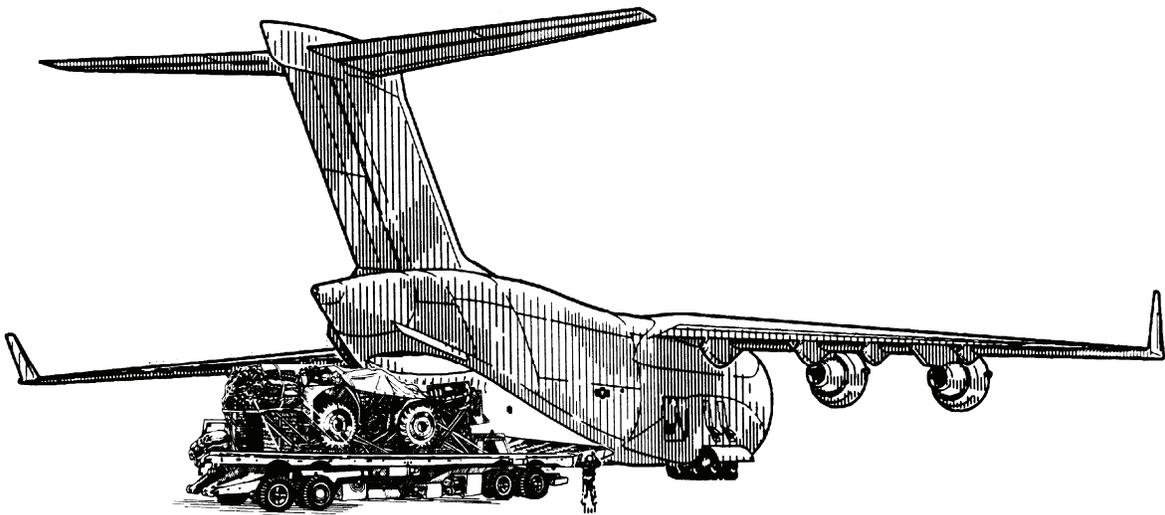


**FM 4-20.119 (FM 10-519)
TO 13C7-10-31**

**Airdrop of Supplies and Equipment:
Rigging 105-Millimeter Howitzers**



MAY 2006

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**Headquarters
Department of the Army
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Field Manual
No. 4-20.119 (10-519)
Technical Order
No. 13C7-10-31

Headquarters
Department of the Army
Department of the Air Force
Washington, DC, 10 May 2006

Airdrop of Supplies and Equipment: Rigging 105-Millimeter Howitzers

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Preface

SCOPE

This manual shows how to rig the M102, M119, and M101A1 105-millimeter howitzers for low-velocity airdrop from a C-130 or C-17 aircraft. The manual includes procedures and equipment for rigging the M102 and M119 105-millimeter howitzer with the 1 ¼-ton High Mobility Multipurpose Wheeled Vehicle (HMMWV) truck as the prime mover on a 32-foot, type V airdrop platform for low-velocity airdrop from a C-130 or C-17 aircraft. In addition, procedures are given for rigging two M119 105-millimeter howitzers on a single platform with two different ammunition loads and with two 81-millimeter mortars for a low-velocity airdrop from C-130 or C-17 aircraft. The manual is designed for use by all parachute riggers.

USER INFORMATION

The proponent of this publication is United States Army Training and Doctrine Command (TRADOC). You are encouraged to report any errors or omissions and to suggest ways of making this a better manual.

This publication applies to the Active Army, the Army National Guard (ARNG)/Army National Guard of the United States (ARNGUS), and the United States Army Reserve (USAR) unless otherwise stated.

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Introduction

DESCRIPTION OF ITEMS

The descriptions and unrigged data for the items covered in this manual are provided below.

- The unrigged M102, 105-millimeter howitzer (mounted on an M31 carriage) with an M137E1 cannon tube and roll-over protection structure weighs 3,680 pounds. Its length is 256 inches, reducible to 206 inches. Its height is 68 inches reducible to 62 inches. Its width is 91 inches with dual wheels and 75 inches with single wheels. The M102 howitzer shown in Figure 1 is equipped with single wheels. The rigging procedures for the howitzer with dual wheels are the same. The howitzer shown in Chapter 1, Section I, is rigged with 17 boxes of ammunition weighing 2,040 pounds. The howitzer shown in Chapter 1, Section II is rigged with 23 boxes of ammunition weighing 2,760 pounds. The howitzer shown in Chapter 2 is rigged with a 1 1/4-ton High Mobility Multipurpose Wheeled Vehicle (HMMWV) truck as its primer mover and with 30 boxes of ammunition weighing 3,600 pounds.

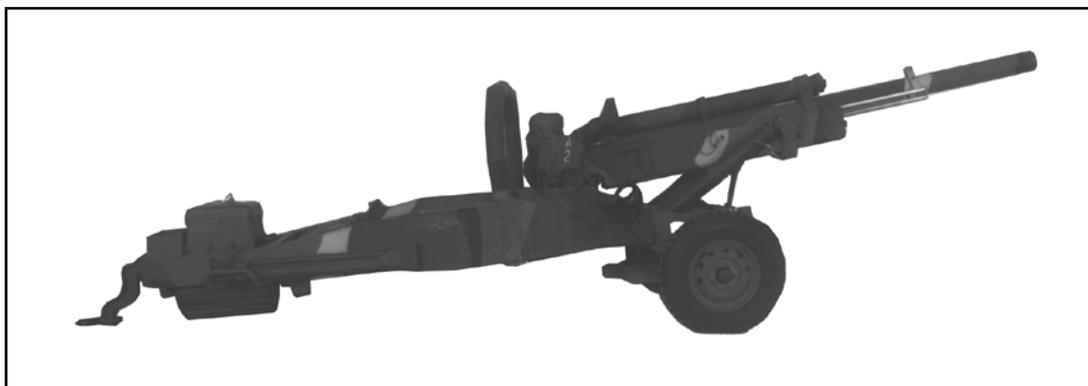


Figure 1. M102, 105-Millimeter Howitzer

- The unrigged M119, 105-millimeter howitzer weighs 4,190 pounds and is shown in Figure 2. Its length is 240 inches, reducible to 192 inches. Its width is 70 inches. Its height is 94 inches, reducible to 54 inches. The howitzer shown in Chapter 3, Section I is rigged with 30 boxes of ammunition and 7 boxes of fuzes weighing 3,713 pounds. The howitzer shown in Section II has the same ammunition load and an 81-millimeter mortar weighing 350 pounds. The howitzers shown in Chapter 4 are rigged with 30 boxes of ammunition, 7 boxes of fuzes, and 1 1/4-ton HMMWV truck. Two M119 howitzers are shown in Chapter 5 rigged with 82 boxes of ammunition on the same platform, as well as a lighter version of this load and a load which includes two 81-millimeter mortars.

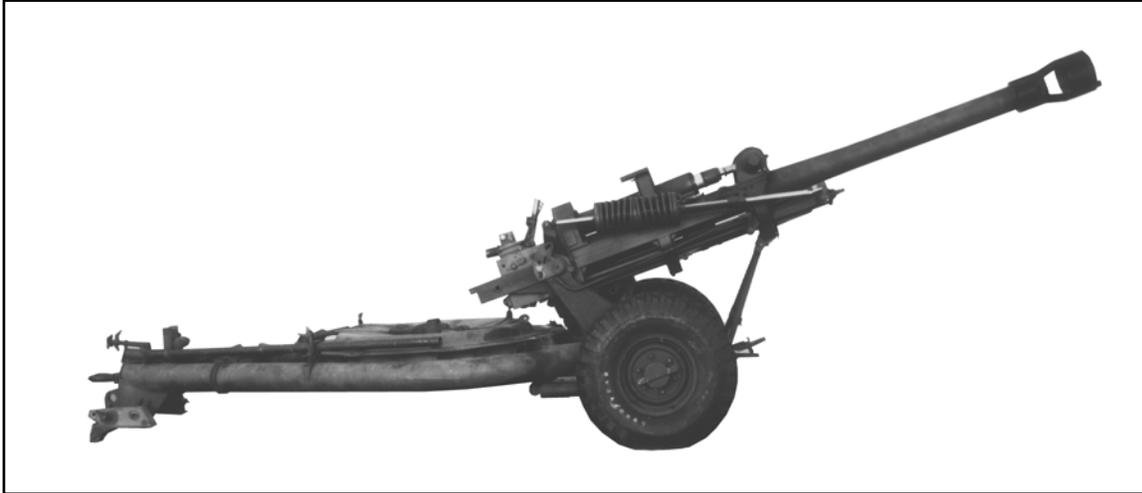


Figure 2. M119, 105-Millimeter Howitzer

- The unrigged M101A1, 105-millimeter howitzer weighs 5,236 pounds. It is 236 inches long, 84 inches wide and 62 inches high. Chapter 6 shows this howitzer rigged with 21 boxes of ammunition weighing 2,100 pounds.

SPECIAL CONSIDERATIONS

Special considerations for this manual are described below.

The loads covered in this manual may include hazardous material as defined in AFMAN 24-204(I)/TM 38-250. If included, the hazardous materials must be packaged, marked, and labeled as required by AFMAN 24-204(I)/TM 38-250.

CAUTION

Only ammunition listed in FM 4-20.153/MCRP 4-11.3B/TO 13C7-18-41 may be airdropped.

A copy of this manual must be available to the joint airdrop inspectors during the before- and after-loading inspections.

Chapter 1

Rigging M102 Howitzer on Type V Platform

SECTION I - RIGGING HOWITZER WITH 17 BOXES OF AMMUNITION FOR LOW-VELOCITY AIRDROP ON TYPE V PLATFORM

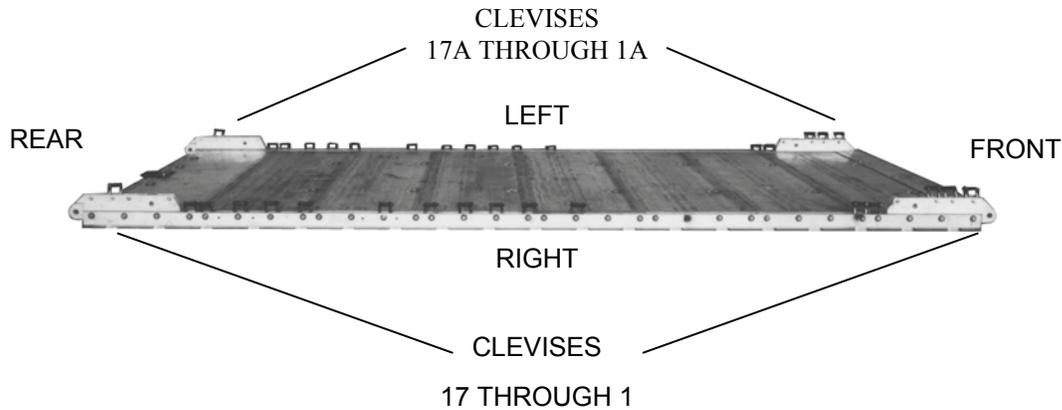
DESCRIPTION OF LOAD

1-1. The M102, 105-millimeter howitzer mounted on an M31 carriage with an M137E1 cannon tube and roll-over protection structure is rigged on a 16-foot, type V airdrop platform. It may be airdropped with an accompanying load. The gun equipment and 17 boxes of ammunition are shown in this section. This load requires two G-11B cargo parachutes.

PREPARING PLATFORM

- 1-2. Prepare a 16-foot, type V airdrop platform as described below.
- **Inspecting platform.** Inspect, or assemble and inspect, the platform according to TM 10-1670-268-20&P/TO 13C7-52-22.
 - **Installing tandem links.** Install tandem links to the front and rear of each rail as shown in Figure 1-1.
 - **Installing and numbering clevises.** Bolt and number 34 clevis assemblies as shown in Figure 1-1.

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



Steps:

1. Install a tandem link on the front of each platform side rail using holes 1, 2, and 3.
2. Install cleaves on bushings 1, 2, and 3 on each front tandem link.
3. Install a tandem link on the rear of each platform side rail using holes 30, 31, and 32.
4. Install a clevis on bushing 3 on each rear tandem link.
5. Starting at the front of each platform side rail, install cleaves on each platform side rail using the bushings bolted on holes 4, 5, 15, 17, 18, 19, 20, 22, 25, 26, 27, 28, and 29.
6. Starting at the front of the platform, number the cleaves bolted to the right side from 1 through 17 and those bolted to the left side from 1A through 17A.
7. Label the tie-down rings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

Figure 1-1. Platform Prepared

BUILDING AND PLACING HONEYCOMB STACKS

1-3. Build the honeycomb stacks as shown in Figure 1-2. Place the stacks on the platform as shown in Figure 1-3.

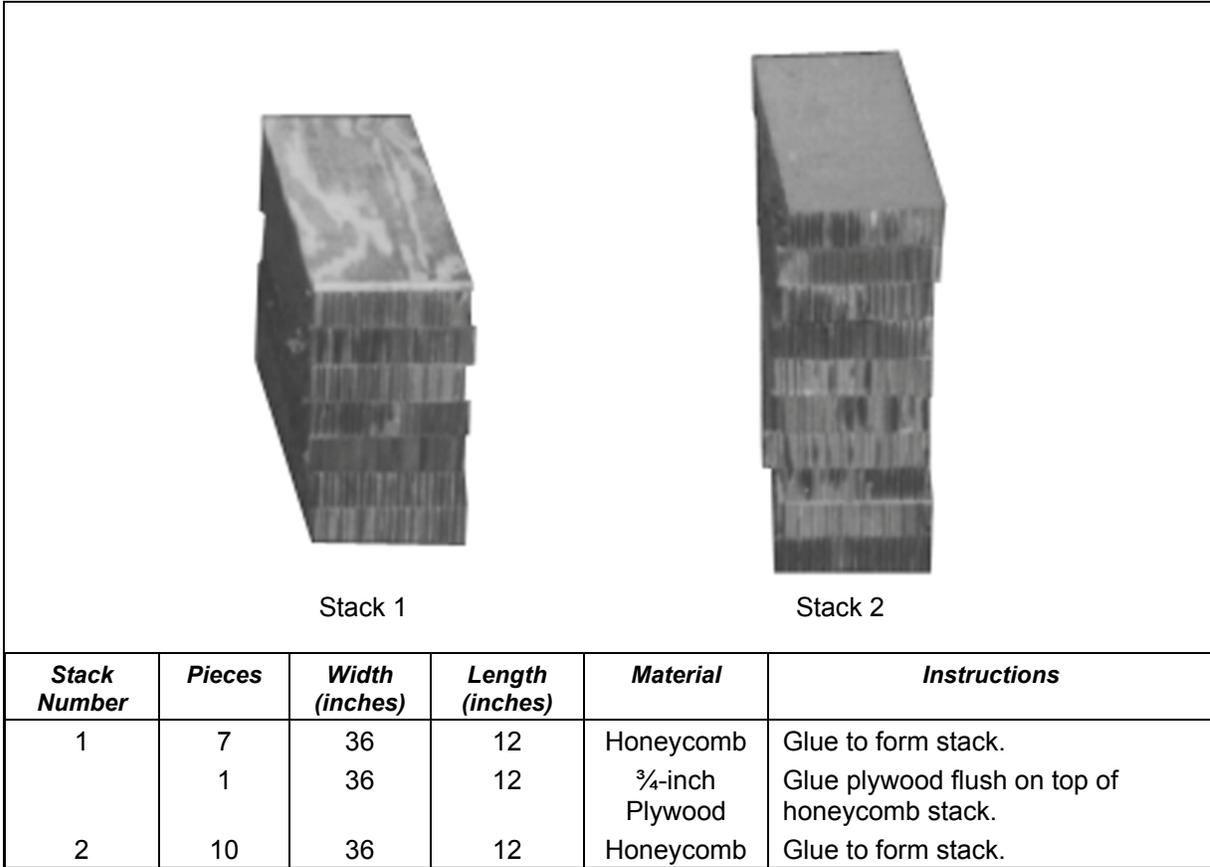


Figure 1-2. Honeycomb Stacks 1 Through 4 Prepared

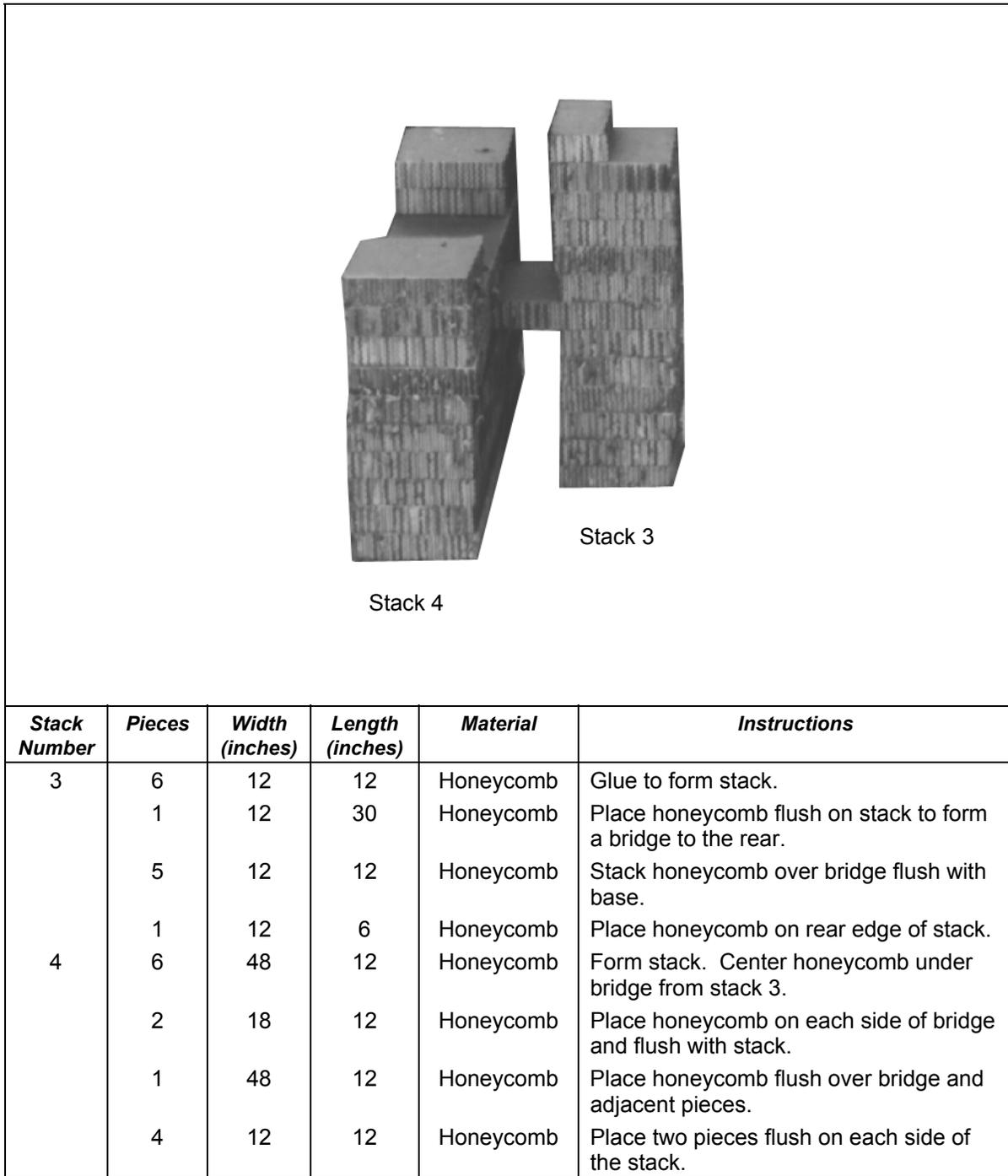
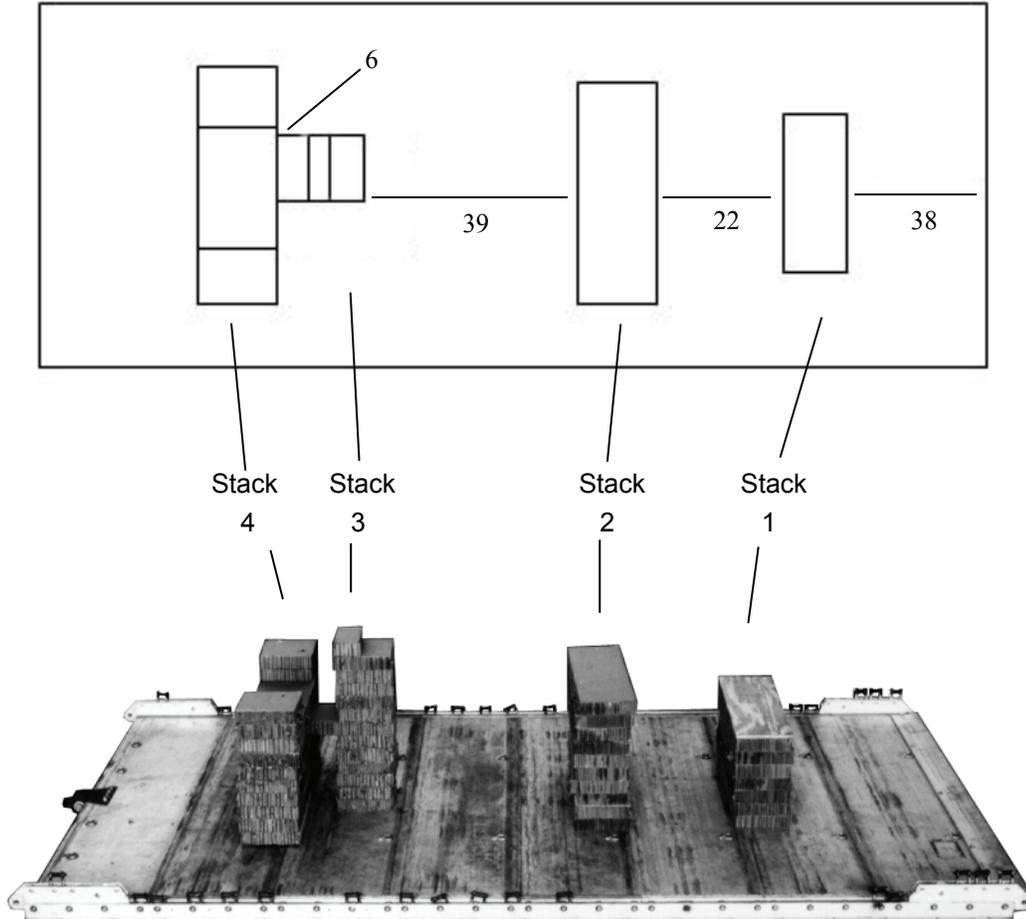


Figure 1-2. Honeycomb Stacks 1 Through 4 Prepared (Continued)

- Notes.** 1. All measurements are given in inches.
 2. This drawing is not drawn to scale.



Stack Number	Position of Stack on Platform
	Place stack:
1	Centered 38 inches from front edge of platform.
2	Centered 22 inches from stack 1.
3	Centered 39 inches from stack 2.
4	Centered 6 inches from stack 3.

Figure 1-3. Honeycomb Stacks Placed on Platform

STOWING ACCOMPANYING LOAD

CAUTION

Only ammunition listed in FM 4-20.153/MCRP 4-11.3B/TO 13C7-18-41 may be airdropped.

1-4. Stow the accompanying load of 17 boxes of ammunition weighing 2,040 pounds as shown in Figures 1-4 through 1-8. Make sure the accompanying load meets the restrictions and requirements as outlined in FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. When hazardous materials are rigged as part of the load, they must be packaged, marked and labeled according to AFMAN 24-204(I)/TM 38-250.

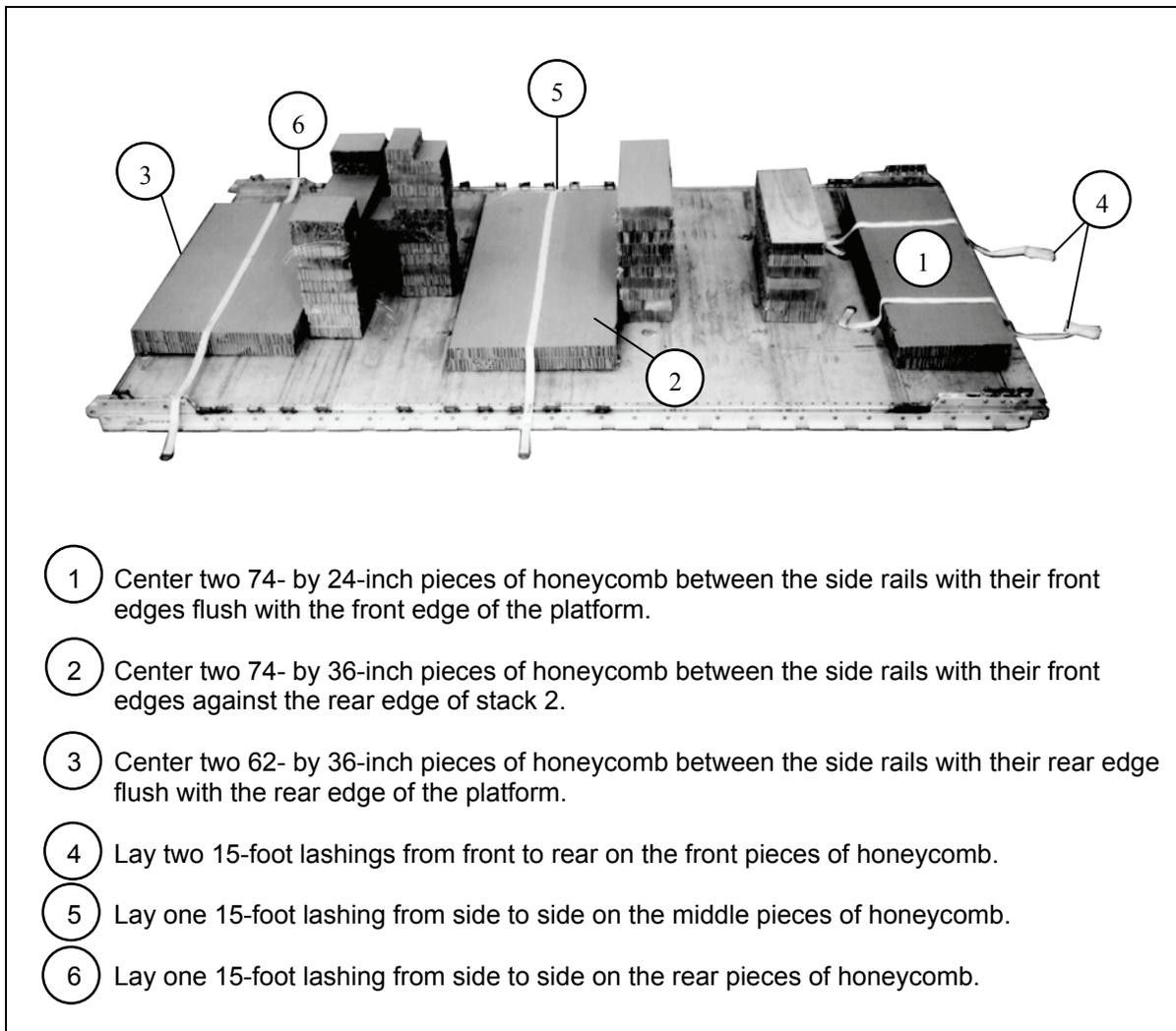
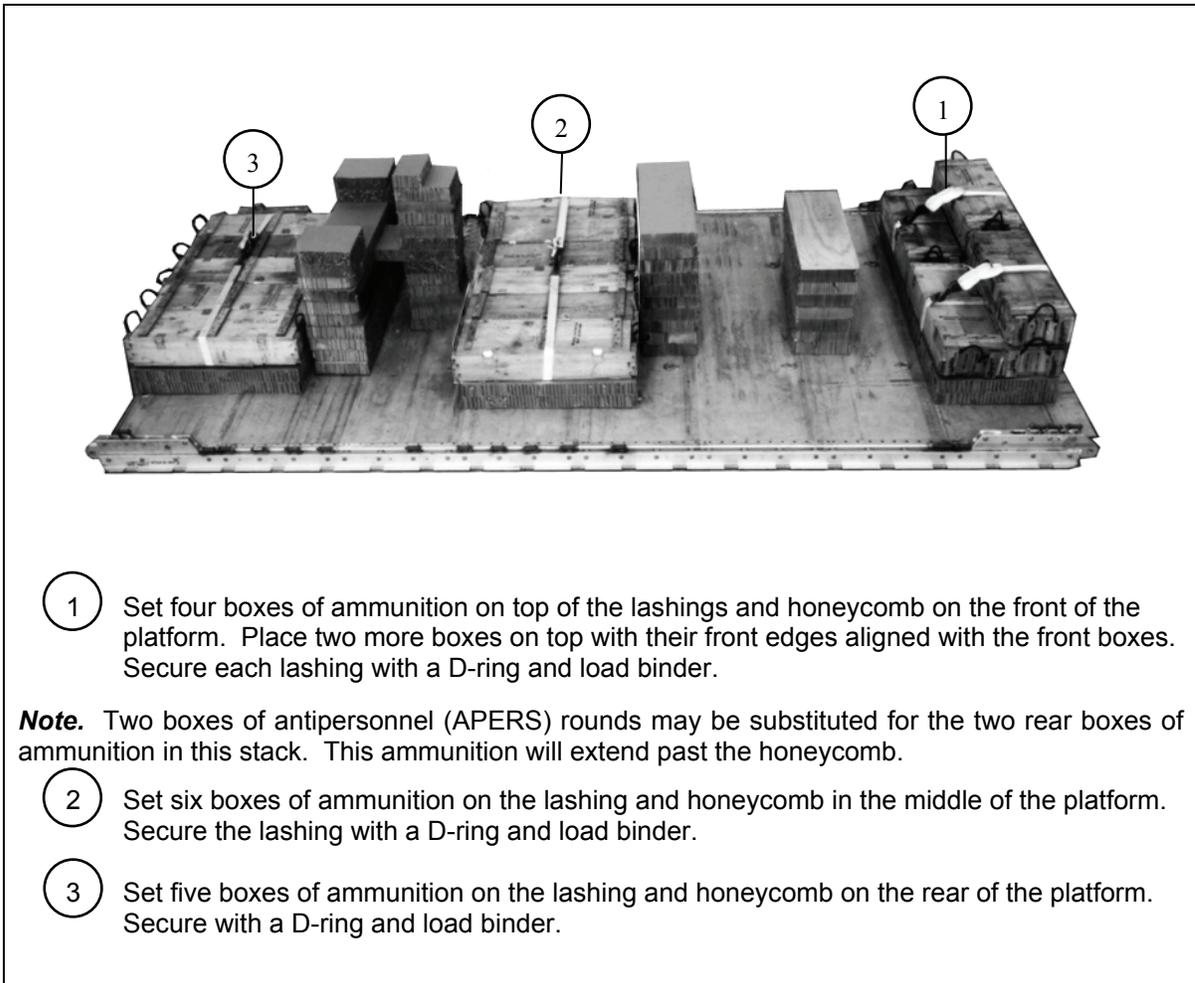


Figure 1-4. Honeycomb and Lashings Placed on Platform

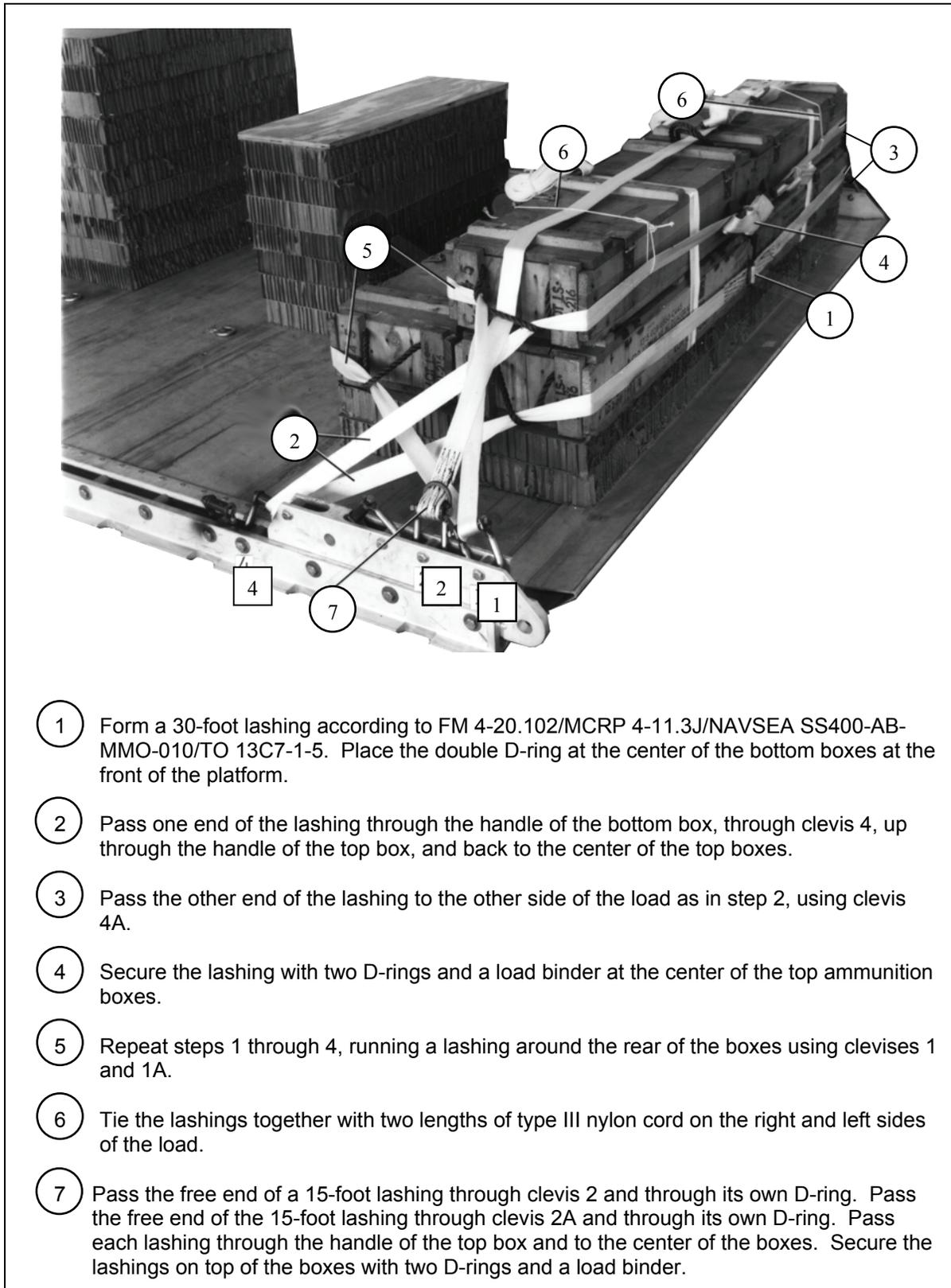


- 1 Set four boxes of ammunition on top of the lashings and honeycomb on the front of the platform. Place two more boxes on top with their front edges aligned with the front boxes. Secure each lashing with a D-ring and load binder.

Note. Two boxes of antipersonnel (APERS) rounds may be substituted for the two rear boxes of ammunition in this stack. This ammunition will extend past the honeycomb.

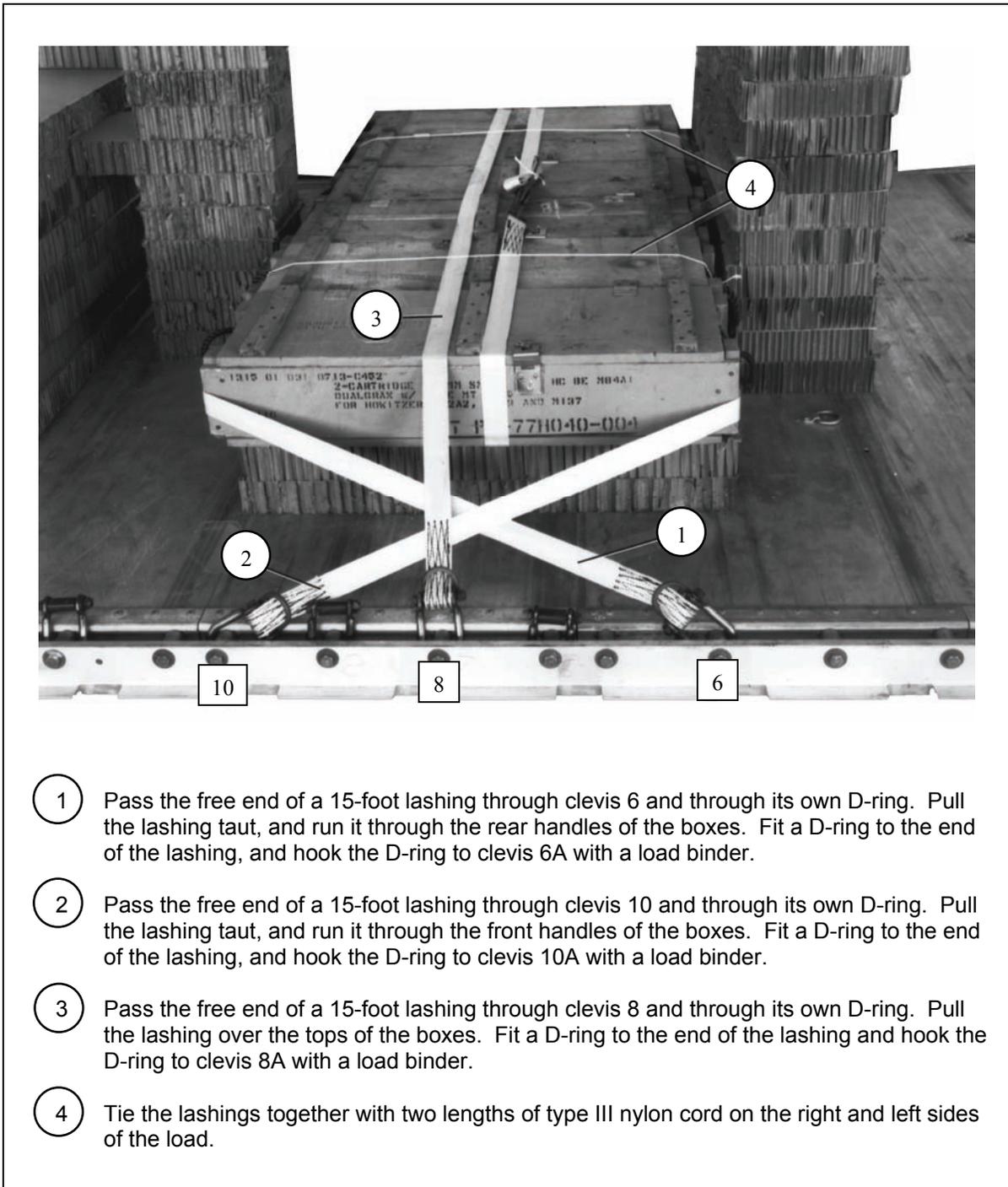
- 2 Set six boxes of ammunition on the lashing and honeycomb in the middle of the platform. Secure the lashing with a D-ring and load binder.
- 3 Set five boxes of ammunition on the lashing and honeycomb on the rear of the platform. Secure with a D-ring and load binder.

Figure 1-5. Boxes of Ammunition Secured



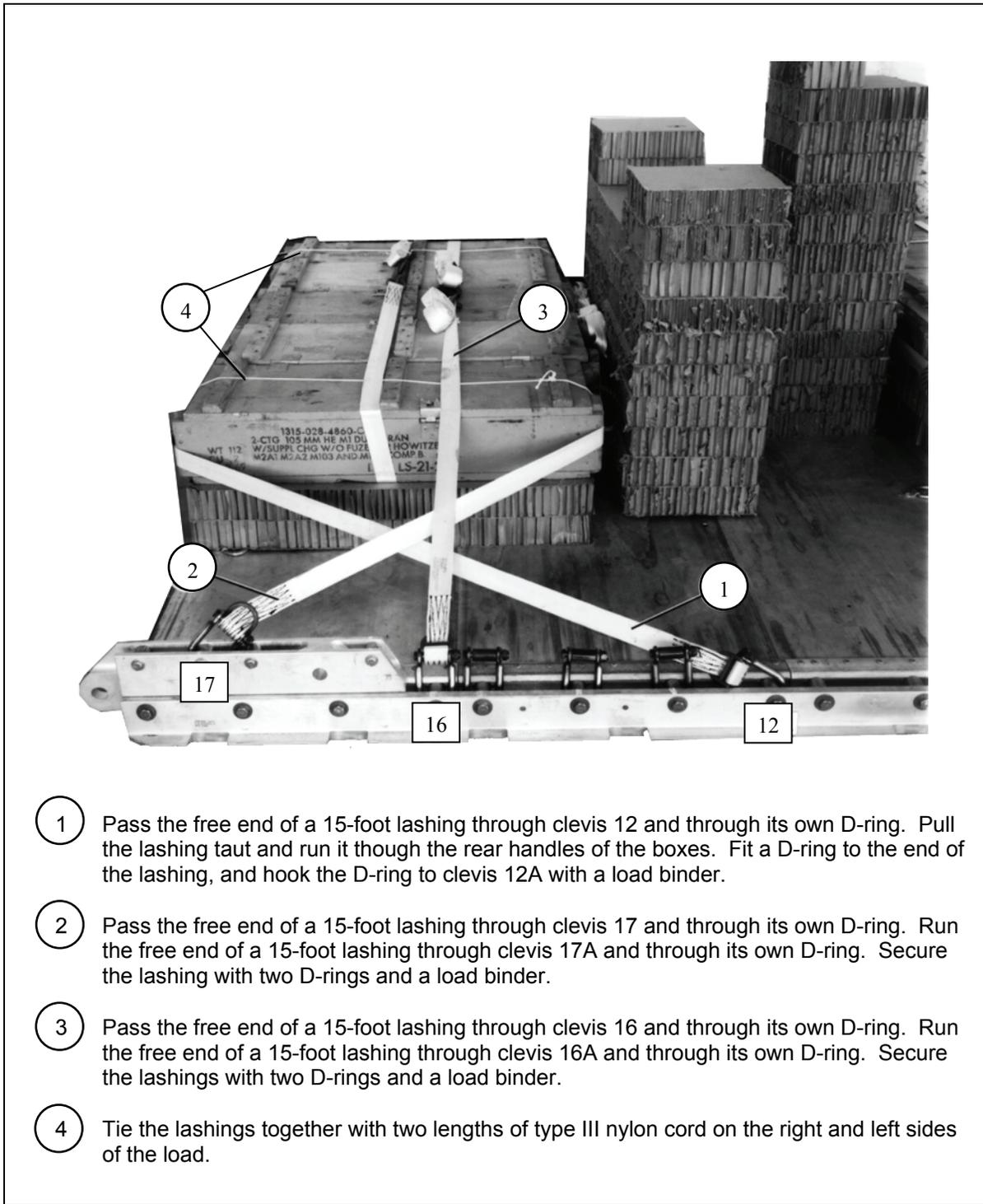
- 1 Form a 30-foot lashing according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Place the double D-ring at the center of the bottom boxes at the front of the platform.
- 2 Pass one end of the lashing through the handle of the bottom box, through clevis 4, up through the handle of the top box, and back to the center of the top boxes.
- 3 Pass the other end of the lashing to the other side of the load as in step 2, using clevis 4A.
- 4 Secure the lashing with two D-rings and a load binder at the center of the top ammunition boxes.
- 5 Repeat steps 1 through 4, running a lashing around the rear of the boxes using clevises 1 and 1A.
- 6 Tie the lashings together with two lengths of type III nylon cord on the right and left sides of the load.
- 7 Pass the free end of a 15-foot lashing through clevis 2 and through its own D-ring. Pass the free end of the 15-foot lashing through clevis 2A and through its own D-ring. Pass each lashing through the handle of the top box and to the center of the boxes. Secure the lashings on top of the boxes with two D-rings and a load binder.

Figure 1-6. Boxes of Ammunition Lashed on Front of Platform



- ① Pass the free end of a 15-foot lashing through clevis 6 and through its own D-ring. Pull the lashing taut, and run it through the rear handles of the boxes. Fit a D-ring to the end of the lashing, and hook the D-ring to clevis 6A with a load binder.
- ② Pass the free end of a 15-foot lashing through clevis 10 and through its own D-ring. Pull the lashing taut, and run it through the front handles of the boxes. Fit a D-ring to the end of the lashing, and hook the D-ring to clevis 10A with a load binder.
- ③ Pass the free end of a 15-foot lashing through clevis 8 and through its own D-ring. Pull the lashing over the tops of the boxes. Fit a D-ring to the end of the lashing and hook the D-ring to clevis 8A with a load binder.
- ④ Tie the lashings together with two lengths of type III nylon cord on the right and left sides of the load.

Figure 1-7. Boxes of Ammunition Lashed to Middle of Platform



- 1 Pass the free end of a 15-foot lashing through clevis 12 and through its own D-ring. Pull the lashing taut and run it through the rear handles of the boxes. Fit a D-ring to the end of the lashing, and hook the D-ring to clevis 12A with a load binder.
- 2 Pass the free end of a 15-foot lashing through clevis 17 and through its own D-ring. Run the free end of a 15-foot lashing through clevis 17A and through its own D-ring. Secure the lashing with two D-rings and a load binder.
- 3 Pass the free end of a 15-foot lashing through clevis 16 and through its own D-ring. Run the free end of a 15-foot lashing through clevis 16A and through its own D-ring. Secure the lashings with two D-rings and a load binder.
- 4 Tie the lashings together with two lengths of type III nylon cord on the right and left sides of the load.

Figure 1-8. Boxes of Ammunition Lashed to Rear of Platform

PREPARING HOWITZER AND EQUIPMENT

1-5. Prepare the howitzer as shown in Figures 1-9 and 1-10 and as described below. Construct the collimator box as shown in Figure 1-11.

- **Stowing Equipment.** Place the section tools and base plate anchoring stakes in the section chest.
- **Securing Rammer Staff.** Secure the rammer staff assembly on the left side of the trails with its own securing strap. Safety it with type III nylon cord.

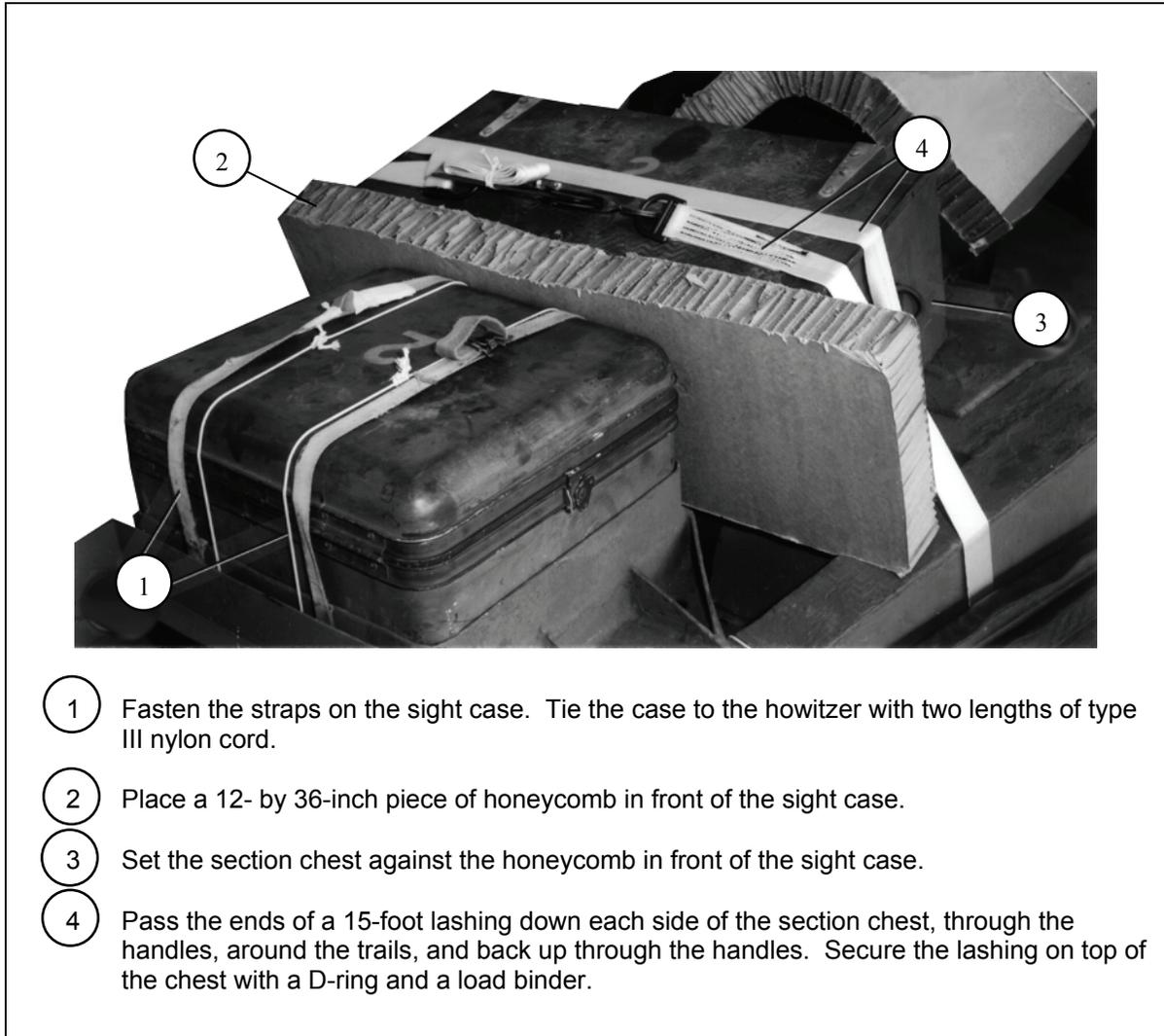
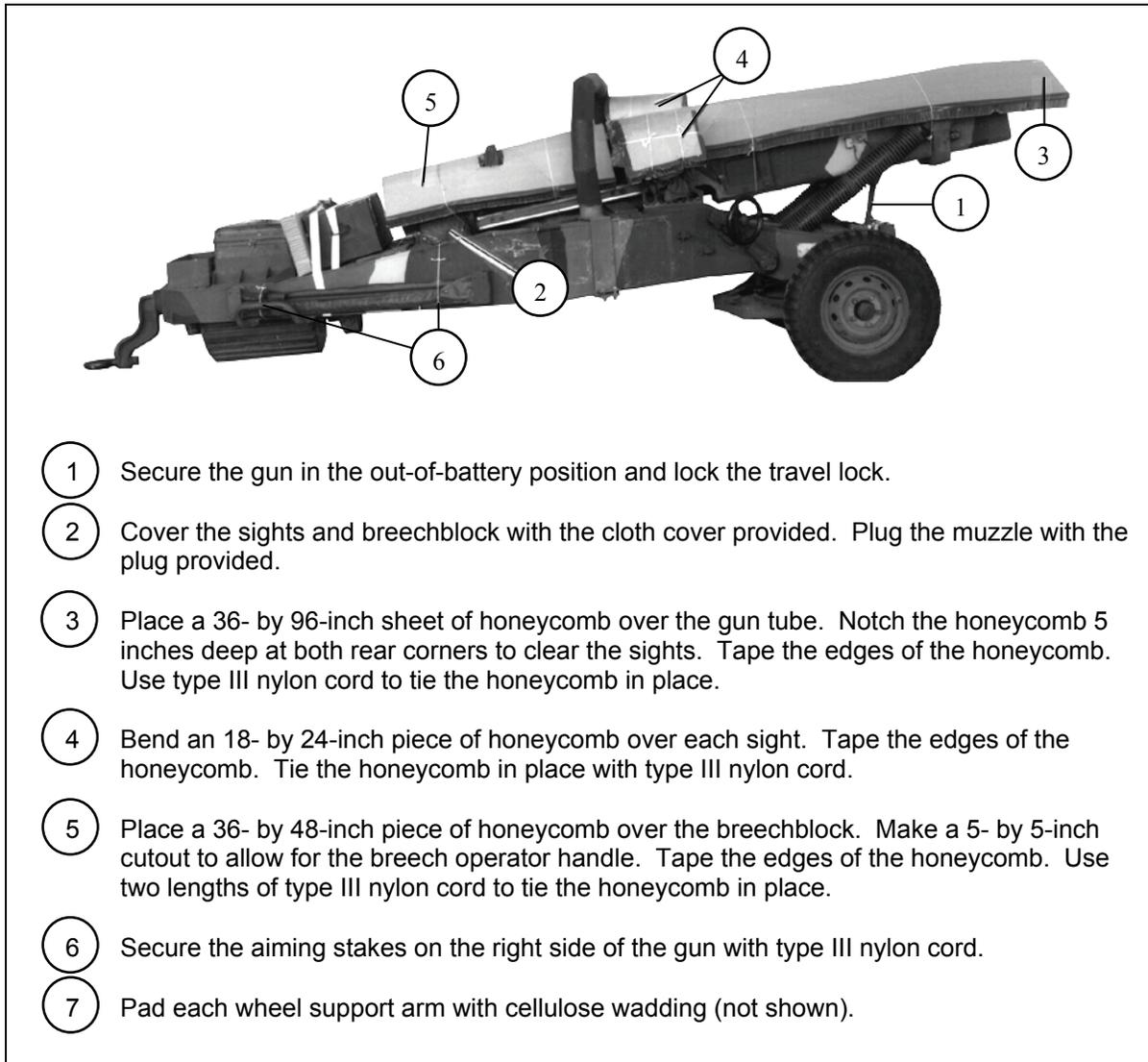


Figure 1-9. Sight Case and Section Chest Secured



- 1 Secure the gun in the out-of-battery position and lock the travel lock.
- 2 Cover the sights and breechblock with the cloth cover provided. Plug the muzzle with the plug provided.
- 3 Place a 36- by 96-inch sheet of honeycomb over the gun tube. Notch the honeycomb 5 inches deep at both rear corners to clear the sights. Tape the edges of the honeycomb. Use type III nylon cord to tie the honeycomb in place.
- 4 Bend an 18- by 24-inch piece of honeycomb over each sight. Tape the edges of the honeycomb. Tie the honeycomb in place with type III nylon cord.
- 5 Place a 36- by 48-inch piece of honeycomb over the breechblock. Make a 5- by 5-inch cutout to allow for the breech operator handle. Tape the edges of the honeycomb. Use two lengths of type III nylon cord to tie the honeycomb in place.
- 6 Secure the aiming stakes on the right side of the gun with type III nylon cord.
- 7 Pad each wheel support arm with cellulose wadding (not shown).

Figure 1-10. Howitzer Prepared

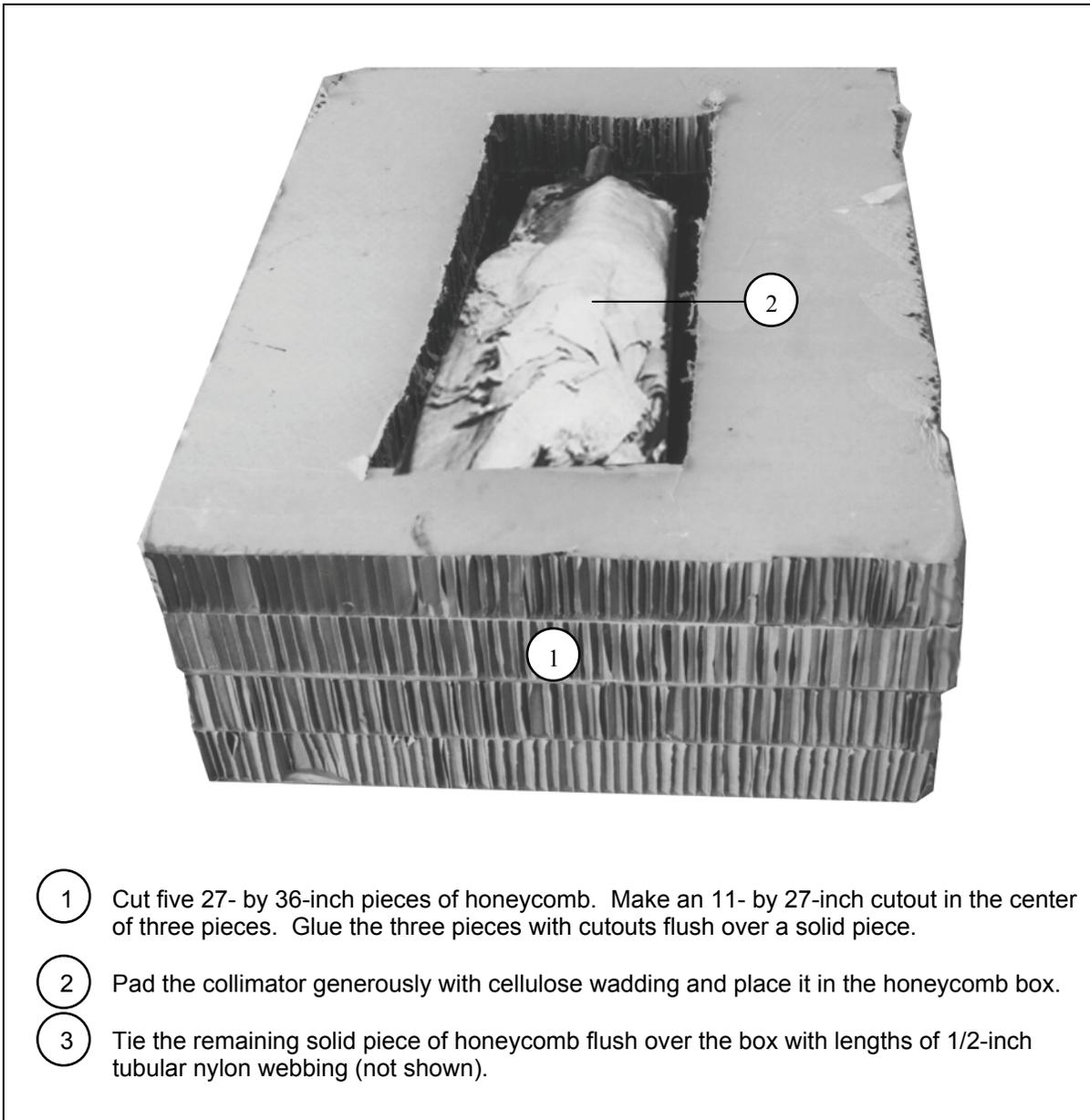


Figure 1-11. Collimator Box Constructed

COVERING LOAD

1-6. Cover the load as shown in Figure 1-12.

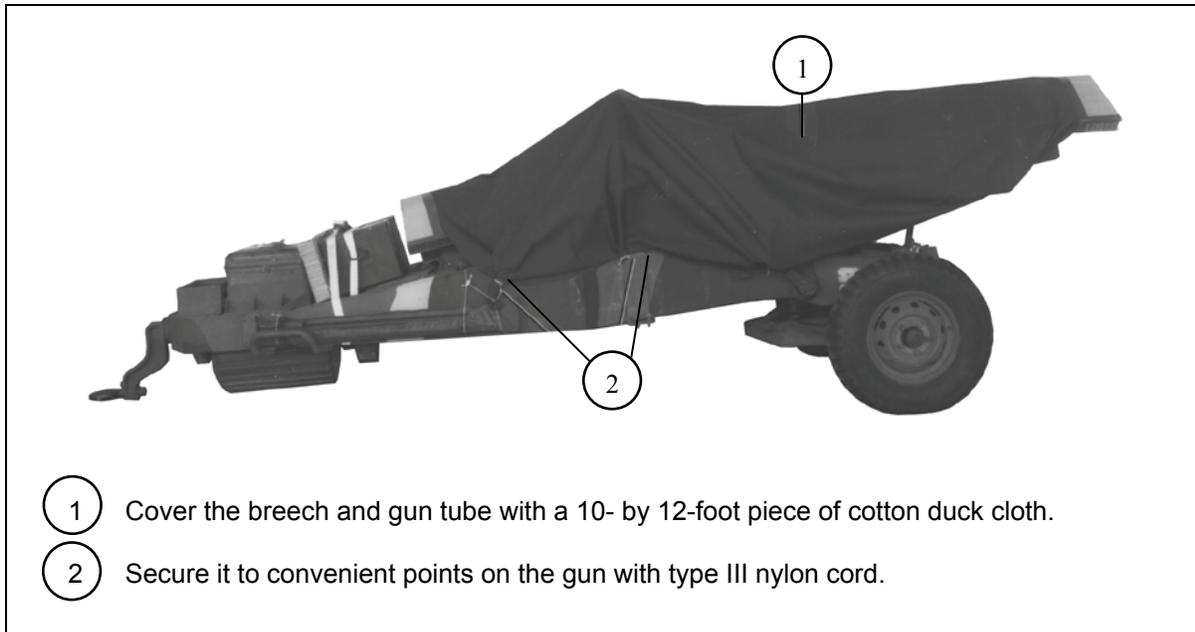


Figure 1-12. Load Covered

STOWING COLLIMATOR BOX AND POSITIONING HOWITZER ON PLATFORM

- 1-7. Stow the collimator box on the load and position the howitzer on the platform as shown in Figure 1-13.

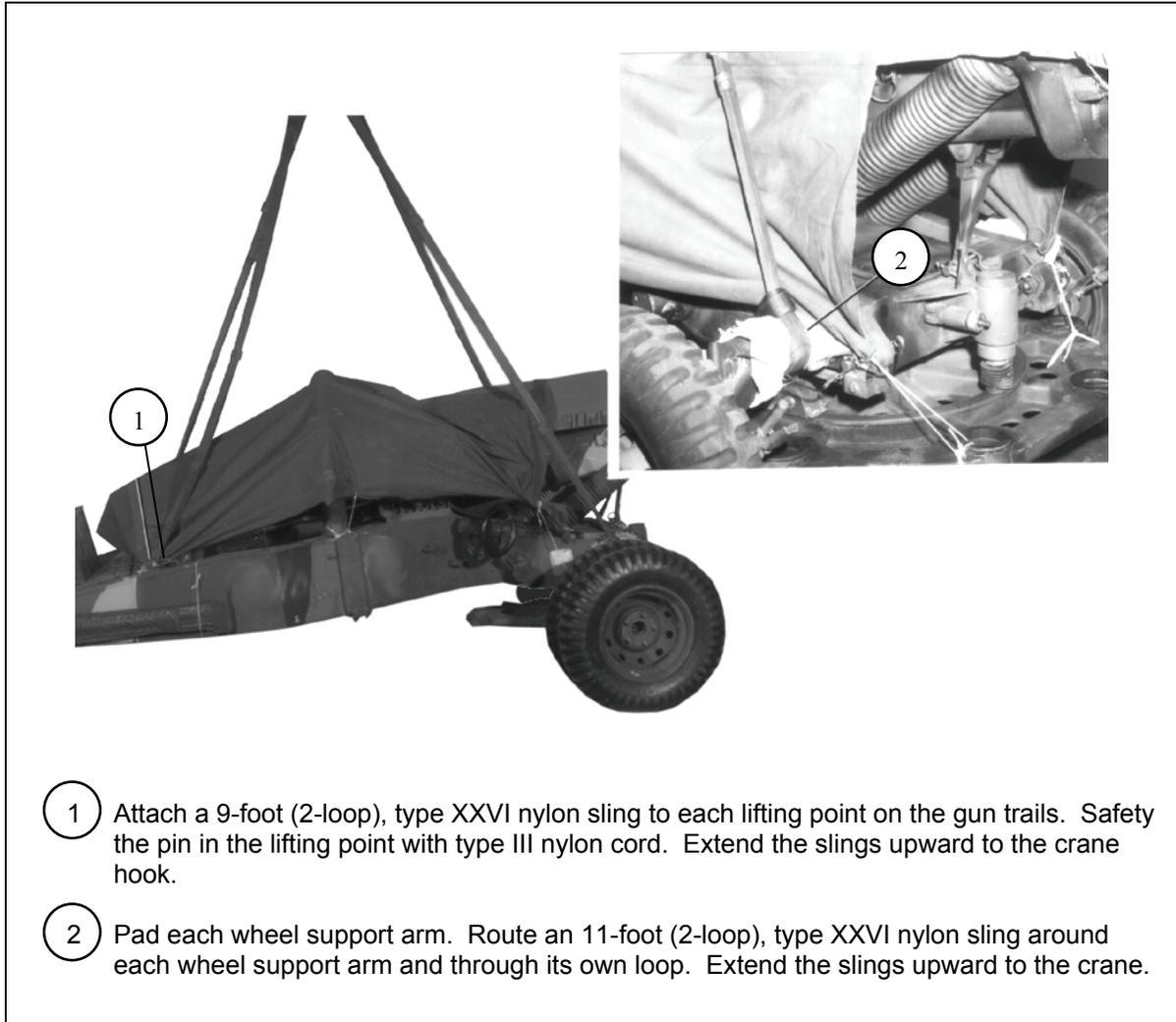
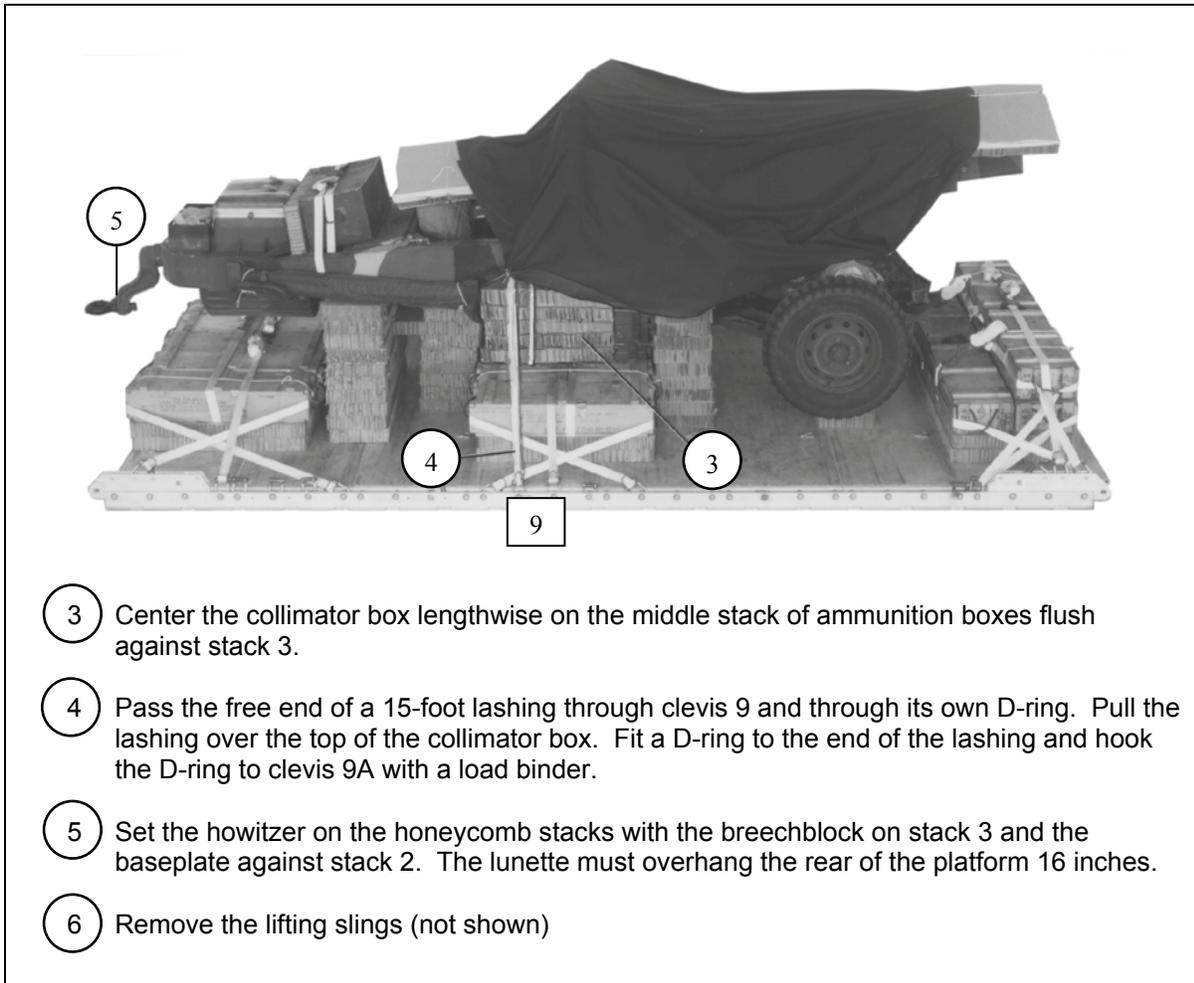


Figure 1-13. Collimator Box Stowed and Howitzer Positioned on Platform

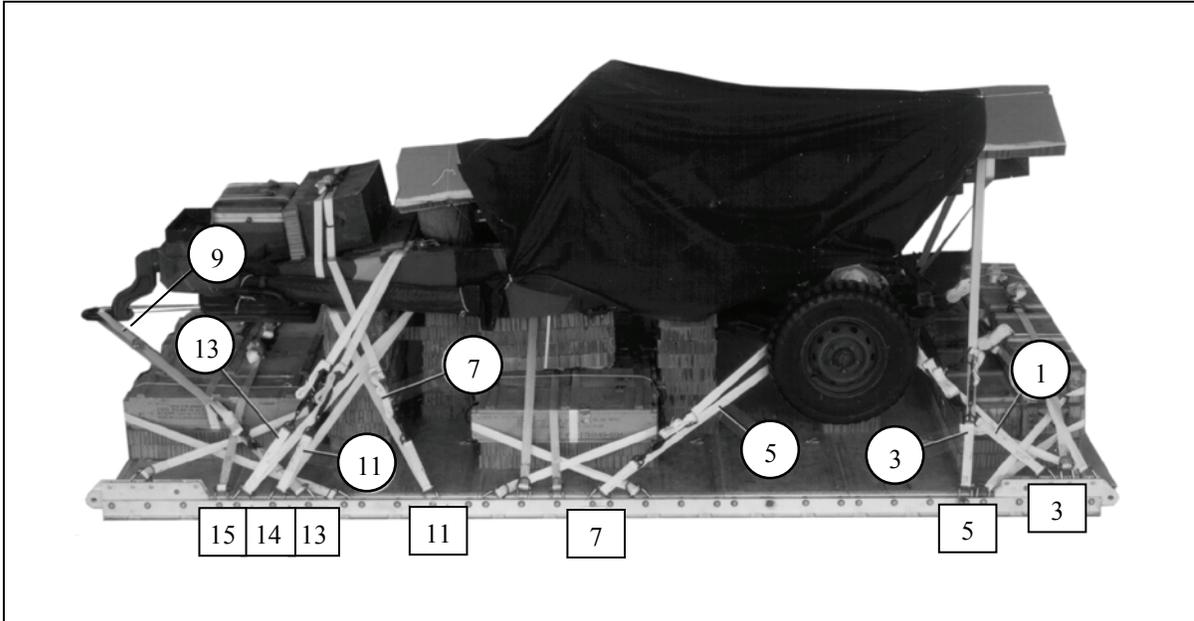


- 3 Center the collimator box lengthwise on the middle stack of ammunition boxes flush against stack 3.
- 4 Pass the free end of a 15-foot lashing through clevis 9 and through its own D-ring. Pull the lashing over the top of the collimator box. Fit a D-ring to the end of the lashing and hook the D-ring to clevis 9A with a load binder.
- 5 Set the howitzer on the honeycomb stacks with the breechblock on stack 3 and the baseplate against stack 2. The lunette must overhang the rear of the platform 16 inches.
- 6 Remove the lifting slings (not shown)

Figure 1-13. Collimator Box Stowed and Howitzer Positioned on Platform (Continued)

LASHING HOWITZER

1-8. Lash the howitzer to the platform with fourteen 15-foot lashings as shown in Figure 1-14. Install and safety the lashings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.



<i>Lashing Number</i>	<i>Tiedown Clevis Number</i>	<i>Instructions</i>
		Pass lashing:
1	3	Around right wheel support arm.
2	3A	Around left wheel support arm.
3	5	Under recoil rail assembly and around tube.
4	5A	Under recoil rail assembly and around tube.
5	7	Around right wheel support arm.
6	7A	Around left wheel support arm.
7	11	Around right trail.
8	11A	Around left trail.
9	13	Through lunette.
10	13A	Through lunette.
11	14	Around right trail.
12	14A	Around left trail.
13	15	Around right trail.
14	15A	Around left trail.

Figure 1-14. Lashings Installed

INSTALLING SUSPENSION SLINGS AND SAFETY TIE

1-9. Install the suspension slings and safety (deadman's) tie according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-15.

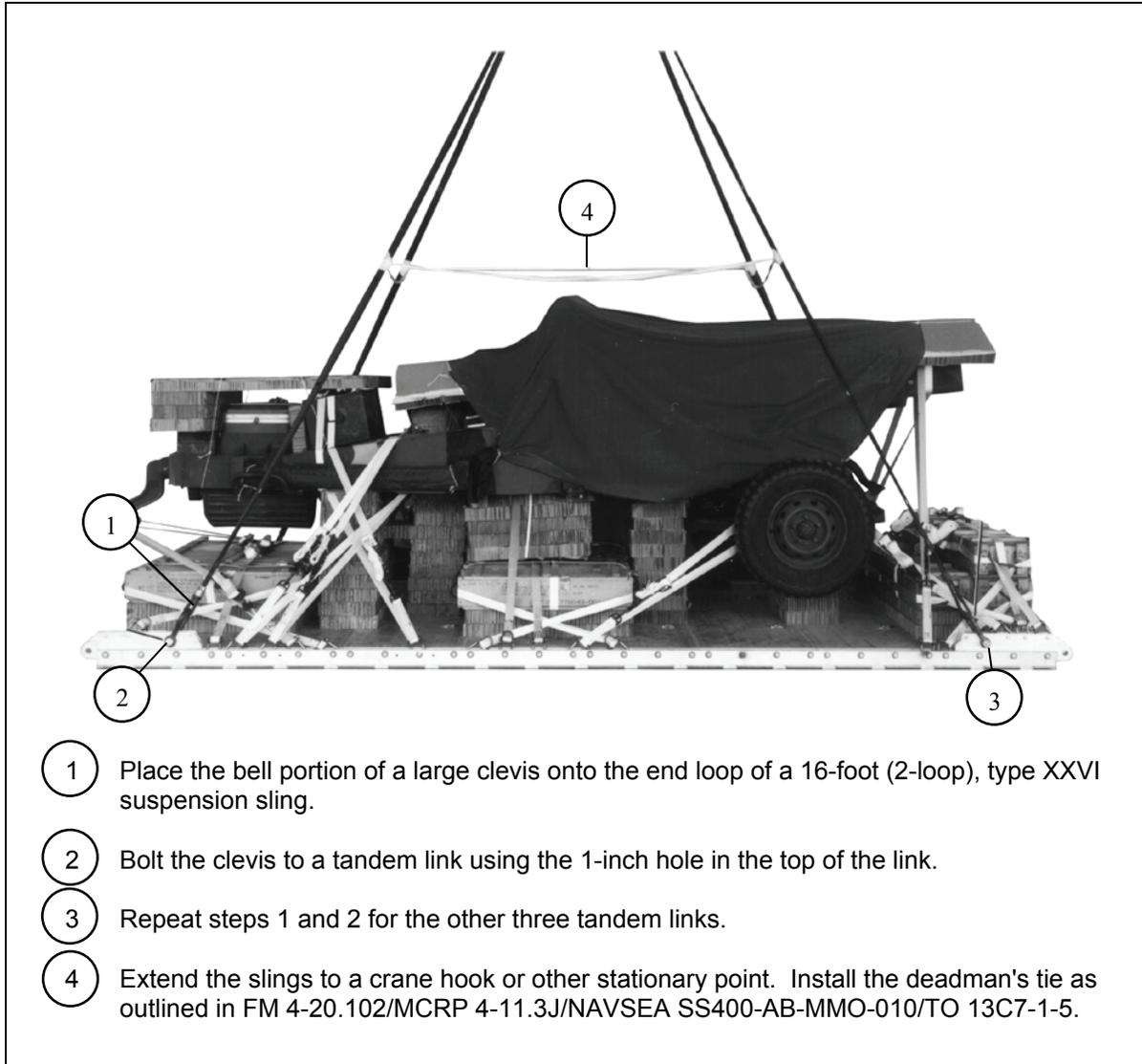
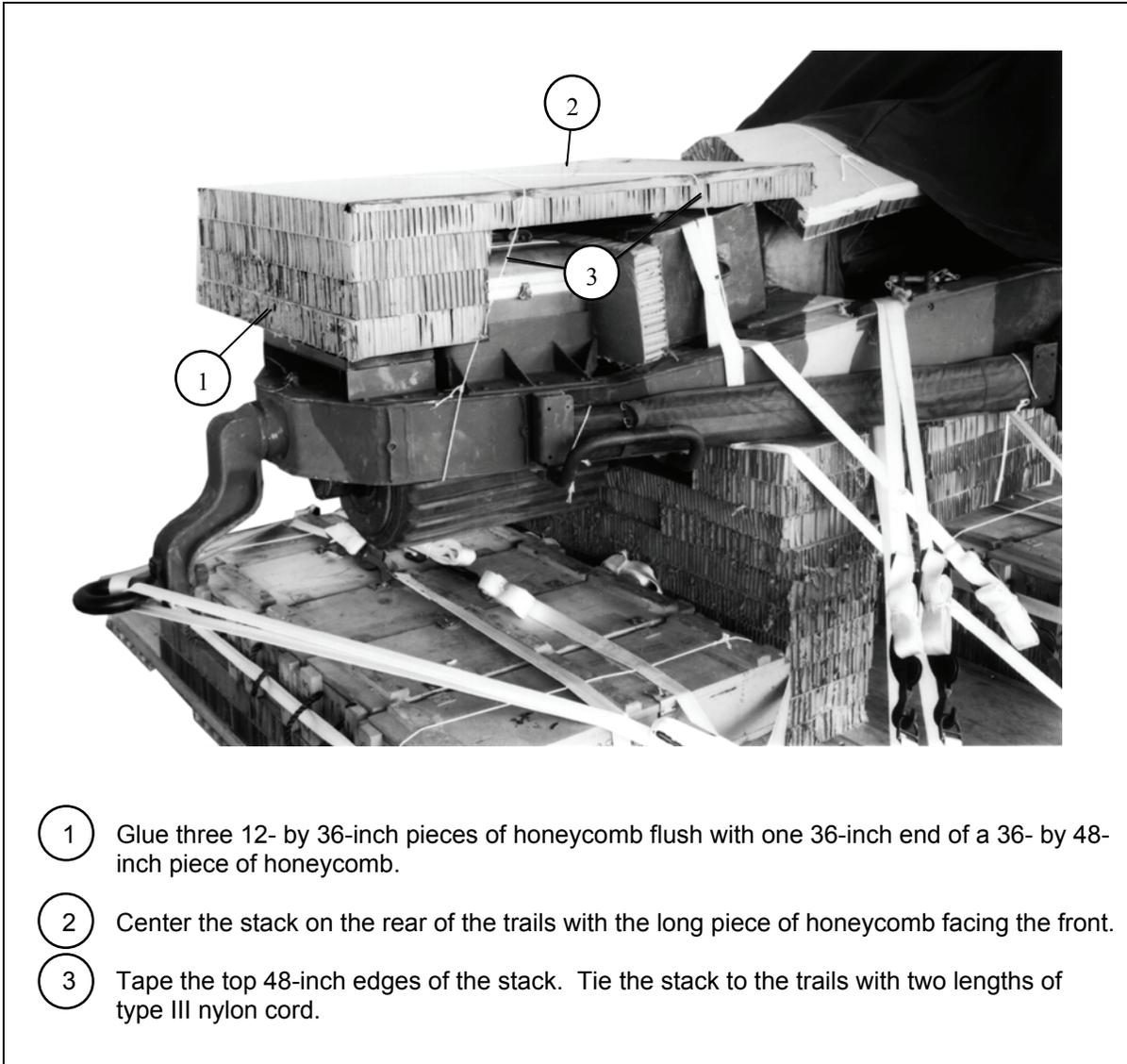


Figure 1-15. Suspension Slings and Deadman's Tie Installed

PREPARING STOWAGE PLATFORM AND STOWING CARGO PARACHUTES

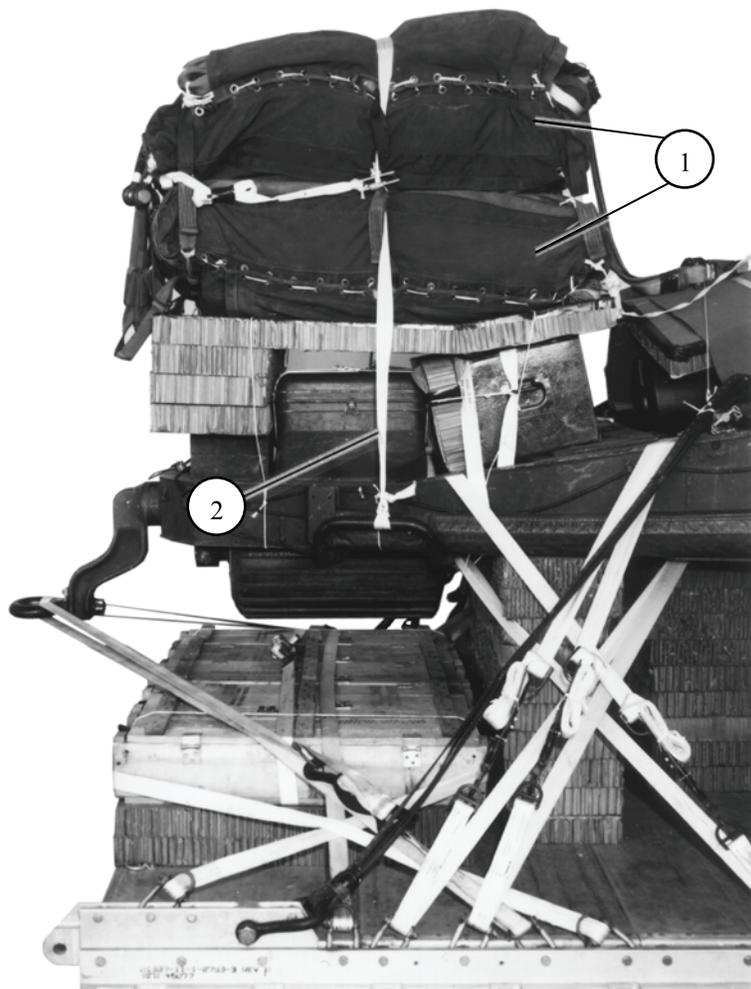
1-10. Prepare the stowage platform and stow the cargo parachutes as described below.

- **Preparing Stowage Platform.** Prepare the cargo parachute stowage platform as shown in Figure 1-16.
- **Stowing Parachutes.** Prepare and stow two G-11 cargo parachutes according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-17.



- 1 Glue three 12- by 36-inch pieces of honeycomb flush with one 36- by 48-inch piece of honeycomb.
- 2 Center the stack on the rear of the trails with the long piece of honeycomb facing the front.
- 3 Tape the top 48-inch edges of the stack. Tie the stack to the trails with two lengths of type III nylon cord.

Figure 1-16. Stowage Platform Prepared and Stowed



- 1 Stack two G-11 cargo parachutes on the stowage platform. Install them on the load according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
- 2 Tie the restraint strap to the lifting handles on the trails.

Figure 1-17. Cargo Parachutes Stowed

INSTALLING EXTRACTION SYSTEM

1-11. Install the components of the extraction force transfer coupling (EFTC) system according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-18. If applicable install the extraction parachute jettison system (EPJS) according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

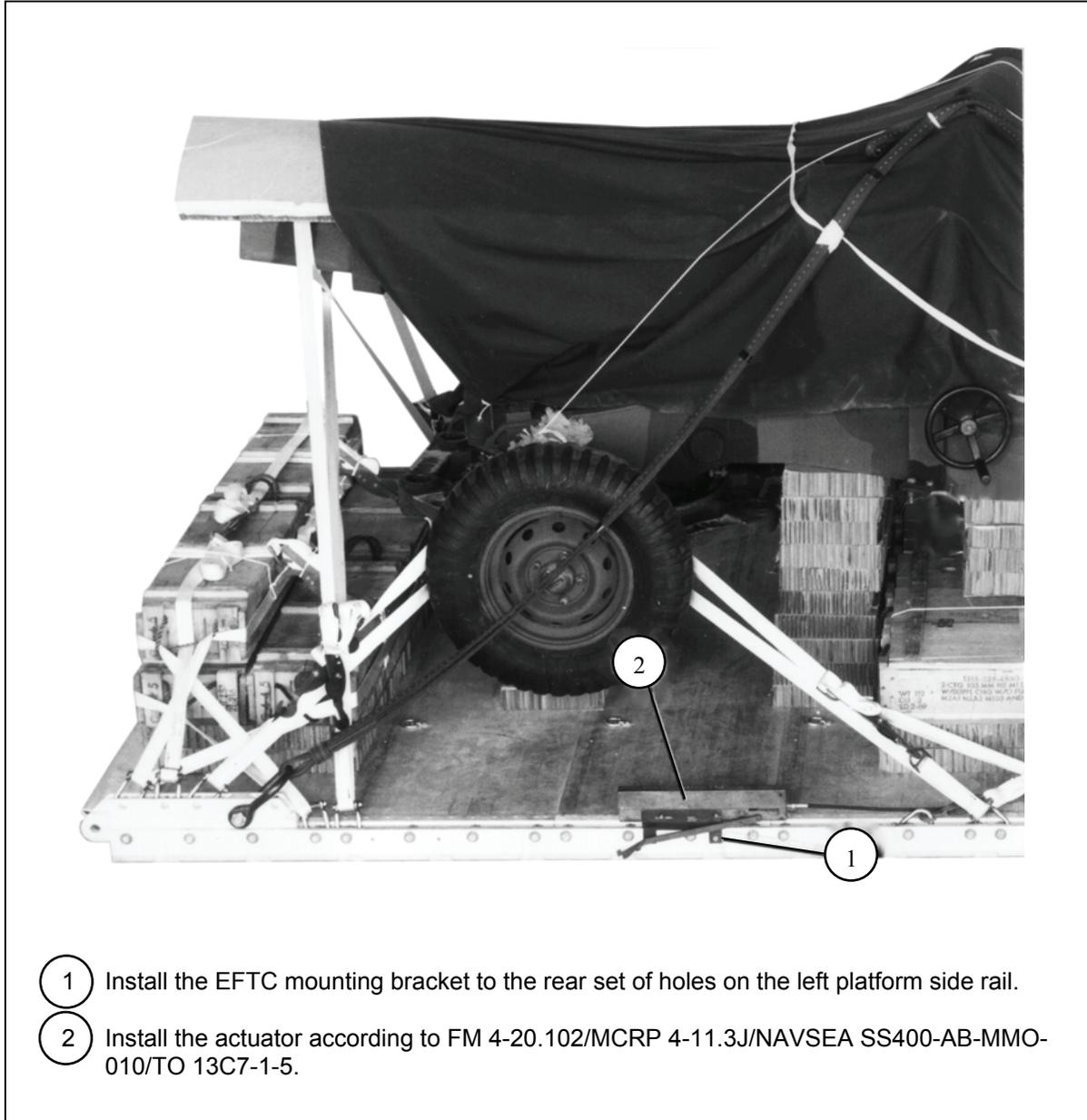


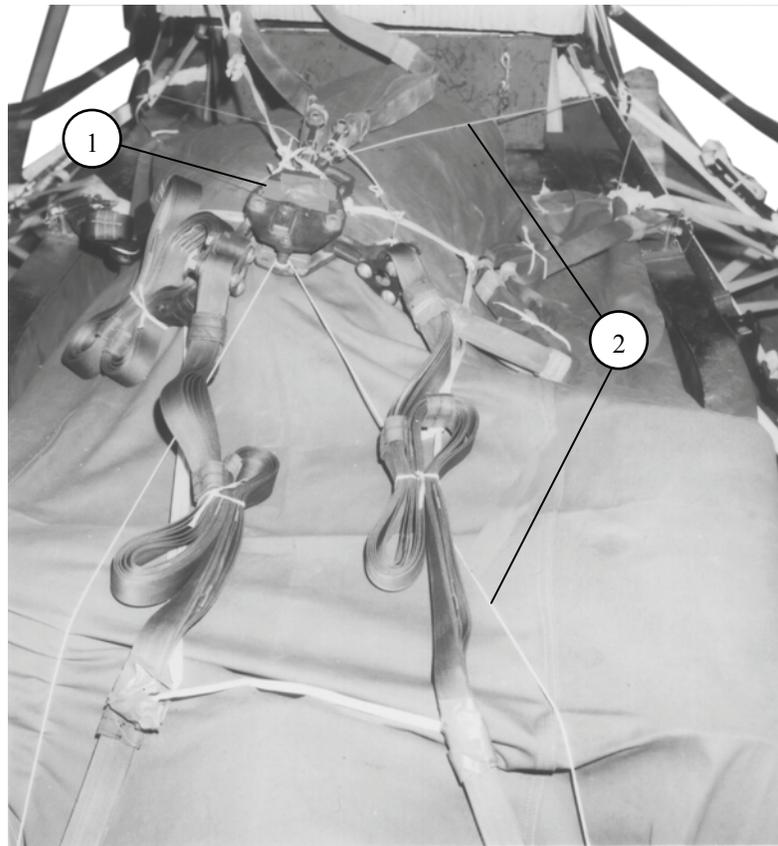
Figure 1-18. EFTC Installed

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

1-12. Install provisions for emergency restraints on the front of the platform according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

INSTALLING RELEASE SYSTEM

1-13. Prepare and install an M-1 cargo parachute release according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-19.



- 1 Prepare and install an M-1 cargo parachute release as described in FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Set the release on the load cover directly above the breechblock.
- 2 Tie the release to convenient points on the load with two lengths of type III nylon cord.

Figure 1-19. M-1 Release Installed

PLACING EXTRACTION PARACHUTE

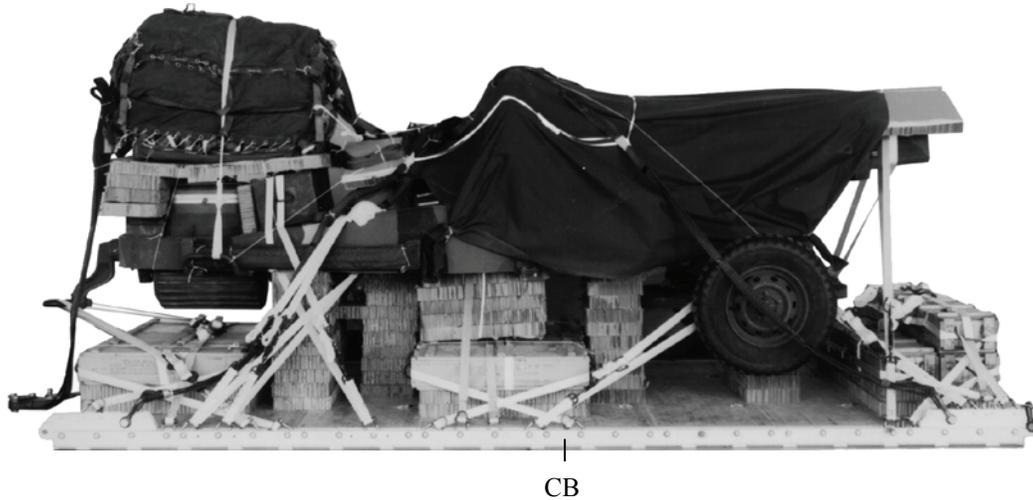
1-14. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Rig the extraction line in an extraction line bag according to TM 10-1670-286-20/TO13C5-2-41. Place the extraction parachute and extraction line on the load for installation in the aircraft.

MARKING RIGGED LOAD

1-15. Mark the rigged load as described in FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-20. If the accompanying load varies from the one shown, the weight, height, center of balance (CB), and parachute requirements must be recomputed.

CAUTION

Make the final rigger inspection required by FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Weight: Load shown.....	8,060 pounds
Maximum load allowed.....	9,000 pounds
Height	90 1/2 inches
Width	108 inches
Overall Length.....	210 inches
Overhang: Front	0 inches
Rear (EFTC).....	18 inches
Rear (EPJS).....	30 inches
Center of Balance (from front edge of platform)	98 inches

Figure 1-20. M102 Howitzer Rigged for Low-Velocity Airdrop on a Type V Platform

EQUIPMENT REQUIRED

1-16. Use the equipment listed in Table 1-1 to rig this load. The equipment required for rigging the accompanying load is also included.

Table 1-1. Equipment Required for Rigging the M102 Howitzer for Low-Velocity Airdrop on Type V Platform

<i>National Stock Number</i>	<i>Item</i>	<i>Quantity</i>
8040-00-273-8713	Adhesive, paste, 1-gallon	As required
	Clevis, suspension:	
4030-00-678-8562	3/4-inch (medium) emergency restraint	4
4030-00-090-5354	1-inch (large)	6
8305-00-184-2034	Cloth, cotton duck, 60-inch	8 yards
4020-00-246-0688	Cord, nylon, type III	As required
1670-00-434-5785	Coupling, airdrop, extraction force transfer with 16-foot cable	1
1670-00-360-0328	Cover, clevis, large	2
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
1670-01-183-2678	Leaf, extraction line	2
1670-01-064-4452	Line, drogue, 60-foot (1-loop)	1
	Line, extraction, type XXVI nylon webbing:	
1670-01-062-6313	60-foot (3-loop)	1
	Or	
1670-01-107-7651	140-foot (3-loop)	2
1670-01-493-6420	Link assembly, two-point, 5 1/2-inch	1
1670-00-753-3928	Pad, energy-dissipating, honeycomb	10 sheets
	Parachute:	
1670-01-016-7841	Cargo, G-11	2
1670-01-063-3716	Cargo, extraction, 22-foot	1
1670-01-063-3715	Drogue, 15-foot	1
	Platform, airdrop, type V, 16-foot	
1670-01-353-8425	Bracket assembly, coupling	1
1670-01-353-8424	Bracket assembly, extraction	1
1670-01-162-2372	Clevis assembly	34
1670-01-162-2381	Tandem link	4
5530-00-218-8073	Plywood, 3/4-inch	1 sheet
1670-01-097-8816	Release, cargo parachute, M-1	1

Table 1-1. Equipment Required for Rigging the M102 Howitzer for Low-Velocity Airdrop on Type V Platform (Continued)

<i>National Stock Number</i>	<i>Item</i>	<i>Quantity</i>
	Sling, cargo airdrop:	
	For deployment line:	
1670-01-063-7761	16-foot (2-loop), type XXVI nylon webbing	1
	For lifting:	
1670-01-062-6304	9-foot (2-loop), type XXVI nylon webbing	2
1670-01-063-7760	11-foot (2-loop), type XXVI nylon webbing	2
	For riser extension:	
1670-01-062-6302	20-foot (2-loop), type XXVI nylon webbing	2
	For suspension:	
1670-01-063-7761	16-foot (2-loop), type XXVI nylon webbing	4
5340-00-040-8219	Strap parachute release, multicut	2
7515-00-266-5016	Tape, adhesive, 2-inch	As required
1670-00-937-0271	Tie-down assembly, 15-foot	34
1670-01-483-8259	Tow Release Mechanism (H-block for C-17)	1
	Webbing:	
8305-00-268-2411	Cotton, 1/4-inch, type I	As required
	Nylon:	
8305-00-082-5752	Tubular, 1/2-inch	As required
8305-00-263-3598	Type VIII webbing	As required

SECTION II – RIGGING M102 HOWITZER WITH 23 BOXES OF AMMUNITION FOR LOW-VELOCITY AIRDROP ON TYPE V PLATFORM

DESCRIPTION OF LOAD

1-17. This load is rigged the same as the M102 howitzer in Section I, except for the addition of six ammunition boxes, the placement of the collimator, and the placement of the EFTC actuator bracket. This load requires two G-11 cargo parachutes.

PREPARING PLATFORM

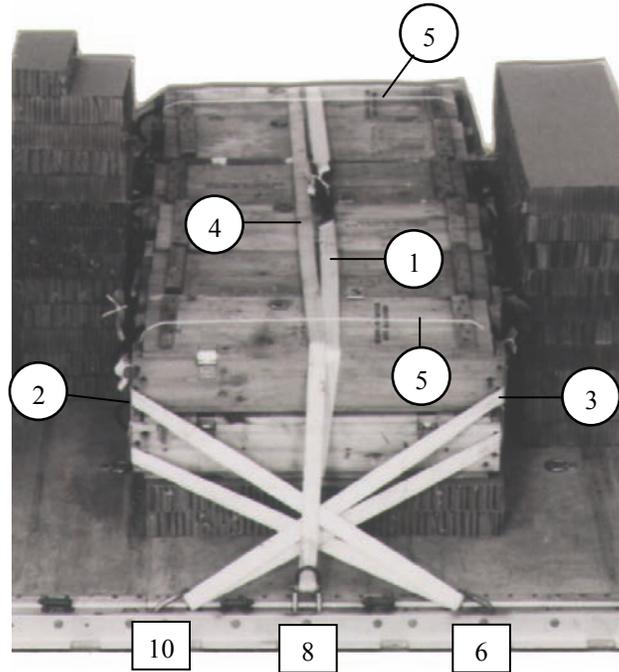
1-18. Prepare the platform as described in paragraph 1-2 and as shown in Figure 1-1.

BUILDING AND PLACING HONEYCOMB STACKS

1-19. Build four honeycomb stacks as shown in Figure 1-2 and according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Place them on the platform as shown in Figure 1-3.

STOWING ACCOMPANYING LOAD

1-20. The accompanying load of 23 boxes weighs 2,760 pounds. The ammunition is rigged as shown in Section I, Figures 1-4 through 1-8, except the stack of ammunition in the middle of the platform. Stow the front and rear stack of ammunition according to Figures 1-5, 1-6 and 1-8. Secure the middle stack according to Figures 1-4 and 1-21.



- 1 Set 12 boxes of ammunition on the lashing and honeycomb in the middle of the platform. Secure the lashing with a D-ring and a load binder.
- 2 Form a 30-foot lashing according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Pass the ends of the lashing through the rear handles of the lower row of boxes, through clevises 6 and 6A, and through the rear handles of the upper row of boxes. Secure the lashing at the rear of the boxes with two D-rings and a load binder.
- 3 Form a 30-foot lashing according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Pass the ends of the lashing through the front handles of the lower row of boxes, through clevises 10 and 10A, and through the rear handles of the upper row of boxes. Secure the lashing at the front of the boxes with two D-rings and a load binder.
- 4 Pass the 15-foot lashing through clevis 8 and through its own D-ring. Pull the lashing over the top of the boxes. Fit a D-ring to the end of the lashing and secure the lashing to clevis 8A with a load binder.
- 5 Tie two lengths of type III nylon cord between the lashings on the ends of the boxes to keep the lashing in place.

Figure 1-21. Boxes of Ammunition Lashed to Middle of Platform

PREPARING HOWITZER AND EQUIPMENT

1-21. Prepare the howitzer as described in paragraph 1-5 and as shown in Figures 1-9 and 1-10. Stow the external air transport slings as shown in Figure 1-22. Prepare the collimator as shown in Figure 1-23.

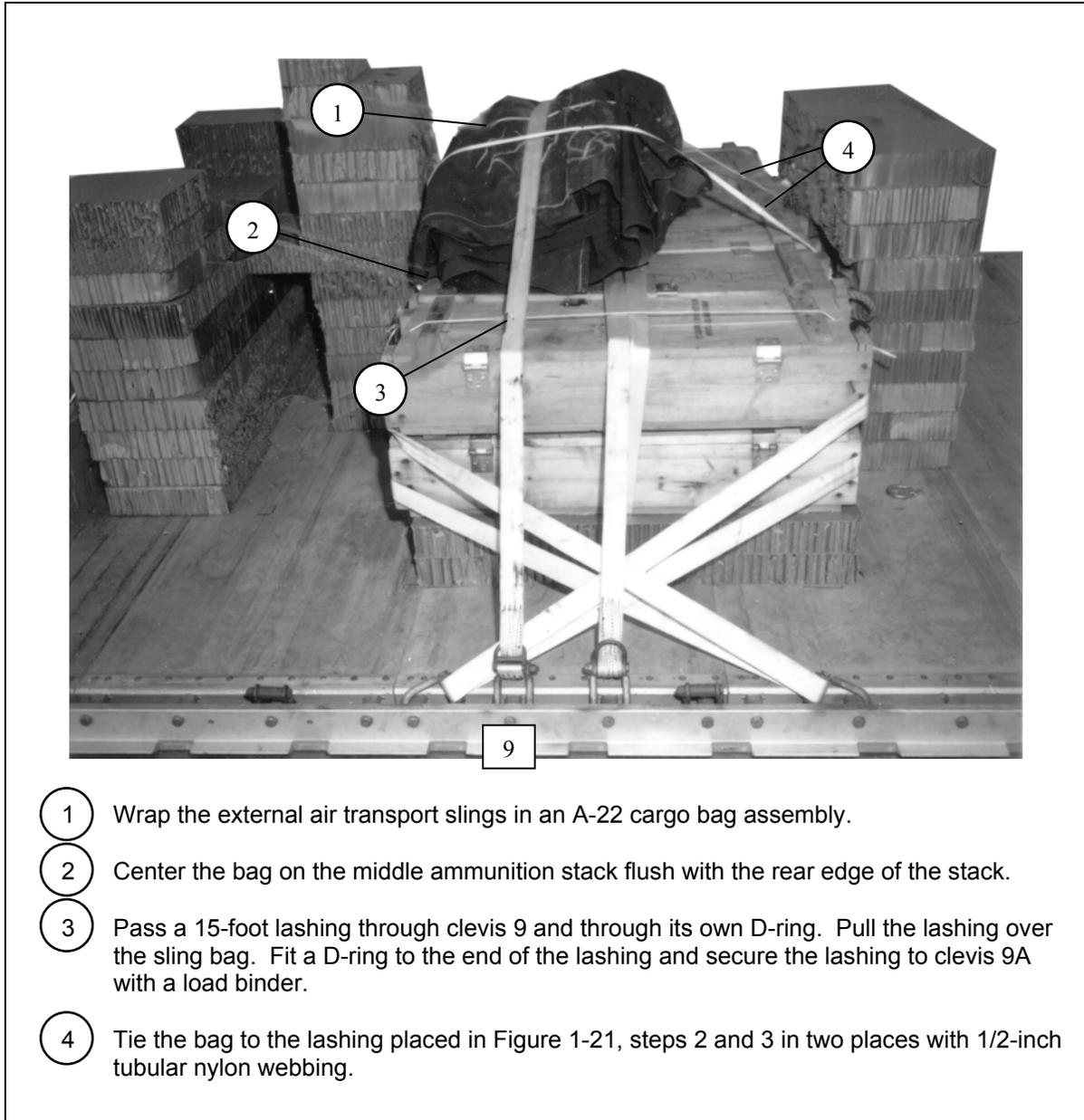


Figure 1-22. External Air Transport Slings Stowed

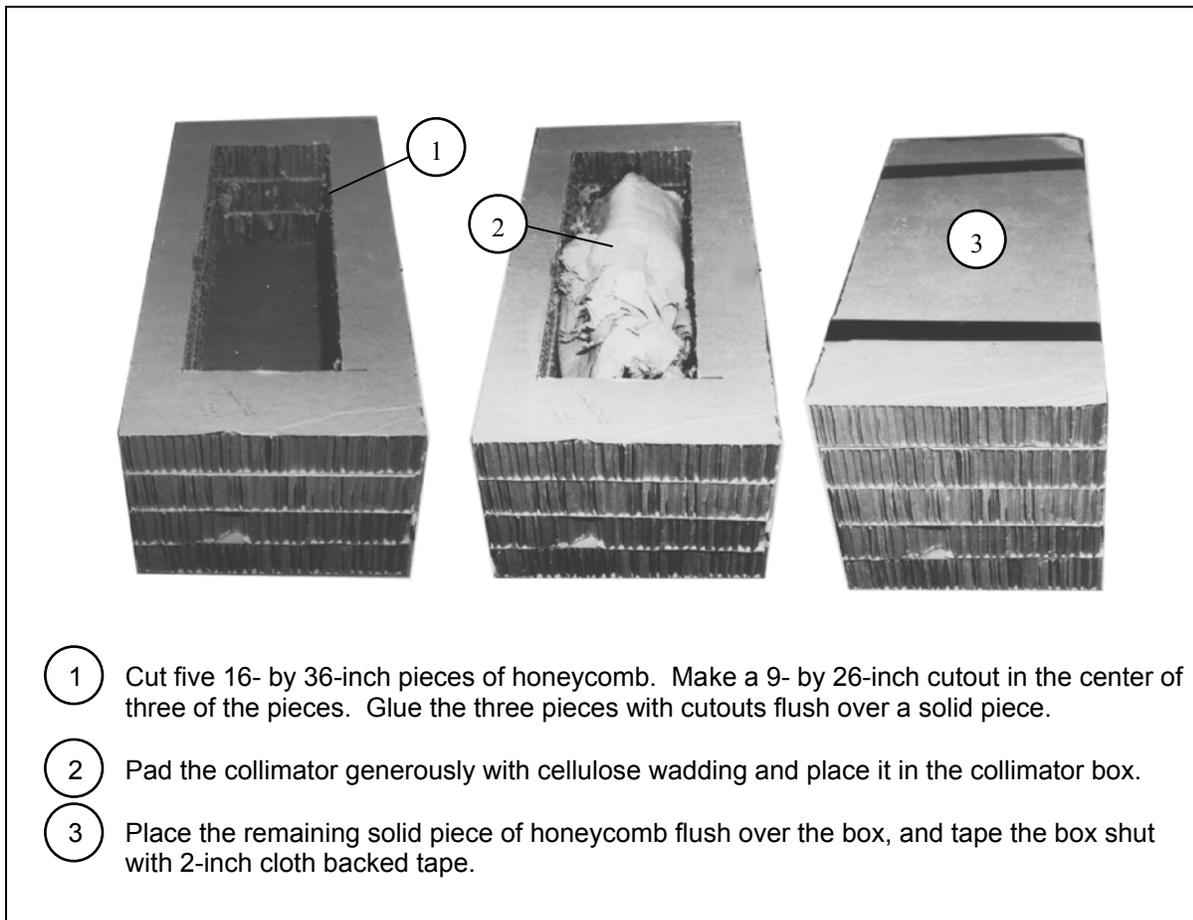


Figure 1-23. Collimator Prepared

COVERING LOAD

1-22. Cover the load as shown in Figure 1-12.

STOWING COLLIMATOR BOX AND POSITIONING HOWITZER ON PLATFORM

1-23. Stow the collimator box on the load and position the howitzer on the platform as shown in Figure 1-24. Lift the howitzer as shown in Figure 1-13, steps 1 and 2.

LASHING HOWITZER

1-24. Lash the howitzer to the platform with fourteen 15-foot lashings as shown in Figure 1-14. Install and safety the lashings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

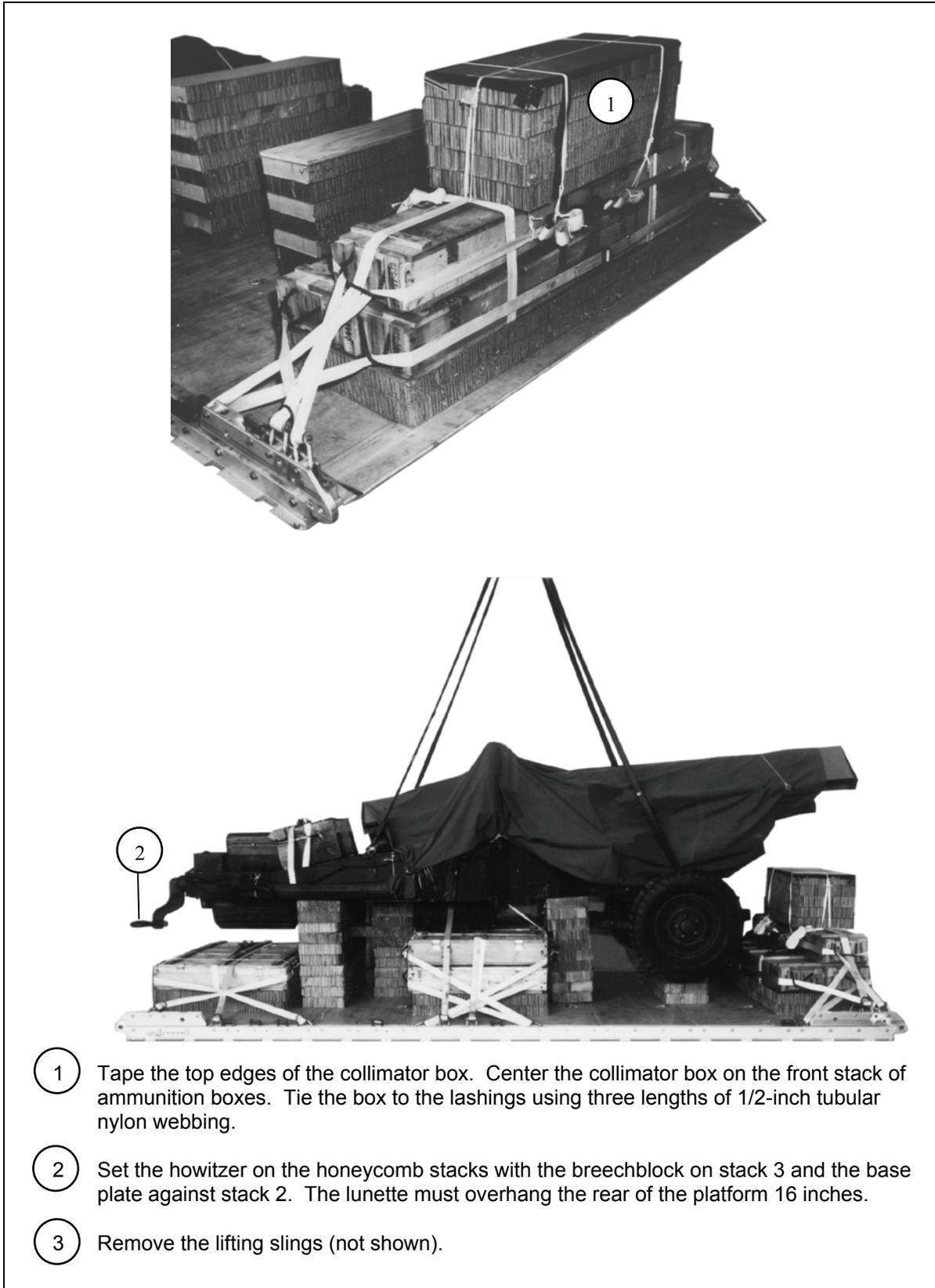
INSTALLING SUSPENSION SLINGS AND DEADMAN'S TIE

1-25. Install four 16-foot (2-loop), type XXVI nylon suspension slings as shown in Figure 1-15. Safety the slings with the deadman's tie as outlined in FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

PREPARING STOWAGE PLATFORM AND STOWING CARGO PARACHUTES

1-26. Prepare the stowage platform and the cargo parachutes as described below.

- **Preparing Stowage Platform.** Prepare the cargo parachute stowage platform as shown in Figure 1-16.
- **Stowing Parachutes.** Prepare and stow two G-11 cargo parachutes according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-17.



- 1 Tape the top edges of the collimator box. Center the collimator box on the front stack of ammunition boxes. Tie the box to the lashings using three lengths of 1/2-inch tubular nylon webbing.
- 2 Set the howitzer on the honeycomb stacks with the breechblock on stack 3 and the base plate against stack 2. The lunette must overhang the rear of the platform 16 inches.
- 3 Remove the lifting slings (not shown).

Figure 1-24. Collimator Box Stowed and Howitzer Positioned on Platform

INSTALLING EXTRACTION SYSTEM

1-27. Install the components of the EFTC system according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-25. If applicable install the extraction parachute jettison system (EPJS) according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

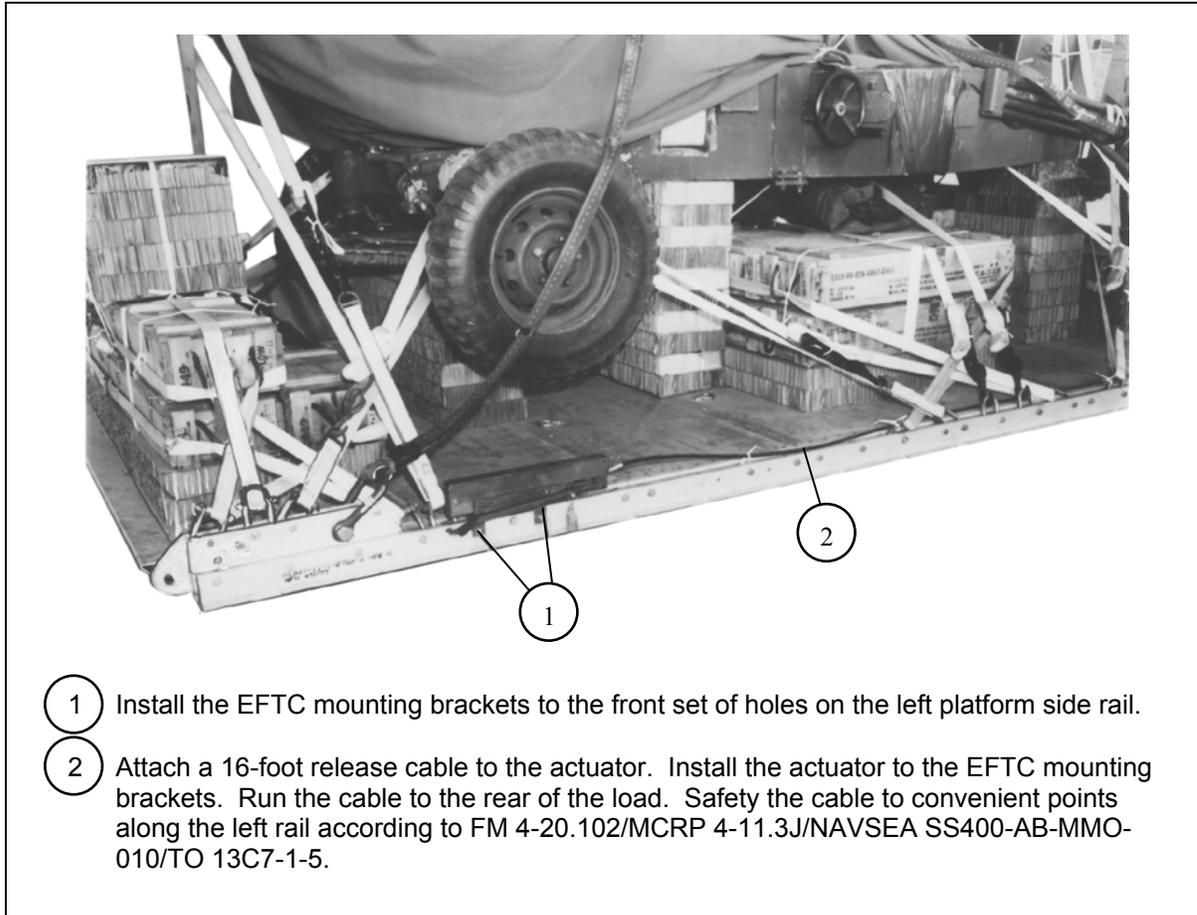


Figure 1-25. EFTC Installed

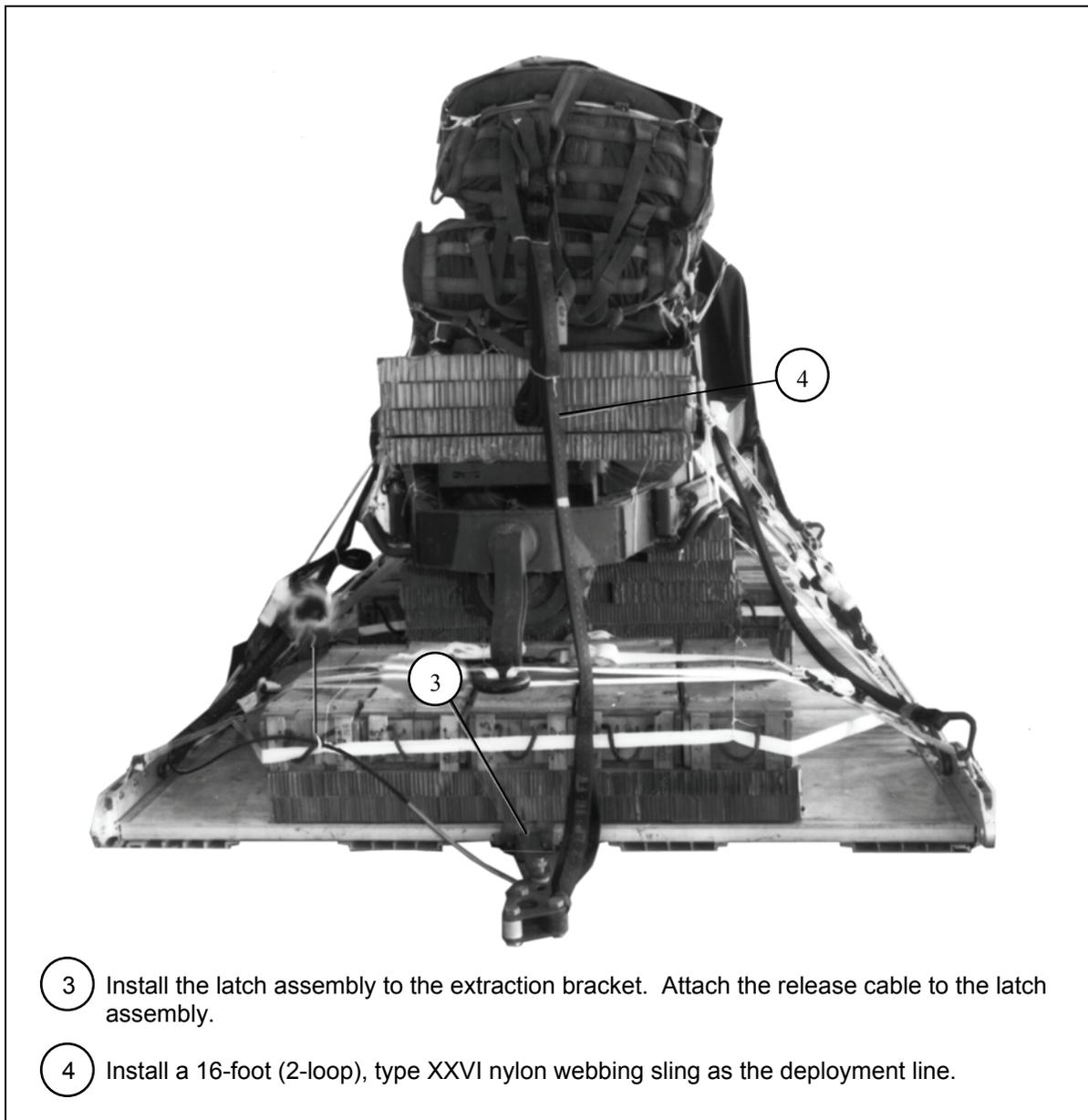


Figure 1-25. EFTC Installed (Continued)

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

1-28. Install provisions for emergency restraints according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

INSTALLING RELEASE SYSTEM

1-29. Prepare and install an M-1 cargo parachute release according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-19.

PLACING EXTRACTION PARACHUTE

1-30. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Rig the extraction line in an extraction line bag according to TM 10-1670-286-20/TO13C5-2-41. Place the extraction parachute and extraction line on the load for installation in the aircraft.

MARKING RIGGED LOAD

1-31. Mark the rigged load as described in FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-26. If the accompanying load varies from the one shown in Figure 1-26, the weight, height, CB, and parachute requirements must be recomputed.

CAUTION

Make the final rigger inspection required by FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Weight: Load shown	8,800 pounds
Maximum load allowed	9,000 pounds
Height	90 1/2 inches
Width.....	108 inches
Overall Length	210 inches
Overhang: Front	0 inches
Rear (EFTC)	18 inches
Rear (EPJS).....	30 inches
Center of Balance (from front edge of platform).....	98 inches

Figure 1-26. M102 Howitzer Rigged with 23 Boxes of Ammunition for Low-Velocity Airdrop on a Type V Platform

EQUIPMENT REQUIRED

1-32. Use the equipment listed in Table 1-2 to rig this load. The equipment required for rigging the accompanying load is also included.

Table 1-2. Equipment Required for Rigging the M102 Howitzer with 23 Boxes of Ammunition for Low-Velocity Airdrop on a Type V Platform

<i>National Stock Number</i>	<i>Item</i>	<i>Quantity</i>
8040-00-273-8713	Adhesive, paste, 1-gallon	As required
1670-00-587-3421	Bag, cargo, A-22	1
	Clevis, suspension:	
4030-00-678-8562	3/4-inch (medium) emergency restraint	4
4030-00-090-5354	1-inch (large)	6
8305-00-184-2034	Cloth, cotton duck, 60-inch	8 yards
4020-00-246-0688	Cord, nylon, type III	As required
1670-00-434-5785	Coupling, airdrop, extraction force transfer with 16-foot cable	1
1670-00-360-0328	Cover, clevis, large	2
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
1670-01-183-2678	Leaf, extraction line	2
1670-01-064-4452	Line, drogue	1
	Line, extraction, type XXVI nylon webbing:	
1670-01-062-6313	60-foot (3-loop)	1
	Or	
1670-01-107-7651	140-foot (3-loop)	2
1670-01-493-6418	Link assembly, two-point: 3 3/4-inch	1
1670-00-753-3928	Pad, energy-dissipating, honeycomb	10 sheets
	Parachute:	
1670-01-016-7841	Cargo, G-11	2
1670-01-063-3716	Cargo, extraction, 22-foot	1
1670-01-063-3715	Drogue, 15-foot	1
	Platform, airdrop, type V, 16-foot	
1670-01-353-8424	Bracket assembly, EFTC	1
1670-01-162-2372	Bracket assembly, extraction	1
1670-01-162-2376	Clevis assembly	34
1670-01-162-2381	Tandem link	4
5530-00-218-8073	Plywood, 3/4-inch	1 sheet
1670-01-097-8816	Release, cargo parachute, M-1	1

Table 1-2. Equipment Required for Rigging the M102 Howitzer with 23 Boxes of Ammunition for Low-Velocity Airdrop on a Type V Platform (Continued)

<i>National Stock Number</i>	<i>Item</i>	<i>Quantity</i>
	Sling, cargo airdrop:	
	For deployment line:	
1670-01-063-7761	16-foot (2-loop), type XXVI nylon webbing	1
	For lifting:	
1670-01-062-6304	9-foot (2-loop), type XXVI nylon webbing	2
1670-01-063-7760	11-foot (2-loop), type XXVI nylon webbing	2
	For riser extension:	
1670-01-062-6302	20-foot (2-loop), type XXVI nylon webbing	2
	For suspension:	
1670-01-063-7761	16-foot (2-loop), type XXVI nylon webbing	4
5340-00-040-8219	Strap parachute release, multicut	2
7515-00-266-5016	Tape, adhesive, 2-inch	As required
1670-00-937-0271	Tie-down assembly, 15-foot	34
1670-01-483-8259	Tow Release Mechanism (H-block for C-17)	1
	Webbing:	
8305-00-268-2411	Cotton, 1/4-inch, type I	As required
	Nylon:	
8305-00-082-5752	Tubular, 1/2-inch	As required
8305-00-263-3598	Type VIII webbing	As required

Chapter 2

Rigging M102 Howitzer with 1 1/4-Ton High Mobility Multipurpose Wheeled Vehicle (HMMWV) Truck and Accompanying Ammunition

DESCRIPTION OF LOAD

2-1. The M102, 105-millimeter howitzer is rigged with the 1 1/4-ton HMMWV truck as its prime mover and an accompanying load of gun equipment and ammunition on a 32-foot, type V airdrop platform. An accompanying load weighing 800 to 2,000 pounds must be rigged in the truck. The gun equipment and 8 boxes of ammunition are shown in the truck. Twenty-two boxes of ammunition are rigged on the platform. This load requires four G-11 cargo parachutes.

PREPARING PLATFORM

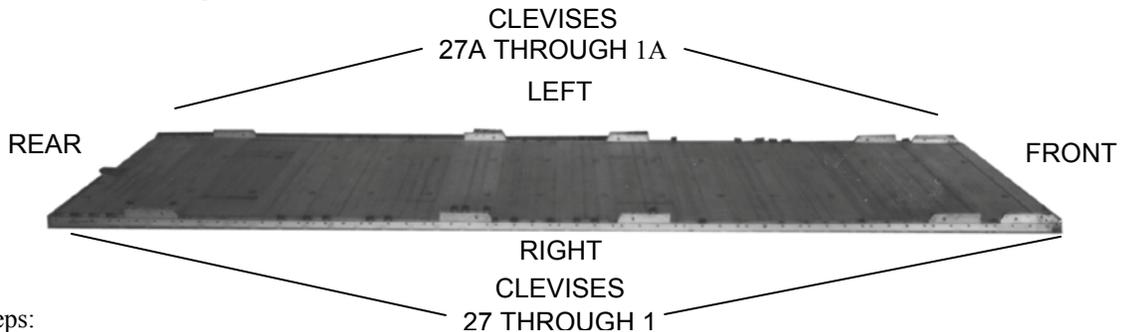
2-2. Prepare a 32-foot, type V airdrop platform as described below.

- **Inspecting Platform.** Inspect, or assemble and inspect, the platform according to TM 10-1670-268-20&P/TO 13C7-52-22.

Note. If the platform must be assembled, install the suspension links when assembling the platform. See Figure 2-1 for the location of the suspension links.

- **Installing Suspension Links.** Install the suspension links on assembled platform according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
- **Installing Tandem Links.** Install tandem links to the front and rear of each side rail as shown in Figure 2-1.
- **Installing and Numbering Clevises.** Install and number 54 clevis assemblies as shown in Figure 2-1.

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



Steps:

1. Install a suspension link in holes 26, 27, and 28 on each platform side rail. Face the flat part of the link to the front of the rail.
2. Install a suspension link in holes 6, 7, and 8 on each platform side rail. Face the flat part of the link to the front of the rail.
3. Install a suspension link in holes 37, 38, and 39 on each platform side rail. Face the flat part of the link to the front of the rail.
4. Install a suspension link in holes 57, 58, and 59 on each platform side rail. Face the flat part of the link to the front of the rail.
5. Install a tandem link on the front of each platform side rail using holes 1, 2, and 3.
6. Install a clevis on bushing 1 on each front tandem link.
7. Install a clevis on bushing 4 on the first suspension link on each side.
8. Install a clevis on bushing 3 on the second suspension link on each side.
9. Install clevises on bushings 1, 2, and 3 on the third suspension link on each side.
10. Install clevises on bushings 1 and 4 on the fourth suspension link on each side.
11. Starting at the front of each platform side rail, install clevises on each platform side rail using the bushings bolted on holes 9, 10, 12, 14 (double on right and tripled on left), 29, 30, 31, 33, 35, 36, 43, 44, 47, 48, 50, 61, 62, 63, and 64.
12. Starting at the front of the platform, number the clevises bolted to the right side from 1 through 27 and those bolted to the left side from 1A through 27A.
13. Label the tie-down rings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

Figure 2-1. Platform Prepared

STOWING ACCOMPANYING LOAD ON THE PLATFORM

2-3. Stow 22 boxes of 105-millimeter ammunition weighing 2,640 pounds on the platform as shown in Figures 2-2 through 2-4.

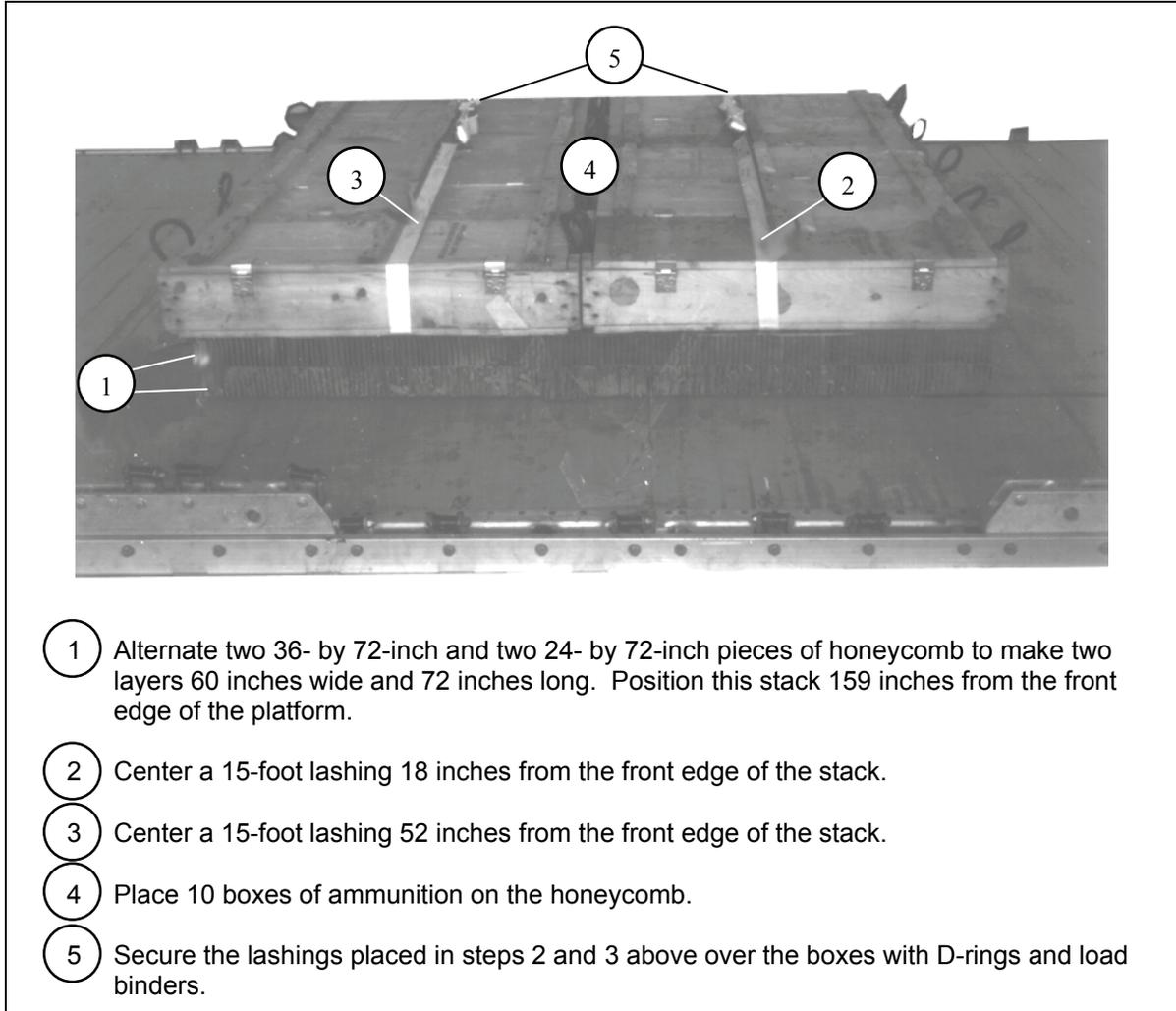
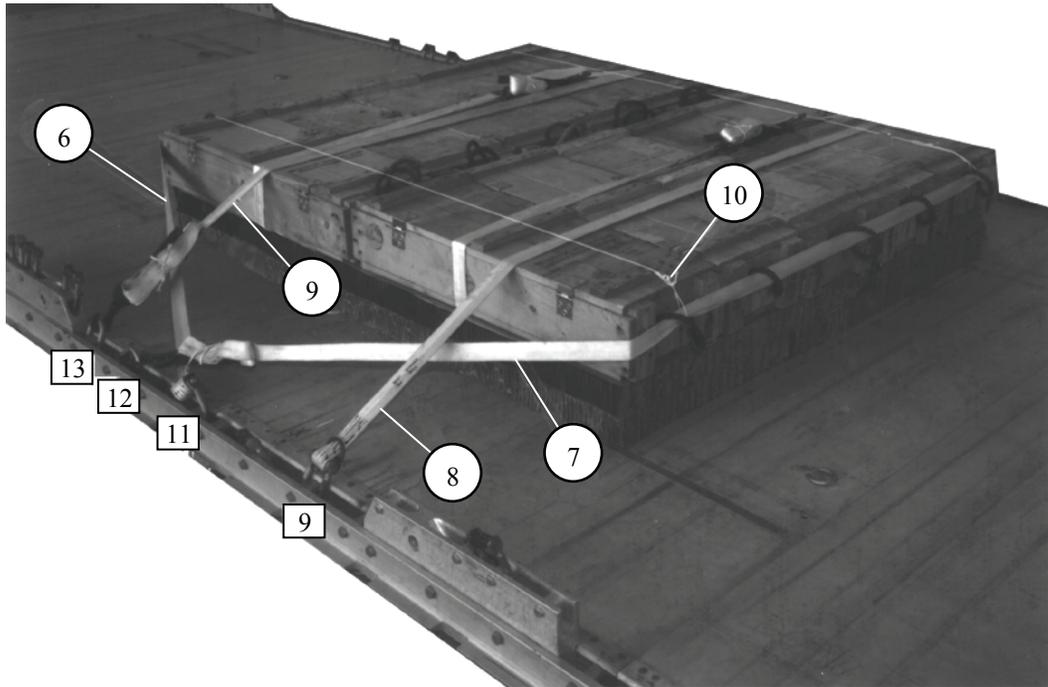


Figure 2-2. Ten Boxes of Ammunition Stowed on the Middle of the Platform

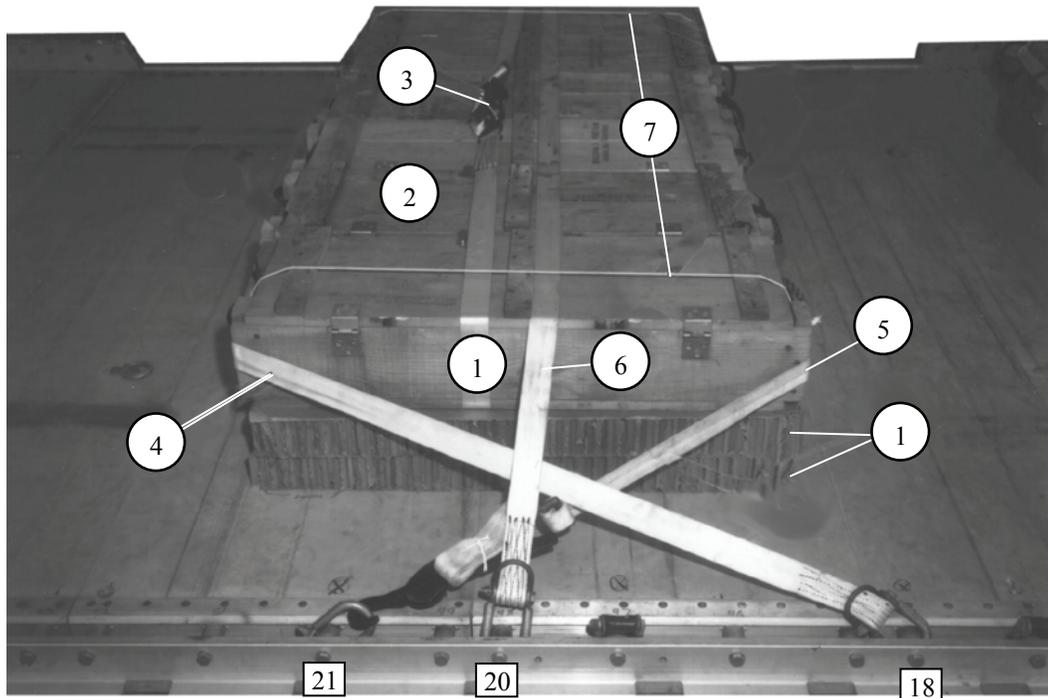


- 6 Pass the free end of a 15-foot lashing through clevis 11 and through its own D-ring. Pull the lashing taut and run it through the rear handles of the boxes. Fit a D-ring to the end of the lashing and secure it to clevis 11A with a load binder.

Note. Invert all clevises to which load binders are attached.

- 7 Pass the free end of a 15-foot lashing through clevis 12A and through its own D-ring. Pull the lashing taut and run it through the front handles of the boxes. Fit a D-ring to the end of the lashing and secure it to clevis 12 with a load binder.
- 8 Pass the free end of a 15-foot lashing through clevis 9 and through its own D-ring. Pull the lashing taut, and run it over the top of the boxes. Fit a D-ring to the end of the lashing and secure it to clevis 9A with a load binder.
- 9 Pass the free end of a 15-foot lashing through clevis 13A and through its own D-ring. Pull the lashing taut, and run it over the top of the boxes. Fit a D-ring to the end of the lashing and secure it to clevis 13 with a load binder.
- 10 Tie two lengths of type III nylon cord between the lashings in steps 6 and 7 on the ends of the boxes to keep the lashings in place.

Figure 2-2. Ten Boxes of Ammunition Stowed on the Middle of the Platform (Continued)



- 1 Position two 36- by 74-inch pieces of honeycomb 34 inches from the first stack of ammunition. Center a 15-foot lashing on the honeycomb.
- 2 Place six boxes of ammunition on the honeycomb.
- 3 Secure the lashing placed in step 1 on top of the boxes with a D-ring and a load binder.

Note. Invert all clevises to which load binders are attached.

- 4 Pass the free end of a 15-foot lashing through clevis 18 and through its own D-ring. Pull the lashing taut and run it through the rear handles of the boxes. Fit a D-ring to the end of the lashing and secure it to clevis 18A with a load binder.
- 5 Pass the free end of a 15-foot lashing through clevis 21A and through its own D-ring. Pull the lashing taut and run it through the front handles of the boxes. Fit a D-ring to the end of the lashing and secure it to clevis 21 with a load binder.
- 6 Pass the free end of a 15-foot lashing through clevis 20 and through its own D-ring. Pull the lashing taut, and run it over the top of the boxes. Fit a D-ring to the end of the lashing and secure it to clevis 20A with a load binder.
- 7 Tie two lengths of type III nylon cord between the lashings in steps 4 and 5 on the ends of the boxes to keep the lashing in place.

Figure 2-3. Six Boxes of Ammunition Stowed

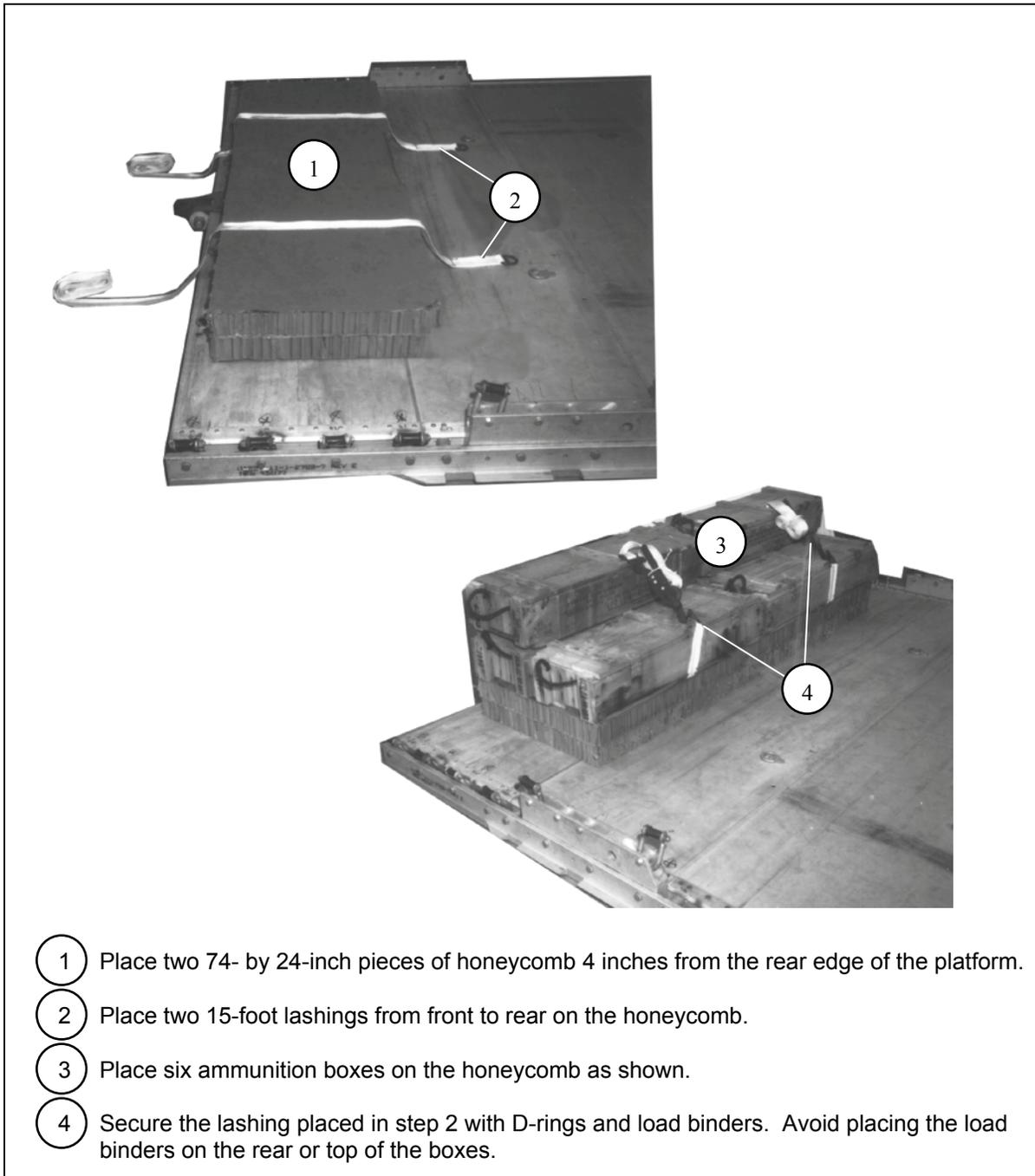
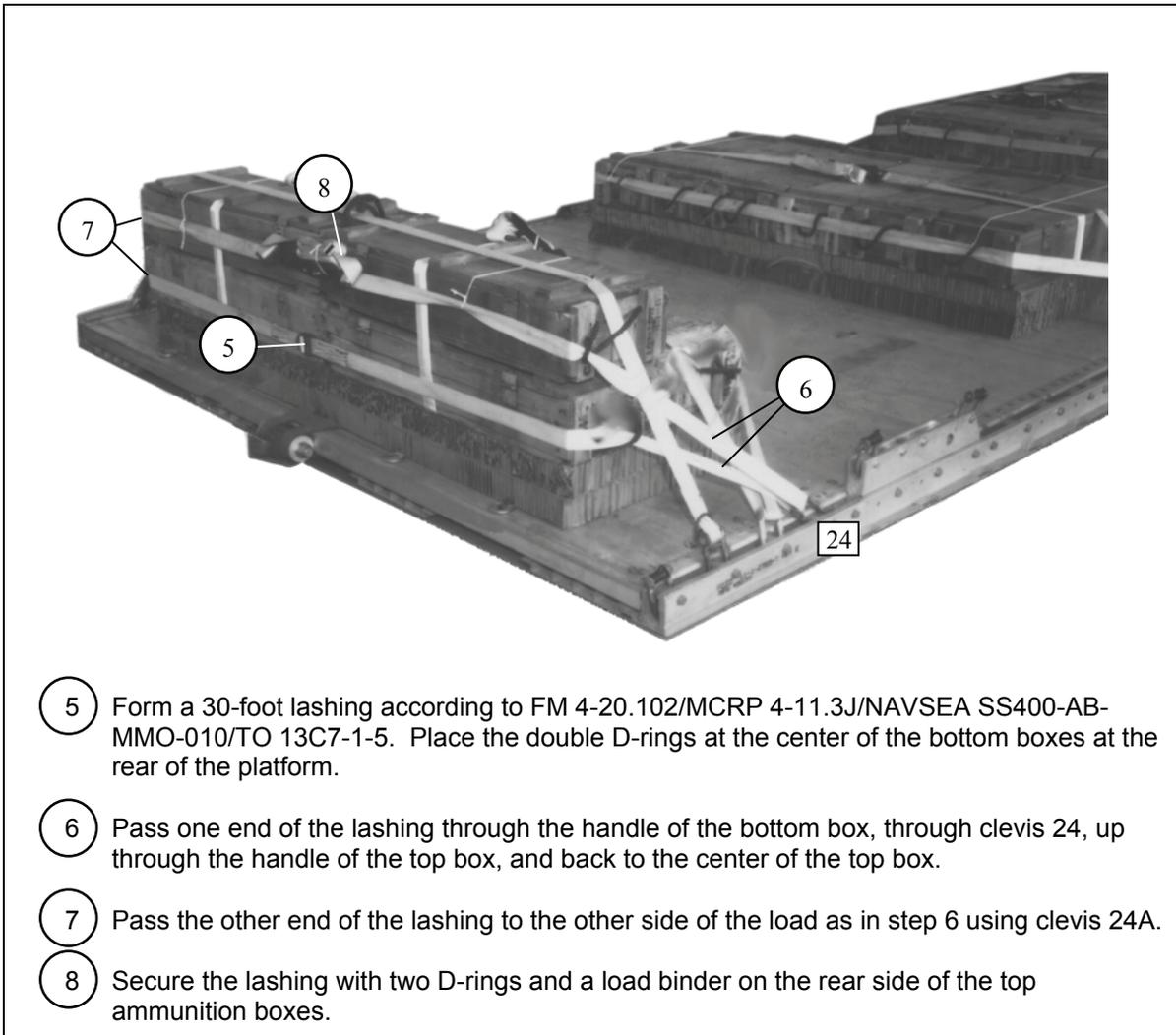
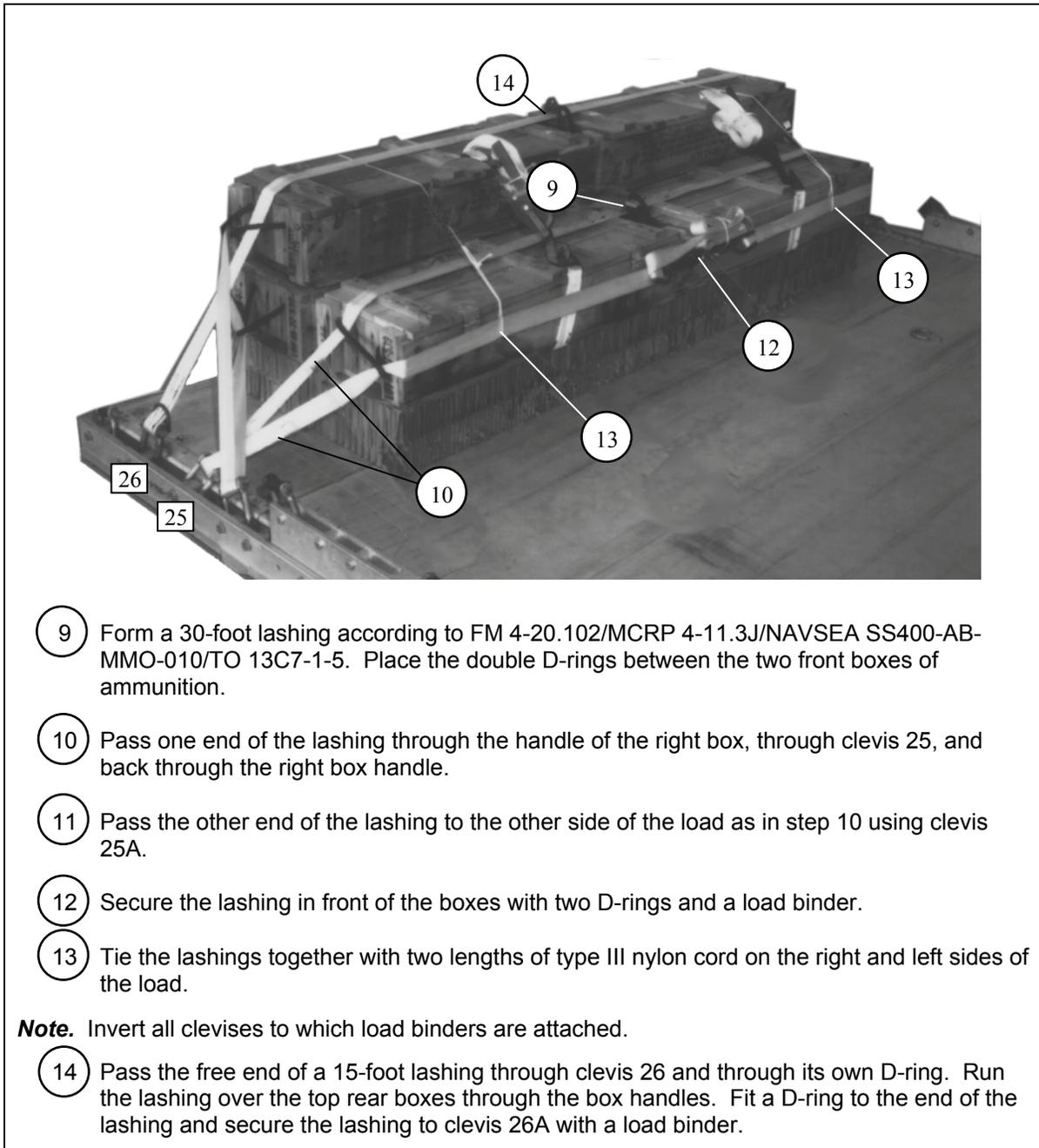


Figure 2-4. Six Boxes of Ammunition Stowed on the Rear of the Platform



- 5 Form a 30-foot lashing according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Place the double D-rings at the center of the bottom boxes at the rear of the platform.
- 6 Pass one end of the lashing through the handle of the bottom box, through clevis 24, up through the handle of the top box, and back to the center of the top box.
- 7 Pass the other end of the lashing to the other side of the load as in step 6 using clevis 24A.
- 8 Secure the lashing with two D-rings and a load binder on the rear side of the top ammunition boxes.

Figure 2-4. Six Boxes of Ammunition Stowed on the Rear of the Platform (Continued)



- 9 Form a 30-foot lashing according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-
MMO-010/TO 13C7-1-5. Place the double D-rings between the two front boxes of
ammunition.
 - 10 Pass one end of the lashing through the handle of the right box, through clevis 25, and
back through the right box handle.
 - 11 Pass the other end of the lashing to the other side of the load as in step 10 using clevis
25A.
 - 12 Secure the lashing in front of the boxes with two D-rings and a load binder.
 - 13 Tie the lashings together with two lengths of type III nylon cord on the right and left sides of
the load.
- Note.** Invert all clevises to which load binders are attached.
- 14 Pass the free end of a 15-foot lashing through clevis 26 and through its own D-ring. Run
the lashing over the top rear boxes through the box handles. Fit a D-ring to the end of the
lashing and secure the lashing to clevis 26A with a load binder.

Figure 2-4. Six Boxes of Ammunition Stowed on the Rear of the Platform (Continued)

INSTALLING OPTIONAL DRIVE-OFF AIDS ON PLATFORM

2-4. Install the drive-off aids on the platform as shown in Figure 2-5.

Note. The use of drive-off aids is optional.

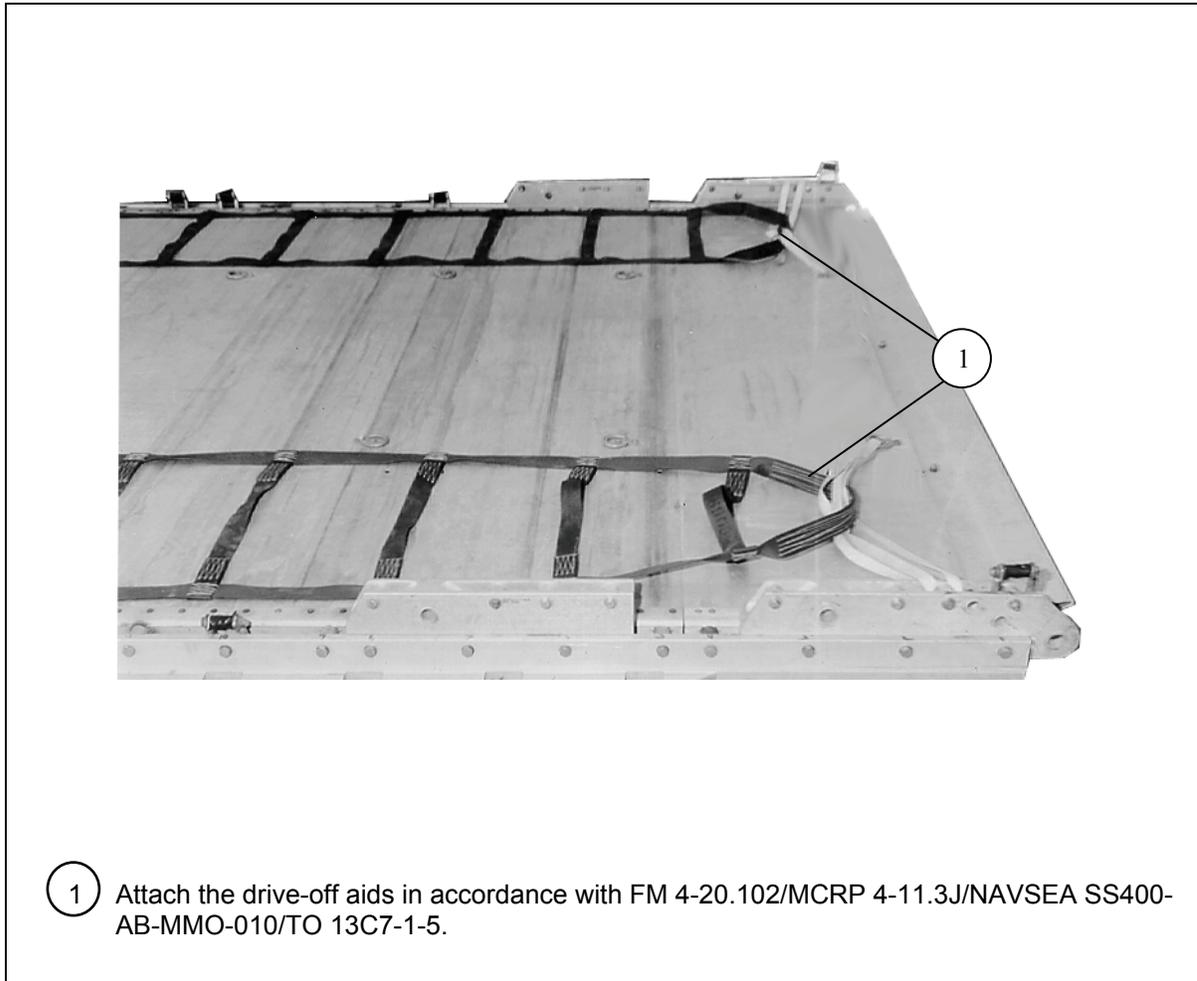


Figure 2-5. Drive-off Aids Installed on Platform

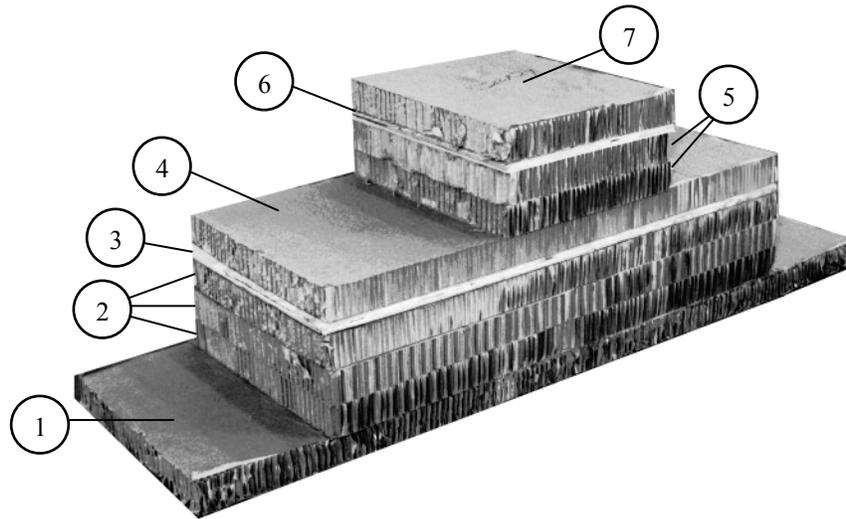
BUILDING HONEYCOMB STACKS

2-5. Build and place the honeycomb stacks as described below.

- Build honeycomb stacks 1 through 3 for the HMMWV as shown in Table 2-1 and Figures 2-6 and 2-7.
- Build honeycomb stacks 4 through 7 for the M102 howitzer as shown in Figures 2-8 and 2-9.
- Position honeycomb stacks on the platform as shown in Figure 2-10.

Table 2-1. Honeycomb Stacks 1 Through 3

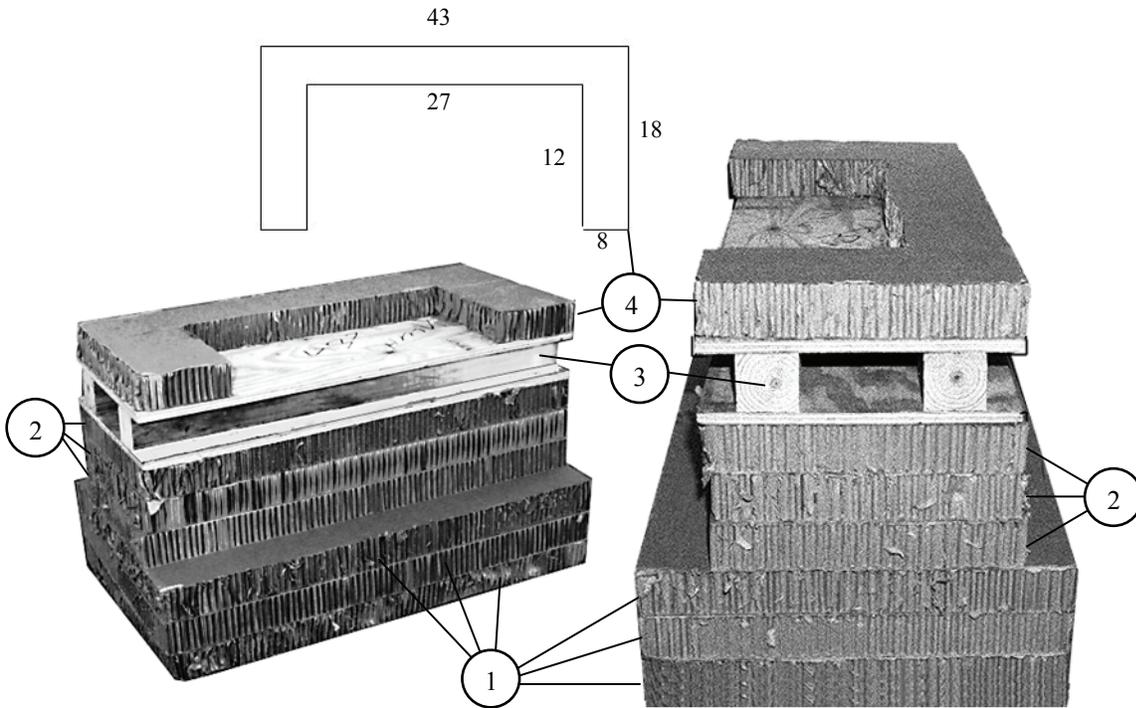
Stack Number	Pieces	Width (inches)	Length (inches)	Material	Instructions
1&3	1	24	80	Honeycomb	See Figure 2-6.
	3	24	54	Honeycomb	
	1	24	54	¾-inch Plywood	
	1	24	54	Honeycomb	
	2	20	24	Honeycomb	
	1	20	24	¾-inch Plywood	
	1	20	24	Honeycomb	
2	3	26	43	Honeycomb	See Figure 2-7.
	3	18	43	Honeycomb	
	2	18	43	¾-inch Plywood	
	2		43	4 x 4 Lumber	
	1	18	43	Honeycomb	



- ① Use an 80- by 24-inch piece of honeycomb to form a base.
- ② Center and glue three 54- by 24-inch pieces of honeycomb on the base.
- ③ Place a 3/4- by 54- by 24-inch piece of plywood over the honeycomb placed in step 2 above.
- ④ Place one 54- by 24-inch piece of honeycomb on top of the plywood placed in step 3 above.
- ⑤ Center two 20- by 24-inch pieces of honeycomb on top of the honeycomb placed in step 4 above.
- ⑥ Place a 3/4- by 20- by 24-inch piece of plywood over the honeycomb placed in step 5 above.
- ⑦ Place one 20- by 24-inch piece of honeycomb on top of the plywood placed in step 6 above.

Figure 2-6. Stacks 1 and 3 Prepared

- Notes.** 1. This drawing is not drawn to scale.
 2. All dimensions are given in inches.



- 1 Glue three 43- by 26-inch pieces of honeycomb flush together to form a base.
- 2 Center and glue three 43- by 18-inch pieces of honeycomb flush on the base.
- 3 Nail a 43-inch piece of 4- by 4-inch lumber parallel to each long side and 1 1/2 inches from each long edge of a 3/4- by 43- by 18 inch piece of plywood. Nail a second 3/4- by 43- by 18-inch piece of plywood to the lumber and flush with the bottom piece of plywood. Glue the wooden section of the stack flush on the honeycomb placed in step 2 above.
- 4 Make the cutout as shown in a 43- by 18-inch piece of honeycomb. Glue the honeycomb flush over the plywood.

Figure 2-7. Stack 2 Prepared

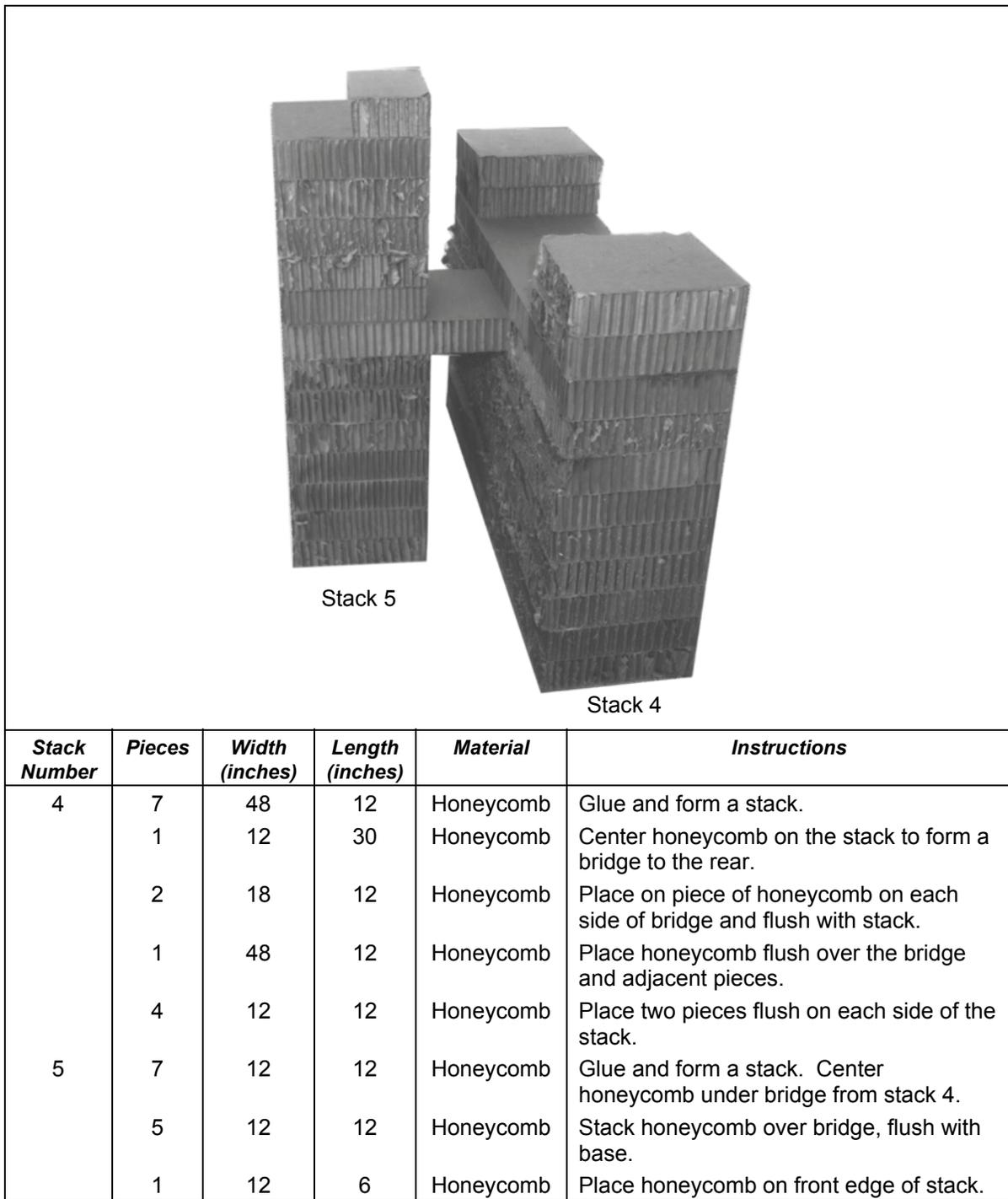


Figure 2-8. Honeycomb Stacks 4 and 5 Built

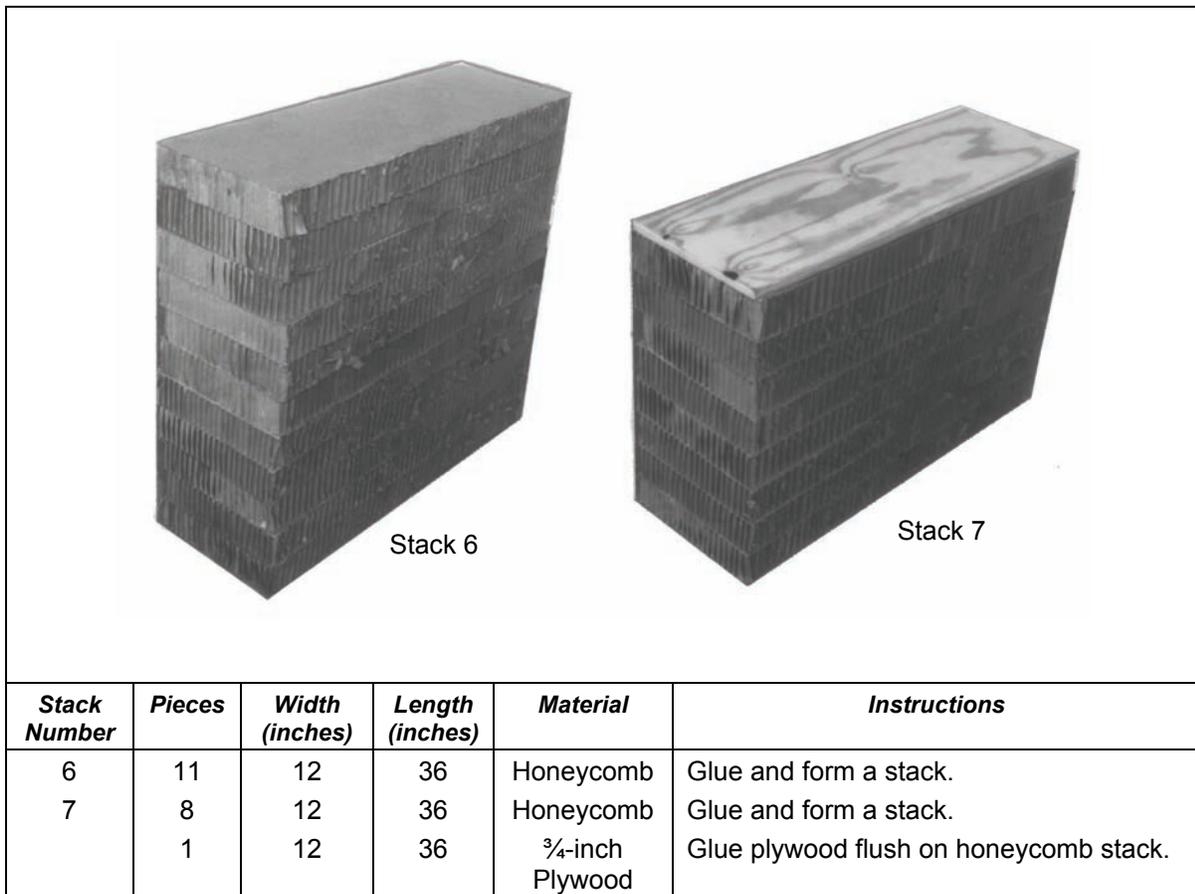
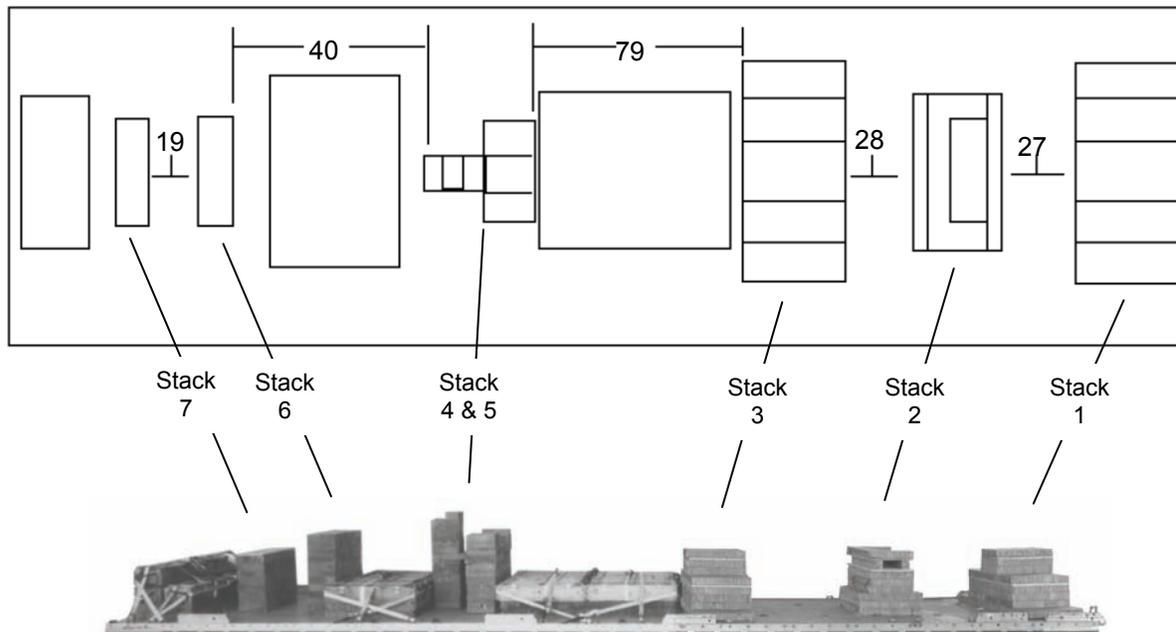


Figure 2-9. Honeycomb Stacks 6 and 7 Built

- Notes.** 1. This drawing is not drawn to scale.
2. All dimensions are given in inches.



Stack Number	Position of Stack on Platform
	Place stack:
1	Centered flush with front edge of platform.
2	Centered and 35 inches from stack 1 or 59 inches from front edge of platform.
3	Centered and 45 inches from stack 2 or 130 inches from front edge of platform.
4 & 5	Centered and 79 inches from stack 3 or 233 inches from front edge of platform.
6	Centered and 40 inches from stack 5 or 303 inches from front edge of platform.
7	Centered and 19 inches from stack 6 or 334 inches from front edge of platform.

Figure 2-10. Honeycomb Stacks Placed on Platform

PREPARING THE HOWITZER

2-6. Prepare the howitzer as shown in Figure 2-11.

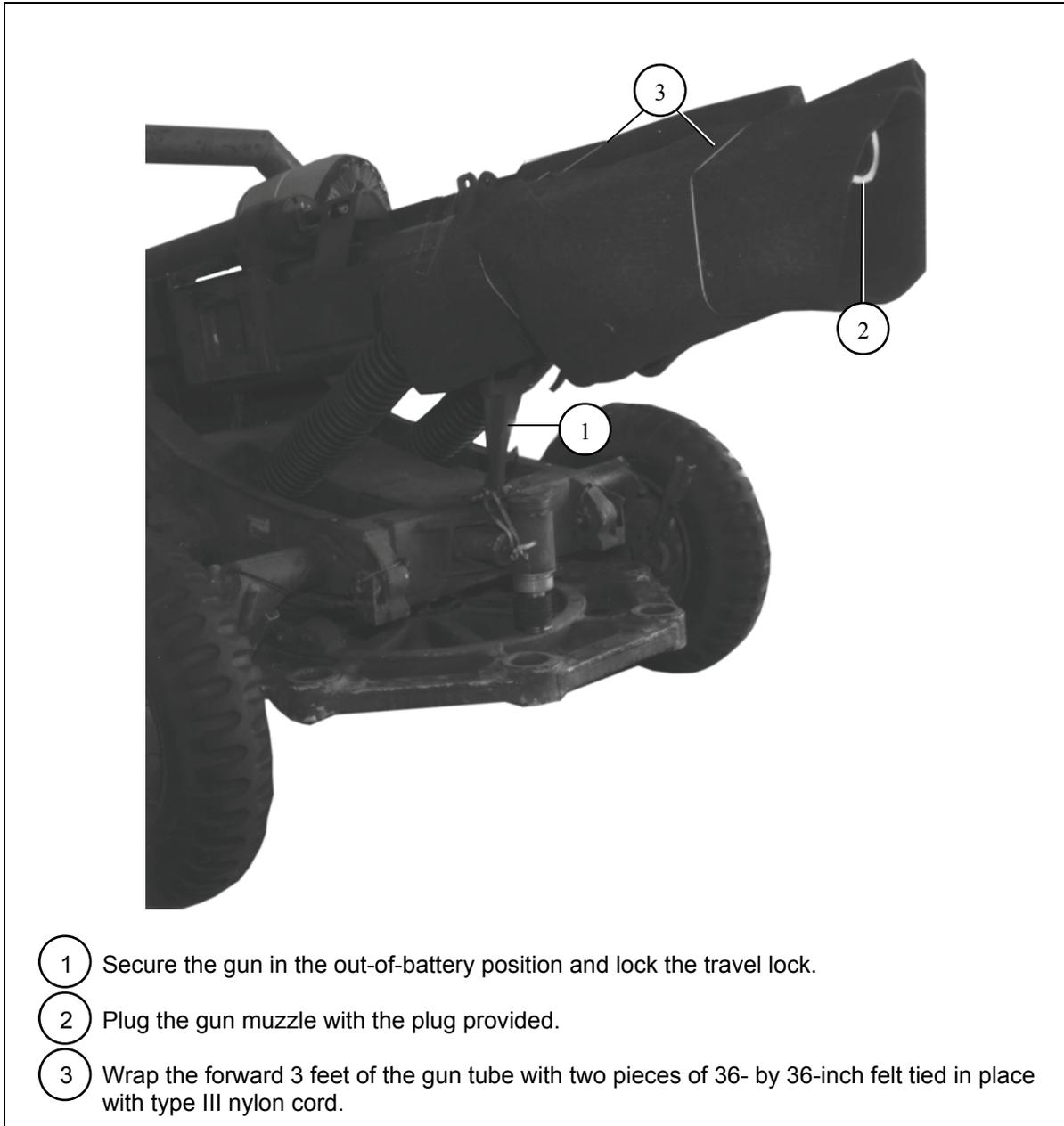


Figure 2-11. Howitzer Prepared

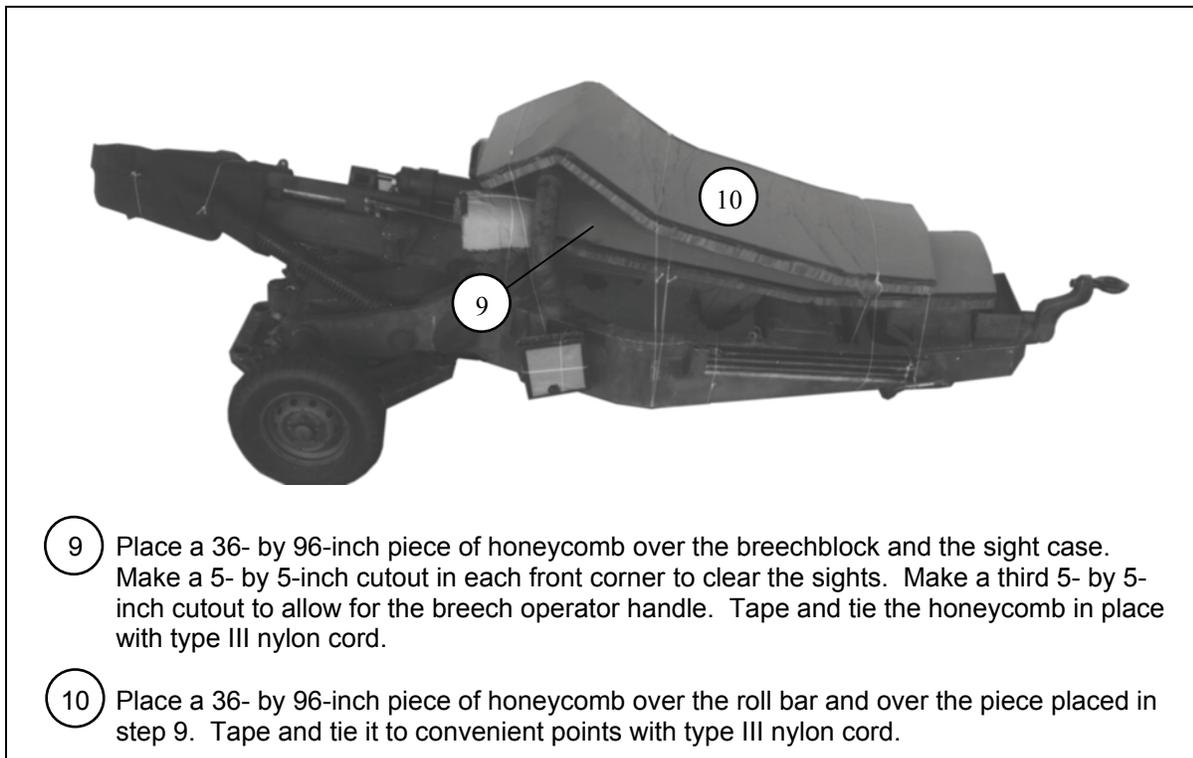


Figure 2-11. Howitzer Prepared (Continued)

PREPARING TRUCK

2-7. Prepare the truck as described below.

- Make sure the fuel tank is no more than 3/4 full. Prepare the fuel tank filler cap and fuel filler opening as shown in Figure 2-12. Prepare the fuel tank drain plug as shown in Figure 2-13.

Note. Certain units may be authorized a waiver allowing 95% fuel. One way to verify the tank is 95% full is to fill the tank and withdraw 1 1/4 gallons with a hand pump.

CAUTION

A full tank does not allow for fuel expansion, and is a danger to aircraft and crew.

- Make sure the batteries and battery compartment and any additional hazardous material comply with AFMAN 24-204(I)/TM 38-250.
- Stow the truck on-vehicular equipment (OVE) according to TM 9-2320-280-10/TO 36A12-1A-2091-1/TM 2320-10/6.
- Prepare the cab of the truck as shown in Figure 2-14.

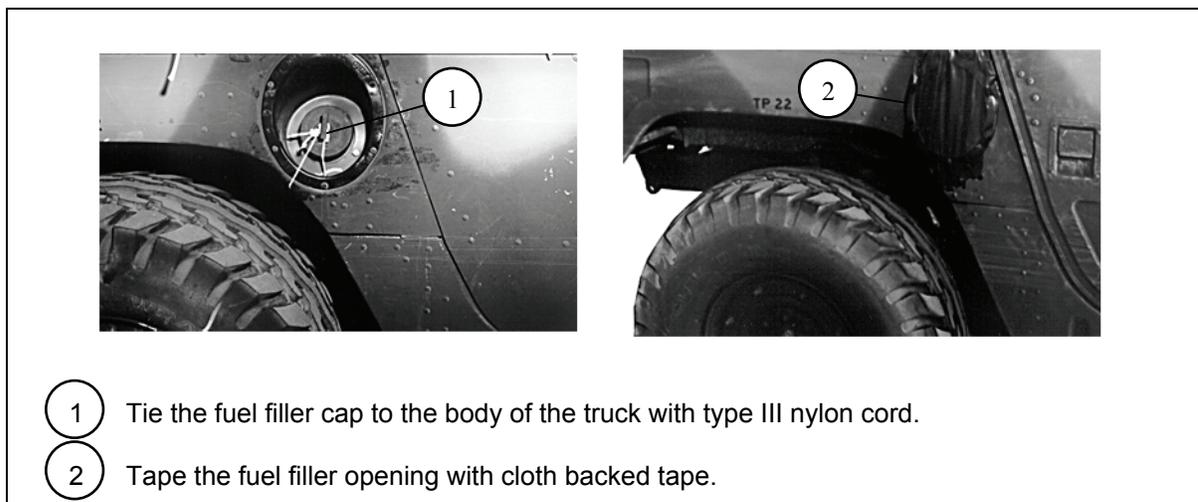


Figure 2-12. Fuel Tank Filler Cap and Opening Prepared

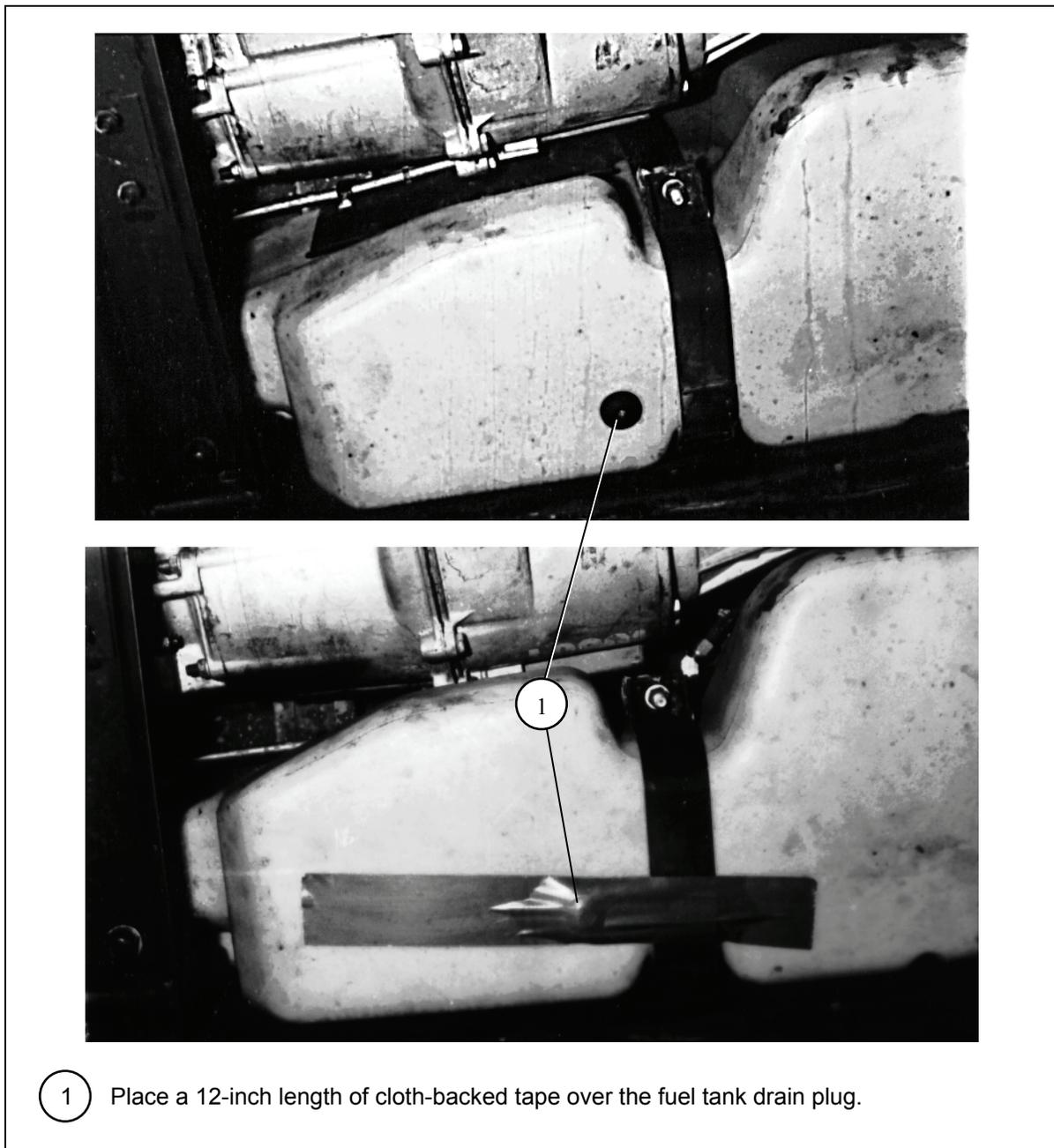
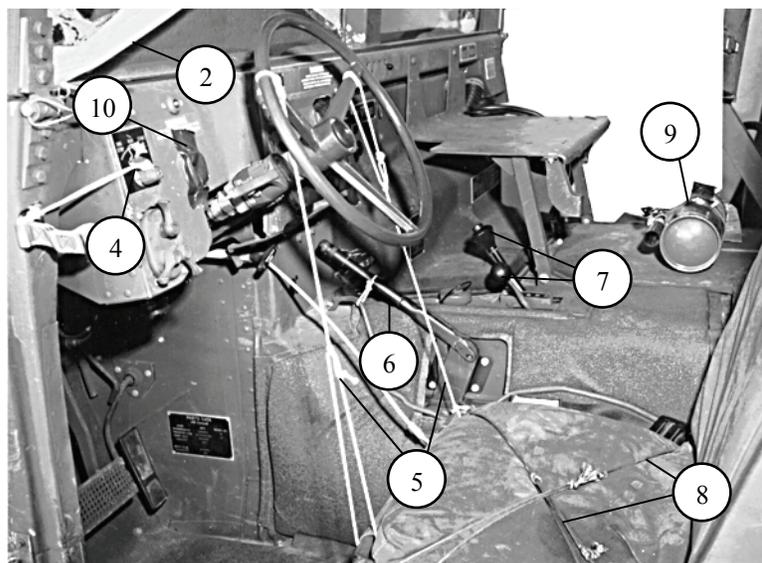


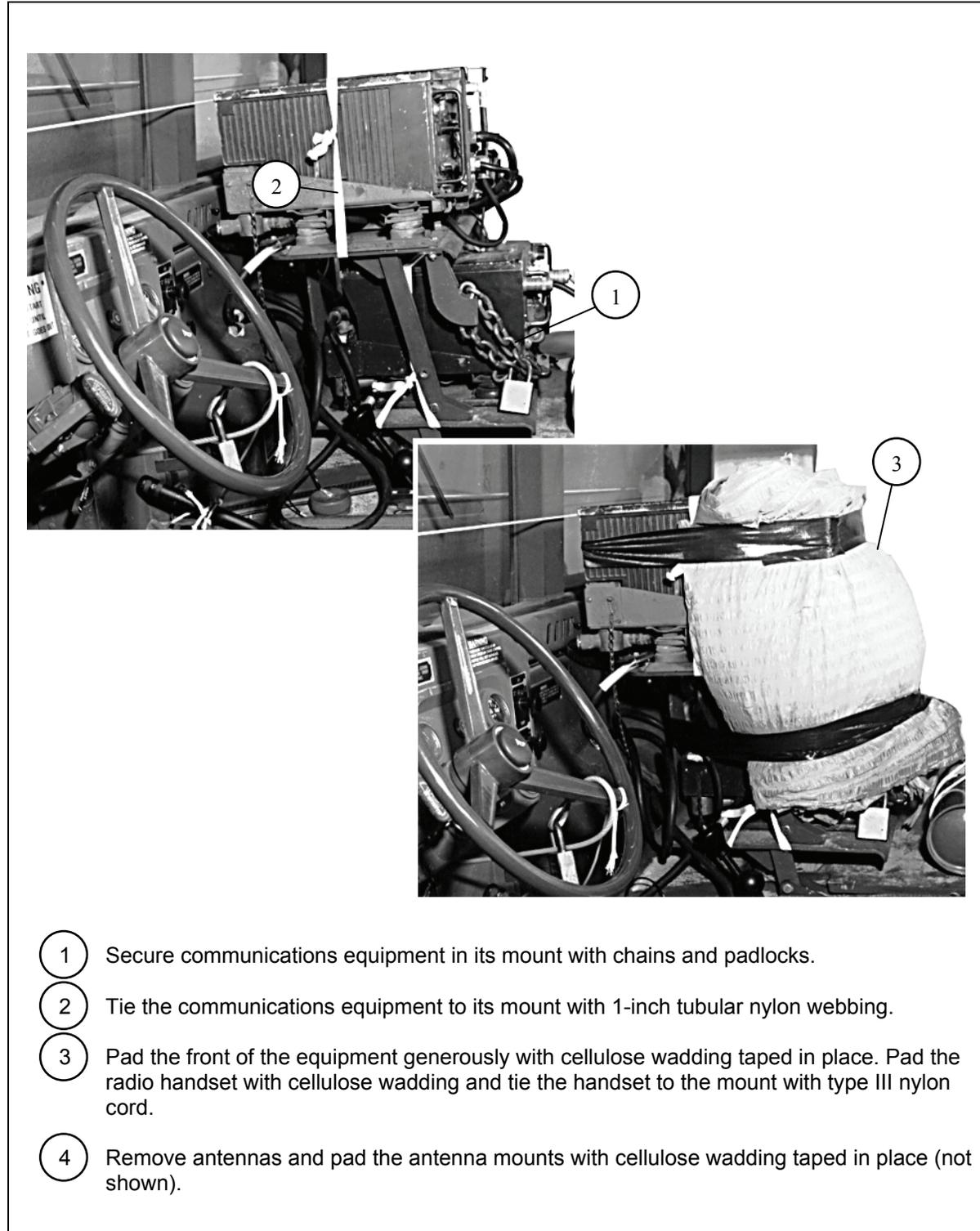
Figure 2-13. Fuel Tank Drain Plug Prepared



- 1 Remove all doors, covers, and supporting bows (not shown).
- 2 Tape the windshield glass on both sides in an X.
- 3 Remove and pad the mirrors. Secure them under the driver's seat with type III nylon cord (not shown).
- 4 Tie the engine start switch in the engine stop position with type I, 1/4-inch cotton webbing.
- 5 Tie the steering wheel to the seat frame in two places with type III nylon cord, or use the retractable steering wheel locking cable. If the locking cable is used, secure it to the steering wheel with type III nylon cord, not a padlock.
- 6 Tie the emergency brake handle in the off position with type III nylon cord.
- 7 Place the transmission and four-wheel drive levers in the neutral position.
- 8 Tie the seat cushions to the seat frames with type III nylon cord. Fold the passenger seats in four-door trucks and secure them with the pins provided.
- 9 Tie the fire extinguisher in place with two lengths of type III nylon cord.
- 10 Tape all instrument panel gauges.

Figure 2-14. Cab Prepared

- Secure and pad radio equipment in the cab section as shown in Figure 2-15.



- 1 Secure communications equipment in its mount with chains and padlocks.
- 2 Tie the communications equipment to its mount with 1-inch tubular nylon webbing.
- 3 Pad the front of the equipment generously with cellulose wadding taped in place. Pad the radio handset with cellulose wadding and tie the handset to the mount with type III nylon cord.
- 4 Remove antennas and pad the antenna mounts with cellulose wadding taped in place (not shown).

Figure 2-15. Communications Equipment Secured and Padded

- Prepare the front of soft-top trucks with foldable windshields as shown in Figure 2-16.

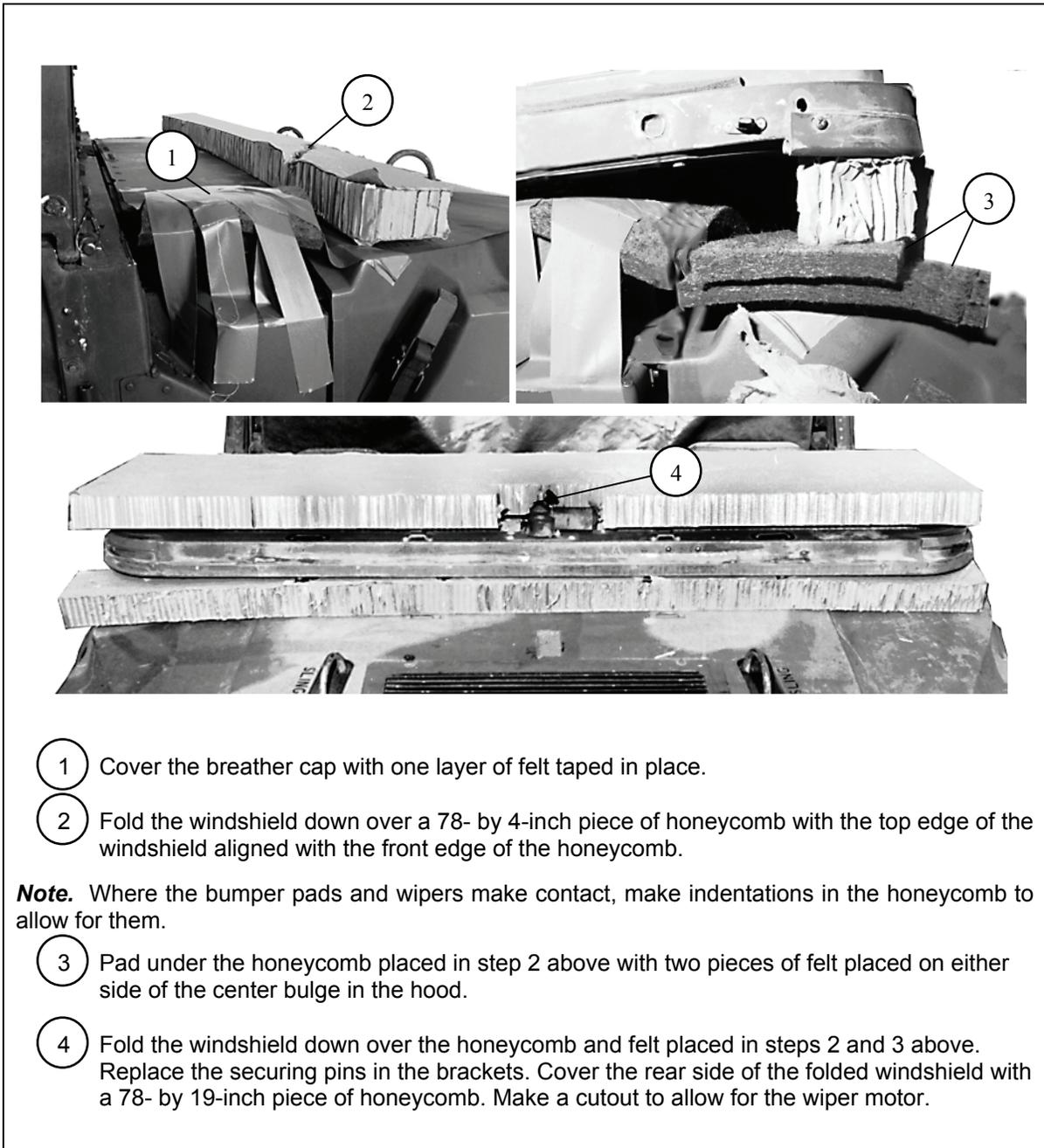
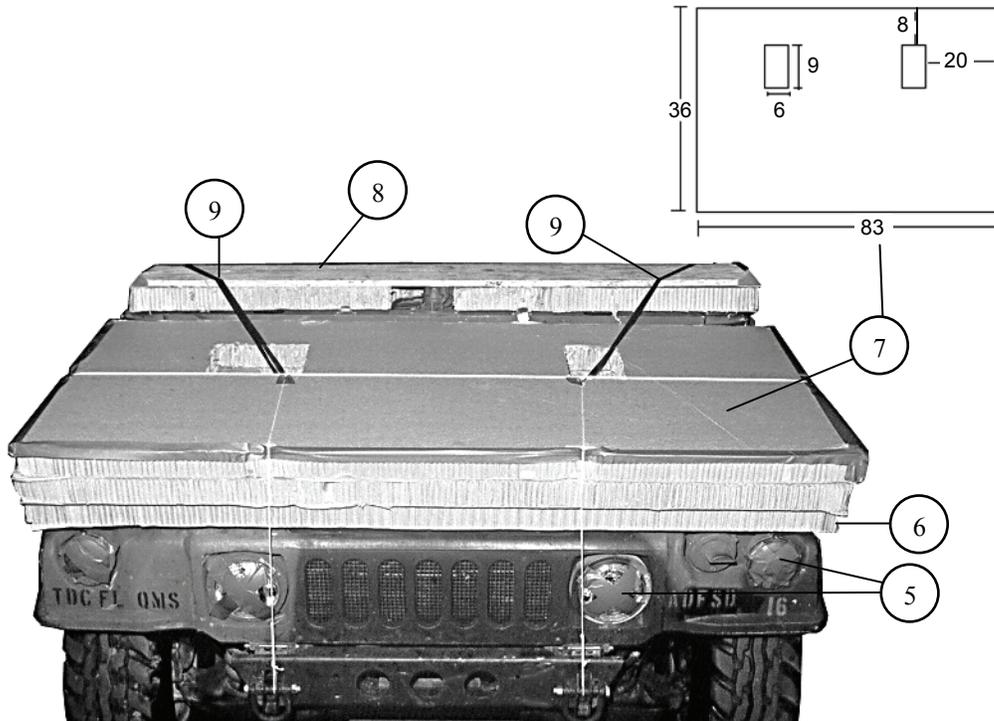


Figure 2-16. Front of Truck Prepared

- Notes.** 1. This drawing is not drawn to scale.
2. All dimensions are given in inches.



- 5 Tape all lights and reflectors. Tape the hood latches.
- 6 Center a 78- by 4-inch piece of honeycomb along the front edge of the hood.
- 7 Place two 83- by 36-inch pieces of honeycomb, with cutouts as shown, on the hood. Tie one length of type III nylon cord over the honeycomb to the front coil springs on each side. Tie two lengths of type III nylon cord from the airlift bracket to the front tie-down bracket on each side. Tape the honeycomb where the cord passes over the edges.
- 8 Place a 3/4- by 78- by 19-inch piece of plywood over the honeycomb placed in step 4. Round the front corners, and drill a 1/2-inch hole 6 inches from the bottom and 1 inch from each end.
- 9 Secure the plywood with two lengths of 1/2-inch tubular nylon webbing tied from the airlift bracket to the windshield securing pin on each side.

Figure 2-16. Front of Truck Prepared (continued)

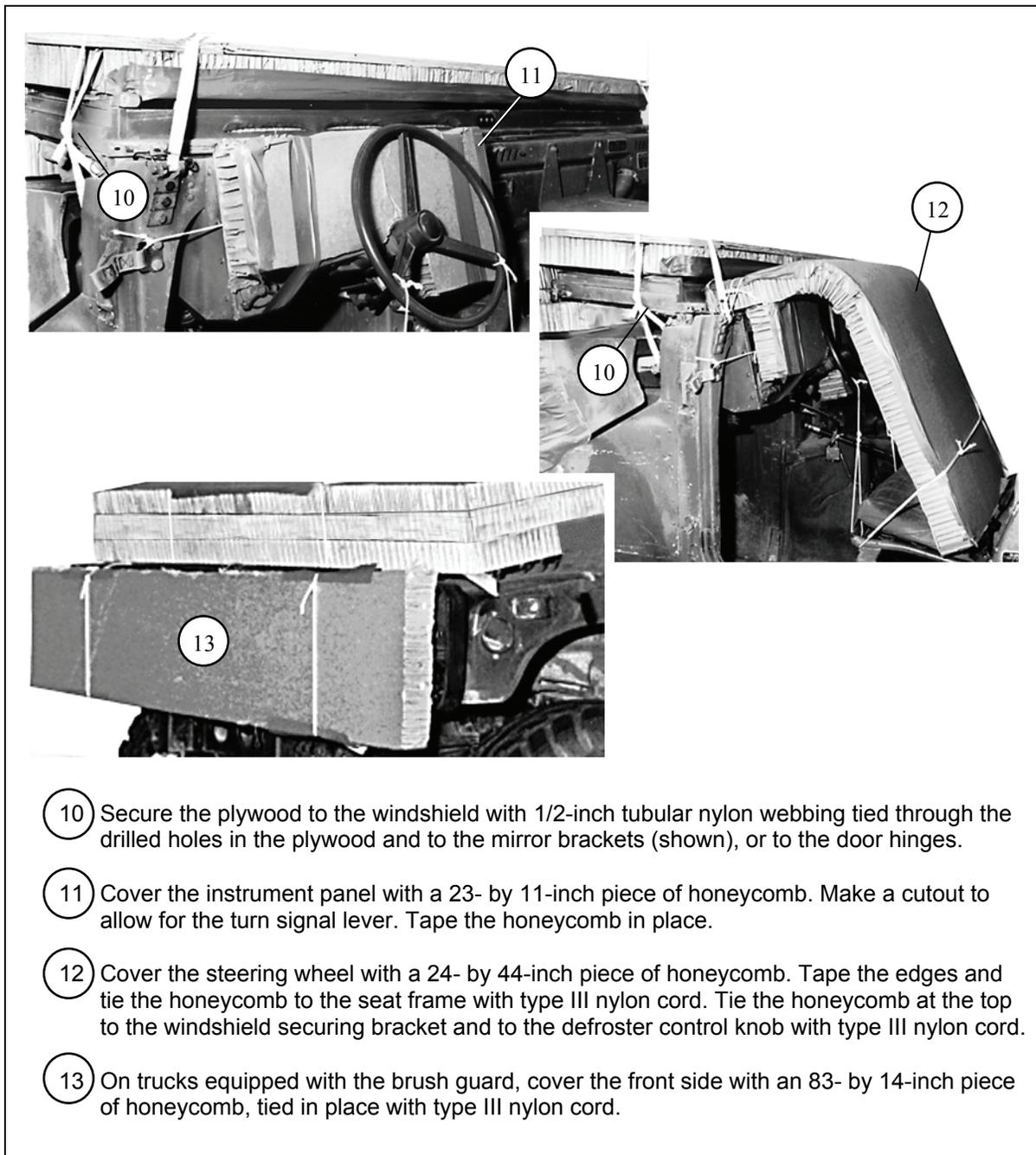


Figure 2-16. Front of Truck Prepared (continued)

- Prepare and secure the pioneer tool kit according to TM 9-2320-280-10/TO 36A12-1A-2091-1/TM 2320-10/6, and as shown in Figure 2-17.

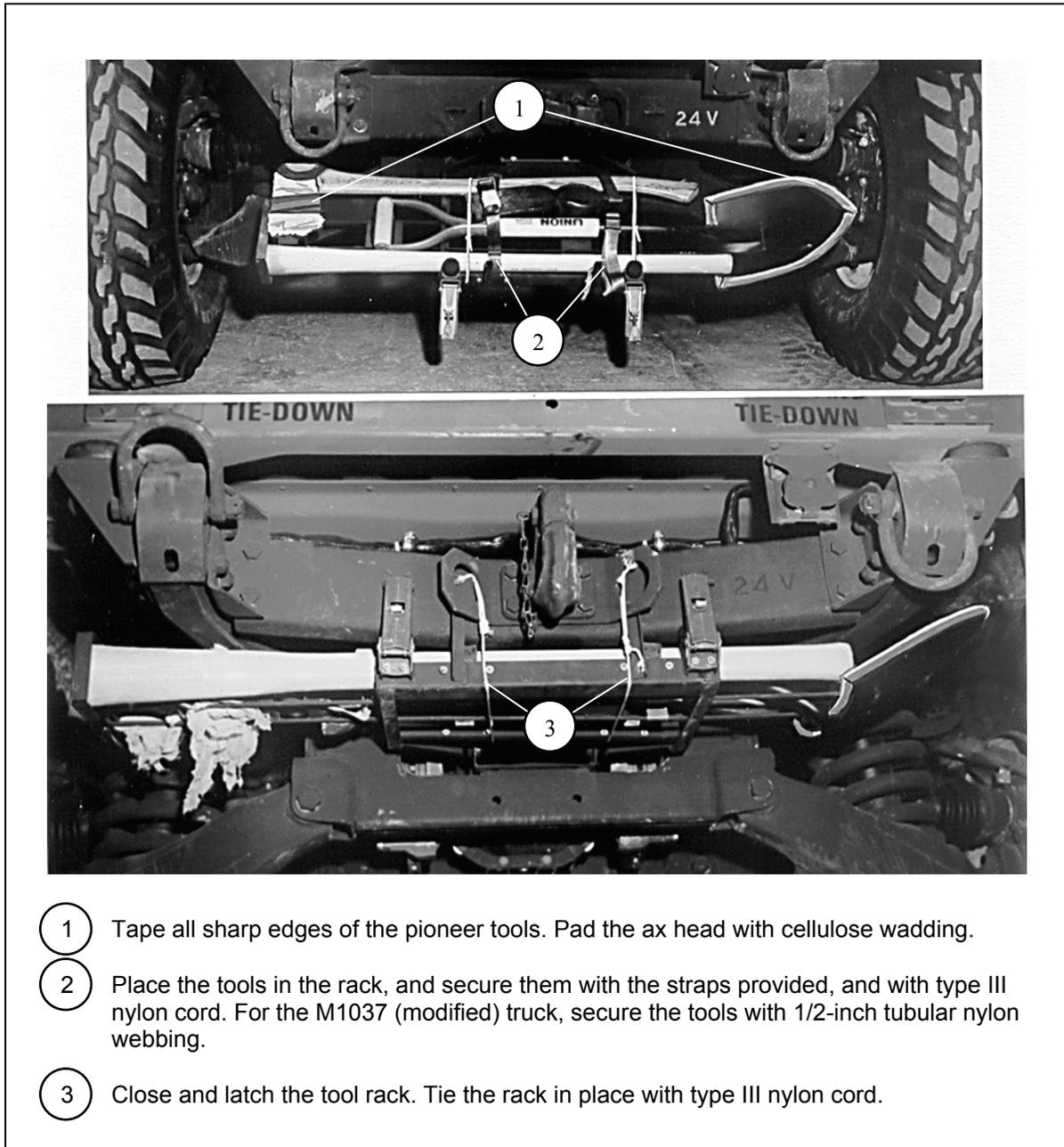
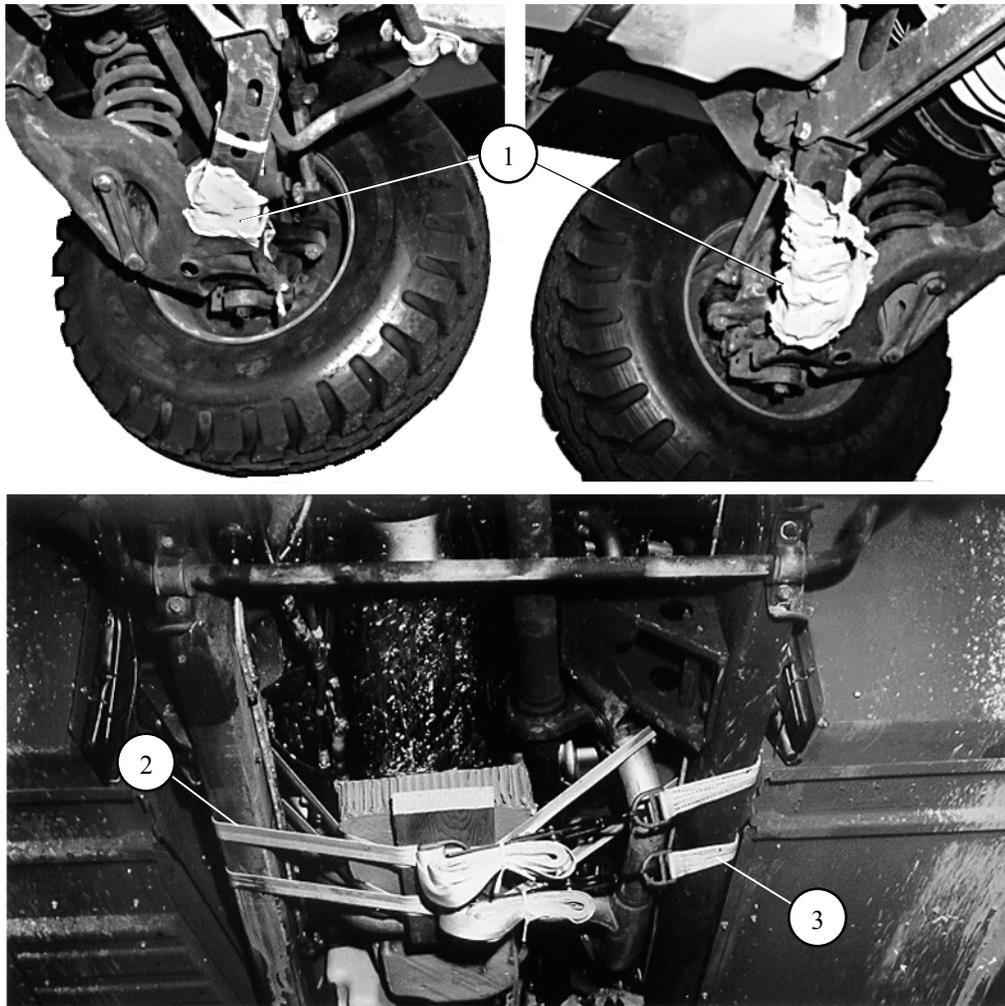


Figure 2-17. Pioneer Tool Kit Secured

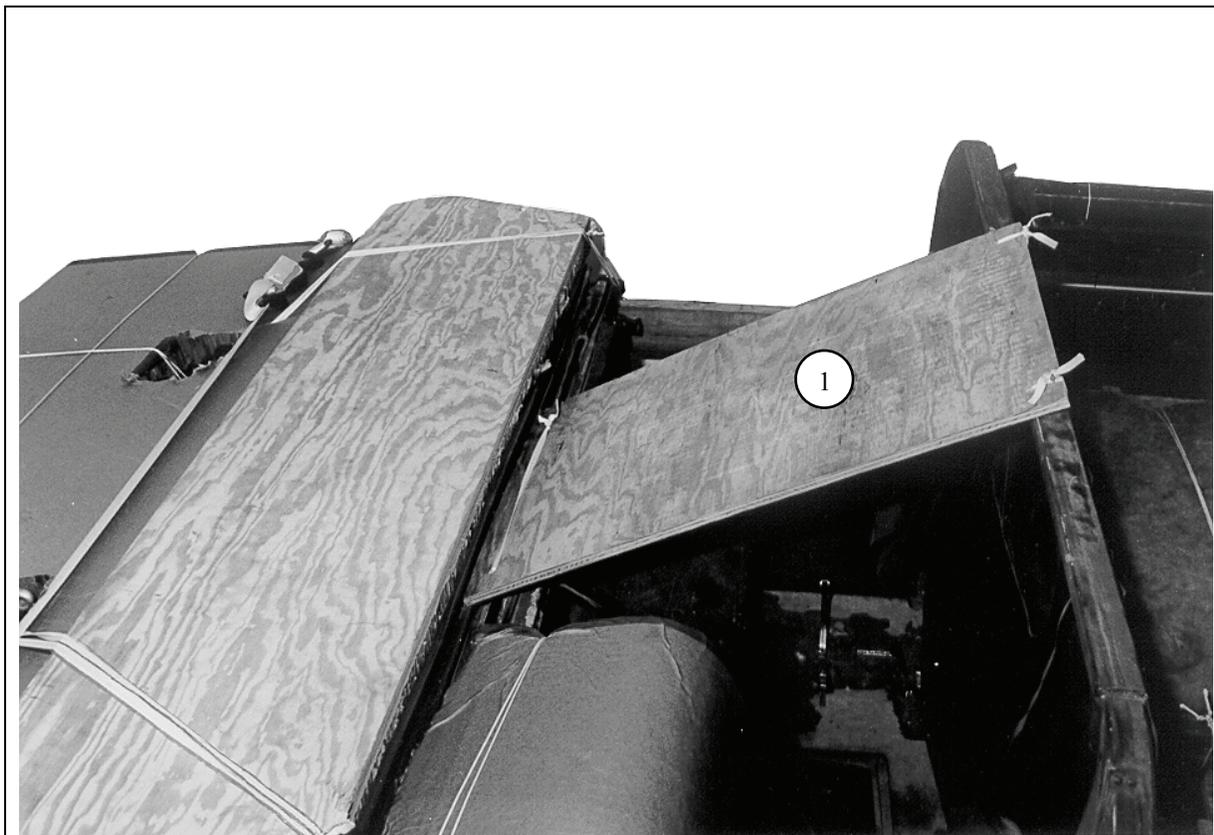
- Prepare the underside of the truck as shown in Figure 2-18.



- 1 Pad the lower control arms on the front and rear of the truck with cellulose wadding taped in place.
- 2 Pass a 15-foot lashing over the right frame rail, under the oil pan, and over the left frame rail. Make sure the lashing goes over the exhaust pipe and then under it. Make sure the wires running along the frame rail are to the outside of the lashing. Place a 12- by 12-inch piece of honeycomb and a 2- by 6- by 16-inch piece of lumber between the lashing and the oil pan. Fasten the lashing with a D-ring and a load binder.
- 3 Install another lashing just to the rear of the lashing installed in step 2. Route the lashing in the same way.

Figure 2-18. Underside of Truck Prepared

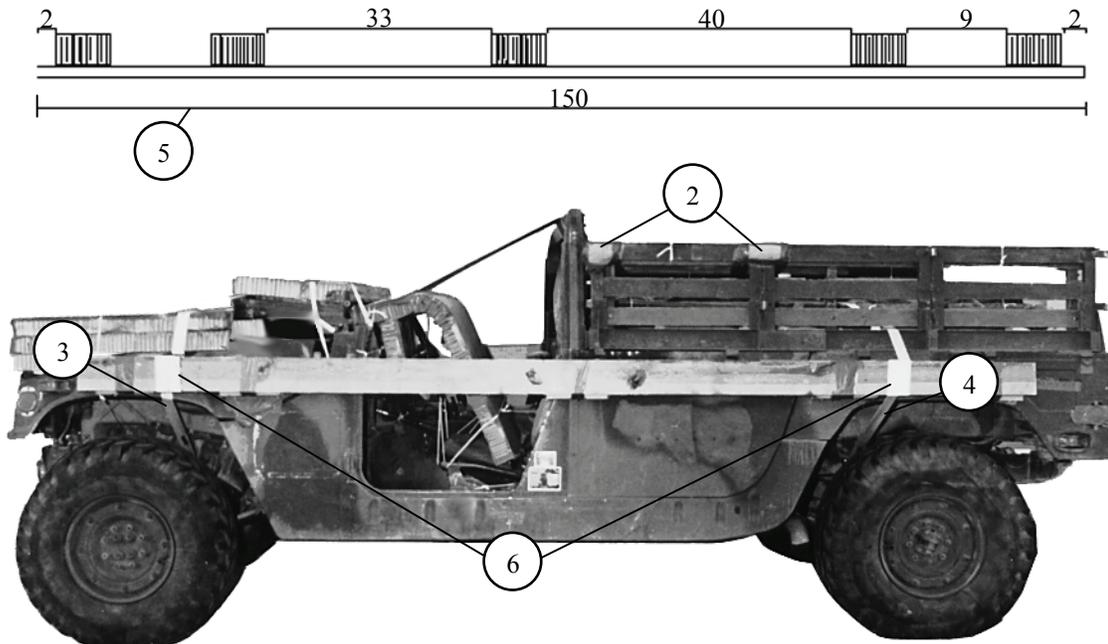
- Prepare the truck body as shown in Figure 2-19.



- 1 Drill 1/2-inch holes 2 inches in from each corner of a 3/4- by 24- by 42-inch piece of plywood. Center the plywood over the cab with one 24-inch edge resting on the bottom of the windshield frame and the other end on the B-pillar. Secure the plywood to the B-pillar and to convenient points in the cab with 1/2-inch tubular nylon webbing. This plywood will be used as a platform for the release.

Figure 2-19. Truck Body Prepared

- Notes.** 1. This drawing is not drawn to scale.
2. All dimensions are given in inches.



- 2 If the wooden cargo body sides are installed, pad all sharp edges with cellulose wadding taped in place.
- 3 Pass a 15-foot lashing around the upper control arm behind a front wheel and through its own D-ring. Repeat for the other side of the truck.
- 4 Pass a 15-foot lashing around the upper control arm behind a rear wheel and through its own D-ring. Repeat for the other side of the truck.
- 5 Tape five 6- by 10-inch pieces of honeycomb to a 2- by 6- by 150-inch piece of lumber spaced as shown. Repeat for the second side board.
- 6 Bring the lashings positioned in steps 3 and 4 around the boards two turns. Secure the lashings from the left and right sides of the truck together with D-rings and load binders.

Figure 2-19. Truck Body Prepared (Continued)

STOWING HOWITZER EQUIPMENT AND AMMUNITION IN TRUCK

2-8. Stow the howitzer equipment, the gun crew equipment, and eight boxes of 105-millimeter ammunition in the bed of the truck as shown in Figures 2-20 and 2-21. Loads that vary from the load shown must be similarly restrained and must weigh no less than 800 pounds and no more than 2,000 pounds.

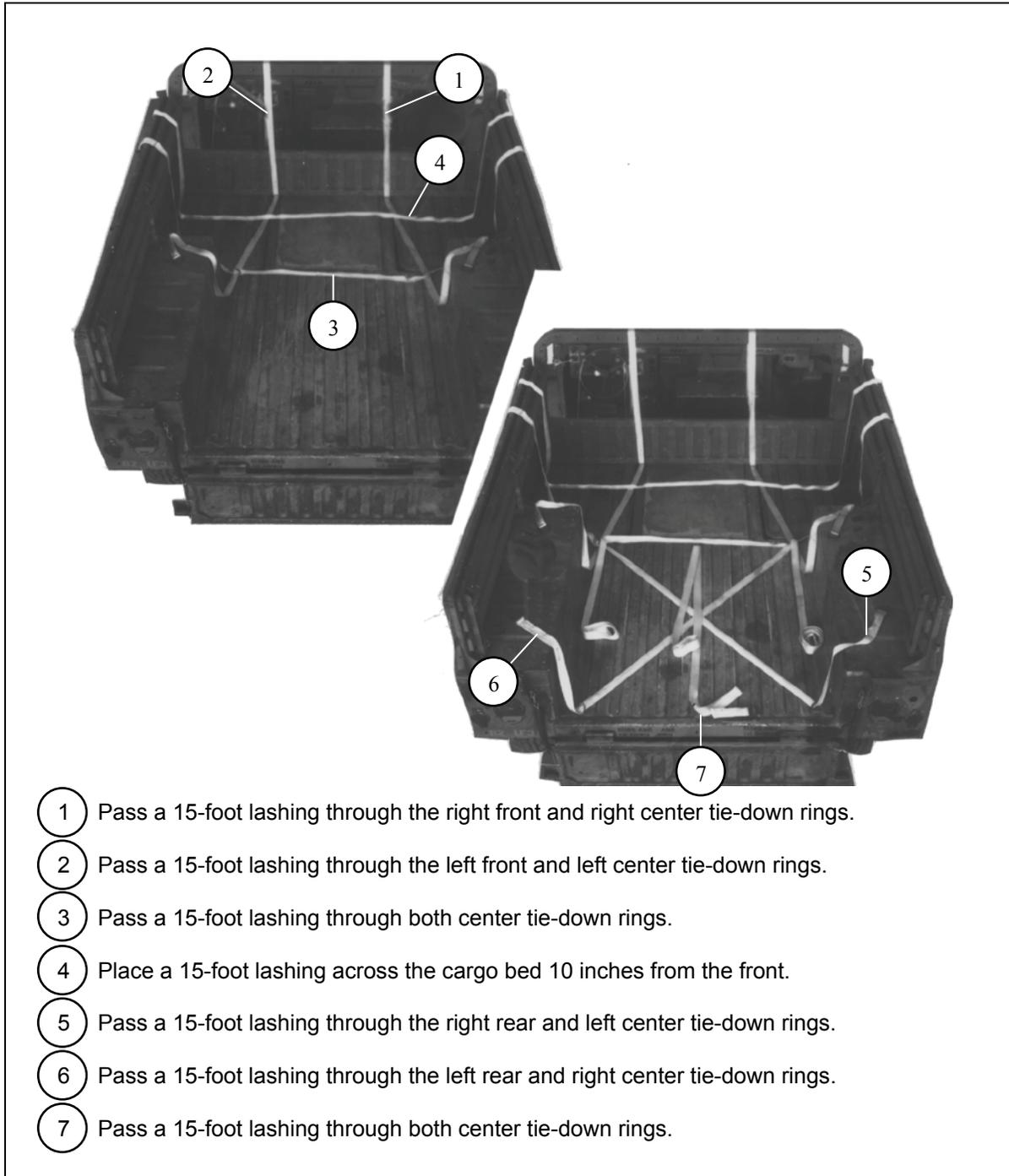
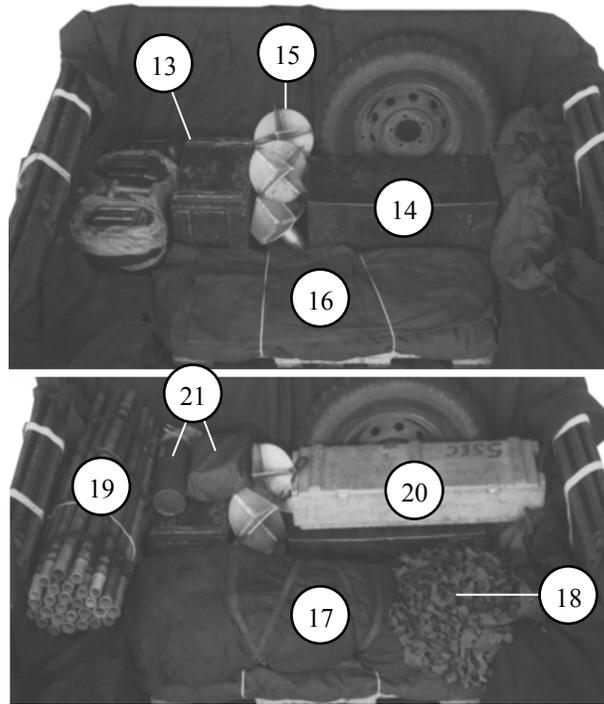
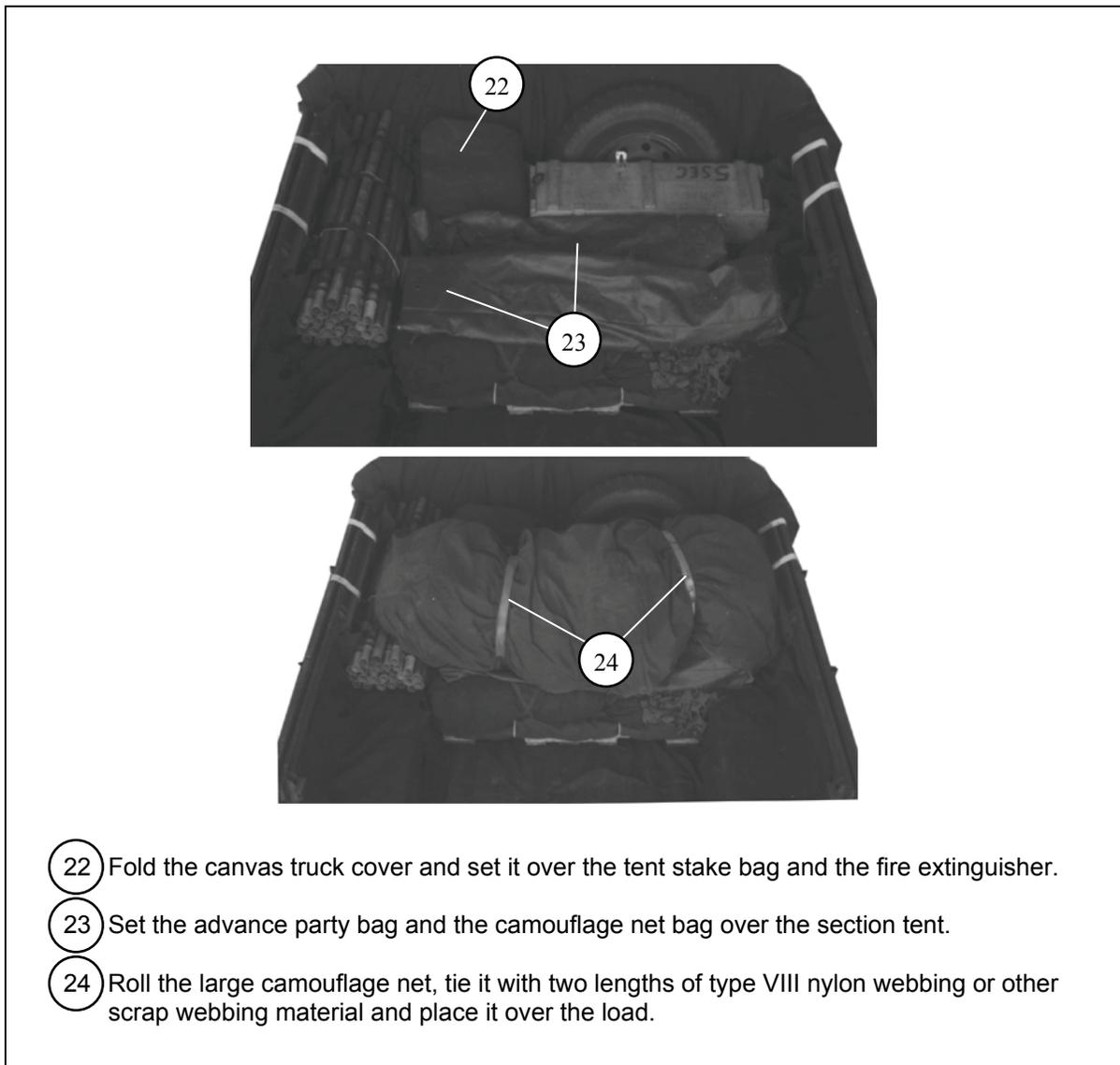


Figure 2-20. Howitzer Equipment Stowed in Truck



- 13 Place the gun display unit box against the fuel cans.
- 14 Place the section chest against the wheel and the sling bag.
- 15 Set the self-emplacement stakes between the section chest and the gun display unit box.
- 16 Fold the A-22 bag and tie it with two lengths of 1/2-inch tubular nylon webbing. Place it on the pallet behind the boxes.
- 17 Fold the section tent and place it on top of the A-22 bag.
- 18 Place the camouflage net on the A-22 bag next to the tent.
- 19 Place the camouflage net poles on the left side. Tie them together with 1/2-inch tubular nylon webbing.
- 20 Place the nuclear, biological, and chemical (NBC) contingency box on top of the section chest.
- 21 Place the bag of tent stakes and the fire extinguisher on top of the gun display unit box.

Figure 2-20. Howitzer Equipment Stowed in Truck (Continued)



- 22 Fold the canvas truck cover and set it over the tent stake bag and the fire extinguisher.
- 23 Set the advance party bag and the camouflage net bag over the section tent.
- 24 Roll the large camouflage net, tie it with two lengths of type VIII nylon webbing or other scrap webbing material and place it over the load.

Figure 2-20. Howitzer Equipment Stowed in Truck (Continued)

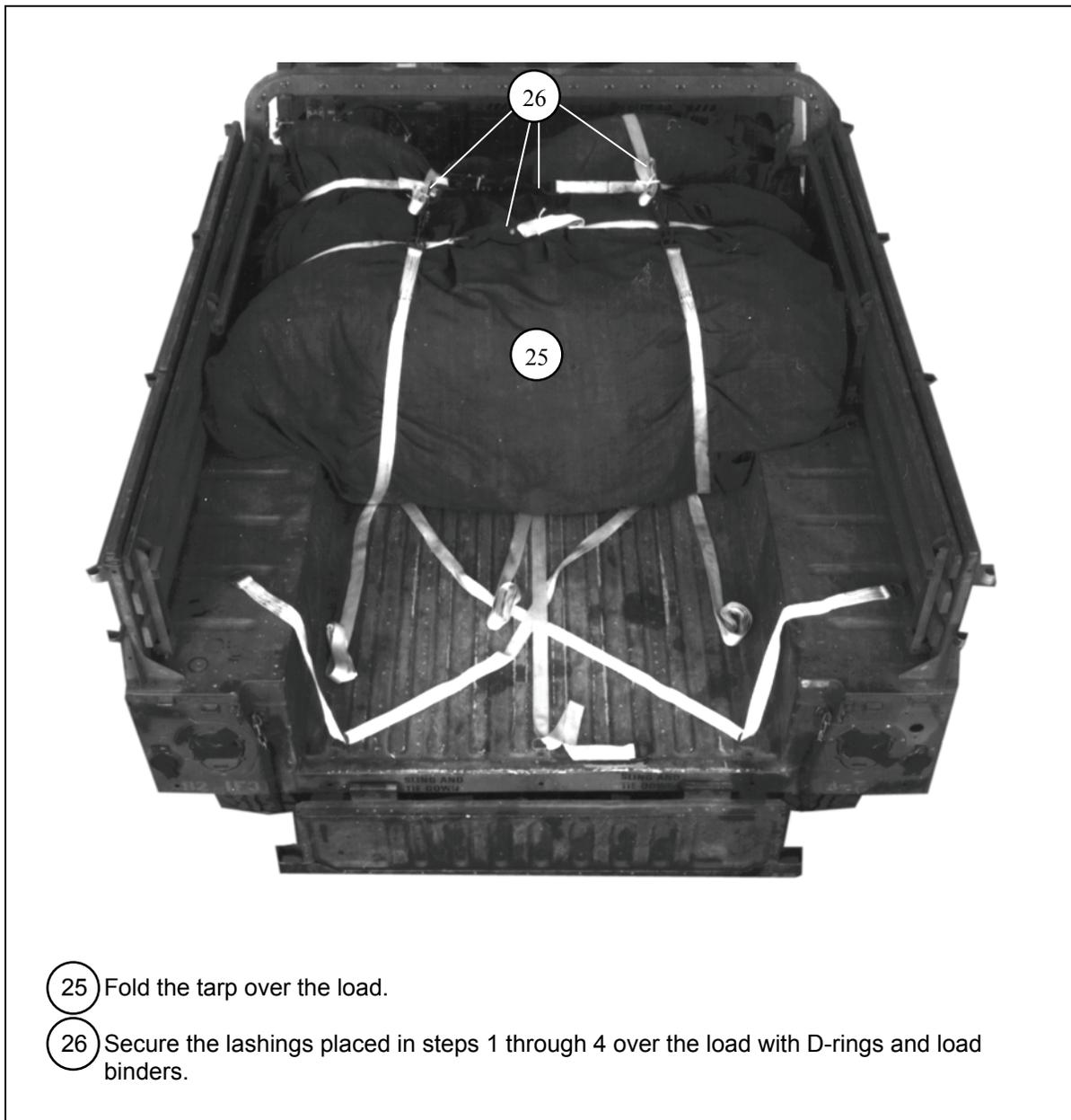


Figure 2-20. Howitzer Equipment Stowed in Truck (Continued)

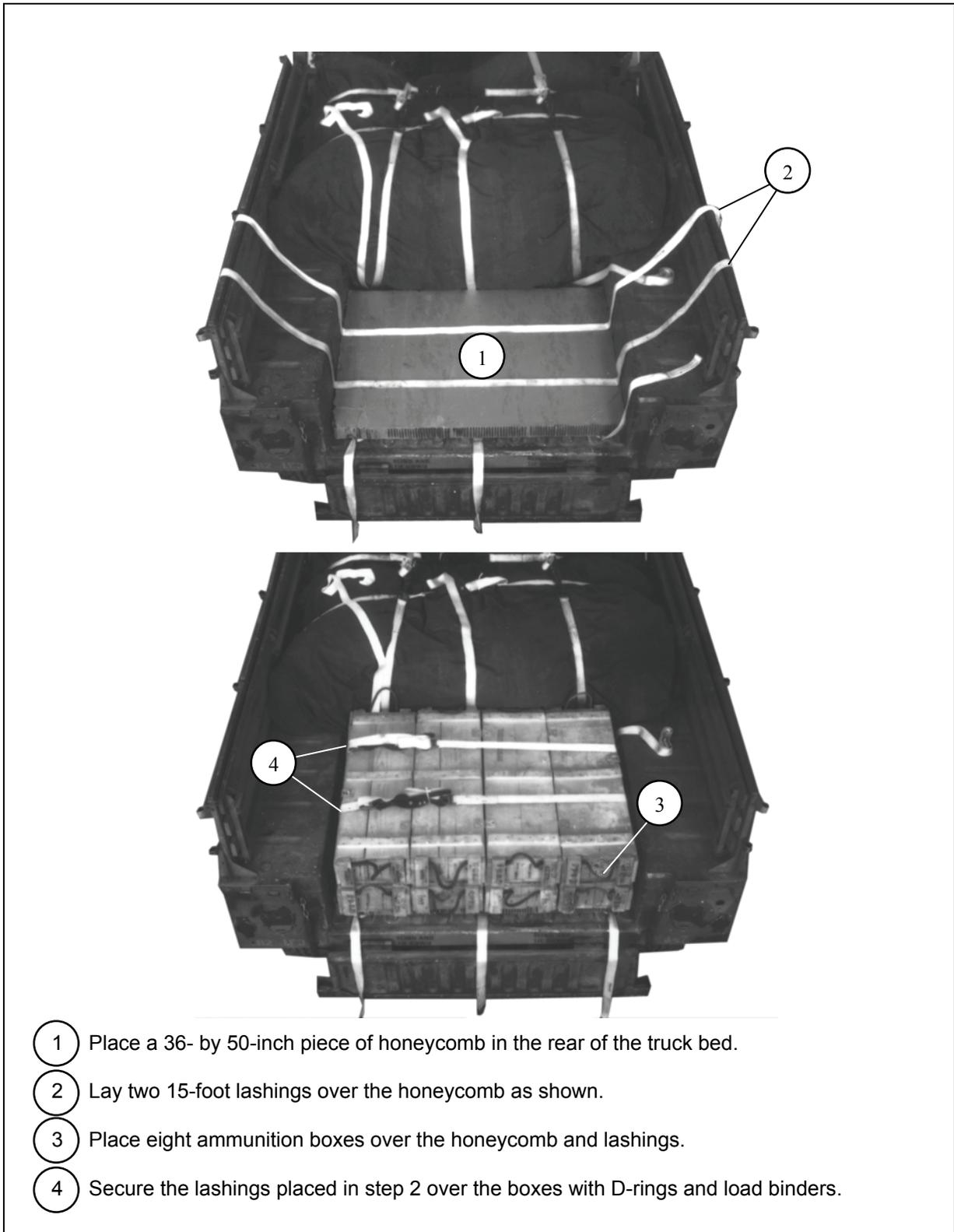
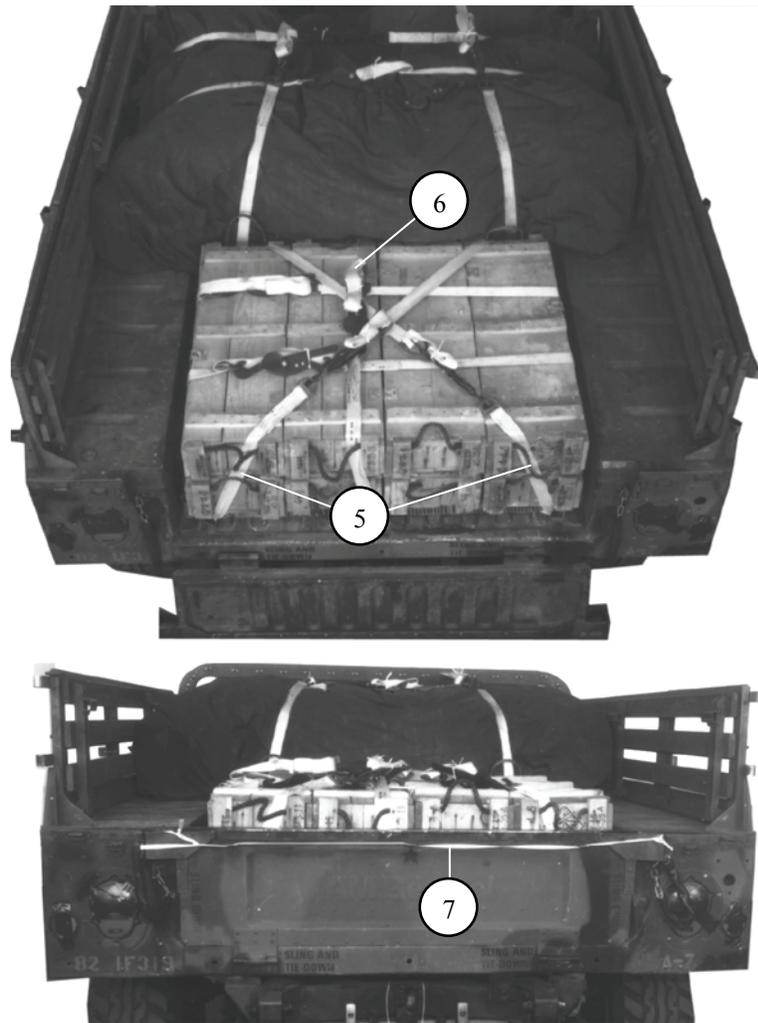


Figure 2-21. Ammunition Stowed in Truck



- 5 Pass the ends of the lashings placed in steps 5 and 6, Figure 2-19, through the nearest box handles and over the boxes. Secure the lashings with D-rings and load binders.
- 6 Pass the ends of the lashing placed in step 7, Figure 2-19, through the upper box handles and over the boxes. Secure the lashing with a D-ring and a load binder.
- 7 Close the tailgate and secure it with a length of 1/2-inch tubular nylon webbing.

Figure 2-21. Ammunition Stowed in Truck (Continued)

POSITIONING HOWITZER AND TRUCK ON PLATFORM

- 2-9. Lift the howitzer and truck and position them on the platform as described below.
- Lift the howitzer as explained in Paragraph 1-7.
 - Lift the truck as explained in Figure 2-22.
 - Position the howitzer and truck as shown in Figure 2-23.

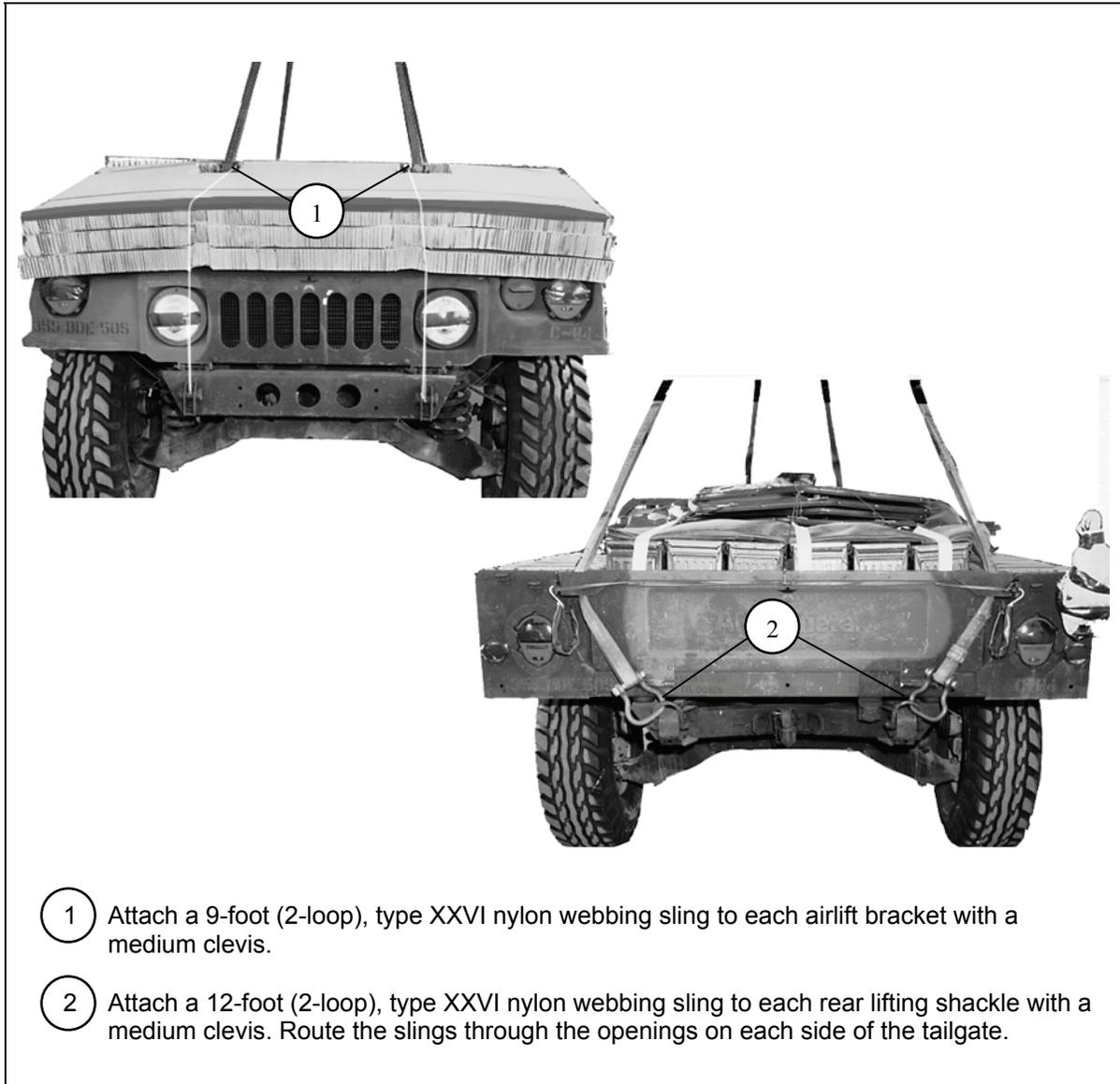


Figure 2-22. Truck Lifted

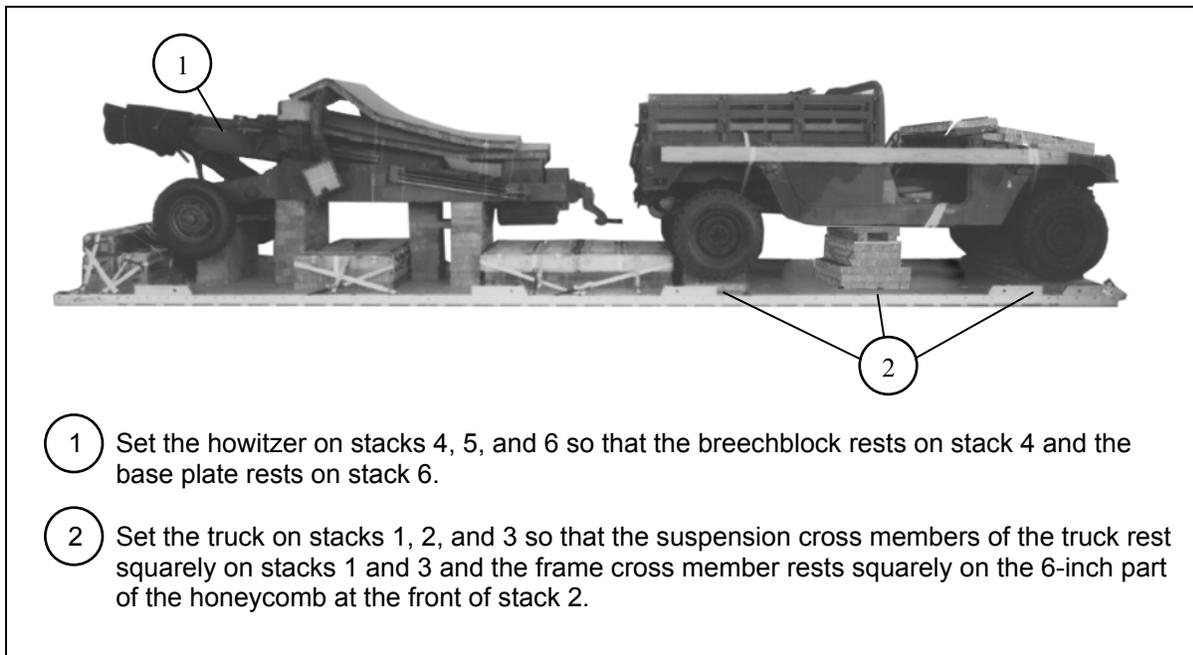
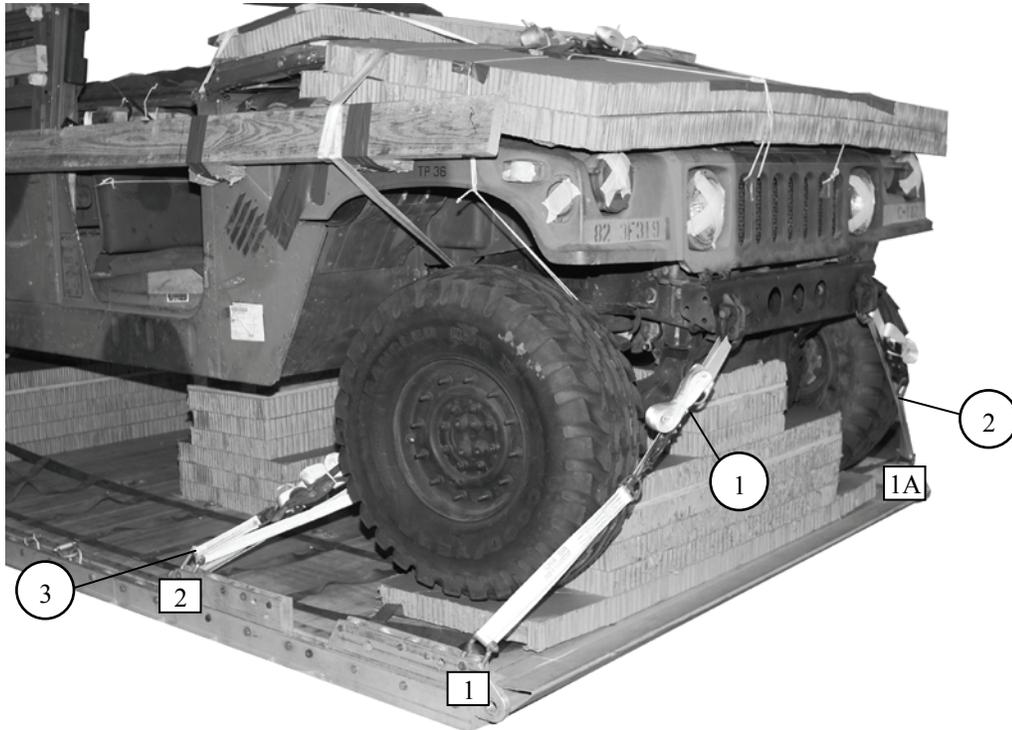


Figure 2-23. Howitzer and Truck Positioned on Platform

LASHING HOWITZER AND TRUCK

2-10. Lash the howitzer and truck to the platform with twenty-six 15-foot lashings as shown in Figure 2-24. Install and safety the lashing according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

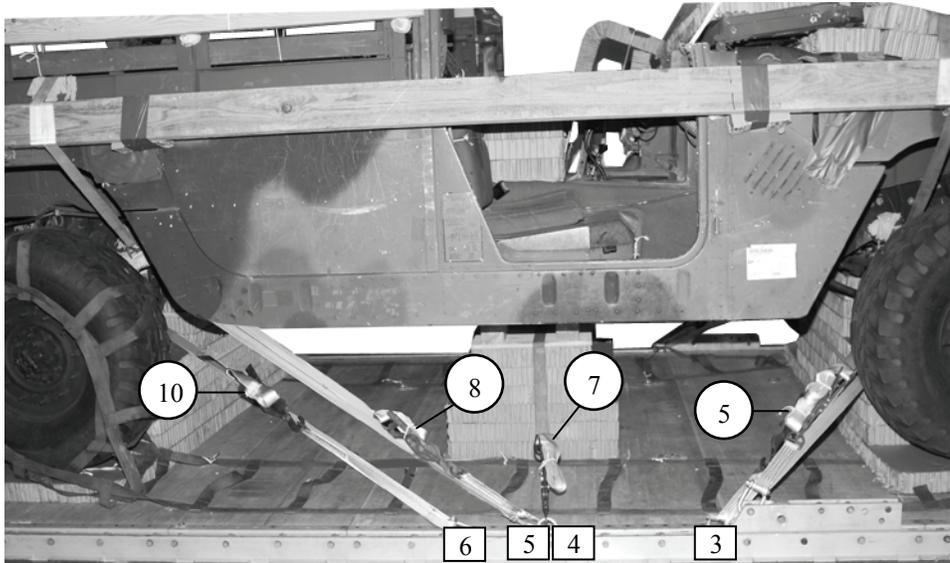
Note. Left and right refer to the truck and howitzer, NOT the platform.



Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashing:
1	1	Through the right front tie-down.
2	1A	Through the left front tie-down.
3	2	Through the right front lower control arm.
4	2A	Through the left front lower control arm (not shown).

Figure 2-24. Lashings Installed

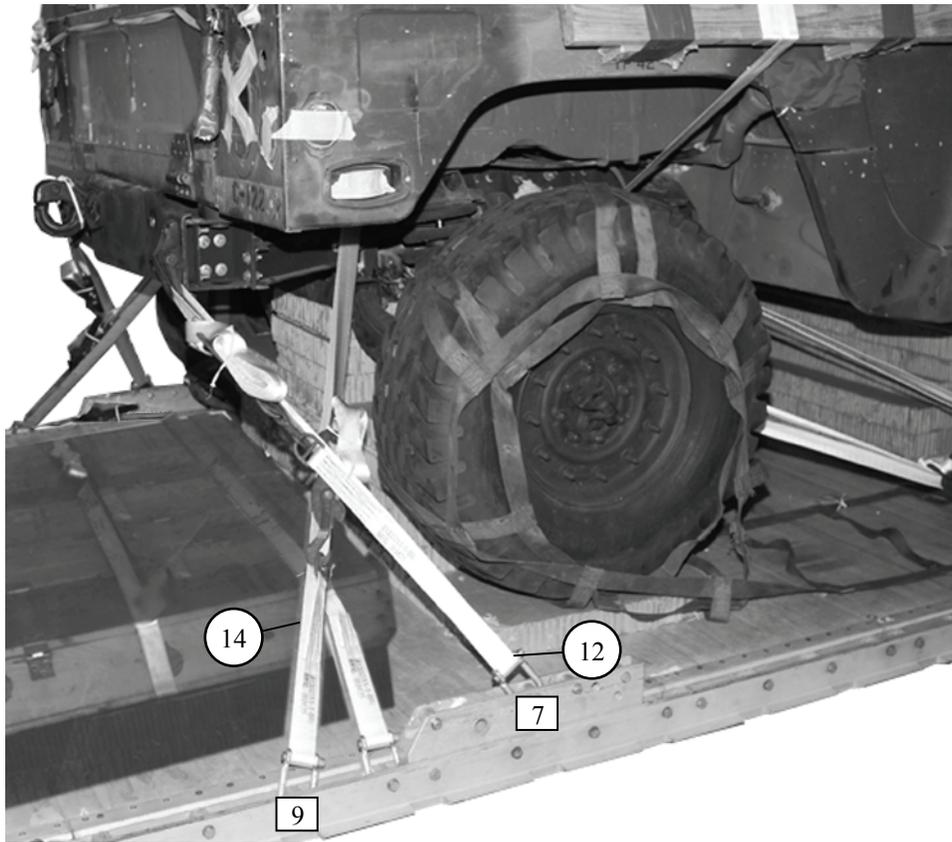
Note. Left and right refer to the truck and howitzer, NOT the platform.



<i>Lashing Number</i>	<i>Tiedown Clevis Number</i>	<i>Instructions</i>
		Pass lashing:
5	3	Through tie-down bracket behind right front coil spring.
6	3A	Through tie-down bracket behind left front coil spring (not shown).
7	4 and 4A	Pass a 15-foot lashing through clevis 4A and through its own D-ring. Pass the lashing through the hole in stack 2. Attach the lashing to clevis 4 with a load binder.
8	5	Through tie-down bracket in front of the right rear coil spring.
9	5A	Through tie-down bracket in left of the right rear coil spring (not shown).
10	6	Around right rear lower control arm.
11	6A	Around left rear lower control arm.

Figure 2-24. Lashings Installed (Continued)

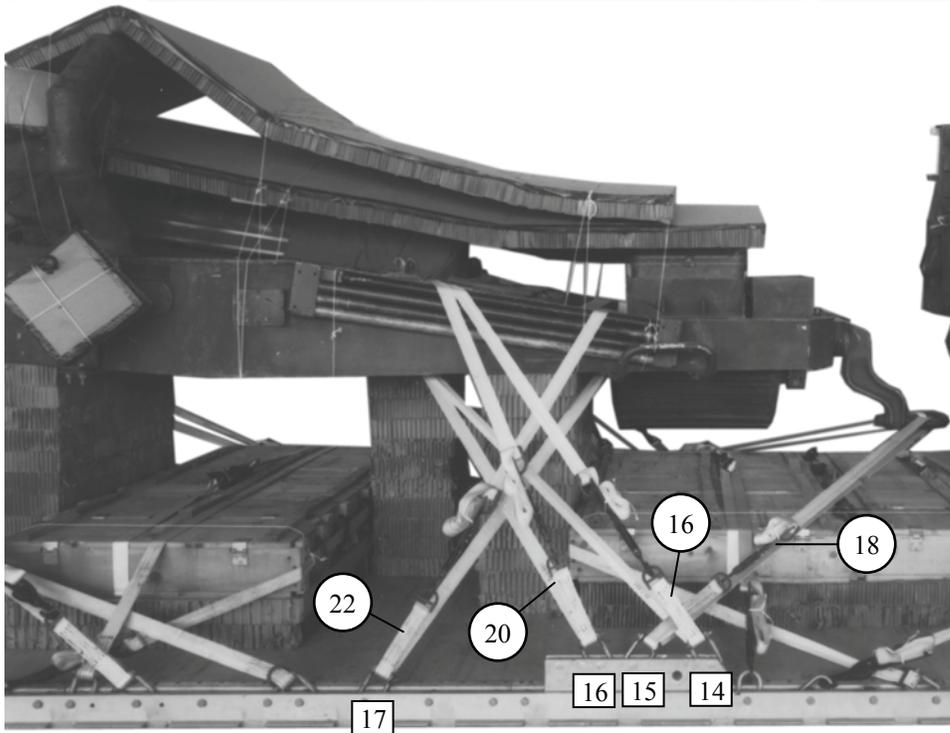
Note. Left and right refer to the truck and howitzer, NOT the platform.



<i>Lashing Number</i>	<i>Tiedown Clevis Number</i>	<i>Instructions</i>
12	7	Pass lashing: Through the right rear lifting shackle.
13	7A	Through the left rear lifting shackle (not shown).
14	9	Through tie-down bracket behind the right rear coil spring.
15	9A	Through tie-down bracket behind the left rear coil spring (not shown).

Figure 2-24. Lashings Installed (Continued)

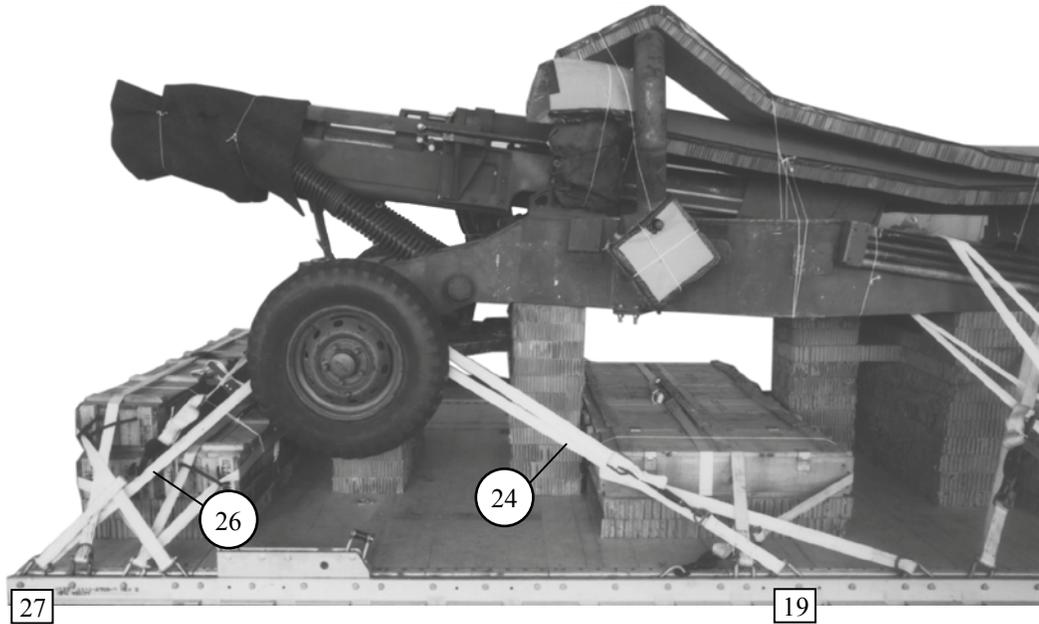
Note. Left and right refer to the truck and howitzer, NOT the platform.



<i>Lashing Number</i>	<i>Tiedown Clevis Number</i>	<i>Instructions</i>
16	14	Pass lashing: Around left trail.
17	14A	Around right trail.
18	15	Through lunette.
19	15A	Through lunette.
20	16	Around left trail.
21	16A	Around right trail.
22	17	Around left trail.
23	17A	Around right trail.

Figure 2-24. Lashings Installed (Continued)

Note. Left and right refer to the truck and howitzer, NOT the platform.



Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashing:
24	19	Around left wheel support arm.
25	19A	Around right wheel support arm.
26	27	Around left wheel support arm.
27	27A	Around right wheel support arm.

Figure 2-24. Lashings Installed (Continued)

INSTALLING AND SAFETY TIEING SUSPENSION SLINGS

2-11. Install the suspension slings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 2-25. Pad and safety the suspension slings as shown in Figure 2-26.

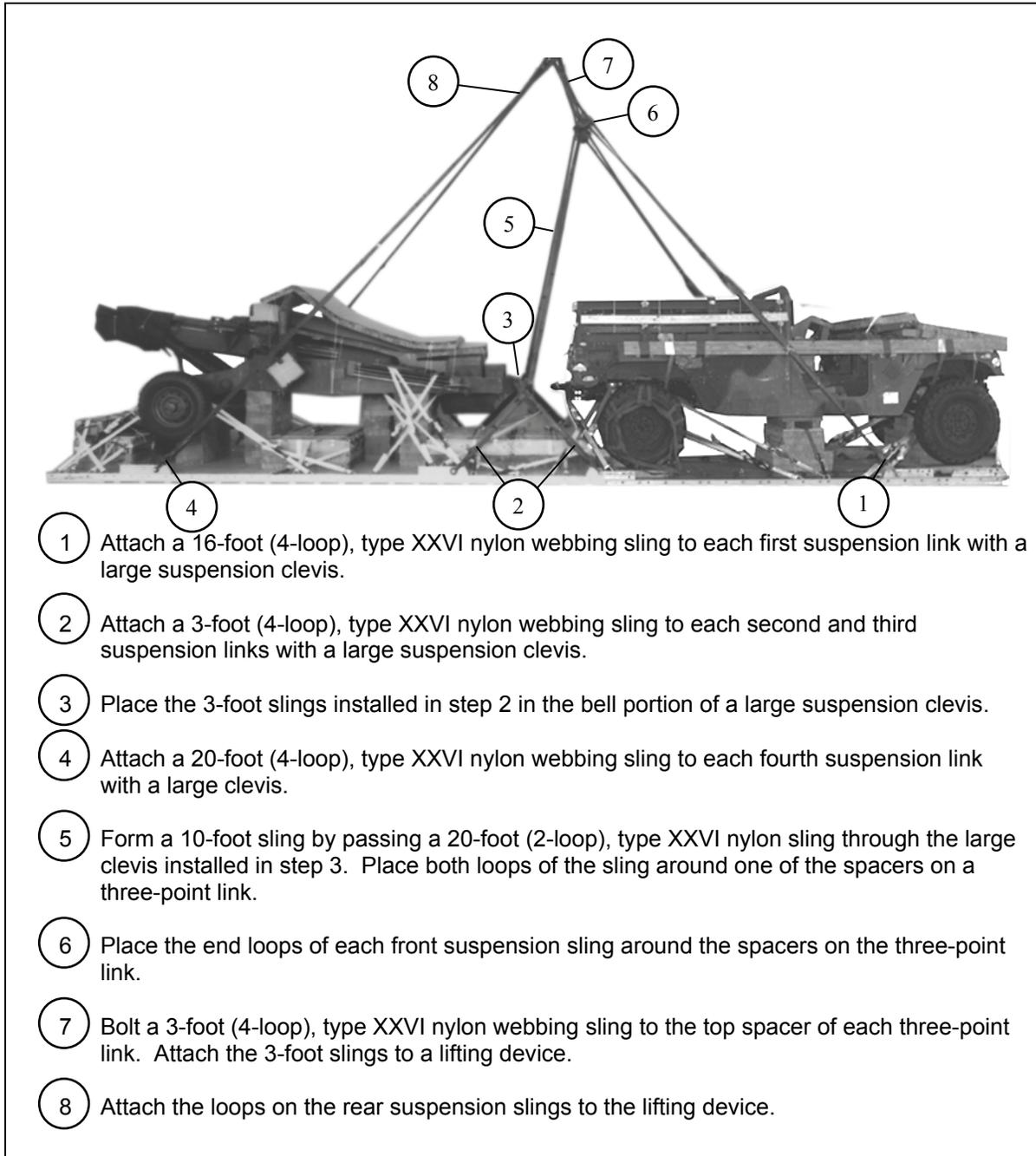


Figure 2-25. Suspension Sling Installed

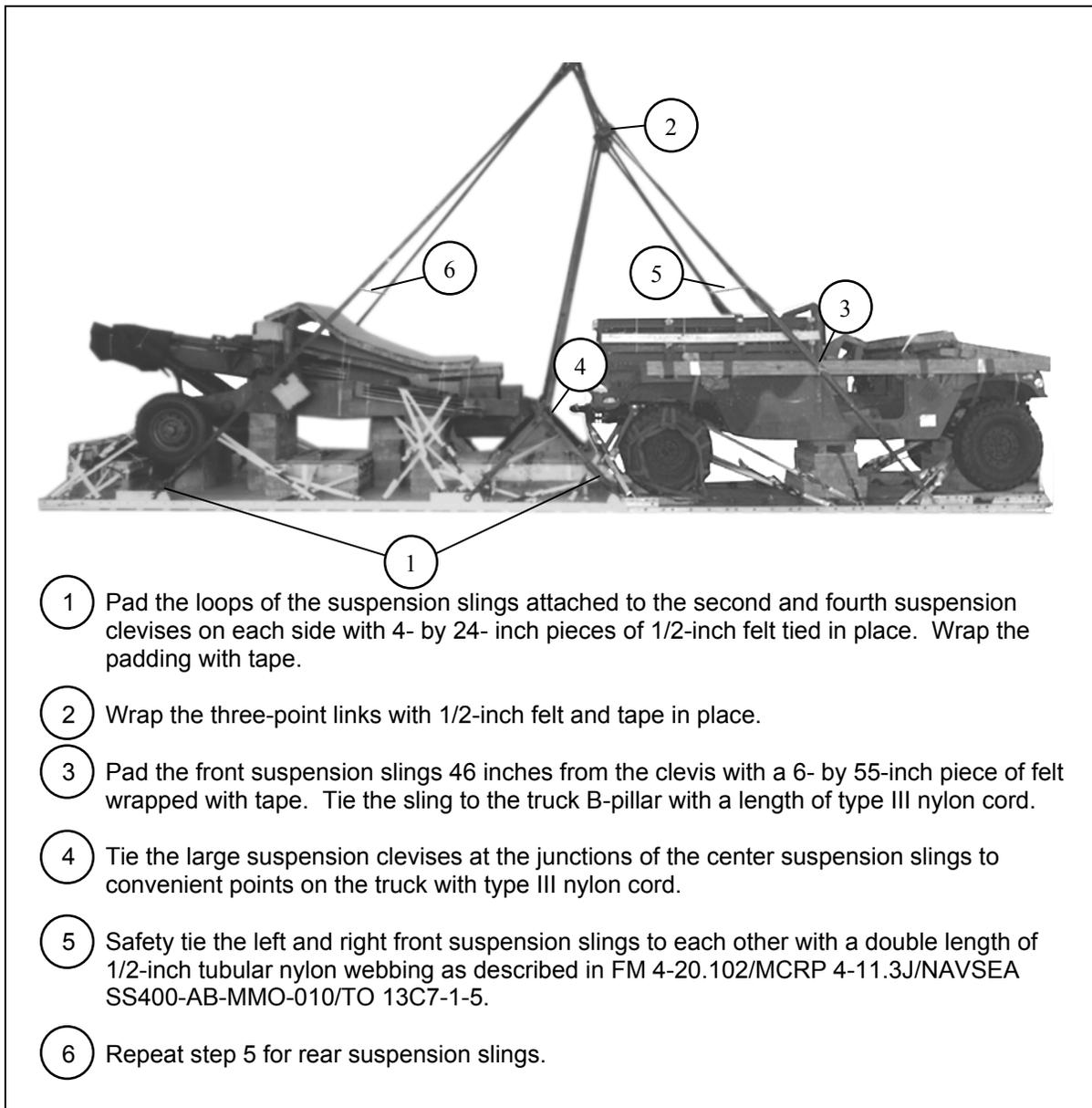
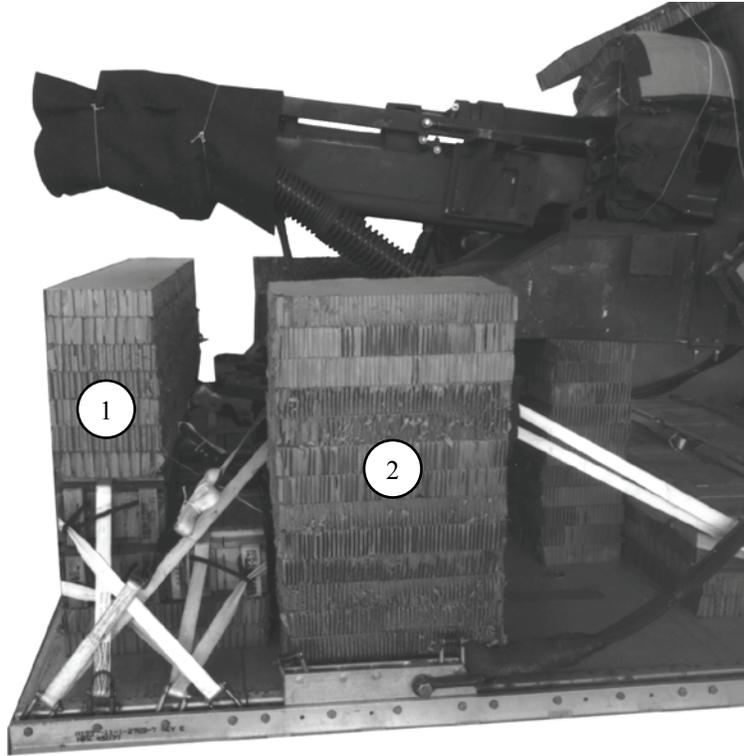


Figure 2-26. Suspension Slings Padded and Safety Tied

PREPARING STOWAGE PLATFORM AND STOWING CARGO PARACHUTES

2-12. Prepare the stowage platform and stow the cargo parachutes as described below.

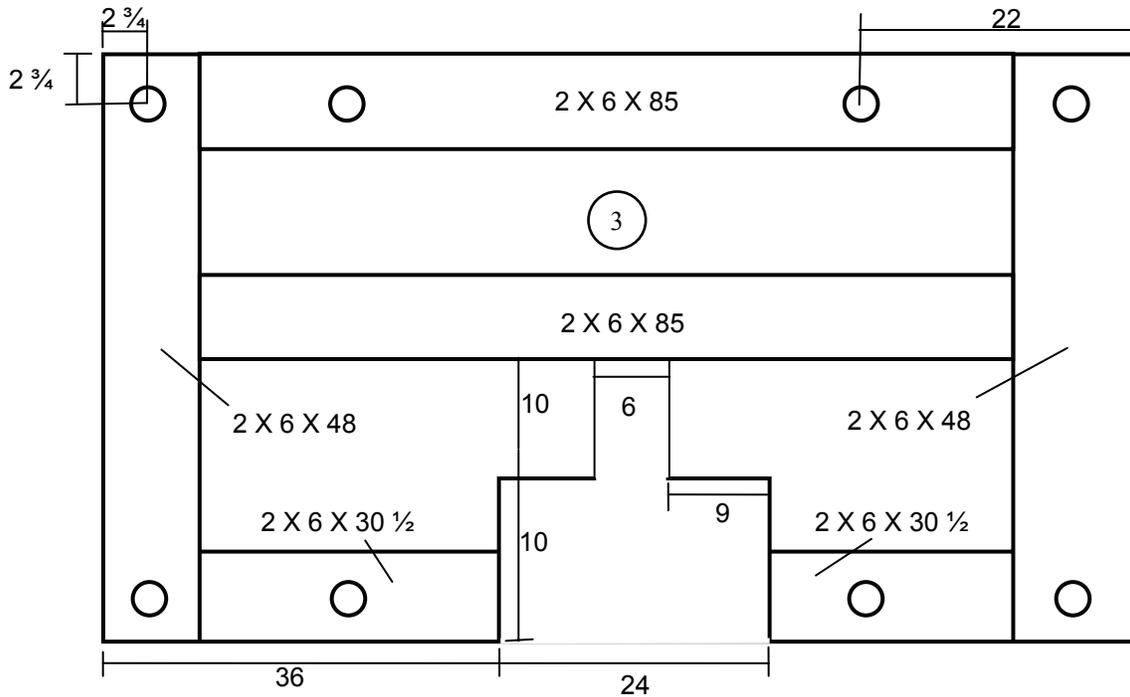
- Prepare the cargo parachute stowage platform as shown in Figure 2-27.
- Prepare and stow four G-11 cargo parachutes according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 2-28.



- 1 Place seven 12- by 74-inch pieces of honeycomb flush over the rear ammunition stack even with the rear edge of the platform.
- 2 Make two 14-layer stacks of 12- by 24-inch pieces of honeycomb. Place one stack on each side of the howitzer 30 inches from the rear edge of the platform and 2 inches from the suspension links.

Figure 2-27. Stowage Platform Prepared

- Notes.** 1. This drawing is not drawn to scale.
 2. All dimensions are given in inches.



- 3 Construct the parachute stowage platform from a 48- by 96-inch piece of 3/4-inch plywood. Reinforce the edges and center with 2- by 6-inch lumber as shown. Drill 2-inch holes as shown.

Figure 2-27. Stowage Platform Prepared (Continued)

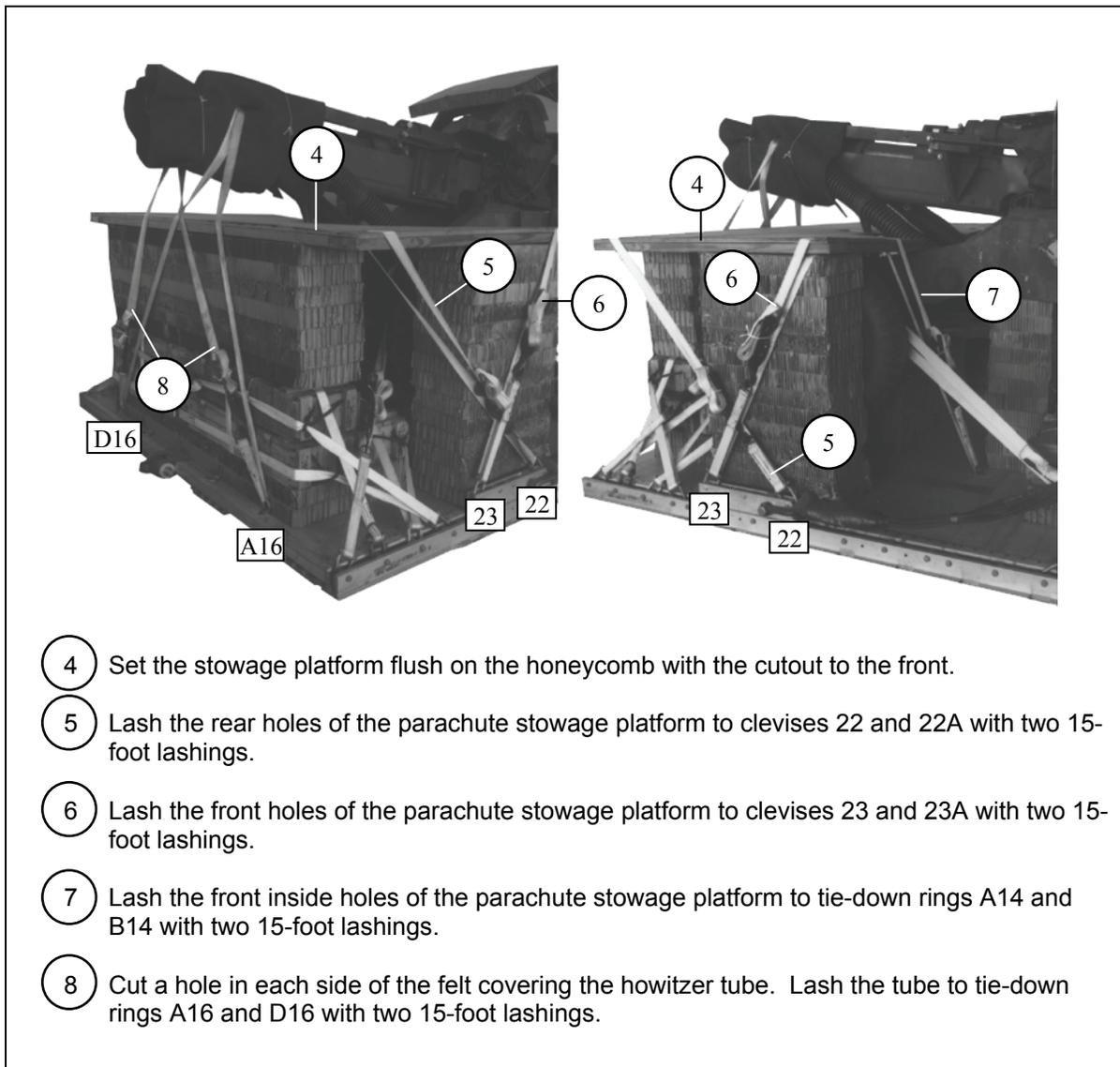


Figure 2-27. Stowage Platform Prepared (Continued)

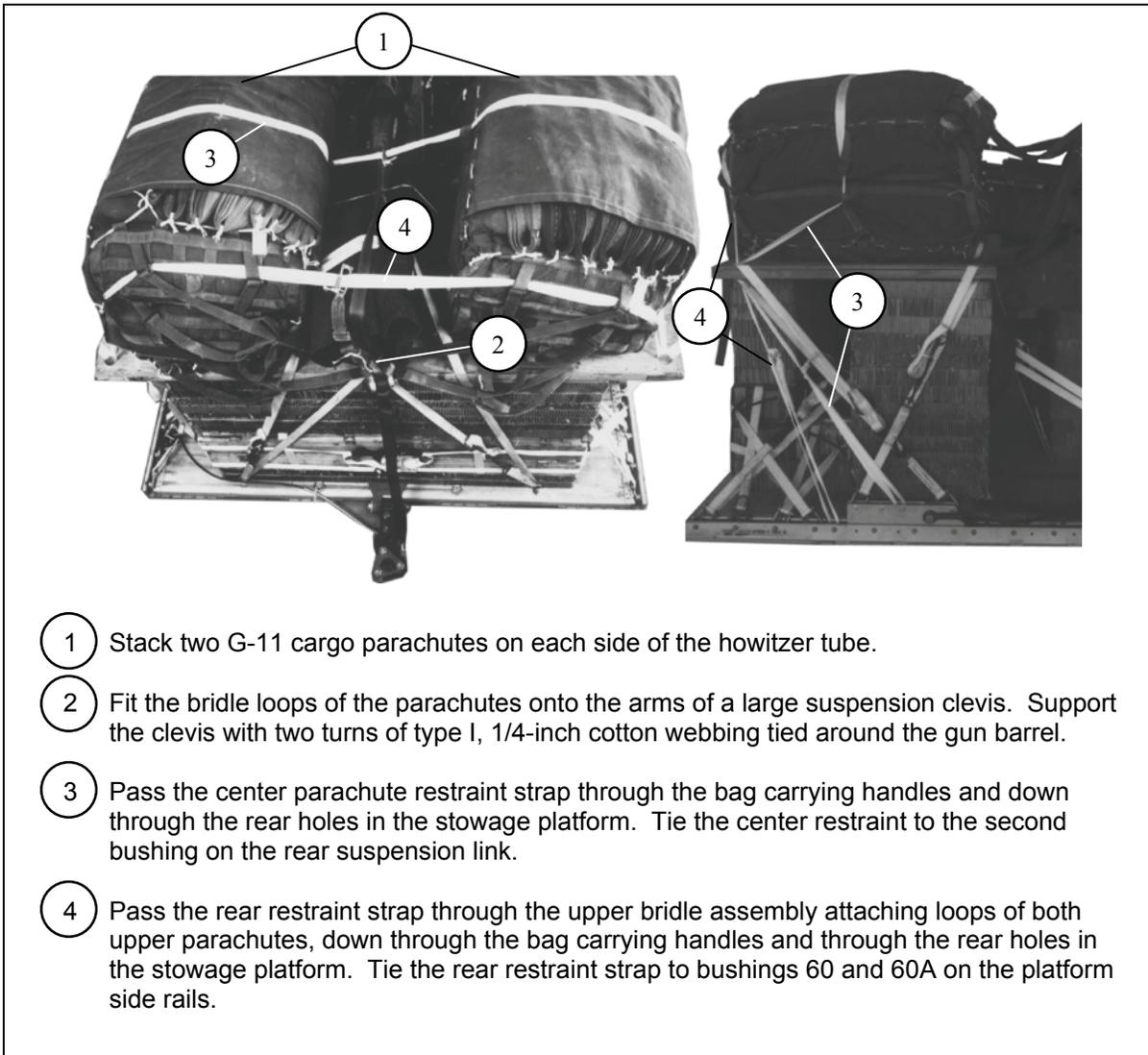


Figure 2-28. Cargo Parachute Stowed

INSTALLING EXTRACTION SYSTEM

2-13. Install the components of the EFTC system according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 2-29. If applicable install the extraction parachute jettison system (EPJS) according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

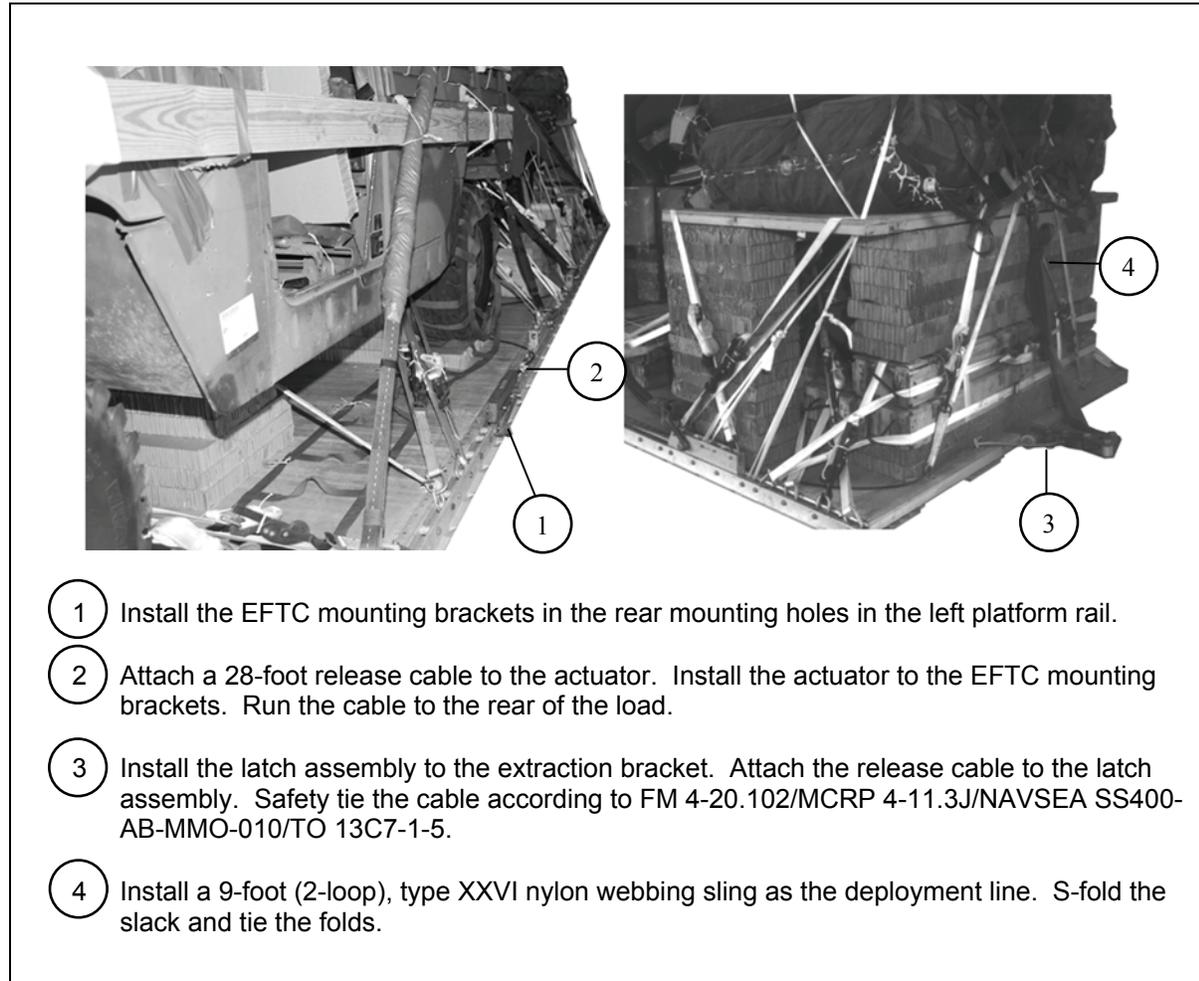


Figure 2-29. Extraction System Installed

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

2-14. Install provisions for emergency restraints according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

INSTALLING RELEASE SYSTEM

2-15. Prepare and install an M-2 cargo parachute release according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 2-30.

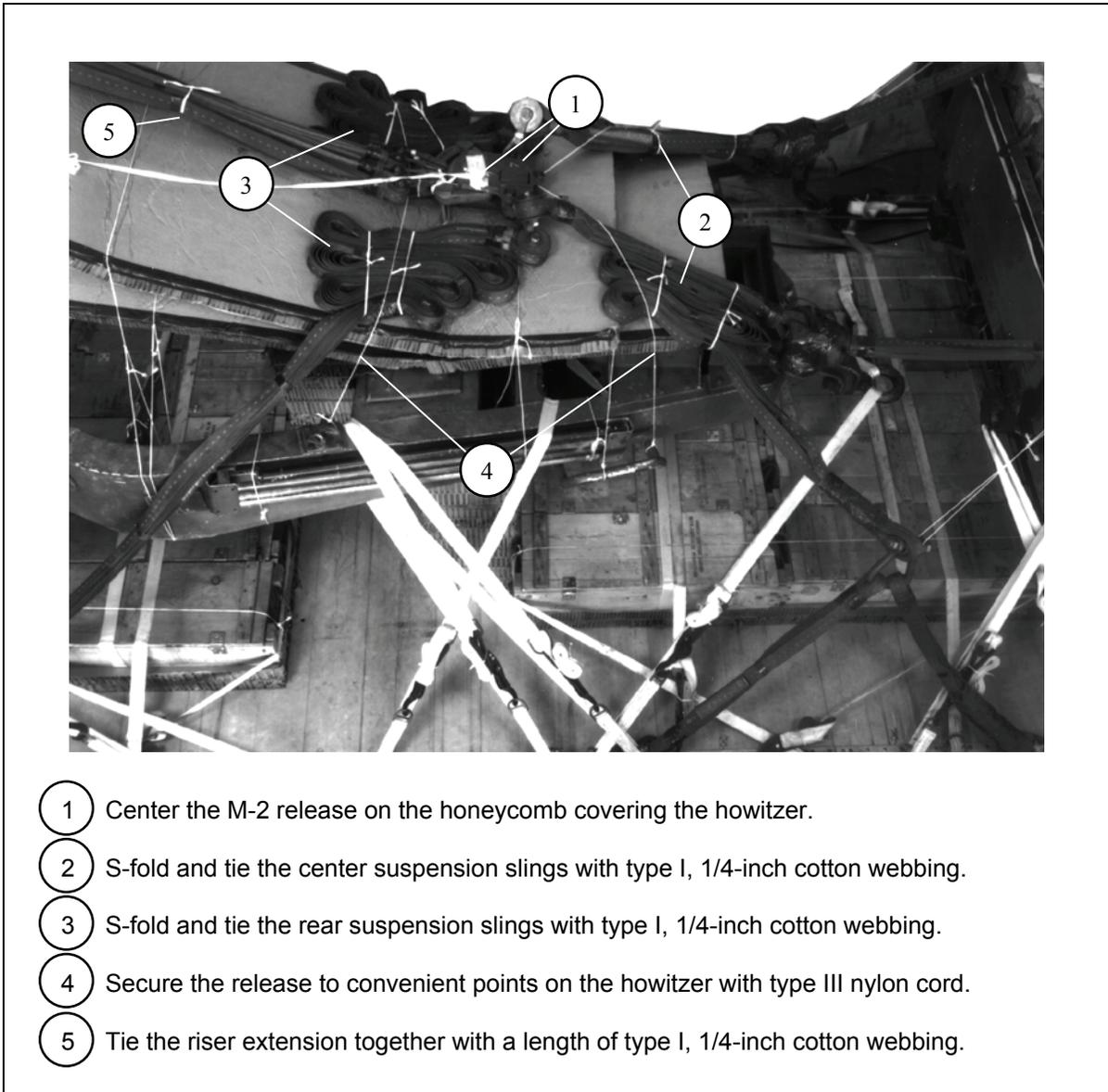


Figure 2-30. M-2 Cargo Parachute Release Installed

PLACING EXTRACTION PARACHUTE

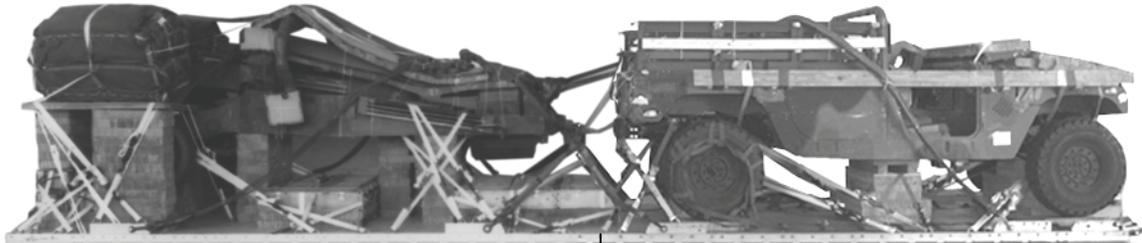
2-16. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Rig the extraction line in an extraction line bag according to TM 10-1670-286-20/TO13C5-2-41. Place the extraction parachute and extraction line on the load for installation in the aircraft.

MARKING RIGGED LOAD

2-17. Mark the rigged load according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 2-31. Complete Shipper's Declaration for Dangerous Goods according to AFMAN 24-204(I)/TM 38-250. If the load varies from the one shown, the weight, height, CB, tip-off cure, and parachute requirements must be recomputed.

CAUTION

Make the final rigger inspection required by FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



CB

RIGGED LOAD DATA

Weight: Load shown.....	17,770 pounds
Maximum load allowed.....	19,000 pounds
Height	83 inches
Width	108 inches
Overall Length.....	402 inches
Overhang: Front	0 inches
Rear (EFTC).....	18 inches
Rear (EPJS).....	30 inches
Center of Balance (from front edge of platform)	196 inches

Figure 2-31. M102 Howitzer with 1 ¼-ton truck and Accompanying Ammunition Rigged for Low-Velocity Airdrop

EQUIPMENT REQUIRED

2-18. Use the equipment listed in Table 2-2 to rig this load.

Table 2-2. Equipment Required for Rigging the M102 Howitzer with 1 1/4-ton Truck and Accompanying Ammunition on a Type V Platform for Low-Velocity Airdrop

<i>National Stock Number</i>	<i>Item</i>	<i>Quantity</i>
8040-00-273-8713	Adhesive paste, 1-gal	As required
	Clevis, suspension:	
4030-00-678-8562	3/4-inch (medium) emergency restraint	13
4030-00-090-5354	1-inch (large)	3
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
1670-00-157-6527	Coupling, airdrop, extraction force transfer with 28-foot cable	1
8305-00-184-2034	Cloth, cotton duck, 60-in	As required
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
8305-00-191-1101	Felt sheet, 1/2-in	As required
1670-01-183-2678	Leaf, extraction line	2
1670-01-064-4452	Line, drogue, 60-foot (1-loop), type XXVI nylon webbing	1
	Line, extraction, type XXVI nylon webbing:	
1670-01-062-6313	60-foot (3-loop)	1
	Or	
1670-01-107-7651	140-foot (3-loop)	1
	Link assembly:	
1670-01-493-6418	Two-point, 3 3/4-in	1
1670-01-493-6420	Two-point, 5 1/2-in	2
	Lumber:	
5510-00-220-6146	2- by 4-in	As required
5510-00-220-6148	2- by 6-in	As required
5510-00-220-6246	2- by 8-in	As required
	Nail, steel wire, common:	
5315-00-010-4659	8d	As required
5315-00-164-5121	20d	As required
1670-00-753-3928	Pad, energy dissipating, honeycomb, 3- by 36- by 96-in	29 Sheets
	Parachute:	
	Cargo:	
1670-01-016-7841	G-11	4
	Cargo extraction:	
1670-01-063-3715	Drogue, 15-foot	1
1670-00-040-8135	28-foot	1

**Table 2-2. Equipment Required for Rigging the M102 Howitzer with 1 1/4-ton Truck and
Accompanying Ammunition on a Type V Platform for Low-Velocity Airdrop (Continued)**

<i>National Stock Number</i>	<i>Item</i>	<i>Quantity</i>
1670-01-097-8817	Release, cargo parachute, M-2 Platform, AD, type V, 32-foot:	1
1670-01-353-8425	Bracket assembly, coupling	1
1670-01-353-8424	Bracket assembly, extraction	1
1670-01-162-2376	Clevis assembly	54
1670-01-247-2389	Suspension link	8
1670-01-162-2381	Tandem link (multi-purpose)	2
5530-00-128-4981	Plywood, 3/4-in Sling, cargo airdrop	As required
	For suspension:	
1670-01-062-6306	3-ft (4-loop), type XXVI nylon webbing	6
1670-01-063-7761	16-ft (2-loop), type XXVI nylon webbing	2
1670-01-062-6308	16-ft (4-loop), type XXVI nylon webbing	2
1670-01-064-4453	20-ft (4-loop), type XXVI nylon webbing	2
	For deployment:	
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	1
	For riser extension:	
1670-01-062-6313	60-ft (3-loop), type XXVI nylon webbing	4
	For lifting:	
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	4
1670-01-063-7760	11-ft (2-loop), type XXVI nylon webbing	2
1670-01-063-7761	16-ft (2-loop), type XXVI nylon webbing	2
5340-00-040-8219	Strap parachute release, multicut	2
7515-00-266-5016	Tape, adhesive, 2-inch	As required
1670-00-937-0271	Tie-down assembly, 15-foot	54
1670-01-483-8259	Tow Release Mechanism (H-block for C-17)	1
	Webbing:	
8305-00-268-2411	Cotton, 1/4-inch, type I	As required
	Nylon:	
8305-00-082-5752	Tubular, 1/2-inch	As required
8305-00-263-3598	Type VIII webbing	As required

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Chapter 3

Rigging M119 Howitzer for Low-Velocity Airdrop on Type V Platform

SECTION I – RIGGING M119 HOWITZER AND ACCOMPANYING AMMUNITION

DESCRIPTION OF LOAD

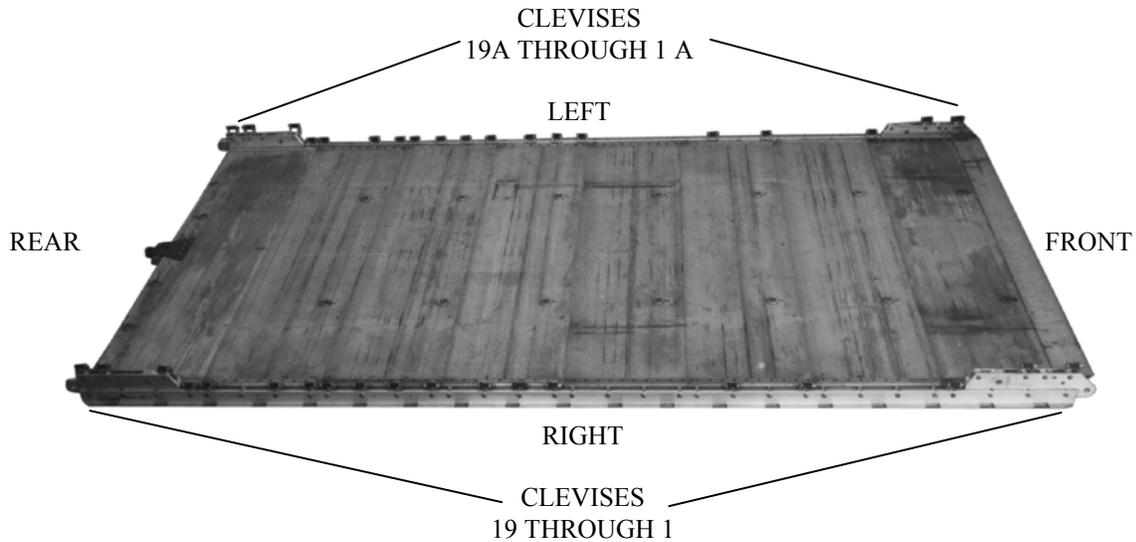
3-1. The M119, 105-millimeter howitzer is rigged on a 16-foot, type V airdrop platform with two G-11 cargo parachutes. This load includes an accompanying load of 30 boxes of ammunition and 7 boxes of fuzes weighing 3,713 pounds. The howitzer is rigged for low-velocity airdrop from a C130 or C-17 aircraft.

PREPARING PLATFORM

3-2. Prepare a 16-foot, type V platform as described below.

- **Inspecting platform.** Inspect, or assembly and inspect, the platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.
- **Installing tandem links.** Install a tandem link on the front and rear of each rail as shown in Figure 3-1.
- **Installing and numbering clevises.** Attach and number 38 clevis assemblies as shown in Figure 3-1.

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



Steps:

1. Install a tandem link on the front of each platform side rail using holes 1, 2, and 3.
2. Install a tandem link on the rear of each platform side rail using holes 30, 31, and 32.
3. Install a clevis on bushings 1 and 3 on each front tandem link.
4. Install a clevis on bushings 1, 3 and 4 on each rear tandem link.
5. Starting at the front of each platform side rail, install clevises on each platform side rail using the bushings bolted on holes 4, 9, 11, 17, 18, 19, 21, 22, 23, 24, 25, 26, 28, and 29.
6. Starting at the front of the platform, number the clevises bolted to the right side from 1 through 19 and those bolted to the left side from 1A through 19A.
7. Label the tie-down rings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

Figure 3-1. Platform Prepared

STOWING ACCOMPANYING LOAD

CAUTION

Only ammunition listed in FM 4-20.153/MCRP 4-11.3B/TO 13C7-18-41 may be airdropped.

3-3. Stow the accompanying load of 28 boxes of ammunition weighing 3,360 pounds as shown in Figures 3-2 through 3-4. The other two boxes of ammunition will be stowed after the gun is lashed to the platform. Make sure the accompanying load meets the restrictions and requirements as outlined in FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. When hazardous materials are rigged as part of the load, they must be packaged, marked and labeled according to AFMAN 24-204(I)/TM 38-250.

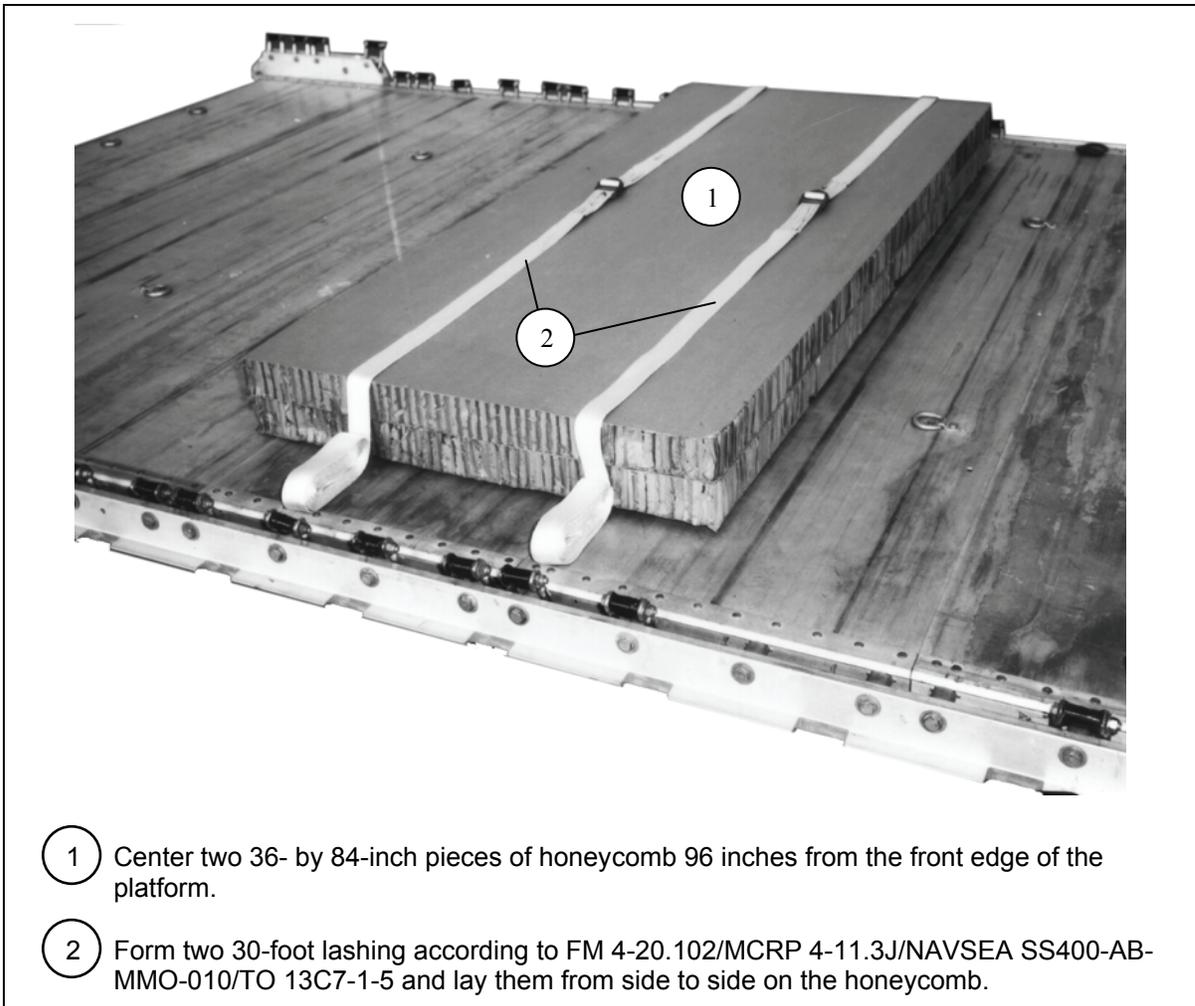


Figure 3-2. First Stack of Ammunition Secured with Lashings

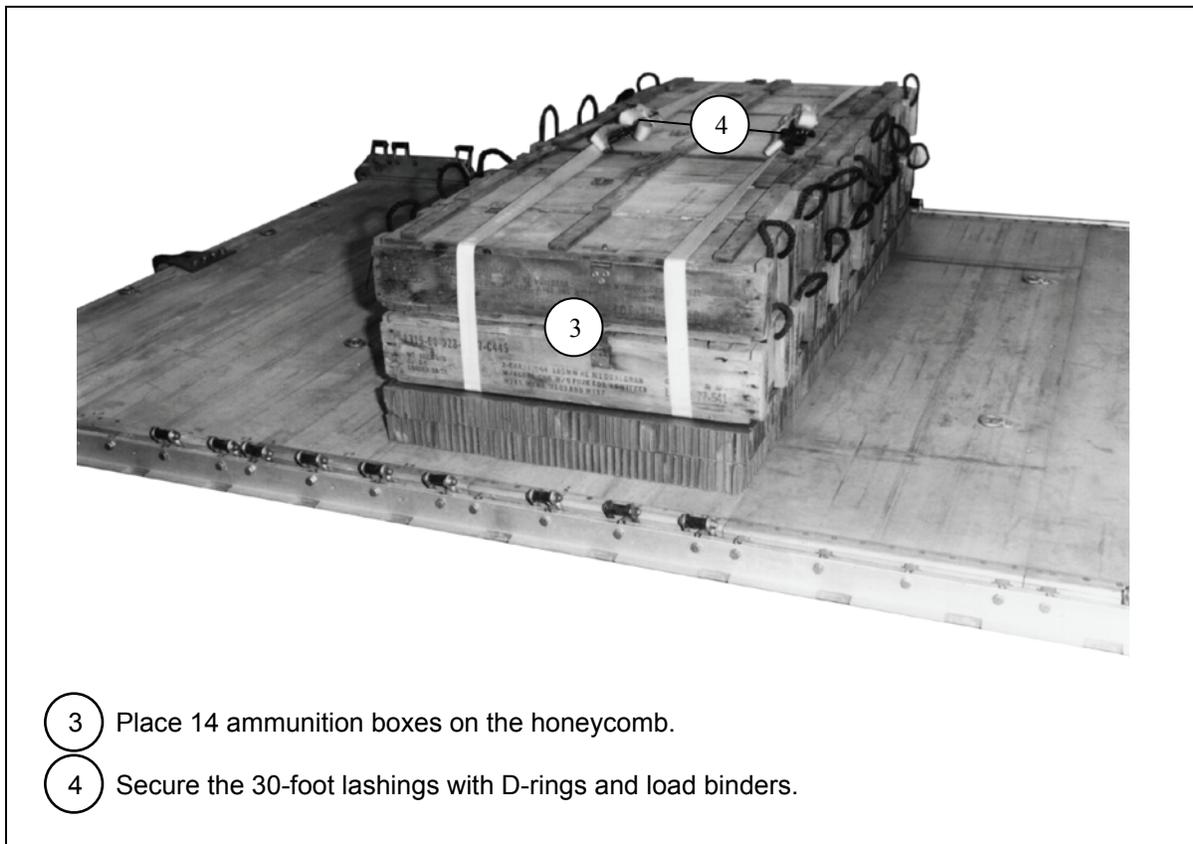
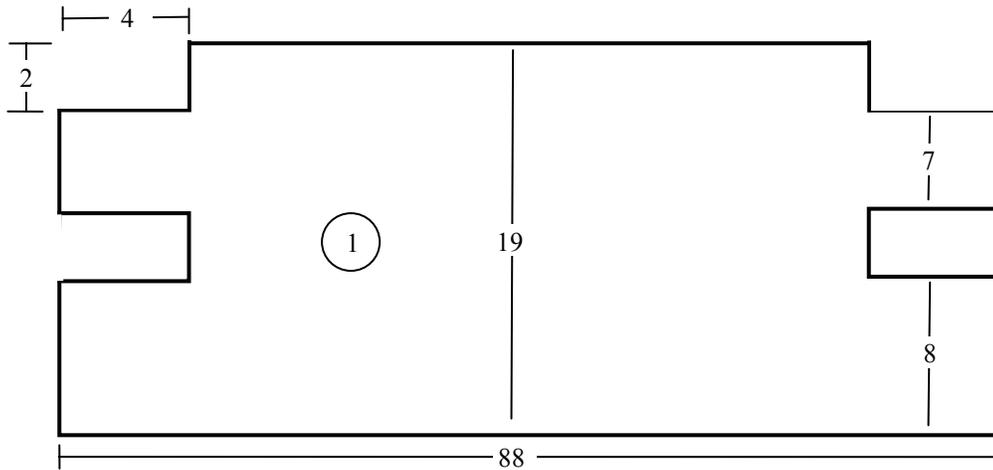
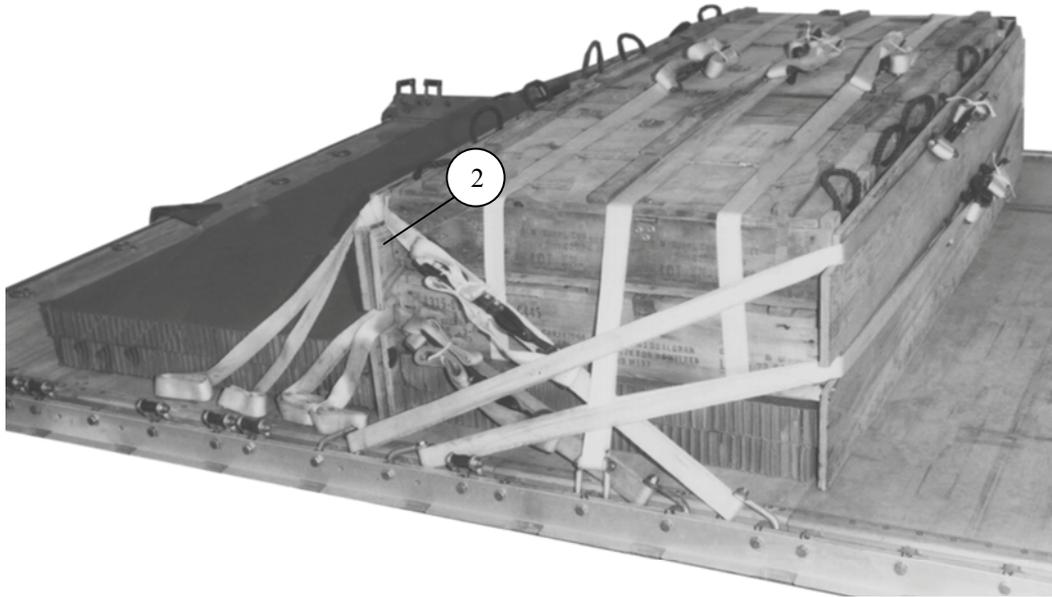


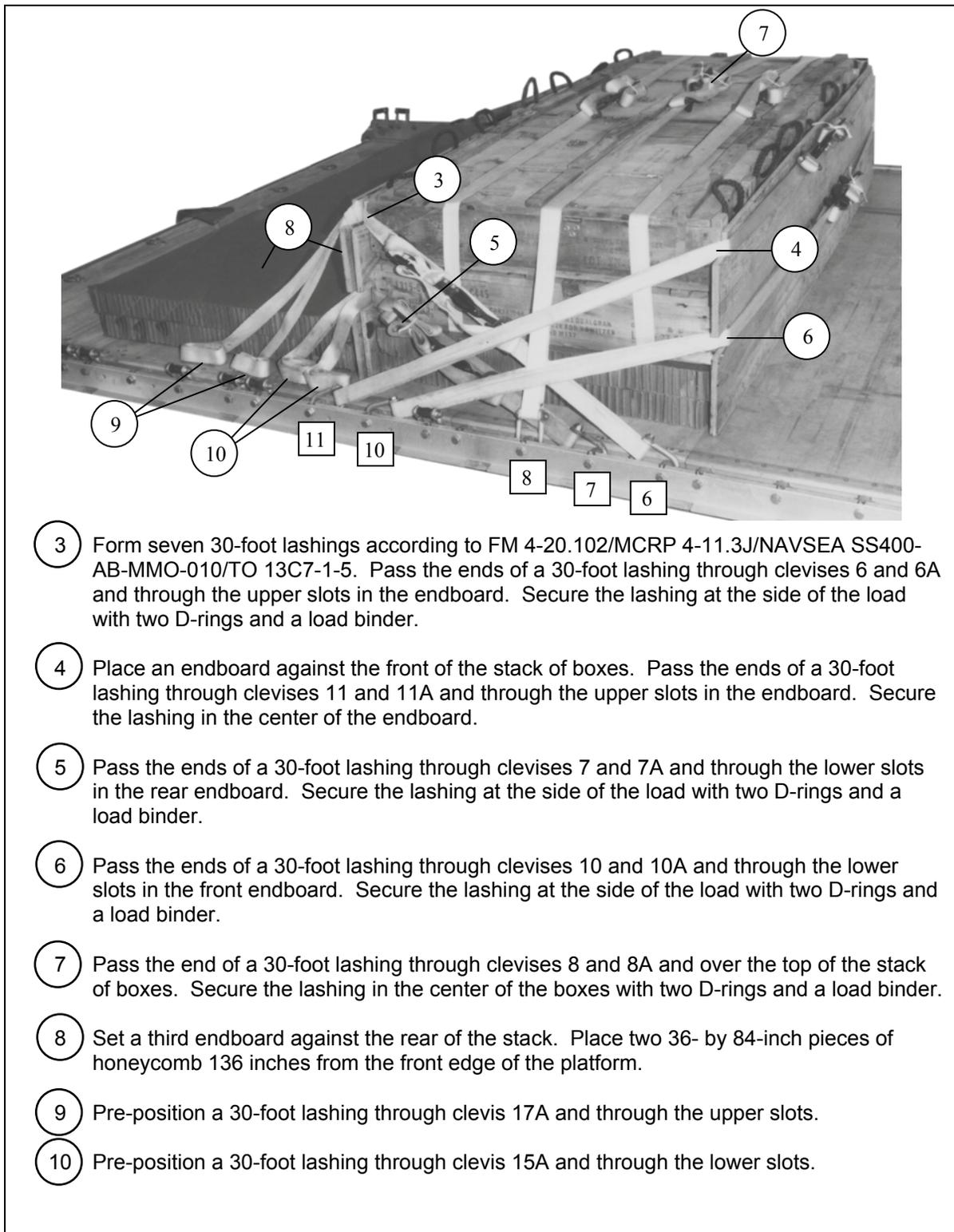
Figure 3-2. First Stack of Ammunition Secured with Lashings (Continued)

- Notes.** 1. All measurements are given in inches.
2. This drawing is not drawn to scale.



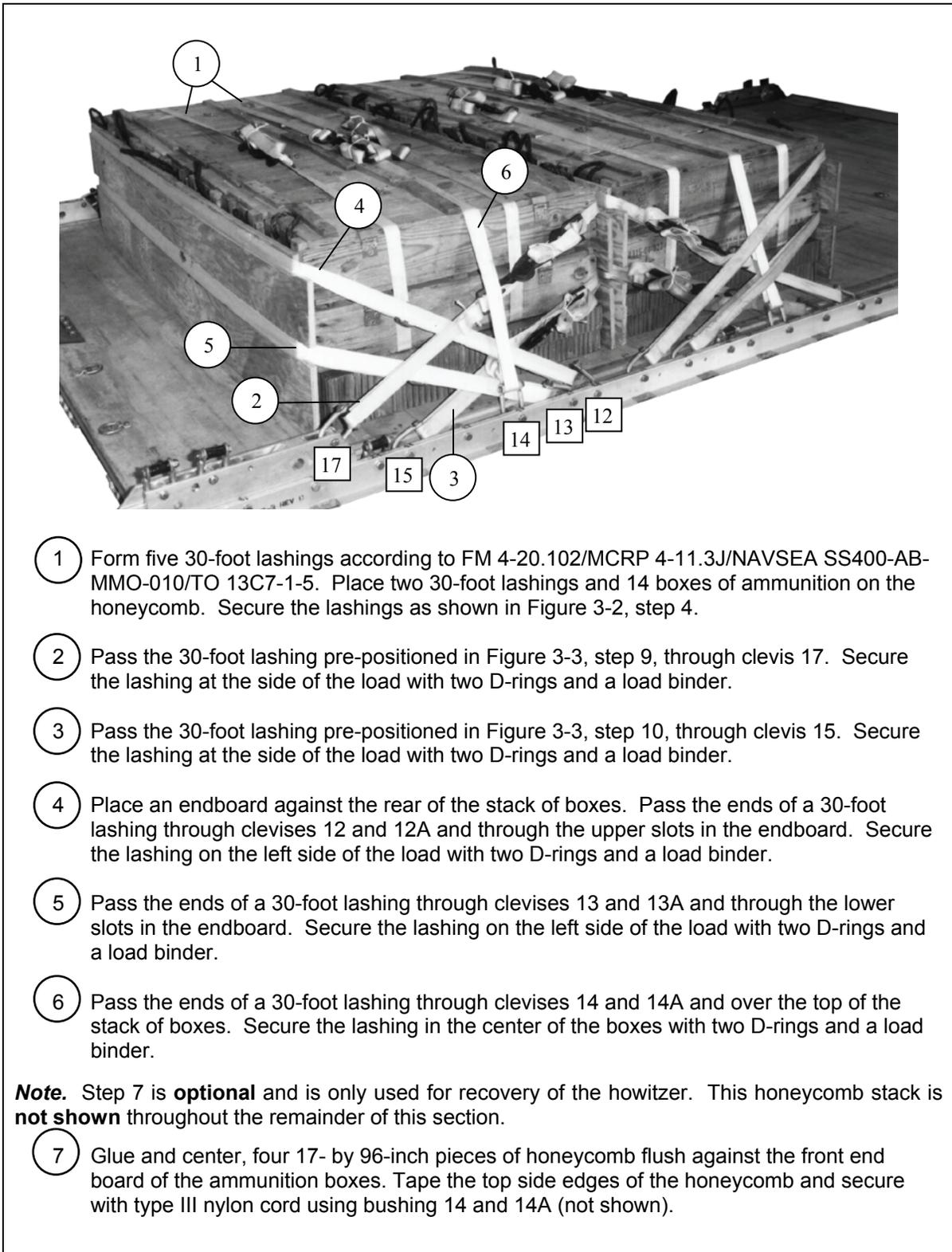
- ① Cut four endboards as shown using 3/4- by 19- by 88-inch pieces of plywood. Cut four 2- by 4-inch cutouts.
- ② Place an endboard against the rear of the stack of boxes.

Figure 3-3. First Stack of Ammunition Lashed



- 3 Form seven 30-foot lashings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Pass the ends of a 30-foot lashing through clevises 6 and 6A and through the upper slots in the endboard. Secure the lashing at the side of the load with two D-rings and a load binder.
- 4 Place an endboard against the front of the stack of boxes. Pass the ends of a 30-foot lashing through clevises 11 and 11A and through the upper slots in the endboard. Secure the lashing in the center of the endboard.
- 5 Pass the ends of a 30-foot lashing through clevises 7 and 7A and through the lower slots in the rear endboard. Secure the lashing at the side of the load with two D-rings and a load binder.
- 6 Pass the ends of a 30-foot lashing through clevises 10 and 10A and through the lower slots in the front endboard. Secure the lashing at the side of the load with two D-rings and a load binder.
- 7 Pass the end of a 30-foot lashing through clevises 8 and 8A and over the top of the stack of boxes. Secure the lashing in the center of the boxes with two D-rings and a load binder.
- 8 Set a third endboard against the rear of the stack. Place two 36- by 84-inch pieces of honeycomb 136 inches from the front edge of the platform.
- 9 Pre-position a 30-foot lashing through clevis 17A and through the upper slots.
- 10 Pre-position a 30-foot lashing through clevis 15A and through the lower slots.

Figure 3-3. First Stack of Ammunition Lashed (Continued)



- 1 Form five 30-foot lashings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Place two 30-foot lashings and 14 boxes of ammunition on the honeycomb. Secure the lashings as shown in Figure 3-2, step 4.
- 2 Pass the 30-foot lashing pre-positioned in Figure 3-3, step 9, through clevis 17. Secure the lashing at the side of the load with two D-rings and a load binder.
- 3 Pass the 30-foot lashing pre-positioned in Figure 3-3, step 10, through clevis 15. Secure the lashing at the side of the load with two D-rings and a load binder.
- 4 Place an endboard against the rear of the stack of boxes. Pass the ends of a 30-foot lashing through clevises 12 and 12A and through the upper slots in the endboard. Secure the lashing on the left side of the load with two D-rings and a load binder.
- 5 Pass the ends of a 30-foot lashing through clevises 13 and 13A and through the lower slots in the endboard. Secure the lashing on the left side of the load with two D-rings and a load binder.
- 6 Pass the ends of a 30-foot lashing through clevises 14 and 14A and over the top of the stack of boxes. Secure the lashing in the center of the boxes with two D-rings and a load binder.

Note. Step 7 is **optional** and is only used for recovery of the howitzer. This honeycomb stack is **not shown** throughout the remainder of this section.

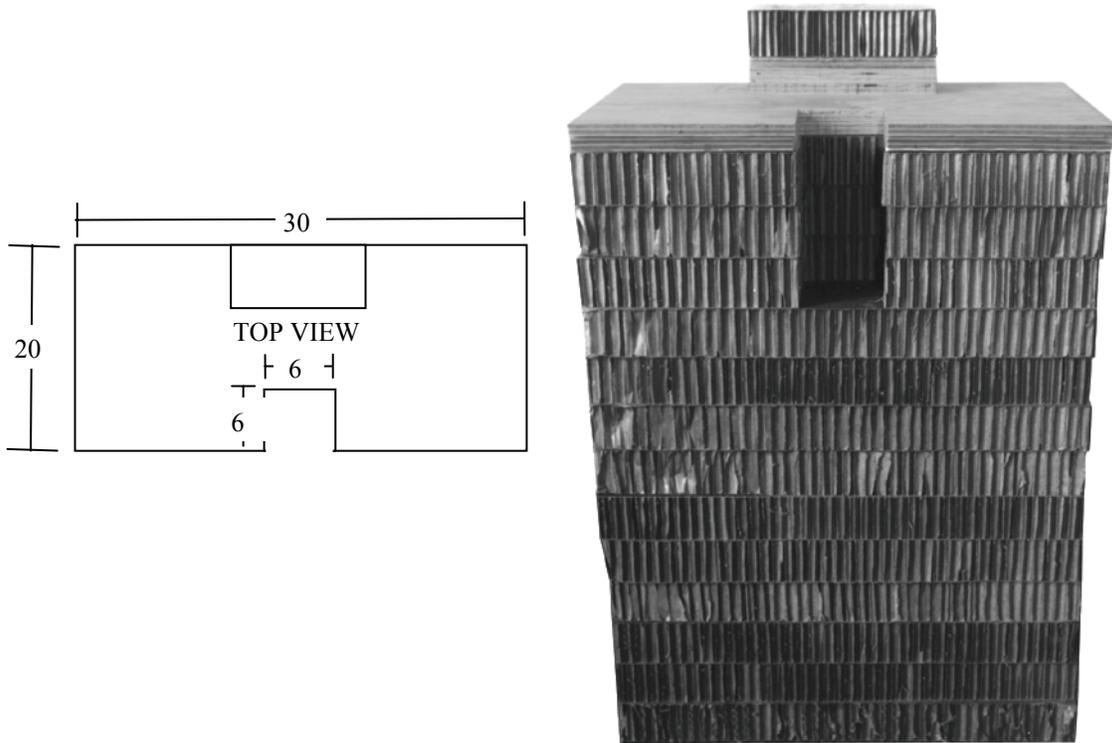
- 7 Glue and center, four 17- by 96-inch pieces of honeycomb flush against the front end board of the ammunition boxes. Tape the top side edges of the honeycomb and secure with type III nylon cord using bushing 14 and 14A (not shown).

Figure 3-4. Second Stack of Ammunition Lashed

BUILDING AND PLACING HONEYCOMB STACKS

3-4. Build the honeycomb stacks as shown in Figures 3-5 through 3-7. Place them on the platform as shown in Figure 3-8. An additional honeycomb stack may be used for recovery purposes. Center four 17-by 96-inch pieces of honeycomb flush against the front endboard of the ammunition boxes. Tape the top side edges of the honeycomb and secure with type III nylon cord using bushings 14 and 14A. This honeycomb stack is not shown throughout this section.

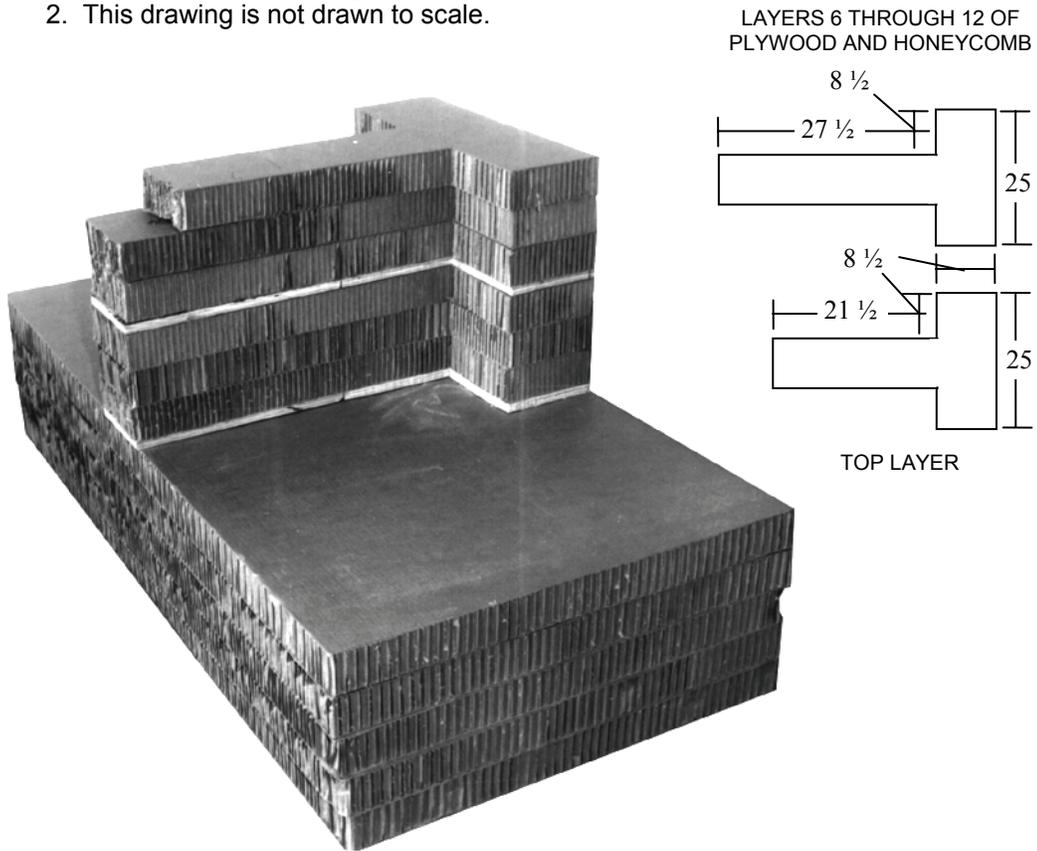
- Notes.** 1. All measurements are given in inches.
2. This drawing is not drawn to scale.



Stack Number	Pieces	Width (inches)	Length (inches)	Material	Instructions
1	10	30	20	Honeycomb	Glue to form stack.
	3	30	20	Honeycomb	Make a 6- by 6-inch cut out centered on the 30 inch side. Glue on top of previous 10 pieces of honeycomb.
	2	30	20	$\frac{3}{4}$ -inch Plywood	Make same cut out as above and place on honeycomb.
	3	12	8	$\frac{3}{4}$ -inch Plywood	Glue the 12-inch side, flush along the front edge and centered.
	1	12	8	Honeycomb	Glue flush over the plywood.

Figure 3-5. Honeycomb Stack 1 Prepared

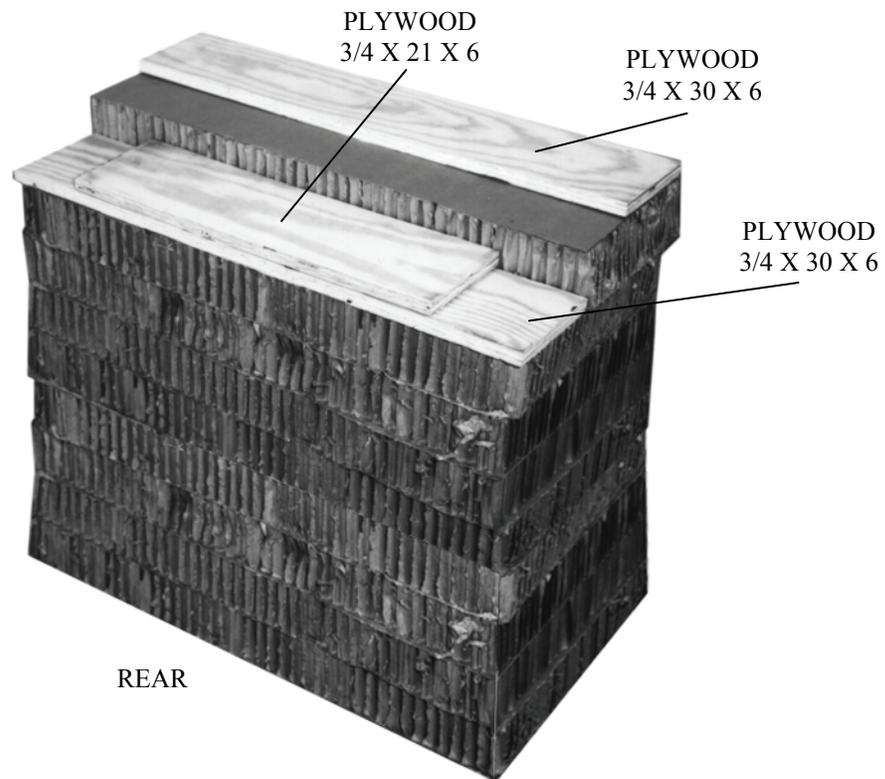
- Notes.** 1. All measurements are given in inches.
 2. This drawing is not drawn to scale.



Stack Number	Pieces	Width (inches)	Length (inches)	Material	Instructions
2	5	72	36	Honeycomb	Glue to form stack.
	1	25	36	3/4-inch Plywood	Make cutouts as shown.
	3	25	36	Honeycomb	Make cutouts as shown and place flush on the plywood.
	1	25	36	3/4-inch Plywood	Make cutouts as shown and place flush on honeycomb.
	2	25	36	Honeycomb	Make cutouts as shown for the top layer and place flush on the stack.
	1	25	30	Honeycomb	Center the T-shaped stack on the base.

Figure 3-6. Honeycomb Stack 2 Prepared

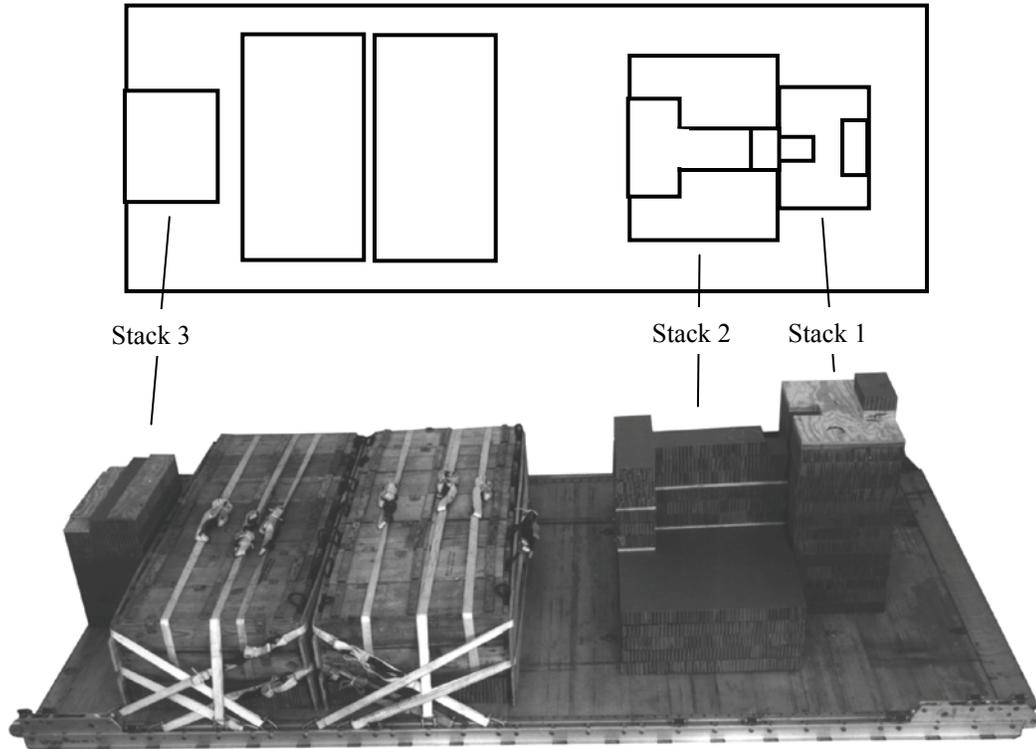
Note. All measurements are given in inches.



Stack Number	Pieces	Width (inches)	Length (inches)	Material	Instructions
3	8	30	16	Honeycomb	Glue to form stack.
	1	30	10	Honeycomb	Glue honeycomb even with front edge of base.
	1	30	6	3/4-inch Plywood	Glue plywood even with front edge of honeycomb.
	1	30	6	3/4-inch Plywood	Glue plywood flush on rear edge of stack.
	1	21	6	3/4-inch Plywood	Center and glue plywood on the rear piece of plywood.

Figure 3-7. Honeycomb Stack 3 Prepared

- Notes.** 1. All measurements are given in inches.
 2. This drawing is not drawn to scale.



Stack Number	Position of Stack on Platform
	Place stack:
1	Centered 17 ½ inches from front edge of platform.
2	Centered and flush against stack 1.
3	Centered and flush with rear edge of platform.

Figure 3-8. Honeycomb Stacks Placed on Platform

PREPARING HOWITZER

3-5. Prepare the howitzer as shown in Figures 3-9 through 3-18.

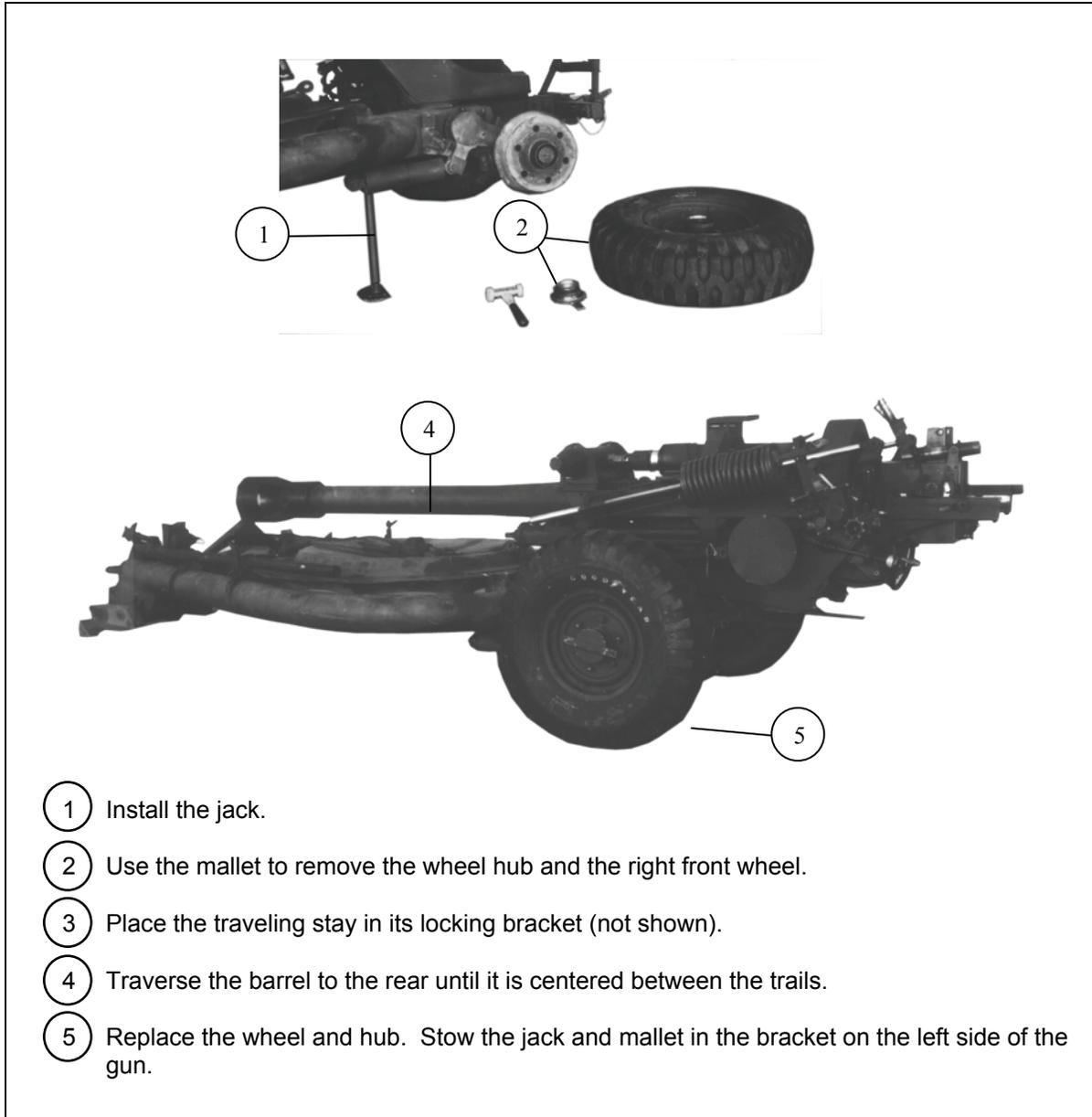
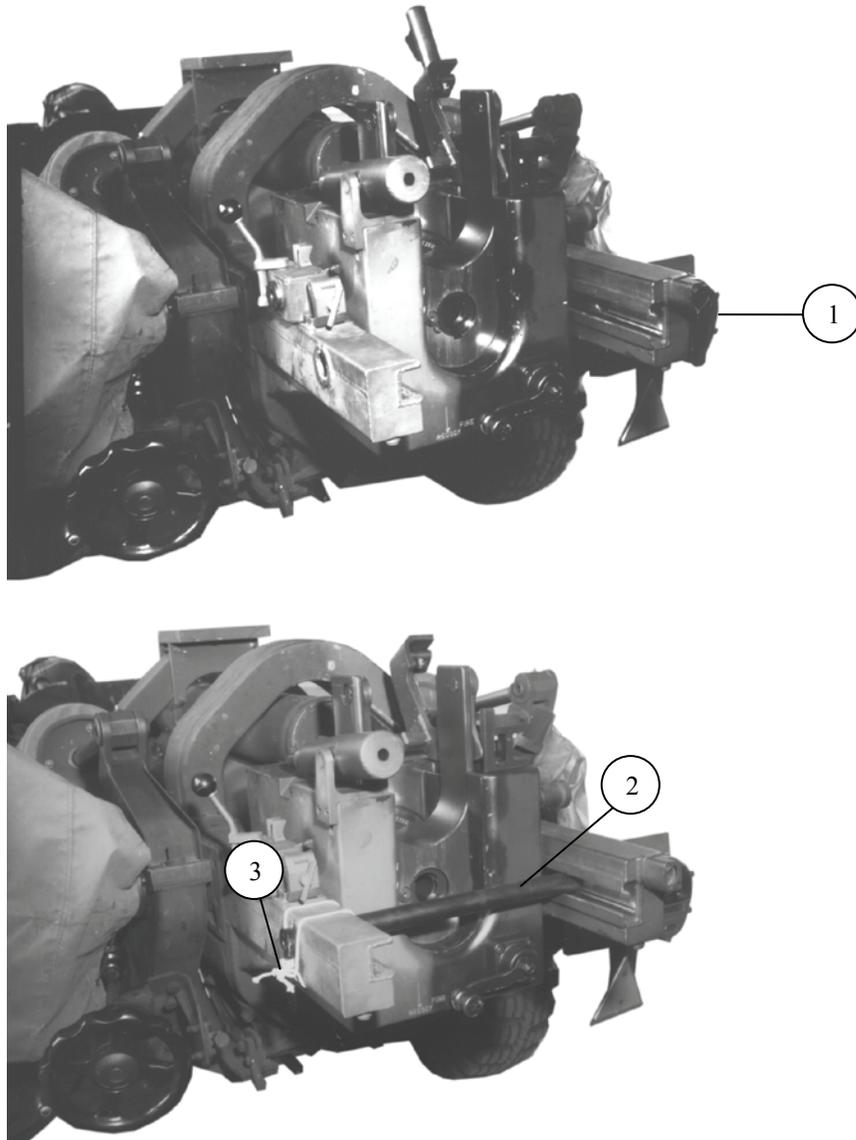
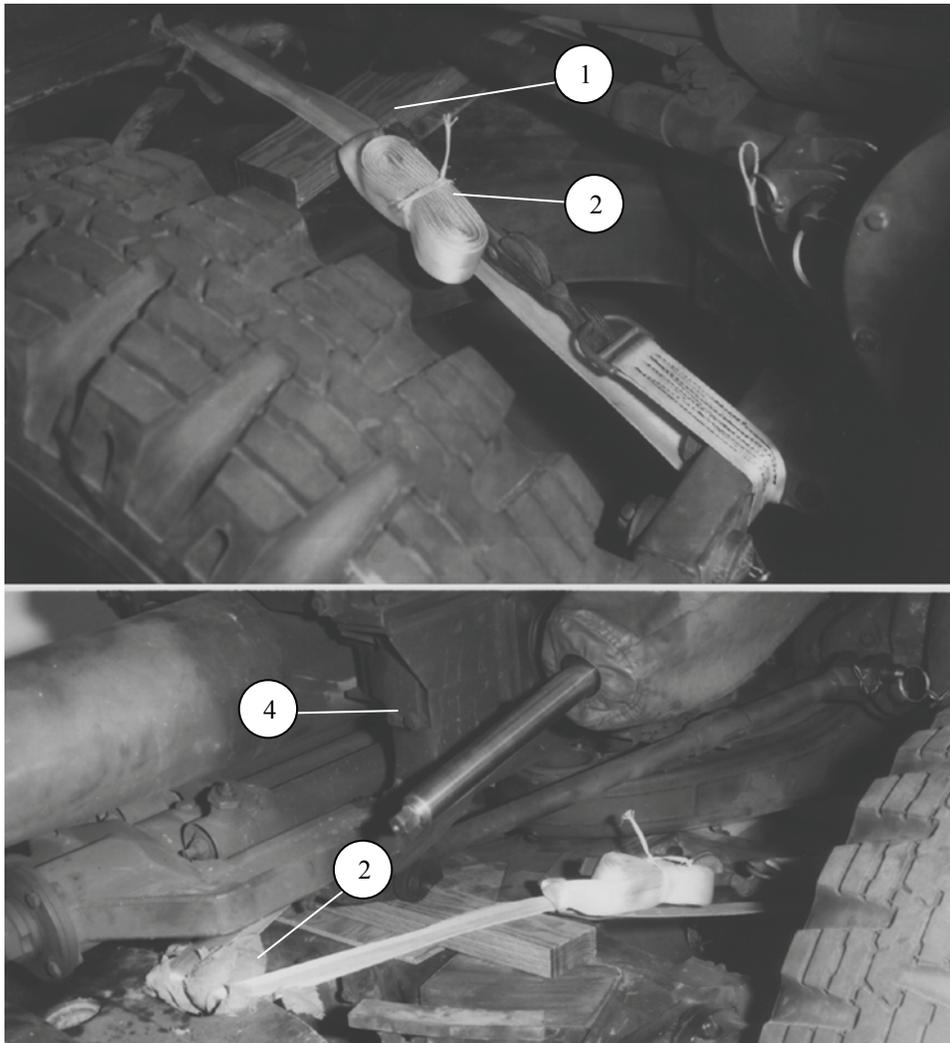


Figure 3-9. Gun Placed in Travel Position



- ① Remove the run back stop bar from its storage hole on the right rail. (Bar shown stowed.)
- ② Insert the bar from the left side into the holes provided in both rails.
- ③ Secure the left end of the bar to the left rail with type III nylon cord.

Figure 3-10. Run Back Stop Bar Secured Across Breech

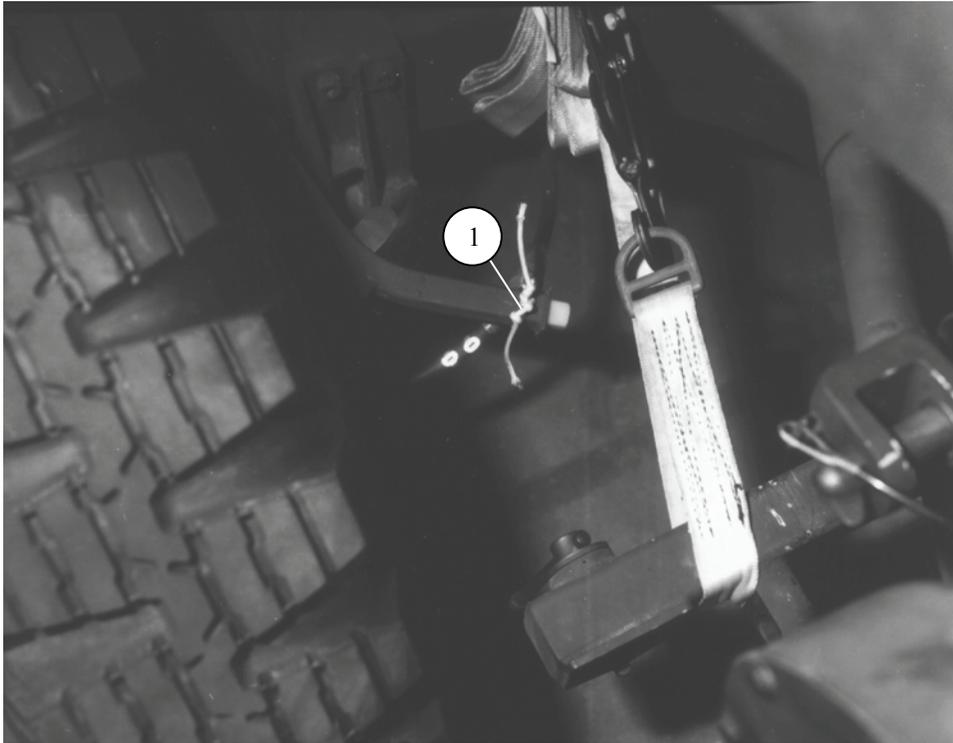


- ① Center a 1/2- by 10 1/2- by 6-inch piece of plywood directly under the hinge of the traveling stay. Center a 2- by 4- by 24-inch piece of lumber over the plywood.

Note. Be sure that the wood support fits snugly between the traveling stay. Center a 2- by 4- by 24-inch piece of lumber over the plywood.

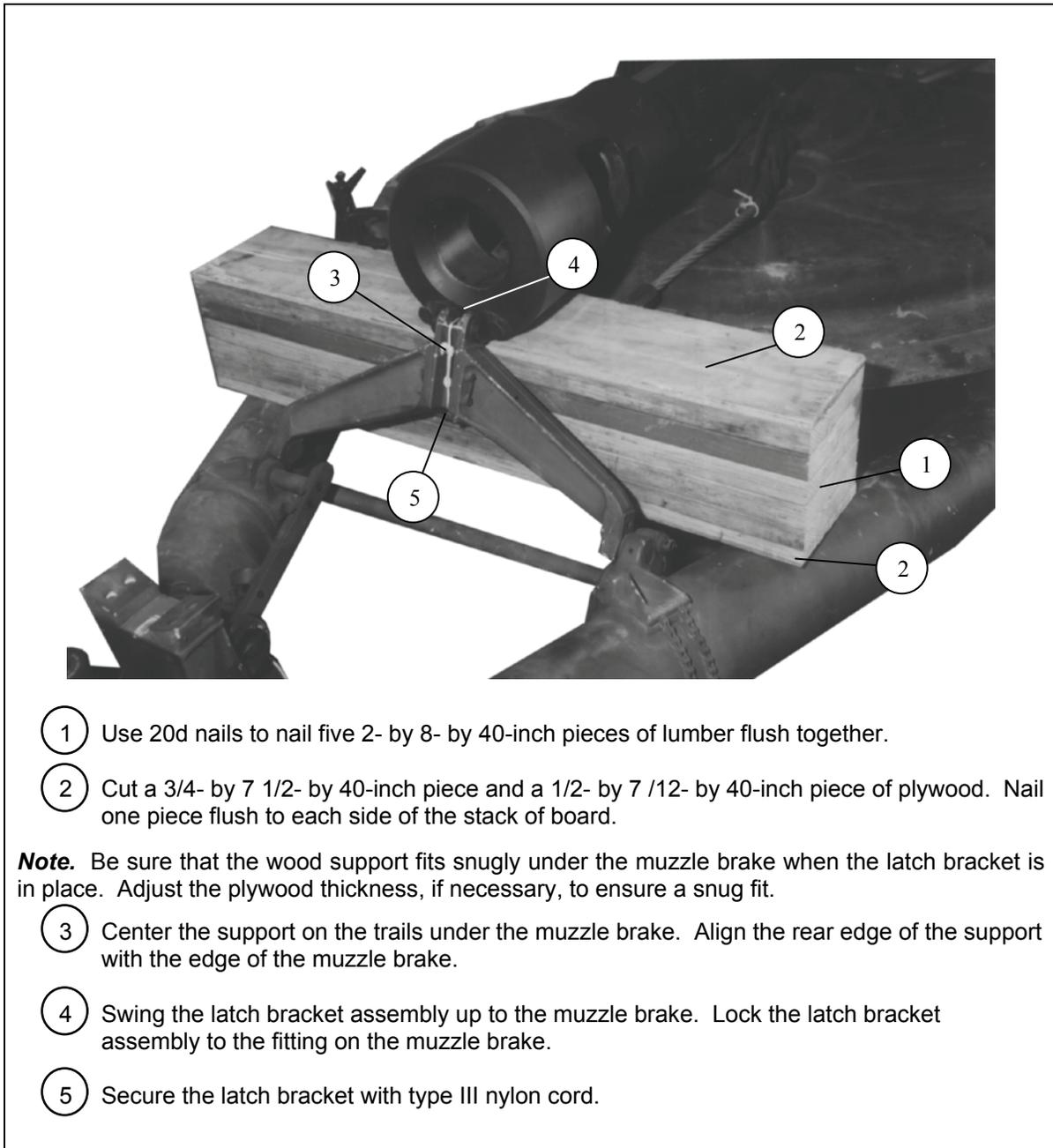
- ② Pad the front firing platform hole with cellulose wadding. Pass a 15-foot lashing through the hole, over the lumber placed in step 1, and around the brake light bar. Secure the lashing on top with a D-ring and a load binder.
- ③ Repeat step 2 on the left side, using the same firing platform hole (not shown).
- ④ Pass a 60-inch shear strap around the barrel and under the buffer assembly. Secure the strap with its friction adapter. Tie the excess strap with 1/4-inch cotton webbing.

Figure 3-11. Wood Under Buffer Assembly Secured



- 1 Tie the brake lines to the brake handle with type III nylon cord.

Figure 3-12. Brake Lines Secured to Brake Handle



- ① Use 20d nails to nail five 2- by 8- by 40-inch pieces of lumber flush together.
 - ② Cut a 3/4- by 7 1/2- by 40-inch piece and a 1/2- by 7 1/2- by 40-inch piece of plywood. Nail one piece flush to each side of the stack of board.
- Note.** Be sure that the wood support fits snugly under the muzzle brake when the latch bracket is in place. Adjust the plywood thickness, if necessary, to ensure a snug fit.
- ③ Center the support on the trails under the muzzle brake. Align the rear edge of the support with the edge of the muzzle brake.
 - ④ Swing the latch bracket assembly up to the muzzle brake. Lock the latch bracket assembly to the fitting on the muzzle brake.
 - ⑤ Secure the latch bracket with type III nylon cord.

Figure 3-13. Muzzle Brake Support Constructed and Placed

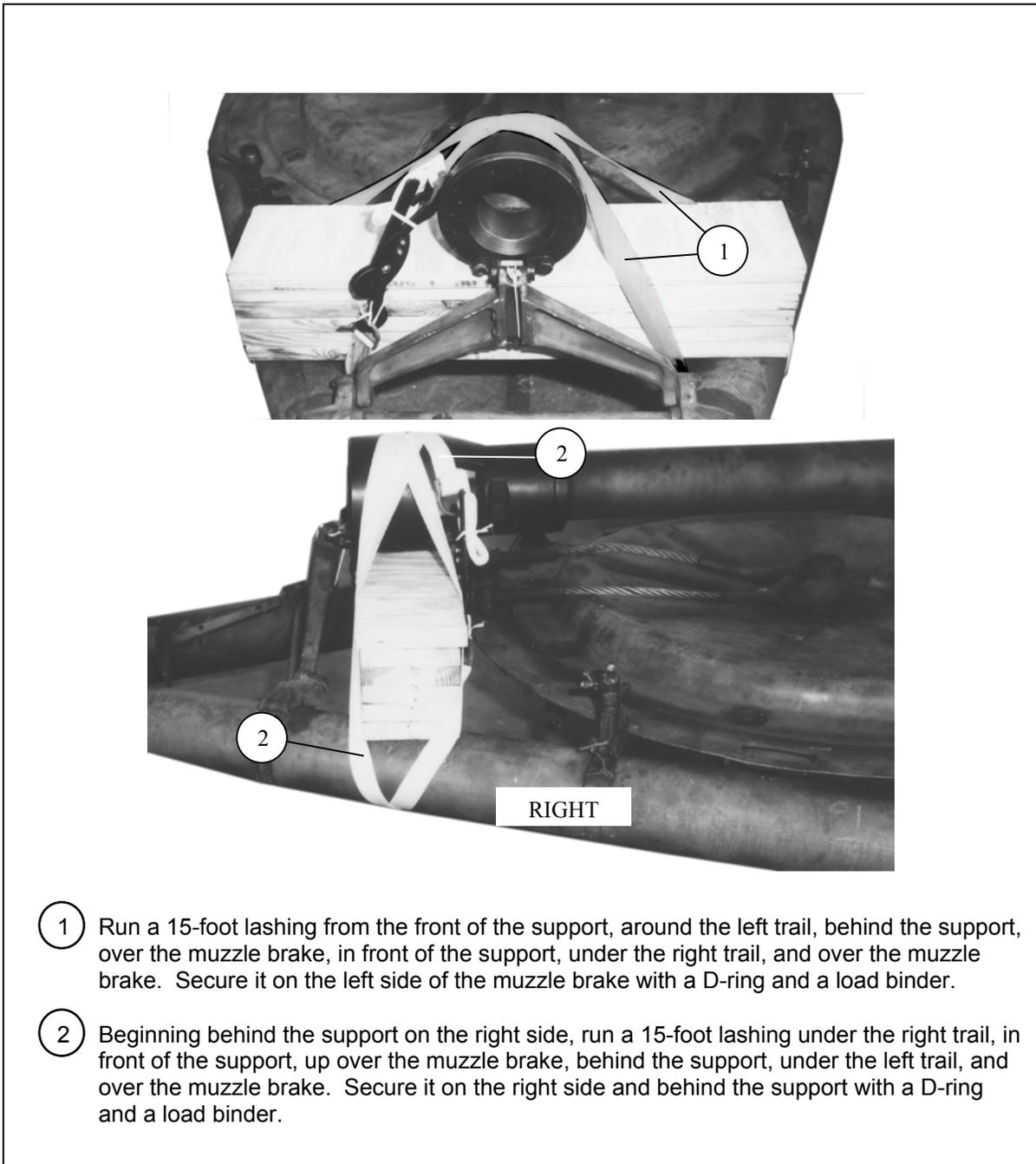
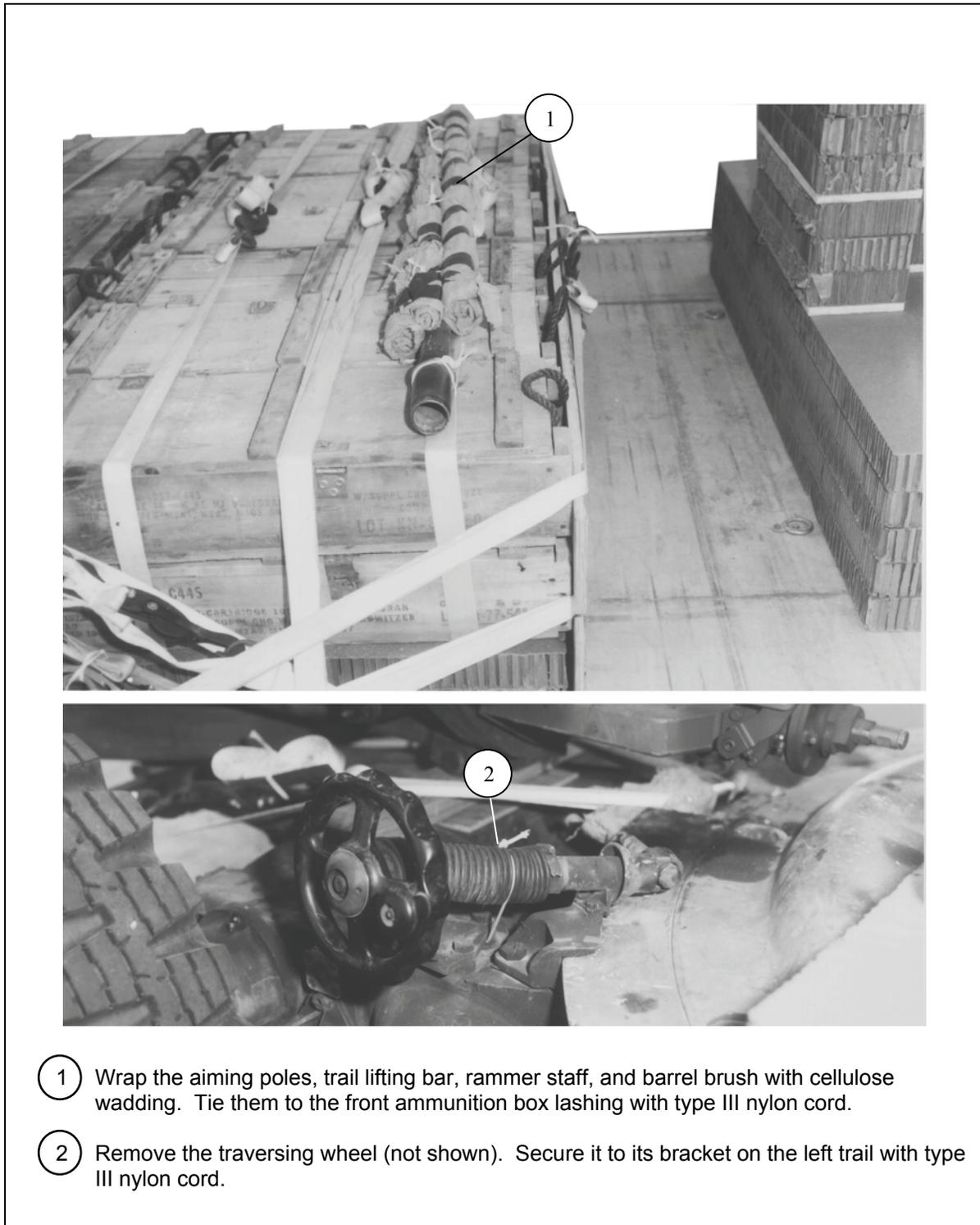
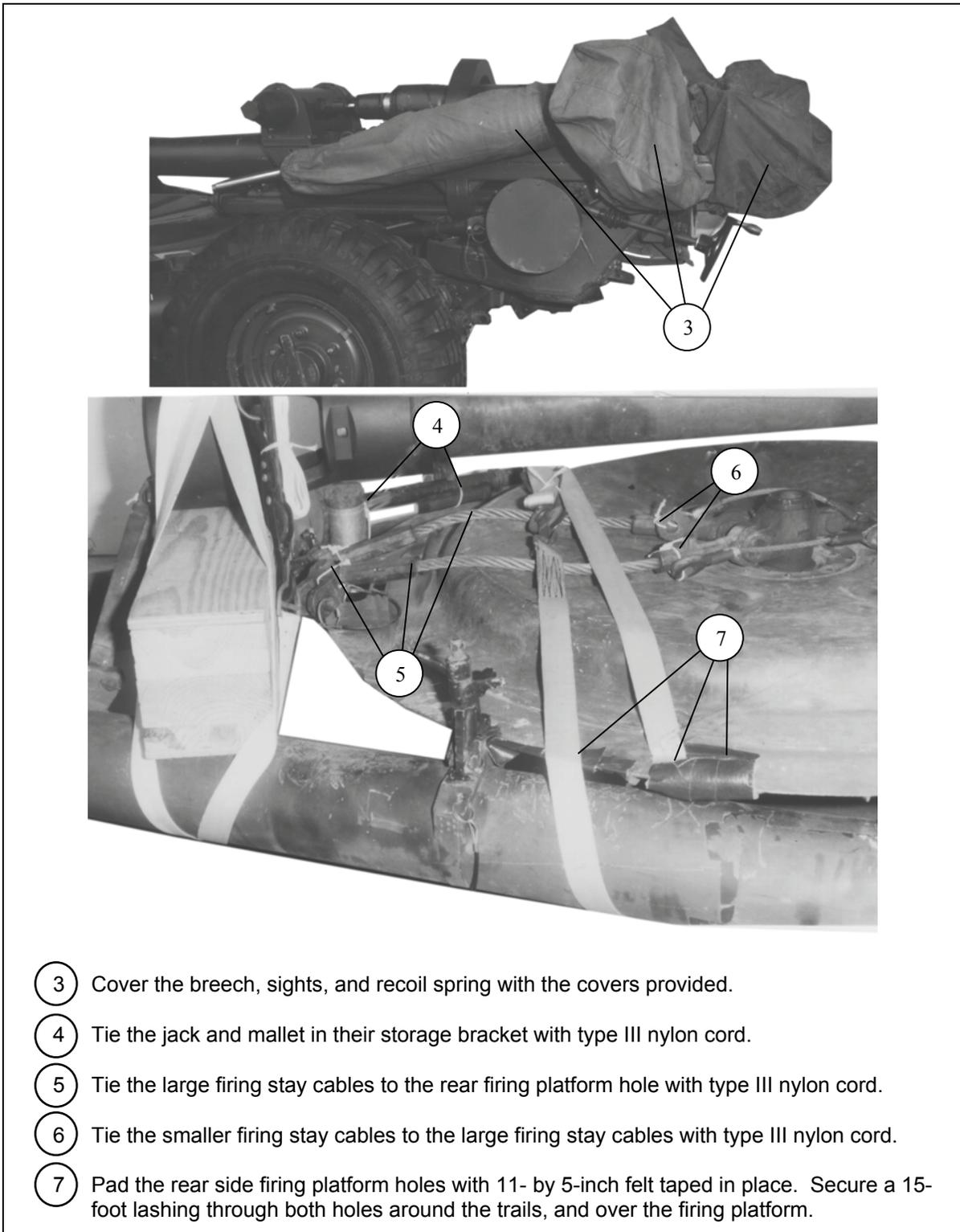


Figure 3-14. Muzzle Brake Support Secured



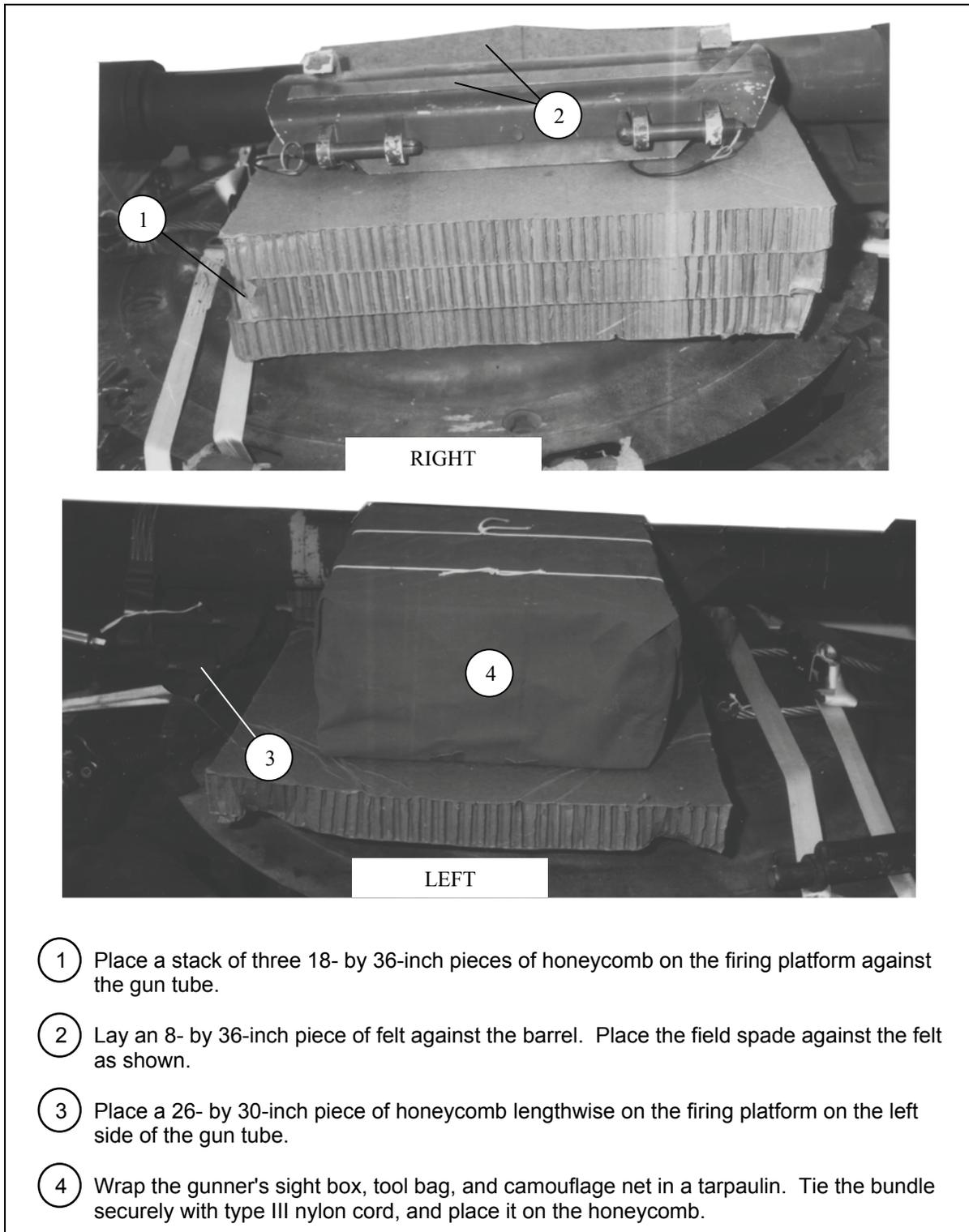
- ① Wrap the aiming poles, trail lifting bar, rammer staff, and barrel brush with cellulose wadding. Tie them to the front ammunition box lashing with type III nylon cord.
- ② Remove the traversing wheel (not shown). Secure it to its bracket on the left trail with type III nylon cord.

Figure 3-15. Gun Equipment Stowed



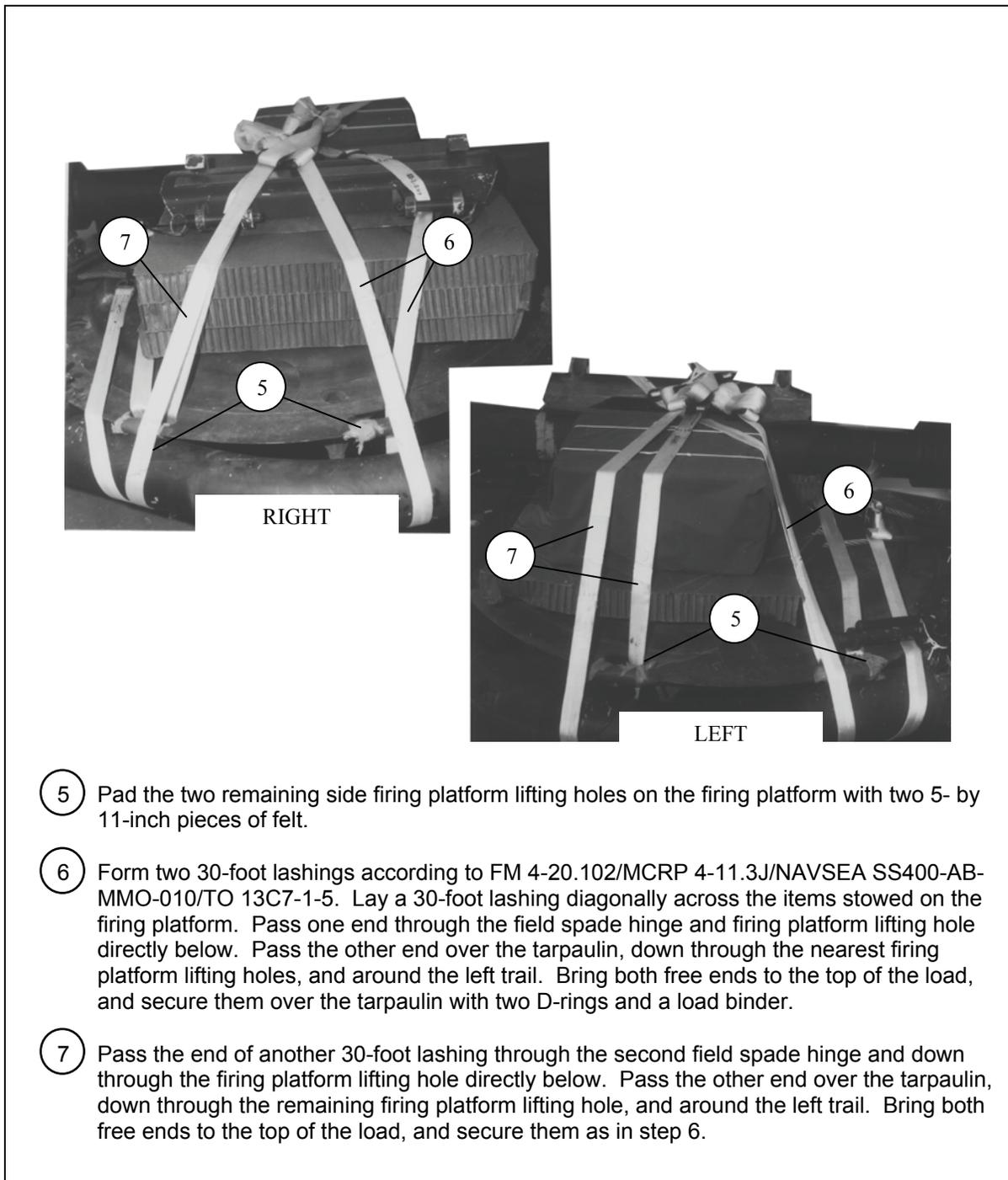
- ③ Cover the breech, sights, and recoil spring with the covers provided.
- ④ Tie the jack and mallet in their storage bracket with type III nylon cord.
- ⑤ Tie the large firing stay cables to the rear firing platform hole with type III nylon cord.
- ⑥ Tie the smaller firing stay cables to the large firing stay cables with type III nylon cord.
- ⑦ Pad the rear side firing platform holes with 11- by 5-inch felt taped in place. Secure a 15-foot lashing through both holes around the trails, and over the firing platform.

Figure 3-15. Gun Equipment Stowed (Continued)



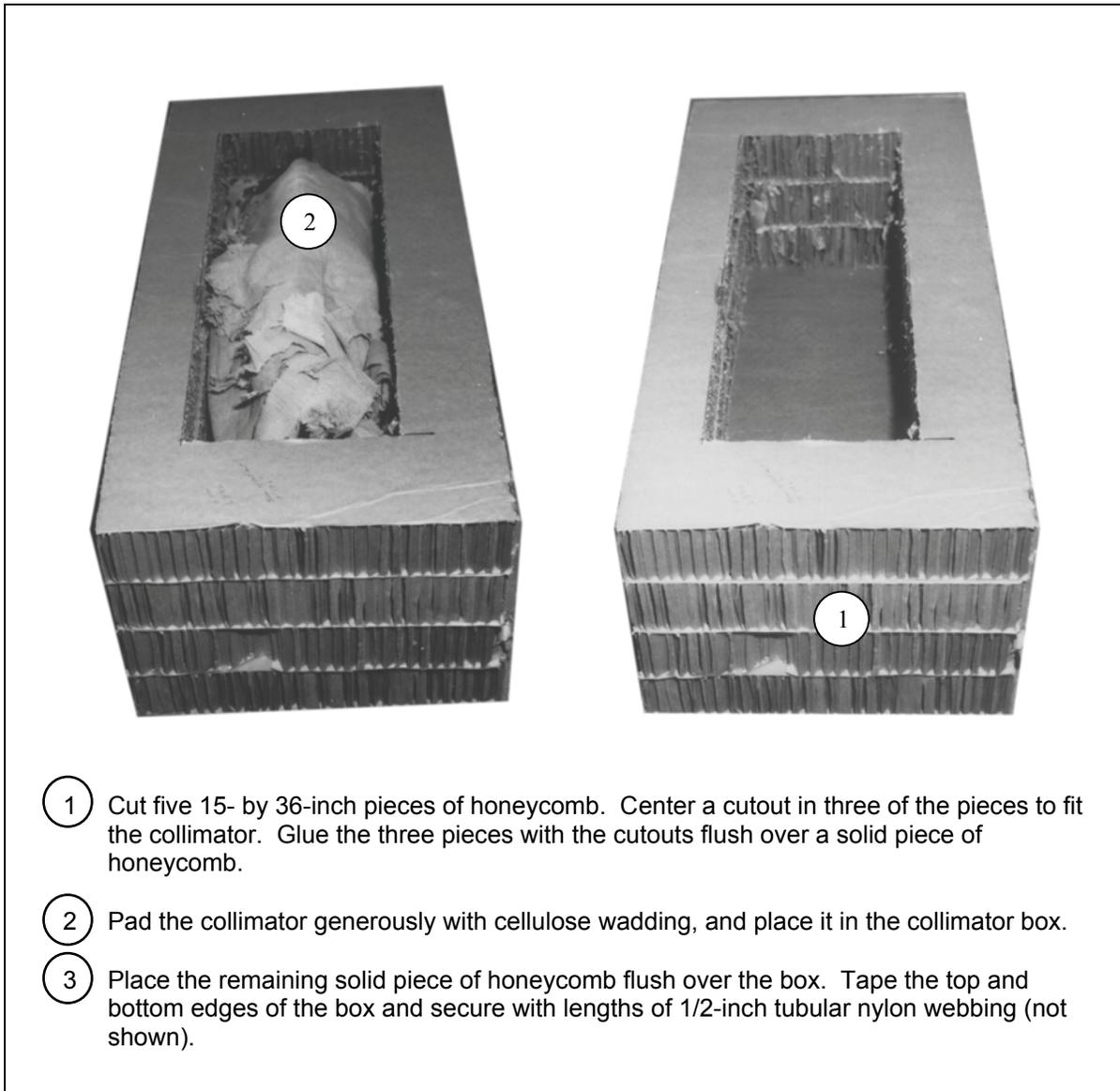
- ① Place a stack of three 18- by 36-inch pieces of honeycomb on the firing platform against the gun tube.
- ② Lay an 8- by 36-inch piece of felt against the barrel. Place the field spade against the felt as shown.
- ③ Place a 26- by 30-inch piece of honeycomb lengthwise on the firing platform on the left side of the gun tube.
- ④ Wrap the gunner's sight box, tool bag, and camouflage net in a tarpaulin. Tie the bundle securely with type III nylon cord, and place it on the honeycomb.

Figure 3-16. Howitzer Equipment Stowed on Firing Platform



- 5 Pad the two remaining side firing platform lifting holes on the firing platform with two 5- by 11-inch pieces of felt.
- 6 Form two 30-foot lashings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Lay a 30-foot lashing diagonally across the items stowed on the firing platform. Pass one end through the field spade hinge and firing platform lifting hole directly below. Pass the other end over the tarpaulin, down through the nearest firing platform lifting holes, and around the left trail. Bring both free ends to the top of the load, and secure them over the tarpaulin with two D-rings and a load binder.
- 7 Pass the end of another 30-foot lashing through the second field spade hinge and down through the firing platform lifting hole directly below. Pass the other end over the tarpaulin, down through the remaining firing platform lifting hole, and around the left trail. Bring both free ends to the top of the load, and secure them as in step 6.

Figure 3-16. Howitzer Equipment Stowed on Firing Platform (Continued)



- 1 Cut five 15- by 36-inch pieces of honeycomb. Center a cutout in three of the pieces to fit the collimator. Glue the three pieces with the cutouts flush over a solid piece of honeycomb.
- 2 Pad the collimator generously with cellulose wadding, and place it in the collimator box.
- 3 Place the remaining solid piece of honeycomb flush over the box. Tape the top and bottom edges of the box and secure with lengths of 1/2-inch tubular nylon webbing (not shown).

Figure 3-17. Collimator Stowed

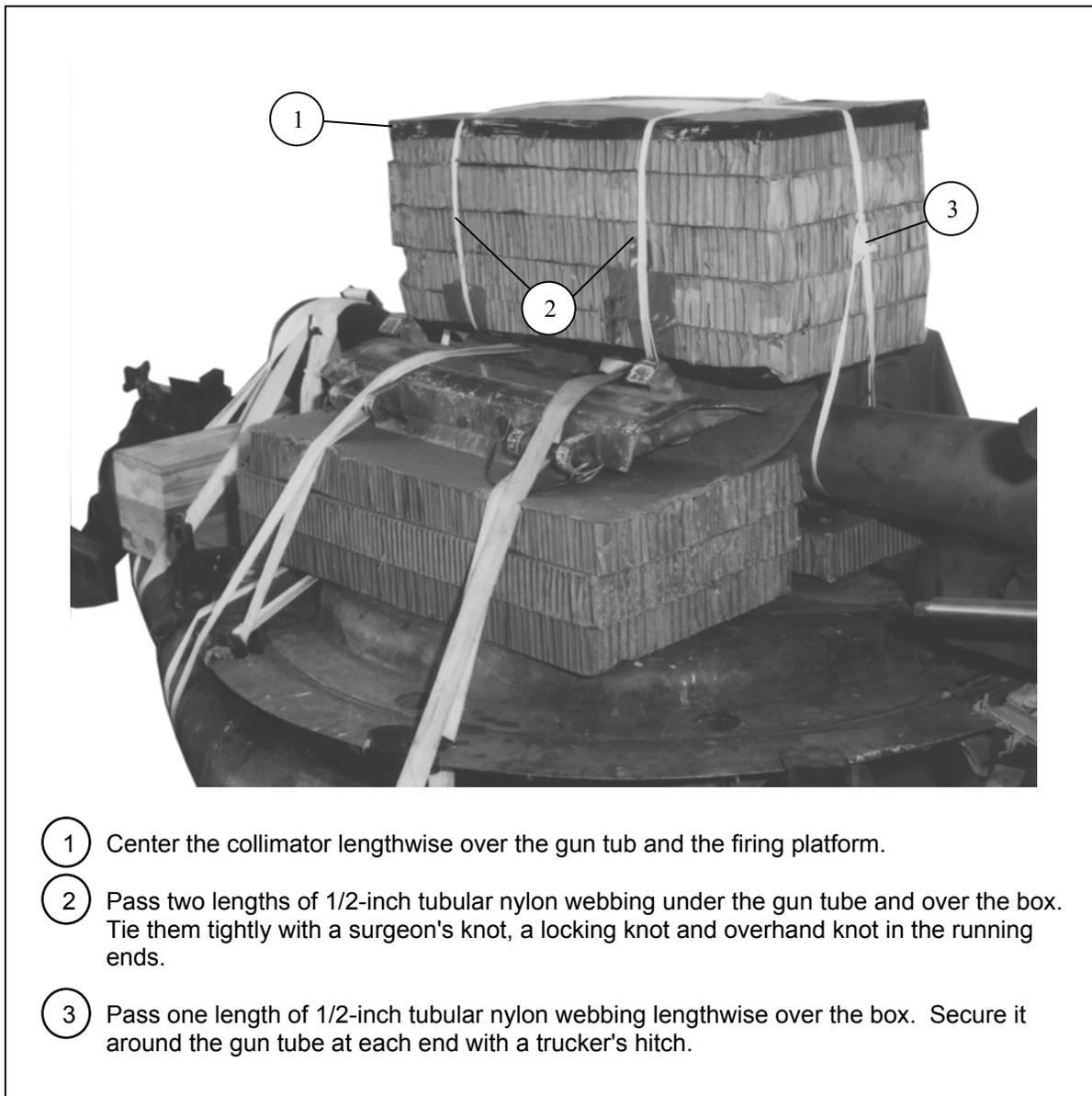


Figure 3-18. Collimator Box Secured to Load

LIFTING AND POSITIONING HOWITZER

3-6. Lift the howitzer and position it on the honeycomb stacks as shown in Figure 3-19.

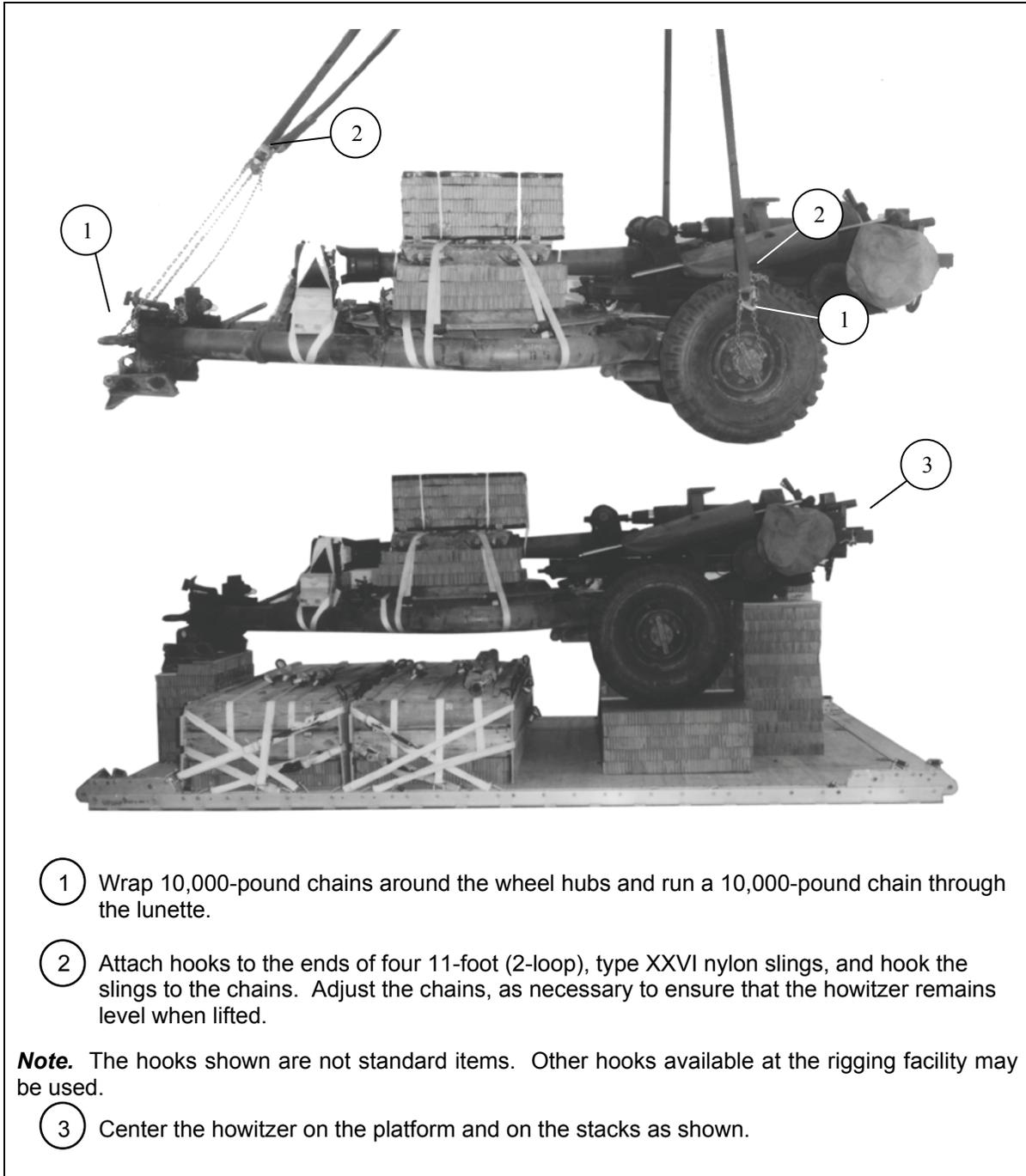
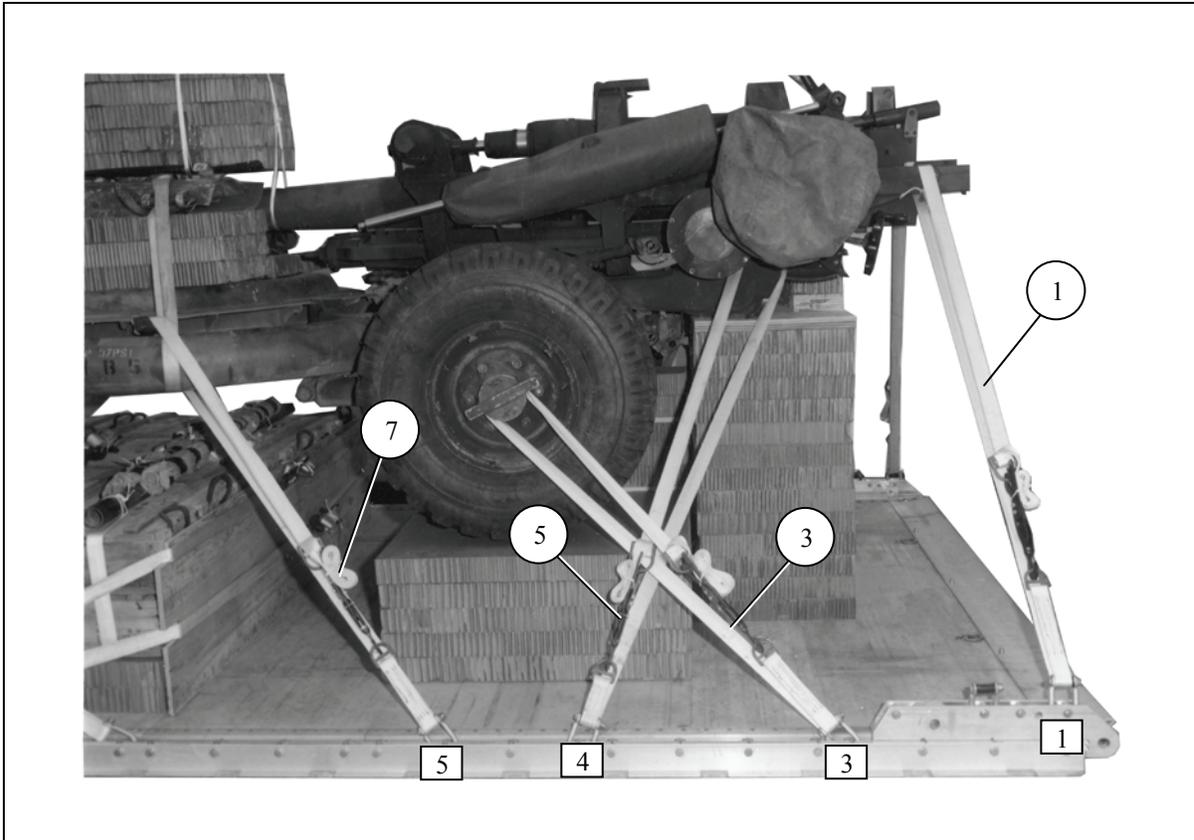


Figure 3-19. Howitzer Lifted and Positioned on Platform

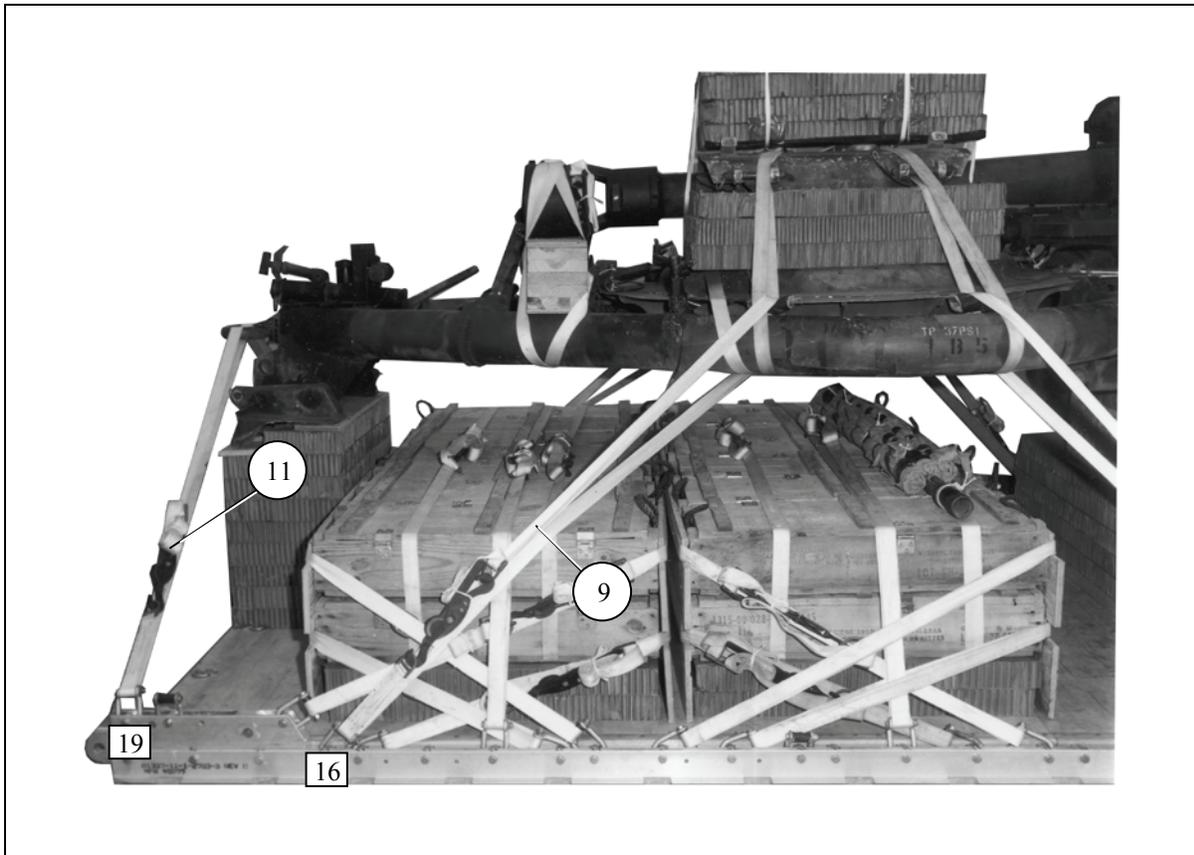
LASHING HOWITZER

3-7. Lash the howitzer to the platform as shown in Figures 3-20 and 3-21. Install and safety the lashings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.



<i>Lashing Number</i>	<i>Tiedown Clevis Number</i>	<i>Instructions</i>
		Pass lashing:
1	1	Around rail, right side.
2	1A	Around rail, left side.
3	3	Around wheel hub, right side.
4	3A	Around wheel hub, left side.
5	4	Around saddle, behind elevating wheel shaft, right side.
6	4A	Around saddle, left side.
7	5	Through hole in firing platform and around trail, right side.
8	5A	Through hole in firing platform and around trail, left side.

Figure 3-20. Lashings 1 Through 8 Installed



<i>Lashing Number</i>	<i>Tiedown Clevis Number</i>	<i>Instructions</i>
9	16	Pass lashing: Through hole in firing platform and around trail, right side.
10	16A	Through hole in firing platform and around trail, left side.
11	19	Through lunette, right side.
12	19A	Through lunette, left side.

Figure 3-21. Lashings 9 Through 12 Installed

STOWING ADDITIONAL ACCOMPANYING LOAD

3-8. Stow two boxes of antipersonnel (APERS) or high-explosive rocket-assisted projectile (HERAP) ammunition and seven boxes of fuzes as shown in Figures 3-22 and 3-23.

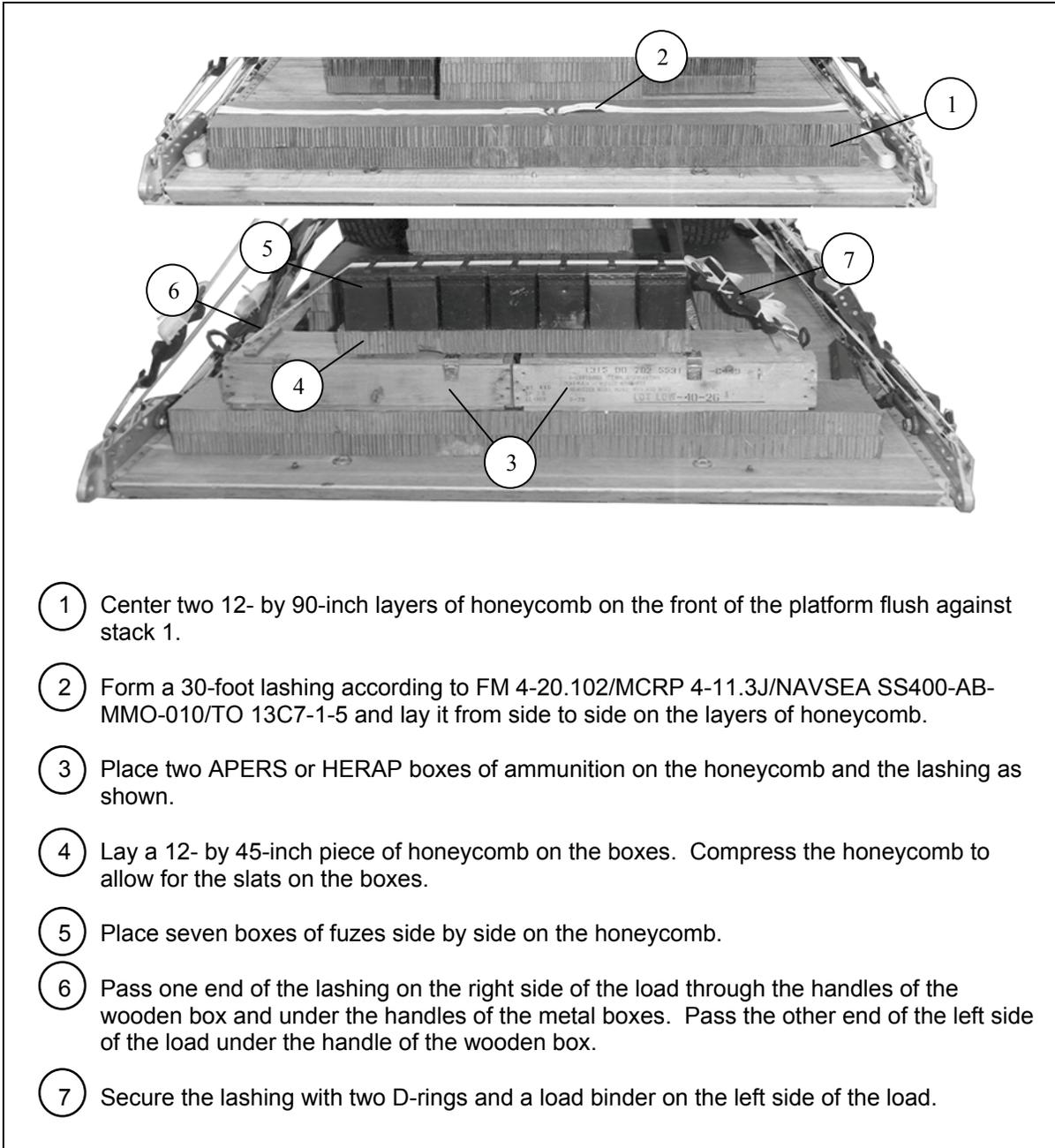
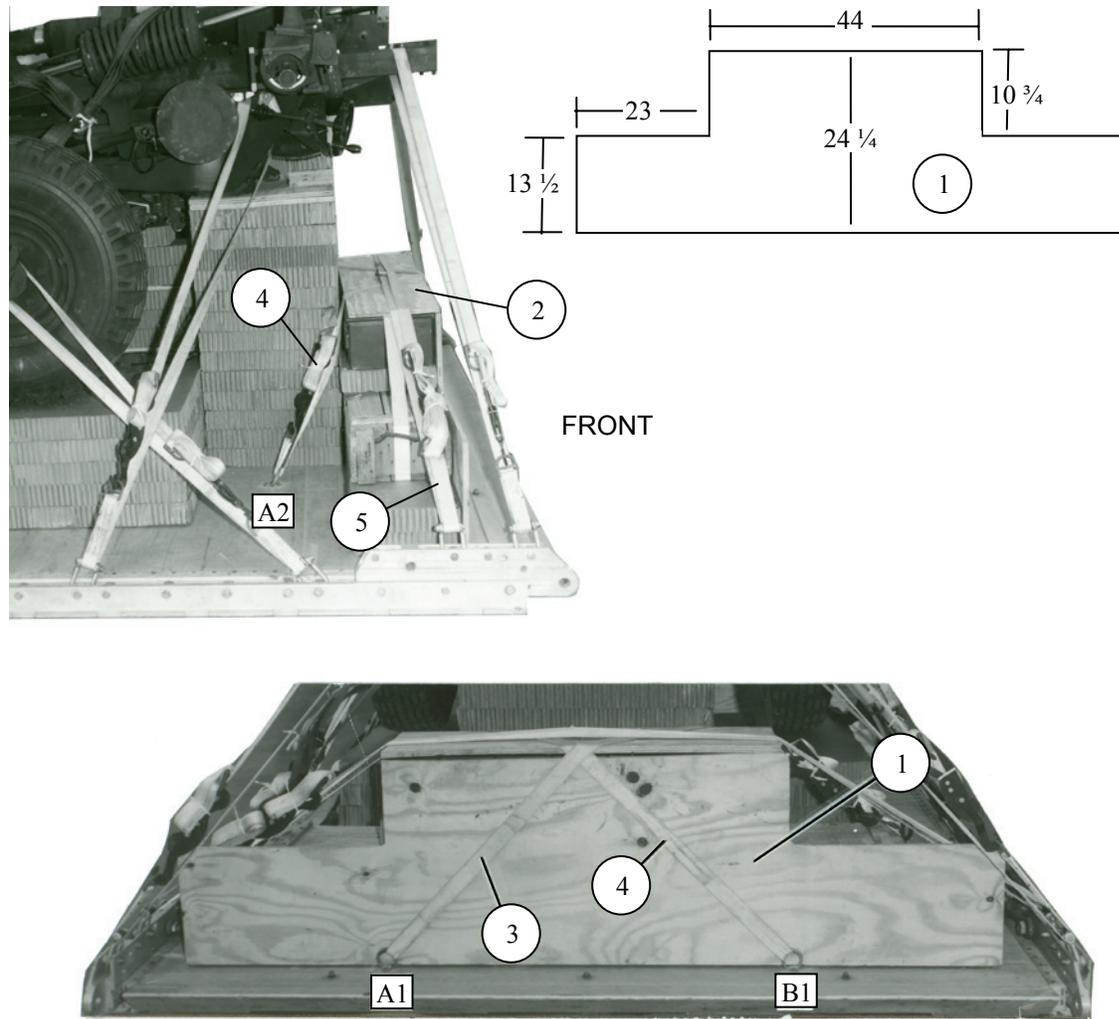


Figure 3-22. Boxes of Ammunition and Fuzes Stowed and Lashed Together

- Notes.** 1. All measurements are given in inches.
 2. This drawing is not drawn to scale.



- 1 Cut an endboard as shown above and place it against the front of the ammunition.
- 2 Place a 12- by 44-inch piece of $\frac{3}{4}$ -inch plywood on top of the fuze box.
- 3 Secure the plywood with a 15-foot lashing from tie-down ring A1 to B2.
- 4 Pass a 15-foot lashing from tie-down ring B1 to A2.
- 5 Form a 30-foot lashing according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-
MMO-010/TO 13C7-1-5. Place the lashing over the top of the plywood and pass the ends through clevises 2 and 2A. Secure the lashing with two D-rings and a load binder on the right side of the boxes.

Figure 3-23. Boxes of Ammunition and Fuzes Stowed and Lashed to Platform

INSTALLING SUSPENSION SLINGS, ANTITUMBLE SLINGS AND DEADMAN'S TIE

3-9. Install the suspension slings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 3-24. Install the antitumble slings as shown in Figure 3-25. Cover the load as shown in Figures 3-26 and 3-27. Secure and safety the slings as shown in Figure 3-27.

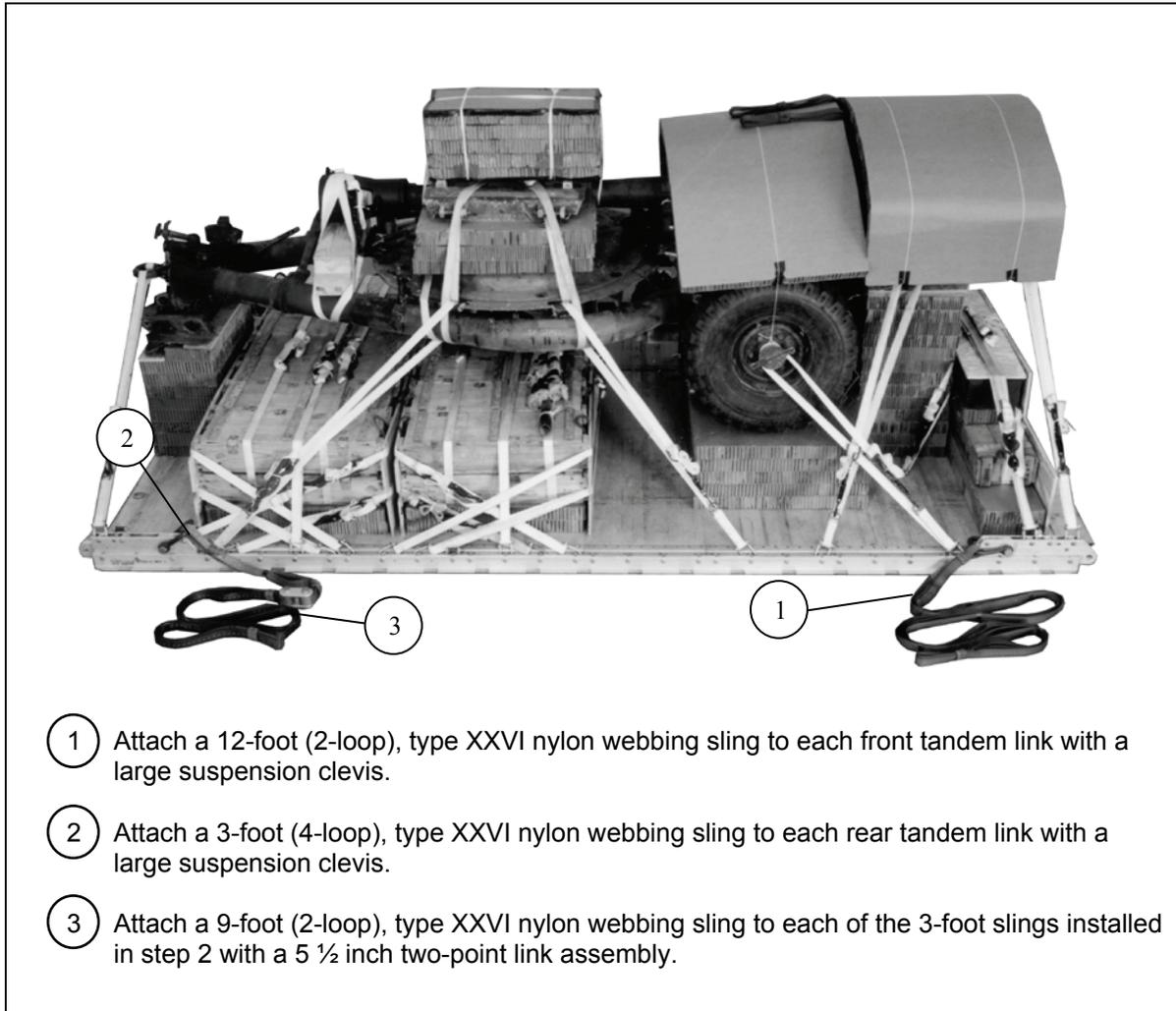


Figure 3-24. Suspension Slings Installed

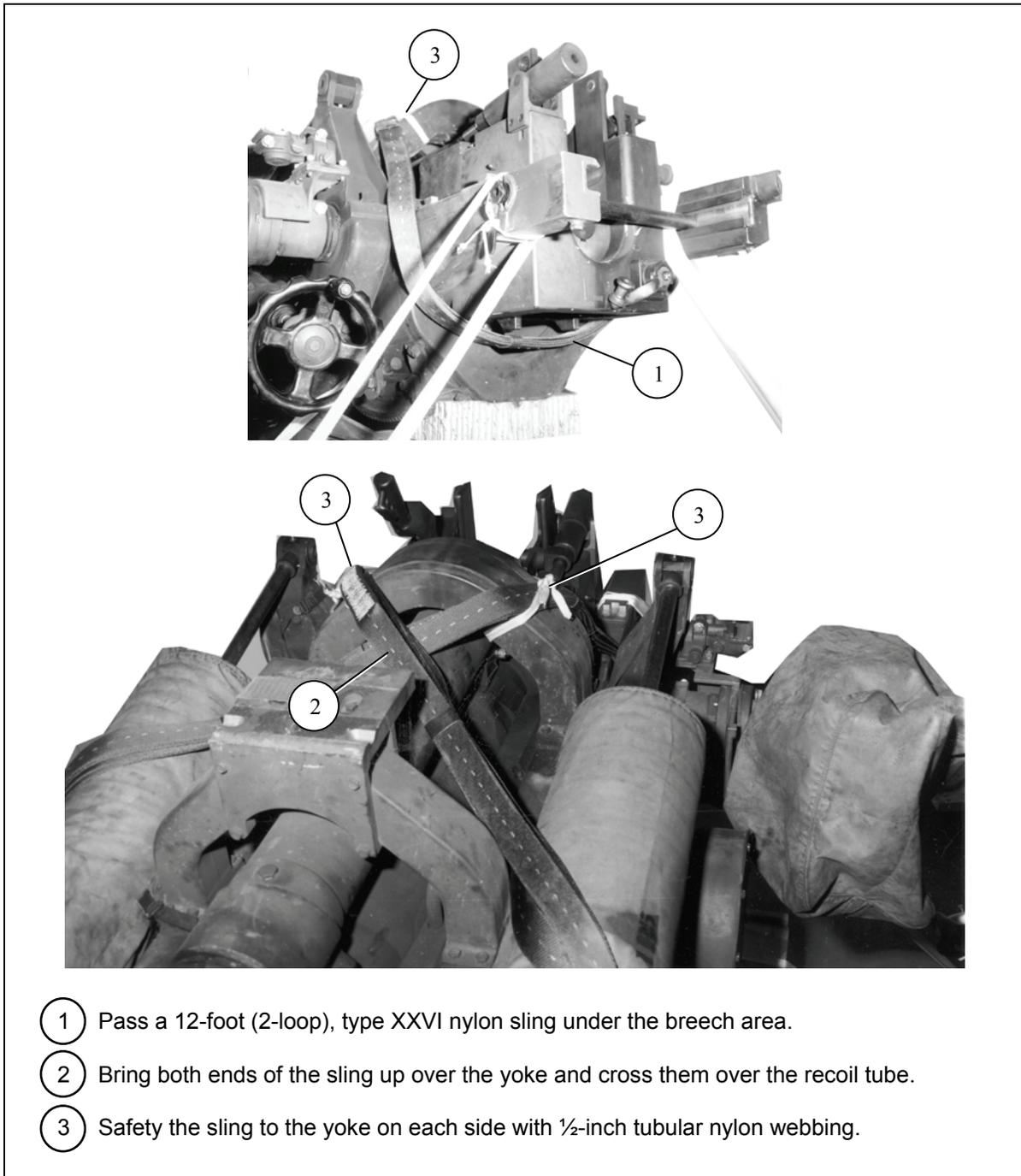
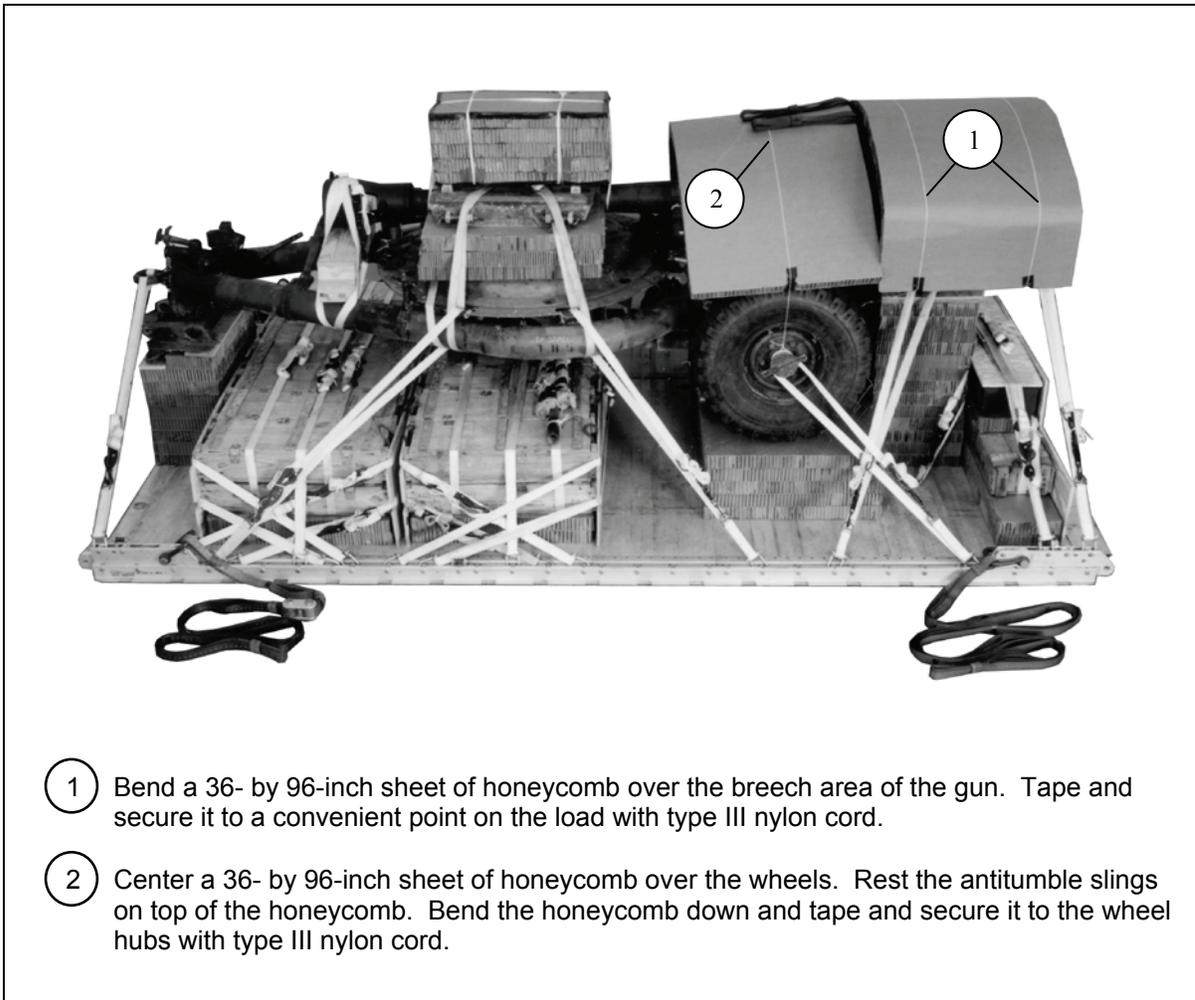


Figure 3-25. Antitumble Sling Installed on Howitzer



- ① Bend a 36- by 96-inch sheet of honeycomb over the breech area of the gun. Tape and secure it to a convenient point on the load with type III nylon cord.
- ② Center a 36- by 96-inch sheet of honeycomb over the wheels. Rest the antitumble slings on top of the honeycomb. Bend the honeycomb down and tape and secure it to the wheel hubs with type III nylon cord.

Figure 3-26. Load Partially Covered

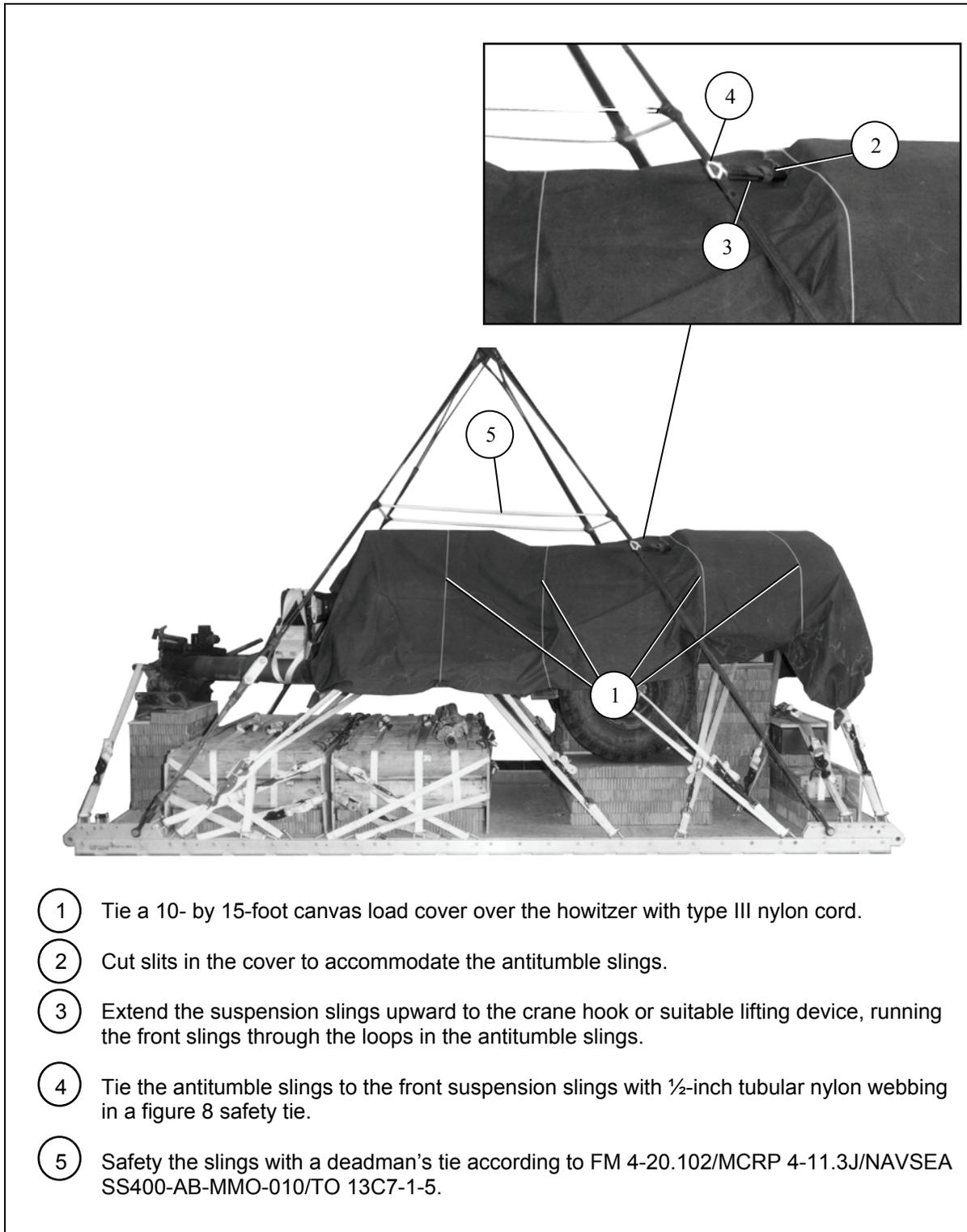


Figure 3-27. Load Covered, Sling Secured and Safetied

STOWING CARGO PARACHUTE

3-10. Prepare the parachute stowage platform and stow the G-11 cargo parachutes according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 3-28.

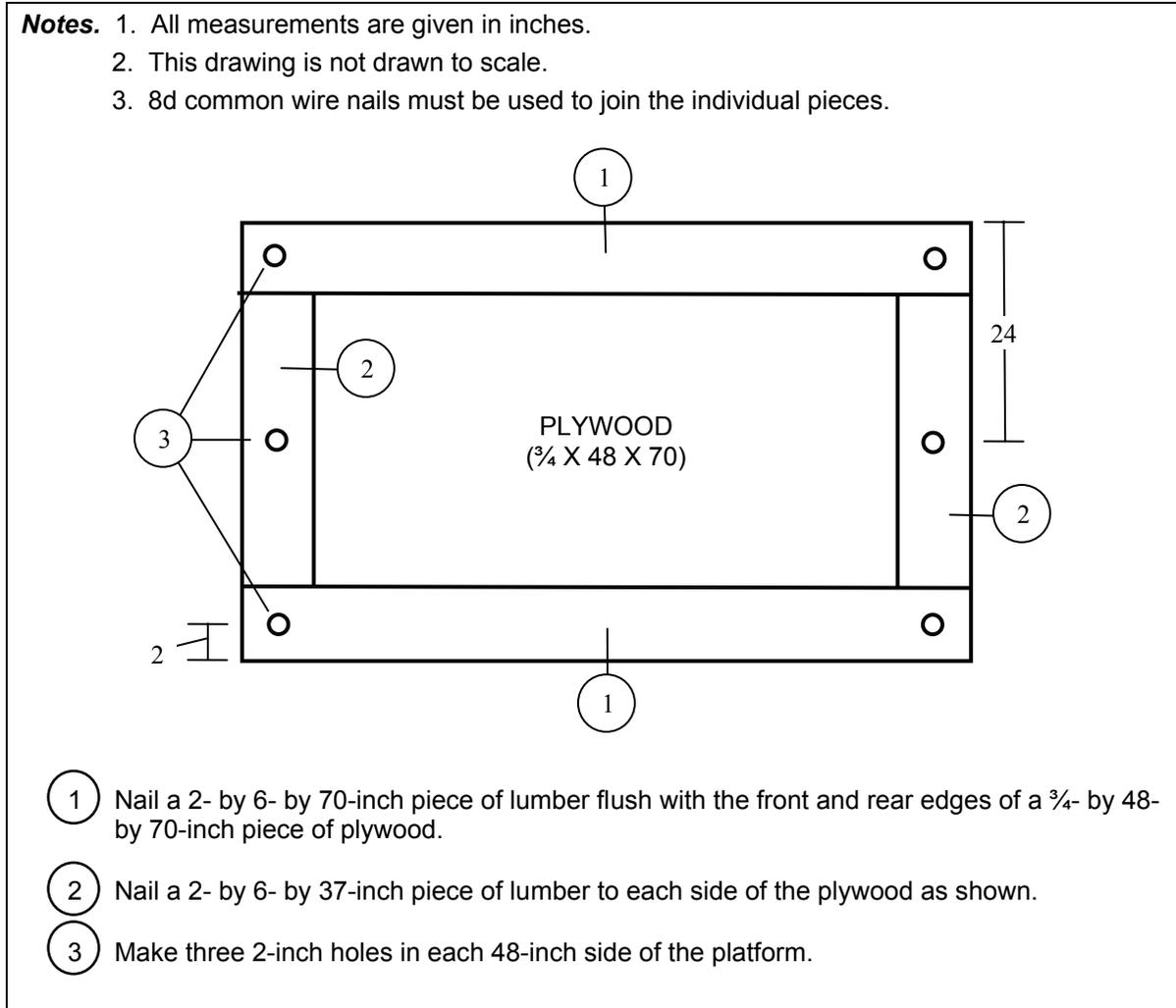
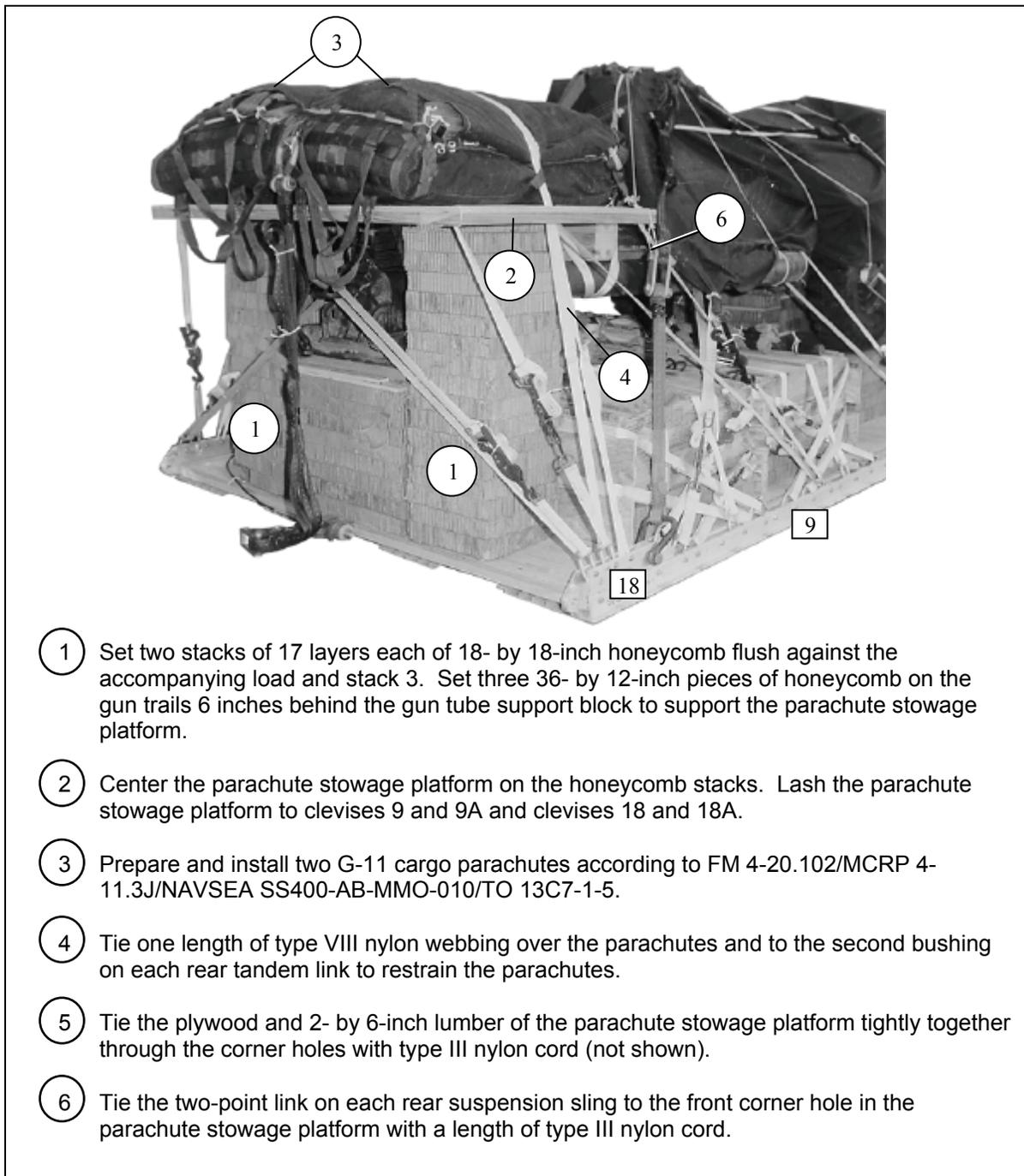


Figure 3-28. Parachute Stowage Platform Constructed



- 1 Set two stacks of 17 layers each of 18- by 18-inch honeycomb flush against the accompanying load and stack 3. Set three 36- by 12-inch pieces of honeycomb on the gun trails 6 inches behind the gun tube support block to support the parachute stowage platform.
- 2 Center the parachute stowage platform on the honeycomb stacks. Lash the parachute stowage platform to clevises 9 and 9A and clevises 18 and 18A.
- 3 Prepare and install two G-11 cargo parachutes according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
- 4 Tie one length of type VIII nylon webbing over the parachutes and to the second bushing on each rear tandem link to restrain the parachutes.
- 5 Tie the plywood and 2- by 6-inch lumber of the parachute stowage platform tightly together through the corner holes with type III nylon cord (not shown).
- 6 Tie the two-point link on each rear suspension sling to the front corner hole in the parachute stowage platform with a length of type III nylon cord.

Figure 3-29. Cargo Parachutes Stowed

INSTALLING EXTRACTION SYSTEM

3-11. Install the EFTC system on the load according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 3-30. If applicable install the extraction parachute jettison system (EPJS) according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

3-12. Install provisions for emergency restraints on the front of the platform according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

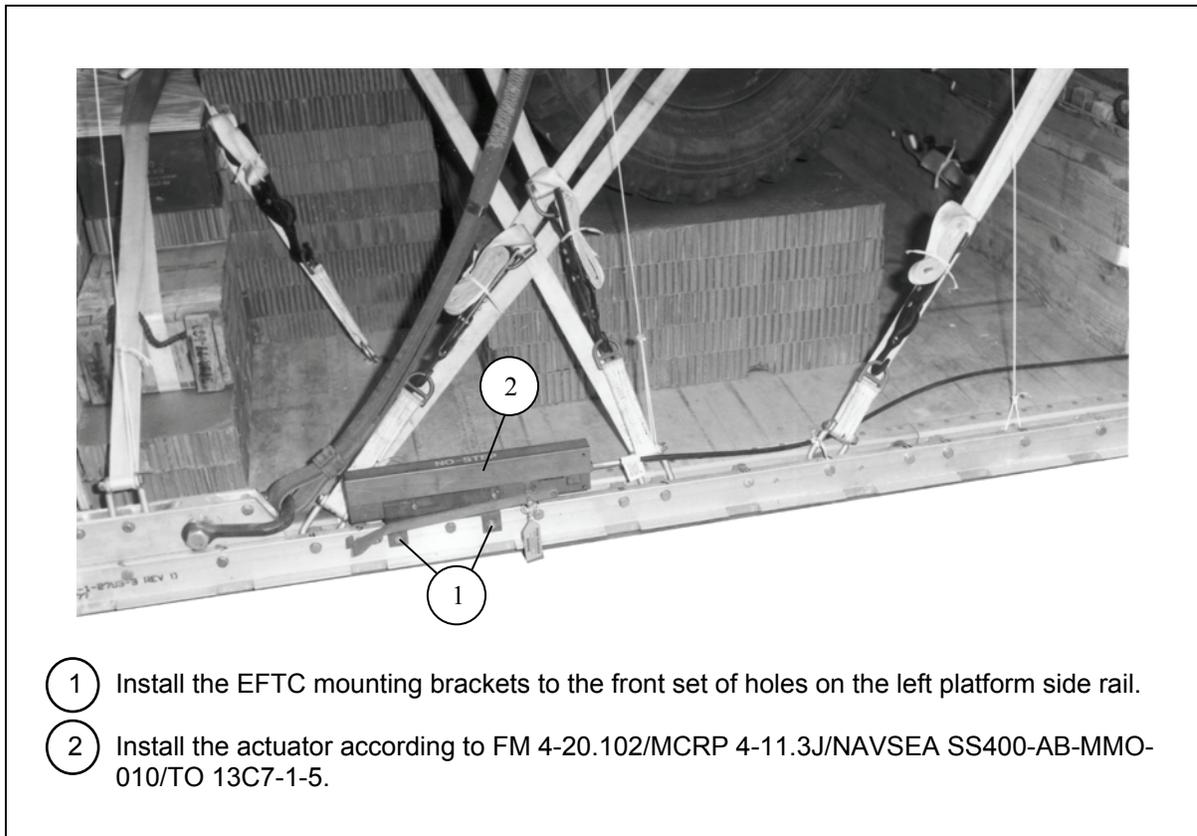
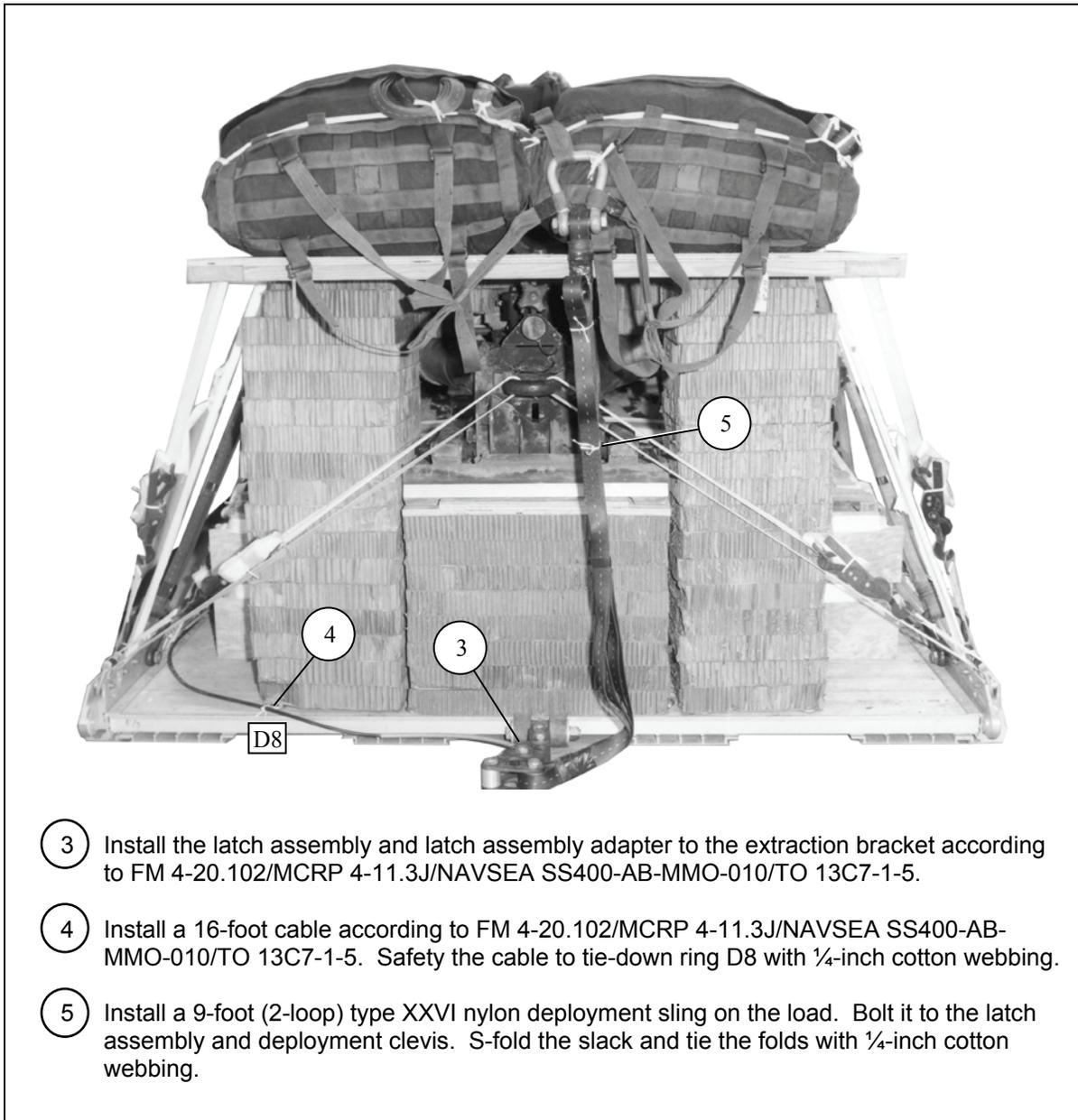


Figure 3-30. EFTC Installed



- ③ Install the latch assembly and latch assembly adapter to the extraction bracket according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
- ④ Install a 16-foot cable according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Safety the cable to tie-down ring D8 with ¼-inch cotton webbing.
- ⑤ Install a 9-foot (2-loop) type XXVI nylon deployment sling on the load. Bolt it to the latch assembly and deployment clevis. S-fold the slack and tie the folds with ¼-inch cotton webbing.

Figure 3-30. EFTC Installed (Continued)

INSTALLING RELEASE SYSTEM

3-13. Prepare and install an M-1 cargo parachute release according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 3-31.

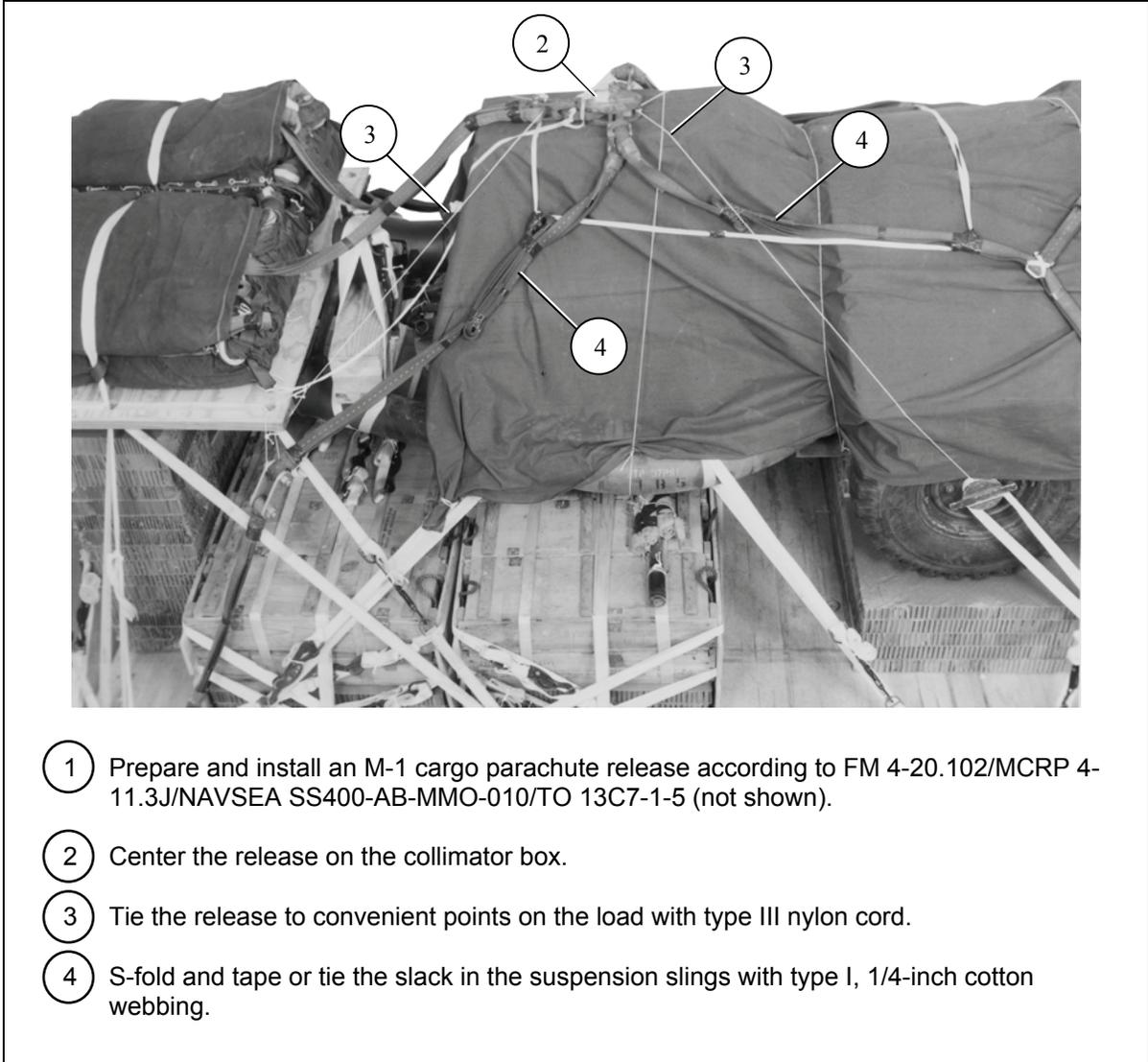


Figure 3-31. M-1 Release Installed

PLACING EXTRACTION PARACHUTE

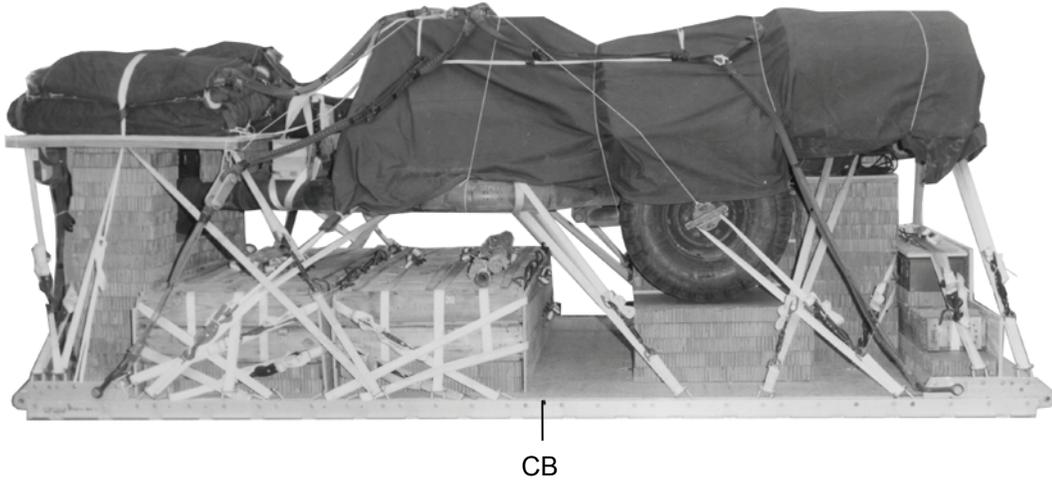
3-14. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Rig the extraction line in an extraction line bag according to TM 10-1670-286-20/TO13C5-2-41. Place the extraction parachute and extraction line on the load for installation in the aircraft.

MARKING RIGGED LOAD

3-15. Mark the rigged load as described in FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 3-32. If the load varies from the one shown the weight, height, CB, and parachute requirements must be recomputed.

CAUTION

Make the final rigger inspection required by FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Weight: Load shown.....	10,000 pounds
Maximum load allowed.....	10,500 pounds
Height	83 inches
Width	108 inches
Overall Length.....	216 inches
Overhang: Front	0 inches
Rear (EFTC).....	18 inches
Rear (EPJS).....	30 inches
Center of Balance (from front edge of platform)	100 inches

Figure 3-32. M119 Howitzer Rigged for Low-Velocity Airdrop on a Type V Platform

EQUIPMENT REQUIRED

3-16. Use the equipment listed in Table 3-1 to rig this load.

Table 3-1. Equipment Required for Rigging the M119 Howitzer for Low-Velocity Airdrop on Type V Platform

<i>National Stock Number</i>	<i>Item</i>	<i>Quantity</i>
8040-00-273-8713	Adhesive, paste, 1-gallon	As required
	Clevis, suspension:	
4030-00-678-8562	3/4-inch (medium) emergency restraint	4
4030-00-090-5354	1-inch (large)	5
8305-00-184-2034	Cloth, cotton duck, 60-inch	As required
4020-00-240-2146	Cord, nylon, type III	As required
1670-00-434-5785	Coupling, airdrop, extraction force transfer with 16-foot cable	1
1670-00-360-0328	Cover, clevis, large	1
1670-00-360-0329	Cover, link	6
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
8305-00-191-1101	Felt, 1/2-inch	As required
1670-01-183-2678	Leaf, extraction line	2
1670-01-064-4452	Line, drogue, 60-foot (1-loop), type XXVI nylon webbing	1
	Line, extraction, type XXVI nylon webbing:	
1670-01-062-6313	60-foot (3-loop)	1
	Or	
1670-01-107-7651	140-foot (3-loop)	2
	Link assembly:	
1670-01-493-6418	Two-point, 3 3/4-in	1
1670-01-493-6420	Two-point, 5 1/2-in	2
	Lumber:	
5510-00-220-6146	2- by 4- by 96-inch	1
5510-00-220-6148	2- by 6- by 96-inch	5
5510-00-220-6246	2- by 8- by 96-inch	3
	Nail, steel wire, common:	
5315-00-010-4659	8d	As required
5315-00-164-5121	20d	As required

Table 3-1. Equipment Required for Rigging the M119 Howitzer for Low-Velocity Airdrop on Type V Platform (Continued)

<i>National Stock Number</i>	<i>Item</i>	<i>Quantity</i>
1670-00-753-3928	Pad, energy-dissipating, honeycomb	21 sheets
	Parachute:	
1670-01-016-7841	Cargo, G-11	2
1670-01-063-3716	Cargo, extraction, 22-foot	1
1670-01-063-3715	Drogue, 15-foot	1
	Platform, airdrop, type V, 16-foot	
1670-01-353-8424	Bracket assembly, coupling	1
1670-01-353-8425	Bracket assembly, extraction	1
1670-01-162-2376	Clevis assembly	38
1670-01-162-2381	Tandem link	4
	Plywood:	
5530-00-129-7777	1/2- inch	1 sheet
5530-00-128-4981	3/4- inch	9 sheets
1670-01-097-8816	Release, cargo parachute, M-1	1
	Sling, cargo airdrop:	
	For antitumble sling:	
1670-01-062-6303	12-foot (2-loop), type XXVI nylon webbing	2
	For deployment line:	
1670-01-062-6304	9-foot (2-loop), type XXVI nylon webbing	2
	For lifting:	
1670-01-063-7760	11-foot (2-loop), type XXVI nylon webbing	4
	For riser extension:	
1670-01-062-6302	20-foot (2-loop), type XXVI nylon webbing	4
	For suspension:	
1670-01-062-6306	3-foot (4-loop), type XXVI nylon webbing	2
1670-01-062-6304	9-foot (2-loop), type XXVI nylon webbing	2
1670-01-062-6303	12-foot (2-loop), type XXVI nylon webbing	2
1670-00-040-8219	Strap parachute release, multicut	2
1670-00-368-7486	Strap, webbing, nylon (shear strap)	1
7515-00-266-5016	Tape, adhesive, 2-inch	As required
1670-00-937-0271	Tie-down assembly, 15-foot	58
1670-01-483-8259	Tow Release Mechanism (H-block for C-17)	1
	Webbing:	
8305-00-268-2411	Cotton, 1/4-inch, type I	As required
	Nylon:	
8305-00-082-5752	Tubular, 1/2-inch	As required
8305-00-263-3591	Type VIII webbing	As required

SECTION II – RIGGING M119 MILLIMETER HOWITZER, ACCOMPANYING AMMUNITION AND 81-MILLIMETER MORTAR

DESCRIPTION OF LOAD

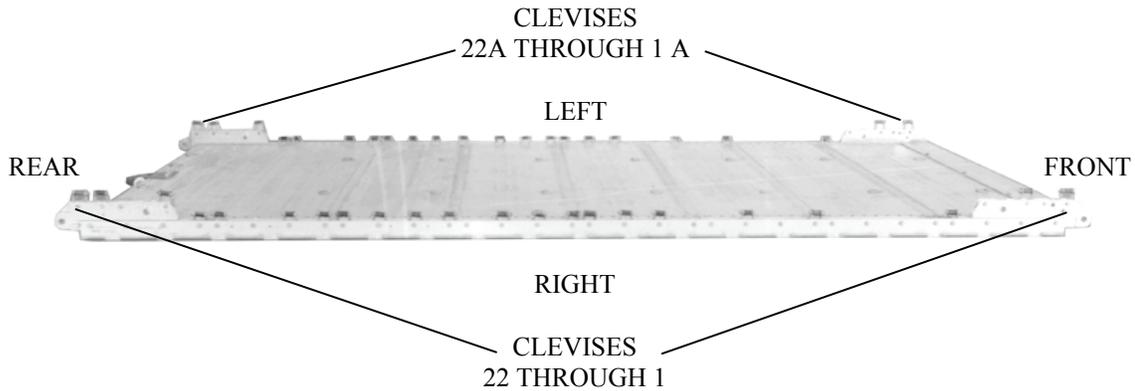
3-17. The M119, 105-millimeter howitzer is rigged on a 16-foot, type V airdrop platform with three G-11 cargo parachutes. This load includes an accompanying load of 30 boxes of ammunition and 7 boxes of fuzes weighing 3,713 pounds and an 81-millimeter mortar weighing 350 pounds. The howitzer is rigged for a low-velocity airdrop from a C-130 or C-17 aircraft.

PREPARING PLATFORM

3-18. Prepare a 16-foot, type V platform as described below.

- **Inspecting platform.** Inspect, or assembly and inspect, the platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.
- **Installing tandem links.** Install a tandem link on the front and rear of each rail as shown in Figure 3-33.
- **Installing and numbering clevises.** Attach and number 44 clevis assemblies as shown in Figure 3-33.

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



Steps:

1. Install a tandem link on the front of each platform side rail using holes 1, 2, and 3.
2. Install a tandem link on the rear of each platform side rail using holes 30, 31, and 32.
3. Install clevises on bushings 1 and 3 of each front tandem link.
4. Install clevises on bushings 1, 3, and 4 of each rear tandem link.
5. Starting at the front of each platform side rail, install clevises on the bushing bolted on holes 4, 9, 11, 14, 15, 16, 17, 18, 19, 21, 22, 23, 24, 25, 26, 28, and 29.
6. Starting at the front of the platform, number the clevises bolted to the right side from 1 through 22 and those bolted to the left side from 1A through 22A.
7. Label the tie-down rings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

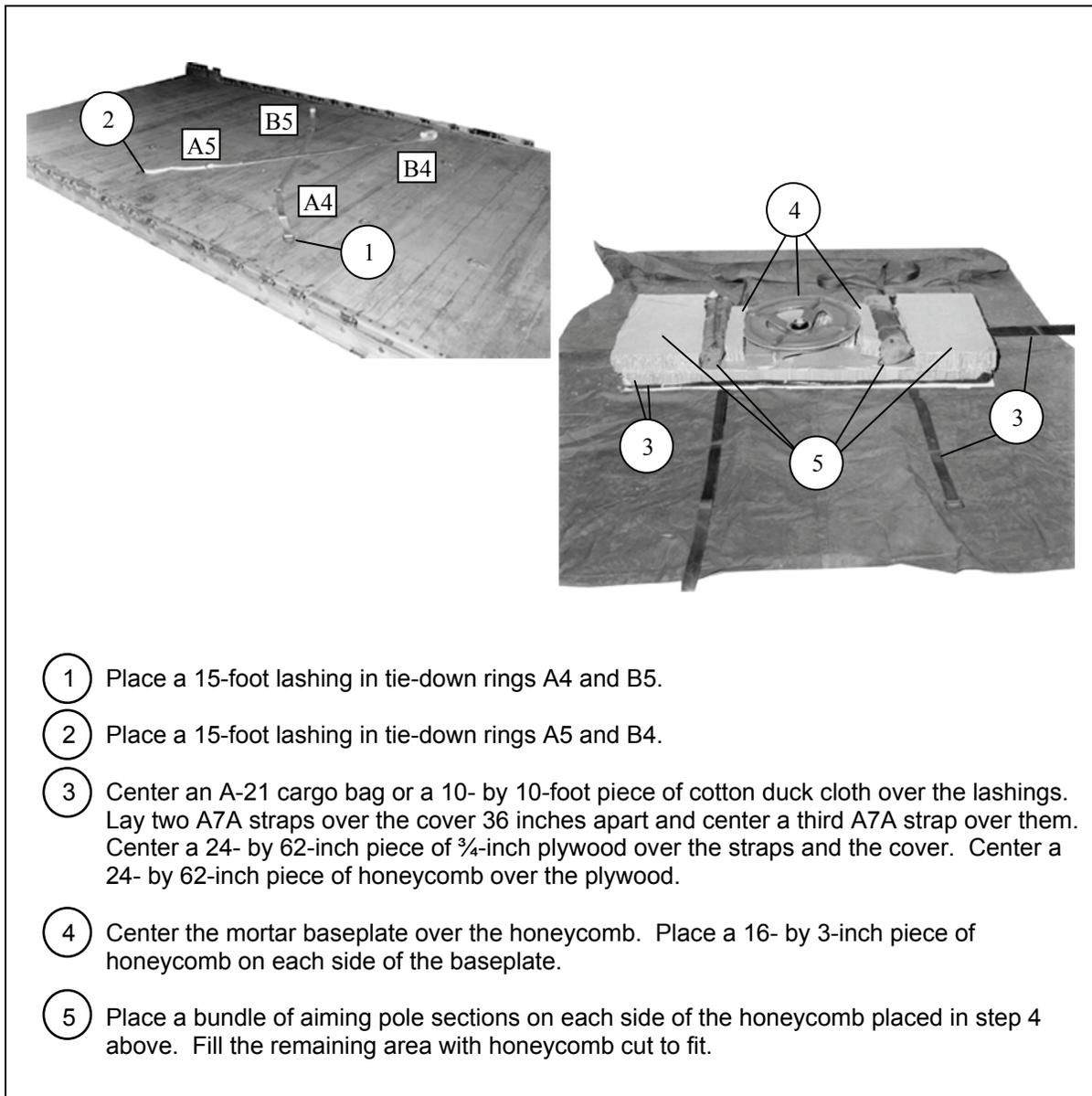
Figure 3-33. Platform Prepared

STOWING ACCOMPANYING LOAD

CAUTION

Only ammunition listed in FM 4-20.153/MCRP 4-11.3B/TO 13C7-18-41 may be airdropped.

3-19. Stow the 81-millimeter mortar and four boxes of 81-millimeter ammunition as shown in Figure 3-34. Stow 28 boxes of 105-millimeter ammunition as shown in Figures 3-35 and 3-36. Two additional boxes of ammunition will be stowed after the gun is lashed to the platform.



- 1 Place a 15-foot lashing in tie-down rings A4 and B5.
- 2 Place a 15-foot lashing in tie-down rings A5 and B4.
- 3 Center an A-21 cargo bag or a 10- by 10-foot piece of cotton duck cloth over the lashings. Lay two A7A straps over the cover 36 inches apart and center a third A7A strap over them. Center a 24- by 62-inch piece of $\frac{3}{4}$ -inch plywood over the straps and the cover. Center a 24- by 62-inch piece of honeycomb over the plywood.
- 4 Center the mortar baseplate over the honeycomb. Place a 16- by 3-inch piece of honeycomb on each side of the baseplate.
- 5 Place a bundle of aiming pole sections on each side of the honeycomb placed in step 4 above. Fill the remaining area with honeycomb cut to fit.

Figure 3-34. Mortar and Ammunition Stowed

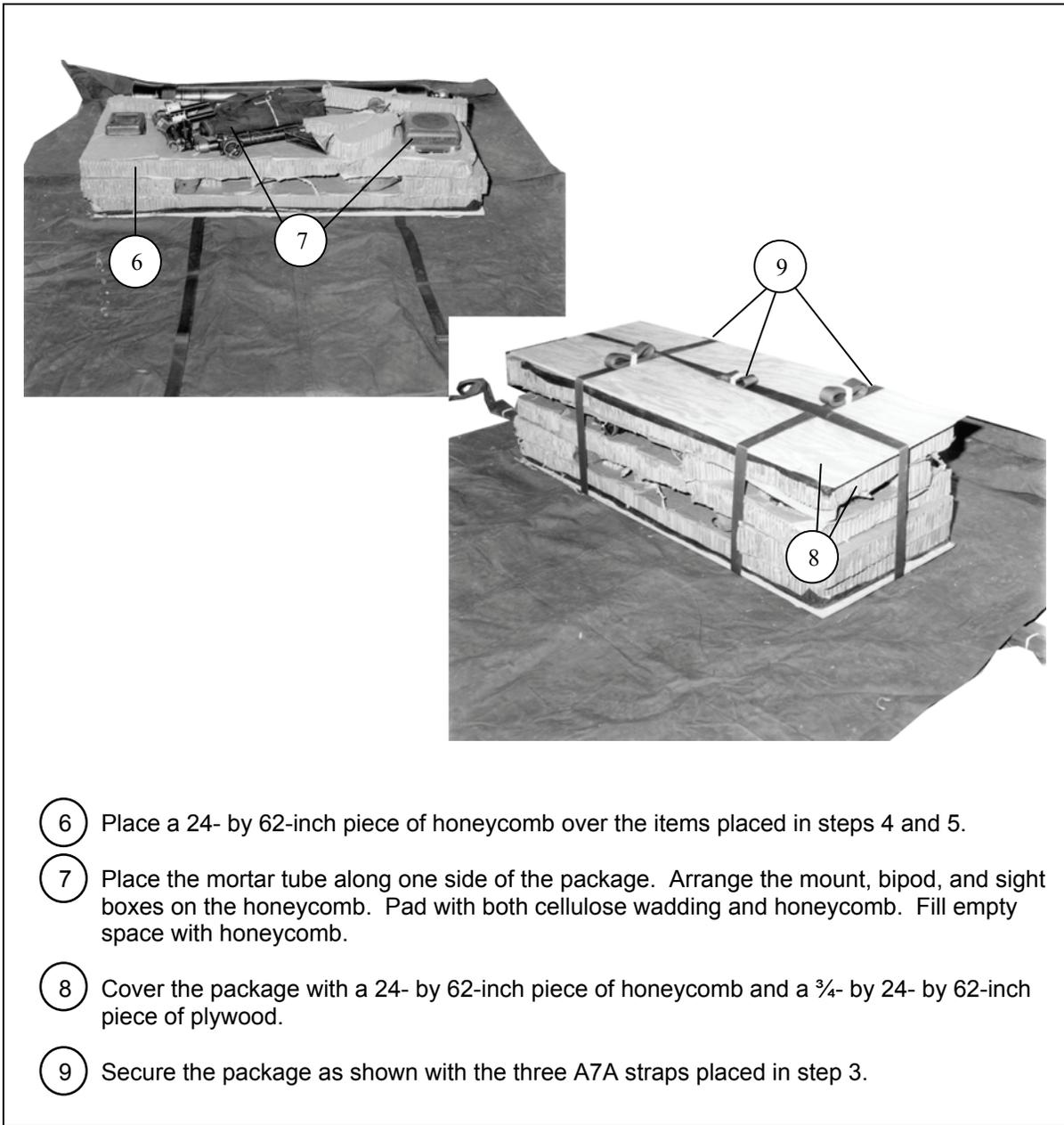
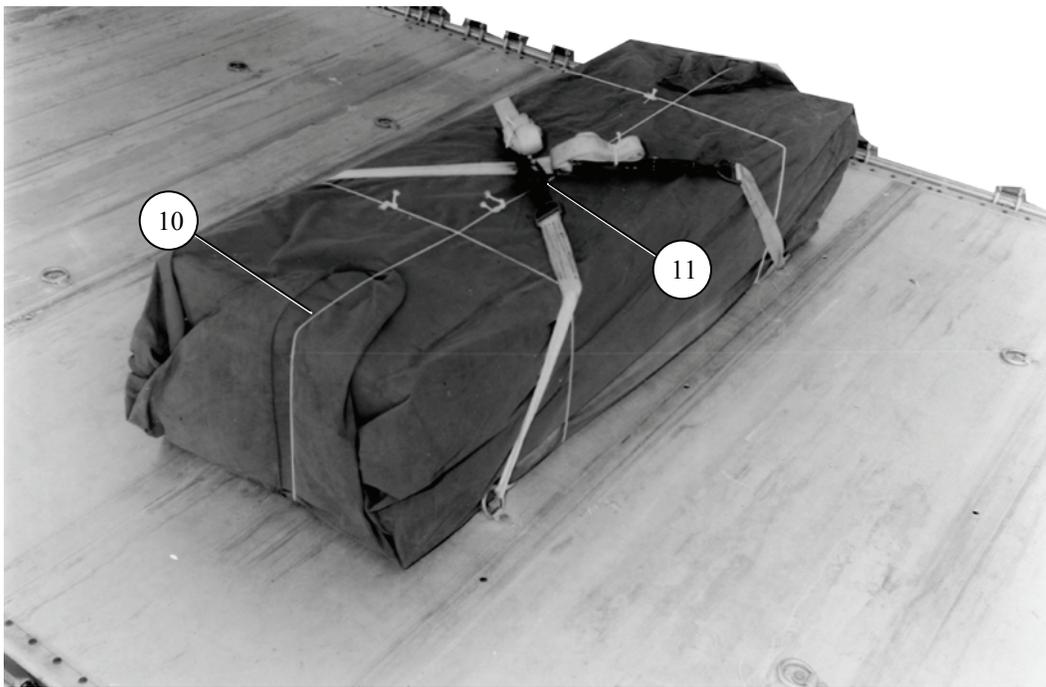


Figure 3-34. Mortar and Ammunition Stowed (Continued)

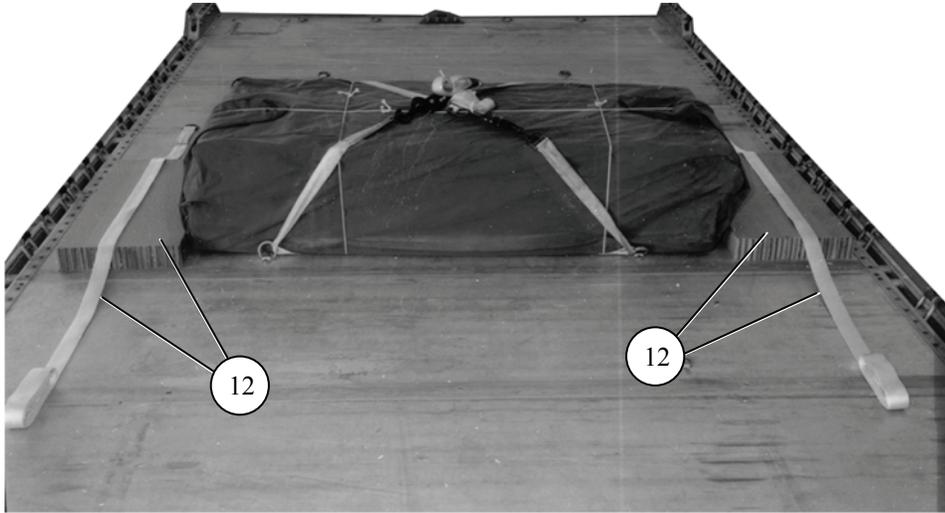


- 10 Bring the flaps of the A-21 cargo bag or cotton duck cloth cover over the package. Tie the cover shut with type III nylon cord.
- 11 Secure the lashings placed in steps 1 and 2 over the load with a load binder and D-ring.

Figure 3-34. Mortar and Ammunition Stowed (Continued)

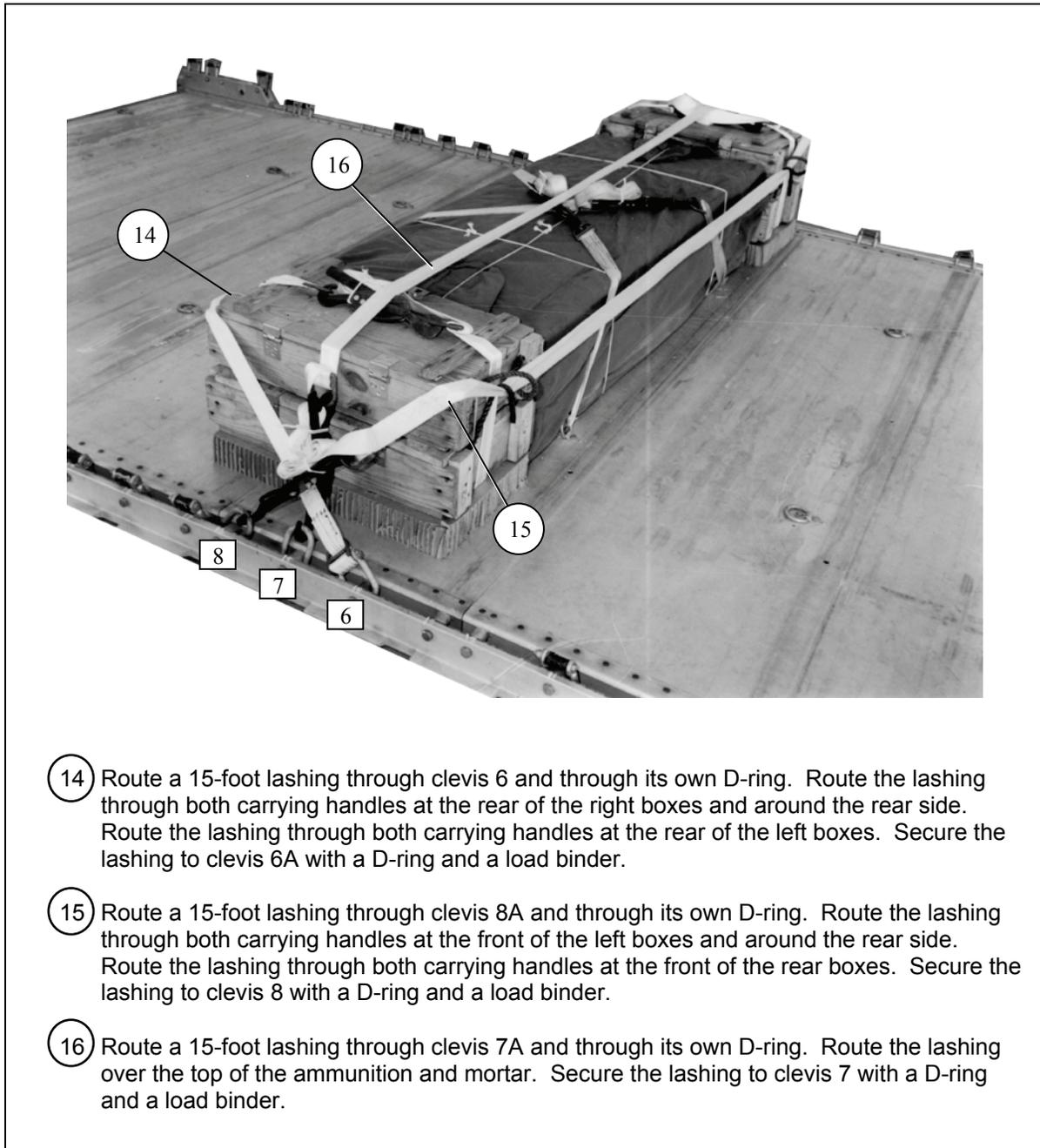
NOTICE OF EXCEPTION

Exception to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 is granted to rig ammunition with one layer of honeycomb.



- 12 Center an 18- by 24-inch piece of honeycomb on each side of the mortar. Place a 15-foot lashing over each piece of honeycomb in a front-to-rear direction.
- 13 Place two boxes of mortar ammunition on the honeycomb stacks and flush with the ends of the mortar package. Bring each of the lashings placed in step 12 through the box carrying handles, and secure with load binder and D-ring on top of the boxes.

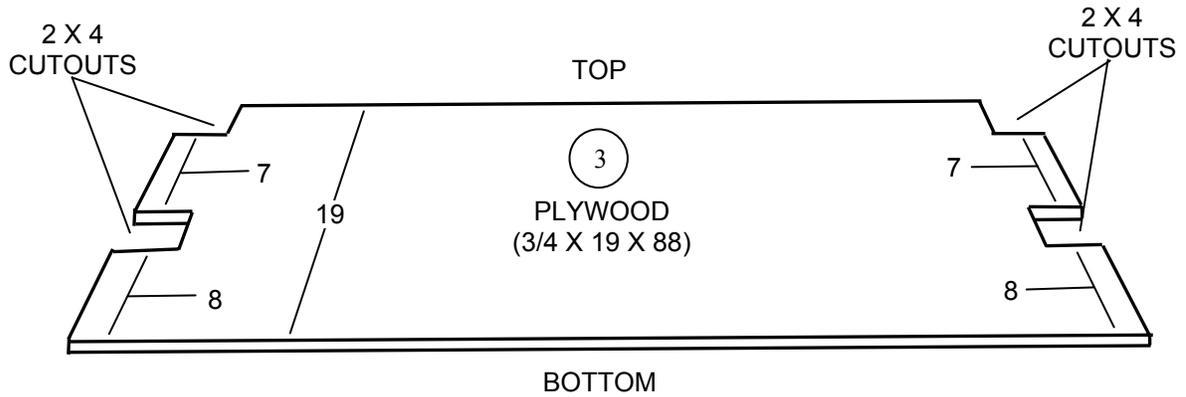
Figure 3-34. Mortar and Ammunition Stowed (Continued)



- 14 Route a 15-foot lashing through clevis 6 and through its own D-ring. Route the lashing through both carrying handles at the rear of the right boxes and around the rear side. Route the lashing through both carrying handles at the rear of the left boxes. Secure the lashing to clevis 6A with a D-ring and a load binder.
- 15 Route a 15-foot lashing through clevis 8A and through its own D-ring. Route the lashing through both carrying handles at the front of the left boxes and around the rear side. Route the lashing through both carrying handles at the front of the rear boxes. Secure the lashing to clevis 8 with a D-ring and a load binder.
- 16 Route a 15-foot lashing through clevis 7A and through its own D-ring. Route the lashing over the top of the ammunition and mortar. Secure the lashing to clevis 7 with a D-ring and a load binder.

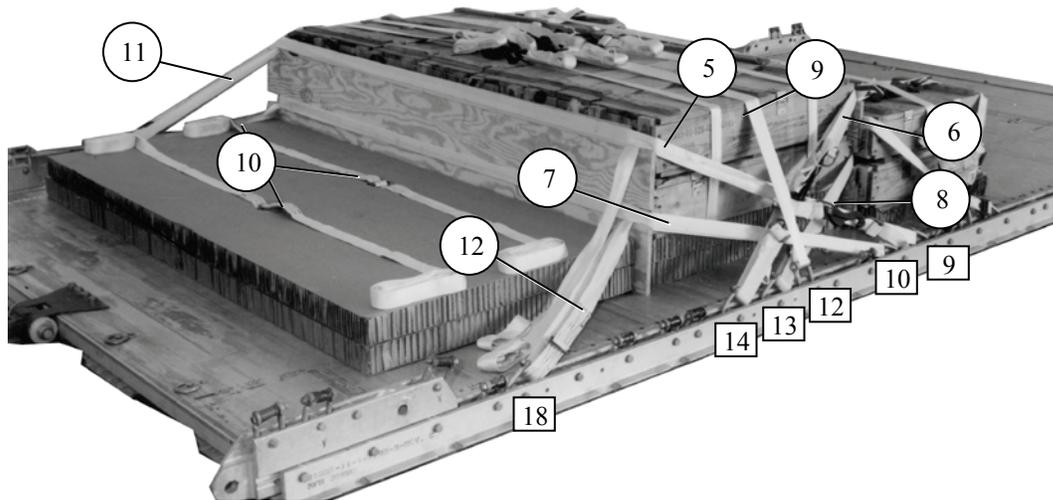
Figure 3-34. Mortar and Ammunition Stowed (Continued)

- Notes.* 1. All measurements are given in inches.
2. This drawing is not drawn to scale.



- ① Center two 36- by 84-inch pieces of honeycomb 96 inches from the front edge of the platform and place two 30-foot lashings on the honeycomb as shown in Figure 3-2, steps 1 and 2.
- ② Place 14 boxes of ammunition on the honeycomb and bind the boxes together with the lashings as shown in Figure 3-2, steps 3 and 4.
- ③ Cut three endboards as shown using $\frac{3}{4}$ - by 19- by 88-inch pieces of plywood.
- ④ Place an endboard against the front and rear of the first stack of boxes (not shown).

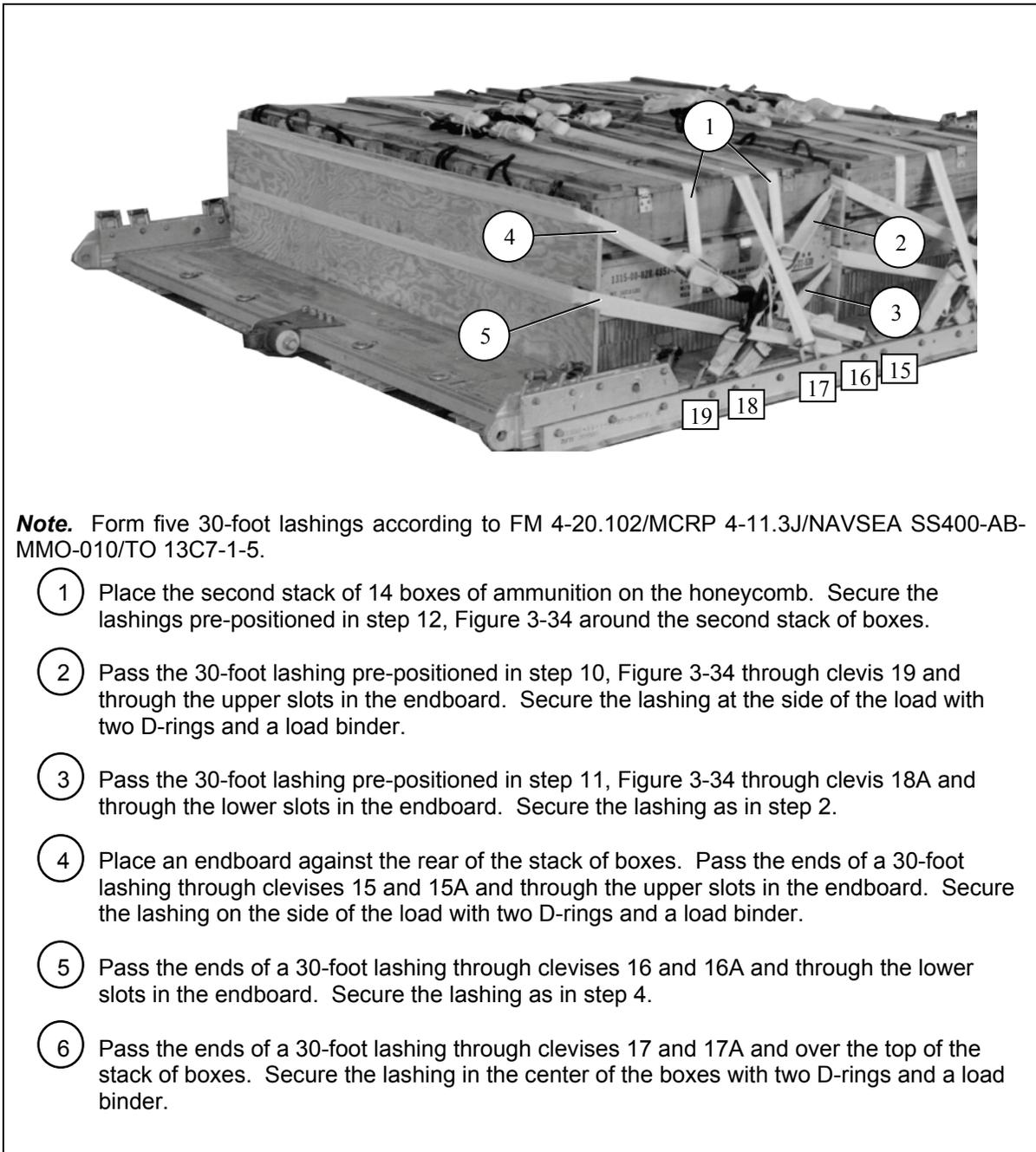
Figure 3-35. First Stack of Ammunition Lashed



Note. Form nine 30-foot lashings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

- 5 Pass the ends of a 30-foot lashing through clevises 9 and 9A and through the upper slots in the second endboard. Secure the lashing at the side of the load with two D-rings and a load binder.
- 6 Pass the ends of a 30-foot lashing through clevises 14 and 14A and through the upper slots in the first endboard. Secure the lashing as in step 5.
- 7 Pass the ends of a 30-foot lashing through clevises 10 and 10A and through the lower slots in the first endboard. Secure the lashing as in step 5.
- 8 Pass the ends of a 30-foot lashing through clevises 13 and 13A and through the lower slots in the first endboard. Secure the lashing as in step 5.
- 9 Pass the ends of a 30-foot lashing through clevises 12 and 12A and over the top of the stack of boxes. Secure the lashing in the center of the boxes with two D-rings and a load binder.
- 10 Pre-position a 30-foot lashing through clevis 19A and through the upper slots.
- 11 Pre-position a 30-foot lashing through clevis 18 and through the lower slots.
- 12 Center two 36- by 84-inch pieces of honeycomb against the second endboard. Place two 30-foot lashings on the honeycomb as shown.

Figure 3-35. First Stack of Ammunition Lashed (Continued)



Note. Form five 30-foot lashings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

- 1 Place the second stack of 14 boxes of ammunition on the honeycomb. Secure the lashings pre-positioned in step 12, Figure 3-34 around the second stack of boxes.
- 2 Pass the 30-foot lashing pre-positioned in step 10, Figure 3-34 through clevis 19 and through the upper slots in the endboard. Secure the lashing at the side of the load with two D-rings and a load binder.
- 3 Pass the 30-foot lashing pre-positioned in step 11, Figure 3-34 through clevis 18A and through the lower slots in the endboard. Secure the lashing as in step 2.
- 4 Place an endboard against the rear of the stack of boxes. Pass the ends of a 30-foot lashing through clevises 15 and 15A and through the upper slots in the endboard. Secure the lashing on the side of the load with two D-rings and a load binder.
- 5 Pass the ends of a 30-foot lashing through clevises 16 and 16A and through the lower slots in the endboard. Secure the lashing as in step 4.
- 6 Pass the ends of a 30-foot lashing through clevises 17 and 17A and over the top of the stack of boxes. Secure the lashing in the center of the boxes with two D-rings and a load binder.

Figure 3-36. Second Stack of Ammunition Lashed

BUILDING AND PLACING HONEYCOMB STACKS

3-20. Build the honeycomb stacks for the howitzer as shown in Figures 3-5 through 3-7. Place the honeycomb stacks on the platform as shown in Figure 3-37.

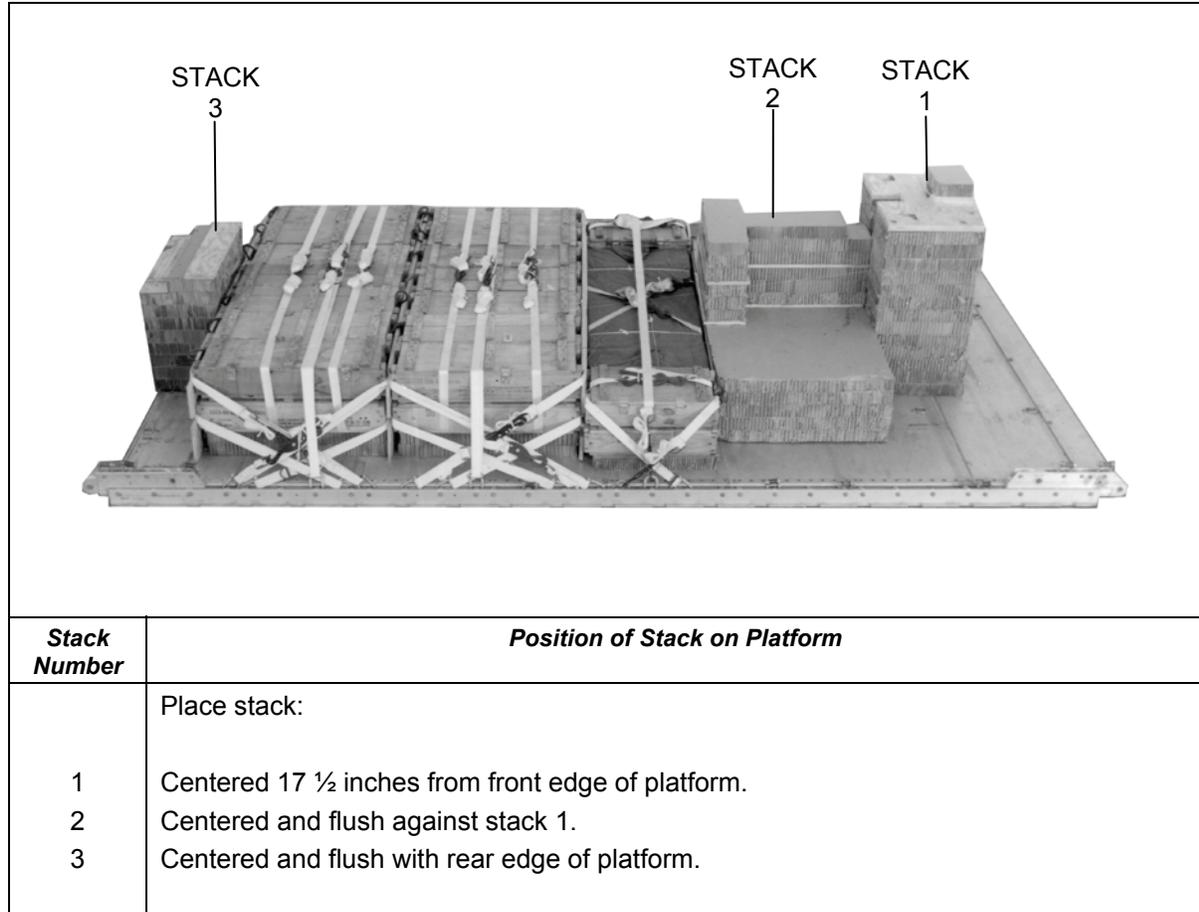


Figure 3-37. Honeycomb Stacks Placed on Platform

PREPARING HOWITZER

3-21. Prepare the howitzer as shown in Figures 3-9 through 3-18.

LIFTING AND POSITIONING HOWITZER

3-22. Lift the howitzer and position it on the honeycomb stacks as shown in Figure 3-19.

LASHING HOWITZER

3-23. Lash the howitzer to the platform with twelve 15-foot lashings as shown in Figures 3-38 and 3-39. Install and safety the lashings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

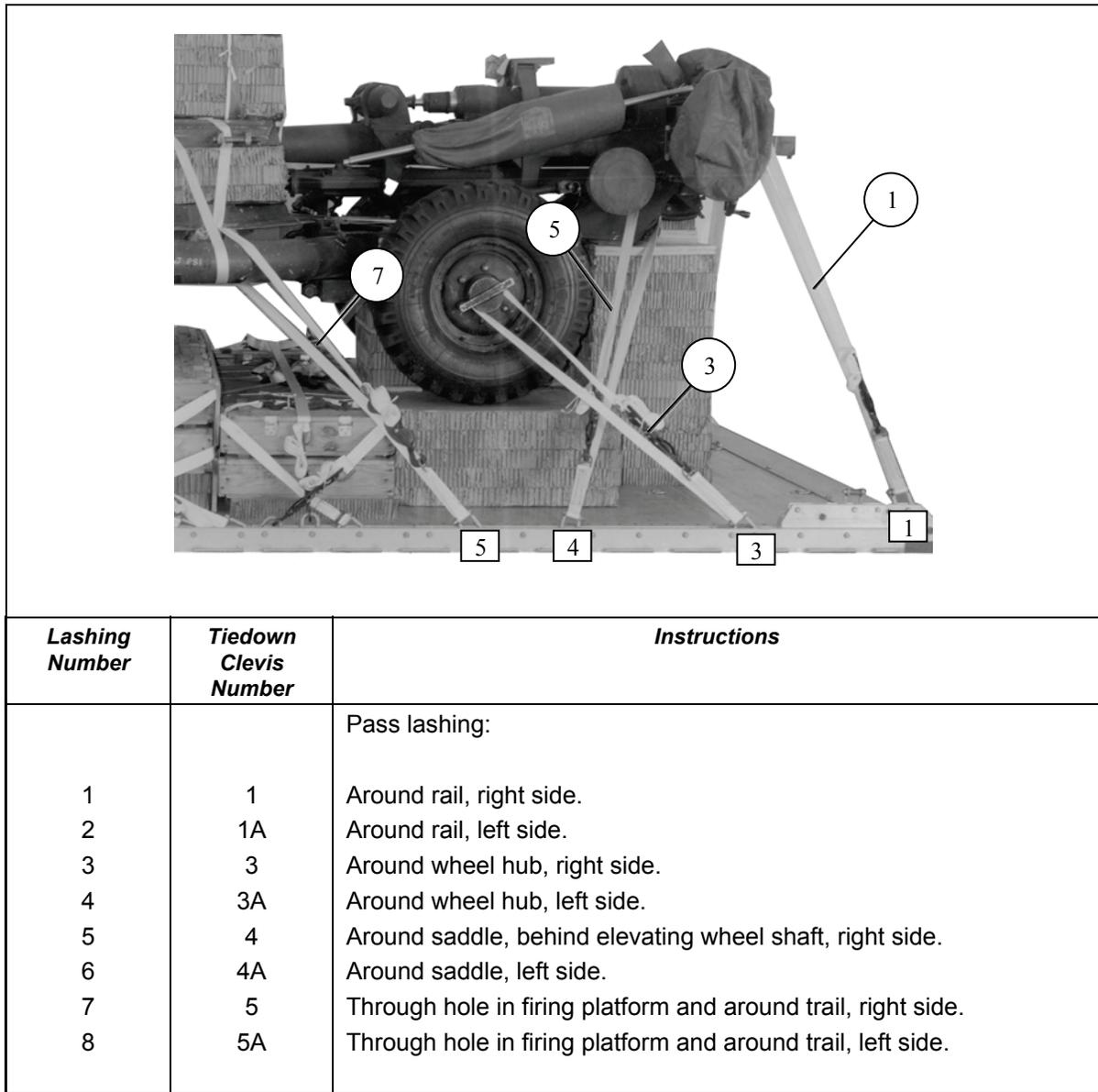
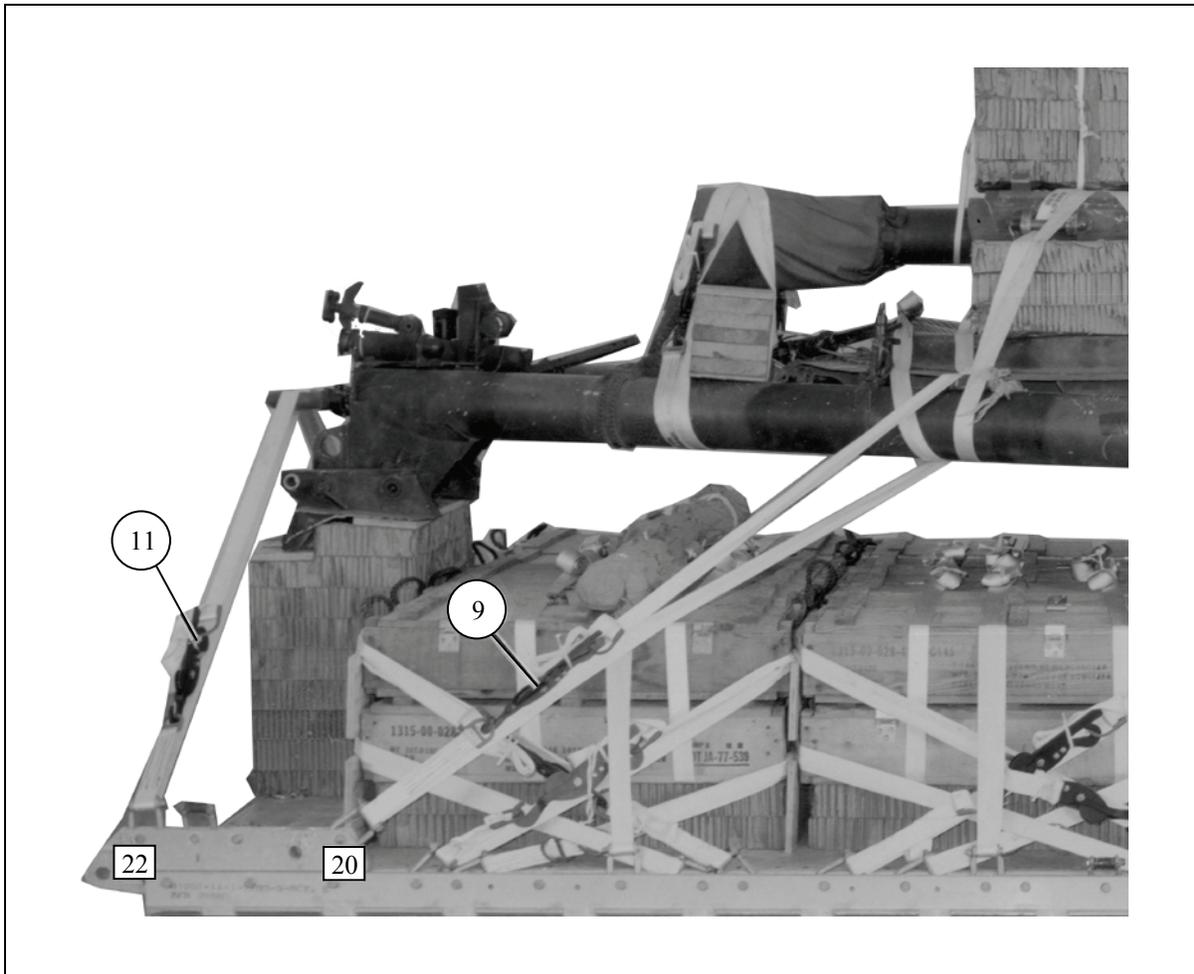


Figure 3-38. Lashings 1 Through 8 Installed



<i>Lashing Number</i>	<i>Tiedown Clevis Number</i>	<i>Instructions</i>
9	20	Pass lashing: Through hole in firing platform and around trail, right side.
10	20A	Through hole in firing platform and around trail, left side.
11	22	Through lunette.
12	22A	Through lunette.

Figure 3-39. Lashings 9 Through 12 Installed

STOWING ADDITIONAL ACCOMPANYING LOAD

3-24. Stow two boxes of APERS or HERAP ammunition and seven boxes of fuzes as shown in Figures 3-22 and 3-23.

INSTALLING SUSPENSION SLINGS, ANTITUMBLE SLINGS AND DEADMAN'S TIE

3-25. Install the suspension slings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 3-24. Install the antitumble sling as shown in Figure 3-25. Cover the load as shown in Figures 3-26 and 3-27. Secure and safety the slings as shown in Figure 3-27.

STOWING CARGO PARACHUTES

3-26. Prepare the parachute stowage platform and stow the G-11 cargo parachute according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 3-40.

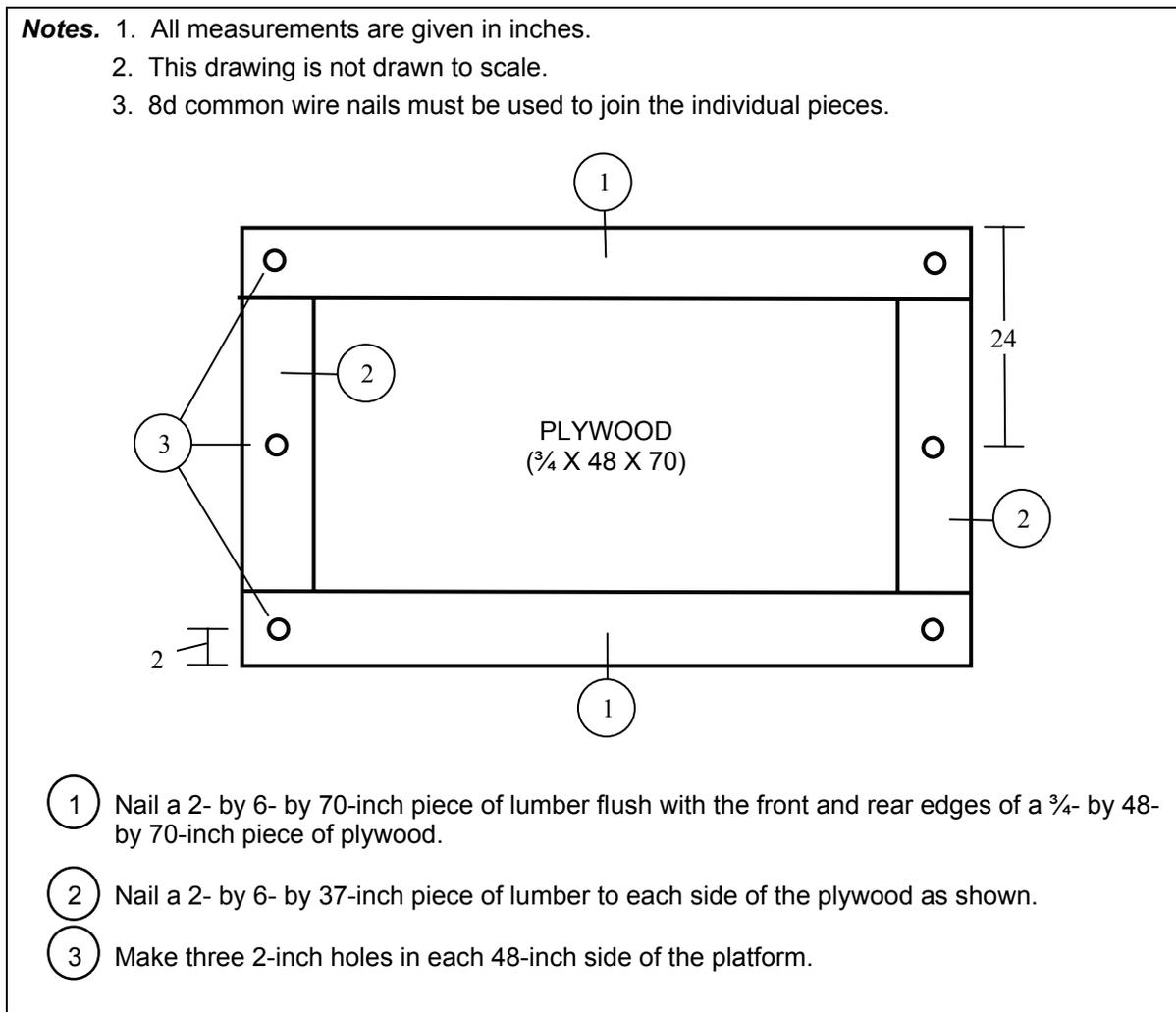


Figure 3-40. Parachute Stowage Platform Constructed and Cargo Parachutes Stowed

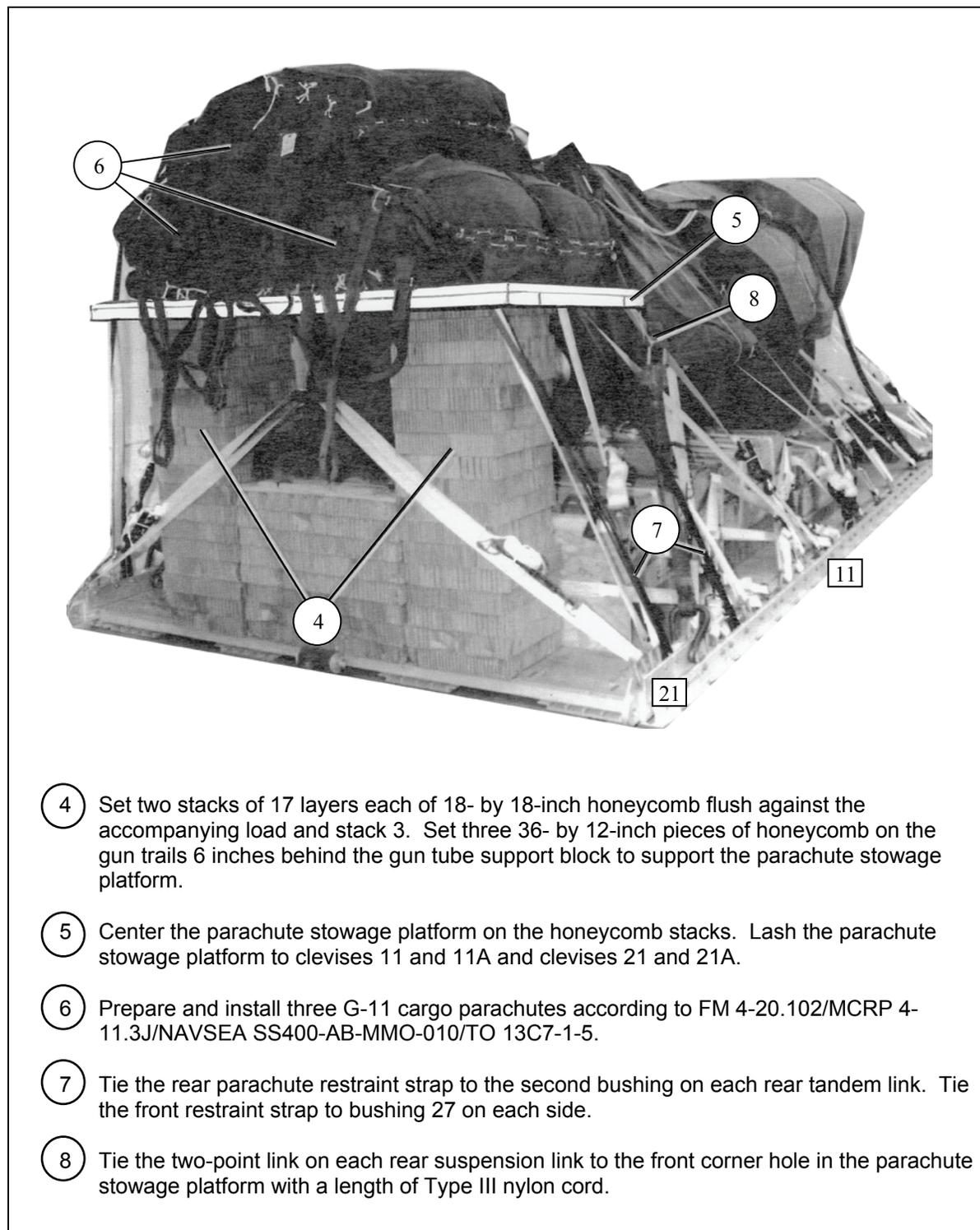


Figure 3-40. Parachute Stowage Platform Constructed and Cargo Parachutes Stowed (Continued)

INSTALLING EXTRACTION SYSTEM

3-27. Install the EFTC extraction system on the load according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 3-30. If applicable install the extraction parachute jettison system (EPJS) according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

3-28. Install provisions for emergency restraints on the front of the platform according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

INSTALLING RELEASE SYSTEM

3-29. Prepare and install an M-1 cargo parachute release according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 3-31.

PLACING EXTRACTION PARACHUTE

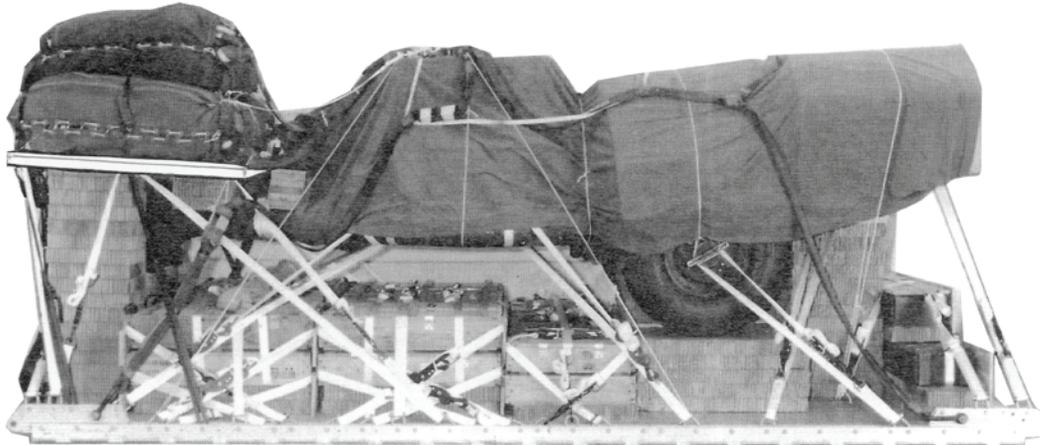
3-30. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Rig the extraction line in an extraction line bag according to TM 10-1670-286-20/TO13C5-2-41. Place the extraction parachute and extraction line on the load for installation in the aircraft. If applicable install the extraction parachute jettison system (EPJS) according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

MARKING RIGGED LOAD

3-31. Mark the rigged load according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 3-41. Complete Shipper's Declaration for Dangerous Goods according to AFMAN 24-204(I)/TM 38-250. If the load varies from the one shown, the weight, height, CB, tip-off curve, and parachute requirements must be recomputed.

CAUTION

Make the final rigger inspection required by FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Weight: Load shown	11,200 pounds
Maximum load allowed	15,000 pounds
Height86 inches
Width.....	108 inches
Overall Length	210 inches
Overhang: Front0 inches
Rear (EFTC)18 inches
Rear (EPJS).....	.30 inches
Center of Balance (from front edge of platform).....	105 inches

Figure 3-41. M119 Howitzer Rigged with 81-Millimeter Mortar for Low-Velocity Airdrop on a Type V Platform

EQUIPMENT REQUIRED

3-32. Use the equipment listed in Table 3-2 to rig this load.

Table 3-2. Equipment Required for Rigging the M119 Howitzer with 81-Millimeter Mortar for Low-Velocity Airdrop on Type V Platform

<i>National Stock Number</i>	<i>Item</i>	<i>Quantity</i>
8040-00-273-8713	Adhesive, paste, 1-gallon	As required
	Clevis, suspension:	
4030-00-678-8562	3/4-inch (medium) emergency restraint	4
4030-00-090-5354	1-inch (large)	5
8305-00-184-2034	Cloth, cotton duck, 60-inch	As required
4020-00-240-2146	Cord, nylon, type III	As required
1670-00-434-5785	Coupling, airdrop, extraction force transfer with 16-foot cable	1
1670-00-360-0328	Cover, clevis, large	1
1670-00-360-0329	Cover, link	6
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
8305-00-191-1101	Felt, 1/2-inch	As required
1670-01-183-2678	Leaf, extraction line	2
1670-01-064-4452	Line, drogue, 60-foot (1-loop), type XXVI nylon webbing	1
	Line, extraction, type XXVI nylon webbing:	
1670-01-062-6313	60-foot (3-loop)	1
	Or	
1670-01-107-7651	140-foot (3-loop)	2
	Link assembly:	
1670-01-493-6418	Two-point, 3 3/4-in	1
1670-01-493-6420	Two-point, 5 1/2-in	2
	Lumber:	
5510-00-220-6146	2- by 4- by 96-inch	1
5510-00-220-6148	2- by 6- by 96-inch	5
5510-00-220-6246	2- by 8- by 96-inch	3
	Nail, steel wire, common:	
5315-00-010-4659	8d	As required
5315-00-164-5121	20d	As required

Table 3-2. Equipment Required for Rigging the M119 Howitzer with 81-Millimeter Mortar for Low-Velocity Airdrop on Type V Platform (Continued)

<i>National Stock Number</i>	<i>Item</i>	<i>Quantity</i>
1670-00-753-3928	Pad, energy-dissipating, honeycomb	21 sheets
	Parachute:	
1670-01-016-7841	Cargo, G-11	3
1670-01-063-3716	Cargo, extraction, 22-foot	1
1670-01-063-3715	Drogue, 15-foot	1
	Platform, airdrop, type V, 16-foot	
1670-01-353-8425	Bracket assembly, EFTC	1
1670-01-162-2372	Bracket assembly, extraction	1
1670-01-162-2376	Clevis assembly	38
1670-01-162-2381	Tandem link	4
	Plywood:	
5530-00-129-7777	1/2- inch	1 sheet
5530-00-128-4981	3/4- inch	9 sheets
1670-01-097-8816	Release, cargo parachute, M-1	1
	Sling, cargo airdrop:	
	For antitumble sling:	
1670-01-062-6303	12-foot (2-loop), type XXVI nylon webbing	2
	For deployment line:	
1670-01-062-6304	9-foot (2-loop), type XXVI nylon webbing	2
	For lifting:	
1670-01-063-7760	11-foot (2-loop), type XXVI nylon webbing	4
	For riser extension:	
1670-01-062-6302	20-foot (2-loop), type XXVI nylon webbing	4
	For suspension:	
1670-01-062-6306	3-foot (4-loop), type XXVI nylon webbing	2
1670-01-062-6304	9-foot (2-loop), type XXVI nylon webbing	
1670-01-062-6303	12-foot (2-loop), type XXVI nylon webbing	4
1670-00-040-8219	Strap parachute release, multicut	2
1670-00-368-7486	Strap, webbing, nylon (shear strap)	1
7515-00-266-5016	Tape, adhesive, 2-inch	As required
1670-00-937-0271	Tie-down assembly, 15-foot	58
1670-01-483-8259	Tow release mechanism (H-block for C-17)	1
	Webbing:	
8305-00-268-2411	Cotton, 1/4-inch, type I	As required
	Nylon:	
8305-00-082-5752	Tubular, 1/2-inch	As required
8305-00-263-3591	Type VIII webbing	As required

Chapter 4

Rigging M119 Howitzer with 1 1/4-Ton HMMWV Truck and Accompanying Ammunition

DESCRIPTION OF LOAD

4-1. The M119, 105mm Howitzer is rigged with the 1 1/4 ton truck (HMMWV) as its prime mover and accompanying load of ammunition on a 32-foot, type V platform. A load weighing 800 to 2,000 pounds must be rigged in the truck. This load requires four G-11 parachutes.

PREPARING PLATFORM

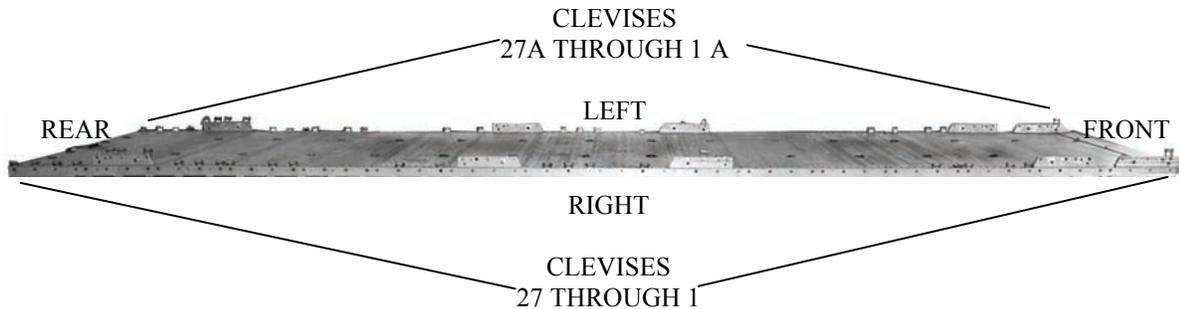
4-2. Prepare a 32-foot, type V airdrop platform as described below.

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

Note. If the platform must be assembled, install the suspension bracket assemblies when assembling the platform. See Figure 4-1 for the location of the suspension bracket assemblies.

- **Installing suspension bracket assemblies.** Install the suspension bracket assemblies on assembled platforms according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and as shown in Figure 4-1.
- **Installing tandem links.** Install a tandem link on the front of each rail according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and as shown in Figure 4-1.
- **Installing and numbering clevises.** Bolt and number 54 clevis assemblies according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and as shown in Figure 4-1.

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



Step:

1. Inspect, or assemble and inspect a 32-foot Type V platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.
2. Install a tandem link to each platform side rail using holes 1, 2, and 3.
3. Install a suspension bracket assembly to each platform side rail using holes 6, 7, and 8.
4. Install a suspension bracket assembly to each platform side rail using holes 26, 27, and 28.
5. Install a suspension bracket assembly to each platform side rail using holes 37, 38, and 39.
6. Install a suspension bracket assembly to each platform side rail using holes 57, 58, and 59.
7. Install a clevis on bushing 1 of each of the tandem links.
8. Install a clevis on bushing 4 of each front suspension bracket assemblies.
9. Install a clevis on bushing 3 of each of the second suspension bracket assemblies.
10. Install a clevis on bushings 1, 2, 3, and 4 of each of the fourth suspension bracket assemblies.
11. Starting at the front of each platform side rail, install clevises on the bushing bolted on holes 9, 10, 12, 14, 30, 33, 34, 35, 41, 43, 49, 50, 52, 53, 54, 55, 61, 62, 63, 64.
12. Starting at the front of the platform number the clevises 1 through 27 on the right side and 1A through 27A on the left side.
13. Label the tie-down rings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

Figure 4-1. Platform Prepared

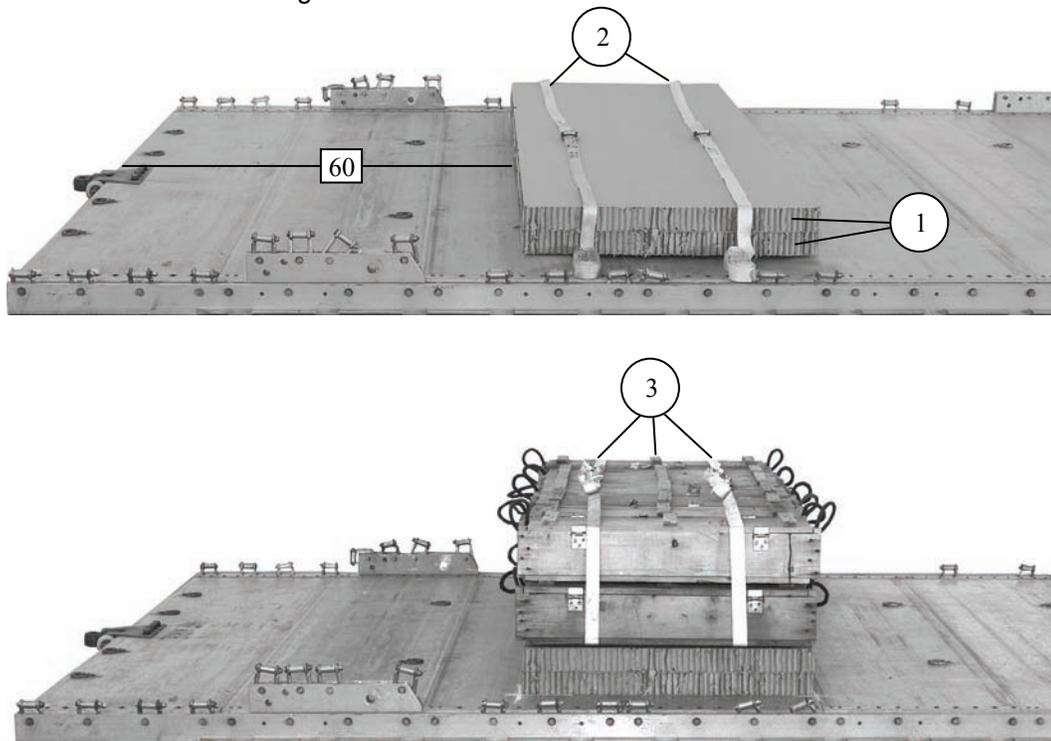
STOWING ACCOMPANYING LOAD ON PLATFORM

CAUTION

Only ammunition listed in FM 4-20.153/MCRP 4-11.3B/TO 13C7-18-41 may be airdropped.

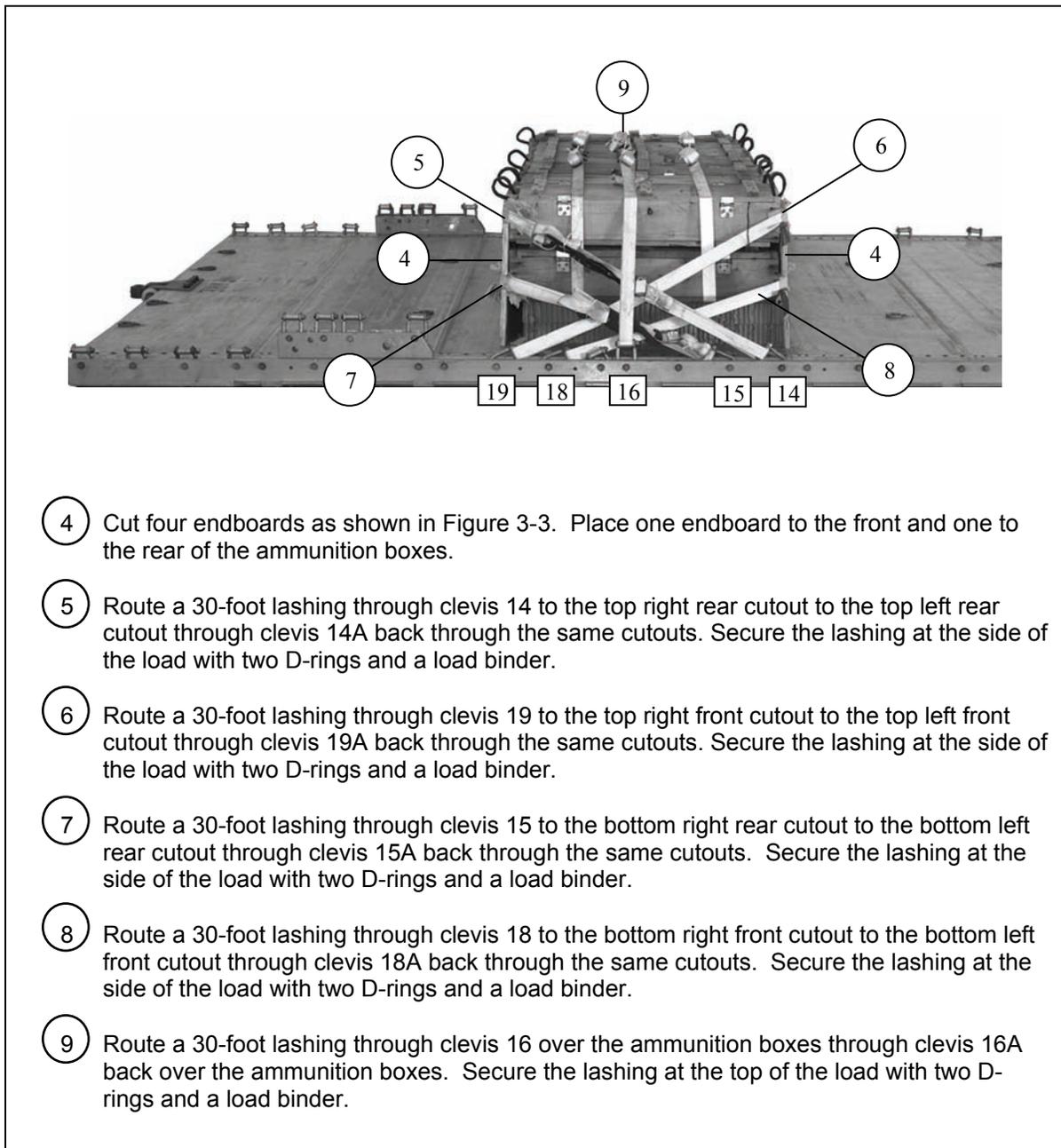
4-3. Stow 28 boxes of 105-millimeter ammunition weighing 3,360 pounds on the platform as shown in Figure 4-2. Ammunition will be included in the accompanying load stowed in the truck. Additional ammunition will be stowed on the platform after the gun and truck is lashed.

Note. All measurements are given in inches.



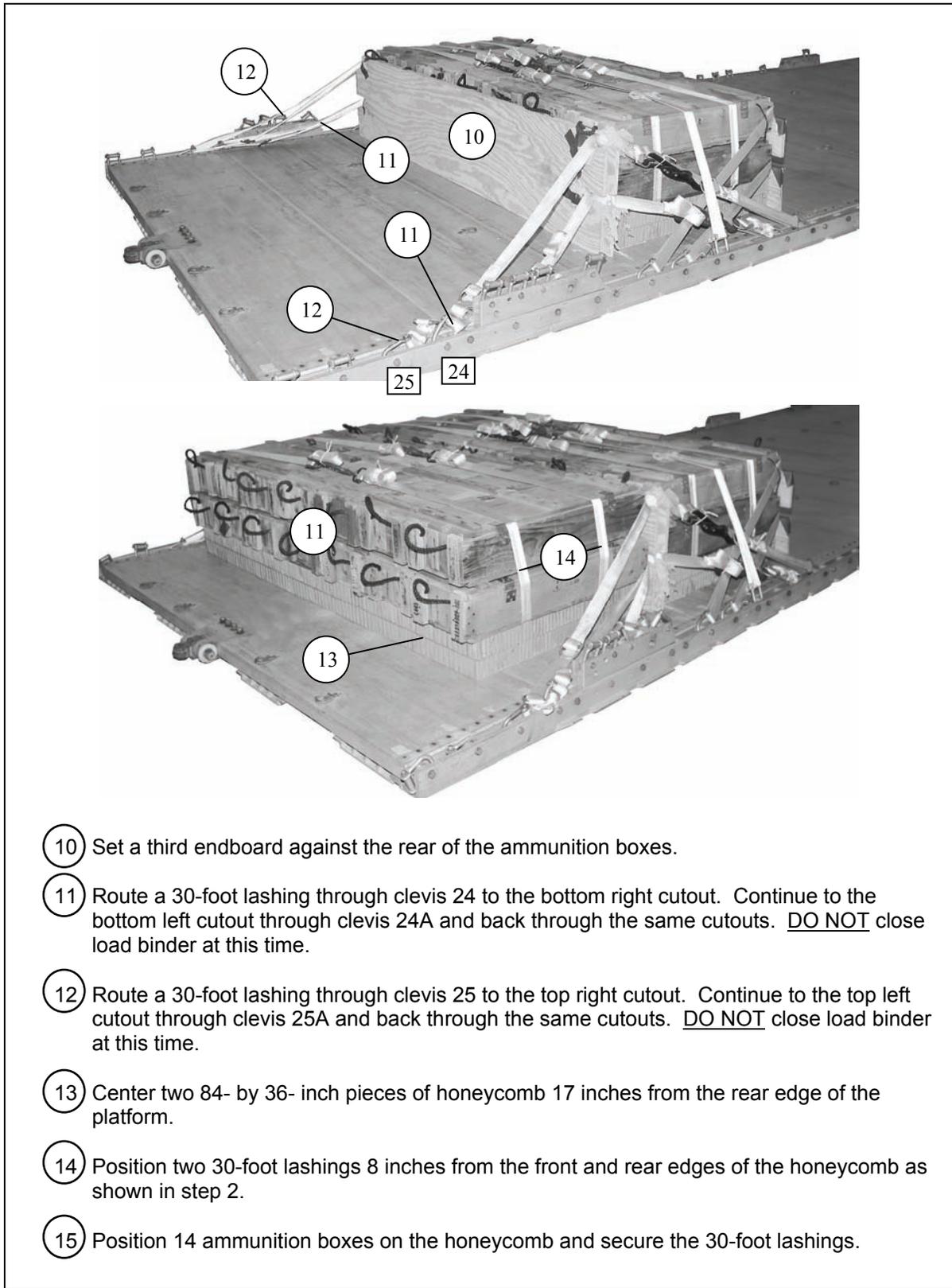
- ① Center two 84- by 36-inch pieces of honeycomb 60 inches from the rear edge of the platform.
- ② Position two 30-foot lashings 8 inches from the front and rear edges of the honeycomb.
- ③ Position 14 ammunition boxes on the honeycomb and secure the 30-foot lashings.

Figure 4-2. Ammunition Stowed and Lashed on Platform



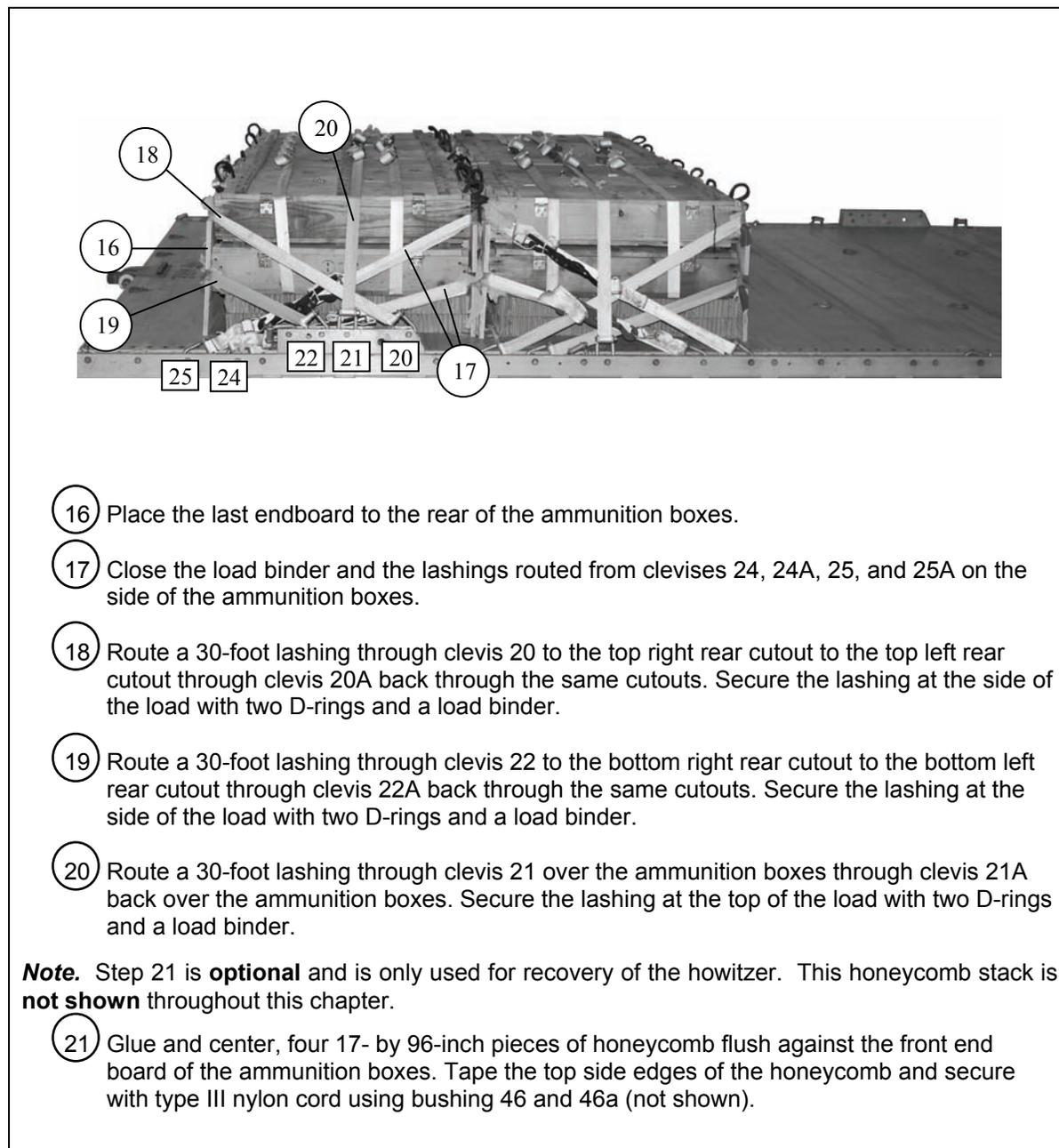
- 4 Cut four endboards as shown in Figure 3-3. Place one endboard to the front and one to the rear of the ammunition boxes.
- 5 Route a 30-foot lashing through clevis 14 to the top right rear cutout to the top left rear cutout through clevis 14A back through the same cutouts. Secure the lashing at the side of the load with two D-rings and a load binder.
- 6 Route a 30-foot lashing through clevis 19 to the top right front cutout to the top left front cutout through clevis 19A back through the same cutouts. Secure the lashing at the side of the load with two D-rings and a load binder.
- 7 Route a 30-foot lashing through clevis 15 to the bottom right rear cutout to the bottom left rear cutout through clevis 15A back through the same cutouts. Secure the lashing at the side of the load with two D-rings and a load binder.
- 8 Route a 30-foot lashing through clevis 18 to the bottom right front cutout to the bottom left front cutout through clevis 18A back through the same cutouts. Secure the lashing at the side of the load with two D-rings and a load binder.
- 9 Route a 30-foot lashing through clevis 16 over the ammunition boxes through clevis 16A back over the ammunition boxes. Secure the lashing at the top of the load with two D-rings and a load binder.

Figure 4-2. Ammunition Stowed and Lashed on Platform (Continued)



- 10 Set a third endboard against the rear of the ammunition boxes.
- 11 Route a 30-foot lashing through clevis 24 to the bottom right cutout. Continue to the bottom left cutout through clevis 24A and back through the same cutouts. DO NOT close load binder at this time.
- 12 Route a 30-foot lashing through clevis 25 to the top right cutout. Continue to the top left cutout through clevis 25A and back through the same cutouts. DO NOT close load binder at this time.
- 13 Center two 84- by 36- inch pieces of honeycomb 17 inches from the rear edge of the platform.
- 14 Position two 30-foot lashings 8 inches from the front and rear edges of the honeycomb as shown in step 2.
- 15 Position 14 ammunition boxes on the honeycomb and secure the 30-foot lashings.

Figure 4-2. Ammunition Stowed and Lashed on Platform (Continued)



- 16) Place the last endboard to the rear of the ammunition boxes.
- 17) Close the load binder and the lashings routed from clevises 24, 24A, 25, and 25A on the side of the ammunition boxes.
- 18) Route a 30-foot lashing through clevis 20 to the top right rear cutout to the top left rear cutout through clevis 20A back through the same cutouts. Secure the lashing at the side of the load with two D-rings and a load binder.
- 19) Route a 30-foot lashing through clevis 22 to the bottom right rear cutout to the bottom left rear cutout through clevis 22A back through the same cutouts. Secure the lashing at the side of the load with two D-rings and a load binder.
- 20) Route a 30-foot lashing through clevis 21 over the ammunition boxes through clevis 21A back over the ammunition boxes. Secure the lashing at the top of the load with two D-rings and a load binder.

Note. Step 21 is **optional** and is only used for recovery of the howitzer. This honeycomb stack is **not shown** throughout this chapter.

- 21) Glue and center, four 17- by 96-inch pieces of honeycomb flush against the front end board of the ammunition boxes. Tape the top side edges of the honeycomb and secure with type III nylon cord using bushing 46 and 46a (not shown).

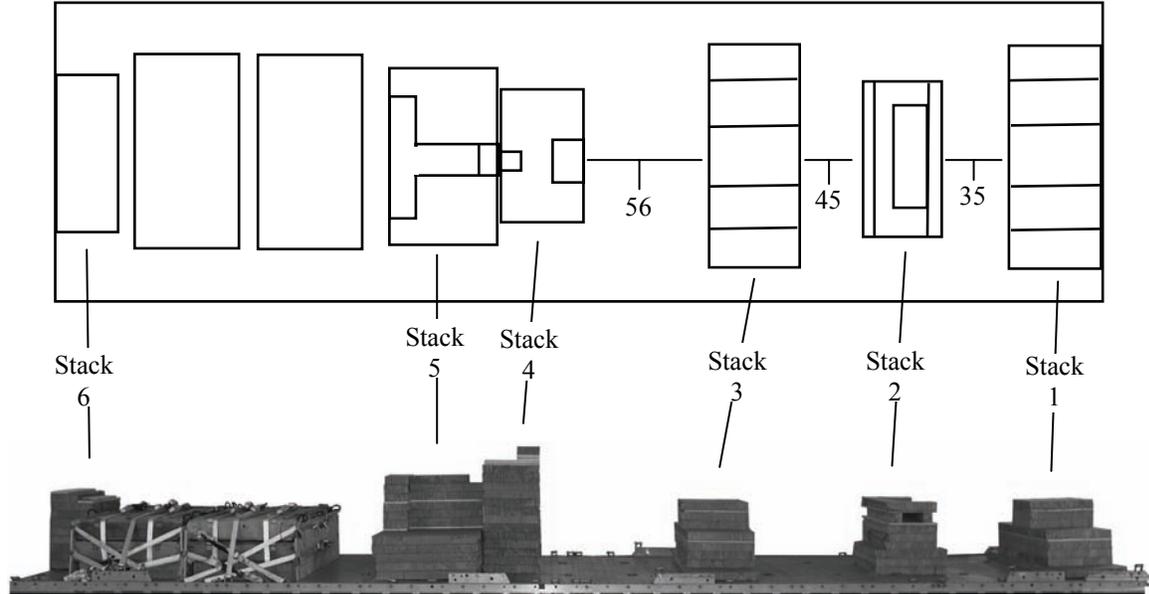
Figure 4-2. Ammunition Stowed and Lashed on Platform (Continued)

BUILDING AND POSITIONING HONEYCOMB STACKS AND INSTALLING THE OPTIONAL DRIVE-OFF AIDS

4-4. Build and position the honeycomb stacks and place the drive-off aids on the platform as explained below.

- Build honeycomb stacks 1 through 3 for the 1 1/4-ton HMMWV truck as shown in Figures 2-5 and 2-6.
- Build honeycomb stacks 4 through 6 for the M119 howitzer as shown in Figures 3-5 through 3-7.
- An additional honeycomb stack may be used for recovery purposes. Center four 17- by 96-inch pieces of honeycomb flush against the front endboard of the ammunition boxes. Tape the top side edges of the honeycomb and secure with type III nylon cord using bushings 14 and 14a. This honeycomb stack is not shown throughout this section.
- Install drive-off aids to the front of the platform as shown in Figure 2-5.
- Position the honeycomb stacks on the platform as shown in Figure 4-3.

- Notes.** 1. All measurements are given in inches.
 2. This drawing is not drawn to scale.



Stack Number	Position of Stack on Platform
	Place Stack:
1	Centered and flush with the front edge of the platform. Note. Place stack 1 over drive-off aids.
2	Centered and 35 inches from stack 1.
3	Centered and 45 inches from stack 2. Note. Drive-off aids are placed over the sides of stack 3.
4	Centered and 56 inches from stack 3.
5	Centered and flush against stack 4.
6	Centered and flush with the rear edge of the platform.

Figure 4-3. Honeycomb Stacks Placed on Platform

PREPARING HOWITZER AND TRUCK

- 4-5. Prepare the howitzer and truck.
- Prepare the howitzer as explained in Paragraph 3-5.
 - Prepare the truck as explained in Paragraph 2-6.

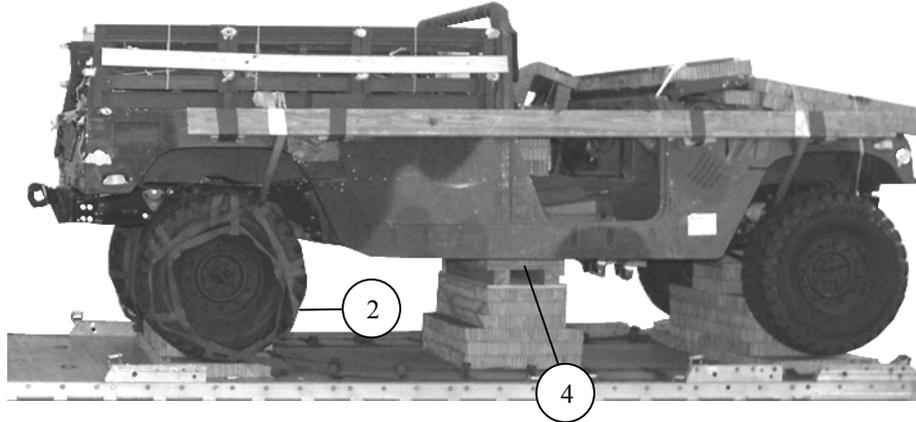
STOWING HOWITZER EQUIPMENT AND AMMUNITION IN TRUCK

- 4-6. Use or adapt the procedures explained in Paragraph 2-7. Additionally, prepare the truck as shown in Figure 4-4.



- ① Prepare collimator box as shown in Figure 3-17. Set the boxed collimator between the seats and secure in place with type III nylon cord.

Figure 4-4. Collimator Box Stowed in Truck

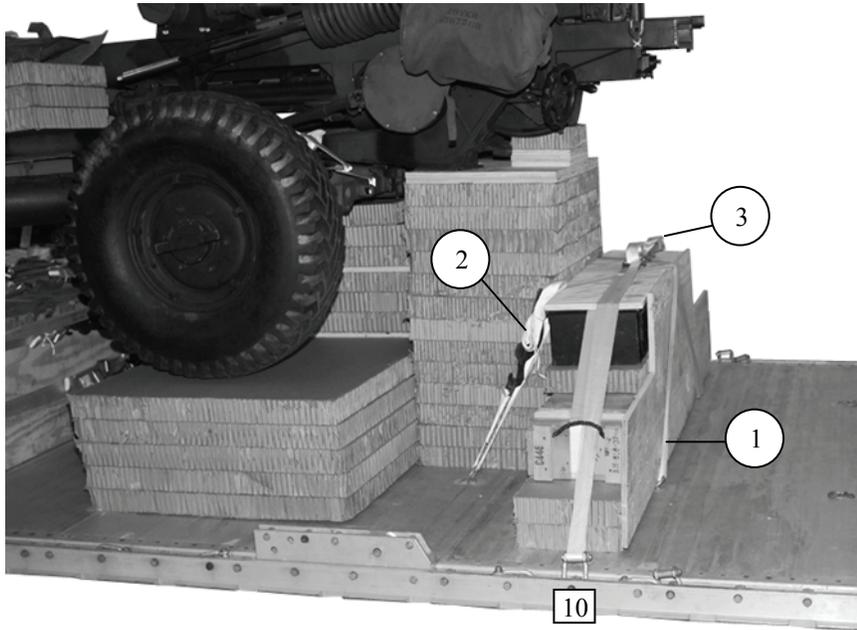


- ② Suspend the truck slightly over the honeycomb stacks. Lay a drive-off aid under each rear wheel. Turn the wheel until the webbing is wound around the wheel and under slight tension.
- ③ Tie the end loop of each drive-off aid to the nearest cross piece with two turns of type I, 1/4-inch cotton webbing (not shown).
- ④ Position the truck on stacks 1, 2, and 3 so that the suspension cross members rest squarely on stacks 1 and 3 with a 10 inch overhang in the front as shown. Be sure that the frame cross-members rest squarely on the 6 inch piece of the honeycomb at the front of stack 2.

Figure 4-5. Howitzer and Truck Positioned on Platform and Drive-off Aids Installed (Continued)

POSITIONING ADDITIONAL ACCOMPANYING LOAD

- 4-8. Stow two boxes of APERS or HERAP ammunition and seven boxes of fuzes as described below.
- Construct the ammunition and fuze package against the front side of stack 4 as shown in Figures 3-22 and 3-23, steps 1 and 2.
 - Lash the ammunition package to the platform as shown in Figure 4-6.



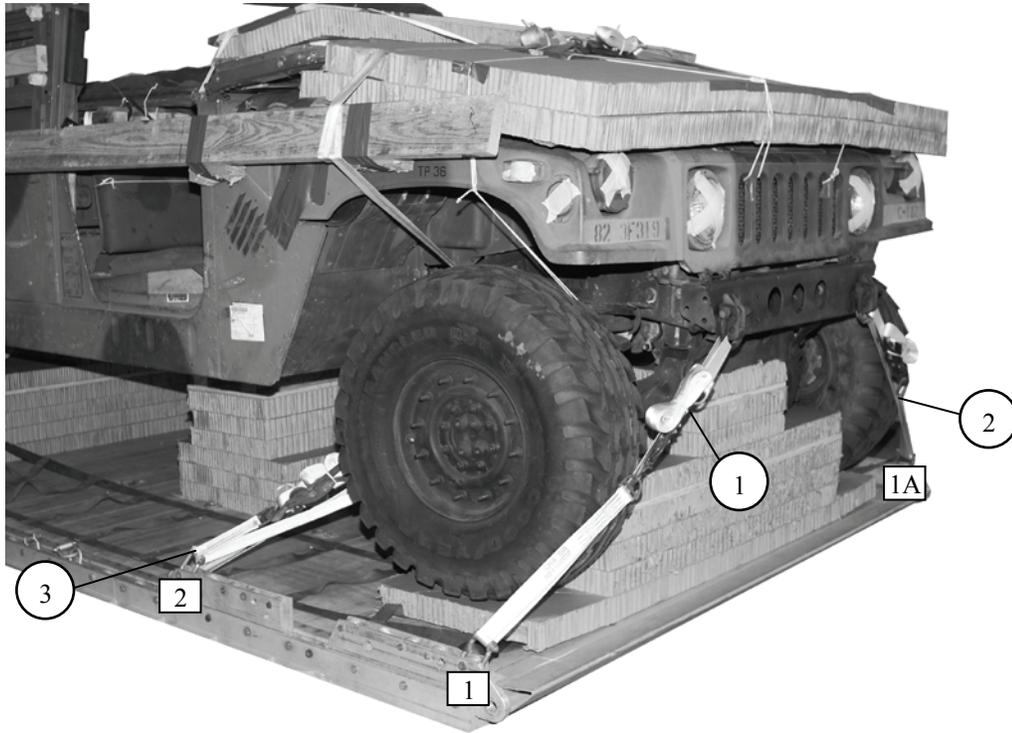
- 1 Secure the plywood with a 15-foot lashing from tie-down rings A9 to B10 and secure with a load bind and D-ring in the rear.
- 2 Pass a second 15-foot lashing over the plywood between tie-down rings B9 to A10 and load bind and D-ring in the rear.
- 3 Form a 30-foot lashing according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Place the lashing over the top of the plywood and pass the ends through clevises 10 and 10A. Secure the lashing with two D-rings and a load binder.

Figure 4-6. Boxes of Ammunition and Fuzes Lashed to Platform

LASHING HOWITZER AND TRUCK

4-9. Lash the howitzer and truck to the platform with 15-foot lashings as shown in Figure 4-7. Install and safety the lashings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

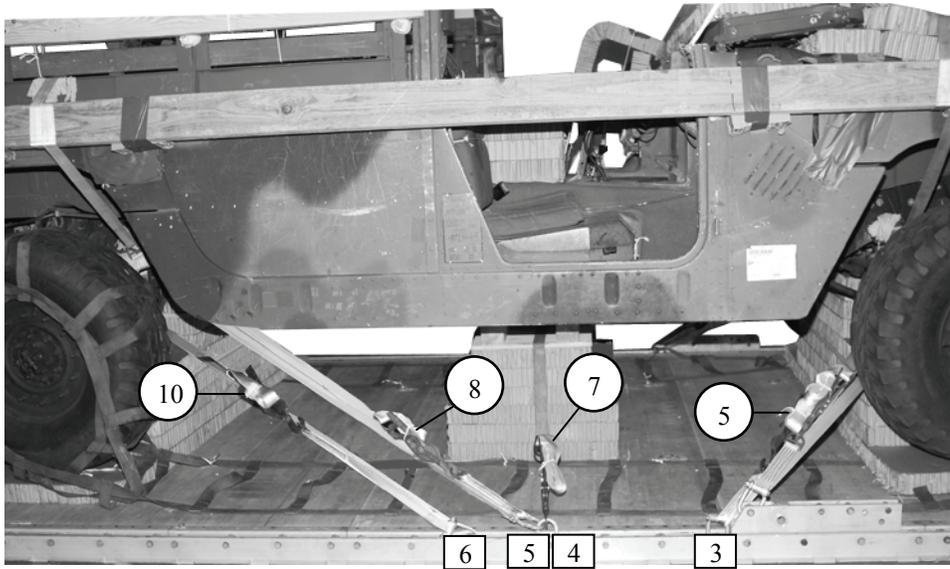
Note. Left and right refer to the truck and howitzer, NOT the platform.



Lashing Number	Tiedown Clevis Number	Instructions
1	1	Pass lashing: Through the right front tie-down.
2	1A	Through the left front tie-down.
3	2	Through the right front lower control arm.
4	2A	Through the left front lower control arm (not shown).

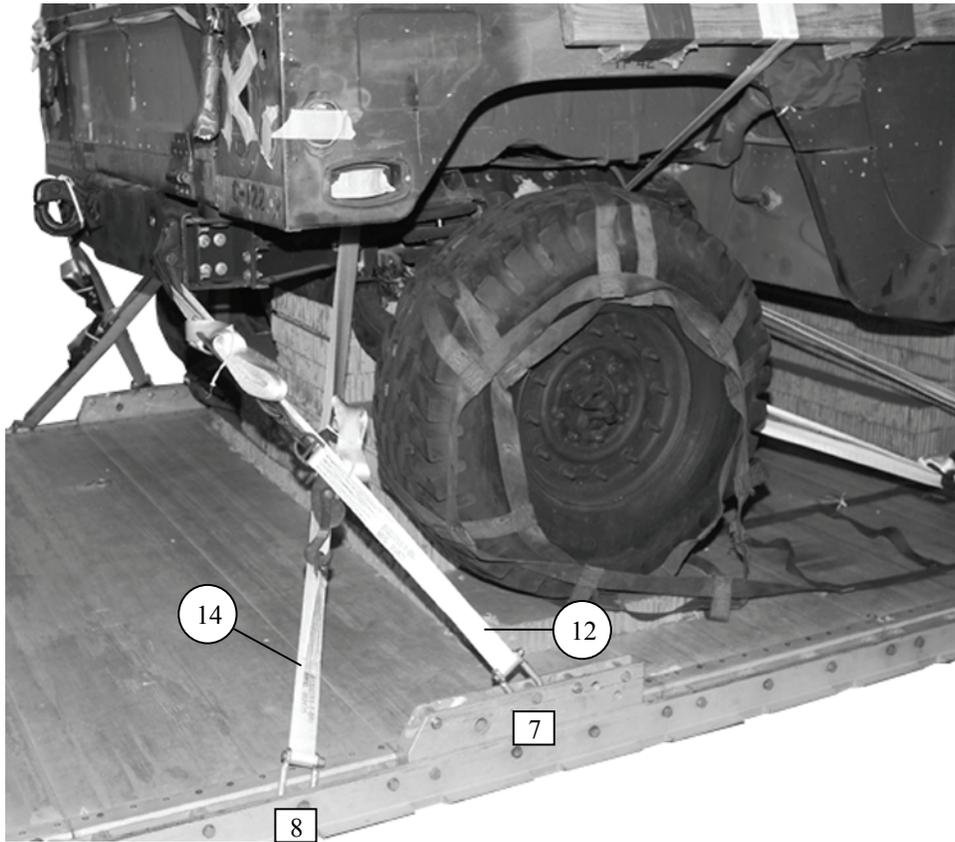
Figure 4-7. Lashings Installed

Note. Left and right refer to the truck and howitzer, NOT the platform.



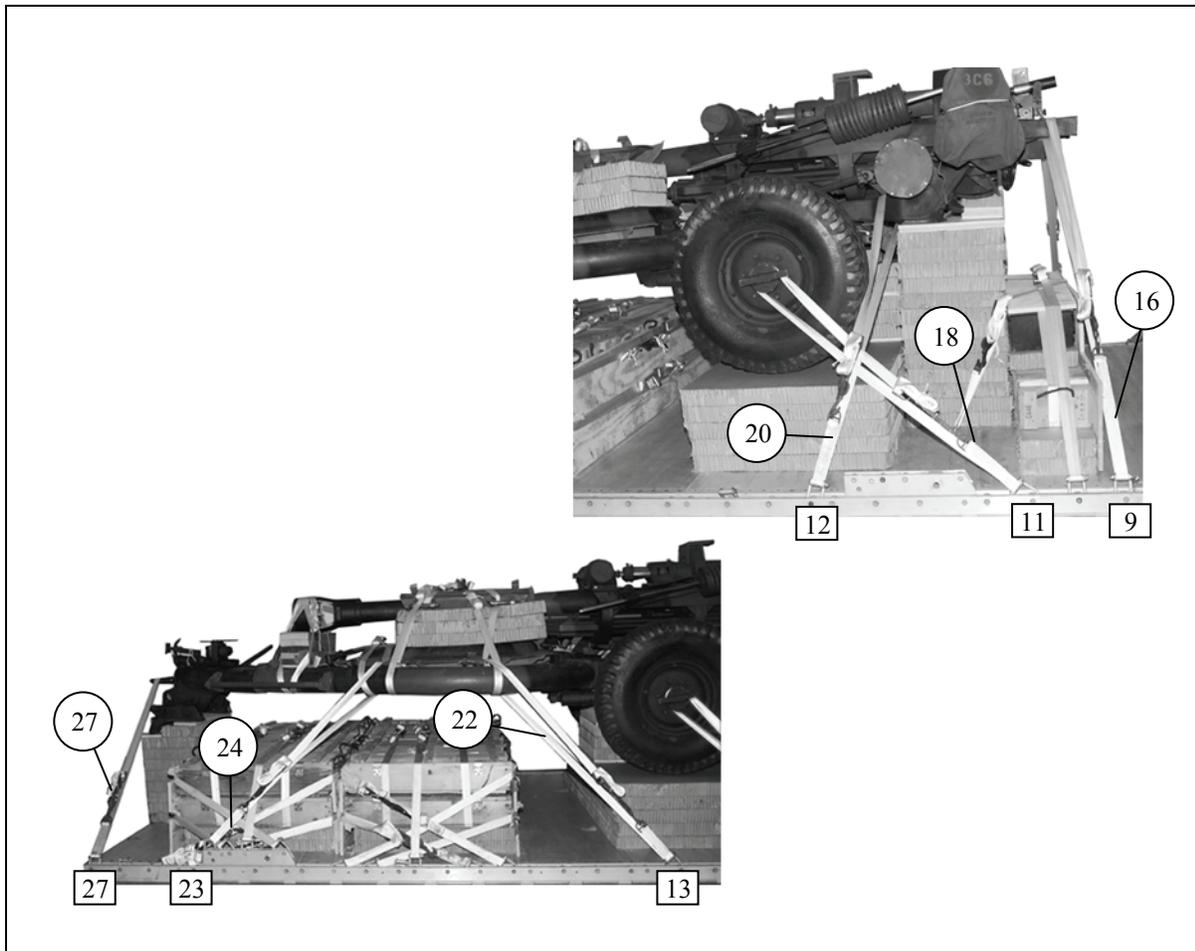
<i>Lashing Number</i>	<i>Tiedown Clevis Number</i>	<i>Instructions</i>
5	3	Pass lashing:
6	3A	Through tie-down bracket behind right front coil spring.
		Through tie-down bracket behind left front coil spring (not shown).
7	4 and 4A	Note. When lashings are tight they should not put adverse pressure on the tie rods.
		Pass a 15-foot lashing through clevis 4A and through its own D-ring. Pass the lashing through the hole in stack 2. Attach the lashing to clevis 4 with a load binder.
8	5	Through tie-down bracket in front of the right rear coil spring.
9	5A	Through tie-down bracket in left of the right rear coil spring (not shown).
10	6	Around right rear coil spring.
11	6A	Around left rear coil spring.

Figure 4-7. Lashings Installed (Continued)



Lashing Number	Tiedown Clevis Number	Instructions
12 13 14 15	7 7A 8 8A	Pass lashing: Through the right rear lifting shackle. Through the left rear lifting shackle (not shown). Through tie-down bracket behind the right rear coil spring. Through tie-down bracket behind the left rear coil spring (not shown).

Figure 4-7. Lashings Installed (Continued)



Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashing:
16	9	Around right rail.
17	9A	Around left rail.
18	11	Around right wheel hub.
19	11A	Around left wheel hub.
20	12	Around saddle, behind elevating wheel shaft, right side.
21	12A	Around saddle, left side.
22	13	Through hole in firing platform and around right trail.
23	13A	Through hole in firing platform and around left trail.
24	23	Through hole in firing platform and around right trail.
25	23A	Through hole in firing platform and around left trail.
26	27	Through the lunette.
27	27A	Through the lunette.

Figure 4-7. Lashings Installed (Continued)

COVERING HOWITZER WITH HONEYCOMB

4-10. Install protective honeycomb covers as shown in Figure 4-8.

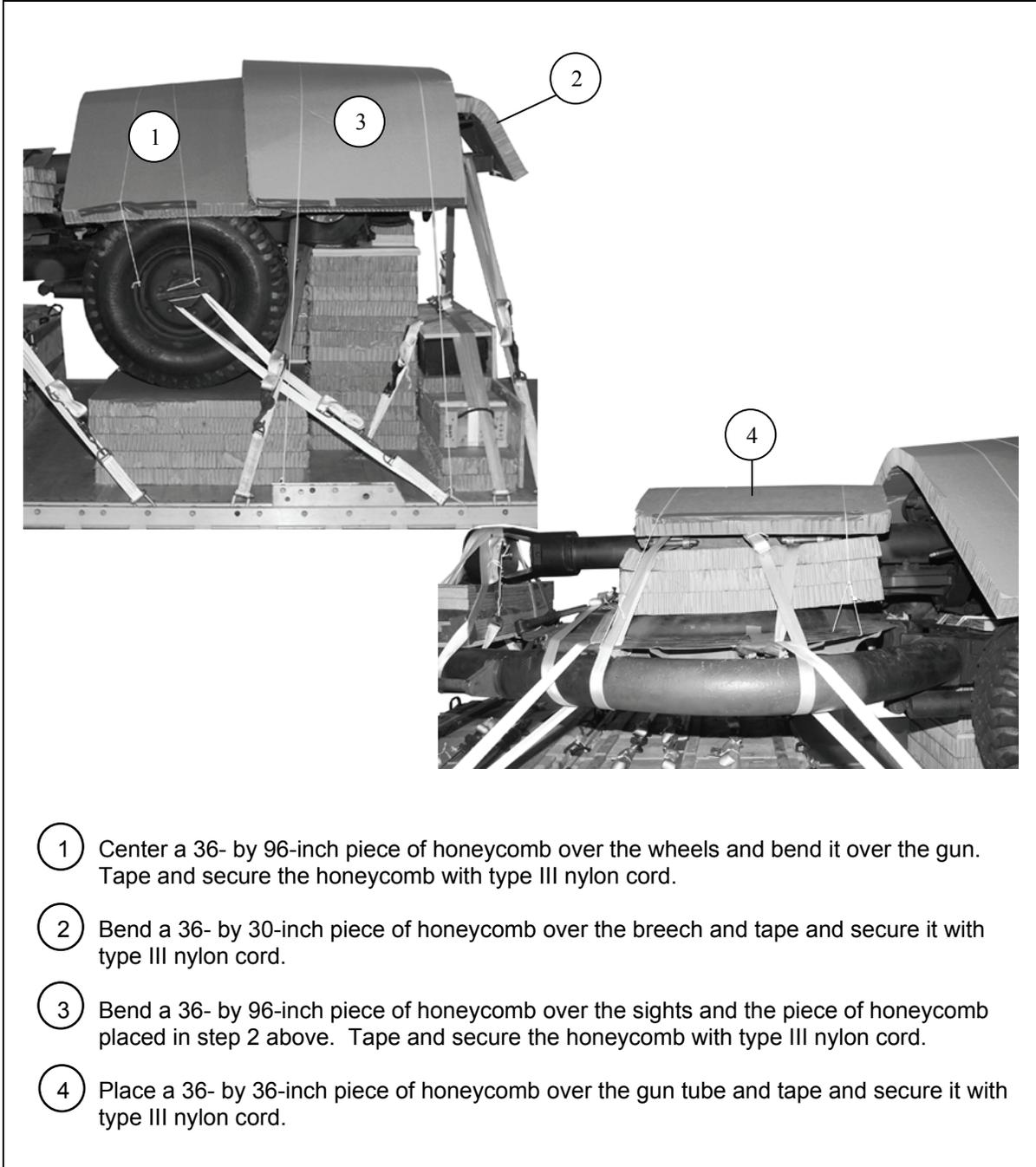


Figure 4-8. Honeycomb Cover Installed

INSTALLING AND SAFETYING SUSPENSION SLINGS

4-11. Install the suspension slings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 4-9. Pad and safety the suspension slings, and cover the load as shown in Figure 4-10.

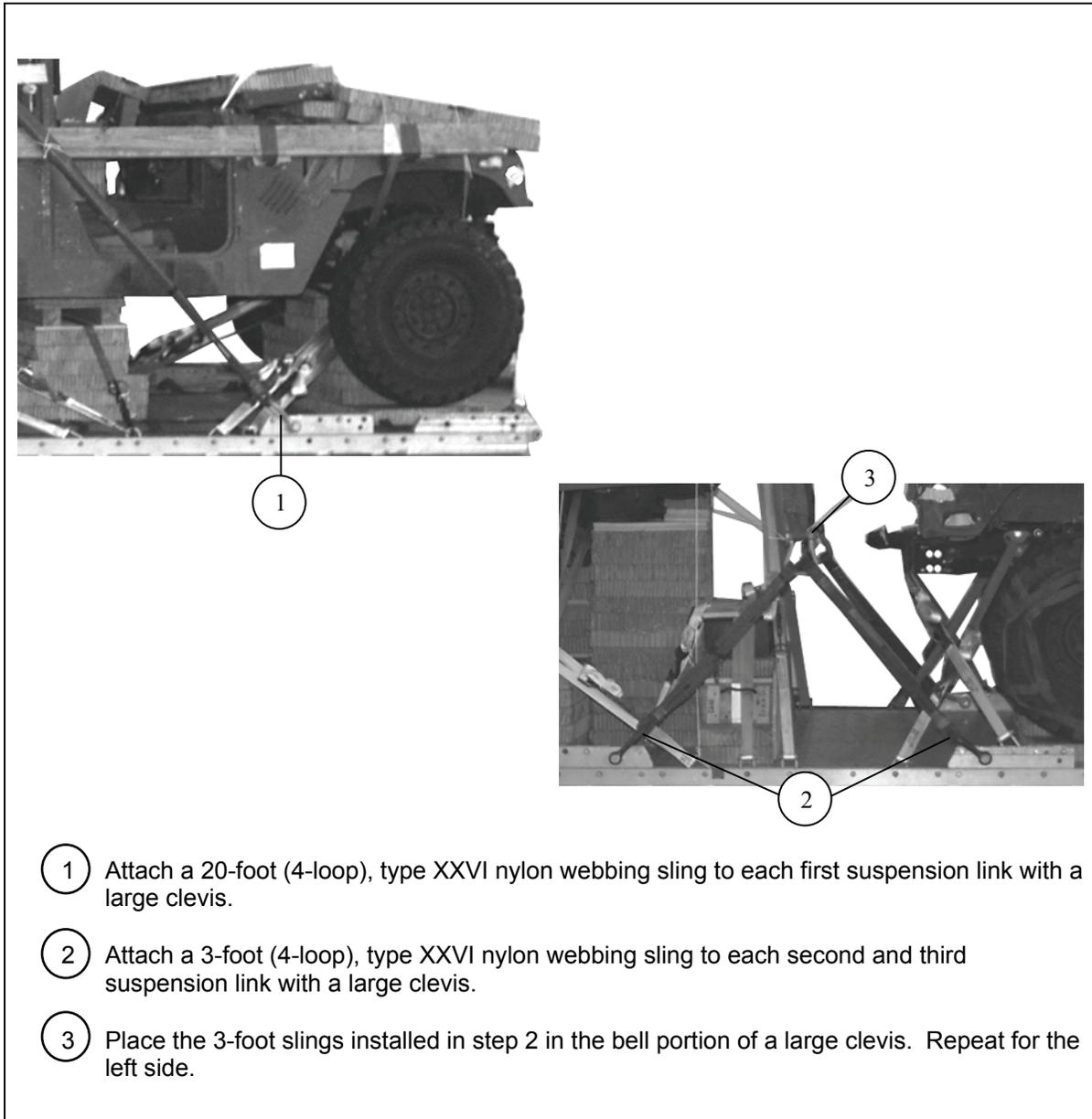
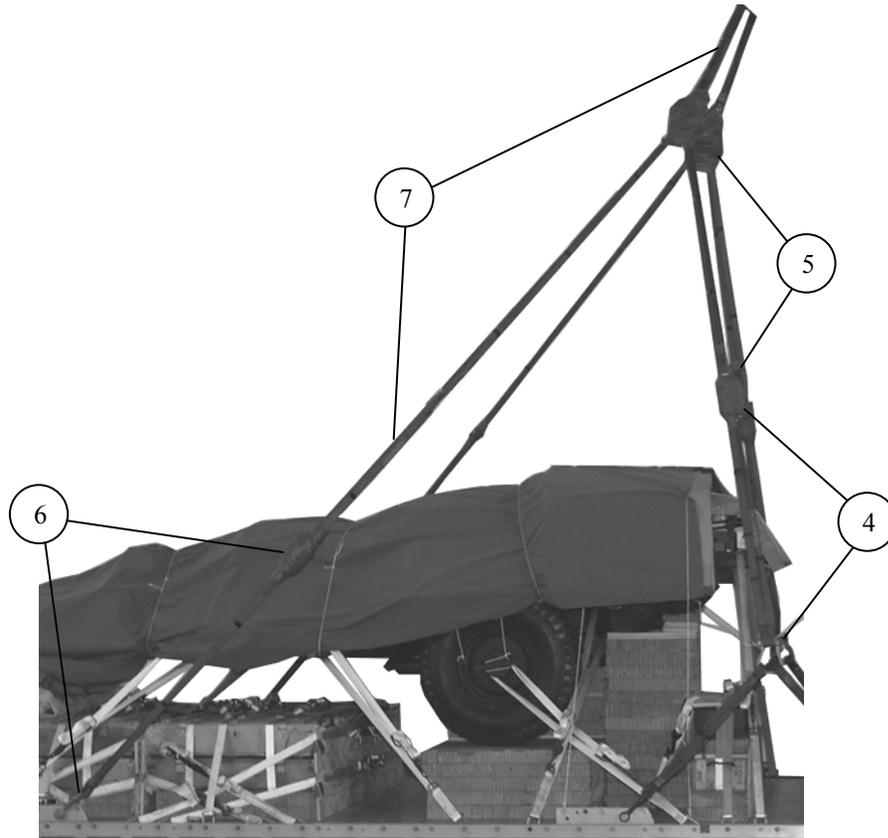


Figure 4-9. Suspension Slings Installed



- ④ Pass a 9-foot (2-loop), type XXVI nylon webbing sling through a 5 1/2-inch two-point link. Bolt both end loops to the large clevis installed in step 3.
- ⑤ Pass an 11-foot (2-loop), type XXVI nylon webbing sling through the 5 1/2-inch two-point link installed in step 4 and attach both running ends to the same point on the three-point link. Repeat for the left side.
- ⑥ Pass an 11-foot (2-loop), type XXVI nylon webbing sling through a 3 3/4-inch two-point link. Place both end loops in the bell portion of a large clevis and bolt the clevis to the fourth suspension link. Repeat for the left side.
- ⑦ Attach an 11-foot (4-loop), type XXVI nylon webbing sling to the top of the 3 3/4-inch two-point link installed in step 6 and attach the running end to the three-point link installed in step 5. Attach a 3-foot (4-loop), type XXVI nylon webbing sling to the top of the three-point link. Repeat for the left side.

Figure 4-9. Suspension Slings Installed (Continued)

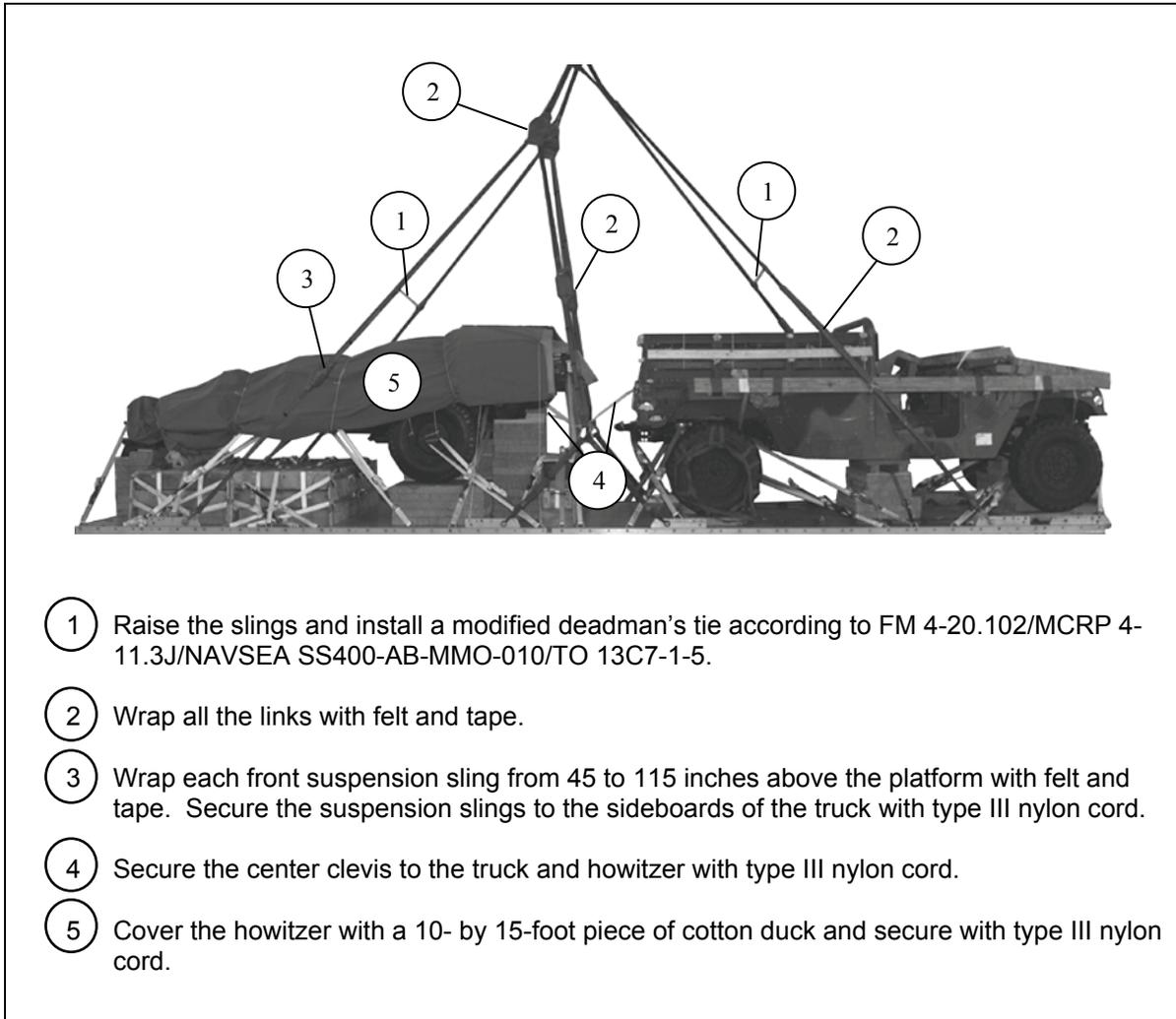


Figure 4-10. Howitzer Covered and Suspension Slings Padded and Safetied

PREPARING STOWAGE PLATFORM AND STOWING CARGO PARACHUTES

4-12. Prepare the cargo parachute stowage platform as shown in Figure 4-11. Stow the G-11 cargo parachutes as shown in Figure 4-12.

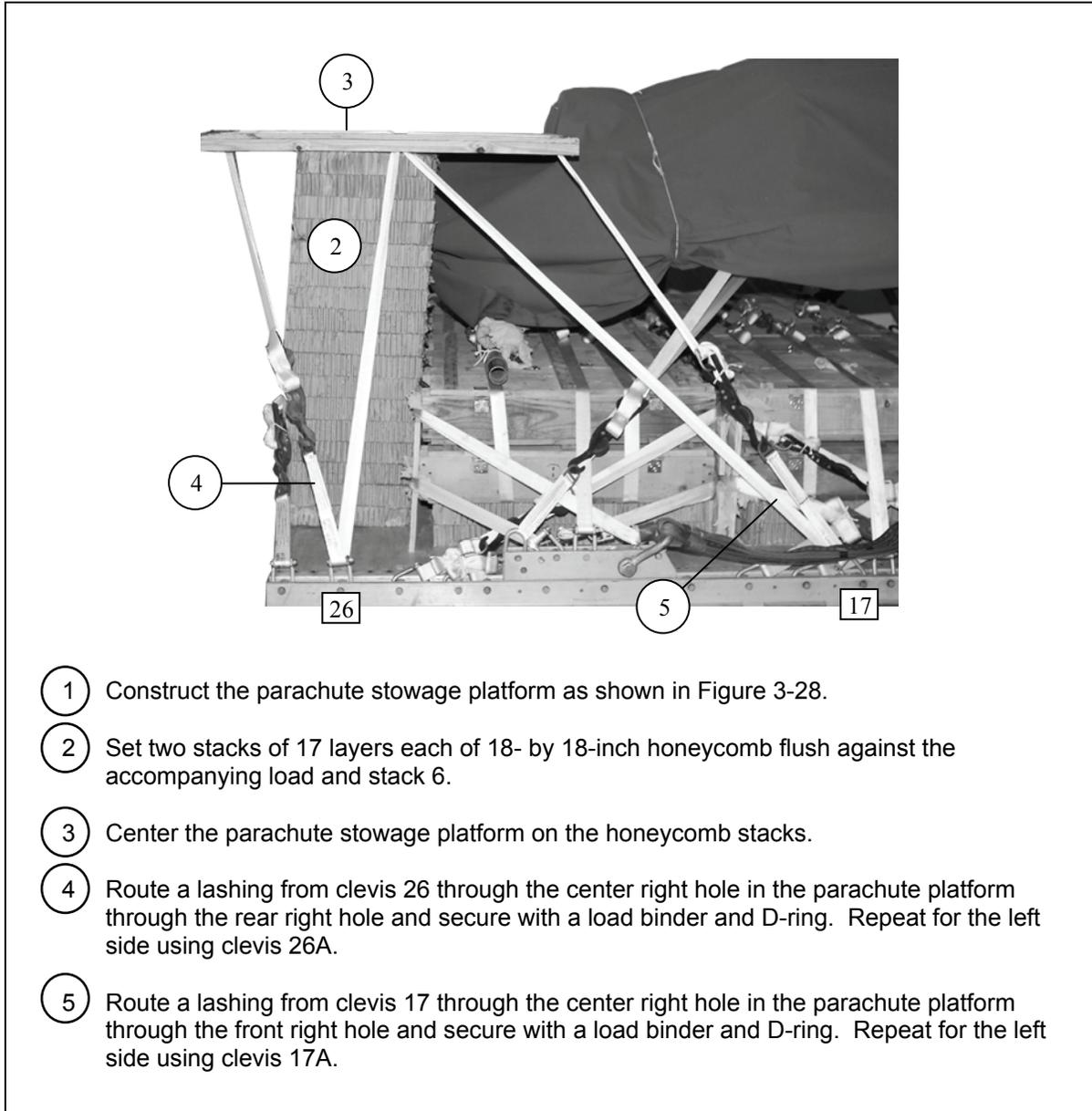


Figure 4-11. Stowage Platform Prepared

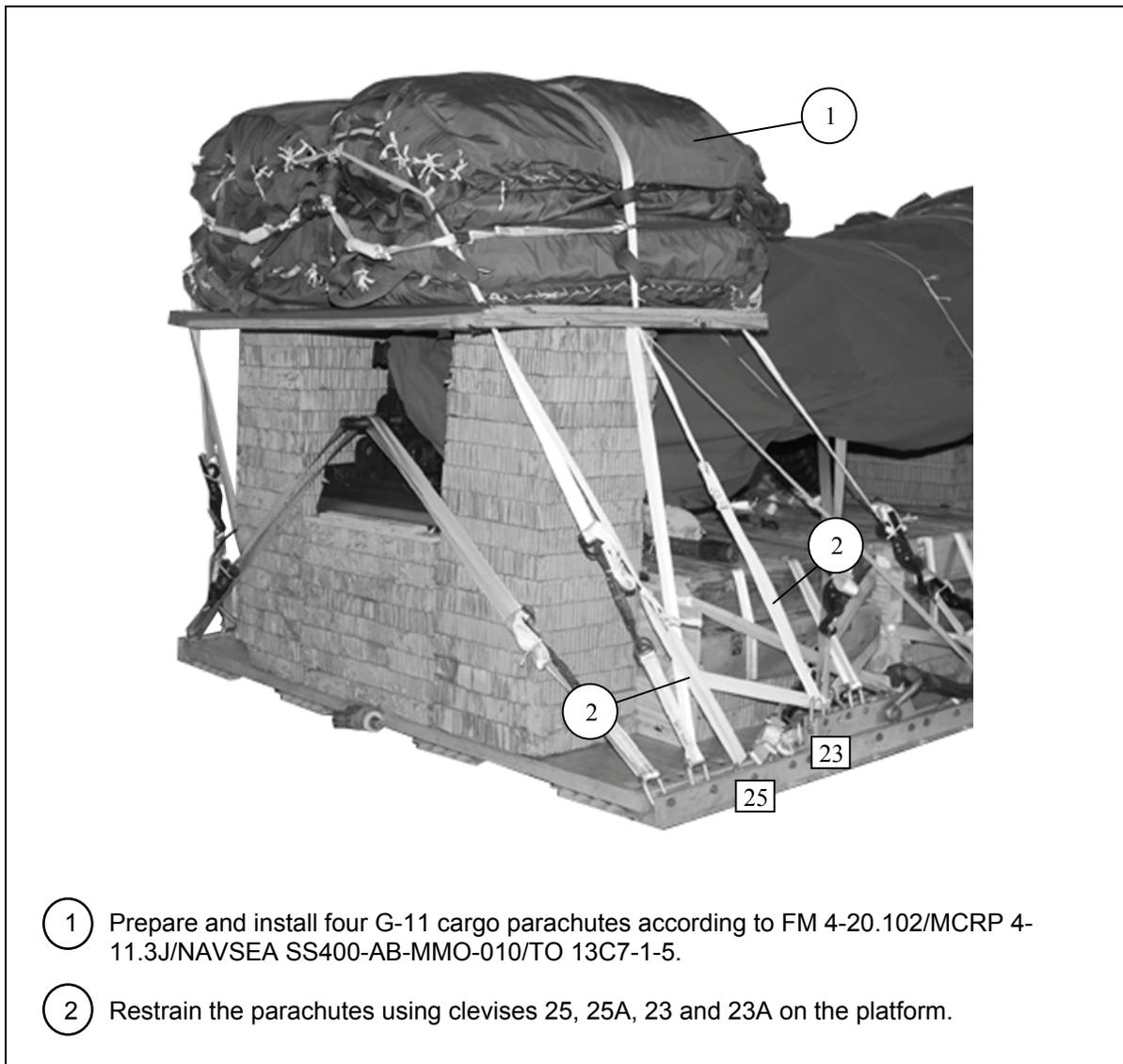


Figure 4-12. Cargo Parachutes Stowed

INSTALLING EXTRACTION SYSTEM

4-13. Install the EFTC extraction system according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 4-13. If applicable install the EPJS according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

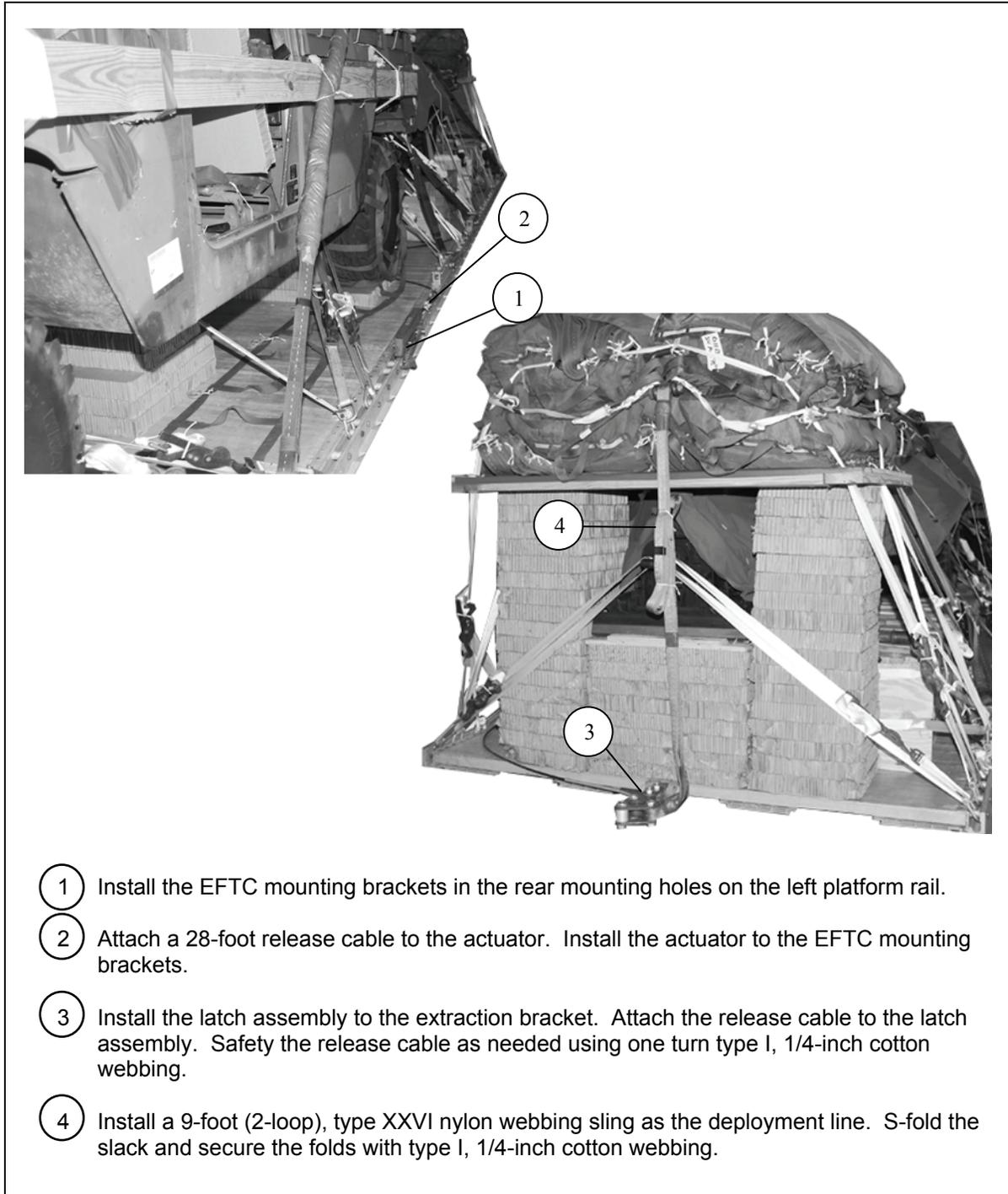


Figure 4-13. Extraction System Installed

INSTALLING RELEASE SYSTEM

4-14. Prepare and install an M-2 cargo parachute release according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 4-14.

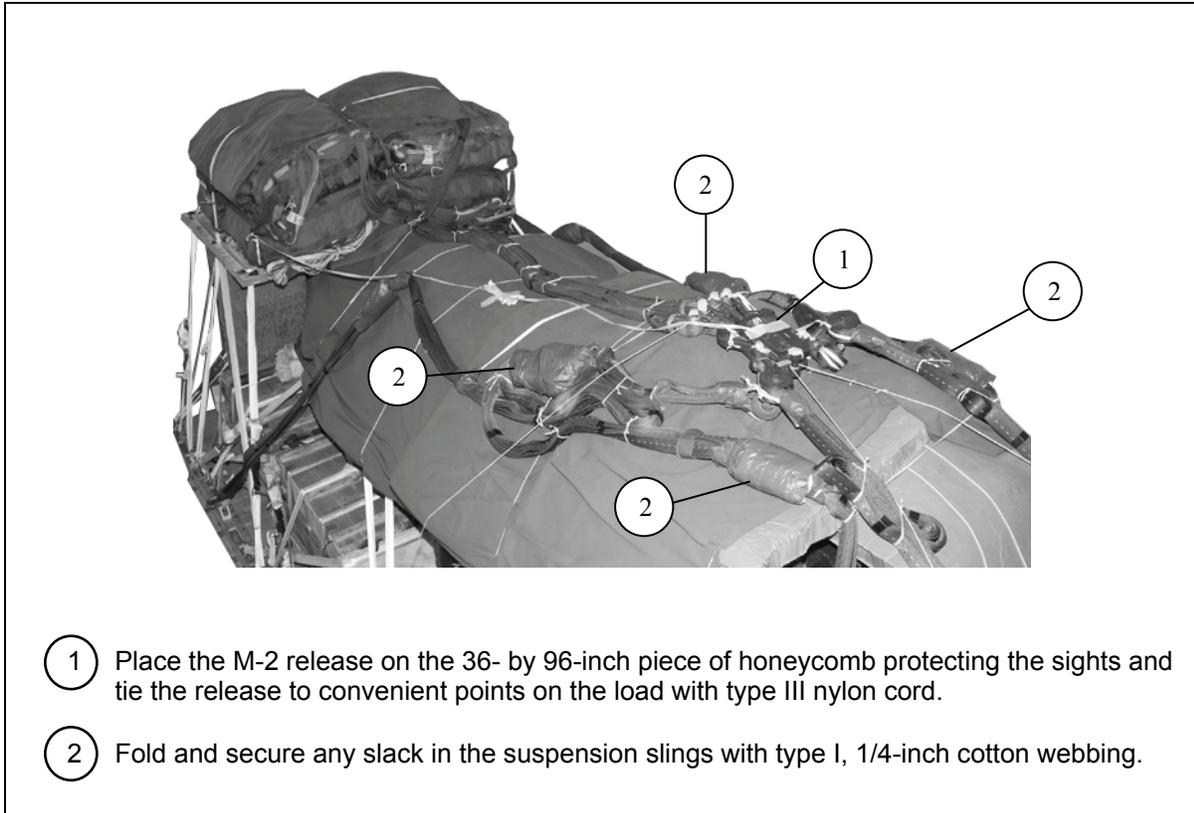


Figure 4-14. Cargo Parachute Release Installed

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

4-15. Select and install provisions for emergency restraints according to the emergency aft restraint requirements table in FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

PLACING EXTRACTION PARACHUTE

4-16. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Rig the extraction line in an extraction line bag according to TM 10-1670-286-20/TO13C5-2-41. Place the extraction parachute and extraction line on the load for installation in the aircraft.

MARKING RIGGED LOAD

4-17. Marked the rigged load according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 4-15. Complete Shipper's Declaration for Dangerous Goods according to AFMAN 24-204(I)/TM 38-250. If the load varies from the one shown, the weight, height, CB, tip-off curve, and parachute requirements must be recomputed.

CAUTION

Make the final rigger inspection required by FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Weight: Load shown	20,340 pounds
Maximum load allowed	21,000 pounds
Height	91 inches
Width	108 inches
Overall Length	402 inches
Overhang: Front	0 inches
Rear (EFTC)	18 inches
Rear (EPJS)	30 inches
Center of Balance (from front edge of platform)	201 inches

Figure 4-15. M119 Howitzer with 1 ¼-Ton Truck and Accompanying Ammunition Rigged for Low-Velocity Airdrop on a Type V Platform

EQUIPMENT REQUIREMENTS

4-18. Use the equipment listed in Table 4-1 to rig the load shown.

Table 4-1. Equipment Required for Rigging the M119 Howitzer with 1 1/4-Ton Truck and Accompanying Ammunition Rigged for Low-Velocity Airdrop on a Type V Platform

<i>National Stock Number</i>	<i>Item</i>	<i>Quantity</i>
8040-00-273-8713	Adhesive paste, 1-gallon	As required
4020-00-240-2146	Cord, nylon, type III	As required
1670-00-157-6527	Coupling, airdrop, extraction force transfer w/28-foot cable	1
8305-00-242-3593	Cloth, cotton duck, 60-inch	As required
	Clevis, suspension:	
4030-00-678-8562	3/4-inch (medium) emergency restraint	12
4030-00-090-5354	1-inch (large)	6
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
8305-00-191-1101	Felt sheet, 1/2-inch	As required
1670-01-183-2678	Leaf, extraction line	2
1670-01-064-4452	Line, drogue, 60-foot (1-loop), type XXVI nylon webbing	1
	Line, extraction, type XXVI nylon webbing:	
1670-01-062-6313	60-foot (3-loop)	1
	Or	
1670-01-107-7651	140-foot (3-loop)	1
	Link assembly:	
1670-01-493-6418	Two-point, 3 3/4-in	4
1670-01-493-6420	Two-point, 5 1/2-in	2
	Lumber:	
5510-00-220-6146	2- by 4-inch	As required
5510-00-220-6148	2- by 6-inch	As required
5510-00-220-6246	2- by 8-inch	As required
	Nail, steel wire, common:	
5315-00-010-4659	8d	As required
5315-00-164-5121	20d	As required
1670-00-753-3928	Pad, energy dissipating, honeycomb, 3- by 36- by 96-in	30 Sheets
	Parachute:	
	Cargo:	
1670-01-016-7841	G-11	4
	Cargo extraction:	
1670-01-063-3715	Drogue, 15-foot	1
1670-00-040-8135	28-foot	1
1670-01-097-8817	Release, cargo parachute, M-2	1

Table 4-1. Equipment Required for Rigging the M119 Howitzer with 1 1/4-Ton Truck and Accompanying Ammunition Rigged for Low-Velocity Airdrop on a Type V Platform (Continued)

<i>National Stock Number</i>	<i>Item</i>	<i>Quantity</i>
	Platform, AD, type V, 32-foot:	
1670-01-353-8425	Bracket assembly, coupling	1
1670-01-353-8424	Bracket assembly, extraction	1
1670-01-162-2376	Clevis assembly	50
1670-01-247-2389	Suspension link	4
1670-01-162-2381	Tandem link (multi-purpose)	2
	Plywood:	
5530-00-129-7777	1/2-in	As required
5530-00-128-4981	3/4-in	As required
	Sling, cargo airdrop	
	For suspension:	
1670-01-062-6306	3-ft (4-loop), type XXVI nylon webbing	6
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	2
1670-01-063-7760	11-ft (2-loop), type XXVI nylon webbing	4
1670-01-062-6310	11-ft (4-loop), type XXVI nylon webbing	2
1670-01-064-4453	20-ft (4-loop), type XXVI nylon webbing	2
	For deployment:	
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	1
	For riser extension:	
1670-01-062-6313	60-ft (3-loop), type XXVI nylon webbing	4
	For lifting:	
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	2
1670-01-063-7760	11-ft (2-loop), type XXVI nylon webbing	4
1670-01-062-6303	12-ft (2-loop), type XXVI nylon webbing	2
1670-00-040-8219	Strap, parachute release, multicut	2
7510-00-266-5016	Tape, adhesive, 2-in	As required
1670-00-937-0271	Tie-down assembly, 15-ft	77
1670-01-483-8259	Tow release mechanism (H-block for C-17)	1
1670-00-431-8486	Universal drive-off aid	1
	Webbing:	
8305-00-268-2411	Cotton, 1/4-inch, type I	As required
	Nylon:	
8305-00-082-5752	Tubular, 1/2-inch	As required
8305-00-268-2455	Tubular, 1-in	As required
8305-00-263-3598	Type VIII webbing	As required

Chapter 5

Rigging Two M119 Howitzers for Low-Velocity Airdrop on Type V Platform

SECTION I-RIGGING HOWITZERS WITH EIGHTY-TWO BOXES OF AMMUNITION

DESCRIPTION OF LOAD

5-1. Two M119, 105-millimeter howitzers are rigged on a 20-foot, type V platform with an accompanying load of 82 boxes of ammunition and 21 cans of fuzes (when required). This load requires five G-11 cargo parachutes.

PREPARING PLATFORM

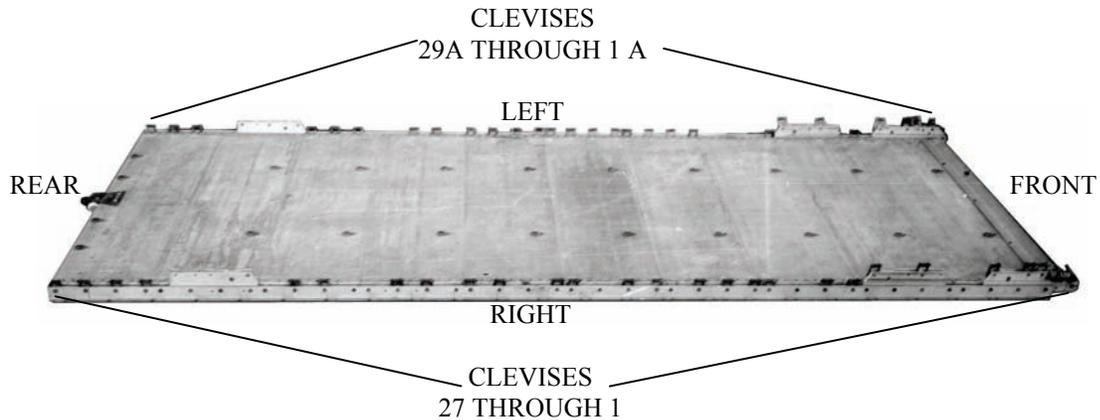
5-2. Prepare a 20-foot, type V airdrop platform as described below.

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

Note. If the platform must be assembled, install the suspension bracket assemblies when assembling the platform. See Figure 5-1 for the location of the suspension bracket assemblies.

- **Installing suspension links.** Install a tandem link on the front of each rail according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
- **Installing tandem links.** Install a tandem link on the front of each rail according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and as shown in Figure 5-1.
- **Installing and numbering clevises.** Bolt and number 56 clevis assemblies according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and as shown in Figure 5-1.

Note. Measurements given in the chapter are from the front edge of the platform, NOT from the front edge of the nose bumper.



Step:

1. Inspect, or assemble and inspect a 20-foot, type V platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.
2. Install a suspension bracket assembly to each platform side rail using holes 6, 7, and 8.
3. Install a tandem link to each platform side rail using holes 1, 2, and 3.
4. Install a suspension bracket assembly to each platform side rail using holes 33, 34, and 35.
5. Install a clevis on bushings 1 (tripled), 2, 3, and 4 of each of the tandem links.
6. Install a clevis on bushings 2 and 4 of each of front suspension bracket assemblies.
7. Starting at the front of right platform side rail, install clevises on the bushing bolted on holes 9, 10, 12, 13, 14, 15, 17, 18, 20, 21, 23, 24, 26, 27, 30, 31, 37, 38, 39, and 40.
8. Starting at the front of left platform side rail, install clevises on the bushing bolted on holes 4, 9, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, 30, 31, 37, 38, 39, and 40.
9. Starting at the front of the platform number the clevises bolted to the right side from 1 through 27 on the left side and 1A through 29A on the left side.
10. Label the tie-down rings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

Figure 5-1. Platform Prepared

STOWING AND LASHING FIRST GROUP OF AMMUNITION BOXES

5-3. Stow 54 boxes of ammunition on the platform and lash the ammunition boxes together as shown in Figure 5-2. Lash the ammunition to the platform as shown in Figure 5-3.

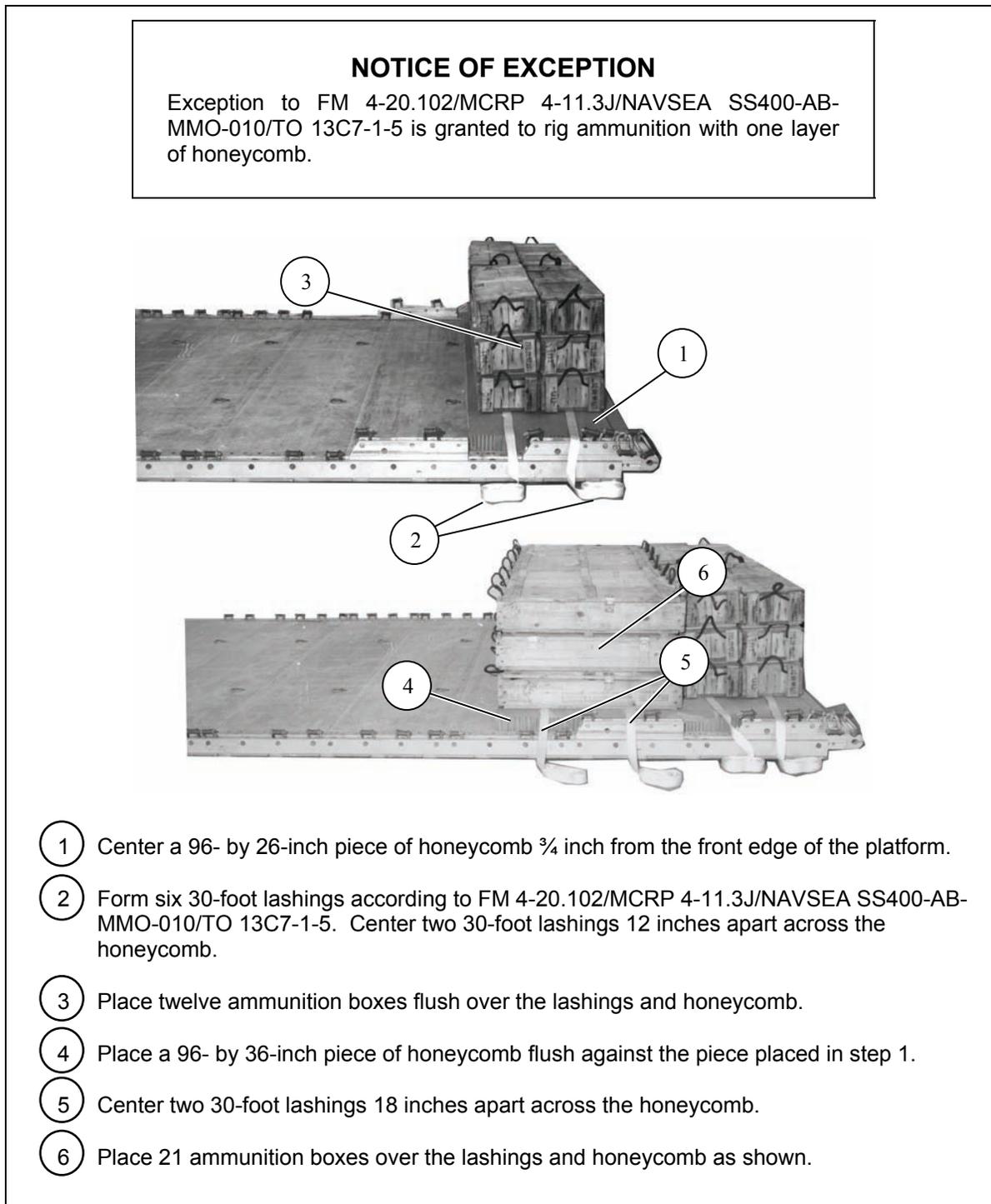
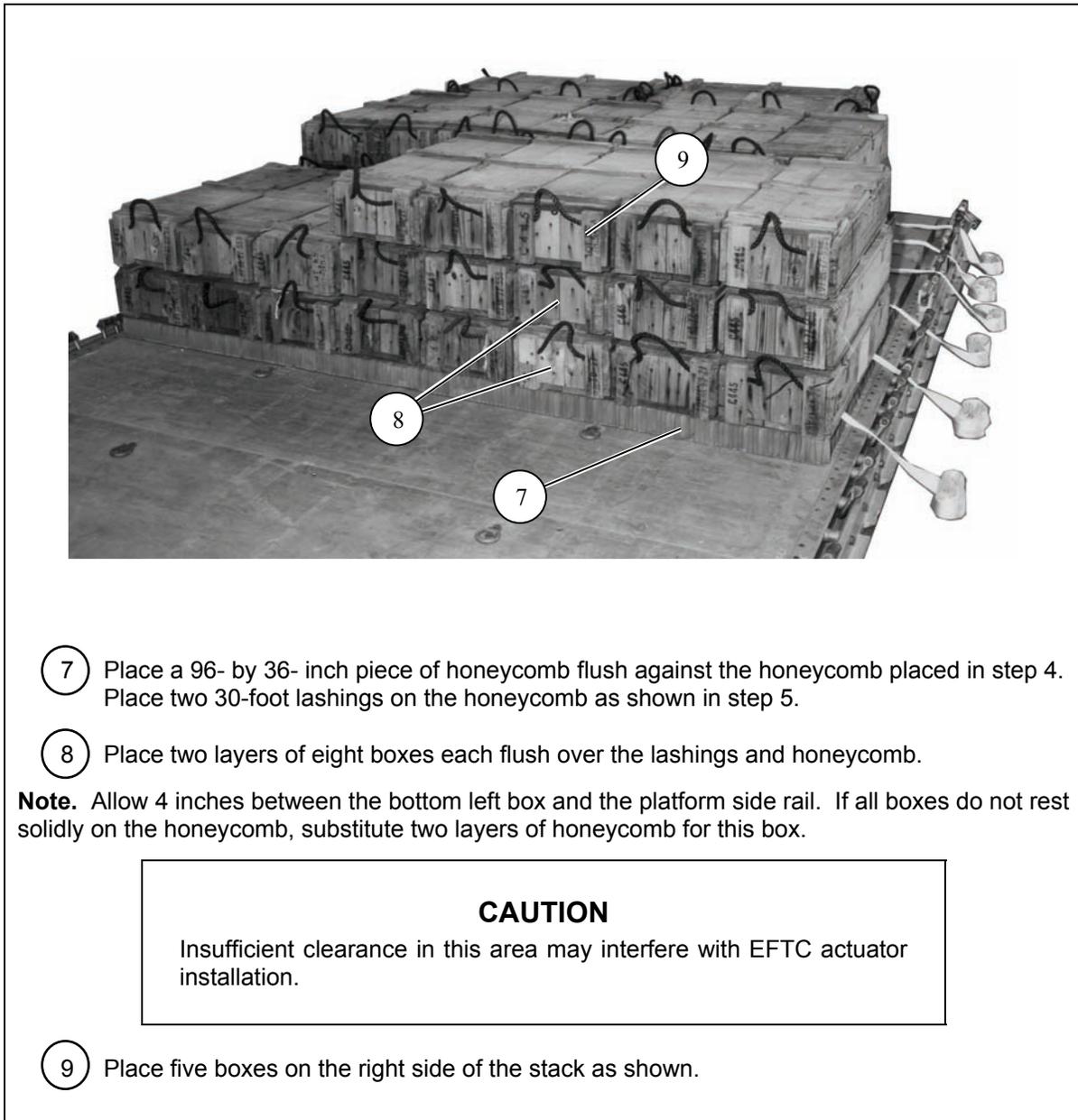


Figure 5-2. First Group of Ammunition Boxes Stowed



- 7 Place a 96- by 36- inch piece of honeycomb flush against the honeycomb placed in step 4. Place two 30-foot lashings on the honeycomb as shown in step 5.
- 8 Place two layers of eight boxes each flush over the lashings and honeycomb.

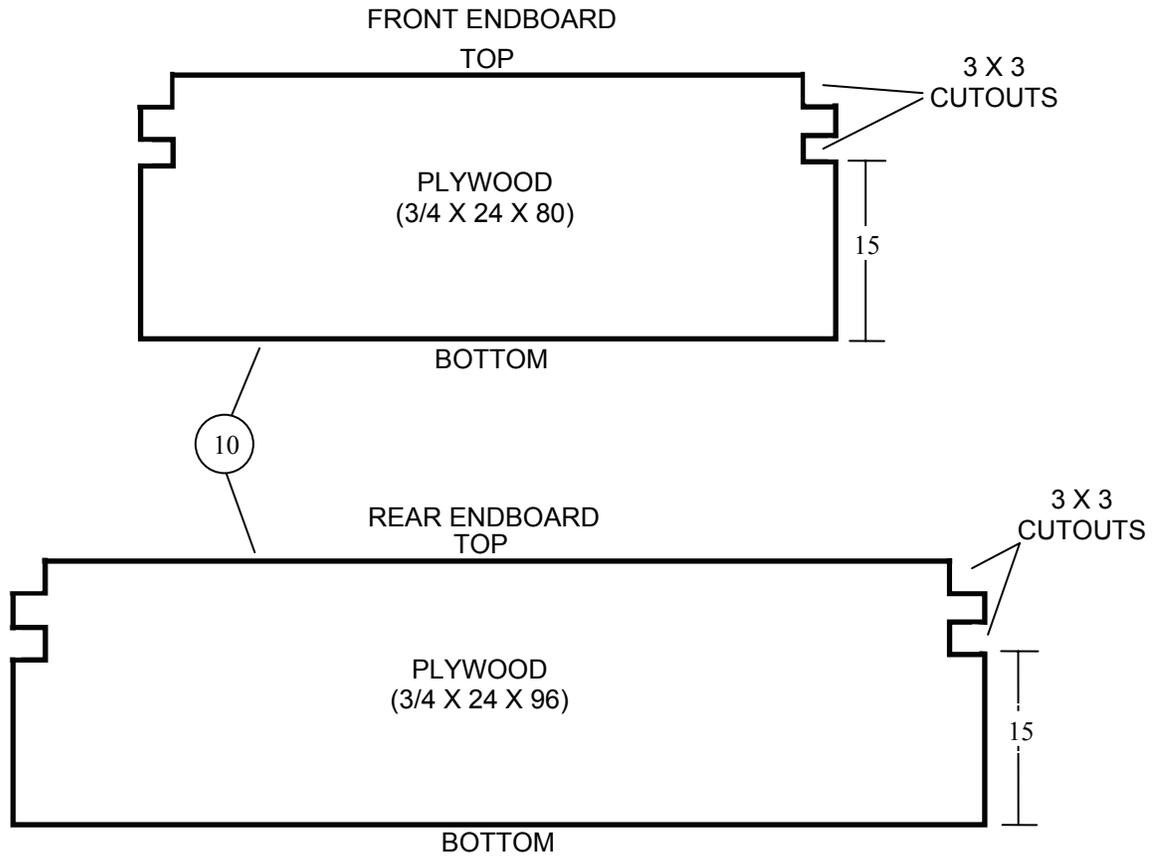
Note. Allow 4 inches between the bottom left box and the platform side rail. If all boxes do not rest solidly on the honeycomb, substitute two layers of honeycomb for this box.

CAUTION
Insufficient clearance in this area may interfere with EFTC actuator installation.

- 9 Place five boxes on the right side of the stack as shown.

Figure 5-2. First Group of Ammunition Boxes Stowed (Continued)

- Notes. 1. All measurements are in inches.
2. These drawings are not drawn to scale.



⑩ Cut the front and rear endboards for the first group of ammunition from $\frac{3}{4}$ -inch plywood.

Figure 5-2. First Group of Ammunition Boxes Stowed (Continued)

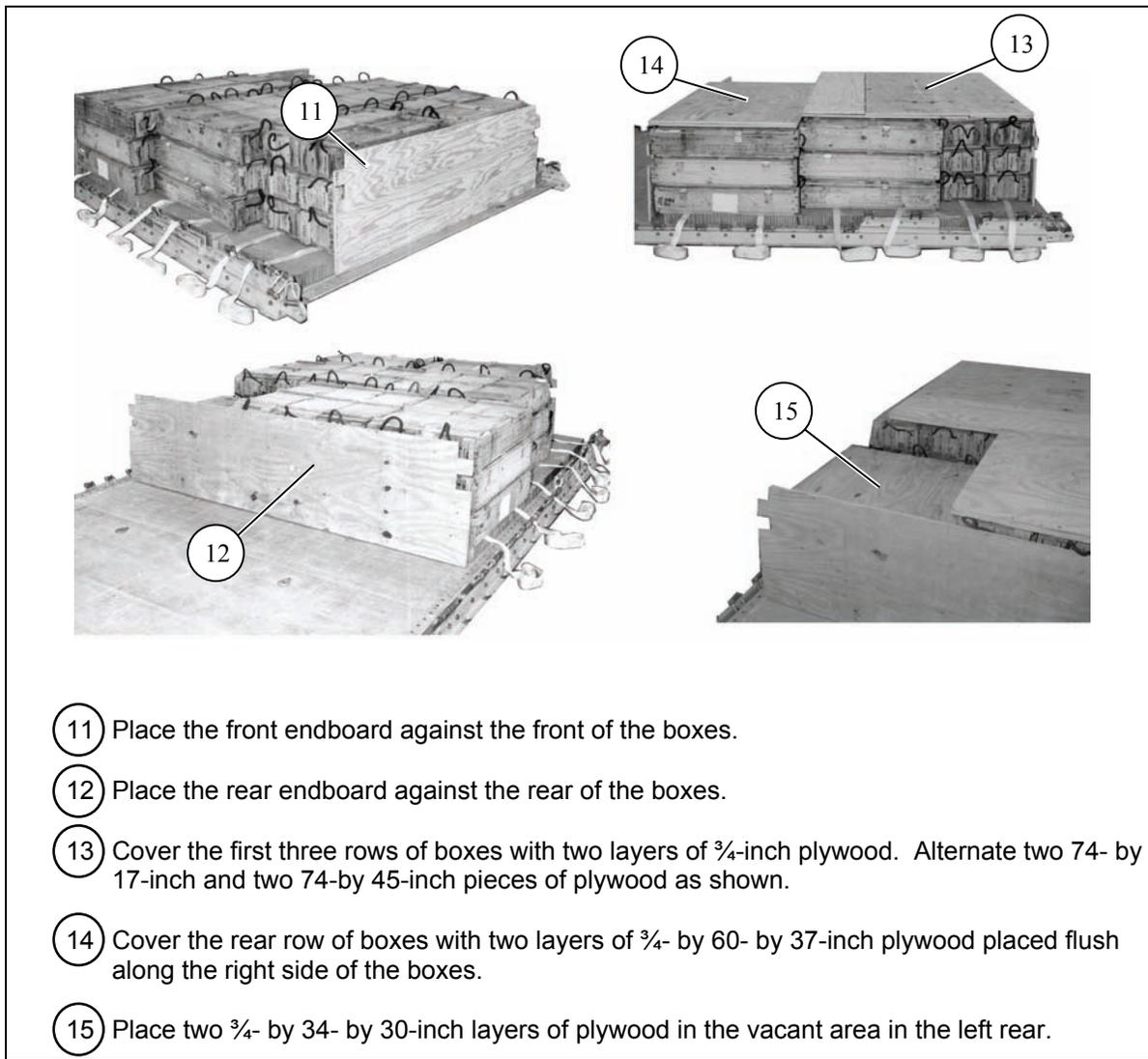
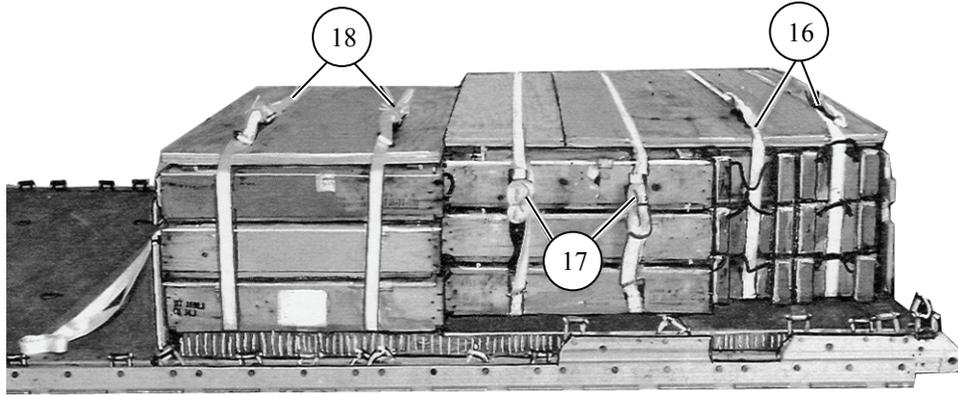


Figure 5-2. First Group of Ammunition Boxes Stowed (Continued)

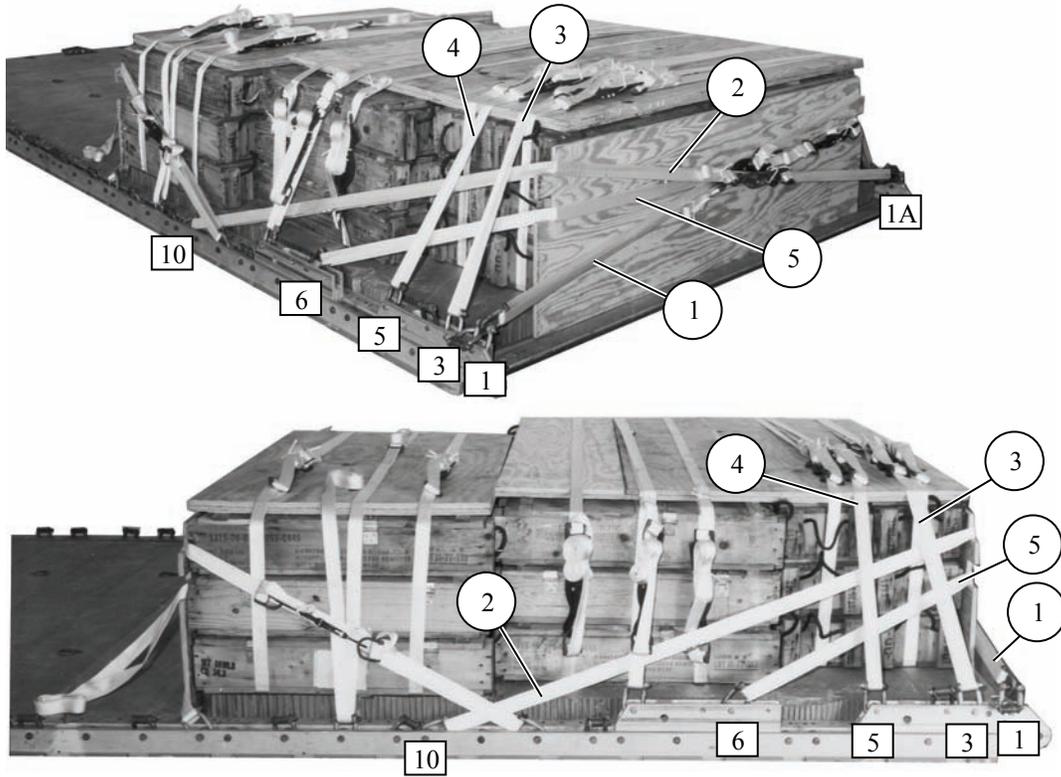


- ①⑥ Secure the lashings pre-positioned in step 2 as far to the right as possible on top of the boxes with a load binder and D-ring.
- ①⑦ Secure the two lashings pre-positioned in step 5 on the right side.
- ①⑧ Secure the two lashings pre-positioned in step 7 on top of the boxes.

Note. It will be necessary to leave these lashings unsecured if the metal boxes of fuzes will be included in this load.

Figure 5-2. First Group of Ammunition Boxes Stowed (Continued)

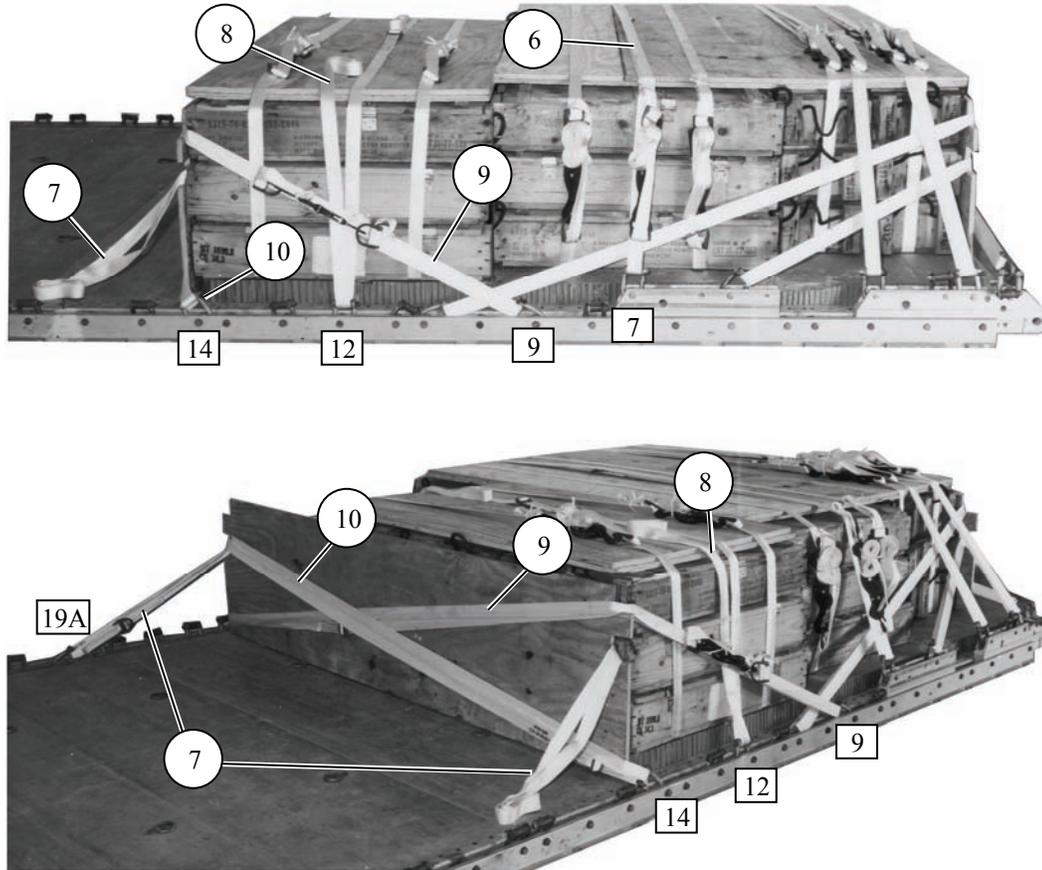
Note. Lashings used below are all 30-foot lashings. Form 30-foot lashings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.



Lashing Number	Tiedown Clevis Number	Instructions
1	1 and 10A	Pass lashing: Through clevis 1, through the left upper cutout in the front endboard, and through clevis 10A. Secure the lashing in the front.
2	1A and 10	Through clevis 1A, through the right upper cutout in the front endboard, and through clevis 10. Secure the lashing in the front.
3	3 and 3A	Through both clevises and over the top of the load. Secure the lashing on the top right.
4	5 and 5A	Through both clevises and over the top of the load. Secure the lashing on the top right.
5	6 and 7A	Through both clevises and through the lower right and left cutouts in the front endboard. Secure the lashings in the front.

Figure 5-3. First Group of Ammunition Boxes Lashed to Platform

Note. Lashings used below are all 30-foot lashings. Form 30-foot lashings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.



Lashing Number	Tiedown Clevis Number	Instructions
6	7 and 8A	Pass lashing: Through both clevises and over the top of the load. Secure the lashing on the side.
7	19A	Through clevis 19A and through both lower cutouts in the rear endboard. Do not secure the lashing.
8	12 and 11A	Through both clevises and over the top of the load. Do not secure the lashing.
9	9 and 13A	Through clevis 9, through the right upper cutout in the rear endboard and through clevis 13A. Secure the lashing on the side.
10	14 and 9A	Through clevis 14, through the left lower cutout in the rear endboard, and through clevis 9A. Secure the lashing on the side.

Figure 5-3. First Group of Ammunition Boxes Lashed to Platform (Continued)

STOWING AND LASHING SECOND GROUP OF AMMUNITION BOXES

5-4. Stow 28 boxes of ammunition on the platform and lash the boxes together as shown in Figure 5-4. Lash the ammunition to the platform as shown in Figure 5-5.

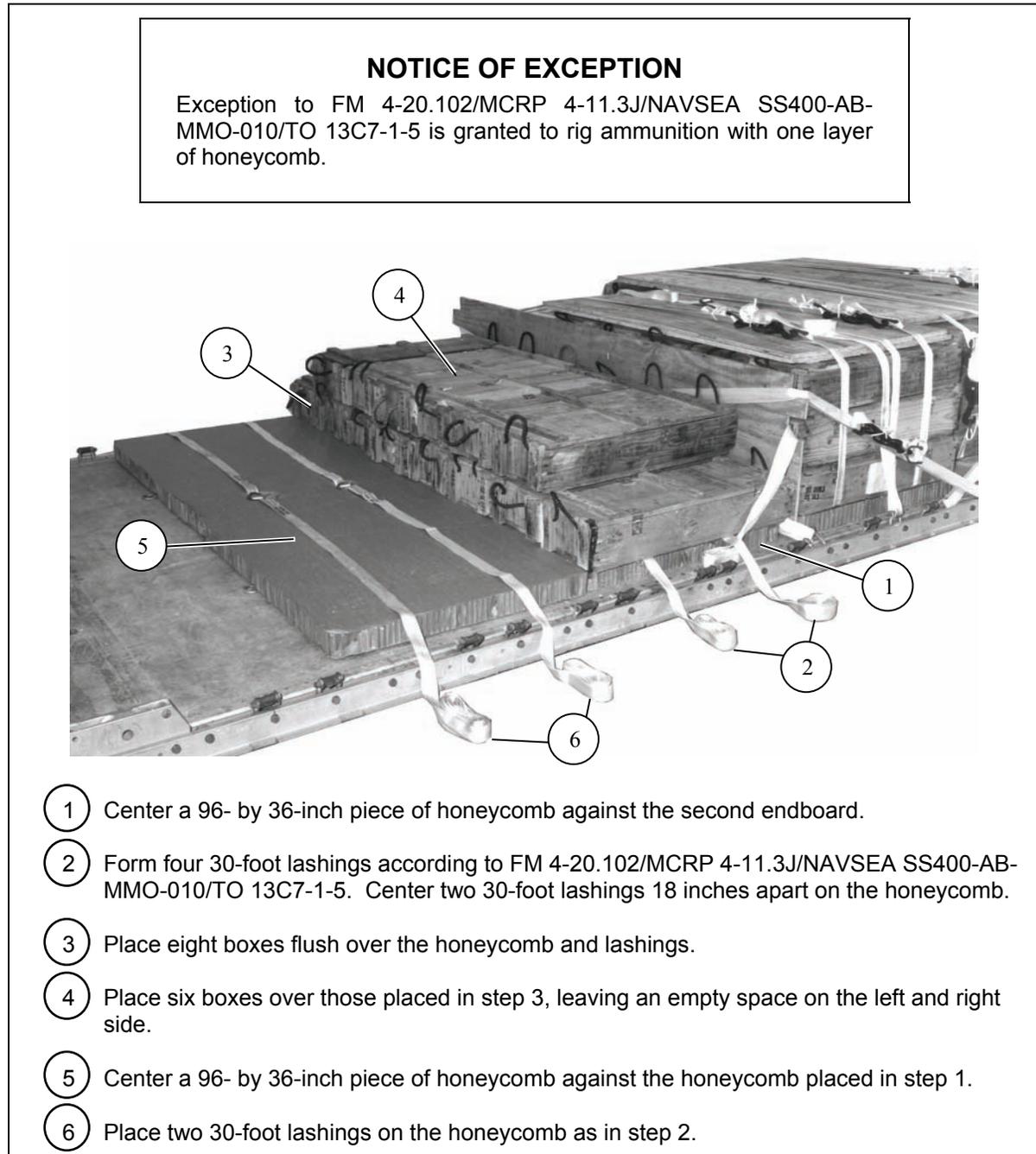


Figure 5-4. Second Group of Ammunition Boxes Stowed

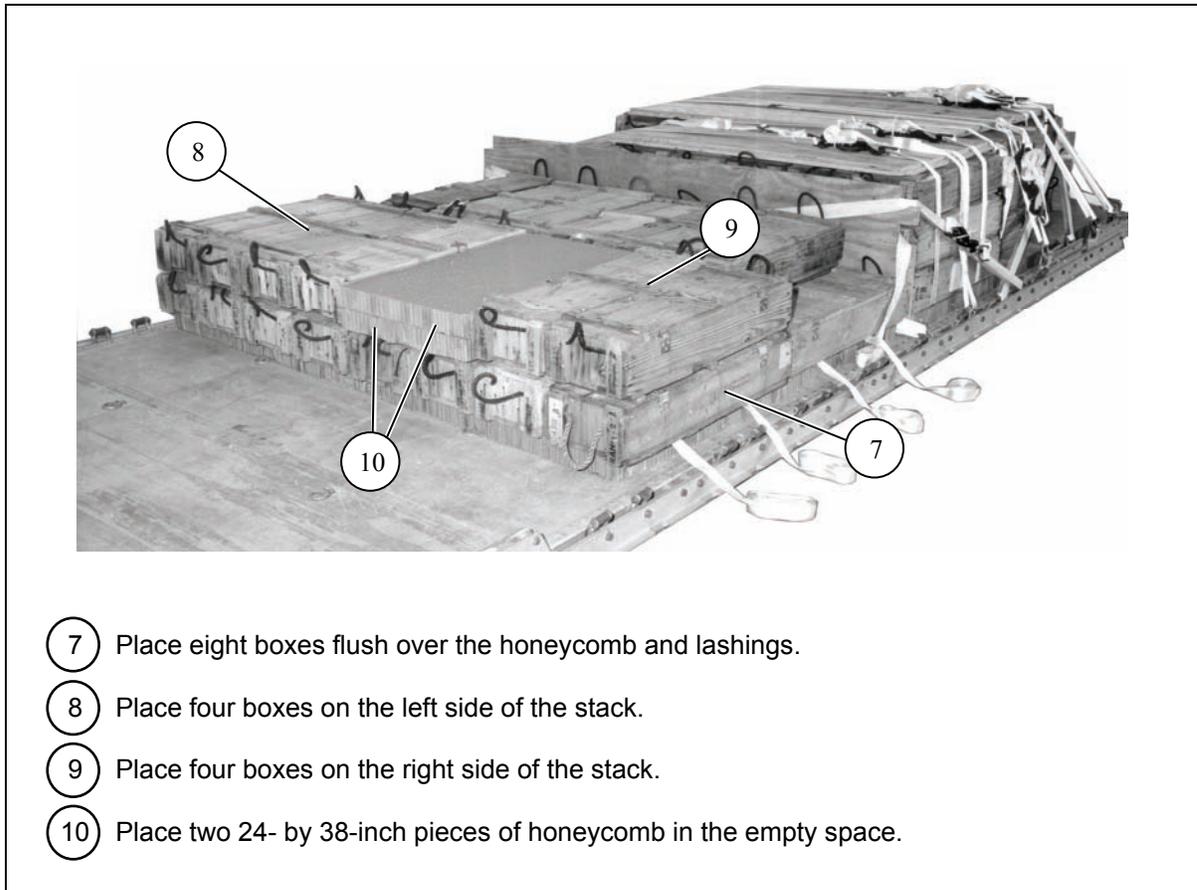
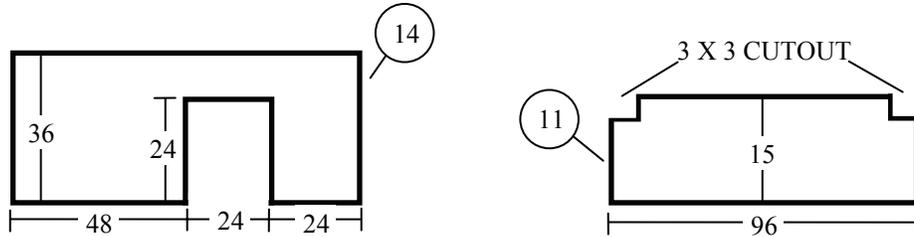


Figure 5-4. Second Group of Ammunition Boxes Stowed (Continued)

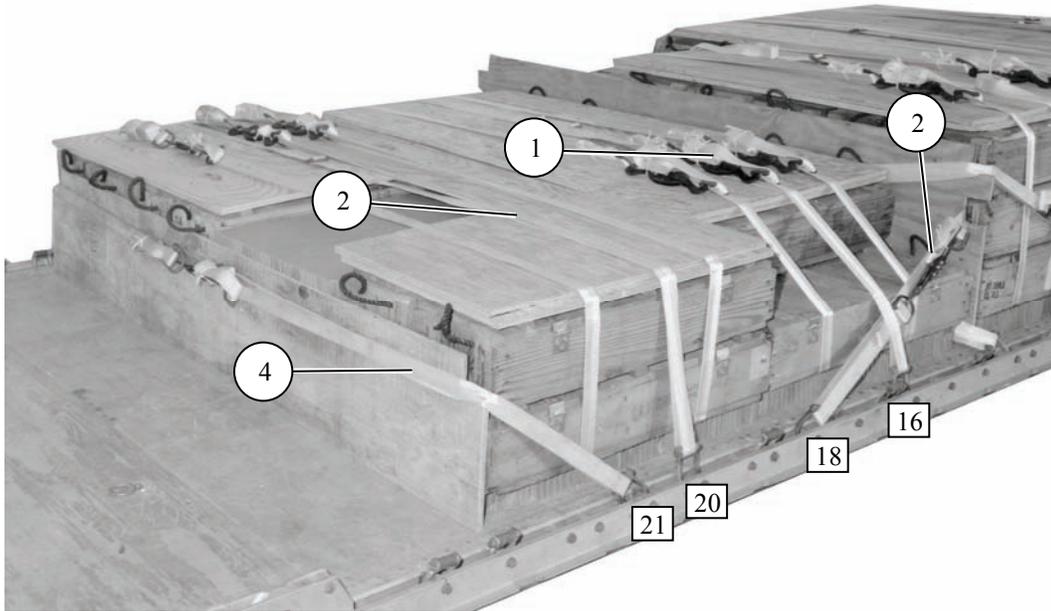
- Notes.** 1. All measurements are given in inches.
 2. These drawings are not drawn to scale.



- 11 Construct the rear endboard using $\frac{3}{4}$ - by 96- by 15-inch plywood as shown. Place the endboard against the rear of the boxes.
- 12 Place two $\frac{3}{4}$ - by 76- by 36-inch pieces of plywood flush over the first stack of boxes.
- 13 Secure the lashings placed in step 2 over the load.
- 14 Make the cutouts as shown in two $\frac{3}{4}$ - by 96- by 36-inch pieces of plywood. Place the plywood over the last row of boxes with the cutout facing the rear.
- 15 Secure the lashing placed in step 6 on top of the boxes as far to the left as possible.

Figure 5-4. Second Group of Ammunition Boxes Stowed (Continued)

Note. Lashings used below are all 30-foot lashings. Form 30-foot lashings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.



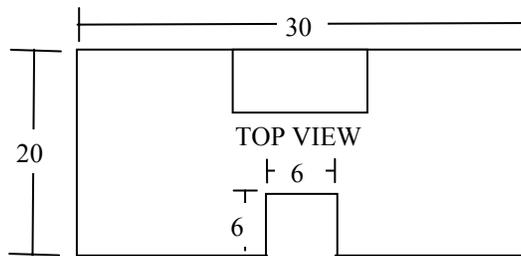
<i>Lashing Number</i>	<i>Tiedown Clevis Number</i>	<i>Instructions</i>
1	16 and 17A	Pass lashing: Through both clevises and over the top of the load. Secure the lashing on the top.
2	18 and 19A	Pre-positioned in Figure 5-3 through clevis 18. Pass the lashing through the lower cutouts in the second endboard. Secure the lashing on the right.
3	20 and 22A	Through both clevises and over the top of the load. Secure the lashing on top and as far to the left as possible.
4	21 and 23A	Through both clevises and through the cutouts in the rear endboard. Secure the lashing in the rear.

Figure 5-5. Second Group of Ammunition Boxes Lashed to Platform

BUILDING AND PLACING HONEYCOMB STACKS

5-5. Build the honeycomb stacks for the howitzers as shown in Figure 5-6. Place the stacks as shown in Figure 5-7.

- Notes.** 1. All measurements are given in inches.
 2. These drawings are not drawn to scale.



Stack Number	Pieces	Width (inches)	Length (inches)	Material	Instructions
1 and 4	7	30	20	Honeycomb	Glue and form a stack.
	3	30	20	Honeycomb	Center a cut 6 inches wide and 6 inches deep in a 30-inch side. Glue these pieces flush on the stack.
	2	30	20	$\frac{3}{4}$ -inch plywood	Make cuts as above and place on honeycomb.
	3	12	8	$\frac{3}{4}$ -inch plywood	Glue flush along uncut 30-inch edge and centered.
	1	12	8	Honeycomb	Glue flush over plywood placed above.

Figure 5-6. Honeycomb Stacks Prepared

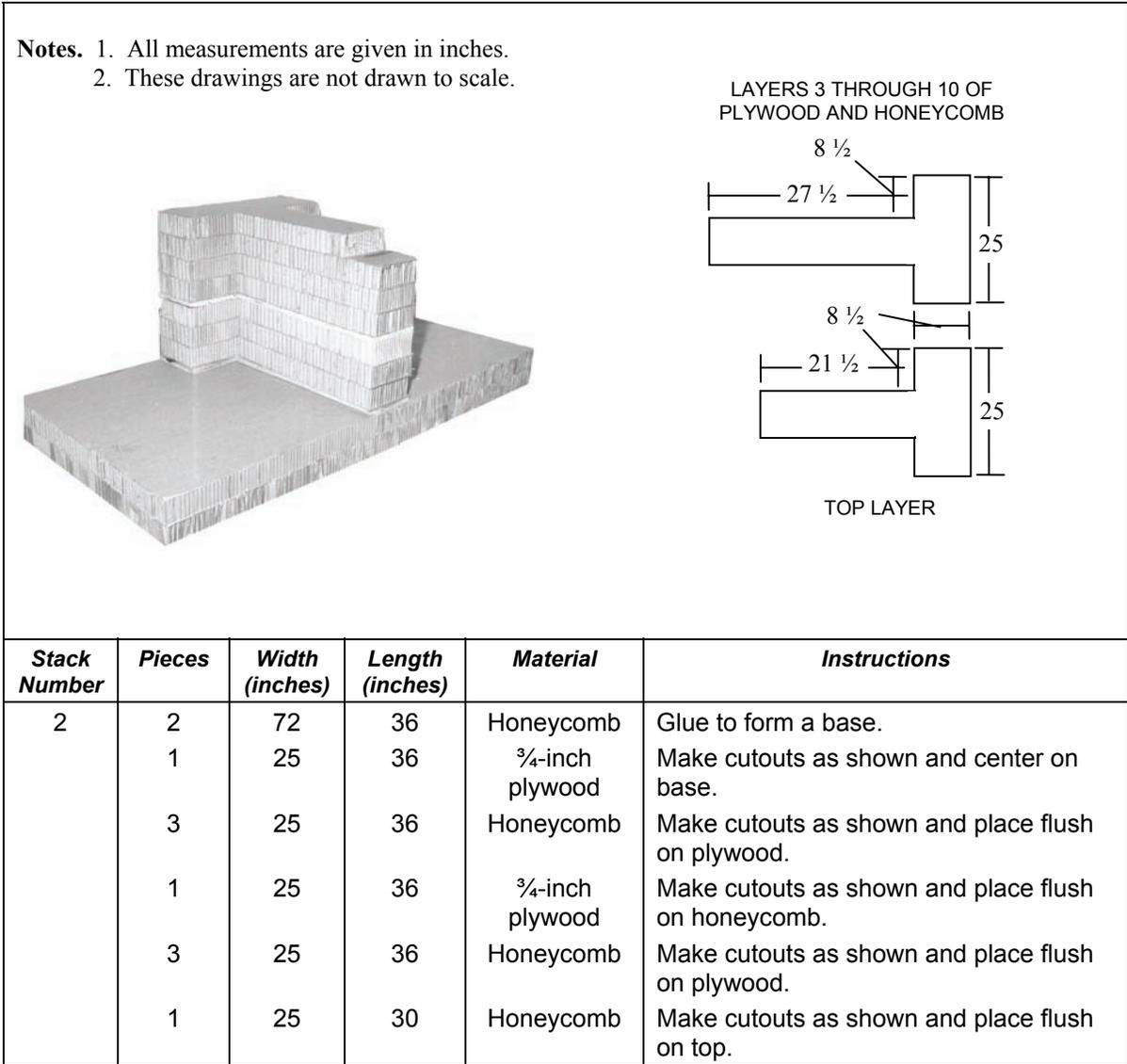
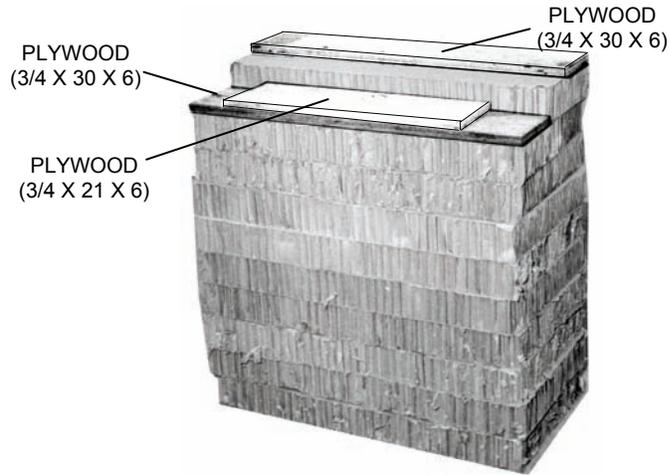


Figure 5-6. Honeycomb Stacks Prepared (Continued)

- Notes.** 1. All measurements are given in inches.
 2. These drawings are not drawn to scale.



Stack Number	Pieces	Width (inches)	Length (inches)	Material	Instructions
3	9	30	16	Honeycomb	Glue to form a base
	1	30	10	Honeycomb	Place honeycomb even with one edge of base.
	1	30	6	3/4-inch plywood	Place plywood flush along outside edge of honeycomb placed above.
	1	30	6	3/4-inch plywood	Place plywood flush on base next to honeycomb placed above.
	1	21	6	3/4-inch plywood	Center plywood on the lower piece of plywood.

Figure 5-6. Honeycomb Stacks Prepared (Continued)

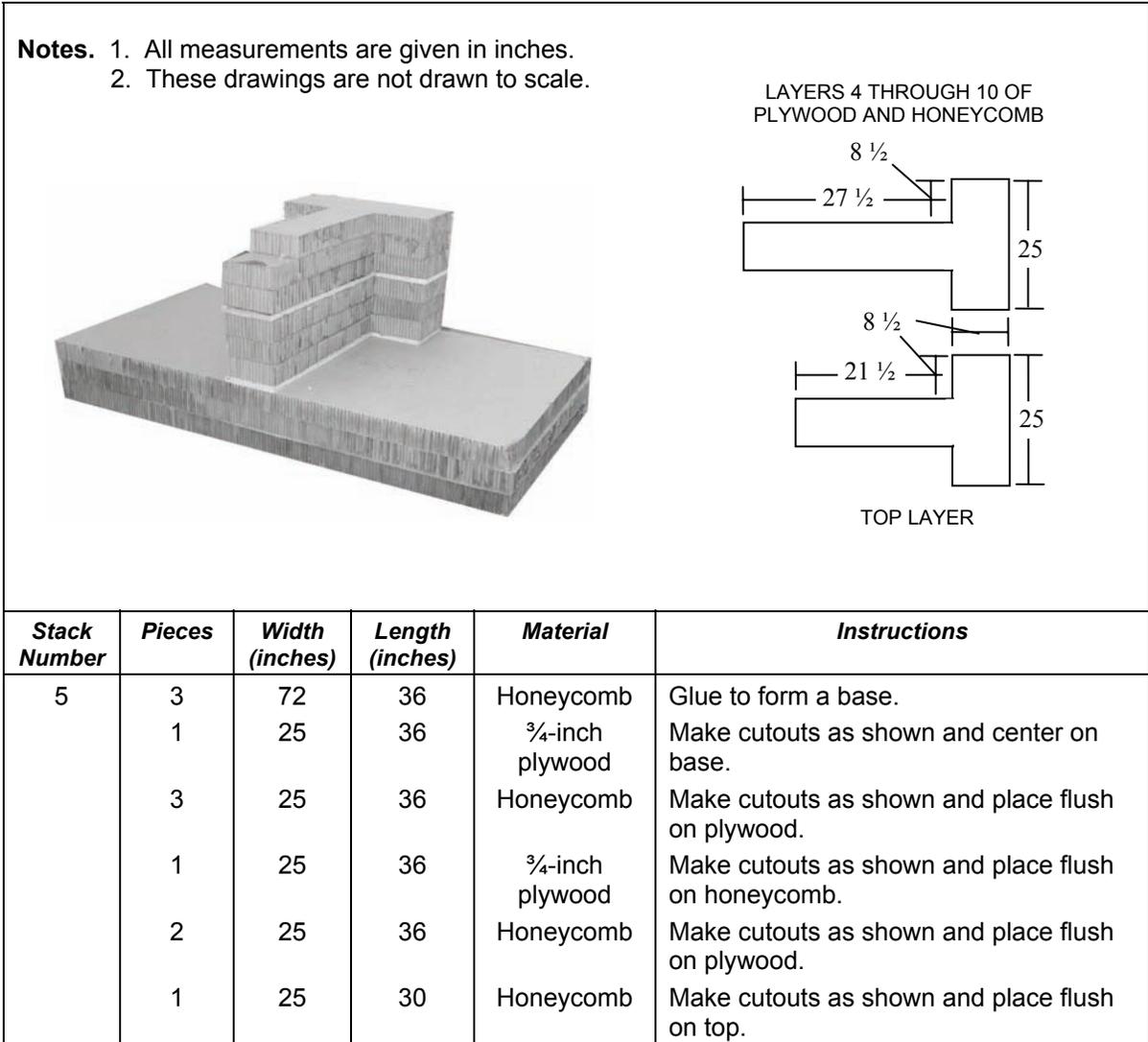
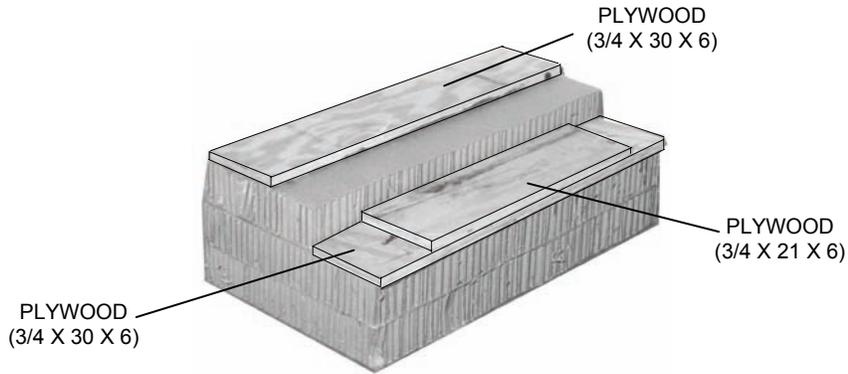


Figure 5-6. Honeycomb Stacks Prepared (Continued)

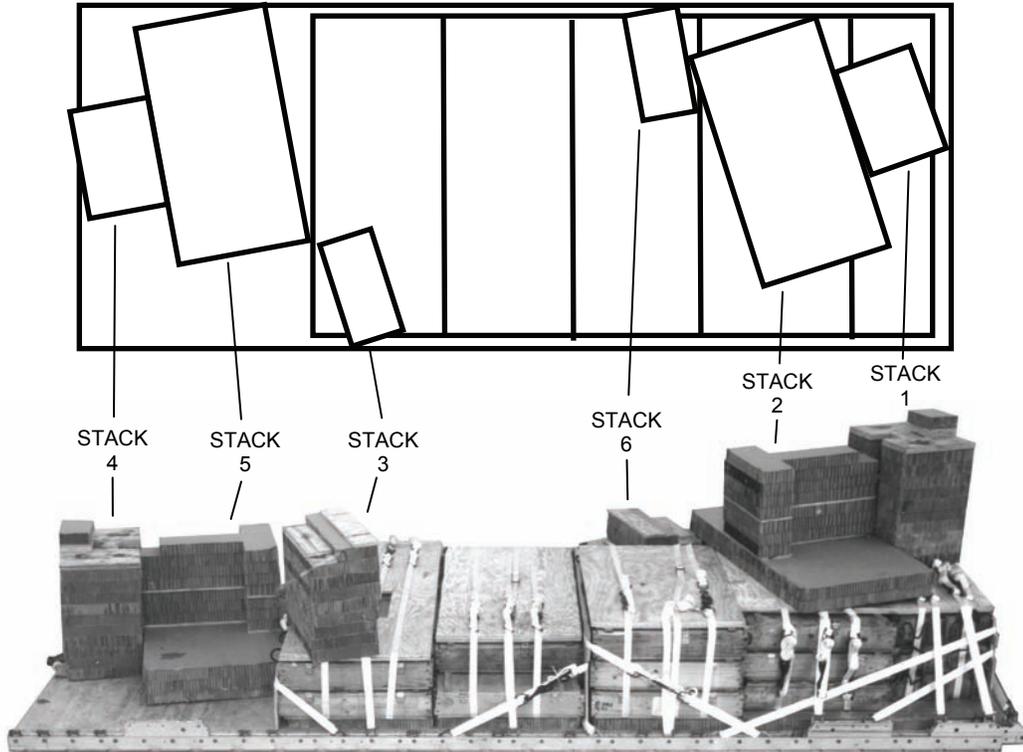
- Notes.** 1. All measurements are given in inches.
 2. These drawings are not drawn to scale.



Stack Number	Pieces	Width (inches)	Length (inches)	Material	Instructions
6	2	30	16	Honeycomb	Glue to form a base
	1	30	10	Honeycomb	Place honeycomb even with one edge of base.
	1	30	6	3/4-inch plywood	Place plywood flush along outside edge of honeycomb placed above.
	1	30	6	3/4-inch plywood	Place plywood flush on base next to honeycomb placed above.
	1	21	6	3/4-inch plywood	Center plywood on the lower piece of plywood.

Figure 5-6. Honeycomb Stacks Prepared (Continued)

- Notes.** 1. This drawing is not drawn to scale.
 2. All dimensions are given in inches.



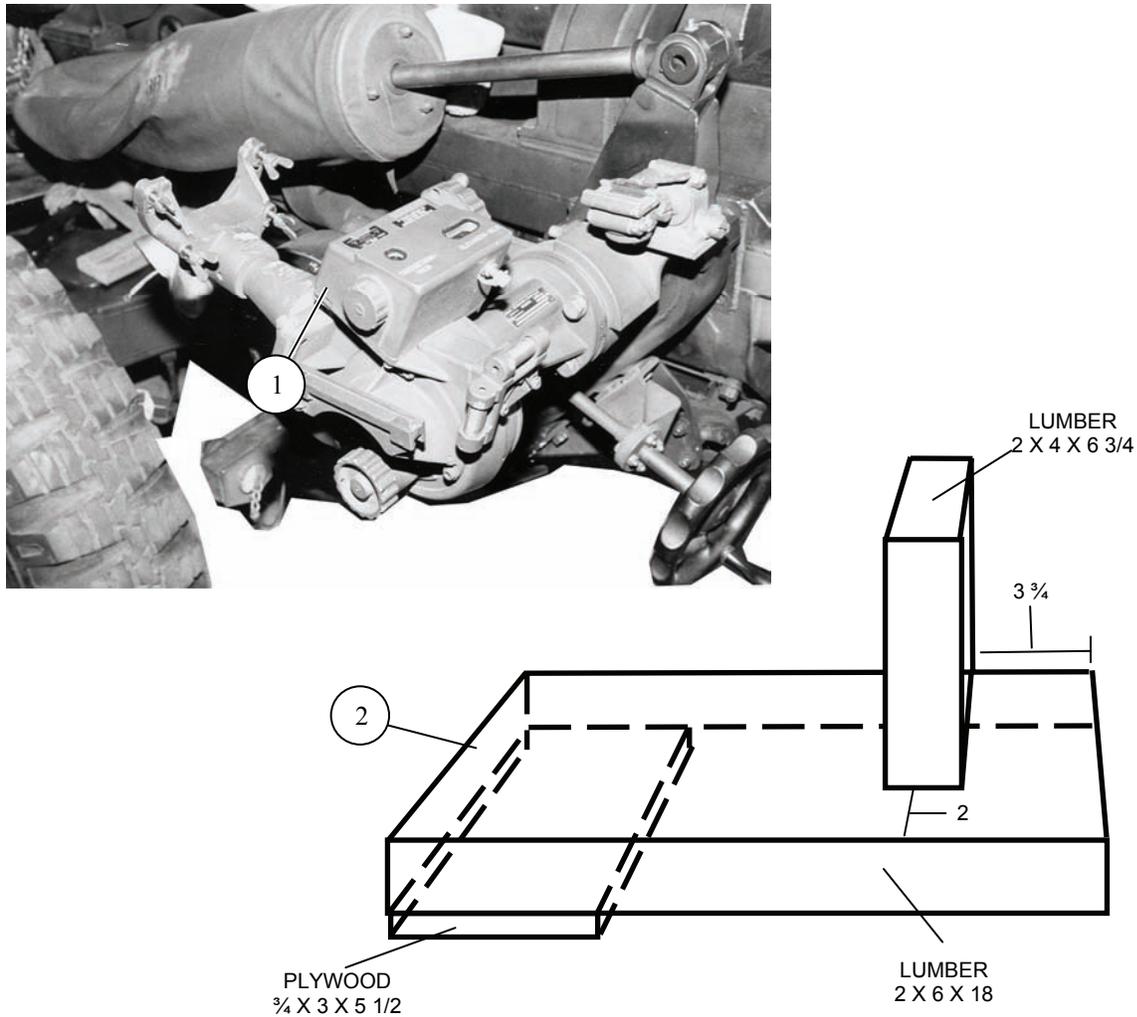
Stack Number	Position of Stack on Platform
	<p>Note. Stack locations are approximate. Exact placement will vary because of differences in individual guns. Be sure that the stacks rest solidly on the platform or on the plywood decking.</p>
1	Place on the plywood decking with the right front corner 28 inches from the right front corner of the plywood and the left front corner of the stack 4 inches from the front edge of the plywood.
2	Center the front edge against stack 1.
3	Align on the rear section of plywood decking on a central axis with stacks 1 and 2.
4	Place at the rear of the platform with the right rear corner of the stack 35 inches from the right rail. Let the left side of the stack overhang the rear edge of the platform from the point at which the extraction bracket meets the rear edge of the platform.
5	Center in front of the stack 4.
6	Align on the third ammunition stack on a central axis with stacks 4 and 5.

Figure 5-7. Honeycomb Stacks Placed

PREPARING HOWITZERS

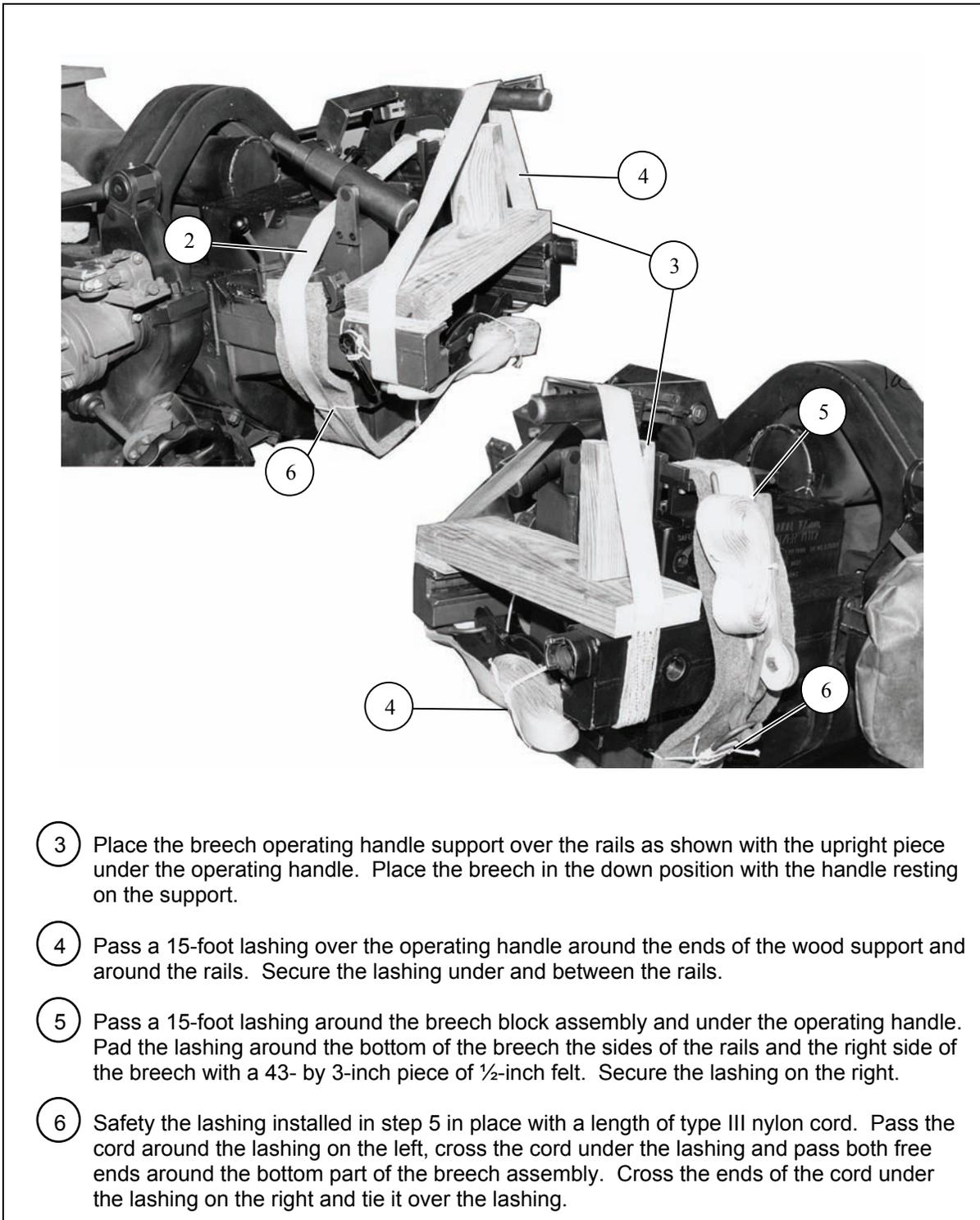
5-6. Prepare both howitzers as shown in Figures 3-9 through 3-17 and in Figure 5-8. Further prepare the front howitzer as shown in Figure 5-9 and the rear howitzer as shown in Figure 5-10.

- Notes.** 1. This drawing is not drawn to scale.
 2. All dimensions are given in inches.



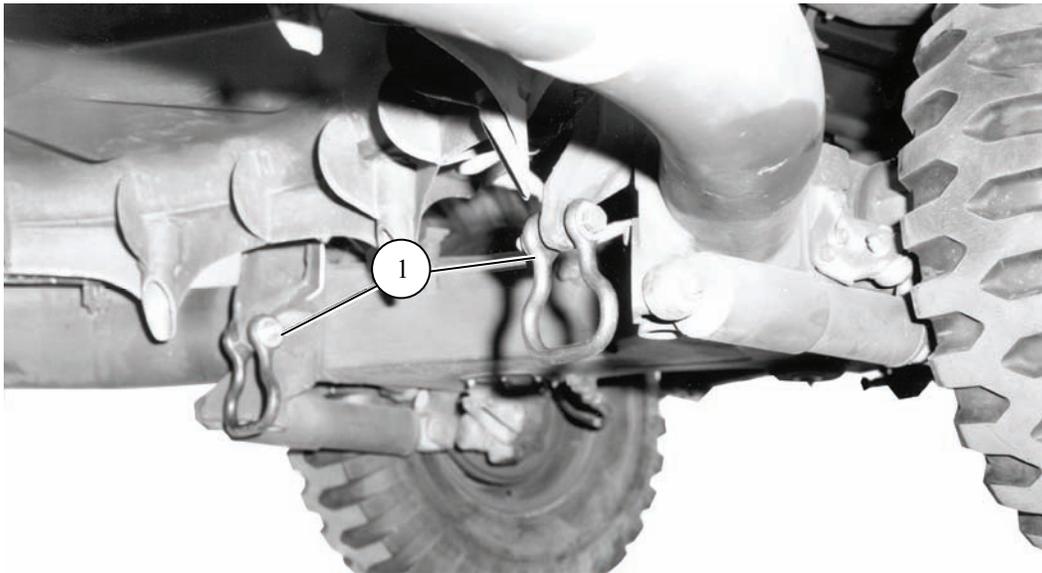
- ① Tilt the left sight assembly forward.
 ② Construct the breech operating handle support as shown.

Figure 5-8. Both Howitzers Prepared



- 3 Place the breech operating handle support over the rails as shown with the upright piece under the operating handle. Place the breech in the down position with the handle resting on the support.
- 4 Pass a 15-foot lashing over the operating handle around the ends of the wood support and around the rails. Secure the lashing under and between the rails.
- 5 Pass a 15-foot lashing around the breech block assembly and under the operating handle. Pad the lashing around the bottom of the breech the sides of the rails and the right side of the breech with a 43- by 3-inch piece of ½-inch felt. Secure the lashing on the right.
- 6 Safety the lashing installed in step 5 in place with a length of type III nylon cord. Pass the cord around the lashing on the left, cross the cord under the lashing and pass both free ends around the bottom part of the breech assembly. Cross the ends of the cord under the lashing on the right and tie it over the lashing.

Figure 5-8. Both Howitzers Prepared (Continued)



- 1 Install a medium suspension clevis onto each of the brackets on the underside of the gun carriage.

Figure 5-9. Front Howitzer Prepared

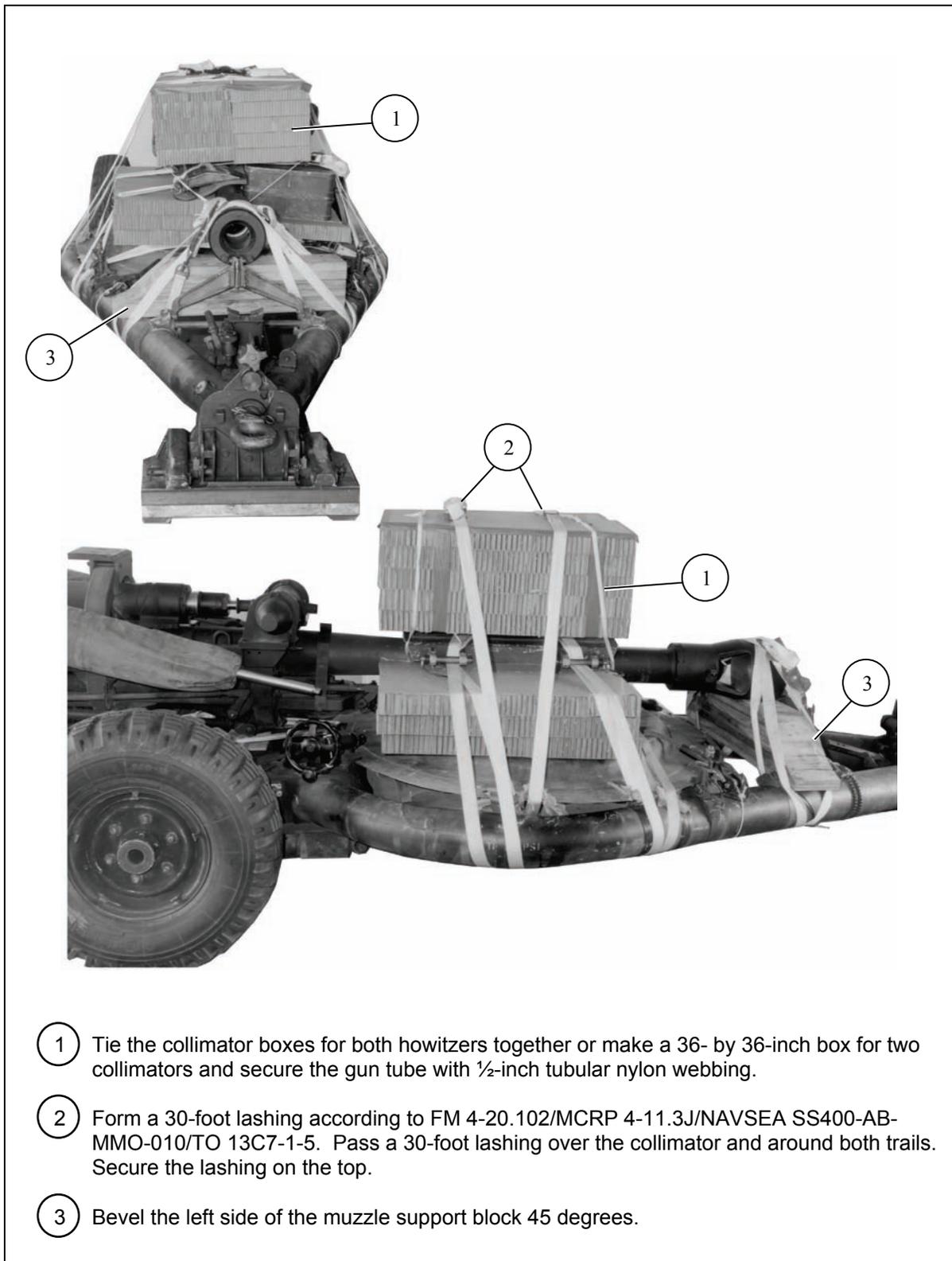
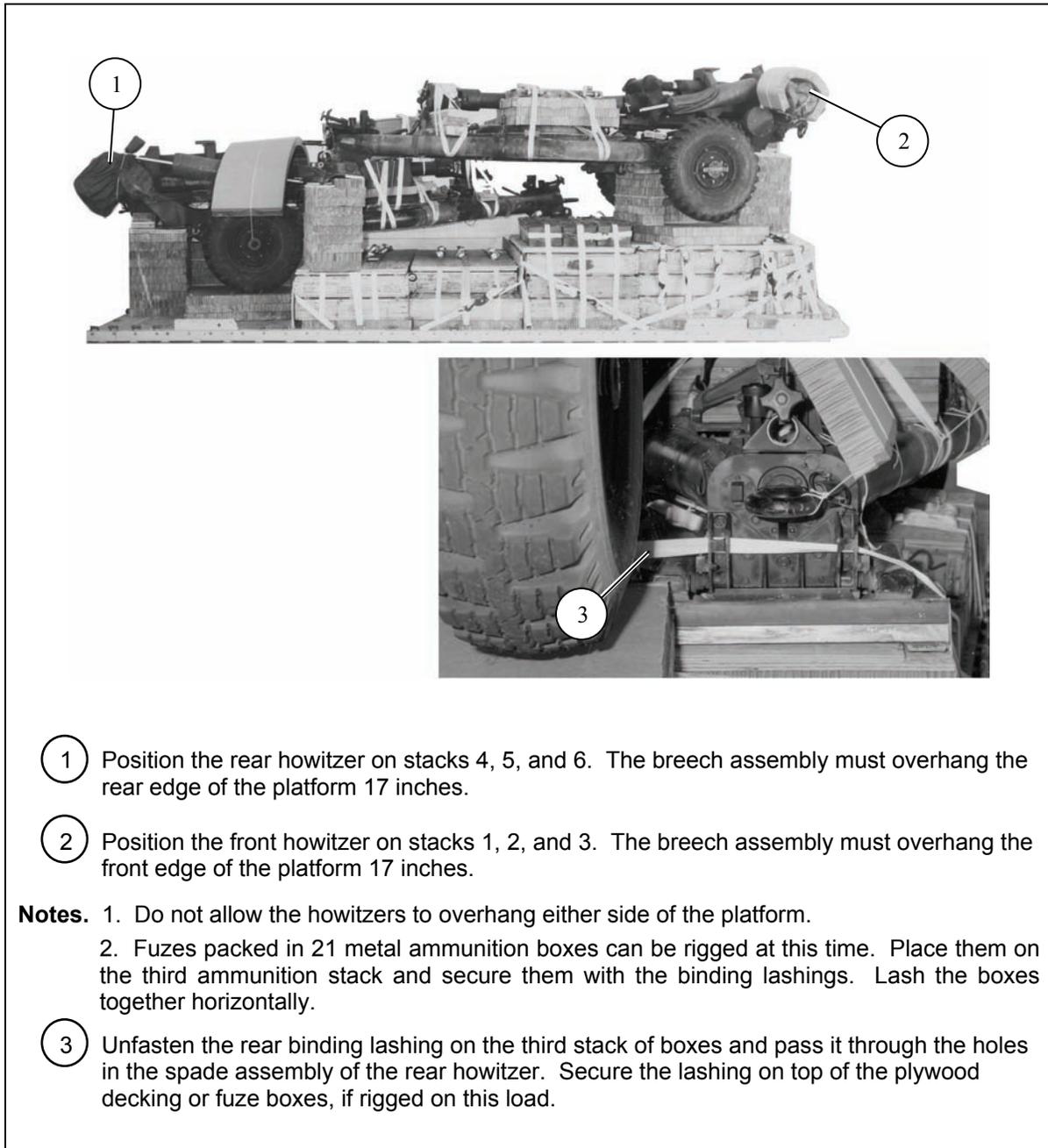


Figure 5-10. Rear Howitzer Prepared

PLACING HOWITZER ON HONEYCOMB STACKS, LASHING HOWITZER, AND INSTALLING PROTECTIVE HONEYCOMB

5-7. Place the howitzers on the platform as shown in Figure 5-11. Lash the howitzers together and install protective honeycomb as shown in Figure 5-12.



- 1 Position the rear howitzer on stacks 4, 5, and 6. The breech assembly must overhang the rear edge of the platform 17 inches.
- 2 Position the front howitzer on stacks 1, 2, and 3. The breech assembly must overhang the front edge of the platform 17 inches.

Notes.

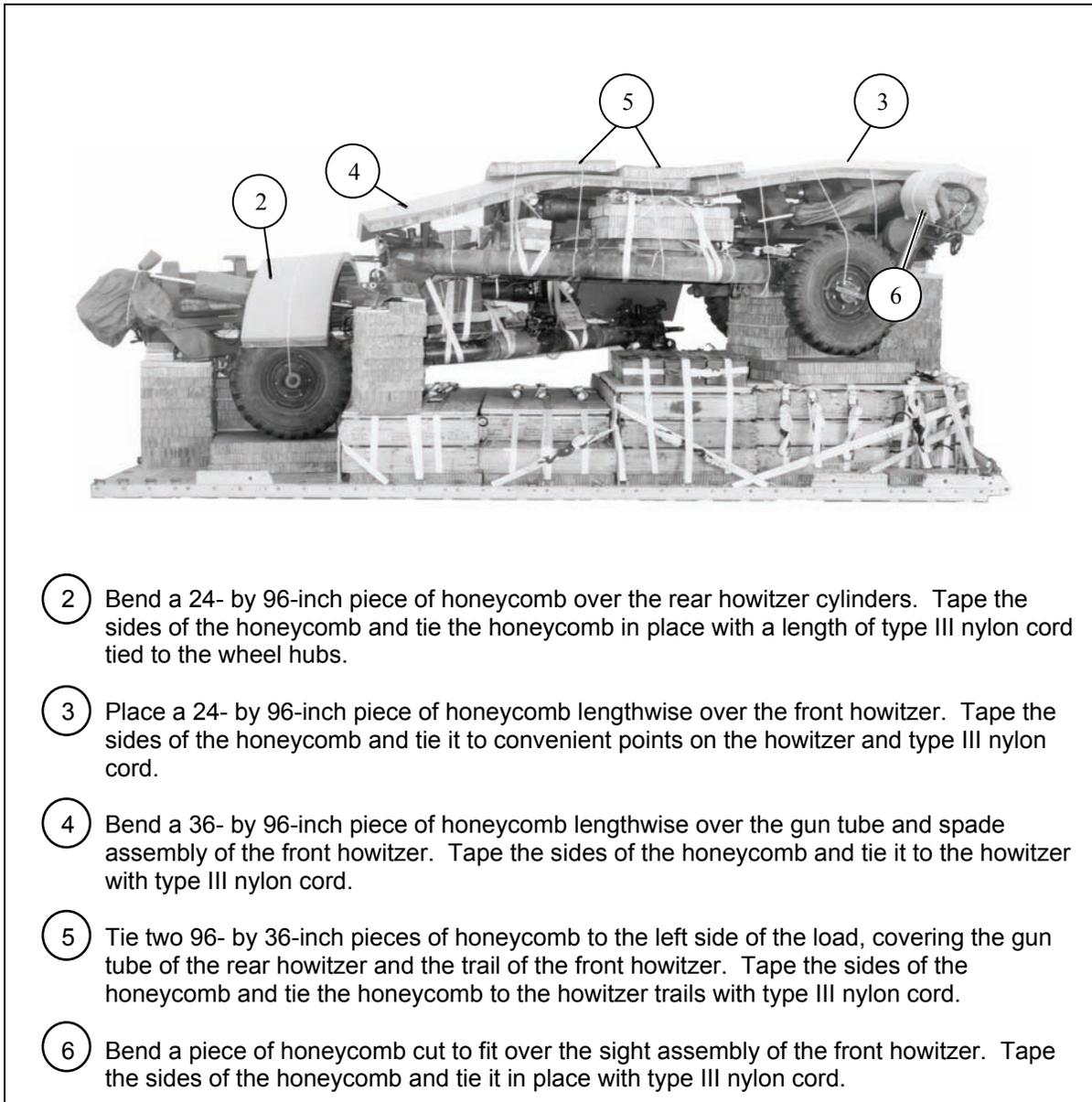
1. Do not allow the howitzers to overhang either side of the platform.
2. Fuzes packed in 21 metal ammunition boxes can be rigged at this time. Place them on the third ammunition stack and secure them with the binding lashings. Lash the boxes together horizontally.
- 3 Unfasten the rear binding lashing on the third stack of boxes and pass it through the holes in the spade assembly of the rear howitzer. Secure the lashing on top of the plywood decking or fuze boxes, if rigged on this load.

Figure 5-11. Howitzers Placed on Honeycomb Stacks



- ① Lash the inside trails of the howitzers together with two 15-foot lashings as shown.

Figure 5-12. Howitzers Lashed Together and Protective Honeycomb Installed



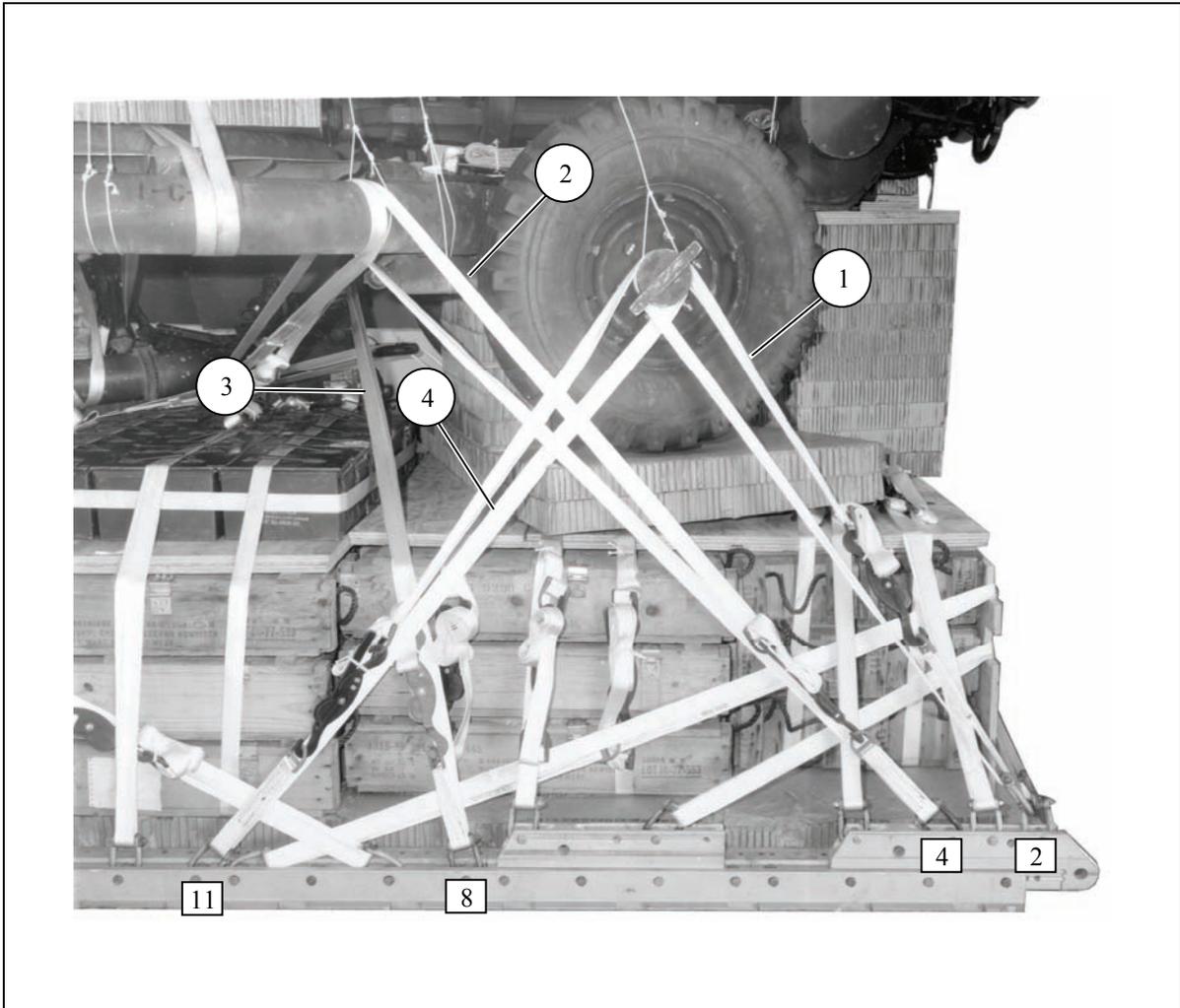
- ② Bend a 24- by 96-inch piece of honeycomb over the rear howitzer cylinders. Tape the sides of the honeycomb and tie the honeycomb in place with a length of type III nylon cord tied to the wheel hubs.
- ③ Place a 24- by 96-inch piece of honeycomb lengthwise over the front howitzer. Tape the sides of the honeycomb and tie it to convenient points on the howitzer and type III nylon cord.
- ④ Bend a 36- by 96-inch piece of honeycomb lengthwise over the gun tube and spade assembly of the front howitzer. Tape the sides of the honeycomb and tie it to the howitzer with type III nylon cord.
- ⑤ Tie two 96- by 36-inch pieces of honeycomb to the left side of the load, covering the gun tube of the rear howitzer and the trail of the front howitzer. Tape the sides of the honeycomb and tie the honeycomb to the howitzer trails with type III nylon cord.
- ⑥ Bend a piece of honeycomb cut to fit over the sight assembly of the front howitzer. Tape the sides of the honeycomb and tie it in place with type III nylon cord.

Figure 5-12. Howitzers Lashed Together and Protective Honeycomb Installed (Continued)

LASHING HOWITZERS

5-8. Lash the howitzers to the right side of the platform as shown in Figure 5-13. Lash the howitzers to the left side of the platform as shown in Figure 5-14.

Note. Do not tighten the lashings until all are installed. Tighten the lashings in pairs on opposite sides.



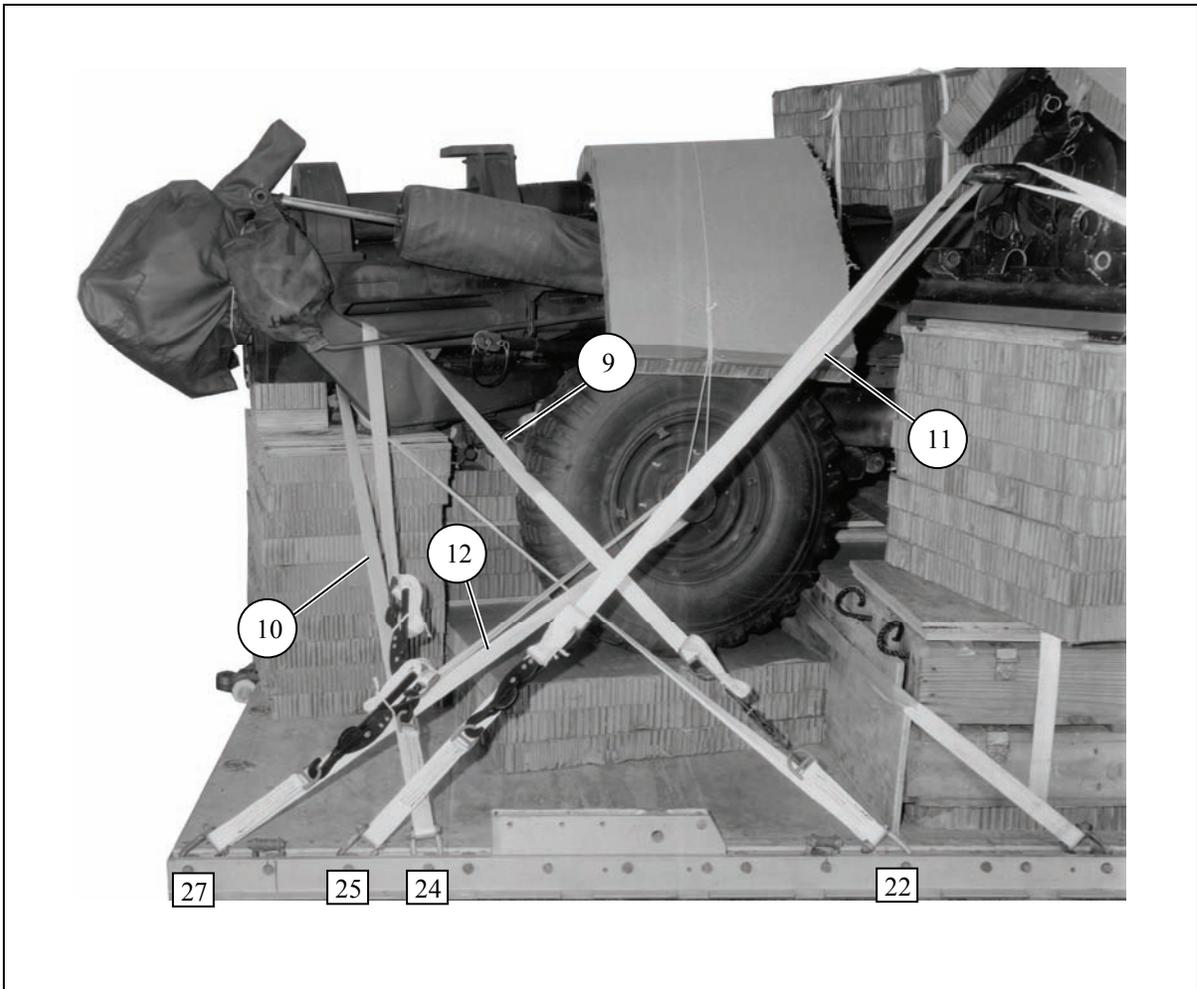
<i>Lashing Number</i>	<i>Tiedown Clevis Number</i>	<i>Instructions</i>
1	2	Pass lashing:
2	4	Around wheel hub.
3	8	Around trail, near side.
4	11	Through medium clevis installed under front howitzer, far side.
		Around wheel hub.

Figure 5-13. Lashings on Right Side Installed

<i>Lashing Number</i>	<i>Tiedown Clevis Number</i>	<i>Instructions</i>
5	13	Pass lashing: Around trail of rear howitzer, near side, and through cutout of endboard.
6	15	Through lunette of front howitzer.
7	17	Around trail on far side of front howitzer.
*8	19	Through lunette on rear howitzer.

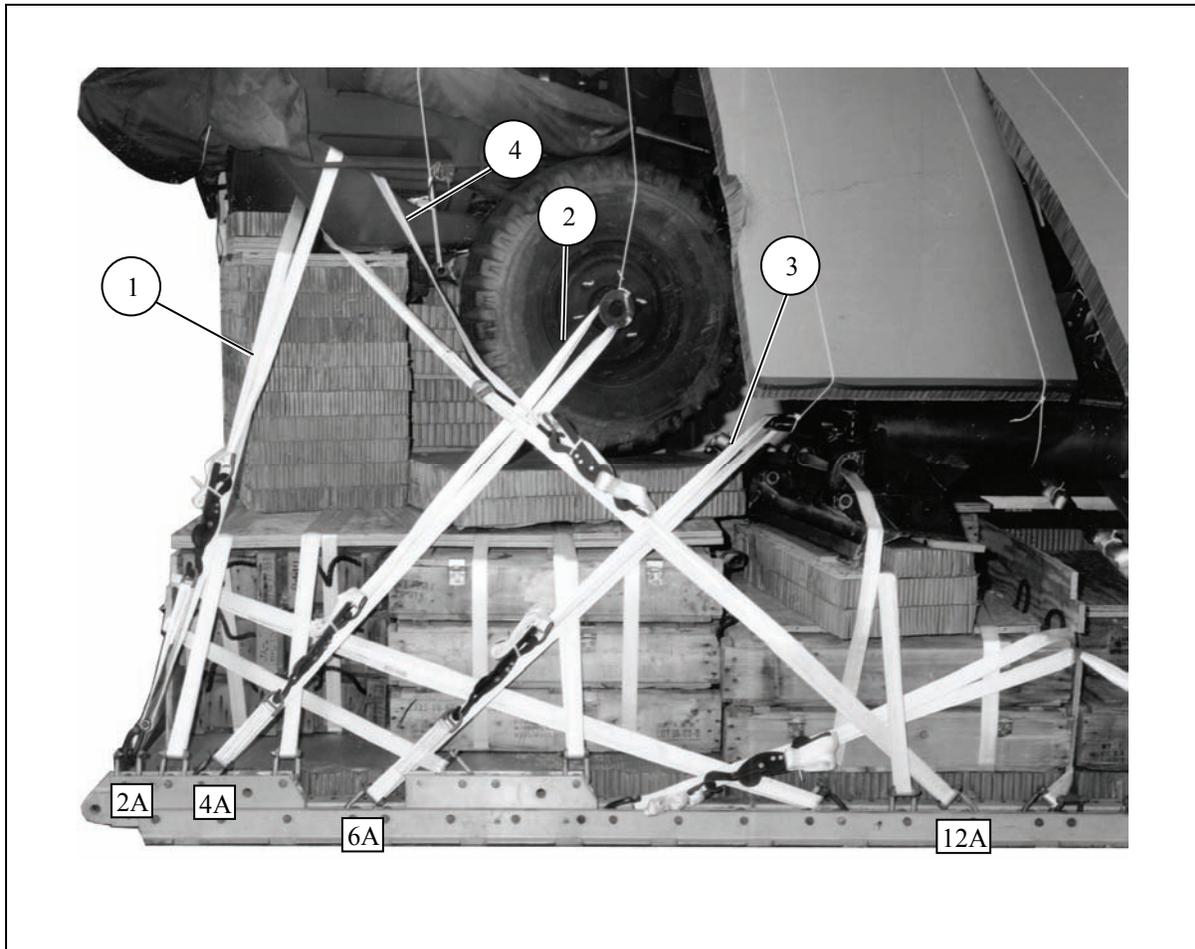
*** 30-foot lashing.**

Figure 5-13. Lashings on Right Side Installed (Continued)



Lashing Number	Tiedown Clevis Number	Instructions
9	22	Pass lashing: Around saddle of rear howitzer.
10	24	Around saddle of rear howitzer.
11	25	Through lunette, front howitzer.
12	27	Around wheel hub, rear howitzer.

Figure 5-13. Lashings on Right Side Installed (Continued)



<i>Lashing Number</i>	<i>Tiedown Clevis Number</i>	<i>Instructions</i>
1	2A	Pass lashing: Around saddle of front howitzer.
2	4A	Around wheel hub of front howitzer.
3	6A	Through lunette of rear howitzer
*4	12A	Around saddle of front howitzer

*** 30-foot lashing.**

Figure 5-14. Lashings on Left Side Installed

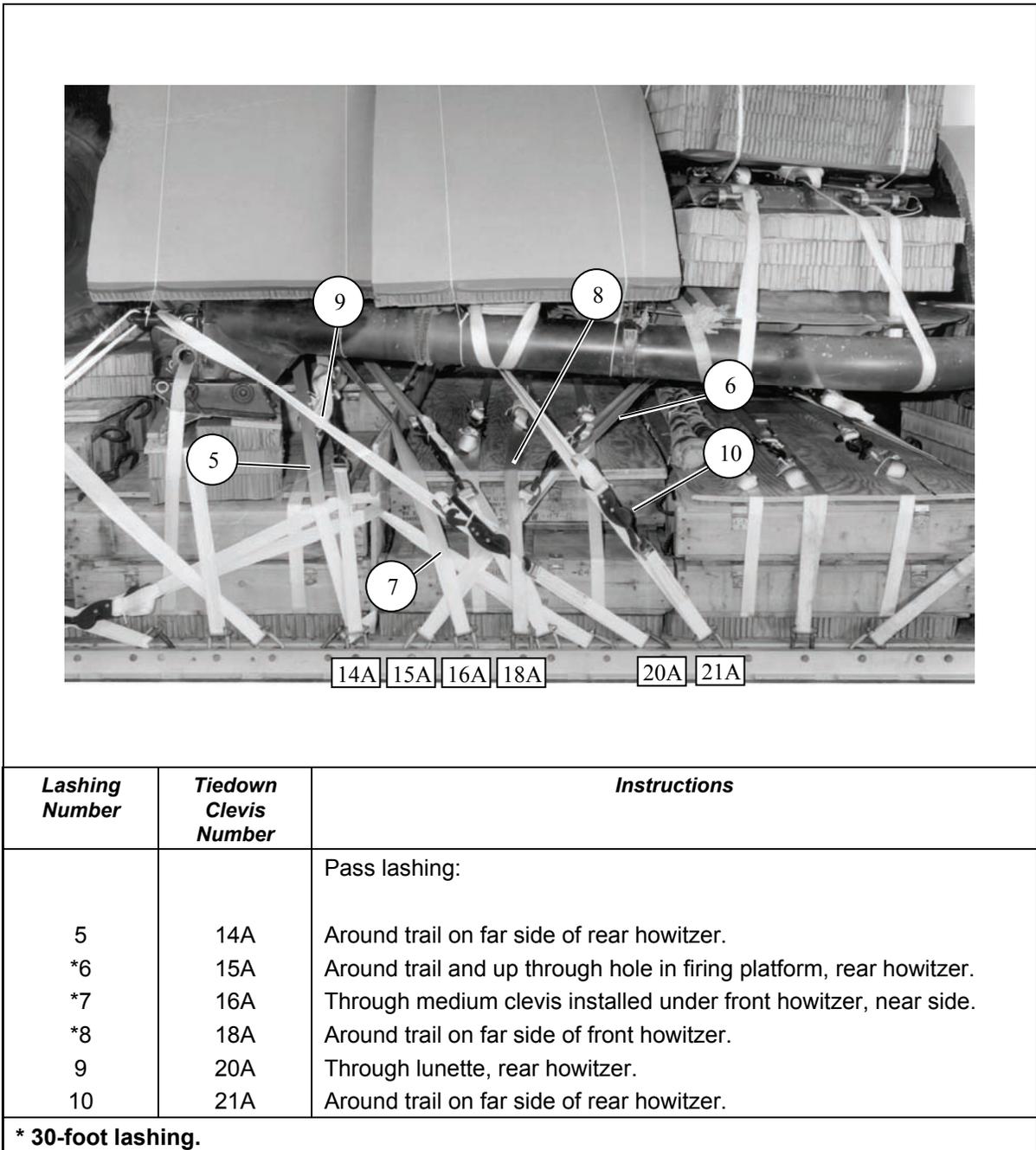
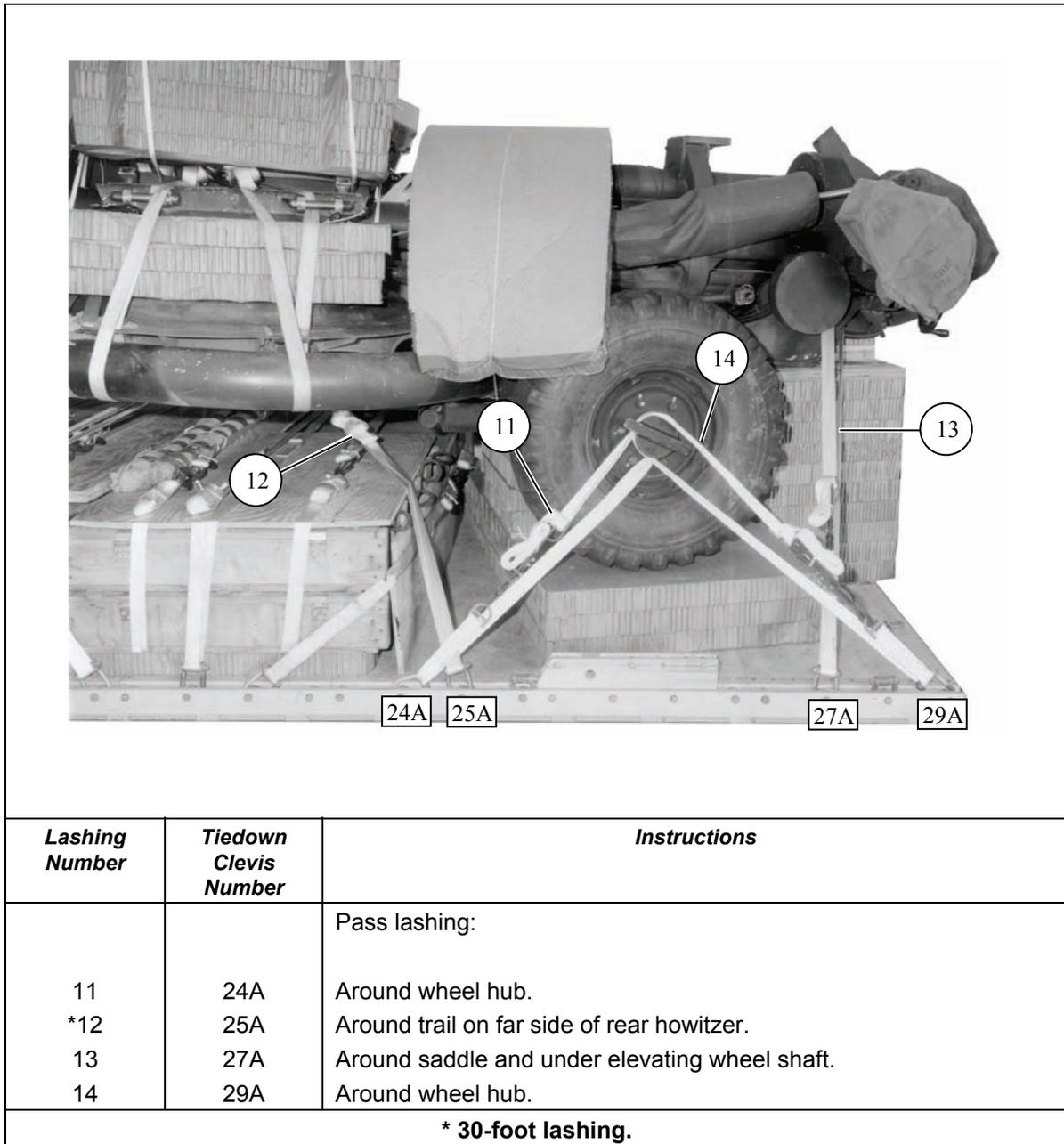


Figure 5-14. Lashings on Left Side Installed (Continued)

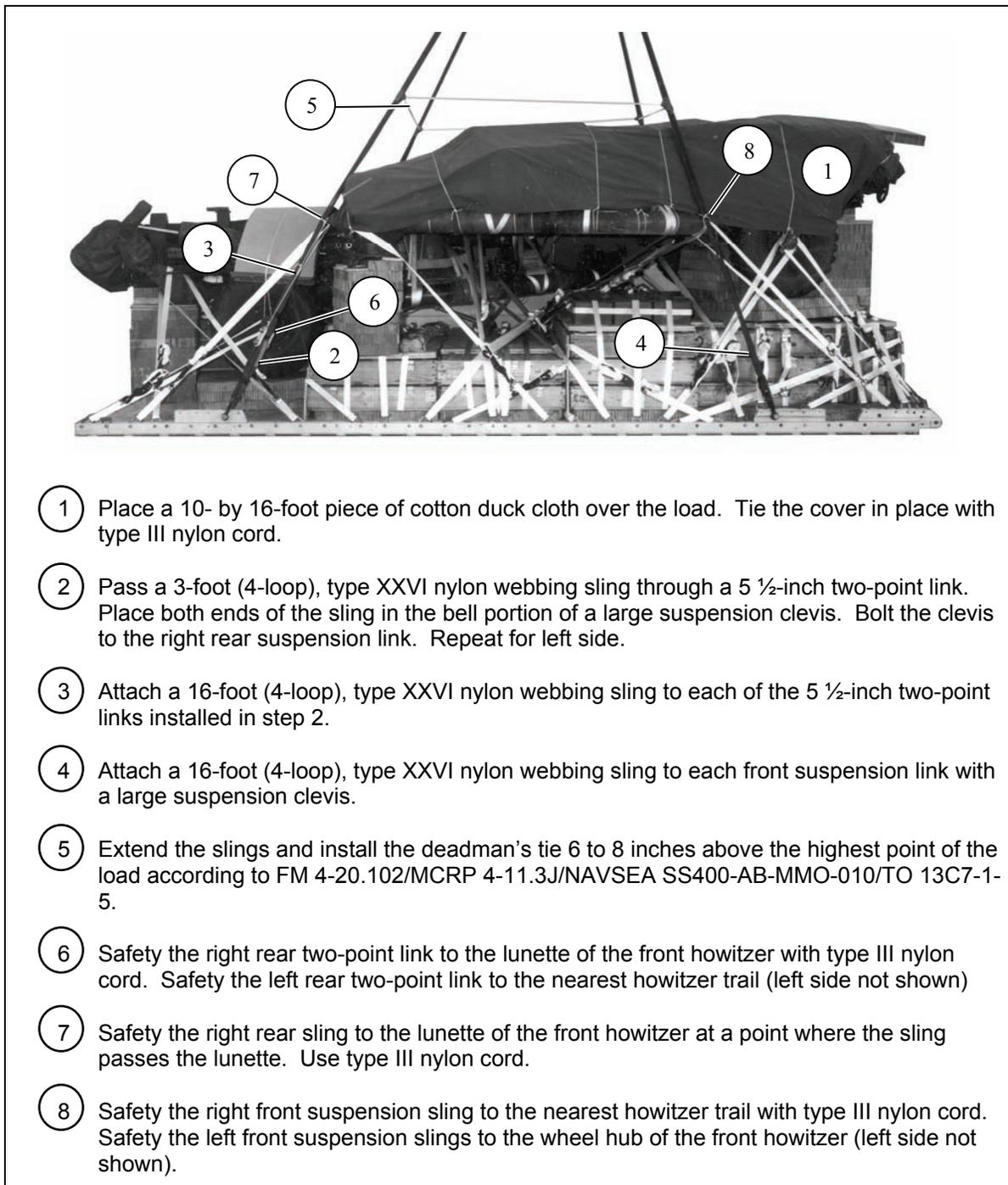


<i>Lashing Number</i>	<i>Tiedown Clevis Number</i>	<i>Instructions</i>
11	24A	Pass lashing: Around wheel hub.
*12	25A	Around trail on far side of rear howitzer.
13	27A	Around saddle and under elevating wheel shaft.
14	29A	Around wheel hub.
* 30-foot lashing.		

Figure 5-14. Lashings on Left Side Installed (Continued)

INSTALLING SUSPENSION SLINGS AND COVERING LOAD

5-9. Install the suspension slings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 5-15. Cover the load as shown in Figure 5-15.



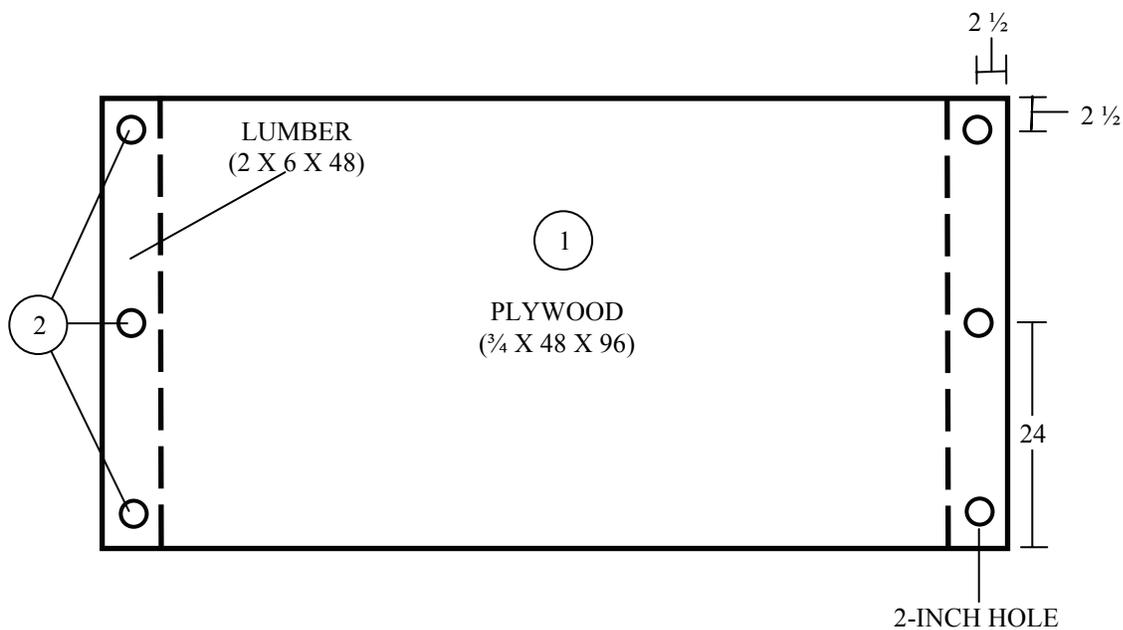
- 1 Place a 10- by 16-foot piece of cotton duck cloth over the load. Tie the cover in place with type III nylon cord.
- 2 Pass a 3-foot (4-loop), type XXVI nylon webbing sling through a 5 ½-inch two-point link. Place both ends of the sling in the bell portion of a large suspension clevis. Bolt the clevis to the right rear suspension link. Repeat for left side.
- 3 Attach a 16-foot (4-loop), type XXVI nylon webbing sling to each of the 5 ½-inch two-point links installed in step 2.
- 4 Attach a 16-foot (4-loop), type XXVI nylon webbing sling to each front suspension link with a large suspension clevis.
- 5 Extend the slings and install the deadman's tie 6 to 8 inches above the highest point of the load according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
- 6 Safety the right rear two-point link to the lunette of the front howitzer with type III nylon cord. Safety the left rear two-point link to the nearest howitzer trail (left side not shown)
- 7 Safety the right rear sling to the lunette of the front howitzer at a point where the sling passes the lunette. Use type III nylon cord.
- 8 Safety the right front suspension sling to the nearest howitzer trail with type III nylon cord. Safety the left front suspension slings to the wheel hub of the front howitzer (left side not shown).

Figure 5-15. Suspension Slings and Load Cover Installed

PREPARING STOWAGE PLATFORM AND STOWING CARGO PARACHUTES

5-10. Prepare the parachute stowage platform as shown in Figure 5-16. Prepare the left parachute stowage platform support as shown in Figure 5-17. Prepare the right parachute stowage platform support as shown in Figure 5-18. Assemble the stowage platform as shown in Figure 5-19. Stow five G-11 cargo parachutes according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 5-20.

- Notes.** 1. This drawing is not drawn to scale.
2. All dimensions are given in inches.



- ① Prepare the parachute stowage platform as shown.
② Tie the lumber to the plywood through each of the holes with a length of type III nylon cord.

Figure 5-16. Parachute Stowage Platform Prepared

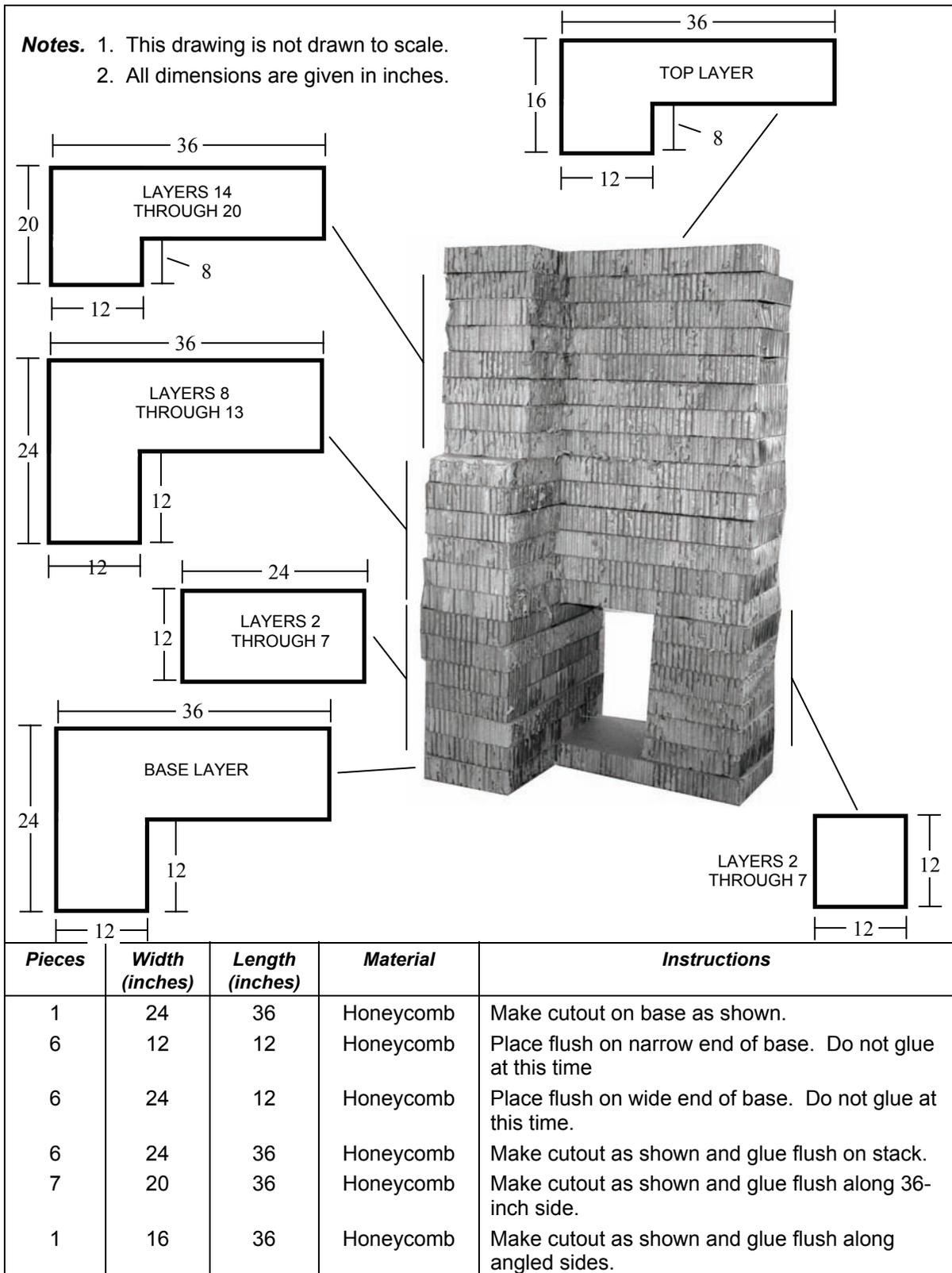


Figure 5-17. Left Parachute Platform Support Constructed

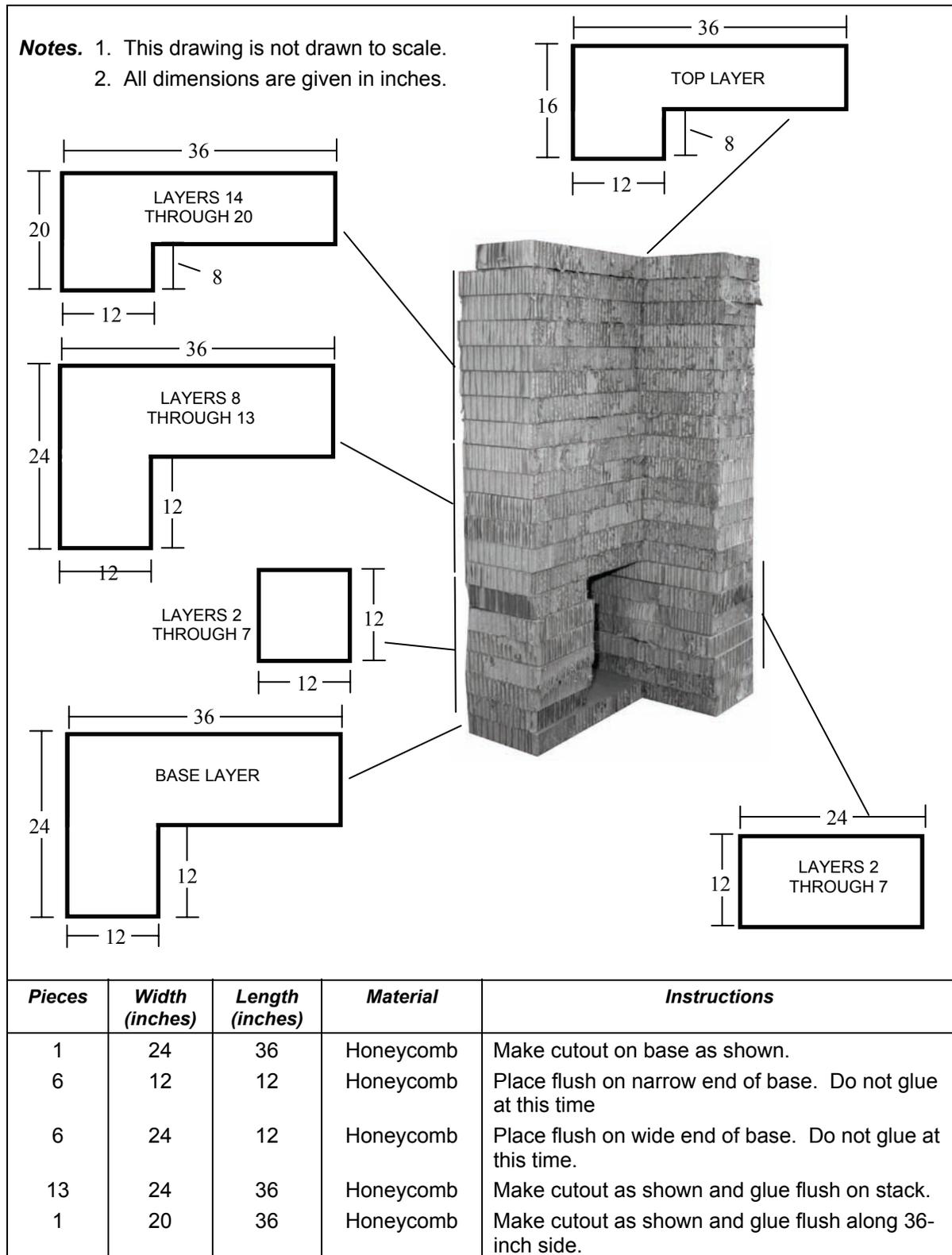
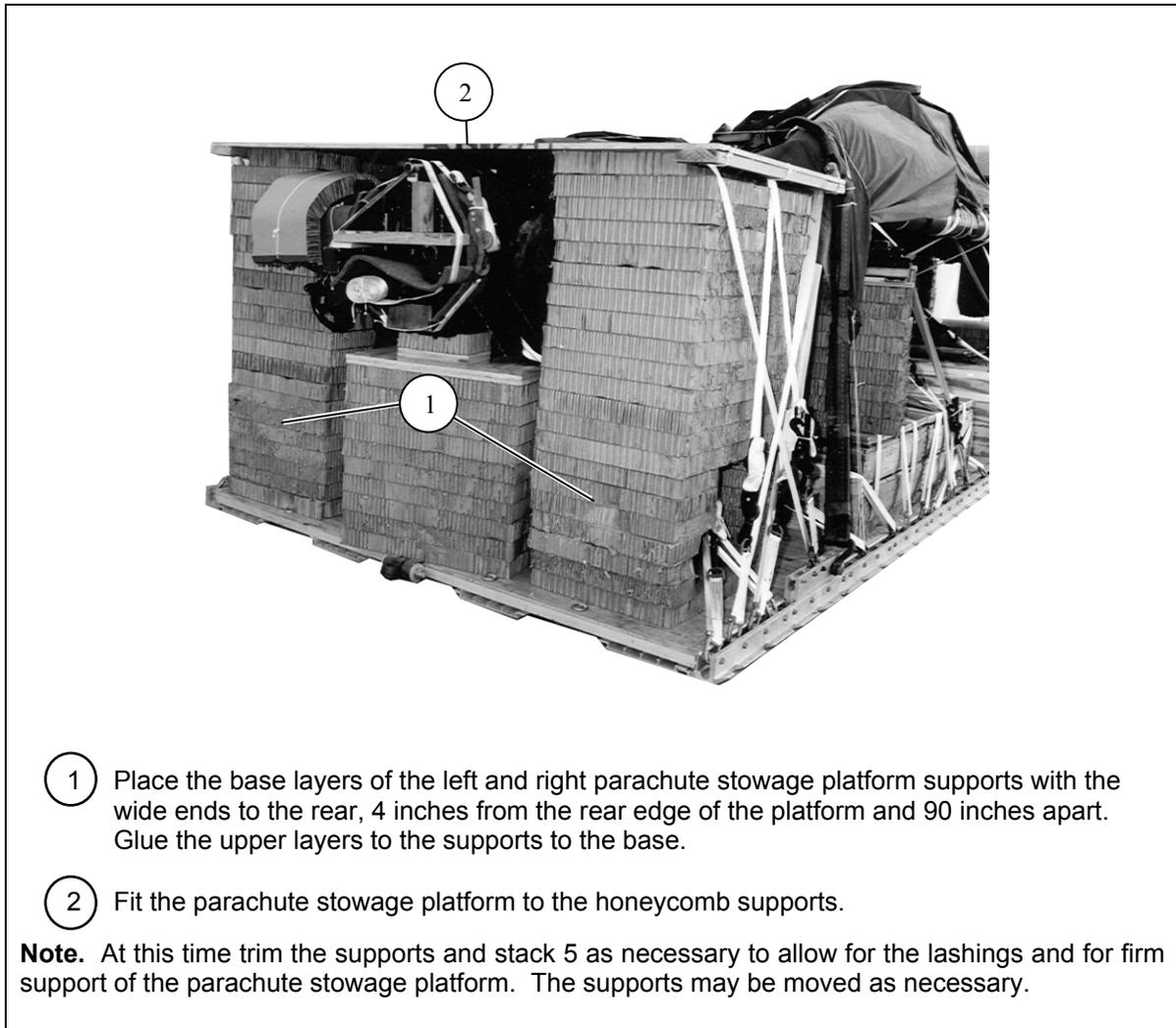


Figure 5-18. Right Parachute Platform Support Constructed



- ① Place the base layers of the left and right parachute stowage platform supports with the wide ends to the rear, 4 inches from the rear edge of the platform and 90 inches apart. Glue the upper layers to the supports to the base.
- ② Fit the parachute stowage platform to the honeycomb supports.

Note. At this time trim the supports and stack 5 as necessary to allow for the lashings and for firm support of the parachute stowage platform. The supports may be moved as necessary.

Figure 5-19. Parachute Stowage Platform Assembled and Placed

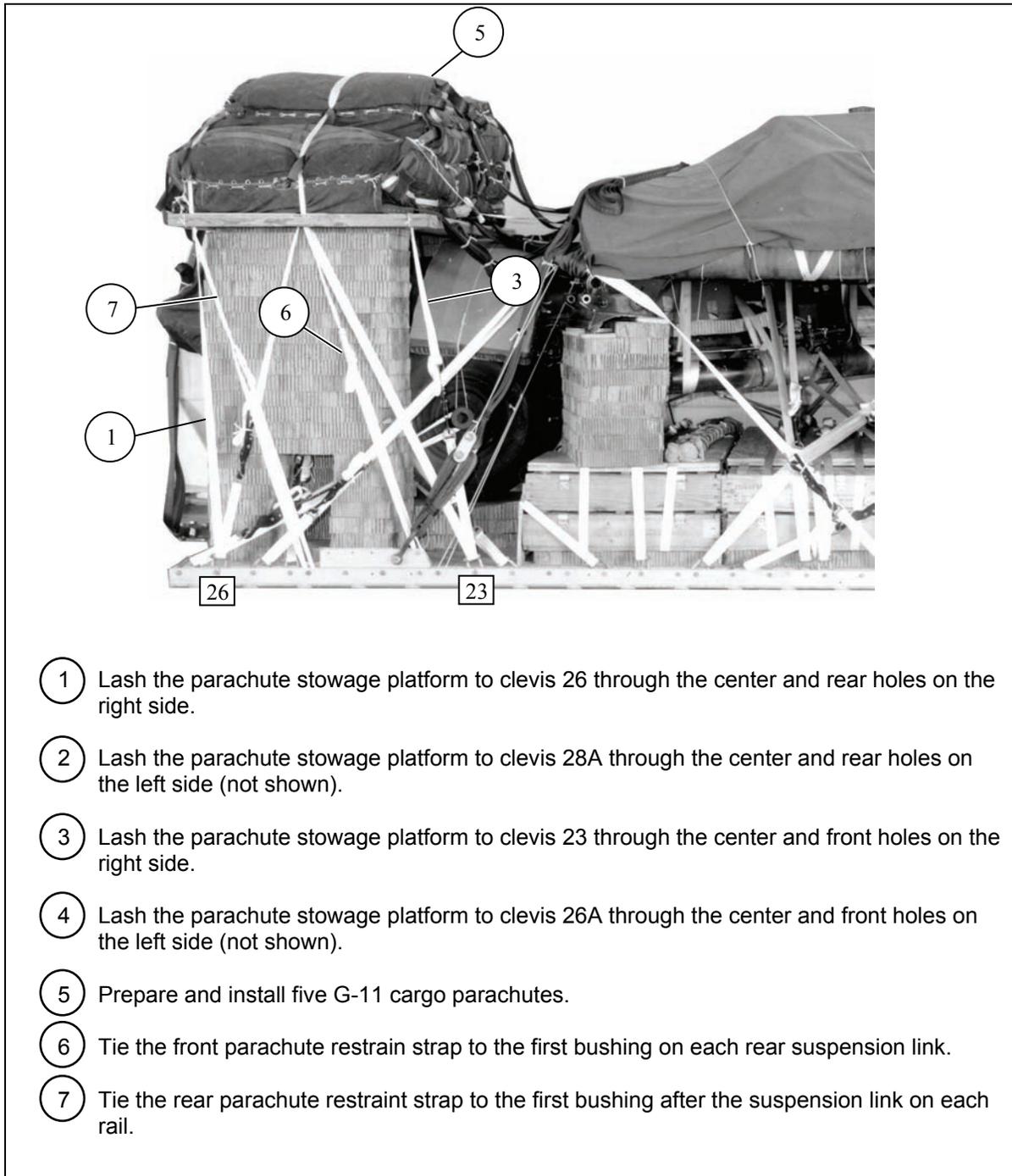
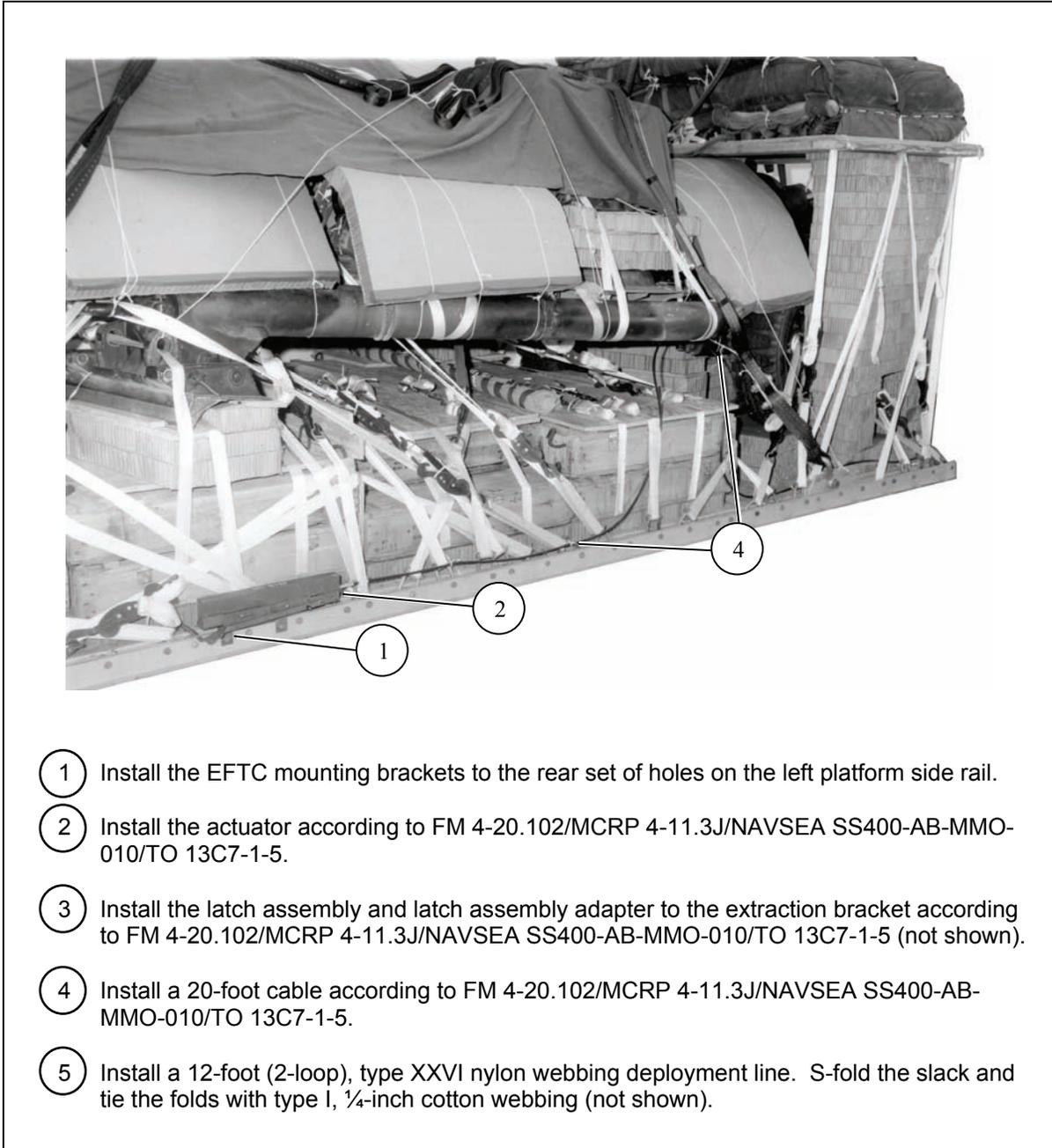


Figure 5-20. Cargo Parachutes Stowed

INSTALLING EXTRACTION SYSTEM

5-11. Install the EFTC extraction system on the load according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 5-21. If applicable install the EPJS according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

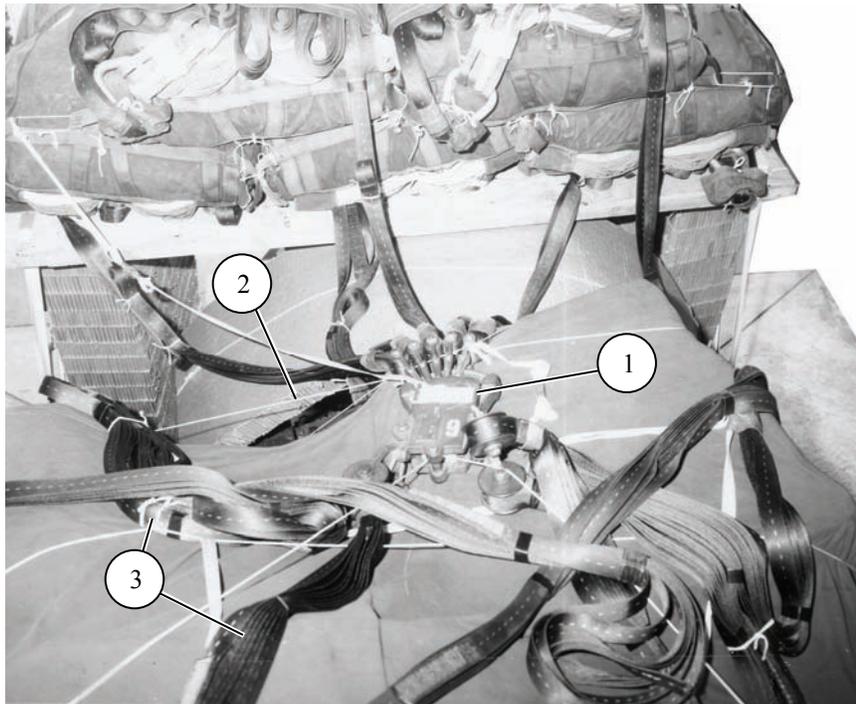


- ① Install the EFTC mounting brackets to the rear set of holes on the left platform side rail.
- ② Install the actuator according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
- ③ Install the latch assembly and latch assembly adapter to the extraction bracket according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 (not shown).
- ④ Install a 20-foot cable according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
- ⑤ Install a 12-foot (2-loop), type XXVI nylon webbing deployment line. S-fold the slack and tie the folds with type I, 1/4-inch cotton webbing (not shown).

Figure 5-21. EFTC Installed

INSTALLING RELEASE SYSTEM

5-12. Prepare and install an M-2 cargo parachute release according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 5-22.



- ① Center the M-2 release on the honeycomb in front of the parachutes.
- ② Secure the release to convenient points on the load with type III nylon cord.
- ③ S-fold and tie slack in the suspension slings with type I, 1/4-inch cotton webbing.

Figure 5-22. M-2 Release Installed

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

5-13. Install provisions for emergency restraint on the front of the platform according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

PLACING EXTRACTION PARACHUTES

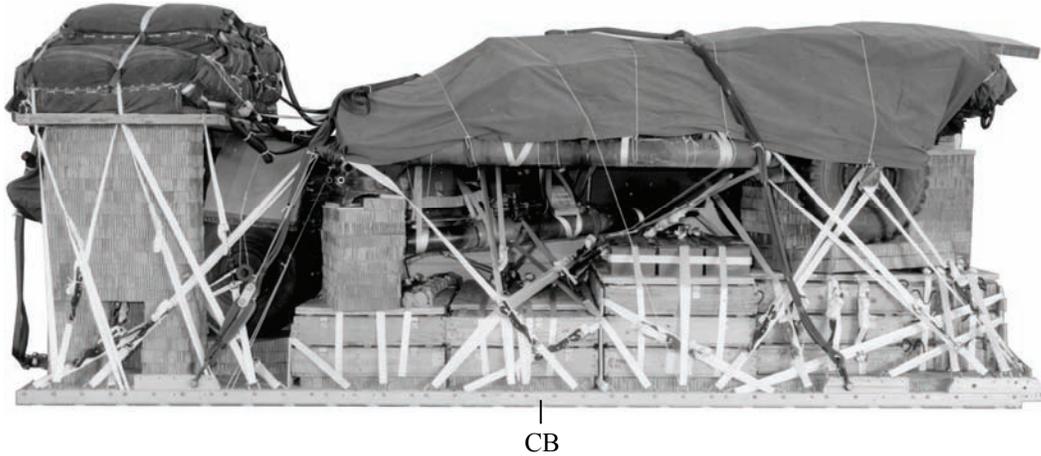
5-14. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Rig the extraction line in an extraction line bag according to TM 10-1670-286-20/TO13C5-2-41. Place the extraction parachute and extraction line on the load for installation in the aircraft.

MARK RIGGED LOAD

5-15. Marked the rigged load according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 5-23. Complete Shipper's Declaration for Dangerous Goods according to AFMAN 24-204(I)/TM 38-250. If the load varies from the one shown, the weight, height, CB, tip-off curve, and parachute requirements must be recomputed.

CAUTION

Make the final rigger inspection required by FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Weight: Load shown	22,660 pounds
Maximum load allowed	25,000 pounds
Height	98 inches
Width.....	108 inches
Overall Length	274 inches
Overhang: Front	17 inches
Rear (EFTC)	18 inches
Rear (EPJS).....	30 inches
Center of Balance (from front edge of platform).....	110 inches

Figure 5-23. Two M119 Howitzers Rigged for Low-Velocity Airdrop on a Type V Platform

EQUIPMENT REQUIRED

5-16. Use the equipment listed in Table 5-1 to rig the load shown.

Table 5-1. Equipment Required for Rigging Two M119 Howitzers for Low-Velocity Airdrop on a Type V Platform

<i>National Stock Number</i>	<i>Item</i>	<i>Quantity</i>
8040-00-273-8713	Adhesive, paste, 1-gallon	As required
	Clevis, suspension:	5
4030-00-678-8562	3/4-inch (medium) emergency restraint	2
4030-00-090-5354	1-inch (large)	5
8305-00-184-2034	Cloth, cotton duck, 60-inch	As required
4020-00-246-0688	Cord, nylon, type III	As required
	Coupling, airdrop, extraction force transfer with	1
1670-00-434-5787	20-foot cable	
1670-00-360-0328	Cover, clevis, large	3
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
8305-00-191-1101	Felt, 1/2-inch	As required
1670-01-183-2678	Leaf, extraction line	2
1670-01-064-4452	Line, drogue, 60-foot (1-loop) type XXVI nylon webbing	1
	Line, extraction, type XXVI nylon webbing:	
1670-01-062-6313	60-foot (3-loop)	1
	Or	
1670-01-107-7651	140-foot (3-loop)	1
	Link assembly, two-point:	
1670-01-493-6418	3 3/4-inch	21
1670-01-493-6420	5 1/2 -inch	2
	Lumber:	
5510-00-220-6146	2- by 4-inch	As required
5510-00-220-6196	2- by 6-inch	As required
5510-00-220-6246	2- by 8-inch	As required
	Nail, steel wire, common:	
5315-00-010-4659	8d	As required
5315-00-164-5121	20d	As required
1670-00-753-3928	Pad, energy-dissipating, honeycomb	31 sheets
	Parachute:	
1670-01-016-7841	Cargo, G-11	5
1670-00-040-8135	Cargo, extraction, 28-foot	1
1670-01-063-3715	Drogue, 15-foot	1

Table 5-1. Equipment Required for Rigging Two M119 Howitzers for Low-Velocity Airdrop on a Type V Platform (Continued)

<i>National Stock Number</i>	<i>Item</i>	<i>Quantity</i>
	Platform, airdrop, type V, 20-foot	
1670-01-353-8425	Bracket assembly, coupling	1
1670-01-353-8424	Bracket assembly, extraction	1
1670-01-162-2372	Clevis assembly	58
1670-01-247-2389	Suspension link	4
	Tandem link	2
	Plywood,	
5530-00-129-7777	½-inch	As required
5530-00-128-4981	¾-inch	As required
1670-01-097-8817	Release, cargo parachute, M-2	1
	Sling, cargo airdrop:	
	For deployment line:	
1670-01-062-6303	12-foot (2-loop), type XXVI nylon webbing	1
	For lifting:	
1670-01-063-7760	11-foot (2-loop), type XXVI nylon webbing	3
	For riser extension:	
1670-01-062-6302	20-foot (2-loop), type XXVI nylon webbing	20
	For suspension:	
1670-01-062-6301	3-foot (2-loop), type XXVI nylon webbing	2
1670-01-063-7761	16-foot (2-loop), type XXVI nylon webbing	4
1670-00-040-8219	Strap, parachute release, multicut	2
7515-00-266-5016	Tape, adhesive, 2-in	As required
1670-00-937-0271	Tie-down assembly, 15-ft	100
1670-01-483-8259	Tow release mechanism (H-block for C-17)	1
	Webbing:	
8305-00-268-2411	Cotton, 1/4-inch, type I	As required
	Nylon:	
8305-00-082-5752	Tubular, 1/2-inch	As required
8305-00-263-3591	Type VIII webbing	As required

SECTION II-RIGGING HOWITZERS WITH SIXTY-THREE BOXES OF AMMUNITION

DESCRIPTION OF LOAD

5-17. Two M119, 105-millimeter howitzers are rigged on a 20-foot type V platform with an accompanying load of 63 boxes of ammunition and 21 cans of fuzes (when required). This load requires four G-11 cargo parachutes.

PREPARING PLATFORM

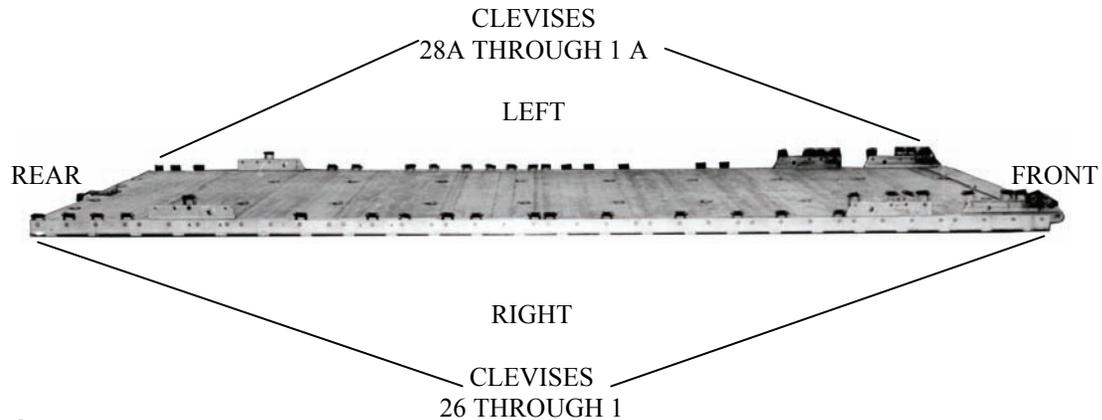
5-18. Prepare a 20-foot, type V airdrop platform as described below.

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

Note. If the platform must be assembled, install the suspension bracket assemblies when assembling the platform. See Figure 5-24 for the location of the suspension bracket assemblies.

- **Installing suspension links.** Install a suspension link on the of each rail according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and as shown in Figure 5-24
- **Installing tandem links.** Install a tandem link on the front of each rail according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and as shown in Figure 5-24.
- **Installing and numbering clevises.** Bolt and number 54 clevis assemblies according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and as shown in Figure 5-24.

Note. Measurements given in the chapter are from the front edge of the platform, NOT from the front edge of the nose bumper.



Step:

1. Inspect, or assemble and inspect a 20-foot Type V platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.
2. Install a suspension bracket assembly to each platform side rail using holes 6, 7, and 8.
3. Install a tandem link to each platform side rail using holes 1, 2, and 3.
4. Install a suspension bracket assembly to each platform side rail using holes 33, 34, and 35.
5. Install a clevis on bushings 1 (tripled), 2, 3, and 4 of each of the front tandem links.
6. Install a clevis on bushings 1, 2, 3, and 4 of each of the right front suspension bracket assemblies.
7. Install a clevis on bushings 1 (tripled), 2, 3, and 4 of each of the left front suspension bracket assemblies.
8. Install a clevis on bushing 2 of each second suspension bracket assembly.
9. Starting at the front of right platform side rail, install clevises on the bushing bolted on holes 9, 11, 13, 15, 18, 20, 21, 23, 24, 26, 27, 30, 37, 38, 39, and 40.
10. Starting at the front of left platform side rail, install clevises on the bushing bolted on holes 11, 12, 16, 18, 19, 20, 21, 22, 23, 24, 26, 27, 30, 31, 38, 39, and 40.
11. Starting at the front of the platform number the clevises bolted to the right side from 1 through 26 and 1A through 28A on the left side.
12. Label the tie-down rings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

Figure 5-24. Platform Prepared

STOWING AND LASHING FIRST GROUP OF AMMUNITION BOXES

5-19. Stow 33 boxes of ammunition on the platform and lash the ammunition boxes together as shown in Figure 5-25. Lash the ammunition to platform as shown in Figure 5-26.

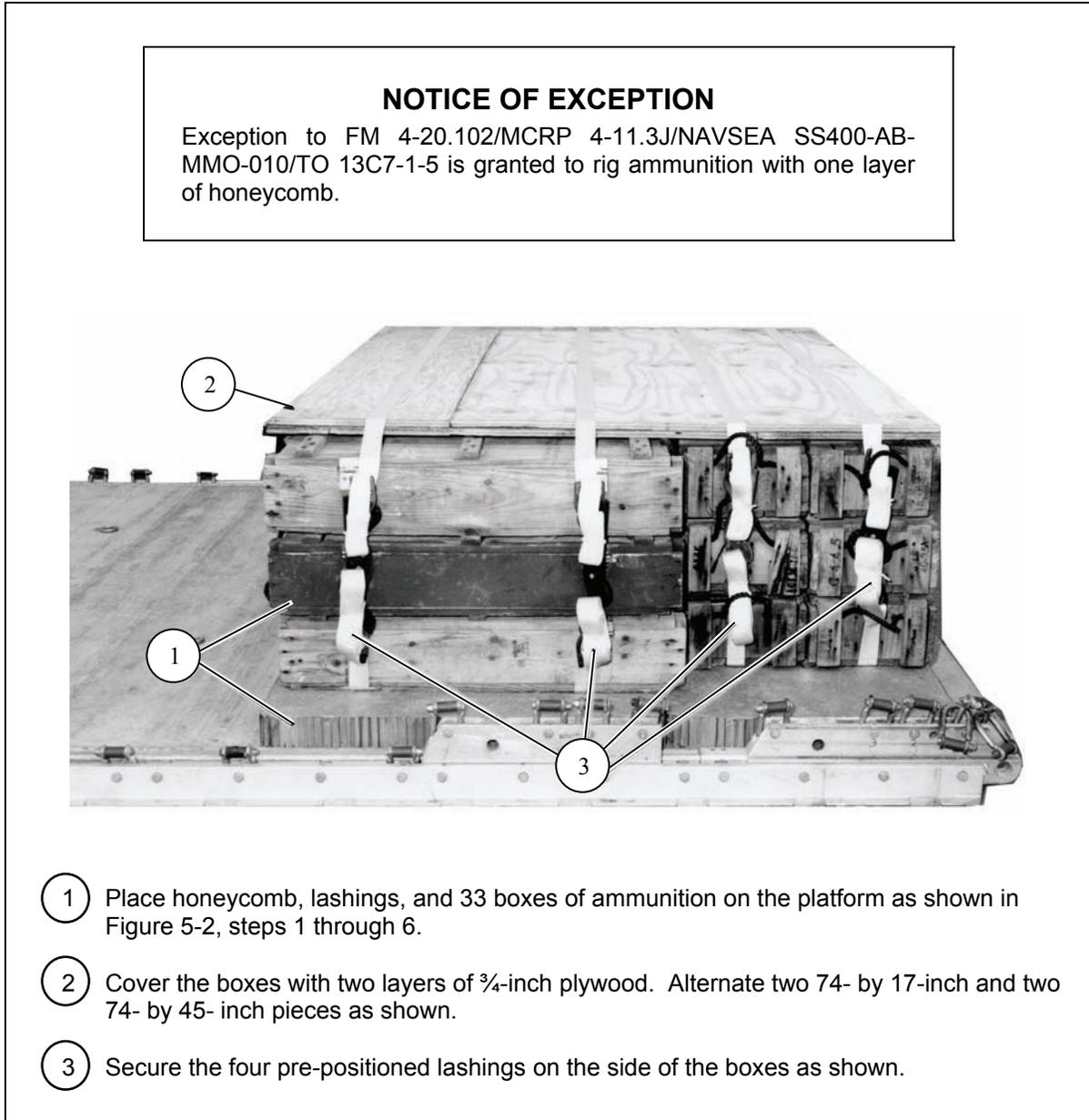


Figure 5-25. First Group of Ammunition Boxes Stowed

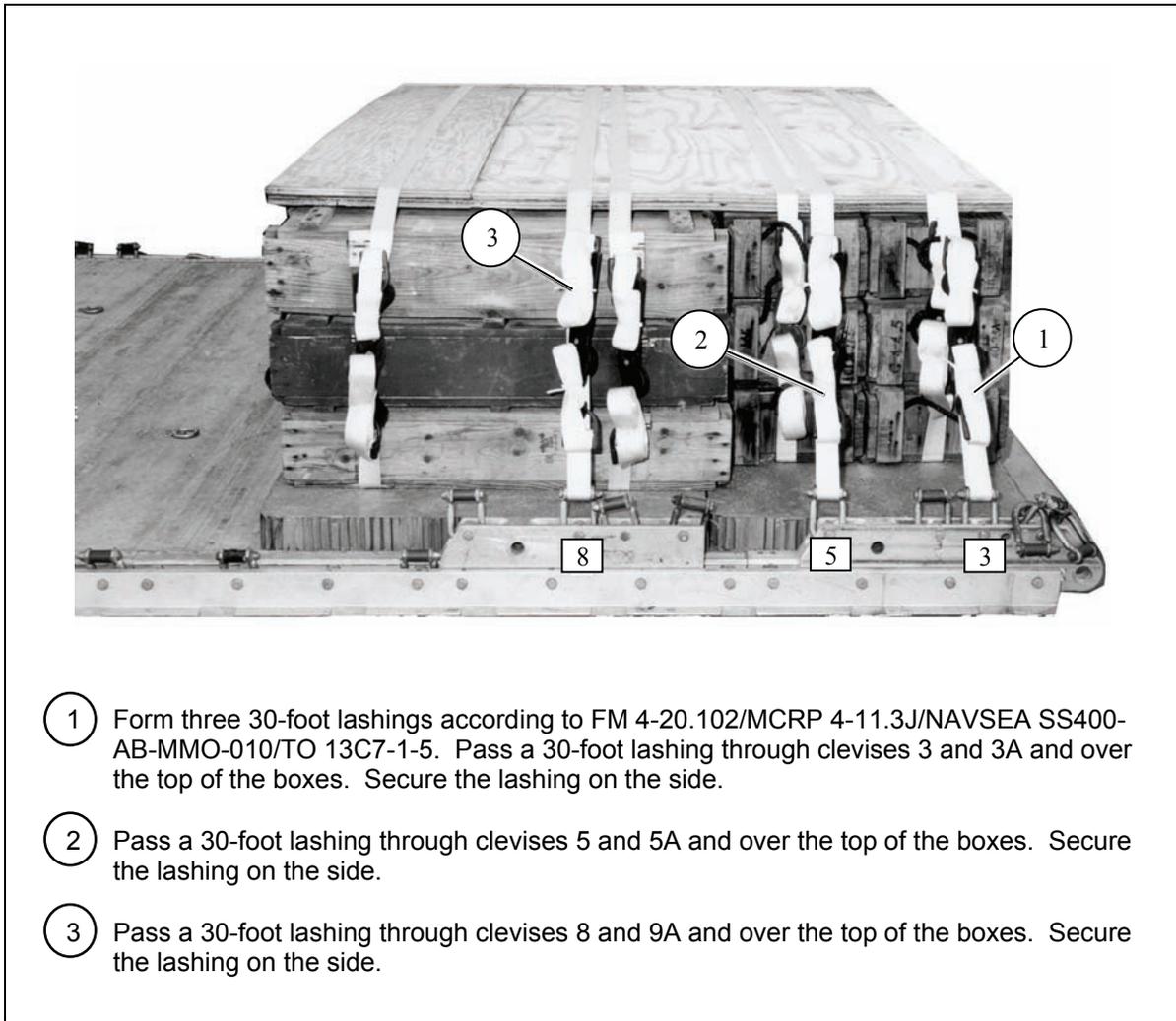
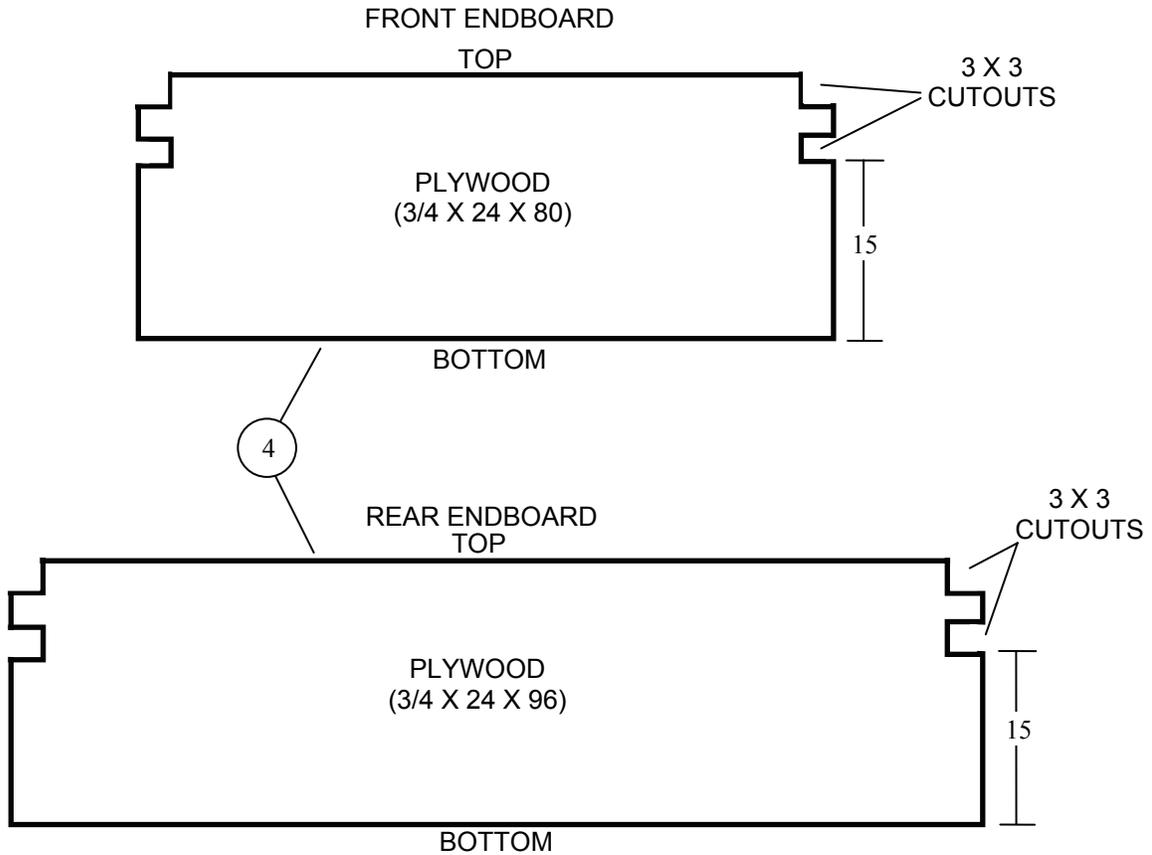


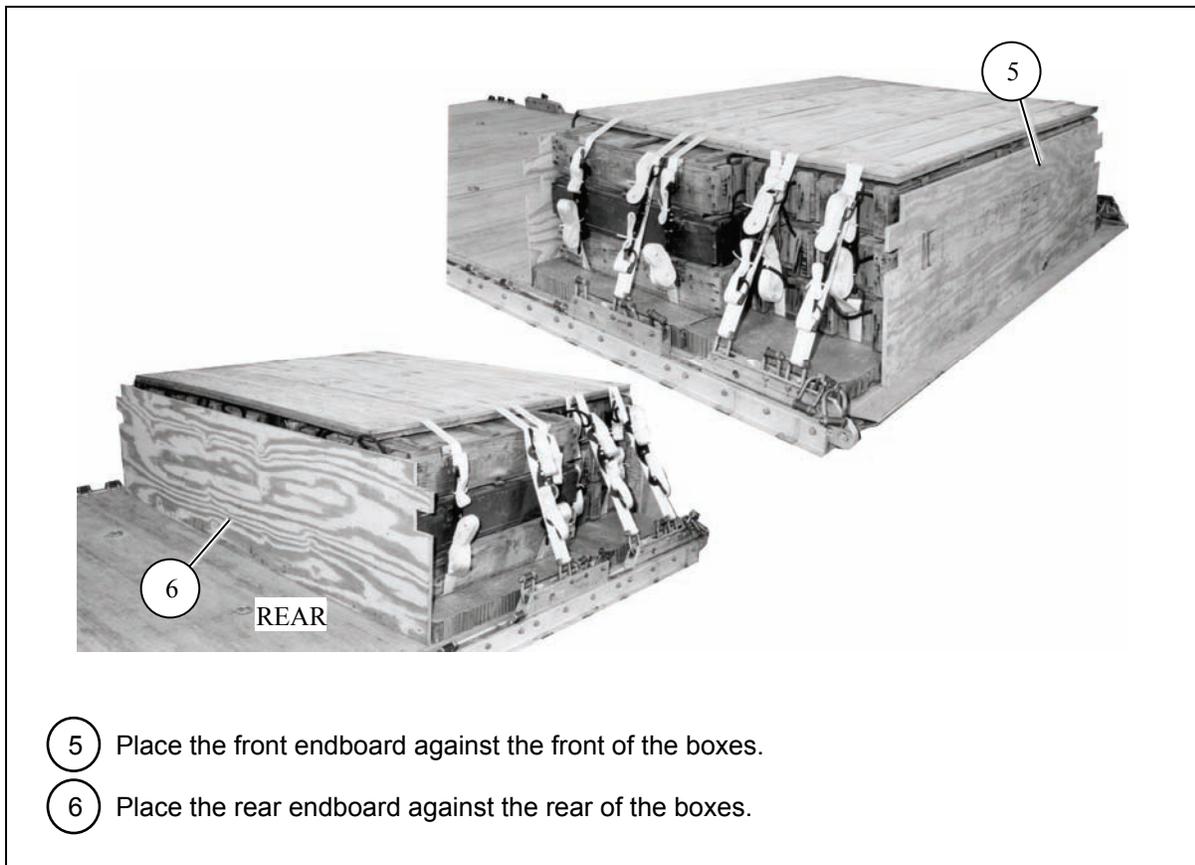
Figure 5-26. First Group of Ammunition Boxes Lashed to Platform

- Notes.** 1. This drawing is not drawn to scale.
2. All dimensions are given in inches.



- ④ Cut the front and rear endboards for the first group of ammunition from 3/4-inch plywood as shown.

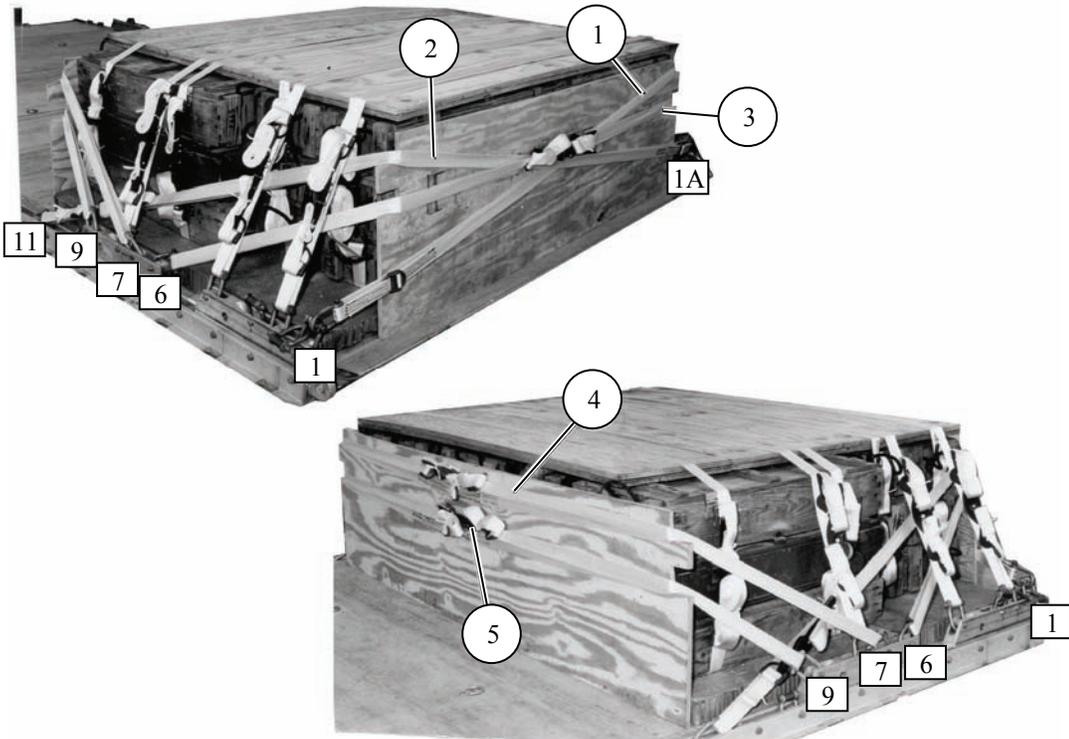
Figure 5-26. First Group of Ammunition Boxes Lashed to Platform (Continued)



- 5 Place the front endboard against the front of the boxes.
- 6 Place the rear endboard against the rear of the boxes.

Figure 5-26. First Group of Ammunition Boxes Lashed to Platform (Continued)

Note. Lashings used below are all 30-foot lashings. Form 30-foot lashings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.



Lashing Number	Tiedown Clevis Number	Instructions
1	1 and 11A	Pass lashing: Through clevis 1, through the left upper cutout in the front endboard, and through clevis 11A. Secure the lashing on the left side.
2	1A and 11	Through clevis 1A, through the right upper cutout in the front endboard, and through clevis 11. Secure the lashing on the right side.
3	6 and 6A	Through both clevises and through the lower cutouts in the front endboard. Secure the lashing in front.
4	7 and 8A	Through both clevises and through the upper cutouts in the rear endboard. Secure the lashing at the rear.
5	9 and 10A	Through both clevises and through the lower cutouts in the rear endboard. Secure the lashing at the rear.

Figure 5-26. First Group of Ammunition Boxes Lashed to Platform (Continued)

STOWING AND LASHING SECOND GROUP OF AMMUNITION BOXES

5-20. Stow 30 boxes of ammunition on the platform and lash the boxes together as shown in Figure 5-27. Lash the ammunition to the platform as shown in Figure 5-28.

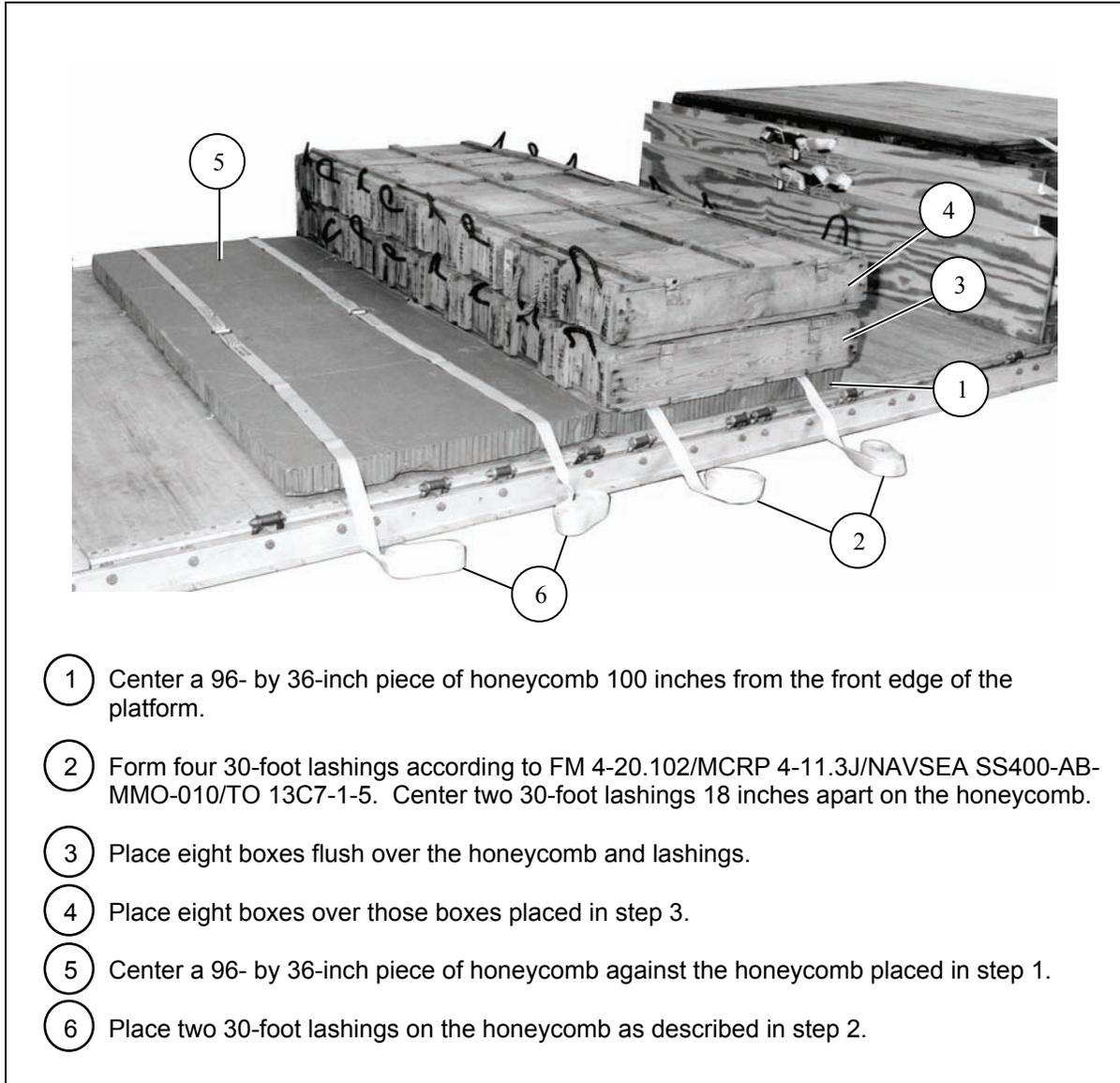
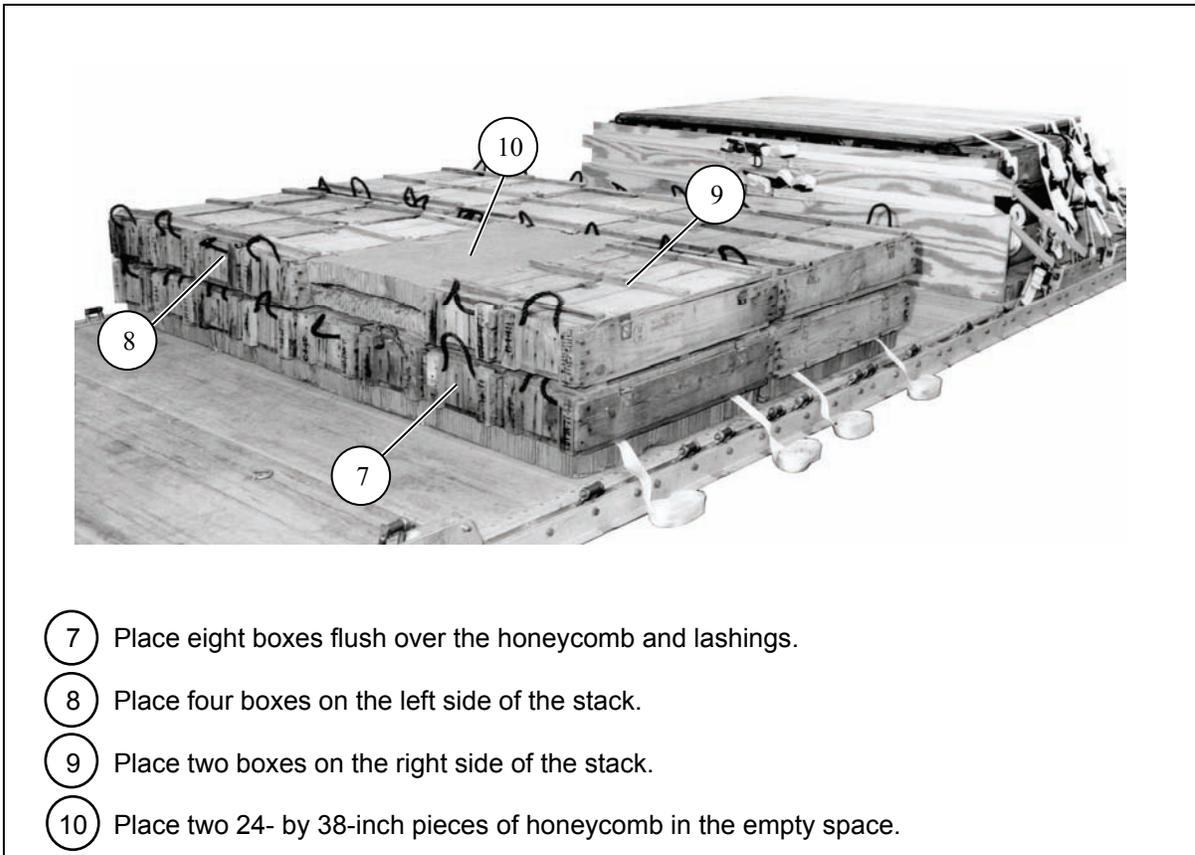


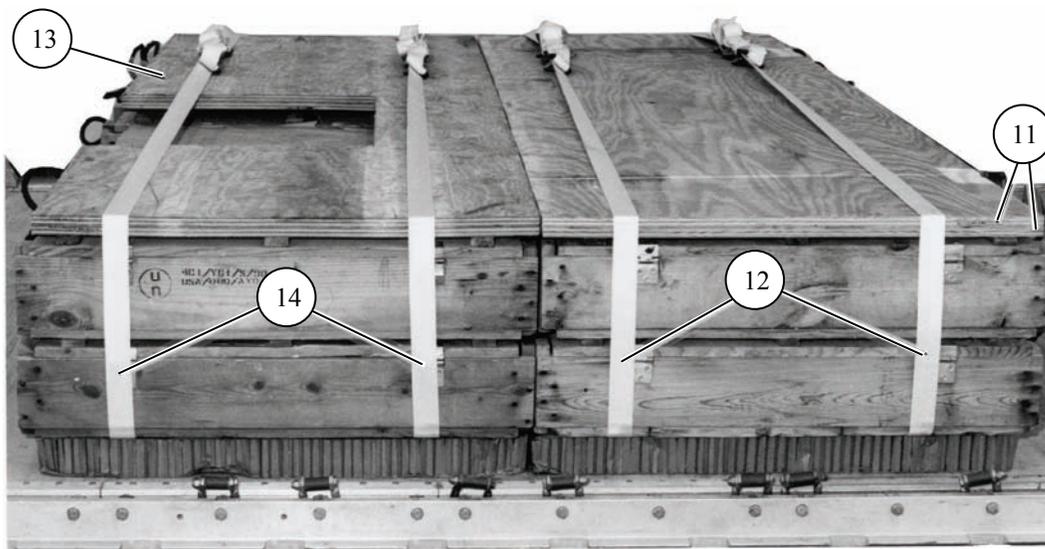
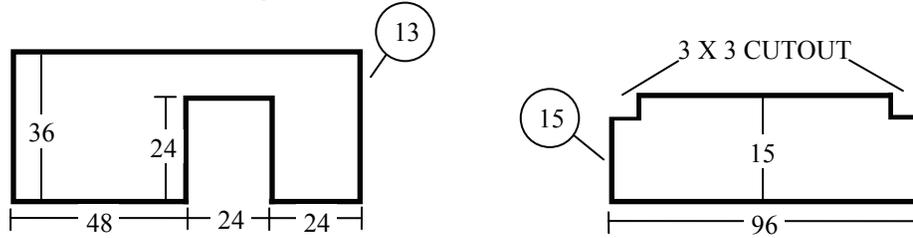
Figure 5-27. Second Group of Ammunition Boxes Stowed



- ⑦ Place eight boxes flush over the honeycomb and lashings.
- ⑧ Place four boxes on the left side of the stack.
- ⑨ Place two boxes on the right side of the stack.
- ⑩ Place two 24- by 38-inch pieces of honeycomb in the empty space.

Figure 5-27. Second Group of Ammunition Boxes Stowed (Continued)

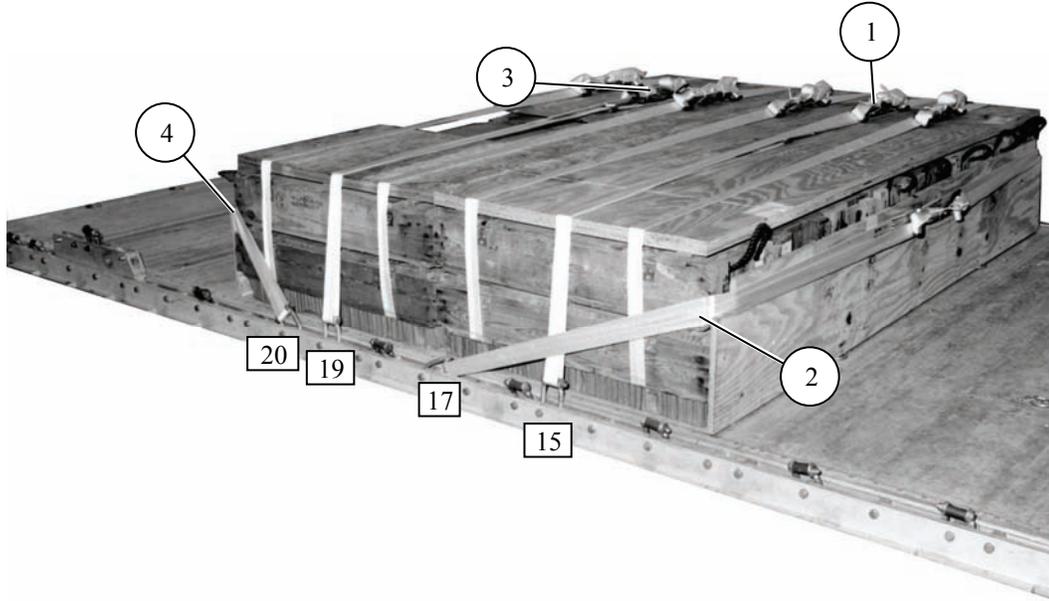
- Notes.** 1. This drawing is not drawn to scale.
 2. All dimensions are given in inches.



- 11 Place two $\frac{3}{4}$ - by 96- by 36-inch pieces of plywood flush over the first stack of boxes.
- 12 Secure the lashings placed in step 2 over the load.
- 13 Make the cutout as shown in two $\frac{3}{4}$ - by 96- by 36-inch pieces of plywood. Place the plywood over the last row of boxes with the cutout facing the rear.
- 14 Secure the lashings placed in step 6 on top of the boxes, as far to the left as possible.
- 15 Construct two endboards of $\frac{3}{4}$ -inch plywood as shown. Place one against each end of the ammunition stack.

Figure 5-27. Second Group of Ammunition Boxes Stowed (Continued)

Note. Lashings used below are all 30-foot lashings. Form 30-foot lashings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.



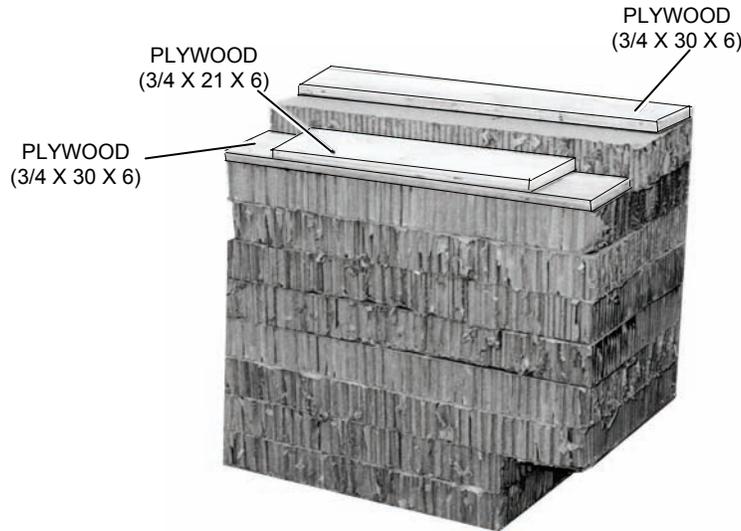
<i>Lashing Number</i>	<i>Tiedown Clevis Number</i>	<i>Instructions</i>
1	15 and 16A	Pass lashing: Through both clevises and over the top of the boxes. Secure the lashing on top as far to the left as possible.
2	17 and 19A	Through both clevises and through the cutouts on the front endboard. Secure the lashing in the front.
3	19 and 21A	Through both clevises and over the top of the boxes. Secure the lashing on top as far to the left as possible.
4	20 and 22A	Through both clevises and through the cutouts in the rear endboard. Secure the lashing in the rear.

Figure 5-28. Second Group of Ammunition Boxes Lashed to Platform

BUILDING AND PLACING HONEYCOMB STACKS

5-21. Build the honeycomb stacks 1 through 5 for the howitzer as shown in Figure 5-6. Build honeycomb stack 6 as shown in Figure 5-29. Place stacks as shown in Figure 5-30.

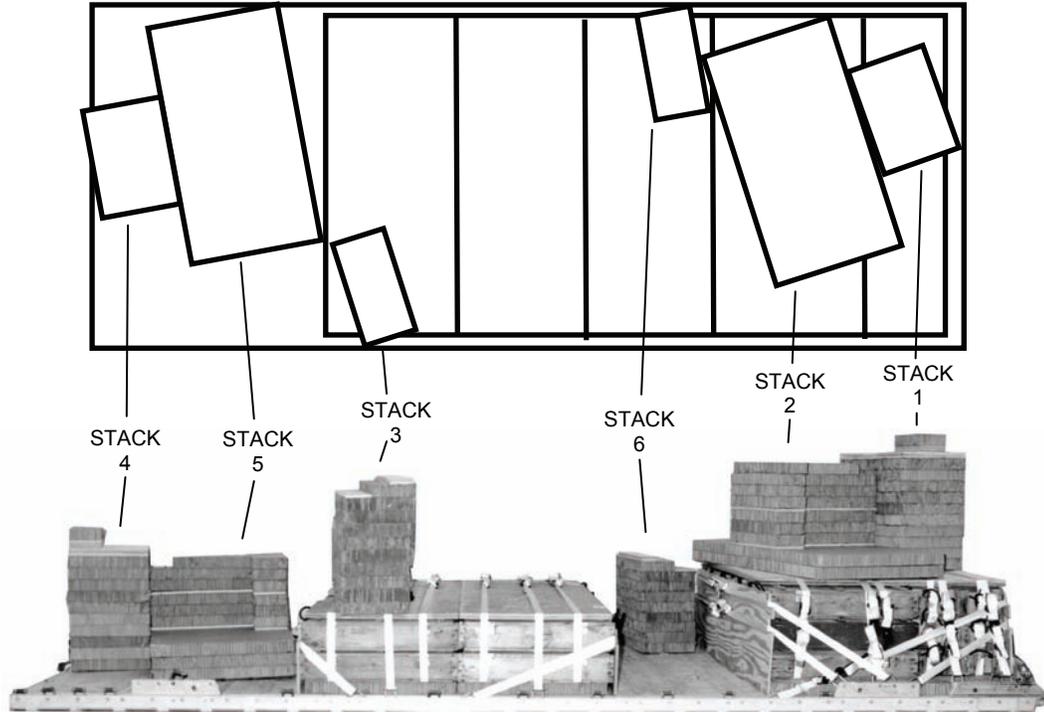
- Notes.** 1. All measurements are given in inches.
2. These drawings are not drawn to scale.



Stack Number	Pieces	Width (inches)	Length (inches)	Material	Instructions
6	2	24	16	Honeycomb	Glue to form a base
	6	30	16	Honeycomb	Glue flush with right edge of base.
	1	30	10	Honeycomb	Place honeycomb even with rear edge of base.
	1	30	6	3/4-inch plywood	Place plywood flush along rear edge of honeycomb placed above.
	1	30	6	3/4-inch plywood	Place plywood flush on front of base.
	1	21	6	3/4-inch plywood	Center plywood on the lower piece of plywood.

Figure 5-29. Honeycomb Stacks Prepared

- Notes.** 1. This drawing is not drawn to scale.
 2. All dimensions are given in inches.



Stack Number	Position of Stack on Platform
	<p>Note. Stack locations are approximate. Exact placement will vary because of differences in individual guns. Be sure that the stacks rest solidly on the platform or on the plywood decking.</p>
1	Place on the plywood decking with the right front corner 28 inches from the right front corner of the plywood and the left front corner of the stack 4 inches from the front edge of the plywood.
2	Center the front edge against stack 1.
3	Align on the rear section of plywood decking on a central axis with stacks 1 and 2.
4	Place at the rear of the platform with the right rear corner of the stack 34 inches from the right rail. Let the left side of the stack overhang the rear edge of the platform from the point at which the extraction bracket meets the rear edge of the platform.
5	Center in front of the stack 4.
6	Align on the third ammunition stack on a central axis with stacks 4 and 5.

Figure 5-30. Honeycomb Stacks Placed

PREPARING HOWITZERS

5-22. Prepare both howitzers as shown in Figures 3-9 through 3-17 and in Figure 5-8. Further prepare the front howitzer as shown in Figure 5-9 and the rear howitzer as shown in Figure 5-10.

PLACING HOWITZERS ON PLATFORM

5-23. Place the howitzers on the platform as shown in Figure 5-31.

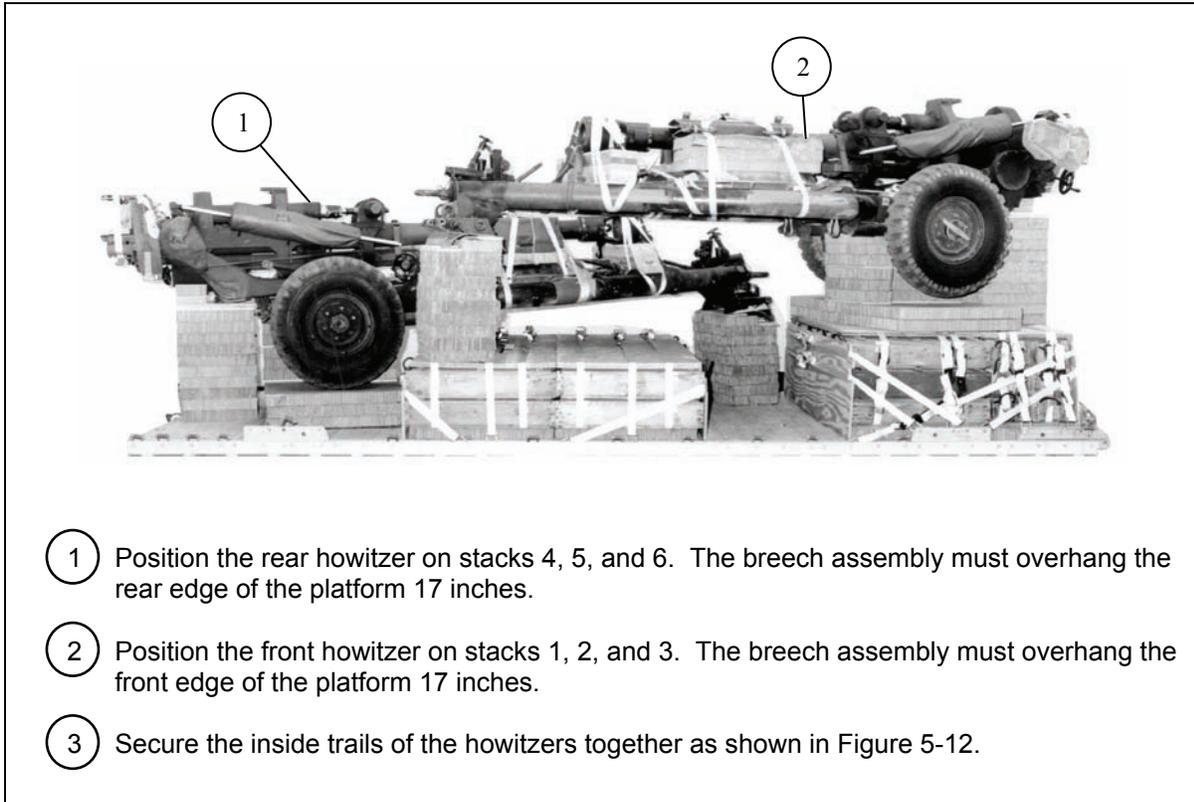
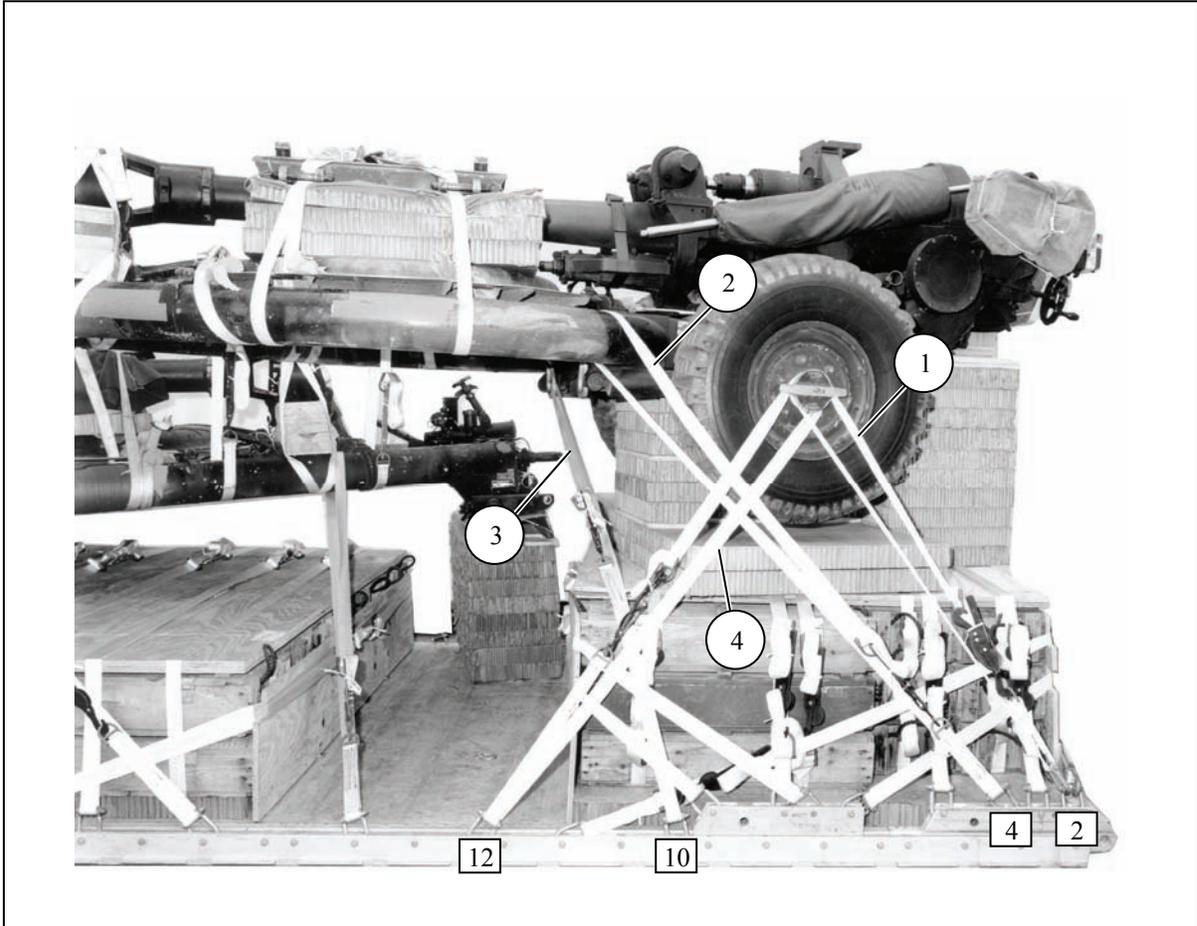


Figure 5-31. Howitzers Placed on Honeycomb Stacks

LASHING HOWITZERS

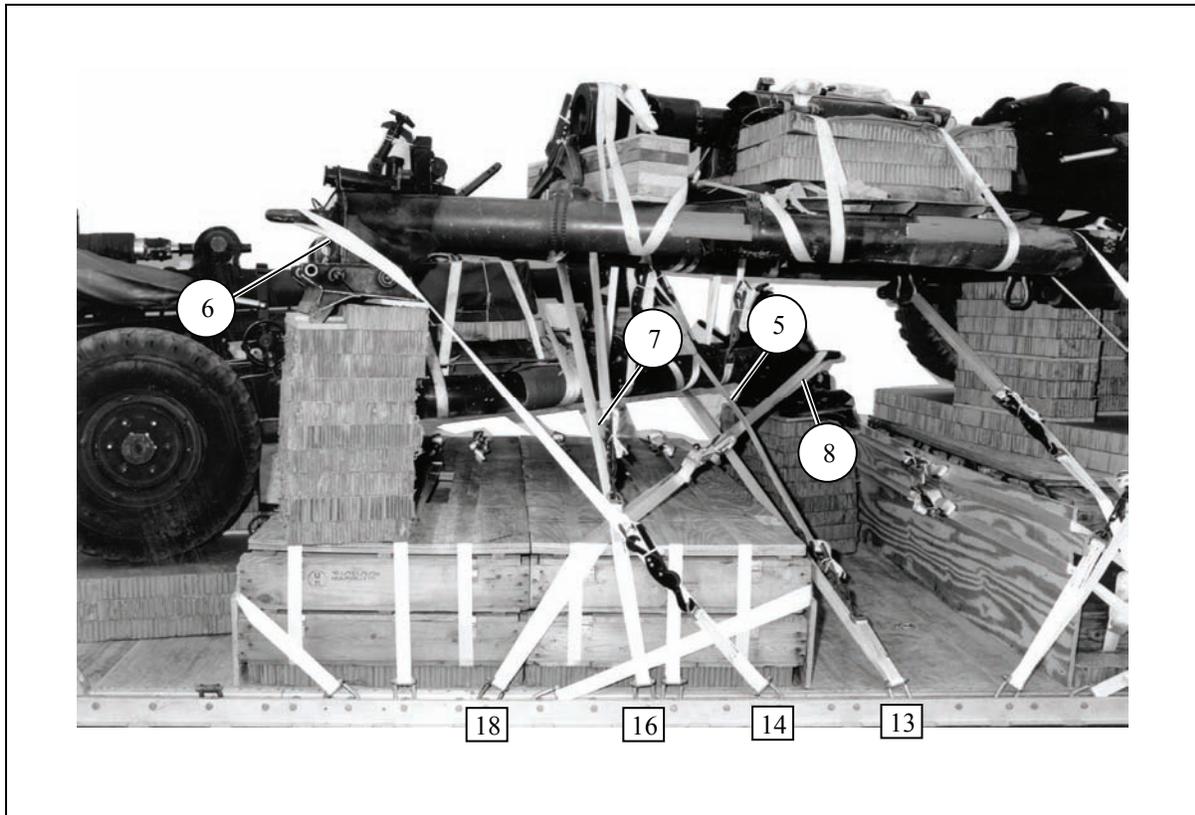
5-24. Lash the howitzers to the right side of the platform as shown in Figure 5-32. Lash the howitzers to the left side of the platform as shown in Figure 5-33.

Note. Do not tighten the lashings until all are installed. Tighten the lashings in pairs on opposite sides.



<i>Lashing Number</i>	<i>Tiedown Clevis Number</i>	<i>Instructions</i>
		Pass lashing:
1	2	Around wheel hub.
2	4	Around trail, near side.
3	10	Through medium clevis installed under front howitzer, far side.
4	12	Around wheel hub.

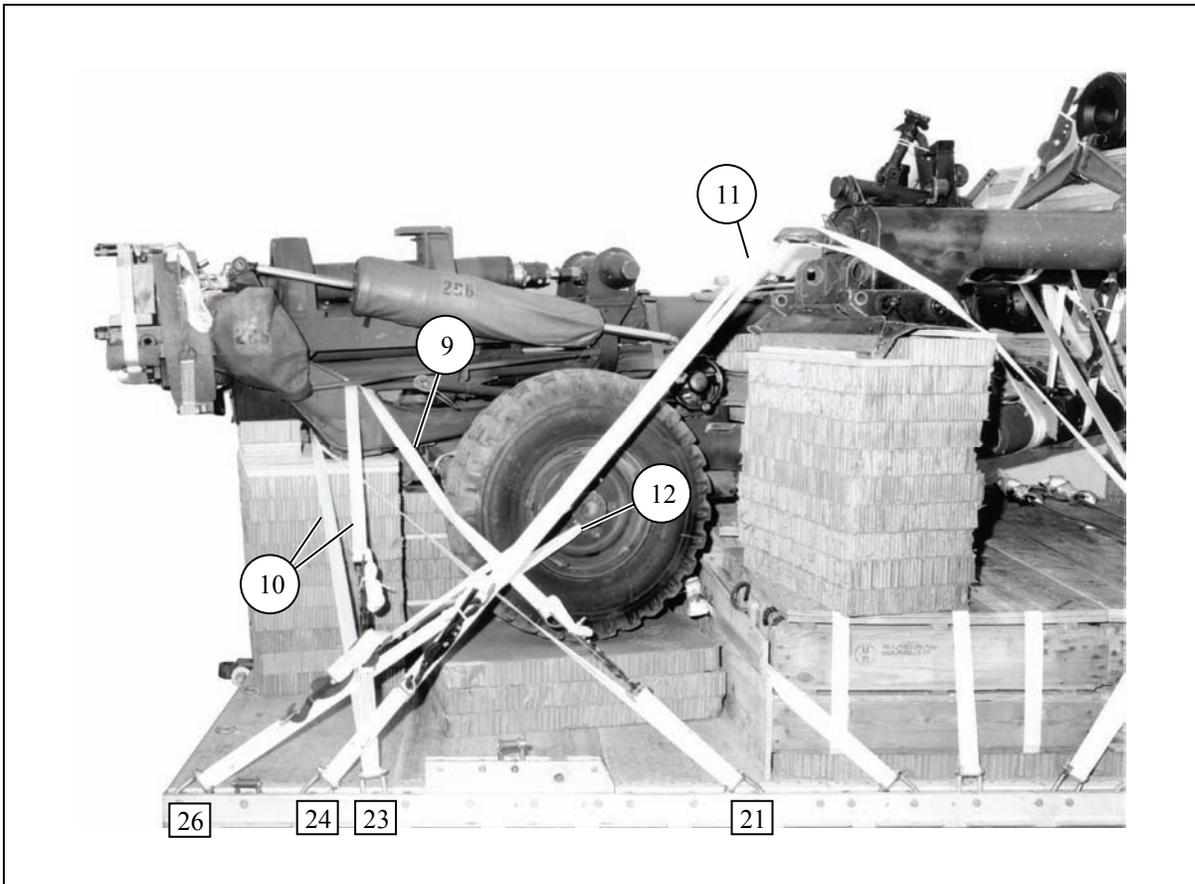
Figure 5-32. Lashings on Right Side Installed



<i>Lashing Number</i>	<i>Tiedown Clevis Number</i>	<i>Instructions</i>
5	13	Pass lashing: Around trail of rear howitzer, near side.
6	14	Through lunette of front howitzer.
7	16	Around trail on far side of front howitzer.
*8	18	Through lunette on rear howitzer.

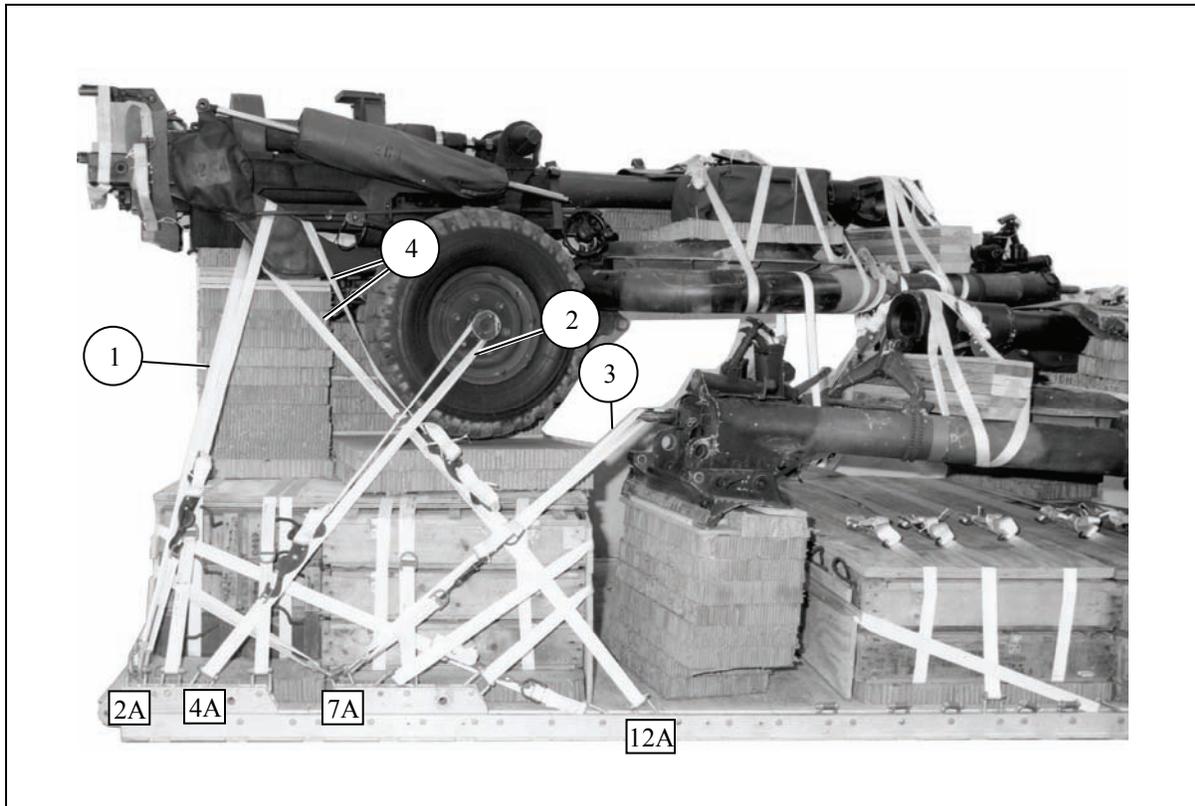
* 30-foot lashing.

Figure 5-32. Lashings on Right Side Installed (Continued)



<i>Lashing Number</i>	<i>Tiedown Clevis Number</i>	<i>Instructions</i>
		Pass lashing:
9	21	Around saddle of rear howitzer.
10	23	Around saddle of rear howitzer.
11	24	Through lunette, front howitzer.
12	26	Around wheel hub, rear howitzer.

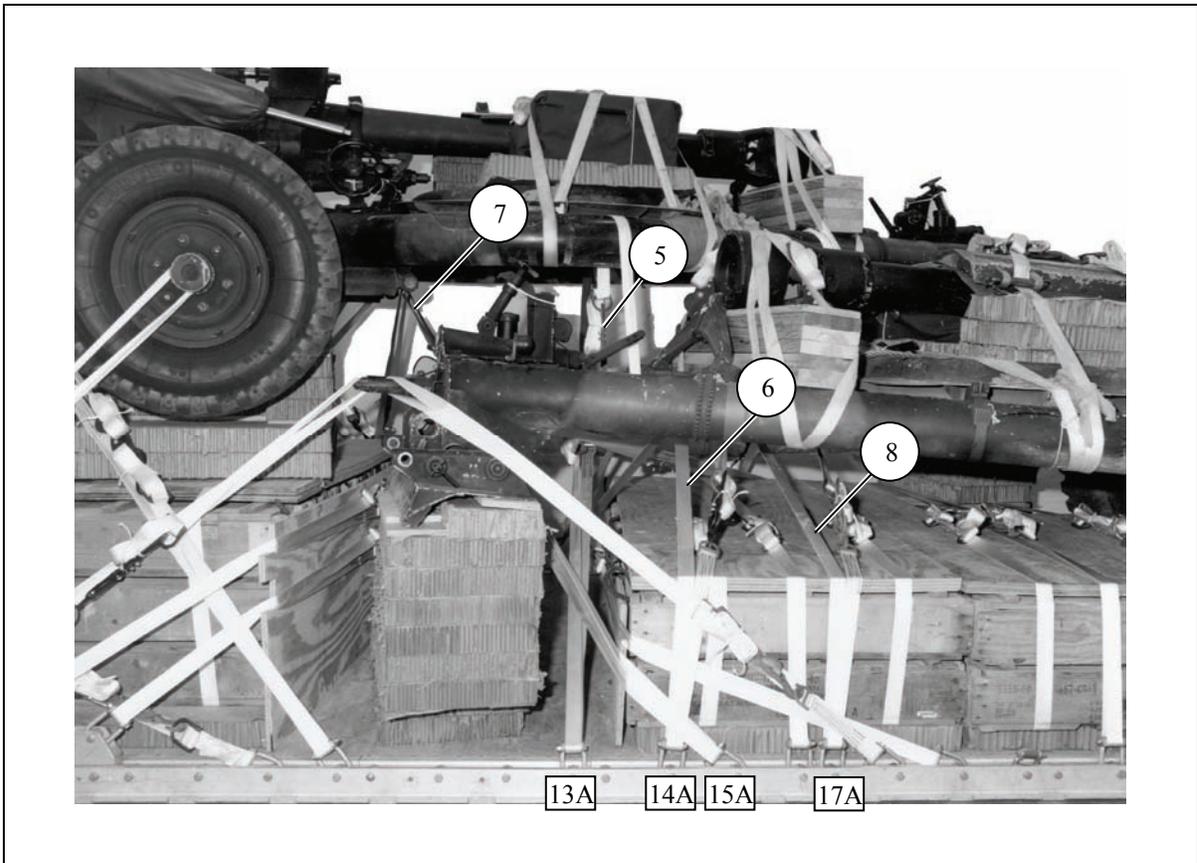
Figure 5-32. Lashings on Right Side Installed (Continued)



<i>Lashing Number</i>	<i>Tiedown Clevis Number</i>	<i>Instructions</i>
1	2A	Pass lashing: Around saddle of front howitzer.
2	4A	Around wheel hub of front howitzer.
3	7A	Through lunette of rear howitzer.
*4	12A	Around saddle of front howitzer.

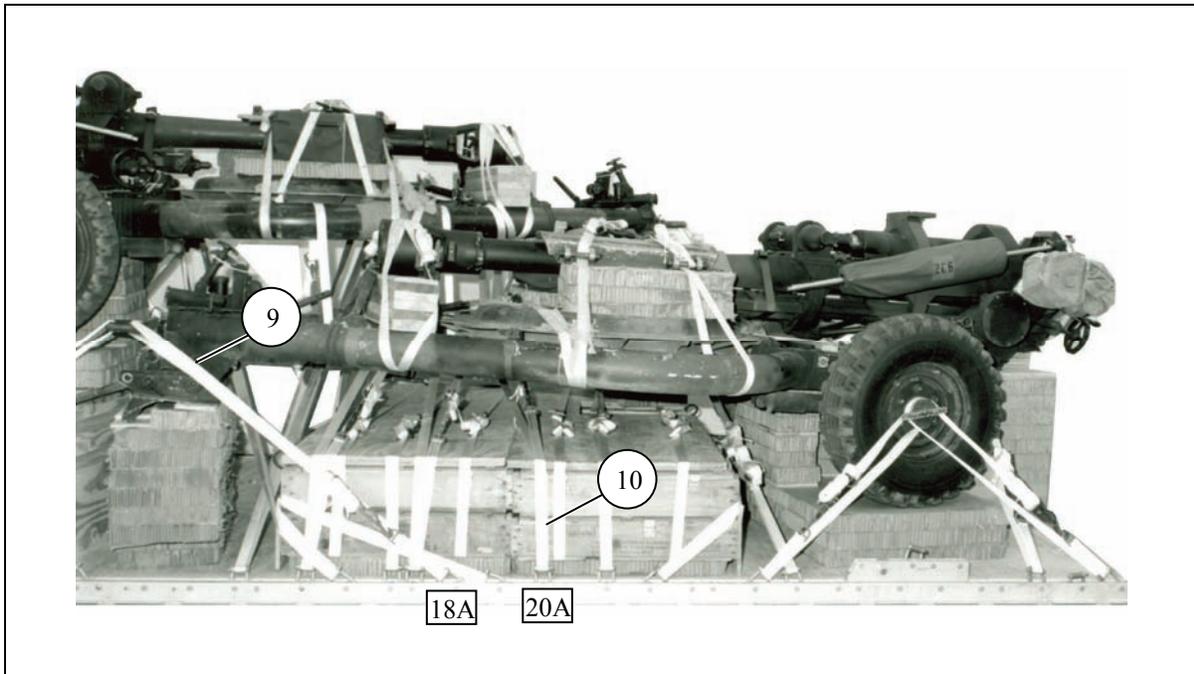
*** 30-foot lashing.**

Figure 5-33. Lashings on Left Side Installed



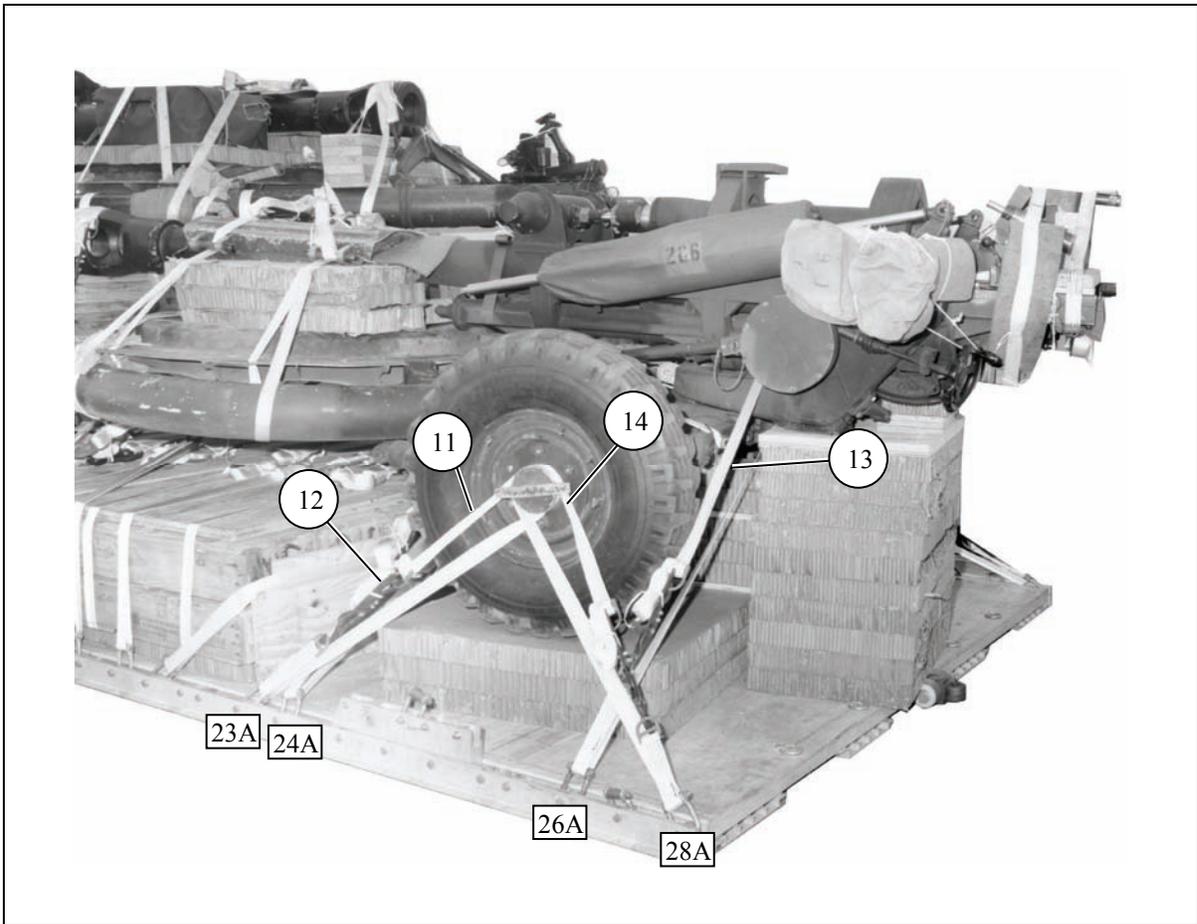
Lashing Number	Tiedown Clevis Number	Instructions
*5	13A	Pass lashing: Around trail on far side of front howitzer.
6	14A	Around trail on far side of rear howitzer.
*7	15A	Through medium clevis installed under front howitzer, near side.
8	17A	Around trail on far side of rear howitzer.
* 30-foot lashing.		

Figure 5-33. Lashings on Left Side Installed (Continued)



Lashing Number	Tiedown Clevis Number	Instructions
9	18A	Pass lashing: Through lunette, rear howitzer.
10	20A	Around trail on far side of rear howitzer.

Figure 5-33. Lashings on Left Side Installed (Continued)



<i>Lashing Number</i>	<i>Tiedown Clevis Number</i>	<i>Instructions</i>
11	23A	Pass lashing: Around wheel hub. Around trail on far side of rear howitzer. Around saddle. Around wheel hub.
12	24A	
13	26A	
14	28A	

Figure 5-33. Lashings on Left Side Installed (Continued)

COVERING THE LOAD

5-25. Install protective honeycomb and cloth cover as shown in Figure 5-34.

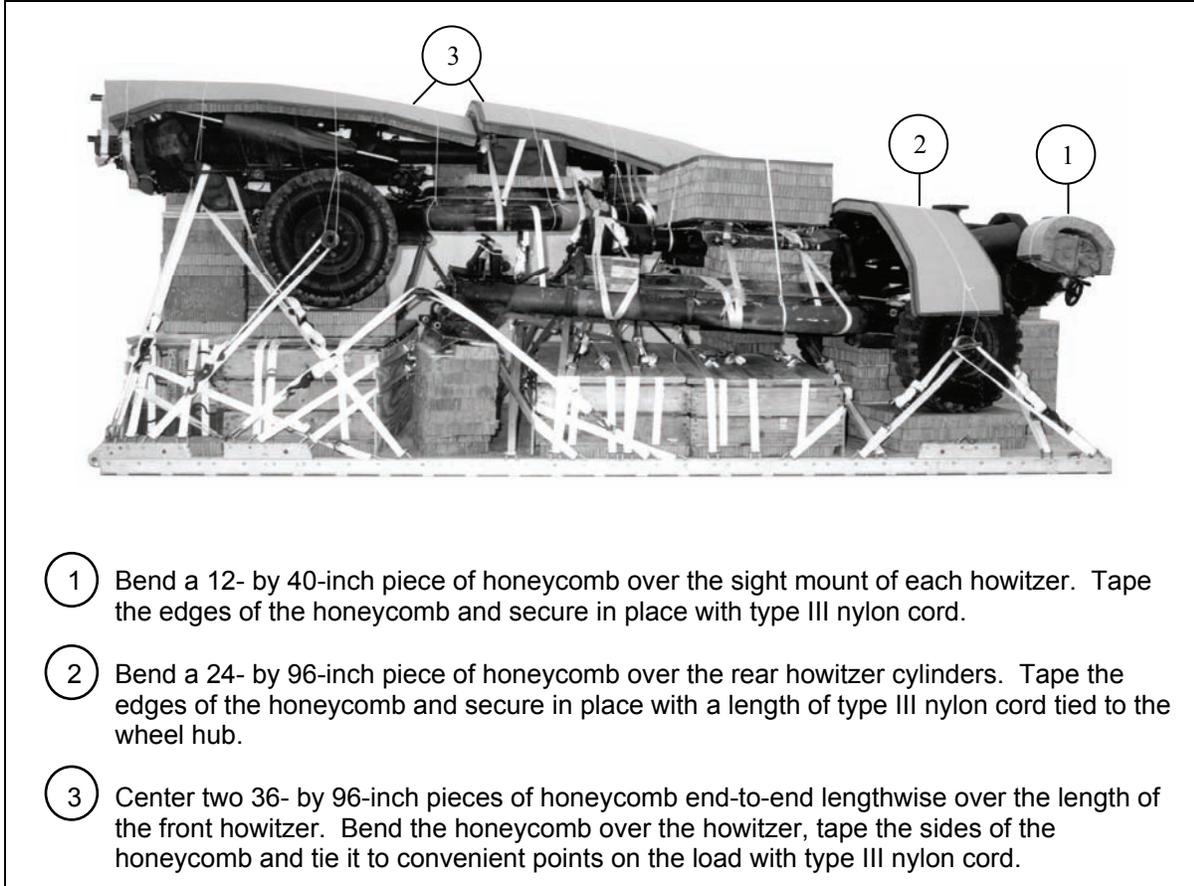
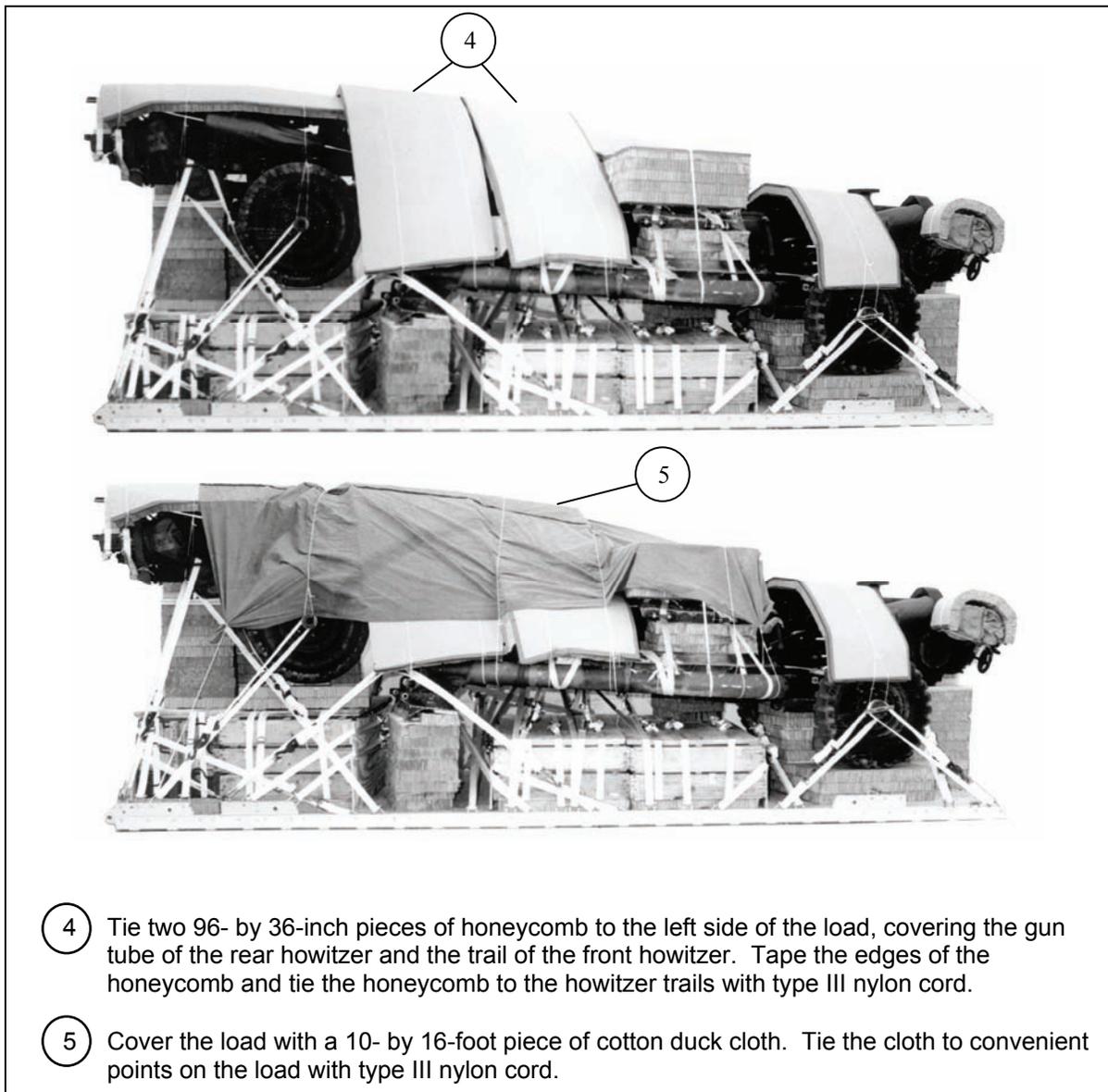


Figure 5-34. Howitzer Covered



- ④ Tie two 96- by 36-inch pieces of honeycomb to the left side of the load, covering the gun tube of the rear howitzer and the trail of the front howitzer. Tape the edges of the honeycomb and tie the honeycomb to the howitzer trails with type III nylon cord.
- ⑤ Cover the load with a 10- by 16-foot piece of cotton duck cloth. Tie the cloth to convenient points on the load with type III nylon cord.

Figure 5-34. Howitzer Covered (Continued)

INSTALLING SUSPENSION SLINGS

5-26. Install and safety the suspension slings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 5-35.

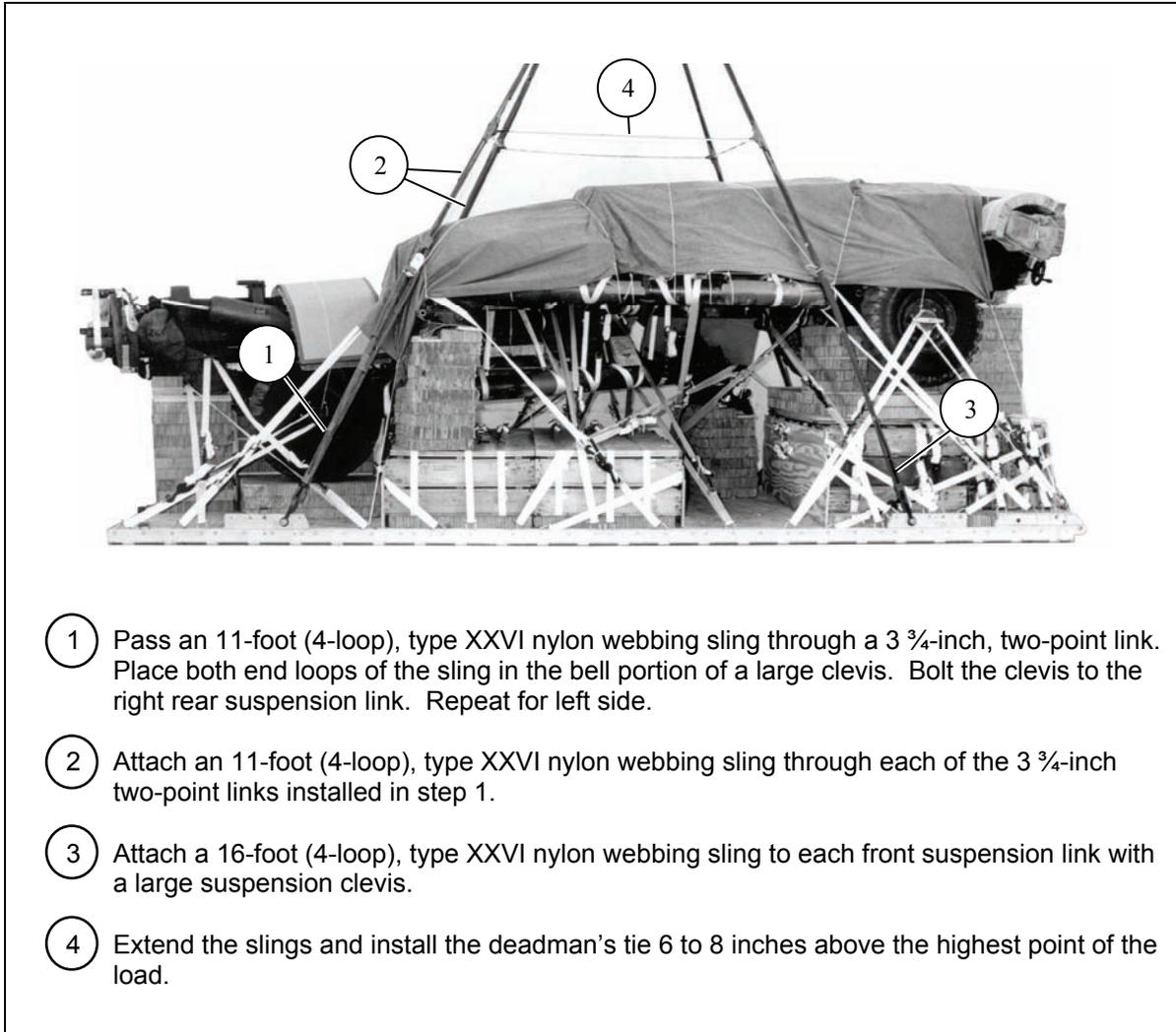
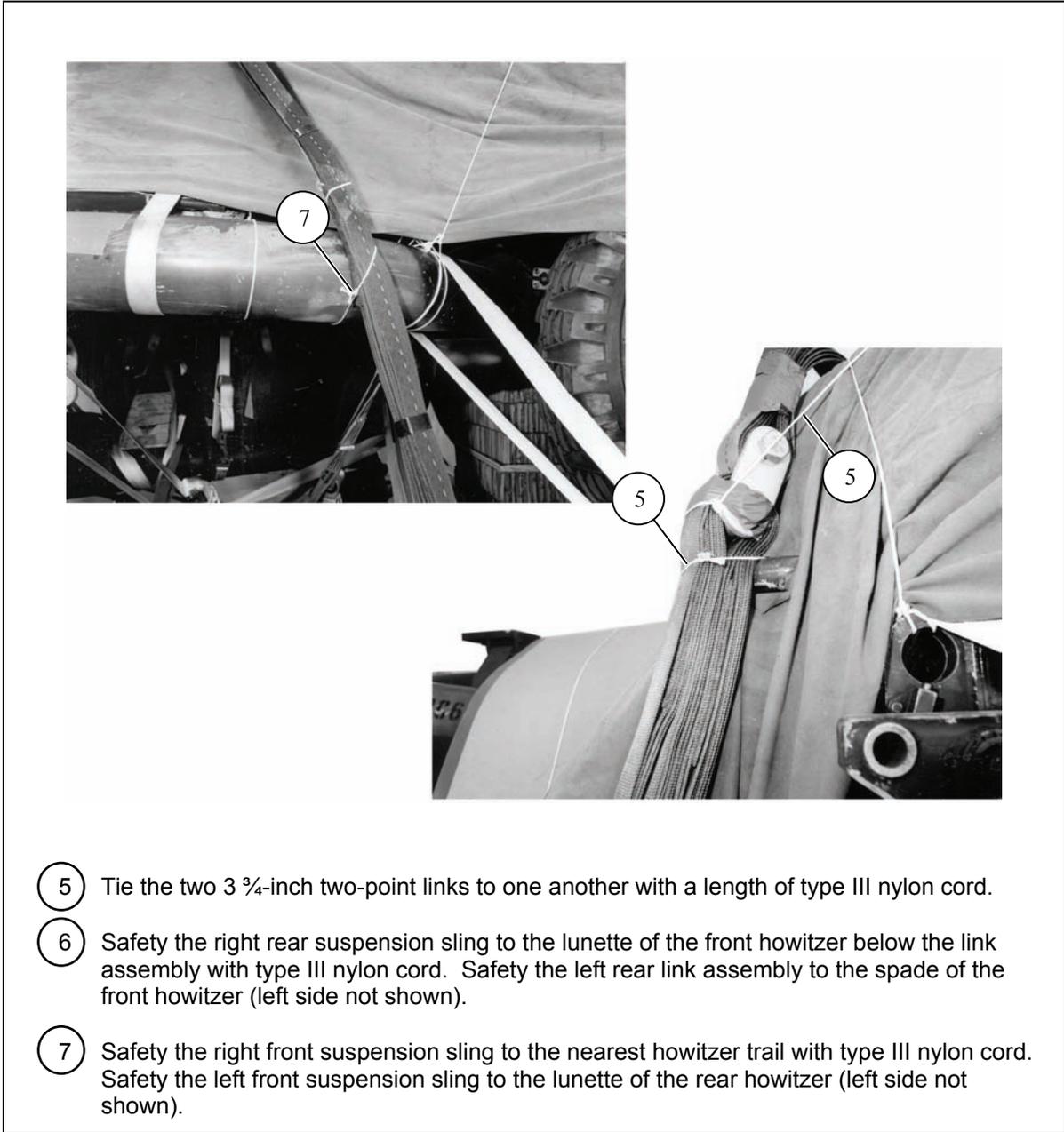


Figure 5-35. Suspension Slings Installed and Safetied



- 5 Tie the two 3 ¾-inch two-point links to one another with a length of type III nylon cord.
- 6 Safety the right rear suspension sling to the lunette of the front howitzer below the link assembly with type III nylon cord. Safety the left rear link assembly to the spade of the front howitzer (left side not shown).
- 7 Safety the right front suspension sling to the nearest howitzer trail with type III nylon cord. Safety the left front suspension sling to the lunette of the rear howitzer (left side not shown).

Figure 5-35. Suspension Slings Installed and Safetied (Continued)

PREPARING STOWAGE PLATFORM AND STOWING CARGO PARACHUTES

5-27. Prepare the parachute stowage platform as shown in Figure 5-16. Prepare the left parachute stowage platform support as shown in Figure 5-17. Prepare the right parachute stowage platform support as shown in Figure 5-18. Assemble the stowage platform as shown in Figure 5-19. Stow four G-11 cargo parachutes according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 5-36.

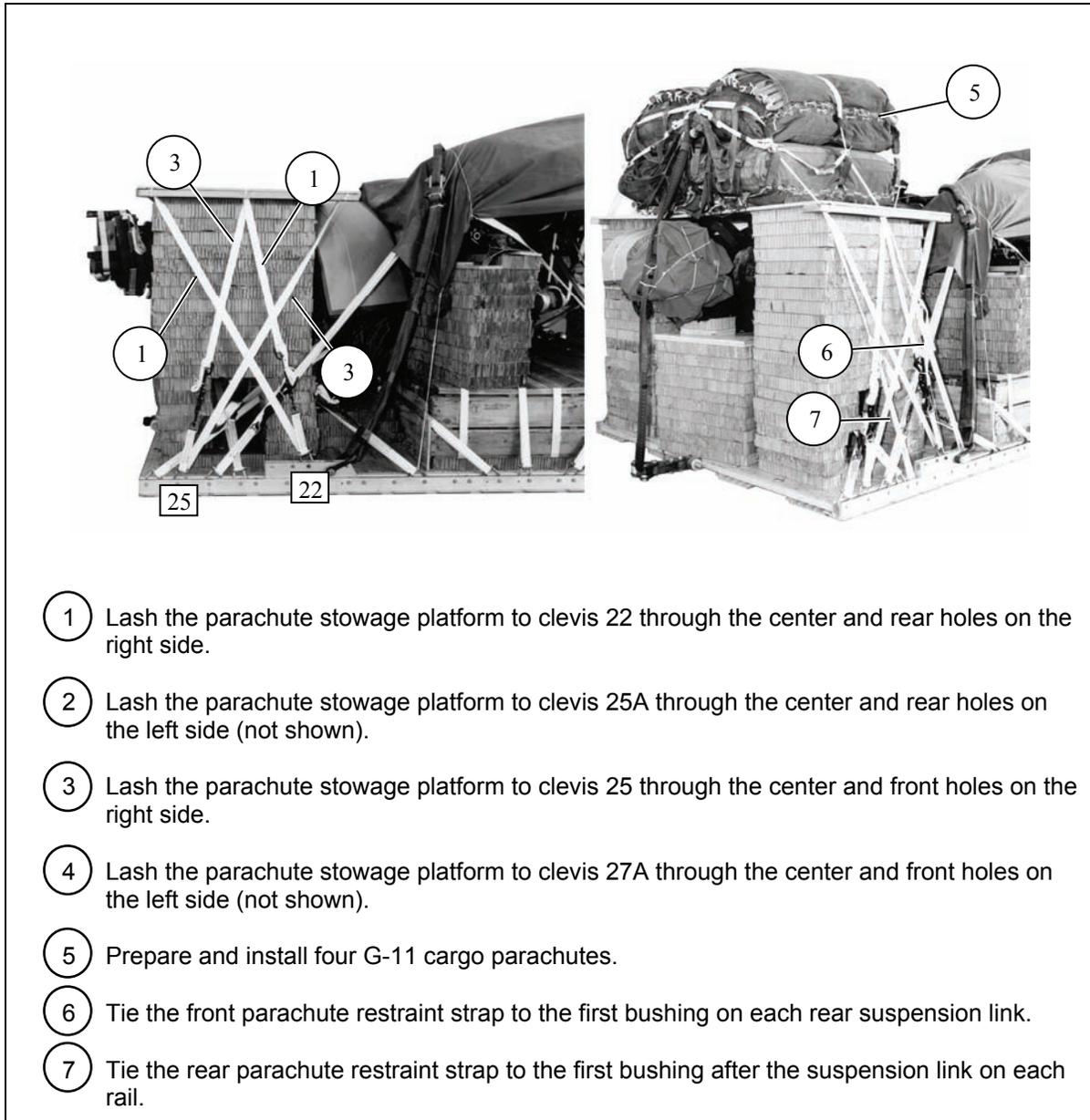


Figure 5-36. Cargo Parachutes Stowed

INSTALLING EXTRACTION SYSTEM

5-28. Install the EFTC extraction system on the load according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 5-37. If applicable install the EPJS according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

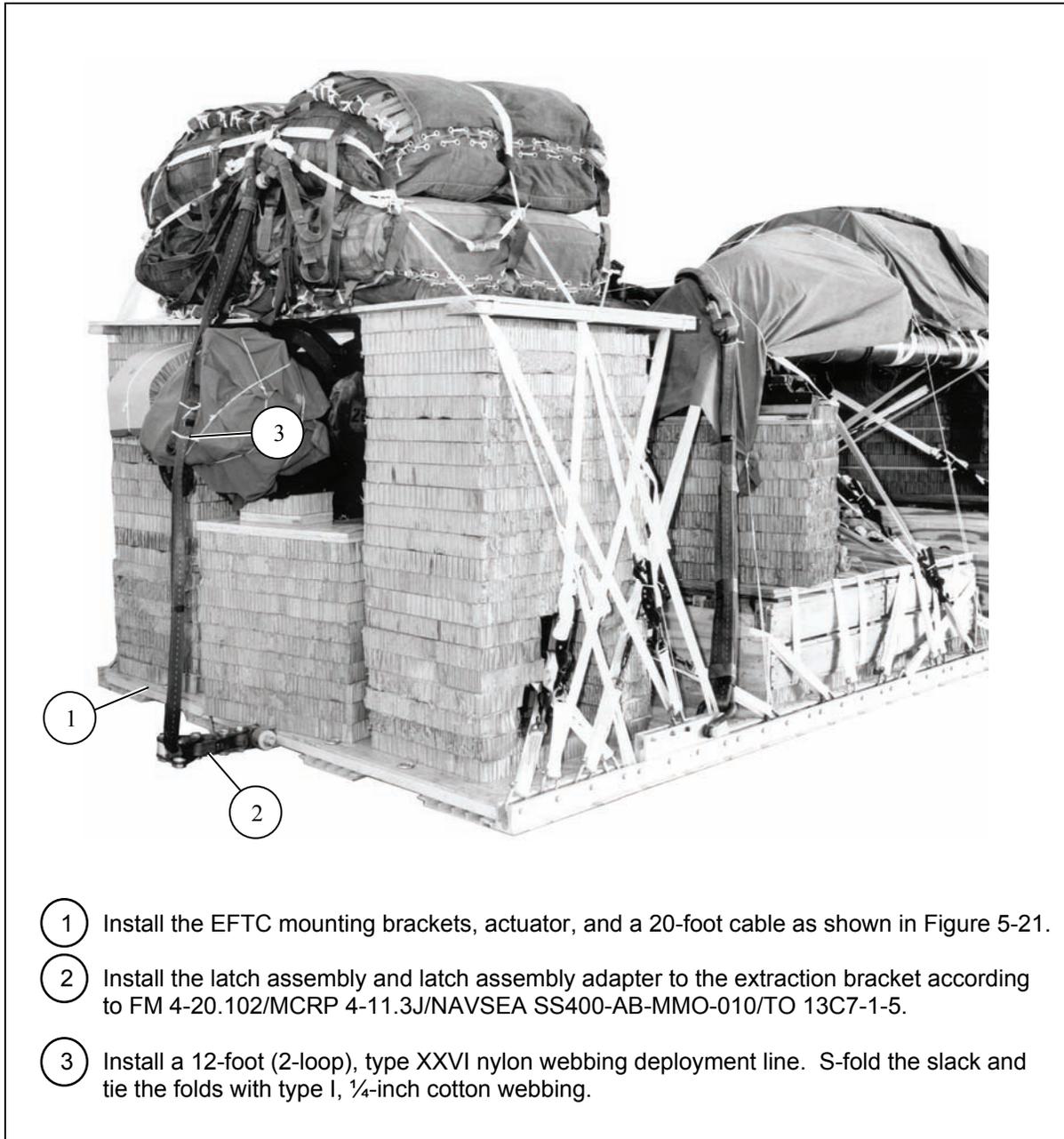


Figure 5-37. EFTC Installed

INSTALLING RELEASE SYSTEM

5-29. Prepare and install an M-2 cargo parachute release according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 5-22.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

5-30. Install provisions for emergency restraints on the front of the platform according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

PLACING EXTRACTION PARACHUTES

5-31. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Rig the extraction line in an extraction line bag according to TM 10-1670-286-20/TO13C5-2-41. Place the extraction parachute and extraction line on the load for installation in the aircraft.

MARKING RIGGED LOAD

5-32. Marked the rigged load according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 5-38. Complete Shipper's Declaration for Dangerous Goods according to AFMAN 24-204(I)/TM 38-250. If the load varies from the one shown, the weight, height, CB, tip-off curve, and parachute requirements must be recomputed.

CAUTION

Make the final rigger inspection required by FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



CB

RIGGED LOAD DATA

Weight: Load shown.....	19,320 pounds
Maximum load allowed.....	20,000 pounds
Height	99 ½ inches
Width	108 inches
Overall Length.....	274 inches
Overhang: Front	17 inches
Rear (EFTC).....	18 inches
Rear (EPJS).....	30 inches
Center of Balance (from front edge of platform)	112 inches

Figure 5-38. Two M119 Howitzers with Sixty-Three Boxes of Ammunition Rigged for Low-Velocity Airdrop on a Type V Platform

EQUIPMENT REQUIRED

5-33. Use the equipment listed in Table 5-2 to rig the load shown.

Table 5-2. Equipment Required for Rigging Two M119 Howitzers with Sixty-Three Boxes of Ammunition for Low-Velocity Airdrop on a Type V Platform

<i>National Stock Number</i>	<i>Item</i>	<i>Quantity</i>
8040-00-273-8713	Adhesive, paste, 1-gallon	As required
	Clevis, suspension:	
4030-00-678-8562	3/4-inch (medium) emergency restraint	2
4030-00-090-5354	1-inch (large)	7
8305-00-184-2034	Cloth, cotton duck, 60-inch	As required
4020-00-246-0688	Cord, nylon, type III	As required
	Coupling, airdrop, extraction force transfer with	
1670-00-434-5787	20-foot cable	1
1670-00-360-0328	Cover, clevis, large	2
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
8305-00-191-1101	Felt, 1/2-inch	As required
1670-01-183-2678	Leaf, extraction line	2
1670-01-064-4452	Line, drogue, 60-foot (1-loop), type XXVI nylon webbing	1
	Line, extraction, type XXVI nylon webbing:	
1670-01-062-6313	60-foot (3-loop)	1
	Or	
1670-01-107-7651	140-foot (3-loop)	1
	Link assembly, two-point:	
1670-01-493-6418	3 3/4-inch	23
1670-01-493-6420	5 1/2 -inch	2
	Lumber:	
5510-00-220-6146	2- by 4-inch	As required
5510-00-220-6196	2- by 6-inch	As required
5510-00-220-6246	2- by 8-inch	As required
	Nail, steel wire, common:	
5315-00-010-4659	8d	As required
5315-00-164-5121	20d	As required
1670-00-753-3928	Pad, energy-dissipating, honeycomb	31 sheets
	Parachute:	
1670-01-016-7841	Cargo, G-11	4
1670-00-040-8135	Cargo, extraction, 28-foot	1
1670-01-063-3715	Drogue, 15-foot	1

Table 5-2. Equipment Required for Rigging Two M119 Howitzers with Sixty-Three Boxes of Ammunition for Low-Velocity Airdrop on a Type V Platform (Continued)

<i>National Stock Number</i>	<i>Item</i>	<i>Quantity</i>
	Platform, airdrop, type V, 20-foot	
1670-01-353-8425	Bracket assembly, coupling	1
1670-01-353-8424	Bracket assembly, extraction	1
1670-01-162-2372	Clevis assembly	58
1670-01-247-2389	Suspension link	4
1670-01-162-2381	Tandem link	2
	Plywood,	
5530-00-129-7777	½-inch	As required
5530-00-128-4981	¾-inch	As required
1670-01-097-8817	Release, cargo parachute, M-2	1
	Sling, cargo airdrop:	
	For deployment line:	
1670-01-062-6303	12-foot (2-loop), type XXVI nylon webbing	1
	For lifting:	
1670-01-063-7760	11-foot (2-loop), type XXVI nylon webbing	3
	For riser extension:	
1670-01-062-6302	20-foot (2-loop), type XXVI nylon webbing	20
	For suspension:	
1670-01-062-6301	11-foot (2-loop), type XXVI nylon webbing	4
1670-01-063-7761	16-foot (2-loop), type XXVI nylon webbing	2
1670-00-040-8219	Strap, parachute release, multicut	2
7515-00-266-5016	Tape, adhesive, 2-in	As required
1670-00-937-0271	Tie-down assembly, 15-ft	94
1670-01-483-8259	Tow release mechanism (H-block for C-17)	1
	Webbing:	
8305-00-268-2411	Cotton, 1/4-inch, type I	As required
	Nylon:	
8305-00-082-5752	Tubular, 1/2-inch	As required
8305-00-263-3591	Type VIII webbing	As required

SECTION III – RIGGING HOWITZERS WITH TWO 81-MILLIMETER MORTARS

DESCRIPTION OF LOAD

5-34. Two M119, 105-millimeter howitzers are rigged on a 20-foot type V platform with an accompanying load of 68 boxes of ammunition, 21 cans of fuzes (when required), and two 81-MM mortars. This load requires five G-11 cargo parachutes.

PREPARING PLATFORM

5-35. Prepare a 20-foot, type V airdrop platform as described in paragraph 5-2 and as shown in Figure 5-1.

STOWING AND LASHING FIRST GROUP OF AMMUNITION BOXES

5-36. Stow and lash the first group of ammunition boxes as shown in Figures 5-2 and 5-3.

PACKAGING AND SECURING MORTAR COMPONENTS

5-37. Build the wooden box for the mortar components as shown in Figure 5-39. Pack the mortar components in the box and close the box as shown in Figure 5-40. Place the mortar ammunition on the load and secure the mortar package as shown in Figure 5-41.

NOTICE OF EXCEPTION

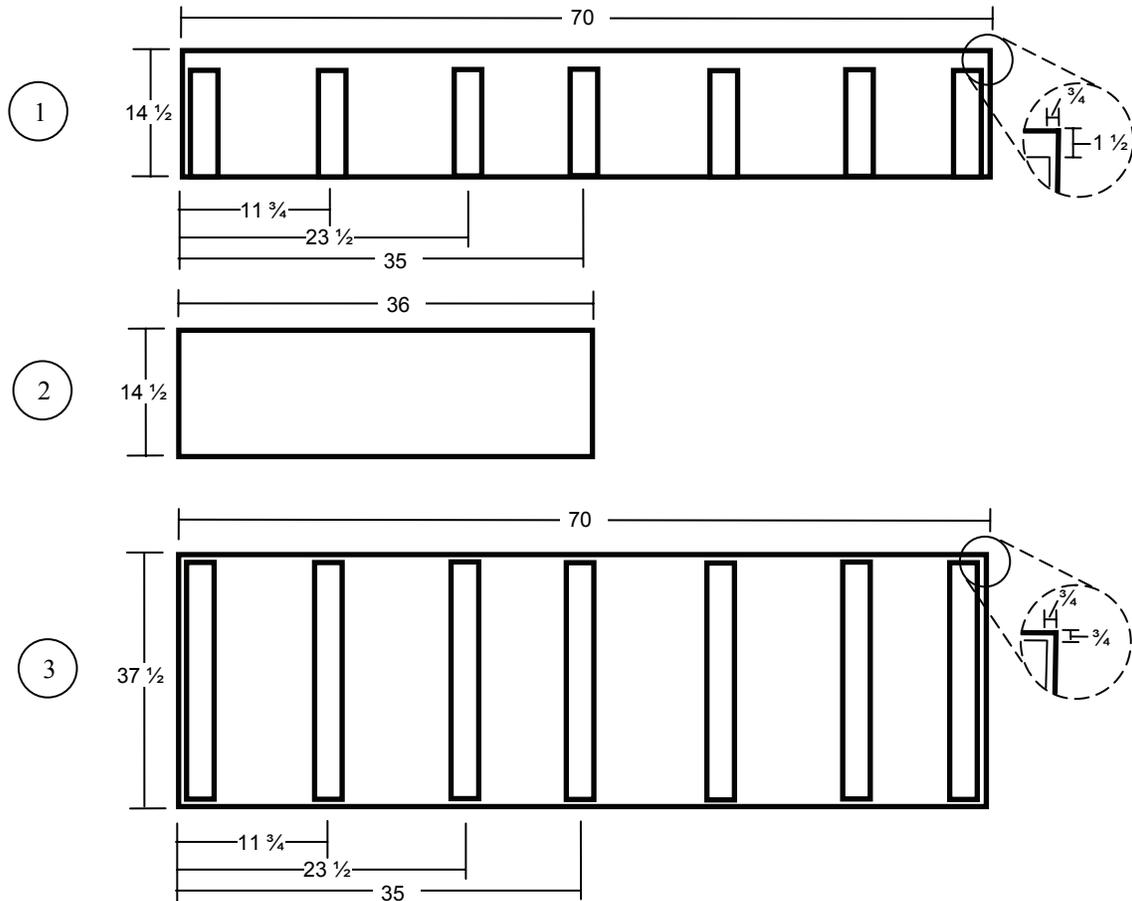
Exception to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 is granted to rig ammunition with one layer of honeycomb.

Note. The mortar and ammunition are rigged as part of the second ammunition stack. See Section I, Paragraph 5-4 of this chapter for procedures for rigging the remainder of the second ammunition stack.

RIGGING HOWITZER

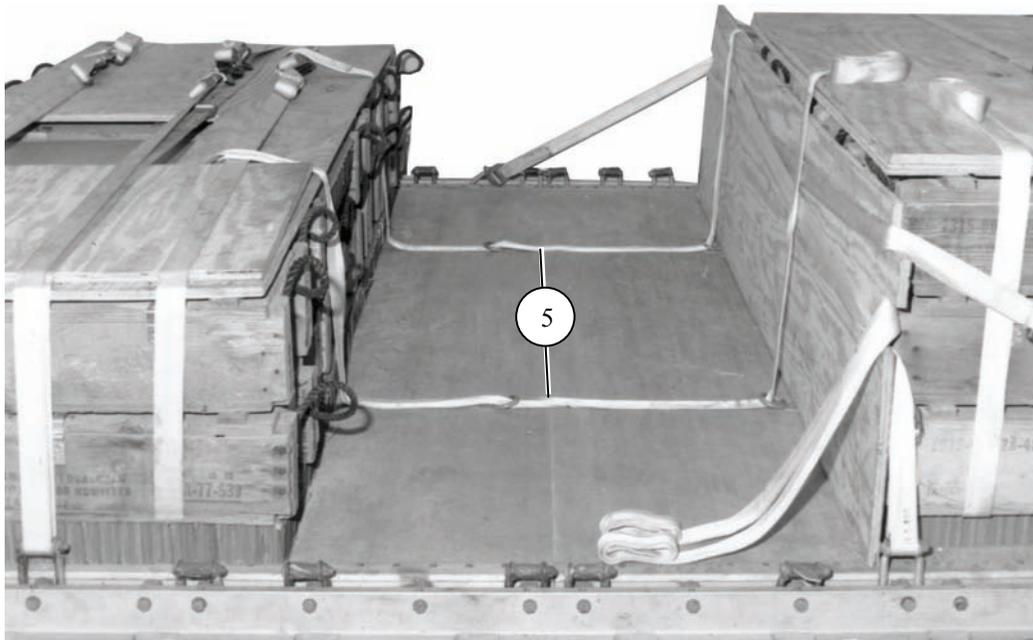
5-38. Complete the rigging of this load as show in Section I of this chapter.

- Notes.** 1. This drawing is not drawn to scale.
2. All dimensions are given in inches.



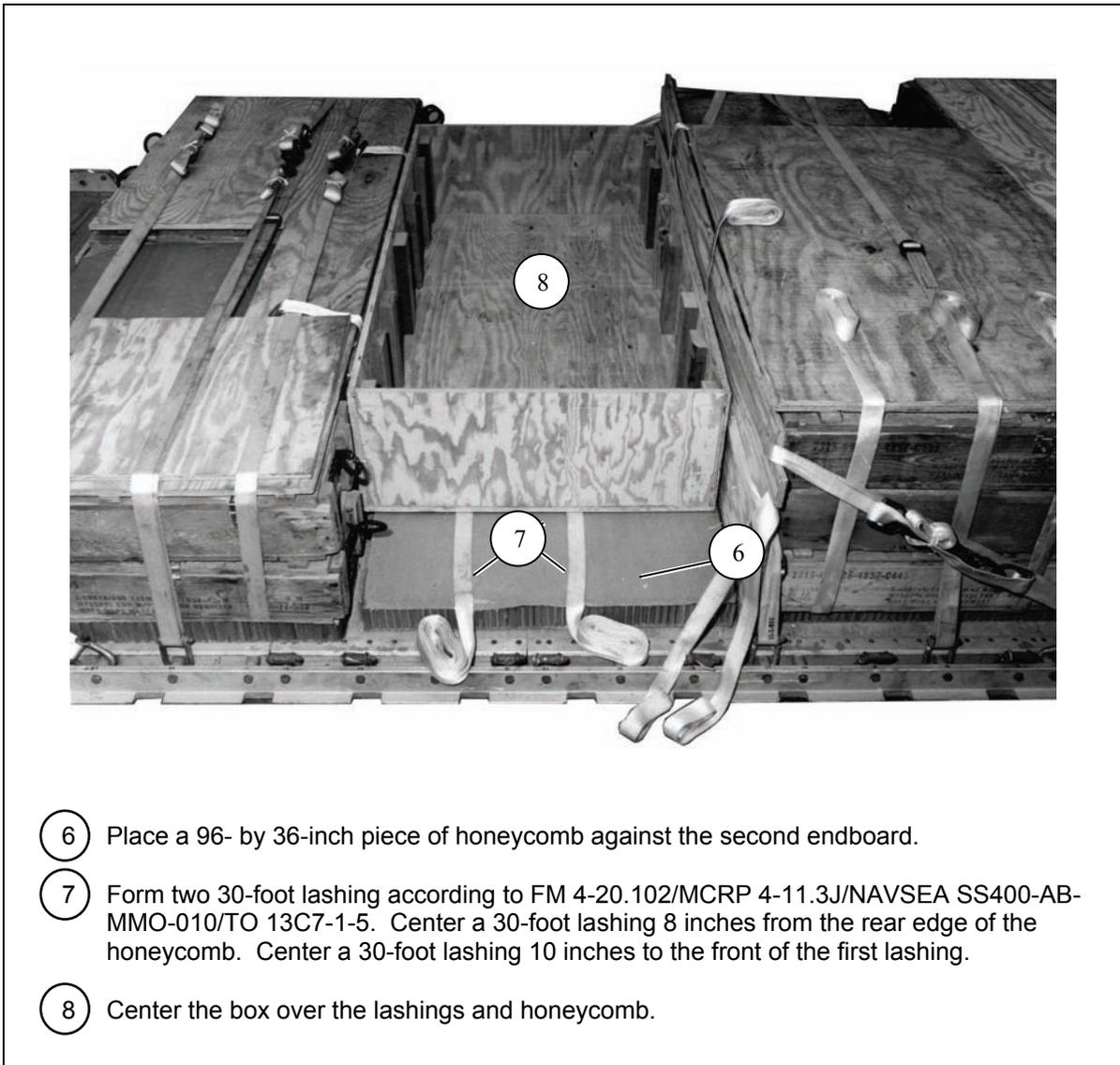
- ① Build two box sides of 3/4- by 70- by 14 1/2-inch plywood. Nail 2- by 4- by 13-inch piece of lumber to the sides spaced as shown.
- ② Cut two box ends of 3/4- by 36- by 14 1/2-inch plywood.
- ③ Cut box bottom and top of 3/4- by 70- by 37 1/2-inch plywood. Nail 2- by 4- by 36-inch piece of lumber to the top spaced as shown.
- ④ Nail the box ends to the sides through the lumber at the box corners. Nail the box bottom to the sides and ends (not shown).

Figure 5-39. Box for Mortars Constructed



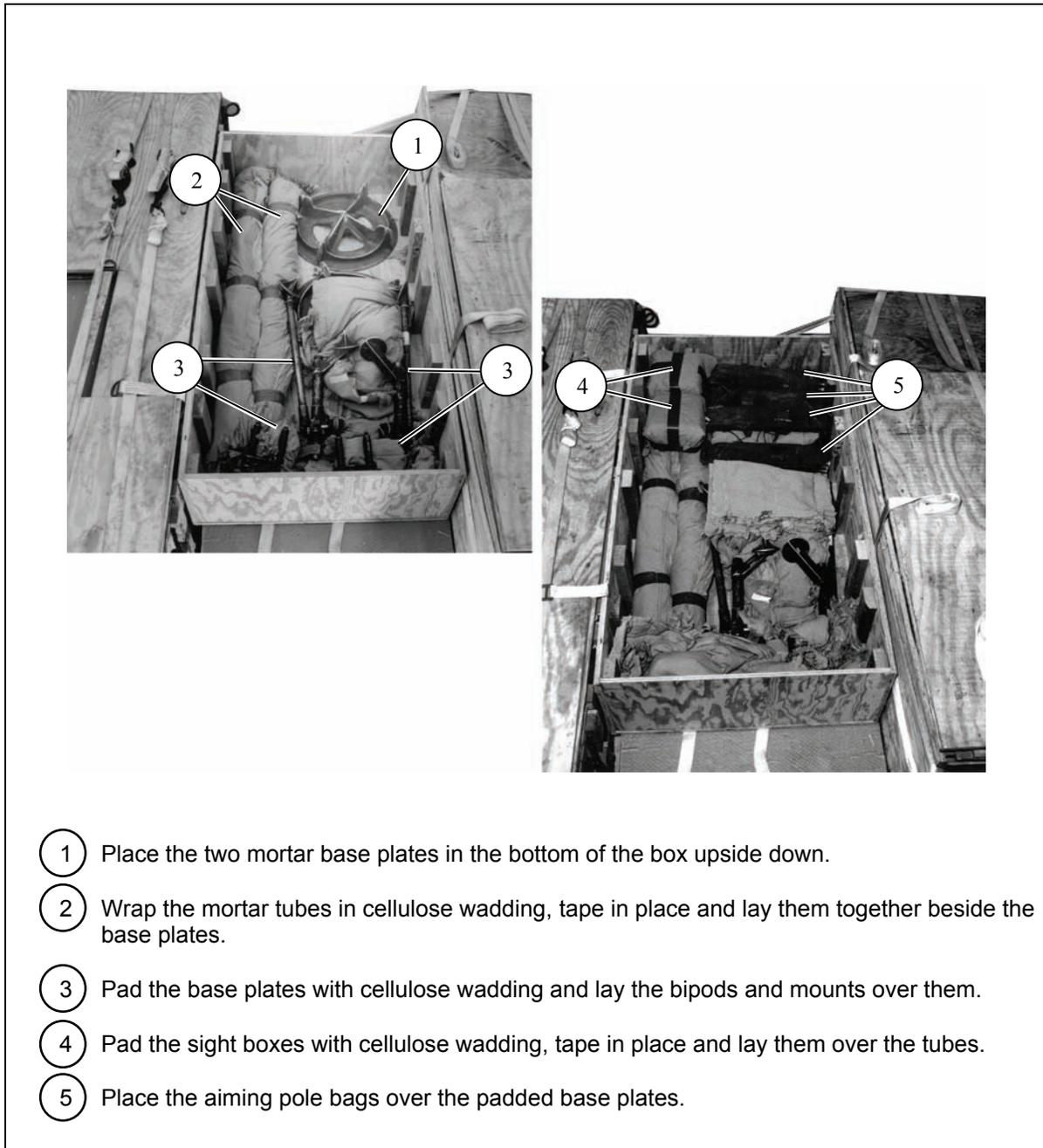
- 5 Route a 15-foot lashing through tie-down rings A5 and A6. Route a 15-foot lashing through tie down rings B5 and B6.

Figure 5-39. Box for Mortars Constructed (Continued)



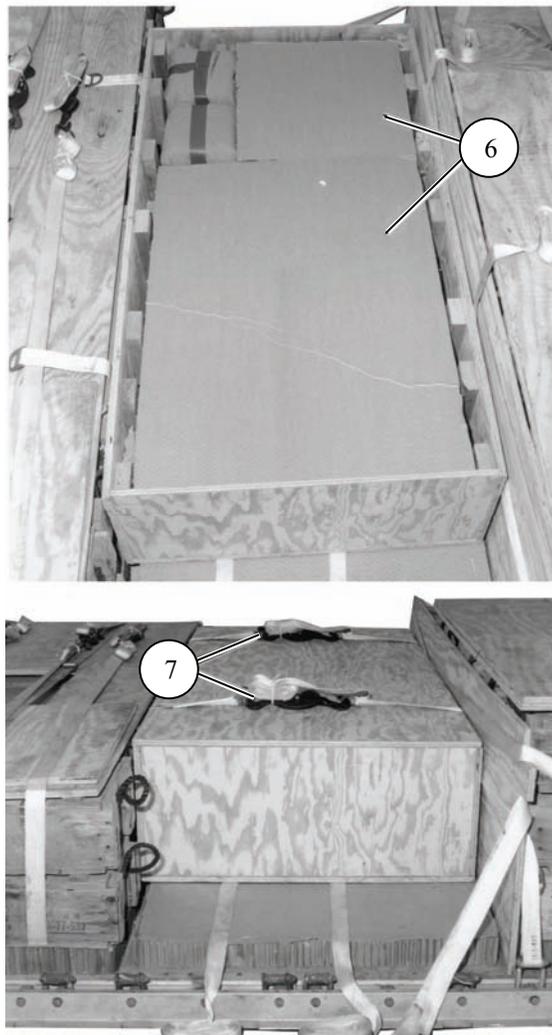
- ⑥ Place a 96- by 36-inch piece of honeycomb against the second endboard.
- ⑦ Form two 30-foot lashing according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Center a 30-foot lashing 8 inches from the rear edge of the honeycomb. Center a 30-foot lashing 10 inches to the front of the first lashing.
- ⑧ Center the box over the lashings and honeycomb.

Figure 5-39. Box for Mortars Constructed (Continued)



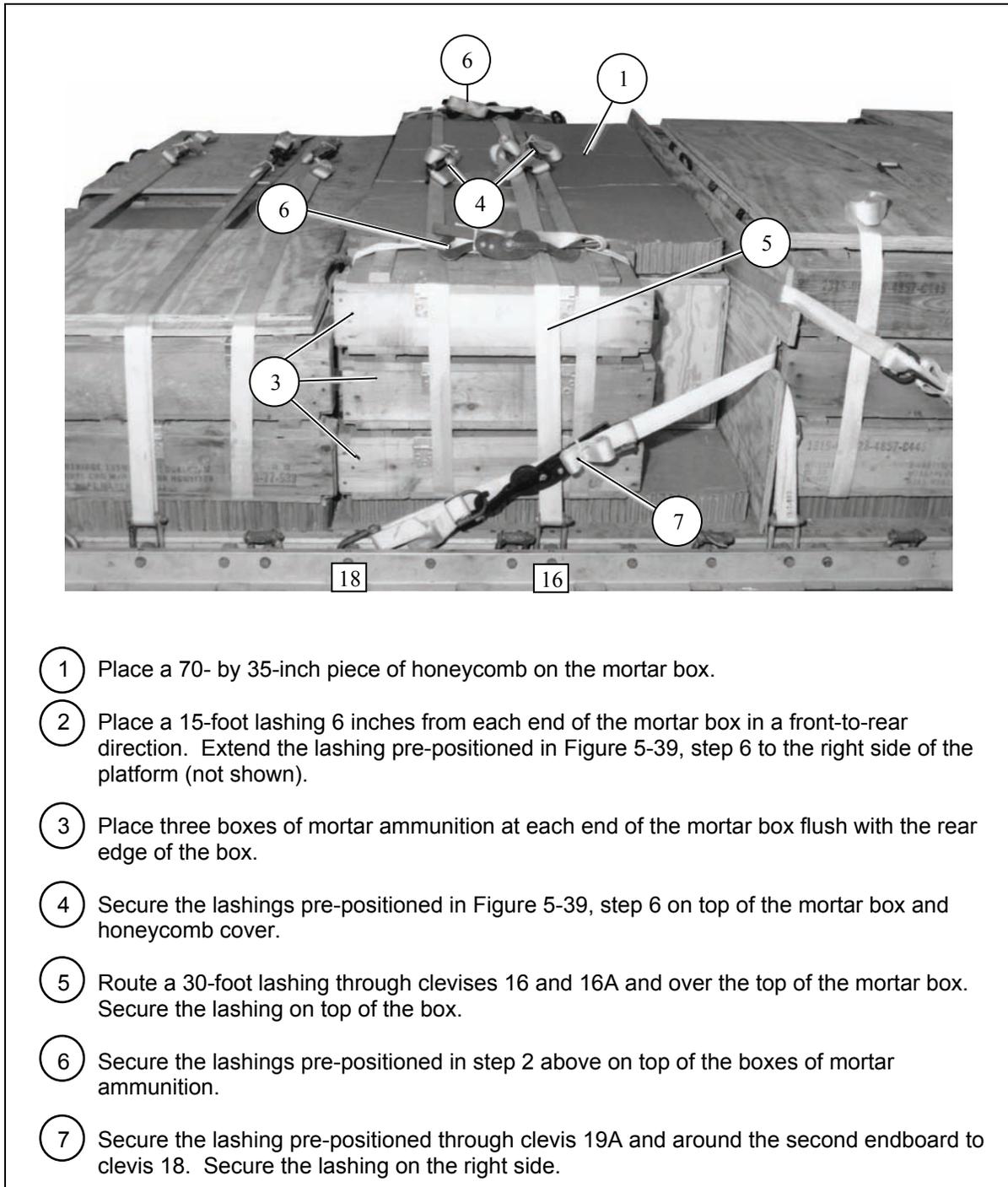
- ① Place the two mortar base plates in the bottom of the box upside down.
- ② Wrap the mortar tubes in cellulose wadding, tape in place and lay them together beside the base plates.
- ③ Pad the base plates with cellulose wadding and lay the bipods and mounts over them.
- ④ Pad the sight boxes with cellulose wadding, tape in place and lay them over the tubes.
- ⑤ Place the aiming pole bags over the padded base plates.

Figure 5-40. Mortar Components Placed in Box



- ⑥ Fill in empty space with additional equipment or honeycomb cut to fit.
- ⑦ Nail the top onto the box. Secure the lashings pre-positioned in Figure 5-39, step 4 over the box.

Figure 5-40. Mortar Components Placed in Box (Continued)



- 1 Place a 70- by 35-inch piece of honeycomb on the mortar box.
- 2 Place a 15-foot lashing 6 inches from each end of the mortar box in a front-to-rear direction. Extend the lashing pre-positioned in Figure 5-39, step 6 to the right side of the platform (not shown).
- 3 Place three boxes of mortar ammunition at each end of the mortar box flush with the rear edge of the box.
- 4 Secure the lashings pre-positioned in Figure 5-39, step 6 on top of the mortar box and honeycomb cover.
- 5 Route a 30-foot lashing through clevises 16 and 16A and over the top of the mortar box. Secure the lashing on top of the box.
- 6 Secure the lashings pre-positioned in step 2 above on top of the boxes of mortar ammunition.
- 7 Secure the lashing pre-positioned through clevis 19A and around the second endboard to clevis 18. Secure the lashing on the right side.

Figure 5-41. Mortar Ammunition Placed and Secured

MARKING RIGGED LOAD

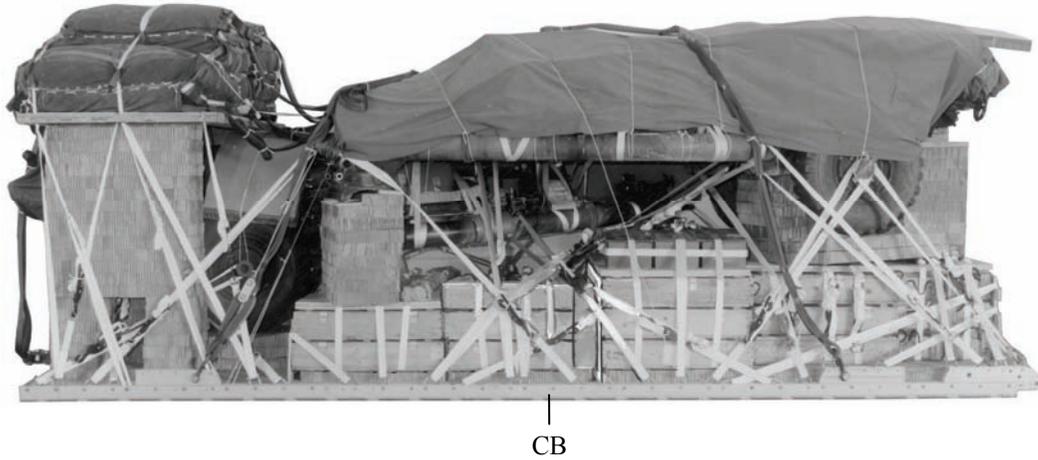
5-39. Marked the rigged load according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 5-42. Complete Shipper's Declaration for Dangerous Goods according to AFJMAN 24-204/TM 38-250. If the load varies from the one shown, the weight, height, CB, tip-off curve, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

5-40. Use the equipment listed in Table 5-1 to rig the load shown with the addition of six tie-down assemblies and the material need for the mortar box.

CAUTION

Make the final rigger inspection required by FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Weight: Load shown	21,940 pounds
Maximum load allowed	25,000 pounds
Height	98 inches
Width.....	108 inches
Overall Length	274 inches
Overhang: Front	17 inches
Rear (EFTC)	18 inches
Rear (EPJS).....	30 inches
Center of Balance (from front edge of platform).....	110 inches

Figure 5-42. Two M119 Howitzers Rigged with Two 81-Millimeter Mortars for Low-Velocity Airdrop on a Type V Platform

Chapter 6

Rigging M101A1 Howitzer for Low-Velocity Airdrop on Type V Platform

DESCRIPTION OF LOAD

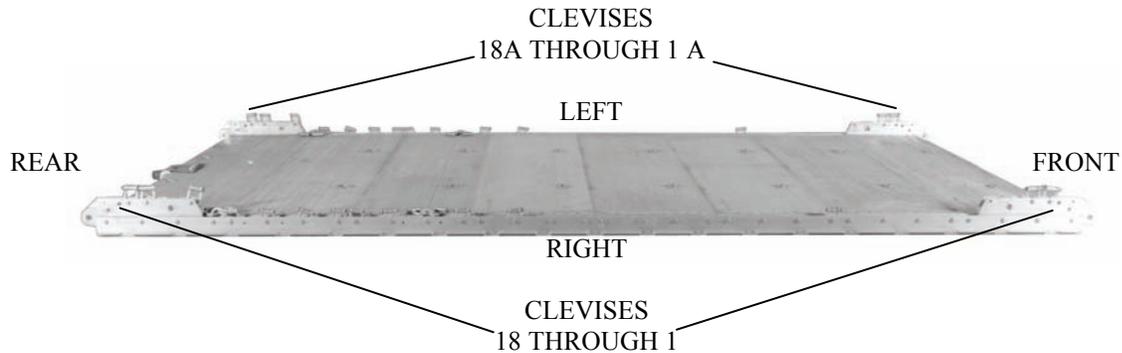
6-1. The M101A1, 105-millimeter howitzer is rigged on a 16-foot, type V airdrop platform with two G-11 cargo parachutes. This load includes an accompanying load of 21 boxes of ammunition. The accompanying load must weigh at least 2,000 pounds, but no more than 2,400 pounds. The howitzer is rigged for low-velocity airdrop from a C-130 or C-17 aircraft.

PREPARING PLATFORM

6-2. Prepare a 16-foot, type V airdrop platform as described below.

- **Inspecting platform.** Inspect, or assemble and inspect, the platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.
- **Installing tandem links.** Install a tandem link on the front of each rail according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and as shown in Figure 6-1.
- **Installing and numbering clevises.** Bolt and number 36 clevis assemblies according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and as shown in Figure 6-1.

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



Step:

1. Inspect, or assemble and inspect a 16-foot, Type V platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.
2. Install a tandem link to each platform side rail using holes 1, 2, and 3.
3. Install a tandem link to each platform side rail using holes 30, 31, and 32.
4. Install a clevis on bushings 2 and 3 of each front tandem link.
5. Install a clevis on bushings 1, 2 and 3 of each rear tandem link.
6. Starting at the front of each platform side rail, install clevises on the bushing bolted on holes 9, 19, 21, 22, 23, 24, 25, 26, 27, 28, and 29. Reverse the clevises on holes 22 and 29 and install two additional clevises on each.
7. Starting at the front of the platform, number the clevises 1 through 18 on the right side and 1A through 18A on the left side.
8. Label the tie-down rings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

Figure 6-1. Platform Prepared

BUILDING AND PLACING HONEYCOMB STACKS

6-3. Build the honeycomb stacks as shown in Figure 6-2. Place the stacks on the platform as shown in Figure 6-3.

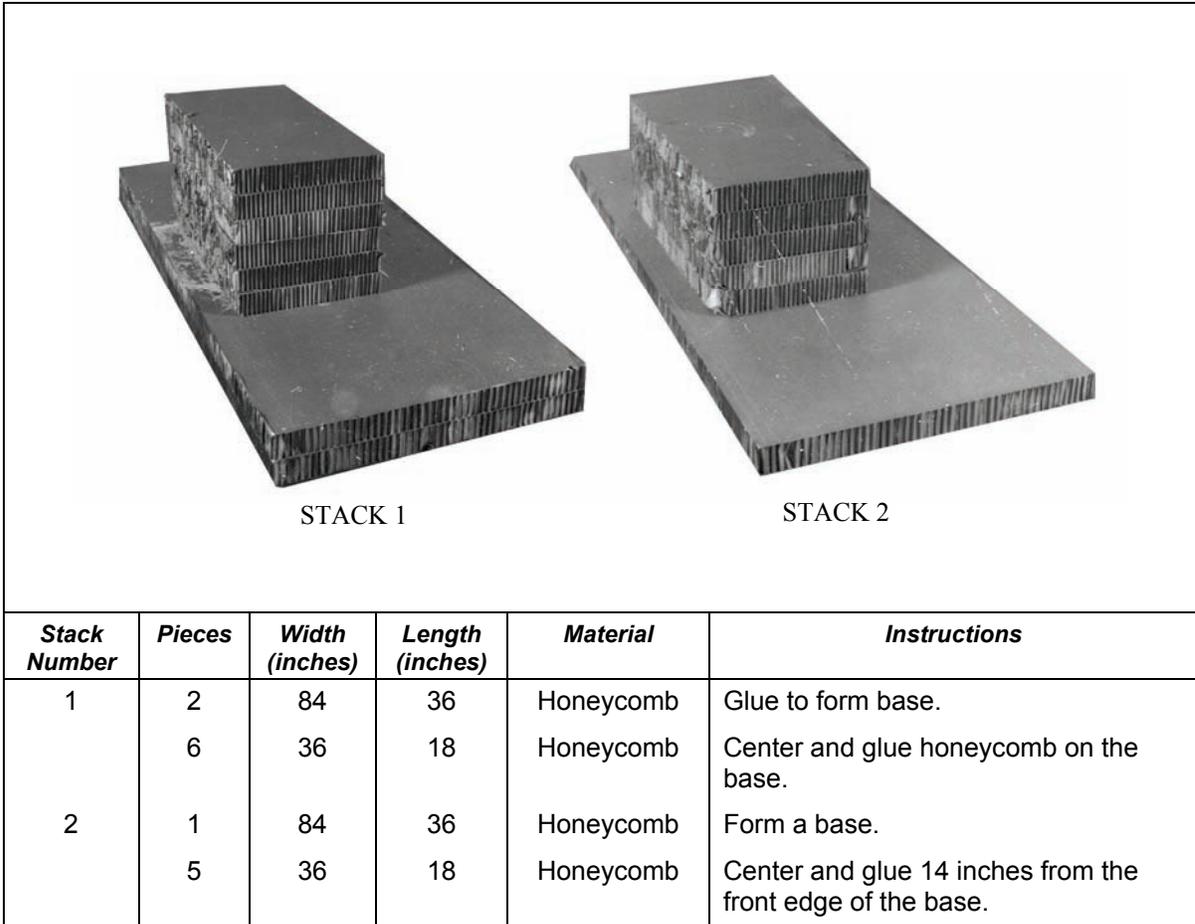
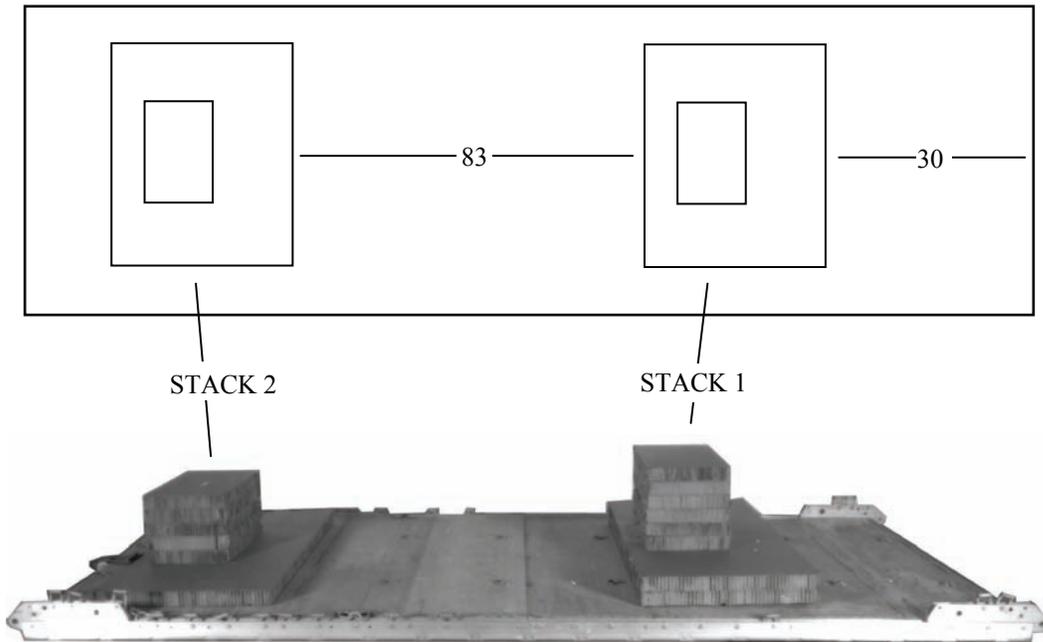


Figure 6-2. Honeycomb Stacks Prepared

- Notes.** 1. All measurements are given in inches.
 2. This drawing is not drawn to scale.



<i>Stack Number</i>	<i>Position of Stack on Platform</i>
	Place stack:
1	Centered 30 inches from front edge of platform.
2	Centered 83 inches from stack 1.

Figure 6-3. Honeycomb Stacks Positioned

STOWING ACCOMPANYING LOAD

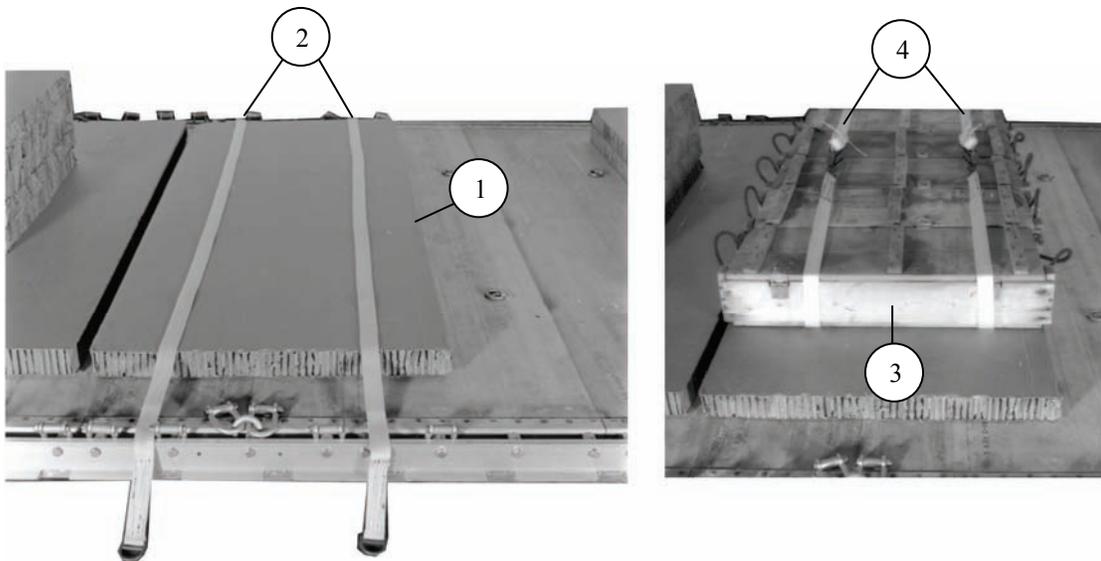
CAUTION

Only ammunition listed in FM 4-20.153/TO 13C7-18-41 may be airdropped.

6-4. Stow the accompanying load of 21 boxes of ammunition weighing 2,100 pounds as shown in Figures 6-4 and 6-5.

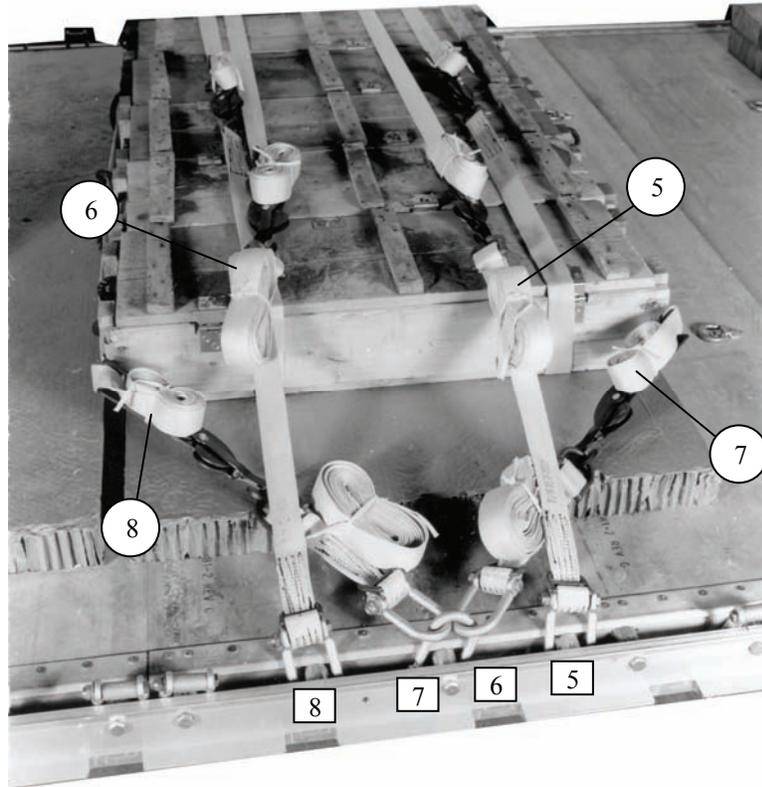
NOTICE OF EXCEPTION

Exception to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-
MMO-010/TO 13C7-1-5 is granted to rig ammunition with one layer
of honeycomb.



- ① Place an 84- by 36-inch piece of honeycomb centered and 1 inch in front of honeycomb stack 2.
- ② Center two 15-foot lashings 7 inches from each end of the honeycomb positioned in step 1.
- ③ Center five boxes of ammunition over the lashings.
- ④ Secure the lashings over the boxes with a D-ring and load binder.

Figure 6-4. First Stack of Ammunition Positioned



- 5 Route a 15-foot lashing through clevis 5 and through its own D-ring. Route a 15-foot lashing through clevis 5A and through its own D-ring. Secure the lashings on top of the boxes with two D-rings and a load binder.
- 6 Route a 15-foot lashing through clevis 8 and through its own D-ring. Route a 15-foot lashing through clevis 8A and through its own D-ring. Secure the lashings on top of the boxes with two D-rings and a load binder.
- 7 Route a 15-foot lashing through clevis 6A and through its own D-ring. Route the lashing through the box handles on the front side of the boxes. Route a 15-foot lashing through clevis 6 and through its own D-ring. Secure the two lashings on the right side as shown with two D-rings and a load binder.
- 8 Route a 15-foot lashing through clevis 7A and through its own D-ring. Route the lashing through the box handles on the front side of the boxes. Route a 15-foot lashing through clevis 7 and through its own D-ring. Secure the two lashings on the right side as shown with two D-rings and a load binder.

Figure 6-4. First Stack of Ammunition Positioned (Continued)

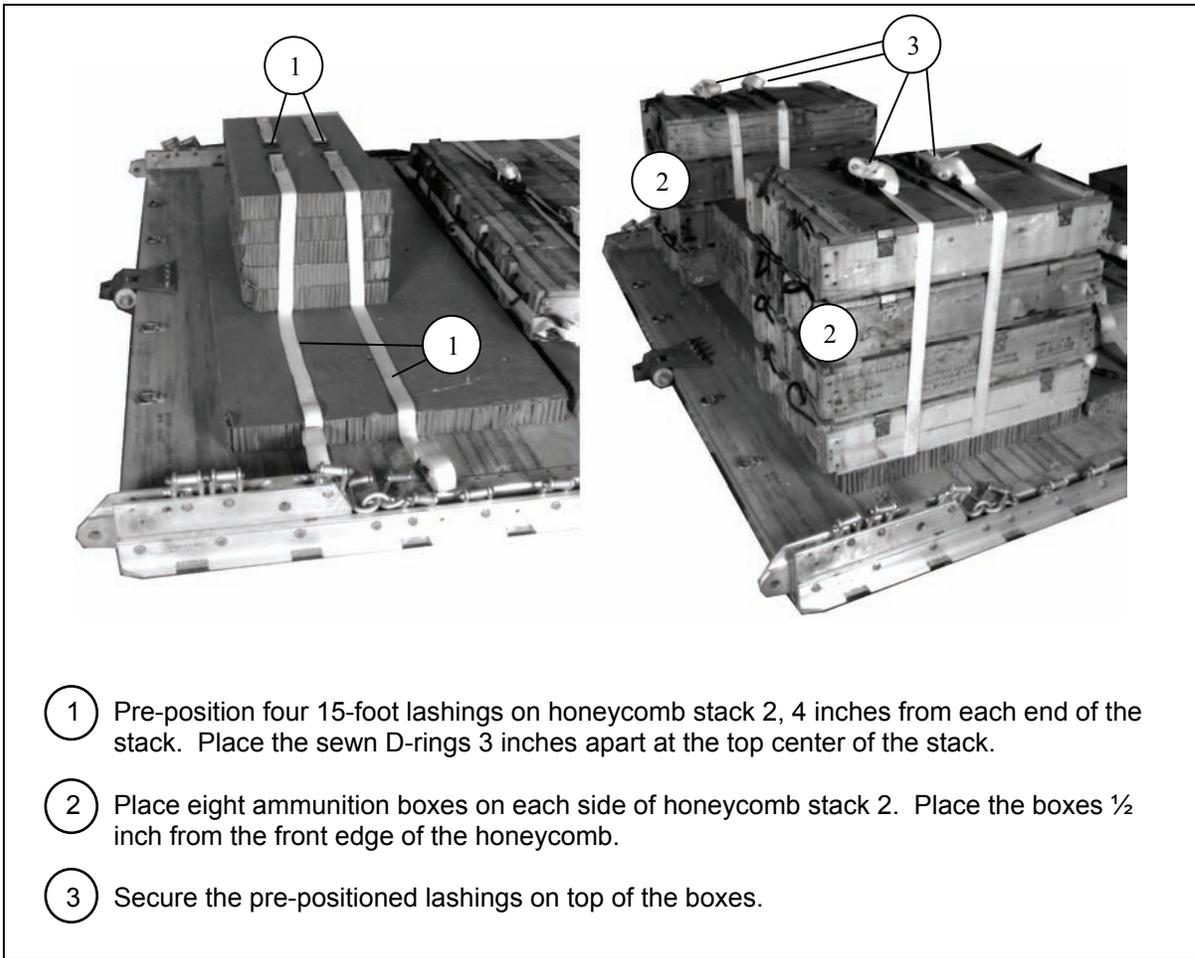


Figure 6-5. Ammunition Boxes Positioned on Honeycomb Stack 2

PREPARING HOWITZER

6-5. Prepare the howitzer as shown in Figure 6-6.

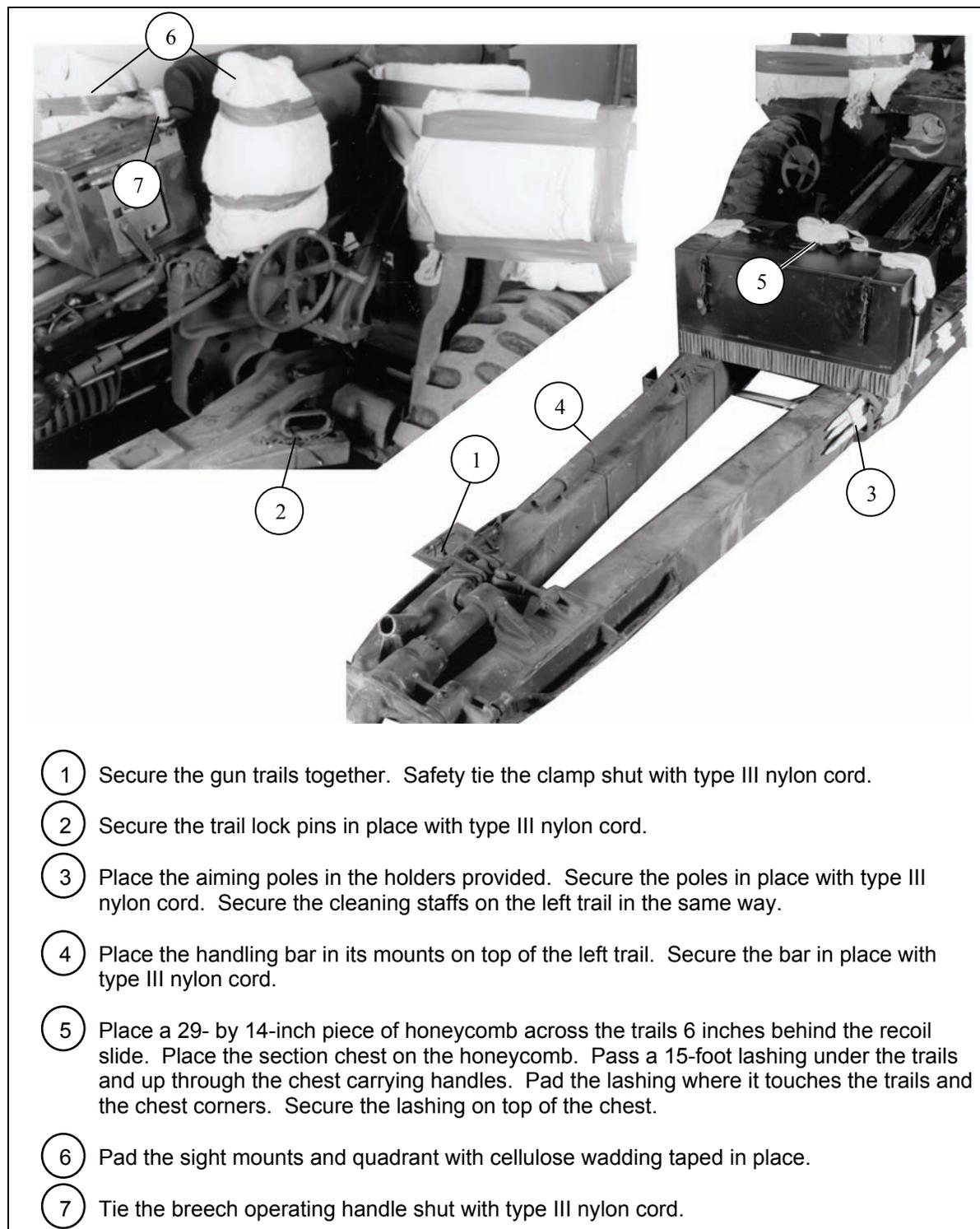


Figure 6-6. Howitzer Prepared

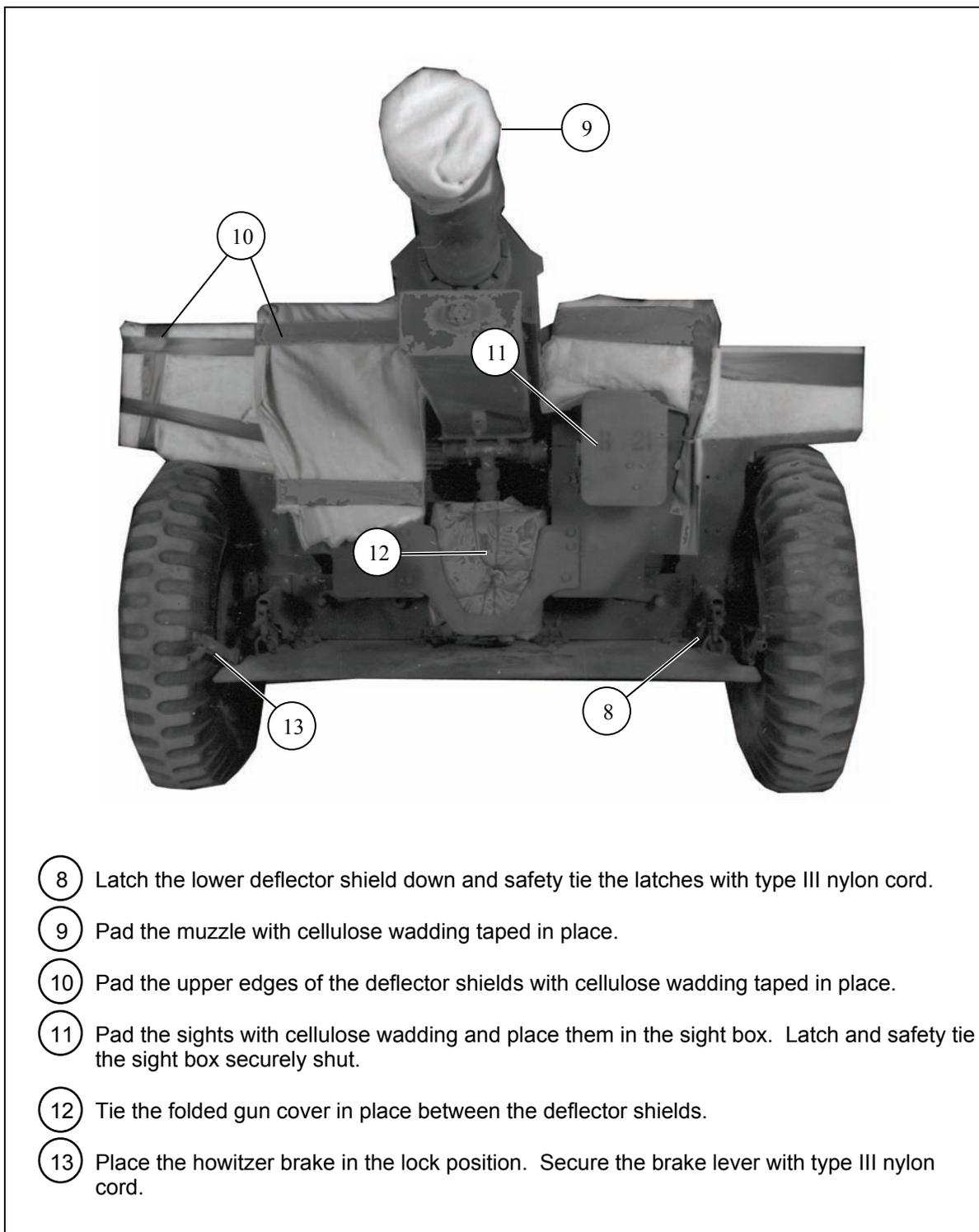


Figure 6-6. Howitzer Prepared (Continued)

PLACING HOWITZER ON PLATFORM

6-6. Place the howitzer on the honeycomb stacks as shown in Figure 6-7.

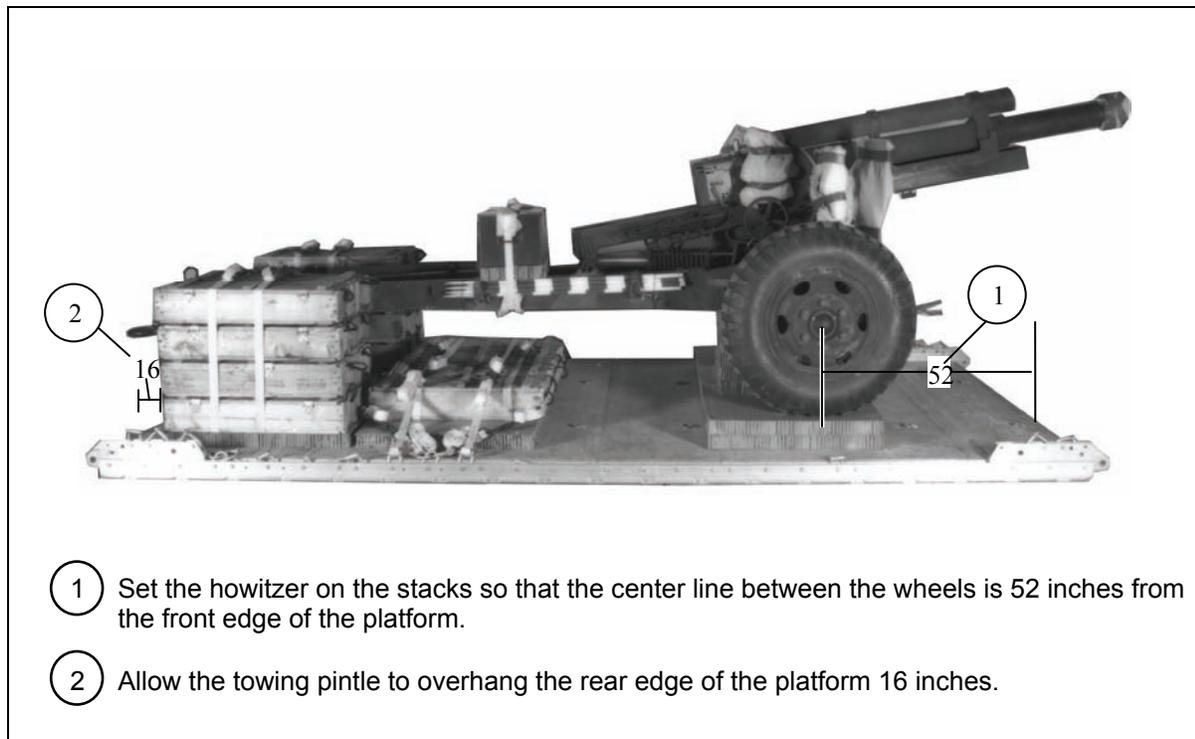


Figure 6-7. Howitzer Positioned on Platform

CONSTRUCTING ENDBOARD AND LASHING REAR AMMUNITION STACK TO PLATFORM

6-7. Construct the endboards and place them on the load as shown in Figure 6-8. Lash the ammunition placed on honeycomb stack 2 to the platform as shown in Figure 6-9.

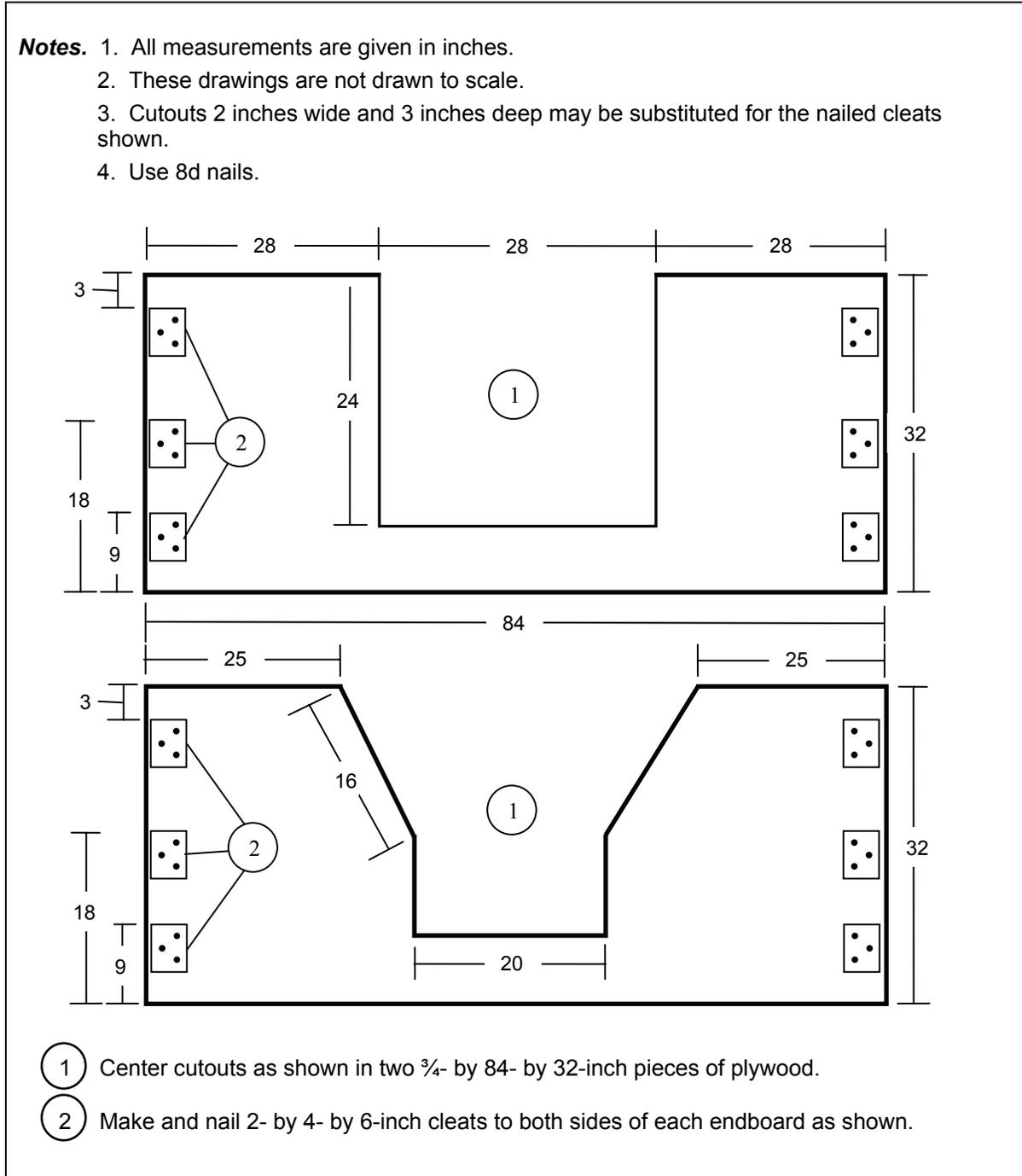
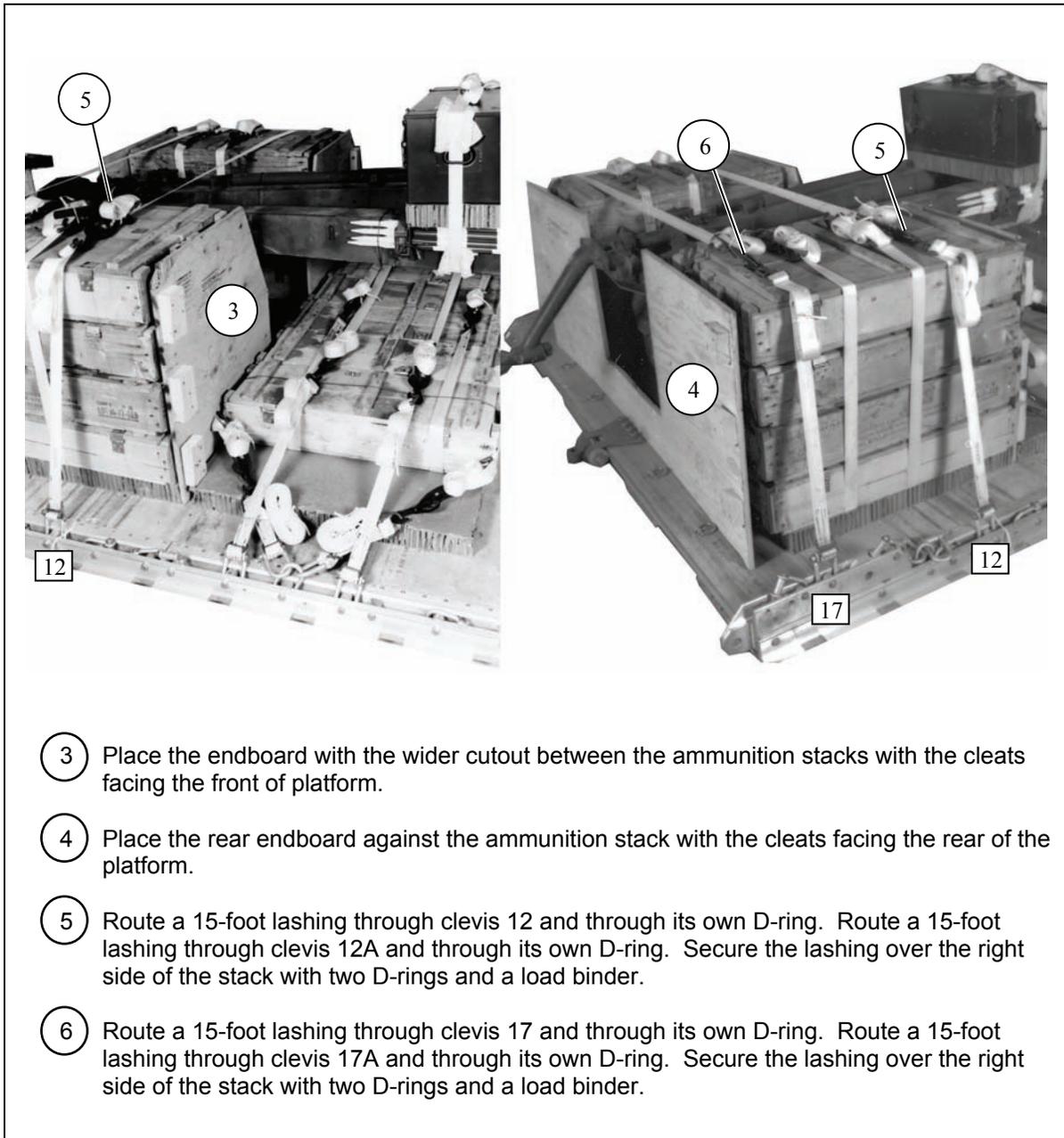


Figure 6-8. Ammunition Stowed and Lashed on Platform



- 3 Place the endboard with the wider cutout between the ammunition stacks with the cleats facing the front of platform.
- 4 Place the rear endboard against the ammunition stack with the cleats facing the rear of the platform.
- 5 Route a 15-foot lashing through clevis 12 and through its own D-ring. Route a 15-foot lashing through clevis 12A and through its own D-ring. Secure the lashing over the right side of the stack with two D-rings and a load binder.
- 6 Route a 15-foot lashing through clevis 17 and through its own D-ring. Route a 15-foot lashing through clevis 17A and through its own D-ring. Secure the lashing over the right side of the stack with two D-rings and a load binder.

Figure 6-8. Ammunition Stowed and Lashed on Platform (Continued)

LASHING HOWITZER

6-8. Lash the howitzer to the platform as shown in Figures 6-9 and 6-10.

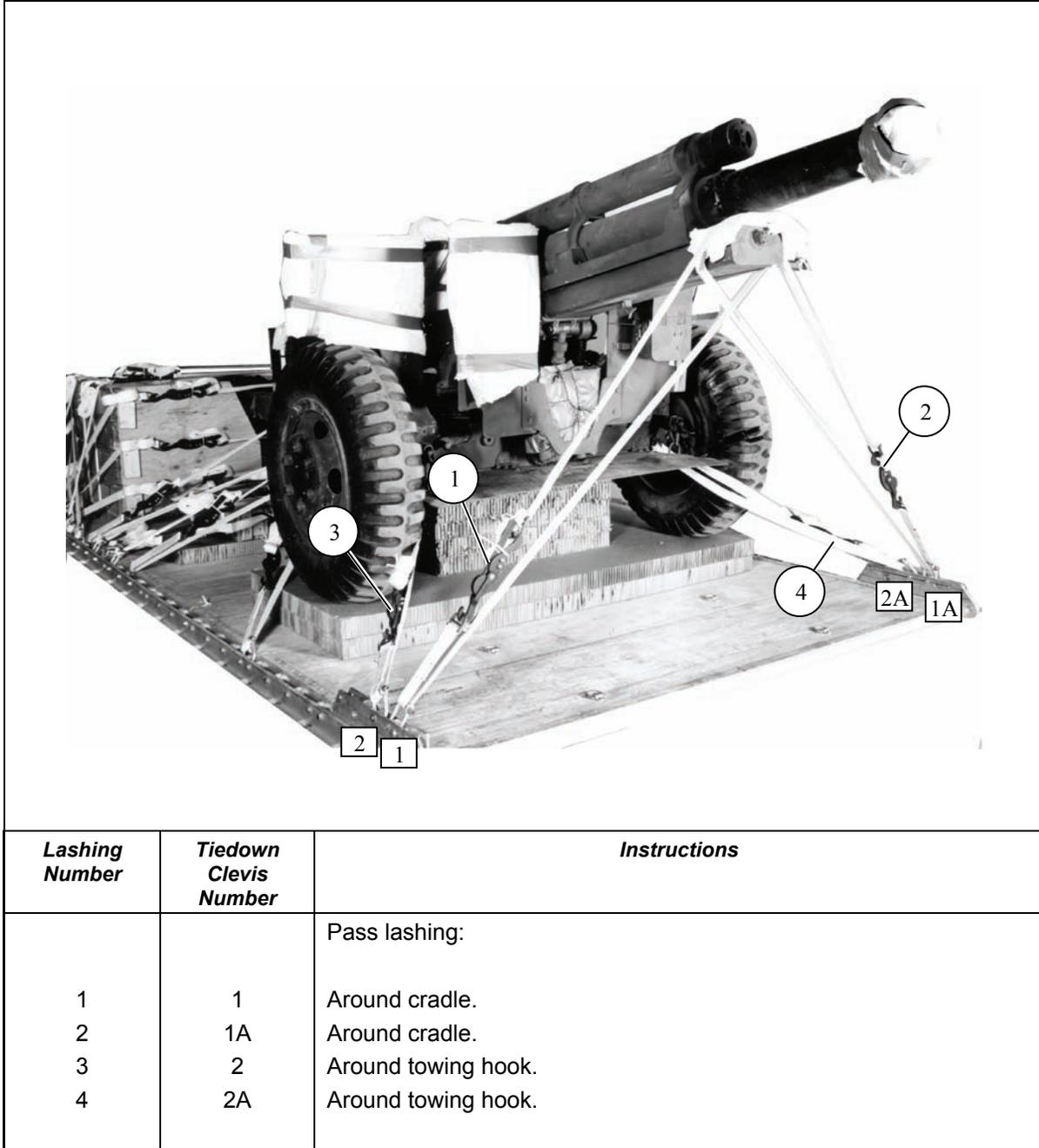
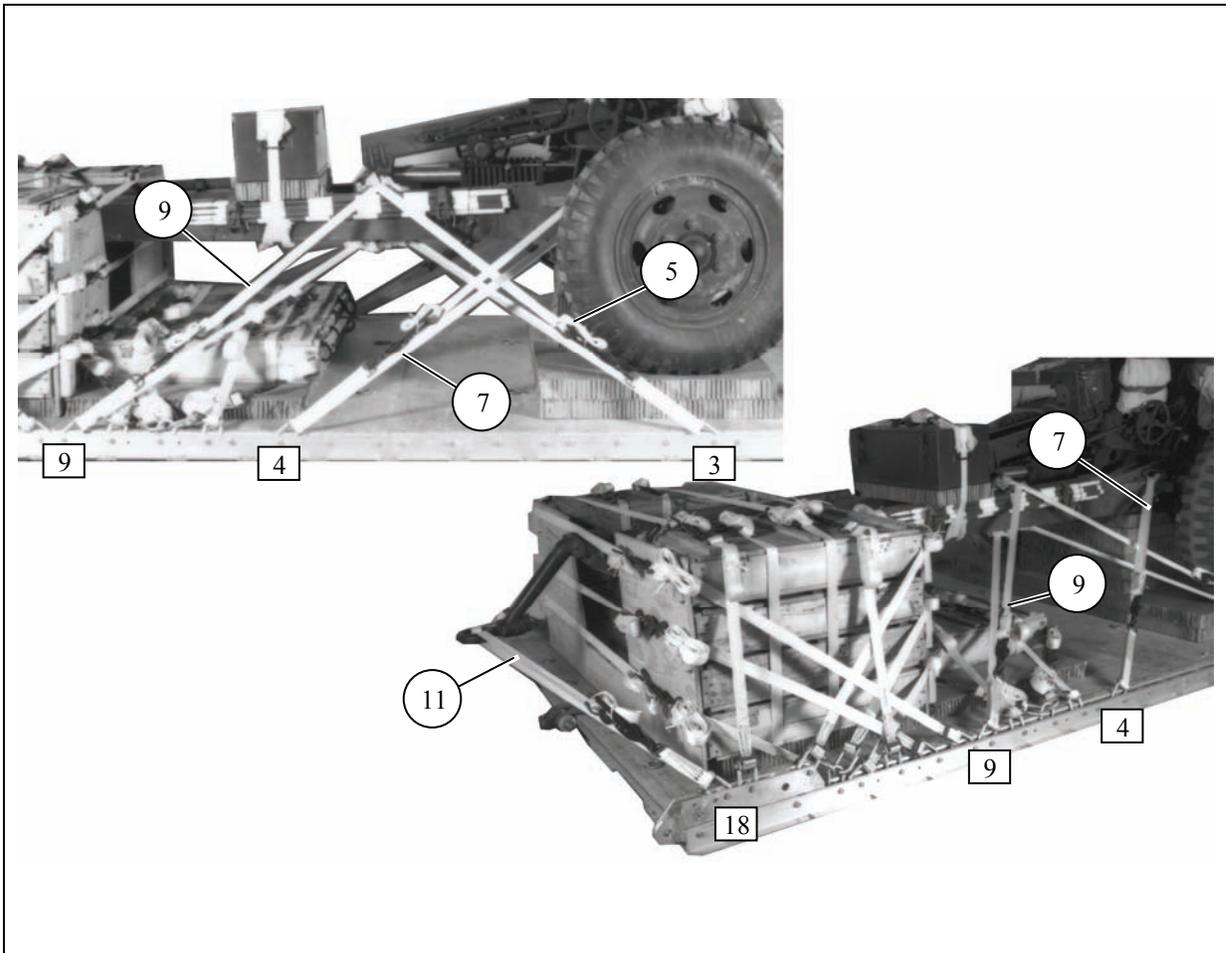


Figure 6-9. Lashings 1 Through 4 Installed



<i>Lashing Number</i>	<i>Tiedown Clevis Number</i>	<i>Instructions</i>
		Pass Lashing:
5	3	Around right trail and around rear of traveling lock bracket.
6	3A	Around left trail and around rear of traveling lock bracket.
7	4	Around trail locking arm.
8	4A	Around trail locking arm.
9	9	Around right trail and around front side of traveling lock bracket.
10	9A	Around left trail and around front side of traveling lock bracket.
11	18	Through towing pintle.
12	18A	Through towing pintle.

Figure 6-10. Lashings 5 though 12 Installed

INSTALLING SUSPENSION SLINGS

6-9. Install the suspension slings, the deadman's tie and safety tie the slings as shown in Figure 6-11.

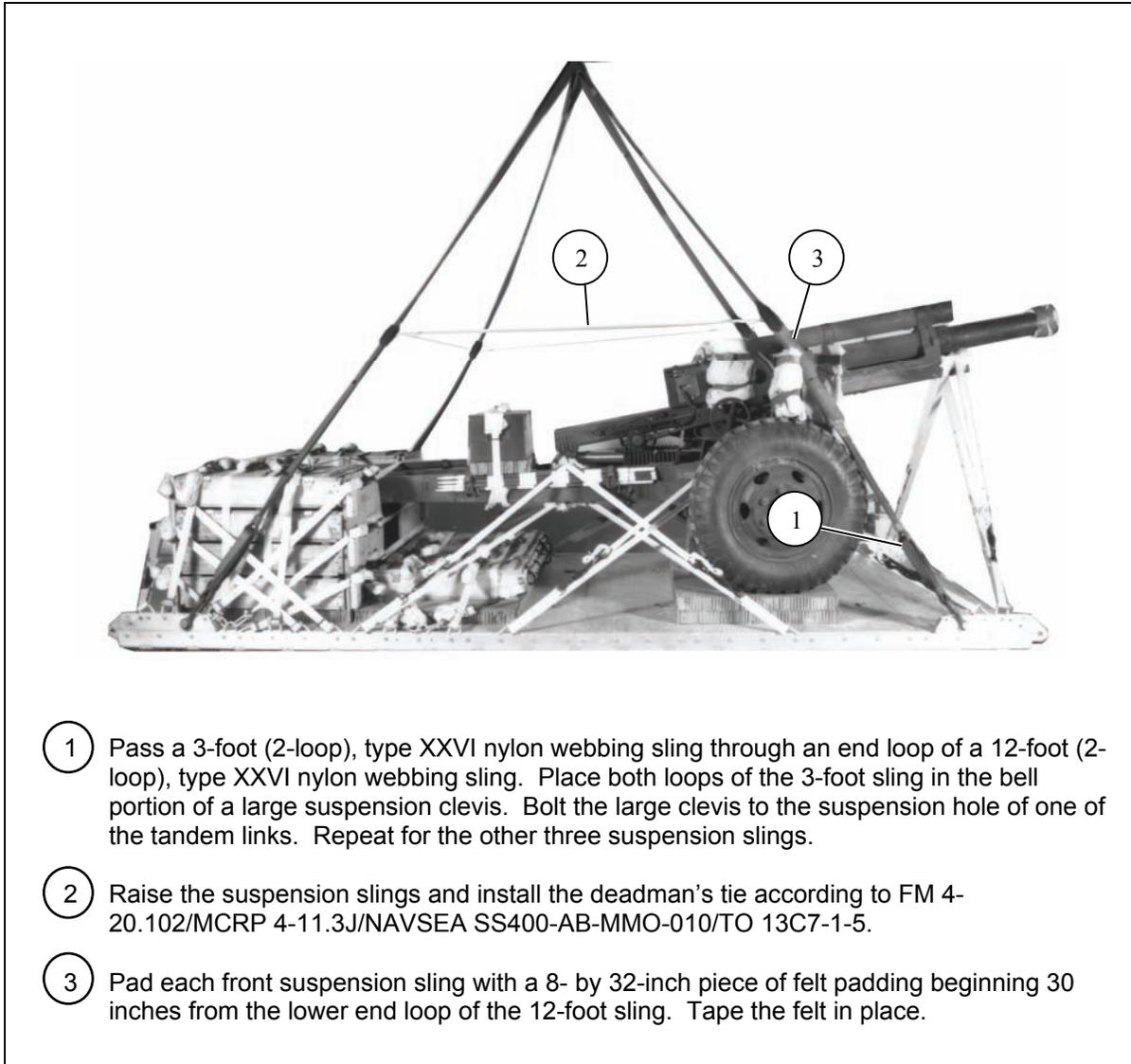
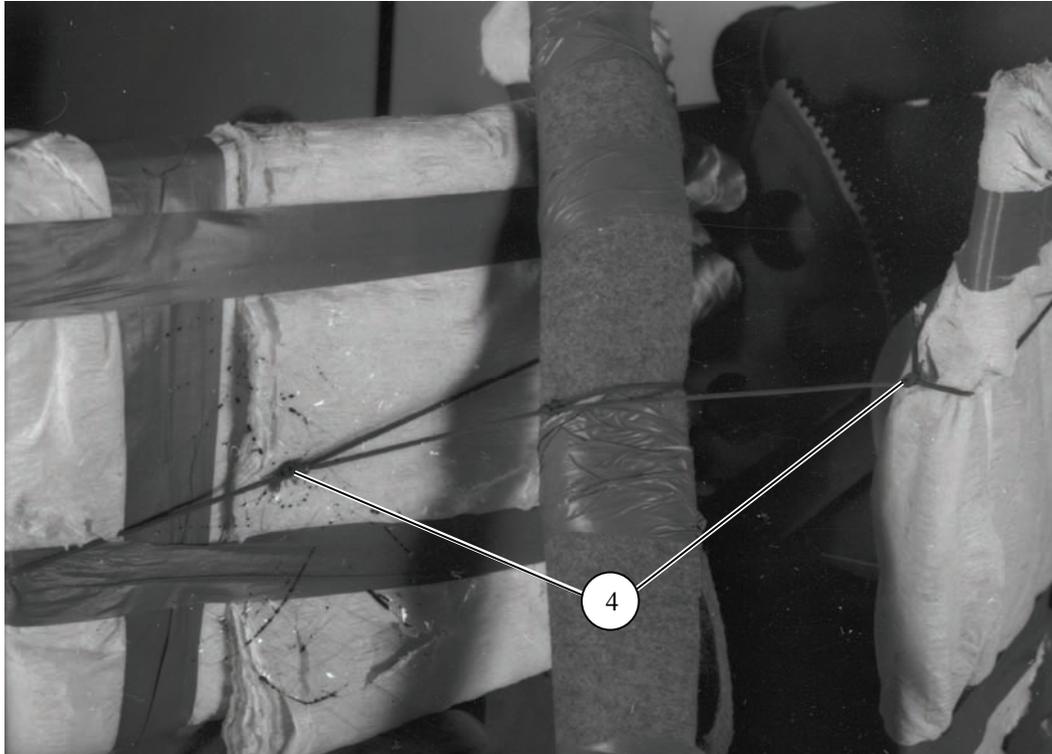


Figure 6-11. Suspension Slings and Deadman's Tie Installed

CAUTION

Each front suspension sling must be securely tied to the deflector shield with type III nylon cord.



- ④ Safety tie the front suspension slings to the deflector shield with type III nylon cord.

Figure 6-11. Suspension Slings and Deadman's Tie Installed (Continued)

STOWING CARGO PARACHUTES

6-10. Stow the G-11 cargo parachutes according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 6-12.

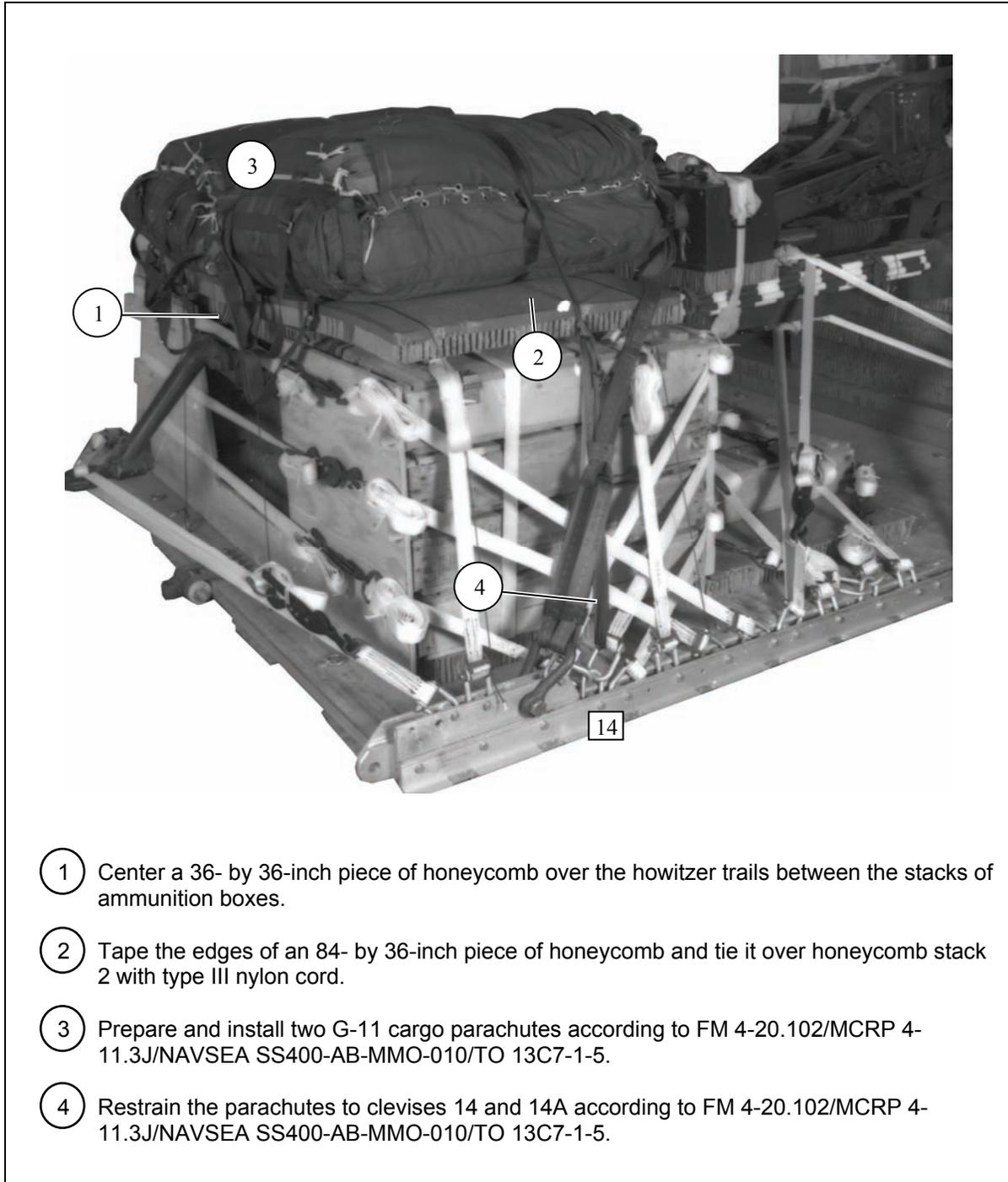
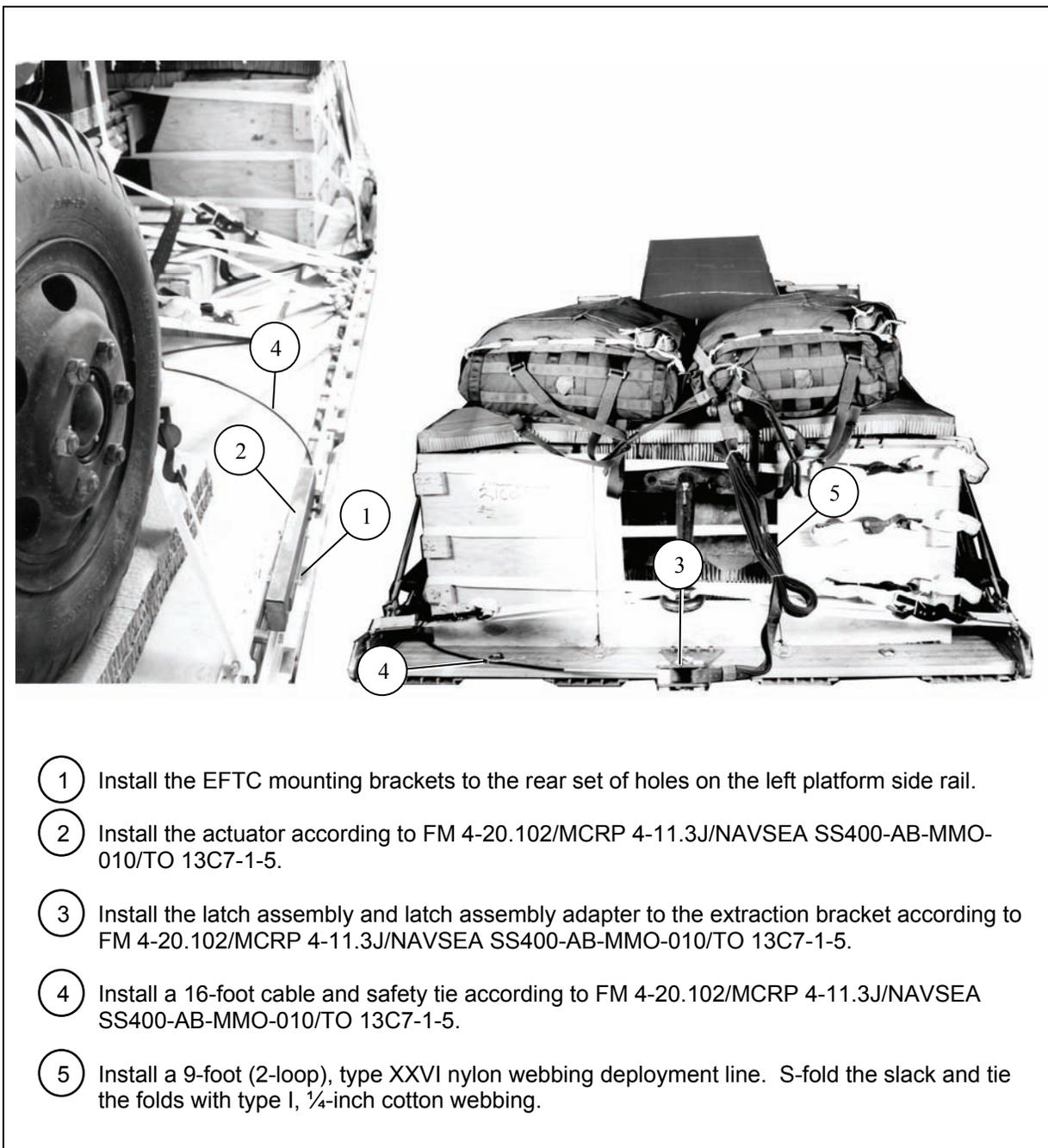


Figure 6-12. Cargo Parachutes Stowed

INSTALLING EXTRACTION SYSTEM

6-11. Install the EFTC extraction system on the load according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 6-13. If applicable install the EPJS according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

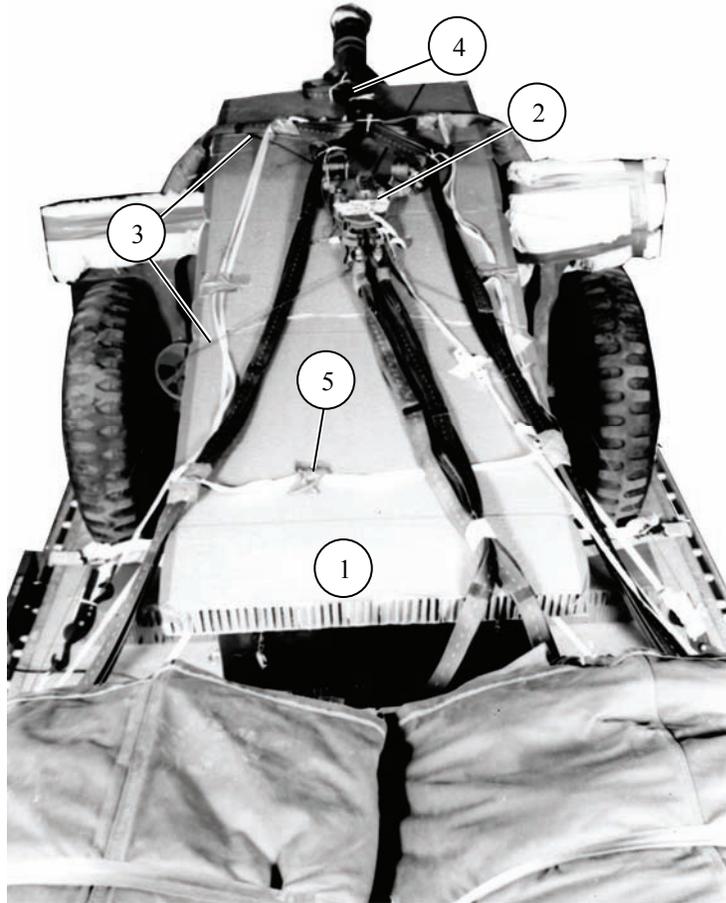


- 1 Install the EFTC mounting brackets to the rear set of holes on the left platform side rail.
- 2 Install the actuator according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
- 3 Install the latch assembly and latch assembly adapter to the extraction bracket according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
- 4 Install a 16-foot cable and safety tie according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
- 5 Install a 9-foot (2-loop), type XXVI nylon webbing deployment line. S-fold the slack and tie the folds with type I, 1/4-inch cotton webbing.

Figure 6-13. EFTC Installed

INSTALLING RELEASE SYSTEM

6-12. Prepare and install an M-1 cargo parachute release according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 6-14.



- 1 Cover the howitzer from the front deflector shield to 6 inches behind the section chest with a full sheet of honeycomb. Tape and tie the honeycomb to convenient points on the load with type III nylon cord.
- 2 Prepare and install an M-1 cargo parachute release according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
- 3 Place the release assembly on the honeycomb over the breech area and tie the release to convenient points on the load according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
- 4 S-fold and tie slack in the suspension slings with type I, ¼-inch cotton webbing.
- 5 Tape each section of the deadman's tie to the honeycomb.

Figure 6-14. M-1 Release Installed

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

6-13. Install provisions for emergency restraints on the front of the platform according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

PLACING EXTRACTION PARACHUTES

6-14. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Rig the extraction line in an extraction line bag according to TM 10-1670-286-20/TO13C5-2-41. Place the extraction parachute and extraction line on the load for installation in the aircraft.

MARKING RIGGED LOAD

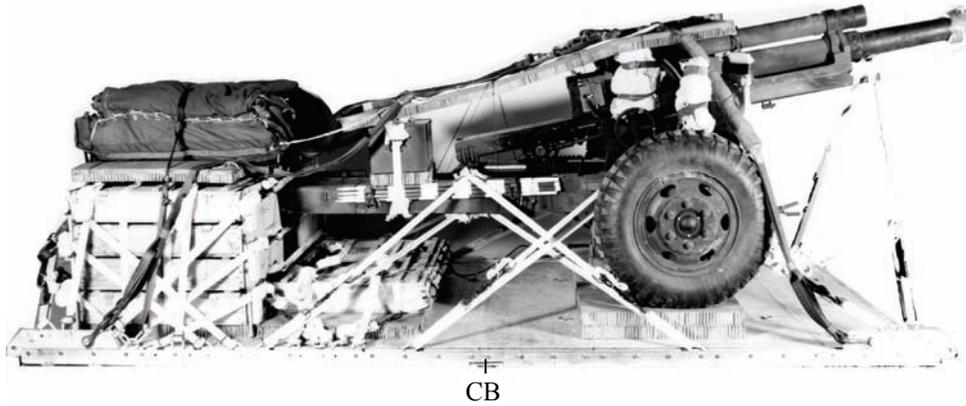
6-15. Marked the rigged load according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 6-15. Complete Shipper's Declaration for Dangerous Goods according to AFMAN 24-204(I)/TM 38-250. If the load varies from the one shown, the weight, height, CB, tip-off curve, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

6-16. Use the equipment listed in Table 6-1 to rig the load shown in Figure 6-15.

CAUTION

Make the final rigger inspection required by FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Weight: Load shown	9,500 pounds
Maximum load allowed	10,000 pounds
Height	79 inches
Width.....	108 inches
Overall Length	192 inches
Overhang: Front	25 inches
Rear (EFTC)	18 inches
Rear (EPJS).....	30 inches
Center of Balance (from front edge of platform).....	96 inches

Figure 6-15. M101A1 Howitzer Rigged for Low-Velocity Airdrop on a Type V Platform

Table 6-1. Equipment Required for Rigging M101A1 Howitzer for Low-Velocity Airdrop on a Type V Platform

<i>National Stock Number</i>	<i>Item</i>	<i>Quantity</i>
8040-00-273-8713	Adhesive, paste, 1-gallon	As required
	Clevis, suspension:	5
4030-00-678-8562	3/4-inch (medium) emergency restraint	2
4030-00-090-5354	1-inch (large)	5
8305-00-184-2034	Cloth, cotton duck, 60-inch	As required
4020-00-246-0688	Cord, nylon, type III	As required
1670-00-434-5785	Coupling, airdrop, extraction force transfer with 16-foot cable	1
1670-00-360-0328	Cover, clevis, large	3
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
8305-00-191-1101	Felt, ½-inch	As required
1670-01-183-2678	Leaf, extraction line	2
1670-01-064-4452	Line, drogue, 60-foot (1-loop), type XXVI nylon webbing	1
	Line, extraction, type XXVI nylon webbing:	
1670-01-062-6313	60-foot (3-loop)	1
	Or	
1670-01-107-7651	140-foot (3-loop)	1
	Link assembly, two-point:	
1670-01-493-6418	3 3/4-inch	1
1670-01-493-6420	5 1/2 -inch	1
5510-00-220-6146	Lumber, 2- by 4-inch	As required
5315-00-010-4659	Nail, steel wire, common 8d	As required
1670-00-753-3928	Pad, energy-dissipating, honeycomb	8 sheets
	Parachute:	
1670-01-016-7841	Cargo, G-11	2
1670-01-063-3716	Cargo, extraction, 22-foot	1
1670-01-063-3715	Drogue, 15-foot	1
	Platform, airdrop, type V, 16-foot	
1670-01-353-8425	Bracket assembly, coupling	1
1670-01-353-8424	Bracket assembly, extraction	1
1670-01-162-2372	Clevis assembly	40
1670-01-162-2381	Tandem link	4
5530-00-128-4981	Plywood, ¾-inch	1 sheet
1670-01-097-8816	Release, cargo parachute, M-1	1

Table 6-1. Equipment Required for Rigging M101A1 Howitzer for Low-Velocity Airdrop on a Type V Platform (Continued)

<i>National Stock Number</i>	<i>Item</i>	<i>Quantity</i>
	Sling, cargo airdrop:	
	For deployment line:	
1670-01-062-6304	9-foot (2-loop), type XXVI nylon webbing	1
	For riser extension:	
1670-01-062-6302	20-foot (2-loop), type XXVI nylon webbing	2
	For suspension:	
1670-01-062-6301	3-foot (2-loop), type XXVI nylon webbing	4
1670-01-062-6303	12-foot (2-loop), type XXVI nylon webbing	4
1670-00-040-8219	Strap, parachute release, multicut	2
7515-00-266-5016	Tape, adhesive, 2-in	As required
1670-00-937-0271	Tie-down assembly, 15-ft	43
1670-01-483-8259	Tow release mechanism (H-block for C-17)	1
	Webbing:	
8305-00-268-2411	Cotton, 1/4-inch, type I	As required
	Nylon:	
8305-00-082-5752	Tubular, 1/2-inch	As required
8305-00-263-3591	Type VIII webbing	As required

Glossary

AFB	Air Force Base
AFMAN	Air Force manual
AFTO	Air Force Technical Order
AMC	Air Mobility Command
APERS	airpersonnel
ARNG	Army National Guard
CB	center of balance
d	penny
EFTC	extraction force transfer coupling
EPJS	extraction parachute jettison system
FM	field manual
HERAP	high-explosive rocket-assisted projectile
HMMWV	high mobility multi-purpose wheeled vehicle
HQ	headquarters
NAVSEA	Naval Sea Command
MCRP	Marine Corps Reference Publication
NBC	nuclear, biological, chemical
no	number
OVE	on-vehicular equipment
TM	technical manual
TO	technical order
TRADOC	Training and Doctrine Command
w	with

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