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A NEW SYSTEM DEVELOPED FOR GUYING TREES

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Methods of cabling trees were developed more than sixty years ago by The Davey Tree Expert Company. Much of the initial work in the development of the process was done by Wellington Davey, who used the thimble, eye bolt, and screw rod to form the triangle and box cable systems. There have been minor improvements in the materials used, but there has been no change in technique to reduce labor or material costs, such as the extra high strength cable.

In recent years the need for finding alternate systems has been magnified by (1) installation of cables by personnel with less experience, (2) increasing difficulty of securing common grade soft lay cable, (3) the need for saving installation time because of ever-increasing labor cost, and (4) a need for reduction of number of items inventoried. Possible areas of modification would be (1) a new method of fastening the cable to the lab hooks or amon eye nuts in place of the eye splice now used, and (2) the use of material other than the common grade cable which is needed for ease in making the hand-wrapped eye splices.

Methods

During 1976, two alternate methods of securing the cable to the lag hooks were evaluated. The first of these methods was the use of the Burndy crimpits. Their installation requires an expensive, heavy duty crimping tool and species dies for the various size crimps. Since the crimping tool was heavy and bulky, it would be difficult to operate when making up a cable in a tree.

On July 12, 1976, a meeting was held with Robert Skilton, Manager Special Industry Sales, of the Preformed Line Products Company in Cleveland, Ohio. This company pioneered and developed the helical concept for gripping wire strand. Millions of Preformed dead-ends have been used by utilities and other industries around the world. Their Preformed Guy-Grip dead-end units could be modified for cabling trees, using cables of various high strength grades. According to Mr. Skilton, the Preformed Guy-Grip dead-ends would not slip on the cable or break below the rated breaking strength of the corresponding size extra high strength 7-wire cable.

When using the Guy-Grip dead-ends for cabling trees, thimbles are required to protect the wire loop from wear at the point where it will rub in contact with the lag hook. The original loops in the standard Preformed units were too large to secure the size thimbles used with Davey 3/8", 1/2", and 5/8" lag hooks.

The next step was the redesigning of the loop in 3/16" and 1/4" Preformed Guy-Grip dead-ends so that the proper size thimbles used by Davey would be held snugly in the loops when these units were installed at the end of the cables. It was not until February 1977 that the first batch of 3/16" and 1/4" Preformed Tree-Grip dead-ends were ready for a stress test. On February 21, 1977, the stress tests were conducted at Preformed Line Products Company's test lab in Cleveland, Ohio. In attendance were Pete Plumgas, design engineer, and Robert Skilton of the Preformed Line Products Company. Using the 3/16" and 1/4" Preformed Guy-Grip dead-ends with the corresponding size extra high strength (EHS) cable, the setups did not break until well beyond the rated breaking strength of the EHS cable.

Advantages. Advantages of Tree-Grip dead-end units are:

1. The Preformed units can be installed much faster than it takes a new employee to wrap an

eye splice at the end of the cable. Installation, either in a tree or on the ground, requires about one minute for each Tree-Grip dead-end. It also appears that with few instructions it would be impossible to make a poor installation of the Preformed unit.

2. The Preformed units can be used with extra high grade, 7-wire, steel cable as well as with the common grade, 7-wire cable Davey now has in stock. With EHS cable, the 3/16" EHS cable can be substituted for the 3/16", 1/4", and 5/16" common grade cable. The 1/4" EHS cable could be used where the 3/16" EHS cable leaves off and substituted for the 3/8" common grade cable which is the heaviest that Davey now stocks. The use of the smaller size EHS cable would also be lighter in weight. The strength and weight relationship between the two grades of cables are shown in Table 1.

Disadvantages. A disadvantage of the Tree-Grip dead-end is that, because of the length of the Preformed Tree-Grip dead-ends, it would be impossible to use them to make up tree cables less than three feet in length. This length cable requires splicing in the middle to prevent kinking and breaking of the wires.

Evaluation Tests

In June of 1977, test kits were sent to eleven Davey tree care territories selected to include those that would have field personnel with many years of cabling experience and those that would have few years of cabling experience.

The field use and acceptance of the Preformed Tree-Grip dead-ends in 1977 was less than expected, but the feedback did indicate that they warrant further use and evaluation. Under some conditions the use of the Preformed Tree-Grip dead-ends were used to install cables in about half the time required with the cabling system now used. Generally, the acceptance of the Tree-Grip dead-ends was greatest in the tree care territories with field personnel with the least amount of experience in cabling.

Substitution of Extra High Strength Cables for Common Grade Cables When Using Preformed 3/16" and 1/4" Tree-Grip Dead-Ends

7-Wire Cable Diameter Sizes	Minimum Cable Strength in Pounds		Weight of Cable Pounds per 1000 feet	
	EHS	Common	EHS	Common
3/16"	3990	1150	72.9	72.9
1/4"	6550	1900	121	121
5/16"		3200		205
3/8"		4250		273
7/16"		5700		399

TABLE 1. Substitution of extra high strength cables for common grade cables when using Preformed 3/16" and 1/4" Tree Grip Dead Ends.

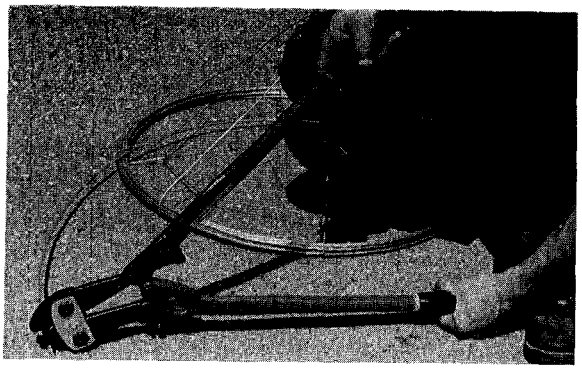

Fig. 1. Extra high strength cable can be more easily handled using Safety Guy Wire Dispenser made by Preformed Line Products Company. Tape area where cable is to be cut with cable cutter. This prevents individual wires from separating.

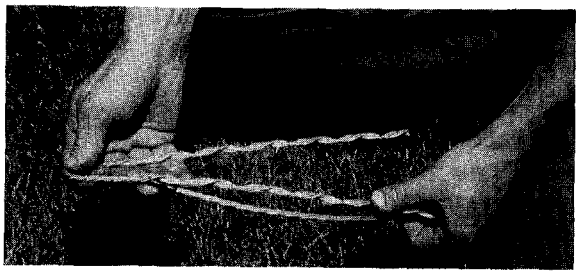

Fig. 2. In starting installation of Tree-Grip Dead-End on cable, lay end of cable twist slighty above crossover mark 3/8" on TG-1250 and 5/8" on TG-251 on short leg of unit.

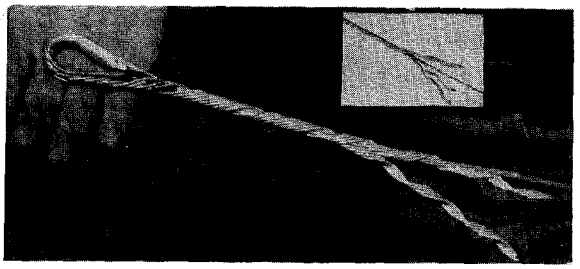

Fig. 3. With 1/4' TG-1251 unit, if last two twists (pitches) are difficult to turn on, leave last pitches on each leg until last. Then split wires on each leg into two groups, as shown in insert, and turn each split group on separately.

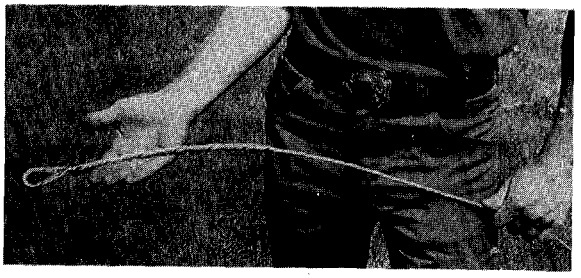

Fig. 4. Completed installation of 3/16" TG-1250 unit at end of 3/16" extra high strength cable.

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ABSTRACT

Pardo, Richard. 1978. **National register of big trees.** American Forests 84(4): 18-45.

With publication of this list, A.F.A.'s Social Register of Big Trees officially becomes the A.F.A. National Register of Big Trees. This is just the first of a number of changes in the Big Tree program planned for 1978; changes that will strengthen the program, make it known to more people and provide improved coordination with the growing number of similar programs at the state level. The first A.F.A. Big Tree list was published in American Forests magazine in 1945; it contained 228 trees. Of those initial champions, seven are still National Champions. For almost four decades, the program has employed a steady growth in size and scope, and there are now some 661 trees in the National Register. But more than 1,000 species are eligible for inclusion, so the list is still far from complete. Inclusion in the Register generally is restricted to native or naturalized trees of the U.S., as listed in the U.S. Forest Service book, *Check List of Native and Naturalized Trees of the United States,* by Elbert Little.