

cost information for the Challis design, but using treated lumber is worth the expense.

Deschutes Trail Cattle Guard

After putting a lot of thought into a design, Dick Dufourd began installing these cattle guards on the East Fort Rock OHV trail system, Deschutes National Forest, in 1986. Since then, many more have been installed at BLM and Forest Service sites in central Oregon and throughout the Pacific Northwest. Both the Forest Service and BLM believe that the cattle guards have performed beyond expectations, at reasonable cost, and with minimal maintenance.

The Deschutes Trail Cattle Guard looks and works like a traditional road cattle guard. It provides a flat running surface (Figure 4). The design is a combination of a treated timber base and a steel deck made with an angle-iron frame and tread rails of square tubing. It is 5 feet (1.5 m) wide and 8 feet (2.4 m) long. The base is a wooden box constructed of 2- by 12-inch (50- by 205-mm) treated lumber. Lag screws attach the deck to the base. The wings are made of treated 2 by 4's.

Complete plans for the Deschutes Trail Cattle Guard are in Appendix A. All the materials for two cattle guards weigh about 600 pounds (270 kg) and can easily fit into the bed of a pickup truck. Although the cattle guard is designed to be assembled onsite, if the deck can be transported to the site in one piece, all of the tread rails could be welded to the angle iron frame except for the last three on each end, which would be bolted. Welding reduces fabrication time, and the bolted tread rails provide cleanouts.



Figure 4—The Deschutes Trail Cattle Guard looks and performs like a downsized version of a traditional road cattle guard.

Maintenance is infrequent and easy. You simply unbolt some of the rails and scoop out dirt that has accumulated beneath the cattle guard. The approaches tend to get beat out with heavy use, especially in soft soils. These need to be raked smooth. In some situations, it may be desirable to harden the approaches with a soil stabilizer, geoweb, or some other trail-hardening technique to keep the soil in place.

Caribou Trail Cattle Guard

The Caribou Trail Cattle Guard was designed by Carl Stoddard, Mark Booth, and John Newcom from the Montpelier Ranger District, Caribou National Forest, Idaho. This all-steel cattle guard features economical recycled steel fenceposts and is fabricated in the District shop (Figure 5). It

has been used since 1995. Cattle were bunched and held against this trail cattle guard, and were also crowded through gates right next to them, but there wasn't a single attempt to breach the ramp.

Installed, the cattle guards are 13 feet (4 m) long. They are constructed in two pieces and bolted together onsite. They can be carried in a pickup truck or on an ATV trailer.

Perhaps the major cost advantage for this design is the fact that installation takes less than 1 hour and can be accomplished easily by two people. There is no need to dig a pit or set brace posts. You simply cut any wire in the fence that is higher than 22 inches (560 mm) above the ground, set the two halves of the cattle guard in place on either side of the fence, bolt them together, and tie the fence back into the wings of the cattle guard. The ground need only be relatively flat and not too boggy.



Figure 5—Carl Stoddard poses with the Caribou Trail Cattle Guard he fabricated in Montpelier, Idaho. Recycled steel fenceposts work fine as tread rails. MTDC modified the design shown here slightly to strengthen and widen the decking. The plans in Appendix B show the changes.

Deerlodge Trail Cattle Guard

Eric Tolf, from the Jefferson Ranger District, Beaverhead-Deerlodge National Forest, Montana, and the late Darrow Hippert, McGrew Machine and Fabricating in Whitehall, Montana, designed the Deerlodge Trail Cattle Guard (Figure 7). It is an elevated design and is shorter than the Caribou or Deschutes Trail Cattle Guards.

The original design called for 2- by 1-inch (50- by 25-mm) steel channel for the tread rails. The plans included in Appendix C show an optional design using 2- by 2-inch (50- by 50-mm) steel angle instead, which should cost less.

Steel angle iron, 2 by 2 inches (50 by 50 mm), could be substituted for the steel fenceposts used here as tread rails. They would be welded at both ends to the box-tubing “stringers” with the point of the angle facing up.

This cattle guard is built with galvanized chain link fence material underneath the tread rails and over the X-shaped flat-iron support bars (Figure 6). The chain-link fence helps prevent users from slipping a foot or wheel between the tread rails. Cattle still avoided the cattle guard even with the chain-link fencing in place.

The original design was 44 inches (1.1 m) wide, but in the plans in Appendix B we widened it to 52 inches (1.3 m) to accommodate wider ATV's. The District has constructed them 36 inches (.9 m) wide for trails where ATV's are not permitted.



Figure 6—The two halves of the Caribou Trail Cattle Guard bolt together easily. Chain-link fencing keeps people from slipping through, but still discourages cattle.

The cattle guard needs to be bolted to at least 2- by 6-inch (50- by 300-mm) treated timbers at both ends (the plans show welded tabs for bolting). These timbers are buried. Larger timbers could be used to raise the entire cattle guard, with the approaches built up to provide a smooth transition.

For a more substantial side barrier, you might consider constructing two short H-brace fences running in the same direction as the cattle guard.

Challis Trail Cattle Guard

Howard Rosenkrance documented this design some years ago on the Lost River Ranger District of the Challis National Forest, Idaho (Figure 8). According to District staff, this all-wood design is still being used and serves its intended purpose.

Plans are included in Appendix D. If the cattle guard is set on railroad ties at two ends only, minimal excavation would be needed to level the ties. Approaches could be built up for a transition to the cattle guard. The lumber can be precut and assembled onsite. Buying treated lumber and applying additional treatment to any cut surfaces is a good investment, because it will help keep the structure from rotting.

The specified tread rail width is 48 inches (1.2 m). However, they can be widened to handle the larger ATV's—or made narrower, for that matter. The wings made out of 2 by 4's are tied into the existing fence.



Figure 7—The Deerlodge Trail Cattle Guard has tread rails of either channel or angle steel. It is welded as one piece and can be easily hauled in one piece to the installation site.



Figure 8—The Challis Trail Cattle Guard. Treated 2 by 6's are used for tread rails. (One piece of decking is missing on the right side.)

Sources

All of these designs can be fabricated by District crews or at local fabricating shops. You may also want to consider the sources below for a couple of the designs. This listing does not constitute an official endorsement by the Forest Service.

Deerlodge Trail Cattle Guard—McGrew Machine and Fabricating, Inc.
5 South Division Street
Whitehall, MT 59759
Phone: (406) 287-3916

Caribou Trail Cattle Guard—The Montpelier Ranger District may be willing to fabricate these at cost for other Forest Service units. For more information, contact John Newcom or Mark Booth at:

USDA Forest Service
Montpelier Ranger District
322 North 4th Street
Montpelier, ID 83254
Phone: (208) 847-0375



About the Author

Brian Vachowski has been a Project Leader specializing in recreation, trails, and wilderness projects at the Missoula Technology and Development Center since 1993. He received a bachelor's of science degree in forestry from the University of Massa-

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recreation, wilderness, planning, lands, rural community assistance, special uses, fire, and timber positions. Before coming to MTDC he was an assistant staff officer for wilderness and recreation on the Nez Perce National Forest.



*** See Part 3 for cattle guard design plans ***

Library Card

Vachowski, Brian. 1998. Cattle guards for off-highway vehicle trails. Tech. Rep. 9823-2826-MTDC. Missoula, MT: U.S. Department of Agriculture, Forest Service, Missoula Technology and Development Center. 16 electronic p.

Describes four cattle guards that can be used to replace gates for off-highway vehicle (OHV) trails. Drawings and photos of the cattle guards are included. Cattle guards prevent the perennial problem of gates being left open.

Keywords: fencing, forest recreation, gates, mechanized recreation, OHV, range management, stiles

Additional single copies of this document may be ordered from:

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