

HAWK

LOADING AND BRACING (CL & LCL) ON FLAT CARS OF COMPLETE ROUND IN M430 OR M611 CONTAINER

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THIS DRAWING, INCLUDING REVISION 3, SUPERSEDES
 DRAWING 19-48-5384-GMSA76, DATED 25 AUGUST 1959,
 AND ALL REVISIONS THERETO, THROUGH NUMBER 2,
 DATED 30 JUNE 1967.

DO NOT SCALE

REVISIONS				DRAFTSMAN ERG/AR	PROJ. ENG. JNW/MLW
3	DEC 74	AIAJ <i>Wesley E. Gilleland</i> <i>A. E. Ehinger</i>	CHECKER JRM/2007 <i>John R. ...</i>	APPROVED <i>Wesley E. Gilleland</i> <small>APPROVED BY CHIEF OF COMMANDING GENERAL U. S. ARMY MATERIEL COMMAND</small>	DATE 12/11/74
<small>U. S. ARMY MATERIEL COMMAND</small> DECEMBER 1974				<small>CLASS</small> 19	<small>DIVISION</small> 48
<small>DRAWING</small> 5384				<small>FILE</small> GM 5HAB	

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 LOADS AS SHOWN HEREIN ARE BASED ON FLAT CARS OF VARIOUS LENGTHS AND WIDTHS WITH STAKE POCKETS SPACED 42" ON CENTER. SEE THE "SPECIAL NOTES" SECTIONS ADJACENT TO AN OUTLOADING METHOD FOR SPECIFIC GUIDANCE AND GENERAL NOTE "U" ON THIS PAGE CONCERNING THE SIZE OF FLAT CARS TO BE ORDERED.
- C. THE OUTLOADING PROCEDURES SPECIFIED HEREIN ARE APPLICABLE TO THE HAWK COMPLETE ROUND, WHEN PACKED IN THE M430 OR M611 CONTAINER. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE CONTAINER WITH MISSILE COMPONENTS.
- D. FOR DETAIL OF THE M430 CONTAINER, SEE DRAWING NO. 9073970.
CONTAINER DIMENSIONS --216" LONG X 28-3/4" WIDE X 41-1/2" HIGH.
GROSS WEIGHT -----3,225 POUNDS (APPROX).
TARE WEIGHT -----1,990 POUNDS (APPROX).
- FOR DETAIL OF THE M611 CONTAINER, SEE DRAWING NO. 8095841.
CONTAINER DIMENSIONS --216" LONG X 30" WIDE X 41-1/2" HIGH.
GROSS WEIGHT -----3,351 POUNDS (APPROX).
TARE WEIGHT -----1,990 POUNDS (APPROX).
- E. THIS ITEM IS A DOT CLASS "A" EXPLOSIVE. THE OUTLOADING PROCEDURES SPECIFIED HEREIN CAN ALSO BE UTILIZED FOR THE SHIPMENT OF THE DEPICTED CONTAINERS WHEN THEY ARE EMPTY OR LOADED WITH AN ITEM WHICH IS IDENTIFIED DIFFERENTLY BY NOMENCLATURE THAN THE ITEM DESIGNATED WITHIN THE DRAWING TITLE.
- F. THE SELECTION OF RAILCARS FOR THE TRANSPORT OF THE DESIGNATED ITEMS WILL BE IN ACCORDANCE WITH HAZARDOUS MATERIALS REGULATIONS OF DOT AND AR 55-355, CHAPTER 213, FOR EXPLOSIVES AND OTHER DANGEROUS ARTICLES, IN FULL.
- G. IF THE RAILCAR BEING USED IS NOT EQUIPPED WITH PLACARD BOARDS ON BOTH ENDS AND BOTH SIDES, 16" X 24" BOARDS MUST BE PROVIDED AS REQUIRED. CAUTION: BOARDS AND BOARD MOUNTING BRACKETS MUST NOT BE NAILED TO THE LADING.
- H. ONLY CARS WITH "SOUND" FLOORS WILL BE USED. CARS WITH STEEL FLOOR ENDS AND/OR EXPOSED STEEL BOLSTERS WHICH INTERFERE WITH PROPER POSITIONING OR NAILING OF THE DUNNAGE WILL NOT BE USED. SEE "TYPICAL END BLOCKING FOR CARS WITH EXPOSED STEEL BOLSTERS" DETAIL ON PAGE 11 FOR APPLICATION-OF-DUNNAGE METHODS WHICH PERMIT THE USE OF SOME CARS THAT HAVE EXPOSED STEEL COMPONENTS. IF THE CAR TO BE USED HAS SUCH EXPOSED STEEL COMPONENTS, THE CAR MAY NECESSARILY HAVE TO BE LONGER THAN THE ONE SPECIFIED FOR THE APPLICABLE LOAD.
- J. **NOTICE:** A SHIPMENT WILL BE POSITIONED ON THE RAIL CAR IN COMPLIANCE WITH THE WEIGHT DISTRIBUTION REQUIREMENTS OF THE AAR. THE APPROVED METHODS FOR THE LOADS SPECIFIED MUST BE FOLLOWED. THE NUMBER OF UNITS MAY BE ADJUSTED TO FIT THE SIZE OF THE CAR TO BE LOADED OR THE QUANTITY TO BE SHIPPED. FOR A LOAD QUANTITY OTHER THAN SPECIFIED, THE APPROVED METHODS FOR BLOCKING, BRACING, AND STAYING MUST BE FOLLOWED AS CLOSELY AS POSSIBLE.
- K. IF THE CAPACITY OF THE MATERIALS HANDLING EQUIPMENT PERMITS, IT IS RECOMMENDED THAT CONTAINERS BE UNITIZED PRIOR TO PLACEMENT ABOARD THE FLAT CAR. SEE THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3.
- L. **CAUTION:** STAKE POCKETS ON FLAT CARS WILL BE USED FOR ANCHORING HOLD-DOWN STRAPPING WHENEVER POSSIBLE. DO NOT USE SWIVEL RING TYPE ANCHOR DEVICES. IF OTHER TYPES ARE USED, THEY MUST BE OF SUFFICIENT WIDTH TO RECEIVE 2" STRAPPING, AND ALSO BE OF A DESIGN WHICH WILL PROVIDE A BEARING SURFACE, ACROSS THE FULL WIDTH OF THE STRAPPING, THAT WILL NOT DEFORM A STRAP, ESPECIALLY AT THE EDGES, WHEN IT IS TENSIONED.
- M. BASED ON FLAT CARS WITH STAKE POCKETS SPACED 42" APART, CONTAINERS MUST BE POSITIONED AS SHOWN TO FACILITATE PROPER APPLICATION OF 2" TIE-DOWN STRAPPING; HOWEVER, IF CARS ARE AVAILABLE WITH STAKE POCKETS SPACED OTHER THAN 42" APART OR IF ADEQUATE TIE-DOWN DEVICES ARE PROVIDED BETWEEN STAKE POCKETS, CONTAINERS SHOULD BE POSITIONED ON THE CAR TO MOST EFFICIENTLY UTILIZE TIE-DOWN ATTACHMENT POINTS.
- N. 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.
- O. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT, OR AS SHOWN IN "DETAIL A" OR "DETAIL B" ON PAGE 11, A MINIMUM OF TWO (2) SEALS, BUTTED TOGETHER, WITH TWO (2) PAIR OF CRIMPS PER SEAL MUST BE USED TO SEAL THE JOINT. **CAUTION:** EXERCISE CARE DURING TENSIONING TO PREVENT DAMAGE TO CONTAINERS.
- P. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE OR 1-5/8" THICK BY 3-5/8" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE OR 1-5/8" THICK BY 5-5/8" WIDE.
- Q. 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 TRANSPORTING VEHICLE, 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.
- R. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3 AND TO THE "SPECIAL NOTES" SECTION WHICH IS IMMEDIATELY ADJACENT TO A DEPICTED OUTLOADING METHOD.
- S. THE WORDS "ANTI-SKID PLATES" WILL BE STENCILED IN ONE INCH (1") LETTERS ON BOTH SIDES OF THE CONTAINERS TO SHOW THE LOCATIONS OF THESE PLATES.
- T. THESE PROCEDURES MAY BE USED ONLY IF THE FOUR (4) CORNER BRACKETS (STACKING PADS) OF THE CONTAINERS HAVE BEEN MODIFIED AS SHOWN IN "DETAIL C" ON PAGE 12.
- U. LARGER CARS MAY BE USED FOR SHIPMENT OF THE LOADS AS SHOWN. HOWEVER, CARS LONGER THAN 42'-6" SHOULD NOT BE ORDERED FOR THE 24 AND/OR 18-UNIT LOADS DEPICTED HEREIN.

(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

- LUMBER** ----- : SEE TM 743-200-1, DUNNAGE LUMBER; FED SPEC MM-L-751.
- NAILS** ----- : COMMON, CEMENT COATED OR CHEMICALLY ETCHED,
FED SPEC FF-N-105.
ALT: ANNULAR-RING TYPE NAIL OF THE SAME SIZE.
- STRAPPING, STEEL** ----- : TYPE I OR IV, FINISH A OR B, FOR 1-1/4" STRAPPING AND
FINISH A, B, OR C FOR 2" STRAPPING, FED SPEC QQ-5-781.
- STRAP SEAL,
STAKE POCKET PROTECTOR** : COMMERCIAL GRADE.
- ANTI-SKID PLATES** ----- : SIGNODE NO. 1 (OR EQUAL).
- ANTI-CHAFING MATERIAL** - : NEUTRAL BARRIER MATERIAL, MIL-8-121 (OR EQUAL).

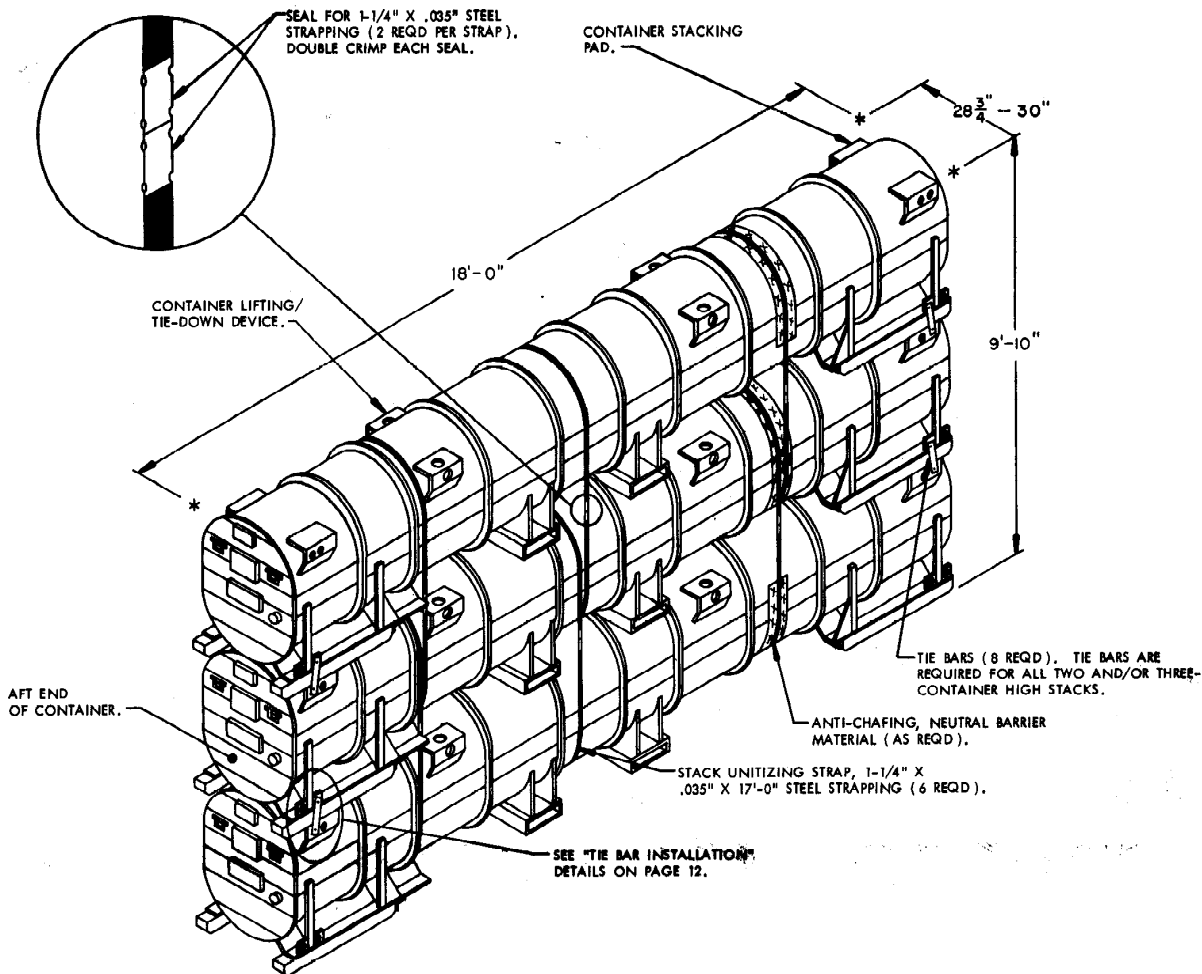
REVISIONS

REVISION NO. 2, DATED 30 JUNE 1967, CONSISTS OF:

1. CHANGES TO DETAILS SHOWN ON PAGE 8.
2. ADDING "TIE BAR INSTALLATION" DETAILS ON PAGE 5.
3. CHANGES AS NECESSARY TO UP-DATE DRAWING FORMAT.

REVISION NO. 3, DATED DECEMBER 1974, CONSISTS OF:

1. ADDING PROVISIONS FOR SHIPPING THE M611 CONTAINER.
2. ADDING "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3.
3. CHANGES AS NECESSARY TO UP-DATE DRAWING FORMAT.
4. CHANGING DRAWING FILE NO. FROM GMSA76 TO GMSHAB.



TYPICAL STACK DETAIL

(M430 CONTAINER SHOWN)

UNITIZING AND HANDLING PROCEDURAL GUIDANCE

1. STACKING CONTAINER FOR UNITIZING.
 - A. AN UPPER CONTAINER SHOULD BE PLACED AS CLOSE AS POSSIBLE IN VERTICAL ALIGNMENT WITH THE NEXT LOWER CONTAINER.
 - B. POSITION THE OPENING END OF AN UPPER CONTAINER ABOVE THE OPENING END OF A LOWER CONTAINER.
 - C. THE CONTAINER SKIDS OF AN UPPER CONTAINER MUST BE FULLY SEATED UPON THE STACKING PADS OF A LOWER CONTAINER.
2. APPLICATION OF CONTAINER TIE BARS.
 - A. TIE BARS ARE LOCATED ON THE SIDE OF THE CONTAINER.
 - B. INSTALL EIGHT TIE BARS, FOUR ON EACH SIDE, OF A THREE-CONTAINER HIGH STACK.
3. INSTALLATION OF 1-1/4" X .035" UNITIZING STEEL STRAPPING.
 - A. EACH OF THE THREE SETS OF UNITIZING STRAPS SHOULD BE POSITIONED AROUND THE CONTAINERS AS SHOWN. PLACE STRAPPING SO THAT IT LAYS FLAT AND STRAIGHT WITH THE CONTOUR OF THE CONTAINERS, I.E., VERTICAL ALONG THE SIDES AND STRAIGHT ACROSS THE TOP AND BOTTOM OF THE STACK.
 - B. PLACE ANTI-CHAFING, NEUTRAL BARRIER MATERIAL UNDER THE STRAPPING AT ALL POINTS OF CONTACT WITH CONTAINER AND SECURE TO PREVENT DISLODGE-
MENT DURING AND AFTER STRAP APPLICATION. STRIPS OF ANTI-CHAFING MATERIAL MAY BE TAPED OR STRING-TIED TO THE CONTAINER OR STRAPPING, OR IT CAN BE FORMED INTO STRAP ENCRICLING TUBES BY WINDING THE MATERIAL AROUND THE STRAPPING TO FORM A SELF-HOLDING UNIT.
 - 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 "O" 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. DURING STRAP TENSIONING, CARE SHOULD BE EXERCISED TO ENSURE THAT THE CONTAINERS ARE NOT DAMAGED. EXCESS STRAPPING (STRAP ENDS) SHOULD BE CUT OFF OR BROKEN OFF NEAR THE JOINT SEALS.

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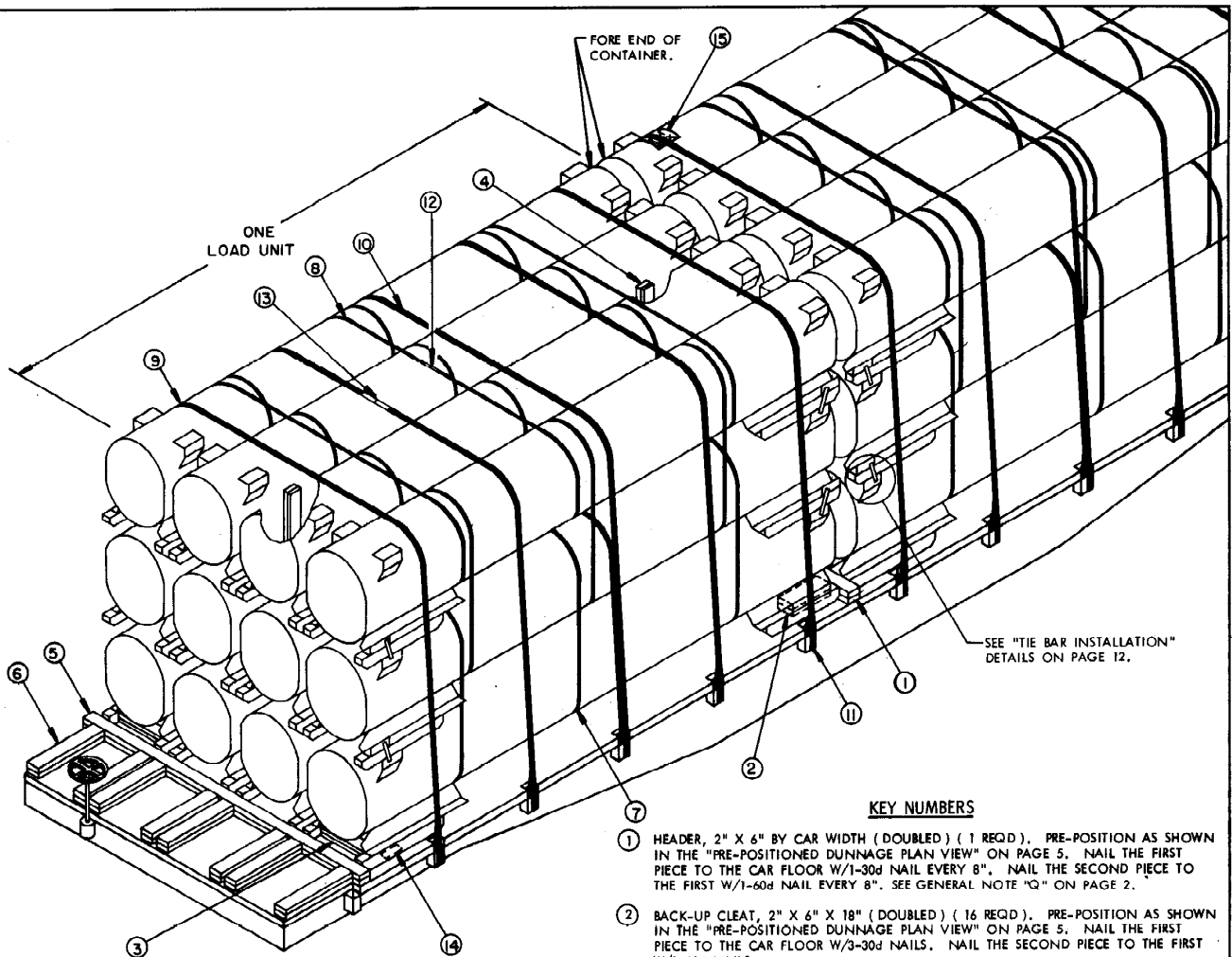
(UNITIZING AND HANDLING PROCEDURAL GUIDANCE CONTINUED)

4. CONTAINER OR CONTAINER STACK HANDLING.

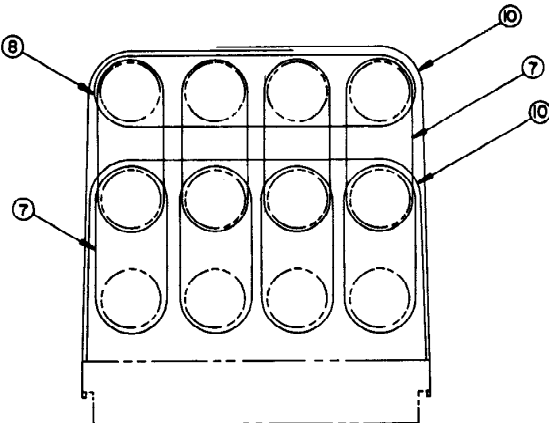
NOTES: (1) APPROVED MATERIALS HANDLING EQUIPMENT (MHE) IS SPECIFIED IN OTHER DOCUMENTS. MHE IS INTENDED TO MEAN EQUIPMENT SUCH AS FORKLIFT TRUCKS, CRANES, HAND TRUCKS, DOLLIES, ROLLER ASSEMBLIES, SLINGS AND SPREADER BARS.

(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. FOR VERY SHORT "INCHING" SPEED MOVEMENTS, SUCH AS WILL BE EXPERIENCED DURING FLAT CAR LOADING, A THREE-HIGH CONTAINER STACK MAY BE HANDLED BY INSERTING THE FORKS OF A FORKLIFT TRUCK INTO THE FORK RECEPTACLES OF THE MIDDLE CONTAINER.
 - C. SLINGING OF A CONTAINER STACK WILL BE ACCOMPLISHED IN ACCORDANCE WITH APPROVED PROCEDURES.



ISOMETRIC VIEW



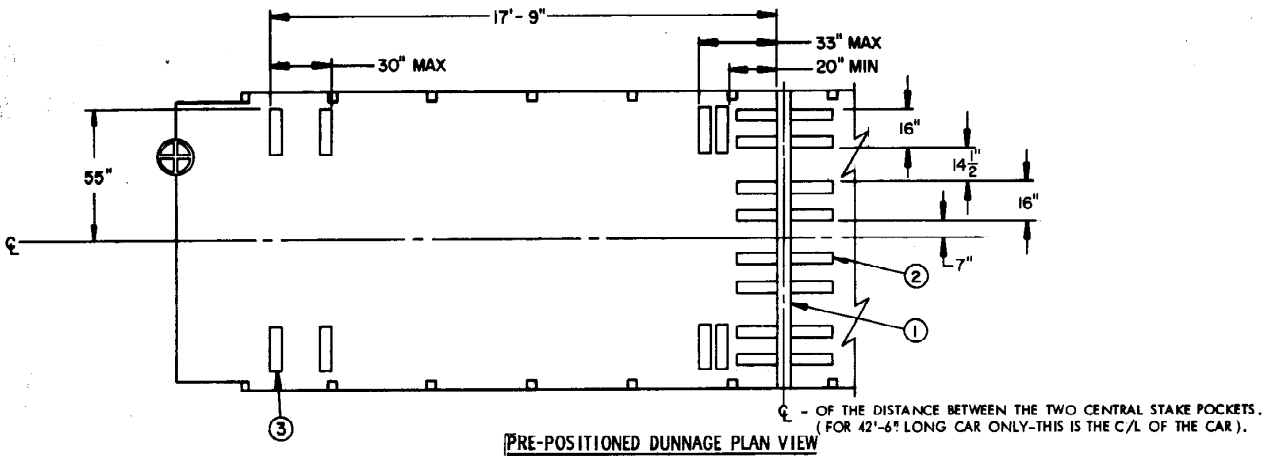
DETAIL OF STRAP THREADING

STRAP, PIECE MARKED ⑨, IS OMITTED FOR CLARITY PURPOSES.

KEY NUMBERS

- ① HEADER, 2" X 6" BY CAR WIDTH (DOUBLED) (1 REQD). PRE-POSITION AS SHOWN IN THE "PRE-POSITIONED DUNNAGE PLAN VIEW" ON PAGE 5. NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-30d NAIL EVERY 8". NAIL THE SECOND PIECE TO THE FIRST W/1-60d NAIL EVERY 8". SEE GENERAL NOTE "Q" ON PAGE 2.
- ② BACK-UP CLEAT, 2" X 6" X 18" (DOUBLED) (16 REQD). PRE-POSITION AS SHOWN IN THE "PRE-POSITIONED DUNNAGE PLAN VIEW" ON PAGE 5. NAIL THE FIRST PIECE TO THE CAR FLOOR W/3-30d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/3-60d NAILS.
- ③ SIDE BLOCKING, 2" X 6" BY CUT TO FIT BETWEEN CONTAINER SKIDS (DOUBLED) (16 REQD). PRE-POSITION AS SHOWN IN THE "PRE-POSITIONED DUNNAGE PLAN VIEW" ON PAGE 5. NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-30d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ④ ANTI-CHAFING ASSEMBLY (12 REQD). SEE THE DETAIL ON PAGE 11 AND POSITION AS SHOWN IN THE "ANTI-CHAFING ASSEMBLY PLACEMENT" DETAIL ON PAGE 2.
- ⑤ HEADER, 2" X 6" BY CAR WIDTH (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-30d NAIL EVERY 8". NAIL THE SECOND PIECE TO THE FIRST W/1-60d NAIL EVERY 8".
- ⑥ BACK-UP CLEAT, 2" X 6" X 30" (DOUBLED) (16 REQD). ALIGN WITH CONTAINER SKIDS AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-30d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/5-60d NAILS.
- ⑦ STACK UNITIZING STRAP, 1-1/4" X .035" X 17'-0" LONG STEEL STRAPPING (48 REQD). SEE THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3 AND SPECIAL NOTE 3 ON PAGE 5.
- ⑧ BUNDLING STRAP, 1-1/4" X .035" X 29'-0" LONG STEEL STRAPPING (6 REQD). INSTALL TO ENCIRCLE THE LATERALLY ADJACENT CONTAINERS IN THE TOP LAYER, AS SHOWN.
- ⑨ HOLD-DOWN STRAP, 2" X .050" X 42'-0" LONG STEEL STRAPPING (8 REQD). INSTALL EACH STRAP FROM TWO (2) 21'-0" LONG PIECES. SEE GENERAL NOTE "M" ON PAGE 2.
- ⑩ HOLD-DOWN STRAP, 2" X .050" X 60'-0" LONG STEEL STRAPPING (2 REQD). BEGIN AT TOP OF LOAD AND RUN STRAP DOWN TO AND UP THROUGH A STAKE POCKET ON ONE SIDE OF THE CAR, BACK UP AND OVER THE TOP OF THE SECOND LAYER CONTAINERS, DOWN TO AND THROUGH A STAKE POCKET ON THE OPPOSITE SIDE OF THE CAR, AND BACK UP TO THE TOP OF THE LOAD WHERE IT IS TENSIONED AND DOUBLE SEALED. SEE THE "DETAIL OF STRAP THREADING" TO THE LEFT ON THIS PAGE.
- ⑪ PAD, 2" X .050" X 24" LONG STEEL STRAPPING (20 REQD). POSITION UNDER STAKE POCKET AND SEAL TO A HOLD-DOWN STRAP MARKED ⑨ AND/OR ⑩. SEE "DETAIL A" ON PAGE 11. ALT: STAKE POCKET PROTECTOR (40 REQD). USE TWO (2) UNDER EACH STAKE POCKET WITH A HOLD-DOWN STRAP. SEE "DETAIL B" ON PAGE 11.

SEE "TIE BAR INSTALLATION" DETAILS ON PAGE 12.



PRE-POSITIONED DUNNAGE PLAN VIEW

(KEY NUMBERS CONTINUED)

- 12 SEAL FOR 1-1/4" STEEL STRAPPING (108 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.
- 13 SEAL FOR 2" STEEL STRAPPING (72 REQD, 8 PER STRAP MARKED ③, AND 4 PER STRAP MARKED ⑩). DOUBLE CRIMP EACH SEAL, EXCEPT THOSE USED TO SECURE THE PADS, PIECES MARKED ⑪. SEE GENERAL NOTE "O" ON PAGE 2.
- 14 ANTI-SKID PLATES (64 REQD, 8 PER CONTAINER). POSITION TWO (2) UNDER EACH SKID OF CONTAINERS IN FIRST LAYER. SEE GENERAL NOTE "5" ON PAGE 2.
- 15 ANTI-CHAFING, NEUTRAL BARRIER MATERIAL (AS REQD). POSITION UNDER ALL STRAPS AT POINT OF CONTACT WITH CONTAINER.

SPECIAL NOTES:

- 1. A 24-UNIT LOAD IS SHOWN ON A 42'-6" LONG BY 10'-6" WIDE FLAT CAR WITH STAKE POCKETS SPACED 42" ON CENTER. SHORTER OR NARROWER CARS CANNOT BE USED FOR THE SHIPMENT OF THE DEPICTED LOAD.
- 2. THE DEPICTED LOAD CONFIGURATION MAY BE ADJUSTED TO SATISFY THE QUANTITY OF ITEMS TO BE SHIPPED. A 23-UNIT LOAD MAY BE SHIPPED BY OMITTING ONE CONTAINER FROM A STACK AS SHOWN IN THE "PROCEDURE FOR OMITTED CONTAINER" ON PAGE 8.
- 3. **CAUTION:** ALL STRAPS, PIECES MARKED ⑦, ⑧, ⑨ AND ⑩ MUST BE INSTALLED WITH CARE SO AS TO NOT HAVE AN EDGE-TO-EDGE CONTACT WITH ANOTHER STRAP.
- 4. THE CONTAINERS MUST BE POSITIONED ON THE FLAT CAR IN RELATION TO THE LOCATION OF THE STAKE POCKETS AS SHOWN, SO THAT HOLD-DOWN STRAPS WILL BE INSTALLED AT THE PROPER POSITION RELATIVE TO THE ITEM.
- 5. FOR THE SHIPMENT OF EMPTY CONTAINERS THE FOLLOWING IS APPLICABLE: ELIMINATE ALL PIECES MARKED ②, ⑩, AND ⑬; AND ELIMINATE THE CENTER PIECE MARKED ⑥ FROM EACH LOAD UNIT OF TWELVE CONTAINERS.

BILL OF MATERIAL

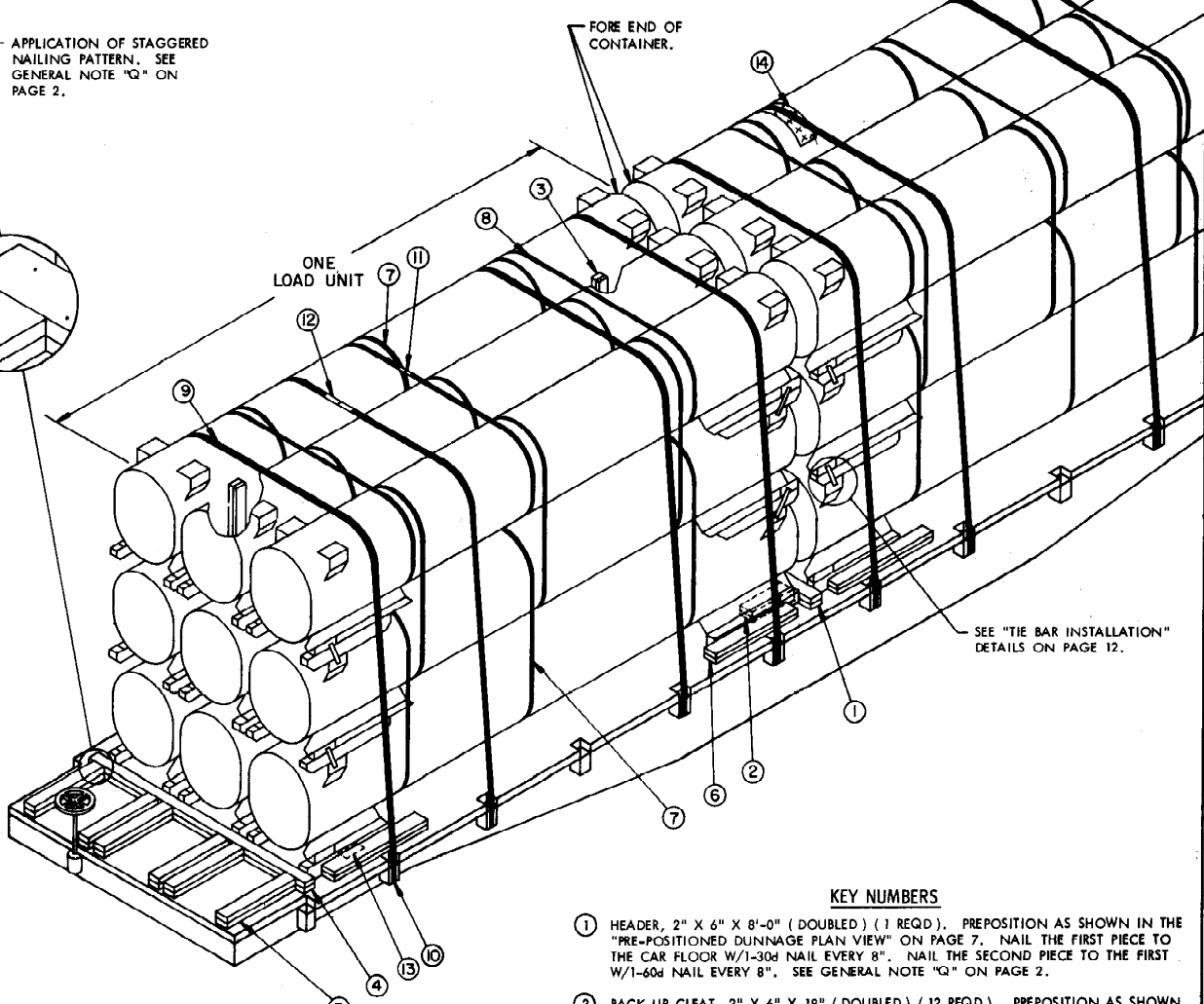
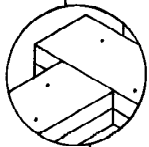
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	108	36
2" X 4"	108	72
2" X 6"	246	246
NAILS	NO. REQD	POUNDS
6d (2")	120	3/4
30d (4-1/2")	304	15-1/4
60d (6")	176	17-1/2
STRAPPING, STEEL, 1-1/4" X .035"	990' REQD	142 LBS
STRAPPING, STEEL, 2" X .050"	496' REQD	166 LBS
ANTI-SKID PLATES	64 REQD	8 LBS
ANTI-CHAFING MATERIAL	AS REQD	NIL
SEAL FOR 1-1/4" STRAPPING	108 REQD	5 LBS
SEAL FOR 2" STRAPPING	72 REQD	14 LBS

LOAD AS SHOWN

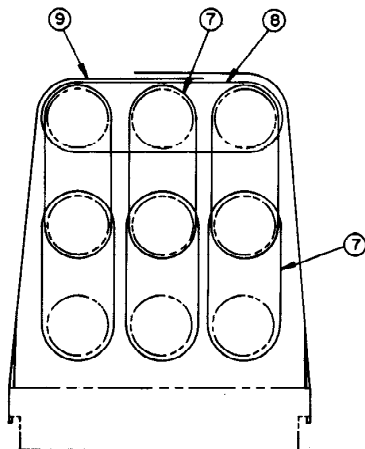
ITEM	QUANTITY	WEIGHT (APPROX)
M430 CONTAINER	24	77,400 LBS
DUNNAGE		1,253 LBS
TOTAL WEIGHT		78,653 LBS
ITEM	QUANTITY	WEIGHT (APPROX)
M611 CONTAINER	24	80,424 LBS
DUNNAGE		1,253 LBS
TOTAL WEIGHT		81,677 LBS

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

FORE END OF
CONTAINER.



ISOMETRIC VIEW



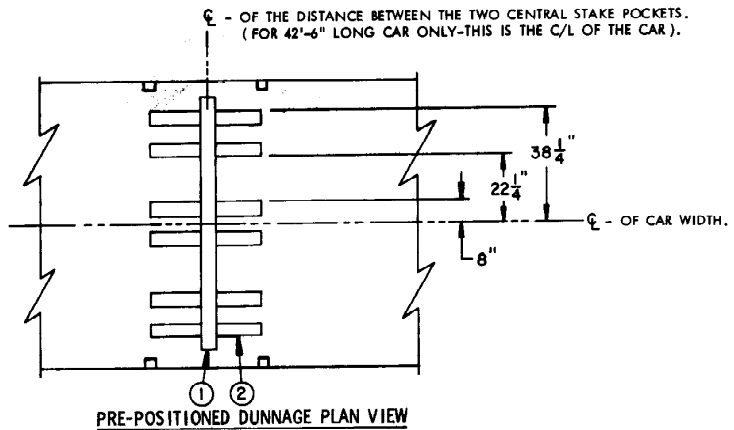
DETAIL OF STRAP THREADING

SEE "TIE BAR INSTALLATION"
DETAILS ON PAGE 12.

KEY NUMBERS

- ① HEADER, 2" X 6" X 8'-0" (DOUBLED) (1 REQD). PREPOSITION AS SHOWN IN THE "PRE-POSITIONED DUNNAGE PLAN VIEW" ON PAGE 7. NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-30d NAIL EVERY 8". NAIL THE SECOND PIECE TO THE FIRST W/1-60d NAIL EVERY 8". SEE GENERAL NOTE "Q" ON PAGE 2.
- ② BACK-UP CLEAT, 2" X 6" X 18" (DOUBLED) (12 REQD). PREPOSITION AS SHOWN IN THE "PRE-POSITIONED DUNNAGE PLAN VIEW" ON PAGE 7. NAIL THE FIRST PIECE TO THE CAR FLOOR W/3-30d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/3-60d NAILS.
- ③ ANTI-CHAFING ASSEMBLY (8 REQD). SEE THE DETAIL ON PAGE 11 AND POSITION AS SHOWN IN THE "ANTI-CHAFING ASSEMBLY PLACEMENT" DETAIL ON PAGE 12.
- ④ HEADER, 2" X 6" X 8'-0" (DOUBLED) (2 REQD). POSITION AS SHOWN AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-30d NAIL EVERY 8". NAIL THE SECOND PIECE TO THE FIRST W/1-60d NAIL EVERY 8".
- ⑤ BACK-UP CLEAT, 2" X 6" X 30" (DOUBLED) (12 REQD). ALIGN WITH THE CONTAINER SKIDS AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-30d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/5-60d NAILS.
- ⑥ SIDE BLOCKING, 2" X 6" X 42" (DOUBLED) (8 REQD). POSITION AGAINST CONTAINER SKIDS AS SHOWN AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/7-30d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑦ STACK UNITIZING STRAP, 1-1/4" X .035" X 17'-0" LONG STEEL STRAPPING (36 REQD). SEE THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3, AND SPECIAL NOTE 3 ON PAGE 7.
- ⑧ BUNDLING STRAP, 1-1/4" X .035" X 25'-0" LONG STEEL STRAPPING (6 REQD). INSTALL TO ENIRCLE THE LATERALLY ADJACENT CONTAINERS IN THE TOP LAYER, AS SHOWN.
- ⑨ HOLD-DOWN STRAP, 2" X .050" X 36'-0" LONG STEEL STRAPPING (8 REQD). INSTALL EACH STRAP FROM TWO (2) 18'-0" LONG PIECES. SEE GENERAL NOTE "M" ON PAGE 2.
- ⑩ PAD, 2" X .050" STEEL STRAP 24" LONG (16 REQD). POSITION UNDER STAKE POCKET AND SEAL TO HOLD-DOWN STRAP MARKED Ⓞ. SEE "DETAIL A" ON PAGE 11. ALT: STAKE POCKET PROTECTOR (32 REQD). USE TWO (2) UNDER EACH STAKE POCKET WITH A HOLD-DOWN STRAP. SEE "DETAIL B" ON PAGE 11.
- ⑪ SEAL FOR 1-1/4" STRAPPING (84 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.

(CONTINUED ON PAGE 7)



(KEY NUMBERS CONTINUED)

- 12 SEAL FOR 2" STRAPPING (48 REQ'D, 6 PER STRAP). EXCEPT FOR THE SEALS USED TO SECURE THE PADS, DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.
- 13 ANTI-SKID PLATES (48 REQ'D, 8 PER CONTAINER). POSITION TWO (2) UNDER EACH SKID OF CONTAINERS IN THE FIRST LAYER. SEE GENERAL NOTE "5" ON PAGE 2.
- 14 ANTI-CHAFING, NEUTRAL BARRIER MATERIAL (AS REQ'D). PLACE UNDER STRAPPING AT ALL POINTS OF CONTACT WITH CONTAINERS.

SPECIAL NOTES:

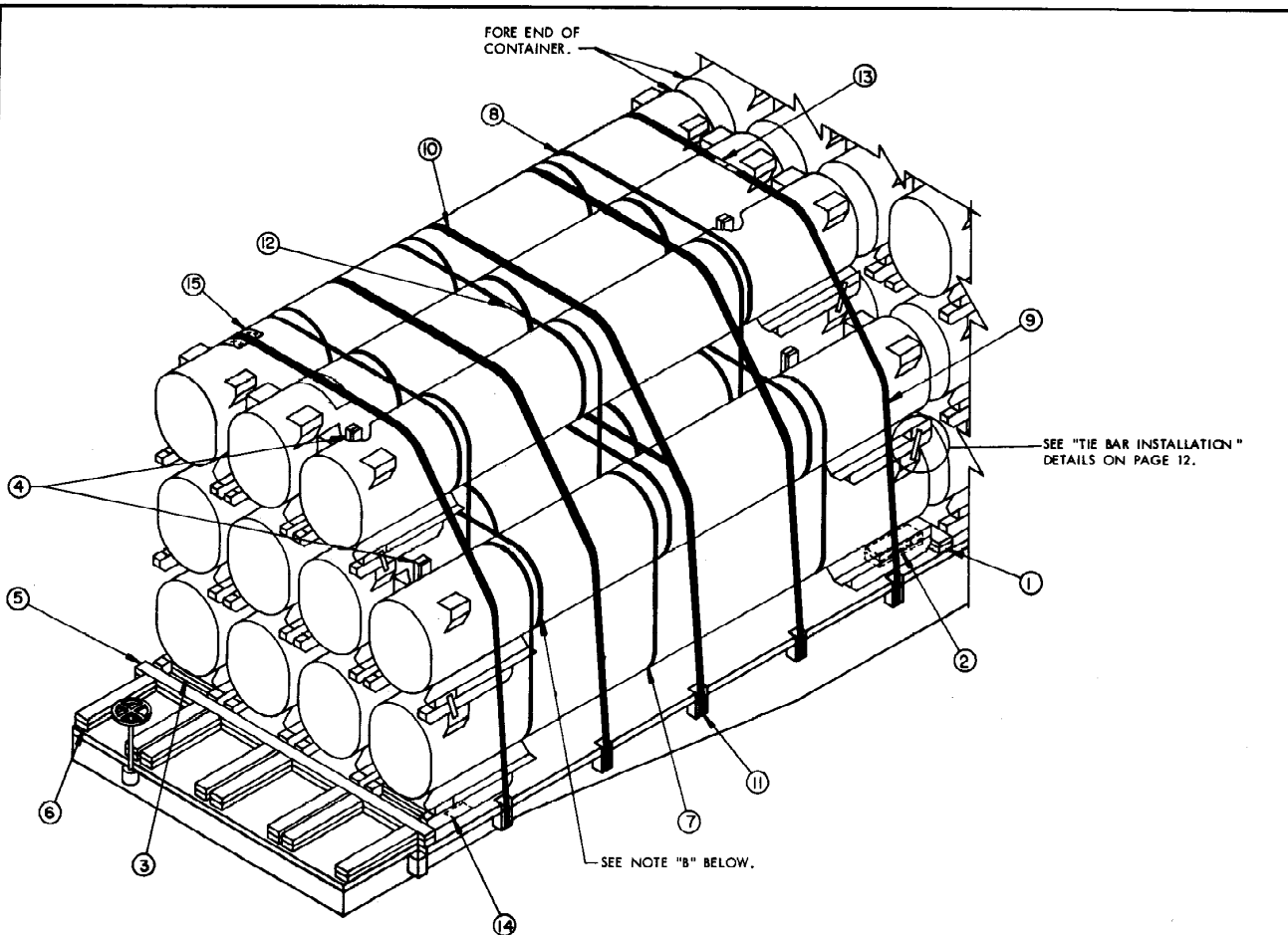
- 1. AN 18-UNIT LOAD IS SHOWN ON 42'-6" LONG BY 9'-2" WIDE FLAT CAR WITH STAKE POCKETS SPACED 42" ON CENTER. A LONGER AND/OR WIDER CAR MAY BE USED.
- 2. THE DEPICTED LOAD CONFIGURATION MAY BE ADJUSTED TO SATISFY THE QUANTITY OF ITEMS TO BE SHIPPED. A 17-UNIT LOAD MAY BE SHIPPED BY OMITTING ONE CONTAINER FROM A STACK. THIS MAY BE ACCOMPLISHED BY APPLYING THE GUIDANCE GIVEN IN THE "PROCEDURE FOR OMITTED CONTAINER" ON PAGE 8.
- 3. CAUTION: ALL STRAPS, PIECES MARKED ⑦, ⑧ AND ⑨ MUST BE INSTALLED WITH CARE SO AS TO NOT HAVE AN EDGE-TO-EDGE CONTACT WITH ANOTHER STRAP.
- 4. THE CONTAINERS MUST BE POSITIONED ON THE FLAT CAR IN RELATION TO THE LOCATION OF THE STAKE POCKETS AS SHOWN, SO THAT HOLD-DOWN STRAPS WILL BE INSTALLED AT THE PROPER POSITION RELATIVE TO THE ITEM.
- 5. FOR THE SHIPMENT OF EMPTY CONTAINERS THE FOLLOWING IS APPLICABLE: ELIMINATE ALL PIECES MARKED ② AND ③. ELIMINATE THE CENTERED PIECE MARKED ④ FROM EACH LOAD UNIT. ELIMINATE ONE PIECE MARKED ⑤ FROM EACH LOAD UNIT AND APPLY THE THREE REMAINING PIECES ④ WITH ONE PASSING OVER THE LOAD UNIT NEAR THE LONGITUDINAL MIDDPOINT AND WITH ONE NEAR EACH END OF THE LOAD UNIT. ALSO, SHORTEN PIECES MARKED ⑥ TO 36", AND NAIL EACH LAMINATION W/6-30d NAILS.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	72	24
2" X 4"	72	48
2" X 6"	200	200
NAILS	NO. REQ'D	POUNDS
6d (2")	80	1/2
30d (4-1/2")	244	12-1/4
60d (6")	132	13-1/4
STEEL STRAPPING, 1-1/4" X .035" -----	756' REQ'D	108 LBS
STEEL STRAPPING, 2" X .050" -----	304' REQ'D	102 LBS
SEAL FOR 1-1/4" STRAPPING -----	84 REQ'D	5 LBS
SEAL FOR 2" STRAPPING -----	64 REQ'D	13 LBS
ANTI-SKID PLATES -----	48 REQ'D	6 LBS
ANTI-CHAFING MATERIAL -----	AS REQ'D	NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
M430 CONTAINER -----	18	58,050 LBS
DUNNAGE -----		940 LBS
TOTAL WEIGHT -----		58,990 LBS
ITEM	QUANTITY	WEIGHT (APPROX)
M611 CONTAINER -----	18	60,318 LBS
DUNNAGE -----		940 LBS
TOTAL WEIGHT -----		61,258 LBS



ISOMETRIC VIEW

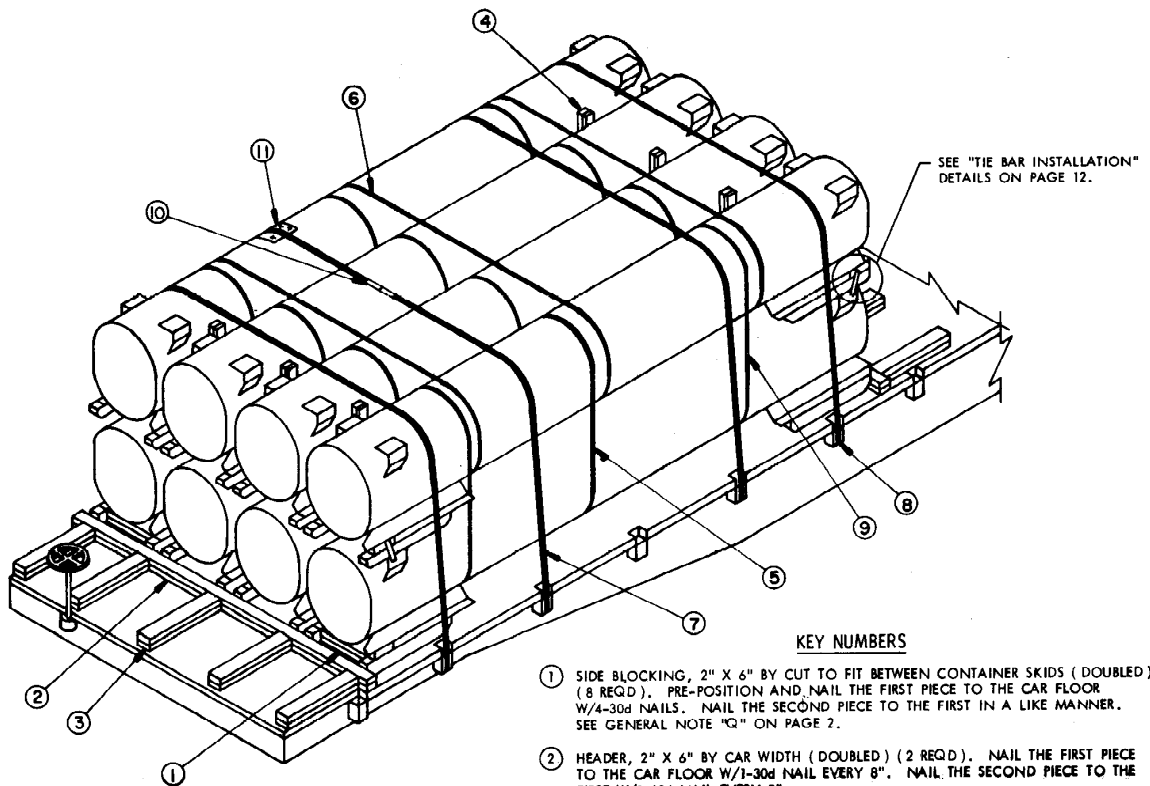
SPECIAL NOTES:

1. AN 11-CONTAINER LOAD UNIT IS SHOWN ON A 10'-6" WIDE (PLATFORM) FLAT CAR. THIS LOAD UNIT MAY BE SUBSTITUTED FOR A 12-CONTAINER LOAD UNIT OF THE LOAD DEPICTED ON PAGE 4, TO PROVIDE FOR THE SHIPMENT OF A 23-UNIT LOAD.
2. IF DESIRED, A 10-CONTAINER LOAD UNIT MAY BE ACCOMPLISHED BY ALSO OMITTING THE OPPOSITE OUTSIDE CONTAINER IN THE TOP LAYER.

KEY NUMBERS

SEE PAGE 4 FOR IDENTIFICATION OF KEY NUMBERS SHOWN ABOVE, WITH THE FOLLOWING ADJUSTMENTS REQUIRED TO ALLOW FOR ONE OMITTED CONTAINER. ALSO, SEE SPECIAL NOTE 1 ON THIS PAGE.

- A. REDUCE THE LENGTH OF TWO (2) ANTI-CHAFING ASSEMBLIES, PIECE MARKED ④, AS SHOWN.
- B. INSTALL THREE (3) ADDITIONAL BUNDLING STRAPS AROUND THE CONTAINERS IN THE SECOND LAYER, AND SHORTEN THE BUNDLING STRAPS, PIECE MARKED ⑩, IN THE THIRD LAYER TO 25'-0" LONG.
- C. REDUCE THE LENGTH OF FOUR (4) HOLD-DOWN STRAPS, PIECE MARKED ③, AND ONE (1) HOLD-DOWN STRAP, PIECE MARKED ⑪, AS REQUIRED.



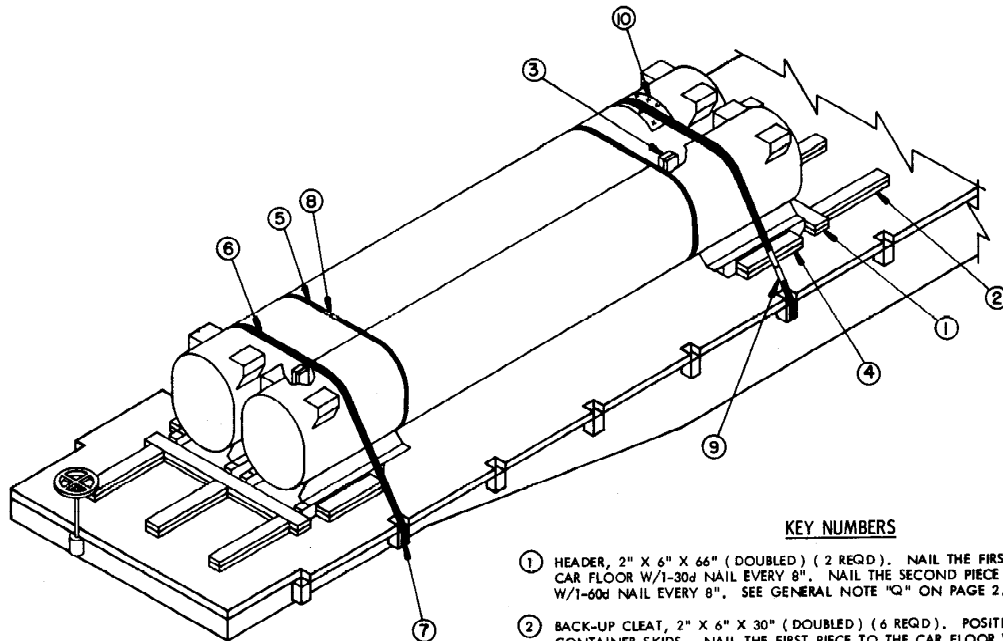
ISOMETRIC VIEW

KEY NUMBERS

- ① SIDE BLOCKING, 2" X 6" BY CUT TO FIT BETWEEN CONTAINER SKIDS (DOUBLED) (8 REQD). PRE-POSITION AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-30d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTE "Q" ON PAGE 2.
- ② HEADER, 2" X 6" BY CAR WIDTH (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-30d NAIL EVERY 8". NAIL THE SECOND PIECE TO THE FIRST W/1-60d NAIL EVERY 8".
- ③ BACK-UP CLEAT, 2" X 6" X 30" (DOUBLED) (10 REQD). ALIGN WITH THE CONTAINER SKID AND/OR THE JOINT BETWEEN CONTAINER SKIDS, AS SHOWN, AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-30d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/5-60d NAILS. SEE SPECIAL NOTE 3 AT LEFT.
- ④ ANTI-CHAFING ASSEMBLY (6 REQD). SEE THE DETAIL ON PAGE 11 AND POSITION AS SHOWN IN THE "ANTI-CHAFING ASSEMBLY PLACEMENT" DETAIL ON PAGE 12.
- ⑤ STACK UNITIZING STRAP, 1-1/4" X .035" X 17'-0" LONG STEEL STRAPPING (12 REQD). SEE THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3 AND SPECIAL NOTE 2 TO THE LEFT.
- ⑥ BUNDLING STRAP, 1-1/4" X .035" X 29'-0" LONG STEEL STRAPPING (3 REQD). INSTALL TO ENCIRCLE THE LATERALLY ADJACENT TOP LAYER CONTAINERS AS SHOWN.
- ⑦ HOLD-DOWN STRAP, 2" X .050" X 36'-0" LONG STEEL STRAPPING (4 REQD). INSTALL EACH STRAP FROM TWO (2) 18'-0" LONG PIECES. SEE GENERAL NOTE "M" ON PAGE 2.
- ⑧ PAD, 2" X .050" X 24" LONG STEEL STRAPPING (8 REQD). POSITION UNDER STAKE POCKET AND SEAL TO A HOLD-DOWN STRAP MARKED ⑦. SEE "DETAIL A" ON PAGE 11. ALT: STAKE POCKET PROTECTOR (16 REQD). USE TWO (2) UNDER EACH STAKE POCKET WITH A HOLD-DOWN STRAP. SEE "DETAIL B" ON PAGE 11.
- ⑨ SEAL FOR 1-1/4" STEEL STRAPPING (30 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.
- ⑩ SEAL FOR 2" STEEL STRAPPING (32 REQD, 8 PER STRAP). DOUBLE CRIMP EACH SEAL, EXCEPT THOSE USED TO SECURE THE PADS, PIECES MARKED ⑧. SEE GENERAL NOTE "O" ON PAGE 2.
- ⑪ ANTI-CHAFING NEUTRAL BARRIER MATERIAL (AS REQD). POSITION UNDER ALL STRAPS AT POINT OF CONTACT WITH CONTAINER.

SPECIAL NOTES:

1. AN 8-UNIT LOAD IS SHOWN ON A 10'-6" WIDE (PLATFORM) FLAT CAR. THIS LOAD UNIT MAY BE SUBSTITUTED FOR A 12-CONTAINER LOAD UNIT OF THE LOAD DEPICTED ON PAGE 4, TO PROVIDE FOR SHIPMENT OF A 20-UNIT LOAD. **CAUTION:** THE HEADERS AND BACK-UP CLEATS MUST BE INSTALLED AS SHOWN IN THE LOAD ON PAGE 4.
2. **CAUTION:** ALL STRAPS, PIECES MARKED ⑤, ⑥ AND ⑦, MUST BE INSTALLED WITH CARE SO AS TO NOT HAVE AN EDGE-TO-EDGE CONTACT WITH ANOTHER STRAP.
3. FIVE (5) DOUBLED BACK-UP CLEATS 30" LONG, SHOWN AS PIECE MARKED ③ ARE ADEQUATE FOR RETAINING A MAXIMUM LOAD OF 30,000 POUNDS.



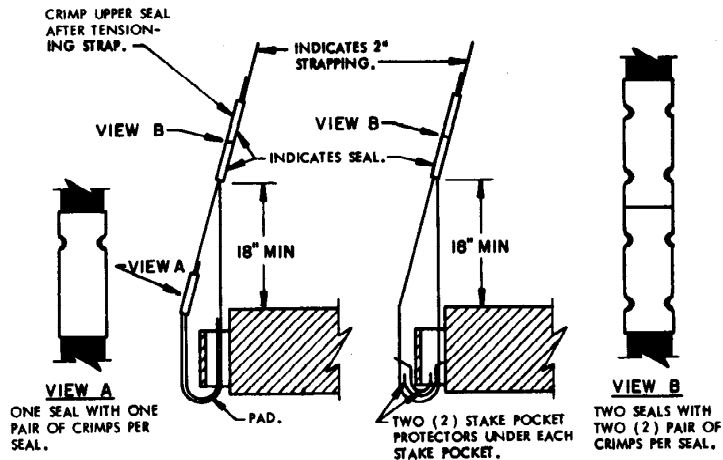
ISOMETRIC VIEW

KEY NUMBERS

- ① HEADER, 2" X 6" X 66" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-30d NAIL EVERY 8". NAIL THE SECOND PIECE TO THE FIRST W/1-60d NAIL EVERY 8". SEE GENERAL NOTE "Q" ON PAGE 2.
- ② BACK-UP CLEAT, 2" X 6" X 30" (DOUBLED) (6 REQD). POSITION TO ALIGN WITH CONTAINER SKIDS. NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-30d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/5-60d NAILS.
- ③ ANTI-CHAFING ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 11 AND POSITION AS SHOWN IN THE "ANTI-CHAFING ASSEMBLY PLACEMENT" DETAIL ON PAGE 12.
- ④ SIDE BLOCKING, 2" X 6" X 24" (DOUBLED) (4 REQD). POSITION AGAINST CONTAINER SKIDS AS SHOWN AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-30d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑤ BUNDLING STRAP, 1-1/4" X .035" X 17'-0" LONG STEEL STRAPPING (2 REQD). INSTALL TO ENIRCLE CONTAINERS.
- ⑥ HOLD-DOWN STRAP, 2" X .050" X 25'-0" LONG STEEL STRAPPING (2 REQD). INSTALL FROM ONE PIECE. SEE GENERAL NOTE "M" ON PAGE 2, AND SPECIAL NOTE 4 ON THIS PAGE.
- ⑦ PAD, 2" X .050" STEEL STRAP 24" LONG (4 REQD). POSITION UNDER A STAKE POCKET AND SEAL TO HOLD-DOWN STRAP MARKED ⑥. SEE "DETAIL A" ON PAGE 11. ALT: STAKE POCKET PROTECTOR (8 REQD). USE TWO (2) UNDER EACH STAKE POCKET WITH A HOLD-DOWN STRAP. SEE "DETAIL B" ON PAGE 11.
- ⑧ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.
- ⑨ SEAL FOR 2" STRAPPING (12 REQD, 6 PER STRAP). EXCEPT FOR THE SEALS USED TO SECURE THE PADS, DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.
- ⑩ ANTI-CHAFING, NEUTRAL BARRIER MATERIAL (AS REQD). PLACE UNDER STRAPPING AT ALL POINTS OF CONTACT WITH CONTAINERS.

SPECIAL NOTES:

1. A 2-UNIT LOAD IS SHOWN ON AN 8'-6" WIDE (PLATFORM) FLAT CAR WITH STAKE POCKETS SPACED 42" ON CENTER. A WIDER CAR MAY BE USED.
2. THREE (3) BACK-UP CLEATS, SHOWN AS PIECES MARKED ②, ARE ADEQUATE FOR RETAINING A MAXIMUM LCL LOAD OF 18,000 POUNDS.
3. TWO (2) DOUBLED SIDE BLOCKING PIECES (24" LONG), SHOWN AS PIECE MARKED ④, ARE REQUIRED ON EACH SIDE OF A LOAD UNIT AND ARE ADEQUATE FOR RETAINING A MAXIMUM OF 8,000 POUNDS PER LOAD UNIT.
4. SECURE HOLD-DOWN STRAP, PIECE MARKED ⑥, TO A STAKE POCKET ON ONE SIDE OF THE CAR, PASS THE STRAP OVER THE TOP OF THE LOAD, THROUGH A STAKE POCKET ON THE OPPOSITE SIDE OF THE CAR, AND BACK UP ABOVE THE CAR FLOOR, WHERE IT CAN BE TENSIONED AND SEALED.



DETAIL A

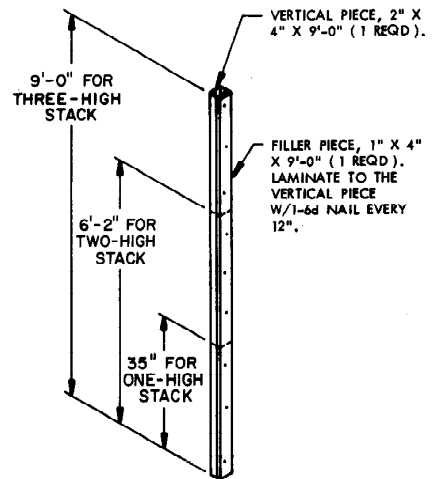
METHOD OF INSTALLING 2" STRAPPING AND PAD AT STAKE POCKET.

DETAIL B

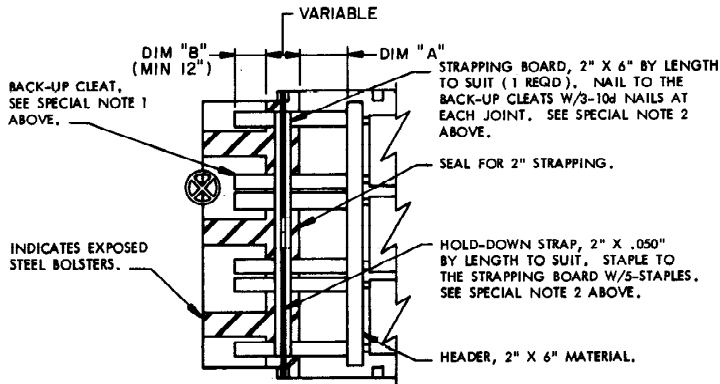
METHOD OF INSTALLING 2" STRAPPING AND STAKE POCKET PROTECTORS (ALT PAD).

SPECIAL NOTES:

1. WHEN LOADING CARS HAVING EXPOSED STEEL BOLSTERS, DIMENSION "B" MUST BE AT LEAST 12", AND THE TOTAL OF DIMENSIONS "A" AND "B" MUST BE EQUAL TO OR GREATER THAN THE LENGTH OF A BACK-UP CLEAT TO PROVIDE FOR PROPER NAILING TO THE CAR FLOOR. SEE KEY NUMBER ④ ON PAGE 4, AND KEY NUMBER ⑤ ON PAGE 6 FOR PROPER NAILING.
2. THE OPTIONAL STRAP HOLD-DOWN FOR END BLOCKING IS FOR CARS WITH OR WITHOUT EXPOSED STEEL BOLSTERS.

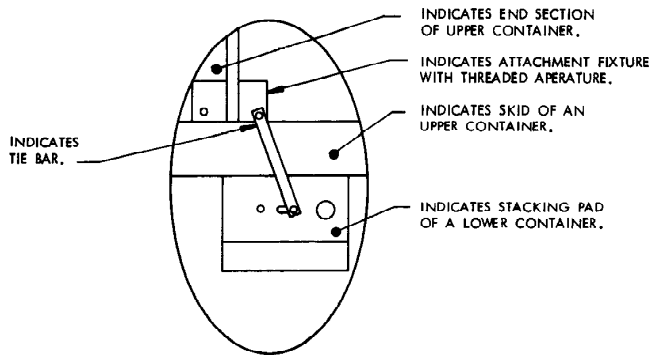


ANTI-CHAFING ASSEMBLY

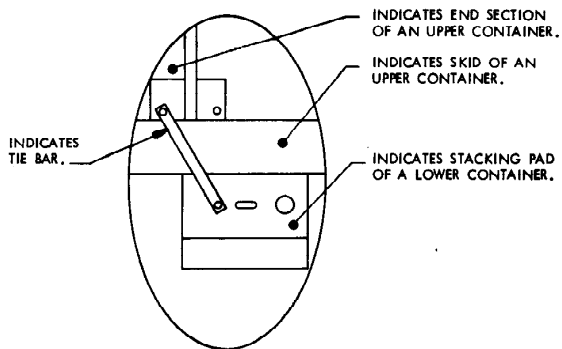


TYPICAL END BLOCKING FOR CARS WITH EXPOSED STEEL BOLSTERS

SEE GENERAL NOTE "H" ON PAGE 2.



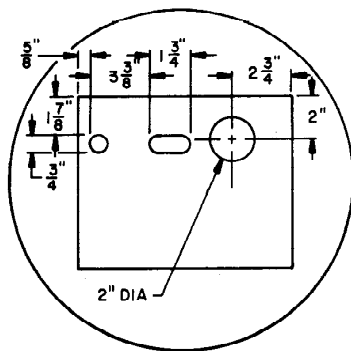
PREFERRED METHOD



ALTERNATE METHOD

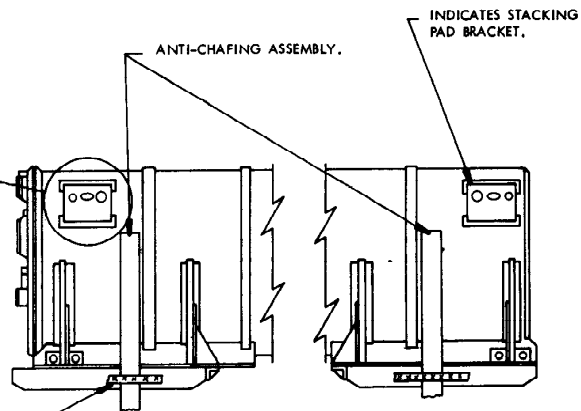
TIE BAR INSTALLATION

NOTE: AT THE OTHER END OF A STACK, THE TIE BAR WILL ANGLE UPWARD IN A DIRECTION OPPOSITE TO THAT SHOWN ABOVE AND TOWARD THE ADJACENT END SECTION OF THE UPPER CONTAINER.



DETAIL C

BRACKET AT OTHER END OF CONTAINER IS OPPOSITE HAND. SEE GENERAL NOTE "I" ON PAGE 2.



ANTI-CHAFING ASSEMBLY PLACEMENT

THE ANTI-CHAFING ASSEMBLY WILL BE PLACED AS SHOWN WHEN LOADING THE M430 CONTAINER. WHEN LOADING THE M611 CONTAINER, WHICH HAS THE WIDER SKIDS, THE ANTI-CHAFING ASSEMBLY WILL BE MOVED INBOARD, SO AS TO BE CAPTURED BEHIND THE INBOARD END OF THE SKID. THE ASSEMBLY MAY BE TAPED TO THE CONTAINER TO PREVENT DISPLACEMENT DURING LOADING OPERATIONS.