

CHAPARRAL

LOADING AND BRACING ON FLAT BED OR "LOW-BOY" TRAILER OF SUPPORT MAINTENANCE SHOP SET, AN/TSM-96

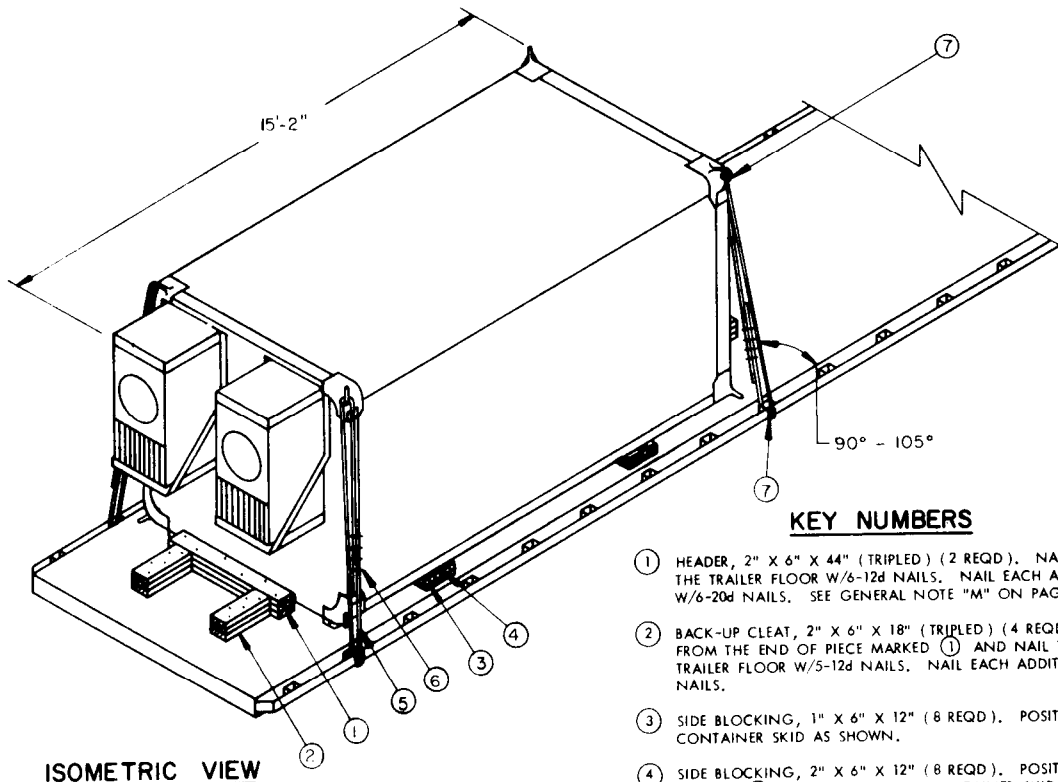
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THIS DRAWING, INCLUDING REVISION 1, SUPERSEDES DRAWING
19-48-7561-GSE 11CH3, DATED 29 JULY 1969.

DO NOT SCALE

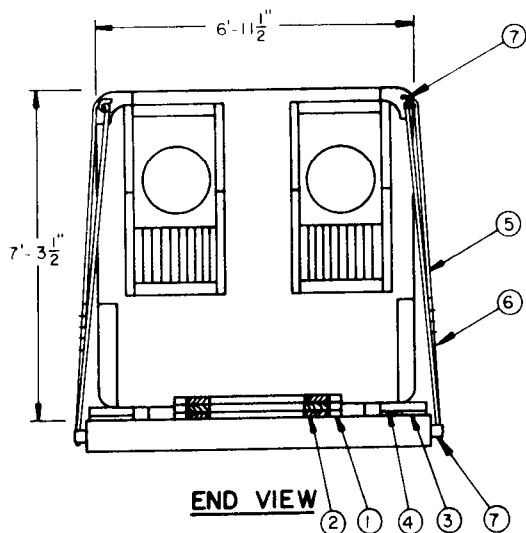
REVISIONS				DRAWN BY <i>RS</i>	PROJ. ENG. <i>GBF</i>	DRSM: SP <i>WJ</i>
1	SEP 79	<i>WJ</i>	<i>WJ</i>	CHECKED <i>RS</i>	LOG. ENG. OFFICE <i>WJ</i>	APPROVED, U.S. ARMY MISSILE COMMAND
				<i>William J. Hoquien</i>		
				<i>Ed. B. Fant</i>		
				APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL DEVELOPMENT AND READINESS COMMAND (DARCOM)		
				<i>Ed. B. Fant</i>		
				U. S. ARMY DEFENSE MUNITION CENTER AND SCHOOL		
				U. S. ARMY DARCOM DRAWING		
				SEPTEMBER 1979		
				CLASS	DIVISION	DRAWING
				19	48	7561
						FILE
						GSE 11CH3



ISOMETRIC VIEW

KEY NUMBERS

- ① HEADER, 2" X 6" X 44" (TRIPLED) (2 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/6-12d NAILS. NAIL EACH ADDITIONAL PIECE W/6-20d NAILS. SEE GENERAL NOTE "M" ON PAGE 3.
- ② BACK-UP CLEAT, 2" X 6" X 18" (TRIPLED) (4 REQD). POSITION 3" FROM THE END OF PIECE MARKED ① AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/5-12d NAILS. NAIL EACH ADDITIONAL PIECE W/5-20d NAILS.
- ③ SIDE BLOCKING, 1" X 6" X 12" (8 REQD). POSITION AGAINST THE CONTAINER SKID AS SHOWN.
- ④ SIDE BLOCKING, 2" X 6" X 12" (8 REQD). POSITION ON TOP OF PIECE MARKED ③ AND AGAINST THE CONTAINER SKID AS SHOWN. NAIL THRU PIECE MARKED ③ AND INTO THE TRAILER FLOOR W/3-20d NAILS.
- ⑤ STEEL WIRE ROPE, 3/8" DIAMETER, 6.56 TONS (4 REQD). INSTALL THE CABLE TO THE APPROXIMATE ANGLE SHOWN AND TO FORM A COMPLETE LOOP FROM THE TIEDOWN FACILITY ON THE TRAILER THRU THE LADING TIEDOWN DEVICE AND BACK TO THE TRAILER TIEDOWN FACILITY. SEE GENERAL NOTES "F", "H" AND "J" ON PAGE 3. NOTE: CABLE OF A LARGER SIZE MAY BE USED IF AVAILABLE, WHEN SPECIFIED CABLE IS NOT AVAILABLE.
- ⑥ CLIP, SIZE 3/8" (24 REQD). USE FOUR (4) PER CABLE JOINT AND ONE PER THIMBLE. NOTE: A STANDARD THIMBLE AS SPECIFIED CAN BE SECURED TO A CABLE WITH 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.
- ⑦ THIMBLE, STANDARD, SIZE 3/8" (8 REQD). ONE (1) PER TRAILER TIEDOWN FACILITY AND ONE (1) PER LADING TIEDOWN DEVICE. SECURE TO THE WIRE ROPE MARKED ⑤ W/1 CLIP PER THIMBLE. NOTE THAT AN "OPEN PATTERN" THIMBLE IS RECOMMENDED.



END VIEW

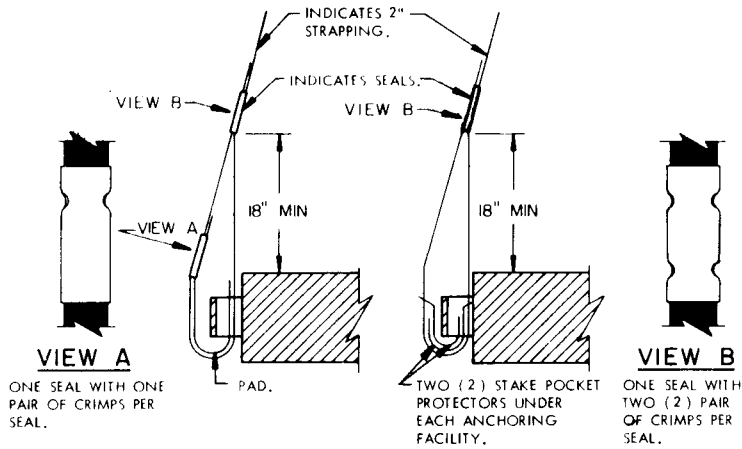
REVISIONS

REVISION NO. 1, DATED SEPTEMBER 1979, CONSISTS OF:

1. ADDING PROCEDURES FOR SHIPPING SHOP SETS, UNCRATED-MOUNTED ON SKID BASE.
2. CHANGING LADING DATA.
3. ADDING "SPECIAL PROVISIONS" FOR USE OF CHAINS AND LOAD BINDERS.
4. CHANGING PROCEDURES TO CONFORM TO CURRENT STANDARDS.

GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1.
- B. THE LOADS AS SHOWN ARE BASED ON FLAT BED OR "LOW-BOY" TRAILERS 8'-0" WIDE WITH WOOD OR WOOD AND METAL FLOORS. 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 4, 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 THE SPECIFIED DUNNAGE LUMBER, AND A SUFFICIENT NUMBER OF TIEDOWN FACILITIES OF A STRENGTH EQUAL TO OR BETTER THAN SPECIFIED LADING TIEDOWN ASSEMBLIES.
- D. SHIPMENT GROSS WEIGHT, AXLE DISTRIBUTION OF LADING WEIGHT AND OVERALL DIMENSIONS MUST MEET STATE LAW REQUIREMENTS.
- E. LADING DATA (UNCRATED):
 ITEM DIMENSIONS ----- 15'-2" LONG X 6'-11-1/2" WIDE X 7'-3-1/2" HIGH
 ITEM GROSS WEIGHT --- 3,855 POUNDS (APPROX).
- LADING DATA (CRATED):
 ITEM DIMENSIONS ----- 16'-5" LONG X 7'-6" WIDE X 8'-5" HIGH
 ITEM GROSS WEIGHT ---- 6,140 POUNDS (APPROX)
- LADING DATA (UNCRATED, MOUNTED ON SKID BASE):
 ITEM DIMENSIONS ----- 16'-3" LONG X 7'-4" WIDE X 7'-11" HIGH
 ITEM GROSS WEIGHT --- 5,055 POUNDS (APPROX).
- F. REFER TO ORD DWG 19-48-C-ORDJ-588, "WIRE ROPE AND ANNEALED WIRE APPLICATION METHODS FOR SECURING LADING ON RAIL & MOTOR CARRIER EQUIP", FOR PROPER TIEDOWN APPLICATION.
- G. SEE THE "SPECIAL PROVISIONS" ON PAGE 6 FOR SPECIFICATIONS WHICH MUST BE APPLIED IF CHAINS AND LOAD BINDERS ARE USED.
- H. **CAUTION:** IT IS RECOMMENDED THAT CABLE BE INSTALLED TO APPROXIMATE ANGLE SHOWN; HOWEVER, IF PLACEMENT OF TRANSPORTER TIEDOWN 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 DIRECTION--CONTACT OF CABLE WITH THE EDGE OF THE LADING IS PROHIBITED.
- J. TO ACHIEVE PROPER CABLE TENSION, EMPLOY TWO (2) CABLE "GRIPPERS" AND AN APPLICABLY SIZED "COME-A-LONG" TYPE MECHANICAL HOIST.
- K. 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.
- L. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 1" X 6" MATERIAL ACTUALLY IS 3/4" THICK BY 5-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE.
- M. NOTICE: 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.



DETAIL A

METHOD OF INSTALLING
2" STRAPPING AND PAD
AT ANCHORING FACILITY.

DETAIL B

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

BILL OF MATERIAL

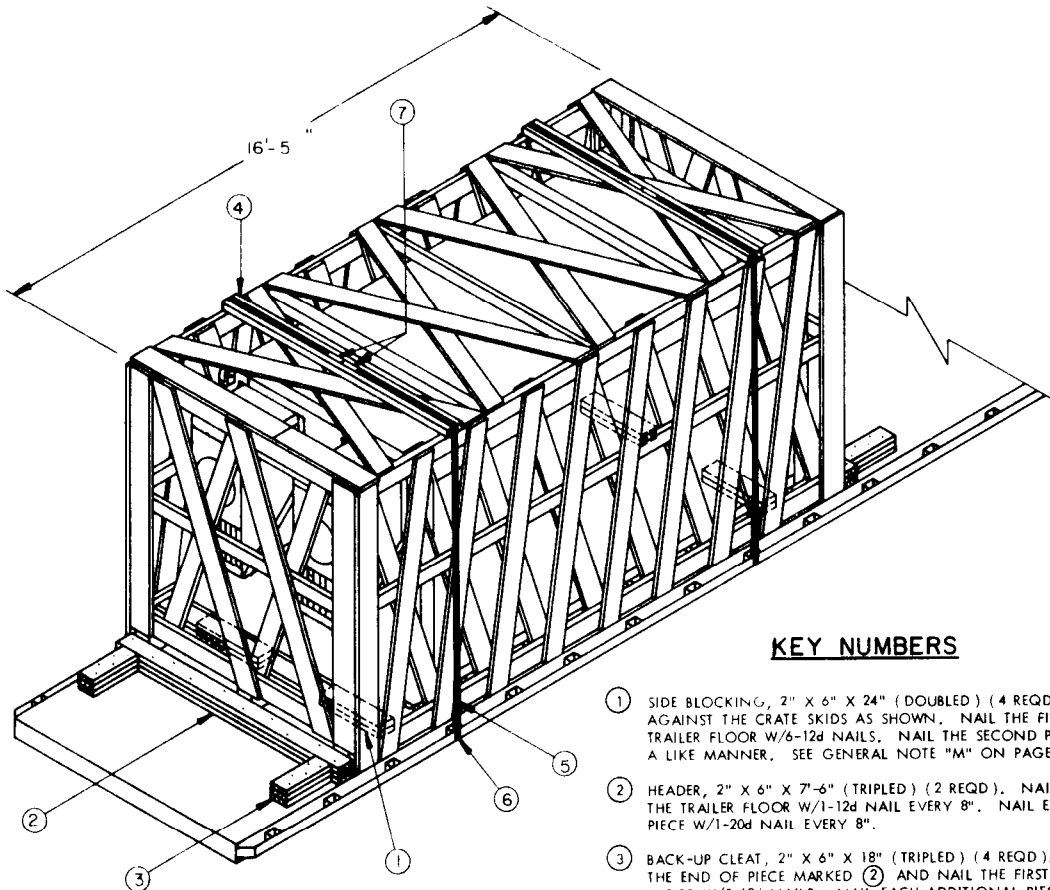
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	8	4
2" X 6"	48	48
NAILS	NO. REQD	POUNDS
12d (3-1/4")	32	3/4
20d (4")	88	3-1/4
ROPE, STEEL WIRE, 3/8" DIA	72' REQD	18 LBS
CLIP, 3/8"	24 REQD	7.5 LBS
CLIP, 1/2" (ALT FOR 3/8", B REQD)		4 LBS
THIMBLE, STANDARD, 3/8"	8 REQD	1.5 LBS

MATERIAL SPECIFICATIONS

- LUMBER** ----- : DOUGLAS FIR OR COMPARABLE LUMBER WITH STRAIGHT GRAIN AND FREE OF MATERIAL DEFECTS. REF: FED SPEC MM-L-751.
- NAILS** ----- : COMMON. REF: FED SPEC FF-N-105.
- 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-450, TYPE I, CLASS 1.
- STRAPPING, STEEL** ----- : CLASS I, TYPE I, HEAVY DUTY, FINISH A, B (GRADE 2) OR C. REF: FED SPEC QQ-5-781.
- STRAP SEAL** ----- : TYPE D, STYLE I, II, OR III, CLASS H. REF: FED SPEC QQ-5-781.
- STRAP STAPLE, STAKE POCKET PROTECTOR** ----- : COMMERCIAL GRADE.

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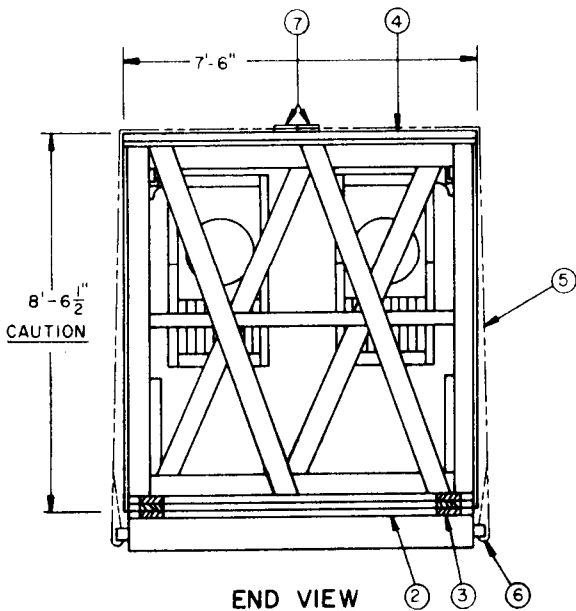
ITEM	QUANTITY	WEIGHT (APPROX)
SHOP SET	1	3,855 LBS
DUNNAGE		135 LBS
TOTAL WEIGHT		3,990 LBS



ISOMETRIC VIEW

KEY NUMBERS

- ① SIDE BLOCKING, 2" X 6" X 24" (DOUBLED) (4 REQD). PRE-POSITION AGAINST THE 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 "M" ON PAGE 3.
- 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). POSITION 3" FROM THE END OF PIECE MARKED ② AND 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'-7-1/2" (2 REQD).
- ⑤ HOLD-DOWN STRAP, 2" X .050" X 33'-0" STEEL STRAPPING (2 REQD). INSTALL EACH STRAP FROM TWO (2) 16'-6" LONG PIECES. STAPLE TO PIECE MARKED ④ W/4-2" STAPLES. SEE THE "SPECIAL PROVISIONS" ON PAGE 6.
- ⑥ PAD, 2" X .050" STRAP 18" LONG (4 REQD). POSITION UNDER AND SEAL TO PIECE MARKED ⑤. SEE "DETAIL A" ON PAGE 3. ALT: STAKE POCKET PROTECTOR (8 REQD). TWO (2) USED UNDER EACH TIEDOWN FACILITY WITH PIECE MARKED ⑤. SEE "DETAIL B" ON PAGE 3.
- ⑦ SEAL FOR 2" STRAPPING (12 REQD). EXCEPT FOR THE SEALS USED TO SECURE THE PADS, DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "K" ON PAGE 3.



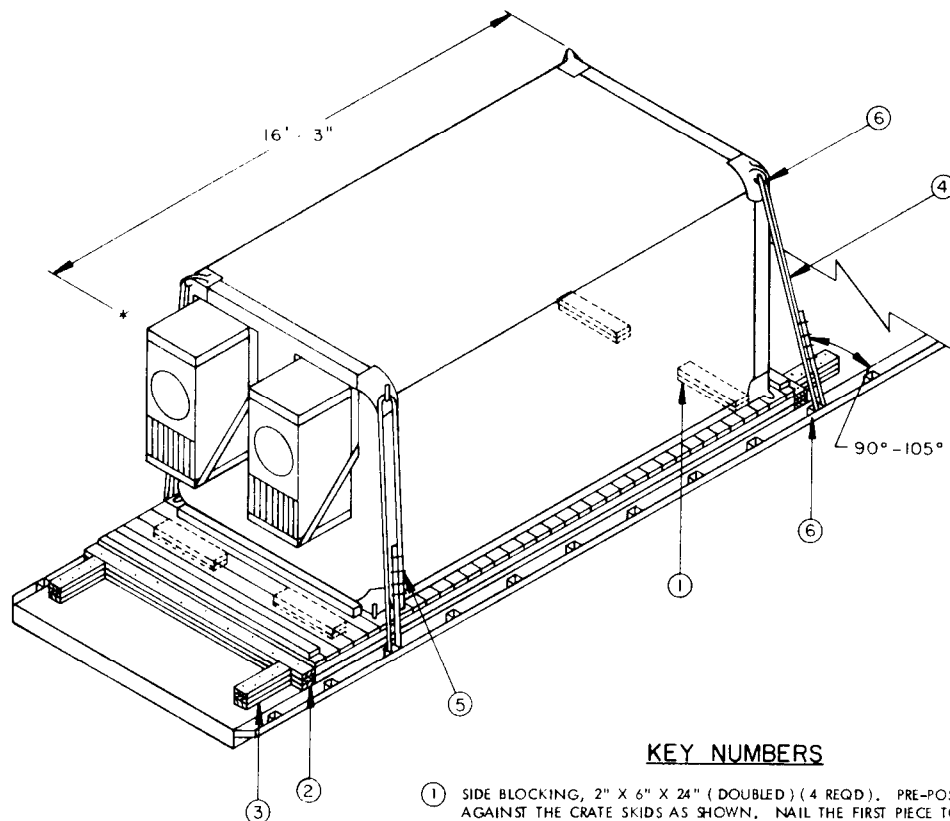
END VIEW

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"	72' REQD	24 LBS
SEAL FOR 2" STRAPPING	12 REQD	3 LBS
STAPLE FOR 2" STRAPPING	8 REQD	NIL

LOAD AS SHOWN

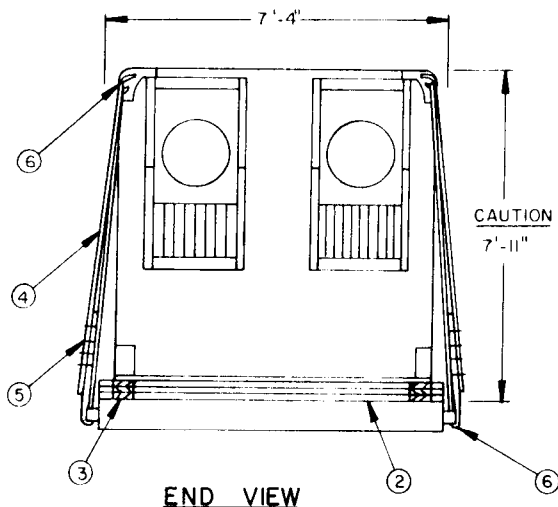
ITEM	QUANTITY	WEIGHT (APPROX)
SHOP SET (CRATED)	1	6,140 LBS
DUNNAGE		222 LBS
TOTAL WEIGHT		6,362 LBS



ISOMETRIC VIEW

KEY NUMBERS

- ① SIDE BLOCKING, 2" X 6" X 24" (DOUBLED) (4 REQD). PRE-POSITION SO AS TO BE AGAINST THE 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 "M" ON PAGE 3.
- 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). POSITION 3" FROM THE END OF PIECE MARKED ② AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/5-12d NAILS. NAIL EACH ADDITIONAL PIECE W/5-20d NAILS.
- ④ STEEL WIRE ROPE, 3/8" DIAMETER, 6.56 TONS (4 REQD). INSTALL CABLE TO APPROXIMATE ANGLE SHOWN AND TO FORM A COMPLETE LOOP FROM A TIEDOWN FACILITY ON THE TRAILER THRU A LADING TIEDOWN DEVICE AND BACK TO THE TRAILER TIEDOWN FACILITY. SEE GENERAL NOTES "F", "H" AND "J" ON PAGE 3, AND "SPECIAL PROVISIONS" ON PAGE 6. NOTE: CABLE OF LARGER SIZE MAY BE USED IF AVAILABLE WHEN SPECIFIED CABLE IS NOT AVAILABLE.
- ⑤ CLIP, SIZE 3/8" (24 REQD). USE FOUR (4) PER CABLE JOINT AND ONE PER THIMBLE. NOTE: A STANDARD THIMBLE AS SPECIFIED CAN BE SECURED TO A CABLE WITH 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.
- ⑥ THIMBLE, STANDARD, SIZE 3/8" (8 REQD). ONE (1) PER TRAILER TIEDOWN FACILITY AND ONE (1) PER LADING TIEDOWN DEVICE. SECURE TO THE WIRE ROPE MARKED ④ W/1-CLIP PER THIMBLE. NOTE THAT AN "OPEN PATTERN" THIMBLE IS RECOMMENDED.



END VIEW

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 6"	79	79
NAILS	NO. REQD	POUNDS
12d (3-1/4")	90	1-1/2
20d (4")	84	3
ROPE, STEEL WIRE 3/8" DIA. ----- 80' REQD ----- 20 LBS		
CLIP, 3/8" ----- 24 REQD ----- 7.5 LBS		
CLIP, 1/2" (ALT FOR 3/8", 8 REQD) ----- 4 LBS		
THIMBLE, STANDARD 3/8" ----- 8 REQD ----- 1.5 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
SHOP SET (UNCRATED, MOUNTED ON SKID BASE)	1	5,055 LBS
DUNNAGE		192 LBS
TOTAL WEIGHT		5,247 LBS

SPECIAL PROVISIONS:

LADING MAY BE SECURED BY CARRIER-OWNED CHAINS AND LOAD BINDERS IN LIEU OF SPECIFIED WIRE ROPE CABLE AND/OR 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 THE LADING.
2. ONE (1) LINE OF 3/8" CHAIN OR TWO (2) LINES OF 1/4" CHAIN, MAY BE SUBSTITUTED FOR EACH WIRE ROPE CABLE TIEDOWN MARKED ⑤ ON PAGE 2, AND MARKED ④ ON PAGE 5. CHAINS SHALL BE INSTALLED AT THE SAME LOCATIONS SHOWN FOR WIRE ROPE CABLES AND IN THE SAME MANNER AS DIRECTED IN GENERAL NOTE "H" ON PAGE 3.
3. IN LIEU OF EACH HOLD-DOWN STRAP MARKED ⑤ ON PAGE 4, 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 BOARD W/4-20d NAILS BY DRIVING EACH NAIL INTO THE BOARD THRU AN OPENING IN A CHAIN LINK AND BENDING IT OVER THE LINK.
4. IF DESIRED, CHAINS OF A LARGER SIZE THAN SPECIFIED ABOVE MAY BE USED.
5. 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. 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 TIEDOWN POINTS AND/OR STRAPPING BOARDS.