

Country Roads & City Streets

WV Transportation Technology Transfer Center

March 2003

College of Engineering & Mineral Resources

Vol. 18 No. 1



VEGETATION CONTROL FOR SAFETY

During the growing season, grass, weeds, and brush often limit a driver's view of approaching vehicles. Likewise, lush vegetation can act as a screen that hides pedestrians and bikers from drivers and vice versa. Be alert for places where vegetation needs to be cut back. The picture below is an example of problem vegetation.

GOALS FOR VEGETATION CONTROL

The main goals for vegetation control include

- Keeping signs and vehicles visible to drivers as well as pedestrians and bike riders in cross walks, at street lights, at uncontrolled intersections, and on bike paths.
- Helping pedestrians and bike riders see oncoming traffic more easily.
- Improving winter road maintenance in snow and ice areas.

LINE OF SIGHT CLEARANCE

Drivers approaching an intersection need a clear line of sight along crossroads early enough to see any conflicting vehicles, pedestrians, and bicyclists to avoid a collision. Drivers also need an unobstructed line of sight to any roadside signs or hazards far enough in the distance to allow them to react safely to each situation.

KEEPING SIGNS AND TRAFFIC CONTROL DEVICES VISIBLE

Suggested maintenance steps

1. Look for signs and other traffic control devices blocked by brush, trees, grass, or weeds when on routine maintenance patrol. Often a small branch from an overhanging tree or some bush near the sign is all that needs to be cut back. If vegetation along the ditch or shoulder blocks a driver's view of a sign, then cut enough to allow a driver sufficient time to see the sign and respond to its message. If your agency has a policy on how far from a sign vegetation has to be cleared for a safe view, then follow that policy. If you do not have such a policy, the chart on the following page is a suggested guideline to allow a driver 3 to 5 seconds to read and respond to the sign.



This Railroad Crossing Warning sign is blocked by foliage. The lack of visibility could cause a motorist to miss seeing this sign and contribute to a possible accident. The foliage should be cut as soon as possible. photo from T2 file



IN THIS ISSUE

Vegetation Control for Safety

Roadside Vegetation

Mowing Operation Do's and Don'ts

Traffic Control for Mowing Operations

Prevention and Control of Lyme Disease

What are the Signs and Symptoms of Lyme Disease?

Meet the T2 Center's Newest Technical Assistant

Another Farewell

In Brief with the Director

Country Roads and City Streets is a quarterly publication of the West Virginia Transportation Technology Transfer Center (T² Center). The purpose of this newsletter is to provide information that is beneficial to highway construction and maintenance personnel.

The material and opinions contained in this newsletter are those of the West Virginia Transportation Technology Transfer Center, and do not necessarily reflect the views of the Federal Highway Administration or the WV Department of Transportation. Material contained in *Country Roads and City Streets* is a combination of original and borrowed material. Every effort has been made to ensure the integrity and accuracy of this material. However, the WV T² Center does not assume responsibility for any incorrect material.

Clearing Vegetation in Front of Signs

Speed Limit (MPH)	Noncritical Signs (Feet)	Critical Signs (Feet)
30	150	250
40	200	350
50	250	450
60	300	600

Critical signs are:

STOP, YIELD, DO NOT ENTER, ONE WAY, WRONG WAY, and other regulatory signs. Non-critical signs are destination guide signs, parking regulations, advance warning signs, and similar warning or information signs.

2. Pull maintenance vehicle off the traveled lane and place temporary traffic control.
3. Cut or trim trees, brush, weeds, or grass to clear a driver's line of sight to the sign or traffic control device. Always wear protective leather gloves, safety glasses or goggles, safety vests, hard hats, and leather boots (not sneakers or soft shoes).
4. Paint the stubs of brush or small trees with a weed killer solution to keep vegetation from growing back.
5. Collect limbs and large brush to haul away for disposal or run them through a chipper if available.
6. Look for moving traffic when removing the temporary traffic control and leaving the site. Drivers may not realize you are through working and probably will not expect you to pull onto the traffic lane.
7. Watch especially for overhead power lines and electrified farm fences when cutting brush. Never touch a wire farm fence when an electrical storm is in the vicinity of your work.

SUGGESTED EQUIPMENT

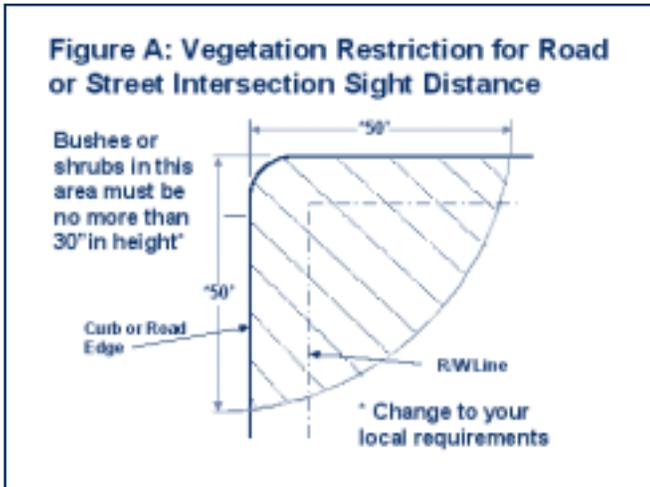
1. **Leather gloves** to protect your hands from cuts and nicks.
2. **Hard hat** to protect your head from a falling limb or flying debris during cutting and clearing.
3. **Safety glasses or goggles** to protect your eyes from flying chips or particles during cutting and clearing.
4. **Safety vest** to reduce accidental injury by vehicles and hunters.
5. **Chain saw, fuel, bar oil** to cut small trees and large brush.
6. **Gasoline powered "weed eater"** to cut grass and small weeds away from sign support and similar areas.
7. **Brush knife or machete** to cut small brush
8. **Loppers** (long-handled side cutters) to cut small low-hanging branches and large woody weeds
9. **Tree trimming saw with small branch lopper** (on a telescoping pole handle) to cut higher branches from overhanging trees that are blocking the view of sign or traffic control device.
10. **Tall step ladder** to help cut branches near the tree trunk to limit regrowth
11. **Axe** to chop down small saplings

TRAFFIC CONTROL CONSIDERATIONS DURING MAINTENANCE

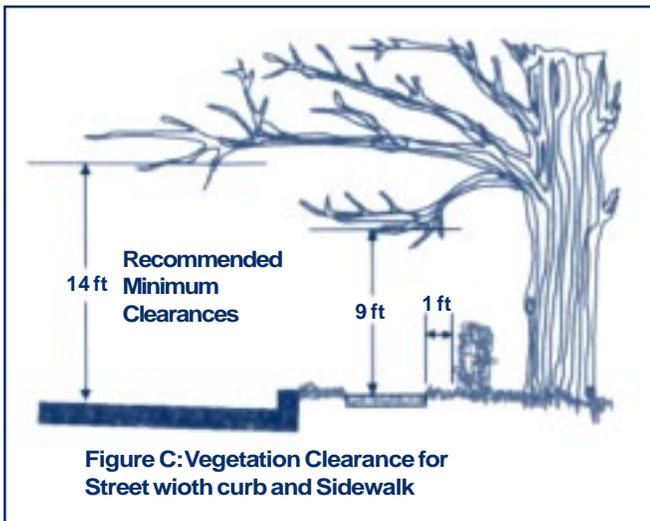
Make sure that your temporary traffic control layout complies with the current edition of the *Manual on Uniform Traffic Control Devices (MUTCD)* and is appropriate for your work situation. Three common situations associated with vegetation work are: (1) a shoulder closure on two-lane, two-way roadway, (2) vehicles and equipment completely off the road and the shoulder, and (3) a lane closure where equipment and/or people will be in a traveled lane.

ROADSIDE VEGETATION

The following figures and description were taken from a roadside vegetation presentation given by Alan Gesford of the PA Local Roads Program at the 2003 Roadway Management Conference. We appreciate Alan granting permission for us to reproduce this information.



Trees and shrubs on the roadside can cause problems resulting in safety hazards. Low hanging branches and sight distance blockage makes the establishment of some height and offset requirements necessary. These figures may serve as guidelines for establishing ordinances regarding these factors for both the road or street and sidewalk.



The vegetation control information on pages 1,2 and 4 of this newsletter edition was taken from the following publication:

Vegetation Control For Safety: A Guide for Street and Highway Maintenance Personnel, U.S. Department of Transportation and the Federal Highway Administration, 1990. Publication number FHWA-RT-90-003.

The complete guide in pdf format can be found on FHWA's web site at www.fhwa.dot.gov/tfhrc/safety/pubs/90003/intro.htm. You can also borrow this guide from the WV T² lending library by calling us at 304-293-3031 x 2612.

CENTER STAFF & CONTACT INFORMATION

WV Transportation

Technology Transfer Center
West Virginia University
PO Box 6103
Rm. 651 and 653-B
Morgantown, WV 26506-6103

Phone: (304) 293-3031 x 2612

Fax: (304) 293-7109

www.cemr.wvu.edu/~wwtt/

STAFF

Dr. Ronald Eck, P.E.

Director
(304) 293-3031 x 2627
reck@wvu.edu

Michael Blankenship, P.E.

Program Manager
(304) 293-3031 x 2629
mblanken@wvu.edu

Kim Carr

Public Relations Specialist
(304) 293-3031 x 2612
kcarr@wvu.edu

Keith Bryant E.I.

Technical Assistant
(304) 293-3031 x 2662
kbryant@mix.wvu.edu

Sandy Wotring

Administrative Assistant
(304) 293-3031 ext. 2630

Bill Wyant

Senior Volunteer
wwyant@hsc.wvu.edu

MOWING OPERATION DO'S AND DON'TS

MOWING OPERATION DO'S

1. Avoid mowing slopes steeper than 2.5:1 with a regular mower unit.
2. Mow slopes steeper than 2.5:1 with side-mounted mower on a boom if the tractor unit remains on flatter surfaces while mowing.
3. Operate side-mounted or boom mower units on the uphill side of the tractor to limit the possibility of overturning the tractor.
4. Replace broken or lost chain guards to deflect debris immediately. Using flail-type mowers reduces the amount of debris thrown.
5. Cover all v-belts, drive chains, and power takeoff shafts.
6. Raise mowers when crossing driveways or roadways.
7. Shut off power before checking any mower unit. Block a mower before changing, sharpening, or replacing a blade. Any blade being re-installed should be checked for cracks or damage that will lead to failure.
8. Use flashing signals and slow-moving-vehicle signs on all mower tractors.
9. Use signs to warn traffic, such as MOWING AHEAD, MOWING AREA, ROAD WORK AHEAD, or similar legends. Signs should not be more than one to two miles ahead of the mowing. Signs saying MOWING NEXT _____ MILES may be used in advance of the operation, but the distance limits should not be shorter than two miles nor longer than five miles.

MOWING OPERATION DON'TS

1. Mow too often. This wastes money, exposes mowing crews to traffic hazards more than needed, and can damage the vegetation.
2. Mow at the wrong time. Good timing reduces the frequency of mowing required by cutting the vegetation in the right stage of growth.
3. Mow too short. Leaving the proper height helps maintain the stand of vegetation and keeps small litter objects hidden.
4. Mow steep slopes if you don't need to. Steep slope operations increase risk of mower accidents.
5. Mow patterns inconsistently and mow a regular area incompletely. Drivers watch the pattern of a mowed area to help understand the safety of an area. Consistent mowing of similar areas helps drivers evaluate the safety of the roadway.
6. Mow when wet. This is hard on equipment.
7. Operate equipment carelessly and scar trees and shrubs. Mowing is tedious but care must be taken to avoid accidents and preserve valuable plantings.

TRAFFIC CONTROL FOR MOWING OPERATIONS

**The most important thing to remember is to make the mower unit highly visible to drivers.
That way drivers will be alert to you and be able to avoid any potential collisions.**

1. Operate rotating yellow beacons on mower tractors.
2. Install slow-moving-vehicle emblems on all mower tractors.
3. Install yellow flasher lights on roll bars or the top of tractor cabs and operate these at all times.
4. Install an orange flag or pennant on a whip to show the location of the tractor in high grass or over the edge of slopes.
5. Operate the tractor with the headlights on at all times.

PREVENTION AND CONTROL OF LYME DISEASE

With the arrival of spring and summer around the corner, road crews around the state begin gearing up for numerous outside projects. If you are working outside, it is important to take safety precautions to help avoid becoming infected with Lyme disease. Take a few moments to read the following to learn more about preventing this disease.

AVOID TICK HABITATS:

Whenever possible, avoid entering areas that are likely to be infested with ticks, particularly in spring and summer when nymphal ticks feed. Ticks favor a moist, shaded environment, especially areas with leaf litter and low-lying vegetation in wooded, brushy or overgrown grassy habitat. Sources for information on the distribution of ticks in an area include state and local health departments, park personnel, and agricultural extension services. **Tuck pants into socks to protect yourself from the bites of ticks and other vectors.**

USE PERSONAL PROTECTION MEASURES:

If you are going to be in areas that are tick infested, wear light-colored clothing so that ticks can be spotted more easily and removed before becoming attached. Wearing long-sleeved shirts and tucking pants into socks or boot tops may help keep ticks from reaching your skin. Ticks are usually located close to the ground, so wearing high rubber boots may provide additional protection.

The risk of tick attachment can also be reduced by applying insect repellents containing DEET (n,n-diethyl-m toluamide) to clothes and exposed skin, and applying permethrin (which kills ticks on contact) to clothes. DEET can be used safely on children

and adults but should be applied according to Environmental Protection Agency (EPA) guidelines to reduce the possibility of toxicity.

USE TWEEZERS TO REMOVE TICKS.

Perform a tick check and remove attached ticks: The transmission of *B. burgdorferi* (the bacteria that causes Lyme disease) from an infected tick is unlikely to occur before 36 hours of tick attachment. For this reason, daily checks for ticks and promptly removing any attached tick that you find will help prevent infection.



Embedded ticks should be removed using fine-tipped tweezers. **DO NOT** use petroleum jelly, a hot match, nail polish, or other products. Grasp the tick firmly and as closely to the skin as possible. With a steady motion, pull the tick's body away from the skin. The tick's

mouthparts may remain in the skin, but do not be alarmed. The bacteria that cause Lyme disease are contained in the tick's midgut or salivary glands. Cleanse the area with an antiseptic.

TAKING PREVENTIVE ANTIBIOTICS AFTER A TICK BITE:

The relative cost-effectiveness of post-exposure treatment of tick bites to avoid Lyme disease in endemic areas (areas where the disease is known to occur regularly) is dependent on the probability of *B. burgdorferi* infection after a tick bite. In most circumstances, treating persons who only have a tick bite is not recommended. Individuals



who are bitten by a deer tick should remove the tick promptly, and may wish to consult with their health care provider. Persons should promptly seek medical attention if they develop any signs and symptoms of early Lyme disease.

STRATEGIES TO REDUCE TICK ABUNDANCE:

The number of ticks in endemic residential areas may be reduced by removing leaf litter, brush and wood-piles around houses and at the edges of yards, and by clearing trees and brush to admit more sunlight and reduce the amount of suitable habitat for deer, rodents, and ticks. Tick populations have also been effectively suppressed through the application of pesticides to residential properties. Community-based interventions to reduce deer populations or to kill ticks on deer and rodents have not been extensively implemented, but may be effective in reducing the community-wide risk of Lyme disease. New approaches such as deer feeding stations equipped with pesticide applicators to kill ticks on deer, and baited devices to kill ticks on rodents, are currently under evaluation.

EARLY DIAGNOSIS AND TREATMENT:

The early diagnosis and proper antibiotic treatment of Lyme disease are important strategies to avoid the costs and complications of infection and late-stage illness.

Lyme disease vaccine: As of February 25, 2002 the manufacturer announced that the LYMERix(tm) Lyme disease vaccine will no longer be commercially available.

Additional information on signs and symptoms of Lyme disease can be found on page 6 of this newsletter.

This article was reprinted from the Center for Disease Control and Prevention's (CDC) website. For this article and other resources, please visit the CDC site at www.cdc.gov.

Q. WHAT ARE THE SIGNS AND SYMPTOMS OF LYME DISEASE?

A. Within days to weeks following a tick bite, 80% of patients will have a red, slowly expanding “bull’s-eye” rash (called erythema migrans), accompanied by general tiredness, fever, headache, stiff neck, muscle aches, and joint pain. If untreated, weeks to months later some patients may develop arthritis, including intermittent episodes of swelling and pain in the large joints; neurologic abnormalities, such as aseptic meningitis, facial palsy, motor and sensory nerve inflammation (radiculoneuritis) and inflammation of the brain (encephalitis); and, rarely, cardiac problems, such as atrioventricular block, acute inflammation of the tissues surrounding the heart (myopericarditis) or enlarged heart (cardiomegaly).

For additional questions and answers regarding lyme disease, please check out the following CDC link.

<http://www.cdc.gov/ncidod/dvbid/lyme/qa.htm>

MEET THE T² CENTER’S NEWEST TECHNICAL ASSISTANT



Keith Bryant

Hometown: Eagle Rock, VA

Keith is a graduate of Bluefield State College (BSC), where he obtained a double major in Architectural Engineering Technology and Civil Engineering Technology. Having been the recipient of a baseball scholarship, Keith juggled a rigorous academic schedule with athletics at BSC. He also played for professional independent baseball teams of the

Frontier Independent League, in northern West VA (Ohio Valley Redcoats, '98) and southwestern Indiana (DuBois County Dragons, '99).

Keith completed his double major at BSC in 1999 and began work at Hayes, Seay, Mattern & Mattern (HSMM) shortly after. He began his professional career in HSMM’s Environmental Department, primarily performing fieldwork (data collection and monitoring), statistical analysis (of data obtained in field), and technical report writing. In 2000, he transferred to HSMM’s Site Design and Survey Department (SDSD) and worked as an Engineer I, exclusively under the guidance of the department’s senior engineer and department head. Some of the typical design tasks performed while in the SDSD were as follows: site layout, site grading, access road and parking lot design, utilities engineering, storm drainage design, storm water management facility design, erosion and sediment control selection and design. He worked on a large array of projects contracted to private entities, public municipalities, and government agencies.

Keith began working for the T² Center in January 2003, and is working towards his Masters of Science in Engineering (Transportation focus). Like our previous graduate assistants, Keith will have a variety of roles, including providing field assistance, working with our lending libraries, assisting with the newsletter, and a slew of other special projects. Join us as we welcome Keith to the Center and our wonderful state of West Virginia.

WV T² ADVISORY BOARD

Robert Amtower

WVDOT
Burlington, WV

Kevin Burgess

FHWA
Charleston, WV

Michael DeMary

Public Works Director
Fairmont, WV

Bob Gordon

Region 9 Planning and
Development Council
Martinsburg, WV

Ed Grace

Public Works
Weirton, WV

Kathy Holtsclaw

WVDOT
Charleston, WV

Terry Hough

City Engineer &
Public Works Director
Morgantown, WV

Jack Justice

FHWA
Charleston, WV

Marvin Murphy

WVDOT
Weston, WV

Pat Parsons

WV Flexible Pavements
Council
Charleston, WV

Buddy Shreve

Public Works Director
Philippi, WV

Mike Skeens

Interstate Traffic Control
Huntington, WV

Donald Williams

WVDOT
Clarksburg, WV

Gary Winter

WV Governor’s Highway
Safety Program
Charleston, WV

ANOTHER FARWELL

By: *Kim Carr*

It hit me as I was laying out this edition of the newsletter, that February 15 marked my four-year anniversary with the WV T² Center. During this time, I have had the pleasure of working with three different technical assistants, who are a tremendous asset to our program. It is always very rewarding to see our Technical Assistants finish their master's programs, and go on to even greater things; although I always get a little sentimental and misty-eyed. It happens every year or two — the T² Center's version of the Changing of the Guard. We wish Andrew the best in his new endeavor, and extend a warm welcome to Keith.



Andrew Morgan
Hometown: Vienna, WV

We were very fortunate to have Andrew join the Center

in May of 2001, and are very sad to see him go. However, on the upside, Andrew has accepted a wonderful job opportunity with the engineering firm of Transystems, Inc., based in Dublin, Ohio. Transystems is a highly regarded transportation firm and we are very excited that Andrew will be part of this wonderful company. (I asked him if we had to worry about the possibility he would convert from a Mountaineer fan to a Buckeye fan. Andrew strongly assured me this would never happen.) At Transystems, Andrew will be working in the traffic engineering department.

Andrew received his Bachelor of Science degree in Civil Engineering in May of 2001, and, as we are going to press, he is preparing for his master's thesis defense. His thesis focuses on trip generation characteristics of rural clinics. This involved gathering "trip-end data" with regards to "socio-economic variables." In simple terms, he counted cars coming and going from the clinics and divided the total by facility and staffing quantities. This in-

formation will be made available to planners and engineers designing or dealing with the traffic impact created by rural clinics.

During his year and one half at the Center, Andrew was involved with representing the Center on four Community Design Team (CDT) Visits. The communities visited were Sistersville, Elkins, McDowell County, and Ronceverte. As the CDT is made up of volunteers from many disciplines, Andrew was able to provide assistance in the area of civil engineering. Actual assistance provided included stream flow assessment, traffic calming, local parking laws, and information on proper traffic signs. Andrew was also a tremendous asset in assisting with the Eastern Winter Road Maintenance Symposium and Equipment Expo.

When asked what advice Andrew would give to Keith, this is what he had to say: "The fundamental purpose of the LTAP program is wonderful and there are many great people involved in this program across the country. Make sure you meet as many LTAP people as possible, as they all have something unique to offer."

The West Virginia T² Center is a part of the nationwide Local Technical Assistance Program (LTAP), which is funded by the Federal Highway Administration. The Center also receives funding from the West Virginia Department of Transportation.

Mission:

The mission of the West Virginia T² Center is to foster a safe and efficient transportation system. The T² Center's mandate is to improve the transportation system by improving the professional skills of those involved in highway design, construction and maintenance, and to act as a resource for them by keeping up-to-date training libraries and constantly seeking/developing new technologies.

Overall Goal:

The Center's overall goal is to improve the transportation system by focusing on professional training, technical assistance, and information dissemination.

To achieve this goal, the WV T² Center does the following:

- Provides on-site training and demonstrations
- Publishes a quarterly newsletter
- Maintains a video and publications library
- Provides technical assistance via e-mail, telephone, fax, mail, or site visits

IN BRIEF WITH RON ECK, DIRECTOR WV T² CENTER



Spring is here and with it come a variety of roadway maintenance and construction activities. Among these are vegetation and vegetation control. At the recently completed Roadway Management Conference in Wheeling, Alan Gesford of the Pennsylvania LTAP made a presentation on “Roadside Vegetation: A Curse or A Blessing.” This sums up very well how many roadway agency personnel feel about vegetation. Certainly, vegetation enhances the appearance of our roads and streets and the public is increasingly aware of the importance of aesthetic treatments. Vegetation is also important in erosion prevention, both as a ground cover and soil reinforcement.

However, vegetation also creates certain problems. It can obstruct the view of

traffic control devices and restrict sight lines on curves and at intersections, making it difficult to see vehicles and pedestrians. Large trees close to the traveled way can be fixed object hazards. In urban areas, trees can accelerate sidewalk degradation. Even control of vegetation brings with it potential hazards to both public and worker safety, e.g., chain saws, mowers and herbicides.

It’s important to monitor trees, shrubs and grasses so that they do not reach the point of creating hazards for motorists and pedestrians. Using safe and appropriate methods for controlling vegetation is also important. Do you and your field crews have accurate and up-to-date information on vegetation and vegetation control?

West Virginia Transportation Technology Transfer Center
West Virginia University
College of Engineering and Mineral Resources
Department of Civil and Environmental Engineering
PO Box 6103
Morgantown, WV 26506-6103

Non-Profit Organization
U.S. Postage Paid
Morgantown, WV
Permit No. 34

Change Service Requested

Please share this newsletter with others.

- Road Supervisors
- Council Members
- Public Works Dept.
- Road Crew
- Managers
- City Engineers
- Mayors
- Others

