WST2

Washington State Technology Transfer

Formerly the T2 Bulletin

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the Highways & Local Programs Service Center — WSDOT and the Local Technical Assistance Program
Issue 70, Spring 2001

Washington State Technology Transfer

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If you have a change of address, please contact us with the old and new addresses.

If your agency or firm receives issues addressed to a person who no longer is employed there, please call the WST2 Center at (360) 705-7386.

Dan Sunde
Director of Technology Transfer
WST2 Center

From the Editor's Desk

A lot of exciting things have happened since the last issue of the WST2. First, we welcomed aboard our new Secretary of Transportation. After 35 years of public service, former Secretary Sid Morrison retired and Doug MacDonald, a native Washingtonian, came home from the east coast to assume the position of Secretary of Transportation. There are exciting times ahead and we look forward to continuing our efforts to improve the quality and efficiency of transportation services in Washington under Secretary MacDonald's leadership.

We also welcome Liana Liu, P.E. to the LTAP in Washington. Liana steps in as the new Technology Transfer Engineer for the FHWA Division Office in Olympia. She comes to us with a wealth of engineering experience and an enthusiasm for the program. Liana has already been helpful in securing special projects that will be beneficial to local agencies.

The WST2 Center would like to thank Kathy Nichols, P.E., Pavement Engineer, FHWA Olympia Division Office, for all her outstanding support while filling in as the FHWA T2 Engineer this past year. With her spirit of cooperation and partnering, Kathy has been great to work with. She has helped develop several successful partnerships involving the WST2 Center. The most noteworthy of these was her assistance in coordinating the Pacific Northwest Transportation Technology Expo, providing FHWA co-sponsorship of the Expo and securing funding to transporting research equipment to the Expo.

Speaking of the Technology Expo, we are pleased to announce that the Pacific Northwest Transportation Technology Expo 2001 is in the works! We plan on being bigger and better than last year! We invite you to not just attend but to participate! Bring your most successful inventions, tool modifications, equipment modifications and process improvements to share with other agencies. The "Better Mousetrap" exhibit was one of the most successful elements of the first Expo. The benefits received through the exchange of successful ideas more than paid back the time and money invested in participation. One of last year's mousetrap presenters told me, "I came thinking I was only going to show our mousetrap, but I'm going home with six ideas we're going to implement in our own shop." This is technology transfer at it's best.

Dan Sunde
Director of Technology Transfer WST2 Center

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Douglas B. MacDonald

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Federal Highway Administration

WST2
HIGHWAYS & LOCAL PROGRAMS SERVICE CENTER

Changing of the Guard:
Doug MacDonald New Washington Secretary of Transportation

By Grace Eubanks

There's a new face in Washington's transportation world — a new leader.

Doug MacDonald became Washington's Secretary of Transportation in late April, succeeding retiring Secretary Sid Morrison.

The Washington Transportation Commission and Governor Gary Locke, who announced the selection of a new secretary after a nationwide search, were impressed by MacDonald's credentials.

His experience working with the public as Executive Director of the Massachusetts Water Resources Authority (MWRA), greater Boston's water and sewer utility that serves 2.5 million customers, was one of the convincing factors.

"Performance measurements and cost-benefit analysis are lynchpins in his management methods, and that is important to us," said Commission Chair Connie Niva.

And anyone who gets a piece of the credit for helping clean up Boston Harbor must have a penchant for results.

Although he came from the East Coast to move into the secretary's Olympia office, Douglas B. MacDonald is no stranger to Washington State.

A 1963 graduate of Mercer Island High School, MacDonald still has family in the state.

Since moving to Massachusetts, he has earned two degrees at Harvard, served in the Peace Corps in Africa, practiced with law firms in two states and worked as chief counsel to Boston's Logan International Airport.

All of that was before he became Executive Director of MWRA in 1992 to lead the $7.5 billion modernization of greater Boston's regional drinking water and wastewater systems.

Though MacDonald is trained as a lawyer, the engineering and construction communities in Boston seemed to have adopted him as one of their own. Among many other awards, he received the Boston Society of Civil Engineers' "Annual Leadership Award" in January 2000, and the National Engineers' Week "New England Recognition Award" in 1999.

He also participated the past three years in judging the American Consulting Engineers Council's national "Excellence in Engineering" awards, serving in 2001 as the event's Chief Judge.

As for his attraction toward Washington, MacDonald shared with the Commissioners that he's stayed connected during his years on the other side of the country through vacations and family visits.

Although he just stepped into his new role on April 23, the many WSDOT staff members and transportation stakeholders he's already met can see he's an enthusiastic, high-energy gent.

Noting that he likes to get a first-hand view of things, MacDonald said he plans to continue visiting WSDOT employees, local leaders and the department's partners in as many corners of the state as possible during the weeks ahead.

What's MacDonald's judgment of WSDOT?

"This is a team with an array of dedicated and talented people. They have accomplished wonderful work that is recognized around the country. WSDOT has a bright future — especially as it embraces the public's thirst for clear performance measures and standards of public accountability.

"It is a pleasure to join this team."

Doug MacDonald became Washington's Secretary of Transportation in late April, succeeding retiring Secretary Sid Morrison.

New Secretary of Transportation Douglas B. MacDonald (fifth from left) and former Secretary of Transportation Sid Morrison (far right) with the Transportation Commission. (Left to right: Edward Barns, Connie Niva, A. Michéle Maher, Aubrey Davis, Doug MacDonald, Elmira Forner, George Kargianis, Christopher Marr, Sid Morrison)

Morrison logs 35 valuable years of public service

When Sid Morrison walked out of the office of Secretary of Transportation in April he was taking with him an admirable record — 35 years of well-acclaimed public service.

After eight years as Washington's transportation leader, Morrison has agreed to serve the department in a consulting role until the end of the fiscal year.

Here's an attempt to capture on paper highlights of more than three decades of involvement in state and national issues.

After growing up in orchard country, attending WSU, serving in the Army and working in the family business — Morrison left the Yakima Valley to head into public service.

His first stop was the state capital in 1967 to serve in the Washington legislature, eight years in the House of Representatives and six years in the Senate.

After eight years as Washington's transportation leader, Morrison has agreed to serve the department in a consulting role until the end of the fiscal year.

Next it was to Washington, DC in 1981 to serve 12 years in Congress.

Then it was back to Olympia in 1993 to manage the state's large and challenging transportation system.

That's the outline of Morrison's public service record, but when the headline on an Associated Press retirement article salutes him as "Mr. Nice Guy" — and his peers on both sides of the aisle in the state Legislature and Congress speak in admiration of his potent negotiating skills — and the tally on a statewide WSDOT staff survey says he's improved employees' opportunities to do their jobs right — there's obviously more to report about his career.

The Toppenish native whose first official brush with transportation was getting an agricultural driver's permit at age 15 for delivering farm products, Sid recently shared some other memories of the career trip that brought him to stewardship of 7,000 miles of highways (and the rest of Washington's transportation system).

For samplers, his state legislator record shows he:

- fostered the Physician's Assistant Program which now provides needed medical professionals for thousands of Washington citizens, especially rural residents;
- was a member of the decision group which chose the route of Interstate 82 ("so it could serve the maximum number of people who needed it");
- brought to reality, as chair of the state House Labor Committee "a lot of things that cried out for negotiation," such as Washington's unemployment insurance program and major reforms in public employee retirement; and
- was the sponsor of the Public Transportation Benefit Area Bill, which provides federal support when communities decide to tax themselves to form a rural transit service. ("Representing a rural district, I knew that the need for bus service didn't end at the big city limits.")

In Congress, among other things, Morrison:

- partnered with Senator Slade Gorton to promote the national organ donor program;
- helped to create the Mt. St. Helens National Volcanic Monument (which brings millions of visitors a year to Washington) — and helped secure federal financing for building State Route 504;
- was a sponsor of the Columbia Gorge National Scenic Area legislation; and
- helped create the William O. Douglas Wilderness Area for forest preservation — and to provide a reliable supply of irrigation water to Central Washington.

Turning to his administration at WSDOT, Morrison will be remembered not only for the many additions and improvements in the state's transportation system, such as the expansion of the ferry fleet and the popular new Amtrak Cascades services — but, also for the better working partnerships with industry, citizens and the legislature.

In testimony to their high regard for his leadership, WSDOT team members around the state — from maintenance crews to executives — and state government and community leaders saluted Morrison with a bevy of farewell gatherings. There were lots of smiling and handshaking and standing applause — and, unashamedly, a good measure of tears. ▲

"TAKING THE NEXT STEP IN ASSET MANAGEMENT"

September 23–25, 2001
Madison, Wisconsin

Attendees will:

- set research agenda and plan the development of educational curricula in transportation asset management.
- share lessons learned by state Departments Of Transportation, local governments and transit agencies.
- hear the latest findings and recommendations of the American Association of State Highway and Transportation Officials (AASHTO) and Transportation Research Board (TRB) asset management task forces.
- discover resources and techniques for overcoming obstacles and taking the next step in implementing an asset management program.

Featured speakers include:

Secretary Peter Rahn of the New Mexico Department of Transportation, Director Mary Peters from the Arizona Department of Transportation, and Dr. Donald Kettl of the Brookings Institution and the La Follette School of Public Affairs. U.S. Department of Transportation Secretary Norman Y. Mineta and U.S. Representative Thomas Petri (R-WI) also have been invited to speak.

"TAKING THE NEXT STEP IN ASSET MANAGEMENT"
is sponsored by AASHTO, Federal Highway Administration, National Association of County Engineers, American Public Transit Association, Midwest Transportation Consortium, and the Midwest Regional University Transportation Center. For information contact Ernie Wittwer, Director, MRUTC (Midwest Regional University Transportation Center) at wittwer@engr.wisc.edu.

A Big Welcome to Liana Liu, the New FHWA T2/ LTAP Coordinator!

The WST2 Center is pleased to welcome Liana Liu, P.E., the new FHWA Washington Division Technology Transfer (T2) and Local Technical Assistance Program (LTAP) Coordinator to the state of Washington.

Liana is an expert in the field of safety and traffic operations with a bachelor's degree in civil engineering, master's degree in transportation engineering, and 18 years in transportation engineering. Liana has broad work experience that includes work with state, local, private and overseas transportation agencies. She has been involved in transportation planning, traffic studies, research, traffic signal operations, roadway and traffic signal design, safety improvement evaluation and traffic noise analysis.

Liana states she "…is pleased to work closely with WSDOT's WST2 Center and LTAP in partnership to bring FHWA's best available training, technical assistance, and state-of-the-art transportation technology to meet your needs. As always, FHWA promotes new technologies for safe, comfortable, convenient and economical movement of people and goods."

The WST2 Center looks forward to working with Liana, continuing the excellent working relationship we have had with the FHWA and expanding our partnerships to provide continued improvement of our services to the local agencies and tribal governments of Washington. ▲

If you need assistance from Liana, give her a call at (360)753-9553 or e-mail her at liana.liu@fhwa.dot.gov.

RECALLED

Danger Signs Video Recalled by FHWA

An appeals court overturned the 1997 manslaughter convictions of the three teen-agers who were accused of removing a stop sign from an intersection where three other teens were killed in a crash just hours later. The Federal Highway Administration (FHWA) Office of Chief Counsel has advised that the appeal and pending new trial of the three convicted teenagers requires the FHWA to take immediate action regarding the Danger Signs video. Therefore, this video (which portrays the teenagers as guilty) should no longer be shown or distributed, pending its modification. FHWA feels since they have received notification that the teenagers' convictions have been overturned, it would be improper for them to allow the continued showing or distribution of the Danger Signs video, portraying the three teenage defendants as convicted felons. For this reason, they are advising the discontinuation of any future distribution and / or showing of the video until the video is modified.

The FHWA wants to have copies of the current video returned to facilitate their replacement with an updated version. Therefore, please return all copies of the video to them. FHWA plans to contact all parties who have returned the video to arrange for distribution of a modified version. If you are unable to return any copies, please at least ensure that the video is shelved and no longer used or distributed. This will help protect the sanctity of the new trial and not taint the legal process by prejudicing the rights of the three teenagers. Continued showing of the video may harm these individuals' right to a fair impartial proceeding.

Continued showing of the video may harm these individuals' right to a fair impartial proceeding.

If you are unable to return your copies, please advise FHWA via the below address or fax (202) 366-3222 indicating that your copies of the video will no longer be shown, used or distributed. Please specify the number of copies you have so that they may be replaced with the updated version.

Please return all copies of the video to:

Federal Highway Administration Safety Core Business Unit, HSA-30, Washington, D C 20590. ▲

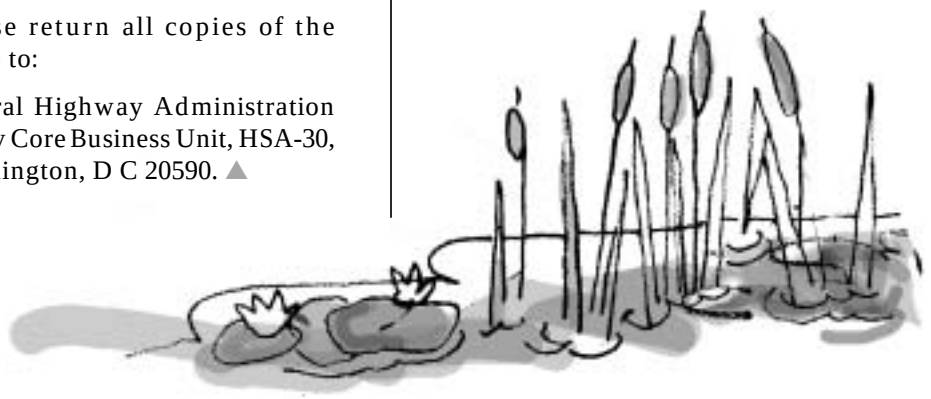
Ecology Stormwater Manual & Continuous Flow Modeling

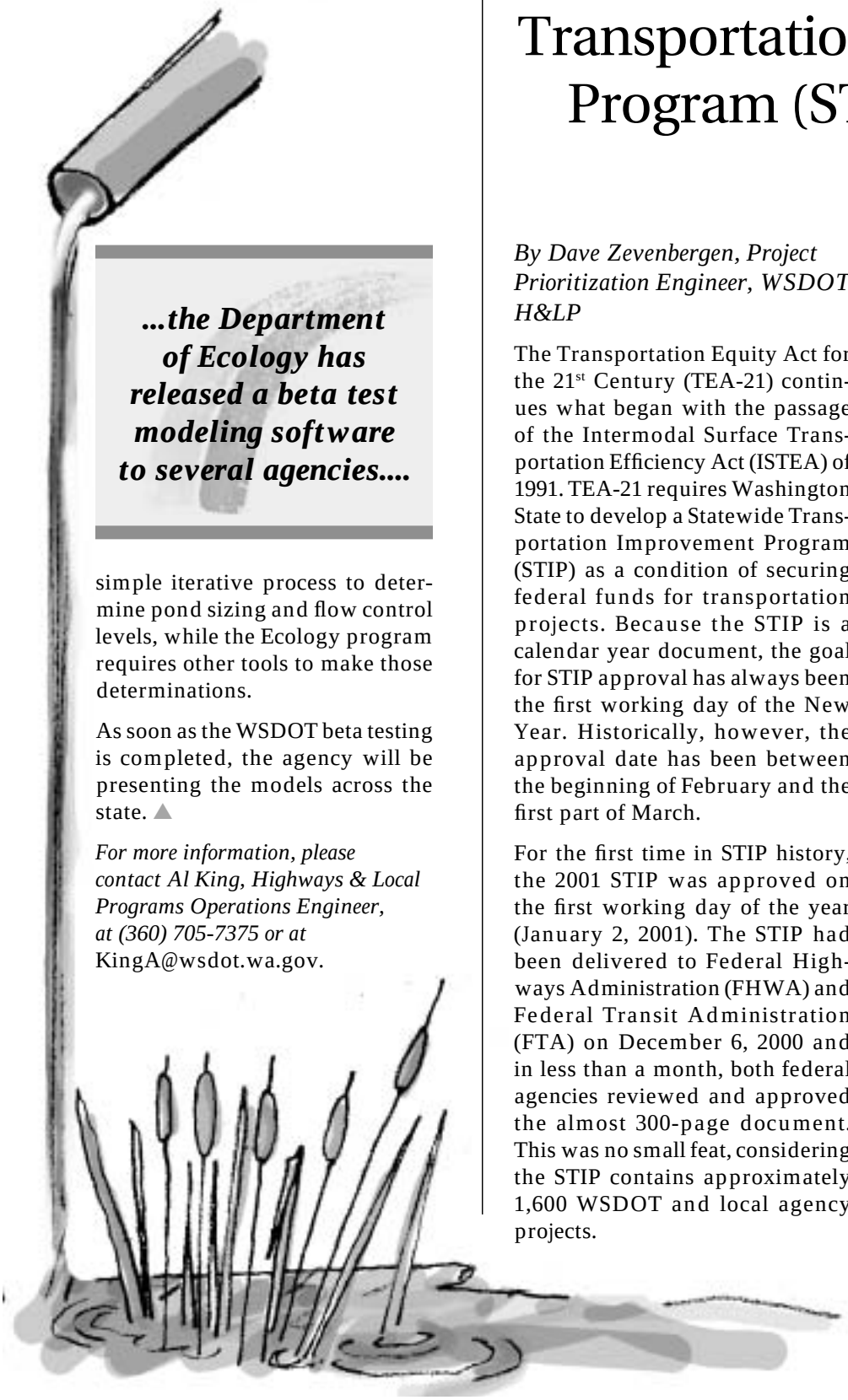
By Al King, Operations Engineer, WSDOT H&LP

The new Ecology Stormwater Manual, utilizing continuous flow modeling as opposed to the event modeling used in the past, will significantly increase the amounts of water that will need to be stored or detained on transportation projects.

To address the issue of implementation, the Department of Ecology has released a beta test modeling software to several agencies, including King County, Thurston County and the City of Vancouver. The software appears to be reasonably user-friendly, and the beta testing will help determine future direction.

Washington State Department of Transportation (WSDOT) expects to release its software to Beta testing about June. The WSDOT modeling program is somewhat different from the Ecology program, but both are expected to result in similar output. The WSDOT program also adds a very





...the Department of Ecology has released a beta test modeling software to several agencies....

simple iterative process to determine pond sizing and flow control levels, while the Ecology program requires other tools to make those determinations.

As soon as the WSDOT beta testing is completed, the agency will be presenting the models across the state. ▲

For more information, please contact Al King, Highways & Local Programs Operations Engineer, at (360) 705-7375 or at KingA@wsdot.wa.gov.

Congratulations to All!!

A New Record for Statewide Transportation Improvement Program (STIP) Approval

By Dave Zevenbergen, Project Prioritization Engineer, WSDOT H&LP

The Transportation Equity Act for the 21st Century (TEA-21) continues what began with the passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991. TEA-21 requires Washington State to develop a Statewide Transportation Improvement Program (STIP) as a condition of securing federal funds for transportation projects. Because the STIP is a calendar year document, the goal for STIP approval has always been the first working day of the New Year. Historically, however, the approval date has been between the beginning of February and the first part of March.

For the first time in STIP history, the 2001 STIP was approved on the first working day of the year (January 2, 2001). The STIP had been delivered to Federal Highways Administration (FHWA) and Federal Transit Administration (FTA) on December 6, 2000 and in less than a month, both federal agencies reviewed and approved the almost 300-page document. This was no small feat, considering the STIP contains approximately 1,600 WSDOT and local agency projects.

For the first time in STIP history, the 2001 STIP was approved on the first working day of the year (January 2, 2001).

The credit for this quick turnaround goes to all who helped build the pieces of the STIP – local agencies, Metropolitan Planning Organizations and Regional Transportation Planning Organizations, Washington State Department of Transportation's Public Transportation, Transportation Planning, Program Management, and Highways & Local Programs offices and, of course, FHWA and FTA for making the approval process a top priority. Congratulations on your great performance! ▲

WST2 Center Sponsors Millennium MUTCD Videoconference

By Dave Sorensen, Traffic Technology Engineer, WST2

ATSSA'S "Millennium MUTCD Videoconference," a quality "first of its kind" videoconference, reviewed the new standards and specifications in the Millennium Edition of the Manual on Uniform Traffic Control Devices (MUTCD). The Millennium MUTCD Videoconference was a live satellite broadcast to the nation from the campus of Northern Virginia Community College in Annandale, Virginia. The broadcast aired on March 20, 2001.

The WST2 Center, in partnership with the WSDOT Traffic Office, sponsored three sites to receive this live satellite broadcast: Edmonds Community College, Pierce College - Puyallup Campus, and Columbia Basin Community College in Pasco. Local jurisdictions across the State were invited to attend.

ATSSA'S "Millennium MUTCD Videoconference" reviewed the new standards and specifications in the Millennium Edition of the MUTCD. This videoconference featured a handpicked panel of representatives from FHWA, and featured a live Q&A session providing the audience an ability to immediately interact with the broadcast panel via toll free numbers and fax. The broadcast was moderated by ATSSA's Executive Director, Roger Wentz. Handout materials and follow-up materials were provided. Discount prices on VHS tapes of the broadcast were offered.

ATSSA'S "Millennium MUTCD Videoconference reviewed the new standards and specifications in the Millennium Edition of the MUTCD.

Over one hundred forty local agency representatives attended the conference.

MUTCD Millennium Edition Adoption Process

The purpose of the adoption process is to document the review procedures for the MUTCD Millennium Edition and to establish the framework for developing a revised WAC 468-95, which covers Traffic Control Devices, including Modifications to the MUTCD for Washington.

Historically, the Attorney General's Office, Tort Division, has recommended that MUTCD modifications be limited to those necessary to comply with state law, where state law and the MUTCD differ.

Time Frame

- Title 23, CFR (Code of Federal Regulations), Subpart 655.603(b), requires that the Millennium Edition provisions be adopted by the states no later than January 17, 2003.

Technical Review Committee

- In January 1995, the Deputy Secretary for Operations approved periodic statewide meetings for processing traffic control device issues. The Millennium Edition review fits under this category.
- Previous traffic control device meetings were attended by representatives from the department's regions, Highways & Local Programs Service Center, the cities of Everett and Vancouver, the counties of King, Pierce, and Thurston, the CRAB, the AWC, the FHWA, the Washington Section of ITE, and John Logan with J & L Associates.
- It is suggested that the technical review committee for the Millennium Edition be comprised of representatives from the following agencies as a minimum:

- WSDOT FOSSC Traffic Office (committee lead)
- WSDOT Regional Traffic Offices
- WSDOT Highways & Local Programs Service Center
- WSDOT'S Risk Manager and the Attorney General's Office
- CRAB & AWC, each to select local agency representatives of their choosing
- Jim Ellison, Pierce County (Mr. Ellison sits on the National Committee's Signing & Work Zone Subcommittees)
- John Logan, J & L Associates (Mr. Logan sits on the National Committee's Markings Subcommittee)
- Washington Section of ITE
- FHWA Olympia Division

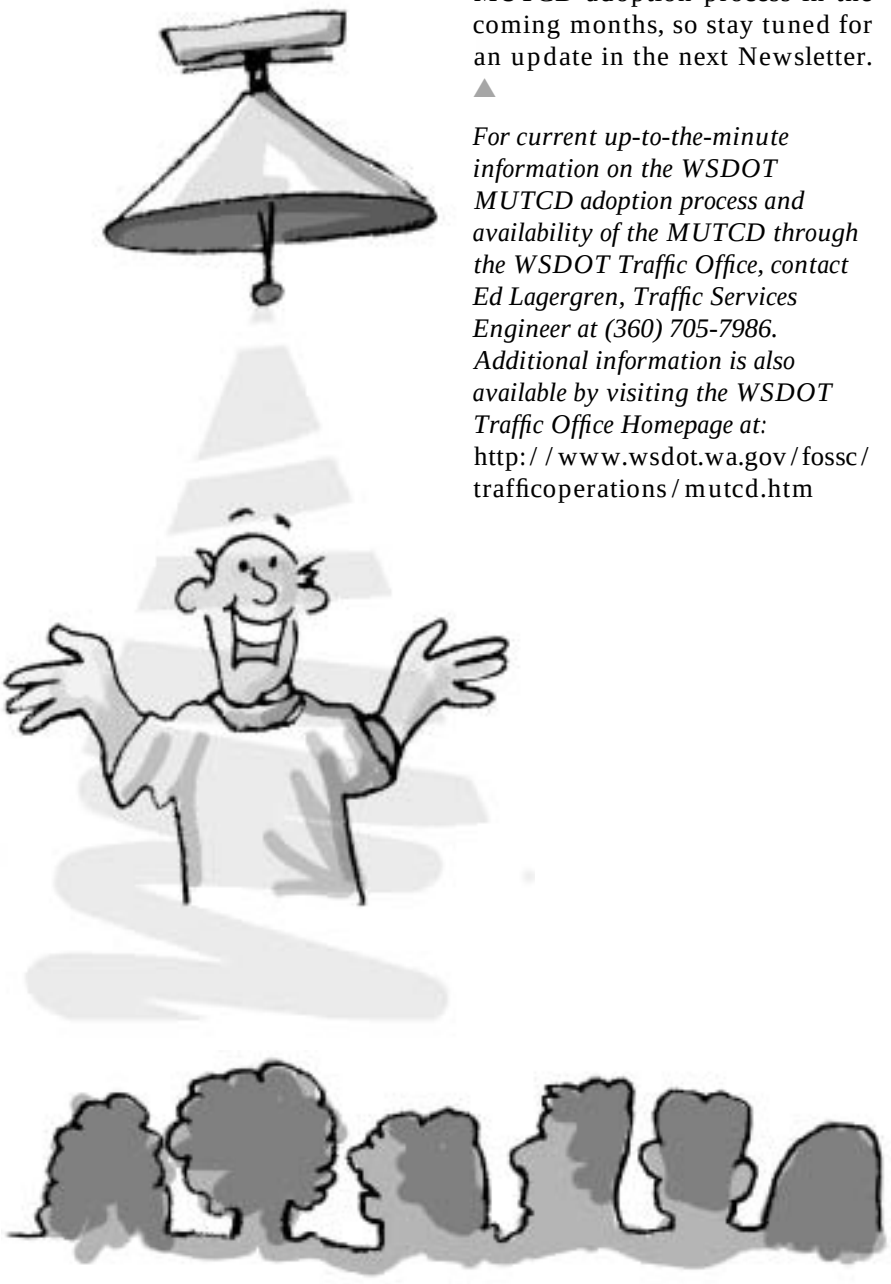
Manual Format

The Millennium Edition of the MUTCD will be distributed using a combination of media, such as downloading a file from a website, CD-ROM, and hard copy.

- Larger agencies may choose to download the manual for printing, or purchase it on CD-ROM.
- A collaborative effort between ATSSA, ITE, and AASHTO offers hard copies of the manual at a fair price in either "bound" or "loose leaf with binder" form.
- FHWA anticipates that the editorial corrections will be published in early May. Updates on availability of the MUTCD from ATSSA, ITE and AASHTO can be found at: http://www.atssa.com/products/MUTCD_update.htm

Distribution and Updates

- The WSDOT plans to release the Millennium Edition on its semi-annual CD, for general use. This will occur once the final edits are published by FHWA.
- The WSDOT also plans to provide one hard copy to those local agencies where the electronic version is not suitable.



- The WSDOT-FOSSC Traffic Office is not only responsible for assuring that future Federal revisions to the Millennium Edition be disseminated to the department's regions and local agencies, but also for initiating rule making on future additional modifications to the MUTCD.

The WST2 Center will publish articles on the progress of the MUTCD adoption process in the coming months, so stay tuned for an update in the next Newsletter. ▲

For current up-to-the-minute information on the WSDOT MUTCD adoption process and availability of the MUTCD through the WSDOT Traffic Office, contact Ed Lagergren, Traffic Services Engineer at (360) 705-7986. Additional information is also available by visiting the WSDOT Traffic Office Homepage at: http://www.wsdot.wa.gov/fossc/trafficoperations/mutcd.htm

Capital Facilities Planning Template and Tools From the Office of Community Development

Having trouble meeting the Capital Facilities Planning (CFP) requirements of the Growth Management Act? Feeling overwhelmed by all the rules and requirements for public works projects? Ever wish there was one place you could go to find all of the capital project technical information, financial information, and data you need?

The Office of Community Development (OCD), as part of its on-going efforts to provide enhanced services to local governments, is offering counties, cities, and special purpose districts the opportunity to join in a partnership to test and further refine a new CFP model for eventual use by interested jurisdictions statewide. Up to 12 local governments from around the state will be selected to receive a disk that contains the electronic tools, along with instructional materials and direct technical assistance from OCD. The goal is to have selected local governments operational with the system by the next CFP cycle.

OCD is seeking self-nominations from interested local governments. The selection criteria are: geographical distribution (of selected sites), type and size of the local government, readiness to proceed, and multi-jurisdictional submissions. If you are interested, please submit a simple letter of request, preferrably by June 8 (later submittals will be accepted), outlining the local government's ability to participate, the strengths of your interest based on those four factors, and the reasons that the local government should be considered.

Ever wish there was one place you could go to find all of the capital project technical information, financial information, and data you need?

Over the past two years, the City of Olympia developed a series of electronic tools and templates that create a streamlined, standardized process for CFP called eNCOMPASS. These tools, primarily in Excel 97, include customizable step-by-step task lists for CFP preparation and document production as well as public works project management. These task lists have hyperlinks to all resource information needed to complete an individual task, e.g., direct links to WSDOT's Standard Specifications, Standard Plans, and manuals. The project management task list can be sorted by size of project, subject heading, project component, resource costs, and major milestones and tasks. Both task lists can easily be blocked, copied, and pasted into any project scheduling software.

In addition, there are worksheets to help you determine public involvement costs, permitting needs, and construction schedules. Decision criteria and a decision matrix along with a spreadsheet that ties individual CFP projects to specific Comprehensive Plan sections help you to make objective funding choices about public works projects across program lines. Finally, the CFP text becomes a tool in and of itself that provides detailed project information that can be searched and sorted to develop lists and reports. A 3-D graphical representation of a jurisdiction's terrain and project locations completes the package. ▲

For more information or to schedule a demonstration in your area, please call Alice Soulek at (360) 725-3064. For your convenience, a list of demonstrations already scheduled around the state is on the next page. To submit your letter of interest, either mail or e-mail the letter to:

Alice Soulek
Local Government Division
Office of Community Development
PO Box 48350
Olympia, WA 98504-8350
e-mail: alices@cted.wa.gov

CFP Tools and Templates Presentations

JUNE

Tuesday, June 12th
NW Planners Forum, Maple Hall, 108 Commercial St, LaConner.
$15 Registration Fee at the door, 9:00 a.m. – noon

Wednesday, June 13th
SW Planners Forum, the Train Depot,
501 S. 1st Avenue, Kelso.
No charge, 9:00 a.m. – 3:00 p.m.

Thursday, June 14th
Washington State Association of Counties
Annual Conference, Yakima.
Conference Registration Fee, 1:00 p.m. – 5:00 p.m. (tentatively)

Wednesday, June 20th
Demonstrations all day at Association of Washington
Cities (AWC) Annual Conference, Bellevue.
Conference Registration Fee

Thursday, June 21st
Presentation at Association of Washington Cities (AWC)
Annual Conference, Bellevue.
Conference Registration Fee, 3:15 p.m. – 4:30 p.m.

AUGUST

Wednesday, August 1st
Presentation at City Managers Annual Conference, Wenatchee.
Conference Registration Fee (tentatively)

Thursday, August 2nd
Presentation at City Managers Annual Conference, Wenatchee.
Conference Registration Fee

NOVEMBER

Tuesday, November 6th
Presentation at IACC Conference, Wenatchee.
Conference Registration Fee

Wednesday, November 7th
Presentation at IACC Conference, Wenatchee.
Conference Registration Fee

Photogrammetry Products and Processes — Things You Should Know

By John Tull, WSDOT Geographic Services

While at WSDOT Photogrammetry I have worked with two valuable products, both derived from aerial photography and accurate field control surveying. They are 3-D (three dimensional) computer aided drafting & design (CADD) files and "geo-referenced" orthophotos. Both are mainly for use in computer software environments.

A. The CADD file is similar to a traditional map, consisting of linear and point features which have been precisely measured from the aerial photos, then represented by stylized lines and symbols in a digital graphics file, or plotted on hardcopy media.

B. By combining the 3-D CADD data with very precise digitally scanned aerial photographic images, an orthophoto can be made. Powerful software applications are used to take apart the image, pixel by pixel, and reassemble it so that each pixel and feature is in its correct geographic position.

Either of these products can be made according to a wide range of specifications for accuracy, precision and resolution, depending on the requirements of the users of the data. They are both usable in a Geographic Information System (GIS) and a variety of other applications as well as for accurate measurement of location, distance and area. The CADD file can also be used to measure elevations.

I have found there are three common approaches to making these products, although many variations are possible.

1. 3-D CADD files for design base maps are made from large- scale (low altitude) aerial photos and very accurate ground control surveys. This product typically costs in the neighborhood of $11-12,000 per mile for "design-type accuracy" urban transportation corridor mapping extending not more than 200 feet outside the right of way (This would only include photogrammetric labor charges – photos and survey services would need to be added).

2. The type of mapping described in Approach 1 can be enhanced by adding the orthophoto product. Since the 3-D CADD data and the aerial photos are already done, there is only about a minimal 5-10% additional cost to make "orthos."

3. Rather than doing either Approach 1 or 2, an agency could do the orthophoto only. This requires less labor than needed to collect the very detailed CADD data for design use, so the cost is usually about 1/3 of the cost of CADD mapping, or $3-4K per mile. The caveat here is that the photos and survey information used to do a mapping project are usually collected at a lower level of accuracy. So this "stand alone" product cannot be used to go back and make precise CADD files for design work. One would have to start over with new photos and ground control as in Approach 1.

There are a few other points that should be considered when planning for photogrammetric products. First, in spite of major technological gains in productivity, it is still labor intensive. Urban corridor mapping requires about 150 labor hours per mile. Second, resources are limited. For example, WSDOT has only 5 people doing production work in this area and the construction FTE cap prevents us from hiring more people or working significant overtime. Private sector resources are much reduced as well, with 2 out of the 4 firms in Washington State who provide service having gone out of business subsequent to passage of I-695. Finally, weather and time of year determine when and whether images can be acquired for a given product. The orthophoto, for example, needs source images taken in March or April. Any other time of year results in a degraded final product. ▲

If you have questions or would like additional information, you can contact John Tull at (360) 709-5540 or e-mail TullJ@wsdot.wa.gov.

Pooled-Fund Study to Validate Geotech Device

By Mike Adams, FHWA

On November 29 and 30, FHWA sponsored a meeting to kick off the validation of the Soil Stiffness Gauge (SSG), a new device that measures the stiffness of compacted granular materials. Preliminary studies indicate the SSG can be used to control the compaction of soil for roadway construction, particularly in trenches, embankments, and behind abutment walls. The validation is being conducted as part of the pooled-fund study, "Non-Nuclear Testing Of Soils And Granular Bases Using The Geogauge."

Successful validation of the SSG should improve the method for controlling the compaction of soils for highway construction and make it possible for the soil stiffness or modulus measurement to be directly applied into the design of pavements or in the forensic failure analysis of soil structures.

Currently, the most popular method of controlling soil compaction is to measure the density of the soil with a nuclear density gauge. The use of the nuclear density gauge is very inconvenient because it contains radioactive materials. The nuclear density gauge is also strictly regulated and use requires special training, transportation documents, and provision for storage. Comparatively, the SSG does not require any special permits or license for use, and collects data quicker than the nuclear density gauge.

Melvin Main, who helped develop the device on the right known as the SSG, prepares the ground with a thin layer of sand to perform a soil stiffness test.

Twenty-two States are contributing to the pooled-fund validation study. Representatives from each State were invited to participate in the November meeting. Developers of the SSG and its manufacturer, along with several university professors attended. The meeting was organized under the direction of FHWA geotechnical engineer Albert DiMillio, who has also collaborated with other government agencies and industries during the development of the device. ▲

For more information, contact Mike Adams, (202) 493-3025
mike.adams@fhwa.dot.gov.

Reprinted from Research & Technology Transporter, USDOT-FHWA, February 2001, FHWA-RD-01-009.

WSDOT Phases In
Fluorescent Orange Sheeting & NCHRP 350 Compliant Construction Signs

Dave Sorensen, Traffic Technology Engineer, WST2Center

Effective October 1, 2000, state DOTs receiving federal funds were to ensure that Category 2 traffic control devices (cones, drums, barricades, temporary construction signs and sign stands) that were in use on the National Highway System (NHS) met NCHRP 350 crash test requirements. Contractors can self-certify certain devices, per the specifications. The WSDOT Olympia Service Center Construction Office met with representatives from industry, WSDOT and FHWA to develop a reasonable implementation plan for phasing in compliant construction signs and sign stands.

WSDOT also began implementing fluorescent orange sheeting on its construction signs at the same time.

WSDOT will require fluorescent orange sheeting on construction signs for all contracts advertised after December 31, 2002. Change orders may be processed to add fluorescent orange flagger signs on current contracts.

- For now, the standard requirement for construction signs made with plywood or aluminum sign panels has not been changed.
- WSDOT will require NCHRP 350 compliant Category 2 signs and sign stands on contracts advertised after December 31, 2007. Until then, existing signs and sign stands are acceptable, but they will be replaced with compliant devices as they wear out.
- The WSDOT New Products Committee has a team working on how to approve NCHRP 350 compliant devices for use on construction projects, as not all compliant devices would be acceptable. Currently, roll-up signs, which are compliant, do not meet the specifications (plywood or aluminum panel required) and a change order would be required to allow their use.

What does this mean for Local Agencies?

NCHRP 350 applies to roadways on the National Highway System (NHS). So, if your agency has NHS roadways, your traffic control devises will need to comply. However, most local agencies do not have NHS Routes on their road or street systems so the requirement does not apply to them directly.

Although they may not be required, your agency may want to use compliant devices when replacing old devices just as good practice. From a risk point of view, using these devices may be the best practice to follow. Suppliers can verify which devices meet NCHRP 350 requirements. Compliant devices are often all that are available for purchase. The WSDOT uses compliant devices as identified in the Qualified Products List, Standard Plans, and Standard Specifications.

NCHRP Categories

Sources: www.atssa.com and http://safety.fhwa.dot.gov/fourthlevel/qanda.htm

Category 1 Includes those items that are small and lightweight, channelizing and delineating devices that have been in common use for many years and are known to be crashworthy by crash testing of similar devices or years of demonstrable safe performance. These include cones, tubular markers, flexible delineator posts and plastic drums with no attachments. These devices may be allowed for use on the NHS based on the developer's self-certification. (The compliance date for this category was October 1, 1998.

Category 2 Includes devices that are not expected to produce significant vehicular velocity change, but may otherwise be hazardous. Examples of this class are barricades, portable sign supports, intrusion alarms and drums, vertical panels, or cones with lights. Testing of devices in this category will be required. However, they may qualify for the reduced testing requirements. (The compliance date for this category was October 1, 2000.)

Category 3 Is for hardware that is expected to cause significant velocity changes or other potentially harmful reactions to impacting vehicles. Hardware in this category must be tested to the full requirement of NCHRP 350. Barriers, fixed sign supports, crash cushions and other work zone devices not meeting the definitions of Category 1 or 2 are examples from this category. (The compliance date for attenuators was October 1, 1998; for temporary barriers: new units needed tensile and moment resistance after October 1, 2000 and new barriers must meet Report 350 criteria by October 1, 2002.)

Category 4 Includes portable or trailer-mounted devices such as Arrow Displays, Temporary Traffic Signals, Area Lighting Supports and Portable Changeable Message Signs. After compliance date of October 1, 2002, this class of devices may not be used unless they are placed behind crashworthy barriers or shielded with TMAs or crash cushions. (The deadline date has been deferred via a policy memorandum dated September 13, 2000.. An announcement of the implementation schedule for these devices is expected by October 1, 2003.)

ATSSA and FHWA have a list of compliant devices on their web pages as well as a history of NCHRP 350 at *http://www.atssa.com* under "Roadway Safety, NCHRP 350."

So, in summary, impacts on local agencies are minimal. Most local agencies do not have NHS Routes, do not have high-speed facilities or are probably using approved devices already so immediate action is not mandatory. In the near future, approved devices will be all that will be manufactured. So, as old devices are replaced they will automatically be replaced with compliant ones. ▲

If you have any questions or need additional information, you can contact Dave Sorensen, Traffic Technology Engineer, WST2 Center at (360) 705-7385 or e-mail SorensD@wsdot.wa.gov *or contact Ed Lagergren, Traffic Engineer, WSDOT Traffic Office at (360) 705-7986 or e-mail* LagergE@wsdot.wa.gov

FHWA — Approved Portable Sign Stands[1]

I. Portable Sign Stands with Roll Up Signs

Manufacturer	Model Number	FHWA Acceptance Letter Number
Eastern Metals	C-102	WZ-7
Eastern Metals	C-202	WZ-13
Eastern Metals	C-902	WZ-13
Eastern Metals	X-500	WZ-13
Eastern Metals	X-550	WZ-7
Eastern Metals	X-600	WZ-7
Dicke Tool	207170	WZ-17
Dicke Tool	244814	WZ-17
Dicke Tool	DF3000WQ	WZ-17
Dicke Tool	DF3003	WZ-25
Dicke Tool	DF3003S	WZ-17
Dicke Tool	DF3003S	WZ-17
Dicke Tool	DF3003W	WZ-17
Dicke Tool	DF4700	WZ-25
Dicke Tool	DF4700TX	WZ-25
Dicke Tool	DL1003W	WZ-17
Dicke Tool	DL1003WQ	WZ-17
Dicke Tool	PS-3000-S	WZ-17
Dicke Tool	PS-3330-S	WZ-17
Dicke Tool	QFV48	WZ-17
Dicke Tool	QFV60	WZ-17
Dicke Tool	QFV84	WZ-25
Dicke Tool	UF2000	WZ-25
PIBH	30SM-PAKD	WZ-18
MDI	4812	WZ-28
MDI	4818	WZ-28
MDI	3612DLK	WZ-20
MDI	4814CS	WZ-20
MDI	4814K	WZ-28
MDI	4814NSCK	WZ-20
MDI	4814SSCK(30CAM)	WZ-20
MDI	4814SSCK(40CAM)	WZ-20
MDI	4815RB	WZ-28
MDI	4850RB	WZ-28
MDI	4860KA	WZ-28
MDI	4884CS	WZ-28
Korman Signs	SS548UCRA	WZ-21
Korman Signs	SS548UCA	WZ-21
TrafFix	Big Buster	WZ-24
TrafFix	Econ Buster	WZ-24
TrafFix	Little Buster	WZ-24
Sign Up Corp.	MS-1000X(48-FU)	WZ-30
Sign Up Corp.	MS-1000X(48-FU3)	WZ-30
Sign Up Corp.	MS-1000X(48-MS22)	WZ-30
Sign Up Corp.	MS-2000XI	WZ-43
Sign Up Corp.	X-CELL	WZ-43
Long Products Int'l	BasicTM 48	WZ-38
Long Products Int'l	CrossWindTM 204-HD	WZ-38
Long Products Int'l	CrossWindTM 606-EXD	WZ-40

II. Portable Sign Stands with Rigid Signs

Manufacturer	Model Number	FHWA Acceptance Letter Number
Montana DOT	DWG# 618-02 (Plywood)	WZ-19
WLI	SafetyCor Sign System (Plastic)	WZ-23
Texas DOT	Skid Mounted Sign Support (Plywood)	WZ-3
TrafFix	Big Buster (Plastic)	WZ-46
TrafFix	Econ Buster (Plastic)	WZ-46
TrafFix	Little Buster (Plastic)	WZ-46

[1] FHWA acceptance is limited to the crashworthiness of the devices and does not cover their structural features, nor conformity with MUTCD.

International Right of Way Association

Fellow Right-of-Way Professional:

The International Right of Way Association (IRWA), in cooperation with the Federal Highway Administration (FHWA), is in the process of finalizing the program for "THE NATIONAL UNIFORM ACT SYMPOSIUM - Commemorating the 30th Anniversary of Public Law 91-646". This symposium will provide a unique forum for information exchange and training among federal agencies, State DOTs, local public agencies (LPAs) and consultants. Our goal is to provide the highest quality speakers from a variety of backgrounds so that the information is meaningful to you. We believe the preliminary program is excellent.

To help us achieve our goal, we are seeking dynamic presenters who can speak on any of the following topics; training needs, appraisal and appraisal review topics, negotiation issues, and relocation assistance. The session formats include clinics, individual and team presentations, panels and discussion groups.

If you can recommend an individual (or individuals) who you believe can be an effective speaker(s) for this event, please contact the following individual:

Michael G. Hereford
Tel: 979 229 2129
email: Herf66@aol.com

Once we have compiled a list of potential speakers, the committee will make final recommendations about the selection of presenters. They will notify all those individuals selected.

Sincerely

Wayne F. Kennedy, SR/WA
International President

for Susan Lauffer
Director of the Office of Real Estate Services
Federal Highway Administration

International Headquarters: Pacifica Harbor Business Center, Suite 220 • 19750 South Vermont Avenue • Torrance, CA 90502-1144
Tel: (310) 538-0233 • Fax: (310) 538-1471 • Web site: http://www.irwaonline.org

HPC In Washington State

By Jerry Weigel, P.E., State Bridge and Structures Engineer, WSDOT Bridge and Structures

Since our 1997 HPC Showcase, state and local agencies in Washington State have constructed eight bridges with high performance concrete (HPC) girders, have ten ready to be advertised, and have eight being designed. Environmental requirements to keep piers out of waterways and the necessity of providing for future widening to accommodate increasing traffic demands are creating an ever-growing need for longer spans. The use of HPC improves construction economy by providing for longer spans, increased girder spacings, and shallower girders.

Experience gained through the design and fabrication of HPC girders has shown that release strength is the critical parameter. A specified release compressive strength of 7500 psi (52 MPa) and a specified design compressive strength of 8500 psi (59 MPa) result in an optimum design economy. While compressive strengths of 10,000 psi (69 MPa) result in an optimum design economy. While compressive strengths of 10,000 psi (69 MPa) are possible, the extended in-form curing time and design mix complexities are uneconomical and difficult.

Super Girders

Washington State Department of Transportation (WSDOT), partnering with industry, has developed two deep precast, prestressed concrete I-girder sections called "Super Girders." An article in the July-August 1998 PCI Journal provides technical data and describes the development of these sections. These new sections, using HPC and 0.6-in. (15.2-mm) diameter prestressing strands will span up to 225 ft. (69 m). WSDOT has a project, Twisp River Bridge, under contract using "Super Girders" with a single span length of 197 ft. (60 m). The girder concrete has a specified release compressive strength of 5000 psi (34 MPa) and a design compressive strength of 8000 psi (55 MPa). Because of their weight, these girders were fabricated in three sections for transportation to the site and will be post-tensioned together on site.

Due to constructibility concerns, the girder sections will be placed on temporary falsework and the girder wet joints completed after the placement of the deck concrete. The inability to consistently produce high strength concrete at a remote project site was one of the major concerns. With this construction sequence, the required compressive strength of the joint concrete is 4400 psi (30 MPa). If the joints were completed and the girders stressed before deck concrete placement, the joint concrete compressive strength would need to be 7500 psi (52 MPa) and the design compressive strength of the girder concrete would need to be 10,000 psi (69 MPa). However, when the deck concrete is placed before the girders are stressed, the falsework must support the weight of the girders and the deck. Consequently, the construction sequence has a significant impact on the design requirements and falsework costs.

Materials

Except for microsilica and corrosion inhibitors, HPC uses similar materials and admixtures as conventional concrete. The amount and type of each component are selected in order to achieve the required durability and strength properties. In addition to prestressed concrete girders, WSDOT has used HPC for bridge deck concrete; cast-in-place piling concrete; and deck overlays of latex modified concrete, microsilica modified concrete, and fly ash modified concrete.

The Future

Through our effort as a member of the "Lead States Program," our participation in a showcase, and working with HPC, we have learned a great deal and are convinced that the future of high performance concrete is very bright. This learning experience has confirmed that we can build bridges that are durable, cost effective, and will require minimal maintenance.

Further Information

For further information about HPC in Washington State, contact the author at (360) 705-7207 or *WeigelJ@wsdot.wa.gov*. ▲

Reprinted from HPC Bridge Views, Issue No. 7, Jan/Feb 2000.

Road Safety Audits — Proactive Safety

By Dave Sorensen, Traffic Technology Engineer, WST2 Center

Historically, highway safety countermeasures have been developed in response to accidents. These countermeasures are based on the identification of contributing factors in the system-operating environment that can be eliminated or changed so that the accidents caused by them will no longer occur. The road safety audit is a process whereby a team of experts attempts to identify features of the highway operating environment that could be potentially dangerous and then works to eliminate or change these features during the different phases of design before the system becomes operational.

...the RSA concept has proven to be highly effective in identifying and reducing the crash potential in the planning and design of roadway projects.

Road safety audits are a proactive approach to improving transportation safety. With over 40,000 fatalities resulting from motor vehicle crashes each year in the United States, the road safety audit (RSA) concept is a new and powerful tool for addressing safety deficiencies. Initiated in Great Britain in the 1980s, the RSA concept has proven to be highly effective in identifying and reducing the crash potential in the planning and design of roadway projects. The road safety audit, when used for applications on existing roads, is more appropriately termed a road safety audit review (RSAR).

...a process whereby safety is taken as an explicit consideration in the planning, design and operation of a transportation facility.

Many experts say the road safety audit (RSA), a preconstruction assessment process that focuses specifically on safety, has the potential to save lives and, ultimately, money. Road Safety Audit (RSA) is a relatively new tool for the North American transportation profession. It was developed by English and Australian road safety professionals as a process whereby safety is taken as an explicit consideration in the planning, design and operation of a transportation facility.

This process, including the participants and their respective roles, has been well documented. RSA may be used on existing facilities (i.e., an in-service audit) but it was primarily developed as a proactive safety tool to be used during the planning and design stages of a project. The design of a new facility or the redesign of an existing facility follows an established process, which has been redefined and restructured over the years, as social and environmental impacts have become more prominent considerations in the delivery of transportation services.

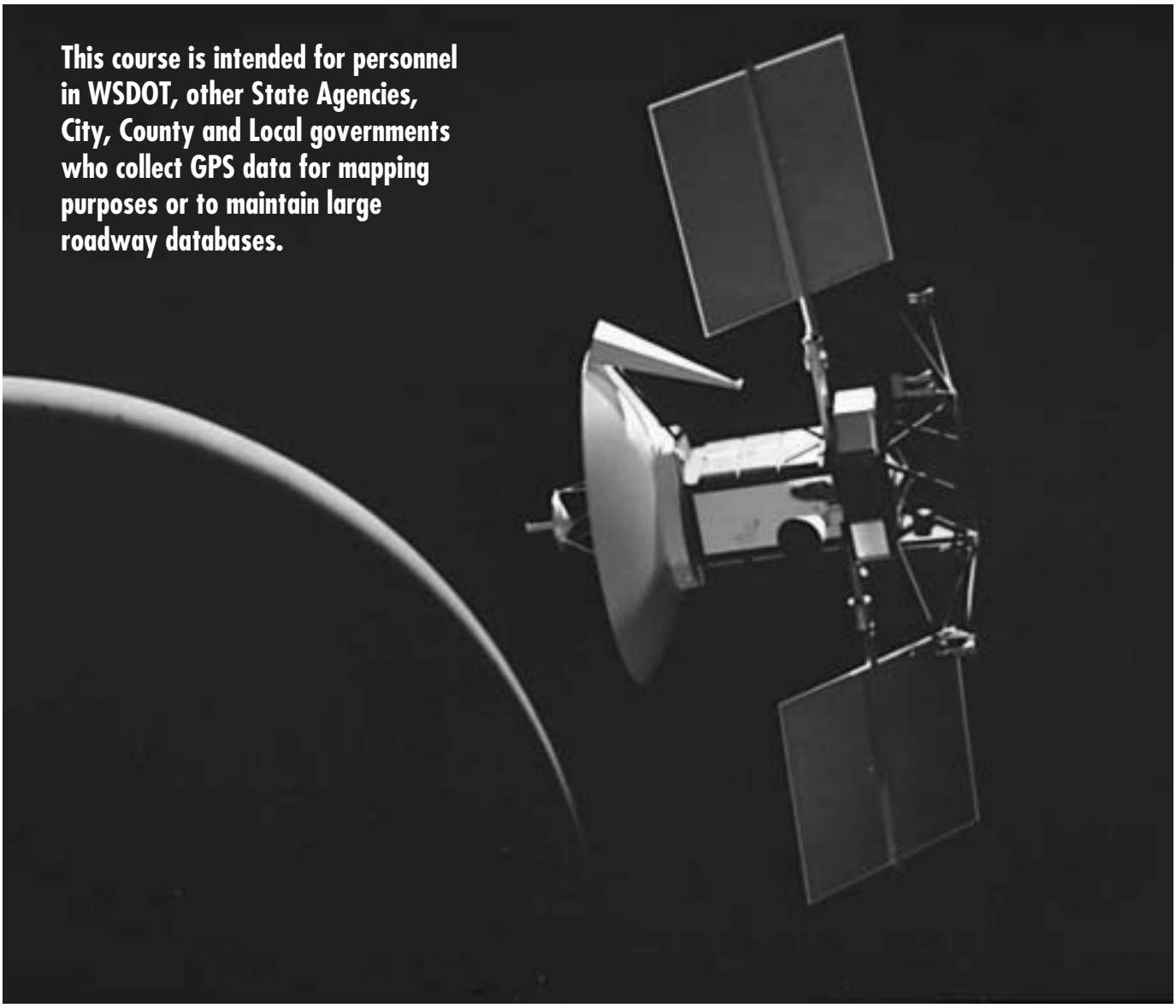
Current North American RSA initiatives have been mainly pilot projects that are carried out as an "add-on service" to roadway design. The pilots have been somewhat distinct from the design process, and efforts have focused on the elements of RSA, the RSA process, and the audit team. In short, these initiatives have used RSA in isolation from the design process. As RSA becomes an accepted part of a road project, an equally important consideration is how to successfully integrate the RSA into the regular design process to minimize delays and wasted resources.

The WST2 Center is soliciting interest to sponsor a Road Safety Audit class later this summer or fall. ▲

If you have an interest in attending this class, learning more about Road Safety Audits and how your programs can benefit from this process, contact Dave Sorensen at (360) 705-7385 or e-mail SorensD@wsdot.wa.gov.

Global Positioning Training Program for Mapping Grade Equipment

This course is intended for personnel in WSDOT, other State Agencies, City, County and Local governments who collect GPS data for mapping purposes or to maintain large roadway databases.



GPS Mapping Grade Equipment (3 Days)

This course prepares personnel in the use of Leica© brand SR500 series GPS equipment. While computers and software are provided for training, course participants are required to supply their own equipment. The course will involve both classroom and field work. Participants must come prepared to work outdoors in all kinds of weather and have appropriate safety equipment.

For more information call (360) 570-7272 or email at smithtm@wsdot.wa.gov

The Washington Partnerships for Quality Transportation (PQT) Award Winners Are . . .

By Kimberly Colburn, Information Officer, WSDOT H&LP

Because exceptional transportation projects deserve public recognition, the PQT Awards were presented at the American Public Works Association Spring Conference on April 19, 2001. Kathleen Davis, Highways & Local Programs (H&LP) Program Management Director, presented awards to two outstanding projects on behalf of Paula Hammond, PQT Co-chair and H&LP Assistant Secretary.

The winner of the PQT Achievement Award was the Colville 2000 Downtown Revitalization and Transportation Improvements, Phase 1 project. The new Wynne Street arterial relieves capacity on U.S. 395, which is also Main Street through Colville. Innovative elements include traffic calming design features, plus the cooperative connection between local economic development and regional transportation goals. At the PQT Awards Presentation, award plaques and posters were presented to the following project team organizations: City of Colville, project owner; Welch Comer Engineers, project construction manager and lead consultant; The Eller Corporation, project contractor; and Washington State Dept. of Transportation (WSDOT) Eastern Region Local Programs, project funding and coordination for WSDOT. The Colville 2000 Downtown Revitalization and Transportation Improvements, Phase 1 project was forwarded to the National Partnership for Highway Quality (NPHQ) as a nomination for their 2001 NPHQ Achievement Award, which takes place later this year.

PQT 2001 Achievement Award presented to Colville 2000 Downtown Revitalization and Transportation Improvements, Phase 1 Project Team: Mark Freiberger, City Engineer, Colville; Rod Fogle, Chairman, Colville 2000 Committee; Brent Rasmussen, Local Programs Engineer, WSDOT Eastern Region; Kathleen Davis, Director Program Management, WSDOT H&LP Award Presenter; Larry Comer, President & Principle Engineer, Welch Comer Engineers; John Acorn, Colville 2000 Committee

The Novelty Bridge Replacement project won an **Honorable Mention** award from PQT because of the outstanding partnering and teamwork of the project development team throughout the entire design and construction process. Depicting the artistic uniqueness of the bridge, a special bridge railing with wave plate design resembles the Snoqualmie River it spans. To minimize traffic dis-

PQT Honorable Mention Award presented to Novelty Bridge Replacement Project Team. (left to right) John Lyou, Project Engineer, King County Road Services Division ; Ronald J. Paananen, County Road Engineer, King County Road Services Division ; Gwen I. Lewis, Project Manager, King County Road Services Division ; Hans Saxer, Project Manager – Design, Parsons Brinckerhoff Quade and Douglas, Inc ; Carolyn Law, Artist, County 1% for Art Program ; Mike Bell, Project Manager – Construction, Wilder Construction Co. ; Kathleen Davis, Director Program Management, WSDOT-H&LP, Award Presenter

ruption the construction on site was completed in seven months. The bridge is located on NE 124th Street between SR 203 and West Snoqualmie Valley Road, over the Snoqualmie River. Award plaques and posters were presented to the following Novelty Bridge Replacement project team organizations: King County, project owner and construction manager; Parsons Brinckerhoff Quade & Douglas, Inc., project engineering designer and prime consultant; Carolyn Law, project artist; and Wilder Construction, project contractor.

A hearty congratulation goes out to everyone who worked on both projects! ▲

For more information about the Colville 2000 Downtown Revitalization and Transportation Improvements, Phase 1 project, please contact Larry Comer, Welch, Comer & Associates, at (208) 664-9382. For more information about the Novelty Bridge Replacement project, contact Hans Saxer at (206) 382-5263.

Evergreen Interchange Partnership Project Nears Completion

By Al Gilson, Public Affairs, WSDOT- Eastern Region

The final component of the Interstate 90/Evergreen Interchange opened to traffic on Friday, May 4, 2001. This last piece, the connection from I-90 south to Mission Avenue and Evergreen Road, completes the entire $20.5 million project.

The overall project consisted of three parts: the freeway on/off ramps, overpass, and subsequent connection to Indiana Ave on the north that was constructed by the Washington State Department of Transportation (WSDOT); Spokane County's project on Evergreen Road from Sprague Ave. to Sharp Ave.; and the final piece, again being built by the WSDOT, between the I-90 on/off ramps and Sharp Avenue to the south. This last component includes a new bridge for Mission Avenue over Evergreen Road and a reconfigured connection from Mission to Evergreen. Harcon, Inc. of Spokane, Washington, was the prime contractor on the state portions of the project. Construction cost on the state-built portions of the job was about $14.1 million.

The construction phase that added the connection from I-90 to Indiana Ave. with the overpass bridge and freeway on/off ramps was opened to traffic in November 2000. Spokane County completed their work on Evergreen Road from Sprague Avenue to Sharp Avenue last September.

These improvements came as a result of a public/private partnership effort. Funding for the work was obtained from the Washington State Department of Transportation, the Washington State Transportation Improvement Board, Federal Highway Administration, Spokane County, and nearby private developers. ▲

For more information, contact Al Gilson at (509) 324-6015 or GilsonA@wsdot.wa.gov.

(Left to right) An un-named Spokesman Review Photographer; Jerry Lenzi, WSDOT Eastern Region Administrator; Marilyn McCurdy, Governor Locke's Office; Jim Haines, Assistant Spokane County Engineer; Kate McCaslin, Spokane County Commissioner; Ross Kelley, Spokane County Engineer; John Ahern, Sixth District Representative; Allen Schweim, representing the Transportation Improvement Board

Partnering:

By Jeff Carpenter, Alternative Project Delivery Manager, WSDOT

Washington State Department of Transportation's (WSDOT) pilot design-build project is now underway in Southwest Region. The SR 500/Thurston Way Interchange is a $22.7 million grade separation project which will serve the Vancouver Mall. The current at-grade intersection is the primary entrance into the mall and traffic will be staged through the work area during construction.

The SR 500/Thurston Way Interchange project is WSDOT's first use of the design-build contracting tool. Design-build combines both the contractor and designer into a single team to produce the best value product to WSDOT. By integrating the contractor's knowledge and practical experi-

Design-Build Pilot Project

ence into the design phase, the designers can tailor the design to the contractor's expertise. The contractor is also able to begin construction before the entire design package is completed, which results in a completed project on a faster timeline than a standard WSDOT construction project.

Rather than the supervisory role, WSDOT will be adopting the new role of full partner throughout the length of the project. In this role, WSDOT personnel can lend their expertise to finding the best solutions for problems that may arise.

Design-build is just one of the many innovative contracting tools that WSDOT is using. ▲

For more information on innovative project delivery tools, please contact Jeff Carpenter at (360) 705-7804.

State/County Collaboration Saves Time, Dollars

By Megan Davis, WSDOT Organizational Development Services

An opportunity arose in Southwest Washington last summer that reaped benefits far beyond solving the workforce issue that often arises when a highway construction project is planned for a remote area. Klickitat County Public Works had programmed a very large construction project but had insufficient workforce and equipment to administer it. They asked the local WSDOT engineering office if resources could be loaned to help meet their need. WSDOT went a step further, rescheduling a large adjacent project, allowing both projects to be built at the same time. A single contract covered the combined work and both agencies enjoyed the benefits of resource sharing.

This partnering effort resulted in several positive benefits:

- More bidders were attracted to the larger, combined project, increasing competition and lowering the bid amount. The low bid turned out to be $888,522 below the engineer's estimate.
- Sharing resources between agencies reduced overall administration costs below statewide averages and avoided hiring and training costs.
- This effort provided a foundation for future resource sharing and cost avoidance in the Klickitat County area. Already, the City of Bingen has approached WSDOT about a similar application for an upcoming project.
- A total savings of $1,388,522 was realized on this project.

The project team, comprised of the Klickitat County Road Department and WSDOT's Columbia River East Engineering Office, has been awarded the Governor's Award for Service and Quality Improvement. The team will be recognized at a reception hosted by Governor Locke. ▲

For more information, contact Megan Davis at (360) 705-7412 or DavisM@wsdot.wa.gov.

Patrick Zellner's & James Pryor's

Tack Distributor Waste Diesel Recycling System — Recycling By Recycling

For years the city of Renton has cleaned their CSS1 Tack Distributor using fresh diesel fuel in order to keep the system pump and hose from plugging up. The flushing processes resulted in 800 to 1000 gallons of tack/diesel waste that had to be disposed of as hazardous material at a disposal cost of $7,000 to $10,000 per year.

Patrick Zellner, City of Renton Lead Maintenance Worker III, noticed that as the dirty tack/diesel mix sat in storage, the tack material settled and fairly clean diesel floated to the top. Patrick got together with his co-worker, James Pryor, Maintenance Worker III, and they came up with an amazing piece of equipment and a process that saves money, fuel resources and the environment by filtering and recycling the used, dirty diesel.

What Patrick and James have developed is a process that allows the asphalt and diesel to separate. This is done in three phases along with a modified initial cleaning step for the Tack distributor.

The first step in cleaning the distributor equipment has been modified. Now the operators push the residual tack remaining in the hose back through the hose into the tack tank using the cleaning diesel, stopping just short of the cleaning diesel entering into the tack tank itself. This removes most of the tack that would have needed to be removed and disposed of during the recycling process itself, without polluting the tack with diesel. This has greatly reduced the amount of waste tack needing to be separated during the recycling process.

Once the distributor is cleaned, the separation process begins. In the first phase, the tack/diesel mix resulting from the distributor flushing process is allowed to sit for a period of time to let the asphalt tack settle to the bottom of the 55-gallon drums it is stored in. In the next phase, after the initial settling occurs, they pump the partially cleaned fuel from the top of the 55-gallon drums through a series of two filters and store the filtered diesel in a tank for future use. In the last phase, when the filtered diesel is needed for cleaning the tack distributor again, the fuel is drawn from the tank and passed through a final filter. After cleaning the tack distributor with the recycled diesel, they start the process all over again.

Pat says the process reduces 55 gallons of tack/diesel mix to about 15 gallons of tack waste and 40 gallons of recycled diesel fuel. He says the fuel can be recycled almost indefinitely. Pat is currently investigating methods of recycling the waste tack material, too.

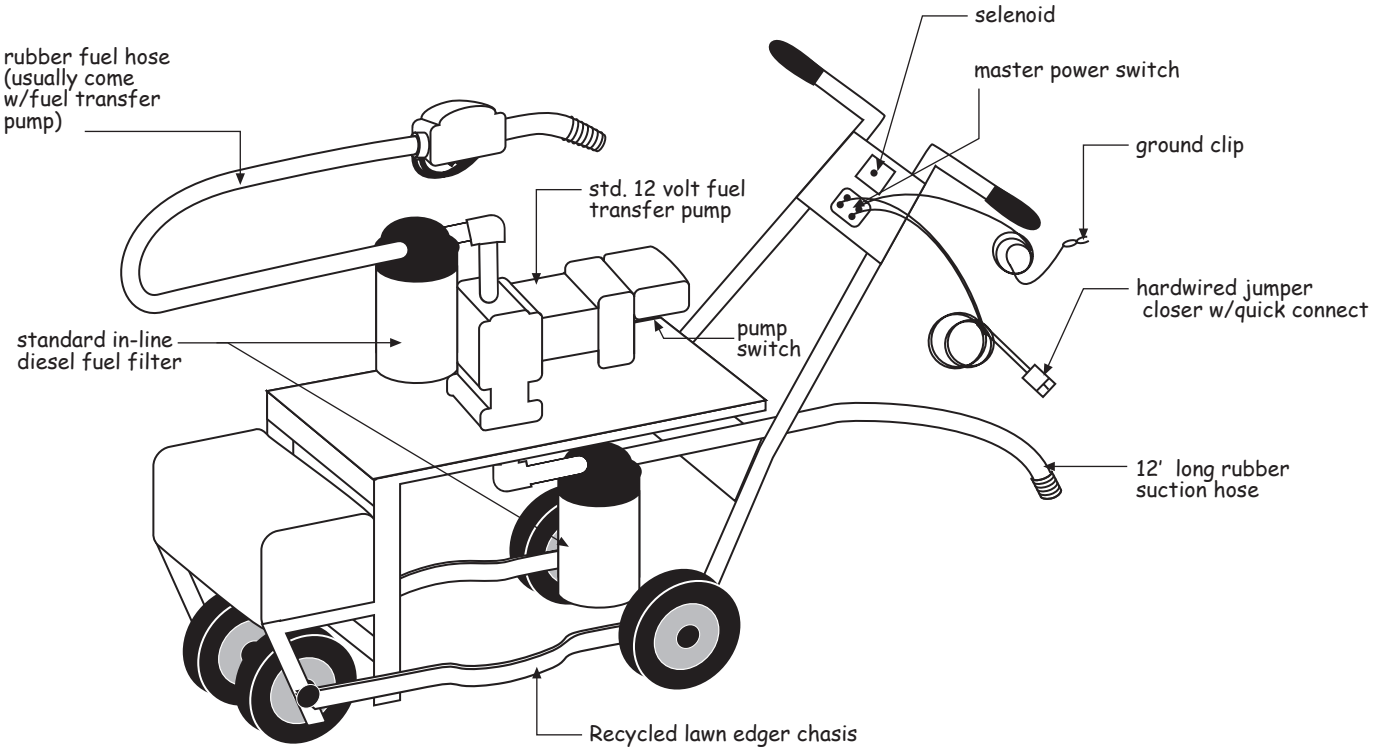
In order implement the process, Patrick and James invented the equipment to make it work. To pump the mix they mounted a 12-volt diesel pump onto an old lawn edger frame (also recycled). Two inline filters were added, one on the inflow and one on the out flow side of the pump (see Diagram). To power the pump they added a 12-volt battery to the frame with hard mounted quick connect jumper cables to connect to a battery charger. On the upstream side they connected a 12-foot suction hose and on the downstream side a hose with a standard fuel nozzle.

The storage tank was made of a (you guessed it) recycled 116-gallon home fuel tank found dumped along the shoulder of a road. It was cleaned, sand blasted, painted and mounted on a stand. A third filter was attached between the gate valve and the hose at the outflow of the storage tank. The tank is well marked so that the recycled fuel is not misused.

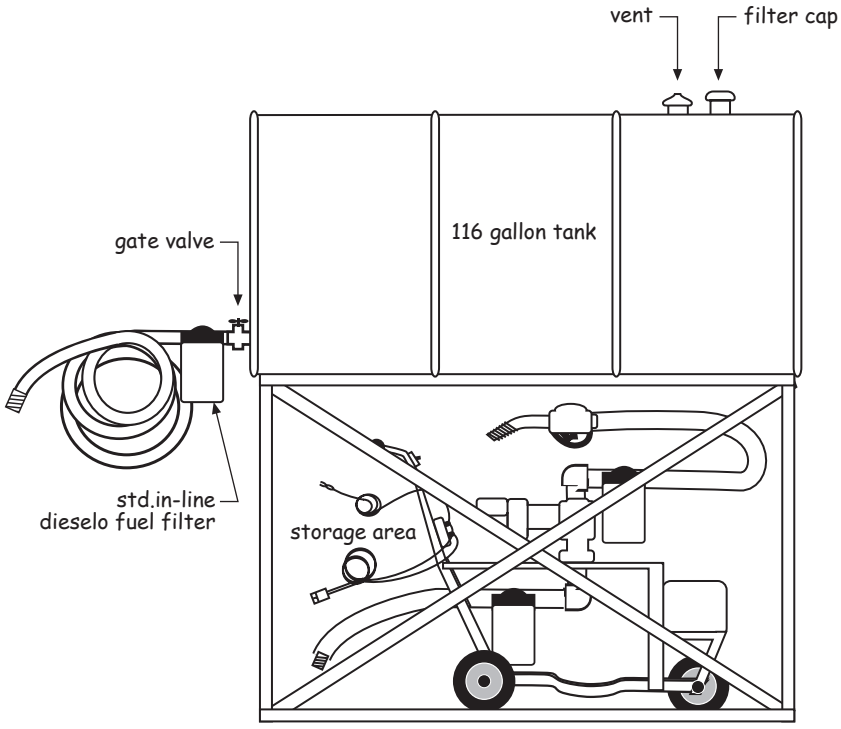
The pump dolly is stored under the storage tank.

Patrick notes, "The system works great! I am working on reusing some of the tack and have had some success filtering and settling it out. That's another invention to come."

If you have questions or would like information on the system, you can contact Patrick or James at (425) 430-7400.



Patrick Zellner with Renton's Diesel Filtering Recycling System (Photo by Bill Wressel)



"I encourage everyone to reuse, recycle and to 'rethink' our methods and procedures, to streamline and conserve. Time changes everything and we all need to help with the changes and adapt to a smarter, more efficient world. Take the challenge… and have fun!"

Patrick Zellner, Lead Maintenance Worker III, City of Renton

Jimmye Crawford's Breakaway Sander Spinner

By Wendy Schmidt, Assistant Editor WST2

Icy roads are a hazard faced by drivers on miles and miles of Washington's roads each winter, so a sand truck is a welcome sight to many motorists. Sand is fed from the truck bed down to a spinning plate, where it is thrown out horizontally in a circular pattern. The truck driver can adjust the speed of the spinner hydraulically but can't move the spinner to protect it from damage. In the past, the spinner assembly was susceptible to impact damage from hitting objects during operations.

Originally, the spinner shafts were rigid, so when the truck crossed a median, hit a rock or something else solid, the spinner shaft would bend. Often that meant the whole unit was ruined, or a new shaft and spinner would need to be installed if the motor could be salvaged. To prevent damage to the spinner, its shaft, and the hydraulic motor, the WSDOT South Central Region Yakima Maintenance Shop developed a spinner assembly that would swing forward or backward when the spinner hit something in the road. This idea allowed the unit to swing when bumped without being damaged, but it had a weakness: it wouldn't return and hold in a vertical position.

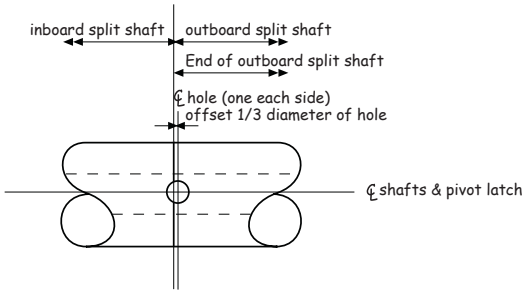
About three years ago, Jimmye Crawford, Equipment Mechanic for the WSDOT South Central Region's Yakima Maintenance Shop, designed and built a spring-loaded breakaway sander spinner for use on tandem axle hopper trucks. Jimmye's spring-loaded design is easier to build than its predecessor, resists corrosion and returns the shaft to its original vertical position quickly and consistently.

Jimmye's design incorporates a two-section split shaft with two pins welded onto opposite sides of the outboard shaft section. The pins sit in offset holes drilled through both shaft sections. The two shaft sections are pressed together by a compression spring slid onto a one-inch diameter threaded rod that runs through the two shaft sections along their axis. The threaded rod and inboard shaft section are welded to a vertical bracket that mounts to the truck frame. The spring is held in place between two washers, and is held tight with a nut and cotter pin. The Hydraulic spinner motor sits on a bracket assembly that is welded to the outboard shaft section, and is suspended below it. The spinner shaft and spinner disk hang below the motor. (See diagram and photos).

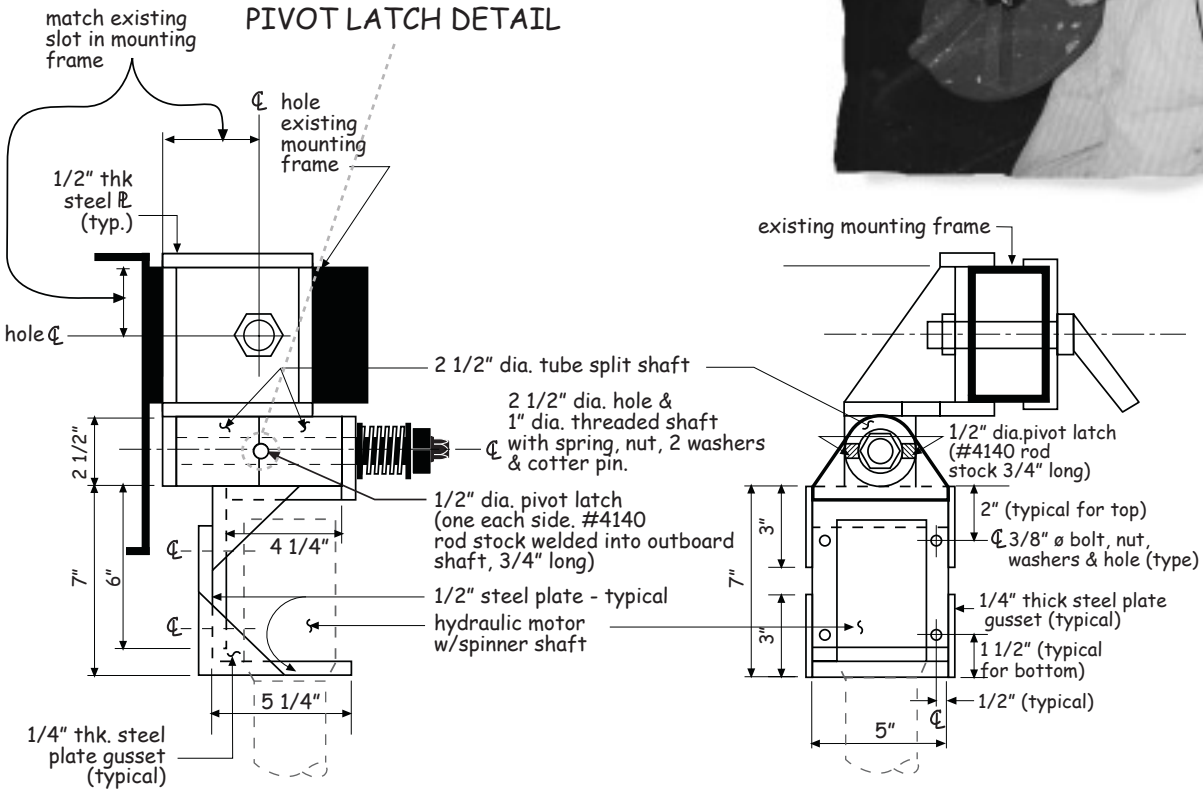
On double axle trucks (ten-wheelers), the system is mounted on the truck frame in front of the truck bed on the drivers' side. On single axle trucks, it is mounted to the dump bed sub frame, which is 6 or 7 inches higher off the ground than the frame of a double axle truck. For this reason, Jimmye built another model for single axle trucks with a longer spinner shaft. That way the spinners ride at the same height above the ground on both truck types. Placing the spinner in front of the truck's rear wheels helps the sander truck's own traction.

Here's how the breakaway spinners work: when an object hits the spinner, it kicks the spinner either backward or forward, parallel to the truck frame. As the spinner shaft tilts, it rotates the out-board shaft, dislodging the pin from the slot of the inboard shaft section. This, in turn, loads the compression spring. Once the spinner clears the object, the weight of the spinner brings it back down so the spinner shaft becomes vertical. The pin re-engages the slot in the inboard shaft, and the compression spring holds it there. The spinner continues to turn and spread sand across the roadway. So, hitting a rock or big chunk of ice in the roadway with the spinner is no big deal anymore! The shaft is simply pushed out of the way, then it returns to vertical and snaps into place as if nothing happened!

Thanks to Jimmye's inventiveness and administrative support from Errol Rhode, Equipment Supervisor, the WSDOT South Central Region has saved equipment, time and money! Thank you for sharing your creative solutions with us! What will these fellows come up with next??

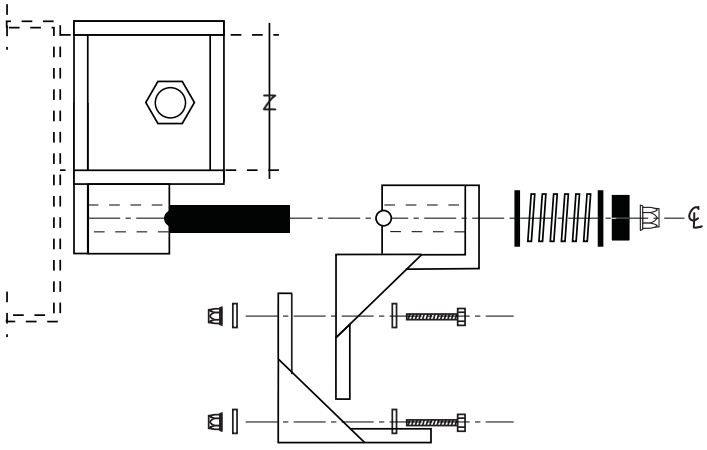


PIVOT LATCH DETAIL



FRONT VIEW
Looking normal to truck frame from side of truck.

SIDE VIEW
Looking along ℄ of truck frame from back.



EXPLODED VIEW

2001
Pacific Northwest
Transportation
Technology Expo

Got a "Better Mousetrap"? Bring it to the Expo!

September 12 & 13, 2001

The WSDOT Maintenance Office, WST2 Center and FHWA are cosponsoring the second Pacific Northwest Transportation Technology Expo at the Grant County Fairgrounds in Moses Lake, Washington, on September 12 & 13, 2001. The purpose of the Expo is to demonstrate the leading edge technologies currently available on the market, as well as innovative "home grown" ideas for roadway operations developed by Pacific Northwest state and local agency transportation operations staff members.

A major part of the Expo will be set up for demonstrations and displays of practical tools, equipment modifications and new techniques developed and used in the field by public agencies. No idea is too small. If it works and saves you time and money, we invite you to share it with the rest of the agencies in the Pacific Northwest. This will be one big two-day "show-and-tell" to share your ideas and see what others like you have done to be more efficient and effective.

Attendance, registration and display space are free to public agencies. We have plenty of space. Just let us know what your innovation is and how much space you need. We'll make the arrangements to get you a site. If possible, we encourage the actual inventor be at the display to field questions and demonstrate the "Better Mousetrap."

Get more information at:

WSU Conferences & Professional Programs
P.O. Box 645222
Pullman, WA 99164-5222

1-800-942-4978
Fax 509-335-0945

E-mail: *wsuconf@wsu.edu*

BUILD A BETTER
MOUSETRAP
WST2

"Better Mousetrap" Submittal Form

BUILD A BETTER MOUSETRAP
WST2

The "Better Mousetrap" is awarded each quarter for the most innovative working ideas presented by a public agency and published in WST2

Award:
The best concepts will be published in the WST2 and posted on the WST2 Web Page.

All entrees will receive a certificate.

All published mousetraps will receive a "Better Mousetrap" baseball cap.

All participants in published mousetraps will be included in competition for the annual "Crystal Mouse" award.

Eligibility:
Washington State Public Agencies.

Mail To:
"Better Mousetrap"
WST2 Center Transportation Building
P.O. Box 47390
Olympia, WA 98504-7390

E-mail:
WST2Center@wsdot.wa.gov

For questions:
Dan Sunde, Director of Technology Transfer
SundeD@wsdot.wa.gov
(360) 705-7390

Name of the "Better Mousetrap":

Submitter's Name:

Title:

Agency:

E-mail Address:

Address:

City: State: Zip+4

Phone Number : ( )

Developer's Name(s):

Title:

Agency:

E-mail Address:

Address:

City: State: Zip+4

Phone Number : ( )

Description of the "Better Mousetrap"

Why was it necessary?

How does it work?

How was it built? (Include Sketches, Photos, Drawings)

How does it perform?

Please add a sketch with dimensions and materials used!
We will draw plans from them so others can build it too!

Words from the Chair

Hi, all. Just back from a very successful spring meeting. Sixty-three of us attended the spring conference in Coeur D' Alene, Idaho, April 10 -12, 2001. This was the biggest spring meeting ever. It was great to see old acquaintances and old friends. The best part was meeting new friends. Over twenty percent of the attendees were from Montana. Over half of all attendees were "first timers." This meeting was a great opportunity to meet new folks and hear fresh perspectives on managing pavements.

Most of the program was geared toward pavement rehabilitation techniques with presentations given by local and state agency folks as well as consultants and vendors. Linda Pierce from WSDOT gave a very interesting presentation on freeze/thaw cycles and how they affect our pavements. As part of her presentation she showed a video that demonstrated how ice lenses form in your sub-grades and how objects in the sub-grade react to the forces exerted by the freezing action. When the executive board first brought up the subject of freeze/thaw I personally thought, "ho hum." Linda's presentation was anything but. As always, Linda was able to turn a potentially dry presentation into something very dynamic and informative. Although there was a question and answer period after her presentation, not all questions were asked and answered. You know how it goes, someone has a really great question to ask, but doesn't for fear of sounding…uh…you know... dumb.

The Fifth International Conference will be held in Seattle Washington August 11-14, 2001. Remember, the first twenty-five NWPMA members to get their registrations in will receive one hundred dollars off the normal registration fee.

After the session, I talked with one individual who had something happen to a road in his system that he couldn't explain. It seems that during a freeze event the road sank over a newly installed culvert. Once the road thawed, the sunken area returned to the proper grade. Everything that I know about freeze/thaw cycles tells me that this road reacted differently from what one would normally expect. If you have a possible explanation for why this occurred please email me at mcentirb@co.clark.wa.us. I would be very interested in finding out why this area may have reacted as it did.

In my last "words" I mentioned that here in Clark County we target an average pavement condition of 76. I asked what your particular organization targeted and how the decision to target that particular rating was made. I have received a lot of interest in finding out what folks are targeting, but as yet I have not had any responses to the actual question. Sooo…. please send in your responses to the question. I will compile the responses and publish the results so everyone can benefit from this information.

The Fifth International Conference on Managing Pavements is fast approaching. It will be held in Seattle Washington August 11-14, 2001. **Remember, the first twenty-five NWPMA members to get their registrations in will receive one**

hundred dollars off the normal registration fee. This is compliments of the WSDOT T2. Once again, we owe Dan Sunde and staff big thanks.

The executive board recently met to discuss our role in the international conference. We had previously decided to have Bill Whitcomb from the City of Vancouver present a history of our organization. George Alton from Ada County, Idaho will present a segment on how the Ada County Co-op Road District was formed and functions. The question of whether or not we wanted to play a more significant role in the meeting was discussed at length. It was determined that we would ask Bill and George to do their presentations periodically throughout the conference, but that no other NWPMA functions would occur. Well, just one. We will be presenting the 2001 Pavement Manager of the Year Award at the Bell Harbor Gala.

The executive board has decided to hold nominations for the award and elections of new officers and board members through the mail. Nomination and election forms will be mailed to all current association members. They will be available on our web site, as well as in this bulletin. This decision was made due to the fact that we would not play a significant part in the conference. Nominations are to be returned by June 22, 2001. Final elections will be held after that and results will be posted on our website. We will also publish the results in the next T2 bulletin.

Nomination and election forms will be mailed to all current association members. They will be available on our web site, as well as in this bulletin.

We are still looking for people to participate on the deduct curve review committee. We need participants from Washington State local agencies. They will meet at the CRAB offices located at 2404 Chandler Court, Suite 240, Olympia, Washington. With the number of legislative directives proposed by the Blue Ribbon Commission, this issue is very important to all local agencies in Washington and will have a major impact on how funding is allocated. I urge you to participate in this process. For more information contact either Bob Brooks at the WSDOT T2 Center or myself.

That's all for now. I hope you have a successful construction and project season. See you in Seattle in August.

Bill McEntire, President

WST2 Center Partners to Develop Web-Based Pavement Training

By Bob Brooks, Pavement Technology Engineer, WSDOT H&LP

As you may be aware, one of the goals the NWPMA adopted for this year was the development of a training program to meet the needs of its members. One point made clear during this effort was the desire to see more training offered in alternative formats such as Internet based and interactive CD.

Taking this desire to heart, the Washington State Technology Transfer Center is pleased to announce its participation as co-sponsor with the Washington State Department of Transportation, University of Washington, and the California Department of Transportation to develop a web based course on pavements that will include elements of design and construction. The course will be designed so that it can be used to train persons to differing levels of pavement knowledge. This course will feature mostly US pavement practices, with an emphasis on the west coast, but will also illustrate much of the excellent pavement technology that is available internationally.

Delivery of this course will be via the Internet (an interactive CD will also be made available). It is anticipated that course development will be completed by the summer of 2001. Each of the chapters (topics) will have the following:

- A PowerPoint type presentation that overviews the chapter similar to what an instructor would do in a classroom.
- Detailed text and photographs (may include short video clips) covering the chapter material.

Different presentations will be included that are tailored to the level of training needs of various groups of individuals. This "tailoring" will result in several possible study tracks with varying degrees of detail. Following completion of their study, a student can be given an exam to determine mastery of the material. If the persons being trained need a very specific level of detail, then a one or two day seminar may be held in conjunction with the course to provide face-to-face discussions of the course material. The text portion of the course can be downloaded for printing.

The course will be backed by substantial and detailed notes — in effect — a textbook on pavements. It will contain up-to-date pavement information that will incorporate a variety of past, current and advanced pavement design concepts. Taking full advantage of the medium, numerous photographs, figures, tables and interactive equations will be utilized. It is envisioned that the information will include pavement design, construction practices, maintenance and management information.

Web-based Pavement Design Draft Table of Contents

Here is a draft table of contents to give you flavor of what the course will contain. These "chapters" actually represent topics to be covered. Each chapter will have text, photographs, and, in some cases, interactive equations. PowerPoint presentations will be based on the content in these chapters.

Chapter 1
Introduction to Pavements

Chapter 2
Materials, Test Methods, and Specifications

Chapter 3
Loads

Chapter 4
Environment

Chapter 5
Flexible and Rigid Pavement Responses to Loads and Temperatures

Chapter 6
Nondestructive and Insitu Tests

Chapter 7
Introduction to Pavement Design

Chapter 8
AASHTO Flexible and Rigid Pavement Design Procedures

▲

If you want further information, contact Bob Brooks at (360) 705-78352 or email BrookBo@wsdot.wa.gov

Northwest Pavement Management Association

Please return your nominations by mail or fax no later than June 18, 2001 to:

WST2 Center
Attn: Bob Brooks
PO Box 47390
Olympia, WA
98504-7390
Fax 360-705-6858

Nomination Form

Keith Kay Memorial Pavement Manager of the Year Award 2001

In honor of the memory of Keith Kay and his contributions to the NWPMA, an annual Pavement Manager of the Year award was established in 1993 to recognize the efforts of an individual for his or her contribution and success in pavement management. Nominations are now being accepted for this award. The winner will be announced and a plaque presented at the 5th International Conference on Managing Pavements in Seattle, Washington on August 12, 2001.

I would like to nominate the following person for the Keith Kay Memorial Pavement Manager of the Year 2001:

Name: _____

Organization: _____

Address: _____

I believe this person is deserving of this award because (use additional sheets if needed):

_____

_____

_____

_____

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_____

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_____

_____

_____

_____

_____

_____

_____

_____

Nomination Form

2001-2002 Officers and Executive Board

Nominations are now being accepted for the offices of Chairperson, Secretary/Treasurer and Executive Board Members for the coming year, 2002. In accordance with the NWPMA Charter, there shall be at least one but not more than three Executive Board members from each of the member states of Washington, Oregon, and Idaho.

I would like to nominate the following person for:

Chairperson: _____

Secretary/Treasurer: _____

Executive Board: _____

Focus on Safe Communities

How safe is your community? This is a common question that is asked by community leaders every day and for a good reason. The safety and well-being of citizens is at the core of public service. The U.S. Department of Transportation has positioned itself to be a safety partner with cities and counties nationwide through its Safe Communities program.

What is Safe Communities?

Safe Communities is a U.S. DOT effort to promote and implement a safer national transportation system, by combining the best injury prevention practices. The Safe Communities model can be adopted by cities of all sizes and brings together law enforcement, the health care community and city officials from within and from outside the transportation community in support of safety. Currently in Washington State, there are 38 recognized Safe Communities at the county and city level.

Get more information and assistance.

The National Highway Traffic Safety Administration (NHTSA), an agency of the U.S. DOT, can provide technical assistance to aid in the establishment of a Safe Community. In addition, NHTSA maintains a website with resource guides, a customer service center and a best practices section to help communities organize and establish a Safe Community. The website address is *www.nhtsa.dot.gov/safecommunities.* ▲

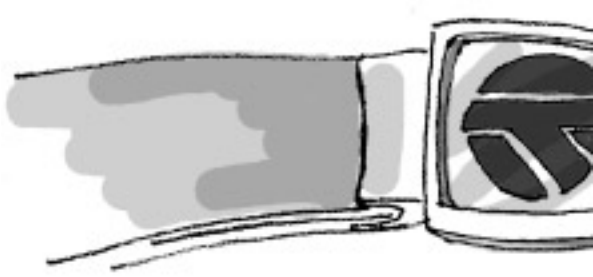
For more information or to determine if your jurisdiction would benefit from a Safe Community, contact Rosemary Nye in care of the NHTSA Region 10 office in Seattle. She can be reached by e-mail at rosemary.nye@nhtsa.dot.gov *or by telephone at 206-220-7640.*

Buckle Up America!

Did you know that every hour someone dies in America simply because they didn't wear a seat belt? Or that failure to buckle up contributes to more fatalities than any other single traffic safety-related behavior?

These statistics are stunning. But even more bothersome is the fact that these deaths and injuries in most cases are preventable. Seat belts are the most effective safety devices in vehicles today, estimated by the National Highway Traffic Safety Administration (NHTSA) to save 9,500 lives each year. If 90 percent of Americans buckle up, an estimated 5,500 deaths and 132,000 injuries annually could be prevented. In the year 2000, seat belt use nationally was about 71 percent.

Now is the time to take the opportunity to evaluate seat belt use within your organization. Are workers buckling up when driving to and from work? How about during the workday if driving or riding in a motor vehicle is required?



If 90 percent of Americans buckle up, an estimated 5,500 deaths and 132,000 injuries annually could be prevented.

A 100% seat belt use policy can help reduce injuries, resulting in a lower absentee rate among employees.

NHTSA can provide a variety of resources to increase seat belt use. Materials available at no cost include posters, fact sheets, brochures public service announcements, and hangtags designed to hang from the rear view mirror of a vehicle to remind people to buckle up. ▲

If you are interested in increasing seat belt use within your organization, please contact Lorie Dankers at lorie.dankers@nhtsa.dot.gov *or Paul Harker at* paul.harker@fhwa.dot.gov *in care of the NTHSA Region 10 office in Seattle. They can be reached by telephone at 206-220-7640.*

The Intermodal Transportation Database Available!

Looking for information about the nation's transportation system? The U.S. Department of Transportation's Bureau of Transportation Statistics (BTS) is announcing the release of a beta-test version of its Intermodal Transportation Database (ITDB).

The aim is to provide one-stop shopping for transportation data, and ultimately to improve transportation through more effective and efficient research.

ITDB provides a broad collection of transportation data. These databases are compiled by the various operating administrations within the Department of Transportation and other Federal agencies, such as the U.S. Census Bureau, Bureau of Labor Statistics, and several non-federal research institutions and associations.

ITDB currently provides databases and links that allow the user to explore transportation issues and find answers to many transportation-related questions. The ITDB project will continue to grow as more data sets become available and Geographic Information Systems (GIS) tools are added. In addition, we will be developing a pre-built query feature that will allow you to quickly retrieve information or to create customized queries from the database. We will notify you electronically as enhancements are made to this system.

You can access ITDB from the BTS home page at *http://www.bts.gov.*

We hope you'll find this new system useful. We welcome your comments and encourage you to submit suggestions on how to make ITDB more user friendly at *answers@bts.gov*. ▲

NOW AVAILABLE

Pedestrian/Bicycle Safety Materials

A Walkable Community

Your Town, USA

See the common characteristics of a pedestrian-friendly community. This brochure outlines safety design features and includes a detailed map of proven pedestrian safety enhancements.

Pedestrian Bicyclist Safety Resource Set

This CD ROM features guidelines and tips on facility design and provides planning tools to increase walkability and bikability in your community.

"Safer Journey"

Interactive Pedestrian Safety Awareness

Whether you walk, bike or drive, this CD ROM will educate you on pedestrian safety issues. A "virtual" walk shows you the dangers pedestrians encounter, a quiz measures your knowledge of walkability issues, and the library contains safety countermeasure options to improve your community.

Pedestrian Safety Toolkit

This toolkit contains resources to develop community-wide pedestrian safety initiatives. Includes CD ROM, videos and training information.

To obtain copies of any of the materials described above,
contact Lorie Dankers (lorie.dankers@nhtsa.dot.gov) or Paul Harker (paul.harker@fhwa.dot.gov)
in care of the National Highway Traffic Safety Administration, 919 Second Avenue, Suite 3140, Seattle, Washington 98174
206-220-7640 (voice) • 206-220-7651 (fax)

U. S. Department of Transportation
Federal Highway Administration

WSDOT LIBRARY: Looking Forward and Looking Back

By Kristy Coomes, WSDOT Librarian

Looking Forward

The concept of a "Virtual Library" has jumped the hurdle of being an academic theory to being a way-of-life for libraries. The WSDOT Library is concentrating on creating electronic information resources and services that are available to WSDOT and its contractors, as well as to staff of city and county transportation agencies.

The fundamental resource for finding information about the library collection is the electronic library catalog located at *www.wsdot.wa.gov/hq/library/*. You can search by key words, author, title, or subject in order to identify and request:

- Books, TRB, and NCHRP publications
- WSDOT publications
- Studies and reports from other states and nations
- Federal publications
- Articles from journals

In order to borrow from the library collection you do need to have a library card application on file. Please download the WSDOT form located at *www.wsdot.wa.gov/hq/library/libcard.htm* and mail your signed application to the WSDOT Library.

Looking Back

The WSDOT Library is embarking on a project that will result in an electronic catalog of historical WSDOT publications, photographs, surveys, plans, studies, etc. In order to protect the historical documents from deterioration, many of them will eventually be housed in the Washington State Department of Archives and Records, but the documents will continue to be available for research.

WSDOT Library Your info link
P.O. Box 47425
Transportation Building
Olympia, WA 98504-7425
E-mail: Library@wsdot.wa.gov
Voice: (360) 705-7750

Jennie Throckmorton

Ergonomics standards change after the Nisqually Quake.

B.C. Team

Collects Information on Washington State Seismic Damage

By Dan Sunde, Director of Technology Transfer, WST2 Center

Just a week and a half after the February 28th 6.8 Nisqually Earthquake, a team of structural and geotechnical engineers from the British Columbia Ministry of Transportation and Highways (BCMoTH) visited the WSDOT and the WST2 Center. Their mission was to learn more about the quake's impacts on Washington's transportation infrastructure and how emergency services were handled. The BC team was very interested in learning from the Washington experience since their province is in the same seismic zone, uses similar designs and has similar geological conditions. The BC team consisted of Bill Szto, BCMoTH Region 1 Bridge Seismic Engineer, Sharlie Huffman, BCMoTH-Victoria Bridge Seismic Rehabilitation Standards Engineer, Don Anderson, consultant structural engineer working on Ministry seismic rehabilitation projects, Al Brown, BCMoTH-Region 1 Geotechnical & Materials Engineering Manager, Dr. Don Gillespie, BCMoTH-Region 1 Geotechnical Engineer, Don Lister, BCMoTH-Victoria Terrain Engineer and Logan Stewart, Victoria, Properties Director.

Their mission was to learn more about the quake's impacts on Washington's transportation infrastructure and how emergency services were handled.

The WST2 Center coordinated the visit with technical experts from the WSDOT Materials Lab, WSDOT-Bridge Office, WSDOT Maintenance Office, city of Olympia Bridge Office, city of Seattle Bridge Design and Maintenance Offices and the Washington Emergency Operations Center. The Washington experts provided the Ministry engineers a firsthand look at the damage, initial repairs in progress and emergency procedures used in the earthquake.

The team broke into three groups and spent two days looking at bridge damage, geo-technical damage and learning about Washington emergency procedures. The Bridge structures team visited the WSDOT Bridge and Structures Office where Jerry Weigel, state Bridge and Structures Engineer, gave a presentation summarizing the earthquake and its damage on the state's bridges. The team also visited several damaged structures including the city of Olympia's Fourth Avenue Bridge with the assistance of Tom Frare, Olympia Bridge Engineer, several state bridges on SR 5 and I-90 with Dr. Chyuan-Shen Lee, WSDOT Bridge Engineer and seismic specialist, and the Magnolia Bridge in Seattle with the guidance of the city of Seattle's Richard Miller, Director of Roadway Structures, and Dave Chew, Manager of Bridge Maintenance and Operations.

Steve Lowell, WSDOT Chief Engineering Geologist from the WSDOT Materials Lab, escorted the geotech team to visit the extensive damage along the Deschutes Parkway in Olympia, a major slide on SR 101 west of Olympia, and another large slide on SR 302, north of Shelton.

Ken Kirkland, WSDOT Maintenance Engineer, and Terry Simmonds, WSDOT Emergency Coordinator, provided Logan Stewart an opportunity to discuss

(Above) Typical damage on the City of Seattle's Magnolia Bridge. (Photo courtesy of Richard Miller, City of Seattle)

(Right) Taking a look at the Olympia 4th Ave. Bridge which is closed due to extensive structural damage. (Photo by Roger Chappell)

(Top left) Canadians Logan Stewart, BC Property Director and Emergency Coordinator, Sharlie Huffman, BCMoTH-Victoria Bridge Seismic Rehabilitation Standards Engineer, and Dr. Don Gillespie, BCMoTH-Region 1 Geotechnical Engineer, prepare for their second day of damage assessment. (Photo by Roger Chappell)

(Top right) Geotech Team (left to right Don Lister, Al Brown, Don Gillespie and Steve Lowell, behind Don Gillespie) discuss damage and progress of repairs with WSDOT drilling crew along the Deschutes Parkway. (Photo by Roger Chappell)

(Middle right) The SR 101 slide, photo taken from the highway. (Photo by Roger Chappell)

(Bottom right) The extensive damage along Olympia's Deschutes Parkway. (Photo by Roger Chappell)

how things went on the emergency services and coordination end of things. Clarissa Lundeen, WSDOT Public Information Officer, and Ken Parish, Operations Director, gave a tour of the Washington State Emergency Operations Center and provided information on how the statewide emergency coordination effort worked.

Each team was able to discuss in detail the seismic damage, the causes, and seismic design performance with their Washington State counterparts. The British Columbia team expressed their gratitude for Washington's assistance especially during a very difficult time for the state. They were very pleased with the level of first-hand information they were able to take home, information that they will be able to apply in preparation for protecting the citizens and transportation network in Canada in the likelihood of an earthquake in their region. ▲

One of many sink holes along Deschutes Parkway in Olympia. (Photo by Roger Chappell)

Dan Sunde, Director of Technology Transfer,WST2 Center, Dr. Chyuan-Shen Lee, WSDOT Bridge and Structures Office, and Al Brown, BCMoTH-Region 1 Geotechnical & Materials Engineering Manager discuss logistics for team trips. (Photo by Roger Chappell)

Column damage to the WSDOT's Beacon Holgate Bridge on I-90 in Seattle.

By Roger Chappell, WST2 Technology Integration Engineer, WST2 Center

Is there a DIP in your future?

What I am talking about here is Digital Imaging Platforms or DIPs. These systems allow you to capture images of your infrastructure and display them on a computer. They come in all shapes, sizes and kinds. Some vendors also add tools like laser reflectometers, profilometers and Ground Penetrating Radar (GPR). For this introductory article, I would like to focus our attention on just Ground Based Imaging or GBI.

Ground Based Imaging may sound like a new term, but in principle, it has been around for a long time in different forms. I started in GBI in the early eighties; at that time there was a paradigm shift from the old 35mm reel film to 3/4 inch Sony U-Matic, or Beta videotape, ushering in the dawn of videotape based systems. In the late eighties there was a shift to Beta or SVHS tape-based systems and the nineties saw the transition to a combination of tape and digital imaging systems. No matter what the current technology, format or equipment used, the basic product is the same, a photo image connected to a geographical location.

Today in the 2000's, digital images are dominating the scene and for good reason. Unlike their predecessors, these new digital images can be distributed more inexpensively and to a wider audience than ever before. These images are also more versatile than their predecessors. As a digital file you can E-mail them, draw on them, use them in presentations, import them into a GIS or a host of CAD and graphics software packages.

No matter what the current technology, format or equipment used, the basic product is the same, a photo image connected to a geographical location.

Even the geographical location of these images has improved through time. With the advent of cheap GPS (Global Positioning System), you can now supplement your traditional LRS (Linear Referencing System) or mile posting, with geospatial coordinates from GPS.

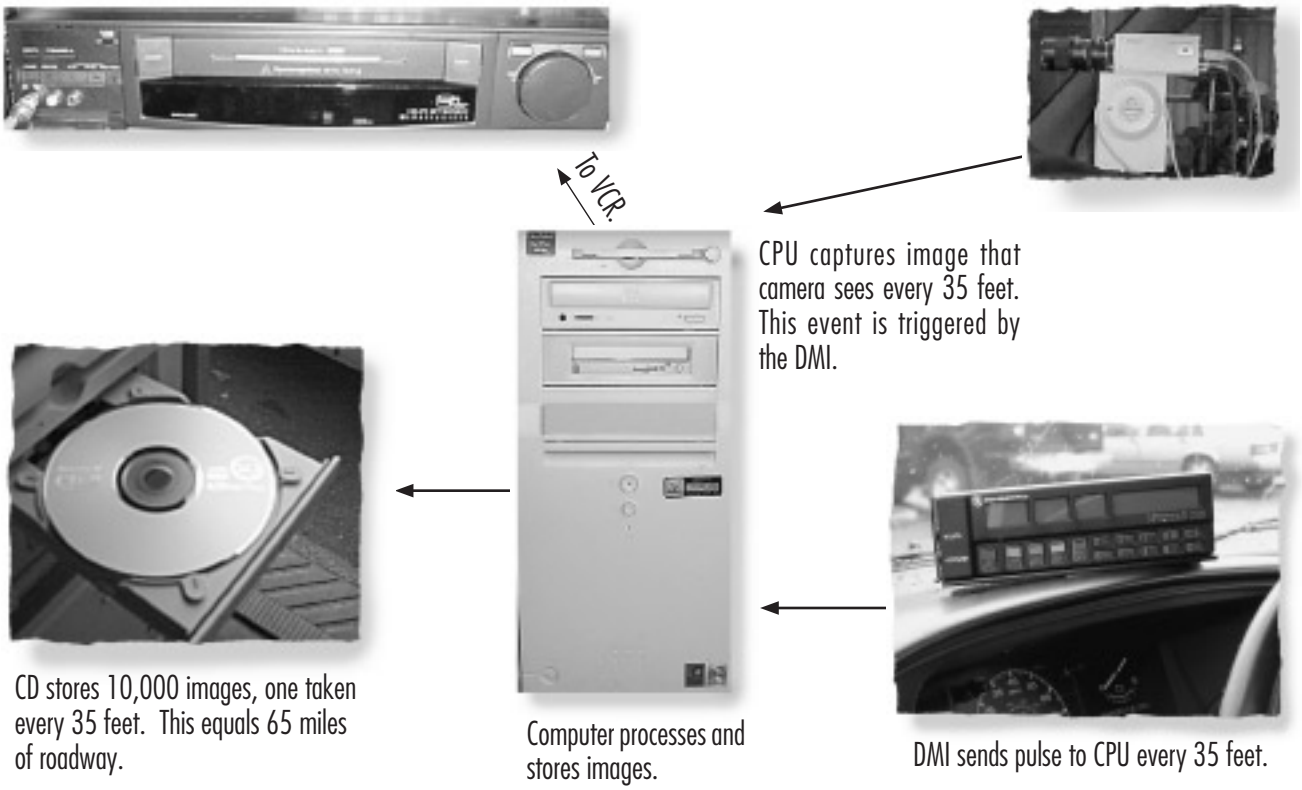
As digital files you can E-mail them, draw on them, use them in presentations, import them into a GIS or a host of CAD and graphics software packages.

In the Northwest there is a system design available to help local agencies apply this technology for themselves: it is called TransView (Transportation View). This system is based on the work accomplished by the Washington State Department of Transportation's Transportation Data Office (TDO). In the mid nineties, the Transportation Data Office first applied this technology under a project named SR View (State Route View).

Then the WSDOT Highways & Local Programs WST2 Center made the results of this successful project available to local agencies. Marion County, OR was the first local agency outside WSDOT to build one for themselves. They called it CR View (County Road View). Building on Marion County's success, Thurston County, WA is now in their first year of production with a system of their own. This is a third generation system with improvements on the first two systems.

Rather then rambling on about these systems myself, I have asked Hans Cregg to outline Thurston County's experience in applying this technology. Hans was key in the development of SR View. He helped develop Marion County's CRview, and most recently has been instrumental in helping Thurston County with their CR View application and systems integration.

Simplified CRview Schematic



CRview van has "filmed" 90% of the county's road system providing a picture every 35 feet. When completed, CRview will have digitally captured the 2,200 lane-mile county road system in 330,000 images.

CRview-DIP the Thurston County Way!

by Hans Cregg, Thurston County, WA

Thurston County's interest in fielding a mobile imaging platform to gather roadway images dates back to 1995. The county's Roads and Transportation Services Department quickly recognized the advantages of having an annual visual record of all county roads. After all, a picture is worth a thousand words.

However, it wasn't until 1998 that Thurston County bit the bullet and allocated the money and time to build a functioning imaging system. It was Mr. Leslie Olsen, County Surveyor, and Mr. Daniel DeBoer from the Thurston County Survey Office that led to the successful implementation of the county's imaging system, dubbed CRview, in August of 2000.

Since its maiden voyage, the CRview van has "filmed" 90% of the county's road system providing a picture every 35 feet. When completed, CRview will have digitally captured the 2,200 lane-mile county road system in 330,000 images. The captured images are compressed JPEG files occupying approximately 80K bites of hard drive space per picture. A slideshow viewer displays these pictures at a default setting of 640 X 480 pixels. The pictures have excellent resolution and no "jaggies." Road details are crisp and traffic signs are readable.

Currently Thurston County is in the process of uploading the images to a server. The server will afford county employees the convenience of driving the county's roads from their computer. The question "what is really out there?" can be answered without leaving the office.

CRview Van

What is Thurston County using CRview for?

The capability of accessing roadway images on the computer is only now being fully explored. Any situation where "only a picture will do" is a potential CRview application.

Today, CRview satisfies the following county needs where a visual record is desirable:

- Standard Road "Filming"
- Accident Investigation
- Sign Inventory
- Right-of-Way Encroachment
- Culverts and Guardrail Inventory
- Vegetation Management
- Special Projects such as Rails to Trails

New applications for CRview are surfacing virtually every day. Currently the county is exploring the possibility of using CRview for Pavement Evaluation and Retro-reflectivity.

...the CRview van has "filmed" 90% of the county's road system providing a picture every 35 feet.

How does CRview work?

The CRview van drives the county's roads in both directions. A Distance Measuring Instrument (DMI) superimposes milepost information on the image captured every 35 feet. Since the DMI is nothing more than a fancy odometer, the CRview software is able grab the image the camera sees at the precise moment that the DMI "turns over," every 35 feet

CRview software compresses that image, gives it a file name, stores it on the hard drive of the on-board computer, clears its memory and waits to grab the next image 35 feet down the road. The file name

given to the image is the actual milepost reading of the DMI. Thus image 10754.jpg corresponds to milepost 10.754 as indicated on the DMI. Traveling at roughly 35 mph, CRview is able to capture and process an image every 0.7 seconds.

Capabilities:

CRview images provide a sequential visual record of the road just driven.

The CRview platform is also capable of capturing GPS centerline reference points on the fly. However, since Thurston County already had established centerline coordinates for all its roads this feature is currently not used.

In addition, the CRview imaging platform can also produce regular "old-fashioned" videotapes on request with road name and milepost information overlaid onto the tape.

Building your own imaging platform:

Admittedly there is something intriguing about following in Thurston County's footsteps and building your own imaging platform. It has been an extremely challenging as well as rewarding journey for Thurston County.

Before embarking on building your own imaging platform make absolutely certain that your management clearly understands that this is not a "Plug and Play" system. Allow yourself at least a year to get the system up and running. The reason for the seemingly long lead-time is that you are forging the widely diverse technologies of imaging, electronic distance measuring, videography and possibly GPS into an integrated computer controlled system. Suffice it to say there is a lot to learn, but there is also a lot to gain if you are willing to invest the time and money.

Allow yourself at least a year to get the system up and running.

Thurston County system costs:

The costs shown below are approximations based on Thurston County's imaging platform. They do not include the van, GPS equipment, and labor associated with building and learning the system.

Basic System costs

Video Camera	$8,000
VCR Deck	$1,000
DMI and Misc.	$3,000
Inverter	$3,500
Laptop	$2,000
Video cards	$1,500
Magnicoder (Overlay)	$3,000
Van modification	$1,500
Computer	$5,000
Total	$28,500

Conclusion:

I am sure this brief overview of the Thurston County experience has raised more questions than it has answered. Feel free to contact me, Hans Cregg, at *Hcregg@AOL.com* if you have any questions regarding the building or operation of a CRview imaging platform contact Leslie Olsen at *olsenl@co.thurston.wa.us* or Daniel DeBoer at *deboerd@co.thurston.wa.us* if you want to visit Thurston County and see the CRview van for yourself.

A copy of the manual for the original SR View system is available on the web at:

http://www.wsdot.wa.gov/ta/T2Center/Mgt.Systems/InfrastructureTechnology/InfaThp.html

Keep in mind that these systems are in a constant state of *dynamic evolution*, and this documentation is now two generations old. It useful for a more detailed idea of how these systems work, but you will need to do some research before embarking on a project of your own. ▲

Publications from your WST2 Center

WST2
HIGHWAYS & LOCAL PROGRAMS SERVICE CENTER

Free Publications from Your WST2 Center
For Washington residents only due to limited quantities.

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Fax, e-mail, phone, or mail your order to:
Fax: (360) 705-6858; E-mail: WST2Center@wsdot.wa.gov; Phone: (360) 705-7386;
Mail: WST2/WSDOT, H&LP, P.O. Box 47390, Olympia, WA 98504-7390.

This order form is available on the WSDOT Homepage at:
http: www.wsdot.wa.gov/TA/T2Center/T2PUBS.htm

Check the items you would like to order.

- ☐ 1999 Audio Visual Catalog, T2Center
- ☐ Asset Management Primer, FHWA, 1999
- ☐ Asphalt Seal Coats, WST2 Center (1999 Reprint)
- ☐ Asphalt Pavement Repair Manuals of Practice, SHRP, 1993
- ☐ Comparison of Three Compactors Used in Pothole Repair, CRREL, 1984
- ☐ Contracting for Professional Services in Washington State, MRSC, 1994
- ☐ Engineer's Pothole Repair Guide, US Army Corps of Engineers, CRREL, 1984
- ☐ Family Emergency Preparedness Plan, American Red Cross, et al.
- ☐ Financing Federal Highways, FHWA, 1999.
- ☐ Fish Passage Through Culverts, FHWA, USDA, 1998
- ☐ Fly Ash Facts for Highway Engineers, FHWA July 1986
- ☐ Geotextile Selection and Installation Manual for Rural Unpaved Roads, FHWA - 1989
- ☐ Getting People Walking: Municipal Strategies to Increase Pedestrian Travel, Rhys Roth, Energy Outreach Center
- ☐ Gravel Road Test Sections Insulated with Scrap Tire Chips, CRREL 1994
- ☐ A Guide to the Federal-Aid Highway Emergency Relief Program, USDOT, June 1995
- ☐ A Guide for Local Agency Pavement Managers, NWT2 Center, 1994
- ☐ A Guidebook for Residential Traffic Management, NWT2 Center, 1994
- ☐ A Guidebook for Student Pedestrian Safety, KJS, 1996
- ☐ A Guide for Erecting Mailboxes on Highways, AASHTO, 1984
- ☐ Highway/Utility Guide, FHWA 1993
- ☐ Improving Conditions for Bicycling and Walking, FHWA, 1998
- ☐ Improving Highway Safety at Bridges on Local Roads and Streets, FHWA, 1998
- ☐ Innovative Materials Development and Testing Volume 2: Pothole Repair, SHRP, NRC, 1993
- ☐ International State-of-the-Art Colloquium on Low-Temperature Asphalt Pavement Cracking, CRREL, 1991
- ☐ Local Agency Safety Management System, WSDOT, 1998, Reprinted 2000
- ☐ Local Low Volume Roads and Streets, ASCE, 1992
- ☐ Maintenance of Aggregate and Earth Roads, WST2 Center (1994 reprint)
- ☐ Manual of Practice for an Effective Anti-icing Program: A Guide for Highway Winter Maintenance Personnel, FHWA, 1996
- ☐ New Generation of Snow and Ice Control, FHWA
- ☐ Pavement Surface Condition Field Rating Manual for Asphalt Pavement, NWPMA, WSDOT, 1999
- ☐ Problems Associated with Gravel Roads, FHWA, 1998
- ☐ Pedestrian Facilities Guidebook, WSDOT, 1997 ($12.00 + postage outside Washington State)
- ☐ Pothole Primer – A Public Administrator's Guide, CRREL, 1989

- ☐ Rating Unsurfaced Roads, A Field Manual for Measuring Maintenance Problems, CRREL
- ☐ Recommendations to Reduce Pedestrian Collisions, WSDOT, December 1999
- ☐ Redevelopment for Livable Communities, Rhys Roth, Energy Outreach Center, 1995
- ☐ Scrap Tire Utilization Technologies, NAPA, 1993
- ☐ Sidewalk Details, WSDOT, 2000
- ☐ State-of-the-Art Survey of Flexible Pavement Crack Sealing Procedures in the United States, CRREL, 1992
- ☐ Superpave System – New Tools for Designing and Building More Durable Asphalt Pavements, FHWA
- ☐ Technology Information At Your Fingertips, A Directory of Information Resources for Improving Transportation Technology - FHWA
- ☐ Traffic Calming: A Guide to Street Sharing, Michael J. Wallwork, PE, 1993
- ☐ Use of Scrap Rubber in Asphalt Pavement Surfaces, CRREL 91-27
- ☐ Utility Cuts in Paved Roads, Field Guide, FHWA, 1997
- ☐ W-Beam Guardrail Repair and Maintenance, FHWA

Workbooks and Handouts from WST2 Center Workshops

- ☐ Flagging Handbook, ATSSA, 1999
- ☐ Handbook for Walkable Communities, by Dan Burden and Michael Wallwork
- ☐ Highway Maintenance Welding Techniques and Applications, Tom Cook, Cornell Local Roads Program, 1995
- ☐ Historic and Archeological Preservation: An Orientation Guide, FHWA/NHI
- ☐ Planning and Implementing Pedestrian Facilities in Suburban and Developing Rural Areas, TRB
- ☐ Part Vl Standards and Guides for Traffic Controls for Street and Highway Construction, Maintenance, Utility, and Incident Management Operations (MUTCD) FHWA, September 3, 1993
- ☐ Pavement Maintenance Effectiveness/Innovative Materials Workshop Participant's Handbook
- ☐ Snow & Ice Control Chemicals, Theory & Practice, Dale G. Keep, Ice & Snow Technologies, LLC,
- ☐ Wetland Evaluation Technique (WET), Volume II Methodology, U.S. Army Corps of Engineers, 1993

Non-Credit Self-Study Guides

These non-credit self-study guides are available through WSDOT Staff Development, and may be obtained from the WST2 Center. An invoice will be sent with these non-credit course materials.

- ☐ Basic Surveying, $20
- ☐ Advanced Surveying, $20
- ☐ Contract Plans Reading, $25
- ☐ Technical Mathematics l, $20
- ☐ Technical Mathematics ll, $20
- ☐ Basic Metric System, $20

Computer Programs

The following computer programs may be downloaded from the Internet at: *http//www.wsdot.wa.gov/TA/Operations/Environmental/Soft.htm*

Everseries Pavement Analysis Programs: This series of programs contains three independent modules:

1. **Evercalc 5.0** – A FWD Pavement Moduli Backcalculation Program
2. **Everstress 5.0** – A Layered Elastic Analysis Program
3. **Everpave 5.0** – A Flexible Pavement Overlay Design Program

HyperCalc - A shareware utility for converting between metric and English units

APWA Cad Symbol Standards and Menus - A public domain program of standard AutoCAD symbols developed by the Washington Chapter of APWA for use with AutoCAD release 12.

FWD Area Program - This program is useful in calculating Normalized Deflections Area Value, and Subgrade Moduli from FWD Data.

STIP Too Application (Version 5.1 from 3/7/2001) – This program enables you to manage your Six Year TIP (Transportation Improvement Plan) and send it to your MPO/RTPO and/or your Regional Local Programs Office for inclusion in the STIP (Statewide Transportation Improvement Program) in FileMaker Pro 5.0.

On Screen Forms:

- ■ Progress Billing Form (Excel)
- ■ Local Agency Agreement (Form 140-039)
- ■ Local Agency Agreement Supplement (Form 140-041)
- ■ Federal Aid Project Prospectus (Form 140-101)
- ■ Environmental Classification Summary (Form 140-100
- ■ Bid Proposal Package
- ■ Safety Management System Application
- ■ BRAC Funding Application

Manuals:

- ■ A Local Agency Guide to Pavement Management/Streetwise Manuals
- ■ The Local Agency Guidelines (LAG) Manual
- ■ The Local Agency Safety Management System Manual
- ■ The STIP Too version 3.3 manual

Washington State T2 Center

Contact: Laurel Gray or Wendy Schmidt
phone: (360) 705-7386, fax (360) 705-6858
web: http://www.wsdot.wa.gov/TA/T2Center/TRAIN2.HTM

To register for a class in this category contact the person above.

Pavement Condition Rating Workshops

June 26-27, Tacoma. **$45 Local Agencies/ $90 Consultants**. Instructor: Bob Brooks. 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.

The Anatomy of a Grant: Grantwriting Workshop

July 26-27, Lacey; July 31-August 1, Ellensburg; August 6-7, SeaTac. Instructor: Sharon Bridwell. **$150 local agencies/$300 consultants**. You don't need to be a professional writer to write effective grant proposals. In this two-day workshop you'll learn some practical steps to take toward grantwriting and how to approach the right funders for the dollars you need. You will look at three types of grants: federal, state, and foundation. You will write part of a state-type grant over the two days.

APTS (Advanced Public Transportation Systems) Mobile Showcase

September 11, Moses Lake. This training will be offered the day prior to the Pacific NW Transportation Technology Expo at the Grant Co. Fairgrounds and will showcase the technologies on the bus which will be present for the Expo. The course will focus on the use of in-vehicle and out-of-vehicle technologies employed in the design of: traffic signal priority systems (TSPS), electronic payment systems (EPS), advanced traveler information systems (ATIS), and public transportation operations (PTO). The course will also discuss the requirements, anticipated benefits, and the physical architectures of these systems. It will use case studies and "lessons learned" through system deployment to illustrate their use and implementation. This workshop is for members of the transportation community with responsibilities in transit planning, management, operations, and/or maintenance. .7 CEUs will be awarded. 8:30 am to 4:30 pm. **Free to public agencies, $150 to others**.

Snow and Ice Control Chemicals

September 24, Pullman; September 25, Ellensburg; October 1, Tacoma; October 2, Vancouver. **$35.** Instructor: Dale Keep. This class will cover the difference between anti-icing and deicing, when each is appropriate for use, and how to use each method correctly. Included will be information on the advantages and disadvantages of both liquid and solid deicers, how they work, why they work and their limits. Also covered is "Total Storm Management." This presents the steps required to proactively manage a storm event rather than react to it, and the benefits of a proactive winter operations program.

Cultural Resources Training

September 25-28 (tentative), The Dalles, OR. **$350**. This class provides an exceptional opportunity to work with the region's most qualified instructors in cultural resources. Sessions take place at the Gorge Discovery Center and Maryhill Museum. There will be discussions on the Native American perspective on cultural resources, state archaeology, prehistory of Washington, Native American ethnobotany, prehistoric stone artifacts, rare plants, logging in the northwest, the historic Columbia River Highway, federal and state cultural resource regulations and how they apply to your agency. Highlights will be an evening dinner and discussion with a demonstration of flintknapping, and a field trip where participants will see ancient petroglyphs and will learn how to "read" the landscape and recognize probable cultural resources located at the site. This course is offered twice yearly, in the spring and fall.

Contract Plans, Specifications, and Estimate Preparation (PS&E)

September 26-27, Kent; October 24-25, Spokane; November 14-15, Lacey. **$40 local agencies/$80 consultants**. This two-day class covers the preparation of PS&E by WSDOT, consultants, and local agency staff. Instruction will be based on the Plans Preparation Manual as well as other references. The course includes contract special provision writing. It will cover the most recent requirements for preparing complete, biddable, constructable, and defensible plans, and the most recent requirements for writing complete, concise, and well-formatted special provisions.

LAG Training Program

The 14 courses listed below are being developed to bring LAG training to local agencies. It is anticipated that many of the courses will be ready by fall 2001 and will be offered yearly from fall thru spring. Indicate your interest by signing up on our "waiting lists" online. Individual classes will be developed in response to the number of people signed up on the waiting lists. If you have questions contact Darlene Sharar at (360) 705-7383. The wait lists can be accessed by going to *http://www.wsdot.wa.gov/TA/Operations/LAG/LAGprotrain.HTM*.

- Right of Way Procedures Workshop — LAG Manual Chapter 25 and the Federal Perspective.
- Advanced Endangered Species Act: LAG Manual Chapter 24.
- Construction Documentation: LAG Manual Chapters 51, 52, and 53.
- Section 106 Process-National Historic Preservation Act of 1966: LAG Manual Chapter 24. Brian Hasselbach, Environmental Manager with Highways and Local Programs, will present this class along with the "Introduction to the Endangered Species Act and Biological Assessments."
- Funding Workshop: LAG Manual Chapters 12, 21, 22, and 23. Agreements and supplements, prospectus, progress billings.
- DBE/EEO/OJT: LAG Manual Chapters 26 and 27.
- LAG Manual Overview.
- Consultants - LAG Manual Chapter 31.
- Certified Testers.
- Design Standards from PS&E to Award.
- Railroad Procedures.
- Emergency Relief Programs.
- Enhancement Program.
- Introduction to Environmental.

Endangered Species Act Training Program

Beginning this fall, the following courses will be available to agencies seeking 4(d) coverage under the Regional Road Maintenance Endangered Species Act Program Guidelines. With adoption of the Guidelines and commitment to the ten program elements contained in the Guidelines, agencies will receive a "take" limit under the 4(d) rule. This training program is one of the ten program elements. Larger agencies will be encouraged to use the "train-the-trainer" program for training their staff. Smaller agencies will be able to send staff to regularly scheduled WST2 classes. An informational packet will be sent to all agencies requesting the level of participation desired by each. For information on the Regional Road Maintenance Program and Guidelines Manual, log on to *http://www.metrokc.gov/roadcon/bmp/pdfguide.htm*

- **ESA 101(1)** — Management and Executive Briefing (2 hours)
- **ESA 101(2)** — Basics of ESA Compliance for Technical Staff (4 hours)
- **ESA 101(3)** — Basics of ESA Compliance for Field Crews (4 hours)
- **ESA 102** — Best Management Practices for Field Crews (8 hours plus additional demonstration training)
- **ESA 103** — Biological Identification for Maintenance Crews, Supervisors, Design and Environmental Staff (8 hours)
- **ESA 104** — Design Procedures for Roadway Maintenance Engineers and Supervisors (8 hours)
- **ESA 105** — Permit Requirements (2 hours)
- **ESA 106** — Project Monitoring and Oversight (4 hours)
- **Train-the-Trainer 101** — Field application of BMPs (16 hours)
- **Train-the-Trainer 102** — All ESA courses (16 hours)

Up and Coming WST2 Classes:

- Subsurface Utility Engineering (SUE) — Three sessions coming this summer. Presented by CH2M Hill.
- Stream Stability and Scour at Highway Bridges — January 29-31, 2002.

Associated General Contractors of Washington

Education Foundation

Contact: David Hymel or Adam Shinn
(206) 284-4500 or (206) 284-4595
web: http://www.agcwa.com

To register for classes in this category, contact the person above.

Certification in Construction Site Erosion and Sedimentation Control

July 25-26, Seattle; August 15-16, Tacoma; Sept. 5-6, Seattle; Sept. 10-11, Olympia; Oct. 3-4, Vancouver; Oct. 17-18, Bellingham; Nov. 1-2, Seattle; Nov. 28-29, Wenatchee; Dec. 4-5, Tacoma; Dec. 11-12, Shoreline. **$250**. This course is the same one that has previously been taught by Environmental Affairs staff at WSDOT. Classes can be presented for individual agencies.

TRANSPEED University of Washington

Contact: Christy Roop
phone: (206) 543-5539
fax: (206) 543-2352
web: http://www.engr.washington.edu/epp

To register for classes in this section, contact the person above.

Prices are for local agencies/all others.

Basic Highway Capacity Analysis for Engineers and Planners

June 25-27, Seattle. **$265/465**.

Managing Project Delivery

July 18-20, Seattle. **$750/950**.

Urban Street Design

August 1-3, Seattle. **$265/465**.

Managing Scope, Schedule and Budget

August 7-9, Seattle. **$645/845**.

Basic Roadway Geometric Design

August 20-22, Seattle. **$265/465**.

Bridge Foundation Design

September 18-20, Seattle. **$265/465**.

University of Washington

Engineering Professional Programs (EPP)

Contact: Emily West
phone: (206) 543-5539
fax: (206) 543-2352
email: uw-epp@engr.washington.edu
web: http://www.engr.washington.edu/epp

To register for classes in this category, contact the person above.

Prices are for early/late registration.

Mechanical Engineering Refresher

September 6-October 16, Seattle. Tuesdays and Thursdays, 6:30-9:00 pm. **$525/595**

E.I.T./Fundamentals Refresher

September 5-October 15, Seattle. Monday and Wednesday, 6:30-9:00 pm. **$425/495**

Civil Engineering Refresher

September 13-October 18, Seattle. Tuesday and Thursday, 7:00-9:30 pm. **$445/515**

Cold Regions Engineering Short Course

August 2-6, November 1-5. **$1,095/1,155**, 3 CEUs. This course is held 3-4 times per year, usually in Seattle, but occasionally in other locations.

Conferences & Meetings

Washington State Association of Counties 95th Annual Convention

June 12-15, 2001, West Coast Yakima Gateway Hotel, Yakima, WA.

Contact: Washington State Association of Counties
phone: (360) 753-1886
fax: (360) 753-2842

Association of Washington Cities Annual Conference (AWC)

June 19-22, 2001, The Maydenbauer Center, Bellevue, WA.

Contact: AWC
phone: (360) 753-4137

International Municipal Signal Association (IMSA) Northwest Section

June 24-28, 2001, Doubletree Suites, Tukwila, WA.

Contact: Karen McKenzie, King Co. DOT
phone: (206) 296-8153.

Fifth International Conference on Managing Pavements

August 11-14, 2001, Washington State Convention and Trade Center, Seattle, WA.

Contact: University of Washington's Engineering Professional Programs
phone: (206) 543-5539
email: pavement@engr.washington.edu.
web: www.engr.washington.edu.
Click on EPP then Conferences.

Pacific Northwest Transportation Technology Expo

September 12-13, 2001, Grant Co. Fairgrounds, Moses Lake, WA. An exhibition of the latest technology in transportation engineering, construction and maintenance. This event is designed to showcase current leading edge technology emerging from research, new technology entering the market, and innovative home grown tools and techniques developed by public agency personnel through live demonstrations.

Contact: WSDOT T2 Center for information on this year's Expo
phone: (360) 705-7386
web: log on for a visual show of the 2000 Expo
http://www.wsdot.wa.gov/ta/T2Center/TechnoExpo/TechnoExpoHP.html

11th Northwest On-Site Wastewater Treatment Short Course and Equipment Exhibition

September 17-18, 2001.

Contact: University of Washington's Engineering Professional Programs
phone: (206) 543-5539

Road and Street Maintenance Supervisors' School

October 2-4, 2001, Spokane; December 4-6, 2001, Tacoma, Washington.

Contact: Kelly Newell
Washington State University (WSU)
phone: 1-800-942-4978.

Footprints and Bike Tracks

October 10-12, 2001, Westcoast Hotel, Olympia.

Contact: Mike Dornfeld WSDOT H&LP
phone: (360) 705-7258

American Public Works Association Fall Conference

October 16-19, 2001, Walla Walla, Washington.

Contact: Dick McKinley
phone: (509) 527-4463

41st Annual Idaho Asphalt Conference

October 25, 2001.

Contact: University of Idaho Conferences & Events
phone: (208) 885-6662

PNS Snowfighters Conference

June 3-5, 2002, Boise, ID.

Contact: Dave Jones (208) 332-7893 (Idaho)
or Clay Wilcox (360) 874-3050 (WA)
web: www.wsdot.wa.gov/fossc/maint/pns

John Carpita, MRSC Public Works Consultant, noticed this "Sidewalk Closed" sign on a state highway east of Apache Junction, Arizona. He noted, "There's not a sidewalk in sight for 30 miles each way"! Thanks John!

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, 1000 x 1500 dpi jpg or tiff) 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 *SundeD@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.