HAWK

LOADING AND BRACING ON FLAT BED OR "LOW-BOY" TRAILER OF SHOP EQUIPMENT, GUIDED MISSILE, ORGANIZATIONAL MAINTENANCE, AN/MSM-43, TRAILER MOUNTED

DRAFTS	SMAN KSI	TRACER		ENGIN	DE A		SUBMITTED			
CHECK	ER ,	ARCTY-	MAS	D/	W/AC	E			COMMANDER, SA	ANNA ARMY DEPOT
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DO NOT SCALE

GENERAL NOTES

- A, THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AMCR
- 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. ONLY ONE UNIT OF LADING IS SHOWN; HOWEVER, MULTIPLES OF UNITS, AS SHOWN OR DIS-SIMILAR 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 THE CARRIER EQUIPMENT.
- 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 THE SPECIFIED DUNNAGE LUMBER, AND A SUFFICIENT NUMBER OF THE 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. LADING DATA

ITEM DIMENSIONS ----- 14'-3" LONG BY 7'-10" WIDE BY 6'-11" HIGH. ITEM GROSS WEIGHT ---- 5,520 POUNDS (APPROX.).
BOX 1 OF 2 ----- 9'-6" LONG BY 13-1/2" WIDE BY 10" HIGH. GROSS WEIGHT ----- 200 POUNDS (APPROX). BOX 2 OF 2 ----- 31-1/4" LONG BY 29-3/4" WIDE BY 21-1/4" HIGH. GROSS WEIGHT ----- 100 POUNDS (APPROX).

- F. REFER TO ORD DWG 19-48-C-ORDJU-508, "WIRE ROPE AND ANNEALED WIRE APPLI-CATION METHODS FOR SECURING LADING ON RAIL & MOTOR CARRIER EQUIP CATION METHODS FOR SECURING LADING ON RAIL & MOTOR CARRIER EQUIP", FOR PROPER TIE DOWN APPLICATION. CAUTION: DURING TWISTED WIRE CABLE AND/OR STEEL WIRE ROPE INSTALLATION, AVOID CONTACT WITH ALL ELECTRICAL WIRING, VEHICLE CONTROLS AND OTHER APPURTENANCES. METAL FILLERS OR COMPARABLE CUSHIONING MATERIAL MUST BE USED BETWEEN TIE DOWN WIRES AND/OR CABLES AND ALL SHARP EDGES, AND ANTI-CHAFING MATERIAL MUST BE USED BETWEEN CONTACTING TIE DOWN WIRES AND LADING TIRES. ADDITIONALLY, LADING TIRES WILL BE INFLATED TO HIGHWAY OPERATING PRESSURE AND ALL HAND BRAKES MUST BE "SET", WITH THE HAND LEVERS WIRE-TIED OR BLOCKED.
- G. SEE THE "SPECIAL PROVISIONS" ON PAGE 5 FOR SPECIFICATIONS WHICH MUST BE APPLIED IF CHAINS AND LOAD BINDERS ARE USED.
- TWISTED WIRE CABLE AND/OR STEEL WIRE ROPE MUST BE TENSIONED SUFFICIENTLY TO CAUSE SLIGHT VEHICLE BODY DEPRESSION, AS APPLICABLE. TENSIONING OF STEEL WIRE ROPE CAN BE ACCOMPLISHED BY EMPLOYING TWO (2) CABLE GRIPPERS AND AN APPLICABLY SIZED "COME-A-LONG" TYPE MECHANICAL HOIST.
- CAUTION: IT IS RECOMMENDED THAT TWISTED WIRE CABLE AND/OR STEEL WIRE ROPE BE INSTALLED TO APPROXIMATE THE ANGLE SHOWN; HOWEVER, IF PLACEMENT OF TRANSPORTER THE DOWN FACILITIES PREVENTS THIS, CARE MUST BE EXERCISED TO ENSURE THAT CABLES ON THE SAME SIDE OF THE LADING ARE INSTALLED SO THEIR RETENTION FORCES ACT IN OPPOSITE LONGITUDINAL DIRECTIONS.
- DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOM-INAL SIZE. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-5/8" THICK BY 3-5/8" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-5/8" THICK BY 5-5/8" WIDE.
- 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

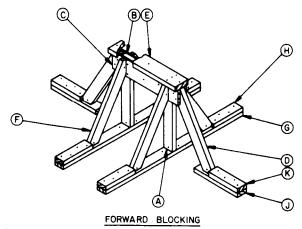
PAGE 2

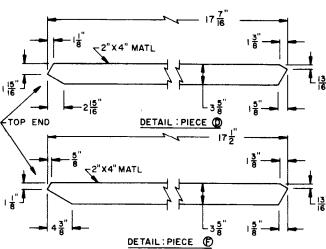
LUMBER	DOUGLAS FIR OR COMPARABLE LUMBER WITH STRAIGHT GRAIN AND FREE OF MATERIAL DEFECTS. REF: FED SPEC MM-L-751.
<u>NAILS</u> :	COMMON, CEMENT COATED OR CHEMICALLY ETCHED. REF: FED SPEC FF-N-105. ALT: ANNULAR-RING TYPE NAIL OF SAME SIZE.
<u>WIRE</u> :	ANNEALED, BLACK. REF: FED SPEC QQ-W-461.
STRAPPING, STEEL:	Type 1 or IV, class A, B, or c for 1–1/4" strapping; Type 1, class A, B, or c for 2" strapping. Ref: fed spec QQ-5–781.
<u>ROPE</u> ::	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.
<u>CLIP</u> ::	"U" BOLT, CROSBY, HEAVY DUTY (OR EQUAL). REF: FED SPEC FF-C-450, TYPE), CLASS 1.

REVISIONS

REVISION NO. 2, DATED JANUARY 1972 CONSISTS OF

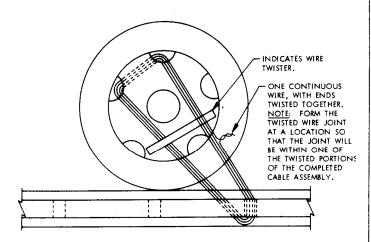
- 1. CHANGES AS NECESSARY TO UPDATE DRAWING FORMAT.
 2. CHANGES AS NECESSARY TO UPDATE "GENERAL NOTES".
- 3. ADDING "SPECIAL PROVISIONS" FOR USE OF CHAINS AND LOAD BINDERS.





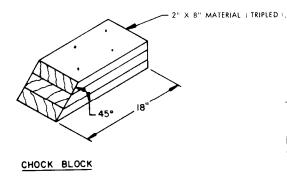
KEY LETTERS

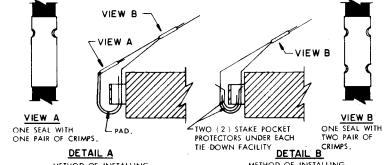
- (A) 2" X 4" X 11-1/8" (2 REQD). CENTER ON AND TOENAIL TO (G) W/2-16d NAILS.
- B 2" X 4" X 22" (1 REQD).
- C) 1" X 6" X 27" (2 REQD). NAIL TO EACH (A) W/2-6d NAILS. NAIL TO (B) AND EACH (D) W/3-6d NAILS EACH.
- (D) 2" X 4" X 17-7/16" (2 REQD). DOUBLE BEVEL EACH END AS PER "DETAIL : PIECE (D)", TOENAIL TO (D) W/2-164 NAILS AFTER ASSEMBLY (A) THRU (G) HAS BEEN LOCATED ON TRANSPORTING VEHICLE AND (D) HAS BEEN NAILED TO FLOOR.
- (E) 2" X 6" X 27" (1 REQD). NAIL TO (B) W/3-12d NAILS AND TO EACH (D) AND (F) W/1-12d NAIL EACH.
- E 2" X 4" X 17-1/2" (4 REQD). DOUBLE BEVEL EACH END AS PER "DETAIL : PIECE E". TOENAIL TO C AND C W/2-16d NAILS EACH.
- © 2" X 4" X 44-3/4" (2 REQD), LOCATE BLOCKING ASSEMBLY (A) THRU (B)) UNDER ITEM AND NAIL TO FLOOR OF TRANSPORTING VEHICLE W/2-12d NAILS NEAR (A) AND W/2-12d NAILS NEAR EACH END.
- (H) 2" X 4" X 12" (4 REQD). POSITION AGAINST (F) AND NAIL TO (G) W/4-20d NAILS.
- 2" x 4" x 18" (2 REQD). POSITION UNDER (1) AS SHOWN AND NAIL TO FLOOR OF TRANSPORTING VEHICLE W/3-12d NAILS.
- (K) 2" X 4" X 12" (2 REQD). POSITION AGAINST (D) AND NAIL TO (1) W/4-20d NAILS.



WHEEL SECUREMENT

AN EIGHT (8) STRAND INSTALLATION OF NO. 8 GAGE BLACK ANNEALED WIRE IS SHOWN, PASSED THRU HOLES IN WHEEL AND TRAILER TIE DOWN FACILITY TO FORM A COMPLETE LOOP, AND READY TO BE TWISTED TAUT WITH WIRE TWISTER.

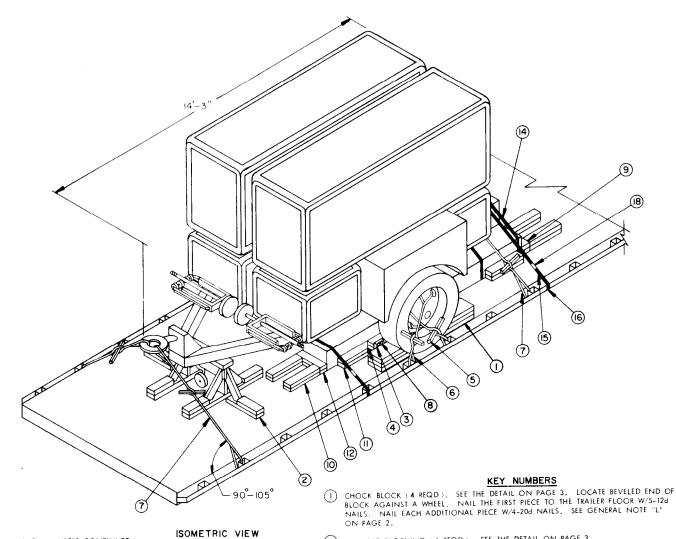




METHOD OF INSTALLING
2" STRAPPING AND PAD
AT TIE DOWN FACILITY.

METHOD OF INSTALLING
2" STRAPPING AND STAKE
POCKET PROTECTORS (ALT PAD).

PAGE



- (KEY NUMBERS CONTINUED)

 HEADER, 2" X 4" X 30" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE

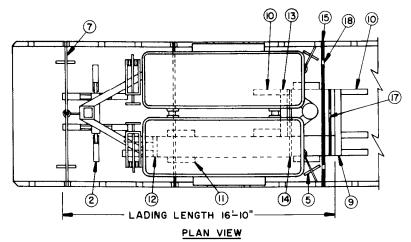
 TRAILER FLOOR W/4-12d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/4-20d NAILS.
- UNITIZING STRAP, 1-1/4" X .035" X 12'-0" LONG STEEL STRAPPING (2 REQD : SEE THE "REAR VIEW" AND "PLAN VIEW" FOR POSITION OF STRAPPING .
- HOLD-DOWN STRAP, 2" X .050" X 161-0" LONG STEEL STRAPPING (2 REQD). (15)
- PAD, 2" X .050" STRAP 18" LONG (4 REQD). POSITION UNDER AND SEAL TO A PIECE MARKED (3). SEE "DETAIL A" ON PAGE 3. ALT: STAKE POCKET PROTECTOR (8 REQD). USE TWO (2) UNDER EACH ANCHORING FACILITY WITH PIECE MARKED (3). SEE "DETAIL B" ON PAGE 3. (16)
- SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP

PAGE 4

- SEAL FOR 2" STRAPPING (8 REQD, 4 PER STRAP). SEE GENERAL NOTE "M" ON PAGE 7 (18) 7'-10"-
- 6-11" (7)(14) **(5) (5) (4) (3)** REAR VIEW

- (2) FORWARD BLOCKING (1 REQD). SEE THE DETAIL ON PAGE 3.
- Rubbing strip, 2" x 6" x 36" (2 reqd). Position on edge and nail to a lower piece marked 4 W/5-12d nails.
- SIDE BLOCKHIEC, $2^{\rm m}$ X $4^{\rm m}$ X $36^{\rm m}$ + Tripled > (2 REQD), PRE-POSITION AND NAIL THE FIRST PHOCE TO THE TRAILER FLOCIR W/5-12d NAILS. NAIL EACH ADDITIONAL PIECE IN & LIKE MANNER
- (5) WIRE TWISTER, 2" X 2" BY A LENGTH TO SUIT (8 REQD), SEE GENERAL NOTE "F".
- (6) EIGHT (8) STRANDS OF NO. 8 GAGE BLACK ANNEALED WIRE (4 REQD.). PASS THRU HOLES IN A WHEEL AND THRU A TRANSPORTER TIE DOWN FACILITY TO FORM A COMPLETE LOOP. TWIST TAUT WITH PIECE MARKED (3). SEE THE "WHEEL SECUREMENT" DETAIL ON PAGE 3. SEE THE "SPECIAL PROVISIONS" ON PAGE 5.
- SIXTEEN + 16 + STRANDS OF NO. 8 GAGE BLACK ANNEALED WIRE (4 REQD.). INSTALL WIRE TO APPROXIMATE THE ANGLE SHOWN AND TO FORM A COMPLETE LOOP FROM WIRE TO APPROXIMATE THE ANGLE SHOWN AND TO FORM A COMPLETE LOOP FROM A TIF DOWN FACILITY ON THE TRANSPORTER THRU THE LADING LUNETTE AT THE FRONT AND/OR THRU A LADING TIE DOWN DEVICE AT THE REAR AND BACK TO THE TRANSPORTER THE FACILITY. TWIST TAUT WITH PIECE MARKED (3). NOTE: IF DESIRED, 3/8 STEEL WIRE ROPE (OR LARGER) MAY BE INSTALLED IN LIEU OF THE WIRE HOLD DOWNS. USE A THIMBLE ("OPEN PATTERN" RECOMMENDED) AT EACH TRANSPORTER THE DOWN FACILITY AND AT EACH REAR LADING THE DOWN DEVICE. USE FOUR 14: CLIPS PER EACH CABLE JOINT AND ONE (1) CLIP TO SECURE EACH THIMBLE. NOTE THAT NUTS ON A 3/8" CARLE CUIP. WILL RE TIGHTENED TO A THIMBLE. NOTE THAT NUTS ON A 3/8" CABLE CLIP WILL BE TIGHTENED TO A TORQUE OF 35 TO 40 FOOT POUNDS. SEE GENERAL NOTES "H" AND "J".
- (8) WATERPROOF PAPER OR BURLAP OF SUFFICIENT SIZE TO POSITION UNDER AND EXTEND 2" ABOVE PIECE MARKED 3 .
- (9) HEADER, 2" X 4" X 44" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/5-12d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/5-20d
- (B) BACK-UP CLEAT, 2" X 4" X 18" (DOUBLED) (7 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/3-12d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/3-20d
- (1) SIDE BLOCKING, 2" X 4" X 18" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/3-12d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- HEADER, 2" X 4" X 13-1/2" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/2-12d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/2-20d NAILS.

(CONTINUED AT LEFT)



SPECIAL PROVISIONS:

- A. LADING MAY BE SECURED BY CARRIER-OWNED CHAINS AND LOAD BINDERS IN LIEU OF SPECIFIED STRANDED ANNEALED WIRE AND/OR STEEL STRAPPING TIE DOWN DUNNAGE MATERIALS, PROVIDING THE FOLLOWING CONDITIONS ARE MET:
 - 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.
 - 2. ONE (1) LINE OF 3/8" CHAIN, OR TWO (2) LINES OF 1/4" CHAIN, MAY BE SUBSTITUTED FOR EACH STRANDED WIRE THE DOWN CABLE MARKED (7). CHAINS SHALL BE INSTALLED AT THE SAME LOCATIONS SHOWN FOR THE STRANDED WIRE CABLES AND IN THE SAME MANNER AS DIRECTED IN GENERAL NOTE "J" ON PAGE 2.
 - 3. FOR WHEEL SECUREMENT FOR THE LOAD SHOWN ON PAGE 4, ONE (1) LINE OF 1/4" CHAIN MAY BE USED IN LIEU OF TWO (2) STRANDED WIRF TIE DOWNS MARKED (6). THE CHAIN SHALL BE INSTALLED TO EXTEND FROM A FORWARD TIE DOWN FACILITY AT THE SIDE OF THE TRANSPORTER, THRU AN UPPER LIGHTENING HOLE OF THE WHEEL, BACK THRU AN ADJACENT LIGHTENING HOLE AND THEN DOWN TO A REARWARD TIE DOWN FACILITY ON THE SAME SIDE OF THE TRANSPORTER.
 - 4. ONE (1) LINE OF 1/4" CHAIN MAY BE SUBSTITUTED FOR EACH HOLD-DOWN STRAP MARKED (3) . <u>CAUTION</u>: USE CARE IN TENSIONING TO PREVENT DAMAGE TO THE CONTAINERS.
 - 5. IF DESIRED, CHAINS OF A LARGER SIZE THAN SPECIFIED ABOVE MAY BE USED.
 - 6. 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
 - 7. CHAINS MUST NOT BE TWISTED DURING INSTALLATION.
 - 8. THE TENSIONING DEVICE OF EACH LOAD BINDER MUST BE SAFETY-WIRE TIED TO PREVENT ACCIDENTAL OPENING OR LOOSENING IN TRANSIT.
 - ANTI-CHAFING MATERIAL MUST BE PLACED AND SECURED BETWEEN THE CHAINS AND THE LADING AT ALL POINTS OF CONTACT, EXCEPT AT DEFINITIVE TIE DOWN POINTS.
 - 10. NOTE: CHAINS WILL NOT BE USED IN LIEU OF THE UNITIZING STRAPS, PIECE MARKED 4 .

LUMBER	LINEAR FEET	BOARD FEET	
1" X 6"	5	3	
2" X 2"	12	4	
2" X 4"	95	64	
2" X 6"	9	9	
2" X 8"	16	22	
NAILS	NO, REQD	POUNDS	
6d (2")	26	NIL	
12d (3-1/4")	163	3	
16d (3-1/2")	40	1	
20d (4")	96	3-1/2	
RE, NO. 8 GAGE	600' REQ [) 55 LBS	
	4" X .035" 24' REQ E		
EL STRAPPING, 2" X	.050" 38' REQ [13 LBS	
	PING 4 REQ I		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT	(APPROX
SHOP EQUIPM	ENT, AN/ 1	5,520	LBS
BOX 1 OF 2 -		200	LBS
BOX 2 OF 2 -	1	100	LBS
DUNNAGE		337	LBS

TOTAL WEIGHT -----6,157 LBS

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