REV NO. 1 APPROVED BY
MECH DIV AAR, THEIR LETTER
DATED 14 DEC 1- FILE [illegible]
SIGNED Frank L. Rhue
DATE 17 Dec 1973
TEA, MTMTS, FT EUSTIS, VA.

HAWK

LOADING AND BRACING ON FLAT CAR OF INFORMATION AND COORDINATION CENTRAL, AN/MSQ-95 (XO-1) AND PLATOON COMMAND POST, G.M., AN/MSW-9 AND/OR AN/MSW-11, TRAILER MOUNTED

INDEX

THIS OUTLOADING PROCEDURAL DRAWING INCLUDES PROCEDURES FOR GENERAL SERVICE FLAT CARS (FM) AND FOR CUSHIONED FLAT CARS (FMS) EQUIPPED WITH SPECIAL CHAIN TIE-DOWN DEVICES OF VARIOUS DESIGN AND MANUFACTURE.

CAUTION: LOAD AS SHOWN MAY REQUIRE "CLEARANCE" CONSIDERATION BECAUSE OF EXCESSIVE LADING SIZE.

THIS DRAWING, INCLUDING REVISION 1, SUPERSEDES THE FOLLOWING DRAWINGS:

19-48-7199-GSE 5HA48, DATED NOVEMBER 1970;
19-48-7165-GSE 5HA45, DATED 23 APRIL 1968.

DO NOT SCALE

REVISIONS			
1	FEB 73		Wesley E. Gilleland

DRAFTSMAN [illegible] PROJ ENG [illegible]
CHECKER [illegible] LOG ENGRG OFFICE [illegible]
APPROVED
Wesley E. Gilleland
U. S. ARMY MISSILE COMMAND
APPROVED BY ORDER OF COMMANDING GENERAL, U. S. ARMY MATERIEL COMMAND
USAMC AMMO CENTER

U.S. ARMY MATERIEL COMMAND
FEBRUARY 1973

CLASS	DIVISION	DRAWING	FILE
19	48	7199	GSE 5HA48

PROJECT GSE 473-69

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 9'-2" 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 IF SPACE PERMITS. 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. CAUTION: THE LOAD AS SHOWN MAY REQUIRE "CLEARANCE" CONSIDERATION BECAUSE OF EXCESSIVE LADING SIZE.

NOTICE TO TRANSPORTATION OFFICER:

IN LIEU OF REQUISITIONING A GENERAL SERVICE FM* FLAT CAR AS DEPICTED HEREIN, EVERY EFFORT SHOULD BE MADE TO ACQUIRE AN FMS* TYPE CAR. THIS IS A CUSHIONED CAR EQUIPPED WITH SPECIAL TIE DOWN CHANNELS AND MOVABLE ANCHOR AND CHAIN ASSEMBLY TIE DOWN DEVICES * *, SUCH AS IS USED FOR TRANSPORTING AGRICULTURAL MACHINERY AND HEAVY, EARTH MOVING EQUIPMENT. SEE THE "SPECIAL PROVISIONS" ON PAGE 6 FOR GUIDANCE.

* ASSOCIATION OF AMERICAN RAILROADS (AAR) MECHANICAL DESIGNATION FOR CAR TYPE. REFERENCE IS MADE TO THE "OFFICIAL RAILWAY EQUIPMENT REGISTER".

* * A TYPICAL CAR OF THIS TYPE IS SHOWN BY FIGURE 88-B OF SECTION 6 IN PUBLICATION OF AAR TITLED "GENERAL RULES GOVERNING THE LOADING OF COMMODITIES ON OPEN TOP CARS".

C. LADING DATA:

ITEM	WEIGHT (APPROX)	DIMENSIONS
INFORMATION AND COORDINATION CENTRAL AN/MSQ-95 (XO-1)	9,800 LBS	17'-9-1/8" L X 8'-0" W X 10'-11" H
PLATOON COMMAND POST AN/MSW-9	9,800 LBS	17'-9-1/8" L X 8'-0" W X 10'-11" H
PLATOON COMMAND POST AN/MSW-11	9,800 LBS	17'-9-1/8" L X 8'-0" W X 10'-11" H

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. 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 CONTACTING 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. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE UNLESS OTHERWISE DIMENSIONED. FOR EXAMPLE, 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE OR 1-5/8" THICK BY 5-5/8" WIDE AND 4" X 4" MATERIAL IS ACTUALLY 3-1/2" THICK BY 3-1/2" WIDE OR 3-5/8" THICK BY 3-5/8" WIDE.

H. 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

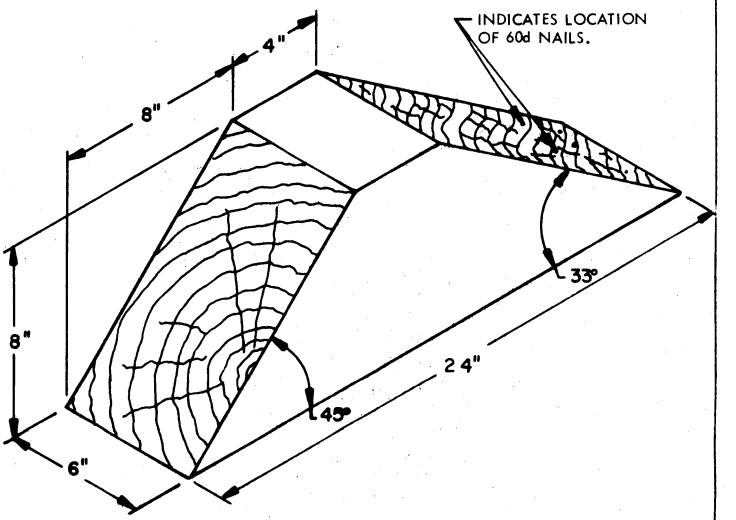
LUMBER: DOUGLAS FIR OR COMPARABLE LUMBER WITH STRAIGHT GRAIN AND FREE FROM MATERIAL DEFECTS. REF: FED SPEC MM-L-751.

NAILS-: COMMON, CEMENT COATED OR CHEMICALLY ETCHED.
REF: FED SPEC FF-N-105.
ALT: ANNULAR-RING TYPE NAIL OF SAME SIZE.

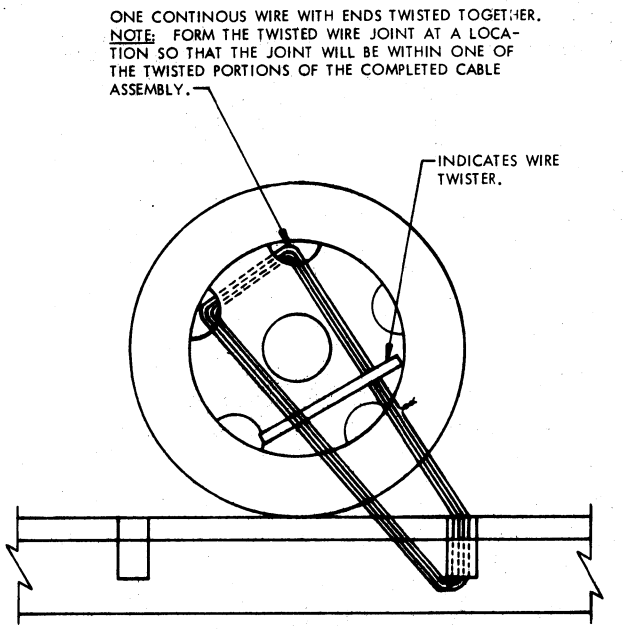
WIRE - : ANNEALED, BLACK, REF: FED SPEC QQ-W-461.

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 I.



CHOCK BLOCK



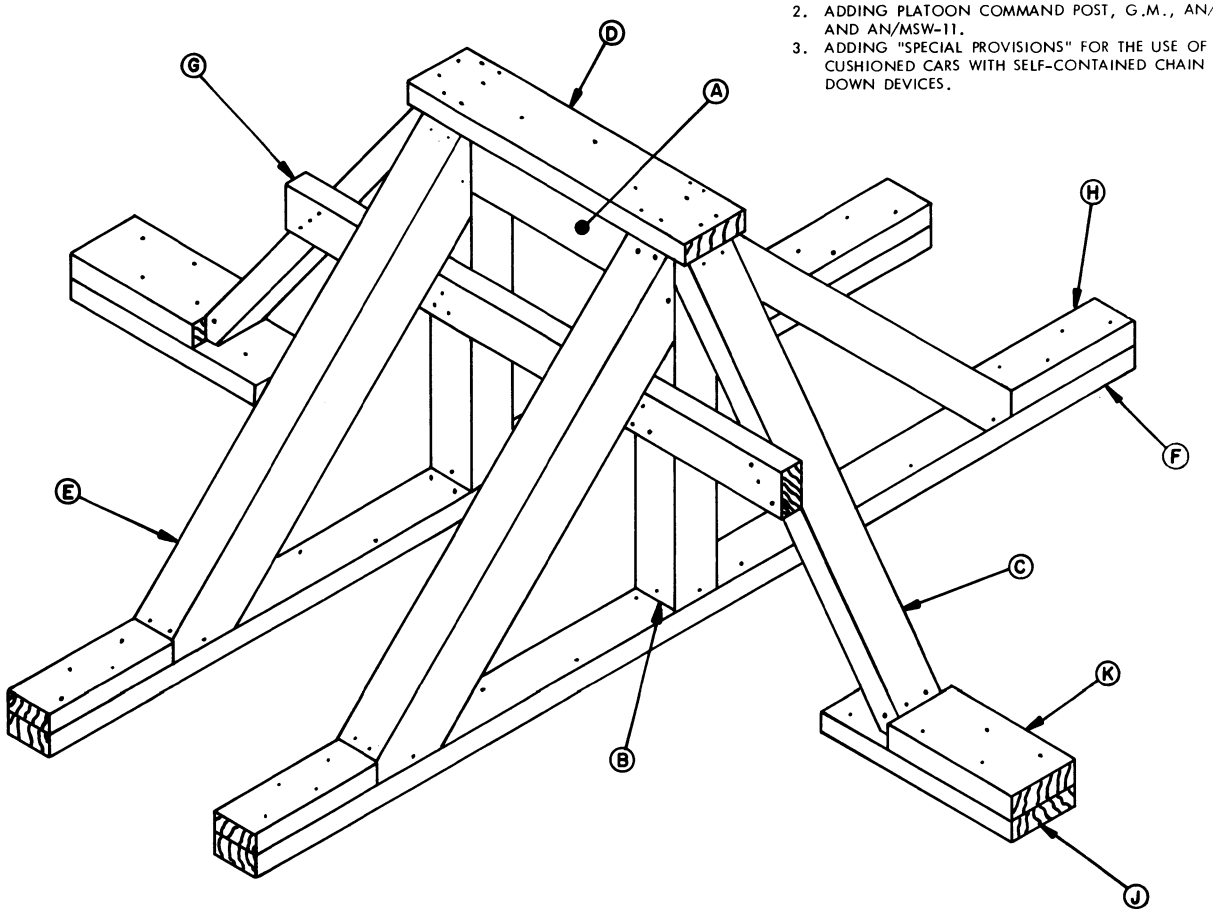
WHEEL SECUREMENT

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

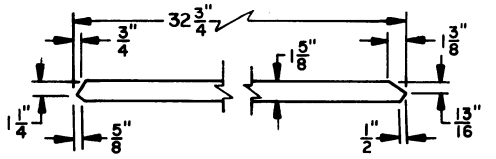
REVISIONS

REVISION NO. 1, DATED FEBRUARY 1973 CONSISTS OF:

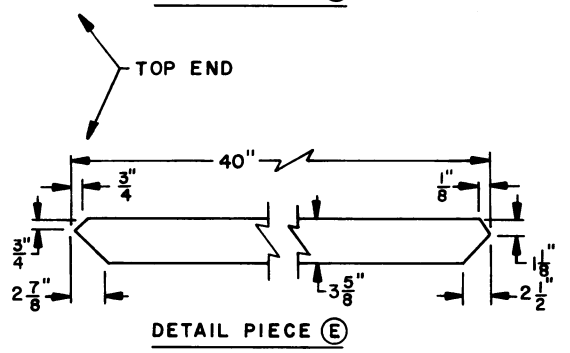
1. CHANGES AS NECESSARY TO UPDATE GENERAL NOTES.
2. ADDING PLATOON COMMAND POST, G.M., AN/MSW-9 AND AN/MSW-11.
3. ADDING "SPECIAL PROVISIONS" FOR THE USE OF CUSHIONED CARS WITH SELF-CONTAINED CHAIN TIE DOWN DEVICES.



FORWARD BLOCKING



DETAIL PIECE (C)



DETAIL PIECE (E)

KEY LETTERS

(A) 4" X 4" X 24" (1 REQD).

(B) 4" X 4" X 25-1/8" (2 REQD). TOENAIL TO PIECE MARKED (A) AND (F) W/4-16d NAILS AT EACH END.

(C) 2" X 4" X 32-3/4" (2 REQD). DOUBLE BEVEL EACH END. SEE "DETAIL PIECE (C)" FOR BEVEL CUTS REQUIRED. NAIL TO PIECE MARKED (A) W/2-16d NAILS AND TO PIECE MARKED (J) W/4-16d NAILS AFTER PARTIAL ASSEMBLY (PIECES MARKED (A) THRU (G)) HAS BEEN LOCATED ON RAIL CAR AND PIECE MARKED (J) HAS BEEN NAILED TO THE CAR FLOOR.

(D) 2" X 6" X 27" (1 REQD). NAIL TO PIECE MARKED (A) W/5-12d NAILS AND TO PIECES MARKED (C) AND (E) W/2-12d NAILS EACH.

(E) 4" X 4" X 40" (4 REQD). DOUBLE BEVEL EACH END. SEE "DETAIL PIECE (E)" FOR BEVEL CUTS REQUIRED. TOENAIL TO PIECES MARKED (A) AND (F) W/4-16d NAILS AT EACH END.

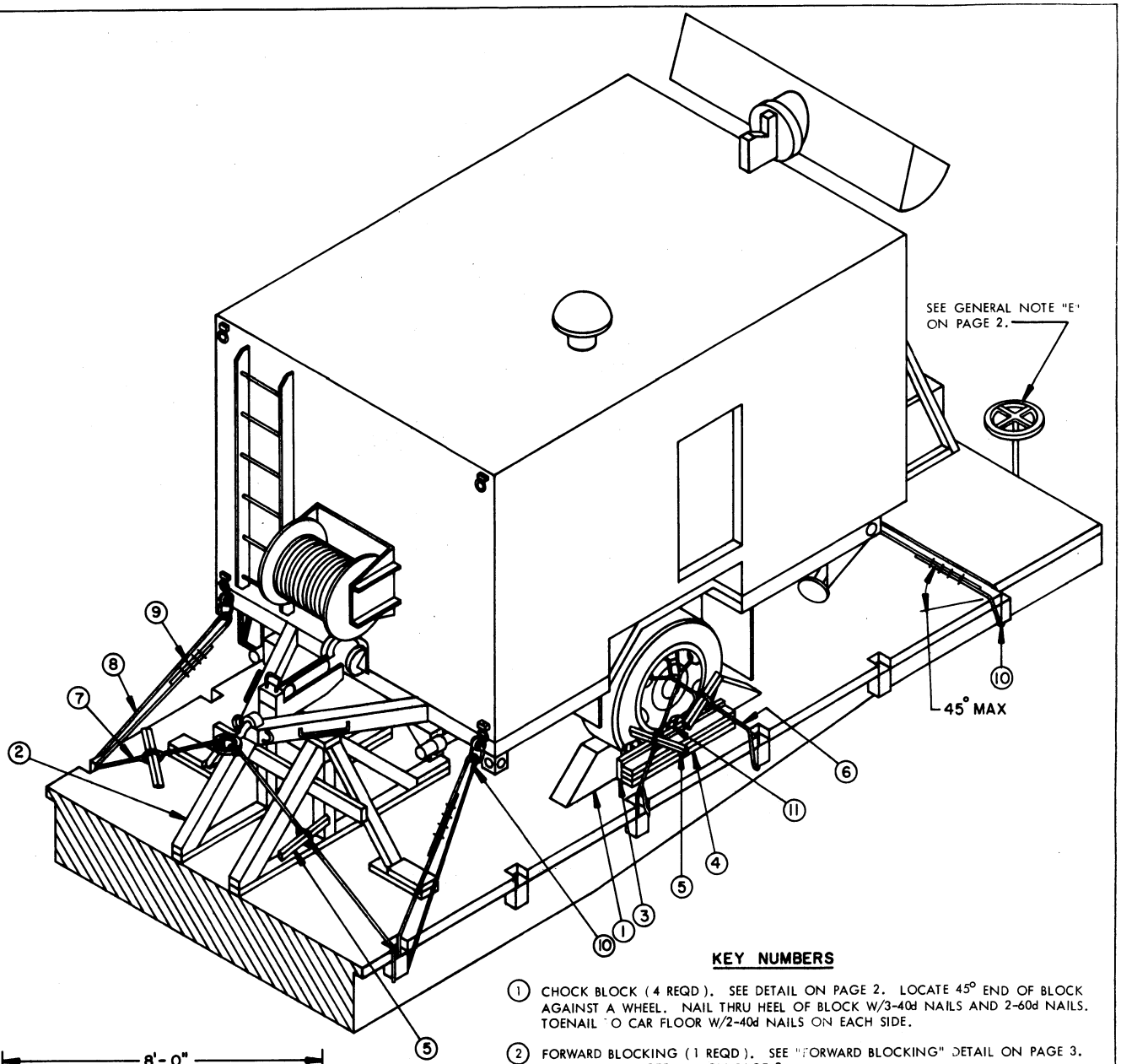
(F) 2" X 4" X 7'-1-1/4" (2 REQD). LOCATE PARTIAL ASSEMBLY (PIECES MARKED (A) THRU (G)) UNDER ITEM AND NAIL TO CAR FLOOR W/1-30d NAIL EVERY 8".

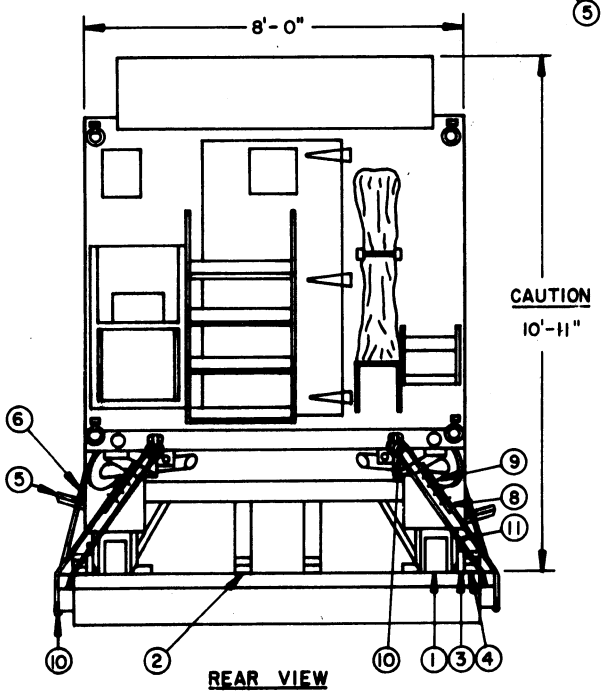
(G) 2" X 4" X 42" (1 REQD). NAIL TO PIECES MARKED (B) AND (C) W/3-12d NAILS AT EACH JOINT.

(H) 2" X 4" X 12" (4 REQD). POSITION AGAINST PIECE MARKED (E) AND NAIL TO PIECE MARKED (F) W/4-30d NAILS.

(J) 2" X 6" X 18" (2 REQD). NAIL TO CAR FLOOR W/5-30d NAILS.

(K) 2" X 6" X 12" (2 REQD). POSITION AGAINST PIECE MARKED (C) AND NAIL TO PIECE MARKED (J) W/4-30d NAILS.





REAR VIEW

NOTE: BRAKE WHEEL ON CAR HAS BEEN OMITTED FOR CLARITY PURPOSES.

KEY NUMBERS

(1) CHOCK BLOCK (4 REQD). SEE DETAIL ON PAGE 2. 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" DETAIL ON PAGE 3. SEE GENERAL NOTE "H" ON PAGE 2.

(3) RUBBING STRIP, 2" X 6" X 36" (2 REQD). POSITION ON EDGE AND NAIL TO LOWER PIECE MARKED (4) W/5-12d NAILS.

(4) SIDE BLOCKING, 2" X 4" X 36" (TRIPLED) (2 REQD). NAIL FIRST PIECE TO CAR FLOOR W/5-30d NAILS. NAIL EACH ADDITIONAL PIECE IN A LIKE MANNER.

(5) WIRE TWISTER, 2" X 2" BY A LENGTH TO SUIT (6 REQD). SEE GENERAL NOTE "D" ON PAGE 2.

(6) EIGHT (8) STRANDS OF NO. 8 GAGE BLACK ANNEALED WIRE (4 REQD). PASS THRU HOLES IN WHEEL AND STAKE POCKET ON CAR TO FORM A COMPLETE LOOP. TWIST TAUT WITH PIECE MARKED (5). SEE GENERAL NOTES "D" AND "E" ON PAGE 2 AND "WHEEL SECUREMENT" DETAIL ON PAGE 2. SEE THE "SPECIAL PROVISIONS" ON PAGE 6.

(7) EIGHT (8) STRANDS OF NO. 8 GAGE BLACK ANNEALED WIRE (2 REQD). PASS THRU LADING LUNETTE AND STAKE POCKET ON CAR TO FORM A COMPLETE LOOP. TWIST TAUT WITH PIECE MARKED (5). SEE GENERAL NOTES "D" AND "E" ON PAGE 2.

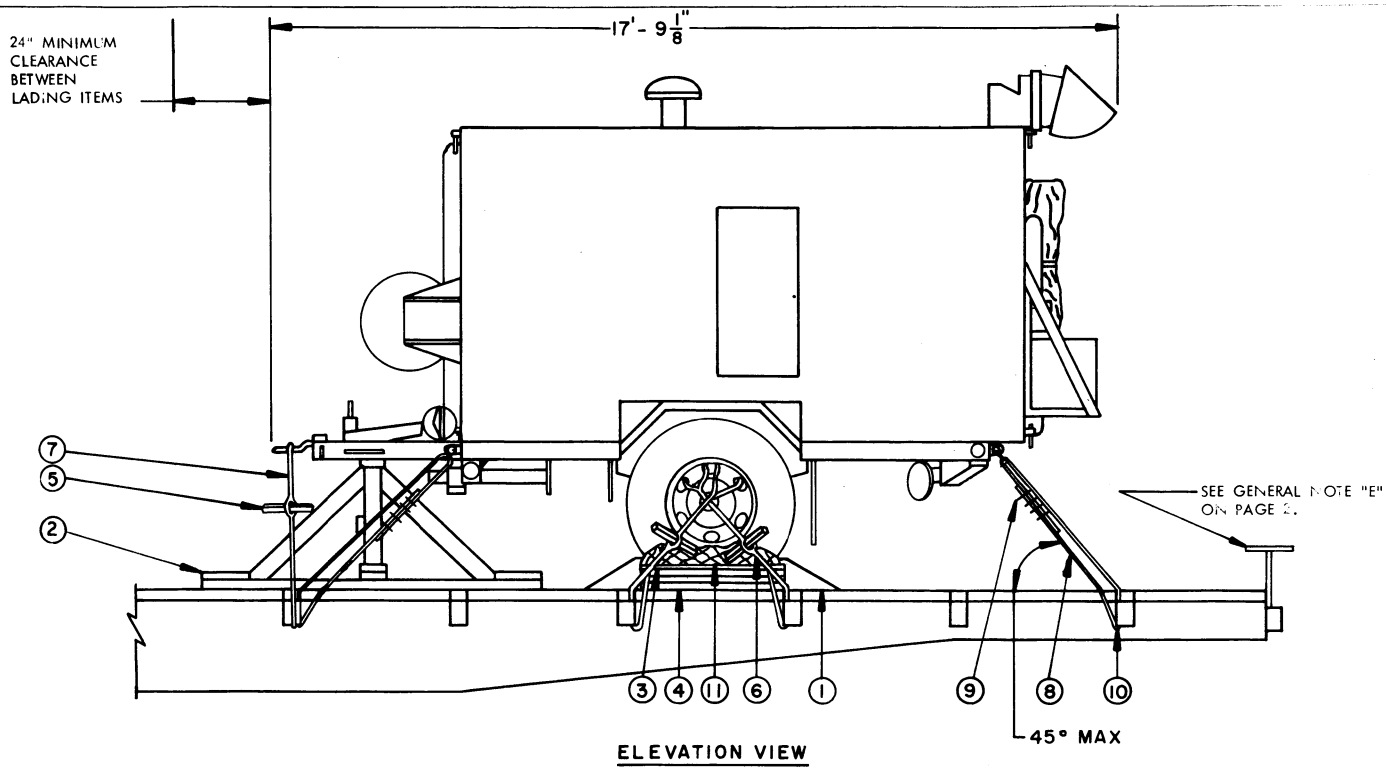
(8) STEEL WIRE ROPE, 1/2" DIAMETER, 11.5 TONS (4 REQD). INSTALL CABLE ANGULARLY AS SHOWN AND TO FORM A COMPLETE LOOP FROM STAKE POCKET ON CAR THRU LADING TIE DOWN DEVICE AND BACK TO STAKE POCKET. SEE GENERAL NOTES "D" AND "E" ON PAGE 2. SEE SPECIAL NOTE 4 ON PAGE 5.

(9) CLIP, SIZE 1/2" (24 REQD). FOUR (4) PER CABLE AND ONE (1) PER THIMBLE. SEE GENERAL NOTE "D" ON PAGE 2.

(10) THIMBLE, STANDARD, SIZE 1/2" (8 REQD). ONE (1) PER STAKE POCKET AND ONE (1) PER LADING TIE DOWN DEVICE. SECURE TO WIRE ROPE MARKED (8) W/1-CLIP PER THIMBLE. SEE GENERAL NOTE "D" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 5.

(11) WATERPROOF PAPER OR BURLAP OF A SUFFICIENT SIZE TO POSITION UNDER AND EXTEND 2" ABOVE PIECE MARKED (3).

LOADING AND BRACING PROCEDURES



ELEVATION VIEW

SPECIAL NOTES:

1. A ONE (.) UNIT LOAD IS SHOWN ON A 9'-2" WIDE (PLATFORM) FLAT CAR WITH STAKE POCKETS SPACED 42" ON CENTER. A WIDER FLAT CAR MAY BE USED.
2. THE ITEM MUST BE LOCATED ON THE FLAT CAR RELATIVE TO LOCATION OF STAKE POCKETS SO THAT WHEN PIECES MARKED (6) THROUGH (8) ARE APPLIED THEY WILL BE IN THE SAME GENERAL LOCATION RELATIVE TO THE ITEM AS SHOWN.
3. A STANDARD THIMBLE AS SPECIFIED CAN BE SECURED TO A CABLE WITH A 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.
4. CABLE OF A LARGER SIZE MAY BE USED IF THE SPECIFIED CABLE IS NOT AVAILABLE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	9	3
2" X 4"	46	31
2" X 6"	14	14
4" X 4"	20	27
6" X 8"	6	24
NAILS	**NO. REQD**	**POUNDS**
12d (3-1/4")	45	3/4
16d (3-1/2")	60	1-1/2
30d (4-1/2")	92	4-3/4
40d (5")	28	1-3/4
60d (6")	8	1

ROPE, STEEL WIRE, 1/2" DIA	64 FT	REQD	28 LBS
CLIP, 1/2"	24	REQD	11 LBS
THIMBLE, STANDARD, 1/2"	8	REQD	2 LBS
WIRE, NO. 8 GAGE	280 FT	REQD	26 LBS
WATERPROOF PAPER OR BURLAP	AS	REQD	NIL
CLIPS, 5/8" (ALT FOR 1/2")	8	REQD	5 LBS

LOAD AS SHOWN

ITEM *	QUANTITY	WEIGHT (APPROX)
INFORMATION AND COORDINATION CENTRAL	1	9,800 LBS
DUNNAGE		325 LBS
TOTAL WEIGHT		10,125 LBS

* SEE GENERAL NOTE "C" ON PAGE 2 FOR ITEMS COVERED.

SPECIAL PROVISIONS:

LADING MAY BE SECURED ON A CUSHIONED FMS TYPE FLAT CAR WITH CHAIN TIE DOWN ASSEMBLIES IN LIEU OF USING THE DEPICTED GENERAL SERVICE FM TYPE CAR AND THE SPECIFIED TIE DOWN MATERIALS, PROVIDING THE FOLLOWING CONDITIONS ARE MET:

1. THE CAR MUST HAVE A NAILABLE FLOOR AREA AT LEAST 24" WIDE BETWEEN THE CENTER CHANNELS FOR THE SECUREMENT OF THE FORWARD BLOCKING ASSEMBLY MARKED ②.

2. ONE (1) MOVABLE ANCHOR WITH CHAIN ASSEMBLY TIE DOWN DEVICE MUST BE SUBSTITUTED FOR EACH WIRE ROPE CABLE TIE DOWN MARKED ①. CHAINS WILL BE ATTACHED TO THE LADING AT THE SAME LOCATIONS SHOWN FOR THE WIRE ROPE. THE ANCHOR DEVICES OF A MATCHING PAIR OF CHAIN TIE DOWNS AT THE SAME END OF THE TRAILER SHOULD BE ATTACHED TO A MATED PAIR OF INBOARD OR OUTBOARD TIE DOWN CHANNELS OF THE CAR FLOOR. ANCHOR DEVICES SHOULD BE LOCATED SO THAT THE MATCHING PAIR OF CHAIN TIE DOWNS ARE AS PARALLEL TO EACH OTHER AS POSSIBLE AND SO THAT THE VERTICAL ANGLE BETWEEN THE CAR FLOOR AND A CHAIN DOES NOT EXCEED 45°.

3. FOR SECURING THE WHEELS, IN LIEU OF STRANDED-WIRE TIE DOWNS, CHOCK BLOCKS, AND SIDE BLOCKING PIECES, TWO (2) CHAIN ASSEMBLIES WILL BE ATTACHED TO THE LIGHTENING HOLES IN EACH WHEEL. HOWEVER, IF THE LIGHTENING HOLES ARE NOT LARGE ENOUGH TO RECEIVE THE CHAINS, A STEEL WIRE ROPE (CABLE) LOOP MUST BE PROVIDED FOR ATTACHMENT OF THE CHAINS. SEE THE "ALTERNATIVE WHEEL SECUREMENT" DETAIL ON PAGE 6 FOR METHOD OF APPLYING CABLE.

4. IN LIEU OF THE STRANDED-WIRE TIE DOWN MARKED ⑦ FOR SECURING THE LADING LUNETTE, TWO (2) CHAIN ASSEMBLIES WILL BE SUBSTITUTED.

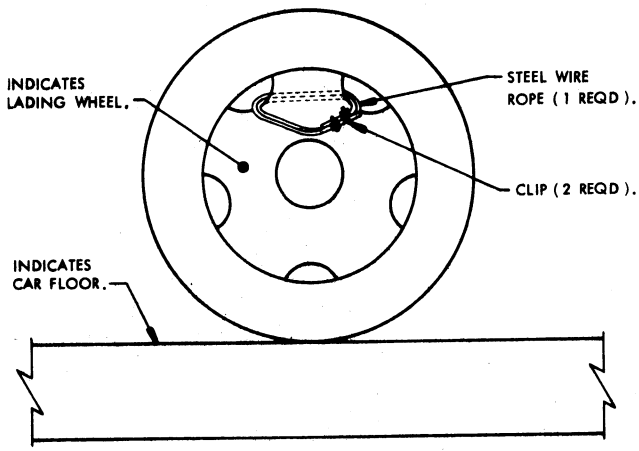
5. BEFORE AND DURING INSTALLATION, THE ANCHOR DEVICES SHALL BE INSPECTED FOR BENT HOOKS, STRETCH, GOUGES, BENT LINKS, AND EXCESSIVE WEAR IN THE CHAIN AND FOR DAMAGED LOAD BINDERS OR WINCHES, OR ANY OTHER NOTICEABLE DEFECTS. ANY DEFICIENCY SHALL BE CAUSE FOR NOT USING AN ANCHOR AND CHAIN ASSEMBLY.

6. CHAINS MUST NOT BE TWISTED DURING INSTALLATION. CHAINS ARE TO BE STRUCK WITH A HAMMER OR BAR AFTER TIGHTENING TO ELIMINATE ANY POSSIBLE MISALIGNMENT OF LINKS. FURTHER TIGHTENING MAY BE REQUIRED TO TAKE UP ANY SLACK THAT DEVELOPS DUE TO LINK ALIGNMENT.

7. TURNBUCKLES OR OTHER TENSIONING DEVICES NOT EQUIPPED WITH SELF-LOCKING DEVICES MUST BE WIRED OR PINNED TO PREVENT THEM FROM TURNING OR LOOSENING DURING TRANSIT.

8. OPEN HOOKS MUST BE SECURED WITH WIRE AS REQUIRED TO PREVENT THE HOOK FROM BECOMING DISENGAGED FROM THE CHAIN LINK TO WHICH IT IS ATTACHED.

9. 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.



AN INSTALLATION OF 1/2" DIAMETER STEEL WIRE ROPE IS SHOWN, PASSED THRU THE UPPER HOLES IN THE WHEEL TO FORM A COMPLETE DOUBLE LOOP WITH AN END-OVER-END LAP JOINT SECURED WITH TWO (2), SIZE 1/2", U-BOLT CLIPS. THE SIZE OF THE LOOP SHALL BE THE MINIMUM NECESSARY TO PERMIT ATTACHMENT OF TWO (2) CHAIN TIE DOWN ASSEMBLIES.

ALTERNATIVE WHEEL SECUREMENT

(FOR USE WITH CHAIN TIE DOWNS)