



**GENERAL NOTES**

**(GENERAL NOTES CONTINUED)**

- 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 BODY SECTION IN THE M417 CONTAINER. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE CONTAINER WITH BODY SECTION.
- E. THE BODY SECTION 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 BODY SECTION OR WHEN THEY ARE EMPTY. FOR REFERENCE PURPOSES, THIS ITEM IS A DOT NON-FLAMMABLE GAS WITHIN CONUS A1D IS TRANSPORTED UNDER THE PROVISIONS OF DOT SPECIAL PERMIT NUMBER 2787.
- F. FOR DETAILS OF THE M417 CONTAINER, SEE DRAWING NO. 9073975.  
CONTAINER DIMENSIONS --- 89-9/16" (2,275 MM) LONG BY 28-21/32" (728 MM) WIDE BY 33-5/16" (846 MM) HIGH.  
GROSS WEIGHT ----- 715 POUNDS (325 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.
- N. 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 10. 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.

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**MATERIAL SPECIFICATIONS**

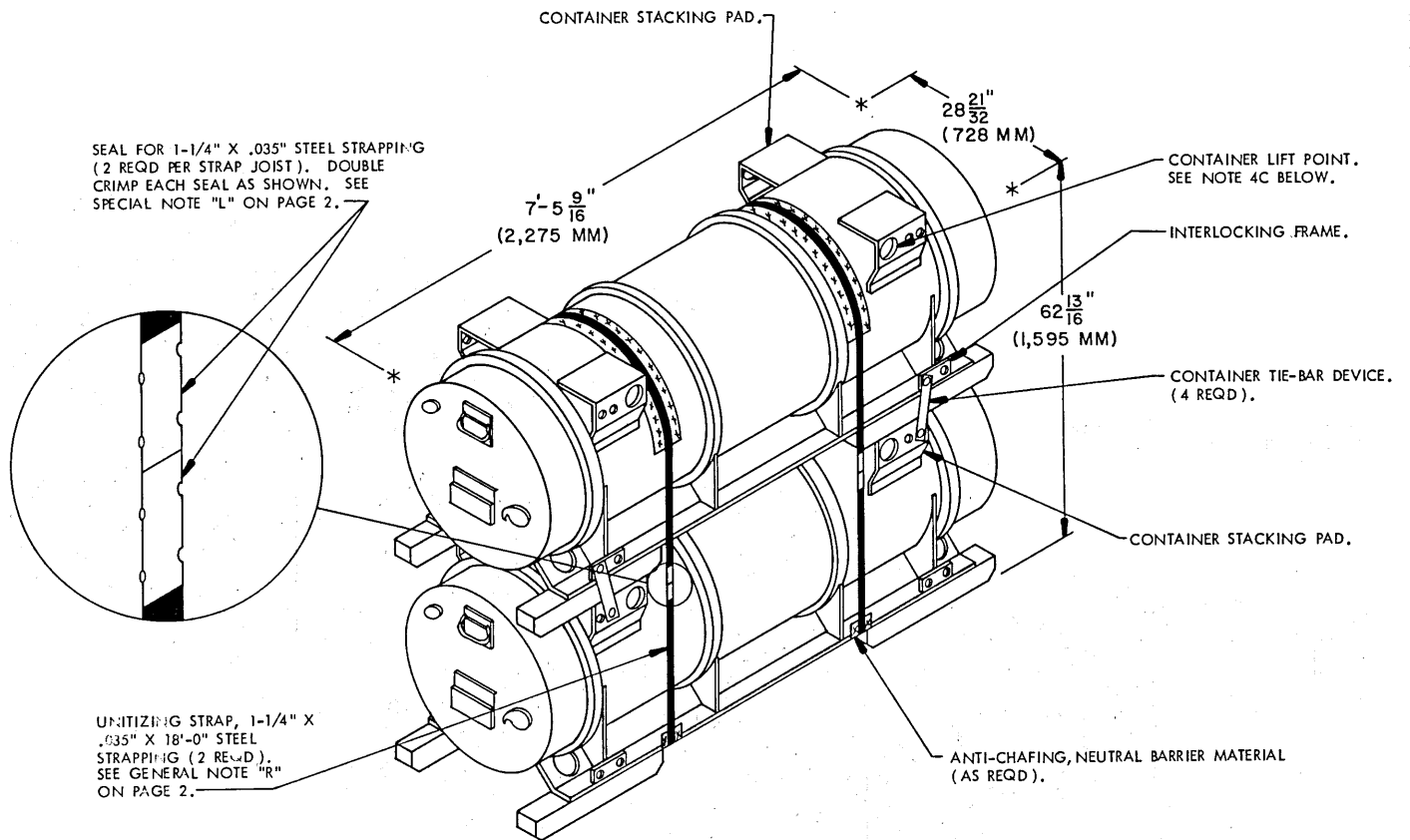
- LUMBER** ----- : DOUGLAS FIR OR COMPARABLE LUMBER WITH STRAIGHT GRAIN AND FREE FROM MATERIAL DEFECTS. REF: FED SPEC MM-L-751.
- NAILS** ----- : COMMON, CEMENT COATED OR CHEMICALLY ETCHED. REF: FED SPEC FF-N-105. ALT: ANNULAR-RING TYPE NAIL OF THE SAME SIZE.
- STRAPPING, STEEL** ---- : CLASS I, TYPE I OR IV, HEAVY DUTY, FINISH A, B (GRADE 2), OR C. REF: FED SPEC QQ-S-781.
- STRAP SEAL** ----- : 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 1.

- 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 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.
- 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 POUND 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)	18	12,870 LBS ( 5,850 KG )
KLM---505	30'-4-9/16" ( 9,260 MM )	12	8,580 LBS ( 3,900 KG )
KLM---506	34'-8-1/2" ( 10,580 MM )	18	12,870 LBS ( 5,850 KG )
KBS---442/443	41'-0-1/8" ( 12,500 MM )	24	17,160 LBS ( 7,800 KG )
KLS---442/443	41'-0-1/8" ( 12,500 MM )	24	17,160 LBS ( 7,800 KG )
RMMS-663/664	41'-5-51/64" ( 12,644 MM )	24	17,160 LBS ( 7,800 KG )
RS--- 680/681	60'-8-23/64" ( 18,500 MM )	36	25,740 LBS ( 11,700 KG )
RS---683/684	60'-8-23/64" ( 18,500 MM )	36	25,740 LBS ( 11,700 KG )
SAS---710	49'-2-9/16" ( 15,000 MM )	24	17,160 LBS ( 7,800 KG )

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 "N".



STACK DETAIL

UNITIZATION AND HANDLING  
PROCEDURAL GUIDANCE

(UNITIZATION AND HANDLING PROCEDURAL GUIDANCE CONTINUED)

1. STACKING CONTAINERS FOR UNITIZING.

- A. THE UPPER CONTAINER SHOULD BE PLACED AS CLOSELY AS POSSIBLE IN VERTICAL ALIGNMENT WITH THE LOWER CONTAINER.
- B. POSITION THE HEAVY END OF THE UPPER CONTAINER ABOVE THE HEAVY END OF THE LOWER CONTAINER.

2. APPLICATION OF CONTAINER TIE-BAR ( INTERLOCKING ) DEVICES.

- A. REMOVE TIE-BAR DEVICES FROM FLANGE ON THE CONTAINER.
- B. ATTACH ONE END OF TIE-BAR TO THE INTERLOCKING FRAME MEMBER OF THE UPPER CONTAINER AND THE OPPOSITE END OF THE TIE-BAR TO THE STACKING PAD OF THE LOWER CONTAINER.
- C. TIGHTEN NUTS UNTIL "SNUG".

3. INSTALLATION OF 1-1/4" X .035" UNITIZING STEEL STRAPPING.

- A. POSITION EACH STRAP TO ENIRCLE THE CONTAINERS IMMEDIATELY BEHIND THE SKIDS AND SO THAT THE STRAPPING LAYS FLAT AND STRAIGHT WITH THE BODY SURFACES OF THE CONTAINERS, I.E., VERTICAL ALONG SIDES AND STRAIGHT ACROSS THE TOP AND BOTTOM OF THE STACK.
- B. PLACE ANTI-CHAFING NEUTRAL BARRIER MATERIAL UNDER STRAPPING AT ALL POINTS OF CONTACT WITH CONTAINERS.
- C. STRAPPING WILL BE FIRMLY TENSIONED, AND EACH END-OVER-END LAP JOINT WILL BE SEALED WITH TWO DOUBLE CRIMPED STRAP SEALS AS SHOWN. SEE GENERAL NOTE "L" ON PAGE 2. THE LAP JOINTS WILL BE MADE ALONG THE SIDE OF THE STACK SO THAT THE SEALS WILL NOT BE IN CONTACT WITH THE CONTAINERS. EXCESS STRAPPING (STRAP ENDS) SHOULD BE CUT OFF OR BROKEN OFF NEAR THE JOINT SEALS.

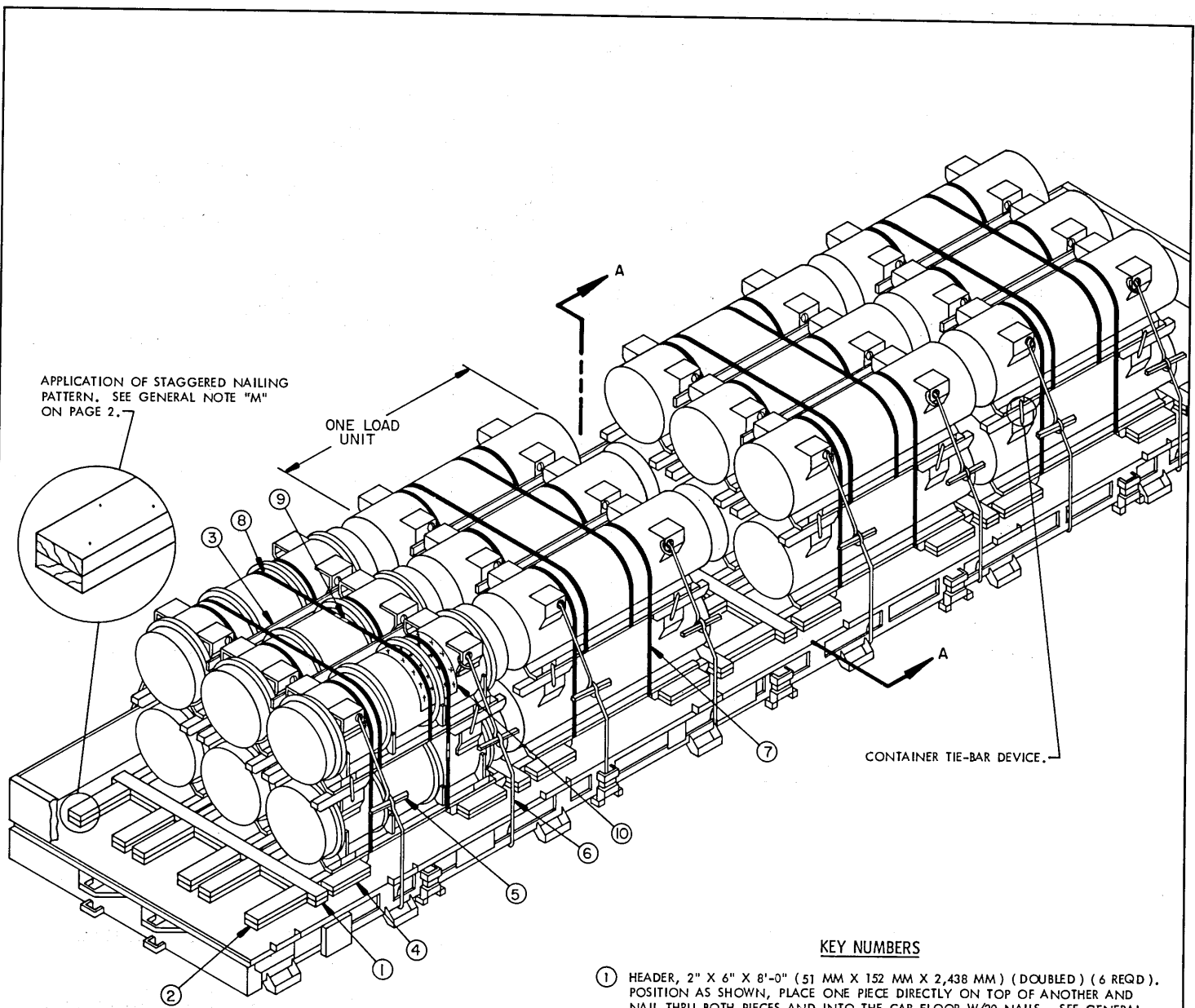
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4. CONTAINER OR CONTAINER STACK HANDLING.

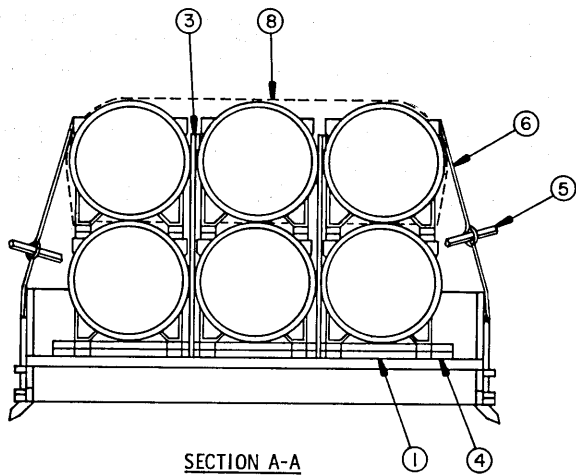
NOTES: (1) APPROVED MATERIALS HANDLING EQUIPMENT (MHE) IS SPECIFIED IN OTHER DOCUMENTS. MHE IS INTENDED TO MEAN EQUIPMENT SUCH AS FORKLIFT TRUCKS, CRANES, HAND TRUCKS, DOLLIES, ROLLER ASSEMBLIES, SLINGS AND SPREADER BARS.

(2) PRECAUTIONARY HANDLING TECHNIQUES NORMALLY EMPLOYED OR AS SPECIFIED FOR THE TYPE OF COMMODITY INVOLVED WILL BE OBSERVED.

- A. ONLY APPROVED AND APPROPRIATELY SIZED MATERIALS HANDLING EQUIPMENT WILL BE USED FOR HANDLING THE DEPICTED CONTAINERS.
- B. IF HANDLING IS ACCOMPLISHED WITH A FORKLIFT TRUCK, THE CONTAINERS SHOULD BE HANDLED FROM A SIDE POSITION AS MUCH AS POSSIBLE. CARE MUST BE EXERCISED WHEN INSERTING FORKS UNDER A CONTAINER TO PREVENT DAMAGE TO THE CONTAINER BY THE FORK TINES OR THE FORKLIFT PACKAGE GUARD.
- C. IF ONE CONTAINER IS HANDLED BY SLINGING, THE SLING MAY BE ATTACHED TO THE LIFTING DEVICES ON THE CONTAINER. HOWEVER, IF A TWO-HIGH STACK IS HANDLED BY SLINGING, DO NOT ATTACH THE SLING TO THE LIFTING DEVICES ON THE CONTAINER. THE SLING USED MUST BE OF SUCH A DESIGN THAT LIFTING IS DONE ON THE BOTTOM OF THE LOWER CONTAINER.



ISOMETRIC VIEW



SECTION A-A

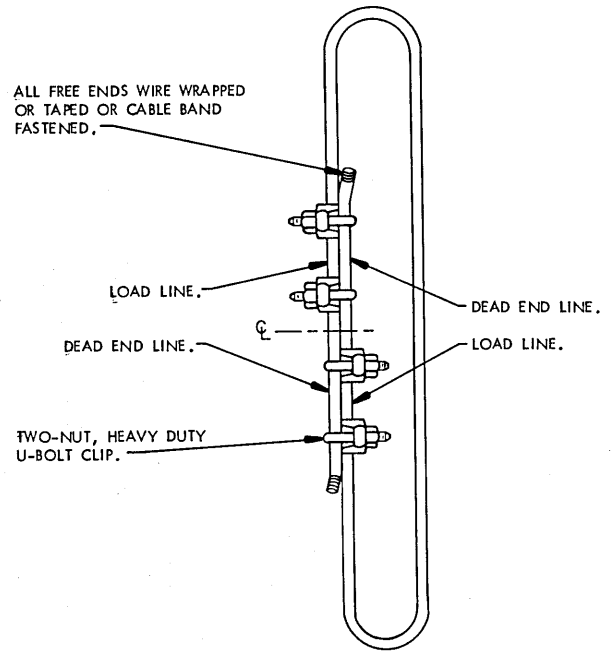
UNITIZING STRAPS NOT SHOWN FOR CLARITY PURPOSES.

KEY NUMBERS

- ① HEADER, 2" X 6" X 8'-0" (51 MM X 152 MM X 2,438 MM) (DOUBLED) (6 REQ'D). POSITION AS SHOWN, PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/20 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) (18 REQ'D). 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/6 NAILS.
- ③ ANTI-CHAFING ASSEMBLY (8 REQ'D). SEE THE "ANTI-CHAFING ASSEMBLY" DETAIL ON PAGE 9. POSITION BETWEEN LATERALLY ADJACENT CONTAINERS, AS SHOWN.
- ④ SIDE BLOCKING, 2" X 6" X 18" (51 MM X 152 MM X 457 MM) (DOUBLED) (16 REQ'D). 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 WIRE TWISTER, 2" X 2" BY LENGTH TO SUIT (16 REQ'D). SEE SPECIAL NOTE 2 ON PAGE 5.
- ⑥ WIRE HOLD-DOWN, SIX (6) STRANDS OF NO. 8 GAGE (3 MM MINIMUM DIAMETER) BLACK ANNEALED WIRE (16 REQ'D). PASS THRU A RAILCAR TIEDOWN FACILITY, THRU THE TIEDOWN POINT ON THE LADING AS SHOWN, AND BACK TO THE RAILCAR TIEDOWN FACILITY TO FORM A COMPLETE LOOP. TWIST TAUT WITH PIECE MARKED ⑤. SEE GENERAL NOTE "P" ON PAGE 2, AND SPECIAL NOTES 3 AND 4 ON PAGE 5.
- ⑦ UNITIZING STRAP, 1-1/4" X .035" X 18'-0" LONG STEEL STRAPPING (24 REQ'D). SEE THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3 AND GENERAL NOTES "L" AND "R" ON PAGE 2.
- ⑧ BUNDLING STRAP, 1-1/4" X .035" X 22'-0" LONG STEEL STRAPPING (8 REQ'D). INSTALL TWO STRAPS AROUND THE THREE LATERALLY ADJACENT CONTAINERS IN THE SECOND LAYER OF EACH LOAD UNIT, AS SHOWN. SEE GENERAL NOTE "R" ON PAGE 2.
- ⑨ SEAL FOR 1-1/4" STRAPPING (64 REQ'D, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "L" ON PAGE 2.
- ⑩ ANTI-CHAFING, NEUTRAL BARRIER MATERIAL (AS REQ'D). POSITION UNDER ALL STRAPPING AT ALL POINTS OF CONTACT WITH THE CONTAINERS.

**SPECIAL NOTES:**

1. A TWENTY-FOUR UNIT LOAD 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 (5), 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 (6), 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 AT THE RIGHT. 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.
5. BECAUSE OF THE PHYSICAL CONFIGURATION OF THE CONTAINER, HOLD-DOWNS ARE REQUIRED TO PREVENT LONGITUDINAL TIPPING OF THE CONTAINER. HOLD-DOWNS, PIECES MARKED (6) 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.



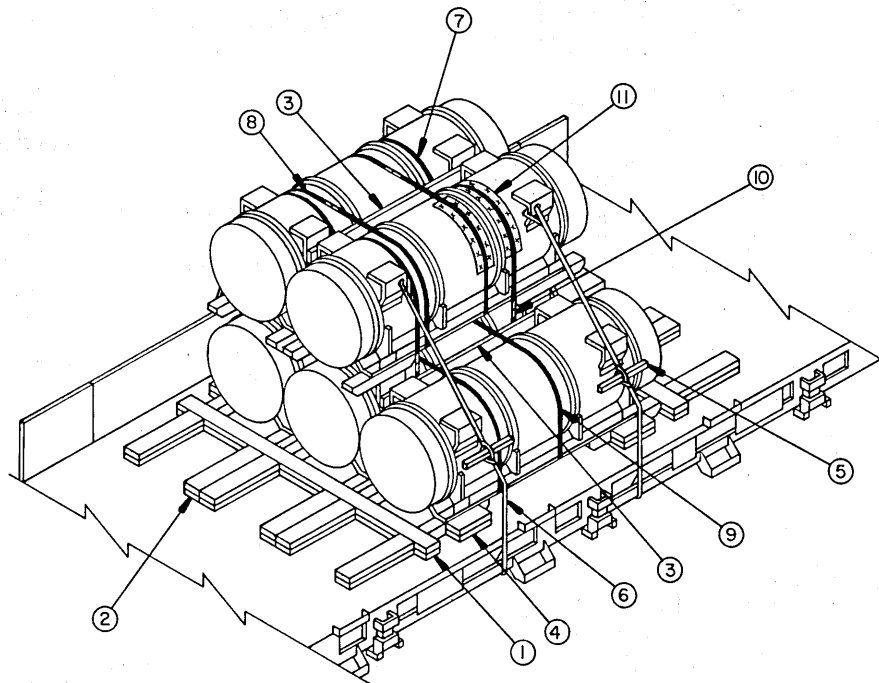
**CABLE JOINT**

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.

BILL OF MATERIAL		
LUMBER	LENGTH	BOARD FEET
1" X 4" ( 25 MM X 102 MM )	128 FT. ( 39,014 MM )	43
2" X 2" ( 51 MM X 51 MM )	24 FT. ( 7,315 MM )	8
2" X 6" ( 51 MM X 152 MM )	216 FT. ( 65,837 MM )	216
NAILS	NO. REQD	WEIGHT
SIZE AS REQD	356	21 LBS
WIRE, NO. 8 GAGE ( 3 MM DIA ) --	672' REQD -----	61 LBS
STEEL STRAPPING, 1-1/4" X .035" --	608' REQD -----	87 LBS
SEAL FOR 1-1/4" STRAPPING -----	64 REQD -----	3 LBS
ANTI-CHAFING MATERIAL -----	AS REQD -----	NIL

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT ( APPROX )
CONTAINER -----	24 -----	17,160 LBS ( 7,784 KG )
DUNNAGE -----	-----	840 LBS ( 381 KG )
<b>TOTAL WEIGHT -----</b>		<b>18,000 LBS ( 8,165 KG )</b>



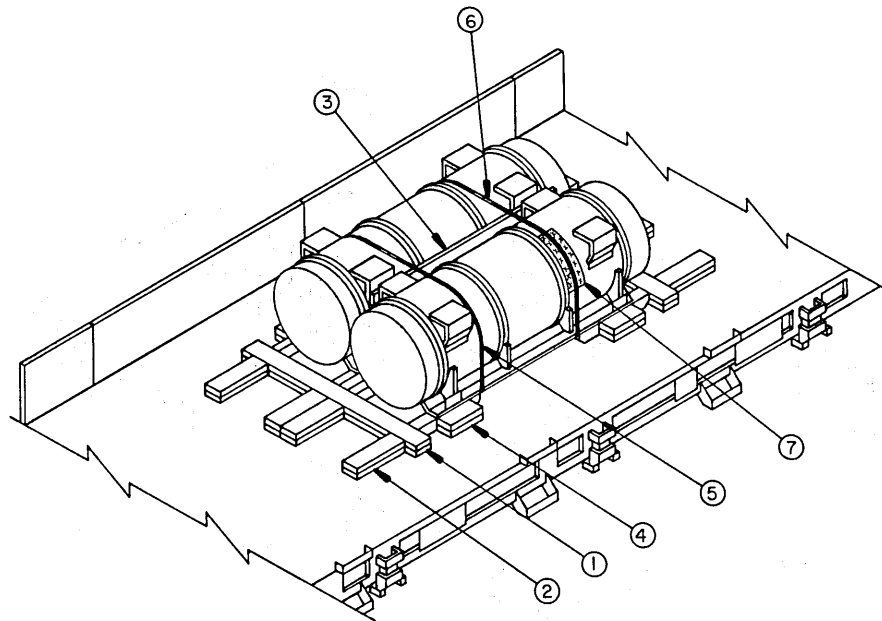
ISOMETRIC VIEW

SPECIAL NOTES:

1. A FIVE-UNIT LOAD IS SHOWN. ANY CAR WITH A NAILABLE FLOOR 8'-3" (2,515 MM) WIDE (MINIMUM) MAY BE USED FOR SHIPMENT.
2. THE FIVE-UNIT LOAD SHOWN ABOVE MAY BE SUBSTITUTED FOR A LOAD UNIT IN THE LOAD AS SHOWN ON PAGES 4 AND 5 TO ADJUST THE QUANTITY OF CONTAINERS BEING SHIPPED.
3. ONE WIRE TWISTER, PIECE MARKED ⑤, 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.
4. 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.
5. IF DESIRED, OR IF ANNEALED WIRE IS NOT AVAILABLE FOR FABRICATING TWISTED WIRE HOLD-DOWNS, MARKED AS KEY NUMBER ⑥, 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 5. WHEN USING A STEEL WIRE ROPE WHICH IS LARGER THAN 3/8", THE NUTS ON THE CABLE CLIP 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.

KEY NUMBERS

- ① HEADER, 2" X 6" X 8'-0" (51 MM X 152 MM X 2,438 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/20 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) (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/6 NAILS.
- ③ ANTI-CHAFING ASSEMBLY (2 REQD). SEE THE "ANTI-CHAFING ASSEMBLY" DETAIL ON PAGE 9. POSITION BETWEEN 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 THE CONTAINER SKIDS AS SHOWN. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/3 NAILS.
- ⑤ WIRE TWISTER, 2" X 2" BY LENGTH TO SUIT (4 REQD). SEE SPECIAL NOTE 3 ON THIS PAGE.
- ⑥ WIRE HOLD-DOWN, SIX (6) STRANDS OF NO. 8 GAGE (3 MM MINIMUM DIAMETER) BLACK ANNEALED WIRE (4 REQD). PASS THRU A RAILCAR TIEDOWN FACILITY, THRU THE TIEDOWN OPENING ON THE LADING AS SHOWN, AND BACK TO THE RAILCAR TIEDOWN FACILITY TO FORM A COMPLETE LOOP. TWIST TAUT WITH PIECE MARKED ⑤. SEE GENERAL NOTE "P" ON PAGE 2 AND SPECIAL NOTES 4 AND 5 ON THIS PAGE.
- ⑦ UNITIZING STRAP, 1-1/4" X .035" X 18'-0" LONG STEEL STRAPPING (4 REQD). SEE THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3 AND GENERAL NOTES "L" AND "R" ON PAGE 2.
- ⑧ UPPER BUNDLING STRAP, 1-1/4" X .035" X 15'-0" LONG STEEL STRAPPING (2 REQD). INSTALL TWO STRAPS AROUND THE CONTAINER IN THE SECOND LAYER, AS SHOWN. SEE GENERAL NOTE "R" ON PAGE 2.
- ⑨ LOWER BUNDLING STRAP, 1-1/4" X .035" X 22'-0" LONG STEEL STRAPPING (2 REQD). INSTALL TWO STRAPS AROUND THE CONTAINERS IN THE BOTTOM LAYER, AS SHOWN. SEE GENERAL NOTE "R" ON PAGE 2.
- ⑩ SEAL FOR 1-1/4" STRAPPING (16 REQD). DOUBLE CRIMP EACH SEAL.
- ⑪ ANTI-CHAFING, NEUTRAL BARRIER MATERIAL (AS REQD). PLACE UNDER ALL STRAPS AT POINTS OF CONTACT WITH THE CONTAINERS.



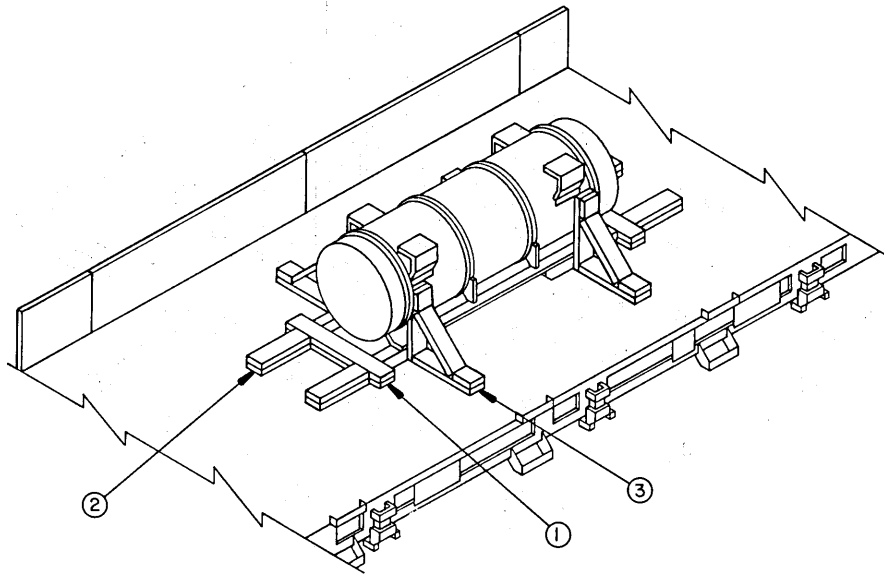
ISOMETRIC VIEW

SPECIAL NOTES:

1. A TWO-UNIT LOAD IS SHOWN. ANY CAR WITH A NAILABLE FLOOR 6'-0" (1,829 MM) WIDE (MINIMUM) MAY BE USED FOR SHIPMENT OF A TWO-UNIT WIDE LOAD.
2. THE BACK-UP CLEATS AS SHOWN ABOVE WILL SUPPORT A MAXIMUM OF 4 CONTAINERS.

KEY NUMBERS

- ① HEADER, 2" X 6" X 66" (51 MM X 152 MM X 1,677 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/15 NAILS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ② BACK-UP CLEAT, 2" X 6" X 18" (51 MM X 152 MM X 452 MM) (DOUBLED) (8 REQD). POSITION AS SHOWN SO THAT A BACK-UP CLEAT IS CENTERED ON A CONTAINER SKID. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/4 NAILS.
- ③ ANTI-CHAFING ASSEMBLY (1 REQD). SEE THE "ANTI-CHAFING ASSEMBLY" DETAIL ON PAGE 9. POSITION BETWEEN THE LATERALLY ADJACENT CONTAINERS, AS SHOWN.
- ④ SIDE BLOCKING, 2" X 6" X 12" (51 MM X 152 MM X 305 MM) (DOUBLED) (4 REQD). POSITION AGAINST THE CONTAINER SKIDS 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 15'-0" LONG STEEL STRAPPING (2 REQD). INSTALL AROUND THE TWO CONTAINERS, AS SHOWN. SEE GENERAL NOTE "R" ON PAGE 2.
- ⑥ SEAL FOR 1-1/4" STRAPPING (4 REQD). DOUBLE CRIMP EACH SEAL.
- ⑦ ANTI-CHAFING, NEUTRAL BARRIER MATERIAL (AS REQD). PLACE UNDER ALL STRAPS AT POINTS OF CONTACT WITH THE CONTAINER.



ISOMETRIC VIEW

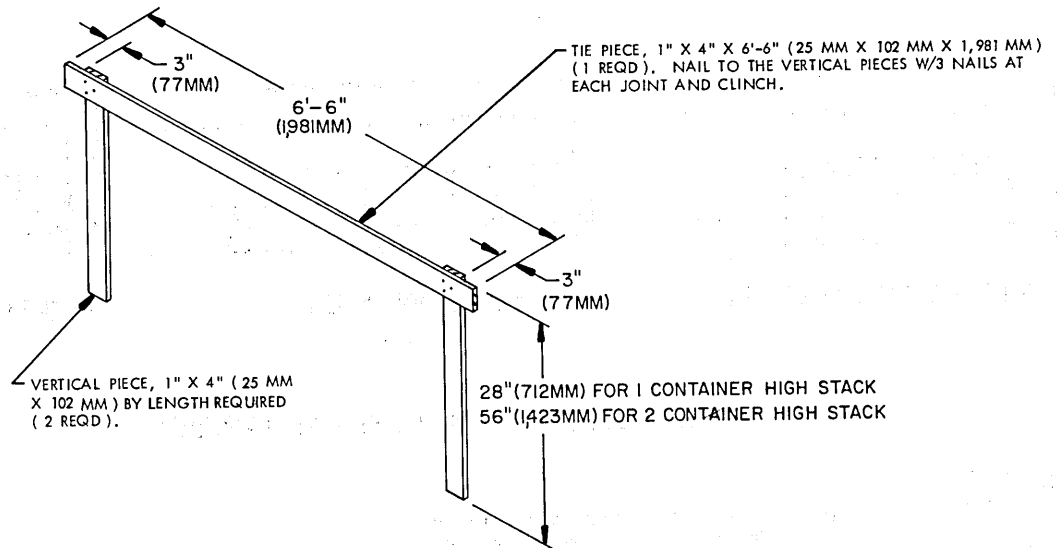
SPECIAL NOTES:

1. A ONE-UNIT LOAD IS SHOWN. ANY CAR WITH A NAILABLE FLOOR 6'-6" (1,981 MM) WIDE (MINIMUM) MAY BE USED FOR SHIPMENT OF A ONE-UNIT LOAD.

KEY NUMBERS

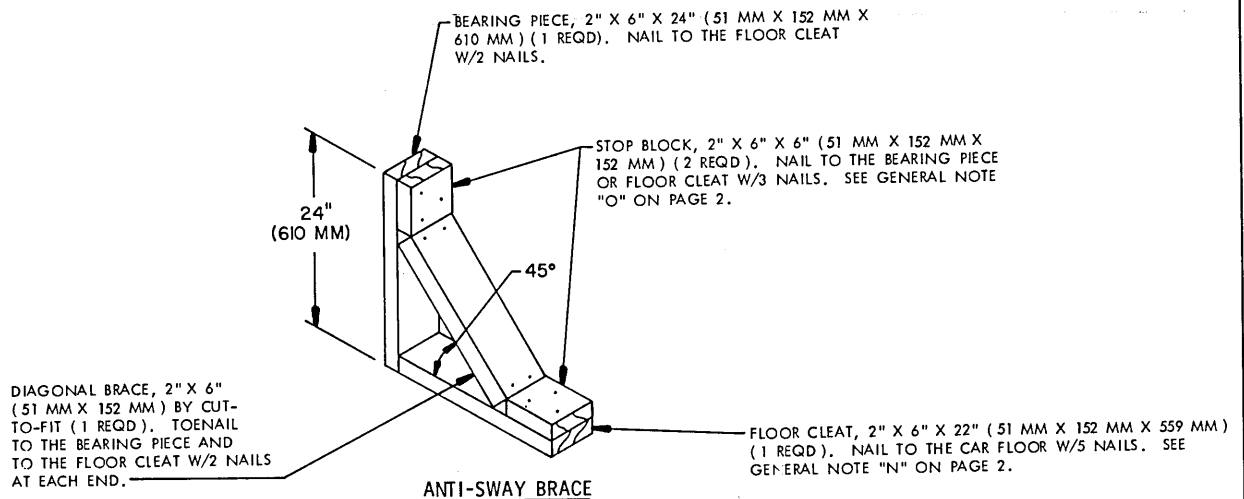
- ① HEADER, 2" X 6" X 36" (51 MM X 152 MM X 915 MM) (DOUBLED) (2 REQD). POSITION AS SHOWN, PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/9 NAILS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ② BACK-UP CLEAT, 2" X 6" X 18" (51 MM X 152 MM X 457 MM) (DOUBLED) (4 REQD). POSITION AS SHOWN SO THAT A BACK-UP CLEAT IS ALIGNED WITH A CONTAINER SKID. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/4 NAILS.
- ③ ANTI-SWAY BRACE (4 REQD). SEE THE "ANTI-SWAY BRACE" DETAIL ON PAGE 9. POSITION AGAINST THE CONTAINER AS SHOWN AND NAIL TO THE CAR FLOOR W/5 NAILS.

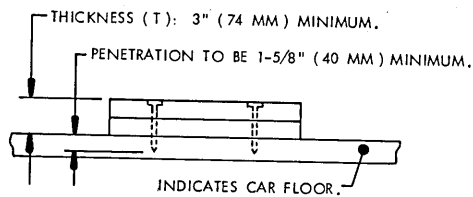




**ANTI-CHAFING ASSEMBLY**

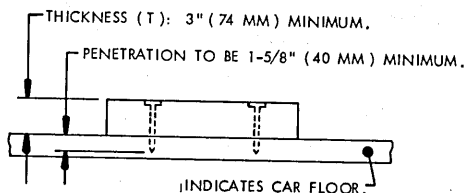
IF 1" X 4" MATERIAL IS NOT AVAILABLE, OR IF DESIRED, MATERIAL WIDER THAN 4" (102 MM) MAY BE USED TO FABRICATE THE ASSEMBLY SHOWN ABOVE.





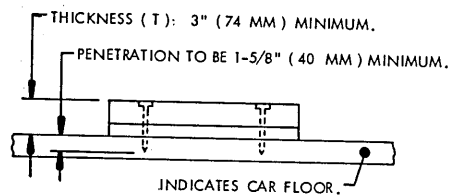
DOUBLED 2' X 6' LUMBER SHOWN

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 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 PERMISSABLE 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)