

APPROVED BY
 MECH DIV AAR, THEIR LETTER
 DATED 5 Aug 70 FILE LP-11.0
 SIGNED Frank L. Davis
 DATE 14 August 1970
 TEA, MTMTS, FT EUSTIS, VA.

LANCE

LOADING AND BRACING ON FLAT CAR OF MOBILITY KIT, GUIDED MISSILE LAUNCHER, XM234

DRAFTSMAN <u>WRS/CRE</u>	PROJ. ENG. <u>C.E. / NEW</u>	AMCPM-LCSM <u>WRS</u>	SUBMITTED <u>C.R. Zeit, Col, Ord. C.</u>	
CHECKER <u>JPH / JDS</u>	AMC ANNO CTR <u>John Boyd</u>	AMSMI PRMP <u>WRS</u>	COMMANDING OFFICER, SAVANNA ARMY DEPOT	
REVISIONS			APPROVED <u>Andrew R. Reid</u>	
			ARMY MISSILE COMMAND	
			APPROVED BY ORDER OF COMMANDING GENERAL, U. S. ARMY MATERIEL COMMAND <u>S. W. Heil</u>	
			U. S. ARMY MATERIEL COMMAND	
			NOVEMBER 1970	
			CLASS	DIVISION
			DRAWING	FILE
			19	48
			7195	GSE 5LC8

DO NOT SCALE

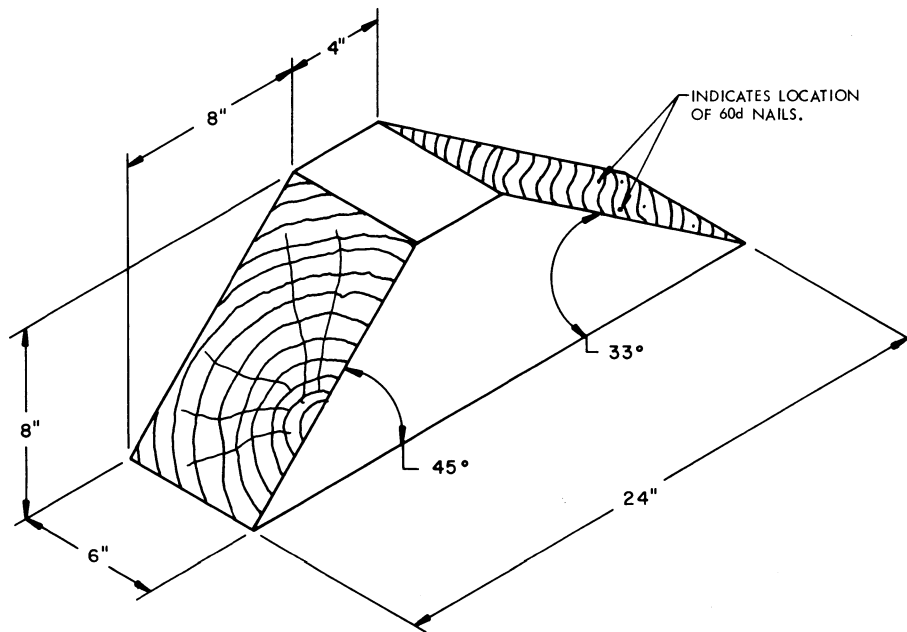
GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AMCR 740-13.
- B. THE LOAD AS SHOWN IS BASED ON A FLAT CAR 8'-6" WIDE (PLATFORM); WIDER CARS CAN BE USED. ONLY ONE UNIT OF LADING IS SHOWN; HOWEVER, MULTIPLES OF UNITS, AS SHOWN OR DISSIMILAR IN NATURE, MAY BE LOADED ON A CAR. THE NUMBER OF UNITS TO BE LOADED ON A CAR WILL BE DEPENDENT ON THE SIZE OF THE CAR USED OR THE QUANTITIES OF UNITS TO BE SHIPPED WITH THE VIEW OF FULL UTILIZATION OF CARRIER EQUIPMENT.
- C. LADING DATA:
ITEM DIMENSIONS ----- 9'-2" LONG BY 6'-6" WIDE BY 3'-10" HIGH.
ITEM GROSS WEIGHT ----- 1,700 POUNDS (APPROX).
- D. 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 NUTS ON 3/8" CABLE CLIPS WILL BE TIGHTENED TO A TORQUE OF 35 TO 40 FOOT POUNDS. **CAUTION:** DURING 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 TIE DOWN WIRES AND LADING TIRES. ADDITIONALLY, LADING TIRES WILL BE INFLATED TO 10 PSI ABOVE HIGHWAY OPERATING PRESSURE, AND ALL HAND BRAKES MUST BE "SET" WITH THE HAND LEVERS WIRE TIED OR BLOCKED.
- E. REFER TO ASSOCIATION OF AMERICAN RAILROADS MANUAL, "GENERAL RULES GOVERNING THE LOADING OF COMMODITIES ON OPEN TOP CARS", FOR APPLICABLE LOADING RULES; PREFACE, 1-A, 2, 3, 4, 5, 7, 9, 10-D, 14, 15, AND 19-B.
- F. WIRE ROPE CABLE MUST BE TENSIONED SUFFICIENTLY TO CAUSE SLIGHT VEHICLE BODY DEPRESSION. TENSIONING CAN BE ACCOMPLISHED BY EMPLOYING TWO (2) CABLE "GRIPPERS" AND AN APPLICABLY SIZED "COME-A-LONG" TYPE MECHANICAL HOIST.
- G. WHEN ANY STRAP IS SEALED AT AN END-OVER-END LAP JOINT, OR AS SHOWN IN DETAILS "A" AND "B" ON PAGE 3, A MINIMUM OF TWO (2) SEALS (BUTTED TOGETHER) WITH TWO (2) PAIR OF CRIMPS PER SEAL MUST BE USED.
- H. **CAUTION:** STAKE POCKETS WILL BE USED FOR ALL TIE DOWN STRAPPING WHENEVER POSSIBLE. DO NOT USE SWIVEL RING TYPE ANCHOR DEVICES. IF OTHER TYPES ARE USED, THEY MUST BE OF SUFFICIENT WIDTH TO RECEIVE 2" STRAPPING, AND ALSO BE OF A DESIGN WHICH WILL PROVIDE A BEARING SURFACE ACROSS THE FULL WIDTH OF THE STRAPPING THAT WILL NOT DEFORM A STRAP, ESPECIALLY AT THE EDGES, WHEN IT IS TENSIONED. **NOTE:** ONLY ONE (1) STRAP MAY BE ANCHORED INTO ANY ONE (1) STAKE POCKET.
- J. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 1" X 4" MATERIAL IS ACTUALLY 3/4" THICK BY 3-5/8" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-5/8" THICK BY 5-5/8" WIDE.
- K. **NOTICE:** A STAGGERED NAILING PATTERN WILL BE USED WHEREVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES. ALSO, 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 ON-TO OR RIGHT BESIDE A NAIL IN A LOWER PIECE.

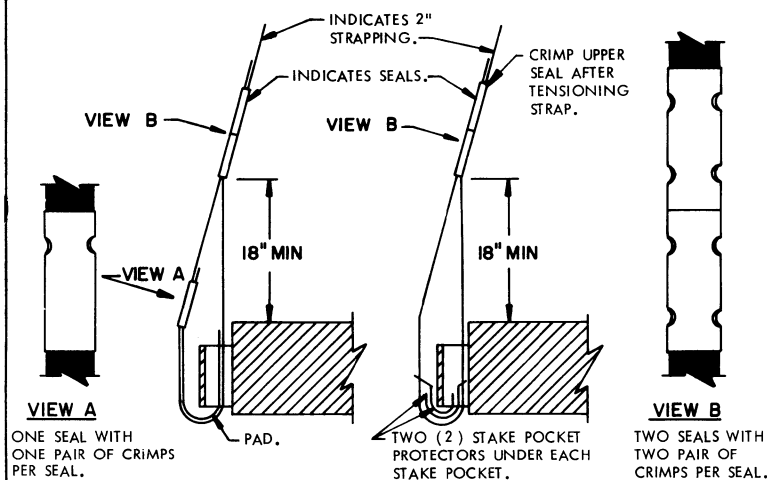
MATERIAL SPECIFICATIONS

- LUMBER** -----: DOUGLAS FIR OR COMPARABLE LUMBER WITH STRAIGHT GRAIN AND FREE FROM 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.
- CLIP** -----: "U" BOLT, CROSBY, HEAVY DUTY (OR EQUAL).
- WIRE** -----: ANNEALED, BLACK. REF: FED SPEC QQ-W-461.
- STRAPPING, STEEL** -----: TYPE 1, CLASS A OR C. REF: FED SPEC QQ-S-781.
(FOR FSN SEE 58-38-100).

STRAP SEAL; STRAP STAPLE;
ANCHOR PLATE; STAKE
POCKET PROTECTOR -----: COMMERCIAL GRADE.



CHOCK BLOCK



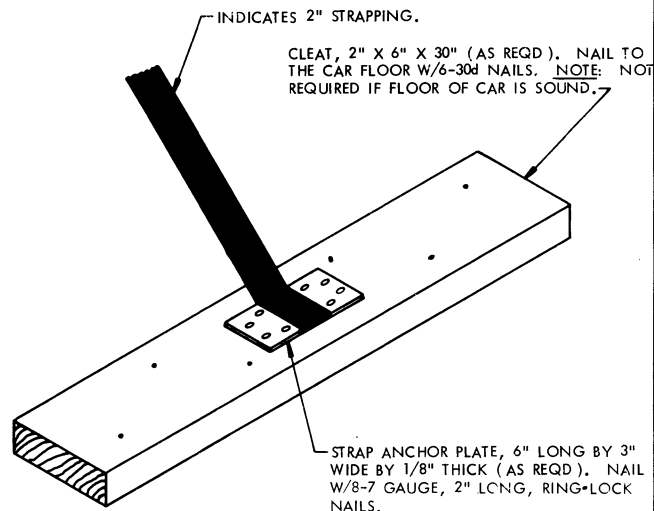
VIEW A
ONE SEAL WITH ONE PAIR OF CRIMPS PER SEAL.

DETAIL A

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

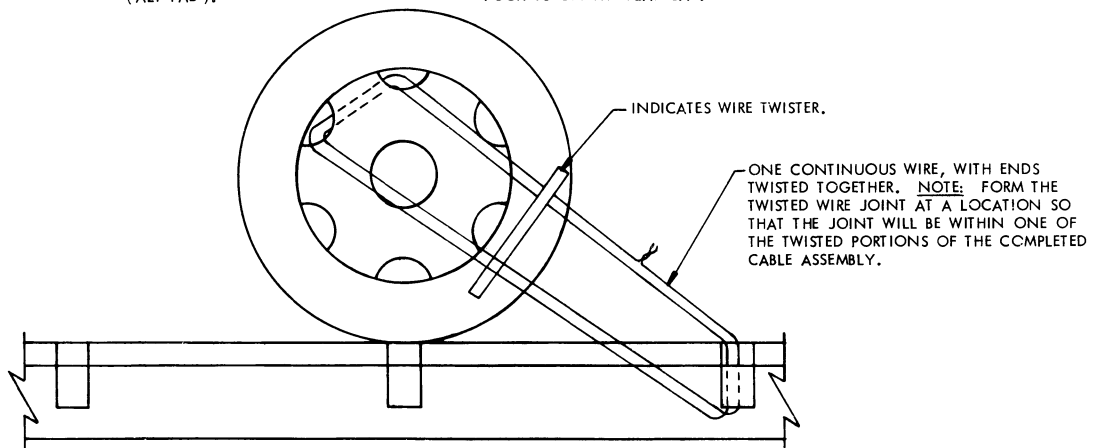
DETAIL B

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



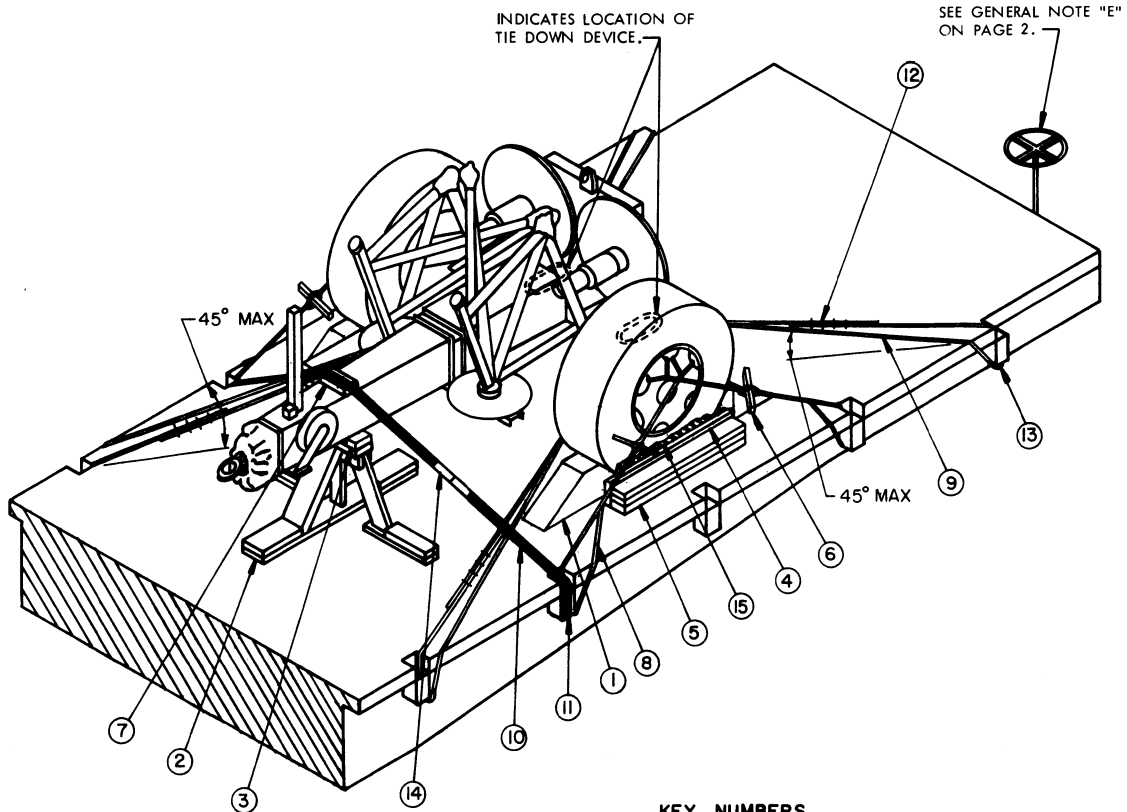
DETAIL C

AN ALTERNATIVE STRAP ANCHORING METHOD IS SHOWN, WHICH MAY BE USED TO SECURE THE SPECIFIED 2" X .050" STEEL STRAPPING IN LIEU OF ANCHORING TO STAKE POCKETS ON THE FLAT CAR.



WHEEL SECUREMENT

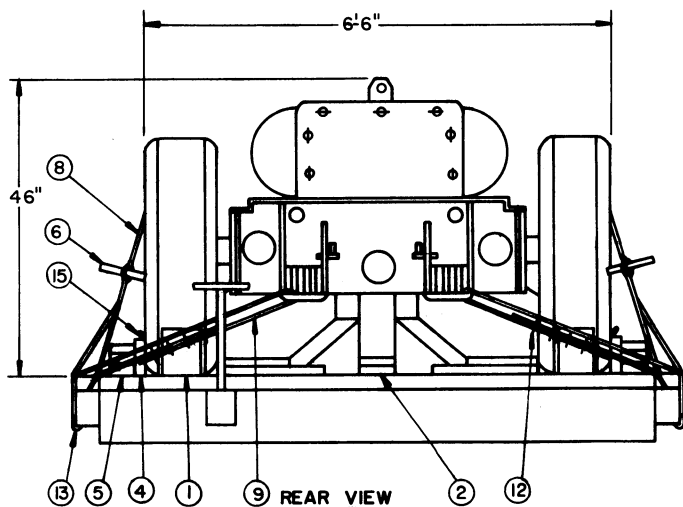
A FOUR (4) STRAND INSTALLATION OF NO. 8 GAGE BLACK ANNEALED WIRE IS SHOWN, PASSED THROUGH HOLES IN WHEEL AND CAR STAKE POCKET TO FORM A COMPLETE LOOP, AND READY TO BE TWISTED TAUT WITH WIRE TWISTER.



ISOMETRIC VIEW

KEY NUMBERS

- ① CHOCK BLOCK (4 REQD). SEE DETAIL ON PAGE 3. LOCATE 45° END OF BLOCK AGAINST A WHEEL. NAIL THRU HEEL OF BLOCK W/3-40d NAILS AND 2-60d NAILS. TOENAIL TO CAR FLOOR W/2-40d NAILS ON EACH SIDE.
- ② FORWARD BLOCKING (1 REQD). SEE "FORWARD BLOCKING ASSEMBLY" DETAIL ON PAGE 6.
- ③ ANTI-SWAY CLEAT, 2" X 4" X 6" (2 REQD). POSITION AGAINST THE TOWBAR AND NAIL TO PIECE MARKED ② W/2-12d NAILS.
- ④ RUBBING STRIP, 2" X 6" X 36" (2 REQD). POSITION ON EDGE AND NAIL TO THE LOWER PIECE MARKED ⑤ W/5-12d NAILS.
- ⑤ SIDE BLOCKING, 2" X 4" X 36" (TRIPLED) (2 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-30d NAILS. NAIL EACH ADDITIONAL PIECE IN A LIKE MANNER.
- ⑥ WIRE TWISTER, 2" X 2" BY LENGTH TO SUIT (4 REQD). SEE GENERAL NOTE "D" ON PAGE 2.
- ⑦ STRAPPING BOARD, 2" X 4" BY LENGTH TO SUIT (1 REQD). POSITION AS SHOWN.
- ⑧ FOUR (4) STRANDS OF NO. 8 GAGE BLACK ANNEALED WIRE (4 REQD). PASS THRU HOLES IN WHEEL AND STAKE POCKET TO FORM A COMPLETE LOOP. TWIST TAUT WITH PIECE MARKED ⑥. SEE GENERAL NOTES "D" AND "E" ON PAGE 2 AND "WHEEL SECUREMENT" DETAIL ON PAGE 3.
- ⑨ STEEL WIRE ROPE, 3/8 DIA., 6.56 TONS (4 REQD). INSTALL CABLE TO APPROXIMATE ANGLE SHOWN AND TO FORM A COMPLETE LOOP FROM THE STAKE POCKET ON THE CAR THRU TIE DOWN DEVICE ON MOBILITY KIT AND BACK TO THE STAKE POCKET. SEE GENERAL NOTES "D", "E", AND "F" ON PAGE 2. SEE SPECIAL NOTE 3.
- ⑩ STEEL STRAPPING, 2" X .050" X 20'-0" (1 REQD). STAPLE TO PIECE MARKED ⑦ W/2-2" STAPLES. SEE "DETAIL C" ON PAGE 3 FOR ALTERNATIVE STRAP ANCHORING METHOD.
- ⑪ PAD, 2" X .050" STRAP 24" LONG (2 REQD). POSITION UNDER AND SEAL TO PIECE MARKED ⑩. SEE "DETAIL A" ON PAGE 3. ALT: STAKE POCKET PROTECTOR, (4 REQD). TWO (2) USED UNDER EACH STAKE POCKET WITH PIECE MARKED ⑩. SEE "DETAIL B" ON PAGE 3.
- ⑫ CLIP, WIRE ROPE, SIZE 3/8" (24 REQD). FOUR (4) PER CABLE JOINT AND ONE (1) PER THIMBLE.
- ⑬ THIMBLE, STANDARD, SIZE 3/8" (8 REQD). USE WITH PIECES MARKED ⑨; ONE (1) PER STAKE POCKET AND ONE (1) PER TIE DOWN DEVICE. SECURE TO PIECE MARKED ⑨ W/1 CLIP PER THIMBLE.
- ⑭ SEALS FOR 2" STRAPPING (8 REQD). SEE GENERAL NOTE "G" ON PAGE 2.
- ⑮ WATERPROOF PAPER OR BURLAP OF A SUFFICIENT SIZE TO POSITION UNDER AND EXTEND 2" ABOVE PIECES MARKED ④.



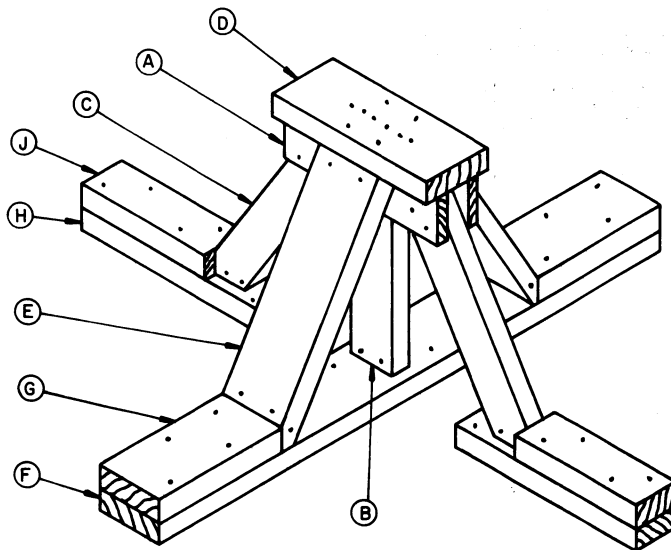
SPECIAL NOTES:

1. A ONE (1) UNIT LOAD IS SHOWN ON AN 8'-6" WIDE (PLATFORM) FLAT CAR WITH STAKE POCKETS SPACED 42" ON CENTER. A WIDER CAR MAY BE USED.
2. THE ITEM MUST BE LOCATED ON THE CAR RELATIVE TO THE LOCATION OF STAKE POCKETS SO THAT WHEN PIECES MARKED ⑧, ⑨, AND ⑩ ARE APPLIED THEY WILL BE IN THE SAME GENERAL LOCATION RELATIVE TO THE ITEM AS SHOWN.
3. STEEL WIRE ROPE OF A LARGER SIZE THAN PIECE MARKED ⑨ MAY BE USED.

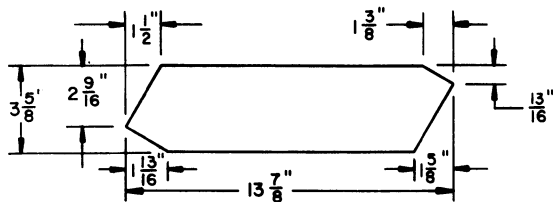
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	3	1
2" X 2"	6	2
2" X 4"	29	20
2" X 6"	17	17
6" X 8"	6	24
NAILS	NO. REQD	POUNDS
6d (2")	18	1/4
12d (3-1/4")	44	3/4
16d (3-1/2")	20	1/2
20d (4")	16	1-3/4
30d (4-1/2")	30	1-1/2
40d (5")	28	2
60d (6")	8	1
ROPE, STEEL WIRE, 3/8" DIA. ----- 64' REQD ----- 16 LBS STEEL STRAPPING, 2" X .050" ----- 20' REQD ----- 7 LBS CLIP, 3/8" ----- 24 REQD ----- 8 LBS THIMBLE, STANDARD, 3/8" ----- 8 REQD ----- 2 LBS WIRE, NO. 8 GAGE ----- 96' REQD ----- 9 LBS SEAL FOR 2" STRAPPING ----- 8 REQD ----- 2 LBS STAPLE FOR 2" STRAPPING ----- 2 REQD ----- NIL WATERPROOF PAPER OR BURLAP ----- AS REQD ----- NIL		

LOAD AS SHOWN

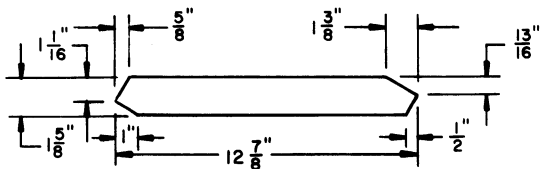
ITEM	QUANTITY	WEIGHT (APPROX)
MOBILITY KIT	1	1,700 LBS
DUNNAGE		212 LBS
TOTAL WEIGHT		1,912 LBS



FORWARD BLOCKING ASSEMBLY



DETAIL OF PIECE C



DETAIL OF PIECE E

KEY LETTERS

- (A) 1" X 4" X 15" (2 REQD). NAIL TO PIECES MARKED (B) AND (C) W/3-6d NAILS AT EACH JOINT.
- (B) 2" X 4" X 10-3/4" (1 REQD). CENTER ON AND TOENAIL TO PIECE MARKED (F) W/4-16d NAILS.
- (C) 2" X 4" X 13-7/8" (2 REQD). DOUBLE BEVEL EACH END. SEE DETAIL OF PIECE FOR BEVEL CUTS REQUIRED. TOENAIL TO PIECE MARKED (H) W/4-16d NAILS AFTER PARTIAL ASSEMBLY (PIECES MARKED (A) THRU (F)) HAS BEEN LOCATED ON THE RAILCAR AND PIECE MARKED (H) HAS BEEN NAILED TO THE CAR FLOOR.
- (D) 2" X 6" X 15" (1 REQD). NAIL TO PIECES MARKED (B), (C) AND (E) W/2-12d NAILS AT EACH JOINT.
- (E) 2" X 6" X 12-7/8" (2 REQD). DOUBLE BEVEL EACH END. SEE DETAIL OF PIECE FOR BEVEL CUTS REQUIRED. TOENAIL TO PIECE MARKED (A) W/2-12d NAILS AND TOENAIL TO PIECE MARKED (F) W/4-16d NAILS.
- (F) 2" X 6" X 45-3/4" (1 REQD). LOCATE THE PARTIAL ASSEMBLY (PIECES MARKED (A) THRU (E)) UNDER THE ITEM AND NAIL PIECE MARKED (F) TO THE CAR FLOOR W/1-30d NAIL EVERY 8".
- (G) 2" X 6" X 12" (2 REQD). POSITION AGAINST PIECE MARKED (E) AND NAIL TO PIECE MARKED (F) W/4-30d NAILS.
- (H) 2" X 4" X 18" (2 REQD). LOCATE UNDER PIECE MARKED (C) AS SHOWN AND NAIL TO THE CAR FLOOR W/5-30d NAILS.
- (J) 2" X 4" X 12" (2 REQD). POSITION AGAINST PIECE MARKED (C) AND NAIL TO PIECE MARKED (H) W/4-30d NAILS.