Crossroads

Spring 1998

TRANSPORTATION Information Center — LTAP

University of Wisconsin–Madison

Chain saw safety

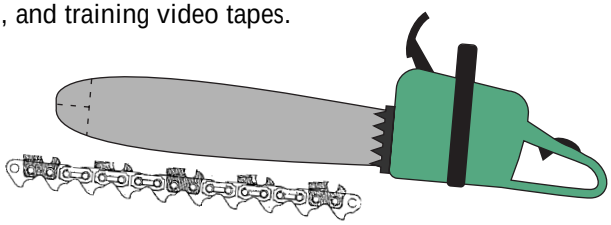
"When you go to work with a chain saw, attitude is the single most important thing you've got going for you," says Ken Lallemont, lead Loggers' Safety Trainer for FISTA, the Forest Industry Safety & Training, Alliance, Inc. "If you have a good attitude and a good common-sense approach to your job, you'll make sure you have personal protective equipment, and not just because OSHA requires it." Lallemont taught a recent T.I.C. chain saw safety workshop.

Proper training, which is often neglected, is essential for safe chain saw operation.

Working safely with a chain saw starts with attitude and training. "There's no other job or piece of equipment that's treated so casually in the work environment," says Lallemont. What employer would consider handing over the keys of a back hoe to a new recruit and telling him to get started? Yet the "school of hard knocks" seems to be the only training many chain saw operators get. Both the employer and the worker are responsible for ensuring a safe operation. This includes proper training, good body mechanics and felling technique, well maintained equipment, and protective clothing.

The majority of accidents are not dramatic cuts or broken limbs, but back and neck injuries from poor technique when cutting and lifting. "Injuries due to bad body mechanics are costly because they result in so much down time," says Lallemont. "And they come back to haunt you for years."

Learn good cutting technique and proper saw operation from the start such as keeping the saw close to the body and "lifting smart" by bending from the knees not the waist, says Lallemont. It will save on a lot of pain and suffering. In addition, using good body mechanics will lessen fatigue and keep you more alert throughout the day. To assist with this learning, FISTA offers chain saw training programs, safety guides, and training video tapes.



Proper chain saw maintenance also promotes safety. Operators should know how to sharpen cutters to manufacturer's specifications, set proper chain tension, tune the carburetor, and clean, lubricate, and adjust the saw. In addition, before starting work they should inspect and test the chain brake, chain catch, throttle lock, handles and guards, all nuts and bolts, spark arrester and muffler, and the air filter.

Continued on page 4

Inside

Compact now, save later

Spring construction season is just weeks away so it's time to think compaction. Proper compaction is a simple and economical way to increase road life and carrying capacity.

In base course preparation, culvert backfills and utility trenches, asphalt paving, and especially asphalt joints, dense, well-compacted material will:

- ensure greater strength for supporting heavier loads
- reduce settlement over the life of the road or patch
- decrease permeability to water and air
- resist rutting

Moisture content and soil type are the two major factors that influence soil compaction. Moisture content must be determined by test and can be modified for better compaction. Soil type dictates the relative number of passes required, the thickness of compaction layers, the type of compaction equipment, and the impact of moisture on compaction.

It takes considerable effort to compact clays. Repeated light loads on six to eight inch layers using sheepsfoot rollers is the most effective approach. Sands, being porous, need just a few passes of heavy loads in eight to 10 inch layers using pneumatic tired rollers.

Crews filling around culverts commonly work too fast for the tamping crew. As a result the soil surrounding the culvert does not develop the critical strength to support design loads. Compact backfill in six to eight inch layers to a distance of at least one diameter of the culvert on each side, if possible.

Compact nativennnng, time is a critical factor. The contractor must finish compacting before the asphalt cools down to the minimum 175 °F. Layer thickness and base temperature affect cooling rates. Thus, thin asphalt surfacing layers laid in early spring and late fall are more likely to fail early. Other factors include air temperature, base layer moisture, laydown temperatures, winds, and sunshine.

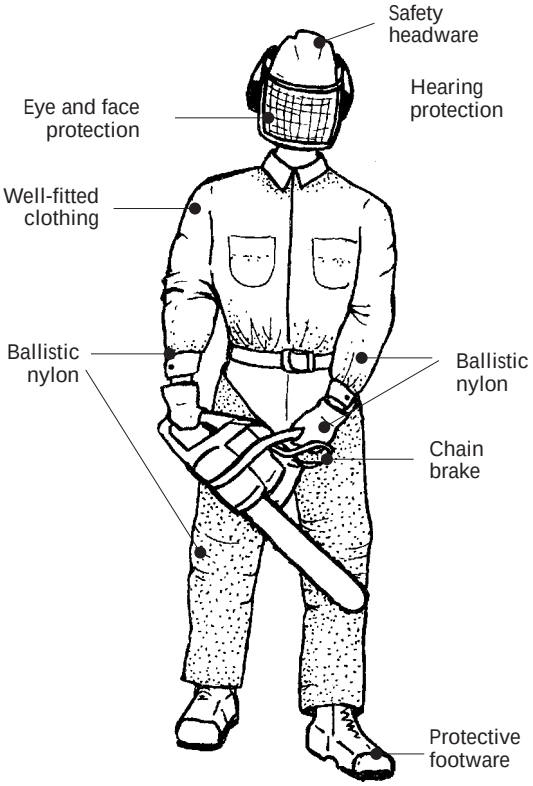
The most difficult place to develop good density in asphalt pavement is at the longitudninal joints. For long lasting conventional joints, overlap the hot lane about

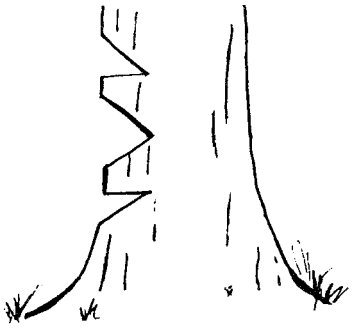
Chain Saw Safety *continued from page 1*

Personal protective equipment is "the last line of defense to protect against injury," says Lallemont. OSHA requires the employer to provide personal protective equipment at no cost (except for boots) and to make sure it is worn. Proper equipment includes:

- safety leg coverings from boot top to upper thigh
- safety helmets
- eye or face protection
- hearing protection
- gloves or mitts for workers handling chain saws
- safety, waterproof, logging style boots (chain saw resistant for saw operators)
- first aid kits at work site and in crew vehicles
- first aid and CPR training for all supervisors and employees

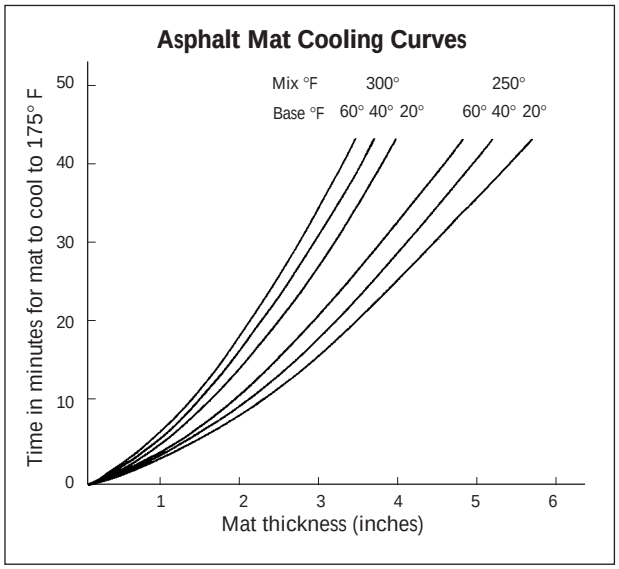
Having a tree felling plan, and following it, are essential for everybody's safety. You must know how you're going to get the tree to the ground before you make any cuts. When two or more are working together, all





*These illustrations were adapted from the **Loggers' Safety Training Guide** and are reprinted here with permission from the Forest Industry Safety and Training Alliance, Inc.*

FISTA, a nonprofit organization, offers a variety of Chain Saw Training sessions. Counties, towns, cities and villages can arrange for group sessions (12-15 parti groups can often be included in other sessions. For information contact the FISTA office: 1-800-551-2656. Videotapes may be purchased from FISTA or borrow



Source: *Time Available for Compaction,* James A. Scherocman, **Better Roads**, April 1984

one inch onto the cold lane, laying the hot material about ¼ inch higher for each inch of the compacted cold lane height. Either the shoulder side or the joint side can be rolled first. In either case, don't overlap more than six inches into the cold mat. State specs also permit a new tapered joint technique that has been successful in other states.

Whatever the material and the situation, paying attention to detail and doing a high quality job of compaction means less maintenance later and more money for other projects.

For more information on compaction see T.I.C. Bulletin No. 11 ***Compaction Improves Pavement Performance,*** *and No. 17* ***Managing Utility Cuts.*** *For information on compacting joints, see "A joint's a cinch when you pinch" in the Summer 1994 issue of* ***Crossroads.*** *Copies are available from the T.I.C.*

others must work at least two full tree lengths from the person cutting the tree. Addressing safety while being efficient at the job is the goal of a felling plan. It doesn't take long to determine:

1. **Hazards** – overhead power and phone lines, nearby buildings, rotted or broken limbs, wind strength and direction, snags or hangups, and others
2. **Lean** – forward, side, or backward slant of the tree
3. **Escape route** – at least a 20 foot clear path at a 45 degree angle away from the falling tree
4. **Hinge** – length and width of hinge needed to control the tree's fall
5. **Cutting plan** – the type and depth of notch; need for boring or wedges

"Most importantly, if you're not comfortable with the task, walk away from it," says Ken Lallemont. "Get somebody else with more skill and experience who can do the job safely."

cipants) at a cost of $500 per day. Individuals and small
wed from County Extension offices (see Resources on page 6).

Daily 5-point chain saw check

Chain brake – A working chain brake stops the chain instantly before it can cause injury if the saw jumps up and hits the operator's wrist or jumps out of the hand.

Chain catch – This white metal or hard plastic knob is standard on all saws in the last 10 years. It shortens the travel distance if the chain comes off the bar. Chain catches are designed to break to preserve the chain and often are never replaced because their function is not understood.

Throttle lock – Located in the rear of the handle bar, the throttle lock prevents accidentally engaging the throttle, as might happen in a brushy area if a stick gets caught in the throttle.

Nuts and bolts – Loose or stripped out bolts on handle bars are the most dangerous. Check and tighten. For stripped threads, plug the hole and retap it.

Spark arrester and muffler – Sparks can start fires. Excess noise forces hearing protection to work too hard. Exhaust systems that don't provide the proper back pressure can shorten the saw's life.

Know your chain saw cutter