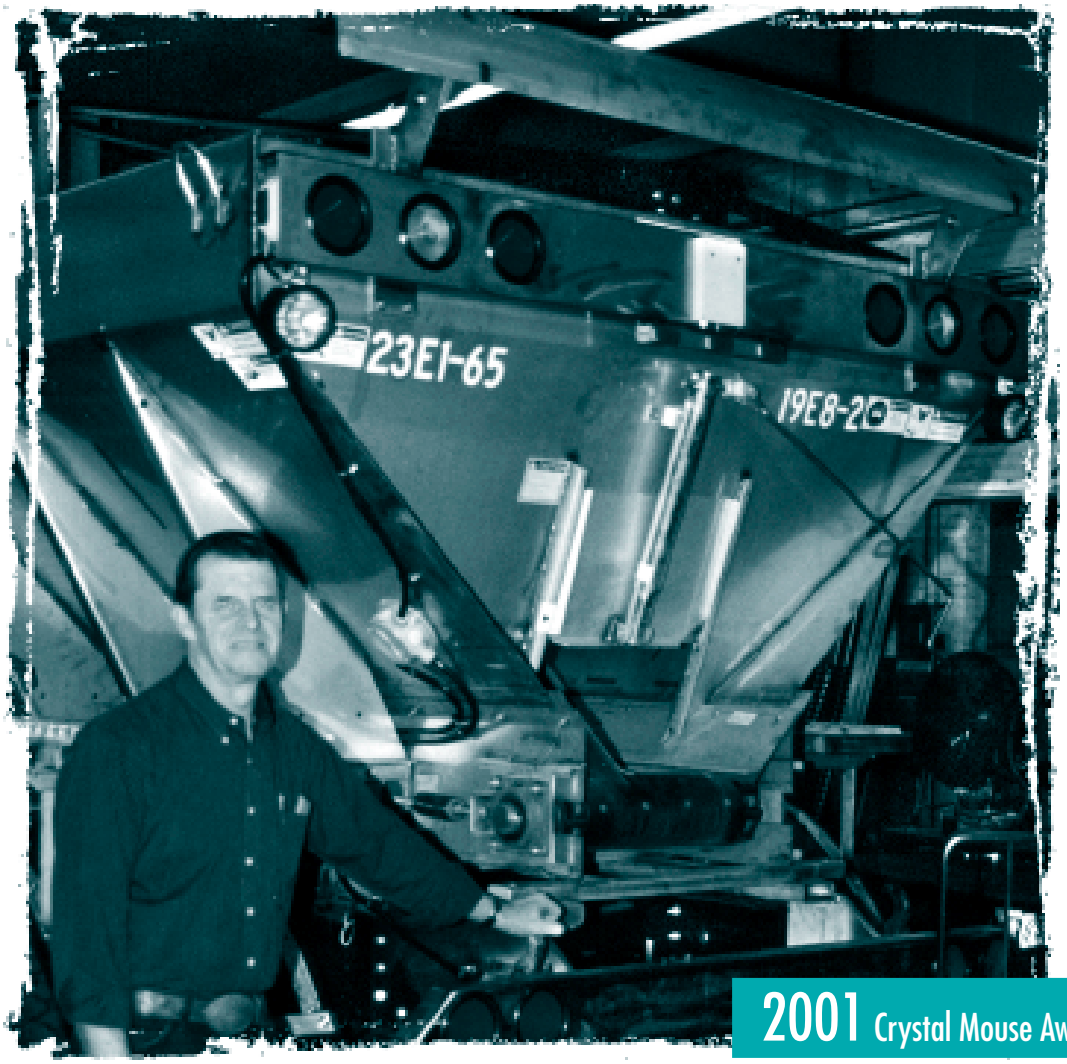
WST2

Washington State Technology Transfer



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Washington State Department of Transportation

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Issue 73, Winter 2002

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Editor reserves the right to refuse to publish and to edit
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The opinions expressed in articles are not necessarily
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From the Editor's Desk

Dan Sunde
Director of Technology Transfer
WST2 Center

Congratulations to the 2001 Crystal Mouse Award winners! As demonstrated by their popularity with the panel of judges and attendees at the 2001 Pacific Northwest Transportation Technology Expo, the winning mousetraps have proven to be great examples of resourcefulness in pursuing improvements. Each definitely demonstrates a desire by the inventors to do things safer, cheaper and more effectively.

As more mousetraps are presented I have noticed several characteristics of the mousetrap development process. First, the inventor is alert enough to recognize a problem or an opportunity to improve efficiency. Second, no matter how creative the inventor nothing happens until they take the initiative to make it happen. Third, others with special expertise often assist in fabricating the prototype. And fourth, the inventor's supervisors provide a work environment that encourages creative thinking and the resources needed to make it all happen. It is truly a team effort from the ground up.

We hear a lot about quality management and its implementation. Each mousetrap is that process in action; needs are identified and solved by the person with the "profound" knowledge with support from supervision. Each new idea breeds opportunities to build upon and pushes the envelope of improvement.

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

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

Washington State Department of Transportation

U. S. Department of Transportation
Federal Highway Administration

The Washington State Technology Transfer Center Announces the 2001 Crystal Mouse Award Winners!

Congratulations to our three Crystal Mouse Award Winners at the 2001 Pacific Northwest Transportation Technology Expo!

WSDOT North Central Region maintenance team's Snowplow Bit Installer was voted the best tool presented at the Expo and the WSDOT Olympic Region maintenance team's Debris Pusher was voted the best equipment modification presented at the Expo. WST2 Advisory Committee judged the WSDOT South Central Region maintenance team's Snowplow Emergency Light System the best mousetrap published in the WST2 newsletter during the year 2001!

Doug MacDonald, Secretary of Transportation and Dan Sunde, Director of the WST2 Center, presented the awards to the winners during a full-house Transportation Commission meeting, January 9, 2002.

(Top) Left to right; Dan Gates, Charlie Jensen (with Stetson) and Linda Dougherty

(Bottom) The Snowplow Bit Installer

The Best Tool for 2001 — Charlie Jensen's Snowplow Bit Changer

The snowplow bit changer was invented and fabricated by Charlie Jensen, Maintenance Tech 2 of the WSDOT Maintenance Shop in Twisp with support from his supervisor Linda Dougherty and superintendent Dan Gates.

This ingenious piece of equipment increases safety by reducing the need to lift snowplow bits and holding them in place while they are mounted, protecting workers from sprained backs, pulled muscles, twisted knees, and smashed fingers. It also increases efficiency by allowing one person to install the bits rather than two. A 40-minute two-person job has been reduced to a 20-minute one-person task.

There are plans now to fabricate this tool for the other shops in the North Central Region.

For more information, photos, and a schematic to show you how to build Charlie's Snowplow Bit Installer for your shop, read the Mousetrap section of the Summer 2001 edition of the WST2, Issue 71, page 30.

(Top) From Left to right, Mike Evans, Jon Moergen (back), Jerry Lowery and Dennis Ulmer

(Bottom) The Debris Pusher

The Best Equipment/Equipment Modification for 2001 — Jerry Lowery's Debris Pusher

The Debris Pusher was invented by Jerry Lowery, Maintenance Tech 2 in the WSDOT Lakewood Shop, Tacoma and fabricated by Jon Moergen, Suspension Bridge Specialist, Narrows Bridge, Tacoma with support from their supervisors, Dennis Ulmer, Mike Evans, and former superintendent, Casey McGill.

The Debris Pusher is a large metal basket with wire brushes along the bottom that mounts to the front of a truck using the snowplow attachment. This very effective piece of equipment provides safety to maintenance crews and the traveling public as well as maintains traffic flow on highways by capturing debris lying in traffic lanes without requiring the truck to stop. The Debris Pusher collects debris as large as a car hood at highway speeds, allowing the driver to work across the traffic lanes to the shoulder where the debris can be thrown into the back of the truck for disposal. The Debris Pusher allows dangerous traffic hazards to be removed safely without disrupting traffic.

For more information, photos, and detailed drawings to show you how to build Jerry's Debris Pusher for your shop, read the Mousetrap section of the Fall 2001 edition of the WST2, Issue 72, page 40.

(Left) Errol Rhode
(Top) The Snowplow Emergency Light System

Best Mousetrap Published in 2001 — Snowplow Emergency Light System

Errol Rhode, Equipment Supervisor in the WSDOT Yakima shop invented and fabricated the Snowplow Emergency Light System with support form his former supervisor, Jerry Mearns.

The light system improves safety for the traveling public and maintenance equipment operators by allowing brake lights and turn signals to be more visible during operations when flashing caution lights are in use. The system turns the flashing caution lights off for two seconds whenever the driver pushes the brake pedal or activates the turn signals. With the caution lights turned off the brake lights and turn signals are isolated and stand out. This provides a clear warning to nearby drivers that the maintenance vehicle is about to slow down, stop, change lanes, or turn. After two seconds the caution lights automatically resume operation.

Errol's design has the taillights and turn lights mounted in a stainless steel light bar at the top of the sand hopper for better visibility and to reduce corrosion. The design also includes an airfoil mounted over the light bar to blow air across the lights to keep snow from building up on them.

For more information, photos and detailed drawings to show you how to build Errol's Snowplow Emergency Light System, read the Mousetrap section of the Summer 2001 edition of the WST2, Issue 71, pages 32 and 33.

Once again, congratulations to this year's Crystal Mouse Award winners!

And a hearty "Thank you" to all of you that shared your ideas with your participation in the 2001 Pacific Northwest Transportation Technology Expo and submission of mousetraps for publication in the WST2.

If you haven't submitted your mousetrap for publication in the WST2 Newsletter, I would like to encourage you to do so. It gives the WST2 Center an opportunity to recognize you for your idea and to distribute it so others can benefit. Just fill out the form in the Mousetrap section of this issue and send it to me along with sketches or drawings showing the dimensions and identifying the parts and as many photos as you can. You don't need to have it perfect; we will work with you to polish it up. Submit your mousetrap to:

"Better Mousetrap"
c/o Dan Sunde, Director
WST2 Center-WSDOT
P.O. Box 47390
Olympia, WA 98504-7390 ▲

WSDOT Creates Website for Urban Design Issues!

By Al King, Operations Engineer, WSDOT-H&LP

In responding to current issues that have evolved from projects on state highways through urban downtown areas, WSDOT has created a new Website devoted to urban design issues.

You can find the new site at: *www.wsdot.wa.gov/eesc/design/policy/SafetyResearch/Safety&Aesthetics.htm*

Here, you can find information on current efforts to develop comprehensive resources that will assist in optimizing the broad range of elements related to urban roadway design.

A unique feature of this Website is that it contains information on recent research in developing more urban-friendly design elements. Currently, cross-sections of a new 18" barrier curb design can be found on the "products" page.

The site will be updated regularly (planned to be weekly!) Information that may be of particular interest to local communities will also be communicated via email and the WST2.

If you have any questions regarding the site or information on it, please contact Nancy Boyd,Project Manager, at (360) 705-7255, BoydN@wsdot.wa.gov. *For issues specific to your local agency projects or standards, you may also contact me, Al King at (360) 705-7375,* KingA@wsdot.wa.gov. ▲

Living Longer and Better

By W. C. Evans, LTAP Manager, FHWA

We all make fitness and awareness of personal health somewhat a priority in our lives. I am no different, but was surprised by the findings of a health study in a news article. Health professionals nationwide developed this study.

Having been in the transportation field all of my career, I still did not realize that two of the top four items in the list would be transportation related and lead to better health and influence our longevity. Safety rather than fitness and health are at the top of this study.

More than 60 health and longevity affecting factors were listed. I am just listing the top 20 or so.

1. Not smoking
2. Not smoking in bed
3. Wearing a seat belt
4. Avoiding driving under the influence of alcohol
5. Living in a home with a smoke detector
6. Keeping a strong network of friends
7. Exercising regularly
8. Moderating alcohol usage
9. Being careful to avoid accidents at home
10. Restricting dietary fat
11. Maintaining a healthful weight
12. Having blood pressure checked annually
13. Obeying the speed limit
14. Controlling stress
15. Consuming enough fiber
16. Restricting cholesterol
17. Getting adequate vitamins and minerals
18. Seeing a dentist regularly
19. Restricting sodium
20. Restricting sugar
21. Getting 7 to 8 hours of sleep nightly (Hmmmm…)

Here is the best part – these are the things that we chose to do – or not to do. We have control of all of these things. We can put ourselves on the positive side of each of them.

As someone once said, "When you have your health, you have it all"! ▲

FHWA Administrator Outlines Agenda at FHWA

Reprinted from NACE UPDATE, December 17, 2001, Volume 01 Number 27

FHWA Administrator Mary Peters outlined her agenda for FHWA at the recent AASHTO annual meeting in Fort Worth, TX. "Congestion is a problem of demand outpacing capacity. We need to break the anti-highway cycle that has plagued us. Sometimes transportation is really about asphalt, concrete and steel," Peters said to the AASHTO Board of Directors. Peters outlined her intentions, saying, "People need to have choices, not mandates. This is not a social policy agency, it's a transportation agency and we need to grasp that now." The following priority focus areas were noted.

Safety and Security

Peters said that the highway system had performed well following the September 11 tragedy, when all aviation services were shut down. Regarding highway safety, she said that the annual loss of life on the nation's highways – more than 40,000 fatalities –equaled the entire population of Flagstaff, Arizona. Reducing that toll "is our business and we must do something about it." She also noted the importance of work zone safety and close coordination with emergency response personnel.

> ***"People need to have choices, not mandates. This is not a social policy agency, it's a transportation agency..."***

Environmental Streamlining

Peters said, "We can improve processes and still be respectful of the environment. We are not jack-booted thugs who will pave over Bambi and the entire world. We will work with others to resolve these issues. The failure to resolve them has not been a staff issue. They have worked hard. It's a leadership issue. And we will lead."

Stewardship and Accountability

Peters said accountability for the proper use of federal funds is another key priority, adding "We promise to do this with you, not to you."

Congestion

Congestion and bottlenecks waste time, money, and productivity, so capacity issues need to be addressed, Peters said.

Reauthorization

Peters said that FHWA is at work developing proposals for the reauthorization of the federal aid highway program. She cited concerns including preservation of the firewalls, preservation of minimum guarantees and flexibility as key priorities, adding that the FHWA will also examine such issues as the appropriate federal role.

AASHTO identifies 2002 Action Agenda

The AASHTO Board of Directors also approved nine regulatory and legislative issues for inclusion in the 2002 action agenda for the association. They include:

- TEA-21 Implementation and Reauthorization
- Protecting the Highway, Transit, and Aviation Funding Guarantees
- Streamlining the Approval of Transportation projects
- Security
- Air Quality Conformity and Reauthorization of the Clean Air Act
- State-local government consultation
- Support for Transportation Research
- Work Zone Safety
- Amtrak
- Ethanol Fuel Tax

FHWA to release the "Designing Sidewalks and Trails for Access, Part II, Best Practices Design Guide."

Reprint from NACE UPDATE December 27, 2001 — Volume 01 Number 28

It is the latest in a series of technical guides issued to the field and state DOT's to assist in integrating bicycle and pedestrian projects into the transportation system mainstream, while ensuring the transportation system is inclusive to all users.

The report is the second phase of the companion report, "Designing Sidewalks and Trails, Part I, Review of Existing Guidelines and Practices" (August 1999). The reports collectively provide information on how to implement the requirements of Title II of the Americans with Disabilities Act (ADA) (1990) and Section 504 of the Rehabilitation Act (1973).

Part II is to be used to design and construct accessible pedestrian facilities. The aim of the research was to develop tools to help FHWA and state and local governments meet their responsibilities under ADA. Copies of the reports will be delivered directly to U.S. state DOTs.

Copies of the reports may be obtained by faxing a request to the FHWA Report Center at 301-577-1421.

For questions on information in the reports, you may contact BarbaraMcMillen at Barbara.McMillen@fhwa.dot.gov or Bill Prosser at William.Prosser@fhwa.dot.gov. Contact Christopher Douwes at Christopher.Douwes@fhwa.dot.gov, for questions on trail design and funding. ▲

Guidelines for Geometric Design of Very Low Volume Local Roads Released by AASHTO

Reprint from NACE UPDATE December 27, 2001 — Volume 01 Number 28

After several years in development this important new publication has now officially been released. The "Guidelines for Geometric Design of Very Low Volume Roads" (ADT of 400 or less) addresses the unique design issues highway designers and engineers face when determining appropriate and cost-effective geometric design policies for very low volume, local roads. A new approach to geometric design of these types of roads, stemming from research on the safety and cost effectiveness of geometric elements and site-specific safety conditions, is incorporated into this work. This approach covers both new and existing construction projects. Because geometric design guidance for very low volume local roads differs from the policies typically applied to higher volume roads, these guidelines may be used in lieu of AASHTO's, A Policy on Geometric Design of Highways and Streets, also known as the "Green Book". The price is $30 for AASHTO members and $35 for non-members. AASHTO is extending the same discount price for its members to NACE members. To receive the special price of $30 per copy you must order using the special offer code of "NACEMBRS-VLVLR100". Please visit the AASHTO bookstore at *www.transportation.org* for details on how to order a copy of the guidelines. ▲

New WST2 Newsletter Staff Member

The WST2 Center is pleased to welcome Kimberly Colburn as the Publishing Editor for the *WST2* Newsletter.

Kimberly is currently the Public Information officer for Highways & Local Programs and has been with WSDOT for almost 10 years. Among her other duties, Kimberly composes articles and press releases for various publications, develops marketing brochures, and coordinates conferences. She is also the newsletter manager for Washington's Partnership for Quality Transportation, PQT. We look forward to working with Kimberly. Her experience and enthusiasim are valuable assets to the *WST2* team.

Welcome Kimberly!

If you have comments or suggestions on ways to improve the WST2, you can contact Kimberly at 360-705-7879 or ColburK@wsdot.wa.gov. ▲

20 Ways to be More Creative

By W. C. Evans, LTAP Manager, FHWA

Here are 20 ways to be more creative. There are lots of other ways to get your creative juices flowing and these may help: Pick one and try it today!!

1. Go for brainstorming walks with a friend.
2. Ask a child for an answer.
3. Exercise during lunch.
4. Wake up at 3:30 am and work for two hours.
5. Tape-record your ideas while driving to work.
6. Trust your instincts.
7. Talk to people in other occupations.
8. Write down your dreams upon waking.
9. Nap once in a while.
10. Redesign your office.
11. Arrive to work early.
12. Read different books.
13. Decorate your walls with inspired quotes.
14. Ask stupid questions.
15. Start an idea bank.
16. Experiment more.
17. Stay inspired.
18. Save time to be creative.
19. Test your limits often.
20. Stare out the window once in a while.

A creative climate is established by doing whatever you can with your current environment to shift your outlook. The material and resources you need to do this are actually all around you. The challenge is recognizing them.

(Thanks go to Mike Vance, Forest Service for these.) ▲

In Pursuit of Improved Maintenance Management — CRAB'S Maintenance Management Survey

By Larry Pearson and Walt Olsen, CRAB Maintenance Program Managers

A primary element of the County Road Administration Board's (CRAB) mission is to preserve transportation infrastructure of Washington Counties by providing standards of good practice and professional technical services. Due to increased attention on the need for maintenance and preservation of transportation infrastructure — through recommendations from the Blue Ribbon Commission on Transportation, the requirements of the Government Accounting Standards Board Rule 34 and from various Washington State legislative proposals — counties are being asked to demonstrate the effectiveness of their maintenance programs. Use of a Maintenance Management System is a way for counties to document characteristics of their maintenance programs and to communicate maintenance program effectiveness to the public, employees, and other agencies.

…a way for counties to document characteristics of their maintenance programs and to communicate maintenance program effectiveness…

...a process to provide more effective and efficient planning, organizing, directing, and controlling of maintenance work.

Because all counties practice some form of maintenance management, CRAB's desire is to craft a functional tool based on current practices. CRAB's initial effort to develop a suitable tool for the counties involved determining the practices that are being used in the counties now. In order to understand how the various elements of a formal maintenance management system (MMS) relate to existing procedures, a survey of maintenance management was recently conducted. The intent was to gather information on current county management practices for comparison with the elements of a formal maintenance management system. A brief survey form was sent to counties. The responses will be used as the basis for further discussions concerning the development and use of a maintenance management tool.

- Setting objectives and standards to aid in planning the work
- Determining resource requirements
- Developing the performance budget
- Scheduling, reporting and controlling the work.

Basically, the MMS is a process to provide more effective and efficient planning, organizing, directing, and controlling of maintenance work. It begins with setting specific, quantitative work objectives and then follows through the complete management cycle to ensure that actual performance is consistent with objectives. The various elements and sub-elements of a formal maintenance management system (MMS) are presented in the schematic on the next page.

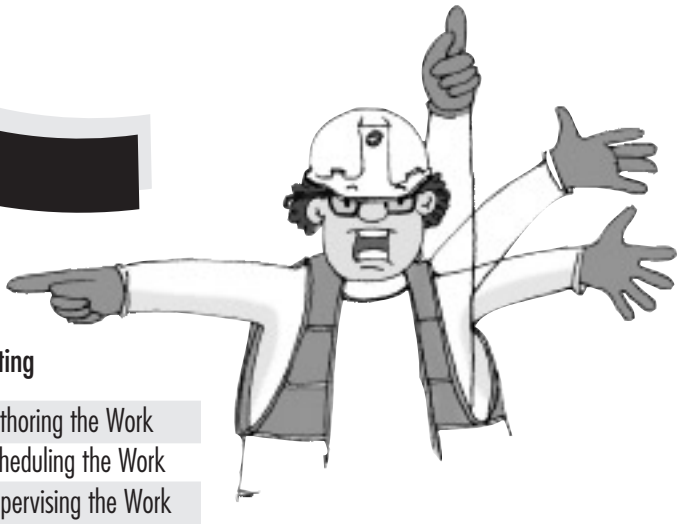
Maintenance Management System Schematic

Planning

- Defining Objectives
- Defining Work Activities and Standards
- Developing Work Programs & Budgets

Organizing

- Identifying Resources Needed
- Organizing Resources
- Allocating Resources



Directing

- Authoring the Work
- Scheduling the Work
- Supervising the Work

Controlling

- Reporting Accomplishments
- Evaluating Performance
- Corrective Action
- System Refinement

By comparing the elements of a maintenance management system as outlined above with current practices in the counties, we are able to provide counties with feedback related to how current maintenance practices compare to a formal maintenance management system. The results are presented below:

Please Note — the brief survey was intended to elicit information concerning current maintenance practices in the counties and should not be construed as a complete or in-depth assessment of such practices in these counties. There are many variations and nuances contained in each sub-element of a formal MMS and as practiced in a specific county. Such nuances and variations are addressed in the "Discussion of Survey Results" section in the body of the report.

The results of the survey indicate that a wide-range of maintenance practices is used throughout the state. Every county practices some form of maintenance management; however, the level of formality and the availability of information related to maintenance operations vary widely. Such variations result in varying levels of maintenance program documentation and reporting.

…a formal maintenance management system (MMS) can provide more consistent documentation and reporting of maintenance activities.

How Current Maintenance Practices Compare to A Formal MMS

Planning and Budgeting	YES	NO
Defined maintenance objective	15	24
Defined work activities	17	22
Activities identified by BARS no.	35	4
Performance standards prepared	12	27
Inventory of facilities or features	37	2
Unit costs for labor/equip/materials	24	15
Budget for maintenance activities	32	7
Work program related to budget	19	20
Organizing and Allocating		
Resources needed for maintenance	23	16
Seasonal and annual workloads	16	23
Resource allocation for workload	16	23
Directing and Scheduling		
Authorization to schedule work	23	16
Procedures for scheduling work	20	19
Weekly or bi-weekly schedules	20	19
Controlling and Evaluating		
Work reporting–quantity, location	22	17
Reporting resources used for work	31	8
Evaluating actual and planned work	17	22
Reports showing budget status	31	8
Reports of work program status	15	24
Evaluation of performance standards	14	25

Use of a formal maintenance management system (MMS) can provide more consistent documentation and reporting of maintenance activities and is recommended. During the next phase of CRAB's Maintenance Management Project, the following areas will be addressed:

1. Work with counties to provide the elements of a formal maintenance management system…. planning, organizing, directing, and controlling.
2. Address reporting and data entry and the interface with the accounting system.
3. Describe the features of a formal maintenance management system and discuss with counties. *Note* — an overview of maintenance management is presented in the recently updated "County Engineers and Public Works Directors Manual" prepared by CRAB.

For more information on Maintenance Management, call Larry Pearson or Walt Olsen at 360.753.5989 or visit CRAB's Web Site for the latest update at http://www.crab.wa.gov/resources/. ▲

Community Partnership Forum

By Julie Mercer Matlick, WSDOT H&LP Community Partnerships Program Manager

Highways & Local Program's (H&LP) Community Partnership Program has initiated a process to implement the Washington State Transportation Commission's "Livable Communities" policy that directs Washington State Department of Transportation (WSDOT) to " … foster livable communities in transportation projects within rural and urban areas by working with its partners to:

- Foster multimodal transportation systems that enhance communities;
- Develop collaborative transportation actions sensitive to community values; and
- Coordinate access to funding."

As a result, the Community Partnership Forum was formed. A number of local agencies, Association of Washington Cities, Sound Transit, Federal Highway Administration, and WSDOT began meeting in September 2001 and will continue to meet through January 2002 to identify roadblocks to effective project planning, design, and delivery. The group is developing a set of recommended "best practices" and included are definitions of joint projects, and a schematic of successful project delivery.

When the set of recommendations is completed, WSDOT will have a document that will be of value for local agencies in understanding the process of a project from conception to completion (a project roadmap), as well as a document that will describe community partnership agreements, report cards for performance, successful conflict resolution models, and many other aides for both WSDOT and local agencies working on partnership type projects.

The group is developing a set of recommended "best practices" and included are definitions of joint projects, and a schematic of successful project delivery.

If you would like to give local agency input to the team, contact Randy Witt, Bainbridge Island Public Works Director, at 206.780.3707.

If you would like information about the Community Partnership Forum or have questions, contact Julie Mercer Matlick, WSDOT H&LP Community Partnerships Program Manager at 360.705.7505 or MatlicJ@wsdot.wa.gov. ▲

Pedestrian Accident Location (PAL) Geographical Information Systems (GIS)

By Julie Mercer Matlick, WSDOT H&LP Community Partnerships Program Manager

Washington State Department of Transportation's (WSDOT) Community Partnership Program unveiled a GIS Pedestrian Accident Location program that displays all the high pedestrian collision locations on state roadways. The purpose of this program is to allow regional staff to easily access a collision location. Tabular data and visual information is available for each location by simply pointing on a location and clicking. Each location has a summary of the site including the number and cost of collisions at the site, if the location is a transit stop, if it has pedestrian oriented lighting, sidewalks, etc. In addition, the user can see an aerial photo of the location to determine land use and driveway locations, SR view of the location, and a map of the site. WSDOT Design Office has been instrumental in developing this application. To access the information, call Suzanna Dethlefs at 360.705.7267.

For questions or comments about the program, contact Julie Mercer Matlick at 360.705.7505 or MatlicJ@wsdot.wa.gov. ▲

The Etiquette of Productivity

By Phil Barto, Maintenance Engineer, Spokane County and WST2 Advisory Committee

Most roadwork requires the transporting of materials, usually asphalt or gravel. The most expensive part of most projects is the transporting of material (trucking). Peak efficiency is reached by moving the maximum amount of material with the least number of people and pieces of equipment assigned to the job. This maximum efficiency is achieved by establishing a rhythm and maintaining it for the entire shift. When moving the maximum amount of material is mentioned, many people think of overloading. When someone talks about establishing a rhythm, many people think of speeding or driving too fast for conditions. The truth is that neither overloads nor speeding do very much to increase productivity. In the long run, they usually hurt the operation. At Spokane County, projects are never estimated on the basis of hauling overloads or speeding.

There are things that can be done to establish and maintain the rhythm. If everyone strives to do these things the productivity will by far out shadow the gains from speeding and over loading and it will ensure the competitiveness in all endeavors. They are good construction etiquette. Construction and maintenance work is fluid. It is easy to say that because things are constantly changing, there is no way that a standard plan will ever work. This is not true. In 80 percent of the cases, the standard plan will fit perfectly. In 20 percent of the cases, adjustments must be made as you go.

> ***In 80 percent of the cases, the standard plan will fit perfectly. In 20 percent of the cases, adjustments must be made as you go.***

Since no work will be accomplished if there is no material on the job, the first thing to consider is the trucking. The first rule is that no one does anything to interfere with the pace of the trucks. The grader operators, water truck drivers, roller operators, and any other operators near the dump site leave the truck drivers enough room to pass without having to stop or even slow down. Foremen, managers, flaggers, and dump truck operators must park their pickups out of the way. Do not park these pickups on the road where they slow down the trucking, nor in the turn-arounds where they block or interfere with the trucks. It is the responsibility of the people that are on the ground to stay out of the way of the trucks and any other equipment that might be working in the area. People that are on the ground must stay where they are readily visible to the operators, they should be sure to catch the operator's eye before they come close to any equipment. In general, everyone gets out of the way of the trucks.

Generally, the grader operator, the paver operator, or the chip spreader operator calls the shots at the dumpsite. These operators should expect that when they tell a truck driver how they want a load dumped, the truck driver would do it that way to the best of their ability. They shouldn't hesitate to instruct the driver on how they want it dumped. However, operators must get their communicating done as quickly as possible, because they are holding up the trucks. If possible, foremen and other people shouldn't communicate with the operators until they are at a good stopping point. They shouldn't interfere with production. They should always catch the operators before they come near a piece of operating machinery.

In the pit or where the loading is being done, the loader operator always calls the shots. It is the loader operator's responsibility to put out every load as quickly as possible. It is the loader operator's right and duty to set up the loading pattern and to position the trucks. The trucks should be positioned so that there is as little travel as possible. Traveling with a bucket full of material takes time. Sometimes the truck drivers will find it inconvenient to do all of the backing and angling to get the truck in just the right position, but that is the way it has to be.

The loader operator should never stop moving. If there is even one truck in the pit, they must load it before any other activity takes place. Neither the foreman nor anyone else should interrupt the loader operator when there are trucks in the pit. Wait until the trucks are loaded. If there are no trucks in the pit, the loader operator should spend the time to work on the loading face of the pile. The operator should loosen the compact material in the pile, buck up the loose material from the floor, and back drag the floor to make it as smooth as possible for the trucks.

Morning start-up, evening shutdown, and lunch and coffee breaks are the most detrimental times of day for breaking the rhythm. Morning is the worst time of all because all of the trucks arrive at the pit about the same time and they wait in line while the trucks in front of them go through the loading process. Then the trucks leave the pit at nearly the same time and bunch up at the dumpsite.

The loader operator must leave the shop immediately at starting time because the loader must be warmed up and the truck crossing signs must be in place when the first truck arrives. This means that the loader operators should fuel up the loader and service it before leaving the site in the evening. They should fill up the pickup and the slip tank in the evening. They should have plenty of time, since the loader operator puts out the last load of the day long before the end of shift.

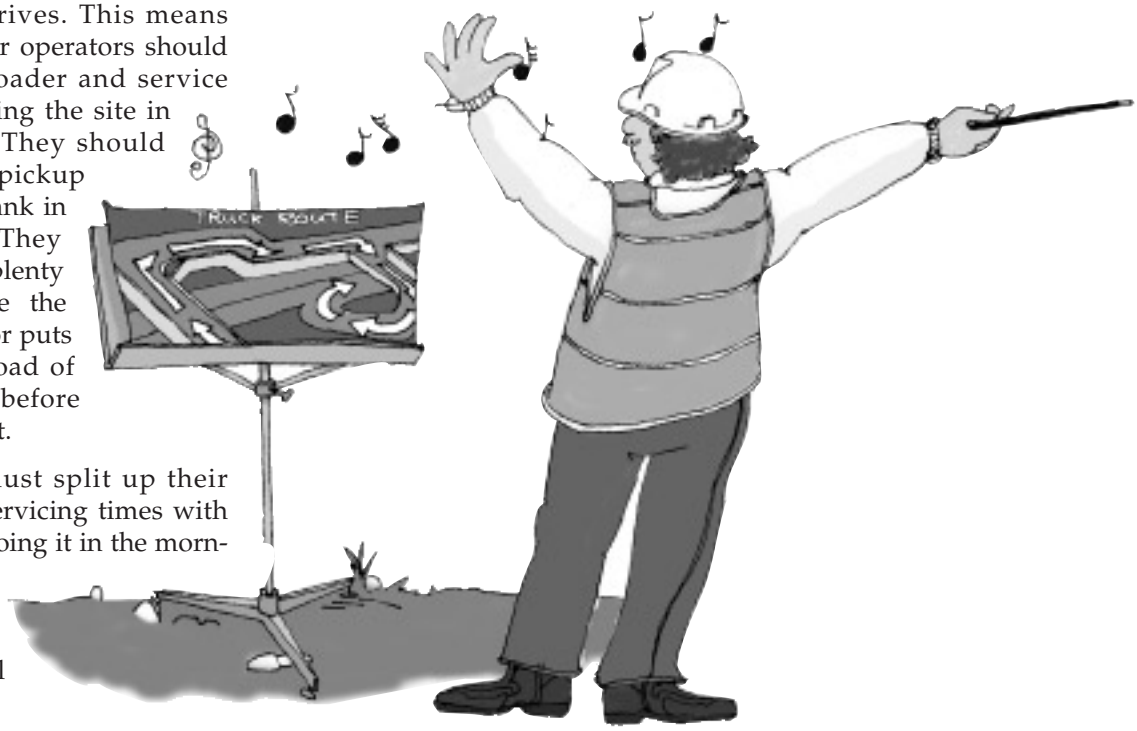
The trucks must split up their fueling and servicing times with some trucks doing it in the morning and others doing it in the afternoon. Those who fuel in the afternoon must leave immediately the next morning. The first trucks to dump on the last round of the day should proceed immediately to the fueling facility, and the last trucks to dump should wait until the next morning. The reason for doing this is to reduce the morning bunch-up. Of course, if it is cold weather, everyone fuels up in the evening. In extreme cases when there are a lot of trucks and the fuel site is close, it might work well to have some trucks fuel before and after lunch or before and after coffee breaks. This should be coordinated ahead of time.

Everyone should stop where they are at coffee break and lunch break. It causes a massive backup when we drive to the pit or the dumpsite and we never get cycled out again. If it is not possible to stop immediately, at least spread out between the pit and the dumpsite.

Shutdown is a special challenge because it is always a guess about getting in the last round before quitting time. It is important to get every load possible during the day. Stopping too early wastes a lot of money.

The term "Casual Overtime" has been coined for the overtime that is required to bring all of the day's activities to a logical stopping point. It is the overtime needed by the truck operators to finish the last round. In some cases, it is the time for the grader operator to finish necessary work before the morning start up. Sometimes it might be the time for the water truck to pre-water in the morning. It is the foreman's responsibility to review the project and make the decision on casual overtime and this is one of the foremen's most important responsibilities.

In this era of constantly trying to do more with less, we must continue to improve and be competitive with the contracting world. Contractors are motivated by the "bottom line" and the successful contractors are constantly thinking about "productivity etiquette" in hauling and every other segment of their work. When they are inefficient, their costs are higher than their competitors and they soon go out of business. We must think of our work the same way. ▲



Safety, Aesthetics, and Community Partnerships: Context Sensitive Solutions

By Julie Matlick, WSDOT Highways & Local Programs Community Partnerships Program Manager, and Nancy Boyd, WSDOT Design Program Manager

Washington State Department of Transportation (WSDOT) welcomes the introduction of Context Sensitive Design (CSD) to the Pacific Northwest. WSDOT in conjunction with other transportation organizations, including Oregon Department of Transportation and British Columbia Ministry of Transportation, will be hosting a regional workshop on CSD in Seattle April 30, and May 1, 2002. This workshop is intended to introduce the CSD philosophy and share best practices with transportation and community planners, designers, and operational staff in the region. The event will be held in conjunction with a national symposium in Seattle on the same topic hosted by AASHTO, FHWA, and WSDOT for state DOT and FHWA CEOs. Both events will feature European guest transportation designers who have integrated "self enforcing, self explaining" roadway designs into their transportation systems. These events will discuss transferable applications for the U.S. transportation profession.

Today, the design challenges facing highway professionals are more complex than ever. While safety and mobility will always be critical design criteria, factors such as preserving and enhancing the natural environment as well as improving the livability of our communities are increasingly more demanding.

While safety and mobility will always be critical design criteria, factors such as preserving and enhancing the natural environment as well as improving the livability of our communities are increasingly more demanding.

Context Sensitive Design has emerged to address these challenges. In 1999, U.S. managers and engineers visited Denmark, the Netherlands, the United Kingdom, Germany, and Sweden under the AASHTO-FHWA International Scanning Program. The Scan Team was so impressed with certain European practices that they decided to bring a piece of Europe back. John Okamoto, from WSDOT, was part of this team and has worked to bring this knowledge to the Northwest.

What Does Context Sensitive Design Mean?

Context sensitive design (CSD) is a collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility. CSD is an approach that considers the total context within which a transportation improvement project will exist.

As citizens' expectations for better, safer roads have increased, a growing awareness of communities' needs has also emerged among designers. These two key factors contributed to bringing about this transformation in highway design and construction. Congress, the Federal Highway Administration, governors, State legislatures, and State transportation agencies have all played an integral part in this important evolution of highways. Meanwhile, public interests groups have worked to make developing better methods of highway design a major part of their agendas.

The American Association of State Highway and Transportation Officials (AASHTO) established the National Highway System (NHS) Task Force in December 1988 to look beyond Interstate completion; AASHTO Board of Directors recommended creating a National Highway System.

AASHTO adopted the National Highway System Design Standards policy on April 11, 1994. The relevant portion of that policy is:

- BE IT FURTHER RESOLVED that the Member Departments of AASHTO will work through AASHTO's design standards committees with DOT and with interested parties on design criteria and a design process for NHS routes that integrate safety, environmental, scenic, historic, community and preservation concerns, and on standards which also foster access for bicycles and pedestrian traffic along with other transportation modes.

The NHS Designation Act was enacted in November 1995: Section 109 of Title 23, United States Code. The relevant portion of that policy is:

- A design for new construction, reconstruction, resurfacing...restoration, or rehabilitation of highways on the National Highway System (other than a highway also on the Interstate System) may take into account...[in addition to safety, durability and economy of maintenance]...

  A. The constructed and natural environment of the area;
  B. The environmental, scenic, aesthetic, historic, community, and preservation impacts of the activity; and
  C. Access for other modes of transportation.

The Maryland Department of Transportation, State Highway Administration conducted "Thinking Beyond the Pavement: A National Workshop on Integrating Highway Development with Communities and the Environment While Maintaining Safety and Performance" in May 1998. This workshop was co-sponsored by AASHTO and FHWA with the advice and support of the National Workshop Advisory Committee. Find out more about Maryland's Workshop at *http://www.sha.state.md.us/oce/tbtp.pdf*. (1.6 MB)

Just after the national workshop in Maryland, five pilot states were selected: Connecticut, Kentucky, Maryland, Minnesota, and Utah. The pilot states agreed to implement the CSD approach, based on the Qualities and Characteristics that were developed at the Maryland workshop, and to share their experiences with the States within their region.

FHWA Federal Lands Highway joined the five Pilot States. FHWA's Office of Program Administration (HIPA-01) and Office of Environment and Planning (HEP) published Flexibility in Highway Design (FHWA Pub. No. FHWA-PD-97-062).

The American Society of Civil Engineers held the Role of the Civil Engineer conference in June 1999. Over 140 practicing civil engineers gathered in Reston, VA, to participate. The workshop, sponsored by the Highway Division's Environmental Quality Commitee, offered civil engineers in the community the opportunity to hear from the nation's leaders on context sensitive design and to participate in active and informative small group discussions. AASHTO committees began working on four chapters to serve as a bridging document between AASHTO's "A Policy on Geometric Design of Highways and Streets" (The "Green Book") and FHWA's "Flexibility in Highway Design."

Principles of Context Sensitive Design

Thinking Beyond the Pavement "Qualities and Characteristics"

The following principles were presented at the 1998 workshop, "Thinking Beyond the Pavement: A National Workshop on Integrating Highway Development With Communities and the Environment," held in Maryland.

Qualities of Excellence in Transportation Design

- The project satisfies the purpose and needs as agreed to by a full range of stakeholders. This agreement is forged in the earliest phase of the project and amended as warranted as the project develops.
- The project is a safe facility for both the user and the community.
- The project is in harmony with the community, and it preserves environmental, scenic, aesthetic, historic, and natural resource values of the area, i.e., exhibits context sensitive design.
- The project exceeds the expectations of both designers and stakeholders and achieves a level of excellence in people's minds.
- The project involves efficient and effective use of the resources (time, budget, community) of all involved parties.
- The project is designed and built with minimal disruption to the community.
- The project is seen as having added lasting value to the community.

Characteristics of the Process Contributing to Excellence

- Communication with all stakeholders is open, honest, early, and continuous.
- A multidisciplinary team is established early, with disciplines based on the needs of the specific project, and with the inclusion of the public.
- A full range of stakeholders is involved with transportation officials in the scoping phase. The purposes of the project are clearly defined, and consensus on the scope is forged before proceeding.
- The highway development process is tailored to meet the circumstances. This process should examine multiple alternatives that will result in a consensus of approach methods.
- A commitment to the process from top agency officials and local leaders is secured.
- The public involvement process, which includes informal meetings, is tailored to the project.
- The landscape, the community, and valued resources are understood before engineering design is started.
- A full range of tools for communication about project alternatives is used (e.g., visualization).

A steering committee is currently developing informational materials and a website for the April 30, and May 1, 2002 regional workshop of CSD.

For additional information, contact Julie Matlick at MatlicJ@wsdot.wa.gov *or 360.705.7505.* ▲

The WST2 Center Offers On-Line Registration!

By Dan Sunde,
Director of Technology Transfer,
WST2 Center

The WST2 Center launched our new on-line registration process December 12, 2001 and from all indications, it's a huge success. In the first seven weeks over 50 percent of the registrations we have received were submitted on-line.

Unlike the previous on-line system that used electronic e-mail, the new system allows the student to register directly with the WST2 Center's training database, T-Base. The new system expedites the registration process greatly by eliminating the need to manually re-enter registration information written on the course flyers and faxes. It also provides the student immediate feedback that their registration request has been received by the WST2 Center and within a day, that they are either registered or have been placed on a waiting list for the next class. WST2 On-line Registration offers pop-down menus to reduce the need for typing and to improve data accuracy, and the ability to register multiple students at one time.

The registration process is quick and easy to use. Simply go to the on-line web page at *http://www.wsdot.wa.gov/TA/T2Center/T2hp.htm,* and click on "On-Line Class Registration." Select whether you are registering yourself or you are registering others, fill out the form and submit. You will receive an e-mail confirmation that your request has been received by the WST2 Center and that it is being processed. Once the WST2 Center has verified the data submitted, the data is automatically entered into the database and the system will send an e-mail confirmation of your registration status. If you would like to verify your request after submitting your request, go back to the URL above and click on the report request and follow the instructions.

...the new system allows the student to register directly with the WST2 Center's training database, T-Base...expedites the registration process greatly by eliminating the need to manually re-enter registration information from hard copies...

We strongly encourage registration on-line. It is quicker and far more efficient for both the student and the WST2 Center. The more efficient we are, the more classes we can offer. Give it a try! ▲

Student Job Referral Program for Summer 2002

By Laurel Gray, WST2 Training Coordinator

It's that time again — time to be thinking about the extra help your agency will need this summer. The WST2 Center will be offering a summer job referral service to all local agencies and civil engineering and technical students. We have offered this service for a number of years, and while we don't receive a lot of feedback, those responses we do receive are glowing. Last year over 100 jobs were advertised on our website from 19 agencies all across the state. If you would like to take a look at last year's site, log on to the website below.

We know that many agencies need summer help in areas such as inspection, engineering support, park maintenance, roadway inventory, mapping, GPS surveys, construction staking, roadway maintenance, record keeping, drafting, field surveying, traffic counts and many other areas. Hiring students who are going into the public works field is a logical way to go. The program can benefit both the agency and the student. The agency hires a motivated student familiar with public works who may return from summer to summer until graduation and perhaps even hire on after graduation. At the same time, the student will gain valuable work experience in their chosen field of study. As your agency makes plans to hire summer help, let the WST2 Center know of your job openings and we will advertise them on our website.

Hiring students who are going into the public works field is a logical way to go. The program can benefit both the agency and the student...As your agency makes plans to hire summer help, let the WST2 Center know of your job openings and we will advertise them on our website.

Here's how it works: About mid-March letters will be sent to all public works directors in the state telling them about this program. A form will be included which asks for the types of work, number of positions available and closing date. This form is also available on the website below and can be downloaded, filled out and faxed to us. Then — letters are mailed to career centers of colleges and technical schools around the state with civil engineering and technical programs. They will be asked to notify students of this website and advise them to watch for potential openings in their home areas. Students will make direct contact with the agency.

If you would like to advertise openings in your agency give me a call at (360) 705-7355 or e-mail *GrayL@wsdot.wa.gov*. The current information will remain on the website until the end of March. So check it out, let us know if we can help you this year, and good luck with your recruiting. ▲

http://www.wsdot.wa.gov/ta/t2center/srs.htm

Bits and Pieces of Management Wisdom

By William C. Evans, Local Technical Assistance Program Manager, FHWA

I would like to visit a couple of authors — probably two of the most powerful in the business. Some readers may have never even heard of them — Norman Vincent Peale and Dale Carnagie. Both wrote in the 1930's up to the present — I am going to hit on Mr. Carnagie's "How to Win Friends and Influence People" first.

Let me say up front that I am sure this will sound somewhat "preachy" and I do not mean for it to be — I just found a lot of nuggets of wisdom in them.

There are Three Fundamental Techniques in Handling People:

1. Do not criticize, condemn or complain.
2. Give honest, sincere appreciation.
3. Arouse in the other person an eager want.

There are Six Ways to Make People Like You

1. Become genuinely interested in other people.
2. Smile.
3. Remember that a person's name is to that person the sweetest and most important sound in any language.
4. Be a good listener. Encourage others to talk about themselves.
5. Talk in terms of the other person's interests.
6. Make the other person feel important – and do it sincerely.

There are Many Ways to Be A Leader

1. Begin with praise and honest appreciation.
2. Call attention to people's mistakes indirectly.
3. Talk about your own mistakes before criticizing the other person.
4. Ask questions instead of giving direct orders; let the other person save face.
5. Praise the slightest improvement and praise every improvement. Be "hearty" in your approbation and lavish in your praise.
6. Give the other person a fine reputation to live up to.
7. Use encouragement. Make the fault seem easy to correct.
8. Make the other person happy about doing the thing you suggest.

I have one more set and we will save that for another time. (By the way, this book was written in 1937 and still is applicable today as it was then, I think). Is this enough to digest? But wait!! There is more:

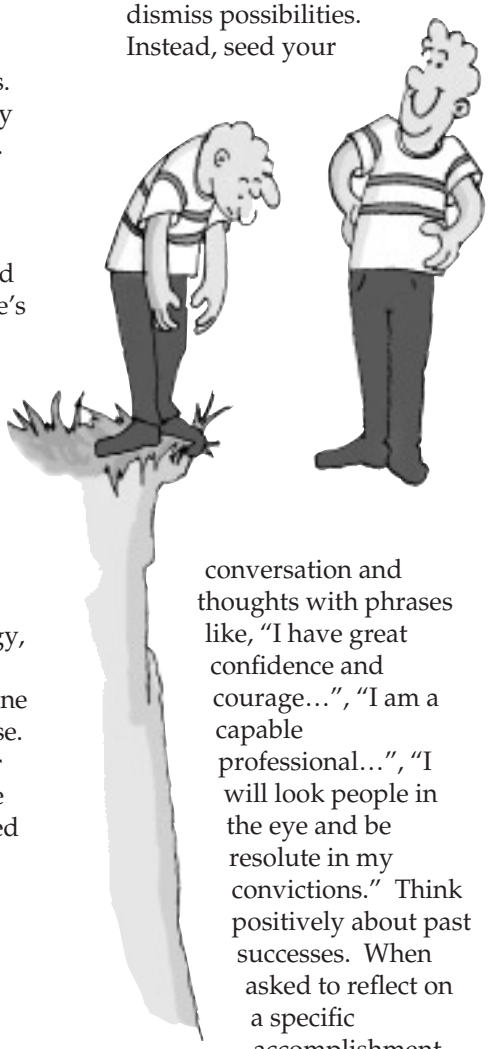
Here is some of Dr. Peale's wisdom (he wrote 47 books up until his death in 1993).

He believed that we are all born positive thinkers and those traits become clouded by the stresses in our lives. Recapturing this innate positive sense can lead to incredible success.

Here are a number of crucial traits for success — and some strategies to make it happen:

- Optimism — expectation of positive outcomes, even in the face of roadblocks or crises. Before starting any project, write down several compelling reasons why you should be optimistic. Too often, people begin a project with great hope pinned to one single factor, such as a head start on their competitor. If that lone advantage falls through, negativity and hopelessness set in.
- Belief — trusting in oneself, others and/or a higher power for support and guidance. Belief drives optimism. Act as if you already posses the traits you lack or want to improve upon. Dr. Peale liked to say, "You achieve what you and others expect you to achieve". There was a person who dreaded public speaking (can you imagine that?!!) It was suggested that he visualize himself as a dynamic, masterful speaker, in demand across the country, before making presentations. He quickly began to feel more confident.

- Focus — attention directed on preset goals and priorities. Concentration on one priority at a time is critical to success. Keep a portion of your desk uncluttered. Use that space to work exclusively on your current task. Keep your mind uncluttered. One of Dr. Peale's favorite imagery techniques: Empty your mind the way you empty your pockets. Close your eyes and imagine reaching into your mind. Pull out each thought unrelated to the task at hand and put it in a drawer.
- Enthusiasm — positive energy, passion or personal motivation. Connect mundane tasks to a meaningful purpose. A CEO saw a hospital janitor enthusiastically mopping the hospital floor. The CEO asked how she found so much joy in her work. She responded, "I am creating a clean, safe environment that helps the nurses and doctors make people healthy!!" Introduce game-playing into unchallenging projects. A CEO of a telemarketing company says that it can be frustrating work for her employees. She placed a bell on each employee's desk — to be hit whenever a sales milestone is met. Her staff enjoys the public acknowledgement of ringing the bell!
- Confidence — being personally assured of one's abilities and potential. Belief is the foundation of confidence. Use confident language. Eliminate negative phrases, such as "I can't", "Impossible", "I am afraid that…". These generalizations predict negative outcomes and dismiss possibilities. Instead, seed your conversation and thoughts with phrases like, "I have great confidence and courage…", "I am a capable professional…", "I will look people in the eye and be resolute in my convictions." Think positively about past successes. When asked to reflect on a specific accomplishment, many people talk about the things that went wrong. Learning from success and how to repeat it is just as vital as learning from failure. Deconstruct the experience. Ask yourself, "What factors led to success in that instance?", "How do I apply them to the next situation?"



Save Money and Save Time... What Could Be Better?

Reprinted from Virginia Transportation Research Council 01-TAR1, August 2001

Bridges are often widened rather than replaced to accommodate increased traffic volumes. Typically, the parapet and deck along the side to be widened are removed to the center of the exterior beam. The concrete is usually removed using 30-pound pneumatic hammers even though the method is slow and labor intensive. Larger pneumatic hammers, hoe rams, and concrete crushers can expedite the removal, but departments of transportation usually don't use them because of concerns that damage will be caused to the concrete left in place.

A VDOT bridge engineer asked that we evaluate the condition of the concrete left in place after the parapet and deck concrete was removed from a bridge using six different methods. The equipment included 30-pound and 90-pound pneumatic hammers, a hoe ram, and a concrete crusher. The bridge was a five-span structure with a noncomposite reinforced deck and steel beams. The deck was constructed in the late 1970s and contained epoxy-coated No. 5 bars in the top mat and uncoated black No. 5 bars in the bottom mat. The hoe ram evaluated was a HY-RAM model 725 with an impact energy of 750 foot-pounds. The crusher was a Universal Processor 50, part number L1020.

Here's What We Did

Seven test sections were designated on the bridge, including one control section. The various pieces of equipment each removed a 10-foot-long section of the parapet and exterior edge of the deck or just the parapet.

After the concrete was removed, various methods were used to evaluate the condition of the concrete left in place. The methods included tests for permeability to chloride ion, compressive strength, and tensile bond pullout strength of the reinforcement as well as a petrographic examination under the microscope.

The News Is Good!

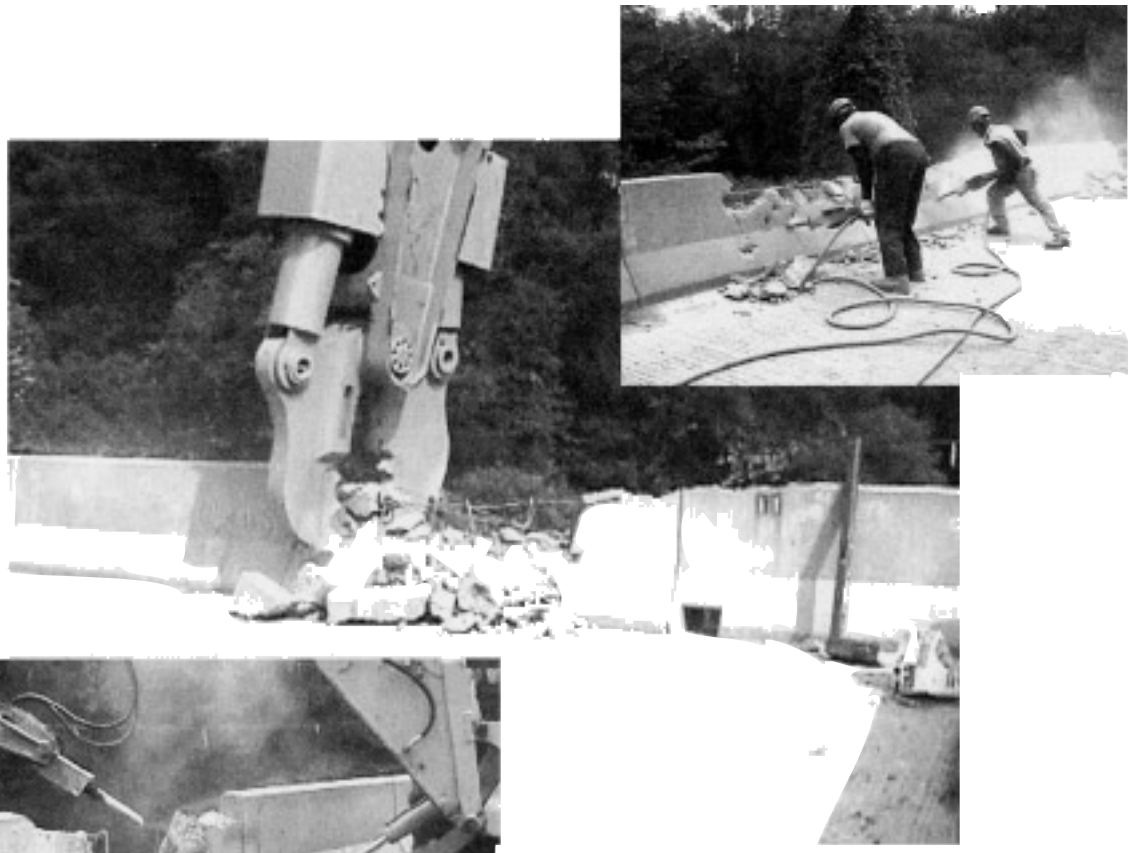
With regard to the removal operation, the use of the hoe ram or crusher provided considerable savings in both time and cost. Compared to the use of the 30-pound hammer, the removal time was 94 percent less and the cost was around 60 percent less. The crusher was more effective than the hoe ram in removing the parapet.

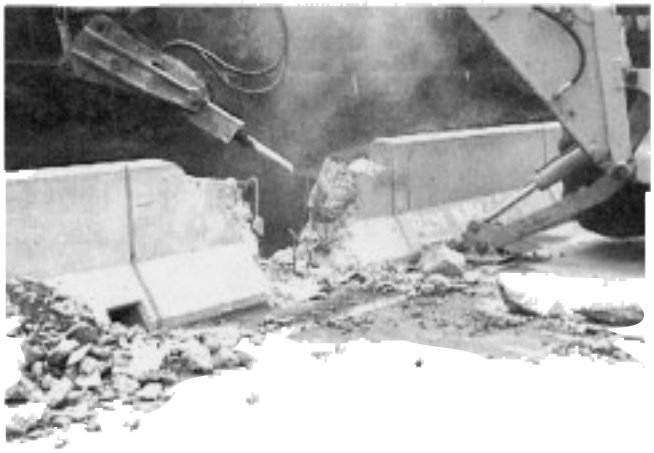
None of the removal methods affected the compressive strength, permeability, or tensile bond pullout strength of the reinforcement.

The petrographic examination of polished slabs showed no brittle factures or cracks related to concrete removal by any method.

Recommendations

- In view of the much higher efficiency and lower cost associated with highly mechanized techniques of concrete removal, alternatives to the 30-pound hammer should be considered in removing desk and parapet concrete on noncomposite, reinforced concrete decks on steel beams.
- Evaluations similar to those done for this study should be conducted for composite, reinforced concrete decks on steel beams and concrete beams. Such evaluations should include the effects of different contractors and equipment that is larger than that used in this study.





(Top) Concrete removed from parapet using 90-pound hammers.
(Middle) Concrete removed using concrete crusher.
(Bottom) Parapet demolished using hoe ram.

About the Researcher

Michael Sprinkel is the VTRC Associate Director responsible for the Materials Group. He specializes in materials and construction methods for protecting, repairing, rehabilitating, and replacing bridge decks and other concrete structures. More than 40 of his papers have been published. Michael is a Fellow of the American Concrete Institute and a member of several TRB committees. He's chairman of ACI Committee 345 and TRB's section on concrete. Michael teaches seminars on concrete repair for the American Concrete Institute and VDOT. He's a registered professional engineer in Virginia.

Want the Whole Story?

If you'd like a copy of the full report, please e-mail the Media Center at *vtrcmedia@vdot.state.va.us* and ask for:

Effect of Concrete Removal Equipment and Methods on the Condition of Deck Concrete Left in Place
VTRC 01-TAR1

The report may also be downloaded from our website at *http://www.vdot.state.va.us/vtrc/main/reports.htm*.

If you have questions about the research topic, call Michael Sprinkel at (434) 293-1941. ▲

Halogen Stop/Slow Paddle Outshines the Rest

Reprinted from University of Wisconsin-Madison, Transportation Information Center — LTAP, Crossroads, Winter 2002

In theory, flashing lights on the Stop/Slow paddle should make work zones safer for flaggers and crews. The extra safety also costs more: $175-$325 compared to $70 for a passive paddle. What are you getting for that extra investment? In the case of most lighted paddles, not enough.

Dave Morena, Safety and Traffic Operations Engineer, Michigan FHWA Division office, field tested five different flashing Stop/Slow paddles for a group of federal, state, and local highway safety people. "The results were dramatic," Morena says. In bright sunlight at 285 feet from the observers, only the paddle with halogen lights was visible.

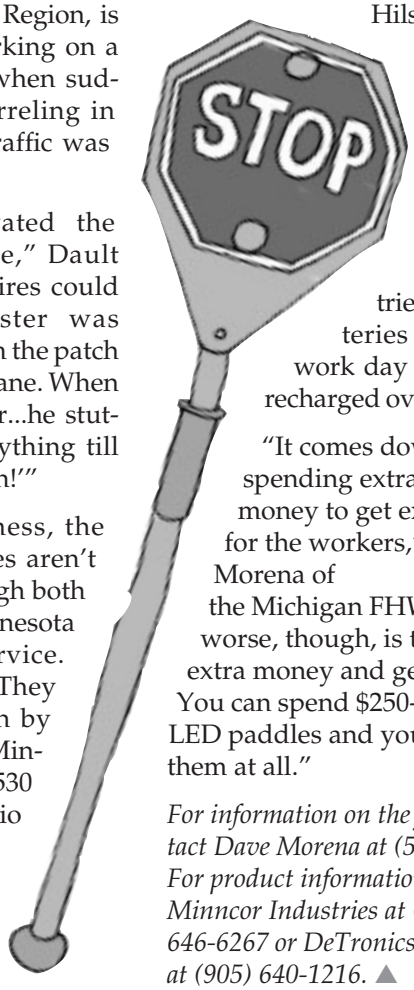
"The group consensus was that the halogen paddle was the only one that would be able to draw a motorist's attention not just at 285 feet, but at the even greater distances required in the field," says Morena. Subsequent tests with two halogen paddles confirmed these findings.

Michigan DOT has supplied halogen Stop/Slow paddles to its road crew for the last six years. After a near miss, John Dault, a Transportation Maintenance Worker in the Superior Region, is very glad. He was working on a winding road section when suddenly a semi came barreling in from the west where traffic was supposed to be stopped.

"I immediately activated the Electronic Sign Paddle," Dault says. "Only skidding tires could be heard. The monster was halted...only 25 feet from the patch crew that occupied the lane. When I approached the driver...he stuttered: 'I never seen anything till the lights started to flash!'"

Despite the effectiveness, the halogen lighted paddles aren't widely used, even though both Michigan DOT and Minnesota DOT have them in service. Cost may be a factor. They are priced at $325 each by Minncor Industries, a Minnesota vendor, and at $530 by DeTronics, an Ontario company.

In Wisconsin, Mashuda Contractors in Princeton started using a set of them in July. "They're really good. I think they should use them in all areas where there is high traffic or low visibility," says Safety Director Deb Hilscher. "They're highly visible and help protect the flagger. Flaggers need all the protection they can get because they're right out in the traffic."



Hilscher says the paddles are also much more reliable than a previous model of lighted paddle they tried. The batteries last a full work day and then are recharged overnight.

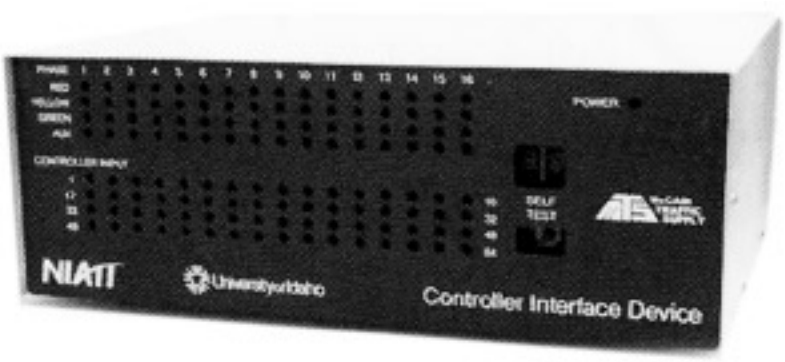
"It comes down to spending extra money to get extra safety for the workers," says Morena of the Michigan FHWA. What's worse, though, is to spend extra money and get nothing. You can spend $250-$325 for the LED paddles and you can't see them at all."

For information on the field test, contact Dave Morena at (517) 702-1836. For product information, contact Minncor Industries at (800) 646-6267 or DeTronics Ltd at (905) 640-1216. ▲

The Controller Interface Device: A Traffic Operations Success Story

Reprinted from Research & Technology Transporter, FHWA-RD-02-017, November-December 2001

Well-coordinated traffic signals can make or break a morning commute. Though perfect signal coordination isn't easy to accomplish, a new product called the Controller Interface Device II (CID II) will help traffic engineers move closer to that ideal. The CID II is the result of a unique collaboration among the Federal Highway Administration (FHWA), the University of Idaho, and private industry.



The Controller Interface Device (CID) allows engineers to test traffic-timing plans in the office rather than in the field.

Traffic engineers use computer software to develop and test signal-timing plans; however, before plans can be implemented in the field, they must be fine-tuned in an actual traffic controller, one operating under actual intersection conditions. Such testing in the field can disrupt traffic and even create unsafe conditions.

In the mid-1990s, FHWA Research Development & Technology (RD&T) collaborated with Darcy Bullock, now of Purdue University, to develop a solution — the CID.

The CID provided a link between FHWA's CORSIM traffic simulation software and an actual traffic controller, so engineers could test timing plans in the office rather than in the field. Though the original CID prototype was very useful, it was hardwired, bulky, and not suitable for mass production.

In 1998, the University of Idaho received a grant through the Department of Transportation's (DOT) University Transportation Centers (UTC) program. The University of Idaho's National Institute for Advanced Transportation Technology (NIATT) approached FHWA RD&T and proposed a partnership that would address Federal priorities under the UTC program. FHWA asked NIATT to re-engineer the CID for production, and the CID II is the result of that partnership.

The university assembled a diverse team of 23 civil, mechanical, computer science, and electrical engineering students for the effort. Within 2 years, working closely with private industry, university, and government advisors, the team had developed a newly engineered device that was ready for manufacture. The CID II and accompanying software have been licensed to McCain Traffic Supply, and McCain expects to have a commercial CID ready for market in January 2002.

The CID project has proven to be not only a highly successful collaboration among government, education, and industry, it has also given the students who worked on the project the benefit of hands-on, real-world engineering experience.

For more information, contact Raj S. Ghaman, P.E., (202) 493-3270, raj.ghaman@fhwa.dot.gov. ▲

Cold In-Place Recycling A Success in the Badlands

Reprinted from Accelerating Infrastructure Innovations FOCUS, October 2001

For the Federal Highway Administration's (FHWA) Central Federal lands office, cold in-place recycling (CIR) of asphalt pavements has proven to be a viable method of rehabilitating roads that both minimizes user delay and is more environmentally sustainable. In June 2001, a group of engineers from the North Dakota Department of Transportation (DOT) and FHWA visited a CIR project in the Badlands National Park in South Dakota to learn more about the methods Central Federal lands uses to select, design, and construct CIR projects. The site visit was designed to help the North Dakota DOT engineers determine if CIR could be a cost-effective method of rehabilitating some of North Dakota's low volume roads.

CIR is performed by milling, screening, and crushing existing asphalt pavement. An asphalt rejuvenator, usually in the form of an emulsion, is then blended with the asphalt and the material is laid back down to form a new pavement structure. A new surface consisting of hot-mix asphalt (HMA) or a seal coat is also usually applied.

The road to be rehabilitated in the Badlands consisted of two 3.6-m (12-ft) lanes with no shoulders and 7.6 cm (3 in) of asphalt pavements with a 25-cm (10-in) aggregate base. As part of the reconstruction, the road was being widened by 1.2 m (4 ft) to provide .6-m (2-ft) shoulders on each side of the roadway. The plan called for 7.6 cm (3 in) of new hot bituminous pavement to be placed on top of the recycled roadway.

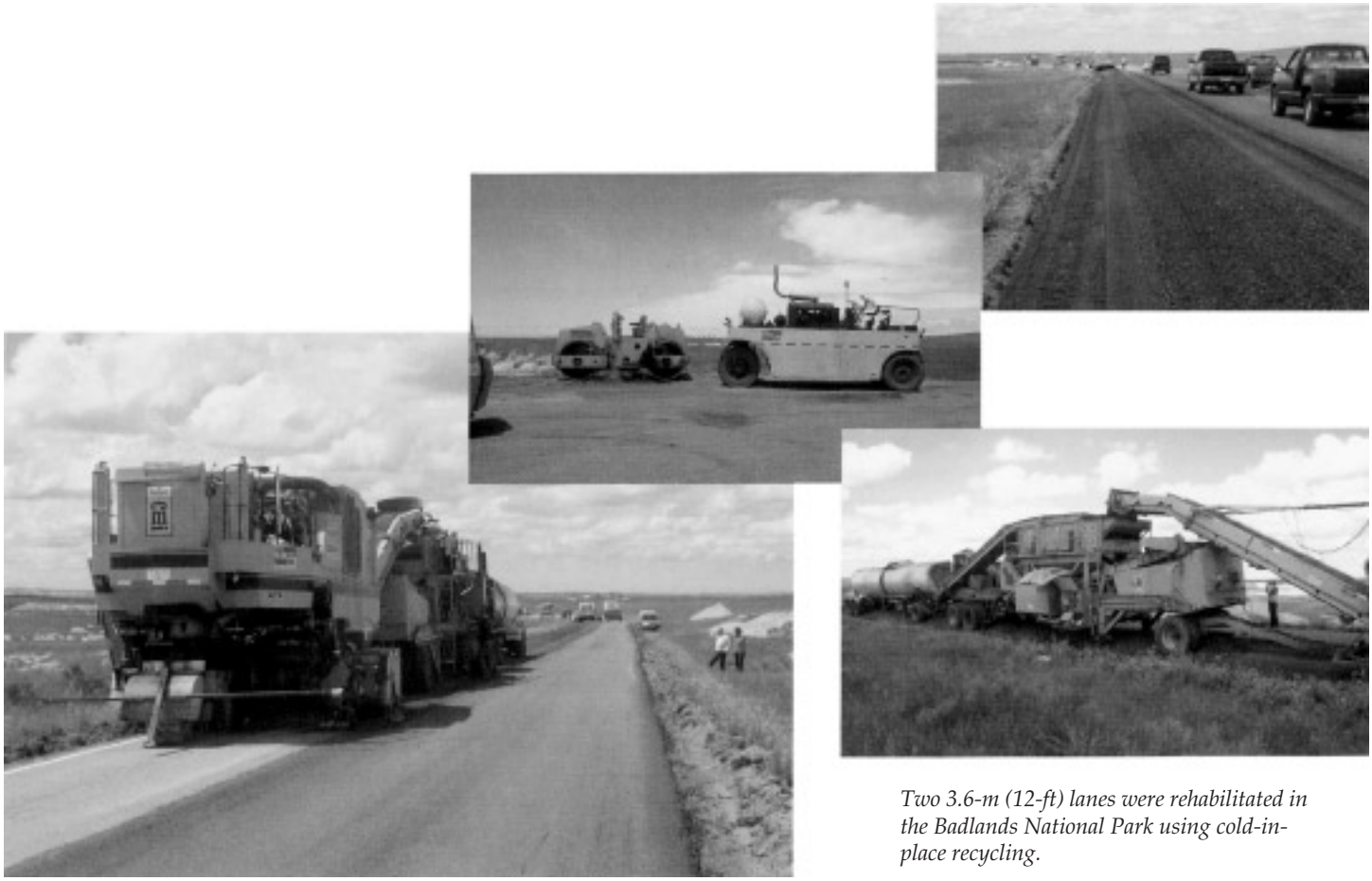
The major advantages of this rehabilitation method are retardation of reflective cracking, reduction in the use of virgin aggregates, and less disruption of traffic due to the quick progression of work.

To determine if CIR is a viable rehabilitation strategy, Central Federal Lands assesses the physical condition of the pavement, traffic volume at the site, and material characteristics of the existing soils, base, and aged HMA. CIR does not improve the underlying soils, so if the pavement is rutting because of problems in the subgrade, CIR is not a viable rehabilitation option. CIR is also usually not performed on projects that are less than 4.8 km (3 mi) in length because of the mobilization costs. And generally, Central Federal Lands does not perform CIR on projects with traffic volumes higher than an annual average daily traffic of 3,000.

On the first day of the project, the contractor began by milling the full 7.6 cm (3 in) of HMA. However, the remaining soil and base structure was unable to support the weight of the equipment, so the contractor decided to perform CIR on 6.35 cm (2.5 in) of the remaining portion of the project to eliminate the problem. After milling, the asphalt was screened and crushed. The material was then mixed with emulsion. For this project, High Float Emulsion HFMS-2s was used as the recycling agent. Field adjustments were then made to the recycling agent to achieve adequate mixture properties.

During the CIR process, the paving machine had to stay far enough behind the recycling train to allow for some of the moisture in the mix to evaporate prior to being laid down by the paving machine. The amount of water in the recycled asphalt pavement is critical to achieving adequate density.

The compaction was performed by a 30-ton pneumatic roller, followed by a double-drum steel wheel roller. Traffic was allowed back on the roadway about 2 hours later.



Two 3.6-m (12-ft) lanes were rehabilitated in the Badlands National Park using cold-in-place recycling.

"I thought the demonstration was very useful," says Ron Tessier of North Dakota DOT. "There were a lot of questions I had about cold in-place recycling and those were answered. I think that we have a project that it could be used on."

"CIR appears to be working well for Central Federal Lands," says Carl Ramos of FHWA. The major advantages of this rehabilitation method are retardation of reflective cracking, reduction in the use of virgin aggregates, and less disruption of traffic due to the quick progression of work. Use of the method can also add years to the expected service life of the pavement and lower life-cycle costs. Local agencies in Iowa and the Iowa DOT, which uses CIR on about a dozen projects a year, have found that it adds 2-4 years of life to the pavement by retarding or eliminating reflective cracking.

..."we have found that the keys to success are appropriate project selection, adequate design, and quality construction by both the contracting agency and the contractor."

After 10 years of experience with the method, says Ramos, "we have found that the keys to success are appropriate project selection, adequate design, and quality construction by both the contracting agency and the contractor."

For more information, contact Carl Ramos at the Central Federal Lands office, 701-250-4345 (e-mail: carl.ramos@fhwa.dot.gov). ▲

Dave Nuttman's Temporary Sign Support for Jersey Barriers

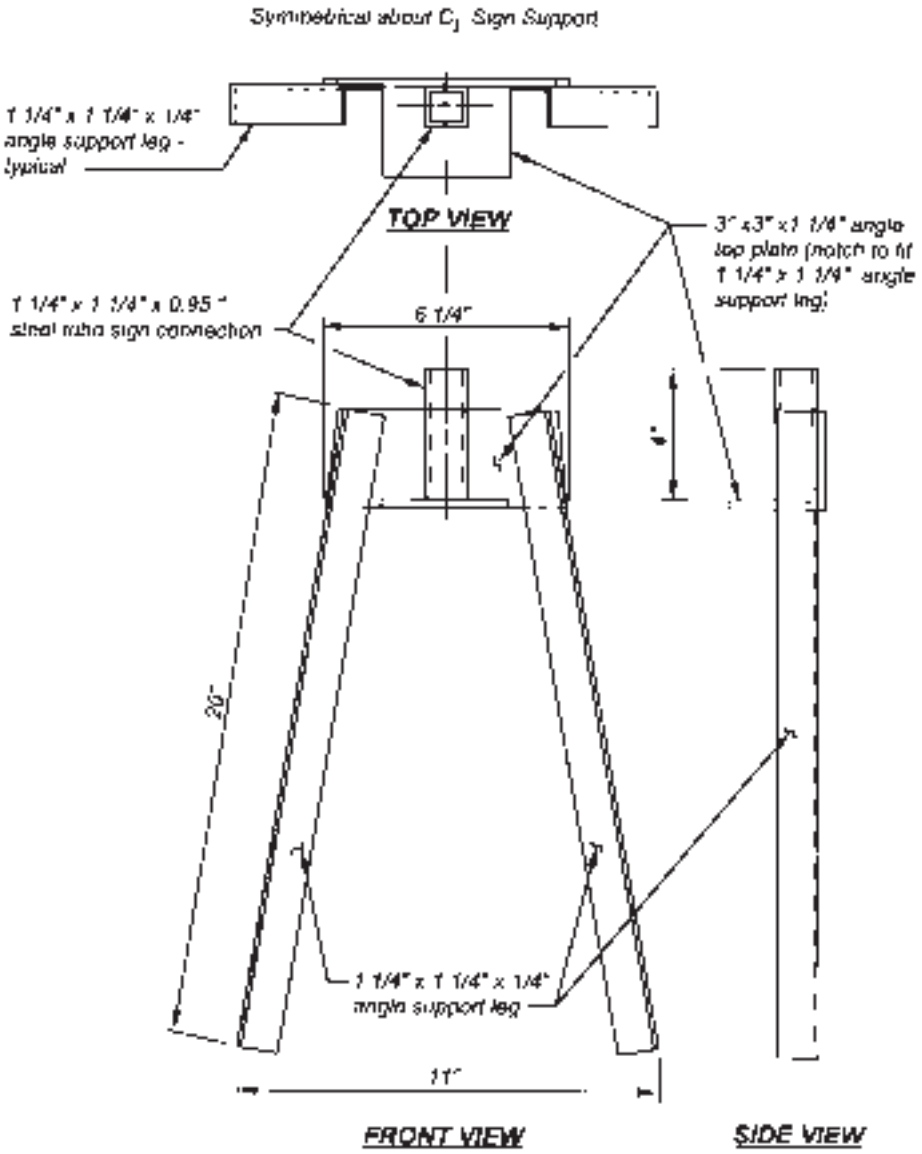
By Dan Sunde, Director, WST2 Center

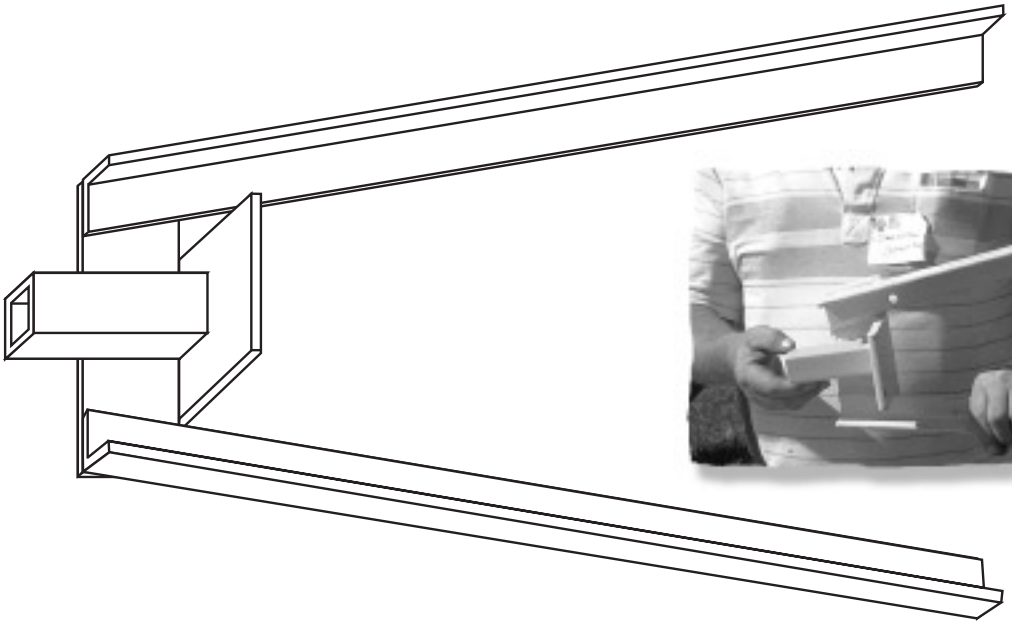
What do you do when you don't have enough room on the shoulder adjacent to a Jersey Barrier to place temporary signing? Dave Nuttman, Bridge Tech II, WSDOT Southwest Region has come up with a handy solution. Dave has developed a portable sign base that slips into the joint between two adjacent barrier sections.

The sign base is compact, sturdy and easy to build. It is constructed of four simple pieces, two support legs (20″ long pieces of 1¼″ x 1¼″ steel angles), a top plate (a 6¼″ section of 3″ x 3″ steel angle) and a sign connection (a 4″ long piece of 1¼″ x 1¼″ steel tube. The 1¼″ x 1¼″ steel angles are welded to the vertical leg of the 3″ x 3″ steel angle top plate at angles parallel to the face of the barrier and with one leg parallel to the face of the joint. The 3″ x 3″ steel angle top plate sits across the top of the Jersey Barrier with one leg of the angle laying flat across the top of the barrier and the other leg vertical. A 4″ long 1¼″ x 1¼″ is welded vertically, centered on the 3″ x 3″ angle and flush to the vertical leg.

Using the support is simple. The legs of the 20″ long pieces of 1¼″ x 1¼″ steel angles are slipped into the joint between two sections of the Jersey Barrier with the bottom of the 3″ x 3″ angle resting on the top of the barrier. A sign is then slipped onto the 4″ long tube.

Dave says the support works "very well." The legs are well anchored into the joint providing the necessary support to resist turning over and are easy to remove when done. The region has fabricated several models to fit barriers of different sizes. ▲


Symmetrical about C_l Sign Support
1 1/4" x 1 1/4" x 1/4" angle support leg - typical
TOP VIEW
3" x 3" x 1 1/4" angle top plate (notch to fit 1 1/4" x 1 1/4" angle support leg)
1 1/4" x 1 1/4" x 0.95" steel tube sign connection
6 1/4"
4"
20"
1 1/4" x 1 1/4" x 1/4" angle support leg
11"
FRONT VIEW
SIDE VIEW



Dan Vest's Buffer Sign Receiver

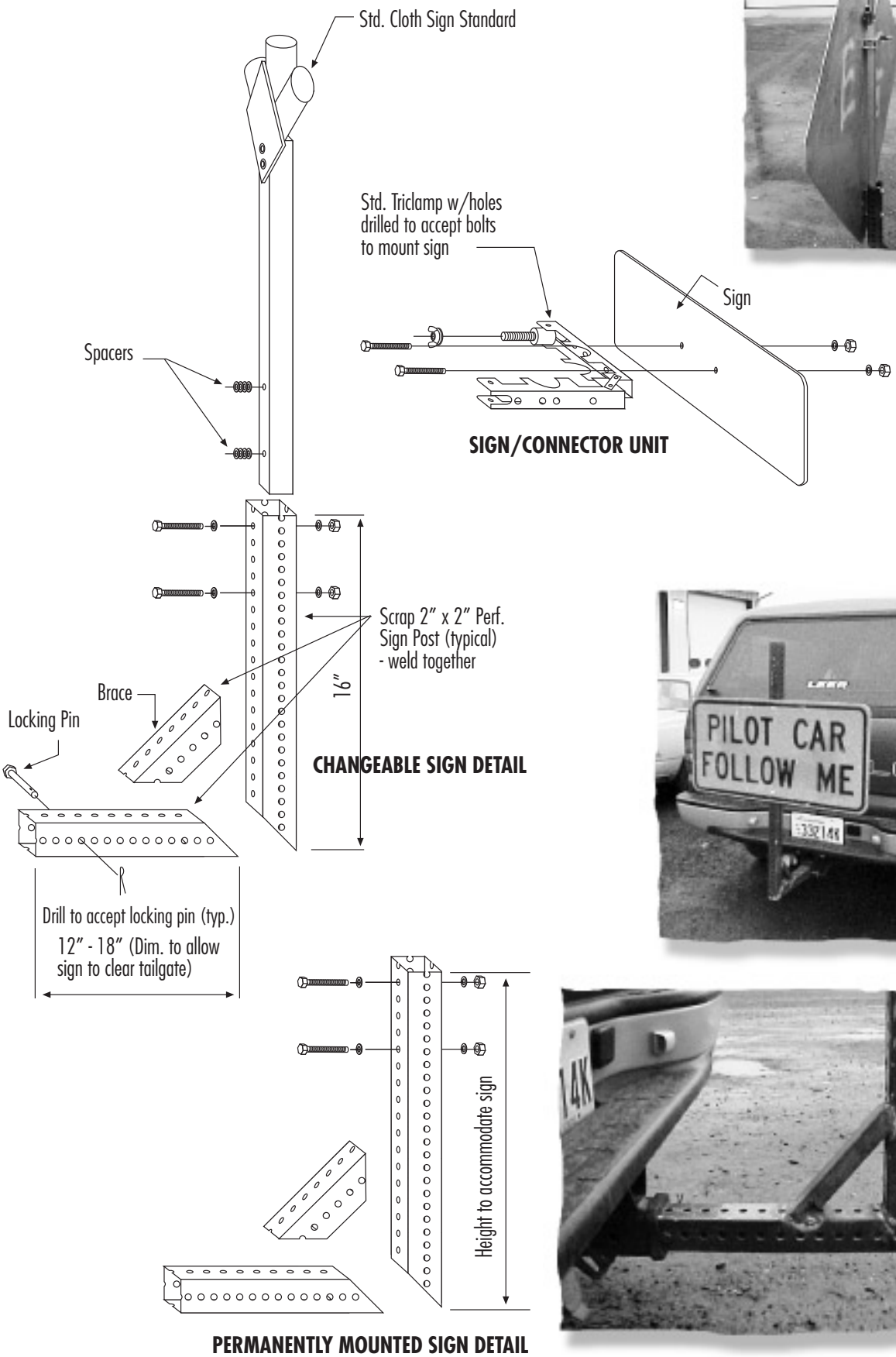
By Wendy Schmidt, WST2 Training Coordinator-Operations and Dan Sunde, Director of Technology Transfer

Dan Vest, Maintenance Technician, WSDOT Elma Maintenance Shop, has developed a quick and easy way to mount traffic control signs to the back of vehicles. About four years ago Dan's shop received a fleet of new pick-ups. Dan noticed that the old method of mounting signs to pilot and buffer vehicles was cumbersome and damaged the vehicles. So he started to look for ways to improve the mounting system. One weekend he noticed a car with a new bicycle rack that mounted to the existing trailer hitch receiver. Dan put two and two together and came up with a sign support system that mounts to a truck's trailer hitch receiver.

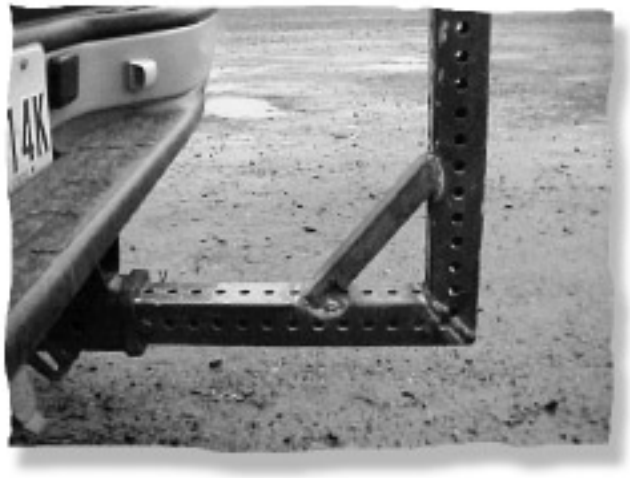
Dan found that a 2″ x 2″ perforated steel signpost fit perfectly into the trailer hitch receiver on their trucks. Since there weren't funds available for new materials Dan went to the scrap heap and scavenged damaged breakaway signpost sections. He welded two 16″ long pieces into an "L" shape. One end of the "L" was inserted into the trailer hitch receiver with the other end vertical. One of the existing holes that aligned with the trailer receiver locking-pin hole was enlarged to 5/8″ diameter to allow a 1/2″ diameter bolt to be inserted to lock the unit into position. Next, Dan collected a 1x1 aluminum sign rod and tri-clamp that came with their cloth signs that the Shop didn't normally use. Dan mounted the 1x1 aluminum rod with two bolts into the vertical section of the "L". A sign was then bolted to the tri-clamp. Using the tri-clamp the sign could be quickly clamped to the aluminum post when needed and unclamped when it needed to be changed. An additional benefit of using the 1x1 aluminum rod was it came standard with a three-flag holder at the top. This allows cautionary flags with wooden dowels to be mounted over the sign for added visibility. After presenting his idea to his supervisor, Tom Gibs, Dan got the nod to make it happen. Greg Schmidt, Maintenance Tech, was put to work immediately fabricating the first half dozen.

Over the past four years, Dan's Sign Receivers have become standard in the Elma Shop with different variations evolving around the original concept. Signs that are used frequently forego the aluminum 1″ x 1″ rod and tri-clamp. Instead they use an extended vertical 2″ x 2″ post with the sign permanently bolted to the post. Height and extension of the 2″ x 2″ post varies depending on the clearance and sign height desired.

Signs are now mounted on trucks quickly and easily without damaging the trucks and they allow better access to the truck bed by allowing the tailgate to be opened. There are currently about a dozen permanent signs receivers in the Elma Shop along with the tri-clamp units. ▲


Std. Cloth Sign Standard
Std. Triclamp w/holes drilled to accept bolts to mount sign
Sign
Spacers
SIGN/CONNECTOR UNIT
Scrap 2" x 2" Perf. Sign Post (typical) - weld together
16"
Brace
Locking Pin
CHANGEABLE SIGN DETAIL
Drill to accept locking pin (typ.)
12" - 18" (Dim. to allow sign to clear tailgate)
Height to accommodate sign
PERMANENTLY MOUNTED SIGN DETAIL

PILOT CAR
FOLLOW ME



"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.

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!

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

Published mousetraps will receive a "Better Mousetrap" baseball cap and certificate.

Published mousetraps will be included in competition for the annual "Crystal Mouse" award.

Eligibility:
Washington State Public Agencies.

Mail To:
"Better Mousetrap"
WST2 Center/WSDOT
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

QuickZone Helps Estimate Work-Zone Traffic Delay

Reprinted from Research & Technology Transporter, FHWA-RD-02-017, November-December 2001

In all but a few high-visibility freeway construction and refurbishment projects, the "soft cost" of traveler delay is typically not considered when key decisions about project staging and duration are made. Transportation professionals need user-friendly computer software tools to assist them with decision making for work-zone design and phasing.

Enter QuickZone. QuickZone is an easy-to-use, easy-to-learn traffic analysis delay estimation tool designed to aid state and local design and construction staff, operations and planning staff, construction contractors and even utility contractors. This Microsoft Excel spreadsheet tool can be used to analyze both urban and inter-urban corridors.

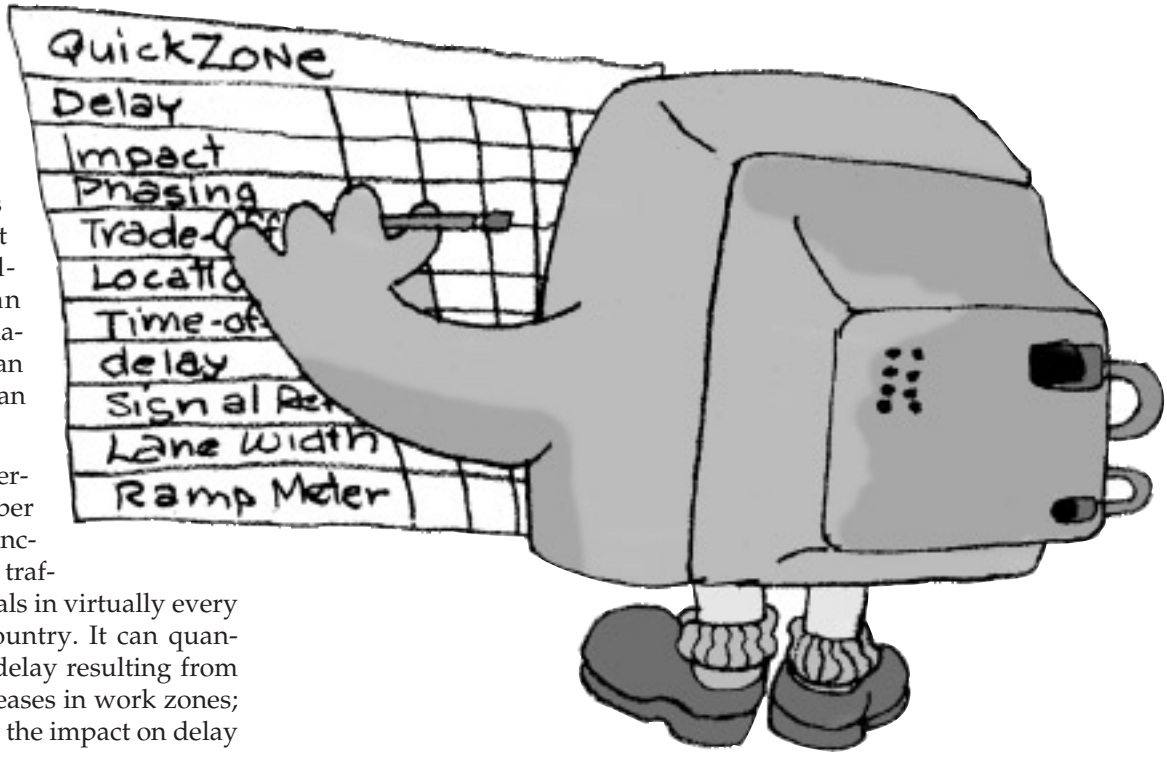
QuickZone performs a number of valuable functions of use to traffic professionals in virtually every part of the country. It can quantify corridor delay resulting from capacity decreases in work zones; it can identify the impact on delay of alternative construction phasing plans; and it supports trade-off analyses between construction costs and delay costs.

QuickZone also considers alternate phasing schedules, such as location, time-of-day, and season. It can assess the impact of delay-mitigation strategies, such as alternate routing, signal retiming, lane widening, and ramp metering. QuickZone even supports calculation of work-completion incentives.

The software is the first of four products that will eventually make up the Federal Highway Administration's (FHWA) Strategic Work Zone Analysis Tools (SWAT) project, which will also include an Expert System software program, a Cost/Alternative Analysis spreadsheet, and a Detailed Simulation model. Check out the active Partnership Program that offers access to the software's source code for customizing the program to meet local needs.

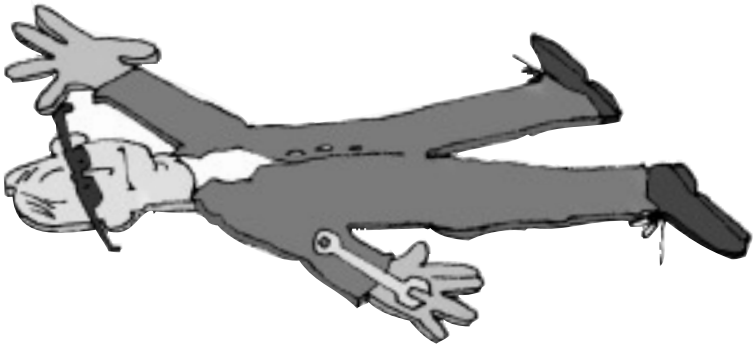
QuickZone 1.0 will soon be available. QuickZone Beta version 0.99 is available as a free download at *http://ops.fhwa.dot.gov/wz/workzone.htm*.

For more information, contact Deborah Curtis, (202) 493-3267, deborah.curtis@fhwa.dot.gov. ▲



Shop Safety: Ten Commandments

Reprinted from Rhode Island Technology Transfer Center Links & Nodes, Fall 2001, Volume 11, Number 2



1. Thou shalt keep thy shop neat and clean with tools in place and oil spills cleaned up lest thou slip and fall, banging they head or slipping thy disk.

2. Thou shalt wear eye protection when welding, chipping, sanding, or grinding; otherwise, thou may become a lifelong companion to a seeing eye dog.

3. Thou shalt block up vehicles being serviced, do not trust jacks and hoists because their failure could crush thee.

4. Thou shalt not use thy legs as a sawhorse for power tools lest thou become a one-legged worker.

5. Thou shalt lay thy butane lighter far aside when welding. It is equivalent to a stick of dynamite and could blow thee to thy eternal reward.

for Shop Mechanics

6. Thou shalt not use thy file as a pry, thy pliers as a wrench, or thy knife as a punch, lest thou skin thy knuckles or cut thy hand and take the name of thy Lord in vain.

7. Thou shalt discard thy broken and badly worn tools because they will lead to disaster and bloodshed.

8. Thou shalt inflate tires in a cage, lest the ring fly off and behead thee.

9. Thou shalt keep fire extinguishers in operating condition and never use gasoline as a cleaning agent, lest thee exit through the roof.

10. Thou shall match thy tool to the job and thou shalt watch out for fellow workers. Be thy brother's keeper in the shop. ▲

Partnering For Quality in Transportation Education

By J.F. McManus, Director, Transportation Professional Development Programs, University of WA

Early in the 1990's, the transportation industry was engulfed with a plethora of changing tools, procedures, and new technology. The nation's transportation organizations were also facing change, as large numbers of experienced professionals were completing their careers and retiring and thereby depleting the wealth of knowledge readily available. In addition, the users also were looking to the industry to deliver the facilities and services and a transportation system necessary in a modern, economically viable society. It became very clear that the providers of training and education needed to work very closely with the transportation leadership to meet the needs of the organizations and their staffs and practitioners. The concept of career-long, continuing professional development emerged as an academic means to support this recognized education and training need. At this same time, initial formulation of the national quality initiative in transportation was born and training and education was recognized as an important element in the equation to achieving organizational excellence. With the emergence of the quality initiative, the principles of quality were soon identified as the foundation upon which to build the career-based training and education programs.

The acronym describes the vision, TRANSportation Partnership for Engineering Education Development.

In Washington State, one example, similar to others occurring in the nation, was the TRANSPEED Program. During the fall of 1992, leaders in the public sectors of transportation representing WSDOT and County and City engineering management along with representatives from the Federal Highway of Administration, met with representatives from the University of Washington to discuss the development of a training and education program in transportation. Applying the then new principles of quality, primarily customer focus, partnering, and benchmarking, TRANSPEED became the product. The acronym describes the vision, TRANSportation Partnership for Engineering Education Development. The program was based on a customer-focused partnership to work hand in hand to deliver training and education. An on-going steering committee was created at the initial meeting in 1992, continues today, and is now an Executive Level Committee with representatives from the federal, state, local, private, and academic sectors of transportation industry in Washington.

TRANSPEED's goals are unchanged through its growth from 1992 through today. These goals are to provide a program of courses, identified by industry, to meet and/or supplement training and education career professional development needs of the transportation-engineering practitioner. In addition, the goals further envisioned providing these courses at reasonable rates to all sectors of practitioners throughout the state. The success of the program is directly attributed to the dedicated partnership embracing a strong customer focus…and maintaining a quality based approach.

The program has grown from an initial offering of approximately 10 subject courses in transportation basics to a current, and still growing program of more than 40 subject courses and offering over 40 workshops a year throughout Washington. New courses and

training needs continue to be identified and brought into the program. New educational technologies as well as expanded directions are beginning to be designed for the future, including offering academic credit, applying on-line, and other distance learning features. Over the nine-year period of its existence, TRANSPEED has offered over 300 workshops to over 7000 participants in Washington State and is now being asked to put on courses in Idaho, California, and elsewhere.

TRANSPEED is definitely a product of the quality initiative here in Washington. The program has also received national recognition as a successful example of partnering in education and as such was asked to present its story to the National Transportation Education Committee meeting at the Transportation Board meeting in January 2000. In closing, it is important to again point to the program's key succeeding principle that is at the very center of its name, Partnering. ▲

Is Your Project "Making A Difference"?

PQT 2002 Call for Nominations

It's time for the 2002 PQT Making A Difference Awards. These awards are given to recognize project and organizational teams that have excelled in improving planning, design, construction, and maintenance of Washington's transportation system. Here's how the award nomination works…

Project Eligibility

To be eligible for an award, the accomplishments nominated must be related to a highway construction or maintenance project, a highway maintenance program or activity, or a highway operation program or activity. The accomplishment cited by the nomination must have been completed during the 2000-2001 two-year time period.

Nomination Process

The PQT Award Panel will select exemplary projects or accomplishments that demonstrate outstanding achievement in the award categories listed below. Nominations for the awards must address the specific criteria of the award category and must be received by April 5, 2002.

Evaluation Criteria

Following are the award categories for the PQT Making A Difference Awards. The PQT Awards Panel will use weighted criteria (totaling 1,000 points for each category) to evaluate the nominations submitted. Each nomination document must provide clear explanation of how the nominated team achieved each of the criteria.

Award Categories

Partnering Award

This team award focuses on what the pro-active and innovative project and organizational teams are doing to improve their performance and products and to share those ideas with their counterparts in Washington's highway industry.

Measurement of quality end result/Customer focus	**275 points**
Originality/ingenuity of innovation	**225 points**
Cooperation involved in innovation (No. of people or entities)	**175 points**
Implementation of innovation by the organization	**175 points**
Cost/time saving	**150 points**

Breaking The Mold Award

This team award seeks to identify those champions of new ideas and publicizes their success so others who apply the same innovative ideas can achieve similar gains.

Measurement of quality end result/Customer focus	**275 points**
Originality/ingenuity of innovation	**225 points**
Cooperation involved in innovation (No. of people or entities)	**175 points**
Implementation of innovation by the organization	**175 points**
Cost/time saving	**150 points**

Risk Taking Award

This team award focuses on teams who are motivated to take intelligent and calculated risks proving there is a better way than the routine processes and procedures to achieve a quality product.

Measurement of quality end result/Customer focus	**275 points**
Magnitude of risk taken	**225 points**
Number of people or entities involved	**175 points**
Short and long range impact on the organization	**175 points**
Cost/time saving	**150 points**

Questions

If you have any questions regarding the award process, contact Kimberly Colburn, PQT Award Coordinator, at *ColburK@wsdot.wa.gov* or at 360.705.7879.

Nomination Package

Each nomination must include the following:

1. The completed nomination form. The nomination form can be found on the PQT web site at *www.wsdot.wa.gov/pqt/02PQTNominationForm.pdf*.
2. A narrative presentation (maximum of 6 (six) single-sided pages using 11 pt. or larger font) that includes:
   - An overview of the nominated project or accomplishment;
   - An explanation of how the team achieved each of the five criteria for the respective award category;
   - An executive summary, and
   - A one-page press release suitable for use after the awards are announced should the nomination win an award.
3. Appendices (maximum of 5 single-sided pages) presenting any additional pertinent information to support the narrative presentation, such as drawings, newspaper articles, test results, etc. No photographs are to be included in the nomination package submitted.

Note: The nomination package is to be in black and white only and preferred to be in clear report covers with "grip-strip" binding. Ring binders, notebooks, and spiral binders will not be accepted.

Nomination Submittal

The nomination package must be received no later than April 5, 2002. Please send your nomination package to:

PQT Making A Difference Award
Highways & Local Programs
WSDOT
PO Box 47390
Olympia, WA 98504-7390 ▲

Training to Partner Construction Projects

By Kristy Turner, WSDOT Construction Office

Team Management of Construction Projects is a new course designed to help construction managers work together to solve difficult issues associated with Contract Administration. This one-day course will include subjects on team-building, effective communication, partnering as a mindset, maintaining an effective and open working relationship, and techniques for collaborative management of construction projects.

The course is intended for:

- Superintendents, Project Managers and Assistants
- WSDOT Project Engineers and Assistants
- Local Agency Contract Officers and Project Managers
- Employees who would like to fill one of the above positions
- Supervisors of the above positions

The course will be presented by Tim Williams, Ph.D., President, Northwest Resolutions; Ron Howard, State Construction Engineer for Administration, WSDOT; and Bill Ott, Construction Manager and Vice President of Mowat Construction Company (Retired).

For course registration and information, visit http://www.agcwa.com/public/education_foundation/wsdot/team.asp *or contact:*

Local Agency Contact:
Larry Schofield, WSDOT Highways & Local Programs, SchofdL@wsdot.wa.gov *or 360.705-7380*

WSDOT Employee Contact:
Kristy Turner, WSDOT Construction Office, TurnerK@wsdot.wa.gov *or 360.705.7820*

Contractor Contact:
Deanna France, AGC of WA Education Foundation, 206.284.4500. ▲

Words from the Chair

I wish to all members of the association a Merry Christmas and a prosperous New Year. Once again the winter season is upon us along with all the fun and frustrations that this time of year brings. The fun part is family, skiing, snowmobling and for those of us who are adventurous, ice fishing. The frustrations come with the snow, rain and ice that takes a toll on the roads we maintain. I know that here in Idaho as in other states snow plowing and removal is in full swing, the frost heaves are starting to appear, and the crews are making a list and checking it twice for the spring repair season.

We are working on the spring conference, which we hope will be informative as well as supportive to the memberships' needs. We are using a slightly different format which I feel will help in bringing the issues that you need to see and hear to help for the coming maintenance year. We will be starting the process of putting together information on the fall conference in January. Your input is always needed and helpful for this process at any time.

I believe we all have a profound respect for fire personnel, police personnel, and the soldiers that risk their lives every day in service of all Americans to eliminate the enemies of freedom in this time of national struggle.

I can't stop here and not express my thoughts on the events of last September. I believe we all have a profound respect for fire personnel, police personnel, and the soldiers that risk their lives every day in service of all Americans to eliminate the enemies of freedom in this time of national struggle. We, as public servants, are in the public eye and perform a job that is necessary even though we don't receive praise or public adulation, and we don't expect it. As Americans, we all have work to do that is important to our communities and nation. I am proud to be associated with this organization and the people that make it work. Thank you for your support and help in making the NWPMA a truly excellent organization.

George Alton, Chair

Asphalt Pavement Construction Workshop

Date: March 20, 2002

Location: Mukogawa Fort Wright Institute

Moderator: Ed Schlect, Project Engineer
Pavement Engineering

Spokane County is hosting an Asphalt Pavement Construction Workshop at Mukogawa Fort Wright Institute on March 20th. Ed Schlect, Project Engineer with Pavement Engineering, will moderate the event. The agenda will include a variety of topics such as pavement distresses and probable causes, longitudinal joint construction, proper crack sealing applications, and asphalt cement concrete construction. This event is for those associated with asphalt cement concrete construction.

For workshop registration and additional information,
please contact Lori Schoonover at (509) 477-7446,
or email *lschoonover@spokanecounty.org*.

FHWA and FTA Launch Program To Help Meet Transportation Challenges

FHWA News 40-01

U.S. Transportation Secretary Norman Y. Mineta today joined the administrators of the U.S. Department of Transportation's Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) in launching the Metropolitan Capacity Building (MCB) program and program Website. The goal of the MCB program is to improve public ability to respond to transportation challenges in metropolitan areas.

"I have time and again seen the power of transportation improve cities and neighborhoods of all backgrounds, and the MCB program will help leverage that power," Secretary Mineta said. "This program is a good example of applying new technology to complex, real-world transportation problems — one of my priorities for the department."

The MCB Website provides a "one-stop" shop for information on a broad array of planning topics. It contains information about the MCB program, a briefing book for metropolitan planning organization board members, case studies, training information, hot links to other relevant sites, and more.

"Metropolitan areas face enormous challenges, such as congestion, air quality, financial constraints, growth issues, and diverse traveler needs," FHWA Administrator Mary Peters said. "The Metropolitan Capacity Building program will help elected officials and transportation professionals meet these challenges and design and operate transportation facilities that meet the needs of the American public."

FTA Administrator Jennifer L. Dorn said, "In the largest metropolitan areas, where traffic congestion is a pressing concern, a multi-modal, balanced approach to addressing transportation issues is essential. A decision-making process that is inclusive, offering communities a voice in planning solutions, will ensure that issues are addressed in ways that are responsive to community needs and concerns. I believe the MCB program will increase awareness, understanding, and informed participation in the transportation planning and decision-making processes, and help keep our communities safe and moving."

The MCB program has several components. It provides transportation agency board members information on the metropolitan transportation planning process. It also provides a means for sharing successful examples of good practice. The FHWA and FTA, in conjunction with the American Association of State Highway and Transportation Officials, the American Public Transit Association, and the Association of Metropolitan Planning Organizations also offer technical assistance, training and education programs.

By consolidating this information in one place, the agency hopes to help state and local transportation officials and their staffs become better prepared to address the transportation issues in metropolitan areas.

The Metropolitan Capacity Building web site on the Internet is *www.mcb.fhwa.dot.gov*.

For more information contact:
FHWA, Lori Irving, 202-366-0660;
FTA, Karen Clarke, 202-366-4043.
▲

Available! Design Resources to Address Older Drivers and Pedestrians

Guidelines and Recommendations To Accommodate Older Drivers and Pedestrians (FHWA-RD-01-051) and Highway Design Handbook for Older Drivers and Pedestrians (FHWA-RD-01-103) are now available. These publications provide practitioners with a condensed source of practical information that links older road user characteristics to roadway design, operations, and traffic engineering recommendations by addressing specific roadway features. These documents supplement existing standards and guidelines in the areas of roadway geometry, operations, and traffic control devices. The information in these publications should be of interest to designers, traffic engineers, and safety specialists involved in the design and operation of roadway facilities. It will also be of interest to researchers concerned with issues of older road user safety and mobility.

To obtain copies of these documents, contact the FHWA Research and Technology Report Center (301) 577-0818, fax: (301) 577-1421, or the National Technical Information Service (703) 487-4650, fax: (703) 321-8547. ▲

USDOT Puts the Brakes on Fatalities

The U.S. Department of Transportation (U.S. DOT) joined a host of other organizations to mark the first annual Put the Brakes on Fatalities Day. A press conference was held on the Capitol steps where a Memorandum of Understanding was signed marking October 10, of each year as Put the Brakes on Fatalities Day. Federal Highway Administrator Mary E. Peters and National Highway Traffic Safety Administrator Jeffery W. Runge, M.D. signed on behalf of the U.S. DOT. Also signing were Dean E. Carlson, President, American Association of State Highway and Transportation Officials; Barbara Harsha, Executive Director, National Association of Governors' Highway Safety Representatives; Larry Emig, National Society of Professional Engineers; William Wilkins, The Road Information Program; Susan Pikrallidas, AAA; and William Fay, Roadway Safety Foundation. The goal of this campaign is to promote public awareness that more than 41,000 people are killed annually on the nation's highway and by focusing on driver behavior, vehicle safety, and roadway improvements, we can greatly reduce the number of fatalities. ▲

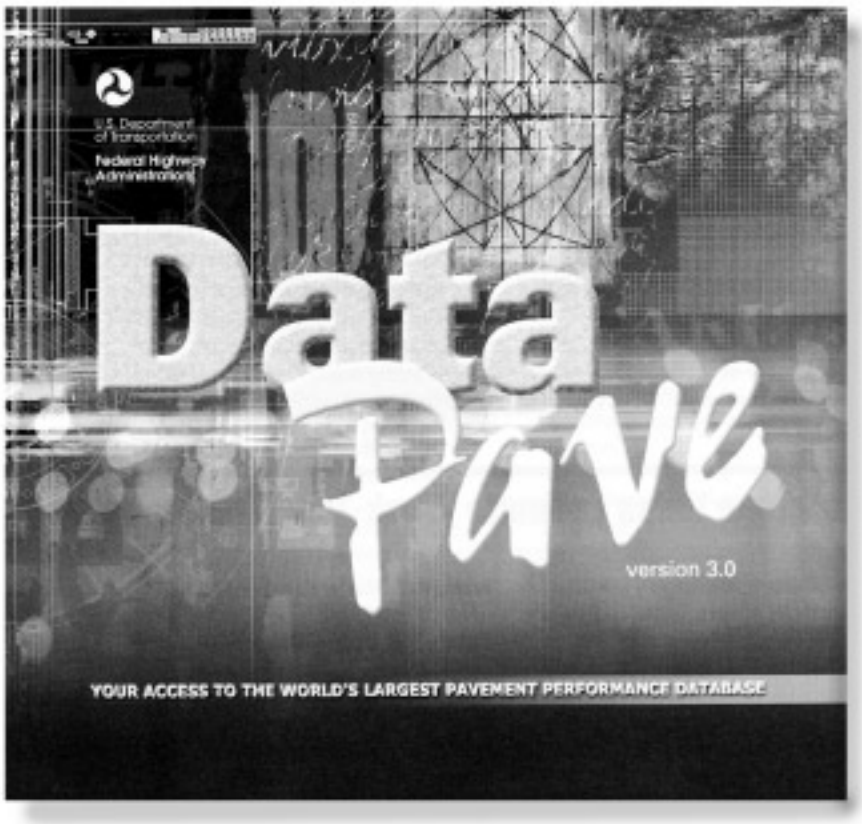
DataPave 3.0 Now Available

Reprinted from Research & Technology Transporter, FHWA-RD-02-017, November-December 2001

DataPave 3.0, a software program that provides quick and easy access to most of the data from the Federal Highway Administration's (FHWA) Long Term Pavement Performance (LTPP) program, is now available.

Why is accessing data from the LTPP program so important? The program, which began in 1987, has collected data from more than 2,500 test sections located at 932 sites on in-service highways throughout the United States and Canada in order to provide inventory, material testing, pavement performance monitoring, climatic, traffic, maintenance, rehabilitation, and seasonal data. These data can be analyzed to aid pavement design, construction, maintenance, and rehabilitation.

The latest version of DataPave provides desktop access to most of the LTPP data collected between 1987 and May 2001. In addition to providing more up-to-date data than the previous products, improvements in the 3.0 version include the enhancement of data selection filters, the addition of notes to the graphs to distinguish raw data from computed data, and the improvement of the program's ability to extract site-specific records.



The power of DataPave lies in the fact that LTPP data are readily available to the entire highway community. Since analysis efforts can be tailored to local or regional sites, highway agencies can develop cost-effective pavement strategies to address their own unique requirements. The research and product development made possible by the LTPP database — and DataPave — will benefit everyone with a stake in the design, construction, maintenance, and rehabilitation of the world's highways.

For more information about DataPave and LTPP, or to obtain your own copy of DataPave, visit the LTPP homepage at www.tfhrc.gov/ltpp.htm *or contact the LTPP Customer Service desk at (865) 481-2967 or via e-mail at* ltppinfo@fhwa.dot.gov.

Barbara Braswell,
(202) 366-8027,
barbara.braswell@fhwa.dot.gov.

▲

Transportation Security

By Jennifer Boteler, WSDOT Librarian

Since the tragic events on September 11, 2001, there has been increased concern over the security of the U.S. transportation system. Most recent issues of transportation magazines contain editorials and special reports on protecting our transportation system.

In addition, on November 19, 2001, President Bush signed the Aviation and Transportation Security Act that establishes a new USDOT law enforcement agency, the Transportation Security Administration. John W. Magaw, former head of the U.S. Secret Service and of the Bureau of Alcohol, Tobacco and Firearms, was recently named as undersecretary of transportation security.

Although media attention has focused on aviation security, i.e. all baggage handlers and screeners be federal employees, the Transportation Security Administration will also be responsible for protecting every mode of transportation (highways, trains, buses, ports, and waterways).

Here are links to information and publications on transportation security and emergency preparedness against terrorist attacks, and to the Aviation & Transportation Security Act.

Transportation System Security
www4.trb.org/homepage.nsf/web/security/ — Comprehensive mega-site sponsored by the Transportation Research Board, Task Force on Critical Infrastructure Protection. Includes links to reports on transportation security published by TRB and the National Academies, articles published in TR News, recommendations for preventive measures, and training opportunities.

Preparing for Possible Terrorist Incidents, Municipal Research Services Center
www.mrsc.org/pubsafe/emergency/EM-Terrorism.htm — Great list of resources geared towards local government; especially valuable are the planning and training links.

Home Front Preparedness, Washington State Emergency Management Division
www.wa.gov/wsem — Under EMD Highlights, click on *Home Front Preparedness*.

State Respond to Terrorism, National Conference of State Legislatures
www.ncsl.org/program/press/2002/t-brief.htm — State and local governments' efforts to combat terrorism are examined in these special briefs covering such topics as emergency prepardness, energy infrastructure, driver's licenses and security, and tourism.

GPO Access, Legislative Information
www.access.gpo.gov/su_docs/legislative.html — For full text of bill, click on *Congressional Bills.* In Search Text box enter "S.1447" (in quotes).

Summit on Homeland Security & Defense
www.dot.gov/affairs/112701sp.htm — Remarks by Secretary of Transportation, Norman Y. Mineta.

Bush Names Magaw for Transportation Security Post, Washington Post
www.washingtonpost.com — In the top left Site Search box, enter "Magaw".

If you'd like help obtaining print copies of online publications, or more background information or legislative history on S.1447, please contact Jennifer Boteler, WSDOT Librarian, at (360) 705-7751 or BoteleJ@wsdot.wa.gov ▲

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By Roger Chappell, WST2 Technology Integration Engineer, WST2 Center

Data Security in the Wake of September 11, 2001

How has September 11th impacted the Imagery, GPS, GIS, and the Geospatial Data world?

Questions are being asked like:

- Who is using the data?
- What is the data being used for?
- How is the data being secured?
- Where is the data being stored?
- How are the copies being controlled?

At first I thought these questions sounded a bit silly and overly paranoid, but it was questions like these that have brought my thoughts back to topics like Data security, Metadata, and what I call project encapsulation.

Data Security: Secure from what?

First of all, you need to ask yourself: what is my data worth and to what degree does it need protecting? One of the most expensive aspects of any database or GIS application is the data they store, manipulate, and display. No matter how remote the end user or application builder is from the data, data doesn't just happen. It is captured, gathered, or produced in some fashion. Whether you are using a satellite to produce images or personnel to collect your data, it will cost somebody something to get the data you need. Then there is the whole issue of "cleaning" and preparing the data for use in your application; the higher the quality and resolution of the data, the higher the cost.

Now that you've determined the true cost of your data, let's look at different aspects of data security. Does the data contain elements that, if left unprotected, could cause damage to those elements in the "real world"? For example, if you are looking at data that contains information about an endangered species, you may not want those who would endanger that species to have copies of this data. Likewise, if you are collecting data about geological deposits or archeological artifacts, you don't want your data to be used by someone who could exploit those resources. This raises issue of data control. You will need to answer questions like:

- What resolution do you distribute the data in?
- Do you "generalize" the data over a larger area so someone can't just walk to a specific location and dig it up?
- Do you need some type of data agreement in place that spells out the restrictions or limitation to which the data can be used?
- What about redistribution of your data by your end users? Can they resell your data or produce a value added product based on your data?

> ***...I have to remind myself of one key ingredient, "balance."***

- Does your data need to be protected from further manipulation by the end users by using "water marking" technology?
- Can all personnel in your organization have free access to your data? If not, do you have polices or network hardware and software in place that provide the appropriate levels of security?
- How do you store your backup and archived copies of the data?
- How susceptible is your data to virus or cyber attacks?

When I look for answers to questions like these, I have to remind myself of one key ingredient, "balance". I have seen many good data applications fail because project managers have either been too global or all-inclusive in their attempts to manage all aspects of the project, or they have rushed into a project without calculating the total life cycle of the project. Every project has its trade offs; the more successful project managers are able to strike a balance.

Even though the projects that I've worked on may have little to do with "Homeland Defense", they do have some type of value or worth and merit some appropriate level of safeguarding or security. If nothing else, I hope the more we are able to look outside "the box" at our data applications and view them over the total life of the project, the more solid our applications will become.

Metadata

In its simplest terms Metadata is data about data. It is the what, who, how, why, and where of your data. The USGS defines metadata as: the content, quality, condition, and other characteristics of data. The reason I want to mention Metadata is because it adds to the protection, worth, and longevity of your data application. I know that there are varying degrees of metadata documentation; however, using metadata in its simplest terms, the more you can "reasonably" document, the better.

So how does metadata protect your data? The more you have documented about the data—how it was gathered, processed, and used—the easier it is to sustain the life of the project. If this is a long-term project, it may need to transition between several "generations" of employees. Also, the more complex the processing of the project, the more likely that these transitions will occur. Having good metadata will ease that transition, and assure continuity in the program.

- What is the data you have collected?
- What is the purpose of this data?
- Where is it located physically, digitally, and geospatially?
- Who are the contact person and the responsible party for maintenance?
- How was the data collected and what procedures or equipment were used (specify equipment makes, models, and modes of operation for the equipment)?
- How accurate is the data and to what resolution?
- If your data is derived from other data sources, how was the source data created and how did you use it?
- Did you create "compound" or "composite" data from various sources?

The answers to these questions will be very important to the end user to evaluate whether your data will be useful to their application. It will also help to safe guard your data from misinterpretation.

So far I have talked mostly about very generic metadata concepts. These concepts can be applied to a variety of functions from taking pictures, writing programs, and creating maps to displaying data and creating databases.

Project Encapsulation

Earlier in this article I alluded to what I call project encapsulation for GIS projects. GIS systems are able to get data from a variety of places across a network or in a directory structure. Once the data is found and linked, it can reside out on its host server or in some other directory structure. This process eliminates multiple copies of the same data being stored by multiple users. Good idea! The process also assures that all users are using the most current data available. The only drawback is saving a copy of the data. If you open your GIS project six months to a year later, hopefully all the data that you linked to is still located where it was when you linked to it originally; if not, you have to find it again. Now that you have found your data, has it been changed? Did portions of it get updated and how does that impact the decisions that were made based on your previous version? Sometimes GIS products are used in planning or decision-making processes that may span several years and many employees. How do you recreate the original project, since it is based on dataset that is really just a "snap shot in time"? The safest way to protect or archive a project is to gather up all the "snap shots" of data, connect them in the GIS software, and burn the whole project to a disk. Then run the software on a totally different machine to make sure it works. This may sound extreme, but some projects may merit this extreme type of treatment. Projects that use GIS products for high level decision-making or planning are good candidates for this treatment. I also keep a project log. This may just be a spreadsheet tracking the status of your projects, and can be as complex as you want to make it. I tend to keep it pretty basic, just something so that you can see at a glance all your projects and some of the vital information on them. For the "make a quick map" type projects, just backing them up on your server may be good enough.

In conclusion, data security is an important issue that merits evaluation. Whether you are protecting the data element itself or the data and data application, some level of security should be considered. I hope that this article has encouraged you to look "outside the box" and view your data project from a variety of vantage points and to choose a "balanced" project management approach. ▲

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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 Pavement Repair Manuals of Practice, SHRP, 1993
- ☐ A Walkable Community is More Than Just Sidewalks, FHWA, 2000
- ☐ Comparison of Three Compactors Used in Pothole Repair, CRREL, 1984
- ☐ Concrete Pavement Repair Manuals of Practice, SHRP, 1993
- ☐ 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., 1998
- ☐ Fish Passage Through Culverts, FHWA, USDA, 1998
- ☐ Fly Ash Facts for Highway Engineers, FHWA July 1986
- ☐ General Field Reference Guide (Pocket Size)
- ☐ 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 Roads – Maintenance and Design Manual, SD LTAP, 2000
- ☐ 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 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
- ☐ Pedestrian Facilities Guidebook, WSDOT, 1997
- ☐ Pothole Primer – A Public Administrator's Guide, CRREL, 1989
- ☐ Rating Unsurfaced Roads, A Field Manual for Measuring Maintenance Problems, CRREL, 1988
- ☐ Recommendations to Reduce Pedestrian Collisions, WSDOT, December 1999

- ☐ Redevelopment for Livable Communities, Rhys Roth, Energy Outreach Center, 1995
- ☐ Sidewalk Details, WSDOT, 2000
- ☐ Soil Bioengineering, USDA, 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
- ☐ Traffic Calming: A Guide to Street Sharing, Michael J. Wallwork, PE, 1993
- ☐ Trail Construction and Maintenance Notebook, USDA-USFS
- ☐ Utility Cuts in Paved Roads, Field Guide, FHWA, 1997
- ☐ W-Beam Guardrail Repair and Maintenance, FHWA
- ☐ Washington Bicycle Map, WSDOT, 2001

Workbooks and Handouts from WST2 Center Workshops:

- ☐ Construction Documentation: Construction Training Manual for Local Agencies, WSDOT, 2002
- ☐ 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
- ☐ 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 (metric), $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: *www.wsdot.wa.gov/TA/Operations/Environmental/Soft.htm*

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.

Download the 2001 FileMaker Pro STIP program at *www.wsdot.wa.gov/TA/STIP/STIP.HTM*.

STIP Too Application (Version 5.4 – July 10, 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 into the STIP (Statewide Transportation Improvement Program).

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

CD ROM:

- Pedestrian/Bicycle Safety Resource Set, FHWA, 2000
- Pedestrian/Bicycle Crash Analysis Tool, FHWA, 1999
- Pavement Preservation: State of the Practice, FHWA, July 2000
- Gravel Roads: Maintenance and Design Manual, SD LTAP, 2000
- Intelligent Transportation Systems Awareness, FHWA, 1999

Manuals Available on the WSDOT Website:

- A Local Agency Guide to Pavement Management/Streetwise Manuals
- The Local Agency Guidelines (LAG) Manual
- The Local Agency Safety Management System Manual

The following computer program may be downloaded from the Internet at: *www.wsdot.wa.gov/fossc/mats/Apps/EPG.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

Important: These programs are updated on a regular basis. Please send your e-mail address to sivanen@wsdot.wa.gov to be included in the mailing list for updates.

The following computer program may be downloaded from the Internet at: *www.wsdot.wa.gov/fossc/mats/pavement/fwd.htm*:

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

Videotapes:

- Walkable Communities: Designing for Pedestrians, Dan Burden, $50/set

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Laurel Gray, WST2
Training Coordinator

Washington State T2 Center

Contact: Wendy Schmidt or Laurel Gray
phone: (360) 705-7386, fax (360) 705-6858
web: www.wsdot.wa.gov/TA/T2Center/train2.htm

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

The class fees shown apply to both public and private sector students.

LAG Training Program

Based on the interest we are now seeing, changes have been made to the LAG training program. We are no longer planning to develop training in some areas due to lack of interest. Listed below are courses that we now expect to offer. If you have questions you may contact Ron Pate at (360) 705-7383 or Laurel Gray at (360) 705-7355.

- **Construction Documentation** — Classes now being conducted. See information on this page for sessions.
- **Consultants** — Curriculum has been developed through the WSDOT Consultant Liaison office. Cost will be $150 per person. Coming soon.
- **Disadvantaged Business Enterprise (DBE)** — Training is in development. Expected to be ready by Fall 2002.
- **EEO/OJT** — Training is in development. Expected to be ready by March 2002.
- **Design Standards from PS&E to Award** — T2 offers many PS&E training sessions every year. See information on this page for scheduled classes. Cost is $75.
- **Emergency Relief Programs** — Training in October/November 2002.
- **Enhancement Program** — About a year away from training, waiting on a new Federal act.
- **Environmental/Introduction** — Classes have been held. More to be developed based on interest.
- **Funding Workshop** — Training is in development.
- **Right of Way Procedures** — Some classes have already been held. More will be scheduled this year based on interest.
- **LAG Manual Overview** — Classes already held. More will be scheduled based on interest.

Continue to add names to wait lists located on-line at *www.wsdot.wa.gov/TA/Operations/LAG/Lagtrain.HTM.*

Construction Documentation

This free training is based on the LAG Manual Chapters 51, 52, and 53. Classes now scheduled for February thru April in all six WSDOT regions. Many of the classes are already full. Call the T2 Office for information on open classes, or newly scheduled classes. For registration in Northwest Region, contact Dave Engle at (206) 440-4733, all others register thru T2 office.

Design and Construction of Concrete Pavements

March 14, University Place, May 7, Moses Lake. **Free**. Instructors: Jim Powell and Jim Tobin of American Concrete Pavement Association. This course covers key considerations related to design, construction, and materials for concrete streets and local roads. Topics covered will include thickness design, joint layout, construction inspection, and materials quality, proportioning, and performance. Special emphasis will be placed on ultra-thin whitetopping.

Advanced Biological Assessment Preparation

March 19, Lacey. **$35**. Course topics include biological assessment content, information analysis, making appropriate effect determinations and common problems found in biological assessments. It will also cover conducting Essential Fish Habitat consultations. Students will come away with an understanding of how to complete the contents of the biological assessment such as how to define the action area, and how to make and document effect determinations. Prerequisite: Introduction to ESA and Biological Assessments, or an understanding of the ESA and some experience writing biological assessments.

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

March 20-21, Wenatchee; April 24-25, Bremerton; September 24-25, Vancouver; October 15-16, Bellevue; November 12-13, Tacoma. **$75**. This 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.

Basics of a Good Gravel Road

April 11, Colfax; April 16, Wenatchee; April 18, Goldendale; April 23, Kelso. **$35**. This is a basic maintenance class. All major problems of unpaved gravel roads will be addressed: washboarding (corrugation), traffic patterns, rutting, surface drainage, dust control, surface material, and roadside obstruction.

Work Zone Traffic Control for Maintenance Operations on Rural Highways (NHI)

April 22, Federal Way; April 24, Kennewick; April 25, Moses Lake. **$150**. This course provides guidance and training for field personnel, such as maintenance crews, survey crews, and utility crews working in the planning, selection, application, and operation of short-term work zones.

Access Management, Location & Design (NHI)

April 29-May 1, Tacoma. **$345**. This course covers access management along streets and highways. General benefits, as well as the social, economic, political and legal implications of access control are examined. Existing access management practices and policies from sample states and jurisdictions are used as examples of what types of programs have been initiated and how effective they have been.

Cultural Resources Workshop

April 30-May 3, The Dalles, OR. **$325**. The goal of this training is to introduce the participant to the value and significance of Washington's irreplaceable cultural resources. There will be presentations by Native Americans on their cultural perspective; speakers on state archaeology, prehistory of Washington, Native American ethnobotany, prehistoric stone artifacts, rare plants, logging in the northwest, federal and state cultural resource regulations and how it applies to your agency. Training takes place twice a year in May and October. This class is nearly full. Now is the time to be thinking about October's class.

Traffic Control Software and Signalization (NHI)

May 8-9, Tacoma. **$280**. Learn skills to evaluate the process by which signal control projects are developed, designed, implemented, maintained, and operated. The course addresses the application of the MUTCD to intersection displays, as well as signal timing, computerized traffic signal systems, control strategies, integrated systems, traffic control simulation and optimization software. The course is divided into three parts: traffic signal design, traffic signal systems, and traffic software.

Pavement Condition Rating Workshop

May 14-15, Ellensburg; June 11-12, Tacoma. **$45**. 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.

Anatomy of a Grant: Grantwriting

May 22-23, Everett; May 28-29, Spokane; July 9-10, Vancouver; October 29-30, Yakima; December 17-18, Seattle. **$150**. 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. The class will discuss writing three types of grants: federal, state, and foundations.

Land Use Areas with Potential for Pedestrian Travel, and New GIS Tools for Identifying Pedestrian Accident Locations

May 7, Spokane; May 9, Olympia; May 20, Seattle; May 22, Vancouver, May 23, Yakima. All sessions will be held at WSDOT Region computer training rooms. **$75**. This is a two-part, one-day training course for MPOs, local agency planning and public works staff, consultants, and WSDOT planners, traffic engineers and design staff. One portion of the class will demonstrate tools to identify areas with medium-density development and mixed land uses for the purpose of targeting future pedestrian improvements. The second part of the course demonstrates the use of GIS as a tool to see high pedestrian accident sites on state routes and related roadways. It will give summary information on accidents, aerial photos, SR view of the location and map of site.

AASHTO Pavement Overlay Design (NHI)

September 24-26, Lacey. **$350**. This is a lecture and discussion class with case studies, and facilitated by hands-on usage of computer software packages. The course focuses on Part III, Chapters 1, 2, 3, and 5 (as revised) of the AASHTO Guide for Design of Pavement Structures.

Snow and Ice Control Chemicals: Theory and Practice

Four to six sessions coming in September/early October. **$35**. If your agency would like to host a session call the T2 Center. Sessions 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.

The Endangered Species Act (ESA) Training Program

The Regional Road Maintenance ESA Program Guidelines is continuing through the approval process. The Regional Program has been published in the Federal Register and is open for comments. Following the comment period process the training material may be updated if necessary. During this timeframe there will be a pilot training class given to work out any problems in the training presentation materials. The pilot class target date is for the week of March 18. Modifications will be incorporated and classes will be scheduled in April if we make our timelines.

The WST2 Center continues to seek funding for full implementation of the eight-course training program. The Center has partnered with the University of Washington's TRANSPEED program to develop an interim plan to conduct a limited number of classes until full funding becomes available. The eight courses have been grouped into four tracks to aid in the efficiency and consistency of the training presentation. Here is a list of the original courses and how this material is now organized and planned to be offered:

Course Plan and Proposed Learning Objectives

- **ESA 100 "Briefing for Decision Makers"** 2 hours. An overview of the Regional Road Maintenance ESA Program and its benefits to participating agencies.
- **ESA 101"Introduction to the Regional Road Maintenance ESA Program"** 4 hours. For all trainees. This class is a prerequisite for ESA 102-107. Includes an overview of the program:
  - Habitat and the Law
  - The 10 Elements of the Regional Program
  - Introduction to the Guidelines
- **ESA 102 "Outcome-based Road Maintenance for Field Crews"** 8 hours. Instruction in using the Guidelines. Applied exercises in using Guidelines to make informed decisions in the field.
- **ESA 103 "Design and BMPs with the Regional ESA Program Guidelines"** 8 hours. Instruction in how to use the Guidelines in multi-disciplinary teams that design, install, monitor, maintain, and remove BMPs. Applied exercises in using the Guidelines for road maintenance design.
- **ESA 104 "Monitoring for the Regional Program"** 4 hours. Detailed instruction in the two types of monitoring required under the Regional Program. Applied exercises in monitoring.
- **ESA 105 "Environmental Roles and Responsibilities"** 4 hours. Detailed instruction in the role of permitting and other environmental issues.
- **ESA 106 "Train the Trainer: Teaching the Regional Program"** 8 hours. Instruction in applying the Regional Road Maintenance ESA Program Guidelines. Includes overview of training materials and adult learning techniques. Coaching and applied exercises.
- **ESA 107 "Train the Trainer: Field Application of BMPs"** 8 hours. Instruction in field training techniques using the Regional Program Guidelines. Morning session includes instruction in tools and techniques for teaching BMPs. Afternoon session covers field practice applying techniques. Includes coaching and peer evaluation.

The Four ESA Training Tracks

During the development of the ESA courses, an implementation plan evolved to form the training into various training tracks. The complete ESA Training Plan has been grouped into four tracks: (1) Briefing for regional level decision makers, (2) a training course addressing office and technical procedures involved in roadway maintenance activities, (3) a training course that addresses the field procedures and practices involved in roadway maintenance activities, and (4) courses that develop agency level trainers who are selected by those agencies desiring in-house training capability.

The purpose of the consolidation is to shorten the time agency personnel would be involved in training and to present the training in an "operational teamwork" environment. The training also is intended to emulate, where appropriate, team approaches most agencies could or do employ on roadway maintenance and operational activities. The ultimate objective is to provide consistent training packages to train agency office and field crews, staff, supervisors, and managers on procedures meeting the requirements of ESA for application to roadway maintenance.

The ESA Training Plan Tracks are as follows:

- **Track 1: (Course 100) Briefing for Regional Decision Makers** 2 hours. Minimal fee. An overview of the ESA program for Regional level management and administration. To be offered at conferences and other public events, and as a continuing part of the T2 training program, on an as-needed basis.
- **Track 2: (Consolidates 101, 103, 104, 105: Introduction, Design and BMP's, Monitoring, and Environmental Roles)** 2 1/2 days. $200 per person. This course is the combination of the various office procedures for technical, professional and scientific staff, supervisors and leads involved in addressing operational maintenance activities to meet ESA requirements. The University of Washington's TRANSPEED program is ready to offer a series of these classes around the state.
- **Track 3: (Consolidates 101, 102: Introduction and Outcome-based Road Maintenance)** 8 hours. Fee not determined. This is the track for field crews and leads. An implementation plan has not been determined yet.
- **Track 4: (Consolidates 106, 107: Train-the Trainer Program)** 2 or 3 days of training. Fee not determined. For agency-selected ESA trainers. This track will be presented by the University of Washington's TRANSPEED program. The University will certify the students who will be instructors. Each participant who seeks certification must have taken Tracks 2 and 3 prior to being enrolled in this training (students do not need to take the 100 course).

University of Washington

Engineering Professional Programs

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

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

Costs for the following 10 classes are for local agency/non-local agency.

Managing Scope, Schedule and Budget
March 12-14, 2002, Lacey. **$645/845**.

Advanced Highway Capacity Analysis for Engineers and Planners
March 13-15, 2002, Olympia. **$360/560**.

Introduction to Retaining Wall Type Selection and Layout
March 19, 2002, Lacey. **$150/275**.

Culvert Repair and Rehabilitation
April 9-10, 2002, Seattle. **$220/400**.

Legal Liability for Transportation Professionals
April 16-17, 2002, Vancouver, WA. **$220/400**.

Traffic Calming: Techniques and Management
April 29-May 1, 2002, Spokane. **$295/495**.

Managing Scope, Schedule and Budget
May 8-10, 2002, Seattle. **$645/845**.

Bridge Foundation Design
May 15-17, 2002, Spokane. **$265/465**.

Fundamentals of Traffic of Engineering
May 29-31, 2002, Seattle. **$295/495**.

Basic Highway Capacity 2000
June 11-13, 2002, Spokane. **$265/465**.

Fleet and Shop Management Classes:
Costs for the following 3 classes:
$349 for one session
$590 for 2 sessions
$735 for 3 sessions

Fleet Facility Maintenance & Design
Thursday, March 28, 8:00 AM - 5:00 PM

Vehicle Fleet Management
Friday, March 29, 8:00 AM - 5:00 PM

Effective Shop Management
Saturday, March 30, 8:00 AM - 5:00 PM

Fees for the following six classes are for early registration/late registration.

Storm and Surface Water Monitoring
March 12 and 13, Seattle. **$465/495**.

Safety, Aesthetics and Community Partnerships: Context-Sensitive Solutions - A Regional Workshop on Context Sensitive Design
April 30-May 1, Seattle. **$100**.

Effective Maintenance Management
May (dates to be announced), Seattle. **$875/975**.

Cold Regions Engineering Short Course
May 2-6, August 1-5, October 31-November 4, Seattle. **$1295/1355**. This course is scheduled three or four times a year and is most often held in Seattle, but occasionally in other locations.

Construction Site Erosion and Pollution Control
May 15 and 16, Seattle. **$465/495**.

Stormwater Treatment by Media Filtration
October 8 and 9, Seattle. **$535/575**.

Associated General Contractors of Washington

Contact: David Hymel
phone: (206) 284-4500
fax: (206) 284-4595
web: www.agcwa.com

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

Costs for the following 10 classes are for local agency/non-local agency.

Construction Site Erosion and Sediment Control Certification
March 27-28, Everett; April 10-11, Kennewick; April 24-25, Shoreline; May 9-10, Tacoma; May 22-23, Seattle. **$250**. This is a WSDOT endorsed class. Classes can be presented for individual agencies. See the above web site for additional information.

Conferences & Meetings

Washington State Chapter APWA Spring Conference

March 26-29, 2002, Skamania Lodge, Stevenson, WA.

For Information: (509) 427-7700, 1-800-221-7117, or
Event Solutions (541) 928-5055

Vehicle Maintenance Management Conference

March 25-28, University of Washington, Seattle. **$320/420**. VMMC brings technicians, mechanics and fleet managers together in an educational setting to improve skills and learn from others.

For Information: (206) 543-5539 or, toll free, 1-866-791-1275.
www.engr.washington.edu/~uw-epp/Vmmc/travel.html

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

April 3-4, University of Washington, Seattle. **$275/310**.

For Information (206) 543-5538 or toll free: 866-791-1275
www.engr.washington.edu/~uw-epp/Wwt/reginfo.html

2002 Pacific Northwest Bridge Maintenance Conference

April 9-10, Doubletree Jantzen Beach Hotel, Portland, OR. $75.

Contact: Kimberly Colburn at WSDOT
Phone: (360) 705-7879 or ColburK@wsdot.wa.gov
Publicity brochure on-line at:
www.wsdot.wa.gov/TA/HOMEPAGE/HLPHP.htm

Northwest Pavement Management Spring Conference

April 8-9, Spokane.

Contact: Howard Hamby at Spokane County
Phone: (509) 477-7458 or hhanby@spokanecounty.org

PNS Snowfighters Conference

June 3-5, Boise, ID.

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

Pacific Northwest Transportation Technology Expo

September 11-12, Grant County Fairgrounds, Moses Lake.

Contact: Dan Sunde
Phone: (360) 705-7390 or sunded@wsdot.wa.gov, or
Clay Wilcox
Phone: (360) 874-3050 or wilcoxc@wsdot.wa.gov

Road and Street Maintenance Supervisor's School

East Side: October 1-3, Spokane. West Side: December 3-5, Tacoma.

Contact: Kelly Newell at Washington State University
Phone: 1-800-942-4978

Washington State Chapter APWA Fall Conference

October 29-November 1, Spokane.

Contact: Katy Allen
Phone: (509) 625-6300

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$10

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Contact Stephanie Williams, WSDOT Engineering Publications, at WilliSr@wsdot.wa.gov or (360) 705-7430.

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South Central Region (Yakima)
Roger Arms (509) 577-1780, *ArmsR@wsdot.wa.gov*

Southwest Region (Vancouver)
www.wsdot.wa.gov/regions/SouthWest/localprograms
Bill Pierce (360) 905-2215, *PierceB@wsdot.wa.gov*

Legal Search

Search RCW's and WAC's
http://search.leg.wa.gov/pub/textsearch/default.asp

Traffic Technology

National Highway Traffic Safety Administration
www.nhtsa.dot.gov

WSDOT Traffic Data Office
www.wsdot.wa.gov/ppsc/TDO/tdo_hp.htm

Washington State Patrol
www.wa.gov/wsp/wsphome.htm

Washington Traffic Safety Commission
www.wa.gov/wtsc

American Traffic Safety Services Association
www.atssa.com

Municipal Research and Services Center of Washington
www.mrsc.org

Transportation Research Board
www.nas.edu/trb/index.html

Training

American Public Works Association
www.apwa.net/education

County Road Administration Board
www.crab.wa.gov/pubs/catalog.pdf

Washington State Technology Transfer Center
www.wsdot.wa.gov/TA/T2Center/TRAIN2.HTM

LAG training site
www.wsdot.wa.gov/TA/Operations/LAG/Lagtrain.HTM

FHWA's Pedestrian Workshop Available Free of Charge
www.ota.fhwa.dot.gov/walk/index.html

Transportation Partnership in Engineering Education Development (TRANSPEED)
http://www.wsdot.wa.gov/ppsc/research/review.htm

Pavement Management

NWPMA – Northwest Pavement Management Association:
www.wsdot.wa.gov/ta/T2Center/Mgt.Systems/PavementTechnology/nwpma.html

Asphalt Institute:
www.asphaltinstitute.org/

National Asphalt Pavement Association:
www.hotmix.org/

Pavenet (A Web Site for Managing Pavements)
www.mincad.com.au/pavenet

SuperPave Information
www.utexas.edu/research/superpave

Infrastructure Management and GIS/GPS

*This site has been established to promote interagency data exchange and resource sharing between local governmental agencies.

www.wsdot.wa.gov/TA/T2Center/Mgt.Systems/InfrastructureTechnology/InfaThp.html

Environmental

Regional Road Maintenance Endangered Species Act Program Guidelines
www.metrokc.gov/roadcon/bmp/pdfguide.htm

National Marine Fisheries Service Species Listings & Info
www.nwr.noaa.gov/1habcon/habweb/listnwr.htm

US Fish & Wildlife Service Species Listings & Info
http://endangered.fws.gov/

National Marine Fisheries Service's Home Page
www.nwr.noaa.gov

U.S. Fish and Wildlife Service's Home Page
www.endangered.fws.gov

Washington State DNR's Natural Heritage Program Home Page
www.wa.gov/dnr/htdocs/fr/nhp/refdesk/fsrefix.htm

FHWA's Environmental Home Page
www.fhwa.dot.gov/environment/genrlenv.htm

Bridge

WSDOT Highways and Local Programs
www.wsdot.wa.gov/TA/Operations/BRIDGE/BRIDGEHP.HTM

Research

WSDOT Research Office
www.wsdot.wa.gov/ppsc/research/other.htm

Looking for a Transportation Research Publication?
www.nas.edu/trb/index.html

Municipal Research and Services Center of Washington
www.mrsc.org/

Other Resources

LTAP (Local Technical Assistance Program) Clearing House
www.ltapt2.org/data.htm

Institute of Transportation Engineers
www.ite.org

FHWA's New Pedestrian Sites, With Great Information Including Design
www.walkinginfo.org
www.bicyclinginfo.org

WSDOT Pedestrian Safety Demonstration Project in Shoreline
www.otak.com/shorelinepedsafety

Washington State Counties
http://access.wa.gov/government/awco.asp

Washington State Cities and Towns
http://access.wa.gov/government/awcity.asp

Governor's Office of Indian Affairs, Washington State Tribal Directory
www.goia.wa.gov/directory/toc.html

Southwest Interagency Coop — Grounds Equipment Maintenance (GEM)
www.gematwork.org

Highways and Local Programs List Serves

Local Agency Guidelines (LAG) Manual
http://lists.wsdot.wa.gov/guest/RemoteListSummary/LAGG

Traffic and Safety Management
http://T2SMS-L@lists.wsdot.wa.gov

Pavement Management
http://T2PAVE-L@lists.wsdot.wa.gov

WSTS Newsletter
http://T2News-L@lists.wsdot.wa.gov

Training
http://T2TRNG-L@lists.wsdot.wa.gov

While on business trip in Washington DC, Mark Sandifer, the Colorado LTAP Manager, grabbed a photo of these no-parking signs in the downtown business district. Mark's comment was, "Just Don't!"

Thanks Mark!

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.

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www.wsdot.wa.gov/TA/T2Center/T2hp.htm

Toll Free Training Number
1-800-973-4496

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