



LANDSCAPE IMPACTS WITH RAILROAD TIES

Methodology and Uses

Dr. Ronald C. Smith
Extension Horticulturist

NORTH DAKOTA
STATE UNIVERSITY

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Used railroad ties can be an effective feature of any landscape setting. Because of their mass and strength, railroad ties may also be used for any number of functional purposes.

Sources of Railroad Ties

Used railroad ties are often available from nurseries, lumber outlets, and railroad maintenance yards. Check the local newspapers for advertisements. In some cases, ties are sold only in large lots; in other cases they are sold individually.

A railroad tie is usually an oak or ash timber which measures approximately 8 feet 6 inches in length, with the widths varying from 6 x 6 inches to 7 x 9 inches. In weight, the variation is much greater, from as little as 125 pounds to nearly 200 pounds. Many railroad ties are cut into two pieces for ease of removal before being replaced by railroad crews, so home gardeners can work with smaller, lighter-weight ties for reduced back strain. In some locations, crossing ties and switch ties are available and range in length from 9 to 12 feet. New railroad ties are pressure treated with creosote and lose excess creosote after years of weathering, making them relatively safe to use in the landscape.

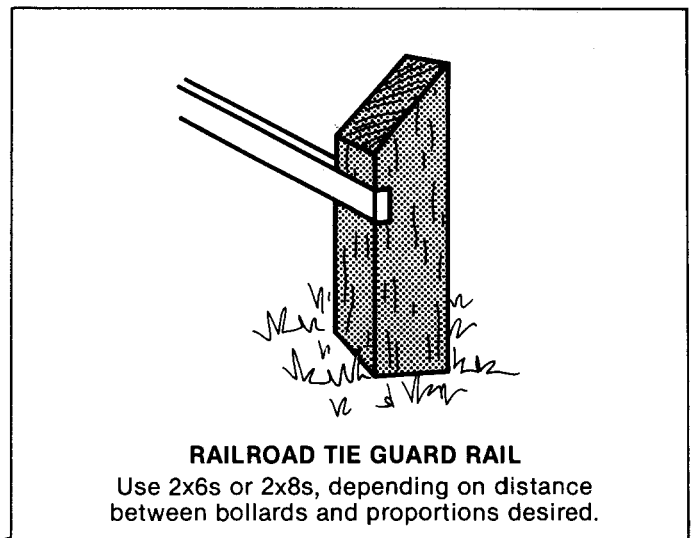
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Landscape ties and railroad ties are not the same material and should not be used together in the same landscape setting. The neat, clean surface and smaller scale of the landscape tie is a direct contrast to the uneven wearing and often rock-scarred, sun-bleached, coarse-textured railroad tie.

Avoid using new railroad ties for landscape purposes. During high summer temperatures, new ties often release creosote, which can cause serious damage to surrounding plant material from actual contact or by its vapors. Also, the price of new railroad ties is usually prohibitive for landscape purposes.

The cost of used ties will vary from free for the taking to as high as \$15 each. The prudent user can fare just about as well by being selective with the free or lower cost ties.

Uses for Railroad Ties in the Landscape

Consider used railroad ties as possible materials for any construction project. Rustic walkways, outdoor steps, rugged fences, borders around patios, riprapping of banks, facing slopes, parking lot car stops, mailbox holders and support beams are some of the possible uses of railroad ties.



Depending on the project to be undertaken, once a source of railroad ties has been located, begin stockpiling to fill anticipated needs. Place the prime or soundest ties in one pile, those with only one or two good sides in another, and those badly warped or disintegrated in a third pile.

In building a retaining wall, the soundest, heaviest ties should be used for the footings for maximum long-range stability. Ties with one or two good sides can be used to raise the wall and those which are warped or partially decayed can be used as deadmen (anchors) (Figure 1).

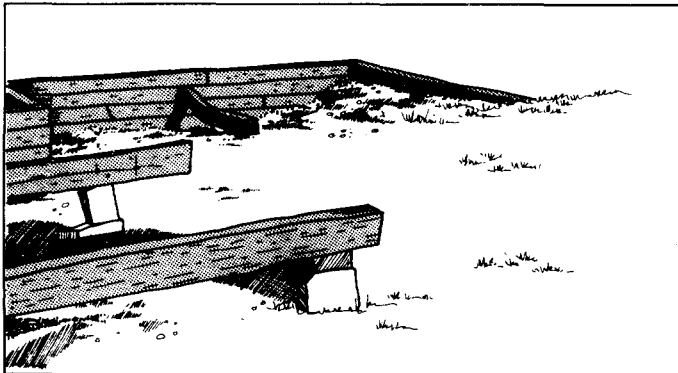


Figure 1. Railroad tie wall under construction, showing deadmen and cross pieces.

Since used railroad ties are approximate in size, care will be needed in using them for anything other than simple edging. In wall building, use the best quality, soundest ties as footings, making sure they are level by sighting with an engineer's level set on a tripod. Footing ties should be dug into the soil about one-half to two-thirds their width or set below grade depending on wall size. Where the soil is unstable, drill three evenly spaced holes through the ties with a 1/2 inch wood bit, then use a sledge hammer to drive a #4 concrete reinforcing rod (rebar) into the holes and soil beneath. With each succeeding tier of ties (going up), stagger the ties (brick-like) so that the ends line up over every other joint beneath. Each tier should also be drawn in (battered) slightly (1/2 to 1 inch) into the slope. To secure into place, use 6-inch spikes, toenailing at the end of each tie, three spikes along the face and two spikes along the backside of the tie (Figure 2). For additional stability drill through two ties at a time with a 1/2 inch wood bit and drive

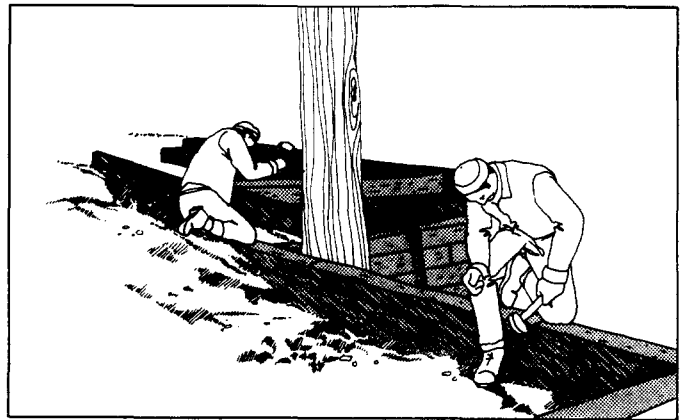
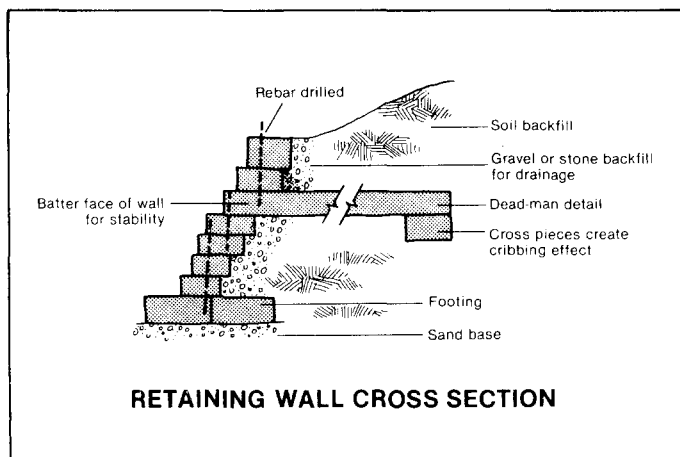


Figure 2. Railroad ties being toenailed with 6 inch nails, using 3 pound sledges.

the #4 reinforcing rods into place. This is especially important where pressure from rainfall or irrigation and frost heaving are experienced.

Anchor ties, referred to as deadmen, may be installed at various wall levels, usually beginning at the third tie layer and staggered at various intervals within subsequent tiers to prevent walls from being forced outward from frost heaving. These are usually warped or badly scarred ties which go back into the bank or slope and may be secured to a cross-piece tie for additional stability (known as cribbing). Generally, two to three more levels of ties are placed above the last deadmen level (approximately 5 to 6 feet maximum). If the wall must be much higher, it is suggested that it be tiered to make handling of the ties easier and to keep the wall from being so imposing (Figure 3).

Once the wall is erected, lining the backside with a geotextile mesh may be necessary to minimize the seeping of sand and soil through the face of the wall. Where heavy rainfall is experienced, it is suggested that perforated pipe (i.e. ADS pipe - Advanced Drainage System) also be laid along the base of the

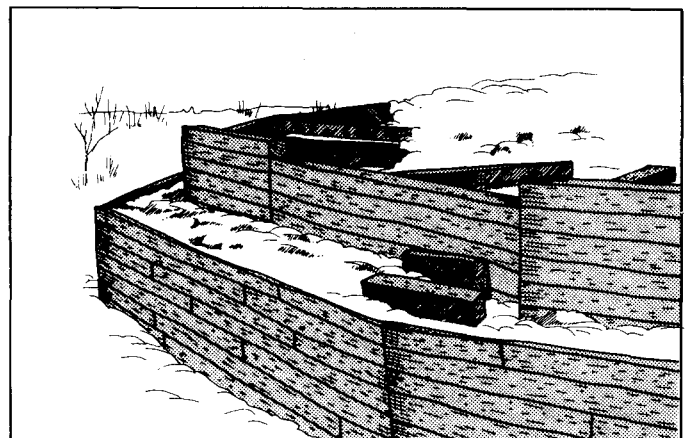


Figure 3. Tiered tie walls going up during early winter. Soil was mulched the previous autumn to prevent freeze-up.

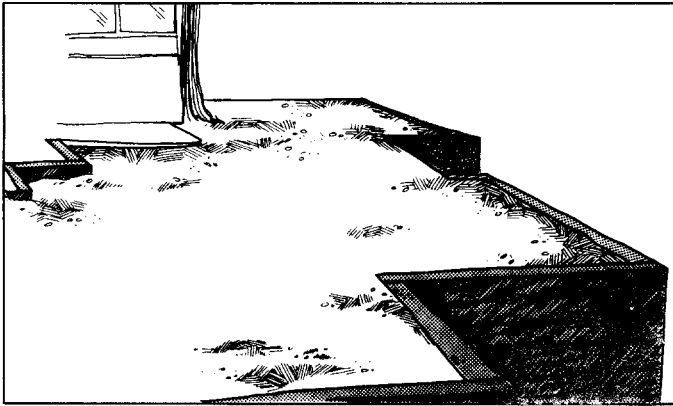


Figure 4. Wall completed, backfilled and ready for planting.

wall to carry the excess water away. Then begin the backfilling process. Use coarse stone or gravel against the ties, about 6 inches thick. This can be accomplished by raising the level of gravel and backfill soil near the wall at the same time. Stone or gravel can be encased in a geotextile envelope to keep silting to a minimum. Then add the remaining backfill soil to complete the job.

Make sure the surface area which will be planted to landscape plants is composed of good quality topsoil (modified with peat moss, sand or vermiculite if necessary) to a depth of 6 to 8 inches or more (Figure 5).

Railroad ties are often used as steps to traverse from one grade to the other. Ties make excellent risers for outdoor steps because of their usable width of 6 to 8 inches.

To construct simple steps for a shallow slope, select only those sound railroad ties which exhibit no evidence of creosote bleeding. Any creosote picked up by foot traffic could be carried to turf areas, which could leave temporary dead spots. Creosote that may contact carpeting or clothing is extremely difficult to remove. Once the ties have been selected, cut them to the width desired (generally 4 feet wide) and set them into the slope on a 1- to 2-inch sand base. While the riser of 6 inches is about right, the tread needs to be 12 inches or more. This tread can be accomplished by using two railroad ties or bricks (bricks laid lengthwise would provide about another 8 inches to the 6-inch tread on the tie for a total of about 14 inches) (Figure 6.)

Many people will want to use railroad ties to construct ramps or ramped steps, which has the riser 3 to 6 feet apart, with a gradual slope (1 to 5 percent) between. If the steps are going to be used in the winter, the ties should be sloped slightly forward to allow for water run-off to minimize ice buildup.

In edging beds (Figure 7) the homeowner may choose to set cut ties vertically at a uniform level, a



Figure 5. Before and after landscape setting using used railroad ties as the basis for construction.

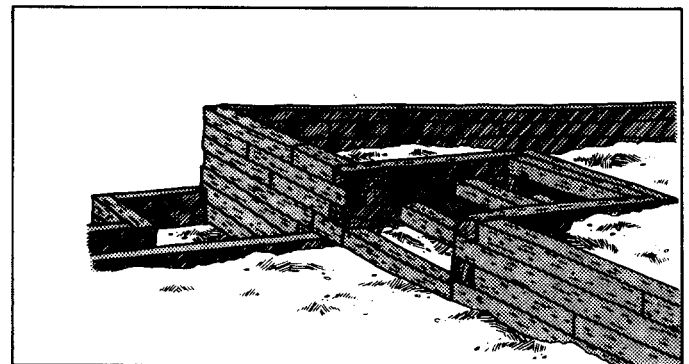


Figure 6. Wall and step construction detail, just prior to backfilling.

gracefully undulating one or at a random height. Make the cuts with a chain saw and set ties on a 2-inch base of level sand to a depth of 4 to 6 inches. The sand will provide adequate stability once the soil is packed around them.

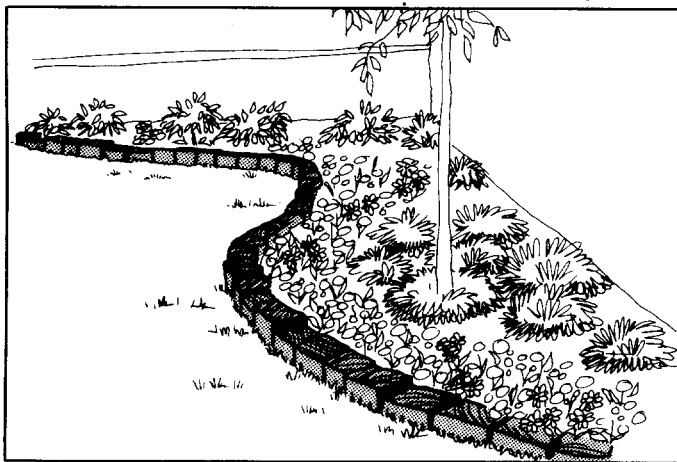


Figure 7. Railroad ties cut on end create an attractive border for a landscape planting.

Where the ties are going to be standing upright as in a mailbox holder (Figure 8), the post hole is dug approximately 30 inches deep. Next, drill holes into both ties with a 1/2 inch wood bit and secure together with (in this particular case) railroad spikes or #4 concrete reinforcing rods. Ties are then set upright, adjusted for straightening and encased in about 6 inches of concrete. The concrete is allowed to cure for 24 hours, then the hole is filled with soil packed tightly around the ties. The height of the aboveground portion of the ties can be varied depending on how they will be used in the landscape.

Typical Tools Needed

1. A gasoline or electric powered chain saw is a necessity. It is wise to have at least one extra sharpened chain on hand to avoid construction delays.

2. Use an engineer's level on a tripod for wall building to make sure each course is laid level. When uneven or slightly warped ties are used, some wood-working tools or an axe may be necessary. If no wall is intended, a carpenter's level will suffice to keep the ties true enough over a normal course.

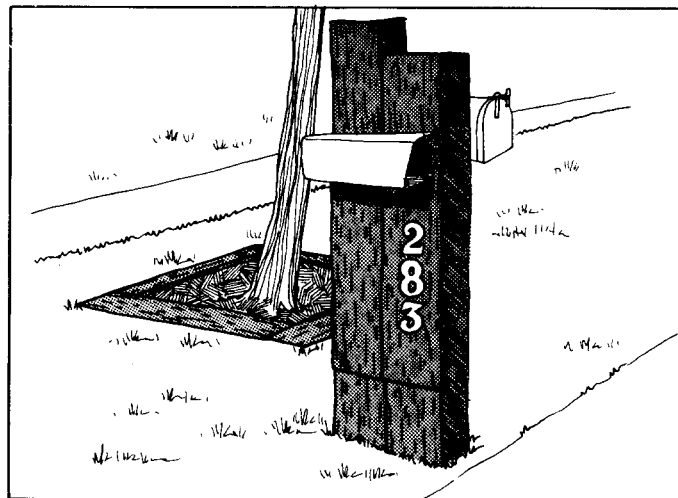


Figure 8. Railroad ties used around tree wells, set flush for easy mowing (background). Two upright ties make a rugged and durable mailbox holder.

3. Obtain a supply of 6-inch spikes and a 20-ounce or heavier hammer to drive them.

4. Heavy duty power drill with a 1/2 inch bit with an extension to go through two ties, and a supply of #4 reinforcing rods are required. The reinforcing rods are about 1/16 inch larger than the auger, providing a "grip" on the ties.

5. Hand tools, shovels, rakes, picks and work gloves are essential for railroad tie construction.

Beware: Rustic Ties and Sloppy Workmanship

While used railroad ties provide a rugged and rustic appearance to the landscape, care should be taken not to ruin the effect with sloppy workmanship. Lines should be straight, courses level and the corners neat.

With some imagination, common sense and hard work, the use of used railroad ties in the landscape can be both aesthetic and functional, lasting a quarter of a century or longer.