


# HAWK

## LOADING AND BRACING ON EUROPEAN RAILCAR OF PULSE ACQUISITION RADAR SETS, AN/MPQ-35 AND/OR AN/MPQ-50, TRAILER MOUNTED

 DELINEATED LOADING AND BRACING PROCEDURES FOR THE TRAILER COMPLY WITH THE REQUIREMENTS OF APPENDIX C TO TM 55-601, AND THE PROCEDURES FOR THE OTHER ITEMS COMPLY WITH THE REGOLAMENTO INTERNAZIONALE VEICOLI (RIV): REGULATIONS GOVERNING THE RECIPROCAL USE OF WAGONS IN INTERNAZIONALE TRAFFIC.

NOTICE: DEPICTED LOAD IS NOT OVERSIZE.

REVISIONS		DRAFTSMAN JAM / mon	PROJECTING C F / JAW
1	FEB 76	CHECKER RS / D. B. C.	LOW ENGRS OFFICE AMS/1-50 E. L. Baker
/	/	APPROVED <i>Wesley E. Gilkland</i> U. S. ARMY MIBSILE COMMAND	
/	/	APPROVED BY ORDER OF COMMANDING GENERAL U. S. ARMY MATERIEL COMMAND <i>A. H. Evinger</i> USAMC AMMO CENTER	
/	/	U. S. ARMY MATERIEL COMMAND	
/	/	FEBRUARY 1973	
/	/	CLASS	DIVISION
/	/	19	48
/	/	DRAWING	FILE
/	/	7806	GSE 5HA61

**DO NOT SCALE**

**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 AND KLS 442/443 ) 41'-0-1/8" ( 12,500 MM ) LONG BY 9'-1-3/84" ( 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:**

- RADAR SET, TRAILER MOUNTED ---- 16'-4-1/2" ( 4,991 MM ) LONG X 8'-1-1/2" ( 2,477 MM ) WIDE X 7'-8" ( 2,337 MM ) HIGH.  
GROSS WEIGHT ----- 7,581 ( APPROX ) ( 3,439 KG ).
- 1 CRATE, ANTENNA REFLECTOR ( RIGHT ) ----- 6'-0-5/8" ( 1,845 MM ) LONG X 63-5/8" ( 1,591 MM ) WIDE X 70-1/2" ( 1,791 MM ) HIGH.  
GROSS WEIGHT ----- 714 POUNDS ( APPROX ) ( 324 KG ).
- 2 CRATE, ANTENNA REFLECTOR ( LEFT ) ----- 6'-0-5/8" ( 1,845 MM ) LONG X 63-5/8" ( 1,591 MM ) WIDE X 70-1/2" ( 1,791 MM ) HIGH.  
GROSS WEIGHT ----- 823 POUNDS ( APPROX ) ( 374 KG ).
- 3 CRATE, ANTENNA REFLECTOR ( CENTER ) ----- 6'-2" ( 1,880 MM ) LONG X 37" ( 940 MM ) WIDE X 6'-1-5/8" ( 1,870 MM ) HIGH.  
GROSS WEIGHT ----- 415 POUNDS ( APPROX ) ( 188 KG ).
- 4 CRATE, ANTENNA SUPPORT ---- 9'-8" ( 2,946 MM ) LONG X 52" ( 1,321 MM ) WIDE X 47-1/4" ( 1,200 MM ) HIGH.  
GROSS WEIGHT ----- 400 POUNDS ( APPROX ) ( 181 KG ).
- 5 CRATE, PALLET JACKS ----- 50-1/2" ( 1,283 MM ) LONG X 32" ( 813 MM ) WIDE X 22-1/4" ( 565 MM ) HIGH.  
GROSS WEIGHT ----- 391 POUNDS ( APPROX ) ( 177 KG ).
- 6 BOX, CABLE REEL ----- 22-3/4" ( 578 MM ) LONG X 21" ( 533 MM ) WIDE X 11" ( 249 MM ) HIGH.  
GROSS WEIGHT ----- 56 POUNDS ( APPROX ) ( 25 KG ).

- 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" AND THE "TYPICAL NAILING OF FLOOR LINE BLOCKING TO CAR FLOOR" DETAIL 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.

( CONTINUED AT RIGHT )

**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. REF: FED SPEC RR-W-410.
- CLIP** ----- : "U" BOLT, CROSBY, HEAVY DUTY ( OR EQUAL ). REF: FED SPEC FF-C-450, TYPE 1, CLASS 1.
- ANTI-CHAFING MATERIAL** : NEUTRAL BARRIER MATERIAL, MIL-B-121 ( OR EQUAL ).
- THIMBLE** ----- : COMMERCIAL GRADE.
- STRAPPING, STEEL** ----- : CLASS 1, TYPE I OR IV, HEAVY DUTY, FINISH A, B ( GRADE 2 ), OR C. REF: FED SPEC QQ-S-781.
- STRAP SEAL** ----- : TYPE D, STYLE 1, II, OR IV, CLASS H, FED SPEC QQ-S-781.
- EDGE PROTECTOR** ----- : COMMERCIAL GRADE.

- 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.
- N. THREE-EIGHTS INCH ( 3/8" ) STEEL WIRE ROPE IS SPECIFIED WHERE REQUIRED FOR TIE-DOWNS TO SECURE THE ITEM. IF DESIRED, OR IF 3/8" 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 APPLICABLE 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 10PSI ABOVE REGULAR OPERATING PRESSURE.
- P. WHEN ANY STRAP IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF TWO ( 2 ) SEALS, BUTTED TOGETHER, AND TWO ( 2 ) PAIR OF CRIMPS PER SEAL MUST BE USED TO SEAL THE JOINT.
- Q. THE PROCEDURES DEPICTED WITHIN THIS DRAWING ARE BASED ON THE USE OF DIMENSIONAL SIZED LUMBER. IN MOST CASES THE METRIC EQUIVALENT IS GIVEN IN PARENTHESIS 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.
- R. STEEL STRAPPING DEPICTED IN THIS DRAWING HAS BEEN SPECIFIED AS 1-1/4" ( 32 MM ) X .035" ( .889 MM ). HOWEVER, .031" ( .787 MM ) THICK STRAP MAY BE USED IN LIEU OF .035" THICK STRAP.

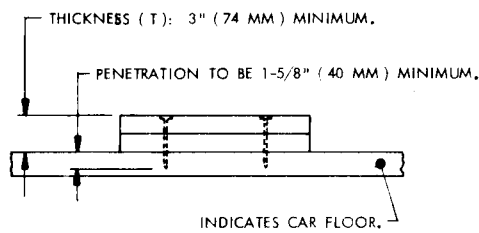
**LIST OF RAILCARS THAT MAY BE USED FOR SHIPMENTS**

TYPE OF RAILCAR	LENGTH OF RAILCAR	NO. OF ITEMS	MAXIMUM TOTAL WEIGHT ( APPROX ) OF ITEMS
KBS 442/443	41'-0-1/8" ( 12,500 MM )	1	10,380 LBS ( 4,702 KG )
KLS 442/443	41'-0-1/8" ( 12,500 MM )	1	10,380 LBS ( 4,702 KG )
RMMS 663/664	41'-5-51/64" ( 12,644 MM )	1	10,380 LBS ( 4,702 KG )
RS 680/681	60'-8-23/64" ( 18,500 MM )	1	10,380 LBS ( 4,702 KG )
RS 683/684	60'-8-23/64" ( 18,500 MM )	1	10,380 LBS ( 4,702 KG )
SAS 710	49'-2-9/16" ( 15,000 MM )	1	10,380 LBS ( 4,702 KG )

**REVISIONS**

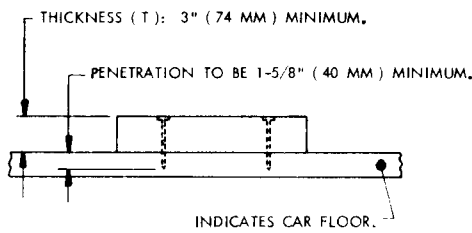
REVISION NO. 1, DATED FEB 1976, CONSISTS OF:

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



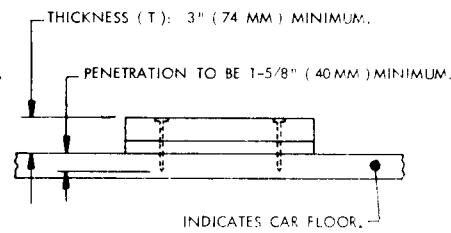
**DOUBLED 2' X 6' LUMBER SHOWN**

DETAIL A



**4' X 6' LUMBER SHOWN**

DETAIL B



**MIXED THICKNESSES OF LUMBER SHOWN**

DETAIL C

**TYPICAL NAILING OF FLOOR LINE BLOCKING TO CAR FLOOR**

**SPECIAL NOTES:**

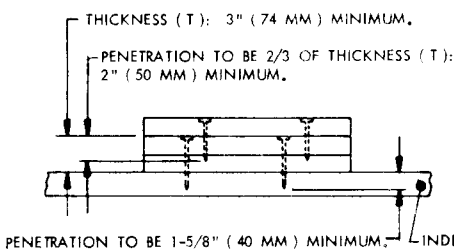
1. THE DETAILS ON THIS PAGE DEPICT POSSIBLE VARIATIONS THAT MAY RESULT FROM USING AVAILABLE LUMBER FOR FLOOR LINE BLOCKING. KEY NUMBERS THROUGHOUT THIS DOCUMENT SPECIFY DOUBLED OR TRIPLED PIECES OF LUMBER WHICH ARE 2" X 6" IN SIZE FOR HEADERS, BACK-UP CLEATS, AND SIDE-BLOCKING, AS TYPICALLY SHOWN IN DETAIL A ABOVE AND DETAIL D BELOW. IT IS PERMISSIBLE TO USE 4" X 6" LUMBER, OR MIXED THICKNESSES OF LUMBER, AS TYPICALLY SHOWN IN DETAILS B AND C, IN LIEU OF THE SPECIFIED DOUBLED 2" X 6" LUMBER. WHERE TRIPLED 2" X 6" LUMBER IS SPECIFIED, AS TYPICALLY SHOWN IN DETAIL D BELOW, IT IS PERMISSIBLE TO USE MIXED THICKNESSES OF LUMBER, AS TYPICALLY SHOWN IN DETAILS E AND F, 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)

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" (89 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)

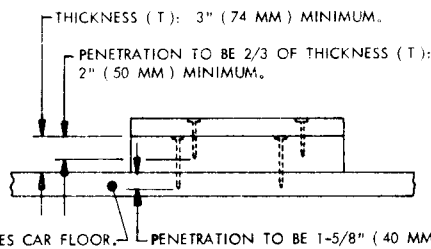
\* NAILS WHICH HAVE ADEQUATE DIAMETER FOR NAILING FLOOR LINE BLOCKING. THE LENGTH OF THE NAIL MUST MEET THE REQUIREMENTS OF GENERAL NOTE "J" ON PAGE 2.

3. WHEN NAILING AN ADDITIONAL LAMINATION TO FLOOR LINE BLOCKING, THE LENGTH OF THE NAIL WILL BE ADEQUATE TO PENETRATE THE ADDITIONAL LAMINATION AND PROVIDE THE PENETRATION OF THE FLOOR LINE BLOCKING AS SPECIFIED IN DETAILS D, E, AND F.
4. WHEN NAILING WHEEL BLOCKS TO THE CAR FLOOR, THE NAILING SHALL COMPLY WITH THE PENETRATION REQUIREMENTS, AS TYPICALLY SHOWN ON THIS PAGE AND AS SPECIFIED IN GENERAL NOTE "J" ON PAGE 2.



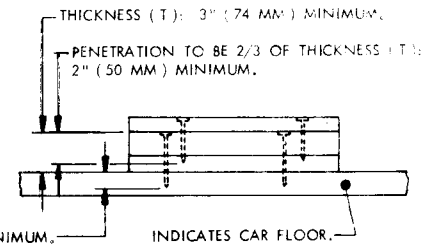
**TRIPLED 2' X 6' LUMBER SHOWN**

DETAIL D



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

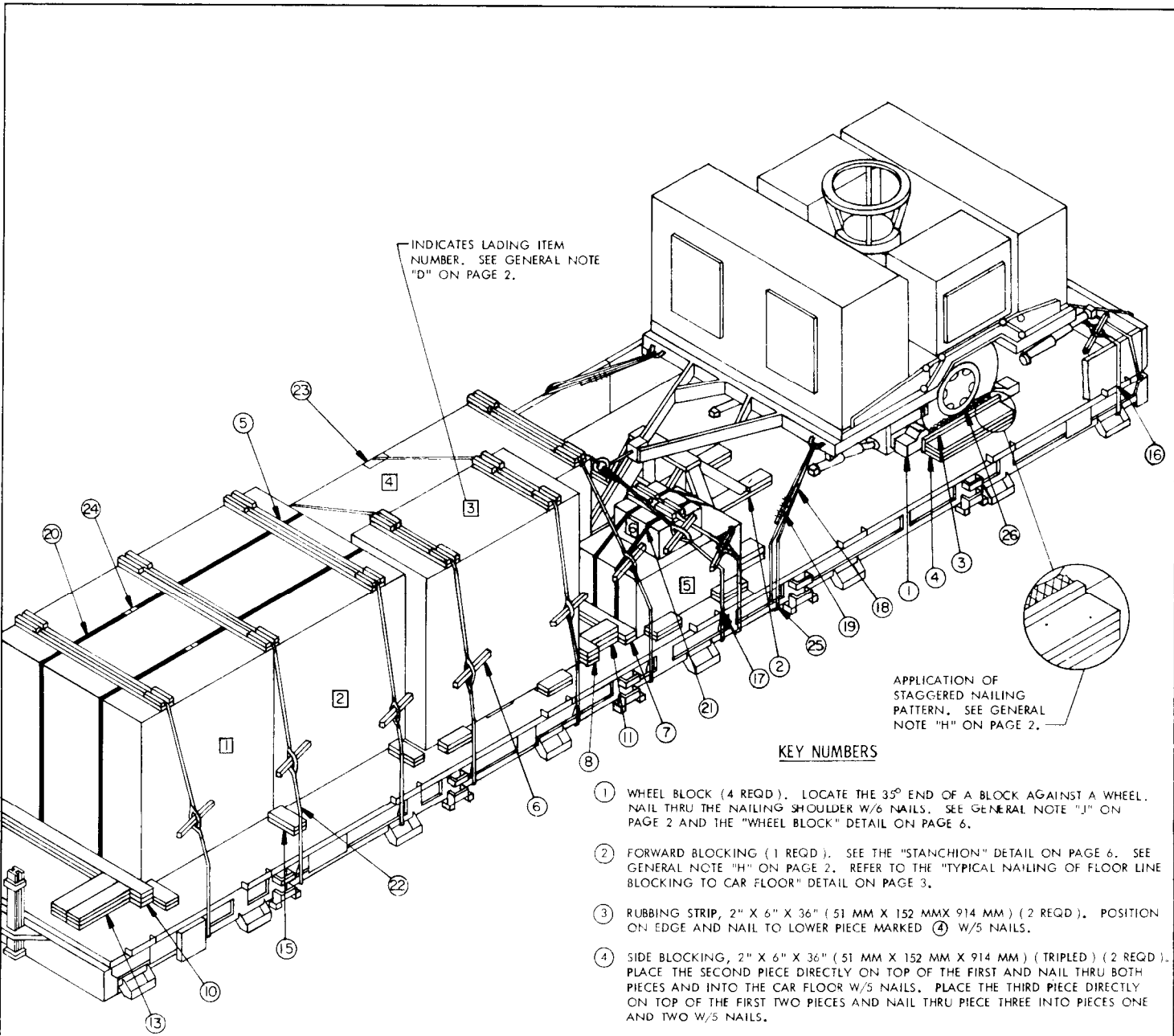
DETAIL E



**MIXED THICKNESSES OF LUMBER SHOWN**

DETAIL F

**TYPICAL NAILING OF ADDITIONAL LAMINATIONS TO FLOOR LINE BLOCKING**



INDICATES LADING ITEM NUMBER. SEE GENERAL NOTE "D" ON PAGE 2.

APPLICATION OF STAGGERED NAILING PATTERN. SEE GENERAL NOTE "H" ON PAGE 2.

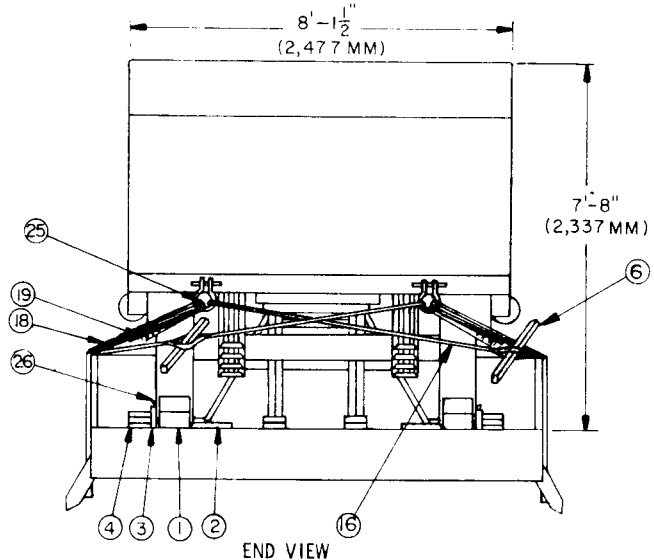
**KEY NUMBERS**

- ① WHEEL BLOCK (4 REQD.). LOCATE THE 35° END OF A BLOCK AGAINST A WHEEL. NAIL THRU THE NAILING SHOULDER W/6 NAILS. SEE GENERAL NOTE "J" ON PAGE 2 AND THE "WHEEL BLOCK" DETAIL ON PAGE 6.
- ② FORWARD BLOCKING (1 REQD.). SEE THE "STANCHION" DETAIL ON PAGE 6. SEE GENERAL NOTE "H" ON PAGE 2. REFER TO THE "TYPICAL NAILING OF FLOOR LINE BLOCKING TO CAR FLOOR" DETAIL ON PAGE 3.
- ③ RUBBING STRIP, 2" X 6" X 36" (51 MM X 152 MM X 914 MM) (2 REQD.). POSITION ON EDGE AND NAIL TO LOWER PIECE MARKED ④ W/5 NAILS.
- ④ SIDE BLOCKING, 2" X 6" X 36" (51 MM X 152 MM X 914 MM) (TRIPLED) (2 REQD.). PLACE THE SECOND PIECE DIRECTLY ON TOP OF THE FIRST AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/5 NAILS. PLACE THE THIRD PIECE DIRECTLY ON TOP OF THE FIRST TWO PIECES AND NAIL THRU PIECE THREE INTO PIECES ONE AND TWO W/5 NAILS.
- ⑤ TIE DOWN BOARD ASSEMBLY (7 REQD.). SEE THE DETAIL ON PAGE 6.
- ⑥ WIRE TWISTER, 2" X 2" (51 MM X 51 MM) BY A LENGTH TO SUIT (18 REQD.). SEE SPECIAL NOTE 2 ON PAGE 5.
- ⑦ HEADER, 2" X 6" X 32" (51 MM X 152 MM X 813 MM) (DOUBLED) (2 REQD.). POSITION AGAINST PACKAGE MARKED ⑤ AS SHOWN. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/4 NAILS. SEE THE "PARTIAL PLAN VIEW" ON PAGE 5.
- ⑧ HEADER, 2" X 6" X 36" (51 MM X 152 MM X 914 MM) (TRIPLED) (1 REQD.). POSITION AGAINST PACKAGE MARKED ③ AS SHOWN. PLACE THE SECOND PIECE DIRECTLY ON TOP OF THE FIRST AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/5 NAILS. PLACE THE THIRD PIECE DIRECTLY ON TOP OF THE FIRST TWO PIECES AND NAIL THRU PIECE THREE INTO PIECES ONE AND TWO W/5 NAILS.
- ⑨ HEADER, 2" X 6" X 52" (51 MM X 152 MM X 1,321 MM) (TRIPLED) (1 REQD.). POSITION AGAINST PACKAGE MARKED ④ AS SHOWN. PLACE THE SECOND PIECE DIRECTLY ON TOP OF THE FIRST AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/9 NAILS. PLACE THE THIRD PIECE DIRECTLY ON TOP OF THE FIRST TWO PIECES AND NAIL THRU PIECE THREE INTO PIECES ONE AND TWO W/9 NAILS.
- ⑩ HEADER, 2" X 6" X 72" (51 MM X 152 MM X 1,829 MM) (TRIPLED) (1 REQD.). POSITION AGAINST PACKAGE MARKED ① AS SHOWN. PLACE THE SECOND PIECE DIRECTLY ON TOP OF THE FIRST AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/12 NAILS. PLACE THE THIRD PIECE DIRECTLY ON TOP OF THE FIRST TWO PIECES AND NAIL THRU PIECE THREE INTO PIECES ONE AND TWO W/12 NAILS.
- ⑪ BACK-UP CLEAT, 2" X 6" X 12" (51 MM X 152 MM X 305 MM) (TRIPLED) (2 REQD.). POSITION AS SHOWN SO AS TO BE BETWEEN HEADERS, PIECES MARKED ⑦ AND ⑧. PLACE THE SECOND PIECE DIRECTLY ON TOP OF THE FIRST AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/3 NAILS. PLACE THE THIRD PIECE DIRECTLY ON TOP OF THE FIRST TWO PIECES AND NAIL THRU PIECE THREE INTO PIECES ONE AND TWO W/3 NAILS.

**ISOMETRIC VIEW**

8'-1 1/2" (2,477 MM)

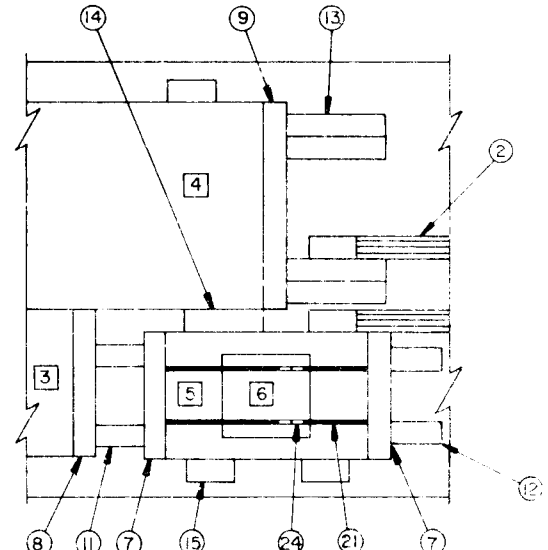
7'-8" (2,337 MM)



**END VIEW**

**SPECIAL NOTES:**

1. A ONE-UNIT LOAD IS SHOWN ON A 9'-1-3/64" (2,770 MM) WIDE EUROPEAN RAILCAR. SEE GENERAL NOTE "E" ON PAGE 2.
2. THE WIRE TWISTERS, PIECES MARKED (6), MUST NOT PROTRUDE BEYOND THE SIDES OF THE CAR WHEN SECURED FOR MOVEMENT. THE TWISTER SHALL BE SECURED TO PREVENT UNTWISTING AND LOOSENING OF THE WIRE HOLD-DOWN.
3. 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. 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 ON PAGE 6. 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 40 FOOT-POUNDS. A PROPER TORQUE CAN BE ACHIEVED BY USING A WRENCH WHICH HAS A HANDLE THAT IS AT LEAST 12" LONG. PROVIDE A THIMBLE OR OTHER SUITABLE PROTECTION AT ANY POINT WHERE THE WIRE ROPE PASSES AROUND A SHARP CORNER. SECURE EACH THIMBLE WITH AN ADDITIONAL CLIP OR BY EQUIVALENT MEANS. WHEN USING A STEEL WIRE ROPE WHICH IS LARGER THAN 3/8", THE NUTS ON THE CABLE CLIPS SHALL BE TIGHTENED TO A TORQUE OF AT LEAST 60 FOOT-POUNDS. A WRENCH WHICH HAS A HANDLE THAT IS AT LEAST 15" LONG MAY BE USED TO OBTAIN THE 60 FOOT-POUND TORQUE. SEE GENERAL NOTE "Q" ON PAGE 2.
5. NARROWER CARS CAN BE USED FOR SHIPMENT OF THIS ITEM. THE TRIPLED SIDE BLOCKING PIECES AND RUBBING STRIPS MUST BE PRE-POSITIONED AND NAILED PRIOR TO LOADING THE TRAILER MOUNTED GENERATOR. THE ITEM WILL BE FIELD CHECKED AND THE SIDE BLOCKING MATERIAL, MARKED AS KEY NUMBERS (3), (4), AND (26), WILL BE POSITIONED SO AS TO BEAR AGAINST THE INSIDE SURFACE OF THE TIRES OF THE TRAILER.



**PARTIAL PLAN VIEW**

TIEDOWN COMPONENTS, PIECES MARKED (1), (2), AND (3), HAVE BEEN OMITTED FOR CLARITY PURPOSES.

(KEY NUMBERS CONTINUED)

(KEY NUMBERS CONTINUED FROM PAGE 4)

- (22) WIRE HOLD-DOWN, FOUR (4) STRANDS OF NO. 8 GAGE (3 MM MINIMUM DIAMETER) BLACK ANNEALED WIRE (2 REQD.), PASS THRU A RAILCAR TIEDOWN FACILITY OVER THE LADING AND THRU A TIEDOWN FACILITY ON THE OPPOSITE SIDE OF THE RAILCAR, AND BACK OVER THE LADING TO FORM A COMPLETE LOOP. TWIST TAUT WITH PIECE MARKED (16). SEE GENERAL NOTE "L" ON PAGE 2, AND SPECIAL NOTES 2 AND 3 ON THIS PAGE.
- (23) EDGE PROTECTOR (2 REQD.), POSITION UNDER WIRE HOLD-DOWN, PIECE MARKED (22), TO PREVENT DAMAGE TO PACKAGE MARKED (21).
- (24) SEAL FOR 1-1/4" STRAPPING (8 REQD., 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.
- (25) THIMBLE, STANDARD, SIZE 3/8" (8 REQD.). USE ONE (1) PER RAILCAR TIEDOWN FACILITY AND ONE (1) PER LADING TIEDOWN DEVICE. SECURE TO WIRE ROPE MARKED (19) W/1 CLIP PER THIMBLE.
- (26) WATERPROOF PAPER OR BURLAP OF A SUFFICIENT SIZE TO POSITION UNDER AND EXTEND 2" (51 MM) ABOVE PIECE MARKED (3).

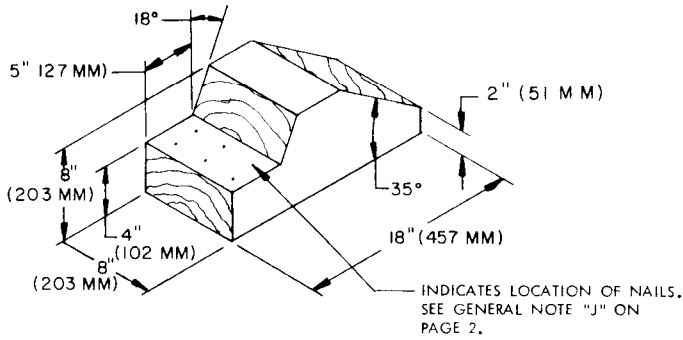
- (12) BACK-UP CLEAT, 2" X 6" X 12" (51 MM X 152 MM X 305 MM) (DOUBLED) (2 REQD.). POSITION AS SHOWN. PLACE THE SECOND PIECE DIRECTLY ON TOP OF THE FIRST AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/3 NAILS.
- (13) BACK-UP CLEAT, 2" X 6" X 20" (51 MM X 152 MM X 508 MM) (TRIPLED) (3 REQD.). POSITION TWO TRIPLED CLEATS SIDE BY SIDE IN ALIGNMENT WITH THE SKIDS ON PACKAGES MARKED (3) AND (1). PLACE THE SECOND PIECE DIRECTLY ON TOP OF THE FIRST AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/5 NAILS. PLACE THE THIRD PIECE DIRECTLY ON TOP OF THE FIRST TWO PIECES AND NAIL THRU PIECE THREE INTO PIECES ONE AND TWO W/5 NAILS.
- (14) SIDE BLOCKING, 2" X 6" X 20" (51 MM X 152 MM X 508 MM) (DOUBLED) (1 REQD.). POSITION BETWEEN PACKAGES MARKED (4) AND (2). PLACE THE SECOND PIECE DIRECTLY ON TOP OF THE FIRST AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/4 NAILS.
- (15) SIDE BLOCKING, 2" X 6" X 12" (51 MM X 152 MM X 305 MM) (DOUBLED) (2 REQD.). POSITION AS SHOWN. PLACE THE SECOND PIECE DIRECTLY ON TOP OF THE FIRST AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/3 NAILS.
- (16) SIX (6) STRANDS OF NO. 8 GAGE (3 MM MINIMUM DIAMETER) BLACK ANNEALED WIRE (2 REQD.). INSTALL WIRE TO FORM A COMPLETE LOOP FROM A LADING TIEDOWN DEVICE ON ONE SIDE TO A RAILCAR TIEDOWN FACILITY ON THE OPPOSITE SIDE. TWIST TAUT WITH PIECE MARKED (2). SEE GENERAL NOTE "L" ON PAGE 2.
- (17) SIX (6) STRANDS OF NO. 8 GAGE (3 MM MINIMUM DIAMETER) BLACK ANNEALED WIRE (2 REQD.). PASS THRU LADING LUNETTE AND RAILCAR TIEDOWN FACILITY TO FORM A COMPLETE LOOP. TWIST TAUT WITH PIECE MARKED (2). SEE GENERAL NOTE "L" ON PAGE 2.
- (18) STEEL WIRE ROPE, 3/8" (9.525 MM) DIAMETER, 6.56 TONS (5,938 KG) (4 REQD.). INSTALL CABLE AS SHOWN TO FORM A COMPLETE LOOP FROM A TIEDOWN FACILITY ON THE RAILCAR THRU THE LADING TIEDOWN DEVICE AND BACK TO THE RAILCAR TIEDOWN FACILITY. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 4 ON THIS PAGE.
- (19) CLIP, SIZE 3/8" (24 REQD.). USE FOUR (4) PER CABLE JOINT AND ONE (1) PER THIMBLE. SEE SPECIAL NOTE 4 ON THIS PAGE.
- (20) UNITIZING STRAP, 1-1/4" X .035" X 36'-0" LONG STEEL STRAPPING (2 REQD.). INSTALL SO AS TO ENCIRCLE PACKAGES (1) AND (2) AS SHOWN. SEE GENERAL NOTE "P" ON PAGE 2.
- (21) UNITIZING STRAP, 1-1/4" X .035" X 15'-0" LONG STEEL STRAPPING (2 REQD.). INSTALL SO AS TO ENCIRCLE PACKAGES (3) AND (4) AS SHOWN.

(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LENGTH	BOARD FEET
2" X 2" ( 51 MM X 51 MM )	48 FT ( 14,630 MM )	16
2" X 6" ( 51 MM X 152 MM )	245 FT ( 74,360 MM )	245
2" X 8" ( 51 MM X 203 MM )	3 FT ( 914 MM )	4
2" X 8" ( 203 MM X 203 MM )	6 FT ( 1,829 MM )	32
NAILS		WEIGHT
SIZE AS REQD	550	25 LBS
STEEL STRAPPING, 1-1/4" X .035" -----	102' REQD -----	15 LBS
SEAL FOR 1-1/4" STRAPPING -----	8 REQD -----	1 LB
ROPE, STEEL WIRE, 3/8" DIA -----	64' REQD -----	16 LBS
CLIP, 3/8" -----	24 REQD -----	6 LBS
WIRE, NO. 8 GAGE -----	500' REQD -----	47 LBS
EDGE PROTECTORS -----	16 REQD -----	4 LBS
THIMBLE, STANDARD, 3/8" -----	8 REQD -----	1 LB
WATERPROOF PAPER OR BURLAP -----	AS REQD -----	NIL

**LOAD AS SHOWN**

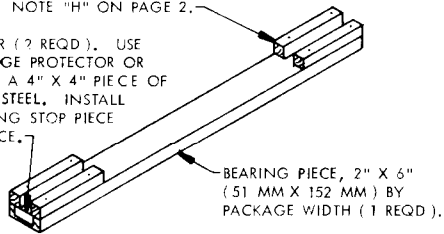
ITEM	QUANTITY	WEIGHT ( APPROX )
PULSE ACQUISITION		
RADAR SET -----	1 -----	7,581 LBS ( 3,436 KG )
ACCESSORY ITEMS -----	6 -----	2,797 LBS ( 1,268 KG )
DUNNAGE -----	-----	857 LBS ( 389 KG )
TOTAL WEIGHT -----	-----	11,237 LBS ( 5,096 KG )



**WHEEL BLOCK**

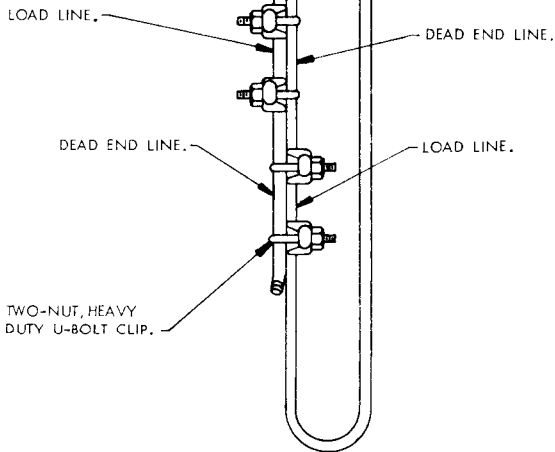
STOP BLOCK, 2" X 2" X 9"  
(51 MM X 51 MM X 229 MM)  
(4 REQD.). NAIL TO THE BEARING  
PIECE W/2 NAILS. SEE GENERAL  
NOTE "H" ON PAGE 2.

EDGE PROTECTOR (? REQD.). USE  
COMMERCIAL EDGE PROTECTOR OR  
FABRICATE FROM A 4" X 4" PIECE OF  
18 GAGE SHEET STEEL. INSTALL  
PRIOR TO NAILING STOP PIECE  
TO BEARING PIECE.



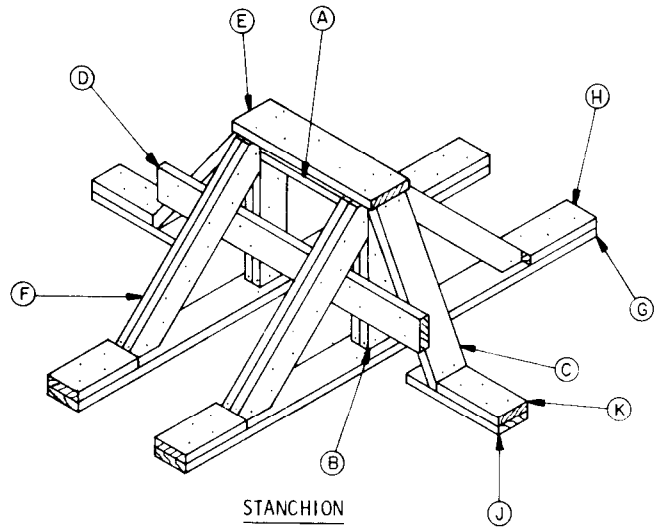
**TIE DOWN BOARD ASSEMBLY**

ALL FREE ENDS WIRE  
WRAPPED OR TAPED OR  
CABLE BAND FASTENED.

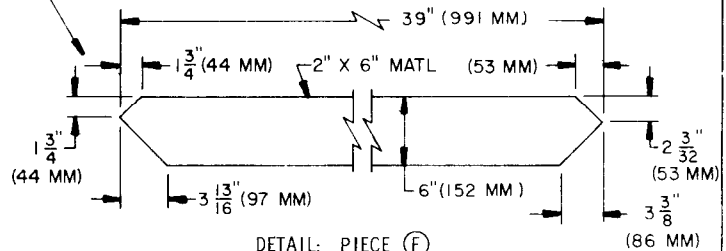
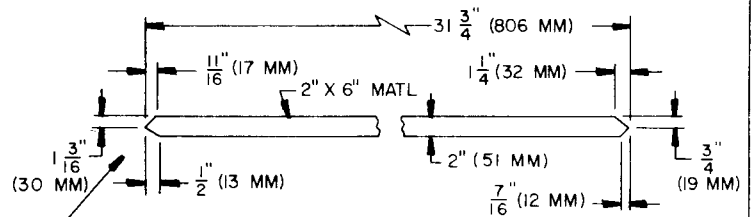


**CABLE JOINT**

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.



**STANCHION**



**KEY LETTERS**

- (A) 2" X 6" X 24" (51 MM X 152 MM X 610 MM) (DOUBLED) (1 REQD.). LAMINATE W/5 NAILS.
- (B) 2" X 6" X 23-5/8" (51 MM X 152 MM X 600 MM) (DOUBLED) (2 REQD.). LAMINATE W/5 NAILS. CENTER ON (C) AND TOENAIL TO (A) AND (C) W/6 NAILS EACH.
- (C) 2" X 6" X 31-3/4" (51 MM X 152 MM X 806 MM) (2 REQD.). DOUBLE BEVEL EACH END AS PER "DETAIL: PIECE (C)". TOENAIL TO (A) AND (J) W/2 NAILS EACH AFTER ASSEMBLY ( (A) THRU (C) ) HAS BEEN LOCATED ON TRANSPORTING VEHICLE AND (J) HAS BEEN NAILED TO THE FLOOR.
- (D) 2" X 6" X 42" (51 MM X 152 MM X 1,067 MM) (1 REQD.). NAIL TO EACH (C) W/2 NAILS AND TO EACH LAMINATION OF (B) W/1 NAIL.
- (E) 2" X 8" X 27" (51 MM X 203 MM X 486 MM) (1 REQD.). NAIL TO (A) W/5 NAILS AND TO EACH LAMINATION OF (F) W/1 NAIL.
- (F) 2" X 6" X 39" (51 MM X 152 MM X 991 MM) (DOUBLED) (4 REQD.). LAMINATE W/8 NAILS AND DOUBLE BEVEL EACH END AS PER "DETAIL: PIECE (F)". TOENAIL TO (A) W/2 NAILS AND TO (C) W/4 NAILS.
- (G) 2" X 6" X 7'-1-1/4" (51 MM X 152 MM X 2,165 MM) (2 REQD.). LOCATE BLOCKING ASSEMBLY ( (A) THRU (C) ) UNDER ITEM AND NAIL TO FLOOR OF TRANSPORTING VEHICLE W/2 NAILS NEAR (B) AND W/2 NAILS NEAR EACH END.
- (H) 2" X 6" X 18" (51 MM X 152 MM X 305 MM) (4 REQD.). POSITION AGAINST (F) AND NAIL TO (C) 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 FLOOR OF TRANSPORTING VEHICLE W/3 NAILS.
- (K) 2" X 6" X 12" (51 MM X 152 MM X 305 MM) (2 REQD.). POSITION AGAINST (C) AND NAIL TO (J) W/4 NAILS.