ 25,000	$ 25,000
7	Storm Drain	LF	1200	$ 40	$ 48,000
8	Illumination (10 poles at $2,500)	LS	All	$ 25,000	$ 25,000
9	Bridge Widening (800' x 18' @ $420/SF) @ Umatilla River	LS	All	$ 6,048,000	$ 6,048,000
				Subtotal	$ 7,513,600
	NB Etrance/Exit Ramp				
1	Mobilization	LS	All	$ 25,000	$ 25,000
2	Signal	LS	All	$ 250,000	$ 250,000
				Subtotal	$ 275,000
	Removal				
1	SB Exit Ramp	SF	24000	$ 3	$ 72,000
2	SB Entrance Ramp	SF	48000	$ 3	$ 144,000
				Subtotal	$ 216,000

Alternative #12 (Short Term) Construction Subtotal (2010)	**$ 13,594,300**
Alternative #12 (Short Term) Project Contingency (20%)	$ 2,719,000
Alternative #12 (Short Term) Design Engineering (10%)	1,360,000
Alternative #12 (Short Term) Construction Engineering and Inspection (10%)	$ 1,360,000
Alternative #12 (Short Term) Environmental Review, Permits, Cultrual Resources (0.5%)	$ 68,000
Alternative #12 (Short Term) Right-of-Way	$ 632,000
Alternative #12 (Short Term)Total Estimated Project Cost (2010 Dollars)	**$ 19,733,300**

				Alternative 12 (Long Term)	
	ITEM DESCRIPTION	**UNIT OF MEASURE**	**QUANTITY**	**UNIT PRICE**	**TOTAL**
	LONG TERM IMPROVEMENTS				
Item No.	**Locust Improvements**				
1	Mobilization	LS	All	$ 14,000	$ 14,000
2	Earthwork	C.Y.	840	$ 20	$ 16,800
3	4" Asphalt	Ton	540	$ 100	$ 54,000
4	12" Base Rock	C.Y.	600	$ 30	$ 18,000
5	Signage	LS	All	$ 1,000	$ 1,000
6	Striping	LS	All	$ 1,000	$ 1,000
7	Storm Drain	LF	500	$ 40	$ 20,000
8	8" Water	LF	500	$ 55	$ 27,500
9	8" Sewer	LF	500	$ 40	$ 20,000
10	Curb and Gutter	LF	1000	$ 15	$ 15,000
11	6' Sidewalk (one side)	SF	3000	$ 3	$ 9,000
				Subtotal	$ 196,300
	POE Exit/Entry Roads				
1	Mobilization	LS	All	$ 113,000	$ 113,000
2	Earthwork	C.Y.	5060	$ 20	$ 101,200
3	12" Asphalt	Ton	7810	$ 100	$ 781,000
4	12" Base Rock	C.Y.	3400	$ 30	$ 102,000
5	Signage	LS	All	$ 1,000	$ 1,000
6	Striping	LS	All	$ 1,000	$ 1,000
7	Storm Drain	LF	3500	$ 40	$ 140,000
8	Bridge Widening (800' x 18' @ $420/SF) @ Umatilla River	LS	All	$ 6,048,000	$ 6,048,000
9	Bridge Widening (300' x 18' @ $420/SF) @ Hwy 730	LS	All	$ 2,268,000	$ 2,268,000
				Subtotal	$ 9,555,200
	Port of Entry Relocation				
1	Estimated Cost	LS	All	$ 5,000,000	$ 5,000,000
				Subtotal	$ 5,000,000

Alternative #12 (Long Term) Construction Subtotal (2010)	**$ 14,751,500**
Alternative #12 (Long Term) Project Contingency (20%)	$ 2,951,000
Alternative #12 (Long Term) Design Engineering (10%)	1,476,000
Alternative #12 (Long Term) Construction Engineering and Inspection (10%)	$ 1,476,000
Alternative #12 (Long Term) Environmental Review, Permits, Cultrual Resources (0.5%)	$ 74,000
Alternative #12 (Long Term) Right-of-Way	$ 2,900,000
Alternative #12 (Long Term) Total Estimated Project Cost (2010 Dollars)	**$ 23,628,500**
Alternative #12 (Short and Long Term Combined) Total Estimated Project Cost	**$ 43,361,800**

Appendix J

Technical Memorandum #7d – Relocated Port of Entry Analysis

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TRANSPORTATION ENGINEERING / PLANNING
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TECHNICAL MEMORANDUM 7d

I-82 / US 730 IAMP

Relocated Port of Entry Analysis

Date: June 6, 2011 Project : 10369.0

To: Teresa Penninger, ODOT Region 5

From: Matt Hughart, AICP, Nick Foster, Marc Butorac, P.E., P.T.O.E.

cc: Technical Advisory Committee (TAC)
Public Advisory Committee (PAC)

The purpose of this memorandum is to provide the TAC and PAC committee members with a detailed operations analysis and cost estimate associated with a scenario where the Port of Entry (POE) is relocated south of Umatilla along the I-82 corridor. This analysis will assist in the process that will ultimately select a preferred interchange and local circulation form for inclusion in the I-82/US 730 interchange area management plan (IAMP).

POE RELOCATION

The concept of relocating the POE south of Umatilla to the location shown in Figure 7d-1 was initially presented and discussed (at a very basic level) at the most recent TAC and PAC meetings, held in Umatilla on December 15, 2010. Following a joint meeting of the Umatilla City Council and Planning Commission on February 1, 2011, ODOT and the project team were asked to more fully evaluate the operational impacts and costs associated with this concept.

In accordance with this request, this memorandum presents the following:

- A more detailed discussion of the potential POE relocation site as well as the need for accessory scale facilities.
- Planning level POE relocation costs and ancillary weigh station/scale costs.
- Traffic operations at the IAMP study intersection assuming a relocated POE and no other infrastructure changes.
- Traffic operations at the IAMP study intersections assuming commercial development on the POE site.
- Qualitative evaluation of the concept through the evaluation matrix used for the other concepts.

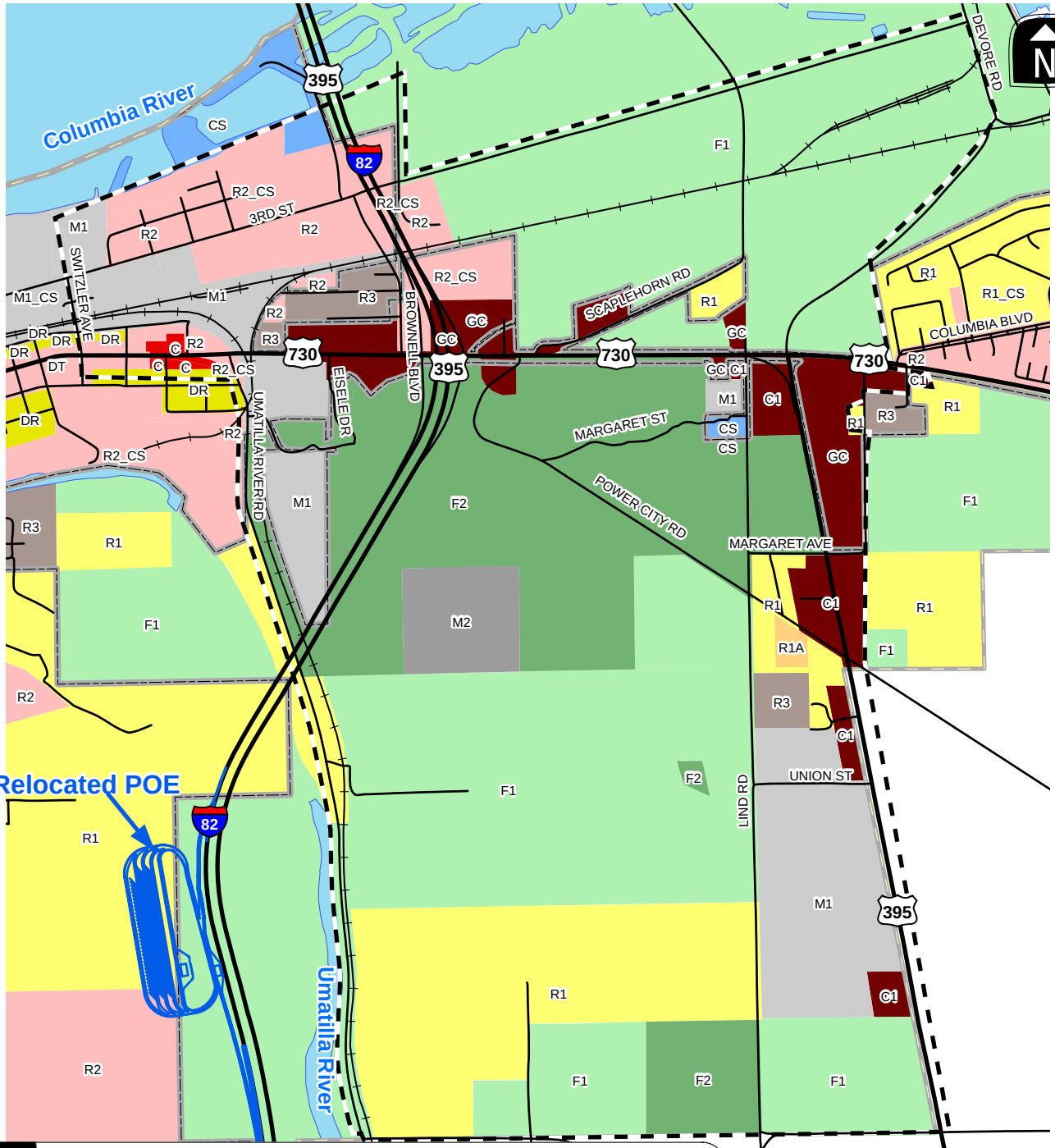
Potential POE Relocation Site Details and Accessory Facilities

The site of the potential POE relocation is located approximately 1.5 miles along I-82 south of the I-82/US 730 interchange. The site is roughly bordered to the north by the West Extension irrigation canal, to the west by I-82, and to the east and south by undeveloped property. For the most part, the area consists of relatively flat land that is currently undeveloped. The entire potential site is located within the Umatilla Urban Growth Boundary (UGB), but not entirely within the existing City limits. Of the portion that is located within the City limits, the underlying zoning is Single Family Residential (R1) and Multi-Family Residential (R2). Of the portion that is located outside the City limits, but still within the UGB, the underlying zoning is Exclusive Farm Use (F1). An illustration of the land use in the vicinity is provided in Figure 7d-1.

As illustrated in Attachment "A", a preliminary layout for the relocated POE was developed as part of this investigation by ODOT staff. This layout does not represent an approved design, but rather a conservative look at a configuration that would meet most of the desired elements of a fully functional port of entry. This includes weigh scales adjacent to the highway, inspection facilities, and adequate truck parking that could accommodate overnight stays.

Accessory Weigh Scales

The existing POE site is strategically located to serve truck traffic traveling southbound on I-82 or US 395 as well as truck traffic traveling westbound on US 730. Under either scenario, trucks are simply required to exit the highways, access the POE, and weigh. There is really no out-of-direction travel involved for trucks traveling on either facility. However, under a scenario where the POE is relocated south along the I-82 corridor (as depicted in Figure 7d-1), this single site is no longer able to effectively serve and enforce the weigh process for trucks traveling along the US 395 and US 730 corridors. As such, a scenario that includes a POE relocation along I-82 will likely necessitate the development of a permanent weigh station on US 730 (somewhere west of Umatilla) and a truck scale to be used as needed along US 395 (somewhere south of US 730). The identification of sites for these facilities has not been completed as part of this process; however a detail drawing of a permanent weigh station has been developed and is illustrated in Attachment "A."



LEGEND

- Relocated POE
- Land Use Study Area
- Umatilla UGB
- Umatilla City Limits

Zone

- Commercial (C)
- Community Service (CS)
- Downtown Residential (DR)
- Downtown Transitional (DT)
- Exclusive Farm Use (F1)
- General Commercial (C1, GC)
- General Rural (F2)
- Heavy Industrial (M2)
- Light Industrial (M1)
- Residential, Multi-Family - Apartments (R3)
- Residential, Multi-Family (R2)
- Single Family Residential (R1)
- Two Acre Residential (R1A)

RELOCATED POE AND SURROUNDING LAND USE UMATILLA, OREGON

FIGURE **7d-1**

H:\profile\10369 - I-82 US 730 IAMP\GIS\UmatillaZoningMap.mxd

POE Relocation Cost Estimates

Table 7d-1 summarizes the cost estimates for constructing a new POE facility on the site depicted in Figure 7d-1, including the anticipated need for separate facilities on US 730 and US 395.

Table 7d-1 Preliminary Cost Estimates

Item	Preliminary Cost Estimate		
	Construction	ROW[1]	Total
POE Relocation	$13,000,000	$1,700,000	$14,700,000
Weigh Station (US 730)	$3,100,000	$300,000	$3,400,000
Truck Scale (US 395)	$1,700,000	$200,000	$1,900,000
Total Costs	**$17,800,000**	**$2,200,000**	**$20,000,000**

[1]ROW estimates were provided by ODOT Region 5 Right of Way and represent a preliminary look at potential land acquisition costs. This is an estimate only and should not be used to calculate individual benefits for any affected landowner.

As Table 7d-2 shows, relocating the POE itself will cost approximately $14.7 million. When the US 730 and US 395 facilities are factored in, the total project cost is estimated to be about $20 million. This is comparable to cost estimates for other concepts previously examined in Technical Memorandums 7b and 7c, as shown below in Table 7d-2. *Attachment "B" contains the detailed cost estimates.*

Table 7d-2 Preliminary Cost Estimates

Concept	Preliminary Cost Estimate		
	Construction	ROW	Total
POE Relocation (w/ 2 accessory facilities)	$17,800,000	$2,200,000	$20,000,000
#3 (original)	$17,600,000	$600,000	$18,200,000
#3 (accommodates POE relocation)	$31,900,000	$3,000,000	$34,900,000
#8b/#8c	$23,700,000	$2,900,000	$26,600,000
#8d	$33,600,000	$2,900,000	$36,500,000
#8e	$34,600,000	$2,900,000	$37,500,000
#9	$18,100,000	$2,400,000	$20,500,000
#11	$25,100,000	$800,000	$25,900,000

Traffic Operations Associated with POE Relocation

An analysis was conducted to illustrate the traffic operations[1] associated with simply relocating the POE along the I-82 corridor and assuming no other changes to the infrastructure network. Under this scenario, southbound truck traffic would no longer exit I-82 at the US 730 interchange to access the POE. This would result in a significant reduction in truck volumes on portions of US 730 and at the US 730/Brownell Boulevard intersection.

Figure 7d-2 shows the results of the traffic operational analysis for the year 2030 assuming that the POE is relocated and that the site it currently occupies is not redeveloped.

Table 7d-3 compares the anticipated year 2030 traffic operations with the POE (taken from analysis summarized in Technical Memorandum #6) to the results shown in Figure 7d-2 without the POE.

Table 7d-3 Operational Analysis Comparison

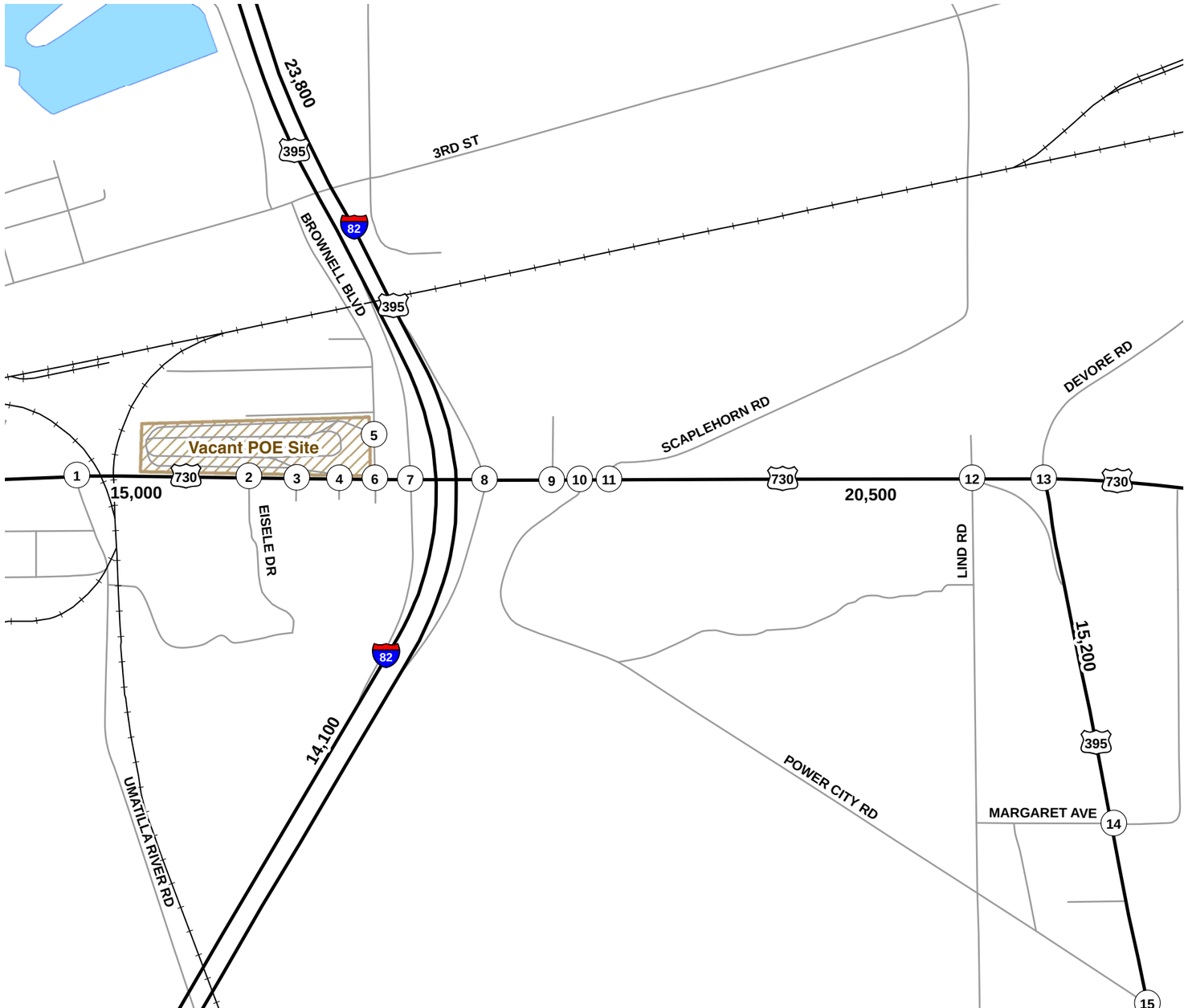
Scenario	US 730/I-82 Southbound Ramp Terminal			US 730/Brownell Boulevard		
	V/C[1] Ratio	LOS	Delay (s)	V/C[1] Ratio	LOS	Delay (s)
2030 Future (w/o POE relocation)	0.66	D	36.6	0.73	D	40.2
2030 Future (w/ POE relocation)	0.67	C	28.8	0.51	C	23.5

[1]V/C Ratio = volume-to-capacity ratio

The table shows that traffic operations are expected to improve in the vicinity of the I-82 Southbound ramp terminal as a result of the relocation of the POE.

The results of the analysis east of I-82 are consistent with the findings discussed in Technical Memorandum #6 as this area is insignificantly affected by the relocation of the POE. Truck traffic passing through them will likely continue to exit I-82 at the US 730 interchange in order to travel on US 730 or US 395 as they do today.

[1] All operational analyses were performed in accordance with the procedures stated in the 2000 Highway Capacity Manual (Reference 1). The Oregon Highway Plan (OHP, Reference 2) sets operational standards based on volume-to-capacity (v/c) ratios for the interchange ramp terminals (v/c of 0.80 for the northbound ramp terminal and 0.85 for the southbound ramp terminal), intersections of US 730 (v/c of 0.85 between Brownell Boulevard and Sloan Avenue and v/c of 0.70 east of I-82), and US 395 (v/c of 0.70). These standards apply to the overall v/c ratio at signalized intersections and to the state highway approaches at unsignalized intersections. The minor street approaches that are stop-controlled at unsignalized intersections have a standard of a v/c ratio of 0.90. *Attachment "C" contains the detailed operational analysis worksheets.*



(No Scale)

US 730 & Umatilla River Rd (1): CM=NB, LOS=F, Del>50, V/C=0.87; 600, 195, 695, 95, 210, 95

US 730 & Eisele Dr (2): CM=NB, LOS=C, Del=22, V/C=0.41; 645, 50, 715, 75, 70, 70

US 730 & West Truck Stop Access (3): CM=NB, LOS=C, Del=15.4, V/C=0.03; 715, <5, 785, 10, <5, 5

US 730 & East Truck Stop Access (4): CM=NB, LOS=B, Del=13, V/C=0.06; 700, 20, 785, 55, 15, 50

Former POE Exit & Brownell Blvd (5): CM=N/A, LOS=N/A, Del=N/A, V/C=N/A; 85, 100

US 730 & Brownell Blvd (6): LOS=C, Del=23.5, V/C=0.51; 25, <5, 60, 45, 705, <5, 55, 805, 15, 5, <5, 40

US 730 & I-82 SB Off-Ramp (7): LOS=C, Del=28.8, V/C=0.67; 280, <5, 415, 730, 80, 600, 110

US 730 & I-82 NB On-Ramp (8): CM=NBLT, LOS=F, Del>50, V/C=0.62; 230, 915, 440, 655, 55, <5, 145

US 730 & Self-Storage Driveway (9): CM=SB, LOS=C, Del=16.3, V/C=0.01; <5, <5, <5, 1055, <5, 1100

US 730 & Road to Power City Rd (10): CM=NB, LOS=D, Del=27.2, V/C=0.09; 1045, 10, 1085, <5, 15, <5

US 730 & Scaplehorn Rd (11): CM=SB, LOS=C, Del=20.6, V/C=0.37; 85, 40, 85, 965, 45, 1000

US 730 & Lind Road (12): CM=NB, LOS=F, Del>50, V/C=0.49; <5, <5, <5, <5, 965, <5, 35, 1010, 10, 35, <5, 10

US 730 & US 395-Devore Rd (13): LOS=D, Del=37.9, V/C=0.73; 35, 25, <5, <5, 425, 550, <5, 425, 170, 560, 5, 210

Margaret Avenue & US 395 (14): CM=WB, LOS=C, Del=15.2, V/C=0.01; <5, 740, <5, <5, <5, 5, <5, <5, <5, 5, 775, <5

Power City Road & US 395 (15): CM=WB, LOS=C, Del=17.8, V/C=0.08; 10, 730, 10, 5, <5, 20, 5, <5, 15, 5, 775, 5

LEGEND

15,000 = APPROXIMATE ADT VOLUME

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 2030 TRAFFIC CONDITIONS - RELOCATED POE
30TH HIGHEST HOUR
UMATILLA, OREGON

FIGURE **7d-2**

Queuing

A particular concern in the vicinity of the I-82 Southbound ramp terminal is for queues of vehicles to back up from the nearby Brownell Boulevard intersection into the ramp terminal intersection. This occasionally happens today and will likely occur more frequently in the future as traffic volumes increase. Removing the truck traffic associated with the POE will help alleviate queuing by not only reducing the total number of vehicles traveling through the Brownell Boulevard intersection, but also reducing the average size of those vehicles, as heavy trucks occupy more space than passenger vehicles. A queuing analysis was performed along with the traffic operations analysis. This analysis, which is included in Attachment "C," indicates that queues are not expected to exceed two vehicles at one time, which would be a length between 50 to 150 feet, depending on the types of vehicles in the queue. The latter length is about the maximum length of queue that can be accommodated in the space between the two intersections. These results are similar, though slightly improved, to those seen in the analysis of existing conditions, so the queue lengths may be underestimated in this analysis. Relocating the Brownell Boulevard intersection to increase the spacing from the I-82 Southbound ramp terminal would still likely be necessary in order to prevent queues from spilling back in front of the ramp terminal.

Development Potential of POE Site

In order to fully assess the potential impacts of the relocation of the POE, a separate analysis was performed assuming that site fully redevelops under its current zoning designation. The current POE site is zoned by the City of Umatilla as General Commercial (GC). This zoning designation allows a variety of commercial uses, with limited exceptions. Given the location's proximity to the I-82/US 730 interchange and location adjacent to US 730, it was conservatively assumed that the site would develop with commercial retail uses. Table 7d-4 documents the project team's assumptions for this analysis regarding potential build-out of the POE site under the GC zoning designation, along with the trip generation potential of such development. The trip generation potential for each of the land uses was calculated for the weekday p.m. peak hour using the 8th Edition of *Trip Generation*, published by the Institute of Transportation Engineers (Reference 3). All trip ends in Table 7d-4 have been rounded to the nearest five.

Table 7d-4 POE Site Redevelopment and Trip Generation Potential

Land Use	Size (Sq. Ft.)	Weekday Daily Trips	Weekday PM Peak Hour Trips		
			Total	In	Out
Shopping Center	158,560	6,810	590	290	300
Pass-By Trips		*2,320*	*200*	*100*	*100*
Total Net New Trips		**4,490**	**390**	**190**	**200**

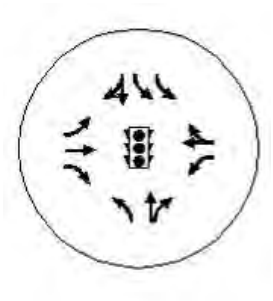
As Table 7d-4 shows, this level of development would be expected to generate approximately 6,810 trips on an average weekday, with 4,490 of those trips being new to the transportation

system and approximately 390 net new trips (190 in and 200 out) during the weekday p.m. peak hour.

Traffic Operations

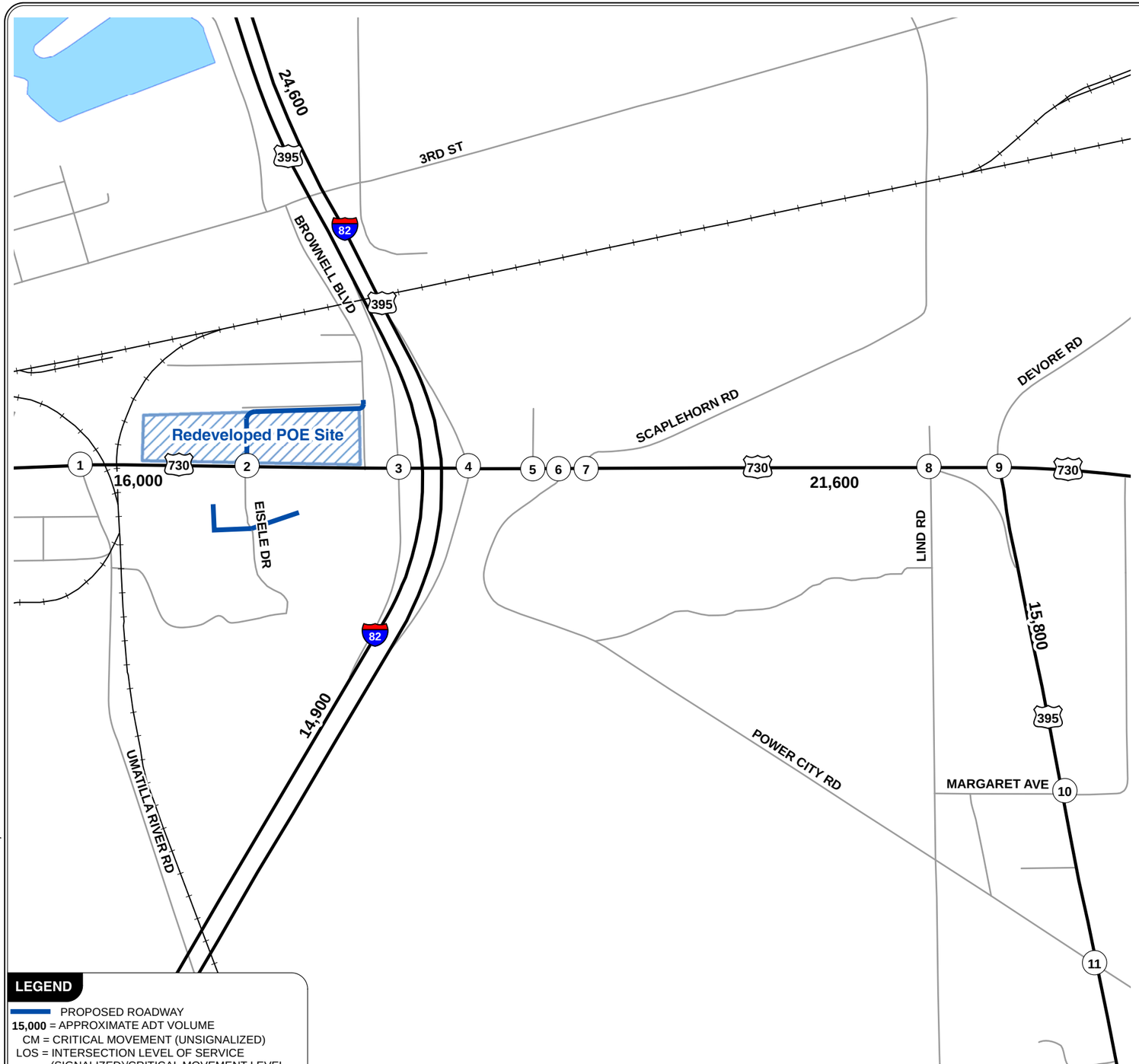
The new trips shown in Table 7d-4 are assigned to the surrounding roadway network based on existing traffic patterns and attractions. These volumes are added to the traffic volumes from Figure 7d-2 in order to estimate the impacts that redevelopment of the POE site would have on the surrounding roadway system. In conducting this analysis, it is assumed that Brownell Boulevard is realigned to access US 730 across from Eisele Drive at a signalized intersection as part of the redevelopment of the site. Figure 7d-3 shows the assumed lane configurations at this intersection.

Figure 7d-3 US 730/Eisele Drive-Brownell Boulevard Intersection Lane Configurations



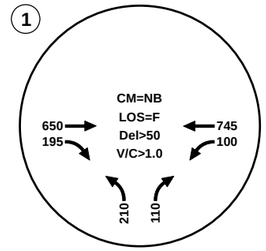
It is also assumed that access to properties on the south side of US 730 is provided via a backage road with a connection to Eisele Drive, as has been presented in other concepts in order to improve access spacing on US 730.

Figure 7d-4 shows the results of the traffic operational analysis for the year 2030 assuming that the POE is relocated and that the site it currently occupies is redeveloped as shown in Table 7d-4 The analysis reveals that the realigned Brownell Boulevard-Eisele Drive intersection with US 730 would operate just below the OHP mobility standard of a v/c ratio of 0.85, assuming the lane configurations shown above in Figure 7d-3. The interchange ramp terminals are also forecast to meet the applicable OHP mobility standard.

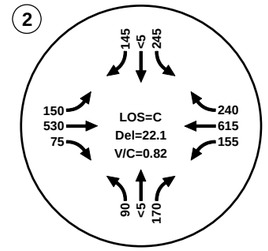


(No Scale)

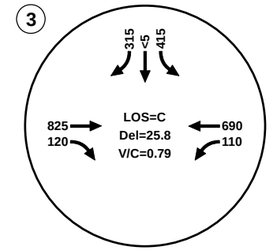
US 730 & Umatilla River Road



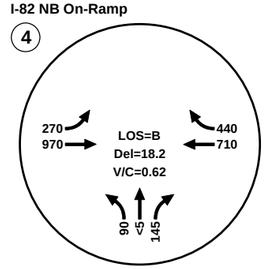
US 730 & Eisele Dr-Brownell Blvd



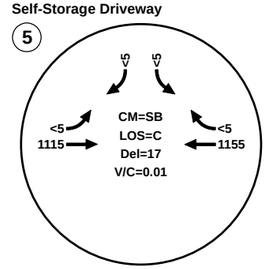
US 730 & I-82 SB Off-Ramp



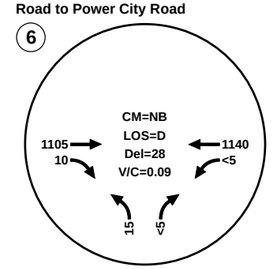
US 730 & I-82 NB On-Ramp



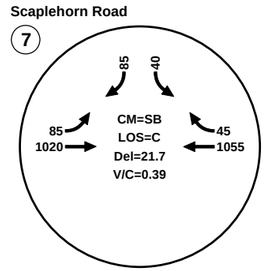
US 730 & Self-Storage Driveway



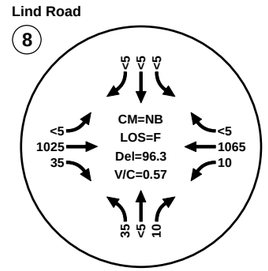
US 730 & Road to Power City Road



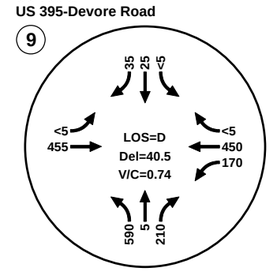
US 730 & Scaplehorn Road



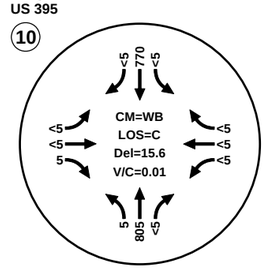
US 730 & Lind Road



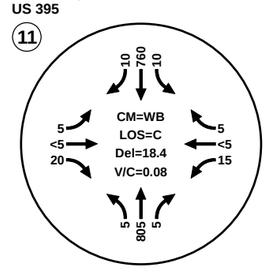
US 730 & US 395-Devore Road



Margaret Avenue & US 395



Power City Road & US 395



LEGEND

PROPOSED ROADWAY
15,000 = APPROXIMATE ADT VOLUME
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 2030 TRAFFIC CONDITIONS - REDEVELOPED POE SITE
30TH HIGHEST HOUR
UMATILLA, OREGON

FIGURE **7d-4**

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Qualitative Evaluation of Concept

In order to better evaluate this concept and compare it to the previous concepts developed for the interchange, it is evaluated using the qualitative evaluation criteria developed for this project. These criteria were applied to the other concepts in previous technical memorandums. They are described in detail in Technical Memorandum #7a. Table 7d-5 summarizes the results of this evaluation for this concept (#13) and compares it to the previous concepts. *Attachment "D" contains the complete evaluation matrix*.

Table 7d-5 Summary of Qualitative Screening Results

Evaluation Criteria	Concept														
	#1a	#1b	#2	#3	#4	#5	#6	#7	#8a	#8b-e	#9	#10	#11	#12	#13
Operations	+	+	+	+	+	+	-	+	+	+	+	-	+	-	+
Non-Vehicular Travel	+	+	0	0	0	0	0	+	+	+	+	+	+	-	+
ROW Impacts	-	-	+	0	-	+	+	-	-	-	0	-	-	0	0
Cost	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-
Construction Feasibility	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+
Environmental Impacts	0	0	+	+	+	-	+	0	0	0	0	+	0	+	+
Livability Impacts	-	+	+	+	+	+	+	-	+	+	+	-	-	+	+
Access Spacing	0	0	+	+	+	+	-	0	+	+	0	-	+	-	+
Local Circulation	+	+	-	+	-	-	+	-	+	+	+	+	+	+	+

Table 7d-5 shows that the POE relocation (shown as Concept #13) generally meets the evaluation criteria developed earlier in the project and scores well against the previous concepts.

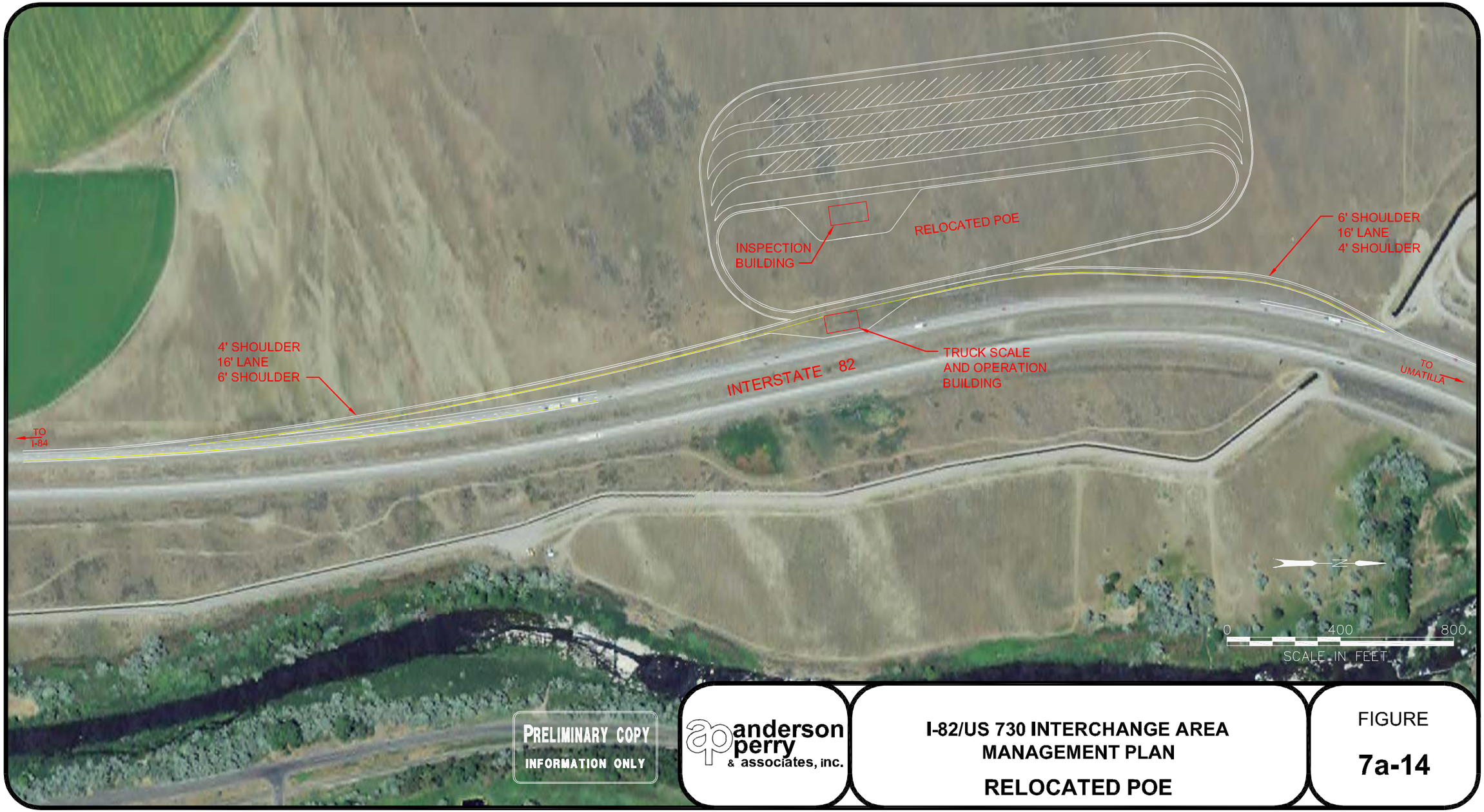
NEXT STEPS

TAC and PAC members, along with members of the Umatilla City Council, have seen this information and have recommended that the relocation of the POE, as described in this memorandum, move forward as the preferred concept. The project team will prepare an access management plan and other necessary components to accompany this concept. This concept and accompanying pieces will then become the IAMP document.

REFERENCES

1. Transportation Research Board. *Highway Capacity Manual*. 2000.
2. Oregon Department of Transportation. *1999 Oregon Highway Plan*. 1999.
3. Institute of Transportation Engineers. *Trip Generation* (8th Edition). 2008.

Attachment A
Relocated POE and
Typical Weigh Station
Drawings



anderson perry & associates, inc.

I-82/US 730 INTERCHANGE AREA MANAGEMENT PLAN

RELOCATED POE

FIGURE

7a-14

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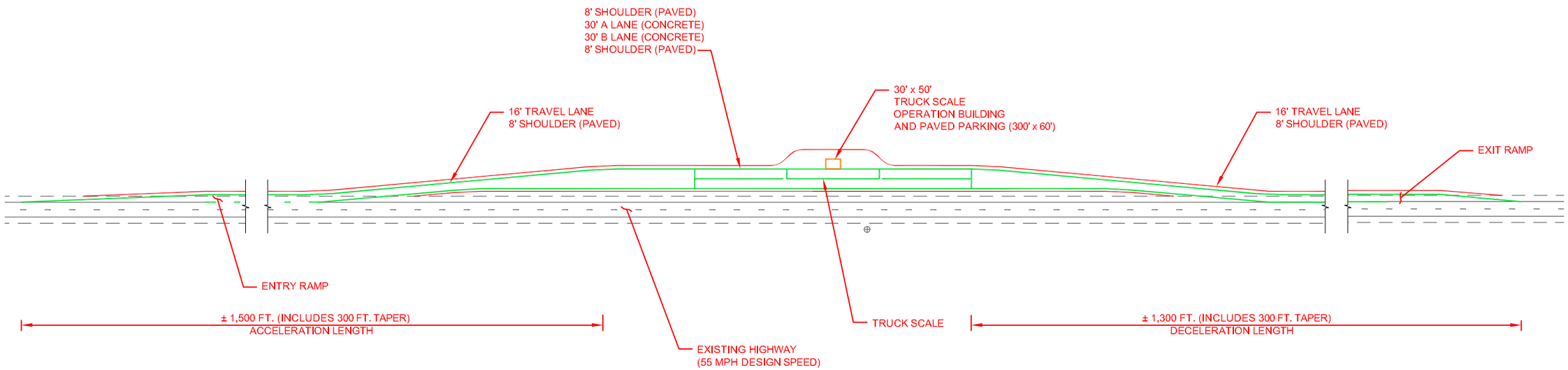

0 400 800
SCALE IN FEET

NOTE:
ACCELERATION AND DECELERATION LENGTHS BASED ON AN ASSUMED HIGHWAY DESIGN SPEED OF 55 MPH.

PRELIMINARY COPY
INFORMATION ONLY

anderson perry & associates, inc.

I-82/US 730 INTERCHANGE AREA MANAGEMENT PLAN

TYPICAL TRUCK SCALE

FIGURE
7a-15

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Attachment B
Cost Estimates

PRELIMINARY COST ESTIMATE

Project: Umatilla IAMP
Date: 5/23/2011
Prepared By: Jeremy Morris, P.E.

				POE Relocation	
	ITEM DESCRIPTION	**UNIT OF MEASURE**	**QUANTITY**	**UNIT PRICE**	**TOTAL**
	POE Exit/Entry Roads and Parking Area				
1	Mobilization (7%)	LS	All	$ 549,000	$ 549,000
2	Earthwork	C.Y.	53,800	$ 10	$ 538,000
3	12" Asphalt	Ton	78,430	$ 75	$ 5,882,250
4	12" Concrete Slab (A & B Lanes)	C.Y.	390	$ 600	$ 234,000
5	12" Base Rock	C.Y.	36,000	$ 25	$ 900,000
6	Signage	LS	All	$ 50,000	$ 50,000
7	Striping	LS	All	$ 25,000	$ 25,000
8	Storm Drain	LF	5,000	$ 40	$ 200,000
9	Illumination Pole, Foundation, and wiring	EA	30	$ 4,000	$ 120,000
				Subtotal	$ 8,498,250
	Port of Entry Relocation				
10	Estimated Cost for scales, scale building, inspection building, equipment, etc.	LS	All	$ 760,000	$ 760,000
				Subtotal	$ 760,000

Construction Subtotal (2011)	**$ 9,258,250**
Project Contingency (20%)	$ 1,852,000
Design Engineering (10%)	926,000
Construction Engineering and Inspection (10%)	$ 926,000
Environmental Review, Permits, Cultural Resources (0.5%)	$ 47,000
Property Acquisition/Right-of-Way	$ 1,734,000
Total Estimated Project Cost (2011 Dollars)	**$ 14,743,250**

PRELIMINARY COST ESTIMATE

Project: Umatilla IAMP
Date: 5/27/2011
Prepared By: Jeremy Morris, P.E.

				New Weigh Station	
	ITEM DESCRIPTION	**UNIT OF MEASURE**	**QUANTITY**	**UNIT PRICE**	**TOTAL**
	Truck Scale Entry/Exit Ramps				
1	Mobilization (10%)	LS	All	$ 87,000	$ 87,000
2	Earthwork	C.Y.	5,100	$ 15	$ 76,500
3	12" Asphalt	Ton	6,800	$ 90	$ 612,000
4	12" Concrete Slab	C.Y.	80	$ 600	$ 48,000
5	12" Base Rock	C.Y.	3,500	$ 30	$ 105,000
6	Signage	LS	All	$ 20,000	$ 20,000
7	Striping	LS	All	$ 5,000	$ 5,000
8	Illumination Poles, Foundation, and Wiring	EA	10	$ 4,000	$ 40,000
				Subtotal	$ 993,500
	Truck Scaleand Equipment				
8	Estimated Cost for scales and equipment.	LS	All	$ 380,000	$ 200,000
				Subtotal	$ 200,000

Construction Subtotal (2011)	**$ 1,193,500**
Project Contingency (20%)	$ 239,000
Design Engineering (10%)	120,000
Construction Engineering and Inspection (10%)	$ 120,000
Environmental Review, Permits, Cultural Resources (0.5%)	$ 6,000
Property Acquisition/Right-of-Way	$ 200,000
Total Estimated Project Cost (2011 Dollars)	**$ 1,878,500**

PRELIMINARY COST ESTIMATE

Project: Umatilla IAMP
Date: 5/27/2011
Prepared By: Jeremy Morris, P.E.

				New Truck Scale	
	ITEM DESCRIPTION	**UNIT OF MEASURE**	**QUANTITY**	**UNIT PRICE**	**TOTAL**
	Truck Scale Entry/Exit Ramps				
1	Mobilization (10%)	LS	All	$ 163,000	$ 163,000
2	Earthwork	C.Y.	10,300	$ 15	$ 154,500
3	12" Asphalt	Ton	11,100	$ 90	$ 999,000
4	12" Concrete Slab (A & B Lanes)	C.Y.	390	$ 600	$ 234,000
5	12" Base Rock	C.Y.	7,000	$ 30	$ 210,000
6	Signage	LS	All	$ 20,000	$ 20,000
7	Striping	LS	All	$ 5,000	$ 5,000
8	Illumination Poles, Foundation, and Wiring	EA	10	$ 4,000	$ 40,000
				Subtotal	$ 1,825,500
	Truck Scale Operations Building and Equipment				
8	Estimated Cost for scales, scale building, equipment, etc.	LS	All	$ 380,000	$ 380,000
				Subtotal	$ 380,000

Construction Subtotal (2011)	**$ 2,205,500**
Project Contingency (20%)	$ 442,000
Design Engineering (10%)	221,000
Construction Engineering and Inspection (10%)	$ 221,000
Environmental Review, Permits, Cultural Resources (0.5%)	$ 12,000
Property Acquisition/Right-of-Way	$ 260,000
Total Estimated Project Cost (2011 Dollars)	**$ 3,361,500**

Attachment C
Operations Analysis
Output Sheets

Queues
2: US 730 & Brownell Blvd

5/27/2011

Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	46	763	17	924	9	45	66	29
v/c Ratio	0.36	0.68	0.02	0.37	0.05	0.21	0.49	0.16
Control Delay	70.9	43.0	29.4	2.0	57.2	18.0	70.8	20.4
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	70.9	43.0	29.4	2.1	57.2	18.0	70.8	20.4
Queue Length 50th (ft)	39	296	12	26	7	0	55	0
Queue Length 95th (ft)	88	421	m28	30	27	40	114	32
Internal Link Dist (ft)		140		134	43		220	
Turn Bay Length (ft)	150							
Base Capacity (vph)	340	1334	828	2489	332	365	257	325
Starvation Cap Reductn	0	0	0	604	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.57	0.02	0.49	0.03	0.12	0.26	0.09

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	706	4	16	806	53	6	3	42	60	1	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5			4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00		0.95	1.00
Satd. Flow (prot)	1770	3469		1656	3382			1803	1583		1633	1455
Flt Permitted	0.95	1.00		0.95	1.00			0.86	1.00		0.72	1.00
Satd. Flow (perm)	1770	3469		1656	3382			1596	1583		1240	1455
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	46	759	4	17	867	57	6	3	45	65	1	29
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	40	0	0	26
Lane Group Flow (vph)	46	763	0	17	922	0	0	9	5	0	66	3
Heavy Vehicles (%)	2%	4%	2%	9%	6%	2%	2%	2%	2%	11%	2%	11%
Turn Type	Prot			Prot			Perm		Perm	Perm		Perm
Protected Phases	5	2		1 4	6 4			8			8	
Permitted Phases							8		8	8		8
Actuated Green, G (s)	7.9	43.6		56.9	97.1			14.5	14.5		14.5	14.5
Effective Green, g (s)	7.9	43.6		56.9	97.1			14.5	14.5		14.5	14.5
Actuated g/C Ratio	0.06	0.33		0.43	0.73			0.11	0.11		0.11	0.11
Clearance Time (s)	4.5	4.5						4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.5	4.6						5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	105	1137		708	2469			174	173		135	159
v/s Ratio Prot	c0.03	c0.22		0.01	c0.27							
v/s Ratio Perm								0.01	0.00		c0.05	0.00
v/c Ratio	0.44	0.67		0.02	0.37			0.05	0.03		0.49	0.02
Uniform Delay, d1	60.4	38.5		22.0	6.7			53.1	53.0		55.8	52.9
Progression Factor	1.00	1.00		2.07	0.22			1.00	1.00		1.00	1.00
Incremental Delay, d2	3.4	1.9		0.0	0.2			0.3	0.1		5.7	0.1
Delay (s)	63.8	40.4		45.5	1.7			53.3	53.1		61.5	53.0
Level of Service	E	D		D	A			D	D		E	D
Approach Delay (s)		41.8			2.4			53.1			58.9	
Approach LOS		D			A			D			E	

Intersection Summary			
HCM Average Control Delay	23.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	133.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	801	88	123	657	457	305
v/c Ratio	0.55	0.23	0.63	0.47	0.87	0.48
Control Delay	3.6	1.7	71.8	32.1	63.5	15.3
Queue Delay	0.1	0.6	0.0	0.0	0.0	0.0
Total Delay	3.7	2.4	71.8	32.1	63.5	15.3
Queue Length 50th (ft)	22	0	104	224	383	55
Queue Length 95th (ft)	21	6	186	313	#706	168
Internal Link Dist (ft)	134			404	977	
Turn Bay Length (ft)			200			
Base Capacity (vph)	1683	447	307	1462	525	630
Starvation Cap Reductn	159	174	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.32	0.40	0.45	0.87	0.48

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	729	80	112	598	0	0	0	0	415	1	278
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5						4.5	4.5
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3406	1042	1597	3539						1707	1553
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3406	1042	1597	3539						1707	1553
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	801	88	123	657	0	0	0	0	456	1	305
RTOR Reduction (vph)	0	0	50	0	0	0	0	0	0	0	0	153
Lane Group Flow (vph)	0	801	38	123	657	0	0	0	0	0	457	152
Heavy Vehicles (%)	2%	6%	55%	13%	2%	2%	2%	2%	2%	6%	2%	4%
Turn Type			Perm	Prot						Perm		Perm
Protected Phases		2		1	6						4	
Permitted Phases		8	2							4		4
Actuated Green, G (s)		58.1	43.6	16.2	51.9						40.7	40.7
Effective Green, g (s)		58.1	43.6	16.2	51.9						40.7	40.7
Actuated g/C Ratio		0.44	0.33	0.12	0.39						0.31	0.31
Clearance Time (s)		4.5	4.5	4.5	4.5						4.5	4.5
Vehicle Extension (s)		4.6	4.6	3.5	5.6						3.5	3.5
Lane Grp Cap (vph)		1488	342	195	1381						522	475
v/s Ratio Prot		c0.18		c0.08	0.19							
v/s Ratio Perm		0.06	0.04								0.27	0.10
v/c Ratio		0.54	0.11	0.63	0.48						0.88	0.32
Uniform Delay, d1		27.6	31.2	55.6	30.4						43.7	35.5
Progression Factor		0.15	0.05	1.00	1.00						1.00	1.00
Incremental Delay, d2		0.5	0.2	6.8	0.7						15.4	0.5
Delay (s)		4.6	1.9	62.3	31.0						59.2	36.0
Level of Service		A	A	E	C						E	D
Approach Delay (s)		4.4			36.0			0.0			49.9	
Approach LOS		A			D			A			D	

Intersection Summary			
HCM Average Control Delay	28.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	133.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	702	20	54	784	13	51
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	724	21	56	808	13	53
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)				220		
pX, platoon unblocked					0.91	
vC, conflicting volume			744		1249	372
vC1, stage 1 conf vol					734	
vC2, stage 2 conf vol					515	
vCu, unblocked vol			744		1071	372
tC, single (s)			4.2		6.8	7.2
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.4
p0 queue free %			93		97	91
cM capacity (veh/h)			853		385	592

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	482	262	56	404	404	31	35
Volume Left	0	0	56	0	0	13	0
Volume Right	0	21	0	0	0	18	35
cSH	1700	1700	853	1700	1700	480	592
Volume to Capacity	0.28	0.15	0.07	0.24	0.24	0.06	0.06
Queue Length 95th (ft)	0	0	5	0	0	5	5
Control Delay (s)	0.0	0.0	9.5	0.0	0.0	13.0	11.5
Lane LOS			A			B	B
Approach Delay (s)	0.0		0.6			12.2	
Approach LOS						B	

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	36.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	1	1057	1098	1	1	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	1113	1156	1	1	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)		797				
pX, platoon unblocked					0.87	
vC, conflicting volume	1157				1715	578
vC1, stage 1 conf vol					1156	
vC2, stage 2 conf vol					558	
vCu, unblocked vol	1157				1530	578
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	600				246	459

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	1	556	556	771	386	2
Volume Left	1	0	0	0	0	1
Volume Right	0	0	0	0	1	1
cSH	600	1700	1700	1700	1700	321
Volume to Capacity	0.00	0.33	0.33	0.45	0.23	0.01
Queue Length 95th (ft)	0	0	0	0	0	0
Control Delay (s)	11.0	0.0	0.0	0.0	0.0	16.3
Lane LOS	B					C
Approach Delay (s)	0.0			0.0		16.3
Approach LOS						C

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	714	1	10	787	3	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	744	1	10	820	3	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				522		
pX, platoon unblocked					0.85	
vC, conflicting volume			745		1585	372
vC1, stage 1 conf vol					744	
vC2, stage 2 conf vol					841	
vCu, unblocked vol			745		1600	372
tC, single (s)			5.5		7.8	7.9
tC, 2 stage (s)					6.8	
tF (s)			2.9		4.0	3.8
p0 queue free %			98		99	99
cM capacity (veh/h)			526		210	506

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	496	249	10	820	10
Volume Left	0	0	10	0	3
Volume Right	0	1	0	0	7
cSH	1700	1700	526	1700	356
Volume to Capacity	0.29	0.15	0.02	0.48	0.03
Queue Length 95th (ft)	0	0	2	0	2
Control Delay (s)	0.0	0.0	12.0	0.0	15.4
Lane LOS			B		C
Approach Delay (s)	0.0		0.2		15.4
Approach LOS					C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	645	52	74	716	69	71
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	672	54	77	746	72	74
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				848		
pX, platoon unblocked					0.85	
vC, conflicting volume			726		1572	672
vC1, stage 1 conf vol					672	
vC2, stage 2 conf vol					900	
vCu, unblocked vol			726		1585	672
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			91		75	84
cM capacity (veh/h)			877		290	452

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	672	54	77	746	146
Volume Left	0	0	77	0	72
Volume Right	0	54	0	0	74
cSH	1700	1700	877	1700	355
Volume to Capacity	0.40	0.03	0.09	0.44	0.41
Queue Length 95th (ft)	0	0	7	0	49
Control Delay (s)	0.0	0.0	9.5	0.0	22.0
Lane LOS			A		C
Approach Delay (s)	0.0		0.9		22.0
Approach LOS					C

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	601	193	93	693	210	97
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	626	201	97	722	219	101
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						2
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			827		1642	727
vC1, stage 1 conf vol					727	
vC2, stage 2 conf vol					916	
vCu, unblocked vol			827		1642	727
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			88		24	76
cM capacity (veh/h)			804		286	424

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	827	97	722	320
Volume Left	0	97	0	219
Volume Right	201	0	0	101
cSH	1700	804	1700	369
Volume to Capacity	0.49	0.12	0.42	0.87
Queue Length 95th (ft)	0	10	0	208
Control Delay (s)	0.0	10.1	0.0	53.4
Lane LOS		B		F
Approach Delay (s)	0.0	1.2		53.4
Approach LOS				F

Intersection Summary			
Average Delay	9.2		
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	231	914	0	0	657	441	53	1	143	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	238	942	0	0	677	455	55	1	147	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)		484										
pX, platoon unblocked				0.86			0.86	0.86	0.86	0.86	0.86	
vC, conflicting volume	1132			942			1757	2551	471	2000	2323	566
vC1, stage 1 conf vol							1419	1419		905	905	
vC2, stage 2 conf vol							339	1132		1095	1419	
vCu, unblocked vol	1132			598			1550	2475	49	1833	2210	566
tC, single (s)	4.3			4.1			7.7	6.5	7.3	7.5	6.5	6.9
tC, 2 stage (s)							6.7	5.5		6.5	5.5	
tF (s)	2.3			2.2			3.6	4.0	3.5	3.5	4.0	3.3
p0 queue free %	58			100			42	97	82	100	100	100
cM capacity (veh/h)	564			835			95	37	818	126	122	467

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	NB 2
Volume Total	238	471	471	452	680	56	147
Volume Left	238	0	0	0	0	55	0
Volume Right	0	0	0	0	455	0	147
cSH	564	1700	1700	1700	1700	92	818
Volume to Capacity	0.42	0.28	0.28	0.27	0.40	0.61	0.18
Queue Length 95th (ft)	52	0	0	0	0	71	16
Control Delay (s)	16.0	0.0	0.0	0.0	0.0	91.7	10.4
Lane LOS	C					F	B
Approach Delay (s)	3.2			0.0		32.7	
Approach LOS						D	

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1047	10	1	1083	14	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1102	11	1	1140	15	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)	1113					
pX, platoon unblocked			0.89		0.89	0.89
vC, conflicting volume			1113		1679	556
vC1, stage 1 conf vol					1107	
vC2, stage 2 conf vol					572	
vCu, unblocked vol			888		1522	265
tC, single (s)			4.1		8.4	6.9
tC, 2 stage (s)					7.4	
tF (s)			2.2		4.3	3.3
p0 queue free %			100		91	100
cM capacity (veh/h)			678		172	655

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	735	378	1	570	570	16
Volume Left	0	0	1	0	0	15
Volume Right	0	11	0	0	0	1
cSH	1700	1700	678	1700	1700	181
Volume to Capacity	0.43	0.22	0.00	0.34	0.34	0.09
Queue Length 95th (ft)	0	0	0	0	0	7
Control Delay (s)	0.0	0.0	10.3	0.0	0.0	26.7
Lane LOS			B			D
Approach Delay (s)	0.0		0.0			26.7
Approach LOS						D

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	85	963	1000	43	42	85
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	89	1014	1053	45	44	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	None			
Median storage veh)		2				
Upstream signal (ft)		1319				
pX, platoon unblocked					0.94	
vC, conflicting volume	1098				1761	549
vC1, stage 1 conf vol					1075	
vC2, stage 2 conf vol					686	
vCu, unblocked vol	1098				1686	549
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	86				82	81
cM capacity (veh/h)	631				243	480

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	89	507	507	702	396	134
Volume Left	89	0	0	0	0	44
Volume Right	0	0	0	0	45	89
cSH	631	1700	1700	1700	1700	363
Volume to Capacity	0.14	0.30	0.30	0.41	0.23	0.37
Queue Length 95th (ft)	12	0	0	0	0	41
Control Delay (s)	11.6	0.0	0.0	0.0	0.0	20.6
Lane LOS	B					C
Approach Delay (s)	0.9			0.0		20.6
Approach LOS						C

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	966	37	9	1008	1	34	1	9	1	1	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	1017	39	9	1061	1	36	1	9	1	1	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					459							
pX, platoon unblocked	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	1062			1056			1589	2119	528	1601	2138	531
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	898			1056			1470	2045	528	1483	2066	322
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			55	98	98	99	98	100
cM capacity (veh/h)	693			655			79	50	495	76	49	621

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	509	547	540	532	46	3
Volume Left	1	0	9	0	36	1
Volume Right	0	39	0	1	9	1
cSH	693	1700	655	1700	94	85
Volume to Capacity	0.00	0.32	0.01	0.31	0.49	0.04
Queue Length 95th (ft)	0	0	1	0	53	3
Control Delay (s)	0.0	0.0	0.4	0.0	75.5	48.9
Lane LOS	A		A		F	E
Approach Delay (s)	0.0		0.2		75.5	48.9
Approach LOS					F	E

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	4	447	179	446	596	223	66
v/c Ratio	0.04	0.62	0.68	0.35	0.87	0.33	0.44
Control Delay	55.8	41.6	57.4	23.3	48.0	14.3	39.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.8	41.6	57.4	23.3	48.0	14.3	39.0
Queue Length 50th (ft)	3	145	118	106	381	45	21
Queue Length 95th (ft)	16	223	211	177	#768	132	72
Internal Link Dist (ft)		252		1189	287		285
Turn Bay Length (ft)	200		200				
Base Capacity (vph)	343	1536	421	1689	684	672	486
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.29	0.43	0.26	0.87	0.33	0.14

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	425	0	170	423	1	560	7	212	1	27	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.5		4.0	5.5			5.0	5.0		4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (prot)	1770	3167		1736	3166			1741	1524		1699	
Flt Permitted	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (perm)	1770	3167		1736	3166			1741	1524		1699	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	4	447	0	179	445	1	589	7	223	1	28	37
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	76	0	32	0
Lane Group Flow (vph)	4	447	0	179	446	0	0	596	147	0	34	0
Heavy Vehicles (%)	2%	14%	12%	4%	14%	2%	4%	2%	6%	2%	5%	2%
Turn Type	Prot			Prot			Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases									8			
Actuated Green, G (s)	1.0	27.5		16.1	42.6			41.5	41.5		6.1	
Effective Green, g (s)	1.0	27.5		16.1	42.6			41.5	41.5		6.1	
Actuated g/C Ratio	0.01	0.25		0.15	0.39			0.38	0.38		0.06	
Clearance Time (s)	4.0	5.5		4.0	5.5			5.0	5.0		4.0	
Vehicle Extension (s)	2.5	5.4		2.5	5.4			3.5	3.5		2.5	
Lane Grp Cap (vph)	16	794		255	1229			659	577		94	
v/s Ratio Prot	0.00	c0.14		c0.10	0.14			c0.34			c0.02	
v/s Ratio Perm									0.10			
v/c Ratio	0.25	0.56		0.70	0.36			0.90	0.26		0.36	
Uniform Delay, d1	54.0	35.9		44.5	23.9			32.2	23.5		49.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	5.9	1.7		7.9	0.4			16.2	0.3		1.7	
Delay (s)	59.9	37.5		52.4	24.3			48.4	23.7		51.6	
Level of Service	E	D		D	C			D	C		D	
Approach Delay (s)		37.7			32.4			41.7			51.6	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM Average Control Delay	38.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	109.7	Sum of lost time (s)	18.5
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	1	7	1	1	1	7	777	1	1	741	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	2	1	7	1	1	1	7	801	1	1	764	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1185	1585	384	1208	1586	401	768			802		
vC1, stage 1 conf vol	768	768		816	816							
vC2, stage 2 conf vol	416	816		392	770							
vCu, unblocked vol	1185	1585	384	1208	1586	401	768			802		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	99	100	100	100	99			100		
cM capacity (veh/h)	321	292	614	303	290	599	842			817		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	10	3	7	534	268	1	509	259
Volume Left	2	1	7	0	0	1	0	0
Volume Right	7	1	0	0	1	0	0	4
cSH	475	357	842	1700	1700	817	1700	1700
Volume to Capacity	0.02	0.01	0.01	0.31	0.16	0.00	0.30	0.15
Queue Length 95th (ft)	2	1	1	0	0	0	0	0
Control Delay (s)	12.7	15.2	9.3	0.0	0.0	9.4	0.0	0.0
Lane LOS	B	C	A			A		
Approach Delay (s)	12.7	15.2	0.1			0.0		
Approach LOS	B	C						

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	31.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	1	18	15	1	5	5	774	7	11	728	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	6	1	20	17	1	6	6	880	8	12	827	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1315	1756	419	1355	1757	444	838			888		
vC1, stage 1 conf vol	857	857		895	895							
vC2, stage 2 conf vol	457	899		460	862							
vCu, unblocked vol	1315	1756	419	1355	1757	444	838			888		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	96	94	100	99	99			98		
cM capacity (veh/h)	279	256	583	267	259	562	793			759		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	27	24	6	586	301	12	552	286
Volume Left	6	17	6	0	0	12	0	0
Volume Right	20	6	0	0	8	0	0	10
cSH	455	304	793	1700	1700	759	1700	1700
Volume to Capacity	0.06	0.08	0.01	0.34	0.18	0.02	0.32	0.17
Queue Length 95th (ft)	5	6	1	0	0	1	0	0
Control Delay (s)	13.4	17.8	9.6	0.0	0.0	9.8	0.0	0.0
Lane LOS	B	C	A			A		
Approach Delay (s)	13.4	17.8	0.1			0.1		
Approach LOS	B	C						

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	909	132	123	759	457	347
v/c Ratio	0.75	0.37	0.77	0.52	0.83	0.47
Control Delay	21.4	10.0	68.3	18.8	41.0	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.4	10.0	68.3	18.8	41.0	4.9
Queue Length 50th (ft)	128	7	62	143	212	0
Queue Length 95th (ft)	173	50	#152	194	#375	57
Internal Link Dist (ft)	371			404	977	
Turn Bay Length (ft)		200	200			
Base Capacity (vph)	1246	366	159	1513	548	734
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.36	0.77	0.50	0.83	0.47

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	827	120	112	691	0	0	0	0	415	1	316
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5						4.5	4.5
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3406	1042	1597	3539						1707	1553
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3406	1042	1597	3539						1707	1553
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	909	132	123	759	0	0	0	0	456	1	347
RTOR Reduction (vph)	0	0	84	0	0	0	0	0	0	0	0	236
Lane Group Flow (vph)	0	909	48	123	759	0	0	0	0	0	457	111
Heavy Vehicles (%)	2%	6%	55%	13%	2%	2%	2%	2%	2%	6%	2%	4%
Turn Type			Perm	Prot						Perm		Perm
Protected Phases		2		1	6						4	
Permitted Phases		8	2							4		4
Actuated Green, G (s)		28.1	20.6	7.9	33.0						25.5	25.5
Effective Green, g (s)		28.1	20.6	7.9	33.0						25.5	25.5
Actuated g/C Ratio		0.35	0.26	0.10	0.42						0.32	0.32
Clearance Time (s)		4.5	4.5	4.5	4.5						4.5	4.5
Vehicle Extension (s)		4.6	4.6	3.5	5.6						3.5	3.5
Lane Grp Cap (vph)		1204	270	159	1469						548	498
v/s Ratio Prot		c0.20		c0.08	0.21							
v/s Ratio Perm		0.07	0.05								0.27	0.07
v/c Ratio		0.75	0.18	0.77	0.52						0.83	0.22
Uniform Delay, d1		22.7	22.9	34.9	17.3						25.0	19.8
Progression Factor		1.00	1.00	1.00	1.00						1.00	1.00
Incremental Delay, d2		3.1	0.6	21.1	0.7						10.8	0.3
Delay (s)		25.8	23.4	56.0	18.0						35.8	20.0
Level of Service		C	C	E	B						D	C
Approach Delay (s)		25.5			23.3			0.0			29.0	
Approach LOS		C			C			A			C	

Intersection Summary			
HCM Average Control Delay	25.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	79.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	1	1115	1153	1	1	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	1174	1214	1	1	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)		313				
pX, platoon unblocked					0.87	
vC, conflicting volume	1215				1803	607
vC1, stage 1 conf vol					1214	
vC2, stage 2 conf vol					589	
vCu, unblocked vol	1215				1617	607
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	570				230	439

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	1	587	587	809	406	2
Volume Left	1	0	0	0	0	1
Volume Right	0	0	0	0	1	1
cSH	570	1700	1700	1700	1700	302
Volume to Capacity	0.00	0.35	0.35	0.48	0.24	0.01
Queue Length 95th (ft)	0	0	0	0	0	1
Control Delay (s)	11.3	0.0	0.0	0.0	0.0	17.0
Lane LOS	B					C
Approach Delay (s)	0.0			0.0		17.0
Approach LOS						C

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	41.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	161	553	80	160	898	95	179	262	155
v/c Ratio	0.62	0.57	0.09	0.32	0.89	0.43	0.38	0.73	0.36
Control Delay	22.7	14.7	3.5	6.6	28.3	38.9	8.0	46.0	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.7	14.7	3.5	6.6	28.3	38.9	8.0	46.0	8.5
Queue Length 50th (ft)	26	183	4	26	389	47	0	72	0
Queue Length 95th (ft)	#110	289	22	50	#648	103	55	125	51
Internal Link Dist (ft)		1062			531		186		288
Turn Bay Length (ft)	100		100	50					
Base Capacity (vph)	259	1263	1154	506	1302	291	553	472	509
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.44	0.07	0.32	0.69	0.33	0.32	0.56	0.30

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	148	531	77	154	613	238	91	1	171	244	1	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.97	1.00	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1743	1568	1770	1782		1770	1555		3155	1457	
Flt Permitted	0.10	1.00	1.00	0.34	1.00		0.57	1.00		0.52	1.00	
Satd. Flow (perm)	188	1743	1568	633	1782		1070	1555		1735	1457	
Peak-hour factor, PHF	0.92	0.96	0.96	0.96	0.96	0.92	0.96	0.92	0.96	0.93	0.93	0.93
Adj. Flow (vph)	161	553	80	160	639	259	95	1	178	262	1	154
RTOR Reduction (vph)	0	0	28	0	16	0	0	141	0	0	122	0
Lane Group Flow (vph)	161	553	52	160	882	0	95	38	0	262	33	0
Heavy Vehicles (%)	2%	9%	3%	2%	2%	2%	2%	2%	4%	11%	2%	11%
Turn Type	pm+pt		Perm	pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	54.6	47.3	47.3	54.2	47.1		17.6	17.6		17.6	17.6	
Effective Green, g (s)	54.6	47.3	47.3	54.2	47.1		17.6	17.6		17.6	17.6	
Actuated g/C Ratio	0.65	0.56	0.56	0.65	0.56		0.21	0.21		0.21	0.21	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	260	981	883	505	999		224	326		364	305	
v/s Ratio Prot	c0.05	0.32		0.03	c0.50			0.02			0.02	
v/s Ratio Perm	0.35		0.03	0.18			0.09			c0.15		
v/c Ratio	0.62	0.56	0.06	0.32	0.88		0.42	0.12		0.72	0.11	
Uniform Delay, d1	14.4	11.7	8.3	6.9	16.1		28.8	26.9		30.9	26.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.3	0.7	0.0	0.4	9.3		1.3	0.2		6.7	0.2	
Delay (s)	18.7	12.5	8.3	7.2	25.4		30.1	27.1		37.6	27.0	
Level of Service	B	B	A	A	C		C	C		D	C	
Approach Delay (s)		13.3			22.6			28.1			33.7	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM Average Control Delay	22.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	84.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	649	193	101	747	210	108
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	676	201	105	778	219	112
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						2
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				1142		
pX, platoon unblocked					0.75	
vC, conflicting volume			877		1765	777
vC1, stage 1 conf vol					777	
vC2, stage 2 conf vol					989	
vCu, unblocked vol			877		1853	777
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			86		7	72
cM capacity (veh/h)			770		236	397

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	877	105	778	331
Volume Left	0	105	0	219
Volume Right	201	0	0	112
cSH	1700	770	1700	302
Volume to Capacity	0.52	0.14	0.46	1.10
Queue Length 95th (ft)	0	12	0	328
Control Delay (s)	0.0	10.4	0.0	118.8
Lane LOS		B		F
Approach Delay (s)	0.0	1.2		118.8
Approach LOS				F

Intersection Summary			
Average Delay	19.3		
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	NBT	NBR
Lane Group Flow (vph)	279	1002	1189	95	147
v/c Ratio	0.66	0.44	0.82	0.25	0.35
Control Delay	24.6	6.7	24.2	33.7	8.7
Queue Delay	0.0	0.1	0.0	0.0	0.0
Total Delay	24.6	6.8	24.2	33.7	8.7
Queue Length 50th (ft)	85	108	254	43	0
Queue Length 95th (ft)	181	138	360	100	52
Internal Link Dist (ft)		404	233	1318	
Turn Bay Length (ft)	200				
Base Capacity (vph)	521	2916	1871	382	422
Starvation Cap Reductn	0	765	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.54	0.47	0.64	0.25	0.35

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	271	972	0	0	712	441	91	1	143	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0			4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95			1.00	1.00			
Frt	1.00	1.00			0.94			1.00	0.85			
Flt Protected	0.95	1.00			1.00			0.95	1.00			
Satd. Flow (prot)	1626	3406			3224			1662	1346			
Flt Permitted	0.10	1.00			1.00			0.95	1.00			
Satd. Flow (perm)	174	3406			3224			1662	1346			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	279	1002	0	0	734	455	94	1	147	0	0	0
RTOR Reduction (vph)	0	0	0	0	103	0	0	0	113	0	0	0
Lane Group Flow (vph)	279	1002	0	0	1086	0	0	95	34	0	0	0
Heavy Vehicles (%)	11%	6%	2%	2%	4%	8%	9%	2%	20%	2%	2%	2%
Turn Type	pm+pt						Perm		Perm			
Protected Phases	7	4			8			2				
Permitted Phases	4						2		2			
Actuated Green, G (s)	57.3	57.3			35.4			19.5	19.5			
Effective Green, g (s)	57.3	57.3			35.4			19.5	19.5			
Actuated g/C Ratio	0.68	0.68			0.42			0.23	0.23			
Clearance Time (s)	4.0	4.0			4.0			4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0			
Lane Grp Cap (vph)	424	2301			1346			382	310			
v/s Ratio Prot	c0.14	0.29			c0.34							
v/s Ratio Perm	0.31							0.06	0.03			
v/c Ratio	0.66	0.44			0.81			0.25	0.11			
Uniform Delay, d1	18.7	6.3			21.7			26.7	25.8			
Progression Factor	1.00	1.00			1.00			1.00	1.00			
Incremental Delay, d2	3.7	0.1			3.6			1.6	0.7			
Delay (s)	22.4	6.5			25.3			28.2	26.5			
Level of Service	C	A			C			C	C			
Approach Delay (s)		9.9			25.3			27.2			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	18.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	84.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1105	10	1	1138	14	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1163	11	1	1198	15	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)	629					
pX, platoon unblocked			0.87		0.87	0.87
vC, conflicting volume			1174		1769	587
vC1, stage 1 conf vol					1168	
vC2, stage 2 conf vol					601	
vCu, unblocked vol			901		1586	227
tC, single (s)			4.1		8.4	6.9
tC, 2 stage (s)					7.4	
tF (s)			2.2		4.3	3.3
p0 queue free %			100		91	100
cM capacity (veh/h)			652		164	675

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	775	398	1	599	599	16
Volume Left	0	0	1	0	0	15
Volume Right	0	11	0	0	0	1
cSH	1700	1700	652	1700	1700	172
Volume to Capacity	0.46	0.23	0.00	0.35	0.35	0.09
Queue Length 95th (ft)	0	0	0	0	0	7
Control Delay (s)	0.0	0.0	10.5	0.0	0.0	28.0
Lane LOS			B			D
Approach Delay (s)	0.0		0.0			28.0
Approach LOS						D

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	85	1021	1055	43	42	85
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	89	1075	1111	45	44	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	None			
Median storage veh)		2				
Upstream signal (ft)		835				
pX, platoon unblocked					0.90	
vC, conflicting volume	1156				1849	578
vC1, stage 1 conf vol					1133	
vC2, stage 2 conf vol					716	
vCu, unblocked vol	1156				1718	578
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	85				81	81
cM capacity (veh/h)	600				232	459

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	89	537	537	740	415	134
Volume Left	89	0	0	0	0	44
Volume Right	0	0	0	0	45	89
cSH	600	1700	1700	1700	1700	347
Volume to Capacity	0.15	0.32	0.32	0.44	0.24	0.39
Queue Length 95th (ft)	13	0	0	0	0	44
Control Delay (s)	12.0	0.0	0.0	0.0	0.0	21.7
Lane LOS	B					C
Approach Delay (s)	0.9			0.0		21.7
Approach LOS						C

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	1024	37	9	1063	1	34	1	9	1	1	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	1078	39	9	1119	1	36	1	9	1	1	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					459							
pX, platoon unblocked	0.91						0.91	0.91		0.91	0.91	0.91
vC, conflicting volume	1120			1117			1679	2238	558	1689	2257	560
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	930			1117			1546	2161	558	1557	2182	313
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			48	97	98	98	97	100
cM capacity (veh/h)	664			621			68	42	473	66	41	620

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	540	578	569	561	46	3
Volume Left	1	0	9	0	36	1
Volume Right	0	39	0	1	9	1
cSH	664	1700	621	1700	81	72
Volume to Capacity	0.00	0.34	0.02	0.33	0.57	0.04
Queue Length 95th (ft)	0	0	1	0	63	3
Control Delay (s)	0.0	0.0	0.4	0.0	96.3	57.0
Lane LOS	A		A		F	F
Approach Delay (s)	0.0		0.2		96.3	57.0
Approach LOS					F	F

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	4	477	179	475	627	223	66
v/c Ratio	0.06	0.68	0.70	0.38	0.84	0.30	0.46
Control Delay	69.0	52.1	68.5	30.7	44.2	10.1	46.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.0	52.1	68.5	30.7	44.2	10.1	46.1
Queue Length 50th (ft)	3	194	144	144	472	40	26
Queue Length 95th (ft)	17	293	#262	247	684	101	80
Internal Link Dist (ft)		252		1189	287		285
Turn Bay Length (ft)	200		200				
Base Capacity (vph)	70	813	322	1350	992	930	442
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.59	0.56	0.35	0.63	0.24	0.15

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	453	0	170	450	1	589	7	212	1	27	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.5		4.0	5.5			5.0	5.0		4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (prot)	1770	3167		1736	3166			1741	1524		1699	
Flt Permitted	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (perm)	1770	3167		1736	3166			1741	1524		1699	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	4	477	0	179	474	1	620	7	223	1	28	37
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	85	0	32	0
Lane Group Flow (vph)	4	477	0	179	475	0	0	627	138	0	34	0
Heavy Vehicles (%)	2%	14%	12%	4%	14%	2%	4%	2%	6%	2%	5%	2%
Turn Type	Prot			Prot			Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases									8			
Actuated Green, G (s)	0.7	30.5		17.9	47.7			51.7	51.7		6.3	
Effective Green, g (s)	0.7	30.5		17.9	47.7			51.7	51.7		6.3	
Actuated g/C Ratio	0.01	0.24		0.14	0.38			0.41	0.41		0.05	
Clearance Time (s)	4.0	5.5		4.0	5.5			5.0	5.0		4.0	
Vehicle Extension (s)	2.5	5.4		2.5	5.4			3.5	3.5		2.5	
Lane Grp Cap (vph)	10	773		249	1209			721	631		86	
v/s Ratio Prot	0.00	c0.15		c0.10	0.15			c0.36			c0.02	
v/s Ratio Perm									0.09			
v/c Ratio	0.40	0.62		0.72	0.39			0.87	0.22		0.39	
Uniform Delay, d1	61.9	42.0		51.1	28.1			33.5	23.6		57.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	18.0	2.3		8.9	0.5			11.1	0.2		2.1	
Delay (s)	79.9	44.3		60.0	28.6			44.7	23.8		59.6	
Level of Service	E	D		E	C			D	C		E	
Approach Delay (s)		44.6			37.2			39.2			59.6	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM Average Control Delay	40.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	124.9	Sum of lost time (s)	18.5
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	1	7	1	1	1	7	806	1	1	771	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	2	1	7	1	1	1	7	831	1	1	795	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1230	1645	399	1253	1647	416	799			832		
vC1, stage 1 conf vol	799	799		846	846							
vC2, stage 2 conf vol	431	846		407	801							
vCu, unblocked vol	1230	1645	399	1253	1647	416	799			832		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	99	100	100	100	99			100		
cM capacity (veh/h)	307	281	600	291	279	586	819			796		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	10	3	7	554	278	1	530	269
Volume Left	2	1	7	0	0	1	0	0
Volume Right	7	1	0	0	1	0	0	4
cSH	460	344	819	1700	1700	796	1700	1700
Volume to Capacity	0.02	0.01	0.01	0.33	0.16	0.00	0.31	0.16
Queue Length 95th (ft)	2	1	1	0	0	0	0	0
Control Delay (s)	13.0	15.6	9.4	0.0	0.0	9.5	0.0	0.0
Lane LOS	B	C	A			A		
Approach Delay (s)	13.0	15.6	0.1			0.0		
Approach LOS	B	C						

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	32.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	1	18	15	1	5	5	803	7	11	758	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	6	1	20	17	1	6	6	912	8	12	861	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1365	1823	436	1405	1824	460	872			920		
vC1, stage 1 conf vol	891	891		928	928							
vC2, stage 2 conf vol	474	932		477	897							
vCu, unblocked vol	1365	1823	436	1405	1824	460	872			920		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	96	93	100	99	99			98		
cM capacity (veh/h)	266	245	568	255	248	548	769			737		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	27	24	6	608	312	12	574	297
Volume Left	6	17	6	0	0	12	0	0
Volume Right	20	6	0	0	8	0	0	10
cSH	440	292	769	1700	1700	737	1700	1700
Volume to Capacity	0.06	0.08	0.01	0.36	0.18	0.02	0.34	0.17
Queue Length 95th (ft)	5	7	1	0	0	1	0	0
Control Delay (s)	13.7	18.4	9.7	0.0	0.0	10.0	0.0	0.0
Lane LOS	B	C	A			A		
Approach Delay (s)	13.7	18.4	0.1			0.1		
Approach LOS	B	C						

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	32.4%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment D
Qualitative Evaluation
Matrix Screening

Category	Evaluation Criteria	Scoring Key		Score	Comments
Concept 13					
Transportation	Addresses the close spacing between the southbound ramp terminal and Brownell Boulevard	+	Improves the spacing and performance of the interchange	+	The relocation of the POE and realignment of Brownell Boulevard at US 730 eliminates the existing interchange/local circulation spacing problem, creates a long-term operational improvement for the interchange, and eliminates some truck traffic along the US 730 corridor.
		-	Fails to address the spacing and performance of the interchange.		
	Improves non-vehicular travel	+	Improvements Would Enhance the Comfort and Safety of Pedestrians and Bicyclists	+	The relocation of the POE will reduce truck traffic in the area, improving the comfort of pedestrians and bicyclists.
		0	Likely an Insignificant Impact on Pedestrians and Bicyclists		
		-	Would Negatively Impact the Comfort and Safety of Pedestrians and Bicyclists		
Land Use	Level of Right-of-Way Impacts	+	Minimal right-of-way impacts (no homes or businesses impacted)	0	No structures will likely be impacted, but a significant amount of right-of-way will need to be purchased to relocate the POE and construct the accessory weigh facilities on US 730 and US 395.
		0	Moderate right-of-way impacts (1-5 residences or commercial buildings impacted)		
		-	Substantial right-of-way impacts (>5 residences or commercial buildings impacted)		
Cost	Level of Construction Costs and Feasibility	+	Low Construction Costs	-	The cost to relocate the POE and construct the accessory facilities will be significant.
		0	Moderate Construction Costs		
		-	Substantial Construction Costs		
	Constructability	+	Improvements Can be Constructed with Minimal Physical Challenges	+	The area where the POE would be relocated has a relatively flat grade.
		-	Construction of Improvements will be a Physical Challenge		
Environmental / Livability Factors	Environmental Impacts	+	No Impacts to Environmentally Sensitive Areas	+	No known impacts to environmentally sensitive areas or features.
		0	Minimal Impacts to Environmentally Sensitive Areas		
		-	Moderate-Substantial Impacts to Environmentally Sensitive Areas		
	Livability Impacts	+	Concept fits in the context of the built environment	+	The relocation of the POE will allow for new development that better fits the vision of the City for this area.
		-	Concept does not fit in the context of the built environment		
Accessibility	Spacing Standards	+	Meets ODOT's Spacing Standards	+	The concept generally meets the ODOT interchange spacing standards on both sides of the interchange. The spacing between the southbound ramp terminal and Eisele Drive would be approximately 1,050 feet.
		0	Works Toward ODOT Spacing Standards		
		-	No Improvement Over Existing Conditions		
	Local Circulation	+	Improves local circulation	+	A local circulation network is developed to serve existing and future land uses along the south side of US 730 and access to/from Brownell Boulevard is maintained.
		-	Fails to improve local circulation		

Appendix K

Proposed Local Ordinance Amendments

Appendix ___: Local Ordinance Amendments

Overview

Development and implementation of Interchange Area Management Plans (IAMPs) are guided by Oregon Administrative Rule (OAR) 734-051 and OAR 660-012.

OAR 734-051-0155(7) requires that an IAMP be developed no later than the time that an interchange is designed or redesigned. The IAMP must be completed before project construction. OAR 734-051-0155(2) states "prior to adoption by the Oregon Transportation Commission, the Department will work with local governments on any amendments to local comprehensive plans and transportation system plans and local land use and subdivision codes to ensure the proposed… Interchange Area Management Plan is consistent with the local plan and codes."

OAR 660-012-0045(2), a provision of the Transportation Planning Rule requires that local governments adopt land use regulations consistent with state and federal requirements "to protect transportation facilities, corridors, and sites for their identified functions."

To comply with OAR 734-051 and OAR 660-012 and ensure that local land use actions are consistent with the transportation facility planning, the Umatilla I-82/US 730 IAMP contains policy language that, once adopted locally, will govern planning and future development within the IAMP Management Area. In addition to policy language that supports the objectives of the IAMPs, the City of Umatilla and Umatilla County will need to adopt regulatory language that ensures that future permitted development is compatible with the improvements planned for the interchange.

As documented in the IAMP, the preferred design for the I-82/US 730 interchange is based on the assumption that the Port of Entry operation will be relocated in the future, vacating a large commercial site at a strategic location in Umatilla. In anticipation of this site redeveloping, the City has an opportunity to articulate community values and aspirations for the site through the IAMP adoption process and, possibly, through implementing code amendments.

This appendix includes proposed ordinance amendments to both the City of Umatilla and Umatilla County that implement the Umatilla I-82/US 730 IAMP and are consistent with Oregon Administrative Rules governing transportation planning. Additional proposed amendments to the City of Umatilla Zoning Ordinance specifically address site development requirements for the POE parcel. The proposed text changes address the following recommendations:

- Amend the Development Code to ensure mobility standards are monitored within the IAMP Management Area. Specifically, include reference to TPR -0060 (or include language addressing -0060) in the County's plan and zone amendment section(s).
- Require a transportation impact analysis (TIA) as part of development approval within the IAMP Management Area.
- Require that development and redevelopment proposals within the IAMP Management Area that are subject to an access evaluation (see IAMP Section 7) show consistency with the IAMP Access Management Plan (AMP) as a condition of approval.
- Require notice to ODOT re: development proposals, plan amendments, and zone changes within the IAMP Management Area.

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- Require specific development standards and specify restricted uses on the POE parcel (City Zoning Ordinance amendments only).

The proposed amendment language is provided in adoption-ready form, first for the City of Umatilla and then for Umatilla County. Language recommended for addition is indicated by <u>underlined text</u>, and language proposed for deletion by ~~strike-through text~~.

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Proposed Amendments to the City of Umatilla Code

TITLE 10
ZONING

ARTICLE C. GENERAL COMMERCIAL (GC)

10-4C-1: PURPOSE:
The General Commercial District provides areas for a full range of commercial uses, and is especially intended to accommodate those uses which require large sites and high visibility. General Commercial areas should be located along major travel routes and at major intersections, but not in the downtown. (Ord. 688, 6-15-1999)

10-4C-2: USES PERMITTED:
The following uses and their accessory uses are permitted in the GC District:

Apartments on the second floor or above, provided the ground floor is occupied by a commercial use.

Commercial uses that are not conducted wholly within an enclosed building, including uses that require outdoor storage or display of products such as lumberyards, motor vehicle sales lots, and plant nurseries.

Commercial uses which are conducted wholly within an enclosed building. Temporary outside displays and promotional activities directly related and subordinate to the primary business are acceptable. (Ord. 688, 6-15-1999)

10-4C-3: CONDITIONAL USES PERMITTED:
In a GC District, the following uses and their accessory uses may be permitted subject to the provisions of Chapter 12 of this Title:
Automobile service station.
Community Services uses as provided by Chapter 6 of this Title.
Recreational vehicle park. (Ord. 688, 6-15-1999)

10-4C-4: DEVELOPMENT STANDARDS:
A. At least ten percent (10%) of the site shall be landscaped. Landscaping shall be used to promote an attractive and inviting appearance.

B. Storage areas shall be screened from view with a six foot (6') high sight-obscuring fence or similar barrier of vegetation, masonry, or a combination of fence, vegetation, and barrier.

C. Yard setbacks adjacent to a residential district may be reduced to zero if screening elements are provided that create a buffer for noise, lights and glare, dust, odor, and similar effects.

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DIMENSIONAL STANDARDS

Minimum lot area	5,000 square feet
Minimum lot width	50 feet
Minimum yard setbacks:	
Front yard	10 feet
Side yard	0 feet or 20 feet if adjacent to a residential district
Side street yard	10 feet
Rear yard	0 feet or 20 feet if adjacent to a residential district
Parking area	10 feet
Maximum building height	35 feet
Maximum site coverage (building and impervious surface)	90 percent

(Ord. 688, 6-15-1999)

10-4C-5: LIMITATIONS ON USE:
All uses are subject to site review, which shall determine the sufficiency of screening elements, landscaping location, and other design features. (Ord. 688, 6-15-1999)

10-4C-6: Gateway Sub-District

A. Applicability. The provisions of Section 10-4C-6 shall be applicable only to development on the Port of Entry site (5N2817AD Tax Lot100; 5N2817AA Tax Lot 701; 5N2816BB Tax Lots 8700, 8600, 8200, 8000, 7800; 5N2816BC Tax Lot 100). The provisions and requirements of Article C General Commercial shall be applicable to this site, except as modified in Section 10-4C-6.

B. Development Approval. Development proposals within the Gateway Sub-District must reflect and implement the realignment of Brownell Boulevard as planned for in the I-82/US 730 Interchange Area Management Plan (IAMP). Narratives, plans, and drawings submitted pursuant to Section 10-13-2 Site Review for development proposals within the Gateway Sub-District must collectively address the location, timing, and financing of the realignment of Brownell Boulevard through the site, consistent with the (IAMP).

C. Conditional Uses Permitted. In the Gateway Sub-District, the following uses and their accessory uses may be permitted subject to the provisions of Chapter 12 of this Title:

1. Drive through uses
2. Community Service uses
3. Residential uses, provided the ground floor street frontage is occupied by commercial use.

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D. Uses Prohibited. The following uses are prohibited in the Gateway Sub-District:

1. Commercial uses that are not conducted wholly within an enclosed building, including uses that require outdoor storage or display of products such as lumber yards and plant nurseries. Outdoor seating that is secondary to an eating establishment use is an exception and shall be permitted.
2. Automobile service station
3. Junk yard (scrap yard, recycling station)
4. Manufactured home sales
5. Modular home sales
6. Motor vehicle sales lots, including recreational vehicle sales
7. Self service storage
8. Tire store
9. Truck stop
10. Vehicle repair

E. Development Standards.

1. Setbacks:

   Maximum front and side yard setback: 10 feet

   Minimum setback: 0 feet

   Build-to line. 0 ft; at least one primary building entrance shall be built no farther from the street right-of-way than the build-to line; except where a greater setback is required for a Planned Street Improvement, then the build-to line increases proportionately. The build-to line may be increased through Site Review when pedestrian amenities are provided between a primary building entrance and the street right-of-way.

2. Building orientation. Buildings shall have at least one primary entrance oriented toward the street. New buildings located adjacent to the realigned Brownell Boulevard shall be designed with building fronts, which include display windows, facing the street.

3. Maximum building height: 35 feet

   a. Maximum building height may be adjusted through the Site Review process if approved by the Umatilla Rural Fire Protection District.

4. Parking. Parking shall not be located between the building and a public street.

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5. Landscaping.

   a. A minimum of ten percent (10%) of lot area shall be devoted to landscaping. The minimum dimension of any landscaped area shall be five feet (5'). Landscaping shall be located between a structure and the fronting street, or as best provides a pleasant environment for pedestrians. Required landscaping in parking areas may contribute to the 10% requirement.

   b. Parking areas. A minimum of 10 percent (10%) of the total surface area of all parking areas, as measured around the perimeter of all parking spaces and maneuvering areas, shall be landscaped. Such landscaping shall consist of "evenly distributed" shade trees and shrubs and/or ground cover plants. "Evenly distributed" means that the trees and other plants are distributed around the parking lot perimeter and between parking bays to provide a partial canopy. At a minimum, one tree per [6] parking spaces on average shall be planted to create a partial tree canopy over and around the parking area. All parking areas with more than [20] spaces shall include landscape islands with trees to break up the parking area into rows of not more than [12] contiguous parking spaces. All parking area landscapes shall have dimensions of not less than 24 square feet of area, or not less than 4 feet in width by 6 feet in length, to ensure adequate soil, water, and space for healthy plant growth.

   c. At least seventy-five percent (75%) of the required landscape area must be covered by plant material, lawn, and trees. Pedestrian amenities, such as benches, plazas, fountains, and sculptures, may replace up to ten percent (10%) of the required vegetative area.

   d. Maintained landscaped areas shall be provided with automatic irrigation unless a qualified landscape professional certifies that plants will survive without irrigation.

6. Lighting.

   a. Parking areas shall have lighting to provide at least 2 foot-candles of illumination over parking spaces and walkways. Light standards shall be directed downward only and shielded to prevent lighting spillover into any adjacent residential district or use.

   b. Pedestrian-oriented lighting shall be required on the Brownell Boulevard re-alignment. Lighting shall be similar in scale and design to example shown in Figure 10-1.

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c. Lighting fixtures shall be limited to heights of 24 ft. for parking lots and 16 ft. for pedestrian walkways.

Figure 10-1: Pedestrian-oriented Lighting Examples

Source: SERA Architects, Inc.

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CHAPTER 8
PLANNED DEVELOPMENT (PD)

10-8-9: APPROVAL CRITERIA:

The Planning Commission shall approve, approve with conditions, or deny the application based upon its findings. The Planning Commission shall find that the following criteria have been met, in addition to criteria and standards of Chapter 12 of this Title or Title 11 of this Code, as applicable. Any conditions shall be directly related to an identified deficiency in the proposed plan.

A. There are special physical conditions of the site or objectives of the development that justify the modification of standards and densities allowed by a planned development. The physical conditions or objectives shall be identified and related to the purposes of the planned development.
B. The site design provides for open spaces through efficient design and layout of the development. The open space is designed to preserve natural features on the site or function as passive or recreational area within the development.

C. Proposed streets, sidewalks, and pathways in the development are adequate for the anticipated traffic and for emergency services vehicles. In the I-82/US 730 Interchange Area Management Plan (IAMP) Management Area, proposed access shall be consistent with the Access Management Plan in Section 7 of the IAMP.
D. The site design provides for adequate light, air, and privacy, to secure safety from fire, flood, and other danger, and to prevent overcrowding of the land.
E. Any modifications to site development standards or public works standards support the objectives of this Chapter and other provisions of this Code; are justified by conditions of the site or objectives of the proposal; and satisfy emergency access requirements.

CHAPTER 11
SUPPLEMENTARY PROVISIONS

10-11-10: TRAFFIC IMAPCT ANALYSIS (TIA):

A. Purpose: The purpose of this section of the code is to implement Section 660-012-0045 (2) (e) of the State Transportation Planning Rule that requires the City to adopt a process to apply conditions to specified land use proposals in order to minimize adverse impacts to and protect transportation facilities. This section establishes the standards for when a proposal must be reviewed for potential traffic impacts; when a Traffic Impact Analysis must be submitted with an application in order to determine whether conditions are needed to minimize impacts to and protect transportation facilities; what must be in a Traffic Impact Analysis; and who is qualified to prepare the analysis.

B. Applicability: A Traffic Impact Analysis shall be required to be submitted to the City with a land use application, when the following conditions apply:

1. The application involves one or more of the following actions:

a. A change in zoning or plan amendment designation; or

b. The proposal is projected to cause one or more of the following effects, which can be determined by field counts, site observation, traffic impact analysis or study, field measurements, crash history, Institute of Transportation Engineers Trip Generation manual; and information and studies provided by the local reviewing jurisdiction and/or ODOT:

1) An increase in site traffic volume generation by 250 Average Daily Trips (ADT) or more (or as required by the City Engineer). The latest edition of the Trip Generation manual, published by the Institute of Transportation Engineers (ITE) shall be used as standards by which to gauge average daily vehicle trips; or

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2) An increase in use of adjacent streets by vehicles exceeding the 20,000 pound gross vehicle weights by 10 vehicles or more per day; or

3) The location of the access driveway does not meet minimum intersection sight distance requirements, or is located where vehicles entering or leaving the property are restricted, or vehicles queue or hesitate, creating a safety hazard; or

4) The location of the access driveway does not meet the access spacing standard of the roadway on which the driveway is located; or

5) A change in internal traffic patterns that may cause safety problems, such as back up onto the highway or traffic crashes in the approach area.

C. Traffic Impact Analysis Requirements

1. Preparation. A Traffic Impact Analysis shall be prepared by an Oregon Registered Professional Engineer that is qualified to perform traffic engineering analysis and will be paid for by the applicant.

2. Transportation Planning Rule Compliance. See Section 10-13-3 Amendments to the Zoning Text or Map.

3. Pre-application Conference. The applicant will meet with the Umatilla Public Works Director and Planning Director prior to submitting an application that requires a Traffic Impact Analysis. The City has the discretion to determine the required elements of the TIA and the level of analysis expected. The City shall also consult the Oregon Department of Transportation (ODOT) on analysis requirements when the site of the proposal is adjacent to or otherwise affects a State roadway.

D. Approval Criteria: When a Traffic Impact Analysis is required, approval of the proposal requires satisfaction of the following criteria:

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

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

3. The proposed site design and traffic and circulation design and facilities, for all transportation modes, including any mitigation measures, are designed to:

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a. Have the least negative impact on all applicable transportation facilities;

b. Accommodate and encourage non-motor vehicular modes of transportation to the extent practicable;

c. Make the most efficient use of land and public facilities as practicable;

d. Provide the most direct, safe and convenient routes practicable between on-site destinations, and between on-site and off-site destinations; and

e. Otherwise comply with applicable requirements of the City of Umatilla Code.

E. Conditions of Approval: The City may deny, approve, or approve a proposal with appropriate conditions.

1. Where the existing transportation system is shown to be impacted by the proposed action, dedication of land for streets, transit facilities, sidewalks, bikeways, paths, or accessways may be required to ensure that the transportation system is adequate to handle the additional burden caused by the proposed action.

2. Where the existing transportation system is shown to be impacted by the proposed action, improvements such as paving, curbing, installation or contribution to traffic signals, construction of sidewalks, bikeways, accessways, paths, or streets that serve the proposed action may be required.

CHAPER 13
OTHER PERMITS AND ACTIONS

10-13-2: SITE REVIEW:

B. Application:

1. Submission: The applicant shall submit at least six (6) copies of a narrative, plans, and drawings that describe the proposed development. A Traffic Impact Analysis (TIA), as established in Section 10-11-10, shall also be submitted pursuant to applicability requirements in Section 10-11-10 (B). Information specified by Chapter 14 of this Title and this Section may be combined and provided in narrative form or on plans and maps so long as required information is clear and understandable. Additional copies of documents and plans will be required for a Type III review.

…

4. Access Standards For All Uses:

i. Review By The Oregon State Department Of Transportation: Any application that involves access to the State Highway System shall be reviewed by the Oregon Department of Transportation for conformance with State access management standards. In the I-82/US 730 Interchange Management Area Plan (IAMP)

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Management Area, proposed access shall be consistent with the Access Management Plan in Section 7 of the IAMP.

10-13-3: AMENDMENTS TO THE ZONING TEXT OR MAP:

C. Narrative, Identification Required: An application shall include a narrative that demonstrates compliance with the approval criteria and a site and vicinity map identifying the property and adjacent properties. A Traffic Impact Analysis (TIA), pursuant to Section 10-11-10, shall also be submitted with all plan and zoning amendment applications.

D. Approval Criteria: An amendment to this Title or Official Map shall comply with the following criteria:
   1. The proposed designation is consistent with and supports the purposes of the portions of the City's Comprehensive Plan not proposed for amendment, or circumstances have changed to justify a change in the Comprehensive Plan.
   2. The proposed change will not affect the land supply for the existing zoning designation as related to projected need for the particular land use.
   3. The proposed designation will not negatively impact existing or planned public facilities and services. In particular, pursuant to the Oregon Transportation Planning Rule, proposed text and map amendments shall determine whether the proposed change will significantly affect a collector or arterial transportation facility and must comply with the requirements of Oregon Administrative Rule (OAR) 660-012-0060 as applicable. In the I-82/US 730 Interchange Management Area Plan (IAMP) Management Area, proposed access shall be consistent with the Access Management Plan in Section 7 of the IAMP.
   4. The site is suitable for the proposed use, considering the topography, adjacent streets, access, size of the site, availability of public facilities, and any other pertinent physical features.
   5. Other sites in the City or the vicinity are unsuitable for the proposed use. In other words, ownership and desire to develop a particular use in themselves provide insufficient rationale for changing a zoning designation that does not support the interests of the City as a whole.

CHAPER 14
ADMINISTRATIVE PROVISIONS

10-14-2: SUMMARY OF THE CITY'S DECISION-MAKING PROCESSES:

B. Type II decisions involve the exercise of limited interpretation and discretion in evaluating approval criteria. Applications evaluated through this process are assumed to be allowed in the underlying district. The review focuses on what form the use will take or how it will look. Notice of application and an invitation to comment is mailed to the applicant and property owners within one hundred feet (100'). When the application pertains to a parcel or parcels in the I-82/US 730

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Interchange Management Area Plan (IAMP) Management Area, the City shall provide written notification to ODOT when the application is deemed complete. The City Administrator accepts comments for fourteen (14) days and renders a decision.

C. Type III decisions involve the greatest amount of discretion and evaluation of subjective approval standards. Applications evaluated through this process include conditional use permits, preliminary planned unit development plans, variances, code interpretations, and similar determinations (the process for these land use decisions is controlled by Oregon Revised Statutes 197.763). Notice of the application and the Planning Commission hearing is published in the newspaper of record and mailed to the applicant, property owners within one hundred feet (100'), and interested agencies. When the application pertains to a parcel or parcels in the I-82/US 730 Interchange Management Area Plan (IAMP) Management Area, the City shall provide written notification to ODOT when the application is deemed complete. Notice must be issued at least twenty (20) days before the hearing and the staff report must be available at least seven (7) days before the hearing.

D. Type IV decisions include only annexations and both legislative and quasi-judicial amendments to the Comprehensive Plan text and Map or to the Zoning Ordinance text and Map. These applications involve the greatest amount of discretion and evaluation of subjective approval criteria. The process for these land use decisions is controlled by Oregon Revised Statutes 197.763. Notice of the application and Planning Commission hearing is published and mailed to the applicant, property owners within one hundred feet (100'), and interested agencies. When the application pertains to a parcel or parcels is in the I-82/US 730 Interchange Management Area Plan (IAMP) Management Area, the City shall provide written notification to ODOT when the application is deemed complete. Notice must be issued at least twenty (20) days before the hearing and the staff report must be available at least seven (7) days before the hearing.

10-14-3: PREAPPLICATION CONFERENCE:

A. Recommendation: Prior to submitting an application for a permit, the City recommends that an applicant schedule and attend a preapplication conference with the staff to discuss the proposal. The City Administrator may waive this requirement if the scale of the project does not warrant a meeting.

B. Requirement: Preapplication conferences are required for applications for which a Traffic Impact Analysis (TIA) is required, pursuant to Section 10-11-10.

~~B~~C.Scheduling And Request For Comments
~~C~~D.Caveat

10-14-4: APPLICATION:

A permit application may only be initiated by the record property owner or contract purchaser, the City Council, or the Planning Commission. The City will not accept an application without the signed authorization from all record owners.

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B. A complete application includes all the materials listed in this Section and any specific information requested for a particular permit. The City Administrator may waive the submission of any of the materials if not deemed to be applicable to the specific review sought. Likewise, within thirty (30) days of submission of the application, the City Administrator may require additional information beyond that listed in this subsection, such as a Traffic Impact Analysis (TIA) pursuant to requirements in Section 10-11-10 ~~traffic report~~ or other study prepared by an appropriate expert. The applicant is responsible for the completeness and accuracy of the application and all supporting documentation.

4. A site plan or plans and a vicinity map, drawn to scale. The site plan shall include at least the following features, along with any other information necessary to understand the proposal…
    c. Rights of way abutting the site, whether public or private, and access to the site. In the I-82/US 730 Interchange Management Area Plan (IAMP) Management Area, proposed access shall be consistent with the Access Management Plan in the IAMP (Section 7).

TITLE 11
LAND DIVISIONS

CHAPTER 2
PRELIMINARY LAND DIVISION REQUIREMENTS AND PROCEDURES

11-2-3: APPLICATION REQUIREMENTS FOR LAND DIVISIONS:

Applications for land division or lot line adjustment shall be submitted on forms provided by the City, accompanied by a tentative plan showing the design of the proposed land division and supporting documents, with the prescribed fee.

B. Information Requirements: The following information shall be included on the tentative plan or on supplemental materials submitted with the tentative plan:

1. The plan shall show the location, width, names, approximate grades of all streets within and adjacent to the proposed land division. The plan shall include any streets shown on any plan adopted by the City or relevant parts of any adopted future street plan to assure adequate traffic circulation. If no future street plan has been adopted for the land division site, such a plan shall be submitted with the application that shows potential street extensions and lotting patterns for a distance of at least six hundred feet (600') from the land division boundaries. In the I-82/US 730 Interchange Management Area Plan (IAMP) Management Area, proposed access shall be consistent with the Access Management Plan in Section 7 of the IAMP.

…

25. A future street plan, when required.
26. A Traffic Impact Analysis (TIA), pursuant to requirements in Section 10-11-10.

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2~~6~~7. Additional information may be required by the City to ensure compliance with the provisions of this Title, Title 9, and Title 10 of this Code.

11-2-4: REVIEW PROCEDURES:

The approval authority may approve, deny, modify, or approve with conditions any application. Decisions by the City Administrator may be appealed to the Planning Commission. Decisions by the Planning Commission may be appealed to the City Council. Notice will be provided for public hearings as required by State law.

B. Tentative Plans For Land Divisions:

4. Agency Notice: The City Administrator shall furnish copies of an application for tentative plan, along with any supplementary information, to County, State, or Federal agencies that may have an interest in the proposal. When the application pertains to a parcel or parcels in the I-82/US 730 Interchange Management Area Plan (IAMP) Management Area, the City shall provide written notification to ODOT when the application is deemed complete. These officials shall have fourteen (14) days to review the application and to suggest any revisions or requirements that are in the public interest. Comments shall be provided to the City in writing.

11-2-6: LAND DIVISION APPROVAL CRITERIA:

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

A. Approval Criteria: Land division tentative plans shall only be approved if found to comply with the following criteria:
   1. The proposal shall comply with the City's Comprehensive Plan.
   2. The proposal shall comply with the I-82/US 730 Interchange Management Area Plan (IAMP) and the Access Management Plan in the IAMP (Section 7) as applicable.
   ~~2~~3. The proposal shall comply with the City's zoning requirements.
   ~~3~~4. The proposal shall comply with the City's Public Works Standards.
   ~~4~~5. The proposal shall comply with applicable State and Federal regulations, including, but not limited to, Oregon Revised Statutes 92, 197, 227, and wetland regulations.
   ~~5~~6. The proposal shall conserve inventoried natural resource areas and flood plains, including, but not limited to, mapped rivers, creeks, sloughs, and wetlands.
   ~~6~~7. The proposal shall minimize disruption of natural features of the site, including steep slopes or other features, while providing for safe and efficient vehicle, pedestrian, and bicycle access.
   ~~7~~8. The proposal shall provide adjacent lands with access to public facilities and streets to allow its full development as allowed by the City's codes and requirements.
   ~~8~~9. The proposal shall be designed with streets that continue or connect to existing and planned land division plats on adjoining properties. All proposed streets shall comply with standards of this Title and the Public Works Standards.

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~~9~~10. The City's decision on a land division application shall include written findings for each required dedication or improvement that identify the legitimate governmental purpose, the relationship between the purpose and the exaction, and the rough proportionality in nature and extent, between the requirement and the projected impacts of the proposed development.

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Proposed Amendments to the Umatilla County Development Code

GENERAL PROVISIONS

§152.017 CONDITIONS FOR DEVELOPMENT PROPOSALS.

(A) The proposed use shall not impose an undue burden on the public transportation system. Any increase meeting the definition of significant change in trip generation constitutes an undue burden.

(B) For developments likely to generate a significant increase in trip generation, applicant shall be required to provide adequate information, such as a traffic impact study or traffic counts, to demonstrate the level of impact to the surrounding system. The scope of the impact study shall be coordinated with the providers of the transportation facility. Proposals that meet the requirements in §152.019(B) are subject to §152.019(C), Traffic Impact Analysis Requirements.

(C) The applicant or developer may be required to mitigate impacts attributable to the project. Types of mitigation may include such improvements as paving, curbing, bridge improvements, drainage, installation or contribution to traffic signals, construction of sidewalks, bikeways, accessways or paths. The determination of impact or effect should be coordinated with the providers of affected transportation facilities.

(D) Dedication of land for roads, transit facilities, sidewalks, bikeways, paths, or accessways may be required where the existing transportation system will be impacted by or is inadequate to handle the additional burden caused by the proposed use.

§ 152.018 ACCESS MANAGEMENT AND STREET CONNECTIVITY:

(A) The intent of this code is to manage access to land development while preserving the flow of traffic in terms of safety, capacity, functional classification, and level of service. […]

(D) In the I-82/US 730 Interchange Management Area Plan (IAMP) Management Area, proposed access shall be consistent with the Access Management Plan in Section 7 of the IAMP.

[…]

Note: Subsequent code sections (existing D through H) will be renumbered upon adoption of proposed language.

§ 152.019 Traffic Impact Analysis

(A) Purpose: The purpose of this section of the code is to implement Section 660-012-0045 (2) (e) of the State Transportation Planning Rule that requires the County to adopt a process to apply conditions to specified land use proposals in order to minimize adverse impacts to and protect transportation facilities. This section establishes the standards for when a proposal must be reviewed for potential traffic impacts; when a Traffic Impact Analysis must be submitted with an application in order to determine whether conditions are needed to

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minimize impacts to and protect transportation facilities; what must be in a Traffic Impact analysis; and who is qualified to prepare the analysis.

(B) Applicability: A Traffic Impact Analysis shall be required to be submitted to the County with a land use application, when the following conditions apply:

(1) The application involves one or more of the following actions:

(a) A change in zoning or plan amendment designation; or

(b) The proposal is projected to cause one or more of the following effects, which can be determined by field counts, site observation, traffic impact analysis or study, field measurements, crash history, Institute of Transportation Engineers Trip Generation manual; and information and studies provided by the local reviewing jurisdiction and/or ODOT:

1) An increase in site traffic volume generation by 250 Average Daily Trips (ADT) or more (or as required by the County Engineer). The latest edition of the Trip Generation manual, published by the Institute of Transportation Engineers (ITE) shall be used as standards by which to gauge average daily vehicle trips; or

2) An increase in use of adjacent streets by vehicles exceeding the 20,000 pound gross vehicle weights by 10 vehicles or more per day; or

3) The location of the access driveway does not meet minimum intersection sight distance requirements, or is located where vehicles entering or leaving the property are restricted, or vehicles queue or hesitate, creating a safety hazard; or

4) The location of the access driveway does not meet the access spacing standard of the roadway on which the driveway is located; or

5) A change in internal traffic patterns that may cause safety problems, such as back up onto the highway or traffic crashes in the approach area.

(C) Traffic Impact Analysis Requirements

(1) Preparation. A Traffic Impact Analysis shall be prepared by a professional engineer. The traffic analysis will be paid for by the applicant.

(2) Transportation Planning Rule Compliance. See §152.019 Compliance with the Comprehensive Plan.

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(3) Pre-filing Conference. The applicant will meet with the Umatilla County Public Works Director and Planning Director prior to submitting an application that requires a Traffic Impact Analysis. The County has the discretion to determine the required elements of the TIA and the level of analysis expected. The County shall also consult the Oregon Department of Transportation (ODOT) on analysis requirements when the site of the proposal is adjacent to or otherwise affects a State roadway.

(D) Approval Criteria: When a Traffic Impact Analysis is required, approval of the proposal requires satisfaction of the following criteria:

(1) Traffic Impact Analysis was prepared by an Oregon Registered Professional Engineer qualified to perform traffic engineering analysis;

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

(3) The proposed site design and traffic and circulation design and facilities, for all transportation modes, including any mitigation measures, are designed to:

(a) Have the least negative impact on all applicable transportation facilities;

(b) Accommodate and encourage non-motor vehicular modes of transportation to the extent practicable;

(c) Make the most efficient use of land and public facilities as practicable;

(d) Provide the most direct, safe and convenient routes practicable between on-site destinations, and between on-site and off-site destinations; and

(e) Otherwise comply with applicable requirements of the Umatilla County Code.

(E) Conditions of Approval: The County may deny, approve, or approve a proposal with appropriate conditions.

(1) Where the existing transportation system is shown to be impacted by the proposed action, dedication of land for streets, transit facilities, sidewalks, bikeways, paths, or accessways may be required to ensure that the transportation system is adequate to handle the additional burden caused by the proposed action.

(2) Where the existing transportation system is shown to be impacted by the proposed action, improvements such as paving, curbing, installation or contribution to traffic signals,

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construction of sidewalks, bikeways, accessways, paths, or streets that serve the proposed action may be required.

LAND DIVISIONS
PART 2, TYPE I LAND DIVISION

§ 152.665 REVIEW AND APPROVAL PROCEDURE.
Review and approval of a Type I Land Division shall be as follows:

(A) An applicant seeking approval of a Type I Land Division shall first request the Planning Director to arrange a pre-filing conference. The request shall include five copies of a preliminary sketch of the proposal. The sketch shall have sufficient information to show the general location of the tract, general layout of lots and roads, general topography, existing land conditions and natural features, general information concerning existing conditions on surrounding properties, and other information that may be helpful to explain the applicant's desire to develop the property;

(B) Within five business days from receipt of a request for a pre-filing conference, the Planning Director shall schedule a time and place for the pre-filing conference to better afford an opportunity for the applicant to incorporate suggestions and requirements for complying with this chapter, the Comprehensive Plan, zoning and development requirements, and such technical and design assistance in better land use practices, and techniques that will aid the applicant in preparing a tentative plan~~;~~. For applications within an Interchange Management Area Plan (IAMP) Management Area or within a ¼ mile of any ODOT facility, the Planning Director shall invite ODOT to participate in a pre-filing conference.

(C) Following the pre-filing conference, the applicant shall file with the Planning Director a completed application form and tentative plan, including 20 copies of the drawings required under § 152.666. The tentative plan shall be accompanied by the required fee. If the applicant does not file a tentative plan within six months after the pre-filing conference, the applicant shall request a new pre-filing conference per the requirements listed in divisions (A) and (B) of this section;

(D) Upon receipt of a completed application, the Planning Director shall schedule, not later than 45 days from receipt of the completed application, a public hearing before the Planning Commission. When the application is in an Interchange Management Area Plan (IAMP) Management Area or within a ¼ mile of any ODOT facility, the Planning Director shall provide written notification to ODOT when the application is deemed complete;

(E) The Planning Director shall furnish a copy of the tentative plan to all affected city, county, state and federal agencies and special districts with a request for their review and comments;

(F) Failure of an agency or district to provide written comments to the Planning Director concerning the tentative plan within 10 business days after furnishing thereof may be deemed a recommendation of approval unless the agency or district has filed a written request for an additional review period, or the county and the agency or district has a signed management agreement that allows for more time.

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§ 152.666 CONTENTS OF TENTATIVE PLAN.

(A) A tentative plan shall consist of maps, written information site review analysis and other supplementary materials adequate to provide the information required in this section.

(B) All applicable information requested in this section shall be provided and addressed, or the application for a tentative plan will not be accepted or processed.

(6) *Criteria for approval.* In granting approval of a tentative plan, the Planning Commission shall find that the tentative plan:

(a) Complies with applicable elements of the Comprehensive Plan, including, but not limited to, policies listed in the public facilities and services and the transportation elements of the Comprehensive Plan.

(b) Complies with the Statewide Planning Goals adopted by the Land Conservation and Development Commission, until the Comprehensive Plan is acknowledged.

(c) Complies with provisions of §152.019, Traffic Impact Analysis, as applicable.

(~~c~~d) Complies with applicable provisions listed in the zoning regulations of this chapter;

(~~d~~e) Complies with applicable provisions, including the intent and purpose of the Type I regulations listed in this chapter;

(~~e~~f) The tentative plan conforms and fits into the existing development scheme in the area, including the logical extension of existing streets and public facility through the tentative plan;

(~~f~~g) Complies with other specific requirements listed in § 152.667 for approval of certain types of subdivisions.

LAND DIVISIONS
PART 3, TYPE II LAND DIVISION

§ 152.682 CONTENTS OF TENTATIVE PLANS.

(A) *General.* A tentative plan for a Type II Land Division shall consist not only of a map, but also of written information and supplementary material adequate to provide the following required information in divisions (B) and (C) which follow. All applicable information below shall be provided and/or addressed, or the application for a Type II Land Division will not be accepted or processed.

(B) *Written and supplementary information.*

(4) Description of the water supply, condition of existing adjacent roads or easements and proposed roads or easements, methods of sewage disposal and storm water disposal, and the availability of other utilities. A Traffic Impact Analysis (TIA) shall be provided pursuant to §152.019.

(5) Statement of required improvements to be made or installed and the time schedule therefore.

§ 152.683 REVIEW AND PROCESSING OF TENTATIVE PLAN.

The tentative plan of a Type II Land Division will be reviewed and processed under the provisions of § 152.769 of this chapter, which for convenience, are restated as follows:

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(A) Within 20 business days of filing a completed application, the Planning Department shall determine whether the application and accompanying material conforms with the applicable requirements of this chapter and render a tentative decision. When the application is an Interchange Management Area Plan (IAMP) Management Area or within a ¼ mile of any ODOT facility, the Planning Department shall provide written notification to ODOT when the application is deemed complete.
(B) All documents or evidence relied upon by the applicant shall be submitted to the Planning Department and shall be made available to the public prior to issuance of the tentative decision.
(C) A tentative decision by the Planning Department to approve, modify or deny a land use request shall include written modifications and conditions, if any, and findings and conclusions which shall specifically address the relationship between the proposal and the applicable criteria for approval listed elsewhere in this chapter.

§ 152.684 STANDARDS FOR APPROVAL.
In granting approval of a Type II Land Division, the Planning Director shall find that the Type II Tentative Plan and required supplementary material:
(A) Complies with applicable elements of the Comprehensive Plan, including, but not limited to, policies listed in the public facilities and services and the transportation elements of the Comprehensive Plan. A Traffic Impact Analysis (TIA) shall be provided pursuant to §152.019
(B) If approved, will permit development on the remainder of the property under the same ownership, if any, or of adjoining land or of access thereto, in accordance with this and other applicable ordinances;
(C) Complies with the zoning requirements or a proposed change thereto associated with the partition map proposal;
(D) Complies with provisions of §152.019, Traffic Impact Analysis, as applicable.
(~~D~~E) Roads …
(~~E~~F) Dedicated road or public recorded easement
(~~F~~G) Each parcel …
(~~G~~H) Shall provide easements …
(~~H~~I) Considers energy conservation measures …
(~~I~~J) All required improvements …
(~~J~~K) Adequately addresses any known development limitations …
(~~K~~L) Addresses the comments of the appropriate water agency …

AMENDMENTS

§ 152.751 COMPLIANCE WITH COMPREHENSIVE PLAN.
An amendment to the text of this chapter or to a zoning map shall comply with the provisions of the County Comprehensive Plan Text and Comprehensive Land Use Map. Proposed amendments shall also comply with the applicable provisions of the Oregon Transportation Planning Rule, Oregon Administrative Rule (OAR) 660, Division 12 and the Umatilla County Transportation Plan,

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and are subject to the requirements of §152.019, Traffic Impact Analysis. Any deviation from this section shall be preceded by an amendment to the Comprehensive Plan Text or to the Comprehensive Land Use Map. However, if the existing use of the property is allowed outright in the requested zone, compliance with the Comprehensive Plan is not necessary.

ADMINISTRATION AND ENFORCEMENT

§ 152.769 ADMINISTRATIVE REVIEW.

(A) The administrative review procedure is designed to provide a less time-consuming alternative to the public hearing process for land use requests which require discretion in the decision-making process (i.e. quasi-judicial decisions).

(B) The administrative review procedure is as follows:

(1) Within 20 business days of filing a completed application, the Planning Department shall determine whether the application and accompanying material conforms with the applicable requirements of this chapter and render a tentative decision. When the application is in an Interchange Management Area Plan (IAMP) Management Area or within a ¼ mile of an ODOT facility, the Planning Department shall provide written notification to ODOT when the application is deemed complete.

(2) All documents or evidence relied upon by the applicant shall be submitted to the Planning Department and shall be made available to the public prior to issuance of the tentative decision.

(3) A tentative decision by the Planning Department to approve, modify or deny a land use request shall include written modifications and conditions, if any, and findings and conclusions which shall specifically address the relationship between the proposal and the applicable criteria for approval listed elsewhere in this chapter.

§ 152.770 PUBLIC NOTICES.

(A) As set forth in ORS 197.763, notice of the hearings governed by § 152.771 and notices required for administrative review in § 152.769, shall be provided to the applicant and to owners of record of property on the most recent property tax assessment roll where such property is located:

(1) Within 100 feet of the property which is the subject of the notice where the subject property is wholly or in part within an urban growth boundary;

(2) Within 250 feet of the property which is the subject of the notice where the subject property is outside an urban growth boundary and not within an Exclusive Farm Use or Forest Zone; or

(3) Within 500 feet of the property which is the subject of the notice where the subject property is within an Exclusive Farm Use or Forest Zone.

(B) In the event that there are less than five different property owners within the distances set forth under division (A) of this section, other nearby properties shall be included in the notice area until at least five different property owners are identified.

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(C) The County will also send the notice to, and request comments from, all local, state, and federal agencies which staff can determine might or would be affected by the request, including, but not limited to, irrigation districts, rural fire districts or fire service providers, nearby municipalities, utility companies with known easements or facilities on the property, the County Road Department, the Watermaster, and the County Assessor. When the application is in an Interchange Management Area Plan (IAMP) Management Area or within a ¼ mile of an ODOT facility, the County shall provide written notification to ODOT when the application is deemed complete.

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