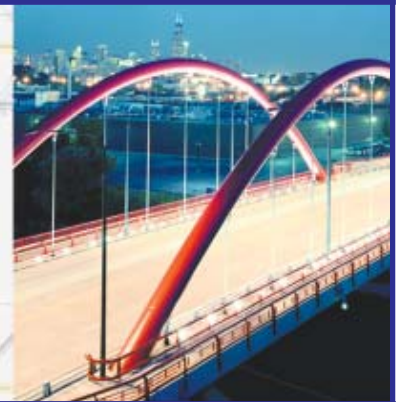




Illinois Interchange



Illinois Technology Transfer Center

Vol. 13 No. 1 Spring 2005

Remote Imaging of Culverts and Down-Holes

by Amit Armstrong, Ph.D., P.E., Technology Deployment Engineer and Bradley J. Roberts, Technology Deployment Systems Coordinator, Western Federal Lands Highway Division, FHWA, Vancouver, WA

WHY?

During a typical highway design and construction process, the need to assess the condition of existing culverts, cross-drains, and under-drains was the primary reason for acquiring the

Rovver® 600 robotic remote imaging tool. This assessment is especially important for the small diameter pipes located under high fills and retaining walls that cannot

be inspected manually. Use of this tool has allowed our highway engineers to make “fact based” decisions in either replacing these pipes or accurately identifying the locations for rehabilitation using trenchless

technologies. The geotechnical engineers have utilized the down-hole capabilities of this tool for verification of newly installed slope stability measuring devices as well as condition assessments of existing installations.

The ability to position the camera into confined, normally inaccessible or unsafe areas allows our construction inspectors to verify structural

reinforcement spacing, placing, and clearances for quality assurance and quality control purposes. The ability to push the camera into openings as small as two inches allows for the

(continued on page 4)



INSIDE:

- ◆ From the Desk of 2
- ◆ Wood Preservative Causing Corrosion of Aluminum Signs 3
- ◆ 2005 APWA North American Snow Conference 5
- ◆ What Is My Role As A Supervisor? 6
- ◆ Check It Out - New Videos/ Publications 8
- ◆ 2005 ARTBA Highway Worker Scholarship Program 9
- ◆ Do's and Don'ts for Supervisors 10
- ◆ 2005-2006 Training Program Survey 11

Please pass this on to other interested parties in your office.



Illinois Department of Transportation
Bureau of Local Roads and Streets



Federal Highway Administration



From the Desk of . . .

Recently, the federal government has issued the following regulations: the

2003 Manual on Uniform Traffic Control Devices, revised the American with Disabilities Act Accessibility Guidelines (ADAAG), proposed new retroreflectivity sign standards, and implemented new or revised regulations on many other transportation topics. Does your agency take an active role in the rulemaking process?

The process of making a federal regulation (often called a "rule") consists of 5 basic steps.

Step 1 - Publication of Proposed Rule. A Notice of Proposed Rule Making (NPRM) is published in the *Federal Register*.

The *Federal Register* is published by the Office of the Federal Register, National Archives and Records Administration (NARA), and is the official daily publication for rules, proposed rules, and notices of Federal agencies and organizations, as well as executive orders and other presidential documents. It is updated daily and published Monday – Friday, except Federal holidays.

The United States Government Printing Office maintains the *Federal Register* electronically at www.gpoaccess.gov. Documents are available in Summary, PDF, ASCII text, or HTML format.

Step 2 - Comment Period. Each NPRM is followed by a period set

aside for public comment. The purpose of the comment period is to provide an opportunity for the public and interested and affected parties to influence the outcome by raising issues and questions that may be addressed before the rule is finalized. In some instances public hearings may also be held during this period.

The *Federal Register's* "List of Code of Federal Regulations (CFR) Sections Affected" web site (www.gpoaccess.gov/lisa/index.html) summarizes CFR titles that are affected in the "**List of CFR Parts Affected Today**", "**Current List of CFR Parts Affected**", and "**Last Month's List of CFR Parts Affected**". These enable highway agencies to quickly review possible changes. Highway agencies are primarily affected by Title 23 – Highways and Title 49 – Transportation; therefore, if these titles are referenced in the above lists, you should review the *Federal Register* to determine the impact on your operations.

Step 3 - Public Inspection of Comments. Comments received are made available for public inspection. This ensures that all interested parties are able to review comments.

Step 4 - Analysis of Comments. Comments are analyzed and summarized, and responses are prepared by the implementation teams responsible for the content. The implementation team is comprised of representatives from industry, government, and other associations that may be impacted by the rule.

Step 5 - Publication of Final Rule. The Final Rule is published in the *Federal Register* and includes a summary of the comments and responses to the comments, including any changes that were made to the proposed rule as a result of the comments.

The comment period is your opportunity to address any impact that the proposed regulation will have on your agency. The implementation team relies on these comments to identify possible problems and issues. Once the final rule is published, the entire rulemaking process must be completed in order to make changes. The Technology Transfer Center recommends you review the *Federal Register* at least once per month.

Kevin Burke
T² Program Manager

Editorial Note:

The Proposed Minimum Requirements for Maintaining Traffic Sign Retroreflectivity which appeared in the Fall/Winter 2004 edition of the *Illinois Interchange Newsletter* omitted the author of the article. The article was written by Kelly Morse, Bureau of Materials and Physical Research, Analytical Chemistry Laboratory Supervisor. We apologize for the omission.

Wood Preservative Causing Corrosion of Aluminum Signs in Wisconsin

by Joe Wilson, WisDOT Technology Advancement Specialist, Wisconsin Department of Transportation

Various aluminum signs from different parts of Wisconsin were experiencing premature and severe corrosion leading to complete failure around the mounting hardware causing some signs to fall off the treated wooden posts that they were attached to. In some cases this occurred only 15 months or less after installation and coincided with a switch in the wood preservative treatment type for the posts from Chromated Copper Arsenate (CCA) to Alkaline Copper Quaternary (ACQ). The photographs below show the typical distresses associated with the ACQ treated posts.

It was learned the new ACQ posts have approximately three times more copper than the old CCA posts and as a result are much more corrosive to metal materials used in conjunction with the treated wood, especially aluminum. Chromated Copper Arsenate (CCA) exists in several formulations or types but contains approximately 65% Chromium, 18% Copper and 16% Arsenate. Alkaline Copper Quaternary (ACQ) on the other hand contains approximately 67% copper,

and 33% didecyldimethylammonium chloride (DDAC). It should be noted that this problem could potentially affect bridge timbers and wood guardrail posts or any other application that uses ACQ treated wood and metal fasteners.

The switch to ACQ posts was made about two years ago to comply (in spirit) with an EPA ban on the use of CCA treated wood products for residential use. Since the highway construction industry is largely exempt from the ruling, WisDOT has since gone back to specifying CCA for the wood preservative on our signposts. It is not necessary to remove the ACQ posts as long as steps are taken to address the issue of the aluminum coming in contact with the posts. To check existing inventories, a tag on the ends of the posts should specify either CCA or ACQ for the wood preservative treatment type. Counties, municipalities and signing contractors should be alerted to the problem and we've been doing that in Wisconsin.

According to Matt Rauch, WisDOT State Signing Engineer, "You

can seal signs that are corroded if the base material is still good, by cleaning with a wire brush and spraying with a clear metal primer for aluminum such as XIM-400 or an equivalent product. Then put 3 1/2" x 3 1/2" square plastic spacers between the sign and the post." He also recommends stainless steel hardware to mount the signs.

The key point is to keep the aluminum from coming in direct contact with the ACQ treated posts. A rubber spray or a rain/ice/weather shield type of barrier could also be used on the backside of the signs so that snow accumulation in the winter does not cause the copper in the treated posts to leach out and come in direct contact with the back of the aluminum signs. If the use of stainless steel hardware proves cost-prohibitive, Craig Wehrle, WisDOT Bridge Metals and Fabrication Engineer, suggests using hot-dipped galvanized mounting hardware with a minimum of five (5) mils of protective coating in lieu of electro-galvanized, mechanically galvanized or cadmium plated hardware.



Remote Imaging of Culverts . . .

(continued from page 1)

inspection of most in-place drainage systems and naturally occurring features. During the design process, the data collected once can be shared many times throughout the project life cycle with all of the primary stakeholders.

THE ROVVER® 600

The Rovver® 600, manufactured by Everest VIT, Inc., is a self-propelled, remotely operated motorized crawler. The versatile and modular component design provides the capability to inspect inside pipes with diameters ranging from 2- to 36-inches. The Rovver can be outfitted with either an axial camera head for down-hole and push pole applications or with a pan and tilt camera head using a fully articulating, manually focused, low-lux lens for larger pipes. Both these lenses will provide digital video and digital still images. The camera heads can operate independently of the Rovver crawler

assembly. Both of these camera heads contain an embedded ring of LEDs around the perimeter of the lens to provide lighting.

THE ROVVER APPLICATIONS

The Rovver was used to assess the condition of all major poured-in-place box culverts installed by the CCC in the 1930s at Alder Camp Road in the Redwood National Park in California. Ryan Tyler, Project Manager, Federal Highway Administration, realized benefits of using the Rovver:

“The ability to actively view the drainage structures on the Alder Camp affords us the ability to make ‘fact based’ decisions, which significantly mitigated the risk of our decisions. Our clients the National Park Service also took part in this effort which added support and buy-in for the hydraulic recommendations at these sites, and strengthened our overall team. Although the use of the Rovver increased PE costs, that amount is minute compared to the potential associated construction costs reflecting unknown conditions of in situ structures (in the case of Alder

Camp Road).”

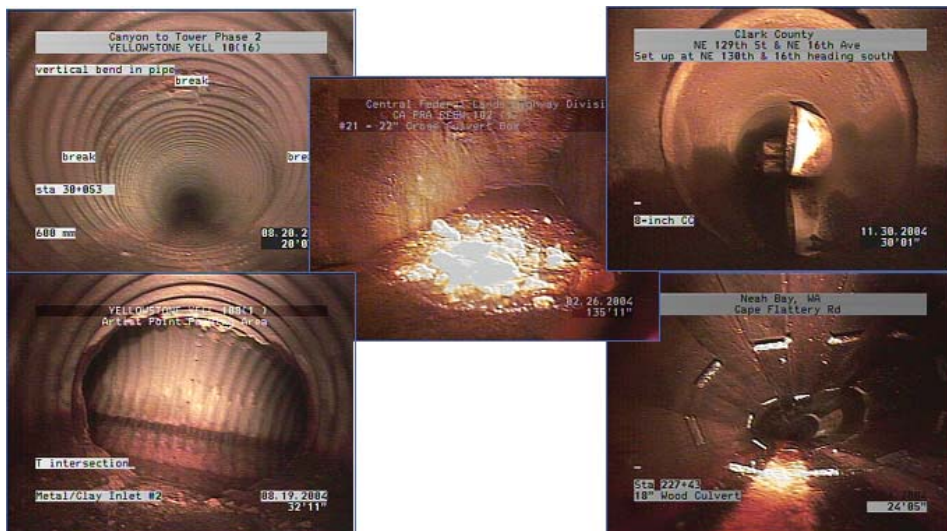
The use of the Rovver tremendously helped the project team in their overall hydraulic analysis and condition assessment of the existing structures in order to accurately determine the appropriate treatment/rehabilitation efforts required. Several box culverts did not require replacement as initially estimated resulting in significant cost savings.

The Rovver was also used to assess the condition of a 24-inch culvert on the Swamp Creek – East Project located near Libby, Montana. The inlet of the pipe was dry while the outlet was producing a steady stream of water. Richard B. Jackson, Geotechnical Engineer, Montana Department of Transportation was aware that the culvert was being fed by collector pipes that ran parallel to the highway; however, the exact location and number of collector pipes, as well as the overall condition of the entire spring collection system was not apparent to Montana DOT engineers. After using the Rovver to collect data, Richard Jackson stated:

“The information provided by the robotic camera will be invaluable in the design of the roadway embankment and culvert. A decision has to be made as to whether we extend the existing culvert or build a new culvert and spring collection system. It is estimated that the information obtained by the robotic camera has a ‘value added’ of up to \$100,000. This ‘value added’ is derived from being able to better design the culvert which will help avoid costly change orders and claims during construction.”

In this particular case, the use of the Rovver provided the Montana DOT design-staff the condition

(continued on page 5)



Remote Imaging of Culverts . . . (continued from page 4)

assessment of the 24-inch culvert and the precise location and number of collector pipes feeding into this culvert.

The Rovver Availability

The Rovver is available for use, free of charge, to any State, County, or City Transportation Department as part of the Technology Deployment Program of Western Federal Lands Highway Division in Vancouver, WA. The Rovver can be requested through your local LTAP/TTAP center or

directly through WFLHD (Amit Armstrong, 360-619-7668).

ROVVER SPECIFICATIONS

- Depth Rating: 1 bar (14.7 psi)– Equivalent to water depth of 10 m (33 ft)
- Temperature Rating: 32°-150° Fahrenheit
- Power Supply: AC Inverter connection to inspection vehicle battery
- Video Format: MiniDV Tapes

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2005 APWA North American Snow Conference

The North American Snow Conference features more than 30 educational and technical sessions and roundtables addressing a variety of topics including snow plowing procedures, new salt applications, anti-icing and de-icing, AVL/GPS/GIS, winter pavement maintenance, fleet responsibilities in a disaster, new technologies, snow removal, winter vehicle maintenance, and more including keynote speakers and the always popular Snow Conference

Talk Show!

The technical tour program includes the option of hands-on training at a Missouri DOT facility or the City of Lee's Summit new public works facility.

In the Snow Conference exhibits you'll gain information on new technology, equipment and services

from more than 100 companies. Snow Conference exhibitors showcase everything you need in snow and ice management and winter operations.

Look for more information at www.apwa.net/meetings/snow/2005, or contact APWA at snow@apwa.net or 800-848-APWA.



Kansas City, Missouri
April 17-20, 2005

What Is My Role As A Supervisor?

The following action steps can help you identify and handle employee job performance problems.

Be Attentive

The sooner a problem is identified, the sooner it can be corrected, especially when dealing with alcohol and other drug abuse. It is important to remain alert to any and all job performance problems such as:

- Rising accident rates
- Increased absenteeism or tardiness
- Decreased productivity
- Deteriorating coworker relationships

Although these problems can arise for many reasons, including a variety of personal problems, they may also be signs of alcohol or other drug abuse. Don't make assumptions about the reason for a problem: your job is to be aware of problems on the job – and to make sure that tasks are completed, deadlines are met, and things are running as smoothly as possible. Staying aware of what is happening in your work environment is the first step to doing an excellent job.

Observe

Suppose you see changes in an employee's work patterns or performance ... watch more closely. For example, you know an employee is making a habit of arriving late, calling in sick a lot, or having mood swings. Has there also been a drop in productivity or an increase in accidents? Remember, it is not your job to figure

out the cause of the problem. Your job is to observe employee behavior and determine the effects of those behaviors on job performance. Changes in behavior may be related to alcohol or other drug abuse; they also may be the result of something else.

Document

Job performance problems and other work-related conduct need to be documented. This means a written record should be kept that explains what you see. It should include the names of persons involved, the time, the date, what occurred, names of witnesses, and what actions were taken. Documentation should focus on job performance and should not include your opinions.

The box below shows how you might use a standard form to document problems with work conduct. A similar form should be used to track job performance and attendance over time. Consistent and objective documentation of

Name: _____	Date: _____
Time: _____	Place: _____
Incident Description: _____	

Actions Taken: _____	

Witnesses: _____	

Supervisor Signature _____	
Employee Signature _____	

performance and conduct is critical when doing employee evaluations.

Address Job Performance Problems

Once you have documented the job performance problem, you should meet with the employee to discuss what you have seen. Make an appointment at a time and place when you think you will be relaxed and able to discuss the problem without distractions. When job performance problems occur, it is especially important to treat the employee with respect. Your job is to address the performance problem and encourage improvement, not to judge the employee.

Be relaxed and maintain a nonjudgmental attitude; this will help keep the lines of communication open, solve the problem, and maintain good management-employee relations.

Many supervisors report that starting a conversation with an employee about a performance problem is often the most difficult step. You may feel unsure about what to say or how to say it. Or you may find yourself wanting to avoid the discussion altogether. The information that follows will help you take the first step.

What To Do if The Conversation Goes Off Track

Employees often become defensive when their supervisor draws attention to a job performance problem. The employee may cry, show anger, or make excuses to take the focus off the real issues – job

(continued on page 7)

What is My Role As a Supervisor?

(continued from page 6)

performance.

When an employee becomes defensive, it is especially helpful to stay focused on job performance and conduct. While it is important to be understanding, it is not your job to counsel the employee about his or her personal problems. The goal of your meeting is to discuss and find solutions to the job performance problem.

Barriers and How to Handle Them

Confronting the employee about a job performance or conduct problem is not easy. No one can tell you how an employee will respond. Sometimes an employee may become upset with you, hoping this will make you back down from the confrontation.

Being aware of potential barriers is the best way to decrease the chance of a negative reaction. The information below provides guidance for how to respond to some of the most common barriers.

Be Consistent

Regardless of your personal relationship with an employee, it is important to treat each person the same when addressing job performance and/or conduct problems. This is not always easy to do. By following your organization's procedures, you avoid playing favorites. This protects you from being accused of discrimination and can help your relationship with the people you supervise.

Maintain Confidentially

All discussions of an employee's job performance problems should be

held in private. No one else should be able to hear the conversations. If employees choose to tell coworkers about their private concerns (e.g., results of a drug test), that is their decision. However, when an employee tells you something in confidence, you are obligated to keep it between the two of you.

Be "up front" with the employee at the beginning of the meeting. If your supervisor requires that you report what will be said, it is important that you inform the employee before you begin the meeting. Respecting employee confidentiality is critical to developing a trusting relationship with the people you supervise.

Follow-up

Taking follow-up action is a key part of your role in your organization's drug-free workplace program. Follow-up means that you continue to observe and document the employee's job performance and conduct. Follow-up ensures that the employee keeps to the agreement and that improvements are made. Before your follow-up meeting(s) with the employee, review the employee's progress and decide what steps to take from there.

If the employee's job performance and/or conduct have improved, no further disciplinary actions need to be taken. However, you should continue to monitor his or her progress until you are sure the performance problem is resolved completely.

If job performance or conduct has not improved as agreed, or if the employee refuses to acknowledge or correct his or her behavior, document these events and tell the employee the actions that you will take next. Inform the employee that help is available.

You may not know if an employee is in treatment for an alcohol or other drug problem. However, if an employee tells you that he or she is seeking help, support the recovery process but do not "enable."

Being in treatment is not an excuse for poor job performance. Your responsibility is to make sure employees do a good job. Protect yourself and the employee's rights by consistently following your organization's disciplinary procedures if an employee's performance or conduct does not improve.

Other Issues - Reintegrating an Employee After Treatment

Returning to work after or during treatment for alcohol and other drug abuse can be stressful. You can help lessen this stress by assuring the employee that you will maintain confidentiality and by carrying on with business as usual.

Employees who return from in-patient treatment or who are enrolled in any type of out-patient treatment program need to know that they will be held accountable for their job performance and conduct. Clear guidelines should be established regarding how the employee's progress will be monitored. For instance, the employee needs to be informed about periodic follow-up reviews, drug testing (if applicable) and in general, how your area will handle his or her return to work (if the employee was away at an in-patient program).

(Reprinted as an excerpt from the Employee Assistance Program Supervisor Training, Bureau of Employee Services, IDOT)

Check It Out - New Videos/Publications

The following new videotapes/publications are now available from the Technology Transfer Center's Video/Publication Library. The videos are available for loan and/or duplication. The publications can be mailed to you free of charge. Check out the complete listing of videos and publications that we have available from our library by accessing our website at <http://www.dot.state.il.us/blr/library.html>.

Publications

L027 Basic Traffic Control For Utility Operations

This guide is provided as a quick reference to utility companies working with temporary traffic control. It is based on the standards and guidelines found in Part 6 of the Manual on Uniform Traffic Control Devices (MUTCD) and the requirements of the Americans with Disabilities Act (ADA).

L028 Accessible Sidewalks and Street Crossings - An Informational Guide

In order to meet the needs of sidewalk users, designers must have a clear understanding of the wide range of abilities that occur within the population. Sidewalks, like roadways, should be designed to serve all users.

L030 2004 Emergency Response Guidebook

The 2004 Emergency Response Guidebook (ERG2004) was developed jointly by Transport Canada (TC), the U.S. Department of Transportation (DOT), the Secretariat of Transport and Communications of Mexico (SCT) and with the collaboration of CIQUIME (Centro de Información Química para Emergencias) of Argentina, for use by fire fighters, police, and other emergency services personnel who may be the first to arrive at the scene of a transportation incident involving dangerous goods.

P036 Detectable Warnings: Synthesis of U.S. and International Practice

This publication summarizes the state-of-the-art regarding the design, installation, and effectiveness of detectable warning surfaces used in the U.S. and abroad.

P037 Working with Positive Protection

This brochure is intended to inform workers of the nature of positive protection in highway work zones, to note the limitations of positive protection, and to let workers know what they can do to maximize safety when working in areas separated from traffic by positive protection.

P038 Selecting a Preventive Maintenance Treatment for Flexible Pavements

This report specifically addresses flexible pavement preventive maintenance, including the types of pavements that are candidates for preventive maintenance, the available treatments, where and when they should be used, their cost effectiveness, the factors to be considered in selecting the appropriate treatment strategy, and a methodology to determine the most effective treatment for a particular pavement.

P039 Accessible Public Rights-of-Way Design Guide

This design guide was developed by the U.S. Architectural and Transportation Barriers Compliance Board (the Access Board) in collaboration with the U.S. Department of Transportation (DOT)/Federal Highway Administration (FHWA) to assist public works and transportation agencies covered by title II of the Americans with Disabilities Act (ADA) in designing and constructing public sidewalks and street crossings.

P040 Handbook of Simplified Practice for Traffic Studies

This handbook describes simplified traffic study procedures that are easy to apply and are written for all potential users (civil engineers and traffic engineers, public works managers, city managers and attorneys, and the general public).

P041 Asphalt Seal Coats

This publication explains the different types of seal coats and provides an overview of construction methods.

VIDEOS**V071 Illinois Adopt-a-Highway**

Tells about the Illinois Adopt-a-Highway program and also gives details on what it takes to adopt a highway like clean-up and maintenance.

V072 Meth Lab Waste Recognition for Adopt-a-Highway Volunteers

This video educates Adopt-a-Highway volunteers with the dangers of meth lab waste products that may be encountered during clean up.

V073 Storm Water Management Systems

This video is a brief overview of waste water management; of causes of water pollution; and of ways to avoid water pollution. Also, it describes EPA regulations; NPDES requirements; and program to evaluate and control water pollution.

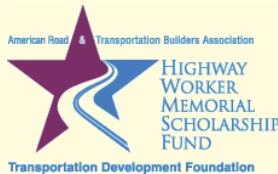
V183 Recommended Use of Recycled Asphalt Pavement in the Superpave Mix Design Method

This video outlines RAP usage in superpave mixes. The recommendations are based on NCHRP studies conducted by the North Central Superpave Center.

V184 Meth Labs: California's Hidden Danger

This video was prepared to introduce individuals to the dangers of Meth Labs by making them aware of what to look for and how they could possibly be harmed by the gases and residue of left over chemicals used in processing methamphetamines. This video also explains how Meth Labs in the local area can be discovered by the ability to identify the waste being dumped. Methamphetamine labs have been found in parks, cars, hotels, and even in picnic baskets. This video will assist emergency personnel in identifying potential dangers when responding to emergency calls.

2005 ARTBA Highway Worker Memorial Scholarship Program



The American Road & Transportation Builders Association-Transportation Development Foundation (ARTBA-TDF) Highway Worker Memorial Scholarship Program provides financial assistance to help the sons, daughters or legally adopted children of highway workers killed or permanently disabled in the line of duty pursue post-high school education. For more information visit the ARTBA website at http://www.artba.org/foundation/hwy_worker_scholarship.htm or by phone at 202/289-4434.

Do's and Don'ts For Supervisors

DO:

- Prepare what you are going to say ahead of time. Have a plan and stick with it. Say what you have to say directly and clearly.
- Find a place to meet that is private. What is said in the meeting must be kept confidential.
- Focus on job performance and conduct – not on suspected alcohol or other drug abuse, mental illness, or any other potential reason for performance problems.
- Present written documentation (must be in compliance with any applicable bargaining unit agreements) of the job performance and/or conduct problems (late reports, absences, lower productivity, accidents, trouble with coworkers).
- Treat all employees the same. Don't let age, seniority, friendship, or sympathy affect your evaluation or allow you to make exceptions for some employees and not others.
- Use a formal yet considerate attitude. If the interview becomes too casual, it will lessen the impact of your message.
- State your expectations for improved performance and/or conduct and what will happen if the expectations are not met within a specific period of time. Offer suggestions for improving performance and/or conduct.
- Arrange for a second meeting to evaluate progress or to discuss disciplinary actions, if necessary.



DON'T:

- Try to diagnose the cause of the employee's job performance or conduct problem.
- Be distracted by tears, anger, or other outbursts. (Stay focused on job performance and conduct).
- Moralize or judge the employee.
- Cover up for the employees or accept repeated unlikely excuses.
- Back down. (Get a commitment for improved job performance and conduct.)
- Threaten discipline unless you are willing and able to carry it out.
- Argue with an employee. If the employee becomes resistant, reschedule the meeting instead.



We Need Your Help . . . It's Time to Plan the 2005-2006 Training Program

The Bureau of Local Roads and Streets' Technology Transfer Center is soliciting **local agency** interest in classes for the October 2005 to April 2006 training program. Please look over the list and indicate those classes of interest to you or your personnel by filling in the blank with an approximate number of attendees your agency would send if the classes were available in your area. This solicitation will be used by the Center in scheduling the 2005-2006 training program. Every effort will be made to locate specific classes in areas showing the most interest. Classes lacking in interest will be dropped from this year's schedule.

Please complete this class interest survey and mail or fax it to the Center at (217) 785-7296 by **April 29, 2005**. If you have questions regarding class content, please call the Center at (217) 785-2350.

	Approximate Number		Approximate Number
Backhoe Safety (1/2 day)	_____	MFT Accounting and Auditing (1 day)	_____
Bridge Construction Inspection (2 days)	_____	OSHA 10-Hour General Industry (1½ days)	_____
Bridge Inventory Documentation (1 day)	_____	Pavement Construction Inspection (3 days)	_____
Bridge Piling (1 day)	_____	Pavement Maintenance (1 day)	_____
Bridge Repair (1 day)	_____	Rehab of Streets & Highways Seminar (1 day)	_____
Bridge Safety Inspection (1 day)	_____	Response Handbook for Incidents, Disasters (½ day)	_____
Colors (prerequisite before taking classes below)	_____	Seal Coats (1 day)	_____
• Managing People Effectively	_____	Small Drainage Structure Const. Insp. (2 days)	_____
• Team Building	_____	Snow & Ice Control (½ day)	_____
• Cultural Diversity	_____	Street Sweeping (1 day)	_____
• Conflict Resolution	_____	Structure Info & Management Systems (SIMS) (1day)	_____
Confined Space Awareness (2 hours)	_____	Surveying I-Beginning (3 days)	_____
Const. Materials Insp. Documentation (1day)	_____	Surveying II-Intermediate (4 days)	_____
Culvert Hydraulics (1/2 day)	_____	Surveying III-Construction Staking (3 days)	_____
Documentation (3 days)	_____	Surveying IV-Map GPS & St. Pl. Coord. (2 days)	_____
Erosion Control (1 day)	_____	Team Building (1 day)	_____
Flagger Training (1/2 day)	_____	Traffic Signal Maintenance (1 day)	_____
Hazardous Material - First Responder (1 day)	_____	Trenching & Shoring Safety (2 hours)	_____
HEC-RAS (3 days)	_____	Work Zone Safety (1 day)	_____
Highway Jurisdiction/Transfers (1 day)	_____	Understanding Specifications (1 day)	_____
Highway Signing (1 day)	_____	Urban Storm Mitigation/Tree Damage (1 day)	_____
Highway Engineering Principles (1 day)	_____	Additional Classes _____	_____
Low Cost Safety Improvement Workshop (1 day)	_____		_____

Contact Person _____

Agency _____

Phone Number _____

Zip Code _____

cut here

The Technology Transfer (T²) Program is a nationwide effort financed jointly by the Federal Highway Administration and individual state departments of transportation. Its purpose is to transfer the latest state-of-the-art technology in the areas of roads and bridges by translating the technology into terms understood by local and state highway or transportation personnel.

The Illinois Interchange is published quarterly by the Illinois Technology Transfer Center at the Illinois Department of Transportation. Any opinions, findings, conclusions, or recommendations presented in this newsletter are those of the authors and do not necessarily reflect views of the Illinois Department of Transportation, or the Federal Highway Administration. Any product mentioned in the Illinois Interchange is for informational purposes only and should not be considered a product endorsement.

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Permit No. 880

ADDRESS SERVICE REQUESTED

Illinois Department of Transportation
2300 South Dirksen Parkway
Springfield, Illinois 62764

