**TECHNICAL MANUAL**

# TRANSPORTABILITY GUIDANCE

# DETECTING SET, SPECIAL-PURPOSE AN/TSQ-114A [NSN 5811-01-109-9494) AN/TSQ-114B [NSN 5811-01-164-9986) (TRAILBLAZER) COUNTERMEASURES SET, SPECIAL-PURPOSE AN/MLQ-34 (TACJAM) (NSN 5865-01-008-6629)

HEADQUARTERS, DEPARTMENT OF THE ARMY

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WASHINGTON, DC, 14 September 1984

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## AN/TSQ-114A
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## COUNTERMEASURES SET, SPECIAL-PURPOSE
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# CHAPTER 1

# INTRODUCTION

## 1-1. Purpose and Scope

a. This manual provides transportability guidance for logistic handling and movement of the Trailblazer and Tacjam systems.

b. The intent of this manual is to provide transportation officers and other personnel responsible for movement or for providing transportation services with appropriate information for safe transport of the items. Included are significant technical and physical characteristics, as well as safety precautions required for worldwide movement by the various modes of transportation. Where considered necessary, metric equivalents are given in parentheses following the dimensions or other measurements.

## 1-2. Safety

Appropriate precautionary measures required during movement of the system items are contained in chapter 3.

## 1-3. Definitions of Warnings, Cautions, and Notes

Throughout this manual, warnings, cautions, and notes emphasize important or critical guidance. They are used for the following conditions:

a. Warning. Instructions that, if not followed, could result in injury to or death of personnel.

b. Caution. Instructions that, if not strictly observed, could result in damage to or destruction of equipment.

c. Note. A brief statement for use as necessary to emphasize a particular operating procedure, condition, and so forth.

## 1-4. Reporting of Recommendations and Comments

Individual users of this manual are encouraged to recommend changes and to submit comments for its improvement. Reports should be prepared on DA Form 2028 (Recommended Changes to DA Publications and Blank Forms) and sent to Commander, Military Traffic Management Command Transportation Engineering Agency, ATTN: MTT-TRC, PO Box 6276, Newport News, VA 23606. (Electrically transmitted messages should be addressed to CDR MTMCTEA FT EUSTIS VA//MTT-TRC//). A reply will be given by MTMCTEA.

# CHAPTER 2

# TRANSPORTABILITY DATE

## Section I. GENERAL-TRAILBLAZER SYSTEM

### 2-1. Scope

This chapter provides a general description of the items, identification photographs, and transportability characteristics and data that are necessary in movement of the items.

### 2-2. Description of Trailblazer System

a. The detecting set, special-purpose, AN/TSQ114A and B (herein referred to as "Trailblazer") system (fig 2-1) components consist of 15 items. They are: two master control set (MSC) shelters, three remote slave set (RSS) shelters, five trailer support unit, and five M1015 full-tracked cargo carriers. A shelter mounted on the M1015 is shown in figure 2-2. The trailer support unit is shown in figure 2-3. The external configurations of the MCS/RSS shelters are identical and are shown as one throughout this manual. The weights and centers of gravity, which are different, are shown in figure 2-4. The trailer support unit characteristics are shown in figure 2-5, and the M1015 characteristics are shown in figures 2-6 and 2-7. Figures 2-8 and 2-9 are clearance diagrams of the M1015 carrier with shelter attached for the Trailblazer system.

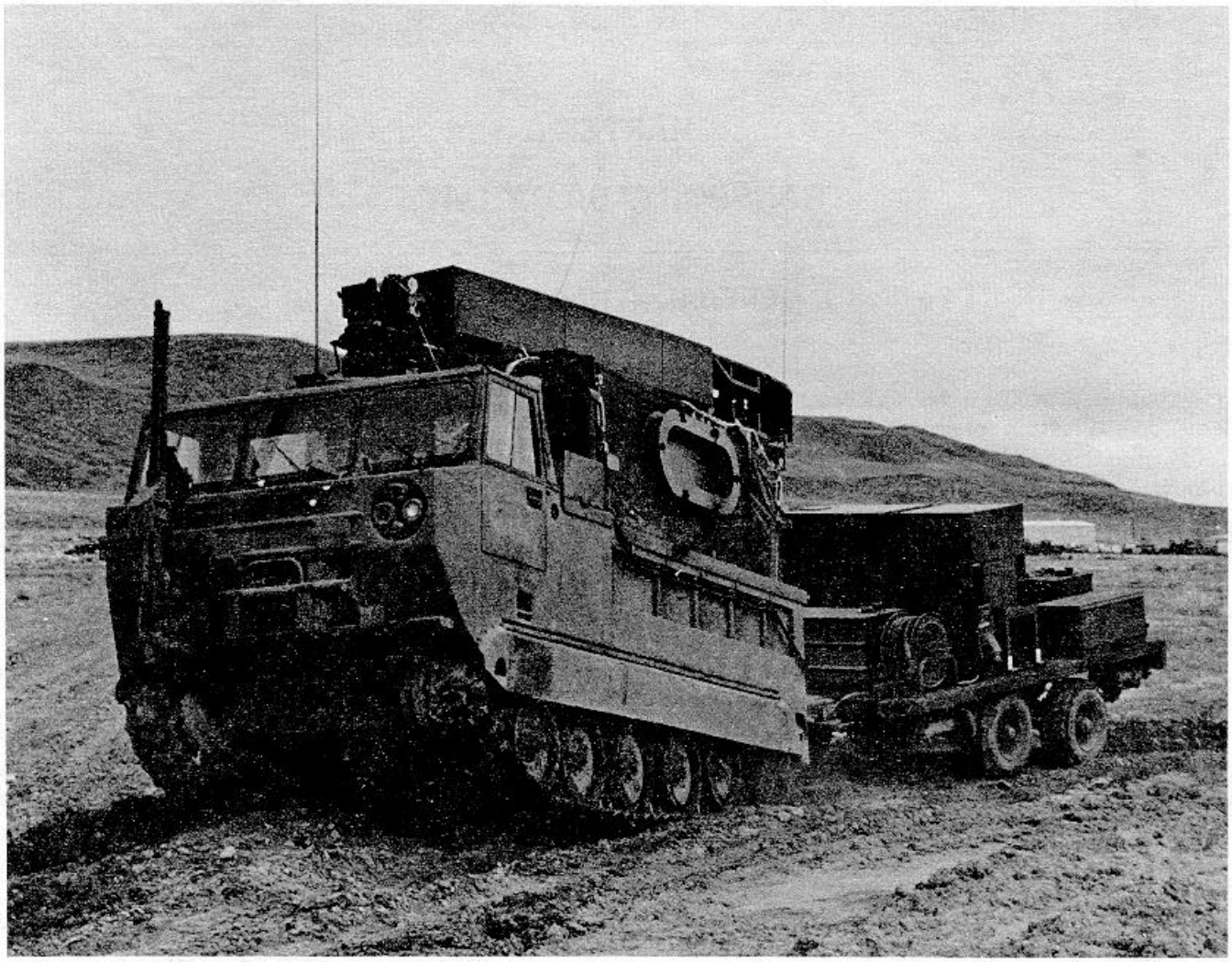


**Figure 2-1. The Trailblazer system (AN/TSQ-114A and B).**

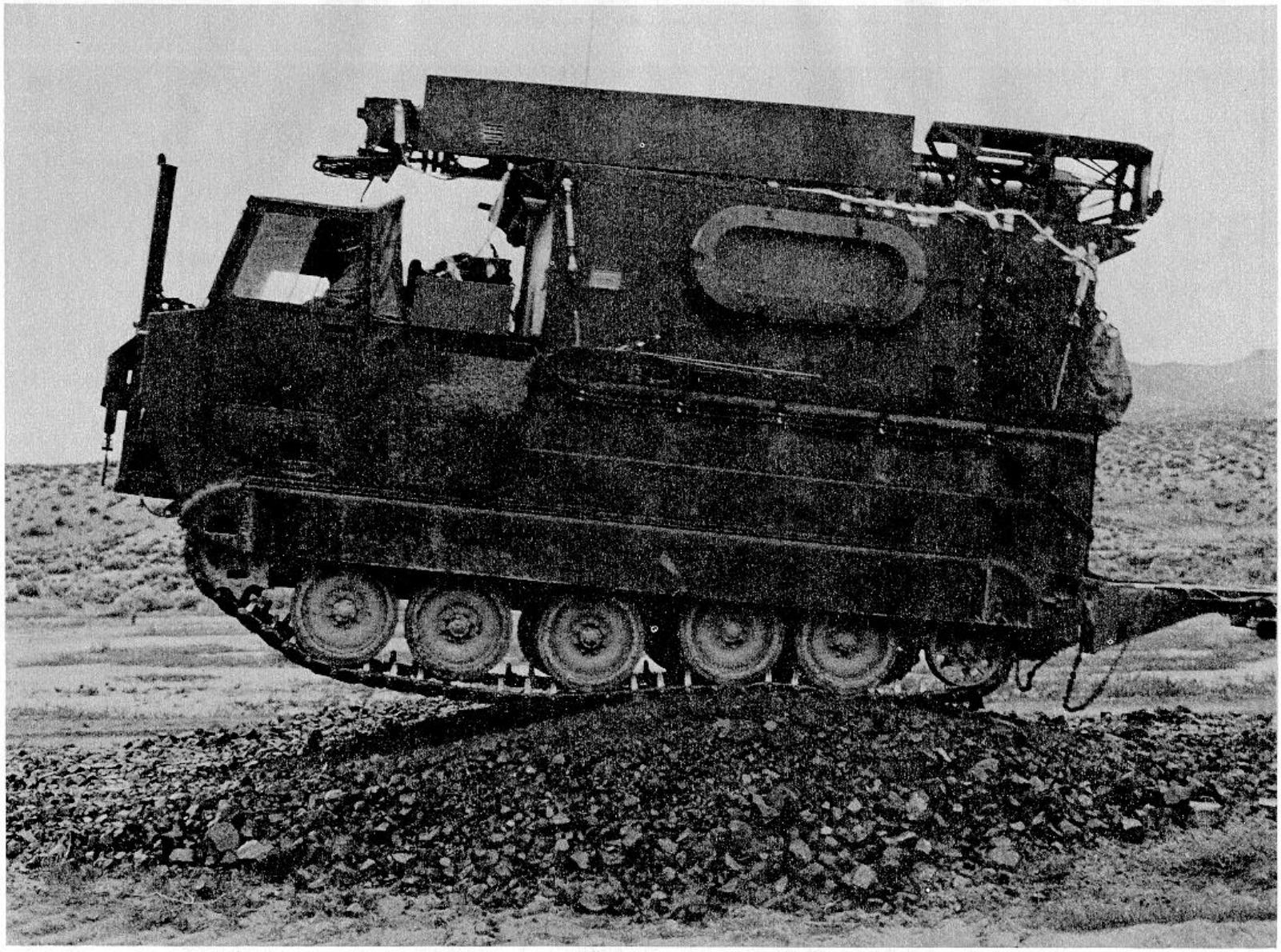


**Figure 2-2. The M1015 full-tracked cargo carrier for the Trailblazer system.**

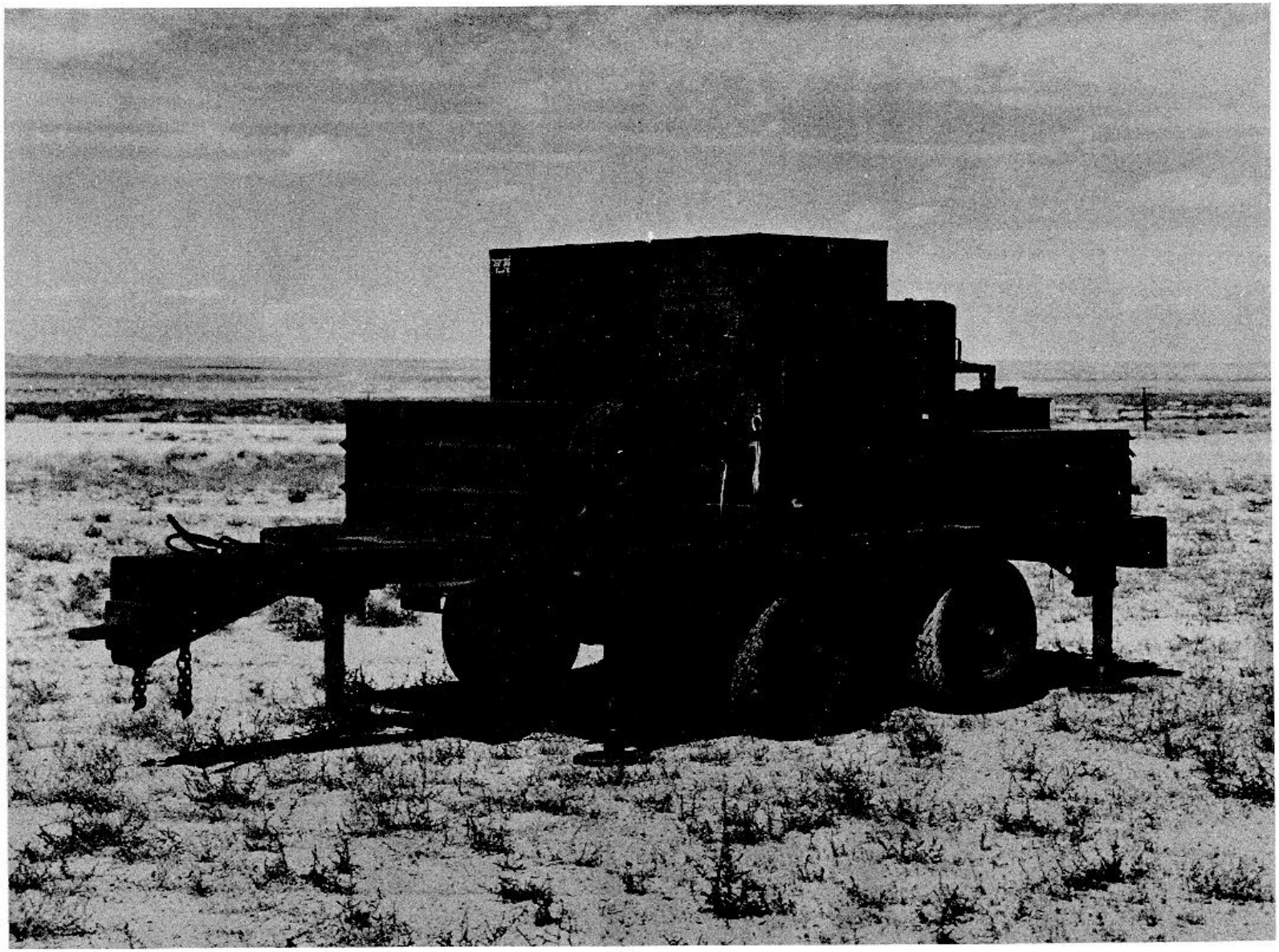
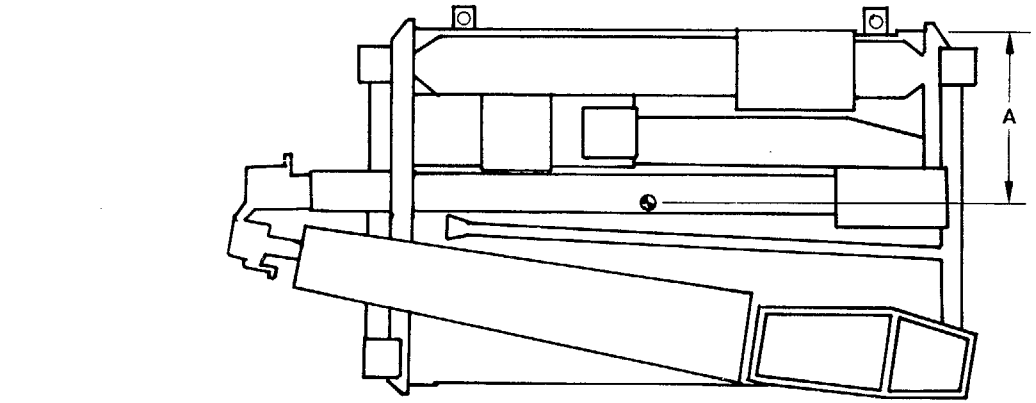


**Figure 2-3. The trailer support unit for the Trailblazer system.**




| | | CENTER OF GRAVITY DATA | | | |
|---|---|---|---|---|---|
| | | DIM A | DIM B | DIM C | WEIGHT |
| 114A | RSS | 37.8" .96 M | 58.1" 1.48 M | 62.7" 1.59 M | 7475 LB 3391 KG |
| | MCS | 38.3" .97 M | 55.4" 1.41 M | 60.9" 1.55 M | 8835 LB 4007 KG |
| 114B | RSS | 35.59" .90 M | 56.16" 1.42 M | 61.80" 1.57 M | 8264 LB 3748 KG |
| | MCS | 38.58" .98 M | 54.96" 1.40 M | 59.10" 1.50 M | 9112 LB 4133 KG |

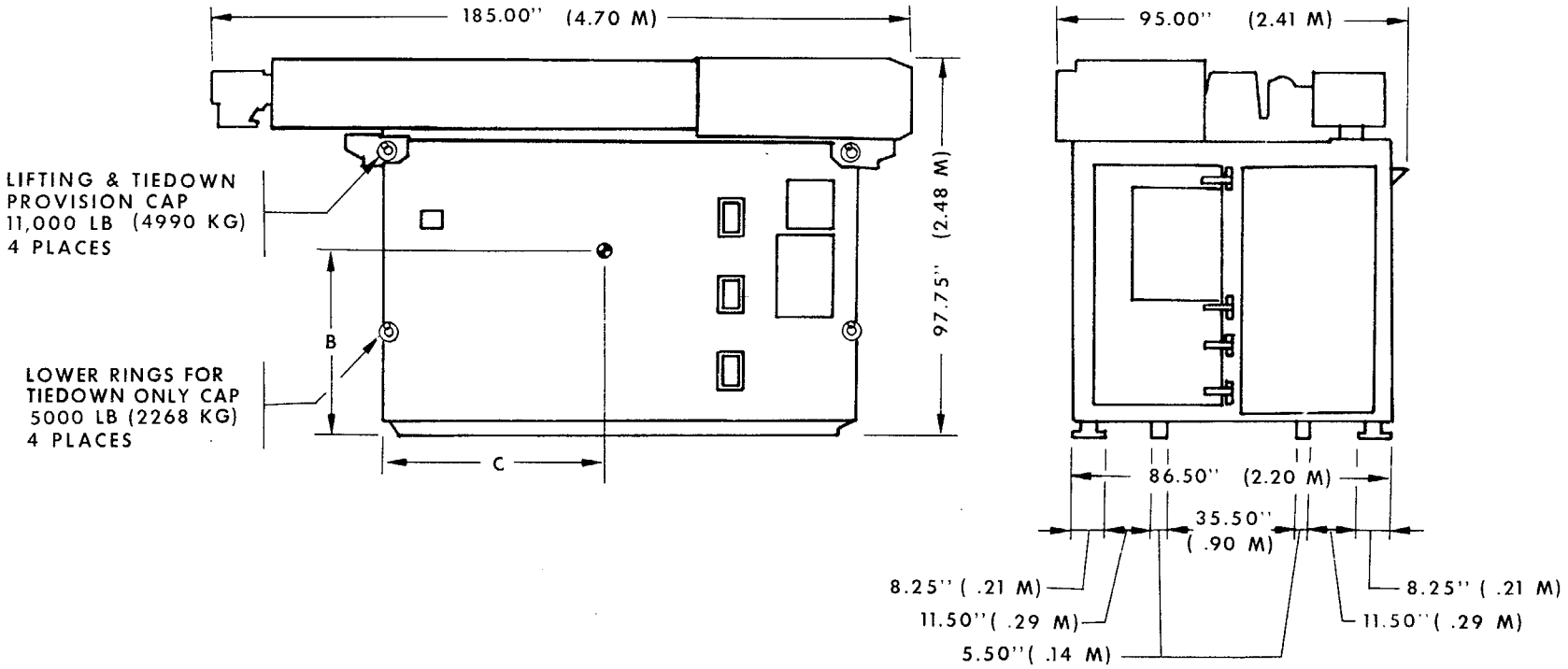



**Figure 2-4. Transportability drawing, left-side and rear-end elevations, MCS or RSS shelter for the Trailblazer system.**

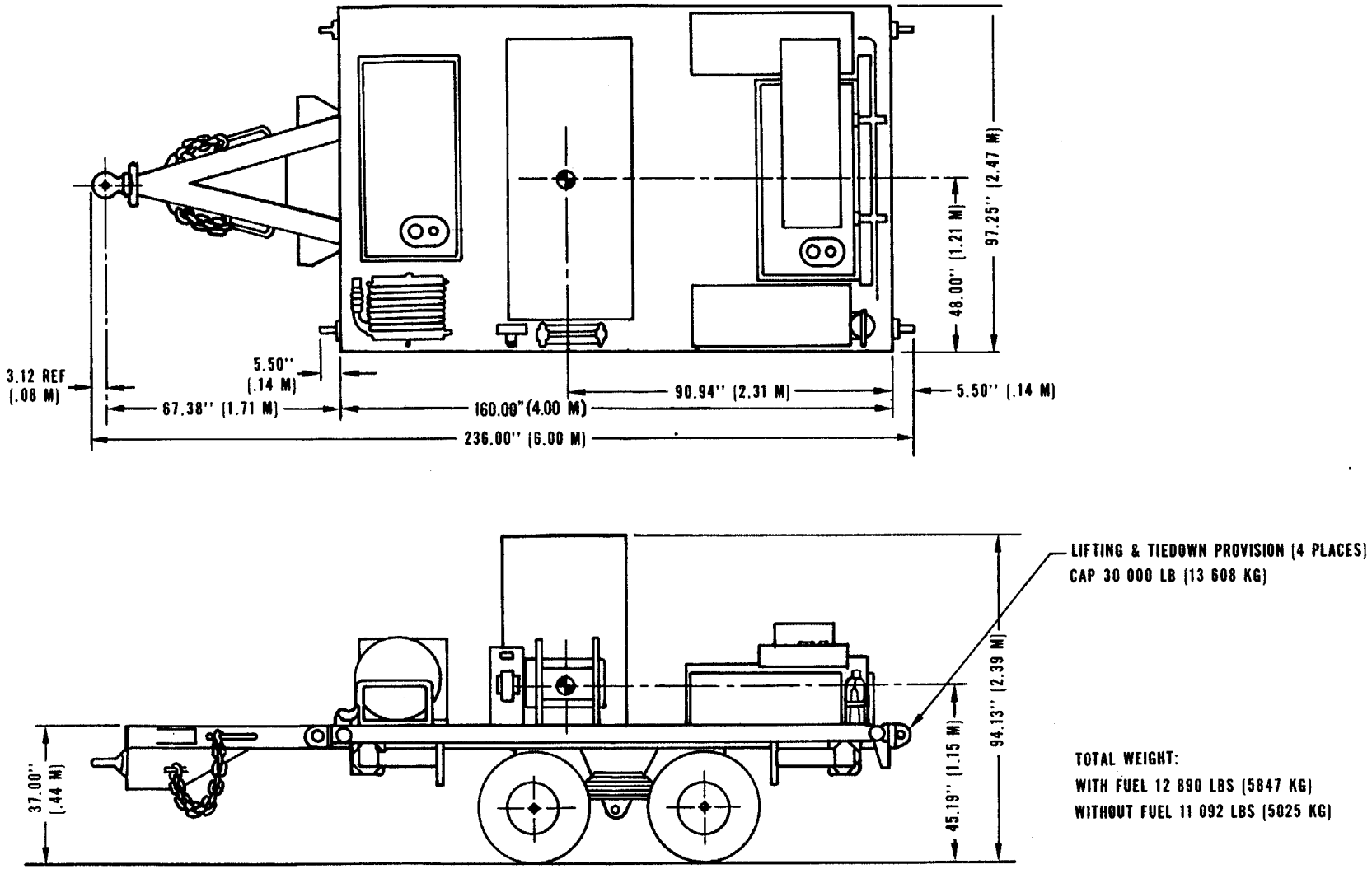



**Figure 2-5. Transportability drawing, left-side and top elevations, trailer support unit for the Trailblazer system.**

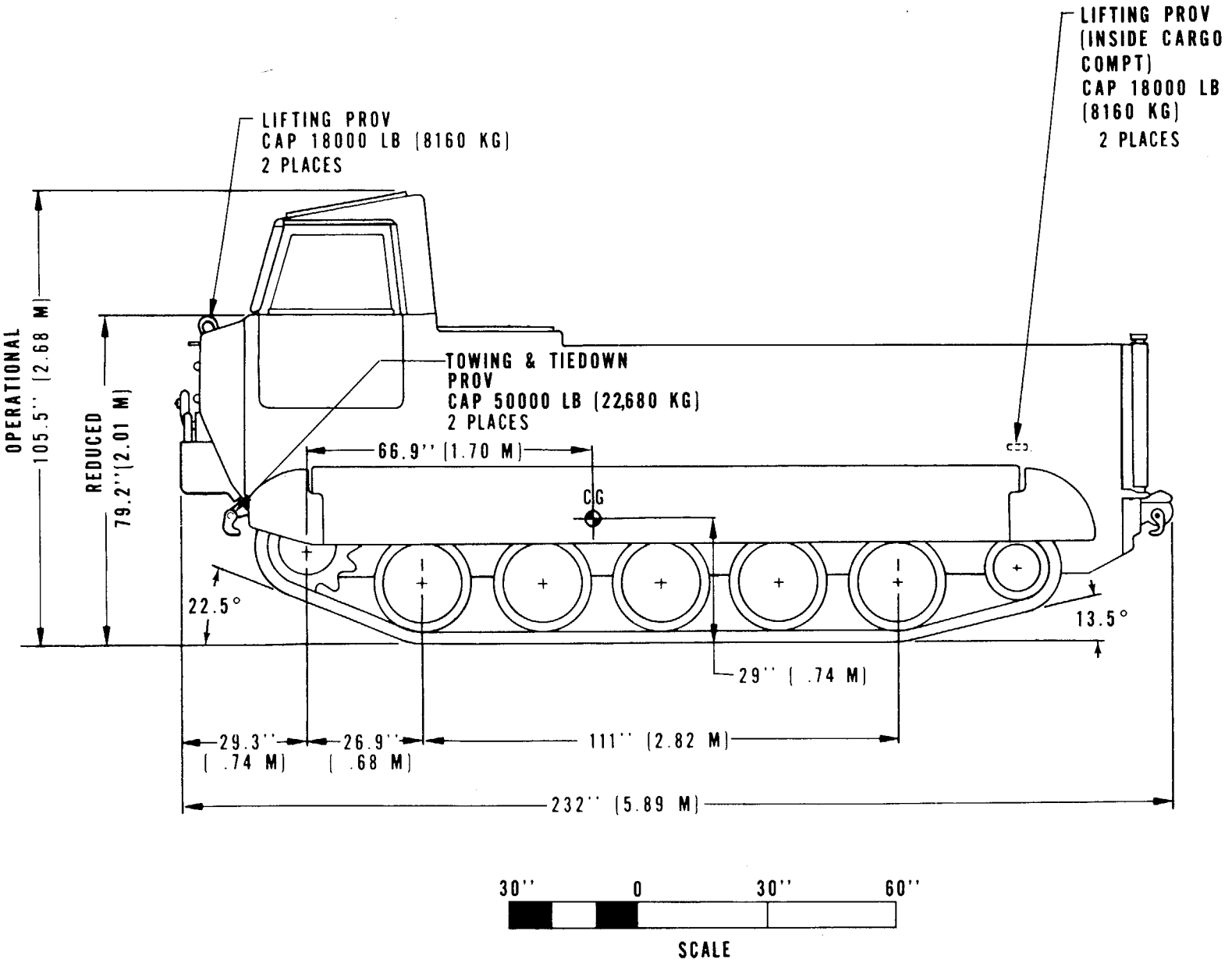



**Figure 2-6. Transportability drawing, left-side elevations, M1015 full-tracked cargo carrier with ground rod driver removed, for the Trailblazer system.**

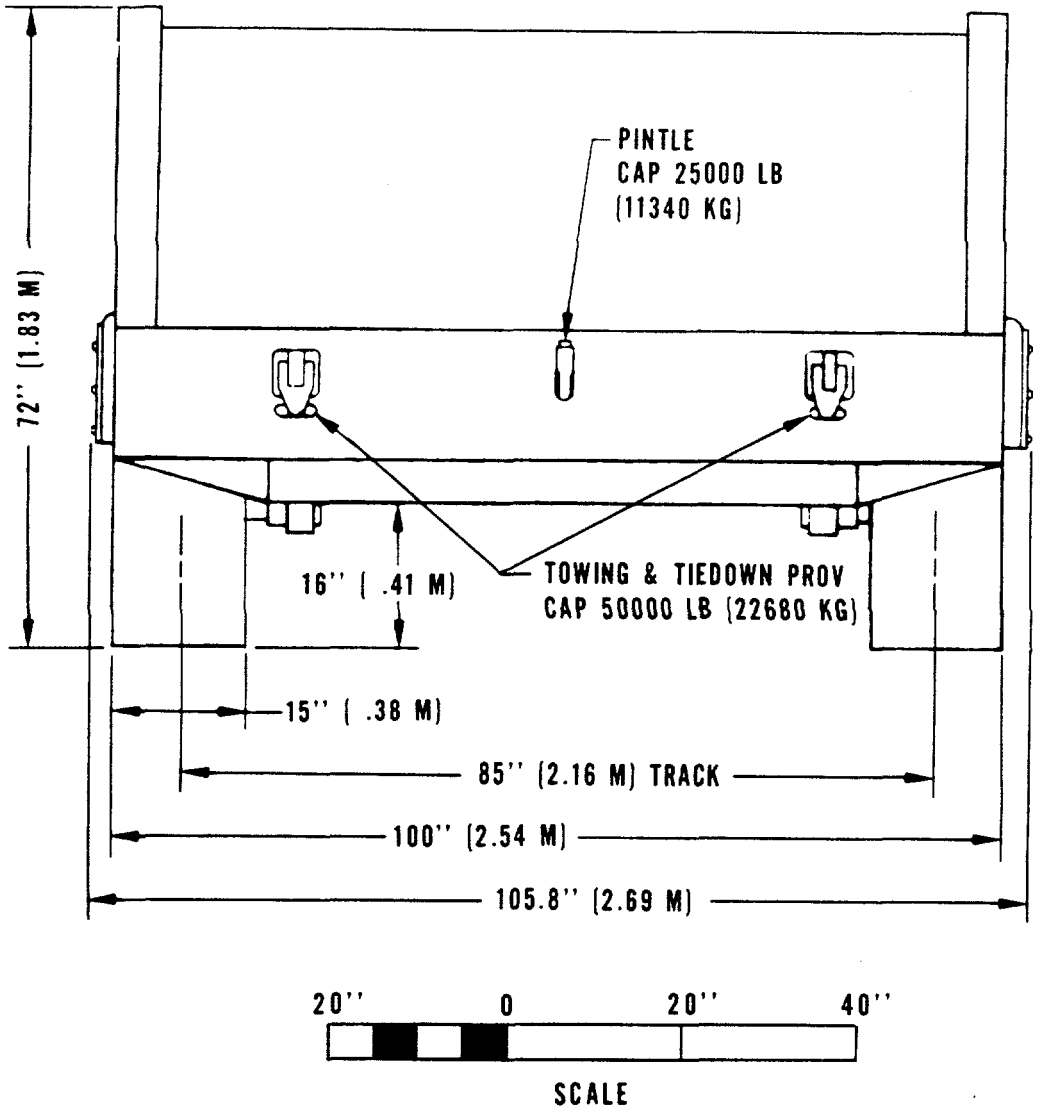



**Figure 2-7. Transportability drawing, rear-end elevation, M1015 full-tracked cargo carrier with ground rod driver removed, for the Trailblazer system.**

| CENTER OF GRAVITY DATA (FIGS. 2-7 AND 2-8) | | | | | |
|---|---|---|---|---|---|
| SHELTER | | A | B | C | WEIGHT |
| 114 A | RSS | 96.90" (2.46M) | 43.60" (1.11M) | 56.35" (1.43M) | 25339 LBS 11494 KG |
| | MCS | 96.00" (2.44M) | 42.20" (1.07M) | 56.10" (1.42M) | 26699 LBS 12110 KG |
| 114 B | RSS | 96.45" (2.45M) | 42.58" (1.08M) | 57.46" (1.46M) | 26128 LBS 11851 KG |
| | MCS | 95.10" (2.42M) | 41.98" (1.07M) | 55.96" (1.42M) | 26976 LBS 12236 KG |

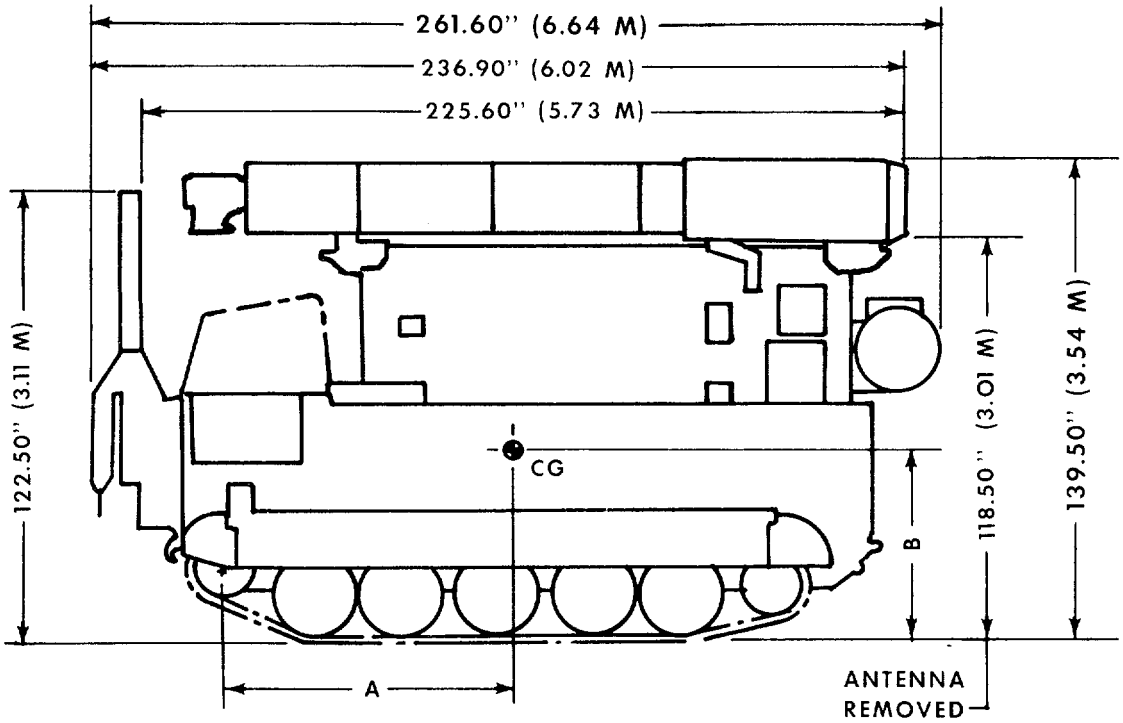



**Figure 2-8. Transportability drawing, left-side elevation, M1015 full-tracked cargo carrier with shelter attached, Trailblazer system.**

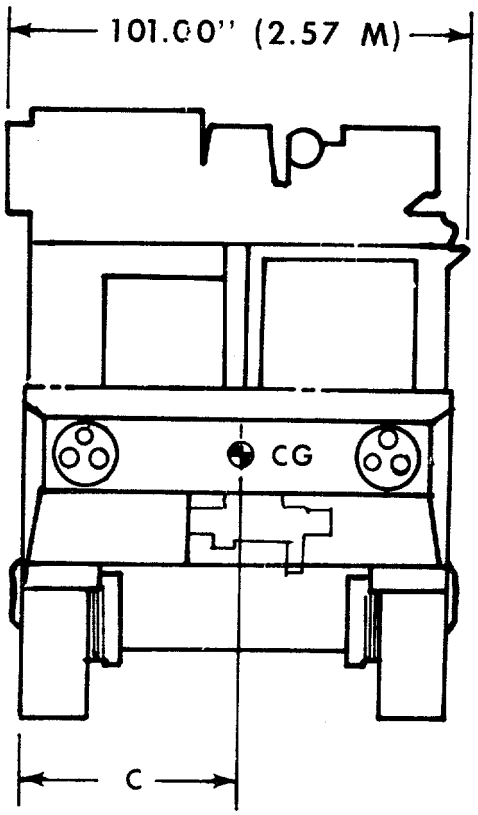



**Figure 2-9. Transportability drawing, read-end elevation, M1015 full-tracked cargo carrier with shelter attached, Trailblazer system.**

b. The MCS (S-661/TSQ-138) and RSS (S-662/TSQ-139) shelters. A telescoping antenna mast, fitted with a folding direction-finding antenna and other antennas, is mounted on the roof of each shelter. A hinged, protective shroud is placed over this antenna assembly when it is stowed. Hydraulic and pneumatic equipment for erecting and extending the masts is also mounted on the shelter roofs. The mast, antenna assembly, and shroud protrude from the front of the shelter. The MCS and RSS are also equipped with whip antennas, which are removed for shipment.

c. Each shelter is equipped with an air conditioner mounted internally at one end (rear) next to the door. Also, a nuclear, biological, and chemical filter unit may be mounted behind the air conditioner on each unit; however, the filter unit must be removed for shipment because it would create a protrusion from the rear.

d. The trailer support units are 5-ton all-terrain trailers equipped with a 30-kW diesel engine generator. A power cable is stowed on a cable reel mounted at the front of each trailer, on the road side. Two 125-gallon low-profile fuel cells are mounted to the top of each trailer; one is mounted forward of the engine generator, and the other is to the rear of the generator. The engine generator is mounted transverse to the trailer roll axis. Two storage containers are mounted on the top of each trailer, at the rear, one on each side of the rear fuel cell. A toolbox is also welded on the drawbar of each trailer.

**2-3. Equipment Configuration**

The components of the system are shown in their shipping configuration in figures 2-4, 2-5, 2-6, and 2-7. The MCS and RSS shelters are shown in figure 2-4; the trailer support unit is shown in figure 2-5; and the M1015 cargo carrier is shown in figures 2-6 and 2-7. Figures 2-8 and 2-9 show a shelter mounted on the M1015. These figures indicate the dimensions of the extremities of the system components and their centers of gravity.

**2-4. Characteristics and Related Data**

Prior to shipment, the high frequency, guard, and voice link antennas should be removed; if mounted, the chemical, biological, and radiological equipment at the rear of the shelter should also be removed. These items should be packaged separately for shipment. Special attachments for shipment of these items are not required, the items should be secured in the bed of the carrier. The general transportability characteristics of each of the Trailblazer components are shown in table

2-1. Whenever the carrier or carrier with shelter must be lifted, the ground rod driver must be removed from the M1015 carrier and the lift fitting must be reinstalled. The ground rod driver should be crated and secured in the bed of the carrier. Also, the cab should be folded down and secured. When the carrier with the shelter mounted is lifted, an I-beam spreader bar must be used (fig 6-2). A box-type spreader bar of adequate capacity must be used whenever the shelters are lifted (fig 6-5). To prevent damage, the drop legs from the spreader bar must not make contact with the shelter.

**Table 2-1. General Transportability Characteristics**

a. Carrier, Full-Tracked, M1015.
National stock number . 2320-00-078-4545
Line item number ..... D11049
Ground pressure:
Unloaded (curb weight) 5.36 psi (.377 kg/sq cm)
Ground..... contact area, pad/ 23.152 sq ft (2.15 sq m)
grouser.
Track type ..... steel, single pin with detachable rubber pads
Size ..... 15 in. (.38 m)
Pitch ..... 6 in. (.15 m)
Axleload..... NA.
Performance:
Maximum speed .... 40 mph (64 kph)
Maximum grade..... 60 percent
Cruising range ..... 300 miles (483 km)
Fuel ..... tank capacity (40 105 gal (397 1)
cetane).
Turning radius ..... pivot
Angle of approach . 22.50
Angle of departure 13.50
Ground clearance .. 16.0 in. (.41 m)
b. Dimensions and Shipping Data.
Length operational . 239.5 in. (6.08 m)
Reduced..... 224 in. (5.69 m)
Width operational... 100 in. (2.54 m)
Reduced..... 100 in. (2.54 m)
Height operational.. 105.5 in. (2.68 m)
Reduced..... 77 in. (1.96 m)
Cube operational ... 1,847 cu ft (52.3 cu m)
Reduced..... 1,110 cu ft (31.46 cu m)
Center of gravity:
Above ground..... 29 in. (.74 m)
From centerline of drive 66.9 in. (1.70 m)
sprocket.
Weight:
Shipping (less crew, ammu- 17,864 lb (8,103 kg)
nition, and fuel).

| | MCS | RSS |
|---|---|---|
| c. Shelter, MCS/RSS... | (AN/TSQ-124A) (114A). | (AN/TSQ-125A) |
| National stock number. | TBA | TBA |
| Line item number .. | N/A | N/A |
| Ground pressure ... | 4.59 psi (.35 kg/sq cm) | 3.84 psi (.27 kg/sq cm) |
| Ground contact area | 13.4 sq ft (1.25 sq m) | 13.4 sq ft (1.25 sq m) |
| Ground clearance ..... | 3.88 in. (.1m) | 3.88 in. (.lm) |
| Dimensions and shipping data: | | |
| Reduced length ..... | 185 in. (4.7 m) | 185 in. (4.7 m) |
| Reduced height ..... | 97.75 in. (2.48 m) | 97.75 in. (2.48 m) |
| Reduced width ..... | 95.0 in. (2.41 m) | 95.0 in. (2.41 m) |
| Reduced cube ..... | 994 cu ft (28.15 cu m) | 994 cu ft (28.15 cu m) |
| Center of gravity: | | |
| Above ground ..... | 55.4 in. (1.41 m) | 58.1 in. (1.48 m) |
| From front edge .... | 60.9 in. (1.55 m) | 62.7 in. (1.59 m) |
| Weight ..... | 8,835 lb (4,007 kg) | 7,475 lb (3,391 kg) |

| | MCS | RSS |
|---|---|---|
| d. Shelter, MCS/RSS .. | (AN/TSQ-124B) (114B). | (AN/TSQ-125B) |
| National stock number. | TBA | TBA |
| Line item number .. | N/A | N/A |
| Ground pressure ... | 4.72 psi (.33 kg/sq cm) | 4.28 psi (.30 kg/sq cm) |
| Ground contact area | 13.4 sq ft (1.25 sq m) | 13.4 sq ft (1.25 sq m) |
| Ground clearance . | 3.88 in. (.lm) | 3.88 in. (.lm) |
| Dimensions and shipping data: | | |
| Reduced length ..... | 185 in. (4.7 m) | 185 in. (4.7 m) |
| Reduced height..... | 97.75 in (2.48 m) | 97.75 in. (2.48 m) |
| Reduced width ..... | 95.0 in. (2.41 m) | 95.0 in. (2.41 m) |
| Reduced cube ..... | 994 cu ft (28.15 cu m) | 994 cu ft (28.15 cu m) |
| Center of gravity: | | |
| Above ground ..... | 54.96 in. (1.40 m) | 56.16 in. (1.42 m) |
| From front edge .... | 59.10 in. (1.50 m) | 61.80 in. 1.57 m) |
| Weight ..... | 9112 lb (4133 kg) | 8264 lb (3748 kg) |

e. Trailer, Support Unit Mounted On XM1034 Trailer:
National stock number TBA
Line item number... N/A
Ground pressure .... 43.3 psi (3.05 kg/sq cm)
Ground contact area 1.78 sq ft (.165 sq m)
Tires:
Size..... 12 X 16.5
Inflation ..... 75 psi (5.27 kg/sq cm)
Axleload (on each). 5,546 lb (2,516 kg)
Ground clearance .. 13.5 in. (.342 m)
Dimensions and shipping data:
Reduced length . 236 in. (5.99 m)
Reduced height .. 94.13 in. (2.39 m)
Reduced width.... 97.25 in. (2.47 m)
Reduced cube ... 1,250 cu ft (35.4 cu m)
Center of gravity:
Above ground .... 45.19 in. (1.15 m)
From lunette ..... 139.56 in. (3.54 m)
Weight ..... 11,092 lb (5,031 kg)
Fuel tank capacity (ea) (40 125 gal (473 1) cetane).

## 2-5. Securement of Shelter to Carrier

Four cables must be used. One cable should be attached to each of the upper lifting/tiedown eyes; the opposite ends of the cables should be attached to the eyes on the floor of the cargo space. The shelter should be located and held in place by stops, which are also on the floor of the cargo space.

## 2-6. Clearance Diagrams

The clearance diagrams for the MCS/RSS shelters, trailer support units, and M1015 carrier are shown in figures 2-10 through 2-15.

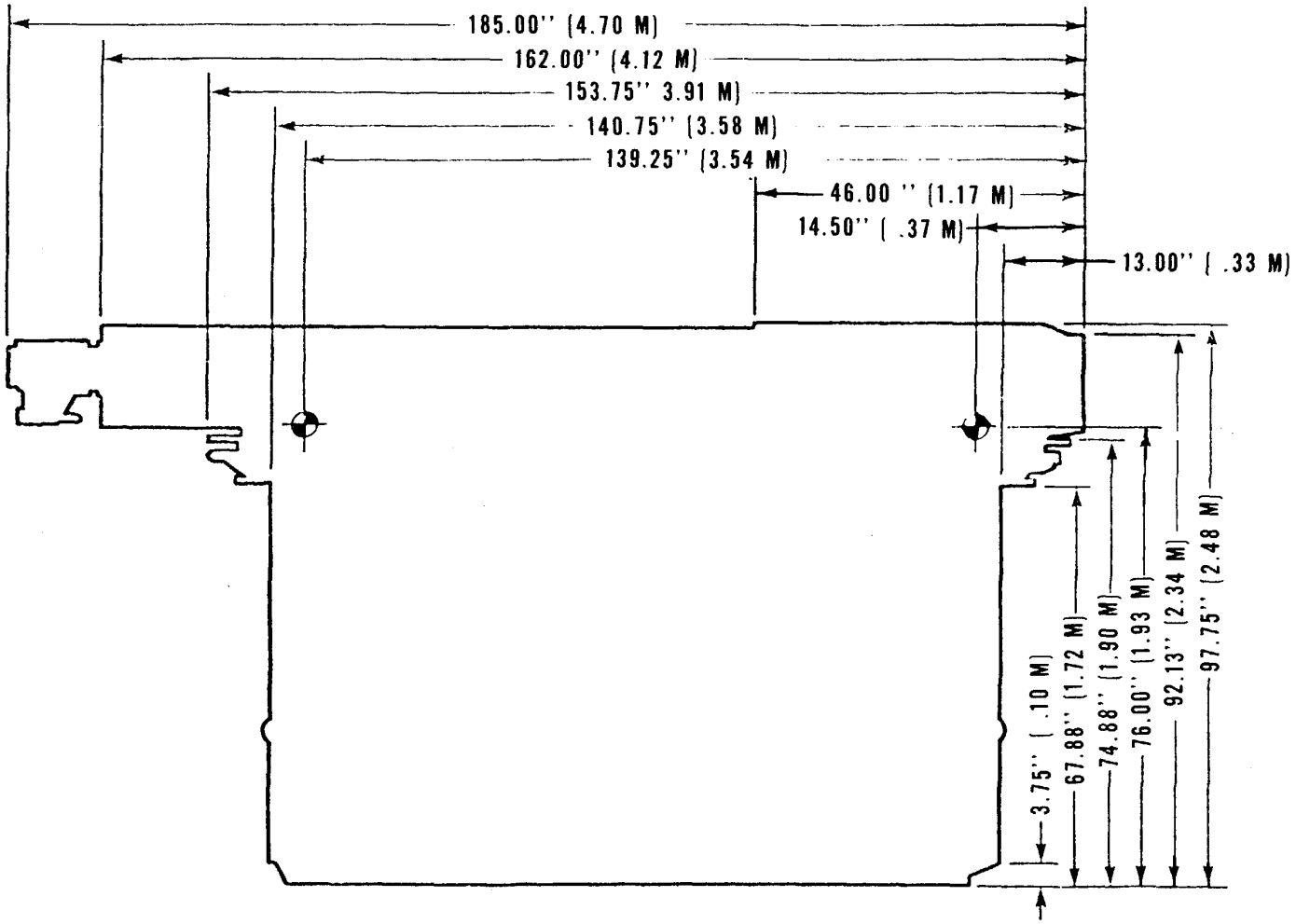



**Figure 2-10. Transportability clearance diagrams, left-side elevation, MCS or RSS shelter for the Trailblazer system.**

459-179-0-85-2

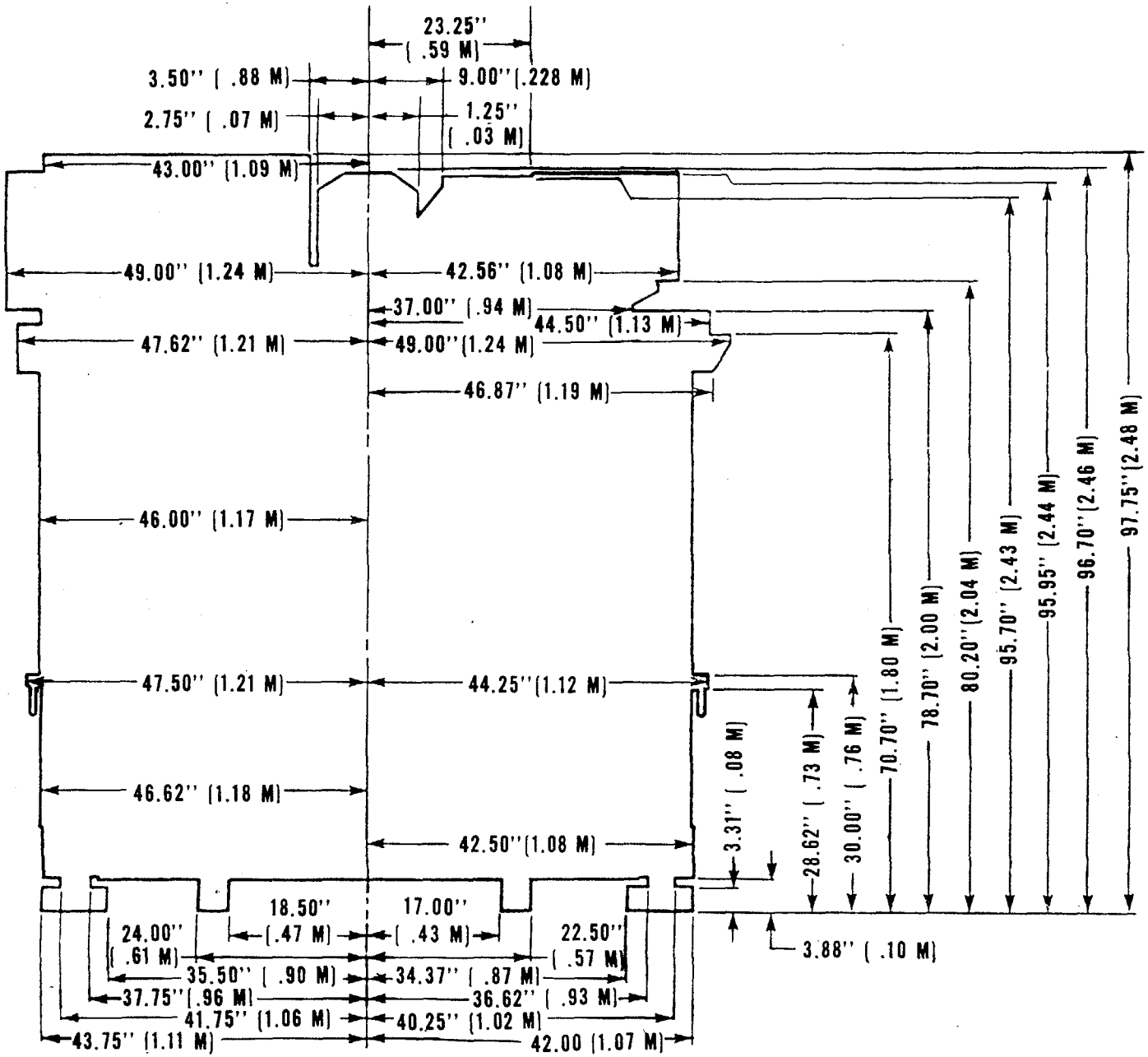



**Figure 2-11. Transportability clearance diagram, rear-end elevation, MCS or RSS shelter for the Trailblazer system.**

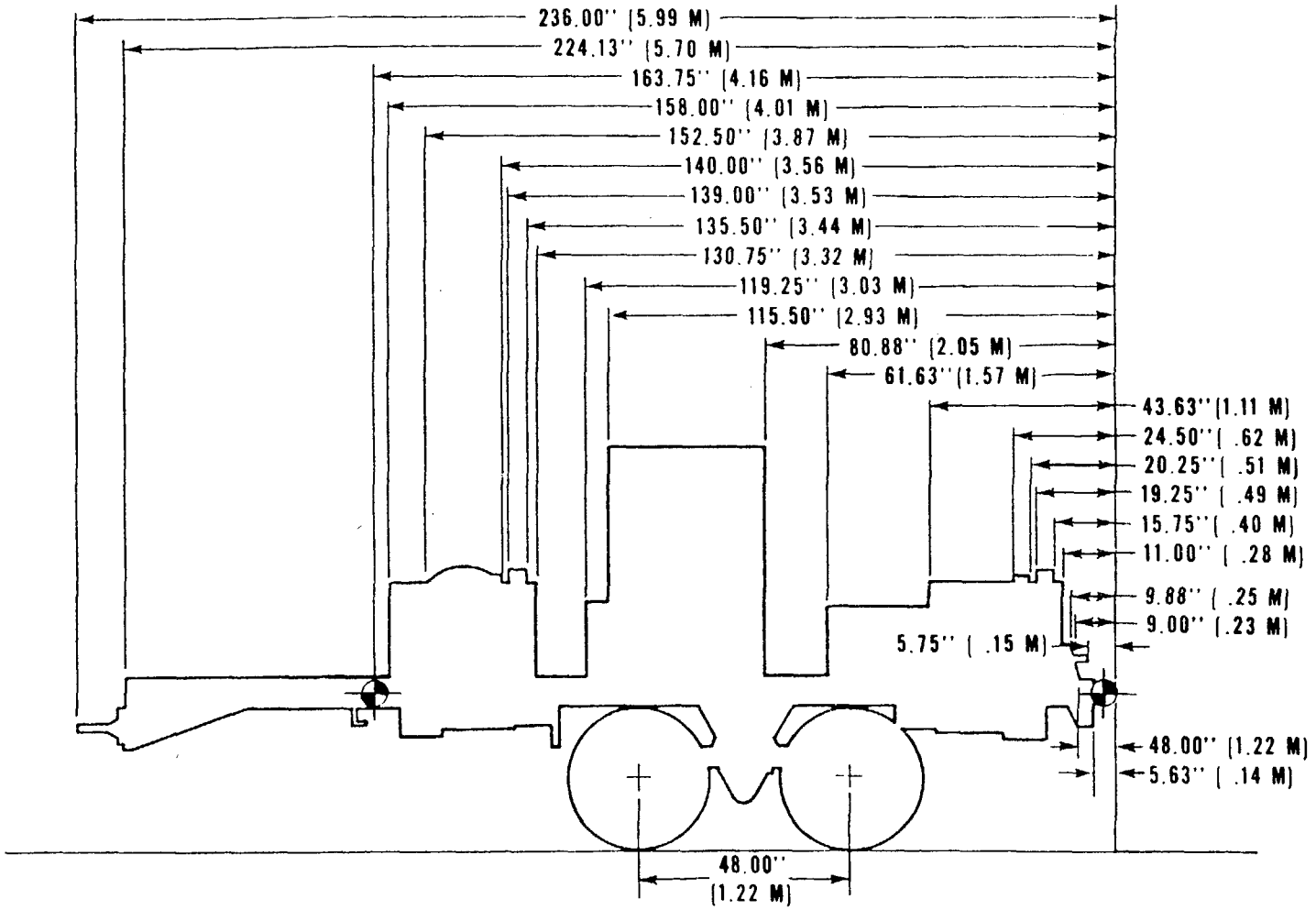



**Figure 2-12. Transportability clearance diagram, left-side elevation, trailer support unit for the Trailblazer system.**

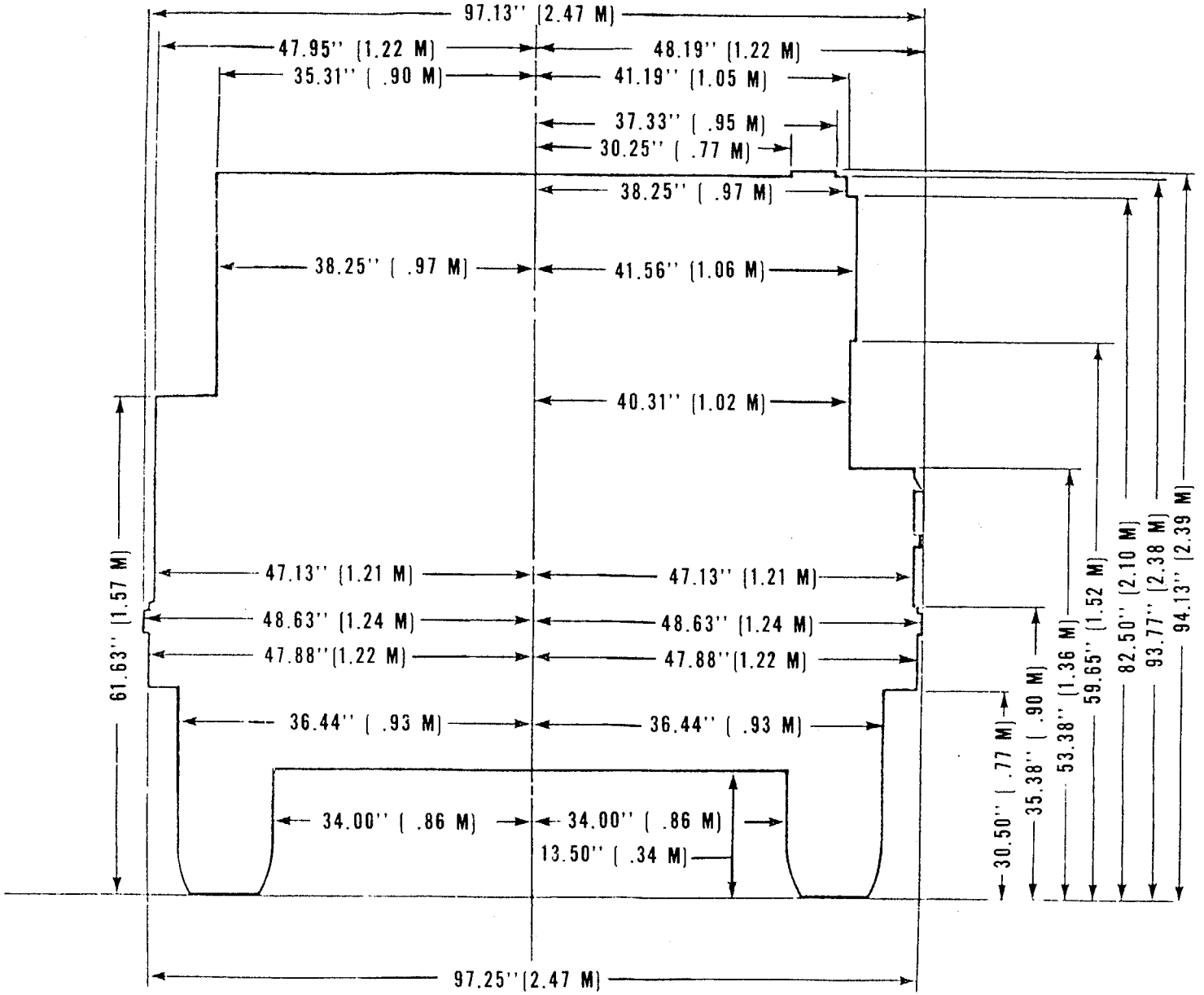



**Figure 2-13. Transportability clearance diagram, rear-end elevation, trailer support unit for the Trailblazer system.**

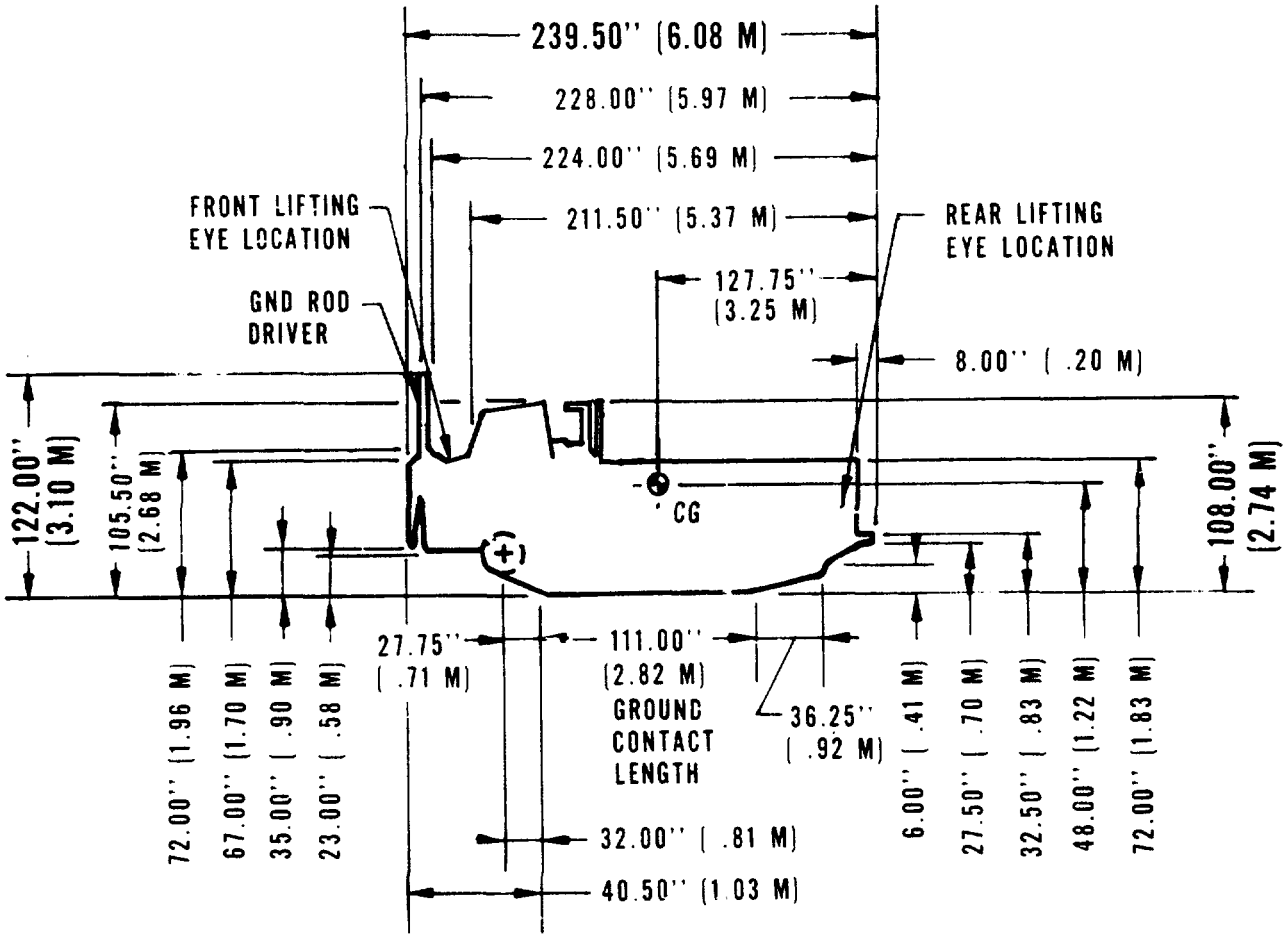



**Figure 2-14. Transportability clearance diagram, left-side elevation, M1015 carrier.**

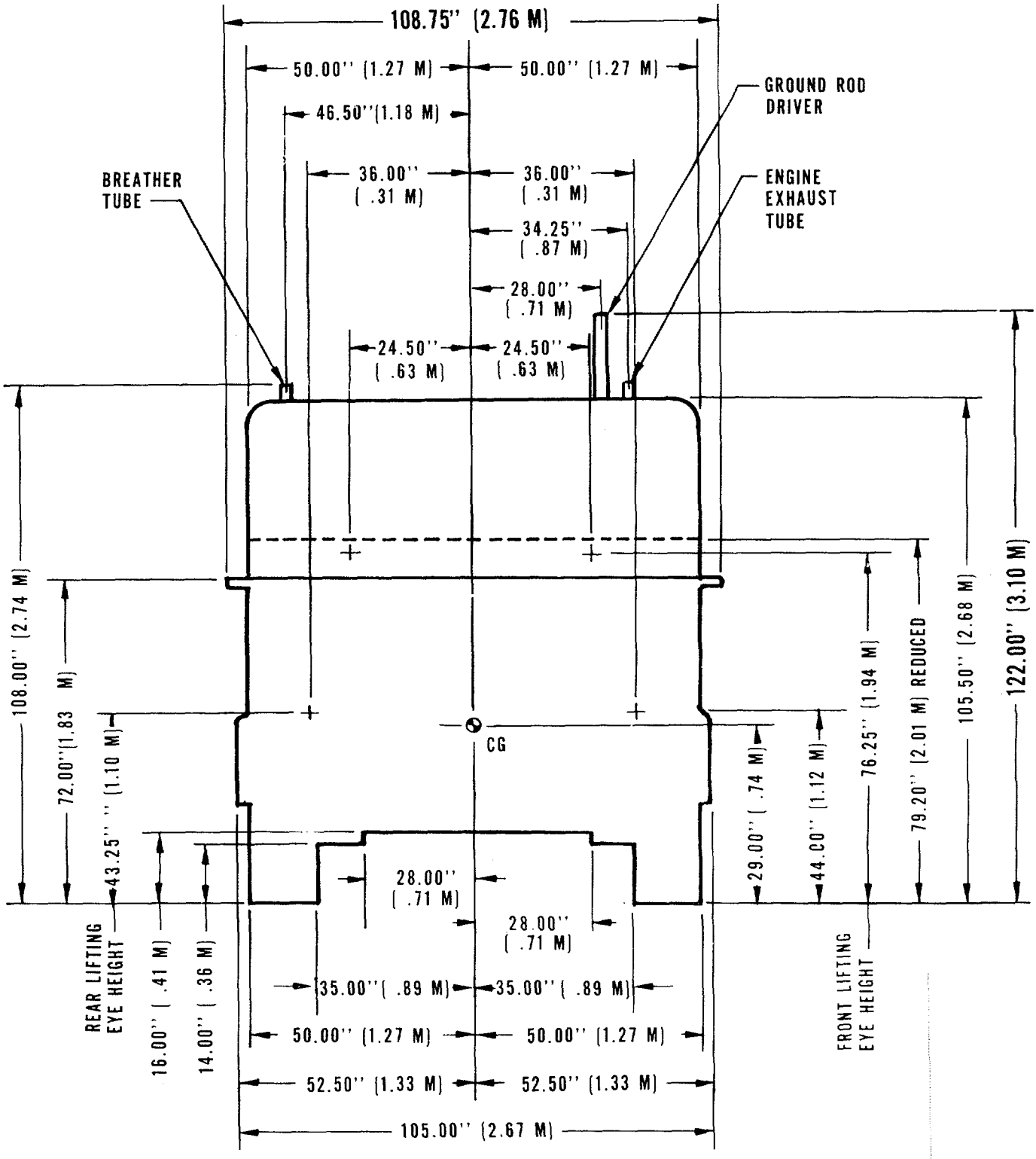



**Figure 2-15. Transportability clearance diagram, rear end elevation, M1015 carrier.**

## Section II. GENERAL-TACJAM SYSTEM .

### 2-7. Description of Tacjam System

The Countermeasures Set, Special-Purposes, AN/ MLQ-34 (herein referred to as Tacjam), consists of three components. The complete system is shown in figure 2-16. They are: a shelter (fig 2-17), an M1015 cargo carrier (fig 2-18), and a heat exchanger. The heat exchanger is mounted in the bed of the M1015, the shelter is mounted on rails, over the heat exchanger.

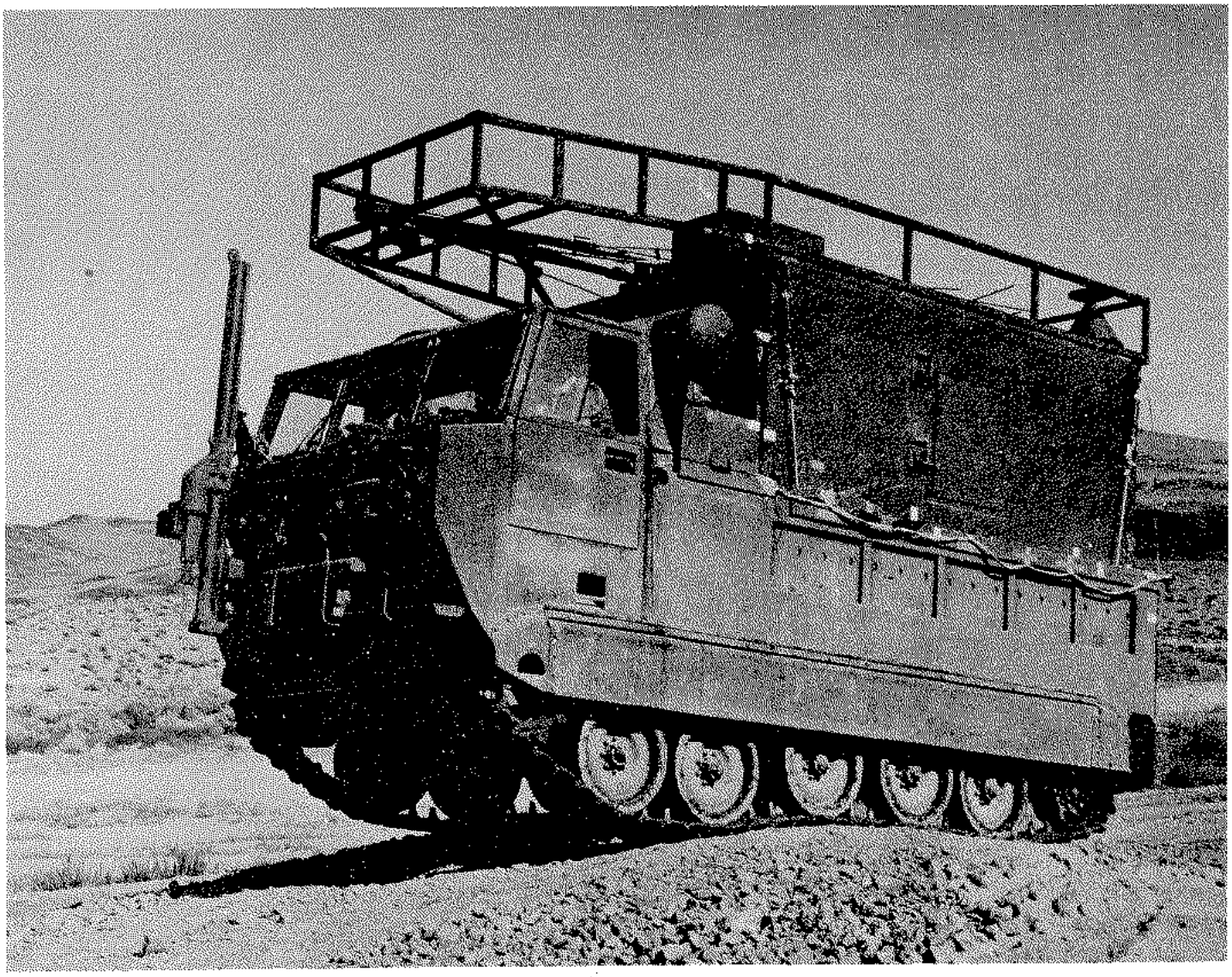


**Figure 2-16. The complete Tacjam system (AN/MLQ-34).**

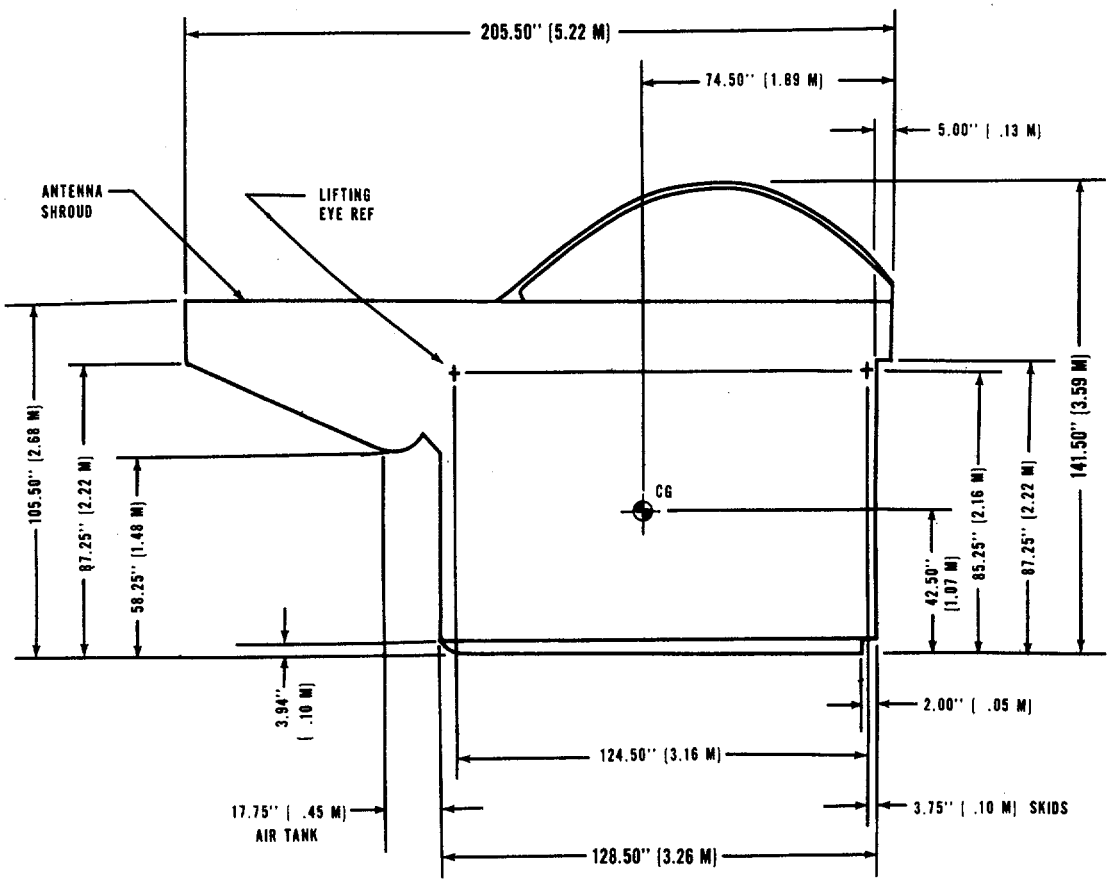



**Figure 2-17. Diagram of left side and rear view of shelter for the Tacjam system.**

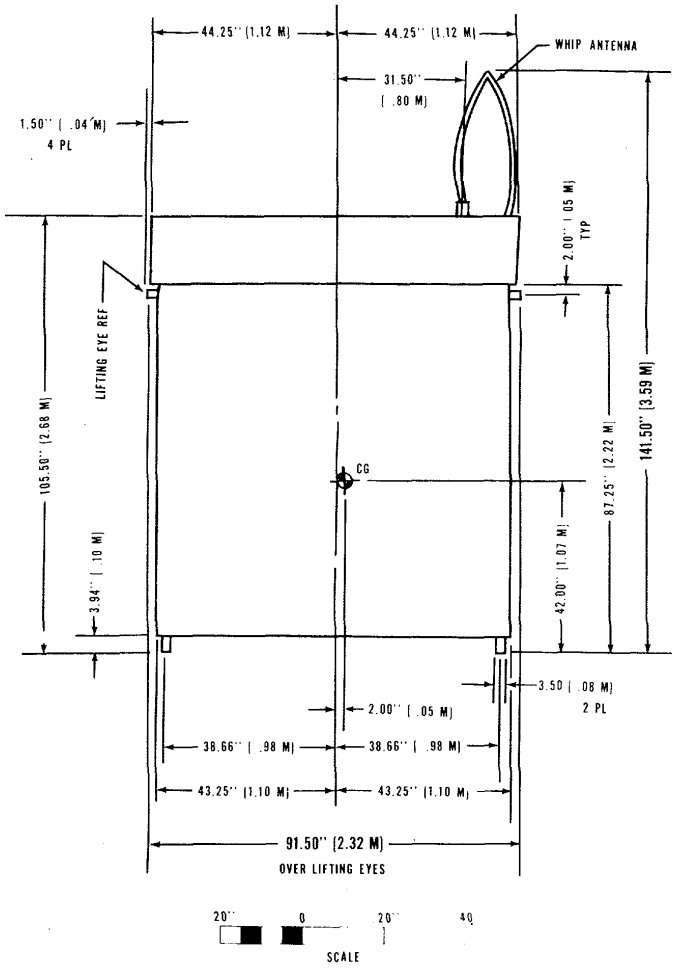



**Figure 2-18. Clearance diagram of left side and rear view of shelter for the Tacjam system.**

## 2-8. Equipment Configuration

Because of the similarities between the Tacjam and Trailblazer systems, the procedures for transport are similar, as well as the transport guidelines. However, since the Tacjam system does not have a trailer, references to the trailer should be ignored when transporting this system.

## 2-9. Characteristics and Related Data

Prior to shipment, the whip antenna, main antenna, and data link antenna and the antenna shroud must be removed from the top of the shelter. This equipment should be crated and secured in the bed of the carrier. General transportability characteristics for the M1015 carrier are shown in table 2-1. Characteristics for the Tacjam shelter are shown in table 2-2

**Table 2-2. General Transportability Characteristics.**

Shelter, Tacjam system:
- National stock number .....TBA
- Line item number.....TBA
- Ground pressure (nonreduced)
- Ground contact area .....6.02 sq ft (.56 sq m)
- Ground clearance .....3.94 in. (.10 m)

Dimensions and shipping data:
- Reduced length .....14fi.25 in. (3.71 m)
- Reduced width .....91.50 in. (2.32 m)
- Reduced height .....100.0 in. (2.54 m)
- Reduced cube.....675.7 cu ft (18.9 cu m)

Center of gravity:
- From right side .....36.66 in. (.93 m)

**Table 2-2. General Transportability Characteristics.--Continued**

Above ground.....42.50 in (1.07 m)
From front edge.....54 in. (1.37 m)
Weights:
Nonreduced.....8,752 lb (3,970 kg)
Reduced.....8,152 (3,658 kg)

## 2-10. Securement of Shelter to Carrier

The shelter is mounted on rails in the carrier bed. The shelter should be set in place and tiedowns should be attached from the upper tiedown rings on the shelter to the tiedown holes in the rails.

## 2-11. Clearance Diagrams

Clearance diagrams for the M1015 carrier are shown in figures 2-12 and 2-13. The clearance diagram for the Tacjam shelter is shown in figure 2-16.

Figures 2-19 and 2-20 are clearance diagrams of the M1015 carrier with shelter attached for the Tacjam system.

## 2-12. Unusual Characteristics of Trailblazer and Tacjam Systems

Neither system has any unusual characteristics that would require special attention be given to temperature, atmospheric pressure, or humidity variations during its exposure to normal transportation environments.

## 2-13. Hazardous and Dangerous Characteristics of Trailblazer and Tacjam System.

Neither system will present any special hazardous or dangerous characteristics during its exposure to normal transportation environments.

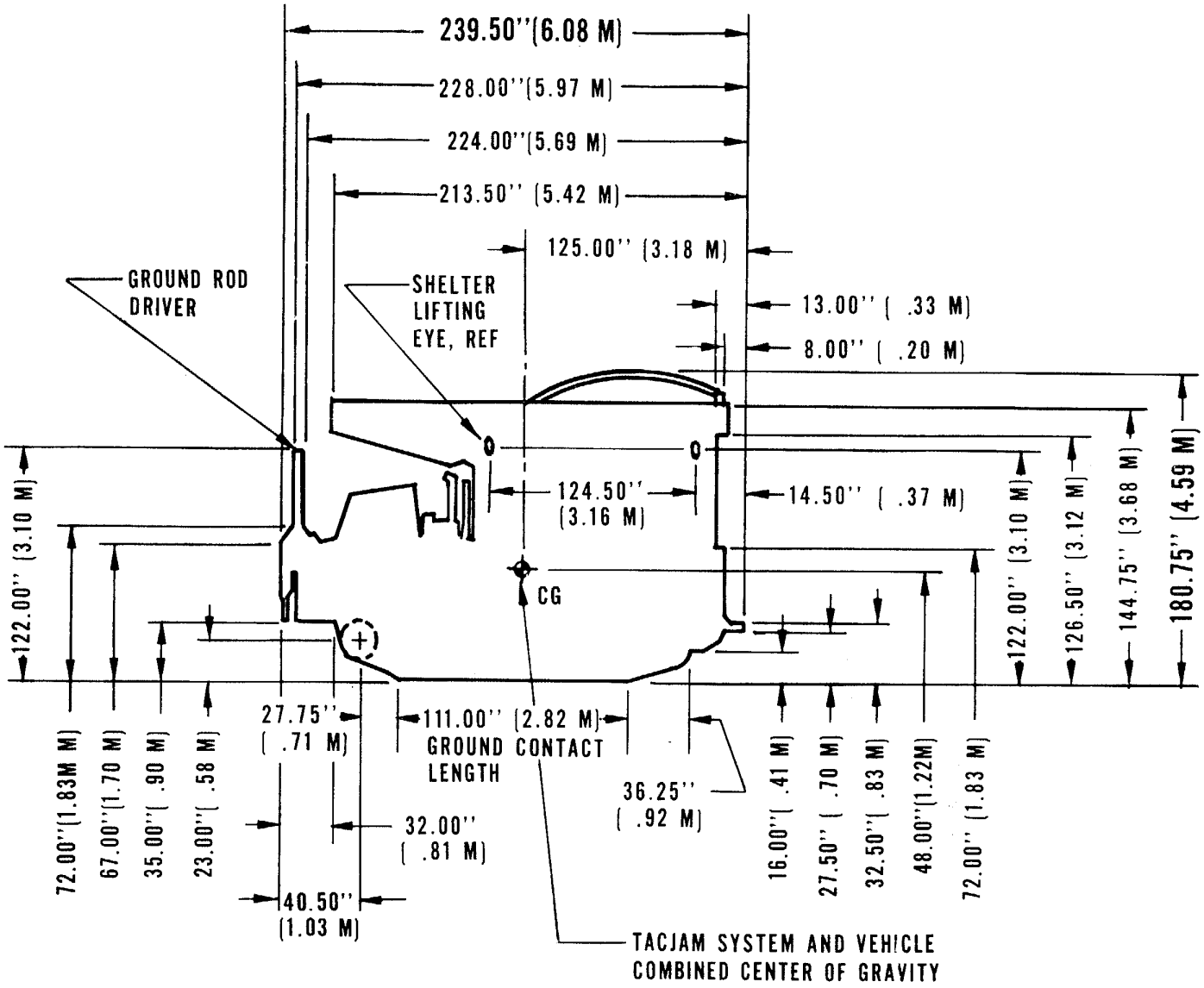



**Figure 2-19. Transportability drawing, left-side elevation, M1015 full-tracked cargo carrier with shelter attached, Tacjam system.**

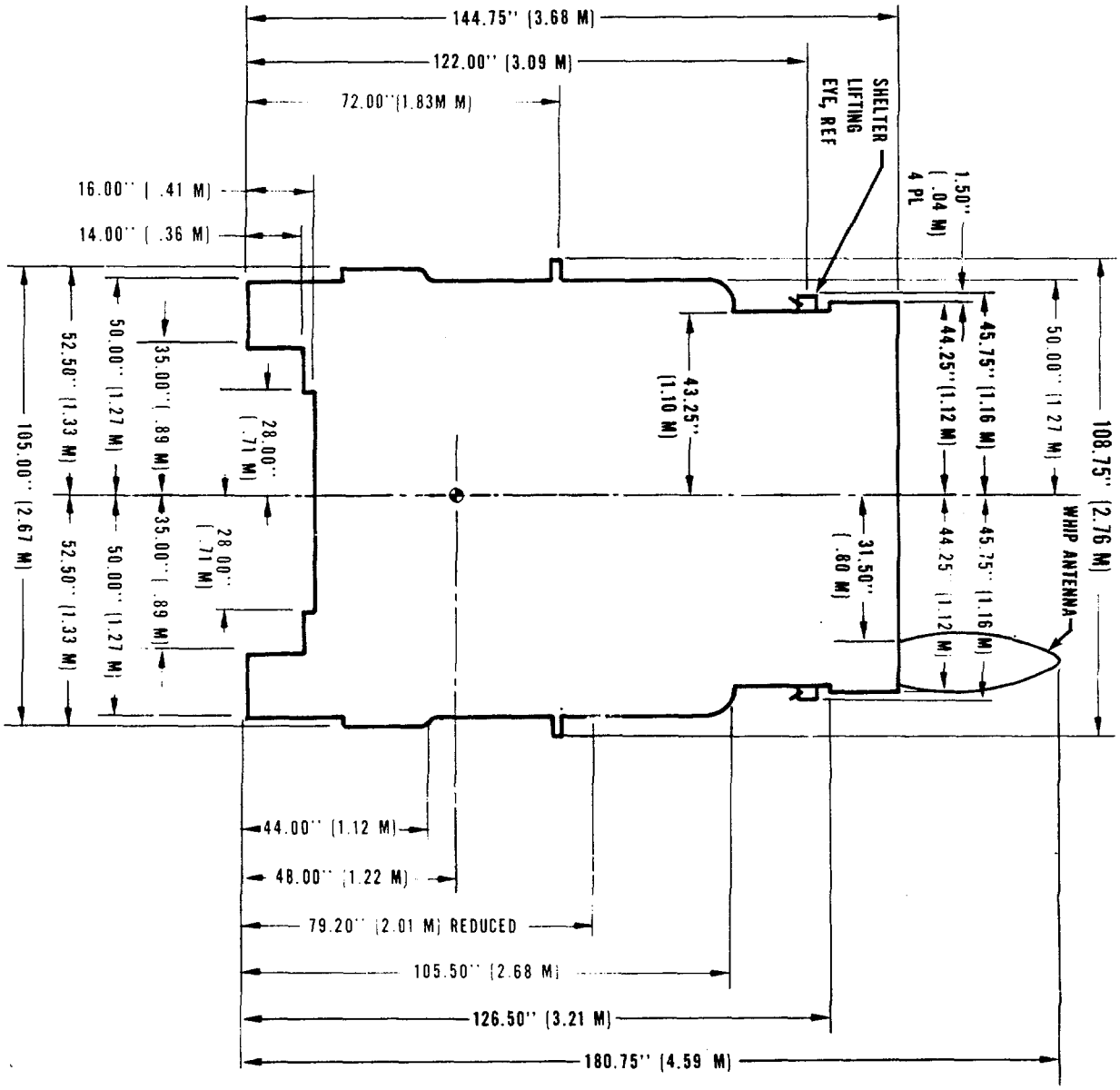



**Figure 2-20. Transportability drawing, rear-end elevation, M1015 full tracked cargo carrier with shelter attached, Tacjam system.**

**NOTE**

Those regulations and/or transportation procedures normally associated with vehicles containing diesel fuel will apply to the cargo carriers and trailer support units.

# CHAPTER 3

# SAFETY

## 3-1. General

General safety precautions for movement are as follows:

a. Check each vehicle to insure that all loose items are appropriately secured.

b. When a vehicle is backed, insure that no personnel or obstructions are behind it.

c. Do not walk under any items while they are being lifted by crane or other means.

d. Insure that fire extinguishers (other than system extinguishers) are readily available during all loading and offloading procedures.

e. Do not leave a vehicle unattended while engine is running.

f. If track is thrown while carrier is being operated, do not apply brakes unless absolutely necessary. Allow carrier to coast to a stop.

g. Insure that ventilation is adequate while vehicle engine is running (carbon monoxide poisoning can be deadly).

## 3-2. Specific Safety Requirements

Pertinent safety requirements by individual mode can be found, where applicable, in the appropriate chapters.

# CHAPTER 4

# AIR TRANSPORTABILITY GUIDANCE

## Section I. GENERAL

### 4-1. Scope

This chapter provides air transportability guidance for movement of the Trailblazer/Tacjam System. Examples of tiedown diagrams and tiedown data for loading this system into US Air Force C-5 and C-141 aircraft are presented in this chapter, as well as tiedown diagrams and tiedown data for loading this system externally on US helicopters.

### 4-2. Maximum Utilization of Aircraft

Additional cargo, including nuclear weapons and/ or personnel, within allowable load limits and restrictions as prescribed by pertinent safety regulations (app), can be transported with the Trailblazer/Tacjam system in US Air Force aircraft.

### 4-3. Safety

In addition to the safety precautions contained in chapter 3, the following procedures apply:

a. The activity offering the vehicles or items for air transport will notify the aircraft commander or his representative when ammunition or explosives are to be transported within a system.

b. The vehicle fuel tanks must not be more than three-fourths full; the trailer tanks may be up to one-half full when shipped either attached to or separated from the carrier.

c. The required number of tiedowns plus their capacity must be checked and the criteria for gravity forces must be adhered to.

d. The carrier must be restrained for air transport in accordance with the applicable procedures in section IV of Air Force TO 1C-5A-9 and TO 1C141B-9. Procedures outlined in these manuals are for general guidance.

**WARNING**

Fire extinguishers must be readily available during all loading and unloading operations.

**WARNING**

Proper ventilation must be provided when loading and unloading. Prolonged inhalation of carbon monoxide fumes may be fatal.

**CAUTION**

Do not allow carriers to exceed 3 miles per hour (walking speed) on the loading ramps or inside the aircraft.

## Section II. TRANSPORT BY US AIR FORCE AIRCRAFT

### 4-4. General

a. The Trailblazer/Tacjam systems in the reduced configuration (shelter removed from carrier) are transportable by the C-5, and C-141 aircraft.

b. The aircraft commander or his representative is responsible for insuring that the system described is loaded or offloaded and properly secured in the aircraft in accordance with the criteria in section IV of TO 1C-5A-9 and TO 1C-141B9, as applicable.

c. Metal parts of the carrier tracks must not make contact with the aircraft loading ramp or cargo compartment floor. The use of shoring is always required when the carrier is loaded and offloaded. Two by twelve-inch lumber must be used to provide two rows of shoring 24 inches wide and spaced to match the carrier tracks. Loaded height of the carrier may be reduced slightly by use of ¾ or 1/2-inch plywood shoring instead of 2 X 12-inch lumber. Shoring must be laid from the ground end of the aircraft ramp extension into the cargo compartment so that, when the carrier is in the tiedown position, the tracks are on the shoring. Shoring is provided by the transporting unit or activity. Trailblazer/Tacjam system components are loaded as shown in figures 4-1 through 4-5 and tables 4-1 through 4-5.

d. Clearance of the shelters in a C-141 aircraft is shown in figure 4-6. A K-loader or similar device should be used for loading the shelters.

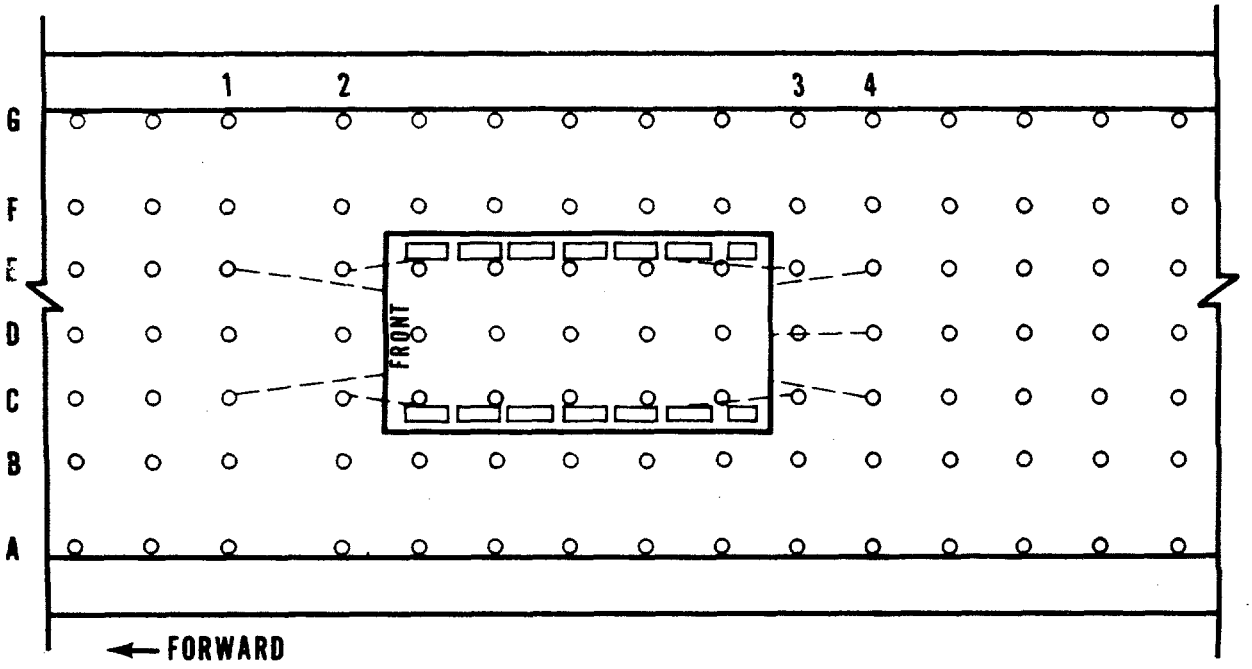
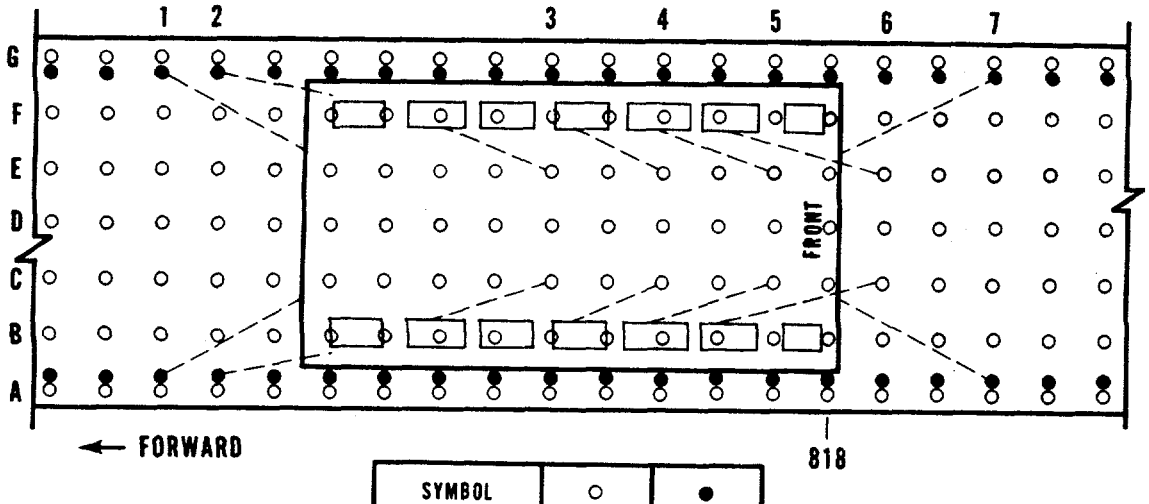



**Figure 4-1. Tiedown diagram for M1015 carrier in C-5 aircraft.**




| SYMBOL | ○ | ● |
|---|---|---|
| STRENGTH OF FITTING AND BASIC LOAD DIRECTION | 10000 LB ANY | 25000 LB ANY |

**Figure 4-2. Tiedown diagram for M1015 carrier in C-141 aircraft.**

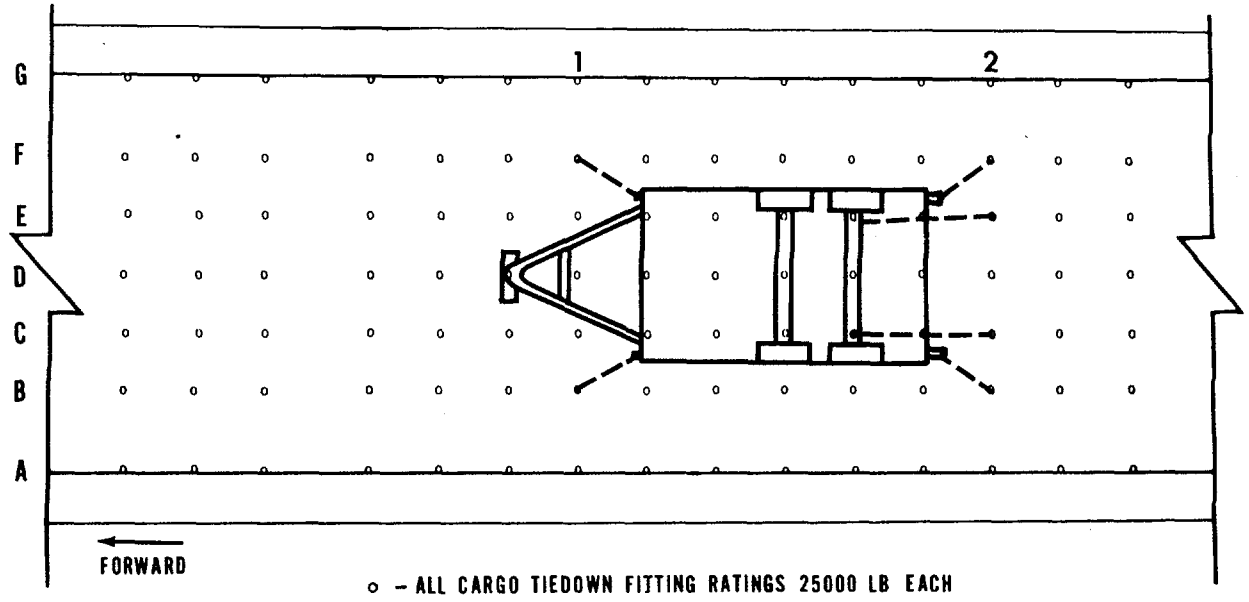
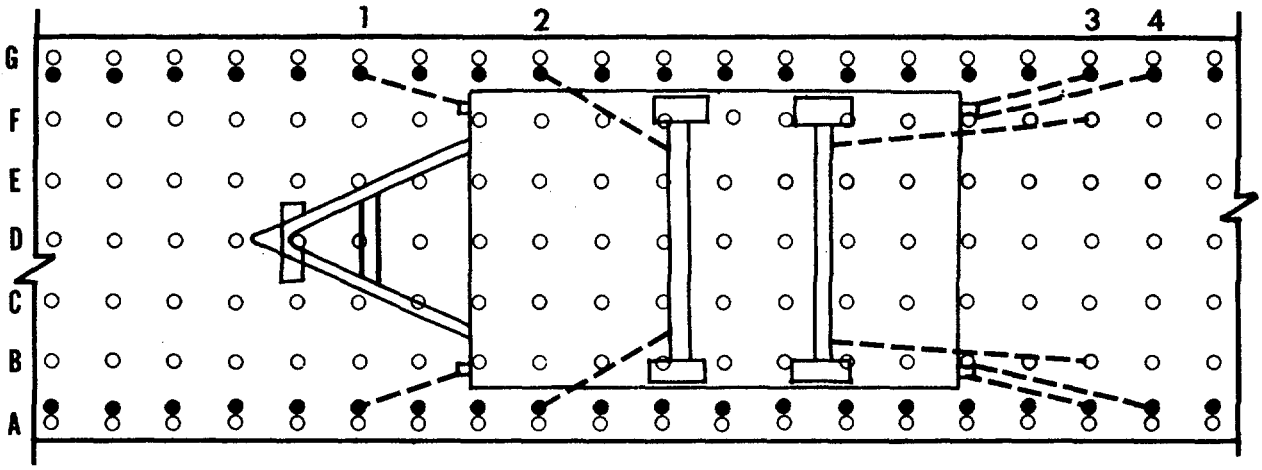



**Figure 4-3. Tiedown diagram for support unit trailer in C-5 aircraft**




| SYMBOL | ○ | ● |
|---|---|---|
| STRENGTH OF FITTING AND BASIC LOAD DIRECTION | 10000 LB ANY | 25000 LB ANY |

**Figure 4-4. Tiedown diagram for trailer support unit in C-141 aircraft.**

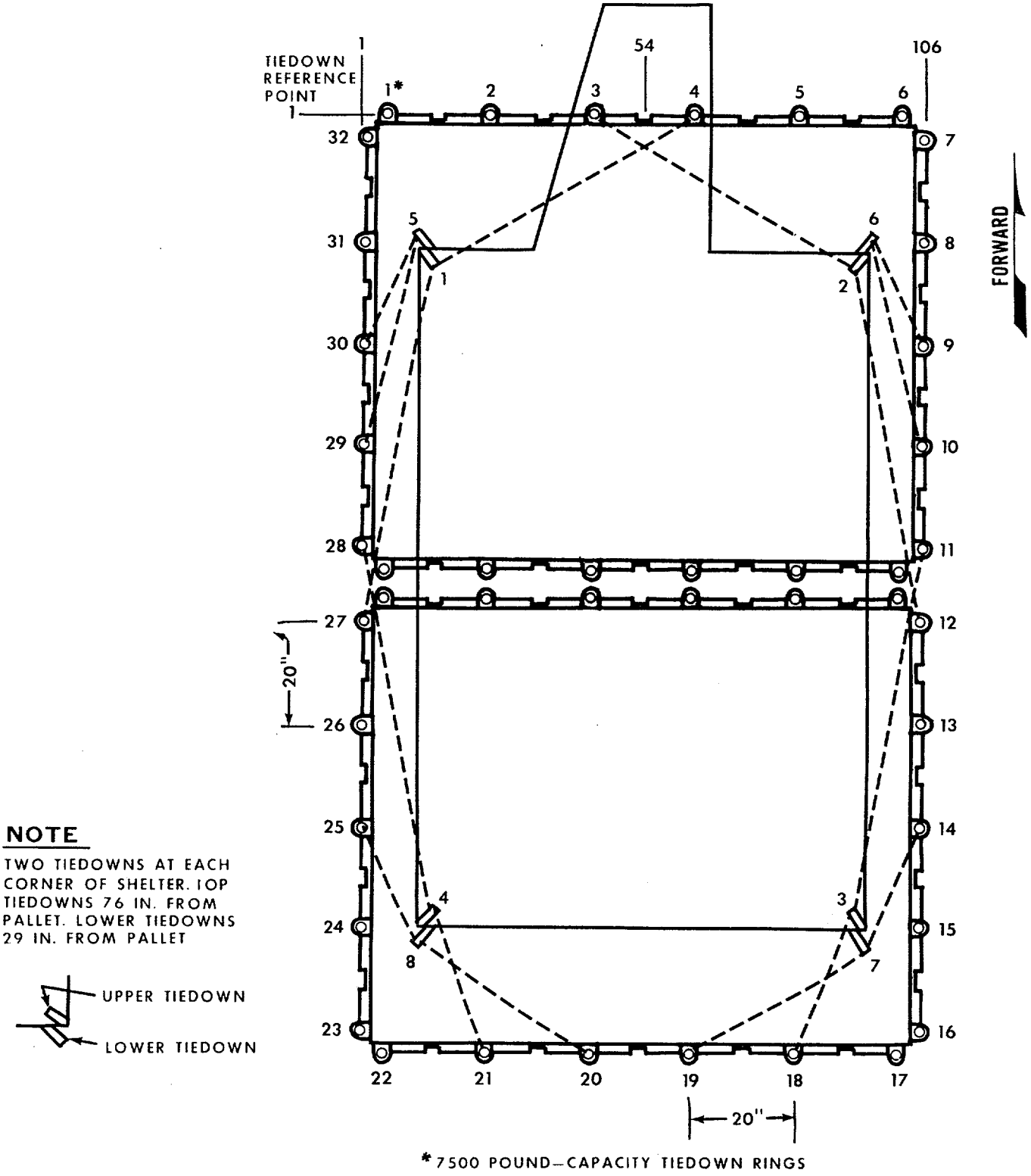



**Figure 4-5. Tiedown diagram for shelters on two interlocked 463L pallets.**

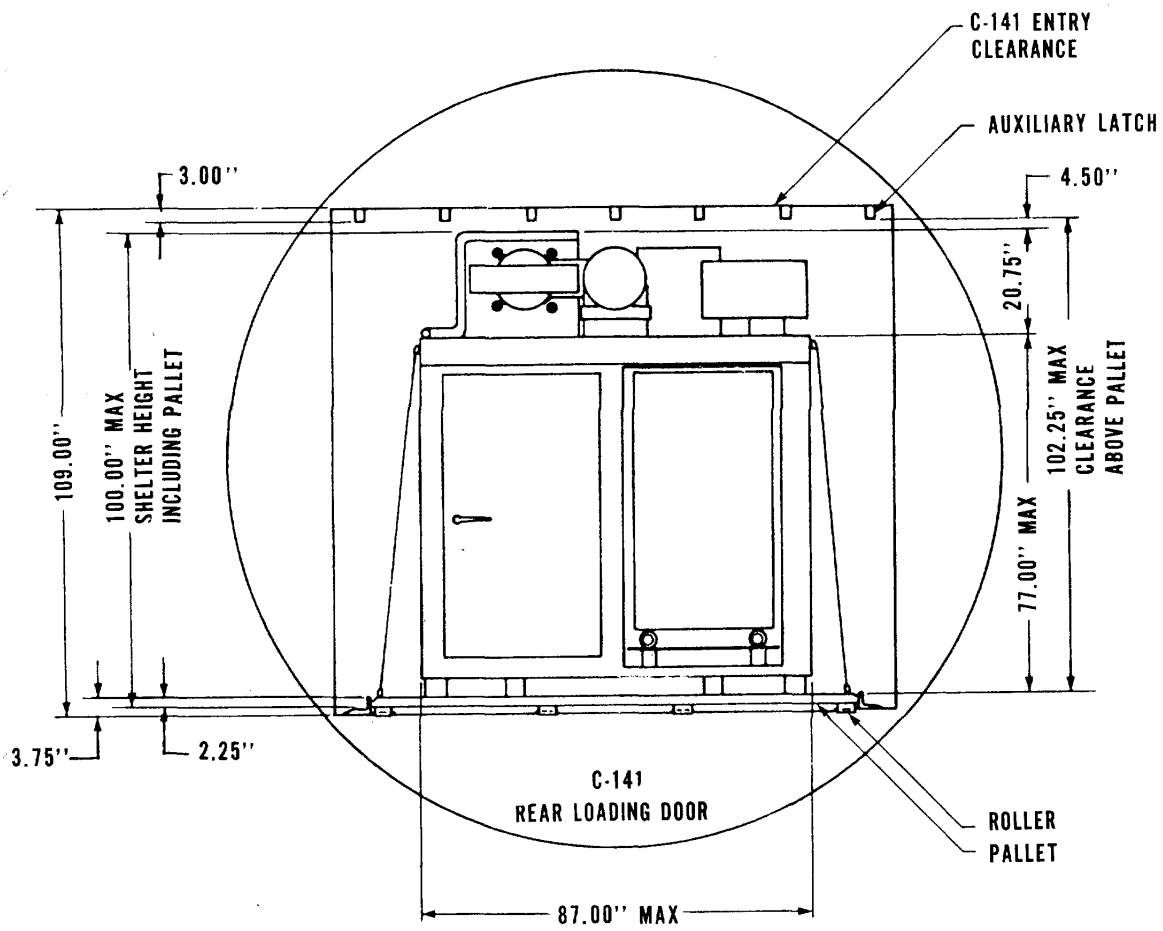



**Figure 4-6. Loading diagram for MCS/RSS shelters on C-141 aircraft.**

**Table 4-1. Tiedown Data for M1015 Carrier in C-5 Aircraft (Fig 4-1).**

| Tiedown fitting | | Tiedown Device | | Attach to Item |
|---|---|---|---|---|
| Designation | Capacity in 1,000 lb | Type | Capacity in 1,000 lb | |
| C1 | 25 | MB-2 | 25 | Left front towing provision |
| E1 | 25 | MB-2 | 25 | Right front towing provision |
| C2 | 25 | MB-2 | 25 | Left idler wheel arm. |
| E2 | 25 | MB-2 | 25 | Right Idler wheel arm |
| C3 | 25 | MB-2 | 25 | No. 5 left road wheel arm. |
| E3 | 25 | MB-2 | 25 | No. 5 right road wheel arm. |
| C4 | 25 | MB-2 | 25 | Left rear towing provision. |
| E4 | 25 | MB-2 | 25 | Right rear towing provision. |
| D4 | 25 | MB-2 | 25 | Towing pintle. |
| F2 | 25 | MB-2 | 25 | Right front towing provision. |
| B2 | 25 | MB-2 | 25 | Left front towing provision. |
| F3 | 25 | MB-2 | 25 | Right rear towing provision |
| B3 | 25 | MB-2 | 25 | Left rear towing provision. |

**Table 4-2. Tiedown Data for M1015 Carrier in C-141 Aircraft (Fig 4-2).**

| Tiedown Fitting | | Tiedown Device | | Attach to Item |
|---|---|---|---|---|
| Designation | Capacity in 1,000 lb | Type | Capacity in 1,000 lb | |
| Al | 25 | MB-2 | 25 | Right rear towing provision. |
| G1 | 25 | MB-2 | 25 | Left rear towing provision. |
| A2 | 25 | MB-2 | 25 | Right rear lifting provision. |
| G2 | 25 | MB-2 | 25 | Left rear lifting provision. |
| C3 | 10 | MB-1 | 10 | No. 5 right road wheel arm. |
| E3 | 10 | MB-1 | 10 | No. 5 left road wheel arm. |
| C4 | 10 | MB-1 | 10 | No. 3 right road wheel arm. |
| E4 | 10 | MB-1 | 10 | No. 3 left road wheel arm. |
| C5 | 10 | MB-1 | 10 | No. 2 right road wheel arm. |
| E5 | 10 | MB-1 | 10 | No. 2 left road wheel arm. |
| C6 | 10 | MB-1 | 10 | No. 1 right road wheel arm. |
| E6 | 10 | MB-1 | 10 | No. 1 left road wheel arm. |
| A7 | 25 | MB-2 | 25 | Right front towing provision. |
| G7 | 25 | MB-2 | 25 | Left front towing provision. |

**Table 4-3. Tiedown Data for Trailer Support Unit in C-5 Aircraft (Fig 4-3).**

| Tiedown Fitting | | Tiedown Device | | Attach to Item |
|---|---|---|---|---|
| Designation | Capacity in 1,000 lb | Type | Capacity in 1,000 lb | |
| F1 | 25 | MB-2 | 25 | Right front tiedown shackle. |
| B1 | 25 | MB-2 | 25 | Left front tiedown shackle. |
| F2 | 25 | MB-2 | 25 | Right rear tiedown shackle. |
| B2 | 25 | MB-2 | 25 | Left rear tiedown shackle. |
| E2 | 25 | MB-2 | 25 | Around rear axle. |
| C2 | 25 | MB-2 | 25 | Around rear axle. Shoring. |

* Fourteen 2- X 6- X 20-inch pieces of lumber nailed together and placed under lunette.

**Table 4-4. Tiedown Data for Trailer Support Unit in C-141 Aircraft (Fig 4-4).**

| Tiedown Fitting | | Tiedown Device | | Attach to Item |
|---|---|---|---|---|
| Designation | Capacity in 1,000 lb | Type | Capacity in 1,000 lb | |
| G1 | 25 | MB-2 | 25 | Right front tiedown shackle. |
| Al | 25 | MB-2 | 25 | Left front tiedown shackle. |
| G2 | 25 | MB-2 | 25 | Around front axle. |
| A2 | 25 | MB-2 | 25 | Around front axle. |
| F3 | 10 | MB-1 | 10 | Around rear axle. |
| B3 | 10 | MB-1 | 10 | Around rear axle. |
| G3 | 25 | MB-2 | 25 | Right rear tiedown shackle. |
| A3 | 25 | MB-2 | 25 | Left rear tiedown shackle. |
| G4 | 25 | MB-2 | 25 | Right rear tiedown shackle. |
| A4 | 25 | MB-2 | 25 | Left rear tiedown shackle. Shoring. |

* Fourteen 2- X 6- x 20-inch pieces of lumber nailed together and placed under lunette.

**Table 4-5. Tiedown Data for Shelters Secured to Two Interlocked 463L Pallets (HUC-61E) (Fig 4-5).**

| Tiedown Fitting | | Tiedown Device | | Attach to Item |
|---|---|---|---|---|
| Designation | Capacity in 1,000 lb | Type | Capacity in 1,000 lb | |
| 3 | 7.5 | MB-1 | 10 | Forward right top tiedown. |
| 4 | 7.5 | MB-1 | 10 | Forward left top tiedown. |
| 9 | 7.5 | MB-1 | 10 | Forward right bottom tiedown. |
| 10 | 7.5 | MB-1 | 10 | Forward right bottom tiedown. |
| 11 | 7.5 | MB-1 | 10 | Aft right top tiedown. |
| 12 | 7.5 | MB-1 | 10 | Forward right top tiedown. |
| 14 | 7.5 | MB-1 | 10 | Aft right bottom tiedown. |
| 18 | 7.5 | MB-1 | 10 | Aft right top tiedown. |
| 19 | 7.5 | MB-1 | 10 | Aft right bottom tiedown. |
| 20 | 7.5 | MB-1 | 10 | Aft left bottom tiedown. |
| 21 | 7.5 | MB-1 | 10 | Aft left top tiedown. |
| 25 | 7.5 | MB-1 | 10 | Aft left bottom tiedown. |
| 27 | 7.5 | MB-1 | 10 | Forward left top tiedown. |
| 28 | 7.5 | MB-1 | 10 | Aft left top tiedown. |
| 29 | 7.5 | MB-1 | 10 | Forward left bottom tiedown. |
| 30 | 7.5 | MB-1 | 10 | Forward left bottom tiedown. |

# CHAPTER 5

# OFF-ROAD AND HIGHWAY TRANSPORTABILITY GUIDANCE

## Section I. GENERAL

**5-1. Scope**

This chapter provides off road and highway transportability guidance for movement of the Trailblazer/Tacjam system. It covers significant technical and physical characteristics and safety precautions, prescribes the materials, and provides guidance required to prepare, load, tie down, and unload this system.

**5-2. Safety**

a. In addition to the safety precautions contained in chapter 3, movement of the system within CONUS is subject to all safety laws, rules, and regulations applicable to commercial carriers. Overseas, movements are governed by theater and local regulations.

b. For the lifting of items, refer to paragraph 6-2.

**5-3. General**

The carrier is self-deliverable only under appropriate tactical situations. Although the carrier tracks are equipped with rubber pads, movement over paved public highways will not be made without specific approval, as outlined in AR 55-162. If approval is given, the shelter may be mounted onto the carrier and the trailer towed. Legal limitations for overseas are identified in "Limits of Motor Vehicle Sizes and Weights," International Road Federation, Geneva, Switzerland.

## Section II. TRANSPORT BY SEMITRAILER

**5-4. General**

The carrier, without shelters attached, and the shelters and trailer can be transported by an M127A2 or larger semitrailer. Both in CONUS and overseas, permits will be required because the width of the trailer and carrier exceeds highway limitations. The type of tractor-trailer combination used for transport determines whether the overall length and/or height limitations may be exceeded.

**5-5. Preparation**

The carrier will be reduced to its minimum height configuration as described in chapter 1. Carrier fuel tanks must be one-half full or less. Trailer tanks must be one-fourth full or less.

**NOTE**

The shelters must be removed from their prime mover and transported separately.

**5-6. Loading On Flatbed Semitrailers.**

The carrier may be lifted by crane (figs 6-1 and 6-2) or driven onto the semitrailer if a suitable ramp is available. The shelters and trailer must be lifted by crane (figs 6-5 and 6-7). After the items are placed in tiedown position, they will be secured in accordance with procedures outlined in the following figures: figures 5-1 and 5-2 (blocking and tiedown of support unit trailer on M127A1 semitrailer), figure 5-3 (blocking and tiedown details), figures 5-4 and 5-5 (blocking, tiedown, and shoring details for M1015 carrier on M127A1 semitrailer), figures 5-6 and 5-7 (tiedown of shelter on M127A1 semitrailer), and figure 5-8 (tracking of M127A1 semitrailer/M818 tractor combination). Tables 5-1 and 5-2 are the bill of materials and application of materials for the tiedown of the trailer support unit on an M127-series semitrailer. Tables 5-3 and 5-4 are the bill of materials and application of materials for the tiedown of the M1015 carrier on M127-series semitrailer. Tables 5-5 and 5-6 are the bill of materials and application of materials for tiedown of the shelters on M127-series semitrailer.

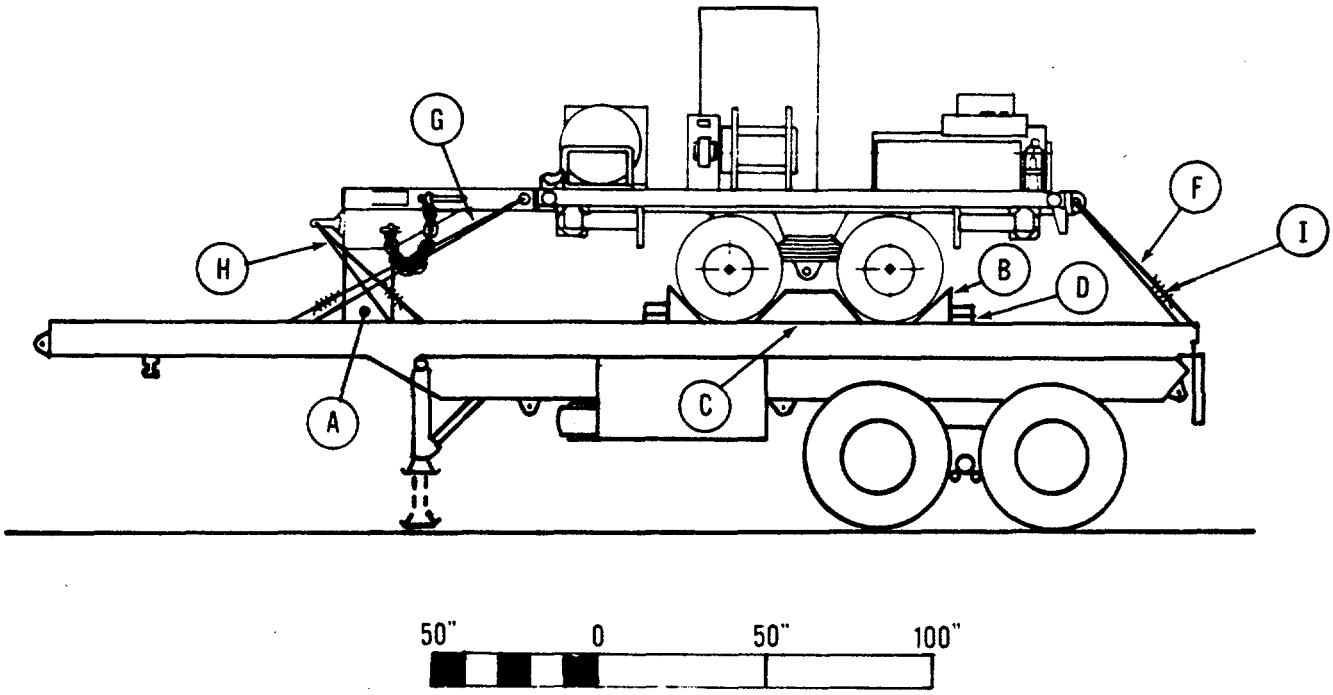



**Figure 5-1. Side view, blocking and tiedown of trailer support unit on M127-series semitrailer.**

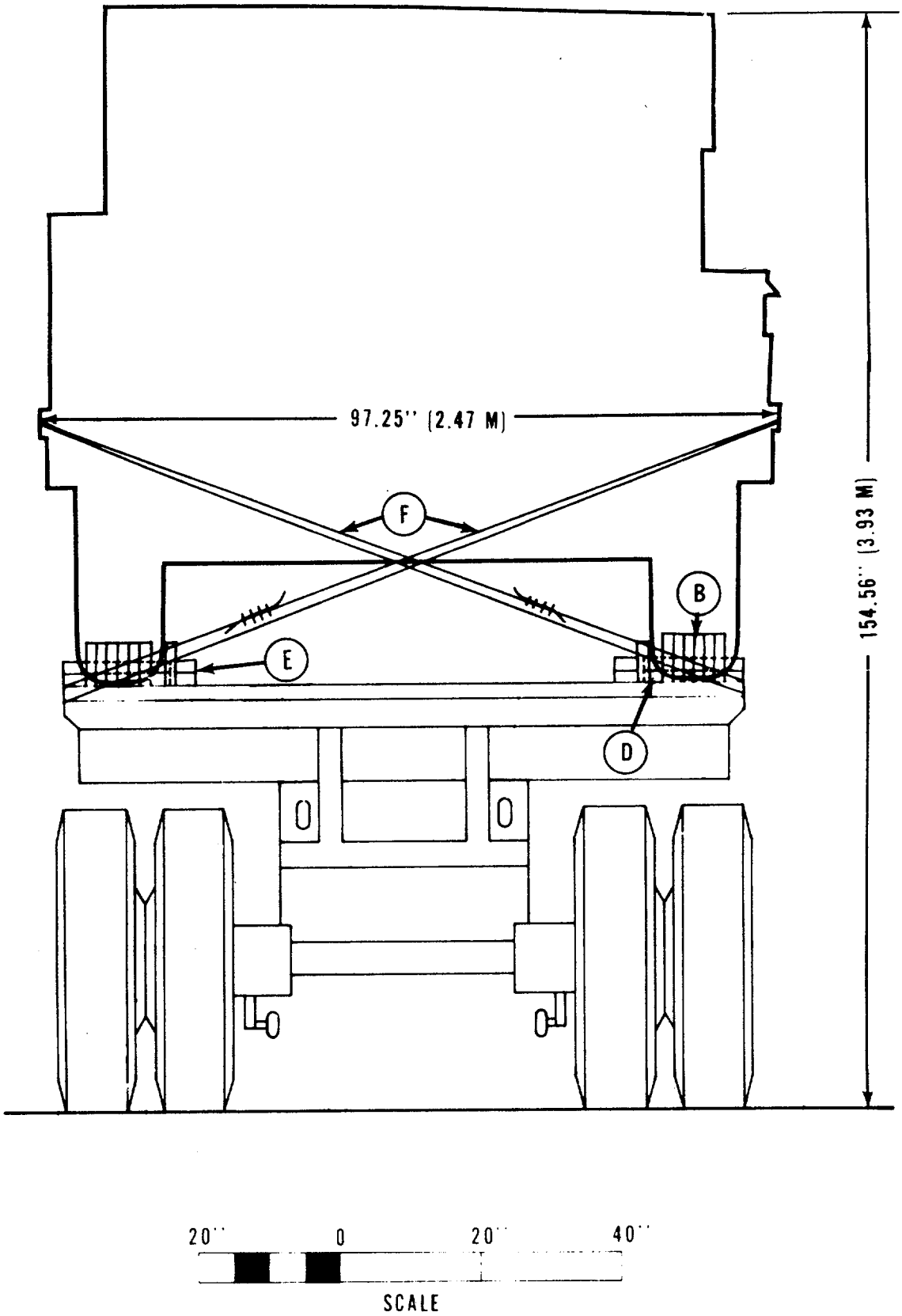
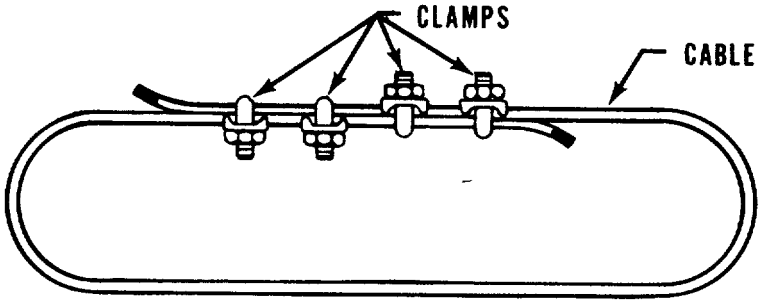
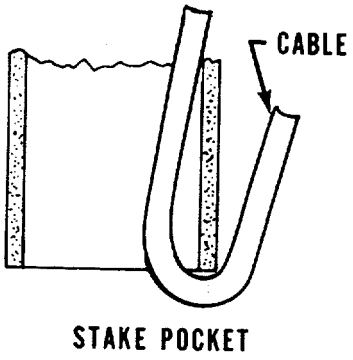


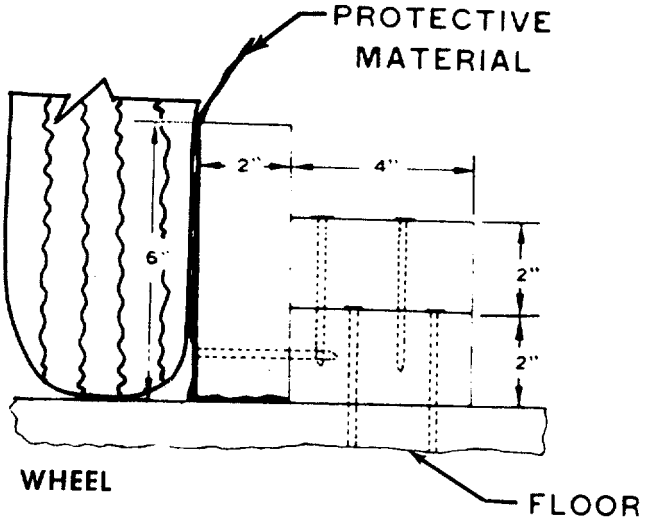

**Figure 5-2. Rear view, blocking and tiedown of trailer support unit on M127-series semitrailer.**




DETAIL 1




DETAIL 2




DETAIL 3

**Figure 5-3. Blocking and tiedown-detail diagram.**

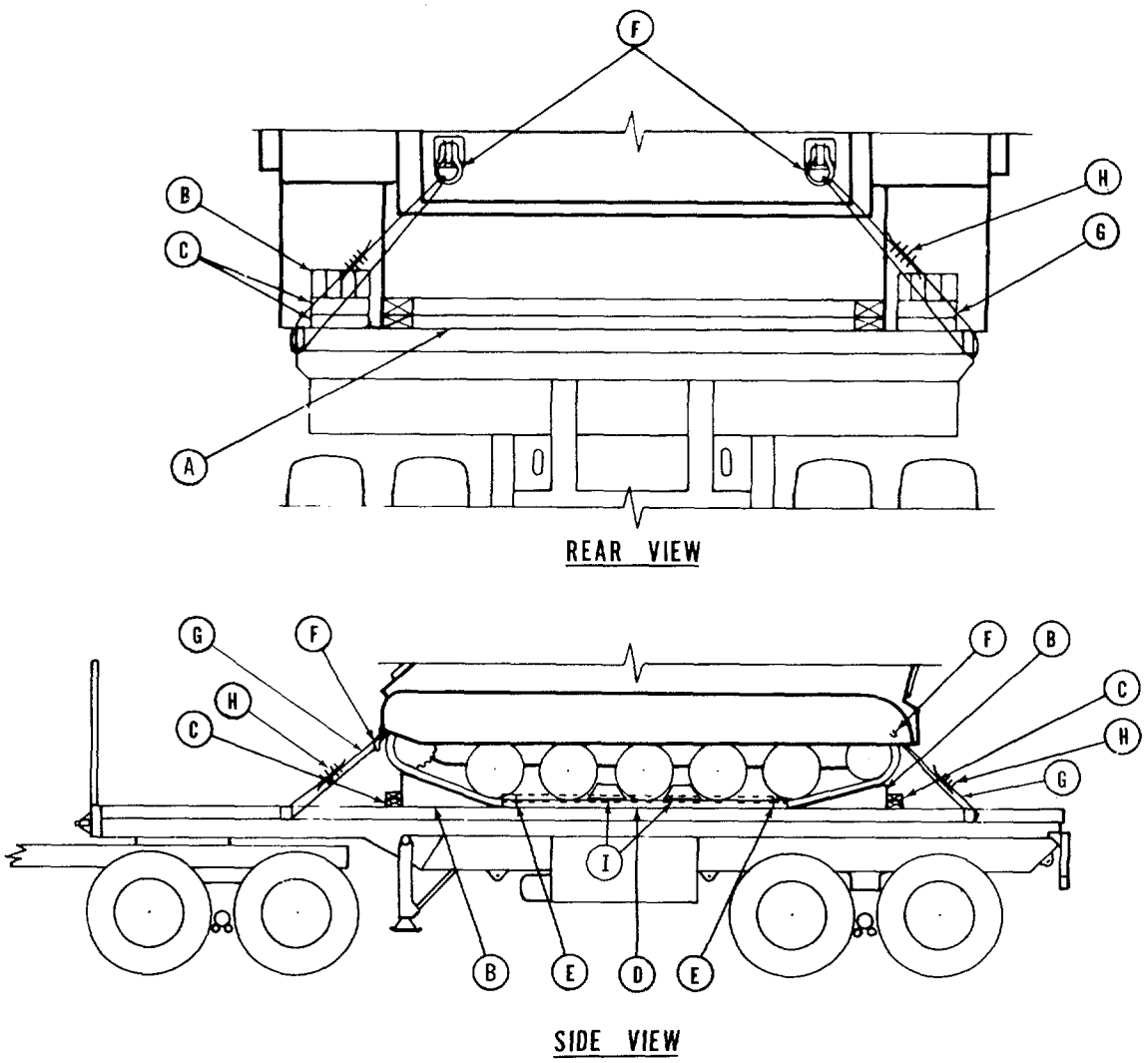



**Figure 5-4. Blocking and tiedown of M1015 carrier on M127-series semitrailer.**

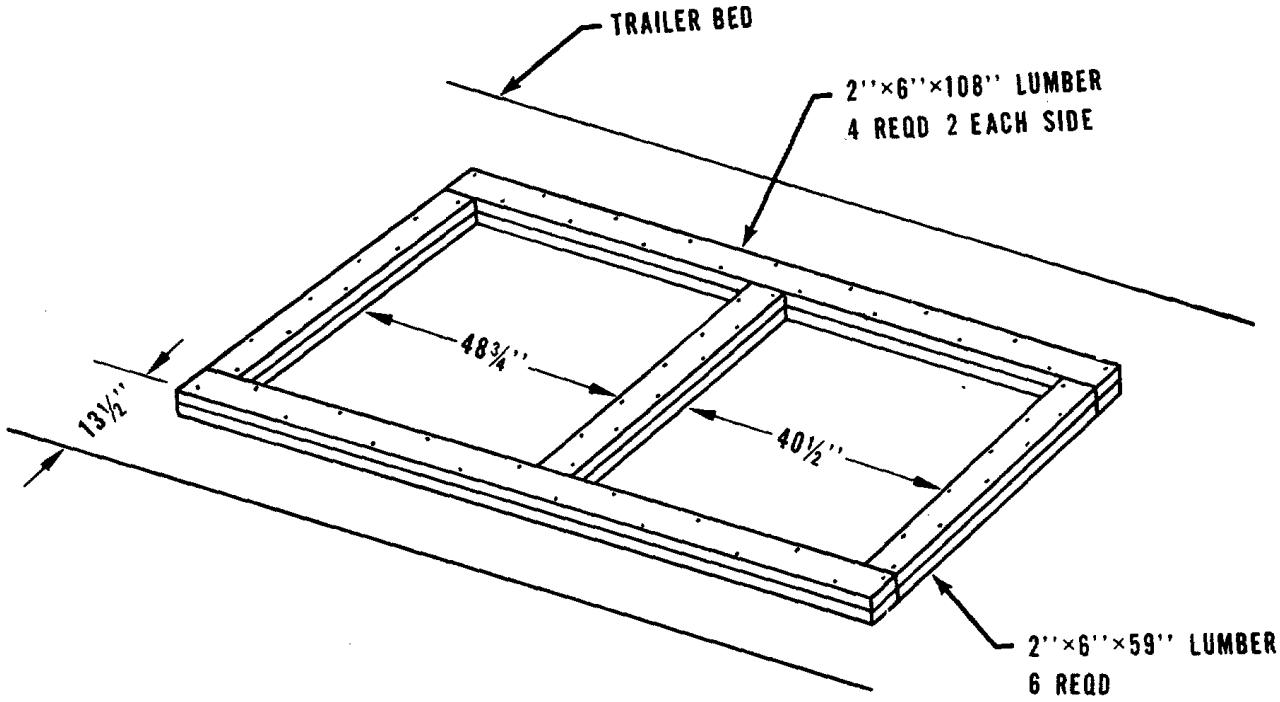



**Figure 5-5. Shoring for M1015 carrier on M127-series semitrailer.**

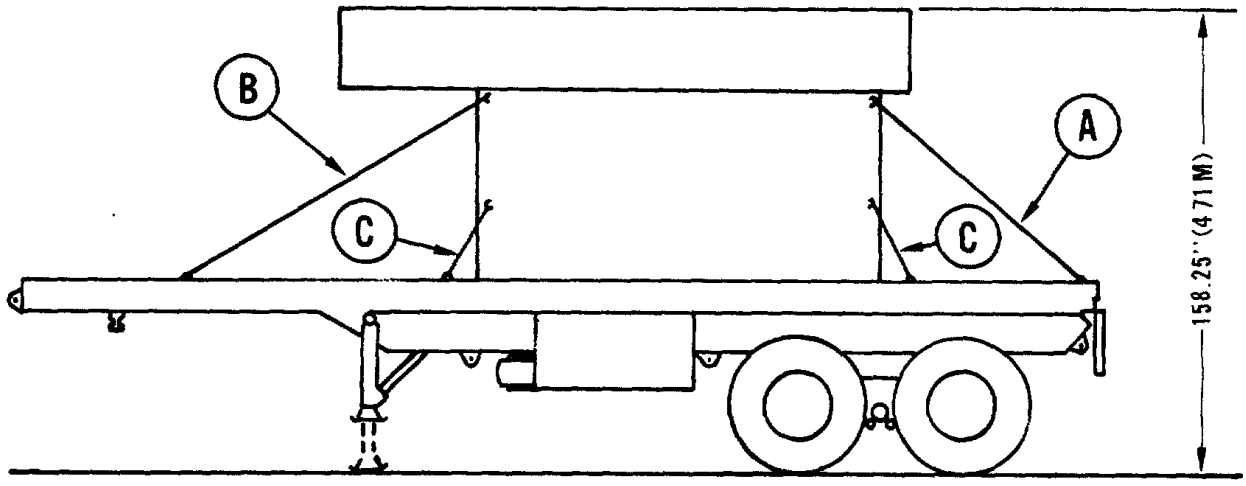



**Figure 5-6. Side view, tiedown of shelters on M127-series semitrailer.**

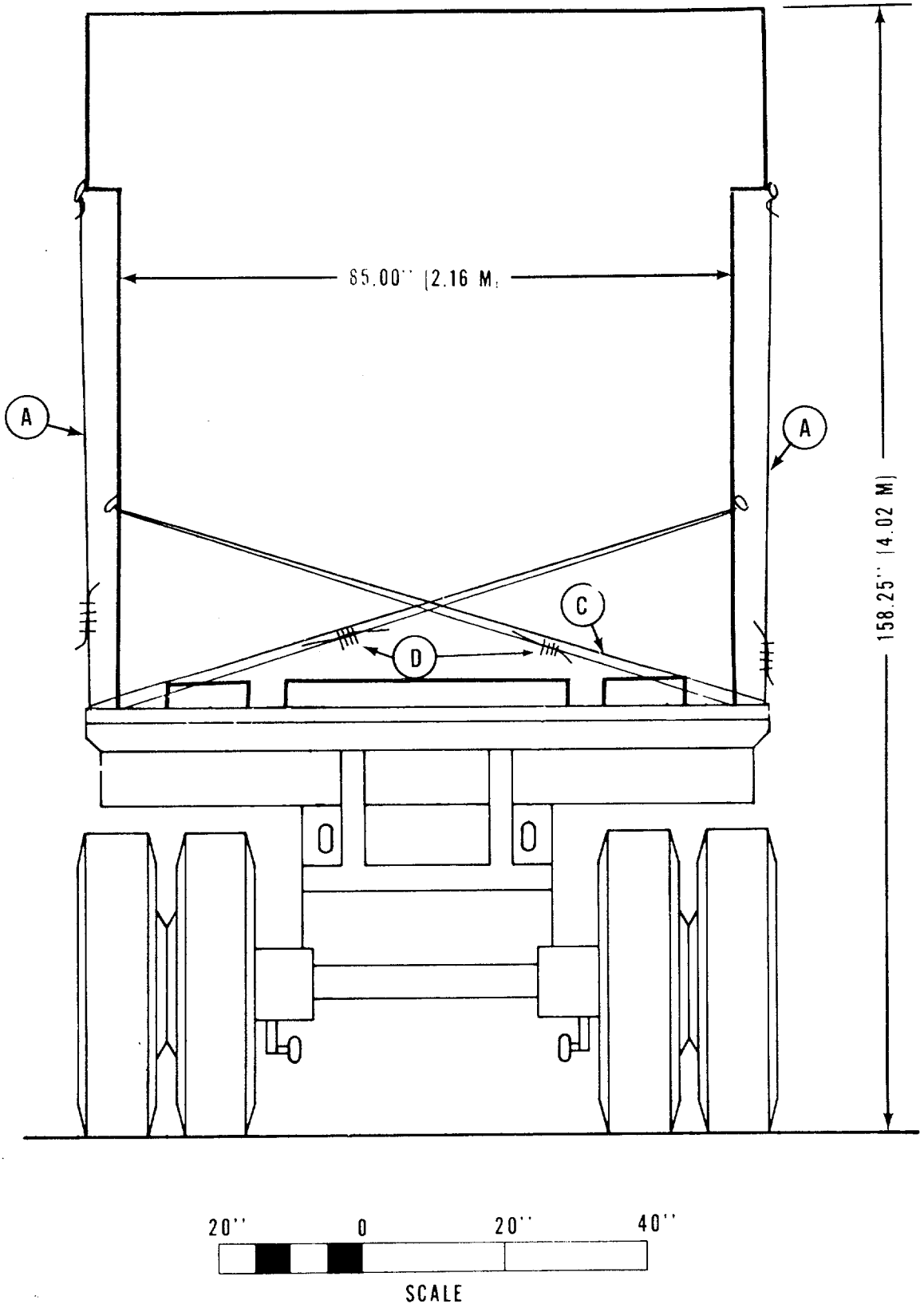



**Figure 5-7. Rear view, tiedown of shelters on M127 series semitrailer.**

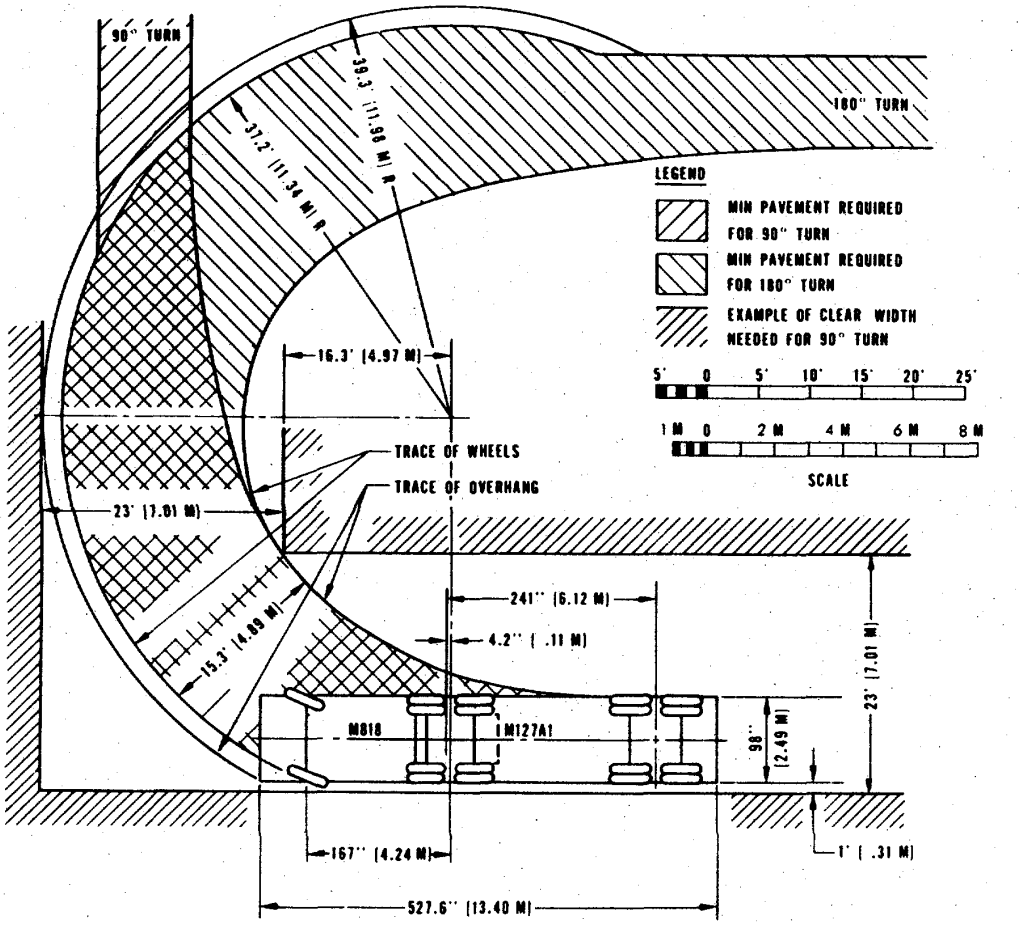



**Figure 5-8. Tracking diagram for M127A1 semitrailer and M818 truck tractor.**

**Table 5-1. Bill of Materials for Blocking and Tiedown of Trailer Support Unit on M127-Series Semitrailer (Figs 5-1 and 5-2).**

| Item | Description | Approximate Quantity |
|---|---|---|
| Lumber ..... | Douglas-fir or comparable, straight-grain, free from material defects; Fed Spec MM-L-751: | |
| | 1- x 2-in ..... | 4 lin ft. |
| | 2- X 4-in..... | 25 lin ft. |
| | 2- X 8-in..... | 56 lin ft |
| Nails ..... | Common, steel; flathead, bright or cement-coated; type II, style 10, Fed Spec FF-N-105: 16d. | 73. |
| Wire rope..... | 6 x 19 IWRC, improved plow steel, preformed, regular-lay; table X, Fed Spec RR-W-410: 1/2-in. | 92 ft. |
| Clamps ..... | Wire rope, U-bolt clips, saddled, single-grip, forged steel, Crosby heavy-duty or equal; Fed Spec FF-C-450: 1/2-in. | 24. |

**Table 5-2. Application of Materials for Blocking and Tiedown of Trailer Support Unit on M127-Series Semitrailer (Figs 5-1 and 5-2).**

| Item | No. Reqd. | Application |
|---|---|---|
| A | 1 | Brace. Consists of fifteen 2- x 4- x 15-inch pieces of lumber nailer together. Locate under lunette and nail in place (fig 5-1). |
| B | 4 | End chock blocks. Each to consist of six 2 x 8x 7-½-inch pieces of lumber, cut as shown in figure 79, detail 1. Nail two pieces together with two 16d nails. Then nail the next piece to these two pieces with two 16d nails. Repeat with other pieces. Then place one block before each front wheel and one behind each rear wheel. |
| C | 2 | Middle chock blocks. Each to consist of six 2 x 8 x 41-inch pieces of lumber, cut as shown in figure 7-9, detail 2. Nail two pieces together with three 16d nails. Then nail the next piece to these two pieces with three 16d nails. Repeat with other pieces. Then place blocks between front and rear wheels as shown (fig 5-1). |
| D | 4 | End blocks. Each to consist of two 2x 4 x 9-inch pieces of lumber. Place one piece tightly against the base of an end chock block, and nail to the semitrailer bed with three 16d nails. Nail the other piece to the first piece with three 16d nails. |
| E | 2 | Side blocks. Each to consist of two 2 x 4 x 70-inch and one 2 x 6x 70-inch pieces of lumber. Place one piece tightly against inside of each wheel, and nail the block as shown in detail 3, figure 5-3. Also nail it to the middle chock block. |
| F | 2 | Wire rope, 2-inch, form a complete loop between tie-down eye and stake pocket (details 1 and 2, fig 5-3). Secure with four clamps spaced 3 ½ inches apart. |
| G | 2 | Wire rope, ½ -inch, form a complete loop between tie-down eye and stake pocket (details 1 and 2, fig 5-3). (Place one end of the loop through the stake pocket on the opposite side of the semitrailer.) Secure the wire rope with four clamps spaced 3 ½ inches apart. |
| H | 2 | Wire rope, Y2-inch, form a complete loop between tie-down eye and stake pocket. Secure the wire rope with four clamps spaced 3 ½ inches apart. |
| I | 24 | Clamps. Four for each loop (detail 1, fig 5-3). |

**Table 5-3. Bill of Materials for Blocking and Tiedown of M1015 Carrier on M127-Series Semitrailer (Fig 5-4).**

| Item | Description | Approximate Quantity |
|---|---|---|
| Lumber | Douglas-fir or comparable, straight-grain, free from material defects; Fed Spec MM-L-751: 2- x 4-in. | 60 lin ft. |
| | 2- x 6-in. | 86 in ft. |
| | 2- x 12-in | 14 lin ft. |
| Nails | Common, steel; flathead, bright or cement-coated, type II, style 10; Fed Spec FF-N-105: | |
| | 12d | 60. |
| | 30d | 140. |
| | 40d | 20. |
| Shackles | Anchor shackle, screw-pin, type IV, class 1; Fed Spec RR-C-271: 7/8-in. (1-in.-dia. pin), NSN 4030-00-162-9668. | 4. |
| Wire rope | 6 x 19 IWRC, improved plow steel, preformed, regular-lay; table X, Fed Spec RR-W-410: ½ -in. | 60 ft. |
| Clamps | Wire rope, U-bolt clips, saddled, single-grip, forged steel, Crosby heavy-duty, or equal; Fed Spec FFC-450: ½ -in. | 24.<br>8. |
| Thimbles | Standard, open type: ½ -in | 8. |

**Table 5-4. Applications of Materials for Blocking and Tiedown of M1015 Carrier on M127-Series Semitrailer (Fig. 5-4).**

| Item | No. Reqd. | Application |
|---|---|---|
| -- | 1 | Shoring (fig 5-5). Construct and locate as shown. |
| A | 2 | Blocks (detail 1, fig 7-4). Each to consist of six pieces of 2 x 12 x 28-inch lumber, cut as shown in detail 1. Nail the two inside pieces together with three 12d nails, on each side. Nail the outside pieces to the inside pieces with four 12d nails, on each side. Locate one block against the front of each track as shown in figure 5-4. Toenail the heel of each block on the two inside pieces to the trailer floor with two 30d nails. Toenail each side of the block to the trailer floor with two 40d nails. |
| B | 2 | Blocks (detail 2, fig 7-4). Each to consist of six pieces of 2 x 6 x 23-inch lumber, cut as shown in detail 2. Construct and apply (to rear tracks) in the same manner as item A, above. |
| C | 4 | End cleats. Each to consist of two pieces of 2 x 6 x 12-inch lumber. Center the bottom pieces crosswires against the heels of items A and B, and nail the piece to the trailer floor with four 30d nails. Nail the top pieces to the bottom pieces with four 30d nails in each piece. |
| D | 2 | Side blocks. Each to consist of two pieces of 2 x 4 x 108-inch lumber. Locate the bottom pieces longitudinally against the inside edge of each track, and nail them to the trailer floor with 30d nails spaced about 8 inches apart. Nail the top pieces to the bottom pieces in like manner. |
| E the | 2 | Braces. Each to consist of two pieces of 2 x 4 x length-to-suit (about 72-in.) lumber. Locate bottom pieces between and at each end of item D, and nail them to the trailer floor with 30d nails spaced about 8 inches apart. Nail the top pieces to the bottom pieces in like manner. |
| F | 4 | Shackles. Attach one shackle to each front and rear towing provision. |
| G | 4 | Wire rope, ½ -inch, 6 X 19 IWRC. Attach wire rope to each shackle on the carrier and to the tiedown provisions on the trailer, to form loop a complete (details 1 and 2, fig 5-3). |
| H | 24 | Clamps. Four for each loop (detail 1, fig 5-3). |
| I | 4 | Wheel blocks (detail 3, fig 7-4). Each to consist of six 2 x 8-inch length-to-suit lumber. Use 2 x 4-inch lumber to tie each set together. Place the blocks between the road wheels (two on each track). |

**Table 5-5. Bill of Materials for Tiedown of Shelters on M127-Series Semitrailer (Figs 5-6 and 5-7).**

| Item | Description | Approximate Quantity |
|---|---|---|
| Wire rope | 6 X 19 IWRC, improved plow steel, preformed, regular-lay; table X, Fed Spec RR- W-410: ½-in. | 160 ft. |
| Clamps | Wire rope, U-bolt clips, saddled, single-grip, forged steel, Crosby heavy-duty, or equal; Fed Spec FF-C-450: ½ -in. | 32. |

**Table 5-6. Application of Materials for Tiedown of Shelters on M127-Series Semitrailer (Figs 5-6 and 5-7).**

| Item | No. Reqd. | Application |
|---|---|---|
| A | 2 | Wire rope, ½-inch-wide, 17.5-foot-long. Form a complete loop between the tiedown shackle and stake pocket, on the same side (details 1 and 2, fig 5-3). Secure with clamps (item D). |
| B | 2 | Wire rope, ½-inch-wide, 22-foot-long. Form a complete loop between the tiedown shackle and stake pocket, on the same side (details 1 and 2, fig 5-3). Secure the wire rope with clamps (item D). |
| C | 4 | Wire rope, ½-inch-wide, 19.25-foot-long. Form a complete loop between the tiedown shackle and stake pocket, on the opposite side (details 1 and 2, fig 5-3). Secure the wire rope with clamps (item D). |
| D | 32 | Clamps (detail 1, fig 5-3). Place four clamps on each piece of wire rope at the overlap area, and space 3 ½ inches apart. |

# CHAPTER 6

# MARINE AND TERMINAL TRANSPORTABILITY GUIDANCE

## 6-1. Scope

This chapter provides guidance for transporting the Trailblazer/Tacjam system by marine mode. It covers significant technical and physical characteristics and safety precautions, and prescribes the materials, and provides guidance required to prepare, load, tie down, and unload the system.

## 6-2. Safety

In addition to the safety precautions contained in chapter 3, the following precautions should be taken as applicable:

*a*. All vessels equipment and gear should be inspected prior to use.

*b*. All slings and other items used in loading and offloading operations should be inspected for condition and adequate capacity.

*c*. Lifting rings and shackles on each item should be inspected to insure that they are complete and not damaged.

*d.* All lifts should have at least two tag lines attached to control the swing of each item while suspended.

**NOTE**

**When vehicles are loaded on vessels that are adequately ventilated by power blowers, such as roll-on/roll-off vessels, fuel need not be drained.**

**NOTE**

**The methods described in this chapter for lifting and securing items are suggested procedures. Other methods of handling and stowage may be used if they will insure delivery without damage.**

## 6-3. General

*a*. Equipment is always loaded on vessels in its minimum configuration, as described in chapter 2. (An example of minimum configuration is reduced height.)

*b.* Railcar/trailer vessels, roll-on/roll-off ships, landing ships, and attack-cargo vessels are equipped with patented lashing gear and pre-positioned fittings in the deck. With the proper use of such equipment, these items will not require blocking and bracing. However, for movement by barge or similar lighterage, these items must be blocked and braced. When vehicles are transported aboard landing craft and amphibious lighters for extended distances or in rough water, they should be lashed, blocked, and braced as shown in the following figures: figures 6-1 and 6-2 (lifting of M1015 carrier without and with shelter), figures 6-3 and 6-4 (blocking and bracing of carrier), figure 6-5 (lifting of MCS/RSS shelters), figure 6-6 (blocking and bracing of shelters), figure 6-7 (lifting of trailer support unit), and figure 6-8 (blocking and tiedown of support unit trailer). The following tables are the bill of materials and application of materials for securing the various components in the hold of general-cargo vessels: tables 6-1 and 6-2, M1015 carrier; tables 6-3 and 6-4, shelters; tables 6-5 and 6-6, trailer support unit.

**NOTE**

**The tiedown pad eyes shown on the vessel deck (figs 6-3, 6-6, and 6-8) may have to be installed.**

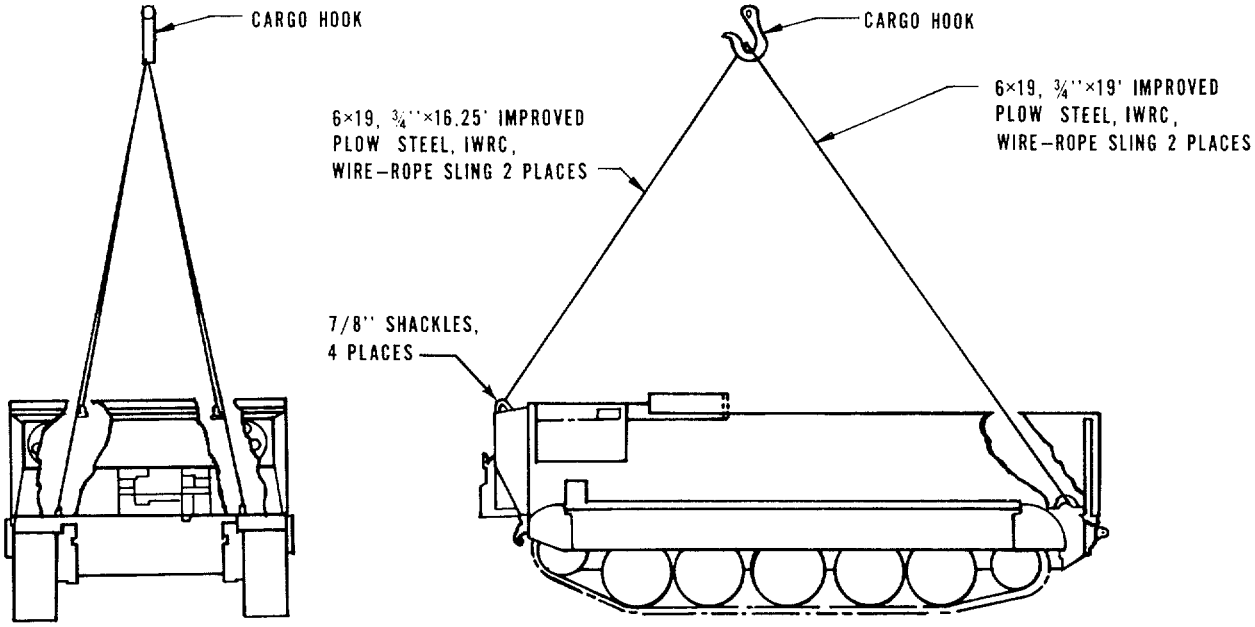



**Figure 6-1. Lifting diagram for M1015 carrier without shelter attached.**

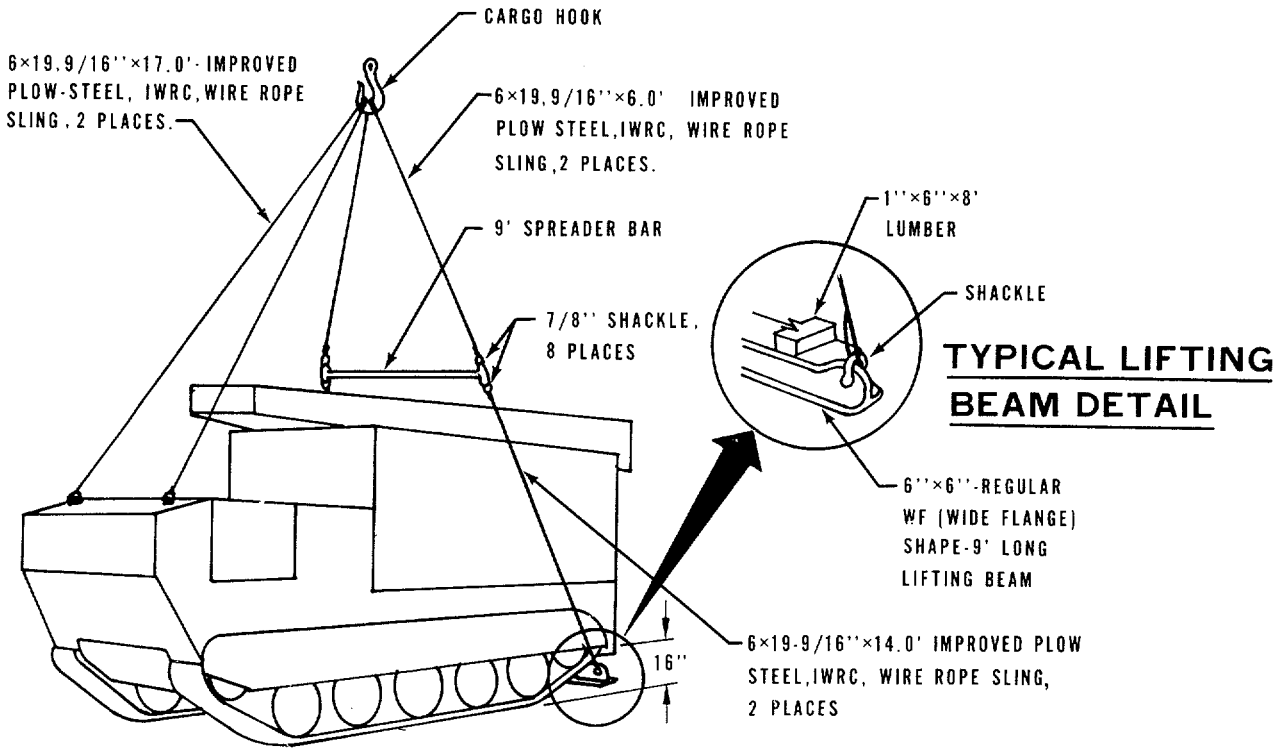



**Figure 6-2. Lifting diagram for M1015 carrier with shelter attached, by use of lifting beam and wire-rope slings with spreader bar.**

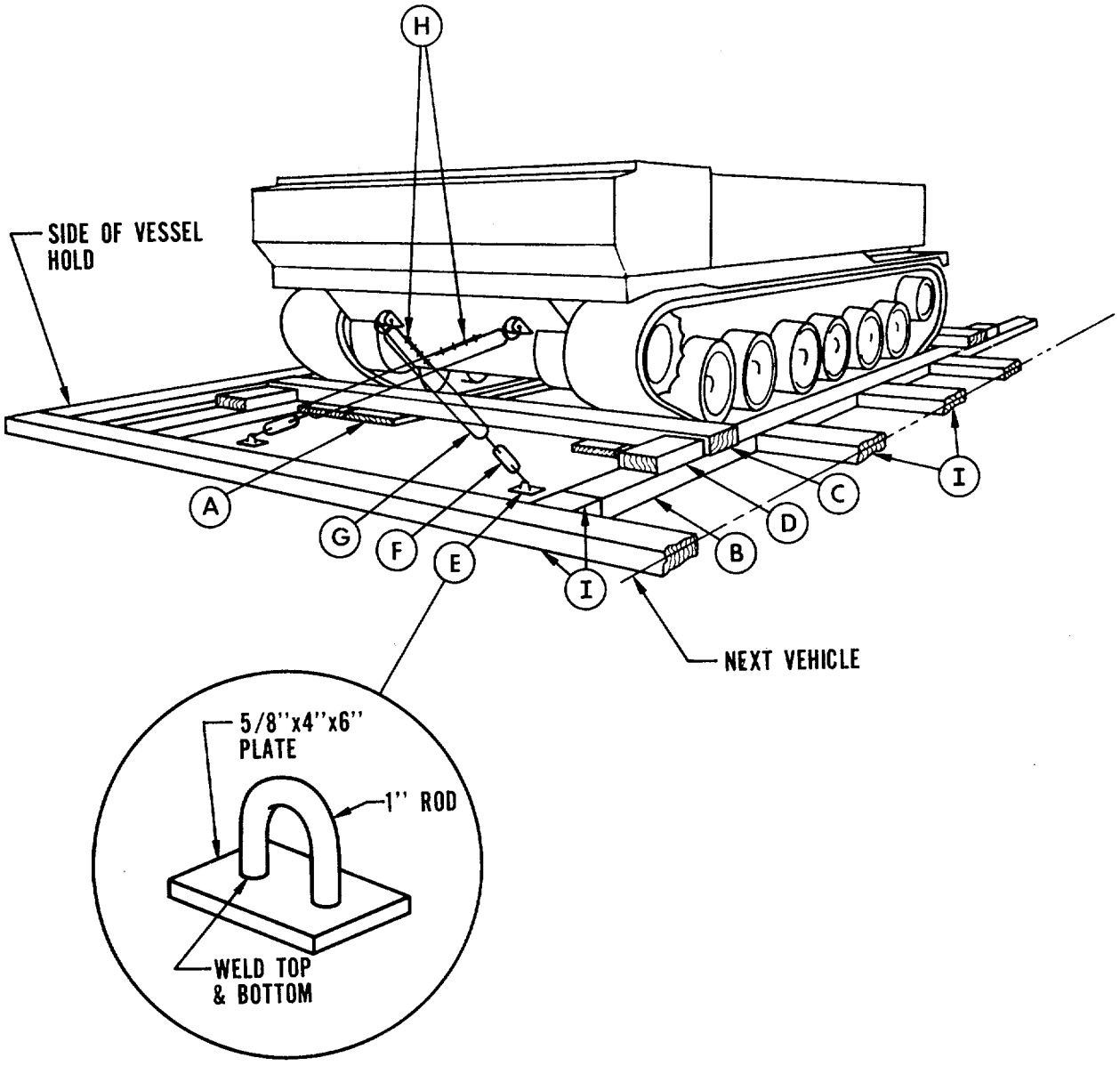



**Figure 6-3. Typical blocking and tiedown of M1015 carrier in hold of general-cargo vessel.**

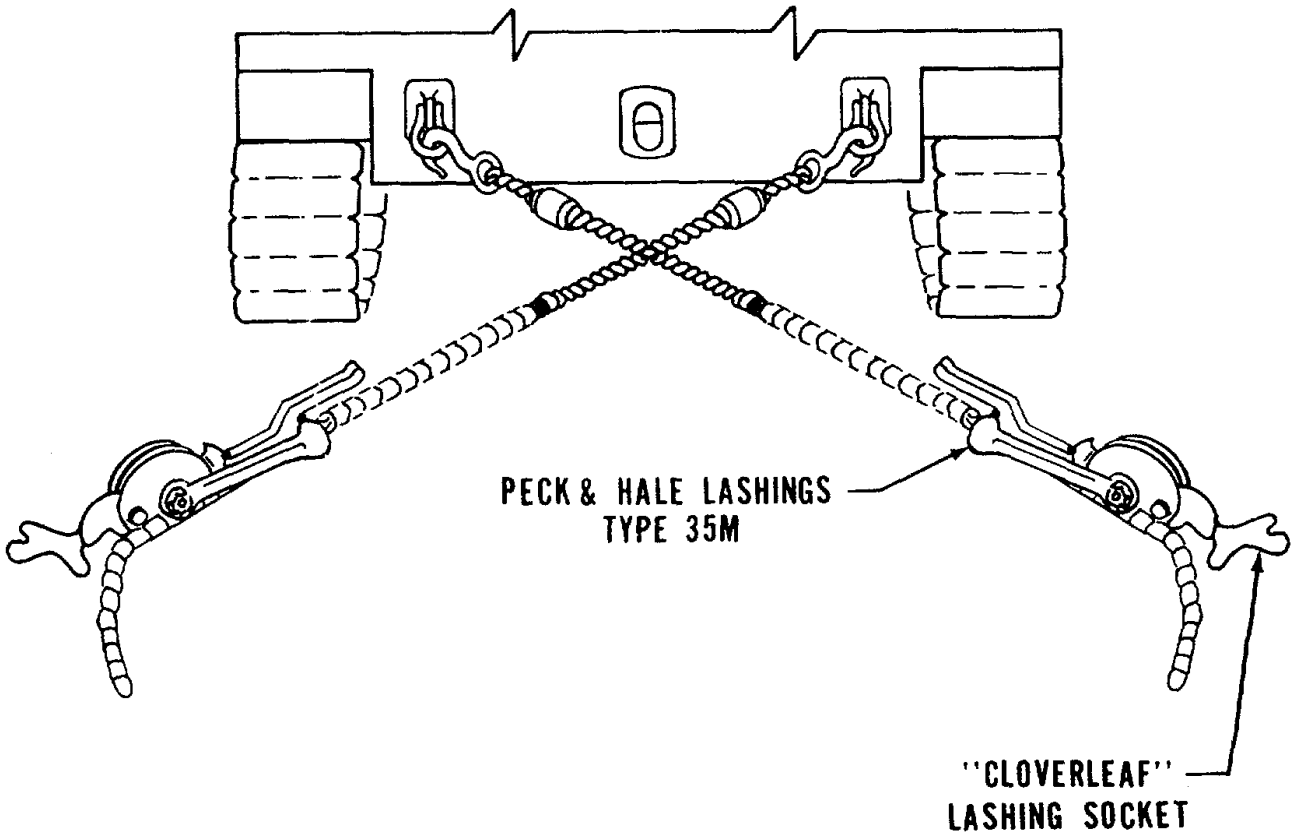



**Figure 6-4. Rear view of M1015 carrier tied down on RORO ship; typical securement with patented lashing.**

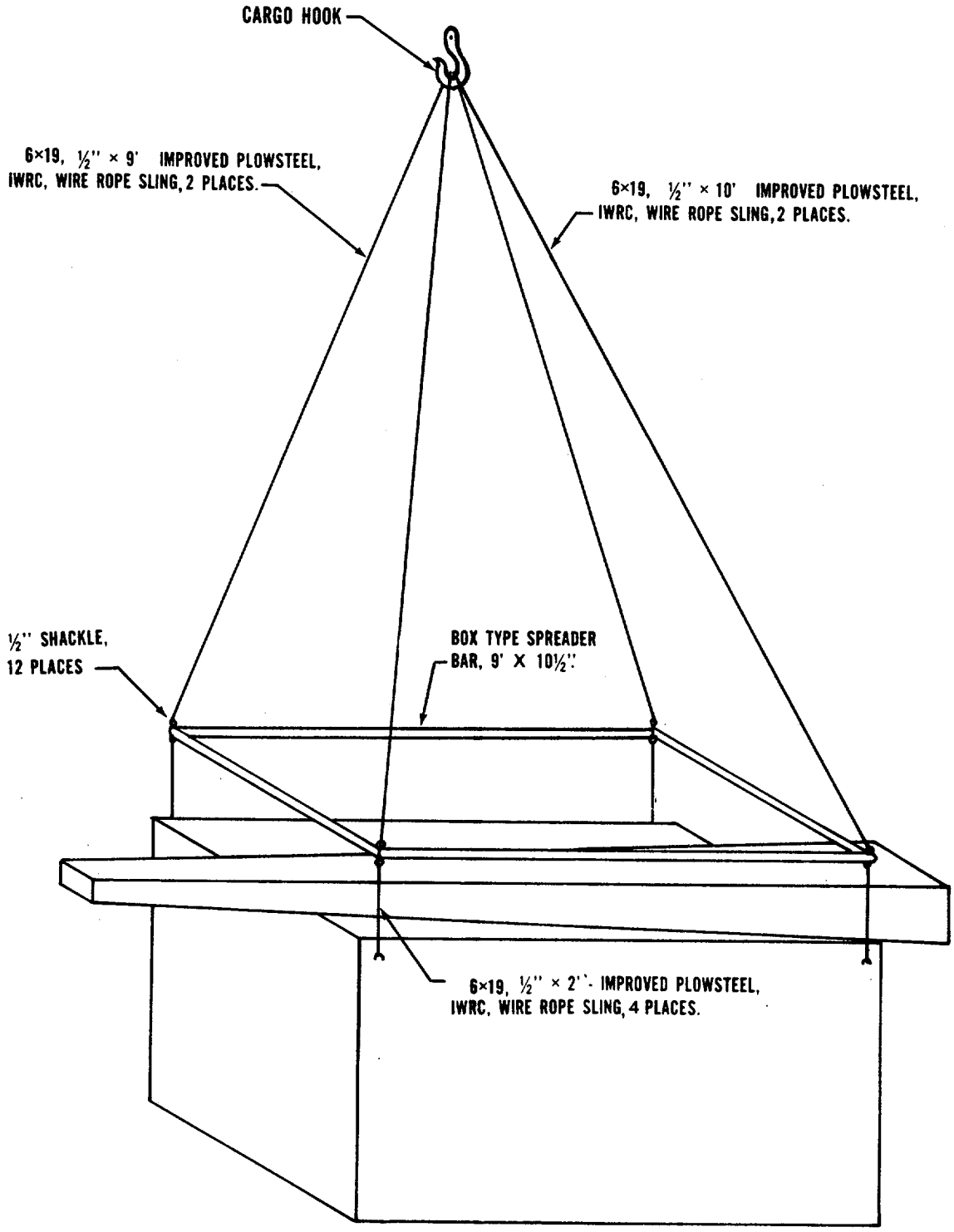



**Figure 6-5. Lifting diagram for shelters.**

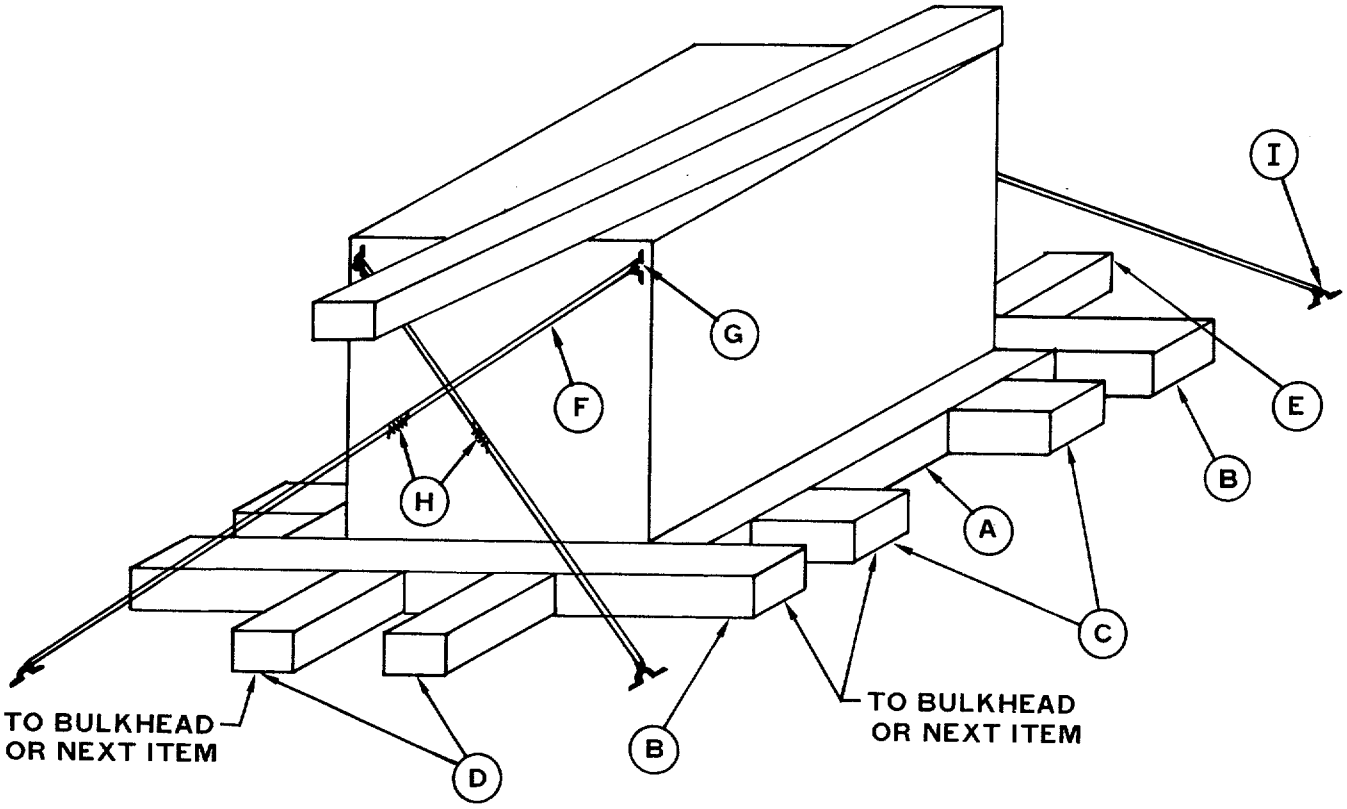



**Figure 6-6. Typical blocking and tiedown of shelters in hold of general-cargo vessel.**

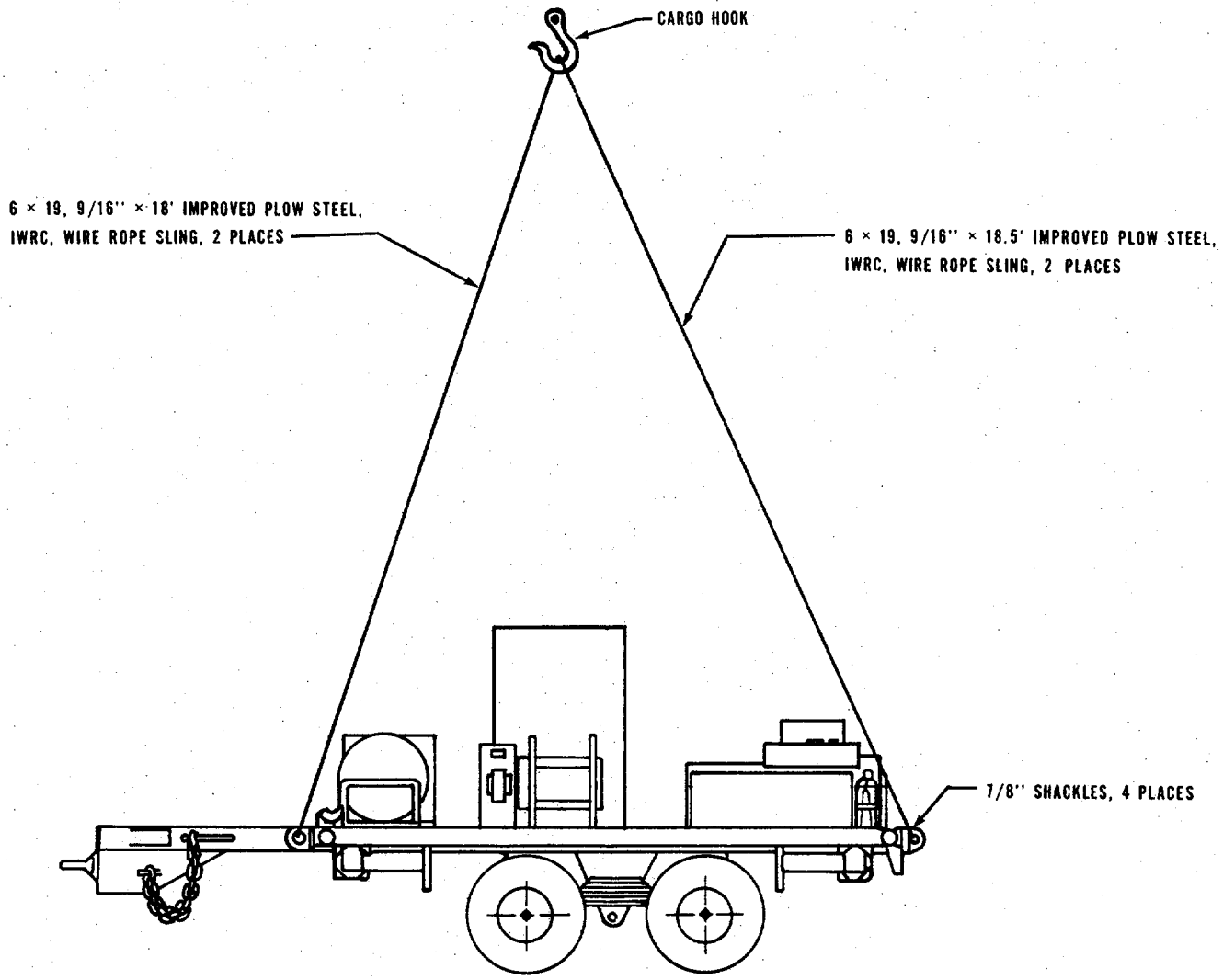



**Figure 6-7. Lifting diagram for trailer support unit.**

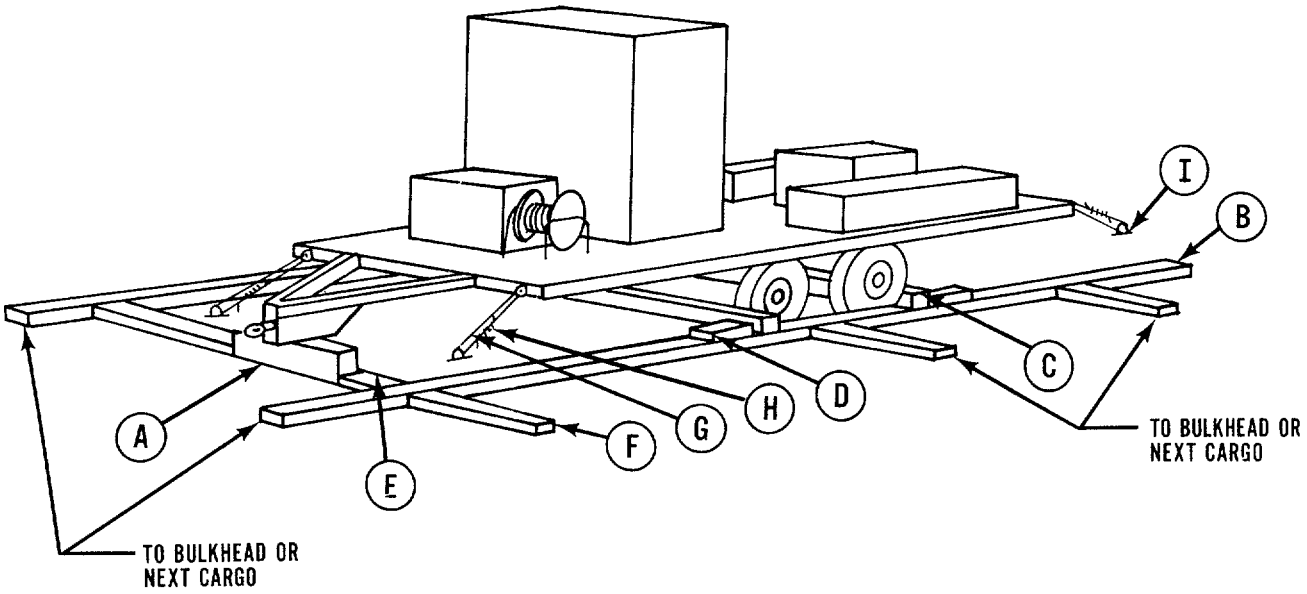



**Figure 6-8. Typical blocking and tiedown of trailer support unit in hold of general-cargo vessel.**

**Table 6-1. Bill of Materials for Blocking and Tiedown of M1015 Carrier in Hold of General-Cargo Vessel (Fig 6-3).**

| Item | Description | Approximate Quantity |
|---|---|---|
| Lumber..... | Douglas-fir or comparable, straight-grain, free from material defects; Fed Spec MM-L-751: | |
| | 4- X 6-in ..... | 4 lin ft. |
| | 2- X 10-in ..... | 44 lin ft. |
| | 6- X 8-in ..... | 120 lin ft. |
| Nails..... | Common, steel; flathead, bright or cement-coated; type II, style 10, Fed Spec FF-N-105: | |
| | 20d ..... | 20. |
| | 40d..... | 116. |
| Wire rope..... | 6 X 19 IWRC, improved plow steel, preformed, regular-lay; table X, Fed Spec RR-W-410: 1/2-in. | 40 ft. |
| Clamps..... | Wire rope, U-bolt clips, saddled, single-grip, forged steel, Crosby heavy-duty, or equal; Fed Spec FF-C-450: 1/2-in. | 16. |
| Pad eyes..... | Local manufacture; from 1-in. steel rod and 4- X 6- x 5/8-in. steel plate. Bore 1-in. 4 holes through the plate and weld U-shaped 1-in. rod ends on the top and bottom of plate. | 4. |
| Turnbuckles ..... | T- X 18-in., with jaw and jaw end fittings..... | 4. |

**Table 6-2. Application of Materials for Blocking and Tiedown of M1015 Carrier in Hold of General-Cargo Vessel (Fig 6-3).**

| Item | No. Reqd. | Application |
|---|---|---|
| A | 4 | Lumber, 2x 10x 132-inch. Pre-position on floor of vessel hold, under vehicle treads. Two pieces are required under each tread. (This application is not to be used if tracks have rubber pads.) |
| B | 2 | Side blocks. Each to consist of one piece of 6x 8-inch x length-to-suit lumber. Locate one piece against outside of vehicle treads, on each side of vehicle. |
| C | 2 | End blocks. Each to consist of one piece of 6X 8-inch x length-to-suit lumber. Locate on top of item B, against vehicle treads (front and rear). Toenail to item B with four 40d nails, at each end. |
| D | 4 | Backup cleats, 4x 6x 12-inch lumber. Locate on top of item B, against item C. Toenail to item B with four 40d nails, at each end. |
| E | 4 | Pad eyes. Four required on floor of vessel. |
| F | 4 | Turnbuckles, 1x 18-inch. Attach one jaw to the wire rope (item G) and the other jaw to the pad eye (item E). Tighten turnbuckles evenly. |
| G | 4 | Wire rope, ½ -inch, in a complete loop. Secure with clamps (item H). Attach to front and rear shackles and to turnbuckles. |
| H | 16 | Clamps, ½ -inch. Secure to item G in a complete loop. |
| I | As required | Bracing, 6 x 8-inch x length-to-suit lumber. Brace as required against vehicle blocking, against side of vessel, or against adjacent cargo blocking, to immobilize vehicle and blocking. Secure each end to adjacent bracing or blocking by toenailing with 40d nails. |

**Table 6-3. Bill of Materials for Blocking and Tiedown of Shelters in Hold of General-Cargo Vessel (Fig 6-6)**

| Item | Description | Approximate Quantity |
|---|---|---|
| Lumber ..... | Douglas-fir or comparable, straight-grain, free from material defects; Fed Spec MM-L-751: 3- X 4-in. | 52 lin ft. |
| Wire rope ..... | 6 X 19 IWRC, improved plow steel, preformed, regular-lay; table X, Fed Spec RR-W-410: ½ -in. | 108 ft. |
| Clamps ..... | Wire rope, U-bolt clips, saddled, single-grip, forged steel, Crosby heavy-duty, or equal; Fed Spec FF-C-450: ½ -in. | 16. |
| Shackles ..... | Anchor shackle, screw pin; type IV, class I, Fed Spec RR-C-271: ¾ -in., NSN 4030-00-162-966B. | 4. |
| Nails..... | Common, steel, flathead, bright or cement-coated; type II, style 10, Fed Spec FF-N-105: 20d. | 24. |

**Table 6-4. Application of Material for Blocking and Tiedown of Shelters in Hold of General-Cargo Vessel (Fig 6-6).**

| Item | No. Reqd. | Application |
|---|---|---|
| A | 2 | Side braces. Each to consist of 3 x 4x 126-inch lumber. Locate against sides of shelter. |
| B | 2 | End braces. Each to consist of 3 x 4 x 102-inch lumber. Locate against front and rear of shelter. Toenail to item A with 20d nails. |
| C | 4 | Side blocks. Each to consist of 3 x 4 x 6-inch lumber. Locate against side brace. Toenail to item A with 20d nails. |
| D | 2 | Front blocks. Each to consist of 3 x 4 x 45-inch lumber. Locate against front end brace. Toenail to item B with 20d nails. |
| E | 2 | Rear blocks. Each to consist of 3 x 4 x 24-inch lumber. Locate against rear end brace. Toenail to item B with 20d nails. |
| F | 4 | Wire rope, ½ -inch. Each to consist of a 27-foot loop, with a 2-foot overlap between ends. Place the loop through the shackle and pad eye on the deck of vessel. |
| G | 4 | Shackles. One of each upper tiedown of shelter. |
| H | 16 | Clamps. Place four over each cable loop, overlap area, and space 3 ½ inches apart, with a minimum of 6 inches from ends of cable. |
| I | 4 | Pad eyes. Four are required on the floor or vessel (inset, fig 6-3). |

**Table 6-5. Bill of Materials for Blocking and Tiedown of Trailer Support Unit in Hold of General-Cargo Vessel (Fig 6-8).**

| Item | Description | Approximate Quantity |
|---|---|---|
| Lumber | Douglas-fir or comparable, straight-grain, free from material defects; Fed Spec MM-L-751: | |
| | 2-4-in. | 18 lin ft. |
| | 4- X 4-in | 102 lin ft. |
| Nails | Common, steel, flathead; bright or cement-coated; type II, style 10, Fed Spec FF-N-105: | |
| | 12d | 22. |
| | 20d | 52. |
| Wire rope | 6 X 19 IWRC, improved plow steel, preformed, regular-lay; table X, Fed Spec RR-W-410: 5/8 -in. | 50 ft. |
| Clamps | Wire rope, U-bolt clips, saddled, single-grip, forged steel, Crosby heavy-duty, or equal; Fed Spec FF-C-450: 5/8 -in. | 24. |

**Table 6-6. Application of Materials for Blocking and Tiedown of Trailer Support Unit in Hold of General-Cargo Vessel (Fig 6-8).**

| Item | No. Reqd. | Application |
|---|---|---|
| A | 1 | Lunette support. Consists of fourteen pieces of 2 x 4 x 15-inch lumber. Nail in a stack with 12d nails and place under the lunette. |
| B | 2 | Side blocks. Each to consist of one piece of 4 x 4 x 252-inch lumber. Place tightly against the wheels on each side of the trailer. |
| C | 2 | Wheel blocks. Each to consist of one piece of 4 x 4 x 101-inch lumber. Place one piece tightly before the front wheels and the other tightly behind the rear wheels. Toenail to item B with 20d nails. |
| D | 4 | Braces. Each to consist of one piece of 4 x 4 x 6-inch lumber. Place against item C and nail into item B with 20d nails. |
| E | 2 | Spreader blocks. Each to consist of one piece of 4 x 4 x length-to-suit (about 42 in.). Place in between items A and B. Nail if needed. |
| F | 6 | Side brace. Each to consist of one piece of 4 x 4 x length-to-suit lumber (about 6 in.). Place between cargo loads. Nail if needed. |
| G | 4 | Wire rope, each about 5/8 inch x 12.5 feet. Form a complete loop, with cable placed between the tiedown shackle and pad eye. |
| H | 24 | Clamps. Place on each cable loop at the overlap area; space 3-½ inches apart, minimum of 6 inches from the end of cable. |
| I | 4 | Pad eyes. Four are required on the floor of vessel (insert, fig 6-3). |

# CHAPTER 7

# RAIL TRANSPORTABILITY GUIDANCE

## Section I. GENERAL

### 7-1. Scope

This chapter provides rail transportability guidance for movement of the Trailblazer/Tacjam system. It covers significant technical and physical characteristics and safety precautions; prescribes the materials, and provides guidance required to prepare, load, tie down, and unload the system.

### 7-2. Maximum Utilization of Railcars

Additional cargo, as approved by the activity offering the system for transport, may be transported with the system.

## Section II. TRANSPORT ON CONUS RAILWAYS

### 7-3. General

The transportability guidance contained in this section is applicable when this system is transported on CONUS railways. Consideration is given to single and multiple movements on the types of railcars normally used for the movement of Army equipment. This system, when at reduced configuration, is transportable in accordance with the Association of American Railroads' Outline Diagram for Single Loads, Without End Overhang, On Open Top Cars, as shown in both the Railway Line .Clearance Publication and the Official Railway Equipment Register.

### 7-4. Loading the Trailblazer/Tacjam System on General-Purpose Flatcars

*a.* The trailer or carrier may be placed in the tiedown position on the railcar by a crane or may be driven or towed, provided that a suitable ramp or bridge is available. For lifting diagrams, refer to chapter 6.

*b*. The loads shown are based on the flatcar minimum width of 9 feet 6 inches.

**NOTE**

**A staggered nailing pattern will be used when lumber or laminated lumber is nailed to the floor of the railcar. Also, the nailing pattern for an upper piece of laminated lumber will be adjusted as required so that nail for that piece will not be driven through, onto, or beside a nail in the lower piece of lumber.**

Figure 7-1 and 7-2 show the tiedown of M1015 carriers on various types of flatcars. Figures 7-3 and 7-4 show tiedown details. Figures 7-5 and 7-6 show the tiedown of the shelters on typical CONUS flatcars. Figures 7-7 and 7-8 show the tiedown of the trailer support unit on a typical CONUS flatcar. Figure 7-9 is a blocking detail diagram for the trailer support unit. The following tables are the bill of materials and application of materials for securing the various components for rail transport: tables 7-1, 7-2, and 7-3, M1015 carrier; tables 7-4 and 7-5, shelters; tables 7-6 and 7-7; trailer support unit.

## Section III. TRANSPORT ON FOREIGN RAILWAYS

### 7-5. General

The transportability guidance contained in this section is applicable when the Trailblazer/Tacjam system is transported on foreign railways. Consideration is given to single and multiple movements on the types of railcars normally used for the movement of Army equipment. The system, when loaded on a suitable railcar, can be transported in its reduced-height configuration, with restrictions within European countries that comply with the International Loading Gauge (formerly Berne International); the majority of the countries in the Middle East; and South America, Australia, India,

and Pakistan. Because clearances vary by country, in the Middle East and South America, each country will require a separate check. In Australia, India, and Pakistan, wide or broad-gauge railways provide greater clearances and fewer restrictions.

Since various designation systems are used by different countries, foreign railcars are not easily classified. Also, clearances vary, in many cases, from one country to the next and sometimes within a country; therefore, evaluation of transportability capability must be made on an individual basis.

### 7-6. Transport on Foreign Service Flatcars

*a. General*. The system can be transported on a number of foreign service flatcars.

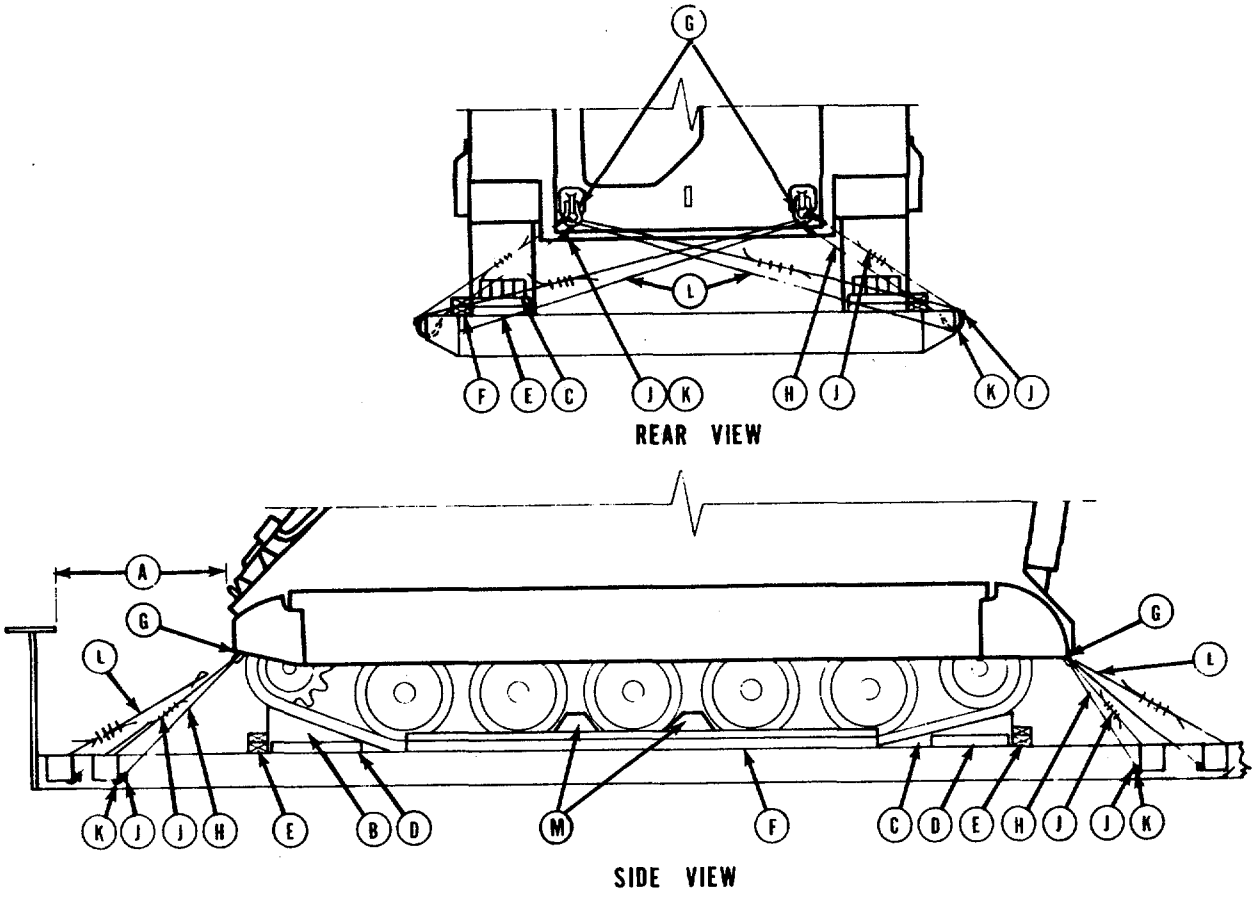



**Figure 7-1. Blocking and tiedown diagram of M1015 carrier on CONUS general-purpose flatcar.**

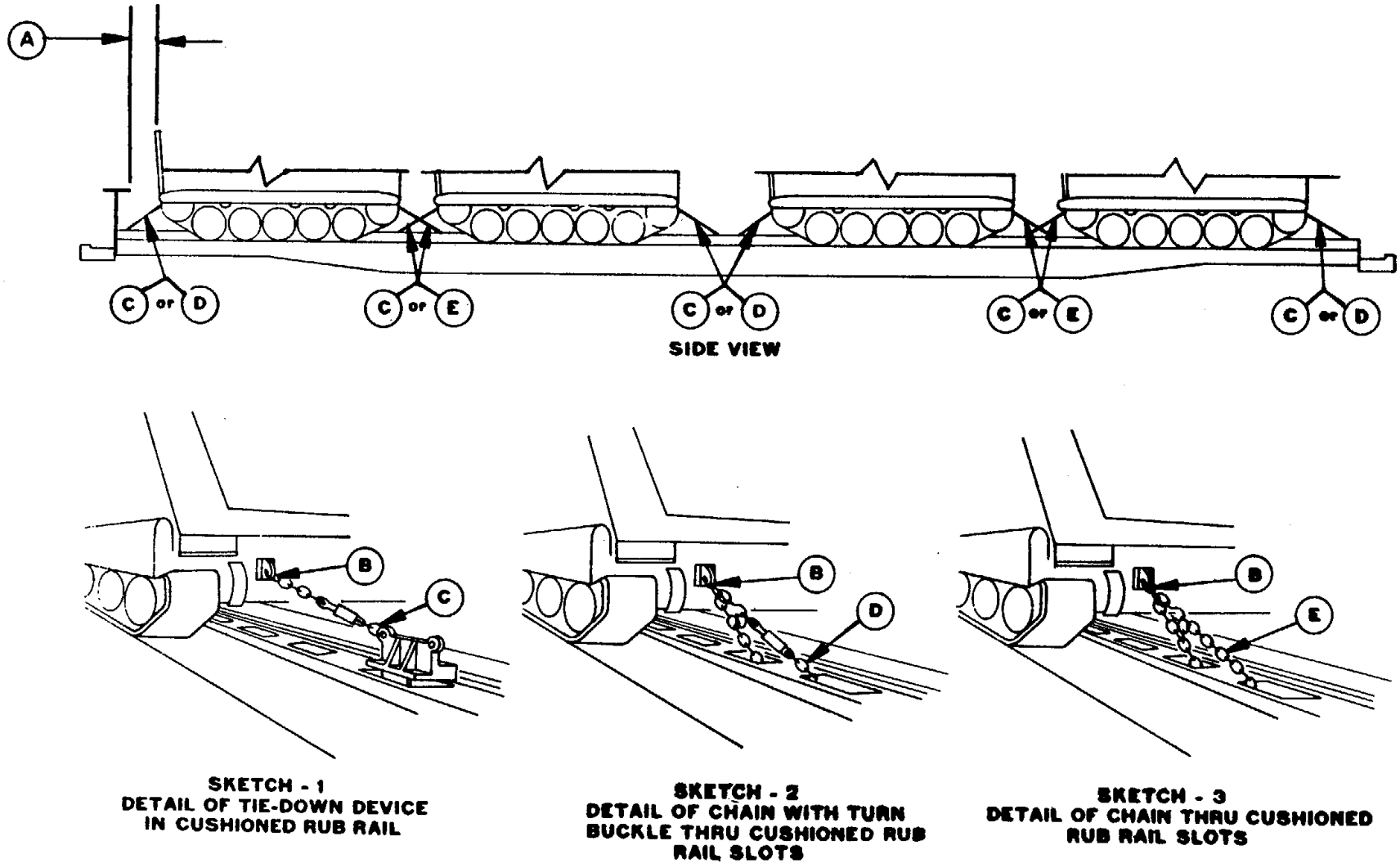



**Figure 7-2. Tiedown diagram of carriers on cushioned rubrail or similar types of flatcars.**

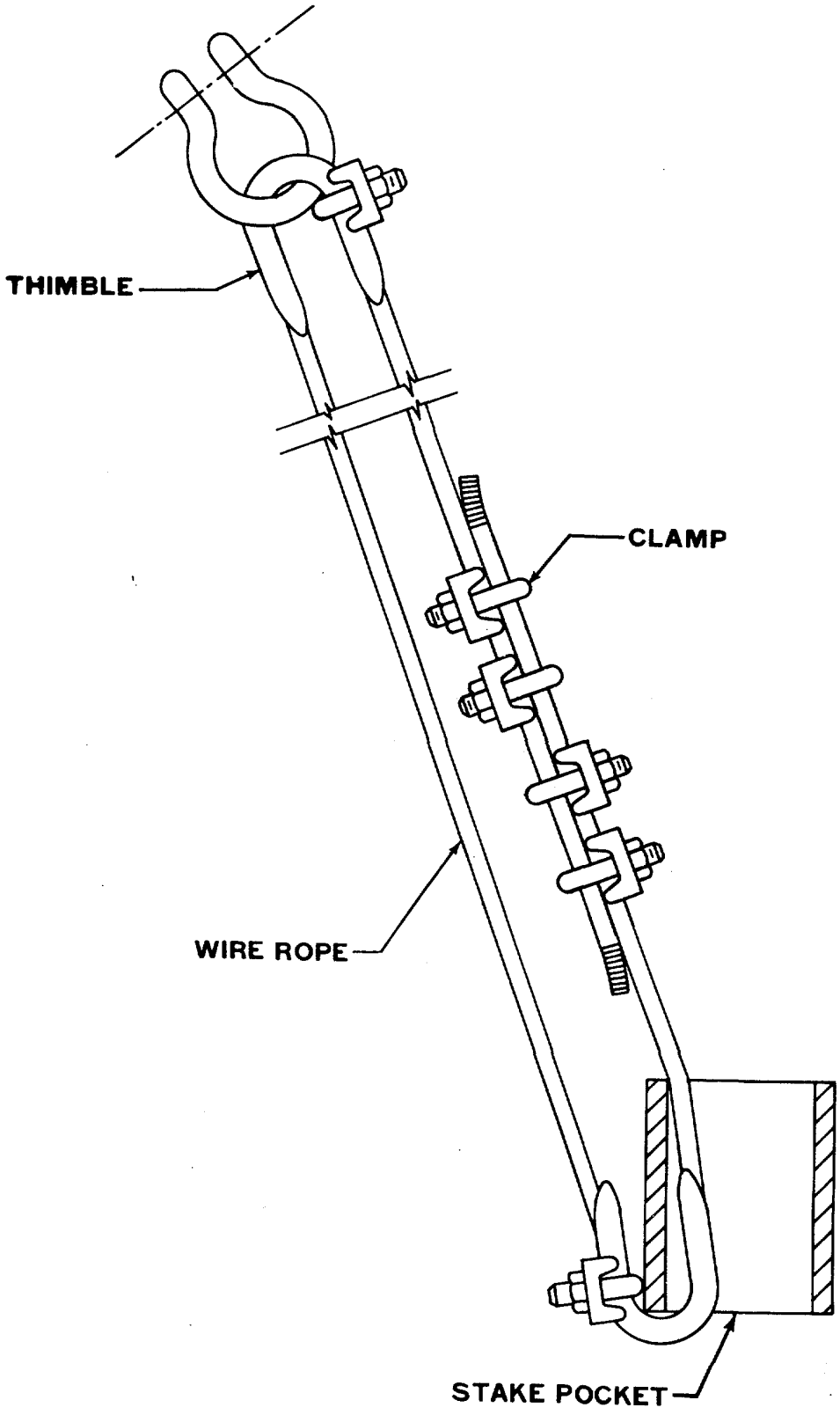



**Figure 7-3. Securement of tiedown with wire rope and clamps.**

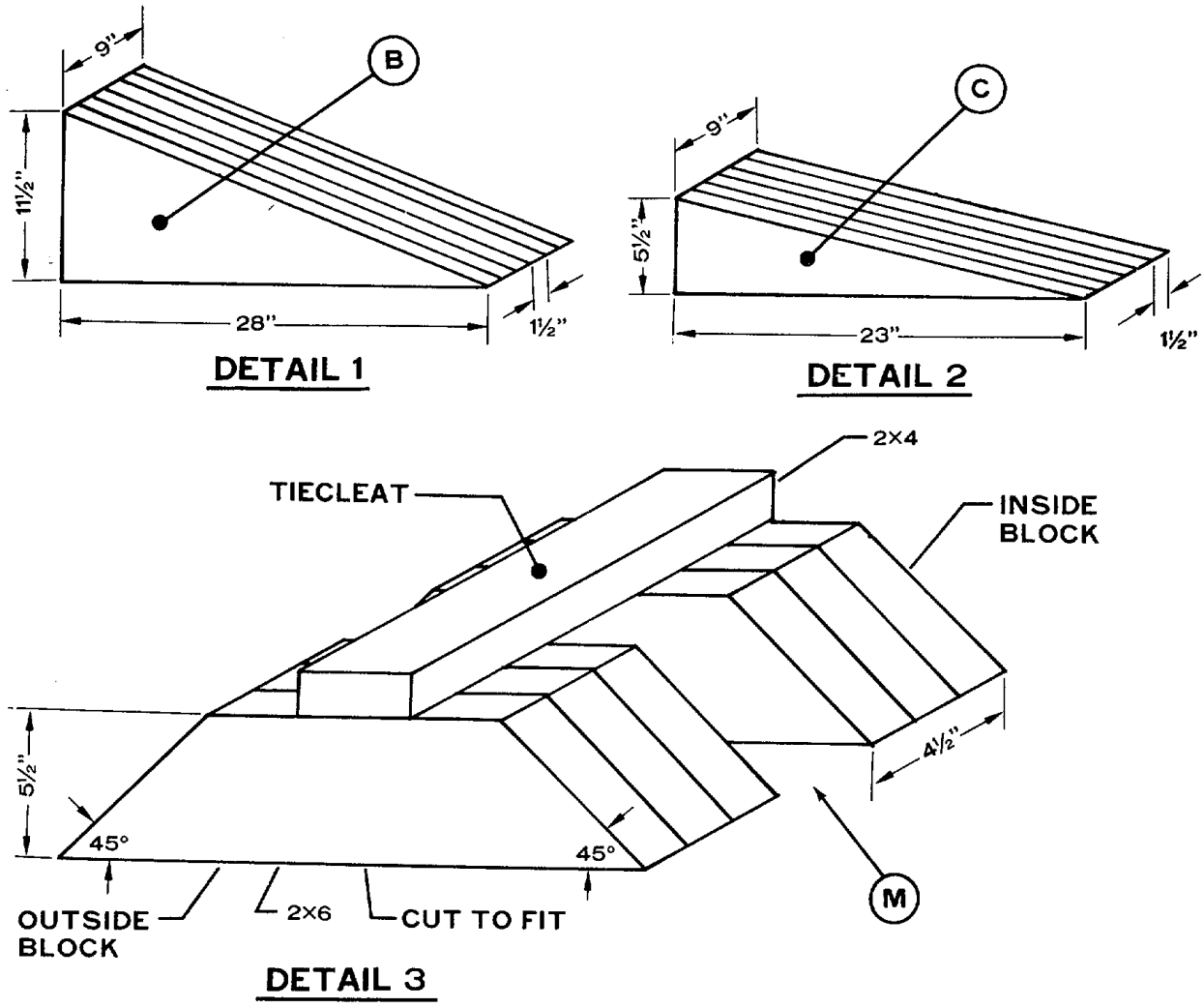



**Figure 7-4. Blocking and tiedown detail diagram.**

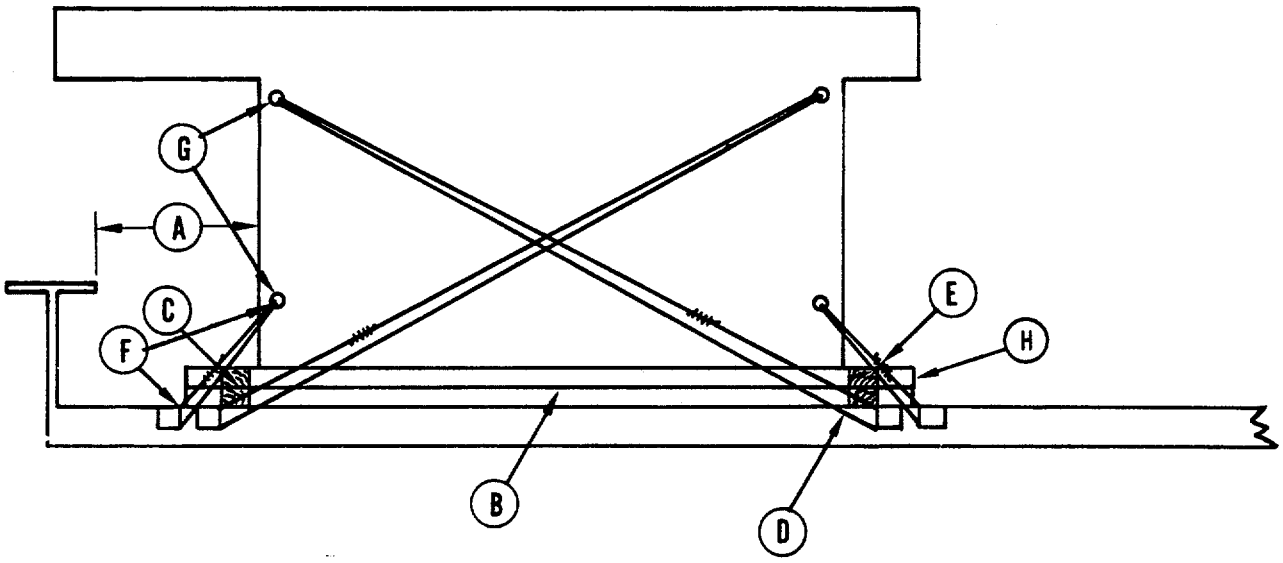



**Figure 7-5. Side view, blocking and tiedown of shelters on a typical CONUS flatcar.**

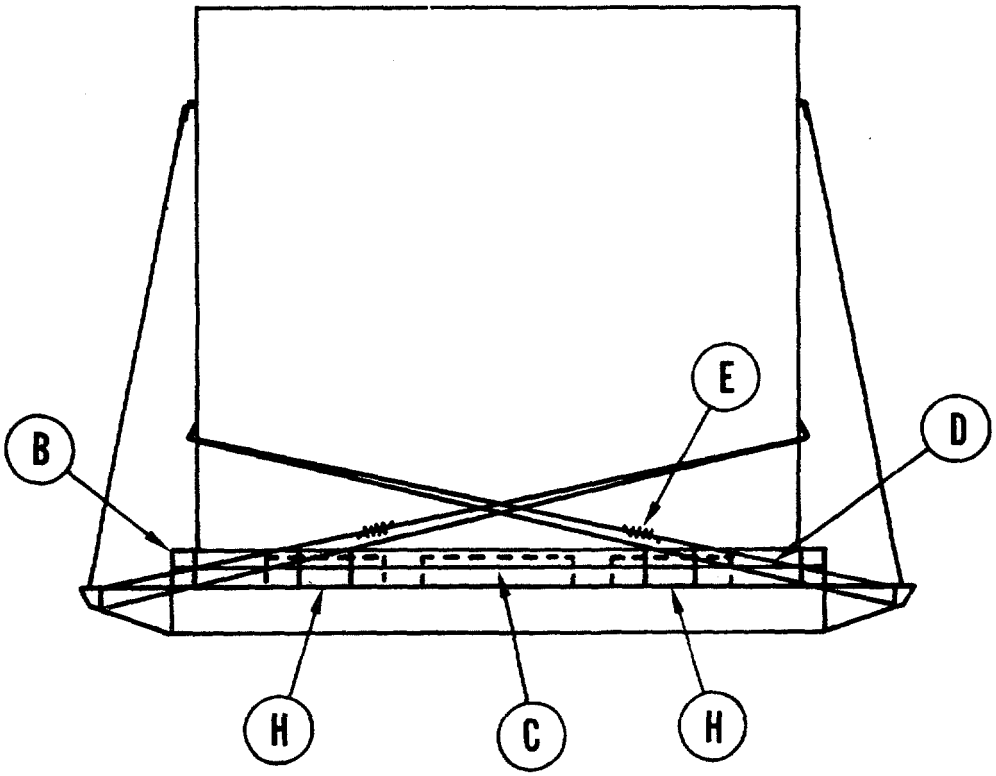



**Figure 7-6. End view, blocking and tiedown of shelters on a typical CONUS flatcar.**

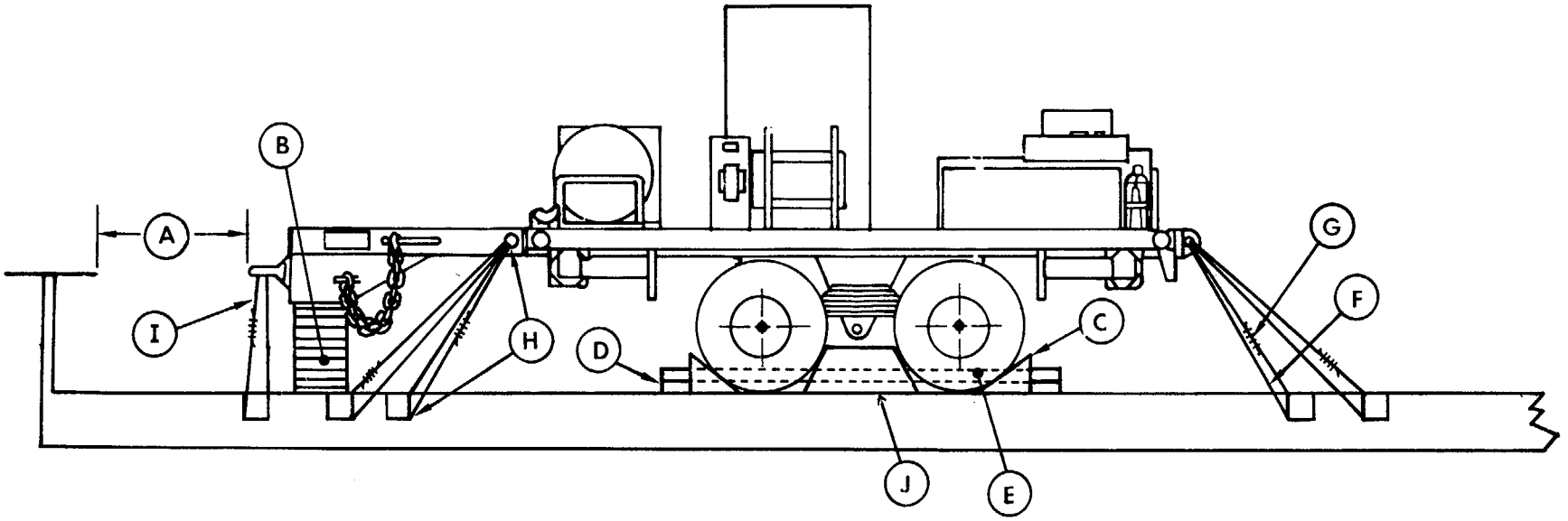



**Figure 7-7. Side view, blocking and tiedown of trailer support unit on a typical CONUS flatcar.**

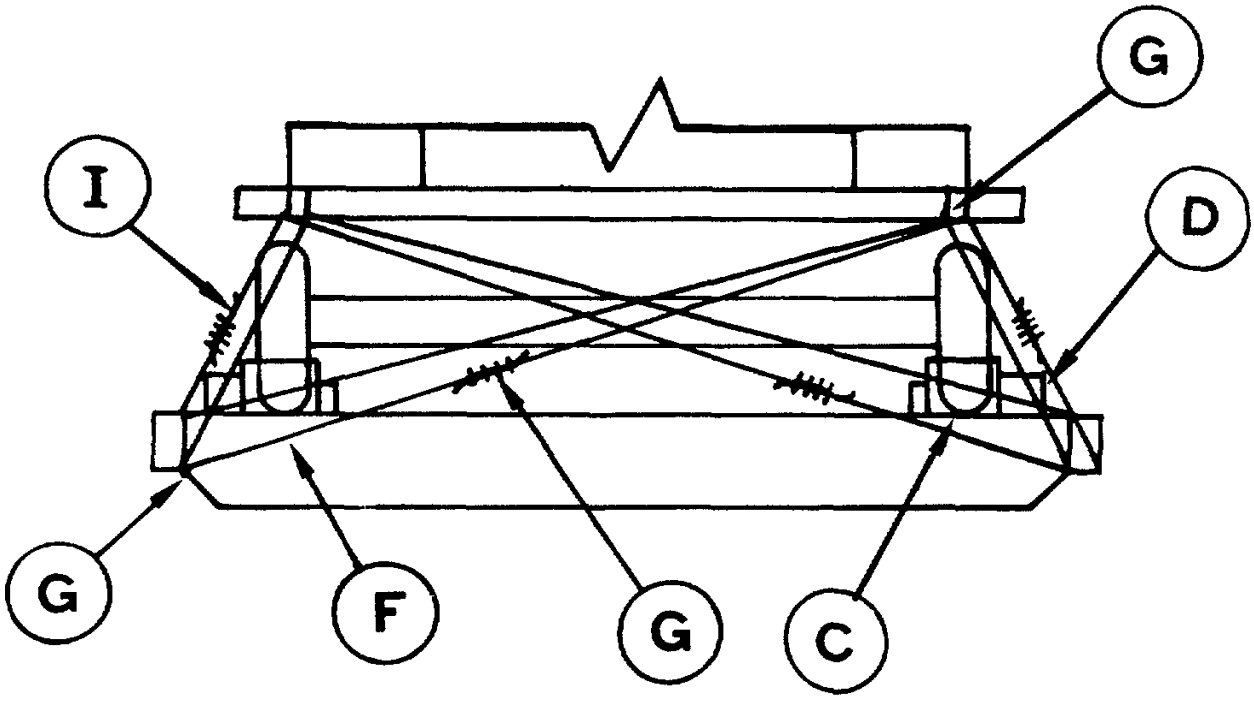



**Figure 7-8. Rear view, blocking and tiedown of trailer support unit on a typical CONUS flatcar.**

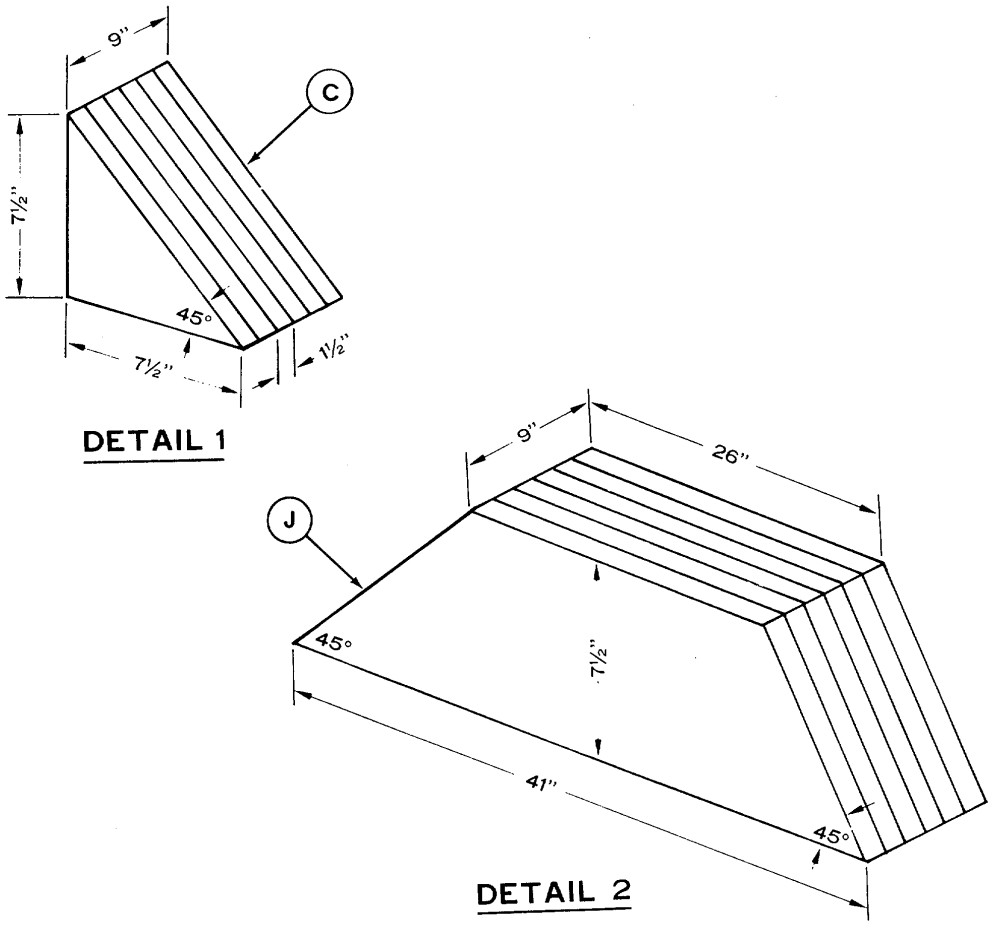



**Figure 7-9. Blocking detail diagram..**

**Table 7-1. Bill of Materials for Blocking and Tiedown of M1015 Carrier on CONUS General-Purpose Flatcars (Figs 7-1 and 7-2).**

| Item | Description | Approximate Quantity |
|---|---|---|
| Lumber | Douglas-fir or comparable, straight-grain, free from material defects; MM-Fed Spec L-751: | |
| | 2- x 4-in. | 52 lin ft. |
| | 2- x 6-in | 33 lin ft. |
| | 2- x 12-in | 28 lin ft. |
| Nails | Common, steel, flathead; bright or cement-coated; type II, Fed Spec FF-N-105: | |
| | 12d | 56. |
| | 20d | 32. |
| | 30d | 90. |
| | 40d | 16. |
| Thimbles | Standard, open-type, 5/8-in . | 16. |
| Clamps | Wire rope, U-bolt clips, saddled, single-grip, forged steel, Crosby heavy-duty, or equal; Fed Spec FF-C-450: 5/8-in. | 48. |

**Table 7-1. Bill of Materials for Blocking and Tiedown of M1015 Carrier on CONUS General-Purpose Flatcars (Figs 7-1 and 7-2).- Continued**

| Item | Description | Approximate Quantity |
|---|---|---|
| Shackles ..... | Anchor shackles, screw-pin, type IV, class 1: Fed Spec RR-C-271: in.-dia. 7/8- in. (1-pin), NSN 4030-00-162-9668. | 4. |
| Wire rope ..... | 6 X 19 IWRC, improved plow steel, preformed, regular-lay; table X, Fed Spec RR-W-410: 5/8-in | 187 ft. |

**Table 7-2. Application of Materials for Blocking and Tiedown of M1015 Carrier on CONUS General-Purpose Flatcars (Figs 7-1 and 7-2).**

| Item | No. Reqd. | Application |
|---|---|---|
| A | -- | Brake wheel clearance. Minimum clearance required is 6 inches above, in back of, and on both sides of the wheel and 4 inches underneath the wheel (fig 7-1). |
| B | 2 | Blocks (detail 1, fig 7-4). Each to consist of six pieces of 2 x 12 x 28-inch lumber, cut as shown in detail 1. Nail the two inside pieces together with three 12d nails, on each side. Nail the two outside pieces to the inside pieces with four 12d nails, on each side. Locate one block against the front of each track as shown in figure 7-1. Toenail the heel of each block on the two inside pieces to the car floor with two 30d nails. Toenail each side of the block to the car floor with two 40d nails. |
| C | 2 | Blocks (detail 2, fig 7-4). Each to consist of six pieces of 2 x 6x 23-inch lumber, cut as shown in detail 2. Construct and apply (to rear tracks) in the same manner as item B, above. |
| D | 8 | Side cleats. Each to consist of one piece of 2 x 4 x 24-inch lumber. Locate one piece on each of items B and C (flush with heel of block), and nail it to the car floor with four 20d nails. |
| E | 4 | End cleats. Each to consist of two pieces of 2 x 6 x 14-inch lumber. Center the bottom pieces crosswise against the heel of items B and C, and nail them to the car floor with four 30d nails. Nail the top pieces to the bottom pieces with four 30d nails. |
| F | 2 | Side blocks. Each to consist of two pieces of 2 x 4 x 108-inch lumber. Locate the bottom pieces longitudinally against the outside of each track, and nail them to the car floor with 30d nails spaced about 8 inches apart. Nail the top pieces to the bottom pieces in like manner. |
| G | 4 | Shackles. Attach one to each front and rear towing provision. |
| H | 4 | Wire rope. Each to consist of one piece of 5/8-inch wire rope, length as required (about 15 ft). Form a complete loop between each shackle and appropriate flatcar stake pocket. (Wire-rope ends should overlap a minimum of 24 inches. The angle of tiedown must not be greater than 45°.) |
| J | 24 | Clamps. Place four clamps on each wire rope at the overlap area, and space 3½ inches apart, with a minimum of 6 inches from each end of wire rope (sketch 1, fig 7-3). Tension the wire rope and tighten the clamps. Use one clamp to secure each thimble to the wire rope at the stake pocket and shackle (fig 7-3). |
| K | 8 | Thimbles. Place one thimble on the wire rope at each stake pocket and shackle. Secure the thimbles with one item J. |
| L | 4 | Same as item H. |
| M | 4 | Wheel blocks. Each consists of six 2 x 6 x 16-inch lumber. Cut and assemble each block as shown in detail 3, figure 7-4. Place the blocks between the road wheels (two on each track). |

**GENERAL INSTRUCTIONS**

1. The load, as shown, is based on a flatcar with a width of 10 feet 6 inches.
2. Handbrakes must not be set.
3. Tensioning of wire rope can be accomplished with an applicable sized comealong mechanical hoist or equal tensioning device.
4. For further details, see General Rules 1, 2, 3, 4, 5, 9, 14, 15, 19A, and 19B, Section I of the Rules Governing the Loading of Commodities on Open-Top Cars and Trailers, published by the Association of American Railroads.

**Table 7-3. Application of Chain Tiedown for Securement of M1015 Carrier on Flatcars Equipped with Cushioned Rub Rails (Fig 7-2).**

| Item | No. Reqd. | Application |
|---|---|---|
| A | | Brake wheel clearance. Minimum clearance required is 6 inches above, in back of, and on both sides of the wheel and 4 inches underneath the wheel (fig 7-2). |
| B | 4 ea unit | Shackles. For carriers having a 1-inch-diameter hole in the towing provision, use a 1-inch-diameter pin with a 7/8-inch steel, galvanized, coated anchor shackle. For carriers having a larger hole in the towing provision, use an appropriate size pin and shackle. Attach the shackle to the front and rear-towing provisions, and secure the pin with a piece of wire (for screw pin) or cotter pin (for other types of shackles). |

**Table 7-3. Application of Chain Tiedown for Securement of M1015 Carrier on Flatcars Equipped with Cushioned Rub Rails (Fig 7-2) - Continued**

| Item | No. Reqd. | Application |
|---|---|---|
| C | 4 ea unit | Devices. Use the Brandon single-chain tiedown device with 1/2-inch-diameter Excelloy chain, or similar, proof-tested to 27,500 pounds. Apply the chain from the shackle on the vehicle to the car rub rail (detail 1, fig 7-2). When required, items D and E may be substituted for item C when required as indicated below. |
| D | 2 ea unit | Chains with turnbuckles. Attach the chains and turnbuckles to the shackles and car rub rails (detail 3, fig 72). Other Details are listed in General Instructions, below. |
| E | 2 ea unit | Chains. Attach chains to the shackles and car rub rails (detail 3, fig 7-2). Other details are listed in General Instructions, below. |

## GENERAL INSTRUCTIONS

1. When ordering specialized railroad freight equipment, shippers should specify cars equipped with tiedown devices along with the quantity shown in item C. If conventional chain tiedowvns are provided in lieu of the tiedown devices specified in item C, they must conform to the requirements of items D and E and must be applied as follows:

   a. Attach the two chain tiedowns (detail 3, fig 7-2, item E) to one end of the carrier and to the car tiedown facility. Pull as tight as possible (by hand), and attach the chain hook to an appropriate link.

   b. Attach the two chain tiedowns with the adjustable turnbuckles (detail 2, fig 7-2, item D) to the opposite end of the carrier and to the car tiedown facility. Tightening the turnbuckles to make all four chain tiedowns taut.

**NOTE**
**Load binders are not to be used instead of turnbuckles in tension tiedown chains.**

2. Carriers must face in the same direction and must be uniformly spaced along the length of the car, to allow sufficient space for tiedown at each end of the car and between the carriers. Tiedowns must be applied parallel to each other at the same end of the carrier and down from the carrier point of attachment to the car tiedown facility. The angle of the tiedown chain must not be greater than 45°.
3. Handbrakes on carriers must not be set.
4. Gearshift levers must be placed in the neutral position.
5. Open hooks on chains must be secured with wire over the opening to prevent the hook from becoming disengaged from the chain link to which it is attached.
6. Turnbuckles not equipped with self-locking devices must be wired or locked to prevent them from turning during transit.
7. Carriers weighing up to 25,000 pounds each, in the quantities shown below, can be loaded on 85-foot or longer cushioned rub-rail that cars or similar flatcars, with center tiedown positions running the entire length of the car.

| Model | No. per 85-foot Car | No. per 89-foot Car |
|---|---|---|
| M1015 | 3 | 4 |

8. For further details, see General Rules 4, 5, 7, and 19A. Section I of the Rules Governing the Loading of Commodities on Open-Top Cars and Trailers, published by the Association of American Railroads.

**Table 7-4. Bill of Materials for Blocking and Tiedown of Shelters on CONUS General-Purpose Flatcars (Figs 7-5 and 7-6).**

| Item | Description | Approximate Quantity |
|---|---|---|
| Lumber | Douglas-fir or comparable, straight-grain, free from material defects; Fed Spec MM-L-751: | |
| | 2- x 4-in | 40 lin ft. |
| | 2- x 6-in | 42 lin ft. |
| Nails | Common, steel, flathead; bright or cement-coated; type II, Fed Spec FF-N-105: | |
| | 30d | 102. |
| | 40d | 28. |
| Thimbles | Standard, open-type, ½ -in | 16. |
| Clamps | Wire rope, U-bolt clips, saddled, single-grip, forged steel, Crosby heavy-duty, or equal; Fed Spec FF-C-450: ½ -in. | 48. |
| Shackles | Anchor shackle, screw-pin; type VI, class 1, Fed Spec RR-C-271: 7/8-in. (1-in.-dia. 8.pin), NSN 4030-00-162-9668. | |
| Wire rope | 6 X 19 IWRC, improved plow steel, preformed, regular-lay; table X, Fed Spec RR-W-410: ½ -in. | 190 ft. |

**Table 7-5. Application of Materials for Blocking and Tiedown of Shelters on CONUS General-Purpose Flatcars (Figs 7-5, 7-6).**

| Item | No. Reqd. | Application |
|---|---|---|
| A | -- | Brake wheel clearance required is 6 inches above, in back of, and on both sides of the wheel and 4 inches underneath the wheel (fig 7-5). |
| B | 2 | Side blocks. Each to consist of two pieces of 2 x 4 x 120-inch lumber. Locate the bottom pieces longitudinally against the side of shelter, and nail them to the car floor with 30d nails spaced about 8 inches apart. Nail the top pieces to the bottom pieces in like manner. |
| C | 2 | End blocks. Each to consist of two pieces of 2 x 6 x 84-inch lumber. Locate against the front and back of shelter and nail same as in item B. |
| D | 8 | Wire rope. Each to consist of one piece of ½ -inch wire rope, length as required. Form a complete loop between each shackle and appropriate flatcar stake pocket. (Wire-rope ends should overlap a minimum of 24 inches. The angle of tiedown must not be greater than 45°.) |
| E | 48 | Clamps. Place four on each wire at the overlap area and space 3/2 inches apart, with a minimum of 6 inches from each end of the wire rope (sketch 1, fig 7-3). Tension the wire rope and tighten the clamps. Use one clamp to secure each thimble to the wire rope at the stake pocket and shackle. |
| F | 16 | Thimbles. Place one thimble on wire rope at each stake pocket and shackle. Secure each thimble with one item E. |
| G | 8 | Shackle. Attach one shackle to each tiedown provision. |
| H | 4 | End cleats. Each to consist of two 2 x 6 x 30-inch lumber. Locate cleats perpendicular to end blocks. Nail the first piece of lumber to the car floor with seven-30d nails. Nail the second piece with seven 60d nails. |

**Table 7-6. Bill of Materials for Blocking and Tiedown Trailer Support Unit on CONUS General-Purpose Flatcars (Figs 7-7 and 7-8).**

| Item | Description | Approximate Quantity |
|---|---|---|
| Lumber | Douglas-fir or comparable, straight-grain, free from material defects; Fed Spec MM-L-751: | |
| | 2- X 4-in | 48 lin ft. |
| | 2- x 8-in | 4 lin ft. |
| Nails | Common, steel, flathead; bright or cement-coated; type II, Fed Spec FF-N-105: 20d | 130. |
| Wire rope | 6 X 19 IWRC, improved plow steel, preformed, regular-lay; table X, Fed Spec RR-W-410: ½-in. | 80 ft. |
| Clamps | Wire rope, U-bolt clips, saddled, single-grip, forged steel, Crosby heavy-duty, or equal; Fed Spec FF-C-450: ½ -in. | 68. |
| Thimbles | Standard, open-type, ½ -in | 20. |

**Table 7-7. Application of Materials for Blocking and Tiedown of Trailer Support Unit on CONUS General-Purpose Flatcars (Figs 7-7 and 7-8).**

| Item | No. Reqd. | Application |
|---|---|---|
| A | -- | Brake wheel clearance. Minimum clearance required is 6 inches above, in back of, and on both sides of the wheel and 4 inches underneath the wheel (fig 7-7). |
| B | 1 | Lunette support. Consists of fifteen 2 x 4 x 15-inch pieces of lumber. First, position the lunette in its proper place, then nail it to the flatcar bed. Nail the remaining pieces to the first piece. |
| C | 4 | Chocks. Consists of six 2 x 8 x 7-1/2 -inch pieces of lumber, cut as shown in figure 7-9. Nail together and place one piece tightly before each front wheel and behind each rear wheel. |
| D | 4 | End blocks. Each consist of two 2 x 4-inch x 9-inch pieces of lumber. Place one piece tightly against the base of item B and nail it in place. Nail the second piece to the first. |
| E | 2 | Side blocks. Each consists of two 2 x 4-inch X 6-foot pieces of lumber. Place one piece tightly against the outside of the wheels and nail it in place. Nail the second piece to the first. |
| F | 4 | Wire rope ½ -inch, 6 x 19, IWRC. With each cable (about 25 ft), form a complete loop between the tiedown shackle and stake pocket (sketch 1, fig 7-3). |
| G | 44 | Clamps, ½ -inch, four each. Place clamps on each cable loop at the overlap area, and space 3 ½ inches apart, with a minimum of 6 inches from the ends of the cable. Place another clip under each stake pocket and shackle to secure the cable and thimble together (sketch 1, fig 7-3). |
| H | 12 | Thimbles, open-type, ½ -inch. Place one thimble at the bottom of each stake pocket and shackle (sketch 1, fig 7-3). |
| I | 2 | Wire rope, ½ -inch, 6 x 19 IWRC. With each cable (about 10 ft), form a complete loop between the tiedown shackle and stake pocket (sketch 1, fig 7-3). |
| J | 2 | Middle chock blocks. Each consists of six 2 x 8 x 41-inch, cut as shown in detail 2, figure 7-9. Nail two pieces together with three 16d nails. Then nail the next piece to these two pieces with three 16d nails. Repeat with other pieces. Then place the blocks between the front and, rear wheels as shown in figure 7-7. |

# APPENDIX A

# REFERENCES

## A-1. Army Regulations (AR)

| | |
|---|---|
| 55-29 | Military Convoy Operations in CONUS |
| 55-80 | Highways for National Defense |
| 55-162 | Permit for Oversize, Overweight, or Other Special Military Movements on Public Highways in the Contiguous States and the District of Columbia of the United States |
| 55-228 | Transportation by Water of Explosives and Hazardous Cargo |
| 55-355 | Military Traffic Management Regulation |
| 70-44 | DOD Engineering for Transportability |
| 70-47 | Engineering for Transportability |
| 385-40 | Accident Reporting and Records |
| 746-1 | Color, Marking, and Preparation of Equipment for Shipment |

## A-2. Army Field Manuals (FM)

| | |
|---|---|
| 55-9 | Unit Air Movement Planning |
| 55-15 | Transportation Reference Data |
| 55-17 | Terminal Operations Specialists Handbook |

## A-3. Army Supply Bulletins (SB)

| | |
|---|---|
| 700-20 | Army Adopted Items of Materiel |

## A-4. Army Technical Bulletins (TB)

| | |
|---|---|
| 55-46-1 | Standard Characteristics (Dimensions, Weight, and Cube) for Transportability of Military Vehicles and Equipment |

## A-5. Technical Manuals (TM)

| | |
|---|---|
| 32-5811-900-10 | Operators Manual; Detecting Set, Special-Purpose; AN/TSQ-114A and B |
| 32-5865-606-10-1 | Operators Manual; Countermeasures Set, Special-Purpose; AN/MLQ-34 |
| (S)32-5865-606-10-2 | Operators Manual; Countermeasures Set, Special-Purpose; AN/MLQ-34(U) |
| 38-250 (AFR 71-4) | Packaging and Handling of Dangerous Materials for Transportation by Military Aircraft |
| 55-405-9 | Weight and Balance |
| 55-500 | Marine Equipment Characteristics and Data |
| 55-2200-001-12 | Transportability Guidance Application of Blocking, Bracing, and Tiedown Materials for Rail Transportation |

## A-6. Air Force Manuals

| | |
|---|---|
| TO 1-1B-40 | Handbook of Weight and Balance Data |
| TO 1C-141B-9 | Loading Instructions, USAF Series C-141B Aircraft |
| TO 1C-5A-9 | Loading Instructions, USAF Series C-5A Aircraft |

## A-7. Other Publications and Source of Procurement

*a. Code of Federal Regulations*, Title 49-Transportation, Parts 170-179

Available from: Superintendent of Documents
US Government Printing Office
Washington, DC 20402

b. Association of American Railroads *Rules Governing the Loading of Commodities on Open-Top Cars and Trailers*

Section No. 1-General Rules
Section No. 6-Rules Governing the Loading

of Department of Defense Material on Open-Top Cars

Available from:

Association of American Railroads
59 E. Van Buren Street
Chicago, IL 60605

c. American Association of State Highway and Transportation Officials (AASHTO) *Legal Maximum Dimensions and Weight of Motor Vehicles Compared with AASHTO Standards*

Available from:

American Association of State
Highway and Transportation Officials
341 National Press Building
Washington, DC 20004

**A-8. Department of Transportation**

USCG 108 Rules and Regulations for Military Explosives and Hazardous Munitions.

By Order of the Secretary of the Army:

**JOHN A. WICKHAM, JR.**
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