

**FM 4-20.158
TO 13C7-7-61**



AIRDROP OF SUPPLIES AND EQUIPMENT: RIGGING WATER PURIFICATION UNITS



MAY 2005

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Airdrop of Supplies and Equipment: Rigging Water Purification Units

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*This publication supersedes FM 10-558, 4 May 1987.

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Preface

SCOPE

This manual provides the latest approved doctrine for rigging the following water purification units. It is written for use by all parachute riggers.

- a. 600-gallons per hour (GPH) ROWPU on a 20-foot platform.
- b. Lightweight water purifier (LWP) on a 12-foot platform.

NOTICE OF EXCEPTION

When an item of airdrop equipment is replaced or a rigging procedure is changed, it will be impossible to change all manuals in the field at one time. Therefore, FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 will be changed when necessary and will take precedence over the procedures in an individual rigging manual. There may be times, however, when the procedures in an individual rigging manual must be followed even though they are different from those in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. When this occurs, a notice of exception will be printed at the beginning of each paragraph where the exception is authorized. The notice of exception will look like the following:

NOTICE OF EXCEPTION

The procedures in this paragraph are different from those in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO13C7-1-5. An exception to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 is granted. The procedures in this paragraph must be followed.

REFERENCE INFORMATION

To avoid repeating certain information and procedures, it is often necessary to reference other FMs and TMs. For example, this manual often references FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. This may seem to be contradictory in that this manual, FM 4-20.158/TO 13C7-7-61, deals with rigging water purification loads and FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 deals with rigging platform loads. However, FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 also provides general information and general procedures. Where procedures are the same or only minor differences exist it is permissible to state that the procedure is done according to or by adapting the procedures in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

USER INFORMATION

The proponent of this publication is HQ TRADOC. You are encouraged to report any errors or omissions and to suggest ways of making this a better manual.

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Introduction

DESCRIPTION OF ITEMS

The description of the items rigged in this manual is given below.

a. 600-Gallons Per Hour (GPH) Reverse Osmosis Water Purification Unit (ROWPU): The ROWPU consists of a water purification unit and a 30-kilowatt generator mounted on a 5-ton, four wheel, cargo trailer. The ROWPU with supporting equipment weighs 21,780 pounds rigged. It is 230 inches long and 96 inches wide. Its height is 97 inches (reducible to 91 inches).

b. Lightweight Water Purifier (LWP): The lightweight water purifier consists of a loading truck, ultra-filtration module, control module, high-pressure pump module, chemical injection cleaning module, reverse osmosis element module, pump module, 3-kilowatt (KW) generator, loading ramps, 1,000 gallon collapsible fabric tank (raw water and product), hose (raw water, back-wash, high-pressure and reject), pump skid cover, components of end items (COEI) box, basic issue items (BII) box, cold weather kit (CWK) 1 box, cold weather kit (CWK) 2 box, CWK 3 box and the components of end items (COEI) cable box. The total weight of the LWP is approximately 6,140 pounds.

SPECIAL CONSIDERATIONS

Special considerations for this manual are given below.

- a.** The 600-GPH ROWPU is technically approved for airdrop from the C-130 and C-17 aircraft.
- b.** The overall rigged height of the 600-GPH ROWPU will not exceed 101 inches for a distance of not more than 40 inches aft of the CB. All high points should be verified each time this load is placed on the aircraft.
- c.** A copy of this manual must be available to the joint airdrop inspectors during the before- and after- loading inspections.
- d.** Check fuel levels to ensure that they do not exceed the the fuel level of the specific rigging chapter.
- e.** Package, mark, and label hazardous material according to AFMAN 24-204(I)/TM 38-250.

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CHAPTER 1

RIGGING 600-GALLONS PER HOUR (GPH) REVERSE OSMOSIS WATER PURIFICATION UNIT (ROWPU) ON A 20-FOOT, TYPE V PLATFORM FOR LOW-VELOCITY AIRDROP

DESCRIPTION OF LOAD

1-1. The 600-gallons per hour ROWPU (Figure 1-1) is rigged on a 20-foot, type V platform. The 600-gallons per hour ROWPU consists of the equipment shown in Figure 1-1. The total rigged weight of the load is 21,780 pounds. The load is 101 inches high, 108 inches wide, 275 inches long, and the center of balance is 130 inches from the front edge of the platform. 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

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

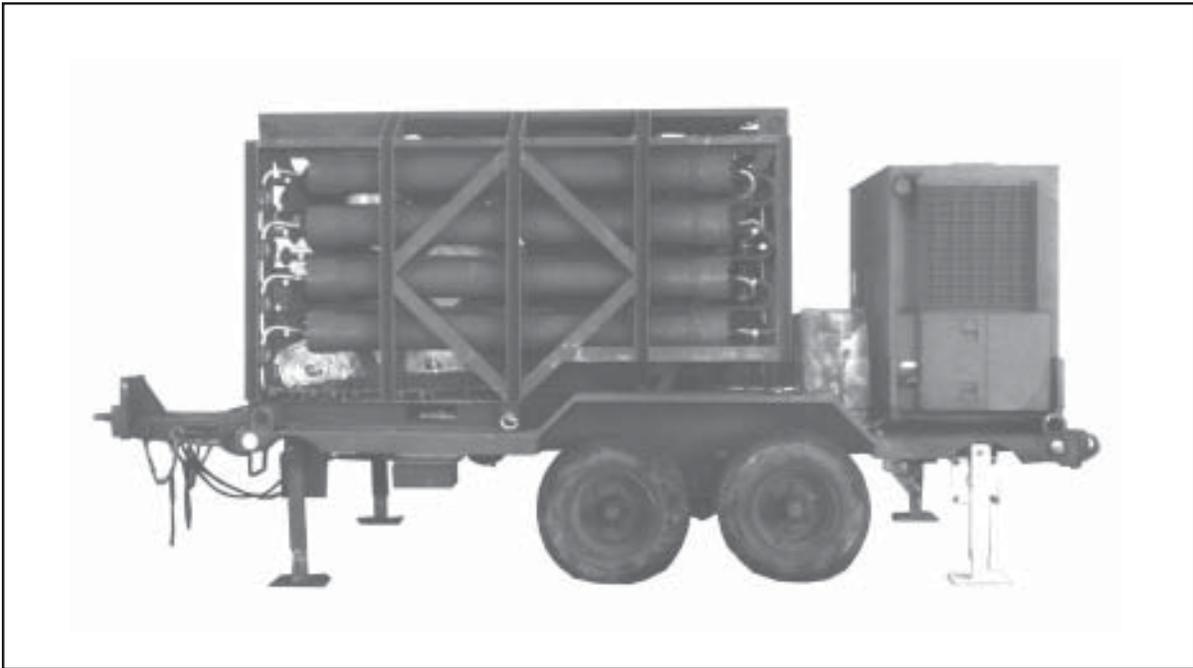
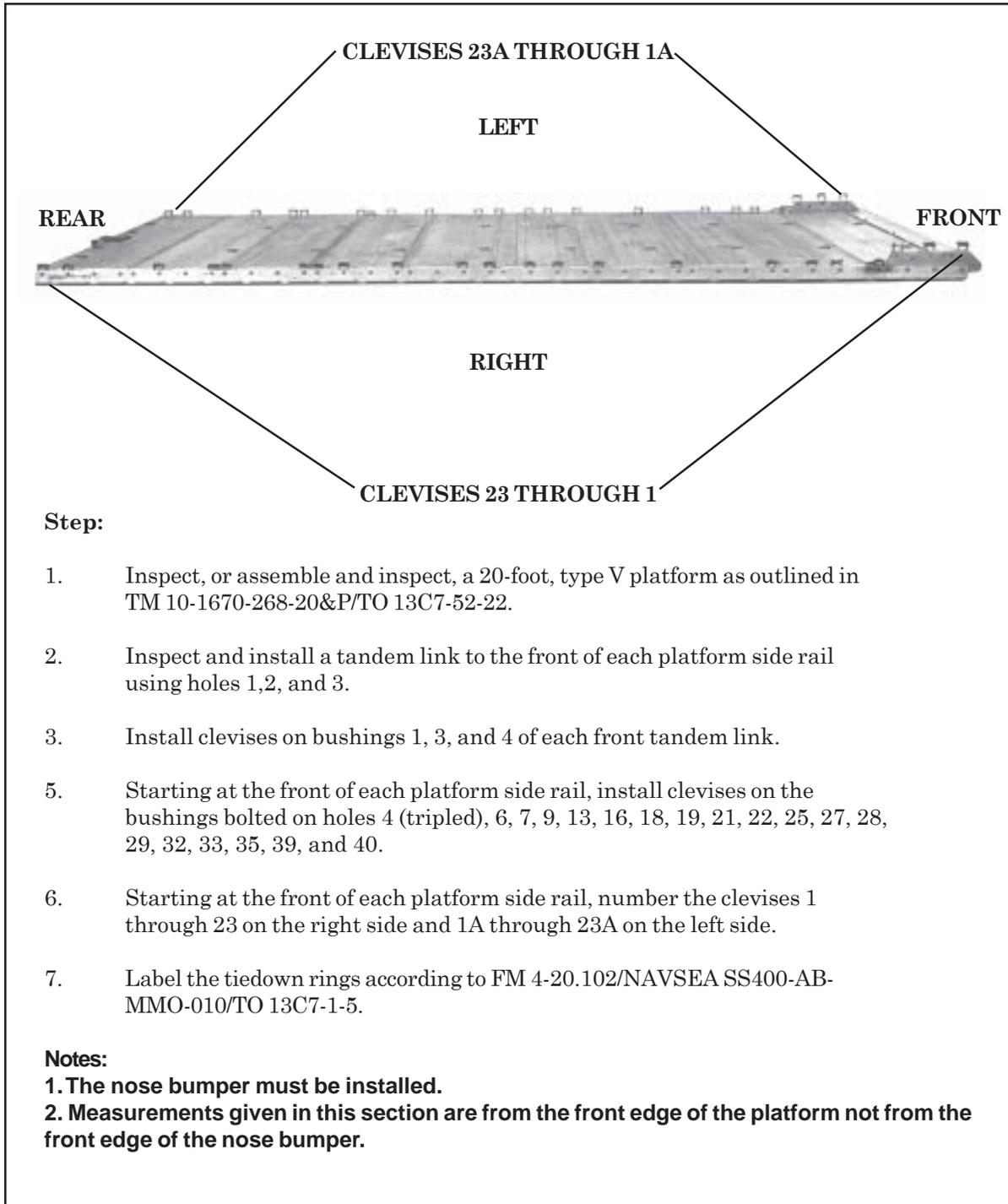


Figure 1-1. 600-Gallons Per Hour (GPH) Reverse Osmosis Water Purification Unit (ROWPU)



Step:

1. Inspect, or assemble and inspect, a 20-foot, type V platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.
2. Inspect and install a tandem link to the front of each platform side rail using holes 1,2, and 3.
3. Install clevises on bushings 1, 3, and 4 of each front tandem link.
5. Starting at the front of each platform side rail, install clevises on the bushings bolted on holes 4 (tripled), 6, 7, 9, 13, 16, 18, 19, 21, 22, 25, 27, 28, 29, 32, 33, 35, 39, and 40.
6. Starting at the front of each platform side rail, number the clevises 1 through 23 on the right side and 1A through 23A on the left side.
7. Label the tiedown rings according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

Notes:

1. The nose bumper must be installed.
2. Measurements given in this section are from the front edge of the platform not from the front edge of the nose bumper.

Figure 1-2. Platform Prepared

PREPARING AND POSITIONING HONEYCOMB STACKS

1-3. Prepare five honeycomb stacks according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figures 1-3 through 1-8. Position the honeycomb stacks on the platform as shown in Figure 1-9.

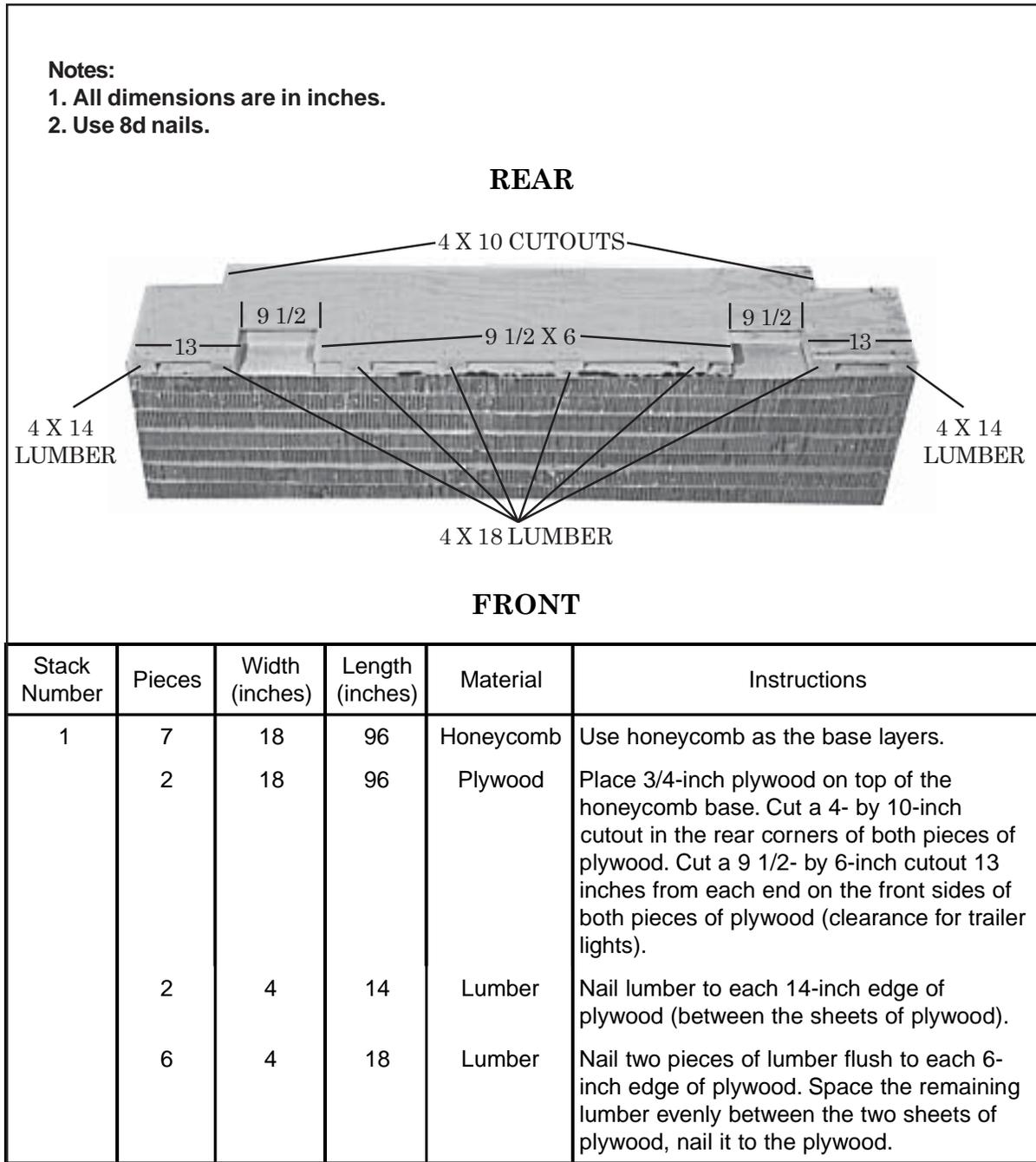
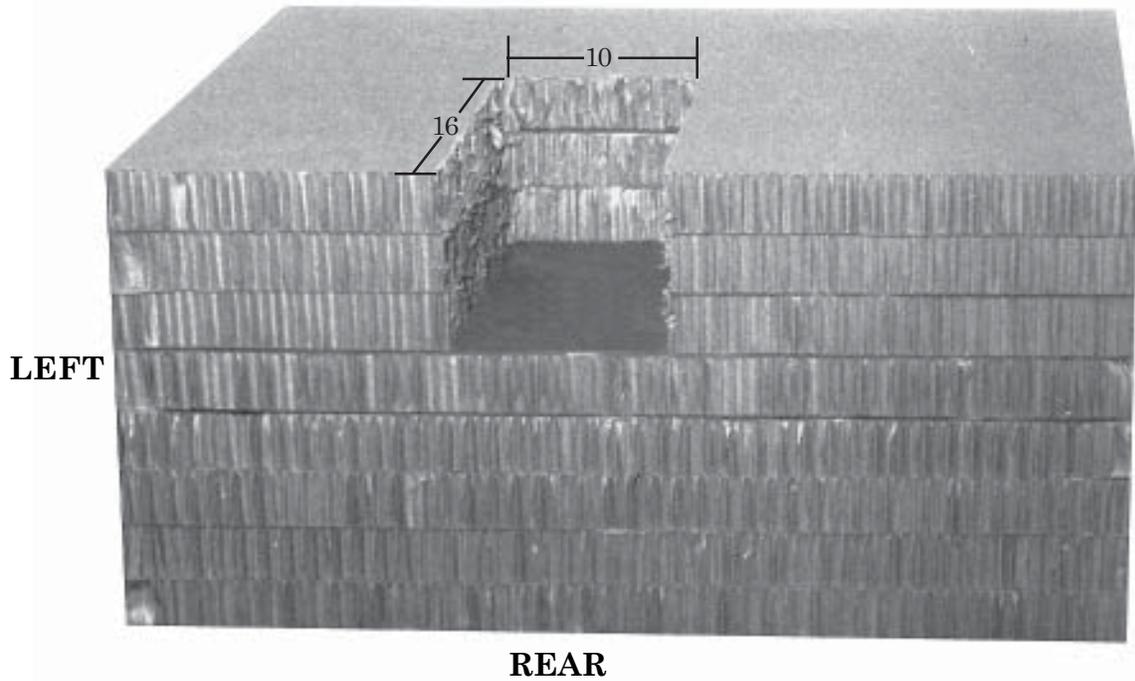


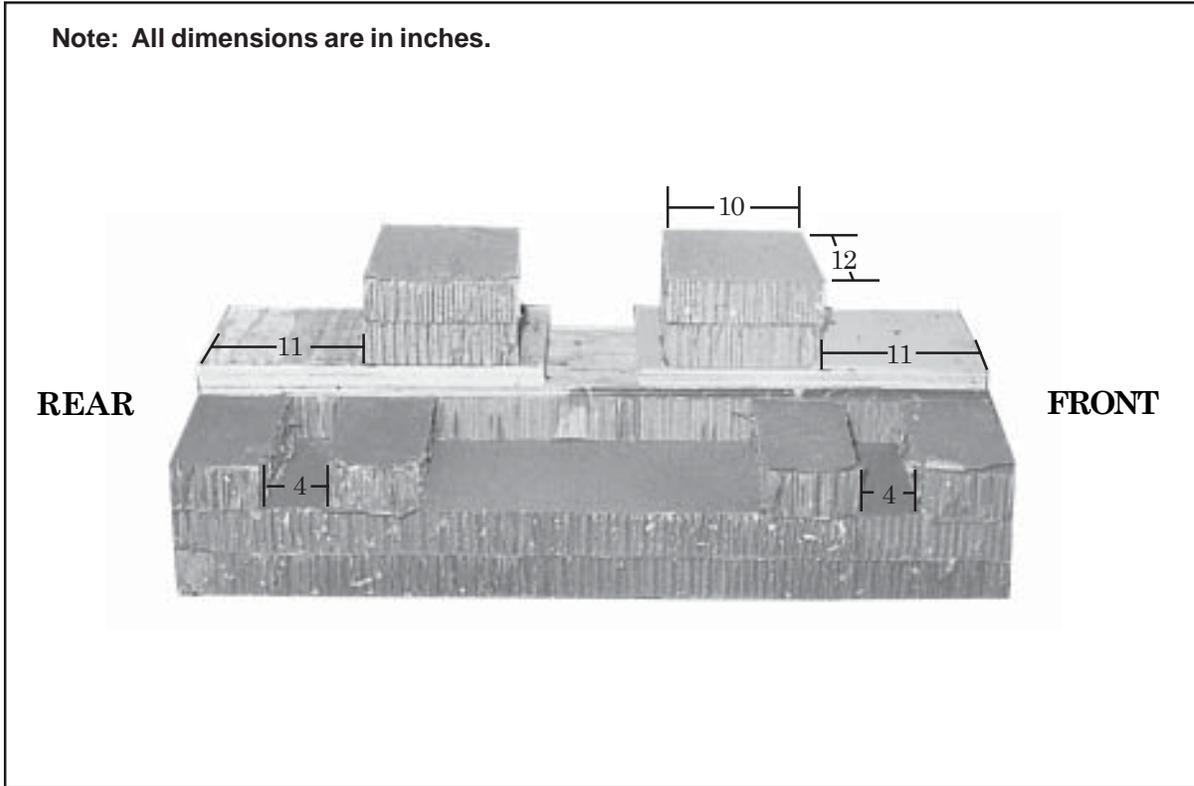
Figure 1-3. Honeycomb Stack 1 Prepared

Note: All dimensions are in inches.



Stack Number	Pieces	Width (inches)	Length (inches)	Material	Instructions
2	8	34	48	Honeycomb	Use honeycomb as base layers. Cut a 10-by 16-inch cutout on the rear edges of the top three layers, starting 16 inches from the left side.

Figure 1-4. Honeycomb Stack 2 Prepared



Stack Number	Pieces	Width (inches)	Length (inches)	Material	Instructions
3	2	24	52	Honeycomb	Use honeycomb as the base layers on the right side of the platform.
	1	12	52	Honeycomb	Place a piece on top of the base on the inside edge.
	1	12	52	Plywood	Place 3/4-inch plywood on top of the 12- by 52-inch honeycomb.
	4	12	23	Plywood	Place two pieces of 3/4-inch plywood flush with the front edge and two pieces flush with the rear edge of the 12- by 52-inch piece of plywood.
	4	10	12	Honeycomb	Place two pieces 11 inches from the front edge and two pieces 11 inches from the rear edge of the plywood.
	4	6	12	Honeycomb	Place pieces on top of the base layers. Place one piece on the rear outside corner, one piece 4 inches from the rear piece, one piece on the front outside corner, and one piece 4 inches from the front piece.

Figure 1-5. Honeycomb Stack 3 Prepared

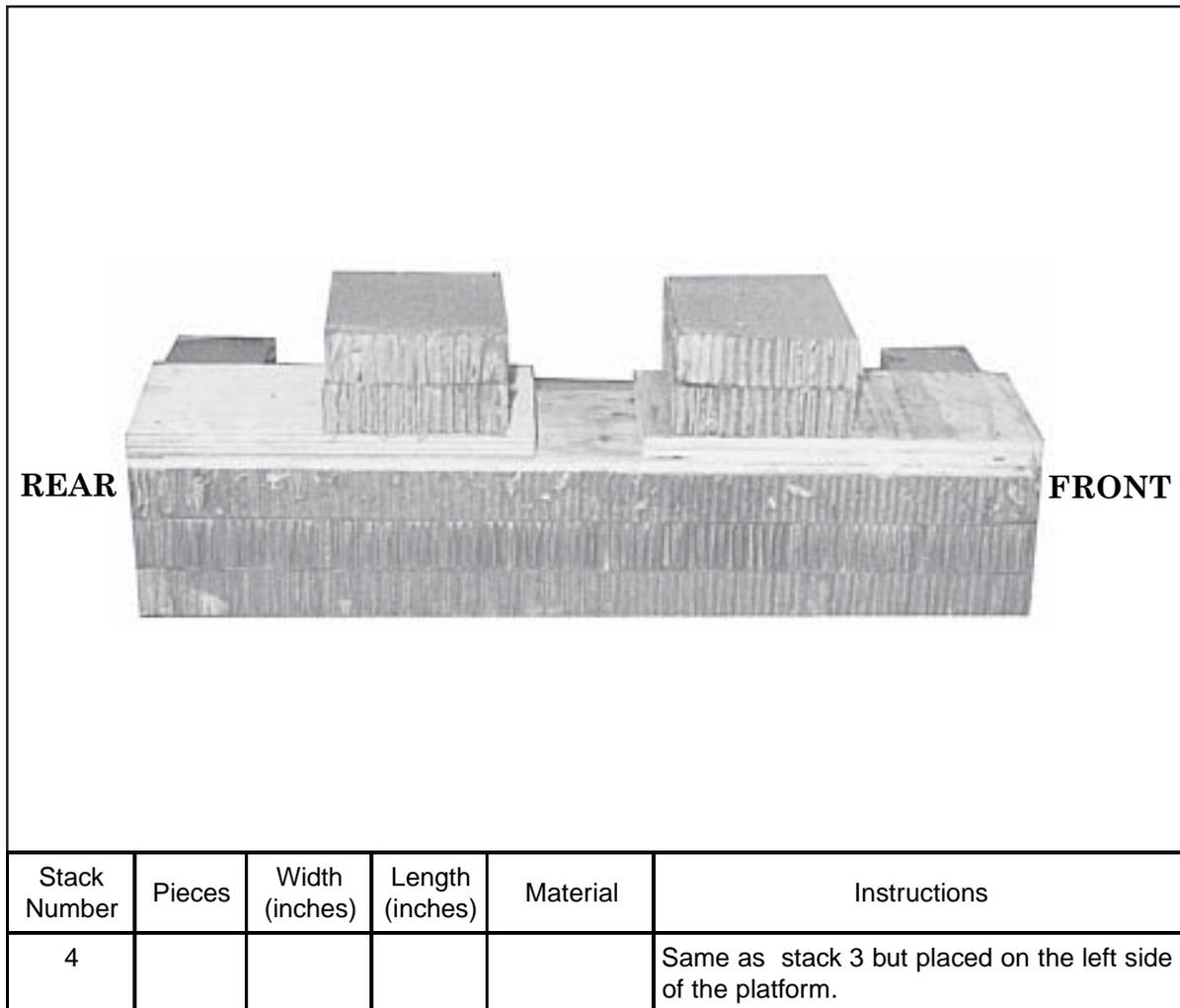
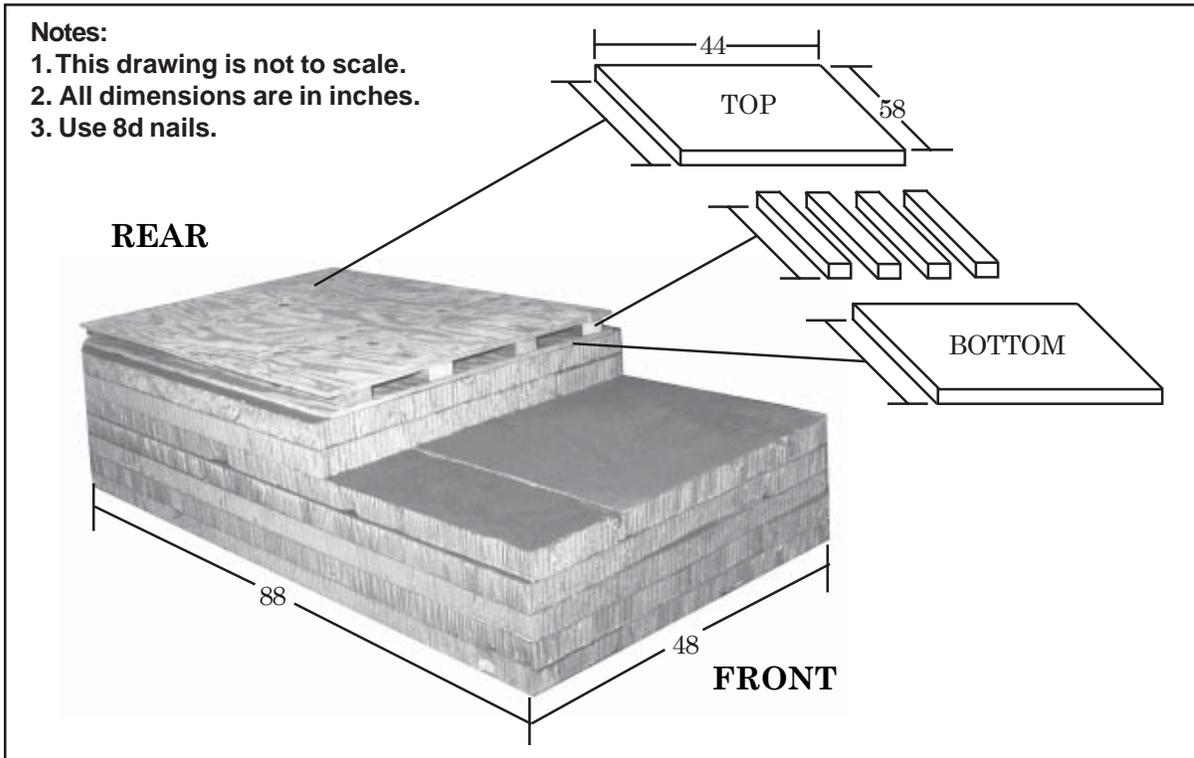


Figure 1-6. Honeycomb Stack 4 Prepared

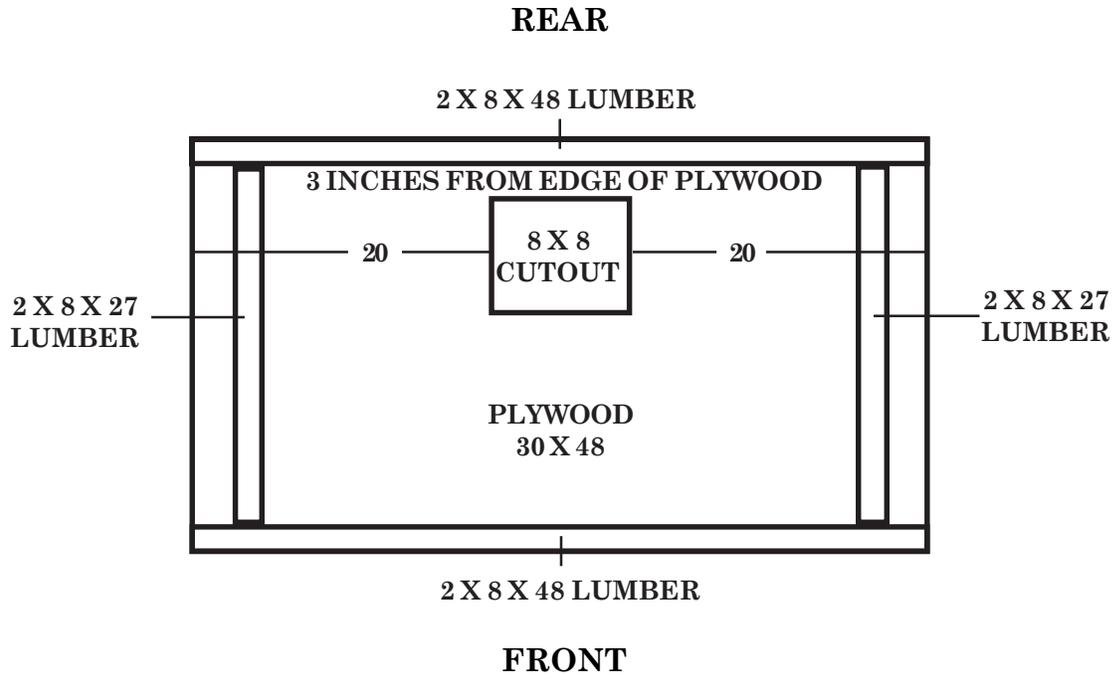


Stack Number	Pieces	Width (inches)	Length (inches)	Material	Instructions
5	5	36	88	Honeycomb	Use honeycomb as the base layers.
	5	12	88	Honeycomb	Use honeycomb as the base layers. Place pieces next to the 36- by 88-inch pieces and stagger.
	2	36	58	Honeycomb	Place the pieces on the top at the rear edges of the base layers.
	2	12	58	Honeycomb	Place the pieces next to the 36- by 58-inch pieces of honeycomb and stagger.
	1	44	58	Plywood	Place 3/4-inch plywood on top of the 48- by 58-inch honeycomb and center.
	4	2	58	Lumber	Place one piece of 2-inch lumber 2 inches from the right edge and one piece 2 inches from the left edge of the plywood. Place the other two pieces of lumber 8 inches from the pieces on the edge.
	1	44	58	Plywood	Place 3/4-inch plywood on top of the lumber. Nail the plywood and lumber together.

Figure 1-7. Honeycomb Stack 5 Prepared

Notes:

1. This drawing is not to scale.
2. All dimensions are in inches.
3. Use 8d nails.
4. Lumber is stood on edge.



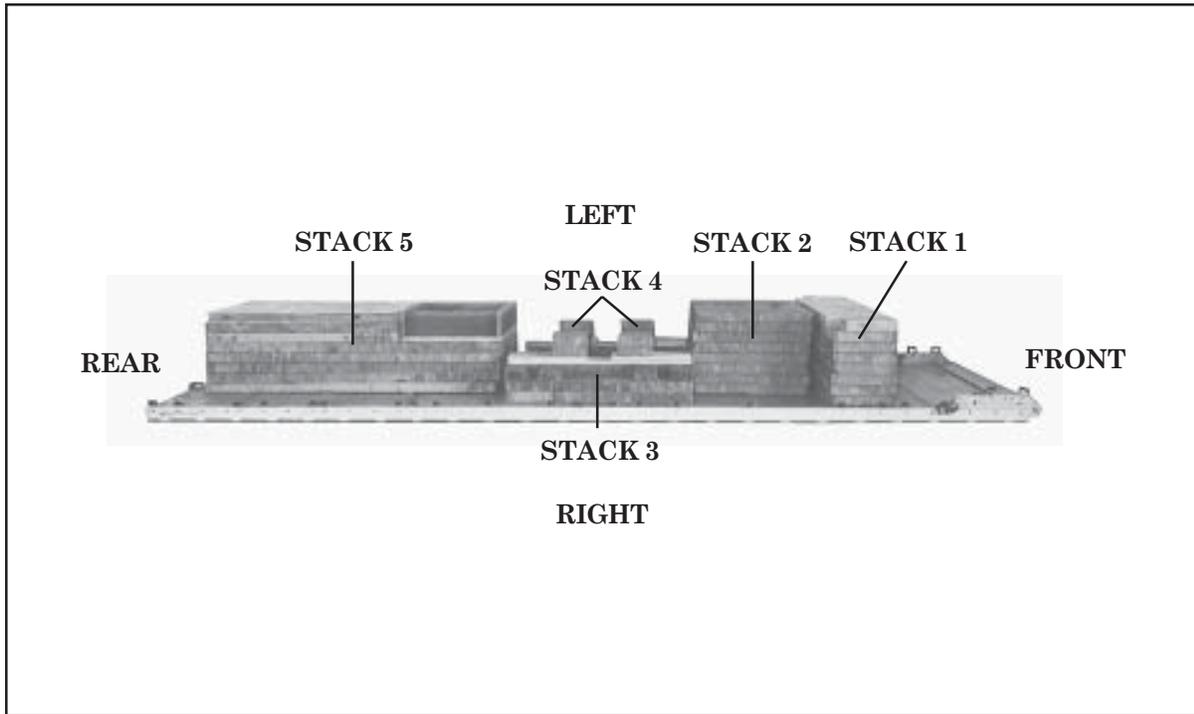
Stack Number	Pieces	Width (inches)	Length (inches)	Material	Instructions
5	2	30	48	Plywood	Use two pieces of 3/4-inch plywood as the base for the box. Cut an 8- by 8-inch cutout in both pieces of plywood 3 inches from the 48-inch rear edge and centered between the 30-inch edges.
	2	8	48	Lumber	Nail the lumber on each 48-inch edge of the plywood.
	2	8	27	Lumber	Nail the lumber 3 inches from each 30-inch edge of the plywood.

Figure 1-8. Box for Honeycomb Stack 5 Prepared



Stack Number	Pieces	Width (inches)	Length (inches)	Material	Instructions
5					Place the completed box from Figure 1-8 on top of the 48- by 88-inch honeycomb at the front of honeycomb stack 5.

Figure 1-8. Box for Honeycomb Stack 5 Prepared (Continued)



Stack Number	Position on Platform
1	Place stack: Centered and 35 inches from the front edge of the platform.
2	Centered and flush against stack 1.
3	Flush against stack 2 and 22 inches from the right side rail.
4	Flush against stack 2 and 22 inches from the left side rail.
5	Centered and 4 inches from the rear of stacks 3 and 4.

Figure 1-9. Honeycomb Stacks Positioned on Platform

PREPARING REVERSE OSMOSIS WATER PURIFICATION UNIT (ROWPU)

1-4. Prepare the ROWPU as described below. Secure all lashings and safety them according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

- a. Pad the top corners of the ROWPU frame and the top corners of the generator using cellulose wadding and 2-inch adhesive tape (not shown).
- b. Pad and tape the trailer lights using cellulose wadding and 2-inch adhesive tape (not shown).
- c. Prepare and lash the control box assembly as shown in Figure 1-10, and secure the lashings as shown in Figure 1-11.

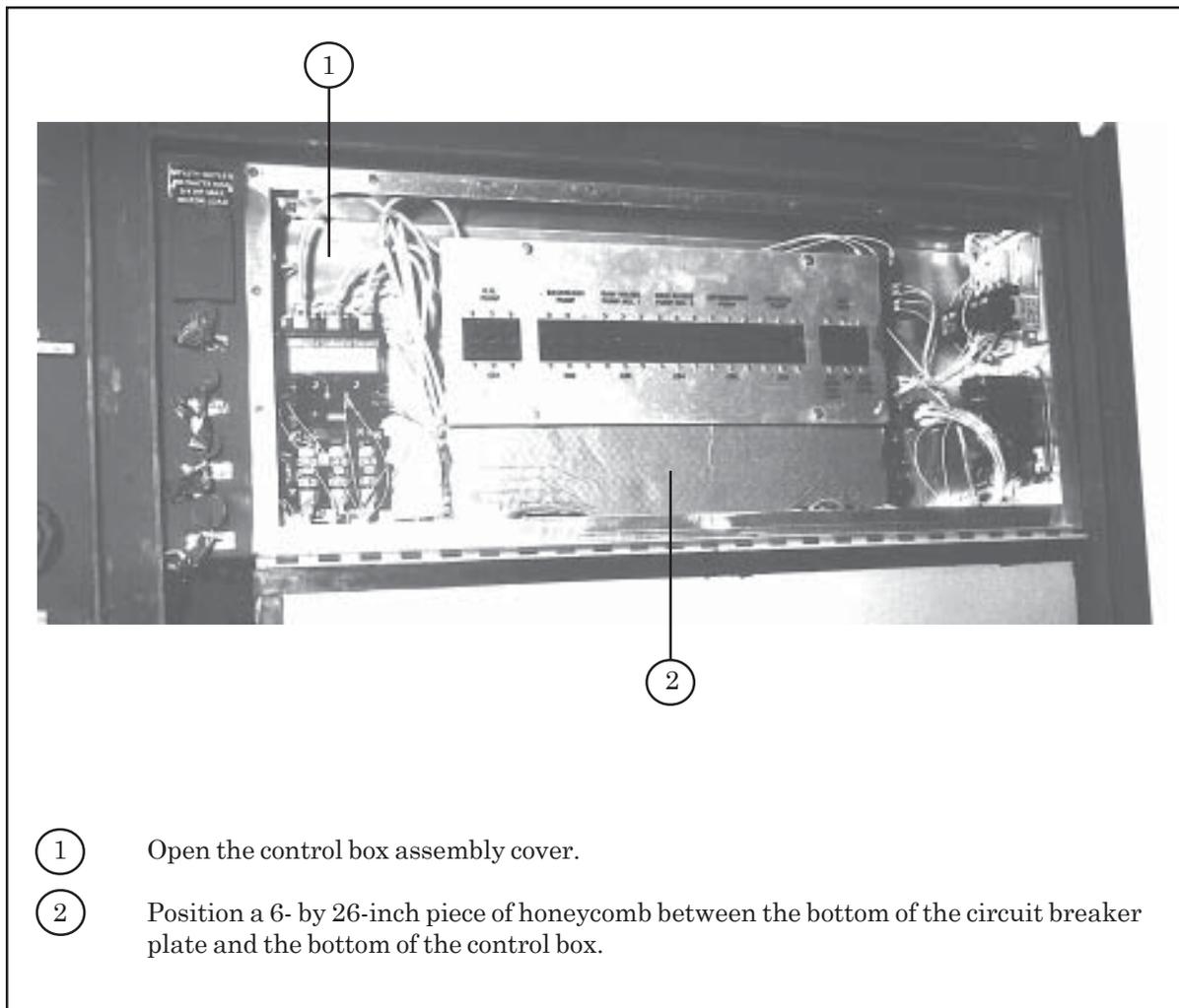
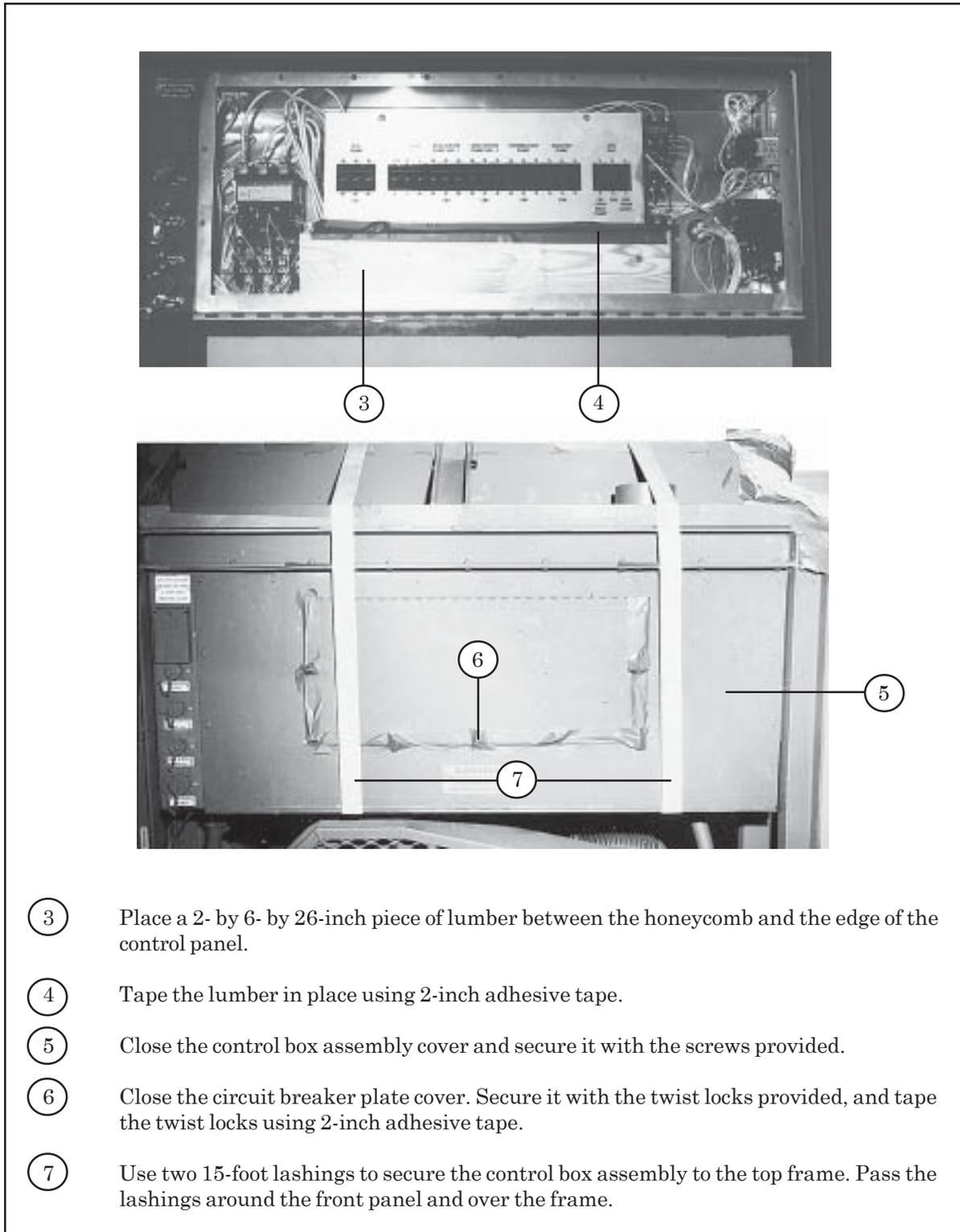


Figure 1-10. Control Box Assembly Prepared



- ③ Place a 2- by 6- by 26-inch piece of lumber between the honeycomb and the edge of the control panel.
- ④ Tape the lumber in place using 2-inch adhesive tape.
- ⑤ Close the control box assembly cover and secure it with the screws provided.
- ⑥ Close the circuit breaker plate cover. Secure it with the twist locks provided, and tape the twist locks using 2-inch adhesive tape.
- ⑦ Use two 15-foot lashings to secure the control box assembly to the top frame. Pass the lashings around the front panel and over the frame.

Figure 1-10. Control Box Assembly Prepared (Continued)

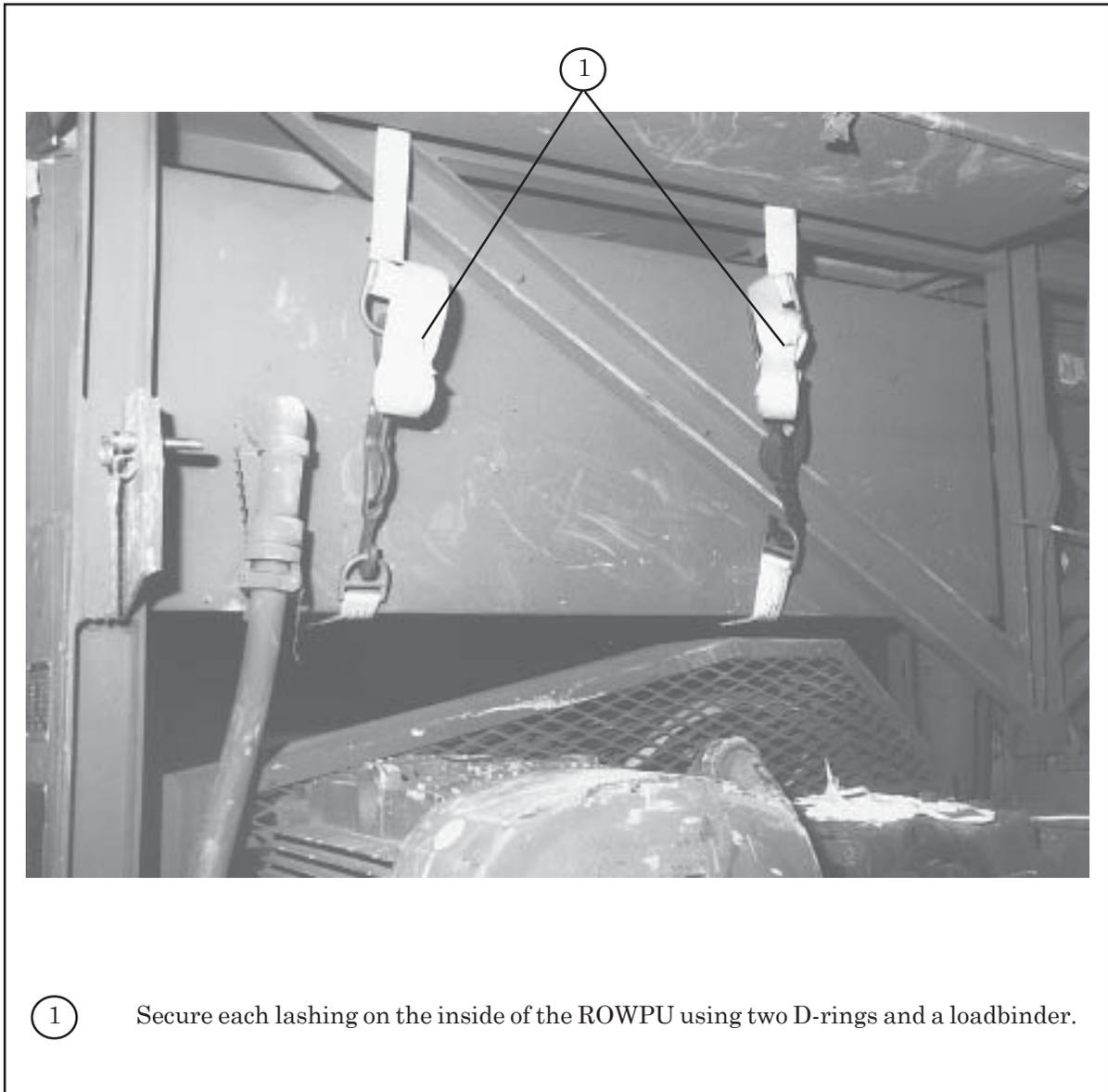


Figure 1-11. Lashings Secured on Control Box

- d. Prepare and secure the control panel as shown in Figure 1-12.

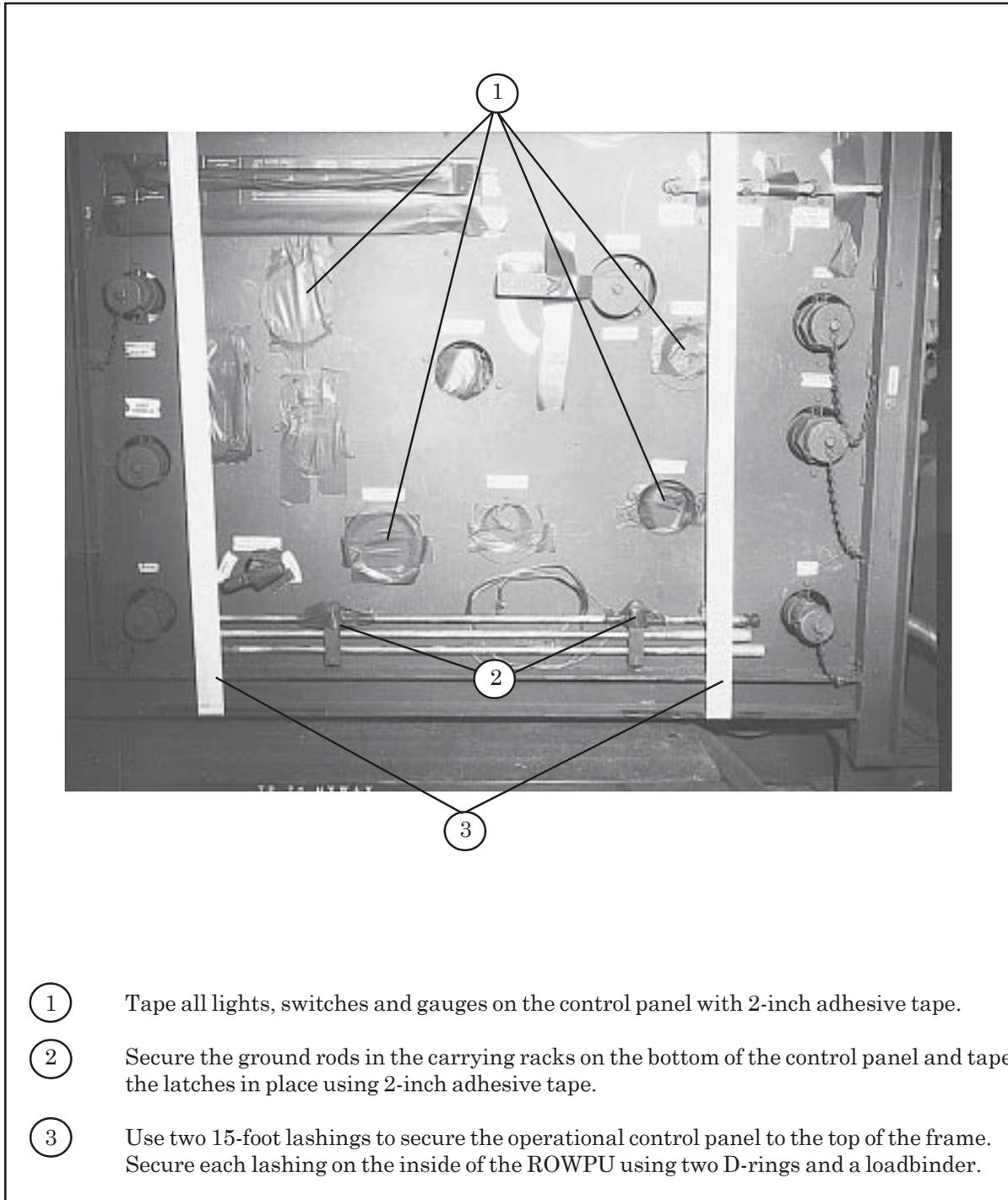
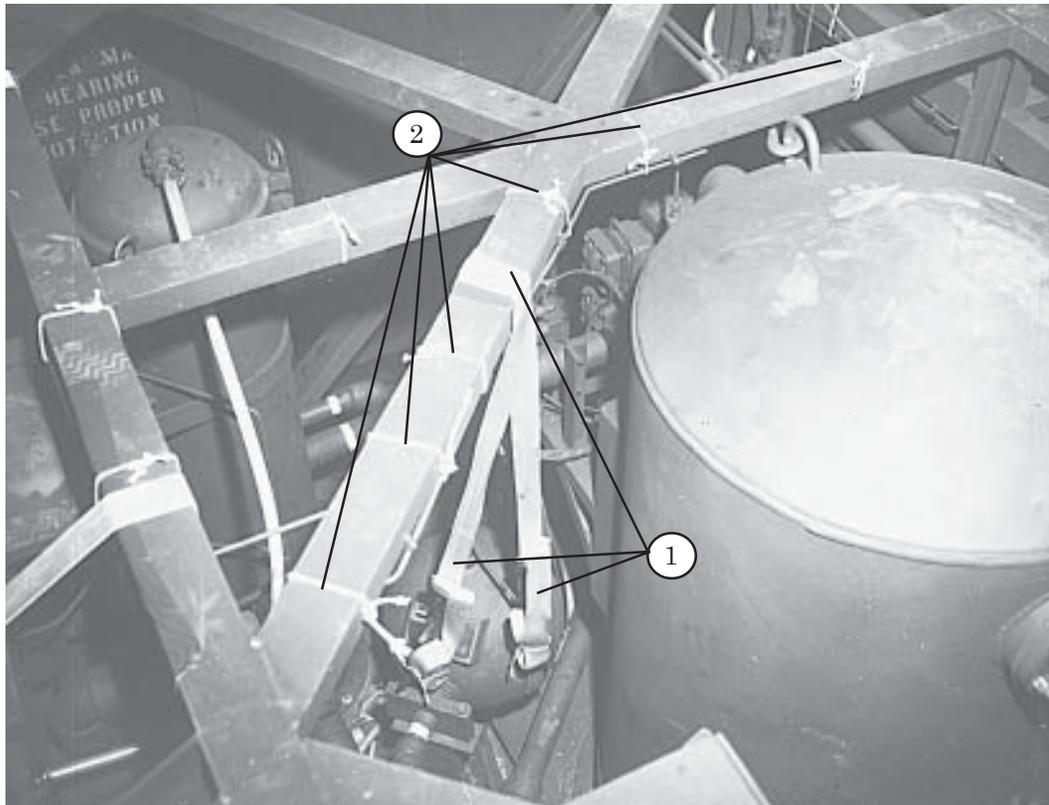


Figure 1-12. Control Panel Prepared and Secured

- e. Secure the pulse dampener as shown in Figure 1-13.



- ① Route two 15-foot lashings around the pulse dampener and the top of the ROWPU frame. Secure each lashing with two D-rings and a loadbinder.
- ② Secure the 3/8-inch vent lines to the top of the ROWPU frame using type III nylon cord.

Note: When securing the 3/8-inch vent lines ensure that six ties are made around the top of the ROWPU frame.

Figure 1-13. Pulse Dampener Prepared and Secured

- f. Secure the intervehicular cables and chains to the trailer using type III nylon cord (not shown).
- g. Fold the pump tiedown straps and tape them to the floor of the ROWPU (not shown).
- h. Stow the jacks and the jack handles on their support brackets, and secure them using type III nylon cord (not shown).
- i. Make sure the generator's fuel tank is at least 1/2 but no more than 3/4 full. Ensure hazardous materials are packaged, marked, and labeled as required by AFMAN(I) 24-204/TM 38-250 (not shown).
- j. Prepare the generator as shown in Figure 1-14.

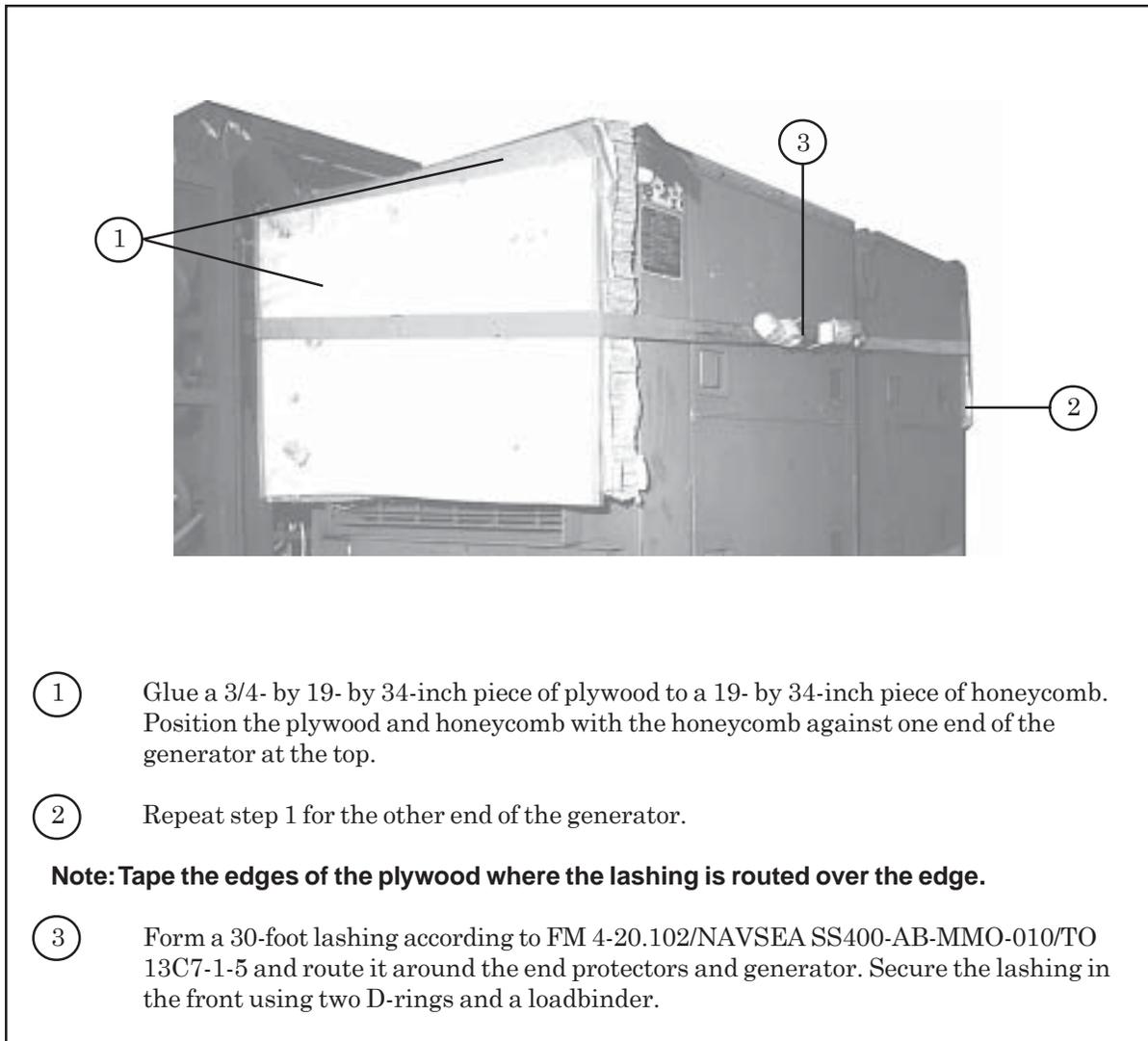


Figure 1-14. Generator Prepared

- k. Prepare and stow the raw water pumps on the ROWPU as shown in Figure 1-15.

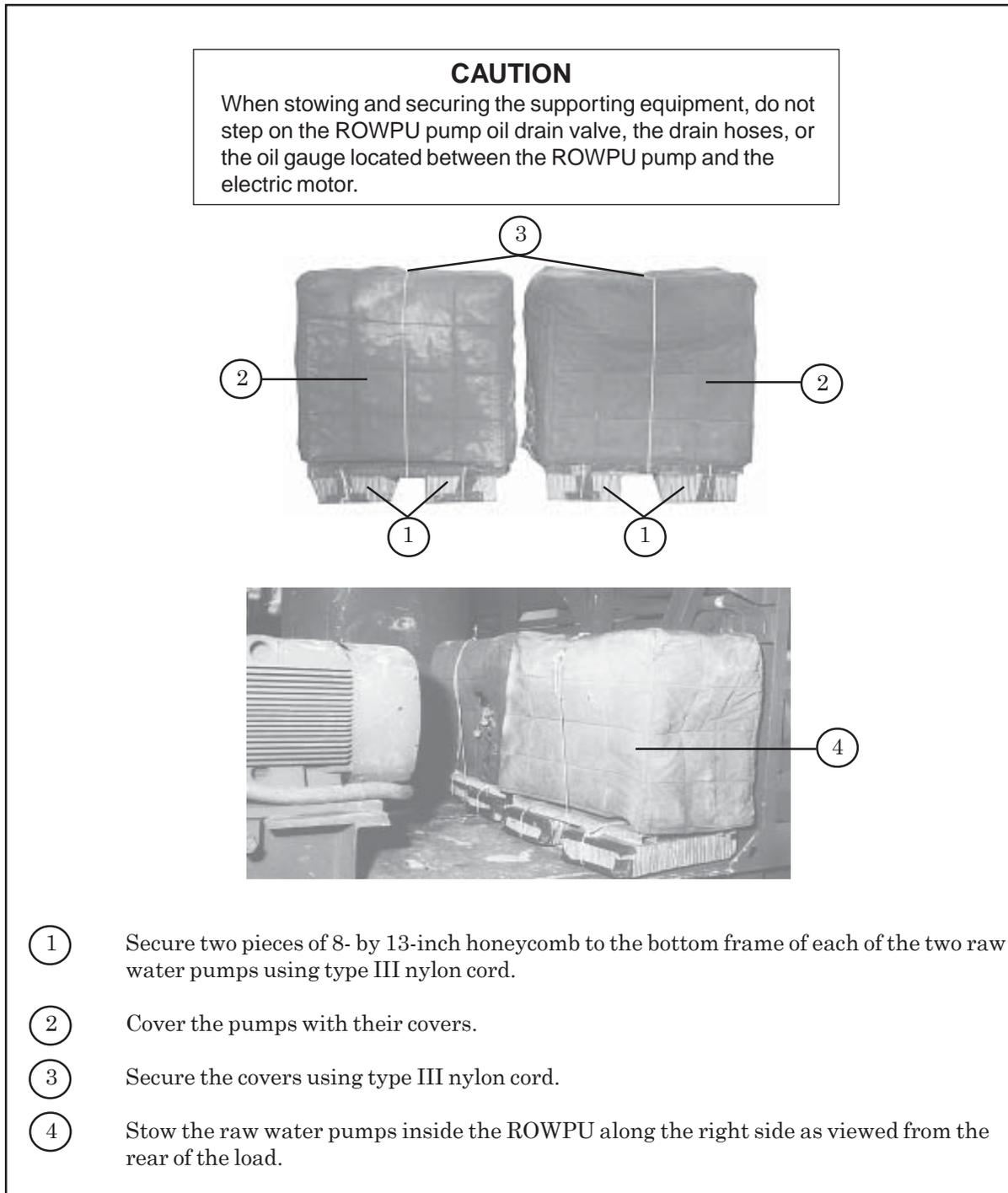


Figure 1-15. Raw Water Pumps Prepared and Stowed

1. Prepare and stow the backwash pumps on the ROWPU as shown in Figure 1-16.

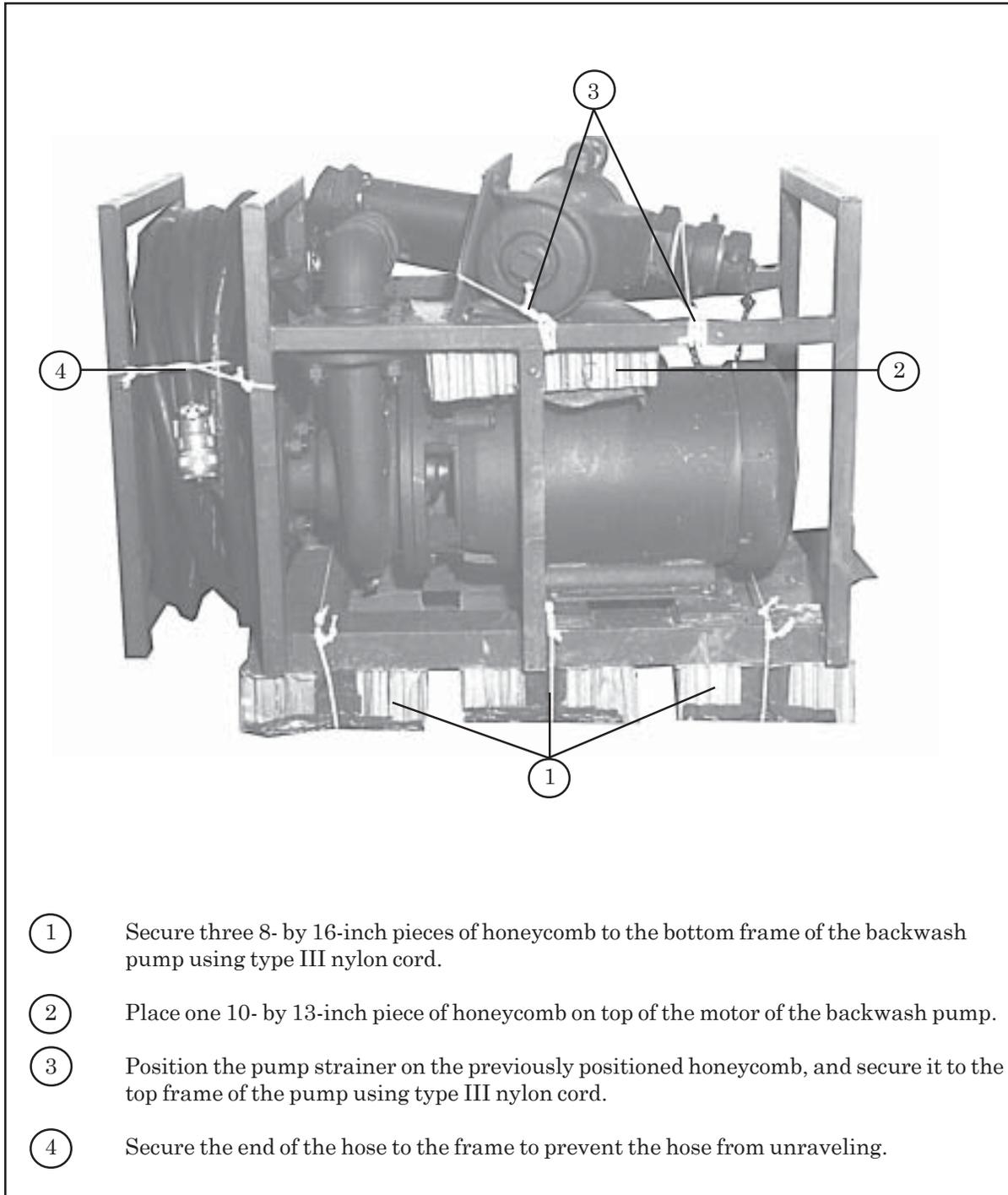


Figure 1-16. Backwash Pump Prepared, Stowed and Secured

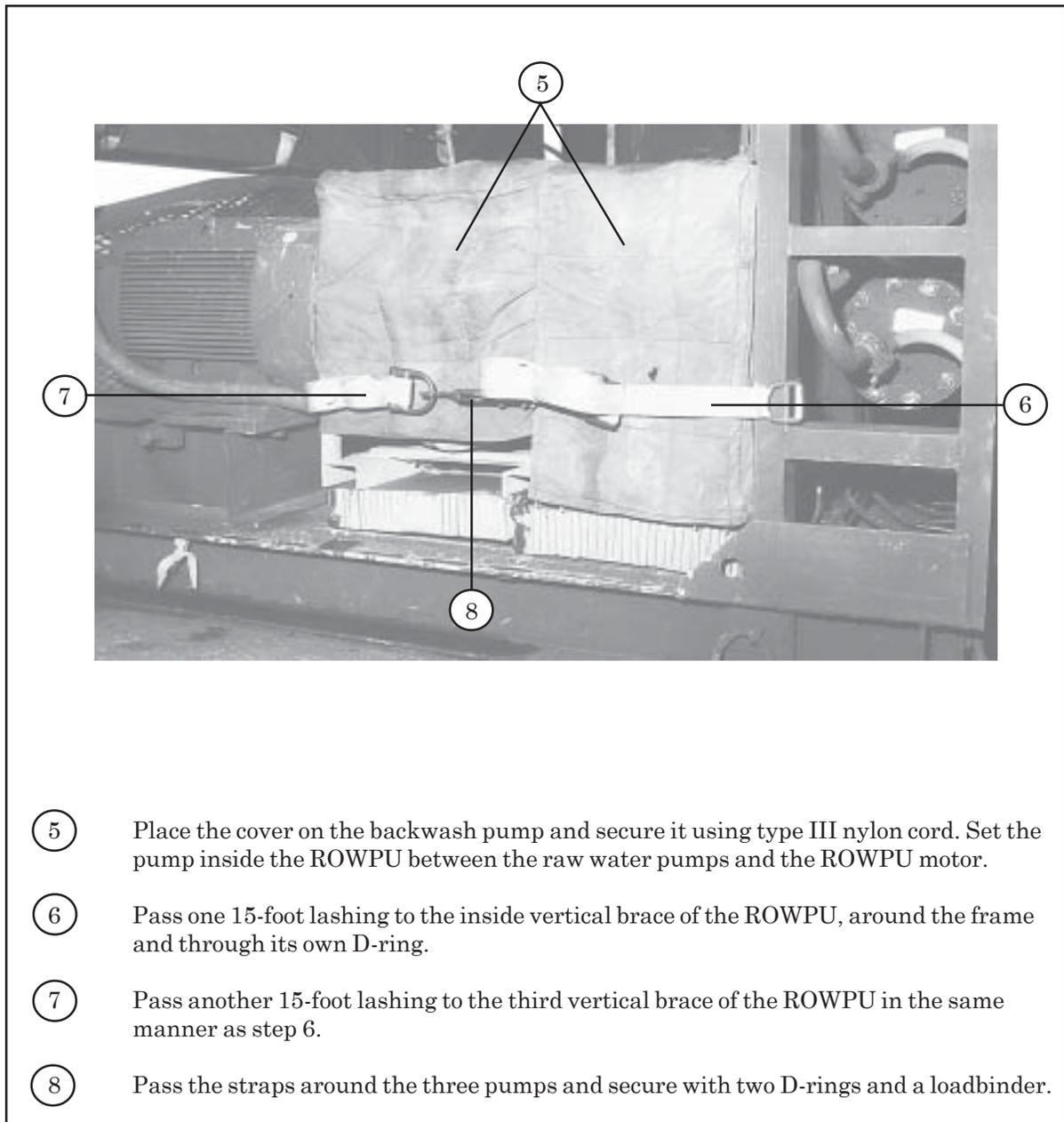


Figure 1-16. Backwash Pump Prepared, Stowed and Secured (Continued)

m. Prepare and stow the canvas hoses as shown in Figure 1-17.

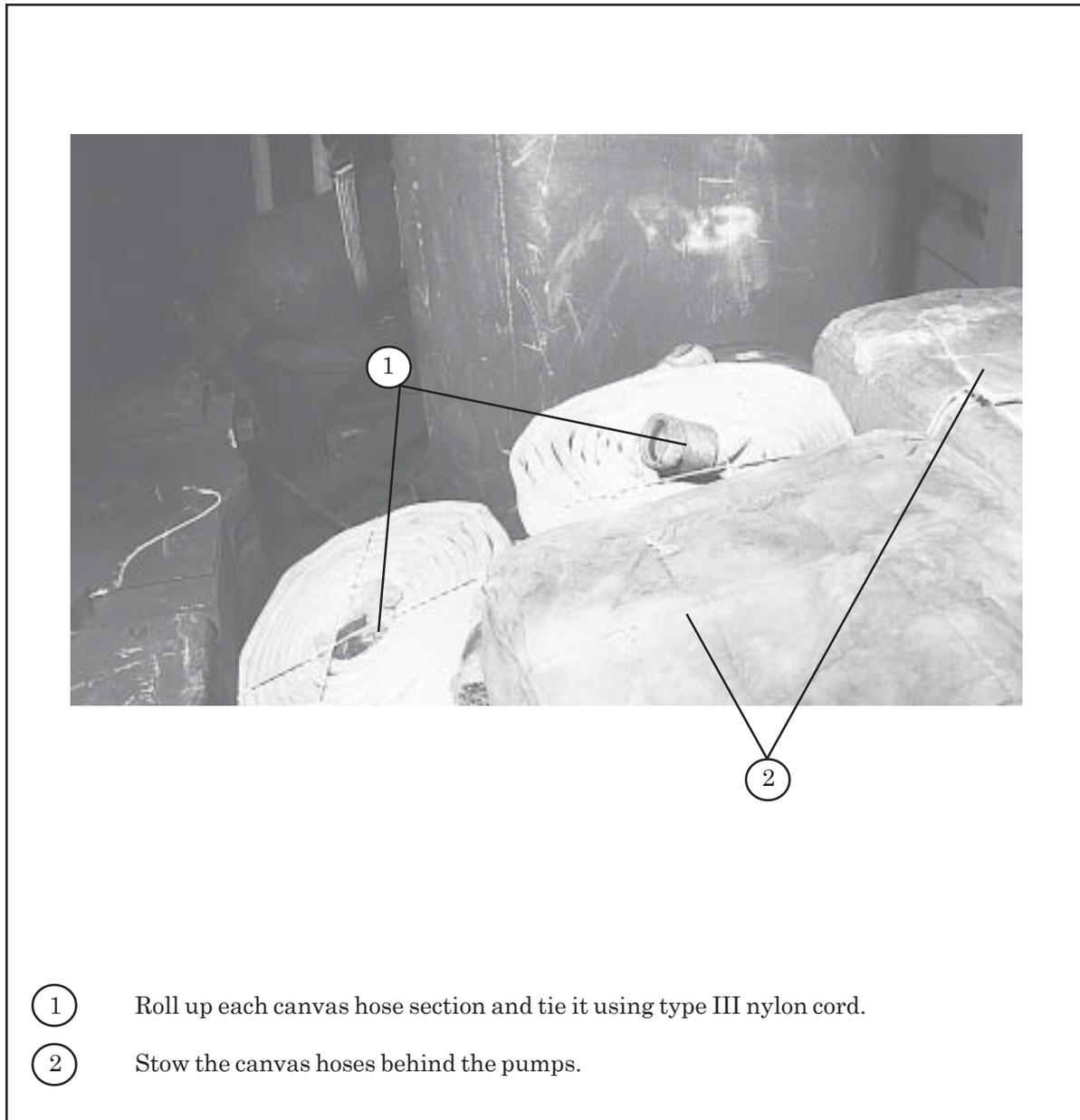


Figure 1-17. Canvas Hose Prepared and Stowed

- n. Prepare, stow and secure the two storage chests as shown in Figure 1-18.

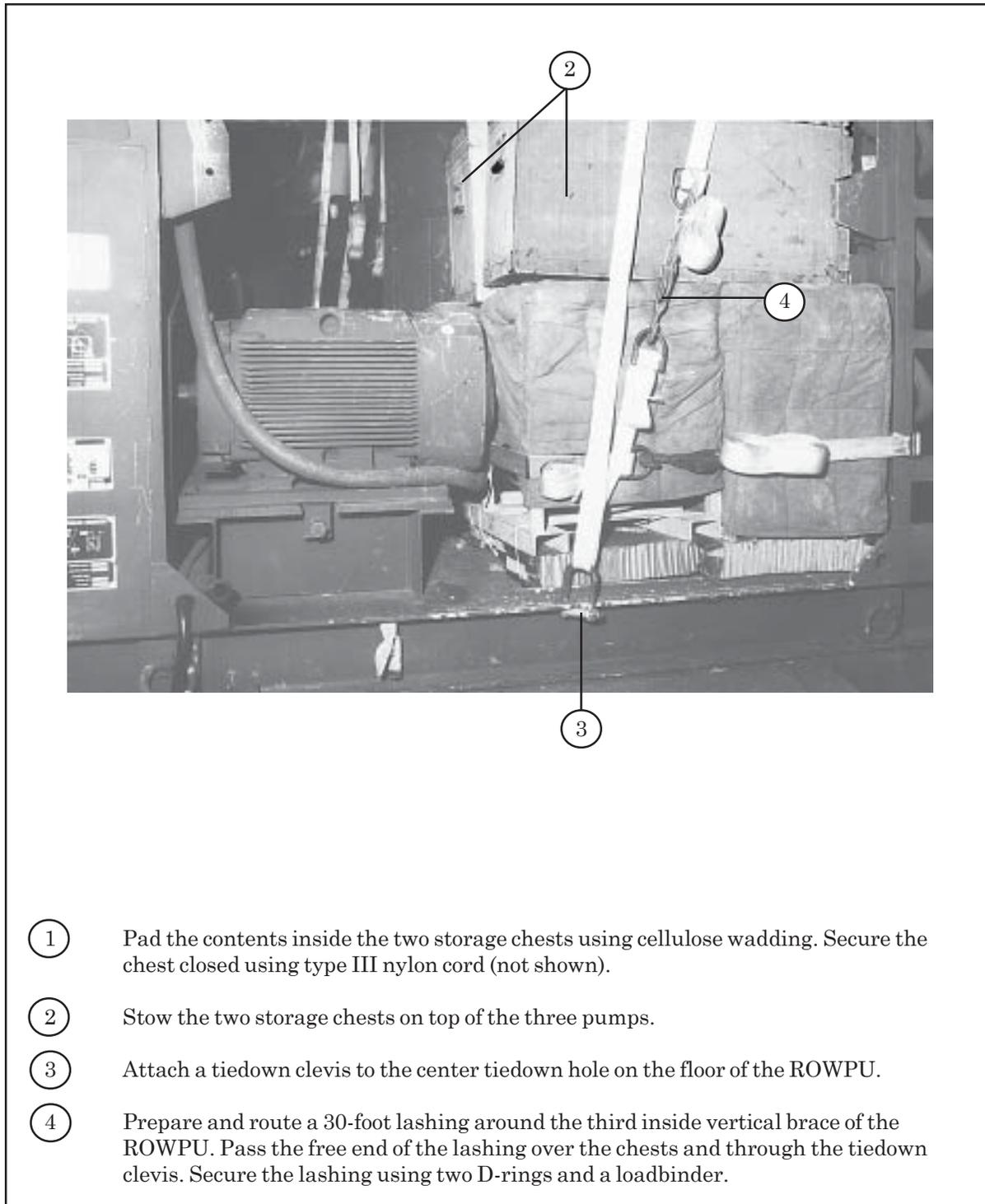


Figure 1-18. Storage Chests Prepared, Stowed and Secured

- o. Place the wooden staves of the water tank beside the ROWPU pump and motor. Secure the staves to the floor using type III nylon cord (not shown).
- p. Set the sledgehammer next to the third inside vertical brace. Secure it to the brace using type III nylon cord (not shown).
- q. Set the paddle and float behind the inside storage chest and secure them together using type III nylon cord (not shown).
- r. Stack the five gallon plastic water containers behind the ROWPU pump and tie them to a convenient point using type III nylon cord (not shown).
- s. Prepare and stow the rubber hoses as shown in Figure 1-19.

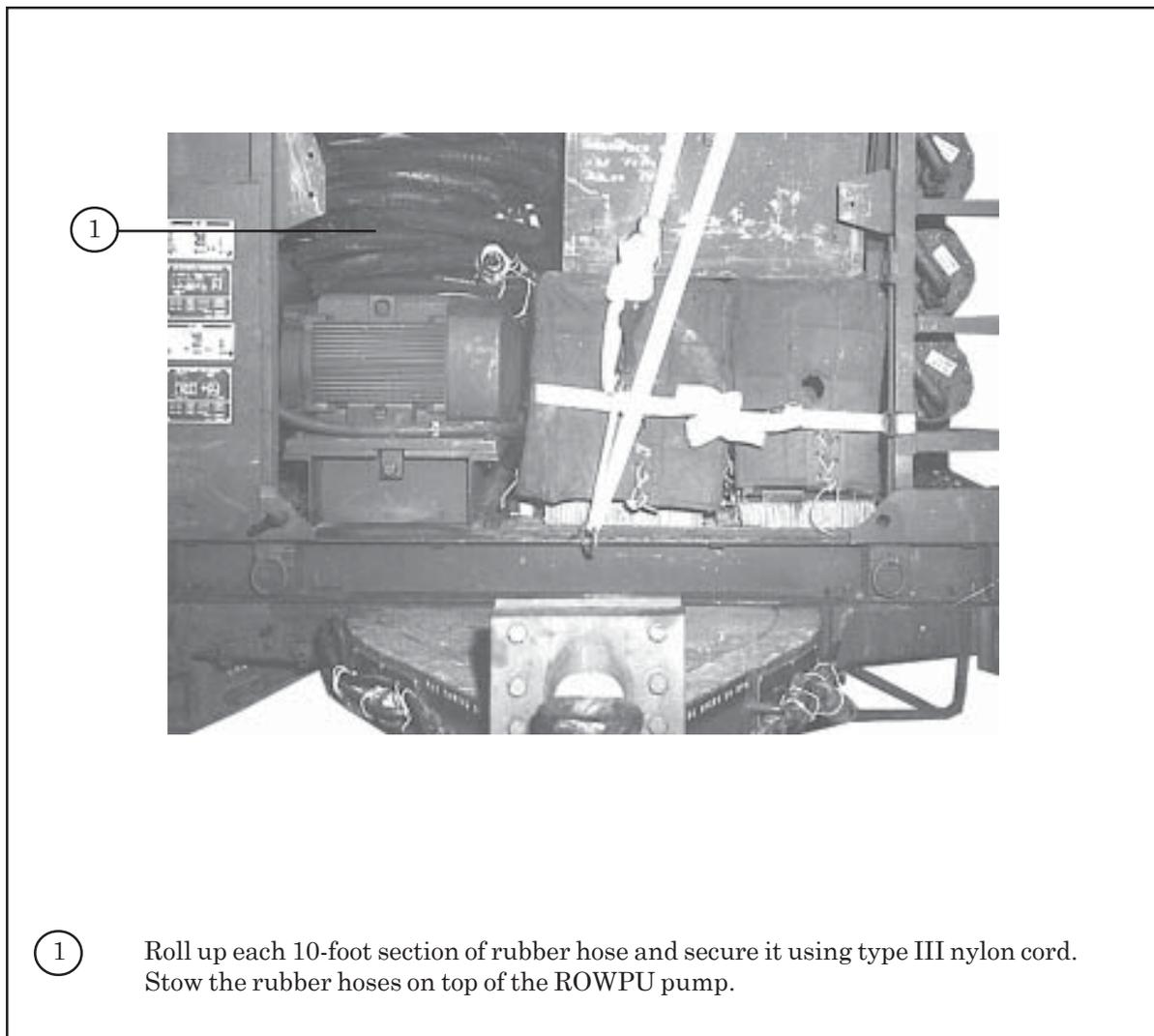


Figure 1-19. Rubber Hoses Prepared and Stowed

t. Prepare, stow and secure the water tanks as shown in Figure 1-20.

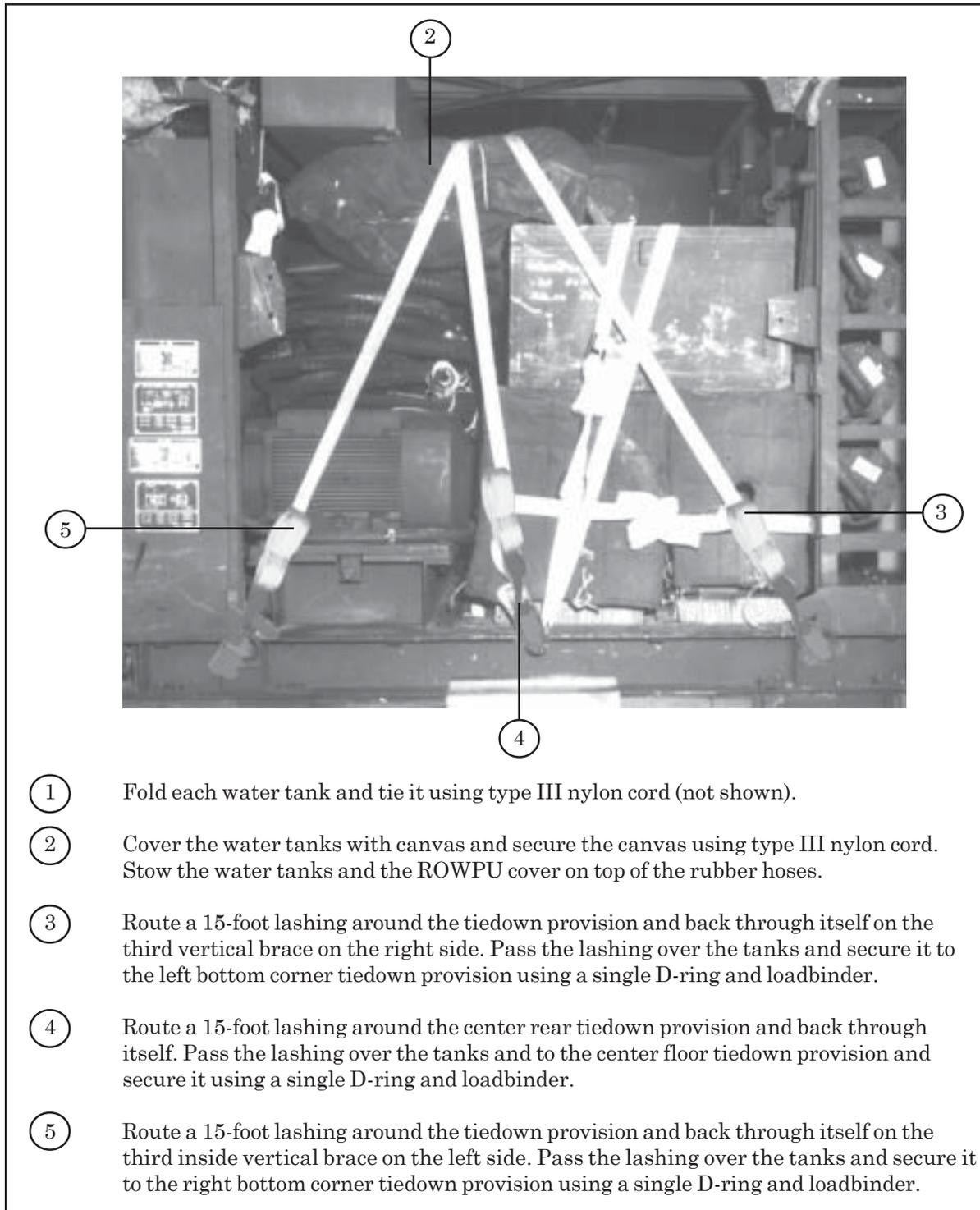


Figure 1-20. Water Tanks Prepared, Stowed and Secured

- u. Install and secure cross braces as shown in Figure 1-21.

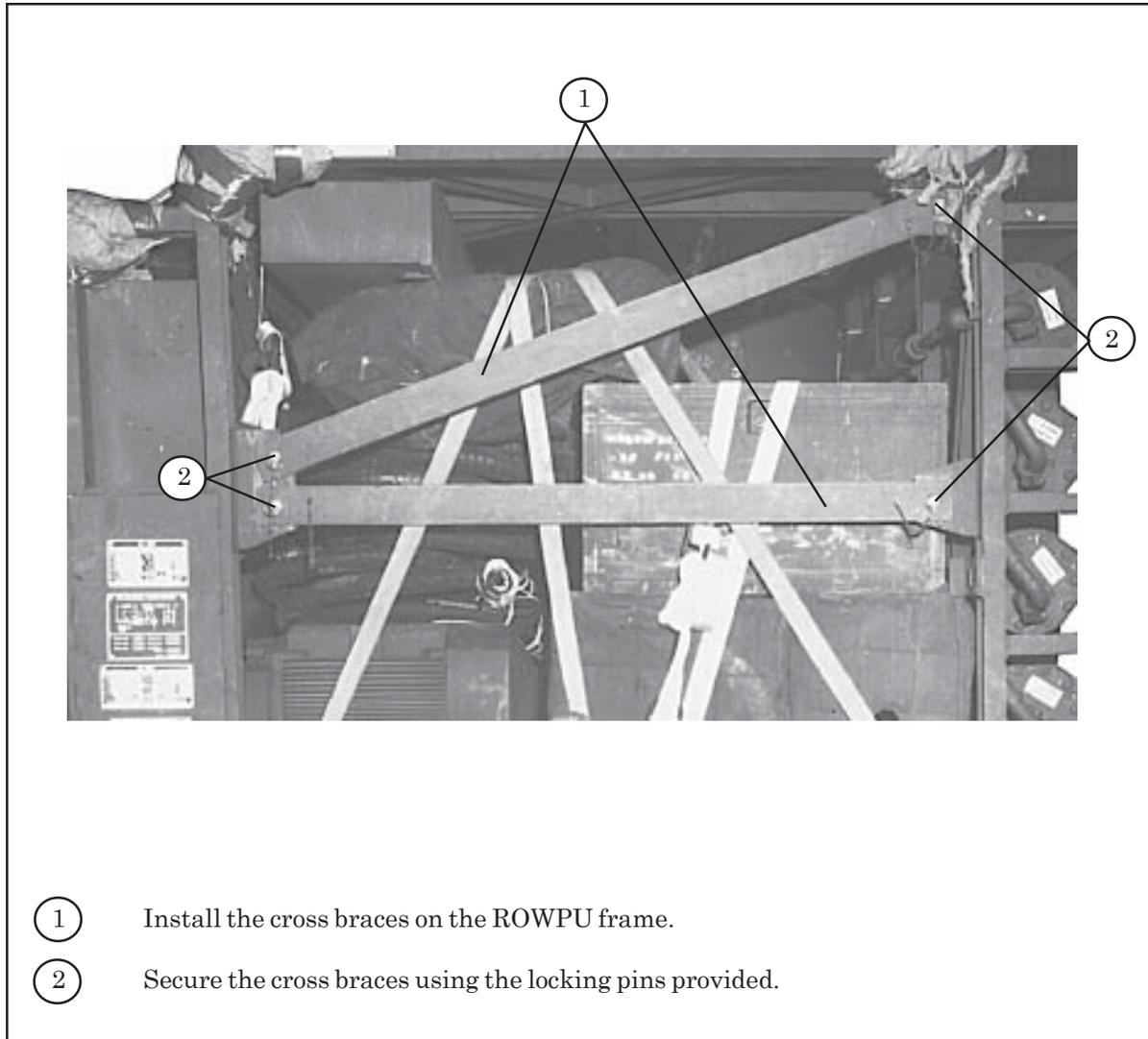


Figure 1-21. Cross Braces Installed and Secured

- v. Prepare, stow and secure the distribution pump as shown in Figure 1-22.

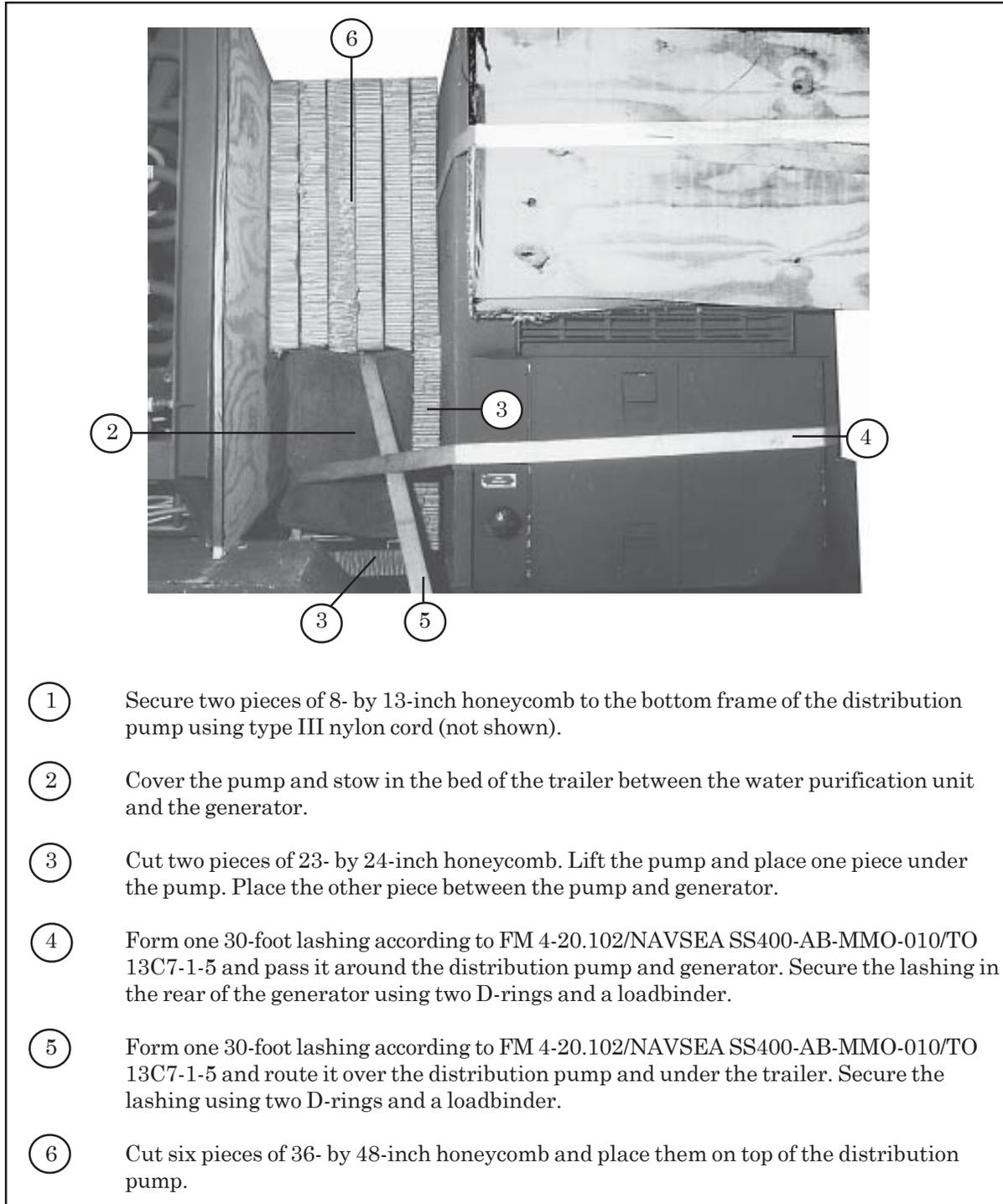


Figure 1-22. Distribution Pump Stowed and Secured

LIFTING AND POSITIONING LOAD

1-5. Use available slings to lift the ROWPU. After lifting the ROWPU, prepare it for positioning as shown in Figure 1-23. Position the ROWPU as shown in Figure 1-24.

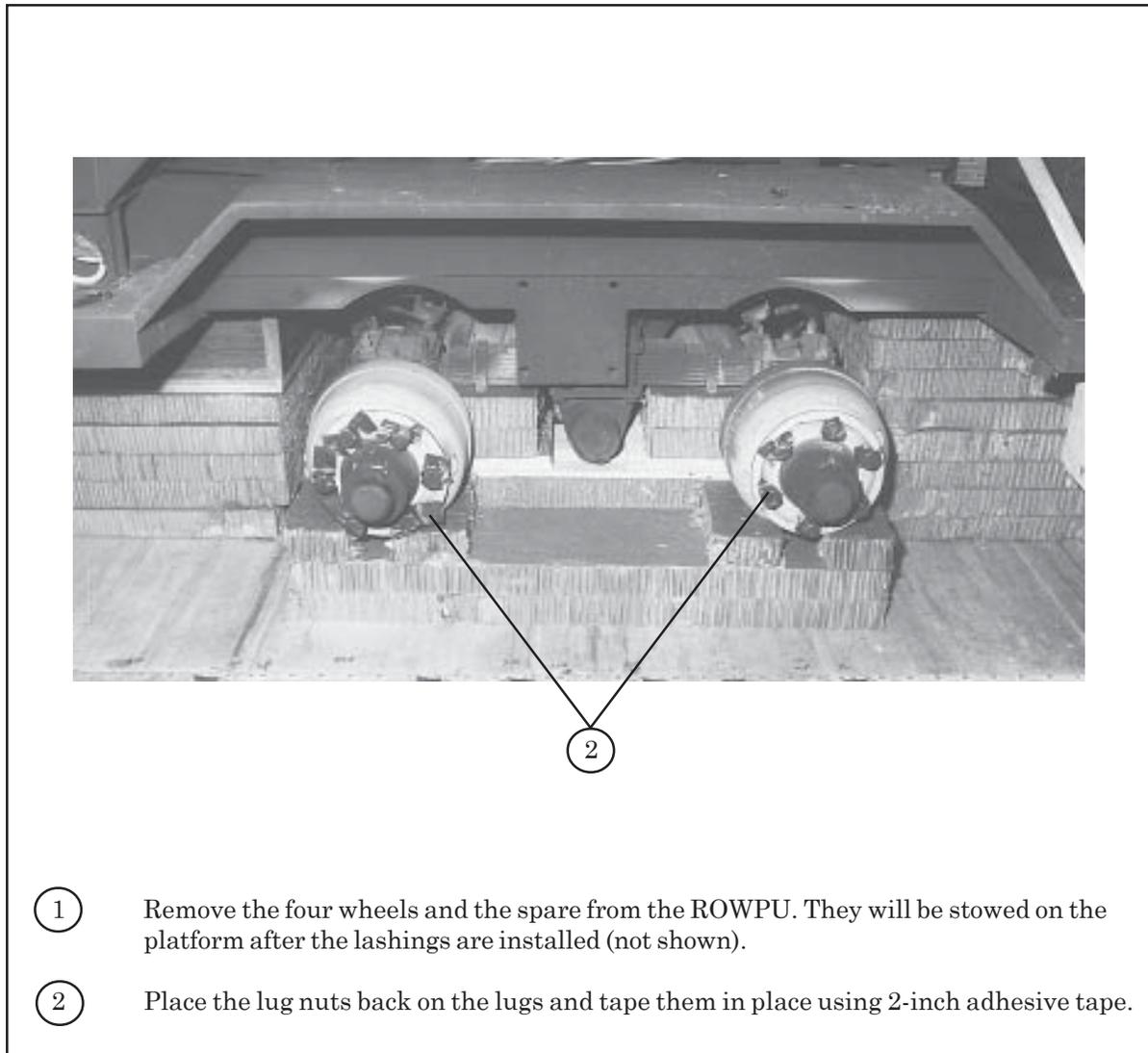
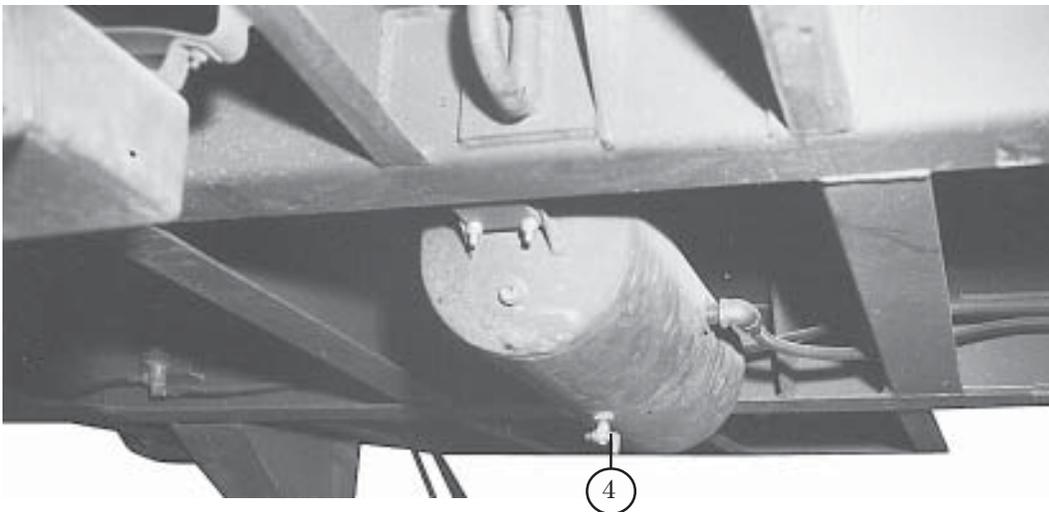
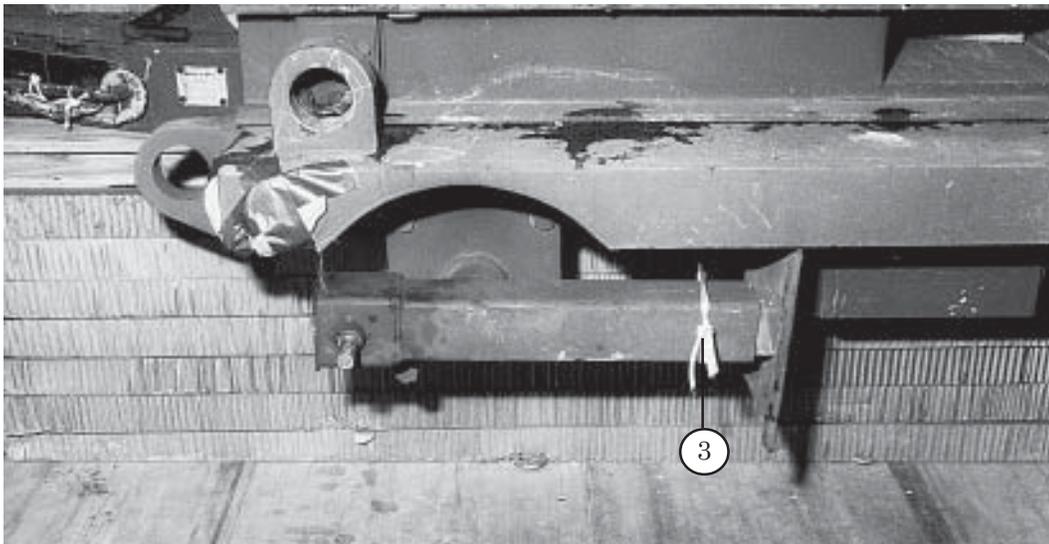


Figure 1-23. ROWPU Prepared for Positioning

CAUTION

Ensure that the air tank release valve fits in the 8-inch by 8-inch hole in the plywood of honeycomb stack 5.



- ③ Raise the leveling jacks into the travel position and secure them with 1/2-inch tubular nylon webbing.
- ④ Position the air tank release valve over the 8- by 8-inch hole in the plywood of honeycomb stack 5.

Figure 1-23. ROWPU Prepared for Positioning (Continued)

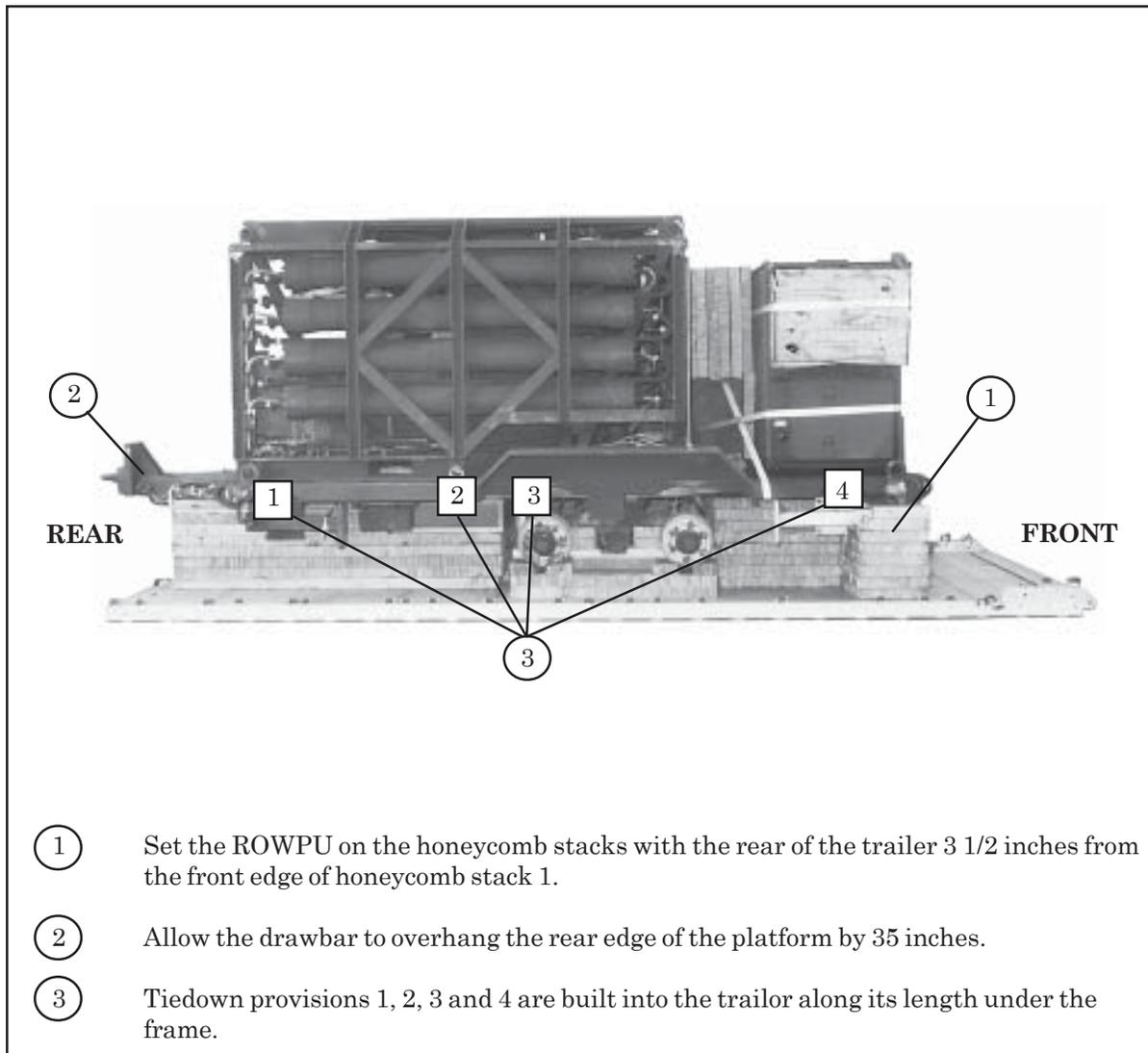
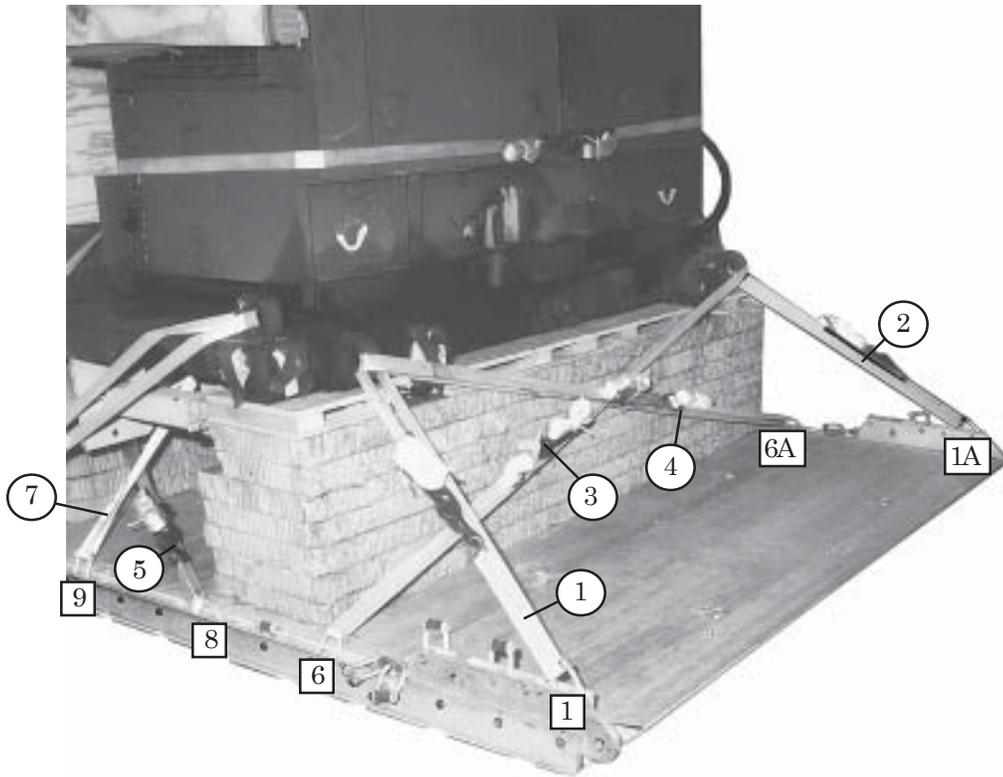


Figure 1-24. ROWPU Positioned on Platform

INSTALLING LASHINGS

1-6. Lash the ROWPU to the platform according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figures 1-25 through 1-27.

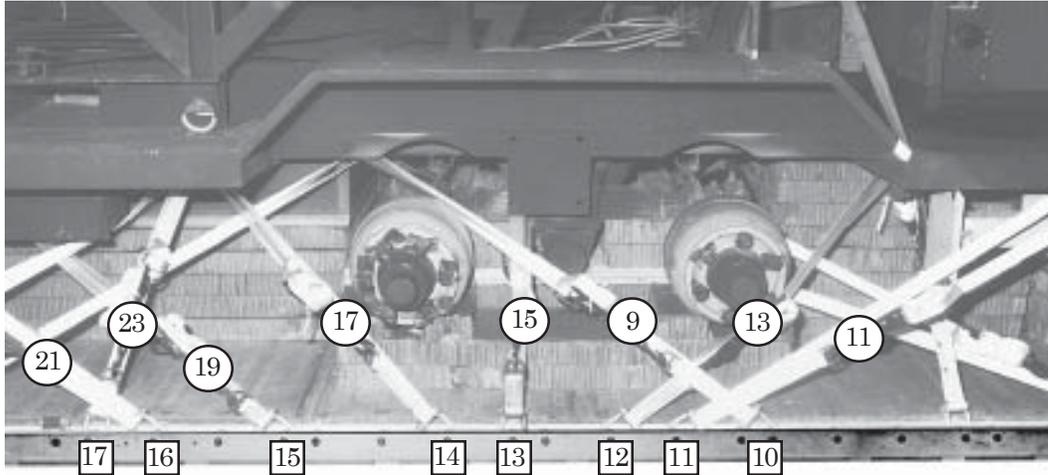
Note: When routing lashings ensure all suspension and lifting points are padded and taped.



Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashing through:
1	1	Left rear tiedown eye of the ROWPU.
2	1A	Right rear tiedown eye of the ROWPU.
3	6	Right rear tiedown eye of the ROWPU.
4	6A	Left rear tiedown eye of the ROWPU.
5	8	Around rear axle.
6	8A	Around rear axle.
7	9	Tiedown provision number 4 right side.
8	9A	Tiedown provision number 4 left side.

Figure 1-25. Lashings 1 through 8 Installed

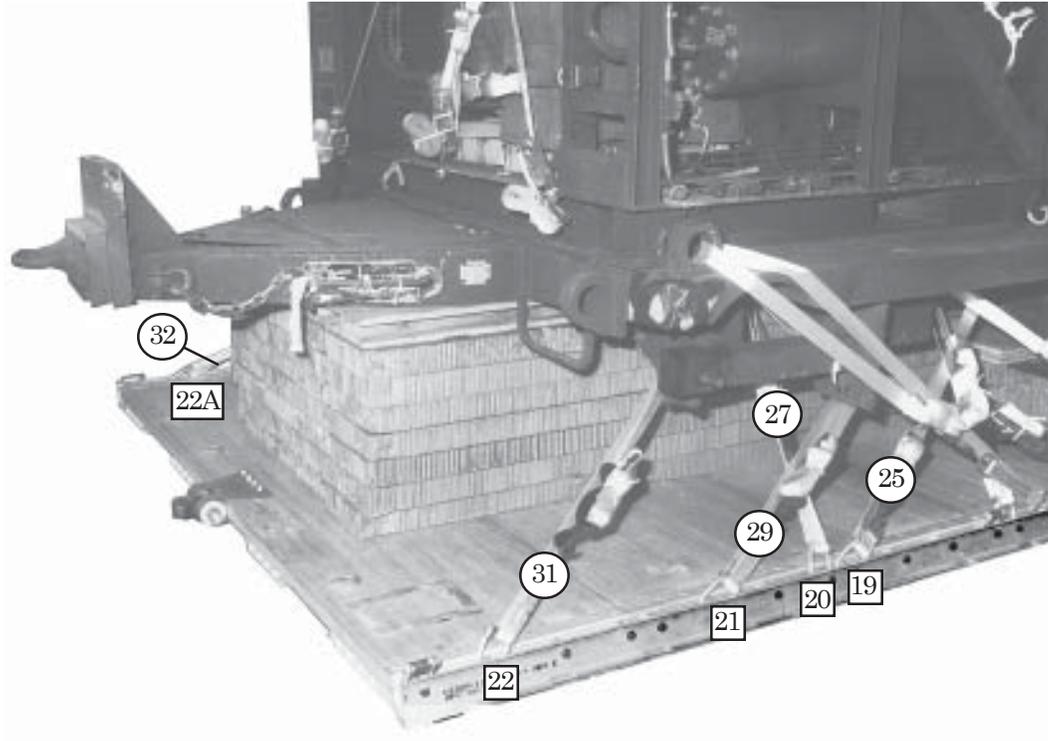
Note: When routing lashings ensure all suspension and lifting points are padded and taped.



Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashing through:
9	10	Tiedown provision number 3 right side.
10	10A	Tiedown provision number 3 left side.
11	11	Rear lifting eye.
12	11A	Rear lifting eye.
13	12	Tiedown provision number 4 right side.
14	12A	Tiedown provision number 4 left side.
15	13	Around leaf spring.
16	13A	Around leaf spring.
17	14	Tiedown provision number 2 right side.
18	14A	Tiedown provision number 2 left side.
19	15	Tiedown provision number 1 right side.
20	15A	Tiedown provision number 1 left side.
21	16	Front lifting eye.
22	16A	Front lifting eye.
23	17	Tiedown provision number 2 right side.
24	17a	Tiedown provision number 2 left side.

Figure 1-26. Lashings 9 through 24 Installed

Note: When routing lashings ensure all suspension and lifting points are padded and taped.



Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashing through:
25	19	Tiedown provision 3 right side.
26	19A	Tiedown provision 3 left side.
27	20	Tiedown provision 1 right side.
28	20A	Tiedown provision 1 left side.
29	21	Tiedown provision 2 right side.
30	21A	Tiedown provision 2 left side.
31	22	Tiedown provision 1 right side.
32	22A	Tiedown provision 1 left side.

Figure 1-27. Lashings 25 through 32 Installed

CONSTRUCTING ENDBOARDS AND STOWING AND LASHING TIRES

1-7. Construct the endboards and stow and lash the tires as described below.

- a. Construct two endboards as shown in Figure 1-28.

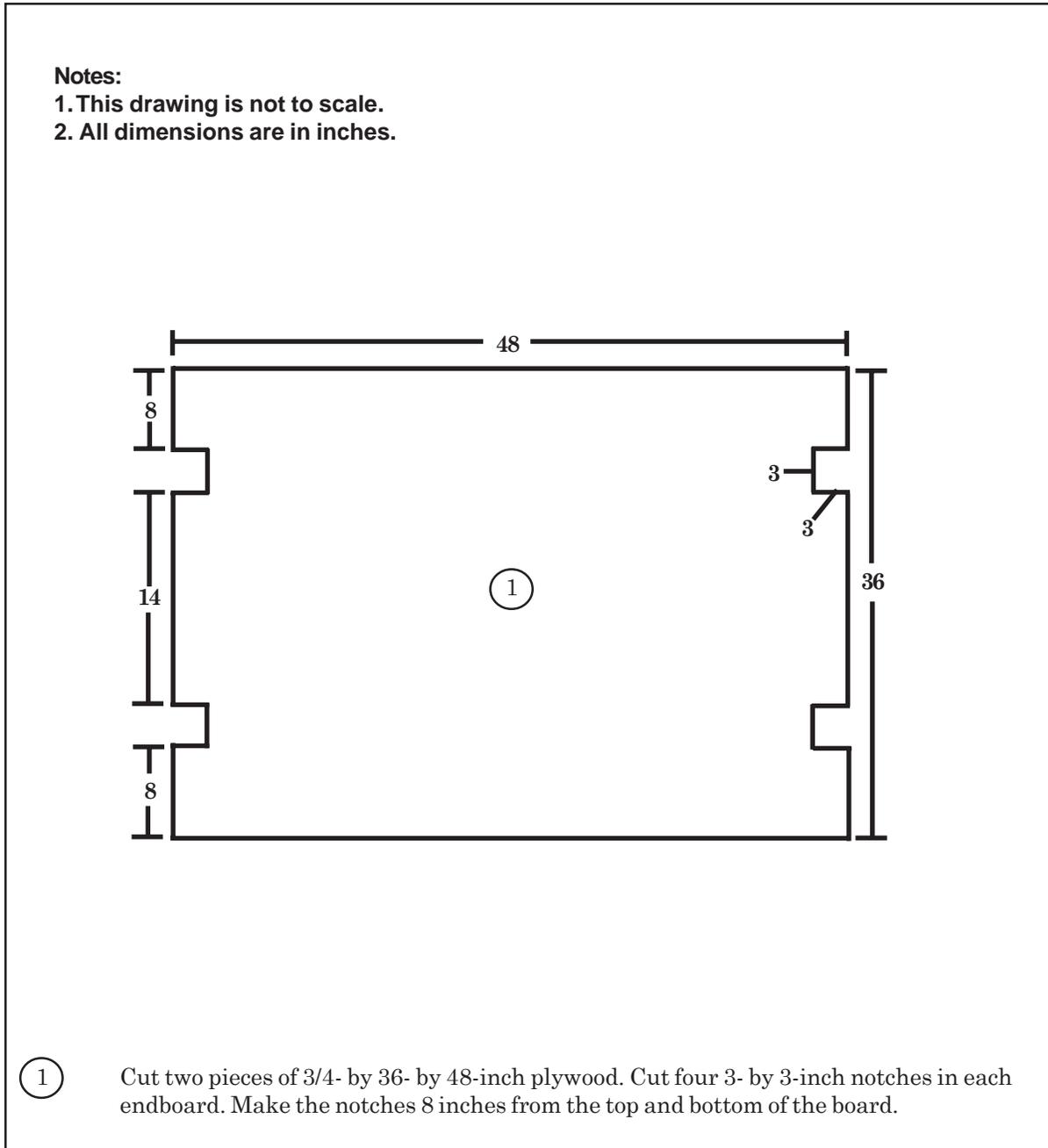


Figure 1-28. Endboards Constructed

- b. Position the endboards and stow the tires as shown in Figure 1-29.

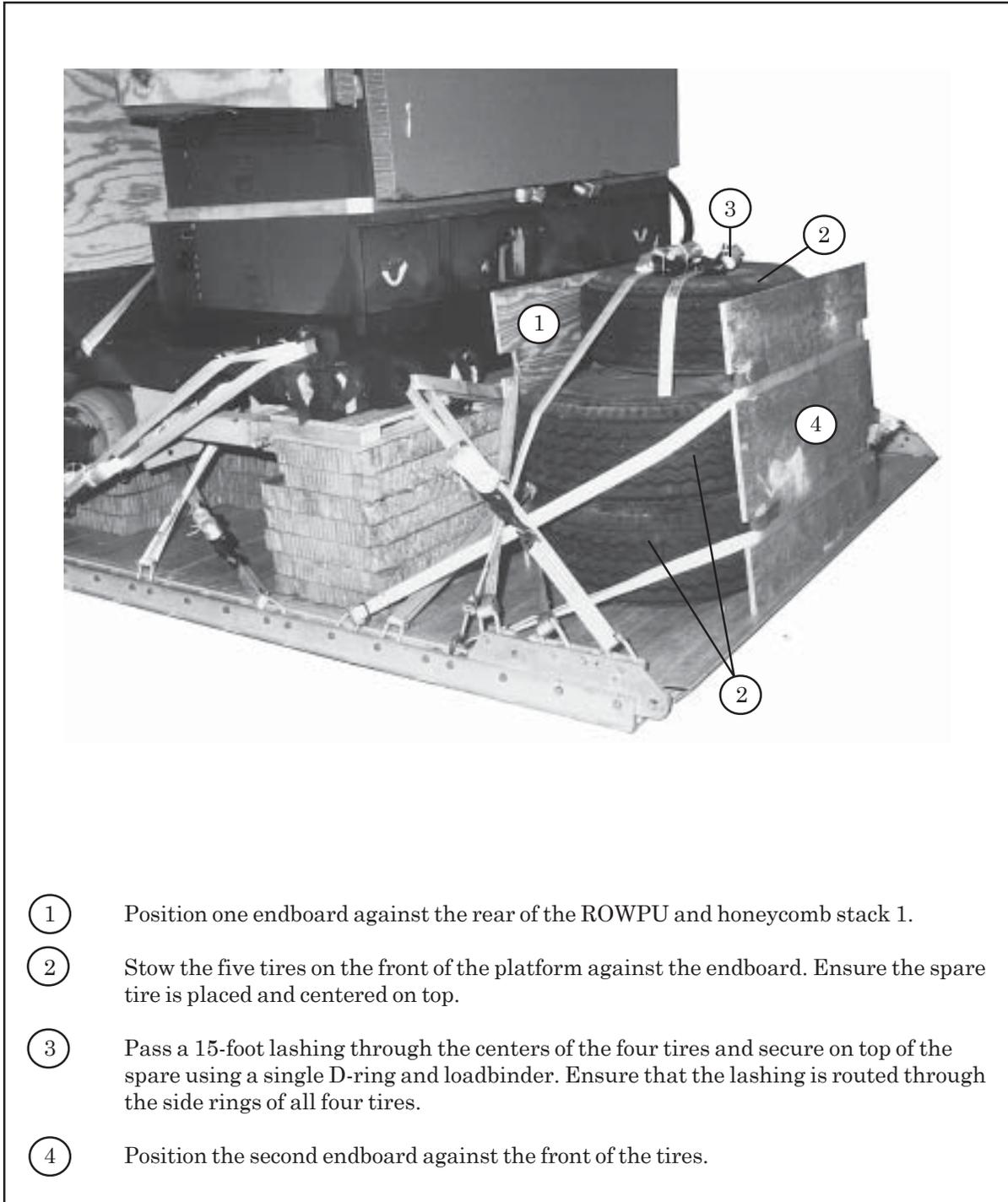
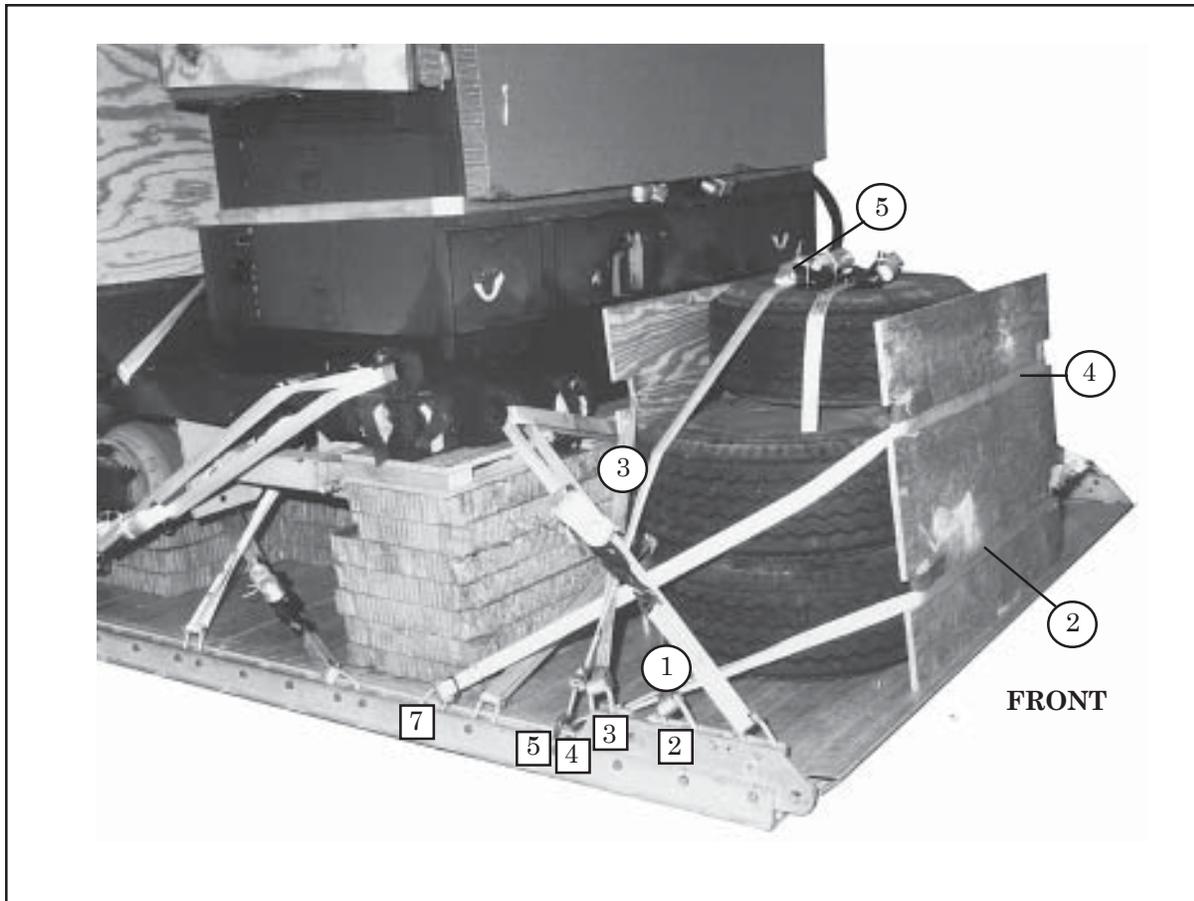


Figure 1-29. Endboards Positioned and Tires Stowed

c. Lash the tires as shown in Figure 1-30.



Lashing Number	Tiedown Clevis Number	Instructions
1	2 to 2A	Pass lashing through: Its own D-ring through the rear bottom cutouts to clevis 2A.
2	4 to 4A	Its own D-ring through the front bottom cutouts to clevis 4A.
3	3 to 3A	Its own D-ring through the rear top cutouts to clevis 3A.
4	7 to 7A	Its own D-ring through the front top cutouts to clevis 7A.
5	5 to 5A	Clevis 5 and its own D-ring and run over the top of the tire. Pass second lashing through clevis 5A and its own D-ring and run over the top of the tires. Secure to lashing from clevis 5 on top of the tires with two D-rings and a loadbinder.

Figure 1-30. Lashings 1 through 5 Installed

PREPARING, CONSTRUCTING AND POSITIONING PARACHUTE STOWAGE PLATFORM

1-8. Prepare the honeycomb stacks for the parachute stowage platform as shown in Figure 1-31. Construct the parachute stowage platform as shown in Figure 1-32. Lash the parachute stowage platform as shown in Figure 1-33.

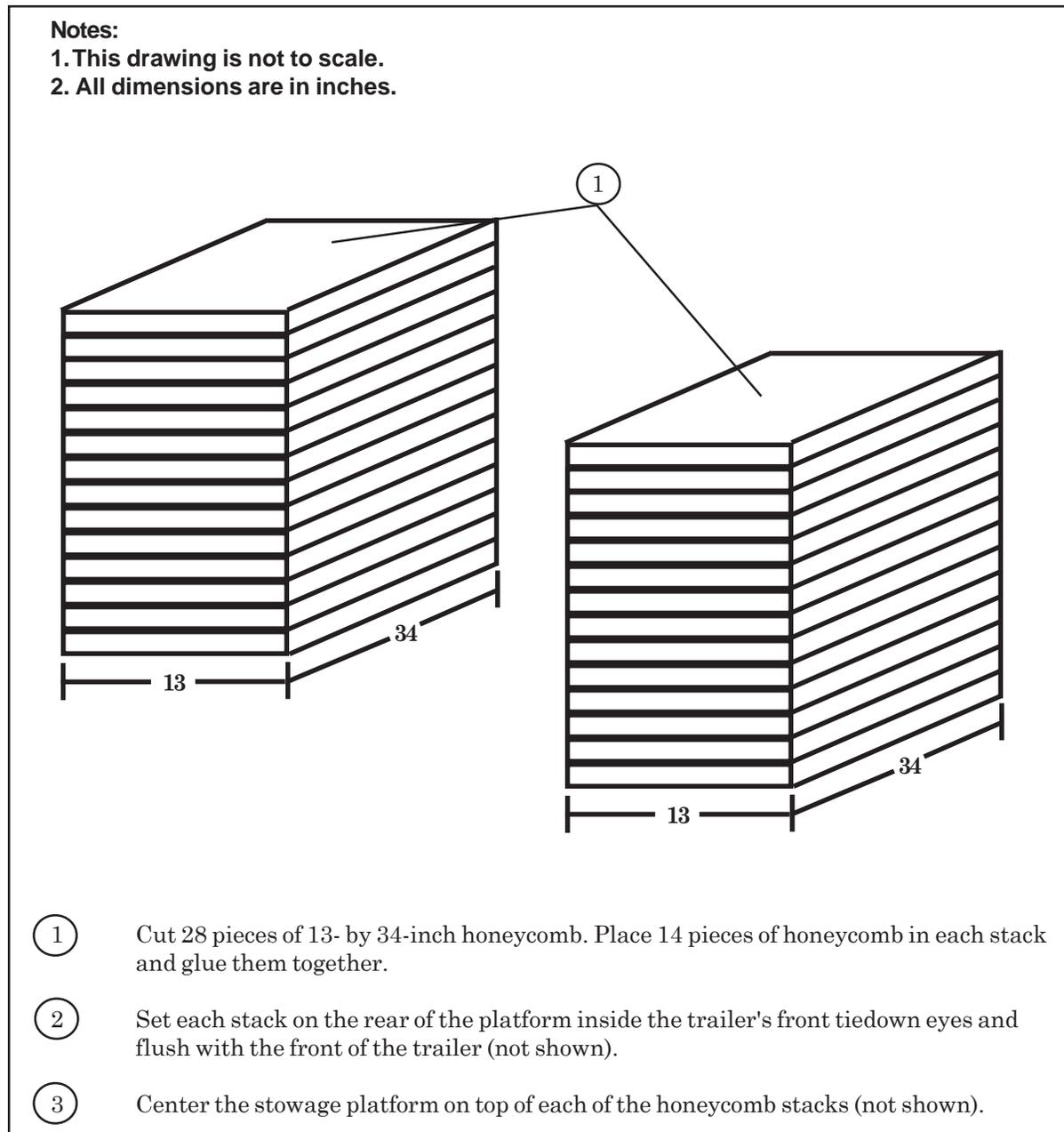
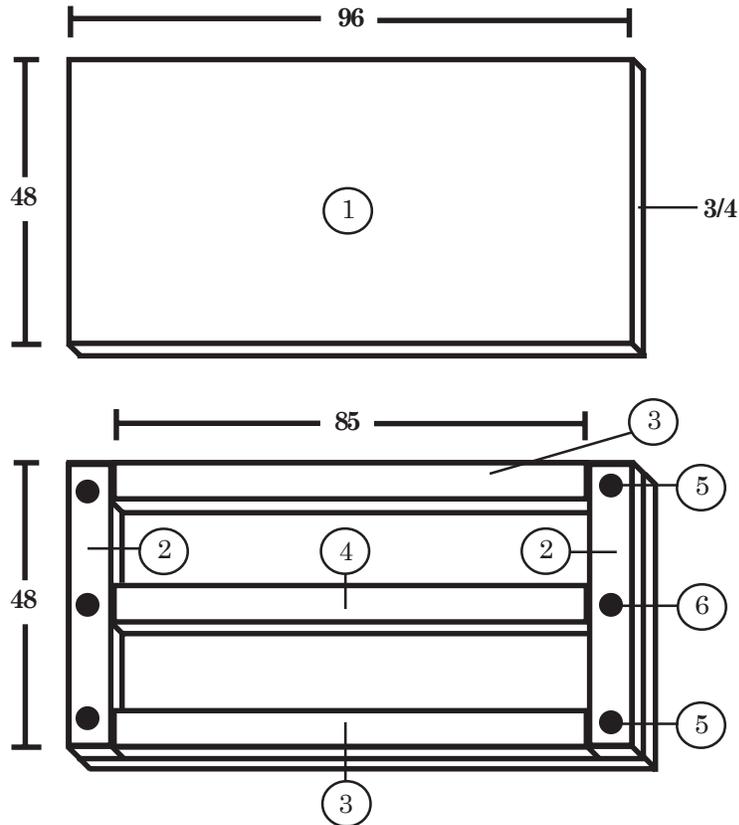


Figure 1-31. Honeycomb Stacks for Parachute Platform Prepared

Notes:

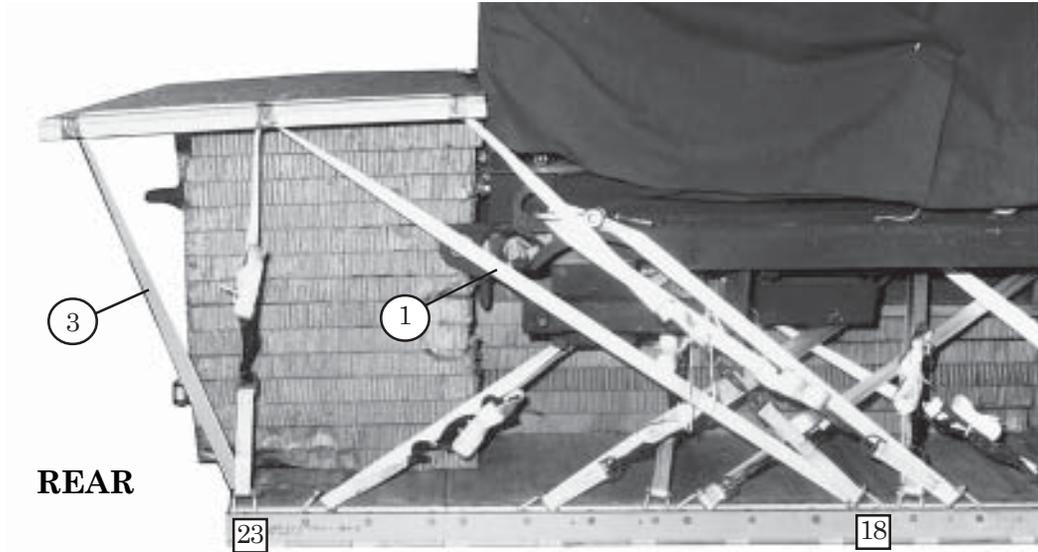
1. This drawing is not to scale.
2. All dimensions are in inches.
3. All nailing is done from the plywood side to maintain a smooth surface using 8d nails.



- ① Start construction of the parachute stowage platform using a 3/4- by 48- by 96-inch piece of plywood.
- ② Nail a 2- by 6- by 48-inch piece of lumber along each 48-inch side of the plywood.
- ③ Nail a 2- by 6- by 85-inch piece of lumber along each 96-inch side of the plywood.
- ④ Center a 2- by 6- by 85-inch of lumber between the other two 2- by 6- by 85-inch pieces of lumber and nail it to the plywood.
- ⑤ Drill 2-inch holes 3 inches from each corner.
- ⑥ Drill one 2-inch hole centered between the corner holes on each 48-inch side of the plywood.

Figure 1-32. Parachute Stowage Platform Constructed

Note: Tape all cutouts in the stowage platform prior to routing lashings.



Lashing Number	Tiedown Clevis Number	Instructions
1	18	Pass lashing through: Clevis 18, up through the right center hole, down through the right front hole. Secure with a D-ring and loadbinder.
2	18A	Repeat for the left side using clevis 18A.
3	23	Clevis 23, up through the right rear hole, down through the right center hole. Secure with a D-ring and loadbinder.
4	23A	Repeat for the left side using clevis 23A.

Figure 1-33. Parachute Stowage Platform Constructed

INSTALLING LOAD COVER, SUSPENSION SLINGS AND SAFETY TIE

1-9. Cover the load, install the suspension slings and safety tie as shown in Figure 1-34.

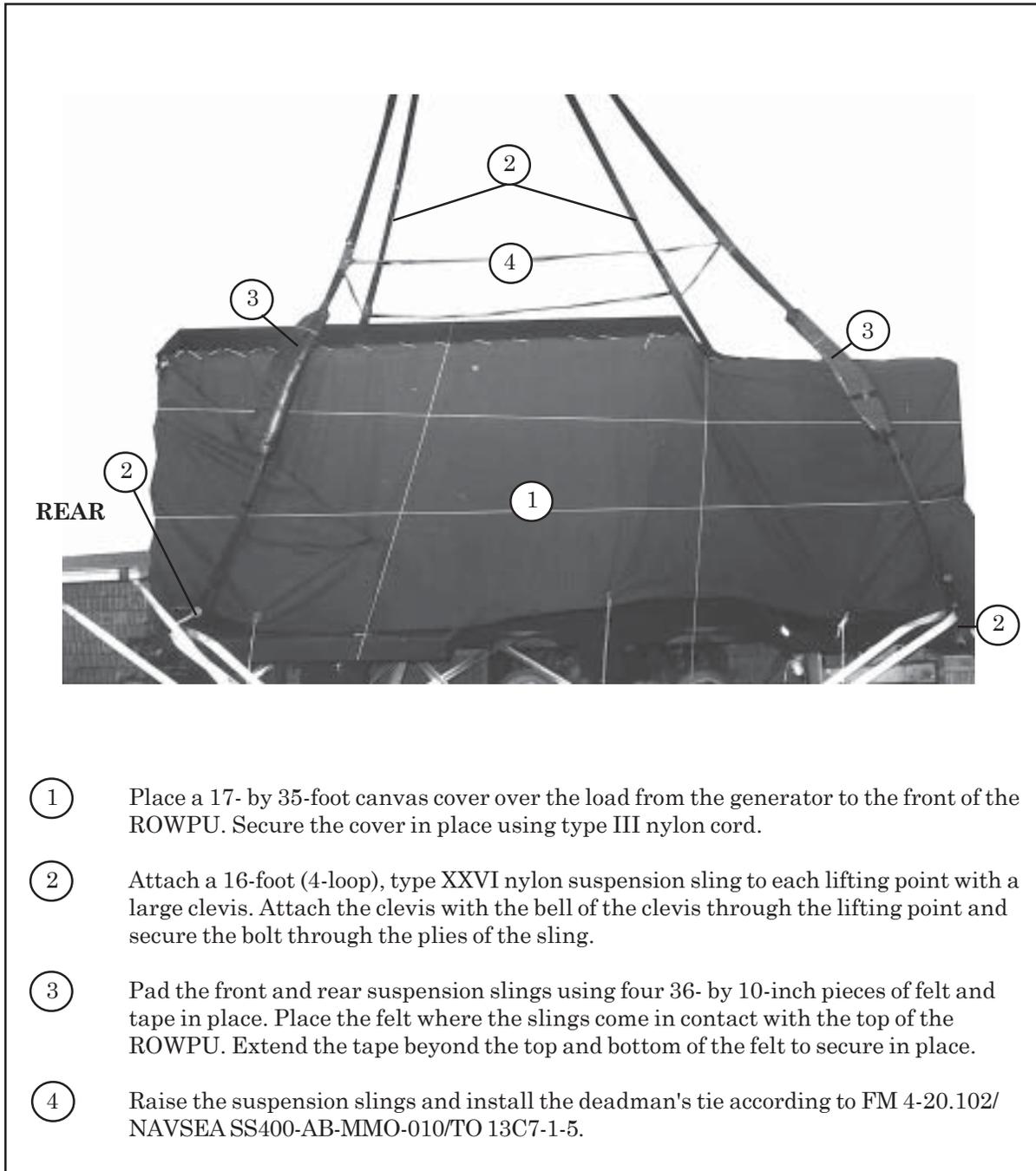


Figure 1-34. Load Cover, Suspension Slings and Safety Tie Installed

PREPARING AND STOWING CARGO PARACHUTES

1-10. Prepare and stow the cargo parachutes as shown in Figure 1-35.

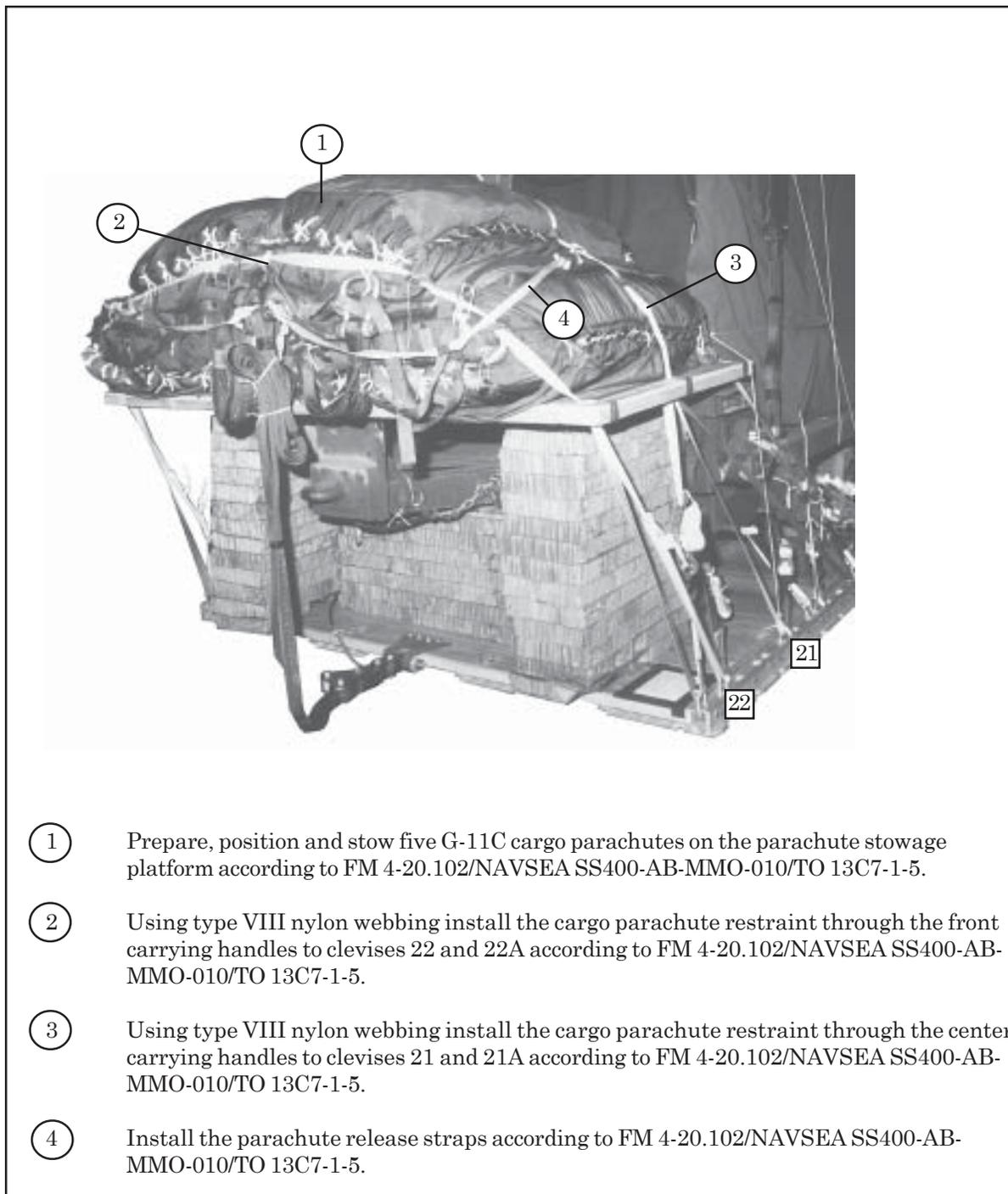
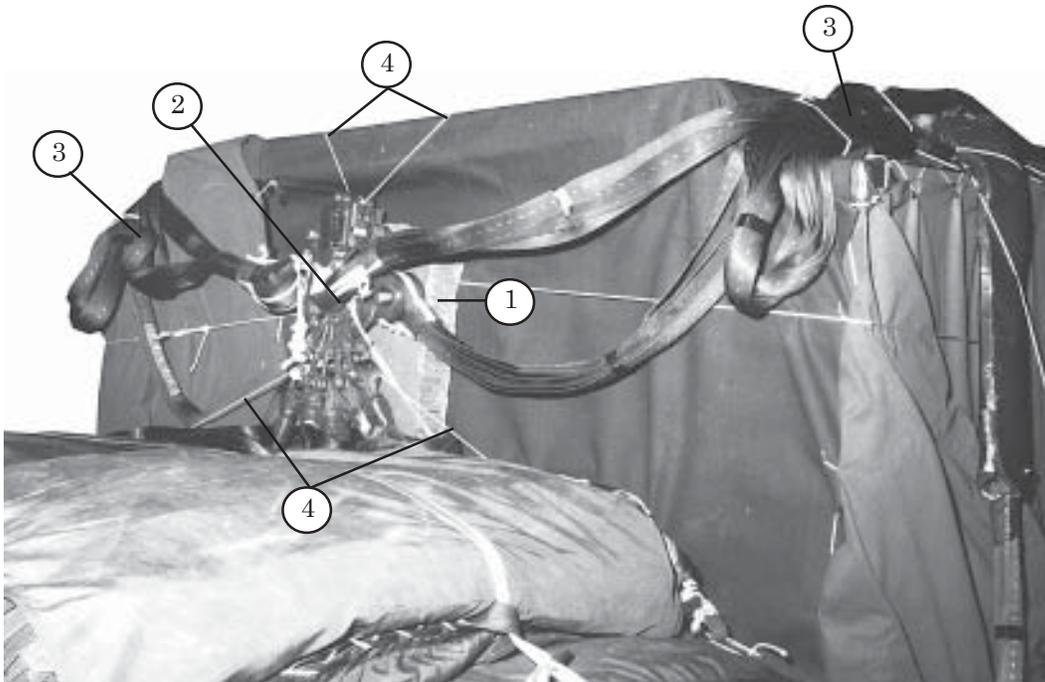


Figure 1-35. Cargo Parachutes Prepared and Stowed

INSTALLING THE RELEASE SYSTEM

1-11. Prepare, attach and safety an M-2 cargo parachute release according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO13C7-5-1 and as shown in Figure 1-36.



- ① Center a 24- by 24-inch piece of honeycomb on the front of the ROWPU. Tape the edges of the honeycomb and secure using type III cord.
- ② Prepare and install the M-2 cargo parachute release according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Center the assembly on top of honeycomb.
- ③ S-fold and tie any excess in the suspension slings using one turn single type I, 1/4-inch cotton webbing.
- ④ Safety the M-2 cargo parachute release to a convenient point on the load using type III nylon cord according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

Note: All slings must be safetied in such a manner as not to increase the height of the load.

Figure 1-36. Cargo Parachute Release Installed

INSTALLING THE EXTRACTION SYSTEM

1-12. Install the extraction system as shown in Figure 1-37.

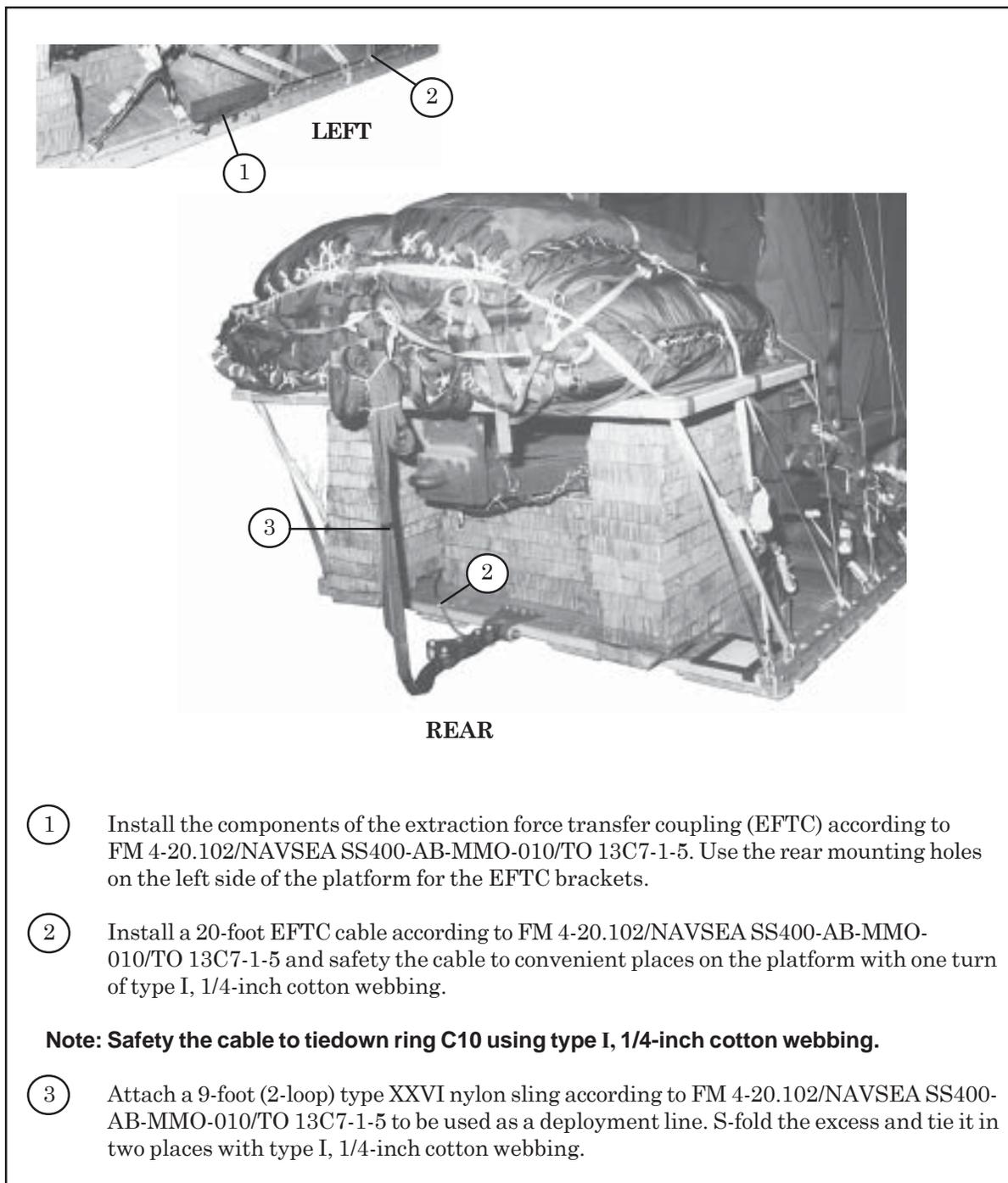


Figure 1-37. Extraction System Installed

PLACING EXTRACTION PARACHUTE

1-13. 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

1-14. 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

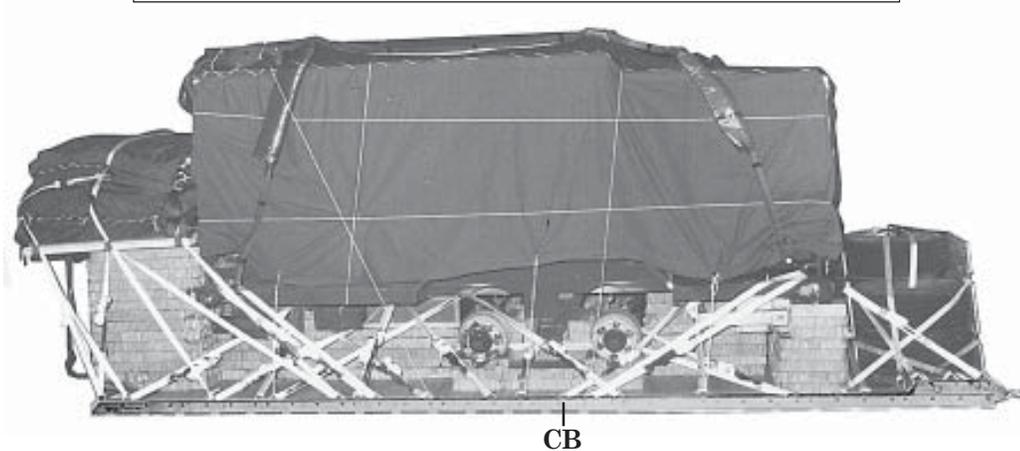
1-15. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and as shown in Figure 1-38. Complete Shipper's Declaration for Dangerous Goods. If the load varies from the one shown, the weight, height, center of balance (CB) and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

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

CAUTION

Make the final rigger inspection required by AR 59-4/OPNAVINST 4630.24C/AFJ 13-210(I)/MCO 13480.1B and FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



NOTICE OF EXCEPTION

The height limitation of this load is greater than what is authorized in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO13C7-1-5. The overall rigged height of the 600-GPH ROWPU will not exceed 101 inches for a distance of not more than 40 inches aft of the CB. All high points should be verified each time this load is placed on the aircraft. An exception to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 is granted. The procedures in this paragraph must be followed.

RIGGED LOAD

Weight:	Load shown:	21,780 pounds
	Maximum weight:	23,030 pounds
Height:	.....	101 inches
Width:	.....	108 inches
Length:	.....	275 inches
Overhang:		
	Front:	5 inches
	Rear:	35 inches
CB (from front edge of platform):	.....	130 inches

Figure 1-38. Reverse Osmosis Water Purification Unit (ROWPU) Rigged on a 20-Foot, Type V Platform for Low-Velocity Airdrop

Table 1-1. Equipment Required for Rigging a Reverse Osmosis Water Purification Unit (ROWPU) on a 20-Foot, Type V Platform for Low-Velocity Airdrop

National Stock Number	Items	Quantity
8040-00-273-8713	Adhesive paste, 1-gallon	As required
4030-00-678-8562	Clevis, 3/4-inch medium	6
4030-00-090-5354	Clevis, 1-inch large	7
4020-00-240-2146	Cord, nylon, type III, 550-lb.	As required
1670-00-434-5783	Coupling, airdrop extraction force transfer, w 20-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) (for C-130)	1
1670-01-183-2678	Leaf, extraction line (line bag) (for C-17)	2
1670-00-003-4391	Knife, parachute bag (for C-17)	1
	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-17)	1
1670-01-064-4452	60-foot (1-loop), type XXVI (for C-17), (drogue line)	1
	Link assembly:	
1670-01-493-6420	Two-point, 5 1/2-in (for C-130 and C-17)	2
1670-01-493-6418	Two-point, 3 3/4-in (for C-17), drogue line	1
	Lumber:	
5510-00-220-6146	2- by 4- by 96-in	As required
5510-00-220-6148	2- by 6-in	As required
5510-00-220-6246	2- by 8-in	As required
5530-00-618-8073	Plywood, 3/4-in	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-in	40 sheets
	Parachute:	
	Cargo:	
1670-01-016-7841	G-11C	5

Table 1-1. Equipment Required for Rigging a Reverse Osmosis Water Purification Unit (ROWPU) on a 20-Foot, Type V Platform for Low-Velocity Airdrop (Continued)

National Stock Number	Items	Quantity
1670-00-040-8135	Parachute, cargo extraction: 28-ft (for C-130)	1
1670-00-040-8135	28-ft. (for C-17)	1
1670-00-063-3715	15-ft. (for C-17),(drogue parachute)	1
1670-01-162-2372	Platform, airdrop, type V, 20-ft: Clevis assembly	46
1670-01-353-8424	Extraction bracket assembly	1
1670-01-162-2381	Tandem link assembly (multipurpose link)	2
1670-01-097-8817	Release, cargo parachute, M-2	1
1670-01-062-6304	Sling, cargo, airdrop: 9-ft. (2-loop), type XXVI	1
1670-01-062-6308	16-ft. (4-loop), type XXVI	4
1670-01-062-6311	120-ft. (2-loop), type XXVI	5
1670-01-062-6301	3-ft. (2-loop), type XXVI	2
1670-00-040-8219	Strap, parachute release, multicut	2
7510-00-266-5016	Tape, adhesive, 2-in	As required
8305-00-433-5986	Textile; Cloth, cotton muslin, type III (for C-17)	As required
8310-00-917-3945	Thread, cotton, ticket no 8/7 (for C-17)	As required
1670-00-937-0271	Tiedown assembly, 15-ft.	60
1670-01-483-8259	Towplate release mechanism (h-block) (C-17 only)	1
8305-00-268-2411	Webbing: 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

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CHAPTER 2

RIGGING LIGHTWEIGHT WATER PURIFIER (LWP) ON A 12-FOOT, TYPE V PLATFORM FOR LOW-VELOCITY AIRDROP

DESCRIPTION OF LOAD

2-1. The lightweight water purifier (Figure 2-1) is rigged on a 12-foot, type V platform. The lightweight water purifier consists of equipment as shown in Figure 2-1. The total weight of the lightweight water purifier is approximately 2,052 pounds. The total rigged weight of the load is 6,140 pounds. The load is 92 inches high, 108 inches wide, 144 inches long, and the center of balance is 70 inches from the front edge of the platform. 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

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

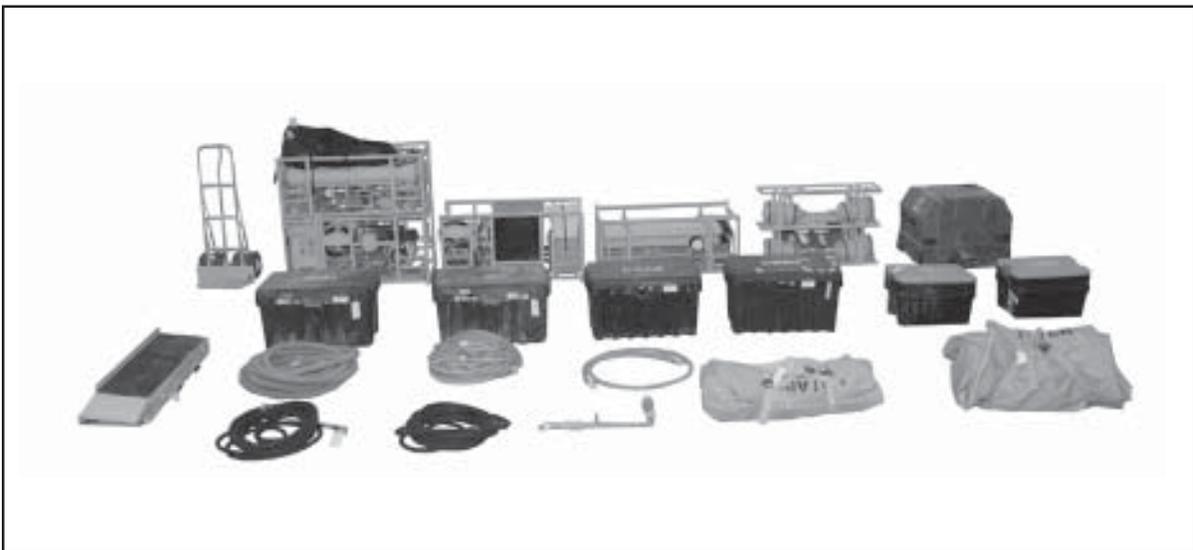


Figure 2-1. Lightweight Water Purifier (LWP)

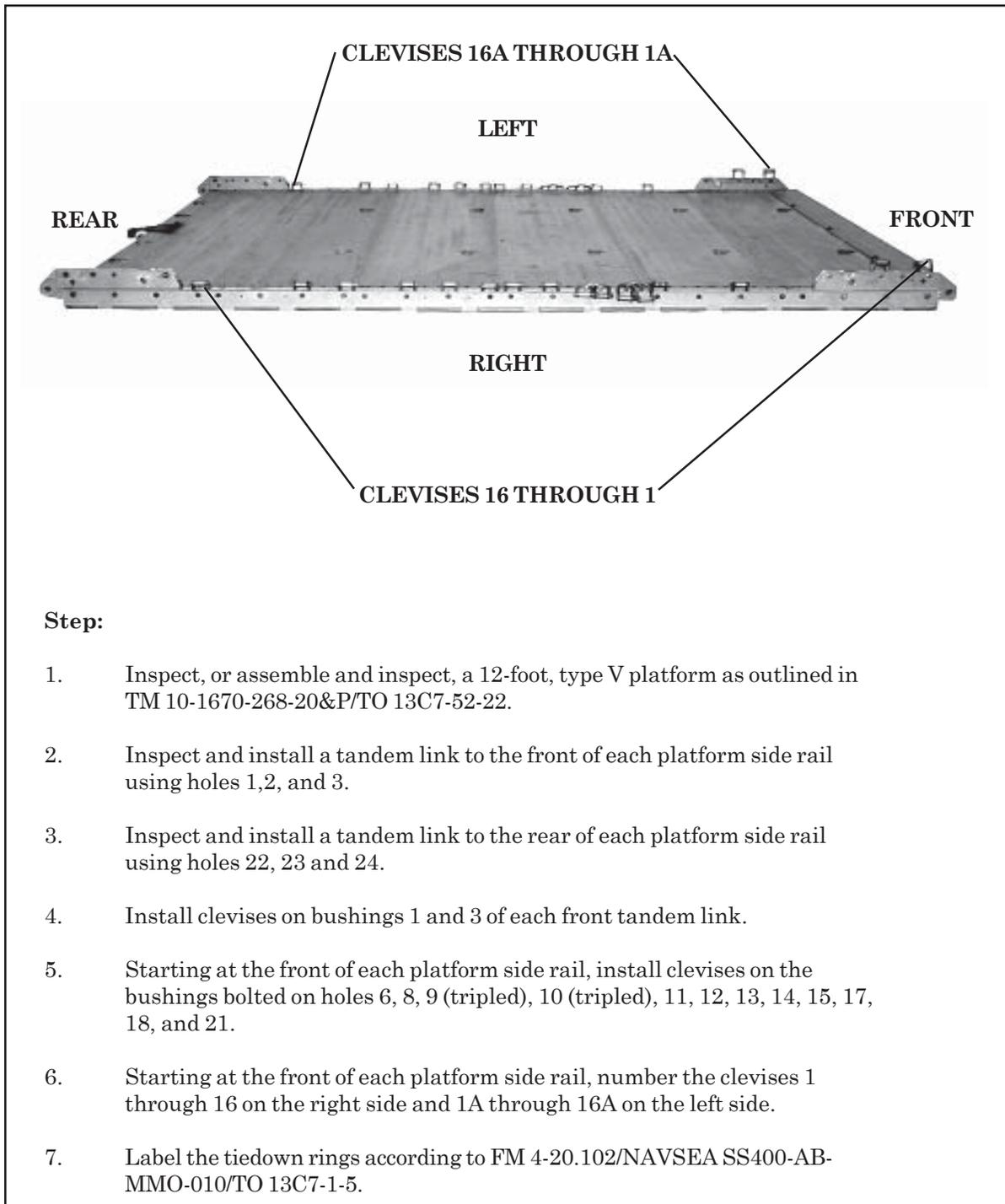


Figure 2-2. Platform Prepared

PREPARING AND PLACING HONEYCOMB STACK 1

2-3. Prepare honeycomb stack 1 as shown in Figure 2-3. Position stack 1 as shown in Figure 2-4.

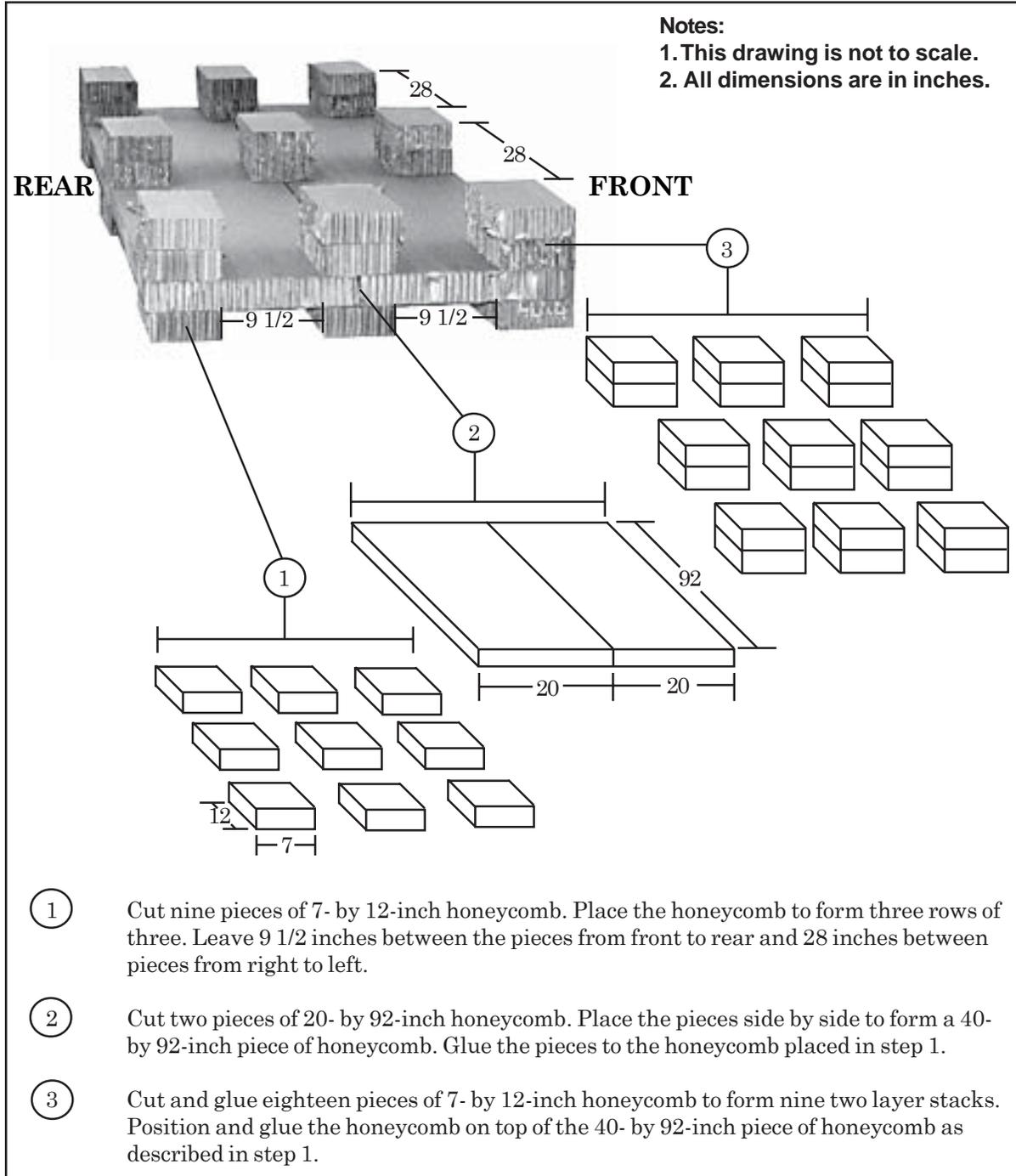


Figure 2-3. Honeycomb Stack 1 Prepared

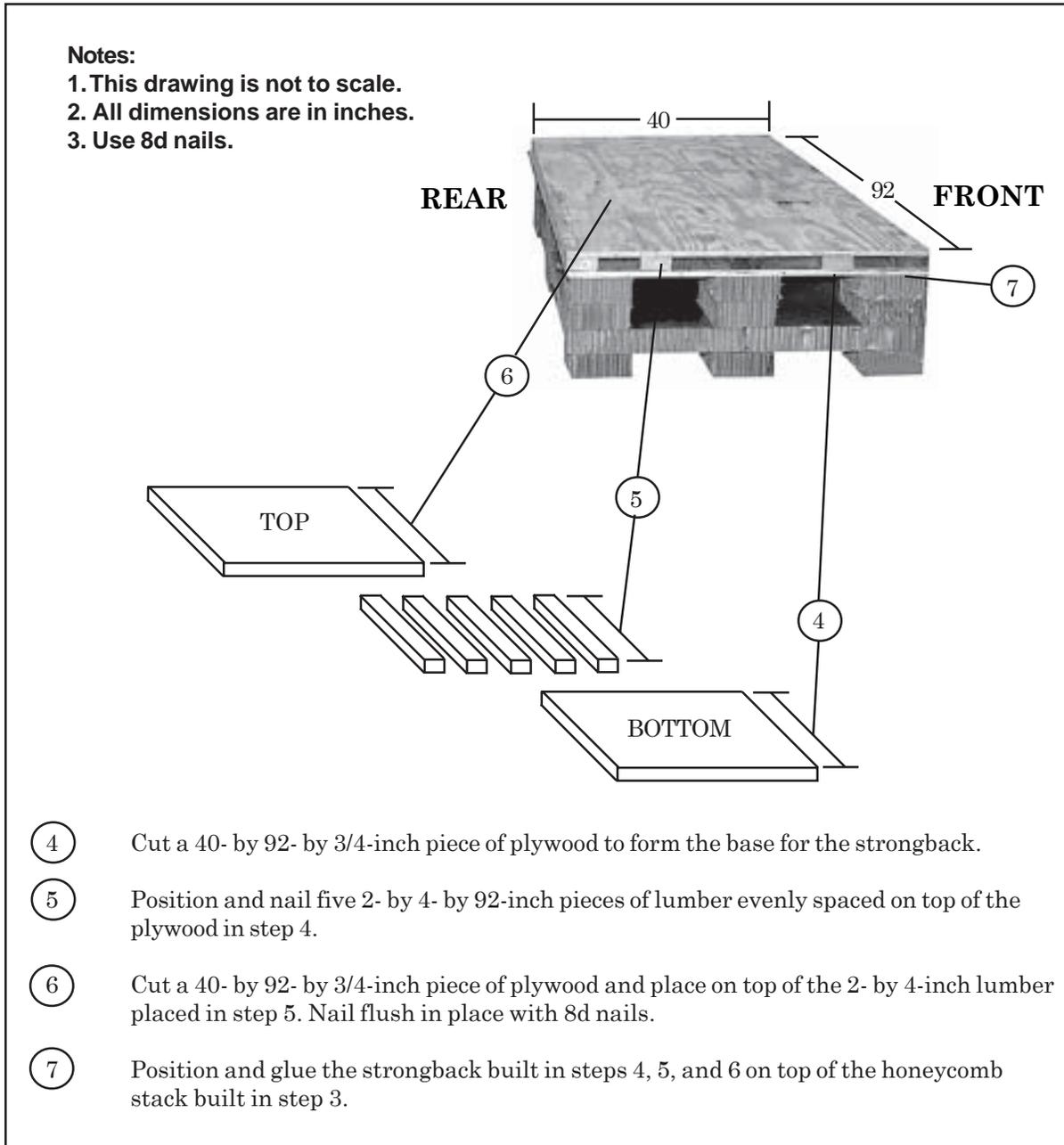
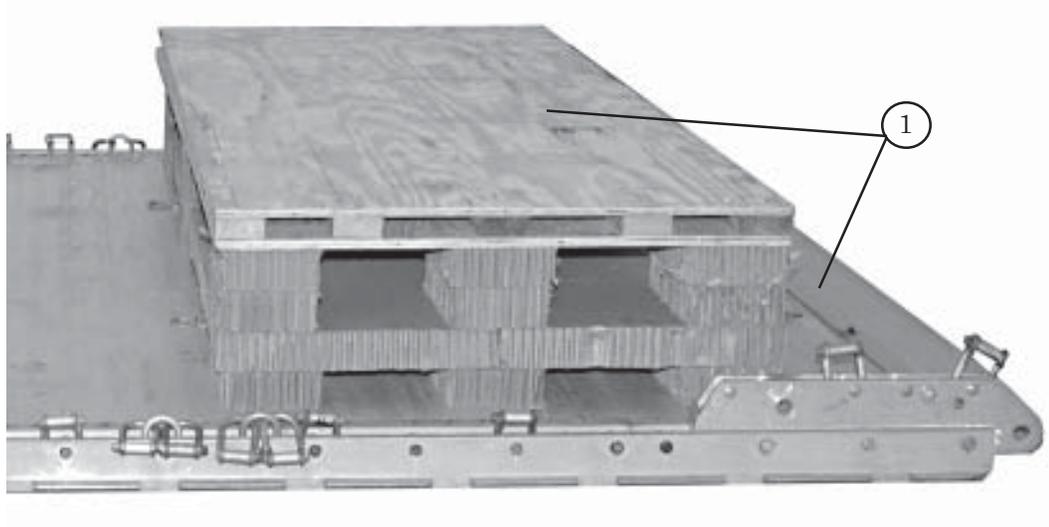


Figure 2-3. Honeycomb Stack 1 Prepared (Continued)



- ① Position the front edge of stack one 13 inches from the front edge of the platform and centered.

Figure 2-4. Honeycomb Stack 1 Positioned on Platform

CONSTRUCTING AND POSITIONING EQUIPMENT BOX 1

2-4. Construct the individual components of equipment box 1 as shown in Figures 2-5 and 2-6. Assemble and position equipment box 1 as shown in Figure 2-7.

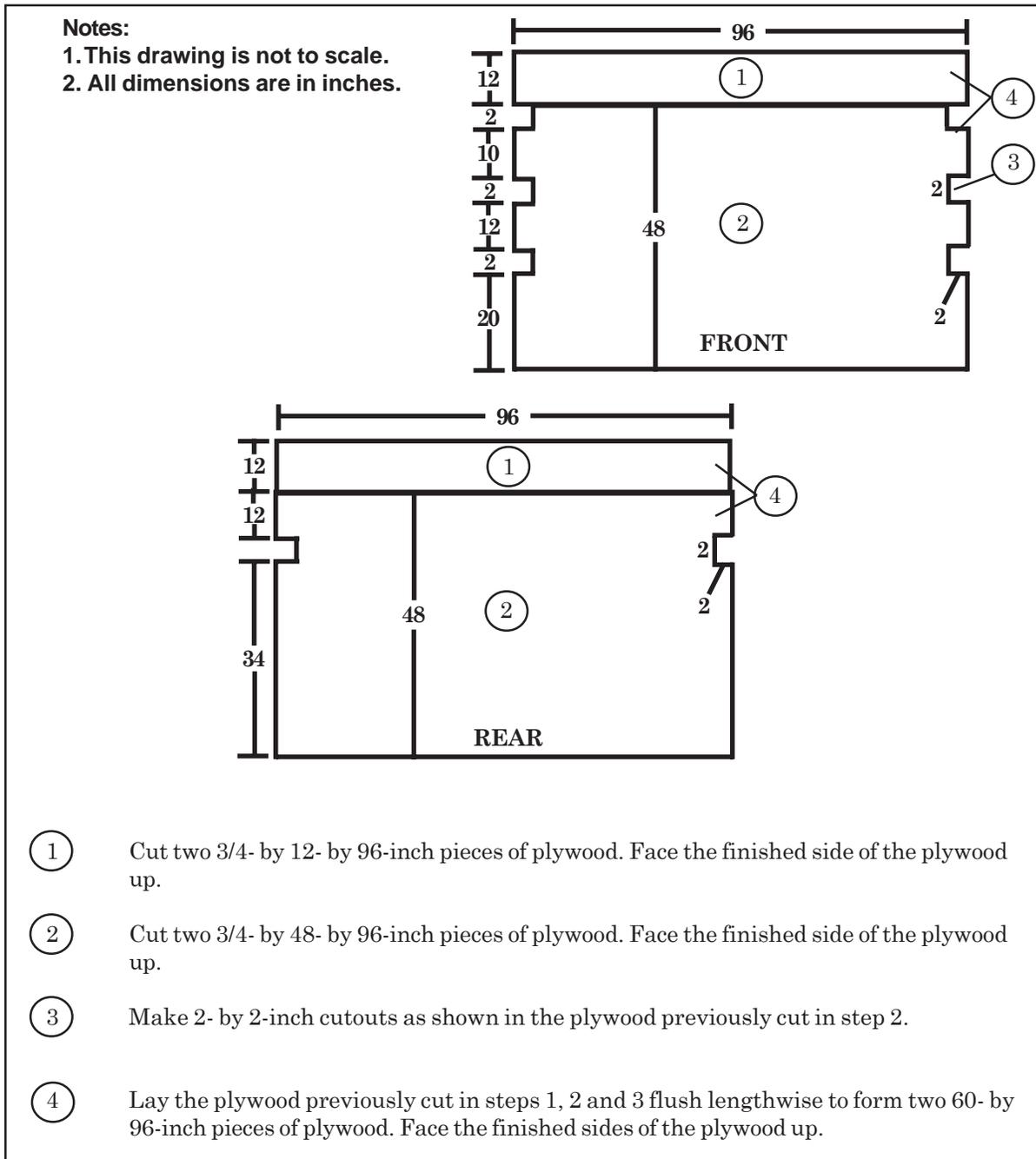


Figure 2-5. Equipment Box 1 Front and Rear Constructed

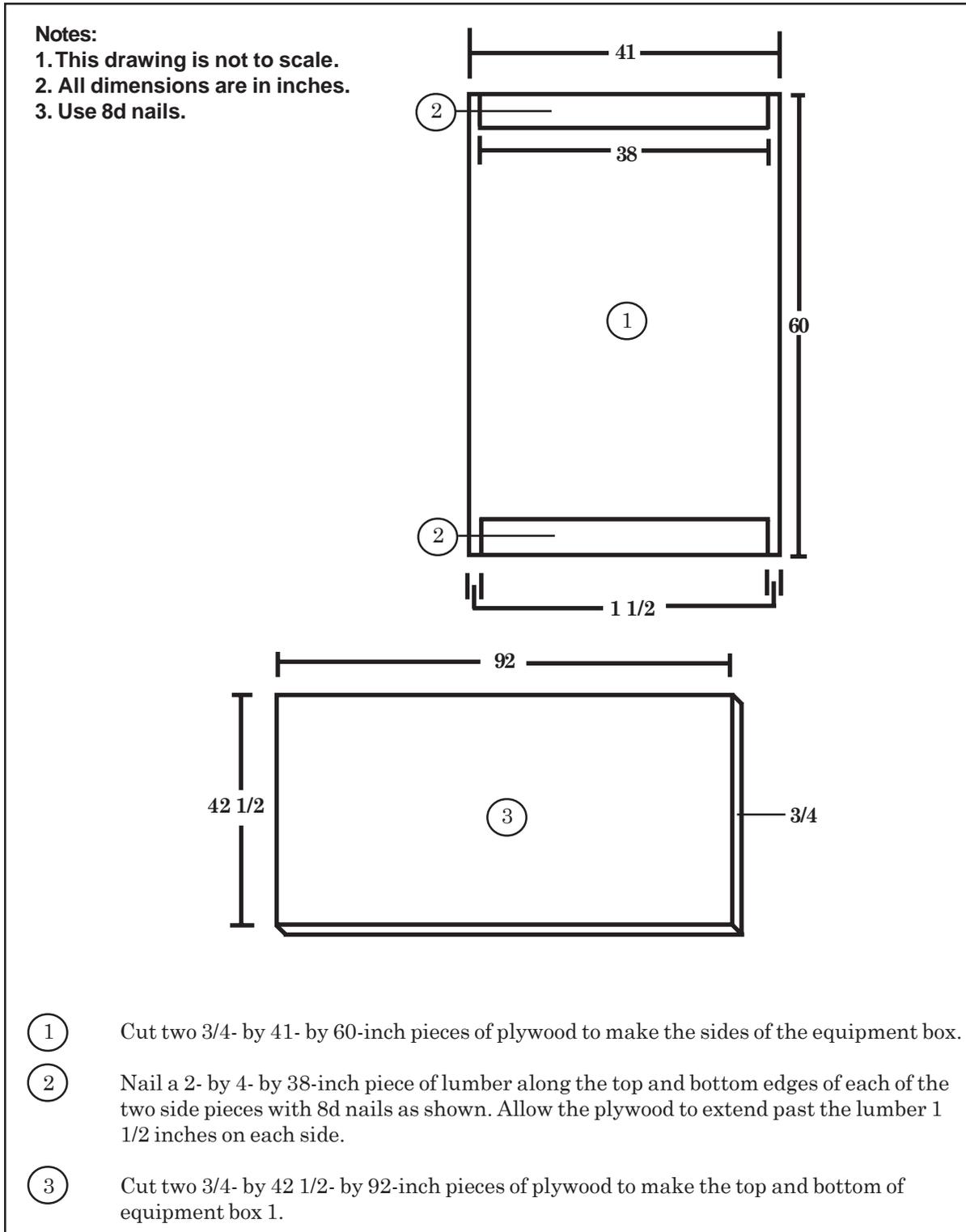


Figure 2-6. Equipment Box 1 Sides, Top and Bottom Constructed

Notes:
 1. This drawing is not to scale.
 2. Use 8d nails.

Note: The side boards are transparent for clarity during construction.

- 1 Assemble the box. When positioning the ends, ensure that the 20-inch cutout is positioned at the front bottom and the 34-inch cutout is positioned at the rear bottom portion of the box.
- 2 Nail the pieces positioned in step 1 together with 8d nails through the sides of the box and into the vertical lumber pieces in the front and rear of the box.
- 3 Position and center the plywood for the bottom of the box on the horizontal lumber supports and nail in place with 8d nails.
- 4 Position and center equipment box 1 on top of honeycomb stack 1 as shown.

Figure 2-7. Equipment Box 1 Partially Assembled and Positioned for Loading

PREPARING AND STOWING THE EQUIPMENT FOR EQUIPMENT BOX 1

2-5. Prepare the components for equipment box 1 and stow them in the container as described below.

- a. **PREPARING REVERSE OSMOSIS ELEMENT MODULE.** Prepare the reverse osmosis element module, and stow in the container as shown in Figure 2-8.

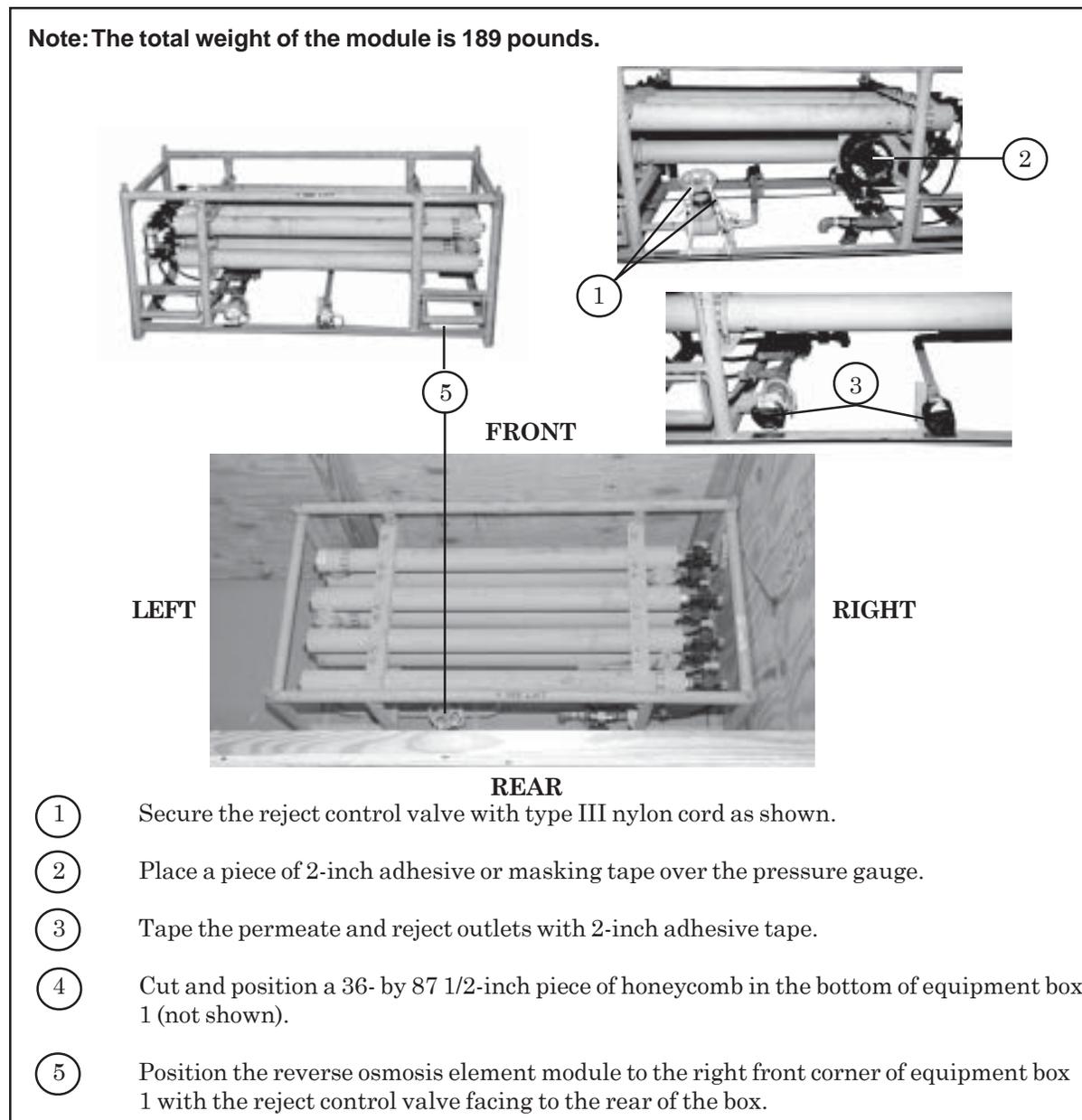


Figure 2-8. Reverse Osmosis Element Module Prepared and Stowed

b. PREPARING CHEMICAL INJECTION CLEANING MODULE.
 Prepare the chemical injection cleaning module and stow in the container as shown in Figure 2-9.

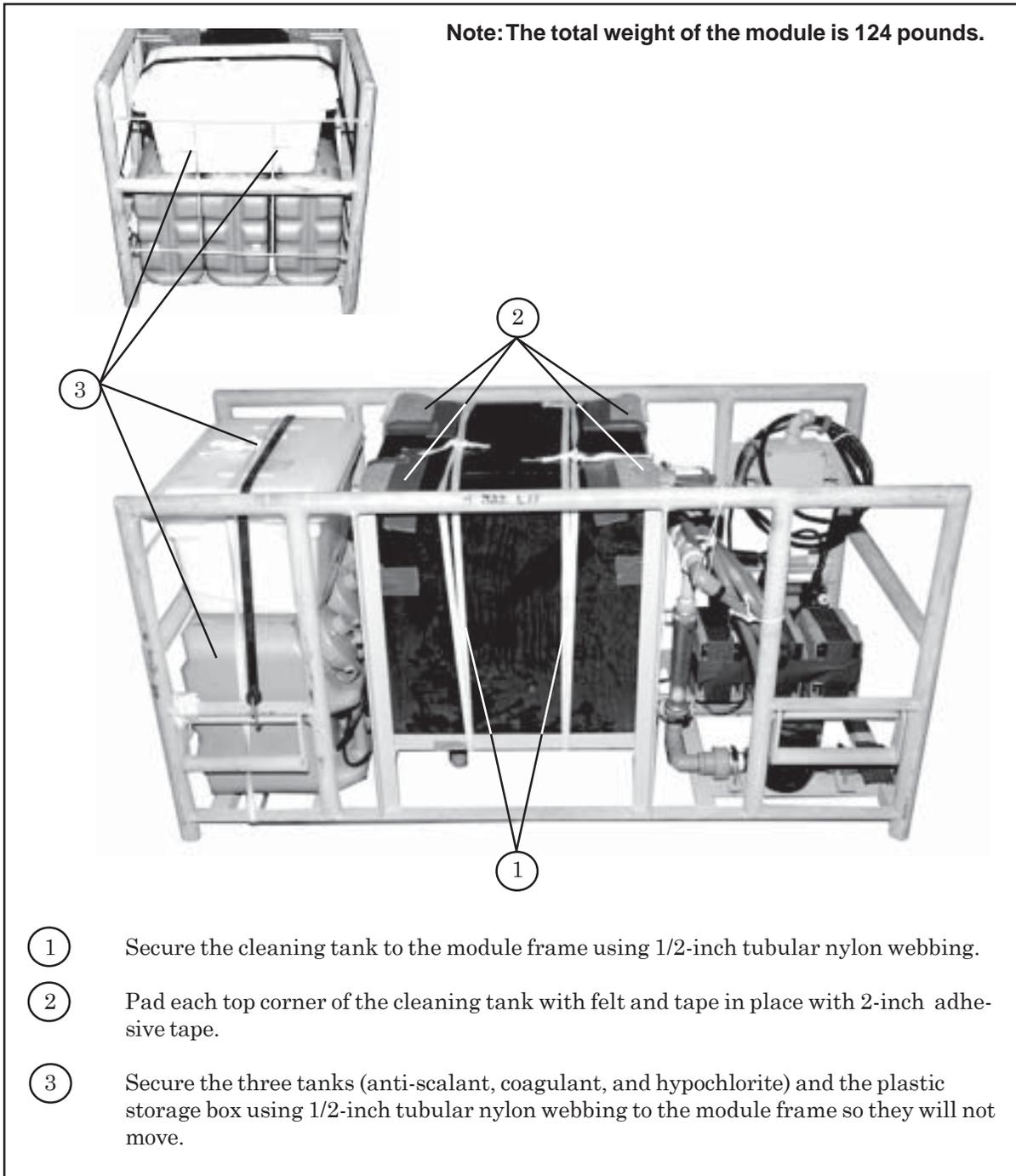


Figure 2-9. Chemical Injection Cleaning Module Prepared and Stowed

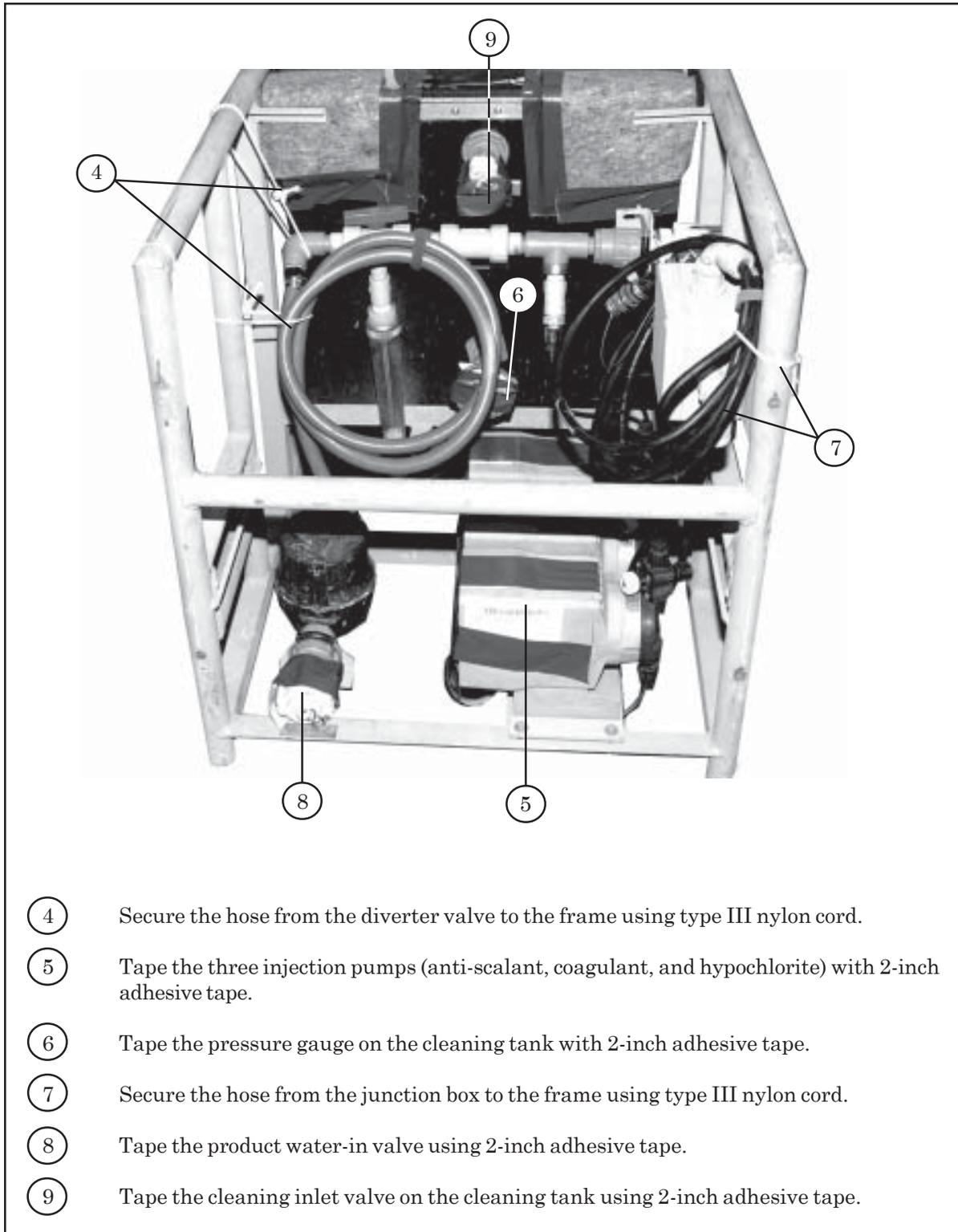
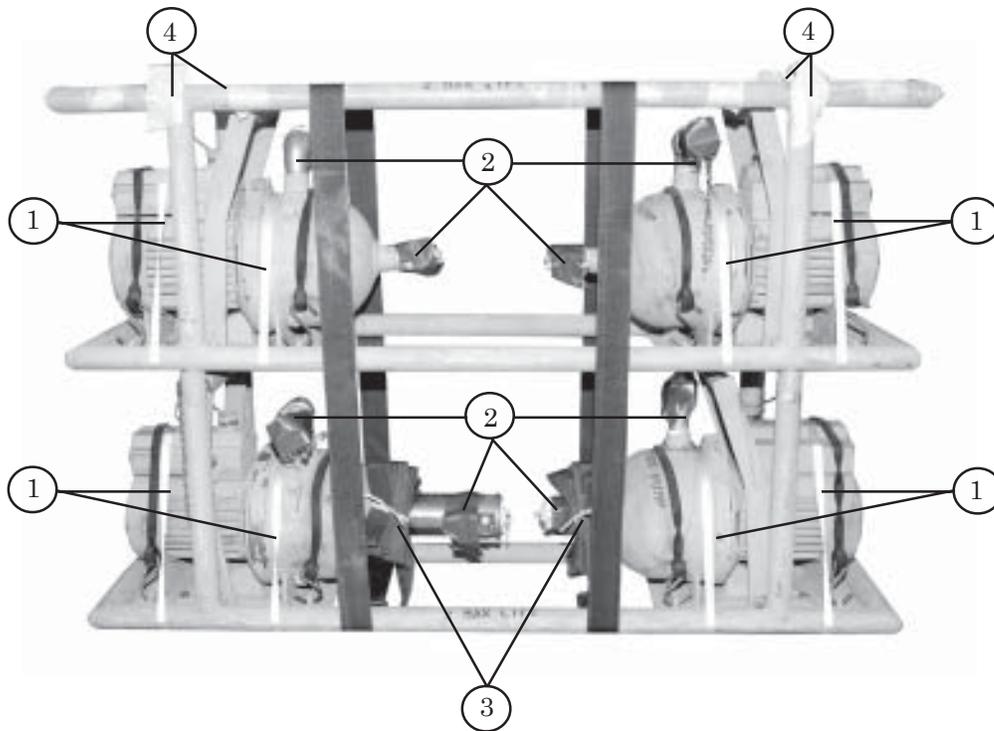


Figure 2-9. Chemical Injection Cleaning Module Prepared and Stowed (Continued)

- c. **PREPARING PUMP MODULE.** Prepare the pump module and stow in the container as shown in Figure 2-10.

Note: The total weight of the module is 152 pounds.



- ① Secure each individual pump to the module frame using two lengths of 1/2-inch tubular nylon webbing.
- ② Tape all valves with 2-inch adhesive tape.
- ③ Secure two A-7A straps vertically around the center of the module frame.

Note: Ensure the friction adapter of the A-7A strap is positioned at the bottom of the module frame and secure the excess webbing to the bottom inside valves using type I, 1/4-inch cotton webbing.

- ④ Tape the male portions of the frame using 2-inch masking tape.

Figure 2-10. Pump Module Prepared and Stowed

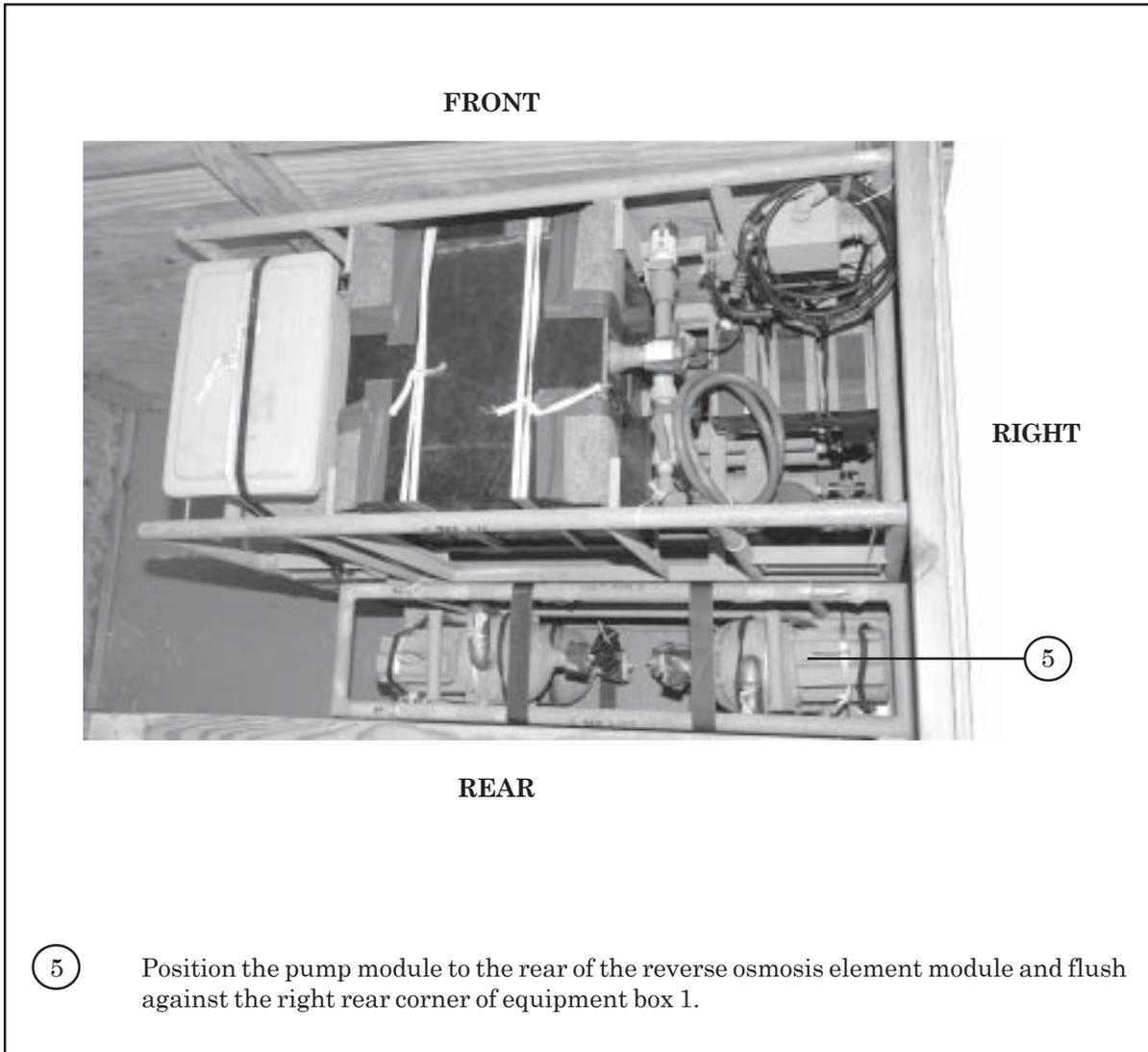


Figure 2-10. Pump Module Prepared and Stowed (Continued)

- d. **STOWING COLD WEATHER KIT 2 (CWK2) BOX AND COLD WEATHER KIT 3 (CWK3) BOX.** Stow the CWK2 box and the CWK3 box in the container as shown in Figure 2-11.

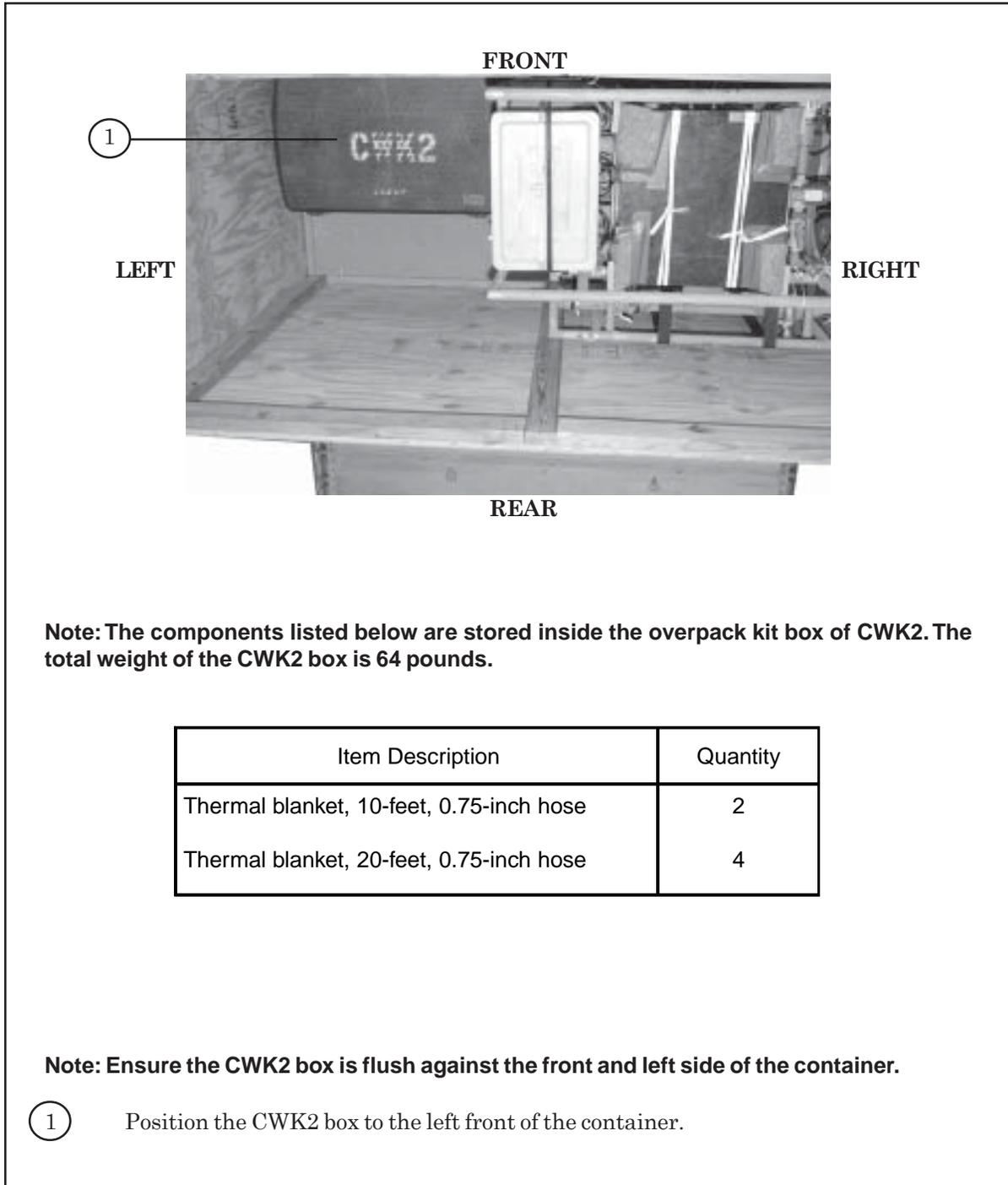


Figure 2-11. CWK2 Box and CWK3 Box Stowed

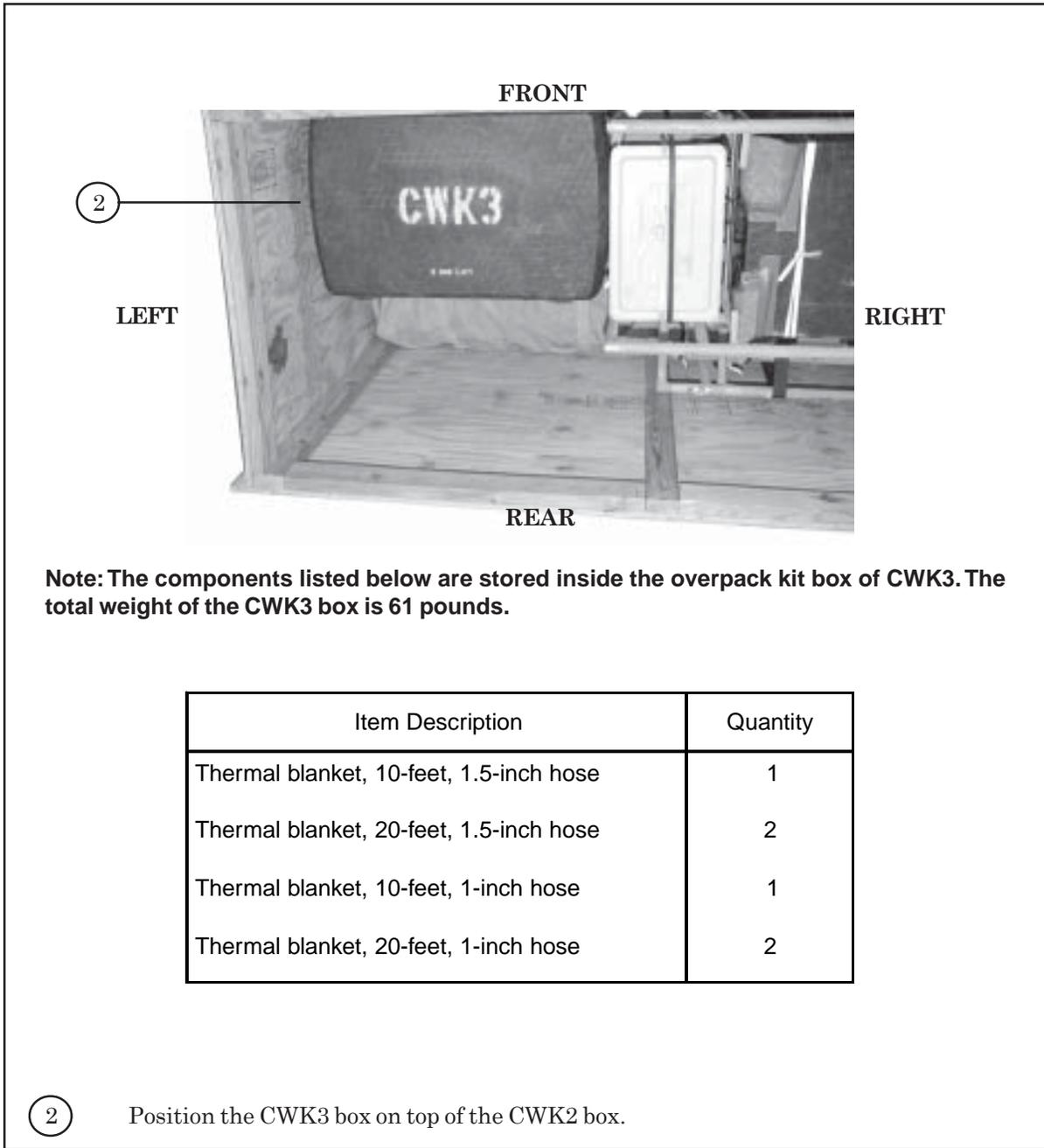
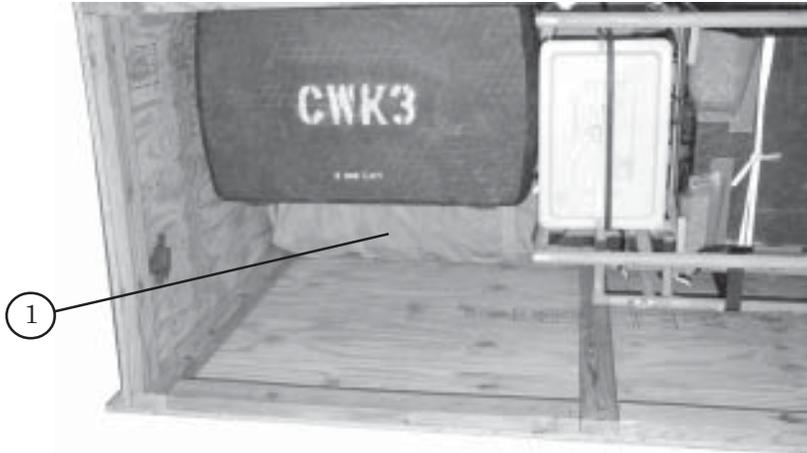


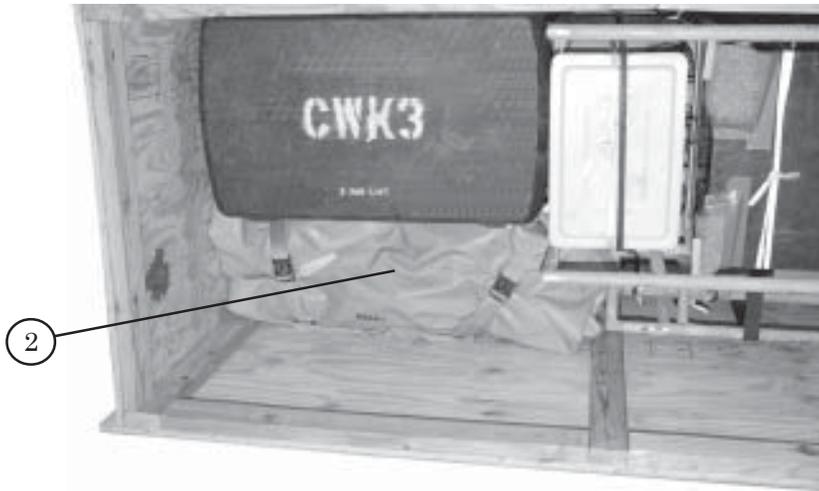
Figure 2-11. CWK2 Box and CWK3 Box Stowed (Continued)

- e. **STOWING 1,000-GALLON COLLAPSIBLE RAW WATER AND PRODUCT FABRIC TANKS.** Stow the 1,000-gallon collapsible raw water and product fabric tanks in the container as shown in Figure 2-12.

Note: The total weight of the 1,000-gallon collapsible raw water fabric tank is 59 pounds.



Note: The total weight of the 1,000-gallon collapsible product fabric tank is 50 pounds.



- ① Position the 1,000-gallon collapsible raw water fabric tank to the rear of the CWK2 box and the CWK3 box.
- ② Position the 1,000-gallon collapsible product fabric tank on top of the 1,000-gallon collapsible raw water fabric tank.

Figure 2-12. 1,000-Gallon Collapsible Raw Water and Product Fabric Tank Stowed

- f. **STOWING HIGH PRESSURE HOSE, BACKWASH HOSES, REJECT HOSES, TUBE RAW WATER HOSES AND PRODUCT WATER HOSES.** Stow the high pressure hose, backwash hoses, reject hoses, raw water hoses and product hoses in the container as shown in Figure 2-13.

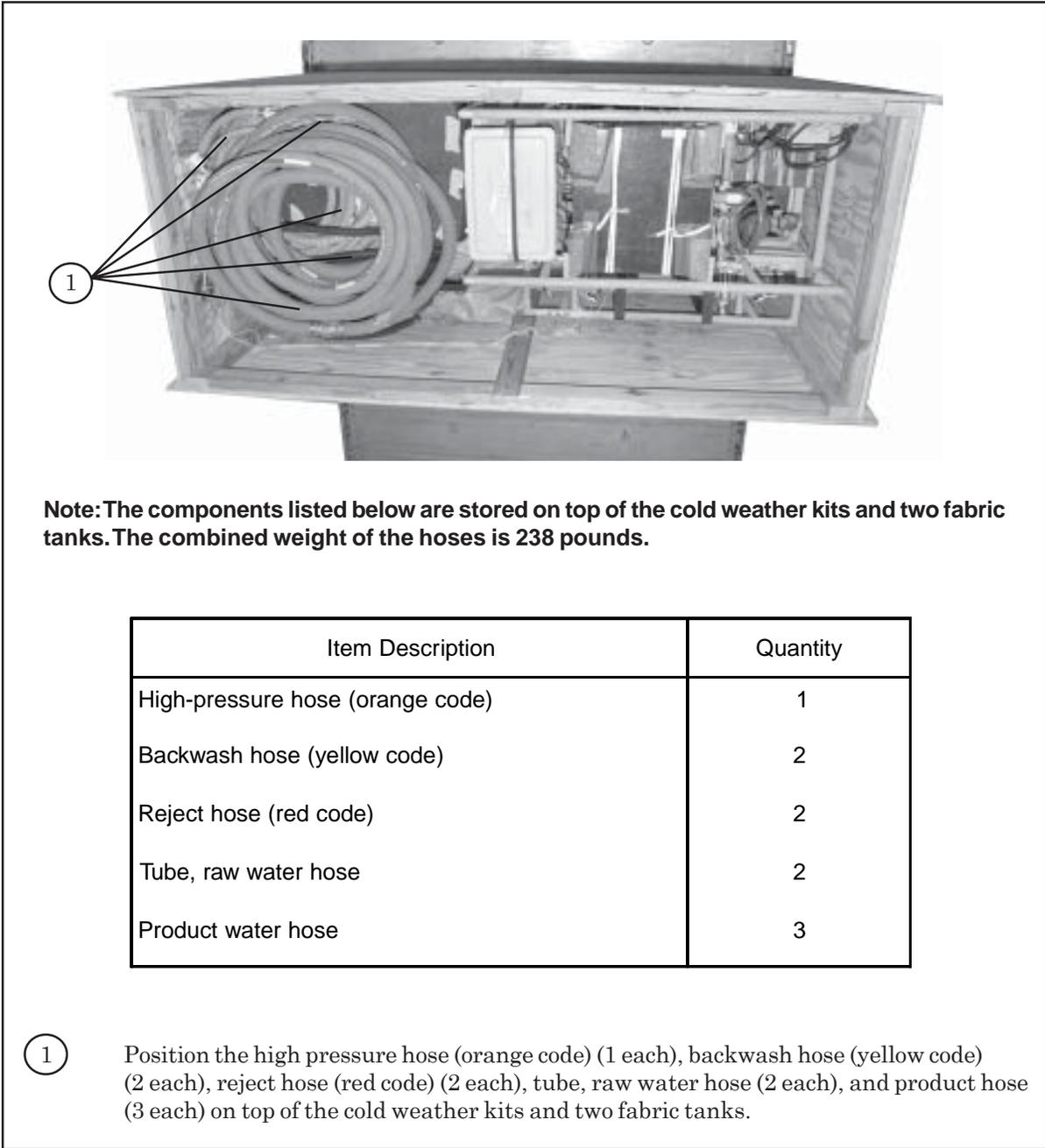


Figure 2-13. High Pressure Hose, Backwash Hoses, Reject Hoses, Tube Raw Water Hoses and Product Water Hoses Stowed

CLOSING AND SECURING EQUIPMENT BOX 1

2-6. Close and secure equipment box 1 as shown in Figure 2-14.

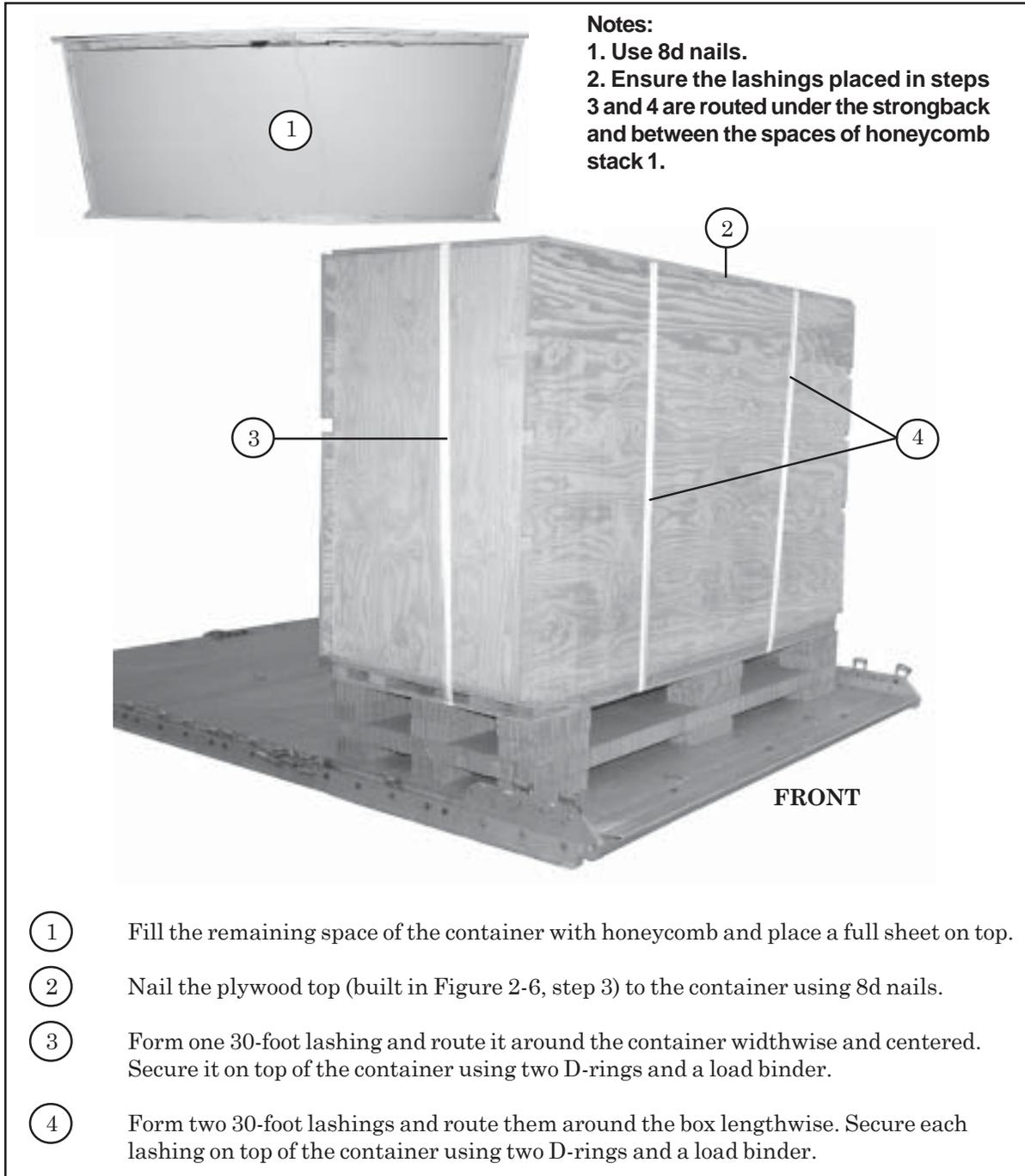


Figure 2-14. Equipment Box 1 Closed and Secured

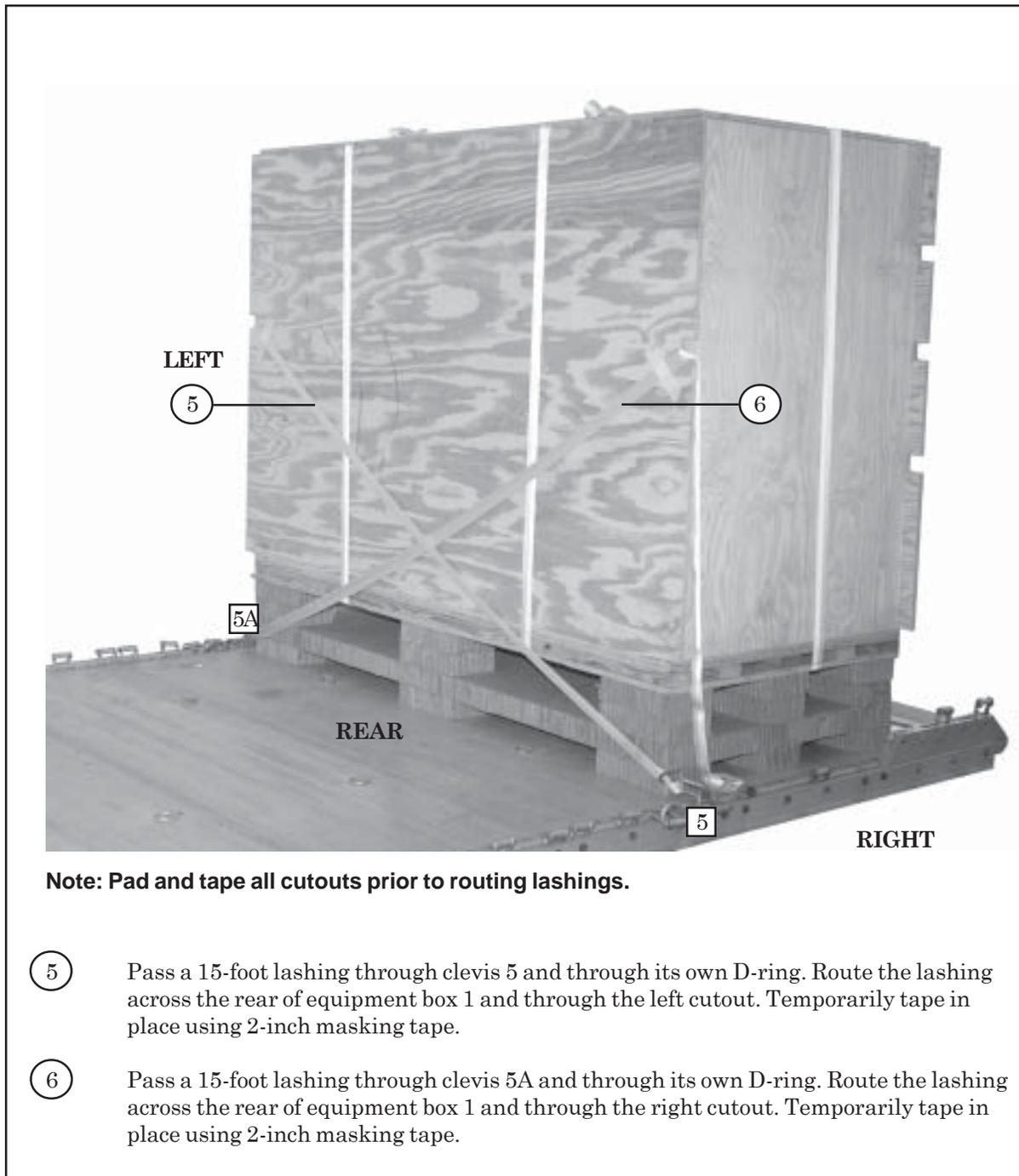


Figure 2-14. Equipment Box 1 Closed and Secured (Continued)

PREPARING AND PLACING HONEYCOMB STACK 2

2-7. Prepare honeycomb stack 2 as shown in Figure 2-15. Position stack 2 as shown in Figure 2-16.

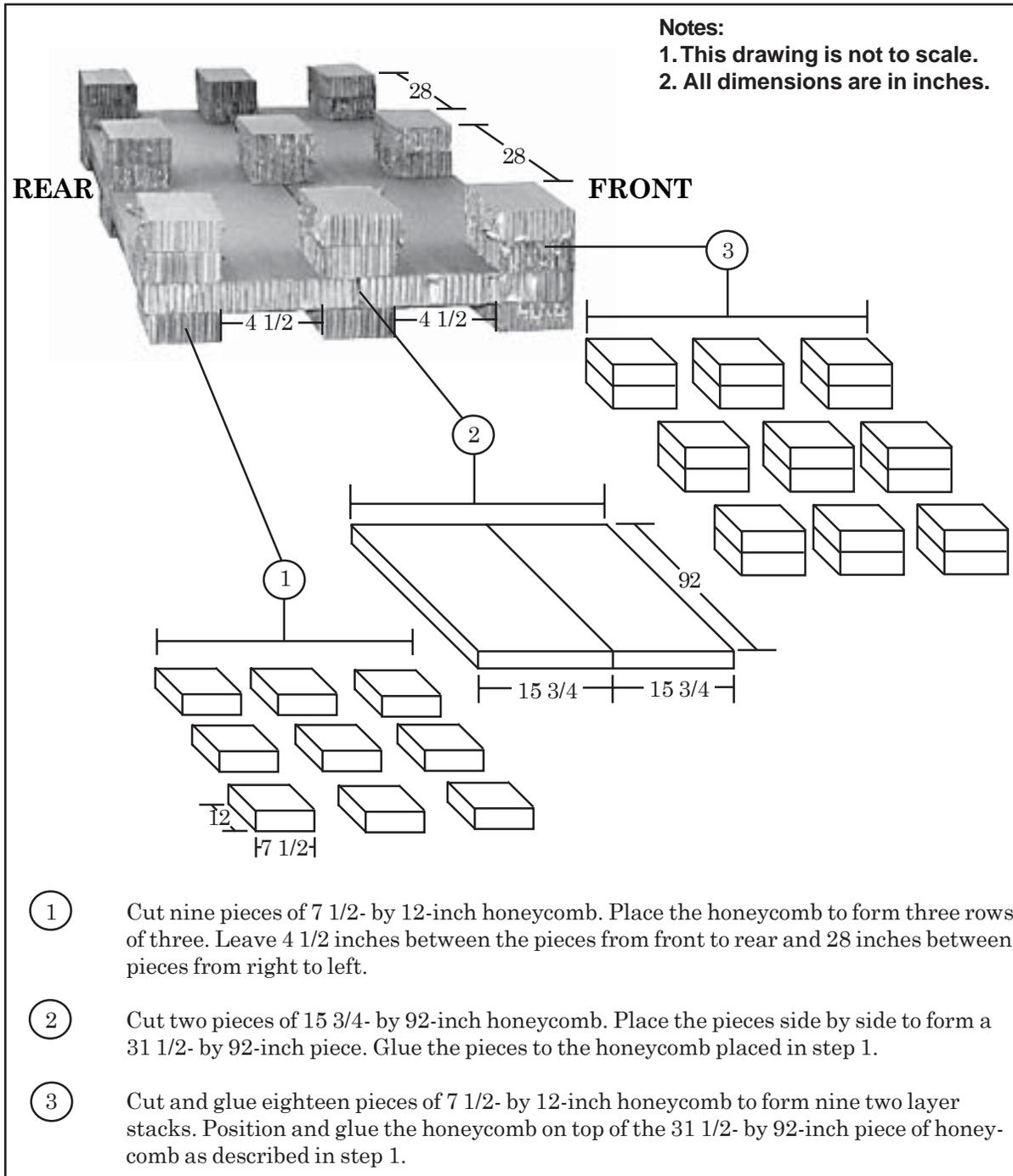
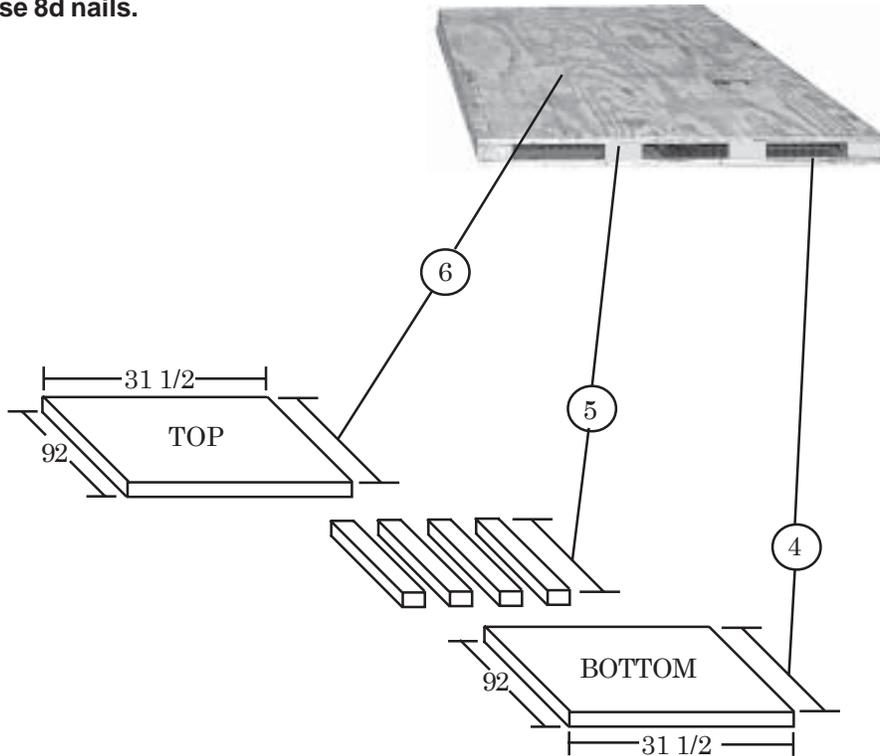


Figure 2-15. Honeycomb Stack 2 Prepared

Notes:

1. This drawing is not to scale.
2. All dimensions are in inches.
3. Use 8d nails.



- ④ Cut a 31 1/2- by 92- by 3/4-inch piece of plywood to form the base for the strongback.
- ⑤ Position and nail four 2- by 4- by 92-inch pieces of lumber evenly spaced on top of the plywood in step 4.
- ⑥ Cut a 31 1/2- by 92- by 3/4-inch piece of plywood and place on top of the 2- by 4-inch lumber placed in step 5. Nail flush in place with 8d nails.

Figure 2-15. Honeycomb Stack 2 Prepared (Continued)

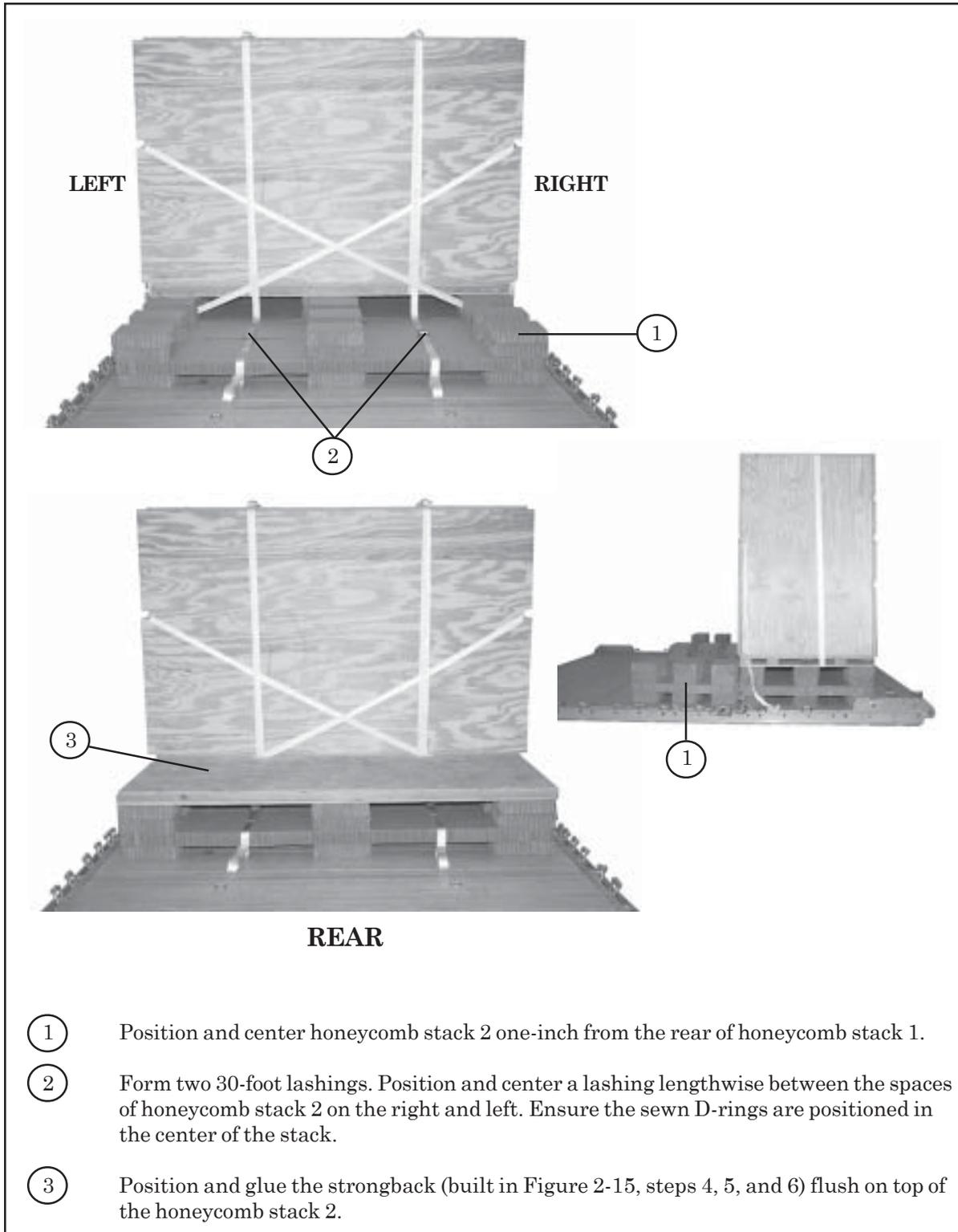


Figure 2-16. Honeycomb Stack 2 Positioned

CONSTRUCTING AND POSITIONING EQUIPMENT BOX 2

2-8. Construct the individual components of equipment box 2 as shown in Figures 2-17 and 2-18. Assemble and position equipment box 2 as shown in Figure 2-19.

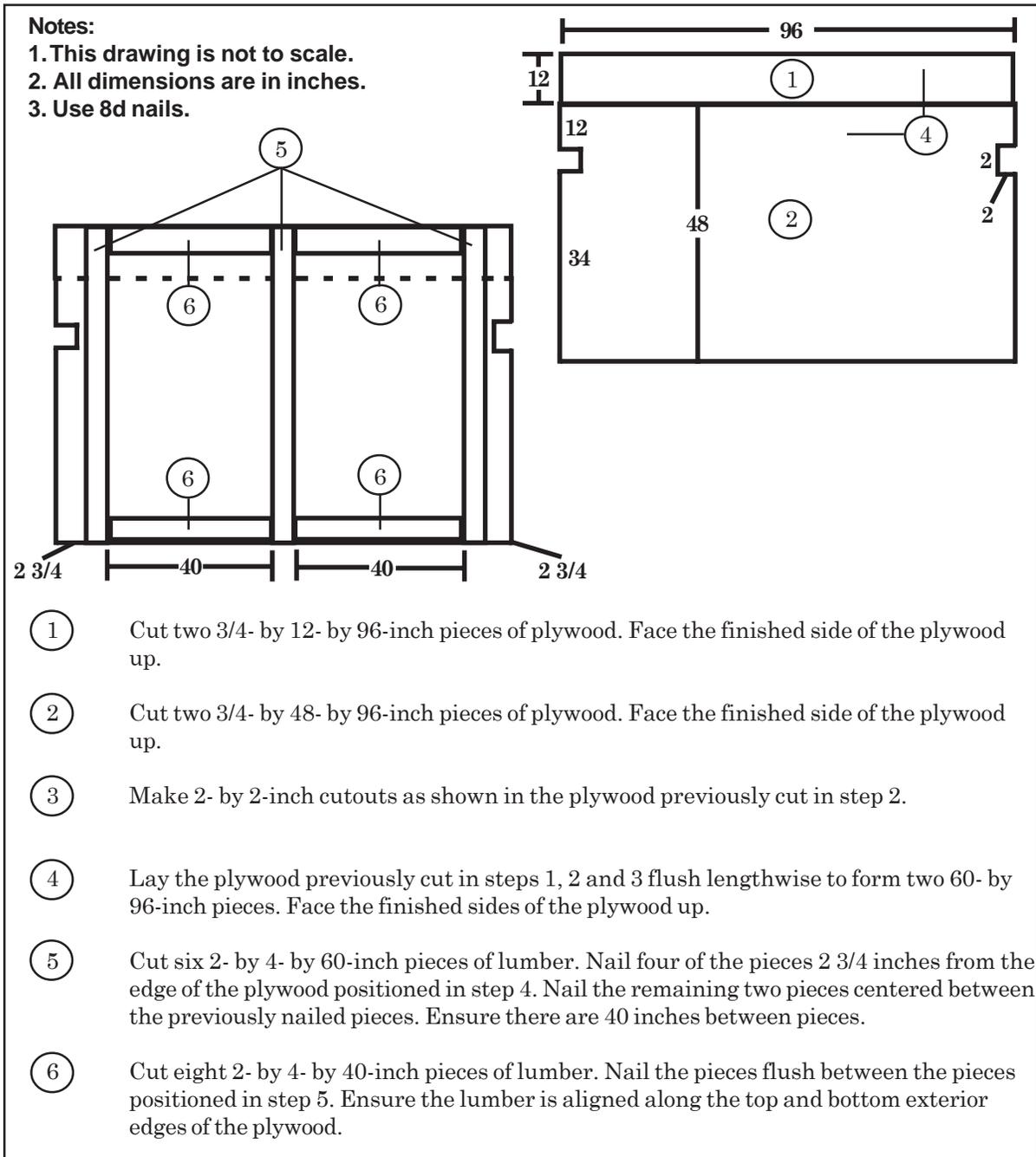


Figure 2-17. Equipment Box 2 Front and Rear Constructed

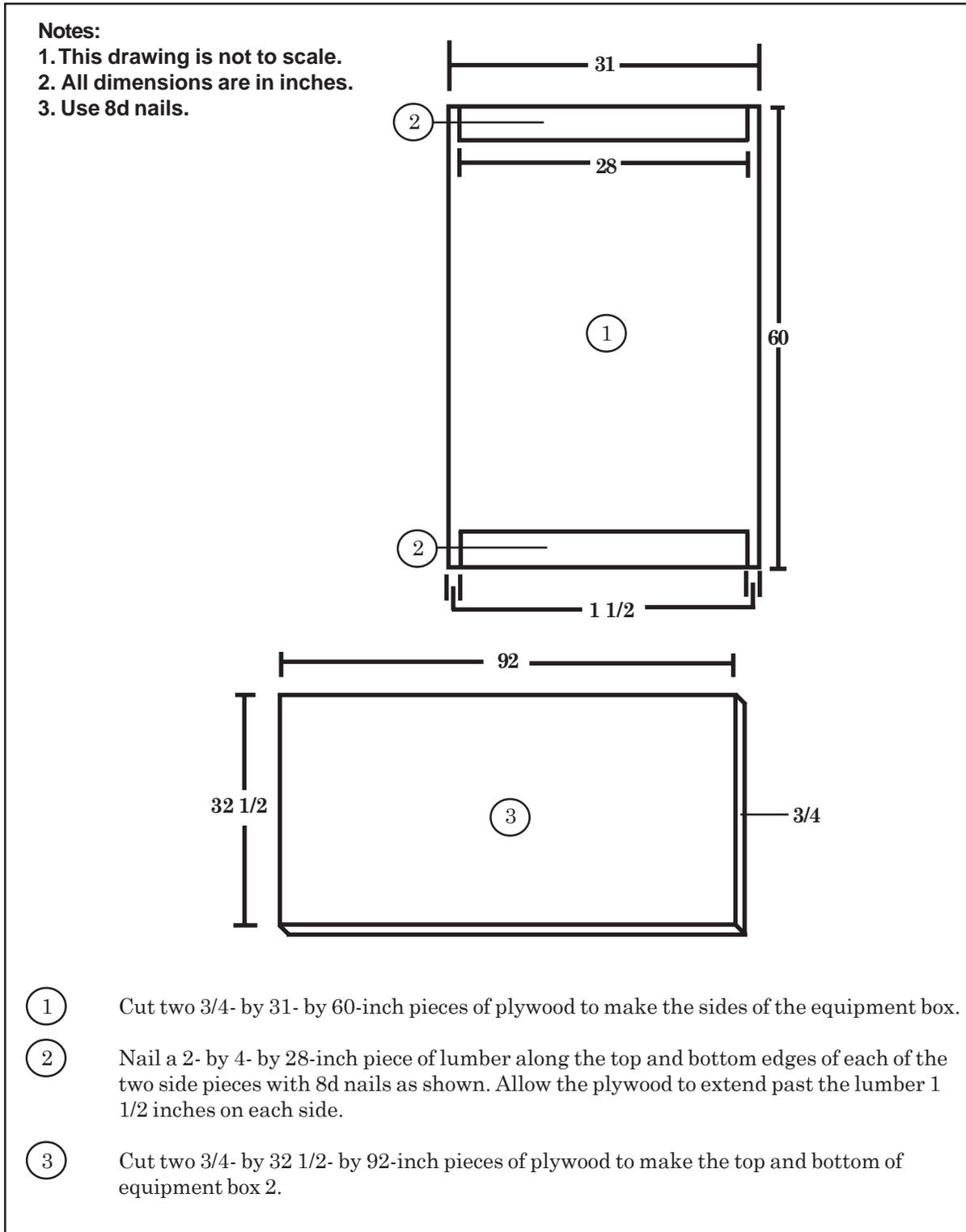


Figure 2-18. Equipment Box 2 Sides, Top and Bottom Constructed

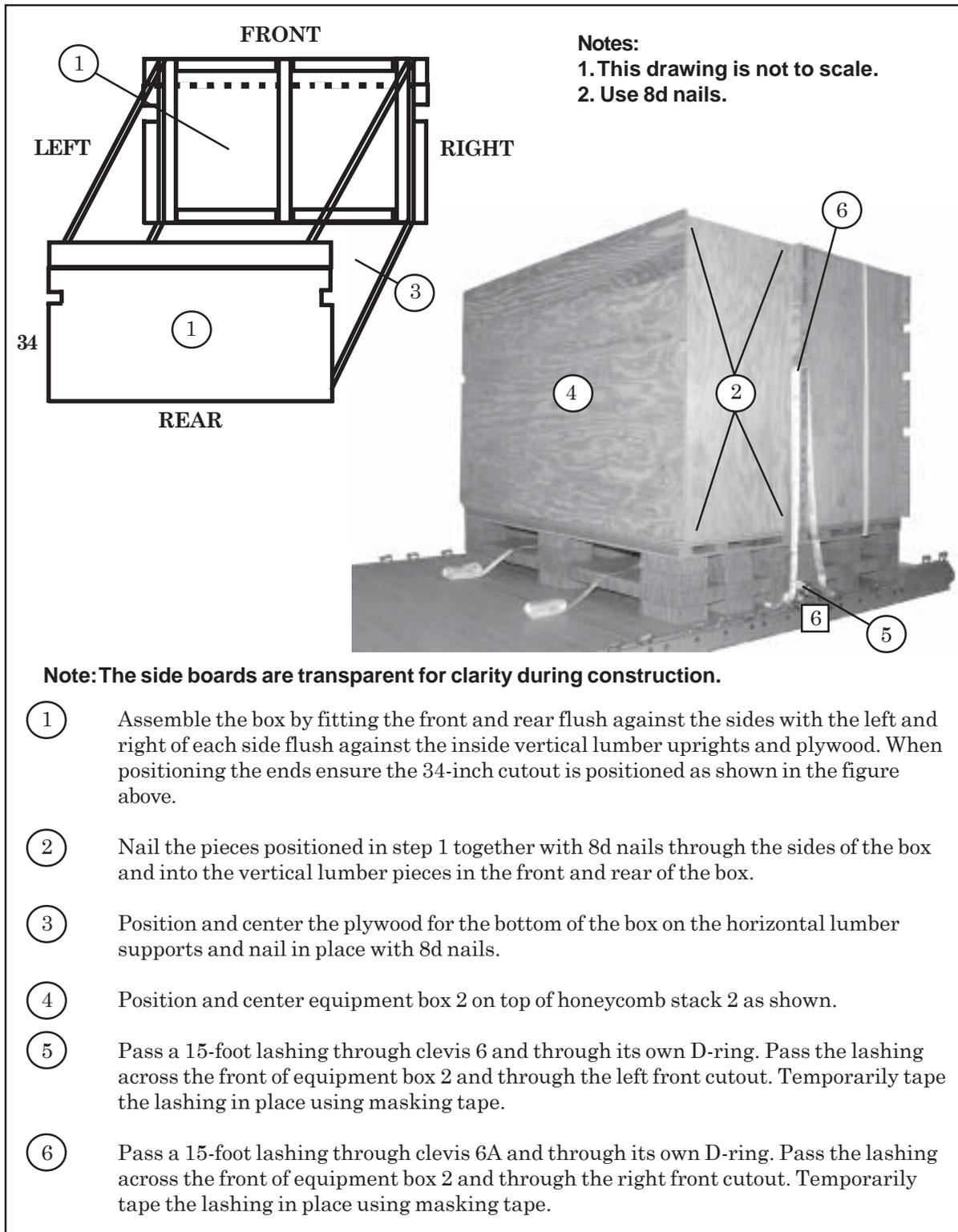


Figure 2-19. Equipment Box 2 Partially Assembled and Positioned for Loading

PREPARING AND STOWING THE EQUIPMENT FOR EQUIPMENT BOX 2

2-9. Prepare the components for equipment box 2 and stow them in the container as described below.

- a. **PREPARING CONTROL MODULE, ULTRA-FILTRATION MODULE, AND HIGH-PRESSURE PUMP MODULE.** Prepare the control module, ultra-filtration module, and high-pressure pump module as shown in Figure 2-20 and stow them in the container as shown in Figure 2-21.

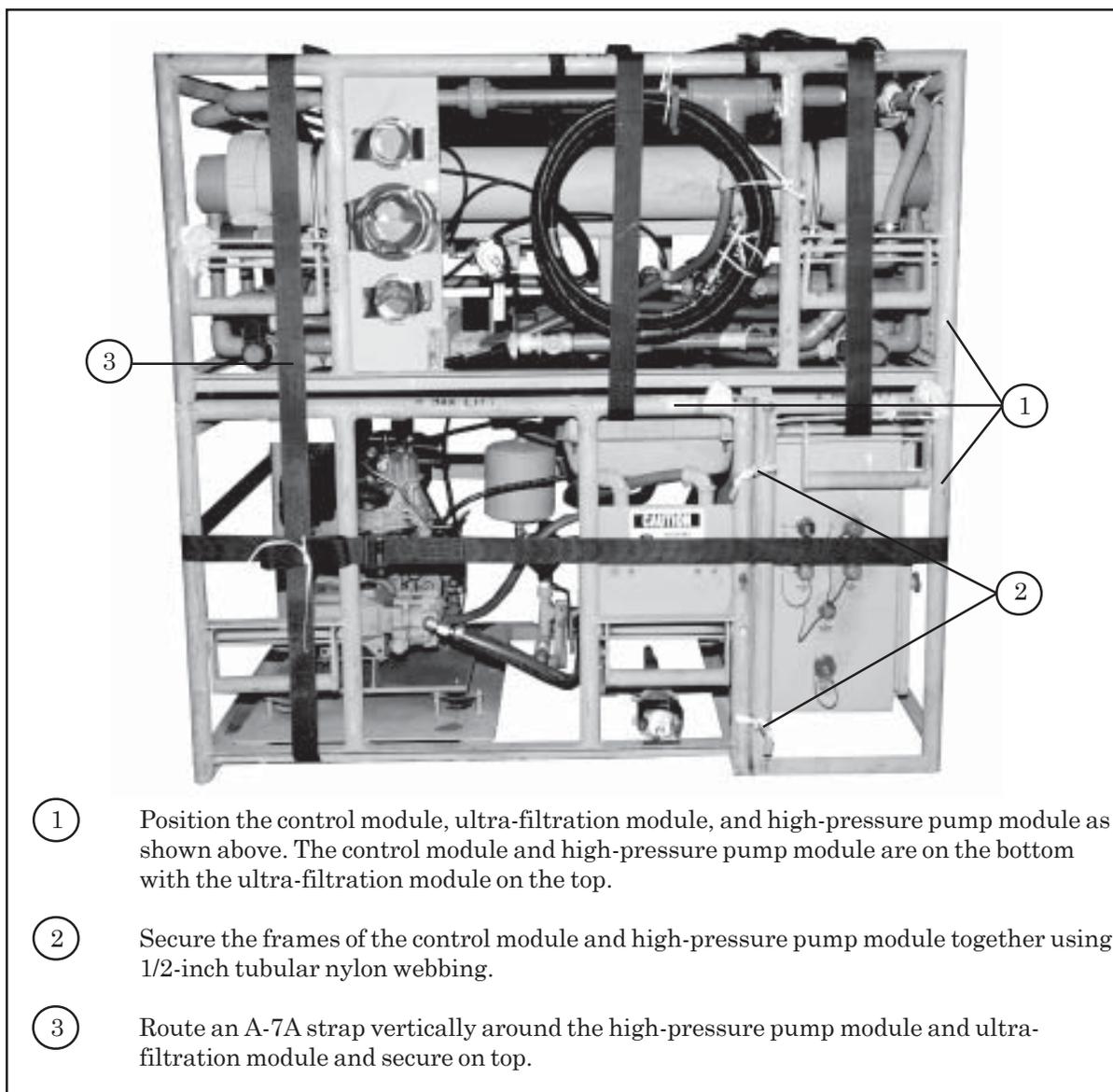
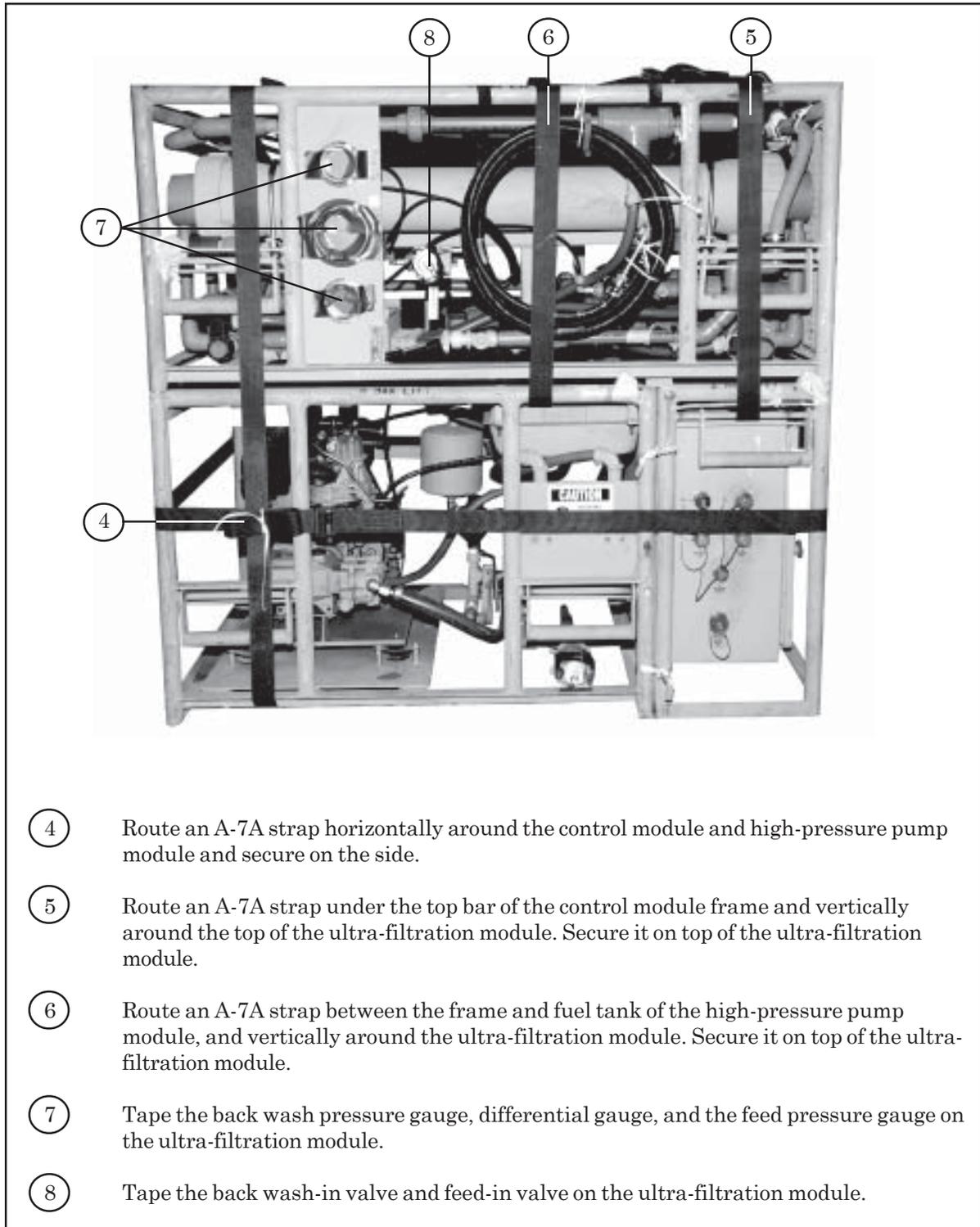


Figure 2-20. Control Module, Ultra-filtration Module, and High-pressure Pump Module Prepared



- ④ Route an A-7A strap horizontally around the control module and high-pressure pump module and secure on the side.
- ⑤ Route an A-7A strap under the top bar of the control module frame and vertically around the top of the ultra-filtration module. Secure it on top of the ultra-filtration module.
- ⑥ Route an A-7A strap between the frame and fuel tank of the high-pressure pump module, and vertically around the ultra-filtration module. Secure it on top of the ultra-filtration module.
- ⑦ Tape the back wash pressure gauge, differential gauge, and the feed pressure gauge on the ultra-filtration module.
- ⑧ Tape the back wash-in valve and feed-in valve on the ultra-filtration module.

Figure 2-20. Control Module, Ultra-filtration Module, and High-pressure Pump Module Prepared (Continued)

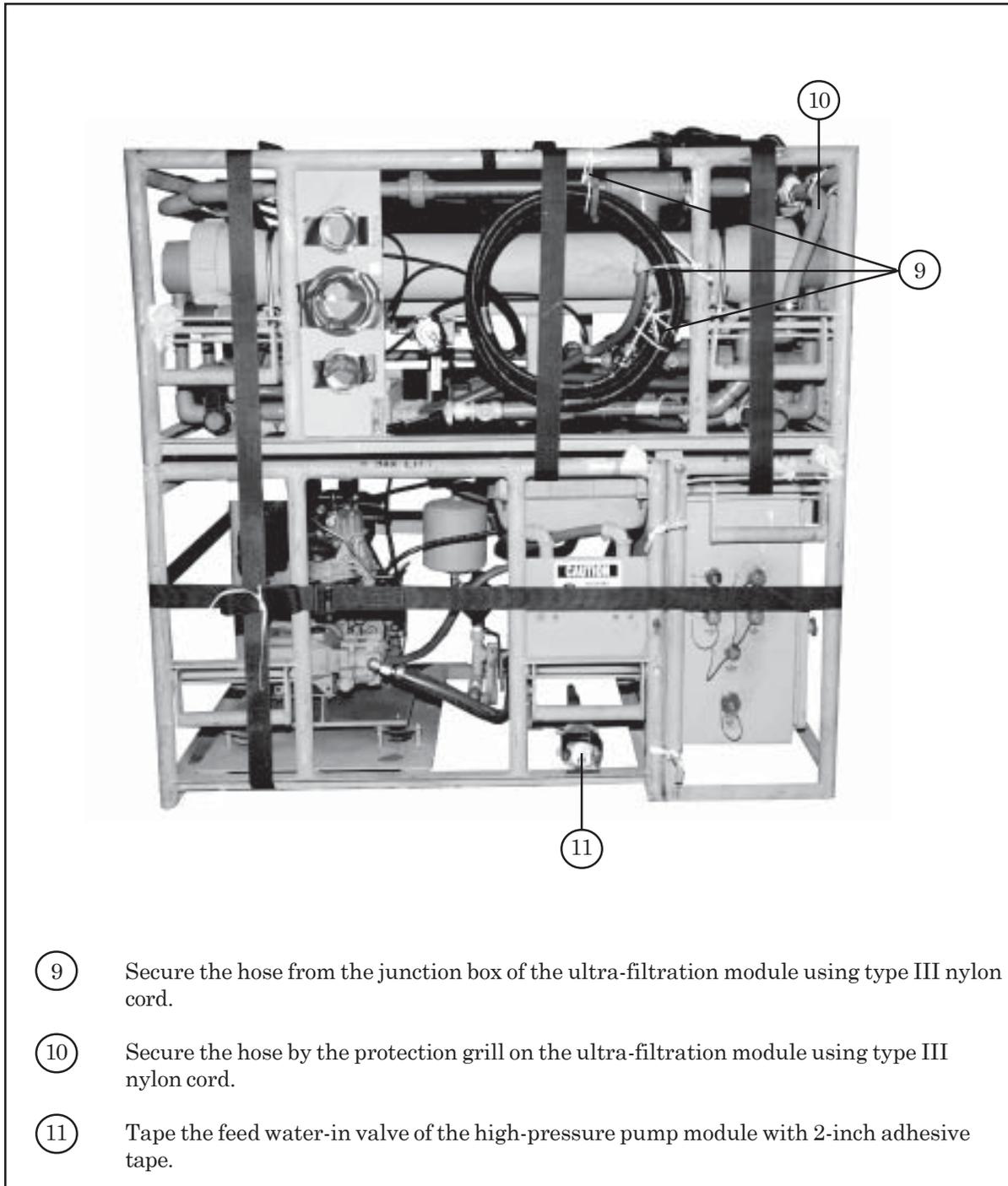
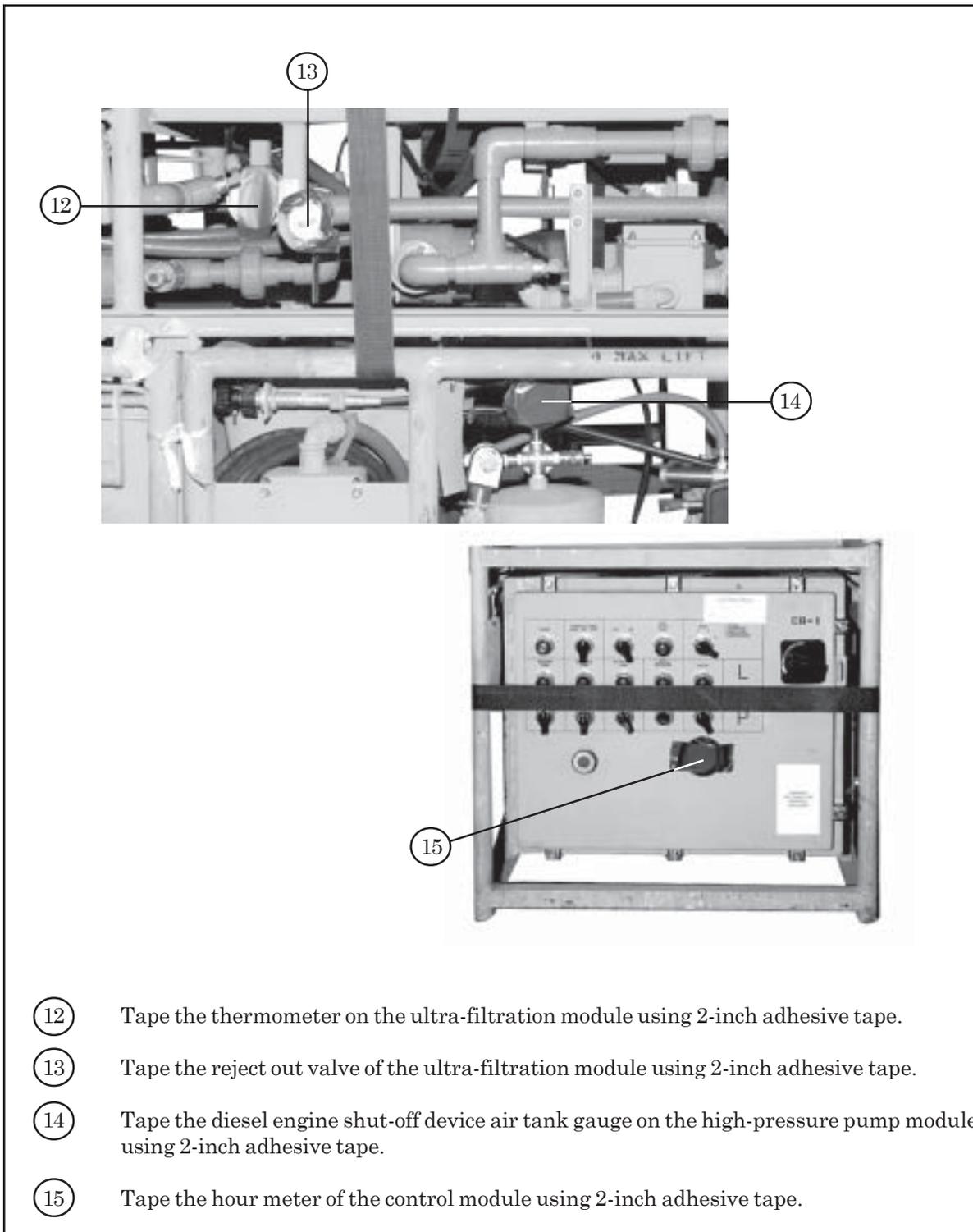


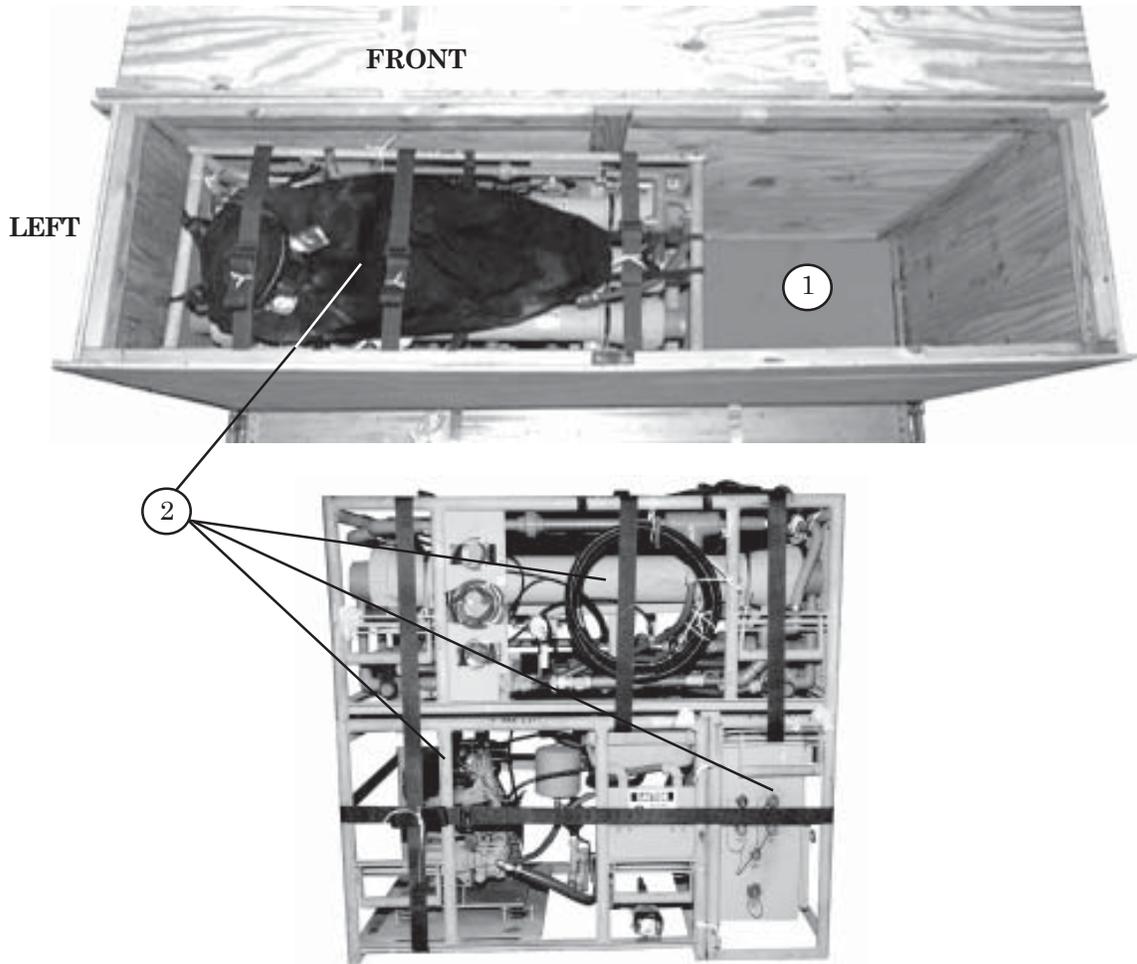
Figure 2-20. Control Module, Ultra-filtration Module, and High-pressure Pump Module Prepared (Continued)



- ⑫ Tape the thermometer on the ultra-filtration module using 2-inch adhesive tape.
- ⑬ Tape the reject out valve of the ultra-filtration module using 2-inch adhesive tape.
- ⑭ Tape the diesel engine shut-off device air tank gauge on the high-pressure pump module using 2-inch adhesive tape.
- ⑮ Tape the hour meter of the control module using 2-inch adhesive tape.

Figure 2-20. Control Module, Ultra-filtration Module, and High-pressure Pump Module Prepared (Continued)

Note: The protection grill of the ultra-filtration module will face the left side of box.



- ① Cut and place a 28- by 87-inch piece of honeycomb in the bottom of equipment box 2.
- ② Position the control module, ultra-filtration module and the high-pressure pump module to the left front corner of equipment box 2.

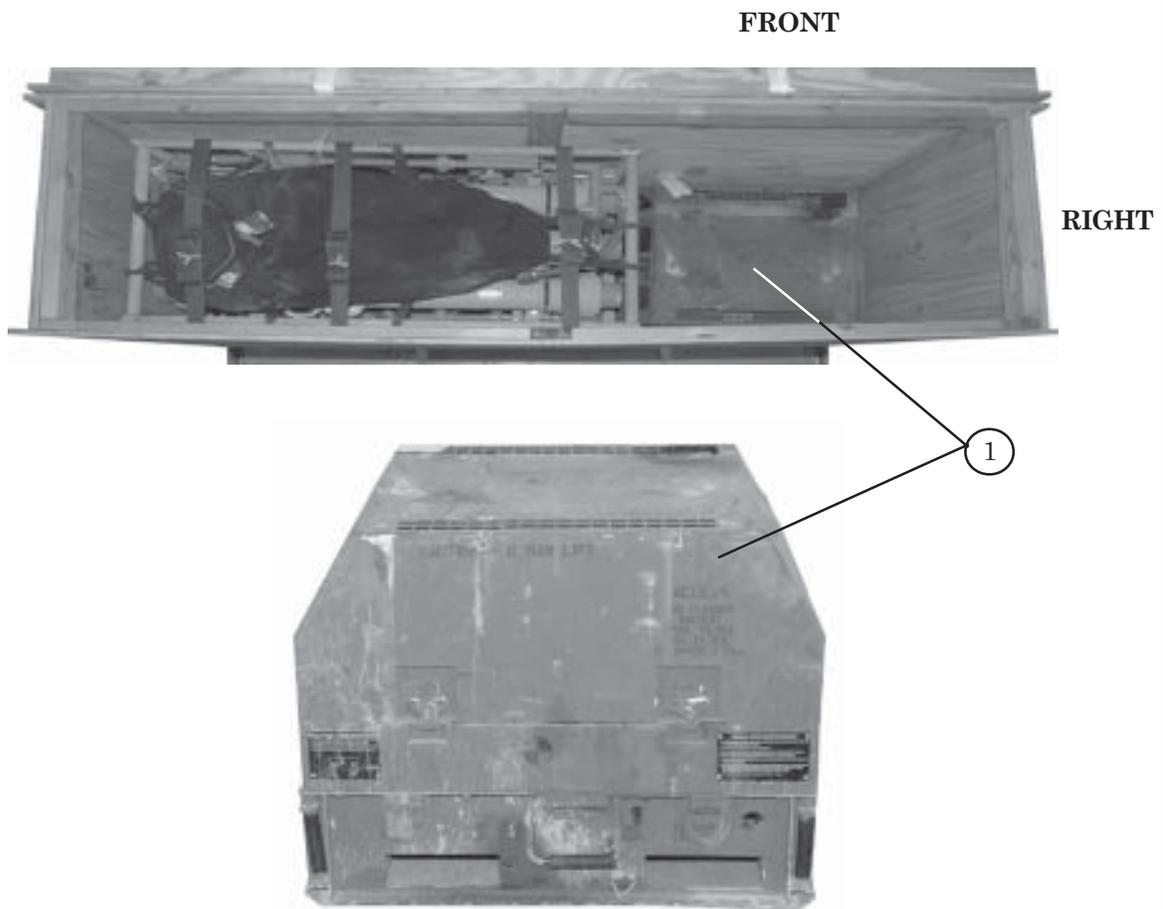
Figure 2-21. Control Module, Ultra-filtration Module, and High-pressure Pump Module Stowed

- b. STOWING 3KW GENERATOR.** Make sure the 3kw generator is no more than 75% full. Stow the 3kw generator in the equipment box as shown in Figure 2-22.

CAUTION

A full tank does not allow for expansion, and is a danger to aircraft and air crew. Ensure the 3kw generator complies with AFMAN 24-204(I)/TM 38-250.

Note: Ensure the controls of the 3kw generator face towards the center of the box.



- ① Position the 3kw generator at the right front corner inside equipment box 2.

Figure 2-22. 3KW Generator Stowed

CLOSING AND SECURING EQUIPMENT BOX 2

2-10. Close and secure equipment box 2 as shown in Figure 2-23.

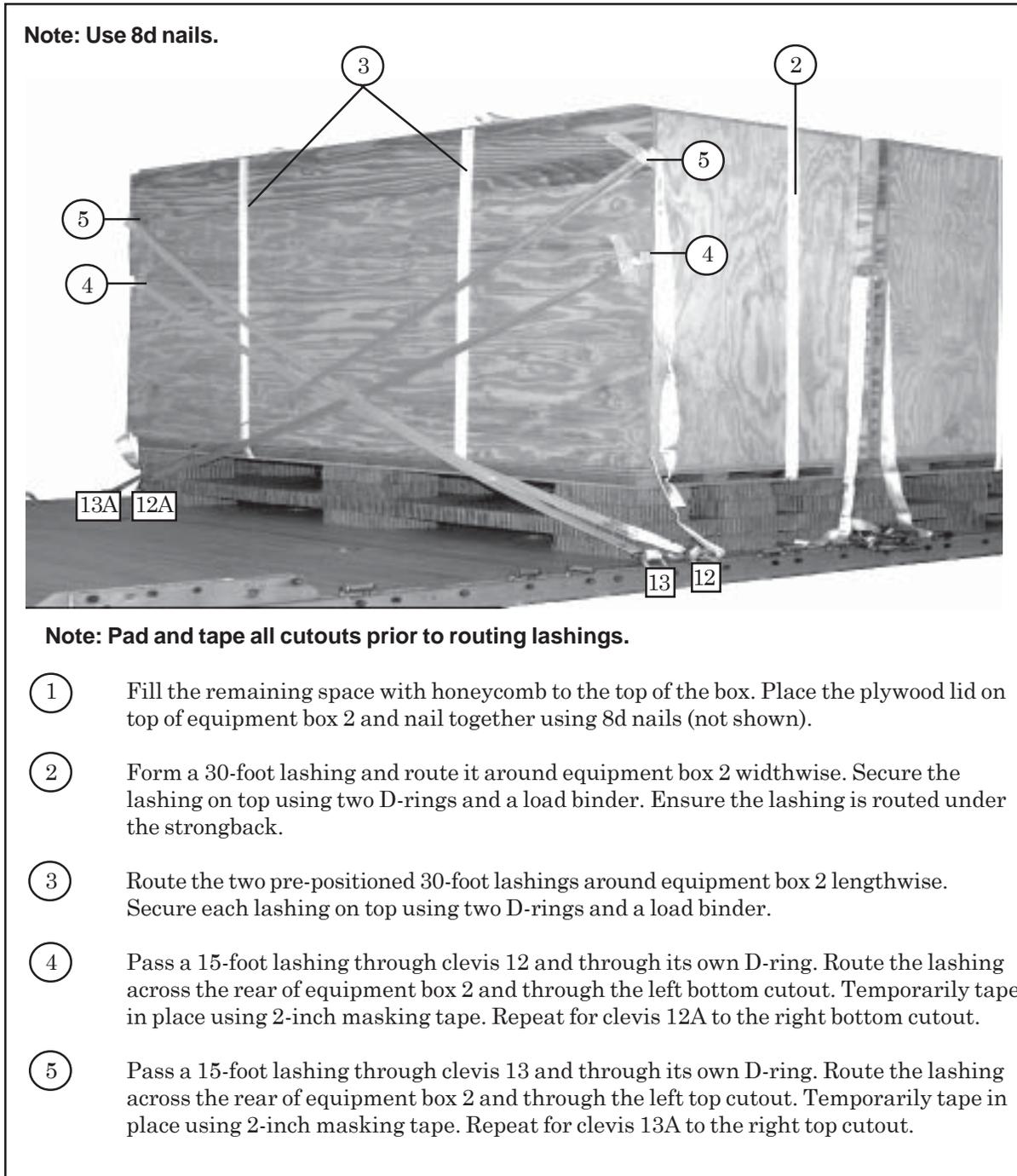


Figure 2-23. Equipment Box 2 Closed and Secured

PREPARING AND POSITIONING HONEYCOMB STACK 3

2-11. Prepare honeycomb stack 3 as shown in Figure 2-24. Position honeycomb stack 3 as shown in Figure 2-25.

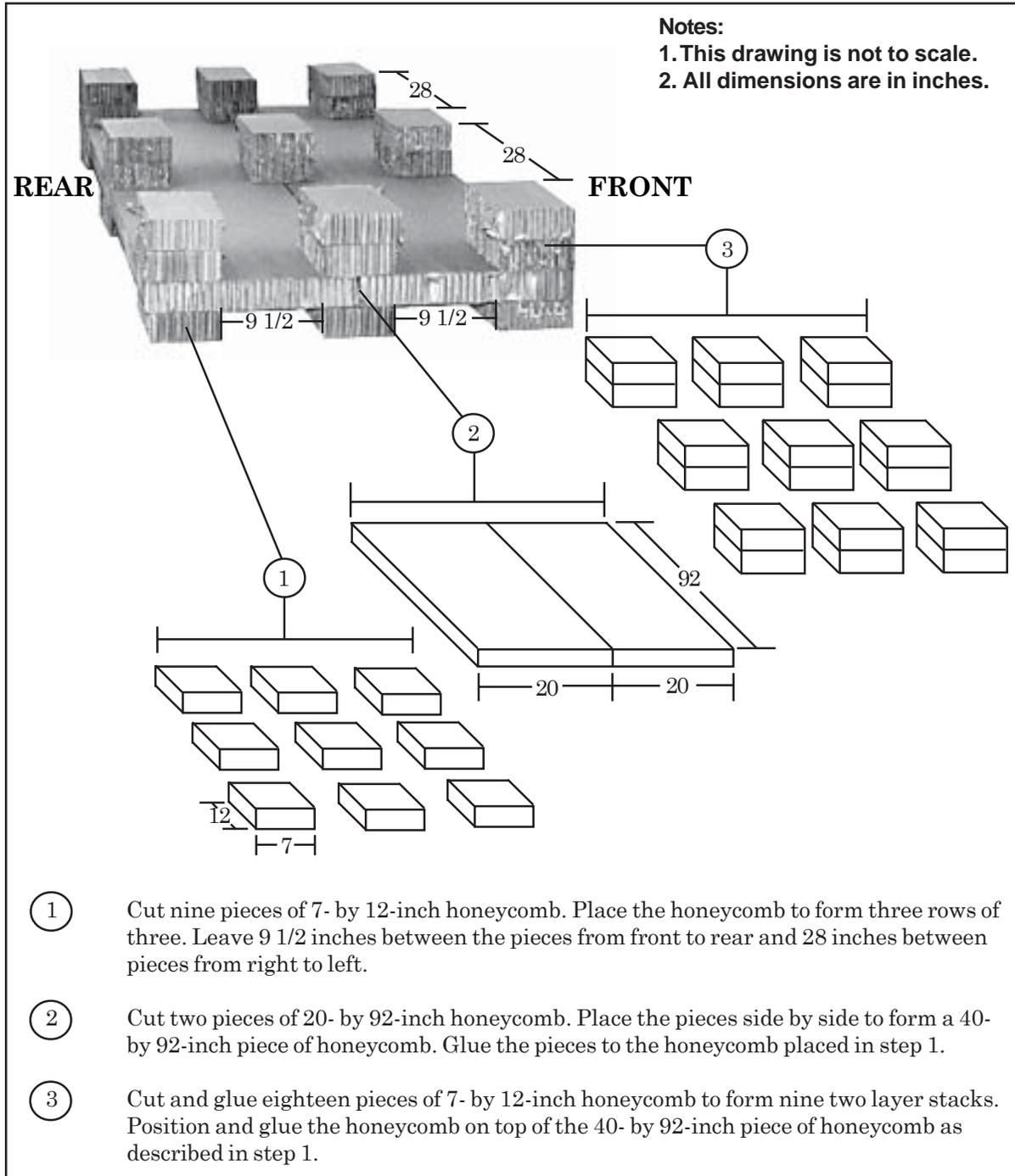
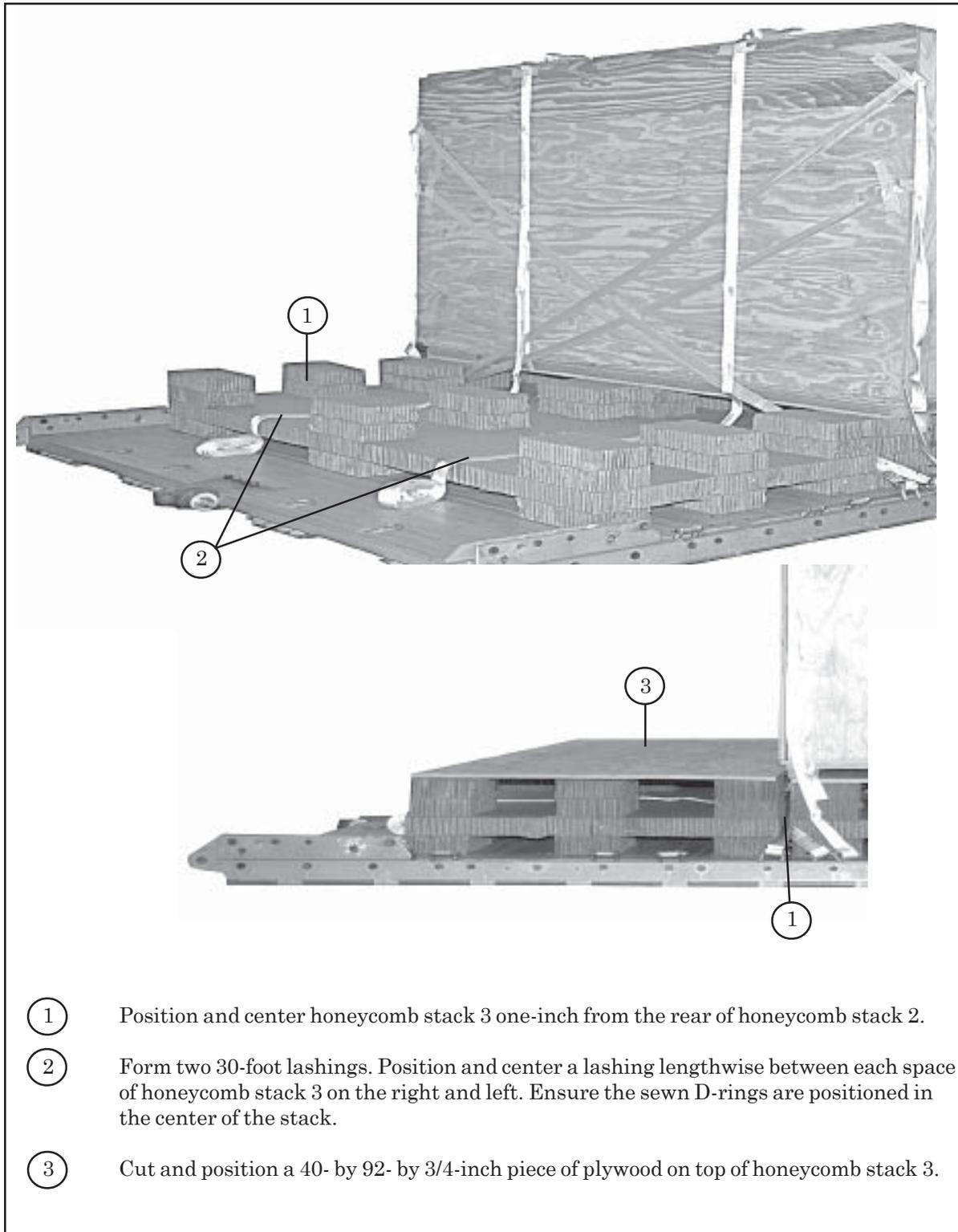


Figure 2-24. Honeycomb Stack 3 Prepared



- ① Position and center honeycomb stack 3 one-inch from the rear of honeycomb stack 2.
- ② Form two 30-foot lashings. Position and center a lashing lengthwise between each space of honeycomb stack 3 on the right and left. Ensure the sewn D-rings are positioned in the center of the stack.
- ③ Cut and position a 40- by 92- by 3/4-inch piece of plywood on top of honeycomb stack 3.

Figure 2-25. Honeycomb Stack 3 Positioned

CONSTRUCTING AND POSITIONING EQUIPMENT BOX 3

2-12. Construct the individual components of equipment box 3 as shown in Figures 2-26 and 2-27. Assemble and position equipment box 3 as shown in Figure 2-28.

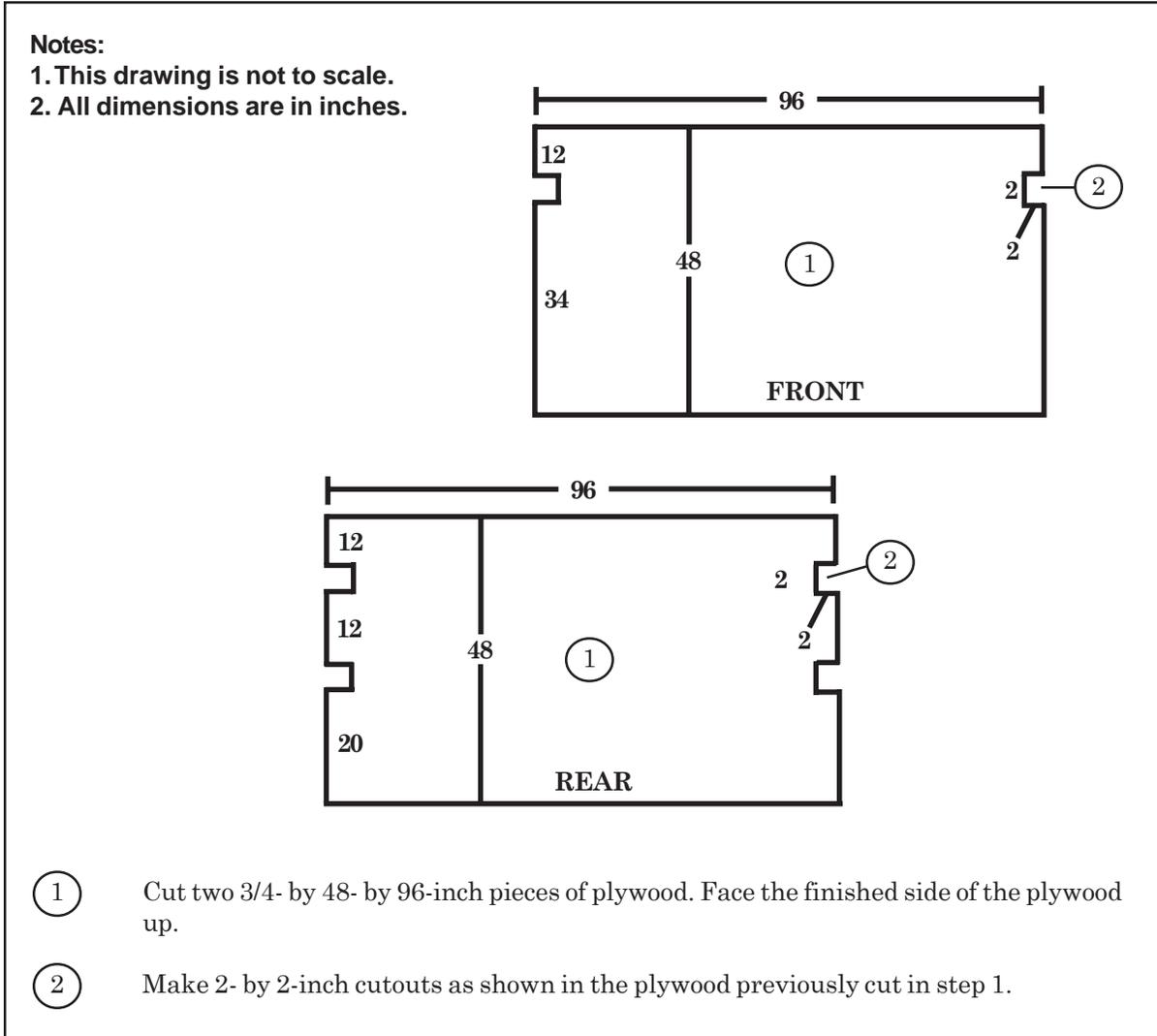
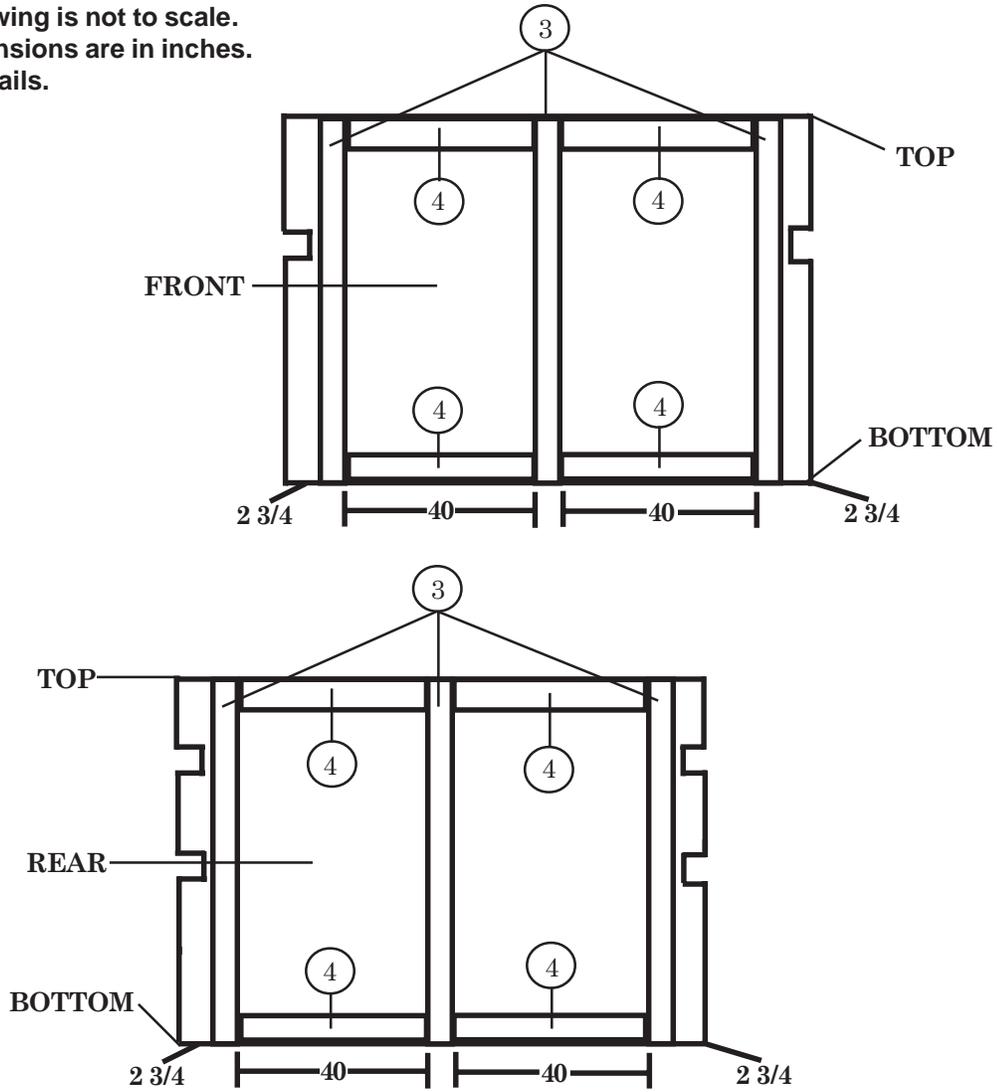


Figure 2-26. Equipment Box 3 Front and Rear Constructed

Notes:

1. This drawing is not to scale.
2. All dimensions are in inches.
3. Use 8d nails.



- 3 Cut six 2- by 4- by 48-inch pieces of lumber. Nail four of the pieces 2 3/4 inches from the edge of the plywood cut in step 1. Nail one of the remaining two pieces centered between the previously nailed pieces. Ensure there are 40 inches between pieces.
- 4 Cut eight 2- by 4- by 40-inch pieces of lumber. Nail the pieces flush between the pieces positioned in step 3. Ensure the lumber is aligned along the top and bottom exterior edges of the plywood.

Figure 2-26. Equipment Box 3 Front and Rear Constructed (Continued)

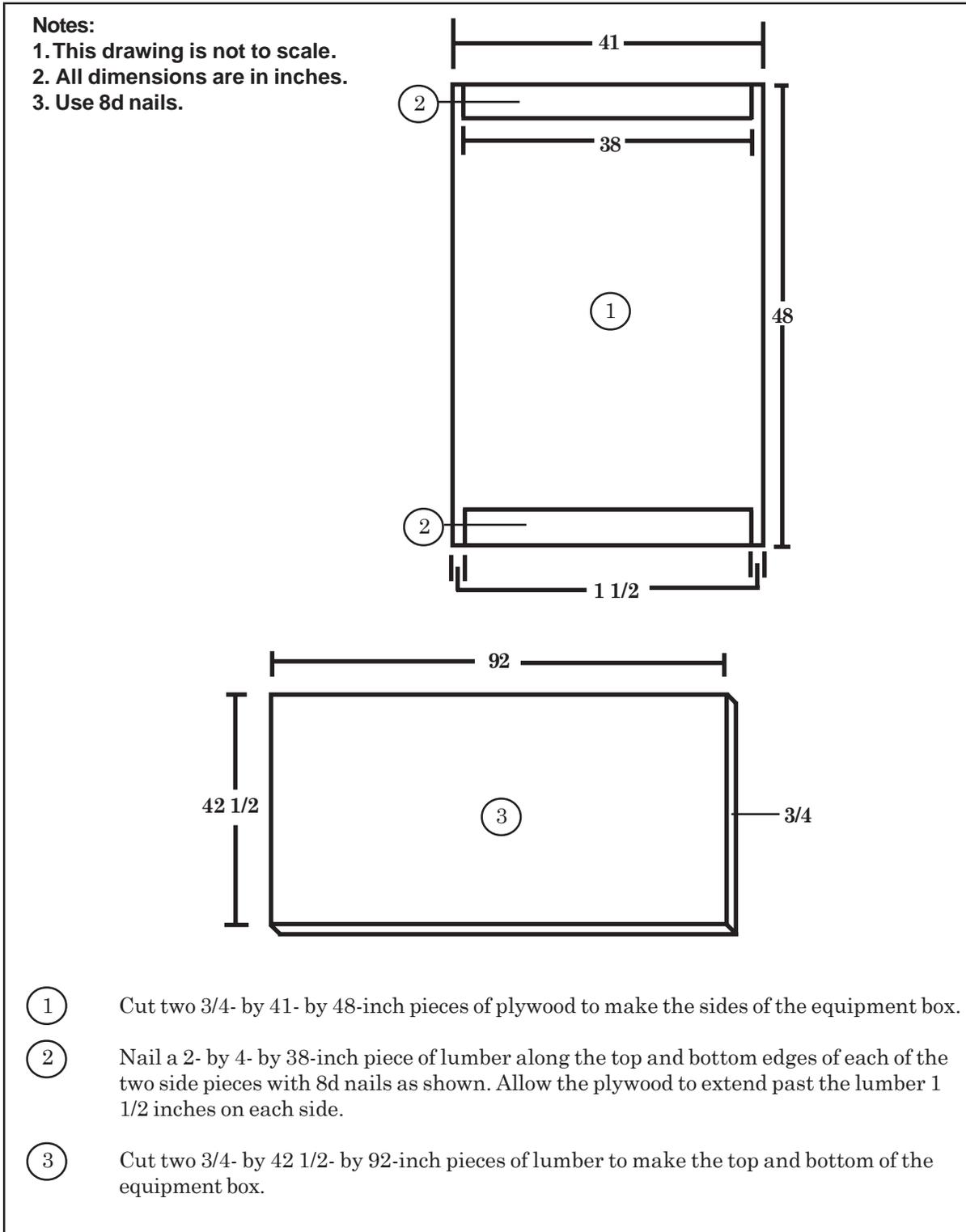


Figure 2-27. Equipment Box 3 Sides, Top and Bottom Constructed

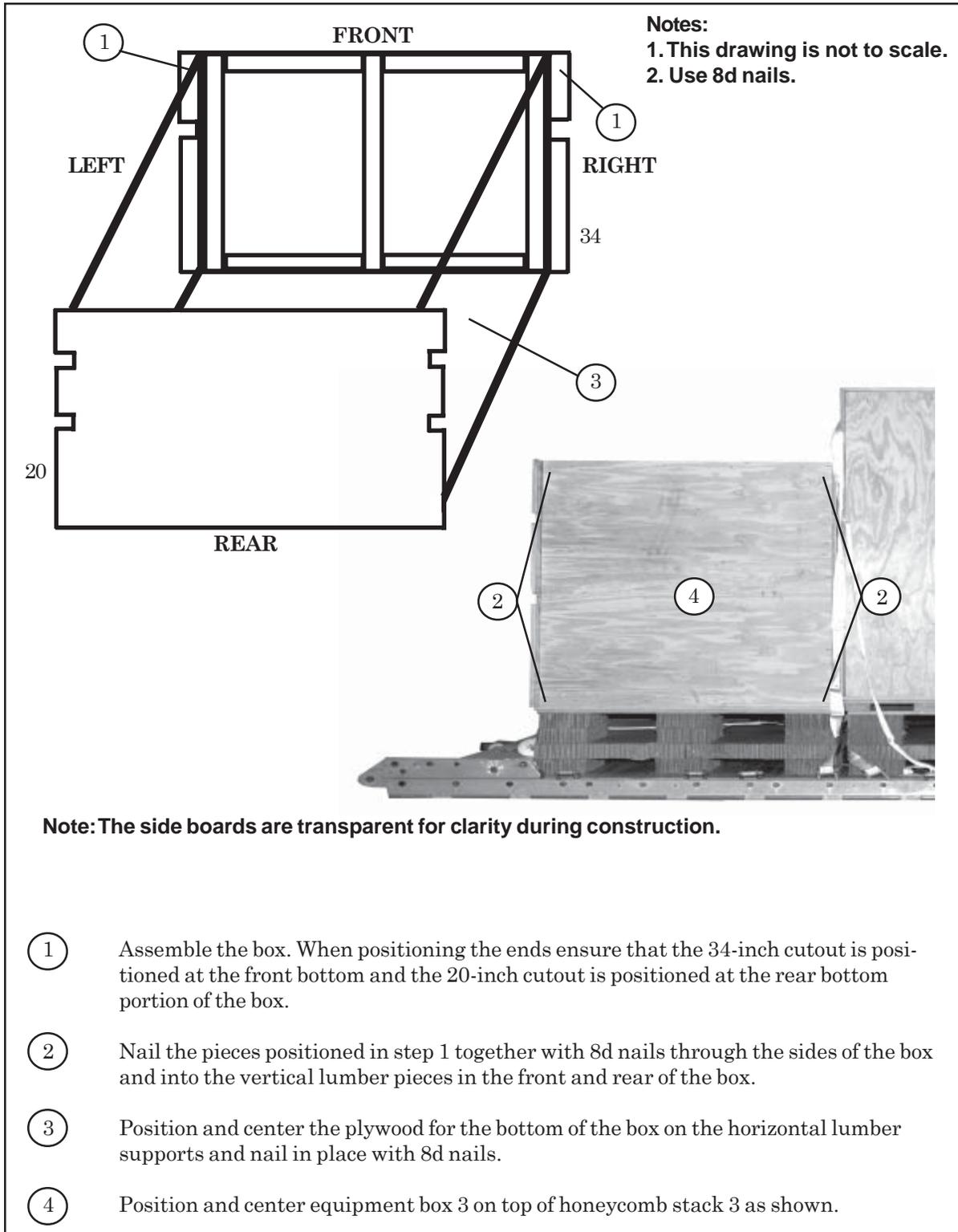


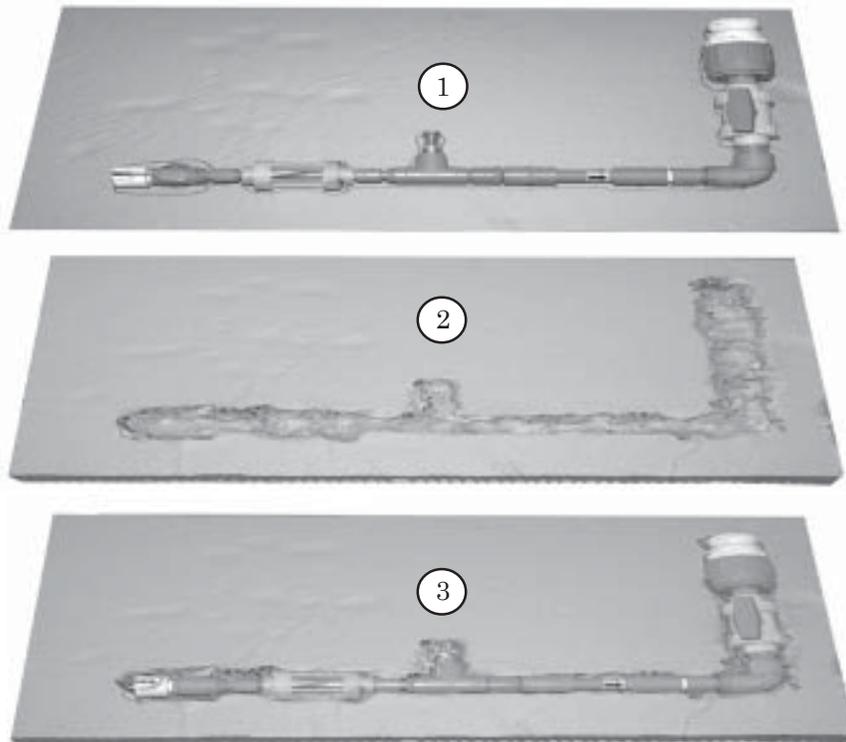
Figure 2-28. Equipment Box 3 Partially Assembled and Positioned for Loading

PREPARING AND STOWING THE EQUIPMENT FOR EQUIPMENT BOX 3

2-13. Prepare the components for equipment box 3 and stow them in the container as described below.

- a. **PREPARING SECURE PUMP SKID COVER (CONTAMINATION AVOIDANCE).** Prepare the secure pump skid cover as shown in Figure 2-29.

Note: Ensure that the secure pump skid cover is removed from the components of end items (COEI) box.



- ① Cut two 37- by 23-inch pieces of honeycomb. Using one piece, place the secure pump skid cover (contamination avoidance) on top of the piece of honeycomb. Trace around secure pump skid cover (contamination avoidance) with a marker. Mark the second piece of honeycomb in the same manner.
- ② Remove the secure pump skid cover (contamination avoidance) from the piece of honeycomb and crush the area that was marked with a hammer on both pieces.
- ③ Place the secure pump skid cover (contamination avoidance) inside the crushed area of the honeycomb.

Figure 2-29. Secure Pump Skid Cover Prepared

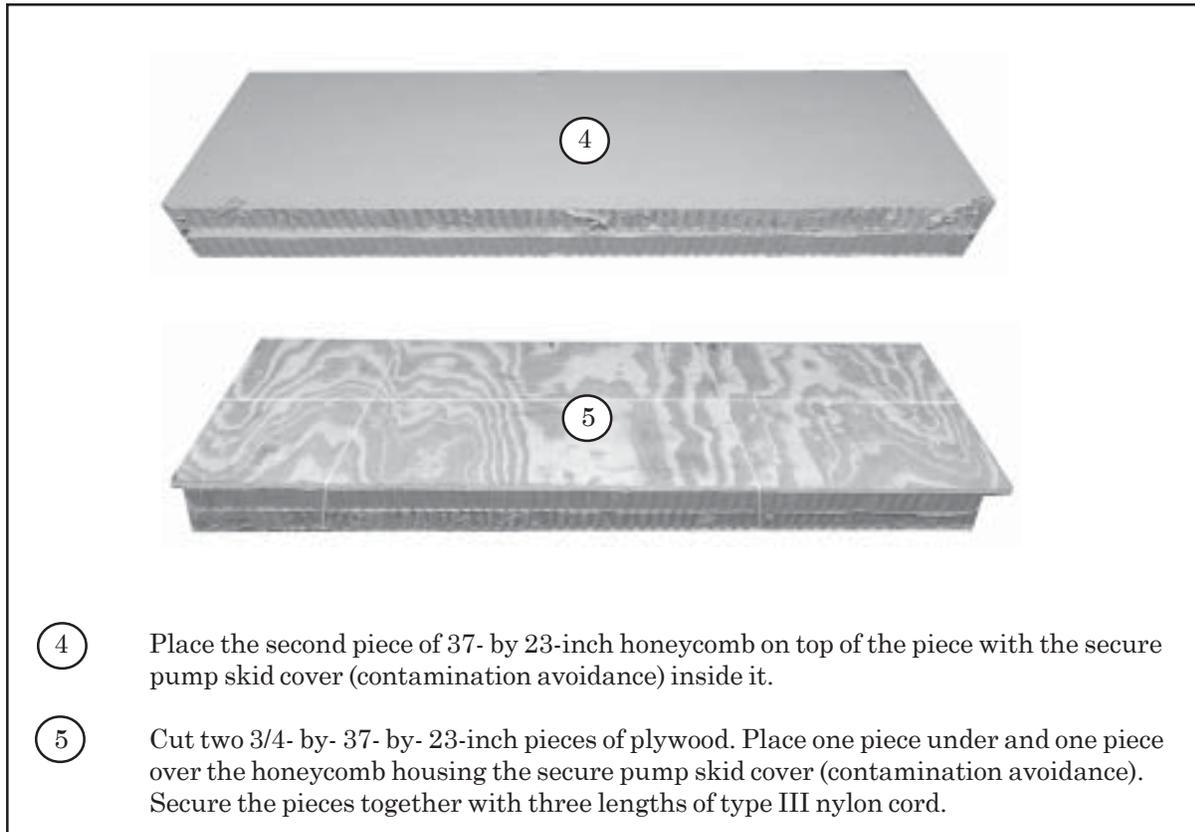


Figure 2-29. Secure Pump Skid Cover Prepared (Continued)

- b. **PREPARING BASIC ISSUE ITEMS (BII) BOX, COMPONENTS OF END ITEMS (COEI) BOX AND COMPONENTS OF END ITEMS (COEI) CABLE BOX.** Prepare the basic issue items box, components of end items box and components of end items cable box, and stow in the container as shown in Figure 2-30.



Note: The components listed below are stored inside the basic issue items box. The total weight of the box is 100 pounds.

Item Description	Quantity
Instrument case	1
Fire extinguisher	1
Apron	2
Gloves	2
Pipe repair system	1
Sand bags	20
Small funnel	1
Large funnel	1
Goggles	2
Dust masks	25
Rope	50-feet
Flotation device	1
Retaining rings	7
Chlorine photometer	1
Utility pail, 5-quart	1
Hearing protection	1
Tool kit	1
Ultra-filtration cleaning outlet	1
Stirring paddle	1
Cleaning adapter	1
Flushing adapter	1
Textile hose, 3/8-inch	1
End cap removal tool	1
Pipe wrench, adjustable strap	1
Over-pack kit box	1
Fabric-tank repair kit	1

Figure 2-30. Basic Issue Items Box, Components of End Items Box and Components of End Items Cable Box Prepared and Stowed



Note: The components listed below are stored inside the components of end items box. The total weight of the box is 119 pounds.

Item Description	Quantity
Floating Strainer, raw water	1
Ultra-filtration module cover, contamination avoidance	1
High-pressure module cover, contamination avoidance	1
Control module, reverse osmosis module, chemical injection/cleaning module cover, contamination avoidance	1
Spool piece, settling tank inlet	1
Spool piece, settling tank outlet	1
Spool piece, product tank inlet	1
Spool piece, product tank outlet	1
Feed strainer, settling tank	1
NBC cartridge assembly	1
Immersion heater assembly	1
Distribution nozzle	1
Hose assembly, 1-inch by 25-feet	1
Hose assembly, 1-inch by 25-feet	3
Hose, high-pressure with union	1
Tubing assembly, anti-scalant	1
Tubing assembly, coagulant	1
Over-pack kit box	1
Pump priming	1

Figure 2-30. Basic Issue Items Box, Components of End Items Box and Components of End Items Cable Box Prepared and Stowed (Continued)



Note: The components listed below are stored inside the components of end items cable box. The total weight of the box is 79 pounds.

Item Description	Quantity
Cable 1, 40-feet, generator to control module	1
Cable 2, 100-feet, raw water service pump to control module	1
Cable 3, 50-feet, booster service pump to control module	1
Cable 4, 20-feet, backwash service pump to control module	1
Cable 5, 30-feet, distribution service pump to control module	1
Cable 11, 40-feet, ground cable, control module to grounding rod	1
Storage container	1

Figure 2-30. Basic Issue Items Box, Components of End Items Box and Components of End Items Cable Box Prepared and Stowed (Continued)

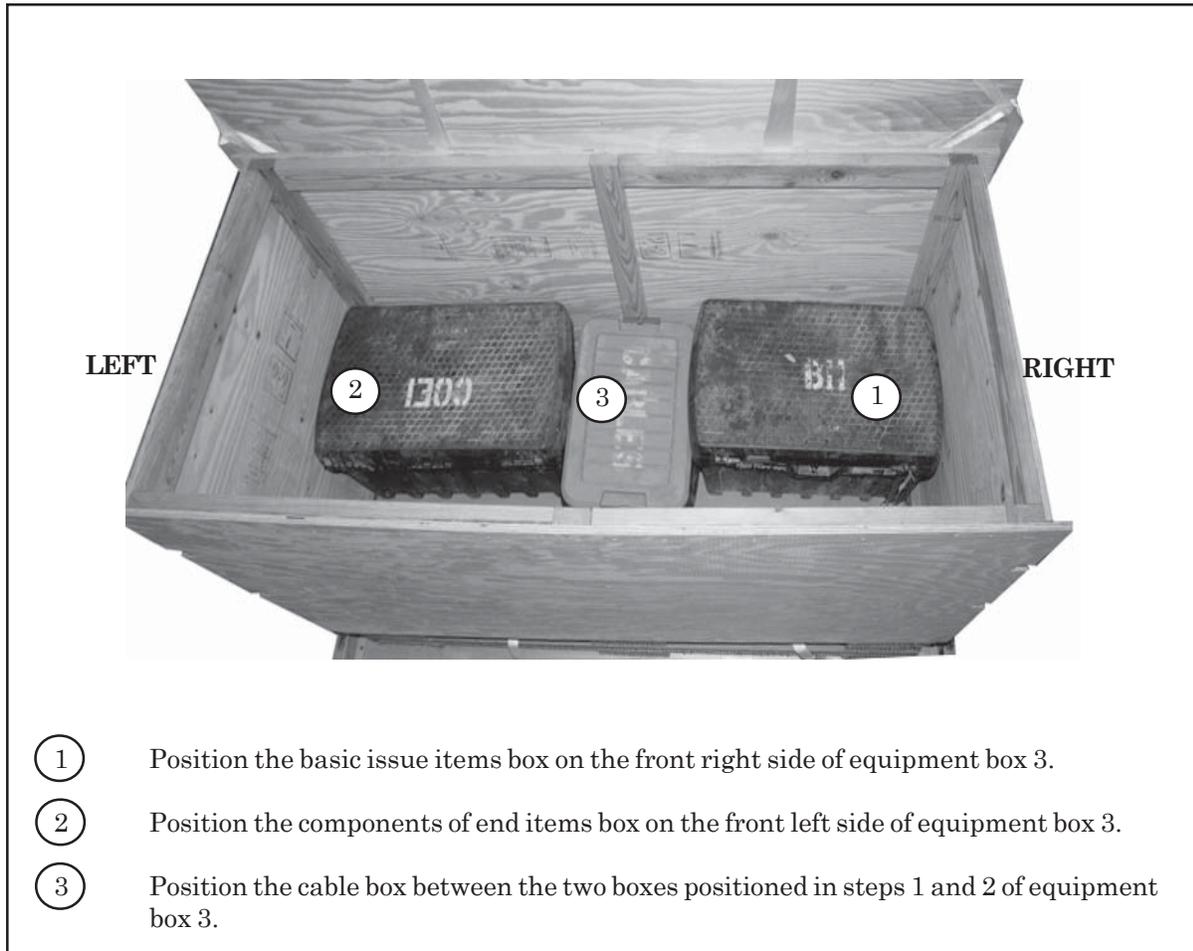


Figure 2-30. Basic Issue Items Box, Components of End Items Box and Components of End Items Cable Box Prepared and Stowed (Continued)

- c. **PREPARING COLD WEATHER KIT 1 (CWK1) BOX AND LOADING TRUCK.** Prepare the cold weather kit 1 box and loading truck, and stow in the container as shown in Figure 2-31.

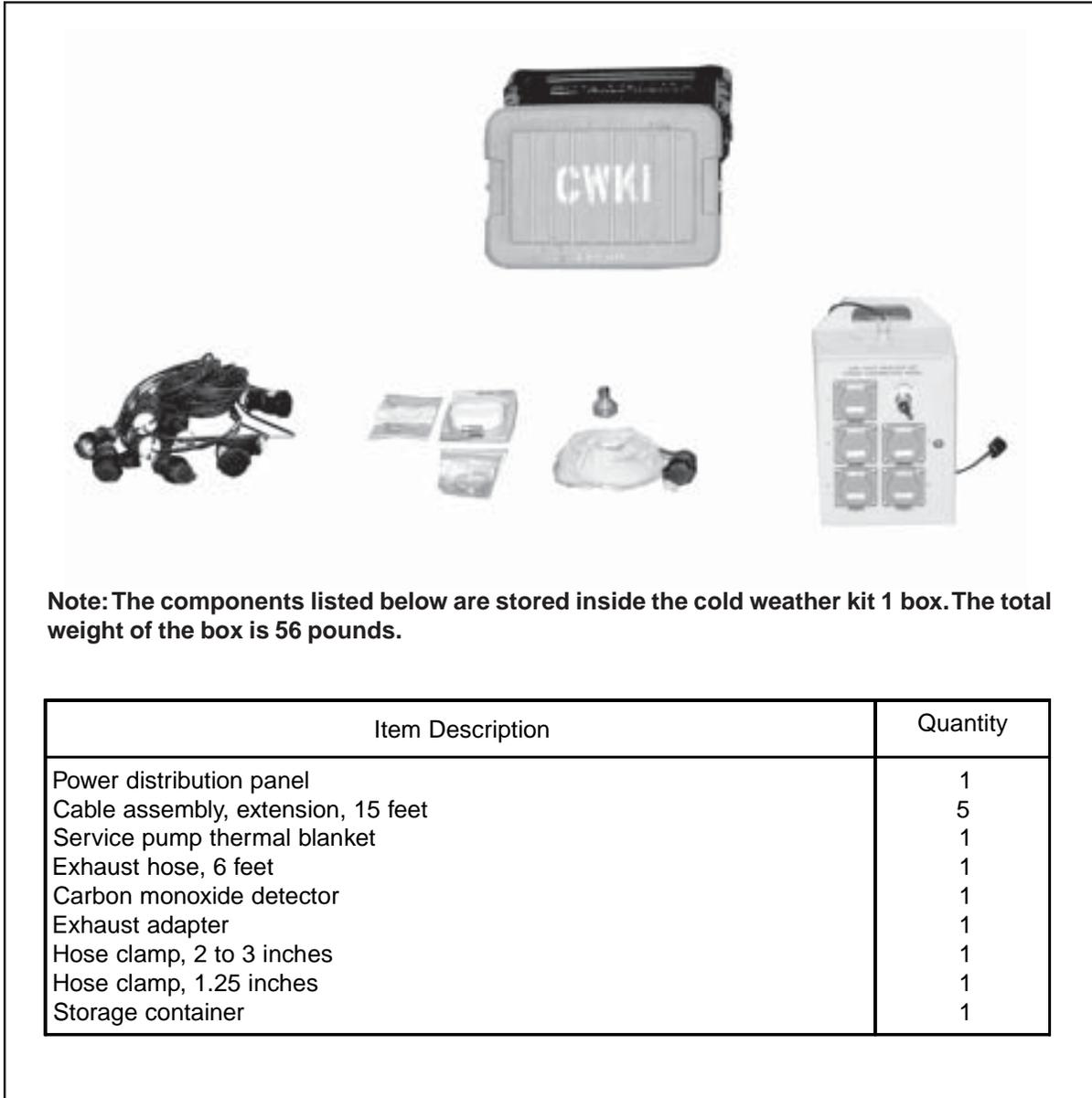


Figure 2-31. CWK1 Box and Loading Truck Prepared and Stowed

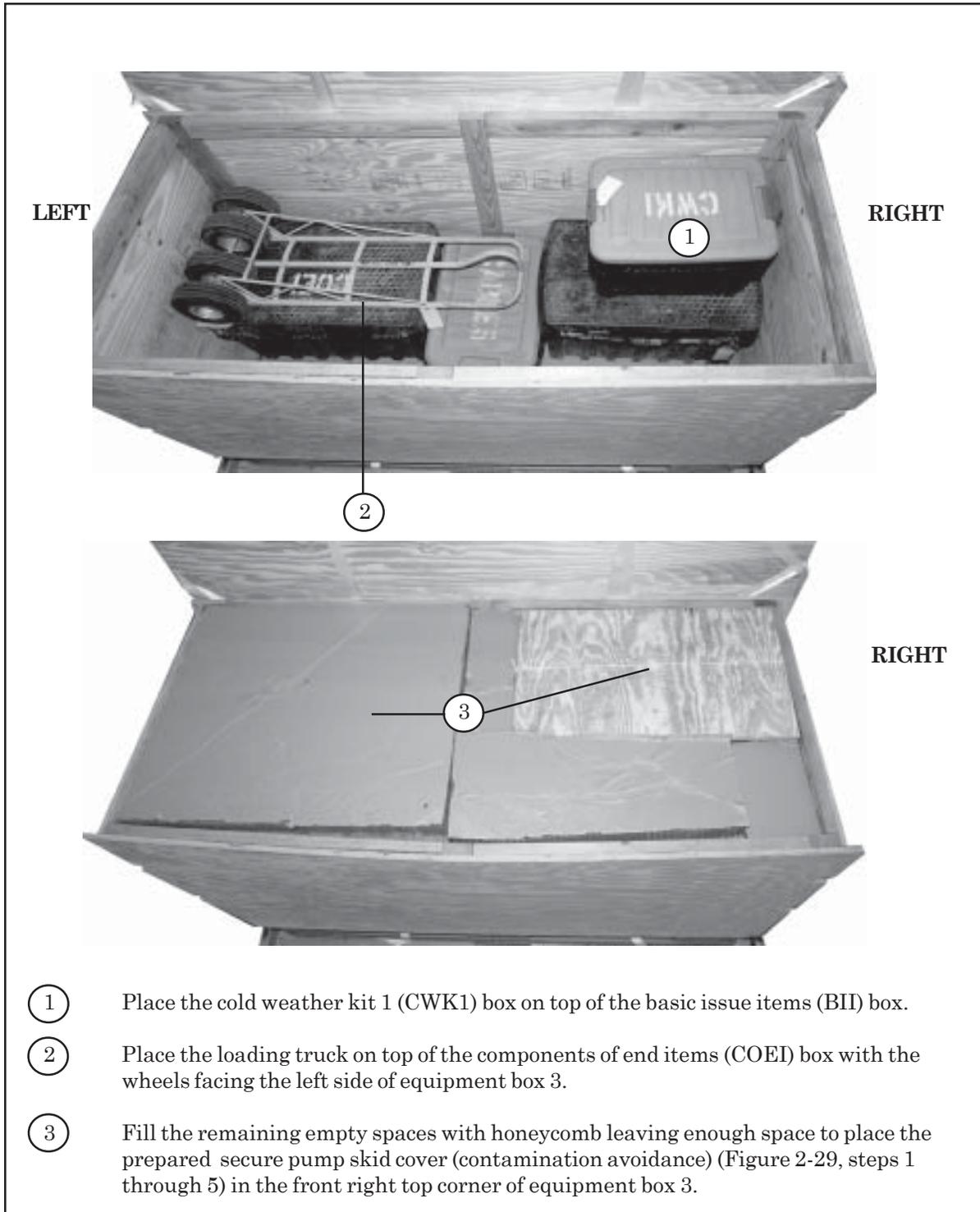


Figure 2-31. CWK1 Box and Loading Truck Prepared and Stowed (Continued)

CLOSING AND SECURING EQUIPMENT BOX 3

2-14. Close and secure equipment box 3 as shown in Figure 2-32.

Note: Use 8d nails.

- ① Place the plywood lid on top of equipment box 3 and nail in place using 8d nails.
- ② Form a 30-foot lashing. Route the 30-foot lashing around equipment box 3 widthwise. Secure the lashing on top using two D-rings and a load binder. Ensure the lashing is routed under the strongback.
- ③ Route the two pre-positioned 30-foot lashings around equipment box 3 lengthwise. Secure each lashing on top using two D-rings and a load binder.

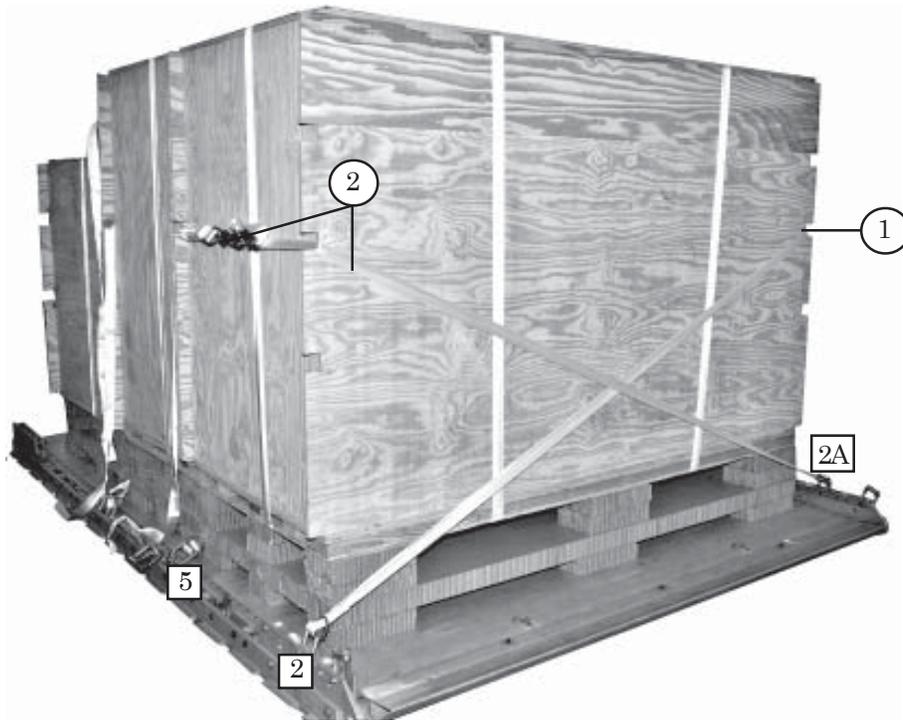
Figure 2-32. Equipment Box 3 Closed and Secured

INSTALLING LASHINGS

2-15. 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 Figure 2-33.

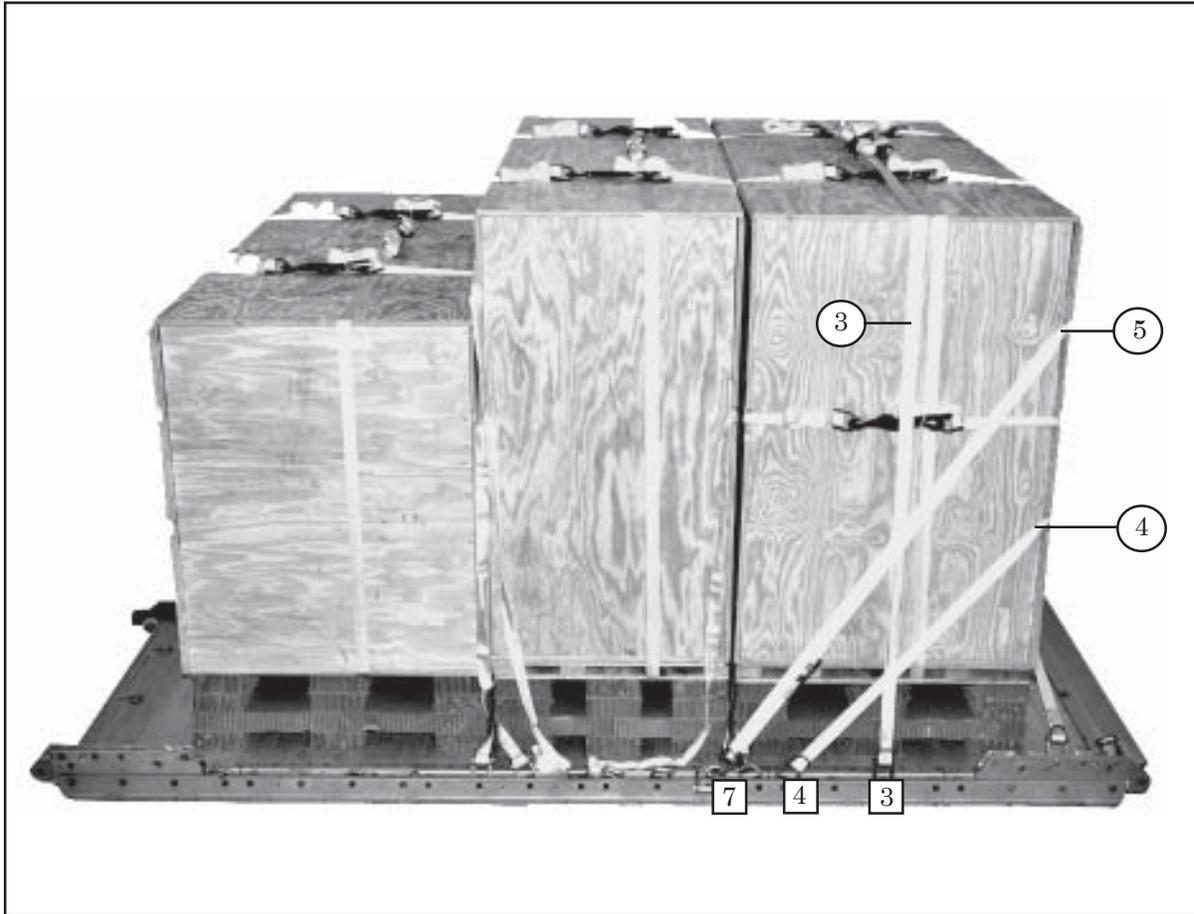
Notes:

1. This load requires lashings over 30 feet in length. Lashings must be positioned through clevises before sections are joined together.
2. Pad and tape all cutouts prior to routing lashings.



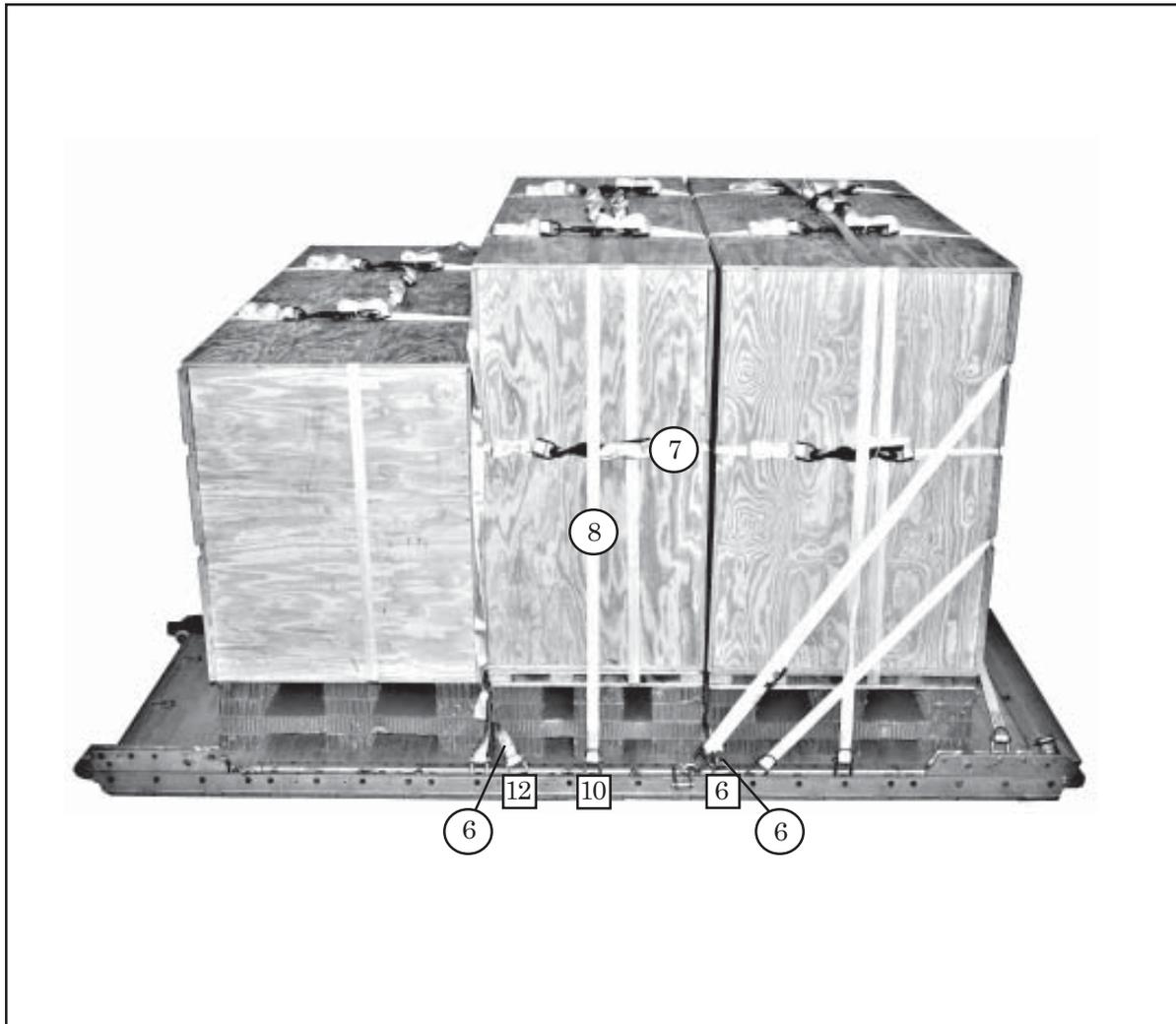
Lashing Number	Tiedown Clevis Number	Instructions
1	2 and 5	Route a 15-foot lashing through clevis 2 and through its own D-ring. Route the lashing across the front of equipment box 1 to the left middle cutout. Secure the lashing to the pre-routed lashing from clevis 5 centered on the left side of equipment box 1 with two D-rings and load binder.
2	2A and 5A	Route a 15-foot lashing through clevis 2A and through its own D-ring. Route the lashing across the front of equipment box 1 to the right middle cutout. Secure the lashing to the pre-routed lashing from clevis 5A centered on the right side of equipment box 1 with two D-rings and load binder.

Figure 2-33. Lashings Installed



Lashing Number	Tiedown Clevis Number	Instructions
3	3 and 3A	Route a 15-foot lashing through clevis 3 and through its own D-ring. Route it to the top of equipment box 1. Route a 15-foot lashing through clevis 3A and through its own D-ring. Route it to the top of equipment box 1. Secure the lashing with the lashing from clevis 3 on top of equipment box 1 with two D-rings and a load binder.
4	4 and 4A	Route a 15-foot lashing through clevis 4 and through its own D-ring. Route the lashing to the front right bottom cutout of equipment box 1. Route a 15-foot lashing through clevis 4A and through its own D-ring. Route the lashing to the front left bottom cutout of equipment box 1. Secure the lashing with the lashing from clevis 4 centered on the front of equipment box 1 with two D-rings and a load binder.
5	7 and 7A	Form a 45-foot lashing. Route a free end through clevis 7 and the other free end through clevis 7A. Route the lashing through the front top cutouts of equipment box 1. Secure the lashing centered on the front of equipment box 1 with two D-rings and a load binder.

Figure 2-33. Lashings Installed (Continued)



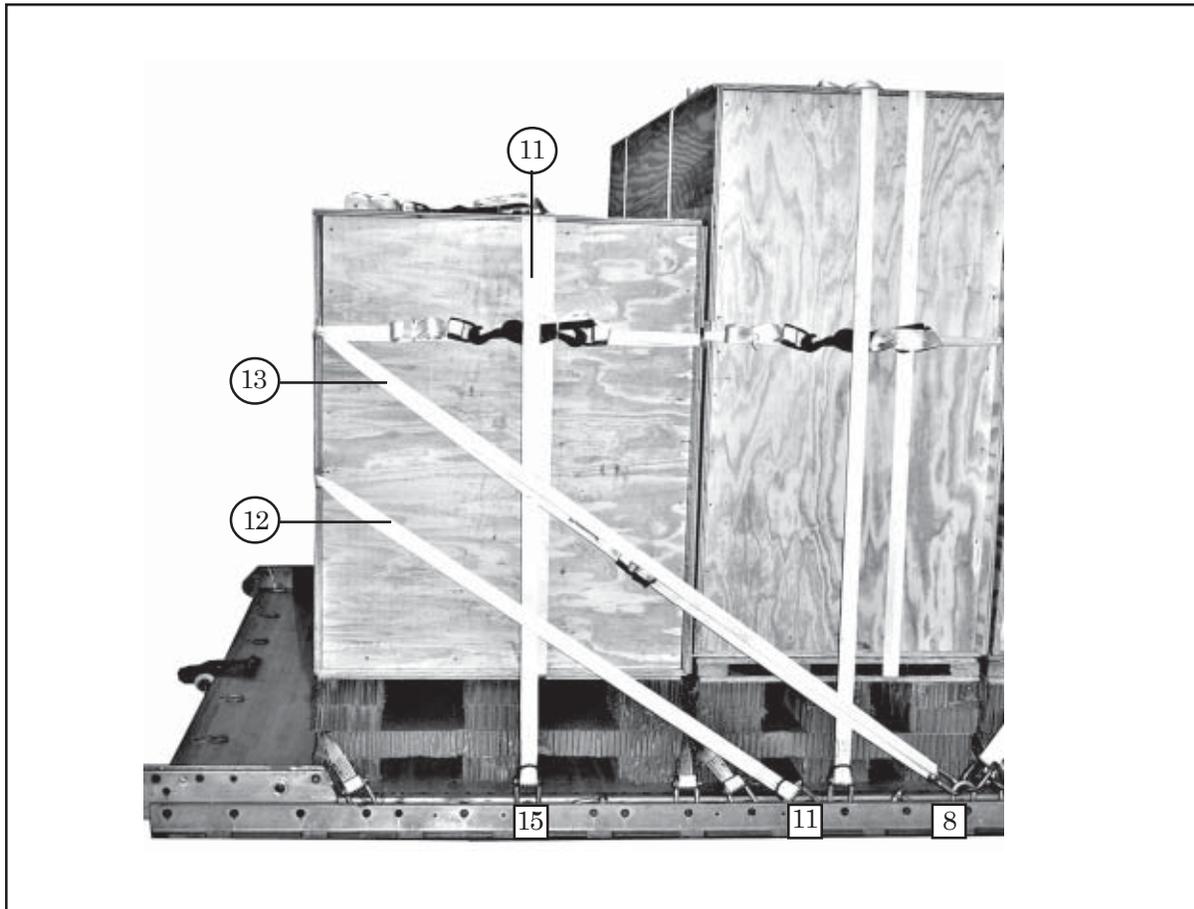
Lashing Number	Tiedown Clevis Number	Instructions
6	6 and 12	Using the 15-foot lashing on clevis 6, secure the lashing to the pre-routed lashing from clevis 12, centered on the left side of equipment box 2 with two D-rings and load binder.
7	6A and 12A	Using the 15-foot lashing on clevis 6A, secure the lashing to the pre-routed lashing from clevis 12A, centered on the right side of equipment box 2 with two D-rings and load binder.
8	10 and 10A	Route a 15-foot lashing through clevis 10 and through its own D-ring. Route it to the top of equipment box 2. Route a 15-foot lashing through clevis 10A and through its own D-ring. Route it to the top of equipment box 2. Secure the lashing with the lashing from clevis 10 on top of equipment box 2 with two D-rings and a load binder.

Figure 2-33. Lashings Installed (Continued)



Lashing Number	Tiedown Clevis Number	Instructions
9	13 and 16	Route a 15-foot lashing through clevis 16 and through its own D-ring. Route the lashing across the rear of equipment box 3 to the rear left top cutout. Secure the lashing to the pre-routed lashing from clevis 13, centered on the left side of equipment box 3 with two D-rings and load binder.
10	13A and 16A	Route a 15-foot lashing through clevis 16A and through its own D-ring. Route the lashing across the rear of equipment box 3 to the rear right top cutout. Secure the lashing to the pre-routed lashing from clevis 13A, centered on the right side of equipment box 3 with two D-rings and load binder.

Figure 2-33. Lashings Installed (Continued)



Lashing Number	Tiedown Clevis Number	Instructions
11	15 and 15A	Route a 15-foot lashing through clevis 15 and through its own D-ring. Route it to the top of equipment box 3. Route a 15-foot lashing through clevis 15A and through its own D-ring. Route it to the top of equipment box 3. Secure the lashing with the lashing from clevis 15 on top of equipment box 3 with two D-rings and a load binder.
12	11 and 11A	Route a 15-foot lashing through clevis 11 and through its own D-ring. Route the lashing to the rear right bottom cutout of equipment box 3. Route a 15-foot lashing through clevis 11A and through its own D-ring. Route the lashing to the rear left bottom cutout of equipment box 3. Secure the lashing with the lashing from clevis 11 centered on the rear of equipment box 3 with two D-rings and a load binder.
13	8 and 8A	Form a 45-foot lashing. Route a free end through clevis 8 and the other free end through clevis 8A. Route the lashing through the rear top cutouts of equipment box 3. Secure the lashing centered on the rear of equipment box 3 with two D-rings and a load binder.

Figure 2-33. Lashings Installed (Continued)

POSITIONING THE ATTITUDE CONTROL BAR (ACB) AND INSTALLING SUSPENSION SLINGS AND SAFETY TIE

2-16. Position the ACB and install the suspension slings and safety tie as shown in Figure 2-34.

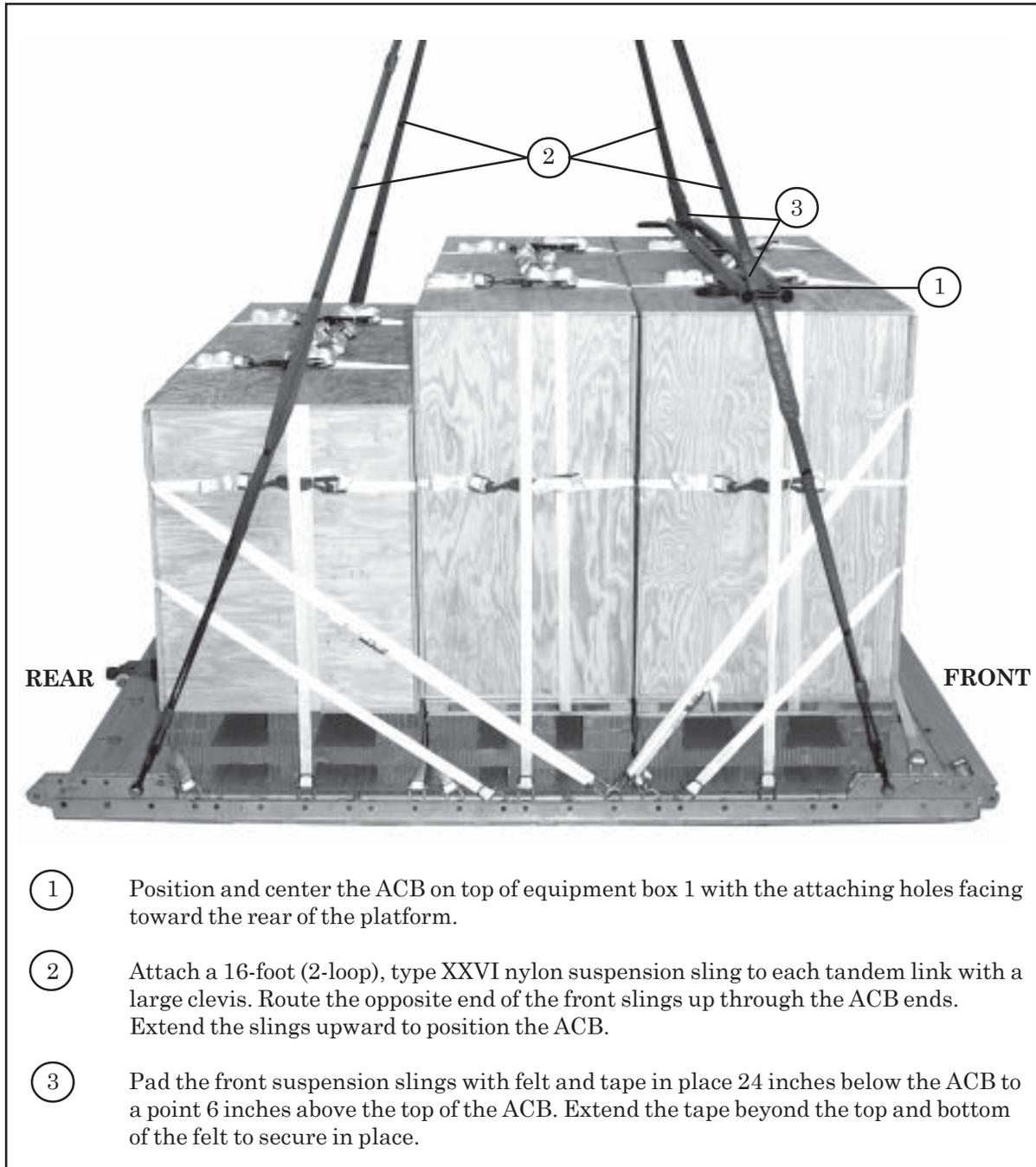


Figure 2-34. ACB, Suspension Slings and Safety Tie Positioned and Installed

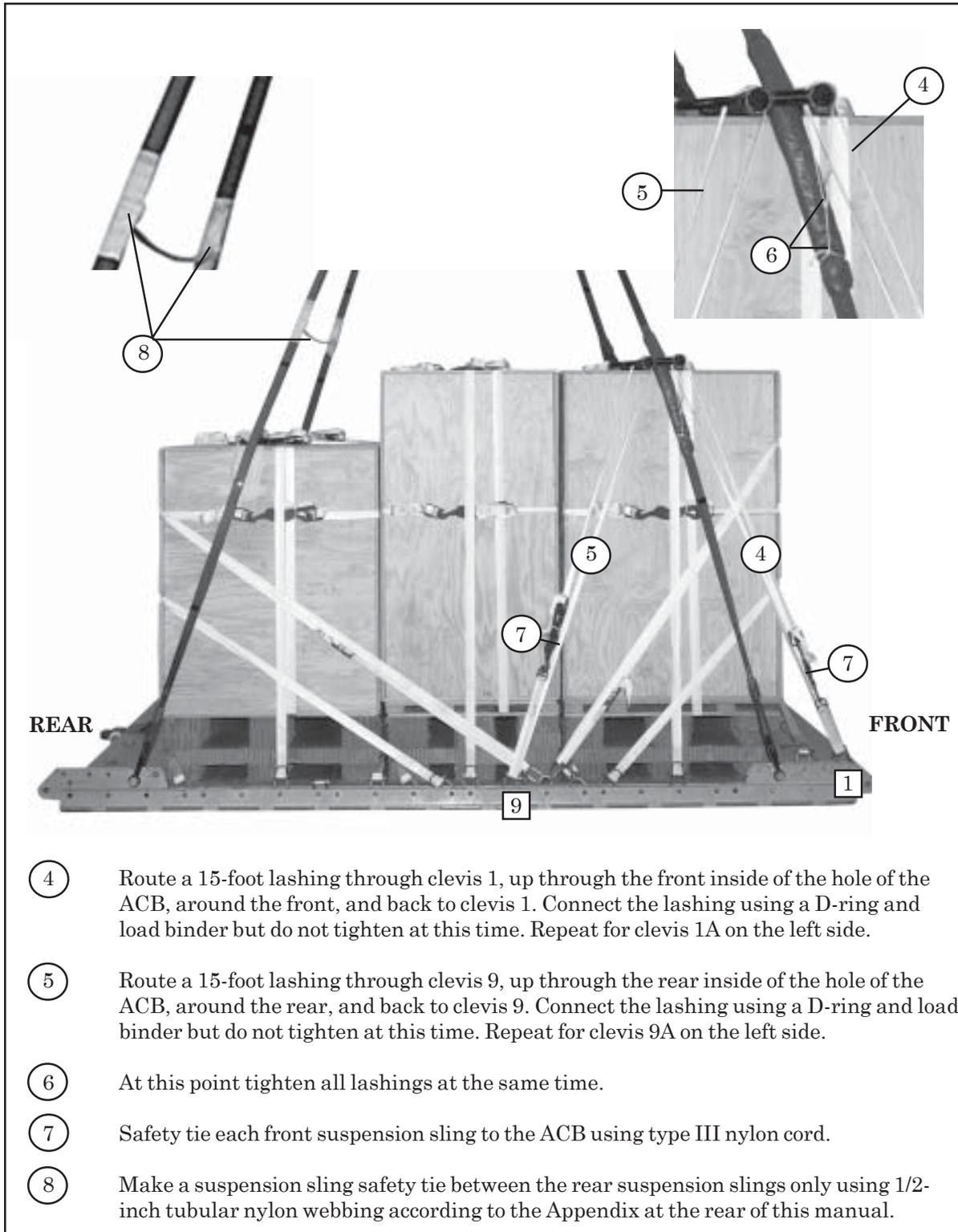
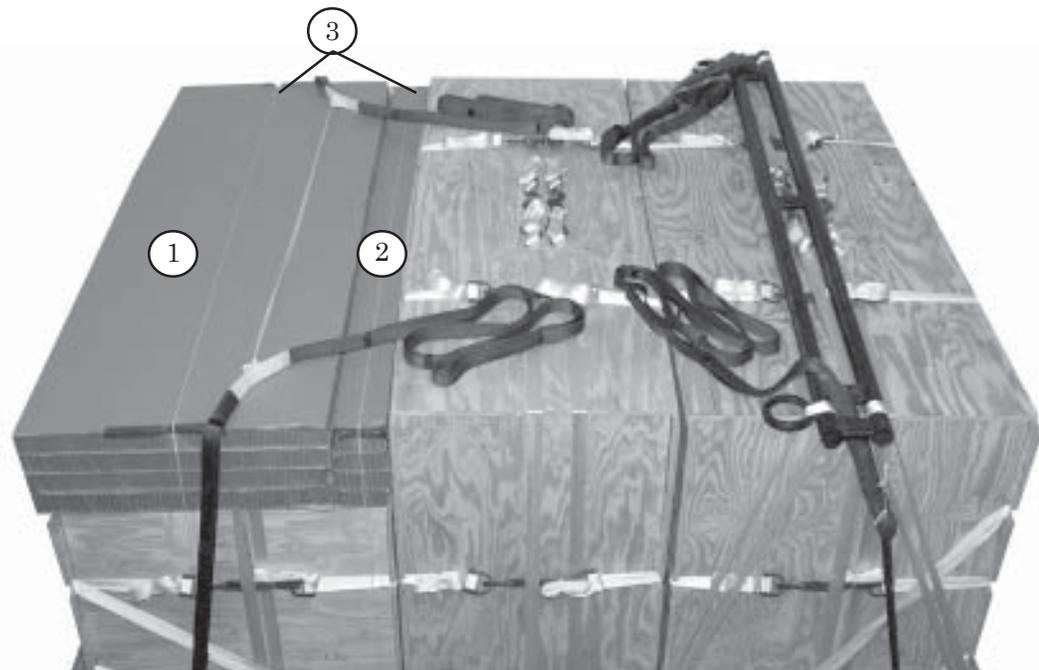


Figure 2-34. ACB, Suspension Slings and Safety Tie Positioned and Installed (Continued)

BUILDING AND POSITIONING PARACHUTE STOWAGE PLATFORM

2-17. Build and position the parachute stowage platform as shown in Figure 2-35.

Note: Make sure the safety tie and suspension slings are on top of the parachute stowage platform.



- ① Prepare a parachute platform by cutting and positioning a 36- by 96-inch piece of honeycomb on top of equipment box 3 flush with the rear edge. Make cutouts in this piece where it comes in contact with the lashings on top of equipment box 3. Place three additional pieces of 36- by 96-inch pieces on top of the first piece. Tape the 36-inch side with 2-inch adhesive tape.
- ② Cut and position four 6- by 96-inch pieces of honeycomb to the front of the 36- by 96-inch pieces of honeycomb previously placed. Tape the 6-inch side with 2-inch adhesive tape.
- ③ Secure the parachute platform to the bushings on the type V platform on each side using type III nylon cord.

Figure 2-35. Parachute Stowage Platform Built and Positioned

PREPARING AND STOWING CARGO PARACHUTES

2-18. Prepare and stow the cargo parachutes as shown in Figure 2-36.

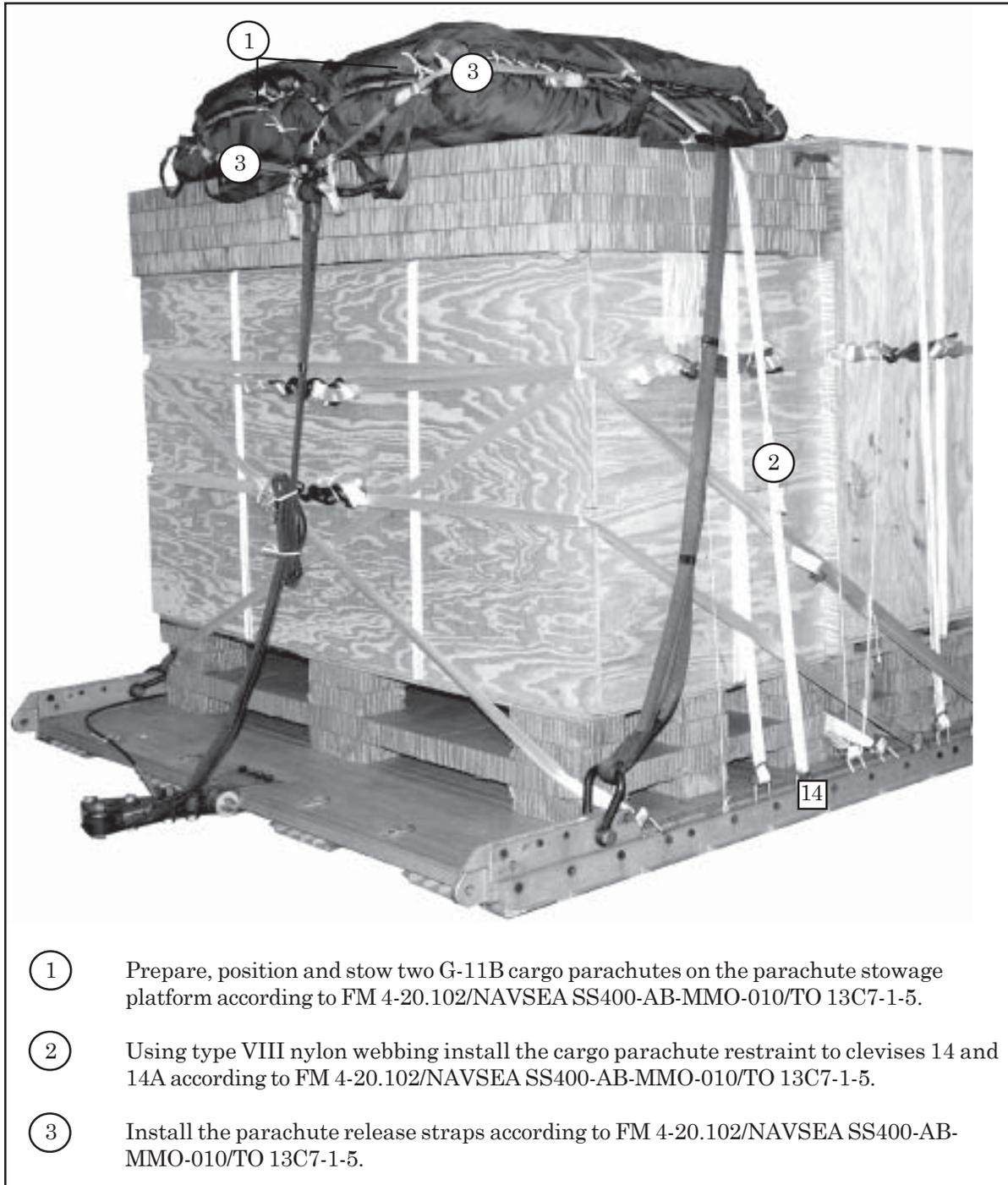


Figure 2-36. Cargo Parachutes Prepared and Stowed

INSTALLING THE RELEASE SYSTEM

2-19. Prepare, attach and safety an M-1 cargo parachute release according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-5-1 and as shown in Figure 2-37.

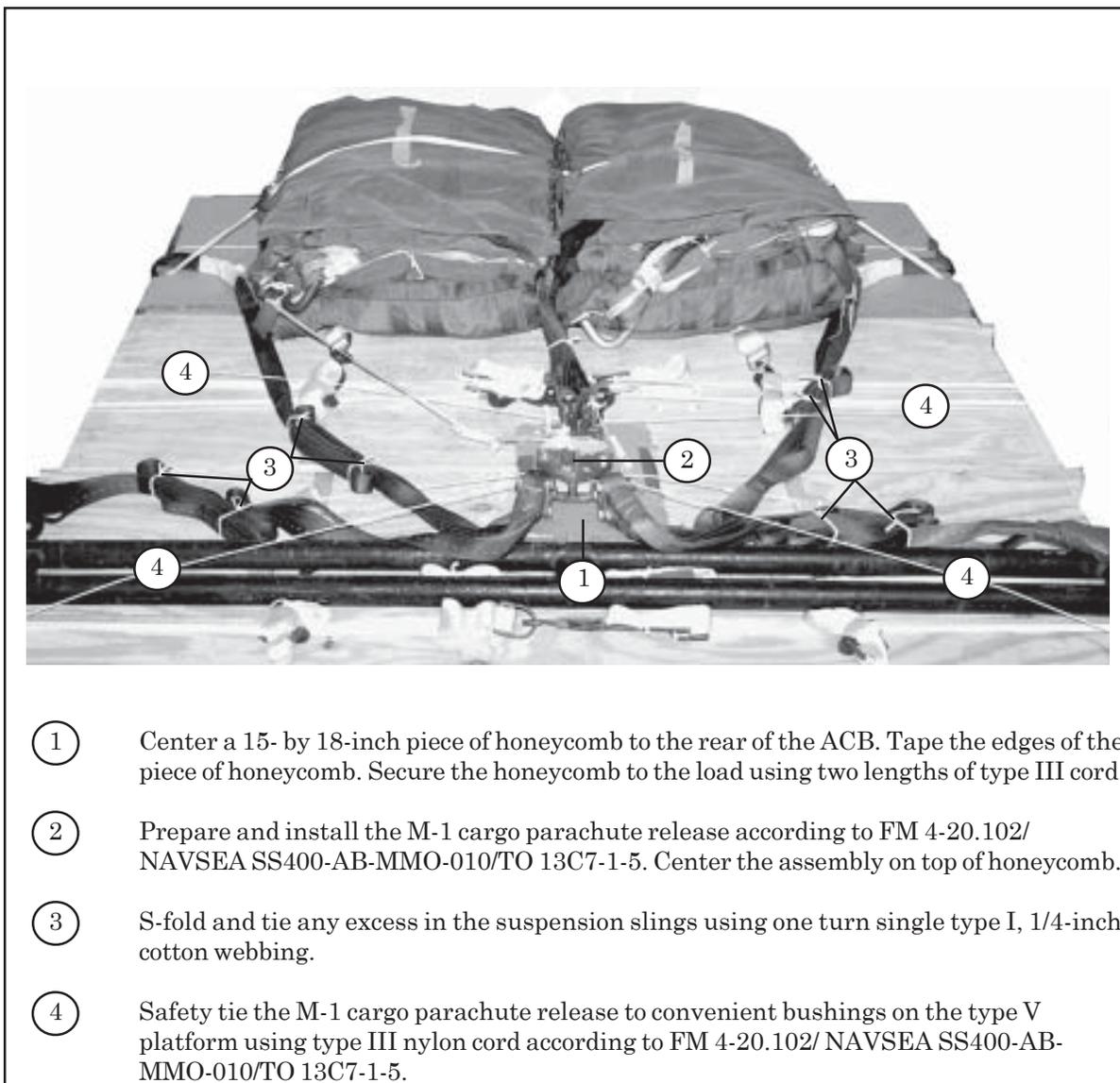


Figure 2-37. Cargo Parachute Release Installed

INSTALLING THE EXTRACTION SYSTEM

2-20. Install the extraction system as shown in Figure 2-38.



Figure 2-38. Extraction System Installed

PLACING EXTRACTION PARACHUTE

2-21. 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

2-22. 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

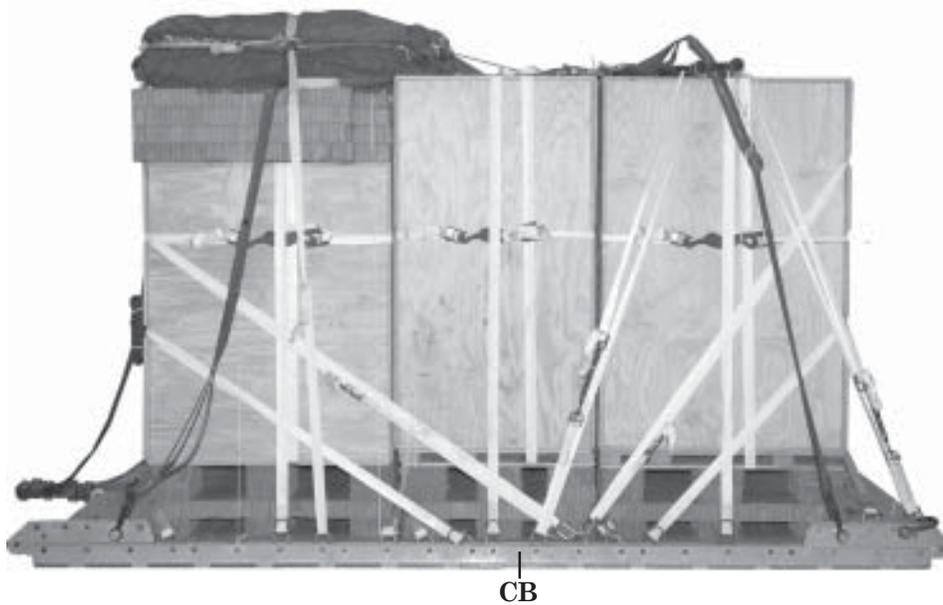
2-23. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and as shown in Figure 2-39. Complete Shipper's Declaration for Dangerous Goods. If the load varies from the one shown, the weight, height, CB, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

2-24. Use the equipment listed in Table 2-1 to rig this load.

CAUTION

Make the final rigger inspection required by AR 59-4/OPNAVINST 4630.24C/AFJ 13-210(I)/MCO 13480.1B and FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD

Weight:	Load shown:	6,140 pounds
	Maximum weight:	6,700 pounds
Height:	.....	92 inches
Width:	.....	108 inches
Length:	.....	144 inches
Overhang:		
	Front:	N/A
	Rear:	18 inches
		(EFTC)
CB (from front edge of platform):	.....	70 inches

Figure 2-39. Lightweight Water Purifier (LWP) Rigged on a 12-Foot, Type V Platform for Low-Velocity Airdrop

Table 2-1. Equipment Required for Rigging a Lightweight Water Purifier (LWP) on a 12-Foot, Type V Platform for Low-Velocity Airdrop

National Stock Number	Items	Quantity
8040-00-273-8713	Adhesive paste, 1-gallon	As required
1670-00-251-1153	A-7A, cargo strap	7
1670-00-003-4389	Bar, attitude control	1
4030-00-678-8562	Clevis, 3/4-inch medium	2
4030-00-090-5354	Clevis, 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) (for C-130)	1
1670-01-183-2678	Leaf, extraction line (line bag) (for C-17)	2
1670-00-003-4391	Knife, parachute bag (for C-17)	1
	Line extraction:	
1670-01-064-4452	60-foot (1-loop), type XXVI (for C-130)	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, 3 3/4-in	
5306-00-435-8994	Bolt, 1-in diam, 4-in long (for C-130)	2
5306-00-435-8994	Bolt, 1-in diam, 4-in long (for C-17)	4
5310-00-232-5165	Nut, 1-in, hexagonal (for C-130)	2
5310-00-232-5165	Nut, 1-in, hexagonal (for C-17)	4
1670-00-003-1953	Plate, side, 3 3/4-in (for C-130)	2
1670-00-003-1953	Plate, side, 3 3/4-in (for C-17)	4
5365-00-007-3414	Spacer, large (for C-130)	2
5365-00-007-3414	Spacer, large (for C-17)	4
	Lumber:	
5510-00-220-6146	2- by 4- by 96-in	As required

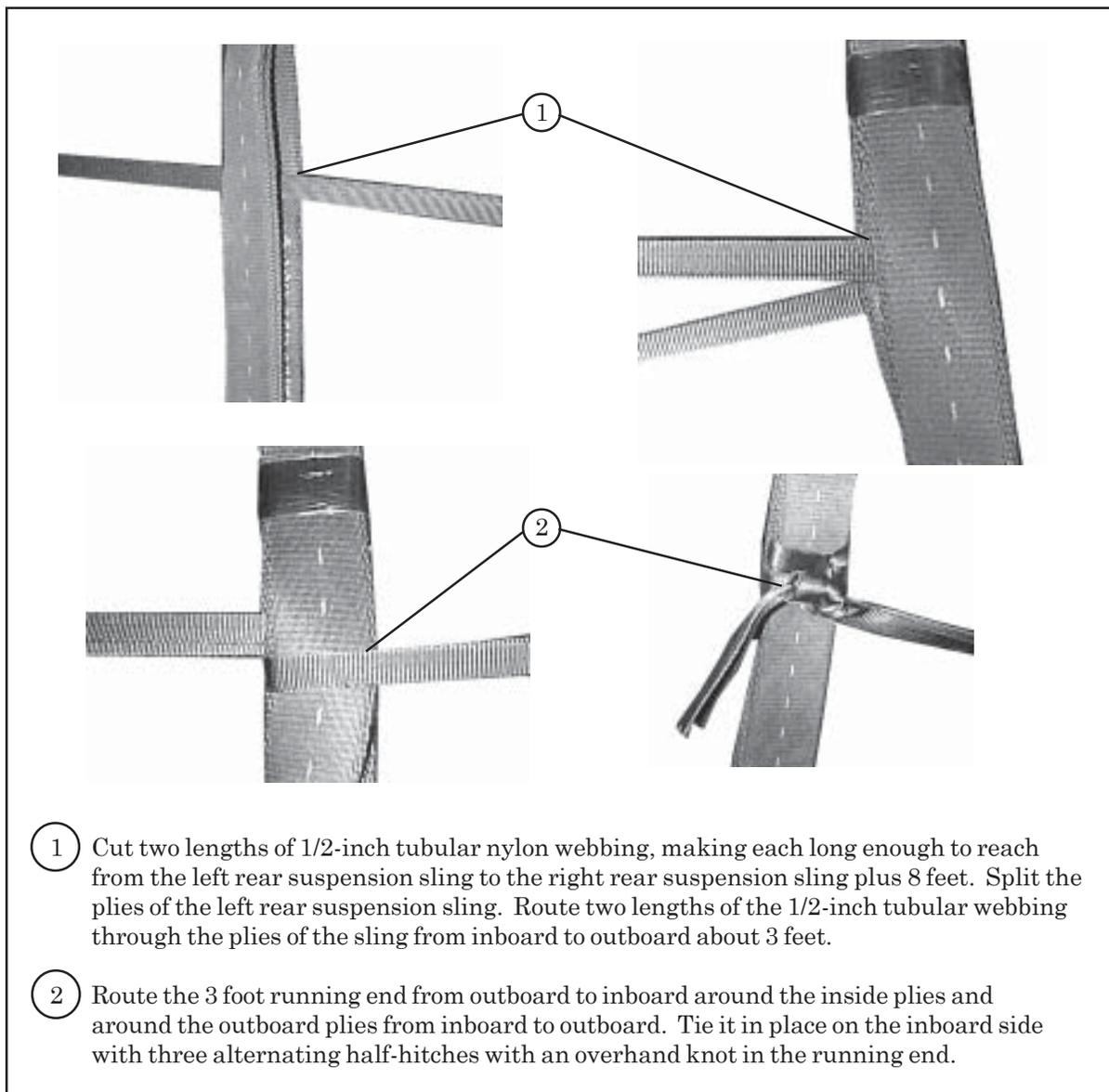
Table 2-1. Equipment Required for Rigging a Lightweight Water Purifier (LWP) on a 12-Foot, Type V Platform for Low-Velocity Airdrop (Continued)

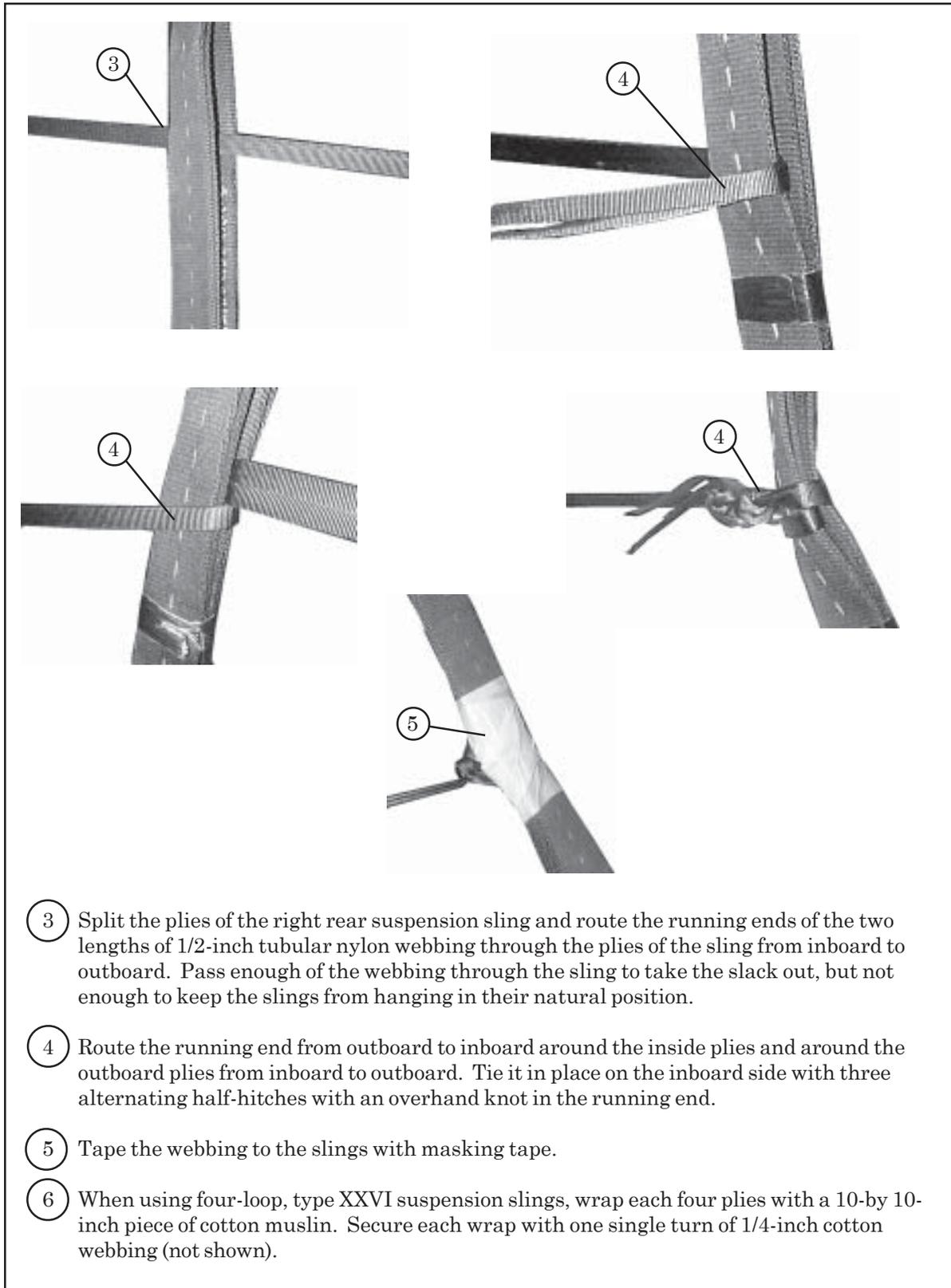
National Stock Number	Items	Quantity
5530-00-618-8073	Plywood, 3/4-in	As required
5315-00-010-4659	Nail, steel wire, common, 8d	As required
1670-00-753-3928	Pad, energy dissipating, honeycomb, 3- by 36- by 96-in	40 sheets
1670-01-016-7841	Parachute: Cargo: G-11B	2
1670-00-063-3715	Parachute, cargo extraction: 15-ft. (for C-130)	1
1670-00-063-3715	15-ft. (for C-17)	2
1670-01-162-2372	Platform, airdrop, type V, 12-ft: Clevis assembly	32
1670-01-353-8424	Extraction bracket assembly	1
1670-01-162-2381	Tandem link assembly (multipurpose link)	4
1670-01-097-8816	Release, cargo parachute, M-1	1
1670-01-062-6304	Sling, cargo, airdrop: 9-ft. (2-loop), type XXVI	1
1670-01-063-7761	16-ft. (2-loop), type XXVI	4
1670-01-062-6302	20-ft. (2-loop), type XXVI	2
1670-00-040-8219	Strap, parachute release, multicut	2
7510-00-266-5016	Tape, adhesive, 2-in	As required
7510-00-266-6710	Tape, masking	As required
8305-00-433-5986	Textile; Cloth, cotton muslin, type III (for C-17)	As required
8310-00-917-3945	Thread, cotton, ticket no 8/7 (for C-17)	As required
1670-00-937-0271	Tiedown assembly, 15-ft.	55
1670-01-483-8259	Towplate release mechanism (h-block) (C-17 only)	1
8305-00-268-2411	Webbing: 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	As required
8305-00-261-8585	Type VIII nylon	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 rear suspension slings according to instructions shown below.





Glossary

ACB	Attitude Control Bar
AFB	Air Force Base
AFMAN	Air Force Manual
AFR	Air Force Regulation
AFTO	Air Force Technical Order
AMC	Air Mobility Command
AR	Army Regulation
attn	attention
BII	basic issue items
CB	center of balance
COEI	components of end items
CWK1	cold weather kit 1
CWK2	cold weather kit 2
CWK3	cold weather kit 3
d	penny
DA	Department of the Army
DD	Department of Defense
EFTC	extraction force transfer coupling
FM	Field Manual
ft	feet
GPH	gallons per hour
HQ	headquarters
in	inch
kw	kilowatt
lb	pound

LWP	lightweight water purifier
MCO	Marine Corp Order
NBC	nuclear, biological and chemical
no	number
JAI	joint airdrop inspection
ROWPU	reverse osmosis water purification unit
TM	technical manual
TO	technical order
TRADOC	United States Army Training and Doctrine Command
US	United States
yd	yard

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FM 4-20.158 (FM 10-558)
TO 13C7-7-61
11 MAY 2005

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