

APPROVED BY  
 MECH DIV AAR, THEIR LETTER  
 DATED 5 JUL 79 FILE LR-110-60  
 SIGNED A. W. Woodcock  
 DATE 10 July 1979  
 TEA, MTMC, FT EUSTIS, VA.

# FAAR

## LOADING AND BRACING ON FLAT CAR OF COMPONENT OF RADAR SET AN/MPQ- 54, MOUNTED ON TRAILER, M796

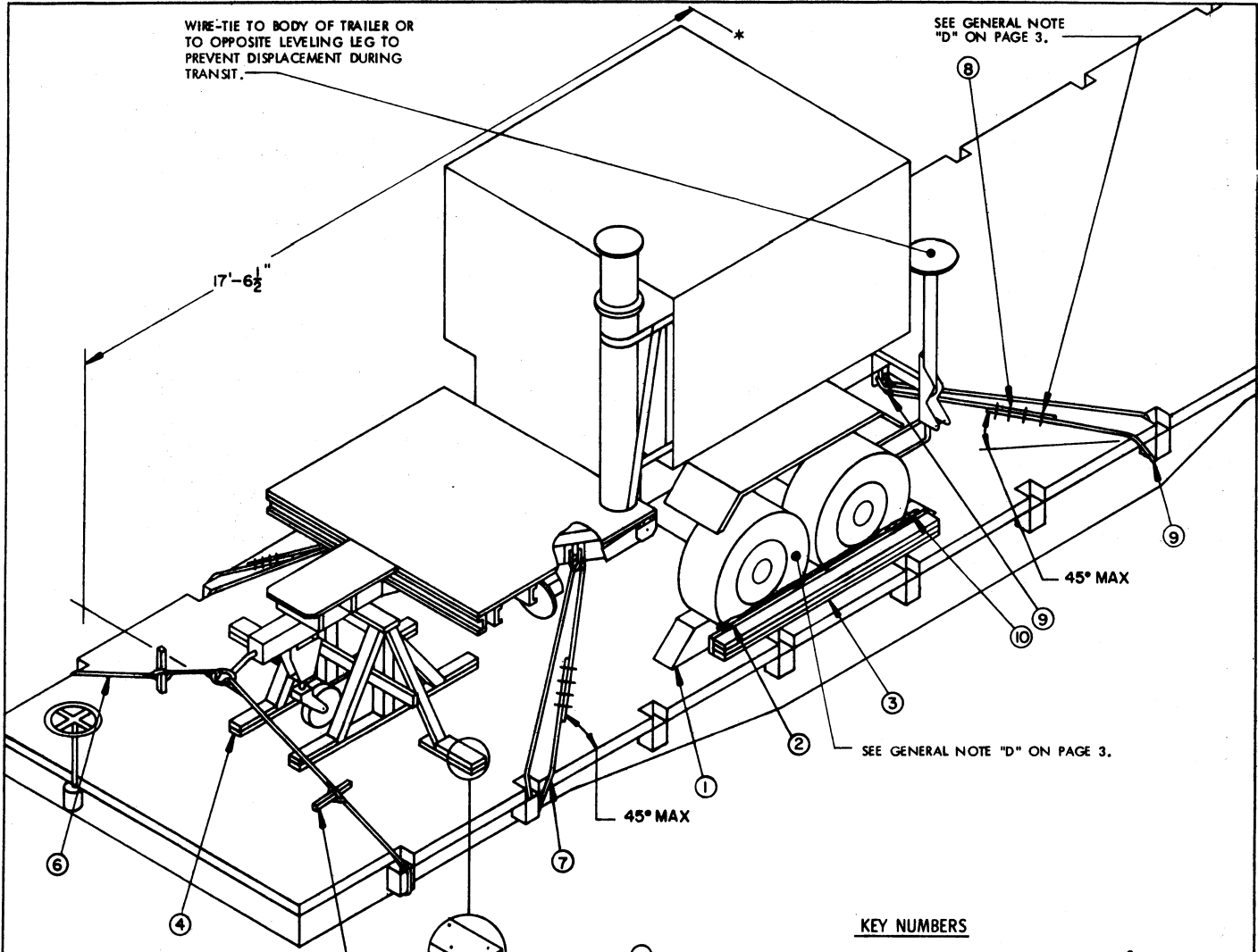
THIS OUTLOADING PROCEDURAL DRAWING INCLUDES  
 PROCEDURES FOR GENERAL SERVICE FLAT CARS (FM)  
 AND FOR CUSHIONED FLAT CARS (FMS) EQUIPPED  
 WITH SPECIAL CHAIN TIE-DOWN DEVICES OF VARIOUS  
 DESIGN AND MANUFACTURE.

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

**DO NOT SCALE**

REVISIONS				DRAFTSMAN	PROJ. ENG.		
				VE	DAN		
				RSM	RHA		
				APPROVED, U.S. ARMY MISSILE MATERIEL READINESS COMMAND			
				<i>William J. Yozuan</i>			
				APPROVED BY ORDER OF <i>John L. Byrd</i> GENERAL, U.S. ARMY <small>MATERIEL DEVELOPMENT AND READINESS COMMAND (BARROOM)</small>			
				U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL			
				U.S. ARMY DARCOM DRAWING			
				AUGUST 1979			
				CLASS	DIVISION	DRAWING	FILE
				19	48	7824	GSE 5FA7

PROJECT GSE 549-77



WIRE-TIE TO BODY OF TRAILER OR TO OPPOSITE LEVELING LEG TO PREVENT DISPLACEMENT DURING TRANSIT.

SEE GENERAL NOTE "D" ON PAGE 3.

17'-6 1/2"

45° MAX

45° MAX

SEE GENERAL NOTE "D" ON PAGE 3.

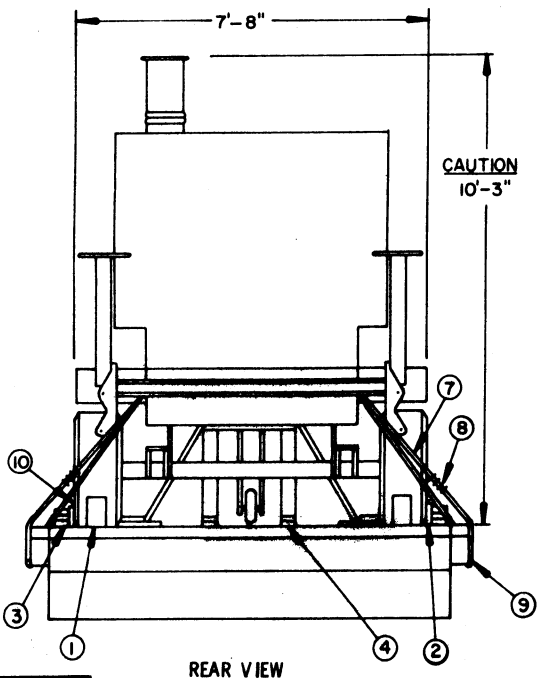
**ISOMETRIC VIEW**

APPLICATION OF STAGGERED NAILING PATTERN. SEE GENERAL NOTE "H" ON PAGE 3.



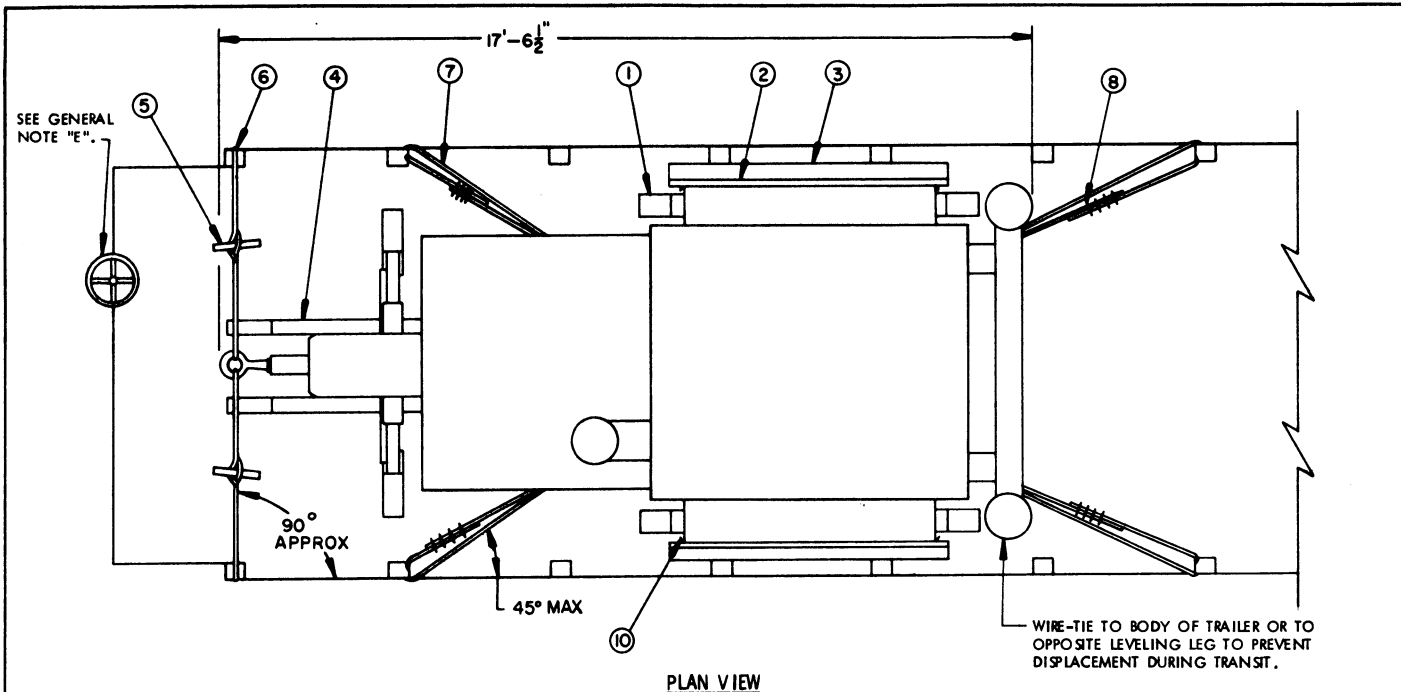
**KEY NUMBERS**

- ① WHEEL BLOCK (4 REQD). SEE THE DETAIL ON PAGE 4. LOCATE 45° END OF BLOCK AGAINST A WHEEL. NAIL THROUGH HEEL OF BLOCK W/3-40d AND 2-60d NAILS. TOENAIL EACH SIDE TO CAR FLOOR W/2-40d NAILS.
- ② RUBBING STRIP, 2" X 6" X 72" (2 REQD). POSITION ON EDGE AND NAIL TO LOWER PIECE MARKED ③ W/1-12d NAIL EVERY 8".
- ③ SIDE BLOCKING, 2" X 4" X 72" (TRIPLED) (2 REQD). NAIL FIRST PIECE TO CAR FLOOR W/1-30d NAIL EVERY 8". NAIL EACH ADDITIONAL PIECE IN A LIKE MANNER. SEE GENERAL NOTE "H" ON PAGE 3.
- ④ STANCHION (1 REQD). SEE THE DETAIL ON PAGE 4.
- ⑤ WIRE TWISTER, 2" X 2" BY A LENGTH TO SUIT (2 REQD). SEE GENERAL NOTE "D" ON PAGE 3.
- ⑥ EIGHT (8) STRANDS NO. 8 GAGE BLACK ANNEALED WIRE (2 REQD). PASS THROUGH HOLES IN LUNETTE AND STAKE POCKET TO FORM A COMPLETE LOOP. TWIST TAUT WITH PIECE MARKED ⑤. WIRE SHOULD BE NEAR RIGHT ANGLE TO SIDE OF CAR.
- ⑦ STEEL WIRE ROPE, 1/2" DIA., 11.5 TONS (4 REQD). INSTALL CABLE ANGULARLY AS SHOWN AND TO FORM A COMPLETE LOOP FROM STAKE POCKET ON CAR TO POINT OF ATTACHMENT ON LADING AND BACK TO STAKE POCKET. NOTE: CABLE OF A LARGER SIZE MAY BE USED IF AVAILABLE, WHEN SPECIFIED CABLE IS NOT AVAILABLE. SEE GENERAL NOTES "D", "E" AND "P" ON PAGE 3. SEE THE "SPECIAL PROVISIONS" ON PAGE 4.
- ⑧ CLIP, WIRE ROPE, SIZE 1/2" (24 REQD). USE FOUR (4) PER CABLE JOINT OF PIECE MARKED ⑦ AND ONE (1) PER THIMBLE. NOTE: 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 3/8" CLIP MAY BE USED.
- ⑨ THIMBLE, STANDARD, SIZE 1/2" (8 REQD). USE ONE (1) PER STACK POCKET AND ONE (1) PER LADING TIEDOWN DEVICE. SECURE TO CABLE, PIECE MARKED ⑦ W/1-CLIP PER THIMBLE. NOTE THAT AN "OPEN PATTERN" THIMBLE IS RECOMMENDED.
- ⑩ WATERPROOF PAPER OR BURLAP OF A SUFFICIENT SIZE TO POSITION UNDER AND EXTEND 2" ABOVE PIECES MARKED ②.



CAUTION  
10'-3"

**REAR VIEW**



PLAN VIEW

(GENERAL NOTES CONTINUED)

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

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 CAR 9'-2" WIDE (PLATFORM). CARS OF OTHER WIDTHS MAY BE USED PROVIDING THE PLATFORM IS AT LEAST 8'-9" WIDE. 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.

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 4 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 AND TRAILERS".

- C. LADING DATA:  
ITEM DIMENSIONS ---- 17'-6-1/2" LONG BY 7'-8" WIDE BY 10'-3" HIGH.  
ITEM GROSS WEIGHT --- 8,305 POUNDS (APPROX).
- D. REFER TO ORD DWG 19-48-C-ORDJJ-588, "WIRE ROPE AND ANNEALED WIRE APPLICATION METHODS FOR SECURING LADING ON RAIL & MOTOR CARRIER EQUIP", FOR PROPER TIE DOWN APPLICATION, EXCEPT THAT THE NUTS ON 1/2" CLIPS WILL BE TIGHTENED TO A TORQUE OF 75 TO 90 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 CONTACTING TIE DOWN WIRES AND LADING TIES. 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 AND TRAILERS", FOR APPLICABLE LOADING RULES: PREFACE, 1-A, 2, 3, 4, 5, 7, 9, 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 SIZE "COME-A-LONG" TYPE MECHANICAL HOIST.

(CONTINUED AT LEFT)

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, REFORMED, 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-490, TYPE I, CLASS 1.
- WIRE ---- : ANNEALED BLACK. REF: FED SPEC QQ-W-461.

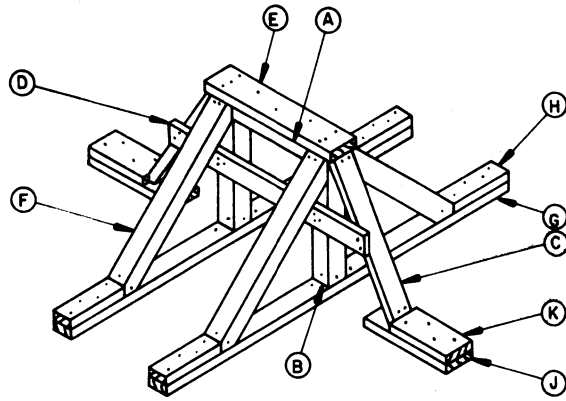
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
COMPONENT OF RADAR	1	8,305 LBS
DUNNAGE		295 LBS
<b>TOTAL WEIGHT</b>		<b>8,600 LBS</b>

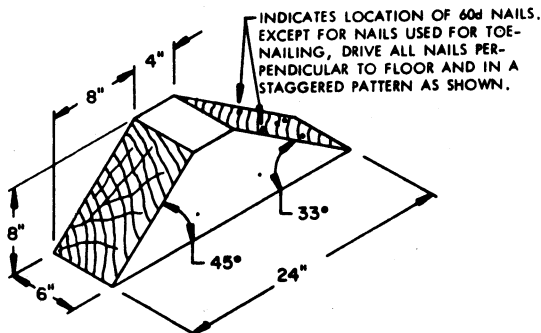
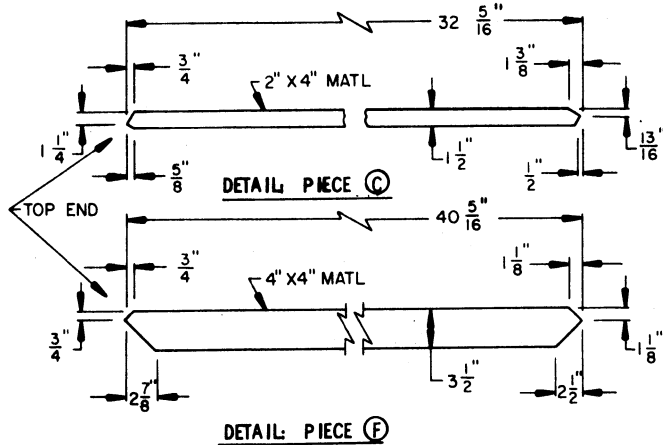
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	3	1
2" X 4"	64	43
2" X 6"	20	20
4" X 4"	20	27
6" X 8"	6	24
NAILS	NO. REQD	POUNDS
12d (3-1/4")	39	3/4
16d (3-1/2")	44	1
20d (4")	2	NIL
30d (4-1/2")	96	5
40d (5")	28	2
60d (6")	8	1
ROPE, STEEL WIRE, 1/2" DIA	72' REQD	32 LBS
CLIP, 1/2"	24 REQD	11 LBS
THIMBLE, STANDARD, 1/2"	8 REQD	2 LBS
WIRE, NO. 8 GAGE	120' REQD	11 LBS
WATERPROOF PAPER OR BURLAP	AS REQD	NIL
CLIP, 5/8" (ALT FOR 1/2")	8 REQD	5 LBS

**KEY LETTERS**

- (A) 4" X 4" X 24" (1 REQD).
- (B) 4" X 4" X 25" (2 REQD). TOENAIL TO (A) AND (C) W/4-16d NAILS EACH.
- (C) 2" X 4" X 32-5/16" (2 REQD). DOUBLE BEVEL EACH END AS PER "DETAIL : PIECE (C)". TOENAIL TO (A) AND (J) W/2-16d NAILS EACH AFTER ASSEMBLY ((A) THRU (C)) HAS BEEN LOCATED ON TRANSPORTING VEHICLE AND (J) HAS BEEN NAILED TO FLOOR.
- (D) 2" X 4" X 48" (1 REQD). NAIL TO EACH (B) W/3-12d NAILS AND TO EACH (C) W/2-12d NAILS EACH.
- (E) 2" X 6" X 27" (1 REQD). NAIL TO (A) W/5-12d NAILS AND TO EACH (F) W/1-12d NAIL EACH.
- (F) 4" X 4" X 40-5/16" (4 REQD). DOUBLE BEVEL EACH END AS PER "DETAIL : PIECE (F)". TOENAIL TO (A) W/2-16d NAILS AND TO (C) W/3-16d NAILS EACH.
- (G) 2" X 4" X 7'-2" (2 REQD). LOCATE BLOCKING ASSEMBLY ((A) THRU (C)) UNDER ITEM AND NAIL TO FLOOR OF TRANSPORTING VEHICLE W/2-30d NAILS NEAR (B) AND W/2-30d NAILS NEAR EACH END.
- (H) 2" X 4" X 12" (4 REQD). POSITION AGAINST (F) AND NAIL TO (C) W/4-30d NAILS.
- (J) 2" X 6" X 18" (2 REQD). POSITION UNDER (C) AS SHOWN AND NAIL TO FLOOR OF TRANSPORTING VEHICLE W/3-30d NAILS.
- (K) 2" X 6" X 12" (2 REQD). POSITION AGAINST (C) AND NAIL TO (J) W/4-30d NAILS.



**STANCHION**



**WHEEL BLOCK**

(4 REQD)

**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 STANCHION ASSEMBLY.
2. ONE (1) MOVABLE ANCHOR WITH CHAIN ASSEMBLY TIE DOWN DEVICE MUST BE SUBSTITUTED FOR EACH WIRE ROPE CABLE TIE DOWN MARKED (7). CHAINS WILL BE ATTACHED TO THE LADING AT THE SAME LOCATIONS SHOWN FOR THE WIRE ROPE. ANCHOR DEVICES WILL BE LOCATED SO AS TO POSITION THE CHAINS WITHIN THE ANGULAR TOLERANCES SPECIFIED ON THE LOAD VIEWS.
3. IN LIEU OF THE STRANDED WIRE TIE DOWNS MARKED (6) FOR SECURING THE LADING LUNETTE, TWO (2) CHAIN ASSEMBLIES WILL BE SUBSTITUTED.
4. BEFORE AND DURING INSTALLATION, THE ANCHOR DEVICES SHALL BE INSPECTED FOR BENT HOOKS, STRETCH, GOUGES, BENT LINKS, AND WEAR IN THE CHAINS, 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.
5. 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.
6. 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.
7. OPEN HOOKS MUST BE SECURED WITH A WIRE AS REQUIRED TO PREVENT THE HOOK FROM BECOMING DISENGAGED FROM THE CHAIN LINK TO WHICH IT IS ATTACHED.
8. 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.