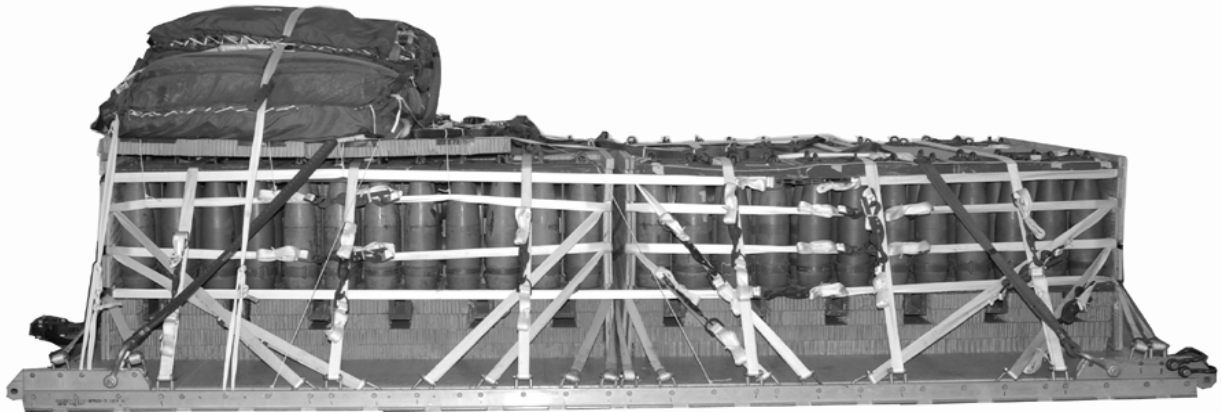




**AIRDROP OF SUPPLIES AND EQUIPMENT:
RIGGING TYPICAL SUPPLY LOADS**



MAY 2004

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**AIRDROP OF SUPPLIES AND EQUIPMENT:
RIGGING TYPICAL SUPPLY LOADS**

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PREFACE

SCOPE

This manual tells and shows how to prepare and rig mass supply loads. Procedures are given for typical loads that can be contained by the methods shown. These procedures are meant as a guide, and may be adapted to specific loads. Procedures are also given for some specific ammunition loads. This manual is designed for all parachute riggers.

USER INFORMATION

The proponent of this publication is HQ TRADOC. You are encouraged to report any errors or omissions and to suggest ways to make this a better manual. Army personnel, send your comments on DA Form 2028 directly to:

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Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men.

Chapter 1

INTRODUCTION

DESCRIPTION OF ITEMS

1-1. Bulk supplies consisting of rations, fuels, lubricants, ammunition, and various unit equipment can be rigged on standard airdrop platforms using the procedures given in this manual. Items packaged in containers or units of the same size, such as rations and ammunition are rigged using lashings and endboards. These procedures can be adapted for loads that are different from the specific ammunition loads shown. Some items are more easily rigged in A-22 containers. Items of varying and irregular size can be padded, secured, and contained in mass supply boxes on 12, 16, and 20-foot platforms. Additionally, items using endboards and A-22 containers are shown rigged using the palletized load system (PLS).

CAUTION

The load weights may vary from the loads shown. Be sure that each load is weighed, and the parachute requirements, CB, and tip-off curve computed.

SPECIAL CONSIDERATIONS

1-2. Special considerations for this manual are given below.

- a. The loads covered in this manual may include hazardous materials as defined in AFMAN(I) 24-204/TM 38-250. If included, the hazardous materials must be packaged, marked, and labeled as required by AFMAN(I) 24-204/TM 38-250.
- b. Only ammunition listed in FM 4-20.153/MCRP 4-11.3B/TO 13C7-18-41 may be airdropped.
- c. A copy of this manual must be available to the joint airdrop inspectors during the before- and after-loading inspection.

AIR FORCE UNILATERAL LOADS

1-3. Air Force unilateral loads are used to support wing airdrop proficiency requirements. The loads are designed as an alternative to actual rigged loads, using the procedures for rigging mass supplies on an 8-foot Type V platform. Ballast for the unilateral platform loads normally consists of railroad ties, lumber or ammo boxes filled with dirt or rocks, however any material may be used as long as it is sufficiently restrained. The following exceptions to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and this manual are authorized for Air Force unilateral loads only:

a. Honeycomb is not required under the ballast; however, due to the lack of honeycomb, the life span of the Type V platform may be reduced. Units must inspect the platform for cracks, loose rivets, delaminating panels, and general damage prior to each drop. All loads must be re-rigged and re-inspected after each airdrop.

b. Honeycomb or a suitable substitute (felt covered plywood) must be used to provide a flat and stable surface for the parachutes and releases.

Chapter 2

RIGGING SUPPLY LOADS ON AN 8-FOOT, TYPE V PLATFORM FOR LOW-VELOCITY AIRDROP

Section I

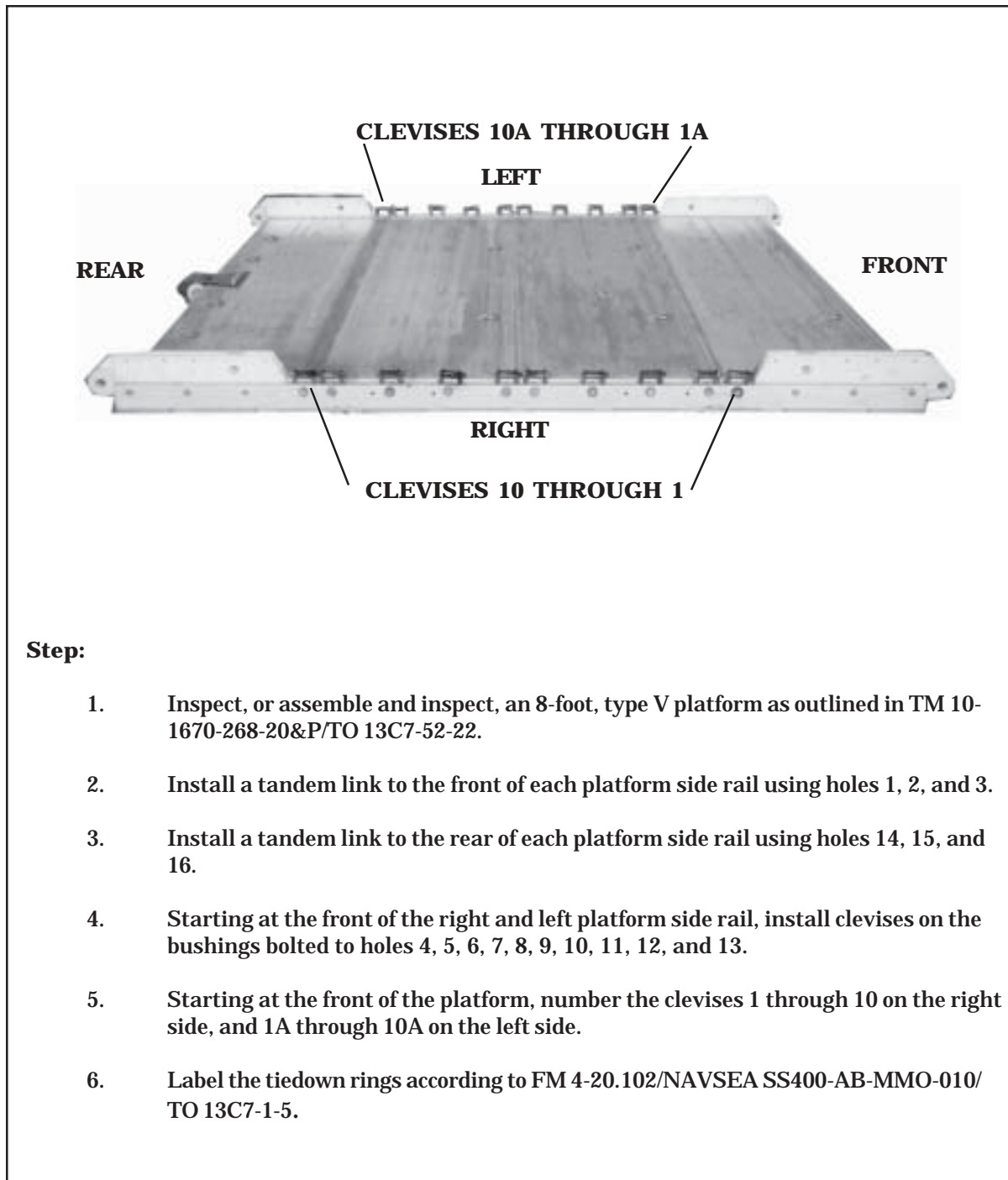
RIGGING BULK SUPPLIES

DESCRIPTION OF LOAD

2-1. Bulk supplies consisting of rations, equipment, fuel, ammunition, or other items of general supply are rigged on an 8-foot, type V airdrop platform with G-11 cargo parachutes. Items packaged or configured so that they can be restrained by endboards and lashings can be airdropped using these procedures. Modifications to the honeycomb, endboards, and lashings may be necessary to allow for items of different sizes and shapes from those shown. For extraction purposes, the rigged load must weigh at least 2,520 pounds. Refer to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 for the weight limitations for the number of parachutes to be used.

PREPARING PLATFORM

2-2. Prepare an 8-foot, type V platform as shown in Figure 2-1.



Step:

1. Inspect, or assemble and inspect, an 8-foot, type V platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.
2. Install a tandem link to the front of each platform side rail using holes 1, 2, and 3.
3. Install a tandem link to the rear of each platform side rail using holes 14, 15, and 16.
4. Starting at the front of the right and left platform side rail, install clevises on the bushings bolted to holes 4, 5, 6, 7, 8, 9, 10, 11, 12, and 13.
5. Starting at the front of the platform, number the clevises 1 through 10 on the right side, and 1A through 10A on the left side.
6. Label the tiedown rings according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

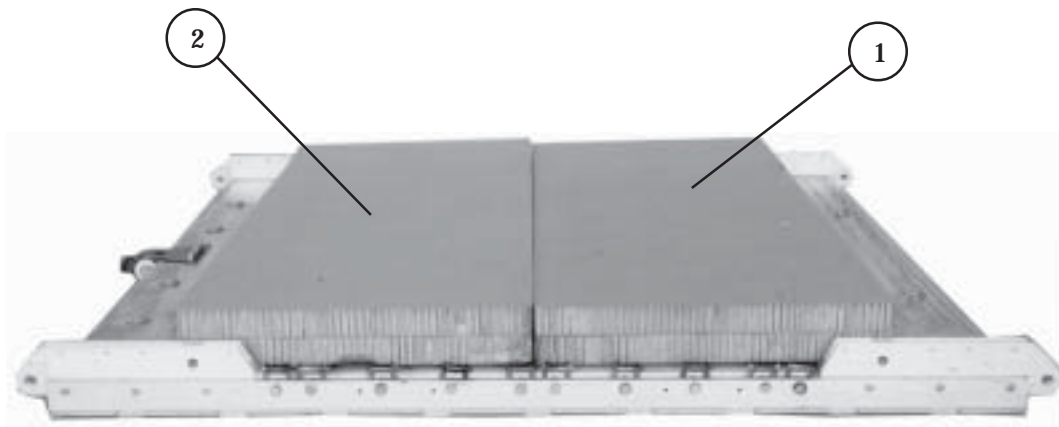
Figure 2-1. Platform Prepared

PLACING HONEYCOMB

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

Notes:

1. When ammunition is dropped, two layers of honeycomb are required.
2. When rigging this load for airdrop on a drop zone with ground elevation of 6,000 to 10,000 feet, add an additional layer of honeycomb.
3. Adjust the dimensions of the honeycomb to fit the items being dropped.
4. Do not cover the extraction bracket with honeycomb.



- 1 Glue two full 36- by 96-inch sheets of honeycomb together. Center them 12 inches from the front edge of the platform.
- 2 Make a stack as in step 1 above and place it flush against the stack placed in step 1.

Figure 2-2. Honeycomb Placed

POSITIONING AND SECURING LOAD

2-4. Place four 30-foot lashings on the honeycomb, place the load on the honeycomb, and secure the lashings as shown in Figure 2-3. Adapt the procedures shown for loads configured differently.

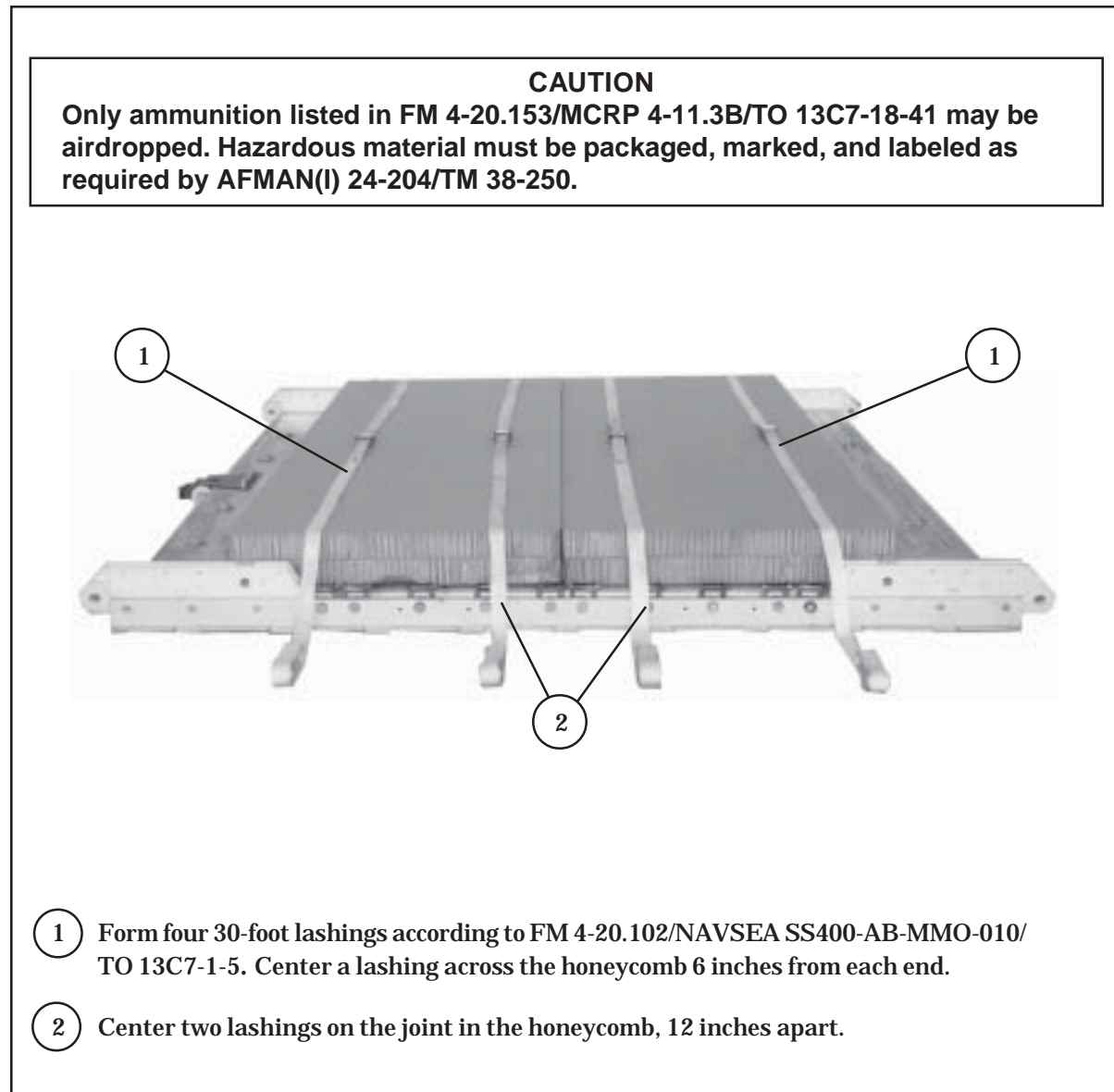
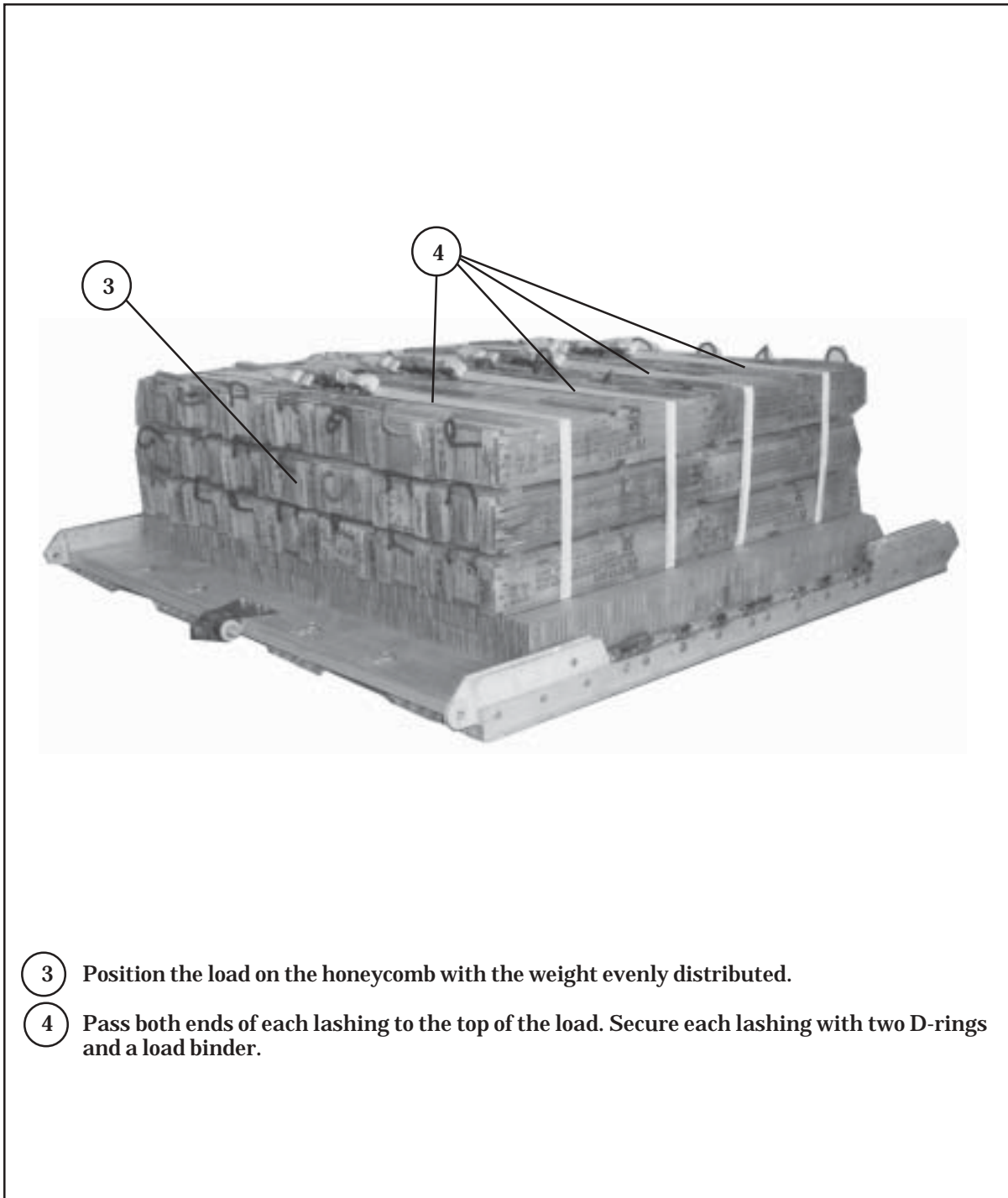


Figure 2-3. Load Positioned and Secured



- ③ Position the load on the honeycomb with the weight evenly distributed.
- ④ Pass both ends of each lashing to the top of the load. Secure each lashing with two D-rings and a load binder.

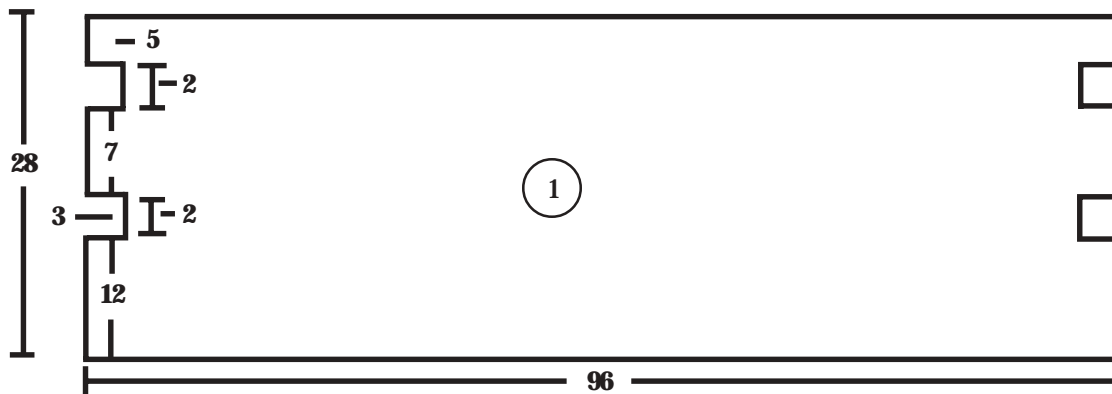
Figure 2-3. Load Positioned and Secured (Continued)

CONSTRUCTING AND INSTALLING ENDBOARDS

2-5. Construct the endboards and install them on the load as shown in Figure 2-4.

Notes:

1. This drawing is not to scale.
2. All dimensions are in inches.
3. The dimensions of the endboards will vary, depending on the load being rigged. The endboards must be even with the top of the load.



- 1 Construct two endboards using one 3/4- by 28- by 96-inch piece of plywood for each endboard. Make cutouts as shown.

Note: Tape or pad the cutouts in the endboards to protect the lashings from sharp edges.

Figure 2-4. Endboards Constructed and Installed

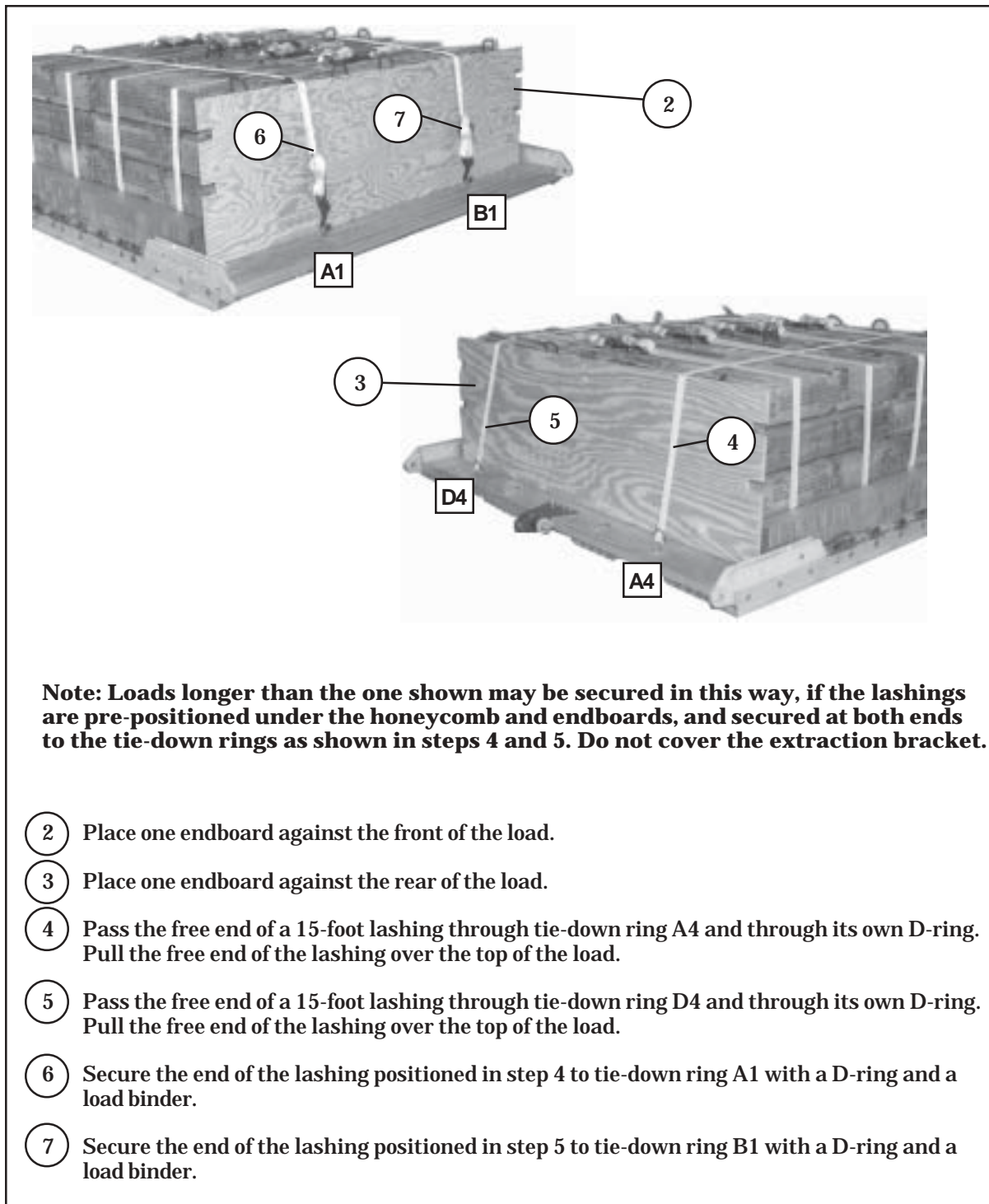


Figure 2-4. Endboards Constructed and Installed (Continued)

INSTALLING LASHINGS

2-6. Lash the load to the platform according to FM 4-20.102/NAVSEA SS400-AB- MMO-010/TO 13C7-1-5, and as shown in Figures 2-5, 2-6, and 2-7.

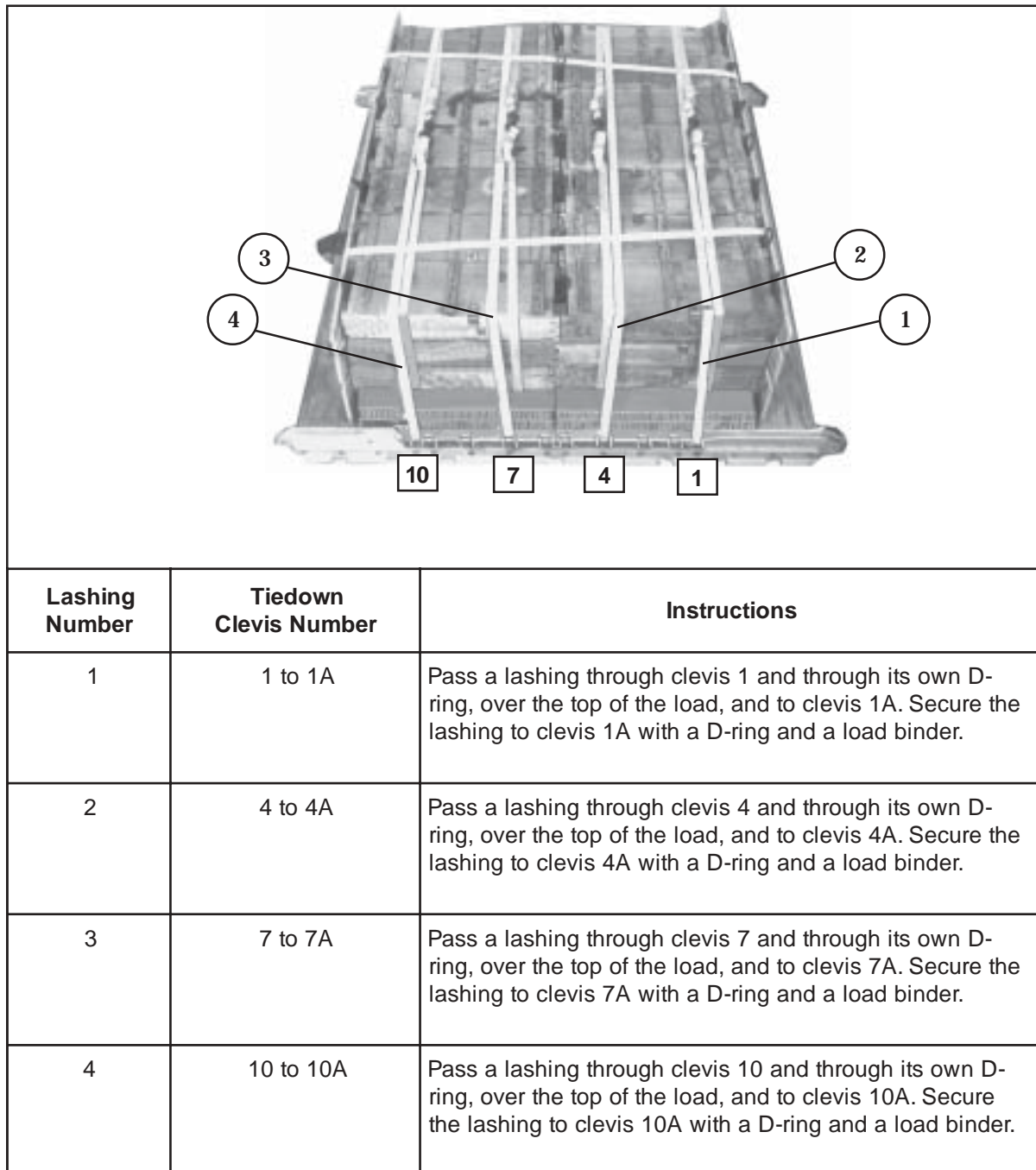
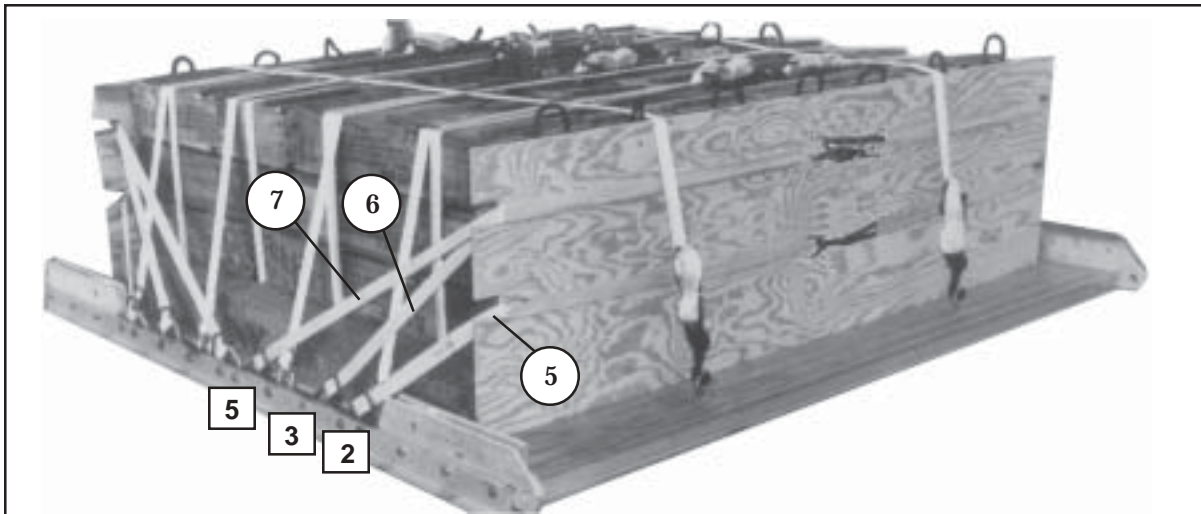


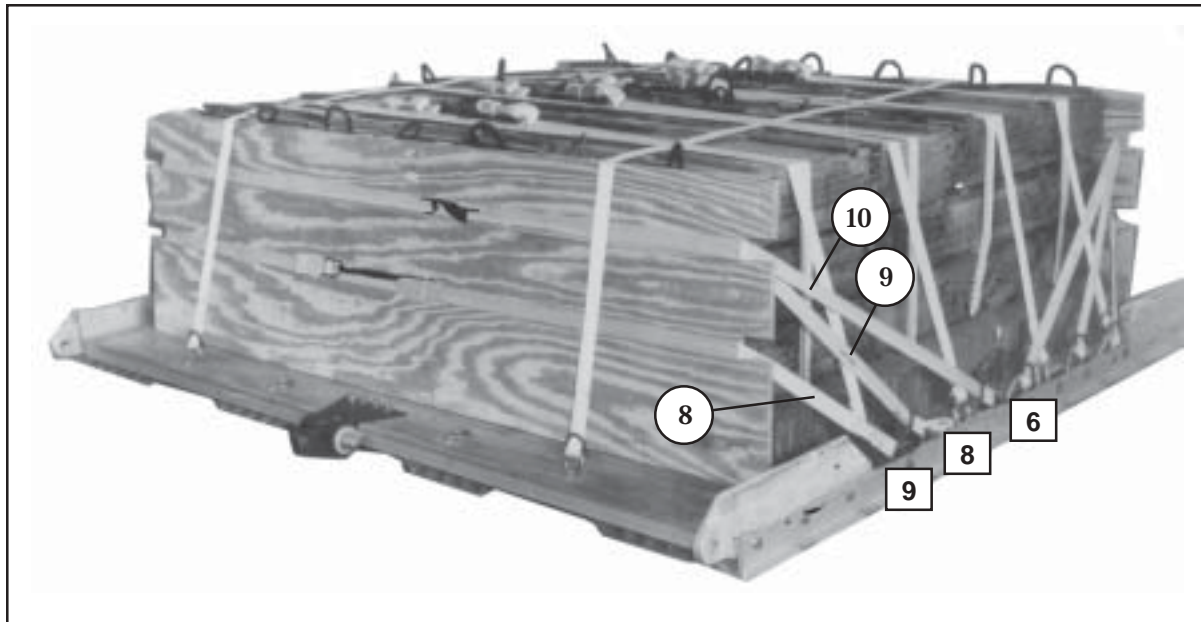
Figure 2-5. Lashings 1 Through 4 Installed



Note: Position the load binders so that they will be accessible for retightening and inspection when the load is fully rigged.

Lashing Number	Tiedown Clevis Number	Instructions
5	2 and 2A	Pass a 15-foot lashing through clevis 2 and through its own D-ring, and through the lower cutout in the front endboard. Pass another lashing through clevis 2A and through its own D-ring, and through the lower cutout in the front endboard. Secure the lashings together in the middle of the front endboard with two D-rings and a load binder.
6	3 and 3A	Pass a 15-foot lashing through clevis 3 and through its own D-ring, and through the upper cutout in the front endboard. Pass another lashing through clevis 3A and through its own D-ring, and through the upper cutout in the front endboard. Secure the lashings together in the middle of the front endboard with two D-rings and a load binder.
7	5 and 5A	Pass a 15-foot lashing through clevis 5 and through its own D-ring, and through the upper cutout in the front endboard. Pass another lashing through clevis 5A and through its own D-ring, and through the upper cutout in the front endboard. Secure the lashings together in the middle of the front endboard with two D-rings and a load binder.

Figure 2-6. Lashings 5 Through 7 Installed



Lashing Number	Tiedown Clevis Number	Instructions
8	9 and 9A	Pass a 15-foot lashing through clevis 9 and through its own D-ring, and through the lower cutout in the rear endboard. Pass another lashing through clevis 9A and through its own D-ring, and through the lower cutout in the rear endboard. Secure the lashings together in the middle of the rear endboard with two D-rings and a load binder.
9	8 and 8A	Pass a 15-foot lashing through clevis 8 and through its own D-ring, and through the upper cutout in the rear endboard. Pass another lashing through clevis 8A and through its own D-ring, and through the upper cutout in the rear endboard. Secure the lashings together in the middle of the rear endboard with two D-rings and a load binder.
10	6 and 6A	Pass a 15-foot lashing through clevis 6 and through its own D-ring, and through the upper cutout in the rear endboard. Pass another lashing through clevis 6A and through its own D-ring, and through the upper cutout in the rear endboard. Secure the lashings together in the middle of the rear endboard with two D-rings and a load binder.

Figure 2-7. Lashings 8 Through 10 Installed

INSTALLING PARACHUTE STOWAGE PLATFORM

2-7. Install the parachute stowage platform as shown in Figure 2-8.

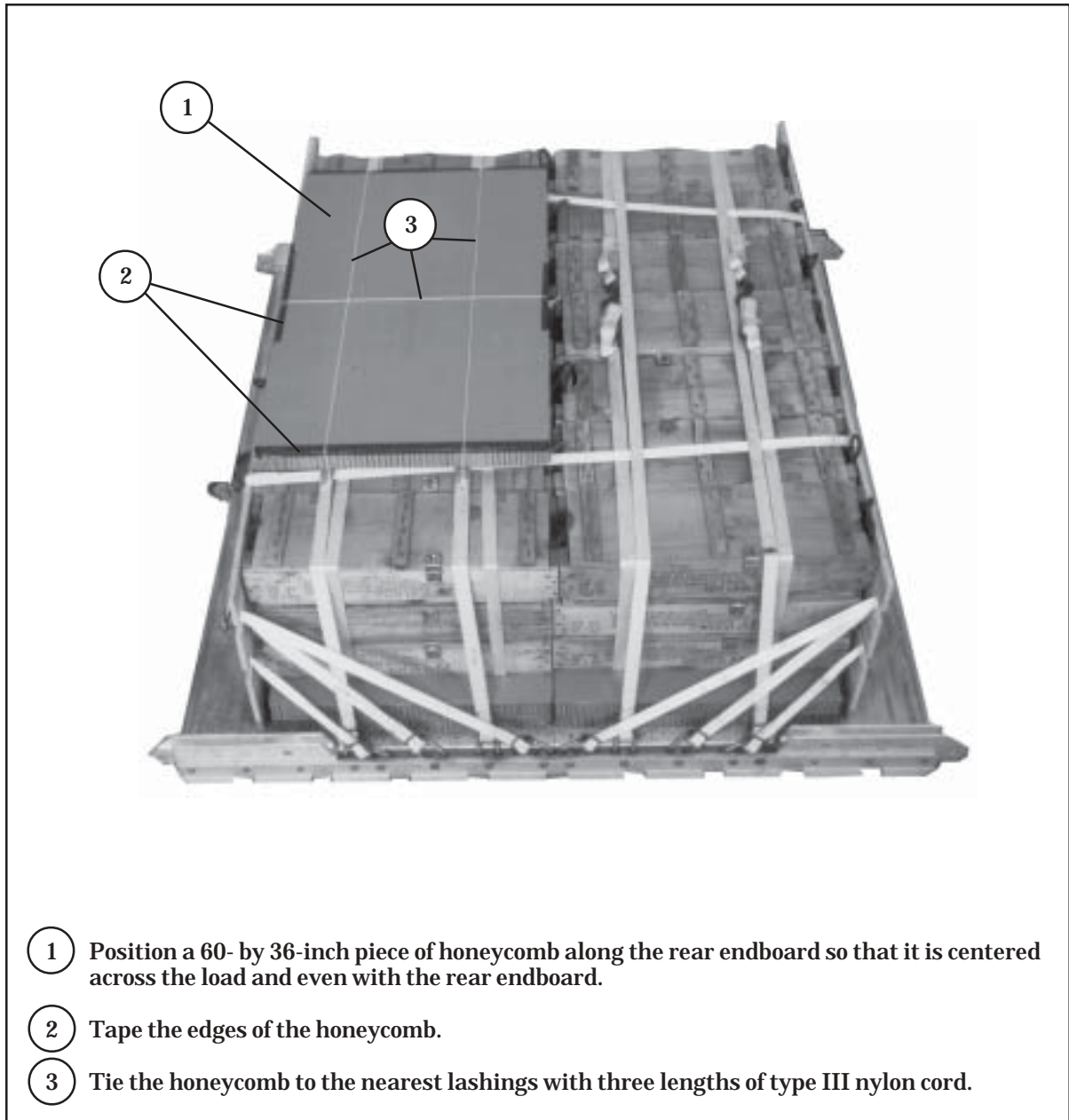


Figure 2-8. Parachute Stowage Platform Installed

INSTALLING SUSPENSION SLINGS AND DEADMAN'S TIE

2-8. Install the suspension slings and deadman's tie as shown in Figure 2-9.

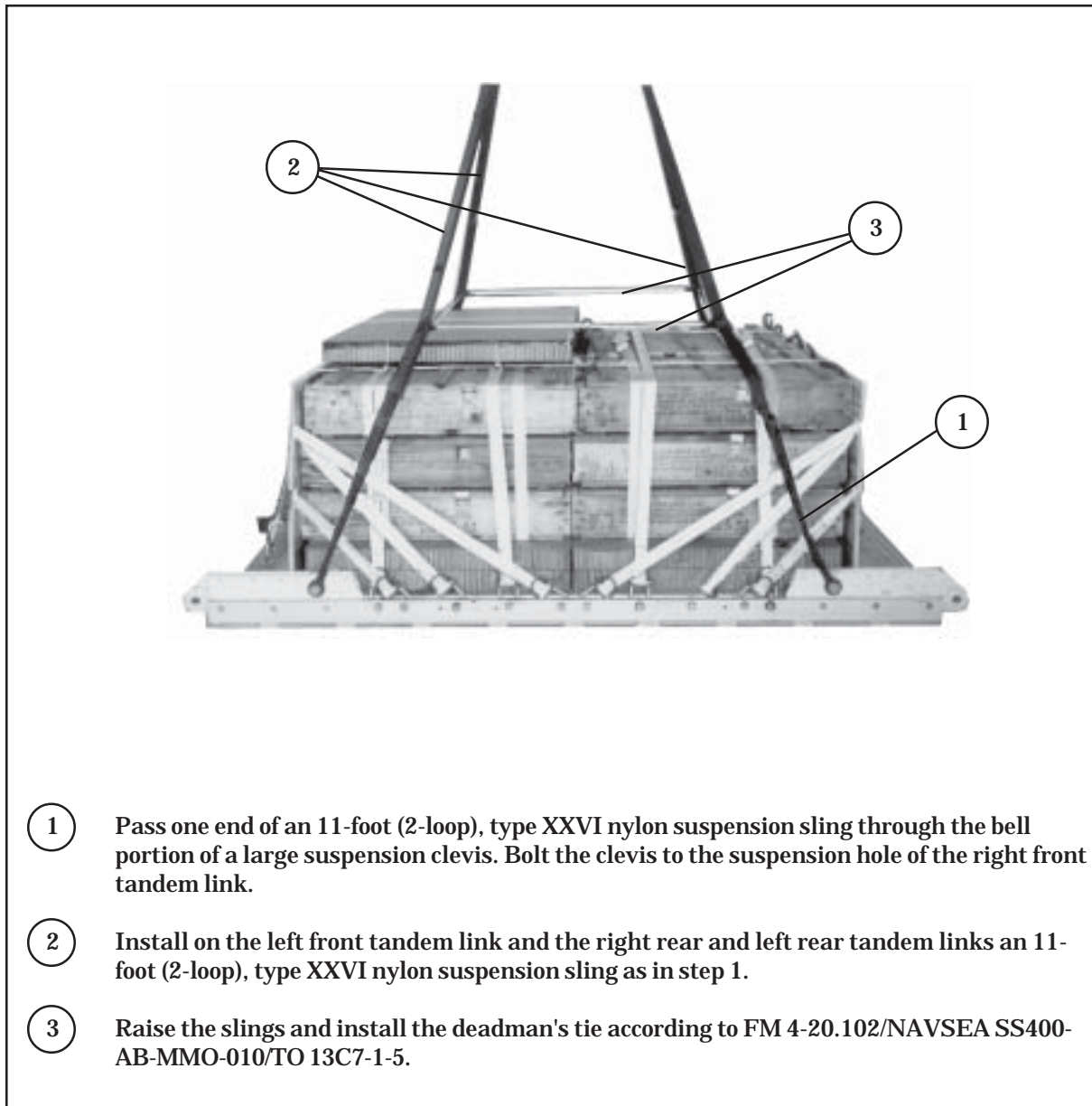


Figure 2-9. Suspension Slings and Deadman's Tie Installed

PREPARING AND STOWING CARGO PARACHUTES

2-9. Compute the parachute requirements for the load being rigged. Prepare and stow the cargo parachutes as shown in Figure 2-10.

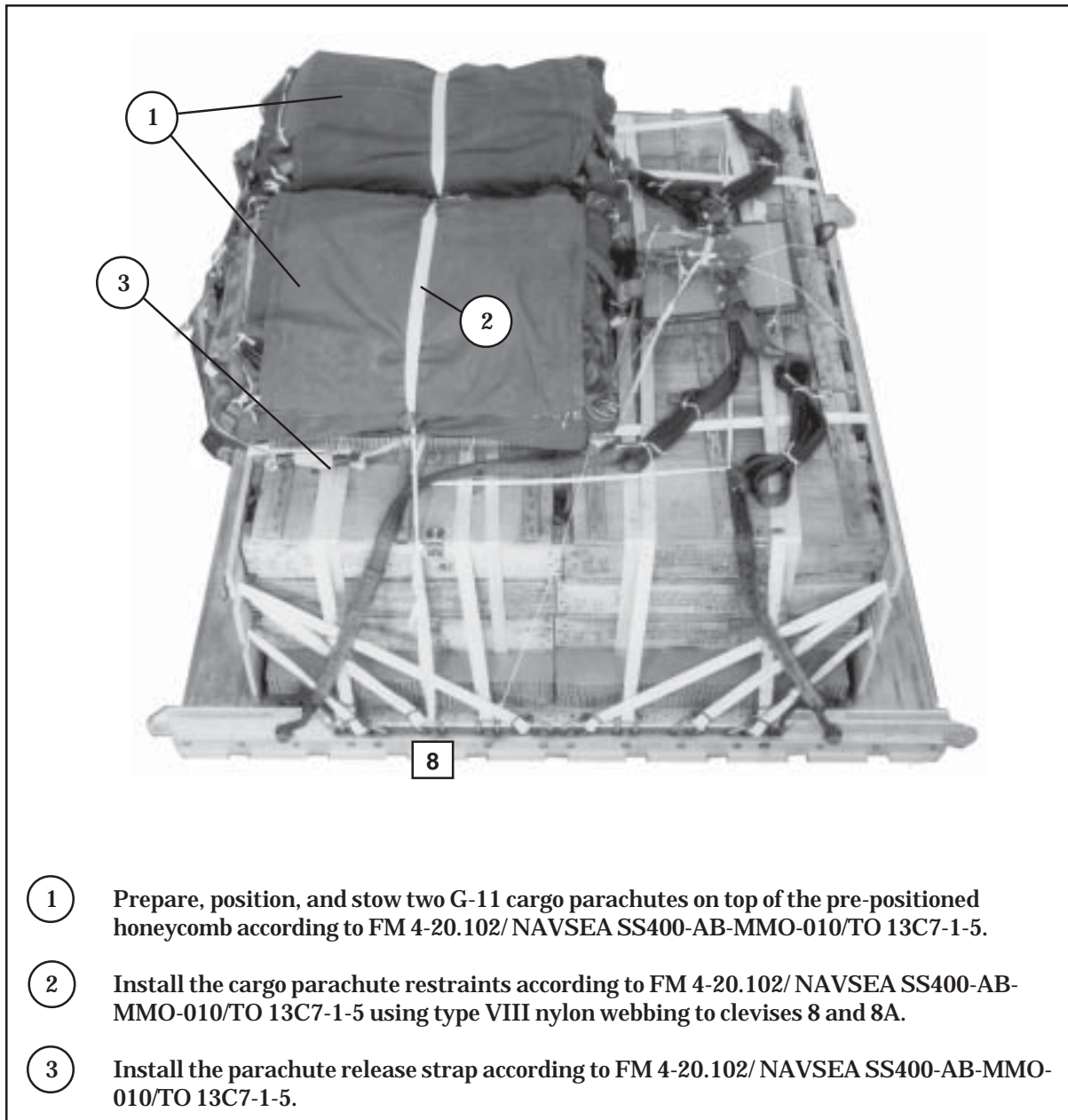
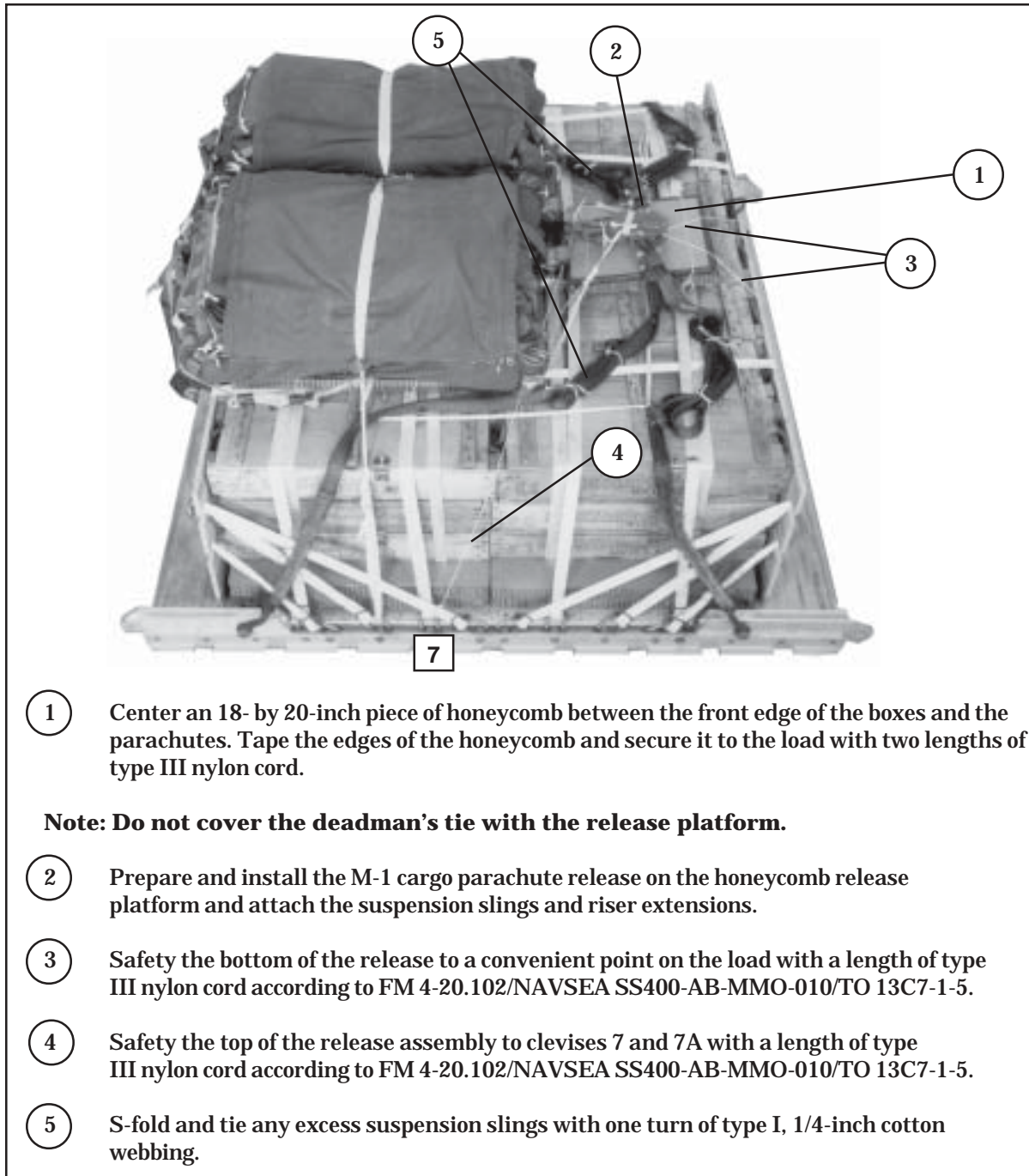


Figure 2-10. Cargo Parachutes Prepared and Stowed

INSTALLING THE RELEASE SYSTEM

2-10. Prepare, attach, and safety an M-1 cargo parachute release according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 2-11.



- ① Center an 18- by 20-inch piece of honeycomb between the front edge of the boxes and the parachutes. Tape the edges of the honeycomb and secure it to the load with two lengths of type III nylon cord.

Note: Do not cover the deadman's tie with the release platform.

- ② Prepare and install the M-1 cargo parachute release on the honeycomb release platform and attach the suspension slings and riser extensions.
- ③ Safety the bottom of the release to a convenient point on the load with a length of type III nylon cord according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
- ④ Safety the top of the release assembly to cleaves 7 and 7A with a length of type III nylon cord according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
- ⑤ S-fold and tie any excess suspension slings with one turn of type I, 1/4-inch cotton webbing.

Figure 2-11. M-1 Cargo Parachute Release Installed

INSTALLING THE EXTRACTION SYSTEM

2-11. Install the extraction system as shown in Figure 2-12.

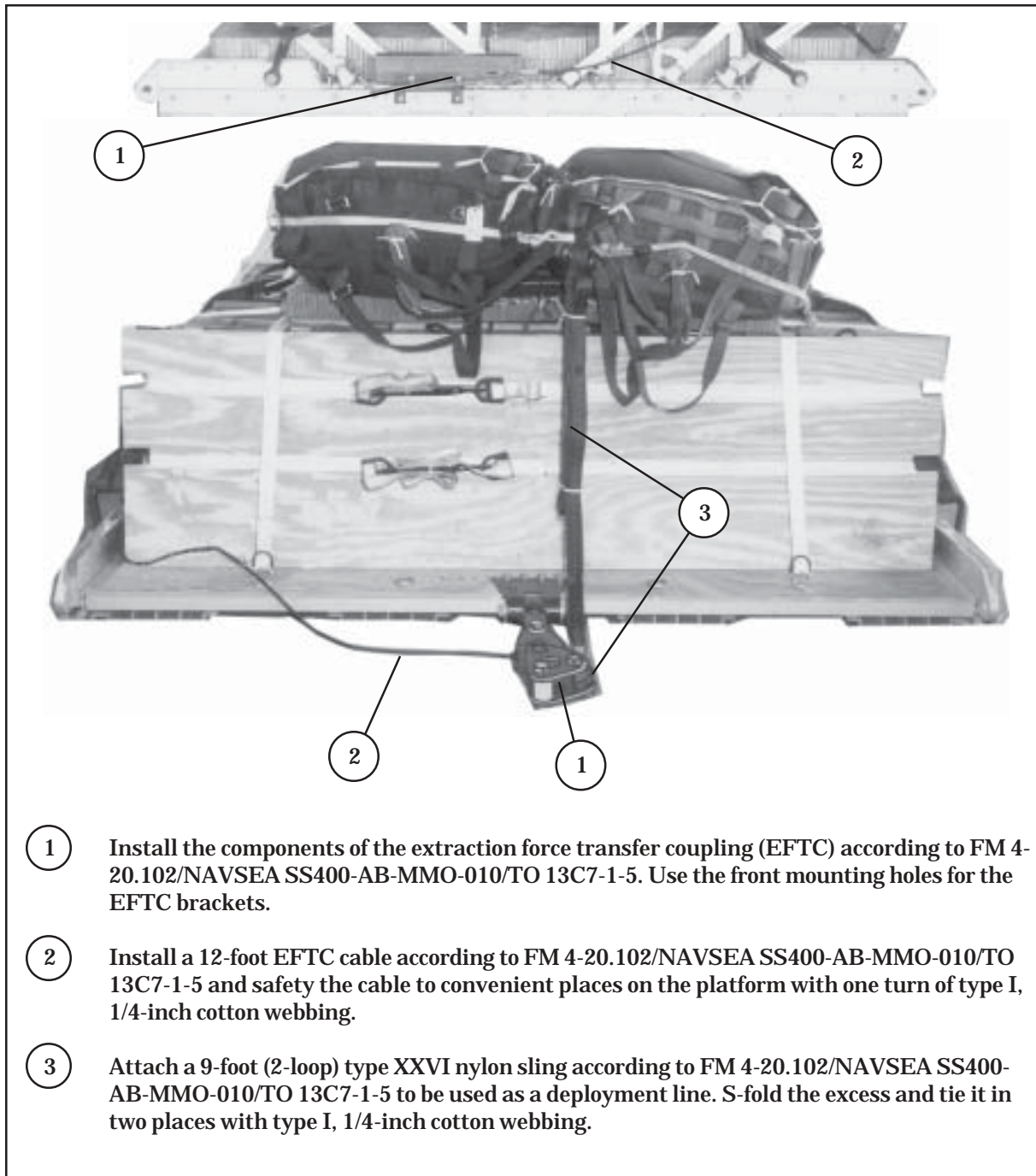


Figure 2-12. Extraction System Installed

PLACING EXTRACTION PARACHUTE

2-12. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Place the extraction parachute and line on the load for installation in the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

2-13. Select and install the provisions for the emergency aft restraints according to the emergency aft restraint requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

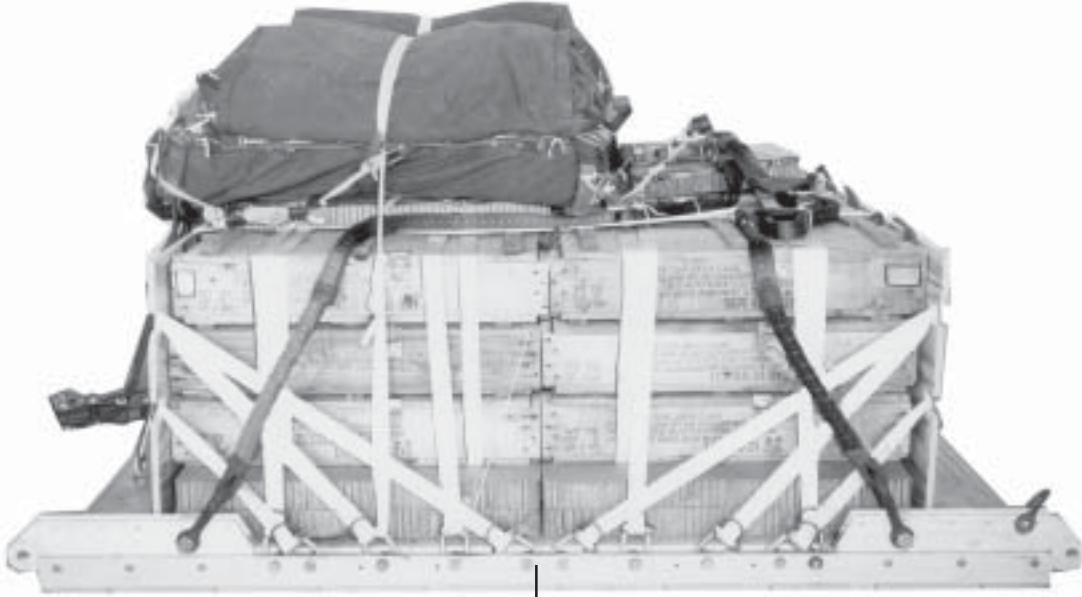
MARKING RIGGED LOAD

2-14. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and as shown in Figure 2-13. Complete Shipper's Declaration for Dangerous Goods. If the load varies from the one shown, the weight, height, CB, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

2-15. Use the equipment listed in Table 2-1 to rig this load.

CAUTION
Make the final rigger inspection required by AR-59-4 and FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



CB

RIGGED LOAD DATA

Weight.....6,344 pounds

Maximum Weight.....See paragraph 2-1

Height.....56 inches

Width.....108 inches

Length.....119 inches

Overhang: Front.....0 inches

Rear.....0 inches

Center of Balance (CB)
 (from front edge of the platform).....50 inches

Extraction System (adds 18 inches to length of platform) EFTC

Figure 2-13. Bulk Supply Load Rigged on an 8-Foot, Type V Platform for Low-Velocity Airdrop

Table 2-1. Equipment Required for Rigging Bulk Supply on an 8-Foot, Type V Platform for Low-Velocity Airdrop

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive paste, 1-gal.	As required
4030-00-578-8562	Clevis, medium	4
4030-00-090-5354	Clevis, suspension, 1-inch (large)	5
4020-00-240-2146	Cord, nylon, type III, 550-lb.	As required
1670-00-434-5783	Coupling, airdrop extraction force transfer, w/12-ft. cable	1
1670-00-360-0328	Cover, clevis	2
8135-00-664-6958	Cushioning material (Cellulose wadding)	As required
8305-00-958-3685	Felt, 1/2-inch thick	As required
1670-01-183-2678	Leaf, extraction line (line bag) (add 2 for C-17)	2
	Line extraction:	
1670-01-064-4452	60-foot (1-loop), type XXVI or	1
1670-01-062-6313	60-foot (3-loop), type XXVI (for C-130)	1
1670-01-107-7652	160-foot (1-loop), type XXVI (for C-5)	1
1670-01-107-7652	160-foot (1-loop), type XXVI (for C-17)	1
1670-01-064-4452	60-foot (1-loop), type XXVI (for C-17), (drogue line)	1
	Link assembly, two-point:	
5306-00-435-8994	Bolt, 1-inch diameter, 4-inches long (add 4 for C-5)	2
5310-00-232-5165	Nut, 1-inch (add 4 for C-5)	2
1670-00-003-1953	Plate, side, 3 3/4-inch	2
5365-00-007-3414	Spacer, large	2
5351-00-010-4659	Nail, steel wire, common, 8d	As required
1670-00-753-3928	Pad, energy-dissipating (honeycomb) 3- by 36- by 96-inches	5 sheets
1670-01-016-7841	Parachute, cargo, G-11	3
	Parachute, cargo, extraction:	
1670-01-063-3716	22-ft.	1
1670-01-063-3715	15-ft. (C-17 only)	1
	Platform, airdrop, type V, 8-ft:	
5530-00-618-8073	Plywood, 3/4-in	As required
1670-01-162-2372	Clevis assembly (type V)	(20)
1670-01-353-8424	Extraction bracket assembly	(1)
1670-01-162-2381	Tandem link assembly (Multipurpose link)	(4)
1670-01-097-8817	Release, cargo parachute, M-1	1
	Sling, cargo, airdrop:	
1670-01-062-6304	9-ft. (2-loop), type XXVI	1
1670-01-063-7760	11-ft. (2-loop), type XXVI	4

Table 2-1. Equipment Required for Rigging Bulk Supply on an 8-Foot, Type V Platform for Low-Velocity Airdrop (Continued)

National Stock Number	Item	Quantity
5340-00-040-8219	Strap, parachute, release, multi-knife	2
7501-00-266-5016	Tape, adhesive, 2-inch	As required
7510-00-266-6710	Tape, masking	As required
1670-00-937-0271	Tiedown assembly, 15-ft.	26
1670-01-483-8259	Towplate release mechanism (H-block) (C-17 only)	1
	Webbing:	
8305-00-268-2411	Cotton, 1/4-inch, type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-inch	As required
8305-00-263-3591	Type VIII Nylon	As required

Section II

RIGGING BULK SUPPLIES IN A-22 CARGO BAGS

DESCRIPTION OF LOAD

2-16. Bulk supplies consisting of rations, equipment, fuel, ammunition, or other items of general supply are rigged on an 8-foot, type V airdrop platform with G-11 cargo parachutes. Items packaged or configured so that they can be contained in A-22 cargo bags can be airdropped using these procedures. For extraction purposes, the rigged load must weigh at least 2,520 pounds. Refer to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 for the weight limitations for the number of parachutes to be used.

PREPARING PLATFORM

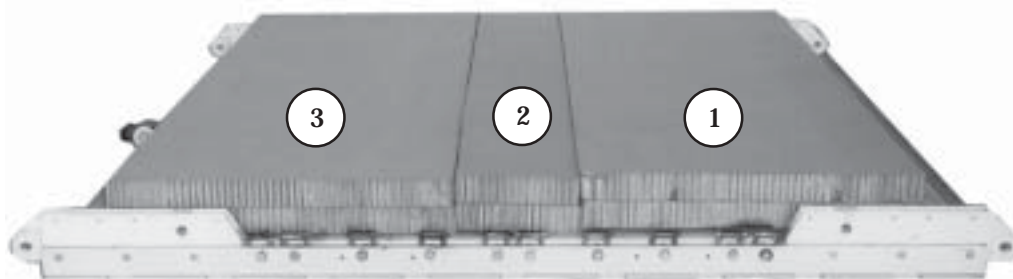
2-17. Prepare an 8-foot, type V platform as described in paragraph 2-2 and as shown in Figure 2-1.

PLACING HONEYCOMB

2-18. Place the honeycomb on the platform as shown in Figure 2-14.

Notes:

1. When ammunition is dropped, two layers of honeycomb are required.
2. When rigging this load for airdrop on a drop zone with ground elevation of 6,000 to 10,000 feet, add an additional layer of honeycomb.



- 1 Glue two full 36- by 96-inch sheets of honeycomb together. Center them 5 inches from the front edge of the platform.
- 2 Glue two 96- by 13-inch pieces of honeycomb together. Center them to the rear of the honeycomb placed in step 1.
- 3 Make a stack as in step 1 above and place it flush against the stack placed in step 2.

Figure 2-14. Honeycomb Placed

PREPARING, STOWING AND RIGGING LOAD

2-19. Prepare, stow, and rig the load in four A-22 cargo bags according to FM 10-500-3/FMFM 7-47/TO 13C7-1-11, paragraphs 9-5 through 9-7. Attach the suspension webs according to paragraph 9-9.

POSITIONING LOAD

2-20. Position the four A-22 cargo bags on the honeycomb as shown in Figure 2-15.

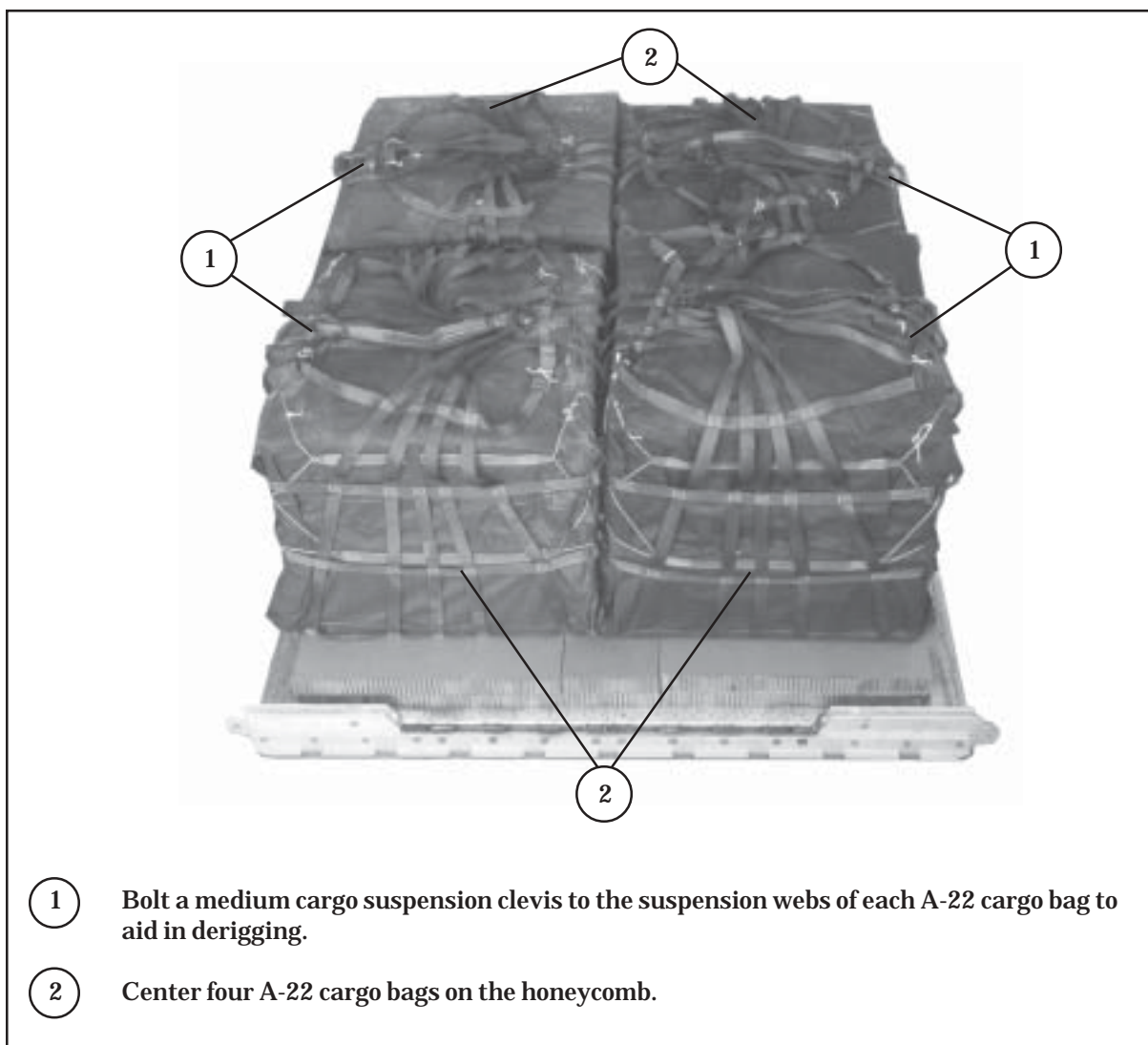


Figure 2-15. Load Positioned

INSTALLING LASHINGS

2-21. Use twelve 15-foot tie-down assemblies to lash the load to the platform. Install the lashings as shown in Figures 2-16 through 2-19 and according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

CAUTION

Only ammunition listed in FM 4-20.153/MCRP 4-11.3B/TO 13C7-18-41 may be airdropped. Hazardous material must be packaged, marked, and labeled as required by AFMAN(I) 24-204/TM 38-250.

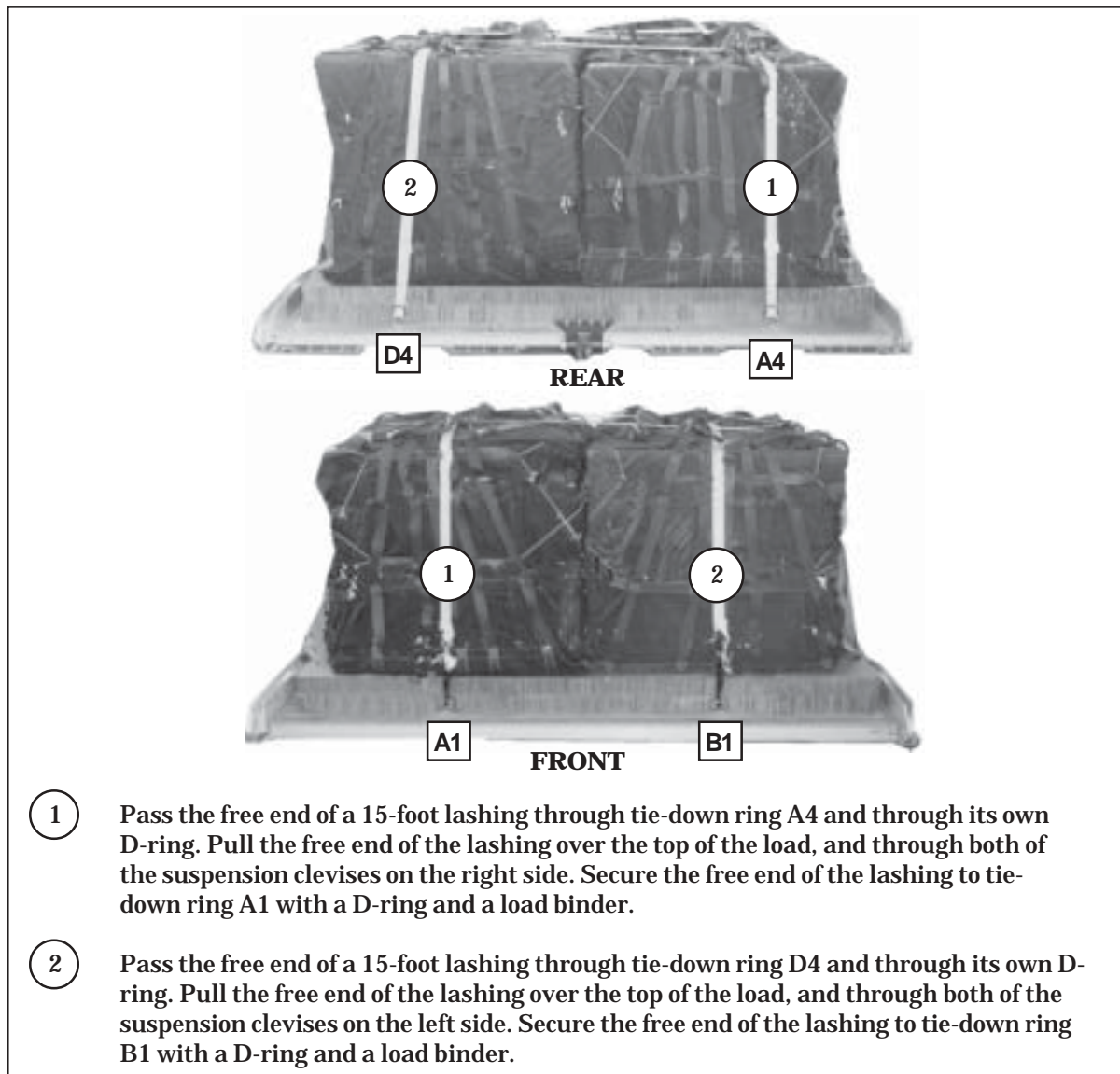
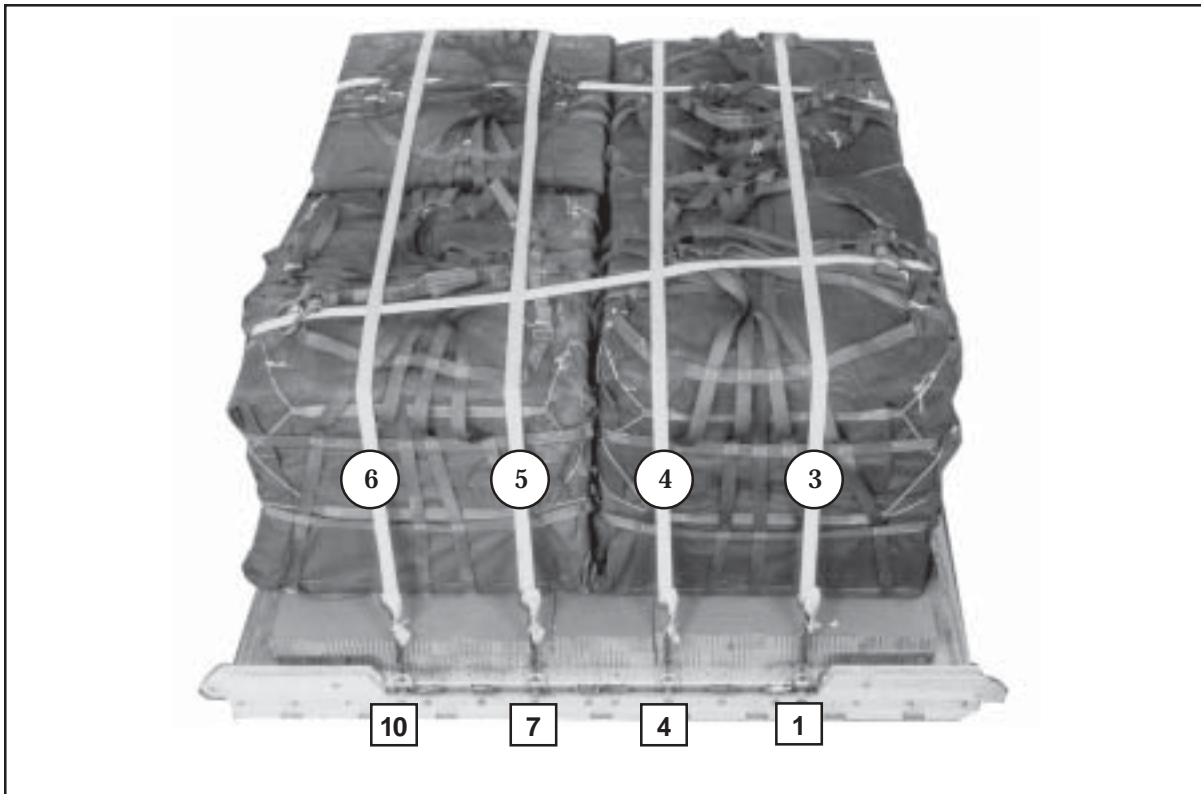


Figure 2-16. Lashings 1 and 2 Installed



Lashing Number	Tiedown Clevis Number	Instructions
3	1A to 1	Pass a lashing through clevis 1A and through its own D-ring, over the top of the load, and to clevis 1. Secure the lashing to clevis 1 with a D-ring and a load binder.
4	4A to 4	Pass a lashing through clevis 4A and through its own D-ring, over the top of the load, and to clevis 4. Secure the lashing to clevis 4 with a D-ring and a load binder.
5	7A to 7	Pass a lashing through clevis 7A and through its own D-ring, over the top of the load, and to clevis 7. Secure the lashing to clevis 7 with a D-ring and a load binder.
6	10A to 10	Pass a lashing through clevis 10A and through its own D-ring, over the top of the load, and to clevis 10. Secure the lashing to clevis 10 with a D-ring and a load binder.

Figure 2-17. Lashings 3 Through 6 Installed

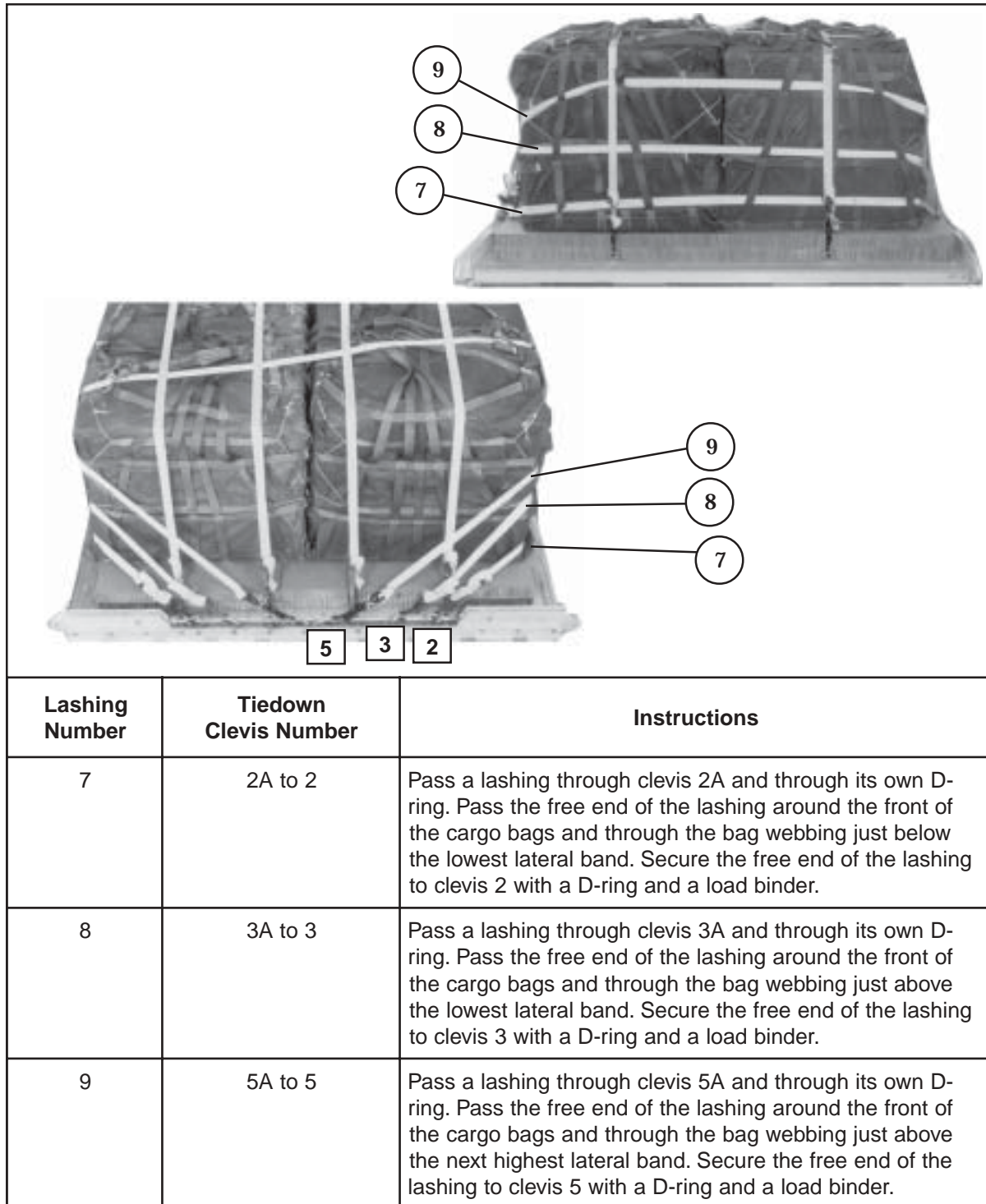
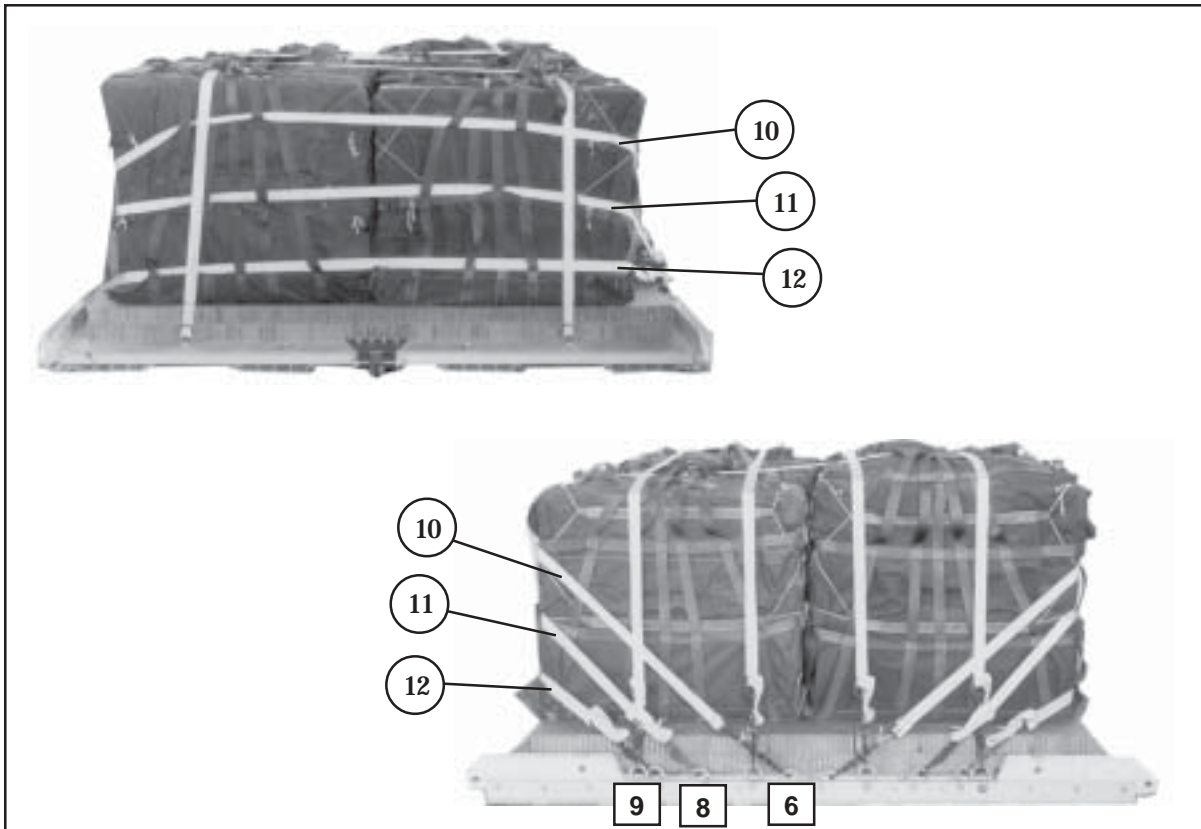


Figure 2-18. Lashings 7 Through 9 Installed



Lashing Number	Tiedown Clevis Number	Instructions
10	6A to 6	Pass a lashing through clevis 6A and through its own D-ring. Pass the free end of the lashing around the rear of the cargo bags and through the bag webbing just above the highest lateral band. Secure the free end of the lashing to clevis 6 with a D-ring and a load binder.
11	8A to 8	Pass a lashing through clevis 8A and through its own D-ring. Pass the free end of the lashing around the rear of the cargo bags and through the bag webbing just above the next lowest lateral band. Secure the free end of the lashing to clevis 8 with a D-ring and a load binder.
12	9A to 9	Pass a lashing through clevis 9A and through its own D-ring. Pass the free end of the lashing around the rear of the cargo bags and through the bag webbing just below the next lowest lateral band. Secure the free end of the lashing to clevis 9 with a D-ring and a load binder.

Figure 2-19. Lashings 10 Through 12 Installed

INSTALLING SUSPENSION SLINGS AND DEADMAN'S TIE

2-22. Install the suspension slings and deadman's tie as shown in Figure 2-20.

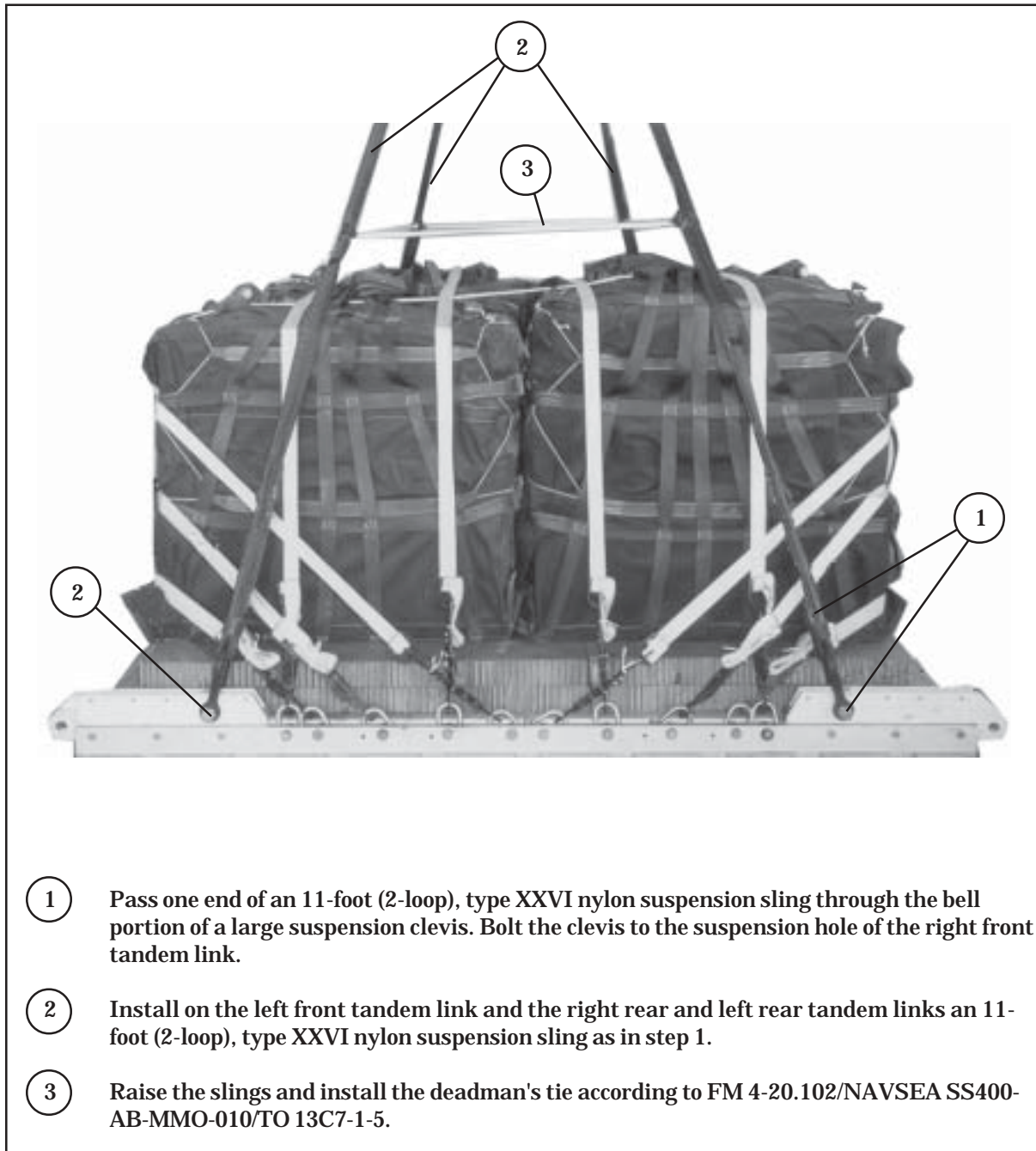


Figure 2-20. Suspension Slings and Deadman's Tie Installed

INSTALLING PARACHUTE STOWAGE PLATFORM

2-23. Install the parachute stowage platform as shown in Figure 2-21.

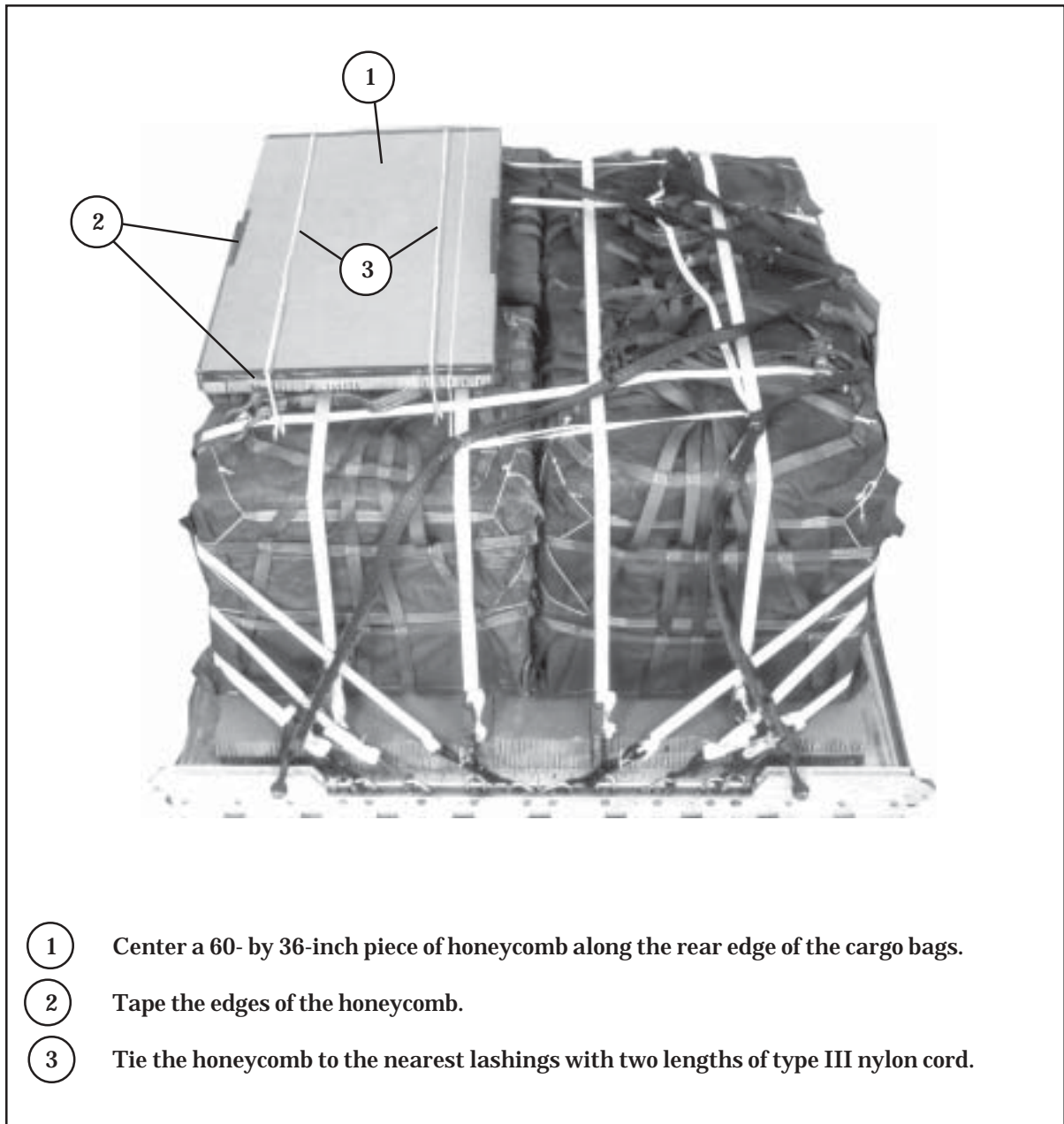


Figure 2-21. Parachute Stowage Platform Installed

INSTALLING PARACHUTES

2-24. Compute the parachute requirements for the load being rigged. Prepare and install the cargo parachutes according to FM 4-20.102/ NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 2-22.

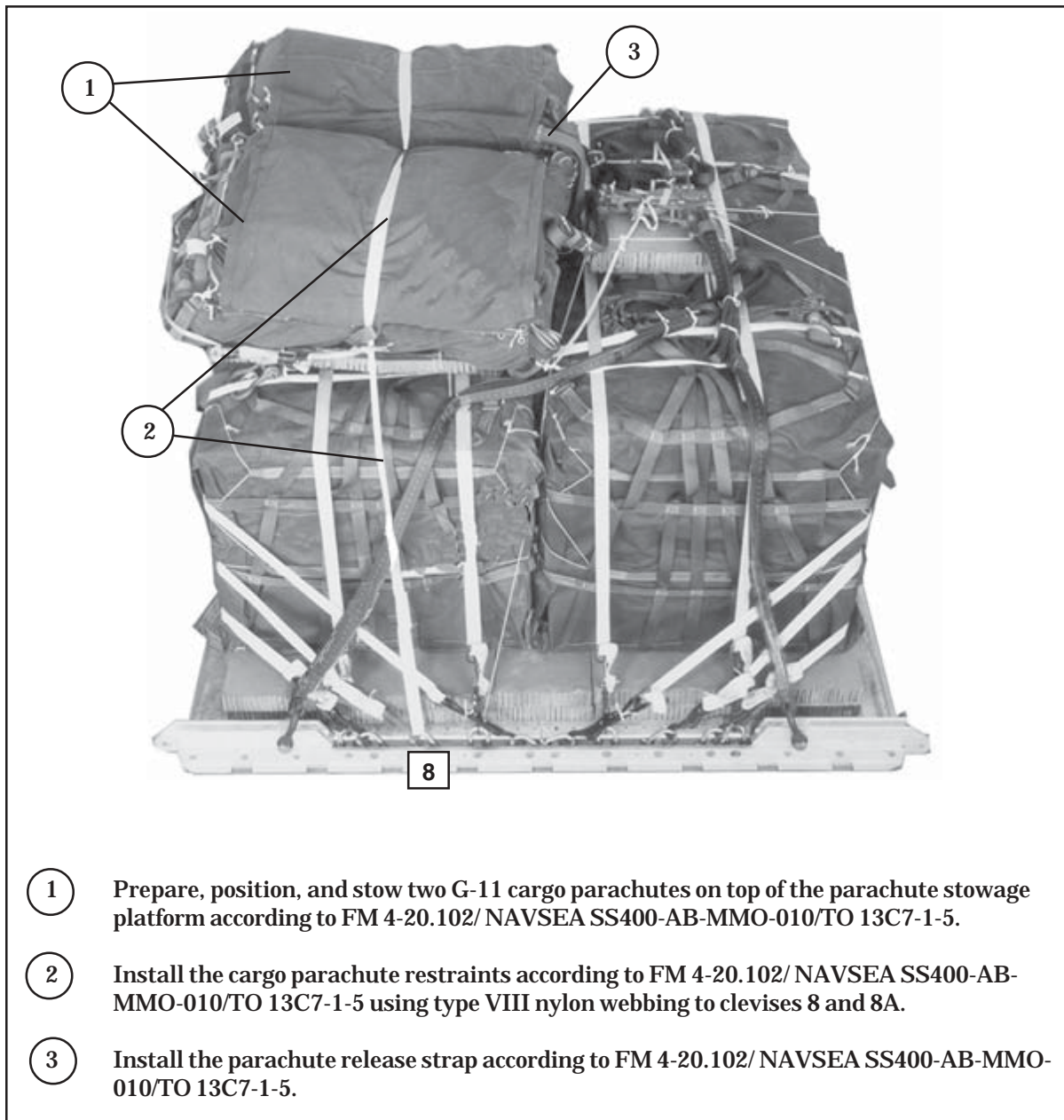


Figure 2-22. Cargo Parachutes Installed

INSTALLING THE RELEASE SYSTEM

2-25. Prepare, attach, and safety an M-1 cargo parachute release according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 2-23.

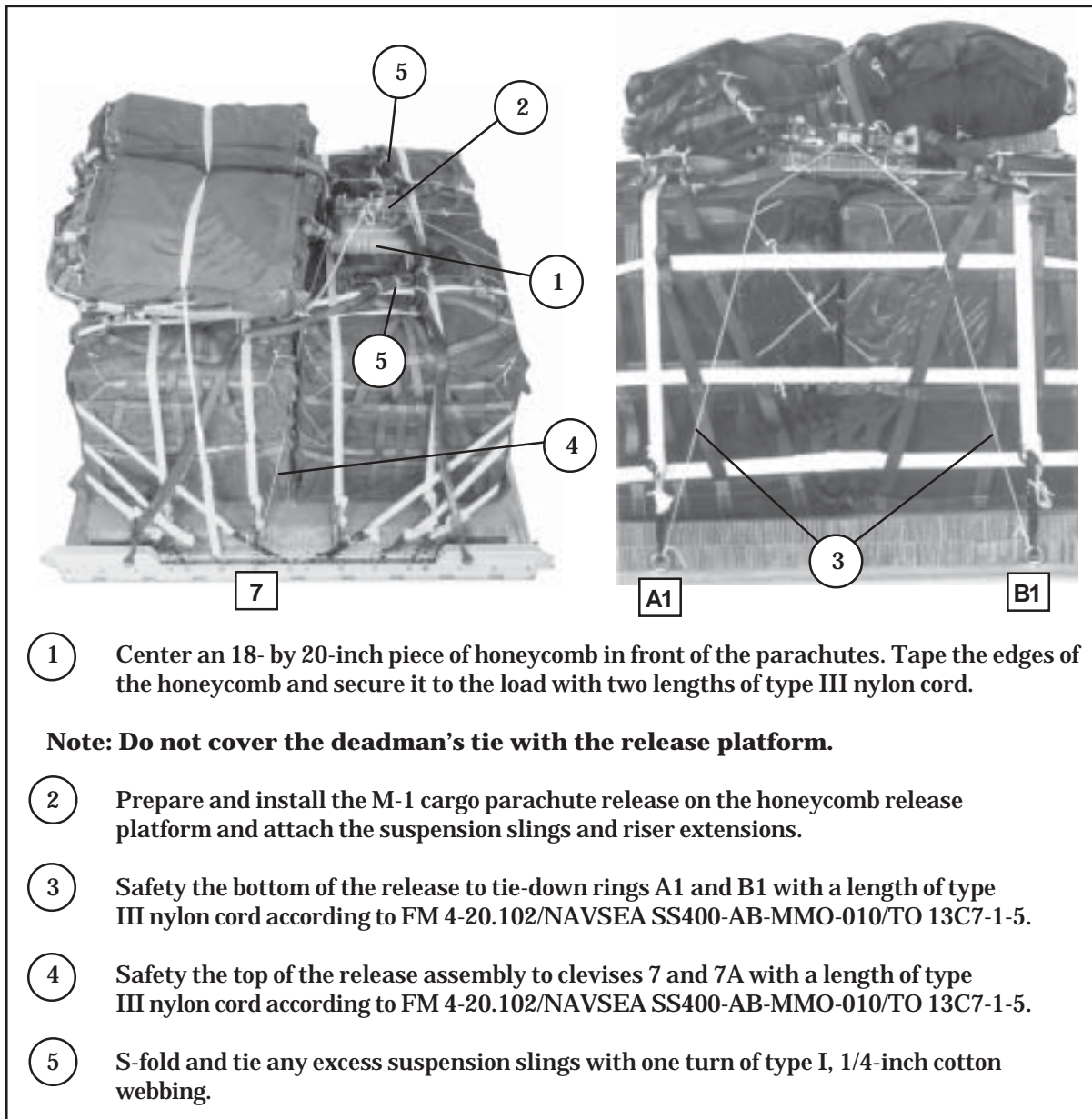


Figure 2-23. Cargo Parachutes Release System Installed

INSTALLING THE EXTRACTION SYSTEM

2-26. Install the extraction system as shown in Figure 2-24.

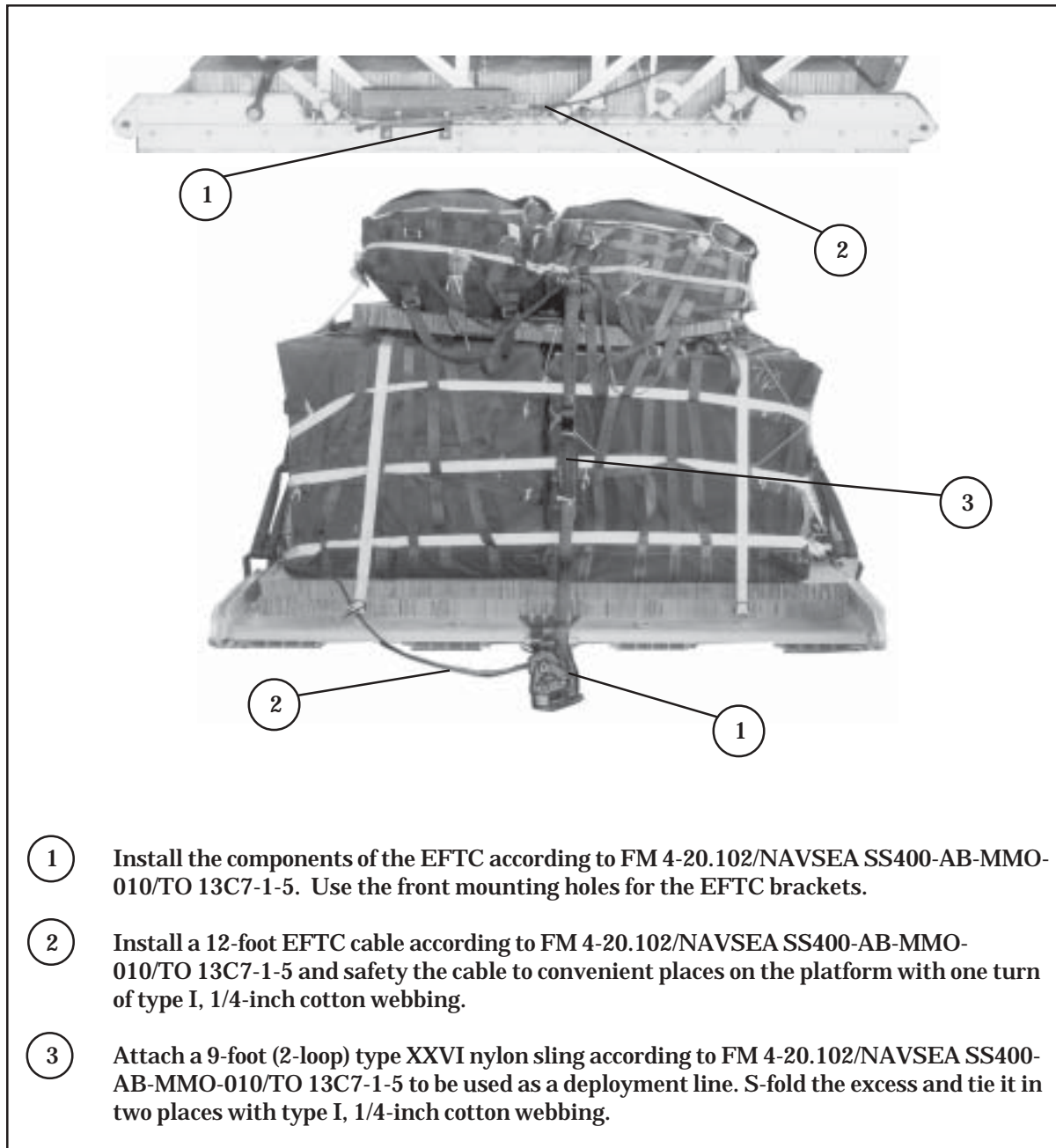


Figure 2-24. Extraction System Installed

PLACING EXTRACTION PARACHUTE

2-27. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Place the extraction parachute and line on the load for installation in the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

2-28. Select and install the provisions for the emergency aft restraints according to the emergency aft restraint requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

MARKING RIGGED LOAD

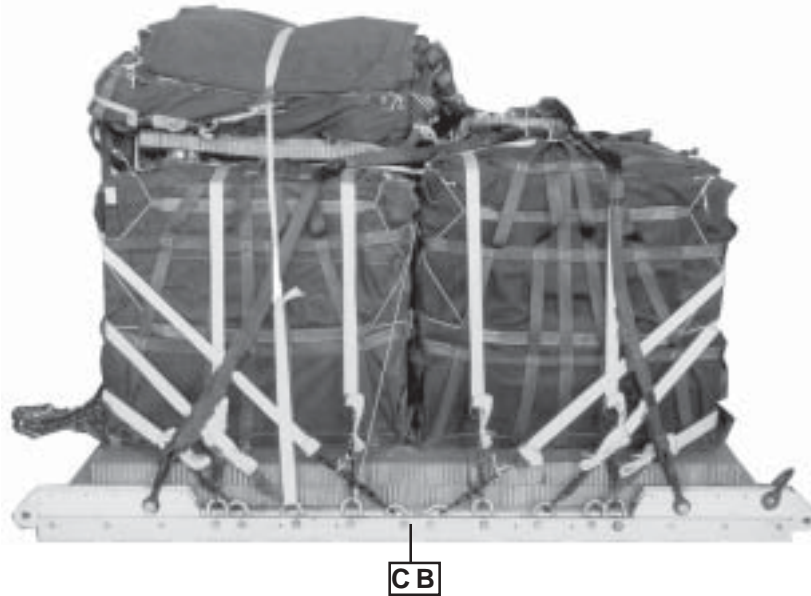
2-29. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and as shown in Figure 2-25. Complete Shipper's Declaration for Dangerous Goods. If the load varies from the one shown, the weight, height, CB, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

2-30. Use the equipment listed in Table 2-2 to rig this load.

CAUTION

Make the final rigger inspection required by AR 59-4 and FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Weight.....	6,750 pounds
Maximum Weight.....	See paragraph 2-16
Height.....	71 inches
Width.....	108 inches
Length.....	119 inches
Overhang: Front.....	0 inches
Rear.....	0 inches
Center of Balance (CB) (from front edge of the platform).....	50 inches
Extraction System (adds 18 inches to length of platform) EFTC	

Figure 2-25. A-22 Cargo Bags Rigged on an 8-Foot, Type V Platform for Low-Velocity Airdrop

Table 2-2. Equipment Required for Rigging Bulk Supplies in A-22 Cargo Bags on an 8-Foot, Type V Platform for Low-Velocity Airdrop

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive paste, 1-gal.	As required
1670-00-587-3421	Bag, cargo, (A-22)	4
4030-00-090-5354	Clevis, suspension, 1-inch (large)	5
4030-00-678-8562	Clevis, 3/4-inch medium	8
4020-00-240-2146	Cord, nylon, type III, 550-lb.	As required
1670-00-434-5783	Coupling, airdrop extraction force transfer, w/12-ft. cable	1
1670-00-360-0328	Cover, clevis	1
8135-00-664-6958	Cushioning material (Cellulose wadding)	As required
8305-00-958-3685	Felt, 1/2-inch thick	As required
1670-01-183-2678	Leaf, extraction line (line bag)	2
	Line extraction:	
1670-01-064-4452	60-foot (1-loop), type XXVI or	1
1670-01-062-6313	60-foot (3-loop), type XXVI (for C-130)	1
1670-01-107-7652	160-foot (1-loop), type XXVI (for C-5)	1
1670-01-107-7652	160-foot (1-loop), type XXVI (for C-17)	1
1670-01-064-4452	60-foot (1-loop), type XXVI (for C-17), (drogue line)	1
	Link assembly, two-point:	
5306-00-435-8994	Bolt, 1-inch diameter, 4-inches long (add 4 for C-5)	2
5310-00-232-5165	Nut, 1-inch (add 4 for C-5)	2
1670-00-003-1953	Plate, side, 3 3/4-inch	2
5365-00-007-3414	Spacer, large	2
1670-00-753-3928	Pad, energy-dissipating (honeycomb) 3- by 36- by 96-inches	6 sheets
1670-01-016-7841	Parachute, cargo, G-11	2
	Parachute, cargo, extraction:	
1670-01-063-3716	22-ft.	1
1670-01-063-3715	15-ft. (C-17 only)	1
	Platform, airdrop, type V, 8-ft:	
5530-00-618-8073	Plywood, 3/4-in	As required
1670-01-162-2372	Clevis assembly (type V)	(20)
1670-01-353-8424	Extraction bracket assembly	(1)
1670-01-247-2389	Link, suspension bracket, type V	(2)
1670-01-162-2381	Link, tandem, suspension link assembly	(4)
1670-01-097-8817	Release, cargo parachute, M-1	1
	Sling, cargo, airdrop:	
1670-01-062-6304	9-ft. (2-loop), type XXVI	1
1670-01-063-7760	11-ft. (2-loop), type XXVI	4
1670-01-062-6302	20-ft. (2-loop), type XXVI	2

Table 2-2. Equipment Required for Rigging Bulk Supplies in A-22 Cargo Bags on an 8-Foot, Type V Platform for Low-Velocity Airdrop (Continued)

National Stock Number	Item	Quantity
5340-00-040-8219 7501-00-266-5016 7510-00-266-6710 1670-00-937-0271 1670-01-483-8259	Strap, parachute, release, multi-knife Tape, adhesive, 2-inch Tape, masking Tiedown assembly, 15-ft. Towplate release mechanism (H-block) (C-17 only)	2 As required As required 12 1
8305-00-268-2411 8305-00-082-5752 8305-00-261-8585	Webbing: Cotton, 1/4-inch, type I Nylon, tubular, 1/2-inch Type VIII nylon	As required As required As required

Chapter 3

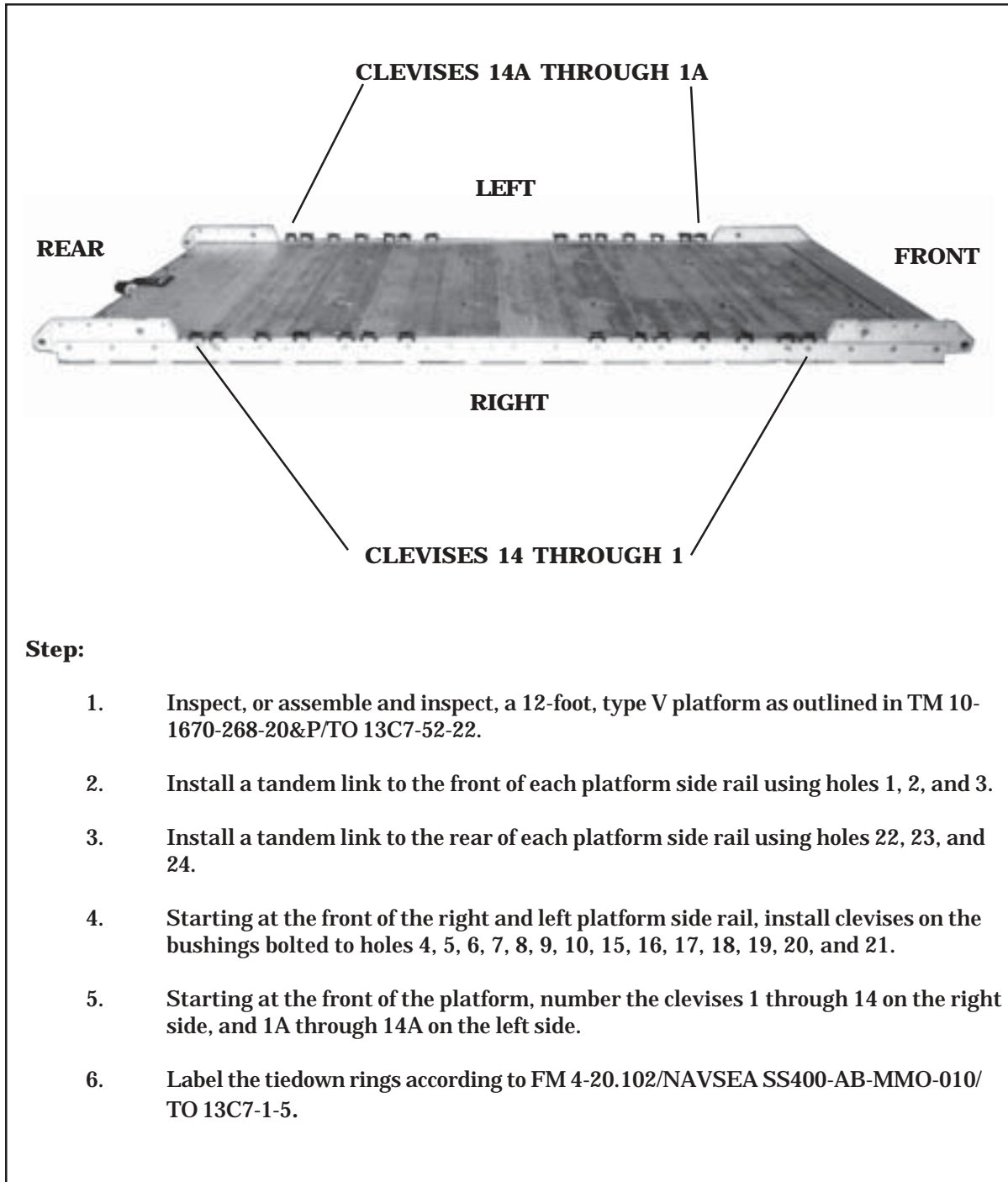
RIGGING SUPPLY LOADS ON A 12-FOOT, TYPE V PLATFORM FOR LOW-VELOCITY AIRDROP

DESCRIPTION OF LOAD

3-1. Bulk supplies consisting of rations, equipment, fuel, ammunition, or other items of general supply are rigged on a 12-foot, type V airdrop platform with G-11 cargo parachutes. Items packaged or configured so that they can be restrained by endboards and lashings can be airdropped using these procedures. Modifications to the honeycomb, endboards, and lashings may be necessary to allow for items of different sizes and shapes from those shown. For extraction purposes, the rigged load must weigh at least 3,780 pounds. Refer to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 for the weight limitations for the number of parachutes to be used.

PREPARING PLATFORM

3-2. Prepare a 12-foot, type V platform as shown in Figure 3-1.



Step:

1. Inspect, or assemble and inspect, a 12-foot, type V platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.
2. Install a tandem link to the front of each platform side rail using holes 1, 2, and 3.
3. Install a tandem link to the rear of each platform side rail using holes 22, 23, and 24.
4. Starting at the front of the right and left platform side rail, install clevises on the bushings bolted to holes 4, 5, 6, 7, 8, 9, 10, 15, 16, 17, 18, 19, 20, and 21.
5. Starting at the front of the platform, number the clevises 1 through 14 on the right side, and 1A through 14A on the left side.
6. Label the tiedown rings according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

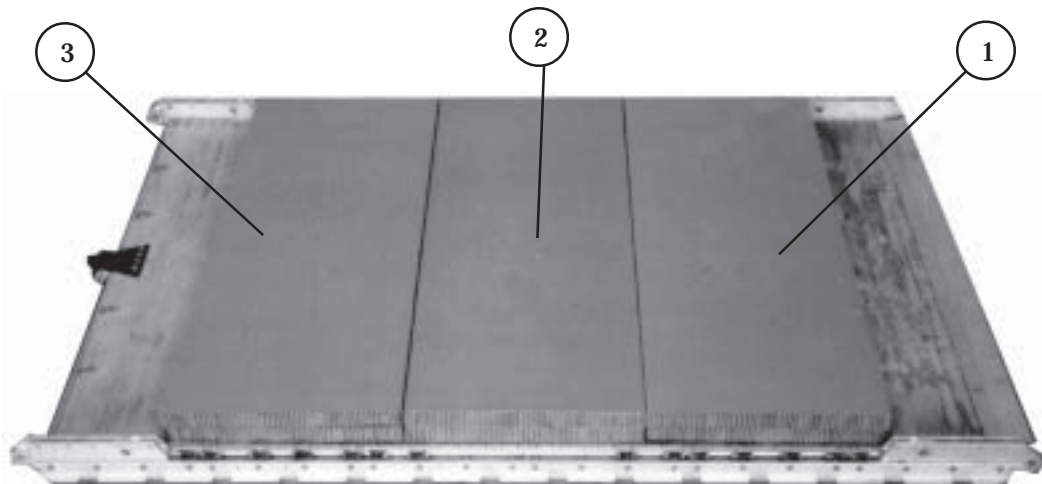
Figure 3-1. Platform Prepared

PLACING HONEYCOMB

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

Notes:

- 1. When ammunition is dropped, two layers of honeycomb are required.**
- 2. When rigging this load for airdrop on a drop zone with ground elevation of 6,000 to 10,000 feet, add an additional layer of honeycomb.**
- 3. Adjust the dimensions of the honeycomb to fit the items being dropped.**
- 4. Do not cover the extraction bracket with honeycomb.**



- 1** Glue two full 36- by 96-inch sheets of honeycomb together. Center them 16 inches from the front edge of the platform.
- 2** Make another stack as in step 1 above and place it flush against the stack placed in step 1.
- 3** Make another stack as in step 1 above and place it flush against the stack placed in step 2.

Figure 3-2. Honeycomb Placed

POSITIONING AND SECURING LOAD

3-4. Place six 30-foot lashings on the honeycomb, place the load on the honeycomb, and secure the lashings as shown in Figure 3-3. Adapt the procedures shown for loads configured differently.

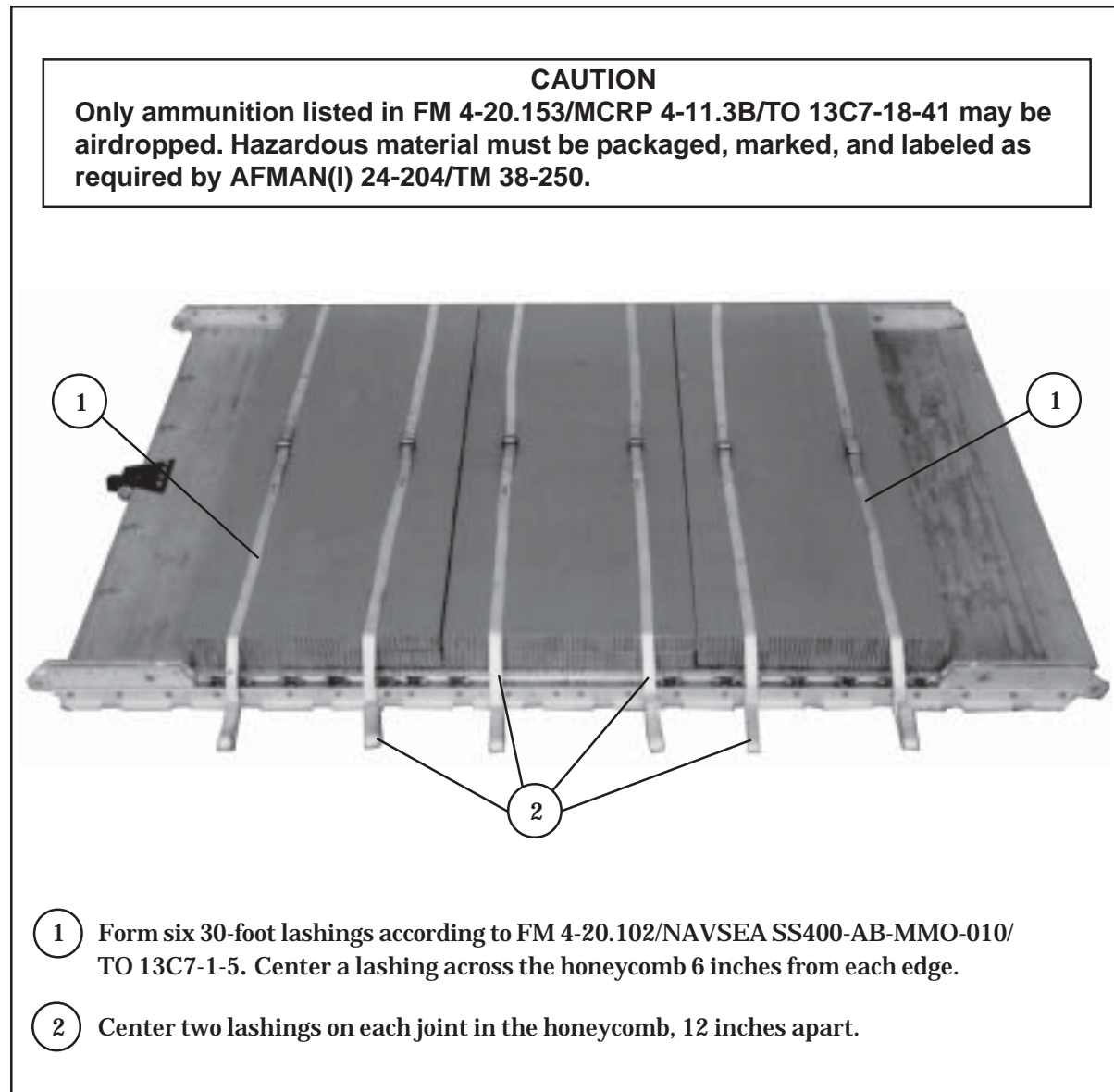
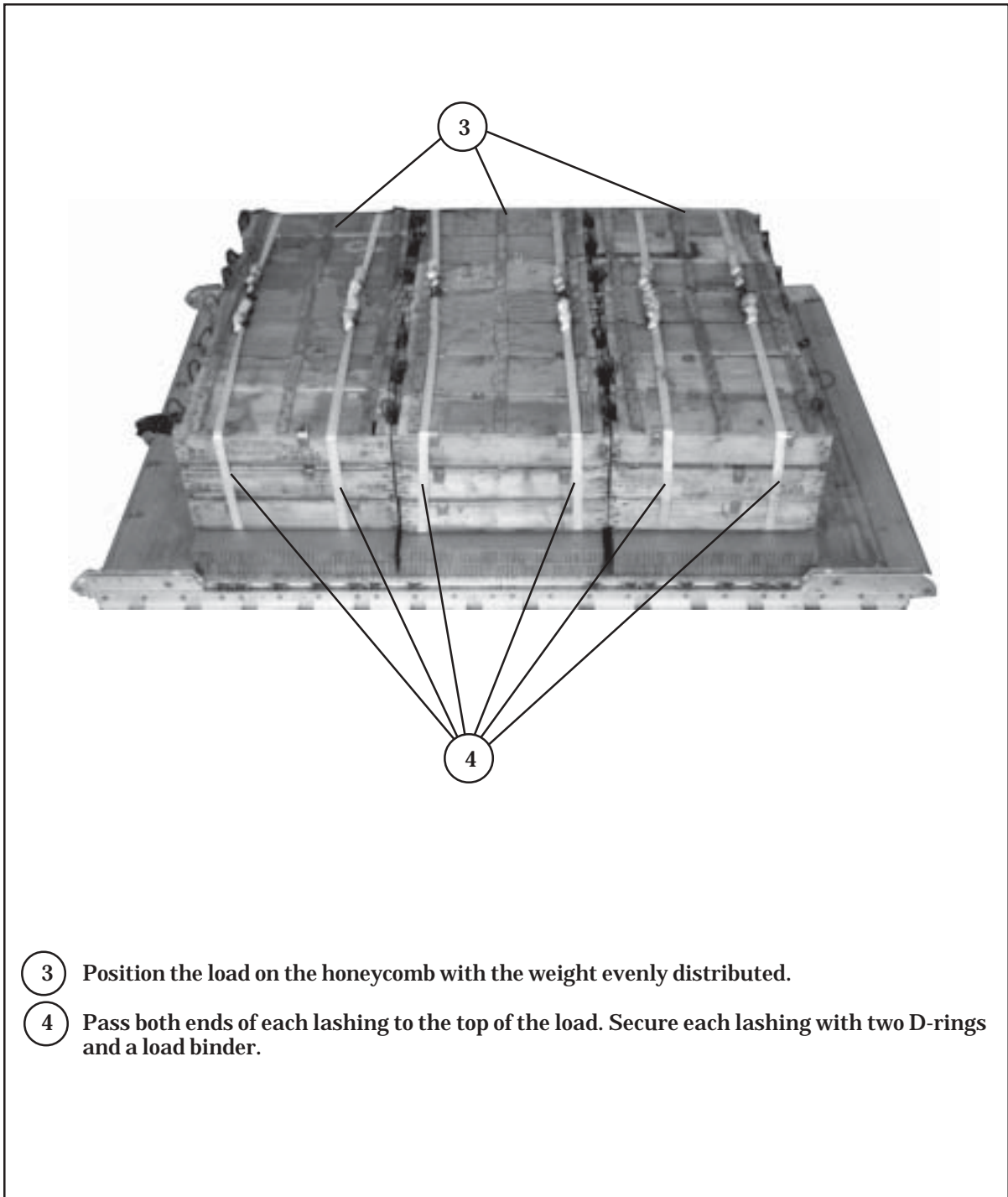


Figure 3-3. Load Positioned and Secured



- ③ Position the load on the honeycomb with the weight evenly distributed.
- ④ Pass both ends of each lashing to the top of the load. Secure each lashing with two D-rings and a load binder.

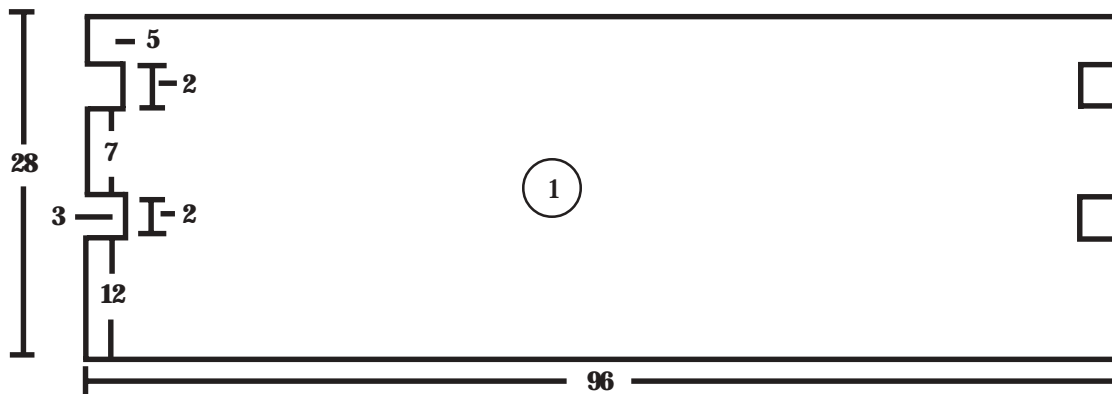
Figure 3-3. Load Positioned and Secured (Continued)

CONSTRUCTING AND INSTALLING ENDBOARDS

3-5. Construct the endboards and install them on the load as shown in Figure 3-4.

Notes:

- 1. This drawing is not to scale.**
- 2. All dimensions are in inches.**
- 3. The dimensions of the endboards will vary, depending on the load being rigged. The endboards must be even with the top of the load.**



- 1** Construct two endboards using one 3/4- by 28- by 96-inch piece of plywood for each endboard. Make cutouts as shown.

Note: Tape or pad the cutouts in the endboards to protect the lashings from sharp edges.

Figure 3-4. Endboards Constructed and Installed

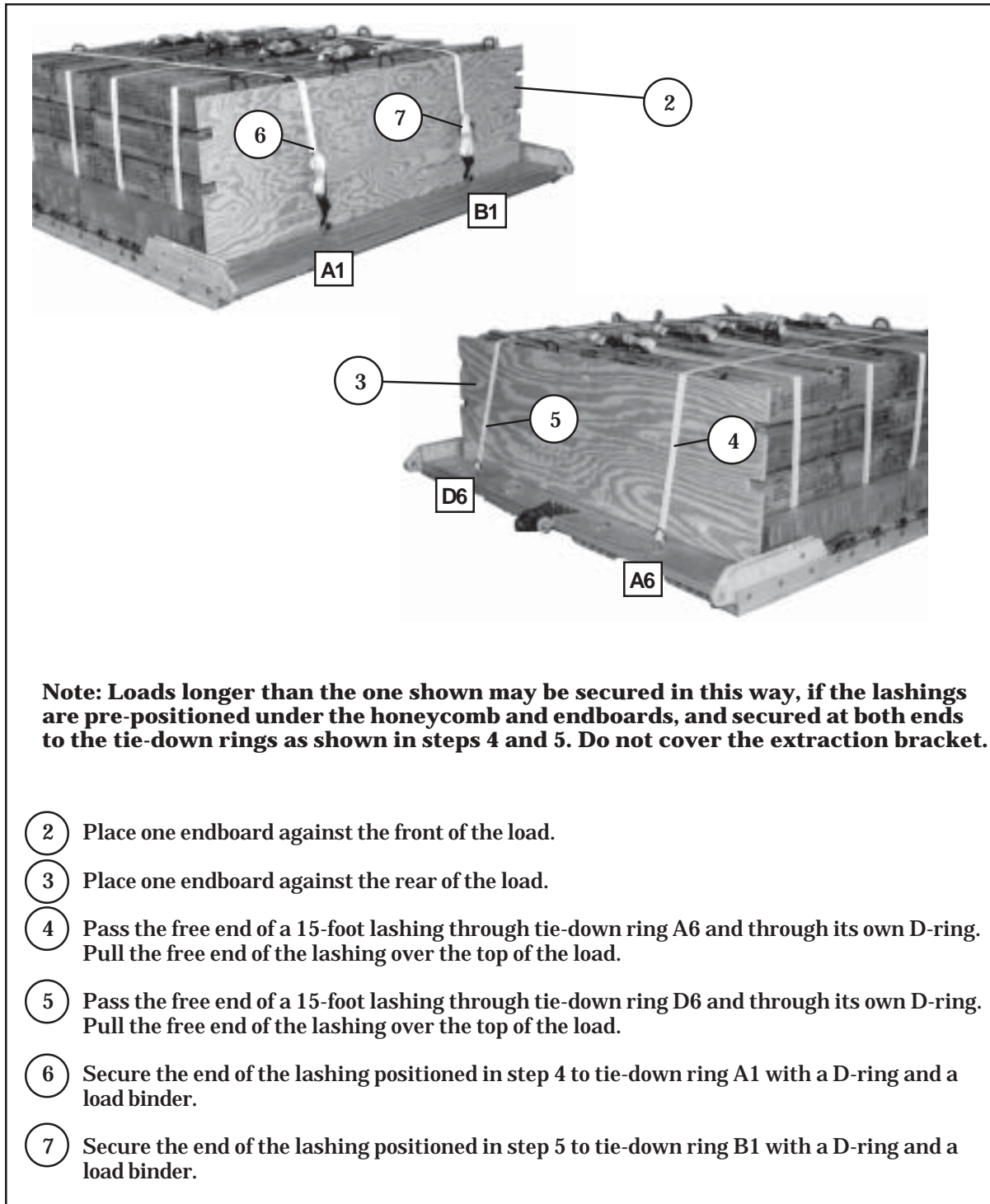


Figure 3-4. Endboards Constructed and Installed (Continued)

INSTALLING LASHINGS

3-6. Lash the load to the platform according to FM 4-20.102/NAVSEA SS400-AB- MMO-010/TO 13C7-1-5, and as shown in Figures 3-5, 3-6, and 3-7.

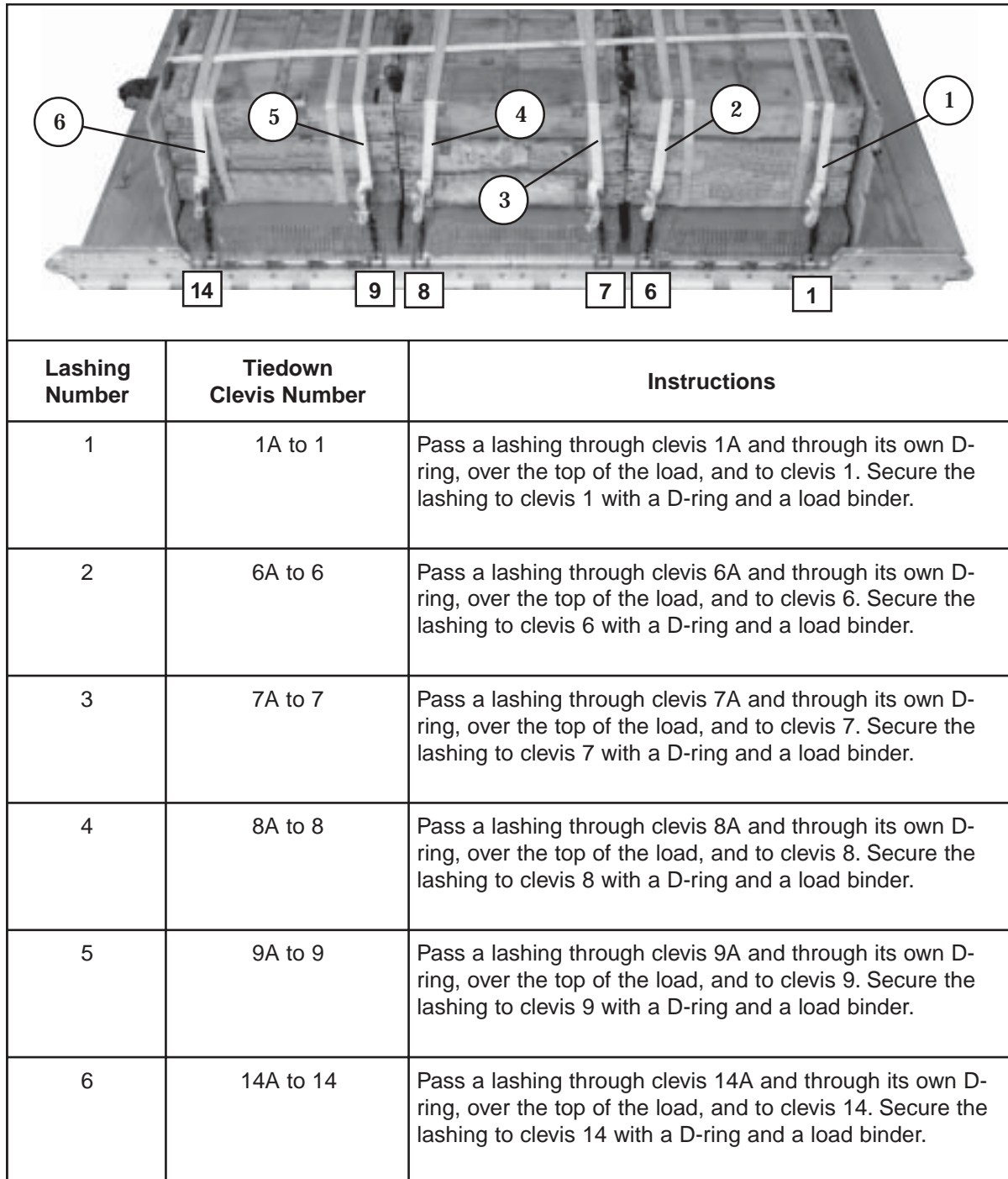
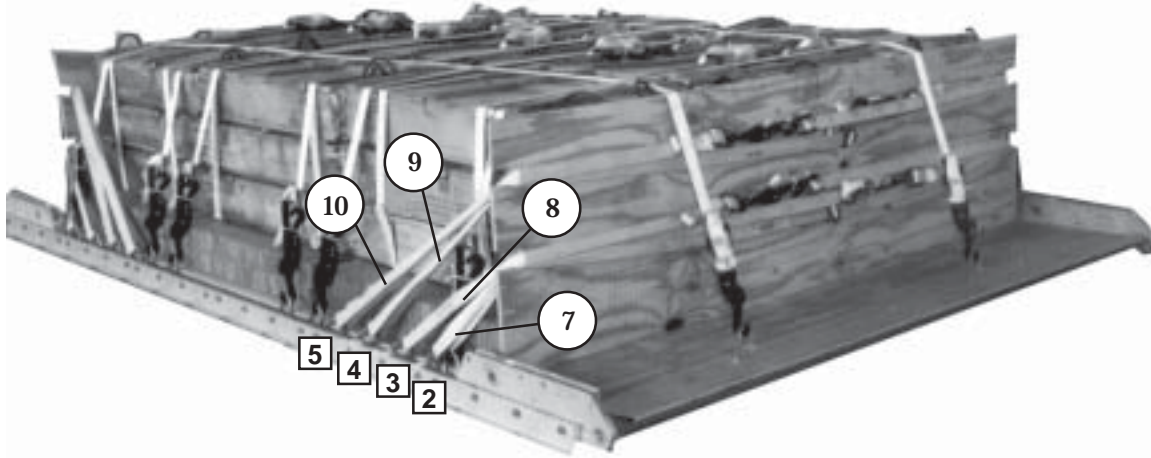


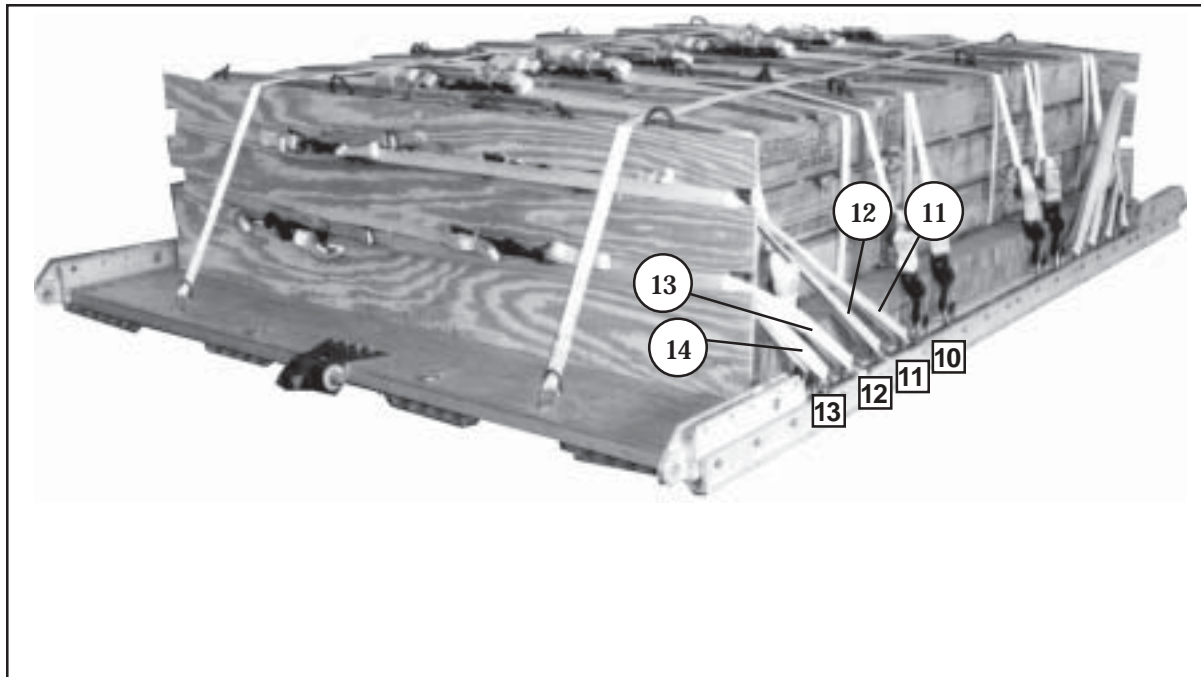
Figure 3-5. Lashings 1 Through 6 Installed

Note: Position the load binders so that they will be accessible for retightening and inspecting when the load is fully rigged.



Lashing Number	Tiedown Clevis Number	Instructions
7	2 and 2A	Form a 30-foot tiedown strap. Pass the free ends of the strap through the lower cutouts in the front storage box, through clevises 2 and 2A, and back through the lower cutouts to the front of the storage box. Secure the free ends of the strap with two D-rings and a load binder.
8	3 and 3A	Form a 30-foot tiedown strap. Pass the free ends of the strap through the lower cutouts in the front storage box, through clevises 3 and 3A, and back through the lower cutouts to the front of the storage box. Secure the free ends of the strap with two D-rings and a load binder.
9	4 and 4A	Form a 30-foot tiedown strap. Pass the free ends of the strap through the upper cutouts in the front storage box, through clevises 4 and 4A, and back through the upper cutouts to the front of the storage box. Secure the free ends of the strap with two D-rings and a load binder.
10	5 and 5A	Form a 30-foot tiedown strap. Pass the free ends of the strap through the upper cutouts in the front storage box, through clevises 5 and 5A, and back through the upper cutouts to the front of the storage box. Secure the free ends of the strap with two D-rings and a load binder.

Figure 3-6. Lashings 7 Through 10 Installed



Lashing Number	Tiedown Clevis Number	Instructions
11	10 and 10A	Form a 30-foot tiedown strap. Pass the free ends of the strap through the upper cutouts in the rear storage box, through clevises 10 and 10A, and back through the upper cutouts to the rear of the storage box. Secure the free ends of the strap with two D-rings and a load binder.
12	11 and 11A	Form a 30-foot tiedown strap. Pass the free ends of the strap through the upper cutouts in the rear storage box, through clevises 11 and 11A, and back through the upper cutouts to the rear of the storage box. Secure the free ends of the strap with two D-rings and a load binder.
13	12 and 12A	Form a 30-foot tiedown strap. Pass the free ends of the strap through the lower cutouts in the rear storage box, through clevises 12 and 12A, and back through the lower cutouts to the rear of the storage box. Secure the free ends of the strap with two D-rings and a load binder.
14	13 and 13A	Form a 30-foot tiedown strap. Pass the free ends of the strap through the lower cutouts in the rear storage box, through clevises 13 and 13A, and back through the lower cutouts to the rear of the storage box. Secure the free ends of the strap with two D-rings and a load binder.

Figure 3-7. Lashings 11 Through 14 Installed

INSTALLING SUSPENSION SLINGS AND DEADMAN'S TIE

3-7. Install the suspension slings and deadman's tie as shown in Figure 3-8.

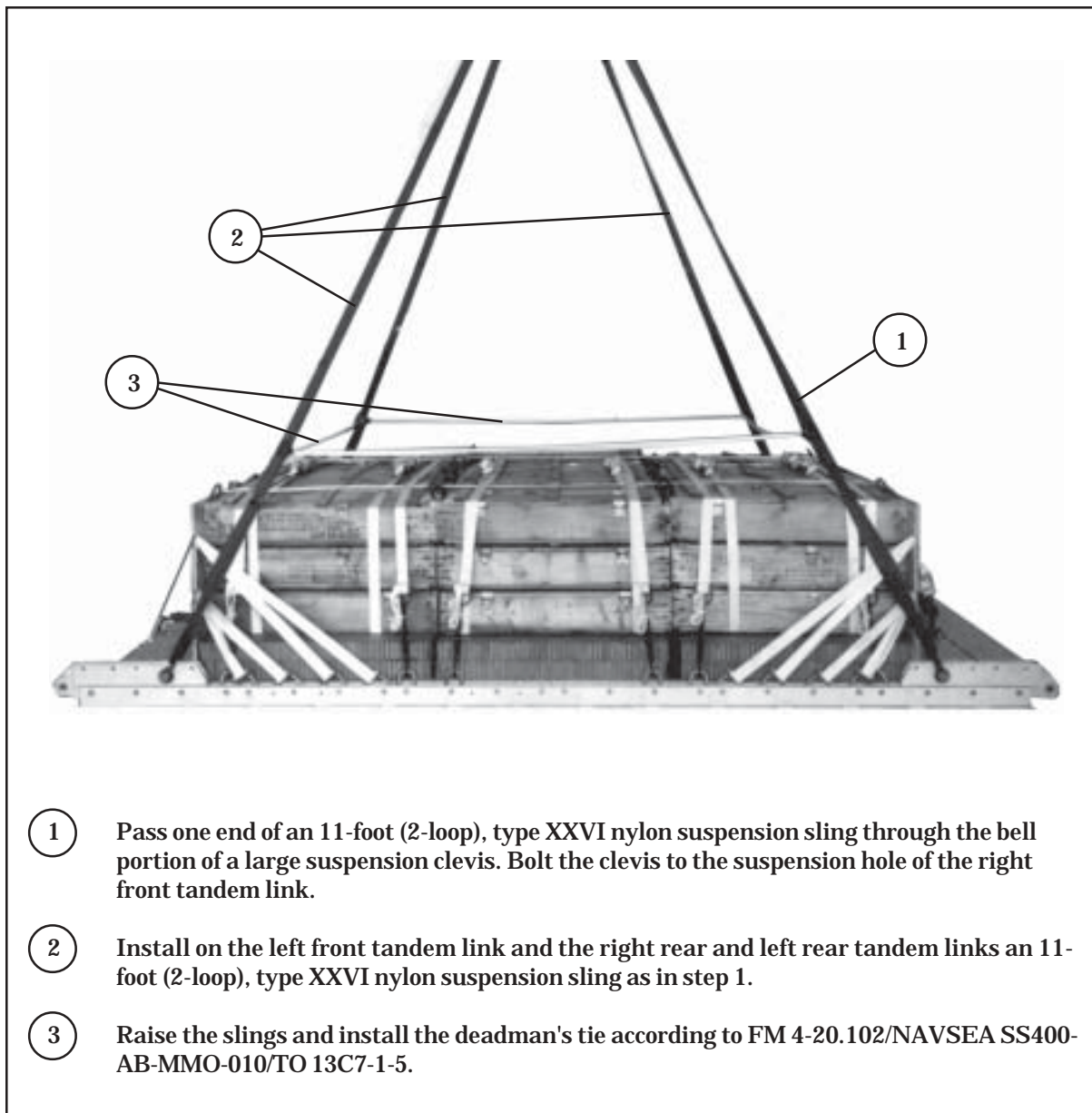


Figure 3-8. Suspension Slings and Deadman's Tie Installed

INSTALLING PARACHUTE STOWAGE PLATFORM

3-8. Install the parachute stowage platform as shown in Figure 3-9.

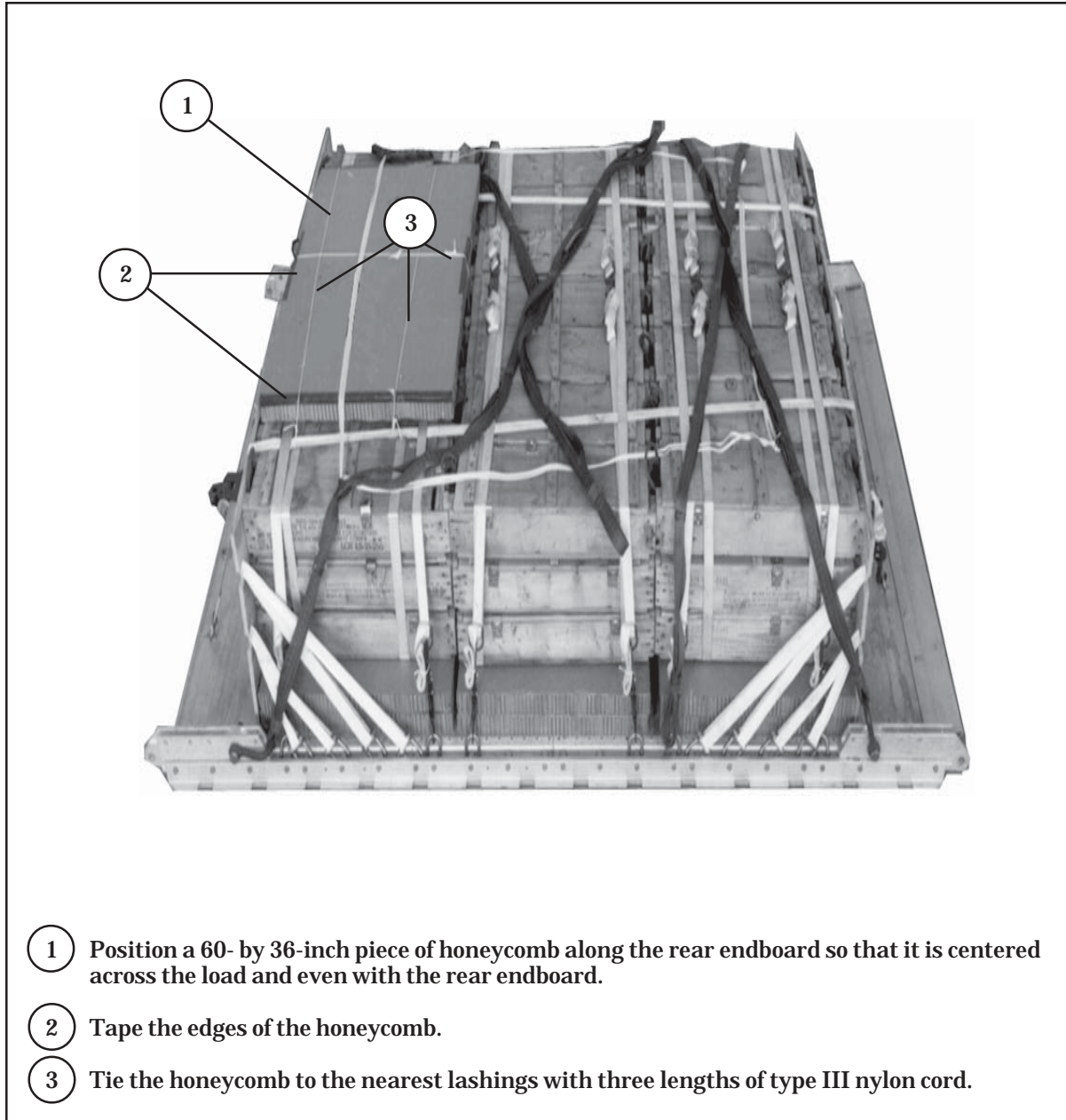


Figure 3-9. Parachute Stowage Platform Installed

PREPARING AND STOWING CARGO PARACHUTES

3-9. Compute the parachute requirements for the load being rigged. Prepare and stow the cargo parachutes as shown in Figure 3-10.

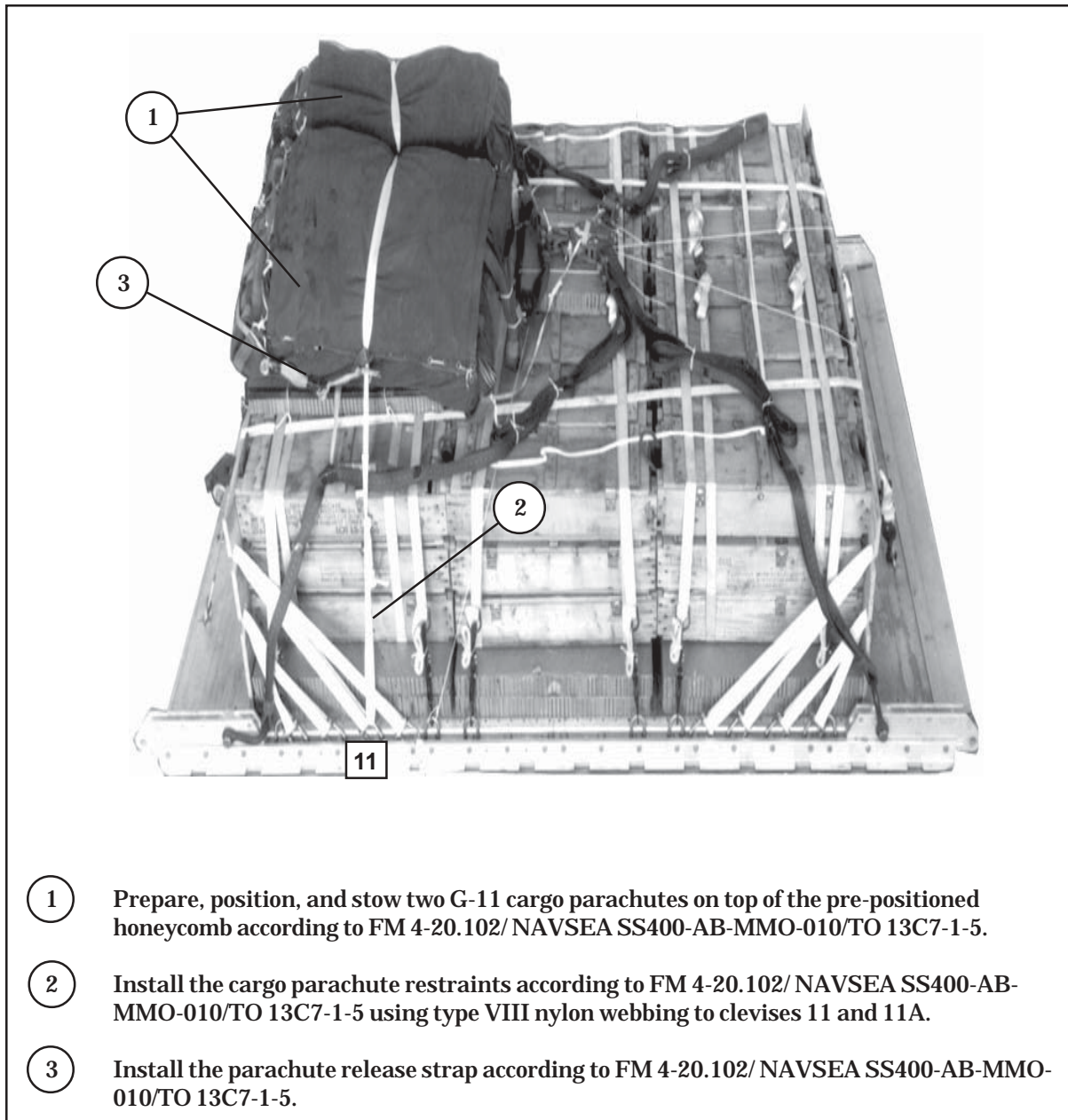
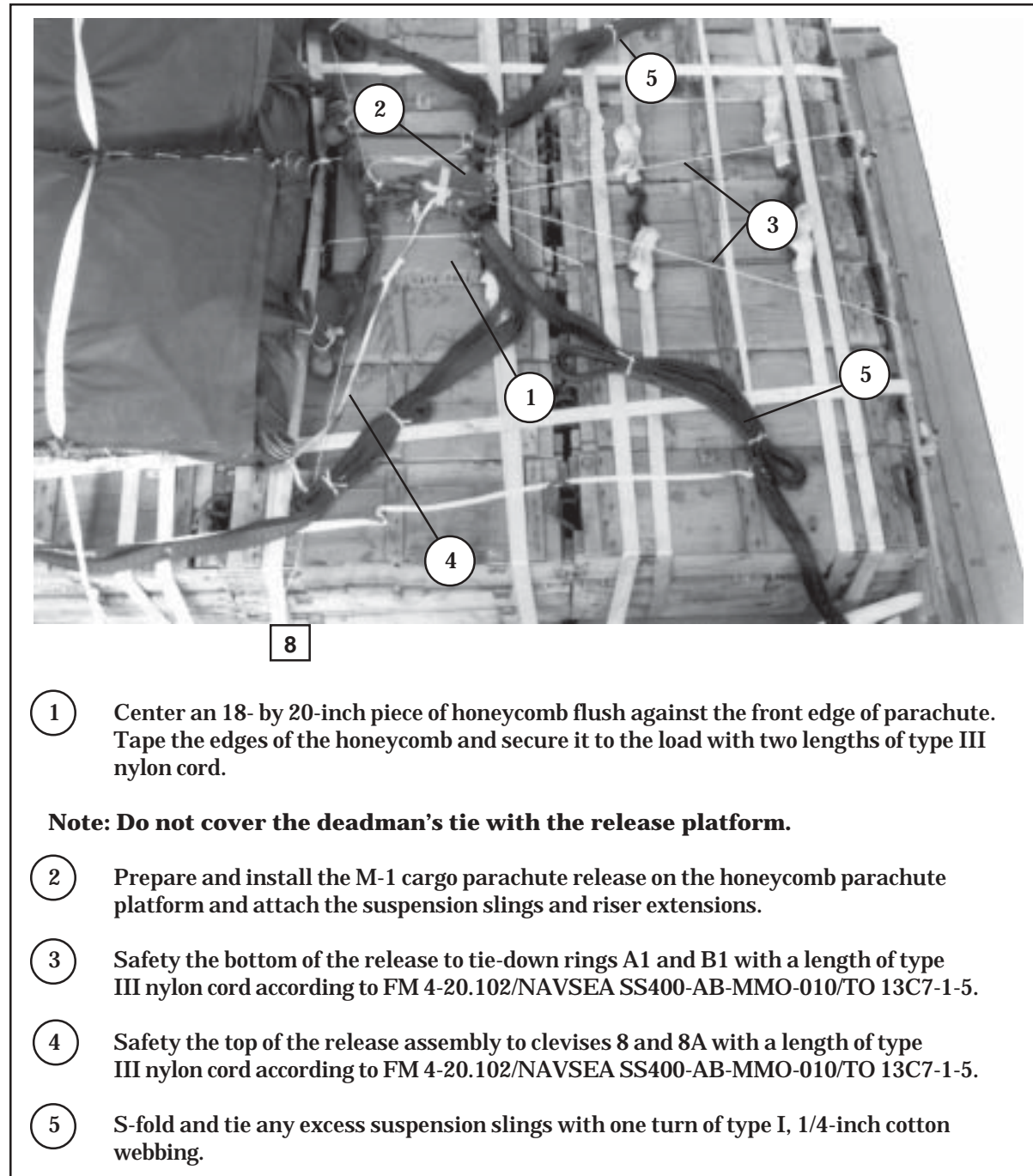


Figure 3-10. Cargo Parachutes Prepared and Stowed

INSTALLING THE RELEASE SYSTEM

3-10. Prepare, attach, and safety an M-1 cargo parachute release according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 3-11.



- 1 Center an 18- by 20-inch piece of honeycomb flush against the front edge of parachute. Tape the edges of the honeycomb and secure it to the load with two lengths of type III nylon cord.

Note: Do not cover the deadman's tie with the release platform.

- 2 Prepare and install the M-1 cargo parachute release on the honeycomb parachute platform and attach the suspension slings and riser extensions.
- 3 Safety the bottom of the release to tie-down rings A1 and B1 with a length of type III nylon cord according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
- 4 Safety the top of the release assembly to clevises 8 and 8A with a length of type III nylon cord according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
- 5 S-fold and tie any excess suspension slings with one turn of type I, 1/4-inch cotton webbing.

Figure 3-11. M-1 Cargo Parachute Release Installed

INSTALLING THE EXTRACTION SYSTEM

3-11. Install the extraction system as shown in Figure 3-12.

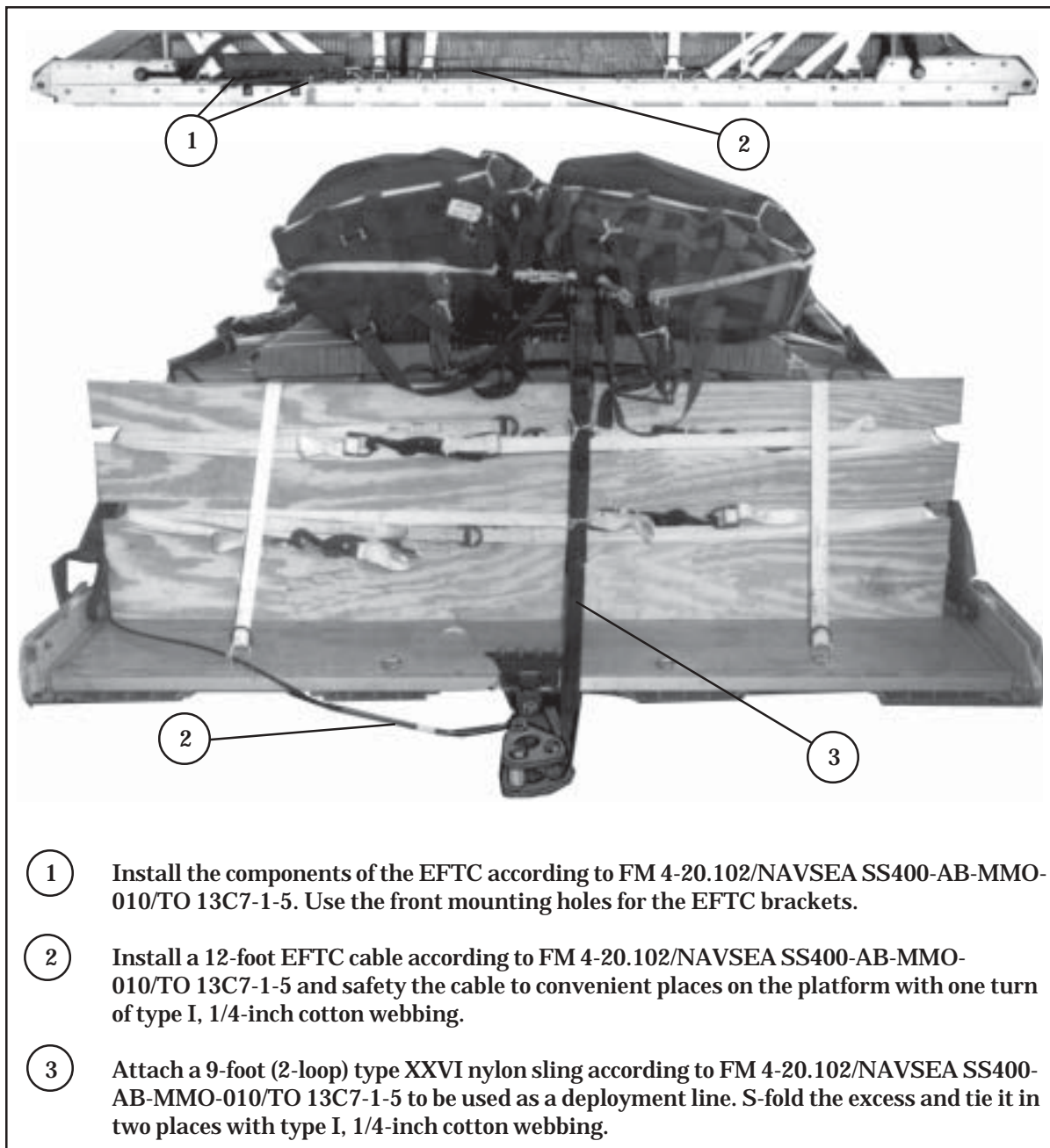


Figure 3-12. Extraction System Installed

PLACING EXTRACTION PARACHUTE

3-12. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Place the extraction parachute and line on the load for installation in the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

3-13. Select and install the provisions for the emergency aft restraints according to the emergency aft restraint requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.


MARKING RIGGED LOAD

3-14. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and as shown in Figure 3-13. Complete Shipper's Declaration for Dangerous Goods. If the load varies from the one shown, the weight, height, CB, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

3-15. Use the equipment listed in Table 3-1 to rig this load.

CAUTION
Make the final rigger inspection required by AR 59-4 and FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



CB

RIGGED LOAD DATA

Weight.....8,904 pounds

Maximum Weight.....See paragraph 3-1

Height.....56 inches

Width.....108 inches

Length.....152 inches

Overhang: Front.....0 inches

Rear.....0 inches

Center of Balance (CB)
 (from front edge of the platform).....74 inches

Extraction System (adds 18 inches to length of platform) EFTC

Figure 3-13. Bulk Supply Load Rigged on a 12-Foot, Type V Platform for Low-Velocity Airdrop

Table 3-1. Equipment Required for Rigging Bulk Supply on a 12-Foot, Type V Platform for Low-Velocity Airdrop

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive paste, 1-gal.	As required
4030-00-678-8562	Clevis, 3/4-inch medium	6
4030-00-090-5354	Clevis, suspension, 1-inch (large)	5
4020-00-240-2146	Cord, nylon, type III, 550-lb.	As required
1670-00-434-5783	Coupling, airdrop extraction force transfer, w/12-ft. cable	1
1670-00-360-0328	Cover, clevis	2
8135-00-664-6958	Cushioning material (Cellulose wadding)	As required
8305-00-958-3685	Felt, 1/2-inch thick	As required
1670-01-183-2678	Leaf, extraction line (line bag) (add 2 for C-17)	2
	Line extraction:	
1670-01-064-4452	60-foot (1-loop), type XXVI or	1
1670-01-062-6313	60-foot (3-loop), type XXVI (for C-130)	1
1670-01-062-6313	160-foot (3-loop), type XXVI (for C-5)	1
1670-01-107-7651	140-foot (3-loop), type XXVI (for C-17)	1
1670-01-064-4452	60-foot (1-loop), type XXVI (for C-17), (drogue line)	1
	Link assembly, two-point:	
5306-00-435-8994	Bolt, 1-inch diameter, 4-inches long (add 4 for C-5)	2
5310-00-232-5165	Nut, 1-inch (add 4 for C-5)	2
1670-00-003-1953	Plate, side, 3 3/4-inch	2
5365-00-007-3414	Spacer, large (add 4 for C-5)	2
1670-00-753-3928	Pad, energy-dissipating (honeycomb) 3- by 36- by 96-inches	7 sheets
1670-01-016-7841	Parachute, cargo, G-11	2
	Parachute, cargo, extraction:	
1670-01-063-3716	22-ft.	1
1670-01-063-3715	15-ft. (C-17 only)	1
	Platform, airdrop, type V, 12-ft:	
5530-00-618-8073	Plywood, 3/4-in	As required
1670-01-162-2372	Clevis assembly (type V)	(36)
1670-01-353-8424	Extraction bracket assembly	(1)
1670-01-162-2381	Tandem link assembly (Multipurpose link)	(4)
1670-01-097-8817	Release, cargo parachute, M-1	1
	Sling, cargo, airdrop:	
1670-01-062-6303	9-ft. (2-loop), type XXVI	1
1670-01-063-7760	11-ft. (2-loop), type XXVI	4
1670-01-062-6302	20-ft. (2-loop), type XXVI	2

Table 3-1. Equipment Required for Rigging Bulk Supply on a 12-Foot, Type V Platform for Low-Velocity Airdrop (Continued)

National Stock Number	Item	Quantity
5340-00-040-8219 7501-00-266-5016 7510-00-266-6710 1670-00-937-0271 1670-01-483-8259	Strap, parachute, release, multi-knife Tape, adhesive, 2-inch Tape, masking Tiedown assembly, 15-ft. Towplate release mechanism (H-block) (C-17 only)	2 As required As required 36 1
8305-00-268-2411 8305-00-082-5752 8305-00-261-8585	Webbing: Cotton, 1/4-inch, type I Nylon, tubular, 1/2-inch Type VIII nylon	As required As required As required

Chapter 4

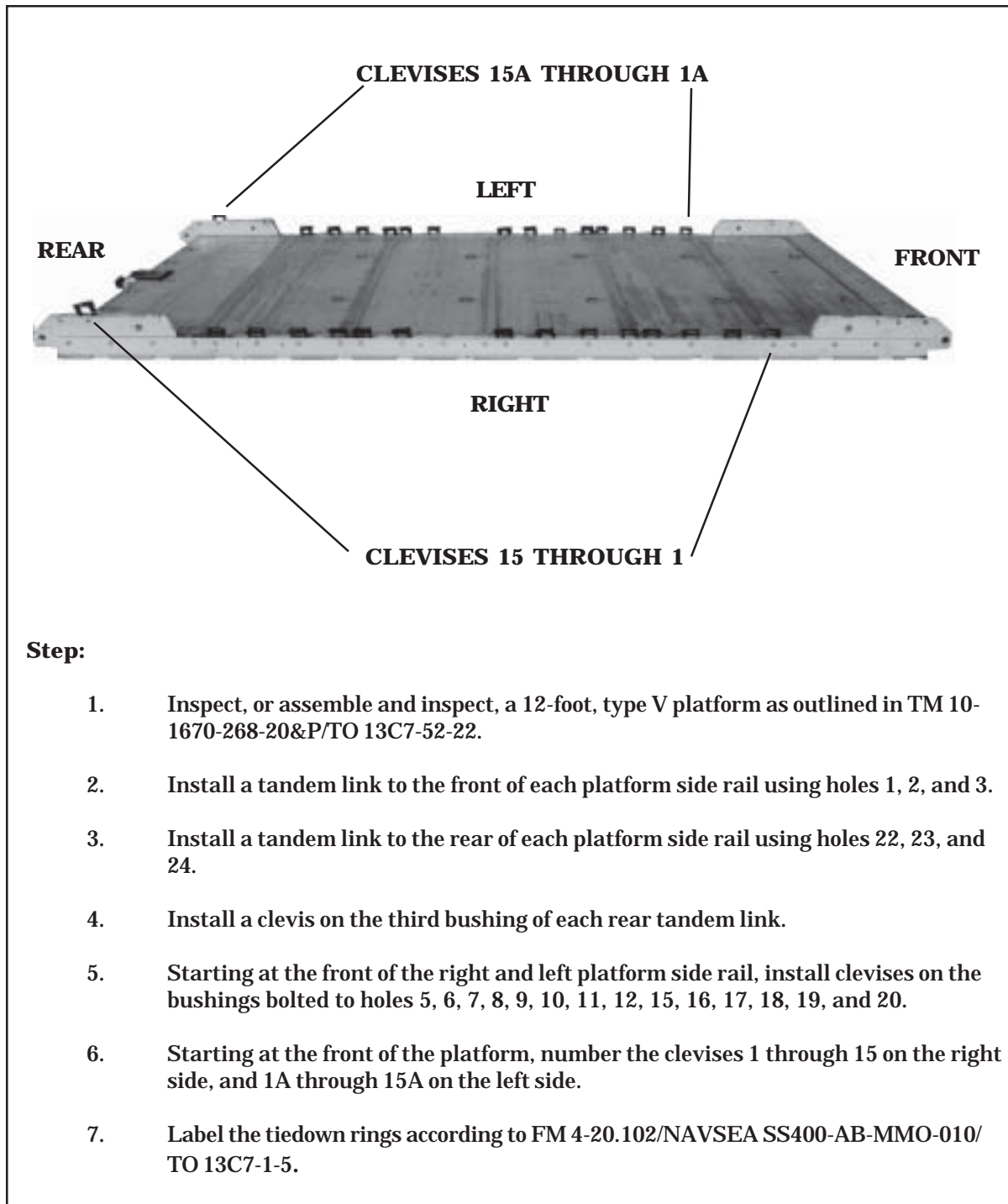
RIGGING FORWARD AREA SURGICAL TEAM (FAST) EQUIPMENT ON A 12-FOOT, TYPE V PLATFORM FOR LOW-VELOCITY AIRDROP

DESCRIPTION OF LOAD

4-1. The FAST equipment is rigged as a bulk supply load on a 12-foot type V airdrop platform with G-11 cargo parachutes. These procedures may be used to rig other bulk supply loads consisting of rations, equipment, fuel, lubricants, ammunition or other items of general supply. As load weights can vary widely, the parachute requirements must be computed for each load. For extraction purposes, the rigged load must weigh at least 3,780 pounds. Refer to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 for the weight limitations for the number of parachutes to be used.

PREPARING PLATFORM

4-2. Prepare a 12-foot, type V platform as shown in Figure 4-1.



Step:

1. Inspect, or assemble and inspect, a 12-foot, type V platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.
2. Install a tandem link to the front of each platform side rail using holes 1, 2, and 3.
3. Install a tandem link to the rear of each platform side rail using holes 22, 23, and 24.
4. Install a clevis on the third bushing of each rear tandem link.
5. Starting at the front of the right and left platform side rail, install clevises on the bushings bolted to holes 5, 6, 7, 8, 9, 10, 11, 12, 15, 16, 17, 18, 19, and 20.
6. Starting at the front of the platform, number the clevises 1 through 15 on the right side, and 1A through 15A on the left side.
7. Label the tiedown rings according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

Figure 4-1. Platform Prepared

POSITIONING LASHINGS

4-3. Use twelve 15-foot tiedown lashings, and position the lashings on the platform as shown in Figure 4-2.

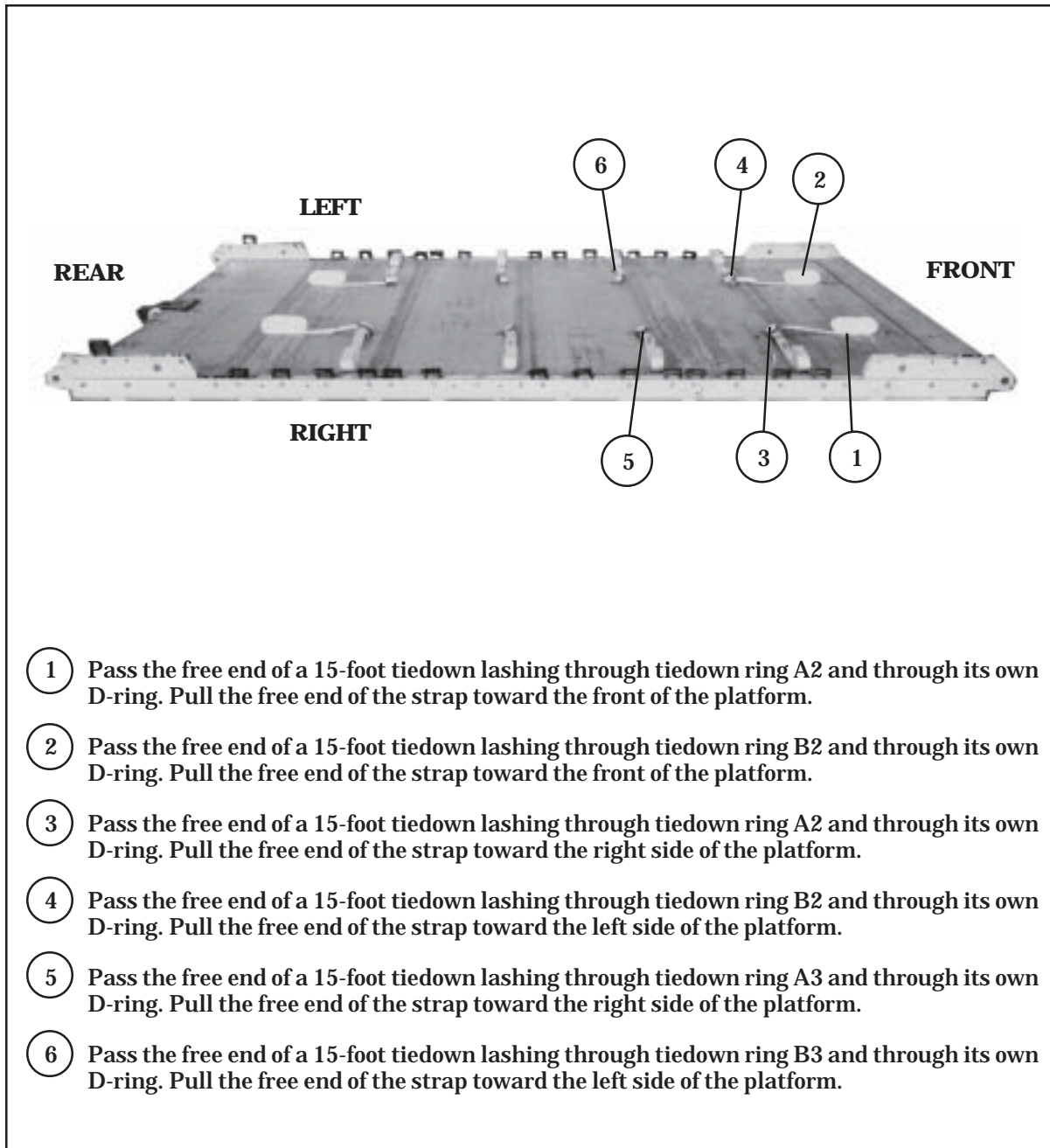


Figure 4-2. Lashings Positioned

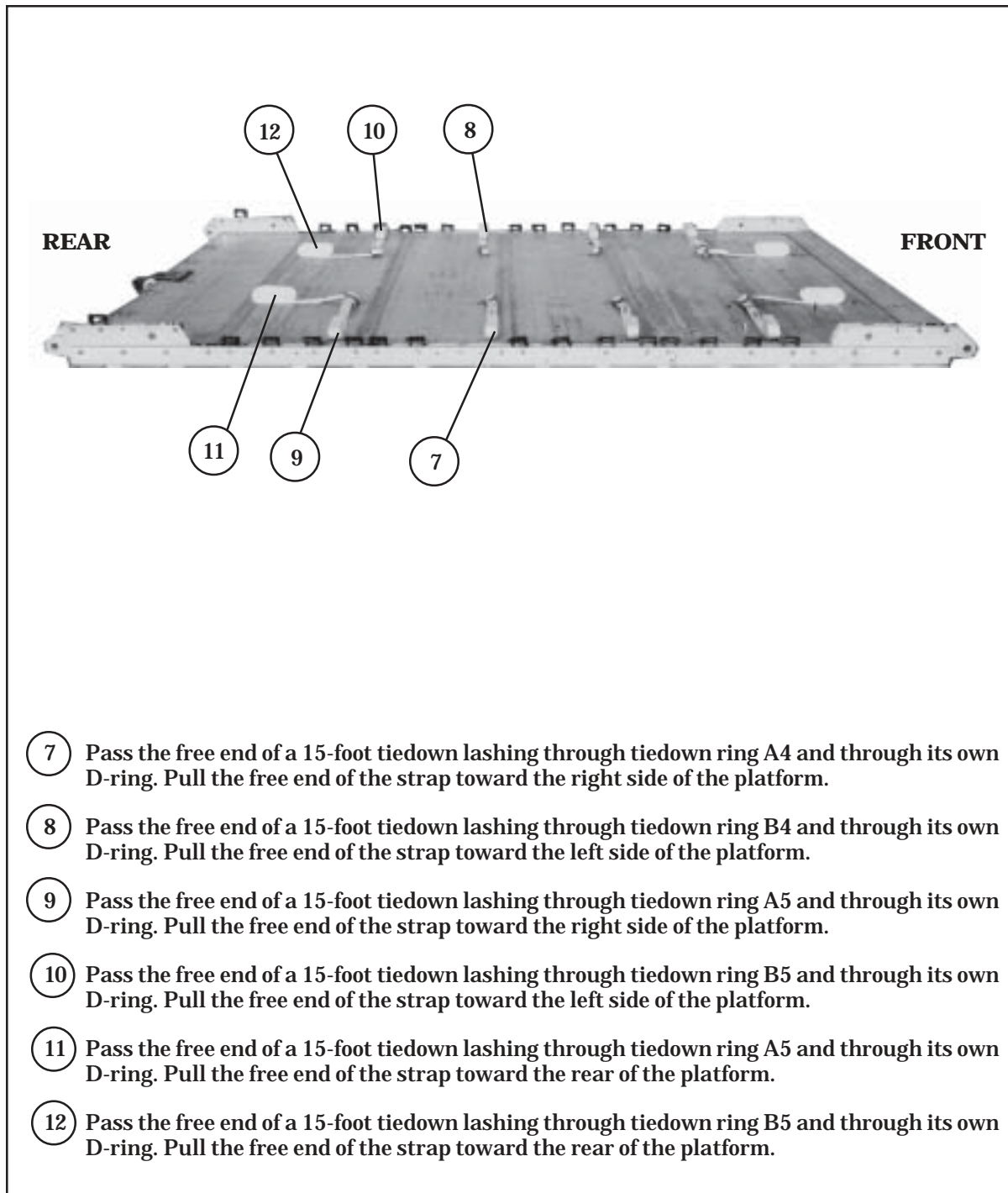


Figure 4-2. Lashings Positioned (Continued)

CONSTRUCTING AND FORMING STORAGE BOX COMPONENTS

4-4. Construct the individual components of a storage box as shown in Figures 4-3 through 4-5. Assemble the individual components of the front and rear of the box and the sides of the box as shown in Figure 4-6 for later assembly on the platform.

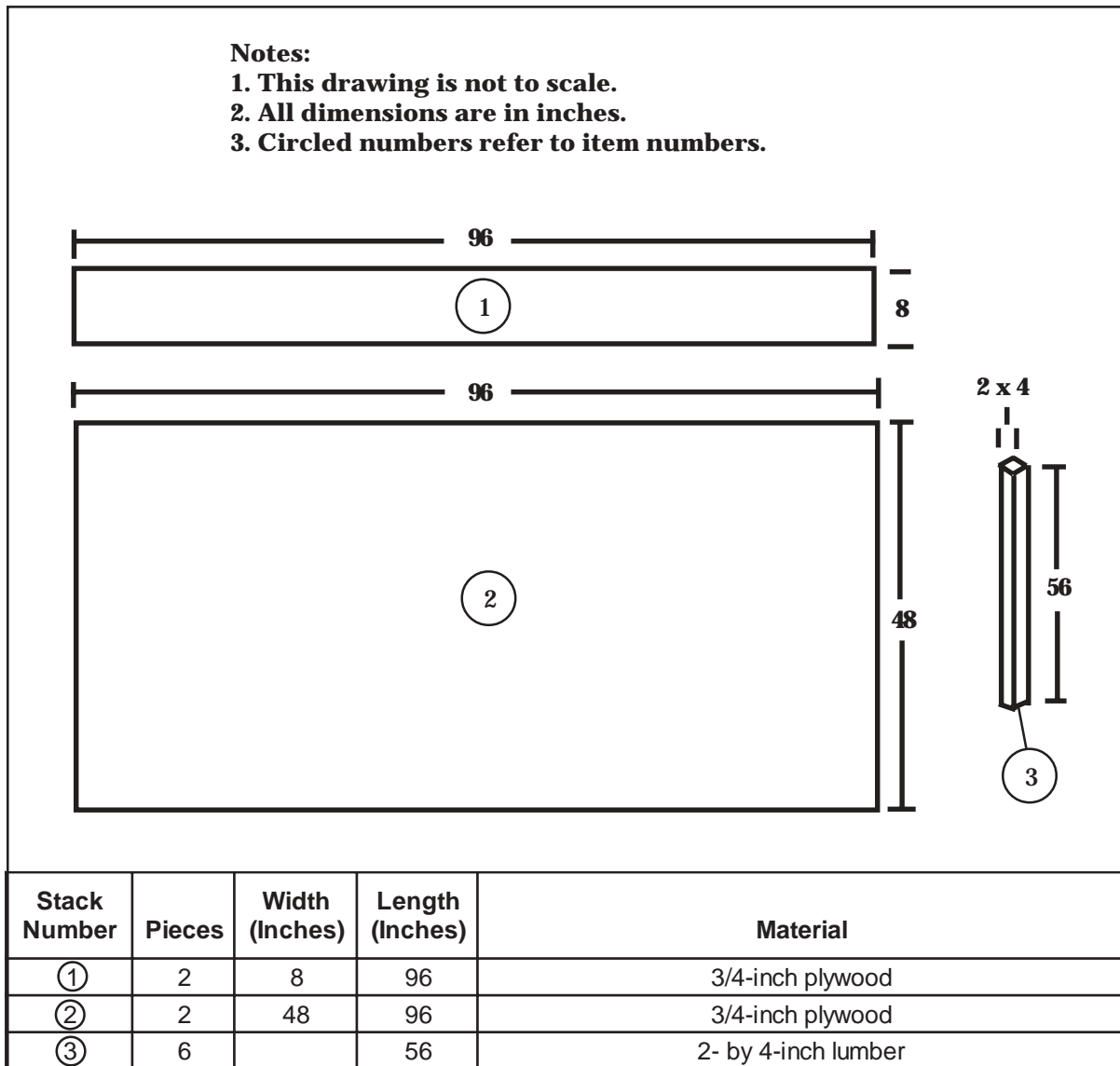
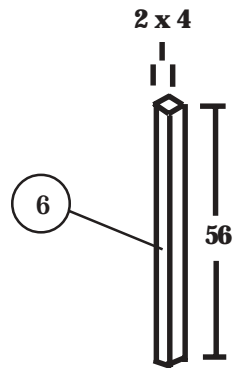
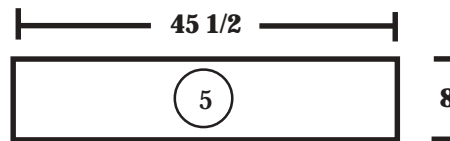
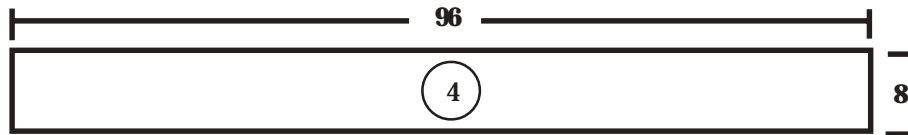


Figure 4-3. Front and Rear Components of Storage Box Constructed

Notes:

- 1. This drawing is not to scale.**
- 2. All dimensions are in inches.**
- 3. Circled numbers refer to item numbers.**

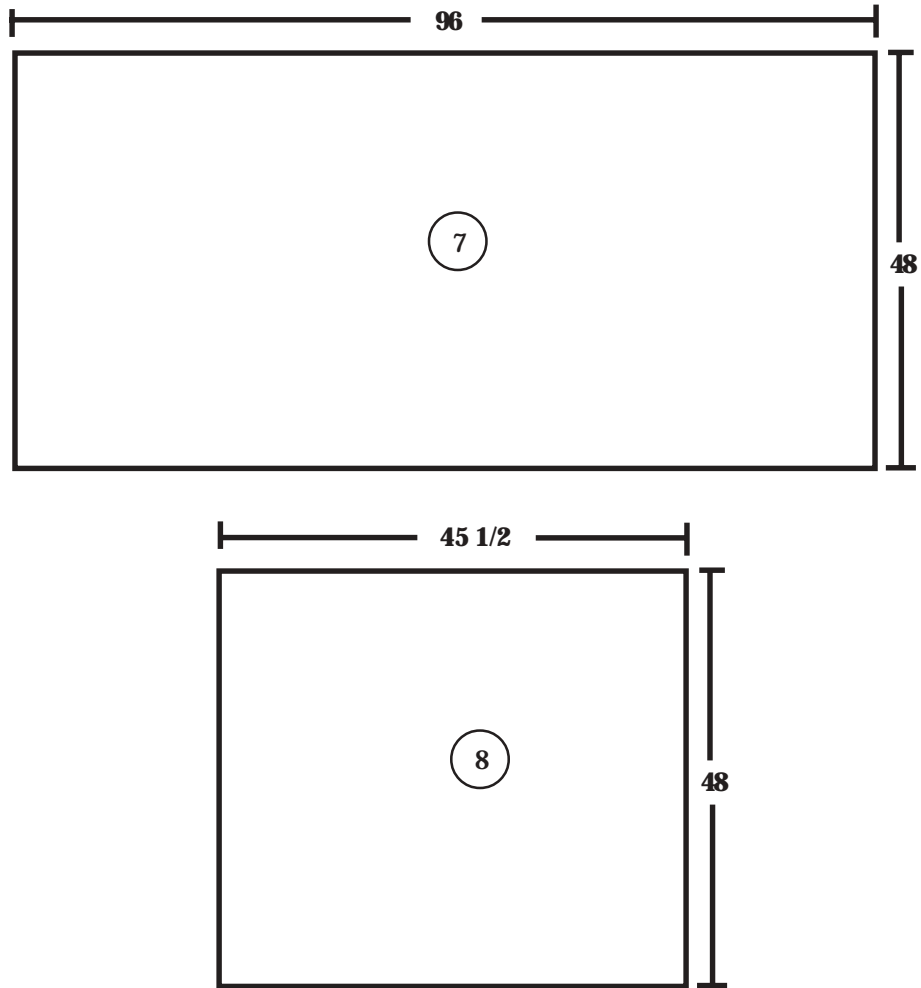


Stack Number	Pieces	Width (Inches)	Length (Inches)	Material
④	2	8	96	3/4-inch plywood
⑤	2	8	45 1/2	3/4-inch plywood
⑥	8		56	2- by 4-inch lumber

Figure 4-4. Side Components of Storage Box Constructed

Notes:

1. This drawing is not to scale.
2. All dimensions are in inches.
3. Circled numbers refer to item numbers.

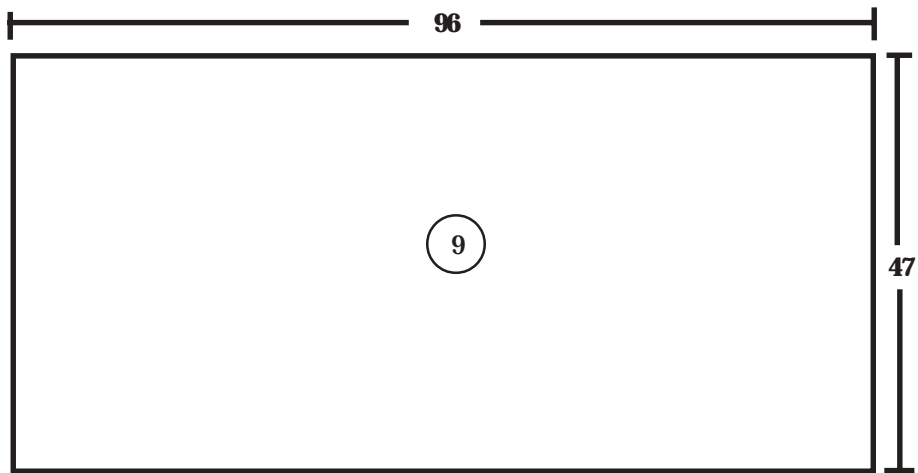


Stack Number	Pieces	Width (Inches)	Length (Inches)	Material
⑦	2	48	96	3/4-inch plywood
⑧	2	48	45 1/2	3/4-inch plywood

Figure 4-4. Side Components of Storage Box Constructed (Continued)

Notes:

- 1. This drawing is not to scale.**
- 2. All dimensions are in inches.**
- 3. Circled numbers refer to item numbers.**

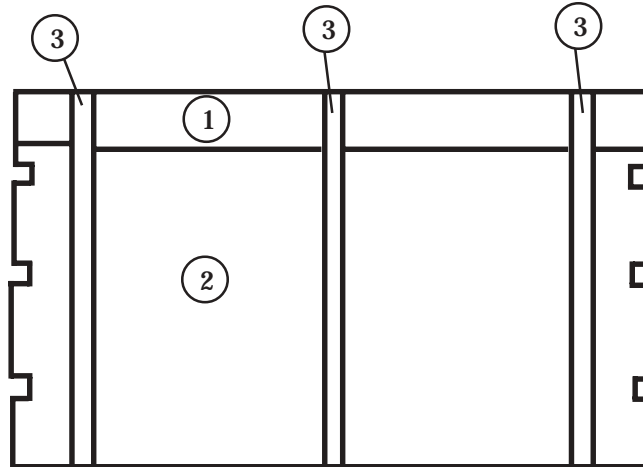


Stack Number	Pieces	Width (Inches)	Length (Inches)	Material
⑨	3	47	96	3/4-inch plywood

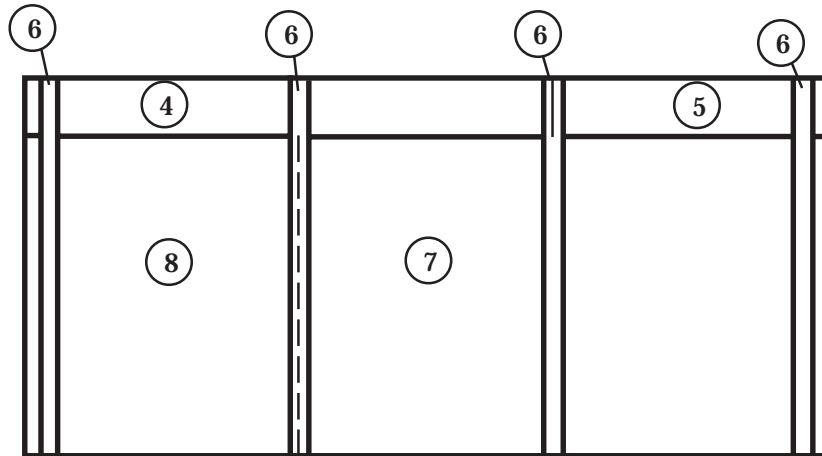
Figure 4-5. Top Components of Storage Box Constructed

Notes:

1. This drawing is not to scale.
2. All dimensions are in inches.
3. Make three evenly spaced 2-inch cutouts on each 48-inch side of the plywood used for the front and rear components before assembling the box.



FRONT AND REAR OF STORAGE BOX



SIDES OF STORAGE BOX

Step:

1. Nail the components of the storage box together with sixteen-penny nails to form the sides.
2. Bend the ends of the nails to hold the components in place securely.

Figure 4-6. Front, Rear, and Sides of Storage Box Constructed

PREPARING HONEYCOMB STACKS

4-5. Prepare the honeycomb stacks as shown in Figure 4-7.

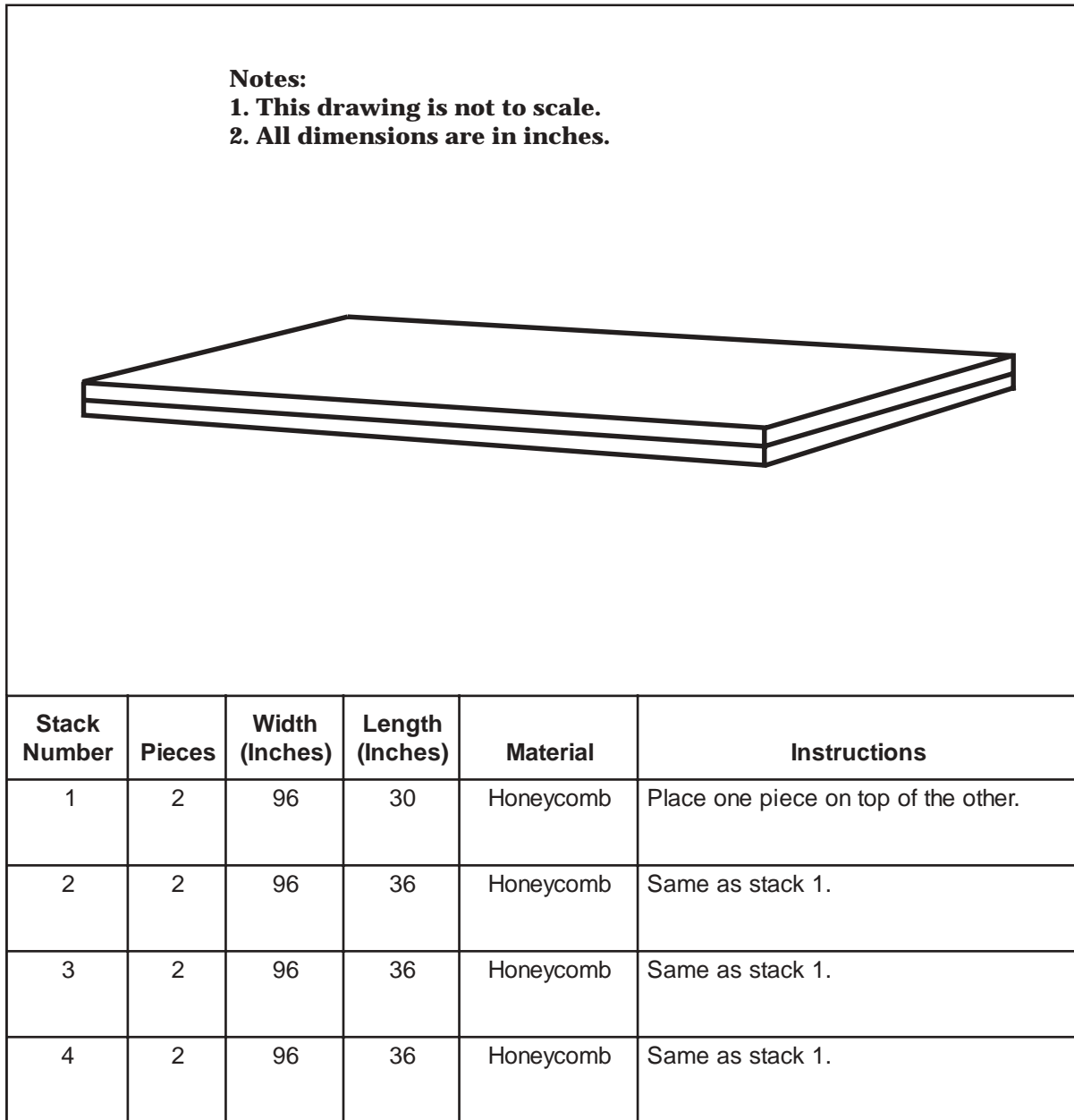


Figure 4-7. Honeycomb Stacks Prepared

POSITIONING HONEYCOMB STACKS AND ASSEMBLING SIDES OF STORAGE BOX

4-6. Position the honeycomb stacks and position and assemble the front and sides of the storage box on the platform as shown in Figure 4-8.

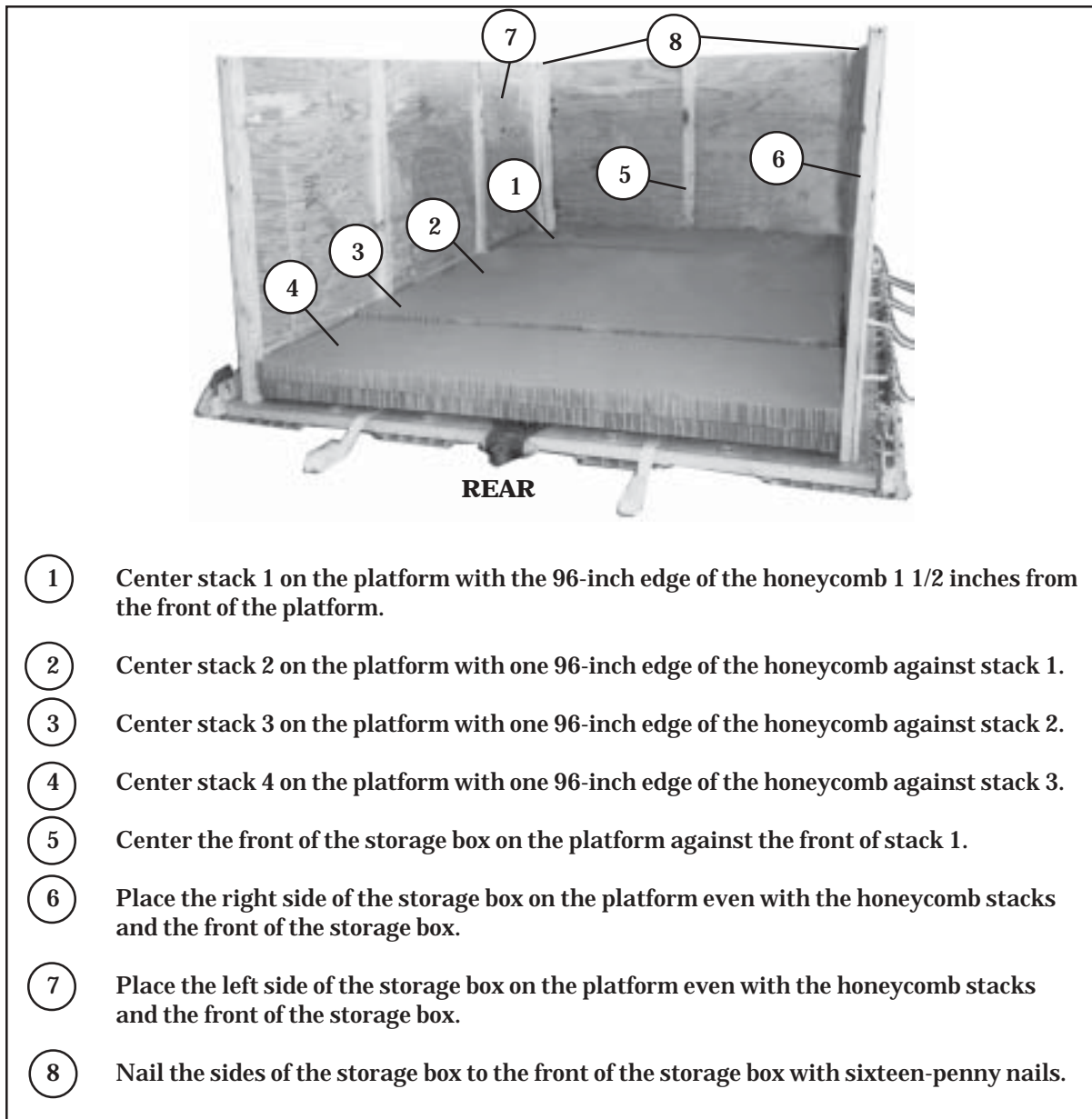


Figure 4-8. Honeycomb Stacks Positioned and Front and Sides of the Storage Box Assembled

POSITIONING DROP ITEMS

4-7. Position the drop items in the storage box on the honeycomb stacks. Distribute the weight of the drop items evenly on the honeycomb stacks. Pad the drop items as necessary, with honeycomb and cellulose wadding. Fill in empty areas with honeycomb to prevent shifting or movement.

CLOSING AND SECURING BOX

4-8. Close and secure the box as shown in Figure 4-9.

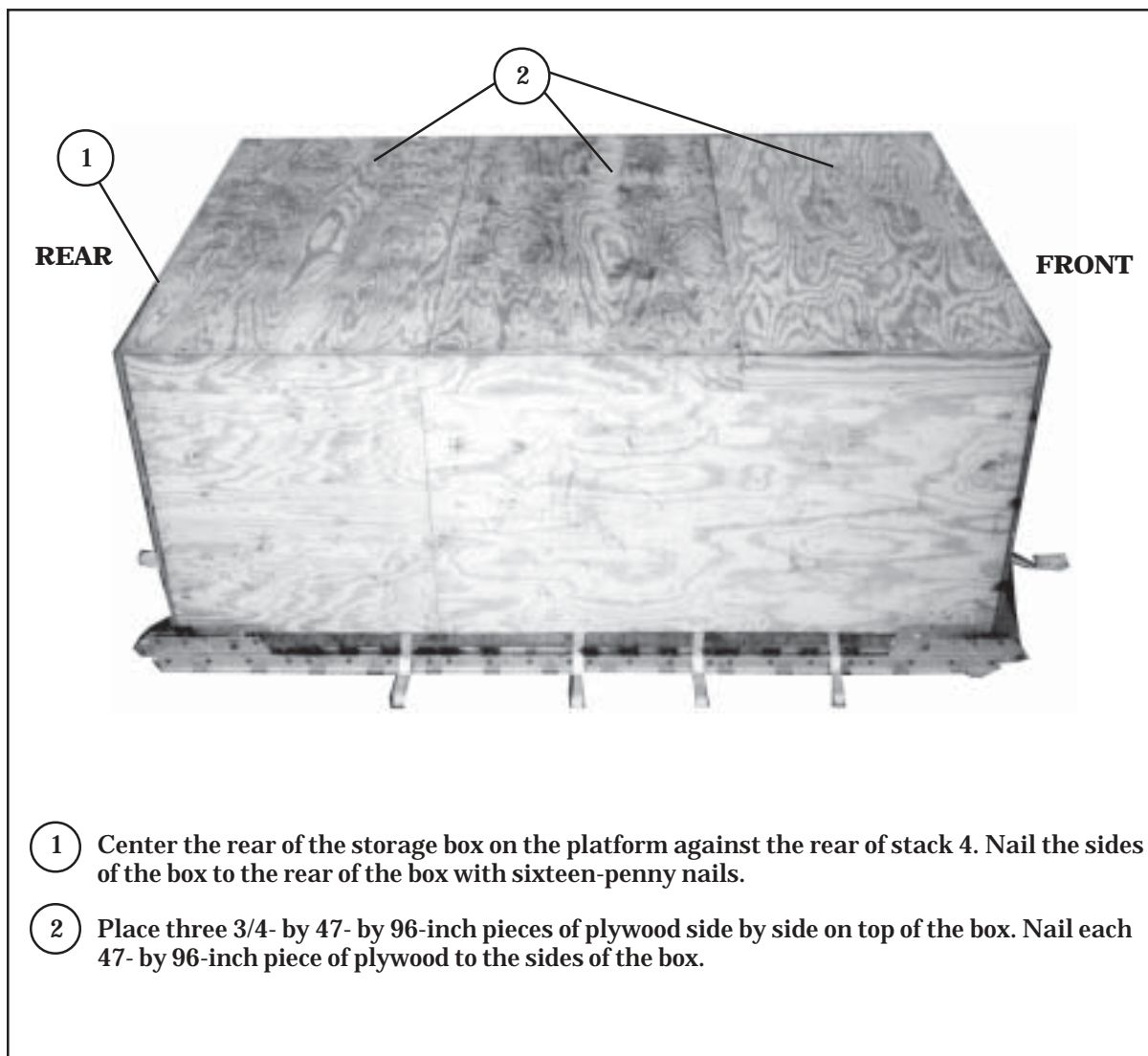


Figure 4-9. Box Closed and Secured

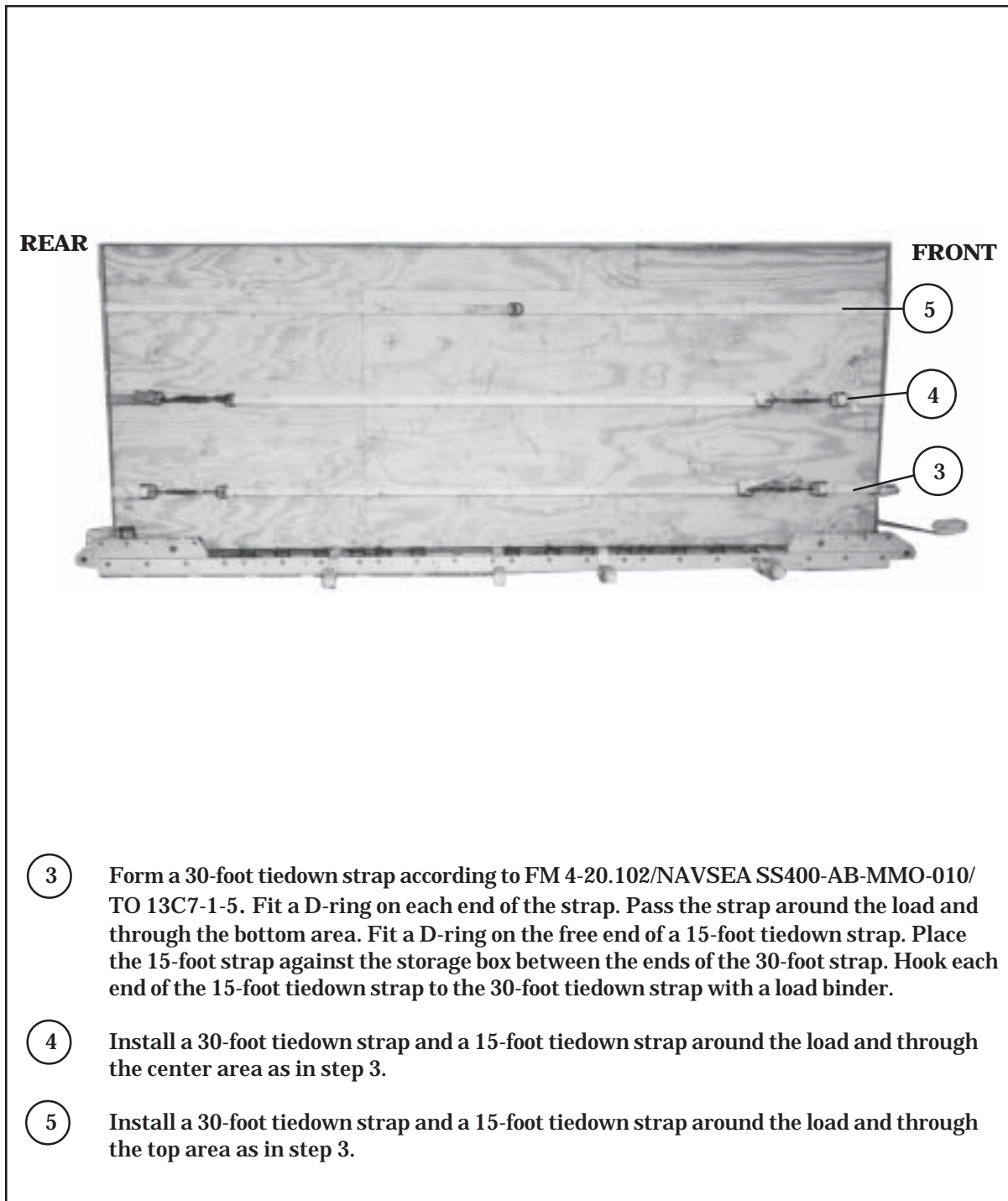


Figure 4-9. Box Closed and Secured (Continued)

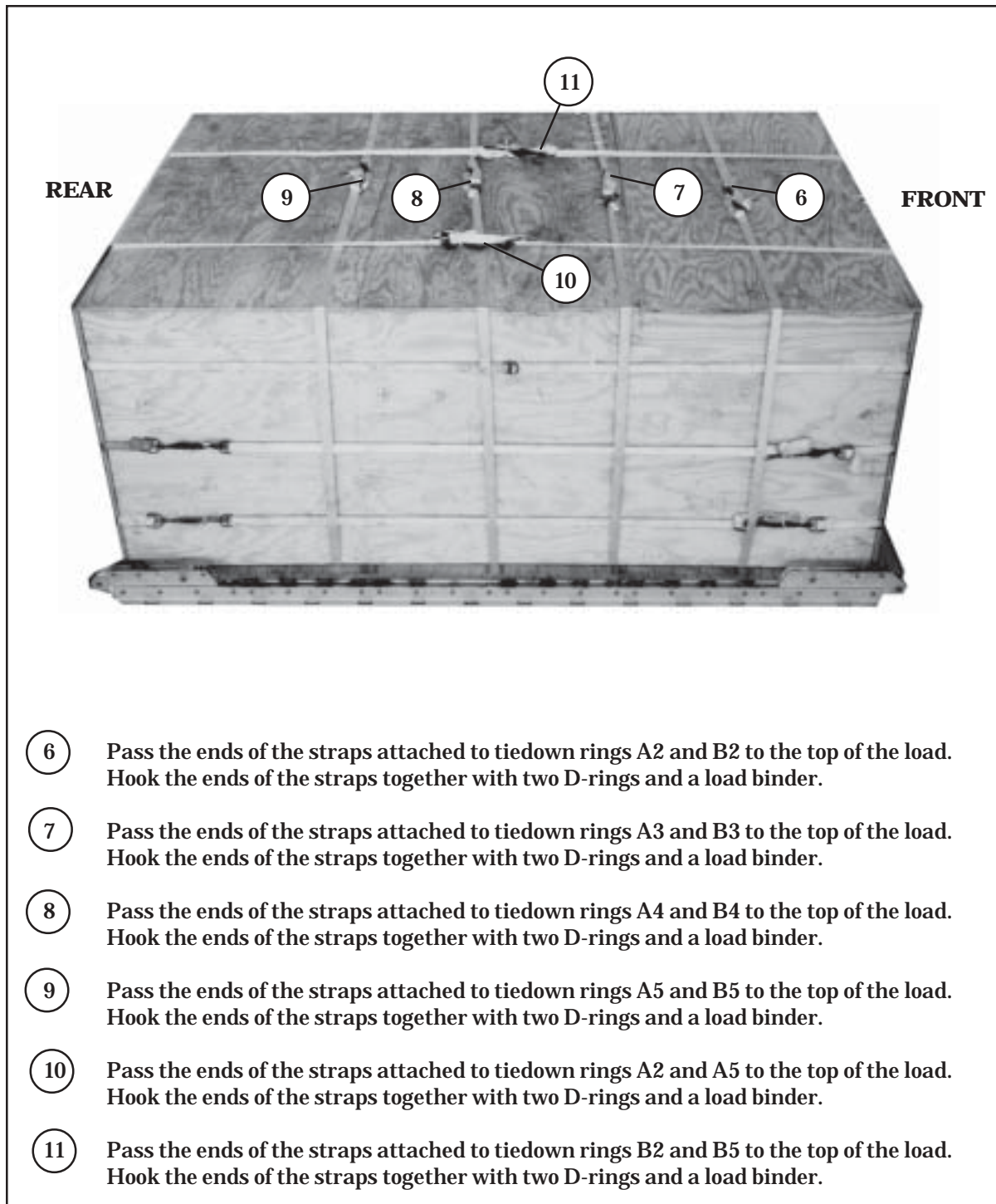


Figure 4-9. Box Closed and Secured (Continued)

INSTALLING LASHINGS

4-9. Install the lashings as shown in Figure 4-10.

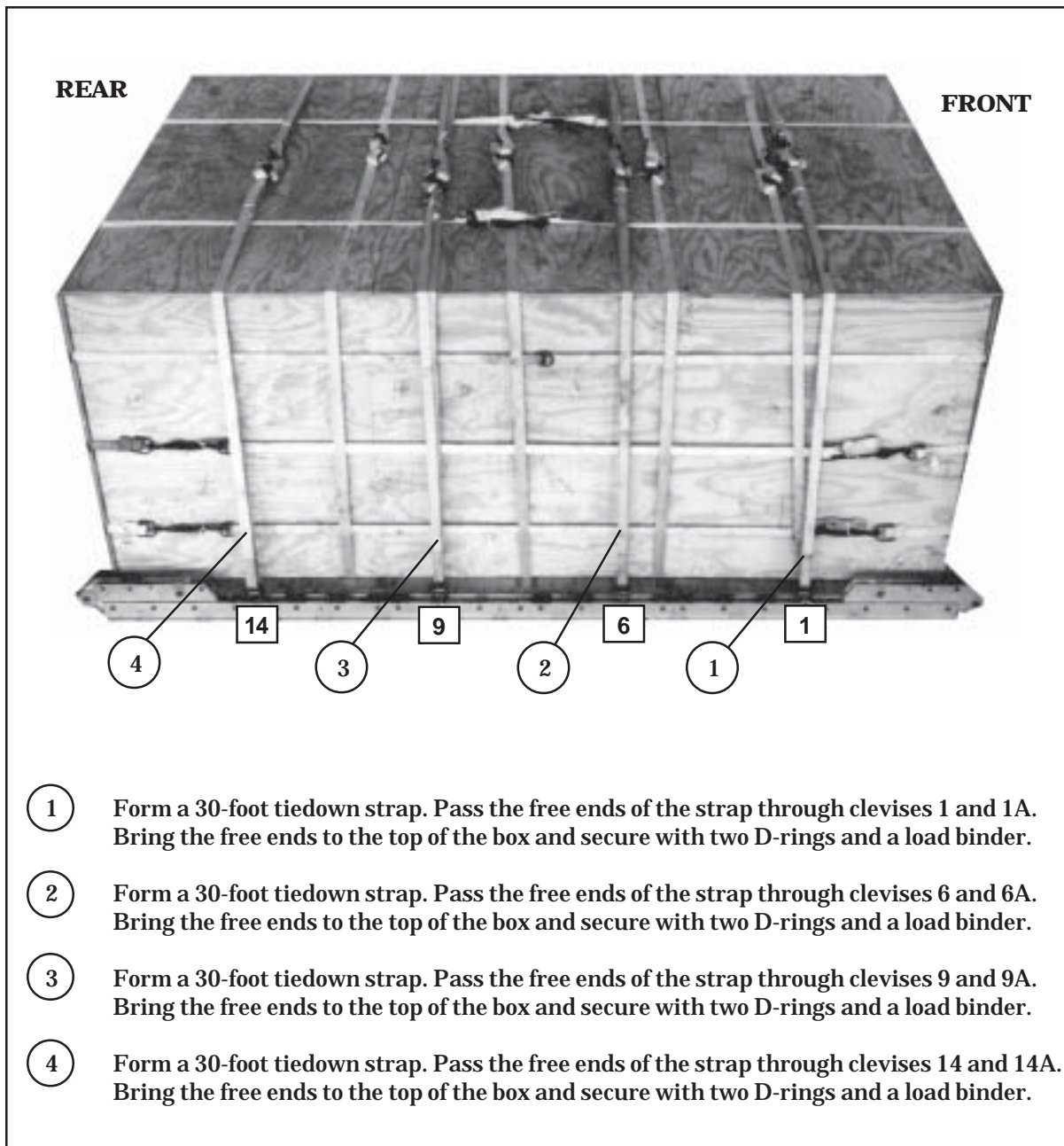


Figure 4-10. Lashings Installed

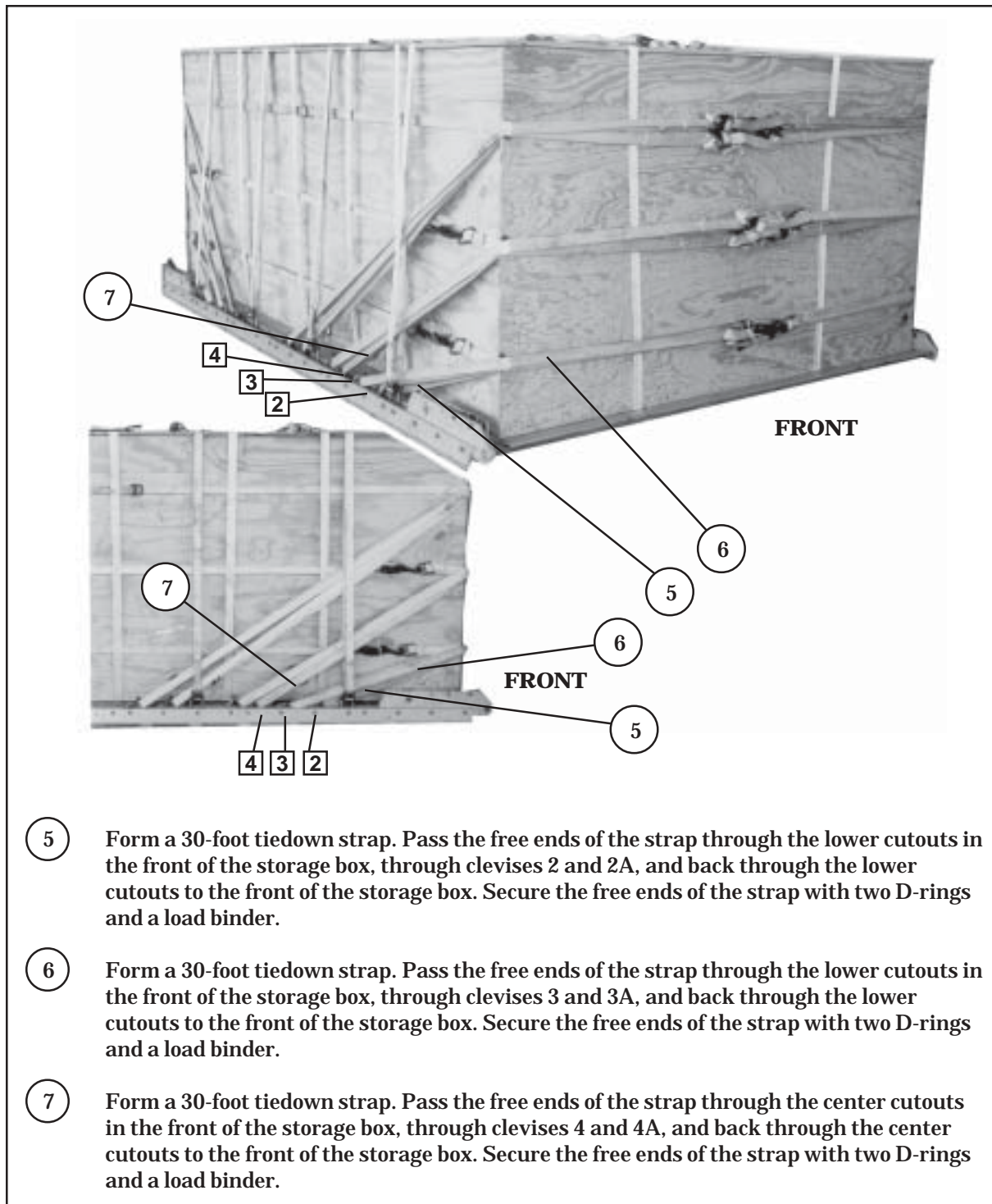


Figure 4-10. Lashings Installed (Continued)

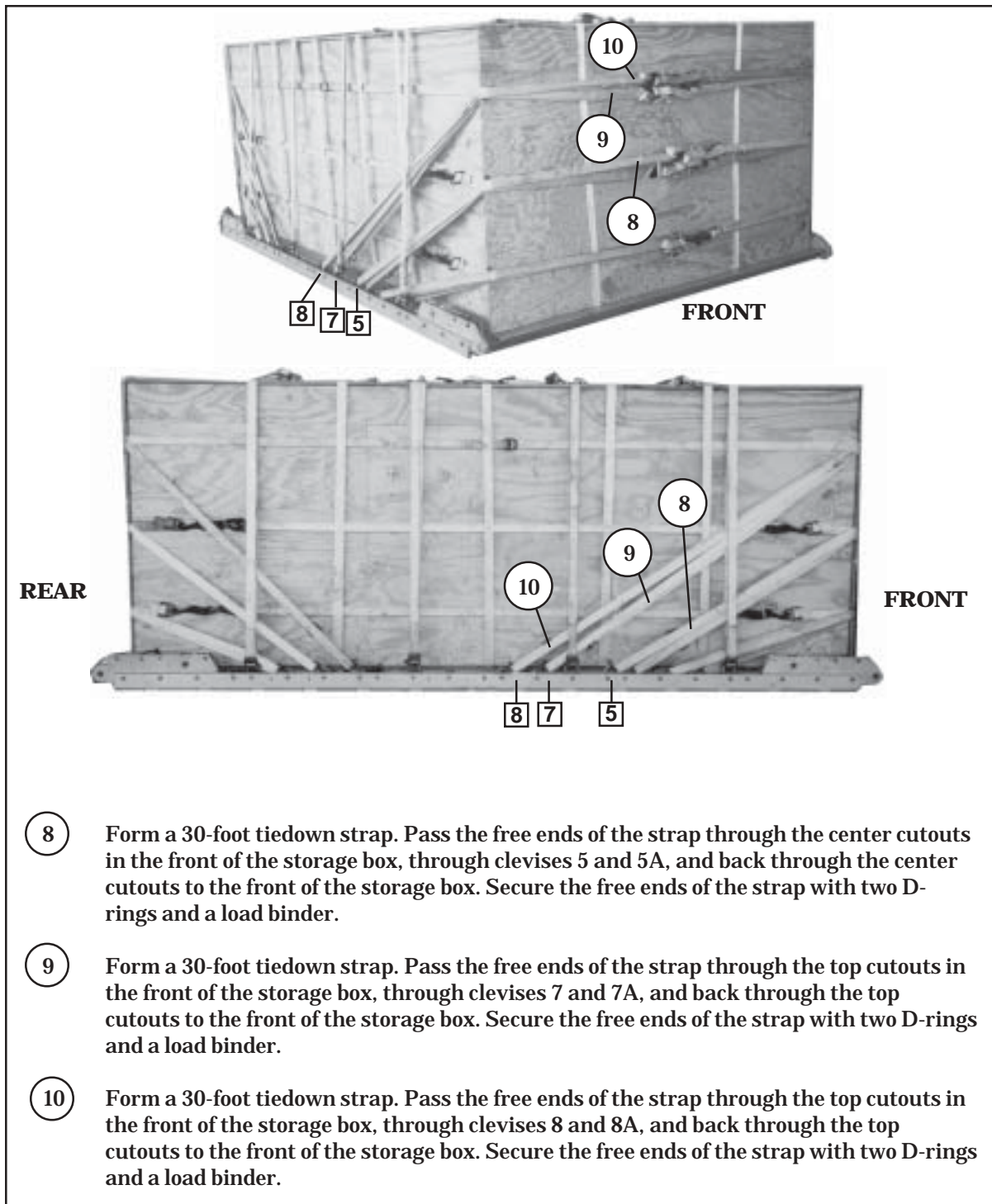
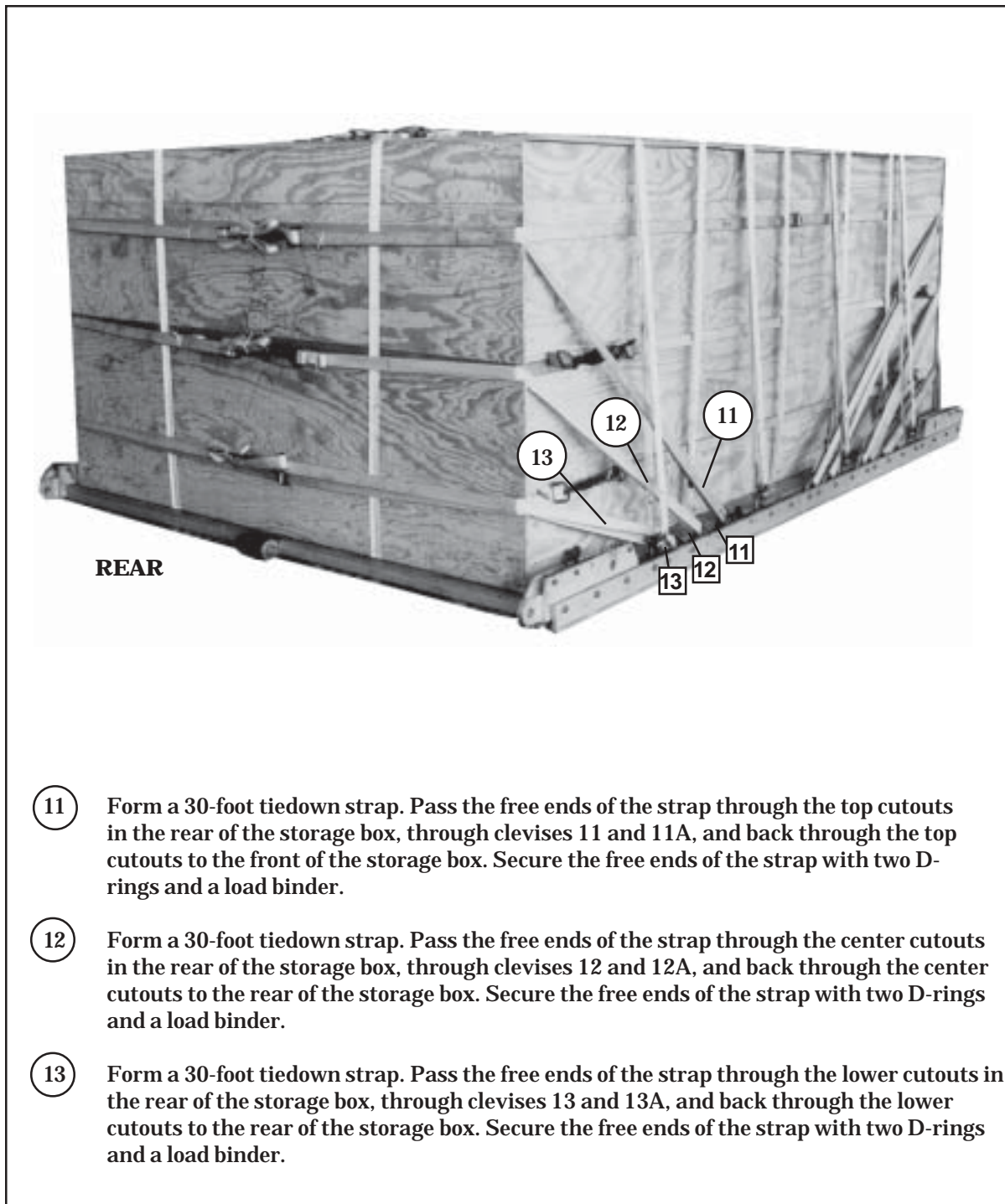


Figure 4-10. Lashings Installed (Continued)



- ① Form a 30-foot tiedown strap. Pass the free ends of the strap through the top cutouts in the rear of the storage box, through clevises 11 and 11A, and back through the top cutouts to the front of the storage box. Secure the free ends of the strap with two D-rings and a load binder.
- ② Form a 30-foot tiedown strap. Pass the free ends of the strap through the center cutouts in the rear of the storage box, through clevises 12 and 12A, and back through the center cutouts to the rear of the storage box. Secure the free ends of the strap with two D-rings and a load binder.
- ③ Form a 30-foot tiedown strap. Pass the free ends of the strap through the lower cutouts in the rear of the storage box, through clevises 13 and 13A, and back through the lower cutouts to the rear of the storage box. Secure the free ends of the strap with two D-rings and a load binder.

Figure 4-10. Lashings Installed (Continued)

INSTALLING SUSPENSION SLINGS AND DEADMAN'S TIE

4-10. Install the suspension slings and deadman's tie as shown in Figure 4-11.

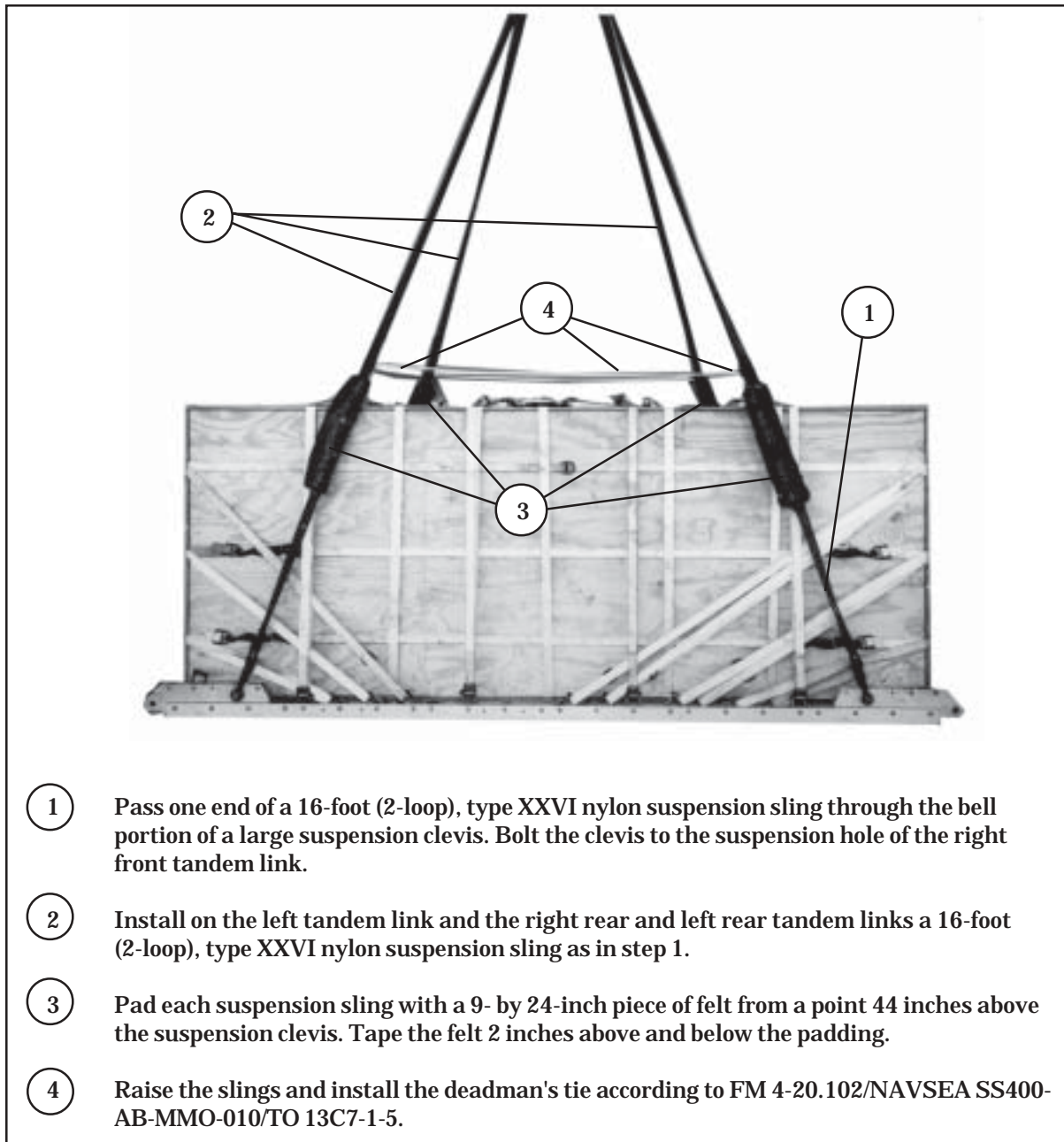


Figure 4-11. Suspension Slings and Deadman's Tie Installed

PREPARING AND STOWING CARGO PARACHUTES

4-11. Compute the parachute requirements for the load being rigged. Prepare and stow the cargo parachutes as shown in Figure 4-12.

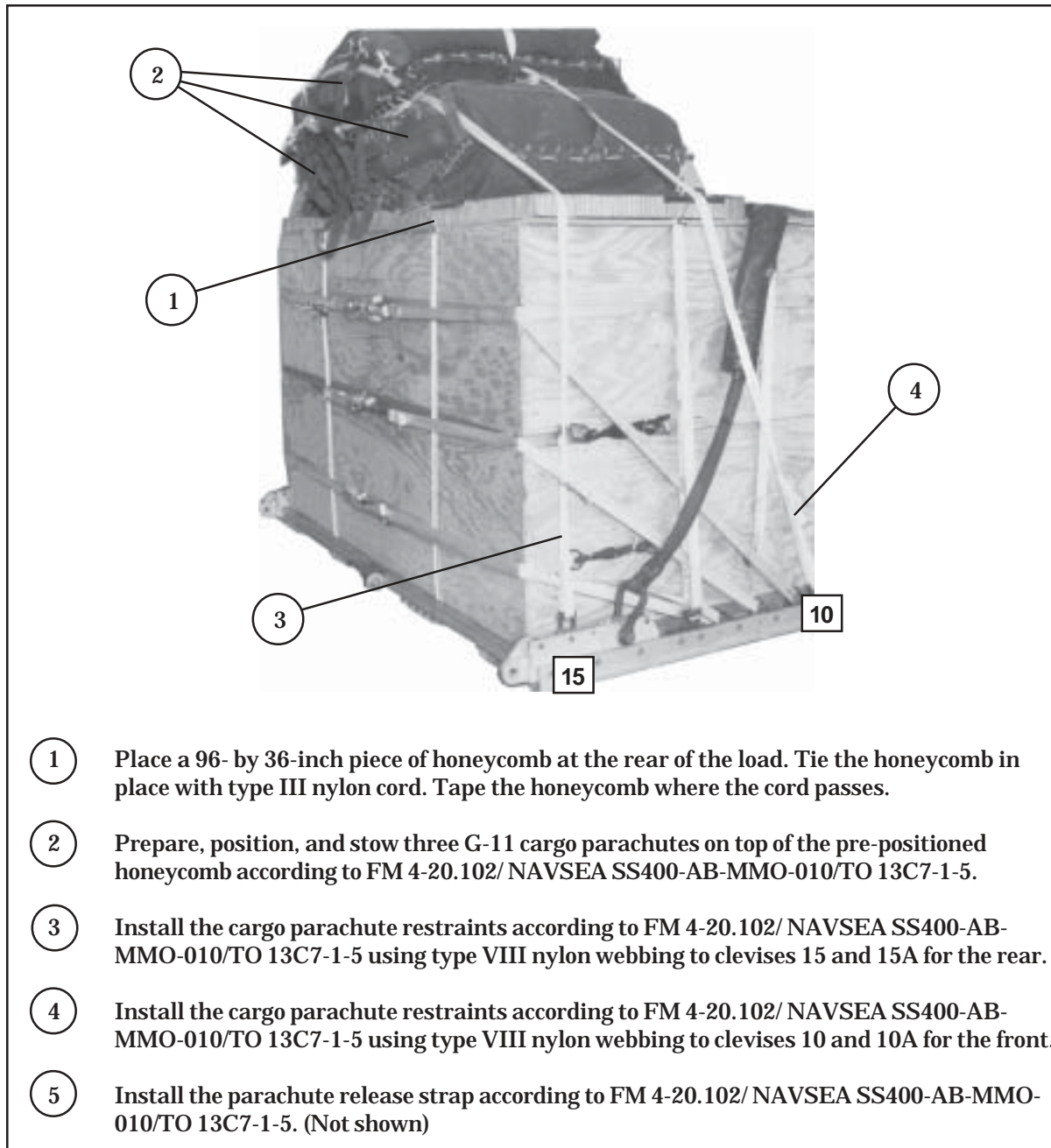
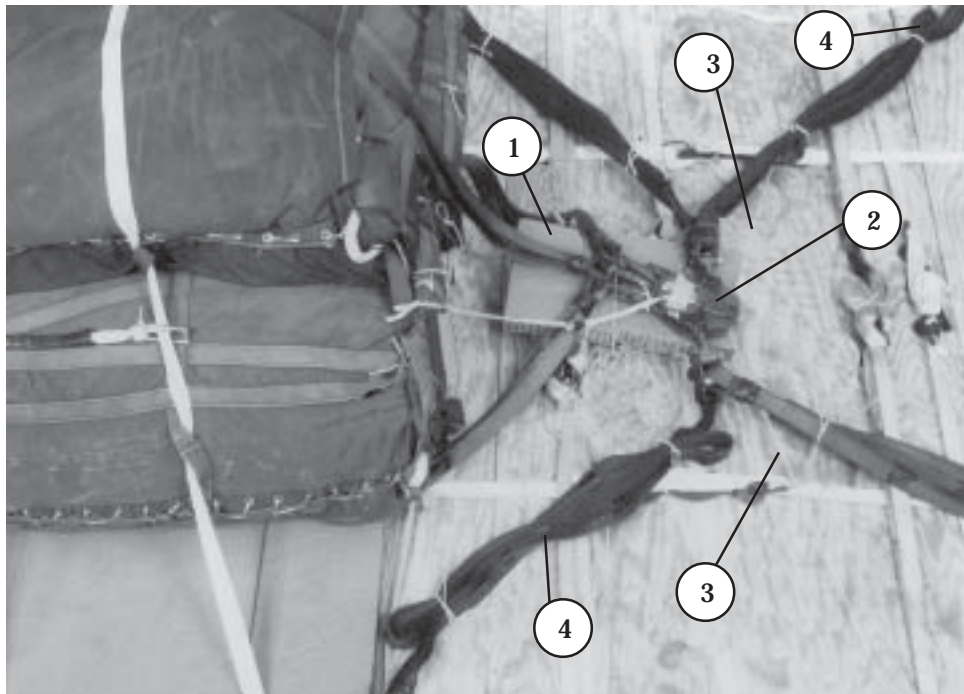


Figure 4-12. Cargo Parachutes Prepared and Stowed

INSTALLING THE RELEASE SYSTEM

4-12. Prepare, attach, and safety an M-1 cargo parachute release according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 4-13.



- ① Center a 12- by 24-inch piece of honeycomb 12 inches in front of the parachutes. Tape the edges of the honeycomb and secure it to the load with a length of type III nylon cord.

Note: Do not cover the deadman's tie with the release platform.

- ② Prepare and install the M-1 cargo parachute release on the honeycomb release platform and attach the suspension slings and riser extensions.
- ③ Safety the top and bottom of the release to convenient points with a length of type III nylon cord according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
- ④ S-fold and tie any excess suspension slings with one turn of type I, 1/4-inch cotton webbing.

Figure 4-13. Release System Installed

INSTALLING THE EXTRACTION SYSTEM

4-13. Install the extraction system according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 4-14.

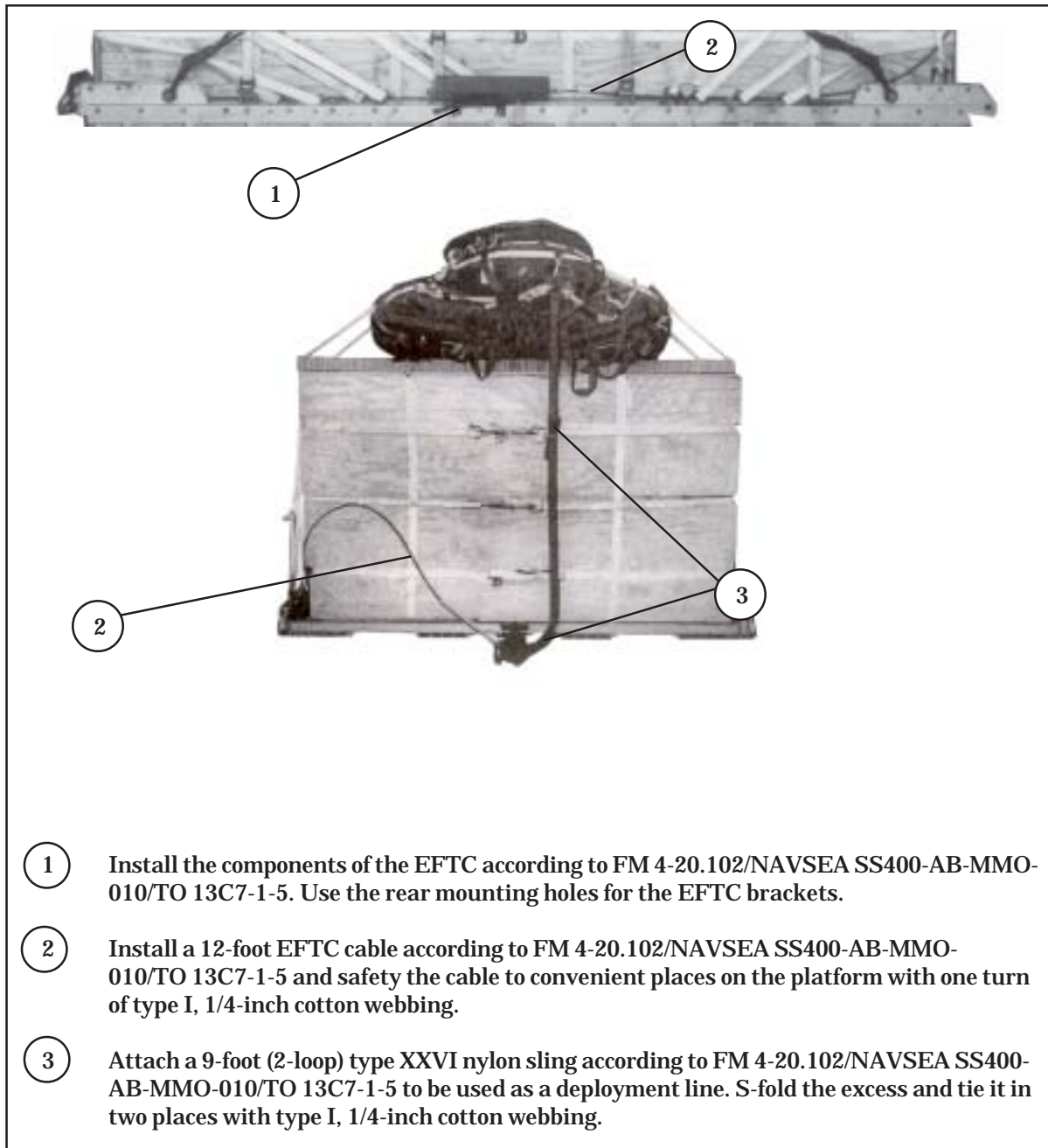


Figure 4-14. Extraction System Installed

PLACING EXTRACTION PARACHUTE

4-14. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Place the extraction parachute and line on the load for installation in the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

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

MARKING RIGGED LOAD

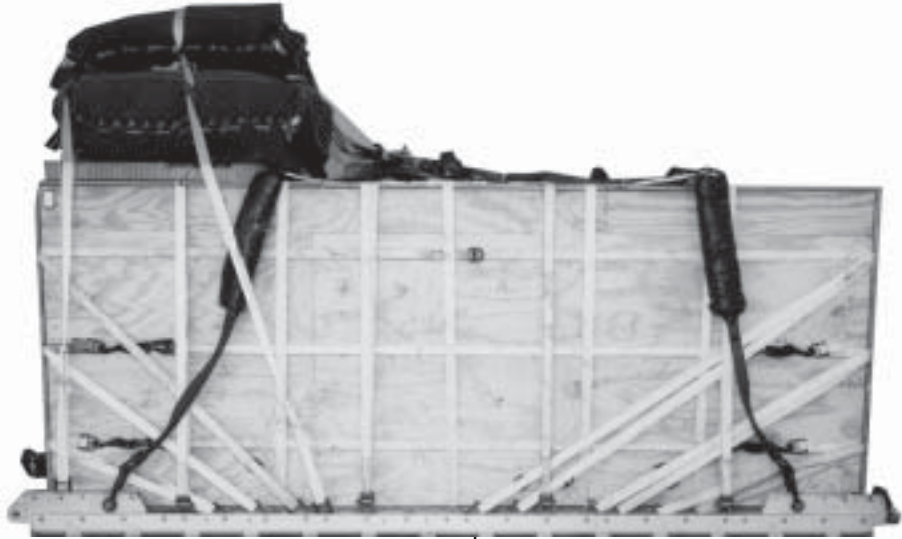
4-16. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and as shown in Figure 4-15. Complete Shipper's Declaration for Dangerous Goods. If the load varies from the one shown, the weight, height, CB, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

4-17. Use the equipment listed in Table 4-1 to rig this load.

CAUTION

Make the final rigger inspection required by AR 59-4 and FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



CB

RIGGED LOAD DATA

Weight.....12,000 pounds

Maximum Weight.....See paragraph 4-1

Height.....92 inches

Width.....108 inches

Length.....168 inches

Overhang: Front.....0 inches

Rear.....0 inches

Center of Balance (CB)
(from front edge of the platform).....84 inches

Extraction System (adds 18 inches to length of platform) EFTC

Figure 4-15. FAST Equipment Rigged on a 12-Foot, Type V Platform for Low-Velocity Airdrop

Table 4-1. Equipment Required for Rigging FAST Equipment Rigged on a 12-Foot, Type V Platform for Low-Velocity Airdrop

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive paste, 1-gal.	As required
4030-00-090-5354	Clevis, suspension, 1-inch (large)	5
4030-00-678-8562	Clevis, 3/4-inch medium	6
4020-00-240-2146	Cord, nylon, type III, 550-lb.	As required
1670-00-434-5783	Coupling, airdrop extraction force transfer, w/12-ft. cable	1
1670-00-360-0328	Cover, clevis	1
8135-00-664-6958	Cushioning material (Cellulose wadding)	As required
8305-00-958-3685	Felt, 1/2-inch thick	As required
1670-01-183-2678	Leaf, extraction line (line bag) (add 2 for C-17)	2
	Line extraction:	
1670-01-064-4452	60-foot (1-loop), type XXVI or	1
1670-01-062-6313	60-foot (3-loop), type XXVI (for C-130)	1
1670-01-062-6313	160-foot (3-loop), type XXVI (for C-5)	1
1670-01-107-7651	140-foot (3-loop), type XXVI (for C-17)	1
1670-01-064-4452	60-foot (1-loop), type XXVI (for C-17), (drogue line)	1
	Link assembly, two-point:	
5306-00-435-8994	Bolt, 1-inch diameter, 4-inches long (add 4 for C-5)	2
5310-00-232-5165	Nut, 1-inch (add 4 for C-5)	2
1670-00-003-1953	Plate, side, 3 3/4-inch	2
5365-00-007-3414	Spacer, large (add 4 for C-5)	2
5315-00-010-4657	Nail, (steel common 6d)	As required
1670-00-753-3928	Pad, energy-dissipating (honeycomb) 3- by 36- by 96-inches	8 sheets
1670-01-016-7841	Parachute, cargo, G-11	3
	Parachute, cargo, extraction:	
1670-01-063-3716	22-ft.	1
1670-01-063-3715	15-ft. (C-17 only)	1
	Platform, airdrop, type V, 12-ft:	
5530-00-618-8073	Plywood, 3/4-in	As required
1670-01-162-2372	Clevis assembly (type V)	(30)
1670-01-353-8424	Extraction bracket assembly	(1)
1670-01-247-2389	Link, suspension bracket, type V	(2)
1670-01-162-2381	Tandem link assembly (Multipurpose link)	(2)
1670-01-097-8817	Release, cargo parachute, M-1	1
	Sling, cargo, airdrop:	
1670-01-062-6303	9-ft. (2-loop), type XXVI	1
1670-01-063-7761	16-ft. (2-loop), type XXVI	4
1670-01-062-6313	60-foot (3-loop), type XXVI (for C-130)	3

Table 4-1. Equipment Required for Rigging FAST Equipment Rigged on a 12-Foot, Type V Platform for Low-Velocity Airdrop (Continued)

National Stock Number	Item	Quantity
5340-00-040-8219	Strap, parachute, release, multi-knife	2
7501-00-266-5016	Tape, adhesive, 2-inch	As required
7510-00-266-6710	Tape, masking	As required
1670-00-937-0271	Tiedown assembly, 15-ft.	69
1670-01-483-8259	Towplate release mechanism (H-block) (C-17 only)	1
	Webbing:	
8305-00-268-2411	Cotton, 1/4-inch, type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-inch	As required
8305-00-261-8585	Type VIII nylon	As required

Chapter 5

RIGGING SUPPLY LOADS ON A 16-FOOT, TYPE V PLATFORM FOR LOW-VELOCITY AIRDROP

Section I

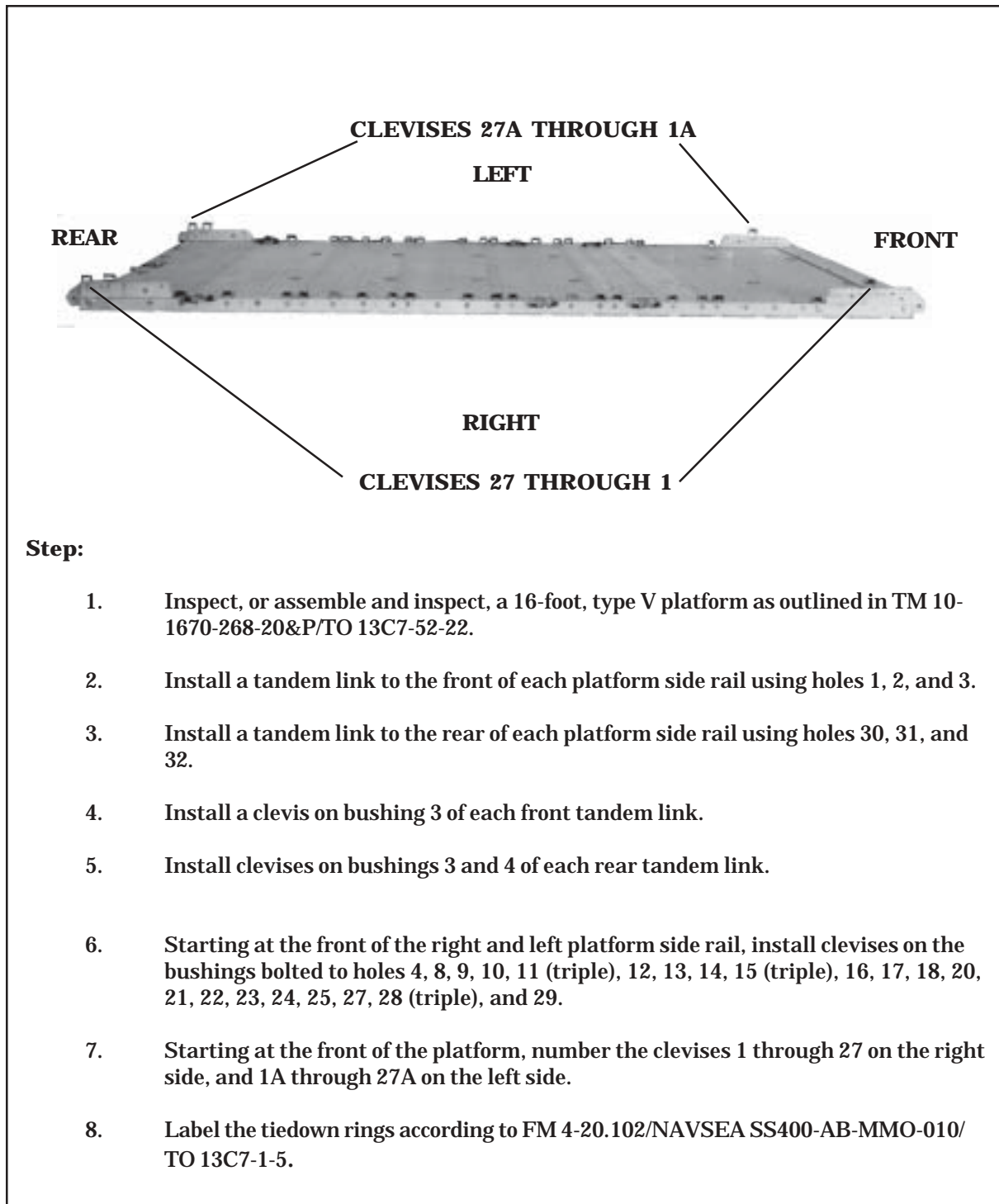
RIGGING 105-MILLIMETER (MM) AMMUNITION

DESCRIPTION OF LOAD

5-1. Bulk supplies consisting of rations, equipment, fuel, ammunition, or other items of general supply are rigged on a 16-foot type V airdrop platform with G-11 cargo parachutes. One hundred and forty boxes of 105-mm ammunition are shown. All 105-mm ammunition packaged as shown and listed in FM 4-20.153/MCRP 4-11.3B/TO 13C7-18-41, as certified for low-velocity airdrop, may be rigged using these procedures. Each load must weigh at least 5,040 pounds, including parachutes. Refer to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 for the weight limitations for the number of parachutes to be used.

PREPARING PLATFORM

5-2. Prepare a 16-foot, type V platform as shown in Figure 5-1.



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 the front of each platform side rail using holes 1, 2, and 3.
3. Install a tandem link to the rear of each platform side rail using holes 30, 31, and 32.
4. Install a clevis on bushing 3 of each front tandem link.
5. Install clevises on bushings 3 and 4 of each rear tandem link.
6. Starting at the front of the right and left platform side rail, install clevises on the bushings bolted to holes 4, 8, 9, 10, 11 (triple), 12, 13, 14, 15 (triple), 16, 17, 18, 20, 21, 22, 23, 24, 25, 27, 28 (triple), and 29.
7. 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.
8. Label the tiedown rings according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

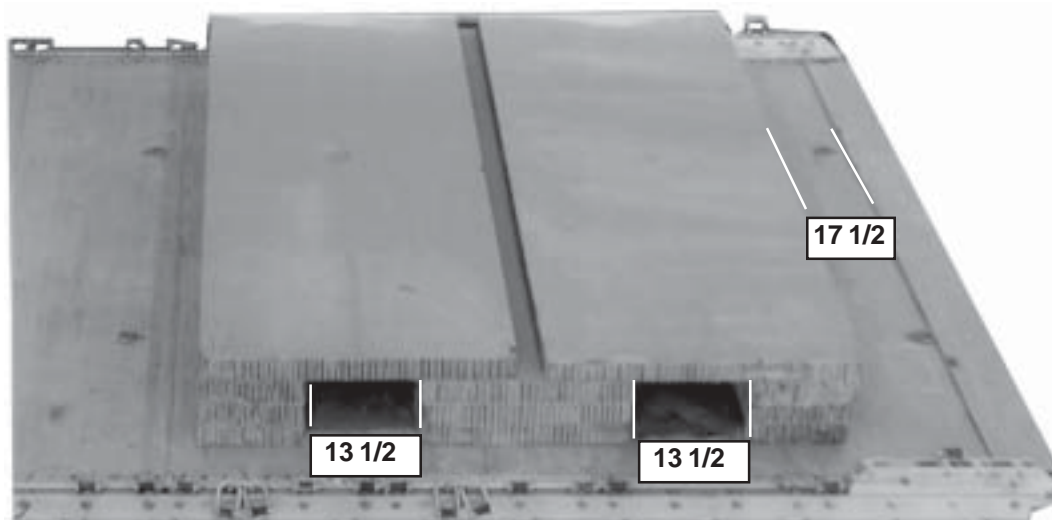
Figure 5-1. Platform Prepared

BUILDING HONEYCOMB STACKS AND PLACING FIRST STACK

5-3. Build the honeycomb stack for the first stack of ammunition and place it on the platform as shown in Figure 5-2. Build the stack for the second stack of ammunition as shown in Figure 5-2. Set the second honeycomb stack aside.

Notes:

1. When ammunition is dropped, two layers of honeycomb are required.
2. When rigging this load for airdrop on a drop zone with ground elevation of 6,000 to 10,000 feet, add an additional layer of honeycomb. However, the height of this load cannot exceed 100 inches.
3. Adjust the dimensions of the honeycomb to fit the items being dropped.
4. Do not cover the extraction bracket with honeycomb.
5. All dimensions are in inches.



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
1 and 2	3	87	12	Honeycomb	Glue honeycomb flush together and center 17 1/2 inches from the front edge of the platform.
	3	87	24	Honeycomb	Glue honeycomb flush together and center 13 1/2 inches from the rear of the stack placed above.
	3	87	12	Honeycomb	Glue honeycomb flush together and center 13 1/2 inches from the rear of the stack placed above.
	2	87	36	Honeycomb	Glue one piece flush with the front edge. Glue one piece flush with the rear edge, leaving a 3-inch gap in the center.

Figure 5-2. Honeycomb for First Ammunition Stack Prepared and Placed

POSITIONING AND SECURING FIRST AMMUNITION STACK

5-4. Position and secure the first stack of 105-mm ammunition as shown in Figure 5-3.

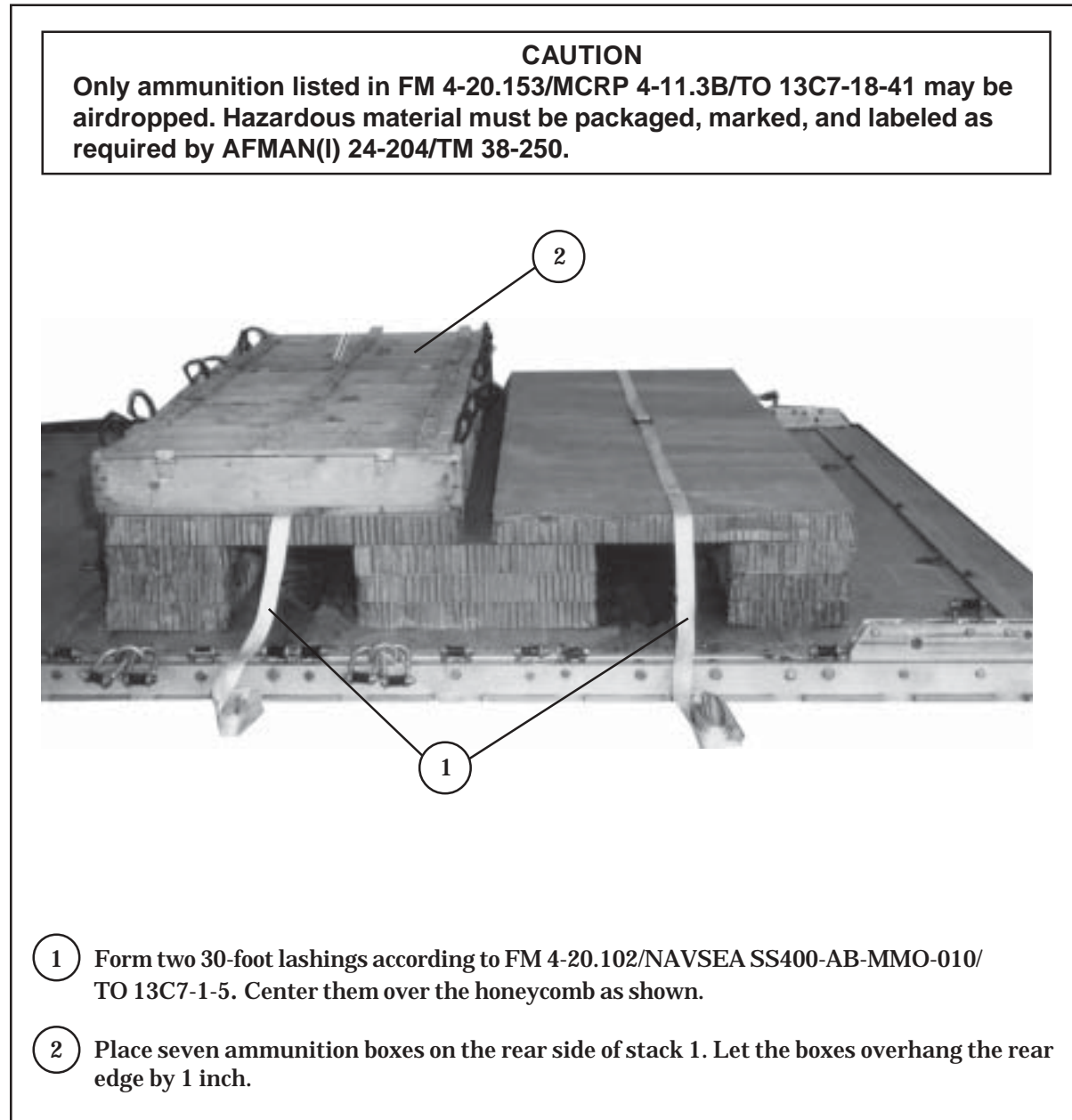


Figure 5-3. Ammunition Positioned and Secured

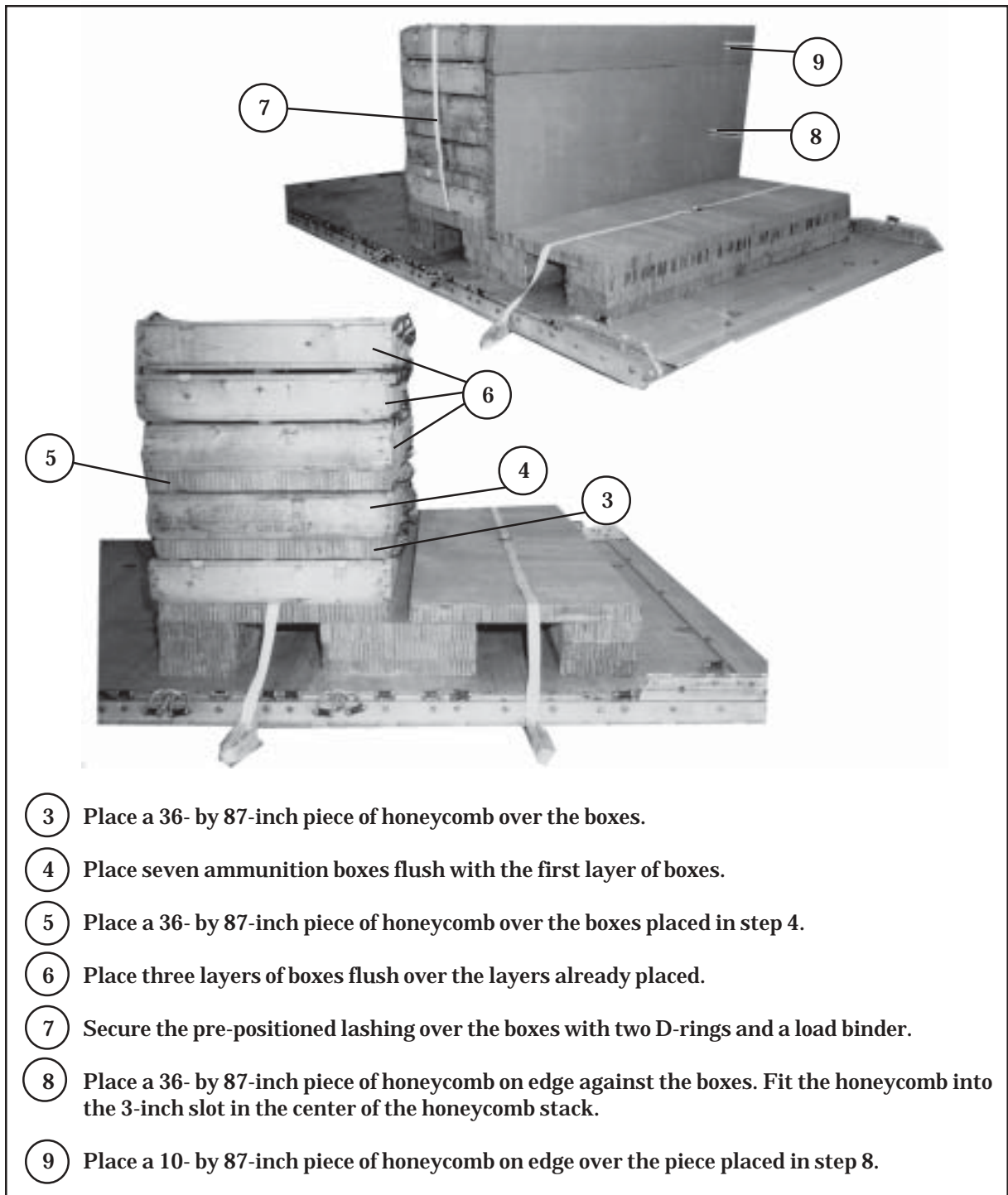
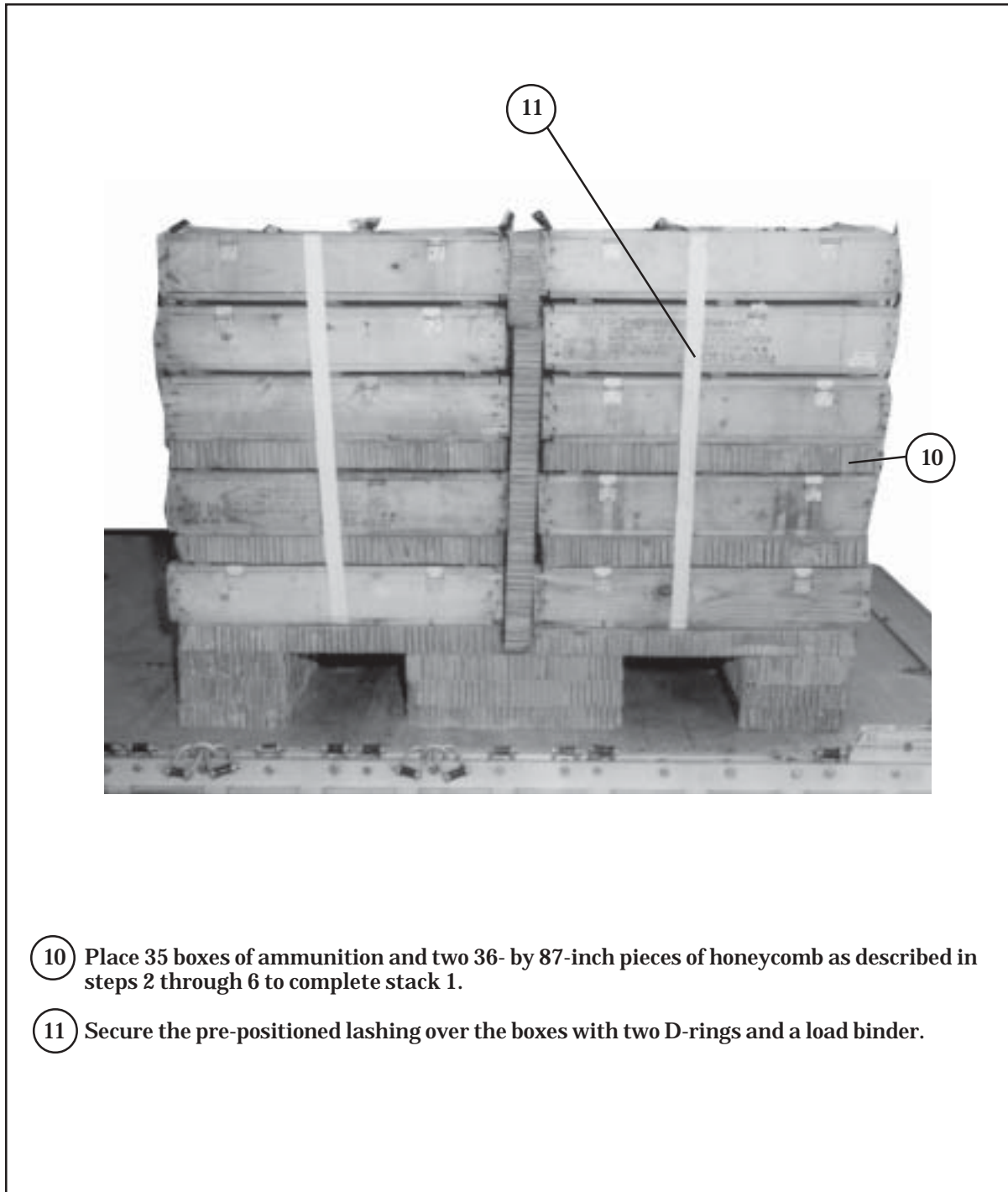


Figure 5-3. Ammunition Positioned and Secured (Continued)



- ⑩ Place 35 boxes of ammunition and two 36- by 87-inch pieces of honeycomb as described in steps 2 through 6 to complete stack 1.
- ⑪ Secure the pre-positioned lashing over the boxes with two D-rings and a load binder.

Figure 5-3. Ammunition Positioned and Secured (Continued)

CONSTRUCTING AND PLACING ENDBOARDS

5-5. Construct four endboards and place them on the load as shown in Figure 5-4.

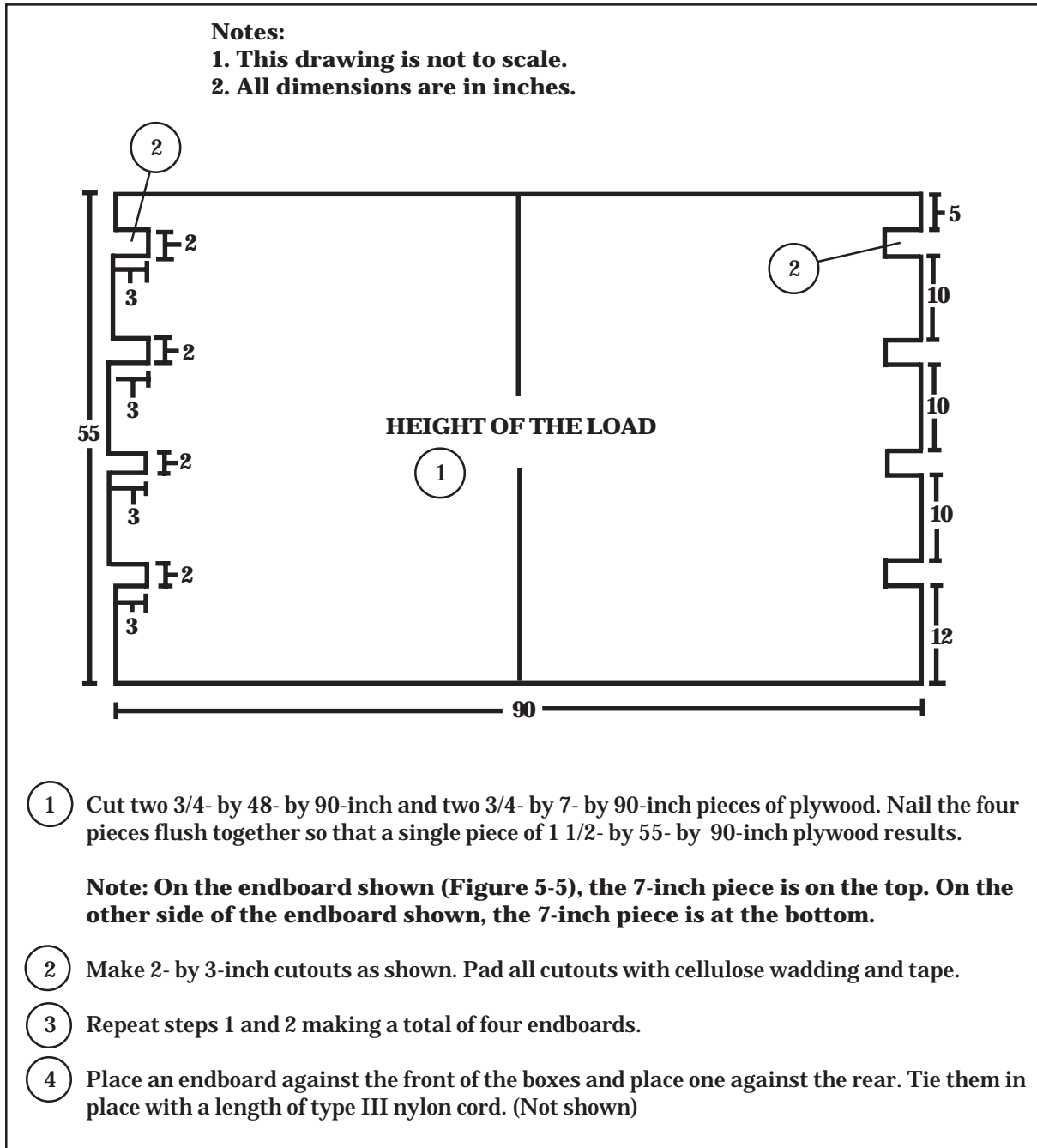


Figure 5-4. Endboards for 105-mm Ammunition Constructed

INSTALLING LASHINGS ON FIRST AMMUNITION STACK

5-6. Lash the load to the platform according to FM 4-20.102/NAVSEA SS400-AB- MMO-010/TO 13C7-1-5, and as shown in Figures 5-5 through 5-8. Lash the first stack to the platform as shown in Figure 5-5.

Note: This load requires lashings over 30 feet in length. Lashings must be positioned through clevises before sections are joined together.

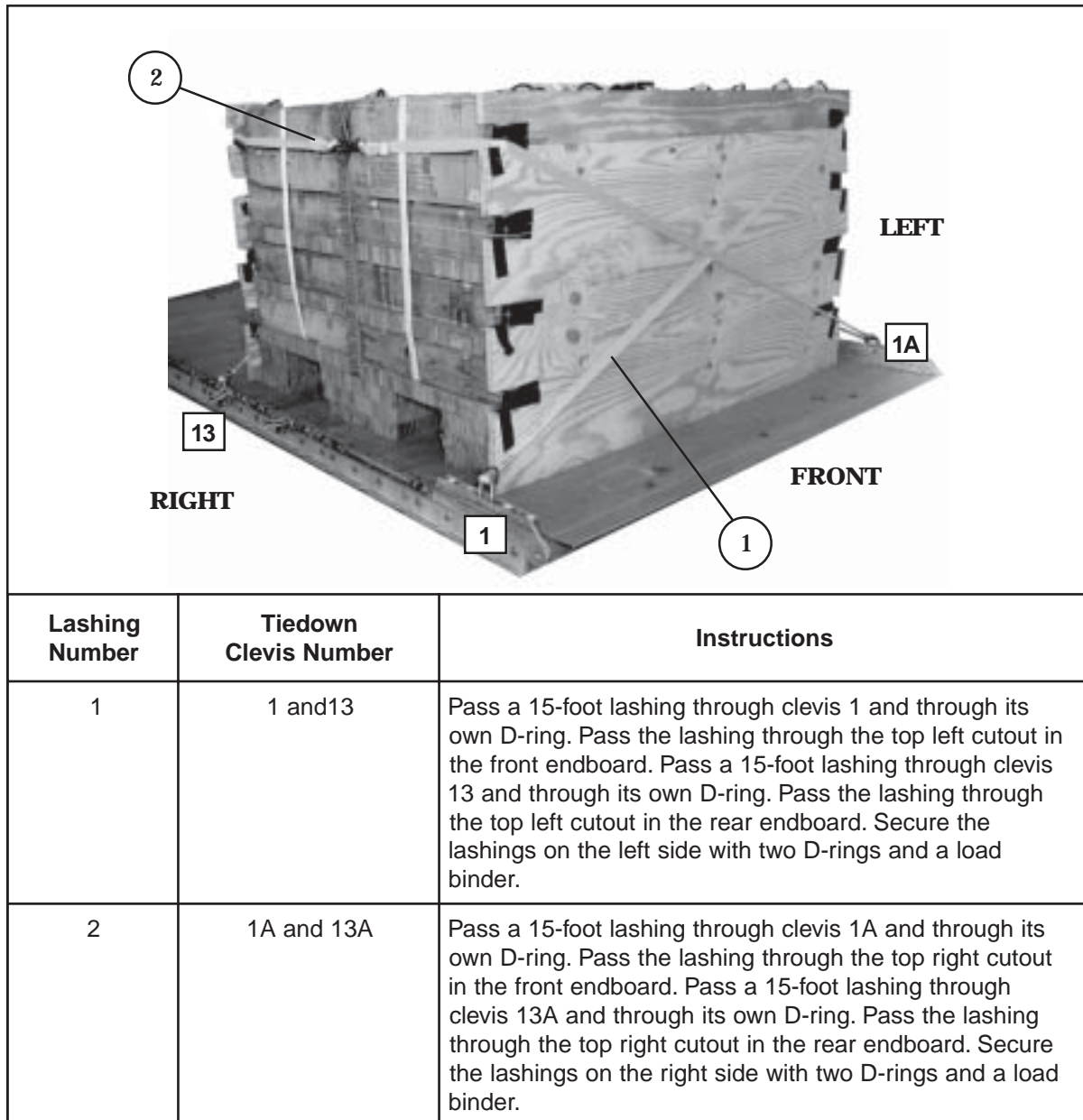
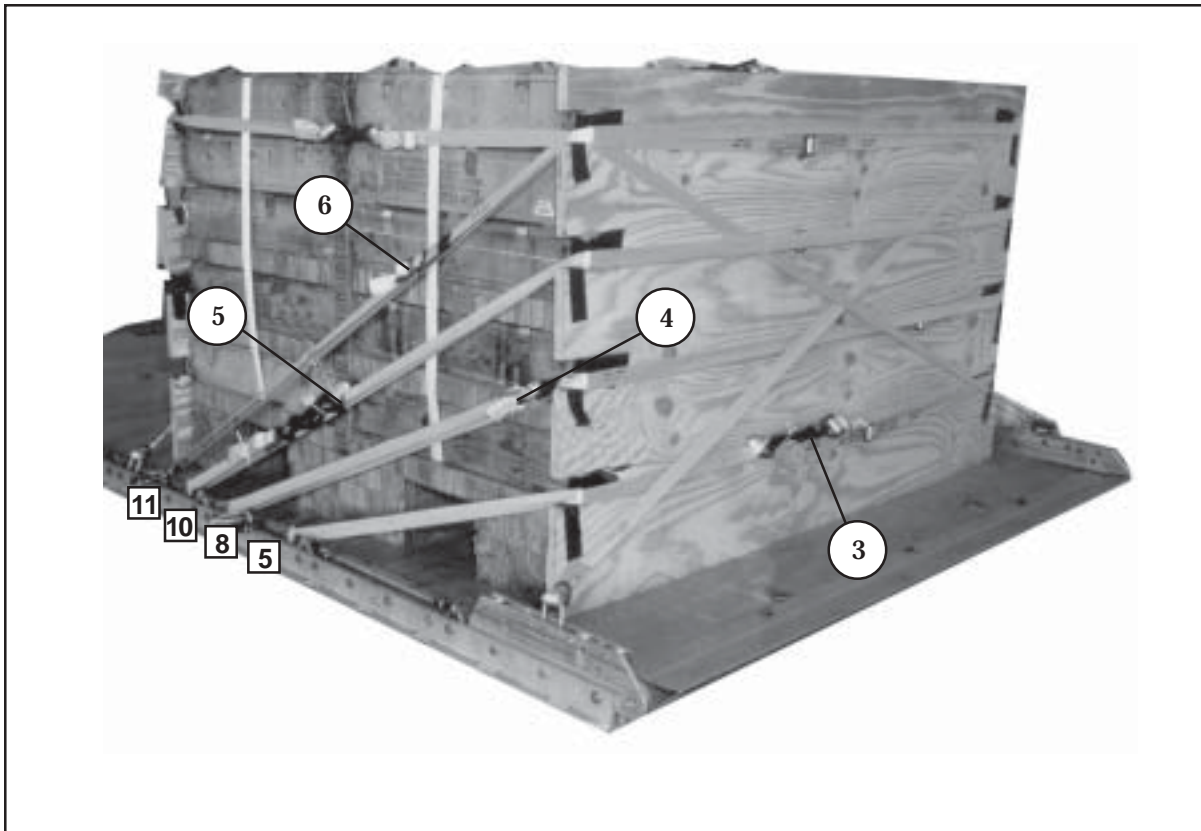
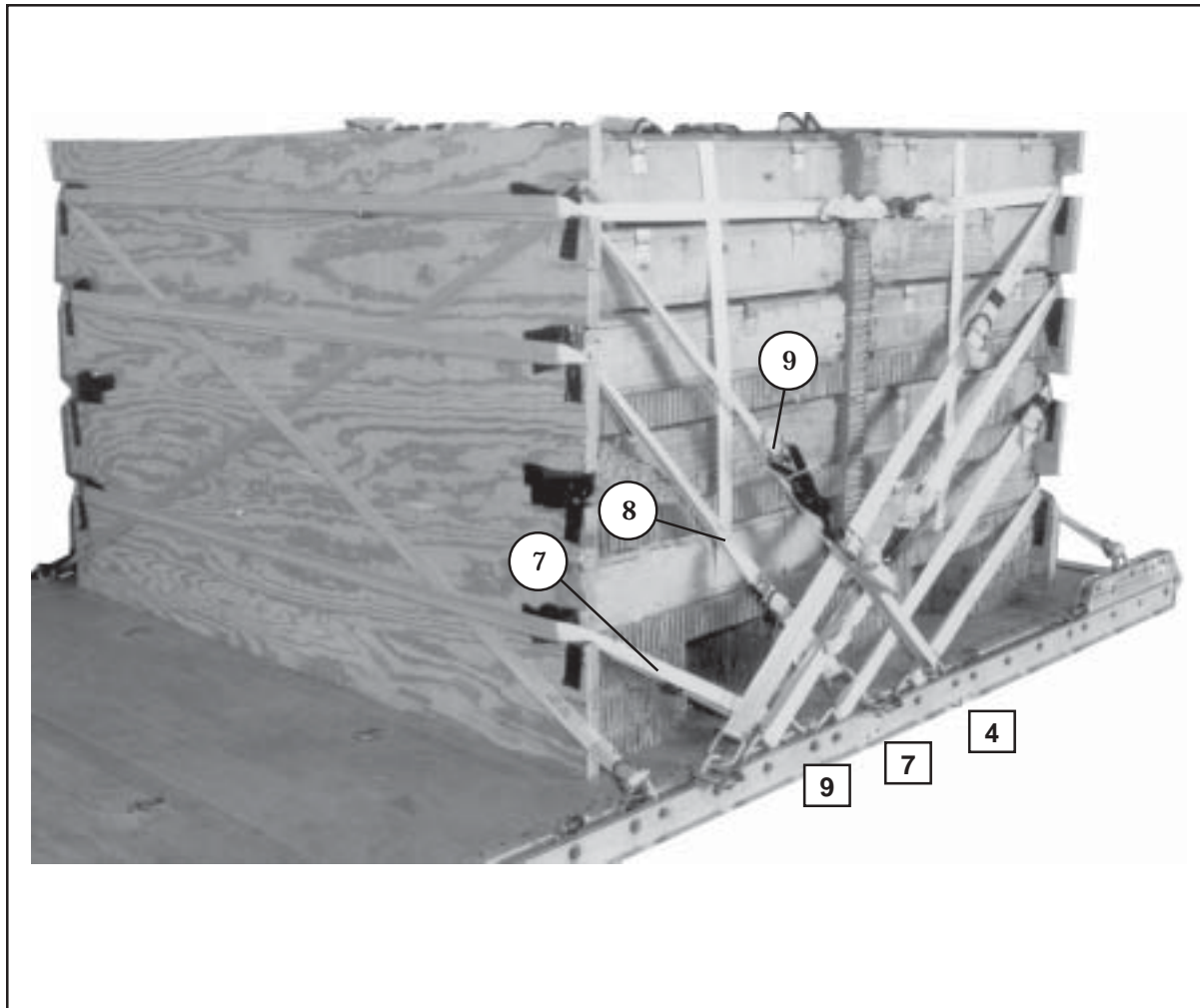


Figure 5-5. Lashings Installed for First Stack



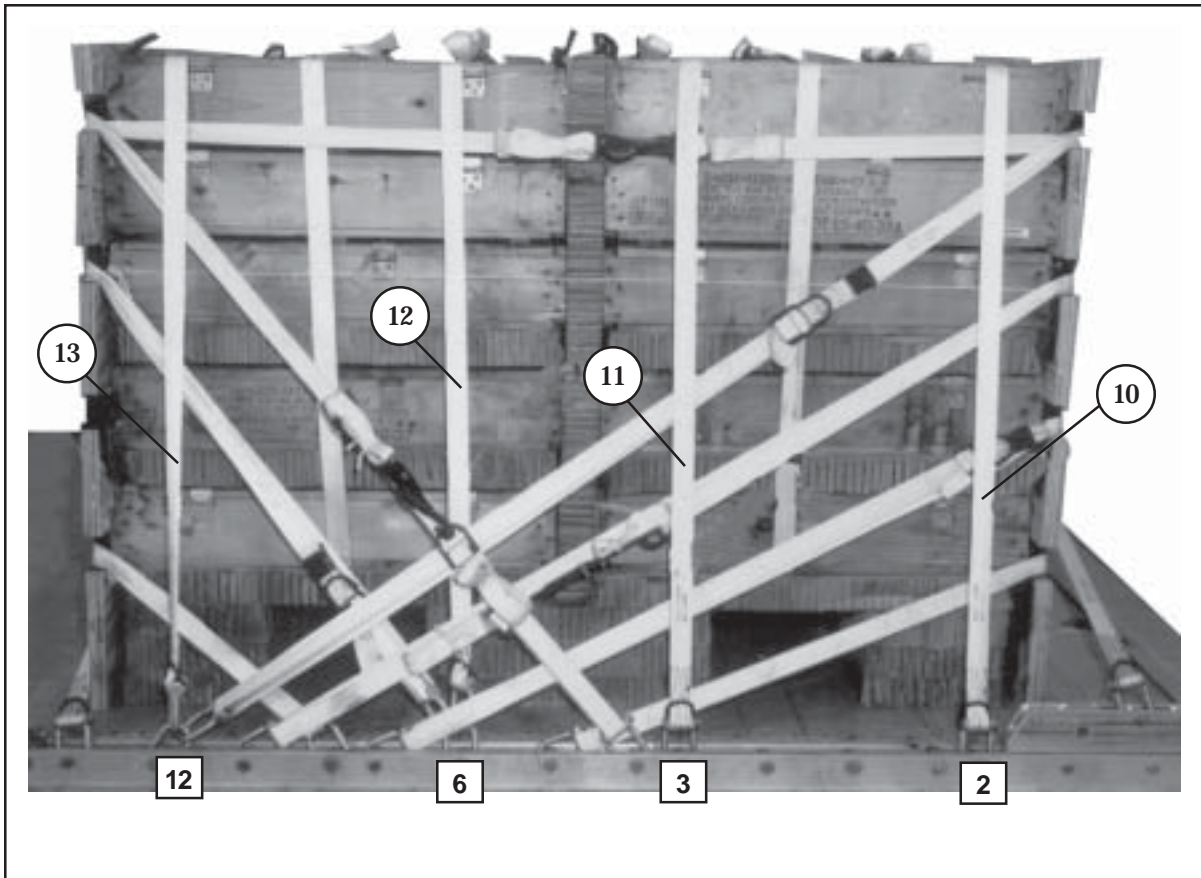
Lashing Number	Tiedown Clevis Number	Instructions
3	5 and 5A	Pass a 30-foot lashing through both clevises and through the bottom cutouts in the front endboard. Secure the lashing in the front with two D-rings and a load binder.
4	8 and 8A	Pass a 45-foot lashing through both clevises and through the second cutouts in the front endboard. Secure the lashing on the right side with two D-rings and a load binder.
5	10 and 10A	Pass a 45-foot lashing through both clevises and through the third cutouts in the front endboard. Secure the lashing on the right side with two D-rings and a load binder.
6	11 and 11A	Pass a 45-foot lashing through both clevises and through the top cutouts in the front endboard. Secure the lashing on the right side with two D-rings and a load binder.

Figure 5-5. Lashings Installed for First Stack (Continued)



Lashing Number	Tiedown Clevis Number	Instructions
7	9 and 9A	Pass a 30-foot lashing through both clevises and through the bottom cutouts in the rear endboard. Secure the lashing on the left side with two D-rings and a load binder.
8	7 and 7A	Pass a 45-foot lashing through both clevises and through the third cutouts in the rear endboard. Secure the lashing on the left side with two D-rings and a load binder.
9	4 and 4A	Pass a 45-foot lashing through both clevises and through the upper cutouts in the rear endboard. Secure the lashing on the left side with two D-rings and a load binder.

Figure 5-5. Lashings Installed for First Stack (Continued)

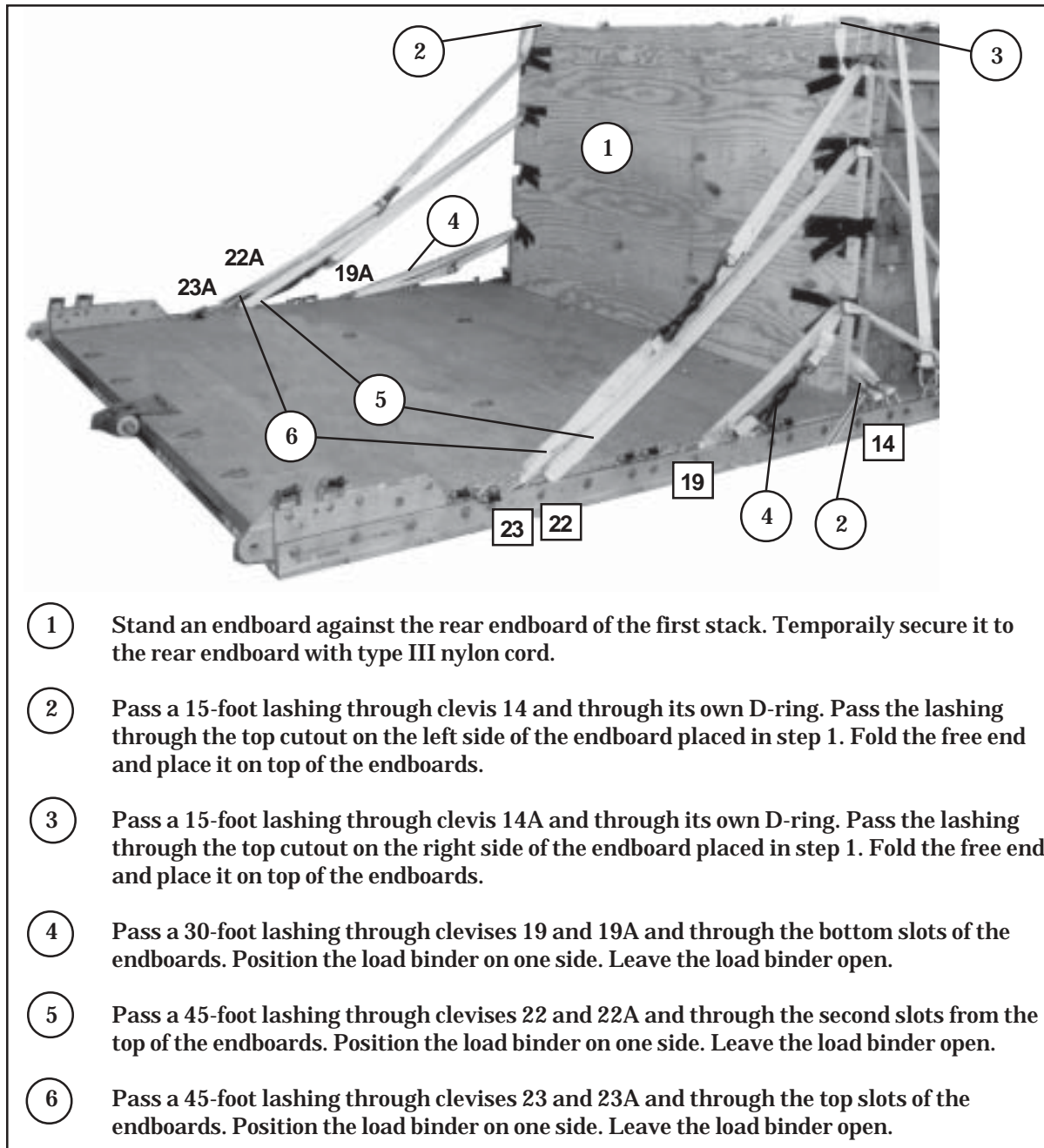


Lashing Number	Tiedown Clevis Number	Instructions
10	2 and 2A	Pass a 15-foot lashing through each clevis and through its own D-ring. Pass both lashings over the load and secure them on top with two D-rings and a load binder.
11	3 and 3A	Pass a 15-foot lashing through each clevis and through its own D-ring. Pass both lashings over the load and secure them on top with two D-rings and a load binder.
12	6 and 6A	Pass a 15-foot lashing through each clevis and through its own D-ring. Pass both lashings over the load and secure them on top with two D-rings and a load binder.
13	12 and 12A	Pass a 15-foot lashing through each clevis and through its own D-ring. Pass both lashings over the load and secure them on top with two D-rings and a load binder.

Figure 5-5. Lashings Installed for First Stack (Continued)

POSITIONING AND SECURING SECOND AMMUNITION STACK

5-7. Place the first endboard for the second ammunition stack and pre-position lashings as shown in Figure 5-6. Position the honeycomb stack, lashings, and ammunition boxes as shown in Figure 5-7.



- ① Stand an endboard against the rear endboard of the first stack. Temporarily secure it to the rear endboard with type III nylon cord.
- ② Pass a 15-foot lashing through clevis 14 and through its own D-ring. Pass the lashing through the top cutout on the left side of the endboard placed in step 1. Fold the free end and place it on top of the endboards.
- ③ Pass a 15-foot lashing through clevis 14A and through its own D-ring. Pass the lashing through the top cutout on the right side of the endboard placed in step 1. Fold the free end and place it on top of the endboards.
- ④ Pass a 30-foot lashing through clevises 19 and 19A and through the bottom slots of the endboards. Position the load binder on one side. Leave the load binder open.
- ⑤ Pass a 45-foot lashing through clevises 22 and 22A and through the second slots from the top of the endboards. Position the load binder on one side. Leave the load binder open.
- ⑥ Pass a 45-foot lashing through clevises 23 and 23A and through the top slots of the endboards. Position the load binder on one side. Leave the load binder open.

Figure 5-6. Endboard for Second Stack Placed and Lashings Pre-positioned

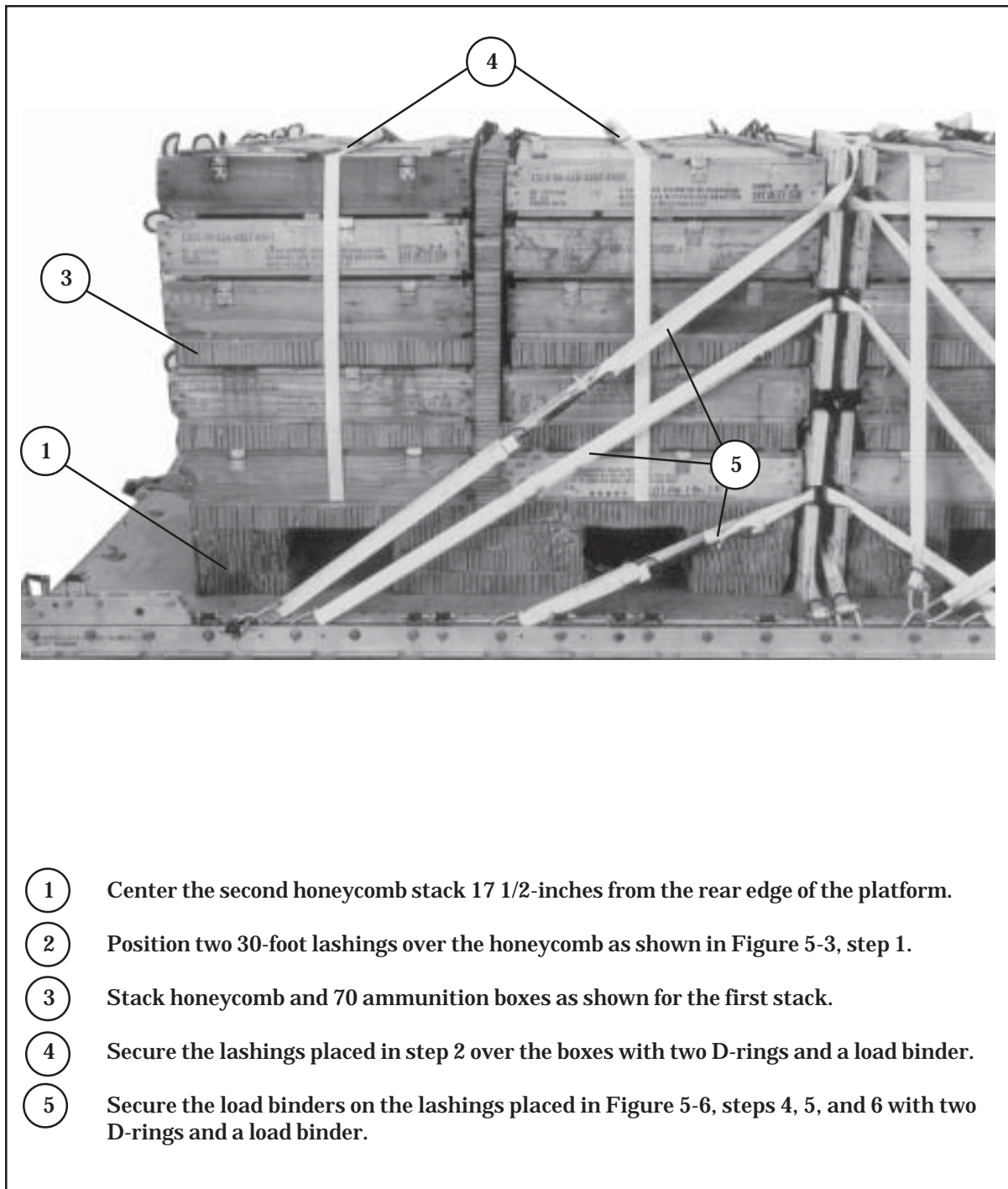
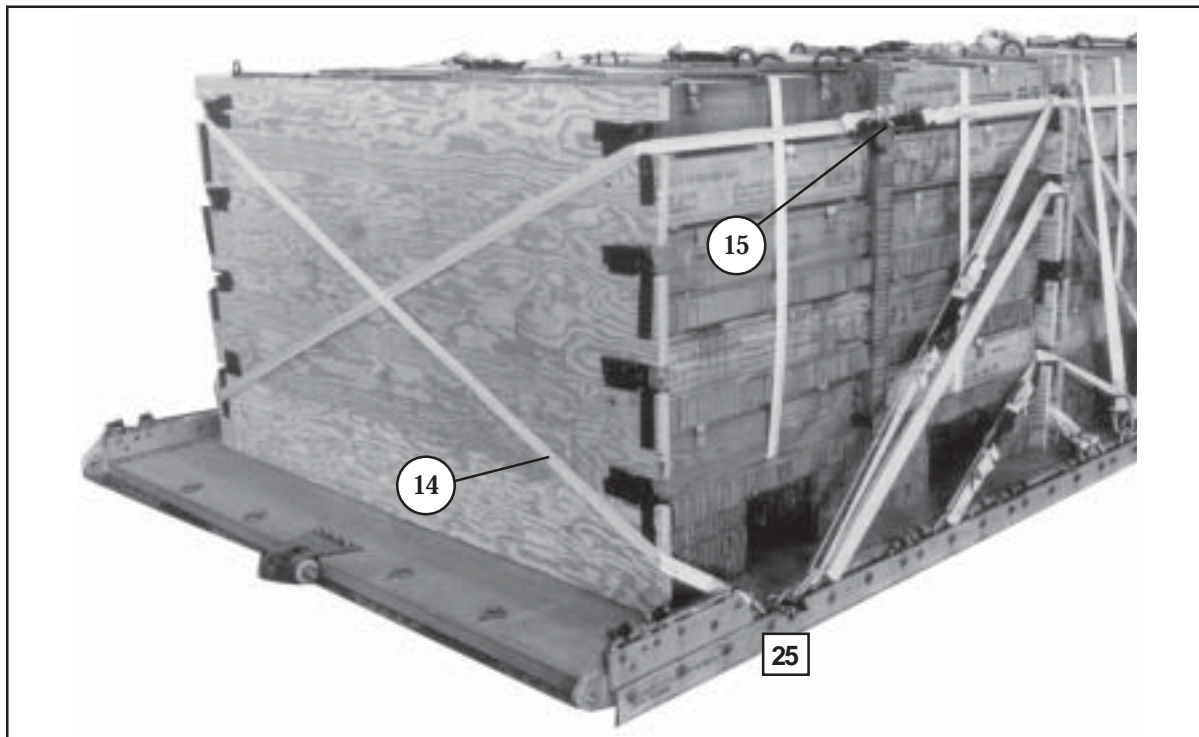


Figure 5-7. Honeycomb, Lashings, and Ammunition Placed for Second Stack

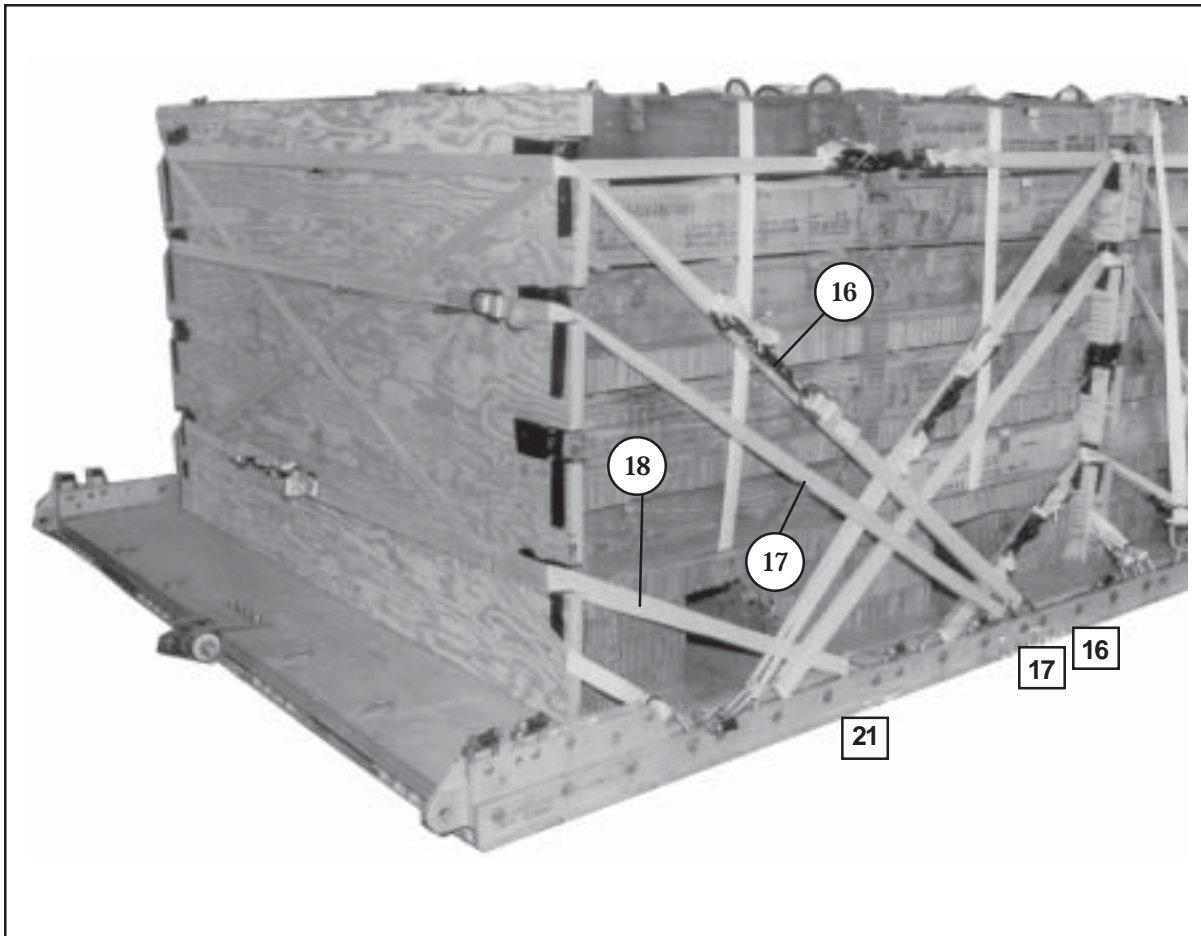
INSTALLING LASHINGS ON SECOND AMMUNITION STACK

5-8. Place the fourth endboard and lash the second ammunition stack to the platform as shown in Figure 5-8. Make sure that the pre-positioned lashings are taut and install additional lashings according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and as shown in Figure 5-8.



Lashing Number	Tiedown Clevis Number	Instructions
14	14 and 25	Pass the pre-positioned lashing in Figure 5-6, step 2, around the left side of the stack. Pass a 15-foot lashing through clevis 25 and through its own D-ring. Pass the lashing through the top left cutout in the rear endboard. Secure the two lashings on the left side with two D-rings and a load binder.
15	14A and 25A	Pass the pre-positioned lashing in Figure 5-6, step 3, around the right side of the stack. Pass a 15-foot lashing through clevis 25A and through its own D-ring. Pass the lashing through the top right cutout in the rear endboard. Secure the two lashings on the left side with two D-rings and a load binder.

Figure 5-8. Lashings Installed for Second Stack



Lashing Number	Tiedown Clevis Number	Instructions
16	16 and 16A	Pass a 45-foot lashing through both clevises and through the top cutouts in the rear endboard. Secure the lashing on the side with two D-rings and a load binder.
17	17 and 17A	Pass a 45-foot lashing through both clevises and through the third cutouts from the bottom in the rear endboard. Secure the lashing on the side with two D-rings and a load binder.
18	21 and 21A	Pass a 30-foot lashing through both clevises and through the bottom cutouts of the rear endboard. Secure the lashing at the rear with two D-rings and a load binder.

Figure 5-8. Lashings Installed for Second Stack (Continued)

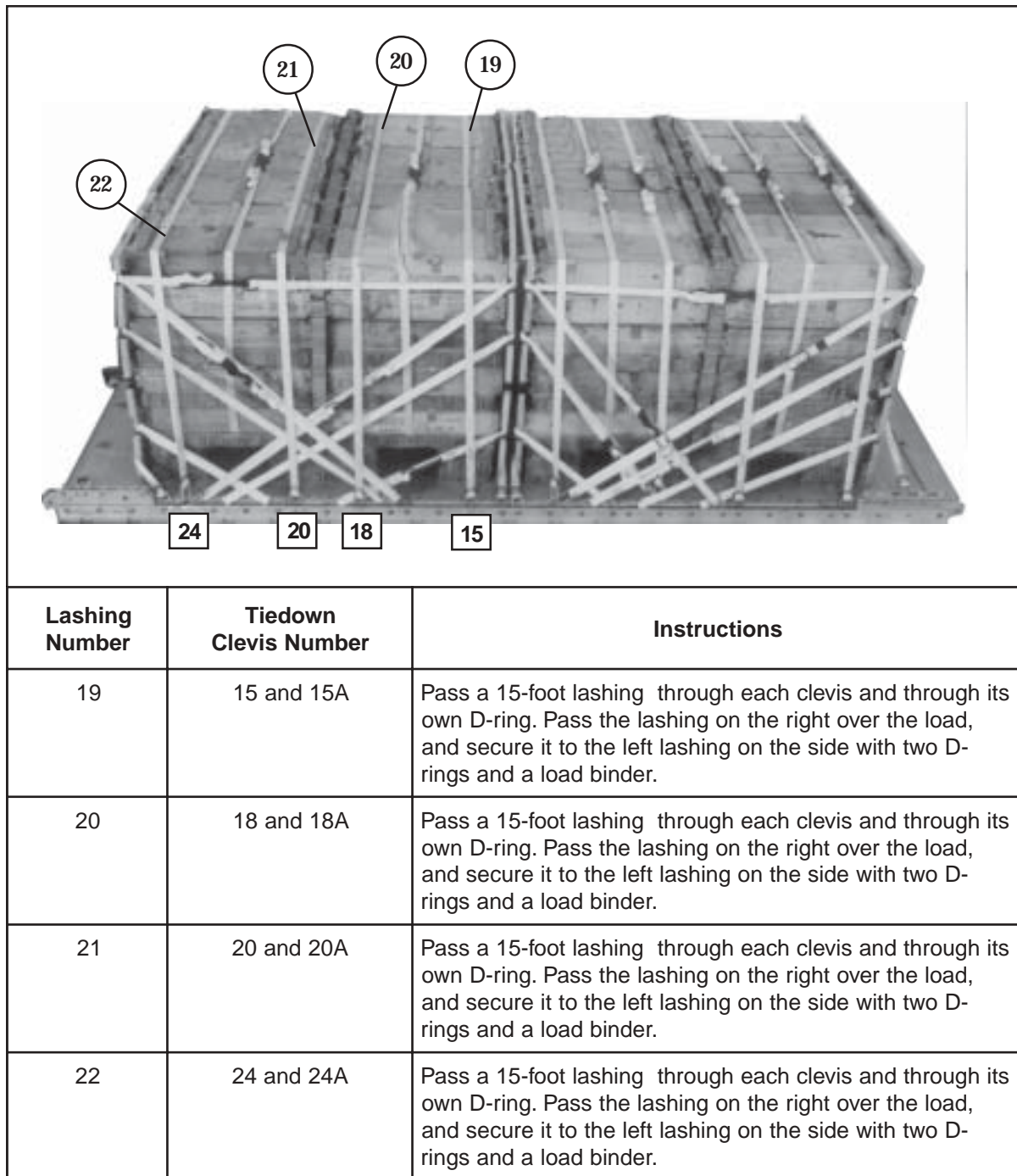
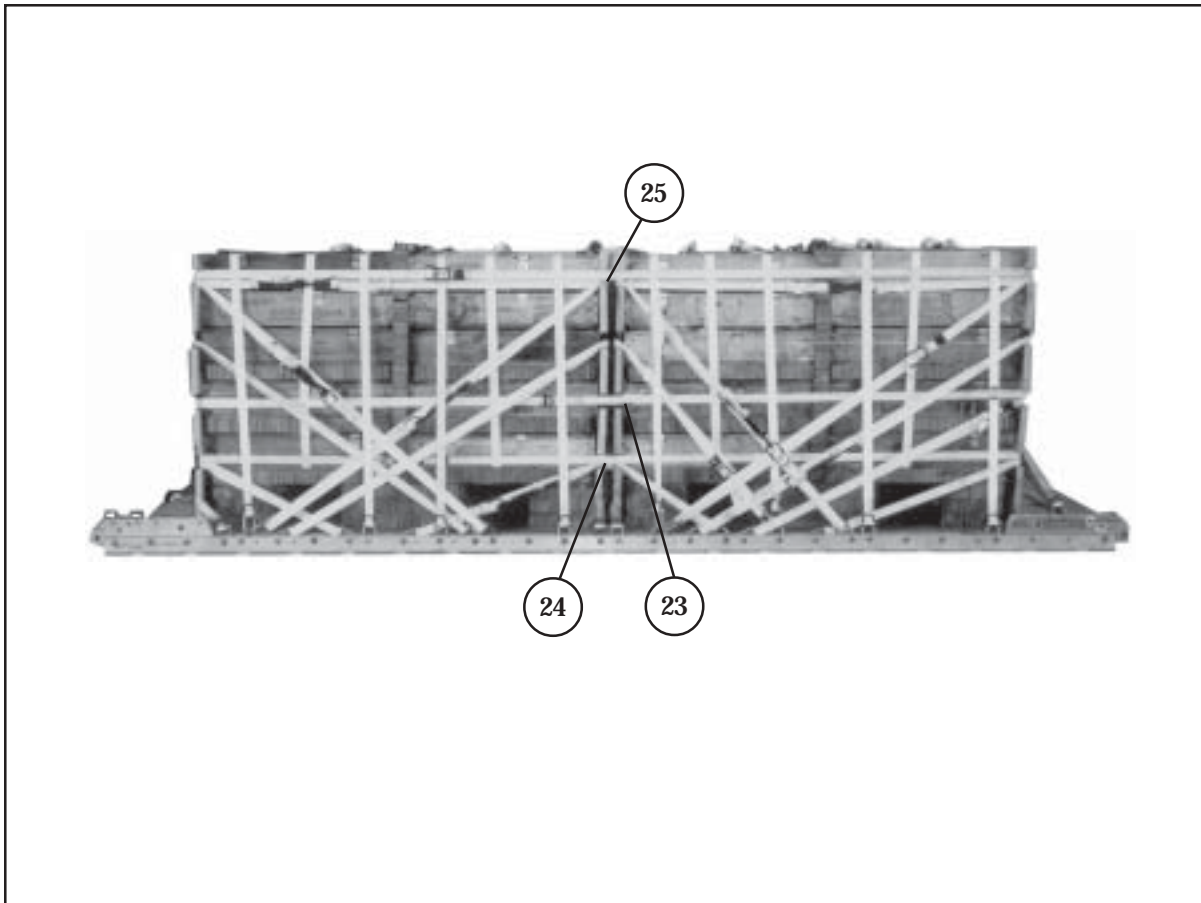


Figure 5-8. Lashings Installed for Second Stack (Continued)

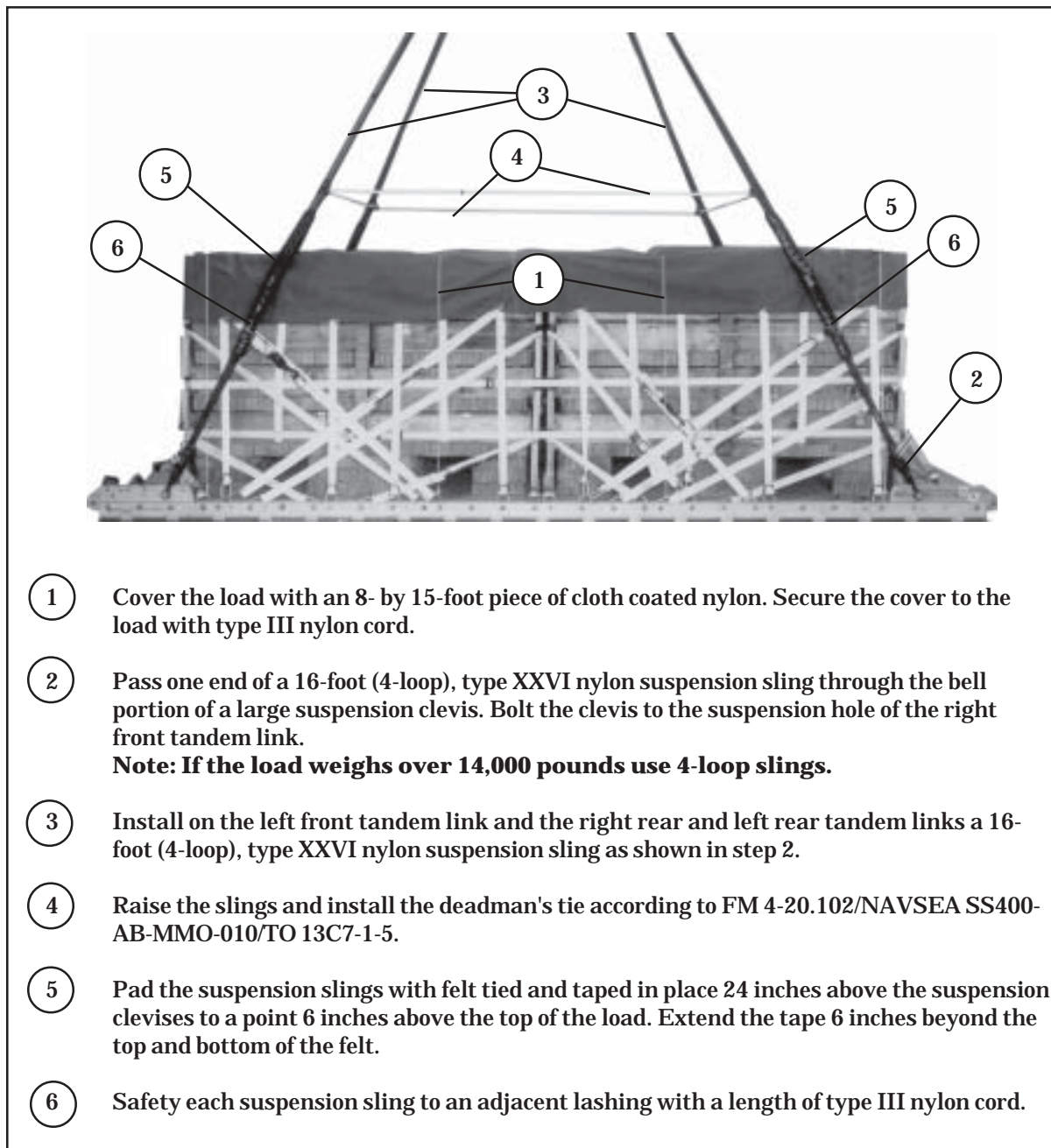


Lashing Number	Tiedown Clevis Number	Instructions
23		Pass a 45-foot lashing around the load, through the second slots from the bottom of all four endboards. Secure the free ends of the lashings with two D-rings and a load binder.
24		Pass a 45-foot lashing around the load, through the bottom slots of all four endboards. Secure the free ends of the lashings with two D-rings and a load binder.
25		Pass a 45-foot lashing around the load, through the top slots of all four endboards. Secure the free ends of the lashings with two D-rings and a load binder.

Figure 5-8. Lashings Installed for Second Stack (Continued)

INSTALLING LOAD COVER, SUSPENSION SLINGS AND DEADMAN'S TIE

5-9. Install the load cover, suspension slings and deadman's tie as shown in Figure 5-9.



- ① Cover the load with an 8- by 15-foot piece of cloth coated nylon. Secure the cover to the load with type III nylon cord.
- ② Pass one end of a 16-foot (4-loop), type XXVI nylon suspension sling through the bell portion of a large suspension clevis. Bolt the clevis to the suspension hole of the right front tandem link.
Note: If the load weighs over 14,000 pounds use 4-loop slings.
- ③ Install on the left front tandem link and the right rear and left rear tandem links a 16-foot (4-loop), type XXVI nylon suspension sling as shown in step 2.
- ④ Raise the slings and install the deadman's tie according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
- ⑤ Pad the suspension slings with felt tied and taped in place 24 inches above the suspension clevises to a point 6 inches above the top of the load. Extend the tape 6 inches beyond the top and bottom of the felt.
- ⑥ Safety each suspension sling to an adjacent lashing with a length of type III nylon cord.

Figure 5-9. Load Cover, Suspension Slings, and Deadman's Tie Installed

INSTALLING PARACHUTES

5-10. Compute the parachute requirements for the load being rigged. Prepare and install the cargo parachutes according to FM 4-20.102/ NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 5-10.

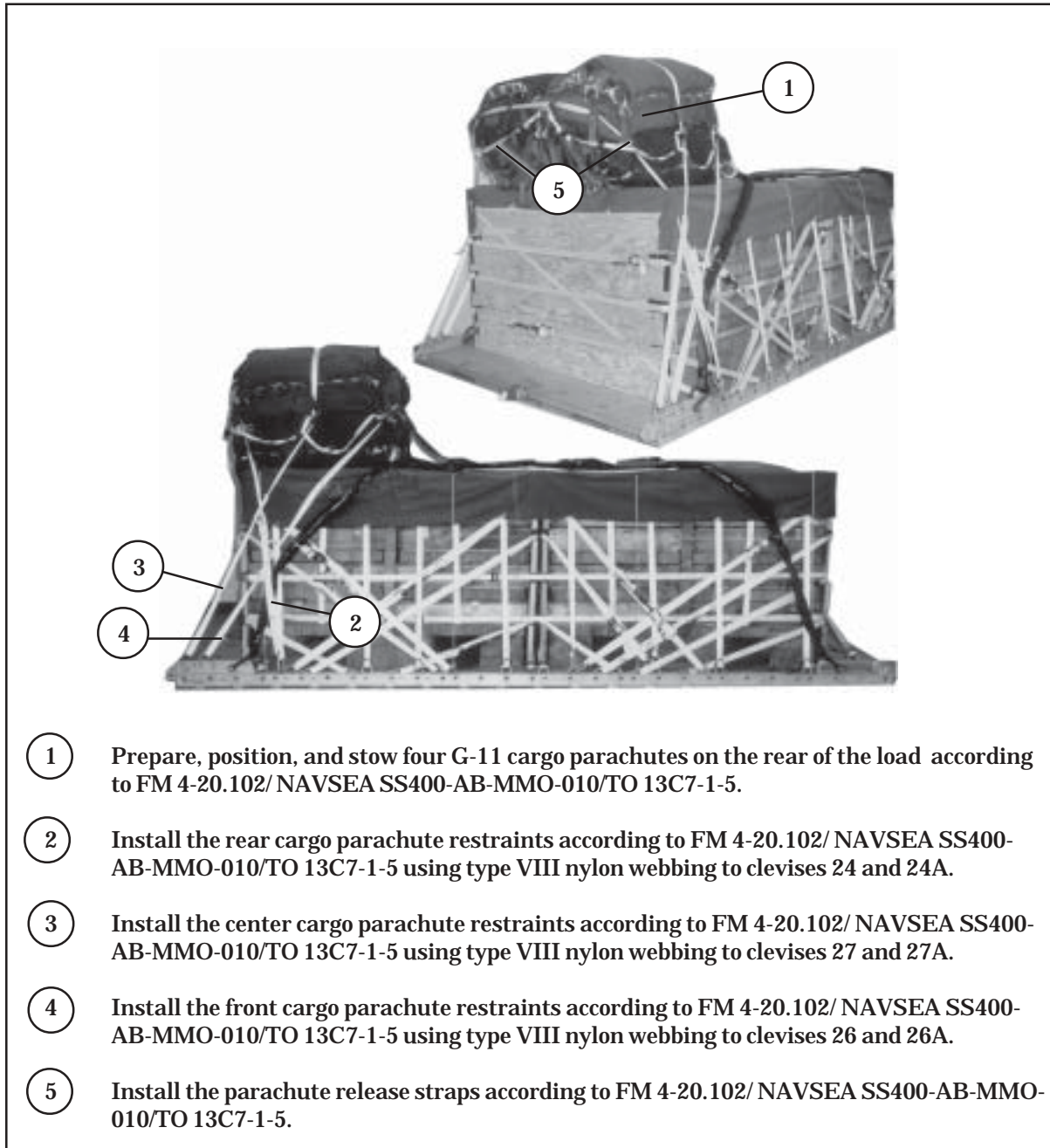
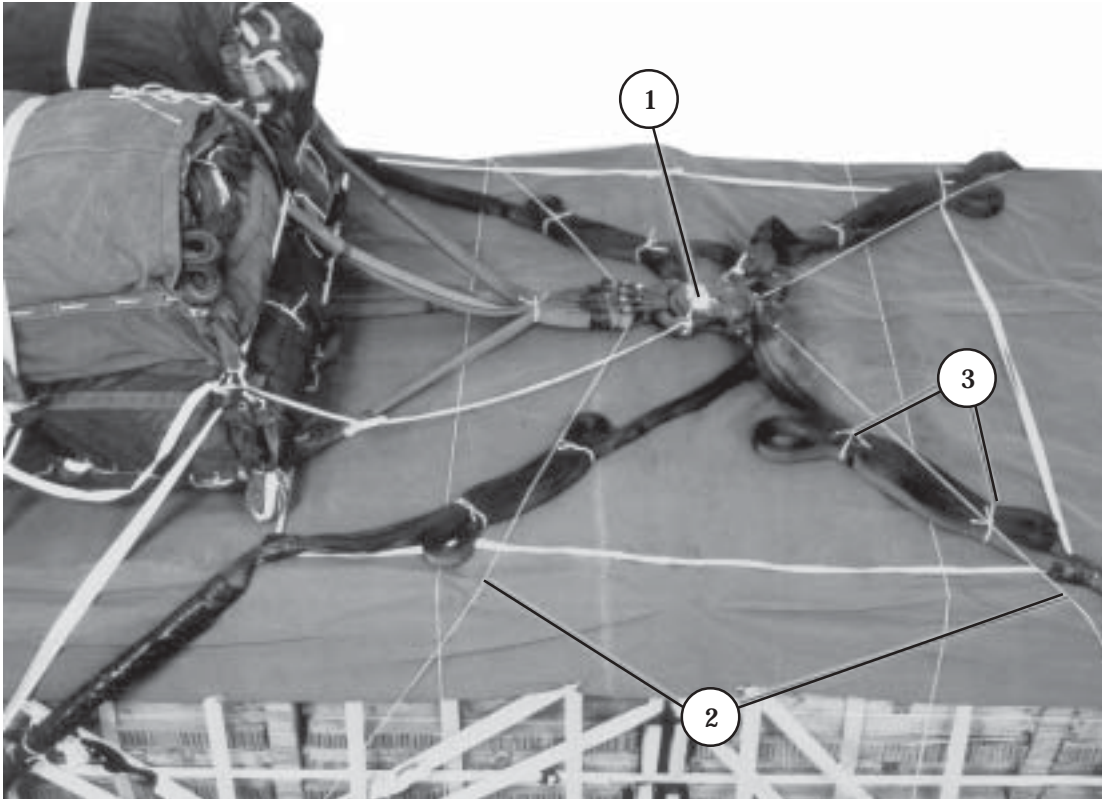


Figure 5-10. Cargo Parachutes Installed

INSTALLING THE RELEASE SYSTEM

5-11. Prepare, attach, and safety an M-2 cargo parachute release according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 5-11.

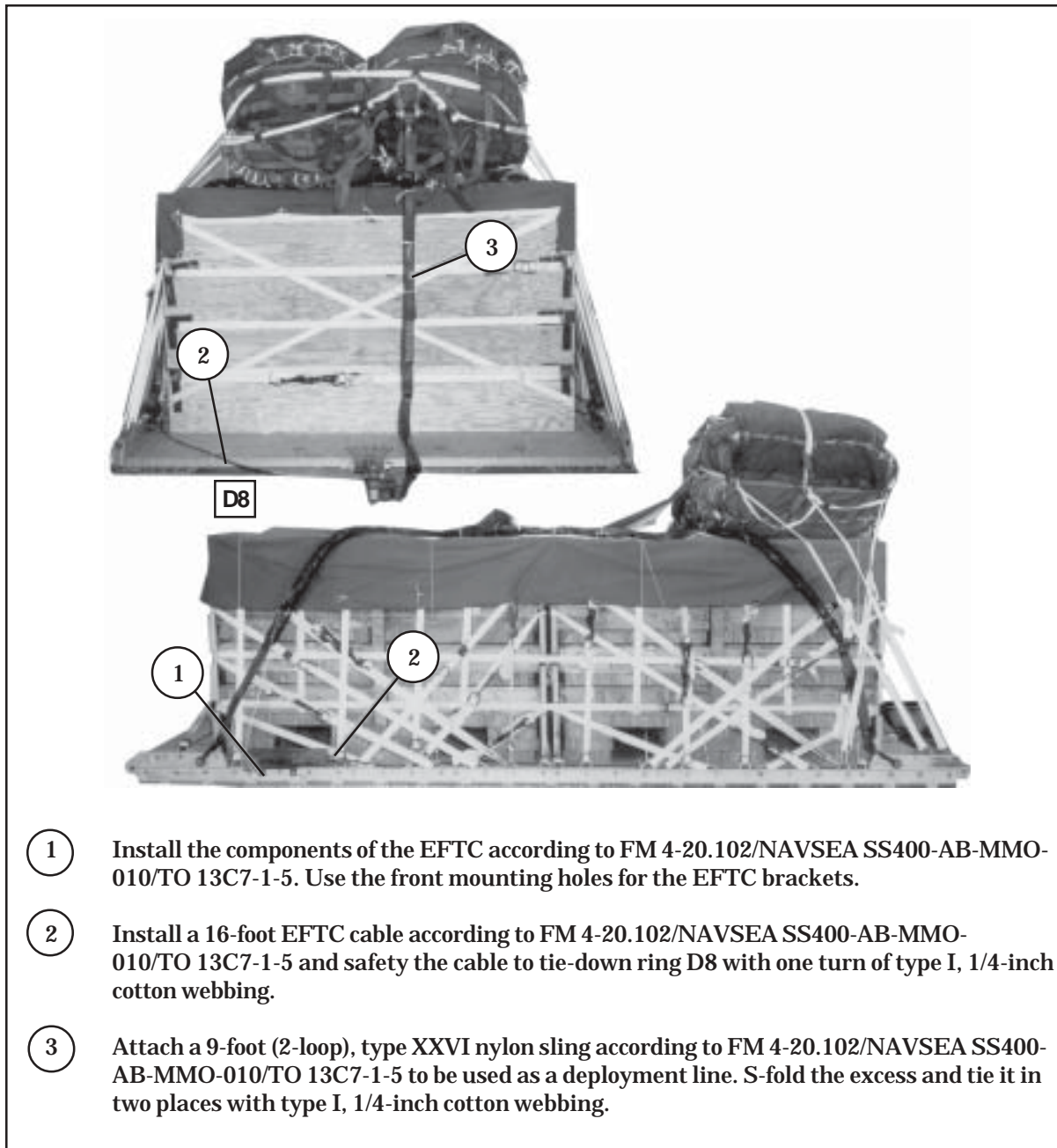


- ① Prepare and install the M-2 cargo parachute release according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Place the assembly in front of the parachutes as shown.
- ② Safety the release to convenient points on the load with type III nylon cord according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
- ③ S-fold and tie any excess suspension slings with one turn of type I, 1/4-inch cotton webbing.

Figure 5-11. Release System Installed

INSTALLING THE EXTRACTION SYSTEM

5-12. Install the extraction system according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 5-12.



- ① Install the components of the EFTC according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Use the front mounting holes for the EFTC brackets.
- ② Install a 16-foot EFTC cable according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and safety the cable to tie-down ring D8 with one turn of type I, 1/4-inch cotton webbing.
- ③ Attach a 9-foot (2-loop), type XXVI nylon sling according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 to be used as a deployment line. S-fold the excess and tie it in two places with type I, 1/4-inch cotton webbing.

Figure 5-12. Extraction System Installed

PLACING EXTRACTION PARACHUTE

5-13. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Place the extraction parachute and line on the load for installation in the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

5-14. Select and install the provisions for the emergency aft restraints according to the emergency aft restraint requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

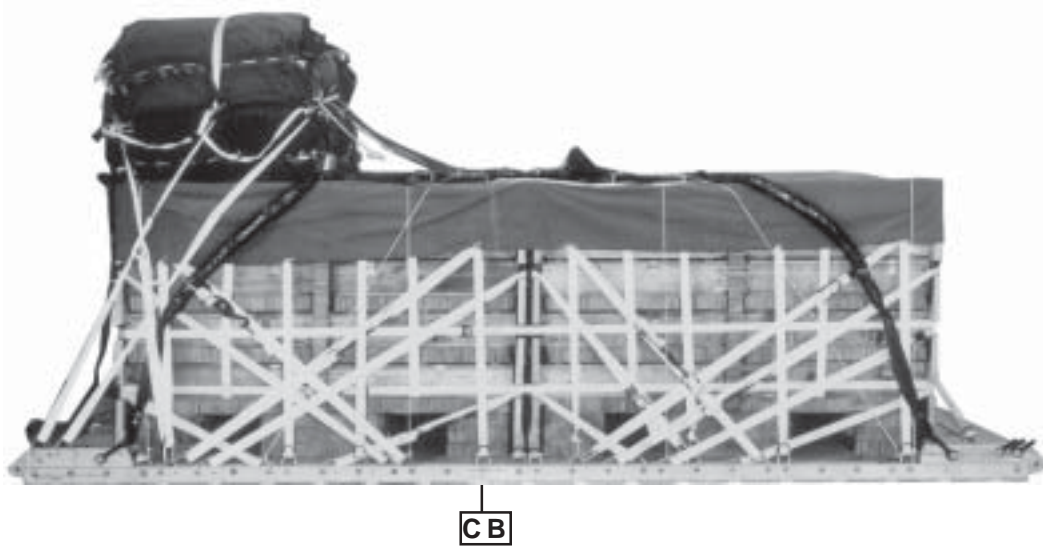
MARKING RIGGED LOAD

5-15. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and as shown in Figure 5-13. Complete Shipper's Declaration for Dangerous Goods. If the load varies from the one shown, the weight, height, CB, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

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

CAUTION
Make the final rigger inspection required by AR 59-4 and FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Minimum Weight.....5,040 pounds

Maximum Weight.....See paragraph 5-1

Height.....97 1/2 inches

Width.....108 inches

Length.....192 inches

Overhang: Front.....0 inches

Rear.....0 inches

Center of Balance (CB)
 (from front edge of the platform).....106 inches

Extraction System (adds 18 inches to length of platform) EFTC

Figure 5-13. Supply Load Rigged on a 16-Foot Platform for Low-Velocity Airdrop

Table 5-1. Equipment Required for Rigging Typical Loads on a 16-Foot, Type V Platform for Low-Velocity Airdrop

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive paste, 1-gal.	As required
4030-00-090-5354	Clevis, suspension, 1-inch (large)	5
4030-00-678-8562	Clevis, 3/4-inch medium	6
8305-00-880-8155	Cloth, coated (nylon, type II, 17.0 oz, green, 60-in)	As required
4020-00-240-2146	Cord, nylon, type III, 550-lb.	As required
1670-00-434-5785	Coupling, airdrop extraction force transfer, w/16-ft. cable	1
1670-00-360-0328	Cover, clevis	4
8135-00-664-6958	Cushioning material (Cellulose wadding)	As required
8305-00-958-3685	Felt, 1/2-inch thick	As required
1670-01-183-2678	Leaf, extraction line (line bag) (add 2 for C-17)	2
	Line extraction:	
1670-01-062-6313	60-foot (3-loop), type XXVI (for C-130)	1
1670-01-107-7651	140-foot (3-loop), type XXVI (for C-5)	1
1670-01-107-7651	140-foot (3-loop), type XXVI,	2
1670-01-107-7651	140-foot (3-loop), type XXVI (for C-17)	1
1670-01-062-6313	60-foot (3-loop), type XXVI (for C-17), (drogue line)	1
	Link assembly, two-point:	
5306-00-435-8994	Bolt, 1-inch diameter, 4-inches long (add 4 for C-5)	2
5310-00-232-5165	Nut, 1-inch (add 4 for C-5)	2
1670-00-003-1953	Plate, side, 3 3/4-inch	2
5365-00-007-3414	Spacer, large (add 4 for C-5)	2
5315-00-010-4657	Nail, (steel common 6d)	As required
1670-00-753-3928	Pad, energy-dissipating (honeycomb) 3- by 36- by 96-inches	21 sheets
1670-01-016-7841	Parachute, cargo, G-11	4
	Parachute, cargo, extraction:	
1670-00-040-8135	28-ft.	1
1670-01-063-3715	15-ft. (C-17 only)	1
	Platform, airdrop, type V, 16-ft:	
1670-01-162-2372	Clevis assembly (type V)	(60)
1670-01-353-8424	Extraction bracket assembly	(1)
1670-01-247-2389	Link, suspension bracket, type V	(2)
1670-01-162-2381	Link, tandem, suspension link assembly	(4)
1670-01-097-8817	Release, cargo parachute, M-2	1
	Sling, cargo, airdrop:	
1670-01-062-6308	16-ft. (4-loop), type XXVI	4
1670-01-062-6304	9-ft. (2-loop), type XXVI	1
1670-01-062-6302	20-ft. (2-loop), type XXVI	12

Table 5-1. Equipment Required for Rigging Typical Loads on a 16-Foot, Type V Platform for Low-Velocity Airdrop (Continued)

National Stock Number	Item	Quantity
5340-00-040-8219 7501-00-266-5016 7510-00-266-6710 1670-00-937-0271 1670-01-483-8259	Strap, parachute, release, multi-knife Tape, adhesive, 2-inch Tape, masking Tiedown assembly, 15-ft. Towplate release mechanism (H-block) (C-17 only)	2 As required As required 76 1
8305-00-268-2411 8305-00-082-5752 8305-00-261-8585	Webbing: Cotton, 1/4-inch, type I Nylon, tubular, 1/2-inch Type VIII nylon	As required As required As required

Section II

RIGGING 155-MILLIMETER (MM) AMMUNITION

DESCRIPTION OF LOAD

5-17. Ninety-six 155-mm projectiles and 72 powder canisters are rigged for low-velocity airdrop on a 16-foot, type V airdrop platform. All 155-mm ammunition packaged as shown and listed in FM 4-20.153/MCRP 4-11.3B/TO 13C7-18-41, as certified for low-velocity airdrop, may be rigged using these procedures. The load uses three G-11 cargo parachutes. Each load must weigh at least 5,040 pounds, including parachutes. Refer to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 for the weight limitations for the number of parachutes to be used.

PREPARING PLATFORM

5-18. Prepare a 16-foot, type V platform as shown in Figure 5-14.

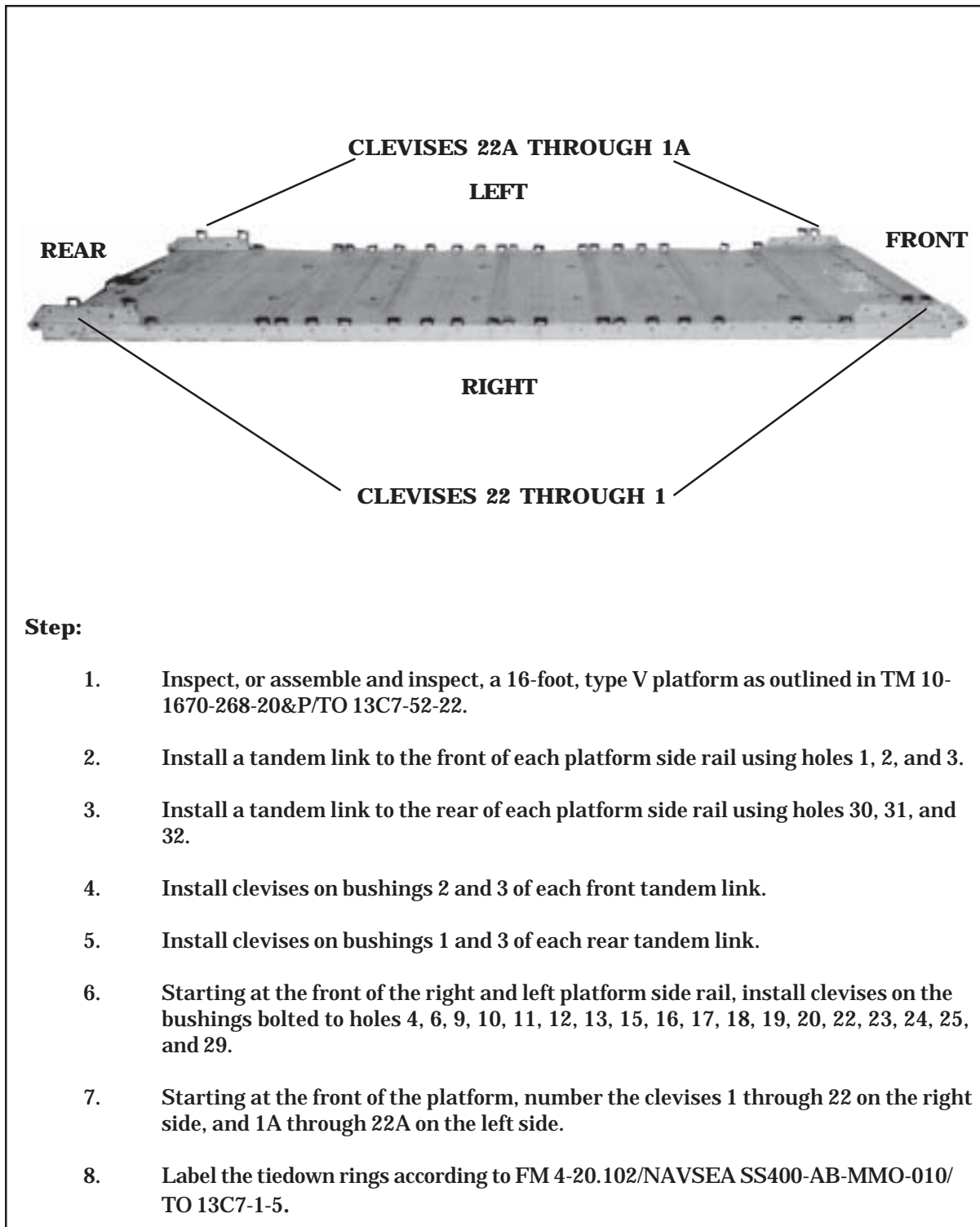
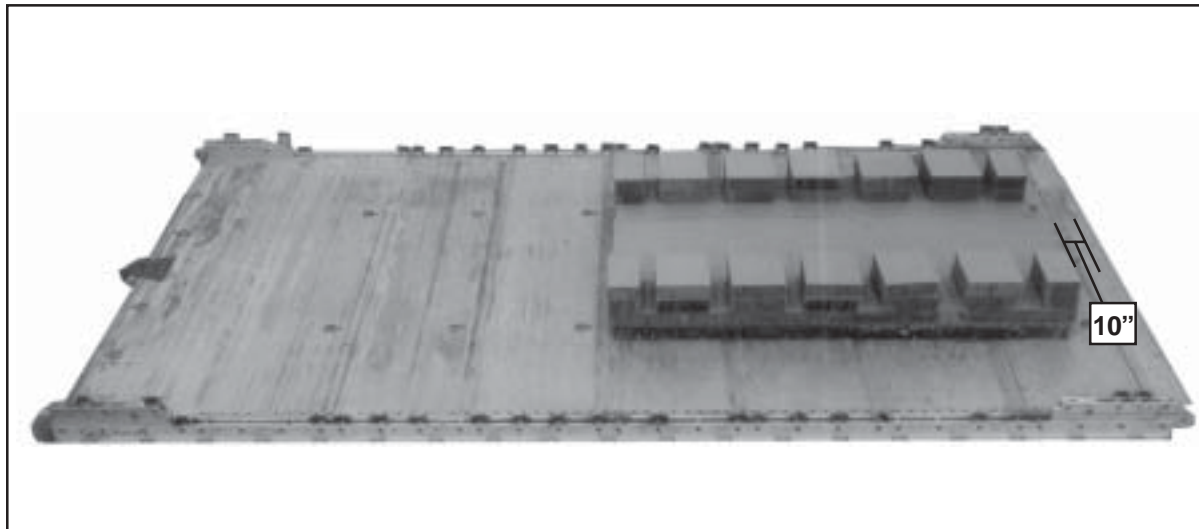


Figure 5-14. Platform Prepared

BUILDING HONEYCOMB STACKS AND PLACING FIRST STACK

5-19. Build the honeycomb stack for the first stack of ammunition and place it on the platform as shown in Figure 5-15. Build the stack for the second stack of ammunition as shown in Figure 5-15. Set the second honeycomb stack aside.



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
1 and 2	2	36	84	Honeycomb	Form a two layer base 84 inches long and 54 inches wide. Alternate the layers of honeycomb. Center the stack 10 inches from the front edge of the platform.
	2	18	84	Honeycomb	
	8	12	5	Honeycomb	Place two pieces of honeycomb on each corner of the base with the 5-inch sides facing the left and right sides of the platform.
	4	12	10	Honeycomb	Center two pieces of honeycomb along each side of the base with the 10-inch sides facing the left and right sides of the platform.
	16	12	10	Honeycomb	Evenly space the two layer pieces of honeycomb between the center and corner pieces. The spaces between the pieces are 4 inches.

Figure 5-15. Honeycomb for First Ammunition Stack Prepared and Placed

POSITIONING AND SECURING FIRST AMMUNITION STACK

5-20. Set six sets of projectiles on the honeycomb and pre-position three lashings as shown in Figure 5-16. Stow 36 powder canisters and secure them as shown in Figure 5-17.

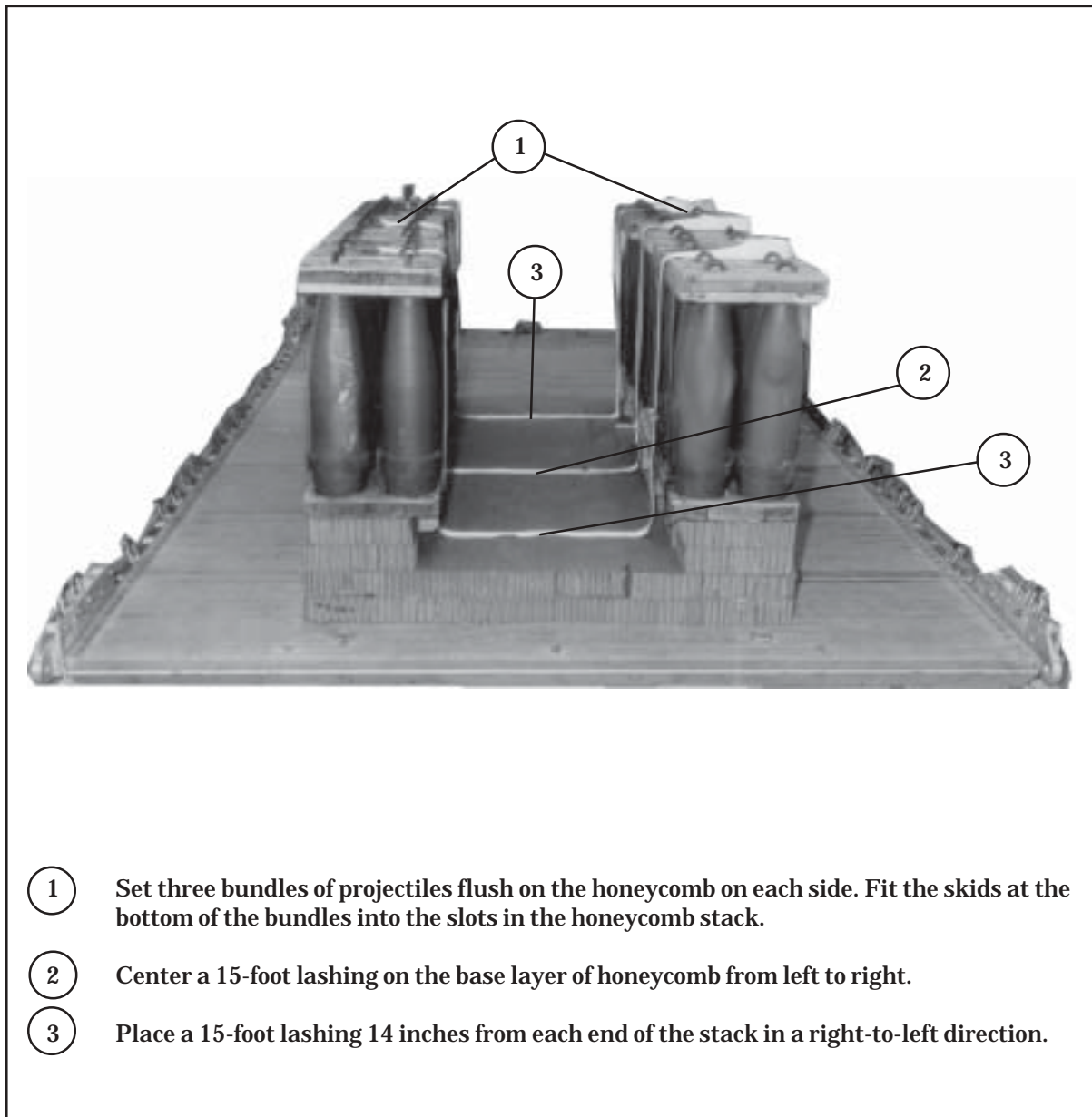


Figure 5-16. Projectiles Placed on Honeycomb and Lashings Pre-positioned

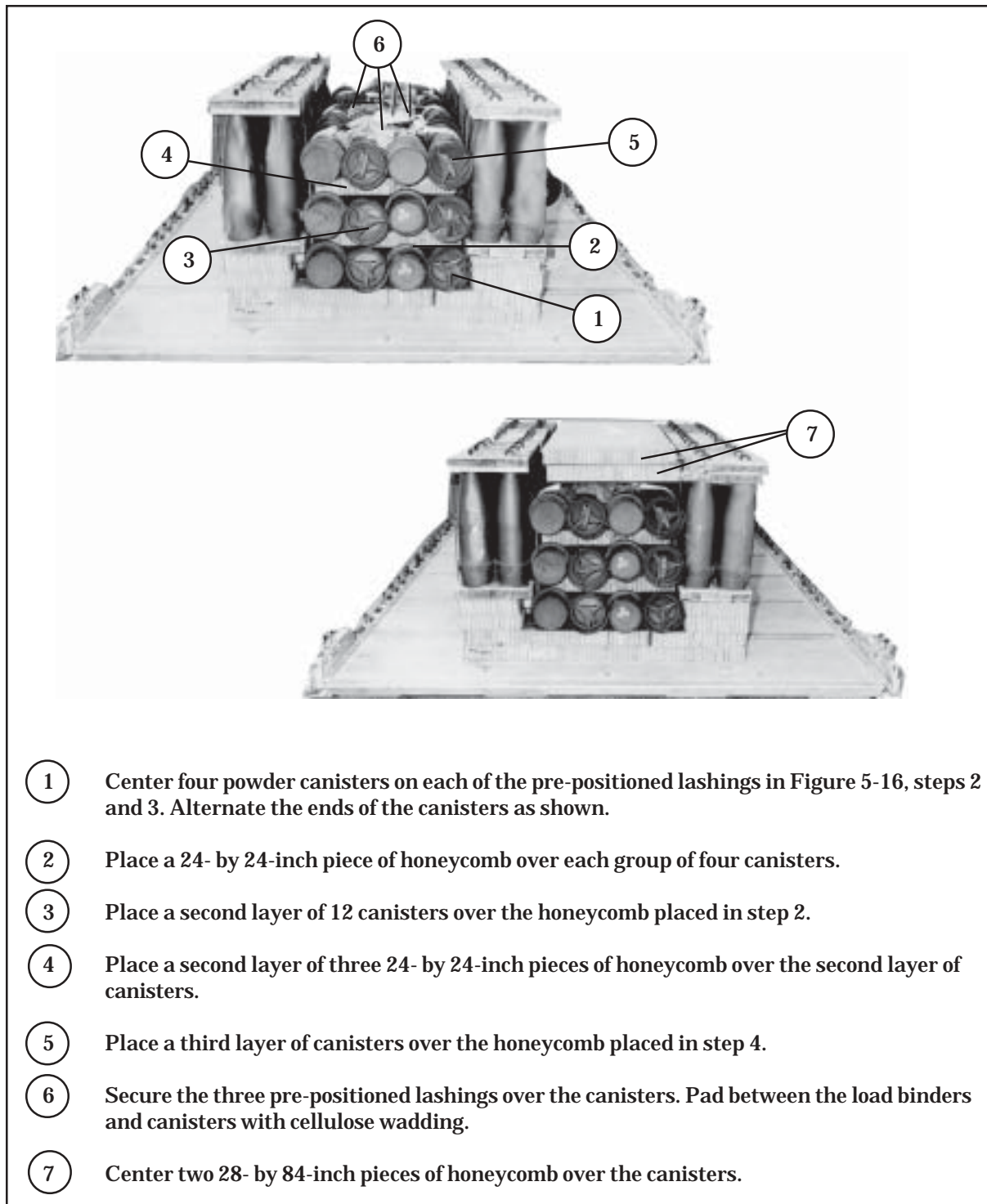


Figure 5-17. Canisters Stowed and Secured

INSTALLING LASHINGS ON FIRST AMMUNITION STACK AND FIRST AND SECOND ENDBOARDS

5-22. Lash the load to the platform according to FM 4-20.102/NAVSEA SS400-AB- MMO-010/TO 13C7-1-5, and as shown in Figures 5-19 and 5-20. Set an endboard against each end of the first ammunition stack. Lash the first and second endboards and the first ammunition stack to the platform as shown in Figure 5-19.

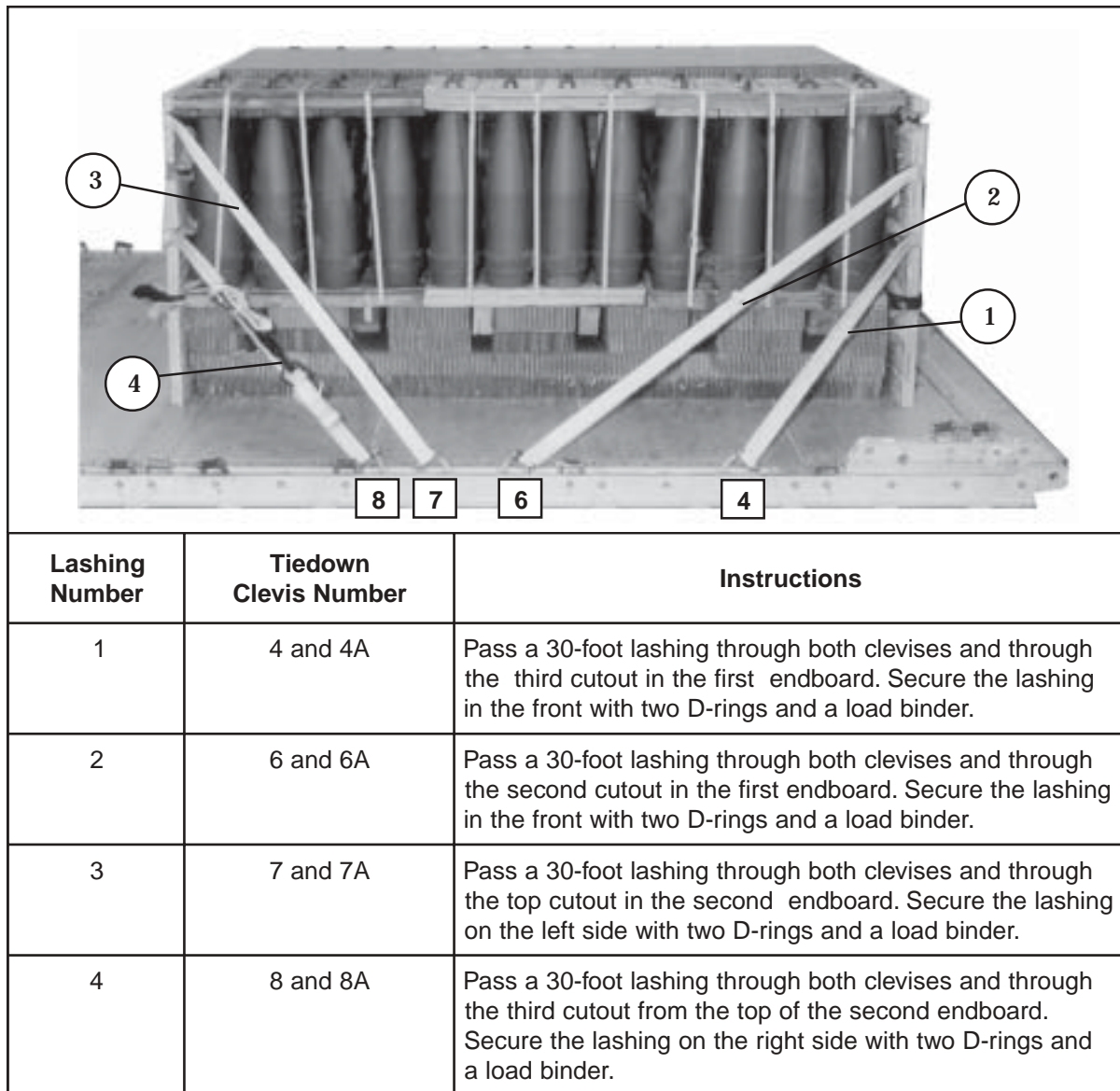
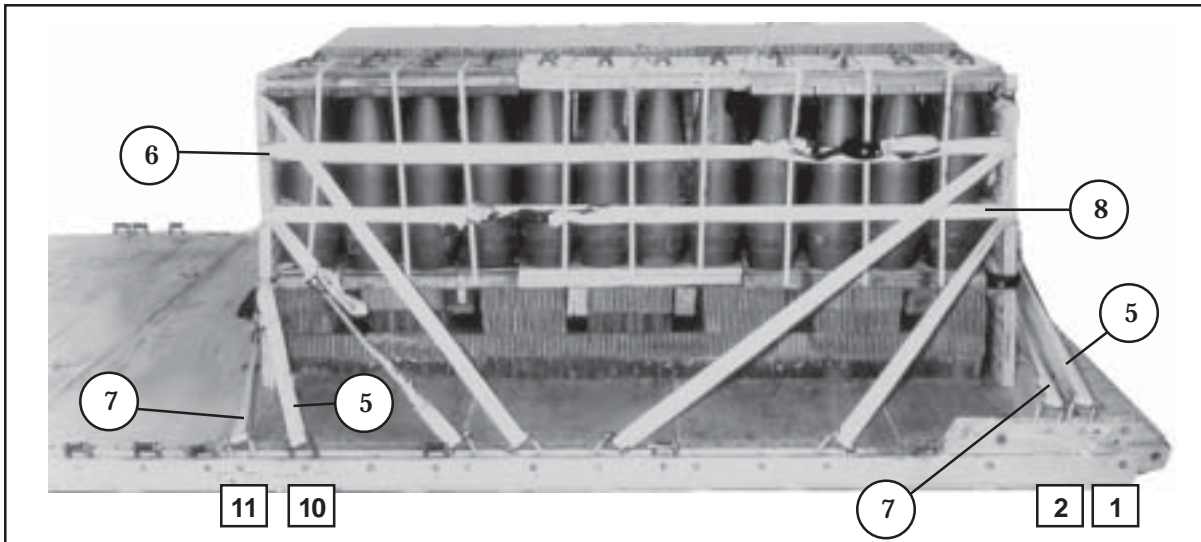
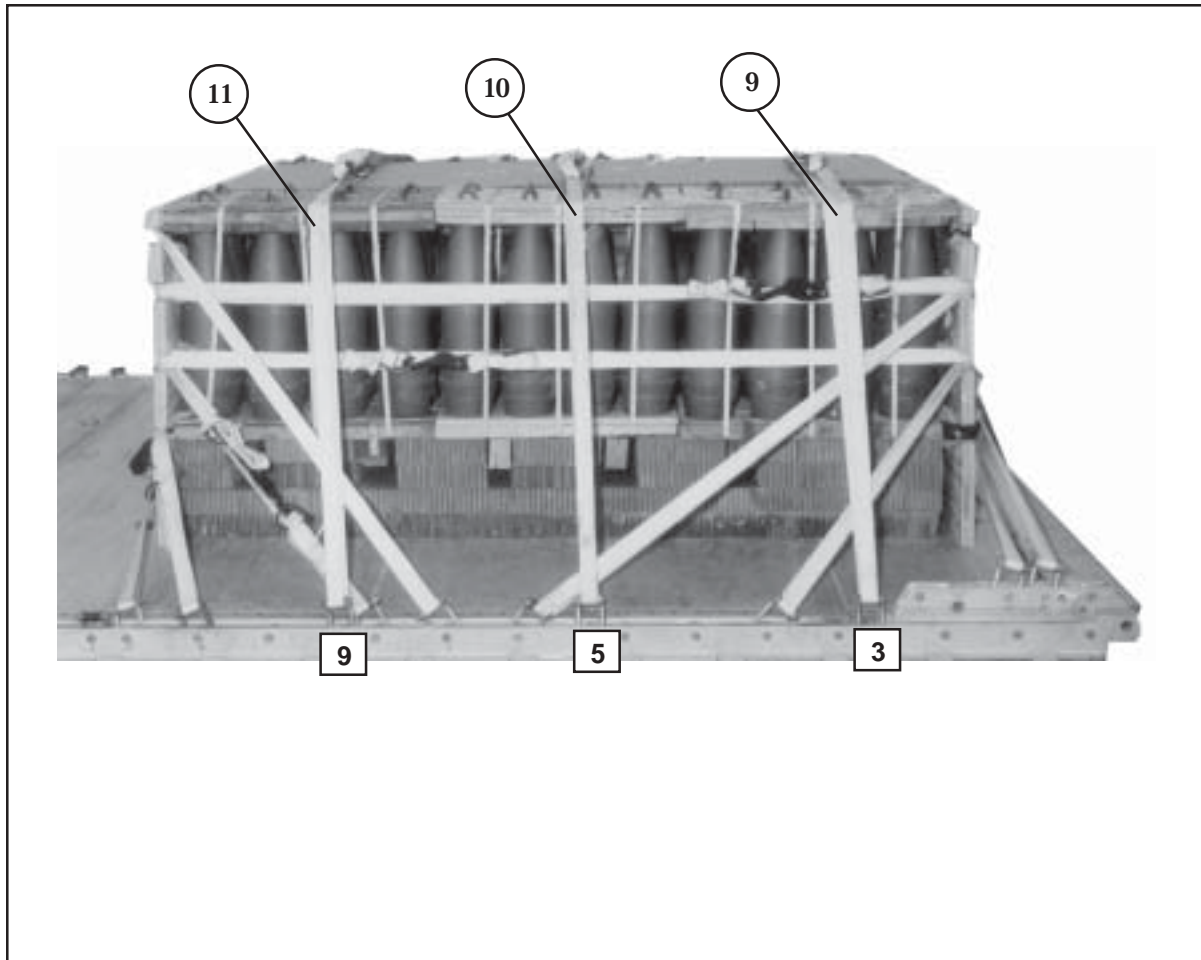


Figure 5-19. Lashings Installed for First Stack



Lashing Number	Tiedown Clevis Number	Instructions
5	1 and 10	Pass a 30-foot lashing through clevis 1, through the second cutout on the left side of the first endboard, and around the left side of the ammunition stack. Pass the lashing through the second cutout from the top in the left side of the second endboard and through clevis 10. Secure the lashing on the left side with two D-rings and a load binder.
6	1A and 10A	Pass a 30-foot lashing through clevis 1A, through the top cutout on the right side of the first endboard, and around the right side of the ammunition stack. Pass the lashing through the second cutout from the top in the right side of the second endboard and through clevis 10A. Secure the lashing on the right side with two D-rings and a load binder.
7	2 and 11	Pass a 30-foot lashing through clevis 2, through the third cutout on the left side of the first endboard, and around the left side of the ammunition stack. Pass the lashing through the third cutout on the left side of the second endboard and through clevis 11. Secure the lashing on the left side with two D-rings and a load binder.
8	2A and 11A	Pass a 30-foot lashing through clevis 2A, through the third cutout on the right side of the first endboard, and around the right side of the ammunition stack. Pass the lashing through the third cutout on the right side of the second endboard and through clevis 11A. Secure the lashing on the right side with two D-rings and a load binder.

Figure 5-19. Lashings Installed for First Stack (Continued)



Lashing Number	Tiedown Clevis Number	Instructions
9	3 and 3A	Pass a 30-foot lashing through both clevises and over the top of the load. Secure the lashing on top with two D-rings and a load binder.
10	5 and 5A	Pass a 30-foot lashing through both clevises and over the top of the load. Secure the lashing on top with two D-rings and a load binder.
11	9 and 9A	Pass a 30-foot lashing through both clevises and over the top of the load. Secure the lashing on top with two D-rings and a load binder.

Figure 5-19. Lashings Installed for First Stack (Continued)

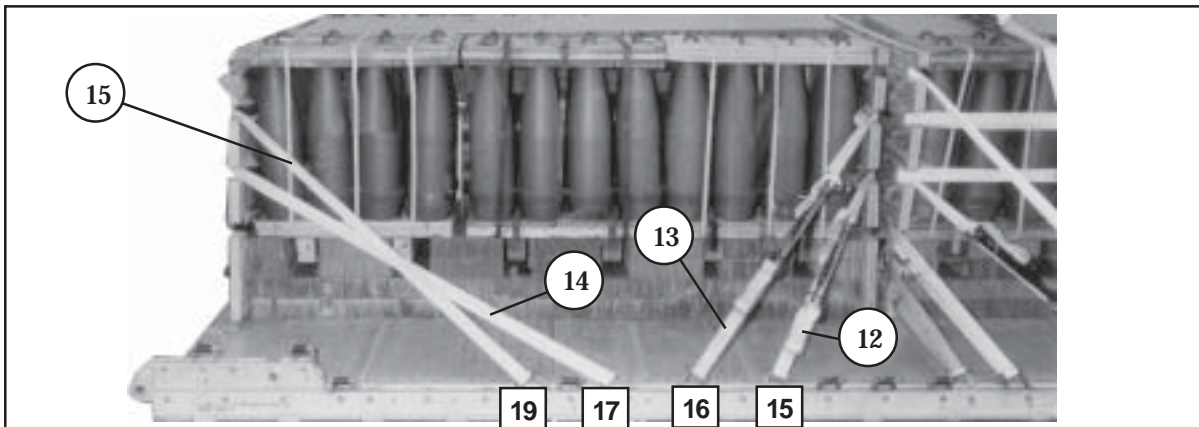
POSITIONING SECOND AMMUNITION STACK AND THIRD AND FOURTH ENDBOARDS

5-23. Position and secure the second ammunition stack and its endboards as described below.

- a. Center the honeycomb for the second ammunition stack 6 inches from the rear edge of the platform.
- b. Stow and secure six sets of projectiles and 36 powder canisters on the honeycomb as shown in Figures 5-16 and 5-17.
- c. Set an endboard against each end of the second ammunition stack.

LASHING SECOND AMMUNITION STACK AND THIRD AND FOURTH ENDBOARDS

5-24. Lash the second ammunition stack and the third and fourth endboards to the platform as shown in Figure 5-20.

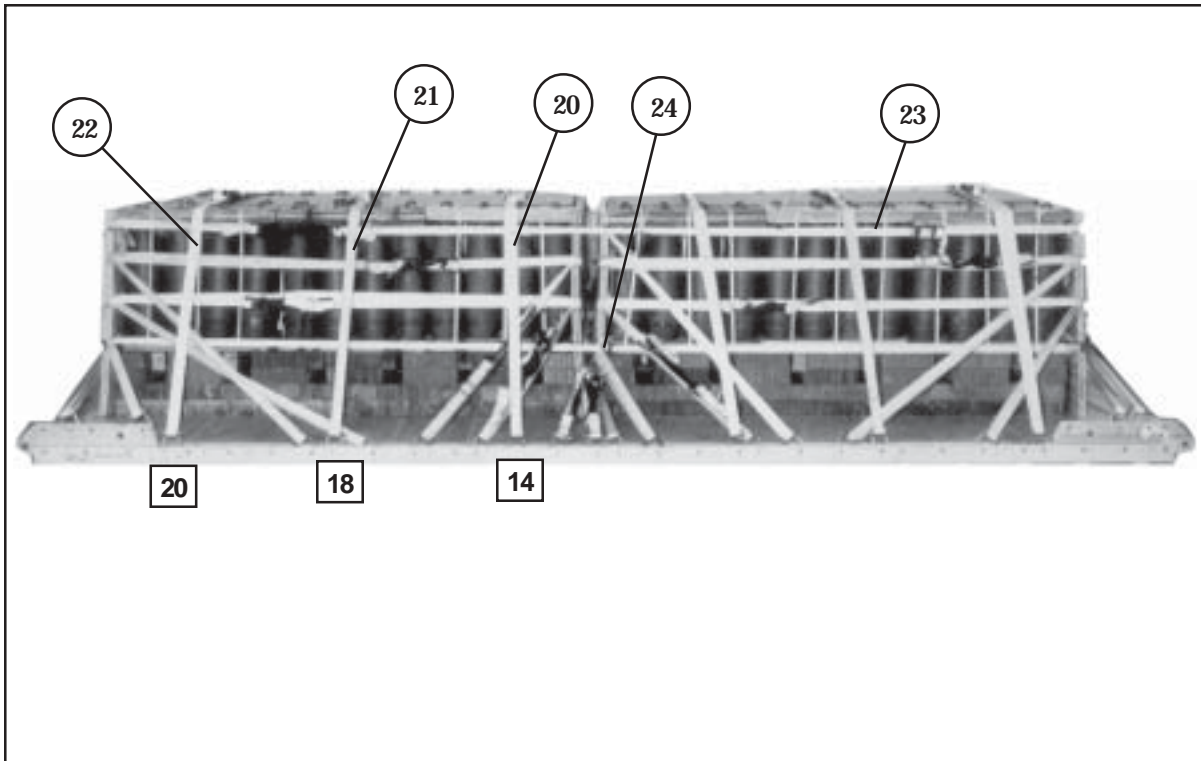


Lashing Number	Tiedown Clevis Number	Instructions
12	15 and 15A	Pass a 30-foot lashing through both clevises and through the third cutout in the third endboard. Secure the lashing in the front with two D-rings and a load binder.
13	16 and 16A	Pass a 30-foot lashing through both clevises and through the second cutout in the third endboard. Secure the lashing in the front with two D-rings and a load binder.
14	17 and 17A	Pass a 30-foot lashing through both clevises and through the top cutout in the fourth endboard. Secure the lashing on the left side with two D-rings and a load binder.
15	19 and 19A	Pass a 30-foot lashing through both clevises and through the third cutout from the top of the fourth endboard. Secure the lashing on the right side with two D-rings and a load binder.

Figure 5-20. Lashings Installed for Second Stack

Lashing Number	Tiedown Clevis Number	Instructions
16	12 and 21	Pass a 30-foot lashing through clevis 12, through the second cutout on the left side of the third endboard, and around the left side of the ammunition stack. Pass the lashing through the second cutout from the top in the left side of the fourth endboard and through clevis 21. Secure the lashing on the left side with two D-rings and a load binder.
17	12A and 21A	Pass a 30-foot lashing through clevis 12A, through the top cutout on the right side of the third endboard, and around the right side of the ammunition stack. Pass the lashing through the second cutout from the top in the right side of the fourth endboard and through clevis 21A. Secure the lashing on the right side with two D-rings and a load binder.
18	13 and 22	Pass a 30-foot lashing through clevis 13, through the third cutout on the left side of the third endboard, and around the left side of the ammunition stack. Pass the lashing through the third cutout on the left side of the fourth endboard and through clevis 22. Secure the lashing on the left side with two D-rings and a load binder.
19	13A and 22A	Pass a 30-foot lashing through clevis 13A, through the third cutout on the right side of the third endboard, and around the right side of the ammunition stack. Pass the lashing through the third cutout on the right side of the fourth endboard and through clevis 22A. Secure the lashing on the right side with two D-rings and a load binder.

Figure 5-20. Lashings Installed for Second Stack (Continued)



Lashing Number	Tiedown Clevis Number	Instructions
20	14 and 14A	Pass a 30-foot lashing through both clevises and over the top of the load. Secure the lashing on top with two D-rings and a load binder.
21	18 and 18A	Pass a 30-foot lashing through both clevises and over the top of the load. Secure the lashing on top with two D-rings and a load binder.
22	20 and 20A	Pass a 30-foot lashing through both clevises and over the top of the load. Secure the lashing on top with two D-rings and a load binder.
23		Pass a 45-foot lashing around the entire load through the top cutouts in all four endboards. Secure the lashing on the side with two D-rings and a load binder.
24		Pass a 45-foot lashing around the entire load through the bottom cutouts in all four endboards. Secure the lashing on the side with two D-rings and a load binder.

Figure 5-20. Lashings Installed for Second Stack (Continued)

INSTALLING SUSPENSION SLINGS AND DEADMAN'S TIE

5-25. Install the suspension slings and deadman's tie as shown in Figure 5-21.

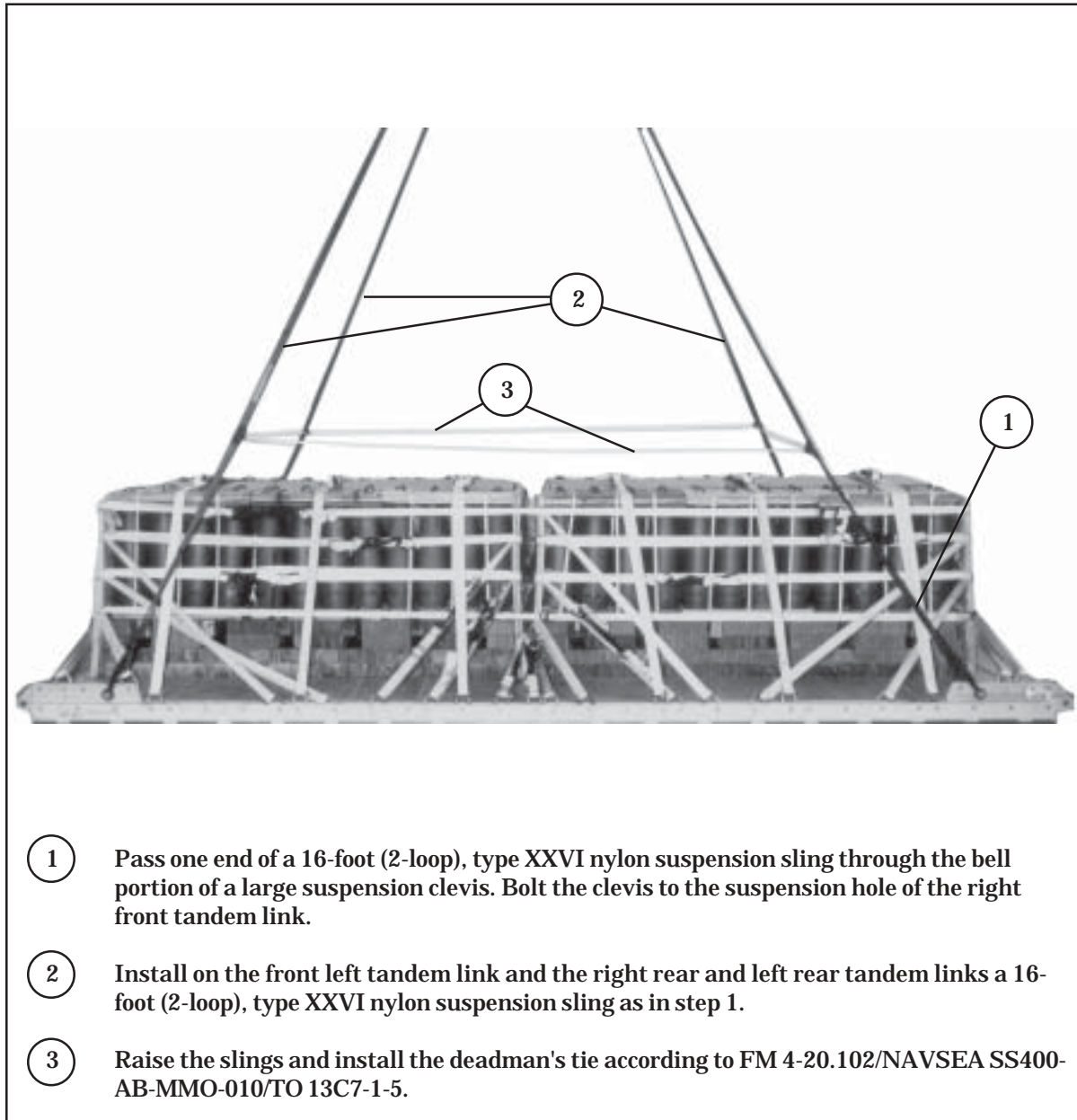


Figure 5-21. Suspension Slings and Deadman's Tie Installed

INSTALLING PARACHUTES

5-26. Compute the parachute requirements for the load being rigged. Prepare and install the cargo parachutes according to FM 4-20.102/ NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 5-22.

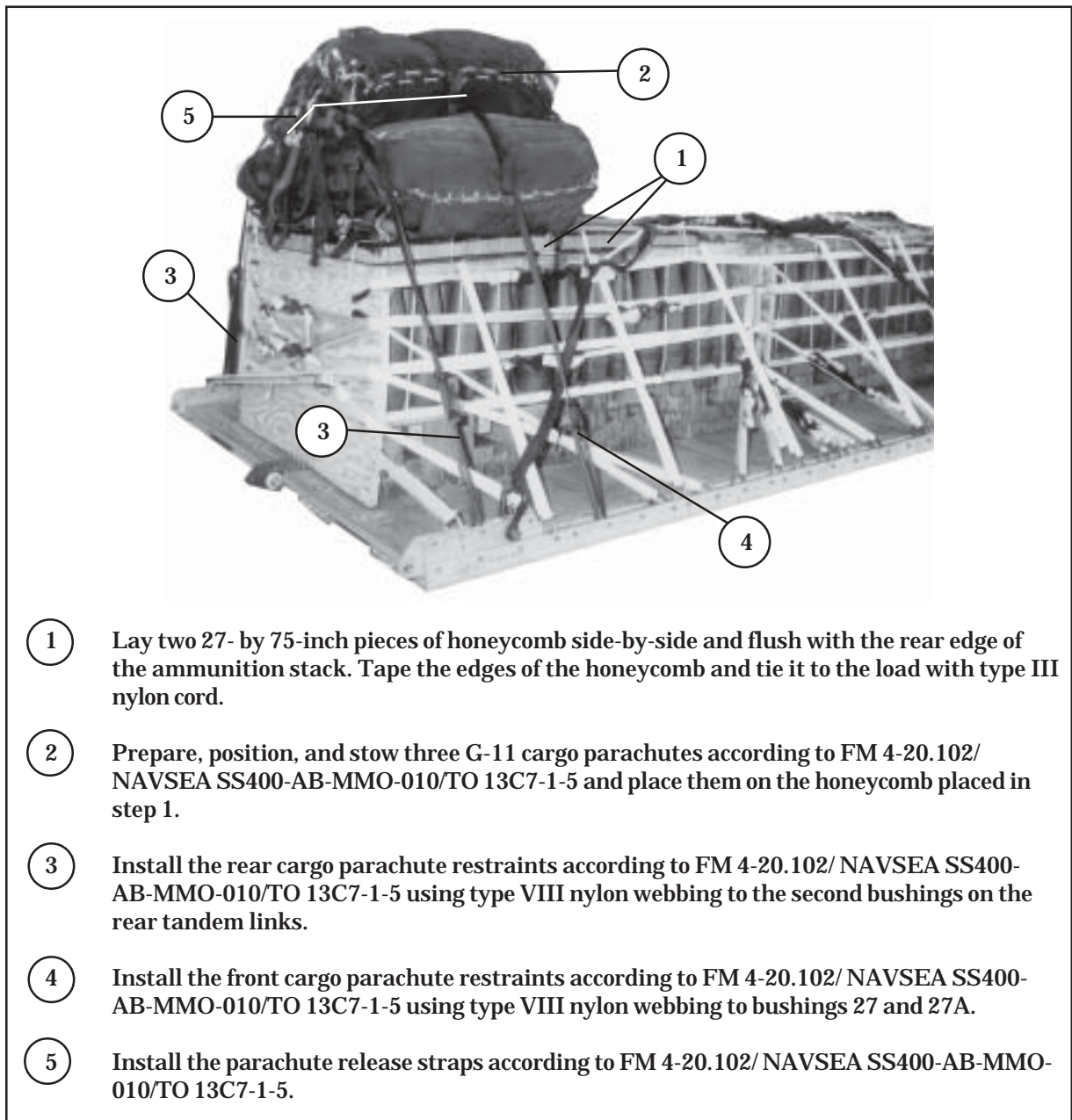


Figure 5-22. Cargo Parachutes Installed

INSTALLING THE RELEASE SYSTEM

5-27. Prepare, attach, and safety an M-1 cargo parachute release according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 5-23.

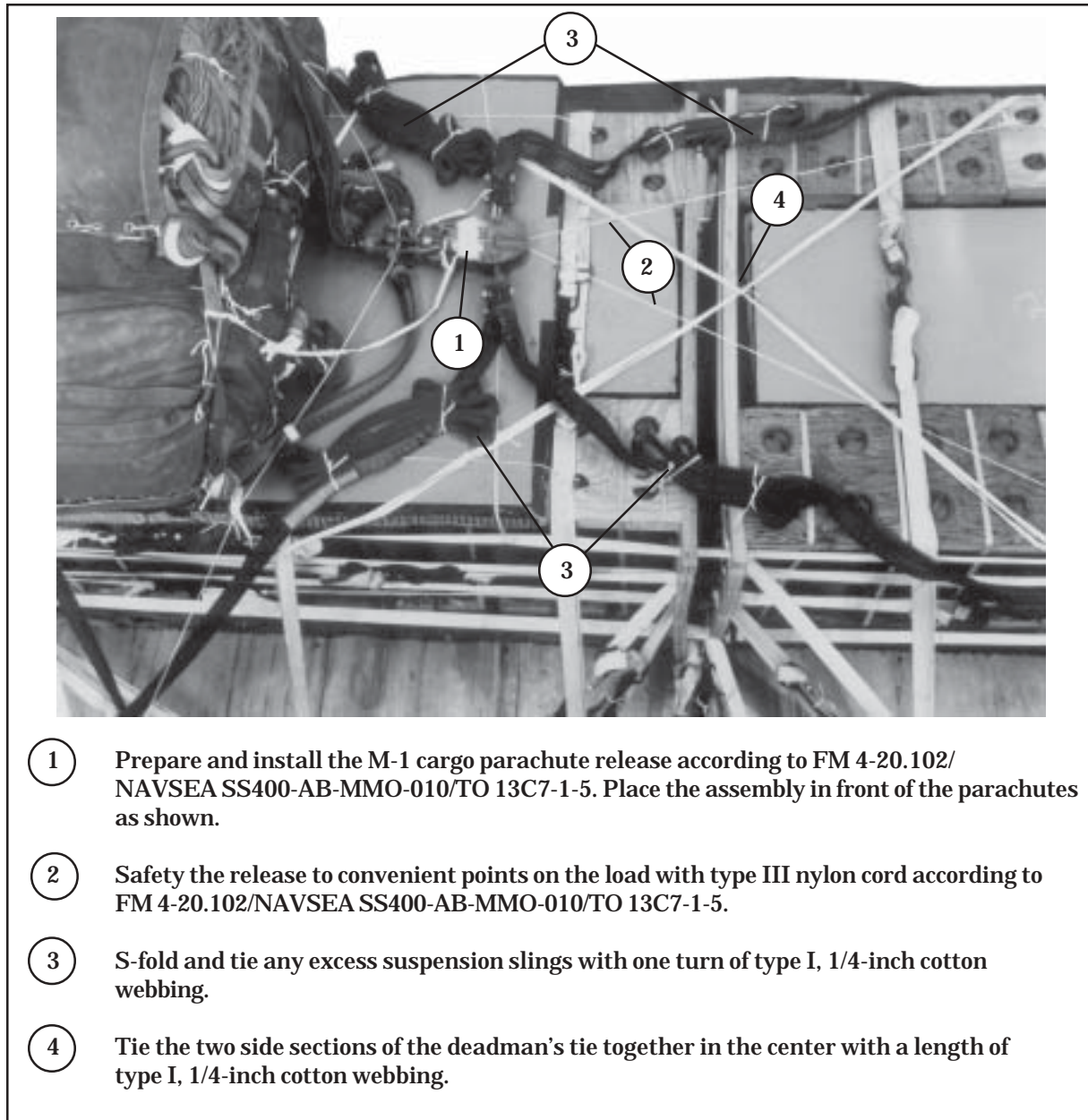


Figure 5-23. Release System Installed

INSTALLING THE EXTRACTION SYSTEM

5-28. Install the extraction system according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 5-24.

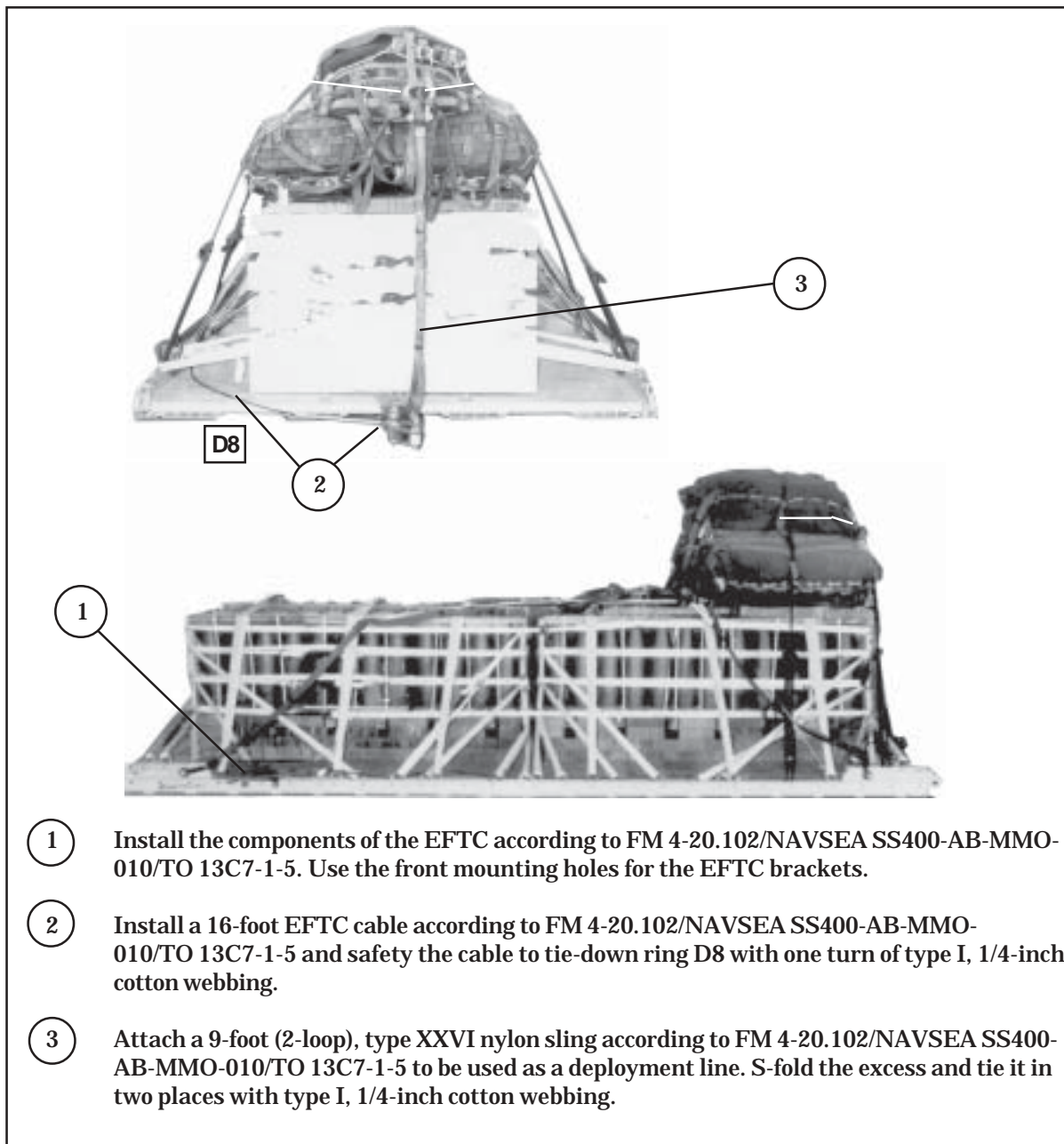


Figure 5-24. Extraction System Installed

PLACING EXTRACTION PARACHUTE

5-29. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Place the extraction parachute and line on the load for installation in the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

5-30. Select and install the provisions for the emergency aft restraints according to the emergency aft restraint requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

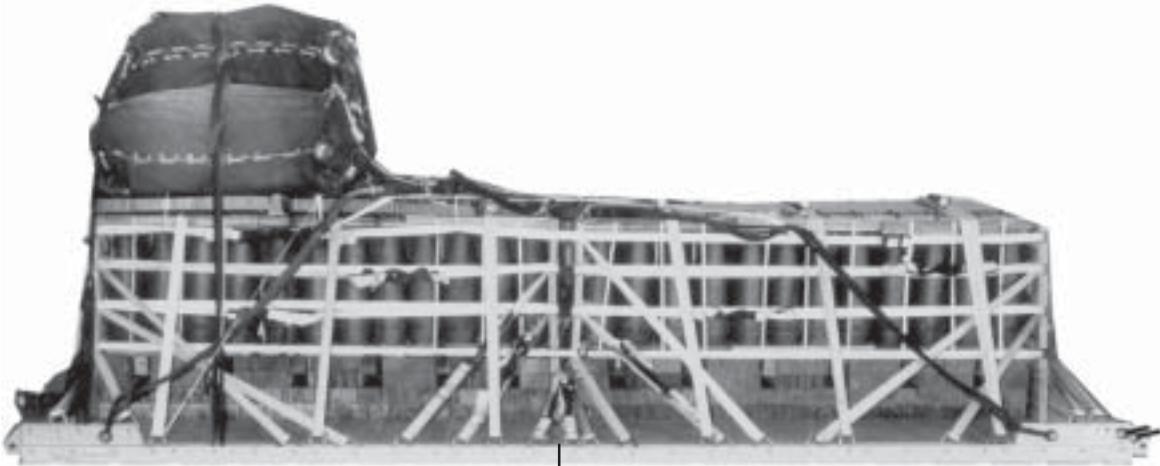
MARKING RIGGED LOAD

5-31. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and as shown in Figure 5-25. Complete Shipper's Declaration for Dangerous Goods. If the load varies from the one shown, the weight, height, CB, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

5-32. Use the equipment listed in Table 5-2 to rig this load.

CAUTION
Make the final rigger inspection required by AR 59-4 and FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Minimum Weight.....5,040 pounds

Maximum Weight.....See paragraph 5-17

Height.....86 inches

Width.....108 inches

Length.....192 inches

Overhang: Front.....0 inches

Rear.....0 inches

Center of Balance (CB)
 (from front edge of the platform).....101 inches

Extraction System (adds 18 inches to length of platform) EFTC

Figure 5-25. 155-mm Ammunition Rigged on a 16-Foot Platform for Low-Velocity Airdrop

Table 5-2. Equipment Required for Rigging 155-mm Ammunition on a 16-Foot, Type V Platform for Low-Velocity Airdrop

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive paste, 1-gal.	As required
4030-00-090-5354	Clevis, suspension, 1-inch (large)	5
4030-00-678-8562	Clevis, 3/4-inch medium	4
8305-00-880-8155	Cloth, coated (nylon, type II, 17.0 oz, green, 60-in)	As required
4020-00-240-2146	Cord, nylon, type III, 550-lb.	As required
1670-00-434-5785	Coupling, airdrop extraction force transfer, w/16-ft. cable	1
1670-00-360-0328	Cover, clevis	3
8135-00-664-6958	Cushioning material (Cellulose wadding)	As required
8305-00-958-3685	Felt, 1/2-inch thick	As required
1670-01-183-2678	Leaf, extraction line (line bag) (add 2 for C-17)	2
	Line extraction:	
1670-01-062-6313	60-foot (3-loop), type XXVI (for C-130)	1
1670-01-107-7651	140-foot (3-loop), type XXVI (for C-5)	1
1670-01-107-7651	140-foot (3-loop), type XXVI,	2
1670-01-107-7651	140-foot (3-loop), type XXVI (for C-17)	1
1670-01-064-4452	60-foot (1-loop), type XXVI (for C-17), (drogue line)	1
	Link assembly, two-point:	
5306-00-435-8994	Bolt, 1-inch diameter, 4-inches long (add 4 for C-5)	2
5310-00-232-5165	Nut, 1-inch (add 4 for C-5)	2
1670-00-003-1953	Plate, side, 3 3/4-inch	2
5365-00-007-3414	Spacer, large (add 4 for C-5)	2
5315-00-010-4657	Nail, (steel common 6d)	As required
1670-00-753-3928	Pad, energy-dissipating (honeycomb) 3- by 36- by 96-inches	13 sheets
1670-01-016-7841	Parachute, cargo, G-11	3
	Parachute, cargo, extraction:	
1670-01-063-3716	22-ft.	1
1670-01-063-3715	15-ft. (C-17 only)	1
	Platform, airdrop, type V, 16-ft:	
5530-00-618-8073	Plywood, 3/4-inch	As required
1670-01-162-2372	Clevis assembly (type V)	(44)
1670-01-353-8424	Extraction bracket assembly	(1)
1670-01-162-2381	Link, tandem, suspension link assembly	(4)
1670-01-097-8816	Release, cargo parachute, M-1	1
	Sling, cargo, airdrop:	
1670-01-062-6304	9-ft. (2-loop), type XXVI	1
1670-01-062-6307	16-ft. (2-loop), type XXVI	4
1670-01-062-6313	60-foot (3-loop), type XXVI	3

Table 5-2. Equipment Required for Rigging 155-mm Ammunition on a 16-Foot, Type V Platform for Low-Velocity Airdrop (Continued)

National Stock Number	Item	Quantity
5340-00-040-8219	Strap, parachute, release, multi-knife	2
7501-00-266-5016	Tape, adhesive, 2-inch	As required
1670-00-937-0271	Tiedown assembly, 15-ft.	56
1670-01-483-8259	Towplate release mechanism (H-block) (C-17 only)	1
	Webbing:	
8305-00-268-2411	Cotton, 1/4-inch, type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-inch	As required
8305-00-261-8585	Type VIII nylon	As required

Section III

RIGGING 20-MILLIMETER (MM) AMMUNITION

DESCRIPTION OF LOAD

5-33. Two hundred forty boxes of 20-mm ammunition are rigged for low-velocity airdrop on a 16-foot, type V airdrop platform. All 20-mm ammunition packaged as shown and listed in FM 4-20.153/MCRP 4-11.3B/TO 13C7-18-41, as certified for low-velocity airdrop, may be rigged using these procedures. This load uses five G-11 cargo parachutes. Each load must weigh at least 5,040 pounds, including parachutes. Refer to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 for the weight limitations for the number of parachutes to be used.

PREPARING PLATFORM

5-34. Prepare a 16-foot, type V platform as shown in Figure 5-26.

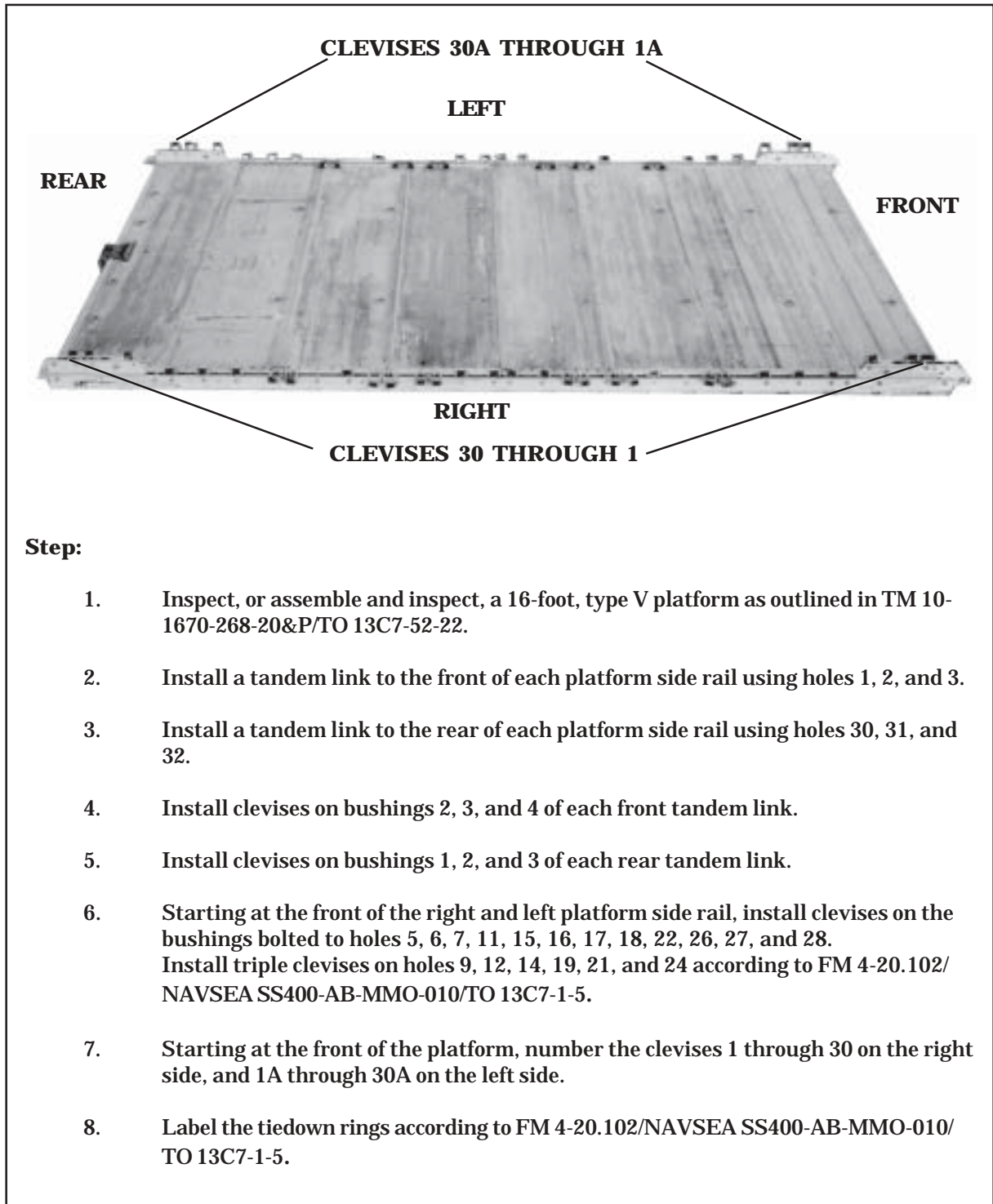


Figure 5-26. Platform Prepared

BUILDING HONEYCOMB STACKS AND PLACING FIRST STACK

5-35. Build the honeycomb stack for the first stack of ammunition and place it on the platform as shown in Figure 5-27. Build the stack for the second stack of ammunition as shown in Figure 5-27. Set the second honeycomb stack aside.

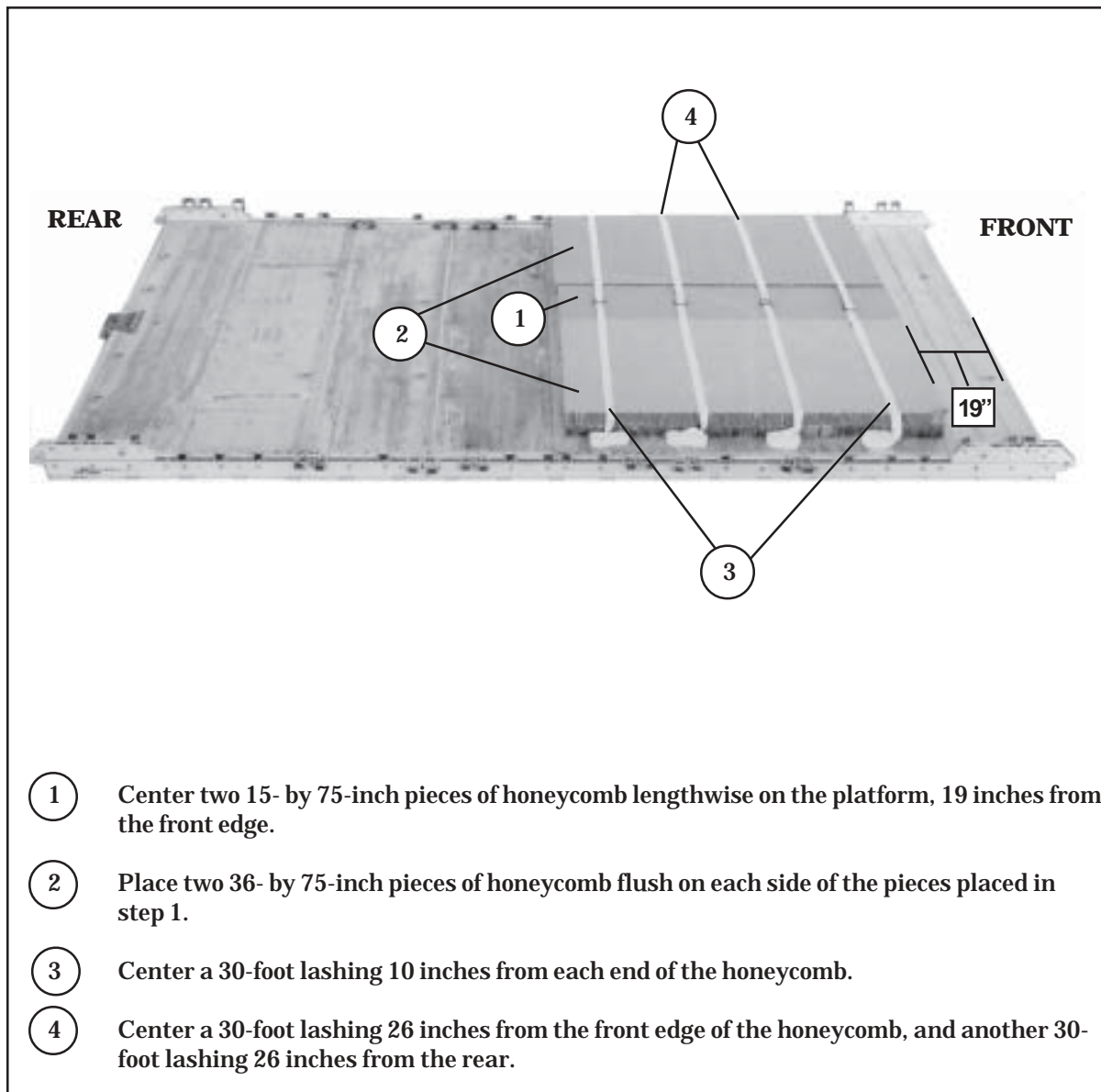


Figure 5-27. Honeycomb for First Ammunition Stack Prepared and Placed

POSITIONING AND SECURING FIRST AMMUNITION STACK

5-36. Set 120 boxes of 20-mm ammunition on the honeycomb and pre-positioned lashings. Secure the lashings as shown in Figure 5-28.

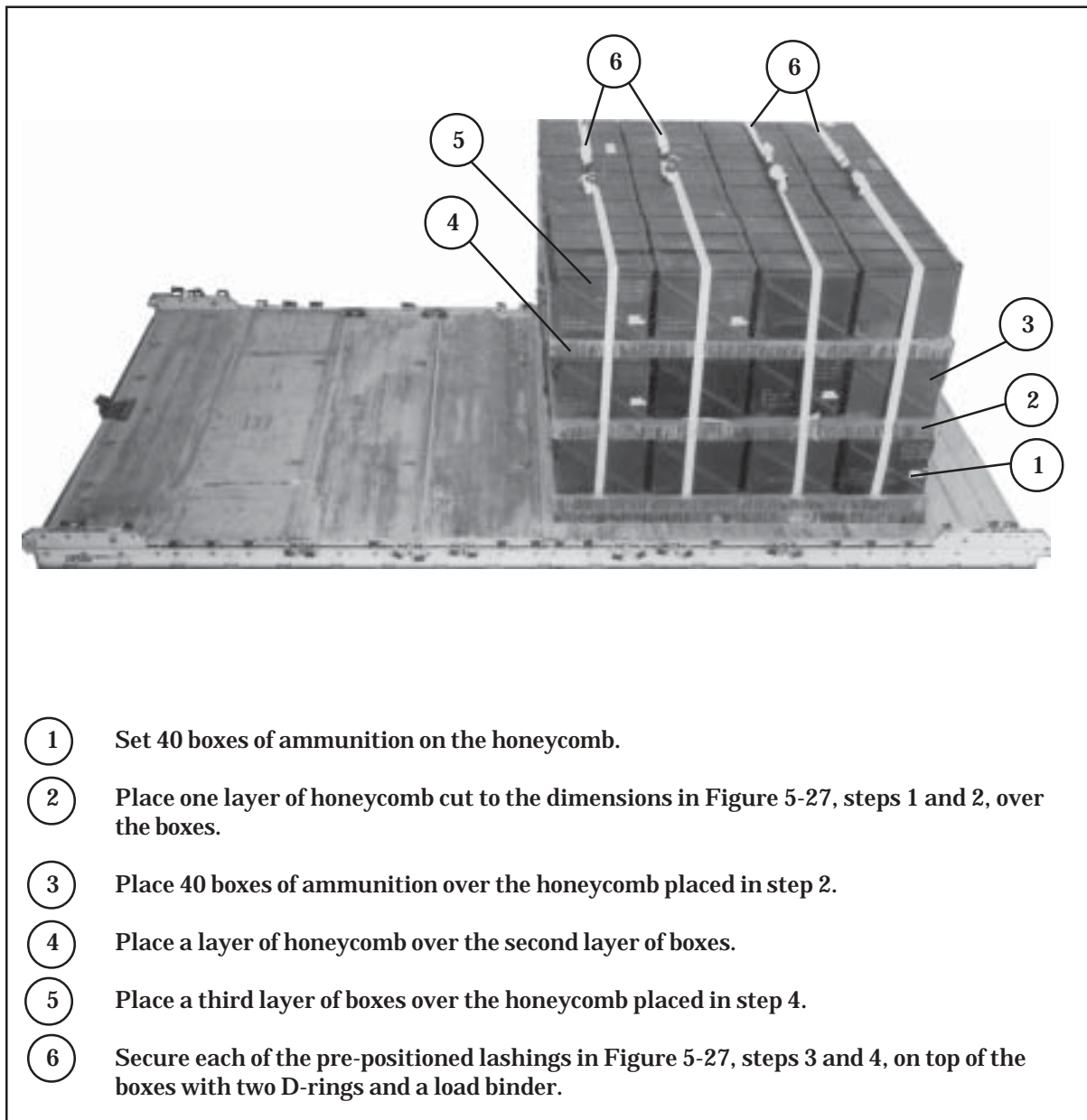


Figure 5-28. First Ammunition Stack Placed and Secured

CONSTRUCTING AND PLACING ENDBOARDS

5-37. Construct four endboards as shown and place them on the load as shown in Figure 5-29.

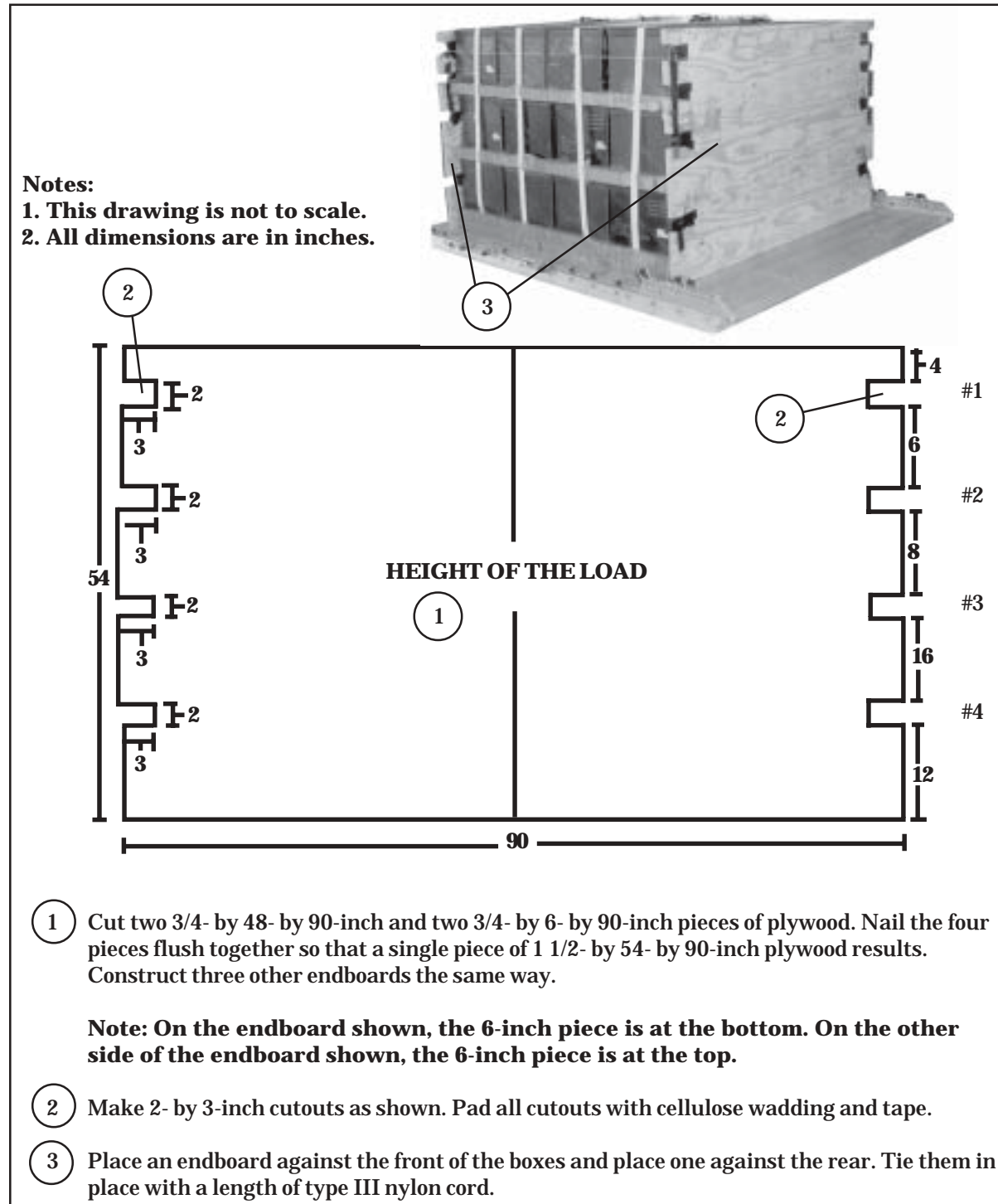


Figure 5-29. Endboards for 20-mm Ammunition Constructed and Placed

LASHING FIRST AMMUNITION STACK AND FIRST AND SECOND ENDBOARDS

5-38. Cover the left and right upper edges of the stack of boxes with felt as shown in Figure 5-30. Lash the first and second endboards and the first ammunition stack to the platform as shown in Figure 5-31.

Note: This load requires lashings over 30 feet in length. Lashings must be positioned through clevises before sections are joined together.

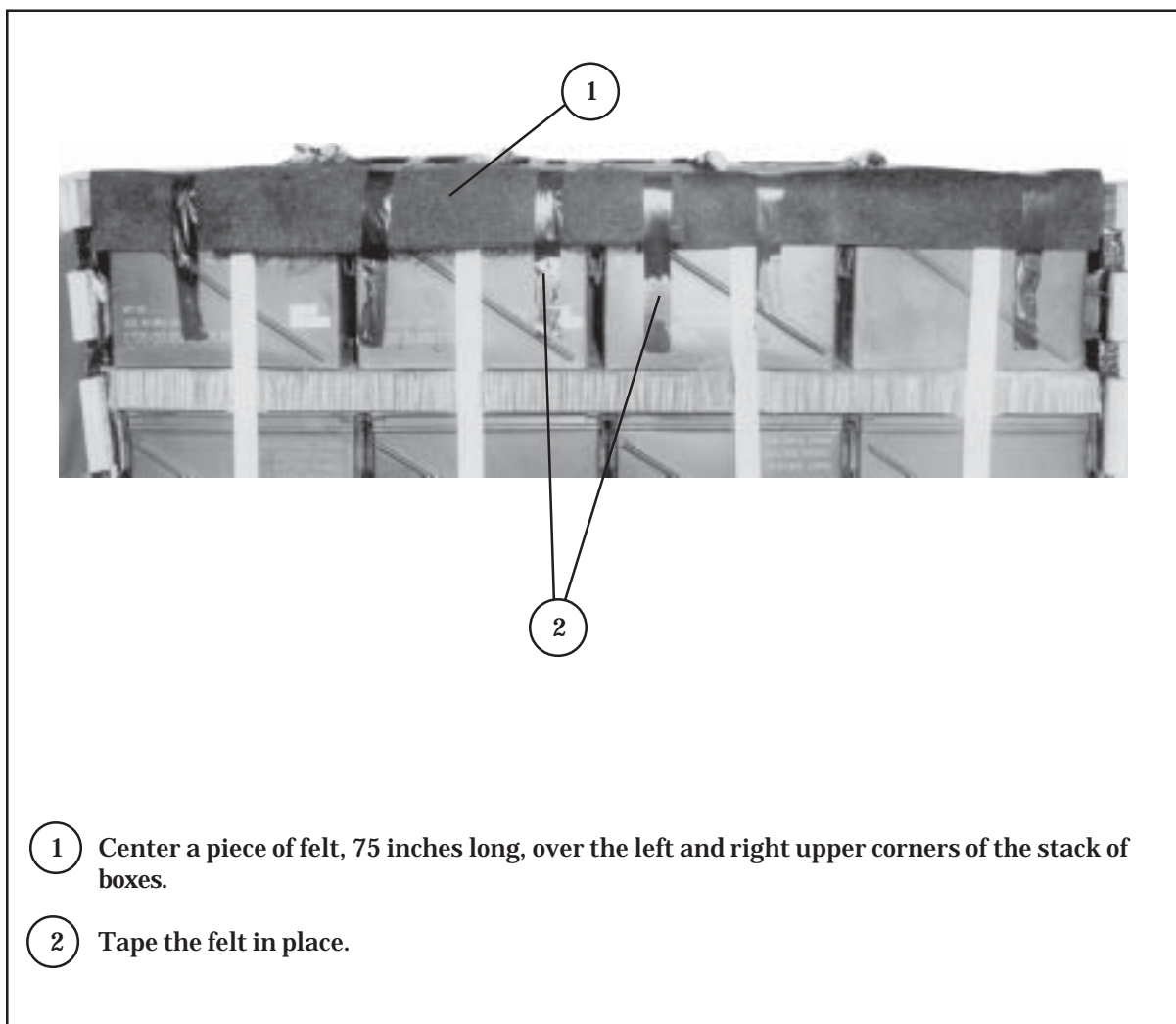
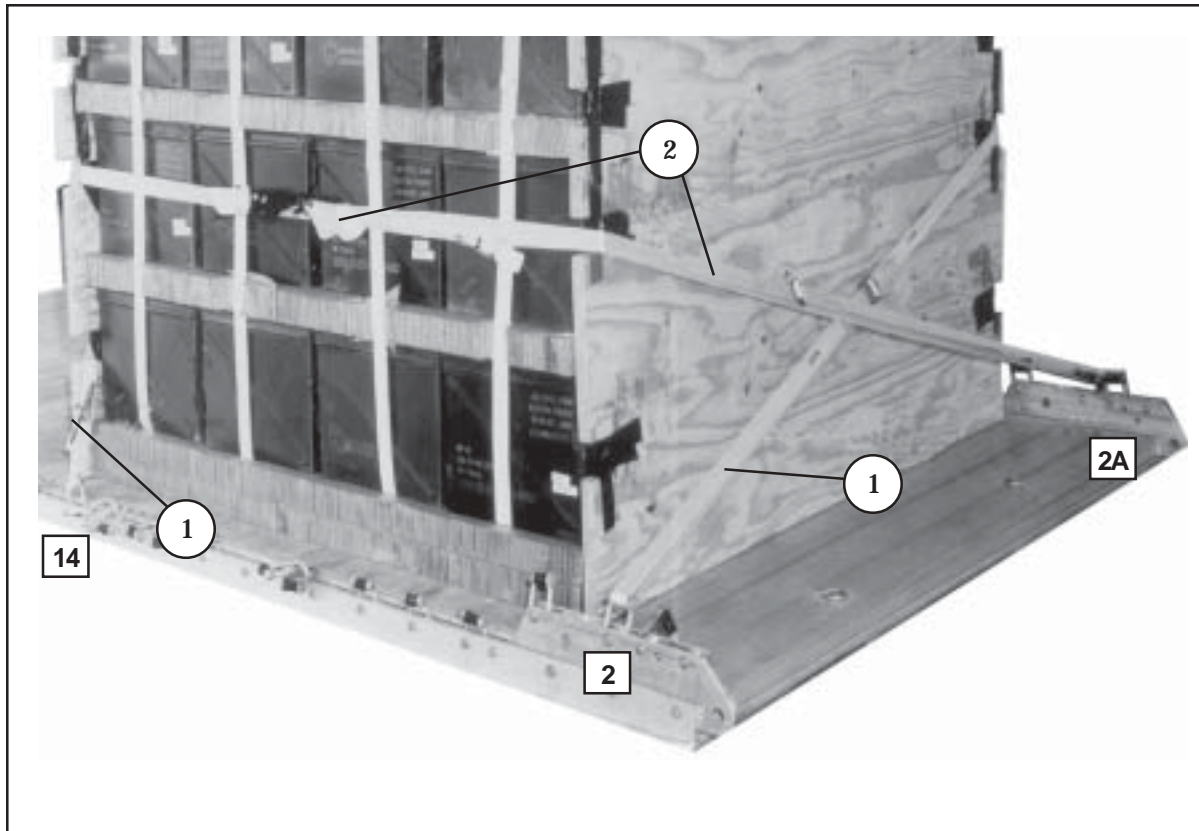
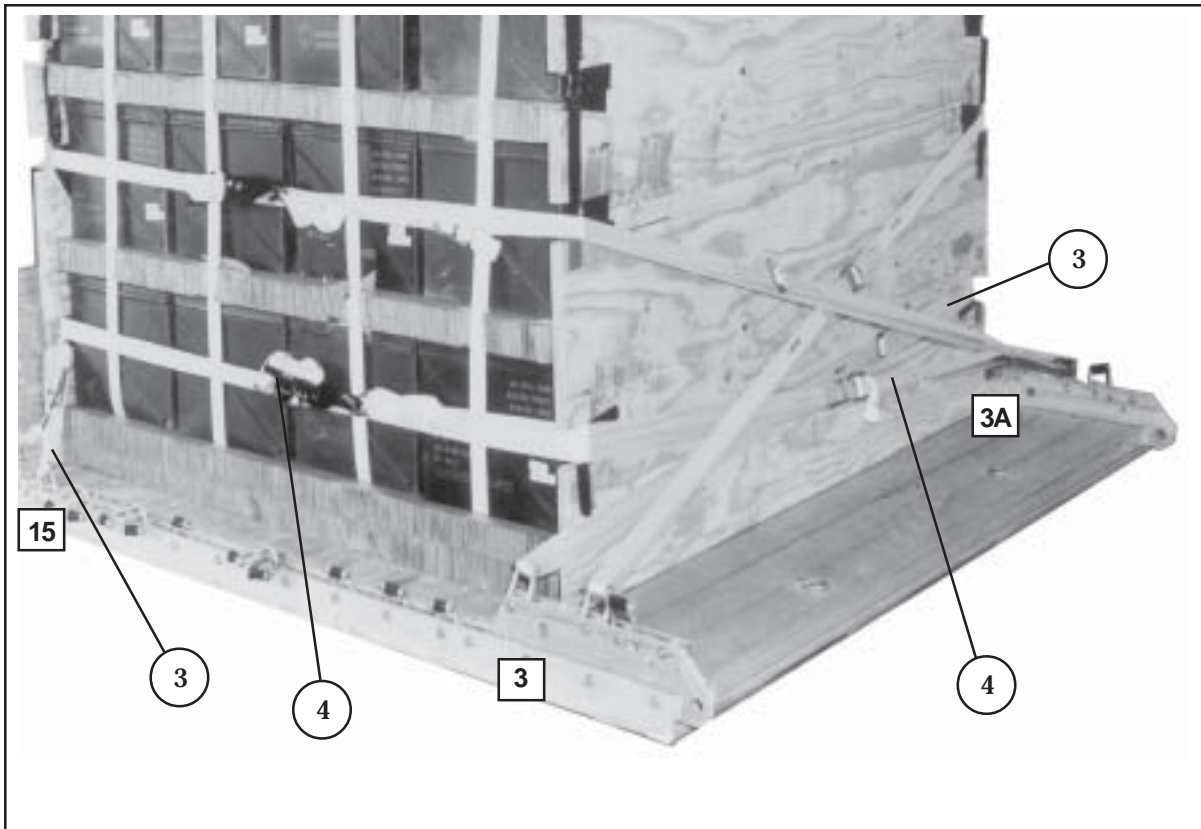


Figure 5-30. Boxes Padded with Felt



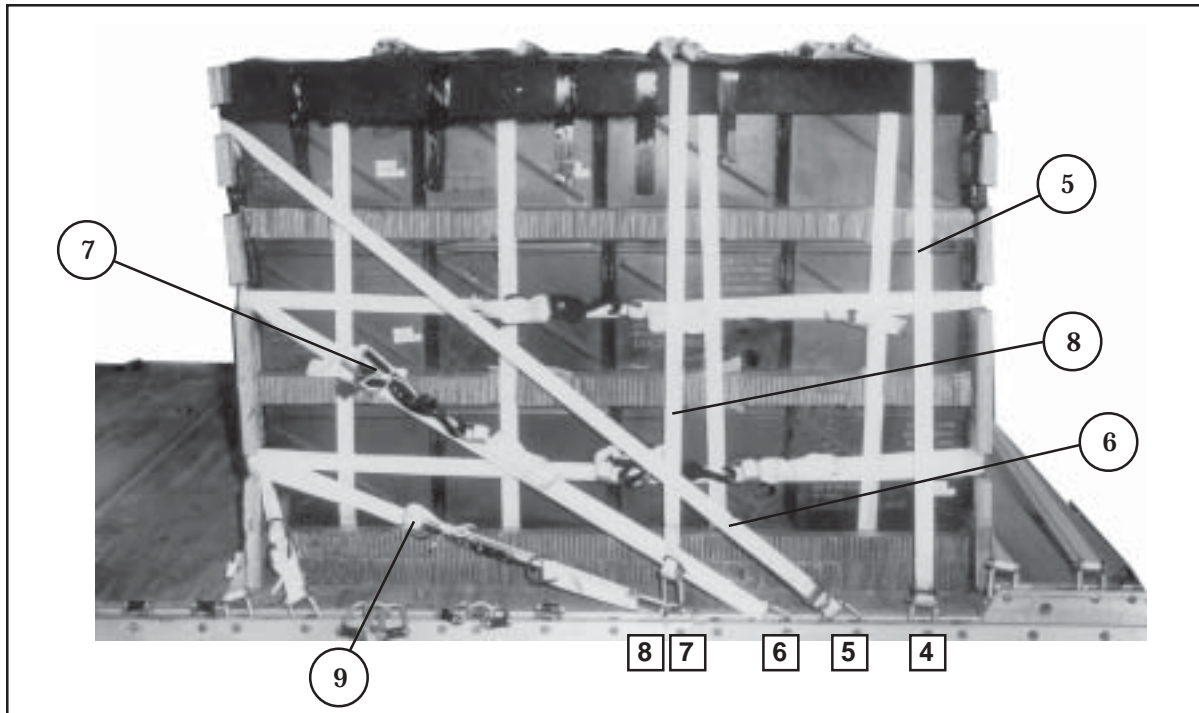
Lashing Number	Tiedown Clevis Number	Instructions
1	2 and 14	Pass a 60-foot lashing through clevis 2, through the third cutout in the left side of the first endboard, and around the left side of the ammunition stack. Pass the lashing through the third cutout in the left side of the second endboard and through clevis 14. Secure the lashing on the left side with two D-rings and a load binder.
2	2A and 14A	Pass a 60-foot lashing through clevis 2A, through the third cutout from the top in the right side of the first endboard, and around the right side of the ammunition stack. Pass the lashing through the third cutout in the right side of the second endboard and through clevis 14A. Secure the lashing on the right side with two D-rings and a load binder.

Figure 5-31. First Ammunition Stack and Endboards Lashed to Platform



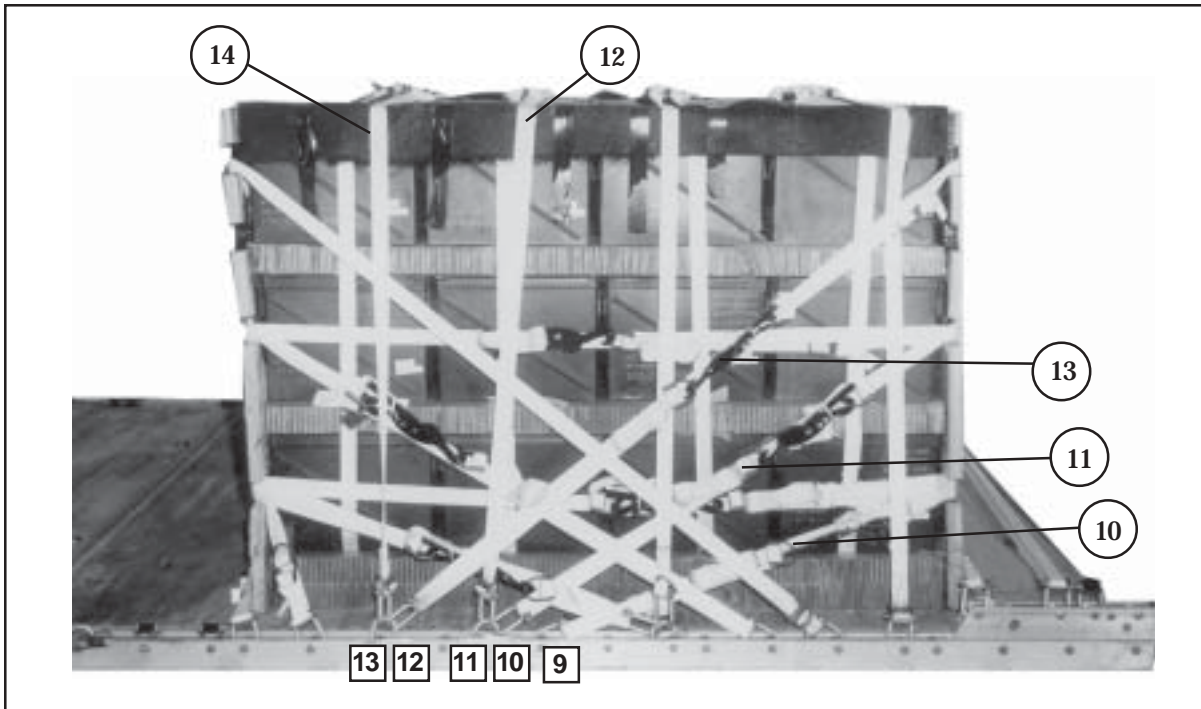
Lashing Number	Tiedown Clevis Number	Instructions
3	3 and 15	Pass a 60-foot lashing through clevis 3, through the bottom cutout in the left side of the first endboard, and around the left side of the ammunition stack. Pass the lashing through the bottom cutout in the left side of the second endboard, and through clevis 15. Secure the lashing on the left side with two D-rings and a load binder.
4	3A and 15A	Pass a 60-foot lashing through clevis 3A, through the bottom cutout in the right side of the first endboard, and around the right side of the ammunition stack. Pass the lashing through the bottom cutout in the right side of the second endboard, and through clevis 15A. Secure the lashing on the right side with two D-rings and a load binder.

Figure 5-31. First Ammunition Stack and Endboards Lashed to Platform (Continued)



Lashing Number	Tiedown Clevis Number	Instructions
5	4 and 4A	Pass a 15-foot lashing through each clevis and through its own D-ring. Secure the lashings on top of the boxes with two D-rings and a load binder.
6	5 and 5A	Pass a 45-foot lashing through both clevises and through the top cutouts in the second endboard. Secure the lashing on the side of the load with two D-rings and a load binder.
7	6 and 6A	Pass a 45-foot lashing through both clevises and through the third cutouts in the second endboard. Secure the lashing on the side of the load with two D-rings and a load binder.
8	7 and 7A	Pass a 15-foot lashing through each clevis and through its own D-ring. Secure the lashings on top of the boxes with two D-rings and a load binder.
9	8 and 8A	Pass a 30-foot lashing through both clevises and through the bottom cutouts in the second endboard. Secure the lashing on the side of the load with two D-rings and a load binder.

Figure 5-31. First Ammunition Stack and Endboards Lashed to Platform (Continued)

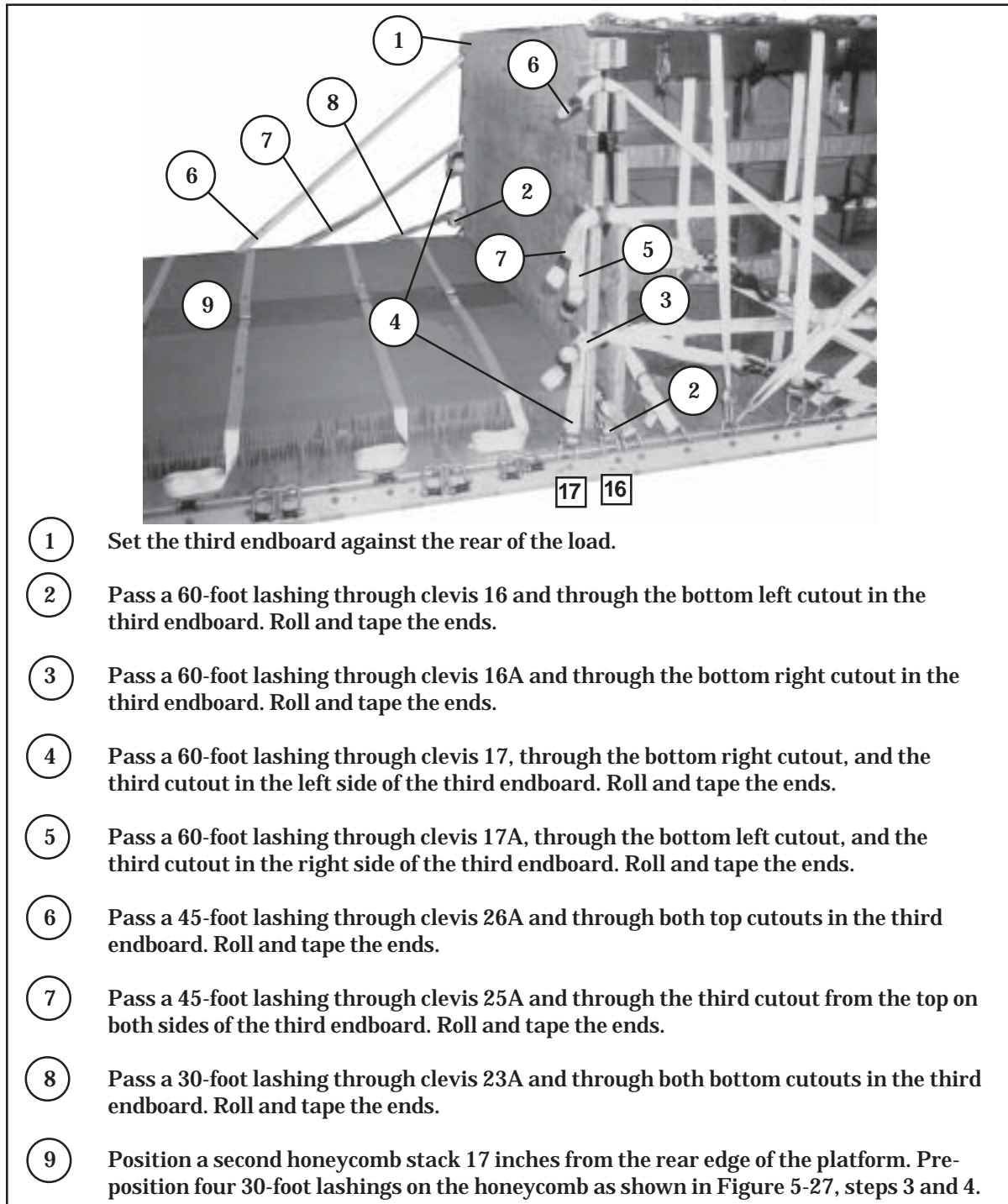


Lashing Number	Tiedown Clevis Number	Instructions
10	9 and 9A	Pass a 30-foot lashing through both clevises and through the bottom cutouts in the first endboard. Secure the lashing on the side of the load with two D-rings and a load binder.
11	10 and 10A	Pass a 45-foot lashing through both clevises and through the third cutout in the first endboard. Secure the lashing on the side of the load with two D-rings and a load binder.
12	11 and 11A	Pass a 15-foot lashing through each clevis and through its own D-ring. Secure the lashing on top of the boxes with two D-rings and a load binder.
13	12 and 12A	Pass a 45-foot lashing through both clevises and through the top cutout in the first endboard. Secure the lashing on the side of the load with two D-rings and a load binder.
14	13 and 13A	Pass a 15-foot lashing through each clevis and through its own D-ring. Secure the lashings on top of the boxes with two D-rings and a load binder.

Figure 5-31. First Ammunition Stack and Endboards Lashed to Platform (Continued)

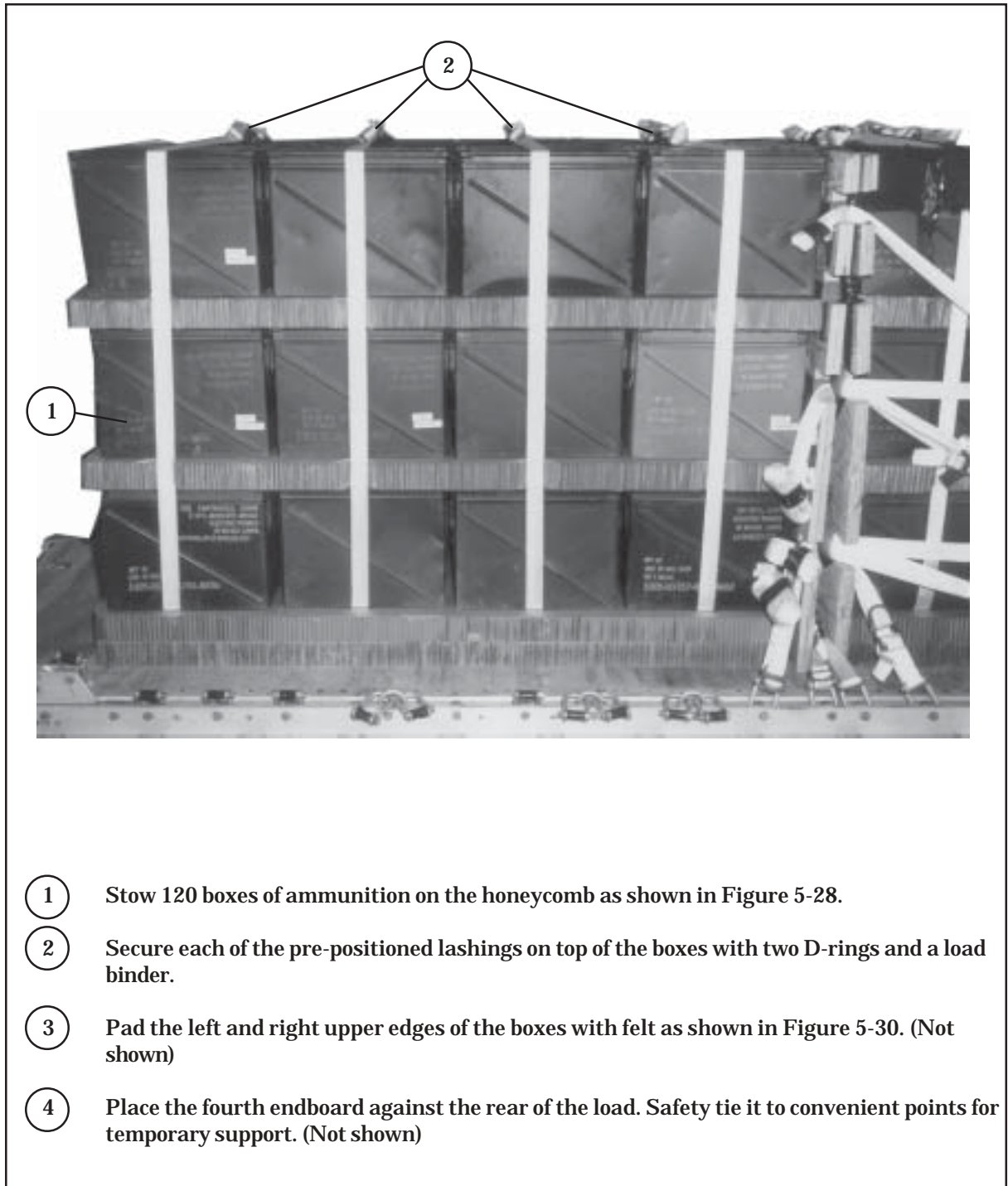
POSITIONING ENDBOARDS, PLACING SECOND AMMUNITION STACK, AND PRE-POSITIONING LASHINGS

5-39. Position the third endboard and lashings as shown in Figure 5-32. Position the second stack of ammunition as shown in Figure 5-33.



- 1 Set the third endboard against the rear of the load.
- 2 Pass a 60-foot lashing through clevis 16 and through the bottom left cutout in the third endboard. Roll and tape the ends.
- 3 Pass a 60-foot lashing through clevis 16A and through the bottom right cutout in the third endboard. Roll and tape the ends.
- 4 Pass a 60-foot lashing through clevis 17, through the bottom right cutout, and the third cutout in the left side of the third endboard. Roll and tape the ends.
- 5 Pass a 60-foot lashing through clevis 17A, through the bottom left cutout, and the third cutout in the right side of the third endboard. Roll and tape the ends.
- 6 Pass a 45-foot lashing through clevis 26A and through both top cutouts in the third endboard. Roll and tape the ends.
- 7 Pass a 45-foot lashing through clevis 25A and through the third cutout from the top on both sides of the third endboard. Roll and tape the ends.
- 8 Pass a 30-foot lashing through clevis 23A and through both bottom cutouts in the third endboard. Roll and tape the ends.
- 9 Position a second honeycomb stack 17 inches from the rear edge of the platform. Pre-position four 30-foot lashings on the honeycomb as shown in Figure 5-27, steps 3 and 4.

Figure 5-32. Lashings Pre-positioned on Third Endboard



- ① Stow 120 boxes of ammunition on the honeycomb as shown in Figure 5-28.
- ② Secure each of the pre-positioned lashings on top of the boxes with two D-rings and a load binder.
- ③ Pad the left and right upper edges of the boxes with felt as shown in Figure 5-30. (Not shown)
- ④ Place the fourth endboard against the rear of the load. Safety tie it to convenient points for temporary support. (Not shown)

Figure 5-33. Second Stack of Ammunition Positioned

LASHING SECOND AMMUNITION STACK AND THIRD AND FOURTH ENDBOARDS

5-40. Lash the third and fourth endboards and the second ammunition stack to the platform as shown in Figure 5-34.

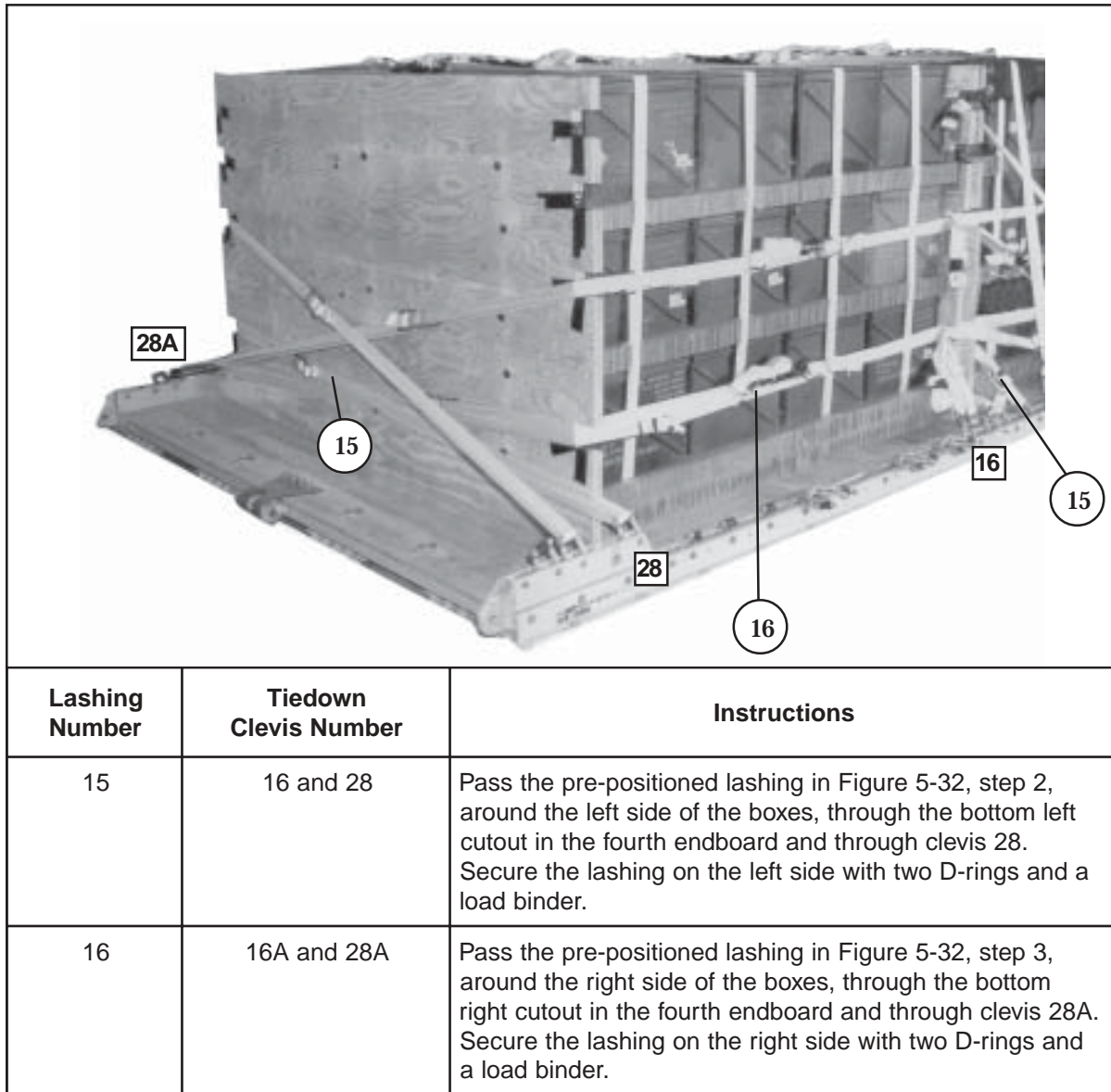
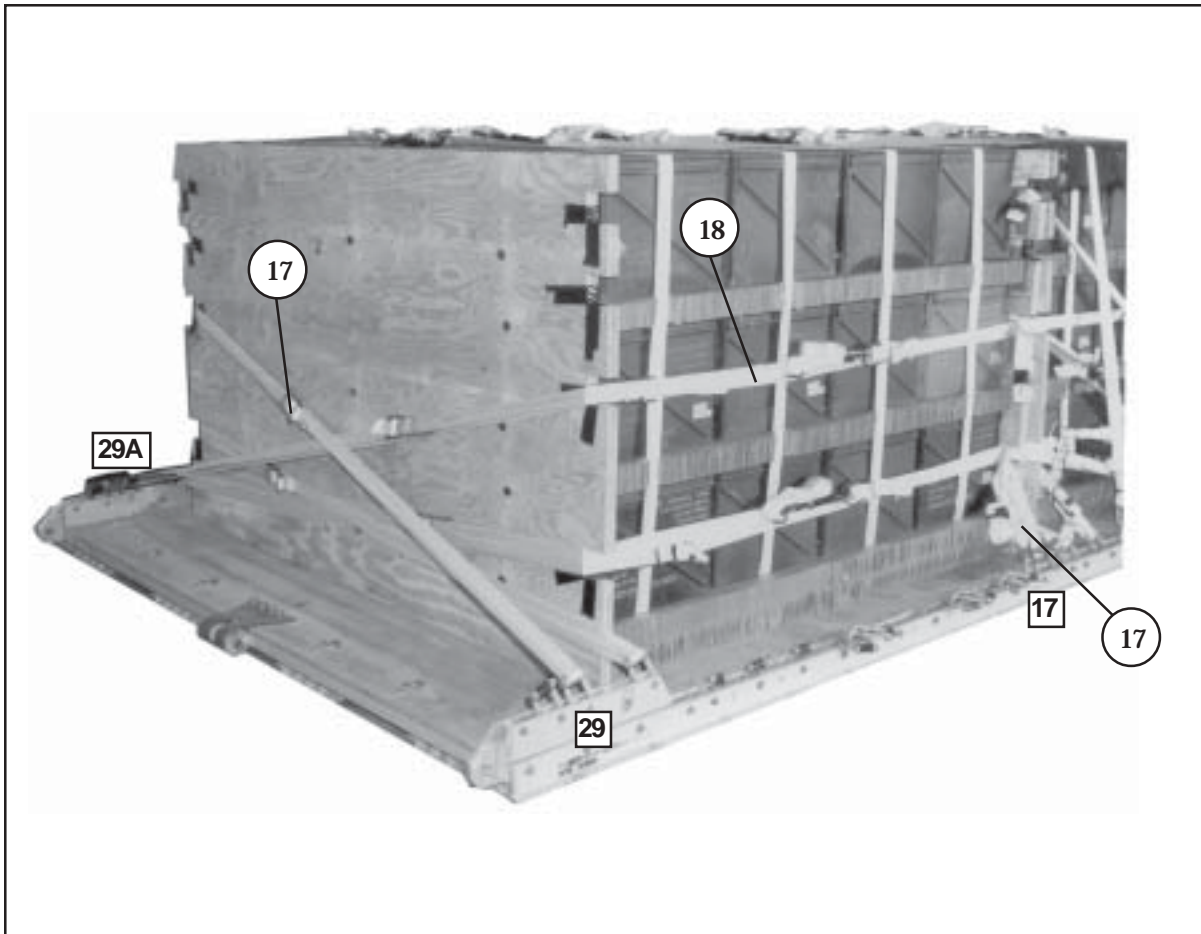


Figure 5-34. Second Ammunition Stack and Endboards Lashed to Platform



Lashing Number	Tiedown Clevis Number	Instructions
17	17 and 29	Pass the pre-positioned lashing in Figure 5-32, step 4, around the left side of the boxes, through the third cutout in the left side of the fourth endboard and through clevis 29. Secure the lashing on the left side with two D-rings and a load binder.
18	17A and 29A	Pass the pre-positioned lashing in Figure 5-32, step 5, around the right side of the boxes, through the third cutout in the right side of the fourth endboard and through clevis 29A. Secure the lashing on the right side with two D-rings and a load binder.

Figure 5-34. Second Ammunition Stack and Endboards Lashed to Platform (Continued)

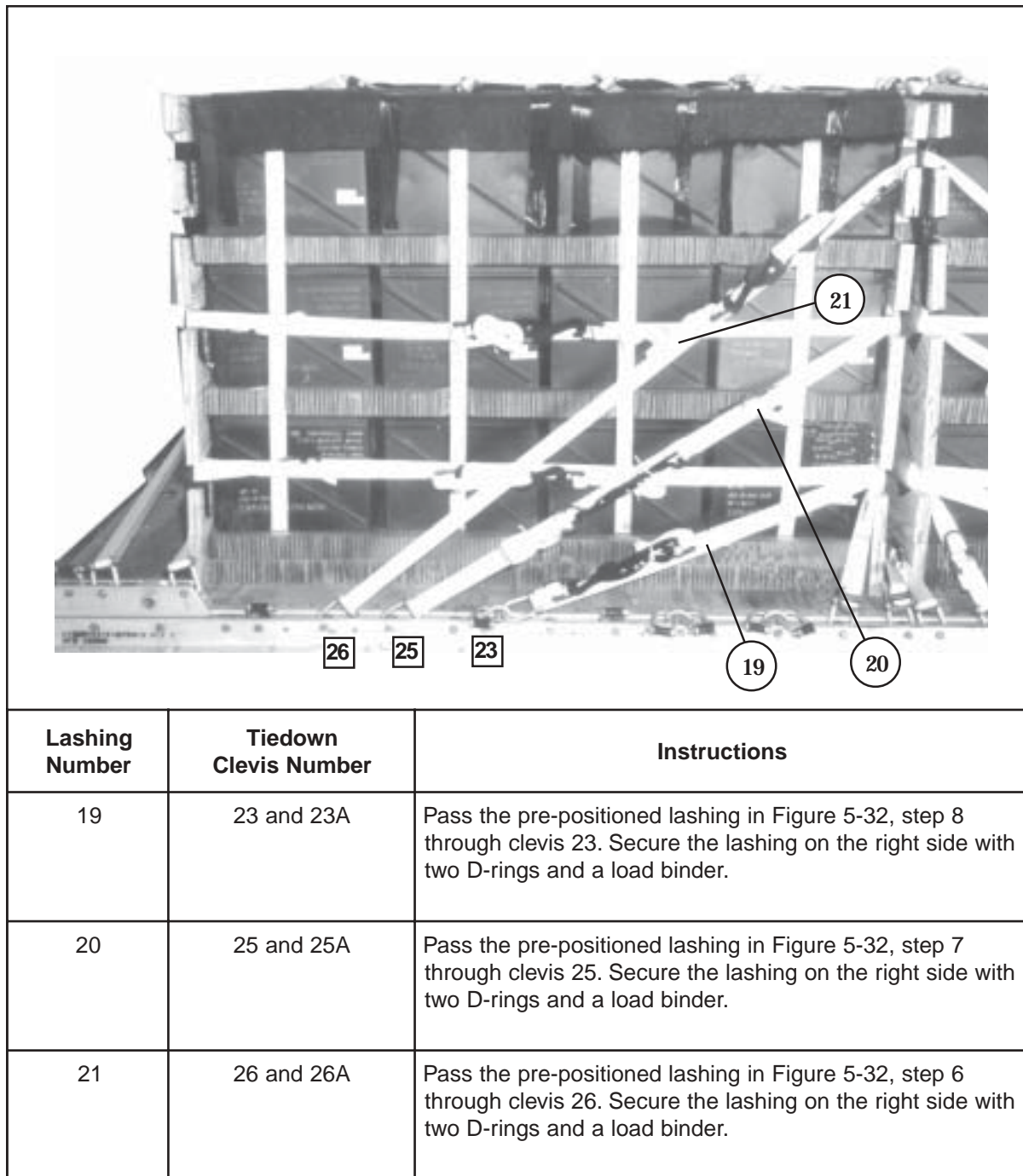
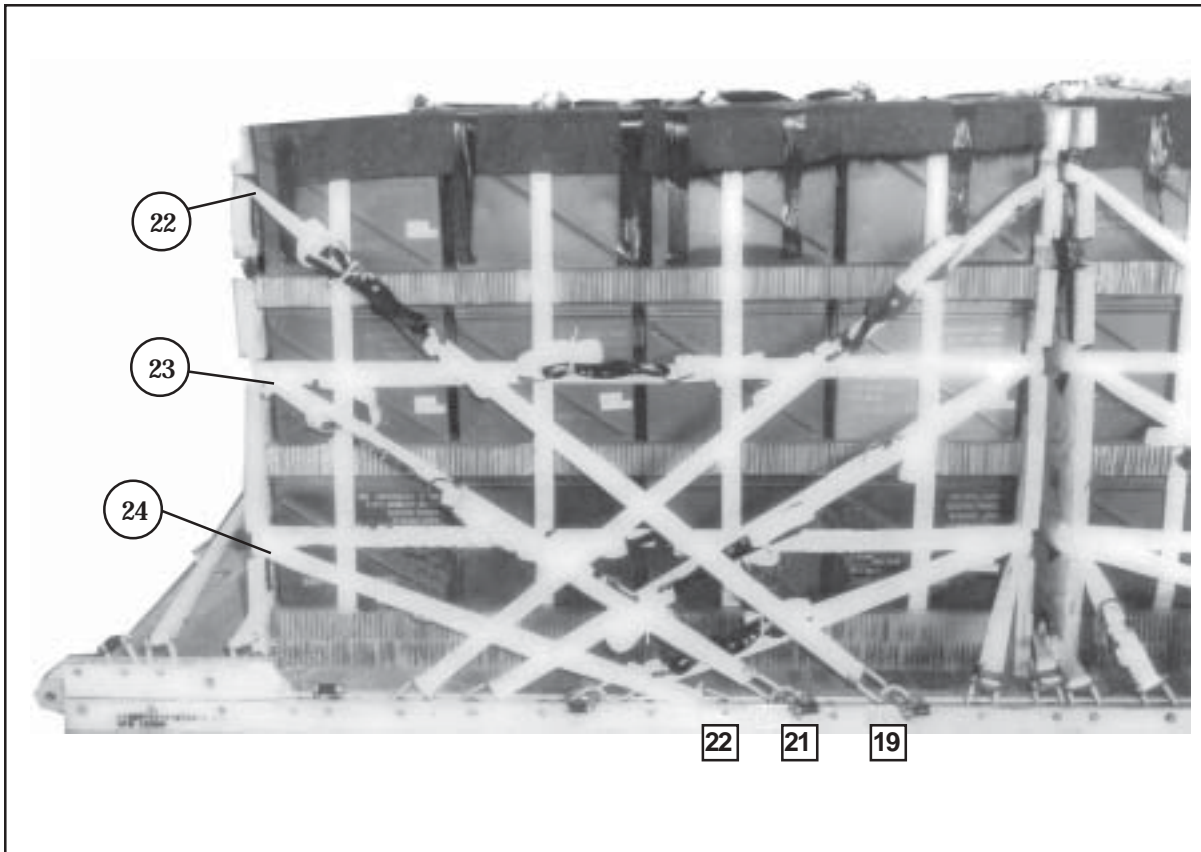
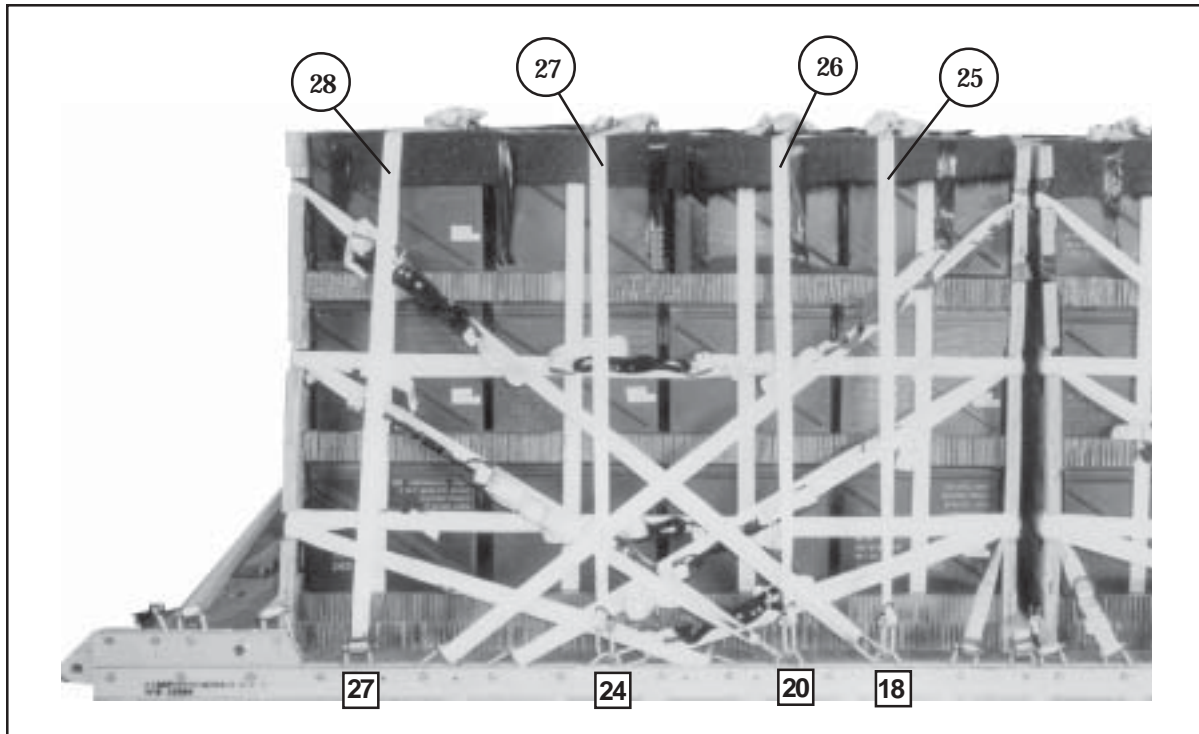


Figure 5-34. Second Ammunition Stack and Endboards Lashed to Platform (Continued)



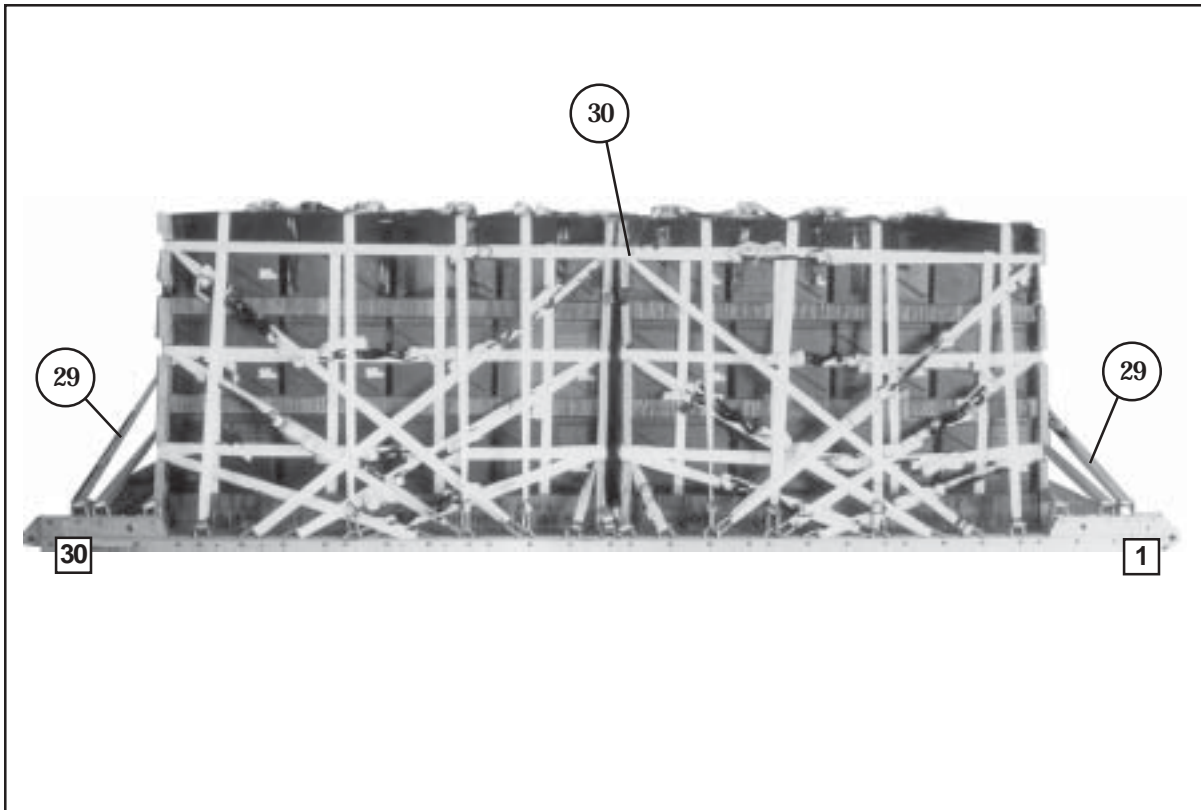
Lashing Number	Tiedown Clevis Number	Instructions
22	19 and 19A	Pass a 45-foot lashing through both clevises and through the top cutouts in the fourth endboard. Secure the lashing on the side with two D-rings and a load binder.
23	21 and 21A	Pass a 45-foot lashing through both clevises and through the third cutouts in the fourth endboard. Secure the lashing on the side with two D-rings and a load binder.
24	22 and 22A	Pass a 30-foot lashing through both clevises and through the bottom cutouts in the fourth endboard. Secure the lashing on the side with two D-rings and a load binder.

Figure 5-34. Second Ammunition Stack and Endboards Lashed to Platform (Continued)



Lashing Number	Tiedown Clevis Number	Instructions
25	18 and 18A	Pass a 15-foot lashing through each clevis and through its own D-ring. Secure the lashing on top with two D-rings and a load binder.
26	20 and 20A	Pass a 15-foot lashing through each clevis and through its own D-ring. Secure the lashing on top with two D-rings and a load binder.
27	24 and 24A	Pass a 15-foot lashing through each clevis and through its own D-ring. Secure the lashing on top with two D-rings and a load binder.
28	27 and 27A	Pass a 15-foot lashing through each clevis and through its own D-ring. Secure the lashing on top with two D-rings and a load binder.

Figure 5-34. Second Ammunition Stack and Endboards Lashed to Platform (Continued)



Lashing Number	Tiedown Clevis Number	Instructions
29	1 and 30	Pass a 75-foot lashing through clevis 1, through the top cutout in the left side of the first endboard, and around the left side of both ammunition stacks. Pass the lashing through the top cutout in the left side of the fourth endboard and through clevis 30. Secure the lashing on the left side with two D-rings and a load binder.
30	1A and 30A	Pass a 75-foot lashing through clevis 1A, through the top cutout in the right side of the first endboard, and around the right side of both ammunition stacks. Pass the lashing through the top cutout in the right side of the fourth endboard and through clevis 30A. Secure the lashing on the right side with two D-rings and a load binder.

Figure 5-34. Second Ammunition Stack and Endboards Lashed to Platform (Continued)

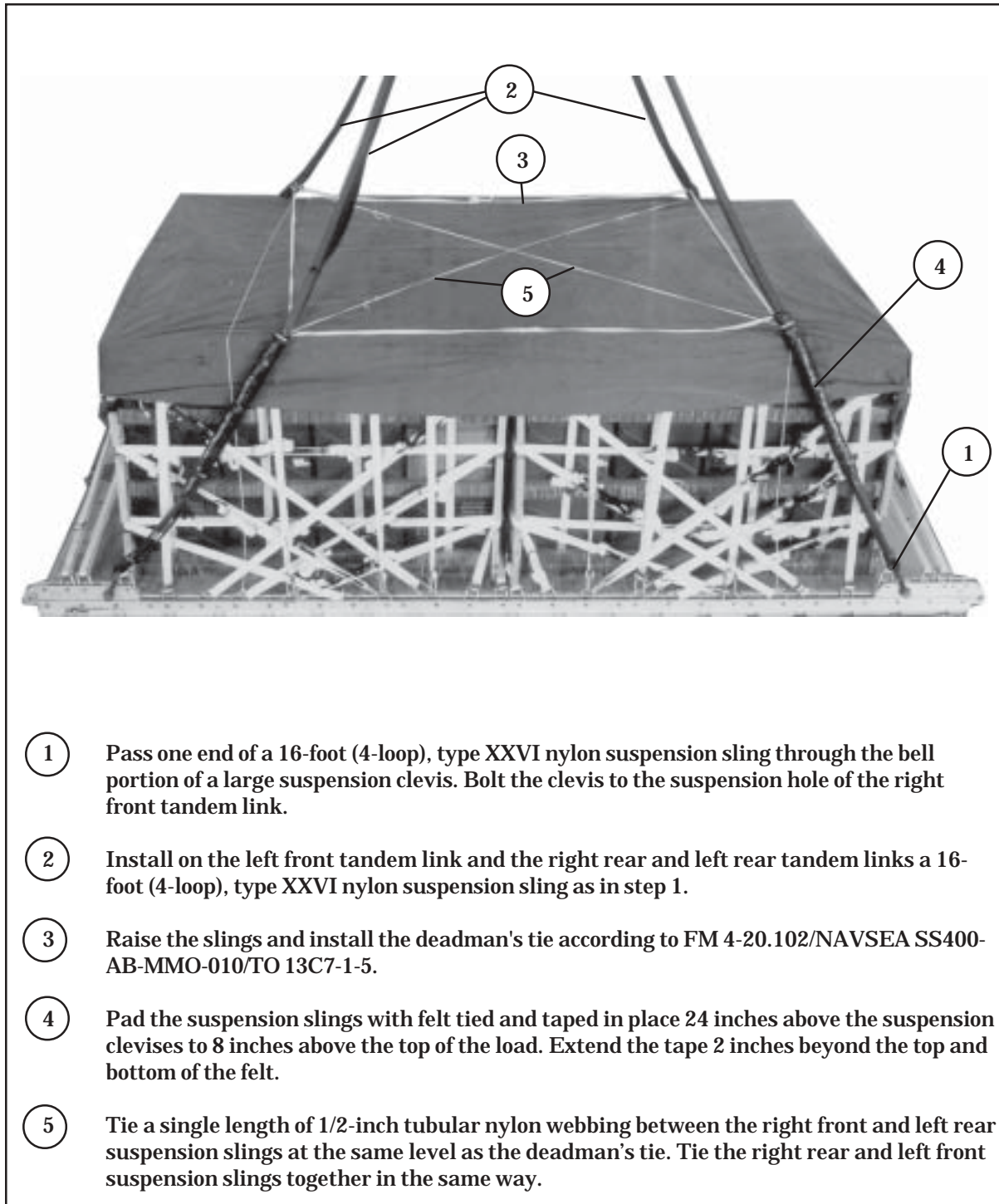


Figure 5-36. Suspension Slings and Deadman's Tie Installed

INSTALLING PARACHUTES

5-42. Compute the parachute requirements for the load being rigged. Prepare and install the cargo parachutes according to FM 4-20.102/ NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 5-37.

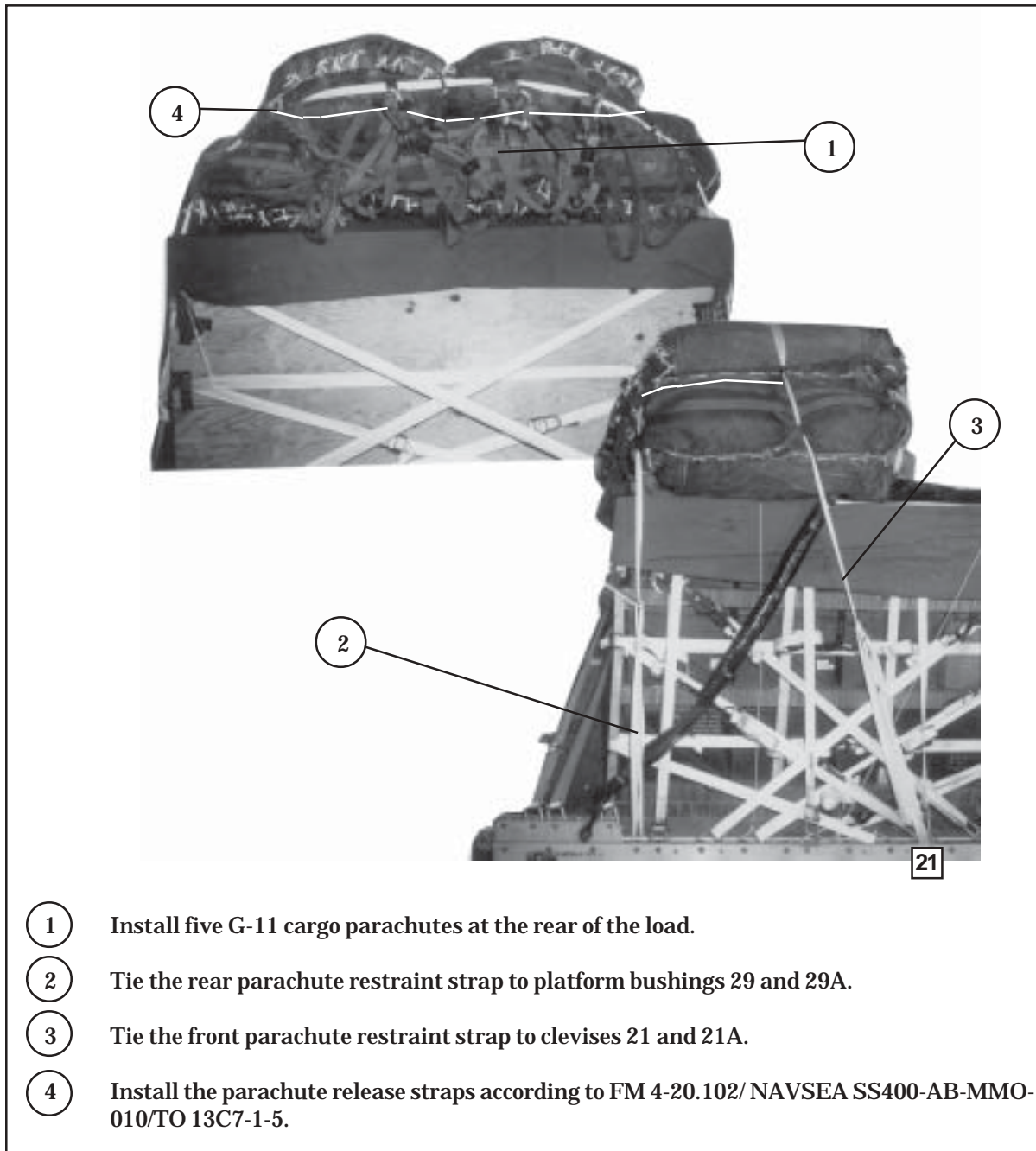


Figure 5-37. G-11 Cargo Parachutes Installed

INSTALLING THE RELEASE SYSTEM

5-43. Prepare, attach, and safety an M-2 cargo parachute release according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 5-38.

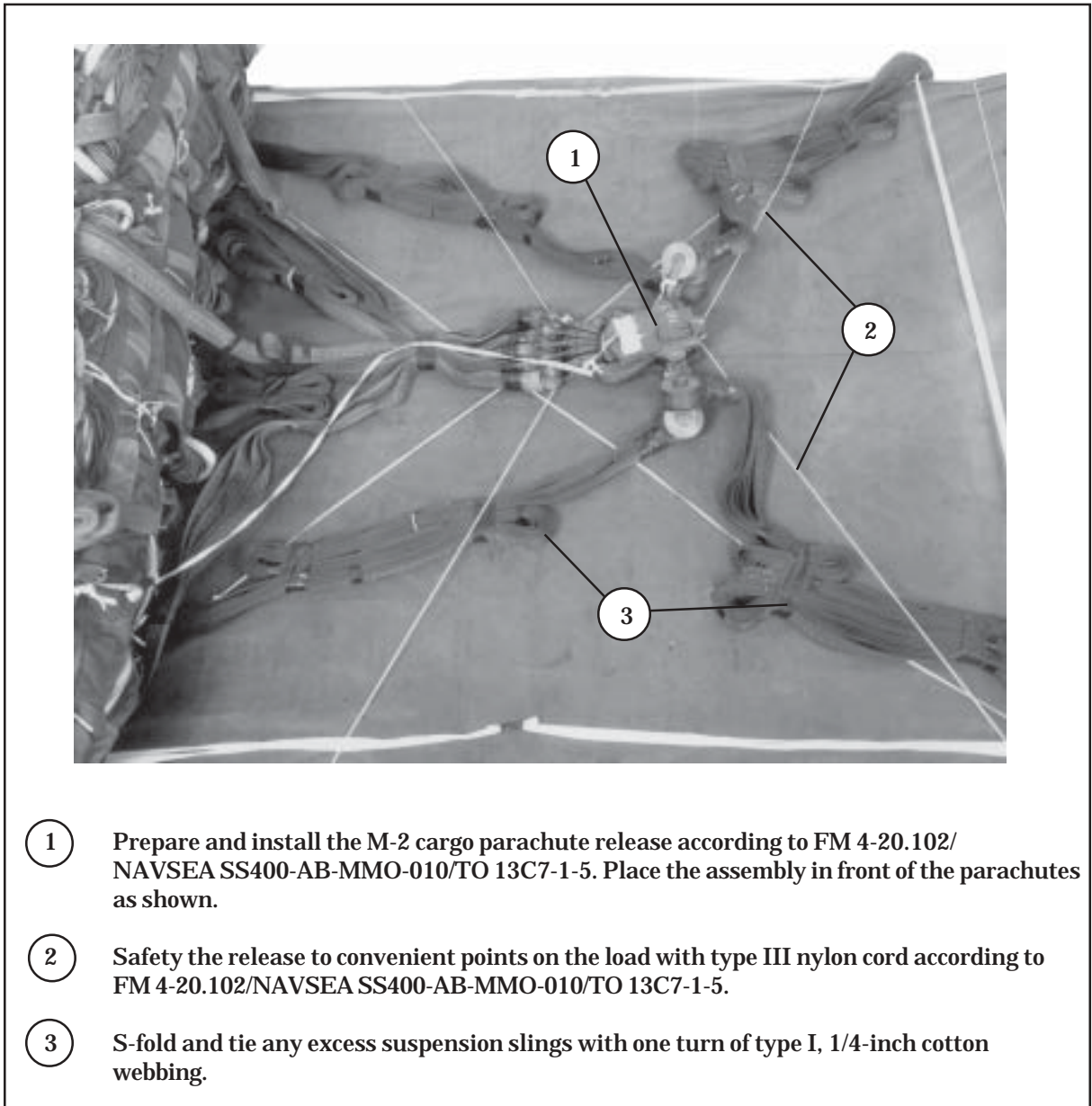


Figure 5-38. Release System Installed

INSTALLING THE EXTRACTION SYSTEM

5-44. Install the extraction system according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 5-39.

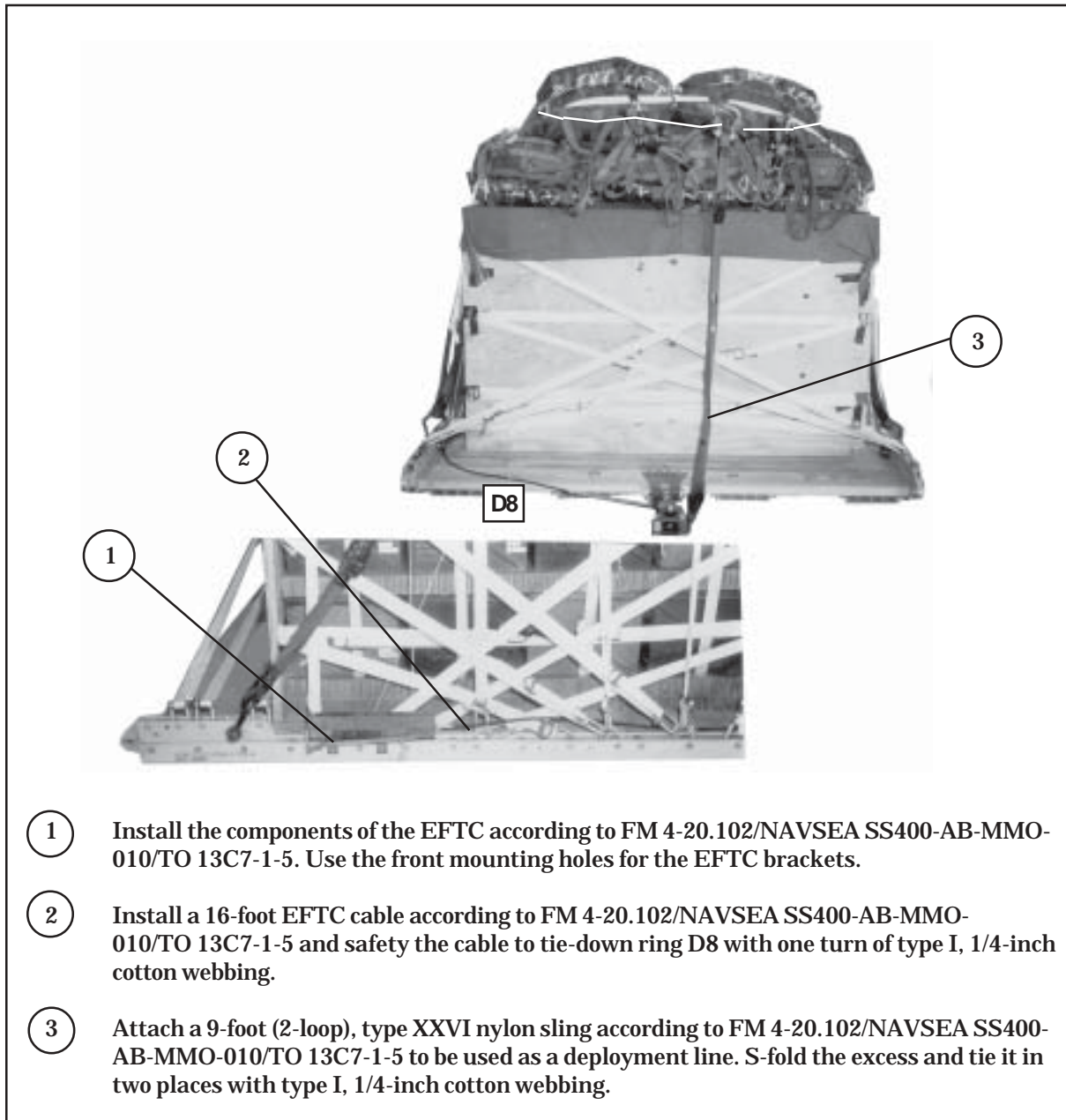


Figure 5-39. Extraction System Installed

PLACING EXTRACTION PARACHUTE

5-45. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Place the extraction parachute and line on the load for installation in the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

5-46. Select and install the provisions for the emergency aft restraints according to the emergency aft restraint requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

MARKING RIGGED LOAD

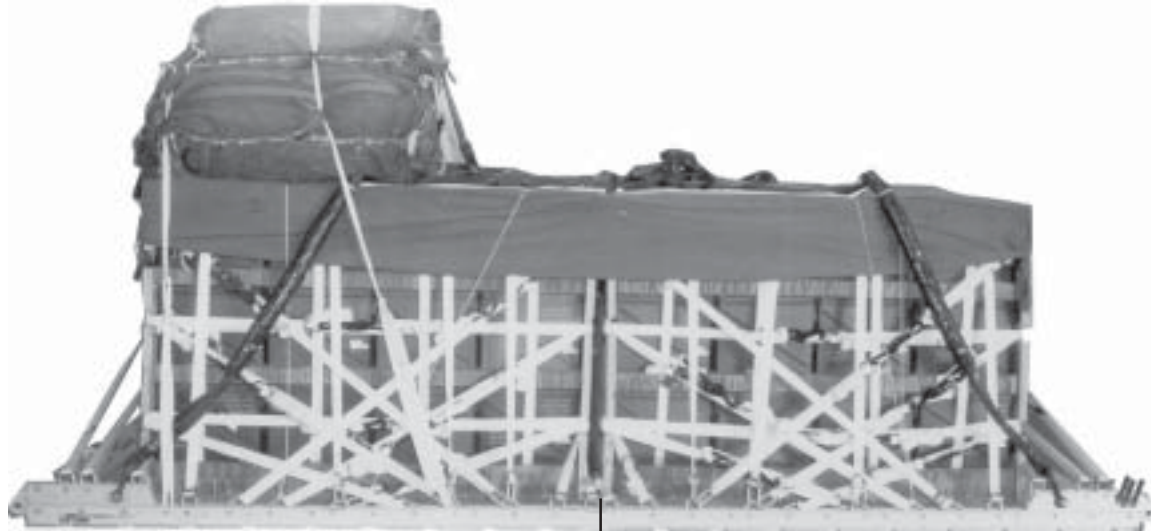
5-47. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and as shown in Figure 5-40. Complete Shipper's Declaration for Dangerous Goods. If the load varies from the one shown, the weight, height, CB, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

5-48. Use the equipment listed in Table 5-3 to rig this load.

CAUTION

Make the final rigger inspection required by AR 59-4 and FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



CB

RIGGED LOAD DATA

Minimum Weight.....	5,040 pounds
Maximum Weight.....	See paragraph 5-33
Height.....	92 inches
Width.....	108 inches
Length.....	192 inches
Overhang: Front.....	0 inches
Rear.....	0 inches
Center of Balance (CB) (from front edge of the platform).....	91 inches
Extraction System (adds 18 inches to length of platform) EFTC	

Figure 5-40. 20-mm Ammunition Rigged on a 16-Foot Platform for Low-Velocity Airdrop

Table 5-3. Equipment Required for Rigging 20-mm Ammunition on a 16-Foot, Type V Platform for Low-Velocity Airdrop

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive paste, 1-gal.	As required
4030-00-090-5354	Clevis, suspension, 1-inch (large)	7
8305-00-880-8155	Cloth, coated (nylon, type II, 17.0 oz, green, 60-in)	As required
4020-00-240-2146	Cord, nylon, type III, 550-lb.	As required
1670-00-434-5785	Coupling, airdrop extraction force transfer, w/16-ft. cable	1
1670-00-360-0328	Cover, clevis	5
8135-00-664-6958	Cushioning material (Cellulose wadding)	As required
8305-00-958-3685	Felt, 1/2-inch thick	As required
1670-01-183-2678	Leaf, extraction line (line bag) (add 2 for C-17)	2
	Line extraction:	
1670-01-062-6313	60-foot (3-loop), type XXVI (for C-130)	1
1670-01-107-7651	140-foot (3-loop), type XXVI,	2
1670-01-107-7651	140-foot (3-loop), type XXVI (for C-17)	1
1670-01-064-4452	60-foot (1-loop), type XXVI (for C-17), (drogue line)	1
	Link assembly, two-point:	
5306-00-435-8994	Bolt, 1-inch diameter, 4-inches long (add 4 for C-5)	2
5310-00-232-5165	Nut, 1-inch (add 4 for C-5)	2
1670-00-003-1953	Plate, side, 3 3/4-inch	2
5365-00-007-3414	Spacer, large (add 4 for C-5)	2
5315-00-010-4657	Nail, (steel common 6d)	As required
1670-00-753-3928	Pad, energy-dissipating (honeycomb) 3- by 36- by 96-inches	20 sheets
1670-01-016-7841	Parachute, cargo, G-11	5
	Parachute, cargo, extraction:	
1670-01-063-3715	15-ft. (C-17 only)	1
1670-00-040-8135	28-ft.	1
	Platform, airdrop, type V, 16-ft:	
5530-00-618-8073	Plywood, 3/4-inch	As required
1670-01-162-2372	Clevis assembly (type V)	(72)
1670-01-353-8424	Extraction bracket assembly	(1)
1670-01-162-2381	Link, tandem, suspension link assembly	(4)
1670-01-097-8817	Release, cargo parachute, M-2	1
	Sling, cargo, airdrop:	
1670-01-062-6304	9-ft. (2-loop), type XXVI	1
1670-01-062-6307	16-ft. (2-loop), type XXVI	4
1670-01-062-6311	120-ft.(2-loop), type XXVI	5

Table 5-3. Equipment Required for Rigging 20-mm Ammunition on a 16-Foot, Type V Platform for Low-Velocity Airdrop (Continued)

National Stock Number	Item	Quantity
5340-00-040-8219	Strap, parachute, release, multi-knife	2
7501-00-266-5016	Tape, adhesive, 2-inch	As required
1670-00-937-0271	Tiedown assembly, 15-ft.	106
1670-01-483-8259	Towplate release mechanism (H-block) (C-17 only)	1
	Webbing:	
8305-00-268-2411	Cotton, 1/4-inch, type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-inch	As required
8305-00-261-8585	Type VIII nylon	As required

Section IV

RIGGING MASS SUPPLY BOX

DESCRIPTION OF LOAD

5-49. Two mass supply boxes are rigged for low-velocity airdrop on a 16-foot, type V airdrop platform. Loads may include any bulk items of general supply that can be packed into the box without shifting the load. Each load must weigh at least 5,040 pounds, including parachutes. Refer to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 for the weight limitations for the number of parachutes to be used.

PREPARING PLATFORM

5-50. Prepare a 16-foot, type V platform as shown in Figure 5-41.

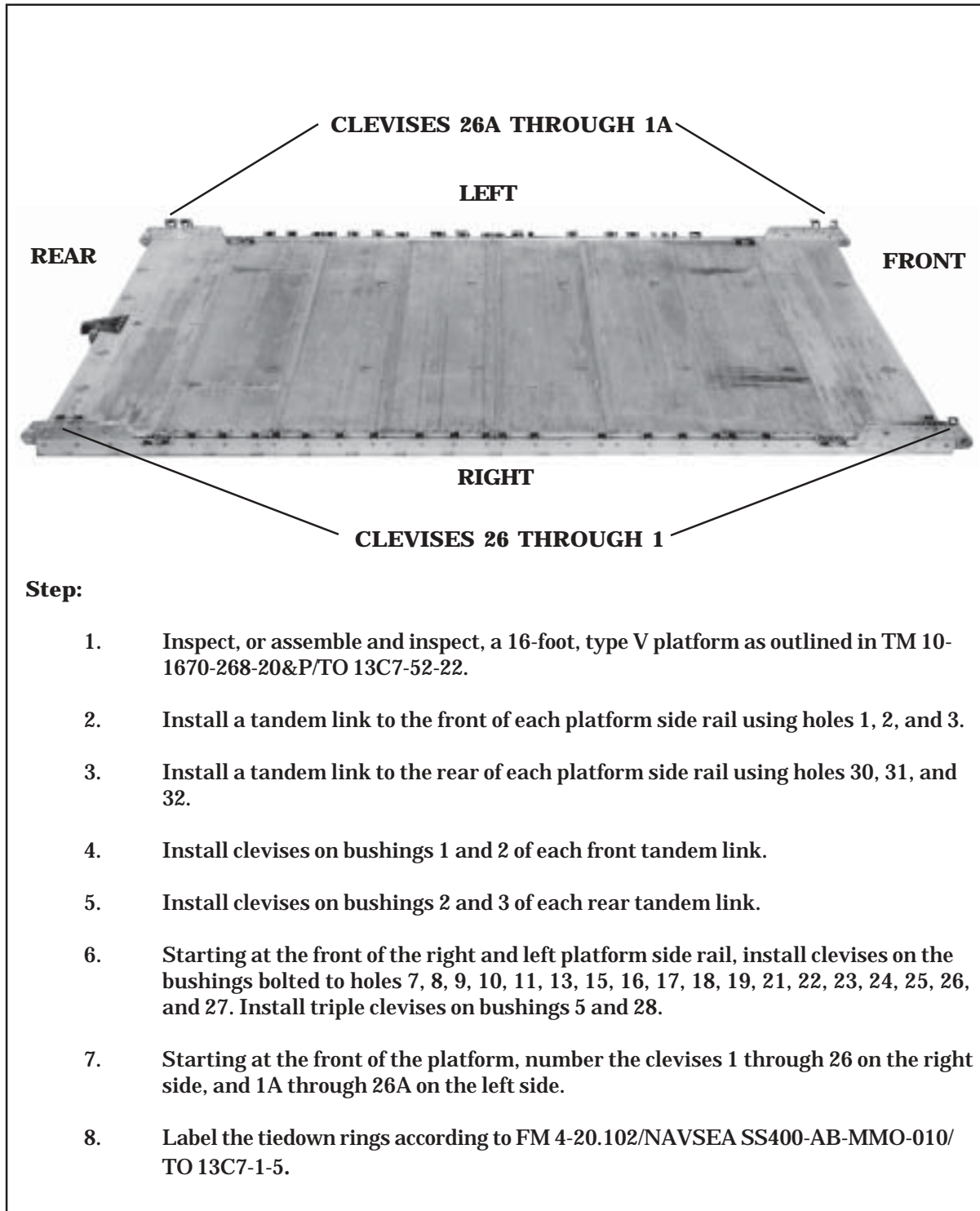


Figure 5-41. Platform Prepared

PLACING LASHINGS ON PLATFORM

5-51. Use twelve 15-foot tiedown lashings, and position the lashings on the platform as shown in Figure 5-42.

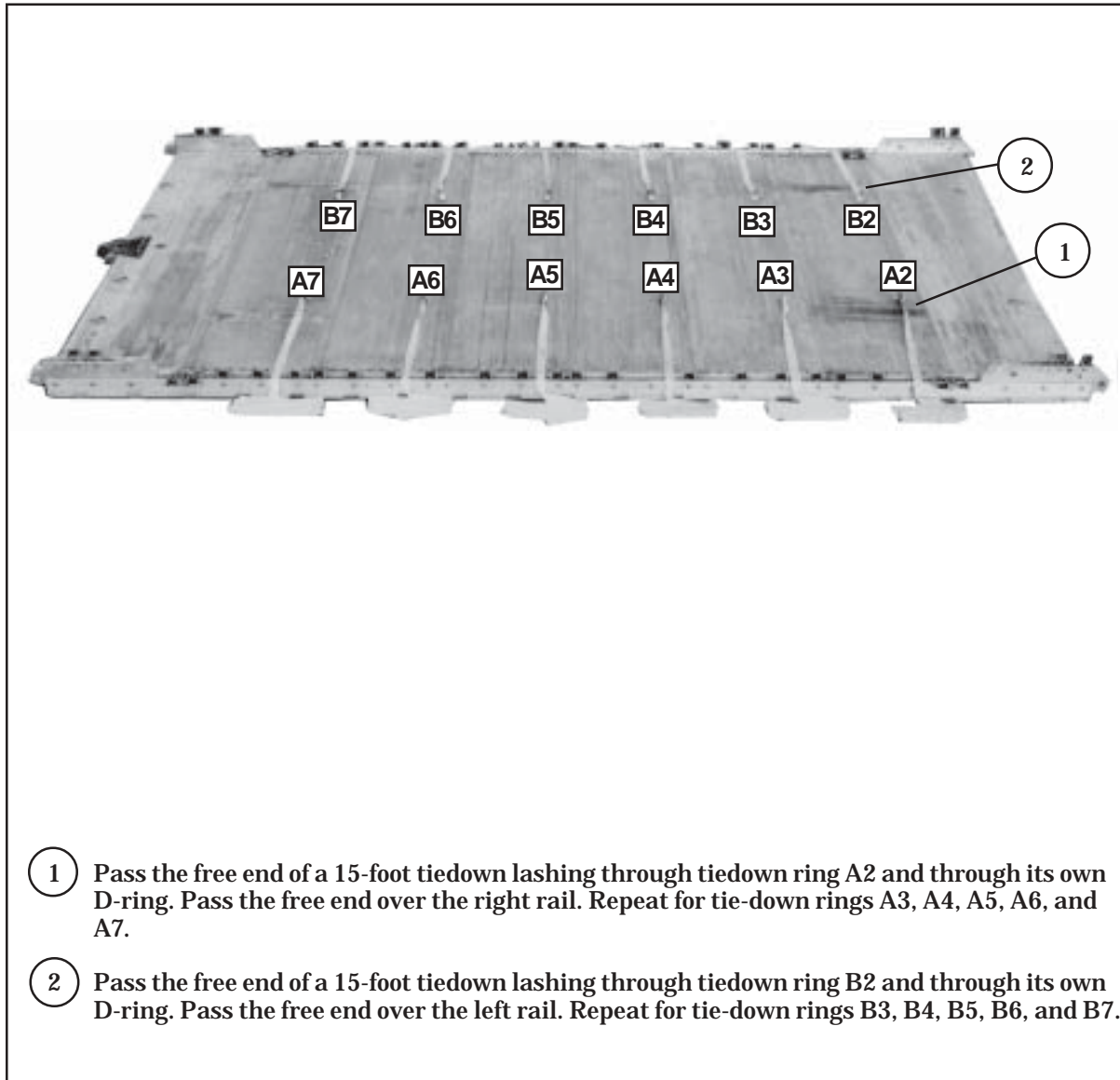


Figure 5-42. Lashings Pre-positioned on Platform

CONSTRUCTING AND FORMING STORAGE BOX COMPONENTS

5-52. Construct the individual components of a storage box as shown in Figures 5-43, 5-44, and 5-45. Partially assemble the first box for loading as shown in Figure 5-46.

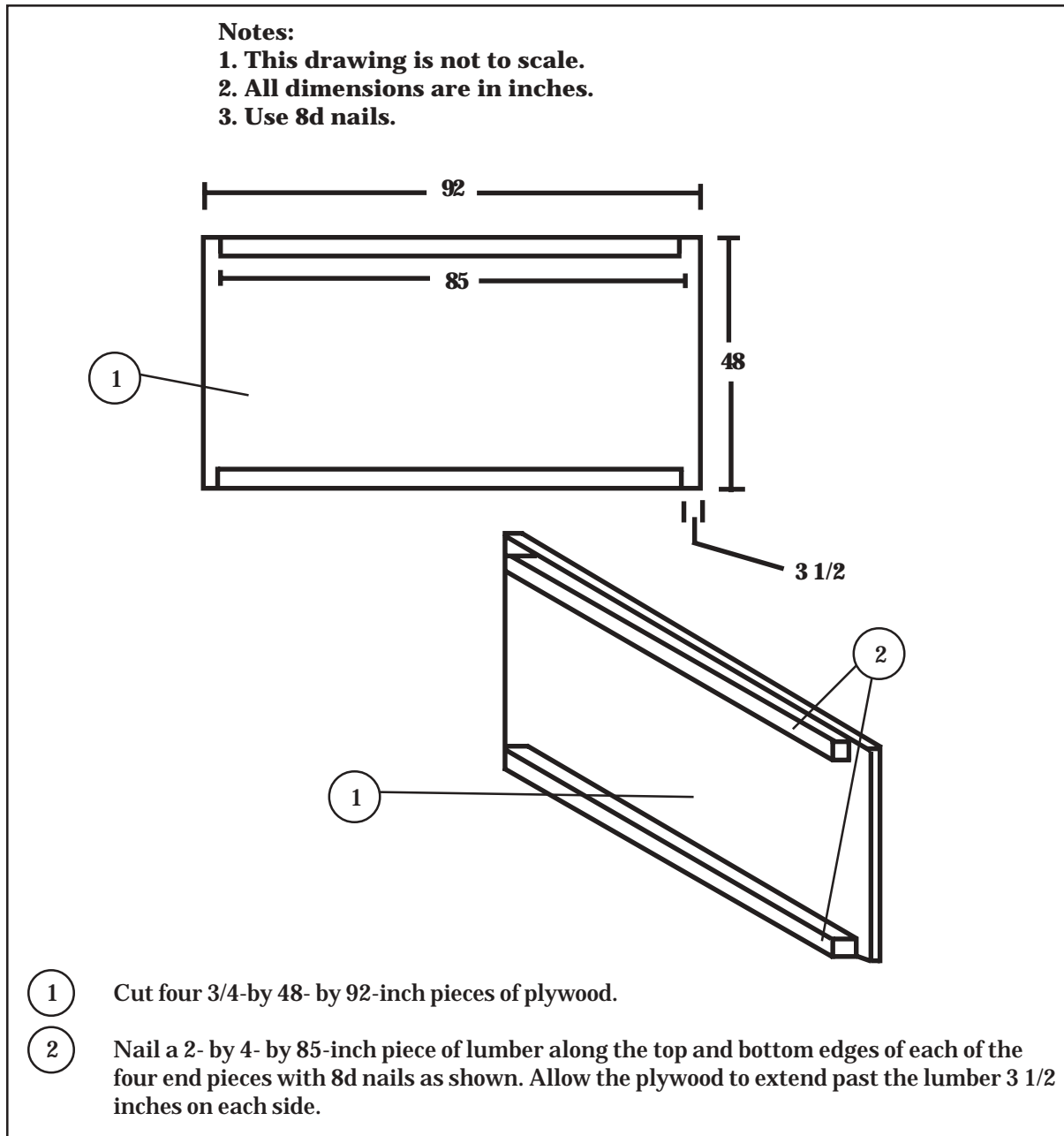


Figure 5-43. Box Ends Constructed

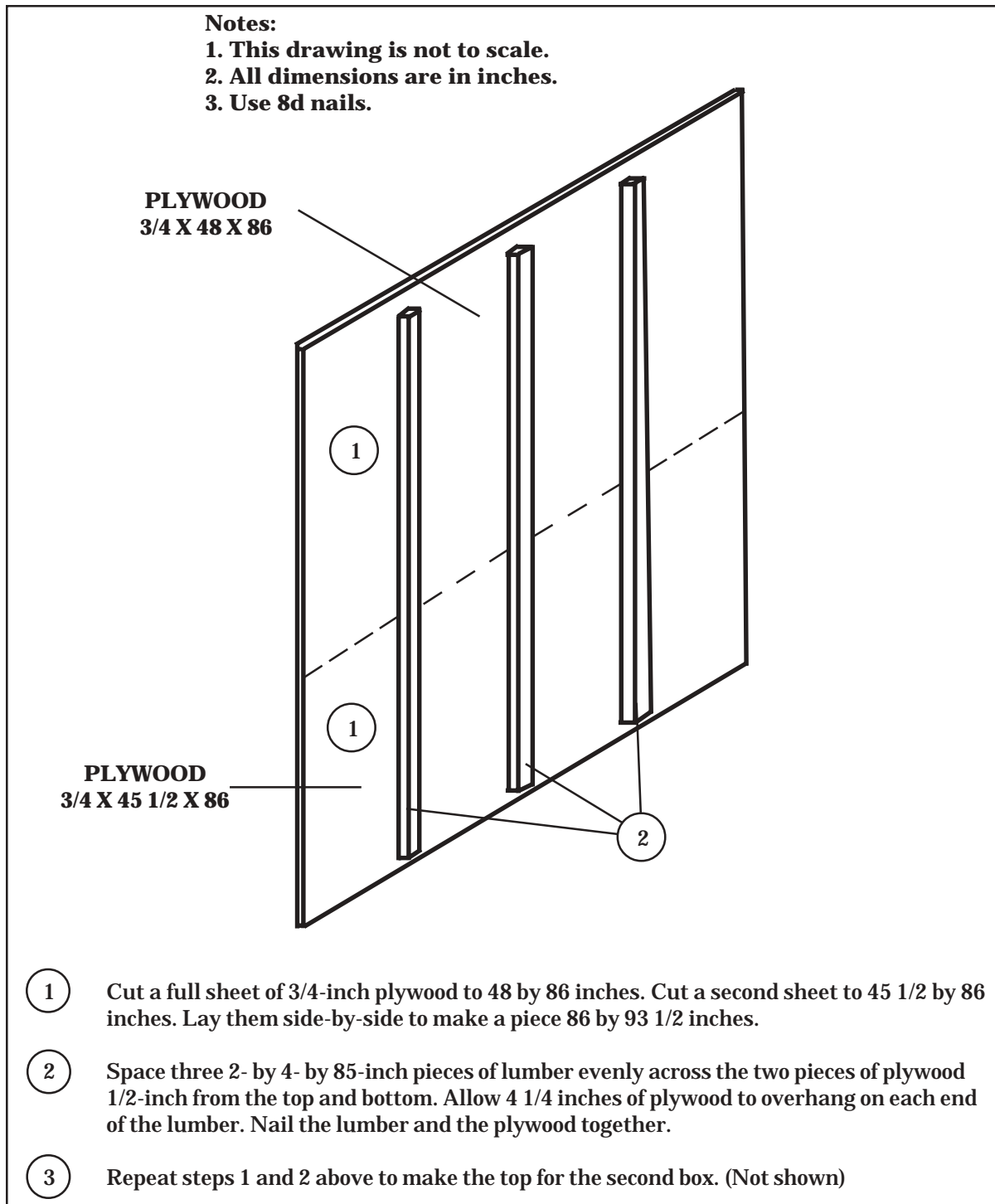


Figure 5-45. Top of Boxes Constructed

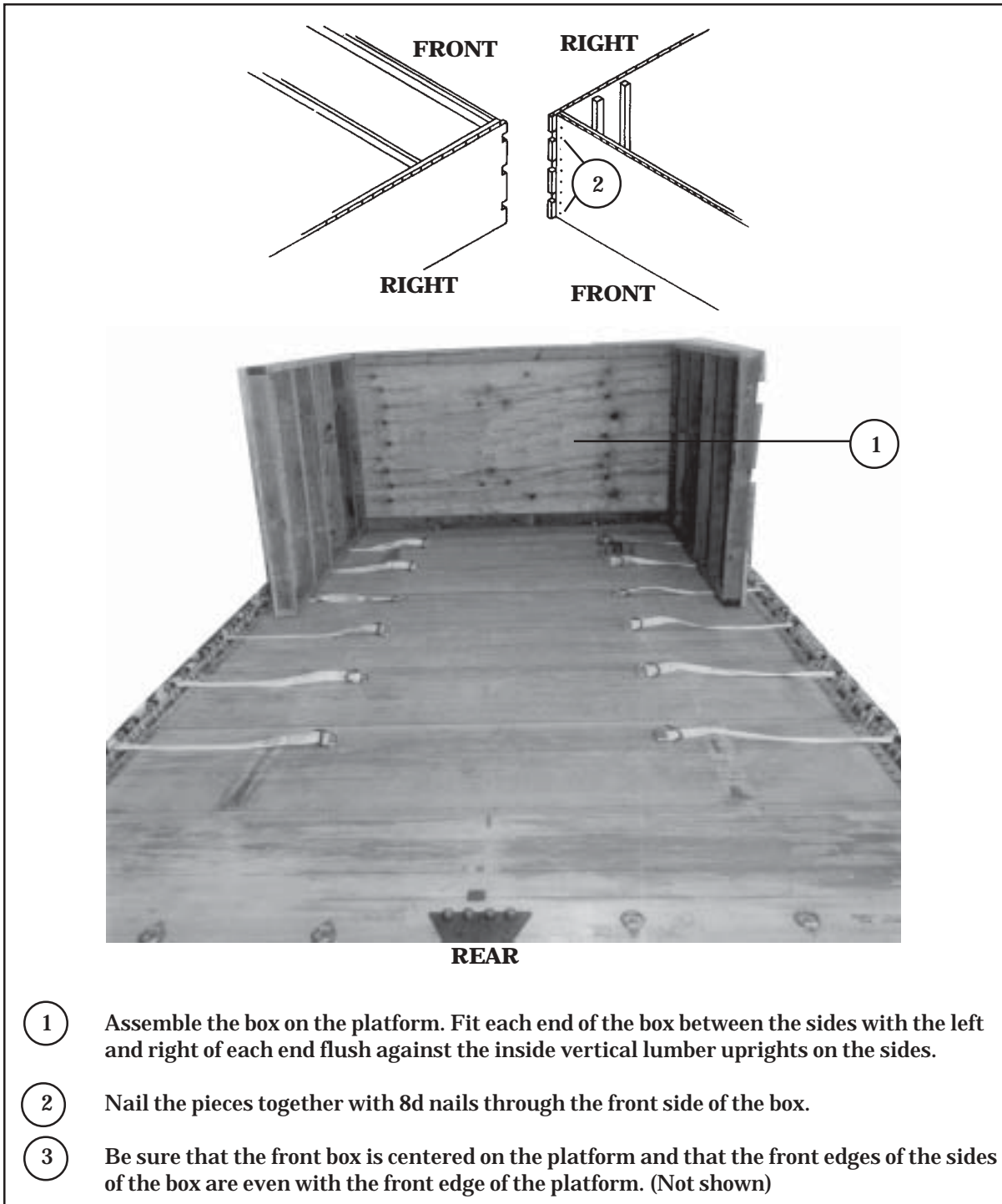


Figure 5-46. Box Partially Assembled for Loading

LOADING AND CLOSING THE BOXES

5-53. Load and close the boxes as described below.

- a. Use the tie-down rings inside the box to secure the load, if necessary.
- b. Use honeycomb, if necessary, to cover the platform inside the box or to fill empty space.
- c. The inside ends of both boxes may be cut out to allow for long items such as lumber or tent poles.
- d. Load the front box. Nail the inside end and top into place as shown in Figure 5-47.
- e. Assemble the front end and sides of the second box as shown in Figure 5-46.
- f. Load the second box and close it as shown in Figure 5-47.

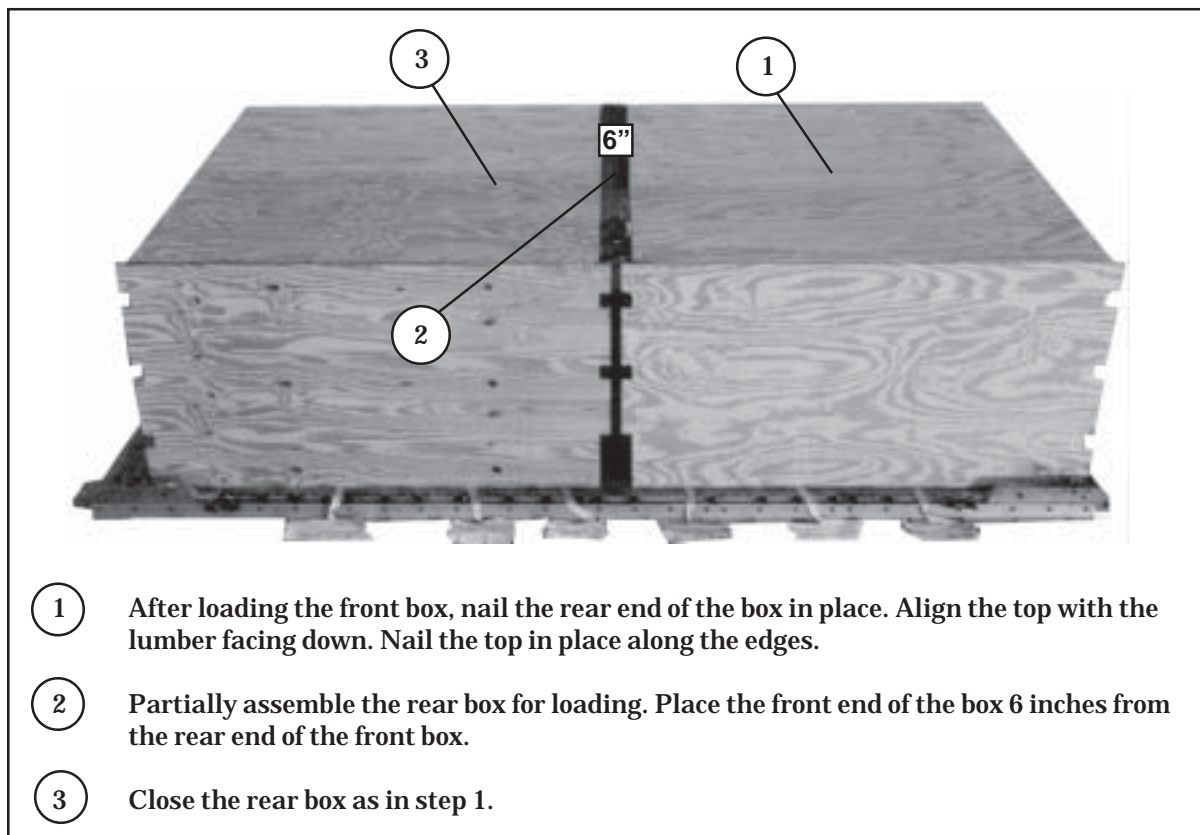


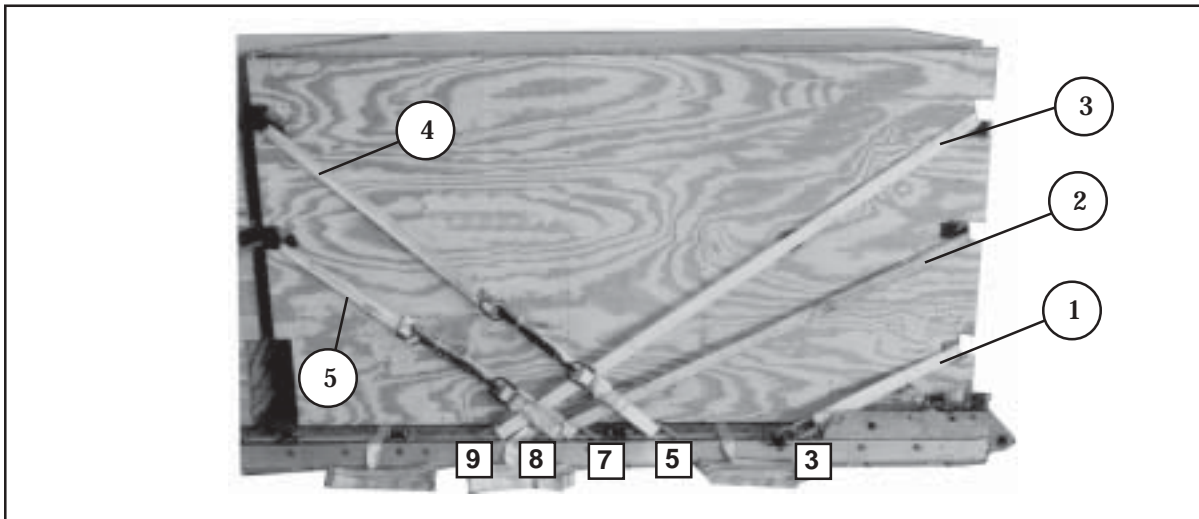
Figure 5-47. Boxes Closed

INSTALLING LASHINGS

5-54. Install the lashings and secure pre-positioned lashings for the boxes as shown in Figures 5-48 through 5-57.

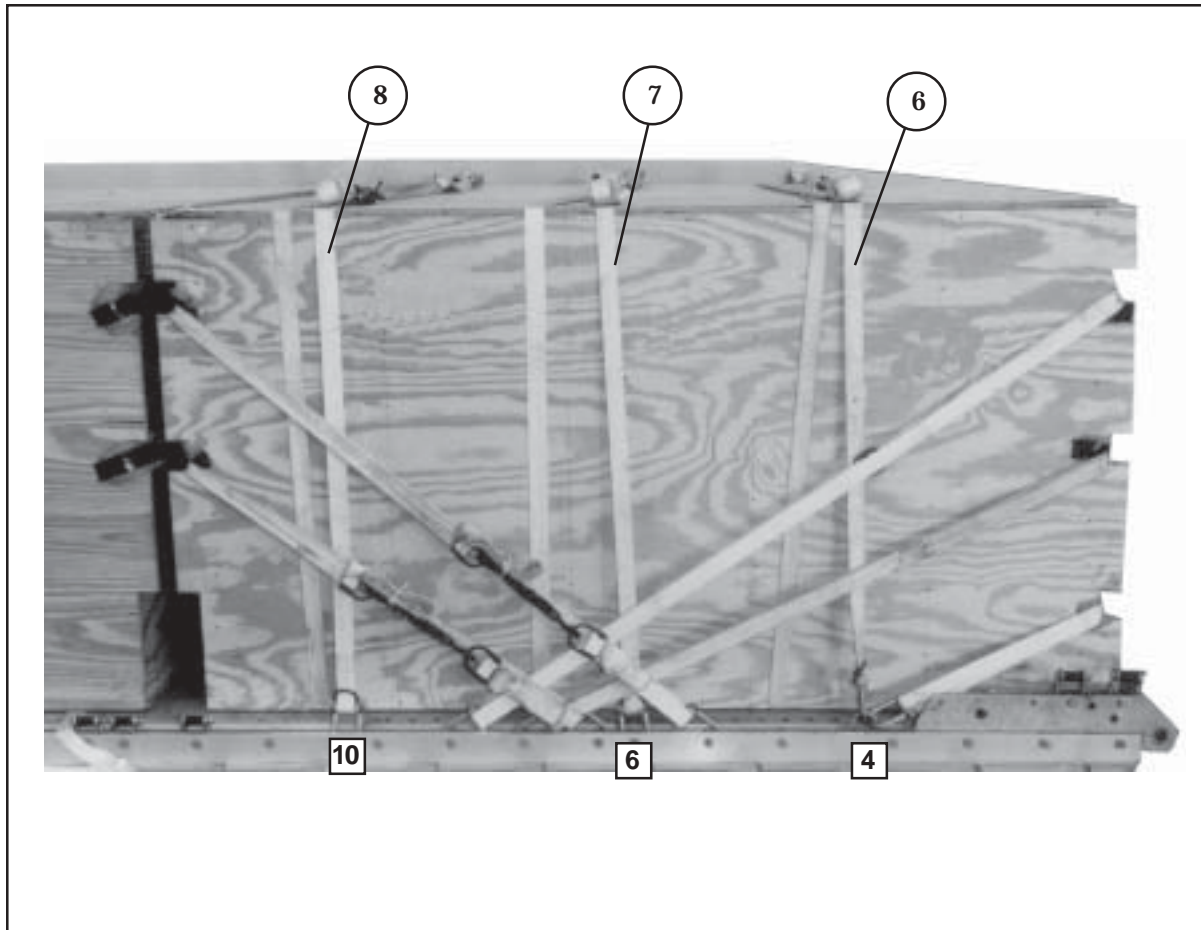
Notes:

- 1. Pad the cutouts in the box sides with cellulose wadding. Tape the wadding in place.**
- 2. This load requires lashings over 30 feet in length. Lashings must be positioned through clevises before sections are joined together.**



Lashing Number	Tiedown Clevis Number	Instructions
1	3 and 3A	Pass a 30-foot lashing through both clevises and through the bottom front cutouts. Secure the lashing in the front with two D-rings and a load binder.
2	8 and 8A	Pass a 45-foot lashing through both clevises and through the middle front cutouts. Secure the lashing in the front with two D-rings and a load binder.
3	9 and 9A	Pass a 45-foot lashing through both clevises and through the upper front cutouts. Secure the lashing in the front with two D-rings and a load binder.
4	5 and 5A	Pass a 45-foot lashing through both clevises and through the top rear cutouts. Secure the lashing on the side with two D-rings and a load binder.
5	7 and 7A	Pass a 45-foot lashing through both clevises and through the bottom rear cutouts. Secure the lashing on the side with two D-rings and a load binder.

Figure 5-48. Lashings 1 Through 5 Installed



Lashing Number	Tiedown Clevis Number	Instructions
6	4 and 4A	Pass a 15-foot lashing through each clevis and through its own D-ring. Secure the lashings on top of the box with two D-rings and a load binder.
7	6 and 6A	Pass a 15-foot lashing through each clevis and through its own D-ring. Secure the lashings on top of the box with two D-rings and a load binder.
8	10 and 10A	Pass a 15-foot lashing through each clevis and through its own D-ring. Secure the lashings on top of the box with two D-rings and a load binder.

Figure 5-49. Lashings 6 Through 8 Installed

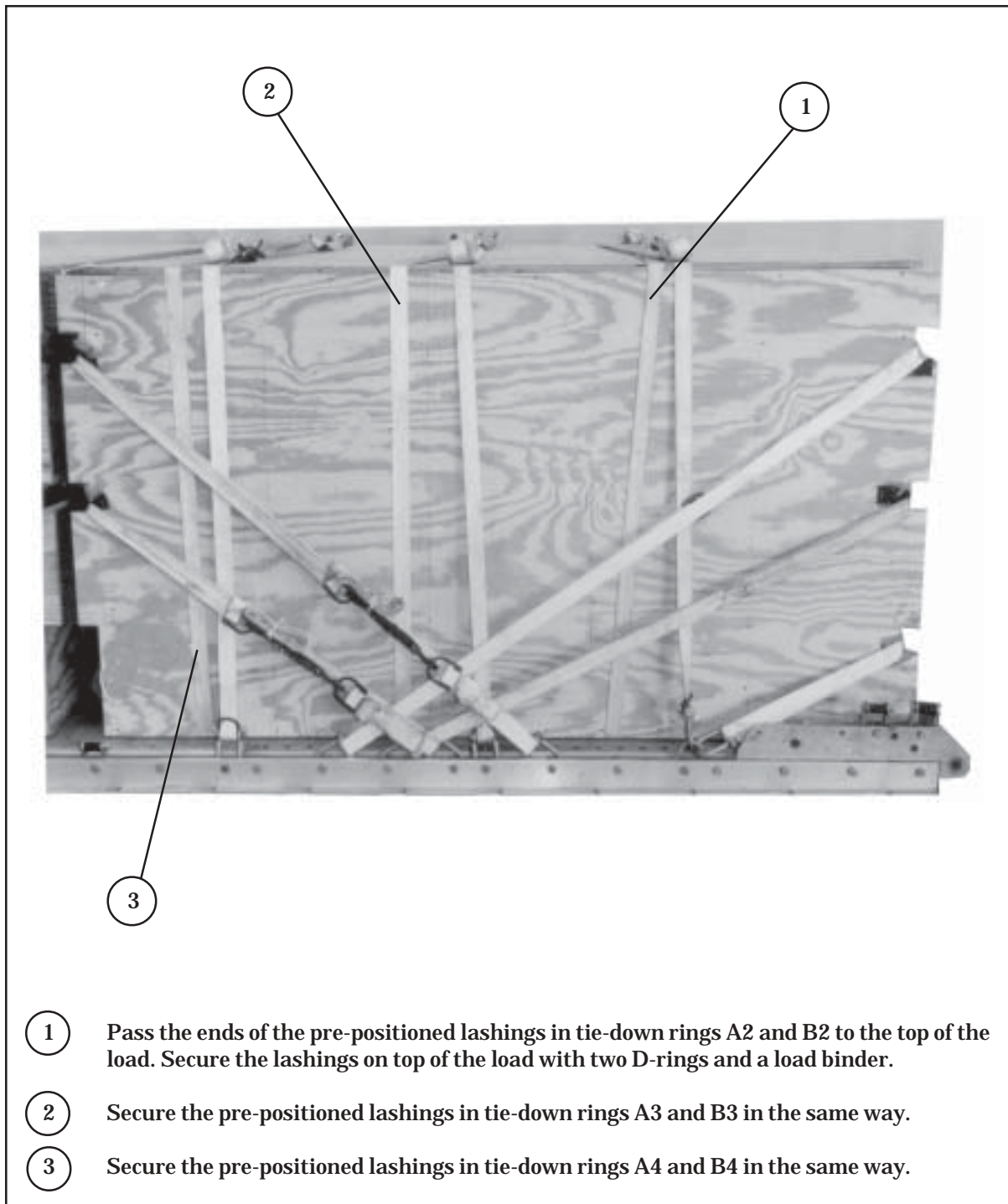
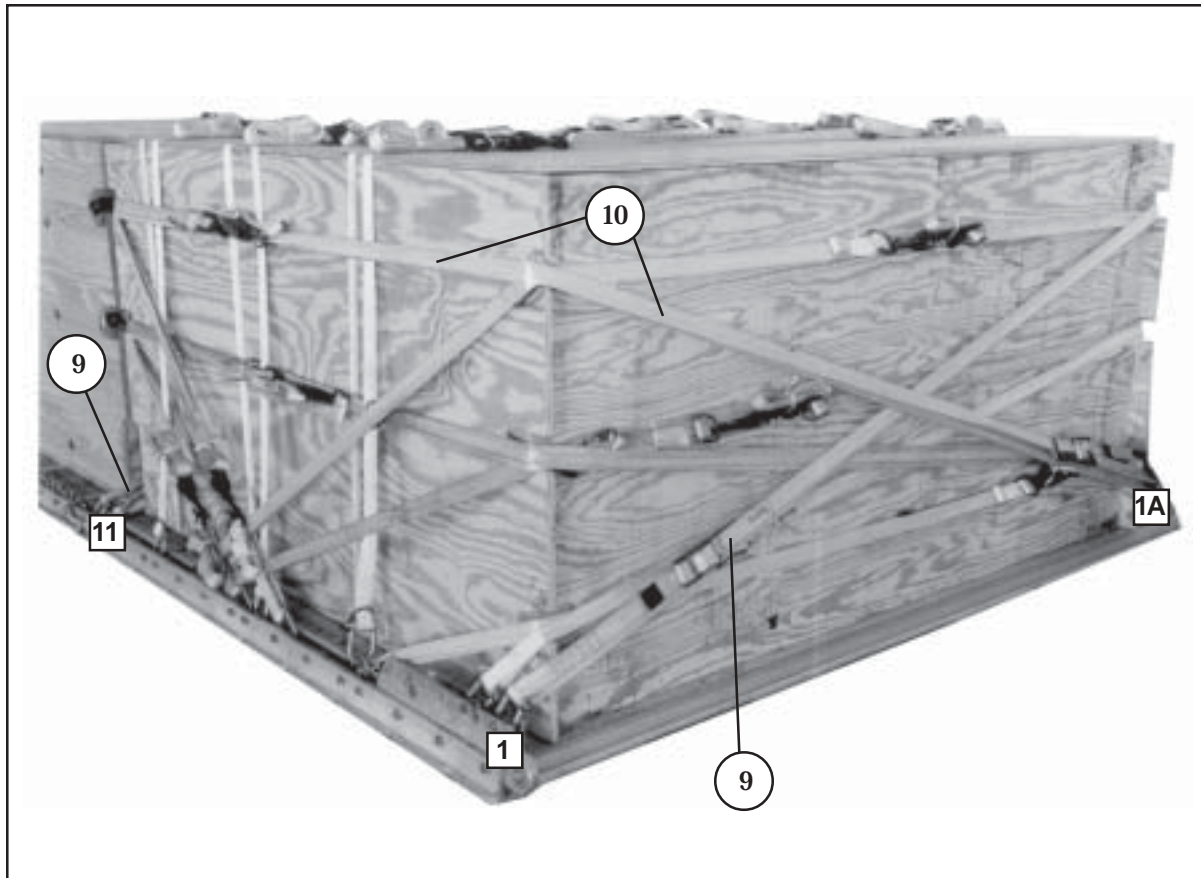
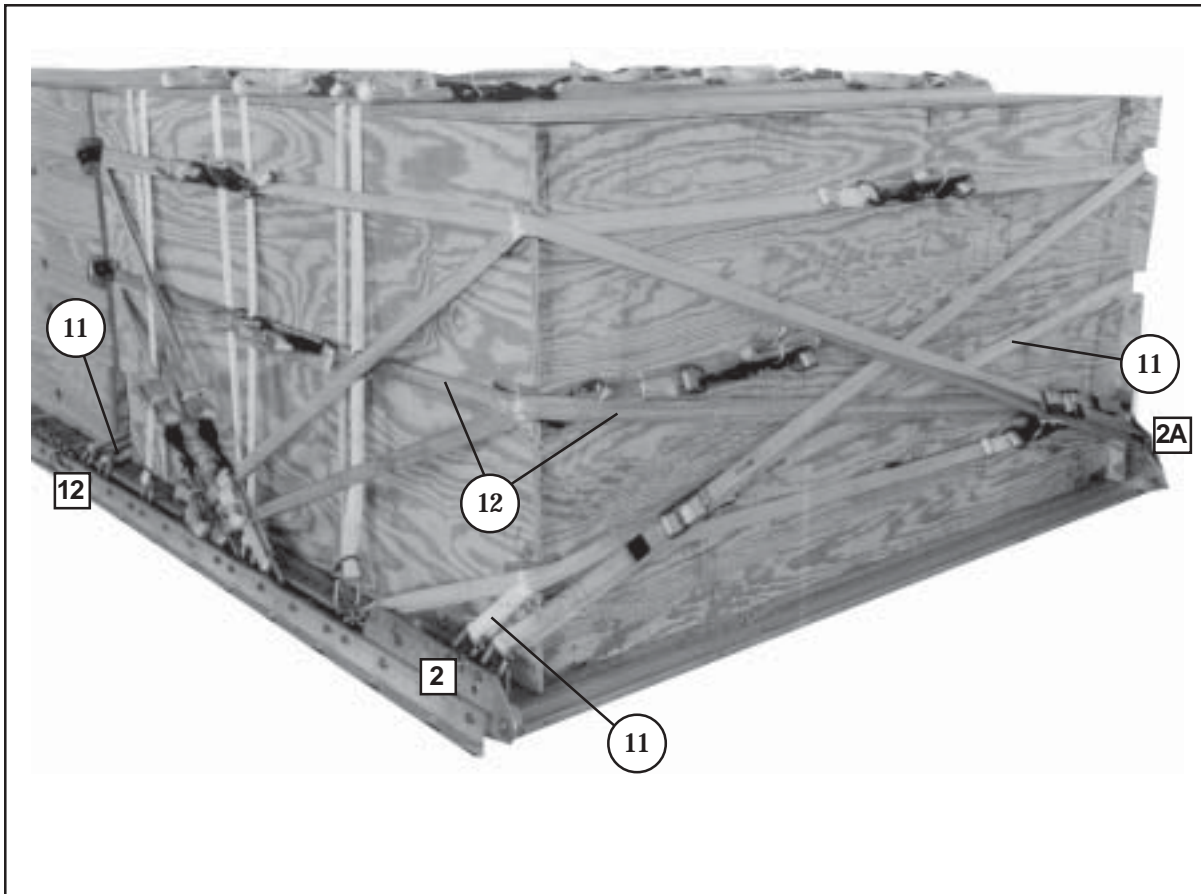


Figure 5-50. Pre-positioned Lashings Secured



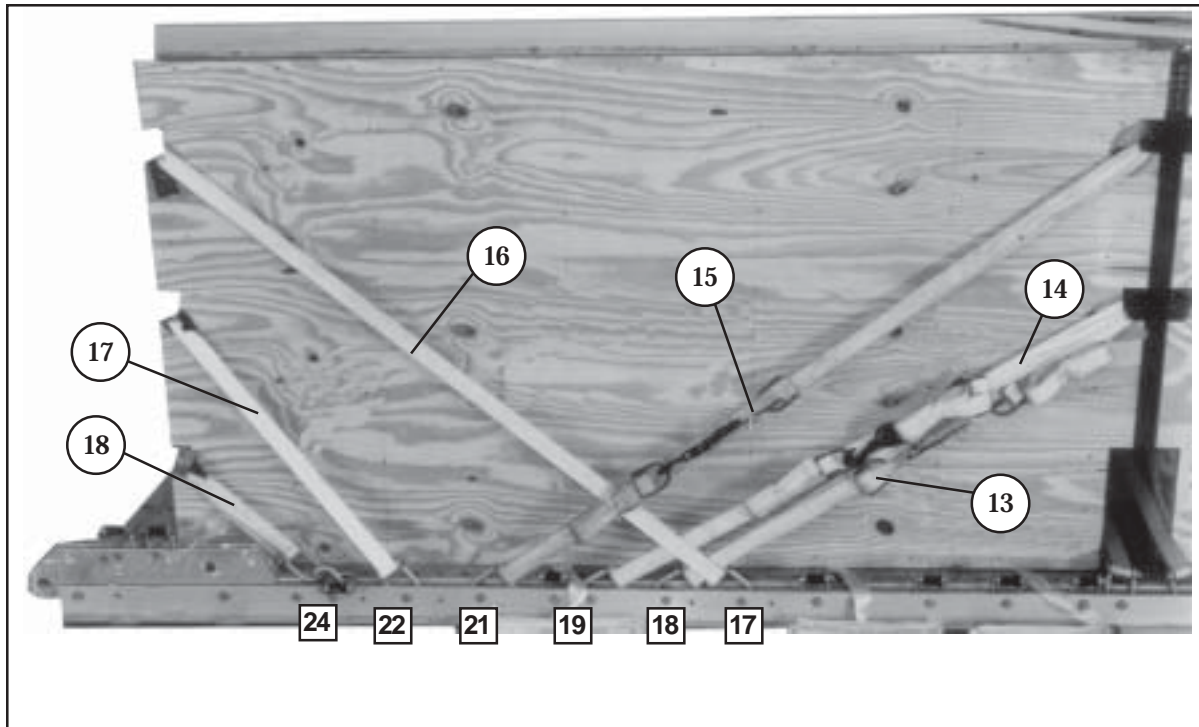
Lashing Number	Tiedown Clevis Number	Instructions
9	1 and 11	Pass a 60-foot lashing through clevis 1, through the top cutout in the left side of the first box and around the left side of the box. Pass the lashing through the top left cutout on the rear end of the first box and through clevis 11. Secure the lashing on the left side with two D-rings and a load binder.
10	1A and 11A	Pass a 60-foot lashing through clevis 1A, through the top cutout in the right side of the first box, and around the right side of the box. Pass the lashing through the top right cutout on the rear end of the first box and through clevis 11A. Secure the lashing on the right side with two D-rings and a load binder.

Figure 5-51. Lashings 9 and 10 Installed



Lashing Number	Tiedown Clevis Number	Instructions
11	2 and 12	Pass a 60-foot lashing through clevis 2, through the bottom right and middle left cutouts in the front of the first box, and around the left side of the box. Pass the lashing through the middle left cutout on the rear end of the first box and through clevis 12. Secure the lashing on the left side with two D-rings and a load binder.
12	2A and 12A	Pass a 60-foot lashing through clevis 2A, through the bottom left and middle right cutouts in the front of the first box, and around the right side of the box. Pass the lashing through the middle right cutout on the rear end of the first box and through clevis 12A. Secure the lashing on the right side with two D-rings and a load binder.

Figure 5-52. Lashings 11 and 12 Installed



Lashing Number	Tiedown Clevis Number	Instructions
13	18 and 18A	Pass a 30-foot lashing through both clevises and through the middle cutouts on the front of the second box. Secure the lashing on the side with two D-rings and a load binder.
14	19 and 19A	Pass a 30-foot lashing through both clevises and through the middle cutouts on the front of the second box. Secure the lashing on the side with two D-rings and a load binder.
15	21 and 21A	Pass a 45-foot lashing through both clevises and through the top cutouts on the front of the second box. Secure the lashing on the side with two D-rings and a load binder.
16	17 and 17A	Pass a 45-foot lashing through both clevises and through the top rear cutouts. Secure the lashing in the rear with two D-rings and a load binder.
17	22 and 22A	Pass a 30-foot lashing through both clevises and through the middle rear cutouts. Secure the lashing in the rear with two D-rings and a load binder.
18	24 and 24A	Pass a 30-foot lashing through both clevises and through the bottom rear cutouts. Secure the lashing in the rear with two D-rings and a load binder.

Figure 5-53. Lashings 13 Through 18 Installed

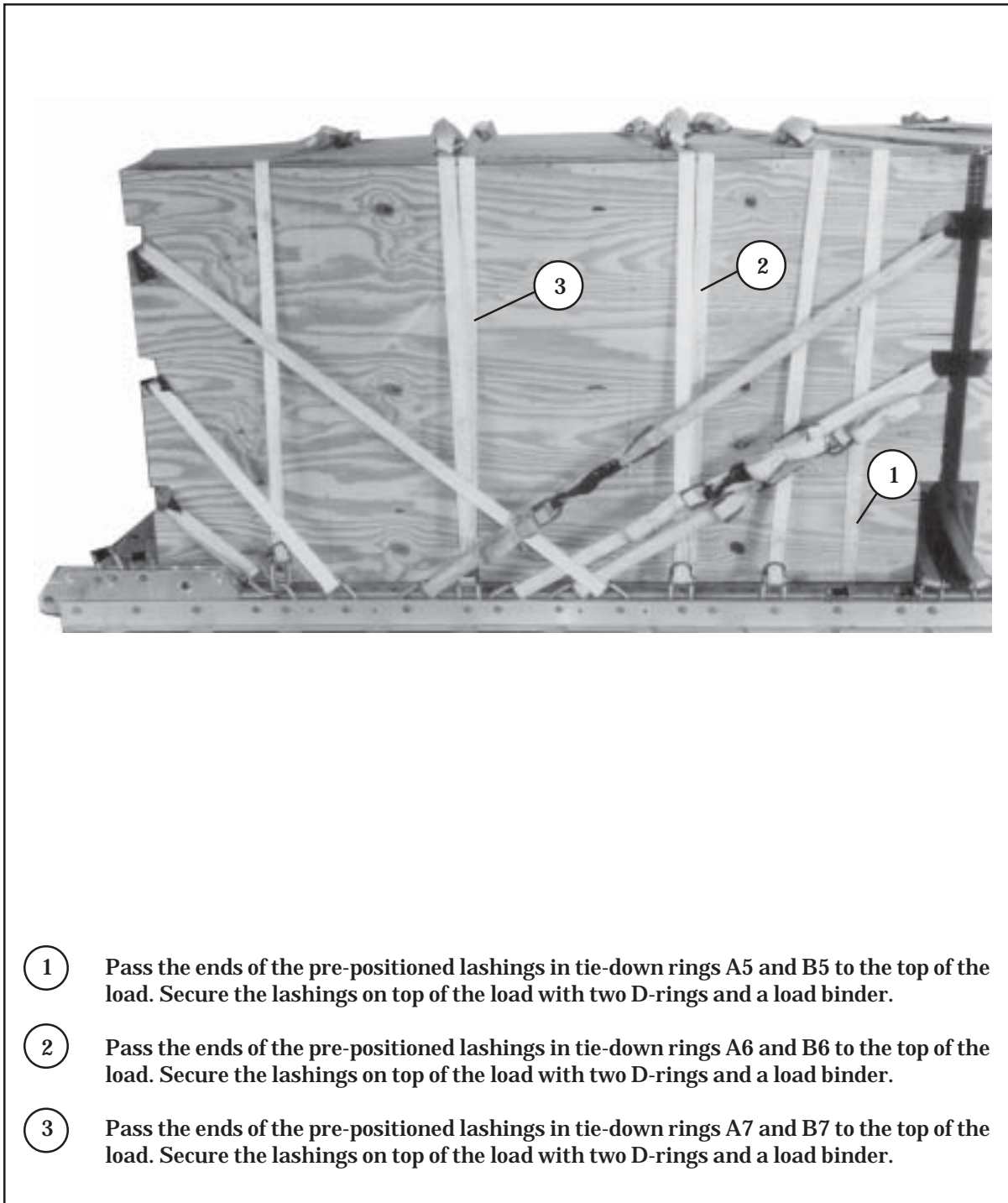
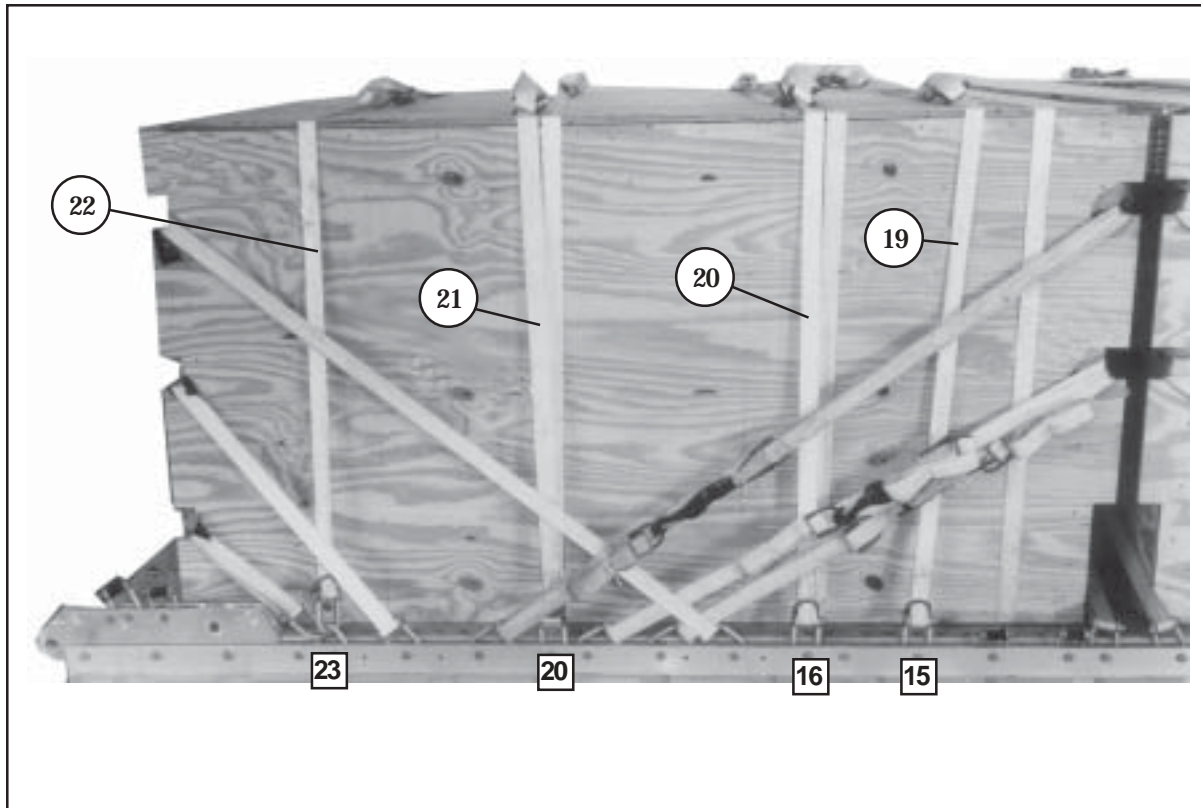
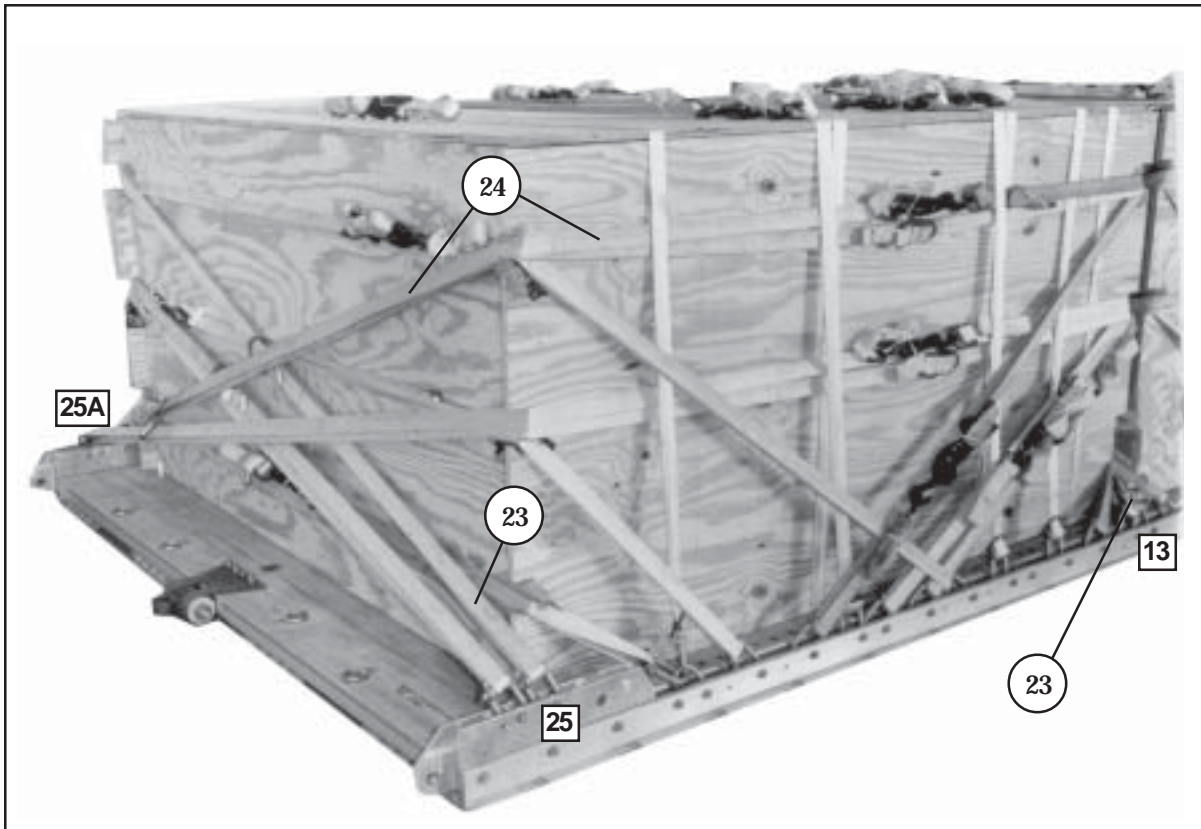


Figure 5-54. Pre-positioned Lashings Secured



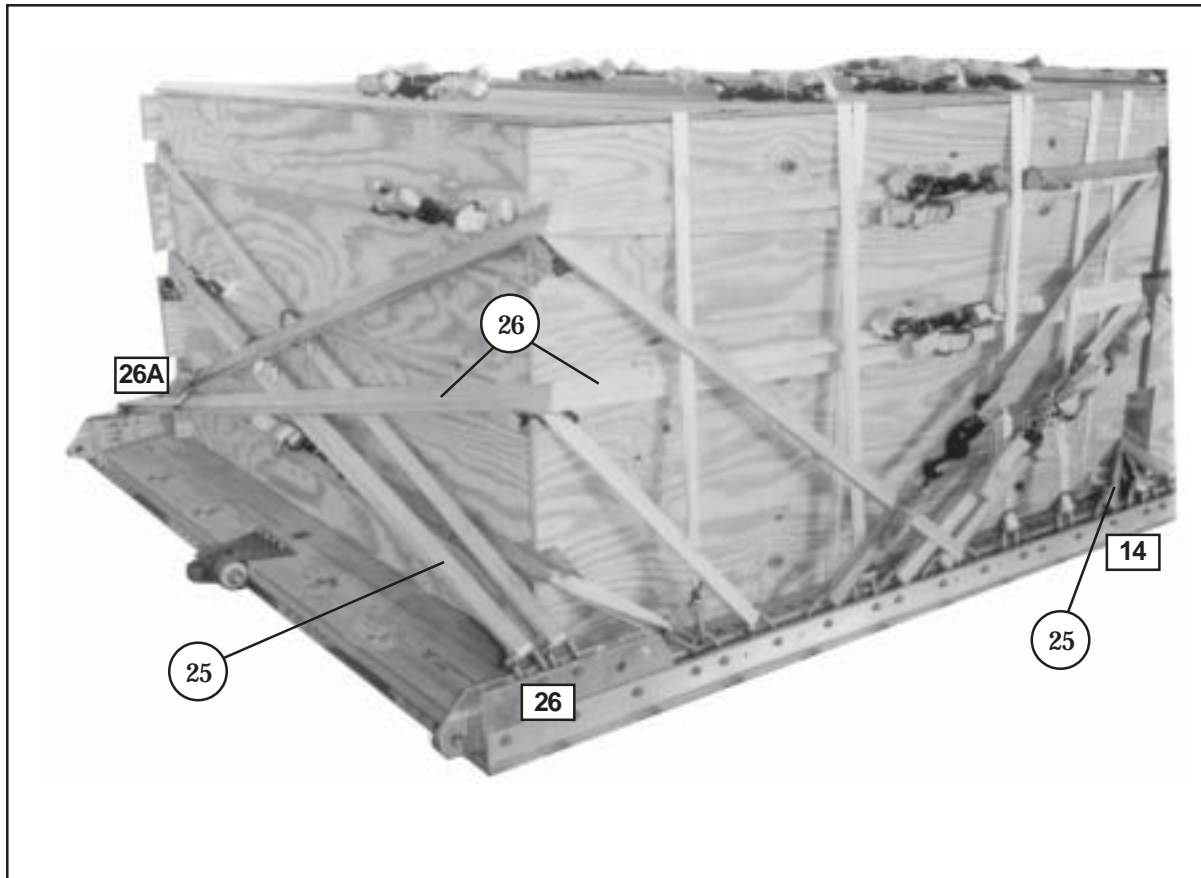
Lashing Number	Tiedown Clevis Number	Instructions
19	15 and 15A	Pass a 15-foot lashing through each clevis and through its own D-ring. Secure the lashings on top of the box with two D-rings and a load binder.
20	16 and 16A	Pass a 15-foot lashing through each clevis and through its own D-ring. Secure the lashings on top of the box with two D-rings and a load binder.
21	20 and 20A	Pass a 15-foot lashing through each clevis and through its own D-ring. Secure the lashings on top of the box with two D-rings and a load binder.
22	23 and 23A	Pass a 15-foot lashing through each clevis and through its own D-ring. Secure the lashings on top of the box with two D-rings and a load binder.

Figure 5-55. Lashings 19 Through 22 Installed



Lashing Number	Tiedown Clevis Number	Instructions
23	13 and 25	Pass a 60-foot lashing through clevis 13, through the top cutout in the left side of the second box, and around the left side of the box. Pass the lashing through the top left cutout on the rear side of the second box and through clevis 25. Secure the lashing on the left side with two D-rings and a load binder.
24	13A and 25A	Pass a 60-foot lashing through clevis 13A, through the top cutout in the right side of the second box, and around the right side of the box. Pass the lashing through the top right cutout on the rear side of the second box and through clevis 25A. Secure the lashing on the right side with two D-rings and a load binder.

Figure 5-56. Lashings 23 and 24 Installed

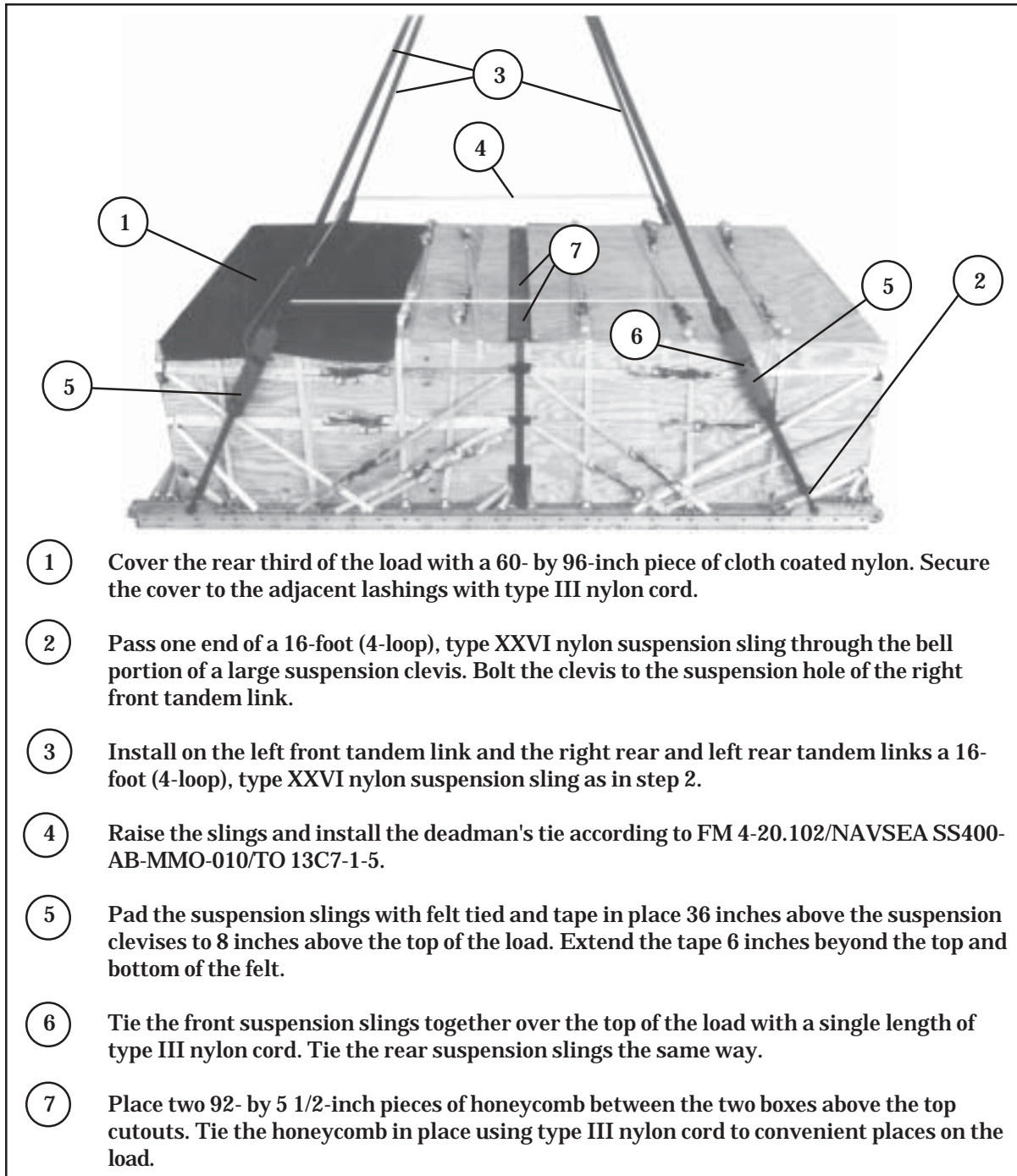


Lashing Number	Tiedown Clevis Number	Instructions
25	14 and 26	Pass a 60-foot lashing through clevis 14, through the middle cutout in the left side of the second box and around the left side of the box. Pass the lashing through the left middle cutout on the rear side of the second box and through clevis 26. Secure the lashing on the left side with two D-rings and a load binder.
26	14A and 26A	Pass a 60-foot lashing through clevis 14A, through the middle cutout in the right side of the second box, and around the right side of the box. Pass the lashing through the right middle cutout on the rear side of the second box and through clevis 26A. Secure the lashing on the right side with two D-rings and a load binder.

Figure 5-57. Lashings 25 and 26 Installed

INSTALLING LOAD COVER, SUSPENSION SLINGS AND DEADMAN'S TIE

5-55. Install the load cover, suspension slings and deadman's tie as shown in Figure 5-58.



- 1 Cover the rear third of the load with a 60- by 96-inch piece of cloth coated nylon. Secure the cover to the adjacent lashings with type III nylon cord.
- 2 Pass one end of a 16-foot (4-loop), type XXVI nylon suspension sling through the bell portion of a large suspension clevis. Bolt the clevis to the suspension hole of the right front tandem link.
- 3 Install on the left front tandem link and the right rear and left rear tandem links a 16-foot (4-loop), type XXVI nylon suspension sling as in step 2.
- 4 Raise the slings and install the deadman's tie according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
- 5 Pad the suspension slings with felt tied and tape in place 36 inches above the suspension clevises to 8 inches above the top of the load. Extend the tape 6 inches beyond the top and bottom of the felt.
- 6 Tie the front suspension slings together over the top of the load with a single length of type III nylon cord. Tie the rear suspension slings the same way.
- 7 Place two 92- by 5 1/2-inch pieces of honeycomb between the two boxes above the top cutouts. Tie the honeycomb in place using type III nylon cord to convenient places on the load.

Figure 5-58. Load Cover, Suspension Slings, and Deadman's Tie Installed

INSTALLING PARACHUTES

5-56. Consult FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 for the number of cargo parachutes required for the weight of the load. Four G-11 cargo parachutes are shown here. Install the cargo parachutes according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 5-59.

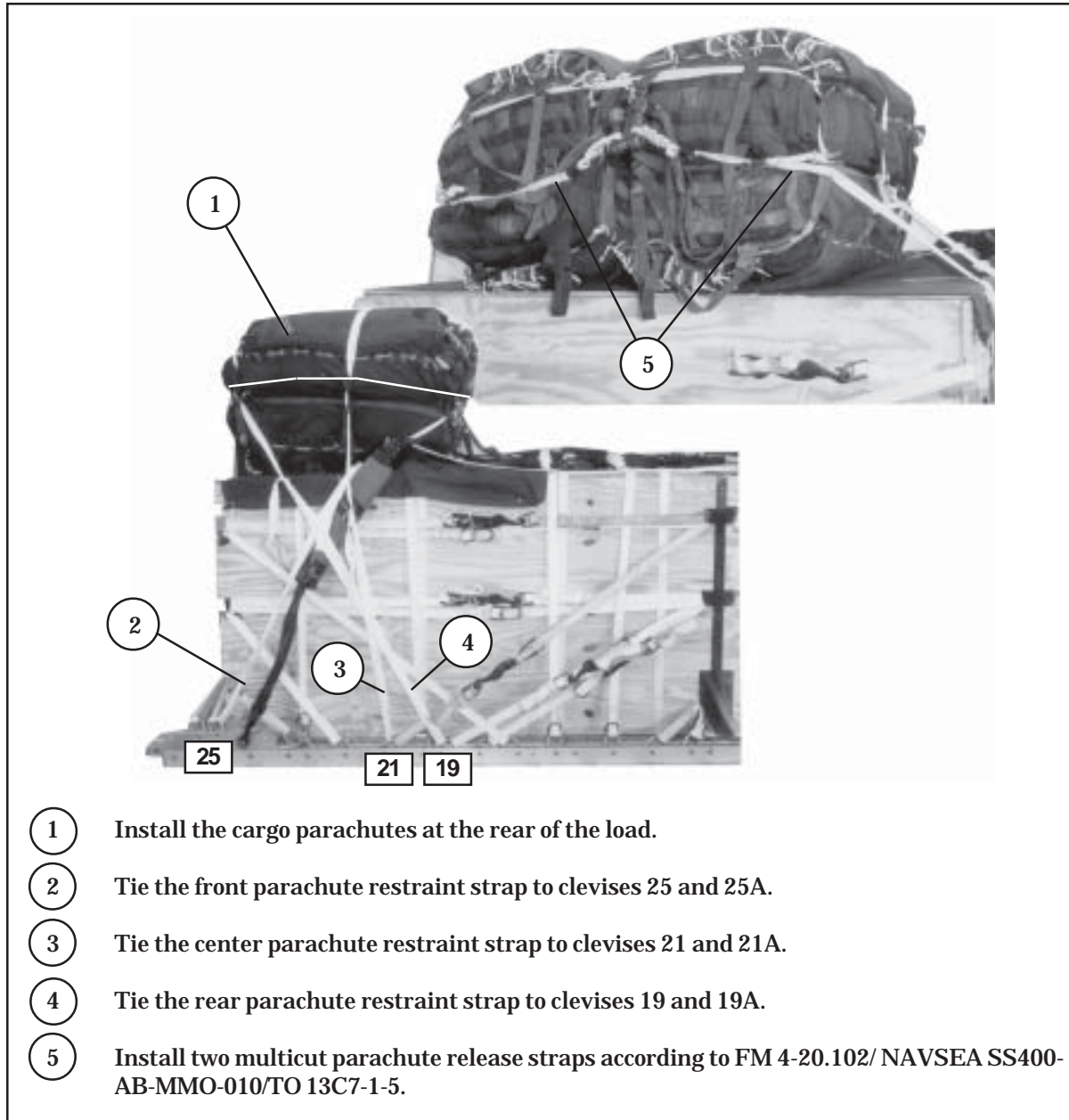
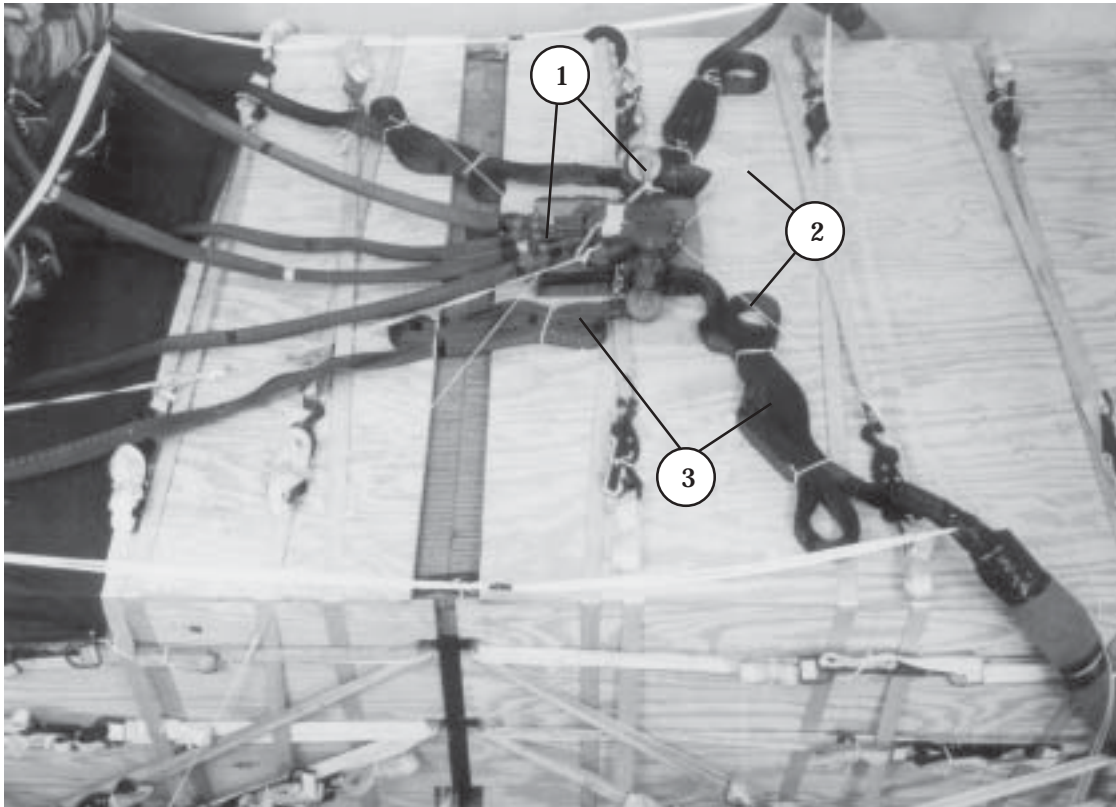


Figure 5-59. Four G-11 Cargo Parachutes Installed

INSTALLING THE RELEASE SYSTEM

5-57. Prepare, attach, and safety an M-2 cargo parachute release according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 5-60.



- ① Prepare and install the M-2 cargo parachute release according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Place the assembly on a 10- by 12-inch piece of honeycomb in front of the parachutes as shown.
- ② Safety the release to convenient points on the load with type III nylon cord according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
- ③ S-fold and tie any excess suspension slings with one turn of type I, 1/4-inch cotton webbing.

Figure 5-60. Release System Installed

INSTALLING THE EXTRACTION SYSTEM

5-58. Install the extraction system according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 5-61.

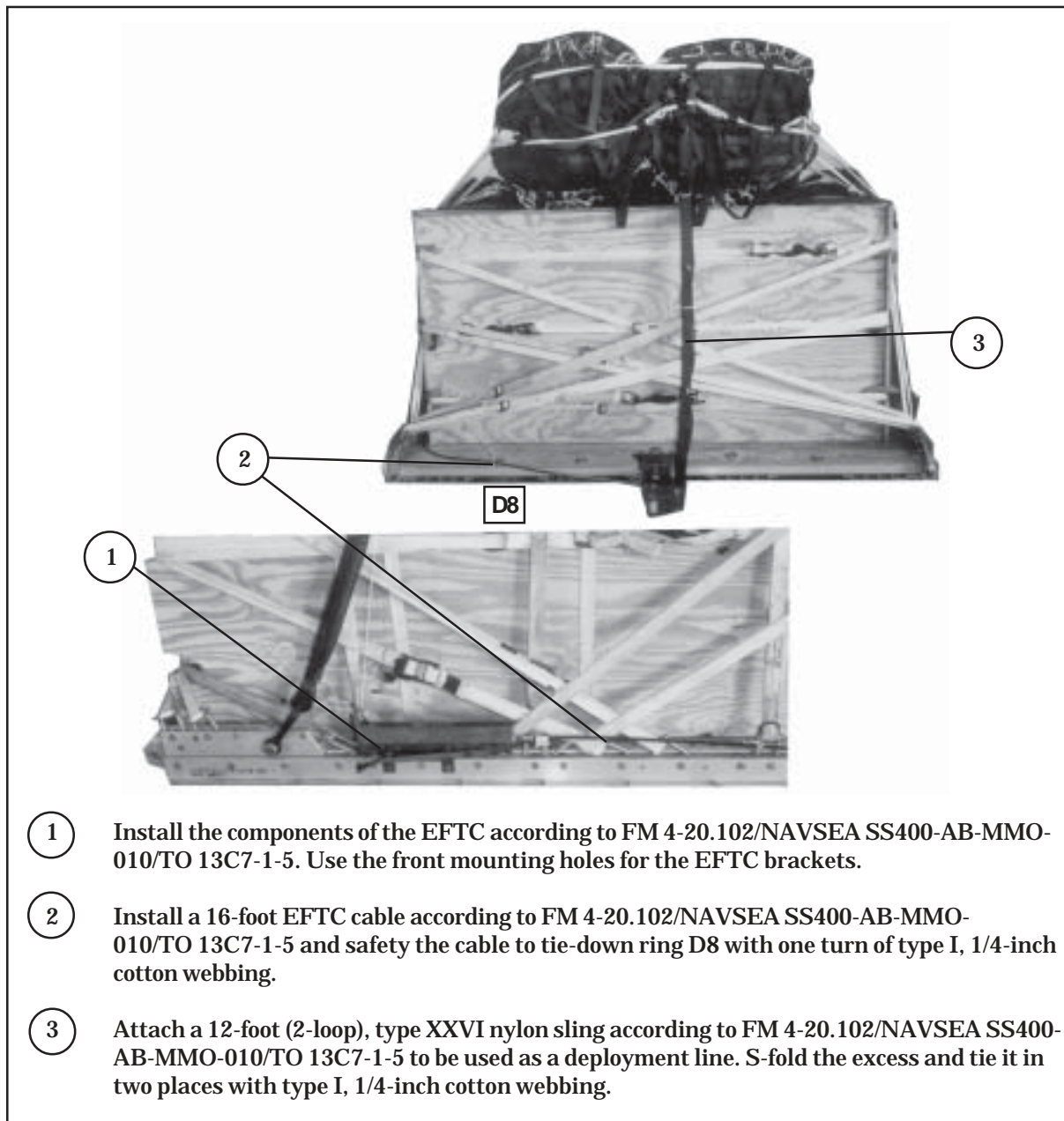


Figure 5-61. Extraction System Installed

PLACING EXTRACTION PARACHUTE

5-59. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Place the extraction parachute and line on the load for installation in the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

5-60. Select and install the provisions for the emergency aft restraints according to the emergency aft restraint requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

MARKING RIGGED LOAD

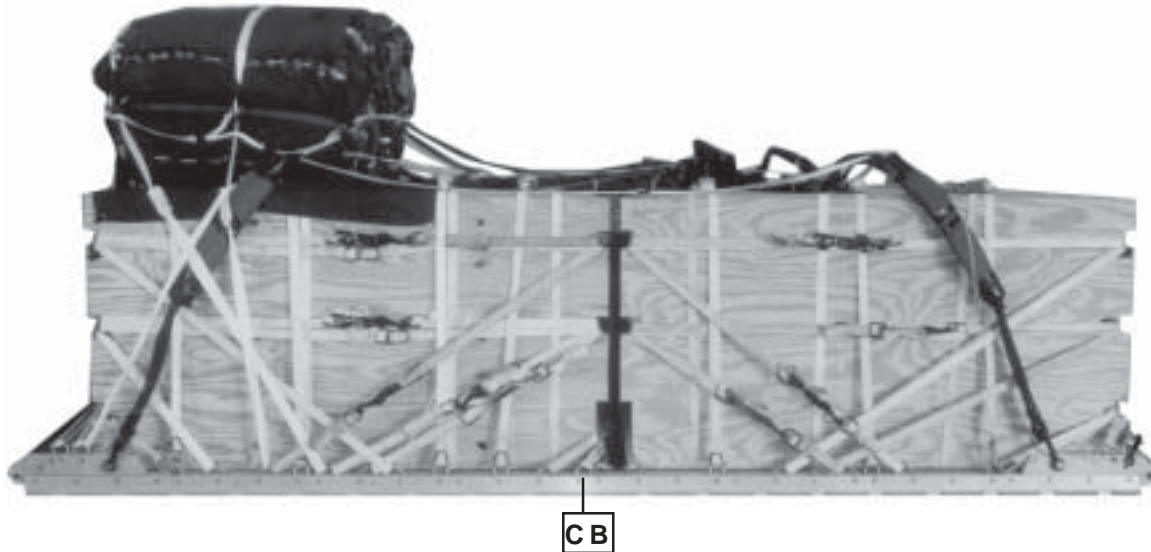
5-61. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and as shown in Figure 5-62. Complete Shipper's Declaration for Dangerous Goods. If the load varies from the one shown, the weight, height, CB, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

5-62. Use the equipment listed in Table 5-4 to rig this load.

Note: Table does not include materials which may be needed to pad and restrain supplies inside the boxes.

CAUTION
 Make the final rigger inspection required by AR 59-4 and FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Minimum Weight.....	5,040 pounds
Maximum Weight.....	See paragraph 5-49
Height.....	.88 inches
Width.....	108 inches
Length.....	192 inches
Overhang: Front.....	0 inches
Rear.....	0 inches
Center of Balance (CB) (from front edge of the platform).....	97 inches
Extraction System (adds 18 inches to length of platform) EFTC	

Figure 5-62. Mass Supply Boxes Rigged on a 16-Foot Platform for Low-Velocity Airdrop

Table 5-4. Equipment Required for Rigging Mass Supply Boxes on a 16-Foot, Type V Platform for Low-Velocity Airdrop

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive paste, 1-gal.	As required
4030-00-090-5354	Clevis, suspension, 1-inch (large)	5
8305-00-880-8155	Cloth, coated (nylon, type II, 17.0 oz, green, 60-in)	As required
4020-00-240-2146	Cord, nylon, type III, 550-lb.	As required
1670-00-434-5785	Coupling, airdrop extraction force transfer, w/16-ft. cable	1
1670-00-360-0328	Cover, clevis	4
8135-00-664-6958	Cushioning material (Cellulose wadding)	As required
8305-00-958-3685	Felt, 1/2-inch thick	As required
1670-01-183-2678	Leaf, extraction line (line bag) (add 2 for C-17)	2
	Line extraction:	
1670-01-062-6313	60-foot (3-loop), type XXVI (for C-130)	1
1670-01-107-7651	140-foot (3-loop), type XXVI (for C-5)	1
1670-01-107-7651	140-foot (3-loop), type XXVI (for C-17)	1
1670-01-064-4452	60-foot (1-loop), type XXVI (for C-17), (drogue line)	1
	Link assembly, two-point:	
5306-00-435-8994	Bolt, 1-inch diameter, 4-inches long (add 4 for C-5)	2
5310-00-232-5165	Nut, 1-inch (add 4 for C-5)	2
1670-00-003-1953	Plate, side, 3 3/4-inch	2
5365-00-007-3414	Spacer, large (add 4 for C-5)	2
5510-00-2206146	Lumber, 2- by- 4- by:	
	45-in	
	84 1/2-in	
	85-in	14
5315-00-010-4657	Nail, steel wire, common, 6d	As required
5315-00-010-4659	Nail, steel wire, common, 8d	As required
1670-00-753-3928	Pad, energy-dissipating (honeycomb) 3- by 36- by 96-inches	1 sheet
1670-01-016-7841	Parachute, cargo, G-11	4
	Parachute, cargo, extraction:	
1670-00-040-8135	28-ft.	1
1670-01-063-3715	15-ft. (C-17 only)	1
	Platform, airdrop, type V, 16-ft:	
1670-00-128-4981	Plywood, 3/4- by 48- by 96-in	12 sheets
1670-01-162-2372	Clevis assembly (type V)	(56)
1670-01-353-8424	Extraction bracket assembly	(1)
1670-01-162-2381	Link, tandem, suspension link assembly	(4)
1670-01-097-8817	Release, cargo parachute, M-2	1

Table 5-4. Equipment Required for Rigging Mass Supply Boxes on a 16-Foot, Type V Platform for Low-Velocity Airdrop (Continued)

National Stock Number	Item	Quantity
1670-01-062-6308 1670-01-062-6303 1670-01-062-6313	Sling, cargo, airdrop: 16-ft. (4-loop), type XXVI 12-ft. (2-loop), type XXVI 60-foot (3-loop), type XXVI	4 1 4
5340-00-040-8219 7501-00-266-5016 1670-00-937-0271 1670-01-483-8259	Strap, parachute, release, multi-knife Tape, adhesive, 2-inch Tiedown assembly, 15-ft. Towplate release mechanism (H-block) (C-17 only)	2 As required 86 1
8305-00-268-2411 8305-00-082-5752 8305-00-261-8585	Webbing: Cotton, 1/4-inch, type I Nylon, tubular, 1/2-inch Type VIII nylon	As required As required As required

Chapter 6

RIGGING MASS SUPPLY BOX ON A 20-FOOT, TYPE V PLATFORM FOR LOW-VELOCITY AIRDROP

DESCRIPTION OF LOAD

6-1. Two mass supply boxes are rigged for low-velocity airdrop on a 20-foot, type V airdrop platform. Loads may include any bulk items of general supply that can be packed into the box without shifting the load. Each load must weigh at least 6,300 pounds, including parachutes. Refer to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 for the weight limitations for the number of parachutes to be used.

PREPARING PLATFORM

6-2. Prepare a 20-foot, type V platform as shown in Figure 6-1.

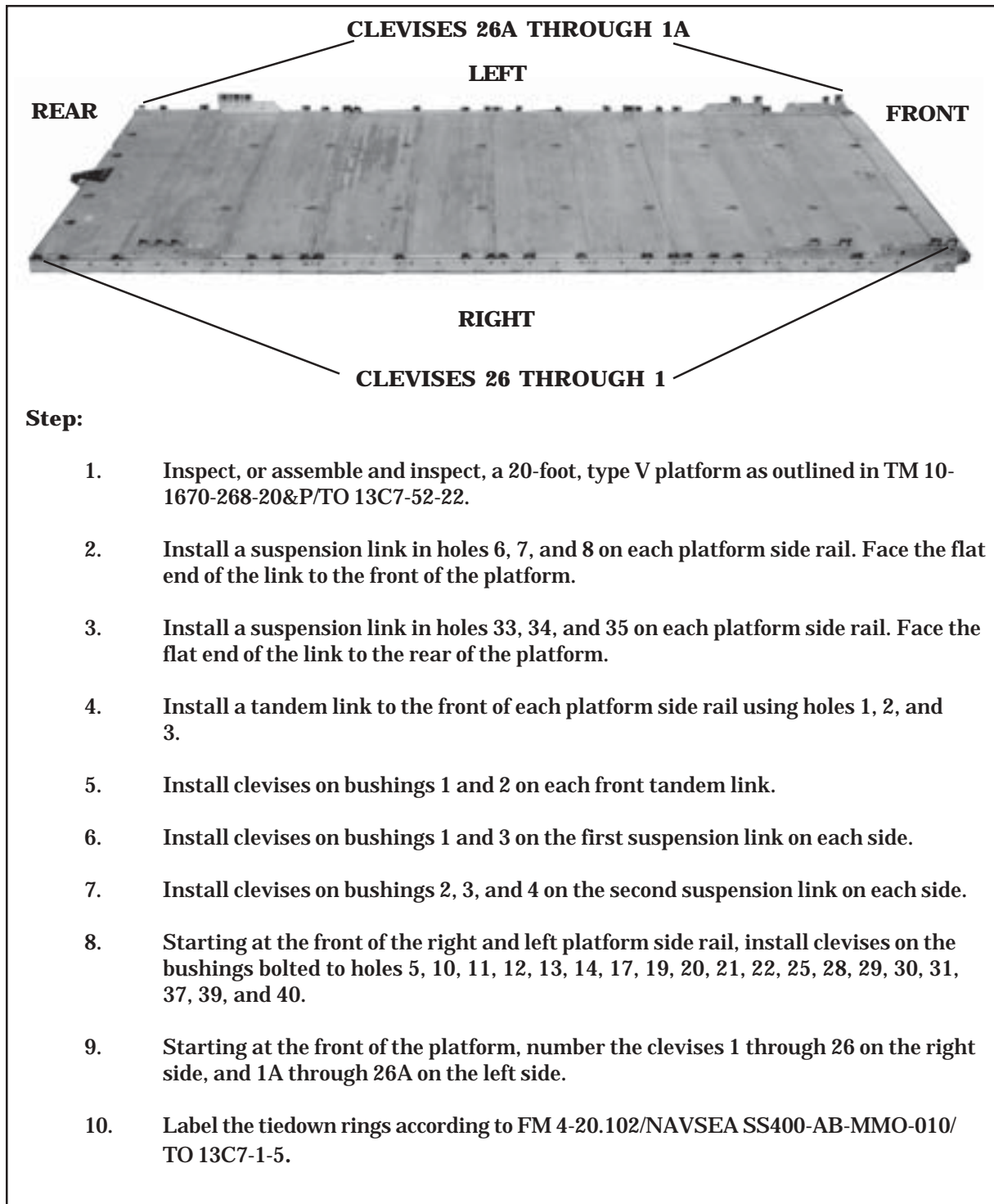


Figure 6-1. Platform Prepared

PLACING LASHINGS ON PLATFORM

6-3. Pre-position fourteen 15-foot lashings through the tie-down rings on the platform as shown in Figure 6-2.

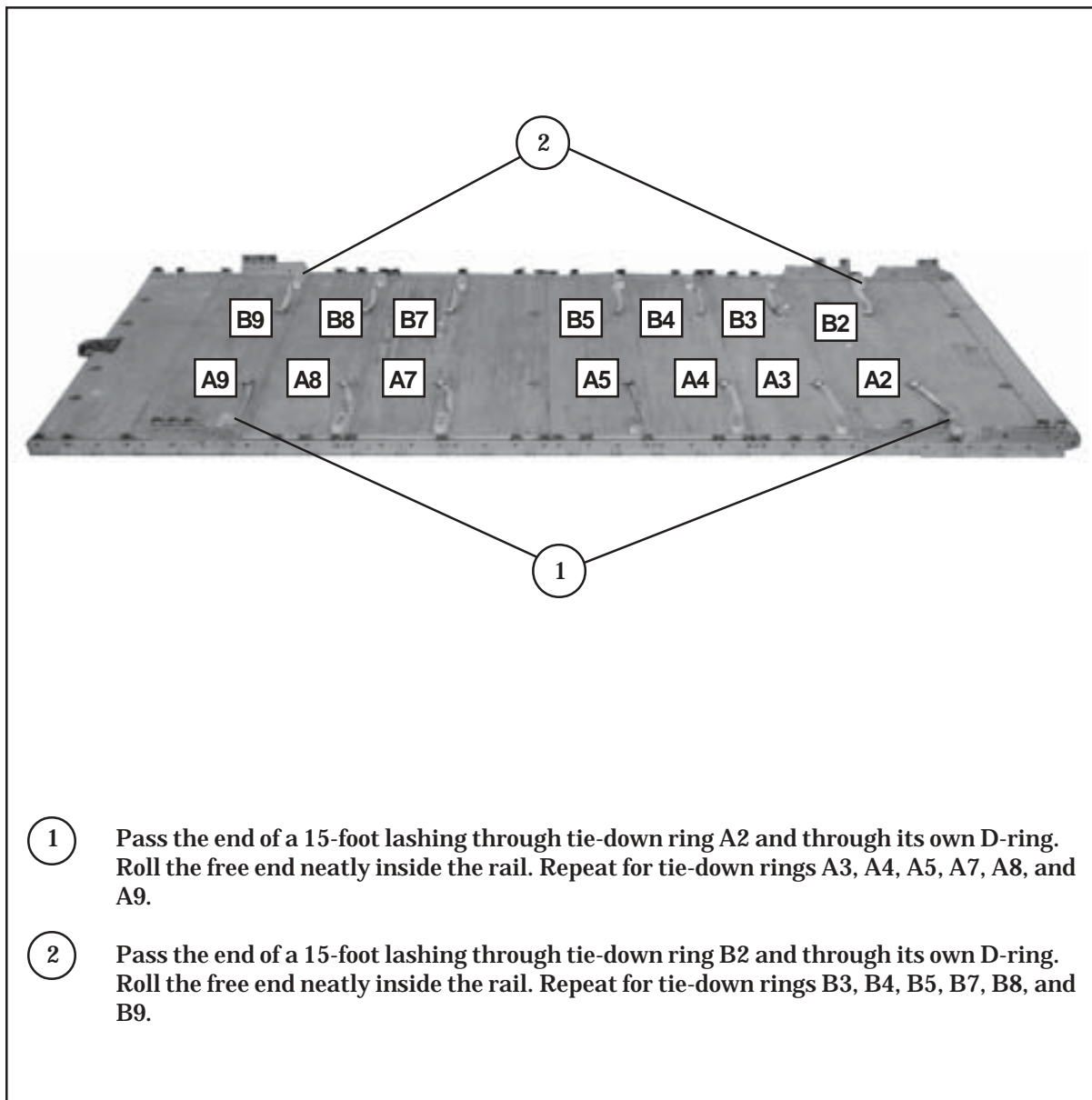


Figure 6-2. Lashings Pre-positioned on Platform

CONSTRUCTING AND FORMING STORAGE BOX COMPONENTS

6-4. Construct the individual components of a storage box as shown in Figures 6-3, 6-4, and 6-5. Partially assemble the first box for loading as shown in Figure 6-6.

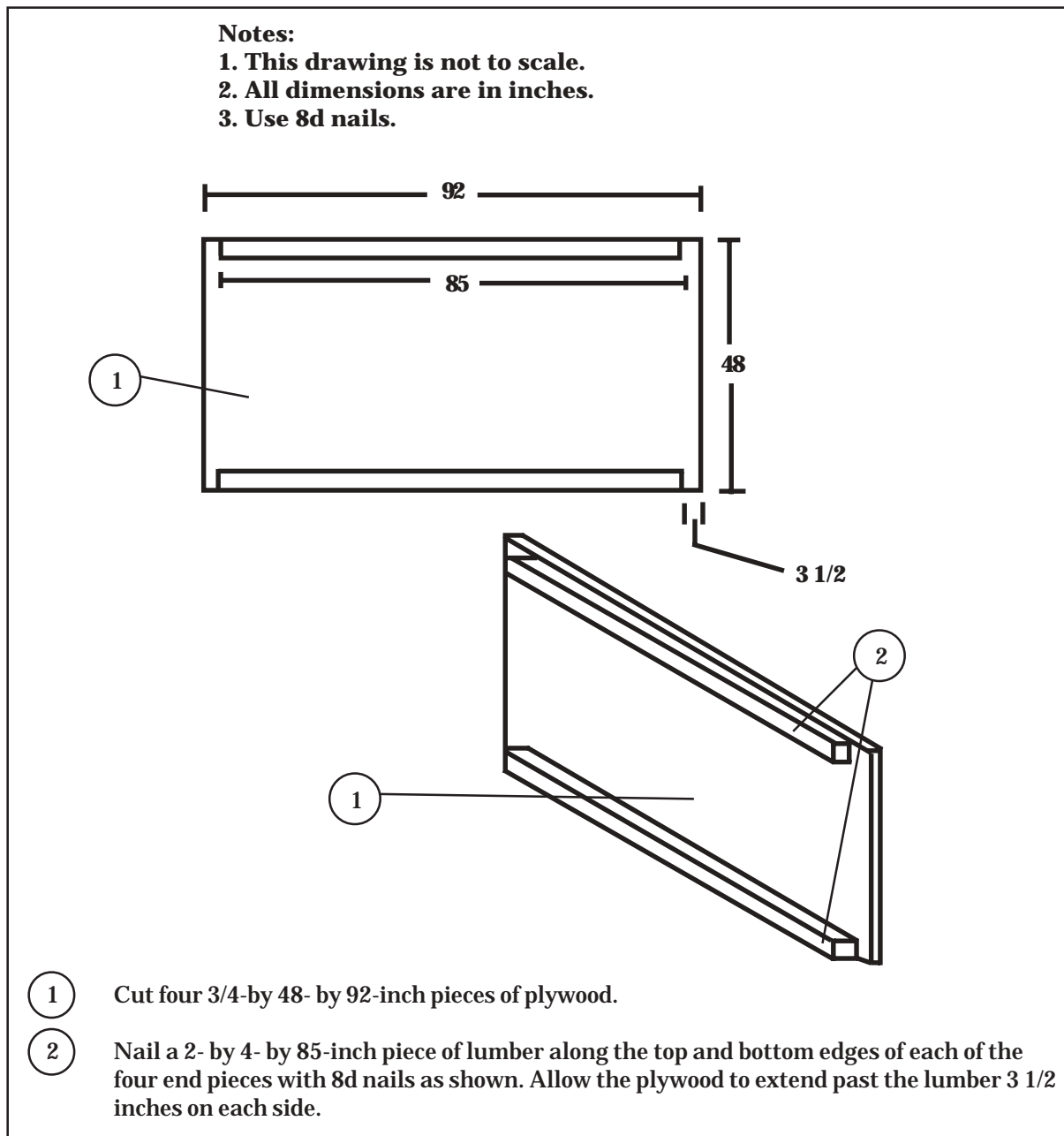


Figure 6-3. Box Ends Constructed

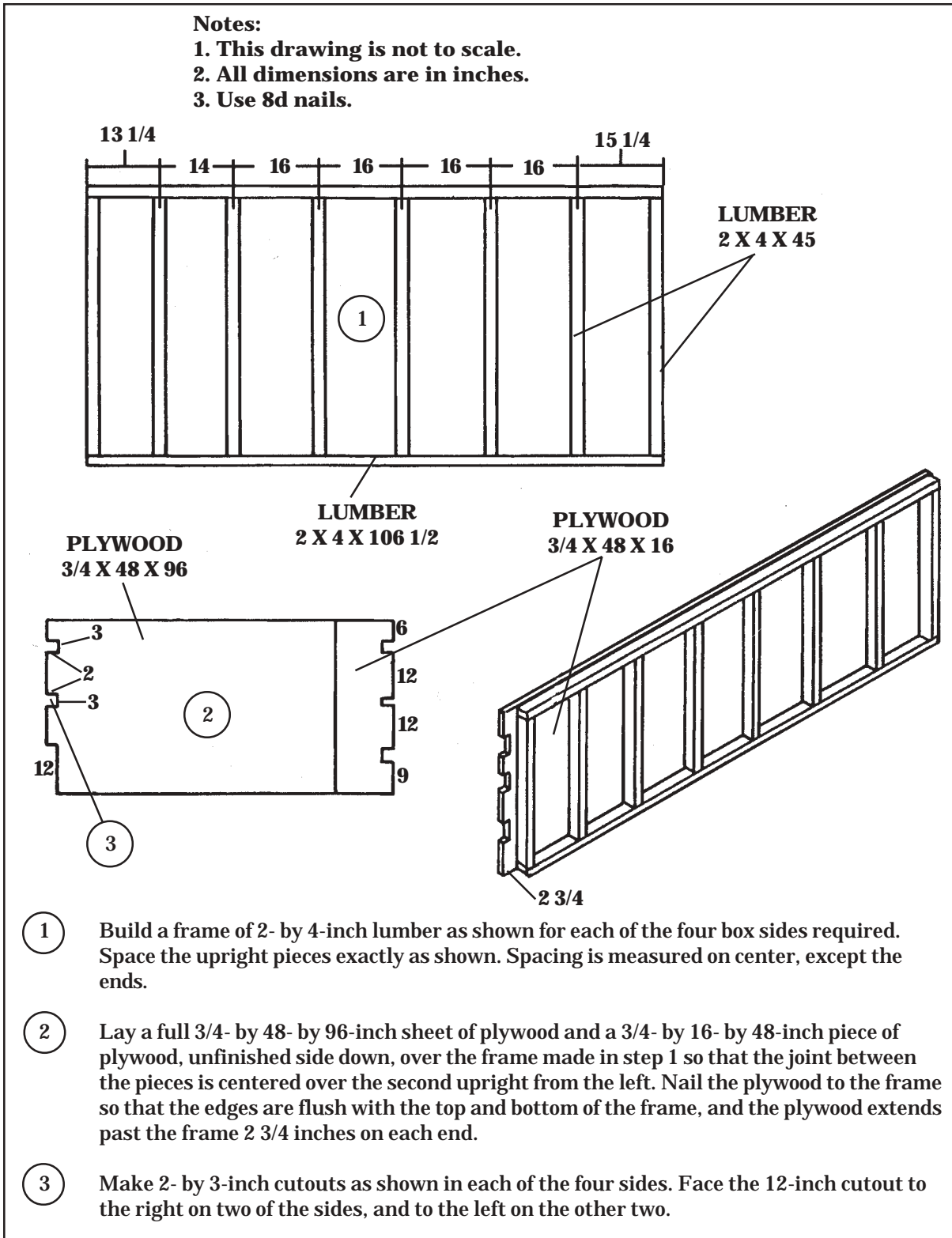


Figure 6-4. Box Sides Constructed

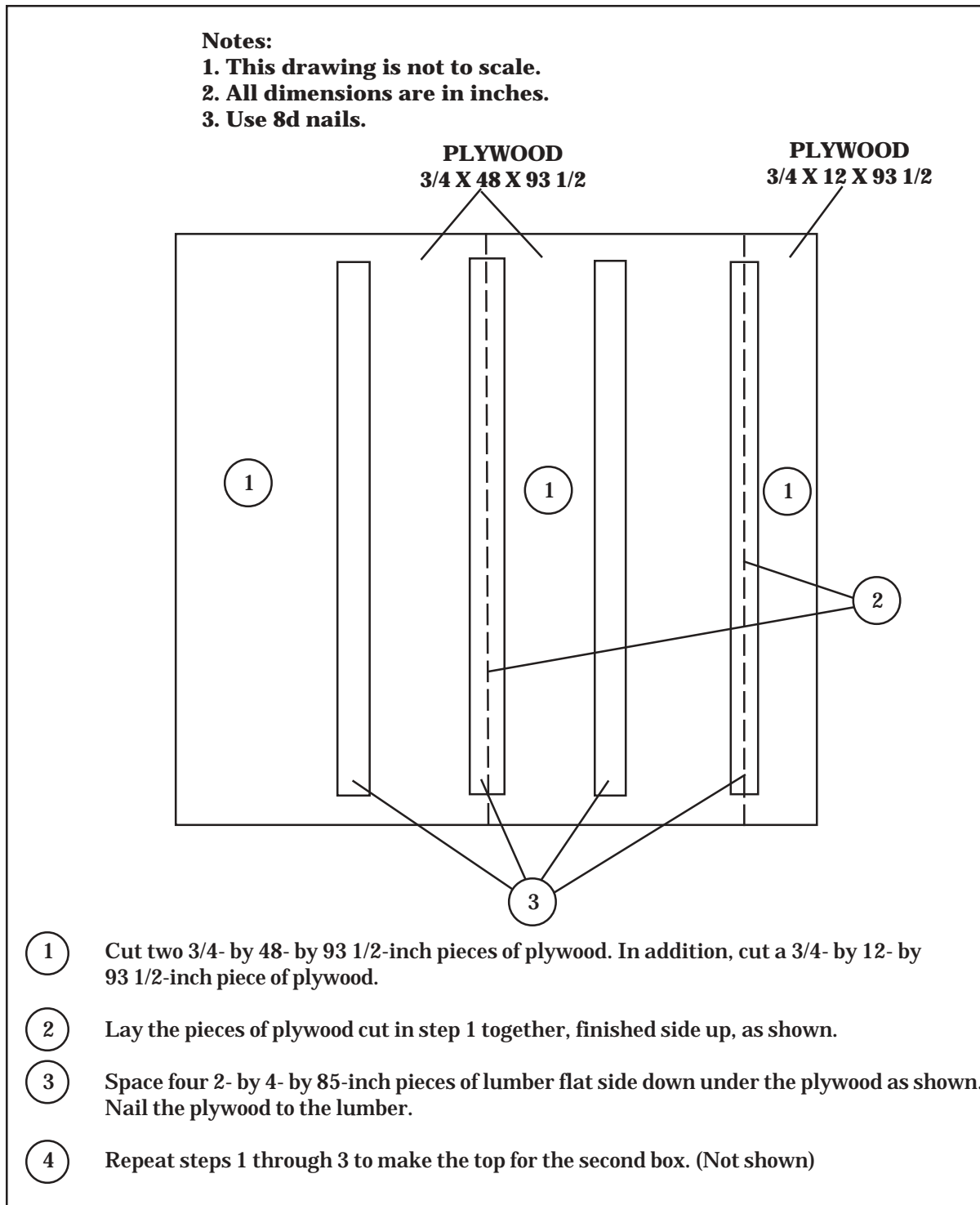


Figure 6-5. Tops of Boxes Constructed

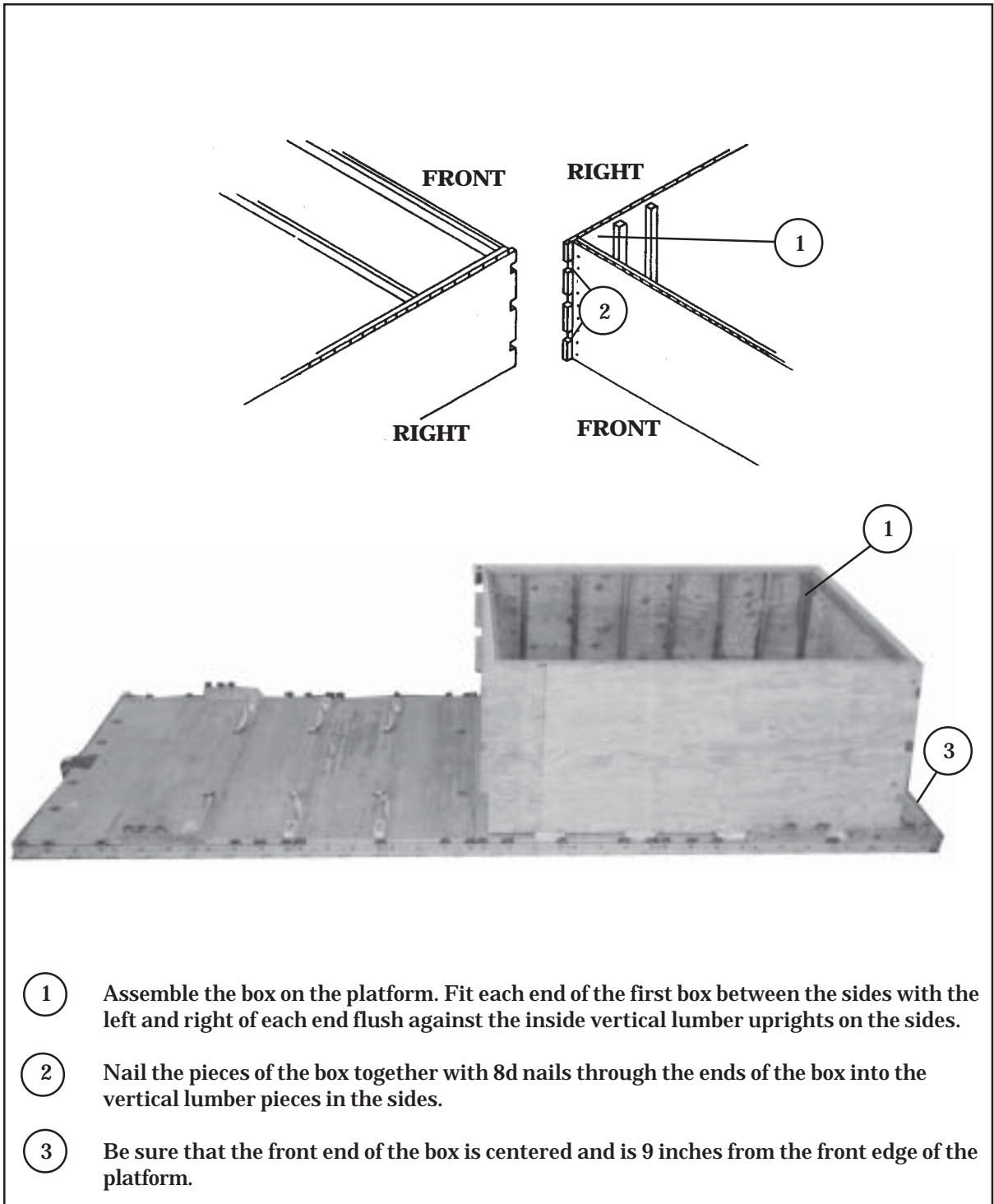


Figure 6-6. Box Partially Assembled for Loading

LOADING AND CLOSING THE BOXES

6-5. Load and close the boxes as described below.

- a. Use the tie-down rings inside the box to secure the load, if necessary.
- b. Use honeycomb, if necessary, to cover the platform inside the box or to fill empty space.
- c. The inside ends of both boxes may be cut out to allow for long items such as lumber or tent poles.
- d. Assemble and load the second box. Allow 6 inches between the ends of the two boxes.
- e. Close both boxes as shown in Figure 6-7.

INSTALLING LASHINGS

6-6. Install the lashings and secure pre-positioned lashings as shown in Figures 6-8 through 6-15.

Notes:

1. Pad the cutouts in the box sides with cellulose wadding. Tape the wadding in place.
2. This load requires lashings over 30 feet in length. Lashings must be positioned through clevises before sections are joined together.

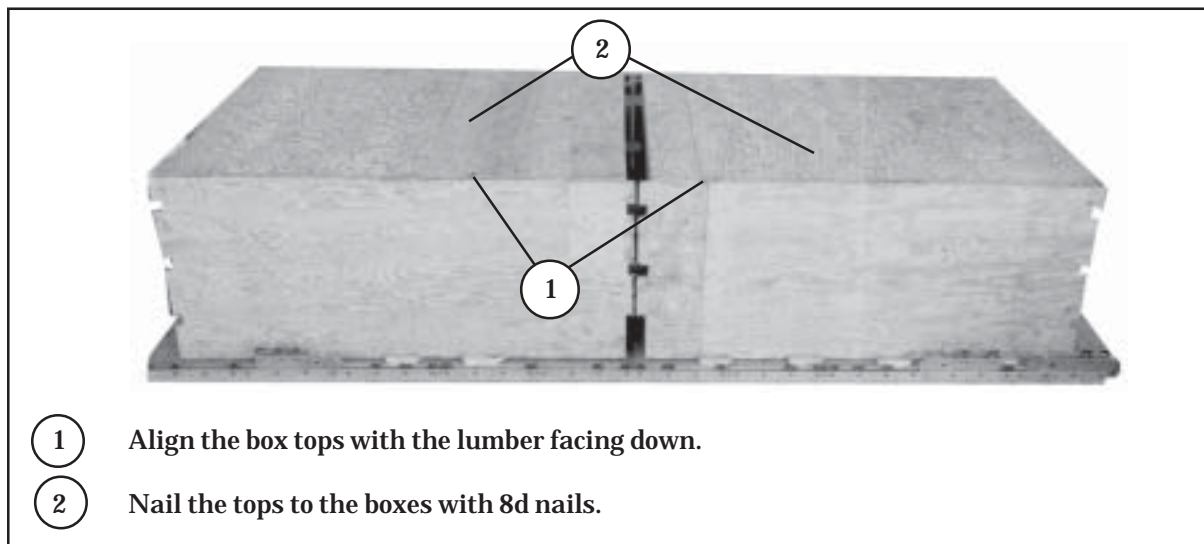


Figure 6-7. Boxes Closed

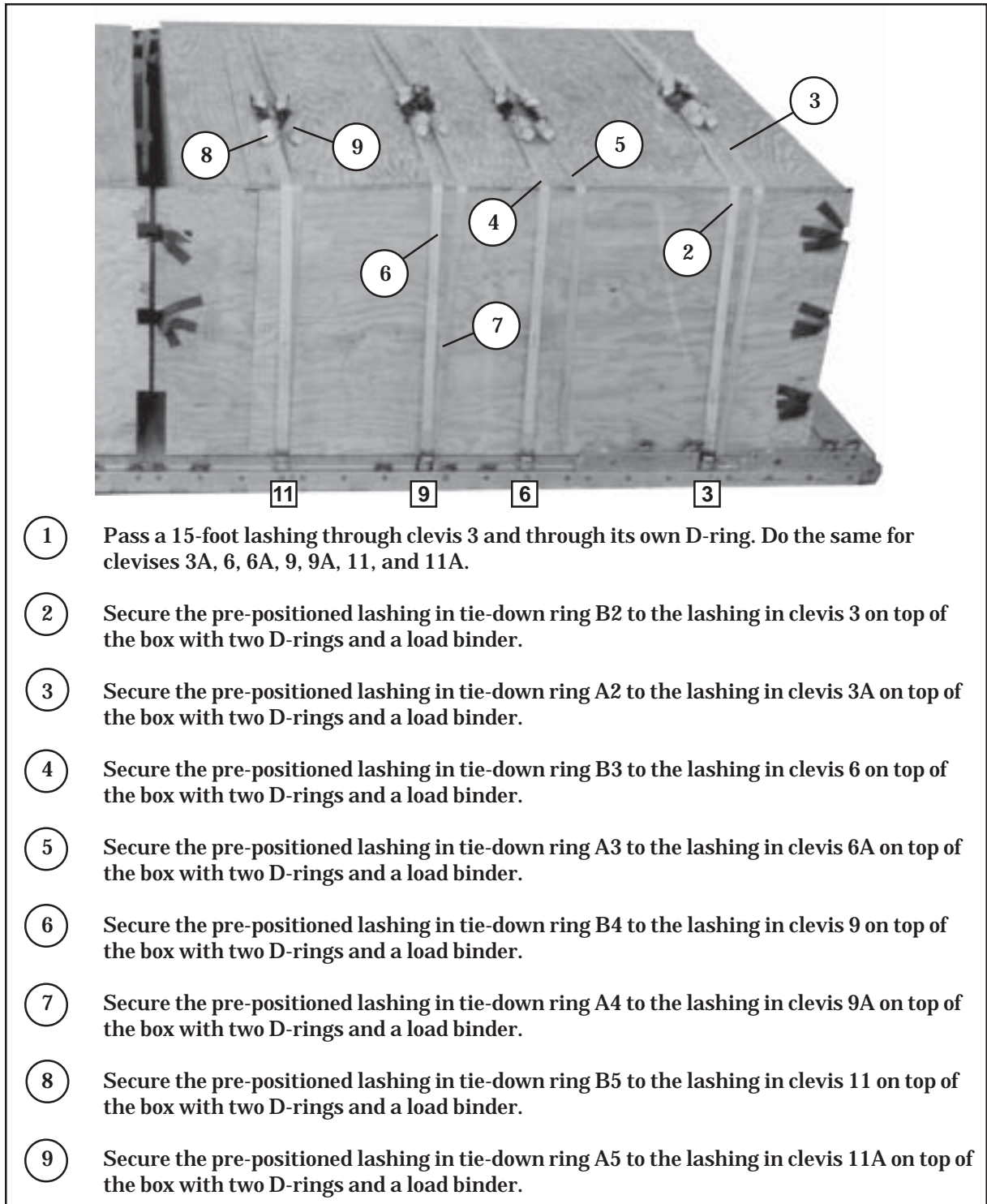


Figure 6-8. Pre-positioned Lashings Secured to Lashings on Platform Rails

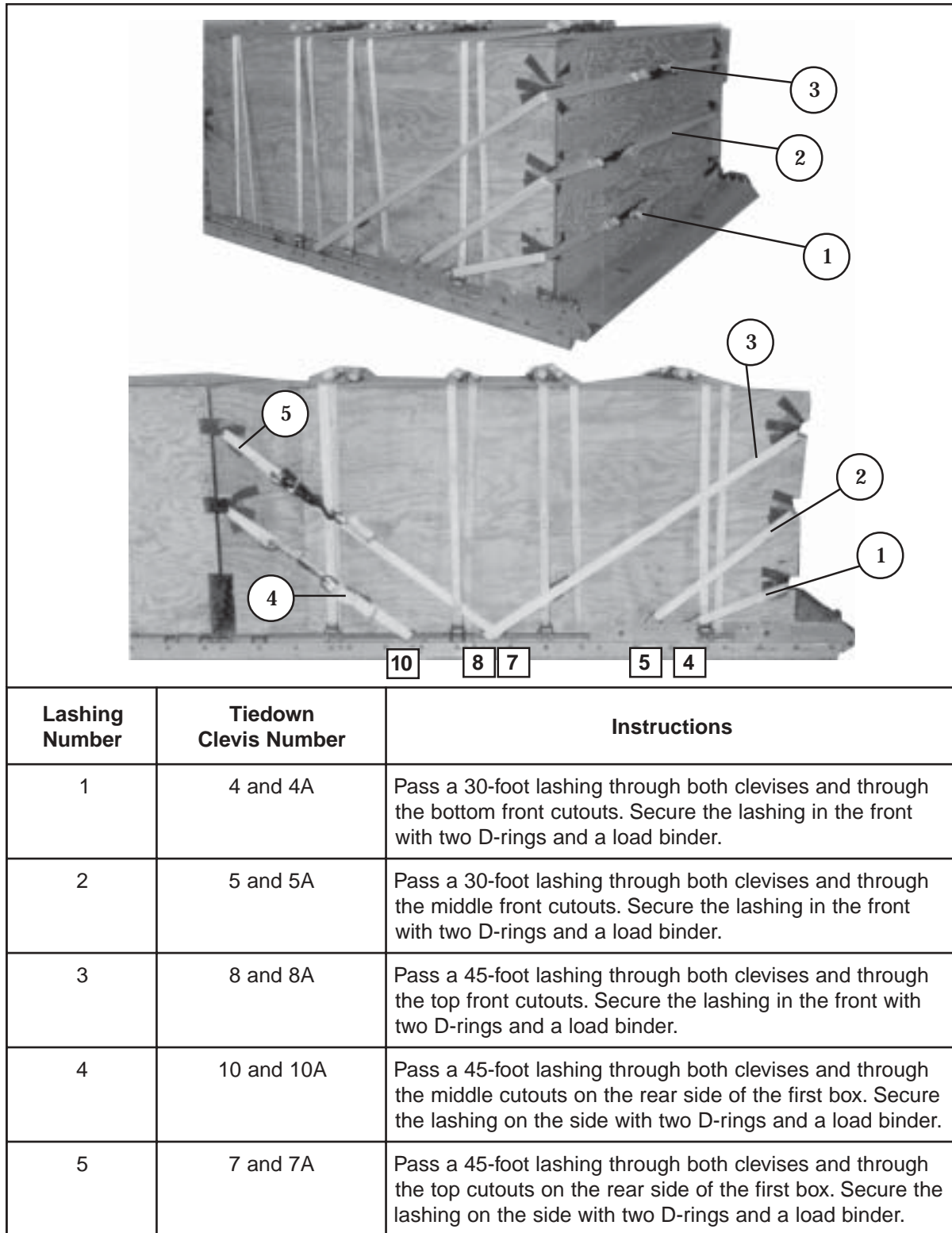
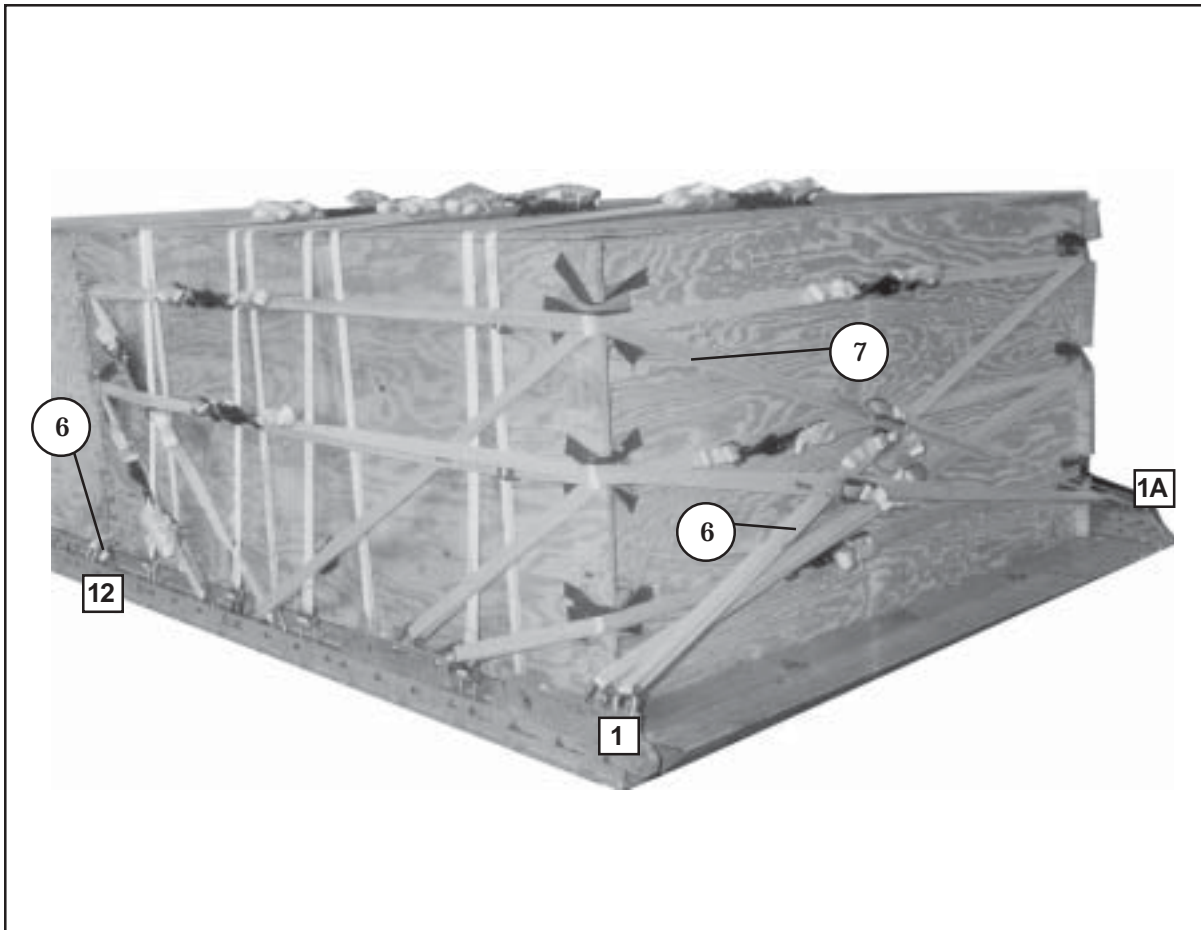


Figure 6-9. Lashings 1 Through 5 Installed



Lashing Number	Tiedown Clevis Number	Instructions
6	1 and 12	Pass a 60-foot lashing through clevis 1, through the top cutout in the left side of the first box and around the left side of the box. Pass the lashing through the top left cutout on the rear side of the first box and through clevis 12. Secure the lashing on the left side with two D-rings and a load binder.
7	1A and 12A	Pass a 60-foot lashing through clevis 1A, through the top cutout in the right side of the first box and around the right side of the box. Pass the lashing through the top right cutout on the rear end of the first box and through clevis 12A. Secure the lashing on the right side with two D-rings and a load binder.

Figure 6-10. Lashings 6 and 7 Installed

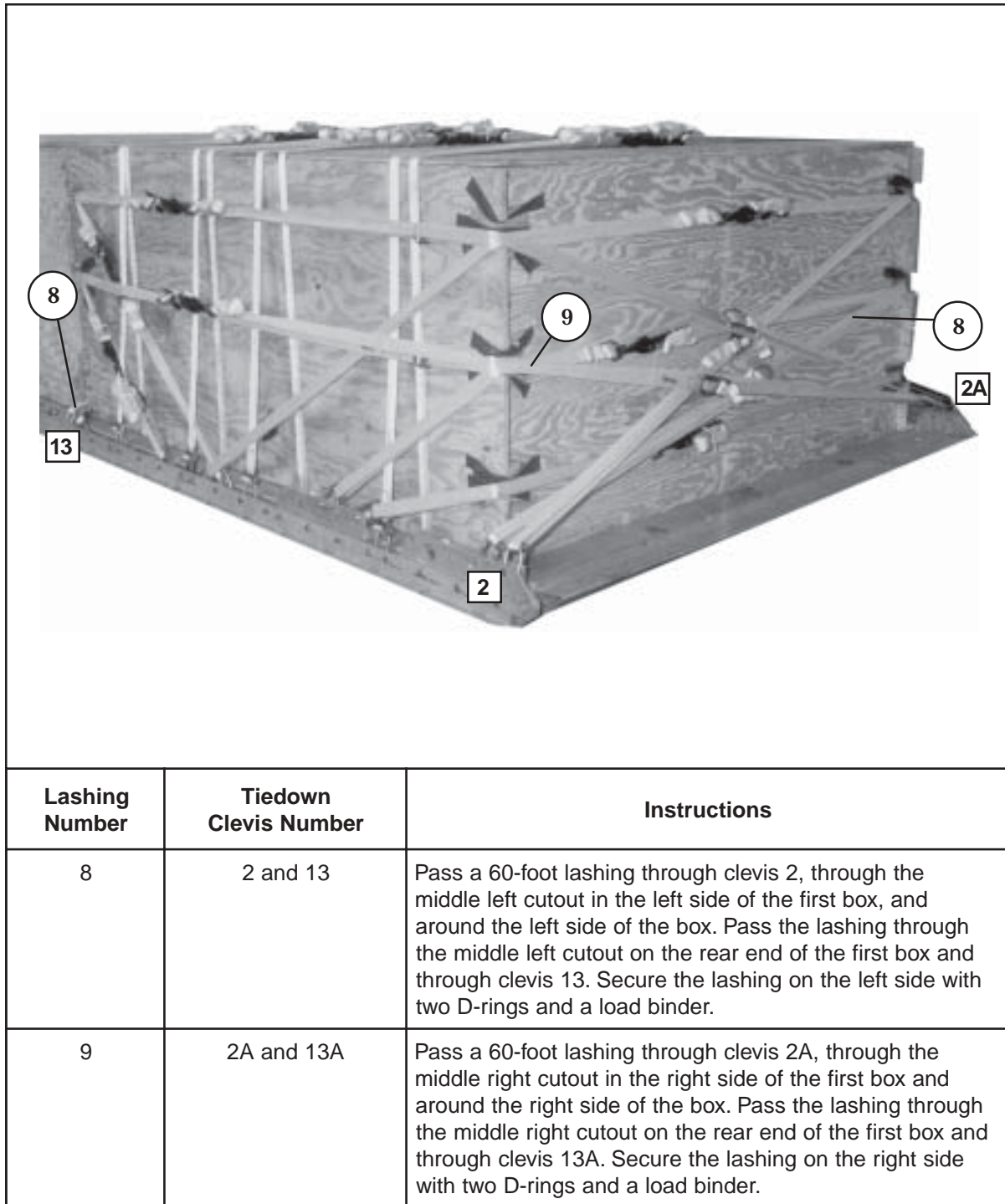
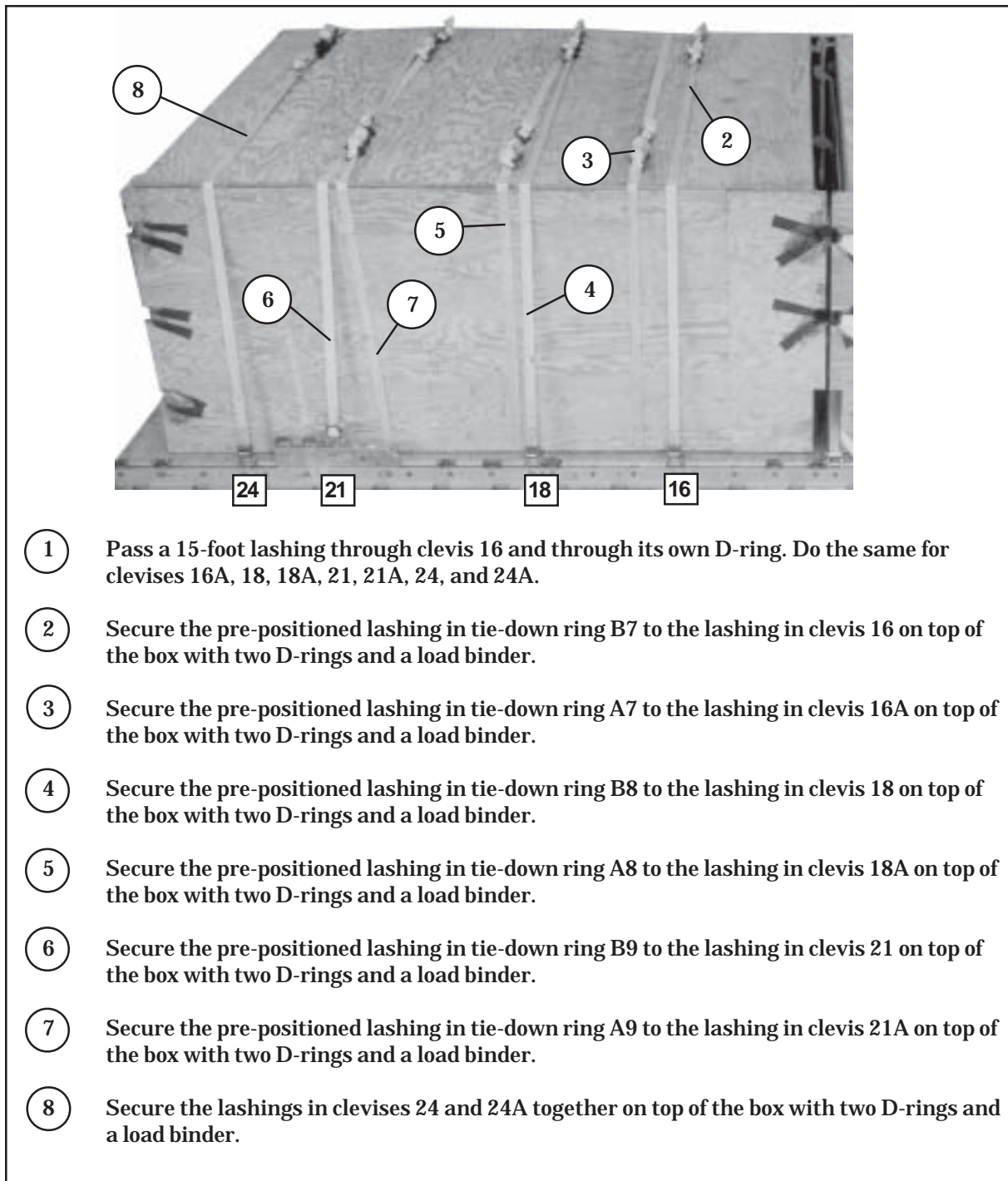
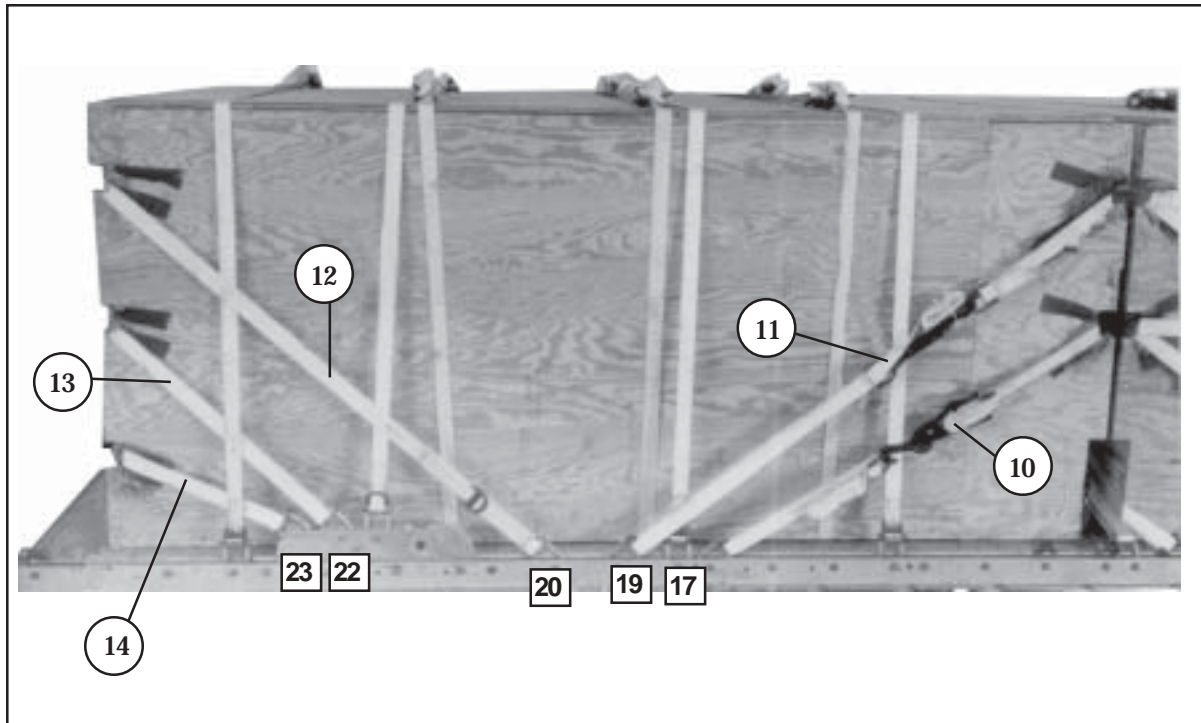


Figure 6-11. Lashings 8 and 9 Installed



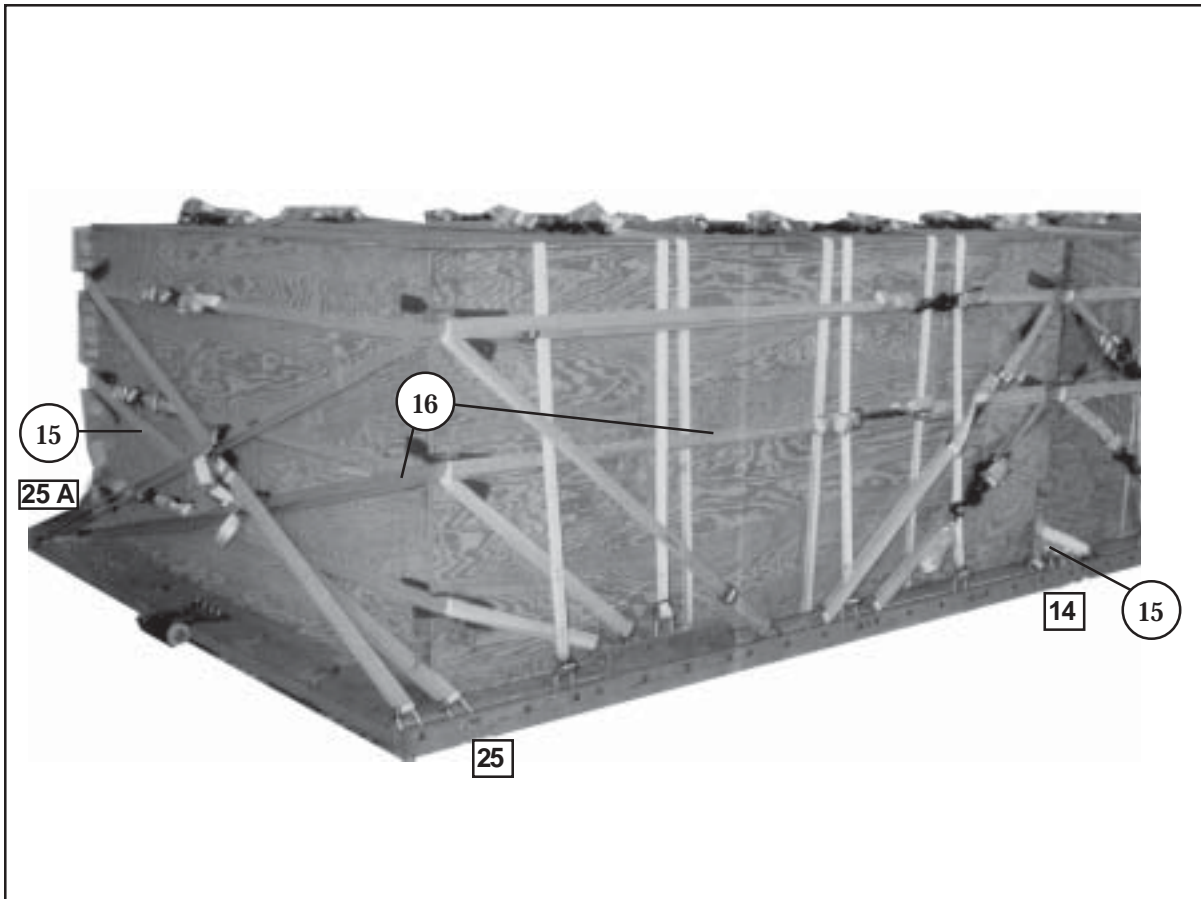
- 1 Pass a 15-foot lashing through clevis 16 and through its own D-ring. Do the same for clevises 16A, 18, 18A, 21, 21A, 24, and 24A.
- 2 Secure the pre-positioned lashing in tie-down ring B7 to the lashing in clevis 16 on top of the box with two D-rings and a load binder.
- 3 Secure the pre-positioned lashing in tie-down ring A7 to the lashing in clevis 16A on top of the box with two D-rings and a load binder.
- 4 Secure the pre-positioned lashing in tie-down ring B8 to the lashing in clevis 18 on top of the box with two D-rings and a load binder.
- 5 Secure the pre-positioned lashing in tie-down ring A8 to the lashing in clevis 18A on top of the box with two D-rings and a load binder.
- 6 Secure the pre-positioned lashing in tie-down ring B9 to the lashing in clevis 21 on top of the box with two D-rings and a load binder.
- 7 Secure the pre-positioned lashing in tie-down ring A9 to the lashing in clevis 21A on top of the box with two D-rings and a load binder.
- 8 Secure the lashings in clevises 24 and 24A together on top of the box with two D-rings and a load binder.

Figure 6-12. Pre-positioned Lashings Secured to Lashings on Platform Rails



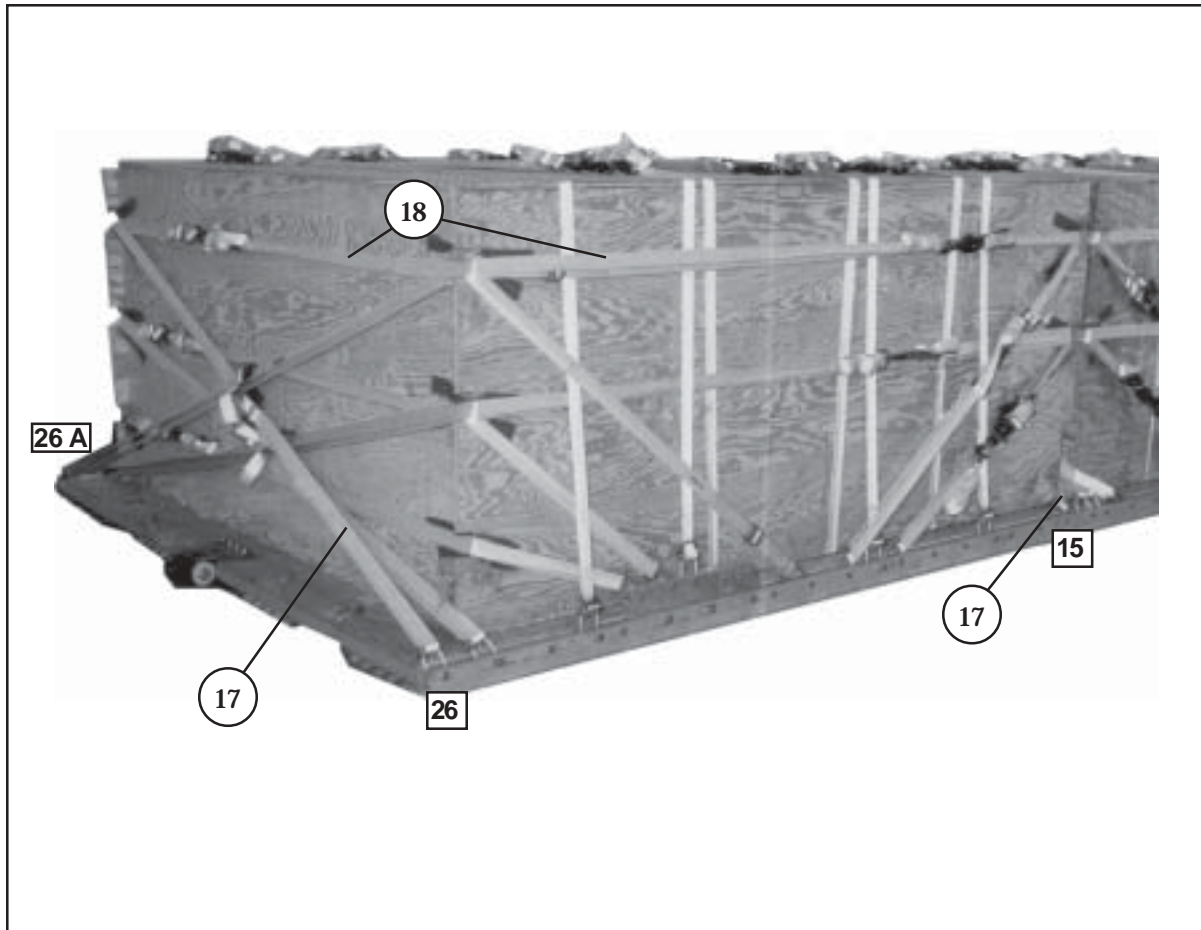
Lashing Number	Tiedown Clevis Number	Instructions
10	17 and 17A	Pass a 30-foot lashing through both clevises and through the middle cutouts in the front end of the second box. Secure the lashing on the side with two D-rings and a load binder.
11	19 and 19A	Pass a 45-foot lashing through both clevises and through the top cutouts in the front end of the second box. Secure the lashing on the side with two D-rings and a load binder.
12	20 and 20A	Pass a 45-foot lashing through both clevises and through the top rear cutouts. Secure the lashing in the rear with two D-rings and a load binder.
13	22 and 22A	Pass a 30-foot lashing through both clevises and through the middle rear cutouts. Secure the lashing in the rear with two D-rings and a load binder.
14	23 and 23A	Pass a 30-foot lashing through both clevises and through the bottom rear cutouts. Secure the lashing in the rear with two D-rings and a load binder.

Figure 6-13. Lashings 10 Through 14 Installed



Lashing Number	Tiedown Clevis Number	Instructions
15	14 and 25	Pass a 60-foot lashing through clevis 14, through the middle cutout in the left side of the second box and around the left side of the box. Pass the lashing through the left middle cutout at the rear and through clevis 25. Secure the lashing in the rear with two D-rings and a load binder.
16	14A and 25A	Pass a 60-foot lashing through clevis 14A, through the middle cutout in the right side of the second box and around the right side of the box. Pass the lashing through the right middle cutout at the rear and through clevis 25A. Secure the lashing on the right side with two D-rings and a load binder.

Figure 6-14. Lashings 15 and 16 Installed

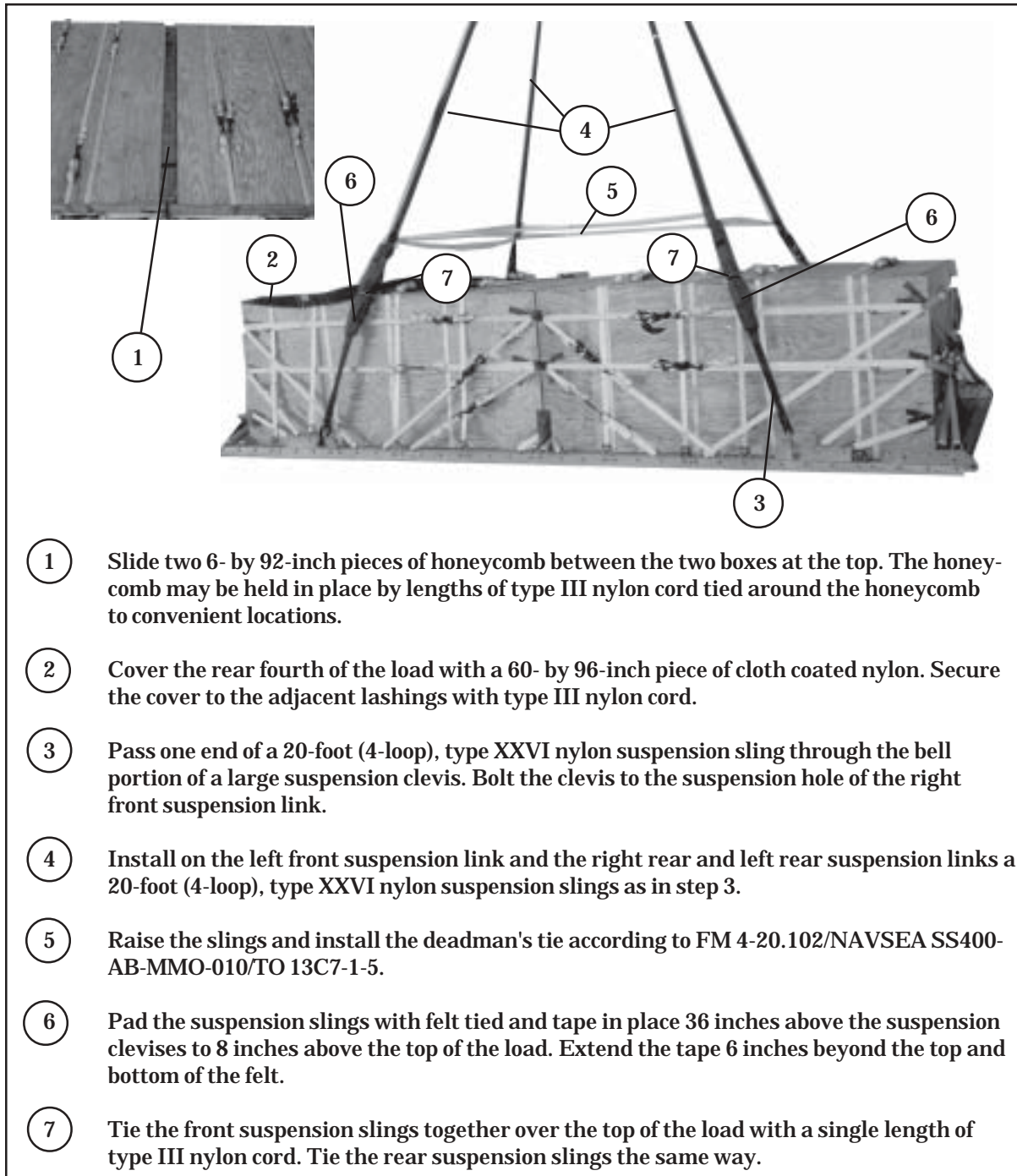


Lashing Number	Tiedown Clevis Number	Instructions
17	15 and 26	Pass a 60-foot lashing through clevis 15, through the top cutouts in the left side of the second box and around the left side of the box. Pass the lashing through the left top cutout at the rear and through clevis 26. Secure the lashing in the rear with two D-rings and a load binder.
18	15A and 26A	Pass a 60-foot lashing through clevis 15A, through the top cutouts in the right side of the second box and around the right side of the box. Pass the lashing through the right top cutout at the rear and through clevis 26A. Secure the lashing on the right side with two D-rings and a load binder.

Figure 6-15. Lashings 17 and 18 Installed

INSTALLING LOAD COVER, SUSPENSION SLINGS AND DEADMAN'S TIE

6-7. Install the load cover, honeycomb buffers, suspension slings and deadman's tie as shown in Figure 6-16.



- ① Slide two 6- by 92-inch pieces of honeycomb between the two boxes at the top. The honeycomb may be held in place by lengths of type III nylon cord tied around the honeycomb to convenient locations.
- ② Cover the rear fourth of the load with a 60- by 96-inch piece of cloth coated nylon. Secure the cover to the adjacent lashings with type III nylon cord.
- ③ Pass one end of a 20-foot (4-loop), type XXVI nylon suspension sling through the bell portion of a large suspension clevis. Bolt the clevis to the suspension hole of the right front suspension link.
- ④ Install on the left front suspension link and the right rear and left rear suspension links a 20-foot (4-loop), type XXVI nylon suspension slings as in step 3.
- ⑤ Raise the slings and install the deadman's tie according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
- ⑥ Pad the suspension slings with felt tied and tape in place 36 inches above the suspension clevises to 8 inches above the top of the load. Extend the tape 6 inches beyond the top and bottom of the felt.
- ⑦ Tie the front suspension slings together over the top of the load with a single length of type III nylon cord. Tie the rear suspension slings the same way.

Figure 6-16. Load Cover, Suspension Slings, and Deadman's Tie Installed

INSTALLING PARACHUTES

6-8. Compute the parachute requirements for the load being rigged. Prepare and install the cargo parachutes according to FM 4-20.102/ NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 6-17.

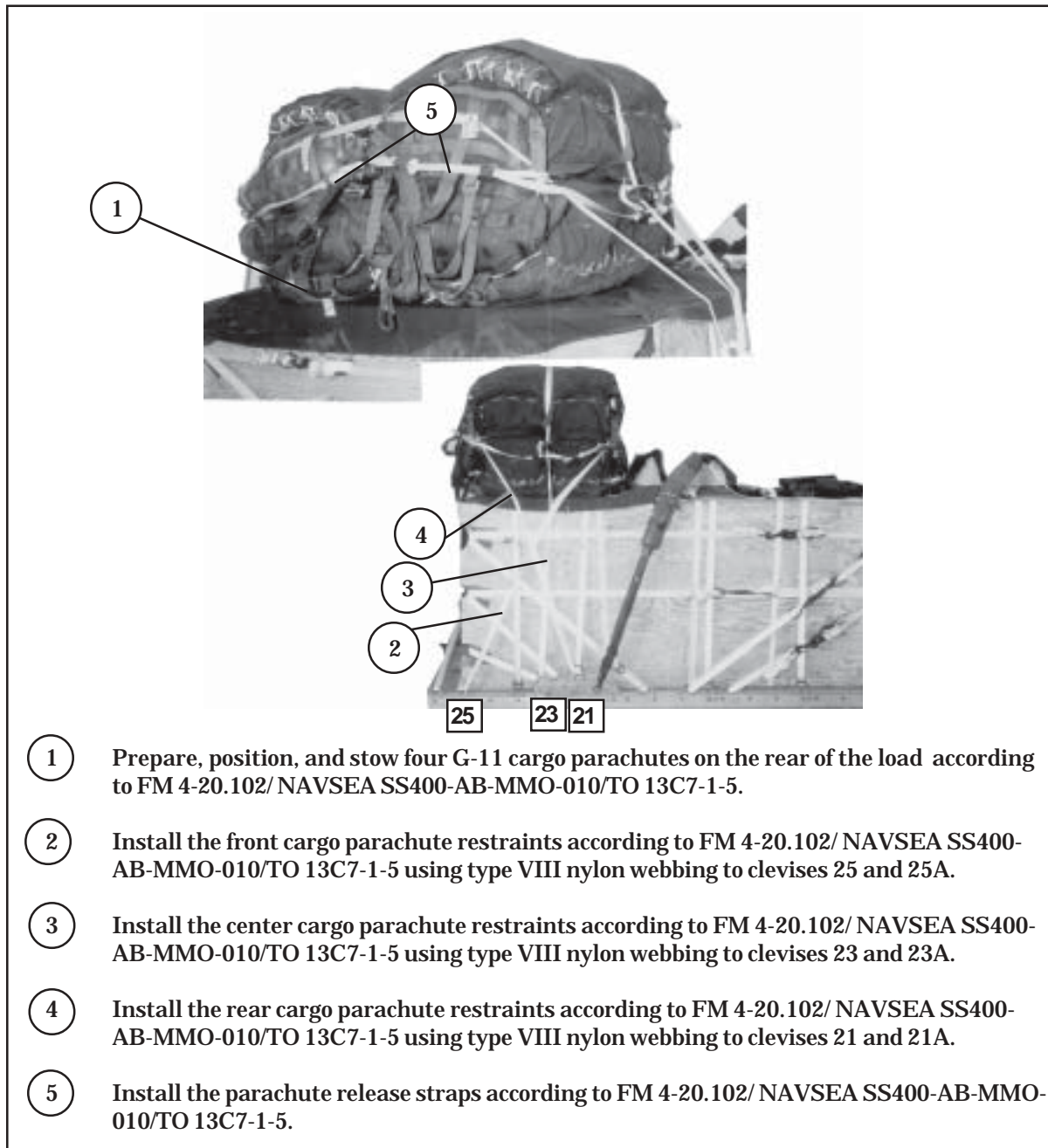
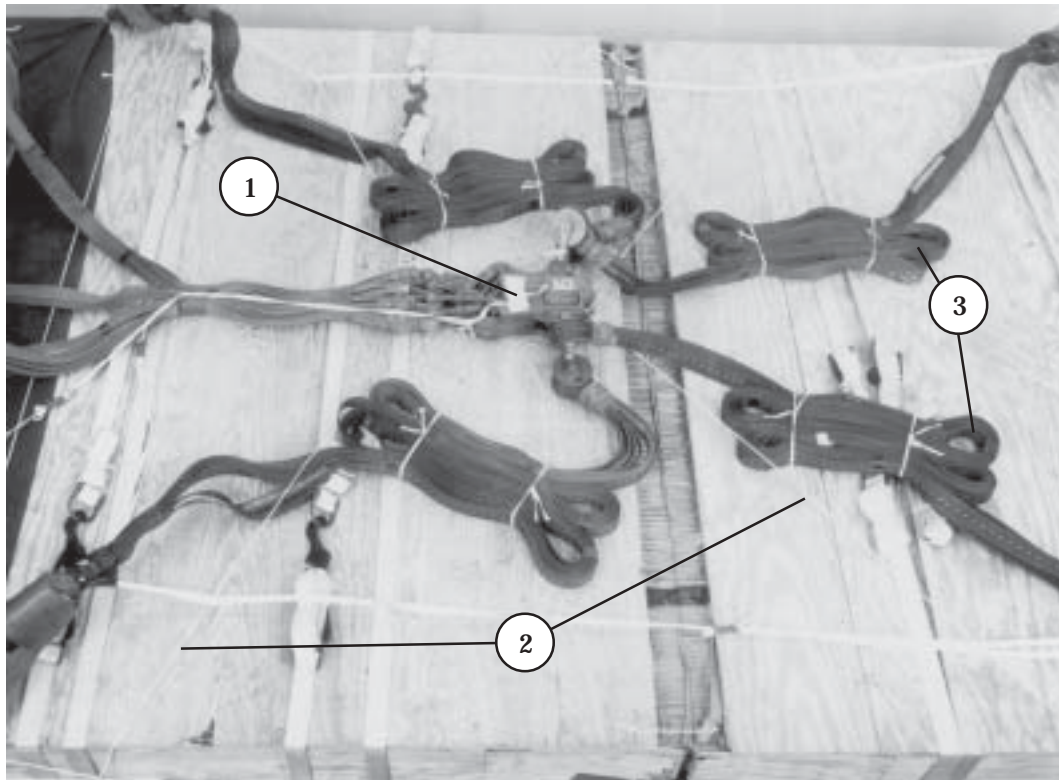


Figure 6-17. Cargo Parachutes Installed

INSTALLING THE RELEASE SYSTEM

6-9. Prepare, attach, and safety an M-2 cargo parachute release according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 6-18.



- ① Prepare and install the M-2 cargo parachute release according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Place the assembly in front of the parachutes as shown.
- ② Safety the release to convenient points on the load with type III nylon cord according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
- ③ S-fold and tie any excess suspension slings with one turn of type I, 1/4-inch cotton webbing.

Figure 6-18. Release System Installed

INSTALLING THE EXTRACTION SYSTEM

6-10. Install the extraction system according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 6-19.

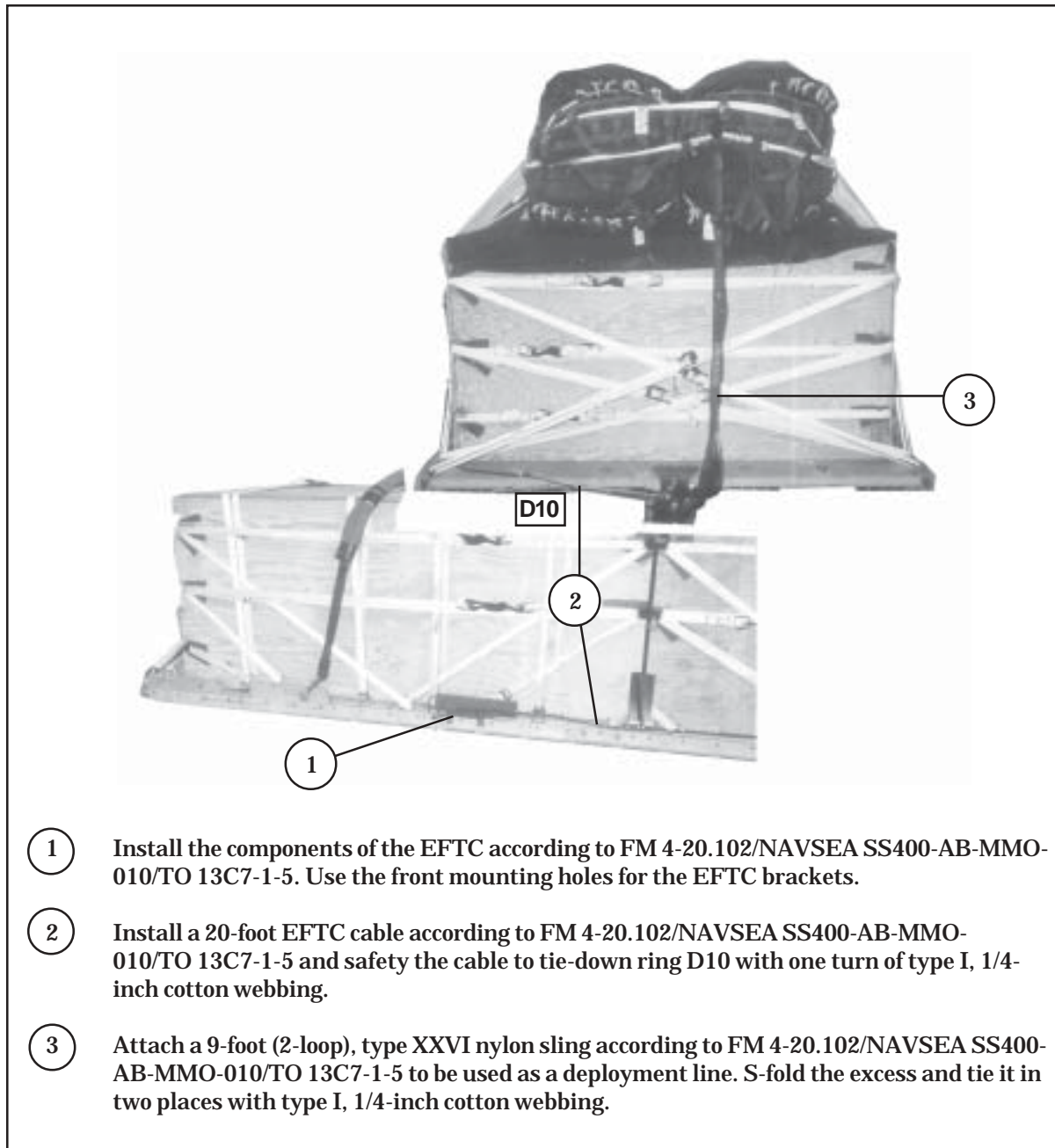


Figure 6-19. Extraction System Installed

PLACING EXTRACTION PARACHUTE

6-11. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Place the extraction parachute and line on the load for installation in the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

6-12. Select and install the provisions for the emergency aft restraints according to the emergency aft restraint requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

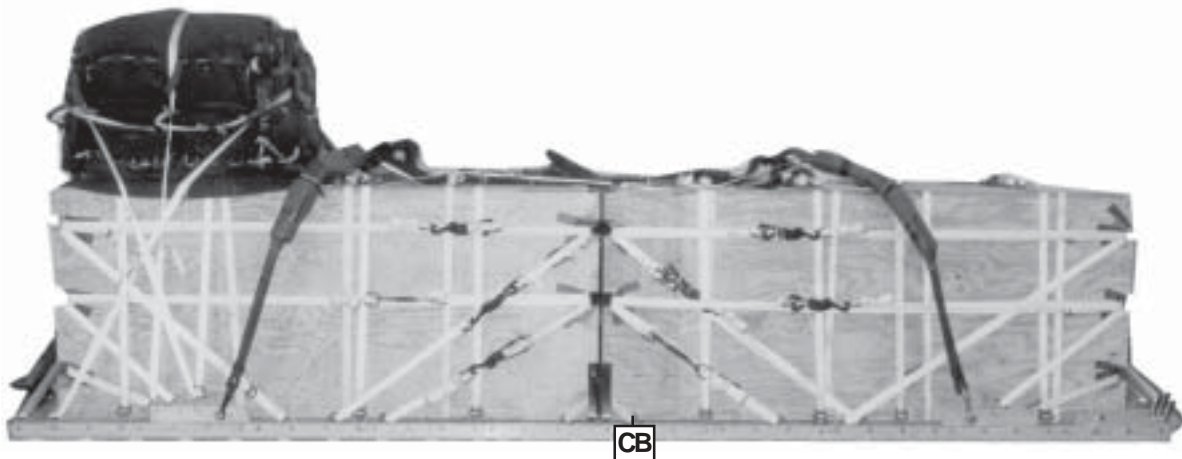
MARKING RIGGED LOAD

6-13. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and as shown in Figure 6-20. Complete Shipper's Declaration for Dangerous Goods. If the load varies from the one shown, the weight, height, CB, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

6-14. Use the equipment listed in Table 6-1 to rig this load.

CAUTION
 Make the final rigger inspection required by AR 59-4 and FM 4-20.102/NAVSEA
 SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Minimum Weight.....6,300 pounds

Maximum Weight.....See paragraph 6-1

Height.....88 inches

Width.....108 inches

Length.....240 inches

Overhang: Front.....0 inches

Rear.....0 inches

Center of Balance (CB)
 (from front edge of the platform).....126 inches

Extraction System (adds 18 inches to length of platform) EFTC

Figure 6-20. Mass Supply Boxes Rigged on a 20-Foot Platform for Low-Velocity Airdrop

Table 6-1. Equipment Required for Rigging Mass Supply Boxes on a 20-Foot, Type V Platform for Low-Velocity Airdrop

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive paste, 1-gal.	As required
4030-00-090-5354	Clevis, suspension, 1-inch (large)	5
8305-00-880-8155	Cloth, coated (nylon, type II, 17.0 oz, green, 60-in)	As required
4020-00-240-2146	Cord, nylon, type III, 550-lb.	As required
1670-00-434-5787	Coupling, airdrop extraction force transfer, w/20-ft. cable	1
1670-00-360-0328	Cover, clevis	4
8135-00-664-6958	Cushioning material (Cellulose padding)	As required
8305-00-958-3685	Felt, 1/2-inch thick	As required
1670-01-183-2678	Leaf, extraction line (line bag) (add 2 for C-17)	2
	Line extraction:	
1670-01-062-6313	60-foot (3-loop), type XXVI (for C-130)	1
1670-01-107-7651	140-foot (3-loop), type XXVI (for C-5)	1
1670-01-107-7651	140-foot (3-loop), type XXVI	2
1670-01-107-7651	140-foot (3-loop), type XXVI (for C-17)	1
1670-01-064-4452	60-foot (1-loop), type XXVI (for C-17), (drogue line)	1
	Link assembly, two-point:	
5306-00-435-8994	Bolt, 1-inch diameter, 4-inches long (add 4 for C-5)	2
5310-00-232-5165	Nut, 1-inch (add 4 for C-5)	2
1670-00-003-1953	Plate, side, 3 3/4-inch	2
5365-00-007-3414	Spacer, large (add 4 for C-5)	2
5510-00-220-6146	Lumber, 2- by 4-in	
	45-in	
	85-in	
	106 1/2	
5310-00-010-4657	Nail, steel wire, common, 6d	As required
5315-00-010-4659	Nail, steel wire, common, 8d	As required
1670-00-753-3928	Pad, energy-dissipating (honeycomb) 3- by 36- by 96-inches	2 sheets
1670-01-016-7841	Parachute, cargo, G-11	4
	Parachute, cargo, extraction:	
1670-00-040-8135	28-ft.	1
1670-01-063-3715	15-ft. (C-17 only)	1
	Platform, airdrop, type V, 16-ft:	
1670-01-162-2372	Clevis assembly (type V)	(52)
1670-01-353-8424	Extraction bracket assembly	(1)
1670-01-247-2389	Link, suspension bracket, type V	(2)
1670-01-162-2381	Link, tandem, suspension link assembly	(4)
1670-01-097-8817	Release, cargo parachute, M-2	1
	Sling, cargo, airdrop:	
1670-01-062-6304	9-ft. (2-loop), type XXVI	1
1670-01-064-4453	20-ft. (4-loop), type XXVI	4
1670-01-062-6313	60-foot (3-loop), type XXVI	4

Table 6-1. Equipment Required for Rigging Mass Supply Boxes on a 20-Foot, Type V Platform for Low-Velocity Airdrop (Continued)

National Stock Number	Item	Quantity
5340-00-040-8219	Strap, parachute, release, multi-knife	2
7501-00-266-5016	Tape, adhesive, 2-inch	As required
1670-00-937-0271	Tiedown assembly, 15-ft.	93
1670-01-483-8259	Towplate release mechanism (H-block) (C-17 only)	1
	Webbing:	
8305-00-268-2411	Cotton, 1/4-inch, type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-inch	As required
8305-00-261-8585	Type VIII nylon	As required

Chapter 7

RIGGING PALLETIZED LOAD SYSTEM (PLS) ON A 24-FOOT, TYPE V PLATFORM FOR LOW-VELOCITY AIRDROP

Section I

RIGGING 105-MILLIMETER (MM) AMMUNITION

DESCRIPTION OF LOAD

7-1. The Palletized Load System (PLS) can be moved from the drop zone and transported on a specially designed truck. Bulk supplies are lashed to the pallet, giving the load integrity for transport. The pallet has swivel rings along the sides for lashing the load. The pallet and load are lashed to the airdrop platform for low-velocity airdrop. The load shown consists of 245 boxes of 105-millimeter ammunition. Adapt these procedures to rig other items of bulk supplies. Ammunition listed in FM 4-20.153/MCRP 4-11.3B/TO 13C7-18-41, as certified for low-velocity airdrop, may be rigged using these procedures. The rigged load may not be more than 100 inches high. Refer to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 for the weight limitations and for the number of parachutes to be used.

PREPARING PLATFORM

7-2. Prepare a 24-foot, type V platform as shown in Figure 7-1.

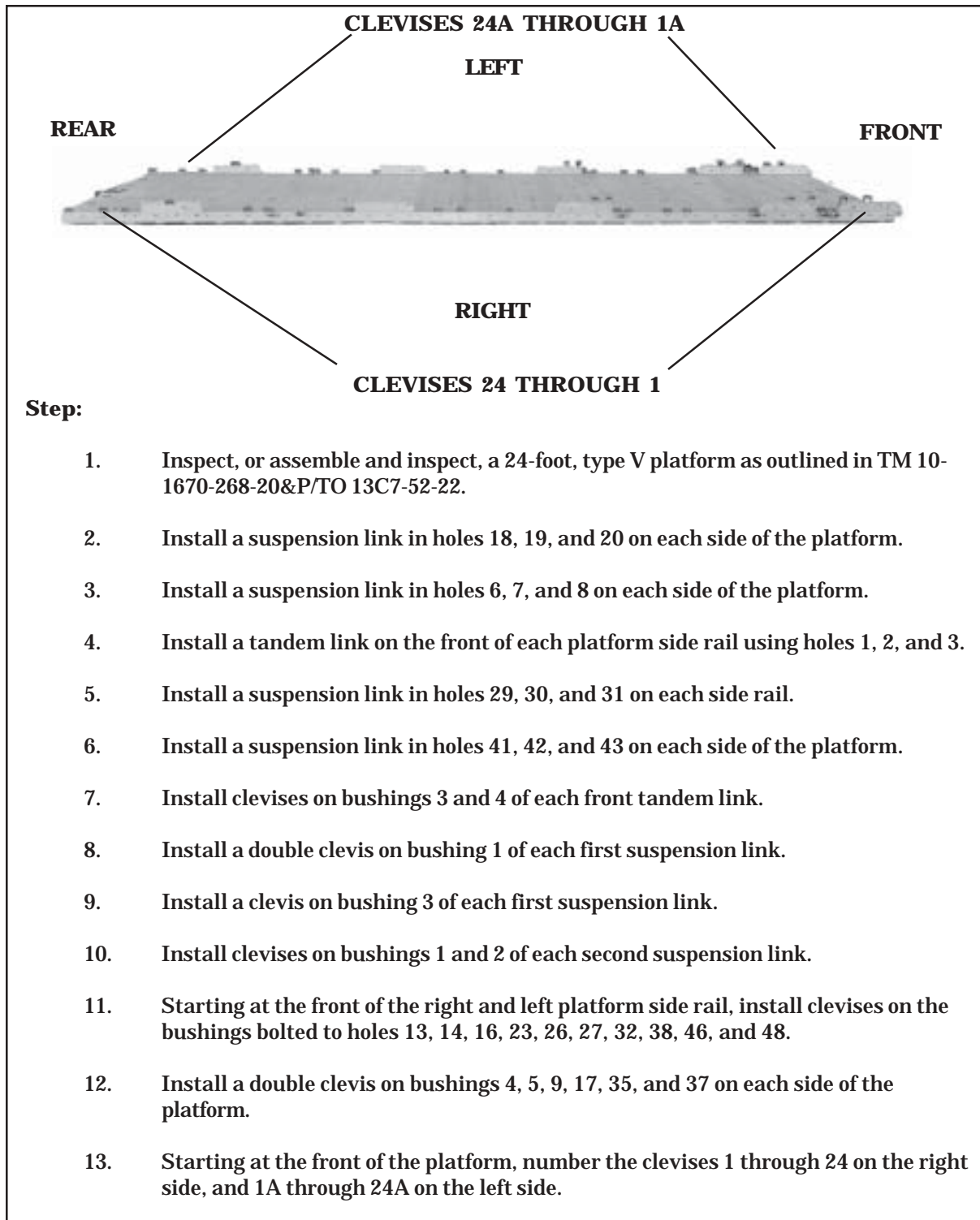
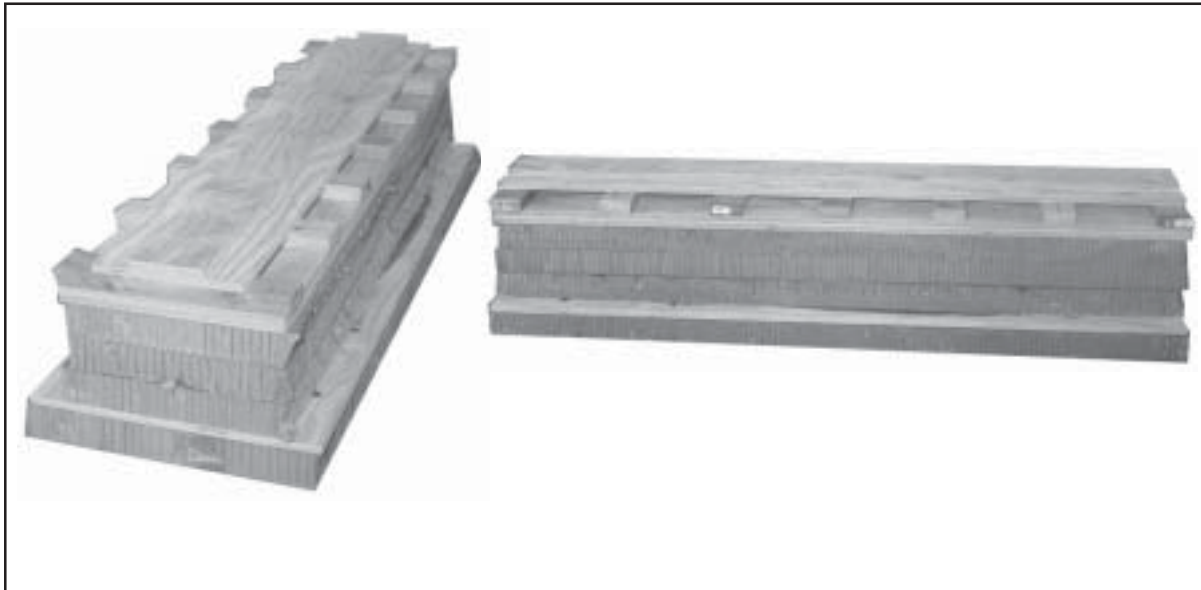


Figure 7-1. Platform Prepared

PREPARING AND POSITIONING HONEYCOMB

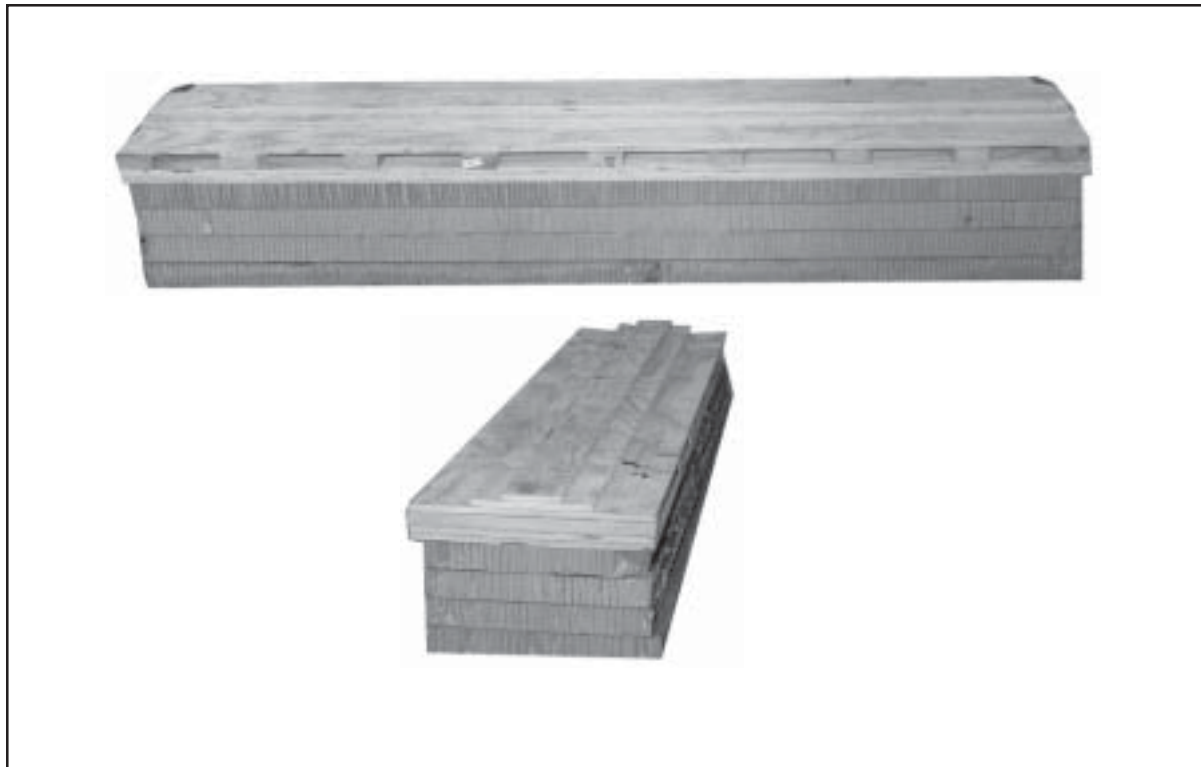
7-3. Prepare ten honeycomb stacks as shown in Figures 7-2 through 7-4.
 Position the stacks on the platform as shown in Figure 7-5.



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
1,2, 5, and 6	1	24	76	Honeycomb	Glue plywood flush over honeycomb to form base.
	1	24	76		
	3	18	76	Honeycomb	Center and glue on base.
	2	18	76	3/4-inch plywood	Glue flush over honeycomb.
	7	18	*3 1/2	2- by 4-inch lumber	Nail one piece flush over each end of the plywood. Center a third piece between the ends. Space two pieces evenly between each end piece and the center piece.
	1	12	76	3/4-inch plywood	Center and nail over lumber.
	1	6	76	3/4-inch plywood	Center and nail over plywood.

* Two- by four-inch lumber is actually 3 1/2 inches wide.

Figure 7-2. Stacks 1, 2, 5, and 6 Prepared



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
3 and 4	4 2	24 24	96 96	Honeycomb 3/4-inch plywood	Glue plywood flush over honeycomb to form base.
	9	24	*3 1/2	2- by 4-inch lumber	Nail one piece flush over each end of the plywood. Center a third piece between the ends. Space three pieces evenly between each end piece and the center piece.
	1	24	96	3/4-inch plywood	Center and nail over lumber.
	1	12	96	3/4-inch plywood	Center and nail over plywood.
	1	6	96	3/4-inch plywood	Center and nail over plywood.

* Two- by four-inch lumber is actually 3 1/2 inches wide.

Figure 7-3. Stacks 3 and 4 Prepared



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
7, 8, 9, and 10	4	16	84	Honeycomb	Glue flush to form base.
	2	9	84	Honeycomb	Glue flush on one side of base.
	1	9	84	3/4-inch plywood	Glue flush over honeycomb.
	1	9	84	Honeycomb	Glue flush over plywood.
	1	*3 1/2	84	2- by 4-inch lumber	Center and glue on honeycomb.

* Two- by four-inch lumber is actually 3 1/2 inches wide.

Figure 7-4. Stacks 7, 8, 9, and 10 Prepared

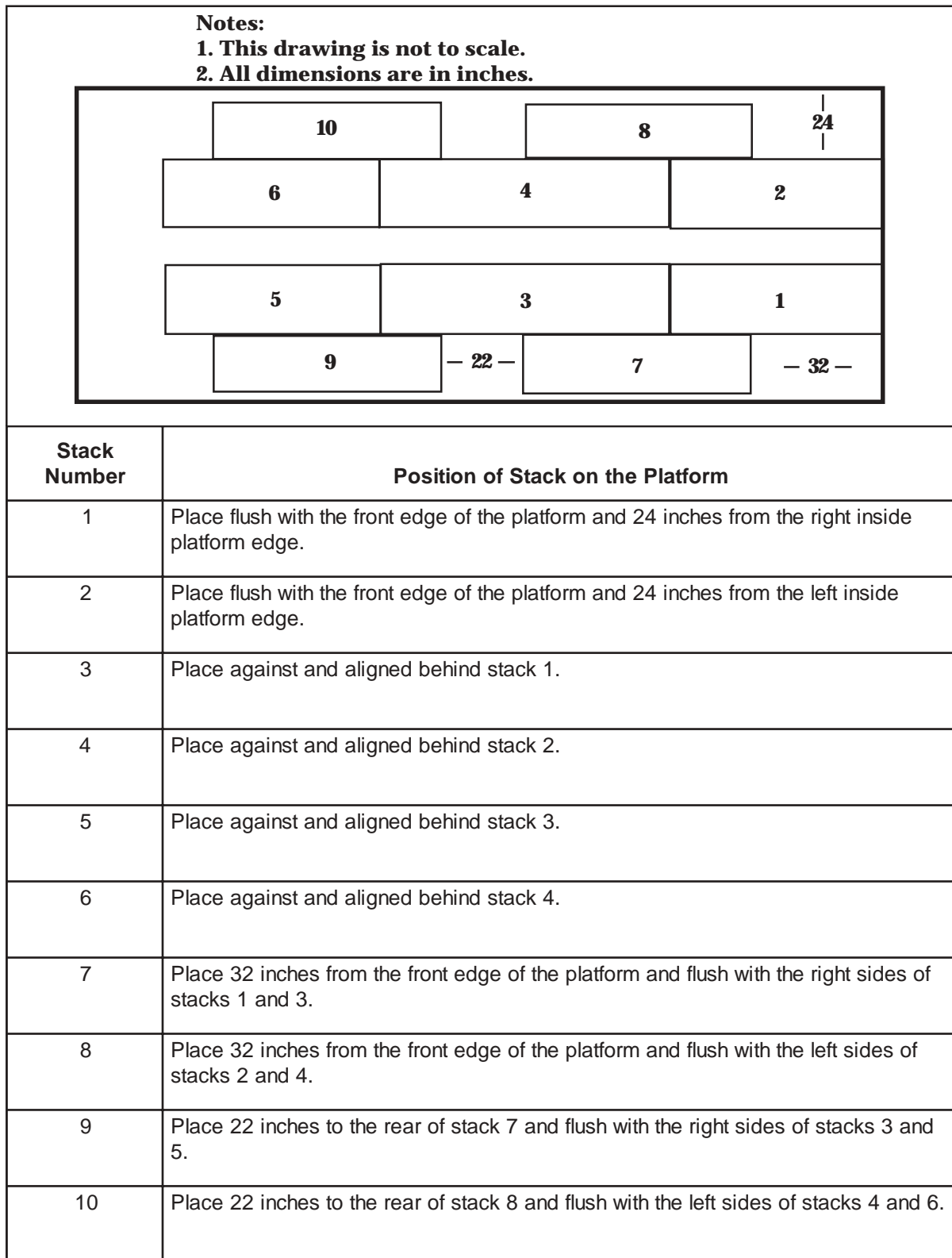


Figure 7-5. Honeycomb Stacks Positioned on Platform

PREPARING PLS PALLET

7-4. Prepare the pallet as shown in Figure 7-6.

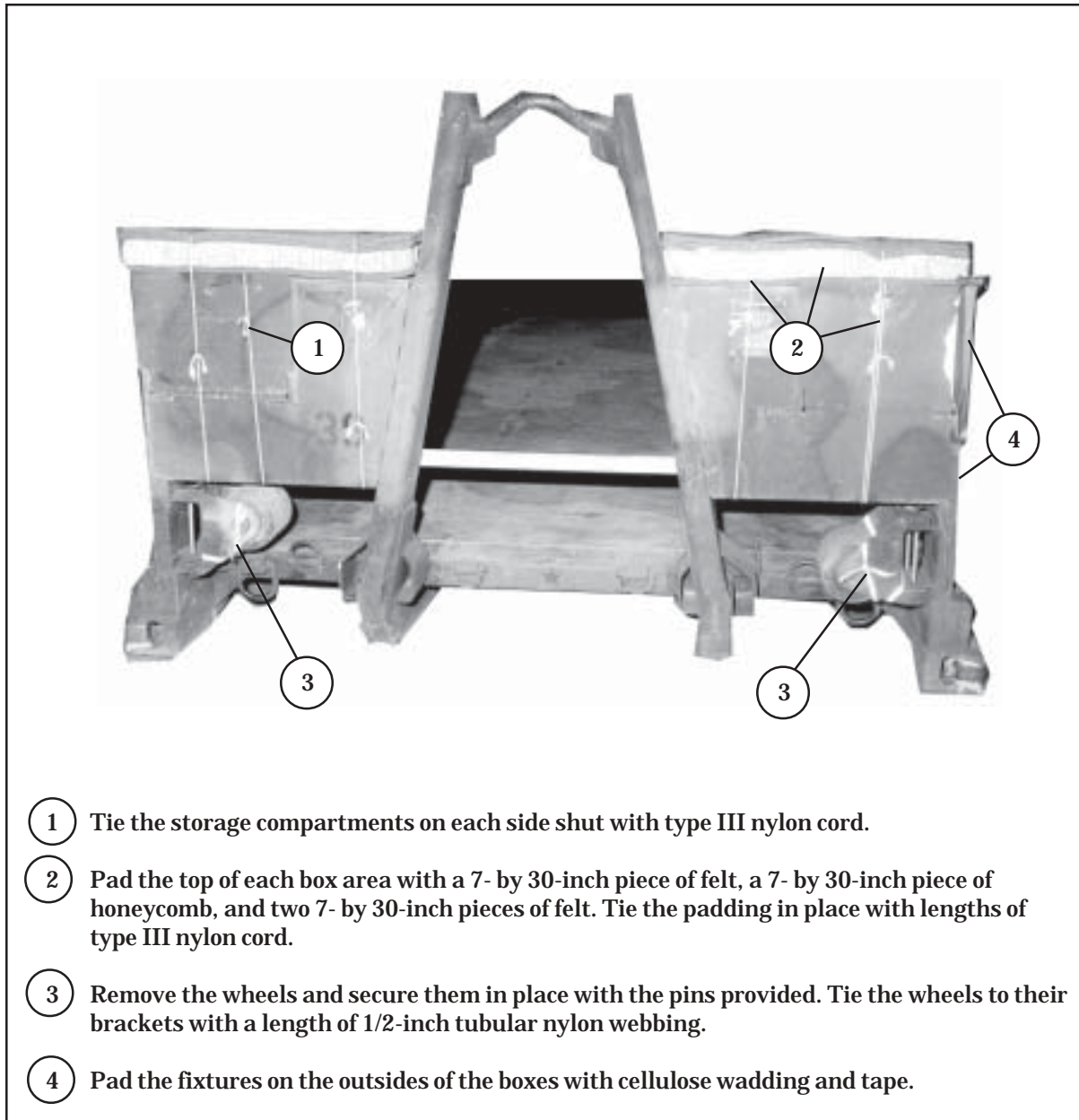


Figure 7-6. Pallet Prepared

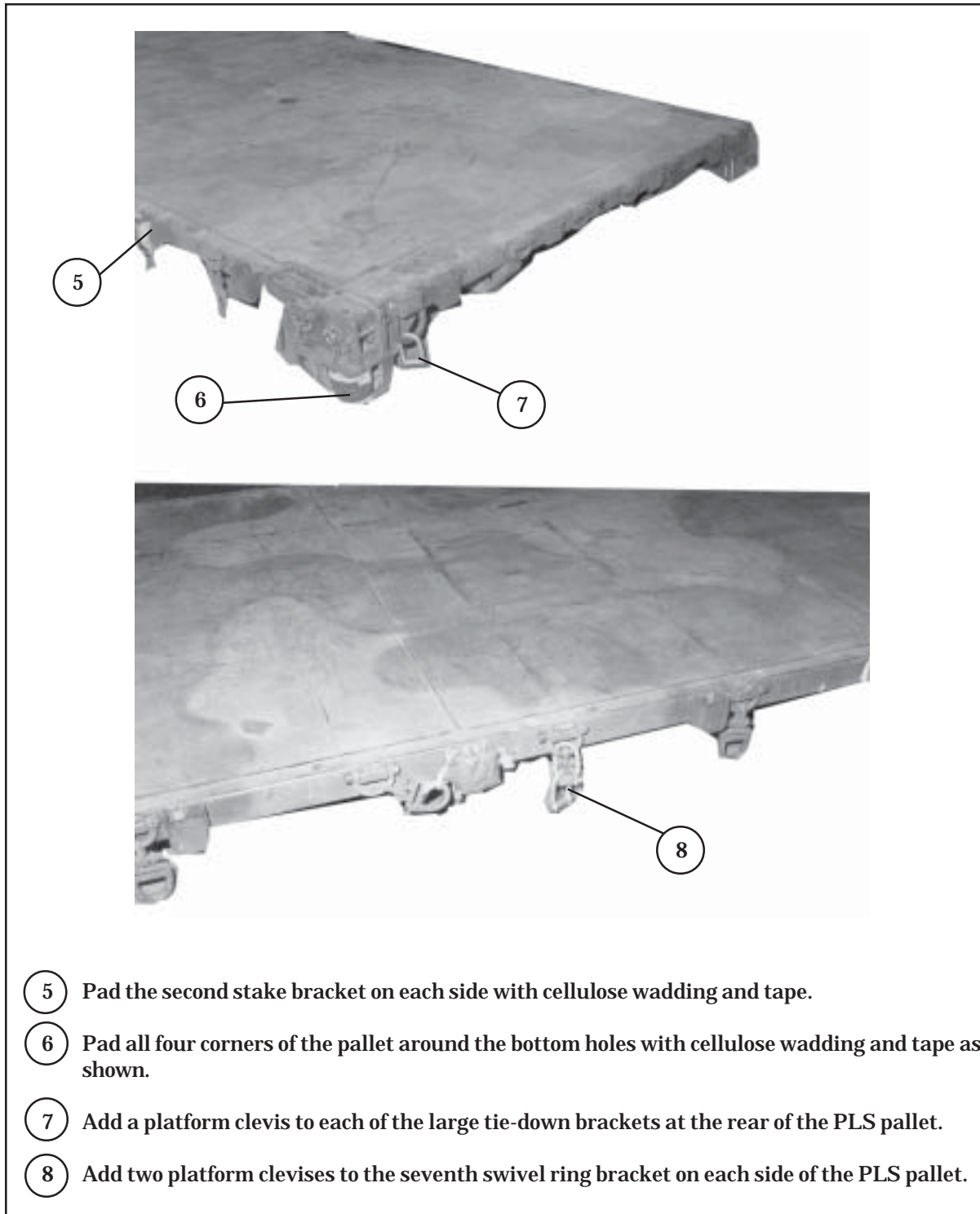


Figure 7-6. Pallet Prepared (Continued)

POSITIONING PLS PALLET ON PLATFORM

7-5. Position the pallet on the platform and install the restraint lashings around the honeycomb stacks as shown in Figure 7-7.

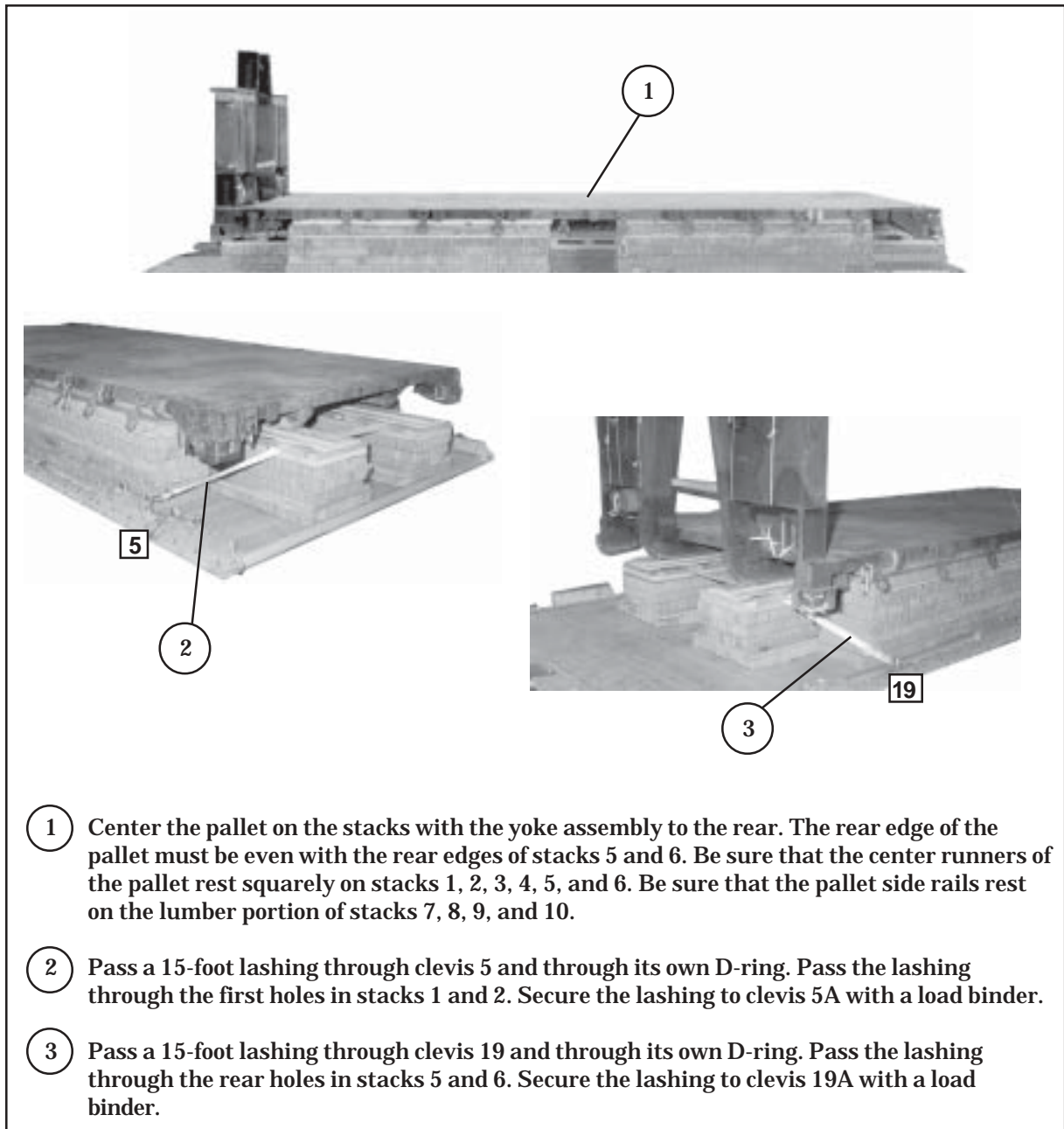
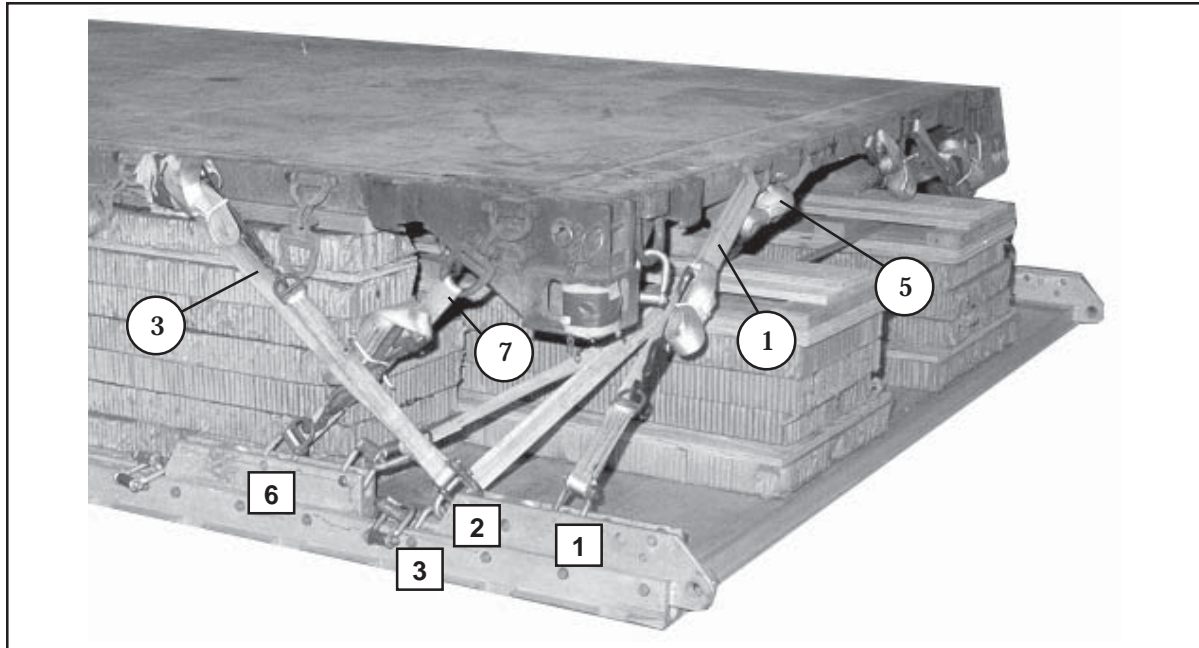


Figure 7-7. Pallet Positioned and Restraint Lashing Installed

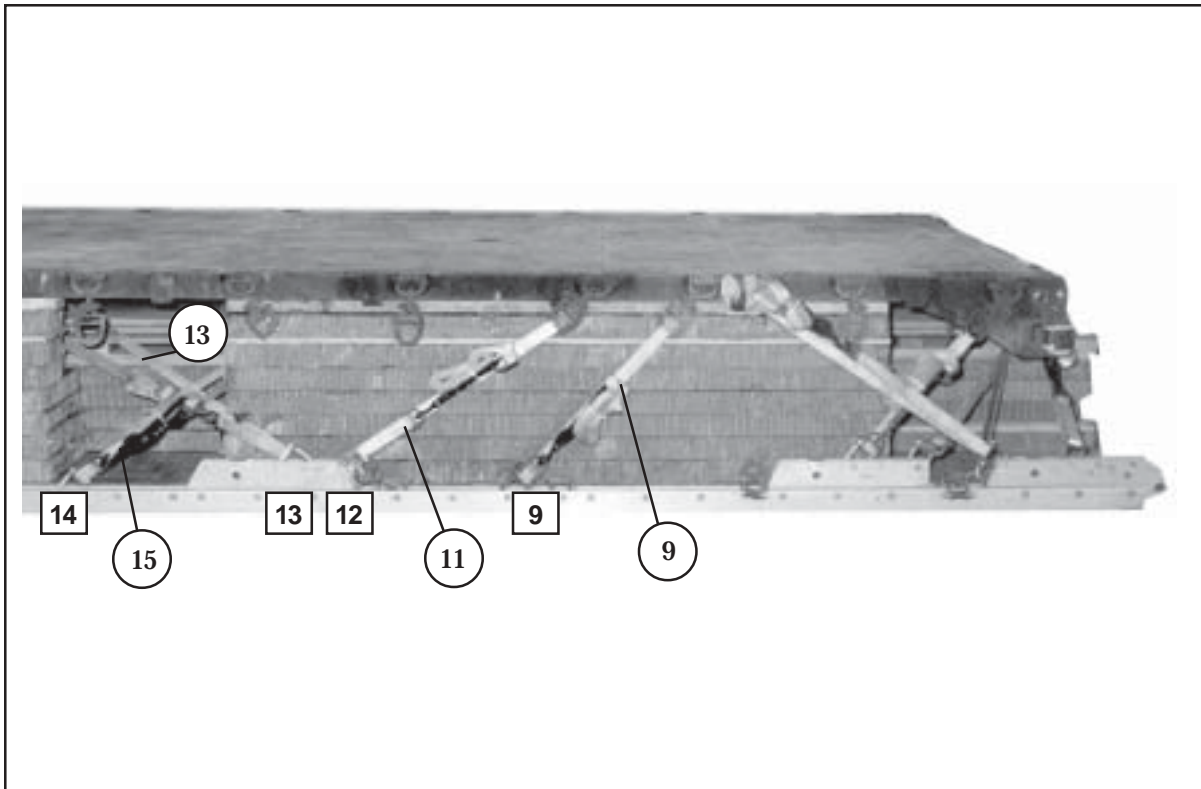
LASHING PLS PALLET TO PLATFORM

7-6. Lash the PLS pallet to the platform as shown in Figure 7-8.



Lashing Number	Tiedown Clevis Number	Instructions
1	1	Pass lashing: Through the right front outside tie-down point.
2	1A	Through the left front outside tie-down point.
3	2	Through the second stake bracket.
4	2A	Through the second stake bracket
5	3	Through the right front inside tie-down point.
6	3A	Through the left front inside tie-down point.
7	6	Through the first swivel ring.
8	6A	Through the first swivel ring.

Figure 7-8. Pallet Lashed to Platform



Lashing Number	Tiedown Clevis Number	Instructions
9	9	Pass lashing: Through the third swivel ring.
10	9A	Through the third swivel ring.
11	12	Through the fourth swivel ring.
12	12A	Through the fourth swivel ring.
13	13	Through the rear holes in the skid.
14	13A	Through the rear holes in the skid.
15	14	Through the front holes in the skid.
16	14A	Through the front holes in the skid.

Figure 7-8. Pallet Lashed to Platform (Continued)

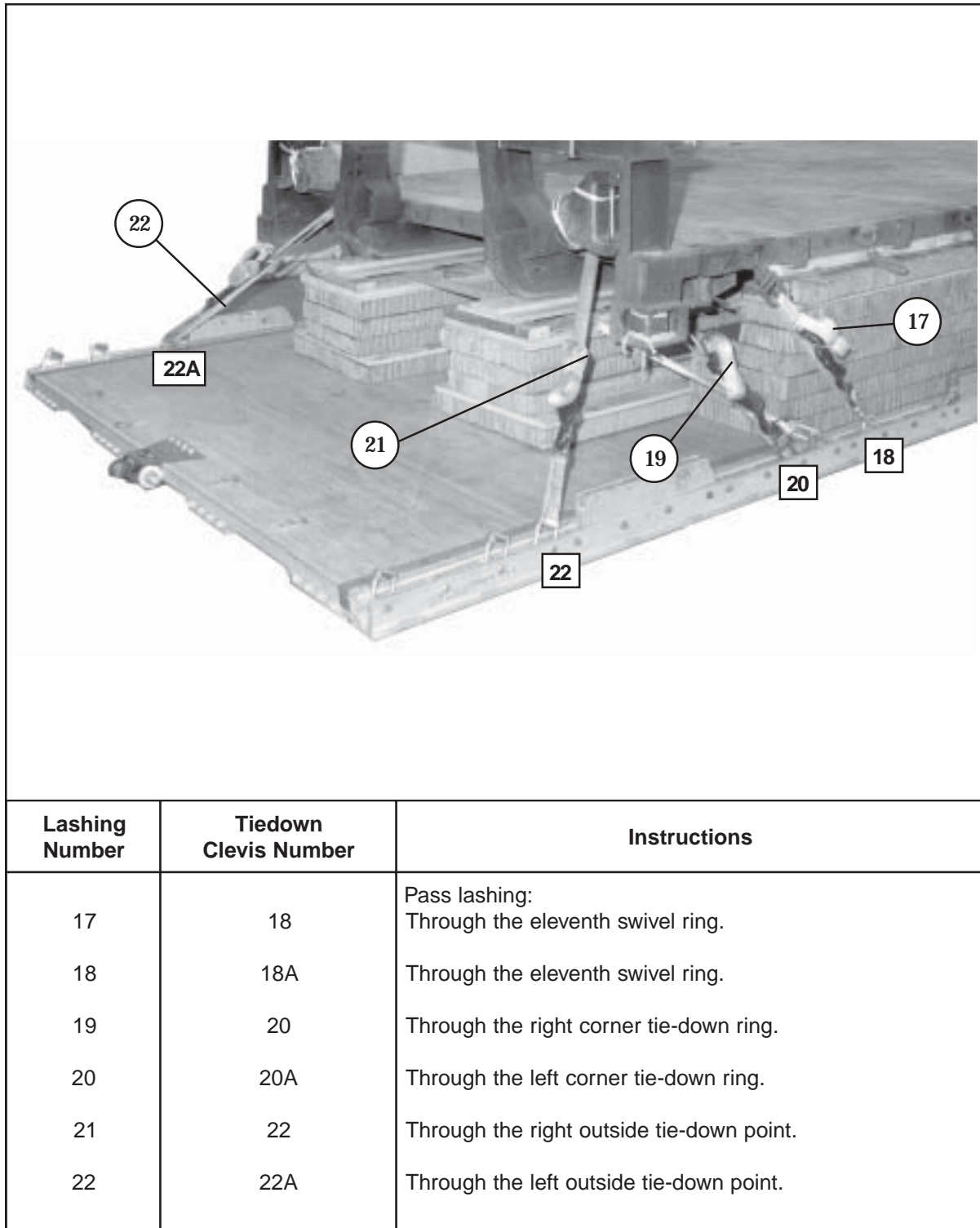


Figure 7-8. Pallet Lashed to Platform (Continued)

PLACING AND LASHING THE LOAD

7-7. Place a layer of honeycomb and eleven 30-foot lashings on the pallet as shown in Figure 7-9. Place 245 boxes of 105-millimeter ammunition on the pallet and bind the boxes together with the lashings as shown in Figure 7-10. Construct four endboards as shown in Figure 7-11. Secure the boxes and endboards to the front section of the pallet as shown in Figure 7-12. Secure the boxes and endboards to the rear section of the pallet as shown in Figure 7-13. Lash the load to the platform as shown in Figure 7-14.

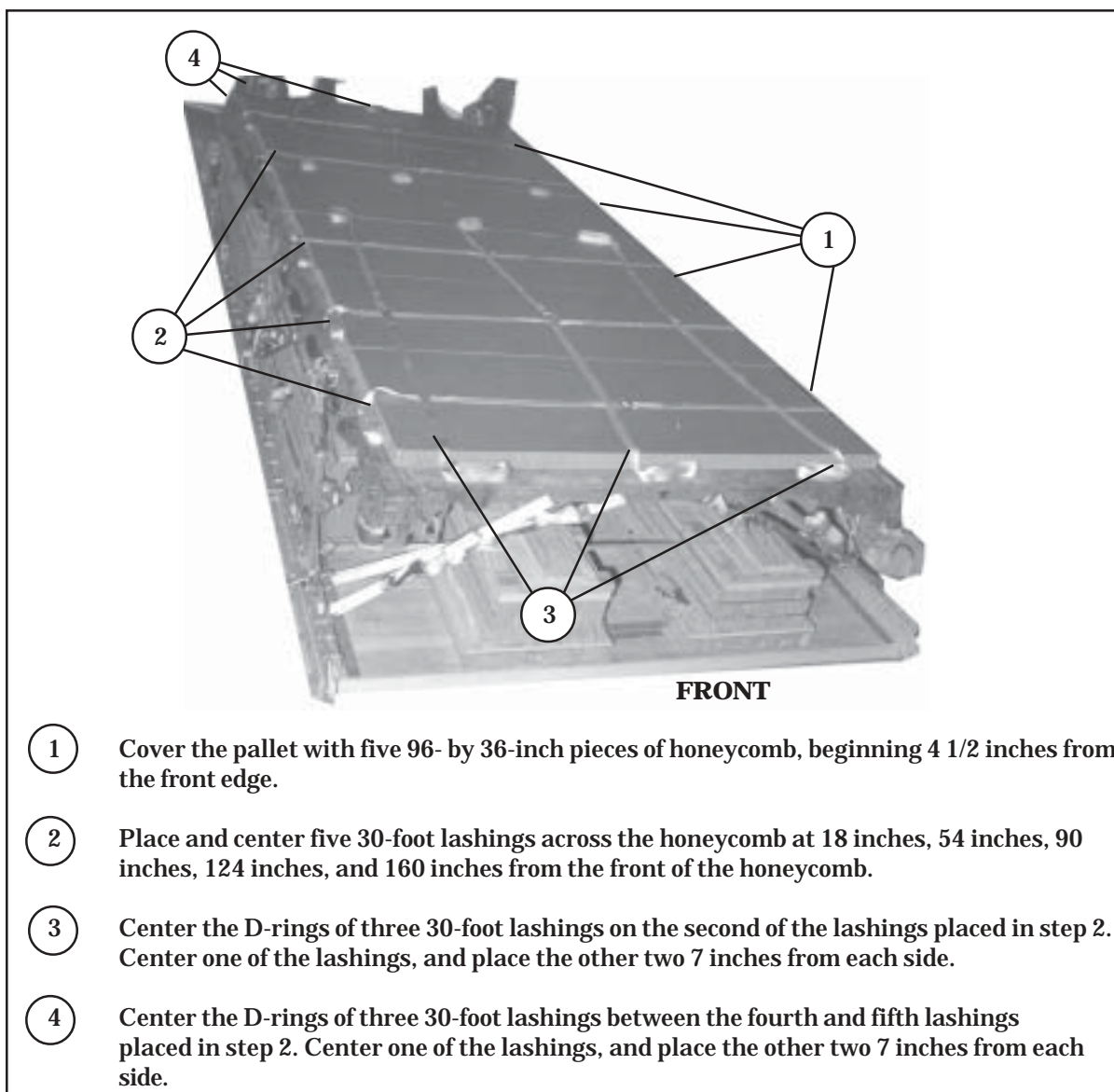


Figure 7-9. Honeycomb and Lashings Placed on the Pallet

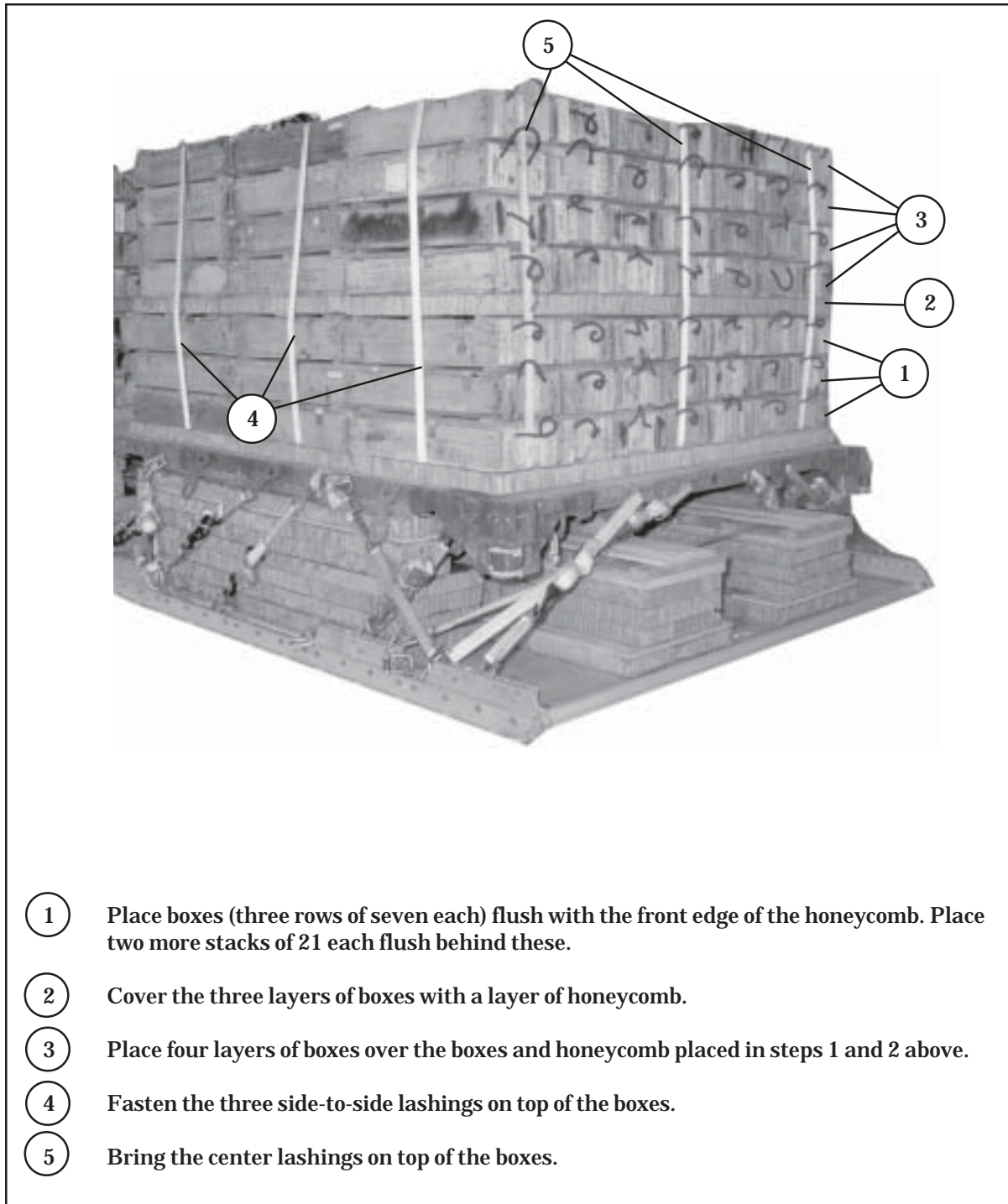
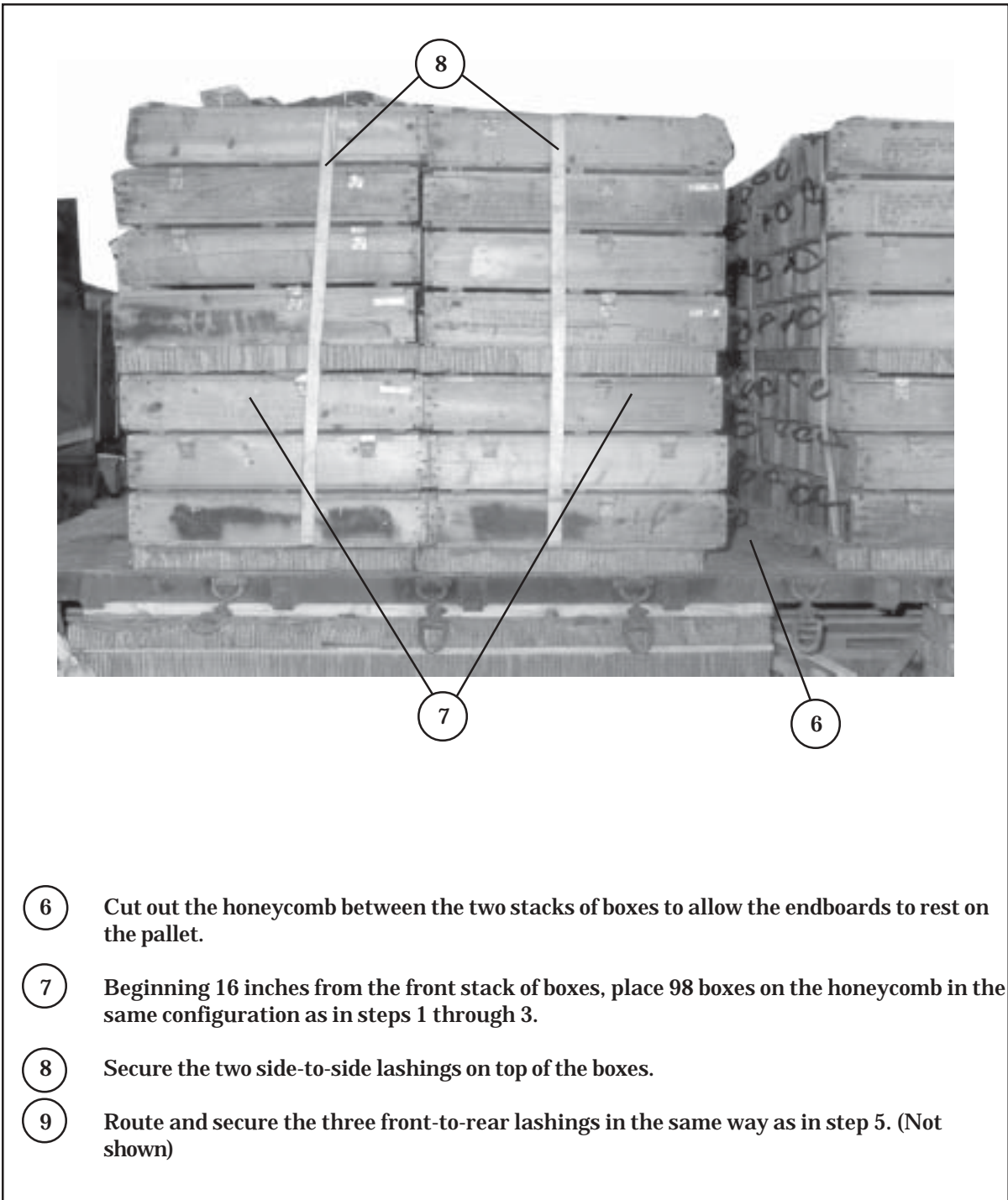


Figure 7-10. Ammunition Boxes Placed on Pallet

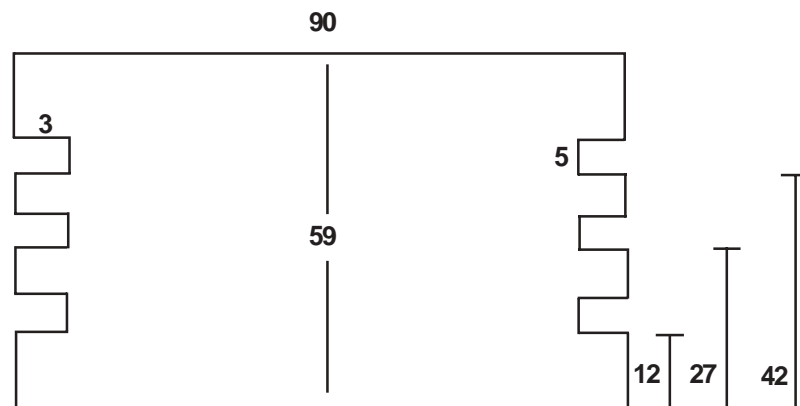


- ⑥ Cut out the honeycomb between the two stacks of boxes to allow the endboards to rest on the pallet.
- ⑦ Beginning 16 inches from the front stack of boxes, place 98 boxes on the honeycomb in the same configuration as in steps 1 through 3.
- ⑧ Secure the two side-to-side lashings on top of the boxes.
- ⑨ Route and secure the three front-to-rear lashings in the same way as in step 5. (Not shown)

Figure 7-10. Ammunition Boxes Placed on Pallet (Continued)

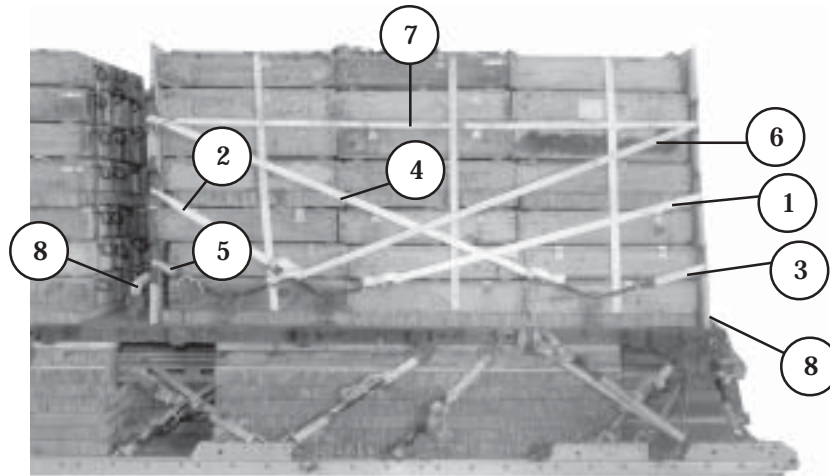
Notes:

1. This drawing is not to scale.
2. All dimensions are in inches.
3. For loads different from that shown in this section, make the endboards the same height as the load configuration.
4. The instructions given are for one endboard. Four are required for this load.

**Step:**

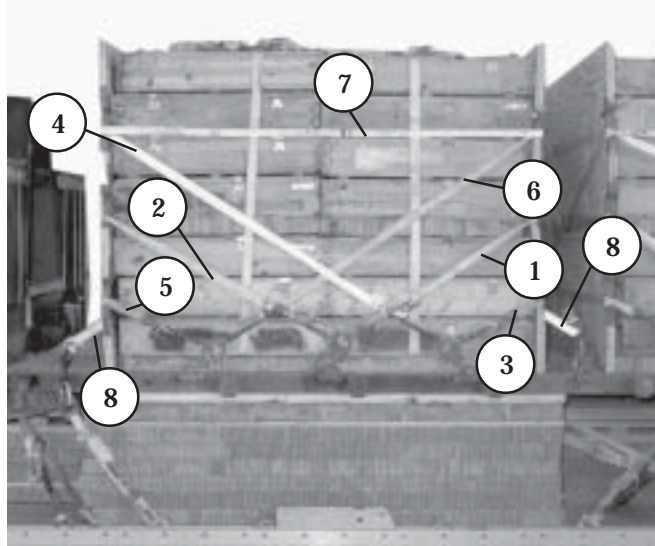
1. Cut two 3/4- by 48- by 90-inch and two 3/4- by 11- by 90-inch pieces of plywood. Nail the four pieces flush together so that a single 1 1/2- by 59- by 90-inch piece of plywood results. (The 11-inch piece will be at the top on one side, and at the bottom on the other side).
2. Make cutouts 5 inches wide and 3 inches deep. Tape the sharp edges of the cutouts.
3. Construct three more endboards following steps 1 and 2.

Figure 7-11. Four Endboards Constructed



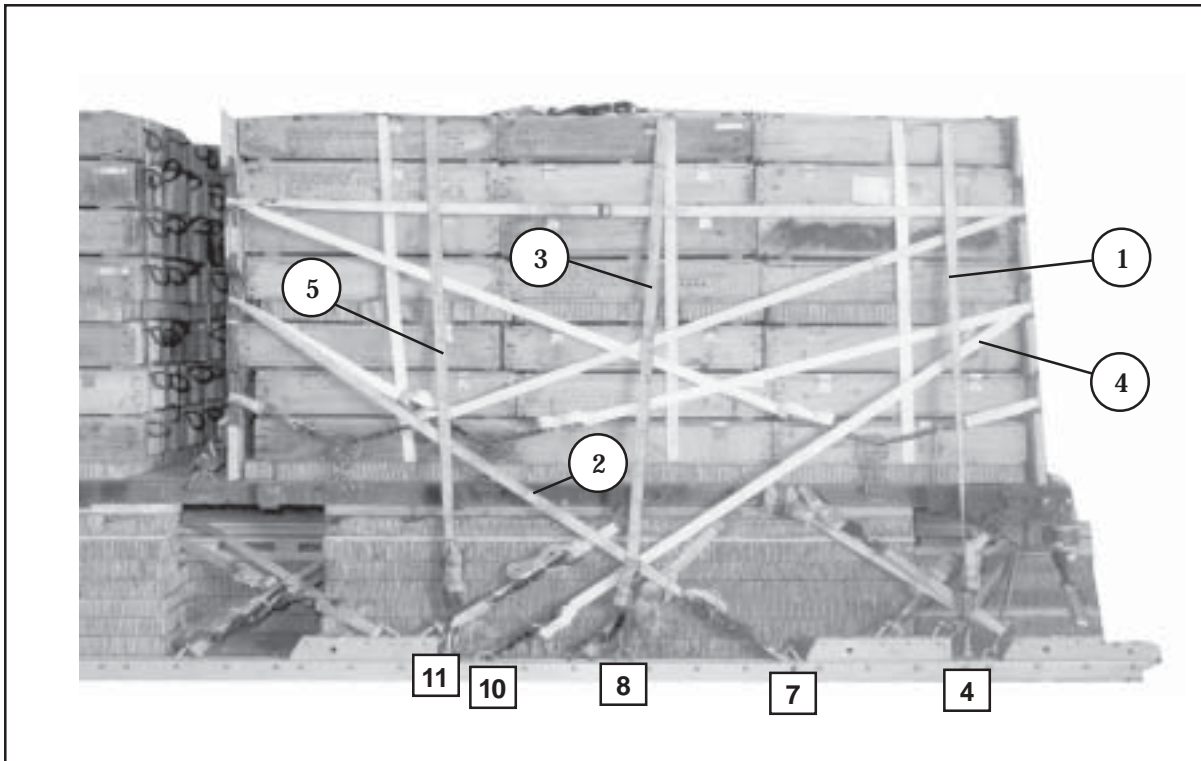
- 1 Set an endboard against each end of the front stack of boxes. Center a 30-foot lashing on the front endboard and pass the free ends through the middle cutouts. Secure the ends to the fifth swivel ring with D-rings and load binders.
- 2 Center a 30-foot lashing on the second endboard and pass the free ends through the middle cutouts. Secure the ends to the fifth swivel ring with D-rings and a load binder.
- 3 Place a 15-foot lashing in the lower cutouts of the first endboard. Secure each end of the lashing to the second swivel ring with a load binder.
- 4 Center a 30-foot lashing on the second endboard and pass the free ends through the upper cutouts. Secure the ends to the second swivel ring with D-rings and a load binder.
- 5 Place a 15-foot lashing in the lower cutouts of the second endboard. Secure each end of the lashing to the sixth swivel ring with a load binder.
- 6 Center a 30-foot lashing on the first endboard and pass the free ends through the upper cutouts. Secure the ends to the sixth swivel ring with D-rings and a load binder.
- 7 Center a 30-foot lashing against the right side and pass the free ends through the upper cutouts in the right side of both endboards. Secure the ends to the left front clevis in the front tie-down point and to the seventh swivel ring on the left side with D-rings and load binders. Fasten the load binder to the platform clevis installed earlier.
- 8 Center a 30-foot lashing against the left side and pass the free ends through the upper cutouts in the left side of both endboards. Secure the ends to the right front clevis in the front tie-down point and to the seventh swivel ring on the right side with D-rings and load binders. Fasten the load binder to the platform clevis installed earlier.

Figure 7-12. Front Boxes and Endboards Secured to Pallet



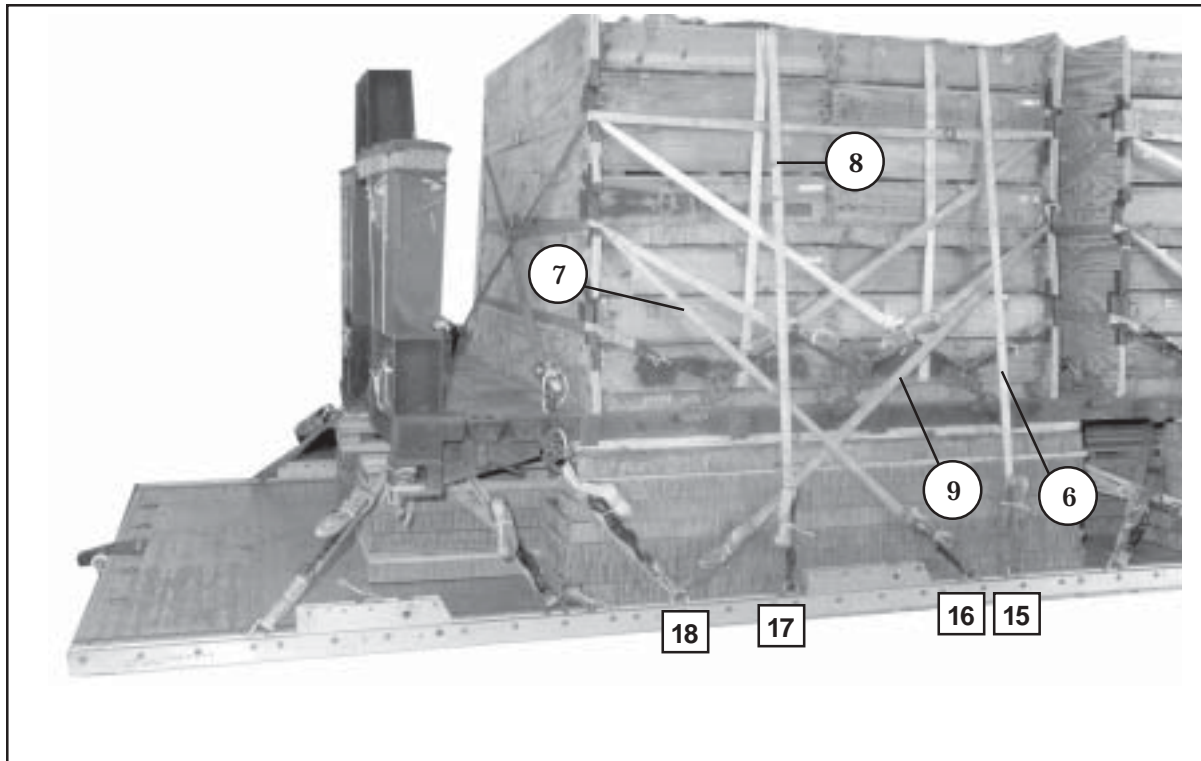
- 1 Set an endboard against each end of the rear stack of boxes. Center a 30-foot lashing on the third endboard and pass the free ends through the middle cutouts. Secure the ends to the ninth swivel ring with D-rings and load binders.
- 2 Center a 30-foot lashing on the fourth endboard and pass the free ends through the middle cutouts. Secure the ends to the ninth swivel ring with D-rings and a load binders.
- 3 Place a 15-foot lashing in the lower cutouts of the third endboard. Secure each end of the lashing to the second swivel ring with a load binder.
- 4 Center a 30-foot lashing on the fourth endboard and pass the free ends through the upper cutouts. Secure the ends to the eighth swivel ring with D-rings and a load binder.
- 5 Place a 15-foot lashing in the lower cutouts of the fourth endboard. Secure each end of the lashing to the tenth swivel ring with a load binder.
- 6 Center a 30-foot lashing on the third endboard and pass the free ends through the upper cutouts. Secure the ends to the tenth swivel ring with D-rings and a load binder.
- 7 Center a 30-foot lashing against the right side and pass the free ends through the upper cutouts in the right side of both endboards. Secure the ends to the clevis on the eleventh swivel ring and to the seventh swivel ring on the left side with D-rings and load binders. Fasten the load binder to the remaining platform clevis installed earlier.
- 8 Center a 30-foot lashing against the left side and pass the free ends through the upper cutouts in the left side of both endboards. Secure the ends to the clevis on the eleventh swivel ring and to the seventh swivel ring on the right side with D-rings and load binders. Fasten the load binder to the remaining platform clevis installed earlier.

Figure 7-13. Rear Boxes and Endboards Secured to Pallet



Lashing Number	Tiedown Clevis Number	Instructions
1	4 and 4A	Pass 30-foot lashing: Over the load. Fit a D-ring to each free end, and secure to clevises with load binders.
2	7 and 7A	Through the center cutouts in the second endboard. Fit a D-ring to each free end, and secure to the clevises with load binders.
3	8 and 8A	Over the load. Fit a D-ring to each end, and secure to the clevises with load binders.
4	10 and 10A	Through the center cutouts in the first endboard. Fit a D-ring to each free end, and secure to the clevises with load binders.
5	11 and 11A	Over the load. Fit a D-ring to each free end, and secure to the clevises with load binders.

Figure 7-14. Load Lashed to Platform



Lashing Number	Tiedown Clevis Number	Instructions
6	15 and 15A	Pass 30-foot lashing: Over the load. Fit a D-ring to each free end, and secure to clevises with load binders.
7	16 and 16A	Through the center cutouts in the fourth endboard. Fit a D-ring to each free end, and secure to the clevises with load binders.
8	17 and 17A	Over the load. Fit a D-ring to each end, and secure to the clevises with load binders.
9	18 and 18A	Through the center cutouts in the third endboard. Fit a D-ring to each free end, and secure to the lower clevises with load binders.

Figure 7-14. Load Lashed to Platform (Continued)

INSTALLING AND SAFETYING SUSPENSION SLINGS

7-8. Install the components of the centerline suspension system according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 7-15. Safety the suspension slings as shown in Figure 7-16.

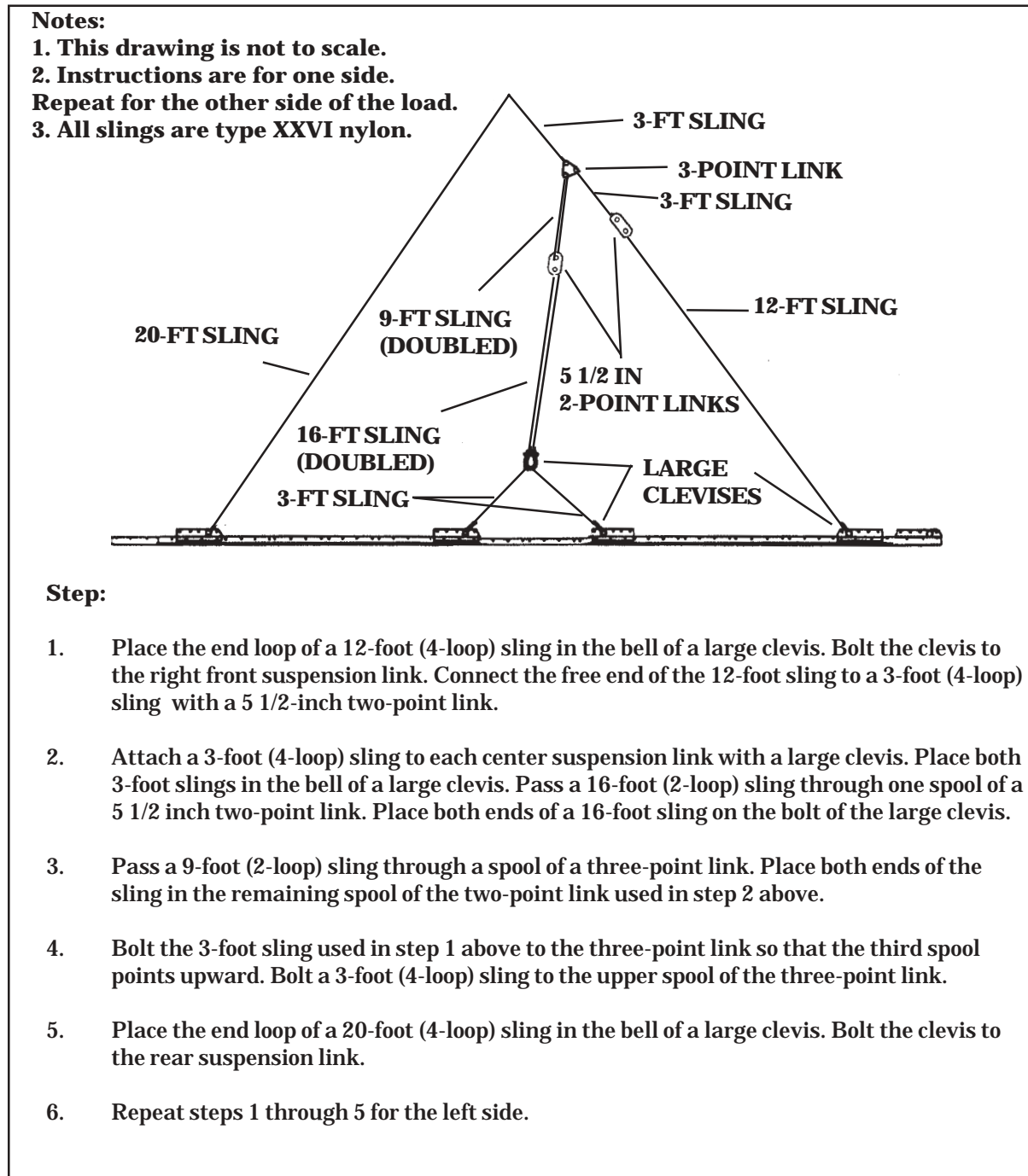
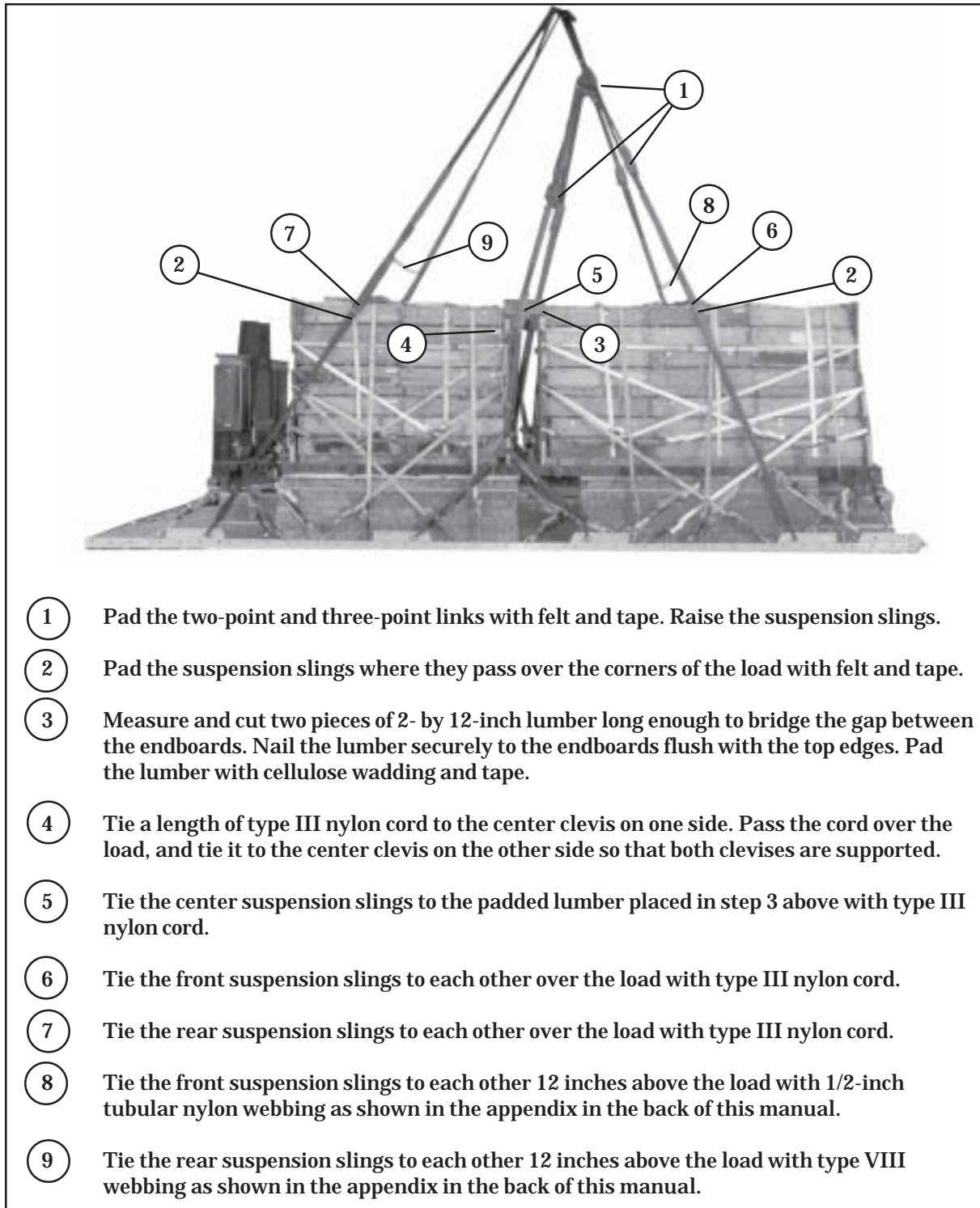


Figure 7-15. Suspension Slings Installed



- ① Pad the two-point and three-point links with felt and tape. Raise the suspension slings.
- ② Pad the suspension slings where they pass over the corners of the load with felt and tape.
- ③ Measure and cut two pieces of 2- by 12-inch lumber long enough to bridge the gap between the endboards. Nail the lumber securely to the endboards flush with the top edges. Pad the lumber with cellulose wadding and tape.
- ④ Tie a length of type III nylon cord to the center clevis on one side. Pass the cord over the load, and tie it to the center clevis on the other side so that both clevises are supported.
- ⑤ Tie the center suspension slings to the padded lumber placed in step 3 above with type III nylon cord.
- ⑥ Tie the front suspension slings to each other over the load with type III nylon cord.
- ⑦ Tie the rear suspension slings to each other over the load with type III nylon cord.
- ⑧ Tie the front suspension slings to each other 12 inches above the load with 1/2-inch tubular nylon webbing as shown in the appendix in the back of this manual.
- ⑨ Tie the rear suspension slings to each other 12 inches above the load with type VIII webbing as shown in the appendix in the back of this manual.

Figure 7-16. Suspension Slings Safetied

BUILDING PARACHUTE STOWAGE PLATFORM

7-9. Build the parachute stowage platform as shown in Figure 7-17.

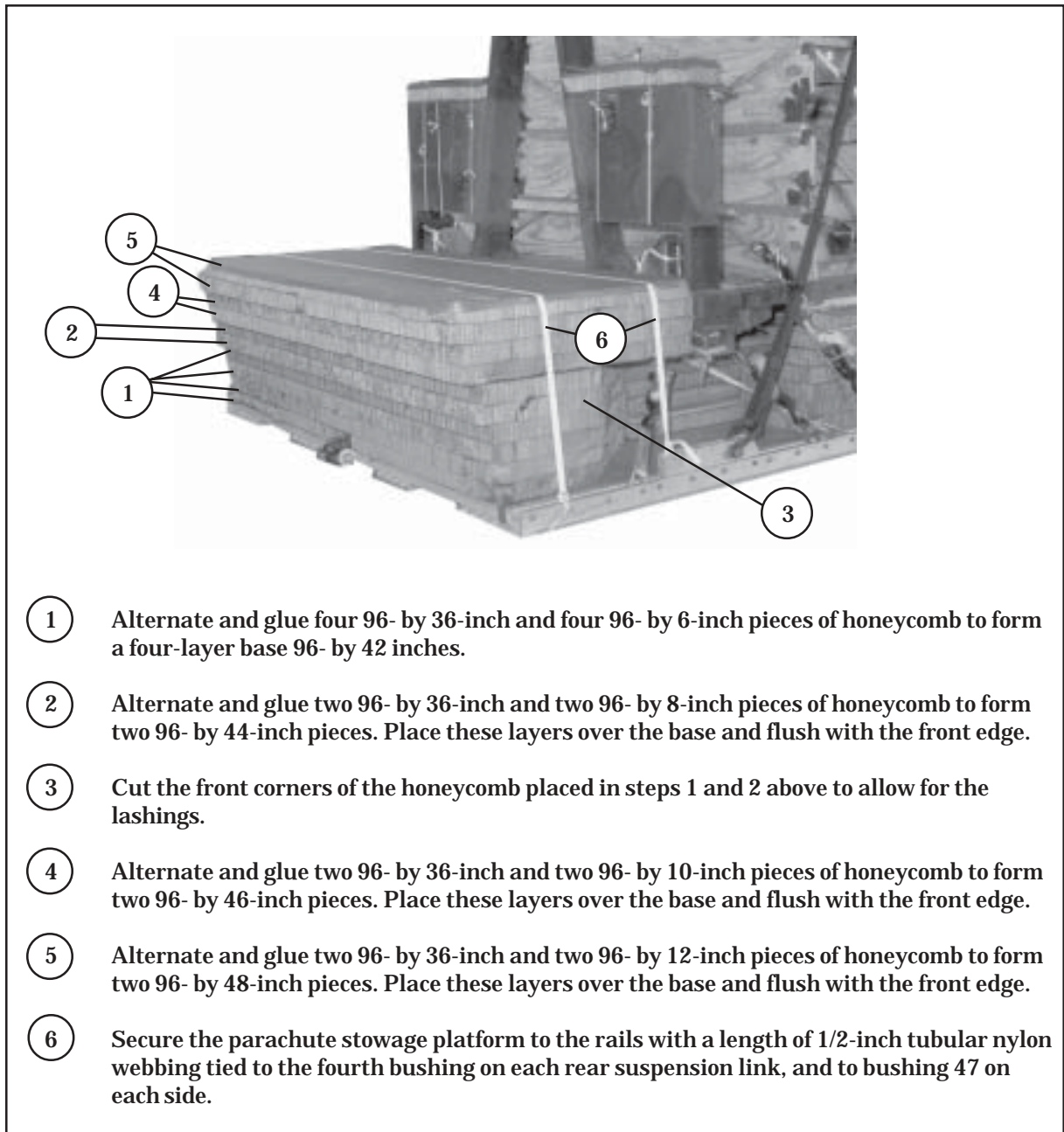


Figure 7-17. Parachute Stowage Platform Built and Placed

INSTALLING CARGO PARACHUTES

7-10. Compute the parachute requirements for the load being rigged. Prepare and install the cargo parachutes according to FM 4-20.102/ NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 7-18.

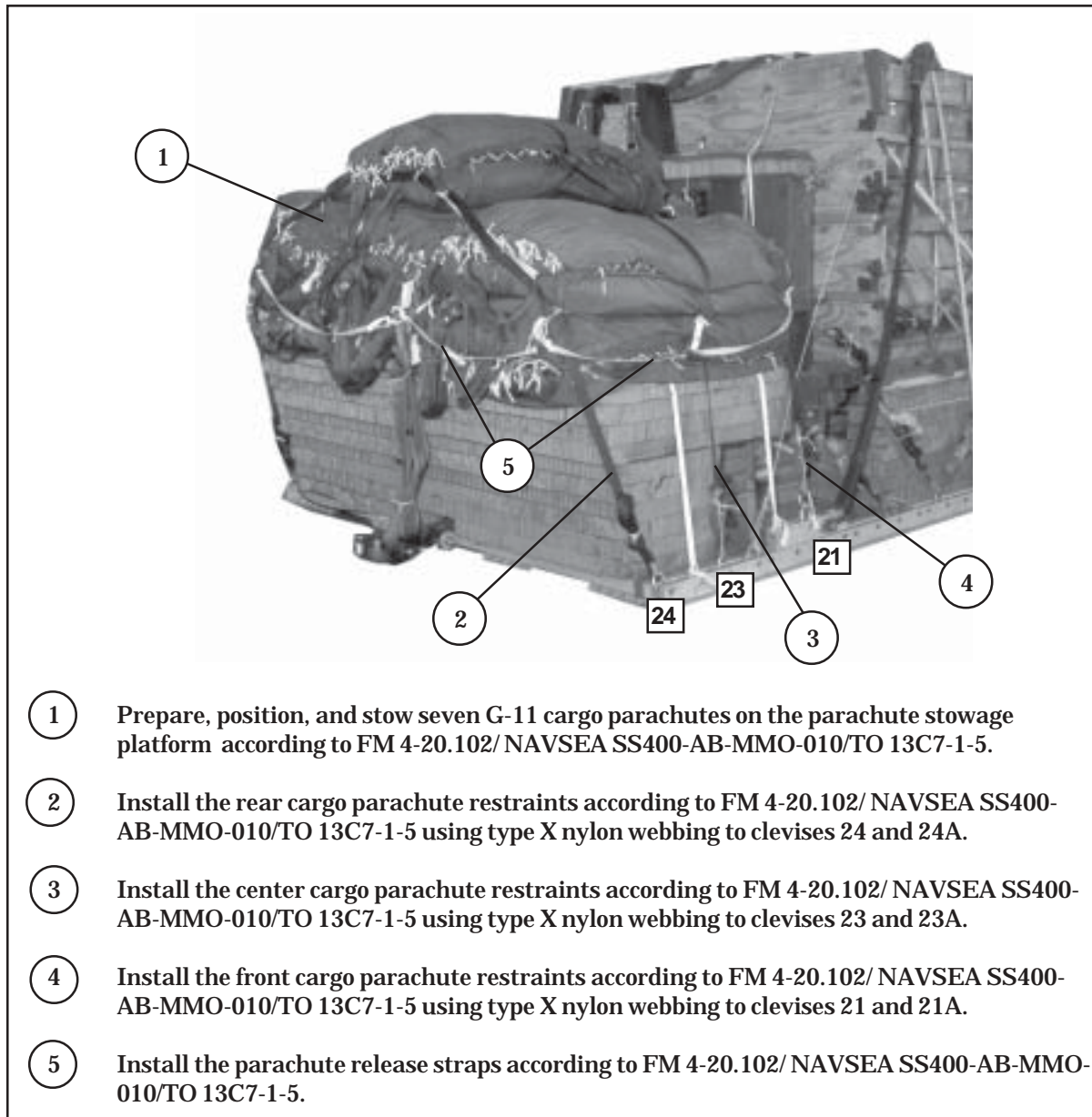


Figure 7-18. Cargo Parachutes Installed

INSTALLING THE RELEASE SYSTEM

7-11. Prepare, attach, and safety an M-2 cargo parachute release according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 7-19.

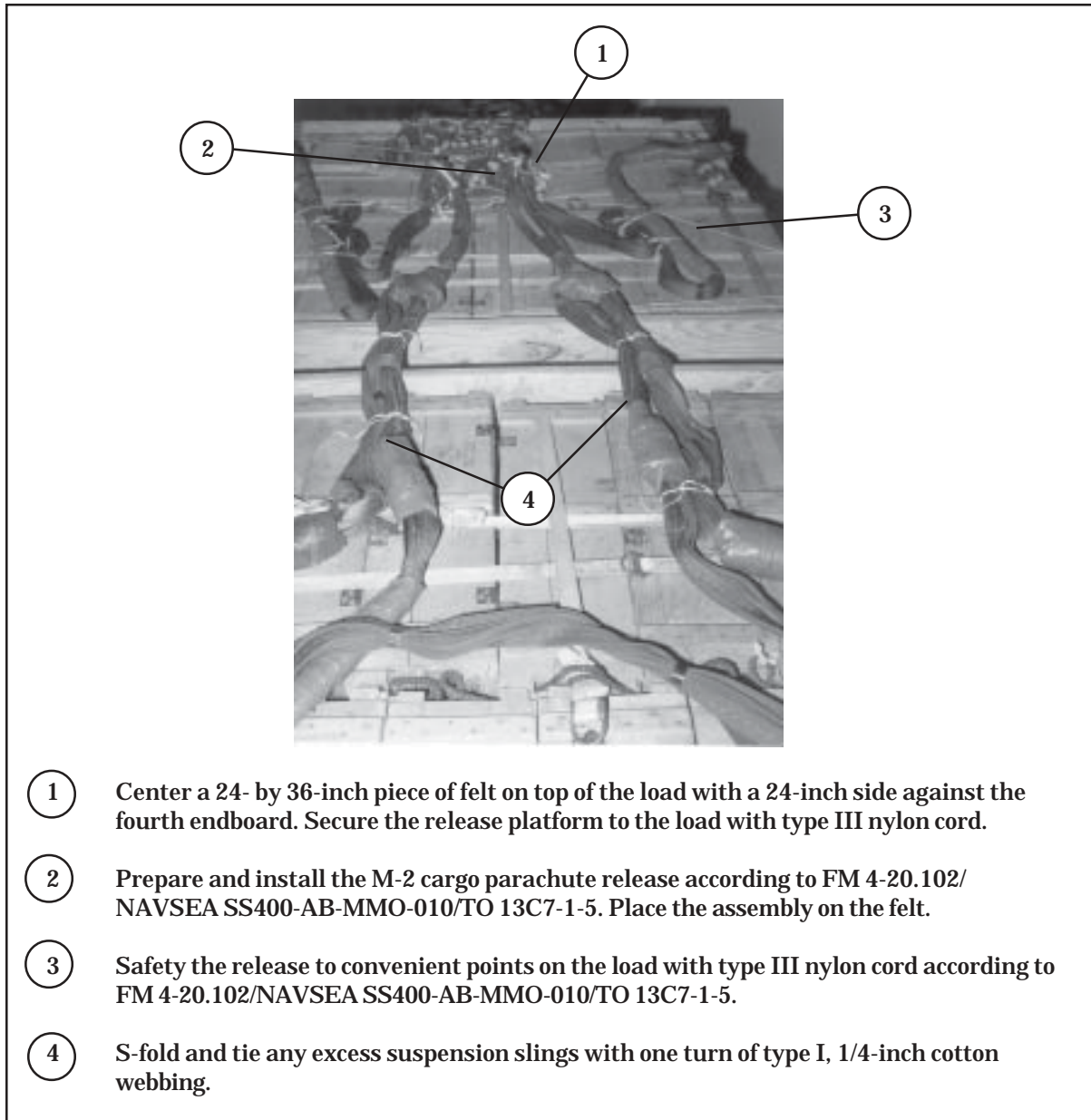


Figure 7-19. M-2 Release Installed

INSTALLING THE EXTRACTION SYSTEM

7-12. Install the extraction system according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 7-20.

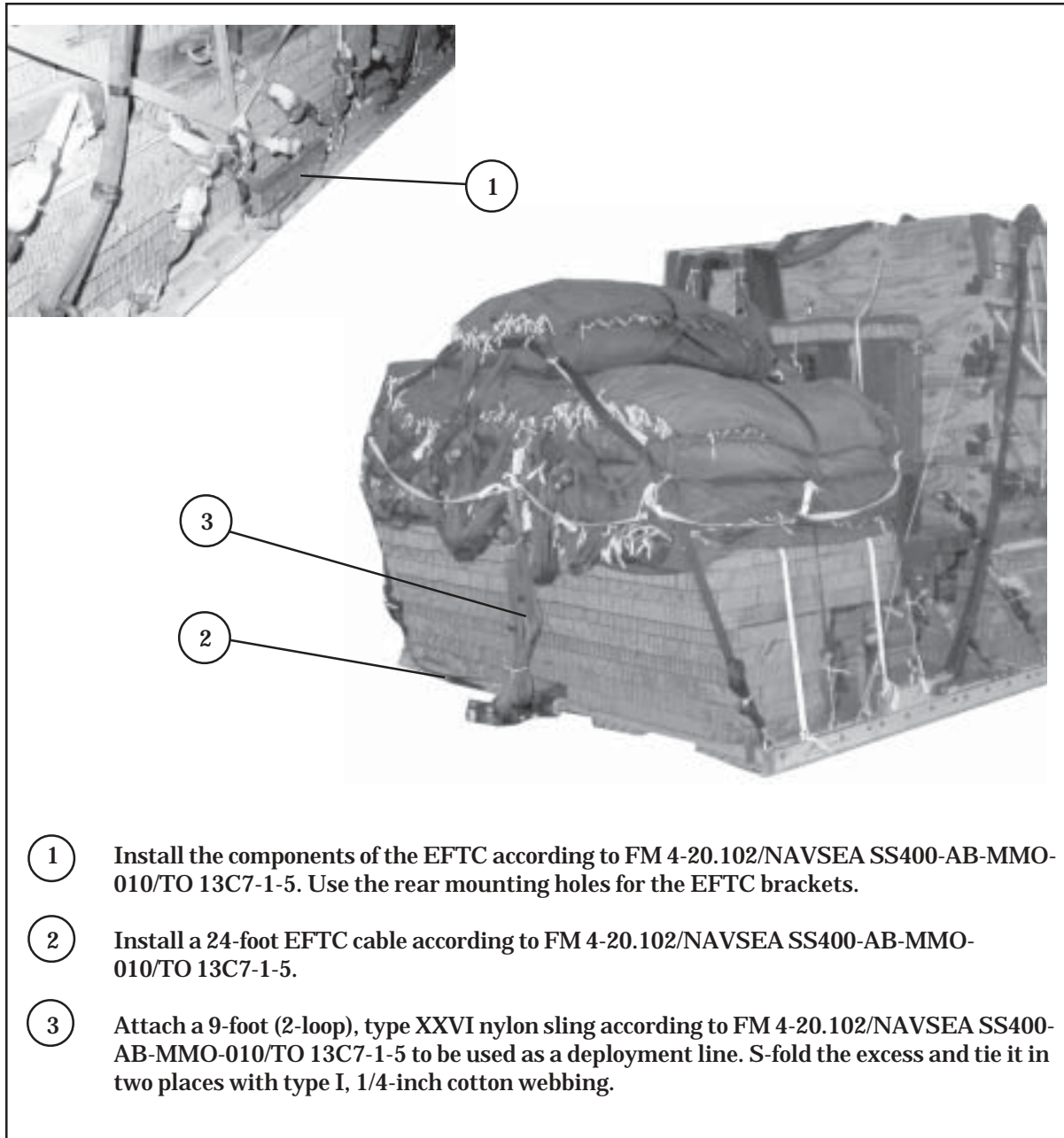


Figure 7-20. Extraction System Installed

PLACING EXTRACTION PARACHUTE

7-13. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Place the extraction parachute and line on the load for installation in the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

7-14. Select and install the provisions for the emergency aft restraints according to the emergency aft restraint requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

MARKING RIGGED LOAD

7-15. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and as shown in Figure 7-21. Complete Shipper's Declaration for Dangerous Goods. If the load varies from the one shown, the weight, height, CB, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

7-16. Use the equipment listed in Table 7-1 to rig this load.

CAUTION
 Make the final rigger inspection required by AR 59-4 and FM 4-20.102/NAVSEA
 SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



CB

RIGGED LOAD DATA

Weight.....33,343 pounds

Maximum Weight.....See paragraph 7-1

Height.....97 inches

Width.....108 inches

Length.....310 inches

Overhang: Front.....0 inches

Rear.....0 inches

Center of Balance (CB)
 (from front edge of the platform).....132 inches

Extraction System (adds 18 inches to length of platform) EFTC

Figure 7-21. PLS Pallet with 105-Millimeter Ammunition Rigged on a 24-Foot Platform for Low-Velocity Airdrop

Table 7-1. Equipment Required for Rigging PLS with 105-Millimeter Ammunition on a 24-Foot, Type V Platform for Low-Velocity Airdrop

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive paste, 1-gal.	As required
4030-00-090-5354	Clevis, suspension, 1-inch (large)	14
4020-00-240-2146	Cord, nylon, type III, 550-lb.	As required
1670-00-434-5782	Coupling, airdrop extraction force transfer, w/24-ft. cable	1
1670-00-360-0328	Cover, clevis	7
8135-00-664-6958	Cushioning material (Cellulose wadding)	As required
8305-00-958-3685	Felt, 1/2-inch thick	As required
1670-01-183-2678	Leaf, extraction line (line bag) (add 2 for C-17)	2
	Line extraction:	
1670-01-062-6313	60-foot (3-loop), type XXVI (for C-130)	1
1670-01-064-4454	60-foot (6-loop), type XXVI	1
1670-01-062-6312	120-foot (6-loop), type XXVI (for C-5)	1
1670-01-468-9178	140-foot (6-loop), type XXVI (for C-17)	1
1670-01-064-4452	60-foot (1-loop), type XXVI (for C-17), (drogue line)	1
1670-00-162-4981	Link assembly, four-point	2
1670-00-162-4981	Link assembly, three-point	2
	Link assembly, two-point:	
5306-00-435-8994	Bolt, 1-inch diameter, 4-inches long (add 4 for C-5)	8
5310-00-232-5165	Nut, 1-inch (add 4 for C-5)	8
1670-00-003-1953	Plate, side, 3 3/4-inch	8
5365-00-007-3414	Spacer, large (add 4 for C-5)	8
5510-00-220-6146	Lumber, 2- by 4-in	As required
5310-00-010-4657	Nail, steel wire, common, 6d	
1670-00-753-3928	Pad, energy-dissipating (honeycomb) 3- by 36- by 96-inches	46 sheets
1670-01-016-7841	Parachute, cargo, G-11	7
	Parachute, cargo, extraction:	
1670-00-040-8135	28-ft.	1
1670-01-063-3715	15-ft. (C-17 only)	1
	Platform, airdrop, type V, 24-ft:	
5530-00-128-4981	Plywood, 3/4- by 48- by 96-in	11 sheets
1670-01-162-2372	Clevis assembly (type V)	(68)
1670-01-353-8424	Extraction bracket assembly	(1)
1670-01-247-2389	Link, suspension bracket, type V	(8)
1670-01-162-2381	Link, tandem, suspension link assembly	(2)
1670-01-097-8817	Release, cargo parachute, M-2	1
	Sling, cargo, airdrop:	
1670-01-064-4453	20-ft. (4-loop), type XXVI	2
1670-01-062-6307	12-ft. (4-loop), type XXVI	2

Table 7-1. Equipment Required for Rigging PLS with 105-Millimeter Ammunition on a 24-Foot, Type V Platform for Low-Velocity Airdrop (Continued)

National Stock Number	Item	Quantity
1670-01-062-6306	3-ft (4-loop), type XXVI nylon webbing	8
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	3
1670-01-063-7761	16-ft (2-loop), type XXVI nylon webbing	2
1670-01-062-6311	120-ft (2-loop), type XXVI nylon webbing	7
5340-00-040-8219	Strap, parachute, release, multi-knife	2
7501-00-266-5016	Tape, adhesive, 2-inch	As required
1670-00-937-0271	Tiedown assembly, 15-ft.	92
1670-01-483-8259	Towplate release mechanism (H-block) (C-17 only)	1
	Webbing:	
8305-00-268-2411	Cotton, 1/4-inch, type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-inch	As required
8305-00-261-8584	Nylon, type X	As required

Section II

RIGGING A-22 CARGO BAGS

DESCRIPTION OF LOAD

7-17. The Palletized Load System can be moved from the drop zone and transported on a specially designed truck. Bulk supplies are lashed to the pallet, giving the load integrity for transport. The pallet has swivel rings along the sides for lashing the load. The pallet is lashed to the airdrop platform for low-velocity airdrop. The load shown consists of eight A-22 cargo bags. Adapt these procedures to rig other items of bulk supplies. Ammunition listed in FM 4-20.153/MCPR 4-11.3B/TO 13C7-18-41, as certified for low-velocity airdrop, may be rigged using these procedures. The rigged load may not be more than 100 inches high. Refer to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 for the weight limitations for the number of parachutes to be used.

PREPARING PLATFORM

7-18. Prepare a 24-foot, type V platform as shown in Figure 7-22.

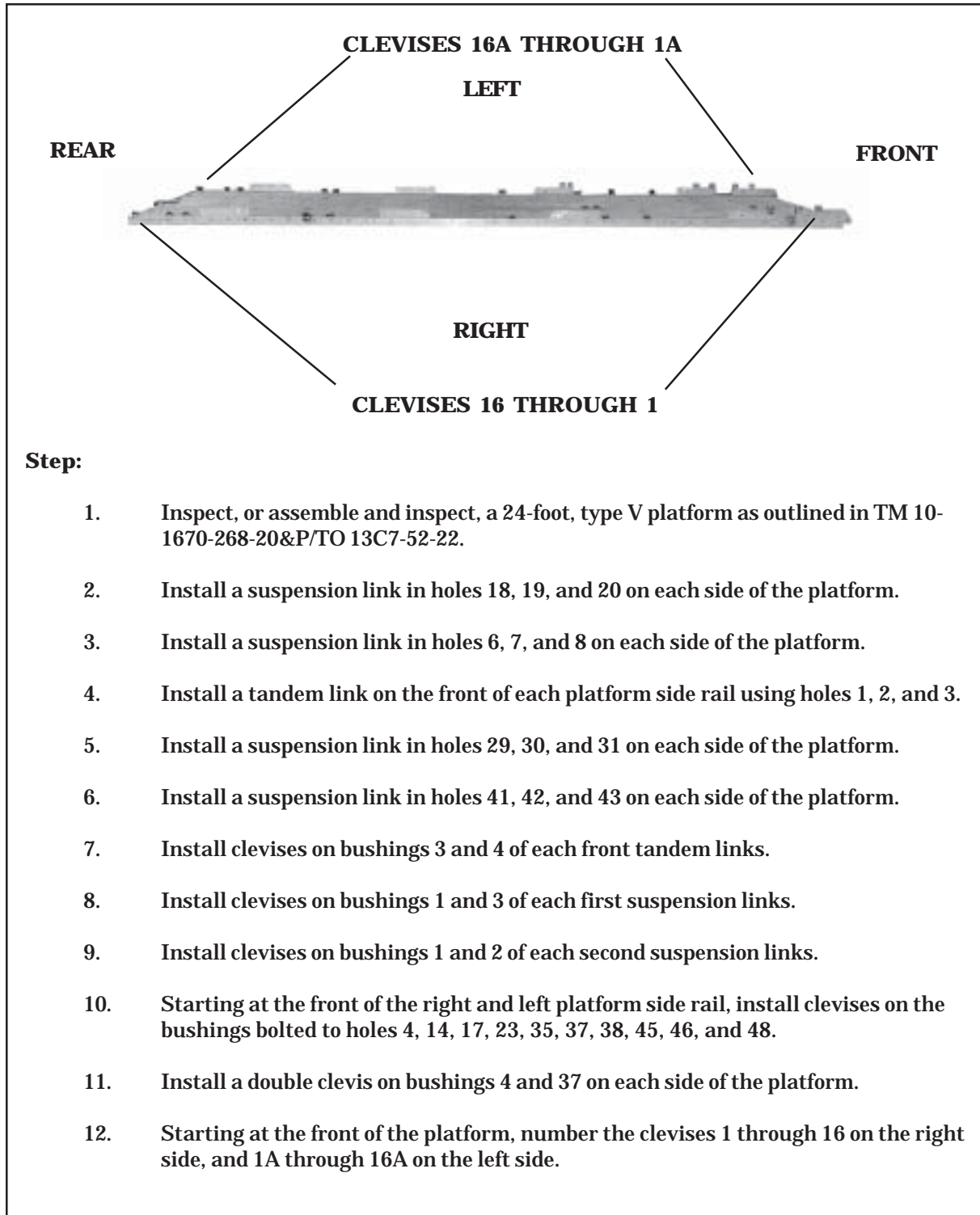


Figure 7-22. Platform Prepared

PREPARING AND POSITIONING HONEYCOMB

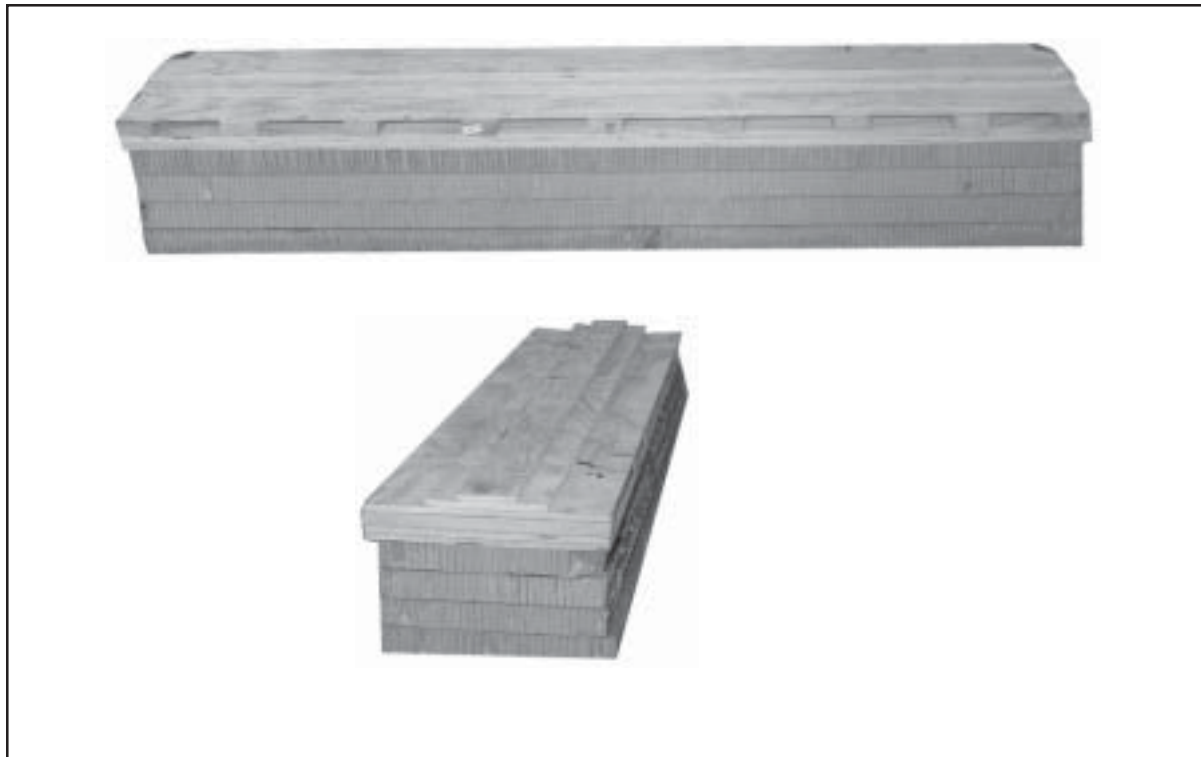
7-19. Prepare ten honeycomb stacks as shown in Figures 7-23 through 7-25. Position the stacks on the platform as shown in Figure 7-26.



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
1,2, 5, and 6	1 1	24 24	76 76	Honeycomb 3/4-inch plywood	Glue plywood flush over honeycomb to form base.
	3	18	76	Honeycomb	Center and glue on base.
	2	18	76	3/4-inch plywood	Glue flush over honeycomb.
	7	18	*3 1/2	2- by 4-inch lumber	Nail one piece flush over each end of the plywood. Center a third piece between the ends. Space two pieces evenly between each end piece and the center piece.
	1	12	76	3/4-inch plywood	Center and nail over lumber.
	1	6	76	3/4-inch plywood	Center and nail over plywood.

* Two- by four-inch lumber is actually 3 1/2 inches wide.

Figure 7-23. Stacks 1, 2, 5, and 6 Prepared



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
3 and 4	4 2	24 24	96 96	Honeycomb 3/4-inch plywood	Glue plywood flush over honeycomb to form base.
	9	24	*3 1/2	2- by 4-inch lumber	Nail one piece flush over each end of the plywood. Center a third piece between the ends. Space three pieces evenly between each end piece and the center piece.
	1	24	96	3/4-inch plywood	Center and nail over lumber.
	1	12	96	3/4-inch plywood	Center and nail over plywood.
	1	6	96	3/4-inch plywood	Center and nail over plywood.

* Two- by four-inch lumber is actually 3 1/2 inches wide.

Figure 7-24. Stacks 3 and 4 Prepared



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
7, 8, 9, and 10	4	16	84	Honeycomb	Glue flush to form base.
	2	9	84	Honeycomb	Glue flush on one side of base.
	1	9	84	3/4-inch plywood	Glue flush over honeycomb.
	1	9	84	Honeycomb	Glue flush over plywood.
	1	*3 1/2	84	2- by 4-inch lumber	Center and glue on honeycomb.

* Two- by four-inch lumber is actually 3 1/2 inches wide.

Figure 7-25. Stacks 7, 8, 9, and 10 Prepared

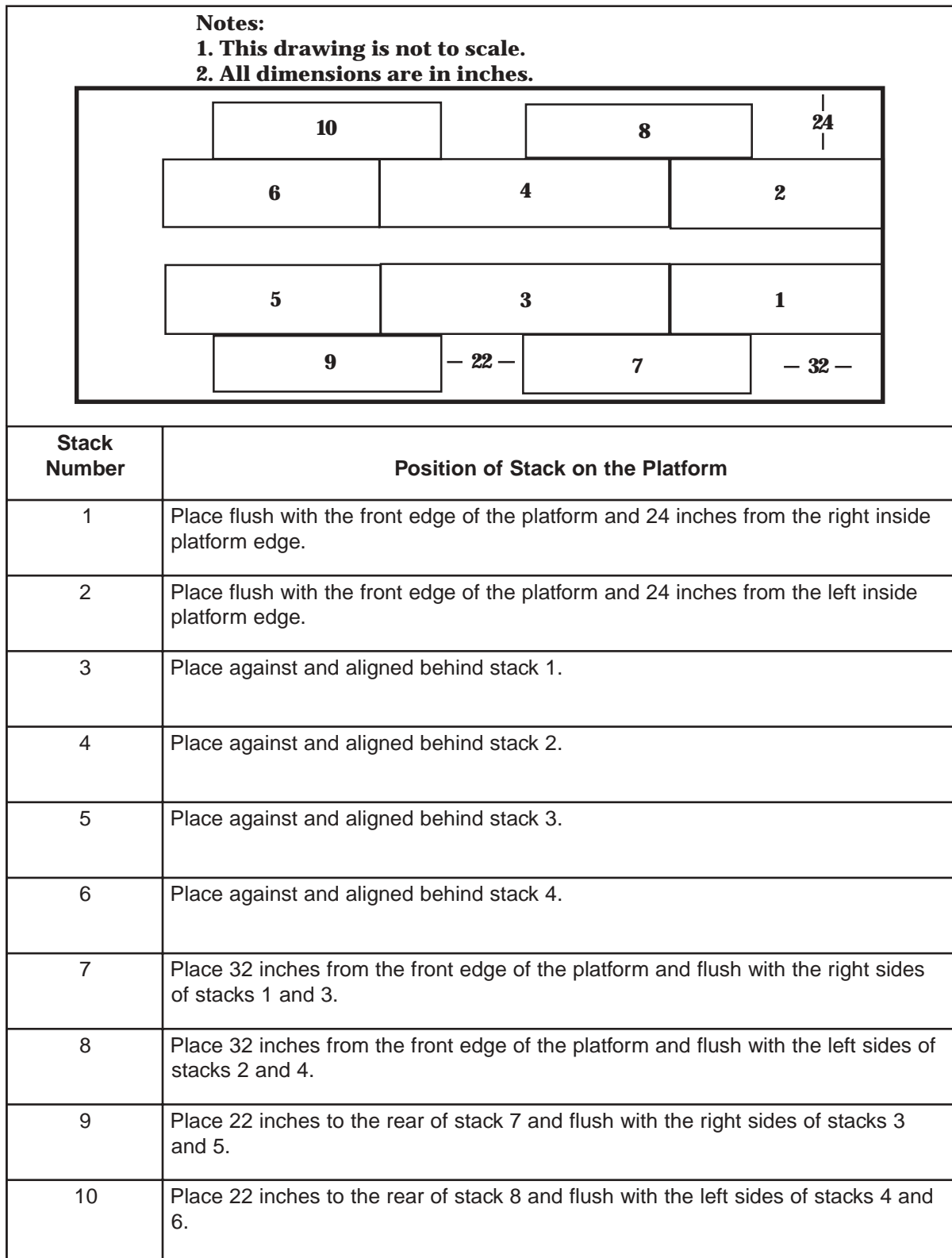


Figure 7-26. Honeycomb Stacks Positioned on Platform

PREPARING PLS PALLET

7-20. Prepare the pallet as shown in Figure 7-27.

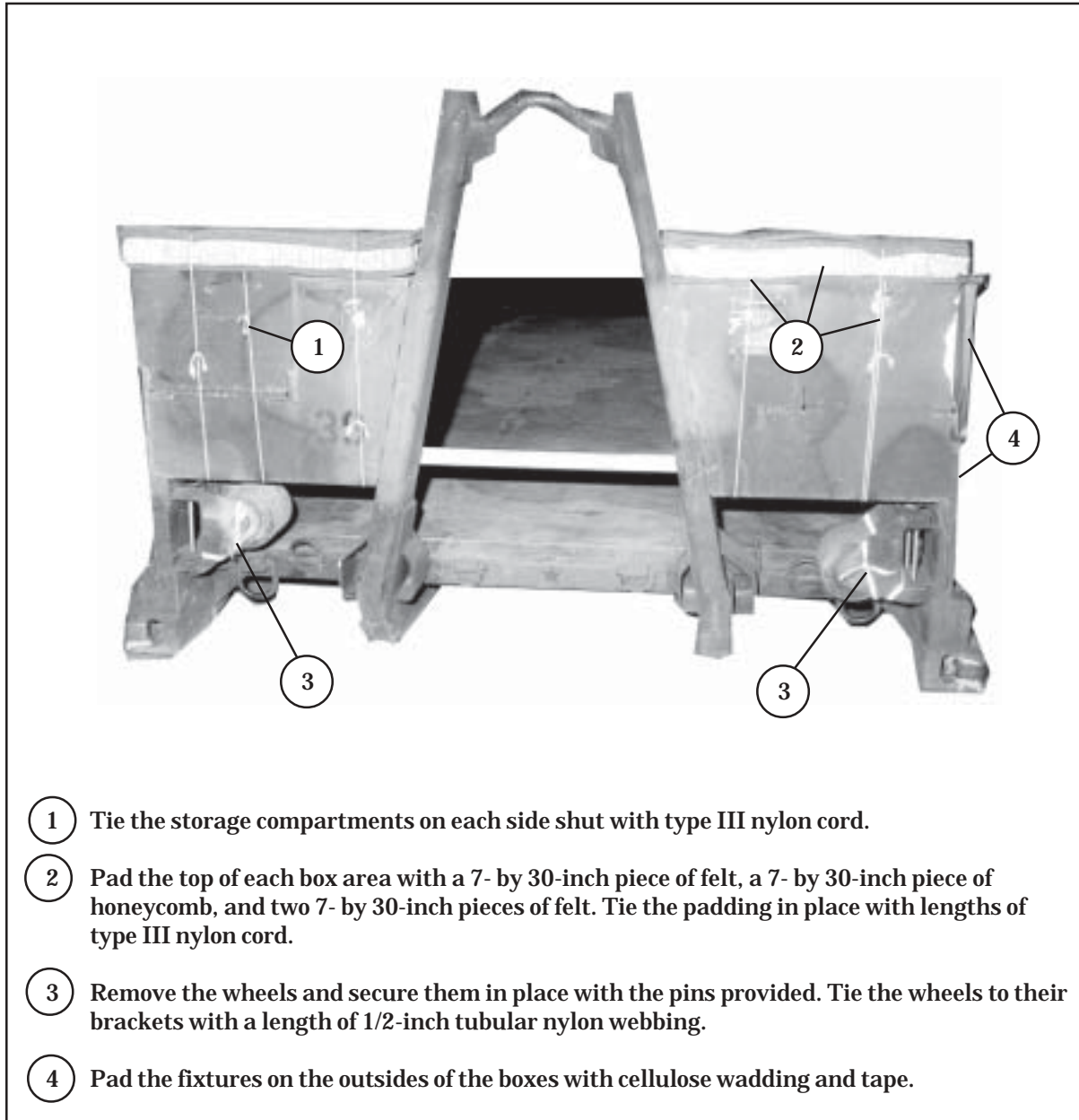


Figure 7-27. Pallet Prepared

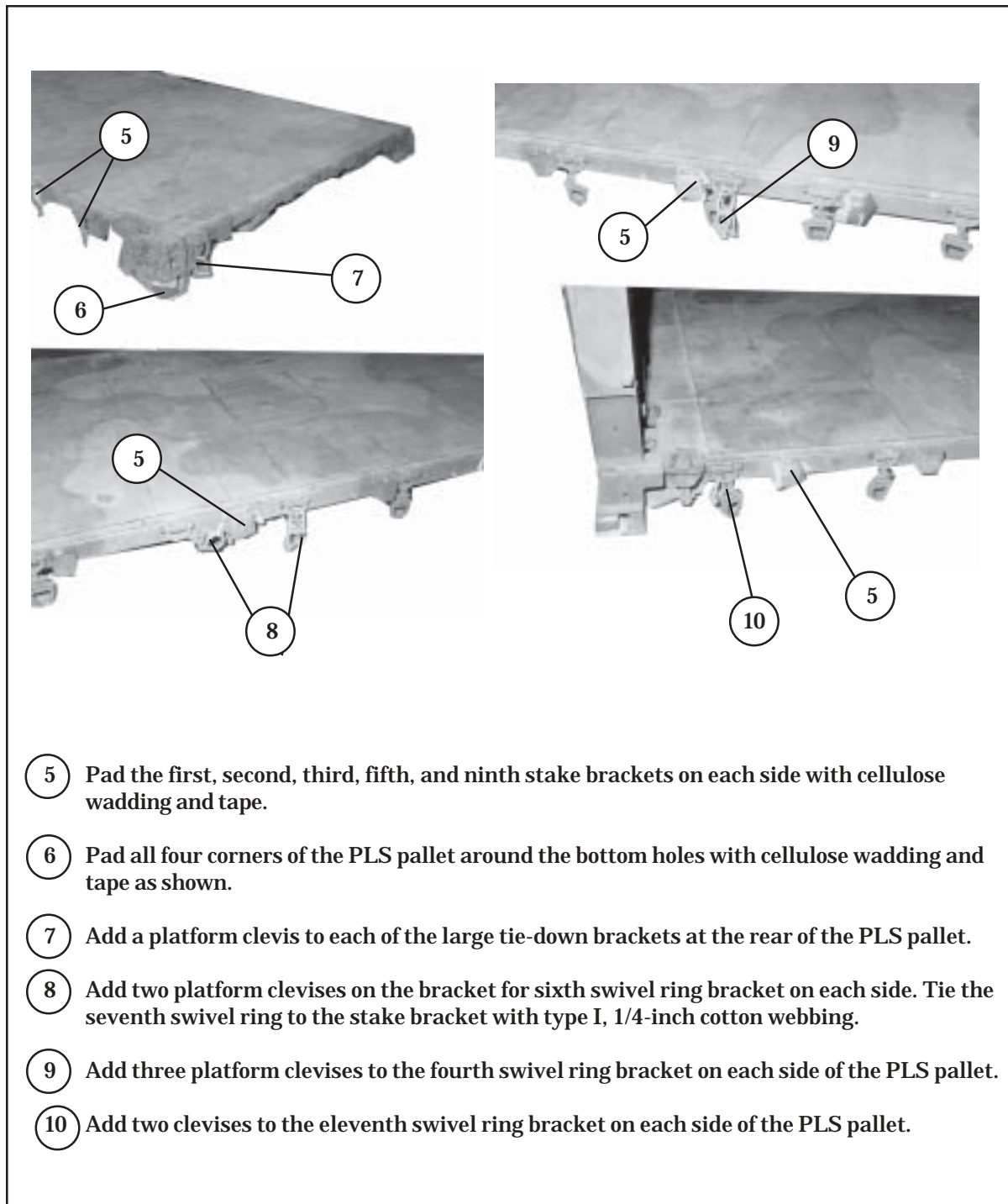


Figure 7-27. Pallet Prepared (Continued)

POSITIONING PLS PALLET ON PLATFORM

7-21. Position the pallet on the platform and install the restraint lashings around the honeycomb stacks as shown in Figure 7-28.

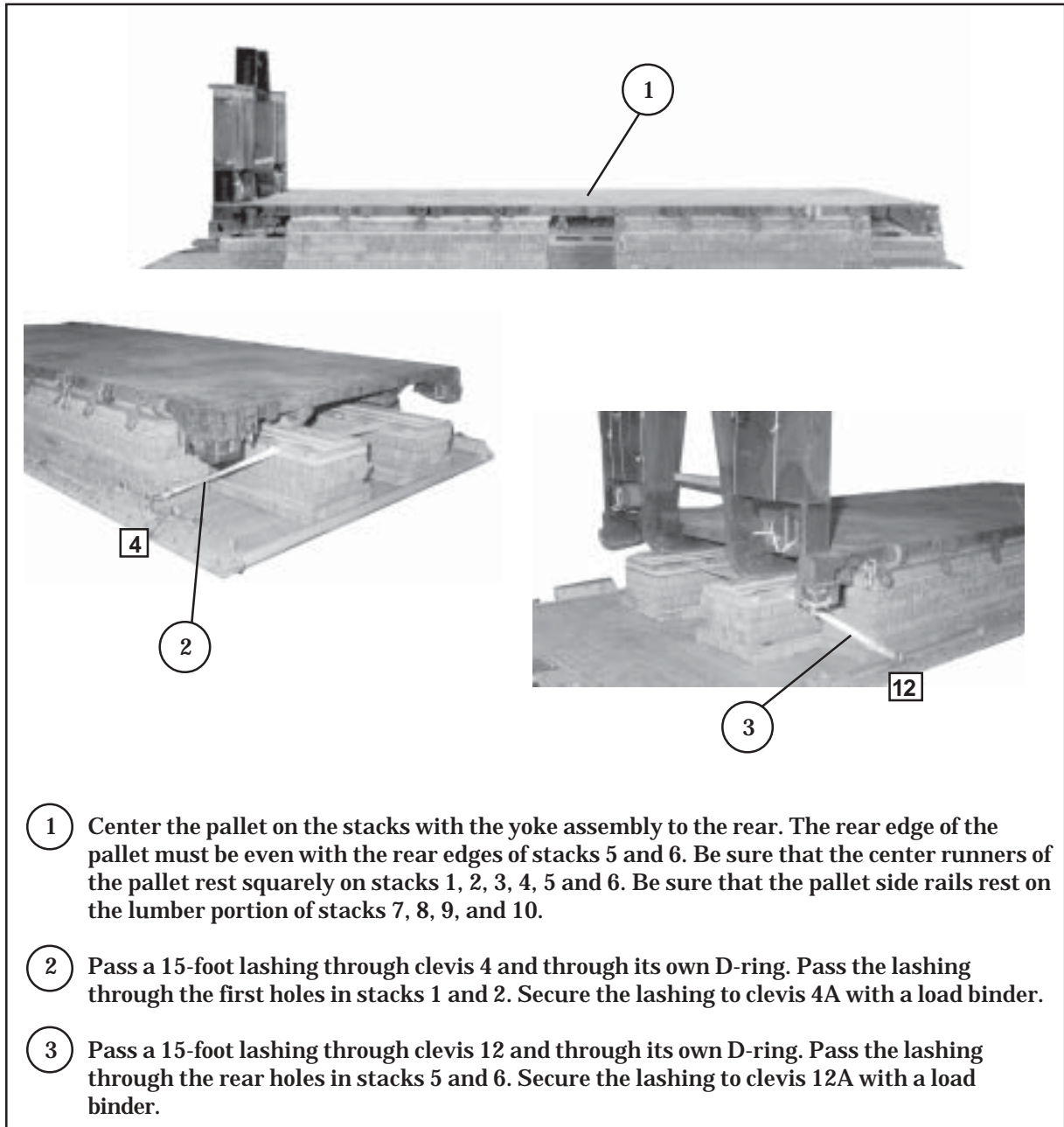
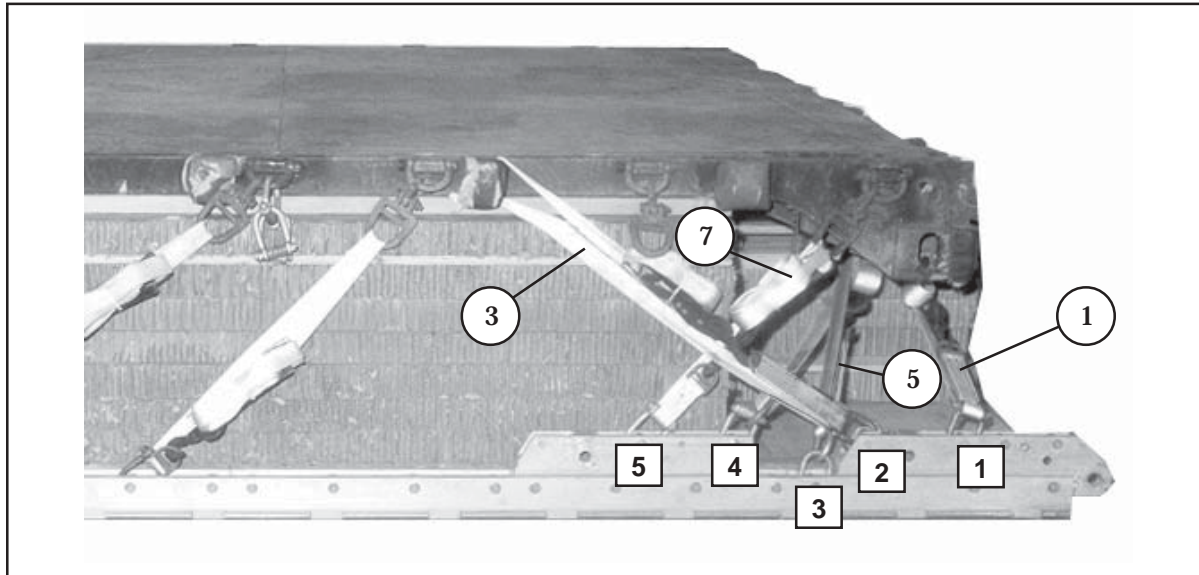


Figure 7-28. Pallet Positioned and Restraint Lashing Installed

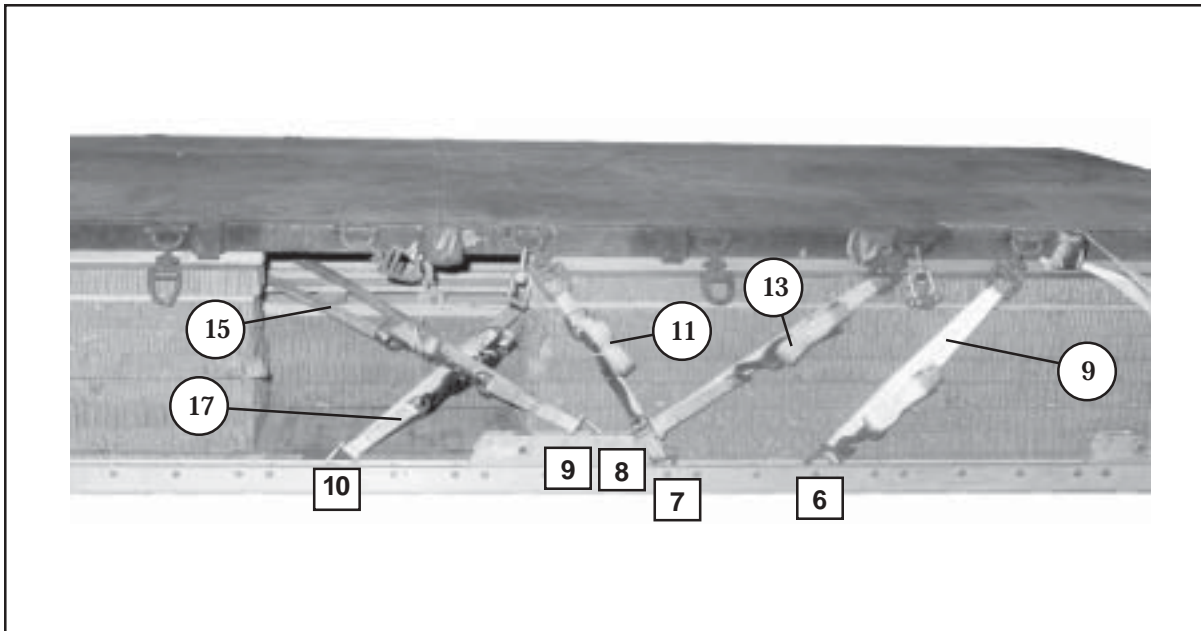
LASHING PLS PALLET TO PLATFORM

7-22. Lash the PLS pallet to the platform as shown in Figure 7-29.



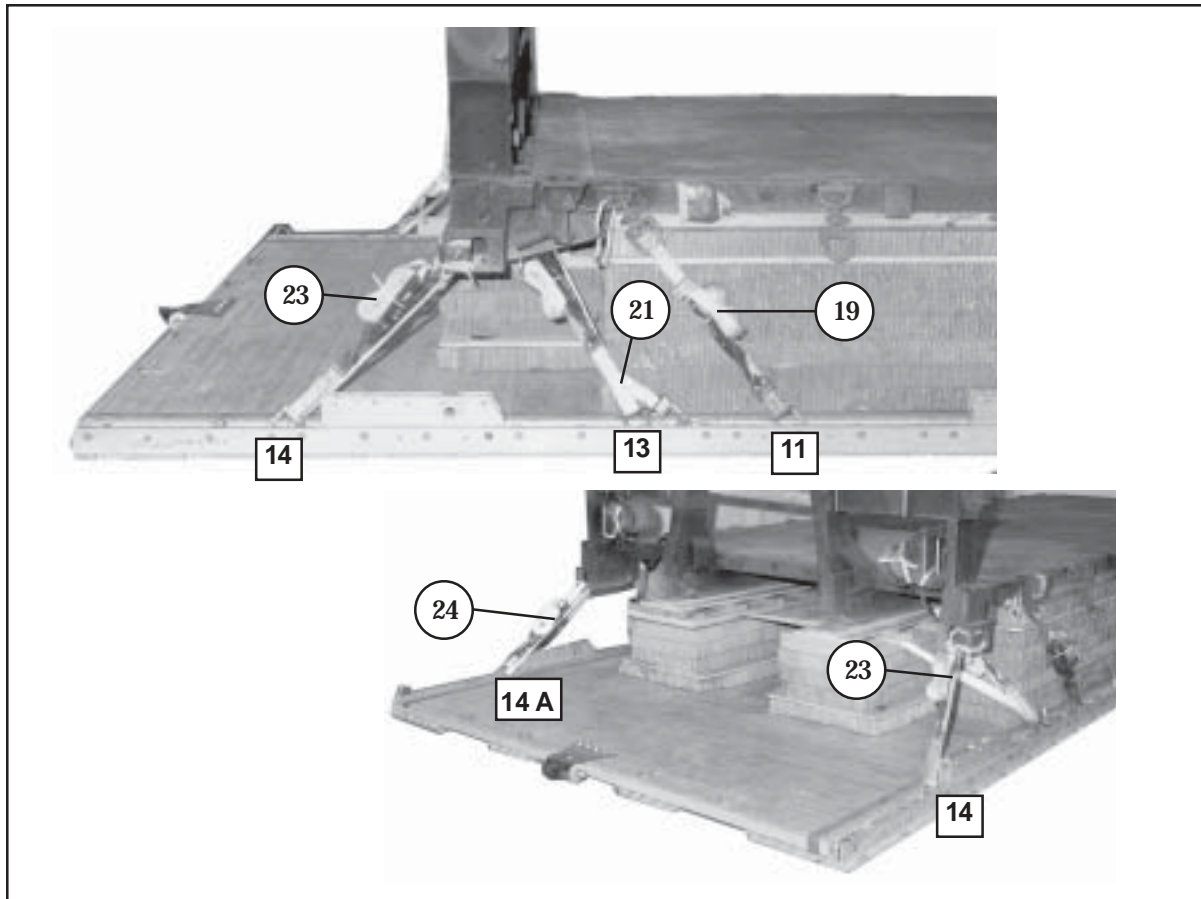
Lashing Number	Tiedown Clevis Number	Instructions
1	1	Pass lashing: Through the right front inside tie-down point.
2	1A	Through the left front inside tie-down point.
3	2	Through the second stake bracket.
4	2A	Through the second stake bracket
5	3	Through the right front outside tie-down point.
6	3A	Through the left front outside tie-down point.
7	5	Through the first swivel ring.
8	5A	Through the first swivel ring.

Figure 7-29. Pallet Lashed to Platform



Lashing Number	Tiedown Clevis Number	Instructions
9	6	Pass lashing: Through the third swivel ring.
10	6A	Through the third swivel ring.
11	7	Through the sixth swivel ring.
12	7A	Through the sixth swivel ring.
13	8	Through the fourth swivel ring.
14	8A	Through the fourth swivel ring.
15	9	Through the rear holes in the skid.
16	9A	Through the rear holes in the skid.
17	10	Through the front holes in the skid.
18	10A	Through the front holes in the skid.

Figure 7-29. Pallet Lashed to Platform (Continued)



Lashing Number	Tiedown Clevis Number	Instructions
19	11	Pass lashing: Through the eleventh swivel ring.
20	11A	Through the eleventh swivel ring.
21	13	Through the right corner tie-down ring.
22	13A	Through the left corner tie-down ring.
23	14	Through the right corner hole.
24	14A	Through the left corner hole.

Figure 7-29. Pallet Lashed to Platform (Continued)

PLACING AND LASHING THE LOAD

7-23. Cover the pallet with a layer of honeycomb and place eight A-22 containers on the pallet as shown in Figure 7-30. Construct four endboards as shown in Figure 7-31. Lash the containers and endboards to the front section of the pallet as shown in Figure 7-32. Lash the containers and endboards to the rear section of the pallet as shown in Figure 7-33.

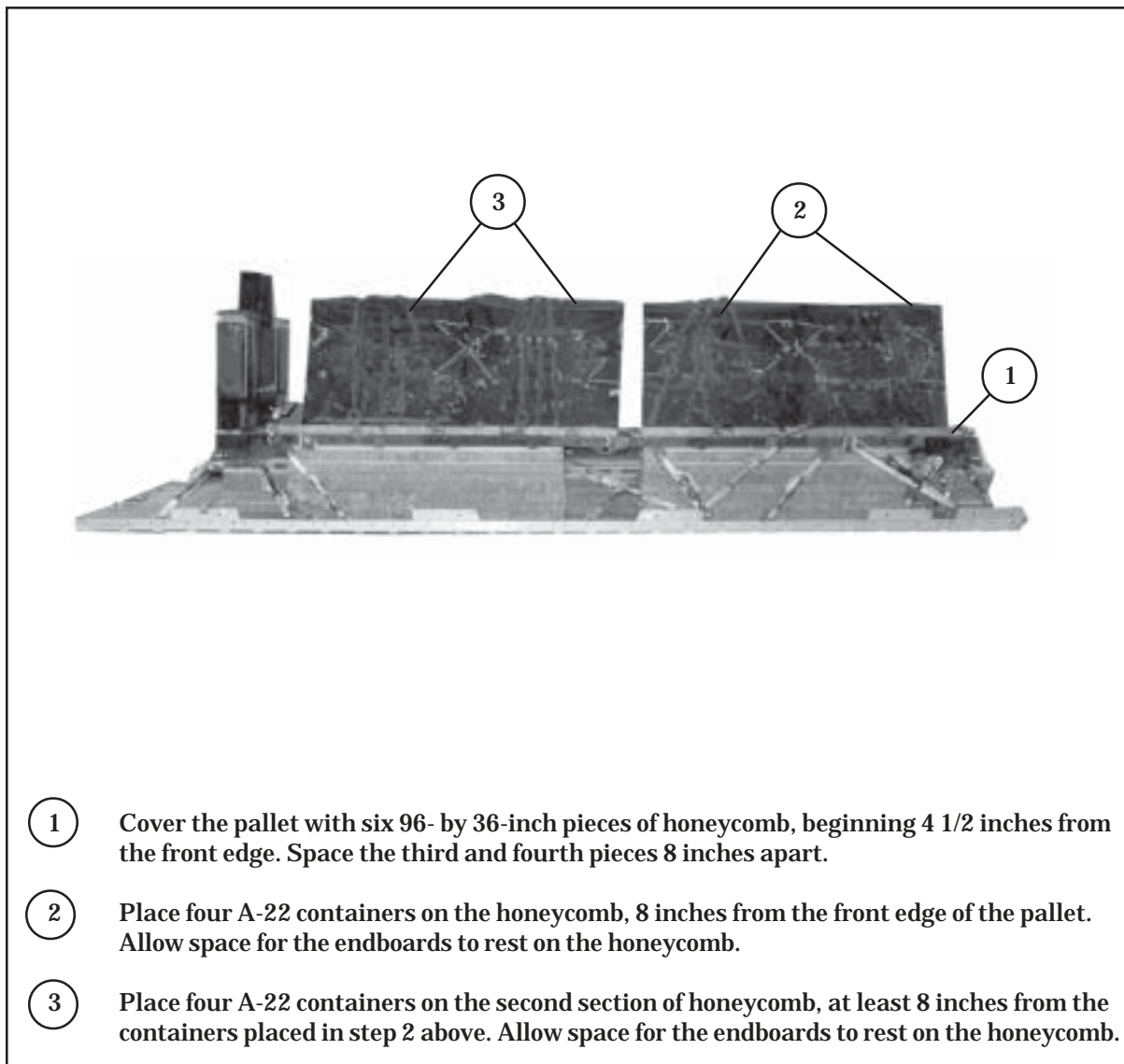
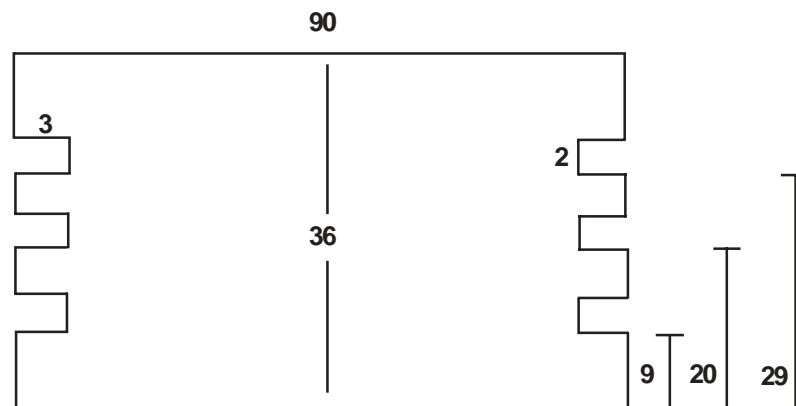


Figure 7-30. Honeycomb and A-22 Containers Placed on the Pallet

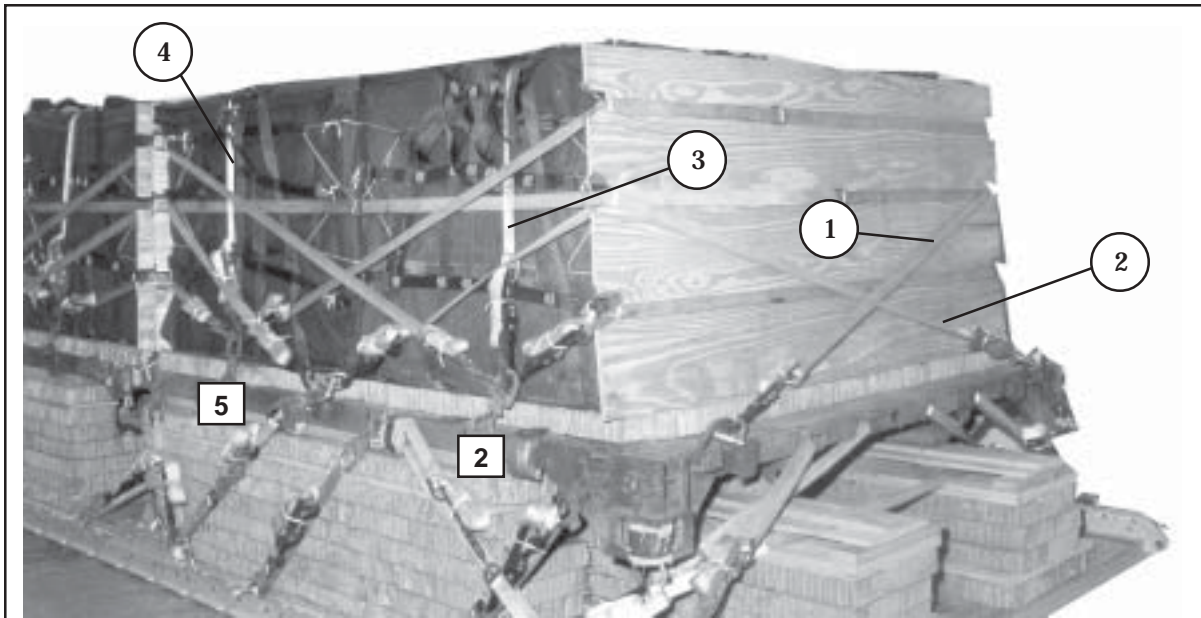
Notes:

1. This drawing is not to scale.
2. All dimensions are in inches.
3. For loads different from that shown in this section, make the endboards the same height as the load configuration.
4. The instructions given are for one endboard. Four are required for this load.

**Step:**

1. Cut four 90- by 36-inch pieces of 3/4-inch plywood.
2. Make 2- by 3-inch cutouts as shown. Tape the sharp edges of the cutouts.
3. Place an endboard against the front and rear of each of the two groups of containers. (Not shown)

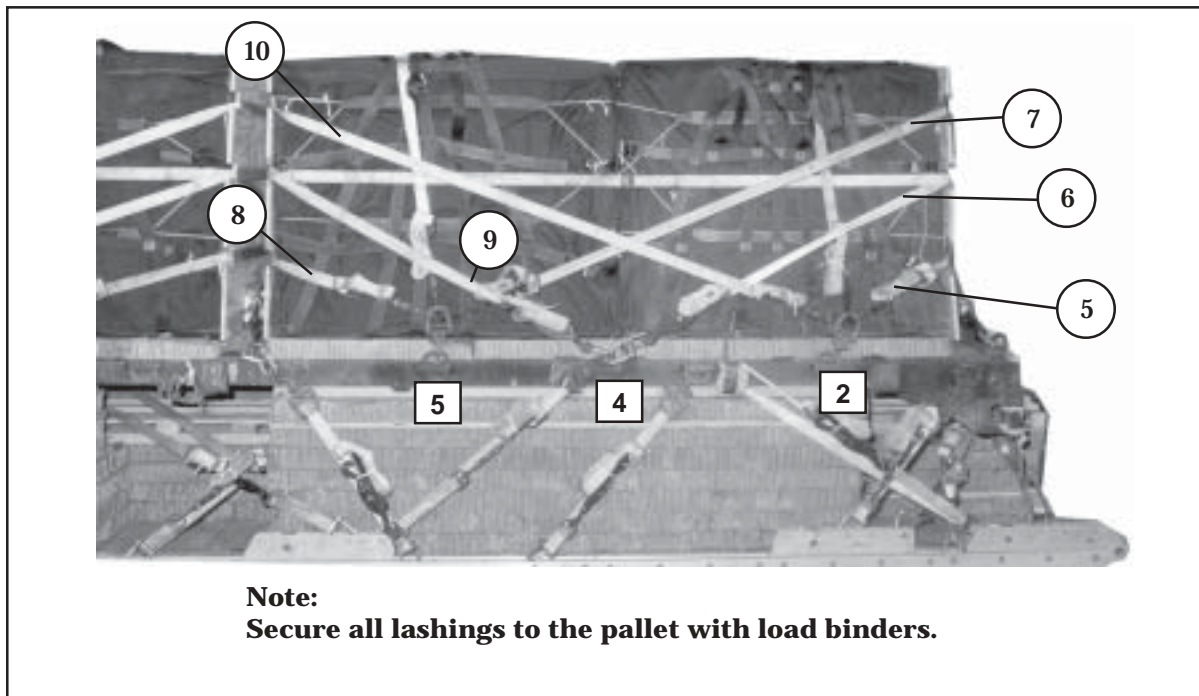
Figure 7-31. Four Endboards Constructed



Note:
Secure all lashings to the pallet with load binders.

Lashing Number	Pallet Ring Number	Instructions
1	1	Run a 30-foot lashing from the right front tie-down to the left middle cutout in the front endboard, and around the left side. Pass the lashing through the left middle cutout in the second endboard. Secure the lashing to the end clevis on the sixth pallet ring on the right side.
2		Run a 30-foot lashing from the left front tie-down to the right middle cutout in the front endboard, and around the right side. Pass the lashing through the right middle cutout in the second endboard. Secure the lashing to the end clevis on the sixth pallet ring on the left side.
3	2A to 2	Run the lashing over the tops of the first two containers.
4	5A to 5	Run the lashing over the tops of the second two containers.

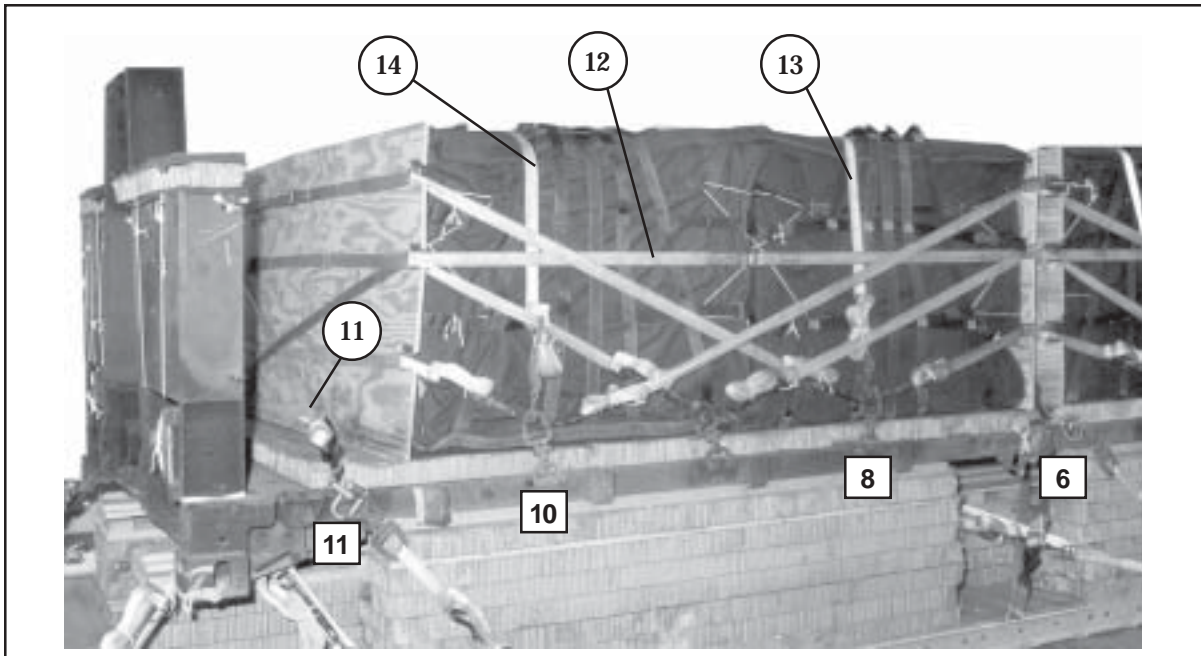
Figure 7-32. First Four Containers Lashed to Pallet



Note:
Secure all lashings to the pallet with load binders.

Lashing Number	Pallet Ring Number	Instructions
5	2A to 2	Run a lashing from the second pallet ring on each side through the lower cutouts in the first endboard.
6	4 and 4A	Run a 30-foot lashing from one of the end clevises on the fourth pallet ring on each side through the middle cutouts in the first endboard.
7	5 and 5A	Run a 30-foot lashing from the fifth pallet ring on both sides through the upper cutouts in the first endboard.
8	5A to 5	Run a lashing from the fifth pallet ring on each side through the lower cutouts in the second endboard.
9	4 and 4A	Run a 30-foot lashing from the remaining end clevis on the fourth pallet ring on each side through the middle cutouts on the second endboard.
10	2 and 2A	Run a 30-foot lashing from the second pallet ring on each side through the upper cutouts in the second endboard.

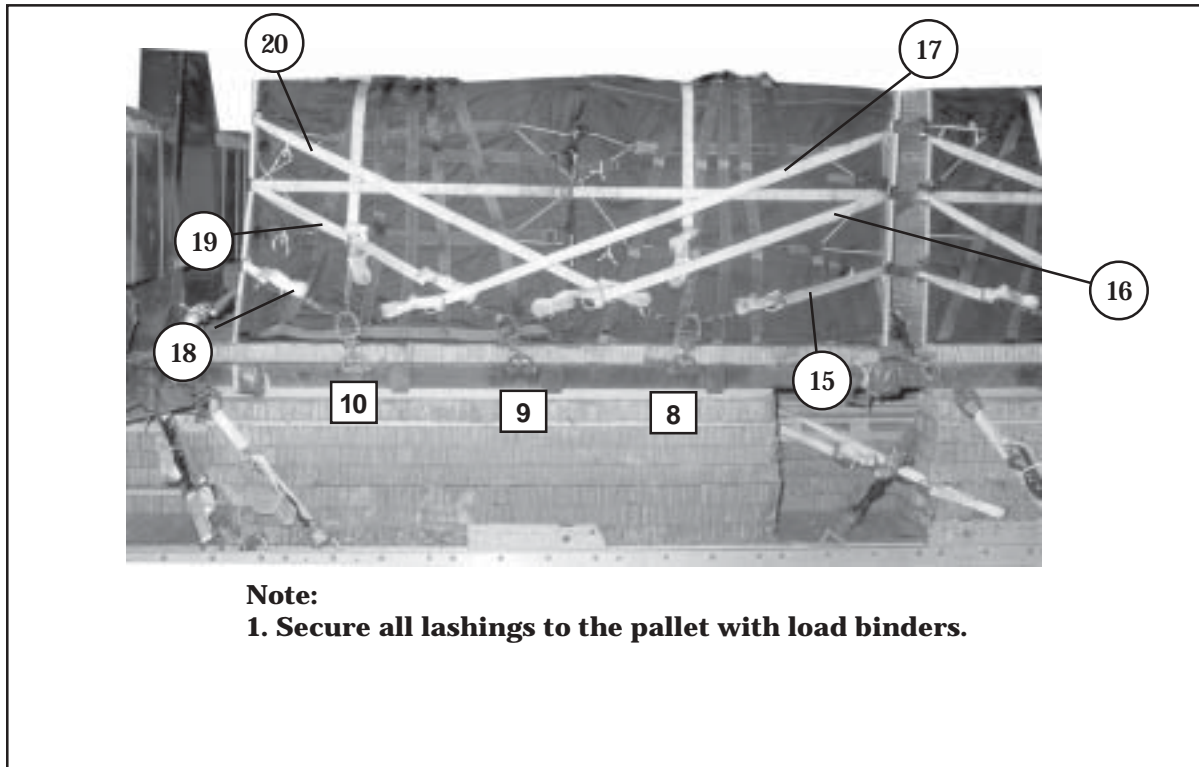
Figure 7-32. First Four Containers Lashed to Pallet (Continued)



Note:
Secure all lashings to the pallet with load binders.

Lashing Number	Pallet Ring Number	Instructions
11	6 and 11	Run a 30-foot lashing from the end clevis on the sixth pallet ring to the left middle cutout in the third endboard, and around the left side. Pass the lashing through the left middle cutout to the rear endboard. Secure the lashing to the end clevis on the eleventh pallet ring on the right side.
12	6A and 11A	Run a 30-foot lashing from the end clevis on the sixth pallet ring to the right middle cutout in the third endboard, and around the right side. Pass the lashing through the right middle cutout to the rear endboard. Secure the lashing to the end clevis on the eleventh pallet ring on the left side.
13	8A to 8	Run the lashing over the tops of the first two containers.
14	10A to 10	Run the lashing over the tops of the second two containers.

Figure 7-33. Second Four Containers Lashed to Pallet



Note:
1. Secure all lashings to the pallet with load binders.

Lashing Number	Pallet Ring Number	Instructions
15	8 and 8A	Run a lashing from the eighth pallet ring on each side through the lower cutouts in the third endboard.
16	9 and 9A	Run a 30-foot lashing from the ninth pallet ring on each side through the middle cutouts in the third endboard.
17	10 and 10A	Run a 30-foot lashing from the tenth pallet ring on both sides through the upper cutouts in the third endboard.
18	10 and 10A	Run a lashing from the tenth pallet ring on each side through the lower cutouts in the rear endboard.
19	9 and 9A	Run a 30-foot lashing from the ninth pallet ring on each side through the middle cutouts in the rear endboard.
20	8 and 8A	Run a 30-foot lashing from the eighth pallet ring on each side through the upper cutouts in the rear endboard.

Figure 7-33. Second Four Containers Lashed to Pallet (Continued)

INSTALLING AND SAFETYING SUSPENSION SLINGS

7-24. Install the components of the centerline suspension system according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 7-34. Safety the suspension slings as shown in Figure 7-35.

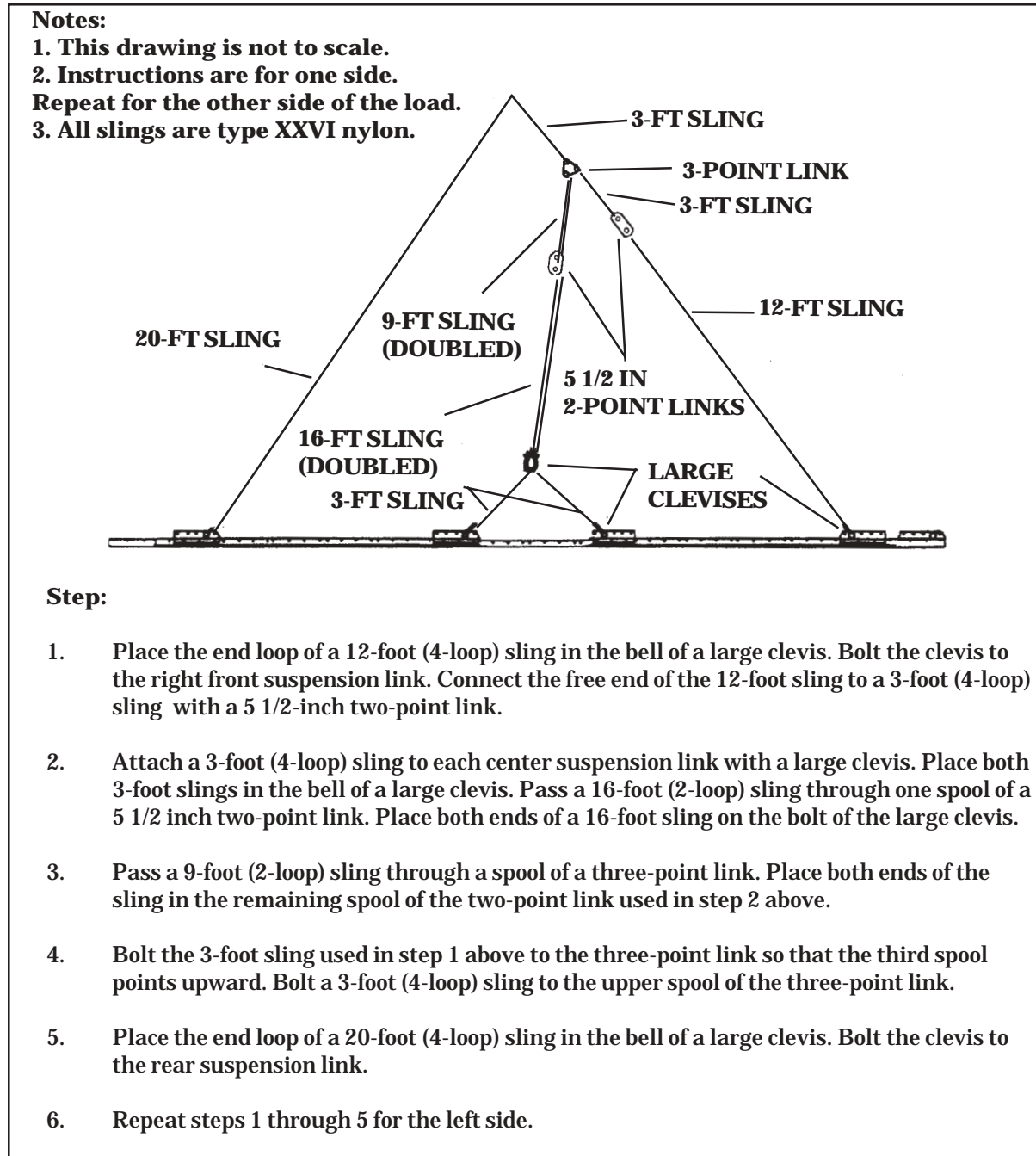
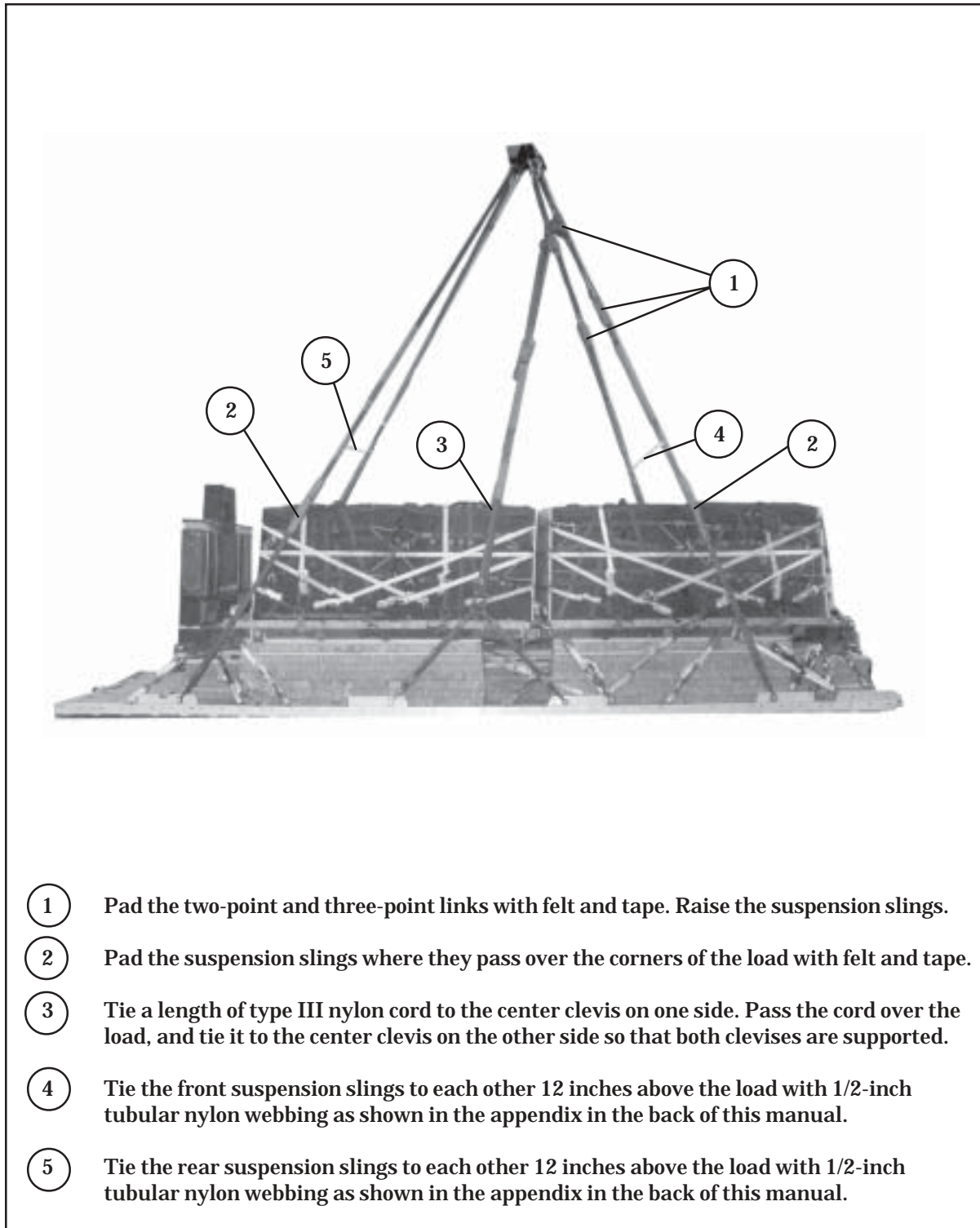


Figure 7-34. Suspension Slings Installed

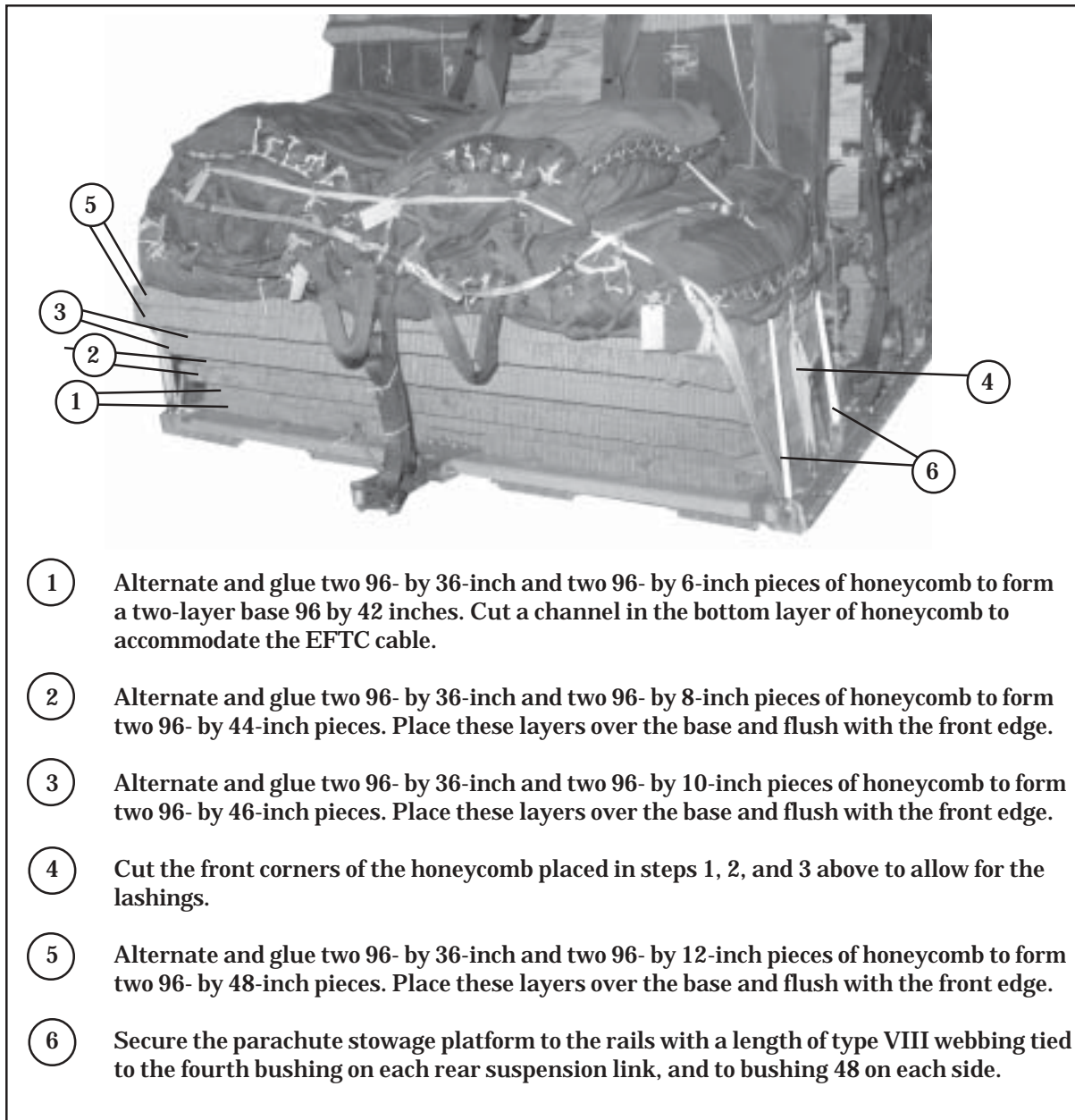


- ① Pad the two-point and three-point links with felt and tape. Raise the suspension slings.
- ② Pad the suspension slings where they pass over the corners of the load with felt and tape.
- ③ Tie a length of type III nylon cord to the center clevis on one side. Pass the cord over the load, and tie it to the center clevis on the other side so that both clevises are supported.
- ④ Tie the front suspension slings to each other 12 inches above the load with 1/2-inch tubular nylon webbing as shown in the appendix in the back of this manual.
- ⑤ Tie the rear suspension slings to each other 12 inches above the load with 1/2-inch tubular nylon webbing as shown in the appendix in the back of this manual.

Figure 7-35. Suspension Slings Safetied

BUILDING PARACHUTE STOWAGE PLATFORM AND INSTALLING CARGO PARACHUTES

7-25. Build the parachute stowage platform and install the G-11 cargo parachutes as shown in Figure 7-36.



- 1 Alternate and glue two 96- by 36-inch and two 96- by 6-inch pieces of honeycomb to form a two-layer base 96 by 42 inches. Cut a channel in the bottom layer of honeycomb to accommodate the EFTC cable.
- 2 Alternate and glue two 96- by 36-inch and two 96- by 8-inch pieces of honeycomb to form two 96- by 44-inch pieces. Place these layers over the base and flush with the front edge.
- 3 Alternate and glue two 96- by 36-inch and two 96- by 10-inch pieces of honeycomb to form two 96- by 46-inch pieces. Place these layers over the base and flush with the front edge.
- 4 Cut the front corners of the honeycomb placed in steps 1, 2, and 3 above to allow for the lashings.
- 5 Alternate and glue two 96- by 36-inch and two 96- by 12-inch pieces of honeycomb to form two 96- by 48-inch pieces. Place these layers over the base and flush with the front edge.
- 6 Secure the parachute stowage platform to the rails with a length of type VIII webbing tied to the fourth bushing on each rear suspension link, and to bushing 48 on each side.

Figure 7-36. Parachute Stowage Platform Built and Cargo Parachutes Installed

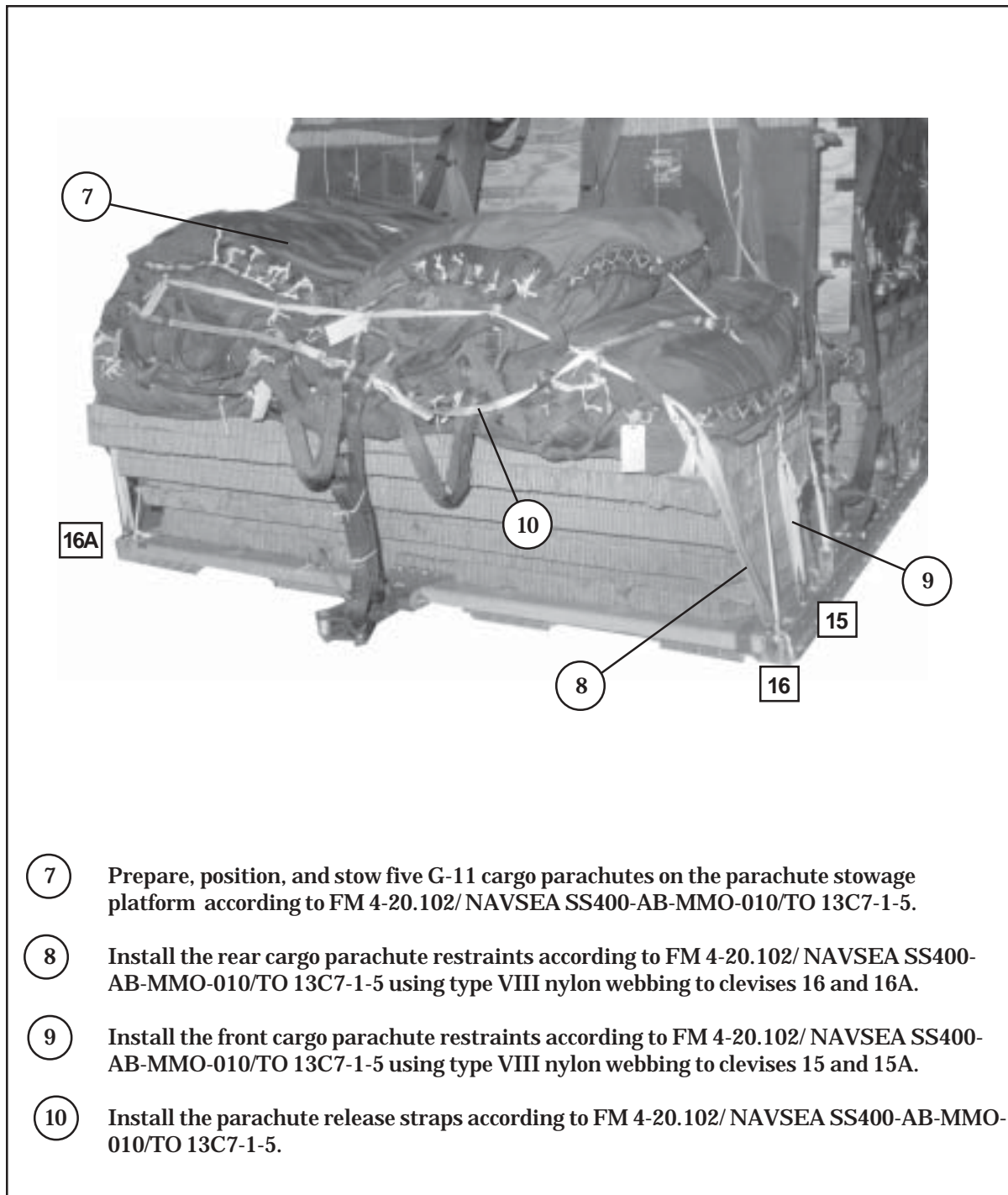


Figure 7-36. Parachute Stowage Platform Built and Cargo Parachutes Installed (Continued)

INSTALLING THE PARACHUTE RELEASE SYSTEM

7-26. Prepare, attach, and safety an M-2 cargo parachute release according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 7-37.

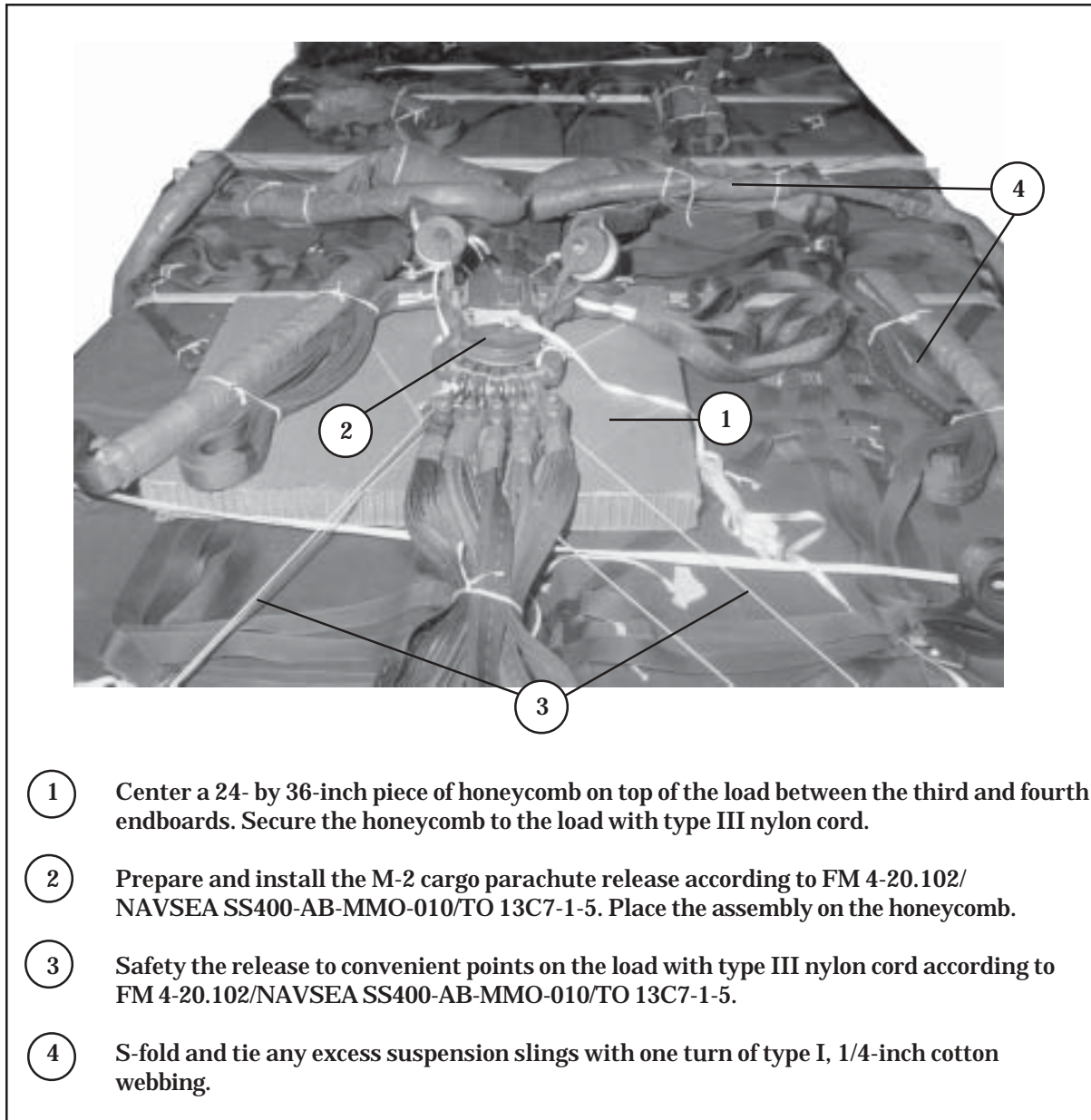


Figure 7-37. M-2 Release Installed

INSTALLING THE EXTRACTION SYSTEM

7-27. Install the extraction system according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 7-38.

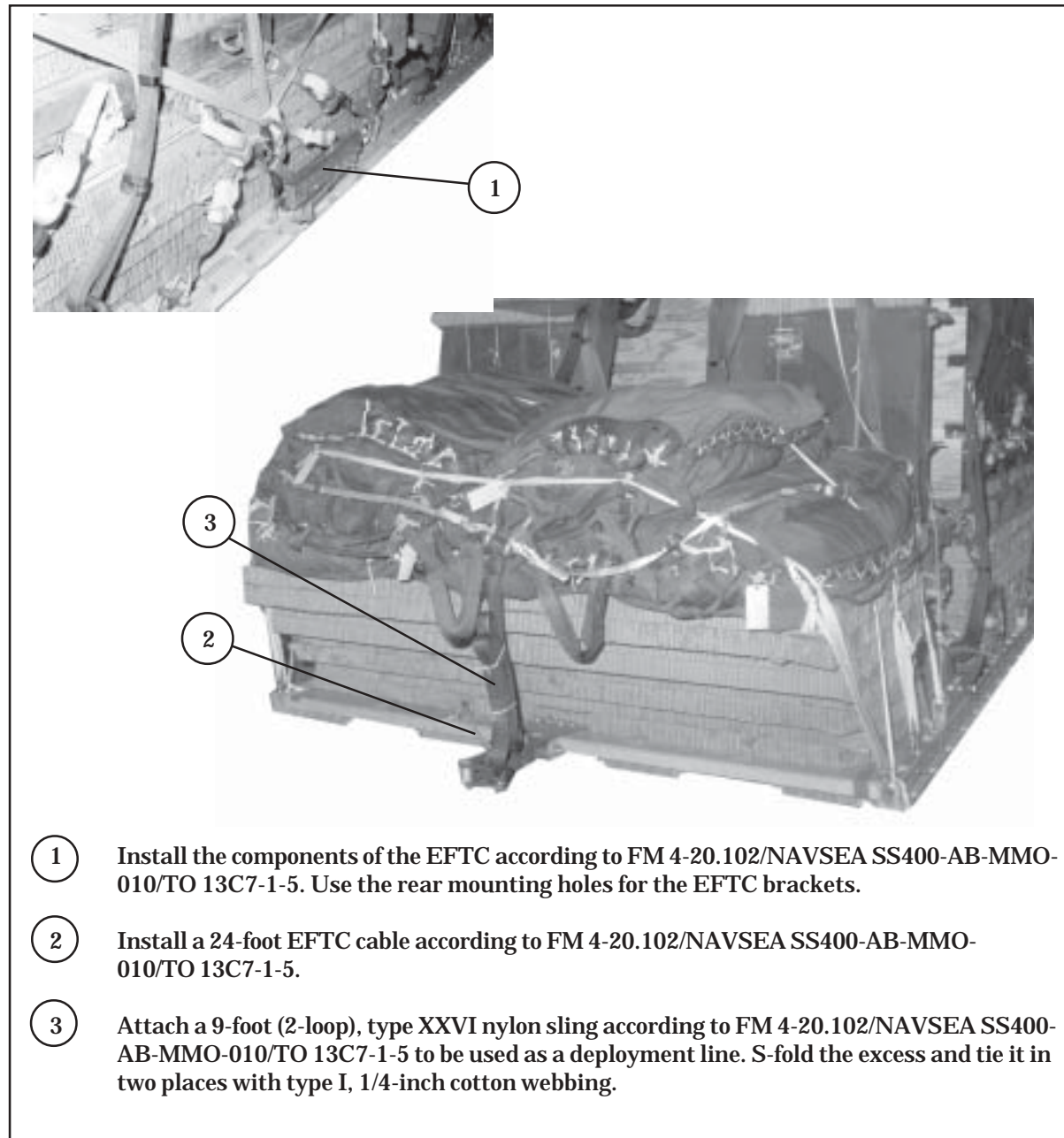


Figure 7-38. Extraction System Installed

PLACING EXTRACTION PARACHUTE

7-28. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Place the extraction parachute and line on the load for installation in the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

7-29. Select and install the provisions for the emergency aft restraints according to the emergency aft restraint requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

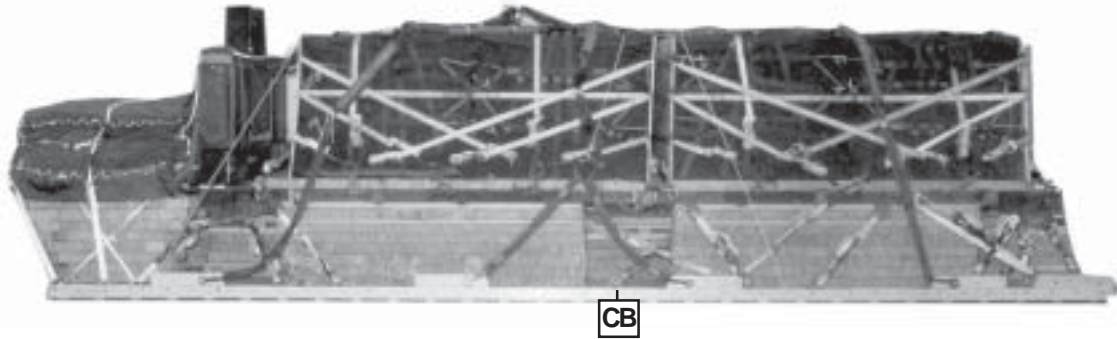
MARKING RIGGED LOAD

7-30. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and as shown in Figure 7-39. Complete Shipper's Declaration for Dangerous Goods. If the load varies from the one shown, the weight, height, CB, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

7-31. Use the equipment listed in Table 7-2 to rig this load.

CAUTION
 Make the final rigger inspection required by AR 59-4 and FM 4-20.102/NAVSEA
 SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Weight.....24,278 pounds

Maximum Weight.....See paragraph 7-17

Height.....84 inches

Width.....108 inches

Length.....288 inches

Overhang: Front.....0 inches

Rear.....0 inches

Center of Balance (CB)
 (from front edge of the platform).....137 inches

Extraction System (adds 18 inches to length of platform) EFTC

Figure 7-39. PLS Pallet with A-22 Containers Rigged on a 24-Foot Platform for Low-Velocity Airdrop

Table 7-2. Equipment Required for Rigging PLS with A-22 Cargo Bags on a 24-Foot, Type V Platform for Low-Velocity Airdrop

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive paste, 1-gal.	As required
1670-00-587-3421	Bag, cargo, (A-22)	8
4030-00-090-5354	Clevis, suspension, 1-inch (large)	13
4020-00-240-2146	Cord, nylon, type III, 550-lb.	As required
1670-00-434-5782	Coupling, airdrop extraction force transfer, w/24-ft. cable	1
1670-00-360-0328	Cover, clevis	5
8135-00-664-6958	Cushioning material (Cellulose wadding)	As required
8305-00-958-3685	Felt, 1/2-inch thick	As required
1670-01-183-2678	Leaf, extraction line (line bag) (add 2 for C-17)	2
	Line extraction:	
1670-01-062-6313	60-foot (3-loop), type XXVI (for C-130)	1
1670-01-064-4454	60-foot (6-loop), type XXVI	1
1670-01-062-6312	120-foot (6-loop), type XXVI (for C-5)	1
1670-01-468-9178	140-foot (6-loop), type XXVI (for C-17)	1
1670-01-064-4452	60-foot (1-loop), type XXVI (for C-17), (drogue line)	1
1670-00-162-4981	Link assembly, four-point	2
1670-00-162-4981	Link assembly, three-point	2
	Link assembly, two-point:	
5306-00-435-8994	Bolt, 1-inch diameter, 4-inches long (add 4 for C-5)	10
5310-00-232-5165	Nut, 1-inch (add 4 for C-5)	10
1670-00-003-1953	Plate, side, 3 3/4-inch	10
5365-00-007-3414	Spacer, large (add 4 for C-5)	10
5510-00-220-6146	Lumber, 2- by 4-in	As required
5310-00-010-4657	Nail, steel wire, common, 6d	As required
1670-00-753-3928	Pad, energy-dissipating (honeycomb) 3- by 36- by 96-inches	44 sheets
1670-01-016-7841	Parachute, cargo, G-11	5
	Parachute, cargo, extraction:	
1670-00-040-8135	28-ft.	1
1670-01-063-3715	15-ft. (C-17 only)	1
	Platform, airdrop, type V, 24-ft:	
5530-00-128-4981	Plywood, 3/4- by 48- by 96-in	7 sheets
1670-01-162-2372	Clevis assembly (type V)	(48)
1670-01-353-8424	Extraction bracket assembly	(1)
1670-01-247-2389	Link, suspension bracket, type V	(8)
1670-01-162-2381	Link, tandem, suspension link assembly	(2)
1670-01-097-8817	Release, cargo parachute, M-2	1
	Sling, cargo, airdrop:	
1670-01-064-4453	20-ft. (4-loop), type XXVI	2
1670-01-062-6307	12-ft. (4-loop), type XXVI	2

Table 7-2. Equipment Required for Rigging PLS with A-22 Cargo Bags on a 24-Foot, Type V Platform for Low-Velocity Airdrop (Continued)

National Stock Number	Item	Quantity
1670-01-062-6306	3-ft (4-loop), type XXVI nylon webbing	8
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	3
1670-01-063-7761	16-ft (2-loop), type XXVI nylon webbing	2
1670-01-062-6311	120-ft (2-loop), type XXVI nylon webbing	7
5340-00-040-8219	Strap, parachute, release, multi-knife	2
7501-00-266-5016	Tape, adhesive, 2-inch	As required
1670-00-937-0271	Tiedown assembly, 15-ft.	58
1670-01-483-8259	Towplate release mechanism (H-block) (C-17 only)	1
	Webbing:	
8305-00-268-2411	Cotton, 1/4-inch, type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-inch	As required
8305-00-263-3598	Nylon, type VIII	As required

Chapter 8

RIGGING 155-MILLIMETER (MM) AMMUNITION MODULAR ARTILLERY CHARGE SYSTEM (MACS) ON A 16-FOOT, TYPE V PLATFORM FOR LOW-VELOCITY AIRDROP

DESCRIPTION OF LOAD

8-1. Ninety-six 155-mm projectiles and 72 power canisters are rigged for low-velocity airdrop on a 16-foot, type V platform. The load uses three G-11B cargo parachutes. Refer to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 for the weight limitations and for the number of parachutes to be used.

Notes:

- 1. The load shown is using metal crates. However, wooden crates may be used with three lashings and a load binder.**
- 2. If the metal locking rods are missing, three lashings, D-rings and load binders will be needed.**

PREPARING PLATFORM

8-2. Prepare a 16-foot, type V platform as shown in Figure 8-1.

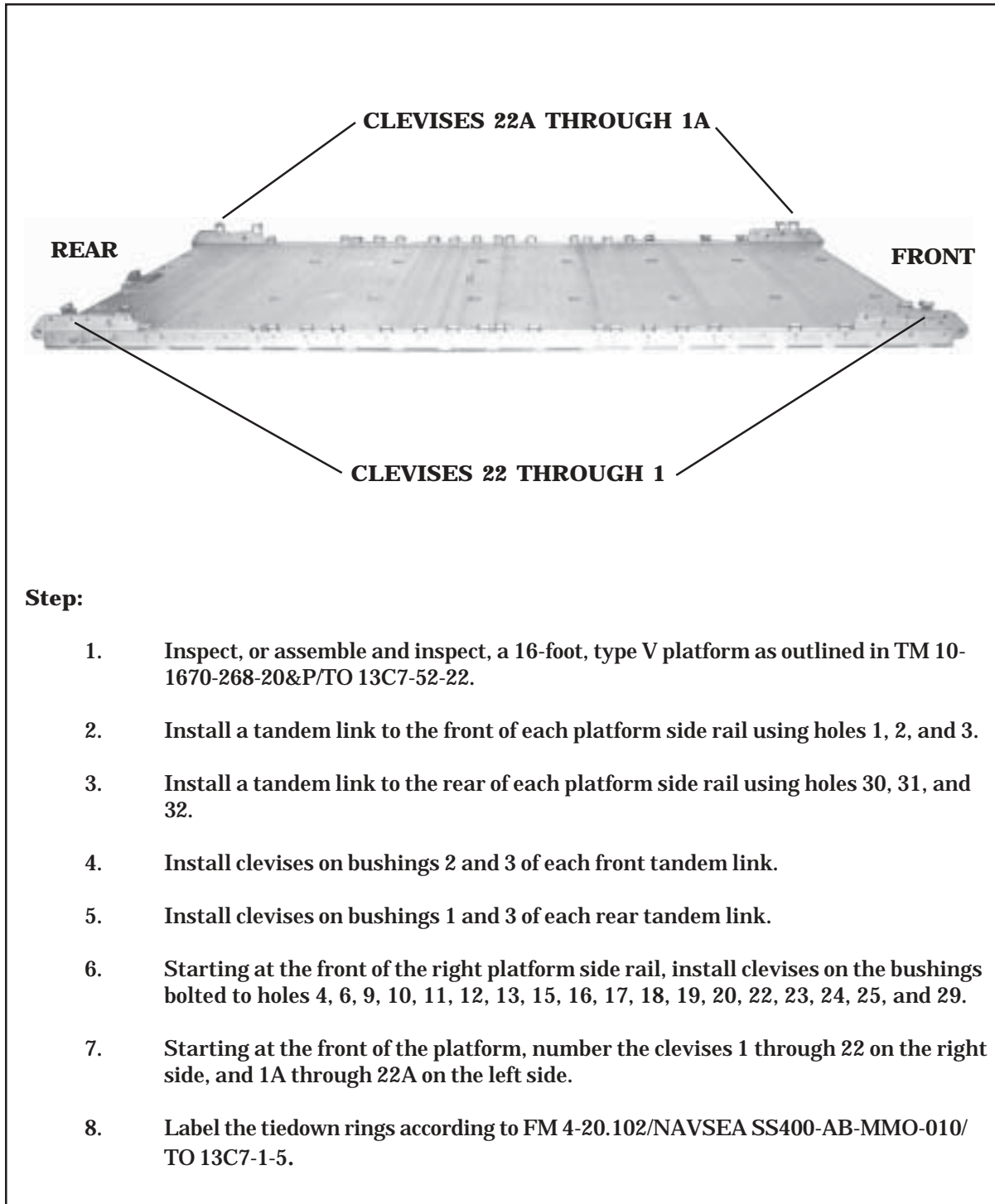
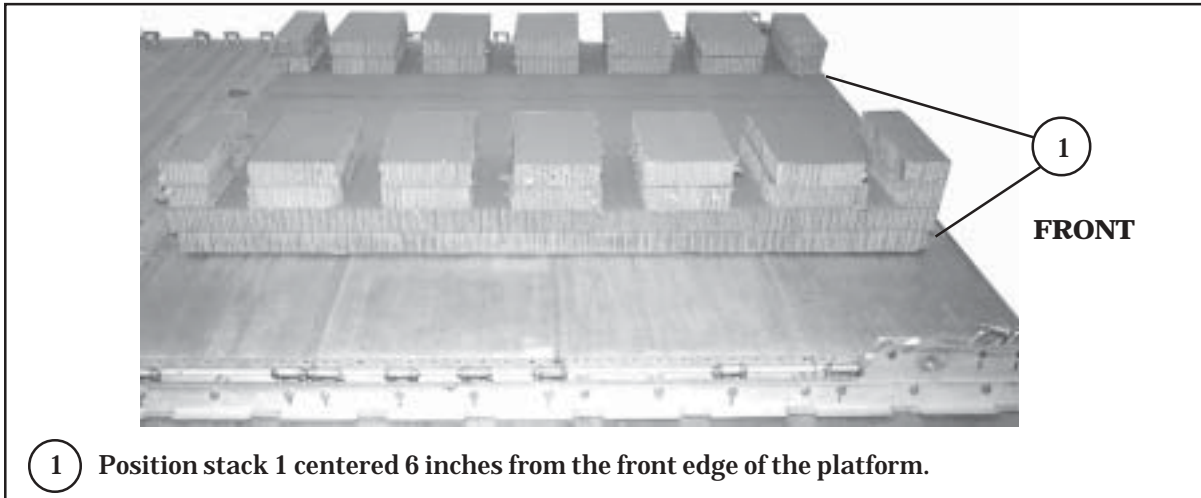


Figure 8-1. Platform Prepared

BUILDING HONEYCOMB STACKS 1 AND 2 AND POSITIONING STACK 1

8-3. Prepare honeycomb stacks 1 and 2 and position stack 1 as shown in Figure 8-2.



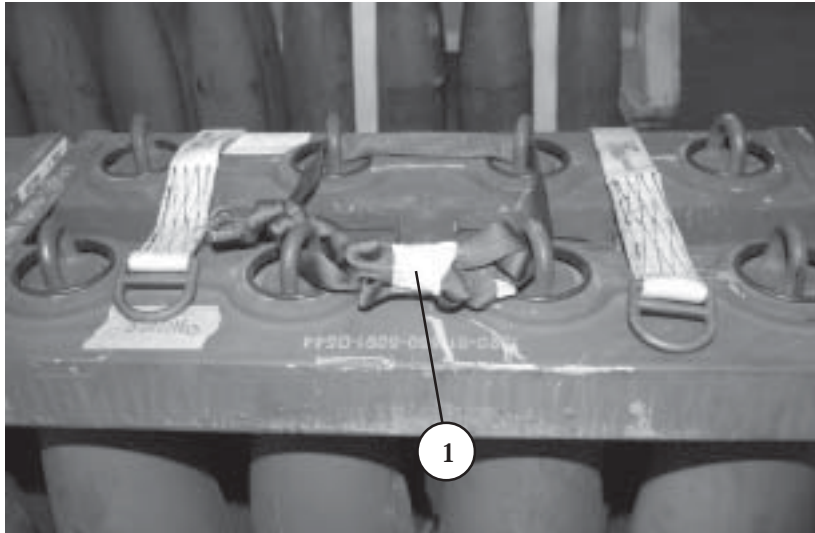
① Position stack 1 centered 6 inches from the front edge of the platform.

Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
1 and 2	2	36	88	Honeycomb	Form a two layer base 88 inches long and 60 inches wide. Alternate the layers of honeycomb. Center the stack 6 inches from the front edge of the platform.
	2	24	88	Honeycomb	Included with the first step.
	8	15	5	Honeycomb	Place two pieces of honeycomb on each corner of the base with the 5-inch sides facing the left and right sides of the platform.
	4	15	10	Honeycomb	Center two pieces of honeycomb along each side of the base with the 10-inch sides facing the left and right sides of the platform.
	16	15	10	Honeycomb	Evenly space two layer pieces of honeycomb between the center and corner pieces. The spaces between the pieces are 4 1/2 inches.

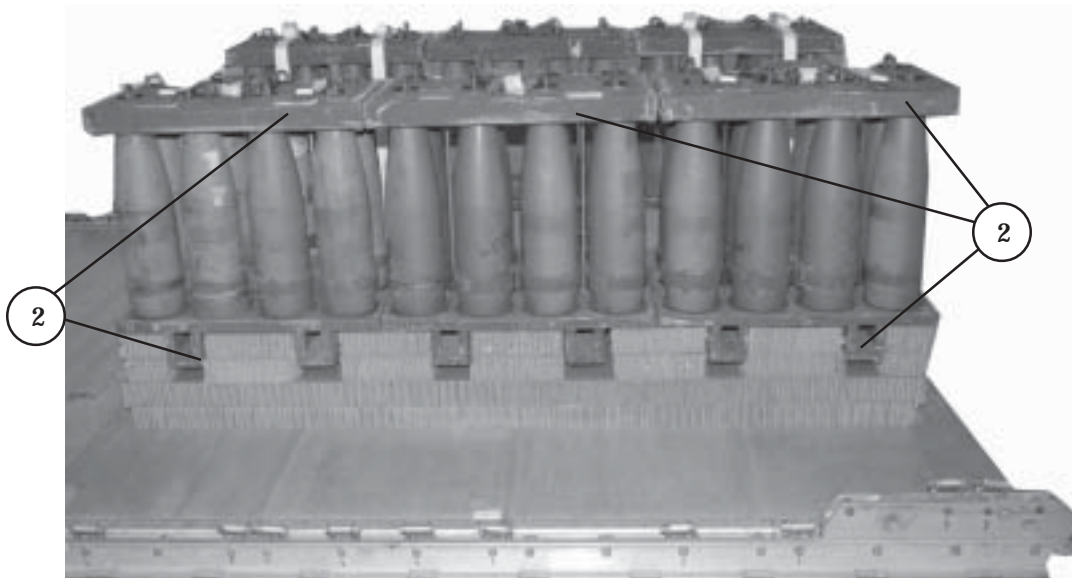
Figure 8-2. Honeycomb Stacks 1 and 2 Prepared and Stack 1 Positioned on the Platform

POSITIONING AND SECURING THE FIRST AMMUNITION STACK

8-4. Position and secure the first ammunition stack as shown in Figure 8-3.

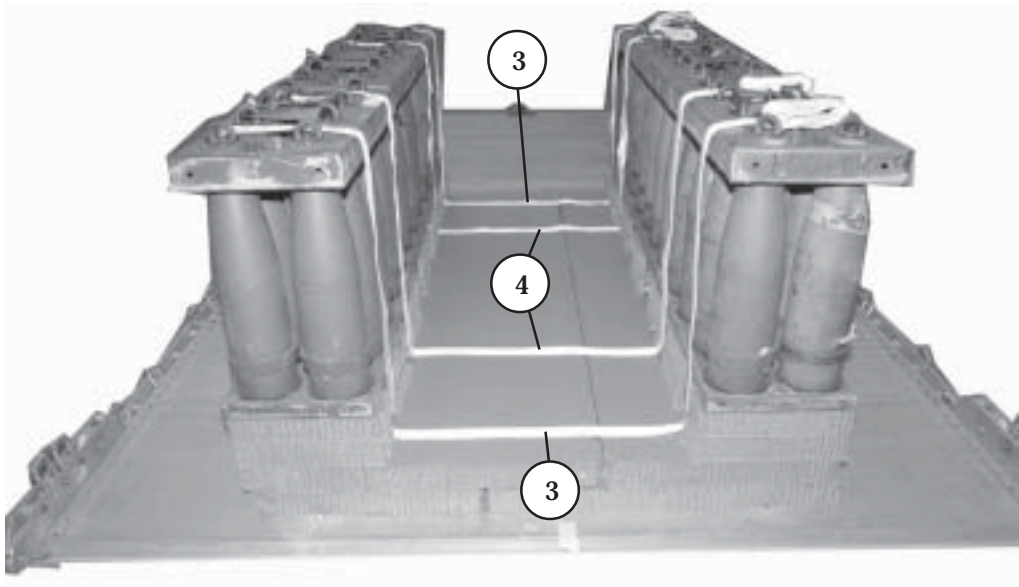


- ① Tie the four center eyelets of each bundle together with 1-inch tubular nylon webbing for lifting purposes only.



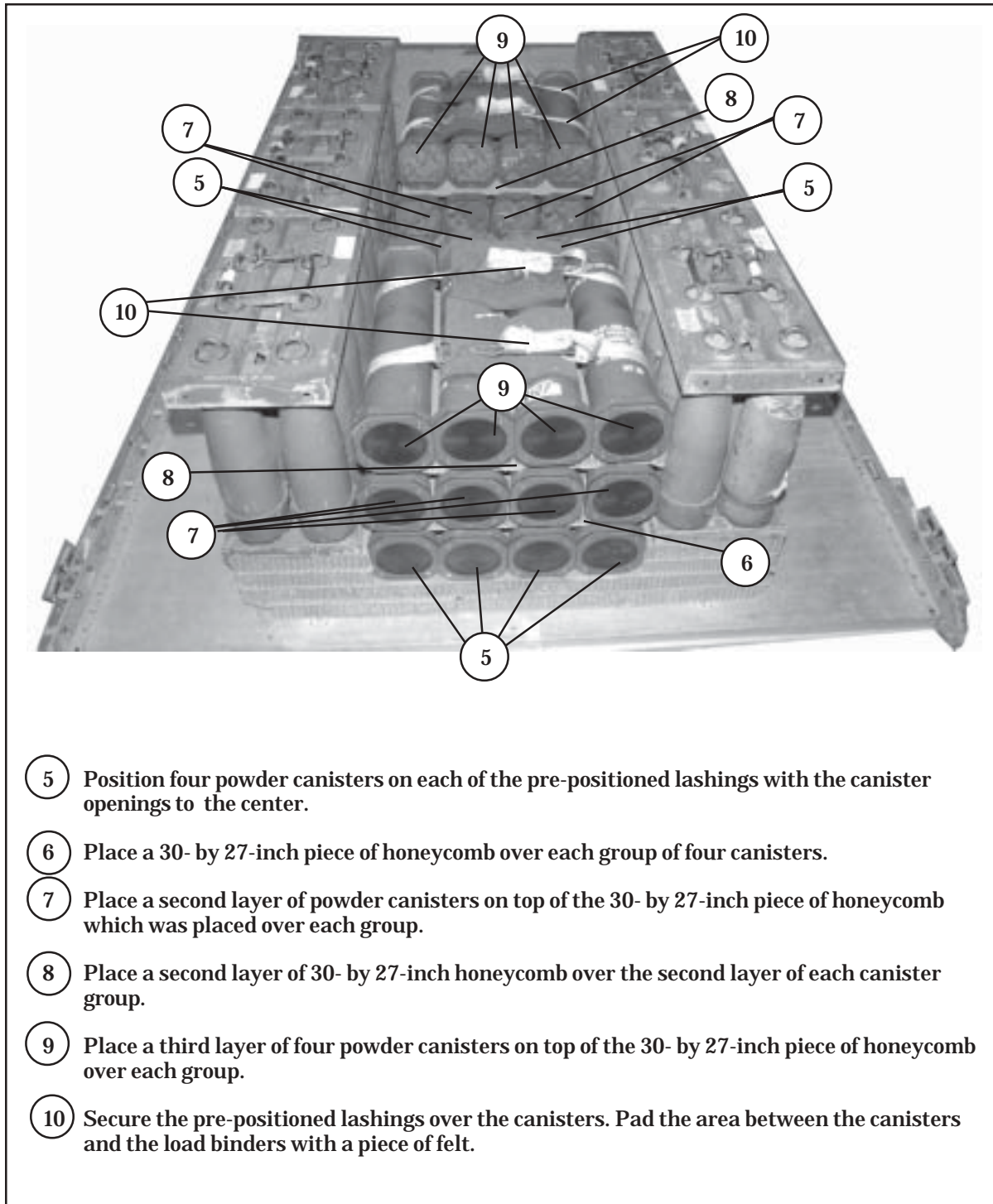
- ② Position three sets of projectiles flush on the honeycomb on each side. Fit the skids at the bottom of the bundles into the slots in the honeycomb stack.

Figure 8-3. Ammunition Positioned and Secured



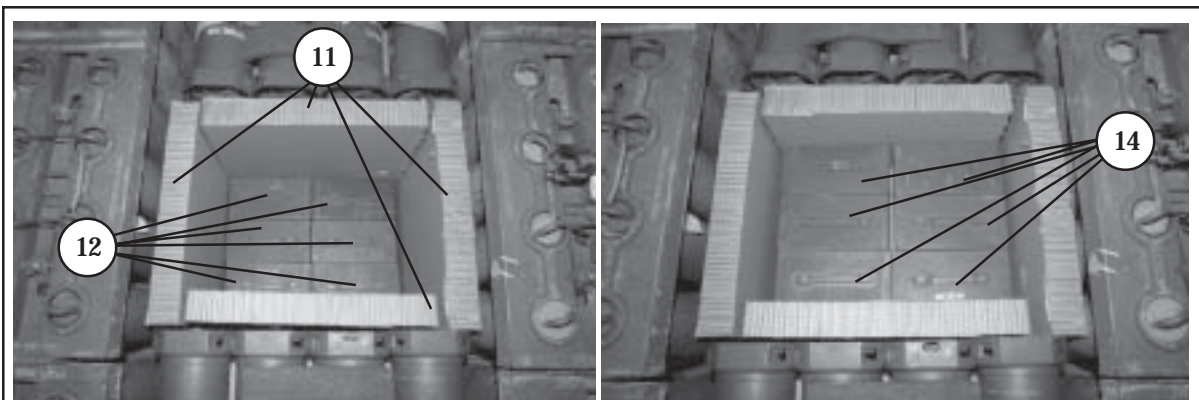
- ③ Place a 15-foot tiedown lashing 8 inches from the front and rear edge of honeycomb stack 1 in a right to left direction.
- ④ Place a 15-foot tiedown lashing 24 inches from the front and rear edge of honeycomb stack 1 in a right to left direction.

Figure 8-3. Ammunition Positioned and Secured (Continued)

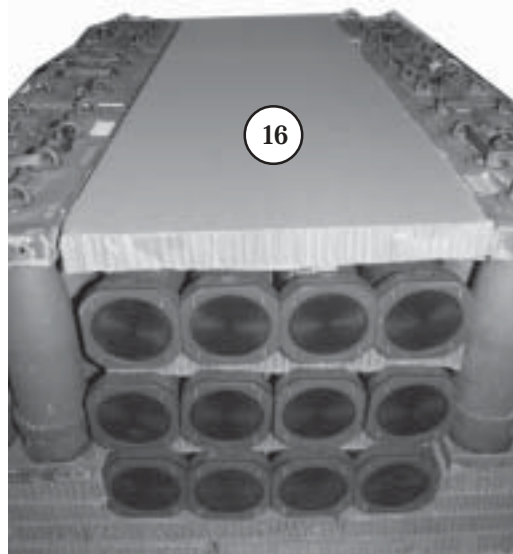


- 5 Position four powder canisters on each of the pre-positioned lashings with the canister openings to the center.
- 6 Place a 30- by 27-inch piece of honeycomb over each group of four canisters.
- 7 Place a second layer of powder canisters on top of the 30- by 27-inch piece of honeycomb which was placed over each group.
- 8 Place a second layer of 30- by 27-inch honeycomb over the second layer of each canister group.
- 9 Place a third layer of four powder canisters on top of the 30- by 27-inch piece of honeycomb over each group.
- 10 Secure the pre-positioned lashings over the canisters. Pad the area between the canisters and the load binders with a piece of felt.

Figure 8-3. Ammunition Positioned and Secured (Continued)



- ①① Cut four 24- by 24-inch pieces of honeycomb and place them between the canisters to form a box.
- ①② Place six fuse cans in the honeycomb box.
- ①③ Cut an 18- by 24-inch piece of honeycomb and position it over the fuse cans. (Not shown)
- ①④ Place six fuse cans on top of the 18- by 24-inch piece of honeycomb.
- ①⑤ Cut two 18- by 24-inch pieces of honeycomb and place on top of the second layer of fuse cans to fill the empty space in the honeycomb box. (Not shown)



- ①⑥ Cut and center a 30- by 88-inch piece of honeycomb over the canisters.

Figure 8-3. Ammunition Positioned and Secured (Continued)

CONSTRUCTING ENDBOARDS

8-5. Construct four endboards as shown in Figure 8-4.

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

The diagram shows a rectangular plywood endboard with a length of 60 inches and a height of 38 inches. On the left side, there are four triangular cutouts, each with a base of 3 inches and a height of 2 inches. On the right side, there are four rectangular cutouts, each with a width of 6 inches and a height of 2 inches. The cutouts are arranged in a staggered pattern. A dimension line at the bottom indicates a length of 60 inches. A dimension line on the right indicates a height of 38 inches. Labels 2, 4, 6, and 12 are placed near the cutouts, likely indicating their respective dimensions or positions.

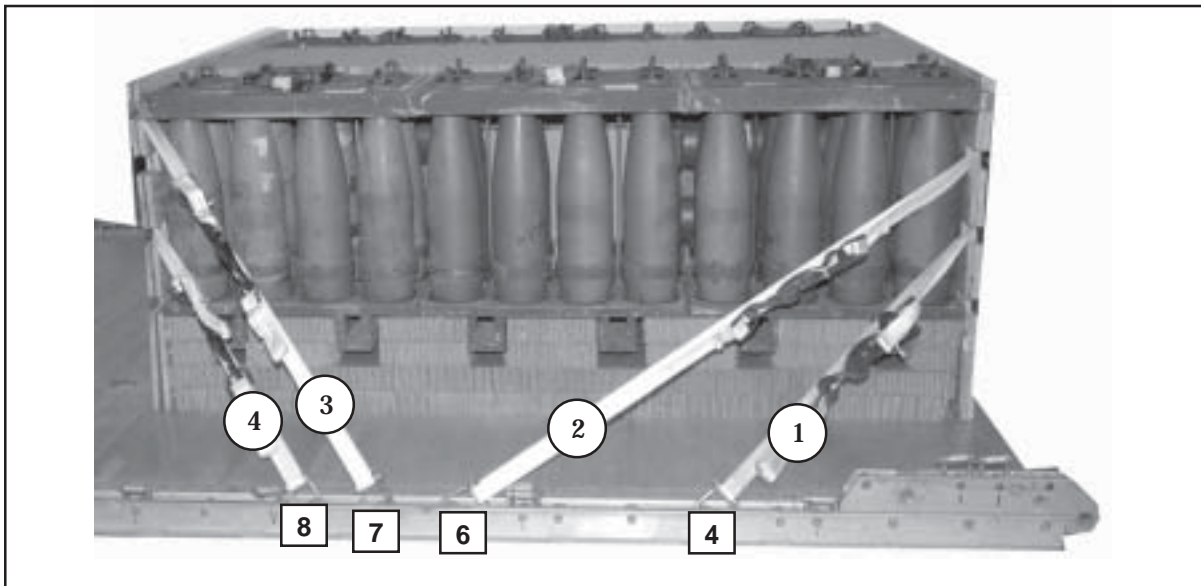
Step:

1. Cut eight 3/4- by 60- by 38-inch pieces of plywood.
2. Cut 2- by 3-inch cutouts as shown.
3. Nail two pieces of plywood flush together with 6d nails to make the four endboards.
4. Pad the cutouts with cellulose wadding and tape.

Figure 8-4. Endboards Constructed

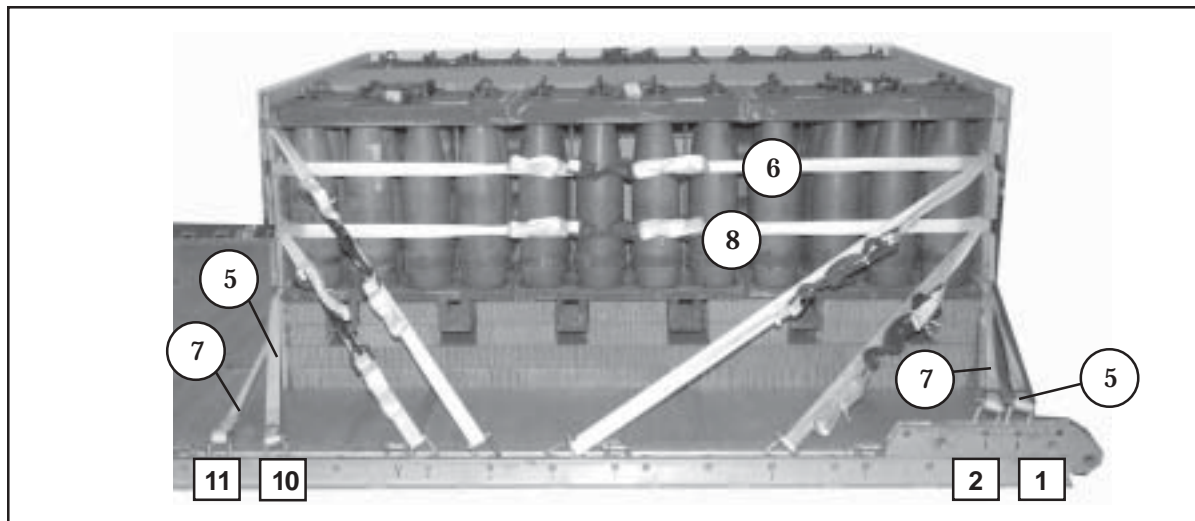
LASHING THE FIRST AMMUNITION STACK AND USING THE FIRST AND SECOND ENDBOARDS

8-6. Lash the first ammunition stack and use the first and second endboards as shown in Figure 8-5.



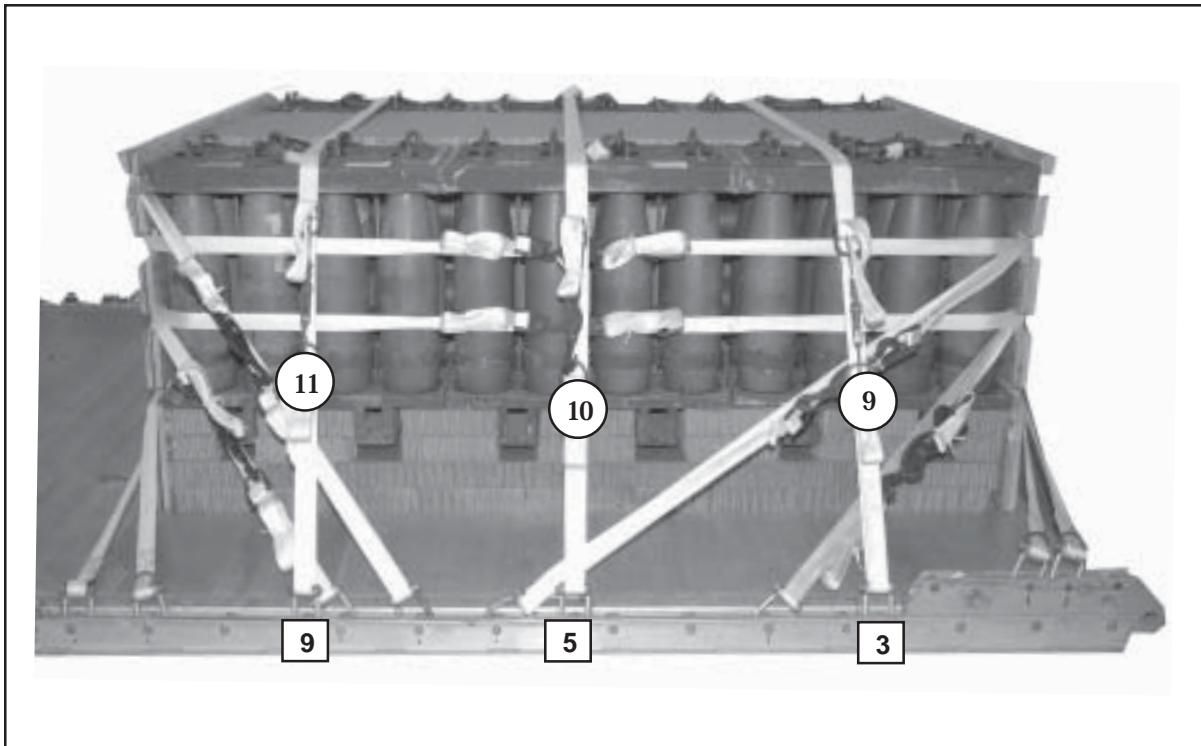
Lashing Number	Tiedown Clevis Number	Instructions
1	4 and 4A	Pass a 30-foot lashing through both clevises and through the third cut-out from the top of the front endboard. Secure the lashing to the front right side with two D-rings and a load binder.
2	6 and 6A	Pass a 30-foot lashing through both clevises and through the second cut-out from the top of the front endboard. Secure the lashing to the front right side with two D-rings and a load binder.
3	7 and 7A	Pass a 30-foot lashing through both clevises and through the top cut-out from the top of the rear endboard. Secure the lashing to the right side with two D-rings and a load binder.
4	8 and 8 A	Pass a 30-foot lashing through both clevises and through the third cut-out from the top of the rear endboard. Secure the lashing to the right side with two D-rings and a load binder.

Figure 8-5. First Ammunition Stack Lashed Using the First and Second Endboards



Lashing Number	Tiedown Clevis Number	Instructions
5	1 and 10	Route a 15-foot lashing through clevis 1 and through its own D-ring. Route the lashing through the second cut-out from the top of the front endboard of the left side. Route a 15-foot lashing through clevis 10 and through its own D-ring. Route the lashing through the second cut-out from the top of the rear endboard on the left side. Secure with a load binder and D-rings on the left side.
6	1A and 10A	Route a 15-foot lashing through clevis 1A and through its own D-ring. Route the lashing through the second cut-out from the top of the front endboard of the right side. Route a 15-foot lashing through clevis 10A and through its own D-ring. Route the lashing through the second cut-out from the top of the rear endboard on the right side. Secure with a load binder and D-rings on the right side.
7	2 and 11	Route a 15-foot lashing through clevis 2 and through its own D-ring. Route the lashing through the third cut-out from the top of the front endboard of the left side. Route a 15-foot lashing through clevis 11 and through its own D-ring. Route the lashing through the third cut-out from the top of the rear endboard on the left side. Secure with a load binder and D-rings on the left side.
8	2A and 11 A	Route a 15-foot lashing through clevis 2A and through its own D-ring. Route the lashing through the third cut-out from the top of the front endboard of the right side. Route a 15-foot lashing through clevis 11A and through its own D-ring. Route the lashing through the third cut-out from the top of the rear endboard on the right side. Secure with a load binder and D-rings on the right side.

Figure 8-5. First Ammunition Stack Lashed Using the First and Second Endboards (Continued)

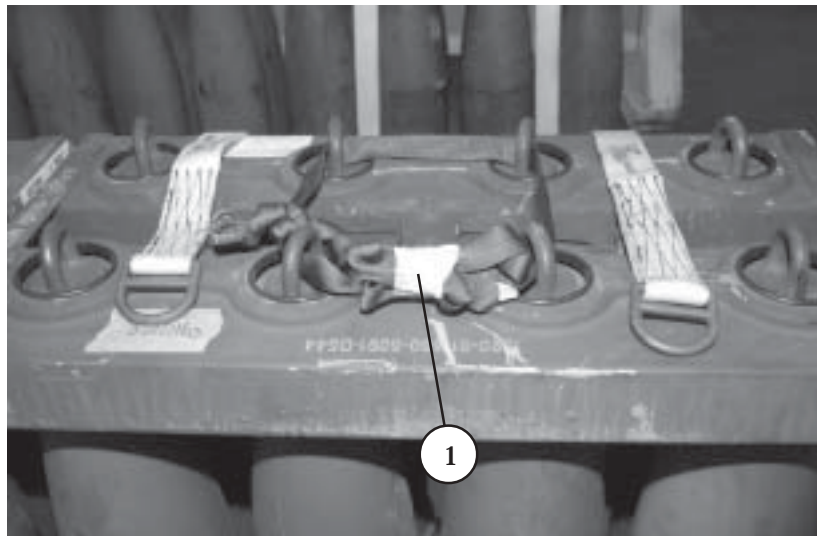


Lashing Number	Tiedown Clevis Number	Instructions
9	3 and 3A	Pass a 30-foot lashing through both clevises and over the top of the load. Secure the lashing on the right side with two D-rings and a load binder.
10	5 and 5A	Pass a 30-foot lashing through both clevises and over the top of the load. Secure the lashing on the right side with two D-rings and a load binder.
11	9 and 9A	Pass a 30-foot lashing through both clevises and over the top of the load. Secure the lashing on the right side with two D-rings and a load binder.

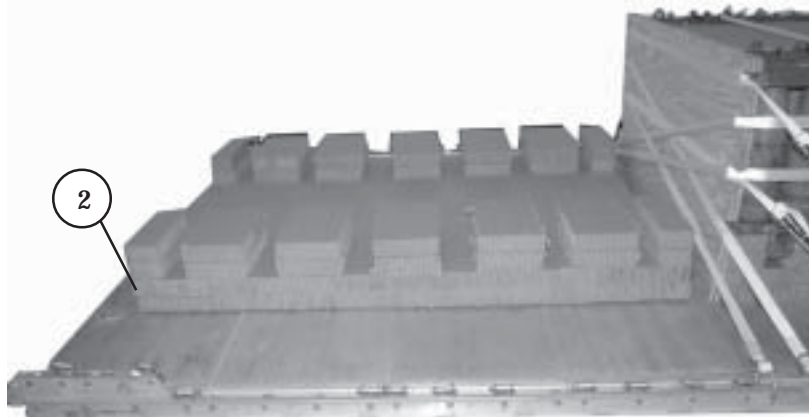
Figure 8-5. First Ammunition Stack Lashed Using the First and Second Endboards (Continued)

POSITIONING STACK 2 AND POSITIONING AND SECURING THE SECOND AMMUNITION STACK

8-7. Position honeycomb stack 2 and position and secure the second ammunition stack as shown in Figure 8-6.

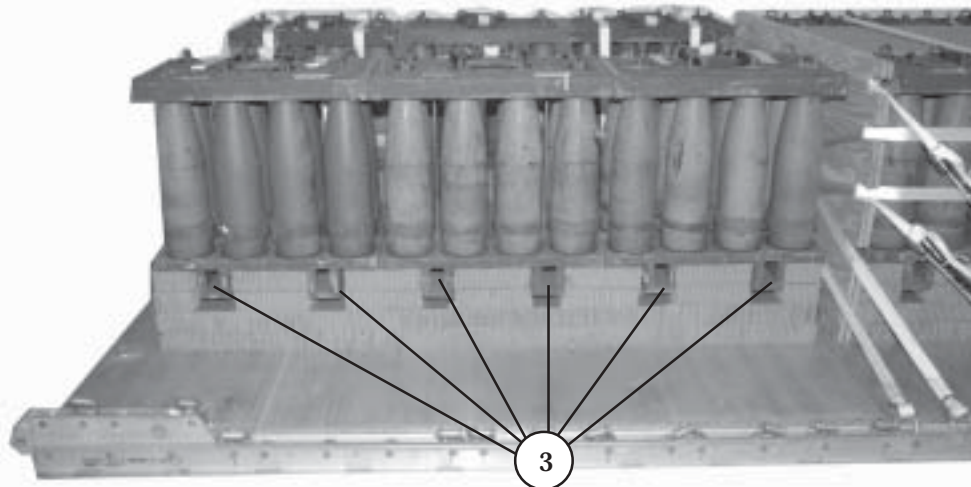


- 1 Tie the four center eyelets of each bundle together with 1-inch tubular nylon webbing for lifting purposes only.

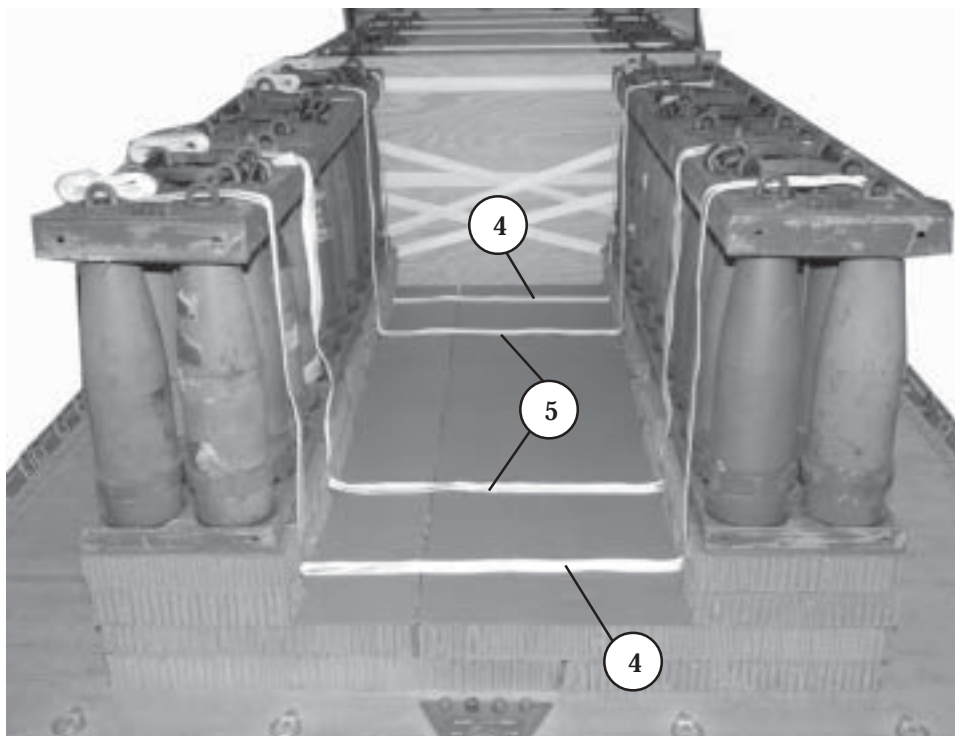


- 2 Position stack 2 six inches and centered from the rear edge of the platform.

Figure 8-6. Honeycomb Stack 2 Positioned and the Second Ammunition Stack Positioned and Secured

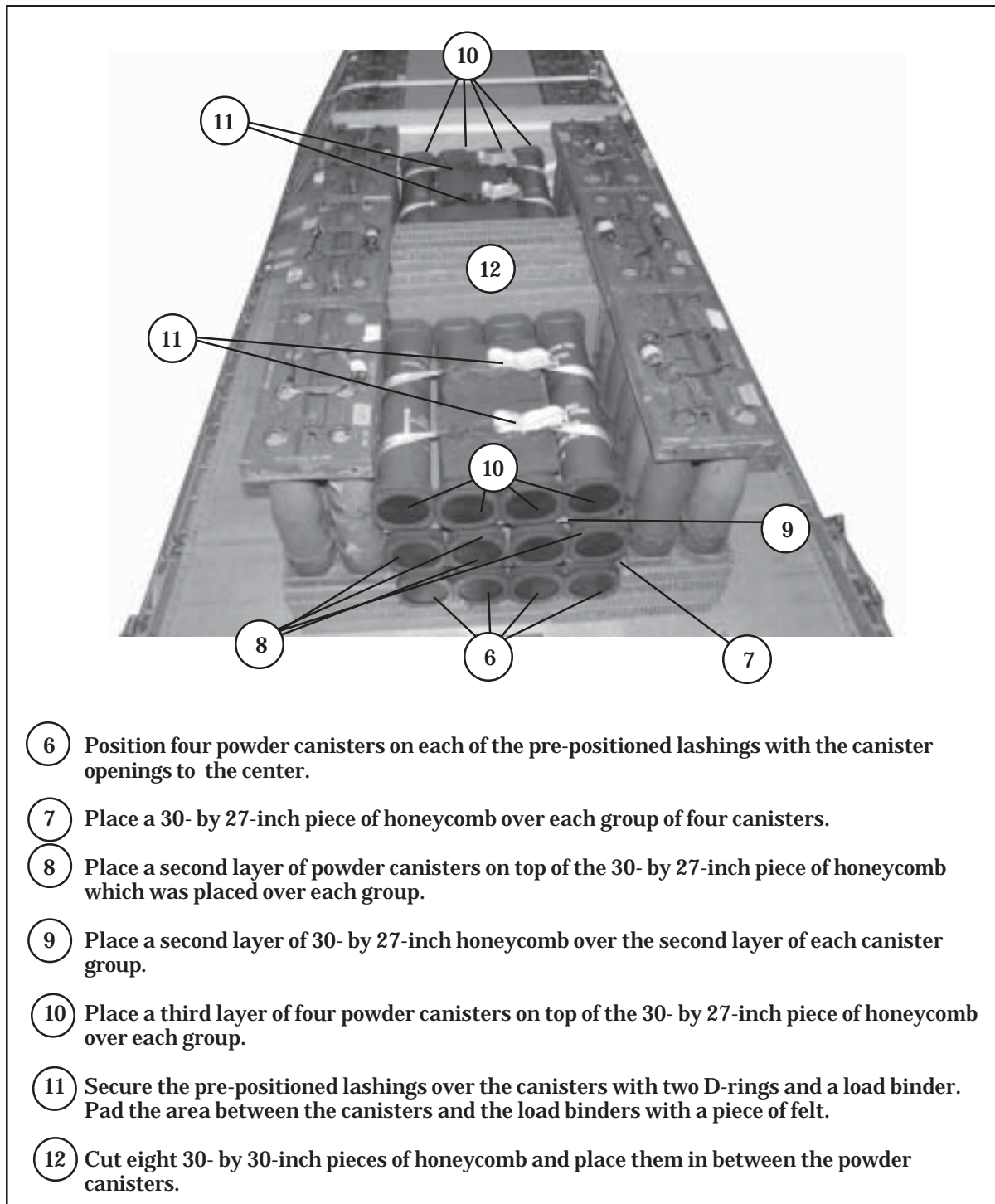


- 3 Position three sets of projectiles flush on the honeycomb on each side. Fit the skids at the bottom of the bundles into the slots in the honeycomb stack.



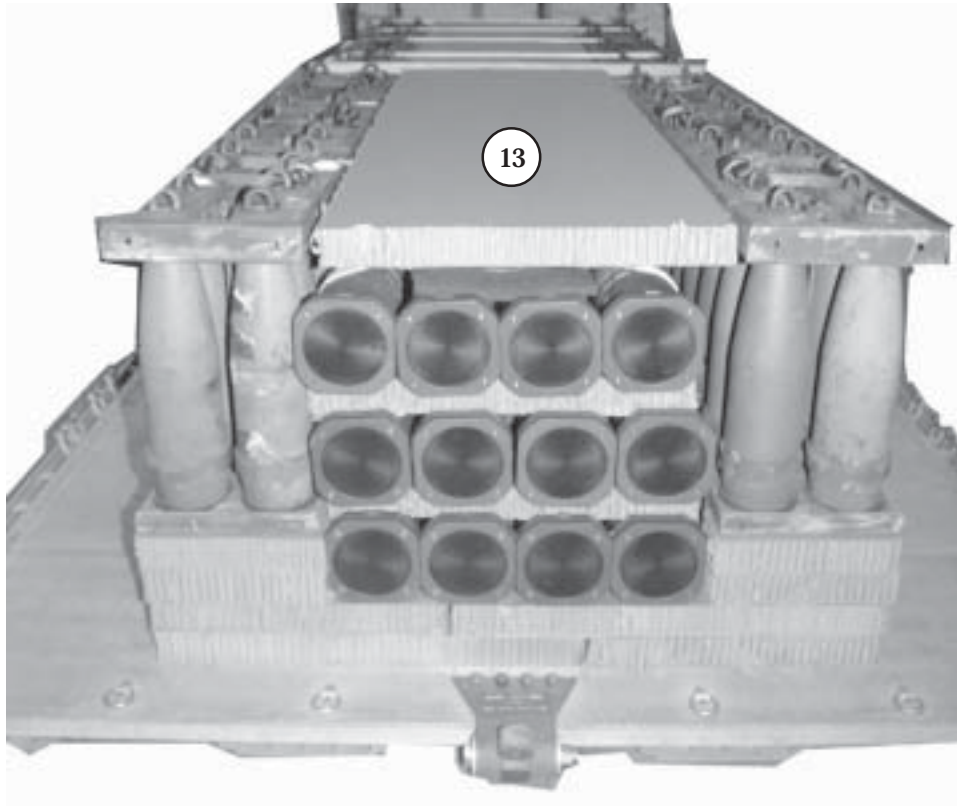
- 4 Place a 15-foot tiedown lashing 8 inches from the front and rear edge of honeycomb stack 2 in a right to left direction.
- 5 Place a 15-foot tiedown lashing 24 inches from the front and rear edge of honeycomb stack 2 in a right to left direction.

Figure 8-6. Honeycomb Stack 2 Positioned and the Second Ammunition Stack Positioned and Secured (Continued)



- ⑥ Position four powder canisters on each of the pre-positioned lashings with the canister openings to the center.
- ⑦ Place a 30- by 27-inch piece of honeycomb over each group of four canisters.
- ⑧ Place a second layer of powder canisters on top of the 30- by 27-inch piece of honeycomb which was placed over each group.
- ⑨ Place a second layer of 30- by 27-inch honeycomb over the second layer of each canister group.
- ⑩ Place a third layer of four powder canisters on top of the 30- by 27-inch piece of honeycomb over each group.
- ⑪ Secure the pre-positioned lashings over the canisters with two D-rings and a load binder. Pad the area between the canisters and the load binders with a piece of felt.
- ⑫ Cut eight 30- by 30-inch pieces of honeycomb and place them in between the powder canisters.

Figure 8-6. Honeycomb Stack 2 Positioned and the Second Ammunition Stack Positioned and Secured (Continued)

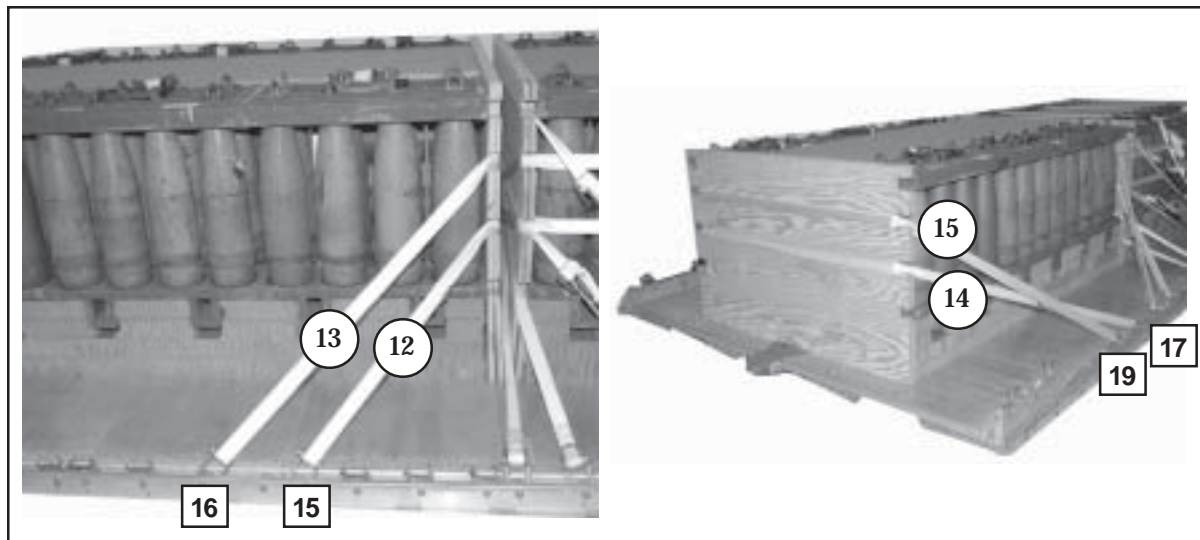


- ⑬ Cut and center a 30- by 88-inch piece of honeycomb over the canisters.

Figure 8-6. Honeycomb Stack 2 Positioned and the Second Ammunition Stack Positioned and Secured (Continued)

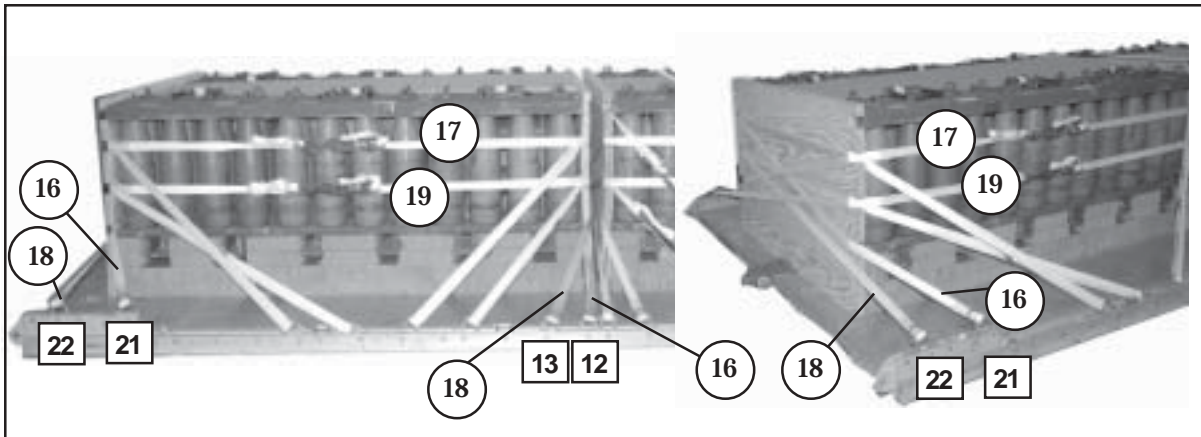
LASHING THE SECOND AMMUNITION STACK AND USING THE THIRD AND FOURTH ENDBOARDS

8-8. Lash the second ammunition stack and use the third and fourth endboards as shown in Figure 8-7.



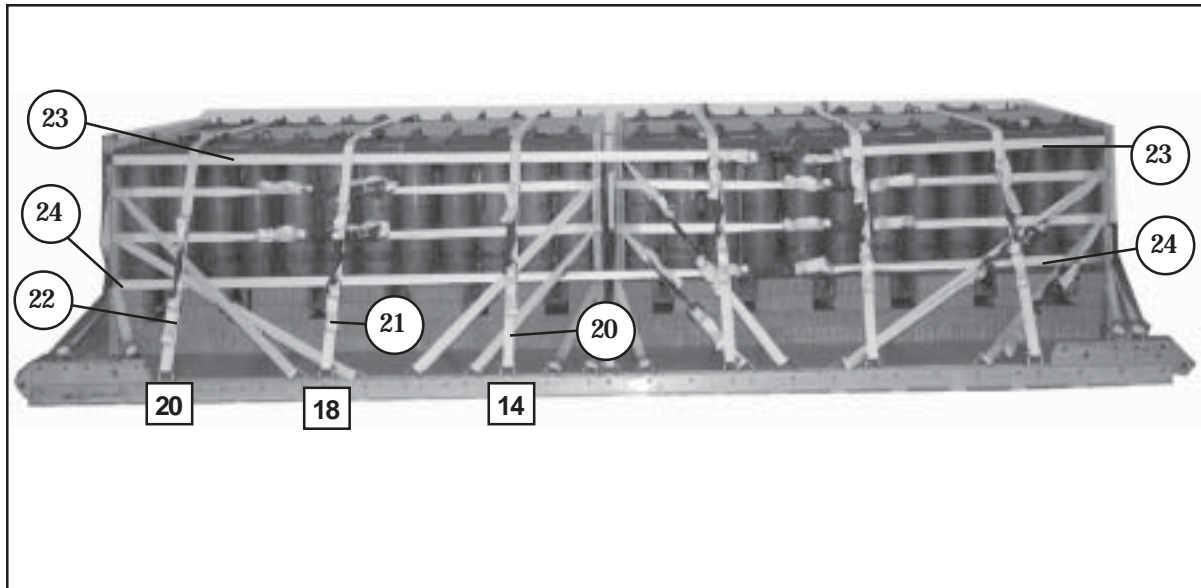
Lashing Number	Tiedown Clevis Number	Instructions
12	15 and 15A	Pass a 30-foot lashing through both clevises and through the third cut-out from the top of the front endboard. Secure the lashing to the front left side with two D-rings and a load binder.
13	16 and 16A	Pass a 30-foot lashing through both clevises and through the third cut-out from the top of the front endboard. Secure the lashing to the front left side with two D-rings and a load binder.
14	17 and 17A	Pass a 30-foot lashing through both clevises and through the third cut-out from the top of the front endboard. Secure the lashing to the front left side with two D-rings and a load binder.
15	19 and 19 A	Pass a 30-foot lashing through both clevises and through the third cut-out from the top of the front endboard. Secure the lashing to the front left side with two D-rings and a load binder.

Figure 8-7. Second Ammunition Stack Lashed Using the Third and Fourth Endboards



Lashing Number	Tiedown Clevis Number	Instructions
5	1 and 10	Route a 15-foot lashing through clevis 1 and through its own D-ring. Route the lashing through the second cut-out from the top of the front endboard of the left side. Route a 15-foot lashing through clevis 10 and through its own D-ring. Route the lashing through the second cut-out from the top of the rear endboard on the left side. Secure with a load binder and D-rings on the left side.
6	1A and 10A	Route a 15-foot lashing through clevis 1A and through its own D-ring. Route the lashing through the second cut-out from the top of the front endboard of the right side. Route a 15-foot lashing through clevis 10A and through its own D-ring. Route the lashing through the second cut-out from the top of the rear endboard on the right side. Secure with a load binder and D-rings on the right side.
7	2 and 11	Route a 15-foot lashing through clevis 2 and through its own D-ring. Route the lashing through the third cut-out from the top of the front endboard of the left side. Route a 15-foot lashing through clevis 11 and through its own D-ring. Route the lashing through the third cut-out from the top of the rear endboard on the left side. Secure with a load binder and D-rings on the left side.
8	2A and 11 A	Route a 15-foot lashing through clevis 2A and through its own D-ring. Route the lashing through the third cut-out from the top of the front endboard of the right side. Route a 15-foot lashing through clevis 11A and through its own D-ring. Route the lashing through the third cut-out from the top of the rear endboard on the right side. Secure with a load binder and D-rings on the right side.

Figure 8-7. Second Ammunition Stack Lashed Using the Third and Fourth Endboards (Continued)



Lashing Number	Tiedown Clevis Number	Instructions
20	14 and 14A	Pass a 30-foot lashing through both clevises and over the top of the load. Secure the lashing to the right side with two D-rings and a load binder.
21	18 and 18A	Pass a 30-foot lashing through both clevises and over the top of the load. Secure the lashing to the right side with two D-rings and a load binder.
22	20 and 20A	Pass a 30-foot lashing through both clevises and over the top of the load. Secure the lashing to the right side with two D-rings and a load binder.
23		Pass a 45-foot lashing around the entire load through the top cut-outs of all four endboards passing under all the other lashings. Secure the lashing on the right side with two D-rings and a load binder.
24		Pass a 45-foot lashing around the entire load through the top cut-outs of all four endboards passing under all the other lashings. Secure the lashing on the right side with two D-rings and a load binder.

Figure 8-7. Second Ammunition Stack Lashed Using the Third and Fourth Endboards (Continued)

INSTALLING SUSPENSION SLINGS AND DEADMAN'S TIE

8-9. Install the suspension slings and deadman's tie as shown in Figure 8-8.

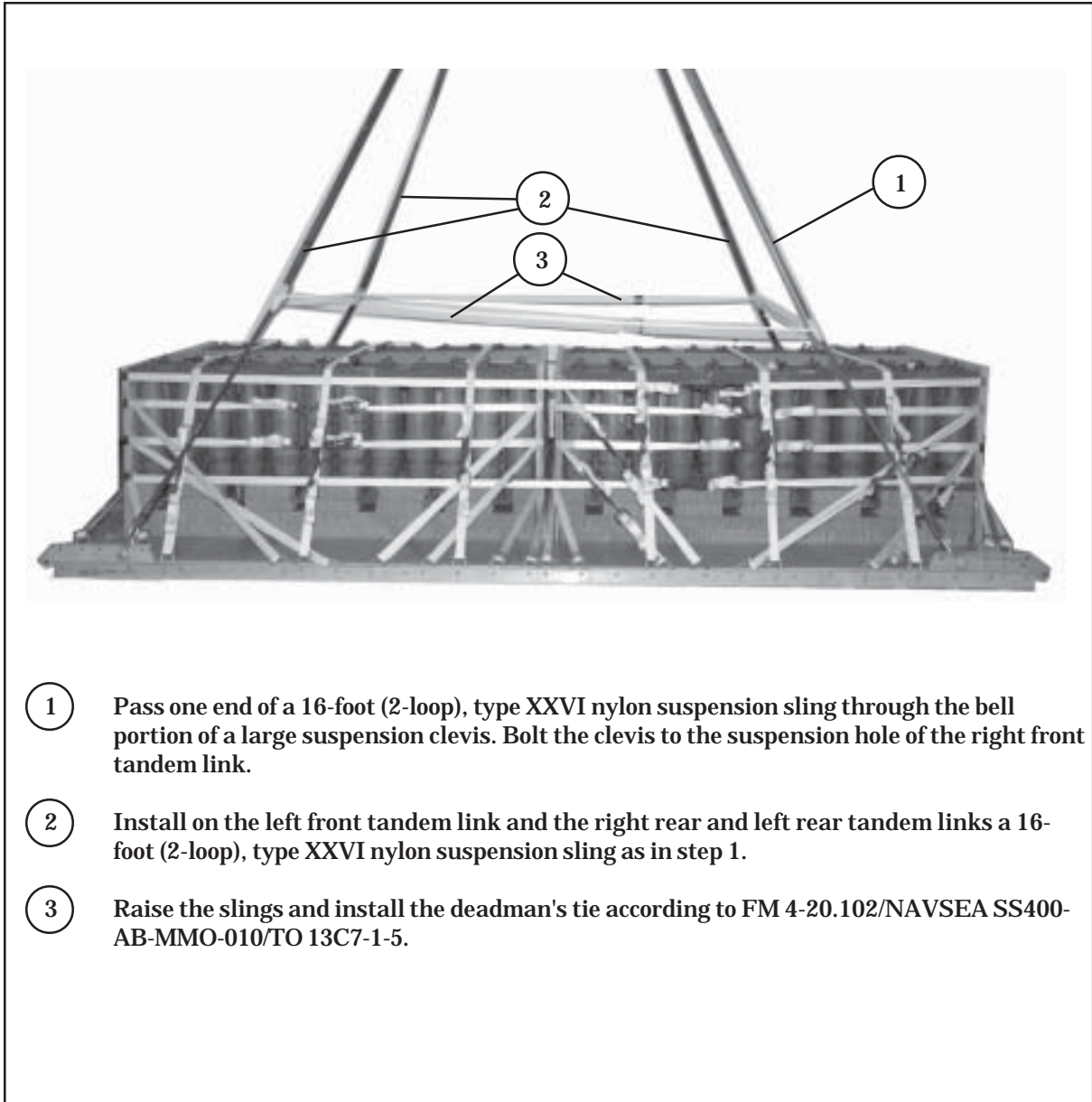


Figure 8-8. Suspension Slings and Deadman's Tie Installed

BUILDING AND POSITIONING PARACHUTE STOWAGE PLATFORM

8-10. Build and position the parachute stowage platform as shown in Figure 8-9.

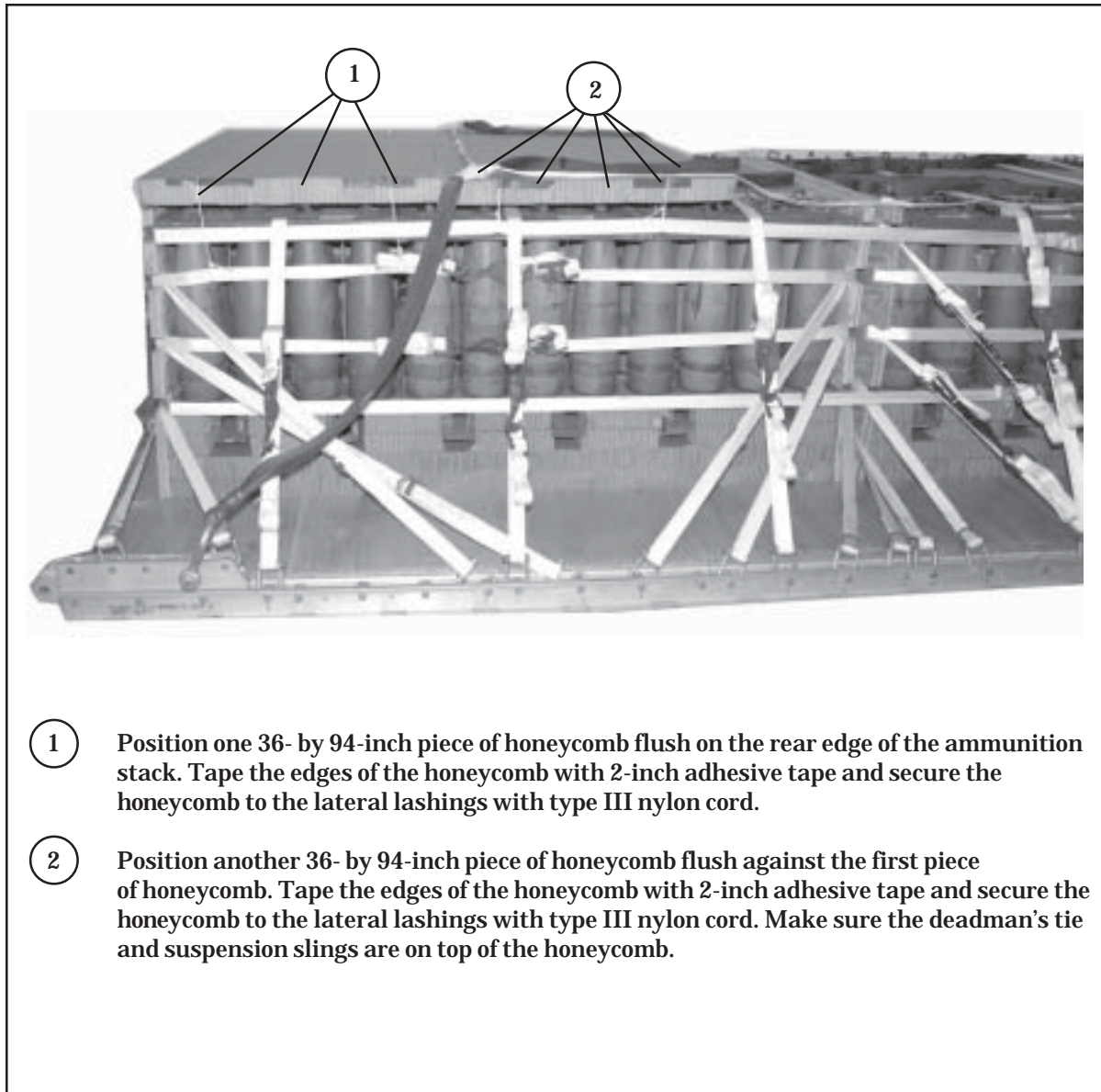


Figure 8-9. Parachute Stowage Platform Positioned and Secured

PREPARING AND STOWING CARGO PARACHUTES

8-11. Prepare and stow the cargo parachutes as shown in Figure 8-10.

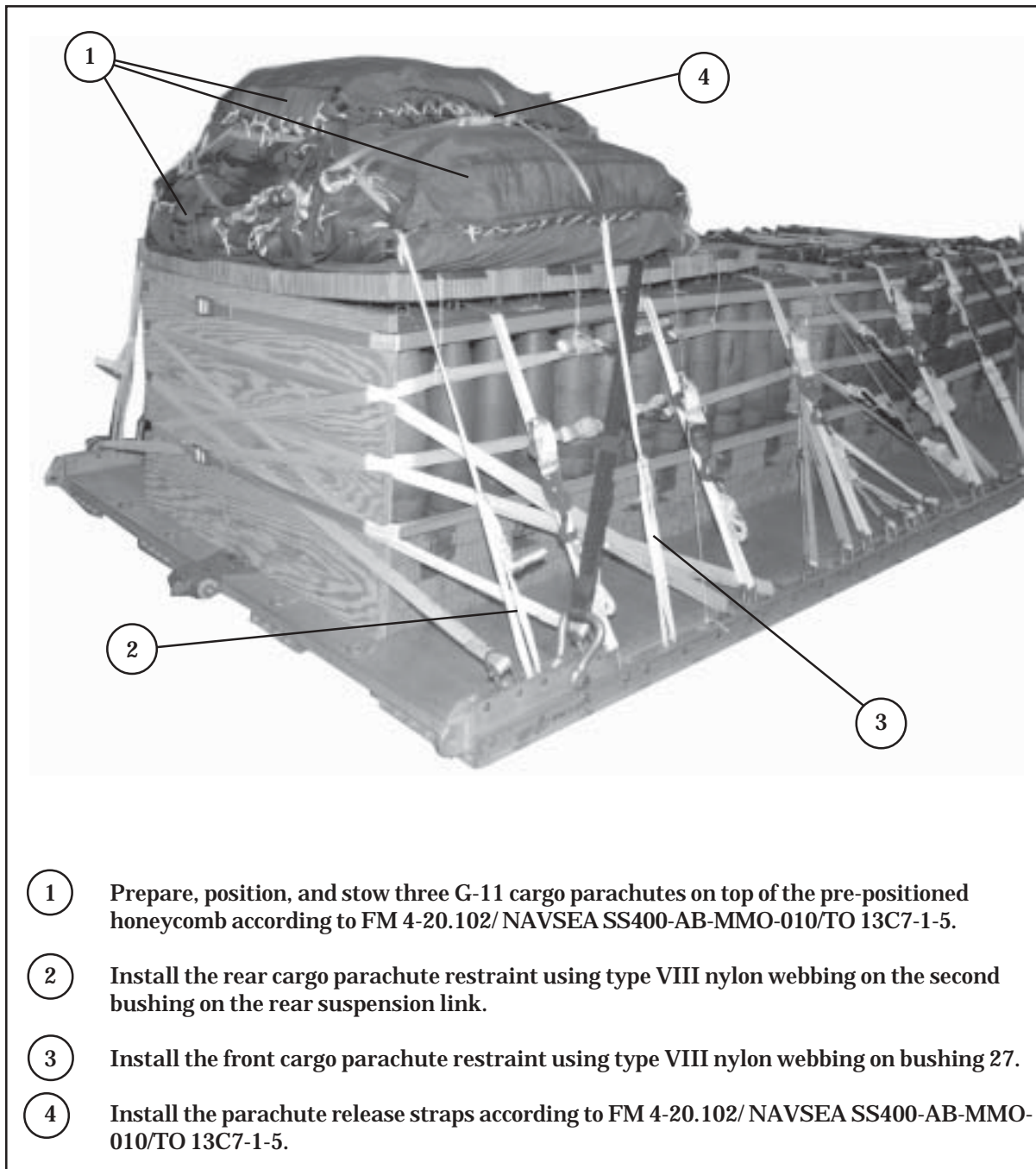


Figure 8-10. Cargo Parachutes Prepared and Stowed

INSTALLING THE RELEASE SYSTEM

8-12. Prepare, attach, and safety an M-1 cargo parachute release according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 8-11.

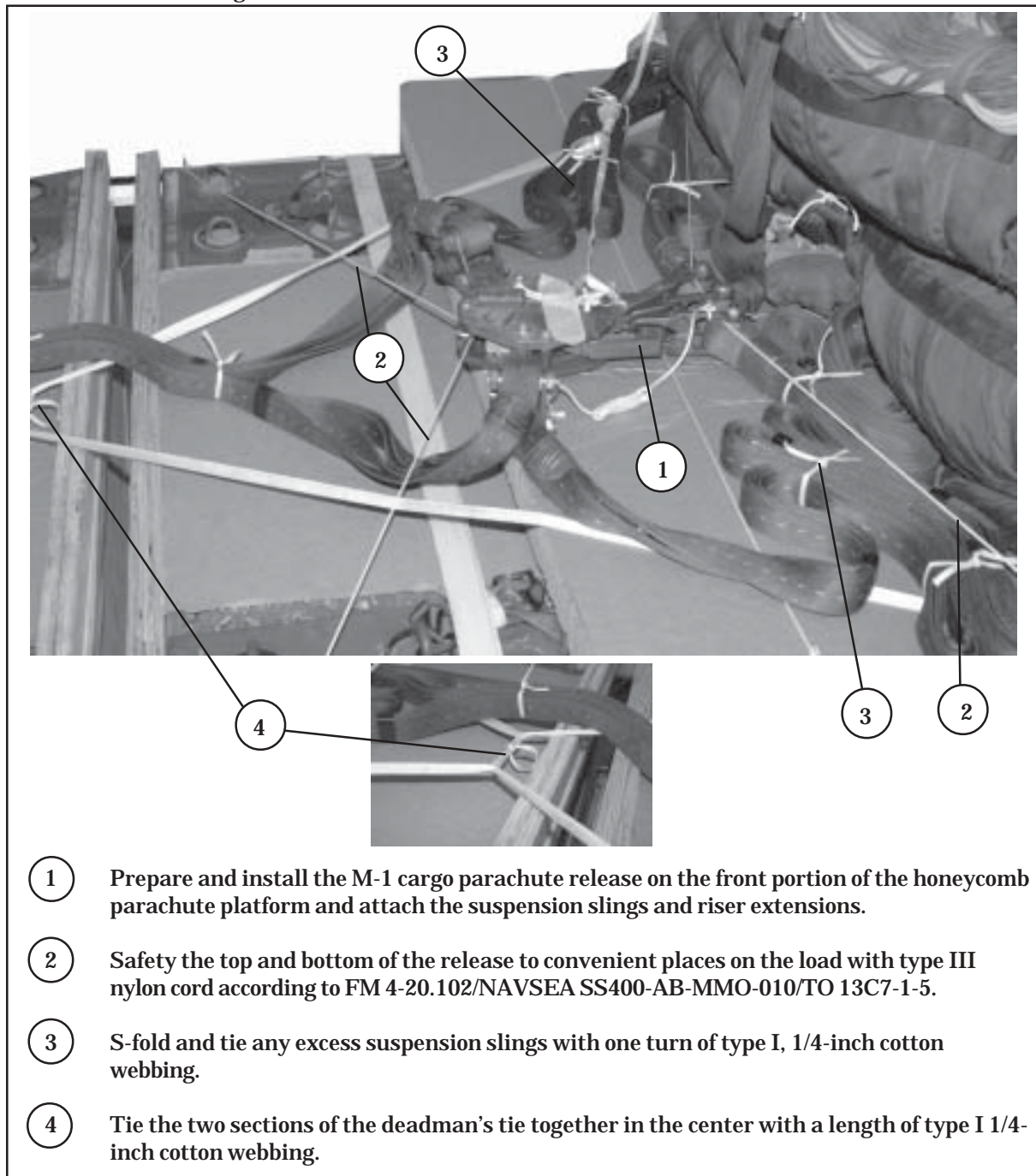


Figure 8-11. M-1 Cargo Parachute Release Installed

INSTALLING THE EXTRACTION SYSTEM

8-13. Install the extraction system as shown in Figure 8-12.

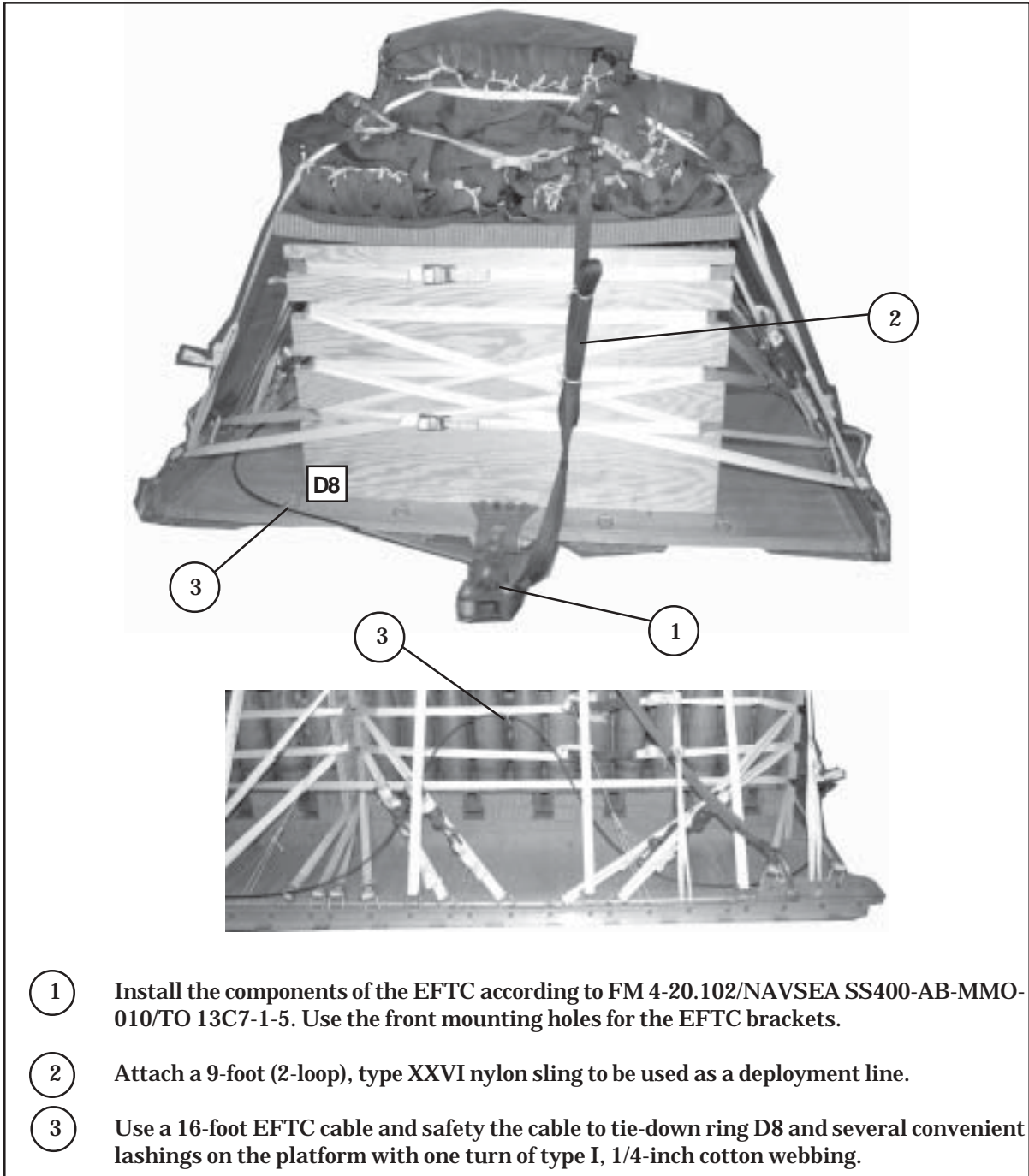


Figure 8-12. Extraction System Installed

PLACING EXTRACTION PARACHUTE

8-14. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Place the extraction parachute and line on the load for installation in the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

8-15. Select and install the provisions for the emergency aft restraints according to the emergency aft restraint requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

MARKING RIGGED LOAD

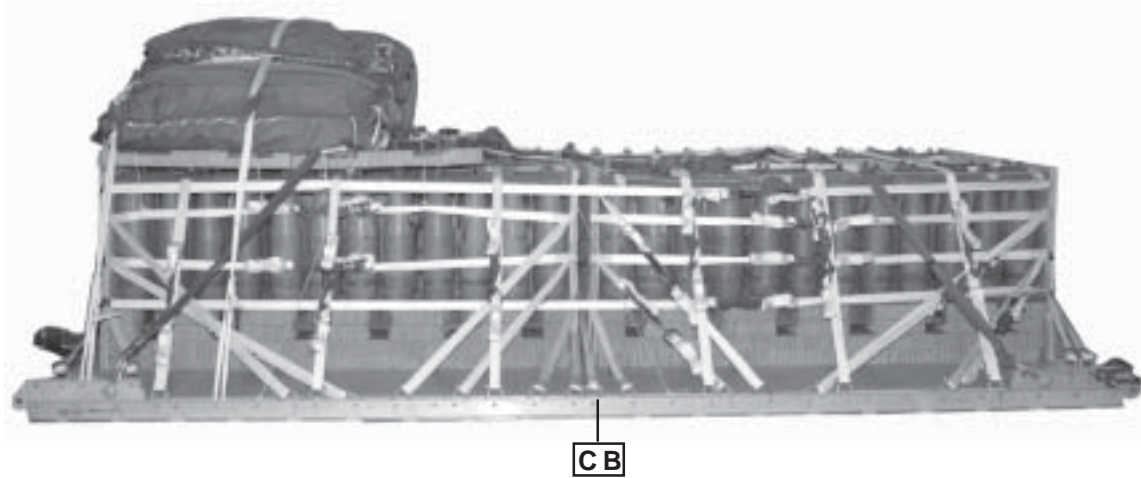
8-16. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and as shown in Figure 8-13. Complete Shipper's Declaration for Dangerous Goods. If the load varies from the one shown, the weight, height, CB, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

8-17. Use the equipment listed in Table 8-1 to rig this load.

CAUTION

Make the final rigger inspection required by AR 59-4 and FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Weight.....11,460 pounds
 Maximum Weight.....See paragraph 8-1
 Height.....48 inches
 Width.....108 inches
 Length.....196 inches
 Overhang: Front.....0 inches
 Rear.....0 inches
 Center of Balance (CB)
 (from front edge of the platform).....96 inches
 Extraction System (adds 18 inches to length of platform) EFTC

Figure 8-13. 155-MM Ammunition (MACS) Rigged on a 16-Foot, Type V Platform for Low-Velocity Airdrop

Table 8-1. Equipment Required for Rigging the 155-MM Ammunition (MACS) on a 16-Foot, Type V platform for Low-Velocity Airdrop

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive paste, 1-gal.	As required
4030-00-090-5354	Clevis, suspension, 1-inch (large)	5
4020-00-240-2146	Cord, nylon, type III, 550-lb.	As required
1670-00-434-5785	Coupling, airdrop extraction force transfer, w/16-ft. cable	1
1670-00-360-0328	Cover, clevis	3
8135-00-664-6958	Cushioning material (Cellulose wadding)	As required
8305-00-958-3685	Felt, 1/2-inch thick	As required
1670-01-183-2678	Leaf, extraction line (line bag) (add 2 for C-17)	2
	Line extraction:	
1670-01-062-6313	60-foot (3-loop), type XXVI (for C-130)	1
1670-01-064-4454	60-foot (6-loop), type XXVI	1
1670-01-062-6312	120-foot (6-loop), type XXVI (for C-5)	1
1670-01-468-9178	140-foot (6-loop), type XXVI (for C-17)	1
1670-01-064-4452	60-foot (1-loop), type XXVI (for C-17), (drogue line)	1
	Link assembly, two-point:	
5306-00-435-8994	Bolt, 1-inch diameter, 4-inches long (add 4 for C-5)	4
5310-00-232-5165	Nut, 1-inch (add 4 for C-5)	4
1670-00-003-1953	Plate, side, 3 3/4-inch	4
5365-00-007-3414	Spacer, large (add 4 for C-5)	4
1670-00-753-3928	Pad, energy-dissipating (honeycomb) 3- by 36- by 96-inches	13 sheets
1670-01-016-7841	Parachute, cargo, G-11	3
	Parachute, cargo, extraction:	
1670-00-063-3716	22-ft.	1
1670-01-063-3715	15-ft. (C-17 only)	1
	Platform, airdrop, type V, 16-ft:	
1670-01-162-2372	Clevis assembly (type V)	As required
1670-01-162-2376	Extraction bracket assembly	(1)
1670-01-162-2381	Tandem link assembly (Multipurpose link)	(4)
1670-01-097-8817	Release, cargo parachute, M-1	1
	Sling, cargo, airdrop:	
1670-01-062-6304	9-ft. (2-loop), type XXVI	1
1670-01-063-7761	16-ft. (2-loop), type XXVI	4
1670-01-062-6313	60-foot (3-loop), type XXVI	4

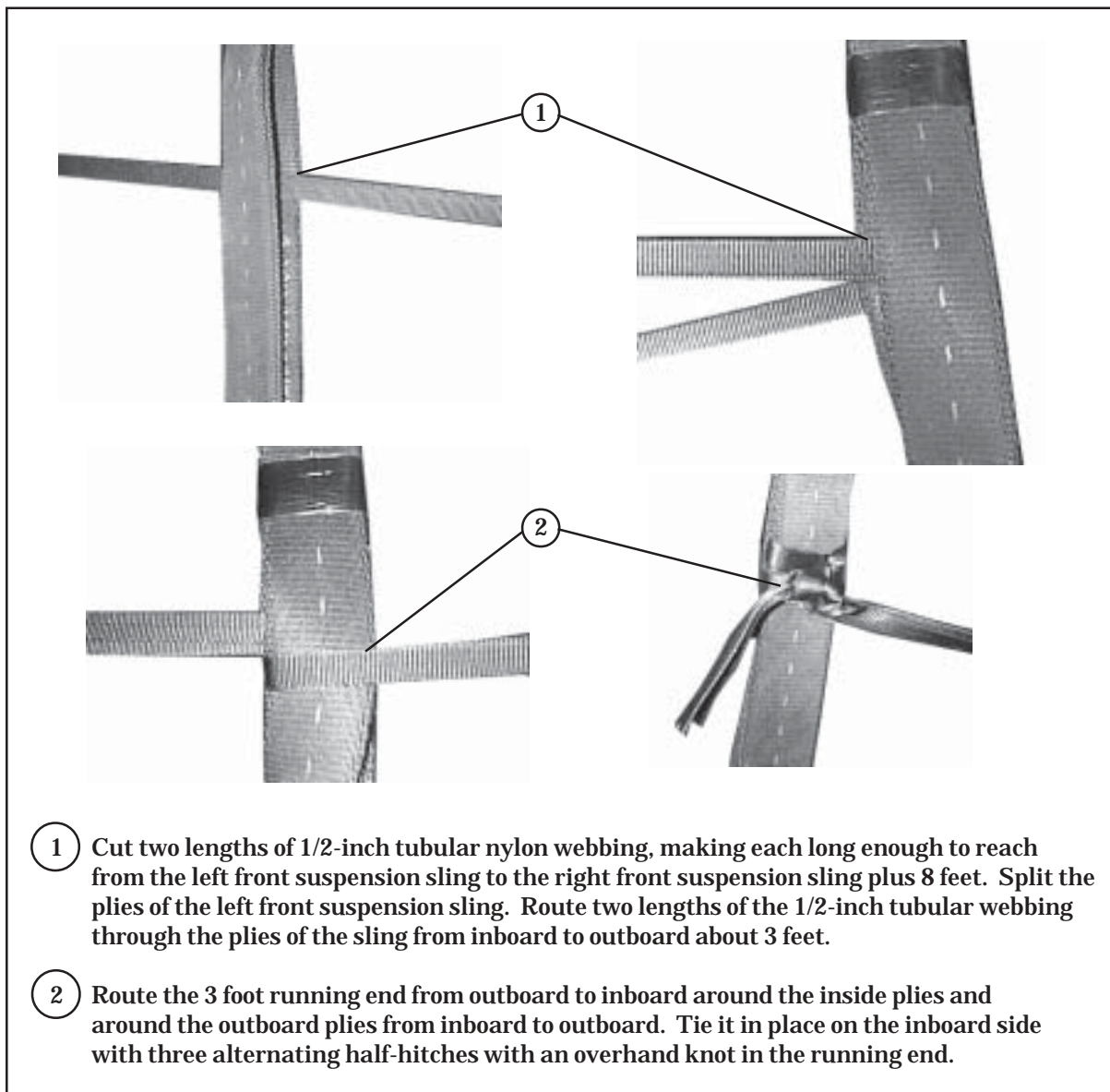
Table 8-1. Equipment Required for rigging the 155-MM Ammunition (MACS) on a 16-Foot, Type V Platform for Low-Velocity Airdrop (Continued)

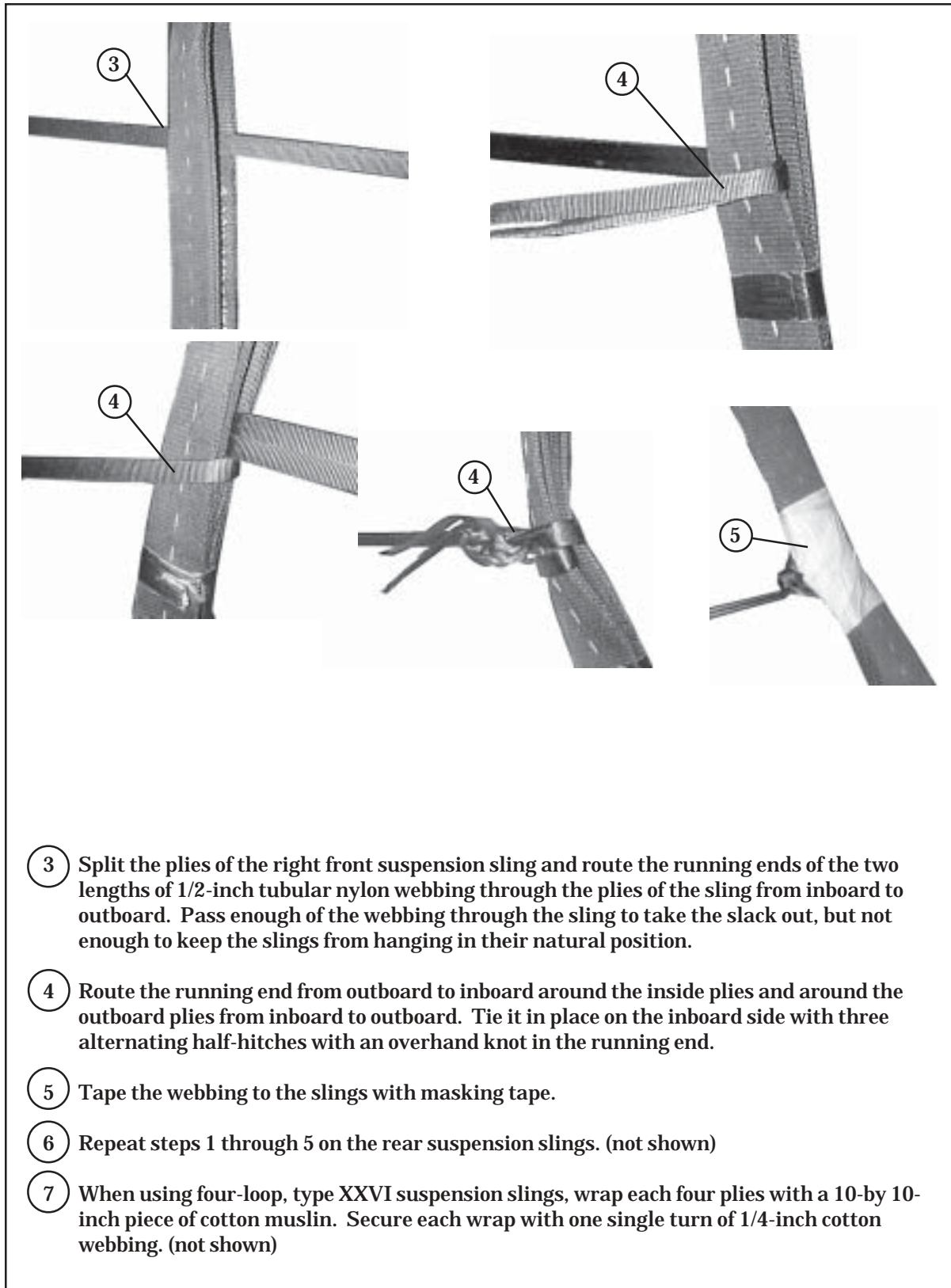
National Stock Number	Item	Quantity
5340-00-040-8219	Strap, parachute, release, multi-knife	2
7501-00-266-5016	Tape, adhesive, 2-inch	As required
1670-00-937-0271	Tiedown assembly, 15-ft.	52
1670-01-483-8259	Towplate release mechanism (H-block) (C-17 only)	1
	Webbing:	
8305-00-268-2411	Cotton, 1/4-inch, type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-inch	As required
8305-00-268-2455	Nylon, tubular, 1-inch, OD 7	As required
8305-00-263-3598	Nylon, type VIII	As required

Appendix

INSTALLING SUSPENSION SLING SAFETY TIES

Installing the Suspension Sling Safety Ties keeps the suspension slings from making contact with the load. **The procedures in this Appendix are different from those in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. An exception to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 is granted. The procedures in this Appendix must be followed.** Safety tie the front and rear suspension slings according to instructions shown below.





GLOSSARY

AD	airdrop
AFB	Air Force Base
AFJMAN	Air Force Joint Manual
AFR	Air Force Regulation
AFTO	Air Force technical order
AR	Armt Regulation
attn	attention
CB	center of balance
cap	capacity
chap	chapter
d	penny
DA	Department of the Army
DC	District of Columbia
DD	Department of Defense
diam	diameter
EFTC	extraction force transfer coupling
FAST	Foward Area Surgical Team
FM	field manual
HQ	headquarters
IAW	in accordance with
in	inch
lb	pound
LV	low-velocity
MACS	Modular Artillery Charge System
mm	millimeter
no	number
NSN	national stock number
PLS	palletized load system
sec	second
TM	technical manual
TO	technical order
TRADOC	United States Army Training and Doctrine Command
US	United States
w	with
yd	yard

REFERENCES

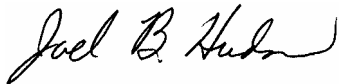
- AFMAN(I) 24-204/TM 38-250. Preparing Hazardous Materials for Military Air Shipments. 14 February 2002.
- AR 59-4/OPNAVINST 4630. 24C/AFJ 13-210(I)/MCO 13480.13, Joint Airdrop Records, Malfunction Investigations, and Activity reporting. 1 May 1998
- FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Airdrop of Supplies and Equipment: Rigging Airdrop Platforms. August 2001.
- FM 4-20.153/MCRP No 4-11.B/TO 13C7-18-41. Airdrop of Supplies and Equipment: Rigging Ammunition.
- FM 10-500-3/FMFM 7-47/TO 13C7-1-11, Airdrop of Supplies and Equipment: Rigging Containers. 8 December 1992
- TM 10-1670-278-20&P/TO 13C5-52-22, Operational Maintenance Manual Including Repair Parts and Special Tools List for Type V Platform and Dual Row Airdrop Platforms. 15 September 2002
- TM 10-1670-277-23&P/TO 13C5-28-2/NAVAIR 13-1-30. Unit and Direct Support (DS) Maintenance Manual Including Repair Parts and Special Tools List for Parachute, Cargo Type, 28-ft Diam, Cargo Extraction. 30 April 2002.
- TM 10-1670-278-23&P/TO 13C5-26-2/NAVAIR 13-1-27. Unit and Intermediate DS Maintenance Manual Including Repair Parts and Special Tools List for Parachute, Cargo Type, 15-ft Diam, Cargo Extraction. 6 November 1989.
- TM 10-1670-279-23&P/TO 13C5-27-2/NAVAIR 13-1-28. Unit and Direct Support (DS) Maintenance Manual Including Repair Parts and Special Tools List for Parachute, Cargo Type, 22-ft Diam, Cargo Extraction. 30 August 1989.
- TM 10-1670-280-23&P/TO 13C5-31-2/NAVAIR 13-1-31. Unit and Intermediate DS Maintenance Manual Including Repair Parts and Special Tools List for Parachute, Cargo Type, G-11A, G-11B, and G-11C. 15 September 2002.
- TM 10-1670-286-20/TO 13C5-2-41. Unit Maintenance Manual for Sling/Extraction Line Panel (Including Stowing Procedures). 1 April 1986.
- AFTO Form 22. Technical Order Publication Improvement Report
- DA Form 2028. Recommended Changes to Publication and Blank Forms. February 1974.
- Shipper's Declaration for Dangerous Goods. Locally procured form

FM 4-20.112 (FM 10-512)
TO 13C7-1-8

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