

# HAWK

## LOADING AND BRACING ON FLAT BED OR "LOW-BOY" TRAILER OF BATTERY CONTROL CENTRAL, SIMULATOR STATION, AND SHOP EQUIPMENT

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THIS DRAWING, INCLUDING REVISION 2, SUPERSEDES DRAWING 19-48-7572-GSE11HA51, DATED AUGUST 1971, AND REVISION 1 THERETO, DATED DECEMBER 1971. THIS DRAWING ALSO SUPERSEDES THE FOLLOWING DRAWINGS AND ALL REVISIONS THERETO:

- 19-48-7405-GSE 11HA17
- 19-48-7407-GSE 11HA25
- 19-48-7408-GSE 11HA26
- 19-48-7409-GSE 11HA27
- 19-48-7410-GSE 11HA28
- 19-48-7411-GSE 11HA29
- 19-48-7412-GSE 11HA30
- 19-48-7413-GSE 11HA31
- 19-48-7506-GSE 11HA41

REVISIONS				DRAFTSMAN	PROJ. ENG.
2	JUL 73	<i>[Signature]</i>	<i>Wesley E. Gilliland</i>	<i>MB</i>	<i>MWD/lews</i>
		<i>[Signature]</i>	<i>AS Elinger</i>	<i>DLP</i>	<i>LOG ENG'G OFFICE</i>
				<i>[Signature]</i>	<i>AMBI-3P</i>
				APPROVED BY ORDER OF COMMANDING GENERAL, U. S. ARMY MATERIEL COMMAND	
				<i>AS Elinger</i> USAMC AMMO CENTER	
				U. S. ARMY MATERIEL COMMAND	
				JULY 1973	
				CLASS	DIVISION
				DRAWING	FILE
				19	48
				7572	GSE 11HA 51

**DO NOT SCALE**

## GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AMCR 740-13.
- B. THE LOAD AS SHOWN IS BASED ON A FLAT BED OR "LOW-BOY" TRAILER 8'-0" WIDE WITH A WOOD OR A WOOD AND METAL FLOOR. TRAILERS WITH ALL METAL FLOORS WILL NOT BE USED. ONLY ONE UNIT OF LADING IS SHOWN; HOWEVER, MULTIPLES OF UNITS, AS SHOWN OR DISSIMILAR IN NATURE, MAY BE LOADED ON A TRAILER. THE NUMBER OF UNITS TO BE LOADED ON A TRAILER WILL BE DEPENDENT ON THE SIZE OF THE TRAILER USED OR THE QUANTITIES OF UNITS TO BE SHIPPED, WITH THE VIEW OF FULL UTILIZATION OF CARRIER EQUIPMENT. CAUTION: THE LOAD AS SHOWN ON PAGE 6, CRATED, MAY REQUIRE "CLEARANCE" CONSIDERATION BECAUSE OF EXCESSIVE LADING SIZE.
- C. ONLY TRAILERS CAPABLE OF SAFELY TRANSPORTING THE LADING TO DESTINATION WITHOUT DAMAGE WILL BE SELECTED. TRAILERS SELECTED MUST HAVE "SOUND" FLOORS WHICH PROVIDE NAIL RETENTION PROPERTIES EQUAL TO OR BETTER THAN SPECIFIED DUNNAGE LUMBER, AND A SUFFICIENT NUMBER OF TIE DOWN FACILITIES OF A STRENGTH EQUAL TO OR BETTER THAN SPECIFIED LADING TIE DOWN ASSEMBLIES.
- D. SHIPMENT GROSS WEIGHT, AXLE DISTRIBUTION OF LADING WEIGHT AND OVERALL DIMENSIONS MUST MEET STATE LAW REQUIREMENTS.
- E. FOR LADING DATA, SEE THE LADING DATA CHART ON PAGE 3.
- F. REFER TO ORD DWG 19-48-C-ORDJU-588, "WIRE ROPE AND ANNEALED WIRE APPLICATION METHODS FOR SECURING LADING ON RAIL & MOTOR CARRIER EQUIP"; FOR PROPER TIE DOWN APPLICATION, EXCEPT THAT THE NUTS ON 3/8" CABLE CLIPS WILL BE TIGHTENED TO A TORQUE OF 35 TO 40 FOOT POUNDS.
- G. SEE THE "SPECIAL PROVISIONS" ON PAGE 5 FOR SPECIFICATIONS WHICH MUST BE APPLIED IF CHAINS AND LOAD BINDERS ARE USED FOR SECURING UNCRATED SHOPS, AND THE "SPECIAL PROVISIONS" ON PAGE 7 FOR SPECIFICATIONS WHICH APPLY FOR CRATED SHOPS.
- H. TO ACHIEVE PROPER CABLE TENSION, EMPLOY TWO (2) CABLE "GRIPPERS" AND AN APPLICABLY SIZED "COME-A-LONG" TYPE MECHANICAL HOIST.
- J. CAUTION: IT IS RECOMMENDED THAT CABLE TIE DOWNS BE INSTALLED TO APPROXIMATE THE ANGLE SHOWN; HOWEVER, IF PLACEMENT OF TRANSPORTER TIE DOWN FACILITIES PREVENTS THIS, CARE MUST BE EXERCISED TO ENSURE THAT THE CABLE TIE DOWNS ON THE SAME SIDE OF THE LADING ARE INSTALLED SO THEIR RETENTION FORCES ACT IN OPPOSITE LONGITUDINAL DIRECTIONS----CONTACT OF CABLE WITH THE EDGE OF THE LADING IS PROHIBITED.
- K. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE OR 1-5/8" THICK BY 5-5/8" WIDE.
- L. NOTE: A STAGGERED NAILING PATTERN WILL BE USED WHEN DUNNAGE IS NAILED TO THE FLOOR OF THE TRANSPORTING VEHICLE, OR WHEN LAMINATING DUNNAGE. ADDITIONALLY, THE NAILING PATTERN FOR AN UPPER PIECE OF LAMINATED DUNNAGE WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL FOR THAT PIECE WILL NOT BE DRIVEN THROUGH ONTO OR RIGHT BESIDE A NAIL IN A LOWER PIECE.
- M. WHEN ANY STRAP IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF TWO (2) SEALS, BUTTED TOGETHER, WITH TWO (2) PAIR OF CRIMPS PER SEAL MUST BE USED TO SEAL THE JOINT.

## MATERIAL SPECIFICATIONS

LUMBER -----:	DOUGLAS FIR OR COMPARABLE LUMBER WITH STRAIGHT GRAIN AND FREE OF MATERIAL DEFECTS. REF: FED SPEC MM-L-751.
NAILS-----:	COMMON, CEMENT-COATED OR CHEMICALLY ETCHED, REF: FED SPEC FF-N-105. ALT: ANNULAR-RING TYPE NAIL OF SAME SIZE.
ROPE-----:	STEEL WIRE, PLAIN, PREFORMED, REGULAR LAY, 6.56 TONS, 6 X 19, FLEXIBLE IWRC, MACWHYTE WIRE ROPE CO (OR EQUAL). REF: FED SPEC RR-W-410.
CLIPS -----:	"U" BOLT, CROSBY, HEAVY DUTY (OR EQUAL). REF: FED SPEC FF-C-430, TYPE 1, CLASS 1.
STRAPPING, STEEL-:	TYPE 1, CLASS A, B, OR C. FED SPEC QQ-S-781 (FOR FSN SEE SB-38-100).
STRAP SEAL; STRAP STAPLE; STAKE	
POCKET PROTECTOR:	COMMERCIAL GRADE.

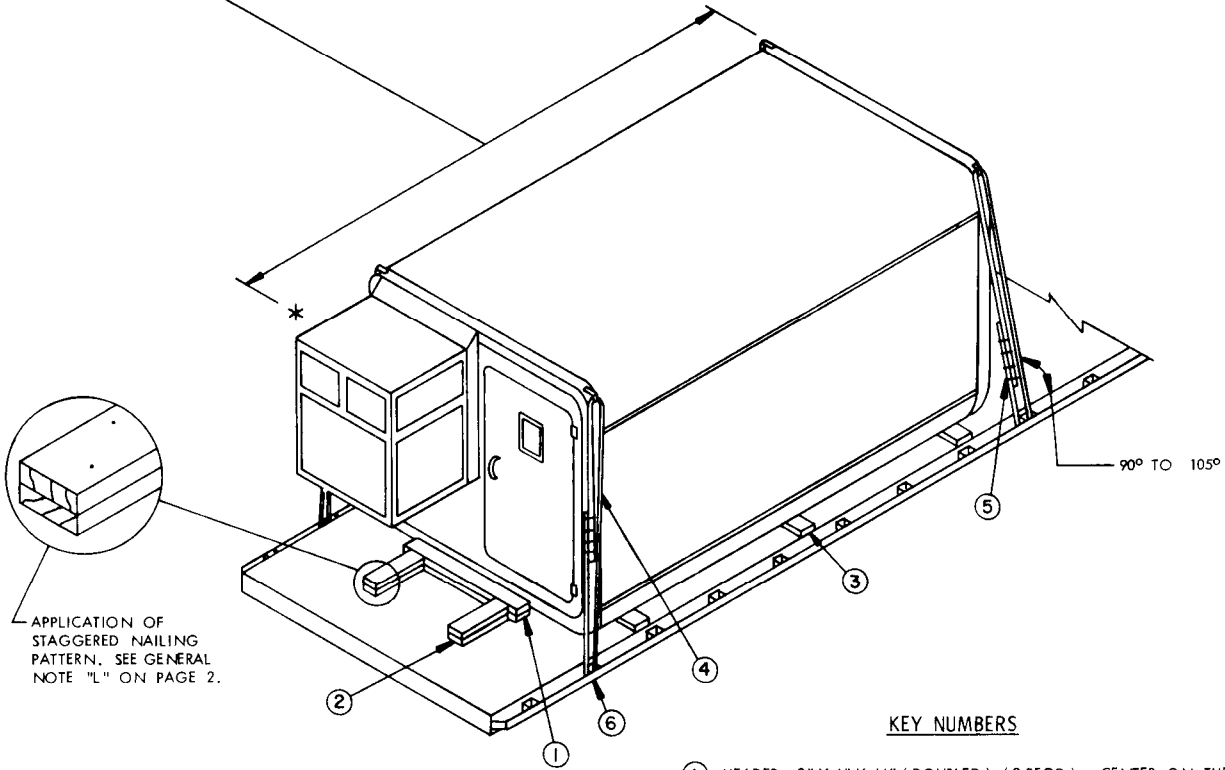
## REVISIONS

REVISION NO. 2, DATED JULY 1973, CONSISTS OF:

1. ADDING THE FOLLOWING ITEMS:  
BATTERY CONTROL CENTRAL: AN/TSW-2, AN/TSW-8.  
SHOP EQUIPMENT: AN/TSM-40, AN/TSM-41, AN/TSM-42, AN/TSM-43, AN/TSM-45, AN/TSM-88, AN/TSM-90, AN/TSM-91, AN/TSM-92, AN/TSM-104, AN/TSM-106, AN/TSM-108, AND XM2E2.  
SIMULATOR STATION: AN/TPQ-21, AN/TPQ-29.
2. DELETING ALL ACCESSORY ITEMS.
3. CHANGES NECESSARY TO UPDATE "GENERAL NOTES".
4. CHANGES NECESSARY TO UPDATE DRAWING FORMAT.

LADING DATA CHART								
ITEM	UNCRATED				CRATED			
	LENGTH	WIDTH	HEIGHT	WEIGHT-LBS (APPROX)	LENGTH	WIDTH	HEIGHT	WEIGHT -LBS (APPROX)
BATTERY CONTROL CENTRAL: AN/TSW- 2 AN/TSW- 8	15'-10" 15'-10"	7'-1" 7'-1"	6'-10" 6'-10"	5,470 5,470	16'-5" 16'-5"	8'-1" 8'-1"	7'-8" 7'-8"	7,470 7,470
SHOP EQUIPMENT:								
AN/TSM-40	15'-10"	7'-1"	6'-10"	5,900	16'-5"	8'-1"	7'-8"	7,900
AN/TSM-41	15'-10"	7'-1"	6'-10"	5,659	16'-5"	8'-1"	7'-8"	7,659
AN/TSM-42	15'-10"	7'-1"	6'-10"	5,726	16'-5"	8'-1"	7'-8"	7,726
AN/TSM-43	15'-10"	7'-1"	6'-10"	5,617	16'-5"	8'-1"	7'-8"	7,617
AN/TSM-45	15'-10"	7'-1"	6'-10"	5,900	16'-5"	8'-1"	7'-8"	7,900
AN/TSM-88	14'-1-1/2"	7'-1"	6'-10"	3,055	15'-0"	8'-1"	7'-8"	5,055
AN/TSM-89	15'-10"	7'-1"	6'-10"	5,945	16'-5"	8'-1"	7'-8"	7,945
AN/TSM-90	15'-10"	7'-1"	6'-10"	5,280	16'-5"	8'-1"	7'-8"	7,280
AN/TSM-91	15'-10"	7'-1"	6'-10"	5,351	16'-5"	8'-1"	7'-8"	7,351
AN/TSM-92	15'-10"	7'-1"	6'-10"	5,480	16'-5"	8'-1"	7'-8"	7,480
AN/TSM-104	15'-10"	7'-1"	6'-10"	5,938	16'-5"	8'-1"	7'-8"	7,938
AN/TSM-105	15'-10"	7'-1"	6'-10"	5,945	16'-5"	8'-1"	7'-8"	7,945
AN/TSM-106	14'-1-1/2"	7'-1"	6'-10"	5,285	15'-0"	8'-1"	7'-8"	7,285
AN/TSM-107	15'-10"	7'-1"	6'-10"	5,873	16'-5"	8'-1"	7'-8"	7,873
AN/TSM-108	15'-10"	7'-1"	6'-10"	5,530	16'-5"	8'-1"	7'-8"	7,530
AN/TSM-121	14'-1-1/2"	7'-1"	6'-10"	4,715	15'-0"	8'-1"	7'-8"	6,715
XM2E2	15'-10"	7'-1"	6'-10"	6,100	16'-5"	8'-1"	7'-8"	8,100
SIMULATOR STATION:								
AN/TPQ-21	15'-10"	7'-1"	6'-10"	5,800	16'-5"	8'-1"	7'-8"	7,800
AN/TPQ-29	15'-10"	7'-1"	6'-10"	5,800	16'-5"	8'-1"	7'-8"	7,800

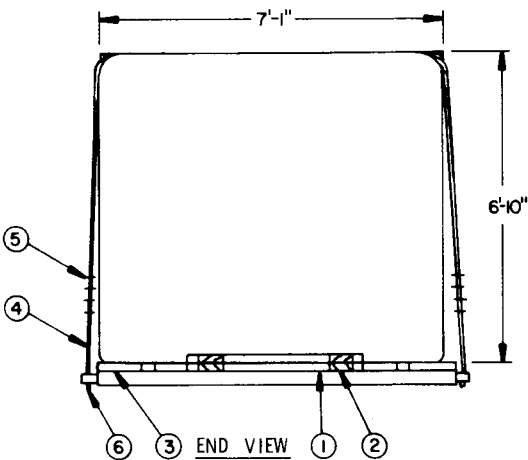
NOTE: SEE LADING DATA CHART ON PAGE 3.



ISOMETRIC VIEW

KEY NUMBERS

- ① HEADER, 2" X 6" X 44" (DOUBLED) (2 REQD). CENTER ON THE LADING AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/7-12d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/7-20d NAILS. SEE GENERAL NOTE "L" ON PAGE 2.
- ② BACK-UP CLEAT, 2" X 6" X 18" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/5-12d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/5-20d NAILS.
- ③ SIDE BLOCKING, 2" X 6" X 12" (6 REQD). NAIL TO THE TRAILER FLOOR W/4-12d NAILS.
- ④ STEEL WIRE ROPE, 3/8" DIA, 6.56 TONS (4 REQD). INSTALL CABLE TO APPROXIMATE THE ANGLE SHOWN AND TO FORM A COMPLETE LOOP FROM AN ANCHORING FACILITY ON THE TRAILER THRU A LADING TIE DOWN DEVICE AND BACK TO THE TRAILER ANCHORING FACILITY. NOTE: CABLE OF A LARGER SIZE MAY BE USED. SEE GENERAL NOTES "E", "H", AND "J" ON PAGE 2 AND THE "SPECIAL PROVISIONS" ON PAGE 5.
- ⑤ CLIP, WIRE ROPE, SIZE 3/8" (24 REQD). USE FOUR (4) PER CABLE JOINT AND ONE (1) PER THIMBLE. SEE GENERAL NOTE "F" ON PAGE 2, AND KEY NUMBER ⑥ GUIDANCE BELOW.
- ⑥ THIMBLE, STANDARD, SIZE 3/8" (8 REQD). USE ONE (1) PER TRAILER ANCHORING FACILITY AND ONE (1) PER LADING TIE DOWN DEVICE (ONLY IF IT IS THE PEAR RING OR ROUND RING TYPE). SECURE TO WIRE ROPE MARKED ④ W/1 CLIP PER THIMBLE. NOTE: A STANDARD THIMBLE, AS SPECIFIED, CAN BE SECURED TO A CABLE WITH A 3/8" CLIP. HOWEVER, IF DESIRED, OR IF THE 3/8" THIMBLE BEING USED IS OF A TYPE WHICH CANNOT BE SECURED TO A CABLE WITH A 3/8" CLIP, A 1/2" CLIP MAY BE USED. NOTE THAT AN "OPEN PATTERN" THIMBLE IS RECOMMENDED. SEE GENERAL NOTE "F". ON PAGE 2.



END VIEW

SPECIAL PROVISIONS ( FOR UNCRATED ITEMS ):

LADING MAY BE SECURED BY CARRIER-OWNED CHAINS AND LOAD BINDERS IN LIEU OF SPECIFIED WIRE ROPE CABLE DUNNAGE MATERIALS, PROVIDING THE FOLLOWING CONDITIONS ARE MET:

1. ONLY CHAINS AND LOAD BINDERS OF GOOD QUALITY SHOULD BE USED. CAUTION: EXTREME CARE MUST BE USED IN TENSIONING CHAINS TO PREVENT DAMAGE TO THE LADING OR DEFORMATION OF THE LADING TIE DOWN FACILITIES.
2. ONE ( 1 ) LINE OF 3/8" CHAIN, OR TWO ( 2 ) LINES OF 1/4" CHAIN, MAY BE SUBSTITUTED FOR EACH WIRE ROPE CABLE TIE DOWN MARKED (4). CHAINS SHALL BE INSTALLED AT THE SAME LOCATIONS SHOWN FOR WIRE ROPE CABLES AND IN THE SAME MANNER AS DIRECTED IN GENERAL NOTE "J" ON PAGE 2.
3. IF DESIRED, CHAINS OF A LARGER SIZE THAN SPECIFIED ABOVE MAY BE USED.
4. BEFORE AND DURING INSTALLATION, THE CHAINS AND LOAD BINDERS SHALL BE INSPECTED FOR BENT HOOKS, STRETCH, GOUGES, BENT LINKS, WEAR AND ANY OTHER NOTICEABLE DEFECTS. ANY DEFICIENCY SHALL BE CAUSE FOR REJECTION OF A CHAIN OR LOAD BINDER.
5. CHAINS MUST NOT BE TWISTED DURING INSTALLATION.
6. THE TENSIONING DEVICE OF EACH LOAD BINDER MUST BE SAFETY WIRE TIED TO PREVENT ACCIDENTAL OPENING OR LOOSENING IN TRANSIT.
7. ANTI-CHAFING MATERIAL MUST BE PLACED AND SECURED BETWEEN CHAINS AND LADING AT ALL POINTS OF CONTACT, EXCEPT AT DEFINITIVE TIE DOWN POINTS.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 6"	33	33
NAILS	NO. REQD	POUNDS
12d ( 3-1/4" )	58	1
20d ( 4" )	34	1-1/4
ROPE, STEEL WIRE, 3/8" DIA ----- 64' REQD ----- 16 LBS CLIP, 3/8" ----- 24 REQD ----- 8 LBS THIMBLE, STANDARD, 3/8" ----- 8 REQD ----- 2 LBS CLIP, 1/2" ( ALT FOR 3/8" ) ----- 8 REQD ----- 4 LBS		

LOAD AS SHOWN

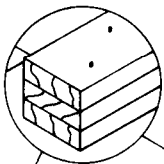
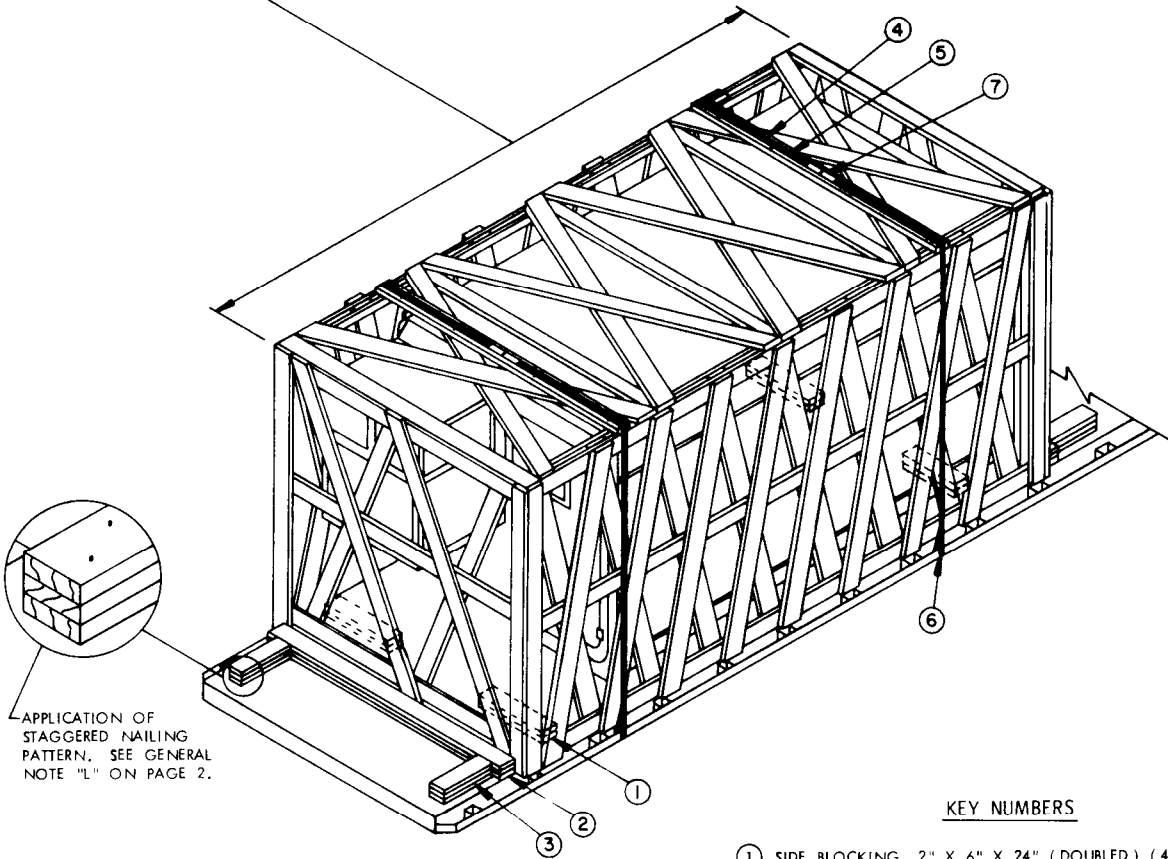
<u>ITEM</u> *	<u>QUANTITY</u>	<u>WEIGHT ( APPROX )</u>
UNCRATED ITEM -----	1 -----	6,100 LBS ( MAX )
DUNNAGE -----		110 LBS
TOTAL WEIGHT -----		6,210 LBS

\* SEE THE LADING DATA CHART ON PAGE 3 FOR ITEMS COVERED.

UNCRATED ITEM ( TYPICAL )

PAGE 5

NOTE: SEE LADING DATA CHART ON PAGE 3.

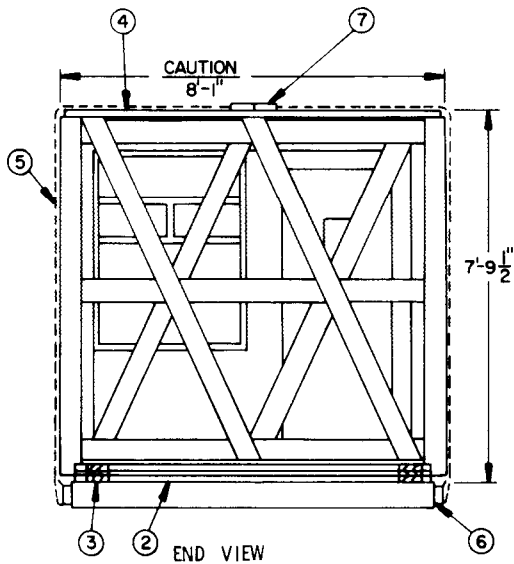


APPLICATION OF STAGGERED NAILING PATTERN. SEE GENERAL NOTE "L" ON PAGE 2.

ISOMETRIC VIEW

KEY NUMBERS

- ① SIDE BLOCKING, 2" X 6" X 24" (DOUBLED) (4 REQD). PRE-POSITION SO AS TO BE AGAINST CRATE SKIDS AS SHOWN. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/6-12d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTE "L" ON PAGE 2.
- ② HEADER, 2" X 6" X 7'-6" (TRIPLED) (2 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/1-12d NAIL EVERY 8". NAIL EACH ADDITIONAL PIECE W/1-20d NAIL EVERY 8".
- ③ BACK-UP CLEAT, 2" X 6" X 18" (TRIPLED) (4 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/5-12d NAILS. NAIL EACH ADDITIONAL PIECE W/5-20d NAILS.
- ④ STRAPPING BOARD, 2" X 6" X 7'-10" (2 REQD).
- ⑤ HOLD-DOWN STRAP, 2" X .050" X 32'-0" LONG STEEL STRAPPING (2 REQD). INSTALL EACH STRAP FROM TWO (2) 16'-0" LONG PIECES. STAPLE TO PIECE MARKED ④ W/4-2" STAPLES. SEE THE "SPECIAL PROVISIONS" ON PAGE 7.
- ⑥ PAD, 2" X .050" X 18" LONG STEEL STRAPPING (4 REQD). POSITION UNDER AND SEAL TO A PIECE MARKED ⑤. SEE "DETAIL A" ON PAGE 8. ALT: STAKE POCKE: PROTECTOR (8 REQD). USE TWO (2) UNDER EACH ANCHORING FACILITY WITH A PICE MARKED ⑤. SEE "DETAIL B" ON PAGE 8.
- ⑦ SEAL FOR 2" STRAPPING (12 REQD, 6 PER STRAP). SEE GENERAL NOTE "M" ON PAGE 2.



END VIEW

SPECIAL PROVISIONS ( FOR CRATED ITEMS ):

LADING MAY BE SECURED BY CARRIER-OWNED CHAINS AND LOAD BINDERS IN LIEU OF SPECIFIED HOLD-DOWN STRAPPING DUNNAGE MATERIALS, PROVIDING THE FOLLOWING CONDITIONS ARE MET:

1. ONLY CHAINS AND LOAD BINDERS OF GOOD QUALITY SHOULD BE USED. CAUTION: EXTREME CARE MUST BE USED IN TENSIONING CHAINS TO PREVENT DAMAGE TO ITEM CRATE.
2. IN LIEU OF EACH HOLD-DOWN STRAP MARKED ⑤, ONE (1) LINE OF 1/4" CHAIN MAY BE USED. THE STRAPPING BOARD MARKED ④ MUST BE DOUBLED AND LAMINATED W/1-10d NAIL EVERY 12". EACH CHAIN SHALL BE SECURED TO THE LAMINATED BOARDS W/4-20d NAILS BY DRIVING EACH NAIL INTO THE BOARD THRU AN OPENING IN A CHAIN LINK AND BENDING IT OVER THE LINK.
3. IF DESIRED, CHAINS OF A LARGER SIZE THAN SPECIFIED ABOVE MAY BE USED.
4. BEFORE AND DURING INSTALLATION, THE CHAINS AND LOAD BINDERS SHALL BE INSPECTED FOR BENT HOOKS, STRETCH, GOUGES, BENT LINKS, WEAR, AND ANY OTHER NOTICEABLE DEFECTS. ANY DEFICIENCY SHALL BE CAUSE FOR REJECTION OF A CHAIN OR LOAD BINDER.
5. CHAINS MUST NOT BE TWISTED DURING INSTALLATION.
6. THE TENSIONING DEVICE OF EACH LOAD BINDER MUST BE SAFETY-WIRE TIED TO PREVENT ACCIDENTAL OPENING OR LOOSENING IN TRANSIT.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 6"	95	95
NAILS	NO. REQD	POUNDS
12d ( 3-1/4" )	90	1-1/2
20d ( 4" )	84	3
STEEL STRAPPING, 2" X .050" ----- 70' REQD --- 24 LBS		
SEAL FOR 2" STRAPPING ----- 12 REQD --- 3 LBS		
STAPLE FOR 2" STRAPPING ----- 8 REQD --- NIL		

LOAD AS SHOWN

<u>ITEM *</u>	<u>QUANTITY</u>	<u>WEIGHT ( APPROX )</u>
CRATED ITEM -----	1 -----	8,100 LBS ( MAX )
DUNNAGE -----		269 LBS
<u>TOTAL WEIGHT -----</u>		<u>8,369 LBS</u>

CRATED ITEM ( TYPICAL ) \* SEE THE LADING DATA CHART ON PAGE 3 FOR ITEMS COVERED.

