Work Zone ITS Devices
The WSDOT Experience

SLOW

STOP

LANE
CLOSED
PASS

Low-Tech Work Zone Devices

- Portable Changeable Message Signs
- Portable Highway Advisory Radio
- Over height Detection
- Intrusion Alarms
- Portable Signal Systems
- Automated Flagger Assistance Devices

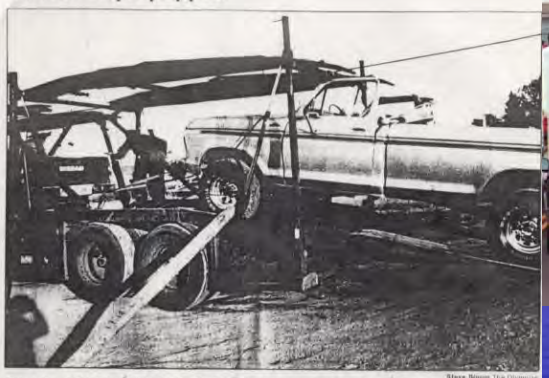
BE
PREPARED
TO STOP

SLOW

CAUTION
BUMP
AHEAD

Portable HAR Systems

Trucks' tops popped



Steve Bloom The Olympian

Pickup damaged in Interstate 5 accident in Tumwater is reloaded into an auto carrier Tuesday.

High load rams freeway overpass

By Mark Baumgartner
Olympian staff writer

State officials and a husband-and-wife trucking team say they are confused about why a semi truck carrying automobiles destined for Seattle scraped the bottom of a pedestrian overpass in Tumwater after apparently clearing even shorter heights on Interstate 5 between there and Portland, Ore.

Marion Petersen and her husband Steve were hauling the seven used vehicles to a Seattle auction when the top of their load was sheared Tuesday morning by the bottom of the new pedestrian freeway overpass south of Trosper Road. State troopers measured the Petersen's load after the accident and found it exceeded the legal height limit of 14 feet from top of the load to the road, said Sgt. Charlie Schreck.

The Petersens said this morning that they left Portland without measuring the height of their load.

"We relied on the weigh station at Woodland to tell us if we were over the limit," said Marion Petersen, who lives with her husband in Vancouver, Wash. "We're fully responsible for the load," she said. "But they're supposed to tell us if the load's not safe."

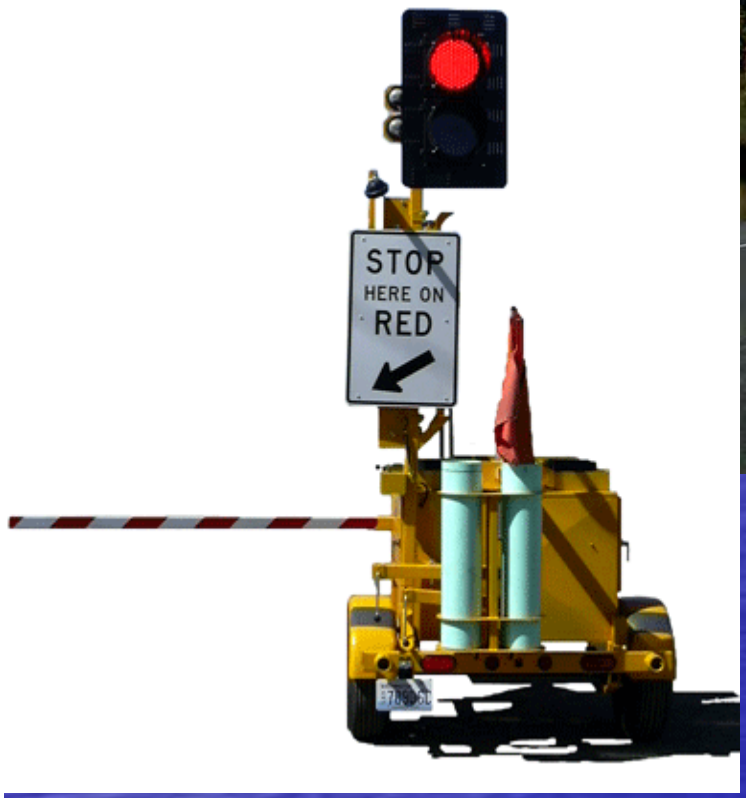
The Petersens said they were baffled about why an overpass with a clearance listed as 14 feet five inches would knock the top off their load when they had passed under numerous other overpasses, some lower than 14 feet high.

See High load/back page

Overheight Vehicle Detection

Intrusion Alarms

Portable Signal System



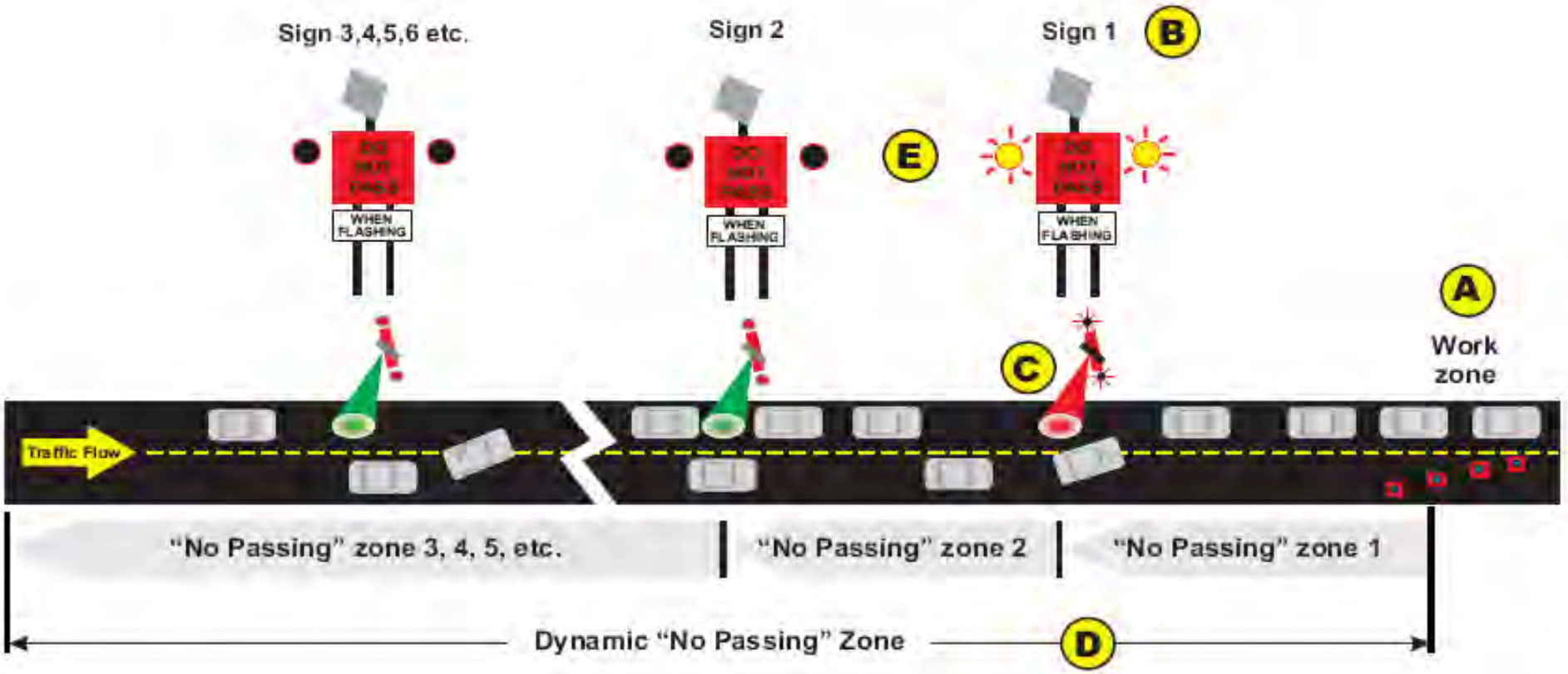
Automated Flagger Assistance Device (AFAD)

Intelligent Devices

- Smart work zone devices
- Dynamic Lane Merge
- Queue Detection System
- Travel Time Estimation System
- Speed trailers
- Variable Speed Limit
- Work Zone Photo Enforcement

Smart Work Zone – Portable Traffic Management System

Video Trailer



A Construction work creates a lane restriction on a two lane, one direction roadway.

B The Dynamic Work Zone Safety System creates a dynamic "No Passing Zone" just in advance of the lane restriction. The traffic sensors, which are non-intrusive, are mounted on the sign structure and used to detect traffic queue lengths. Sign #1 is always activated to warn of the lane restriction.

C When vehicle congestion is detected at Sign #1, the second warning sign is automatically activated. When vehicle congestion is detected at Sign #2, the third warning sign will be activated, and so on.

D The "No Passing Zone" is dynamic. Each "No Passing" sign is automatically activated/deactivated in sequence as changing conditions in vehicle congestion are detected by the traffic sensors.

E Activated signs have flashing lights and display a warning message. Non-activated signs remain blank with the lights turned off.

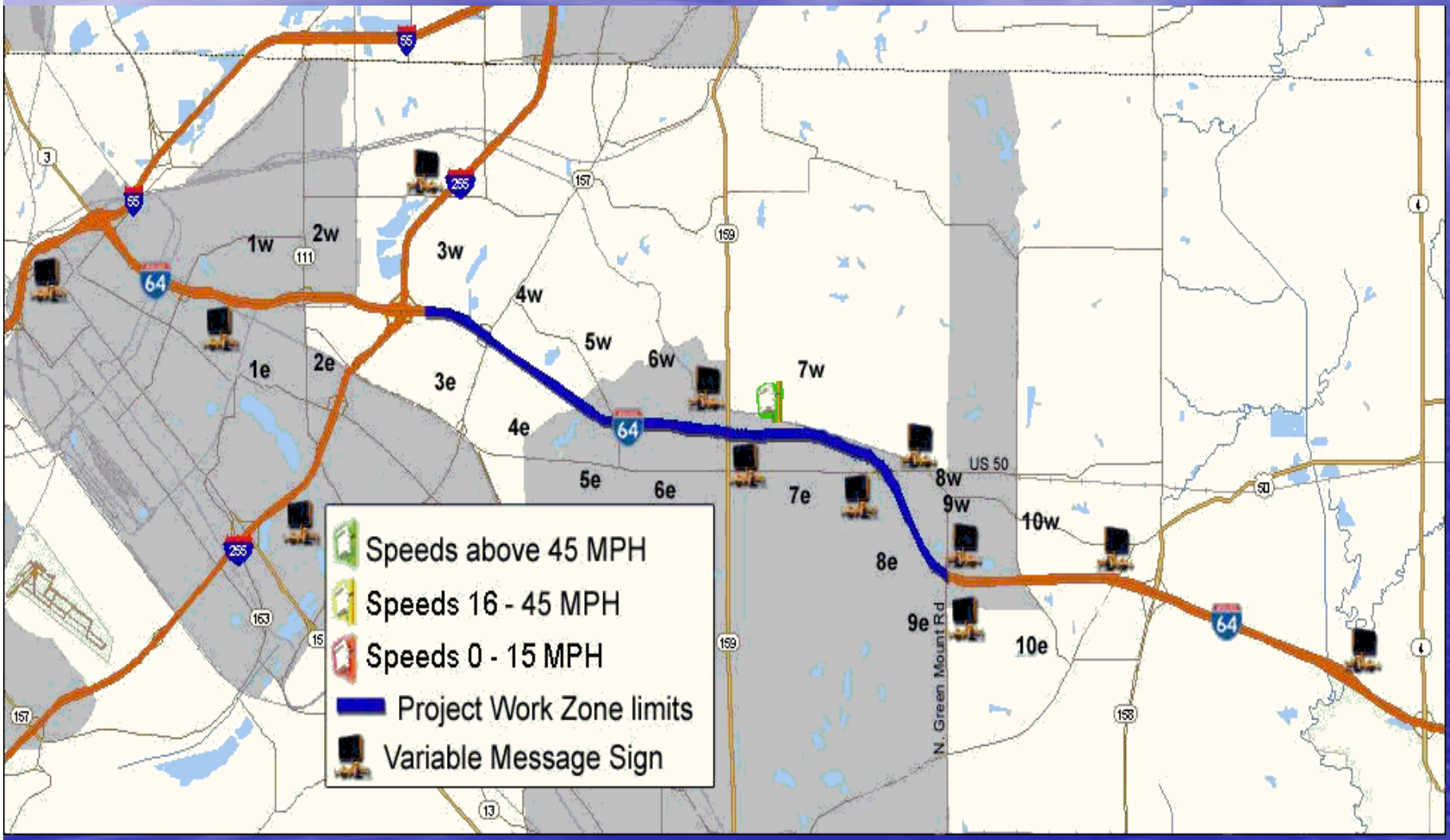
Anyone attempting to pass the waiting traffic queue and then invading the traffic stream near the taper would be subject to a traffic citation, since the "No Passing Zone" sign is an enforceable regulatory sign.

Dynamic Lane Merge System

Queue Detection System

Typical Queue

Drivers see this first ...



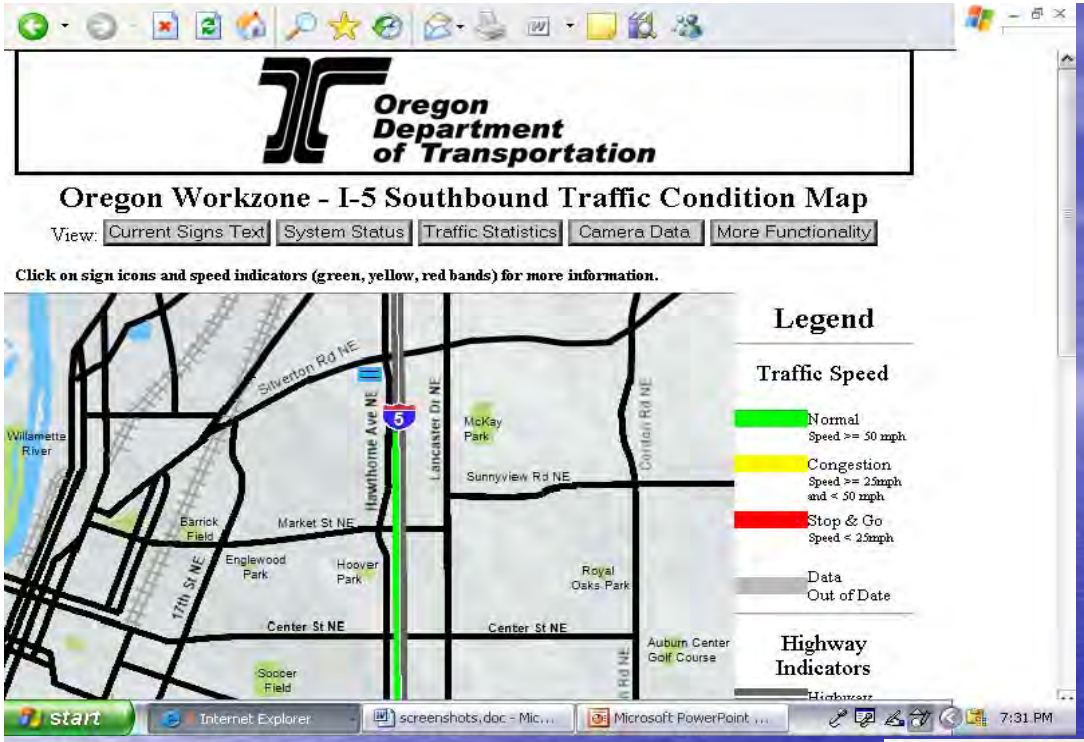
Illinois DOT – I64 Add Lane Project – Travel Management System

Travel Time Estimation System

Arizona Route 68 License Plate reader used to measure travel time

Illinois DOT I-55 Bridge Construction
Real Time Work Zone Traffic control system

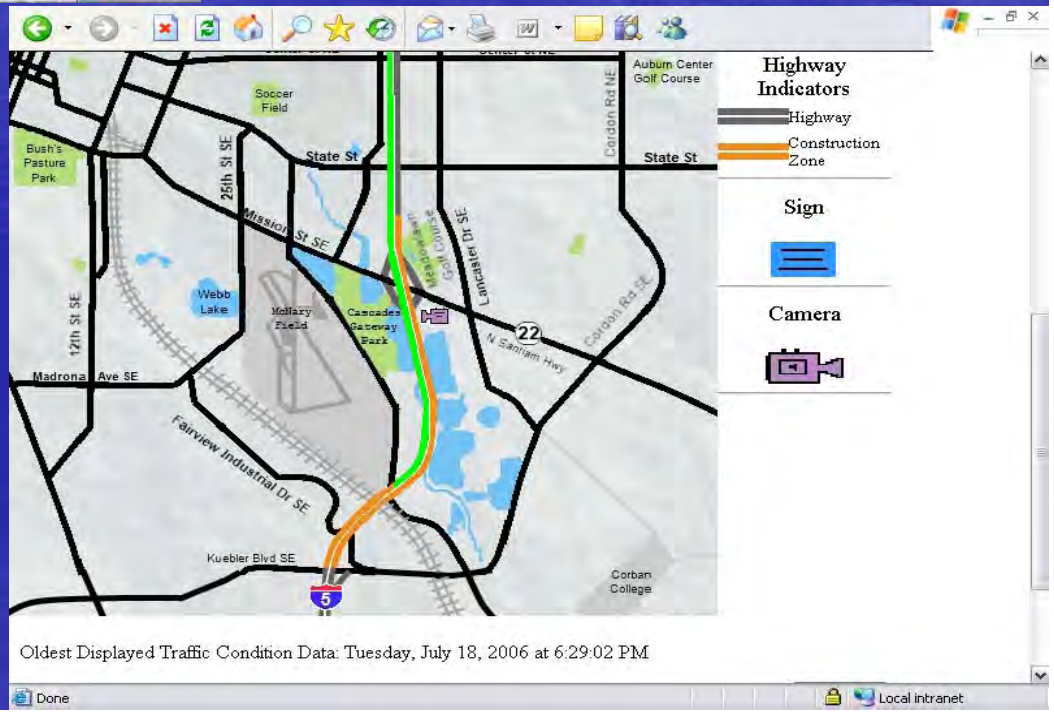
8 Portable traffic sensors
- 17 remotely controlled DMS
- 4 Portable camera systems
- All systems linked to central base



Oregon DOT – Travel Time Monitoring Project

Project Goals

- Monitor travel time through the Work zone using side-fired sensors and AVI transponders
- Measure delay through the work zone
- Measure traffic volumes, speed, roadway occupancy and patterns
- Estimate corridor travel time and provide this information to drivers



Speed Management and Enforcement

- Variable speed limits
- Automated enforcement

iCone

- Easily deployable and movable
- Provides speed data
- Locates itself using GPS
- Available via the Internet in realtime
- Implications of devices like this:
- Easier to collect WZ performance data
- Can be used in short duration situations
- Still being evaluated by WSDOT

Speed Display Trailer – used on WSDOT/WSP 555 Pilot project

SPEED LIMIT
PHOTO
ENFORCED
WSDOT
WSP
Give'em a
BRAKE

ATS
American
Traffic Solutions
Give 'em a
BRAKE
ESCAPE

Lewis County District Court
PO Box 600
Chehalis, WA 98532-0600
360-740-1203

NOTICE OF INFRACTION

NOTICE # 1160800004609
PIN # 8812

This infraction will not be a part of your driving record and will be processed as a parking infraction.

Amount Due: $137.00
Due Date: 10/27/2008

[redacted]
1535 S MARKET BLVD # 33
CHEHALIS, WA 98532-4139

INFRACTION **SPEEDING - RCW 46.61.400**				
VIOLATION DATE **10/01/2008**		VIOLATION TIME **01:16 PM**		FINE AMOUNT **$137.00**
VEHICLE PLATE # 94[redacted]				STATE **WA**
YEAR **1998**	MAKE **HONDA**	MODEL **ACD**	STYLE **4D**	COLOR **PURPLE**
LOCATION **NB INTERSTATE 5 BETWEEN MP 75 AND 76, Lewis County, WA**			POSTED **60 mph**	ACTUAL **71 mph**
REGISTERED OWNER **CASTIO ADRIANA E** [redacted]				
DEFENDANT **CASTIO ADRIANA E** [redacted]				
STREET ADDRESS [redacted]				
CITY **CHEHALIS**		STATE **WA**		ZIP **98532-4139**

I certify as true and correct under penalty of perjury under the laws of the State of Washington that, based upon my review of photographs made by an automated traffic camera, I have probable cause to believe, and do believe, that on the date and at the time and location indicated above, the operator of the vehicle described above was in violation of **RCW 46.61.400 (SPEEDING).** The images show the vehicle and its license plate, portray a fair and accurate representation of the location listed above and show that the vehicle operator was driving with a speed over the speed limit posted. The registered owner of the vehicle is named above.

OFFICER	BADGE #	ISSUE DATE:
CADET MATT ROGERS	**7070**	**10/08/2008**

Detach here and return bottom portion with you payment

You must respond no later than midnight of the **DUE DATE** by one of the following methods:

1. PAY THE $137.00 PENALTY (see back for payment options); OR
2. REQUEST A MITIGATION HEARING TO EXPLAIN THE CIRCUMSTANCES (see back for explanation of hearing); OR
3. REQUEST A HEARING TO CONTEST THE INFRACTION (see back for explanation of hearing); OR
4. SUBMIT A DECLARATION OF NON-RESPONSIBILITY (see back)

This notice represents a determination that a speed limit zone violation has been committed. This determination will be final unless you request a mitigation or contested hearing or submit a declaration of non-responsibility within 15 days.

NAME: [redacted]				**DUE:**	10/27/2008
NOTICE #:	1160800004609	**VERSION:**	1	**ISSUED:**	10/08/2008
PLATE: 943[redacted]		**STATE:**	WA	**TYPE:**	Regular Passeng

This response must be mailed no later than midnight of the Due Date

Lewis County District Court
Law & Justice Center, 3rd Floor
PO Box 600
Chehalis, WA 98532-0600

WSDOT ITS Application Top 3 Priorities

•Dynamic Lane Merge System - The system is intended to improve work zone capacity and reduce crashes, (studies show minimal improvement) but it's greatest value may be the merge control or direction it provides drivers approaching the lane closure.

•Queue Detection System - a portable device that utilizes a microwave detector that is able to detect changes in traffic flow, and send out an alarm to advance signs to warn motorists if a backup is forming.

•Work Zone Traffic Management - this concept can employ several technologies and is slowly starting to move ahead on some projects, but requires some detailed advance planning and design. A practical example might be to combine temporary work zone ITS with permanent ITS managed through the region TMC.

WORK ZONE SAFETY

WORK ZONE SAFETY

- Work Zone Home
- Training Information
- Drivers Education
- Resources
- Work Zone ITS
- Work Zone Safety Task Force
- Traffic Control Oversight Committee - TCOC
- Contacts
- FAQ

RELATED TOPICS

- "Give 'em a Brake"
- Safety Industry Links
- WSDOT Safety Office
- Automated Traffic Safety Cameras
- Flagger Safety Rules

What is a Work Zone?

A work zone is an area of a highway with construction, maintenance, or utility work activities. A work zone is typically marked by signs, channelizing devices, barriers, pavement markings, and/or work vehicles. It extends from the first warning sign or rotating/strobe lights on a vehicle to the END ROAD WORK SIGN or the last temporary traffic control device.

- National Work Zone Memorial Wall
- Roadway Worker Memorial Scholarship Program

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Questions?