CHAPARRAL

LOADING AND BRACING ON FLAT BED OR "LOW-BOY" TRAILER OF GUIDED MISSILE SUB-SYSTEM INTERCEPT-AERIAL, CARRIER MOUNTED, M48 AND M48A1

THIS DRAWING, INCLUDING REVISION 2, SUPERSEDES DRAWING 19-48-7556-GSE11CH1, DATED JULY 1979 AND REVISION 1 THERETO, DATED JULY 1979.

DO NOT SCALE

REVISIONS			
2	JUN 85	WRF/WJB	

DRAFTSMAN: bh / dh	PROJ ENG: PB / WRF	AMSMI-SSDP: [illegible]	
CHECKER: GRG	LOG ENGRG OFFICE: WJM		
APPROVED, U.S. ARMY MISSILE COMMAND			
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND (AMC) U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL			
U.S. ARMY AMC DRAWING			
JUNE 1985			
CLASS: 19	DIVISION: 48	DRAWING: 7556	FILE: GSE 11CH1

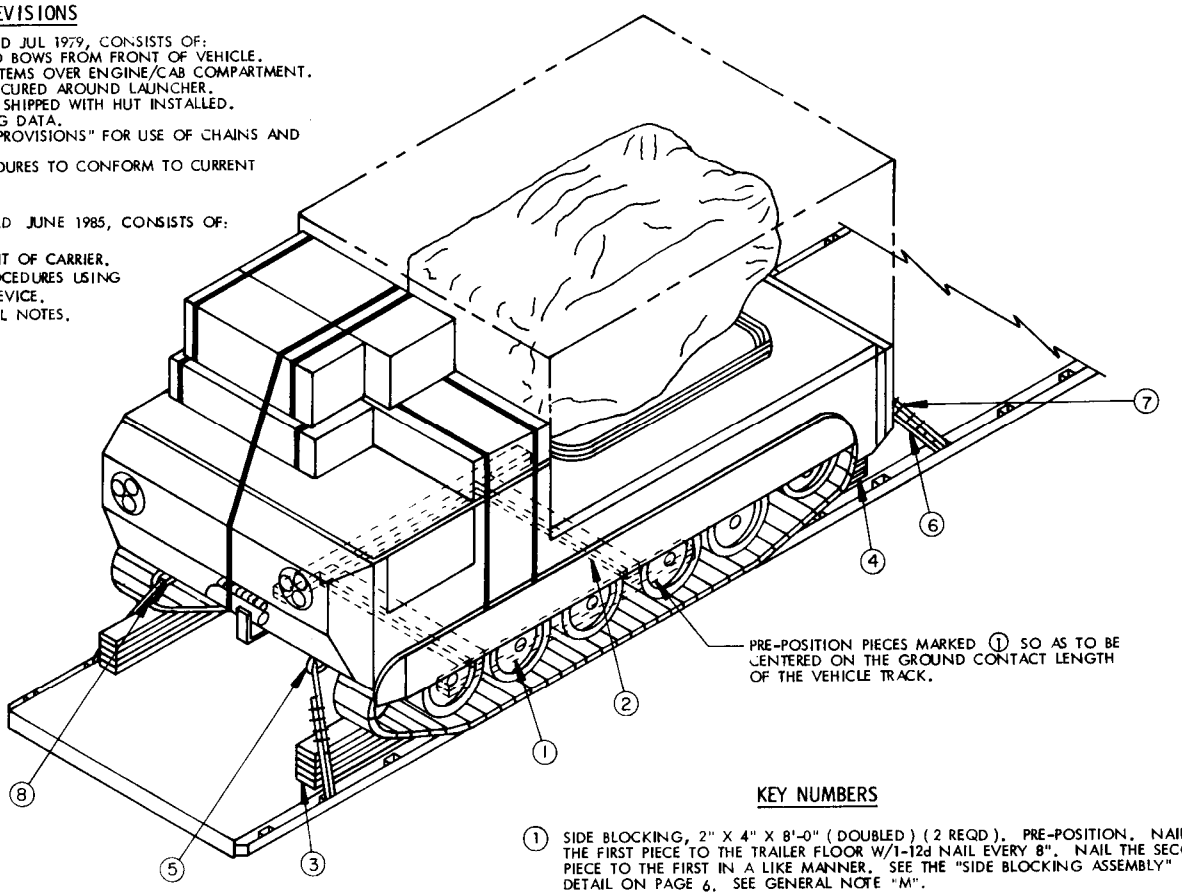
PROJECT GSE 410-67

REVISIONS

REVISION NO. 1, DATED JUL 1979, CONSISTS OF:
1. DELETING CAB AND BOWS FROM FRONT OF VEHICLE.
2. SHOWING BOXED ITEMS OVER ENGINE/CAB COMPARTMENT.
3. SHOWING BOWS SECURED AROUND LAUNCHER.
4. SHOWING VEHICLE SHIPPED WITH HUT INSTALLED.
5. CHANGING LADING DATA.
6. ADDING "SPECIAL PROVISIONS" FOR USE OF CHAINS AND LOAD BINDERS.
7. CHANGING PROCEDURES TO CONFORM TO CURRENT STANDARDS.

REVISION NO. 2, DATED JUNE 1985, CONSISTS OF:

1. INCREASING HEIGHT OF CARRIER.
2. SHOWING LIFT PROCEDURES USING SPECIAL LIFTING DEVICE.
3. UPDATING GENERAL NOTES.



ISOMETRIC VIEW

PHANTOM LINES INDICATE CARRIER WITH HUT.

KEY NUMBERS

(1) SIDE BLOCKING, 2" X 4" X 8'-0" (DOUBLED) (2 REQD). PRE-POSITION. 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 THE "SIDE BLOCKING ASSEMBLY" DETAIL ON PAGE 6. SEE GENERAL NOTE "M".

(2) LATERAL BRACING, 2" X 4" BY CUT TO FIT (DOUBLED) (2 REQD). PRE-POSITION AS SHOWN. 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 THE "SIDE BLOCKING ASSEMBLY" DETAIL ON PAGE 6.

(3) FRONT CHOCK BLOCK (2 REQD). SEE THE DETAIL ON PAGE 6. LOCATE THE BEVELED END AGAINST THE VEHICLE TRACK AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-12d NAILS. NAIL EACH ADDITIONAL PIECE W/4-20d NAILS.

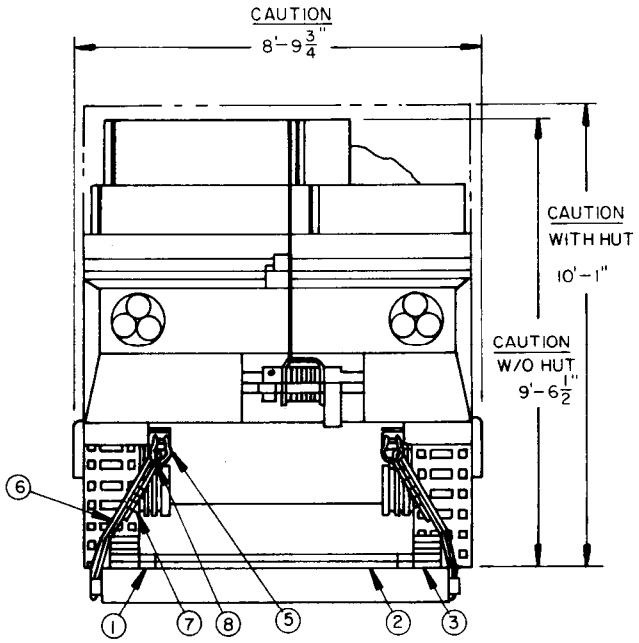
(4) REAR CHOCK BLOCK (2 REQD). SEE THE DETAIL ON PAGE 6. LOCATE THE BEVELED END AGAINST THE VEHICLE TRACK AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-12d NAILS. NAIL EACH ADDITIONAL PIECE W/4-20d NAILS.

(5) SHACKLE, SIZE 7/8" (4 REQD). INSTALL ONE EACH AT THE TWO FRONT AND TWO REAR TIE-DOWN POINTS ON THE VEHICLE. NOTE: THESE SHACKLES ARE NOT REQUIRED IF THE VEHICLE IS ALREADY SO EQUIPPED WHEN OFFERED FOR SHIPMENT. IF THE VEHICLE HAS TOW HOOKS ATTACHED TO THE TIE-DOWN POINTS, THESE SHALL BE REMOVED AND STORED IN THE DRIVER'S COMPARMENT. SEE GENERAL NOTE "N".

(6) STEEL WIRE ROPE, 1/2" DIAMETER, 11.5 TONS (4 REQD). INSTALL THE CABLE TO APPROXIMATE THE ANGLES AS SHOWN AND TO FORM A COMPLETE LOOP FROM THE TIE-DOWN FACILITY ON THE TRAILER, THROUGH THE SHACKLE, PIECE MARKED (5), AND BACK TO THE TRAILER TIE-DOWN FACILITY. SEE GENERAL NOTES "G", "J", AND "K". NOTE: CABLE OF A LARGER SIZE MAY BE USED IF THE SPECIFIED CABLE IS NOT AVAILABLE.

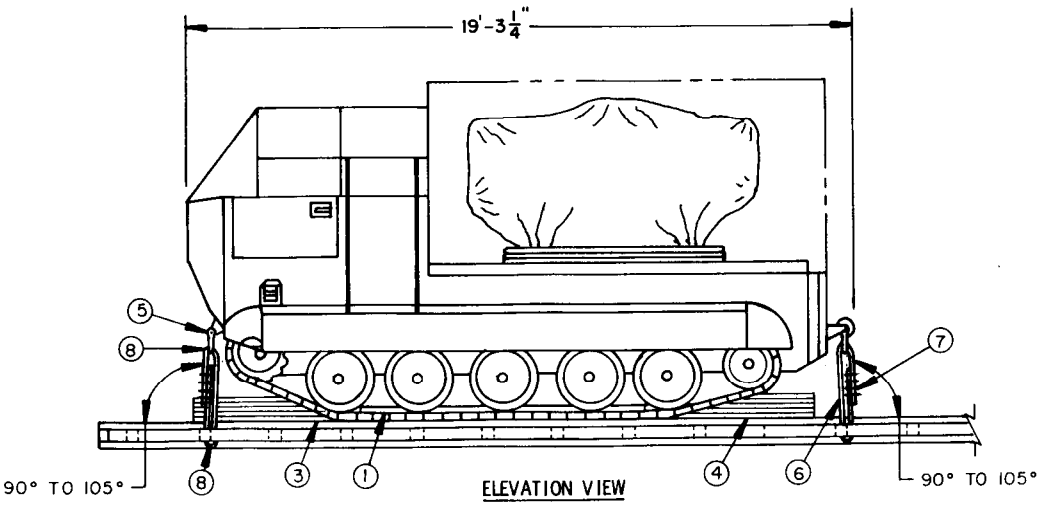
(7) CLIP, SIZE 1/2" (24 REQD). USE FOUR (4) PER CABLE JOINT AND ONE PER THIMBLE. NOTE: A STANDARD THIMBLE AS SPECIFIED CAN BE SECURED TO A CABLE WITH 1/2" CLIP. HOWEVER, IF DESIRED, OR IF THE 1/2" THIMBLE BEING USED IS OF A TYPE WHICH CANNOT BE SECURED TO A CABLE WITH A 1/2" CLIP, A 5/8" CLIP MAY BE USED.

(8) THIMBLE, STANDARD, SIZE 1/2" (8 REQD). ONE (1) PER TRAILER TIE-DOWN FACILITY AND ONE (1) PER LADING TIE-DOWN DEVICE (SHACKLE). SECURE TO THE WIRE ROPE MARKED (6) W/1-CLIP PER THIMBLE. NOTE THAT AN "OPEN PATTERN" THIMBLE IS RECOMMENDED.



FRONT VIEW

PHANTOM LINES INDICATE CARRIER WITH HUT.



ELEVATION VIEW

PHANTOM LINES INDICATE CARRIER WITH HUT.

(GENERAL NOTE CONTINUED)

N. MORE DISTANCE MAY BE REQUIRED BETWEEN THE DRILLED PADS AT THE OPEN END OF A SHACKLE SO THAT IT WILL FIT PROPERLY OVER THE THICKNESS OF THE TOWING/TIE DOWN BRACKET ON THE VEHICLE. TO PROVIDE THE NEEDED CLEARANCE, EQUAL AMOUNTS OF MATERIAL MAY BE REMOVED FROM THE SHACKLE PADS BY GRINDING OR MACHINING.

O. CONVERSION TO METRIC EQUIVALENTS: DIMENSIONS WITHIN THIS DOCUMENT ARE EXPRESSED IN INCHES AND WEIGHTS ARE EXPRESSED IN POUNDS. WHEN NECESSARY, THE METRIC EQUIVALENTS MAY BE COMPUTED ON THE BASIS OF ONE INCH EQUALS 25.4MM, AND ONE POUND EQUALS 0.454KG.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	53	36
2" X 8"	65	87
NAILS	**NO. REQD**	**POUNDS**
12d (3-1/4")	96	1-3/4
20d (4")	64	2-1/2

ROPE, STEEL WIRE, 1/2" DIA	48' REQD	21 LBS
CLIP, 1/2"	24 REQD	11 LBS
CLIP, 5/8" (ALT FOR 1/2", 8 REQD)		5 LBS
THIMBLE, STANDARD 1/2"	8 REQD	2 LBS
SHACKLE, 7/8"	4 REQD	9 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, 11.5 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.

SHACKLE ------- : MIL-S-5675 .

GENERAL NOTES

A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1.

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 MAY REQUIRE "CLEARANCE" CONSIDERATION BECAUSE OF EXCESSIVE LADING WIDTH AND HEIGHT.

C. ONLY TRAILERS CAPABLE OF SAFELY TRANSPORTING THE LADING TO THE 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 TIE-DOWN FACILITIES OF A STRENGTH EQUAL TO OR BETTER THAN THE 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	WEIGHT (APPROX)	DIMENSIONS
GMSIA, CARRIER MOUNTED W/O HUT	24,778 LBS	19'-3-1/4" L X 8'-9-3/4" W X 9'-6-1/2" H
WITH HUT	25,578 LBS	19'-3-1/4" L X 8'-9-3/4" W X 10'-1" H

F. FOR HANDLING AND LIFTING PROCEDURES, REFER TO PAGES 4 AND 5.

G. 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 THE NUTS ON 5/8" CABLE CLIPS WILL BE TIGHTENED TO A TORQUE OF 85 TO 95 FOOT POUNDS.

H. SEE THE "SPECIAL PROVISIONS" ON PAGE 4 FOR SPECIFICATIONS WHICH MUST BE APPLIED IF CHAINS AND LOAD BINDERS ARE USED.

J. TO ACHIEVE PROPER CABLE TENSION, EMPLOY TWO (2) CABLE "GRIPPERS" AND AN APPLICABLY SIZED "COME-A-LONG" TYPE MECHANICAL HOIST. NOTE: CABLES WILL BE TENSIONED SUFFICIENTLY TO CAUSE THE BODY OF THE TRACK VEHICLE TO DEPRESS APPROXIMATELY ONE INCH (1").

K. CAUTION: IT IS RECOMMENDED THAT THE CABLE TIE-DOWNS BE INSTALLED TO APPROXIMATE THE ANGLES SHOWN; HOWEVER, IF PLACEMENT OF THE 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.

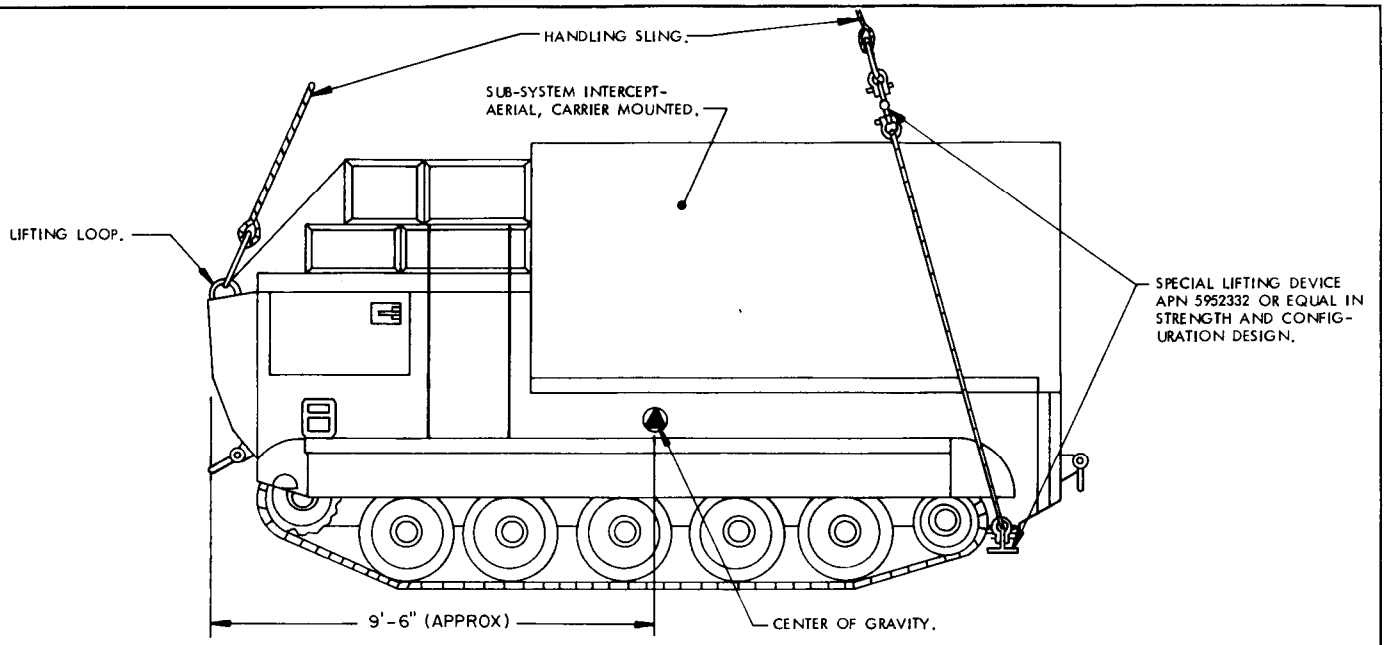
L. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE.

M. NOTICE: A STAGGERED NAILING PATTERN WILL BE USED WHEN DUNNAGE IS NAILED TO THE FLOOR OF THE TRANSPORTING VEHICLE, OR WHEN LAMINATING DUNNAGE. ALSO, 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.

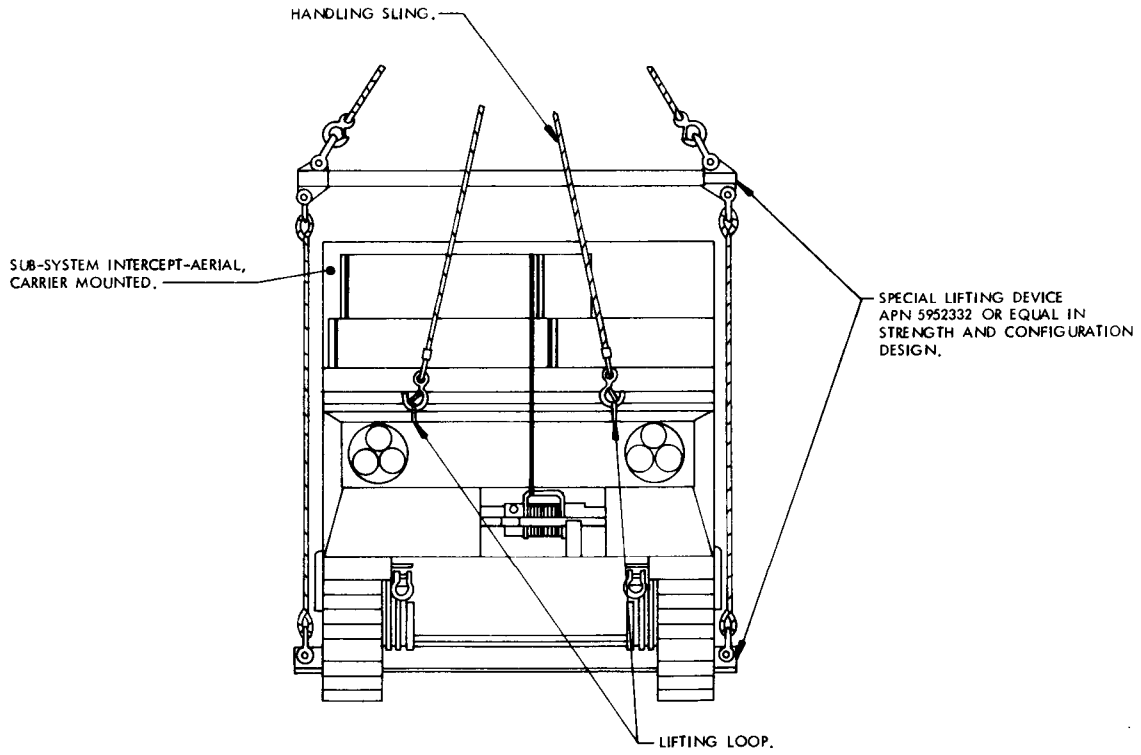
(CONTINUED AT LEFT)

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
GMSIA, CARRIER MOUNTED (W/O HUT)	1	24,778 LBS
GMSIA, CARRIER MOUNTED (WITH HUT)	1	25,578 LBS
DUNNAGE		294 LBS
TOTAL WEIGHT (W/O HUT)		25,072 LBS
TOTAL WEIGHT (WITH HUT)		25,872 LBS



ELEVATION VIEW



FRONT VIEW

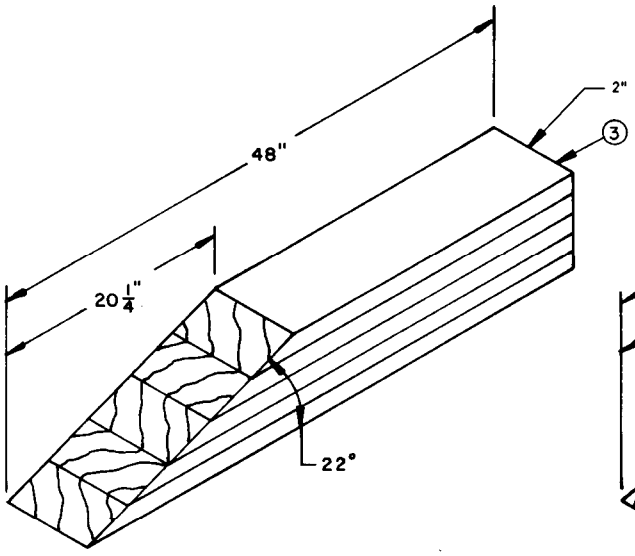
HANDLING AND LIFTING PROCEDURES:

A. HANDLING OF THE CARRIER SHOULD BE ACCOMPLISHED BY USING THE "SPECIAL LIFTING DEVICE" (APN 5952332) AND THE LIFT POINTS DESIGNATED HEREIN.

B. THE HANDLING SLING SHALL BE OF A DESIGN AND CONFIGURATION TO LIFT THE ITEM IN SUCH A MANNER THAT THE CABLE LEGS DO NOT COME IN CONTACT WITH OR APPLY PRESSURE AGAINST THE FRAMING, SUPERSTRUCTURE OR OTHER MEMBERS OF THE ITEM WHEN BEING LIFTED.

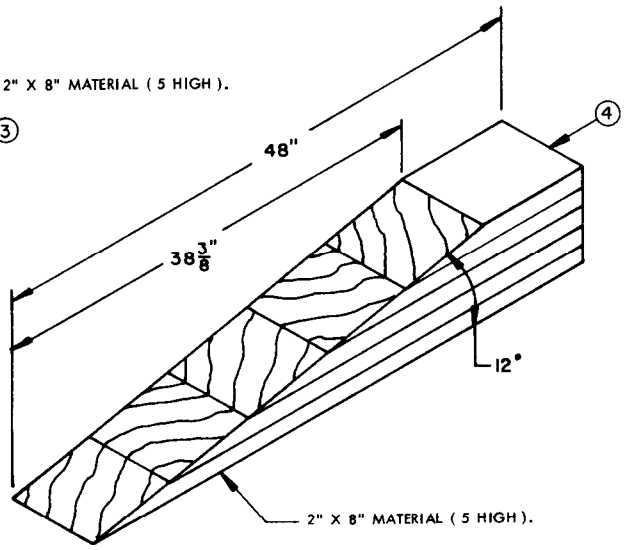
C. EACH LEG OF THE HANDLING SLING MUST BE SECURELY ATTACHED TO A LIFT POINT PRIOR TO LIFTING.

D. ALTHOUGH DESIRABLE, A LEVEL LIFT IS NOT MANDATORY, THE CENTER OF GRAVITY OF THIS ITEM IS SHOWN TO ASSIST IN DETERMINING CABLE LENGTHS TO ASSURE A SAFE LIFT.



FRONT CHOCK BLOCK

REFER TO KEY NUMBER ③ ON PAGE 2 FOR NAILING SPECIFICATIONS.



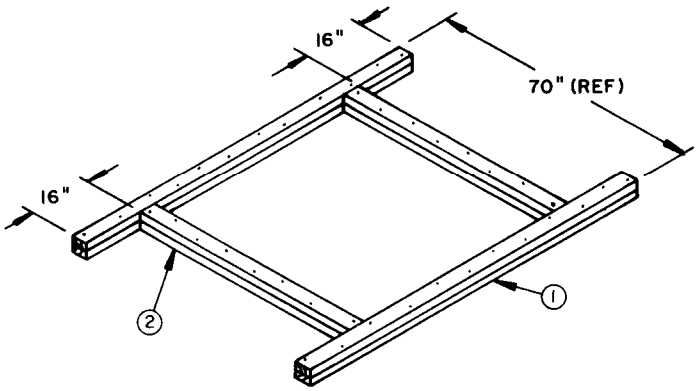
REAR CHOCK BLOCK

REFER TO KEY NUMBER ④ ON PAGE 2 FOR NAILING SPECIFICATIONS.

SPECIAL PROVISIONS:

A. LADING MAY BE SECURED BY CARRIER-OWNED CHAINS AND LOAD BINDERS IN LIEU OF SPECIFIED WIRE ROPE CABLE TIE DOWN 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 LADING TIE DOWN DEVICES.
2. THREE (3) LINES OF 3/8" CHAIN, OR SIX (6) LINES OF 1/4" CHAIN, MAY BE SUBSTITUTED FOR EACH WIRE ROPE CABLE TIE DOWN MARKED ⑥. CHAINS SHALL BE INSTALLED AT THE SAME LOCATIONS SHOWN FOR WIRE ROPE CABLE AND TENSIONED SUFFICIENTLY TO CAUSE A SLIGHT VEHICLE BODY DEPRESSION.
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. CHAINS MUST NOT BE TWISTED DURING INSTALLATION.
5. THE TENSIONING DEVICE OF EACH LOAD BINDER MUST BE SAFETY-WIRE TIED TO PREVENT ACCIDENTAL OPENING OR LOOSENING IN TRANSIT.
6. 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.



SIDE BLOCKING ASSEMBLY

REFER TO KEY NUMBERS ① AND ② ON PAGE 2 FOR NAILING SPECIFICATIONS.