TEXAS
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COOPERATIVE
RESEARCH

A TRAILER FOR TRANSPORTING THE CHLOE PROFILOMETER

in cooperation with the
Department of Commerce
Bureau of Public Roads

RESEARCH REPORT 32-5
AASHO ROAD TEST RESULTS
PROJECT 2-8-62-32

A TRAILER FOR TRANSPORTING THE CHLOE PROFILOMETER

by

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Research Report Number 32-5

AASHO Road Test Results
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Sponsored by

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TEXAS TRANSPORTATION INSTITUTE
Texas A&M University
College Station, Texas

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INTRODUCTION

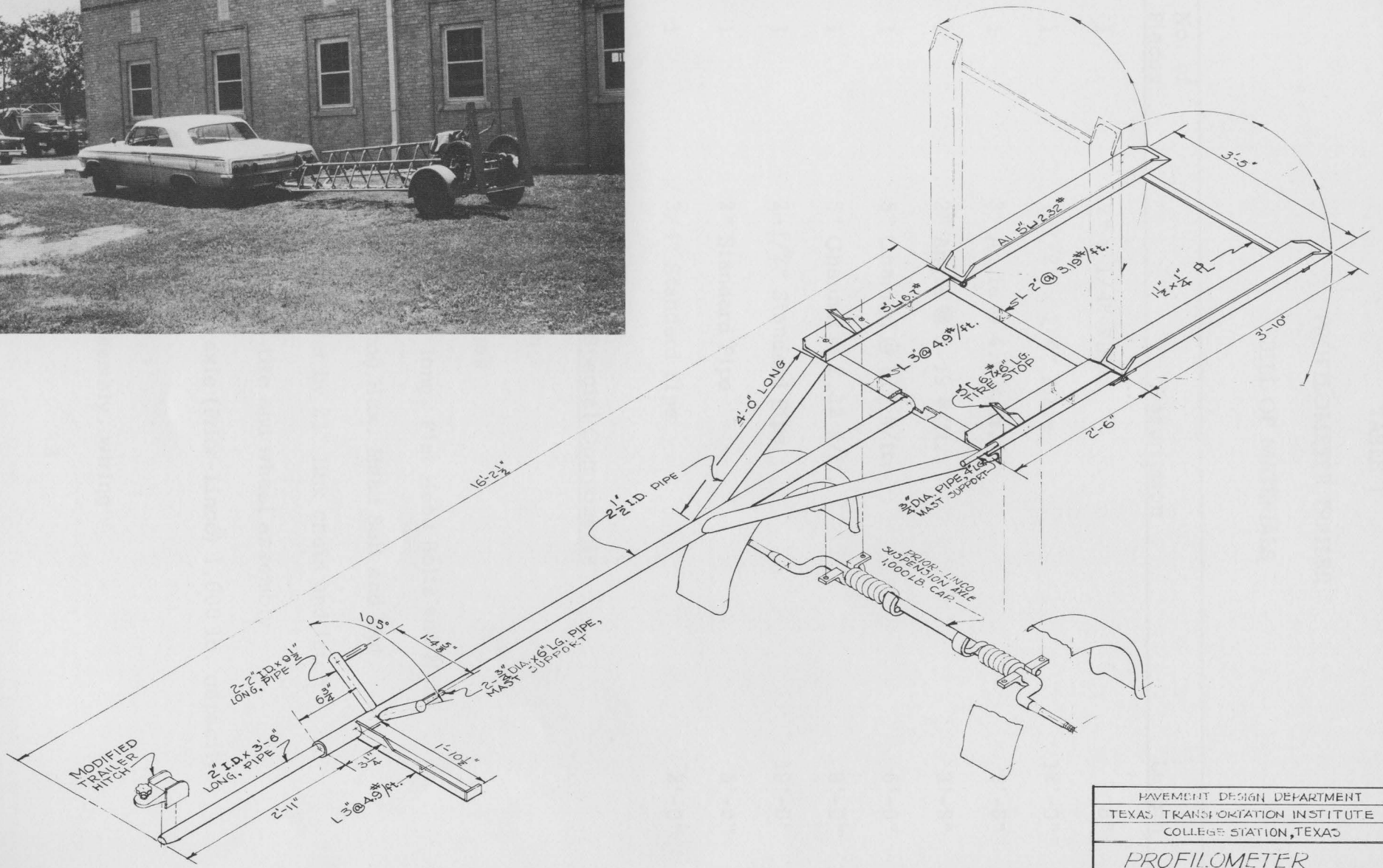
The excess length, as well as certain other design features of the CHLOE profilometer, make it impractical to tow this instrument at normal highway speeds between the test sections where it is to be used. After more than a year's experience in operating the profilometer on Texas highways, the Texas Transportation Institute developed a light, two-wheel trailer for safely transporting the profilometer at high speed. Normally towed by an automobile, the trailer has certain features designed to minimize the time and effort spent in loading and unloading. However, the dimensions supplied herein should be checked against the dimensions of the particular CHLOE for which a trailer is to be constructed as some dimensions vary between models.

The construction details which follow may be of interest to other states and agencies who have recently purchased CHLOE profilometers.

CONSTRUCTION DETAILS

The CHLOE profilometer trailer (Figure 1, Table 1) used in this project was designed by the profilometer crew (Messrs. Rudell Poehl, Edwin L. Hlavaty, and Charles E. Schlieker) with the assistance of the fabricator, Bryan Marine, Inc., 1413 West 25th Street, Bryan, Texas.

A patented sub-assembly used in the trailer was the Prior-Linco (Level Load) Suspension Axle (Figures 1, 2, and 3). It was furnished by Prior



PAVEMENT DESIGN DEPARTMENT		
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PROFILOMETER TRAILER		
Drawn by: L.E.J.	Scale: Isometric	
Checked by: J.H.B.	Date: 5-15-64	Page 1 of 1

FIGURE 1

TABLE 1

PROFILOMETER TRAILER

BILL OF MATERIALS

No. of Pieces	Description	Length
1	2" x 1/4" Plate	8"
1	1-1/2" x 1/4" Plate	12'-0"
1	3" Angle @ 4.9 #/ft.	5'-6"
1	2" Angle @ 3.19 #/ft.	3'-5"
1	5" Channel @ 6.7 #/ft.	6'-0"
1	5" Channel @ 2.32 #/ft.	8'-0"
1	2-1/2" Standard Pipe	19'-0"
1	2" Standard Pipe	5'-0"
1	3/4" Standard Pipe	2'-0"
	Special Components	
1	Trailer Hitch	
1 pr.	4" Butt Hinges	
20	1/4" x 1/2" long, Flat Head Bolts and Nuts	
4	1/2" x 2" long,Hex. Head Bolt and Nut	
1	1/8" diameter by 21" link chain and latch	
2	7.50" x 14" tire and wheel assembly	
1	Suspension axle (Prior-Linco) 1,000 lb. capacity	
2	Finders	
1 pr.	Taillight assembly, wiring	

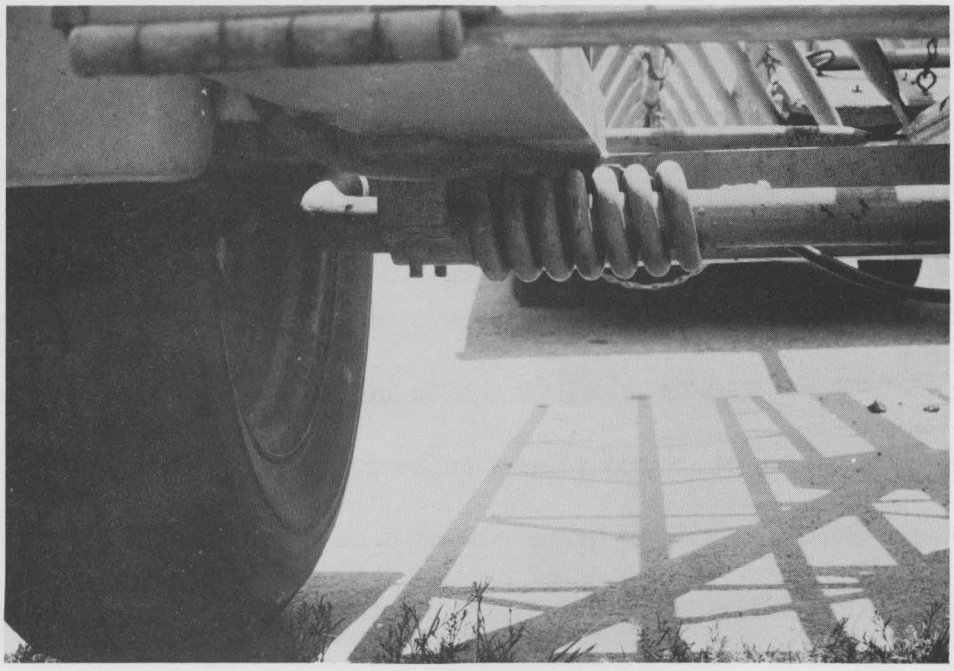

Figure 2: Prior-Linco (Level Load) Suspension Axle.

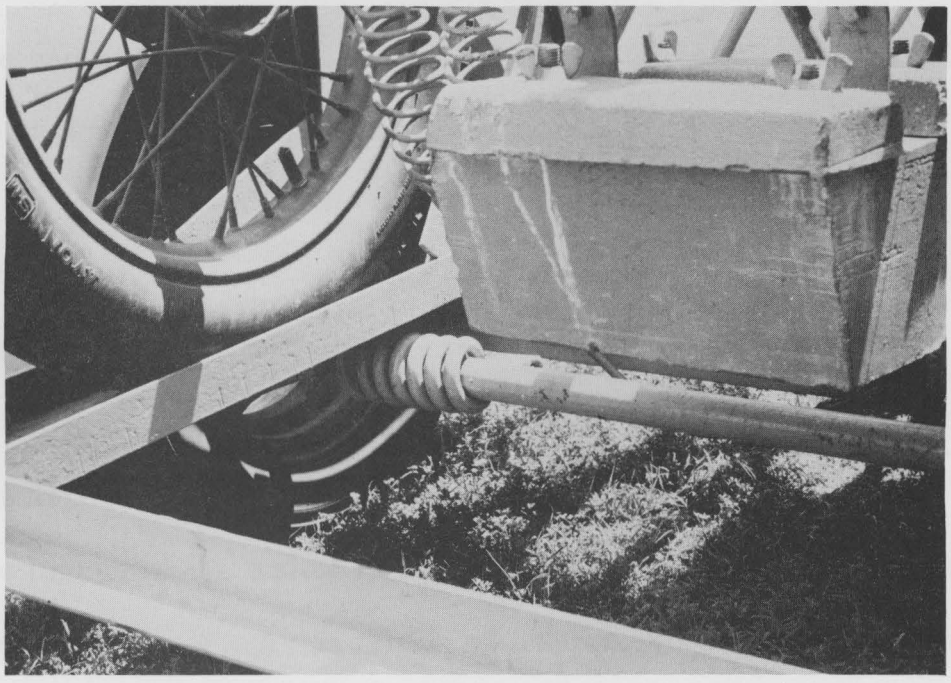

Figure 3: View from above of suspension axle, with profilometer on trailer.

Products, Inc., Dallas, Texas. The use of this axle results in a lowering of the center of gravity of trailer and load, thus making loading and unloading easier and providing greater safety on the highway. It also simulates independent wheel suspension.

The trailer was constructed from three basic metal forms; pipe, angle and channel. Hinged at the rear of the trailer are two 5-inch aluminum channels 3'-10" long. They serve as a ramp for loading and unloading the profilometer (Figure 4), and as a back stop when in transit (Figure 5). A simple latch or chain (not shown in the drawing but pictured in Figure 6) was devised to hold the channel upright. The hinged end of the channel was so located that in an upright position the channel would be inclined slightly off vertical toward the loaded profilometer.

The bed of the trailer is comprised of two 5-inch channels 30 inches long, and two steel angles. These were welded as shown in the drawing (Figure 1), and secured to the axle brackets with four bolts.

Two 5-inch channels 6 inches long, one of which is pictured in Figure 7, were welded to the bed channel for wheel stops. Their location and inclination were determined by the position of the wheels of the loaded profilometer.

The tongue of the trailer is comprised of two pipes welded together as shown in Figure 1. A three-inch angle iron was welded to the forward end of the tongue. This supports the leading edge of the front section of

Figure 4: Five-inch aluminum channels connected to trailer bed by hinges serve as ramp for loading and unloading.

Figure 5: Hinged channels in upright position become backstop for load.

Figure 6:

Chain attached to profilometer holds ramp in position for traveling.

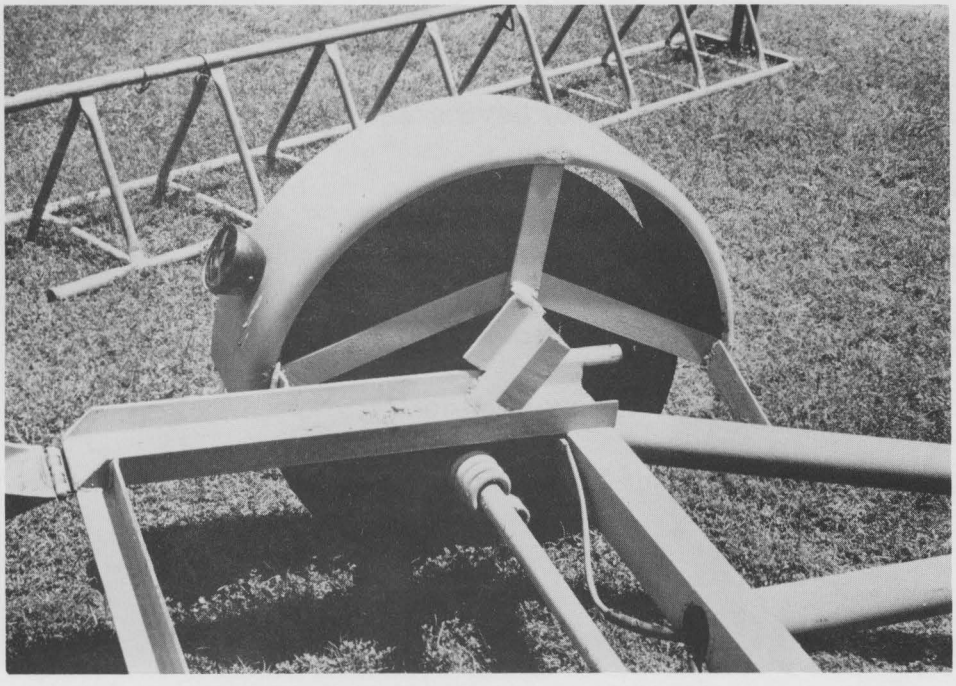

Figure 7: Short section of 5-inch channel welded at an angle to trailer bed prevents profilometer from rolling forward.

the profilometer mast (Figures 8 and 10). The back end of the front section of the mast is secured by inserting the 3/4-inch standard pipe into the mast leg while a second mast leg rests on the 2-1/2-inch pipe (Figure 9).

Just back of the angle iron mast supports are located two 3/4 inch standard pipes, as shown in Figure 10. When the profilometer is loaded on the bed of the trailer the two 3/4-inch standard pipes are inserted into the lower legs of the rear mast section (Figure 11). The exact location of the pipes and of the angle iron support on the tongue were determined by the individual mast section lengths in loaded position. A standard trailer hitch (Figure 12) was modified and welded to the forward end of the tongue. In normal use on this project the trailer is towed by an automobile. In transit the profilometer switching assembly is protected from road dust and the elements by a tarpaulin (Figure 13).

In use the trailer has proved to be very satisfactory. One possible improvement would be to lower, slightly, the transverse two-inch angle iron shown in the drawing at the rear of the trailer bed. This alteration would facilitate loading and unloading operations by providing greater clearance for the profilometer slope wheels. At present this clearance is obtained by raising the front end of the rear mast when loading or unloading.

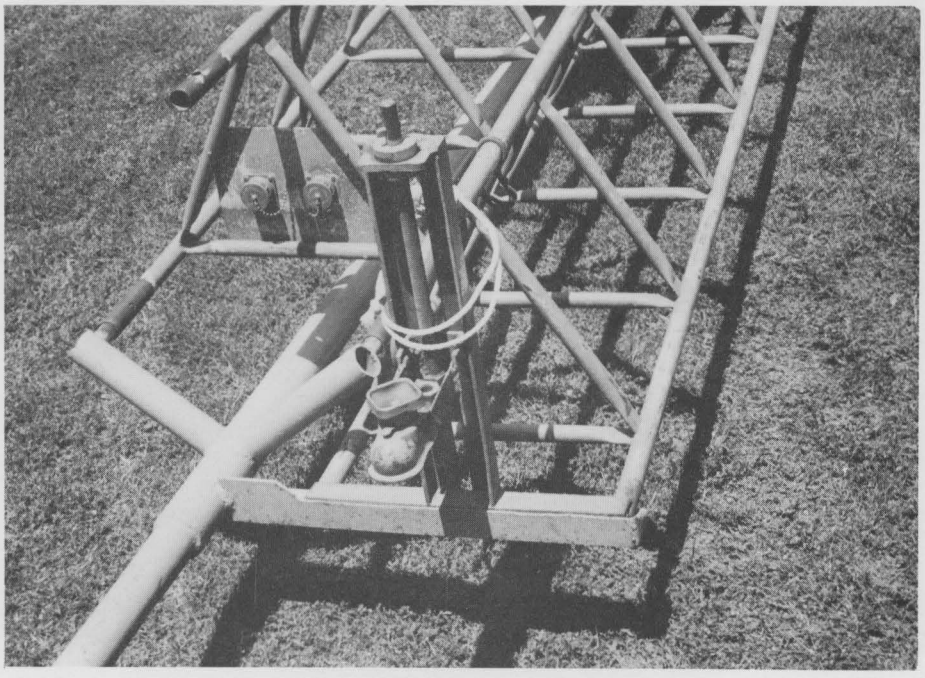

Figure 8: Steel angle welded in horizontal position to trailer tongue supports leading edge of front section of profilometer mast.

Figure 9: Back end of front section of profilometer mast is supported by rod inserted into mast leg. Other leg rests on trailer tongue.

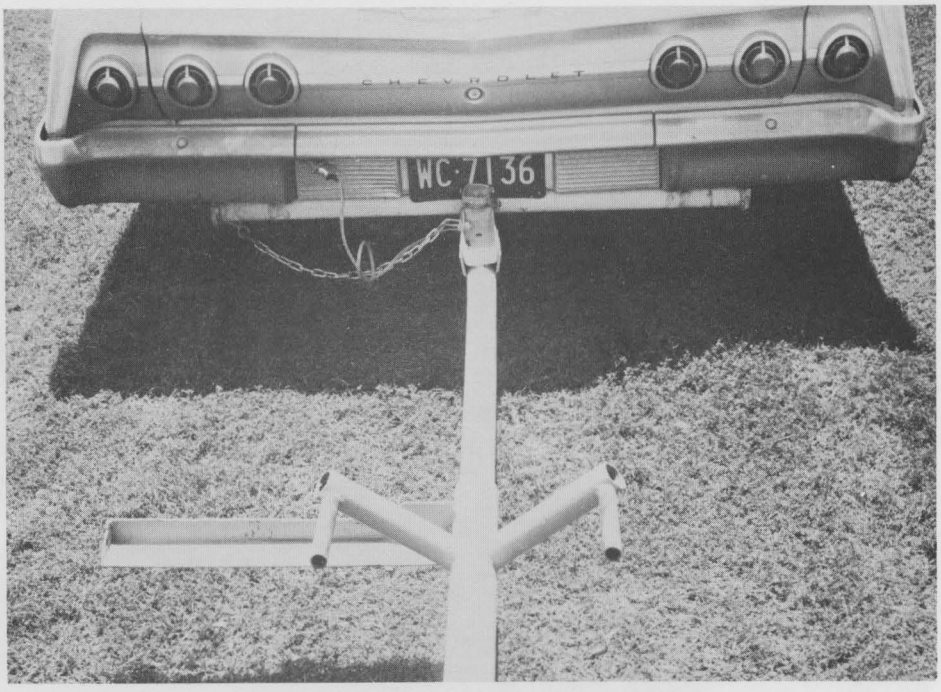

Figure 10: View of angle iron support for front mast section, and 1-inch pipes that support lower legs of rear mast section.

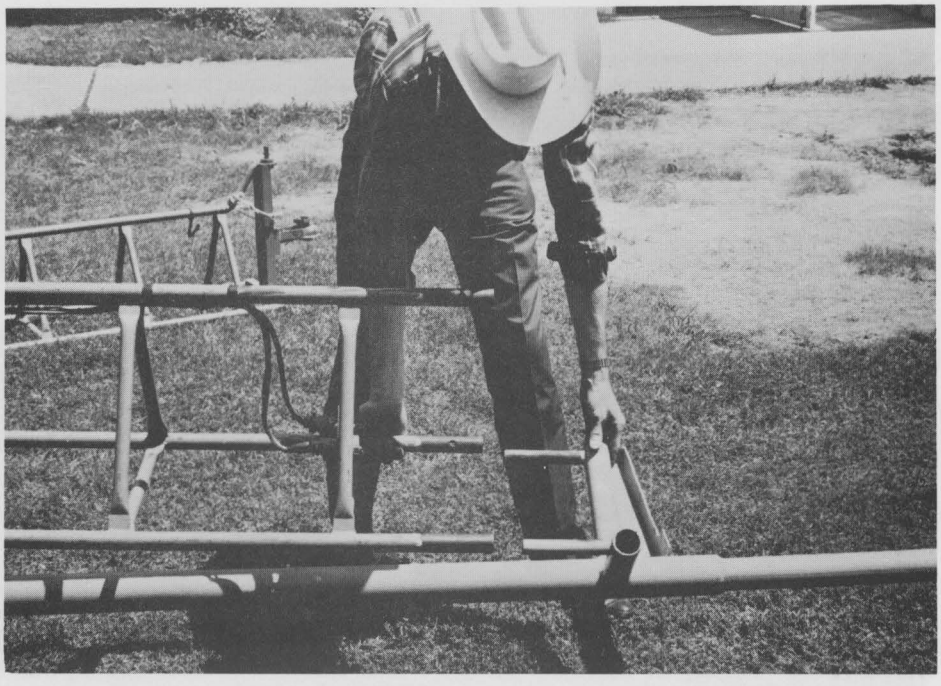

Figure 11: One-inch pipe supports being inserted into the lower legs of the rear mast section during loading operation.

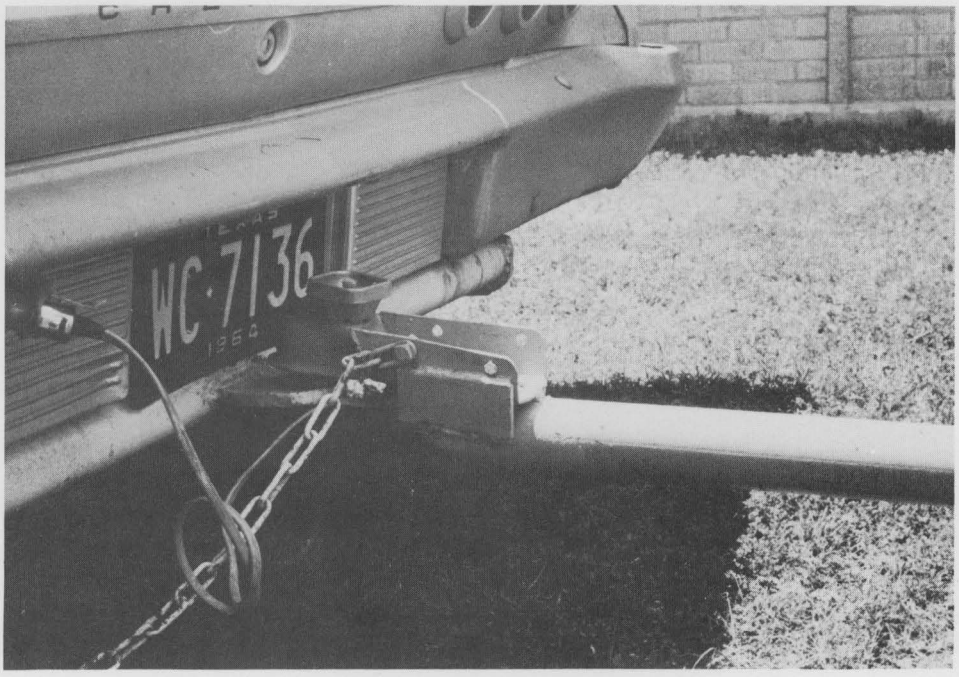

Figure 12: Standard hitch welded to front end of trailer tongue.

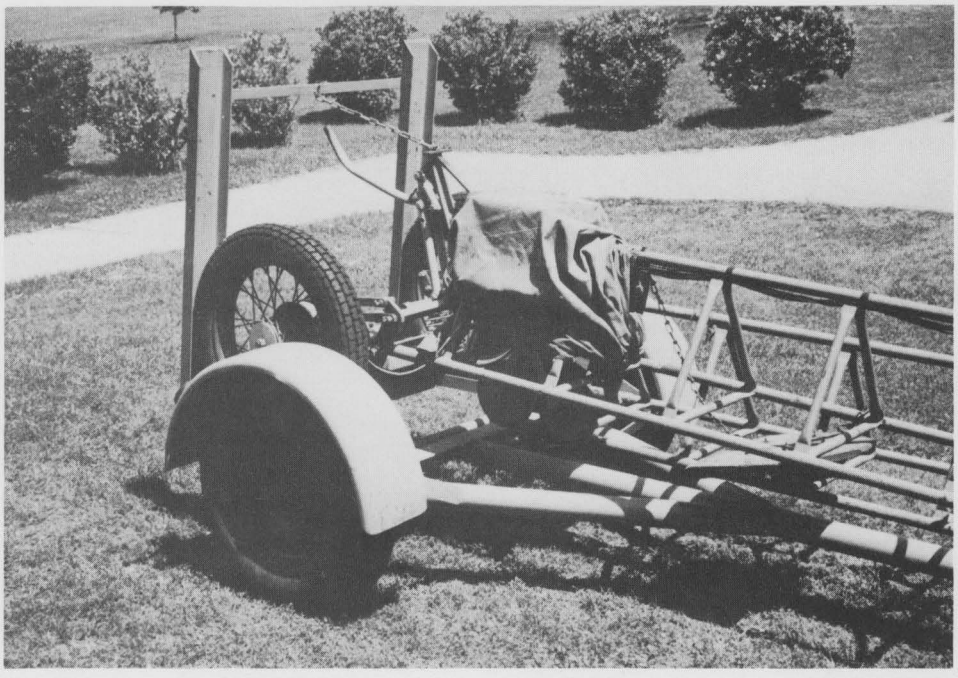

Figure 13: Tarpaulin protects switching assembly from road dust and weather.