

NIKE-HERCULES

LOADING AND BRACING ON FLAT BED OR "LOW-BOY" TRAILER OF LAUNCHER, MONORAIL, GUIDED MISSILE, M36E1

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DRAFTSMAN TAS/288	PROJ ENG C. J. New	A/ESD-5000 AGC	SUBMITTED W. H. Harding, Col	
CHECKER TK-1	AMC ARMO CTR E. J. ...	A/ESD-5000 AGC	COMMANDING OFFICER, SAVANNA ARMY DEPOT	
REVISIONS			APPROVED Andrew ...	
			ARMY MISSILE COMMAND	
			APPROVED BY ORDER OF COMMANDING GENERAL U. S. ARMY MATERIEL COMMAND	
			U. S. ARMY MATERIEL COMMAND	
			29 JULY 1969	
CLASS	DIVISION	DRAWING	FILE	
19	48	7558	GSE IINH27	

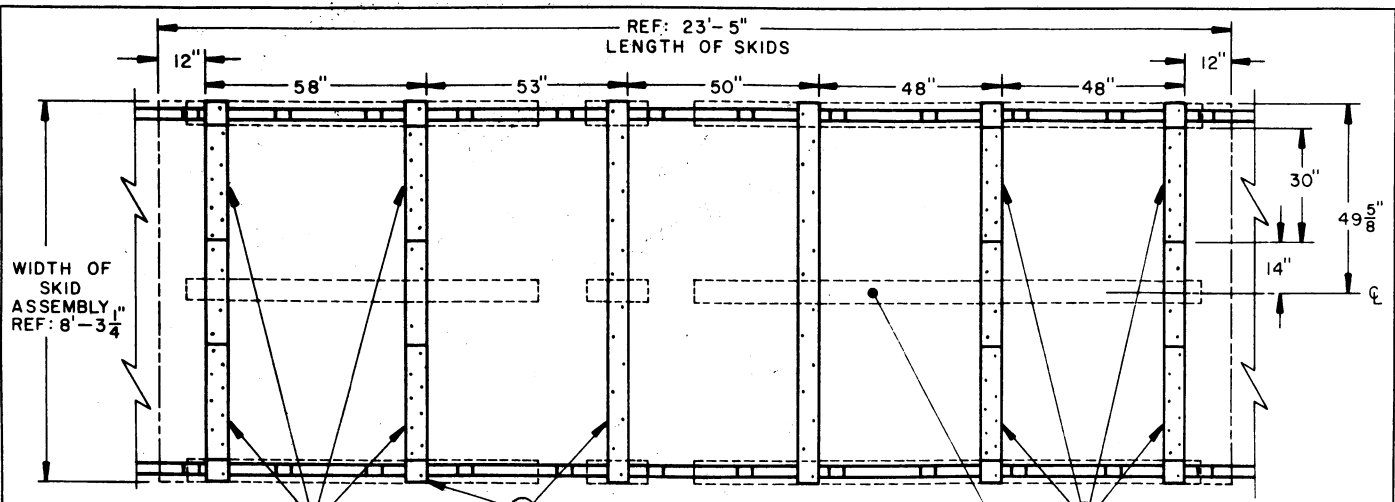
DO NOT SCALE

GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AMCR 740-13.
- B. THE LOADS AS SHOWN ARE 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. MULTIPLES OF UNITS 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 LOADS AS SHOWN 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 ANCHORING 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 (CRATED):
ITEM DIMENSIONS ----- 23'-5" LONG X 8'-4-1/4" WIDE X 51-1/2" HIGH.
ITEM GROSS WEIGHT ---- 14,900 POUNDS (APPROX).
- LADING DATA (UNCRATED; SKID-MOUNTED):
ITEM DIMENSIONS ----- 23'-5" LONG X 8'-3-1/4" WIDE X 44-1/2" HIGH.
ITEM GROSS WEIGHT ---- 12,674 POUNDS (APPROX).
- F. WHEN STEEL STRAPPING 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.
- G. IF THE STAKE POCKETS AND/OR ANCHOR DEVICES ON A TRAILER ARE NOT PROPERLY LOCATED TO PERMIT SECURING OF THE TWO INCH (2") STEEL STRAPPING AS SHOWN, OR IF THE POCKETS AND/OR ANCHOR DEVICES ARE NOT EQUAL TO OR GREATER THAN THE STRENGTH OF THE 2" TIEDOWN STRAPS, STRAPPING MAY BE APPLIED TO FORM A COMPLETE LOOP WHICH ENCOMPASSES BOTH THE LADING AND THE TRAILER FRAME AND/OR BED. CAUTION: WHEN INSTALLING A TIEDOWN STRAP WHICH ENCOMPASSES BOTH LADING AND TRAILER FRAME AND/OR BED, AVOID TRAILER WHEELS, FIFTH WHEEL PLATE, CONTROLS, AND APPURTENANCES; AND USE PADS ON ALL SHARP EDGES AS CUSHIONING FOR THE STRAPPING. NOTE: PROVISIONS OF GENERAL NOTE "F" ABOVE WILL ALSO APPLY.
- H. THE WORDS "ANTI-SKID PLATE" WILL BE STENCILED IN ONE INCH (1") HIGH LETTERS ON BOTH SIDES OF A CRATE JUST ABOVE THE LOCATIONS OF THE PLATES.
- J. NOTICE: LADING WILL NOT BE SECURED BY CHAINS AND/OR LOAD BINDERS IN LIEU OF SPECIFIED DUNNAGE.
- K. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 6" MATERIAL IS ACTUALLY 1-5/8" THICK BY 5-5/8" WIDE AND 4" X 4" MATERIAL IS ACTUALLY 3-5/8" THICK BY 3-5/8" WIDE.
- L. 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.

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.
- STRAPPING, STEEL ----- : TYPE I OR IV, CLASS A OR C. REF: FED SPEC QQ-S-781.
(FOR FSN SEE SB-38-100).
- STRAP SEAL; STRAP STAPLE;
ANTI-SKID PLATE; STAKE
POCKET PROTECTOR ----- : COMMERCIAL GRADE.



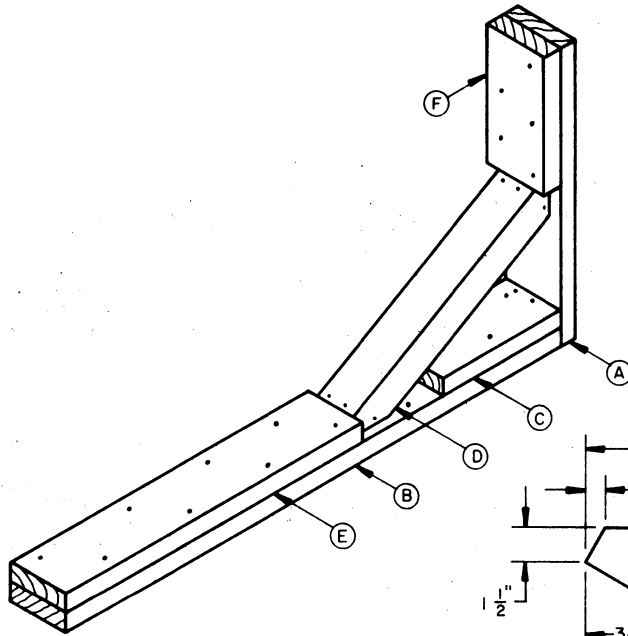
NOTE Ⓐ:
 FOR UNCRATED LOADS, DECREASE THE LENGTH OF PIECES MARKED Ⓑ AND Ⓔ BY 6" WITH A PROPORTIONAL REDUCTION TO THE NAILING.

DUNNAGE PLAN VIEW
 THIS VIEW SPECIFIES THE LOCATION FOR THE PRE-POSITIONED DUNNAGE FOR A 2-UNIT LOAD. FOR A 1-UNIT LOAD OMIT THE FOUR (4) INNERMOST SIDE BLOCKING PIECES MARKED Ⓔ.

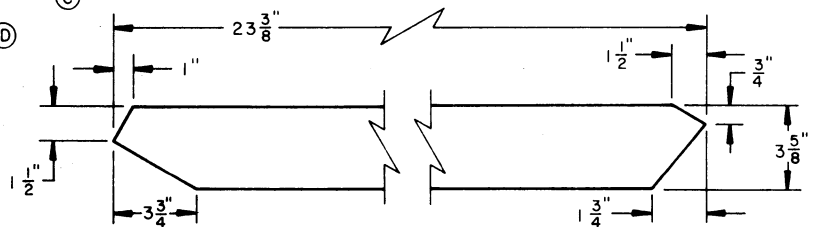
THOSE AREAS SHOWN BY DOTTED OUTLINE INDICATE LOCATIONS FOR RUBBING STRIPS OF THE CONTAINER.

KEY LETTERS

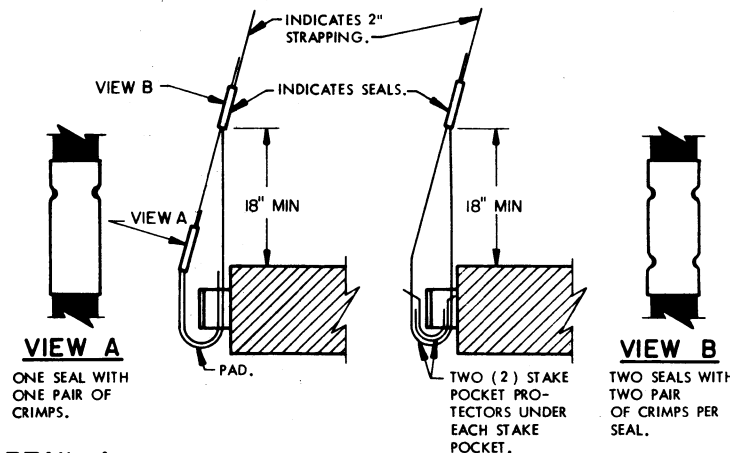
- Ⓐ VERTICAL CLEAT, 2" X 6" X 26" (1 REQD.).
- Ⓑ FLOOR CLEAT, 2" X 6" X 50" (1 REQD.). NAIL TO TRAILER FLOOR W/1-12d NAIL EVERY 4". SEE "NOTE Ⓐ" AT LEFT.
- Ⓒ POCKET CLEAT, 2" X 6" X 12" (1 REQD.). NAIL TO FLOOR CLEAT PIECE MARKED Ⓑ W/3-12d NAILS. TOENAIL TO VERTICAL CLEAT PIECE MARKED Ⓐ W/2-12d NAILS.
- Ⓓ BRACE PIECE, 4" X 4" X 23-5/8" (1 REQD.). SEE "PIECE D" DETAIL BELOW FOR BEVEL CUTS REQUIRED. TOENAIL TO VERTICAL PIECE MARKED Ⓐ AND FLOOR CLEATS PIECE MARKED Ⓑ W/4-16d NAILS AT EACH END.
- Ⓔ BACK-UP CLEAT, 2" X 6" X 30" (1 REQD.). NAIL TO FLOOR CLEAT PIECE MARKED Ⓑ W/7-12d NAILS. SEE "NOTE Ⓐ" AT LEFT.
- Ⓕ HOLD DOWN CLEAT, 2" X 6" X 12" (1 REQD.). NAIL TO VERTICAL CLEAT PIECE MARKED Ⓐ W/3-10d NAILS.



KNEE BRACE
 (AS REQD.)



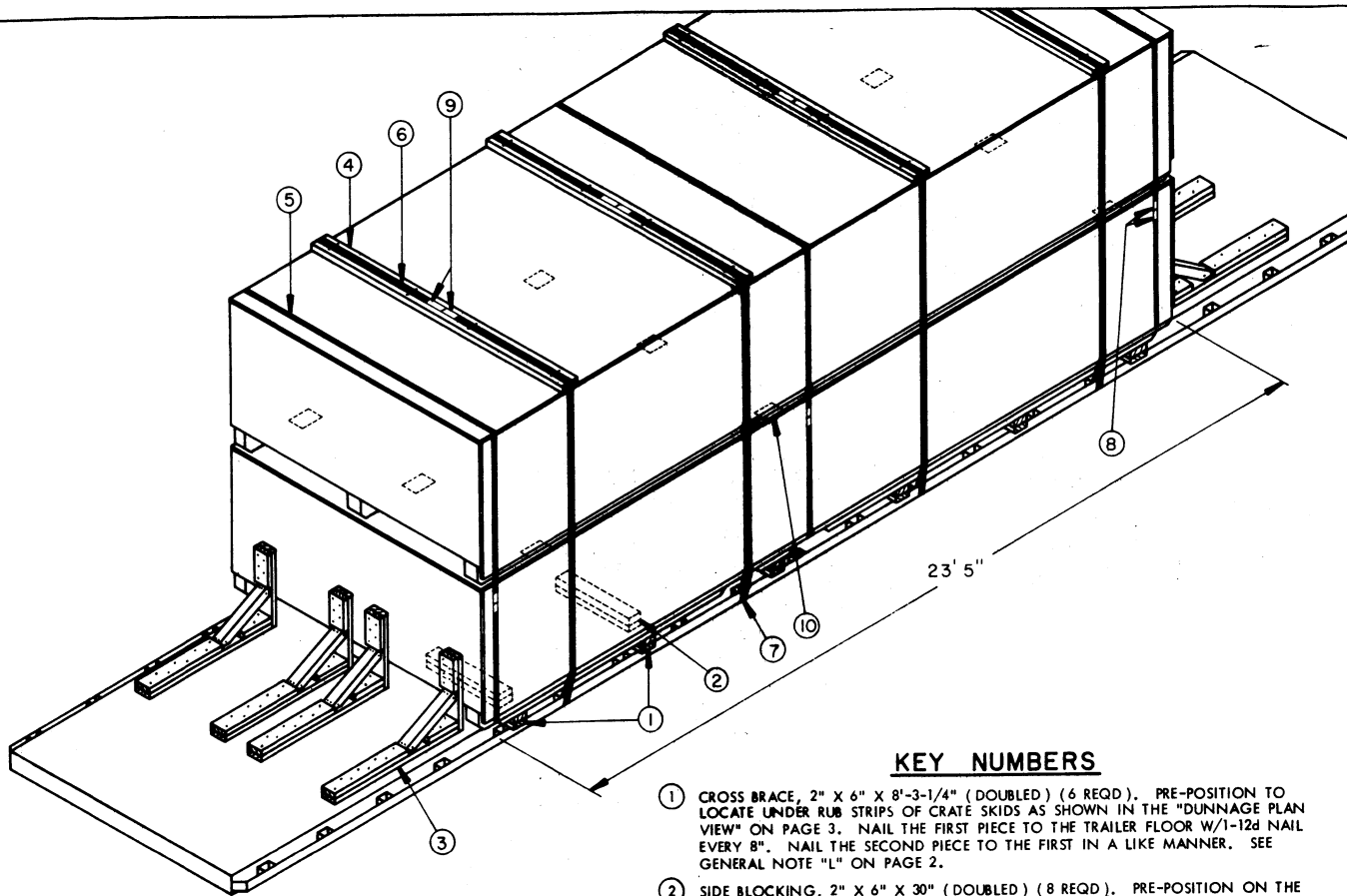
BRACE Ⓓ



DETAIL A
 METHOD OF INSTALLING 2" STRAPPING AND PAD AT STAKE POCKET.

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

DETAILS



ISOMETRIC VIEW

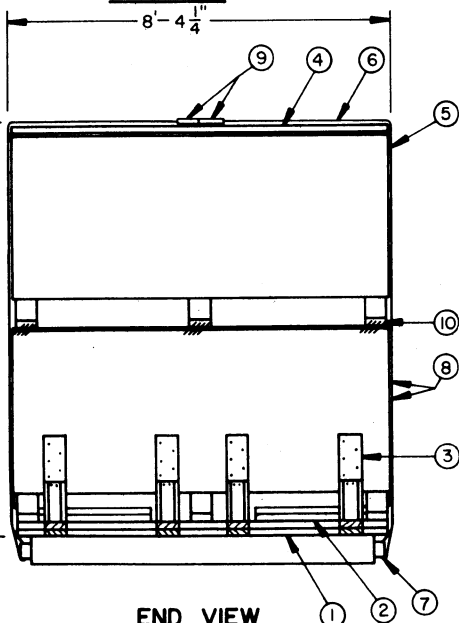
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
LAUNCHER MONORAIL (CRATED)	2	29,800 LBS
DUNNAGE		791 LBS
TOTAL WEIGHT		30,591 LBS

KEY NUMBERS

- ① CROSS BRACE, 2" X 6" X 8'-3-1/4" (DOUBLED) (6 REQD). PRE-POSITION TO LOCATE UNDER RUB STRIPS OF CRATE SKIDS AS SHOWN IN THE "DUNNAGE PLAN VIEW" ON PAGE 3. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/1-12d NAIL EVERY 8". NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTE "L" ON PAGE 2.
- ② SIDE BLOCKING, 2" X 6" X 30" (DOUBLED) (8 REQD). PRE-POSITION ON THE TWO FRONT AND TWO REAR CROSS BRACES MARKED ① SO AS TO BEAR AGAINST THE INSIDE OF THE OUTER SKIDS OF THE CRATE. NAIL THE FIRST PIECE TO ① W/8-12d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE "DUNNAGE PLAN VIEW" ON PAGE 3.
- ③ KNEE BRACE (8 REQD). SEE THE DETAIL ON PAGE 3.
- ④ STRAPPING BOARD, 2" X 6" X 8'-4" (4 REQD).
- ⑤ UNITIZING STRAP, 1-1/4" X .035" X 35'-0" STEEL STRAPPING (3 REQD). INSTALL EACH STRAP TO ENCIRCLE BOTH UNITS.
- ⑥ TIE DOWN STRAP, 2" X .050" X 36'-0" STEEL STRAPPING (4 REQD). INSTALL EACH STRAP FROM TWO (2) 18'-0" LONG PIECES. STAPLE TO THE STRAPPING BOARD MARKED ④ W/4 STAPLES. SEE GENERAL NOTE "G" ON PAGE 2.
- ⑦ PAD, 2" X .050" STEEL STRAPPING 18" LONG (8 REQD). POSITION UNDER AND SEAL TO A PIECE MARKED ④. SEE "DETAIL A" ON PAGE 3. ALTERNATIVE: STAKE POCKET PROTECTOR (16 REQD). USE TWO (2) UNDER EACH ANCHOR POINT WITH PIECES MARKED ④. SEE "DETAIL B" ON PAGE 3.
- ⑧ SEAL FOR 1-1/4" STRAPPING (6 REQD, 2/STRAP). SEE GENERAL NOTE "F" ON PAGE 2.
- ⑨ SEAL FOR 2" STRAPPING (24 REQD, 6/STRAP). EXCEPT FOR SEALS USED TO SECURE PIECE MARKED ⑦, DOUBLE-CRIMP EACH SEAL. SEE GENERAL NOTE "F" ON PAGE 2.
- ⑩ ANTI-SKID PLATE (9 OF 5" X 7" PLATES OR 18 OF 3-3/4" X 5" PLATES REQD). POSITION ONE (1) 5" X 7" PLATE OR TWO (2) 3-3/4" X 5" PLATES UNDER EACH RUBBING STRIP OF THE TOP CRATE. SEE GENERAL NOTE "H" ON PAGE 2.

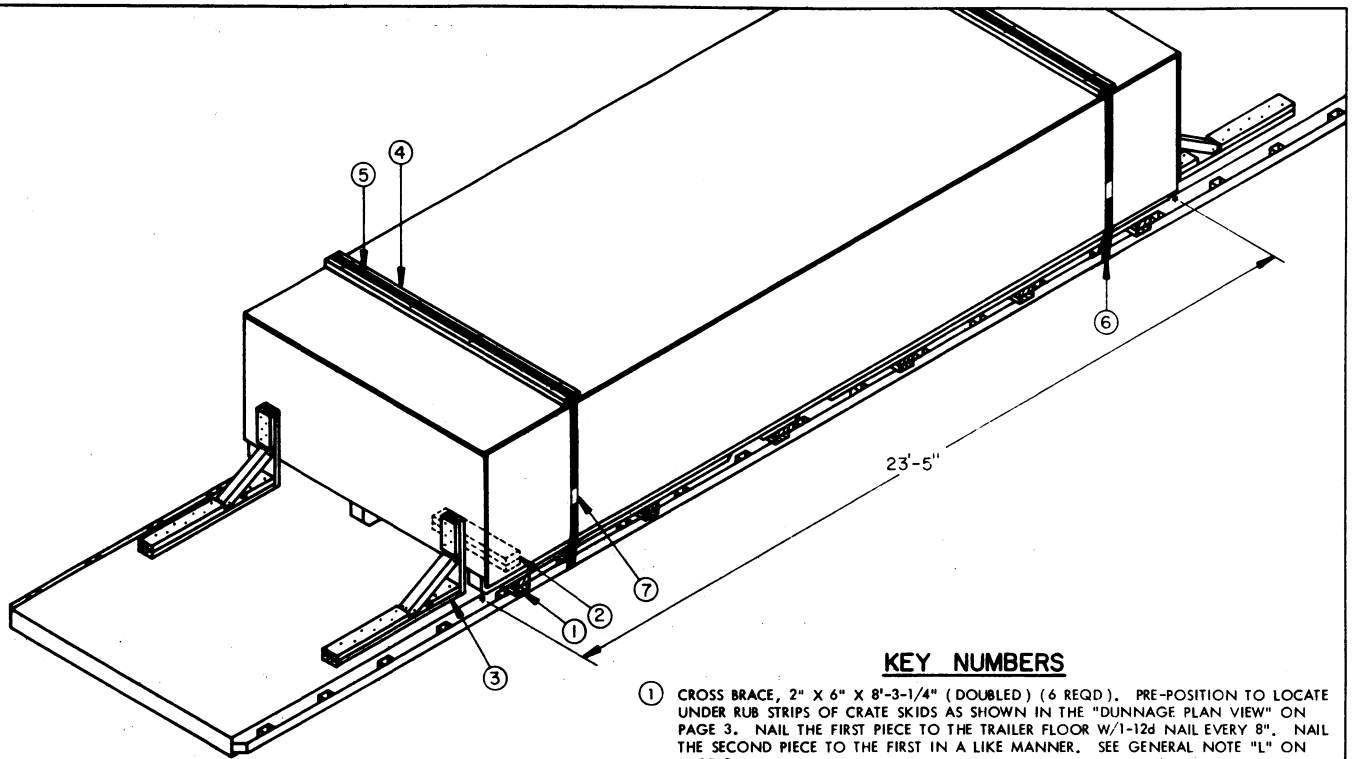
CAUTION



END VIEW

BILL OF MATERIAL

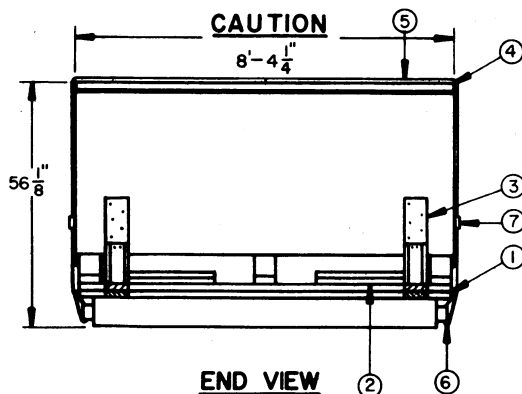
LUMBER	LINEAR FEET	BOARD FEET
2" X 6"	260	260
4" X 4"	16	22
NAILS	NO. REQD	POUNDS
10d (3")	40	3/4
12d (3-1/4")	428	7-1/4
16d (3-1/2")	32	3/4
20d (4")	64	2-1/2
STEEL STRAPPING, 1-1/4" X .035"	105' REQD	15 LBS
STEEL STRAPPING, 2" X .050"	156' REQD	52 LBS
SEAL FOR 1-1/4" STRAPPING	6 REQD	1/2 LBS
SEAL FOR 2" STRAPPING	24 REQD	5 LBS
ANTI-SKID PLATES	9 REQD	2-1/4 LBS
STAPLE FOR 2" STRAPPING	16 REQD	NIL



ISOMETRIC VIEW

KEY NUMBERS

- ① CROSS BRACE, 2" X 6" X 8'-3-1/4" (DOUBLED) (6 REQD). PRE-POSITION TO LOCATE UNDER RUB STRIPS OF CRATE SKIDS AS SHOWN IN THE "DUNNAGE PLAN VIEW" ON PAGE 3. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/1-12d NAIL EVERY 8". NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTE "L" ON PAGE 2.
- ② SIDE BLOCKING, 2" X 6" X 30" (DOUBLED) (4 REQD). PRE-POSITION ON THE FRONT AND REAR CROSS BRACES MARKED ① SO AS TO BEAR AGAINST THE INSIDE OF THE OUTER SKIDS OF THE CRATE. NAIL THE FIRST PIECE TO 1 W/8-12d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE "DUNNAGE PLAN VIEW" ON PAGE 3.
- ③ KNEE BRACE (4 REQD). SEE THE DETAIL ON PAGE 3.
- ④ STRAPPING BOARD, 2" X 6" X 8'-4" (2 REQD).
- ⑤ TIE DOWN STRAP, 2" X .050" X 26'-0" STEEL STRAPPING (2 REQD). INSTALL EACH STRAP FROM ONE PIECE OF STRAPPING; ANCHOR IT ON ONE SIDE OF THE TRAILER, RUN IT OVER THE LOAD, PASS IT THROUGH AN ANCHOR DEVICE ON THE OPPOSITE SIDE OF THE TRAILER, AND BRING IT BACK UP ABOVE THE ANCHOR DEVICE WHERE IT CAN BE TENSIONED AND SEALED. STAPLE TO THE STRAPPING BOARD MARKED ④ W/4 STAPLES. SEE GENERAL NOTE "G" ON PAGE 2.
- ⑥ PAD, 2" X .050" STEEL STRAPPING 18" LONG (4 REQD). POSITION UNDER AND SEAL TO A PIECE MARKED ⑤. SEE "DETAIL A" ON PAGE 3. ALTERNATIVE: STAKE POCKET PROTECTOR (8 REQD). USE TWO (2) UNDER EACH ANCHOR POINT WITH PIECES MARKED ⑤. SEE "DETAIL B" ON PAGE 3.
- ⑦ SEAL FOR 2" STRAPPING (8 REQD, 4/STRAP). EXCEPT FOR SEALS USED TO SECURE PIECE MARKED ④, DOUBLE-CRIMP EACH SEAL.



END VIEW

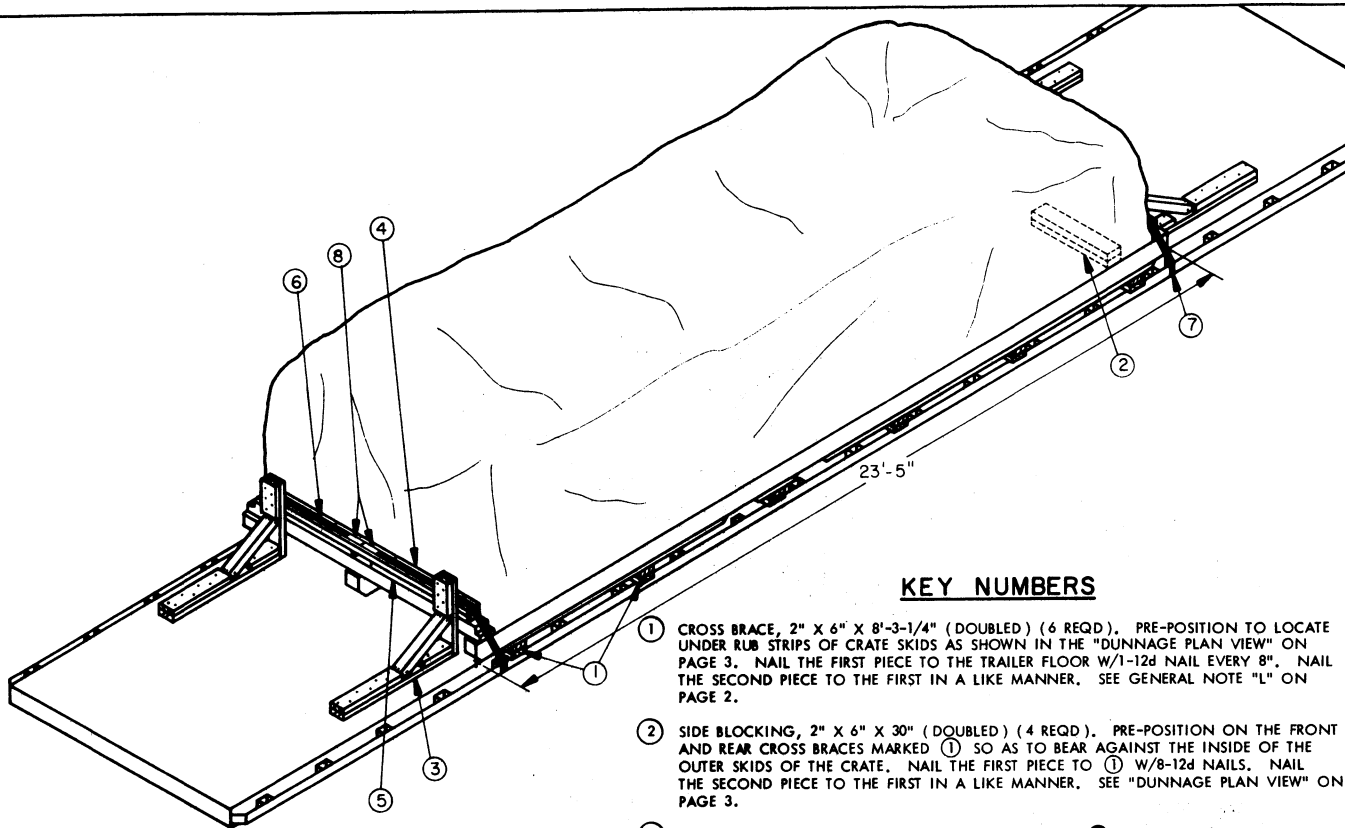
1-UNIT LOAD (CRATED) ON A 40'-0" LONG TRAILER

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 6"	180	180
4" X 4"	8	11
NAILS	NO. REQD	POUNDS
10d (3")	20	1/2
12d (3-1/4")	292	5
16d (3-1/2")	16	1/2
20d (4")	32	1-1/4
STEEL STRAPPING, 2" X .050"	58' REQD	20 LBS
SEAL FOR 2" STRAPPING	8 REQD	2 LBS
STAPLE FOR 2" STRAPPING	8 REQD	NIL

LOAD AS SHOWN

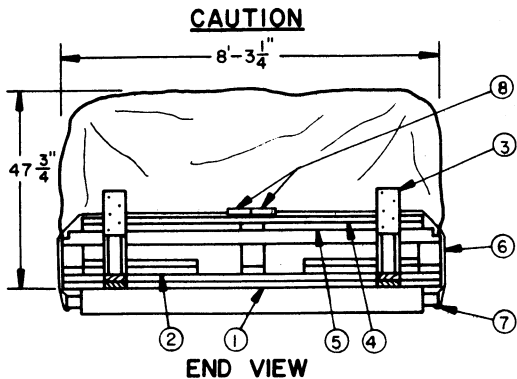
ITEM	QUANTITY	WEIGHT (APPROX)
LAUNCHER MONORAIL (CRATED)	1	14,900 LBS
DUNNAGE		508 LBS
TOTAL WEIGHT		15,408 LBS



ISOMETRIC VIEW

KEY NUMBERS

- ① CROSS BRACE, 2" X 6" X 8'-3-1/4" (DOUBLED) (6 REQD). PRE-POSITION TO LOCATE UNDER RUB STRIPS OF CRATE SKIDS AS SHOWN IN THE "DUNNAGE PLAN VIEW" ON PAGE 3. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/1-12d NAIL EVERY 8". NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTE "L" ON PAGE 2.
- ② SIDE BLOCKING, 2" X 6" X 30" (DOUBLED) (4 REQD). PRE-POSITION ON THE FRONT AND REAR CROSS BRACES MARKED ① SO AS TO BEAR AGAINST THE INSIDE OF THE OUTER SKIDS OF THE CRATE. NAIL THE FIRST PIECE TO ① W/8-12d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE "DUNNAGE PLAN VIEW" ON PAGE 3.
- ③ KNEE BRACE (4 REQD). SEE THE DETAIL AND NOTE "A" ON PAGE 3.
- ④ STRAPPING BOARD, 2" X 6" X 7'-4" (2 REQD).
- ⑤ FILLER PIECE, 2" X 6" X 42" (4 REQD). POSITION TO FIT FLUSH WITH THE END OF THE STRAPPING BOARD MARKED ④ AND NAIL TO THE STRAPPING BOARD W/5-10d NAILS.
- ⑥ TIE DOWN STRAP, 2" X .050" X 20'-0" STEEL STRAPPING (2 REQD). INSTALL EACH STRAP FROM TWO (2) 10'-0" LONG PIECES. STAPLE TO THE STRAPPING BOARD MARKED ④ W/4 STAPLES. SEE GENERAL NOTE "G" ON PAGE 2.
- ⑦ PAD, 2" X .050" STEEL STRAPPING 18" LONG (4 REQD). POSITION UNDER AND SEAL TO A PIECE MARKED ⑥. SEE "DETAIL A" ON PAGE 3. ALTERNATIVE: STAKE POCKET PROTECTOR (8 REQD). USE TWO (2) UNDER EACH ANCHOR POINT WITH PIECES MARKED ⑥. SEE "DETAIL B" ON PAGE 3.
- ⑧ SEAL FOR 2" STRAPPING (12 REQD, 6/STRAP). EXCEPT FOR SEALS USED TO SECURE PIECE MARKED ⑦, DOUBLE-CRIMP EACH SEAL. SEE GENERAL NOTE "F" ON PAGE 2.



BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 6"	188	188
4" X 4"	8	11
NAILS	NO. REQD	POUNDS
10d (3")	40	3/4
12d (3-1/4")	292	5
16d (3-1/2")	16	1/2
20d (4")	32	1-1/4
STEEL STRAPPING, 2" X .050"	46' REQD	16 LBS
SEAL FOR 2" STRAPPING	12 REQD	2-1/2 LBS
STAPLE FOR 2" STRAPPING	8 REQD	NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
LAUNCHER MONORAIL -- 1	1	12,674 LBS
(UNCRATED; SKID-MOUNTED)		
DUNNAGE		524 LBS
TOTAL WEIGHT		13,198 LBS