

Staff Report

For the Meeting of February 22, 2016
MAYOR AND MEMBERS OF THE CITY COUNCIL

Agenda Item #

NO. 2016 –

**SUBJECT: Proposed
Amendment to Hermiston TSP**

Subject

An amendment to the city's transportation system plan adding an additional signal or roundabout to the south Highway 395 corridor is proposed in advance of new commercial development.

Summary and Background

The City of Hermiston and George Dress et al have worked to prepare an amendment to the South Highway 395 Corridor Refinement Plan in the Transportation System Plan (TSP) to reconfigure the traffic signal and off-highway circulation plans contained within that document. The current corridor refinement plan was prepared by the city and ODOT and adopted in 2003. The primary purpose of the corridor refinement plan is to create a plan for a system of off-highway streets to channel traffic to a set of five highway intersections which will eventually be signalized as traffic volumes warrant. The city is working on processing a development application for a large retail operation and several future lease pads immediately south of Hermiston Foods on Highway 395. Initial traffic analysis for this development indicates that at full buildout a traffic signal will be needed. The existing TSP does not reflect a traffic light at this access point. The Oregon Department of Transportation (ODOT) requires any signal installed on a state facility to be included in a city's TSP before it will consider any funding mechanism or allow the signal to be installed.

The existing circulation plan for the south Highway 395 corridor is attached to this report as figure 1.

The proposed amendment will add a new traffic signal between the proposed signals at Airport Road and at the truck entrance for the Wal-Mart distribution center. The amendment to the plan will add a new signal at the existing truck entrance for Hermiston Foods. This new signal location will require a change from the existing access as a public access easement to a public road.

A copy of the revised layout is included in the attached Figure 2. The new signal is highlighted by the number 2 in a squared circle. Additionally, the removal of a planned parallel backage road for Highway 395 is marked by dual strikethrough lines in the graphic.

A copy of the full TSP amendment report is attached to this memo.

Highway 395 through this area is a 55 mph speed zone. Installing a traffic signal in a high speed corridor such as this will require additional traffic calming measures as part of any signal

CITY OF HERMISTON

construction and operation. Calming measures will include advance warning signage with flashing beacons, lane reconfiguration to slow traffic, and possibly rumble strips. These calming measures are included in the plan.

The signal itself will help the overall circulation of the south Hermiston industrial area in several ways. It will improve spacing for traffic, creating better gaps in traffic for vehicles entering the highway. It will create a new full access intersection for the off-highway circulation network. Specifically, new east/west public streets are already planned to intersect at this point. A new signal will provide cross highway access. The local street network as depicted in Figures 1 and 2 will funnel trips from Kelli Blvd and Airport Road to the new proposed signal and the proposed signals at Airport Road and the Wal-Mart distribution center.

ODOT has reviewed the TSP amendment and requested that the city broaden the signalization proposal to include the option of signals or roundabouts at each signal location in the south 395 corridor. The planning commission agreed with ODOT's request that signals or roundabouts would be acceptable on the south 395 corridor, but with the caveat that speeds would need to be reduced before roundabouts could be considered workable or safe.

Fiscal Information

Inclusion of this amendment in the TSP will add a new project estimated to cost between \$300,000 and \$1,000,000 depending on the right-of-way necessary and what elements will be required in the final design. The cost of these improvements will be shared between property developers, ODOT, and the city. In general, development is responsible for bearing the majority of costs required to insure the functionality of public infrastructure.

Alternatives and Recommendation

The city council may choose to:

1. Approve the amendment to the TSP adding a new signal or roundabout at the Hermiston Foods truck entrance and adopt Ordinance 2239 incorporating the amendment into the city's TSP.
2. Reject the amendment, not adopt Ordinance 2239 and leave the TSP as-is.

Staff recommends the city council accept the TSP amendment as amended by the planning commission.

Requested Action/Motion

Motion to accept the findings of fact attached to Ordinance 2239.

Motion to adopt Ordinance 2239.

Reviewed by:

A handwritten signature in black ink, appearing to be 'CSP', written in a cursive style.

Department Head – Clinton Spencer, City Planner

A handwritten signature in blue ink, appearing to be 'Raymond...', written in a cursive style.

City Manager Approval

ORDINANCE NO. 2239

AN ORDINANCE AMENDING THE HERMISTON TRANSPORTATION SYSTEM PLAN THROUGH THE ADOPTION OF THE 2016 AMENDMENT TO THE SOUTH HIGHWAY 395 CORRIDOR REFINEMENT PLAN.

WHEREAS, the Hermiston Planning Commission held a public hearing on February 10, 2016 to receive public testimony and consider an amendment to the Hermiston Transportation System Plan, and

WHEREAS, the Hermiston City Council held a public hearing on February 22, 2016 to receive public testimony and consider an amendment to the Hermiston Transportation System Plan, and

WHEREAS, notice of the Planning Commission and City Council hearings was provided to the Department of Land Conservation and Development and published in a newspaper of general circulation in accordance with statutory requirements and local ordinance requirements for notice of legislative amendments, now therefore

THE CITY OF HERMISTON DOES ORDAIN AS FOLLOWS:

SECTION 1. The Hermiston Transportation System Plan is hereby amended to include the 2016 HDJ Transportation System Plan Update.

SECTION 2. The 2016 HDJ Transportation System Plan Update is attached as Exhibit A and is incorporated herein by reference.

SECTION 3. The findings of fact adopted by the city council on February 22, 2016 are incorporated herein by reference.

SECTION 4. The effective date of this ordinance shall be the thirtieth day after enactment.

PASSED by the Common Council this 22nd day of February, 2016.

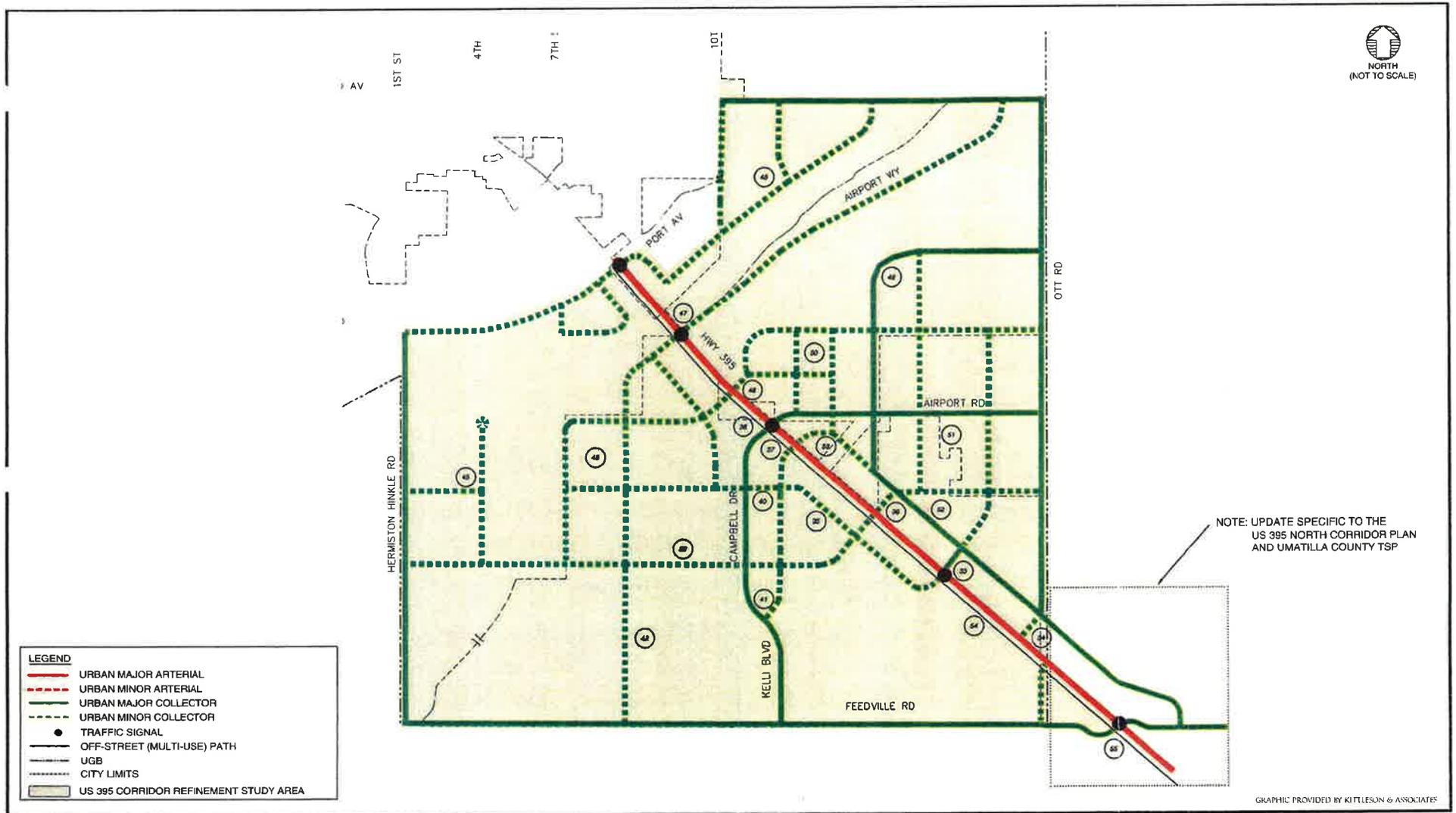
SIGNED by the Mayor this 22nd day of February, 2016.

MAYOR

ATTEST:

CITY RECORDER

**FIGURE 1
CURRENT CONFIGURATION**



CORRESPONDS TO IMPROVEMENTS LISTED IN TABLE 1

**US 395 CORRIDOR
STREET SYSTEM IMPROVEMENTS
JANUARY 2003 UPDATE**

FIGURE 5

TRIT TRANSPORTATION ENGINEERING
4700 Village Plaza Drive, Suite 401
Eugene, Oregon 97401 (531) 541-1821
www.trit.com

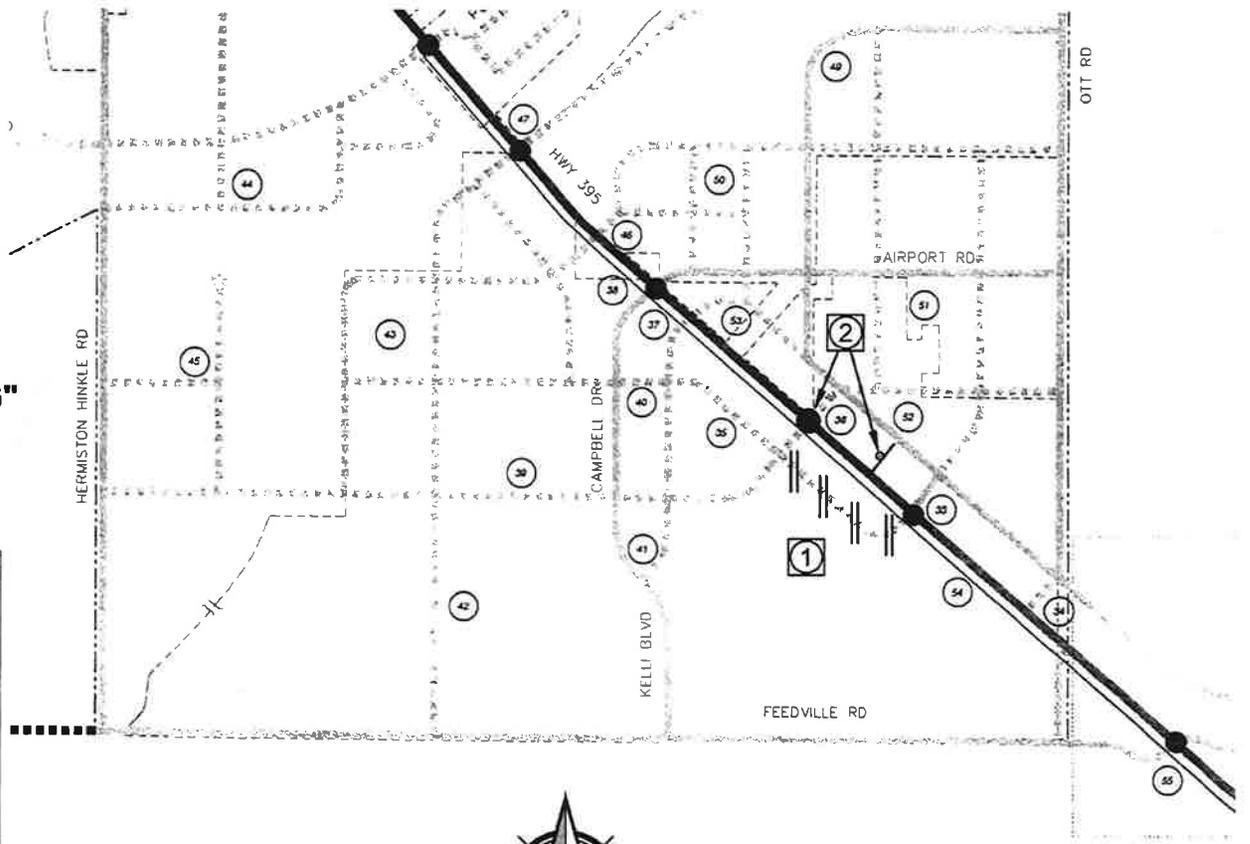
**FIGURE 2
AMENDED CONFIGURATION**

HDJ Design Group, PLLC
Hermiston TSP Update - Ranch & Home
HDJ Project No. 4027-01

- ① **REVISE PROJECT TO SHORTEN 35.**
- ② **REVISE PROJECT 36 TO INCLUDE FULL ACCESS SIGNAL WITH "PREPARE TO STOP WHEN FLASHING" SIGN.**

LEGEND

- URBAN MAJOR ARTERIAL
- URBAN MINOR ARTERIAL
- URBAN MAJOR COLLECTOR
- URBAN MINOR COLLECTOR
- RURAL ARTERIAL
- RURAL COLLECTOR
- TRAFFIC SIGNAL
- OFF-STREET (MULTI-USE) PATH
- UGB
- CITY LIMITS
- SOUTH HERMISTON STUDY AREA
- US 395 CORRIDOR REFINEMENT STUDY AREA



TSP Update
December 2015

FIGURE 2

6115 Burden Blvd, Suite E
Pasco, WA 99301-8930
509/547-5119
360/695-3488
509/547-5129 fax
Internet: www.hdjag.com

**TSP Project Recommendations
Hermiston TSP Update - Ranch & Home**



Date: February 18, 2015

To: Clinton Spencer

From: John Manix, PE

Re: City of Hermiston Transportation System Plan Update – Ranch and Home Development

Introduction:

This memo is intended as an update to the *City of Hermiston Transportation System Plan (TSP)* based on the proposed modifications associated with the Ranch and Home commercial development.

See Figure 1 for a vicinity map and Appendix A for excerpt from the 2003 updated TSP project map.

The current TSP proposes a “backage road” (Project Number 35) through and conflicting with the Ranch and Home site, and the *Ranch and Home’s Traffic Impact Analysis (TIA)* Report recommends a traffic signal at the shared Ranch and Home/Hermiston Foods driveway intersection with US 395. The current TSP was updated in 2005 based on the *US 395 Corridor Refinement Plan*.¹ This memo also addresses the October 6, 2015 letter from Oregon Department of Transportation (ODOT) commenting on Ranch and Home Development and the TIA.

Subsequent to the December 4, 2015 draft of the TSP Update, ODOT has issued comments in the February, 8, 2016 letter. The Hermiston Planning Commission has held a public hearing, and the Ranch and Home applicant has met with staff of both ODOT and the City. Based on the February 16, 2016 meeting, consensus has been reached that the TSP update will add roundabouts as an alternative to traffic signals. The final draft does not include a response to all comments but does address the primary change which is that roundabouts should be considered as an alternative to traffic signals as proposed in the current TSP. The evaluation conclusions and recommendations were amended to address this change.

Recommendations:

Revise City of Hermiston’s Transportation System Plan project listed as follows and illustrated in Figure 2:

1. Modify Project 35 to shorten proposed minor collector backage road, parallel to US 395, between Kelli Boulevard to the proposed minor arterial listed as Project 39 (Hermiston Foods driveway).
2. All TSP projects within the US 395 corridor that call for a signal shall include a roundabout as the preferred alternative. This includes specific projects listed in the 2003 TSP Update, such as Project 33 at the Walmart Entrance, Project 38 at Campbell Drive/Airport Road intersection, and Project 55 at the Feedville Road intersection.

¹ Kittelson and Associates, *US 395 Corridor Refinement Plan (Port Drive to Feedville Road)*, January 2003.

3. Modify project 36 to include a full access traffic signal or roundabout at the proposed minor arterial intersection with US 395, near the Hermiston Foods driveway. A roundabout shall be considered as the preferred alternative to the proposed traffic signal. If a traffic signal is the most feasible for the Ranch and Home Development and the Hermiston Foods driveway, it should include an advance warning sign assembly “PREPARE TO STOP WHEN FLASHING” and advance vehicle detection system.

Background:

The *US 395 Corridor Refinement Plan* was jointly funded by the City of Hermiston and ODOT to address the overall management direction established by the July 2000, *US 395 North Corridor Plan*. This plan was developed by ODOT and called for an access management plan with raised medians on US 395 from Kelli Boulevard to Rosalynn Drive. The *US 395 Corridor Refinement Plan* called for a series of projects, including a network of minor arterials and collectors near US 395, between Port Avenue and Feedville Road that included a series of proposed signalized intersections with access restrictions, such as right-in and right-out. To provide access to the abutting properties, the *US 395 Corridor Refinement Plan* called for a “backage road” that would collect and distribute traffic from the adjacent property to the proposed signals. A backage road is similar to a frontage road as it parallels a highway but it runs along the back of the abutting properties. This separation positions intersections approximately a city block from the signalized intersection which minimizes conflicts and provides room for queueing at the signal for the cross street to US 395. The plan intended the backage roads to follow property lines so to minimize conflicts with abutting properties. The preferred alternative project list from the *US 395 Corridor Refinement Plan* was adopted by the City in January 2005 as a TSP update.

In 2012, the City of Hermiston processed land use rezoning to relocate the Eastern Oregon Trade and Event Center (EOTEC) to a new location north of Airport Road, contiguous to the southern boundary of the Hermiston Municipal Airport, and west of Ott Road. The 2012 *Fairgrounds Overlay Zone District Transportation Impact Analysis Report* prepared by Group Mackenzie estimated that the EOTEC would generate upwards of 1,000 PM peak hour trips for events. These trips are currently anticipated to enter and exit the site from US 395 via Airport Road or a possibly an extension of Able Drive.

In 2015, the Ranch and Home Company proposed a larger commercial development between Hermiston Foods and the Walmart Distribution Center. See *Figure 1* for a vicinity map from the projects TIA. This large scale retail development on 17.59 acres site estimates to generate 4,426 trips per day and is the type of development the City of Hermiston envisioned for the *US 395 Corridor Refinement Plan*. The TSP Project 35 directs the backage road through the Ranch and Home site and significantly limits the commercial development plans. The Ranch and Home development was conditioned by the City to prepare a TIA plan which would identify traffic impacts and mitigation of the proposed project. The TIA concluded a traffic signal was needed on US 395 at the entrance between the existing Hermiston Foods driveway and the proposed Ranch and Home, often referred to as the “Hermiston Foods driveway.”

ODOT submitted a letter to the City of Hermiston on October 6, 2015. This letter noted inconsistencies with the City’s TSP and recommended that other safety concerns be addressed. These concerns and comments brought up by ODOT are summarized as follows:

- The proposed signal at the Hermiston Foods driveway may compromise the other proposed signals in the TSP. The applicant should verify that the proposed signal does not impact the traffic signals identified in the TSP.
- The TSP calls for the backage road to extend to the Walmart Distribution Center driveway at US 395 and a traffic signal at this location. The City should consider if this is still necessary in light of the proposed event center (EOTEC) on Airport Road.
- A roundabout should be considered as an alternative to a traffic signal due to safety concerns of traffic stopping from 55 MPH rural highway approach. If a roundabout is not used traffic calming should be considered.

Based on these comments, the City has directed the applicant to process a TSP update in the form of a technical memo. After discussing the TSP update with both ODOT and City staff, it was agreed that the scope of work would address the following questions:

1. What is the impact on signal spacing standards and the possible impact of the proposed signal at the Hermiston driveway?
2. What are the impacts of the proposed Ranch and Home signal on the proposed signal at Airport Way?
3. What are the impacts on the projects listed in the 2003 Hermiston TSP Amendment?
4. What is the interaction between passenger vehicles from the Ranch and Home Development, and the Hermiston Food and Walmart Distribution Center trucks?
5. Is a roundabout a viable alternative to a signal and if not what other traffic calming measures can be used as a safety enhancement to a traffic signal?
6. What are the impact of a signal on the off-set intersection at the US 395/Hermiston Foods entrance/E-Z Storage entrance?
7. Does the proposed or current TSP projects impact industrial development?

Evaluation:

The following section addresses the questions above:

What are the impacts on signal spacing standards and the possible impact of the proposed signal at the Hermiston driveway?

In this case, the primary issue with signal spacing is related to possible impacts to signal system coordination. No specific standard was found for signal spacing. The MUTCD cites that signals should be coordinated with spacing under a half mile.² The MUTCD also cites that signals may meet warrants based on signal coordination, based on engineering study, but not if the spacing is under 1,000 feet. With spacing greater than a half mile the platoon will disperse and coordination will be less effective. With spacing less than 1,000 feet, the queue at upstream signals may interfere with progression of the platoon through the signal system. Figure 3 shows the spacing of the signal and it is likely that with the proposed signal at Ranch and Homes development driveway (existing Hermiston Foods driveway) it will improve coordinated signal operation by making the spacing more uniform from Port Avenue to Walmart Distribution Center Driveway. Thus, the proposed signal at Ranch and Home/Hermiston Foods/US 395 will have a positive impact on signal system operation associated with signal spacing.

² FHWA, *Manual on Uniform Traffic Control Devices, 2009 Edition*.

What are the impacts of the proposed Ranch and Home signal on the proposed signal at Airport Way?

Beyond the impacts on signal system coordination addressed above, the possible impacts of the proposed signal at Ranch and Home development is related to traffic diversion. This is challenging to quantify due to the uncertainty of the land development and the supporting land uses. Based on careful review of the *US 395 Corridor Refinement Plan* and the *Fairgrounds Overlay Zone District Transportation Impact Analysis Report*; a traffic signal at Ranch and Home entrance will better distribute the trips to the adjacent property to US 395 between Airport Road and the Walmart Distribution Center.

The *US 395 Corridor Refinement Plan* estimates a 4,000 PM peak hour trips entering and exiting US 395 between Airport Road and the Walmart Distribution Center. With the current TSP, most of those trips that need to make a left turn across US 395 will need to use the signals proposed at either the Airport Road or the Walmart Distribution Center signals. With most of the egress trips destined for Hermiston, the Airport Road intersection is likely to take the largest share of these trips on the west side of US 395. Thus, the proposed signal at Ranch and Home should reduce the traffic impacts on the future Airport Road/Campbell Drive/US 395 signal by providing an additional egress opportunity for left turning vehicles.

The backage road was proposed as supporting development by improving the access. In this case, it severely restricts development by sub-dividing a large retail site into smaller lots, restricting land-use options. Assuming the backage road through the Ranch and Home site is not built, future trips need a signal to access US 395. The proposed signal at the Walmart Distribution Center driveway will not be accessible from the west side of US 395. Thus, the proposed traffic signal will provide another access point to US 395 other than the future Airport Road/Campbell Drive/US 395 traffic signal.

What are the impacts on the projects listed in the 2003 Hermiston TSP Amendment?

The most significant impacts are on Project 35, the backage road on the west side of US 395. The Ranch and Home development proposes to eliminate a portion from the Hermiston Foods driveway to the Walmart Distribution Center driveway. With the proposed signal at Ranch and Home/Hermiston Foods/US 395 intersection, the surrounding area still will be served.

Project 33, the signal at the Walmart Distribution Center Driveway/US 395 intersection, may be impacted without the connection to west side backing road (Project 35). Without the traffic from the west side of US 395 connected to the Walmart Distribution Center driveway at US 395, it may not meet warrants in the future. For this update, it is not recommended that this project be removed from the project list because future development on the east side of US 395 may produce enough trips to meet signal warrants.

The project list from 2003 Hermiston TSP Amendment is based on the *US 395 Corridor Refinement Plan*. After careful review of the series of technical memos that make up the *US 395 Corridor Refinement Plan*, it is clear that this planning process involves extensive analysis and public involvement, including a project team of technical stakeholders. Thus the Ranch and Home modifications to the TSP project list should be kept to a minimum. The *US 395 Corridor Refinement Plan* acknowledged that the plan would need refinement as land adjacent to US 395 is developed but at this early stage the update should only recommend minor refinements.

What is the interaction between passenger vehicles from the Ranch and Home Development, and the Hermiston Food and Walmart Distribution Center trucks?

At the Hermiston Food driveway (the location of the proposed Ranch and Home traffic signal), the interaction is minor due to time of day that truck ingress and egress the site verses passenger vehicles. The traffic counts from both the *US 395 Corridor Refinement Plan* and the Ranch and Home TIA counted few if any trucks turning into or out of the site in the AM, Mid-day or PM peak hours. At the Walmart Distribution Center driveway, the truck volume is moderately high for truck volume, with 7 exiting and 18 entering in the AM, 29 exiting and 18 entering in the mid-day, and 13 exiting and 20 entering in the PM peak hours. The Walmart Distribution Center staff are reported to have expressed reservations about mixing passenger vehicles with truck traffic associated with the proposed backage road in the current TSP. The length of left turn lane on the Walmart Distribution Center driveway will be constrained due to the backage road driveway intersection with the Walmart Distribution Center driveway. If the Ranch and Home development traffic destined for northbound US 395 was directed through this intersection, per the existing TSP (Project 35), the queue with trucks added is a concern. With a double left turn, it will require upwards of 225 feet of left turn storage for Ranch and Home development traffic. This long queue would be very disruptive to the Walmart Distribution Center operation. Thus, due to the moderately high truck traffic and the constrained roadway geometry at the Walmart Distribution Center, the backage road should not be terminated at Walmart Distribution Center driveway intersection with US 395.

Is a roundabout a viable alternative to a signal and if not what other traffic calming measures can be used as a safety enhancement to a traffic signal?

Signals on the State Highway system are a significant safety concern to the Department of Transportation staff in both Oregon and Washington. With a high speed approach to a traffic signal, red light running and rear-end collisions can result in fatal or serious injury collisions. Based on their safety record, ODOT encourage roundabouts as an alternative. In this case, ODOT has traffic safety concerns with rural locations where traffic has traveled long distances prior to encountering a traffic signal.

Subsequent comments and discussions related to this TSP Update generated consensus that roundabouts should be considered at all signalized intersections. Beyond ODOT's safety concerns, the City of Hermiston desires slow traffic speed on US 395 within City limits. One roundabout at any intersection will not achieve this outcome. For a roundabout to operate correctly, it requires a serpentine alignment of the approach lanes to slow traffic down to a modest speed at or below 20 MPH. With several roundabouts in a row, vehicle speeds should remain moderate. The final impact on travel speeds on US 395 in Hermiston is beyond the scope of this study and is reliant on several design parameters. Roundabouts have their challenges which include:

- Cost – Roundabouts cost considerably higher than traffic signals, especially double lane roundabouts. ODOT's insistence of traffic calming with signals, which is envisioned as the same serpentine alignment of approach lanes similar to a roundabout, has the cost of a traffic signal much more equivalent to a roundabout. If a signal proves to be the best alternative to the Ranch and Home/Hermiston Food driveway, advance warning systems have proven effective to address the DOT safety concerns. *See appendix B for more details.*
- Right-of-way – Considerably more right of way is needed at the intersection for roundabouts compared to a traffic signal. On US 395 a traffic signal will need right turn, deceleration lanes, which is not needed with a roundabout reducing the difference in the need for right-of-way between a signal and a roundabout.

- **Public Resistance** –It is not uncommon for roundabout projects to receive negative comments from the public including the trucking industry compared to a traffic signal. Public perception typically grows positive after implementation and after the public gains familiarity.
- **Safety Concerns of Over-capacity Double Lane Roundabouts** – Double lane roundabouts, built to meet future demands, experience higher collision rates than the typical single lane roundabouts. The collision severity (number of fatal collisions) is typically lower than a traffic signal. Communities often size the central island and the inscribed circle of the intersection for a future double lane, but stripe it as a single lane until the volume reaches the need for a double lane roundabout.

With these important concerns noted, the advantages of a roundabout over a traffic signal are numerous. Here are a few important advantages:

- **Safety** – When designed correctly, roundabouts have a substantial safety benefit over traffic signals due to slower speeds, reduced conflict points and pedestrian safety.
- **Access Management Mitigation** – Roundabouts along a corridor facilitate U-turn access needed with center medians, as well as restrict left turns into driveways and minor cross streets. Center medians have tremendous safety benefits but often generate objections by the business community due to loss easy access to their property. Roundabout significantly improve access compared to traffic signals.
- **Queueing on the Cross Street** – Queueing is significantly less for roundabouts compared to traffic signals and on the side street, like the Ranch and Home/Hermiston Foods approach, the length of lanes and number of lanes can be substantially reduced. This allows for better and easier access to abutting lots.
- **On-going Cost Savings:** Traffic signals are often cited as costing \$5,000 per year in maintenance. Roundabouts have little maintenance costs depending on the landscape architectural treatment in the central island. Roundabouts typically are associated with reduced societal costs associated with reduction in serious collisions, and reduced wear and tear on vehicles.
- **Beautification Opportunity** – Roundabouts are renown for street beautification. For US 395, they can provide a great entrance treatment into Hermiston. Sophisticated central island streetscaping also can drive up the cost of roundabouts but from an economic development perspective, the additional cost is typically acceptable.

If the City of Hermiston can fund roundabouts, they should be considered as the preferred alternative, but the City should not dismiss traffic signals either. Until preliminary designs are prepared that include right-of-way impacts for each intersection, there may be a fatal flaw at one or some intersections. With the under-developed adjacent property, the US 395 intersections in Hermiston appear to have room to install roundabouts.

What is the impact on the off-set intersection at the US 395/Hermiston Foods entrance/E-Z Storage entrance?

The traffic to and from the E-Z Storage has been counted as low as 1 or 2 vehicles in the peak hours. The Hermiston Foods Driveway is offset 85 feet from the access of E-Z Storage. With the signal, the median should be extended on US 395 south to restrict left turn movements from US 395 to the E-Z Storage driveway. Access from Hermiston can be maintained via the proposed signal by making a U-turn in the short term. In the long term, TSP project 51 will eliminate the need for a U-turn.

Does proposed or current TSP projects impact industrial development?

The zoning in the vicinity of the project is a combination of commercial, light and heavy industrial (C-2, M-1 and M-2). With the opportunity to receive grant funding for transportation projects related to industrial land use, the scope of the study included review of the impact on truck access by the proposed updated and current TSP.

Hermiston Foods is the current industrial land use, just north of the Ranch and Home development. Presently Hermiston Foods trucks either ingress or egress late at night or rely on the Kelli Blvd. intersection for access. The proposed signal by the Ranch and Home development will improve truck access during hours with higher traffic volumes and reduce out of direction travel of only using the Kellie Blvd intersection. The traffic signal will provide better gaps in traffic than the current two-way STOP sign control intersections at both the driveway and the Kelli Blvd. The current TSP would further limit access to Hermiston Food by directing all truck traffic to the Airport Rd/Campbell Dr/US 395 and Wall Mart Distribution Center/US 395 future signals. Hermiston Foods future access in the current TSP is highly dependent on the backing road that will take some time to implement and appears to be conflicting with the existing Hermiston Food facilities. Thus, the new signal between Ranch and Home and Hermiston Foods may eliminate the need for the backing road on the west side of US 395 (Project 35).

The proposed traffic signal opens access to large tracks of property zoned Commercial/Industrial (C-2/M-1) on the east and west side of US 395. Thus, the current TSP will delay and prevent industrial/commercial development with the restriction of access as proposed in Project 36. Projects 40 and 52, the backing roadways east and west of US 395, will delay development waiting for their completion. There is approximately 42 acres of property zoned Industrial (M-1) in close proximity to the proposed signal that can gain access to US 395 with the signal. *See Figure 4 for the industrial zoning in the vicinity of the proposed signal.*

Thus, the proposed signal at the Ranch and Home/Hermiston Foods access roadway will not compromise access to the adjacent commercial and industrial property but will significantly improve access compared to the existing TSP projects. This signal should be a good candidate for grant funding targeting industrial land use development.

Conclusions:

The following conclusions are based on the review of background material and evaluation of the possible impacts of the proposed changes to the TSP.

- This update is a refinement to the current TSP based on the *US 395 Corridor Refinement Plan* but kept changes to a minimum to honor past process. Thus, the proposed signal at the Ranch and Home/Hermiston Foods /US 395 intersection should be added to the plan and not replace the proposed signal at the Walmart Distribution Center as recommended in the Ranch and Home TIA report. The backage road proposed through the Ranch and Home site should be curtailed but the remainder should remain in the TSP.
- The proposed signal at the Ranch and Home/Hermiston Foods/US 395 intersection will have a positive impact on the TSP signal system from the Walmart Distribution Center to Port Ave US 395 by creating more consistent spacing.
- The proposed signal at the Ranch and Home/Hermiston Foods/US 395 intersection will have a positive impact on TSP Project 37, the signal at Airport Road/Campbell Rd/US 395, by diverting traffic to away and reducing impacts.

- The proposed Ranch and Home development and recommended transportation projects have the most impact on TSP Project 33, the traffic signal at the Walmart Distribution Center/US 395. It may not meet warrants in the future without the connection to the backage road. The TSP backage road, Project 35, will be shorter but not significantly impacted.
- The proposed signal at the Ranch and Home/Hermiston Foods/US 395 intersection and the reduction in the backage road will have a positive impact on truck access on US 395. The trucks destined to Hermiston Foods will have a signal for their late-night and early-morning access to US 395. If the Ranch and Home development distributed its trips to Walmart Distribution Center Driveway as proposed in TSP Project 35, the queue would interfere with truck traffic at their driveway.
- Traffic signals on rural highways after a long distance of uninterrupted traffic flow are a safety concern. A roundabout was considered and has significant benefits, such as reduced queuing at the Ranch and Home approach.
- It is the consensus of the City of Hermiston and ODOT that roundabouts should be considered the preferred alternative at all intersections identified in the current TSP for a traffic signal. If funding allows, roundabouts have many advantages over traffic signals and this update supports this conclusion.
- Until further design work is complete, the intersection control should still consider a traffic signal as an alternative because there may exist fatal flaws with installing roundabouts. To address safety concerns of high speed approach to a traffic signal a PREPARE TO STOP WHEN FLASHING sign assembly is proposed to alert drivers that they are approaching a signal. This can be further enhanced with additional advanced vehicle detection to address dilemma zones for high speed traffic, a speed limit reduction and the use of radar signs.
- The proposed signal at the Ranch and Home/Hermiston Foods/US 395 intersection will require extending the median to eliminate the left turn from US 395 to EZ Storage. But access will be maintained by a U-turn that will meet the very low traffic volume in and out of the facility during the peak traffic hours.
- The proposed signal at the Ranch and Home/Hermiston Foods/US 395 intersection will have a positive impact on industrial development in the vicinity. With approximately 42 acres of land zoned Commercial/Industrial (C-2/M-1), tributary to the proposed signal, improving access to US 395 will enhance development by lowering infrastructure improvement costs.

Recommendations

Revise City of Hermiston's Transportation System Plan listed as follows and illustrated in Figure 1:

1. Modify Project 35--Shorten the proposed minor collector backage road, parallel to US 395, between Kelli Boulevard to the proposed minor arterial listed as Project 39 (Hermiston Foods driveway).
2. All projects with the US 395 corridor that call for a signal shall include a roundabout as the preferred alternative. This includes specific projects listed in the 2003 TSP Update as Project 33 at the Walmart Entrance, Project 38 at Campbell Drive/Airport Road intersection, and Project 55 at the Feedville Road intersection.
3. Modify project 36 to include a full access traffic signal or roundabout at the proposed minor arterial intersection with US 395, near the Hermiston Foods driveway. A roundabout shall be considered as the preferred alternative to the proposed traffic signal. If a traffic signal is the

most feasible for the Ranch and Home Development and the Hermiston Foods driveway, it should include an advance warning sign assembly “PREPARE TO STOP WHEN FLASHING” and advance vehicle detection system.

Appendix A – 2003 City of Hermiston TSP Amendments

Appendix B – Safety improvements for high speed approach for of traffic signal. 2006 WSDOT White Paper – Prepare to Stop When Flashing (PTSWF) System Pilot Project Interim Guidelines.

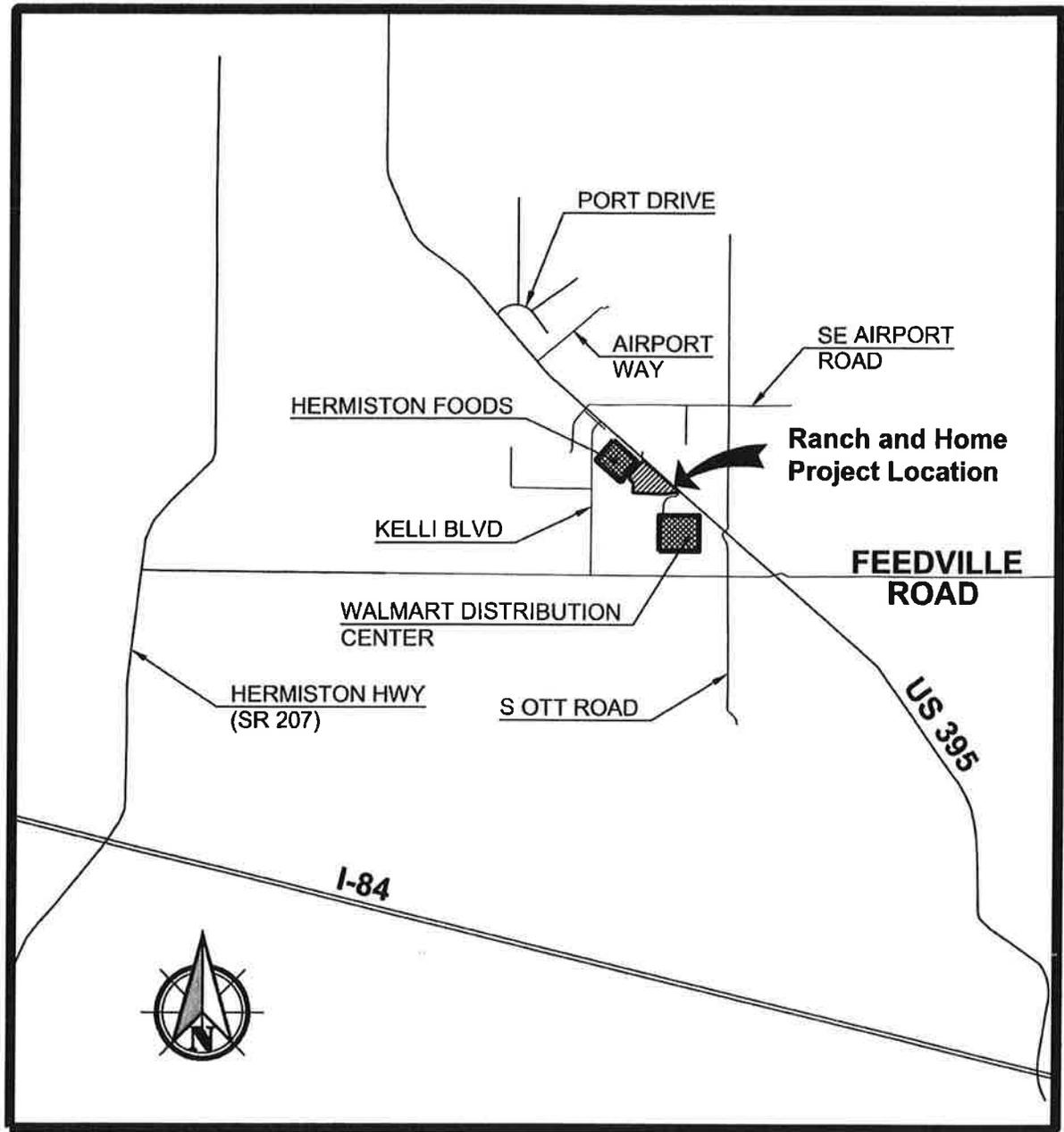


FIGURE 1



6115 Burden Blvd, Suite E
 Pasco, WA 99301-8930
 509/547-5119
 360/695-3488
 509/547-5129 fax
 Internet: www.hdjg.com

Vicinity Map

Hermiston TSP Update - Ranch & Home

- ① REVISE PROJECT TO SHORTEN 35.
- ② REVISE PROJECT 33, 38, & 55 TO INCLUDE A ROUNDABOUT AS THE PREFERRED ALTERNATIVE TO A SIGNAL.
- ③ REVISE PROJECT 36 TO INCLUDE ROUNDABOUT AS PREFERRED ALTERNATIVE OR TRAFFIC SIGNAL WITH "PREPARE TO STOP WHEN FLASHING" SIGN.

LEGEND

- URBAN MAJOR ARTERIAL
- URBAN MINOR ARTERIAL
- URBAN MAJOR COLLECTOR
- URBAN MINOR COLLECTOR
- RURAL ARTERIAL
- RURAL COLLECTOR
- TRAFFIC SIGNAL
- OFF-STREET (MULTI-USE) PATH
- UGB
- CITY LIMITS
- SOUTH HERMISTON STUDY AREA
- US 395 CORRIDOR REFINEMENT STUDY AREA

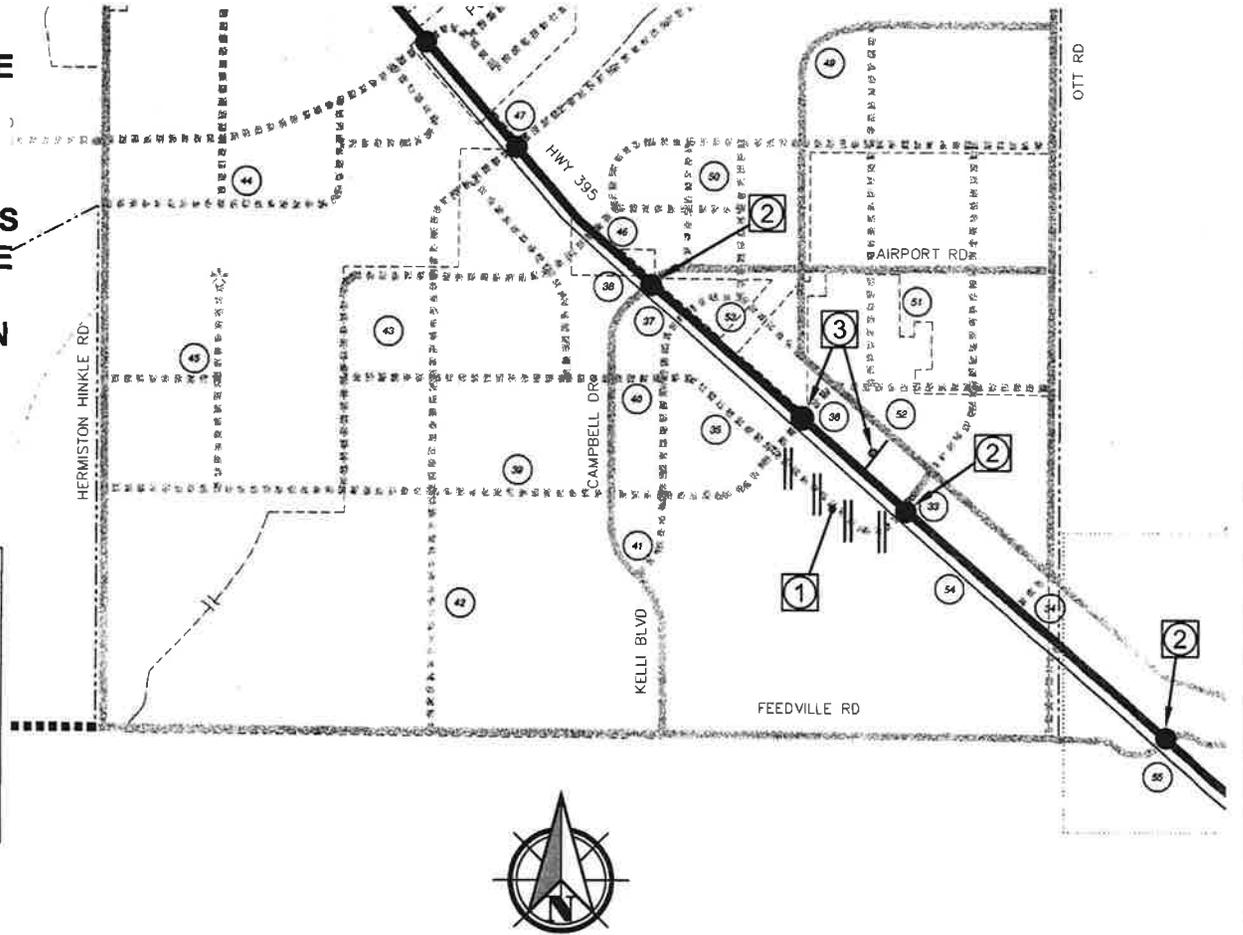
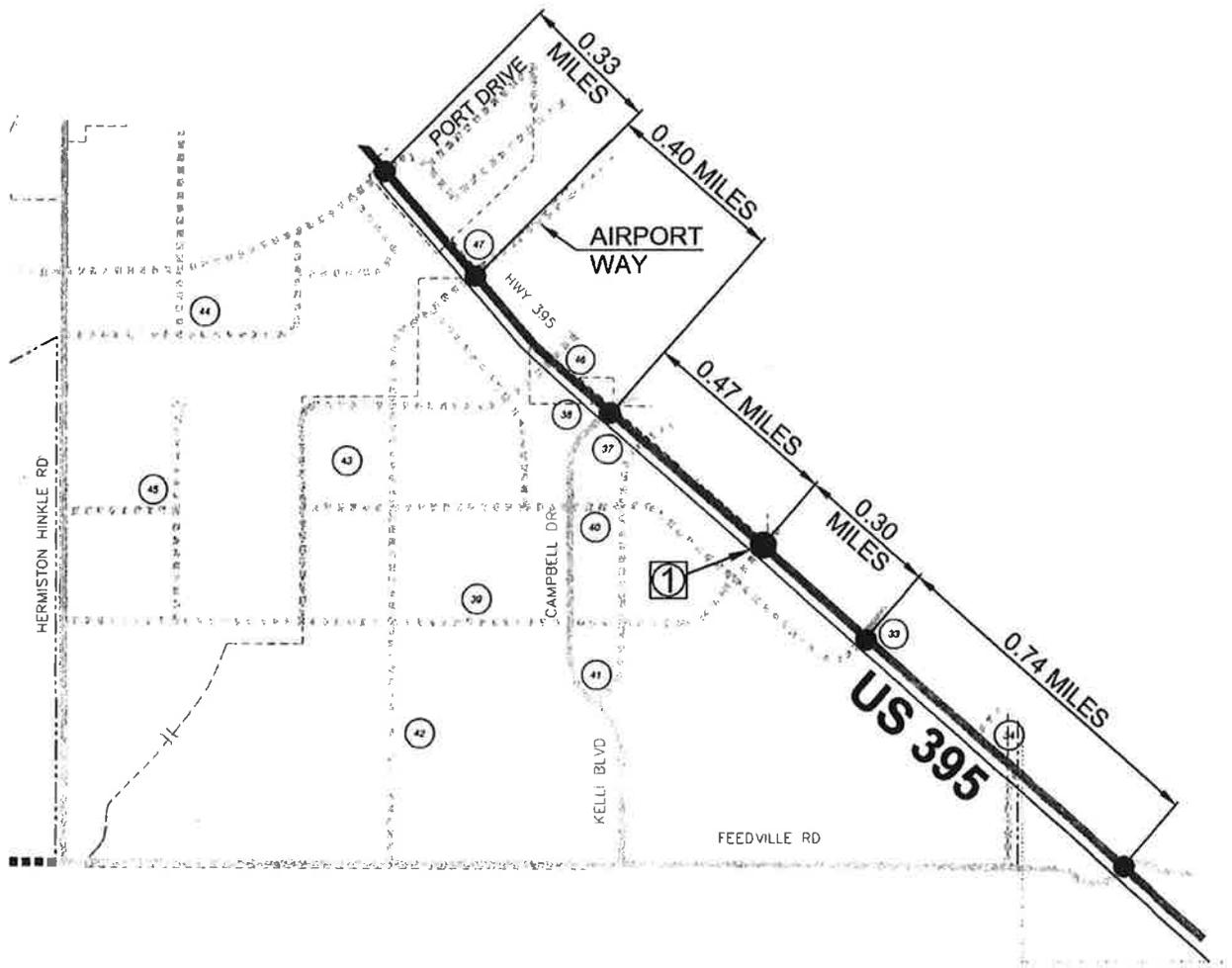


FIGURE 2

6115 Burden Blvd, Suite E
 Pasco, WA 99301-8930
 509/547-5119
 360/695-3488
 509/547-5129 fax
 Internet: www.hdjog.com

TSP Project Recommendations

Hermiston TSP Update - Ranch & Home



HERMISTON 2003 AMENDED TRANSPORTATION SYSTEM PLAN

① New traffic signal at Hermiston Foods entrance.



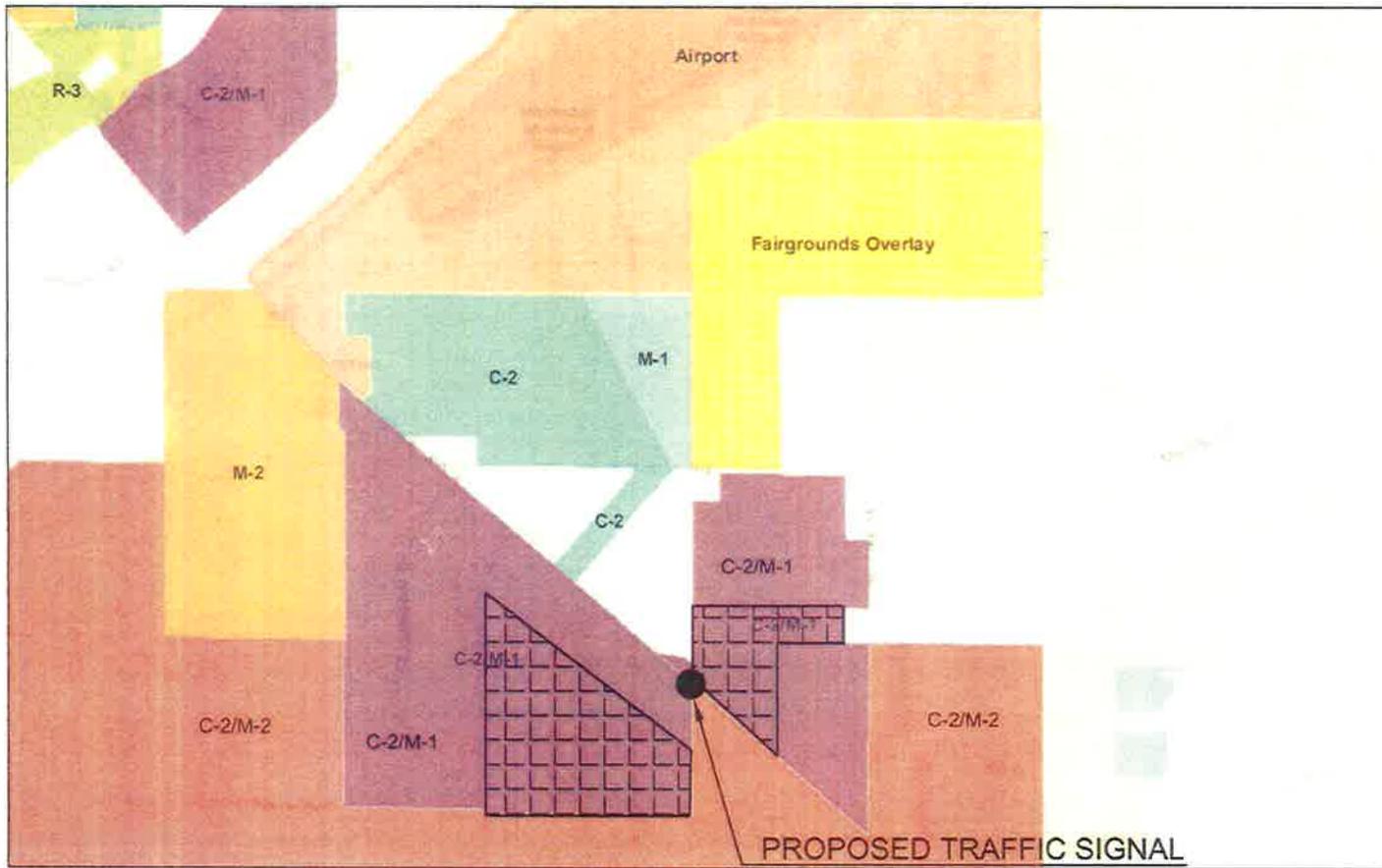
FIGURE 3



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 360/695-3488
 509/547-5129 fax
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Signal Spacing
Hermiston TSP Update - Ranch & Home

Hermiston Zoning



INDUSTRIAL LAND CLOSE TO PROPOSED SIGNAL

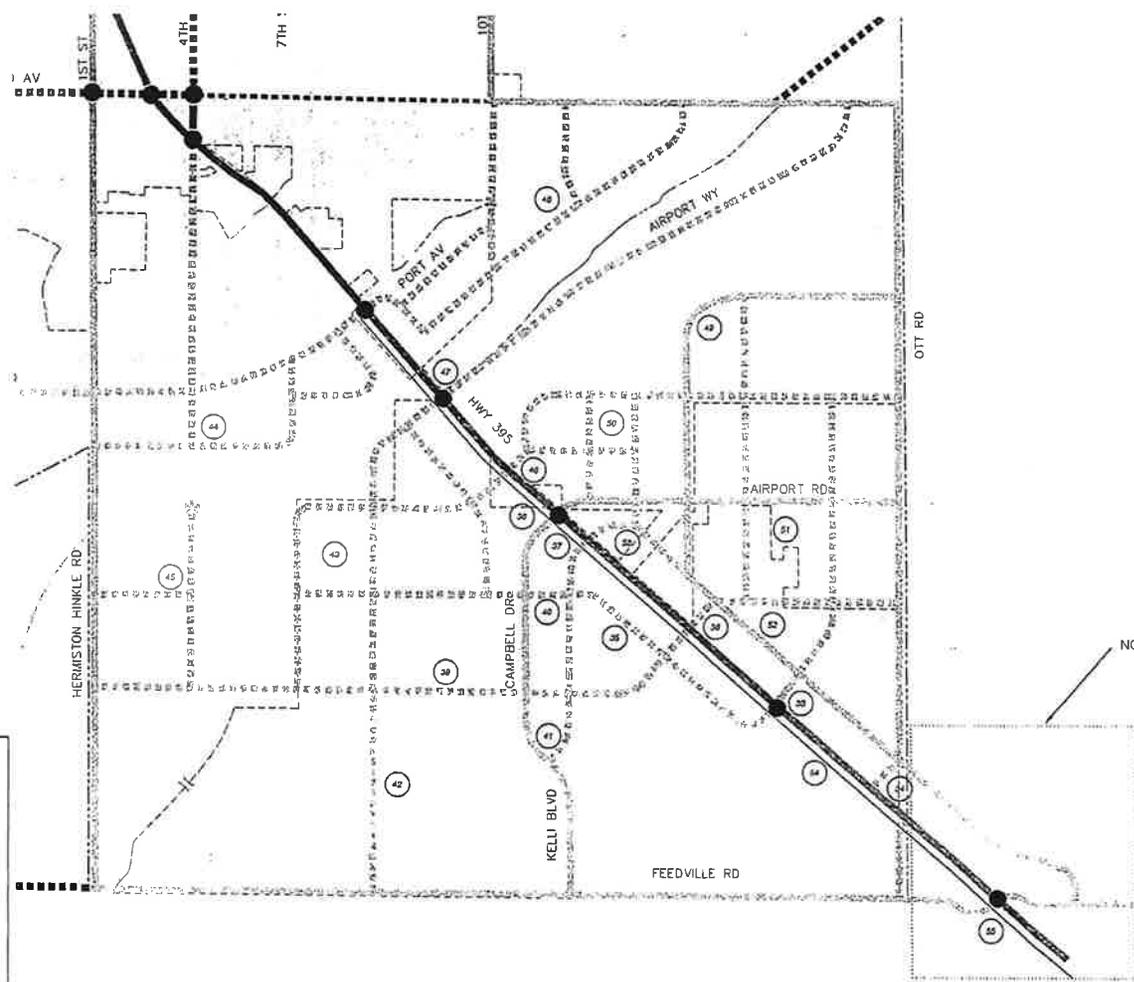


FIGURE 4


 6115 Burden Blvd, Suite E
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 360/695-3486
 509/547-5129 fax
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Industrial Land
Hermiston TSP Update - Ranch & Home

Appendix A



NOTE: UPDATE SPECIFIC TO THE US 395 NORTH CORRIDOR PLAN AND UMATILLA COUNTY TSP

LEGEND

- URBAN MAJOR ARTERIAL
- URBAN MINOR ARTERIAL
- URBAN MAJOR COLLECTOR
- URBAN MINOR COLLECTOR
- RURAL ARTERIAL
- RURAL COLLECTOR
- TRAFFIC SIGNAL
- OFF-STREET (MULTI-USE) PATH
- UGB
- CITY LIMITS
- SOUTH HERMISTON STUDY AREA
- US 395 CORRIDOR REFINEMENT STUDY AREA

CORRESPONDS TO IMPROVEMENTS LISTED IN TABLE 1

**US 395 CORRIDOR
STREET SYSTEM IMPROVEMENTS
JANUARY 2003 UPDATE**

HERMISTON TSP AMENDMENT HERMISTON, OREGON JANUARY 2003	FIGURE 6	
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TSP_01065947-01

**Table 1
Recommended 20-Year Street Improvement Projects
US 395 Corridor Refinement Study Area**

Fig 6 id #	Project Description	Priority	Estimated Cost (Yr. 2002 \$)	Potential Funding Source(s)
33	Provide a signalized access portal to US 395 (when warranted by a traffic engineering study) at the current Wal-Mart Distribution Center access to be served by a major collector roadway east of US 395 and a minor collector west of US 395.	Near-term	\$225,000	AMG, PDF, TEP, SDC, GF
34	Realign the north and south approaches to Ott Road such that they intersect US 395 at a complete 90-degree angle. The future intersections should be limited to right-in/right-out driveways to help preserve access management along the highway.	Mid-term, but not before improvements #33 and #52	\$550,000	AMG, PDF, TEP, SDC, GF
35	Develop a minor collector backage road that runs parallel to US 395 between Kelli Boulevard and the Wal-Mart Distribution Center truck access road.	Near-term, but not before improvements #33.	\$1,750,000	PDF, LID, GF
36	Re-construct a limited access right-in/right-out driveway to US 395 near the current Hermiston Foods driveway to be served by minor collector roadways on both sides of the highway.	Mid-term, following improvements #33, #35, & #52	\$25,000	AMG, TEP, SDC, PDF, STIP
37	Re-construct a limited access intersection (left-in/right-in/right-out) at the US 395/Kelli Boulevard intersection.	Mid-term, following the completion of improvements #33, #35, #38 & #40	\$25,000	AMG, TEP, SDC, PDF, STIP
38	Signalize the US 395/Campbell Drive/Airport Road Intersection when warranted by a traffic engineering study.	Mid-term	\$225,000	STIP, PDF, LID, GF
39	Develop a minor collector roadway to facilitate east/west travel between Hermiston-Hinkle Road and US 395.	Long-term	\$5,375,000	PDF, LID, GF
40	Upon redevelopment of adjacent land parcels, develop a minor collector connection between Campbell Drive and Kelli Boulevard.	Mid-term	\$275,000	PDF, GF, LID
41	Extend Campbell Drive at major collector standards south and east to Kelli Boulevard (1 st Phase). Realign a portion of Kelli Boulevard so that it intersects the extension of Campbell Drive (2 nd Phase).	Long-term	\$1,075,000	GF, LID, TEP
42	Develop a minor collector roadway to facilitate north/south travel between US 395 and Feedville Road.	Long-term	\$3,700,000	PDF, LID, GF
43	Develop a series of minor collector roadways to ensure circulation and connectivity upon redevelopment of the large agriculture plots within the western study area.	Long-term	\$5,825,000	PDF, LID, GF

Fig # Id #	Project Description	Priority	Estimated Cost (Yr. 2002 \$)	Potential Funding Source(s)
44	Extend SE 4 th Street along the western boundary of the Hermiston Cemetery to a new east/west minor collector facility that would run parallel to the Gettman Road extension.	Mid-term	\$2,075,000	PDF, LID, GF
45	Upon the redevelopment of the Hermiston Agriculture Experiment Station, provide a new minor collector roadway along the SE 4 th Street alignment. Upgrade and extend Experiment Station Road to this 4 th Street alignment.	Long-term	\$1,575,000	PDF, LID
46	Develop a full access intersection at US 395 to be served by a future extension of Able Drive. This intersection should be limited to a right-in/right-out/left-in access when warranted by a traffic engineering study.	Long-term, following the completion of improvements #43 & #47	\$225,000	STIP, AMG, PDF
47	Develop a signalized access intersection at the US 395/Airport Way intersection when warranted by a traffic engineering study.	Long-term, following completion of elements of Improvement #43	\$225,000	GF, SDC, TEP, PDF, STIP
48	Complete a minor collector roadway system upon redevelopment of the vacant land north of the airport, irrigation canal, and rail line.	Mid-term	\$3,150,000	PDF, SDC, LID, TEP
49	Develop a major collector roadway to facilitate north/south travel within the northeast quadrant of the US 395 Refinement Plan study area.	Mid-term	\$3,300,000	PDF, SDC, LID, TEP
50	Develop a series of minor collector roadways to facilitate circulation south of the Hermiston Airport.	Mid-term	\$3,375,000	PDF, SDC, LID, TEP
51	Develop a series of minor collector roadways to facilitate circulation within the northeast quadrant of the US 395 Refinement Plan study area.	Long-term	\$7,125,000	PDF, SDC, LID, TEP
52	Develop a major collector backage road between Kelli Boulevard and Ott Road.	Near-term	\$2,875,000	PDF, SDC, LID, TEP
53	Extend Kelli Boulevard east of US 395 to connect into a minor collector roadway network.	Near-term	\$1,100,000	PDF, SDC, LID
54	Develop a multi-use path along the west side of US 395. This path will require a bridge crossing over the feed canal and rail line.	Mid-term	\$450,000	GF, STIP, TEP
55	Signalize the US 395/Feedville Road intersection when warranted by a traffic engineering study. (Improvement specific to the US 395 North Corridor Plan)	Long-term	\$225,000	STIP

Note: Potential Funding Sources include the Following:

STIP - State Transportation Improvement Program (ODOT)
GF - City of Hermiston General Fund
SDC - City of Hermiston Transportation System Development Charge
TEP - Transportation Enhancement Program
PDF - Private Development Funds

AMG - Access Management Grant
LID - Local Improvement District
County - Umatilla County
LSN - Local Street Network

Implementation Requirements

The order of implementing the US 395 (Port Drive to Feedville Road) Corridor Refinement Plan projects were developed jointly by the City of Hermiston and ODOT to ensure the integrity of the US 395 corridor as well as local access and circulation. This implementation strategy is outlined in the following bullet points.

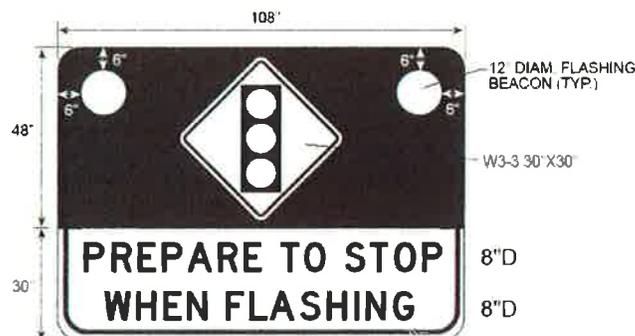
- Access improvements to US 395 will need to occur on an incremental basis depending upon the rate and location of new development.
 - The signalization of the US 395/Campbell Drive/Airport Road intersection (*Improvement #38*) in the near to mid-term will begin to shape future circulation patterns within the US 395 study area.
 - The signalization of the US 395/Wal-Mart Distribution Center driveway (*Improvement #33*) should occur when traffic signal warrants merit installation. The need for signalization will likely be facilitated by roadway *Improvements #35 and #52*.
 - *Improvement #36* will occur upon redevelopment of adjacent land parcels and the completion of *Improvements #35 and #52*.
 - The signalization of the US 395/Airport Way intersection (*Improvement #47*) will occur when upon the completion of future roadways associated with *Improvement #43* and when traffic signal warrants merit installation.
 - The future extension of Able Drive (*Improvement #46*) and its future intersection with US 395 should be limited to a right-in/right-out/left-in access upon the completion of *Improvements #43 and #47*.
 - The limited access modifications to the US 395/Kelli Boulevard (*Improvement #37*) should occur after completion of *Improvements #33, #35, #38, and #40*.
 - The limited access modifications to the US 395/Ott Road (*Improvement #34*) should occur after the completion of *Improvement #33 and #52*.
 - The signalization of US 395/Feedville Road (*Improvement #55*) should occur when traffic signal warrants merit installation. This is likely to be a long-term improvement that will be required upon the redevelopment of the large agricultural plots of the western US 395 study area. This improvement project is specific to the US 395 North Corridor Plan.
- The majority of the circulation roadways and necessary right-of-way can begin to be acquired and constructed upon the redevelopment of individual land parcels. Specific projects that should occur on a phased basis include the following:
 - To facilitate future circulation and access patterns, right-of-way and roadways associated with *Improvement #53* should begin to be acquired and constructed in the near term.
 - Future circulation roadways such as *Improvements #35 and #52* should occur upon the redevelopment of adjacent land parcels. These roadways will serve as

Appendix B

ODOT recommended that “traffic calming” be considered as a traffic safety enhancement to a traffic signal. The intent is to slow traffic approaching the proposed traffic signal to minimize the risk of collisions with high speed, rural, highway traffic. The median can be modified to reduce the design speed of approaching traffic by creating horizontal deflection but takes substantial median modification. Similar to the high speed approach to a roundabout, widening to added horizontal curves for a serpentine alignment to the roadway for 500 feet prior to the intersection would likely be necessary to bring traffic down to urban speeds prior to the signal. Unless US 395 is reduced to one lane, some drivers may resort to risky behavior of using unsafe lane changes to maintain speed on the approach. There are a lot of other traffic calming techniques, some that are not appropriate at this location, such as speed humps, and others with very limited success in changing behavior such as speed bars or rumble strips.

As a safety enhancement for the proposed traffic signal, the following alternative is recommended:

- Install traffic activated warning signs on the northbound approach to the signal 400-500 feet in advance. WSDOT used advance warning signs in very similar circumstances on southbound on SR 503 as traffic approaches the first signal in the City Battle Ground, WA at NE 244th Ave-NE 25 St. See the follow WSDOT white paper on the use of PREPARE TO STOP WHEN FLASHING sign assembly.



The key to success is to provide a message that commands attention, provides adequate reaction time, provides a clear and simple message, and fulfills a need. The use of traffic or signal activated flashing lights are effective at command attention of approaching traffic. Another benefit of this method is that it can be further enhanced with additional advanced traffic control if necessary. For example, use of radar signs (speed limit signs with radar feedback messages) can provide additional traffic calming. The proposed signal should also use a robust vehicle detection system that addresses dilemma zone consideration of approaching high speed traffic.

Prepare to Stop When Flashing (PTSWF) Systems Pilot Project Interim Guidelines

I. Introduction

A. Purpose

To provide guidance to WSDOT personnel in the design, operation, and study of Prepare To Stop When Flashing (PTSWF) systems.

B. References

Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), FHWA, June 2001 Millennium Edition, including the Washington State Modifications to the MUTCD, M 24-01, 2003

Design Manual, M 22-01

A Policy On Geometric Design of Highways and Streets 2004, 5th Edition AASHTO

ITE Traffic Engineering Handbook, 4th Edition

C. Background

WSDOT is continuously looking for ways to operate our highway facilities in the most efficient and safe way possible. With this goal in mind, WSDOT collected collision data and performed statistical analysis on this information at existing PTSWF operated systems on state highways. Also, research was conducted by reviewing many public records on the subject. Furthermore, State Traffic Departments throughout the country were contacted to poll their experiences with these systems. After completing this analysis, WSDOT concluded that there are potential safety benefits in operating this type of installation at select locations.

D. Discussion

It is the goal of WSDOT to allow PTSWF systems to be installed throughout the state by following the attached PTSWF Pilot Project Interim Guidelines. When a region decides to install a PTSWF system they shall contact the State Traffic Engineer as a means of documenting when the study period begins. The Region Traffic office shall submit a copy of all final drawings and calculations for the PTSWF system to the State Traffic Engineer prior to project implementation. The drawing includes flashing beacon locations, sign locations and mounting details consistent with the pilot study guidelines.

II. Instructions

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION PREPARE TO STOP WHEN FLASHING (PTSWF) SYSTEM PILOT PROJECT INTERIM GUIDELINES

PURPOSE

The purpose of this document is to provide WSDOT Traffic personnel with uniform guidelines to design, operate and study prepare to stop when flashing (PTSWF) systems. These technical guidelines shall be effective on the date of this White Paper.

IMPLEMENTATION

These guidelines are to be implemented for new PTSWF System installations. For existing systems, flasher timing adjustments should be implemented within six months of the effective date in order to provide consistency of operations with new systems.

INTRODUCTION

The PTSWF System is a sign/flasher combination that at certain high-speed locations may provide additional information to the motorist describing the operation of the traffic signal. It has been found that the installation of a PTSWF System may assist the driver in making safer and more efficient driving decisions. This additional information is to get the driver's attention, and inform the driver that he or she must prepare to stop for a red light signal indication. The PTSWF System described above is what WSDOT currently uses in select situations to convey this information.

The PTSWF sign may be placed on main line approaches to applicable high-speed signalized intersections. The PTSWF sign is connected to the traffic signal in such a way that prior to the main line green phase changing to yellow, the flasher is turned on to warn the approaching drivers of the impending change. Specific timing intervals will be determined on a case-by-case basis for each signalized intersection.

Some objectives of an optimally designed combination of traffic signal and PTSWF system are:

- to inform the driver that a signal indication will change to yellow or red in advance of a required decision to stop
- to minimize the number of drivers that are required to make that decision in the dilemma zone; and
- to reduce red-light running, particularly by heavy commercial vehicles.

GENERAL GUIDELINES

PTSWF system implementation is appropriate only at high-speed locations where the posted speed is 45 mph or greater. In addition, it should be considered that the operation of a PTSWF system has the potential to cause increased delay to side street traffic.

Guidelines for a PTSWF system are as follows:

Any one of these categories or other considerations may justify the installation of PTSWF system.

**Table 1
PTSWF Guidelines**

CATEGORY	CRITERIA	COMMENT
1. Isolated or unexpected signalized intersection.	Where there is a long distance from the last intersection at which the main line is controlled, or the intersection is unexpected.	This guideline may be applicable where the distance from the last intersection is greater than 10 miles, or a freeway terminus, or at other locations where the intersection is unexpected
2. Limited sight distance	<p>Where the distance to the stop bar, D, with two signal heads visible is insufficient:</p> $D \leq 1.47Vt + \frac{V^2}{0.93(a + 32.2(G/100))}$ <p>Where: D = distance to stop bar in (ft) V = posted speed (mph) t = reaction time, 2.5 seconds a = deceleration rate 10 ft/s² (all traffic)* 8 ft/s² (Trucks)** G = Grade %</p>	<p>* <i>Traffic Engineering Handbook</i>, 5th Edition, page 481</p> <p>** A deceleration rate of 8 ft/s² may be used when the Criteria from the Category <i>Grade and Truck Volume</i> is met. See Category 3</p>
3. Grade/Truck Volume	Where the roadway has a grade of 3% or greater and truck volume exceeds 15%.	
4. Accidents	If an approach has a collision history that is not correctible with other countermeasures.	If no sight distance or dilemma zone problems exist, PTSWF may not be an appropriate countermeasure to accident problems.
5. Engineering Judgment	Approval of Region Traffic Engineer	Approval shall be based on an Engineering Study.

APPLICATION / PROCEDURE

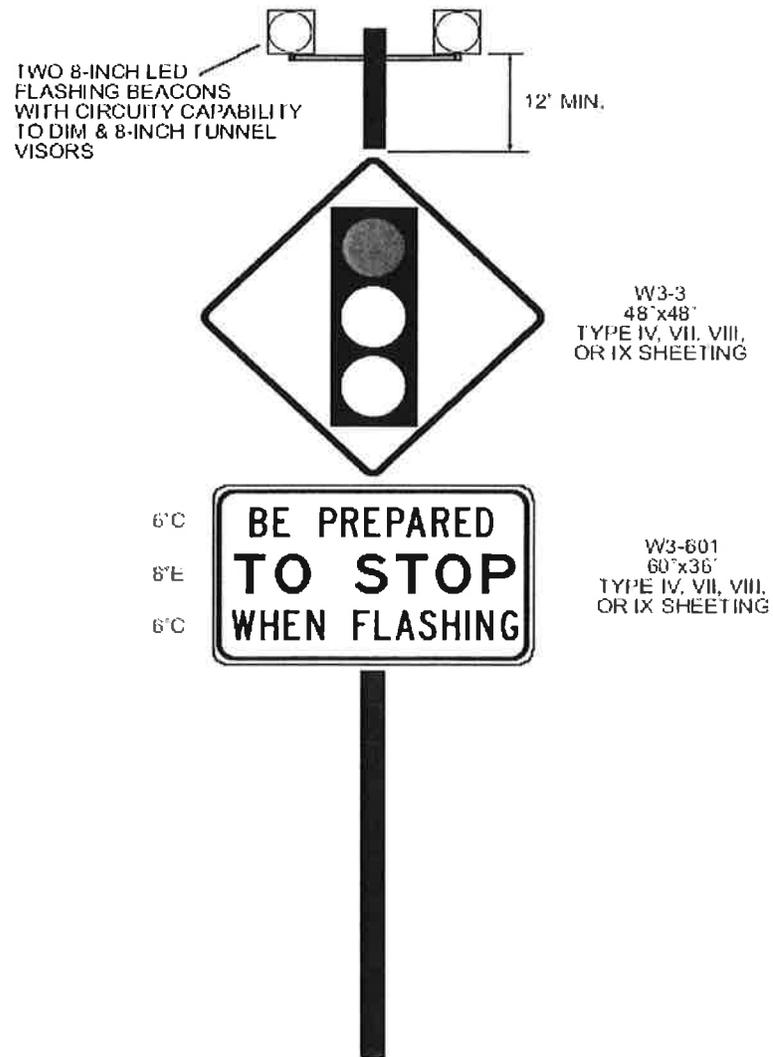
Due to the complex nature of traffic flow characteristics and the various intersection geometric layouts, the following guidelines shall be applied using an engineering study coupled with engineering judgment. Engineering judgment should be based in part on data such as complaints, violations, conformity of practice, and traffic conflicts. Documentation shall be prepared that discusses why decisions were made and how the following countermeasures have been considered prior to installation of a PTSWF system. Although not all inclusive, examples of countermeasures include:

- improving dilemma zone detection
- adjusting existing signal timing parameters such as; yellow clearance time, red interval, passage time, max green time(s) etc.
- installing and enhancing advanced warning signing
- sight distance improvements
- modification of the signal system such as adding additional signal heads
- adjusting speed limits.

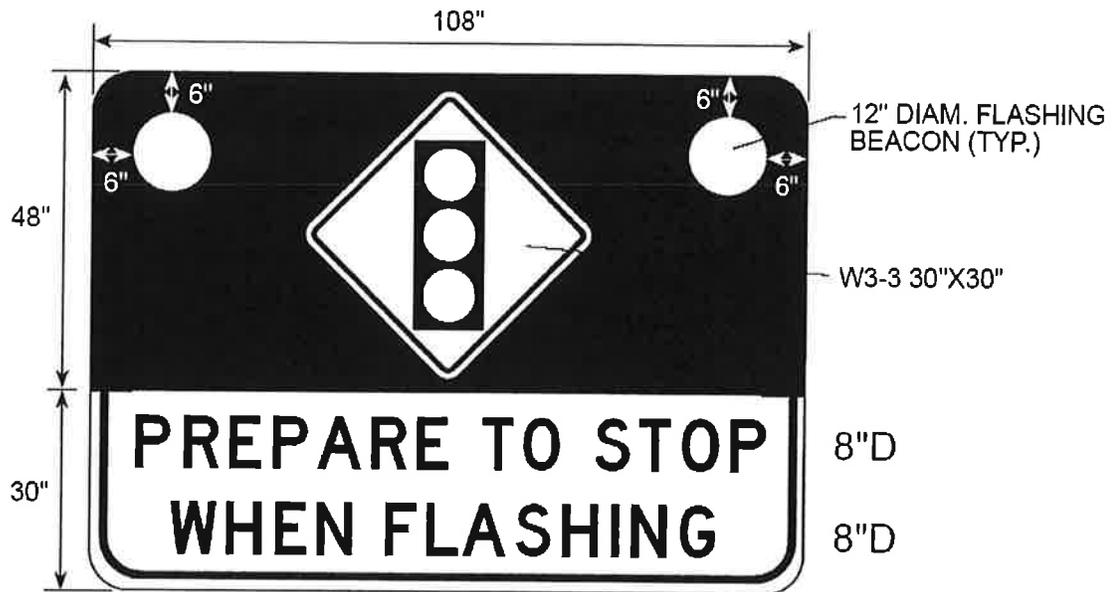
The State Traffic Engineer shall review the proposed installation documentation, with final written approval granted by the Region Traffic Engineer. For study purposes, notice of the installation date shall be forwarded to the State Traffic Engineer.

DESIGN / INSTALLATION

1. **Details** - Figures 1 and 2 show conceptual drawings of the PTSWF sign/flashing beacon combination for median, shoulder and overhead mounting installation locations. Contact the Headquarters Traffic Design office for special design details. Prior to the termination of the green phase (Advanced Green) and during the yellow and red clearance intervals, the flasher shall flash yellow either alternately or simultaneously (see MUTCD section 4K.03). In addition, consideration should be given to extending the flash while the queue of vehicles begins to move on the following initial green indication. A general rule of thumb for this movement is approximately 4 seconds. The flasher will also flash if the signal goes into flashing operation. In addition, power shall be supplied to the PTSWF System from the signal control cabinet. A backup uninterrupted power supply (UPS) should be considered at each location. For any questions concerning the design of the PTSWF System contact the Headquarters Traffic Design office.
2. **Placement** - Considering the roadway environment, the PTSWF sign should generally be set back from the intersection in accordance with Table 1. At locations on multilane divided roadways, the PTSWF sign shall be placed on both sides of the approach or mounted overhead.
3. **Advanced Green** The Advanced Green is the amount of time; prior to the signal turning yellow that, the flashing beacons on the PTSWF sign flash. The Advanced Green time(s) is shown in Table 1.
4. **Detector Placement** - Consider WSDOT *Design Manual* guidelines when installing signal detection.



**Installation at Median or Shoulder Barrier Locations
Figure 1**



COLORS

TOP
STANDARD COLORS FOR W3-3
BACKGROUND - BLACK (NON REFL)

BOTTOM
LEGEND - BLACK (NON REFL)
BACKGROUND - YELLOW (REFL)

**Overhead or Shoulder Mount Installation
Figure 2**

**Table 2
Advanced Warning Flasher Sign Placement**

Sign Placement Distance											
	GRADE	45 mph		50 mph		55 mph		60 mph		65 mph	
		D (ft)	Advance Green (sec)								
Downhill	-8%	392	7.0	472	7.4	559	7.8	653	8.2	754	8.6
	-7%	380	6.8	457	7.2	540	7.6	631	7.9	729	8.4
	-6%	369	6.6	443	7.0	524	7.3	611	7.7	705	8.1
	-5%	358	6.5	430	6.8	508	7.2	593	7.5	684	7.9
	-4%	349	6.3	418	6.6	494	7.0	576	7.3	664	7.7
	-3%	340	6.2	407	6.5	481	6.8	560	7.1	645	7.5
	-2%	332	6.1	397	6.4	468	6.7	545	7.0	628	7.3
	-1%	324	6.0	388	6.2	457	6.5	532	6.8	612	7.1
	0%	317	5.9	379	6.1	446	6.4	519	6.7	597	7.0
Uphill	1%	310	5.8	370	6.0	436	6.3	507	6.5	583	6.8
	2%	303	5.7	362	5.9	426	6.1	495	6.4	569	6.7
	3%	297	5.6	355	5.8	417	6.0	485	6.3	557	6.6
	4%	292	5.5	348	5.7	409	5.9	475	6.2	545	6.4
	5%	286	5.4	341	5.6	401	5.8	465	6.1	534	6.3
	6%	281	5.3	335	5.5	393	5.7	456	6.0	523	6.2
	7%	277	5.2	329	5.4	386	5.6	448	5.9	513	6.1
	8%	272	5.2	324	5.4	379	5.6	440	5.8	504	6.0

For situations other than those listed in Table 2, Sign Distance and the Advanced Green Time can be computed by the following equations:

Distance From Stop-bar to PTSWF Sign

$$D = 1.47Vt + \frac{V^2}{30 \left[\left(\frac{a}{32.2} \right) \pm \frac{G}{100} \right]}$$

Where :

- D* = Sign placement distance
- V* = Posted speed (mph)
- t* = Perception / reaction time (1.5 s)
- a* = Deceleration rate (10 ft / sec²)
- G* = Grade (%)

Advanced Green Time

$$AG = \frac{D + D_p}{V * 1.47}$$

Where:

- AG* = Advance Green Time (s)
- D* = Distance from stop bar to PTSWF sign (ft)
- D_p* = Minimum distance that flashers can be perceived (70 ft)
- V* = Posted speed (mph)



Oregon
Kate Brown, Governor

Oregon Department of Transportation
Highway Department
District 12 Office
1327 SE 3rd Street
Pendleton, OR 97801
Telephone (541) 276-1241
FAX (541) 276-5767

October 6, 2015

Mr. Clint Spencer
City Planner
180 NE 2nd Street
Hermiston, OR 97838

Dear Mr. Clint Spencer :

I am responding to the City of Hermiston with ODOT's analysis results and concerns in regards to the potential Ranch & Home Development on US 395 South of Hermiston.

According to the information we have, the preferred layout from the developer would include a future signalized intersection being developed where the current truck access is for the Hermiston Foods facility. The Cities 2003 corridor refinement plan was carried forward to the 2014 Transportation System Plan (TSP) update. Locating a signal at the Hermiston Foods access (#36) is inconsistent with the plan. A determination needs to be made that adding a signal at this location would not impact the proposed signalized intersections already identified in the plan. The results of this analysis would then be used to justify an amendment to the Cities TSP.

We also feel the City needs to consider that the plan identifies signalizing Airport Road and a back-age road connection somewhere between the east-west connector (#39) and Kelli Boulevard to the north and the Wal-Mart Truck entrance to the south for connectivity. Development of the Event Center on Airport Road may increase a future need for that intersection to be signalized as currently identified in your TSP.

The rural character of the area is of concern when signalizing either of these intersections. ODOT's thoughts on these similar environment signal installations, within the state have changed recently, due to creating traffic accident locations where the posted speed is 55 mph. We would submit that an evaluation of a round-about could be a viable alternative that would better serve the area. At a minimum, if the intersections are signalized we would like to see traffic calming measures.

If you have any questions about our position and concerns please let us know. We appreciate the economic development opportunities and want to make sure the development connects to the state highway system as efficient and safely as possible as the growth for Hermiston continues. Please correspond with Assistant District Manager Tim Ryncarson with any questions (541) 429-6700.

Sincerely,

Marilyn Holt
ODOT District 12 Manager



Oregon

Kate Brown, Governor

Oregon Department of Transportation
Highway Department
District 12 Office
1327 SE 3rd Street
Pendleton, OR 97801
Telephone (541) 276-1241
FAX (541) 276-5767

February 8, 2016

Clint Spencer, City Planner
City of Hermiston
180 NE 2nd Street
Hermiston, Oregon 97838

Subject: City of Hermiston 2016 Transportation System Plan Amendment
Comments for February 10 Hearing

The Oregon Department of Transportation (ODOT) has concerns with the proposed amendments to the City's Transportation System Plan (TSP) which could adversely affect the safety and operation of US 395. Please enter this letter into the hearing record.

The City's 2003 TSP includes the US 395 Corridor Refinement Plan that projected traffic volumes to increase as this area develops and outlines initiatives aimed to respond to growth. The US 395 Corridor Refinement Plan was developed in partnership with the City, Umatilla County, ODOT and stakeholders recognizing the importance of the corridor to the regional economy, as well as the corridor's function as an alternative to Interstate 82.

As US 395 also serves as a main street for communities along the corridor, highway safety and the importance of bicycle and pedestrian mobility are recognized. The corridor strategy strives to balance the needs and to address an overall access and circulation management plan with appropriate improvements.

In reviewing the City's proposed 2016 TSP amendments, it was recognized that the development assumptions could have a significant impact on state highways and intersections. There are several project opportunities that should be established and retained to ensure the proposed TSP amendments support short and long-term improvements to the transportation system.

Project Opportunities

US 395 is classified as a Statewide Highway and Freight Route. The location of intersection improvements, such as future traffic signals or roundabout treatments will significantly change the character of traffic using the existing approaches. Project descriptions of future intersection improvements should be updated to enable installation of signalization "or roundabouts" to provide for final design flexibility.

Clint Spencer, City Planner
February 8, 2016
Page 2

To minimize conflicts with turning vehicles, there are operational issues that will need to be addressed. Access to the Ranch and Home site from the current US 395/Hermiston Food's driveway/truck entrance will require a new Approach Permit from ODOT and possibly construction of right-turn lanes at the time of opening, consistent with OAR Chapter 734, Division 051.

A future traffic signal or roundabout adjacent to the US 395/Walmart Distribution Center site and at the US 395/E Airport Road/SE Campbell Drive intersection allows for improvements of existing lane configurations, control and geometric characteristics to accommodate growth patterns and needs upon redevelopment of the large agricultural plots located within the nearby area along 395. However, with these noted improvements for traffic circulation, ODOT remains concerned about safety problems that can occur at a newly signalized intersection in a remaining rural environment with a current posted speed of 55mph.

As previously shared in our October 6, 2015 letter to the City, we feel traffic calming measures combined with a traffic signal are a necessity. Potential options for traffic calming are included in the TSP Update. The TSP Update notes that a traffic signal would be one-third the cost of a roundabout. In our experience, the cost of a signal would also include improving the geometry of the intersection that is needed and will most likely be comparable in cost. Also, future ongoing maintenance cost of a signal will exist while being absent with a roundabout.

As congestion and travel delays increase along US 395, a parallel route becomes more favorable to local traffic and necessary to accommodate future development. A fully continuous north-south route parallel to US 395 (Project #35) to tie into east-west roadways improves the continuity of the City's street grid system. A primary street network consisting of an extension of East Penney Avenue and the connection of SE Kelli Blvd south toward the Walmart Distribution Center are planned facilities to enhance local and regional circulation and overall access. Deleting segments of planned local streets significantly limits north-south as well as east-west connectivity opportunities to support planned land use within the area.

These projects which provide highway access and roadway alignments should be preserved to enable future expansion of a balanced, interconnected multi-modal transportation network. The Transportation Planning Rule (OAR 660-012) encourages Transportation Demand Management (TDM) measures as part of the TSP. The City should consider the range of transportation solutions. Given the opportunities, one of the most promising options available to the City is provisions to encourage and promote the use of all travel modes in conjunction with local development activities.

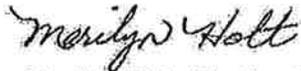
The City has been working to obtain funding and install projects to enhance the overall network of safe and convenient bicycle and pedestrian facilities linking home, work and play. Development and extension of these local access and circulation streets to accommodate walking

Clint Spencer, City Planner
February 8, 2016
Page 3

and cycling (active transportation modes) and other improvements, particularly at key crossroad junctions with the surrounding and emerging industrial and commercial employment centers should be retained. The transportation system is more effective if optimizes and improves mobility choices and connectivity.

In addition, the traffic study provided lacks specific triggers for the recommended improvements and identification of responsibility for the implementation of Project #35 and when traffic signal warrants or roundabouts merit installation on US 395. These elements should be addressed with emphasis on development contributing fiscally to implement the transportation infrastructure improvements.

Thank you for the opportunity to comment regarding the proposed plan amendment. ODOT would like to work with the City and the Applicant to ensure that US 395 operates safely with a full understanding of the traffic implications and not cause a significant affect.



Marilyn Holt, District 12 Manager
ODOT Region 5

CJS

Attachment: ODOT October 6, 2015 letter to Clint Spencer, City of Hermiston

cc: Craig Sipp, Region 5 Area Manager
Teresa Penninger, Region Planning
Jeff Wise, Region Traffic
Grant Young, DLCD
Tamra Mabbott, Umatilla County

From: Clinton Spencer
Sent: Monday, February 08, 2016 5:01 PM
To: 'RYNEARSON Timothy W'
Cc: JARVIS-SMITH Cheryl; Byron Smith; Mark Morgan; manixj@hdjdg.com; jeff@ranch-home.com; georgedress@ranch-home.com; Paul Knutzen (paul@knutzenengineering.com)
Subject: RE: Comments-Hermiston TSP amendment hearing

Tim,

I've received your comments and have a few points of clarification to discuss.

The city agrees that changing from a signal to a signal/roundabout to provide better design flexibility is acceptable. ODOT's concept of future roundabouts at Airport Road and the Wal-Mart distribution center is interesting. A string of roundabouts would go a long way to calming traffic over the long term which is where the city wants to be. The is much more supportive of the roundabout concept if more than one is installed concurrently. Perhaps a plan that installs a roundabout for ranch and home concurrently with another at Airport Road servicing EOTEC would better calm traffic? We still maintain that a single roundabout at any location in a 55 mph zone works against the public interest and feel that this corridor can be made significantly safer with a lowered speed limit.

Your letter makes reference to a backage road connecting Kelli Blvd to the Wal-Mart distribution center truck entrance (Project #35) Project #35 in the 2003 corridor refinement plan should be looked at in the context of what is feasible versus what is built on the ground, as well as what is ultimately served by the proposed street network. It's important to note that the proposed signal/roundabout in the TSP amendment provides a new full access intersection at the end of the road extension #39 in the 2003 corridor refinement plan. The 2003 plan had this new collector street terminating at a right-in/right-out access onto 395. Since the functionality of the intersection at the Hermiston Foods driveway is improving to a full access with the TSP amendment, the city contends that extending the road in Project #35 is redundant and unnecessary. In the 2003 plan, trips moving along street #39 had to turn either north or south to take advantage of the signal at Wal-Mart or Campbell Drive. Now those trips can be contained on the new collector with the planned signal. It is important to note that the development under consideration, a new ranch and home store, has already agreed to dedicate and improve the right-of-way necessary to construct the first portion of this new street. Extension of the new backage road in Project #35 precludes any large form factor development on the parcels between Wal-Mart and Hermiston Foods.

The city also includes here copies of the bike and pedestrian plans from the TSP. Please note that the existing planning documents call for a separated multi-use path along the Highway 395 frontage between Ott Road and Airport Way. The portion adjacent to Ranch and Home will be required when that frontage is built upon. Similarly, all of the streets in the south Hermiston study area will require sidewalks and/or on-street bike lanes.

The City appreciates the opportunity to work with ODOT on these development issues and hopes that we can find a compromise acceptable to all parties.

Clinton Spencer
City Planner
(541)567-5521

YOU CAN GROW HERE.

Clinton Spencer

From: RYNEARSON Timothy W <Timothy.W.RYNEARSON@odot.state.or.us>
Sent: Wednesday, February 10, 2016 12:53 PM
To: Clinton Spencer
Cc: JARVIS-SMITH Cheryl; Byron Smith; Mark Morgan
Subject: RE: Comments-Hermiston TSP amendment hearing

Thank you Clint!

As I have previously mentioned ODOT is interested in providing the City of Hermiston staff a presentation on what we have learned on roundabouts.

My thought is to do it exclusively between us or however with whomever in your organization that would benefit.

I will need some lead time in getting those folks scheduled to come over. We may want to offer it while they are here to others separately as well.

Let me know your thoughts in possibly putting something together.

Thanks !

Timothy W. (Tim) Ryneerson
Assistant District Manager
ODOT- District 12
1327 S.E. 3rd Street
Pendleton, OR 97801
Office: (541) 429-6700

From: Clinton Spencer [<mailto:cspencer@hermiston.or.us>]
Sent: Monday, February 08, 2016 5:01 PM
To: RYNEARSON Timothy W
Cc: JARVIS-SMITH Cheryl; Byron Smith; Mark Morgan; manixj@hdjdg.com; jeff@ranch-home.com; georgedress@ranch-home.com; Paul Knutzen (paul@knutzenengineering.com)
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