Recreation Tech Tips

USDA United States Department of Agriculture
Forest Service
Technology & Development Program

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Improved All-Terrain Vehicle Trail Cattle Guard

Deb Mucci, ***Mechanical Engineering Technician;*** **Brian Vachowski,** ***Program Leader***

The Southwest Montana ATV (all-terrain vehicle) Trail Cattle Guard (MTDC–1049) has been developed to replace an earlier design, the Deerlodge Trail Cattle Guard (MTDC–951–2).

The Deerlodge Trail Cattle Guard proved to be too short (only 34 inches on each side of a wire fence) to prevent livestock from trying to jump over it. Also, cattle got their legs caught in the 4-inch gap between the rails and could not free themselves. The Deerlodge Trail Cattle Guard was featured as one of four OHV (off-highway vehicle) trail cattle guard designs in MTDC's 1998 report, *Cattle Guards for Off-Highway Vehicle Trails* (9823–2826–MTDC), available at: *http://www.fs.fed.us/eng/pubs/htmlpubs/htm98232826/*

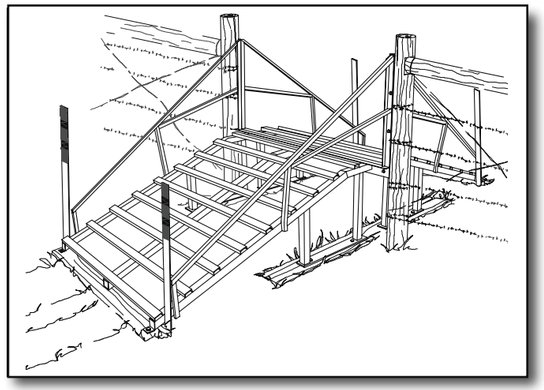


Figure 1—The Southwest Montana ATV Trail Cattle Guard is being used on national forests and BLM public lands in Montana. Object markers may be placed on the center posts instead of on fiberglass stakes at the corners.

Features of the New Cattle Guard

Eric Tolf from the Beaverhead-Deerlodge National Forest and Tim Hippert from McGrew Machine and Fabricating, Inc., designed the Southwest Montana ATV Trail Cattle Guard, borrowing some ideas from other designs (figure 1). The deck is fabricated from 2- by 1-inch steel channel, with a 6-inch gap between the pieces of channel. The two halves of the deck join at the middle. The halves can be bolted to each other, or to wooden fenceposts. Attaching the halves directly to the posts will not reduce the effective width (54 inches) of the cattle guard.

The deck is about 22 inches above the ground and the top of the sides are about 51 inches above the ground. The sides flare out from the bottom to the top, providing a visual cue to keep cattle from trying to jump the cattle guard, and serving as a physical barrier to stop ATVs from sliding off the cattle guard. The cattle guard is painted with flat brown oil-based paint.

Installation

Usually, these cattle guards are installed along an existing fence. Choose crossing locations where cattle are not accustomed to bunching up, because cattle that are pushed or bunched up may be forced to step onto the cattle guard or may be tempted to jump it. Sites need to be fairly level.

When foot traffic is encouraged beyond the restriction, a minimum of 32 inches (815 millimeters) of clear passage must be provided around the gate, berm, or other restrictive device to ensure that a person who uses a wheelchair can participate in the opportunity behind the restriction. The accessible timber kissing gate in "Accessible Gates for Trails and Roads" (0623–2340–MTDC) works for pedestrians and people in wheelchairs; an accessible gate latch in "Accessible Gate Latch" (0623–2331–MTDC) may be a better solution when other users, such as mountain bikers and livestock, need access. Refer to the MTDC "Accessibility Guidebook for Outdoor Recreation and Trails" for more gates and barriers information.

For additional information, contact: *USDA Forest Service, MTDC; 5785 Hwy. 10 West; Missoula, MT 59808–9361. Phone: 406–329–3900; fax: 406–329–3719; email: wo_mtdc_pubs@fs.fed.us*

Preservative-treated timbers or thick planks usually are placed beneath the structure, with the soil excavated so that the buried timbers are nearly flush with the ground surface. Timbers support the cattle guard and help keep it in place. Lag screws fasten the cattle guard to the timbers.

Typically, treated wood fenceposts are part of a brace panel that supports the fence on both sides of the cattle guard. Although the two halves of the deck can be screwed directly to these posts, normally they are bolted to each other instead of to the posts.

Yellow retroreflective object markers are mounted on each side of the two posts to help ATV riders see the edges of the structure after dark. Instead, markers could be placed on flexible fiberglass stakes or posts at each of the four corners of the cattle guard. The markers (figure 2) may be type 2 or modified type 2 object markers. If a cattle guard constricts or narrows the trail, the larger type 3 object markers (figure 2) may be required.

Availability

The cattle guard can be fabricated from the drawing on the inside pages. McGrew Machine and Fabricating, Inc., Whitehall, MT, fabricates and sells these cattle guards.

McGrew Machine and Fabricating, Inc.
5 South Division St.
Whitehall, MT 59759
Phone: 406–287–3916

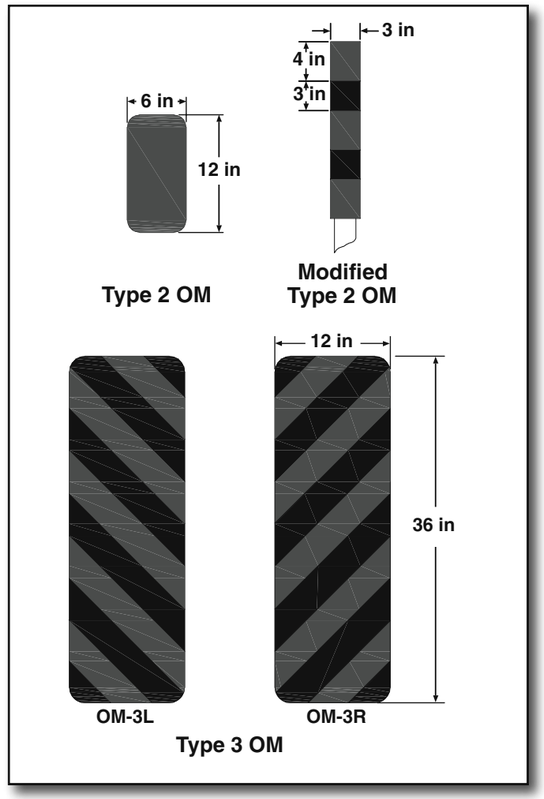


Figure 2—The type 2 or modified type 2 object markers meet Forest Service guidelines, except where the cattle guard narrows or constricts a wide trail. In such cases, the type 3 object marker may be needed as determined by a recreation review.

For additional information about improved ATV trail cattle guards, contact MTDC:

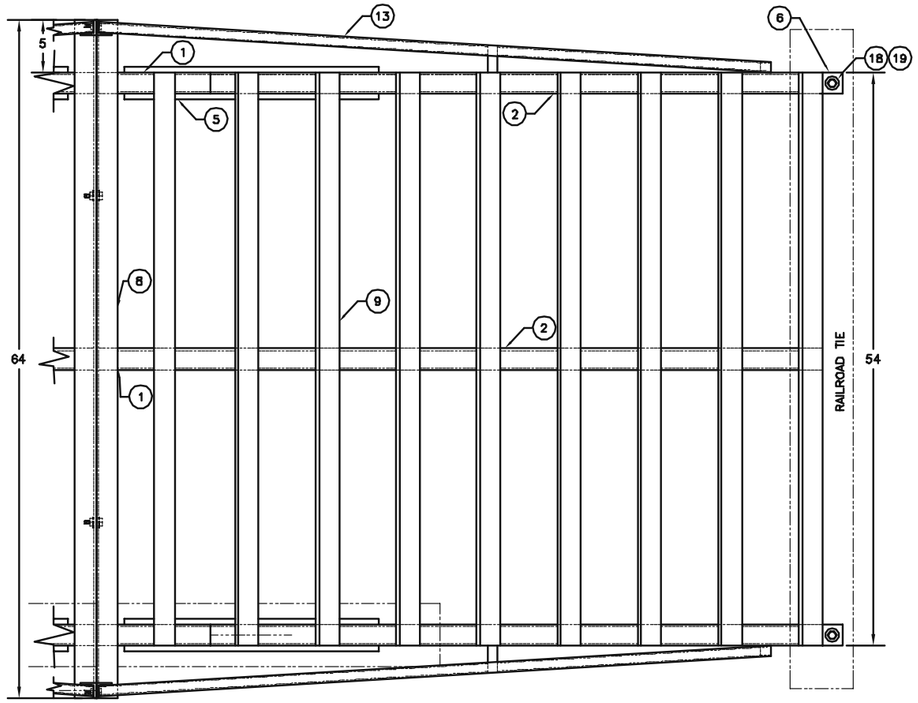
USDA Forest Service
Missoula Technology and Development Center
5785 Hwy. 10 West
Missoula, MT 59808–9361
Phone: 406–329–3900
Fax: 406–329–3719

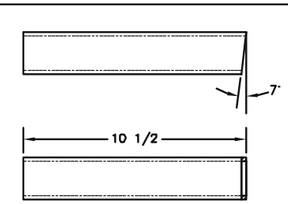
Electronic copies of MTDC's documents are available on the Internet at: *http://www.fs.fed.us/eng/pubs*

Forest Service and Bureau of Land Management employees can search MTDC's documents, CDs, DVDs, and videos on their internal computer networks at:
http://fsweb.mtdc.wo.fs.fed.us/search/

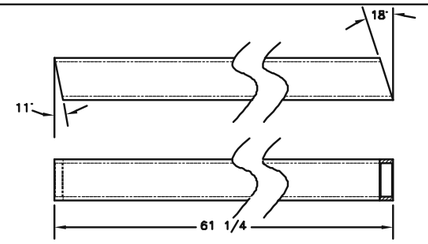
Thanks to...

Grant Godbolt, Beaverhead-Deerlodge National Forest
Tim Hippert, McGrew Machine and Fabricating, Inc.
Donna Sheehy, Northern Region, USDA Forest Service
Eric Tolf, Beaverhead-Deerlodge National Forest





1 FRAME (TOP)
SCALE X2

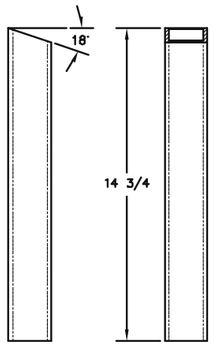


2 FRAME (SIDE)
SCALE X2

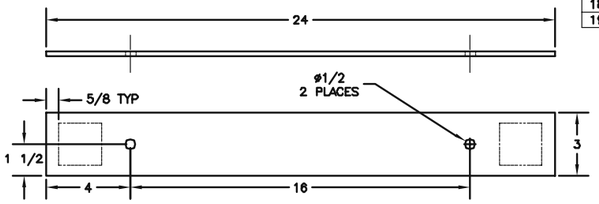
MATERIAL LIST			
NO	PART NAME	REQD	MATERIAL–DESCRIPTION
1	FRAME (TOP)	3	3/16 X 2 X 10–1/2 LG SQ. MECH TUBING, STEEL
2	FRAME	3	3/16 X 2 X 61–1/4 LG SQ. MECH TUBING, STEEL
3	FRONT LEG	2	3/16 X 2 X 19–1/4 LG SQ. MECH TUBING, STEEL
4	BACK LEG	2	3/16 X 2 X 14–3/4 LG SQ. MECH TUBING, STEEL
5	BASE	2	1/4 X 3 X 24 LG FLAT, STEEL
6	TAB	2	1/4 X 2 X 2 ANGLE, STEEL
7	STIFFENER	3	1/4 X 1–1/2 X 3 LG FLAT, STEEL
8	CENTER RAIL	1	1/4 X 2 X 3 X 64 LG ANGLE, STEEL
9	TREADS	9	1/8 X 1 X 2 X 54 LG STANDARD "C" CHANNEL, STEEL
10	POST RAIL	2	3/16 X 1–1/2 X 1–1/2 X 29 LG ANGLE, STEEL
11	BOTTOM SUPPORT	2	11 GAUGE X 1 X 7–5/8 LG SQ TUBING, STEEL
12	CENTER SUPPORT	2	11 GAUGE X 1 X 16–5/8 LG SQ TUBING, STEEL
13	TOP RAIL	2	11 GAUGE X 1 X 75–1/4 LG SQ TUBING, STEEL
14	CROSS SUPPORT	2	11 GAUGE X 1 X 38–3/16 LG SQ TUBING, STEEL
15	NUT	8	3/8–16NC HEX NUT
16	BOLT	8	3/8–16NC X 1 LG HEX HEAD BOLT
17	WASHER	16	3/8–INCH FLAT WASHER
18	BOLT	6	1/2 X 3 LG HEAVY DUTY HEX HEAD LAG BOLT
19	WASHER	6	1/2–INCH FLAT WASHER

NOTES:

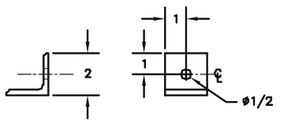
1. PARTS SHOWN FOR 1 ASSEMBLY – 2 REQ'D.
2. CATTLE GUARD SECTIONS ARE DESIGNED TO BE INSTALLED ALONG AN EXISTING FENCE LINE USING THE EXISTING POST(s) OR PLACED TOGETHER AND BOLTED ALONG THE CENTER RAIL – PART NO. 8. PARTS SHOWN ARE FOR BOLTING THE TWO SECTIONS TOGETHER.
3. CENTER FRAME SECTION CAN BE CONSTRUCTED OF 3/16 X 2 X 2 ANGLE IF DESIRED.



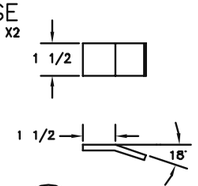
4 BACK LEG
SCALE X2



5 BASE
SCALE X2

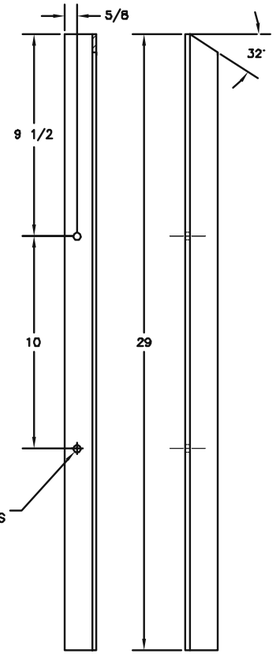


6 TAB
SCALE X2

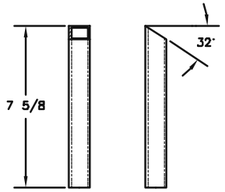


7 STIFFENER
SCALE X2

8 CENTER RAIL
SCALE X2

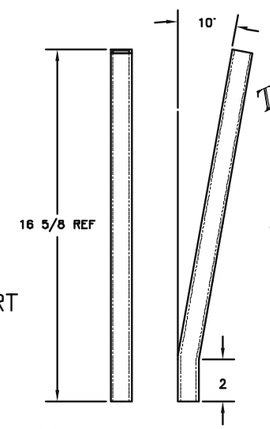


10 POST RAIL
SCALE X2

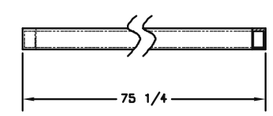


11 BOTTOM SUPPORT
SCALE X2

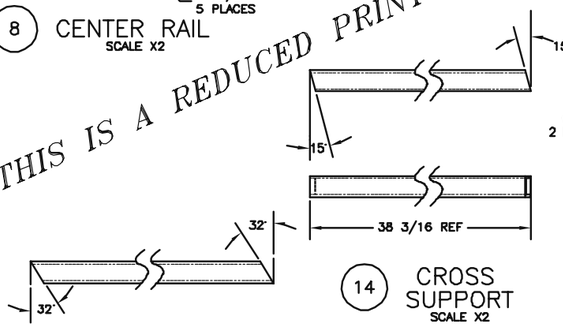
WELDED CONSTRUCTION



12 CENTER SUPPORT
SCALE X2



13 TOP RAIL



14 CROSS SUPPORT
SCALE X2

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