

Shoulder Reinforcement With Recycled Tires

An innovative approach for reinforcing narrow or erroded roadway shoulders

by David Huft

Most highway departments face two common problems--the high cost of new construction materials and disposal of used tires. The California Department of Transportation's Transportation Laboratory has developed a novel way to address both problems at once, by reinforcing narrow or eroded highway shoulders with recycled tires.

In a typical installation, a bench is cut and sloped slightly towards the traveled way. After the bench is lined with engineering fabric to prevent erosion, a layer of tires is placed. Steel clips fabricated from half-inch reinforcing bar tie the tires together in parallel rows. After the first layer is filled and covered with permeable material, the second layer of tires is placed.

Walls up to six feet high can be built by adding more tire layers. Salvaged steel posts driven through the inside rows of tires tie the embankment together vertically. Caltrans recommends covering the top and sides of the installation with engineering fabric to prevent erosion.

At a test site on Route 32 in northern California, Caltrans determined that the tires provided a safer highway by developing

a wider traveled way. The tires remained stable after installation. Caltrans found the cost of the tire reinforcement to be less than half that of other alternatives (see table).

Caltrans cautions that recycled tire reinforcement should be considered an interim repair, with a life expectancy of five to ten years.

More information on this use of recycled tires can be obtained from The New Hampshire Technology Transfer Center at 1-800-423-0060 or from Caltrans by calling (916) 739-2417 or writing to:

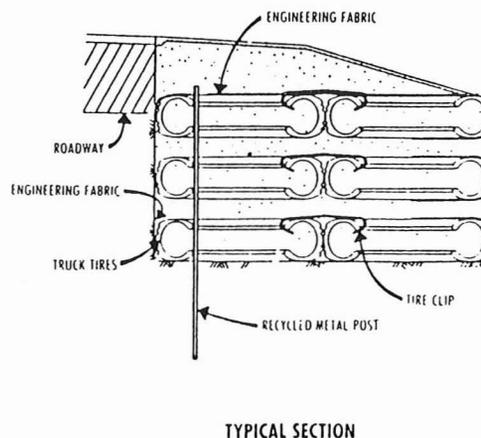
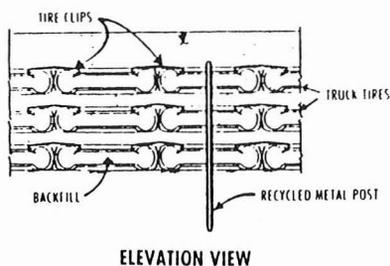
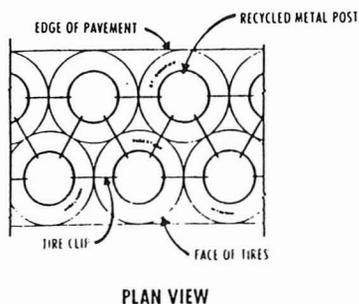
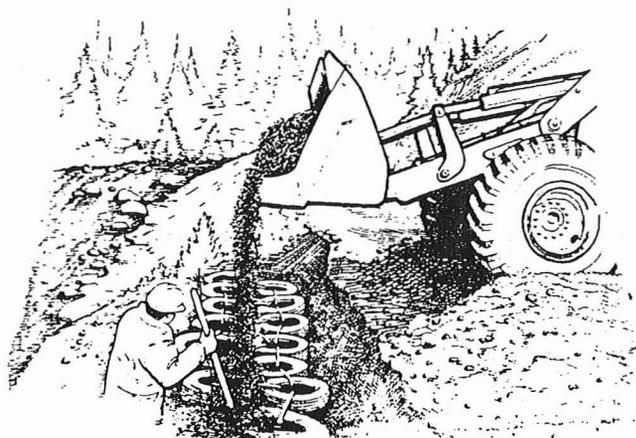
In 1988 Dollars Per Lineal Foot For a 5' High Wall

Discarded Tire wall *	80.00
Gabion wall	165.00
Concrete crib wall	230.00
Reinforced concrete wall	325.00

*Suitable excavated material is assumed as backfill

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Shoulder erosion along a narrow highway can be mitigated. By using salvaged post anchors and discarded tires, shoulders can be restored thus making the highway safe for travel.