



# KITTELSON & ASSOCIATES, INC.

TRANSPORTATION ENGINEERING / PLANNING

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## MEMORANDUM

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**Date:** April 8, 2011 **Project #:** 11539.0

**To:** Nikki Messenger  
City of Roseburg  
900 SE Douglas Avenue  
Roseburg, OR 97470

**From:** Hermanus Steyn, P.E. and Matthew Bell

**Project:** Roseburg Pedestrian Crossing Study

**Subject:** NE Stephens Street between NE Stewart Parkway and NE Newton Creek Road

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### Introduction

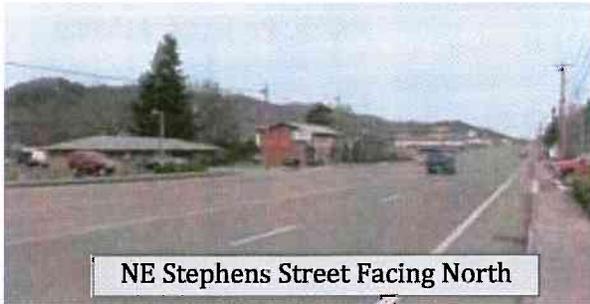
This memorandum summarizes the existing physical, geometric, and operational characteristics of NE Stephens Street (OR99) between NE Stewart Parkway and NE Newton Creek Road in Roseburg, Oregon. This memorandum provides an evaluation of the need for a pedestrian crossing or crossings along NE Stephens Street based on field observations and input from the City. Ultimately, this memorandum proposes the installation of a mid-block pedestrian crossing with a raised median island located approximately half-way between NE Hewitt Avenue and Clover Avenue adjacent to the Cow Creek Tribal Office and the northern U-Trans Redline and Greenline stops. This memorandum gives further consideration to the potential for a traffic signal at the NE Airport Road intersection with NE Stephens Street to accommodate safe pedestrian crossings as well as improved traffic operations along the NE Stephens Street corridor.

### Issue

The City has expressed multiple concerns related to the safety of pedestrians crossing NE Stephens Street within the vicinity of the U-Trans bus stops located along the roadway. Currently there are no marked pedestrian crossings located along NE Stephens Street between NE Stewart Parkway and NE Newton Creek Road to facilitate safe pedestrian crossings. However, legal pedestrian crossings do exist at NE Stewart Parkway and NE Newton Creek Road.

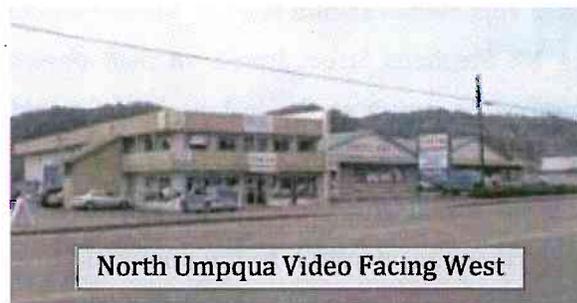
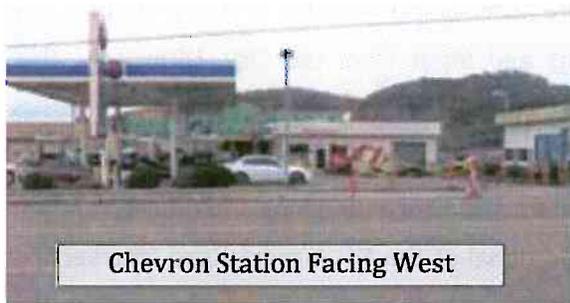
## Study Area

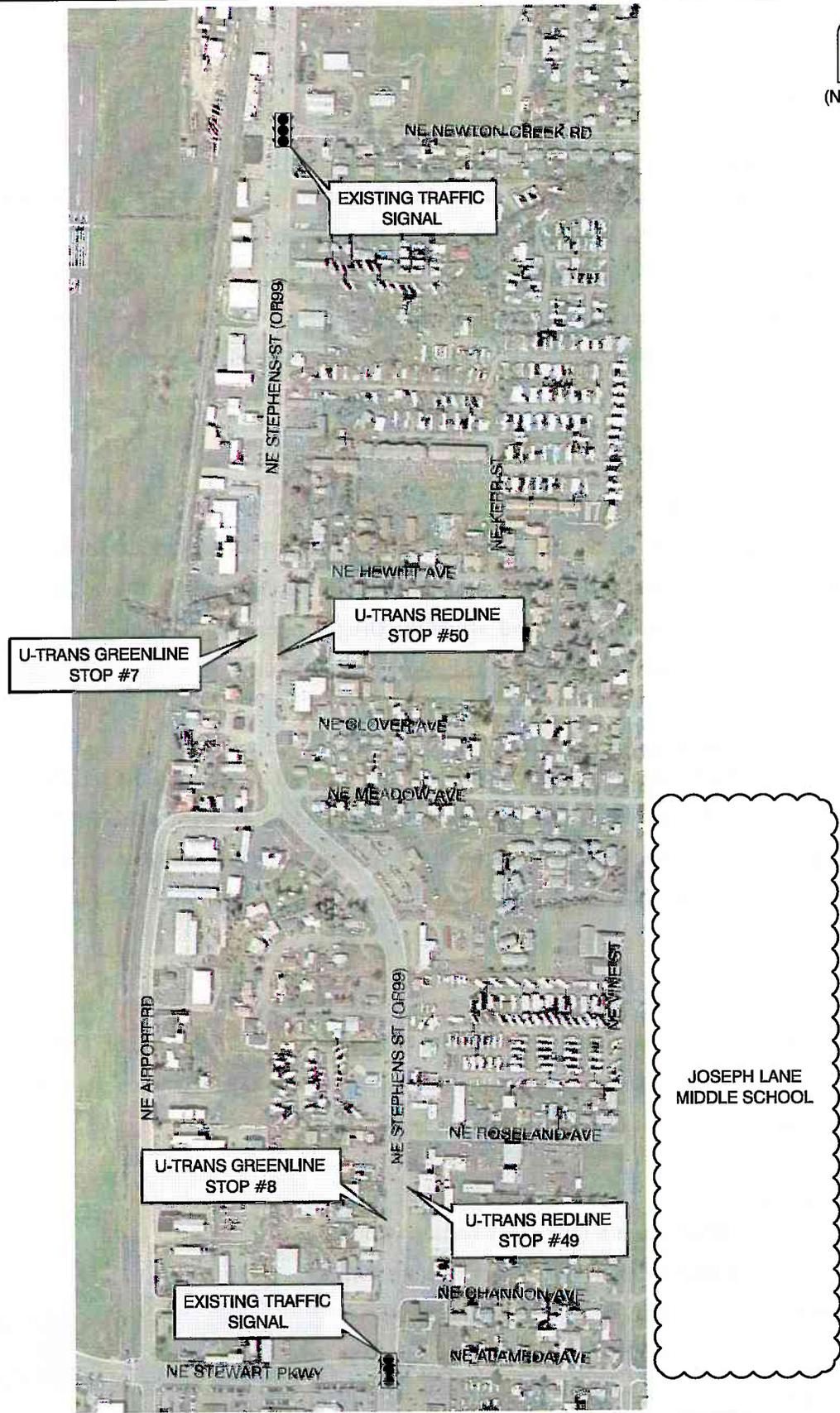
The study area consists of the segment of NE Stephens Street between Stewart Parkway and Newton Creek Road as well as the adjacent roadway network. Figure 1 illustrates the general study area.



### LAND USES

Land uses along NE Stephens Street include a mix of general commercial and retail. A majority of the residential uses in the study area are located east of NE Stephens Street along local streets. Further east of NE Stephens Street is Joseph Lane Middle School along NE Vine Street and further west is the Roseburg Regional Airport along NW Aviation Drive; access to the school is provided along NE Meadow, Roseland, and Alameda Avenue as well as other local streets in the area, while access to the airport is provide along NE Stewart Parkway and NE Airport Road.





JOSEPH LANE MIDDLE SCHOOL

STUDY AREA  
ROSEBURG, OREGON

FIGURE  
1

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## Transportation Facilities

### ROADWAY FACILITIES

NE Stephens Street, also referred to as the Oakland-Shady Highway (OR99), runs north-south through the city providing off-interstate connections to several communities along the I-5 corridor, including the City of Winston to the south and the City of Sutherlin to the north. There are several other major roadway facilities located within the study area, including NE Stewart Parkway, NE Alameda Avenue, NE Newton Creek Road, and NE Airport Road. Each provides connections to areas located within the City of Roseburg as well as areas throughout the region.

### **Jurisdiction**

The City of Roseburg has jurisdiction over a majority of the major roadways in the study area, including NE Stephens Street and NE Stewart Parkway. Douglas County has jurisdiction over several of the minor roadways in the study, including NE Clover Avenue, NE Hewitt Avenue, NE Meadow Avenue, and NE Newton Creek Road, while the Oregon Department of Transportation (ODOT) does not have Jurisdiction over any of the Roadways in the study area.

### **Functional Classification**

NE Stephens Street and NE Stewart Parkway are classified as arterials by the ODOT and the City of Roseburg; ODOT further classifies NE Stephens Street as a principal arterial and NE Stewart Parkway as a minor arterial. NE Newton Creek Road, NE Airport Road, and NE Alameda Avenue are classified as collectors by both ODOT and the City. All of the remaining roadways are classified as local streets by both agencies.

As arterials, NE Stephens Street and NE Stewart Parkway are intended to provide connections on a regional level while the collectors provide connections throughout the City. The local streets in the study area provide access to many of the retail and commercial businesses along NE Stephens Street as well as the residential properties to the east.

### **Cross Section**

NE Stephens Street has a 5-lane cross section within the study area with two northbound travel lanes, two southbound travel lanes, and a continuous two-way-left-turn lane (TWLT); on-street parking is prohibited along NE Stephens Street within the study area. NE Stephens Street also has continuous bicycle



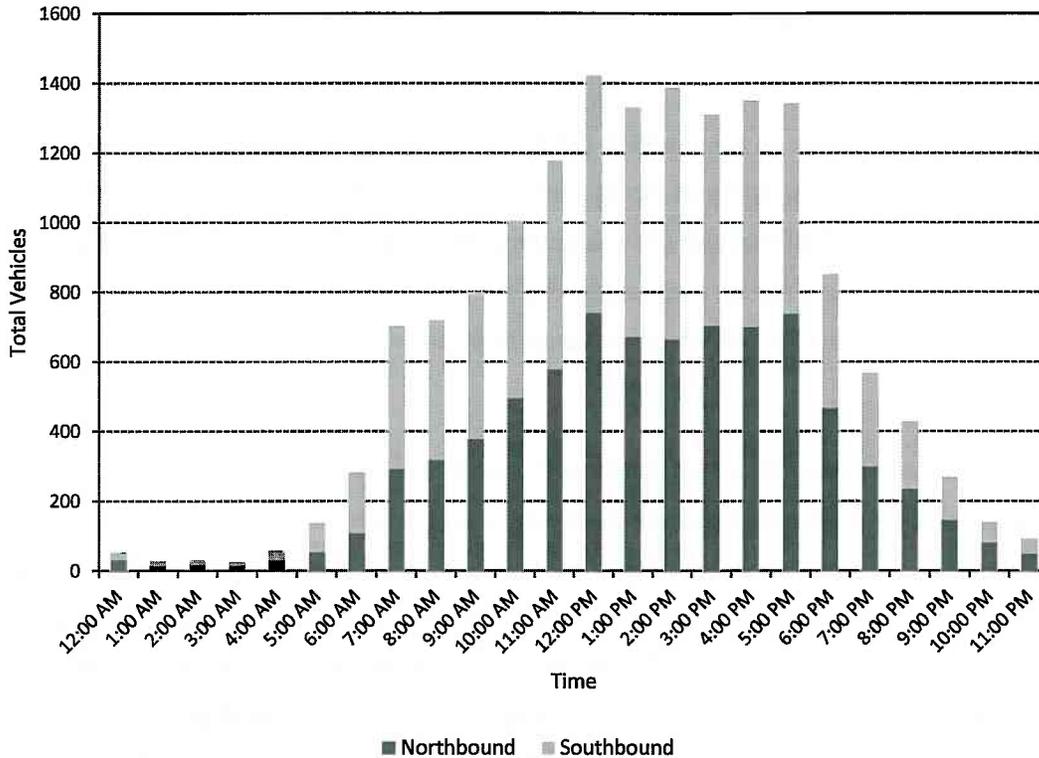
lanes and sidewalks on both sides of the roadway that extend well beyond the study area. The overall width of the paved surface is approximately 71 feet with (4) 12-foot travel lanes, (1) 13-foot TWLT, and (2) 5-foot bicycle lanes.

The City's current Transportation System Plan (TSP) displays the 5-lane arterial cross section with 7-8-foot landscape strips and an optional 12-14-foot center median. Landscape strips could improve the comfort of pedestrians walking along NE Stephens Street, providing greater separation from the adjacent street traffic, while a center median could serve as an island refuge for pedestrians crossing NE Stephens Street and allow for two-stage crossings to occur when necessary.

### **Traffic Volumes**

Traffic volumes were collected along NE Stephens Street over a 24-hour period in March of 2011. As shown in Chart 1 below, traffic volumes increased steadily between 5:00 a.m. and 12:00 p.m., remained relatively constant between 12:00 p.m. and 6:00 p.m., and then dropped off toward the evening. A total of approximately 15,530 vehicles were observed over the 24-hour period; approximately 720 (320 northbound, 400 southbound) were observed between 8:00 and 9:00 a.m. during the typical morning peak period and approximately 1,350 (700 northbound, 650 southbound) were observed between 4:00 and 5:00 p.m. during the typical evening peak period. A mid-day peak of approximately 1,425 (745 northbound, 680 southbound) was also observed between 12:00 p.m. and 1:00 p.m. The morning and evening peak hour traffic volumes will be compared to the morning and evening peak hour pedestrian volumes later in this report. Chart 1 displays the traffic volumes observed over the 24-hour period. *The traffic volumes are provided in Attachment "A".*

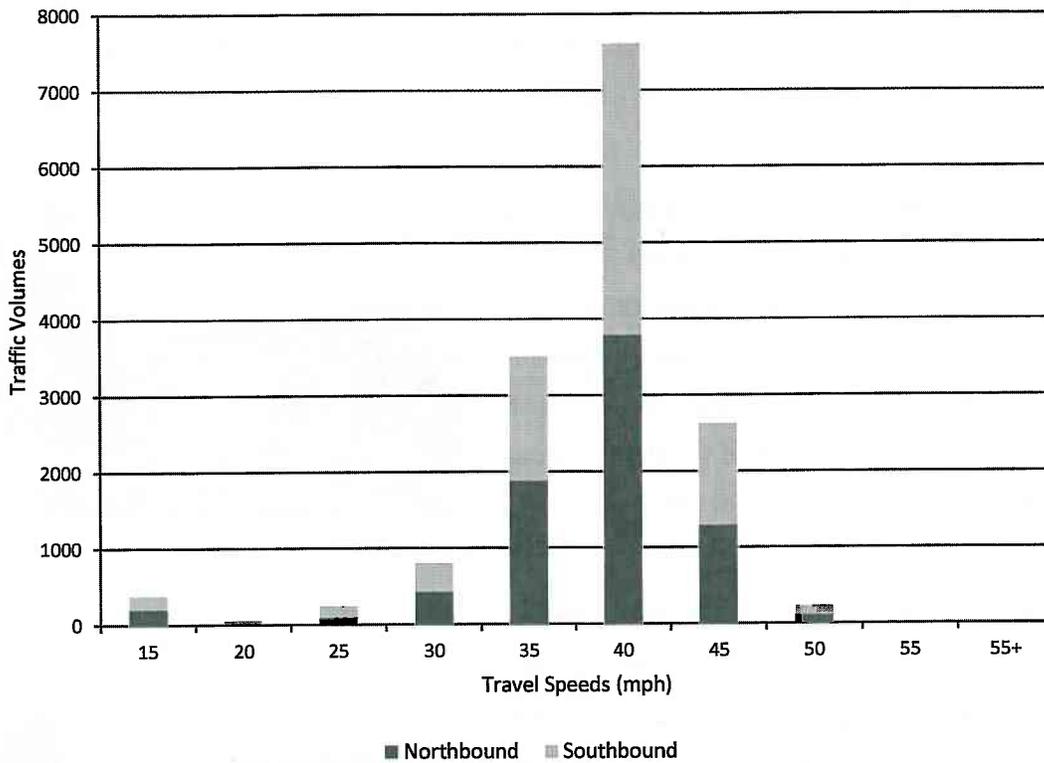
CHART 1: DAILY TRAFFIC VOLUMES



**Traffic Speeds**

Traffic speeds were also collected along NE Stevens Street over a 24-hour period in March of 2011. Approximately 32 percent (5,015 vehicles) of the daily traffic were traveling at or below the posted speed limit of 35 miles per hour (mph) while the remaining 68 percent (10,515) were traveling above the posted speed limit. The average speed in both directions was found to be 35 mph while the 85<sup>th</sup> percentile speed (the speed used to evaluate the need for various types of pedestrian crossing treatments) was found to be 40 mph in the northbound direction and 41 mph in the southbound direction. Chart 2 displays the traffic speeds observed over the 24-hour period. *The speed data is provided in Attachment "B".*

CHART 2: DAILY TRAFFIC SPEEDS



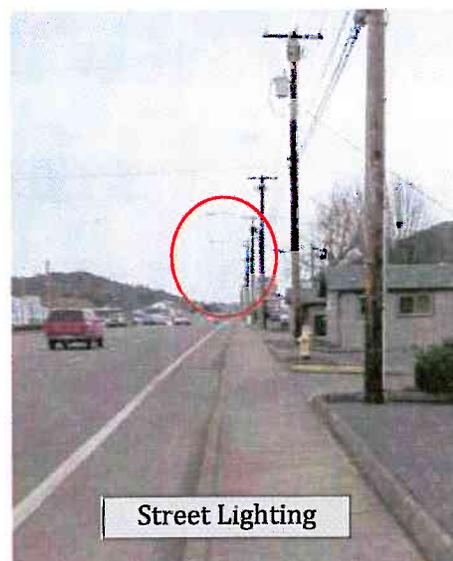
**Heavy Vehicles**

Heavy vehicle percentages were not collected along with traffic volumes and speeds. However, NE Stephens Street is designated as a freight route in the City’s TSP; therefore, heavy vehicles should be expected along the roadway. A review of the 2005 analysis included within the City’s TSP indicates truck percentages of approximately 7 percent in the northbound direction and 8 percent in the southbound direction during the weekday p.m. peak period near the NE Stewart Parkway intersection with NE Stephens Street. That equates to approximately 50 heavy vehicles in both directions during the weekday p.m. peak hour based on existing traffic volumes.

**Other Roadway Considerations**

**Illumination**

Overhead Illumination is currently provided at many of the major intersections and at several mid-block locations along NE Stephens Street on overhead utility poles.



### Topography

The segment of NE Stephens Street included in the study area is relatively flat. There is a gradual “S” curve between NE Roseland Avenue and NE Hewitt Avenue where NE Stevens Street turns approximately 60 degrees to the west before continuing north.

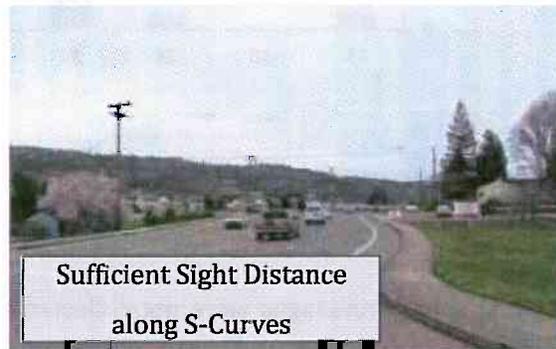
### Vegetation

As indicated previously, there are no landscape strips or median islands along NE Stephens Street to accommodate street trees or other vegetation and a majority of the residential properties are located along adjacent roadways. The only vegetation along NE Stephens Street is located north of NE Hewitt Avenue where Cow Creek intersects with NE Stephens Street.

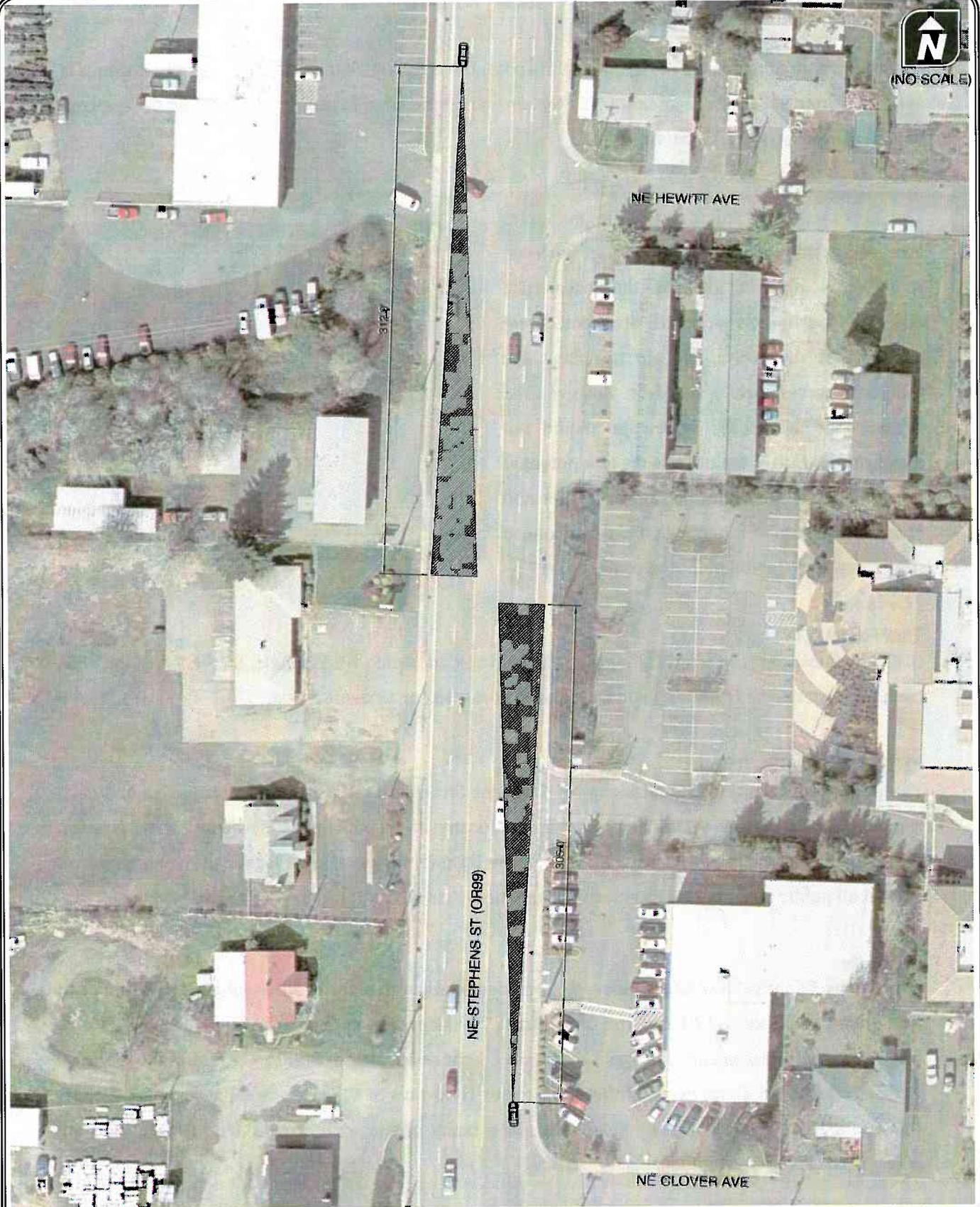


### Sight Distance

As indicated previously, the 85<sup>th</sup> percentile speed along NE Stephens Street is 40 mph in the northbound direction and 41 mph in the southbound direction. Based on the standard reference manual, *A Policy on Geometric Design of Highway and Streets* (Reference 1) the required stopping sight distance is approximately 305 feet for northbound vehicles and 312 feet for southbound vehicles. Figure 2 illustrates



the required stopping sight distance in advance of a potential crossing between NE Hewitt and Clover Avenue. As shown, there is currently sufficient stopping sight distance along NE Stephens Street to



SIGHT DISTANCE REQUIREMENTS AT BUS STOP  
ROSEBURG, OREGON

FIGURE

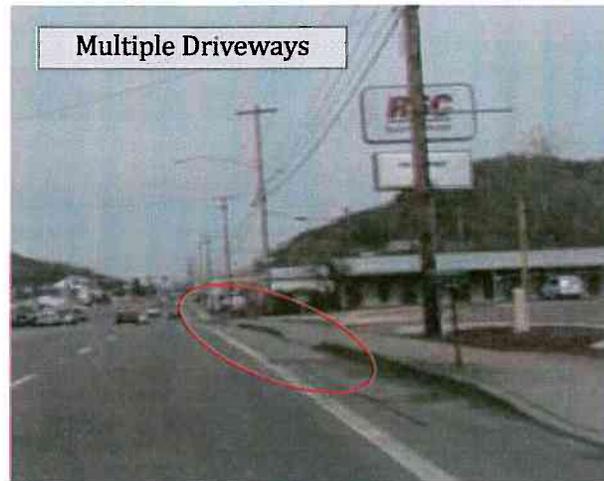
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safely stop a moving vehicle in advance of the potential crossing. Sufficient stopping sight distance is available along the entire segment of NE Stephens street included in the study; including the segment which incorporates the "S" curve.

#### **Access Spacing**

The City's current TSP defines the minimum access spacing standard along an arterial roadway as 500-feet. Many of the commercial and retail businesses along NE Stephens Street have access driveways that do not meet the minimum access spacing standard. However, the presence of the access driveways should not significantly impact the operations of a potential future pedestrian crossing, assuming it is located at an intersection or far enough away from one of the driveways to avoid potential conflicts.



#### **TRAFFIC SAFETY**

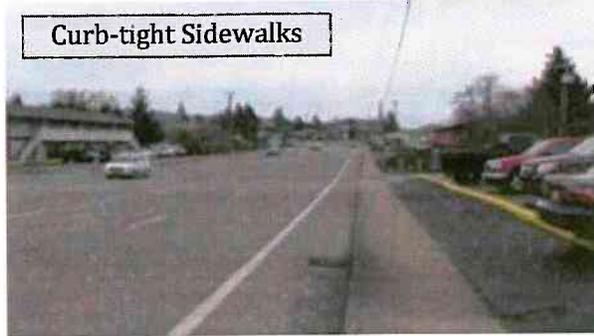
ODOT maintains crash records along all of its facilities, including NE Stephens Street. Crash data has been requested from ODOT and will be evaluated prior to our next submittal.

#### **PEDESTRIAN FACILITIES**

The pedestrian facilities located along NE Stephens Street primarily consist of sidewalks and curb ramps. The only marked pedestrian crossings are located at the NE Stewart Parkway and NE Newton Creek Road intersections with NE Stephens Street. Based on Oregon laws, legal pedestrian crossings exist at all public unsignalized intersections and motorists are required to yield to pedestrians.

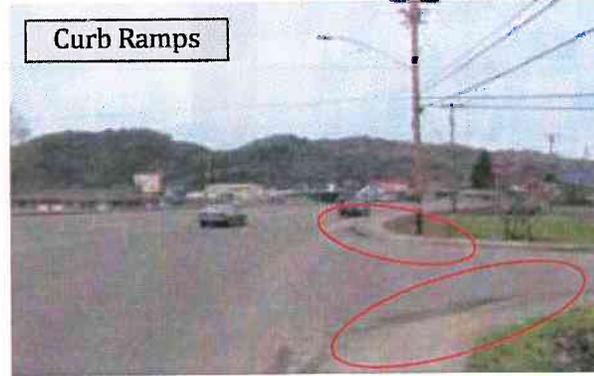
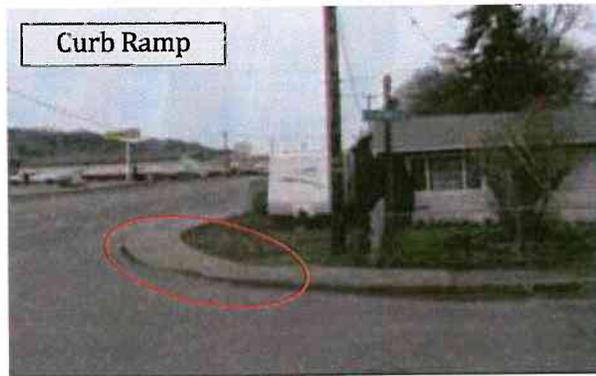
#### **Sidewalks**

Continuous 5-foot sidewalks are currently provided along both sides of NE Stephens Street between NE Stewart Parkway and NE Newton Creek Road. The sidewalks appear to be in good shape and are free from any impediments, such as utility poles, light poles, fire hydrants, etc. Sidewalks are also currently provided along many of the other major roadways in the study area, such as NE Airport Drive and NE Stewart Parkway. Sidewalks along many of the local streets are primarily located adjacent to newer developments.



**Curb Ramps**

Curb ramps are currently provided on every corner of every major intersection along NE Stephens Street.



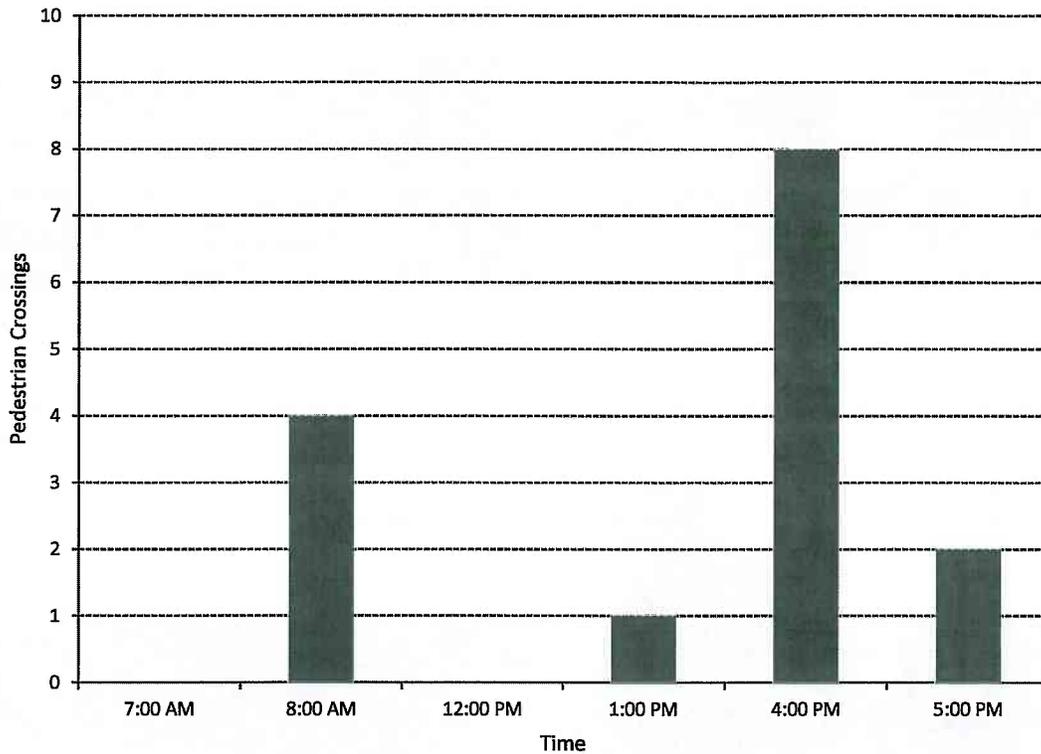
**Crosswalks**

There are currently no marked crosswalks provided at the intersections of NE Stewart Parkway and NE Newton Creek Road with NE Stephens Street. Both intersections are signalized and allow for pedestrian actuation with pushbuttons.

**Pedestrian Activity**

The number of pedestrians who crossed NE Stephens Street between NE Hewitt Avenue and NE Airport Road were collected in March 2011 during the morning (7:00 to 9:00 a.m.), mid-day (12:00 to 2:00 p.m.), and evening (2:00 to 6:00 p.m.) peak time periods. Chart 3 displays the pedestrian crossings that occurred during the morning and evening peak periods. As shown, there were 4 pedestrian crossings during the morning peak period that corresponds to the morning peak period for vehicular traffic and 8 pedestrian crossings during the evening peak period that corresponds to the evening peak period for vehicular traffic. No pedestrian crossings were recorded during the mid-day peak period that corresponds with the mid-day peak period for vehicular traffic. These volumes are used later in this report to evaluate the types of potential pedestrian crossings treatments.

**Chart 3 Pedestrian Crossings**



## TRANSIT FACILITIES

### ***Transit Service***

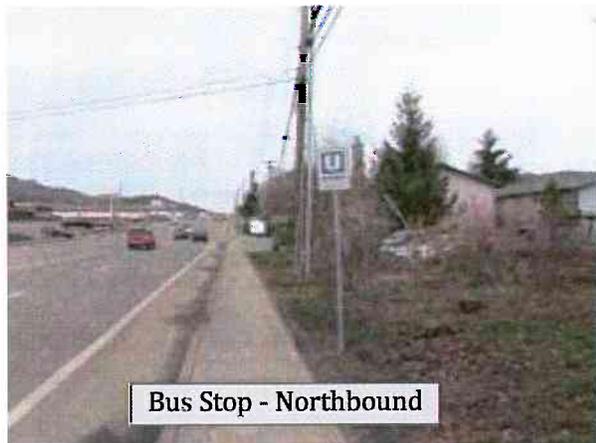
Transit service is provided within the study area by U-Trans Public Transportation Service. The U-Trans Roseburg Redline and Greenline Routes travel north and south along NE Stephens Street between 6:50 a.m. and 6:40 p.m. on 1-hour headways providing service between downtown Roseburg and Umpqua Community College.

### ***Transit Stops***

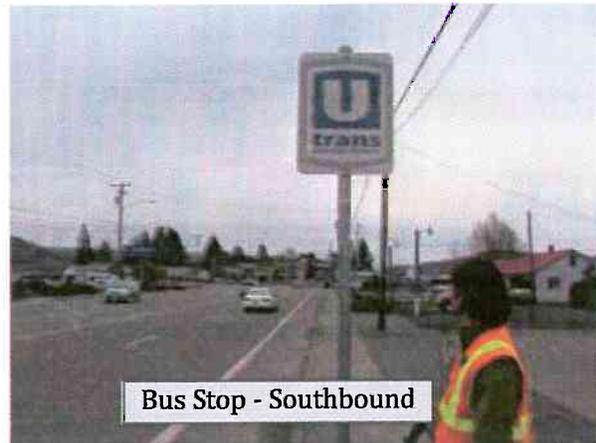
U-Trans has two stops located toward the north end of the study area between NE Hewitt Avenue and Clover Avenue adjacent to the Cow Creek Tribal Office and two stops located toward the south end of the study area between NE Roseland Avenue and NE Channon Avenue adjacent to the Douglas Education Services District. Transit riders must cross NE Stephens Street or travel a significant distance out of the way to access the stops in both locations.

The northern stops provide service to both special needs riders from the Rose Villa Apartments and students from Umpqua Community College. Approximately 25-50 riders get on and off the bus on both sides of NE Stephens at the northern stops every day. U-Trans has plans to relocate the

northbound stop (located on the east side of the roadway) approximately 300-feet to the north to avoid potential conflicts with vehicles exiting the Cow Creek Tribal Office. U-Trans also plans to install shelters at both stops in the near future.



Bus Stop - Northbound



Bus Stop - Southbound

## Crosswalk Assessment

### POTENTIAL CROSSINGS LOCATIONS

Several locations along NE Stephens Street were evaluated as potential pedestrian crossings based on their ability to provide safe and convenient places to cross the roadway. Ultimately one mid-block crossing location was identified for further consideration in addition to the NE Airport Road intersection with NE Stephens Street.

#### ***Northern U-Trans Redline Stop***

The northern U-Trans Redline stops are located approximately half-way between NE Hewitt and Clover Avenue along NE Stephens Street. A mid-block crossing in this location would provide access to many of the commercial and retail businesses located on both sides of the NE Stephens Street as well as the northern U-Trans Redline stops. Given the current configuration of the roadway as well as existing traffic volumes and speeds, the crossing would require the installation of a raised median island as well as the potential relocation and/or sharing of multiple driveways along the west side of the roadway and the redesign of the TWLT lane to accommodate left-turn pockets. Figure 3 illustrates the two mid-block crossings scenarios considered at this location.

The first scenario reflects ODOT's minimum standards for the left-turn pockets, including deceleration, taper, and storage lengths for the two left-turn lanes based on the 85<sup>th</sup> percentile speed on NE Stephens Street. As shown, this scenario has a significant impact on the existing driveways within the area; restricting many to right-in/right-out only.

The second scenario has very little impact overall and would provide a similar benefit to pedestrians. However, left-turns from NE Stephens Street into private properties would not have the necessary deceleration within the TWLT and may have to wait for a gap in the leftmost through lane.



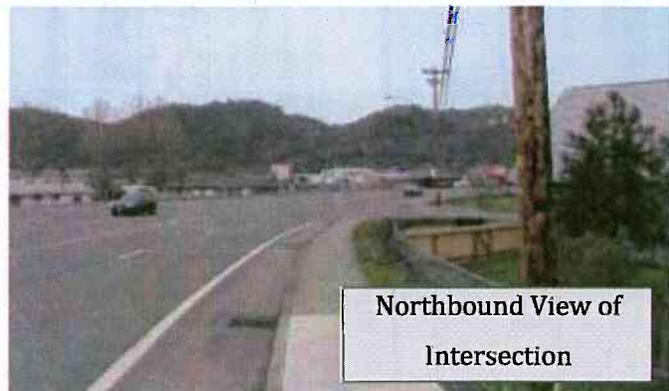
### **NE Airport Way Intersection**

The NE Airport Way intersection with NE Stephens Street is currently a two-way stop controlled intersection with shared movements at the eastbound and westbound approaches. Given the current configuration of the intersection and the existing traffic volumes along NE Stephens Street, a crosswalk could not be installed without a significant investment in an advanced warning system. However, the intersections location approximately half-way between NE Stewart Parkway and NE Newton Creek Road make it an attractive place for a potential future traffic signal.



Although minor street traffic volumes are not well known at the intersection, it can be assumed that as the city grows, NE Meadow Avenue could become an east-west collector street, intersecting with both NE Stephens and Vine Street. The placement of a traffic signal at this location with pedestrian actuated push buttons would provide a safe and convenient location for pedestrians to cross the roadway as well as improve access and circulation along NE Stephens Street. In the future, motorists may struggle to make a side-street left from NE Hewitt Avenue and NE Clover Avenue; and therefore may consider using NE Kerr Street to NE Meadows Avenue to make a left at a potential signal. In addition, having a signal at NE Meadows Avenue would provide an alternative access to NE Alameda Avenue for the Joseph Lane Middle School. In addition, the transit stops located to the north could be relocated to the intersection to further improve operations along NE Stephens Street as well as pedestrian access to transit service.

Ultimately the mid-block crossing at the northern U-Trans Redline stops was selected as the preferred location based on the likelihood that a traffic signal will not be warranted at the NE Airport Way intersection. The types of pedestrian crossing treatments considered at this location are described in the tables below.



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**GAP ANALYSIS**

The National Cooperative Highway Research Program (NCHRP) Report 562 *Improving Pedestrian Safety at Unsignalized Crossings* recommends an engineering study method for evaluating the appropriate levels of crosswalk protection that takes into account traffic volumes, travel speeds and pedestrian crossing volumes. The NCHRP Report 562 method was applied to the potential mid-block crossing location along NE Stephens Street and led to the conclusion that raised median islands, curb extensions, or other traffic calming devices would be appropriate at the suggested location. However a slight increase in the number of pedestrian crossings to 14 triggers the need for an active or enhanced crossing treatment. Given the difficulty in crossing NE Stephens Street in this location, it is likely that the demand exists. *The worksheets used in the evaluations are included in Attachment "D".*

It is challenging to predict the anticipated volume of pedestrians that would cross at the proposed location in the future. However, based on a sensitivity analysis, it appears that an active or enhanced treatment would be able to accommodate up to 31 pedestrians under current traffic conditions, 17 pedestrian with a 10-percent increase in traffic, and 13 with a 20-percent increase in traffic volumes before a traffic signal would be required.

**POTENTIAL PEDESTRIAN CROSSING TREATMENTS**

There are a variety of potential pedestrian crossing treatments that can be installed along NE Stephens Street that can improve the safety of the potential pedestrian crossing by enhancing driver's awareness. Tables 1-8 below provide a brief summary of the pedestrian crossing treatments considered for the crossing and the feasibility for implementation.

Table 1 Minor Geometric Improvements

Enhancement Feature	Feasible Option?
Install raised median (refuge) islands	<b>Yes:</b> The mid-block crossings would require a raised median Island.
Install staggered refuge islands	<b>Yes:</b> The raised median island will be staggered to orient pedestrian toward oncoming traffic.
Install curb extensions	<b>No:</b> curb extensions would encroach into the travel lanes and/or bike lane.
Install raised crossing platforms	<b>No:</b> NE Stephens Street is classified as an arterial and the speeds are too high for this application.

Table 2 Striping Enhancements

Enhancement Feature	Feasible Option?
Install advance stop/yield lines	<b>Yes:</b> this application is used on multilane approaches.
Install high-visibility crosswalk markings	<b>Yes:</b> the new crosswalk markings will be thermoplastic.
Install advance pavement legends	<b>Possible:</b> pavement legends could be a maintenance challenge.
Install non-reflective coloring in crosswalk	<b>Possible:</b> colored markings in crosswalk could be a maintenance challenge.

Table 3 Signing Enhancements

Enhancement Feature	Feasible Option?
Install in-street flexible signs	No: in-street flexible signs would be inappropriate for an arterial facility.
Install high-visibility roadway signs	<b>Yes</b> : the pedestrian crossing signs (at the crosswalk) will be installed as part of this project and meet current retroreflectivity standards.
Install high-visibility post covers	<b>Yes</b> : although the post covers do not actively indicate the presence of pedestrians they increase visibility especially during the winter months in peak periods
Install oversized signs	No: the speeds and topography in the area do not justify installing signs to expressway standards
Install signs on both sides of approaching roadway	<b>Yes</b> : signs should be installed on both sides of the approaching roadway on the shoulders and in the median island.

Table 4 Other Lower Cost Enhancements

Enhancement Feature	Feasible Option?
Install transverse rumble strips in advance of the crossing	No: rumble strips could be a maintenance challenge and typically neighboring property owners raise noise concerns.
Install flag kiosks at each end of the crosswalk	No: flag kiosks require frequent restocking of the flags and are not a crossing option accessible to all pedestrians.

Table 5 Basic Warning Beacon Systems

Enhancement Feature	Feasible Option?
Install a continuously-flashing circular beacon, at or in advance of the crossing (overhead or side-mounted)	<b>Possible</b> : although studies show a higher compliance rate for motorists when beacons are not flashing continuously.
Install a pedestrian-activated flashing circular beacon at the crossing (overhead or side-mounted)	<b>Possible</b> : options exist for how pedestrians trigger the warning beacons (push button, passive detection [e.g. radar], pressure pad at the ramp, etc.).

Table 6 Advanced Warning Beacon Systems

Enhancement Feature	Feasible Option?
In-Pavement Warning Lights	No: these systems have maintenance challenges, and are not as visible during bright sunny days.
In-Sign Warning Lights (e.g. LEDs around the perimeter of the signs)	<b>Possible</b> : although these signs require additional up-front costs and long-term maintenance to maintain their effectiveness.
Speed Feedback Signs	<b>Possible</b> : speed feedback signs could be added to the advance crosswalk signs.
Rectangular Rapid Flashing Beacon (RRFB)	<b>Yes</b> : RRFBs should be installed on both sides of the approaching roadway on the shoulders and in the median island per the FHWA's interim approval.
Pedestrian Hybrid Beacon (e.g. HAWK)	No: the current pedestrian volumes do not warrant this device. The installation cost for a Pedestrian Hybrid Beacon is roughly 50% of a new traffic signal and requires meeting minimum warrants per the 2009 MUTCD.

Table 7 Pedestrian/Roadway Lighting

Enhancement Feature	Feasible Option?
Install pedestrian lighting (e.g., bollard lighting) along sidewalks	No: the sidewalks are located relatively close to the existing roadway and no lighting in addition to the roadway lighting would be required.
Install roadway lighting at crosswalk	<b>Possible:</b> roadway lighting exists along NE Stephens Street. However, lighting at the proposed crossing locations may be considered depending on the roadway light pole locations and final location of crosswalk.

Table 8 Higher Cost Crossing Enhancements

Enhancement Feature	Feasible Option?
Signalize the crossing	No: as the crossing does not have the pedestrian volumes (per field observations) necessary to meet MUTCD warrants. Further, the cost of this installation is likely beyond the scope of this project.
Install two-stage signalized crossing	No: The crossing does not have the pedestrian volumes (per field observations) necessary to meet MUTCD warrants. Further, the cost of this installation is likely beyond the scope of this project.
Grade-separate the crossing	No: as this is not a cost-effective measure for these crossings and not commonly used across two-lane roadways.

### PROPOSED IMPROVEMENTS

As indicated above, there are several potential pedestrian crossing treatments that could be used to both enhance driver’s awareness of pedestrians as well as provide a safe and convenient location for pedestrians to cross. Recognizing that the implementation of any of the potential enhancement will likely depend on policies, priorities and available funding, the proposed improvements are presented according to their simplicity and anticipated time and cost constraints.

#### **Near-Term Recommendations**

The City should consider the following pedestrian enhancements along NE Stephens Street:

- Install high visibility crosswalk pavement markings per the MUTCD adjacent to the northern U-trans Redline stops.
- Install advance stop bars with “Stop Here” sign.
- Install American Disability Act (ADA) compliant curb ramps at both ends of the crosswalk per City standards.
- Install crosswalk signs per the MUTCD on the roadway shoulders and in the center median with Rectangular Rapid Flash Beacons (RRFB).

Figure 3 illustrates the location and layout of the proposed pedestrian crossing. The City needs to coordinate with U-Trans to determine the final location of the mid-block crossing and adjacent property owners regarding the affect the raised median would have on their access.

### **Long-Term Pedestrian Enhancements**

The near-term proposed installations would encourage certain pedestrian behavior such as focusing crossings at the mid-block location. In addition, the character of NE Stephens Street with the signed, striped, and enhanced pedestrian crossing could potentially alter the motorists' driving behavior. The City should consider the following activities as a follow-up to the proposed near-term enhancements.

- Monitor motorist behavior and yielding rates after installation of near-term enhancements.
- Educate neighborhood residents about the purpose of the crosswalk treatments and how pedestrians, cyclists and automobiles are supposed to behave based on Oregon laws.
- Consider the consolidation of driveways along NE Stephens Street and where it is permitted; provide access along local side streets.
- Investigate the potential for a signal installation at the NE Airport Road intersection. Figure 4 illustrates a conceptual layout of the intersection with a traffic signal

### **References:**

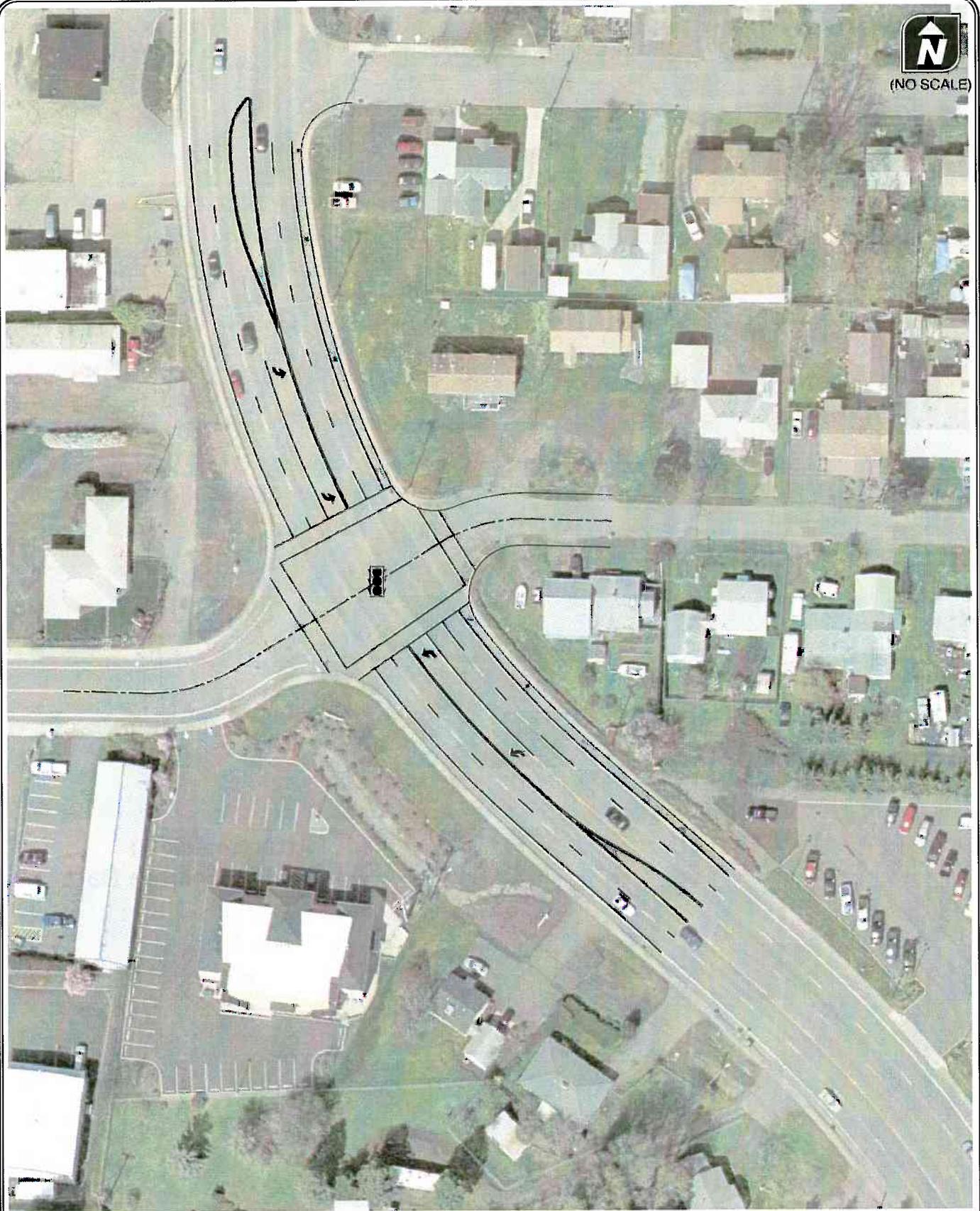
1. American Association of State Highway and Transportation Officials. *A Policy on Geometric Design of Highway and Streets*. 2004.

### **Attachments**

- A. Traffic Volumes Data
- B. Traffic Speed Data
- C. Pedestrian Count Data

### **Attachments**

- A. Traffic Volumes Data
- B. Traffic Speed Data
- C. Pedestrian Count Data
- D. NCHRP 562 Worksheets



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CONCEPTUAL INTERSECTION PEDESTRIAN CROSSING DESIGN  
ROSEBURG, OREGON

FIGURE  
4

**Attachment A:  
Traffic Volume Data**

**LOCATION:** NE Stephens Street South of Hewitt Ave  
**SPECIFIC LOCATION:** 0 ft from  
**CITY/STATE:** Roseburg, OR

**QC JOB #:** 10592504

**DIRECTION:** NB

**DATE:** Mar 15 2011 - Mar 16 2011

Start Time	Mon 15-Mar-11	Tue 16-Mar-11	Wed 16-Mar-11	Thu	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM	33	33	33			33			33	
1:00 AM	14	14	14			14			14	
2:00 AM	17	17	17			17			17	
3:00 AM	15	15	15			15			15	
4:00 AM	30	30	30			30			30	
5:00 AM	56	56	56			56			56	
6:00 AM	108	108	108			108			108	
7:00 AM	293	293	293			293			293	
8:00 AM	319	319	319			319			319	
9:00 AM	379	379	379			379			379	
10:00 AM	497	497	497			497			497	
11:00 AM	579	579	579			579			579	
12:00 PM	742	742	742			742			742	
1:00 PM	673	673	673			673			673	
2:00 PM	666	666	666			666			666	
3:00 PM	706	706	706			706			706	
4:00 PM	701	701	701			701			701	
5:00 PM	739	739	739			739			739	
6:00 PM	468	468	468			468			468	
7:00 PM	301	301	301			301			301	
8:00 PM	237	237	237			237			237	
9:00 PM	146	146	146			146			146	
10:00 PM	83	83	83			83			83	
11:00 PM	50	50	50			50			50	
<b>Day Total</b>	<b>2725</b>	<b>5127</b>	<b>7852</b>			<b>7852</b>			<b>7852</b>	
<b>% Weekday Average</b>	<b>34.7%</b>	<b>65.3%</b>								
<b>% Week Average</b>	<b>34.7%</b>	<b>65.3%</b>				<b>100.0%</b>				
<b>AM Peak Volume</b>		<b>11:00 AM</b>				<b>579</b>			<b>579</b>	<b>11:00 AM</b>
<b>PM Peak Volume</b>	<b>5:00 PM</b>	<b>12:00 PM</b>				<b>742</b>			<b>742</b>	<b>12:00 PM</b>

**Comments:** near the Umpqua Transit Bus stops

LOCATION: NE Stephens Street South of Hewitt Ave

QC JOB #: 10592504

SPECIFIC LOCATION: 0 ft from

DIRECTION: SB

CITY/STATE: Roseburg, OR

DATE: Mar 15 2011 - Mar 16 2011

Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM			22			22			22	
1:00 AM			15			15			15	
2:00 AM			15			15			15	
3:00 AM			11			11			11	
4:00 AM			29			29			29	
5:00 AM			82			82			82	
6:00 AM			176			176			176	
7:00 AM			411			411			411	
8:00 AM			401			401			401	
9:00 AM			416			416			416	
10:00 AM			509			509			509	
11:00 AM			600			600			600	
12:00 PM			681			681			681	
1:00 PM			659			659			659	
2:00 PM			723			723			723	
3:00 PM			606			606			606	
4:00 PM	650					650			650	
5:00 PM	604					604			604	
6:00 PM	385					385			385	
7:00 PM	267					267			267	
8:00 PM	191					191			191	
9:00 PM	124					124			124	
10:00 PM	57					57			57	
11:00 PM	42					42			42	
<b>Day Total</b>	2320		5356			7676			7676	
% Weekday Average	30.2%		69.8%							
% Week Average	30.2%		69.8%			100.0%				
AM Peak Volume		11:00 AM	600			11:00 AM			600	
PM Peak Volume	4:00 PM	650	2:00 PM	723		2:00 PM			723	

Comments: near the Umpqua Transit Bus stops

**Attachment B:  
Traffic Speed Data**

LOCATION: NE Stephens Street South of Hewitt Ave

QC JOB #: 10592504

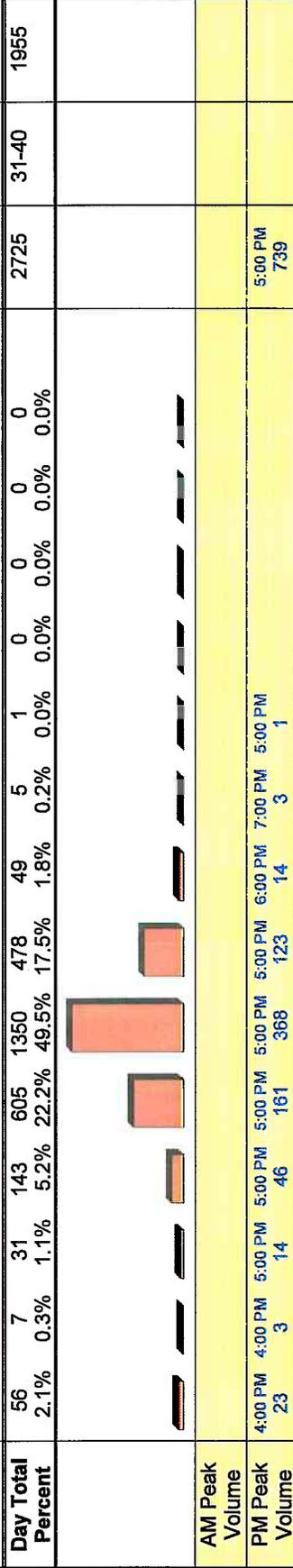
SPECIFIC LOCATION: 0 ft from

DIRECTION: NB

CITY/STATE: Roseburg, OR

DATE: Mar 15 2011

Start Time	15	16	20	21	25	26	30	31	35	36	40	41	45	46	50	51	55	56	60	61	65	66	70	71	75	76	Total	Pace Speed	Number in Pace	
12:00 AM																														
1:00 AM																														
2:00 AM																														
3:00 AM																														
4:00 AM																														
5:00 AM																														
6:00 AM																														
7:00 AM																														
8:00 AM																														
9:00 AM																														
10:00 AM																														
11:00 AM																														
12:00 PM																														
1:00 PM																														
2:00 PM																														
3:00 PM																														
4:00 PM	23	3	11	45	136	358	119	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	701	31-40	493	
5:00 PM	13	2	14	46	161	368	123	10	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	739	31-40	528	
6:00 PM	11	2	3	18	82	237	101	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	468	36-45	338		
7:00 PM	1	0	2	12	86	141	46	10	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	301	31-40	227		
8:00 PM	5	0	0	7	66	113	43	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	237	31-40	179		
9:00 PM	2	0	0	6	35	77	22	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	146	31-40	111		
10:00 PM	1	0	1	5	23	34	17	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	83	31-40	57		
11:00 PM	0	0	0	4	16	22	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50	31-40	38		
Day Total	56	7	31	143	605	1350	478	49	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2725	31-40	1955		
Percent	2.1%	0.3%	1.1%	5.2%	22.2%	49.5%	17.5%	1.8%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	



AM Peak Volume

PM Peak Volume

Comments: near the Umpqua Transit Bus stops



LOCATION: NE Stephens Street South of Hewitt Ave

SPECIFIC LOCATION: 0 ft from

CITY/STATE: Roseburg, OR

QC JOB #: 10592504

DIRECTION: NB

DATE: Mar 15 2011 - Mar 16 2011

Start Time	15	16	20	21	25	26	30	31	35	36	40	41	45	46	50	51	55	56	60	61	65	66	70	71	75	76	Total	Pace Speed	Number in Pace
Grand Total	205	19	205	92	434	1882	3794	1296	116	13	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7852	31-40	5675
Percent	2.6%	0.2%	2.6%	1.2%	5.5%	24.0%	48.3%	16.5%	1.5%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%
Cumulative Percent	2.6%	2.9%	2.9%	4.0%	9.6%	33.5%	81.8%	98.3%	99.8%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%



Comments: near the Umpqua Transit Bus stops

85th Percentile: 40 MPH  
 Mean Speed(Average): 35 MPH  
 Median: 36 MPH  
 Mode: 38 MPH



**LOCATION:** NE Stephens Street South of Hewitt Ave  
**SPECIFIC LOCATION:** 0 ft from  
**CITY/STATE:** Roseburg, OR  
**QC JOB #:** 10592504  
**DIRECTION:** SB  
**DATE:** Mar 15 2011

Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Speed	Number in Pace
12:00 AM	13	4	14	26	121	346	113	12	1	0	0	0	0	0	650	31-40	466
1:00 AM	13	2	8	30	109	309	127	6	0	0	0	0	0	0	604	36-45	435
2:00 AM	7	2	5	20	88	189	66	8	0	0	0	0	0	0	385	31-40	276
3:00 AM	4	1	3	16	55	138	47	3	0	0	0	0	0	0	267	31-40	193
4:00 AM	2	1	1	10	33	95	38	9	1	1	0	0	0	0	191	36-45	132
5:00 AM	2	0	1	10	33	62	14	2	0	0	0	0	0	0	124	31-40	94
6:00 AM	0	0	1	6	13	25	8	2	2	0	0	0	0	0	57	31-40	37
7:00 AM	0	0	0	3	14	17	7	1	0	0	0	0	0	0	42	31-40	31
8:00 AM	41	10	33	121	466	1181	420	43	4	1	0	0	0	0	2320	31-40	1646
9:00 AM	1.8%	0.4%	1.4%	5.2%	20.1%	50.9%	18.1%	1.9%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%			
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	13	4	14	30	121	346	127	12	2	1	0	0	0	0	650	31-40	466
5:00 PM	13	4	14	30	121	346	127	12	2	1	0	0	0	0	650	31-40	466
6:00 PM	13	4	14	30	121	346	127	12	2	1	0	0	0	0	650	31-40	466
7:00 PM	13	4	14	30	121	346	127	12	2	1	0	0	0	0	650	31-40	466
8:00 PM	13	4	14	30	121	346	127	12	2	1	0	0	0	0	650	31-40	466
9:00 PM	13	4	14	30	121	346	127	12	2	1	0	0	0	0	650	31-40	466
10:00 PM	13	4	14	30	121	346	127	12	2	1	0	0	0	0	650	31-40	466
11:00 PM	13	4	14	30	121	346	127	12	2	1	0	0	0	0	650	31-40	466
AM Peak Volume																	
PM Peak Volume																	
Comments:	near the Umpqua Transit Bus stops																

LOCATION: NE Stephens Street South of Hewitt Ave		QC JOB #: 10592504															
SPECIFIC LOCATION: 0 ft from		DIRECTION: SB															
CITY/STATE: Roseburg, OR		DATE: Mar 16 2011															
Start Time	15	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Speed	Number in Pace
12:00 AM	1	0	0	1	6	5	7	1	1	0	0	0	0	0	22	37-46	11
1:00 AM	0	0	0	1	4	7	3	0	0	0	0	0	0	0	15	35-44	10
2:00 AM	0	0	1	0	6	5	2	1	0	0	0	0	0	0	15	31-40	11
3:00 AM	0	0	0	0	1	7	3	0	0	0	0	0	0	0	11	36-45	10
4:00 AM	0	0	2	1	10	15	1	0	0	0	0	0	0	0	29	31-40	25
5:00 AM	0	2	1	3	14	38	22	2	0	0	0	0	0	0	82	36-45	60
6:00 AM	1	2	4	7	34	77	47	4	0	0	0	0	0	0	176	36-45	123
7:00 AM	9	2	5	15	61	200	104	14	1	0	0	0	0	0	411	36-45	303
8:00 AM	9	0	11	10	98	198	69	4	1	1	0	0	0	0	401	31-40	295
9:00 AM	5	1	13	28	97	214	55	3	0	0	0	0	0	0	416	31-40	310
10:00 AM	10	3	13	27	143	239	67	7	0	0	0	0	0	0	509	31-40	381
11:00 AM	15	0	16	33	118	293	112	12	1	0	0	0	0	0	600	31-40	410
12:00 PM	23	6	14	34	144	349	107	4	0	0	0	0	0	0	681	31-40	493
1:00 PM	27	7	10	28	124	322	130	11	0	0	0	0	0	0	659	36-45	452
2:00 PM	23	4	14	39	162	379	95	7	0	0	0	0	0	0	723	31-40	541
3:00 PM	10	5	20	31	143	294	93	9	1	0	0	0	0	0	606	31-40	436
4:00 PM																	
5:00 PM																	
6:00 PM																	
7:00 PM																	
8:00 PM																	
9:00 PM																	
10:00 PM																	
11:00 PM																	
Day Total	133	32	124	258	1165	2642	917	79	5	1	0	0	0	0	5356	31-40	3807
Percent	2.5%	0.6%	2.3%	4.8%	21.8%	49.3%	17.1%	1.5%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak Volume	15	3	16	33	143	293	112	14	1	1					11:00 AM 600		
PM Peak Volume	27	7	20	39	162	379	130	11	1	1					2:00 PM 723		
<i>Comments:</i> near the Umpqua Transit Bus stops																	

LOCATION: NE Stephens Street South of Hewitt Ave

SPECIFIC LOCATION: 0 ft from

CITY/STATE: Roseburg, OR

QC JOB #: 10592504

DIRECTION: SB

DATE: Mar 15 2011 - Mar 16 2011

Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Pace Speed	Number in Pace
15	20	25	30	35	40	45	50	55	60	65	70	75	76	999	31-40	5453
Grand Total	174	42	157	379	1631	3823	1337	122	9	2	0	0	0	0	7676	
Percent	2.3%	0.5%	2.0%	4.9%	21.2%	49.8%	17.4%	1.6%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%		
Cumulative Percent	2.3%	2.8%	4.9%	9.8%	31.0%	80.8%	98.3%	99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%		



Comments: near the Umpqua Transit Bus stops

85th Percentile: 41 MPH  
 Mean Speed(Average): 35 MPH  
 Median: 36 MPH  
 Mode: 38 MPH



**Attachment C:  
Pedestrian Count Data**



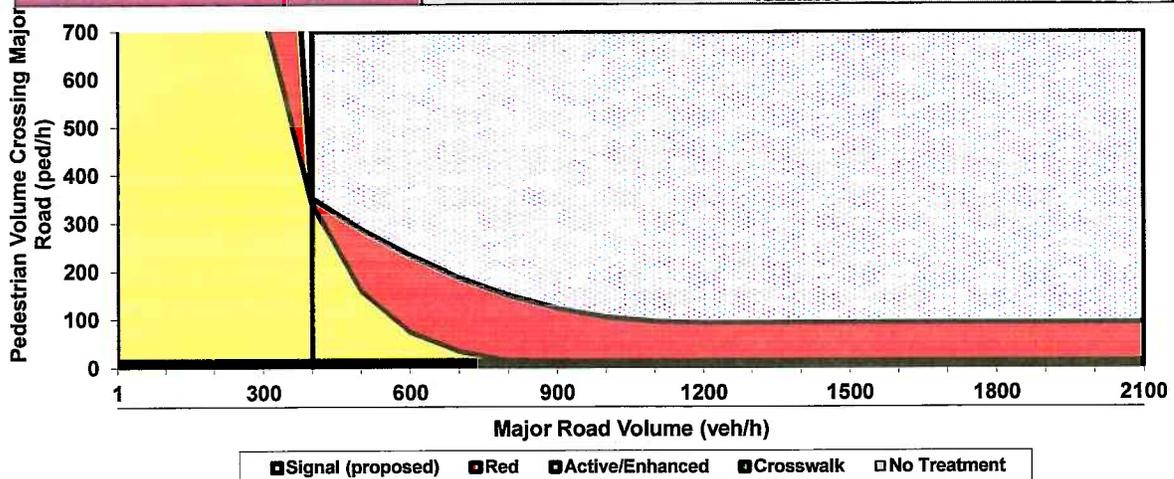
Attachment D:  
NCHRP 562 Worksheets

## GUIDELINES FOR PEDESTRIAN CROSSING TREATMENTS

This spreadsheet combines Worksheet 1 and Worksheet 2 (Appendix A, pages 69-70) of TCRP Report 112/NCHRP Report 562 (*Improving Pedestrian Safety at Unsignalized Intersections*) into an electronic format. This spreadsheet should be used in conjunction with, and not independent of, Appendix A documentation.

<b>Key</b>	This spreadsheet is still under development, please inform TTI if errors are identified.
	Blue fields contain descriptive information.
	Green fields are required and must be completed.
	Tan fields are adjustments that are filled out only under certain conditions (follow instructions to the left of the cell).
	Gray fields are automatically calculated and should not be edited.

Analyst and Site Information			
Analyst	MJB	Major Street	NE Stephens Street
Analysis Date	April 8, 2011	Minor Street or Location	North of NE Airport Road
Data Collection Date	March 15, 2011	Peak Hour	8:00 to 9:00 AM
Step 1: Select worksheet:			
Posted or statutory speed limit (or 85th percentile speed) on the major street (mph)	1a		41
Is the population of the surrounding area <b>LESS THAN</b> 10,000? (enter <b>YES</b> or <b>NO</b> )	1b		NO
Step 2: Does the crossing meet minimum pedestrian volumes to be considered for a traffic control device?			
Peak-hour pedestrian volume (ped/h), $V_p$	2a		4
<b>Result: Consider raised median islands, curb extensions, traffic calming, etc. as feasible.</b>			
Step 3: Does the crossing meet the pedestrian warrant for a traffic signal?			
Major road volume, total of both approaches during peak hour (veh/h), $V_{maj-s}$	3a		720
[Calculated automatically] Preliminary (before min. threshold) peak hour pedestrian volume to meet warrant	3b		
[Calculated automatically] Minimum required peak hour pedestrian volume to meet traffic signal warrant	3c		
Is 15th percentile crossing speed of pedestrians less than 3.5 ft/s (1.1 m/s)? (enter <b>YES</b> or <b>NO</b> )	3d		NO
If 15th percentile crossing speed of pedestrians is less than 3.5 ft/s (1.1 m/s), then reduce 3c by up to 50%.	% rate of reduction for 3c (up to 50%)	3e	0%
	Reduced value or 3c	3f	
<b>Result:</b>			
Step 4: Estimate pedestrian delay.			
Pedestrian crossing distance, curb to curb (ft), L	4a		71
Pedestrian walking speed (ft/s), $S_p$ (suggested speed = 3.5 ft/s)	4b		3.5
Pedestrian start-up time and end clearance time (s), $t_s$ (suggested start-up time = 3 sec)	4c		3
[Calculated automatically] Critical gap required for crossing pedestrian (s), $t_c$	4d		
Major road volume, total both approaches OR approach being crossed if raised median island is present, during peak hour (veh/h), $V_{maj-d}$	4e		401
Major road flow rate (veh/s), $v$	4f		
Average pedestrian delay (s/person), $d_p$	4g		
Total pedestrian delay (h), $D_p$ The value in 4h is the calculated estimated delay for all pedestrians crossing the major roadway without a crossing treatment (assumes 0% compliance). If the actual total pedestrian delay has been measured at the site, that value can be entered in 4i to replace the calculated value in 4h.	4h		
	4i		
Step 5: Select treatment based up on total pedestrian delay and expected motorist compliance.			
Expected motorist compliance at pedestrian crossings in region: enter <b>HIGH for High Compliance</b> or <b>LOW for Low Compliance</b>	5a		High
<b>Treatment Category:</b>		<b>Consider raised median islands, curb extensions, traffic calming, etc. as feasible.</b>	



Because the volume in Step 4e is different from the volume in Step 3a, the graph may show a different result than the Treatment Category above.

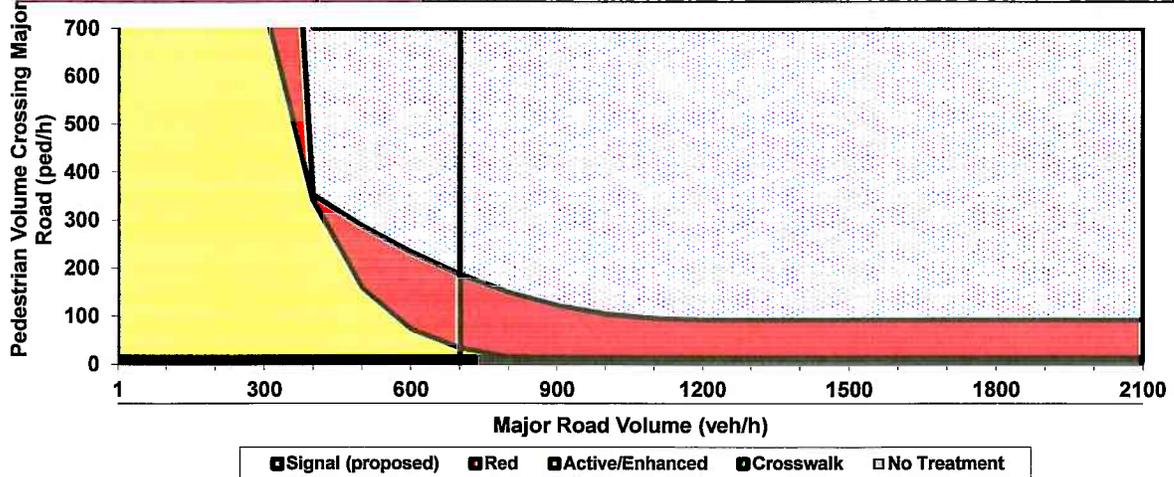
This worksheet provides general recommendations on pedestrian crossing treatments to consider at unsignalized intersections; in all cases, engineering judgment should be used in selecting a specific treatment for installation. This worksheet does not apply to school crossings. In addition to the results provided by this worksheet, users should consider whether a pedestrian treatment could present an increased safety risk to pedestrians, such as where there is poor sight distance, complex geometrics, or nearby traffic signals.

## GUIDELINES FOR PEDESTRIAN CROSSING TREATMENTS

This spreadsheet combines Worksheet 1 and Worksheet 2 (Appendix A, pages 69-70) of TCRP Report 112/NCHRP Report 562 (*Improving Pedestrian Safety at Unsignalized Intersections*) into an electronic format. This spreadsheet should be used in conjunction with, and not independent of, Appendix A documentation.

<b>Key</b>	This spreadsheet is still under development, please inform TTI if errors are identified.
	Blue fields contain descriptive information.
	Green fields are required and must be completed.
	Tan fields are adjustments that are filled out only under certain conditions (follow instructions to the left of the cell).
	Gray fields are automatically calculated and should not be edited.

Analyst and Site Information			
Analyst	MJB	Major Street	NE Stephens Street
Analysis Date	April 8, 2011	Minor Street or Location	North of NE Airport Road
Data Collection Date	March 15, 2011	Peak Hour	4:00 to 5:00 PM
Step 1: Select worksheet:			
Posted or statutory speed limit (or 85th percentile speed) on the major street (mph)	1a	41	
Is the population of the surrounding area <b>LESS THAN 10,000?</b> (enter <b>YES</b> or <b>NO</b> )	1b	NO	
Step 2: Does the crossing meet minimum pedestrian volumes to be considered for a traffic control device?			
Peak-hour pedestrian volume (ped/h), $V_p$	2a	8	
<b>Result: Consider raised median islands, curb extensions, traffic calming, etc. as feasible.</b>			
Step 3: Does the crossing meet the pedestrian warrant for a traffic signal?			
Major road volume, total of both approaches during peak hour (veh/h), $V_{maj-s}$	3a	1351	
[Calculated automatically] Preliminary (before min. threshold) peak hour pedestrian volume to meet warrant	3b	15	
[Calculated automatically] Minimum required peak hour pedestrian volume to meet traffic signal warrant	3c	15	
Is 15th percentile crossing speed of pedestrians less than 3.5 ft/s (1.1 m/s)? (enter <b>YES</b> or <b>NO</b> )	3d	No	
If 15th percentile crossing speed of pedestrians is less than 3.5 ft/s (1.1 m/s), then reduce 3c by up to 50%.	3e	0%	
	3f	15	
<b>Result:</b>			
Step 4: Estimate pedestrian delay.			
Pedestrian crossing distance, curb to curb (ft), L	4a	71	
Pedestrian walking speed (ft/s), $S_p$ (suggested speed = 3.5 ft/s)	4b	3.5	
Pedestrian start-up time and end clearance time (s), $t_s$ (suggested start-up time = 3 sec)	4c	3	
[Calculated automatically] Critical gap required for crossing pedestrian (s), $t_c$	4d	15	
Major road volume, total both approaches OR approach being crossed if raised median island is present, during peak hour (veh/h), $V_{maj-d}$	4e	701	
Major road flow rate (veh/s), v	4f	19.2	
Average pedestrian delay (s/person), $d_p$	4g	2.97	
Total pedestrian delay (h), $D_p$ The value in 4h is the calculated estimated delay for all pedestrians crossing the major roadway without a crossing treatment (assumes 0% compliance). If the actual total pedestrian delay has been measured at the site, that value can be entered in 4i to replace the calculated value in 4h.	4h	1.1	
	4i	1.1	
Step 5: Select treatment based up on total pedestrian delay and expected motorist compliance.			
Expected motorist compliance at pedestrian crossings in region: enter <b>HIGH</b> for <b>High Compliance</b> or <b>LOW</b> for <b>Low Compliance</b>	5a	High	
<b>Treatment Category:</b>	<b>Consider raised median islands, curb extensions, traffic calming, etc. as feasible.</b>		



Because the volume in Step 4e is different from the volume in Step 3a, the graph may show a different result than the Treatment Category above.

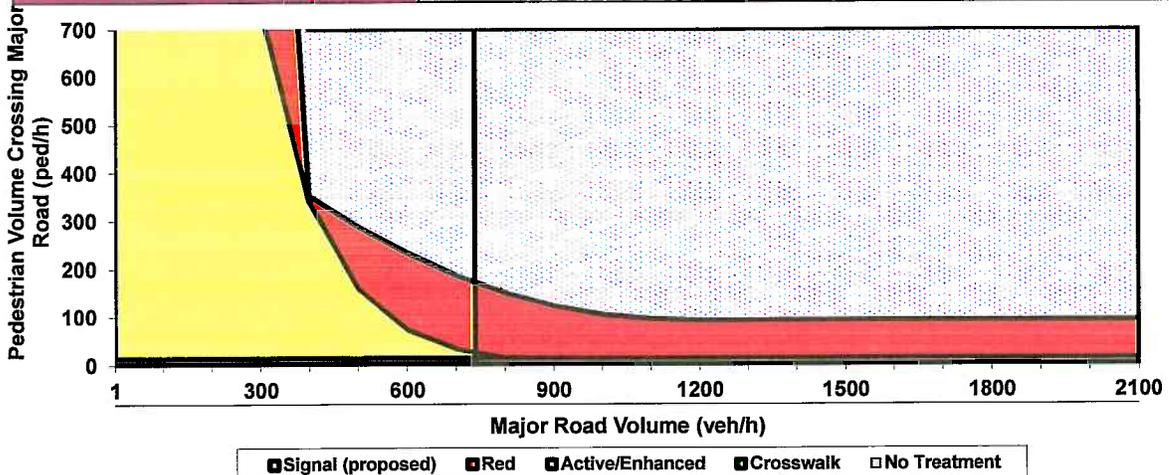
This worksheet provides general recommendations on pedestrian crossing treatments to consider at unsignalized intersections; in all cases, engineering judgment should be used in selecting a specific treatment for installation. This worksheet does not apply to school crossings. In addition to the results provided by this worksheet, users should consider whether a pedestrian treatment could present an increased safety risk to pedestrians, such as where there is poor sight distance, complex geometrics, or nearby traffic signals.

## GUIDELINES FOR PEDESTRIAN CROSSING TREATMENTS

This spreadsheet combines Worksheet 1 and Worksheet 2 (Appendix A, pages 69-70) of TCRP Report 112/NCHRP Report 562 (*Improving Pedestrian Safety at Unsignalized Intersections*) into an electronic format. This spreadsheet should be used in conjunction with, and not independent of, Appendix A documentation.

<b>Key</b>	This spreadsheet is still under development, please inform TTI if errors are identified.
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	Gray fields are automatically calculated and should not be edited.

Analyst and Site Information			
Analyst	MJB	Major Street	NE Stephens Street
Analysis Date	April 8, 2011	Minor Street or Location	North of NE Airport Road
Data Collection Date	March 15, 2011	Peak Hour	5:00 to 6:00 PM
<b>Step 1: Select worksheet:</b>			
Posted or statutory speed limit (or 85th percentile speed) on the major street (mph)	1a		41
Is the population of the surrounding area <b>LESS THAN</b> 10,000? (enter <b>YES</b> or <b>NO</b> )	1b		NO
<b>Step 2: Does the crossing meet minimum pedestrian volumes to be considered for a traffic control device?</b>			
Peak-hour pedestrian volume (ped/h), $V_p$	2a		2
<b>Result: Consider raised median islands, curb extensions, traffic calming, etc. as feasible.</b>			
<b>Step 3: Does the crossing meet the pedestrian warrant for a traffic signal?</b>			
Major road volume, total of both approaches during peak hour (veh/h), $V_{maj-s}$	3a		1343
[Calculated automatically] Preliminary (before min. threshold) peak hour pedestrian volume to meet warrant	3b		5
[Calculated automatically] Minimum required peak hour pedestrian volume to meet traffic signal warrant	3c		5
Is 15th percentile crossing speed of pedestrians less than 3.5 ft/s (1.1 m/s)? (enter <b>YES</b> or <b>NO</b> )	3d		No
If 15th percentile crossing speed of pedestrians is less than 3.5 ft/s (1.1 m/s), then reduce 3c by up to 50%.	% rate of reduction for 3c (up to 50%)	3e	0%
	Reduced value or 3c	3f	5
<b>Result:</b>			
<b>Step 4: Estimate pedestrian delay.</b>			
Pedestrian crossing distance, curb to curb (ft), L	4a		71
Pedestrian walking speed (ft/s), $S_p$ (suggested speed = 3.5 ft/s)	4b		3.5
Pedestrian start-up time and end clearance time (s), $t_s$ (suggested start-up time = 3 sec)	4c		3
[Calculated automatically] Critical gap required for crossing pedestrian (s), $t_c$	4d		2
Major road volume, total both approaches OR approach being crossed if raised median island is present, during peak hour (veh/h), $V_{maj-d}$	4e		739
Major road flow rate (veh/s), v	4f		205
Average pedestrian delay (s/person), $d_p$	4g		25.7
Total pedestrian delay (h), $D_p$ The value in 4h is the calculated estimated delay for all pedestrians crossing the major roadway without a crossing treatment (assumes 0% compliance). If the actual total pedestrian delay has been measured at the site, that value can be entered in 4i to replace the calculated value in 4h.	4h		1.2
	4i		
<b>Step 5: Select treatment based up on total pedestrian delay and expected motorist compliance.</b>			
Expected motorist compliance at pedestrian crossings in region: enter <b>HIGH</b> for High Compliance or <b>LOW</b> for Low Compliance	5a		High
<b>Treatment Category:</b>	<b>Consider raised median islands, curb extensions, traffic calming, etc. as feasible.</b>		



Because the volume in Step 4e is different from the volume in Step 3a, the graph may show a different result than the Treatment Category above.

This worksheet provides general recommendations on pedestrian crossing treatments to consider at unsignalized intersections; in all cases, engineering judgment should be used in selecting a specific treatment for installation. This worksheet does not apply to school crossings. In addition to the results provided by this worksheet, users should consider whether a pedestrian treatment could present an increased safety risk to pedestrians, such as where there is poor sight distance, complex geometrics, or nearby traffic signals.





**ROSEBURG PUBLIC WORKS COMMISSION AGENDA  
THURSDAY, JUNE 9, 2011**

*Richard K. O'Connell  
Acting City Recorder  
6/9/2011*

**3:30 p.m Regular Meeting      City Hall Third Floor Conference Room  
900 SE Douglas Avenue, Roseburg, Oregon 97470**

***NOTE: IT IS UP TO EACH OF YOU AS COMMISSIONERS TO CALL 541-492-6730 AND LET STAFF KNOW BEFORE THE DAY OF THE MEETING IF YOU WILL NOT BE ATTENDING. THANK YOU.***

**I. CALL TO ORDER**

**II. ROLL CALL:**

<u>Chair:</u>	Steve Kaser		
<u>Commissioners:</u>	Nathan Reed	Stuart Liebowitz	Noel Groshong
	Richard Weckerle	Jim Kent	Joe Powell
	Fred Dayton	Dell Gray	

**III. APPROVAL OF MINUTES**

A. May 12, 2011

**IV. DISCUSSION ITEMS**

- A. Lincoln Street Water Main Replacement Bid Award Recommendation
- B. SE Pine Street and NE Stephens Street Pedestrian Crossing Studies
- C. 2" and Larger Water Meter SDC Comparisons

**AUDIENCE PARTICIPATION** – At this time, anyone wishing to address the Commission concerning items of interest not included in the agenda may do so. The person addressing the Commission shall, when recognized, give his/her name and address for the record. All remarks shall be directed to the whole Commission. The Commission reserves the right to delay any action, if required, until such time when they are fully informed on the matter.

**V. INFORMATIONAL**

A. Traffic Calming - Verbal

**VI. BUSINESS FROM THE COMMISSION**

**VII. NEXT MEETING DATE:** July 14, 2011

**VIII. ADJOURNMENT**

**\*\*\* AMERICANS WITH DISABILITIES ACT NOTICE \*\*\***

Please contact the Office of the City Recorder, Roseburg City Hall, 900 SE Douglas Avenue, Roseburg, OR 97470-3397 (Phone 541-492-6700) at least 48 hours prior to the scheduled meeting time if you need an accommodation. TDD users please call Oregon Telecommunications Relay Service at 1-800-735-2900.

