

HAWK

LOADING AND BRACING (CL & LCL) ON EUROPEAN RAILCAR OF COMPLETE ROUND, PACKED IN THE M430 OR M6II CONTAINER

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DELINEATED LOADING AND BRACING PROCEDURES COMPLY WITH THE REGOLAMENTO INTERNAZIONALE VEICOLI (RIV): REGULATIONS GOVERNING THE RECIPROCAL USE OF WAGONS IN INTERNATIONAL TRAFFIC.

NOTICE: DEPICTED LOADS ARE NOT OVERSIZE.

DO NOT SCALE

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			<div style="font-size: x-small; margin: 0;">APPROVED BY CHIEF OF ENGINEERING SERVICE, U.S. ARMY MATERIAL DEVELOPMENT AND RESEARCH COMMAND (BARROW)</div> <div style="font-family: cursive; font-size: 1.2em; margin: 0;">John S. Boyd</div> <div style="font-size: x-small; margin: 0;">U.S. ARMY DEFENSE ACQUISITION CENTER BARROW</div>		
U.S. ARMY DARTCOM DRAWING					
APRIL 1980					
	CLASS	DIVISION	DRAWING	FILE	
	19	48	5507	GM 5HA3	

GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE OUTLOADING PROCEDURES SHOWN HEREIN ARE APPLICABLE TO EUROPEAN RAILCARS WHICH CONFORM TO THE RIV REQUIREMENTS.
- C. THE LOAD AS SHOWN ON PAGES 4 AND 5 IS BASED ON RIV RAILCARS (KBS 442/443 AND KLS 442/443) 41'-0-1/8" (12,500 MM) LONG BY 9'-1-3/64" (2,770 MM) WIDE WITH 18" (457 MM) HIGH CAR SIDES.
- D. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE TO THE COMPLETE ROUND IN THE M430 OR THE M611 CONTAINER, SUBSEQUENT REFERENCE TO A CONTAINER HEREIN MEANS THE CONTAINER WITH COMPLETE ROUND.
- E. THE COMPLETE ROUND IS AN EXPLOSIVE ITEM. THESE PROCEDURES CAN ALSO BE UTILIZED FOR THE SHIPMENT OF THE CONTAINERS WHEN THEY ARE LOADED WITH AN ITEM OTHER THAN THE SPECIFIED COMPLETE ROUND, OR WHEN THEY ARE EMPTY. FOR REFERENCE PURPOSES, THIS ITEM IS A DOT CLASS "A" EXPLOSIVE WITHIN CONUS.
- F. DETAILS:
 - 1. FOR DETAILS OF THE M430 CONTAINER, SEE DRAWING NO. 9073970.
CONTAINER DIMENSIONS ---- 216" (5,486 MM) LONG BY 28-3/4" (730 MM) WIDE BY 41-1/2" (1,054 MM) HIGH.
GROSS WEIGHT ----- 3,225 POUNDS (1,463 KG) (APPROX).
 - 2. FOR DETAILS OF THE M611 CONTAINER, SEE DRAWING NO. 8035841.
CONTAINER DIMENSIONS ---- 216" (5,486 MM) LONG BY 30" (762 MM) WIDE BY 41-1/2" (1,054 MM) HIGH.
GROSS WEIGHT ----- 3,351 POUNDS (1,520 KG) (APPROX).
- G. A LIST OF RAILCARS THAT MAY BE USED FOR SHIPMENTS OF THE DEPICTED LOADS IS SHOWN IN A 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.
- H. REMOVE ALL POSTS FROM SIDE OF CAR AND PLACE IN RACKS UNDER CAR, IF APPLICABLE.
- J. 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.
- K. OTHER TYPES OF LADING ITEMS MAY BE LOADED ON A CAR WHICH IS PARTIALLY LOADED WITH THE DESIGNATED ITEM, PROVIDING THE TOTAL LOAD IS COMPATIBLE, EXISTING DIRECTIVES ARE NOT VIOLATED, AND THE OTHER LADING ITEMS ARE BLOCKED AND BRACED TO EQUAL THE BLOCKING AND BRACING CRITERIA SPECIFIED HEREIN.
- L. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF TWO (2) SEALS, BUTTED TOGETHER, WITH TWO (2) PAIR OF CRIMPS PER SEAL MUST BE USED TO SEAL THE JOINT.
- M. 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.

(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.
REF: FED SPEC FF-N-105.
- STRAPPING, STEEL** ----- CLASS I, TYPE I OR IV, HEAVY DUTY, FINISH A OR B (GRADE 2), FED SPEC QQ-S-781.
- SEAL STRAP** ----- TYPE D, STYLE I, II, OR IV, CLASS H, FED SPEC QQ-S-781.
- WIRE** ----- ANNEALED, BLACK. REF: FED SPEC QQ-W-461.
- ROPE** ----- STEEL WIRE, PLAIN, PREFORMED, REGULAR LAY.
REF: FED SPEC RR-W-410.
- CLIPS** ----- "U" BOLT, CROSBY, HEAVY DUTY (OR EQUAL).
REF: FED SPEC FF-C-450, TYPE I, CLASS I.

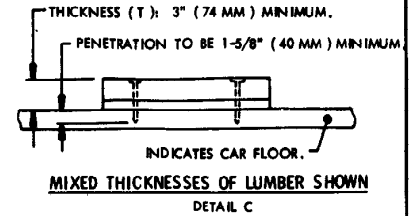
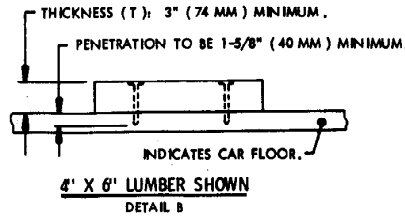
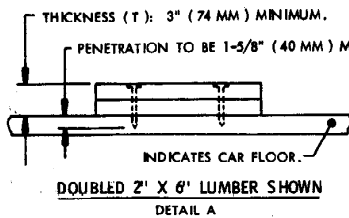
(GENERAL NOTES CONTINUED)

- N. NAILS USED FOR FLOOR LINE BLOCKING WILL HAVE A MINIMUM DIAMETER OF 5MM. NAIL SIZES WILL BE SELECTED TO PROVIDE A MINIMUM OF 40MM 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 "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.
- O. 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 POSSIBLE DAMAGE TO THE LADING.
- P. STEEL WIRE USED FOR HOLD-DOWNS MUST HAVE A MINIMUM DIAMETER OF 3MM. 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.
- 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 **
KLMS ----440	34'-11-11/16" (10,660 MM)	3	10,053 LBS (4,560 KG)
KLM ----505	30'-4-9/16" (9,260 MM)	3	10,053 LBS (4,560 KG)
KLM ----506	34'-8-1/2" (10,580 MM)	3	10,053 LBS (4,560 KG)
KBS ----442/443	41'-0-1/8" (12,500 MM)	6	20,106 LBS (9,120 KG)
KLS ----442/443	41'-0-1/8" (12,500 MM)	6	20,106 LBS (9,120 KG)
RMMS ---663/664	41'-5-51/64" (12,644 MM)	6	20,106 LBS (9,120 KG)
RS ----680/681	60'-8-23/64" (18,500 MM)	9	30,159 LBS (13,680 KG)
RS ----683/684	60'-8-23/64" (18,500 MM)	9	30,159 LBS (13,680 KG)
SAS ----710	49'-2-9-16" (15,000 MM)	6	20,106 LBS (9,120 KG)

** REFER TO GENERAL NOTE "F" FOR LADING DATA FOR A SPECIFIC ITEM.



TYPICAL NAILING OF FLOOR LINE BLOCKING TO CAR FLOOR

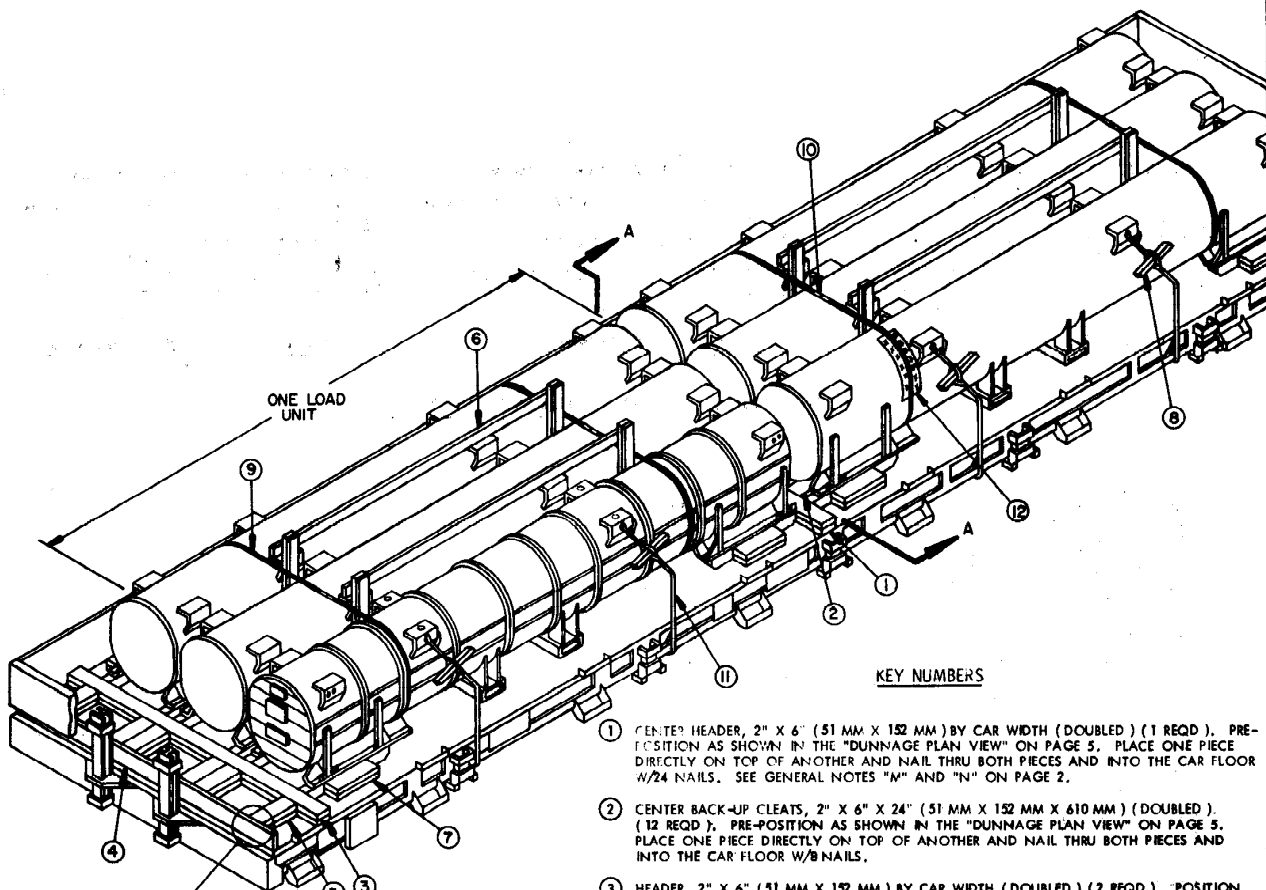
SPECIAL NOTES:

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 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. 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. 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)	0.1485" (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)

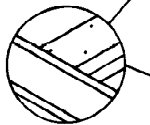
* NAILS WHICH HAVE ADEQUATE DIAMETER FOR NAILING FLOOR LINE BLOCKING. THE LENGTH OF THE NAIL MUST MEET THE REQUIREMENTS OF GENERAL NOTE "N" ON PAGE 2.



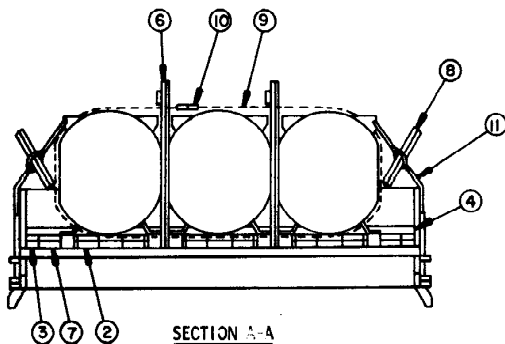
ISOMETRIC VIEW

KEY NUMBERS

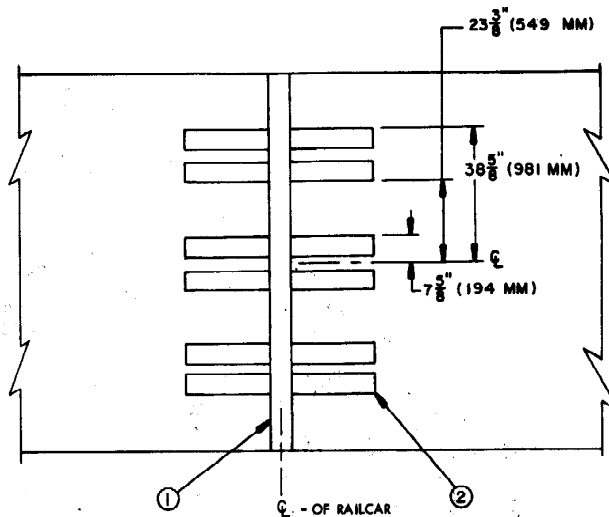
- ① CENTER HEADER, 2" X 6" (51 MM X 152 MM) BY CAR WIDTH (DOUBLED) (1 REQD.). PRE-POSITION AS SHOWN IN THE "DUNNAGE PLAN VIEW" ON PAGE 5. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/24 NAILS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ② CENTER BACK-UP CLEATS, 2" X 6" X 24" (51 MM X 152 MM X 610 MM) (DOUBLED). (12 REQD.). PRE-POSITION AS SHOWN IN THE "DUNNAGE PLAN VIEW" ON PAGE 5. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/8 NAILS.
- ③ HEADER, 2" X 6" (51 MM X 152 MM) BY CAR WIDTH (DOUBLED) (2 REQD.). POSITION AS SHOWN, PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/24 NAILS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ④ END-WALL HEADER, 2" X 6" (51 MM X 152 MM) BY CAR WIDTH MINUS 1/2" (2,757 MM) (2 REQD.). POSITION ON THE 2" (51 MM) EDGE AGAINST EACH END WALL OF THE CAR.
- ⑤ BACK-UP CLEAT, 2" X 6" (51 MM X 152 MM) BY CUT TO FIT (18" OR 457 MM MINIMUM) (DOUBLED) (12 REQD.). POSITION AS SHOWN TO ALIGN WITH A CONTAINER SKID. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/8 NAILS. TOENAIL THE TOP PIECE TO PIECE MARKED ② W/2 NAILS.
- ⑥ ANTI-CHAFING ASSEMBLY (4 REQD.). SEE THE "ANTI-CHAFING ASSEMBLY" ON PAGE 8. POSITION ASSEMBLIES BETWEEN LATERALLY ADJACENT CONTAINERS, AS SHOWN.
- ⑦ SIDE BLOCKING, 2" X 6" X 18" (51 MM X 152 MM X 457 MM) (DOUBLED) (8 REQD.). POSITION AGAINST A CONTAINER SKID, AS SHOWN. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/3 NAILS.
- ⑧ WIRE TWISTER, 2" X 2" X LENGTH TO SUIT (8 REQD.). SEE SPECIAL NOTE 2 ON PAGE 5.
- ⑨ BUNDLING STRAP, 1-1/4" X .035" X 25'-0" LONG STEEL STRAPPING (4 REQD.). INSTALL TWO STRAPS AROUND EACH LOAD UNIT OF THREE LATERALLY ADJACENT CONTAINERS, AS SHOWN. SEE GENERAL NOTE "R" ON PAGE 2.
- ⑩ SEAL FOR 1-1/4" STRAPPING (8 REQD., 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "L" ON PAGE 2.
- ⑪ WIRE HOLD-DOWN, EIGHT (8) STRANDS OF NO. 8 GAGE (3 MM MINIMUM DIAMETER) BLACK ANNEALED WIRE (8 REQD.). PASS THRU A RAILCAR TIEDOWN FACILITY, THRU A TIEDOWN POINT ON THE LADING AS SHOWN, AND BACK TO THE RAILCAR TIEDOWN FACILITY TO FORM A COMPLETE LOOP. TWIST TAUT WITH PIECE MARKED ⑥. SEE GENERAL NOTE "B" ON PAGE 2, AND SPECIAL NOTE 3 AND 4 ON PAGE 5.
- ⑫ ANTI-CHAFING, NEUTRAL BARRIER MATERIAL (AS REQD.). POSITION UNDER STRAPPING AT ALL POINTS OF CONTACT WITH THE CONTAINER.



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



SECTION A-A



DUNNAGE PLAN VIEW

(PRE-POSITIONED)

SPECIAL NOTES:

1. A SIX-CONTAINER LOAD OF THE COMPLETE ROUND IS SHOWN ON A 41'-0-1/8" (12,500 MM) LONG BY 9'-1-3/64" (2,770 MM) WIDE EUROPEAN RAILCAR. LARGER CARS MAY BE USED FOR SHIPMENT OF THE DEPICTED LOAD. SEE GENERAL NOTE "G" ON PAGE 2.
2. ONE WIRE TWISTER, PIECE MARKED ⑧, WILL BE USED TO TIGHTEN EACH TWISTED WIRE HOLD-DOWN. THE TWISTER WILL BE SECURED TO PREVENT UNTWISTING AND LOOSENING OF THE WIRE HOLD-DOWN. THE TWISTER WILL BE POSITIONED SO THAT IT DOES NOT PROTRUDE BEYOND THE SIDE WALLS OF THE RAILCAR.
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. IF DESIRED, OR IF ANNEALED WIRE IS NOT AVAILABLE FOR FABRICATING TWISTED WIRE HOLD-DOWNS, MARKED AS KEY NUMBER ⑩, 3/8" (OR LARGER) STEEL WIRE ROPE MAY BE INSTALLED IN LIEU OF THE TWISTED WIRE HOLD-DOWNS. THE 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. TENSIONING OF THE STEEL WIRE ROPE CAN BE ACCOMPLISHED BY EMPLOYING TWO CABLE GRIPPERS AND 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 CONTAINER ANCHOR FACILITY. FOUR CLIPS WILL BE USED TO SECURE EACH CABLE JOINT. 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. FOR ADDITIONAL GUIDANCE, SEE THE "CABLE JOINT" DETAIL ON PAGE 8. 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-POUNDS TORQUE. SEE GENERAL NOTE "Q" ON PAGE 2.

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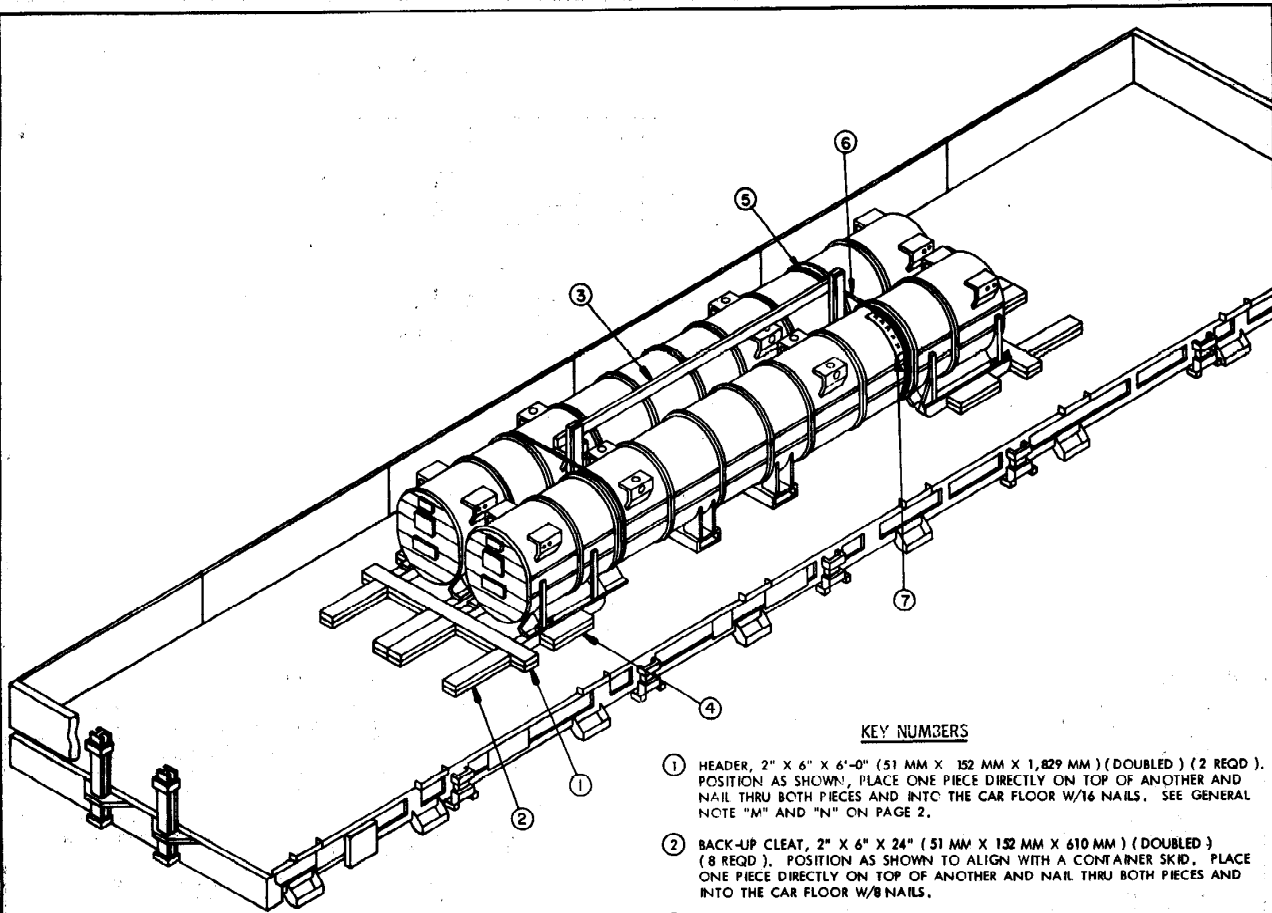
(SPECIAL NOTES CONTINUED)

5. SINCE THE WEIGHT OF THREE CONTAINERS IN A LOAD UNIT EXCEEDS FOUR METRIC TONS, WIRE HOLD-DOWNS ARE USED TO SUPPLEMENT THE WOODEN DUNNAGE. HOLD-DOWNS, PIECES MARKED ⑪, WILL BE INSTALLED AS NEARLY AS POSSIBLE AT RIGHT ANGLES TO THE SIDE OF THE RAILCAR. WHERE THE POSITIONING OF THE RAILCAR TIEDOWN FACILITIES PREVENTS INSTALLATION OF THE HOLD-DOWNS AS STATED ABOVE, THE HOLD-DOWNS ON ONE END OF A CONTAINER MAY BE ANGLED FORWARD OR REARWARD A SMALL AMOUNT TO REACH THE RAILCAR TIEDOWN FACILITIES. THE HOLD-DOWNS ON THE OTHER END OF THE SAME CONTAINER WILL BE ANGLED IN THE OPPOSITE DIRECTION.
6. THE LOCATION OF THE PRE-POSITIONED DUNNAGE WILL BE ADJUSTED AS NECESSARY WHEN SHIPPING A THREE LOAD-UNIT LOAD.
7. WHEN SHIPPING A THREE CONTAINER, ONE LOAD-UNIT LOAD, USE END-OF-LOAD HEADERS AND BACK-UP CLEATS, PIECES MARKED ⑬ AND ⑭ ON PAGE 4, AT EACH END OF THE LOAD UNIT, SIMILAR TO THE PROCEDURES SHOWN ON PAGE 6 FOR A TWO LOAD-UNIT LOAD.

BILL OF MATERIAL		
LUMBER	LENGTH	BOARD FEET
1" X 4" (25 MM X 102 MM)	32 FT (9,754 MM)	11
2" X 2" (51 MM X 51 MM)	12 FT (3,658 MM)	4
2" X 4" (51 MM X 102 MM)	74 FT (22,555 MM)	49
2" X 6" (51 MM X 152 MM)	186 FT (56,699 MM)	186
NAILS		WEIGHT
SIZE AS REQD	384	20 LBS
WIRE NO. 8 GAGE (3 MM DIA) -----	320' REQD -----	29 LBS
STEEL STRAPPING, 1-1/4" X .035" -----	100' REQD -----	14 LBS
SEAL FOR 1-1/4" STRAPPING -----	8 REQD -----	NIL
ANTI-CHAFING MATERIAL -----	AS REQD -----	NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER -----	6 -----	20,106 LBS (9,128 KG)
DUNNAGE -----		690 LBS (313 KG)
TOTAL WEIGHT -----		20,796 LBS (9,441 KG)



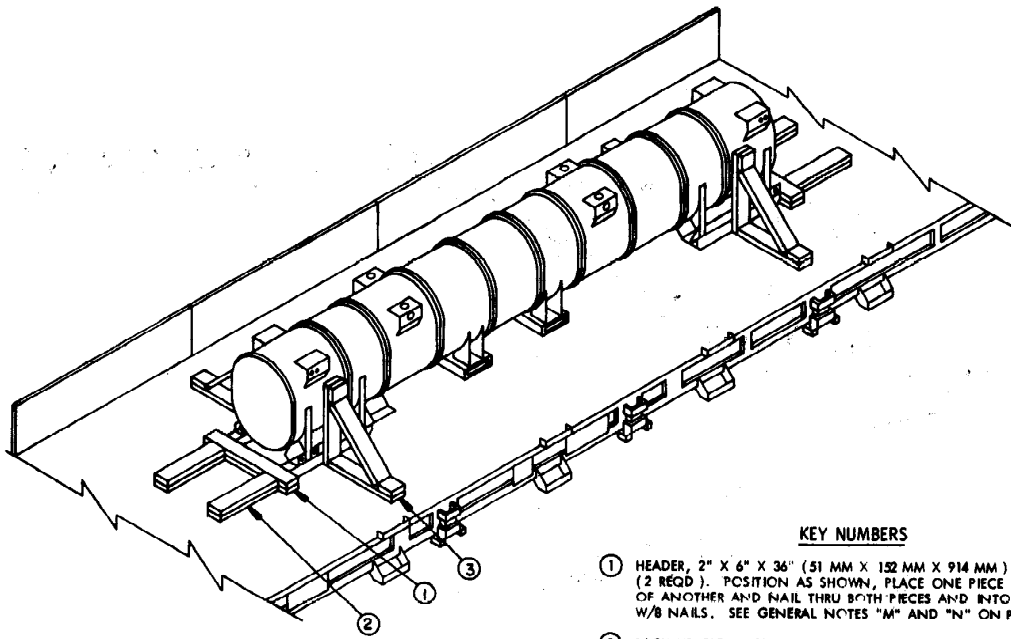
ISOMETRIC VIEW

SPECIAL NOTE:

1. A TWO-UNIT LOAD IS SHOWN. ANY CAR WITH A NAILABLE FLOOR 7'-0" (2,134 MM) WIDE (MINIMUM) MAY BE USED FOR SHIPMENT OF A TWO-UNIT LOAD.

KEY NUMBERS

- ① HEADER, 2" X 6" X 6'-0" (51 MM X 152 MM X 1,829 MM) (DOUBLED) (2 REQD). POSITION AS SHOWN, PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/16 NAILS. SEE GENERAL NOTE "M" AND "N" ON PAGE 2.
- ② BACK-UP CLEAT, 2" X 6" X 24" (51 MM X 152 MM X 610 MM) (DOUBLED) (8 REQD). POSITION AS SHOWN TO ALIGN WITH A CONTAINER SKID. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/8 NAILS.
- ③ ANTI-CHAFING ASSEMBLY (1 REQD). SEE THE "ANTI-CHAFING ASSEMBLY" DETAIL ON PAGE 8. POSITION THE ASSEMBLY BETWEEN TWO LATERALLY ADJACENT CONTAINERS, AS SHOWN.
- ④ SIDE BLOCKING, 2" X 6" X 18" (51 MM X 152 MM X 457 MM) (DOUBLED) (4 REQD). POSITION AGAINST A CONTAINER SKID, AS SHOWN. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/3 NAILS.
- ⑤ BUNDLING STRAP, 1-1/4" X .035" X 17'-0" LONG STEEL STRAPPING (2 REQD). INSTALL TWO STRAPS AROUND EACH LOAD UNIT, AS SHOWN. SEE GENERAL NOTE "R" ON PAGE 2.
- ⑥ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "L" ON PAGE 2.
- ⑦ ANTI-CHAFING, NEUTRAL BARRIER MATERIAL (AS REQD). POSITION UNDER STRAPPING AT ALL POINTS OF CONTACT WITH THE CONTAINERS.



ISOMETRIC VIEW

SPECIAL NOTE:

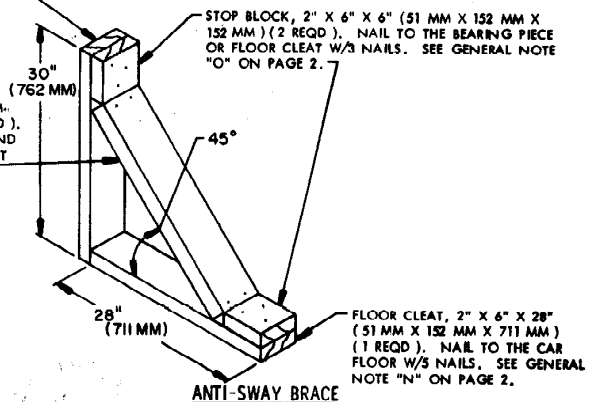
1. A ONE-UNIT LOAD IS SHOWN. ANY CAR WITH A NAILABLE FLOOR 7'-6" (2,286 MM) WIDE (MINIMUM) MAY BE USED FOR SHIPMENT OF A ONE-UNIT LOAD.

KEY NUMBERS

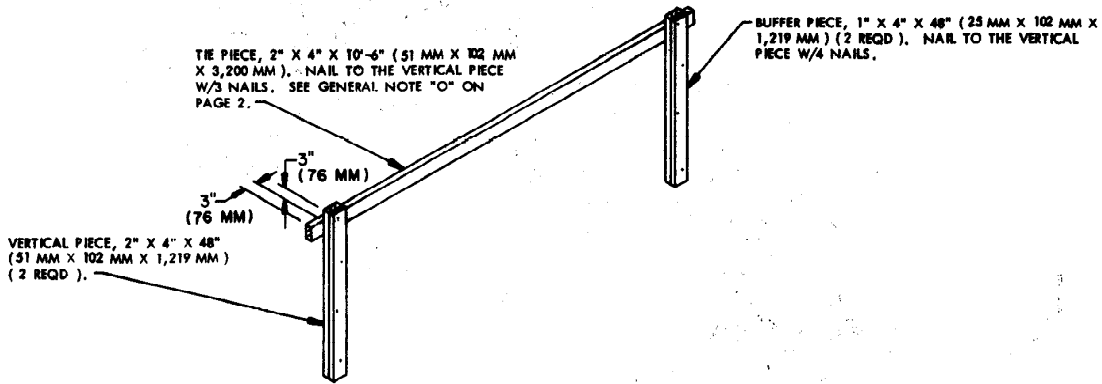
- ① HEADER, 2" X 6" X 36" (51 MM X 152 MM X 914 MM) (DOUBLED) (2 REQD.). POSITION AS SHOWN, PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/8 NAILS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ② BACK-UP CLEAT, 2" X 6" X 24" (51 MM X 152 MM X 610 MM) (DOUBLED) (4 REQD.). POSITION AS SHOWN TO ALIGN WITH A CONTAINER SKID, PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/8 NAILS.
- ③ ANTI-SWAY BRACE (4 REQD.). SEE THE "ANTI-SWAY BRACE" DETAIL BELOW. POSITION AGAINST THE CONTAINER AS SHOWN AND NAIL TO THE CAR FLOOR W/5 NAILS.

BEARING PIECE, 2" X 6" X 30"
(51 MM X 152 MM X 762 MM)
(1 REQD.). NAIL TO THE FLOOR
CLEAT W/2 NAILS.

DIAGONAL BRACE, 2" X 6" (51 MM X 152 MM) BY CUT-TO-FIT (1 REQD.). TORNNAIL TO THE BEARING PIECE AND TO THE FLOOR CLEAT W/2 NAILS AT EACH END.

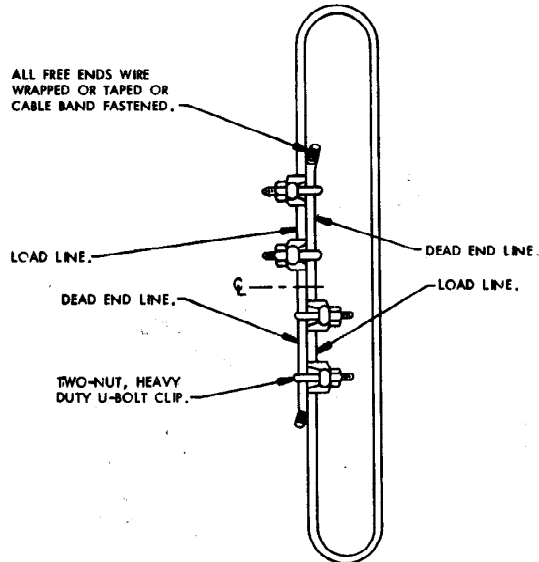


ANTI-SWAY BRACE



ANTI-CHAFING ASSEMBLY

IF 1" X 4" AND 2" X 4" MATERIAL IS NOT AVAILABLE OR IF DESIRED, MATERIAL WIDER THAN 4" (102 MM) MAY BE USED TO FABRICATE THE ASSEMBLY SHOWN ABOVE.



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.