

CHAPTER 4

**RIGGING THE RAPID RUNWAY REPAIR (RRR) KIT-ALPHA
ON A 32-FOOT, TYPE V PLATFORM
FOR LOW-VELOCITY AIRDROP****4-1. Description of Load**

The folded fiberglass mat Rapid Runway Repair (RRR) Kit-ALPHA consists of two mat sections, an equipment box and eight metal boxes filled with bolts and washers. The folded fiberglass mat RRR kit is rigged with three G-11 cargo parachutes on a 32-foot, type V platform for low-velocity airdrop. It has a total rigged weight of 13,260 pounds, height of 59 1/2 inches, width of 108 inches, and length of 401 inches with a 17 inch rear overhang and a center of balance (CB) of 189 inches from the front edge of the platform.

4-2. Preparing Platform

Prepare a 32-foot, type V platform as given below.

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

Note:

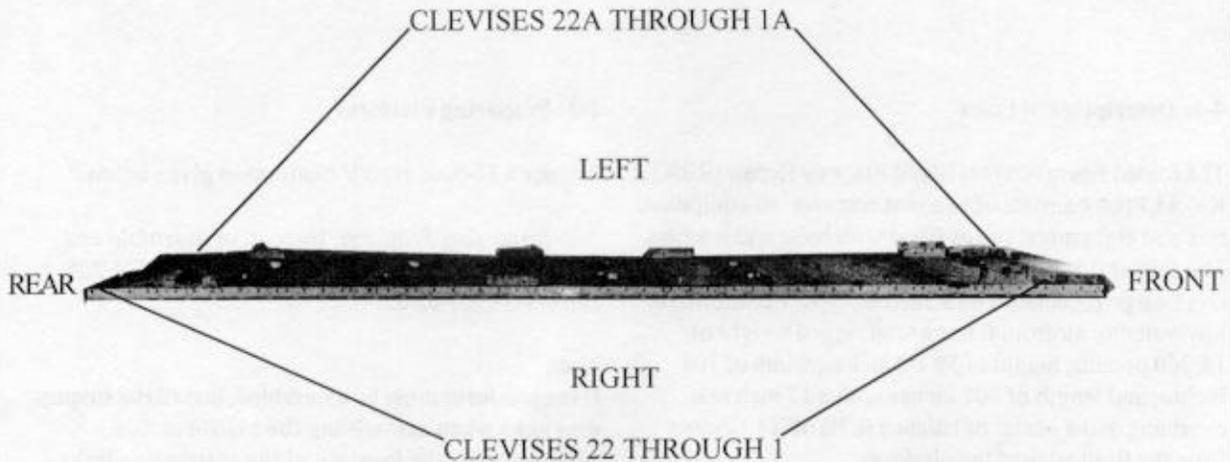
If the platform must be assembled, install the suspension links when assembling the platform. See *Figure 4-1* for the location of the suspension links.

b. Installing Suspension Links. Install eight suspension links on the assembled platform according to FM 10-500-2/TO 13C7-1-5 and as shown in *Figure 4-1*.

c. Installing Tandem Links. Install two tandem links as shown in *Figure 4-1*.

d. Attaching and Numbering Clevises. Attach and number 44 clevis assemblies as shown in *Figure 4-1*.

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



Step:

1. Inspect, or assemble and inspect, the platform according to TM 10-1670-268-20&P/ TO 13C7-52-22.
2. Install a tandem link on the front of each platform side rail using holes 1, 2, and 3.
3. Install a suspension link on each side rail using holes 6, 7, 8, 26, 27, 28, 37, 38, 39, 57, 58, and 59.
4. Install a clevis on bushings 1, 2, and 4 on the first suspension link.
5. Install a double clevis on the fourth suspension link on bushing 2.
6. Starting at the front of each platform side rail, install clevises on the bushings bolted on holes 4, double 10 only, 11, 16, 19, 22, 33, 45, 51, 53, 54, 55, 61, 63, and 64.
7. Starting at the front of the platform, number the clevises bolted on the right side 1 through 22 and those bolted on the left side from 1A through 22A.
8. Label the tie-down rings according to FM 10-500-2/TO 13C7-1-5.
9. Preposition single tie-down lashings through the following deck rings running each through it's own D-ring: A2, B2, A6, B6, B9, A12, A15, and B15.

Figure 4-1. Platform prepared

4-3. Building and Positioning Honeycomb Stacks

Build eight honeycomb stacks according to FM 10-500-2/TO 13C7-1-5 and as shown in *Figure 4-2*. Position the honeycomb stacks on the platform as shown in *Figure 4-3*.

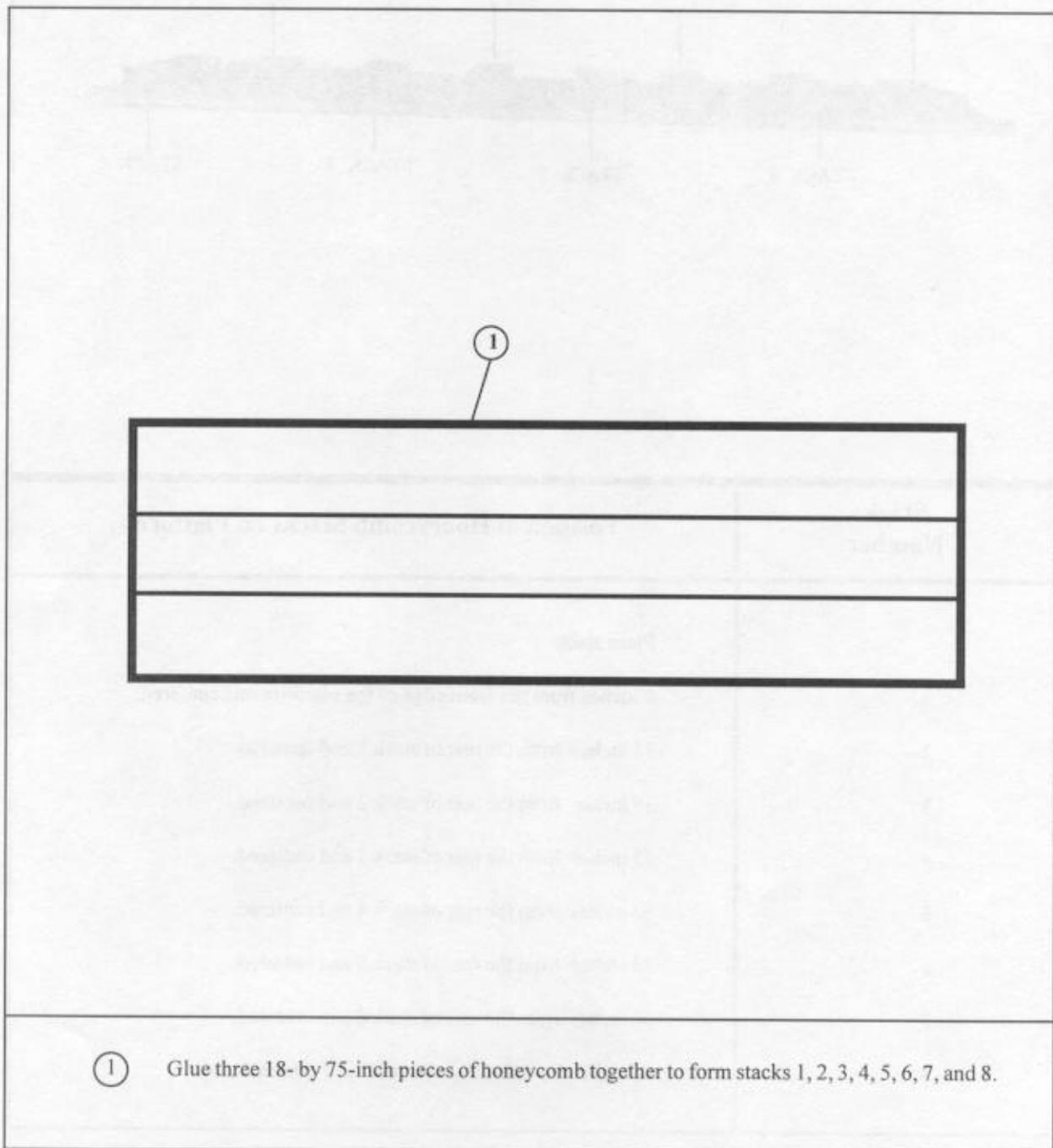


Figure 4-2. Honeycomb stacks built

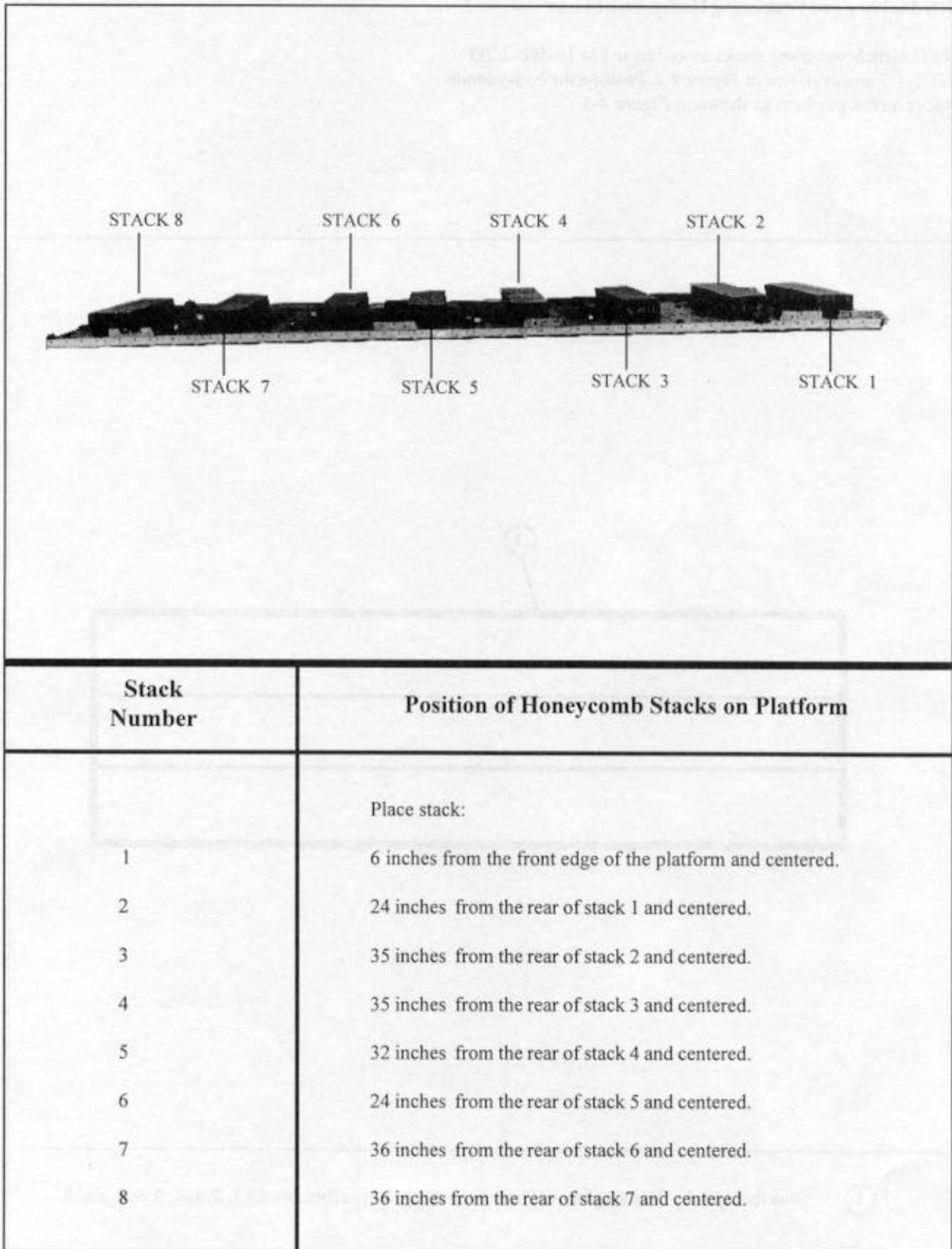
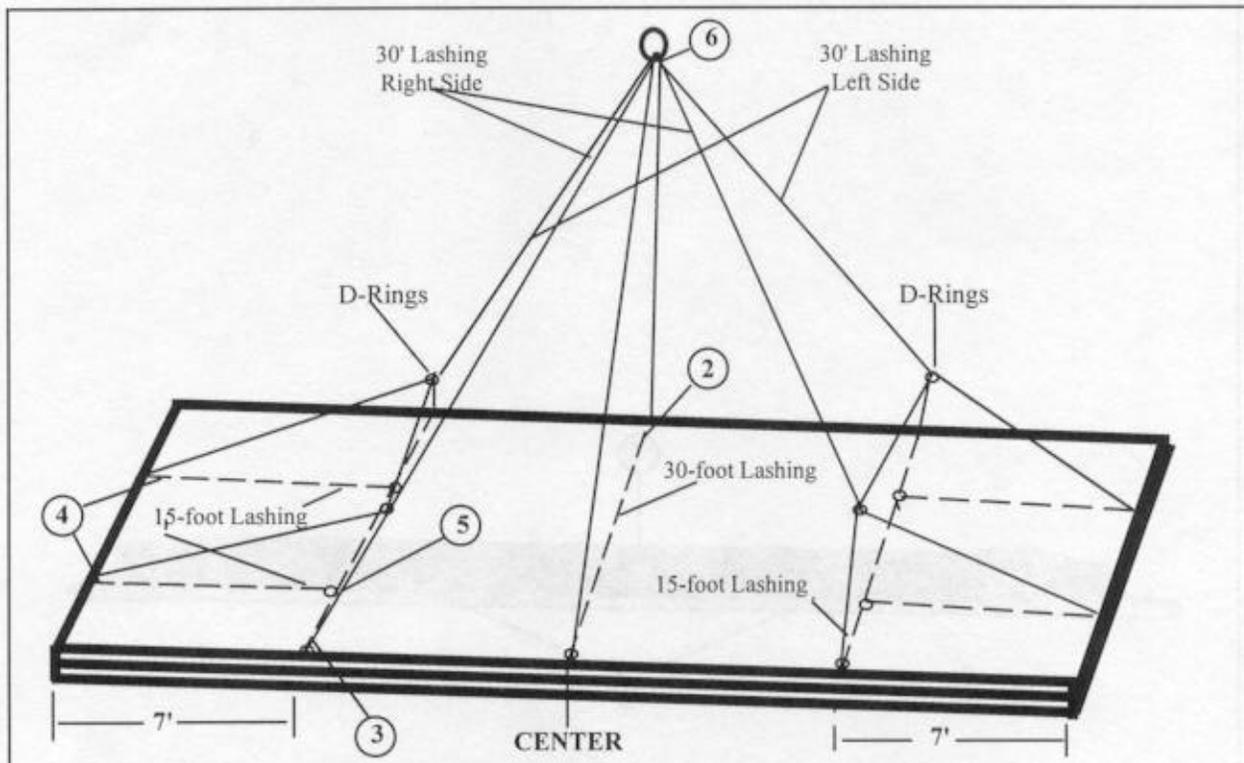


Figure 4-3. Honeycomb stacks positioned

4-4. Lifting and Positioning Folded Fiberglass Mat Rapid Runway Repair (RRR) Kit

Lift one section of the folded fiberglass mat RRR kit by using a combination of tie-down lashings as shown in *Figure 4-4*.

Position the mats on the honeycomb stacks as shown in *Figures 4-5 through 4-7*.



- ① Using a forklift, place the section to be lifted on adequate dunnage (not shown).
- ② Form a 30-foot lashing and pass around the center of the matting.
- ③ Evenly space and position two 15-foot lashings on each end of the mat. Place the D-rings under the mat 7 feet from the ends.
- ④ Run a 15-foot lashing on each end of the mat through the D-rings of the lashings in step 3. Connect the running end of the lashing to its own D-ring forming a loop around the mat. Attach the running ends of the lashings in step 3 to the looped lashing with D-rings keeping the ends evenly spaced.
- ⑤ Form two 30-foot lashings and connect the running end of one of the 30-foot lashings on the left side at the point where the lashings in steps 3 and 4 connect. Repeat the steps for the right side.
- ⑥ Place the centers of all the 30-foot lashings on a crane and lift the mat. Adjust the lashings as needed to balance evenly.

Figure 4-4. Lifting lashings positioned

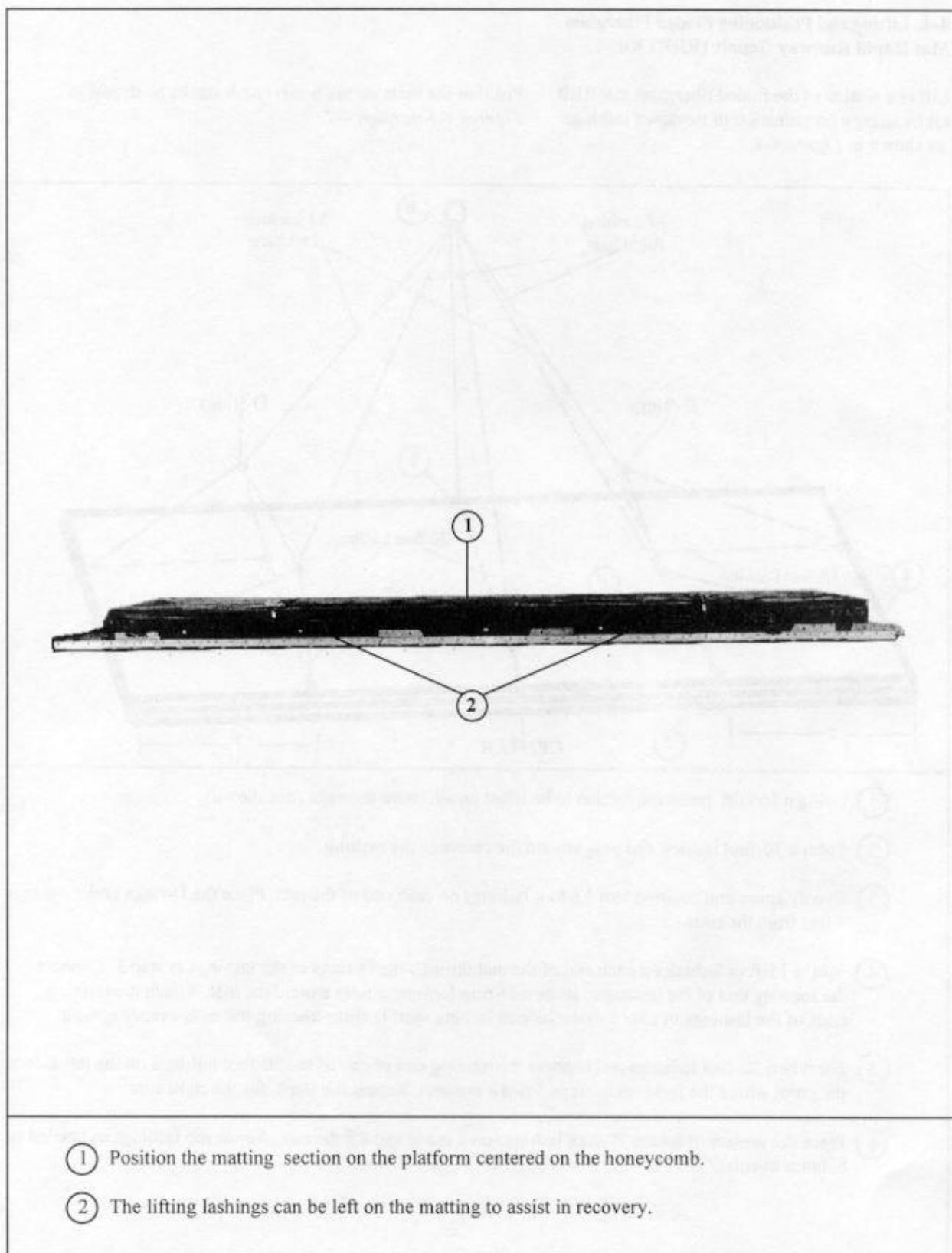
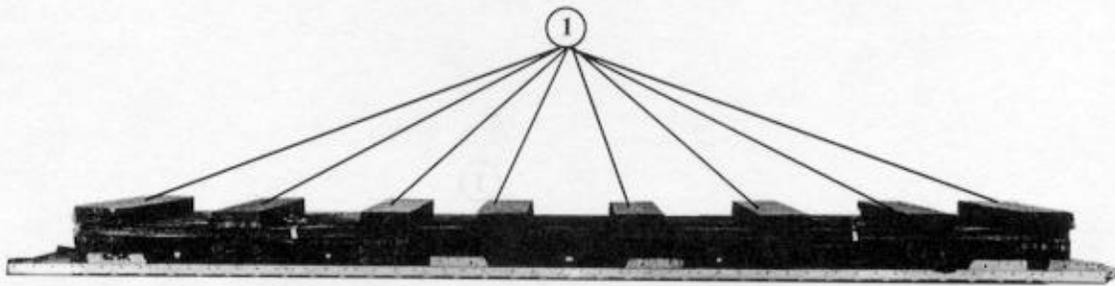


Figure 4-5. Matting section positioned on honeycomb stacks



- ① Cut and glue eight stacks of honeycomb each with two layers measuring 18 by 75 inches. Place them on top of the matting section one directly over the stacks positioned on the platform.

Figure 4-6. Second honeycomb stacks positioned on matting

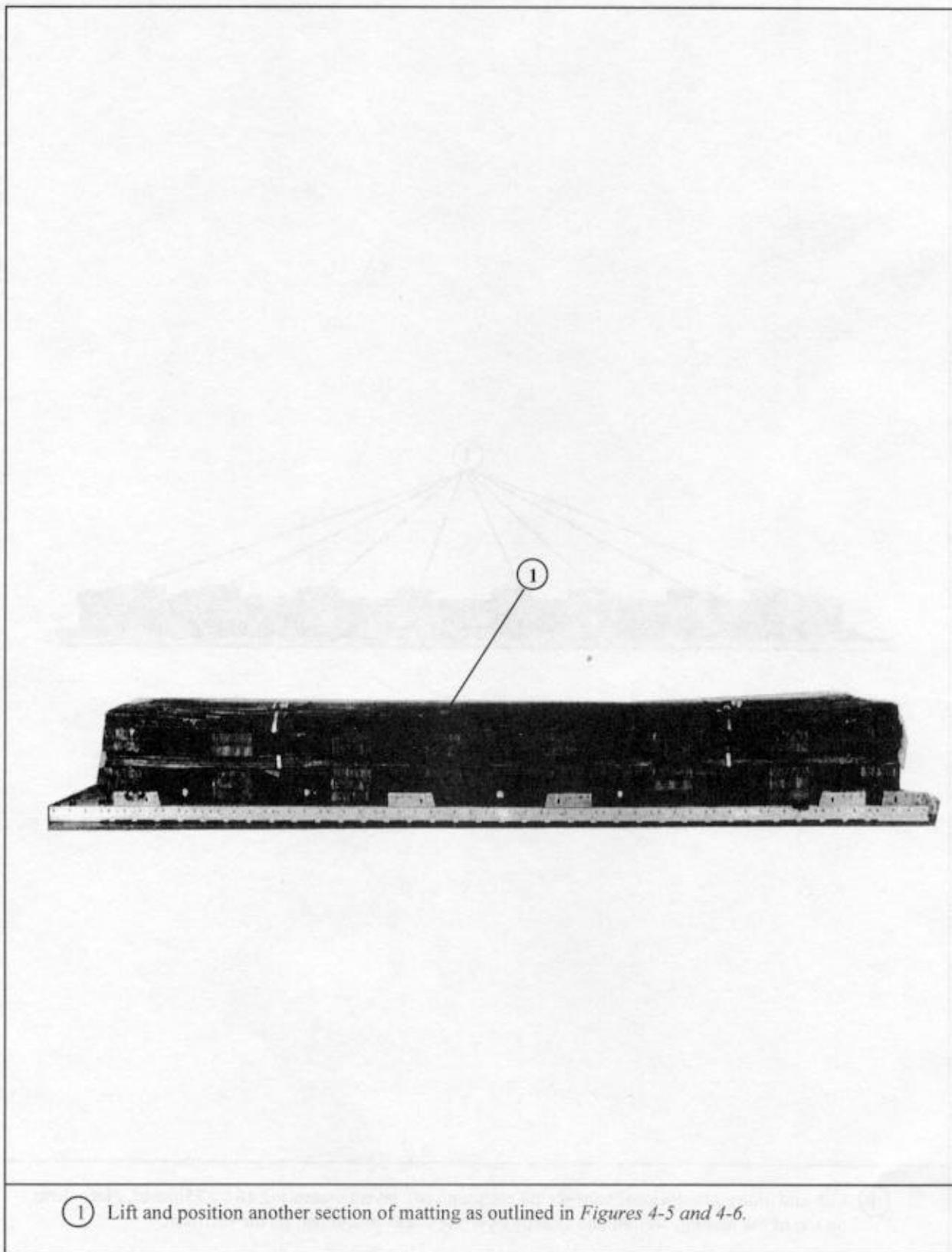


Figure 4-7. Second matting section positioned

4-5. Building, Positioning and Securing Front and Rear Endboards

Build the front and rear endboards as shown in *Figure 4-8*. Place a piece of honeycomb 36 inches by 75 inches, flat behind, centered and flush with endboards as shown in *Figure 4-10*. Each endboard consists of a double thickness of 3/4-inch plywood. Nail the outside layer to the inside layer of each endboard. Position and secure the endboards as shown in *Figures 4-10, 4-11, 4-12, and 4-14*.

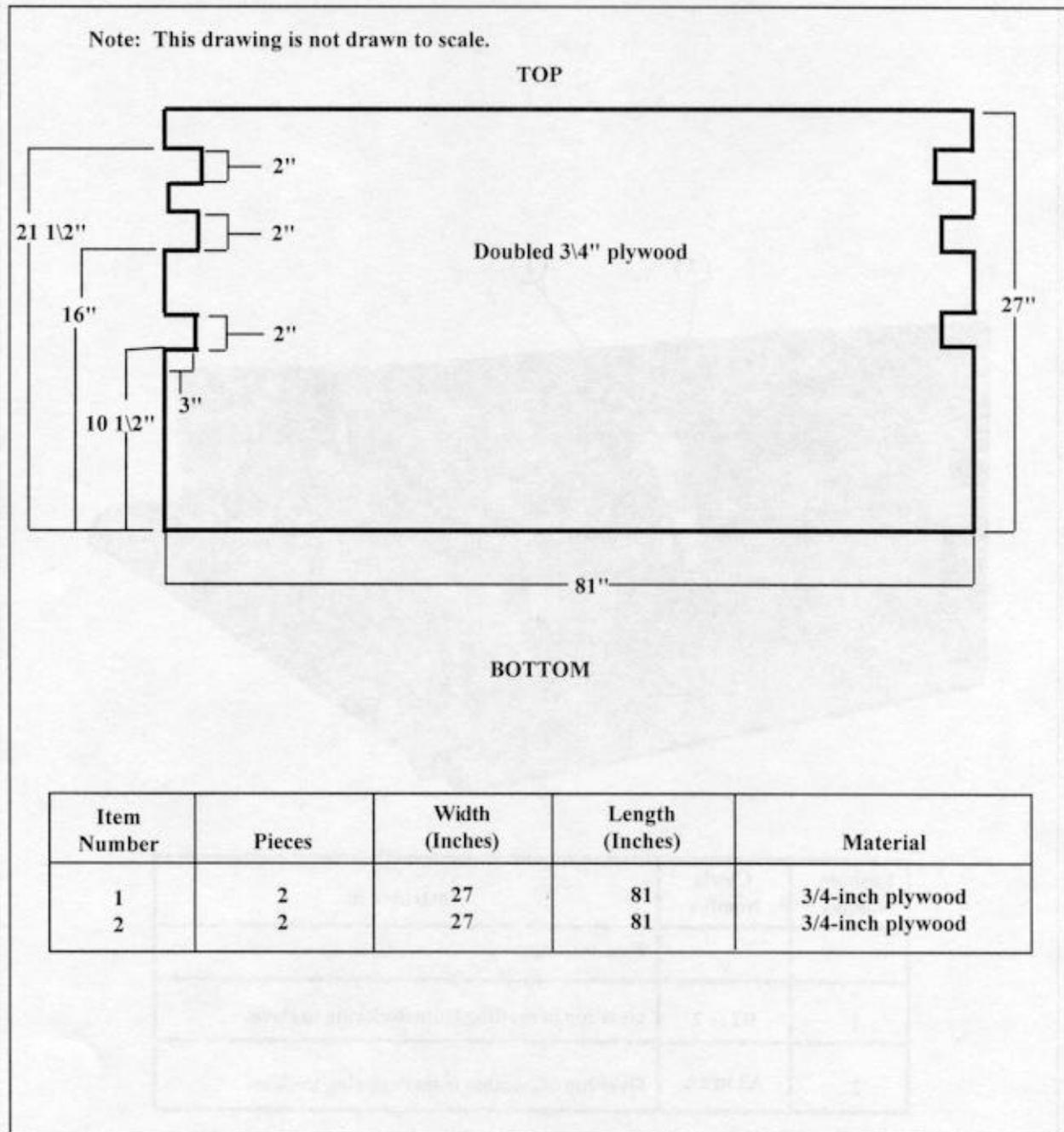


Figure 4-8. Materials required to build load endboards

4-6. Installing Lashings

Lash the load to the platform as shown in *Figures 4-9 through 4-14*. Form 30-foot and 45-foot lashings in accordance with FM 10-500-2/TO 13C7-1-5.

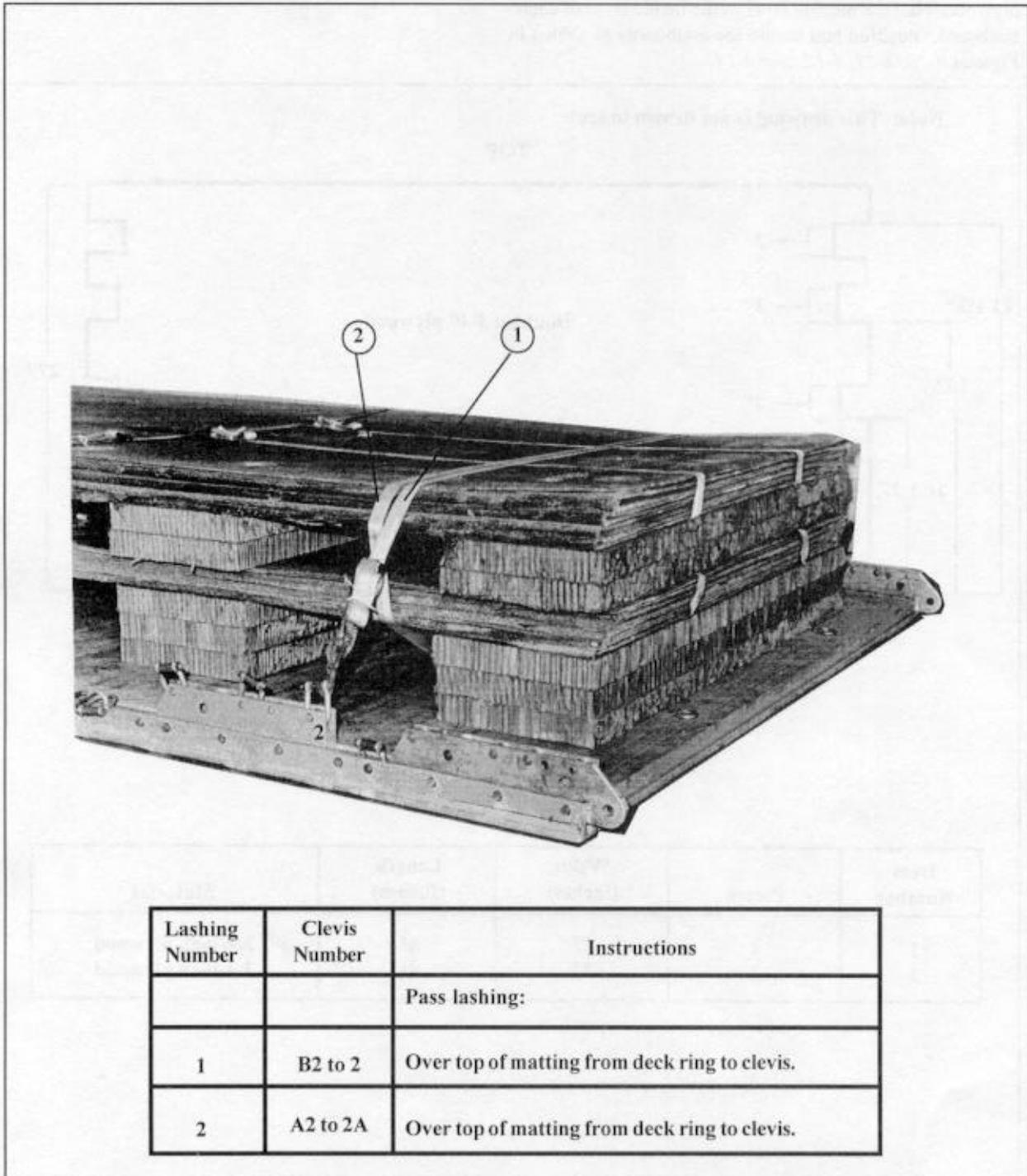
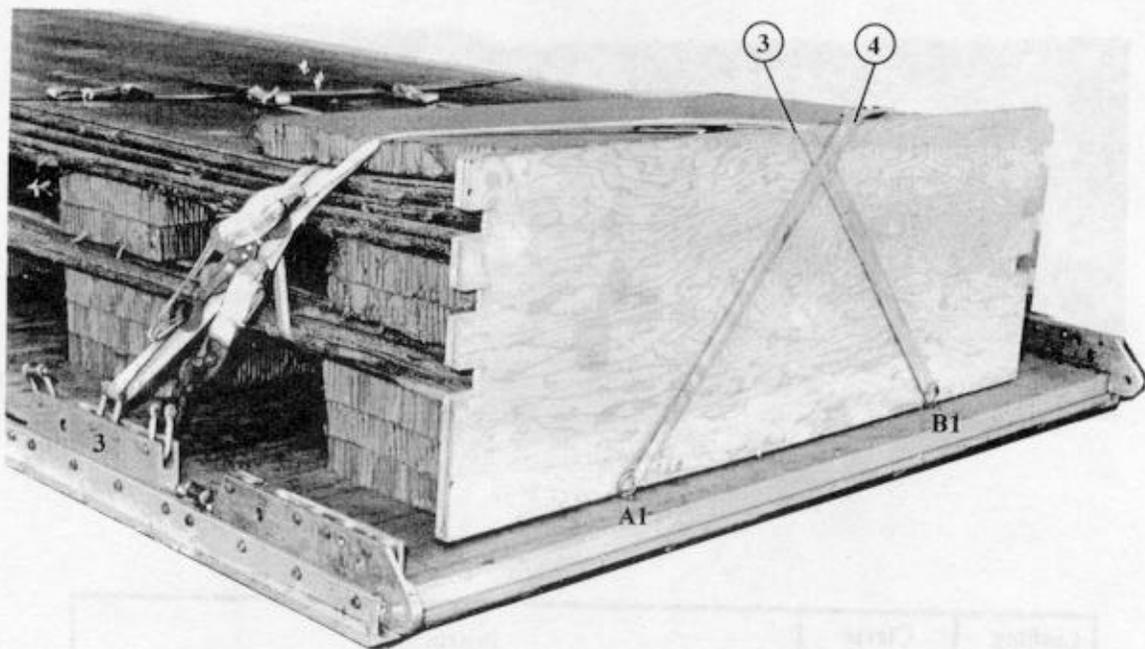
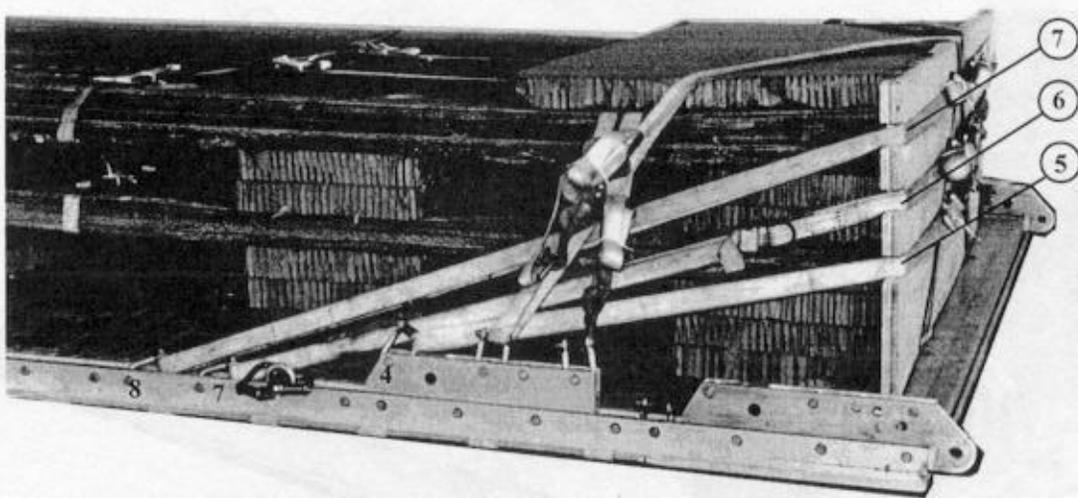


Figure 4-9. Lashings 1 and 2 installed



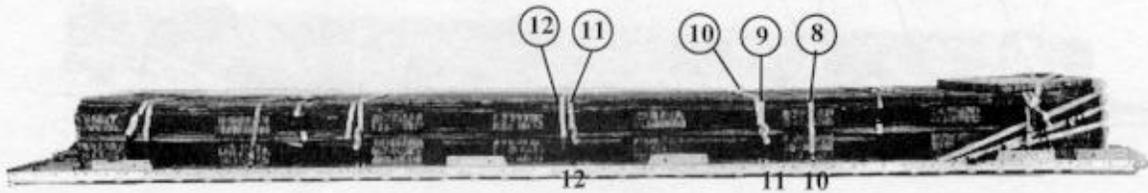
| Lashing Number | Clevis Number | Instructions |
|----------------|---------------|--|
| | | Note: *30-foot lashing. |
| | | Pass lashing: |
| *3 | 3 to B1 | From clevis over top of endboard through deck ring back to clevis. |
| *4 | 3A to 1A | From clevis over top of endboard through deck ring back to clevis. |

Figure 4-10. Lashings 3 and 4 installed



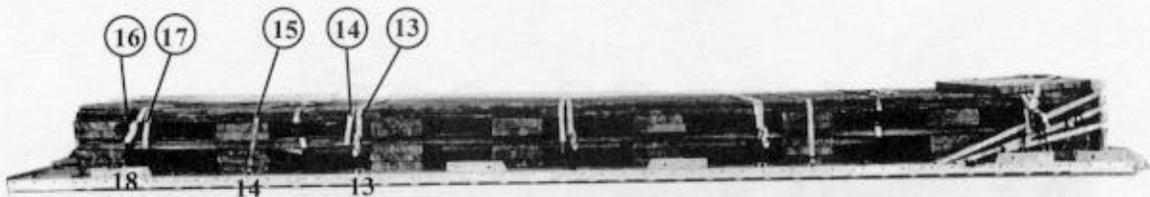
| Lashing Number | Clevis Number | Instructions |
|----------------|---------------|--|
| | | Note: *30-foot lashing, **45-foot lashing. |
| | | Pass lashing: |
| *5 | 4 to 4A | Through bottom notch of endboard. |
| **6 | 7 to 7A | Through middle notch of endboard. |
| **7 | 8 to 8A | Through top notch of endboard. |

Figure 4-11. Lashings 5 through 7 installed



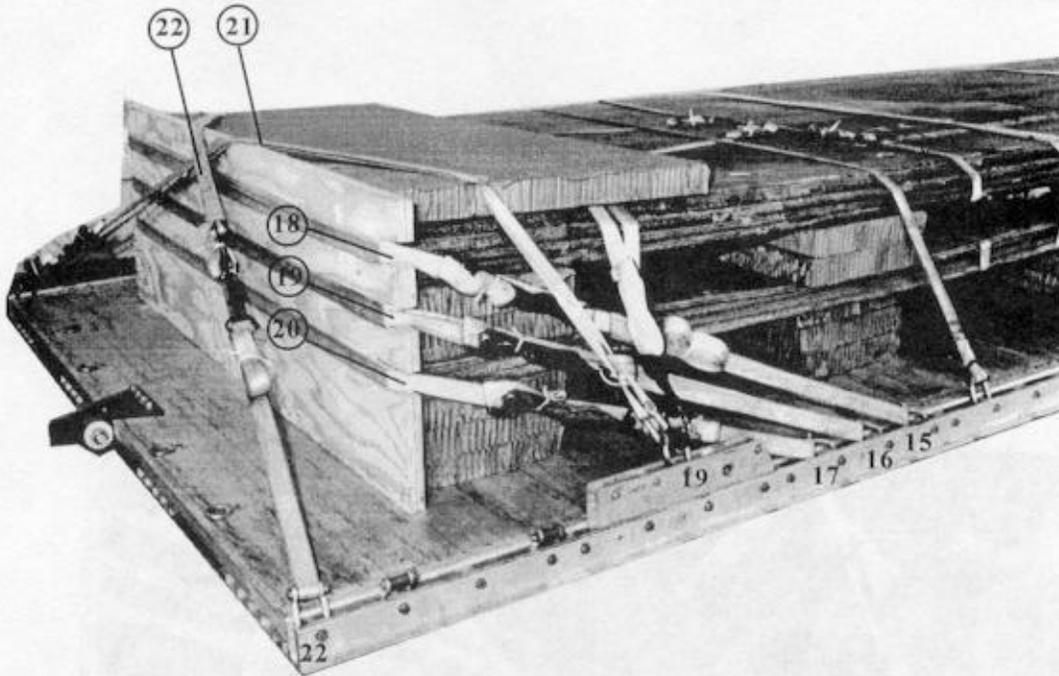
| Lashing Number | Clevis Number | Instructions |
|----------------|---------------|--|
| | | Pass lashing: |
| 8 | 10 to 10A | Through clevis 10 and own D-ring over matting to clevis 10A. |
| 9 | B6 to 11 | Over top of matting from deck ring to clevis. |
| 10 | A6 to 11A | Over top of matting from deck ring to clevis. |
| 11 | B9 to 12 | Over top of matting from deck ring to clevis. |
| 12 | A9 to 12A | Over top of matting from deck ring to clevis. |

Figure 4-12. Lashings 8 through 12 installed



| Lashing Number | Clevis Number | Instructions |
|----------------|---------------|--|
| | | Pass lashing: |
| 13 | B12 to 13 | Over top matting from deck ring to clevis. |
| 14 | A12 to 13A | Over top matting from deck ring to clevis. |
| 15 | 14 to 14A | Through clevis 14 and its own D-ring over matting to clevis 14A. |
| 16 | B15 to 18 | Over top matting from deck ring to clevis. |
| 17 | A15 to 8A | Over top matting from deck ring to clevis. |

Figure 4-13. Lashings 13 through 17 installed

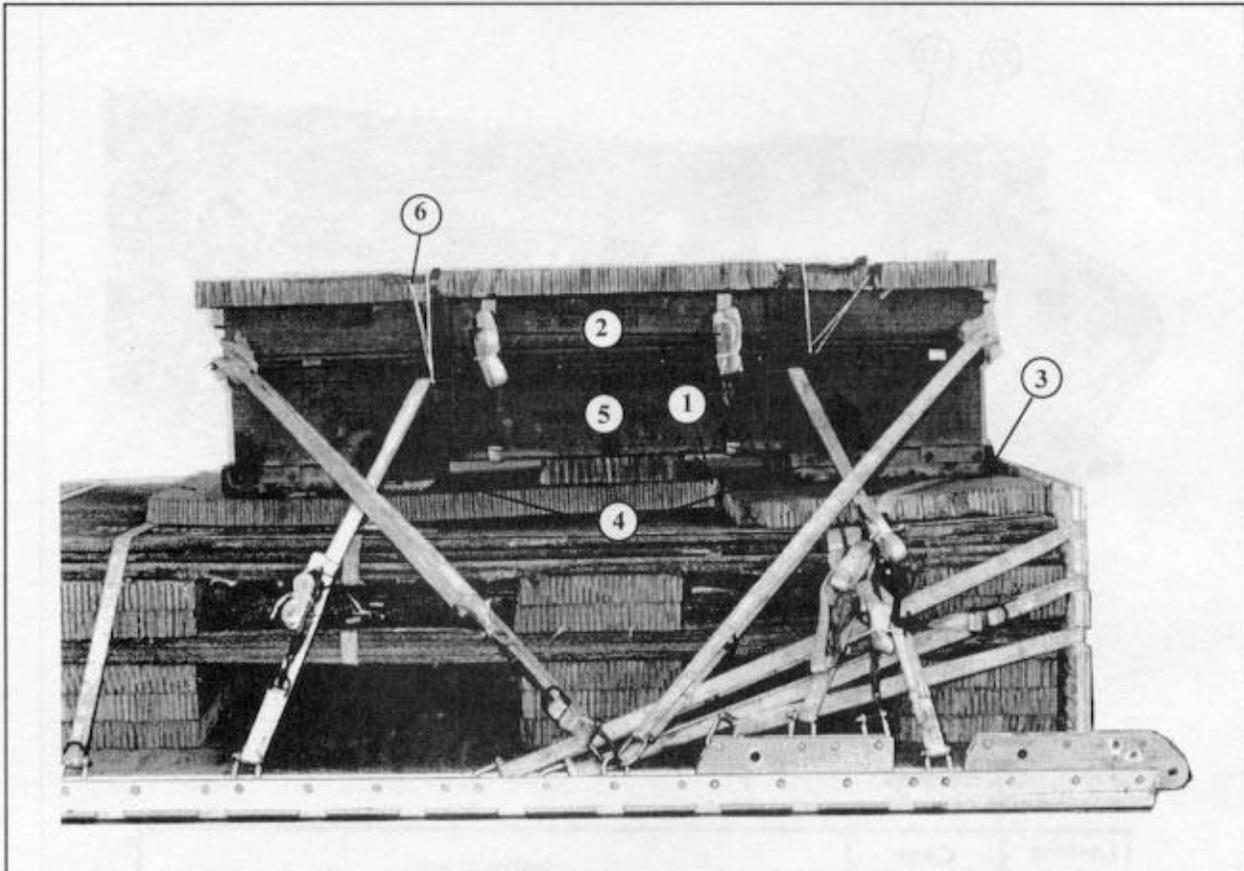


| Lashing Number | Clevis Number | Instructions |
|----------------|---------------|--|
| | | Note: *30-foot lashing. |
| | | Pass lashing: |
| *18 | 15 to 15A | Through top notch of endboard. |
| *19 | 16 to 16A | Through middle notch of endboard. |
| *20 | 17 to 17A | Through bottom notch of endboard. |
| *21 | 19 to 22A | Over top of endboard (Do not tighten). |
| *22 | 19A to 22 | Over top of endboard (Do not tighten). |

Figure 4-14. Lashings 18 through 22 installed

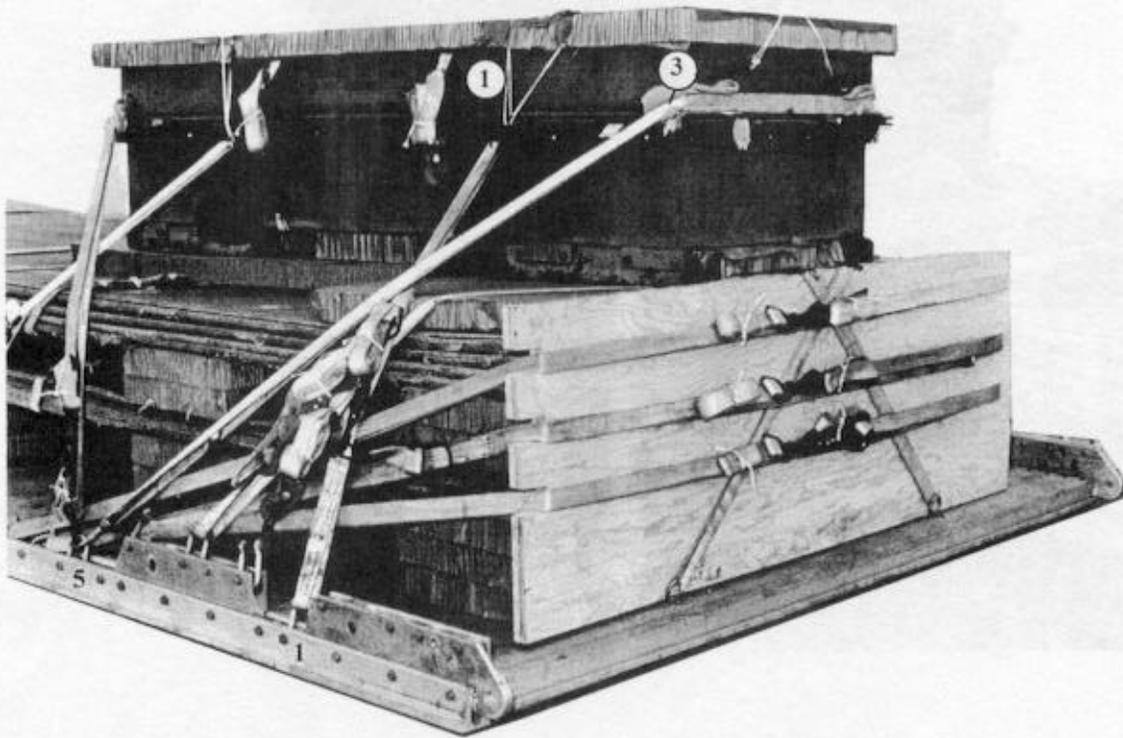
4-7. Rigging Accompanying Load

Rig the accompanying loads as shown in *Figures 4-15 through 4-19*.



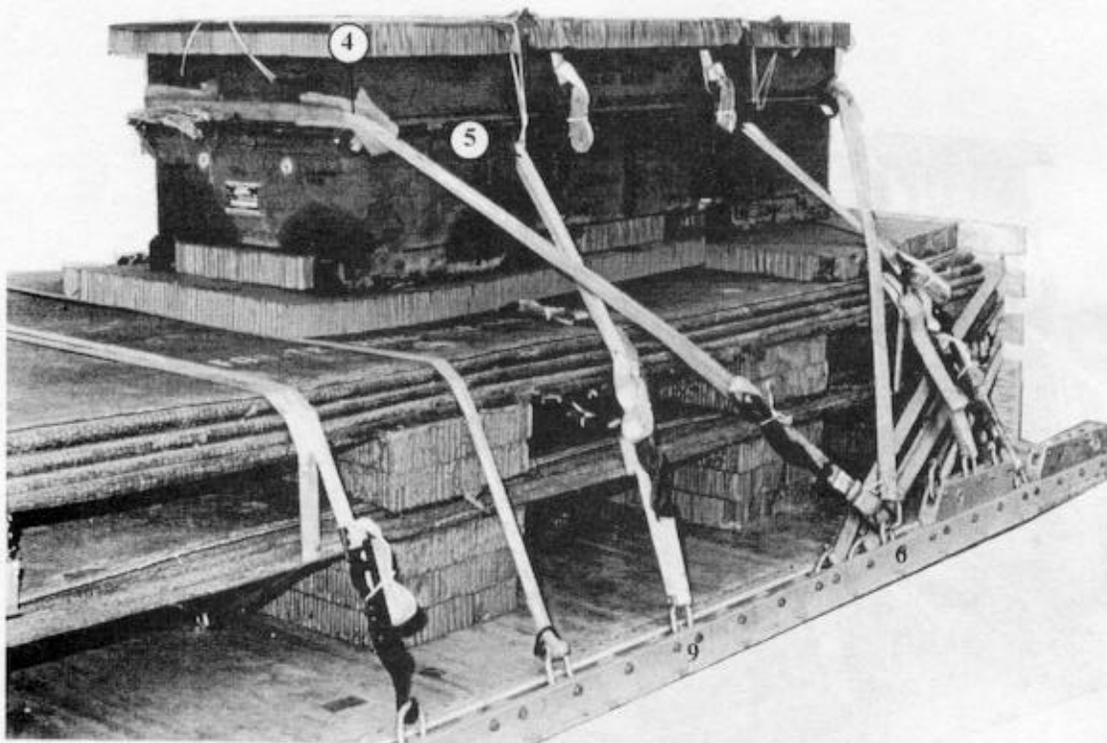
- ① Cut and position a 36- by 68-inch piece of honeycomb on top of matting long ways and flush with the honeycomb against the endboard.
- ② Secure the equipment box closed with two tiedown lashings.
- ③ Position the equipment box centered and long ways, 4 1/2 inches from endboard on top of honeycomb.
- ④ Cut two 20- by 24-inch pieces of honeycomb. Place one piece under the front and one under the rear of the equipment box.
- ⑤ Cut one 16- by 27-inch piece of honeycomb. Place it under the center of the box and glue it to the honeycomb positioned on top of the matting.
- ⑥ Place a 36- by 96-inch piece of honeycomb on top of the box and secure in place with type III nylon cord.

Figure 4-15. Equipment box positioned



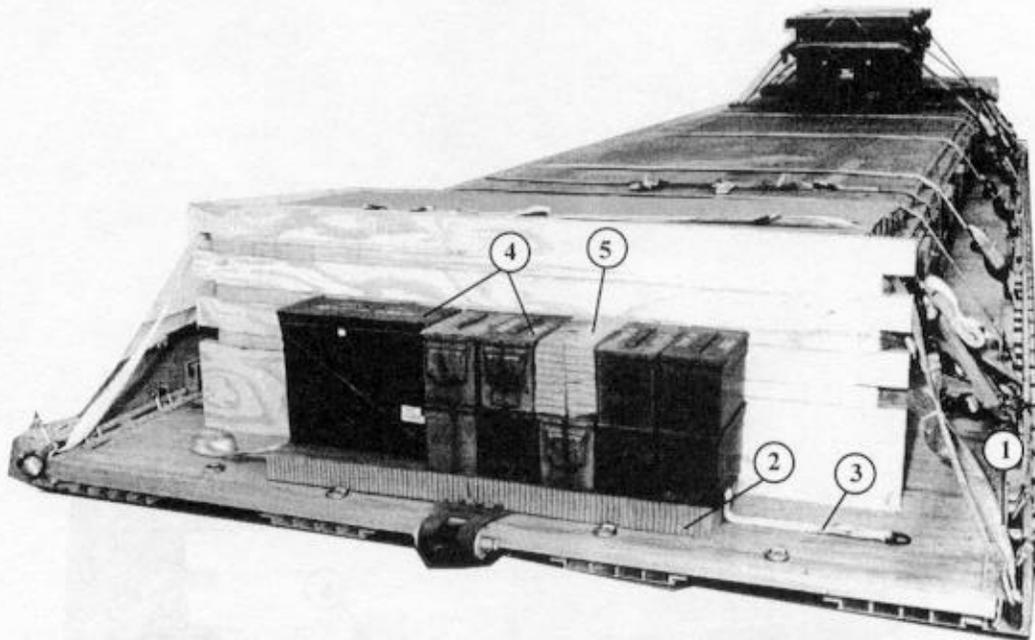
| Lashing number | Clevis Number | Instructions |
|----------------|---------------|---|
| | | Note: *30-foot lashing. |
| | | Pass lashing: |
| 1 | 1 | Through right front carrying handle. |
| 2 | 1A | Through left front carrying handle. |
| *3 | 5 to 5A | Up and around front end of box (over lip of lid). Pad lid with cellulose. |

Figure 4-16. Equipment box secured



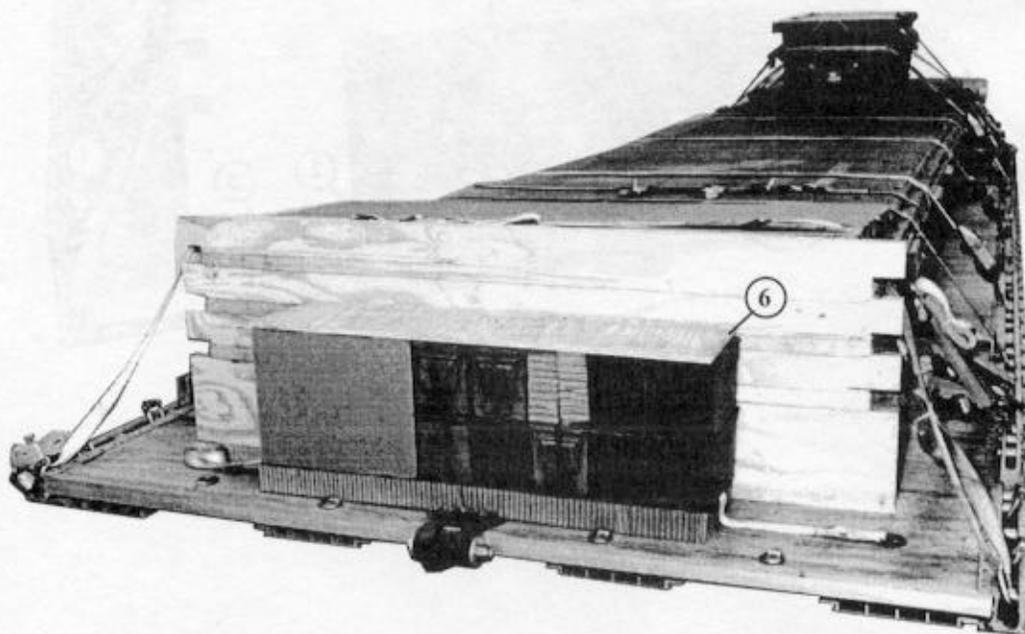
| Lashing Number | Clevis Number | Instructions |
|----------------|---------------|--|
| | | Note: *30-foot lashing. |
| | | Pass lashing: |
| *4 | 6 to 6A | Up and around rear end of box (over lip of lid). Pad lid with cellulose. |
| 5 | 9 | Through right rear carrying handle. |
| 6 | 9A | Through left rear carrying handle. |

Figure 4-16. Equipment box secured (continued)



- ① Loosen lashings 21 and 22.
- ② Place a 12- by 48-inch piece of honeycomb centered and flush with endboard.
- ③ Place a tiedown lashing on top of honeycomb.
- ④ Place parts boxes on honeycomb.
- ⑤ Fill gaps with honeycomb as needed.

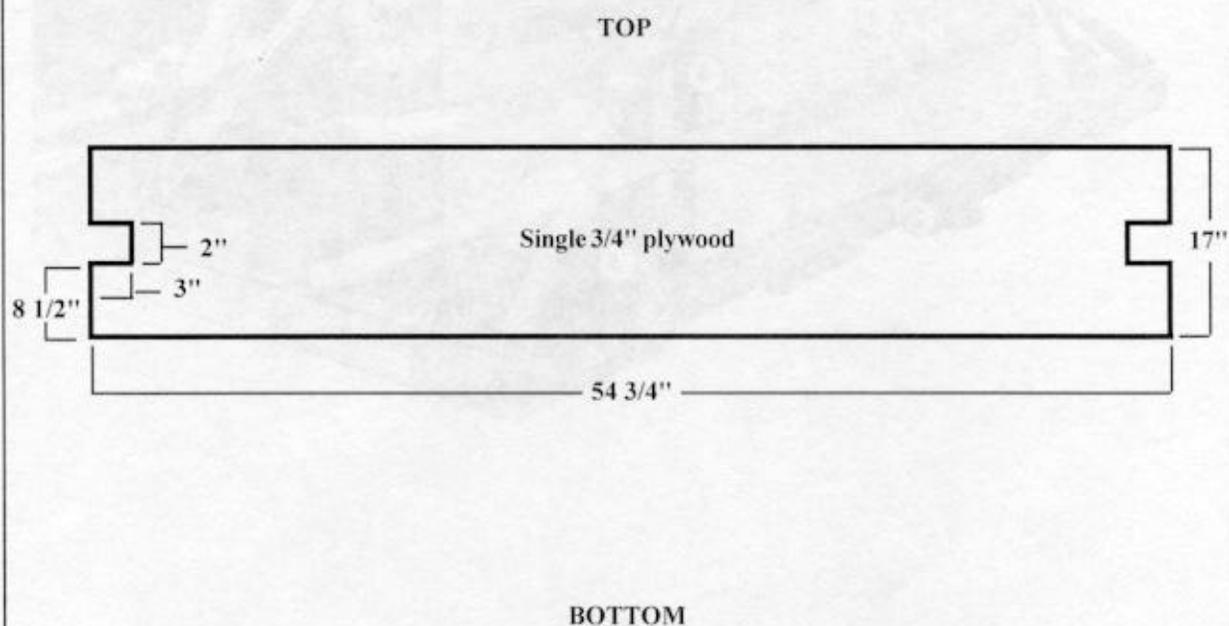
Figure 4-17. Parts boxes positioned



- ⑥ Place a 12- by 48-inch piece of 3/4-inch plywood on top of parts boxes.

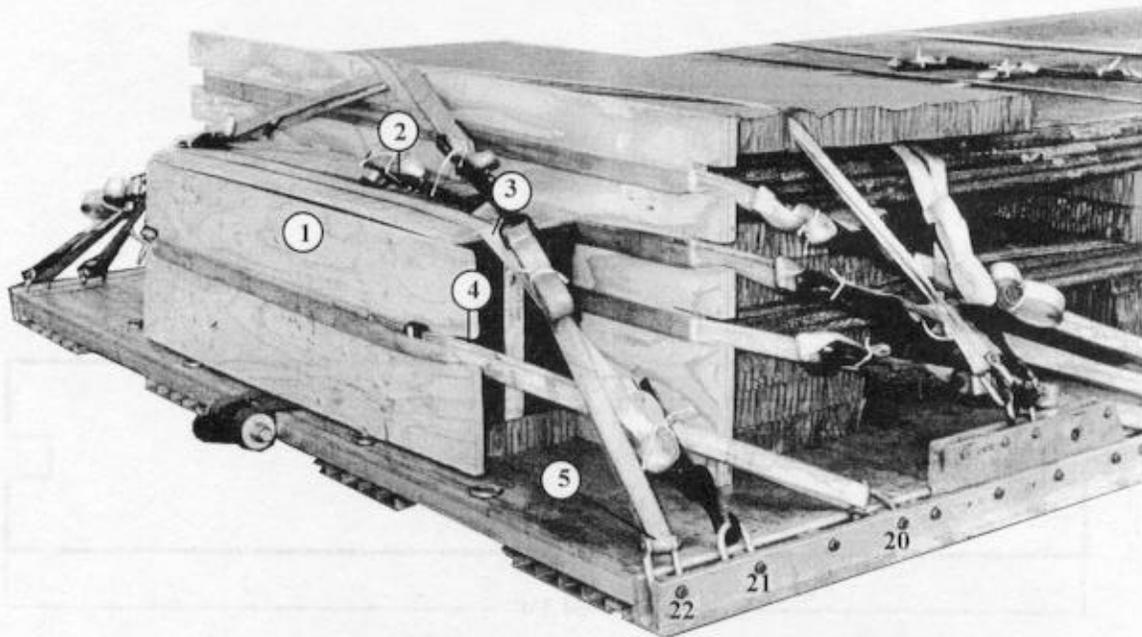
Figure 4-17. Parts boxes positioned (continued)

Note: This drawing is not drawn to scale.



| Item Number | Pieces | Width (Inches) | Length (Inches) | Material |
|-------------|--------|----------------|-----------------|------------------|
| 1 | 1 | 17 | 54 3/4 | 3/4-inch plywood |

Figure 4-18. Material required to build parts boxes endboard

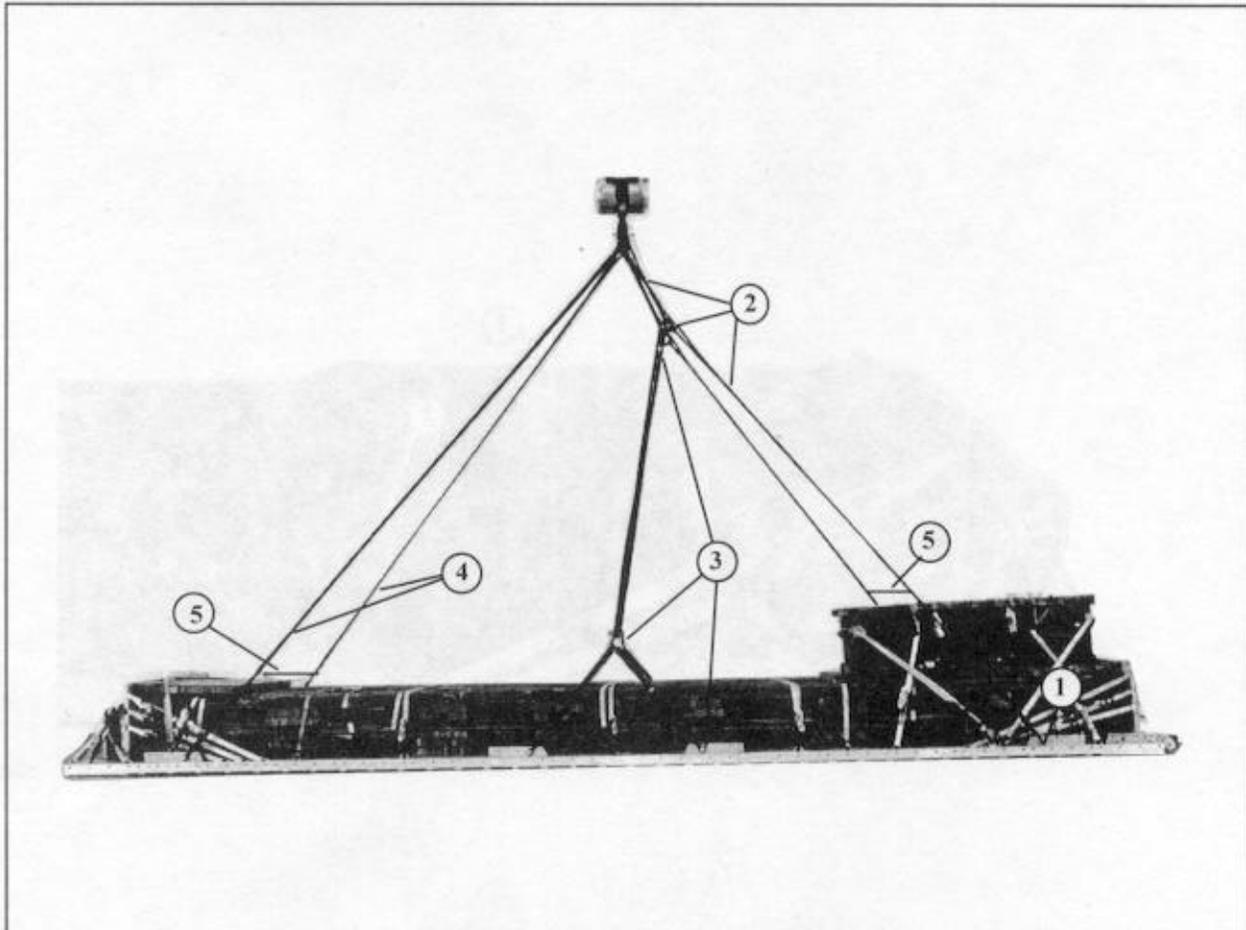


- ① Place the parts boxes endboard centered and flush against parts boxes and secure endboard .
- ② Secure prepositioned lashing in *Figure 4-19*, step 3 on top of plywood.
- ③ Run a lashing through clevis 21A and it's own D-ring and over top of parts boxes and clevis 21.
- ④ Run a 30-foot lashing through the notch of endboard and clevises 20 and 20A.
- ⑤ Secure lashings 21 and 22.

Figure 4-19. Parts boxes secured

4-8. Installing and Safetying Suspension Slings

Install and safety the suspension slings in accordance with FM 10-500-2/TO 13C7-1-5 and as shown in *Figure 4-20*.

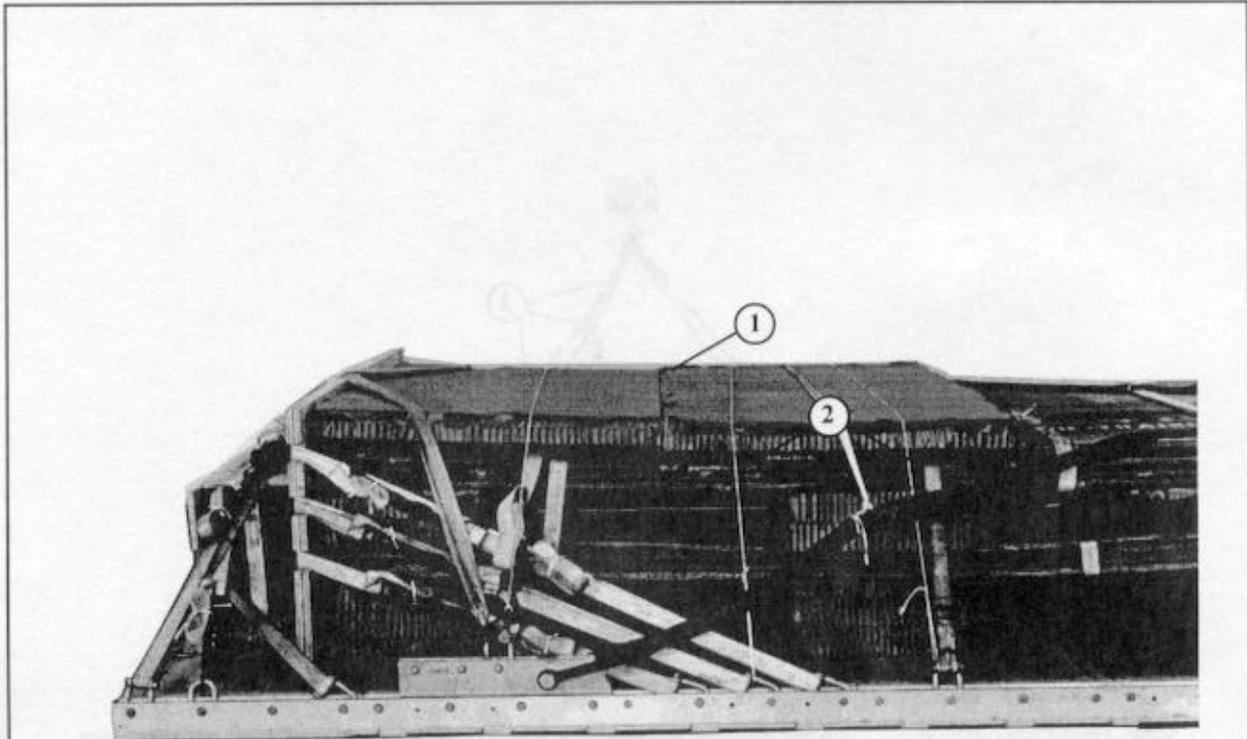


- ① Attach large clevises to the platform suspension links.
- ② Attach a 16-foot (2-loop), type XXVI nylon suspension sling to each center suspension link, each front suspension link and three point link, and 3-foot (2-loop), type XXVI nylon sling.
- ③ Attach a 3-foot (2-loop), type XXVI nylon suspension sling to each center suspension link and join them with a large clevis. Attach and half a 20-foot (2-loop), type XXVI nylon suspension sling to the large clevis and three point link.
- ④ Attach a 20-foot (2-loop), type XXVI nylon suspension sling to each of the rear suspension links.
- ⑤ Raise the slings and safety the two front and rear suspension slings with a double length of 1/2-inch tubular nylon.

Figure 4-20. Suspension slings installed

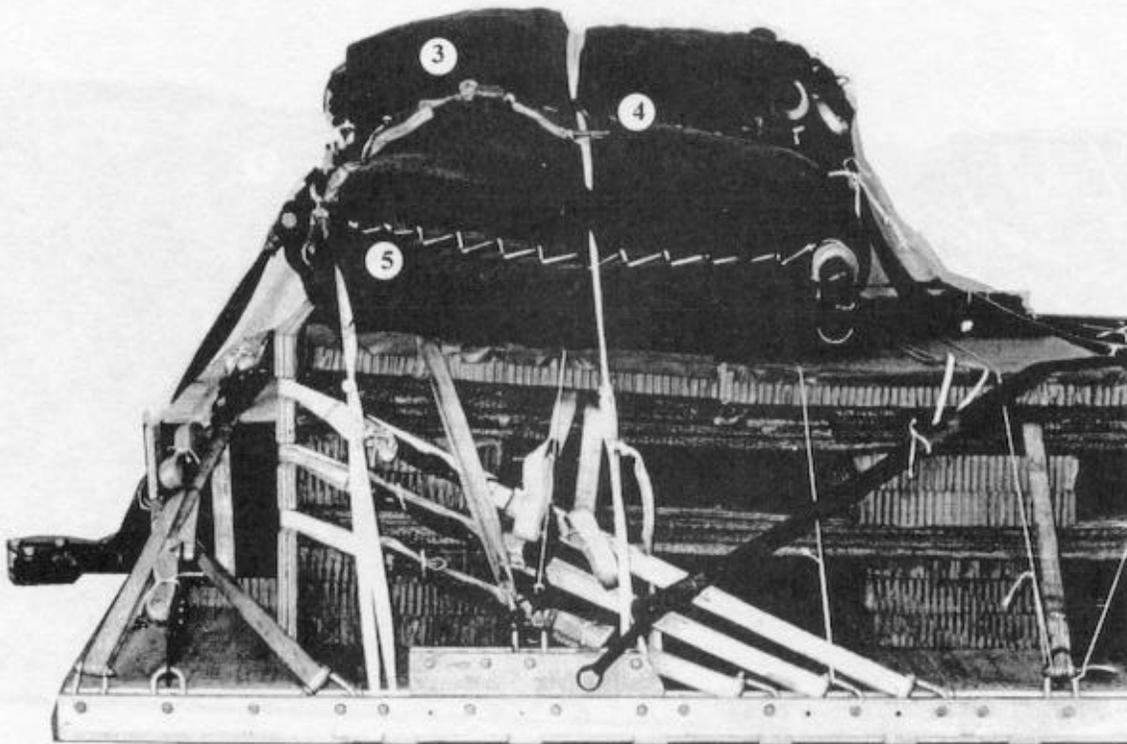
4-9. Stowing Cargo Parachutes

Prepare, stow and restrain three G-11 cargo parachutes according to FM 10-500-2/TO 13C7-1-5 and as shown in *Figure 4-21*.



- ① Place a 36- by 75-inch piece of honeycomb on top of the matting flush with the rear piece of previously placed honeycomb.
- ② Secure in place with three lengths of type III nylon cord.

Figure 4-21. Cargo parachutes positioned

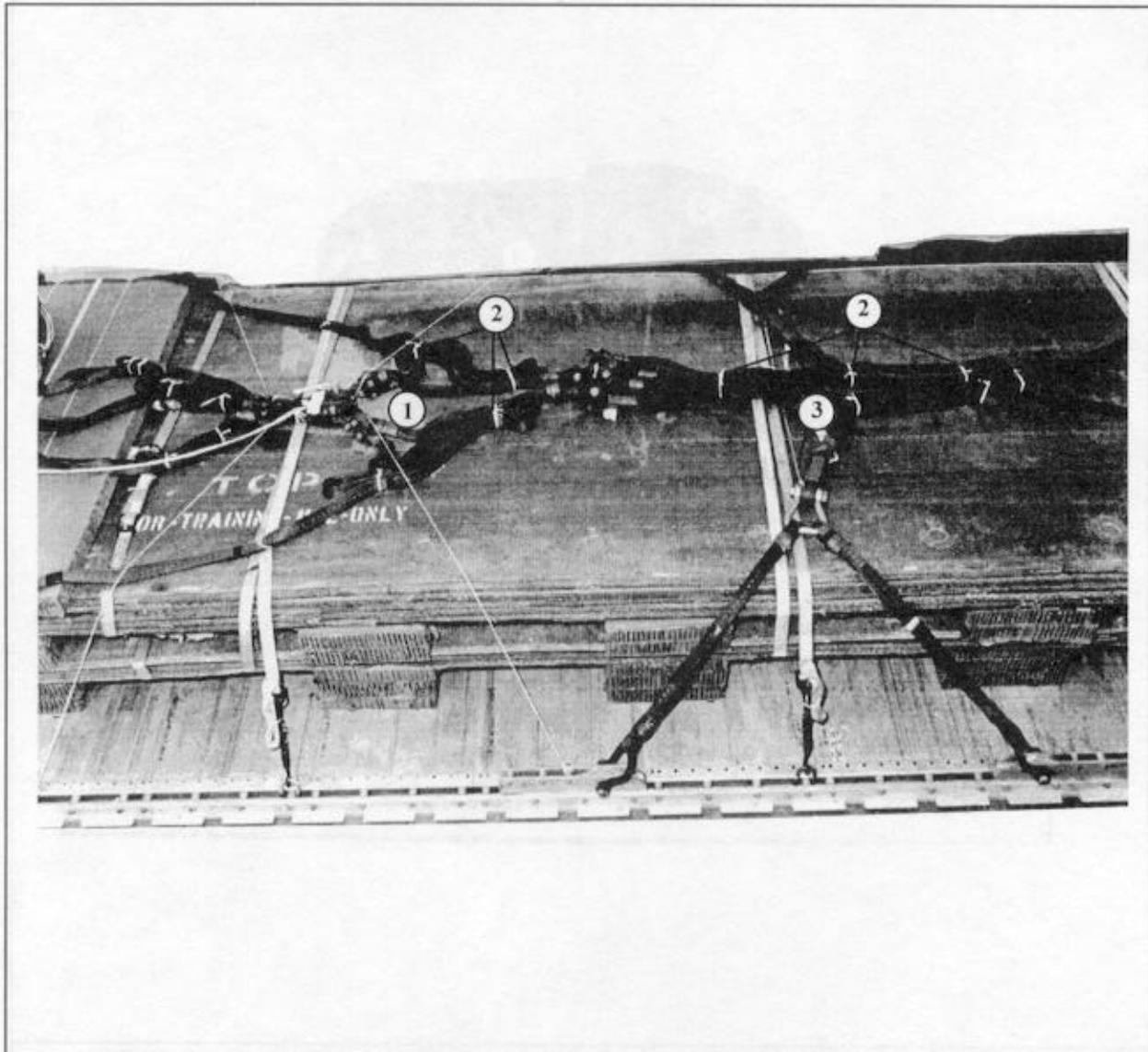


- ③ Stow three G-11 cargo parachutes on the load according to FM 10-500-2/TO 13C7-1-5.
- ④ Run one length of type VIII nylon webbing from bushing 1 on the left rear suspension link through the center carrying handles and bushing 1A on the right rear suspension link and secure.
- ⑤ Run one length of type VIII nylon webbing from platform bushing 60 on left side of platform through the rear carrying handles and bushing 60A on the right side of platform and secure.

Figure 4-21. Cargo parachutes positioned (continued)

4-10. Installing Release System

Prepare and install the M-1 release system according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure 4-22.



- ① Position and install the M-1 release assembly on the matting and according to FM 10-500-2/TO 13C7-1-5.
- ② Safety all suspension slings according to FM 10-500-2/TO 13C7-1-5.
- ③ Safety tie large clevises with length of type III nylon cord.

Figure 4-22. Release system installed

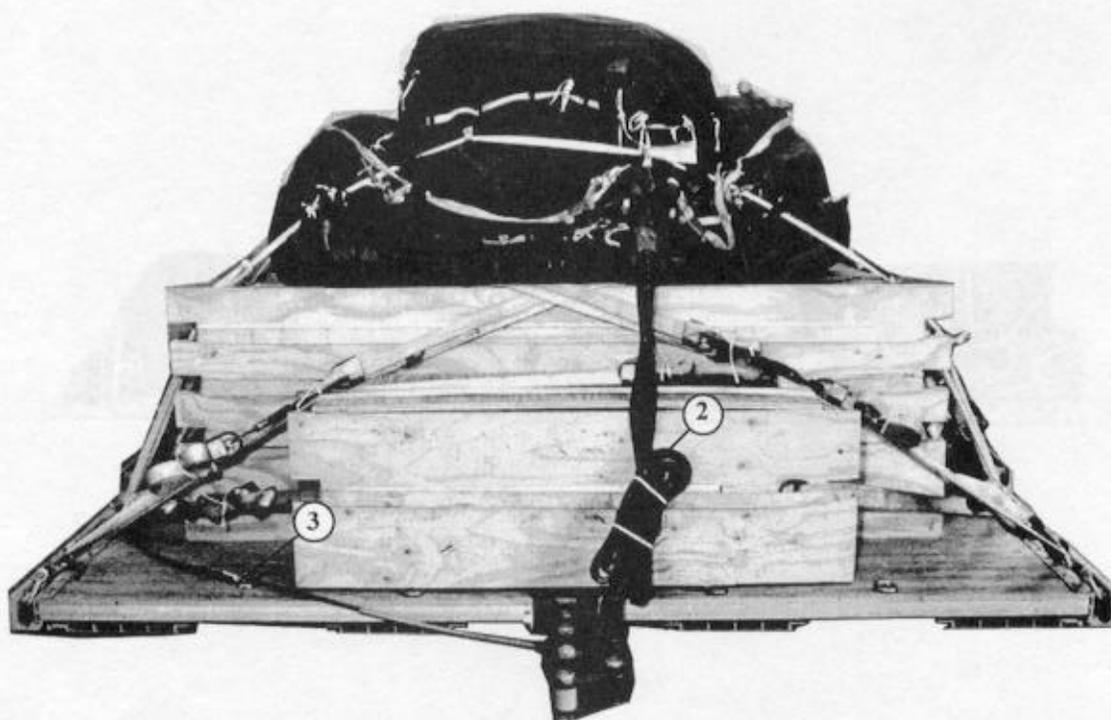
4-11. Installing Extraction System

Prepare and install the extraction force transfer coupling (EFTC) system according to FM 10-500-2/TO 13C7-1-5 and as shown in *Figure 4-23*.



- ① Install the components of the EFTC according to FM 10-500-2/TO 13C7-1-5. Use the rear mounting holes for the EFTC bracket.

Figure 4-23. Extraction system installed



- ② Attach a 9-foot (2-loop), type XXVI nylon sling to be used as a deployment line.
- ③ Use a 28-foot EFTC cable and safety the cable to tiedown ring D16 and along the side rail using one turn of type I, 1/4-inch cotton webbing.

Figure 4-23. Extraction system installed (continued)

4-12. Installing Provisions for Emergency Restraints

Install provisions for emergency restraints according to FM 10-500-2/TO 13C7-1-5.

4-13. Placing Cargo Extraction Parachute

Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 10-500-2/TO 13C7-1-5. Place the extraction parachute and extraction line on the load for installation in the aircraft.

4-14. Marking Rigged Load

Mark the rigged load according to FM 10-500-2/TO 13C7-1-5 and as shown in *Figure 4-24*. If the load varies from the one shown, the weight, height, tip-off curve, CB, and parachute requirements must be recomputed.

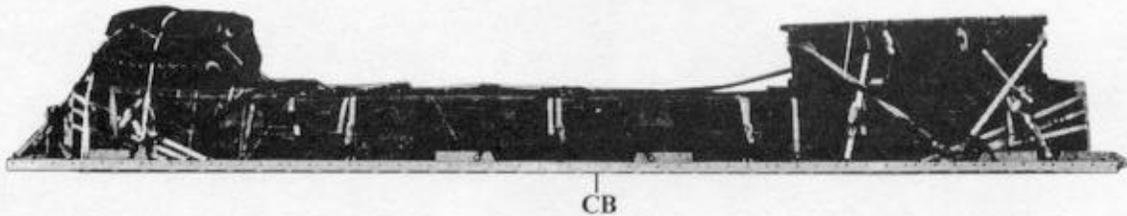
4-15. Equipment Required

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



| Item | Quantity | Remarks |
|----------------------|----------|--|
| Extraction Parachute | 1 | See FM 10-500-2/TO 13C7-1-5 for details. |
| Extraction Line | 1 | See FM 10-500-2/TO 13C7-1-5 for details. |
| Emergency Restraints | 1 | See FM 10-500-2/TO 13C7-1-5 for details. |
| Marking Tape | 1 | See FM 10-500-2/TO 13C7-1-5 for details. |
| ... | ... | ... |

CAUTION
Make the final inspection required by FM 10-500-2/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

| | |
|--|---------------|
| Weight: Load shown | 13,260 pounds |
| Maximum rigged weight | 13,500 pounds |
| Height: | 59 1/2 inches |
| Width: | 108 inches |
| Length: | 401 inches |
| Overhang: Front | 0 inches |
| Rear (extraction bracket) | 17 inches |
| Center of Balance (CB): (from the edge of the platform) | 189 inches |
| Extraction System: (add 18 inches to length of platform) | EFTC |

Figure 4-24. Rapid runway repair kits -ALPHA rigged for low-velocity airdrop on type V platform

Table 4-1. Equipment required for rigging the rapid runway repair kit-ALPHA for low-velocity airdrop on a 32-foot type V platform

| National Stock Number | Item | Quantity |
|-----------------------|---|-------------|
| 8040-00-273-8713 | Adhesive, paste, 1-gal | As required |
| | Clevis, suspension: | |
| 4030-00-090-5354 | 1-in (large) | 15 |
| 4020-00-240-2146 | Cord, nylon, type III, 550-lb | As required |
| 1670-00-157-6527 | Coupling, airdrop, extraction force transfer with 28-ft cable | 1 |
| | Cover: | |
| 1670-00-360-0328 | Clevis, large | 5 |
| 1670-00-360-0329 | Link assembly (type IV) | 3 |
| 1670-01-183-2678 | Leaf, extraction line | 2 |
| | Line, extraction: | |
| 1670-01-062-6313 | 60-ft (3-loop), type XXVI nylon webbing (C-130) | 1 |
| 1670-01-107-7651 | 140-ft (3-loop), type XXVI nylon webbing (C-141, C-5, and C-17) | 1 |
| | Link assembly: | |
| 1670-01-307-0155 | Three-point | 2 |
| 1670-00-783-5988 | Type IV | 3 |
| | Nail, steel wire, common: | |
| 5315-00-010-4657 | 6d | As required |
| 5315-00-010-4661 | 10d | As required |
| 1670-00-753-3928 | Pad, energy-dissipating, honeycomb, 3- by 36- by 96-in | 9 sheets |
| | Parachute: | |
| 1670-01-016-7841 | Cargo, G-11B | 3 |
| 1670-01-063-3716 | Cargo extraction, 22-ft | 1 |
| | Platform, AD, type V, 32-ft: | |
| 1670-01-162-2372 | Clevis assembly | 44 |
| 1670-01-162-2376 | Extraction bracket assembly | (1) |
| 1670-01-247-2389 | Suspension link | (8) |
| 1670-01-162-2381 | Tandem link | (2) |
| 5530-00-128-4981 | Plywood, 3/4-in: | 3 Sheets |
| 1670-01-097-8816 | Release, cargo parachute, M-1 | 1 |
| | Sling, cargo airdrop: | |
| | For deployment line: | |
| 1670-01-062-6304 | 9-ft (2-loop), type XXVI nylon webbing | 1 |
| | For riser extensions: | |
| 1670-01-062-6302 | 20-ft (2-loop), type XXVI nylon webbing | 6 |
| | For suspension slings: | |
| 1670-01-062-6301 | 3-ft (2-loop), type XXVI nylon webbing | 6 |
| 1670-01-063-7761 | 16-ft (2-loop), type XXVI nylon webbing | 2 |
| 1670-01-062-6302 | 20-ft (2-loop), type XXVI nylon webbing | 2 |
| 5340-00-040-8219 | Strap, parachute release, multicut comes with 3 knives | 2 |
| 8305-00-074-5124 | Tape, adhesive, 2-in | As required |
| 1670-00-937-0271 | Tie-down assembly, 15-ft | 48 |

Table 4-1. Equipment required for rigging the rapid runway repair kit-ALPHA for low-velocity airdrop on a 32-foot type V platform (continued)

| National Stock Number | Item | Quantity |
|-----------------------|------------------------------------|-------------|
| 8305-00-268-2411 | Webbing: Cotton, 1/4-in, type I | As required |
| 8305-00-082-5752 | Nylon: Tubular: 1/2-in or | As required |
| 8305-00-268-2453 | 1/2-in | As required |
| 8305-00-263-3591 | Type VIII | As required |

GLOSSARY

| | | | |
|-------------|------------------------------------|---------------|--|
| ACB | attitude control bar | HHDS | heavy drop derigging system |
| AD | airdrop | in | inch |
| AFB | Air Force base | LAPE | low-altitude parachute-extraction |
| AFR | Air Force regulation | LAPES | low-altitude parachute-extraction system |
| AFTO | Air Force technical order | lb | pound |
| ATTN | attention | No | number |
| CB | center of balance | NSN | national stock number |
| d | penny | OVE | on-vehicular equipment |
| DA | Department of the Army | OVM | operator vehicle maintenance |
| DC | District of Columbia | psi | pound per square inch |
| DD | Department of Defense | RRR | rapid runway repair kit |
| diam | diameter | TM | technical manual |
| EFTA | extraction force transfer actuator | TO | technical order |
| EFTC | extraction force transfer coupling | TRADOC | United States Army Training and Doctrine Command |
| FM | field manual | US | United States |
| ft | feet | w | with |
| gal | gallon | yd | yard |
| HQ | headquarters | | |

REFERENCES

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