

# TECHNOLOGY eXchange

## POTHOLES - IS THERE A SOLUTION?

Of the many problems handled by city and parish maintenance crews, one of the most frustrating is the pothole. Quite often it seems that some potholes are immortal. Repair them today, and they will need to be repaired again tomorrow. Does this have to be the case? Is there a solution?

The answer lies in the nature of the pothole. If the surface has, for some reason, delaminated and a piece of asphalt has come loose, the solution is relatively simple. A little cold mix placed in the hole and compacted may well do the job. Of course, any adjoining loose material has to be removed, and the edges of the hole should be squared off before the cold mix is applied, but the solution is usually quick, easy, and satisfactory.

Most of the time, however, a persistent pothole is a sign of a much deeper problem. The failure may not simply be on the surface but

CONT. ON PAGE 2



TYPICAL POTHOLE



DELAMINATION



POTHOLE DUE TO BASE FAILURE



## TRB TRANSPORTATION SECURITY WEB PAGE FORMED TO ASSIST IN NATION'S RESPONSE

The Transportation Research Board has established a new web page on transportation security (<http://www4.nas.edu/trb/home-page.nsf/web/security>).

In light of the tragic events of September 11, 2001, enhancing the

security of our transportation system is expected to be one of the highest priorities of transportation agencies. TRB and the National Research Council have generated extensive information on this issue in recent years. This website brings together much of this information. Also included are links to other related

websites that contain discussions of issues, actions which can be taken, guidance and training opportunities. This website, which is being sponsored by the TRB Task Force on Critical Infrastructure Protection (A5T56), will continue to be expanded as more information comes to their attention.

If you have comments or recommendations on other items that should be included in this website, please contact Joedy Cambridge ([jcambrid@nas.edu](mailto:jcambrid@nas.edu)) at TRB. To login: <http://gulliver.trb.org/webboard>.

## POTHOLES, CONT. FROM PAGE 1

in the base or displacement of the subgrade, the soil below the road base. In many parts of Louisiana, the water table is very high and may saturate the soil under the road, causing the road to collapse into the soft mud or subgrade. In this case, most of the time, a surface repair will have little lasting effect. The most reliable solution is to get the water out from under the road and replace the weak soil with more stable material.

As we know, proper drainage is critical to the life of any road, paved or not. So the first thing to do is to inspect the drainage ditches, culverts and catch basins for obstructions, silting and any other problem that could keep the soil under the road saturated. If any drainage problems are found, solving them may solve the recurring pothole problem.

Once the drainage has been corrected, the repair of the pothole can begin. In addition to proper traffic control, which should be a part of all maintenance and construction operations, there are eight steps to the proper repair of a major pothole:

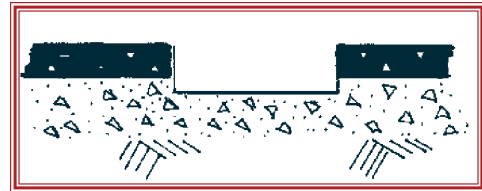
**1. Inspection:** The pothole area should be inspected to determine whether a surface patch is sufficient, or a more thorough patch is required. Sometimes a complete overlay is needed, but the pothole still must be patched for the short term.

**2. Marking:** The area around the pothole must be marked with chalk or paint so that the workman doing the cutting can quickly and easily remove the failed material. Marking is done so that good, stable material will be left around the hole. This material must provide a good surface for the patch to bond to. The material left should have no cracks and appear solid compared to the material immediately adjacent to the pothole.

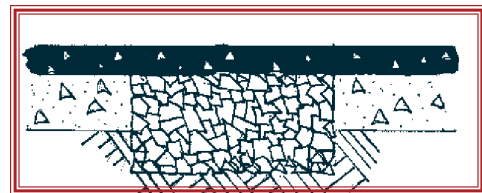
**3. Cutting:** Workmen should avoid cutting more material than necessary to repair the pothole. It is expensive and time consuming to replace material that is not in need of repair. The walls of the hole should be made vertical to provide a good surface for adhesion. Cutting should continue to a depth where good pavement or base material exists. If the pavement that is cut away is to be recycled, care should be taken to avoid including base and subgrade material that may contaminate the mix. When the cutting is complete, the large chunks of pavement should be removed and stockpiled for future recycling.

If the surface and base material are broken, collapsed or otherwise inferior, remove them. Then inspect the subgrade for excess moisture. If the soil beneath the base is saturated, it may have to be excavated also. If this is necessary, a stable material such as crushed stone must be placed and compacted to ensure the stability of the patch.

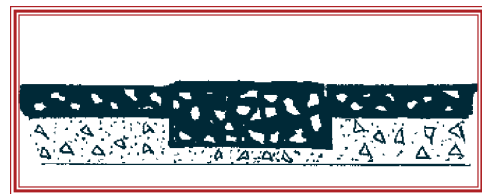
**4. Cleaning:** This step includes removing any remaining debris from the hole. Compression air works well for this purpose. If the hole has been made to the base or subgrade, these materials, if disturbed, must be compacted, so that undue compaction by traffic will not occur after the patch is in place. The hole must be dry in order to insure a proper bond between the new material and the old. Compressed air, torches, or rags may be used to get the hole as dry as possible. All debris must be



SURFACE AND BASE CUT, TACK COAT APPLIED



PAVEMENT, BASE, AND SUBGRADE REMOVED AND REPLACED



FINISHED PATCH

removed from the sides of the hole. Loose material will cause a poor bond and early failure of the patch.

**5. Tacking:** A tack coat should be used to provide a bond between old and new surfaces. Too much tack coat will result in bleeding at the joint and a waste of material, rutting and eventual failure of the patch. Hot mix as well as recycled mix or cold mix should always be tacked. The best method for tacking is to spray the tack coat uniformly throughout the area to be patched. Brooming and pouring are generally not effective because the sides are very difficult to coat and excess material tends to collect in the bottom of the hole.

**6. Placing:** Holes deeper than six inches should be filled and compacted in more than one lift. Placing should be done with a shovel working from one side of the patch to the other. To prevent segregation the material should be placed, rather than thrown or raked, into the hole. The patch should be made so that after final compaction, it is slightly above the surrounding pavement to allow possible future compaction by traffic and eliminate “bird baths.” No patching material should be left on the surrounding surface.

**7. Compaction:** It is critical that the patch be compacted properly. Poor compaction will cause shrinkage, rutting and failure of the patch. The compaction method should match the size of the patch. Most road repairs can be made with a small or medium sized vibrating compactor. Take care to compact the patch only and not the surrounding pavement.

**8. Edge sealing:** Seal the edges of the patch to keep water out of the joint. Any patching material can be used as long as it doesn't cause excess asphalt to bleed around the patch. Sand can be used to blot the seal.

## Why Meetings Should Last Only 29 Minutes and 59 Seconds



**Here's an argument for brevity: never ever schedule another meeting to last more than a half-hour. The reasons why brief meetings work:**

- **They force preparation. If a meeting is to last a half-hour, everyone will have had to do the real critical thinking beforehand if they're to accomplish anything.**
- **They force focus. There won't be any time to get off on a tangent – and the clock, not the manager, is the bad guy.**
- **They force action. In 30 minutes everyone at the meeting will be back at their workstations doing what they're supposed to be doing. Remember, teams accomplish projects, but individuals do the work of the project.**

**–adapted from Industry Week**

## PEDESTRIAN RESOURCE PACK AVAILABLE



Collisions between pedestrians and motor vehicles are a serious problem in the United States. Many of these collisions occur on city streets and parish roads. Nationwide, in the last decade, more than 63,000 pedestrians lost their lives and another 1.7 million pedestrians were injured in vehicle related crashes.

With this in mind, the CD, “Safer Journey - Interactive Pedestrian Safety Awareness” was developed to improve the level of pedestrian knowledge for all road users and safety practitioners.

In addition to vehicular crashes involving pedestrians, during the last decade, over 8,000 bicyclists lost their lives to traffic crashes. The CD, entitled “The Pedestrian/Bicycle Safety Resource Set” is focused toward helping local planners, engineers, road supervisors and elected officials make roads safer for pedestrians and bicyclists.

The Louisiana LTAP Center now has available “Pedestrian Resource Packs” which consist of the two previous CDs, “Safer Journey” and

“Pedestrian/Bicycle Safety Resource Set.” Both of these were developed by the Federal Highway Administration and distributed to the LTAP centers through the LTAP Clearinghouse which is part of the American Public Works Association. Also included as part of the resource packs is a pamphlet, “A Walkable

Community,” which details common characteristics of pedestrian friendly communities.

In order to get your free copy of the “Pedestrian Resource Pack,” simply call the Louisiana LTAP Center at 800-256-1567, and the set of two CDs and accompanying literature will be sent to you.



## LTAP YEAR 2001 ROADS SCHOLAR AND ROAD MASTER TRAINING RECAP



The Local Technical Assistance Program (LTAP) was established at the Louisiana Transportation Research Center in 1986. One purpose of the Center is to provide technical training to help local government agencies maintain and improve their roads and bridges. To this end a "Roads Scholar" program was developed in 1993, consisting of a series of 13 workshops. The workshops are offered at numerous locations throughout the state to minimize costs and travel for local governments.

Local Technical Assistance Program  
ROADS SCHOLAR AND ROAD MASTER 2001  
Summary

ROADS SCHOLAR	Jefferson	Baton Rouge	Alexandria	Sulphur	Lafayette	Bossier City	Ruston	Total Attendance/Average	Total PDHs
#5 - Safety (4 PDHs)	46	28	28	82	95	26	12	317 45.3	1268
#6 - Equipment Op. (4 PDHs)	46	28	28	82	95	26	12	317 45.3	1268
#8 - Successful Supervision (6 PDHs)	22	24	26	60	31	29	31	223 31.9	1338
#9 - Better Signing (6 PDHs)	35	22	35	75	26	22	15	230 32.9	1380
#10 - Unpaved & Gravel Roads (4 PDHs)	36	19	17	50	20	28	9	179 25.6	716
#11 - Geotextiles (4 PDHs)	34	19	17	55	20	28	9	182 26.0	728
#13 - Bridge Maintenance (6 PDHs)	46	29	38	24	25	20	20	202 28.9	1212
ROAD SCHOLAR Total/Average	265/37.9	169/24.1	189/27	428/61.1	312/44.6	179/25.6	108/15.4	1650/235.7	7910
ROAD MASTER									
#5 - Dealing w/the Government (6 PDHs)	40	14	28	19	10	29	18	156 22.6	948
#6 - Pubic Wks. Image (6 PDHs)	38	14	14	13	16	13	31	139 19.9	834
ROAD MASTER Total/Average	78/39	28/14	42/21	32/16	26/13	42/21	49/24.5	297/148.5	1782
Grand Totals	343/38.1	197/21.9	231/25.7	460/51.1	338/37.6	221/24.6	157/17.4	1947	9692

In 2000 the "Road Master" program was introduced. The Road Master program is aimed at transportation employees who have more experience and are motivated to increase their knowledge and skills, and is also aimed at transportation employees in supervisory and management positions. At present there are six workshops in this series, with more to be added next year.

Approximately one-half of each series is presented each year. Professional Development Hours (PDHs) are awarded for attendance on the basis of one hour for each 50 contact minutes. During 2001, 49 "Roads Scholar" classes and 14 "Road Master" classes were conducted, as shown in the tabulation below (1).

In addition, to the Roads Scholar and Road Master sessions, presented in 2001, the LTAP Center also conducted/coordinated 69 other workshops at 27 locations with a total attendance of 1596.

### CALENDAR

Louisiana Police Jury Convention - February 21, 22 & 23, Monroe, LA.

National Association of County Engineers - Annual Convention - March 24 - 28, San Diego, CA.

Louisiana Parish Engineers and Supervisors Association - Spring Seminar - June 7 & 8, Sulphur, LA

MUTCD - Millennium Edition - What are the changes? How to handle them. February 5, Lafayette and February 7, Ruston.

## ATSSA'S "NIGHT LIGHTS" VIDEO NOW AVAILABLE



One of the most significant social trends of the new century will be the graying of the population, a fact that raises serious questions for everyone concerned with traffic safety and education. By the year 2020, for instance, it's estimated there will be 38 million drivers over the age of 70 on roads in the U.S. alone, compared to 13 million today. This, in itself, isn't necessarily a problem. In fact, reports show that mature motorists are not involved in a disproportionate number of motor vehicle crashes. Most mature drivers self-assess their skills, modifying their driving habits to fit declining capabilities. However, night driving can be a challenge for older drivers. One of the solutions

to the problem is to make signs, guard rails and other traffic control devices more retro-reflective, thereby appearing brighter in the headlights of an automobile.

The American Traffic Safety Services Association, an international trade association located in Fredericksburg, VA, has produced a federally funded video, "Night Lights," which clearly outlines and explains the benefits of retro-reflectivity in a wide variety of situations. This 10-minute, informative video is now being made available to local governments through the LTAP centers.

"Night Lights" examines the very technical issue

of retro-reflectivity and defines the process in easy-to-understand terms for those outside of the roadway safety industry. "Night Lights" will

unquestionably be beneficial in schools, within law enforcement agencies and at community events nationwide. More importantly, the new film brings to the attention of the motoring public the importance

and benefits of retro-reflective products of all types. Filmed primarily in rural Stafford County, VA, "Night Lights" describes how bright, reflective materials on roadways and traffic safety devices save lives by improving the roadway in a variety of depicted scenarios. Additionally, the video also addresses the importance of wearing reflective clothing while engaged in outdoor activities such as road work, jogging, walking and bike riding.

For a free copy of "Night Lights," simply contact the Louisiana LTAP Center at 800-256-1567.

### TECHNOLOGY *exchange*

#### NEWSLETTER STAFF

Sher Creel, Executive Editor  
Vicki Dischler, Designer  
Audrey Paul, Editorial Assistant

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Any findings, conclusions, or recommendations presented in this newsletter are those of the authors and do not necessarily reflect those of LSU, DOTD, or FHWA.

## PLANS PROGRESS FOR LADOTD'S 2002 TRANSPORTATION ENGINEERING CONFERENCE

**Louisiana  
Transportation  
Engineering  
Conference**  
— 2002 —  
**We Get You There!**

Plans are in full swing for DOTD's 2002 Transportation Engineering Conference to be held February 17-20, 2002, at the Baton Rouge Radisson Hotel and Conference Center. The conference, which is coordinated by the Louisiana

Transportation Research Center, provides a forum for members of the industry to relate innovative technologies and to discuss transportation policy, practice, and problems. More than 1,200 trans-

portation professions are expected to attend, representing the public, private and academic sections of the transportation industry.

A wide range of topics will include The Law and the Engineer, Tort Liability, Superpave

Troubleshooting, Contract Management, AASHTO 2002 Design Guide, Life Cycle Cost Analysis, New Design Concepts, Problem Soils, Cone Penetration Technology, Crack Relief - Composite Pavements, Outsourcing, Enhancement, Information Technology, Construction Issues, and Warranted Pavements.

Several chat rooms will be available to discuss issues relative to "The Red Book," MS Civil Engineering, Warranties, Smoothness Specifications, and Management Training

Program. Additionally, as in the past, alternative sessions will be offered on topics such as Conflict Management, Communication Skills, Personality Assessments, Becoming a Change-Adept Professional, and Successful Meetings.

Further information on the conference can soon be found at the LTRC web site, [www.ltrc.lsu.edu](http://www.ltrc.lsu.edu). In the near future, both the government and corporate registration forms may be downloaded and faxed to the attention of Gordon Smith, 225-767-9156.

### MOTIVATING HIGHWAY MAINTENANCE WORKERS: TOOLS FOR PEAK PERFORMANCE

Quite often, excellent operators and craftspeople become supervisors with no training. The Louisiana LTAP Center

has offered Successful Supervision as a mini-workshop and as Roads Scholar number 8. Now the National Cooperative Highway Research Program (NCHRP), has developed a powerful aid for the frustrated supervisor.

Tools for Peak Performance, Effective Motivation of Highway Maintenance Personnel is a training course in motivating maintenance workers to perform at their very best. It is available as a CD or in

hard copy format from the Louisiana LTAP Center.

Some of the topics covered in the course are:

- Working with a wide variety of tasks — both planned and emergency
- Using a wide array of equipment and tools
- Working with many different materials
- Dealing with the challenges of working under traffic and representing the agency positively to the public.

Since highway, road, and street maintenance is very important, and since local agencies show the public its commitment through that maintenance, this course is important in helping the supervisor's personnel represent the agency. A more productive work force begins with the first line supervisor

The CD's are available now and you can get one by calling 1-800-256-1567. A training class on how to best use the CD is being developed and will be offered early in 2002.

### MAILING LIST UPDATE/ORDER FORM

Please use this form to update your mailing address, to request to be added to or deleted from the mailing list, or to order a publication/video.

- ◇ Please change my address, as indicated below.
- ◇ Please add this person to the mailing list.
- ◇ Please remove this person from the mailing list.

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 City/State/Zip: \_\_\_\_\_

◇ I have the following suggestion(s) for newsletter articles:

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 \_\_\_\_\_  
 \_\_\_\_\_  
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The Louisiana Local Technical Assistance Program was established at the Louisiana Transportation Research Center on the LSU campus in 1986. The purpose of the center is to provide technical materials, information, and training to help local government agencies in Louisiana maintain and improve their roads and bridges in a cost-effective manner. To accomplish this purpose, we:

- ✦ publish a quarterly newsletter,
- ✦ conduct seminars, workshops, and mini-workshops covering various aspects of transportation,
- ✦ provide a lending library service of audio/visual programs on a variety of transportation topics,
- ✦ provide technical assistance through phone and mail-in requests relating to transportation technology,
- ✦ and undertake special projects of interest to municipalities in Louisiana.

### NEED TECHNICAL HELP?.....CONTACT OUR LTAP CENTER STAFF:

David M. Grouchy..... Director  
 Joe T. Smith..... Teaching Associate  
 David McFarland..... Teaching Associate  
 Robert D. Breaux..... Office Manager

225-767-9117  
 800-256-1567 (in state)  
 225-767-9156 (fax)  
[LALTAP@ltrc.lsu.edu](mailto:LALTAP@ltrc.lsu.edu) (e-mail)

**LTAP CENTER**  
 Louisiana Transportation Research Center  
 4101 Gourrier Ave.  
 Baton Rouge, Louisiana 70808

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