FM 55–384

FIELD MANUAL

AIR TRANSPORT PROCEDURES TRANSPORT OF W84 NUCLEAR WARHEAD IN H1408 CONTAINER BY US ARMY CH–47 HELICOPTER

HEADQUARTERS, DEPARTMENT OF THE ARMY
1 APRIL 1986

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CHAPTER 1
INTRODUCTION

1-1. Purpose and Scope

a. This manual presents Department of the Army-approved procedures for transport of W84 nuclear warhead in the H1408 container by US Army CH-47 series helicopters. It also prescribes materials and personnel needed to prepare, load, tie down, and unload the container. References are shown in the appendix.

b. The procedures in this manual provide for:

(1) Transport of H1408 containers, with shoring, on the cargo floor of CH-47 helicopters.

(2) Transport of H1408 containers on HCU-6/E pallets on CH-47 helicopters equipped with the Helicopter Internal Cargo Handling System (HICHS).

c. Additonal cargo, such as different types of nuclear weapons, and/or personnel may be transported. However, this added cargo and/or personnel must be within the allowable load limits and restrictions prescribed in AR 50-5 and TM 39-20-7 (US Air Force Technical Order 11N-20-7).

d. Times given to prepare, load, tie down, and unload the loads described in this manual are approximate and may vary with existing conditions.

1-2. Reporting of Publication Improvements

Users of this manual are encouraged to submit comments or recommendations for its improvement. Comments or recommendations should be prepared on DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forwarded to Commander, Military Traffic Management Command Transportation Engineering Agency, ATTN: MTT-TRC, PO Box 6276, Newport News, VA 23606-0276 (electrically transmitted messages should be addressed to CDR MTMCTEA FT EUSTIS VA/MTT-TRC//).

1-3. Definitions of Warnings, Cautions, and Notes

When used in this manual, warnings, cautions, and notes emphasize important or critical guidance. They are used for the following conditions:

a. Warning. Instructions that, if not followed, could result in injury to or death of personnel.

b. Caution. Instructions that, if not strictly observed, could result in damage to, or destruction of, equipment.

c. Note. A brief statement for use as necessary to emphasize a particular operating procedure, condition, and so forth.

CHAPTER 2
SAFETY AND SECURITY

WARNING

Jettisoning of nuclear weapons during a logistical movement by US Army aricraft is not authorized.

2-1. Warnings

The following warnings will be observed by personnel performing operations, procedures, and practices that are included or implied in this manual. Disregard for these warnings could result in injury or loss of life.

a. Before each logistical nuclear cargo mission, the pilot in command will comply with ARs 50-5, 50-5-1, and 95-27. FM 100-50 contains appropriate guidance for tactical air transport missions. In addition, the pilot in command will know the security, safety, and technical aspects that may affect air transport of the cargo.

b. Flights will be planned so as to avoid flying over built-up and heavily populated areas.

c. Ordnance support channels must be consulted to determine the compatibility of any other nuclear weapons or other cargo (as authorized by chap 4, AR 50-5 and chap 1, AR 55-203) for transport with the W84. Information on compatability is contained in TM 39-45-51c (US Air Force TO 11N-45-51c), which is distributed to major headquarters and to direct support and general support levels. Restrictions listed in TM 39-20-7 (US Air Force TO 11N-20-7) will not be exceeded during logistical air movements when other types of nuclear weapons are transported with the W84.

d. Emergency-destruction procedures for the W84 warhead are contained in TM 39-DE-2.

e. The H1408 containers will be loaded and tied down as prescribed in this manual, except that they may be repositioned for helicopter operational reasons or for the loading of additional nuclear weapons or other cargo and/or personnel. Mandatory requirements for minimum spacing, numerical limits, and type of array for transport of the W84 warhead are prescribed in TMs 39-20-7 and 39-45-51A. If a location other than that shown in the tiedown diagrams in this manual is used, the pilot in command must ensure that:

(1) The number and load capacity of the tiedown devices are as prescribed in this manual.

(2) Tiedown devices restraining the containers are secured to tiedown fittings in the same location relative to the containers as those fittings used in the pertinent tiedown diagram. Required restraint will be provided when the depicted tiedown pattern is maintained.

(3) The requirements prescribed by TMs 39-20-7 and 39-45-51A are implemented.

2-2. Operational Precautions

The following operational precautions will be observed during loading, tie down, transport, and unloading of the H1408.

a. The CGU-1/B tiedown device (NSN 1670-00-725-1437) and the web tiedown strap (NSN 5340-01-089-4997) have a rated strength of 5,000 pounds. When either of these tiedown assemblies are used to secure the items described in this manual, the assemblies are limited to a useful life of 36 months. The 36-month period will start when the tiedowns are unpackaged by the using organization. At that time, the tiedowns will be marked with stencil ink TT-I-1795, in any contrasting color, to show the unpacking date (month and year), in at least ½-inch-high letters near the hook end of the strap. Upon expiration of the 36-month period, the tiedowns will be marked with a 2-inch-wide band on both sides of the strap, near the unpacking date, with No. 33538 yellow stencil ink (TT-I-1795) or enamel (TT-E-516).

b. The tiedown strap (NSN 5340-01-204-3009) may also be used to secure the H1408 container. The 36-month useful life limit does not apply to this tiedown strap. However, these straps will be marked with the unpacking date (month and year) when used.

c. Before each usage, tiedown straps will be inspected for burns, tears, punctures, cuts caustic damage, oil or grease contamination, fraying or broken stitches. Metal items will be inspected for improper operation, corrosion, cracks, or distortion. If any of these conditions exist, the tiedown must be replaced. No strength testing of tiedowns will be conducted.

d. Serviceable web-strap tiedown assemblies in use more than 36 months may be used to secure nuclear weapon trainers, training devices, and other nonnuclear cargo. However, when the H1408 container or other nuclear weapon or component is being transported in the helicopter, all tiedowns except the NSN 5340-01-204-3009,

including those used to secure weapon trainers, training devices, and other nonnuclear cargo, must meet the 36-month useful-life criterion.

e. When tiedown straps are attached to cargo and to helicopter tiedown fittings, each tiedown strap must be tensioned to form at least 1½ turns on the takeup spool of the tensioning ratchet. The 1½ turns must be taken after webbing-to-webbing contact. To prevent movement of the cargo, each tiedown must be tightened until about equal tension is applied throughout the tiedown arrangement. After tensioning is completed, the takeup spool locking latch must be checked to ensure that it is fully seated at both ends of the spool in the matching locking notches. During flight, tiedowns must be checked and tightened as necessary.

f. Security and safety measures relative to guards, fire, or emergency destruction procedures, as established by pertinent publications (app), apply during all phases of air transport. Logistical transport operations described herein will be in strict compliance with ARs 50-5 and 50-5-1.

g. The high noise level of helicopter engines and helicopter auxiliary power units can cause permanent damage to hearing. All personnel working in the nearby vicinity will wear hearing protectors and will avoid entering the engine-noise danger area.

h. Passenger seats must be available for the minimum-essential security personnel (courier officer and guard).

i. Helicopters will be searched and inspected by the pilot in command for unauthorized equipment and for possible sabotage. Entry controls will be established by the courier officer to maintain security until completion of the nuclear mission.

CHAPTER 3
AIR TRANSPORTABILITY AND HANDLING DATA

3-1. General

a. This chapter contains descriptive and handling data for the H1408 container (fig 3-1).

NOTE

In this manual, all instructions for transporting the H1408 container refer to containers with the W84 warhead inside.

b. The H1408 container is a steel and aluminum skid-mounted container. It is 35.5 inches (0.90 m) long, 30 inches (0.76 m) wide, and 28 inches (0.71 m) high. The loaded container weighs 990 pounds (449.0 kg) and can be lifted by forklift from each side or end. The H1408 container has four lift/tiedown shackles, each with a safe working load of 4,000 pounds (1814.4 kg). The loaded container exerts a floor pressure of 145 pounds per square foot. The container's top has arrows painted on it to indicate the required orientation for air transport. The center of gravity of the H1408 is 18.7 inches (0.47 m) from the front (cover) end and 13.0 inches (0.33 m) up from the bottom of the skids.

WARNING

The lift handles on the container cover must not be used for lifting or tying down the container.

3-2. Handling Data

a. Personnel dosimetry (film badge) or special radiological handling procedures are not required, unless otherwise specified, for personnel engaged in operations described in this manual.

b. The container cover must be securely fastened, and the container must be inspected for damage other than minor scratches and abrasions. If the container is damaged to the extent that its contents or functions might be affected, security personnel will notify the support unit and submit a report in accordance with chapter 5, AR 50-5.

c. The helicopter weight and balance must be computed for all loads, to include shoring, conveyors, pallets, chains, and other equipment, as well as the number and location of nuclear weapon security personnel.

d. Four persons can prepare, load, and tie down one or two nonpalletized H1408 containers in about 30 minutes. Four persons can unload one or two nonpalletized containers in about 10 minutes.

e. Four persons can load palletized H1408 container(s) in about 5 minutes and unload palletized containers in about 5 minutes.

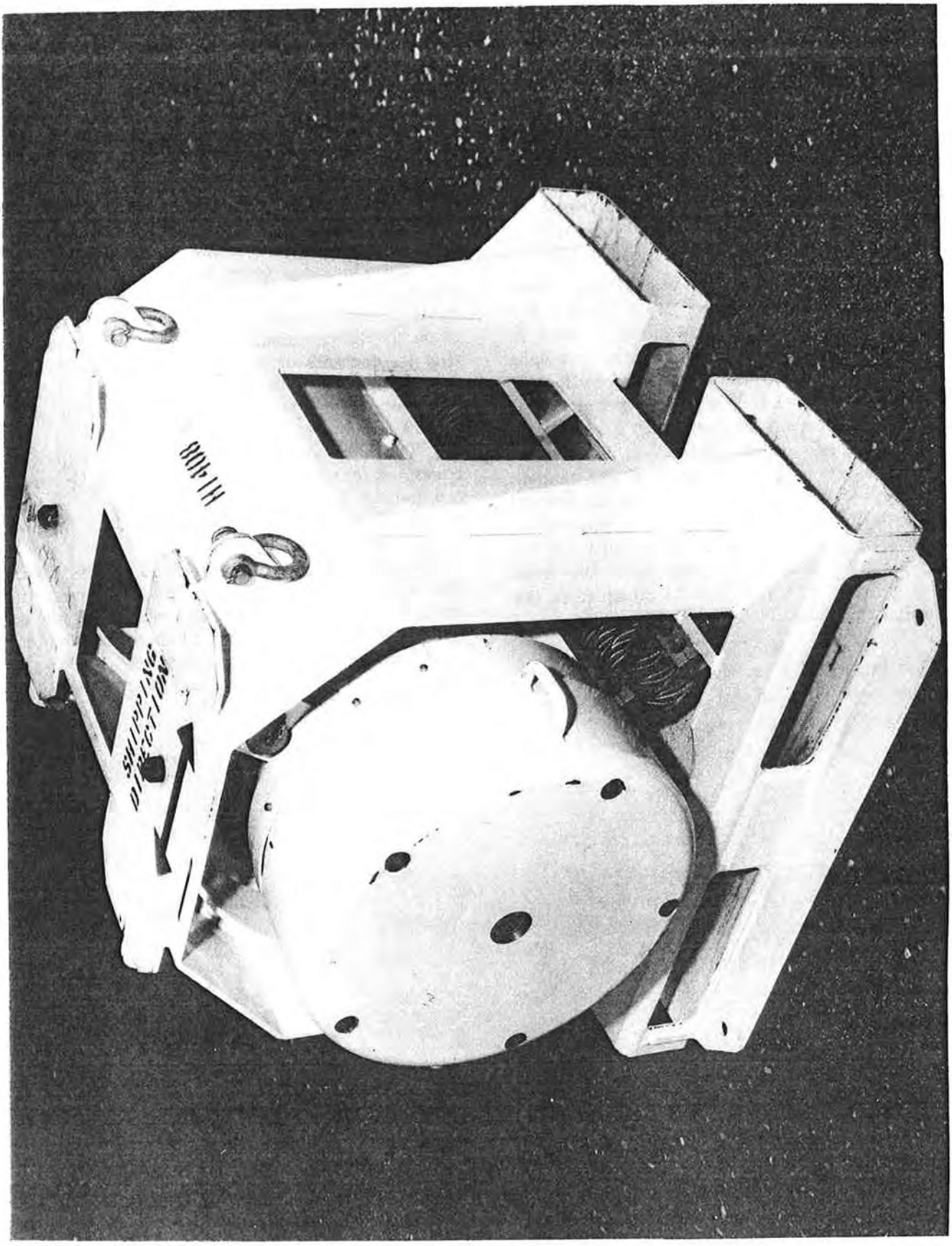


Figure 3-1. H1408 shipping and storage container for the W84 warhead.

CHAPTER 4
TRANSPORT BY CH–47 HELICOPTER

4–1. Transport on Shoring (Nonpalletized)

a. Materials and Procedures for Transporting One or Two H1408 Containers.

NOTE

Instead of the 2- by 12-inch lumber prescribed in this chapter, plywood may be used as parking and rolling shoring. If plywood shoring is used, it must be at least ¾-inch thick and wide enough to accommodate the conveyor rollers.

(1) *Materials Required*

(*a*) Parking and rolling shoring: eight pieces of 2- by 12-inch by 8-foot lumber.

NOTE

If no hard surface is available for loading, the roller conveyors will require rolling shoring outside the helicopter. If required, this shoring will be two pieces of 2- by 12-inch by 12-foot lumber, or equivalent.

(*b*) Blocking shoring: two pieces of 2- by 12-inch by 5-foot lumber, or equivalent.

(*c*) Bridge shoring: one sheet of ¾-inch by 4-foot by 8-foot plywood.

(*d*) Roller conveyor: two sections, 10-feet (NSN 3910-00-903-1303), or equivalent.

(*e*) Chain: one of the type used with the MB–1 tiedown device, 10,000-pound capacity, or equivalent (if two containers are to be transported, an additional chain is required to tie the containers together).

(*f*) Forklift or crane: one, load-tested, 4,000-pound capacity, or greater.

(2) *Loading*

(*a*) Place roller conveyors, with rollers down, behind the helicopter and on the hardstand or the ground. If required by surface conditions, place the roller conveyors on 2- by 12-inch by 12-foot shoring. Space the roller conveyors to match the 4-foot width of the plywood sheet.

(*b*) Place the plywood sheet on the roller conveyors.

(*c*) Place one or two H1408 containers on the plywood as shown in fig 4–1. The arrows painted on the top of the H1408 container(s) must be pointing fore and aft when the containers are loaded in the helicopter.

(*d*) Position the helicopter auxiliary loading ramps, as required, and block underneath with the 5-foot blocking shoring (fig 4–2).

(*e*) Position the rolling and parking shoring, spaced to match the roller conveyors, from the ground level to the top of the helicopter cargo ramp (fig 4–2) and inside the helicopter to the tiedown point.

(*f*) Form a towing bridle by looping the chain through the forklift openings in the H1408 container skids. Attach the helicopter winch hook to the bridle, and safety-tie the hook to prevent accidental release. If the hook has a serviceable safety latch, tying is not required.

(*g*) If two containers are loaded on one sheet of plywood, lash the containers together by looping a chain through the forklift openings of both containers.

(*h*) Place a wooden block under the cable at the helicopter ramp hinge to protect the helicopter floor.

(*i*) Position guides to adjust shoring, observe clearances, and signal winch operator as necessary.

(*j*) Winch the container(s) into the helicopter and to the tiedown point. If one or two containers are being transported on one sheet of plywood, the forward edge of the load can be winched to about station 295 without repositioning shoring from the helicopter ramp. The forward edge of the load may be winched forward to about station 200 by repositioning the rolling shoring from the helicopter ramp.

(*k*) Tie down the container(s) on conveyors and shoring according to figure 4–3 and table 4–1. If the prescribed tiedown pattern is maintained, the container(s) may be relocated in the helicopter to accommodate for other cargo or for weight and balance purposes. Release tension on the helicopter winch cable and leave attached to assist in unloading (fig 4–4).

(*l*) Load materials required for unloading and tie them down as directed by the helicopter commander.

(3) *Unloading.* Unloading procedures are essentially the reverse of loading procedures. The helicopter winch will be used as a safety restraint when the load is manhandled from the helicopter. Care must be taken when the load passes over the cargo ramp hinge.

b. Materials and Procedures for Transporting Three or Four H1408 Containers

(1) *Materials Required*

(*a*) Parking and rolling shoring: ten pieces of 2- by 12-inch by 8-foot lumber.

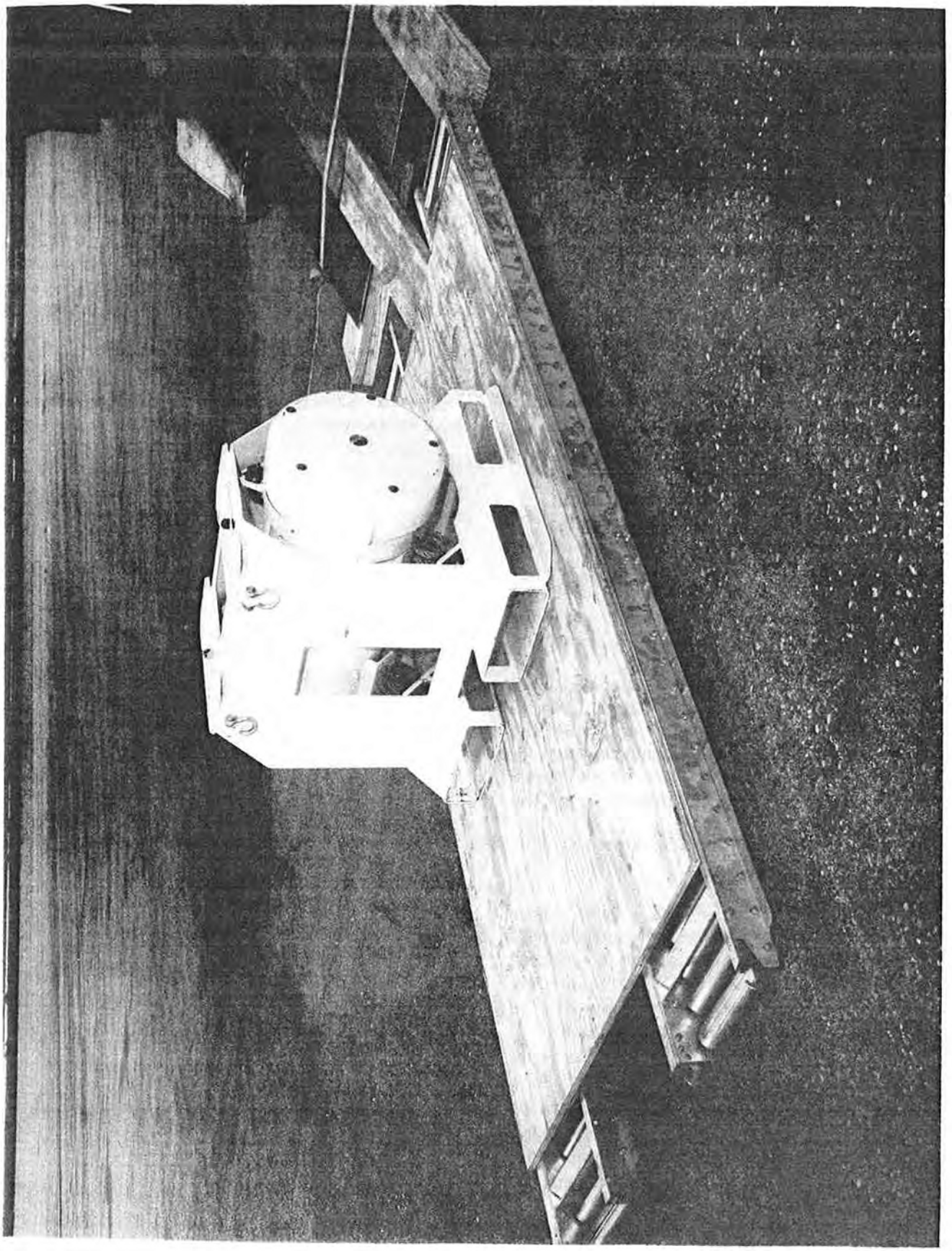


Figure 4-1. H1408 container positioned on plywood bridge shoring and roller conveyors.

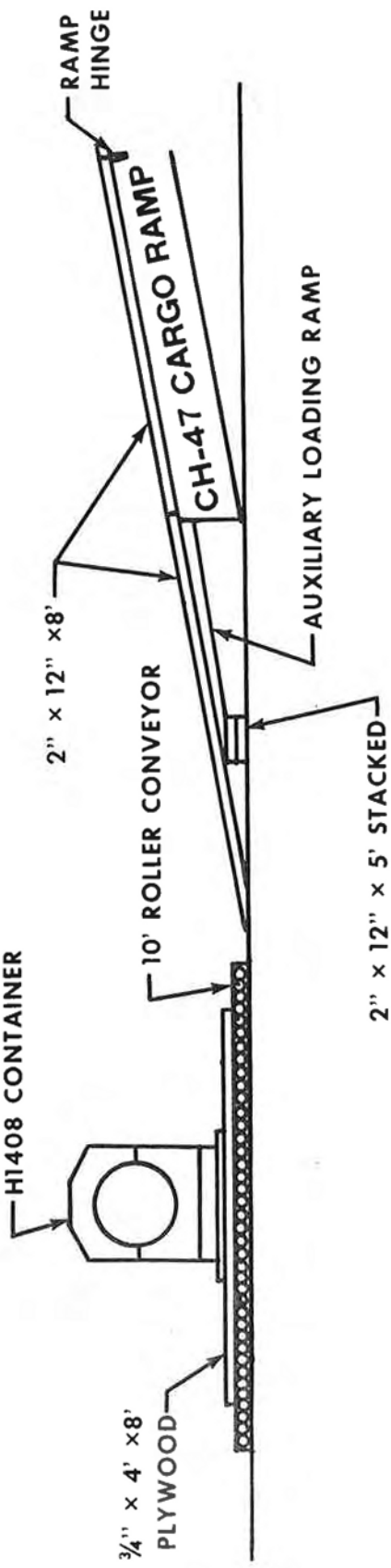


Figure 4-2. Side view schematic of rolling, blocking, and bridge shoring positioned for loading H1408 containers into a CH-47 helicopter.

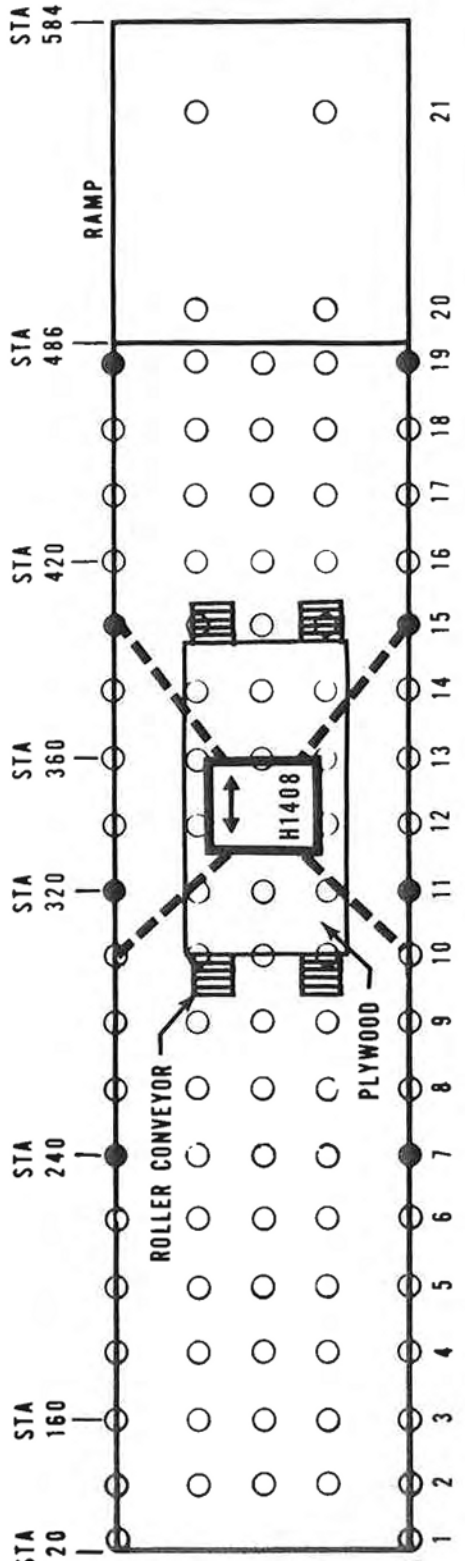


Figure 4-3. Tiedown diagram for one H1408 container on conveyors and shoring.

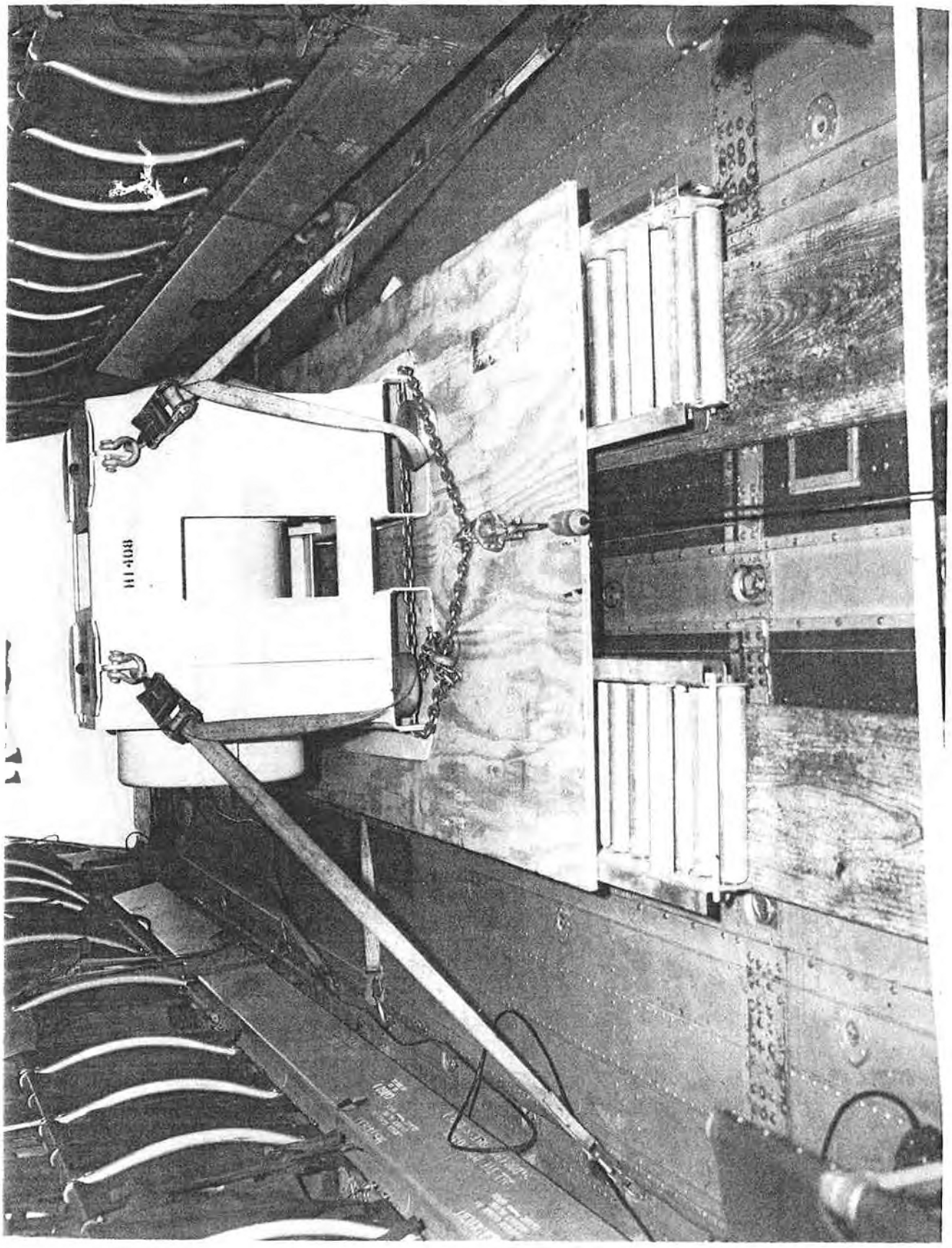


Figure 4-4. Towing bridle and winch cable attached to H1408 container.

NOTE

If no hard surface is available for loading the roller conveyors must be placed on two pieces of 2- by 12-inch by 12-foot lumber, or equivalent, behind the helicopter.

(*b*) Blocking shoring: two pieces of 2- by 12-inch by 5-foot lumber, or equivalent.

(*c*) Bridge shoring: two sheets of ¾-inch by 4- by 8-foot plywood.

(*d*) Roller conveyor: four sections, 10 feet (NSN 3910-00-903-1303), or equivalent.

(*e*) Chains: two of the type used with the MB-1 tiedown device, 10,000-pound capacity, or equivalent (if two containers are loaded on one sheet of plywood, an additional chain is required to tie each pair of containers together).

(*f*) Forklift or crane: one, load-tested, 4,000-pound capacity or greater.

(2) *Loading*

(*a*) Follow procedures in paragraphs 4-1 *a*(2)(*a*) through (*i*).

(*b*) Winch the container into the helicopter and to the tiedown point. The forward edge of the load can be winched to about station 200 with all 10 pieces of the 8-foot shoring.

(*c*) Tie down the containers on conveyors and shoring according to figure 4-5 and table 4-2. Release tension on the winch cable and unhook it from the load.

(*d*) Attach a chain towing bridle to the front container of the second load. Route the winch cable underneath the first load, between the roller conveyors, and attach the winch hook to the towing bridle. Safety-tie the hook if necessary.

(*e*) Winch the second load into the helicopter and to the tiedown point. Tie down the containers on conveyors and shoring according to figure 4-5 and table 4-2. Release tension on the winch cable and leave attached to assist in unloading.

(*f*) Load materials required for unloading and tie them down as directed by the helicopter commander.

(3) *Unloading*. Unloading procedures are essentially the reverse of loading procedures. The helicopter winch will be used as a safety restraint when the loads are manhandled from the helicopter. Care must be taken when the loads pass over the cargo ramp hinge.

4-2. Transport on HCU-6/E Pallets

a. Materials and Procedures for Transporting H1408 Containers in CH-47 Helicopters Equipped with the Helicopter Internal Cargo Handling System (HICHS).

(1) *Materials Required*

(*a*) Four MB-1 chain assemblies or four CGU-1/B tiedown devices (or authorized substitutes) for each H1408 container to be transported.

WARNING

Chain and nylon tiedown devices must not be mixed on the same container.

(*b*) Safety straps: two CGU-1/B tiedown devices (or authorized substitute).

(*c*) Tape: adhesive, 2-inch wide (NSN 7510-00-266-5016), or equivalent.

(2) *Loading*

(*a*) Center the container on the pallet with the container arrows pointing toward the 88-inch sides of the pallet (fig 4-6). If two containers are to be loaded on one pallet, position the containers as shown in figure 4-7.

(*b*) The pallet with one H1408 container and four MB-1 chain assemblies weighs 1,332 pounds (604.2 kg). A pallet with two containers and eight MB-1 chain assemblies weighs 2,462 pounds (1116.8 kg).

(*c*) Attach the hooks of the MB-1 takeup assemblies to the applicable rings on the pallet as shown in figures 4-6 and 4-7. Attach the hooks with the safety latch up so that the hook will not interfere with the HICHS guide rails.

Table 4-1. Tiedown Data for One H1408 Container in a CH-47 Helicopter

Tiedown Fitting		Tiedown Device*		
Designation	Capacity in in 1,000 lb	Type	Capacity in in 1,000 lb	Attach to Item
A10	5	CGU-1/B	5	Left front shackle.
E10	5	CGU-1/B	5	Right front shackle.
A15	10	CGU-1/B	5	Left rear shackle.
E15	10	CGU-1/B	5	Right rear shackle.

*See paragraphs 2-2 *a* and *b* for authorized substitutes.

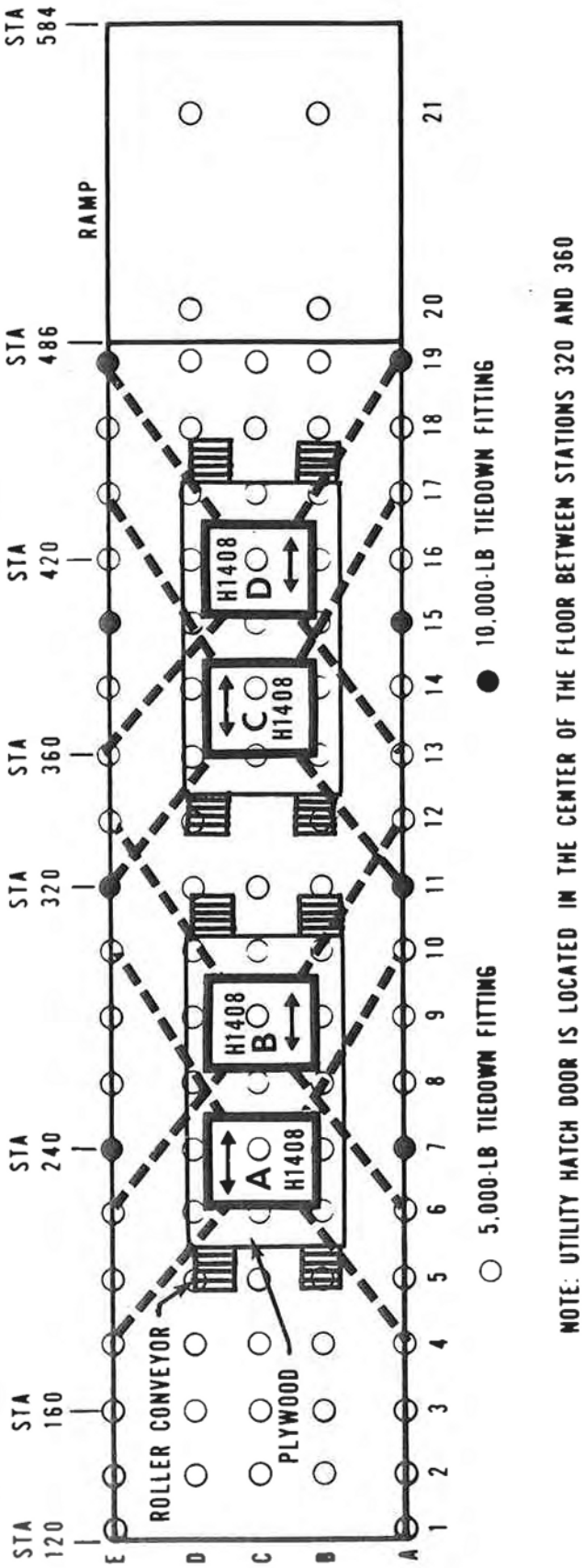


Figure 4–5. Tiedown diagram for four H1408 containers on conveyors and shoring.

Table 4-2. Tiedown Date for Four H1408 Containers in a CH-47 Helicopter

Item	Tiedown Fitting		Tiedown Device*		
	Desig-nation	Capacity in 1,000 lb	Type	Capacity in 1,000 lb	Attach to Item
A	A4	5	CGU-1/B	5	Left front tiedown shackle.
	E4	5	CGU-1/B	5	Right front tiedown shackle.
	A10	5	CGU-1/B	5	Left rear tiedown shackle.
	E10	5	CGU-1/B	5	Right rear tiedown shackle.
B	A6	5	CGU-1/B	5	Left front tiedown shackle.
	E6	5	CGU-1/B	5	Right front tiedown shackle.
	A12	5	CGU-1/B	5	Left rear tiedown shackle.
	E12	5	CGU-1/B	5	Right rear tiedown shackle.
C	A11	10	CGU-1/B	5	Left front tiedown shackle.
	E11	10	CGU-1/B	5	Right front tiedown shackle.
	A17	5	CGU-1/B	5	Left rear tiedown shackle.
	E17	5	CGU-1/B	5	Right rear tiedown shackle.
D	A13	5	CGU-1/B	5	Left front tiedown shackle.
	E13	5	CGU-1/B	5	Right front tiedown shackle.
	A19	10	CGU-1/B	5	Left rear tiedown shackle.
	E19	10	CGU-1/B	5	Right rear tiedown shackle.

*See paragraphs 2-2*a* and *b* for authorized substitutes.

(*d*) Loop a chain through each container lift/tiedown shackle. *Do not attach tiedowns to the container cover handles.* Pull chains as tight as possible by hand.

(*e*) Tighten all tiedowns, applying about equal tension to all chains tighten takeup wheels on takeup assembly by hand until chains are tight. After initial tightening of takeup wheels, grab each chain in the center and pull back and forth. Retighten takeup wheels by hand.

(*f*) Use the patterns shown in figures 4-6 and 4-7 if CGU-1/B or other authorized devices are used.

(*g*) Tape loose ends of chains to tightened part of chain, or roll and tape excess straps.

(*h*) Safety-tie the pallet to the forklift, with two CGU-1/B, or equivalent, devices. One method of doing this is shown in figure 4-8.

(*i*) Position the CH-47 cargo ramp about level with the cargo compartment floor, and support the ramp with the HICHS ramp support jack assembly. Position the auxiliary loading ramps as shown in figure 4-9, and support each ramp with an HICHS jack stand so that the ramps are level with the cargo ramp.

(*j*) Place the pallet in the helicopter, push it to the tiedown location, and lock it in place, Locking is accomplished by inserting the HICHS lock through the HICHS side rail, thereby engaging any detent in the pallet. Use two locks per pallet (one on each side).

(*k*) Four persons can load one or two palletized H1408 containers in about 5 minutes.

(3) *Unloading*

(*a*) Remove the pallet from the helicopter. Safety-tie the pallet to the forklift.

(*b*) If the containers are secured with chain devices, loosen the takeup wheels by holding the locking lever open until the tension is removed from the chains. Release the quick-release lever and remove the chain assembly. Four persons can unload each pallet in about 5 minutes.

b. Multiple Pallets. The CH-47 HICHS can accommodate three HCU-6/E pallets. If more than one pallet is to be loaded, follow the procedures in paragraphs 4-2*a*(2)(*h*) through (*k*).



Figure 4–6. H1408 container tied down on a HCU–6/E pallet.

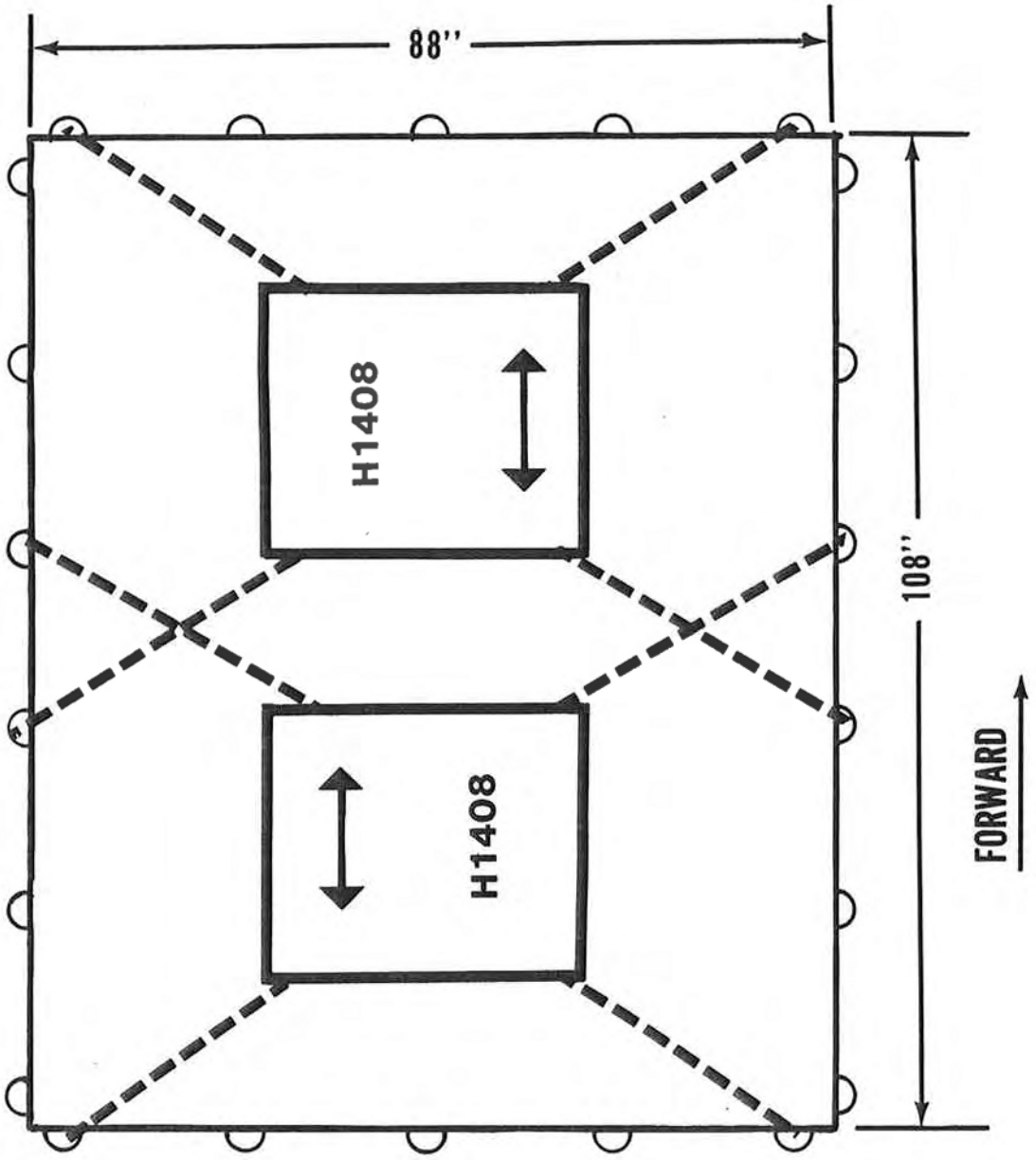


Figure 4-7. Tiedown diagram for two H1408 containers on a HCU-6/E pallet.

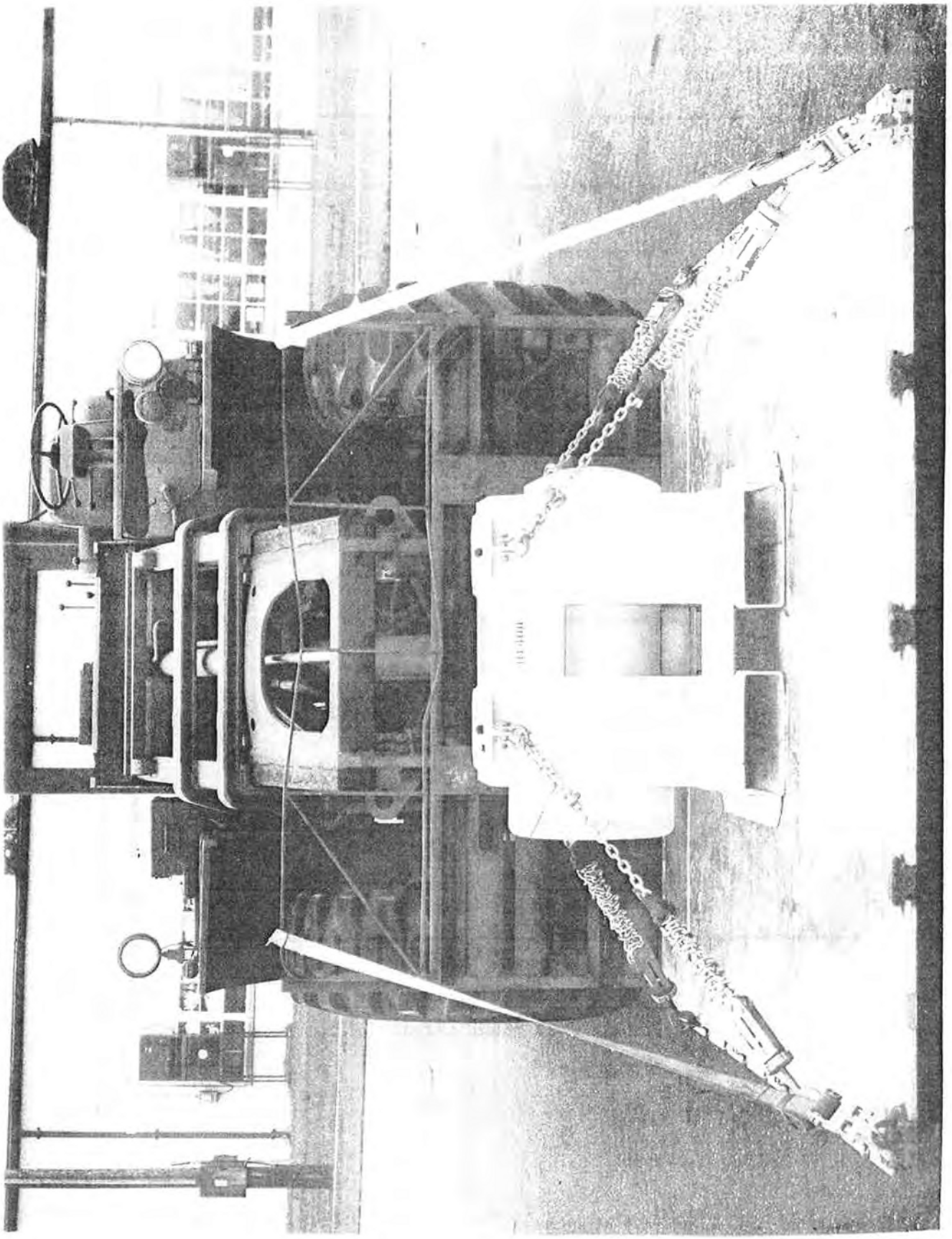


Figure 4–8. HCU–6/E pallet safety-tied to forklift.

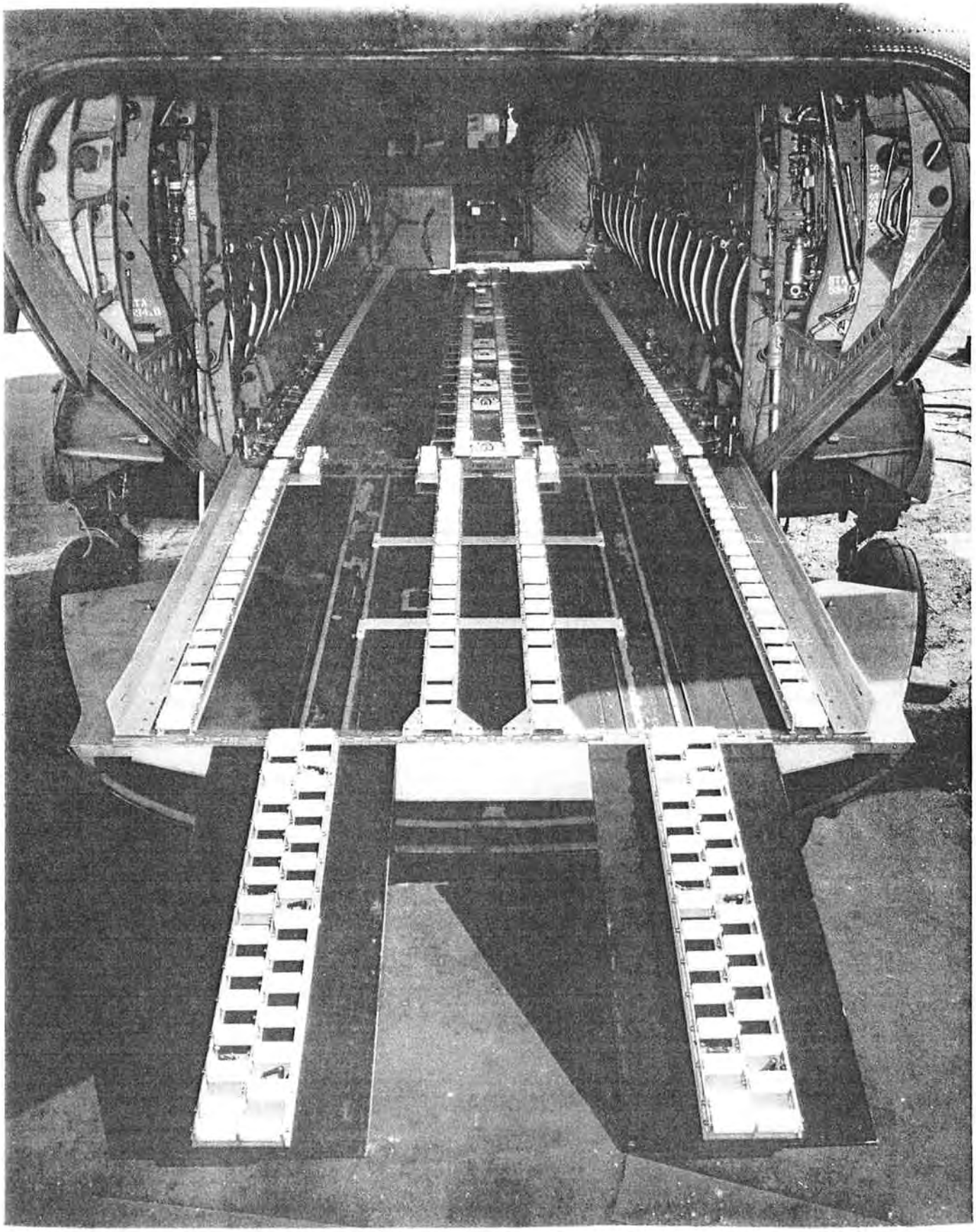


Figure 4-9. Helicopter Internal Cargo Handling System (HICHS) installed in a CH-47 helicopter.

APPENDIX
REFERENCES

1. Publication Indexes

Department of the Army pamphlets of the 310 series should be consulted frequently for the latest changes or revisions of references given in this appendix and for new publications relating to material covered in this manual.

2. Army Regulations (AR)

10-16	US Army Nuclear and Chemical Agency
40-14	Control and Recording Procedures for Exposure to Ionizing Radiation and Radioactive Materials
50-5	Nuclear and Chemical Weapons and Material: Nuclear Surety
(c)50-5-1	Nuclear and Chemical Weapons and Material: Nuclear Surety (U)
55-203	Movement of Nuclear Weapons, Nuclear Components, and Related Classified Nonnuclear Materiel
95-1	General Provisions and Flight Regulations
95-27	Operational Procedures for Aircraft Carrying Hazardous Materials
360-5	Public Information
385-40	Accident Reporting and Records
700-65	Nuclear Weapons and Nuclear Weapons Materiel

3. Field Manuals (FM)

100-50	Operations for Nuclear-Capable Units
101-20	US Army Aviation Planning Manual

4. Technical Bulletins (TB)

(SRD)9-1100-811-40	Security Classification of Nuclear Weapons Information (U)
385-2	Nuclear Weapons Firefighting Procedures

5. Technical Manuals (TM)

5-315	Fire Fighting and Rescue Procedures in Theaters of Operations
39-0-1A	Numerical Index to Joint Nuclear Weapons Publications (Including Related Publications) (Army Supplement)
(SRD)39-20-7	Nuclear Safety Criteria (U)
(CRD)39-20-11	General Firefighting Guidance for Nuclear Weapons (U)
39-45-51	Transportation of Nuclear Weapons Material
(SRD)39-45-51A	Transportation of Nuclear Weapons Material (Supplement): Shipping and Identification Data for Stockpile Major Assemblies (U)
39-DE-2	Operation and Maintenance Instructions with Illustrated Parts Breakdown, Disablement Equipment
39-45-51C	Transportation of Nuclear Weapons Material (Supplement): Military Criteria for Shipment
(CRD)39-50-8	Emergency Destruction of Nuclear Weapons (U)
55-1520-209-10	Operator's Manual: Army Model CH-47A Helicopter
55-1520-227-10-1	Operator's Manual: Army Model CH-47B Helicopter
55-1520-227-10-2	Operator's Manual: Army Model CH-47C Helicopter
55-1520-240-10	Operator's Manual: Army Model CH-47D Helicopter

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