

WST2

Washington State Technology Transfer



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**Washington State
Department of Transportation**

A Technical Digest of the
Washington State Department of Transportation (WSDOT)
and the Local Technical Assistance Program (LTAP)
Issue 87, Summer 2005

Washington State Technology Transfer

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Editor reserves the right to refuse to publish and to edit articles to conform to the standards of our publication.

The opinions expressed in articles are not necessarily those of the editor.

Cover photo: *Bill Pierce, WSDOT Local Programs Engineer, making a presentation at the SR 101 road improvements visioning workshop.*

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The Local Technical Assistance Program (LTAP) is a national program financed by the Federal Highway Administration (FHWA) and individual state transportation departments. Administered through Technology Transfer (T2) Centers in each state, LTAP bridges the gap between research and practice by translating state-of-the-art technology into practical application for use by local agency transportation personnel.

Any opinions, findings, conclusions, or recommendations presented in this newsletter are those of the authors and do not necessarily reflect the views of WSDOT or FHWA. All references to proprietary items in this publication are not endorsements of any company or product.



U. S. Department of Transportation
Federal Highway Administration

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WSDOT Has Grants Available for Local Transportation Projects

Communities across the state have an opportunity to enhance their transportation system and improve safety through several grant programs being offered by the Washington State Department of Transportation (WSDOT). WSDOT administers both federal and state grant funding to qualified communities and organizations and today issued a “call for projects” for five separate grant programs:

Federal Transportation Enhancement Program

This federal program has \$42 million available to public agencies and non-profit organizations in Washington for innovative transportation-related projects that contribute to a community’s transportation needs and goals. Regional Transportation Planning Organizations (RTPO) will prioritize projects within their respective areas following the Enhancement Advisory Committee guidelines. The Enhancement Advisory Committee will submit their recommendations to the Secretary of Transportation for final selections. Eligible projects may include:

- Restoring historic transportation facilities
- Building bike and pedestrian trails and walkways
- Landscaping and scenic beautification
- Treating stormwater runoff and reducing pollution from roadways

Federal Rural County Two-Lane Roadways and Intersection and Corridor Safety Programs

Two federal grant programs offer over \$39 million to improve safety in Washington State. After reviewing accident history in the state, it was determined that rural county two-lane roadways, intersections, and high-speed corridors have the highest accidents.

■ *Rural County Two-Lane Roadways* program is a federal pilot program targeted at reducing the accident rates on rural two-lane roads. This program provides funding for low-cost safety improvement projects. All Washington counties are eligible to apply for the \$19.5 million available, and may receive up to \$500,000 per county for roadway safety improvements. Applications are due to WSDOT by September 12, 2005. Grants may fund safety improvements such as:

- Centerline or shoulder “rumble strips” that jar motorists when they stray out of their lanes
- Pavement marking, guideposts, and warning signs
- Roadside clearing to remove fixed objects and enable motorists to recover their vehicle if they run off of the road

http://www.wsdot.wa.gov/TA/ProgMgt/Grants/Two_Lane_Roadway.htm

■ **Intersection and Corridor Safety** program is targeted at reducing the accident rates at intersections and within corridors. This program provides funding for safety projects that eliminate or reduce fatal or injury accidents at high accident intersections and within high accident corridors. All cities, towns, counties, ports, and tribal governments are eligible to apply for the \$20 million available. Applications are due to WSDOT by October 10, 2005. Grants may fund safety improvements such as:

- Intersection and roadway improvements
- Centerline or shoulder “rumble strips” that jar motorists when they stray out of their lanes
- Pavement marking and guardrail
- Roadside clearing to remove fixed objects and enable motorists to recover their vehicle if they run off of the road

http://www.wsdot.wa.gov/TA/ProgMgt/Grants/Intersection_Corridor.htm

Pedestrian and Bicycle Safety Grant and Safe Routes to Schools Program

Two state grant programs offer a total of \$5 million to improve pedestrian and bicycle safety in Washington. The 2005 Washington State Legislature created the Pedestrian and Bicycle Safety grant program and continued the Safe Routes to Schools Program. Applications are due to WSDOT by October 3, 2005. Recommendations will be provided to the state legislature by December 15, 2005.

■ **Pedestrian and Bicycle Safety** grants are available to all public agencies for projects that make pedestrian and bicycle improvements at accident locations, intersections, and transit facilities; construct paths; and improves safety for children, elderly, and people with disabilities.

http://www.wsdot.wa.gov/TA/ProgMgt/Grants/Pedestrian_Bicycle.htm

■ **Safe Routes to Schools** grants are available to schools and school districts for projects that improve safety for children and encourage healthy lifestyles through walking or biking. Projects may include sidewalks, pathways, and other street safety measures; education programs; enforcement; and community health initiatives.

http://www.wsdot.wa.gov/TA/ProgMgt/Grants/Safe_Routes.htm

Additional information can be found at: <http://www.wsdot.wa.gov/TA/HomePage/HLPHP.html>



Superpave Performance and Cost Comparison

State Materials Laboratory
Tech Notes, July 2004

Introduction

WSDOT placed its first Superpave test section in 1996 and has placed an increasing number of projects each year, with volumetric acceptance planned for 2007. Over 2.1 million tons have been placed through the year 2002 on approximately 1,090 lane-miles. In 1997, Superpave only accounted for 2 percent of the tonnage placed while almost half the tonnage placed in 2002 was Superpave. Figure 1 shows the location of each Superpave project that has been placed through 2002.

The performance and cost comparison presented here is for wearing course mixes, therefore the $1/2$ and $3/4$ inch Superpave mixes are compared to Hveem-designed HMA classes A, B, E, and F.

Performance Background

A comparison of the Pavement Structural Condition (PSC), International Roughness Index (IRI), and rut depths between Superpave and Hveem-designed HMA was performed using data from the 2002 Washington State Pavement Management System (WSPMS). The PSC is a measure of pavement distress (includes longitudinal, alligator, and transverse cracking and patching) and ranges from 100 (no distress) to 0 (extensive distress). IRI is a measure of road roughness and ranges from 0 inches/mile (perfectly smooth) to values in excess of 320 inches/mile (very rough). The rut depths are measured in the wheelpaths and can range from 0 inches to values in excess of $1/2$ inch. WSDOT programs rehabilitation projects for roadways that exhibit a PSC between 40 and 60, an IRI measurement of 220 inches/mile or higher, and/or rut depths that exceed $3/8$ inch.



Figure 1. Superpave Projects

Each Superpave project was compared to the previous overlay or construction that was done at the same location (State Route and milepost) to limit variables such as environment and traffic levels. The PSC, IRI, and rut depths were retrieved from the WSPMS for both projects at the same age.

The Superpave projects range in age from one to six years old (placed from 1996 to 2001), of which approximately 70 percent are age 3 or less. The Hveem-designed projects were constructed anywhere from 1967 to 1998 (approximately 68 percent of these projects were placed prior to 1990). For the comparison, the Superpave and Hveem-designed projects were broken into similar sections, which consist of the same year or class of mix and a similar lift thickness. All Superpave projects utilized a PG binder, while almost all the Hveem-designed mixes (94 percent) used AR4000W. Since lift thickness can affect the PSC, IRI, and rut depths, comparisons were only made when the lift thicknesses for both projects were within 0.10 feet of each other.

Pavement Condition Performance

The Superpave PSC ranged from 47 to 100 while the Hveem-designed mixes ranged from 22 to 100 (Figure 2). The majority of the Superpave sections have a higher PSC than its comparable Hveem-designed section. After a maximum of six years performance:

- 48 percent of Superpave sections have a higher PSC
- 29 percent of the comparable sections had the same PSC
- 23 percent of the Superpave sections have a lower PSC

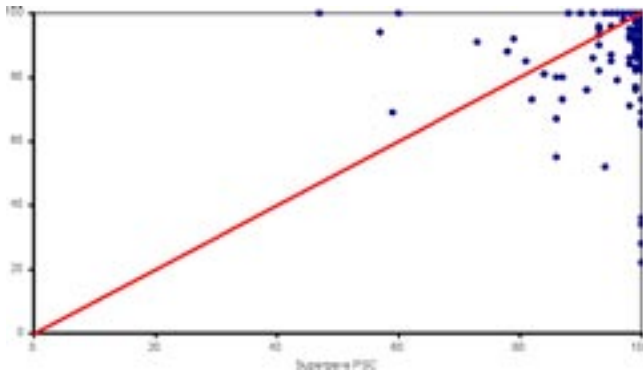


Figure 2. Comparison of PSC

Roughness Performance

The Superpave IRI ranges from 25 inches/mile to 204 inches/mile while the Hveem-designed IRI ranges from 48 inches/mile to 319 inches/mile. Almost all of the Superpave sections have a lower IRI (smoother) than the Hveem-designed mixes (Figure 3). After a maximum of six years performance:

- 91 percent of the Superpave section's IRI values are lower than the Hveem-designed sections

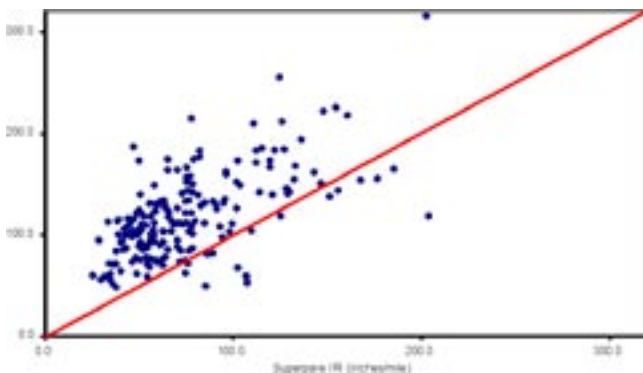


Figure 3. Comparison of IRI

Rutting Performance

The range of rut depths for the Superpave sections was 0 inches to 1/4 inch while the Hveem-designed mixes ranged from 1/32 inch to 7/16 inch (Figure 4). The rut depths for the Hveem-designed sections were usually higher than the rut depths of the Superpave sections. After a maximum of six years performance:

- 60 percent of the Superpave sections had lower rut depths than the Hveem-designed sections
- Of the remaining 40 percent, 12 percent had the same rut depths and 28 percent of the Superpave sections had higher rut depths than the Hveem-designed sections

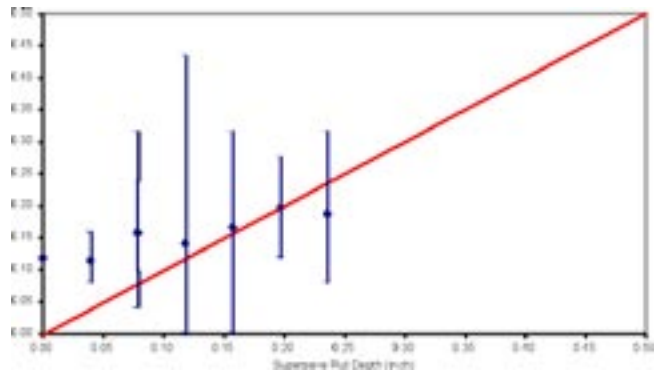


Figure 4. Comparison of Rut Depths

Performance Results

Although these results favor Superpave over the conventional Hveem-designed mixes, recall that 68 percent of the Hveem-designed sections were placed prior to 1990. In recent years, there has been an increased focus on improving construction practices, improving initial smoothness, and improved design methods that cannot be taken into account with this type of comparative study. Therefore, an additional check was performed on Hveem-designed projects constructed at approximately the same time as the Superpave projects. To ensure that the traffic levels and environment were similar, only projects constructed near or adjacent to the Superpave projects were chosen. Another constraint was to limit the construction year of the Hveem-designed projects from 1990 to 2002. Due to these constraints, there were only 8 comparison projects (all constructed in 1997 and 1998). The results for these 8 projects were comparable in regards to PSC, IRI, and rutting, but the IRI result was not as remarkably in favor of the Superpave designed sections.

- **PSC:** 75 percent of the Superpave projects have the same or less surface distress than the Hveem-designed projects
- **IRI:** 63 percent of the Superpave projects are smoother than the Hveem-designed projects
- **Rutting:** 63 percent of the Superpave projects have less rutting than the Hveem-designed projects

At this time, Superpave seems to be performing as well as the Hveem-designed mixes in terms of PSC, IRI, and rutting. The comparison sections ranged in age from one to six years, but the majority of the sections were one to three years old. The expected overlay life cycle for Eastern and Western Washington is approximately 12 and 15 years, respectively, so a similar analysis will be performed in the near future to verify these results.

Performance-Graded Binder Performance

Since Superpave consists of an asphalt binder specification and a mix design method, an examination of the performance-graded (PG) binders was also conducted.

For the intersection rutting analysis, there were 8 projects that had signalized intersections. The high-temperature binder grades used were PG 76, PG 70, and PG 64, which corresponds to one or two bumps (four projects each) from the base grade at 98 percent reliability. WSDOT requires a two-grade bump for standing traffic, but depending on the length of the project, the number of intersections within the project, and the previous rut depth severity, a one-grade bump may have been selected for the entire project.

With three years of data, the maximum rut depth was $\frac{1}{4}$ inch. After the first year, the maximum rut depths for intersections using a PG 76, PG 70, and PG 64 were $\frac{1}{8}$ inch, $\frac{1}{4}$ inch, and $\frac{3}{16}$ inch, respectively. Figure 5 shows a comparison of the average rut depths by grade of binder for the overlays up to three years of age. Although none of the average rut depths exceed $\frac{1}{8}$ inch, the rut depths for the PG 76 and PG 70 binders remained fairly constant over the three years, while the PG 64 binder increased each year.

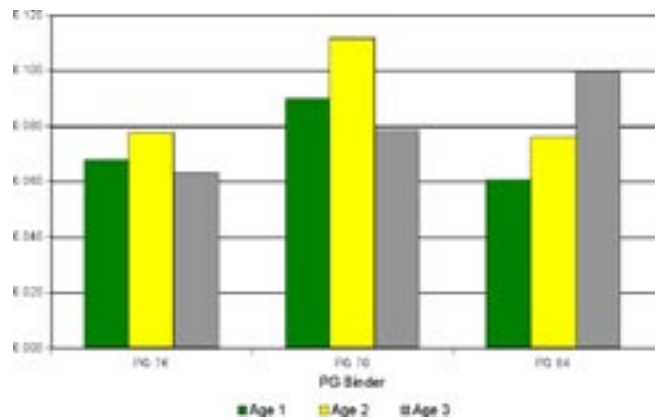


Figure 5. Average Intersection Rutting by Binder Grade

An evaluation of low temperature cracking was performed, but since all of the Superpave projects were overlays, any transverse crack is likely due to reflective cracking and not low temperature cracking. Therefore, this evaluation is more an assessment of a PG binder's impact on delaying reflective cracking. Based on the WSPMS, the Hveem-designed sections have two to three times more transverse cracking than the Superpave sections at the same location and age.

At this time, there is insufficient data to draw specific conclusions on the effectiveness of PG binders for rutting or low temperature cracking. As additional years of performance data become available, the benefits of PG binders will be reassessed.

Cost Comparison

Three types of cost comparisons were performed: 1) unit price of Superpave per year, 2) unit prices of Superpave and Hveem-designed HMA by class of mix, and 3) cost per lane-mile.

The unit price of Superpave per year is presented in Figure 6 along with the tonnage placed (the 1996 test section is not included because the cost was a lump sum change order). The average cost for producing and placing Superpave in 1997 (four projects) was \$36.99/ton, but after the first year, the average cost decreased to \$27.87/ton and has remained around \$28/ton since.

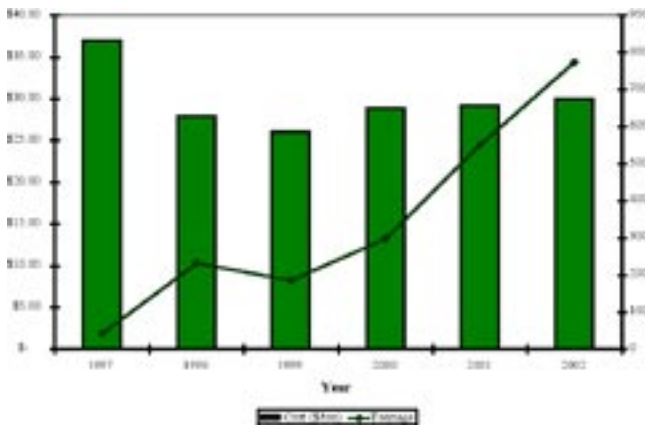


Figure 6. Superpave Unit Price and Tonnage by Year

The comparison of unit prices is presented in Table 1. The Superpave $1/2$ inch and $3/4$ inch mixes are \$28.66/ton and \$26.40/ton, respectively, while the Hveem-designed mixes (A, B, and E) are between \$27.41/ton and \$27.64/ton. Overall, the costs are very similar with an average of \$27.51/ton. Although not shown in Table 1, there was a slight increase in the Hveem-designed HMA cost when PG binders were introduced. Also, Table 1 shows that HMA, in general, is more expensive in Western Washington than Eastern Washington – as expected.

Table 1. Unit Price (\$/ton) Comparison

	Superpave		Hveem-designed		
	$1/2$ inch	$3/4$ inch	A	B	E
East	\$26.38	\$25.01	\$24.11	\$25.15	\$26.57
West	\$34.12	\$35.44	\$28.59	\$28.67	\$27.86
Average	\$28.66	\$26.40	\$27.41	\$27.44	\$27.64

The final comparison was based on the project cost per lane-mile. These costs include only the costs related to paving – safety, drainage, bridge work, etc. have been excluded. As expected, there are differences between the cost in rural and urban areas as well as Western versus Eastern Washington. Paving in rural areas and/or Eastern Washington is typically less expensive, as illustrated in Table 2. The average cost per lane-mile for Superpave and Hveem-designed HMA are \$87,637/lane-mile and \$94,835/lane-mile, respectively.

Since market forces cannot be factored into the costs (low-bid process), these results indicate that there is no significant cost difference between Superpave and Hveem-designed HMA.

Table 2. Cost Per Lane-Mile Comparison

Superpave HMA						
East	Rural	\$76,694	Urban	\$76,056	Average	\$76,490
West		\$80,739		\$134,257		\$109,930
Avg		\$77,705		\$102,918		\$87,637
Hveem-designed HMA						
East	Rural	\$79,500	Urban	\$91,550	Average	\$85,525
West		\$88,100		\$120,200		\$104,150
Avg		\$83,800		\$105,875		\$94,835

Conclusions

- Superpave seems to be performing as well as Hveem-designed HMA in terms of structural condition, smoothness, and rutting.
- The PG binder evaluation is, at this time, inconclusive, as to whether the high temperature binder properties reduce the severity of rutting and whether the low temperature properties prevent or delay transverse cracking.
- The cost for Superpave and Hveem-designed HMA is approximately the same.

Even though not all the improvement can be attributed to the use of Superpave and PG binders, WSDOT has found that Superpave is performing as well as Hveem-designed HMA and costs about the same. Given that Superpave is the national focus and that it is performing well to date, WSDOT will continue to use Superpave mix design methods and PG binders while continuing its implementation schedule.

For more information, contact Linda Pierce, State Pavement Engineer, at (360) 709-5470 or pierceL@wsdot.wa.gov



Nanotechnology Will Change Our Roads

By Bob Brooks

Derived from the article

"Small Science Will Bring Big Changes to Roads" by Tom Kuennen – Better Roads, July 2004

After many years of progress in other industrial sectors, nanotechnology is now finally making its way into the transportation industry. This progression into our industry promises to bring about revolutionary and profound changes to the materials and construction practices with which we are all familiar.

Nanotechnology occurs on a truly miniature scale, in the world of atoms and molecules. In scientific terms, that scale is one billionth of a meter, called a nanometer. At this scale, atoms and molecules exhibit very different properties than those we are familiar with in our everyday world. Nanotechnology marks that boundary line between our familiar world and the world of quantum mechanics. Research into nanotechnology will not only result in the miniaturization of our machines but will also lead to a much better understanding of the physical interactions between common construction materials like aggregates and asphalt binder or Portland cement.

Through research being conducted by the Federal Highway Administration's Advanced Infrastructure Research program, the feasibility of Cyberliths or smart aggregates being used as wireless sensors embedded in concrete or soil is being studied. In addition, common problems

like alkali-silica reactivity in concrete are being investigated and even a better understanding of the hydration process of cement grains is emerging. Additional research being done in the private sector is looking at autonomic (spontaneous) healing in structural polymers. This type of research could someday lead to guardrail that heals itself after being hit or concrete or asphalt pavement that heals its own cracking.

Microsensors, also known as MEMS (Micro-Electro-Mechanical Systems), are already being used on the Golden Gate Bridge and are providing real-time monitoring of stress at any point along with its impact on the bridge as a whole. These microsensors may in the future be reduced to the size of a dust particle, Smart Dust, and be used to coat an entire structure to provide a smart sensor network. High-performance, high-strength steels have already been developed through the use of nanotechnology and more are on the way.

This technology has the potential to solve even mundane problems like dirty signs. Coatings that mimic the properties of the lotus leaf — to which nothing sticks — may well lead to signs that shed dirt and never need washing, freeing up time for more important activities.

"A future in which cracked bridges and potholes repair on their own, guardrails realign automatically after impact, bridges adjust their shapes to control movement caused by winds, and metal structures self-clean to avoid corrosion are among the advances in highway technology under forecast by scientists," the FHWA reported in the summer of 2003. The federal government is taking a lead role in this effort with the passage of the *21st Century Nanotechnology Research and Development Act*. "Nanotechnology is going to change America on a scale equal to, if not greater than, the computer revolution," said Senator Ron Wyden (D-Oregon).

Nanotechnology is now starting to make its impact on construction materials, especially porous materials like concrete and hot mix asphalt. Much research is being done on concrete with the goal of better understanding the hydration process to produce stronger and more durable concrete mixes. The addition of nanoscale silica fume, an industrial byproduct of glass manufacturing, has proven to be a big improvement in durability of concrete structures exposed to deicing salts.

Another area of study involves controlling alkali-silicate reaction (ASR) in concrete mixes. This occurs between alkalis from cement and a reactive form of silica from some aggregates, which can damage concrete. One goal of this research is to develop a test for ASR potential in aggregates.

Self-healing materials are another area of research that holds great promise. This essentially involves the creation of materials that are able to rejoin themselves after being cut or broken. Structural polymeric materials with the ability to autonomically heal cracks have already been developed. This is accomplished by incorporating a microencapsulated healing agent and a catalytic chemical trigger in an epoxy matrix. As a crack develops, the embedded microcapsules are ruptured thus releasing the healing agent into the crack plane through capillary action. Upon contact with the embedded catalyst polymerization, the joining together in a chain like structure occurs and the crack faces are bonded. Other methods of accomplishing the same sealing of cracks are under investigation as well. These methods could be used in HMA as well as concrete.

Plastic coatings have been developed that mimic the "lotus effect." The lotus leaf, or water lily leaf, has a very unique property that repels water and dirt on its surface. On current no-stick products, particles of dirt are just moved around by moving water. But in the "lotus effect," surface dirt and grime are collected by water and are rinsed off. The potential to eliminate sign washing is obvious. This technology has already made its way into an exterior house paint product.

Nanotechnology is also being utilized to develop new low-carbon high performance steels (HPS) that have improved strength and weldability. A new high performance stainless steel has been developed that can produce components that are thinner and lighter than those made from aluminum and titanium. This new stainless steel is currently being used for medical equipment.

Another area of FHWA-funded research are the so-called "smart aggregates." These are miniscule sensors that can be mixed into HMA or concrete and can perform a variety of tasks. A data reader mounted on a car or truck passes over the sensor and powers it and collects the sensor data onto a PC. These "smart aggregates" are designed to withstand the harsh

environment of being embedded in a concrete or asphalt mix and have a lifespan of 50 years. In HMA or concrete, "smart aggregates" can monitor and report on processes that contribute to deterioration and cracking. On structures, they might monitor vibrations and loads that can weaken a structure. These can also be used to monitor traffic conditions and report on congestion or changing environmental conditions such as fog and ice formation. The Golden Gate Bridge has been fitted with an array of 200 small sensors, each with an accelerometer that measures movement from sources such as traffic, wind, or seismic loads. By correlating all the sensor readings, a three-dimensional picture is created.

Carrying this approach one step further, the Department of Defense is working on a sensor system that would be about the size of a printed period. These sensors could be distributed over a potential battlefield to give a three- or four-dimensional real-time visualization of the battlefield conditions.

In the near and not-so-near future, nanotechnology has the potential to change the way we do business in ways that cannot even be imagined now.



Grass Roots Effort Takes Shape in South Bend SR 101 Improvements

*Jim Seitz, Transportation Specialist,
Association of Washington Cities*

The City of South Bend's Revitalization Team, a group of business and community leaders, have set their sights on improving their city through building projects that improve their community. One of the largest projects the team is undertaking is the improvement of the SR 101 corridor, which serves as the "main street" through their small city. The Revitalization Team developed the following vision statement for the corridor and are now taking steps to make it a reality: "The SR 101 corridor through South Bend provides an attractive and safe street design for customers, residents, and tourists; improved mobility for people and goods; areas to gather, interact, shop, and do business; and inviting access points to the picturesque Willapa River."

The team has formed a partnership with the Washington State Department of Transportation (WSDOT), the Transportation Improvement Board (TIB), the Washington State Community, Trade and Economic Development (CTED), and the Association of Washington Cities (AWC) to turn their vision into a reality.



South Bend residents take notes as City Supervisor Steve Russell listens in the background.

One of the first efforts this new partnership has undertaken was to conduct a visioning workshop for SR 101 road improvements. The workshop was held in April at the South Bend Community Center. The main focus of the workshop was to hear from the citizens and record their ideas for the SR 101 corridor improvements. Their ideas for the corridor included new street and pedestrian lighting systems, better gateway signs, trees, and safer and more attractive crosswalks. The ideas received fit well with the team's overall vision statement.

Those attending the workshop received information on street design standards for state highways, funding transportation projects, and similar projects constructed by other small cities around the state.

Since the workshop, Paula Reeves, WSDOT's Local Planning Liaison, has conducted a visual preference survey for the city. The survey was taken by team members and citizens from the community and will help the community identify street features (for example tree canopy, sidewalk width, building setbacks, etc.) that best fit the vision of the community.

The next step in the project development process is to create conceptual drawings. The team will be assisted by Bill Pierce, WSDOT Southwest Region Local Programs Engineer, in this endeavor. The conceptual drawings will be based on community input from the visioning workshop held in April, results of the visual



Diane Grant, member of the Revitalization Team, explains her group's ideas for improvements.

preference survey taken in May, input from the city, and input from the South Bend Revitalization Team. The conceptual drawings were presented to the city council June 27. They gave approval to seek funding for engineering and construction of the improvements.

South Bend's initial grass roots effort has grown into this successful partnership between the city and state agencies that appears to be well on its way to making the community vision a reality.



A South Bend resident explains her vision for artistic crosswalks downtown.

The *Gray Notebook* is a quarterly publication published by the Washington State Department of Transportation to track a variety of performance and accountability measures for review by the Transportation Commission

and others. The following is a sampling from this document. For an on-line version of this or a previous edition of the *Gray Notebook*, visit <http://www.wsdot.wa.gov/accountability/>



**Washington State
Department of Transportation**

Measures, Markers and Mileposts

The Gray Notebook for the quarter ending
March 31, 2005

WSDOT's quarterly report to the Governor and the
Washington State Transportation Commission
on transportation programs and department management

Douglas B. MacDonald
Secretary of Transportation



Four Year Anniversary Edition

Special Features

WSDOT Completes Traffic Signal Operations

National Traffic Signal Operations Assessment

WSDOT manages traffic signal timing to improve roadway safety and traffic flow. According to the National Transportation Operations Coalition (NTOC), the benefits of investing in signal timing have an extraordinarily high forty-to-one ratio to costs. Managing traffic signals supports shorter trip times, improved air quality, better fuel efficiency, and decreased driver frustration.

In February 2005, the Traffic Signal Operations Self-Assessment survey was sent to any agency in the United States that is responsible for the operation and maintenance of traffic signals. NTOC, in partnership with the Federal Highway Administration, sponsored the survey. The self-assessment helps agencies identify opportunities to improve their own policies and procedures. In addition, the information is combined into a national report card on traffic signal operations.

NTOC received 378 responses from 49 states, 242 cities, and 62 counties. Bearing in mind that the rankings are derived from self-assessments of the organizations returning results, WSDOT's score was 68 compared to the national average of 60.

WSDOT's Signal Re-Timing Efforts

WSDOT owns and operates just over 1000 traffic signals on state roadways. Virtually all are fully actuated traffic systems, meaning they use loop detectors to determine when the signal light changes to green. Actuated signals take into account fluctuations in traffic volumes.

Every two years, WSDOT develops a signal re-timing and coordination plan. The plan is based on the number of signals in an area, where each signal is located (i.e. suburban and rural), the volume of vehicles that travel through each signal, and the available staffing resources. Signals are re-timed every two to three years in rural locations, about every two years in suburban locations, and more frequently in urban areas.

The graph at the top shows WSDOT's signal re-timing performance results from July 2003 through December 2004. WSDOT signal re-timing activities were planned at about 75% of optimal based on available funding. Current re-timing delivery is about 85% of planned. This is in part due to difficulties in retaining skilled staff and in part due to re-allocation of signal re-timing resources to other operational activities. WSDOT is currently evaluating its management practices and needed efforts to meet the re-timing plan.

Cumulative Performance in Signal Re-Timing Eighteen Months from July 1, 2003 to December 31, 2004



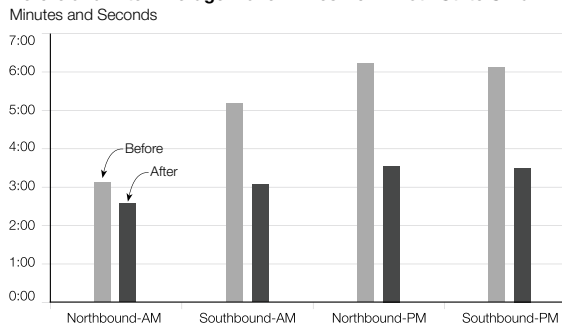
Source: WSDOT Traffic Office

Signal Synchronization: Before and After Results

Case Study: SR 527 Signal Optimization Project

In a study conducted by the City of Bothell, noticeable reductions in average vehicle travel times were recorded as a result of re-timing traffic signals on SR 527 between 228th Street SE and SR 524. Reductions going northbound ranged from 16 seconds during the morning peak period to two minutes and 27 seconds during the evening peak period. Signal synchronization accounted for a 41% reduction in travel times during the morning southbound commute, and a 38% reduction during the evening northbound commute.

Time Savings for Motorists Resulting from Traffic Signal Resynchronization of SR 527 in Bothell Before and After Average Travel Times from 228th St. to SR 524



Source: City of Bothell

Special Features

Using Plain English at WSDOT

Recently Governor Gregoire issued Executive Order 05-03, requiring state agencies to use “Plain Talk” in letters, announcements, publications, and other documents. Plain Talk means writing with everyday language, presenting information logically, composing short sentences, developing easy-to-read layout and design, and using active voice sentences that clearly show who is responsible for what. WSDOT’s ongoing effort to use “Plain English” is receiving national attention through its *Gray Notebook*, and reader-friendly environmental impact statements. WSDOT employees also apply easy-to-read writing throughout the agency as part of its everyday way of doing business. Using Plain English is WSDOT’s way of staying accountable to its citizens.

Measures Your Neighbor Can Understand

This edition of WSDOT’s *Gray Notebook - Measures, Markers, and Mileposts* marks its four-year anniversary. From its beginning, this quarterly performance measures report has been written in a style called “Performance Journalism.” Performance Journalism consists of nine principles that make the presentation of technical information clearer, easier to understand and even engaging to the reader. Quantitative reporting with its tables, charts, and measurements combines with narrative text. The result is a form of special feature article with text, pictures and charts. The motto of the *Gray Notebook* expresses these principles to read: “Explain it so your neighbor can understand.” For more information about Performance Journalism, please check out the gray text box on this page. The *Gray Notebook* is available at www.wsdot.wa.gov/accountability/default.htm.

Reader-Friendly Environmental Impact Statements

WSDOT’s Environmental Impact Statements (EISs) are developed using guidelines from a 60-plus page publication known as the *Reader-Friendly Document Tool Kit* for environmental documents. Using the principles in the tool kit, WSDOT created the *SR 99 Alaskan Way Viaduct and Seawall Replacement Draft EIS*, which recently received The National Association of Environmental Professionals’ (NAEP’s) 2005 President’s National Environmental Excellence Award. NAEP called the Alaskan Way Viaduct Draft EIS the “best of the best” of entries received in all categories. They added: “The environmental decisions to be made were clearly and distinctively communicated for the public and decision makers, a feat which makes this project an obvious choice for this award.”

Around the country, transportation departments are changing the way they do business, working to become more accountable to the public through clear, understandable environmental writing. WSDOT’s environmental writing guidelines are being taken up with interest around the country and have become models for other states’ DOTs. WSDOT has also been helping to lead a national taskforce organized by the American Association of State Highway and Transportation Officials (AASHTO), the Federal Highway Administration, and the American Consulting Engineers Council to develop clear guidelines on writing about environmental impacts.

To learn more about the *Reader-Friendly Document Tool Kit*, please visit: www.wsdot.wa.gov/environment/compliance/ReaderFriendly.htm.

Making WACs Readable for Non-Lawyers

WSDOT made Washington’s Administrative Code or WAC rules for overweight and oversize vehicle permits easier to read. WSDOT revised chapter 468-38 WAC, “Vehicle Size & Weight - Highway Restrictions - Equipment.” The revision created a more understandable document by turning the chapter into a “question and answer” format.

Performance Journalism Principles

- Good Writing:** use plain English and avoid jargon
- Good Stories:** adopt narrative reporting to make it real
- Good Data:** source data is your credibility
- Good Format:** design should not distract from content
- Good Graphics:** every chart should tell a story, every chart should prompt a question
- Quality Assurance/Quality Control:** it is part of every step of the analysis and report production
- Good Timing:** (as in “real-time”) provide frequent and timely information
- Good Presentation:** share information in a conversational style
- Good Software:** use software capable of generating both good formats and good graphics

Highway Maintenance: Annual Update

Integrated Vegetation Management

Alternatives for Managing Vegetation at the Pavement Edge

Historically, WSDOT has maintained a vegetation free band at the edge of pavement on practically all highway sections statewide. The most cost effective way of accomplishing this is through the routine annual application of soil residual, pre-emergent herbicides. The maintenance of this area has accounted for approximately 60 percent of the total herbicide used by the agency in recent years.

To help determine the best course for future agency policy and practice, WSDOT has contracted with the University of Washington (UW) to research this aspect of highway design and maintenance. A working group made up of public and private interests, and local, state and federal agency experts is assisting in adapting the research findings into a recommended decision framework for WSDOT. These recommendations will be used to help determine how to best maintain the roadside where it meets the edge of pavement. It is anticipated that there will be some aspects of this topic where additional field study may be necessary to fill gaps in current available data. A report on this research and resulting recommendations will be available in June 2005.



The pictured product is a mat that is installed underneath runs of guardrail and fits tightly around the base of guardrail posts. The mat prevents vegetation growth without the use of herbicides or labor-intensive trimming.

Reducing Roadside Maintenance through Design and Construction

In September 2004, a Value Engineering study (see June 2003 *Gray Notebook*) was conducted for five upcoming contracts on SR 20 - Whidbey Island that focused on roadside maintenance. The study looked at changes in design and construction practices that would improve the resulting condition of vegetation on roadsides following construction, thereby reducing maintenance requirements and necessity of herbicide use. Recommendations resulting from the study will also be considered for application throughout the state.

Recommendations were developed around the areas of: pavement edge, soils, weed control, and establishing desirable vegetation. An important recommendation that will be implemented in the Whidbey Island projects is the elimination of the need for annual applications of herbicides. Because the projects on the island are being designed with eight foot wide paved shoulders, grass can be established to the edge of pavement and mowed without significantly impacting traffic or safety.

On sections with guardrail, a weed prevention fabric will be installed, eliminating the need for spraying or mowing in these areas. Several products are available for installation around the base of the guardrail to prevent all vegetation growth. WSDOT will be testing and evaluating these products over the coming years in relation to recommendations from the UW research findings and the Whidbey Island Value Engineering study.

News from FHWA Washington Division

*By Liana Liu, P.E., PTOE
Traffic/Safety/Research/T2 Engineer
FHWA Washington Division*

FHWA Scenario Planning Website

The Federal Highway Administration (FHWA) has a newly developed Scenario Planning website. Through the Scenario Planning website, you can learn about noteworthy practices and innovative uses of Scenario Planning applications for transportation planning, explore other Scenario Planning Resources, and learn who to contact in FHWA about particular Scenario Planning questions or issues. The website for the Scenario Planning is <http://www.fhwa.dot.gov/planning/scenplan/index.htm>

The Travel Model Improvement Program Newsletter

The Travel Model Improvement Program (TMIP) is sponsored by the U.S. Department of Transportation, FHWA, and Federal Transit Administration. The TMIP helps planning agencies improve the techniques they use to inform their decision makers on how growth in population and employment, development patterns, and investments in transportation infrastructure are likely to affect travel, congestion, air quality, and quality of life.

In October 2001, the Mid-Ohio Regional Planning Commission (MORPC) contracted with Parsons Brinkerhoff to develop a new set of regional travel forecasting models.

The new model is an activity/tour-based model applied with micro-simulation. The development is based on the 1999 Household Interview Survey, which is supplemented by the 1993 Central Ohio Transit Authority On-Board Survey and an External Cordon Survey that had been conducted in 1995. The new modeling system was completed in late 2004, and testing continues into early 2005. The new model is being used by MORPC for Conformity Analysis, transit alternative analysis, and for highway-related MIS projects in the Columbus region. The TMIP newsletters can be found at http://tmip.fhwa.dot.gov/clearinghouse/tmip_newsletter/

FHWA Roadway Safety Training

Common Sense Solutions for Intersection Safety Problems — Developed by FHWA and Michigan Tech University, this one-day training course is for non-engineers, especially elected officials, law enforcement, municipal workers, and safety groups. The course addresses common safety tasks that don't require an engineer and introduces tasks that do. PowerPoint slides, notes, and handouts are available on CD-ROM. Contact Kingsley.Azubike@fhwa.dot.gov

Low Cost Safety Improvements — The popular LCSi course reviews safety countermeasures that do not require substantial capital investment or design changes. Already

widely available through LTAP centers, the course is available from NHI and will be available via NHI Webcast by Fall 2005. Contact Thomas.Elliott@fhwa.dot.gov

Road Safety Audits for Local Government — Designed to help local and Tribal road agency professionals understand the basic road safety audit concepts, risk and safety, common issues and challenges, and to experience a road safety audit. Instructor training will be offered in June, October, and on request, along with Road Safety Fundamentals below. Contact Louisa.Ward@fhwa.dot.gov

Roadway Safety Fundamentals — The workshop is designed to help local and Tribal road agency professionals understand the critical relationships between roads, roadside, road user behavior, and safety. The RSF course covers road safety basics, solving traffic safety problems, traffic control devices, improving roadside safety, roadways (standards, consistency, sight distance, cross sections, curves, etc.), and much more. Instructor training will be offered in June with Road Safety Audits. Contact Leslie.Wright@fhwa.dot.gov

Safety Conscious Planning — This cross-training course on incorporating road safety into the transportation planning process is now available from both the National Highway Institute (NHI) and National Transit Institute (NTI). Contact Mila.Plosky@fhwa.dot.gov

Speed Management Workshop Guide — Covers how the public and professionals can work together to set appropriate and enforceable speed limits. Facilitator training is being offered to four representatives from each state, representing engineering, public policy, law enforcement, and judicial instructors. Contact Benjamin.Gibbon@fhwa.dot.gov

Safety Competencies

Highway safety competency sets have been developed for the Injury and Violence Prevention Industry, National Highway Traffic Safety Administration (NHTSA), and FHWA.

Construction and Maintenance Safety Skills — The Transportation Curriculum Coordinating Council has completed a detailed set of skills and competencies for career levels in a variety of subjects, now available for comment. Contact Chris.Newman@fhwa.dot.gov

Local Safety Competencies — FHWA Office of Safety will look to develop core safety competencies for local transportation and public works departments this spring. Contact Leslie.Wright@fhwa.dot.gov

Highway Safety Core Competencies — The TRB Subcommittee on Highway Safety Workforce Development has developed a draft set of core competencies, now available for comment. Contact Susan.Herbel@camsys.com



Retired Professionals: Ready to Work for You

Need help with a special project? Need the skills and experience of a public works professional? The Washington State Department of Transportation's database of Retired Professionals may be just what you need. It is a skills bank of professionals with expertise in maintenance, operations, engineering, inspection, construction, and surveying, just to name a few. You can browse through the listings at:

<http://www.wsdot.wa.gov/TA/T2Center/T2hp.htm>
Click on Retired Professional Program

Are you retiring soon? Want to continue with part-time, full-time, or occasional employment? You can now enter your résumé directly on-line by going to:

http://fmapps.wsdot.wa.gov/retired_professional_reviewer

Enter all of your information and give yourself a Retiree Identifier that will allow you, and only you, to return at another time to make changes to your record. Then, click the register button. A window will pop up asking for a User ID and Password. You should enter:

User ID: retired

Password: kindof

This will be the only time you enter the User ID and Password.

Your résumé will be reviewed and posted to the web.

If you have questions, contact Laurel Gray at (360) 705-7355 or GrayL@wsdot.wa.gov.

WST2 Resources

Free Publications from Your WST2 Center

For State of Washington residents only due to high mailing costs.

Name	Agency		
Mailing Address	City	State	Zip+4
Phone	Fax	E-mail	

Order direct from the WSDOT home page:

<http://www.wsdot.wa.gov/TA/T2Center/T2PUBS.htm>

Or you may fax the form to (360) 705-6858; or mail the form to WST2/WSDOT, H&LP, PO Box 47390, Olympia, WA 98504-7390; or e-mail your request to WST2Center@wsdot.wa.gov; or phone (360) 705-7386.

Check the items you would like to order.

Free Hard Copy Publications

- Accessible Sidewalks and Street Crossings, FHWA, 2003
- Asset Management Primer, FHWA, 1999
- Bicycle Traffic Laws, Washington State
- Building Projects that Build Communities, WSDOT, 2003
- Concrete PASTER Manual, University of Wisconsin, 1998
- Data Integration Primer, FHWA, 2001
- Dust Control on Low Volume Roads, FHWA, 2001
- Dust Palliative Selection and Application Guide, USDA, 1999
- Entering the Quiet Zone, FHWA, 2002
- Fish Passage Through Culverts, FHWA, USDA, 1998
- General Field Reference Guide (Pocket Size), 2002
- A Guide for Erecting Mailboxes on Highways, AASHTO, 1984
- HMA Pavement Smoothness, FHWA, 2002
- Highway Finance and Public-Private Partnerships – New Approaches to Delivering Transportation Services, FHWA, 2005
- Improving Conditions for Bicycling and Walking, FHWA, 1998

- Improving Highway Safety at Bridges on Local Roads and Streets, FHWA, 1998
- Increasing Physical Activity Through Community Design, 2002
- Maintenance of Aggregate and Earth Roads, WST2 Center (1994 reprint)
- Pavement Markings, FWA, 2002
- Pavement Preservation Checklist, FHWA, six pocket guides:
 1. Crack Seal Application
 2. Chip Seal Application
 3. Thin Hot-Mix Asphalt Overlay
 4. Fog Seal Application
 5. Microsurfacing Application
 6. Joint Sealing Portland Cement Concrete Pavements
- Pedestrian Safety for the Older Adult (65+), NHTSA
- Recommendations to Reduce Pedestrian Collisions, WSDOT, December 1999
- Reflective Sheeting Identification Guide, FHWA, 2001
- Road Sign Symbols, FHWA, 2002
- Roadway Safety Tools for Local Agencies, NCHRP, Synthesis 321, TRB, 2003
- Scenic Byways Map of Washington State, 2003
- School Administrator's Guide to School/Walk Routes and Pedestrian Safety, WTSC, 2003
- Traffic Control Handbook for Mobile Operations at Night, FHWA, 2003

- Trail Construction & Maintenance Notebook, USDA Forest Service, 2004
- Utility Cuts in Paved Roads, Field Guide, FHWA, 1997
- W-Beam Guardrail Repair and Maintenance, FHWA, 1996
- A Walkable Community is More Than Just Sidewalks Brochure, FHWA, 2000
- Washington Bicycle Map, WSDOT, 2001
- Wildlife Habitat Connectivity Across European Highways, FHWA, 2002
- Work Zone Traffic Control Guidelines, WSDOT, 2005

Workbooks and Handouts from WST2 Center Workshops

- Construction Documentation: Construction Training Manual for Local Agencies, WSDOT, 2005
- Context Sensitive Solutions in Washington, WSDOT and CH₂M Hill, 2004
- Implementing HMA (Superpave) in Local Agencies, WSDOT & FHWA, 2005

Free Videotapes

- Driving Modern Roundabouts, City of Lacey, City of Olympia, and WSDOT, 2002
- Modern Roundabouts: Tomorrow's Solution for Today's Traffic, City of Bellingham, 2005

- Pacific Northwest Transportation Technology Expo and Mousetraps
- Preventive Maintenance Project Selection: Right Road, Right Treatment, Right Time, FHWA

Free CD ROM

- H&LP CD Library (formerly WST2 CD Library), 6th Edition, Summer 2004 contains the following publications and many other technical documents:
 - Asphalt Pavement Repair Manuals of Practice, SHRP, 1993
 - Asphalt Seal Coats, WSDOT/ WST2 Revised 2003
 - Building Projects that Build Communities, Community Partnership Forum, 2003
 - Concrete Pavement Repair Manuals of Practice, SHRP, 1993
 - Dust Palliative Selection and Application Guide, USFS, 1992
 - Erosion Control Handbook for Local Roads, FHWA & Minnesota Local Road Research Board
 - Gravel Roads Maintenance and Design Manual, South Dakota LTAP, November 2000
 - A Guide for Local Agency Pavement Managers, NWT2 Center, 1994
 - Local Agency Pavement Management Application Guide, WST2 Center, 1997
 - Local Agency Safety Management System, WSDOT, 1998, Reprinted 2000
 - Maintenance of Signs & Sign Supports for Local Roads and Streets, FHWA, 2001
 - Manual of Practice for an Effective Anti-icing Program: A Guide for Highway Winter Maintenance Personnel, FHWA, 1996
 - Pavement Surface Condition Field Rating Manual for Asphalt Pavement, NWPMA, WSDOT, 1999
 - Roundabouts: An Information Guide, FHWA, 2000
 - Streetwise, A Simplified Local Agency Pavement Management System, WSDOT, 2000

Other CDs

- Bicycle Safer Journey, FHWA, 2003
- Building Projects that Build Communities
- Driving Modern Roundabouts, City of Lacey, City of Olympia and WSDOT, 2002
- Emergency Relief Training for Washington State Local Agencies, WSDOT, 2004
- Endangered Species Act – Build Smart, 2 CD set, FHWA, 2004
- Pedestrian Facilities Guidebook, WSDOT, 1997
- Ped Safe, FHWA, 2005
- School Administrator’s Guide to School/Walk Routes and Student Pedestrian Safety, WTSC
- WSDOT Engineering Publications CD Library, March 2005
- Work Zone Safety for Roadway Maintenance Operations, Interactive Training Course Advanced Technology Concepts with Rutgers University

Free DVD

- Danger Signs, 2004
- Driving Modern Roundabouts, City of Lacey, City of Olympia and WSDOT, 2002
- Pedestrian Safety, City of Olympia and Washington Traffic Safety Commission, 2004
- Prefabricated Bridge Elements and Systems, AASHTO

Self-Study Guides

These non-credit WSDOT self-study guides may be obtained from the WST2 Center. An invoice will be sent with the books.

Basic Surveying, \$20
 Advanced Surveying (metric), \$20
 Contract Plans Reading, \$25
 Technical Mathematics I, \$20
 Technical Mathematics II, \$20
 Basic Metric System, \$20

New Videos in WST2 Video Lending Library!

The T2 Center has added videos to our lending library. Here is a list of the new additions. Agencies inside Washington State may check one out. Give us a call at (360) 705-7386.

- 474 **Winter Driving School at Steamboat.** 30 min. “Why skid on compact snow and ice? Learn how to control your automobile: vehicle dynamics in snow; traction, the effects of under steering and over steering, correct braking, and understanding vehicle trajectory around curves on ice.”
- 475 **Office and Computer Ergonomics.** 13 min. “This video shows how to develop an ergonomics program in an office environment, particularly computers, desk set-up, and general office ergonomics.”
- 476 **Confined Space Safety/ Manhole Entry.** 45 min. “This video presents an informative look at the hazards and procedures involved with manhole confined space operations: site testing, safety, and traffic control. Ends with an accident re-enactment.”
- 477 **Hazard Communications: The New Millennium.** 26.37 min. “Information provides compliance for 1910.1200 written and training requirements. Addresses hazardous materials, written HazCom plan & requirements, hazard classification system, routes of entry, MSDS, proper labeling & storage.”
- 478 **Lock-Out/Tag-Out Training for Affected and Authorized Employees.** 15:49 min. Covers 1910.147 and helps ensure employees are following safe work practices. Shows proper Lock-out & Tag-out steps to take and tags to place.
- 479 **Safe Operation of Cranes and Hoists.** 12 min. “This comprehensive training program is designed for companies that use indoor cranes & jib hoists. Safety information covers inspection parameters, load ratings and proper sling angles.”

- ❑ 480 **Overexertion: Injury Prevention.** 15 min. Employees learn how the body functions, risk factors associated with overexertion type injuries, and preventive measures. Motivates employees to make adjustments to ensure health and safety.
- ❑ 481 **Hearing Conservation: What Do You Want to Hear?** 15:50 min. This video shows how an organization can create an awareness and respect for noise hazards and by motivating employees to protect their hearing. How the ear works, why exposure to loud noises affects hearing permanently, correct use of hearing protection, best safety practices.
- ❑ 482 **“Keller’s Extreme 7 Minute Training: Rain!”** Water on the road has four major effects on your ability to drive: Limited Visibility, Loss of Traction, Hydroplaning, and the possibility of Mechanical Breakdown. Reduce speed to compensate for poor weather conditions, and if you can’t see, get completely off the road!
- ❑ 483 **High Impact Power Tool Safety.** 19 min. Six accidents with power tools are re-enacted to show the importance of “Thinking Safety” in every task. Real world advice on using tools safely. Inspect before use, select the proper tool for the job, proper positioning of the tool and your body, hazards of electric extension cords.
- ❑ 484 **Road Rage Driver Training.** 27:15 min. The #1 concern of vehicle drivers today is Road Rage. Presented as a training tool to professional truck drivers, this video attributes Road Rage to aggressive driving, resulting from increased congestion, reduced enforcement (budget cuts) and societal pressures stressing drivers.
- ❑ 485 **Basic Electrical Safety in the Workplace – Spanish Version.** 11 min. Covers dangers of electricity: Static electricity and high voltage wires; shock prevention: inspection, ground wiring, double insulation, no cheater plugs, care around liquids; cord safety: tripping and wear hazards, inspection, match cord to equipment being used, fire and explosion hazards.
- ❑ 486 **Employee Safety Orientation (Orientation 2000) Short Version – Spanish Version.** 11 min. Meet OSHA requirements for training in general hazards regarding proper clothing, machine guarding, accident reporting and more. This video may be used for new employee orientation and as a refresher for more experienced employees.
- ❑ 487 **Hazard Communication – Right-to-Know – Spanish Version.** 10 min. This video aids in compliance with retraining requirements of OSHA 1910.1200. Encourage employees to use HazCom information. Covers hazardous material definition and OSHA Safety Standards, Labels and following directions, MSDS section-by-section info., labeling new containers.
- ❑ 488 **MSDS and Hazard Communications.** 18 min. Describes material safety data sheets (MSDS), labeling requirements, basic safety when using hazardous chemicals/ materials, and more.
- ❑ 489 **OSHA Log 300 Recordkeeping and Insurance.** 12 min. Designed for administrative persons responsible for safety and insurance related reports. This video explains accident investigation, proper completion of records, and procedure for hospital or clinic visits and follow-up paperwork. For administrative personnel, supervisors, and safety officers.
- ❑ 490 **Top 10 OSHA Violations and How to Eliminate Them.** 15 min. OSHA Standards address physical hazards. Employers must have a written safety Program and document safety training. Most frequent violations include: Respiratory Protection, Lockout/ Tagout, Electrical Wiring, Machine Guarding, Powered Industrial Truck, Electrical Systems, and others.
- ❑ 491 **Safety in the Maintenance Department – Part 1.** 10 min. Maintenance personnel are relied upon to keep things moving. They must practice safety at all times: wear personal protective equipment, practice safe use of hand and power tools, using only if in safe, serviceable condition, making sure electrical tools have ground wire, discard broken tools.
- ❑ 492 **Safety in the Maintenance Department – Part 2.** 16 min. Covers Lockout/ Tagout, confined spaces, fire protection, proper storage of flammables, how to operate a fire extinguisher, proper use of step and straight ladders, compressors, “Right to Know” MSDS for hazardous chemicals must be readily accessible; labels, labeling identify hazardous items.
- ❑ 493 **Motor Fleet Maintenance Safety.** 17 min. Meets OSHA requirements for mechanic safety training. Addresses hazards associated with vehicle maintenance and repair. Wear proper boots and clothing, wear correct personal protective equipment. Explains basic tools, electrical hand tools, hydraulics, fire hazards, and more.
- ❑ 494 **Carpal Tunnel Syndrome.** 12 min. Carpal Tunnel Syndrome (CTS) is discussed in this safety video as well as how to prevent it, and what employees can do to reduce its effects.
- ❑ 495 **Cyber Crime & Privacy.** 17 min. There are many legal cyber issues other than hacking. This video covers the different laws and Federal Acts that deal with economic espionage, copyright infringement, computer security, and privacy issues. Viruses and pornography are also addressed.
- ❑ 496 **“Peer Today, Boss Tomorrow: Navigating Your Changing Role.”** 25 min. Changing from peer to boss is not easy. New managers frequently struggle to balance old co-worker relationships with new management responsibilities. This video presents proven strategies that will help new supervisors with changing relationships and prepare for difficult situations.
- ❑ 497 **Recognizing Drug and Alcohol Abuse for Employees.** 18 min. This program covers the basics for any employee for training on the dangers of alcohol and controlled substance abuse, and the potential consequences of their misuse. Drivers must be trained on this subject, according to the USDOT’s Alcohol & Testing Rule.

- ❑ 498 **Heat Stress: Don't Lose Your Cool – Safety 101.** 14 min. This program provides a no-nonsense approach to heat stress and how to prevent or treat heat disorders. Addresses: sunburn, acclimatization, heat rash, heat exhaustion, heat stroke, fluid intake and foods to eat under hot conditions, correct clothing to wear in hot environments.

- ❑ 499 **Sexual Harassment in the Workplace: It's Not Enough to Know Better.** 25 min. An organization can protect itself from legal liability by having and communicating appropriate sexual harassment policies and procedures, and holding annual training sessions on sexual harassment, but this is not enough. Persons with authority over others are held to a higher standard. Leader's Guide.

- ❑ 500 **Forklift Operator Safety Training.** 26 min. Train forklift operators and meet OSHA's "formal instruction" training requirements (29CFR Section 1910.178(I)). Video covers 6 safety topics critical to avoiding accidents and injuries: general safety, pre-operation, operation, load handling, fuel-battery maintenance, and specialized units.

System Requirements for the following CD items: 486/100 MHz (minimum), CD-ROM, 8 MB RAM, Sound Card. Available Hard Disk Space 3 MB. Windows 95, 98, NT 4.0, 2000, or Windows XP.

Learn valuable word processing skills in Microsoft Word with these step-by-step tutorials on CD ROM.

- ❑ 501 **Microsoft Word 2000 Beginner Office 2000 Professional.**
- ❑ 502 **Microsoft Word 2000 Intermediate Office 2000 Professional.**
- ❑ 503 **Microsoft Word 2000 Advanced Office 2000 Professional.**

Learn valuable spreadsheet skills in Microsoft Excel with these step-by-step tutorials on CD ROM.

- ❑ 504 **Microsoft Excel 2000 Beginning Office 2000 Professional.**
- ❑ 505 **Microsoft Excel 2000 Intermediate Office 2000 Professional.**
- ❑ 506 **Microsoft Excel 2000 Advanced Office 2000 Professional.**

Learn valuable database skills in Microsoft Access with these step-by-step tutorials on CD ROM.

- ❑ 507 **Microsoft Access 2000 Beginning Office 2000 Professional.**
- ❑ 508 **Microsoft Access 2000 Intermediate Office 2000 Professional.**
- ❑ 509 **Microsoft Access 2000 Advanced Office 2000 Professional.**

Learn valuable presentation skills in Microsoft PowerPoint with these step-by-step tutorials on CD ROM.

- ❑ 510 **Microsoft PowerPoint 2000 Beginner Office 2000 Professional.**
- ❑ 511 **Microsoft PowerPoint 2000 Intermediate Office 2000 Professional.**
- ❑ 512 **Microsoft PowerPoint 2000 Advanced Office 2000 Professional.**

Learn valuable communication skills in Microsoft Outlook with these step-by-step tutorials on CD ROM.

- ❑ 513 **Microsoft Outlook 2000 Beginner Office 2000 Professional.**
- ❑ 514 **Microsoft Outlook 2000 Intermediate Office 2000 Professional.**
- ❑ 515 **Microsoft Outlook 2000 Advanced Office 2000 Professional.**

Bridge

- WSDOT Highways & Local Programs
<http://www.wsdot.wa.gov/TA/Operations/BRIDGE/BRIDGEHP.HTM>

Environmental

- *Environmental Procedures Manual (M31-11)*
<http://www.wsdot.wa.gov/fasc/EngineeringPublications/Manuals/EPM/EPM.htm>
- Regional Road Maintenance Endangered Species Act Program Guidelines
<http://www.metrokc.gov/roadcon/bmp/pdfguide.htm>
- National Marine Fisheries Service Species Listings & Info
<http://www.nwr.noaa.gov/>
- U.S. Fish and Wildlife Service Species Listings & Info
<http://endangered.fws.gov/>
- Washington State DNR's Natural Heritage Program Home Page
<http://www.wa.gov/dnr/htdocs/fr/nhp/refdesk/fsrefix.htm>
- FHWA's Environmental Home Page
<http://www.fhwa.dot.gov/environment/index.htm>

Highways & Local Programs List Servs

For the following list servs:

- WST2 Newsletter
- WST2 Training
- Traffic Technology and Safety

Use the following address to sign up:

<http://www.wsdot.wa.gov/TA/T2Center/T2hp.htm>

WSDOT Materials Lab

- <http://www.wsdot.wa.gov/biz/mats>

Infrastructure Management & GIS/GPS

The site below has been established to promote interagency data exchange and resources sharing between local governmental agencies.

<http://www.wsdot.wa.gov/TA/T2Center/Mgt.Systems/InfrastructureTechnology/Infathp.html>

Legal Search

- Search RCWs and WACs
<http://search.leg.wa.gov/pub/textsearch/default.asp>

Local Agency Guidelines (LAG) Manual

- <http://www.wsdot.wa.gov/TA/Operations/LAG/LAGHP.htm>

Pavement Management

- Pavement Publications & NWPMA Links
<http://www.wsdot.wa.gov/TA/T2Center/Mgt.Systems/PavementTechnology>
- NWPMA – North West Pavement Management Association
<http://www.wsdot.wa.gov/TA/T2Center/Mgt.Systems/PavementTechnology/nwpma.html>
- Asphalt Institute
<http://www.asphaltinstitute.org/>
- National Asphalt Pavement Association
<http://www.hotmix.org/>
- Pavement (A Website for Managing Pavements)
<http://www.mincad.com.au/pavenet>
- SuperPave Information
<http://www.utexas.edu/research/superpave>

Project Development

- Federal Aid Progress Billing Form
<http://www.wsdot.wa.gov/TA/ProgMgt/Projectinfo/BILLFORM.XLS>
- State Funded Progress Billing Form
<http://www.wsdot.wa.gov/TA/ProgMgt/Projectinfo/BILLFORMSTATE.xls>
- STIP (State Transportation Improvement Program)
<http://www.wsdot.wa.gov/TA/ProgMgt/STIP/STIPHP.htm>

- TIP (Local Agency 6-Year Transportation Improvement Program)
<http://www.wsdot.wa.gov/TA/ProgMgt/STIP/TIP.html>

Research

- WSDOT Research Office
<http://www.wsdot.wa.gov/research>
- Looking for a Transportation Research Publication?
<http://gulliver.trb.org>
- Municipal Research and Services Center of Washington
<http://www.mrsc.org>

Traffic & Safety

- Safety Management Publications & Information
<http://www.wsdot.wa.gov/TA/T2Center/Mgt.Systems/SafetyTechnology/>
- WSDOT Traffic Data Office
<http://www.wsdot.wa.gov/mapsdata/tdo/>
- Washington State Patrol
<http://www.wsp.wa.gov>
- Washington Traffic Safety Commission
<http://www.wtsc.wa.gov>
- National Highway Traffic Safety Administration
<http://www.nhtsa.dot.gov>
- American Traffic Safety Services Association
<http://www.atssa.com>
- Municipal Research and Services Center of Washington
<http://www.mrsc.org>
- Transportation Research Board
<http://gulliver.trb.org>

Training

- WST2 Classes
<http://www.wsdot.wa.gov/TA/T2Center/Training/>
- WST2 Class Registration
http://fmapps.wsdot.wa.gov/tbase_registration/
- County Road Administration Board
<http://www.crab.wa.gov/>
- American Public Works Association
<http://www.apwa.net/education>
- Transportation Partnership in Engineering Education Development (TRANSPED)
<http://www.engr.washington.edu/epp>

WSDOT Local Programs Engineers

- Eastern Region (Spokane)
Keith Martin, (509) 324-6080,
martink@wsdot.wa.gov
- Northwest Region (Seattle)
Ed Conyers, (206) 440-4734,
conyere@wsdot.wa.gov
- Olympic Region (Olympia)
Neal Campbell, (360) 357-2666,
campben@wsdot.wa.gov
- North Central Region (Wenatchee)
Paul Mahre, (509) 667-3090 or 667-2900,
mahrep@wsdot.wa.gov
- South Central Region (Yakima)
Roger Arms, (509) 577-1780,
armsr@wsdot.wa.gov
- Southwest Region (Vancouver)
Bill Pierce, (360) 905-2215,
pierceb@wsdot.wa.gov

Other On-line Resources

- Bicycle maps and other information
<http://www.wsdot.wa.gov/bike/>
- Pedestrian information
<http://www.wsdot.wa.gov/walk/>
- Rural Partnerships and scenic byways information
<http://www.wsdot.wa.gov/TA/progmgt/byways/>
- Better Mousetraps
<http://www.wsdot.wa.gov/ta/T2Center/Mousetraps/>
- Retired Professional Program
<http://www.wsdot.wa.gov/TA/T2Center/Retired.htm>
- Student Referral Program
<http://www.wsdot.wa.gov/TA/T2Center/StudentReferral/>
- LTAP (Local Technical Assistance Program) Clearing House
<http://www.ltapt2.org>
- Institute of Transportation Engineers
<http://www.ite.org>
- Washington State Counties
<http://mrsc.org/byndmrsc/counties.aspx>
- Washington State Cities and Towns
<http://mrsc.org/byndmrsc/cities.aspx>
- Governor's Office of Indian Affairs
<http://www.goia.wa.gov>
- Southwest Interagency Coop - Grounds Equipment Maintenance (GEM)
<http://www.gematwork.org>

Washington State T2 Center

Contact: Laurel Gray (360) 705-7355
Wendy Schmidt (360) 705-7386
<http://www.wsdot.wa.gov/TA/T2Center/Training>

To register for a class in this section, use the contacts listed above.

The class fees shown apply to both public and private sector students. Updated information on these courses, and a link to the on-line registration form, can be obtained from the web page listed above.

Advanced Biological Assessment Preparation, Revised

2005: November 3, Tacoma. \$50. This class will cover the contents of biological assessments (BAs) in greater depth than previous classes, offering topic-specific guidance and instruction on complex issues. It will provide guidance related to various components or sections of a BA including: project description, in-water work, conservation measures and BMPs, indirect and cumulative effects, defining action area, and making appropriate effect determinations. WSDOT and FHWA have completed a new BA format which will be presented and included in the class materials. New information will be provided on how to address stormwater and pile driving in the consultation process. While some of the information will be familiar to individuals who prepare BAs on a regular basis, new information will be provided on the latest WSDOT and FHWA policies and procedures associated with the consultation process. For local agency, WSDOT, and other biologists who prepare biological assessments.

Bridge Condition Inspection Update (BCIU)

2006: February 1-2, Eastern Washington; February 15-16, 2006, Lacey. **Free.** Instructor: Grant Griffin, WSDOT Bridge Engineer. This course will provide information on the latest inspection manual, Laptop98 bridge inspection software, bridge file records, and other important bridge inspection issues. Sufficiency ratings and proper coding of bridge elements will also be discussed.

Bridge Condition Inspection Fundamentals (BCIF)

2006: February 7-9, Lacey. **Free** to Washington State local agencies and consultants. All others **\$150.** Instructor: Grant Griffin, WSDOT Bridge Engineer. This course is designed to provide basic knowledge

of bridge condition inspection, construction materials, material properties, bridge components and nomenclatures, loadings, stresses and strains, and deterioration of bridge materials and members. For engineering or design technicians and other personnel who have little or no background in bridges. This course is preparatory for BCIT.

Bridge Condition Inspection Training (BCIT)

2006: March 13-24, Lacey. **Free** to Washington State local agencies and consultants. All others **\$700.** Instructor: Grant Griffin, WSDOT Bridge Engineer. This training is for new bridge inspectors or those who desire a refresher. It is based on the FHWA *Bridge Inspector's Reference Manual* and will provide extensive training on the condition inspection of in-service bridges. Two comprehensive examinations will be administered: a field exam covering inspection and inventory coding, and a multiple choice classroom exam. Satisfactory completion of this course will fulfill the training requirements of the National Bridge Inspection Standards (NBIS) for a "comprehensive training course" based on the reference manual.

Construction Documentation

2005: October 25, Spokane; December 13, Shoreline; December 14, Kent.

2006: January 10, Port Orchard; January 11, Tacoma; January 30, Vancouver; February 1, Olympia; February 14, Wenatchee; February 16, Kennewick; March 14, North Seattle; March 15, East Seattle. **Free.** Instructor: Ken Hash, WSDOT Southwest Region Engineer. Regional Local Program Engineers will be in attendance at each class to answer questions. This course covers three project phases: pre-contract, contract, and post-contract documentation of public works projects with FHWA funding. Local agency and contractor's documentation is discussed, with a strong emphasis on the documentation requirements of the field inspector. On completion of this course, participants will have a working knowledge of: (1) required documentation that will be submitted by the contractor, (2) required documentation for acceptance of contract materials, (3) daily inspector's documentation of the contract work, and (4) source documentation for the monthly progress payment to the contractor.

Context Sensitive Solutions

2006: March 7-8, Shoreline; March 15-16, Lacey; March 28-29, Spokane. **Free.** Instructor: John Heinley, WSDOT, and Robert Kutrich, WSDOT Northwest Region Trainer. This course will provide the knowledge and skills to collaboratively develop transportation projects addressing the needs of a broad range

of users and interested parties. Participants will learn to identify critical issues, involve stakeholders, evaluate alternatives and minimize tort liability when developing solutions to transportation issues that are specific to individual sites.

Contract Specification Writing (LAG Program)

2005: September 20, Everett; October 5, Kent; November 16, Port Orchard.

2006: April, Spokane; May, Vancouver; September, Seattle; October, Lacey; November, Mt. Vernon. **\$75.** Instructor: Steve Boesel. This class will provide guidance and methods for writing consistently clear, concise, complete and well formatted contract special provisions. It will provide a thought process that can be used when writing or reviewing contract specifications to ensure the greatest possibility for a successful bid and a successful construction project.

Electrical-Illumination and Signals

2005: October 12, Spokane; November 8, Tumwater. **\$50.** Instructor: Mark Scheuffele, WSDOT Olympic Region Construction Trainer. This course will review plans, materials, and installation requirements for illumination and signal systems per WSDOT standards as follows: Provide an overview of the construction elements of the installation of signals and illuminations systems; discuss review and approval of shop drawings; identify key components of illumination and signal systems; covers staking locations of luminaries and signals; includes information on collecting required material samples; identifies safety procedures to use during the installation, inspection and testing of a drainage structure; identifies required documentation; and, provides a comprehensive course manual containing outlines of the duties of an inspector and references to critical specifications. For project inspectors and field engineers who are or will be engaged in a project requiring the installation of signals and illumination.

Hot Mix Asphalt Placement

2005: September 13, Moses Lake; October 13, Tacoma. **\$50.** Instructor: Tim Moomaw, WSDOT North Central Region Trainer. This course will provide an overview of equipment used in placing HMA and Superpave, identify the duties of an inspector prior to paving, cover the key areas of inspection during placement, cover safety procedures for working around a paving operation, and identify post production duties. For project inspectors and field engineers who are or will be engaged in the inspection, acceptance and documentation of Hot Mix Asphalt and Superpave placement.

Low Cost Safety Improvements

2005: August 16, Shoreline; August 17, Shoreline; August 18, Moses Lake. (Both Shoreline classes are full.) **Free.** Instructor: John McFadden, P.E., FHWA Baltimore Resource Center, Baltimore, Maryland. The purpose of this course is to provide participants with methods for implementing effective, low-cost safety improvements targeted at high crash areas. It emphasizes the basic and enhanced application of traffic control devices, low cost safety improvements, and their specific safety benefit (crash reduction factors). Traffic crash data collection, identification of hazardous locations, and engineering study procedures will also be discussed. Emphasis is placed on low-cost solutions that may be made at the local level.

Pavement Condition Rating

2005: September 13-14, Tacoma.

2006: May 9-10, Ellensburg; May 23-24, Tacoma; September 12-13, Tacoma. **Free.** Instructor: Bob Brooks, WST2 Pavement Engineer. Participants will learn to rate any of the pavements commonly found in Washington. The rating values obtained using the definitions and methods learned in this course should compare favorably with those obtained and used in the Washington State Pavement Management System. Each participant should be able to perform a pavement condition survey with reasonable objectivity.

Preparing Your ECS for NEPA Approval

2005: September 22, Tumwater; October 4, Spokane; October 5, Yakima; October 19, Vancouver; November 1, Shoreline. **Free.** Instructors: Brian Hasselbach, John Heinley, Trevin Taylor, WSDOT H&LP Environmental Staff. This course will give a basic understanding of the National Environmental Policy Act (NEPA) and other environmental procedures. The course will predominantly focus on a step-by-step explanation of the Environmental Classification Summary (ECS) – the process and documentation requirements associated with each environmental consideration; the triggers for analysis; and, most importantly, the appropriate responses and level of documentation needed to obtain FHWA's approval. The course will also provide updates to any process, regulatory, and guidance changes that have occurred in the past year.

Purchasing, Bidding, and Contract Management for Local Agencies

2005: September 14, Tacoma; October 4, Yakima (at APWA Conference); November 16, Kent. **\$75.** Instructors: John Carpita, Municipal Research & Services Center of Washington, K. Wendell Adams, City of Yakima, and Dick Andrews, Pertee, Inc. Topics to be discussed:

- **Purchasing and Bidding Overview** – statutes that affect local agencies in purchasing goods, materials and services.
- **Public Works Contracting** – procedures, checklists, files; contract documents; bidding and contract award issues; contract administration and closeout; retainage and bonding; sales and use tax issues; exemptions; small works projects; emergency contracts; prevailing wage issues; contractor licensing, bond and insurance requirements.
- **Consultant Selection** – types of consultants; quality-based selection vs. bids; selection process; contract negotiations.

Troubleshooting Roundabout Design

2005: October 4, Vancouver; October 5, Ellensburg. **\$100.** Instructors: Patrick McGrady and Michelle Mach, Reid Middleton, Inc. Students will participate in hands-on roundabout design. Exercises include site specific conditions that influence the choice of roundabout control. Students will troubleshoot roundabout designs to identify and remove fatal flaws and refine the design for safe efficient traffic operations. The instructors will show how to establish a balance between design elements and avoid common pitfalls in single and multi-lane roundabout design that rob capacity and contribute to collisions. For traffic analysts, roadway designers, staff that are part of plan review for roundabout or roadway design, and their immediate supervisors.

WSDOT Construction and Design Courses

Thirteen WSDOT courses are available for local agency attendance in the Design and Construction disciplines. Attendance is limited to cities, counties, ports, tribes, transit agencies, and consultants acting as official city engineer. Classes are free. Registration is limited to one person per agency, per class. Classes are available in Seattle, Olympia, Vancouver, Yakima, Wenatchee, and Spokane.

Design training season is September through March. Design classes are now posted on the WST2 website and registrations are being accepted on-line. The five courses are listed here; approximately six sessions per course around the state. More sessions may be posted at a later date.

- Roadside Safety (B74)
- Managing Project Delivery (B71)
- WSDOT Interchange Design (CFU)
- Intersection and Pedestrian Design (CBD)
- Roadway Geometric Design (BWE)

Construction training season is January through May. Construction classes will begin posting in late fall for the following eight courses. Two courses will be offered as a special request on east and west sides of the state: Electrical Illumination and Signals, and Hot Mix Asphalt Placement. See page 22 for dates and descriptions. There is a fee for the special sessions, however they have no limit on who can attend or how many from each agency may attend.

- Excavation and Embankments Inspection (AC3)
- Nuclear Gauge Safety and Operation (ALG)
- Nuclear Gauge, Embankment/Surfacing/Pavement Applications (ANQ)
- Electrical-Illumination and Signals (API)
- Drainage Inspection (ACF)
- Hot Mix Asphalt Placement (ACB)
- Bridge and Structures Inspection 201 (CQ9)
- Bituminous Surface Treatment Inspection (ACC)

Courses Planned for 2006

- Modern Chip Seal Techniques
Classes will be held in April/May in four to five locations around the state. **\$50.**
- Basics of a Good Gravel Road
Early May, two sessions. Kennewick and Tacoma. **\$45.**
- Roadway Drainage
Early May, three sessions. Both sides of the state. **\$45.**

TRANSPEED University of Washington

Contact: Julie Smith
(206) 543-5539, toll free 1-866-791-1275
fax (206) 543-2352
jsmith@enr.washington.edu
<http://www.engr.washington.edu/epp/esa/reginfo.html>

Endangered Species Act 4(d) Training Program

To register for a class in this section, use the contact listed above.

Fall classes will be posted to the TRANSPEED website in July. The following classes will be offered; dates and locations are not yet finalized:

Track 2: Introduction, Design and BMPs, Monitoring, and Environmental Roles for Engineering, Technical and Scientific Staff

Track 3: Classroom Introduction to ESA and Outcome-based Road Maintenance for Field Crews

Track 3F: Road Maintenance Crew Training in the Field Environment: Applying Maintenance BMPs

Track 3W: Road Maintenance Crew Training in the Field Environment: Applying BMPs in Water Work
(course currently under development)

AASHTO Roadside Design Guide, Web-based Training

NHI Course Number: 380032C

This web-based course is approximately 14 hours long and is available anytime — 24 hours, 365 days a year via the Internet. The cost for non-FHWA employees is \$230 per participant and includes a copy of the 2002 AASHTO "Roadside Design Guide." This course provides an overview of the 2002 AASHTO "Roadside Design Guide." Emphasis is on current highway agency policies and practices. Participants must register on-line at <http://www.nhi.fhwa.dot.gov/registerdl.asp>

Computer Requirements: You will need a fairly recent version of a browser (such as Internet Explorer 4 or 5 or Netscape 4 with JavaScript enabled), the latest version of Macromedia Shockwave and Flash (which you can download from the Internet), and a connection to the Internet (at least 56K modem). An older computer such as a Pentium 100 would work, but it would be slower than a Pentium III. For more information, visit <http://www.nhi.fhwa.dot.gov>

TRANSPEED University of Washington

Contact: Christy Pack
(206) 543-5539, toll free 1-866-791-1275
fax (206) 543-2352
<http://www.engr.washington.edu/epp>

To register for a class in this section, use the contact listed above.

Fall classes will be posted to the TRANSPEED website in July. The following classes will be offered; dates and locations are not yet finalized:

- Basic Highway Capacity**
- Managing Consultants**
- Advanced Highway Capacity**
- Concrete Bridge Design**
- Culvert Repair and Rehabilitation**
- Developing Contract Working Days**
- Fundamentals of Traffic Engineering**
- Legal Liability for Transportation Professionals**
- Manual on Uniform Traffic Control Devices**
- Roadway Culvert Hydraulic Design**
- Traffic Signal Timing**
- Work Zone Traffic Control Plan**

Associated General Contractors Education Foundation

Contact: Beth Sachse
(206) 284-4500, fax (206) 284-4595
bsachse@agcwa.com
<http://www.constructionfoundation.org>

To register for a class in this section, use the contact listed above.

Construction Site Erosion and Sediment Control Certification

Tentative dates for 2005/2006: August 31, Seattle; September 30, Tacoma; October 28, Everett; November 18, Olympia; December 16, Bellingham; January 27, Yakima; February 24, Seattle; March 24, Everett; April 21, Tacoma; May 19, Seattle; June 23, Tacoma; July 21, Seattle.

Certification and recertification training on the same day. \$225/\$250.

Other Training Programs for Local Agencies

Engineering Professional Programs (EPP)

University of Washington
(206) 543-5539
Engineering Refresher Courses
<http://www.engr.washington.edu/epp>

Professional Engineering Practice Liaison (PEPL)

University of Washington
(206) 543-5539
<http://www.engr.washington.edu/epp>

Washington Environmental Training Center

Green River Community College, Auburn
1-800-562-0858
<http://www.greenriver.edu/wetrc>

Click, Listen and Learn

American Public Works Association
(816) 472-6100
<http://www.apwa.net/education/cll/>

Washington State Emergency Management Division

(253) 512-7048 or (253) 512-7000
<http://emd.wa.gov/>

Washington State Department of Personnel (DOP)

Human Resource Development Services
(360) 664-1921
<http://hr.dop.wa.gov/training>

Evergreen Safety Council

(206) 382-4090 or 1-800-521-0778
<http://www.esc.org>

2005 Summer Employment On-line Student Referral Program

Does your agency need extra help in the summer with construction projects, flagging, surveying, inspection, support for engineers and technicians, drafting, traffic counting, office support, inventorying, recordkeeping, and more? Help an engineering student secure employment this summer by letting them know of jobs available in your agency.

The on-line summer employment referral service benefits local agencies and college students enrolled in civil engineering or other technical fields. Over the years, hundreds of jobs have been posted to this web site for students in colleges and universities from around the state to access. Currently available jobs are posted at this web site:

<http://www.wsdot.wa.gov/TA/T2Center/StudentReferral/> (select "view current jobs")

If you will have jobs available this summer, go to the web site and select "Local Agency Form." Fill out the form and mail or fax it to the WST2 Center. If you are a college student, you can expect that jobs will begin to be posted starting in March 2005. You should check back often, as jobs will be posted for several months. If you have questions about this program, contact Laurel Gray at (360) 705-7355 or grayl@wsdot.wa.gov.

13th Northwest Onsite Wastewater Treatment Short Course and Equipment Exhibition

September 19-20, 2005, University of Washington, Seattle. For further information, contact Christy Roop Pack at (206) 543-5539 or croop@u.washington.edu

Western Bridge Engineers' Seminar

September 25-28, 2005, Doubletree Jantzen Beach Hotel, Portland, Oregon. For registration and information, contact Jean Canfield, Conference Manager, at (360) 943-7732.

Northwest Pavement Management Association (NWPMA) Conference

October 17-20, 2005, Vancouver. For further information, contact Bob Brooks at (360) 705-7352 or BrookBo@wsdot.wa.gov

American Public Works Association Conferences

Fall 2005: October 4-7, 2005. Yakima Conference Center. Contact Wendy Leinan at (509) 575-6068.

Spring 2006: March 28-31, 2006, Vancouver Convention Center. Joint Oregon/Washington. Contact Katherine Claeys at (360) 676-6961.

Fall 2006: October 16-20, 2006, Wenatchee Convention Center. Contact Ruta Jones at (509) 664-3364 or Dick McKinley for information about any of these conferences: (360) 676-6961.

Exhibitors should contact Jaine Lamqie at (206) 431-2257 or lamqie@abam.com for information on vendor exhibits.

Road and Street Maintenance Supervisors' Conference

East: October 4-6, 2005, Spokane

West: December 6-8, 2005, SeaTac

For information, contact Michelle Johnson at mlj@wsu.edu at Washington State University.

Pacific Northwest Transportation Technology Expo

September 2006. Location TBA.

Washington State Roadway Safety Conference

The Washington State Department of Transportation, the Washington State Patrol, and the Washington State Traffic Commission are pleased to announce an upcoming Roadway Safety Conference to be held August 30-September 1, 2005, Tacoma Convention and Trade Center, Tacoma. This statewide conference will cover intersection safety, rural road safety, and pedestrian/bicycle safety on city streets, county roads, and state highways. These topics range from safety problems that we face daily to solutions that address engineering, enforcement, and education and public awareness.

For more information: <http://www.engr.washington.edu/epp/safetyconference/>

Speakers at the conference will include:

WSDOT Chief of Staff — Paula Hammond, PE

Paula Hammond is Chief of Staff at the Washington State Department of Transportation (WSDOT) and has worked with highway safety issues for most of her 25-year career at WSDOT. Paula serves as the adjunct to the Secretary, providing day-to-day leadership and oversight of the agency's administration and communications.

Washington State Patrol Chief — John R. Batiste

Chief John R. Batiste is the 21st Chief of the Washington State Patrol. Governor Christine Gregoire appointed Chief Batiste on February 14, 2005. Chief Batiste has a long career in law enforcement, including 26 years with the Washington State Patrol.

Federal Highway Administration, Washington Division Head — Dan Mathis, P.E.

Dan Mathis is the Division Administrator for the Washington Division of the Federal Highway Administration (FHWA) in Olympia, Washington. He is responsible for overall coordination in implementing the Federal-aid Highway Program in the State of Washington. He has been in this position since July 2001.

The Honorable Judge Judith Eiler

Judge Judith Eiler serves as a judge in the King County District Court, South Division. The South Division encompasses the Burien, Renton, Federal Way, Kent, Enumclaw, and Federal Way areas. She has been very supportive of traffic safety initiatives in Washington State for many years. In 1999, Judge Eiler was appointed by Governor Gary Locke as the Judicial Commissioner to the Washington Traffic Safety Commission. In 2004, the American Bar Association named Judge Eiler a Judicial Outreach Liaison for the National Highway Traffic Safety Administration.

Sign of the Times



A picture is worth a thousand words ... Chip Seal signing the New Zealand way. Thanks Ken Hash, WSDOT, for the picture.



Sign of the Times

Do you have a humorous traffic sign to share? Send us a print or e-mail a digital image (preferably a 300 dpi, 1000x1500 dpi jpeg or tif) and we will add it to our collection for publishing. Please provide your name, title, agency or company, and a short description of where and when you saw the sign. We want to give you credit for your participation.

You can e-mail the image to schofil@wsdot.wa.gov

Or mail the photo to:
"Sign of the Times"
WST2 Center
PO Box 47390
Olympia, WA 98504-7390

Please don't send your original photo. Although we will do our best to return the photo, we can't guarantee it.

You can receive the WST2 newsletter electronically by adding your e-mail address to the WST2 Newsletter Listserv at <http://www.wsdot.wa.gov/TA/T2Center/T2HP.htm> You can also view the newsletters at the same web address beneath the heading "Publications & Software".

If you would like to stop receiving a hardcopy of the newsletter, please e-mail Wendy Schmidt at schmidw@wsdot.wa.gov, or phone (360) 705-7386, and ask to be taken off the hardcopy mailing list.



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