

CHAPTER 12

**RIGGING TOW MISSILES IN BOXES ON
THE TYPE V AIRDROP PLATFORM**

Section I

RIGGING MISSILES FOR LOW-VELOCITY AIRDROP

12-1. Description of Load

Forty-eight boxed missiles are rigged on a 12-foot, type V airdrop platform. Each boxed missile weighs 87 pounds and is 57 1/2 inches long, 12 inches high, and 12 inches wide. The rigged load requires two G-11A or two G-11B parachutes. This load can be airdropped from a C-130 or a C-141 aircraft.

12-2. Preparing Platform

Prepare a 12-foot, type V airdrop platform as described below.

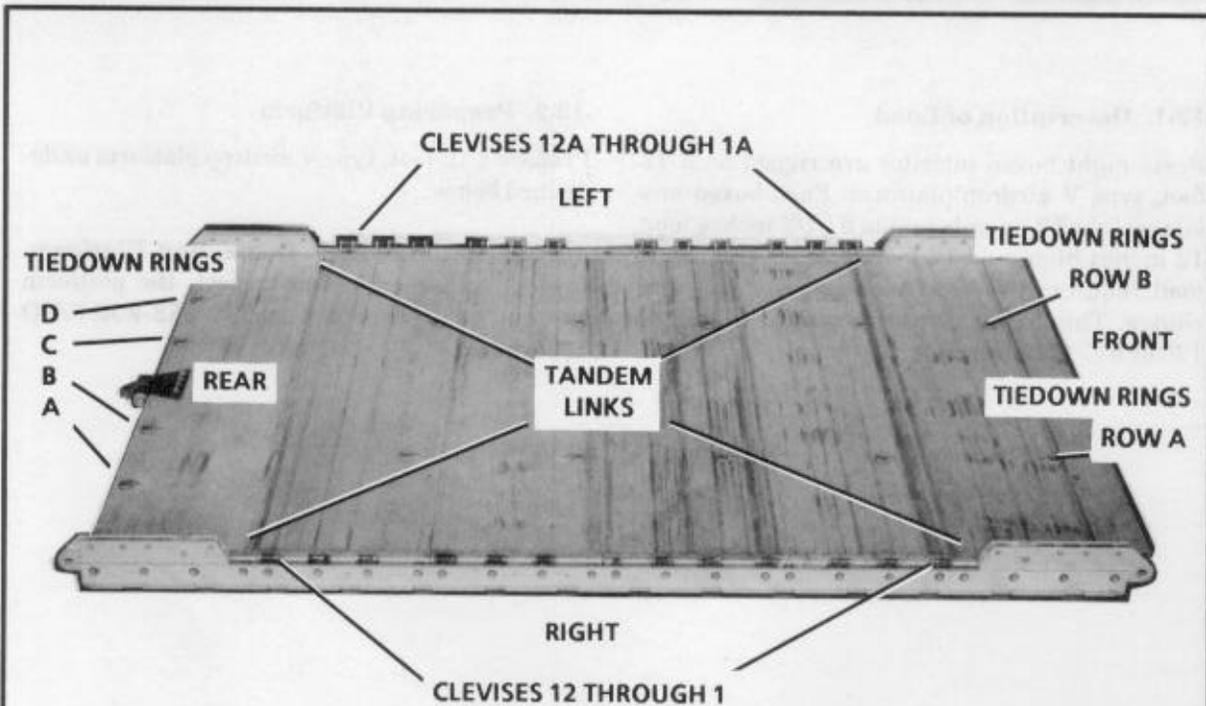
a. Assembling and Inspecting Platform. Inspect, or assemble and inspect, the platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.

b. **Installing Tandem Links.** Attach a tandem link on the front and rear of each rail as shown in Figure 12-1.

c. **Attaching and Numbering Clevises.** Bolt 24 tiedown clevises to the side rail bushings according to TM 10-1670-268-20&P/ TO 13C7-52-22. Number the clevises as shown in Figure 12-1.

NOTES:

1. The nose bumper may or may not be installed.
2. Measurements given in this section are from the front edge of the platform, **NOT** from the front edge of the nose bumper.



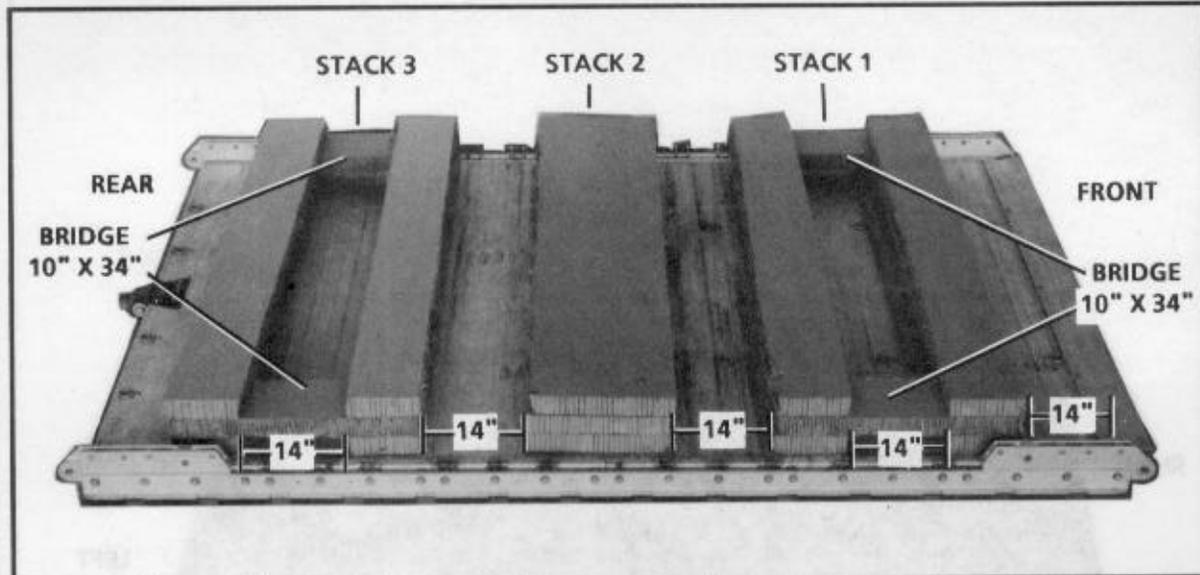
Step:

1. Starting at bushing 1 behind each front tandem link, attach a clevis to bushings 2, 3, 4, 6, 7, 8, 11, 12, 13, 15, 16, and 17.
2. Starting at the front of the platform, number the clevises bolted to the right rail 1 through 12 and those bolted to the left rail 1A through 12A.
3. Starting at the front of the platform, number the tiedown rings 1 through 6. Label the rows A and B from right to left. Label the tiedown rings on the last panel A, B, C, and D from right to left.

Figure 12-1. Platform prepared

12-3. Building and Placing Honeycomb Stacks

Build the honeycomb stacks and place them on the platform as shown in Figures 12-2 and 12-3.



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
1	2	96	10	Honeycomb	Place one piece 14 inches from the front edge of the platform. Place another piece 14 inches from the first piece.
	2	10	34	Honeycomb	Place one piece on top of each end of the two base pieces as a bridge.
	2	76	10	Honeycomb	Place on base pieces of honeycomb between each bridge
	2	96	10	Honeycomb	Place one piece on top of each base piece.
2	3	96	20	Honeycomb	Center honeycomb on the platform 14 inches from stack 1.
3	2	96	10	Honeycomb	Place one piece 14 inches from stack 2. Place another piece 14 inches from the first piece.
	2	10	34	Honeycomb	Place one piece on top of each end of the two base pieces as a bridge.
	2	76	10	Honeycomb	Place on base pieces of honeycomb between each bridge.
	2	96	10	Honeycomb	Place one piece on top of each base piece.

Figure 12-2. Honeycomb stacks prepared and positioned

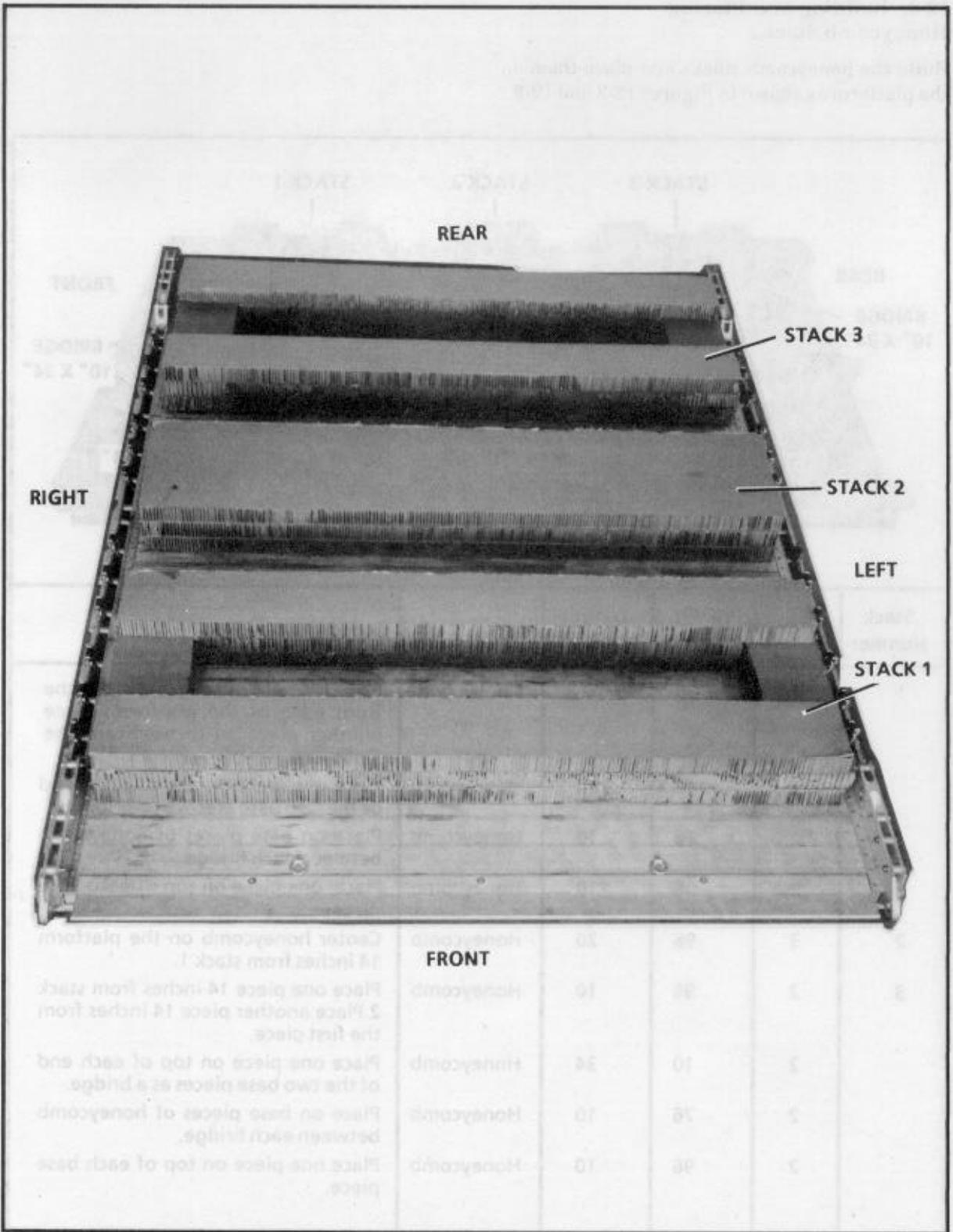
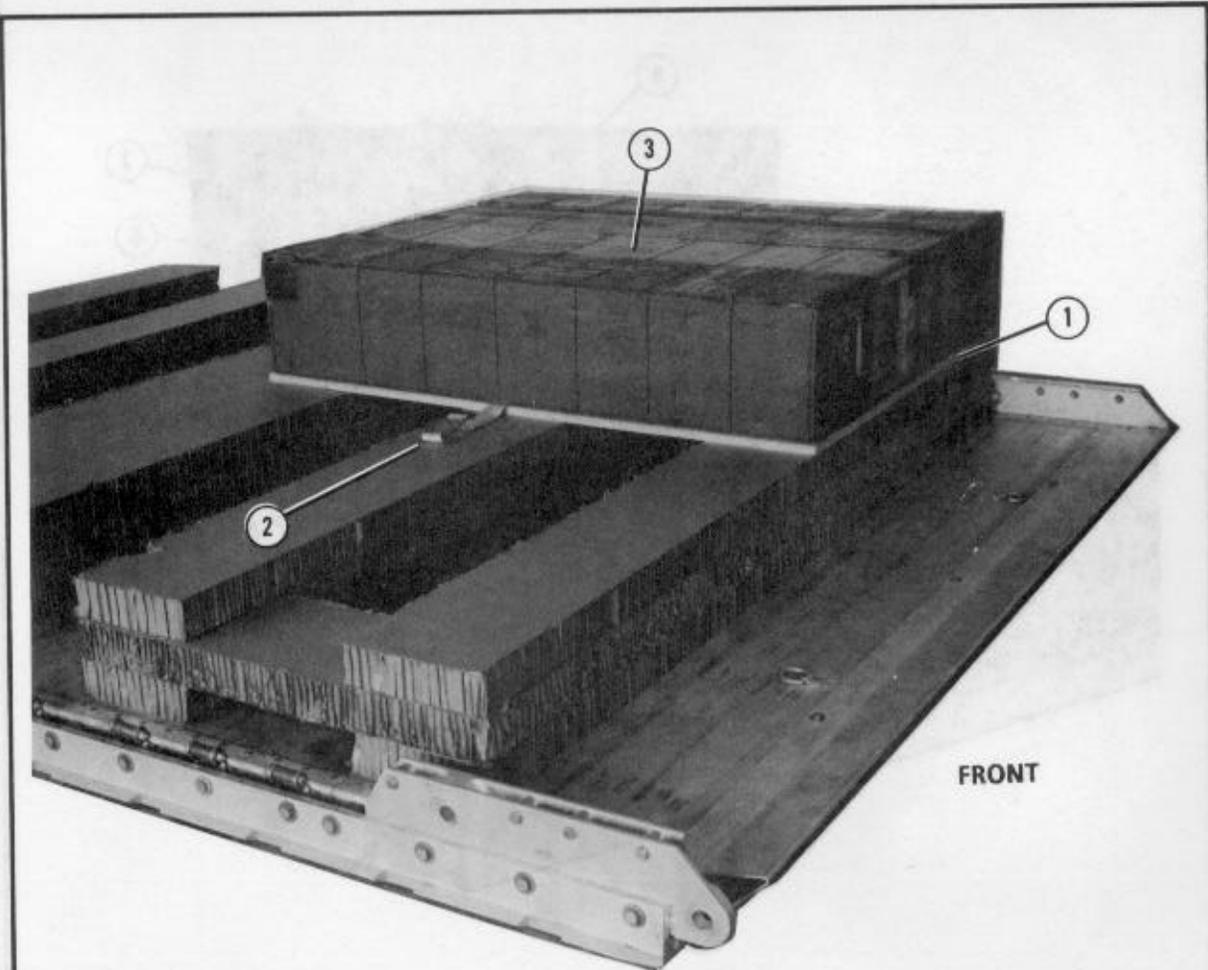


Figure 12-3. Front view of honeycomb stacks

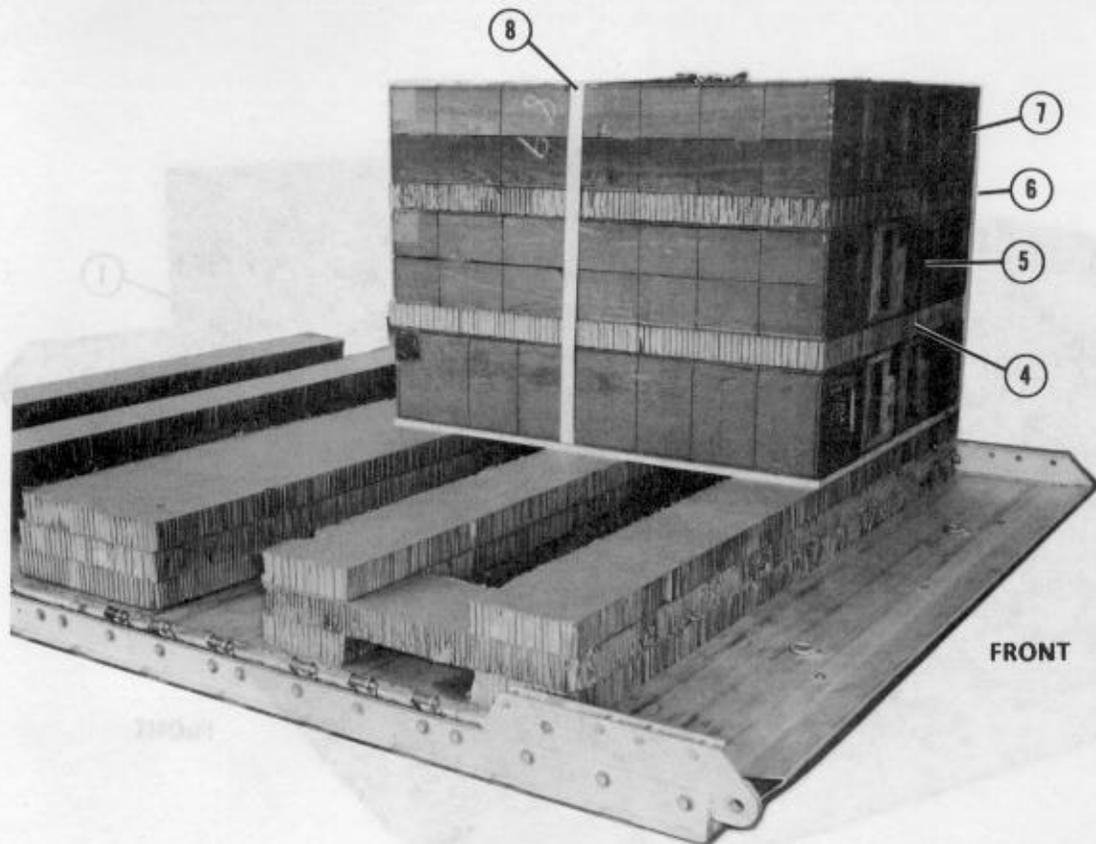
12-4. Preparing Load

Prepare and position the missiles as shown in Figure 12-4.



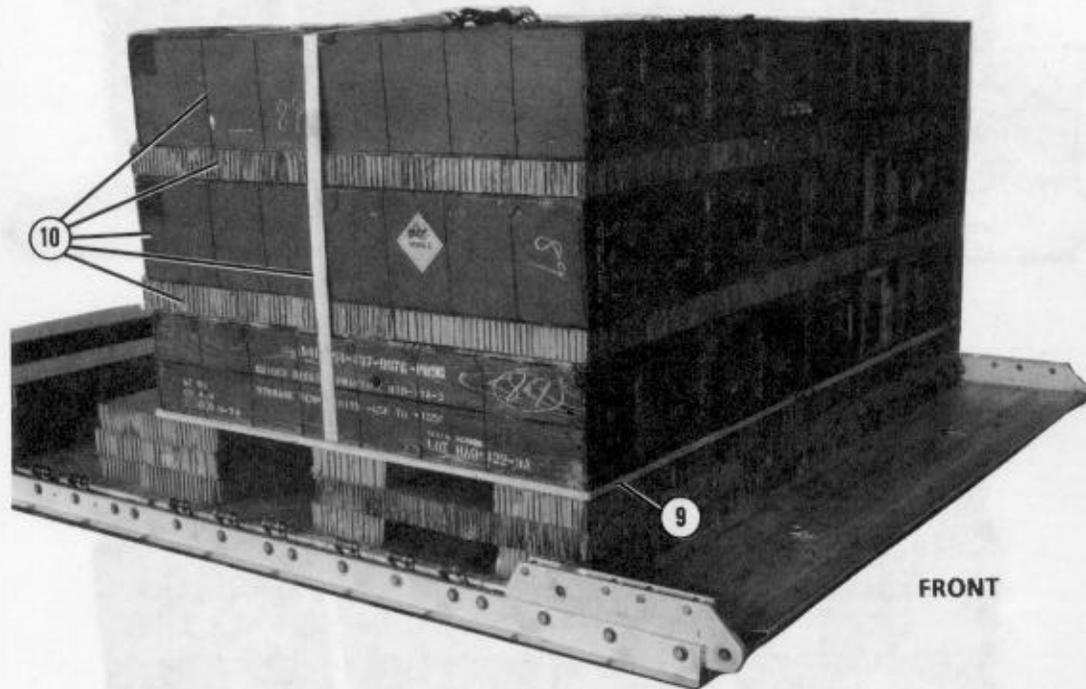
- 1 Place a piece of 3/4- by 48- by 58-inch plywood on top of stacks 1 and 2 so that it is flush with the front and left side of stack 1.
- 2 Lay a 15-foot tiedown strap across the plywood.
- 3 Set four boxed missiles on the plywood.

Figure 12-4. Missile stacks prepared



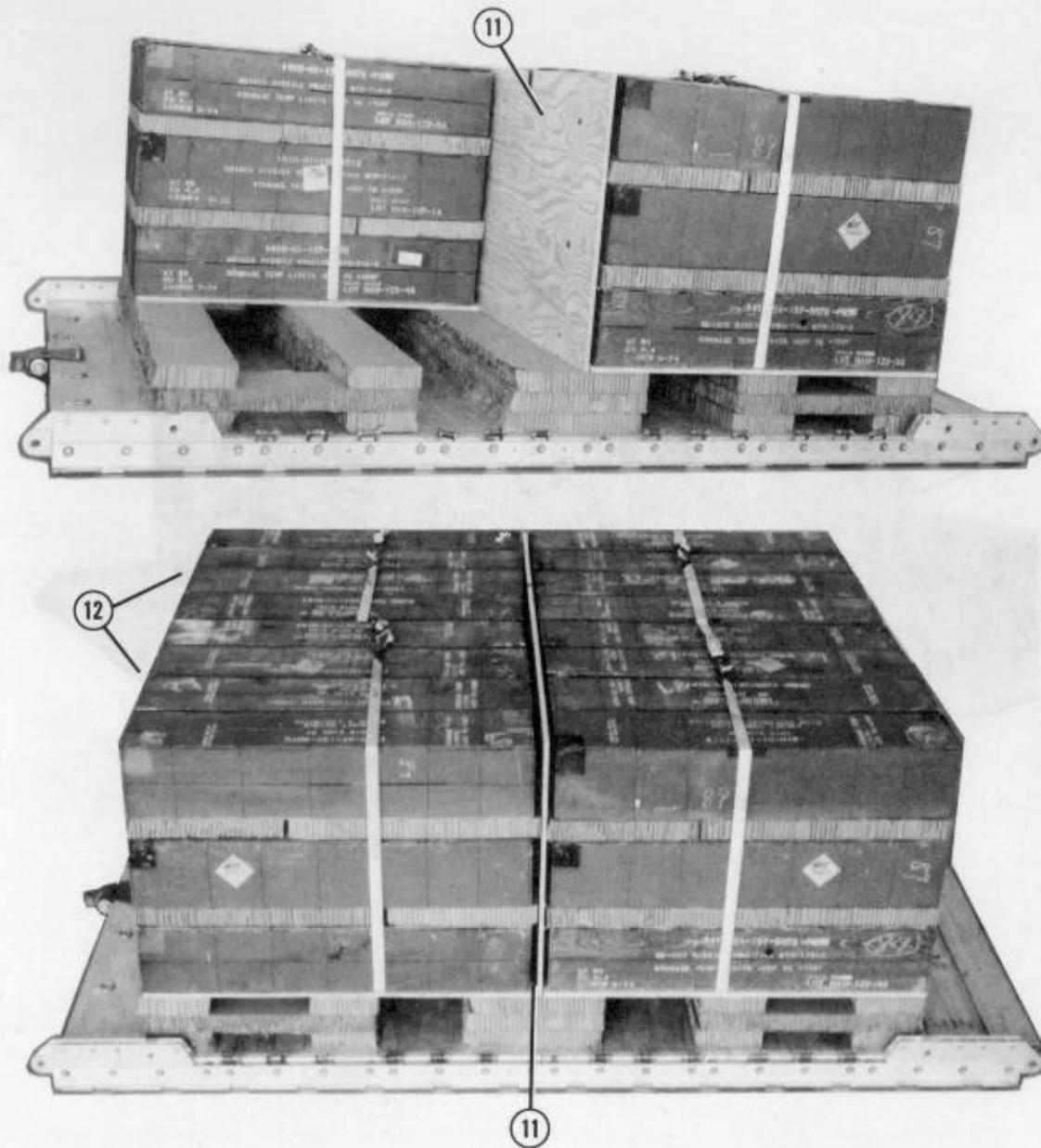
- ④ Form a layer of honeycomb on top of the missiles with one 36- by 48-inch piece and one 22- by 48-inch piece of honeycomb.
- ⑤ Place four boxed missiles on the honeycomb.
- ⑥ Form another honeycomb layer with one 36- by 48-inch piece and one 22- by 48-inch piece of honeycomb on top of the missiles.
- ⑦ Place four boxed missiles on the second layer of honeycomb.
- ⑧ Bind the missiles together with the pre-positioned tiedown strap.

Figure 12-4. Missile stacks prepared (continued)



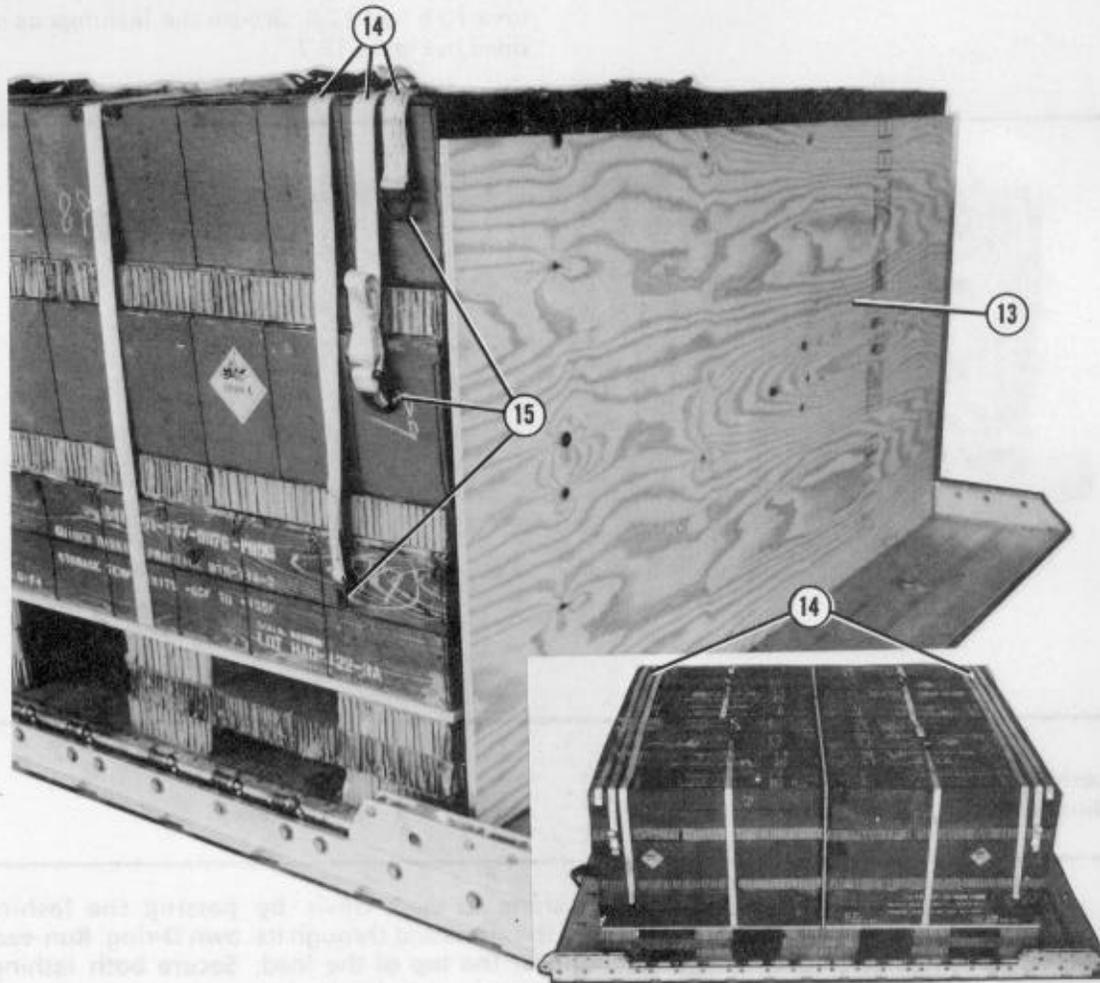
- 9 Place a piece of 3/4- by 48- by 58-inch plywood on top of stacks 1 and 2 so that it is flush with the front and right side of stack 1.
- 10 Repeat steps 2 through 8 to position another 12 boxed missiles on the platform.

Figure 12-4. Missile stacks prepared (continued)



- 11 Place a 3/4- by 42- by 96-inch piece of plywood on edge and on top of honeycomb stack 2 against the rear of the first two stacks of missiles.
- 12 Adapt steps 1 through 10 to rig the two rear stacks (12 missiles each) of missiles on the rear of the platform.

Figure 12-4. Missile stacks prepared (continued)

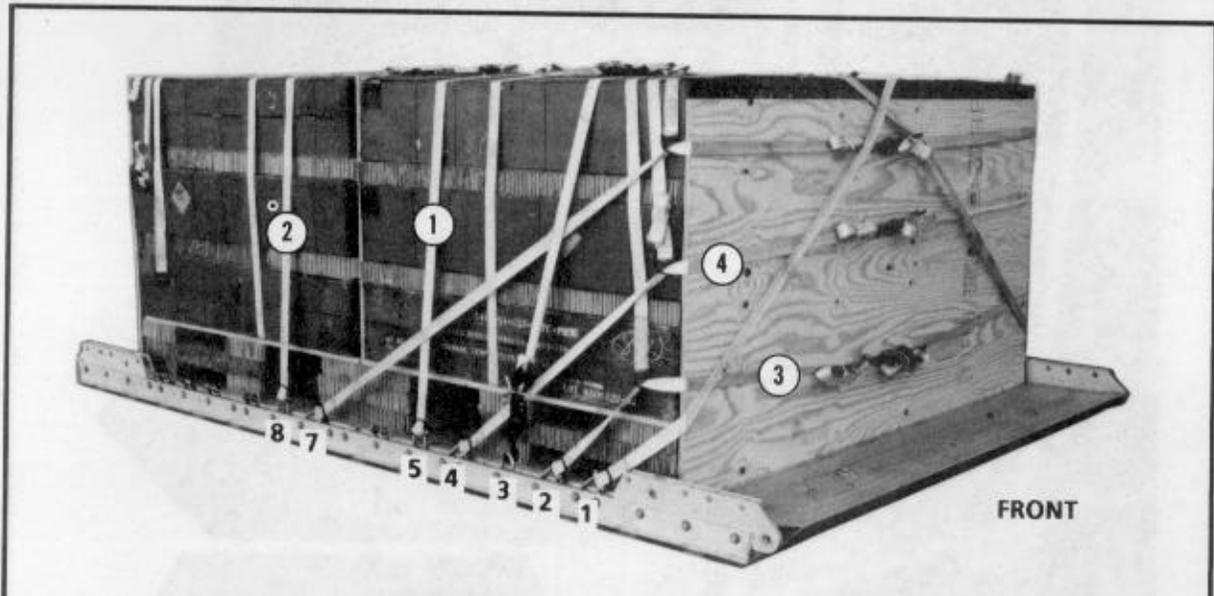


- 13 Place a 3/4- by 48- by 96-inch piece of plywood against the front edge of honeycomb stack 1 and the missiles. Place another 3/4- by 48- by 96-inch piece of plywood against the rear edge of honeycomb stack 3 and the missiles.
- 14 Lay three 15-foot tiedown straps side by side across the front edges of the missiles. Lay three 15-foot tiedown straps side by side across the rear edges of the missiles.
- 15 Fit a D-ring on each strap, and adjust the D-rings so that one is at the center of each layer of missiles.

Figure 12-4. Missile stacks prepared (continued)

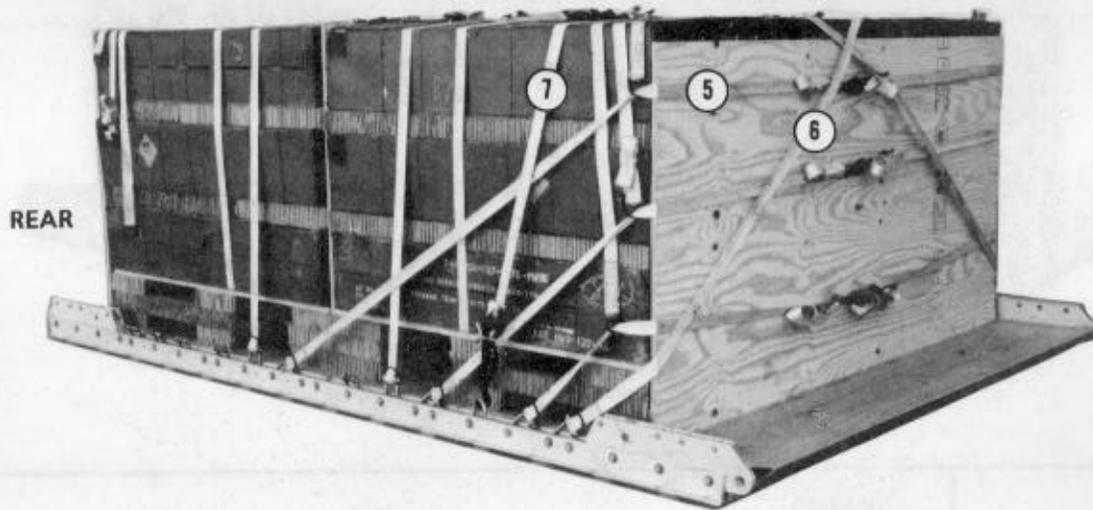
12-5. Lashing Load

Lash the load to the platform as shown in Figures 12-5 and 12-6. Secure the lashings as outlined in Figure 12-7.



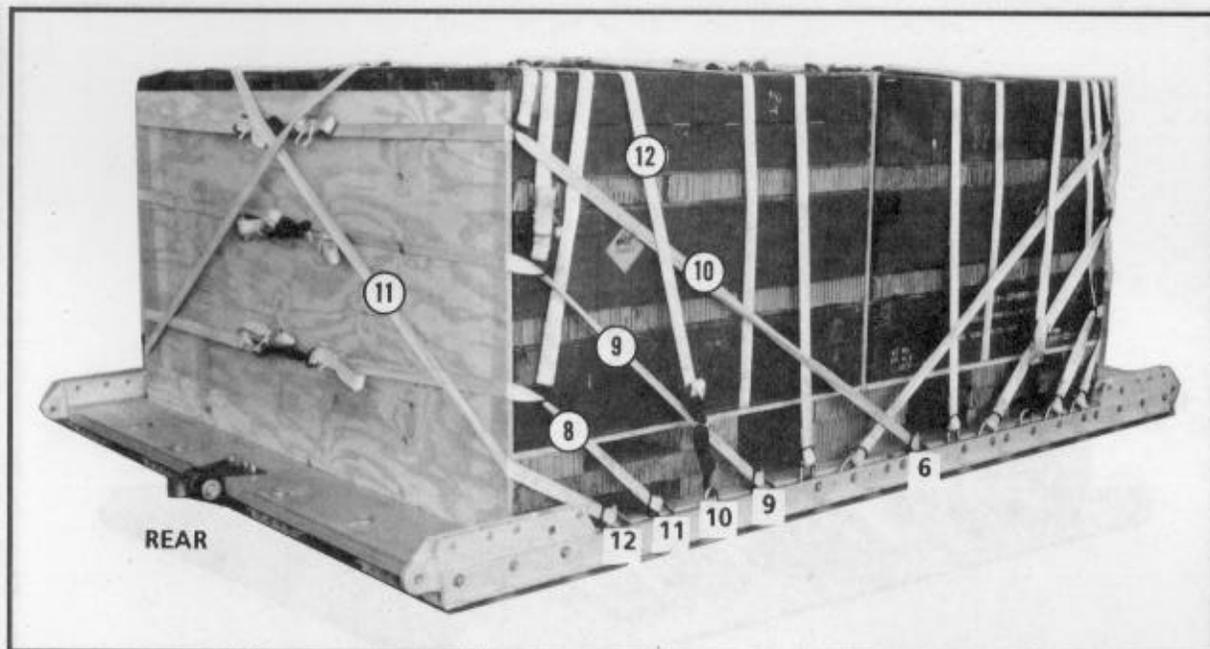
Lashing Number	Tiedown Clevis Number	Instructions
1	5 and 5A	Fit a lashing to each clevis by passing the lashing through the clevis and through its own D-ring. Run each lashing over the top of the load. Secure both lashings with two D-rings and a load binder.
2	8 and 8A	Fit a lashing to each clevis by passing the lashing through the clevis and through its own D-ring. Run each lashing over the top of the load. Secure both lashings with two D-rings and a load binder.
3	2 and 2A	Fit a lashing to each clevis by passing the lashing through the clevis and through its own D-ring. Run each lashing through the D-ring on the bottom layer of missiles. Run each lashing to the front of the plywood, and secure the lashings with two D-rings and a load binder.
4	4 and 4A	Fit a lashing to each clevis by passing the lashing through the clevis and through its own D-ring. Run each lashing through the D-ring on the middle layer of missiles. Run each lashing to the front of the plywood, and secure the lashings with two D-rings and a load binder.

Figure 12-5. Lashings 1 through 7 installed



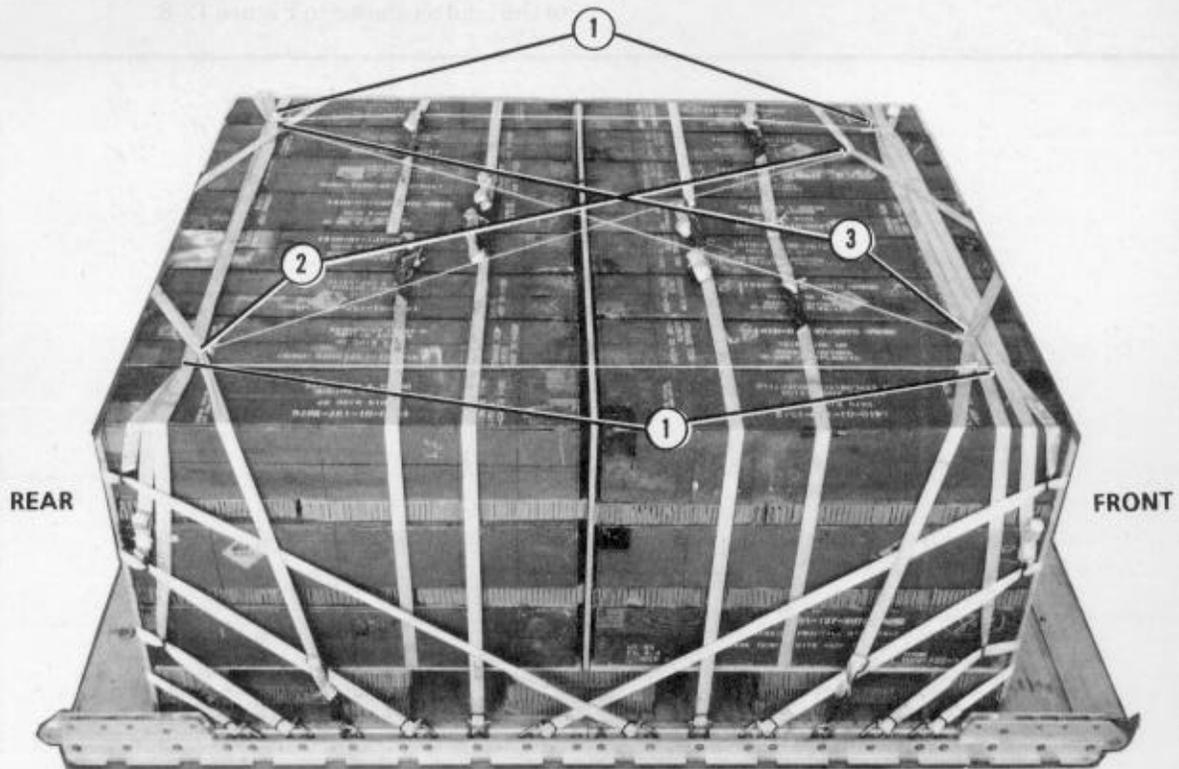
Lashing Number	Tiedown Clevis Number	Instructions
5	7 and 7A	Fit a lashing to each clevis by passing the lashing through the clevis and through its own D-ring. Run each lashing through the D-ring on the top layer of missiles. Run each lashing to the front of the plywood, and secure the lashings with two D-rings and a load binder.
6	1 and 3A	Fit a lashing to clevis 1 by passing the lashing through its own D-ring. Run the lashing around the front of the plywood and over the top of the missiles. Attach a D-ring to the free end of the lashing, and secure it to clevis 3A with a load binder.
7	1A and 3	Fit a lashing through clevis 1A by passing the lashing through its own D-ring. Run the lashing around the front of the plywood and over the top of the missiles. Attach a D-ring to the free end of the lashing, and secure it to clevis 3 with a load binder.

Figure 12-5. Lashings 1 through 7 installed (continued)



Lashing Number	Tiedown Clevis Number	Instructions
8	11 and 11A	Fit a lashing to each clevis by passing the lashing through the clevis and through its own D-ring. Run each lashing through the D-ring on the bottom layer of missiles. Run each lashing to the rear of the plywood, and secure the lashings with two D-rings and a load binder.
9	9 and 9A	Fit a lashing to each clevis by passing the lashing through the clevis and through its own D-ring. Run each lashing through the D-ring on the middle layer of missiles. Run each lashing to the rear of the plywood, and secure the lashings with two D-rings and a load binder.
10	6 and 6A	Fit a lashing to each clevis by passing the lashing through the clevis and through its own D-ring. Run each lashing through the D-ring on the top layer of missiles. Run each lashing to the rear of the plywood, and secure the lashings with two D-rings and a load binder.
11	12 and 10A	Fit a lashing to clevis 12 by passing the lashing through its own D-ring. Run the lashing around the rear of the plywood and over the top of the missiles. Attach a D-ring to the free end of the lashing and secure it to clevis 10A with a load binder.
12	10 and 12A	Fit a lashing to clevis 12A by passing the lashing through its own D-ring. Run the lashing around the rear of the plywood and over the top of the missiles. Attach a D-ring to the free end of the lashing, and secure it to clevis 10 with a load binder.

Figure 12-6. Lashings 8 through 12 installed

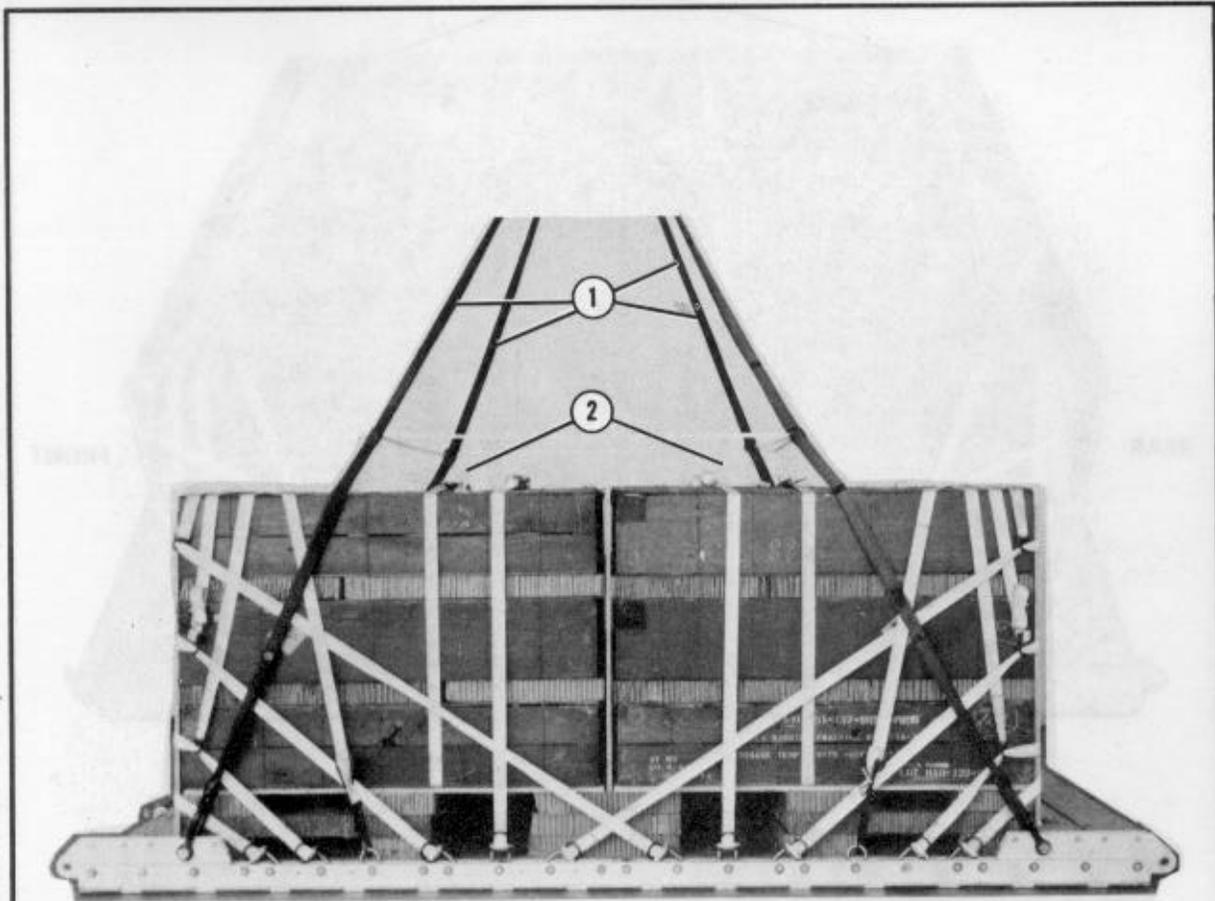


- ① Secure lashings 3, 4, and 5 and 8, 9, and 10 in two places with type III nylon cord.
- ② Secure lashing 6 to lashing 12 with type III nylon cord.
- ③ Secure lashing 7 to lashing 11 with type III nylon cord.

Figure 12-7. Lashings secured

12-6. Attaching and Safetying Suspension Slings

Install the suspension slings using four 12-foot (2-loop), type XXVI nylon webbing slings and four large clevises. Attach the suspension slings to the load as shown in Figure 12-8.

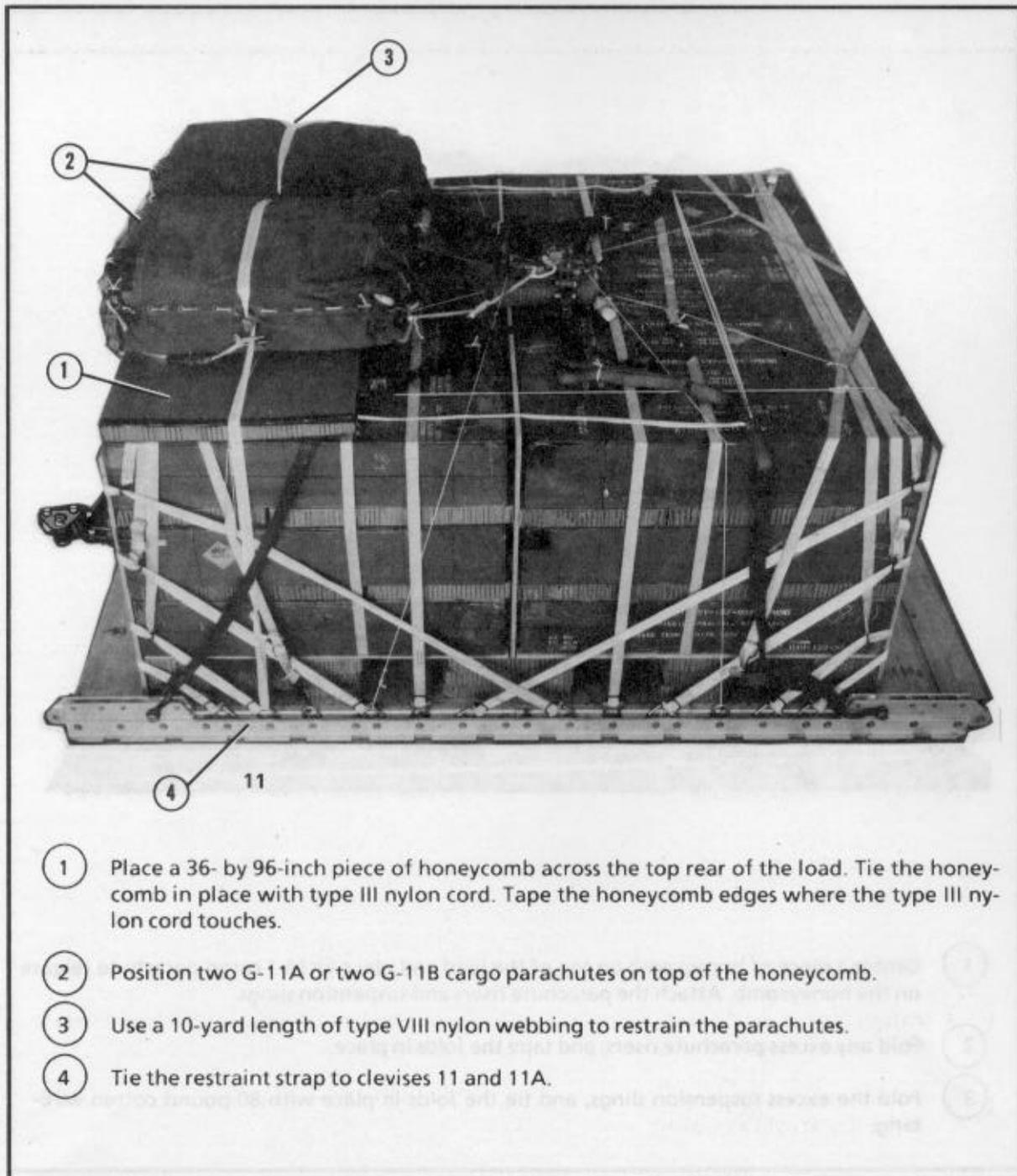


- ① Attach a 12-foot (2-loop), type XXVI nylon webbing sling to each of the four tandem links using a large clevis. Raise the suspension slings above the load.
- ② Install the deadman's tie as outlined in FM 10-500-2/TO 13C7-1-5 using two lengths of 1/2-inch tubular nylon webbing.

Figure 12-8. Suspension slings installed

12-7. Installing Cargo Parachutes

Prepare two G-11A or two G-11B cargo parachutes as outlined in FM 10-500-2/TO 13C7-1-5. Stow them as shown in Figure 12-9.

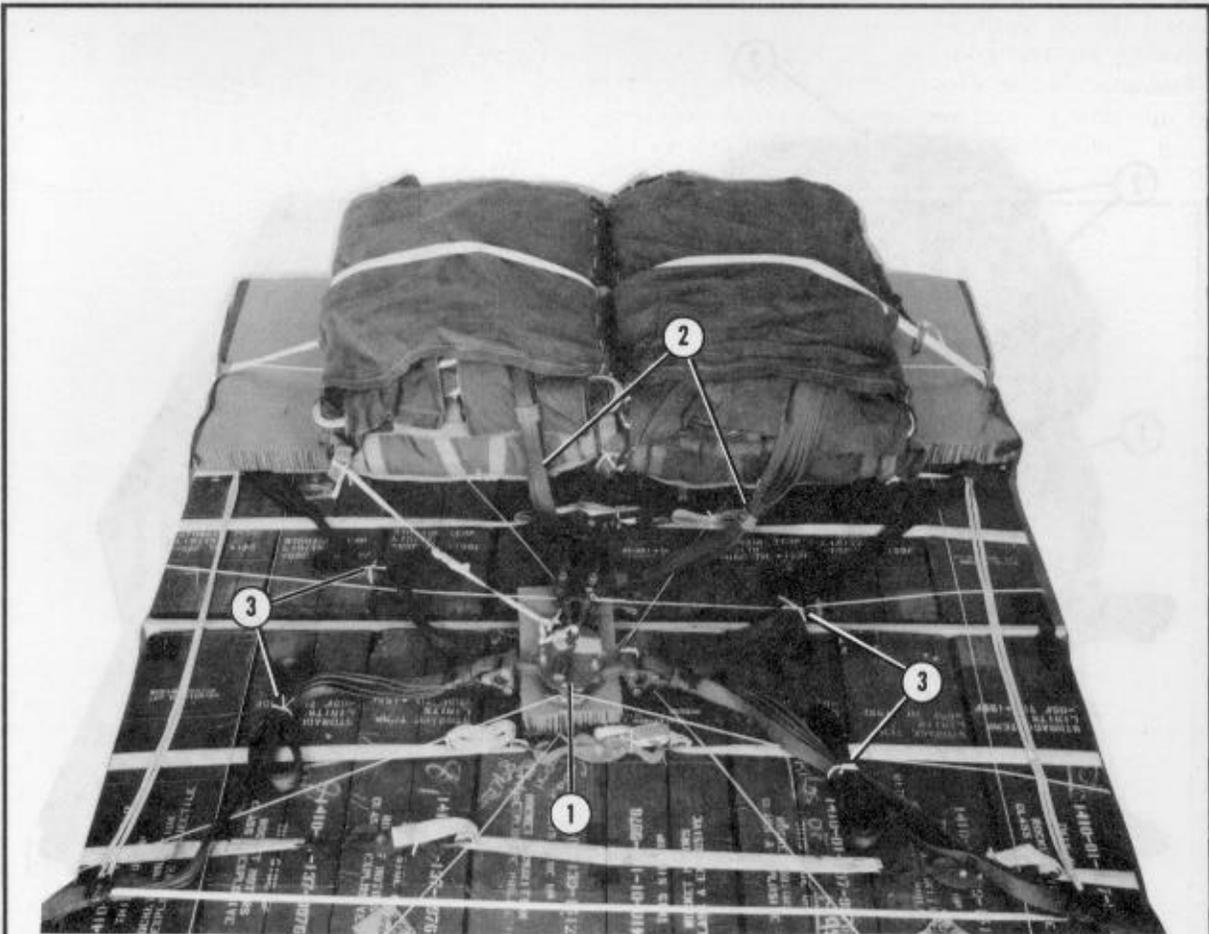


- 1 Place a 36- by 96-inch piece of honeycomb across the top rear of the load. Tie the honeycomb in place with type III nylon cord. Tape the honeycomb edges where the type III nylon cord touches.
- 2 Position two G-11A or two G-11B cargo parachutes on top of the honeycomb.
- 3 Use a 10-yard length of type VIII nylon webbing to restrain the parachutes.
- 4 Tie the restraint strap to clevises 11 and 11A.

Figure 12-9. Cargo parachutes stowed

12-8. Installing Release System

Install and safety an M-1 cargo parachute release according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure 12-10.

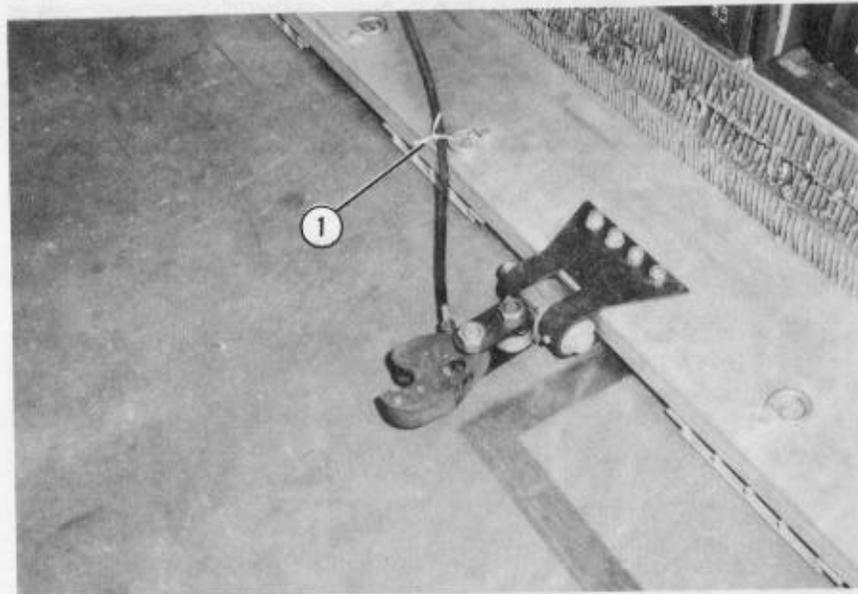


- ① Center a piece of honeycomb on top of the load and place an M-1 cargo parachute release on the honeycomb. Attach the parachute risers and suspension slings.
- ② Fold any excess parachute risers, and tape the folds in place.
- ③ Fold the excess suspension slings, and tie the folds in place with 80-pound cotton webbing.

Figure 12-10. M-1 cargo parachute release installed

12-9. Installing Extraction System

Use the EFTC extraction system for this load. Install the EFTC brackets on the left rail of the platform. Use the first pair of EFTC bracket mounting holes on the platform front end. Install the components of the EFTC extraction system according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure 12-11. Use a 9-foot (3-loop), type X or a 9-foot (2-loop), type XXVI nylon webbing sling as the deployment line.



- ① Safety the cable of the EFTC to tiedown ring C6 using 80-pound cotton webbing.

NOTE: It may be necessary to loosen lashing 3 to mount the EFTC actuator onto the bracket.

Figure 12-11. Extraction system installed

12-10. Placing Extraction Parachute

Place the extraction parachute as described below.

a. **C-130 Aircraft.** Place an unreefed 15-foot cargo extraction parachute and a 60-foot (1-loop), type XXVI nylon webbing extraction line on the load for installation in the aircraft.

b. **C-141 Aircraft.** Place an unreefed 15-foot cargo extraction parachute with a 36-inch adapter web and a continuous 160-foot (1-loop), type XXVI nylon webbing extraction line on the load for installation in the aircraft.

12-11. Installing Emergency Restraints

Install a medium clevis in the front hole of each tandem link as an emergency restraint.

12-12. Marking Rigged Load

Mark the rigged load as outlined in FM 10-500-2/TO 13C7-1-5 and as shown in Figure 12-12. Complete DD Form 1387-2, and securely attach it to the load. If the load varies from that shown, the weight, CB, and parachute requirements must be recomputed.

12-13. Equipment Required

Use the equipment listed in Table 12-1 to rig this load.

CAUTION
MAKE THE FINAL RIGGER INSPECTION REQUIRED BY AFR 55-40/AR 59-4 BEFORE THE LOAD LEAVES THE RIGGING SITE.

RIGGED LOAD DATA

Weight: Load shown	.....	6,650 pounds
Maximum allowed	.....	7,000 pounds
Height	.....	75 inches
Width	.....	108 inches
Length	.....	148 inches
CB (from front edge of platform)	.....	77 inches

Figure 12-12. Missiles in boxes rigged for low-velocity airdrop on a type V airdrop platform

Table 12-1. Equipment required for rigging missiles in boxes for low-velocity airdrop on a type V platform

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive, paste, 1-gal	As required
4030-00-090-5354	Clevis, suspension, 1-in (large)	8
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
1670-00-434-5783	Coupling, airdrop, extraction force transfer w 12-ft cable	1
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
5365-00-937-0147	D-ring, heavy-duty, 10,000-lb	30
8305-00-958-3685	Felt, 1/2- by 6- by 6-in	1
1670-01-064-4452	Line, extraction: 60-ft (1-loop), type XXVI nylon webbing (for C-130) or	1
1670-00-856-0265	60-ft (1-loop), type X nylon webbing (for C-130)	1
1670-01-107-7652	160-ft (1-loop), type XXVI nylon webbing (for C-141)	1
1670-00-783-5988	Link assembly, type IV (for extraction line)	1
1670-00-217-2421	Link, L-bar type	2
1670-00-753-3928	Pad, energy-dissipating, honeycomb, 3- by 36- by 96-in:	18 sheets
	10- by 34-in	(4)
	22- by 48-in	(8)
	36- by 48-in	(8)
	36- by 96-in	(1)
	76- by 10-in	(4)
	96- by 10-in	(8)
	96- by 20-in	(3)
1670-01-183-2678	Panel, sling, extraction line	2
	Parachute:	
	Cargo:	
1670-00-269-1107	G-11A or	2
1670-01-016-7841	G-11B	2
	Cargo extraction:	
1670-01-063-3715	15-ft (unreefed)	1
	Platform, AD, type V, 12-ft:	
	Bracket:	
1670-01-162-2375	Inside EFTA	1
1670-01-162-2374	Outside EFTA	1
1670-01-162-2385	Bumper, nose	1
1670-01-162-2372	Clevis, load tiedown	24
1670-01-162-2376	Extraction bracket assembly	1
1670-01-162-2381	Tandem link	4
5530-00-128-4981	Plywood, 3/4-inch:	
	42- by 96-in	1
	48- by 58-in	4
	48- by 96-in	2
1670-01-097-8816	Release, cargo, parachute, M-1	1

Table 12-1. Equipment required for rigging missiles in boxes for low-velocity airdrop on a type V platform (continued)

National Stock Number	Item	Quantity
	Sling, cargo, airdrop:	
1670-00-753-3631	9-ft (3-loop), type X nylon webbing or	1
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	1
1670-00-823-5041	12-ft (3-loop), type X nylon webbing or	4
1670-01-062-6303	12-ft (2-loop), type XXVI nylon webbing	4
1670-00-753-3794	20-ft (2-loop), type X nylon webbing or	2
1670-01-062-6302	20-ft (2-loop), type XXVI nylon webbing	2
7510-00-266-5016	Tape, adhesive, 2-in	As required
1670-00-937-0271	Tiedown assembly, 15-ft, 10,000-lb	30
1670-01-062-6312	Web, adapter, 36-in	1
	Webbing:	
8305-00-268-2411	Cotton, 80-lb	As required
8305-00-082-5752	Nylon, tubular, 1/2-in, 1,000-lb, natural	As required
8305-00-263-3591	Nylon, type VIII, 3,600-lb	10 yd

GLOSSARY

abn airborne
ACB attitude control bar
AD airdrop
AFB Air Force base
AFR Air Force regulation
AFTO Air Force technical order
AR Army regulation
attn attention
CB center of balance
d penny
DA Department of the Army
DD Department of Defense
diam diameter
EFTC extraction force transfer coupling
FM field manual
ft feet/foot
gal gallon
HQ headquarters
in inch
LAPE low-altitude parachute-extraction
LAPES low-altitude parachute-extraction system
lb pound
LV low-velocity
MRE meal, ready-to-eat
no number
NSN national stock number
op operation
PEFTC extraction force transfer coupling (platform)
SL/CS static line/connector strap
TM technical manual
TO technical order
TOW tube-launched, optically tracked, wire-guided
TRADOC United States Army Training and Doctrine Command
US United States
w with
yd yard

REFERENCES

These documents must be available to the intended users of this publication.

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