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Vandal Resistant Fee Tube Is Effective Against Crime

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Highlights...

- The Forest Service currently uses many different fee tube designs.
- Many fee tubes are susceptible to common methods of theft and vandalism.
- The Columbia River Gorge National Scenic Area (CRGNSA) made design changes to its fee tubes that have prevented thefts for more than 2 years.



Figure 1—The remains of a stolen fee tube.

For many years, recreation sites of the U.S. Department of Agriculture, Forest Service have collected fees.

Since 1996, when Congress authorized the Recreation Fee Demonstration Program (now, the Recreation Enhancement Act), the Forest Service has collected recreation fees for the use of specific facilities. Since then, recreation sites have installed many self-service fee tube designs, some of which have been susceptible to theft (figure 1) and vandalism. The Missoula Technology and Development Center (MTDC) has been evaluating self-service collection designs, including fee tubes, since 1971.

In 2011, MTDC requested information from Forest Service employees who collect or manage fee collections. The information gathered included the following:

- National forests, grasslands, and scenic areas, which currently use many different fee tube designs, sent pictures or drawings of 13 different fee tube designs.
- Depending on the frequency of vandalism and theft and the possibility of dangerous wildlife seeking shelter in the fee tube, some locations require different fee tube designs.
- It would benefit Forest Service employees to standardize a set of fee tube designs that address combinations of security issues and environmental conditions of an area.

This tech tip describes a new fee tube design that the Columbia River Gorge National Scenic Area (CRGNSA) has used for more than 2 years. It has been effective in stopping theft and vandalism.



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Fee Tube Vulnerabilities

The Columbia River Gorge National Scenic Area, a popular recreation destination, can collect up to \$5,000 per week at some sites during the summer months. The CRGNSA experienced theft and vandalism to the horizontal envelope slot fee tubes at many of its developed sites. The horizontal envelope slot fee tube design (figure 2) is similar to what many Federal recreation areas currently use. The 6- by 8-inch tube is constructed with ¼-inch-thick metal plate welded together with a horizontal envelope slot on top and a sliding collection plate at the bottom. Some fee tubes have two saw-tooth metal plates (figure 3) to prevent the envelopes from being fished (a method of removing envelopes through the slot using glue sticks and string). The design of the horizontal envelope slot fee tube, with single walls, a padlock, and collection plate, has several vulnerabilities that thieves take advantage of. Using a torch, thieves have cut open the tube; using a hacksaw or other cutting device, they have hacked into the tube; using a hydraulic jack, they have jacked it open; and, using glue sticks, they have fished for the contents. With each theft or vandalism, it takes employees time to fix the damage and mitigate the loss of personally identifiable information that can be found on visitors' checks and credit card receipts.

Fishing is the most common form of theft. Law enforcement working these cases dubbed the thieves "sticky bandits." After law enforcement apprehended one sticky bandit, the thief described some simple design changes that would prevent fishing and other forms of theft.



Figure 2—A fee tube with a horizontal envelope slot.

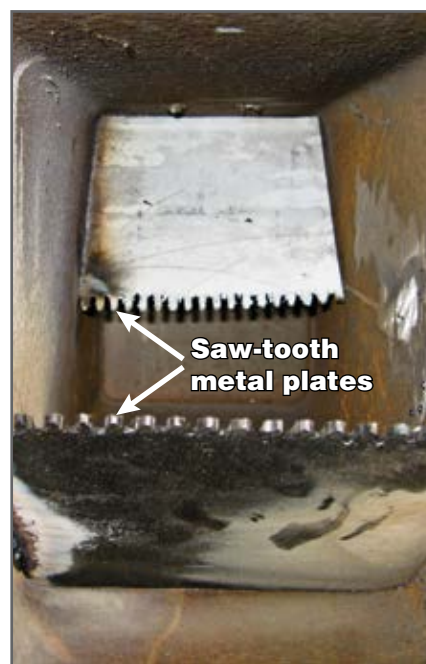


Figure 3—Teeth intended to stop envelope fishing on a fee tube.

The Columbia River Gorge National Scenic Area Vandal-Resistant Fee Tube Design

The vandal-resistant fee tube design (figure 4) incorporates vandal-resistant and theft-proof improvements not found in many currently used designs. It has a vertical envelope slot with internal deflection fins (inset, figure 4) that help prevent fee envelopes from being fished out from the collection box. An optional layer of concrete between the inner and outer tubes would help deter cutting the tube with a torch (figure 5). The padlock has been replaced with a shrouded lock which, unlike the padlock, cannot be pulled with a vehicle and cable to force open the lock. The floor of the collection box (see figure 4) is sloped instead of flat to prevent jacking open the collection plate. The sloped base also makes the terrain less hospitable for dangerous wildlife, such as snakes, to shelter in.

The vandal-resistant fee tube design has been successful in stopping all thefts for more than 2 years at CRGNSA sites. When these tubes were initially installed, site employees observed signs of attempted thefts, but none were successful. In a show of frustration with the new design, the thieves glued the envelope insertion assist (hanging from the chain, figure 4) into the slot and gave up. Over time, the signs of attempted thefts have mostly ceased.



Figure 4—The new Columbia River Gorge National Scenic Area fee tube. This tube does not have an optional concrete-filled outer sheath. The vertical envelope slot has internal deflection fins (inset).



Figure 5—A prototype fee tube with an optional concrete-filled outer sheath.

Summary

The vandal-resistant fee tube offers additional security for locations that experience frequent vandalism and theft. This design would be a good choice for areas that collect high dollar amounts. Many of the design improvements, such as slanting the collection floor and changing the envelope slot from horizontal to vertical, adding envelope slot deflection fins, and changing from a padlock to a shrouded lock, could be retrofitted into current fee tube designs with some fabrication. Something to remember, as was mentioned in the 1998 tech tip “Fee Deposit Tube Fabrication Drawing” (9823–2343–MTDC), available at <http://www.fs.fed.us/eng/pubs/htmlpubs/htm98232343/index.htm>, the concept of vandal-proof or theft-proof vaults in unattended recreation sites is not practical.

In an attempt to find further design improvements, MTDC will fabricate and install the vandal-resistant fee tube and other fee tube designs at its facility, subjecting them to a variety of theft and vandalism methods. Any future design improvements will be included in AutoCAD specification drawings available on the internal Forest Service network. These are preliminary drawings (not for construction) to be used for reference only.

Additional Information

Although no commercial manufacturers are fabricating this design at this time, Iron Rangers, LLC, is willing to offer a vertical slot fee tube option (based on the vandal-resistant fee tube design), which will be available on request. For those planning to fabricate the CRGNSA model, the estimated cost of fabrication, labor, and materials is about \$1,800. Installation requires excavation for a 1- to 2-yard concrete footing to install the pedestal.

Acknowledgments

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About the Author

Damien Hoffman joined MTDC in 2004 as a student at the University of Montana. He worked as a Web development assistant until graduating in 2006 with a bachelor's degree in wildlife biology, when he took over as Webmaster. Hoffman, who works as a project leader at MTDC, is the cache coordinator for the National Visitor Use Monitoring program. He also earned a bachelor's degree in sociology from the University of Minnesota-Morris.



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The U.S. Department of Agriculture, Forest Service uses self-service fee tubes at some locations to collect recreation fees from the public. Some fee tube designs are susceptible to theft and vandalism. The Missoula Technology and Development Center (MTDC) evaluates self-service collection designs in an effort to improve security. In 2011, MTDC requested information from Forest Service employees who collect fees or manage fee collections. This tech tip describes a new fee tube design used at the Columbia River Gorge National Scenic Area for more than 2 years. The design effectively reduces theft and vandalism.

Keywords: fee collection, fees, fee tubes, theft, theft-proof, vandalism, vandal-resistant



For additional information about vandal-resistant fee tubes, contact MTDC:

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