HAWK

LOADING AND BRACING ON EUROPEAN RAILCAR 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

DELINEATED LOADING AND BRACING PROCEDURES COMPLY WITH THE REDUIREMENTS OF APPENDIX C TO TM 55-601.

 $\underline{\text{NOTICE}}\colon \text{DEPICTED LOAD }\underline{\text{IS}}$ OVERSIZE, MOVEMENT $\underline{\text{MUST}}$ BE COORDINATED WITH DB OR SNCB.

U.S. ARMY MATERIEL COMMAND DRAWING				
APPROVED, U.S. ARMY MISSILE COMMAND	DRAF1	NAMZ	TECHNICIAN	ENGINEER
	J. LA	SHELLE		C. FERRELL
Farl w Honea				
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND	VALIDA ENGINE DIVIS	ERING ION	TRANSPORTATION ENGINEERING DIVISION	ENGINEERING OFFICE
William F Ernst	0	OCTOBER 1972		
U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL	CLASS	OIZIVIO	DRAWING	FILE
REVISION NO. 1 APRIL 1980				
SEE THE REVISION LISTING ON PAGE :	19	48	7801	GSE5HA59

NOT NECESSARILY DRAWN TO SCALE

PROJECT GSE 509-72

GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1.
- B. THE OUTLOADING PROCEDURES SHOWN HEREIN ARE APPLICABLE TO EUROPEAN RAILCARS WHICH CONFORM TO THE RIV REQUIREMENTS.
- C. THE LOAD AS SHOWN IS BASED ON RIV RAILCARS (KBS 442/443) 41'-0-1/8" (12,500 MM) LONG BY 9'-1-3/64" (2,770 MM) WIDE WITH 18" (457 MM) CAR SIDES. ADDITIONAL UNITS OR OTHER ITEMS MAY BE LOADED ON THE CAR, WITH THE VIEW TOWARD FULL UTILIZATION OF CARRIER EQUIPMENT.
- D. LADING DATA:

ITEM DIMENSIONS -----: : 17'-9" (5,411 MM) LONG BY 8'-0" (2,439 MM) WIDE BY 11'-0" (3,353 MM) HIGH.

ITEM GROSS WEIGHT---- : 9,800 POUNDS (4,445 KG) APPROX.

- E. A LIST OF RAILCARS THAT MAY BE USED FOR SHIPMENTS OF THE DEPICTED LOAD IS SHOWN IN THE CHART ON THIS PAGE. OTHER TYPES OF RAILCARS CAN BE USED PROVIDING THESE OTHER CARS ARE PROPERLY EQUIPPED FOR THE APPLICATION OF THE PRESCRIBED LOAD-SECURING BLOCKING IN ACCORDANCE WITH THE SPECIFIED PROCEDURES. MINOR DEVIATIONS FROM THE LOCATIONS SHOWN IN THE LOAD VIEWS FOR INSTALLING BLOCKING AND TIE DOWN COMPONENTS ON A CAR ARE PERMITTED. HOWEVER, THE INTENT OF THE SPECIFIED BLOCKING PROCEDURES MUST BE ACHIEVED.
- F. REMOVE ALL POSTS FROM SIDE OF CAR AND PLACE IN RACKS UNDER CAR, IF APPLICABLE.
- G. THE NUMBER OF UNITS MAY BE ADJUSTED TO FIT THE RAILCAR CONCERNED, OR THE QUANTITY TO BE SHIPPED; HOWEVER, THE APPROVED METHODS CONTAINED HEREIN, FOR FULL OR PARTIAL CARLOAD, MUST BE FOLLOWED FOR BLOCKING, BRACING, AND STAYING OF THIS ITEM.
- H. 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 RAILCAR, OR WHEN LAMINATING DUNNAGE. THE NAILING PATTERN WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL DOES NOT PENETRATE INTO OR NEAR A CRACK BETWEEN FLOOR BOARDS. 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.
- J. NAILS USED FOR FLOOR LINE BLOCKING WILL HAVE A MINIMUM DIAMETER OF 5 MM. NAIL SIZES WILL BE SELECTED TO PROVIDE A MINIMUM OF 40 MM PENETRATION INTO THE CAR FLOOR. HOWEVER, THE LENGTH OF THE NAIL WILL BE SUCH THAT THE NAIL DOES NOT COMPLETELY PENETRATE THE CAR FLOOR. SEE THE "NAIL CHART" AT THE RIGHT AND THE "SPECIAL NAILING GUIDANCE" ON PAGE 3. NAILS WHICH ARE OF OTHER SIZES OR WHICH HAVE A NOMENCLATURE DIFFERENT THAN THAT USED HEREIN, MAY ALSO BE USED PROVIDED THEY MEET THE MINIMUM REQUIREMENTS STIPULATED WITHIN THIS DOCUMENT.
- K. NAILS USED FOR FABRICATING DUNNAGE ASSEMBLIES SHALL BE OF THE MAXIMUM PRACTICAL LENGTH WHICH WILL PREVENT THE NAIL POINT FROM COMPLETELY PENETRATING THE DUNNAGE ASSEMBLY. THE NAIL POINT IS TO BE CONCEALED WITHIN THE DUNNAGE ASSEMBLY TO PREVENT DAMAGE TO THE LADING.
- L. STEEL WIRE USED FOR HOLD-DOWNS MUST HAVE A MINIMUM DIAMETER OF 3 MM. WHERE REQUIRED WITHIN THIS DOCUMENT, NO. 8 GAGE BLACK ANNEALED WIRE HAS BEEN SPECIFIED FOR WIRE HOLD-DOWNS. IF DESIRED, OR IF NO. 8 GAGE WIRE IS NOT AVAILABLE, WIRE OF A LARGER DIAMETER, OR 3/8" (OR LARGER) STEEL WIRE ROPE, MAY BE SUBSTITUTED.
- M. CAUTION: DURING WIRE ROPE INSTALLATION AVOID ALL CONTACT WITH ELECTRICAL WIRING, VEHICLE CONTROLS AND OTHER APPURTENANCES.

(CONTINUED AT RIGHT

REGOLAMENTO INTERNAZIONALE VEICOLI (RIV): REGULATIONS GOVERNING THE RECIPROCAL USE OF WAGONS IN INTERNATIONAL TRAFFIC.

MATERIAL SPECIFICATIONS

LUMBER	GRAIN AND FREE FROM MATERIAL DEFECTS. REF: FE SPEC MM-L-751.
<u>NAILS</u> :	COMMON. REF: FED SPEC FF-N-105.
<u>WIRE</u> ::	ANNEALED, BLACK. REF: FED SPEC QQ-W-461.
<u>ROPE</u> ::	STEEL WIRE, PLAIN, PREFORMED, REGULAR LAY, REF: FED SPEC RR-W-410.
<u>CLIP</u> ::	"U" BOLT, CROSBY, HEAVY DUTY (OR EQUAL) REF: FED SPEC FF-C-450, TYPE 1, CLASS 1.
<u>THIMBLE</u> ::	COMMERCIAL GRADE.
ANTI-CHAFING MATERIAL :	NEUTRAL BARRIER MATERIAL MIL-B-121 (OR FOLIAL).

(GENERAL NOTES CONTINUED)

- N. ONE-HALF INCH (1/2") STEEL WIRE ROPE IS SPECIFIED WHERE REQUIRED FOR TIEDOWNS TO SECURE THE ITEM. IF DESIRED, OR IF 1/2" STEEL WIRE ROPE IS NOT AVAILABLE, STEEL WIRE ROPE OF A LARGER DIAMETER MAY BE USED. 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.
- O. ALL HAND BRAKES MUST BE "SET" WITH THE HAND LEVERS WIRE-TIED OR BLOCKED, AND TIRES WILL BE INFLATED TO 10 PSI ABOVE REGULAR OPERATING PRESSURE.
- P. THE PROCEDURES DEPICTED WITHIN THIS DRAWING ARE BASED ON THE USE OF DIMENSIONAL SIZED LUMBER. IN MOST CASES THE METRIC EQUIVALENT IS GIVEN IN PARENITHESIS FOLLOWING THE DIMENSION. HOWEVER, WHERE THE METRIC EQUIVALENT IS NOT SHOWN, IT MAY BE COMPUTED BY USING 1" EQUALS 25.4 MM. METRIC EQUIVALENTS FOR WEIGHTS ARE BASED ON 1 LB EQUALS 0.454 KG. METRIC EQUIVALENTS FOR TORQUE ARE BASED ON 1 FOOT-POUND EQUALS 0.7376 NEWTON-METERS.

NAIL CHART			
SIZE	LENGTH	DIAMETER	
10d	3" (76 MM)	0.1483" (3.77 MM)	
12d	3-1/4" (83 MM)	, 0.1483" (3.77 MM)	
16d	3-1/2" (83 MM)	0.1620" (4.11 MM)	
20d	4" (102 MM)	0.1920" (4.88 MM)	
30d **	4-1/2" (114 MM)	0.2070" (5.26 MM)	
40d * *	5" (127 MM)	0.2253" (5.72 MM)	
50d * *	5-1/2" (140 MM)	0.2437" (6.19 MM)	
60d **	6" (152 MM)	0.2625" (6.67 MM)	

** NAILS WHICH HAVE ADEQUATE DIAMETER FOR NAILING FLOOR LINE BLOCKING. THE LENGTH OF THE NAIL MUST MEET THE REQUIREMENTS OF GENERAL NOTE "J".

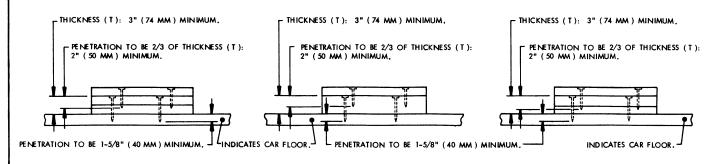
LIST OF RAILCARS THAT MAY BE USED FOR SHIPMENTS			
TYPE OF RAILCAR	LENGTH OF RAILCAR	NO. OF	MAXIMUM TOTAL WEIGHT (APPROX) OF ITEMS
KLMS-440	34'-11-11/16" (10,660 MM)	1	9,800 LBS (4,445 KG)
KLM 505	30'-4-9/16" (9,260 MM)	1	9,800 LBS (4,445 KG)
KLM506	34'-8-1/2" (10,580 MM)	1	9,800 LBS (4,445 KG)
KBS442/443	41'-0-1/8" (12,500 MM)	2	19,600 LBS (8,890 KG)
KLS442/443	41'-0-1/8" (12,500 MM)	2	19,600 LBS (8,890 KG)
RMMS-663/664	41'-5-51/64" (12,644 MM)	2	19,600 LBS (8,890 KG)
RS680/681	60'-8-23/64" (18,500 MM)	3	29,400 LBS (13,335 KG)
RS 683/684	60'-8-23/64" (18,500 MM)	3	29,400 LBS (13,335 KG)
SAS 710	49'-2-9/16" (15,000 MM)	2	19,600 LBS (8,890 KG)

REVISIONS

REVISION NO. 1, DATED APR 1980, CONSISTS OF:

- 1. UPDATING THE GENERAL NOTES.
- 2. UPDATING THE DRAWING FORMAT.

PAGE 2



TRIPLED 2" X 6" LUMBER SHOWN

DETAIL A

2' X 6' AND 4' X 6' LUMBER SHOWN

DETAIL B

MIXED THICKNESSES OF LUMBER SHOWN
DETAIL C

TYPICAL NAILING OF FLOOR LINE BLOCKING

SPECIAL NOTES:

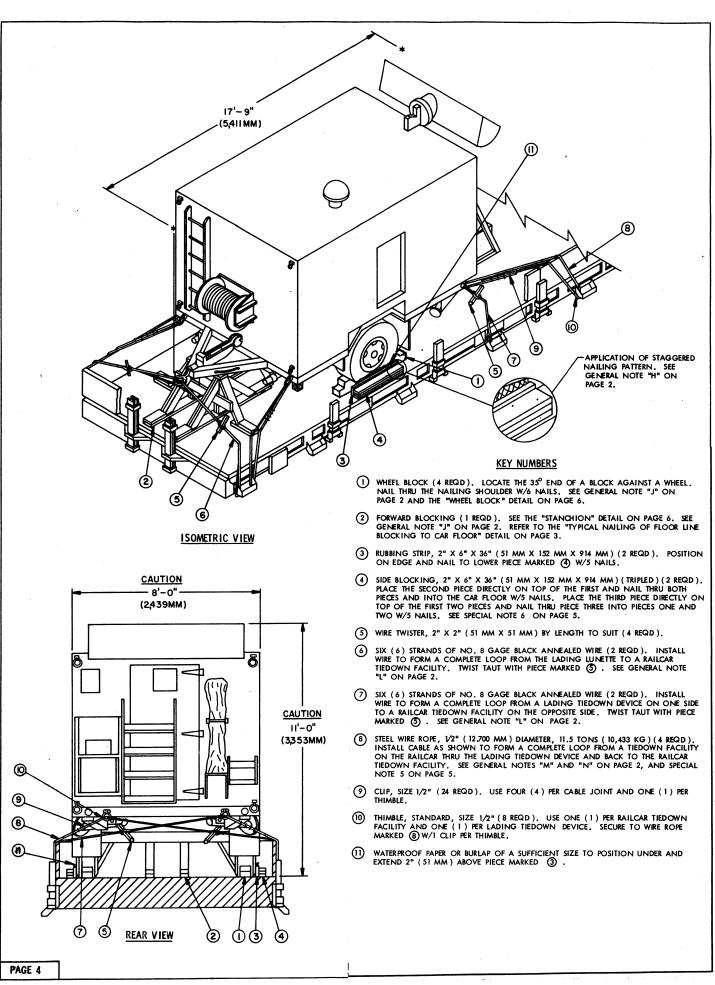
- 1. THE DETAILS ON THIS PAGE DEPICT POSSIBLE VARIATIONS THAT MAY RESULT FROM USING AVAILABLE LUMBER FOR FLOOR LINE BLOCKING. KEY NUMBERS THROUGH-OUT THIS DOCUMENT SPECIFY TRIPLED PIECES OF LUMBER 2" X 6" IN SIZE FOR SIDE-BLOCKING, AS TYPICALLY SHOWN IN DETAIL A ABOVE. IT IS PERMISSABLE TO USE MIXED THICKNESSES OF LUMBER, AS TYPICALLY SHOWN IN DETAILS B AND C, IN LIEU OF THE SPECIFIED TRIPLED 2" X 6" LUMBER. THE INTENT OF THE SPECIFIED BLOCKING PROCEDURE MUST BE OBTAINED.
- 2. THE NUMBER OF NAILS USED TO SECURE EACH PIECE OF BLOCKING WILL BE AS SPECIFIED IN THE KEY NUMBERS FOR EACH SPECIFIC PROCEDURE. THE LENGTH OF THE NAILS SELECTED WILL BE ADEQUATE TO NAIL THROUGH THE BLOCKING AND ACHIEVE THE PENETRATION OF THE CAR FLOOR AS SPECIFIED. WHEN NAILING FLOOR LINE BLOCKING TO THE CAR FLOOR, AS DEPICTED IN DETAILS A, B, AND C, THE FOLLOWING APPLIES:

	THICKNESS (T) OF BLOCKING		SIZE OF NAIL	
	MINIMUM	MAXIMUM		
3"	(74 MM)	3" (74 MM)	30d (4-1/2")(114 MM)	
3"	(74 MM)	3-3/8" (87 MM)	40d (5") (127 MM)	
3-3/8"	(87 MM)	4" (100 MM)	50d (5-1/2")(140 MM)	
4"	(100 MM)	4-3/8" (112 MM)	60d (6") (152 MM)	

 WHEN NAILING WHEEL BLOCKS TO THE CAR FLOOR, THE NAILING SHALL COMPLY WITH THE PENETRATION REQUIREMENTS, AS TYPICALLY SHOWN ABOVE, AND AS SPECIFIED IN GENERAL NOTE "J" ON PAGE 2.

SPECIAL NAILING GUIDANCE

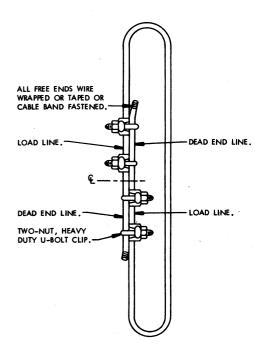
PAGE 3



SPECIAL NOTES

- A ONE UNIT LOAD IS SHOWN AS A 9'-1-3/64" (2,770 MM) WIDE EUROPEAN RAILCAR. SEE GENERAL NOTE "E" ON PAGE 2 AND SPECIAL NOTE 6 BELOW.
- THE WIRE TWISTERS, PIECES MARKED (3), MUST NOT PROTUDE BEYOND THE SIDE\$
 OF THE CAR WHEN SECURED FOR MOVEMENT. THE TWISTER SHALL BE SECURED TO
 PREVENT UNTWISTING AND LOOSENING OF THE WIRE HOLD-DOWN.
- AT ANY LOCATION WHERE THE TWISTED WIRE HOLD-DOWN PASSES AROUND A SHARP CORNER, PROVIDE SUITABLE CUSHIONING OR BUFFERING MATERIAL TO PROTECT THE WIRE FROM BEING CUT ON THE SHARP CORNER.
- 4. IF DESIRED, OR IF ANNEALED WIRE IS NOT AVAILABLE FOR FABRICATING TWISTED WIRE HOLD-DOWNS, MARKED AS KEY NUMBERS (AND 7), 3/8" (OR LARGER) STEEL WIRE ROPE MAY BE INSTALLED IN LIEU OF THE TWISTED WIRE HOLD-DOWNS.
- 5. STEEL WIRE ROPE WILL PASS THRU A RAILCAR TIEDOWN FACILITY, THROUGH AN ANCHOR ON THE LADING AS SHOWN, AND BACK TOWARD THE RAILCAR TIEDOWN FACILITY TO FORM A COMPLETE LOOP. FOUR CLIPS WILL BE USED TO SECURE EACH CABLE JOINT. SEE THE "CABLE JOINT" DETAIL AT THE RIGHT. IF DESIRED, OR IF 1/2" STEEL WIRE ROPE IS NOT AVAILABLE, STEEL WIRE ROPE OF A LARGER DIAMETER MAY BE USED. TENSIONING OF THE STEEL WIRE ROPE CAN BE ACCOMPLISHED BY EMPLOYING TWO CABLE GRIPPERS ON AN APPLICABLY SIZED COME-A-LONG TYPE MECHANICAL HOIST. THE STEEL WIRE ROPE SHALL BE TENSIONED SUFFICIENTLY SO AS TO BE TAUT, BUT NOT SO MUCH AS TO DAMAGE THE ANCHOR. THE NUTS ON THE CABLE CLIPS SHALL BE TIGHTENED TO A TORQUE OF APPROXIMATELY 60 FOOT-POUNDS. A PROPER TORQUE CAN BE ACHIEVED BY USING A WRENCH WHICH HAS A HANDLE THAT IS AT LEAST 15" LONG. PROVIDE A THIMBLE OR OTHER SUITABLE PROTECTION AT ANY POINT WHERE THE WIRE ROPE PASSES AROUND A SHARP CORNER. SECURE EACH HIMBLE WITH AN ADDITIONAL CLIP OR BY EQUIVALENT MEANS. SEE GENERAL NOTE "P" ON PAGE 2.
- 6. CARS WHICH ARE NARROWER THAN 9'-1-3/64" (2,770 MM) CAN BE USED FOR SHIPMENT OF THIS ITEM. HOWEVER, THE SIDE BLOCKING PIECES AND RUBBING STRIPS MUST BE PRE-POSITIONED AND NAILED PRIOR TO LOADING THE ITEM. THE ITEM WILL BE FIELD CHECKED AND THE SIDE BLOCKING MATERIAL, MARKED AS KEY NUMBERS (3), (4), AND (1), WILL BE PRE-POSITIONED SO AS TO BEAR AGAINST THE INSIDE SURFACE OF THE TIRES OF THE TRAILER.

	BILL OF MATERIAL	
LUMBER	LENGTH	BOARD FEET
2" X 2" (51 MM X 51 MM)	6 FT (1,828 MM)	2
2" X 6" (51 MM X 152 MM)	97 FT (29,566 MM)	97
2" X 8" (51 MM X 203 MM)	3 FT (914 MM)	4
8" X 8" (203 MM X 203 MM)	6 FT (1,828 MM)	32
NAILS	NO, REQD	WEIGHT
SIZE AS REQD	185	11 LBS
ROPE, STEEL WIRE, 1/2" DIA	76' REQD	34 LBS
CLIP, 1/2"		7 LBS
WIRE, NO. 8 GAGE (3 MM DI	A) 240' REQD	24 LBS
THIMBLE, 1/2" 1 LB		
WATERPROOF PAPER OR BURLAP	AS REQD	NIL



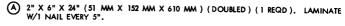
CABLE JOINT

PROPER TIGHTENING OF THE WIRE ROPE CLIP NUTS CAN BE ACCOMPLISHED BY UTILIZING A PROPER SIZED TORQUE WRENCH. AFTER THE NUTS HAVE BEEN INITIALLY TIGHTENED, THE "U" SIDE OF EACH CLIP MUST BE STRUCK SEVERAL TIMES WITH A HAMMER TO INSURE PROPER SEATING INTO THE DEAD END LINE. FINAL TORQUE WILL BE ACQUIRED BY REPEATEDLY AND ALTERNATELY TIGHTENING EACH CLIP NUT.

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)	
		9,800 LBS (4,445 KG) 381 LBS (173 KG)	
	TOTAL WEIGHT	10, 181 LBS (4,618 KG)	

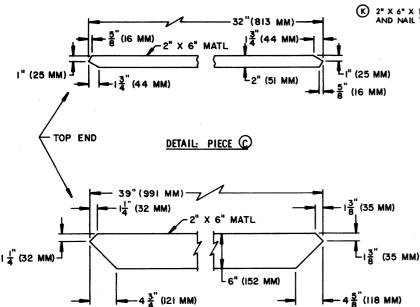




- (B) 2" X 6" X 23-5/8" (51 MM X 152 MM X 600 MM) (DOUBLED) (2 REQD).
 LAMINATE W/1 NAIL EVERY 5". CENTER ON (G) AND TOENAIL TO (A) AND (G)
 W/4 NAILS EACH.
- (C) 2" X 6" X 32" (51 MM X 152 MM X 813 MM) (2 REQD). DOUBLE BEVEL EACH END AS PER "DETAIL: PIECE (C)". NAIL TO (A) AND (1) W/2 NAILS EACH AFTER ASSEMBLY ((A) THRU (G)) HAS BEEN LOCATED ON TRANSPORTING VEHICLE AND (1) HAS BEEN NAILED TO THE CAR FLOOR.
- (D) 2" X 6" X 42" (51 MM X 152 MM X 1,067 MM) (1 REQD). NAIL TO EACH (B) W/4 NAILS AND TO EACH (C) W/2 NAILS EACH.
- (G) (E) 2" X 8" X 27" (51 MM X 203 MM X 686 MM) (1 REQD). NAIL TO (A) W/5 NAILS AND TO EACH (F) W/1 NAIL EACH.

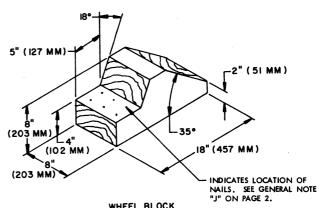
⊚

- F 2" X 6" X 39" (51 MM X 152 MM X 991 MM) (DOUBLED) (4 REQD), LAMINATE W/1 NAIL EVERY 5". DOUBLE BEVEL EACH END AS PER "DETAIL; PIECE (F)". TOENAIL TO (A) AND (G) W/2 NAILS EACH.
- (E) (E) 2" X 6" X 6'-10" (51 MM X 152 MM X 2,083 MM) (2 REQD). LOCATE
 BLOCKING ASSEMBLY ((A) THRU (E)) UNDER ITEM AND NAIL TO THE CAR FLOOR
 W/2 NAILS NEAR (B) AND W/2 NAILS NEAR EACH END.
 - \bigoplus 2" X 6" X 12" (51 MM X 152 MM X 305 MM) (4 REQD). POSITION AGAINST (F) AND NAIL TO 6 W/4 NAILS.
 - (J) 2" X 6" X 18" (51 MM X 152 MM X 457 MM) (2 REQD). POSITION UNDER (C) AS SHOWN AND NAIL TO THE CAR FLOOR W/3 NAILS.
 - (E) 2" X 6" X 12" (51 MM X 152 MM X 305 MM) (2 REQD). POSITION AGAINST (C) AND NAIL TO (1) W/4 NAILS.



STANCHION

DETAIL: PIECE (F)



WHEEL BLOCK

@