

APPROVED BY
 BUREAU OF EXPLOSIVES
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 SUPERVISOR, MILITARY & INTERMOVAL SERVICES
 DATE 1/24/75

LOADING AND BRACING (CL & LCL) IN BOX CARS[⊕] OF THE WARHEAD SECTION, PACKED IN THE M544 STORAGE AND SHIPPING CONTAINER

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⊕ INCLUDES CONVENTIONAL TYPE BOX CARS AND CUSHIONED BOX CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS.

| REVISIONS | | | | DESIGNER GRG/A | PROJ ENG MYD/JNW |
|-----------|--|--|--|---|-----------------------------------|
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| | | | | FEBRUARY 1975 | |
| | | | | CLASS | DIVISION |
| | | | | 19 | 48 |
| | | | | DRAWING | FILE |
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DO NOT SCALE

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 SPECIFIED IN THIS DRAWING ARE APPLICABLE TO THE WARHEAD SECTION, WHEN PACKED IN THE M544 CONTAINER. SUBSEQUENT REFERENCE TO CONTAINER MEANS THE CONTAINER WITH CONTENTS. SEE NOTE "R".
- C. FOR DETAIL OF THE M544 CONTAINER SEE DRAWING NO. 9211120.
CONTAINER DIMENSIONS --- 115-5/8" LONG BY 34-15/16" WIDE BY 36-9/16" HIGH.
GROSS WEIGHT ----- 1,900 POUNDS (APPROX).
- D. THIS ITEM IS A DOT CLASS "A" EXPLOSIVE. THE OUTLOADING PROCEDURES SPECIFIED HEREIN CAN ALSO BE UTILIZED FOR THE SHIPMENT OF THE CONTAINERS WHEN THEY ARE LOADED WITH AN ITEM OTHER THAN THE WARHEAD, OR WHEN THEY ARE EMPTY.
- E. THE OUTLOADING PROCEDURES SPECIFIED HEREIN ARE BASED ON CONVENTIONAL TYPE BOX CARS OF VARIOUS LENGTH AND WIDTH COMBINATIONS, WITH WOOD OR NAILABLE METAL FLOORS AND EQUIPPED WITH CONVENTIONAL SLIDING AND/OR PLUG TYPE DOORS. ALL-METAL CARS WITH NAILABLE FLOORS CAN ALSO BE USED. PROCEDURES ARE ALSO INCLUDED FOR SHIPMENT IN CUSHIONED BOX CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH OR WITHOUT ADJUSTABLE SIDE FILLERS; HOWEVER, ONLY THOSE CARS WHICH SATISFY THE SPECIFICATIONS CONTAINED ON PAGE 19 CAN BE USED.
- F. THE LOADS AS SHOWN ARE BASED ON CARS WHICH HAVE VARIOUS WIDTH DOOR OPENINGS. A 10'-0" WIDE OPENING IS THE MINIMUM WIDTH OPENING THAT WILL PERMIT LOADING CONTAINERS AS DEPICTED ON PAGE 4. FOR THE LOAD DEPICTED ON PAGE 6, A 6'-0" WIDE OPENING IS THE MINIMUM WIDTH OPENING THAT WILL PERMIT LOADING THE CONTAINERS; HOWEVER, AN 8'-0" MINIMUM WIDTH OPENING IS RECOMMENDED TO FACILITATE LOADING OPERATIONS AND TO MATERIALLY REDUCE HANDLING COSTS AND LOADING TIME. CARS WITH STAGGERED DOOR OPENINGS OF ANY WIDTH CAN BE USED FOR ALL LOADS DEPICTED HEREIN. FOR ADDITIONAL GUIDANCE, SEE THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3 AND THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO DEPICTED OUTLOADING METHODS.
- G. DOORWAY PROTECTION REQUIREMENTS WITHIN THE "DOORWAY AREA" OF A CAR ARE INCLUDED IN THE PROCEDURES AND ARE APPLICABLE TO CARS HAVING EITHER CONVENTIONAL SLIDING AND/OR PLUG TYPE DOORS. THE "DOORWAY AREA" WITHIN A CAR IS DEFINED AS THE CARGO SPACE THAT IS ADJACENT TO A CONVENTIONAL TYPE AND/OR PLUG TYPE DOOR. THE LENGTH OF A "DOORWAY AREA" CAN BE AS MUCH AS 24 FEET IN SOME CARS THAT ARE EQUIPPED WITH STAGGERED DOORS. **CAUTION:** DUNNAGE MATERIAL MUST NOT BE NAILED TO ANY PLUG DOOR, WHETHER AUXILIARY OR MAIN. ALSO, AFTER THE PLUG DOORS ON A CAR ARE CLOSED AND READY FOR THE INSTALLATION OF "CAR SEALS", A PIECE OF WIRE OF SUITABLE SIZE WILL BE USED IN ADDITION TO, AND IN CONJUNCTION WITH, EACH CAR SEAL USED TO "SEAL" THE CAR. THE WIRE WILL BE THREADED THROUGH THE HOLES IN THE DOOR LATCH ASSEMBLY ONE OR MORE TIMES, AND THE WIRE ENDS WILL BE TWISTED TOGETHER.
- H. THE SELECTION OF RAILCARS FOR THE TRANSPORT OF THE DESIGNATED ITEM WILL BE IN ACCORDANCE WITH HAZARDOUS MATERIALS REGULATIONS OF DOT AND AR 55-355, CHAPTER 213, FOR EXPLOSIVES OR OTHER DANGEROUS ARTICLES, IN FULL.
- J. **NOTICE:** A SHIPMENT WILL BE POSITIONED IN THE CAR IN COMPLIANCE WITH THE WEIGHT DISTRIBUTION REQUIREMENTS OF THE AAR. THE APPROVED BLOCKING, BRACING, AND STAYING 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 MUST BE FOLLOWED AS CLOSELY AS POSSIBLE.
- K. OTHER TYPES OF LADING ITEMS MAY BE LOADED IN A CAR WHICH IS PARTIALLY LOADED WITH THE DESIGNATED ITEMS, PROVIDING THE TOTAL LOAD IS COMPATIBLE, EXISTING DIRECTIVES ARE NOT VIOLATED, AND OTHER LADING ITEMS ARE BLOCKED AND BRACED TO EQUAL THE BLOCKING AND BRACING CRITERIA SPECIFIED.
- L. IF THE CAR BEING USED FOR A SHIPMENT IS EQUIPPED WITH A NAILABLE METAL FLOOR AND THE NAIL SIZE FOR FLOOR NAILING IS MARKED ON THE SIDE WALL OF THE CAR, THAT GUIDANCE SHOULD BE APPLIED FOR THE NAILING OF THE APPLICABLE DUNNAGE PIECES. IF THE NAIL SIZE IS NOT SPECIFIED IN THE CAR, 30d NAILS SHOULD BE USED IN LIEU OF THOSE SPECIFIED IN THE KEY NUMBERS.

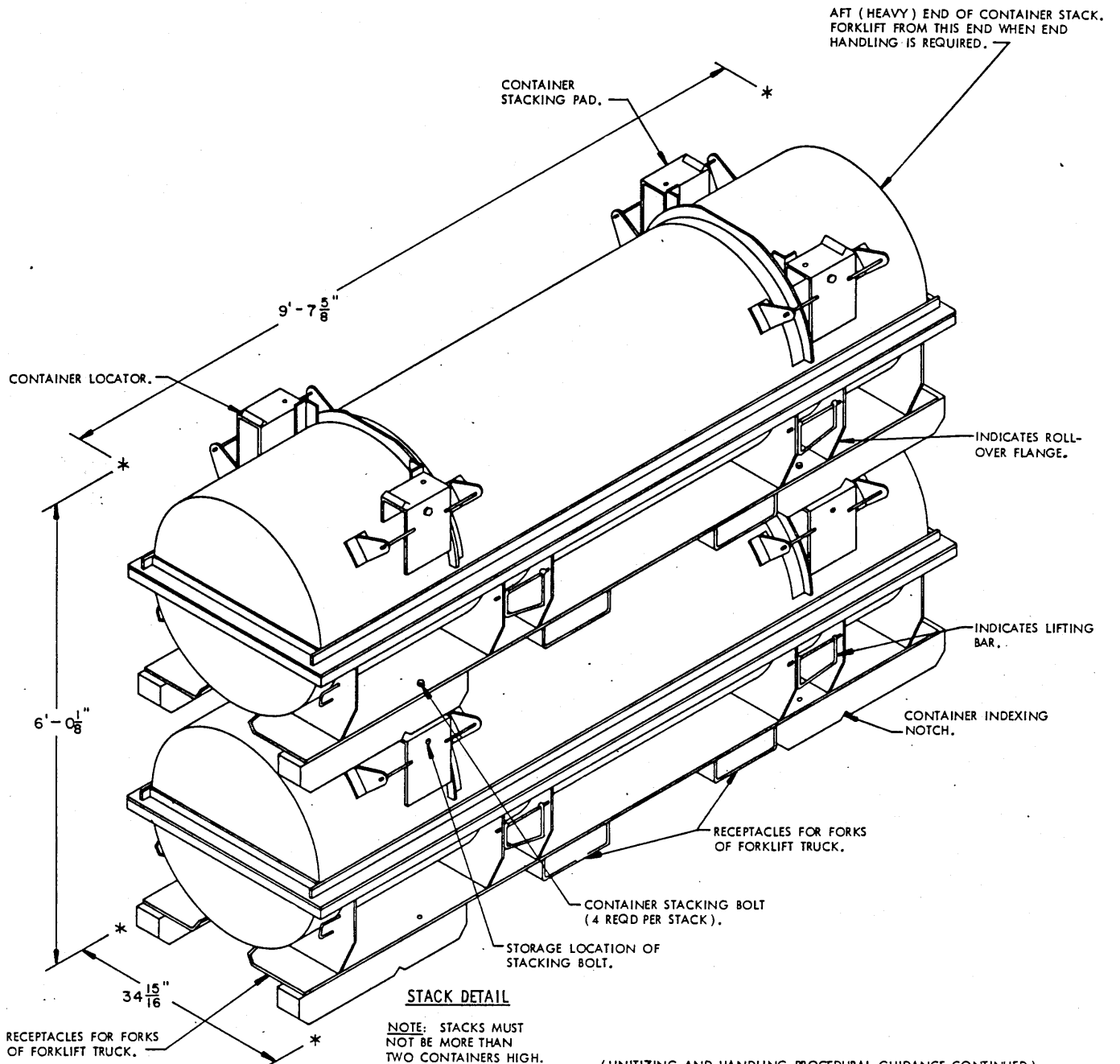
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(GENERAL NOTES CONTINUED)

- M. 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. IF THOSE MEMBERS SPECIFICALLY IDENTIFIED AS "STRUTS" WITHIN THE KEY NUMBERS OF A DEPICTED LOAD ARE SPECIFIED TO BE DOUBLED 2" THICK MATERIAL AND LAMINATED, IT IS PERMISSIBLE TO USE 4" X 6" MATERIAL IN LIEU OF TWO LAMINATED PIECES OF 2" X 6" MATERIAL.
- N. **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 OR SIDEWALL 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 OR SIDEWALL 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.
- O. WHEN ANY 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. **CAUTION:** EXERCISE CARE DURING TENSIONING TO PREVENT DAMAGE TO LADING ITEMS.
- P. THROUGHOUT THIS PROCEDURAL DRAWING PORTIONS OF THE BLOCKING COMPONENTS AND OF THE DEPICTED CARS, SUCH AS A CAR SIDE WALL, HAVE BEEN OMITTED FROM THE LOAD VIEWS FOR CLARITY PURPOSES.
- Q. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3 AND THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO DEPICTED OUTLOADING METHODS.
- R. **CAUTION:** THE M544 CONTAINERS MUST NOT BE STACKED MORE THAN TWO CONTAINERS HIGH.

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, B OR C, FED SPEC QQ-S-781.
- STRAP SEAL ----- : COMMERCIAL GRADE.
- ANTI-CHAFING MATERIAL - : NEUTRAL BARRIER MATERIAL, MIL-B-121 (OR EQUAL).



(UNITIZING AND HANDLING PROCEDURAL GUIDANCE CONTINUED)

**UNITIZING AND HANDLING
PROCEDURAL GUIDANCE**

1. STACKING CONTAINERS FOR UNITIZING.

- A. THE UPPER CONTAINER SHOULD BE PLACED AS CLOSE AS POSSIBLE IN VERTICAL ALIGNMENT WITH THE LOWER CONTAINER.
- B. POSITION THE AFT (HEAVY) END OF THE UPPER CONTAINER ABOVE THE AFT (HEAVY) END OF THE LOWER CONTAINER.
- C. THE CONTAINER INDEXING NOTCHES WITHIN THE SKIDS OF THE UPPER CONTAINER SHOULD BE FULLY SEATED DOWN OVER THE LOCATORS ON THE STACKING PADS OF THE LOWER CONTAINER.

2. APPLICATION OF CONTAINER STACKING BOLTS.

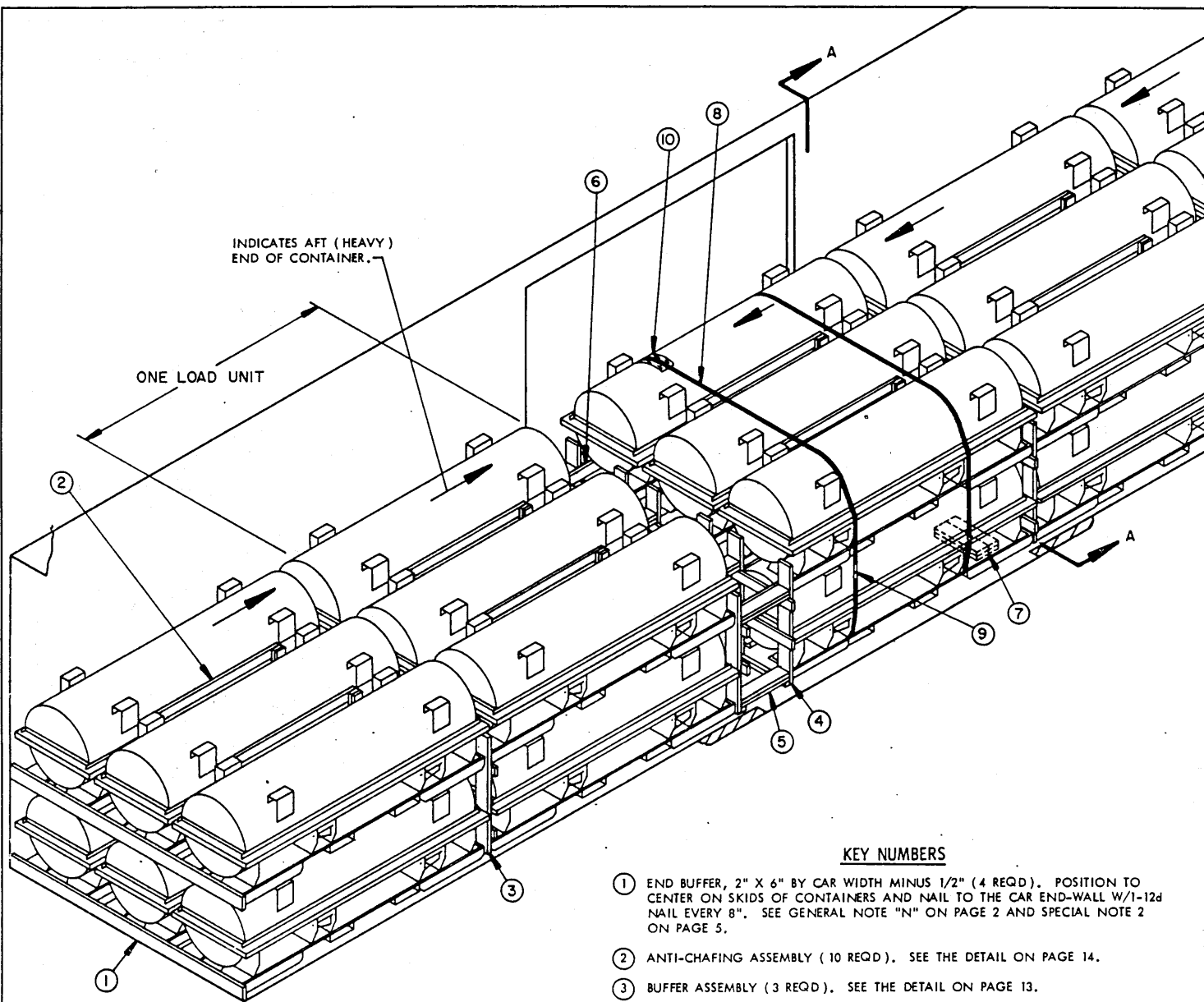
- A. REMOVE THE STACKING BOLT FROM ITS STORAGE LOCATION ON THE STACKING PAD OF THE CONTAINER.
- B. POSITION ONE WASHER ON THE STACKING BOLT AND INSERT THE BOLT DOWN THROUGH THE HOLE IN THE TOP CONTAINER SKID AND THROUGH THE HOLE IN THE BOTTOM CONTAINER STACKING PAD. POSITION THE SECOND WASHER AND THE NUT OVER THE THREADED END OF THE BOLT.
- C. TIGHTEN THE NUT AS SECURELY AS POSSIBLE WITH A NORMAL SIZE HAND TOOL WRENCH.

(CONTINUED AT RIGHT)

3. 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.

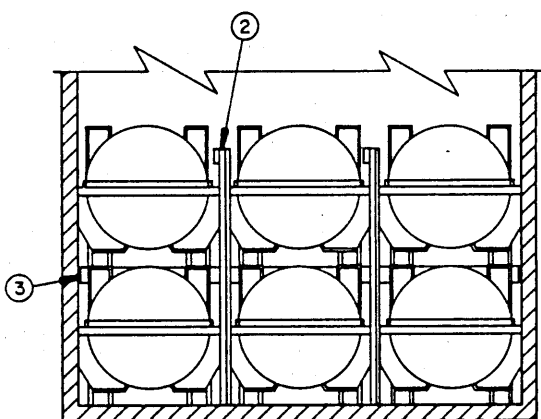
- A. ONLY APPROVED AND APPROPRIATELY SIZED MATERIALS HANDLING EQUIPMENT WILL BE USED FOR HANDLING THE DEPICTED CONTAINERS.
- B. IF HANDLING IS ACCOMPLISHED WITH A FORKLIFT TRUCK, THE CONTAINERS SHOULD BE HANDLED FROM A SIDE POSITION AS MUCH AS POSSIBLE. CARE MUST BE EXERCISED WHEN INSERTING FORKS UNDER 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 CAR LOADING, A TWO-HIGH CONTAINER STACK MAY BE HANDLED BY INSERTING THE FORKS OF A FORKLIFT TRUCK INTO THE END FORK RECEPTACLES OF THE UPPER CONTAINER. ALSO, IF A CONTAINER OR A CONTAINER STACK IS HANDLED FROM AN END POSITION, LIFTING SHOULD BE DONE AT THE AFT (HEAVY) END OF THE CONTAINER OR CONTAINER STACK AS MUCH AS POSSIBLE.
- C. IF ONE CONTAINER IS HANDLED BY SLINGING, THE SLING MAY BE ATTACHED TO THE LIFTING POINTS OF THE CONTAINER. HOWEVER, IF A TWO-HIGH STACK IS HANDLED BY SLINGING, DO NOT ATTACH THE SLING TO THE LIFTING POINTS OF THE CONTAINERS. THE SLING USED MUST BE OF SUCH A DESIGN THAT LIFTING IS DONE ON THE BOTTOM OF THE LOWER CONTAINER.



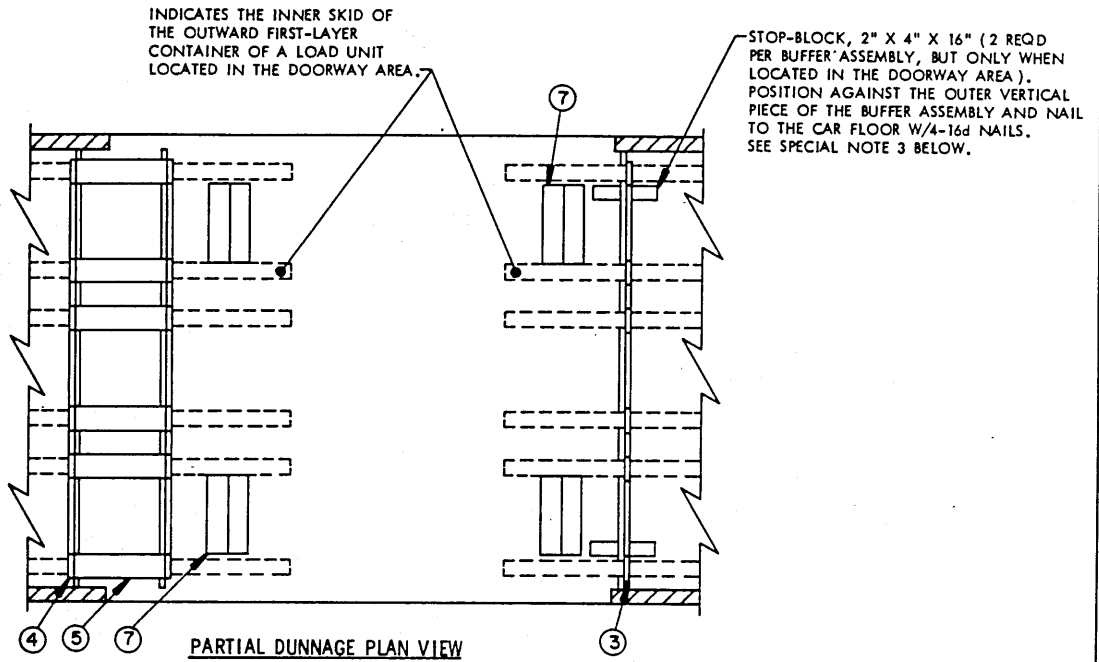
ISOMETRIC VIEW

KEY NUMBERS

- ① END BUFFER, 2" X 6" BY CAR WIDTH MINUS 1/2" (4 REQD). POSITION TO CENTER ON SKIDS OF CONTAINERS AND NAIL TO THE CAR END-WALL W/1-12d NAIL EVERY 8". SEE GENERAL NOTE "N" ON PAGE 2 AND SPECIAL NOTE 2 ON PAGE 5.
- ② ANTI-CHAFING ASSEMBLY (10 REQD). SEE THE DETAIL ON PAGE 14.
- ③ BUFFER ASSEMBLY (3 REQD). SEE THE DETAIL ON PAGE 13.
- ④ CENTER GATE (2 REQD). SEE THE DETAIL ON PAGE 13.
- ⑤ STRUT, 2" X 6" BY CUT-TO-FIT BETWEEN VERTICALS OF GATES MARKED ④ (DOUBLED) (12 REQD). LAMINATE W/1-10d NAIL EVERY 6". TOENAIL TO GATE VERTICALS W/2-12d NAILS AT EACH END. SEE "STRUT BRACING" DETAIL ON PAGE 20.
- ⑥ GATE HOLD-DOWN/STOP, 2" X 3" BY CUT TO SPAN THE VOID BETWEEN LONGITUDINALLY ADJACENT CONTAINER STACKS AND TO EXTEND 6" UNDER A SECOND-LAYER CONTAINER BODY AT EACH END (2 REQD). POSITION ON EDGE AND NAIL TO THE VERTICALS OF THE GATES MARKED ④ W/2-10d NAILS AT EACH JOINT AND NAIL TO THE STRUT W/3-10d NAILS.
- ⑦ PRE-POSITIONED SIDE BLOCKING, 2" X 6" X 20" (DOUBLED) (8 REQD). PRE-POSITION TWO (2) DOUBLED PIECES, SIDE BY SIDE, AT EACH OF FOUR (4) LOCATIONS SHOWN IN THE "PARTIAL DUNNAGE PLAN VIEW" ON PAGE 5. NAIL THE FIRST PIECE TO THE CAR FLOOR W/6-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTE 3 ON PAGE 5.
- ⑧ DOORWAY PROTECTION BUNDLING STRAP, 1-1/4" X .035" X 31'-0" LONG STEEL STRAPPING (2 REQD). POSITION BEHIND SKIDS OF FIRST-LAYER CONTAINERS AND INSTALL TO ENIRCLE THE LOAD UNIT LOCATED IN THE DOORWAY AREA. SEE SPECIAL NOTE 3 ON PAGE 5.
- ⑨ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.
- ⑩ ANTI-CHAFING, NEUTRAL BARRIER MATERIAL (AS REQD). PLACE UNDER STRAPS AT ALL POINTS OF CONTACT WITH CONTAINERS.



SECTION A-A



THIS VIEW DEPICTS SIDE BLOCKING REQUIRED IN CONJUNCTION WITH BUNDLING STRAPS FOR "DOORWAY PROTECTION" WITHIN THE DOORWAY AREA. SEE SPECIAL NOTE 3 BELOW.

SPECIAL NOTES:

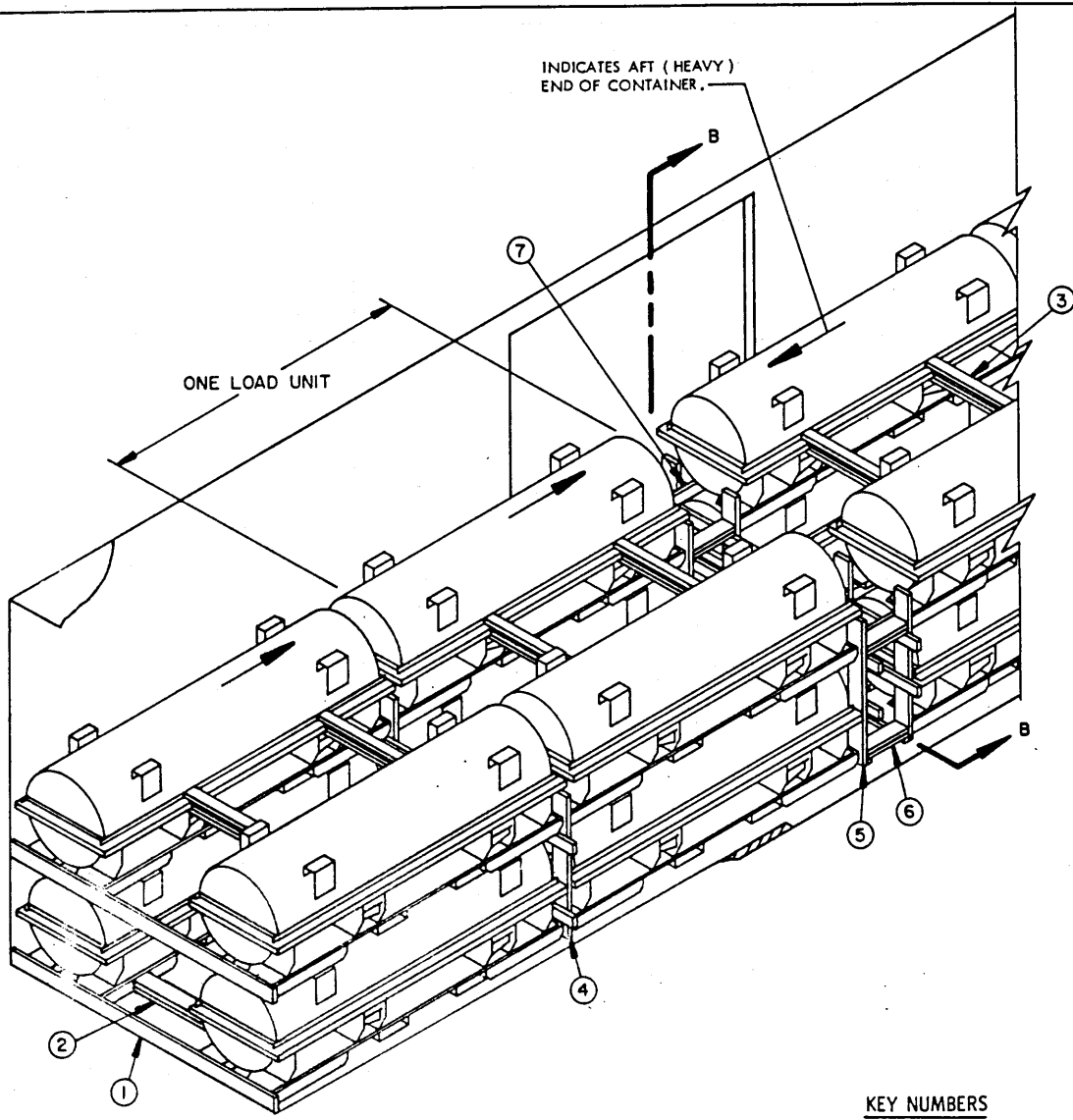
1. A 30-UNIT LOAD IS SHOWN IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR HAVING 10'-6" WIDE THROUGH DOOR OPENINGS WITH CONVENTIONAL SLIDING OR PLUG TYPE DOORS. CARS LESS THAN 9'-2" WIDE OR HAVING DOOR OPENINGS LESS THAN 10'-0" WIDE CANNOT BE USED FOR SHIPMENT OF THE DEPICTED LOAD. WIDER CARS AND CARS WITH WIDER THROUGH DOOR OR STAGGERED DOOR OPENINGS CAN BE USED. FOR USE OF NARROWER CARS SEE THE PROCEDURES ON PAGES 6 AND 7.
2. THE DEPICTED LOAD CAN ALSO BE SHIPPED IN AN ALL-METAL CAR, IF THE CAR HAS A NAILABLE FLOOR. HOWEVER, A "BUFFER ASSEMBLY" AS DETAILED ON PAGE 13 MUST BE USED AT EACH END-WALL OF THE CAR IN LIEU OF PIECES MARKED ①. ALSO, "ANTI-CHAFING ASSEMBLIES", PIECES MARKED ②, MUST BE USED BETWEEN THE CONTAINERS AND THE CAR SIDE-WALLS. DEPENDING UPON THE WIDTH OF THE CAR, THE VERTICAL PIECES OF SOME OF THE ASSEMBLIES MAY REQUIRE USE OF 1" THICK MATERIAL IN LIEU OF THE 2" THICK MATERIAL SPECIFIED IN THE DETAIL ON PAGE 14.
3. IF THE CAR BEING LOADED IS EQUIPPED WITH STAGGERED DOOR OPENINGS, ADDITIONAL PRE-POSITIONED SIDE BLOCKING AND DOORWAY PROTECTION BUNDLING STRAPS, PIECES MARKED ⑦, ⑧ AND ⑨, WILL BE REQUIRED FOR EACH LOAD UNIT OF CONTAINERS WHICH EXTENDS MORE THAN HALF THE LENGTH OF A CONTAINER INTO THE "DOORWAY AREA" ON EITHER SIDE OF THE CAR. HOWEVER, IF ONE END OF A LOAD UNIT IN THE DOORWAY AREA IS RETAINED BY AT LEAST 6" OF THE CAR SIDEWALL ON BOTH SIDES OF THE CAR, THE SIDE BLOCKING PIECES AND BUNDLING STRAP AT THAT END OF THE LOAD UNIT MAY BE OMITTED. NOTE THAT EACH BUFFER ASSEMBLY, PIECE MARKED ③, WHEN LOCATED IN THE DOORWAY AREA, MUST BE PROVIDED WITH TWO (2) STOP-BLOCKS, AS SHOWN IN THE "PARTIAL DUNNAGE PLAN VIEW" ABOVE, TO PREVENT LATERAL MOVEMENT OF THE ASSEMBLY. SEE GENERAL NOTE "G" ON PAGE 2.
4. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE TO THE SHIPMENT OF A 24-UNIT LOAD IN A 40'-6" LONG BY 9'-2" WIDE BOX CAR, EXCEPT THAT THE CAR MUST HAVE STAGGERED DOOR OPENINGS AND THEY MUST BE NOT LESS THAN 14'-0" WIDE.
5. TO SATISFY A LESS-THAN-FULL-LOAD QUANTITY, THE DELINEATED OUTLOADING METHOD CAN BE USED FOR THE SHIPMENT OF A 25-UNIT THROUGH 29-UNIT LOAD BY OMITTING THE CENTER CONTAINER IN THE SECOND LAYER OF ONE OR MORE LOAD UNITS. A "FILLER ASSEMBLY", AS DETAILED ON PAGE 17, MUST BE USED IN THE PLACE OF EACH OMITTED CONTAINER. ALSO, A LOAD UNIT WITH AN OMITTED CONTAINER WILL REQUIRE TWO (2) "ANTI-SWAY BRACE ASSEMBLIES", AS DETAILED ON PAGE 14, FOR LATERAL BRACING OF THE SECOND-LAYER CONTAINERS AS TYPICALLY DEPICTED IN THE ISOMETRIC VIEW ON PAGE 10, PIECE MARKED ③.

| BILL OF MATERIAL | | |
|---------------------------------------|----------------|------------|
| LUMBER | LINEAR FEET | BOARD FEET |
| 1" X 4" | 107 | 36 |
| 2" X 2" | 19 | 7 |
| 2" X 3" | 6 | 3 |
| 2" X 4" | 299 | 200 |
| 2" X 6" | 220 | 220 |
| NAILS | NO. REQD | POUNDS |
| 6d (2") | 80 | 1/2 |
| 10d (3") | 370 | 5-3/4 |
| 12d (3-1/4") | 104 | 1-3/4 |
| 16d (3-1/2") | 96 | 2 |
| STEEL STRAPPING, 1-1/4" X .035" ----- | 62' REQD ----- | 9 LBS |
| SEAL FOR 1-1/4" STRAPPING ----- | 4 REQD ----- | NIL |
| ANTI-CHAFING MATERIAL----- | AS REQD ----- | NIL |

LOAD AS SHOWN

| ITEM | QUANTITY | WEIGHT (APPROX) |
|----------------------|----------|-----------------|
| M544 CONTAINER ----- | 30 ----- | 57,000 LBS |
| DUNNAGE ----- | ----- | 1,184 LBS |
| TOTAL WEIGHT ----- | | 58,184 LBS |

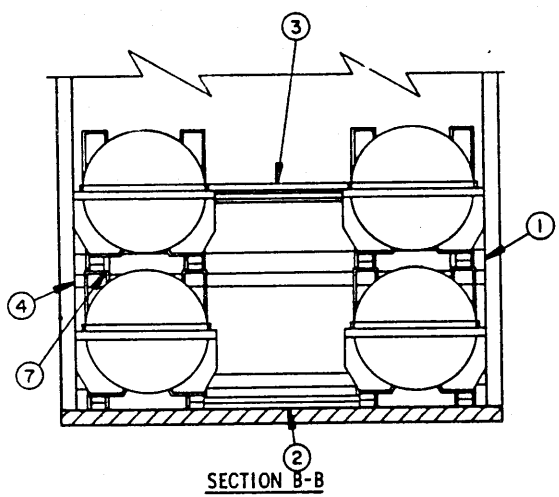
30-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE BOX CAR



ISOMETRIC VIEW

KEY NUMBERS

- ① END BUFFER, 2" X 6" BY CAR WIDTH MINUS 1/2" (4 REQD). POSITION TO CENTER ON SKIDS OF CONTAINERS AND NAIL TO THE CAR END-WALL W/1-12d NAIL EVERY 8". SEE GENERAL NOTE "N" ON PAGE 2 AND SPECIAL NOTE 2 ON PAGE 7.
- ② SIDE BLOCKING, 2" X 6" BY CUT TO FIT BETWEEN SKIDS OF LATERALLY ADJACENT FIRST-LAYER CONTAINERS (DOUBLED) (8 REQD; 2 PER LOAD UNIT). CENTER ON SKIDS AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/9-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTE "L" ON PAGE 2.
- ③ ANTI-SWAY BRACE ASSEMBLY (8 REQD; 2 PER LOAD UNIT). POSITION BETWEEN LATERALLY ADJACENT SECOND-LAYER CONTAINERS TO ALIGN WITH CONTAINER LIFTING BARS AND TO BEAR ON OPENING FLANGES. SEE THE DETAILS ON PAGE 14.
- ④ BUFFER ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 13.
- ⑤ CENTER GATE (2 REQD). SEE THE DETAIL ON PAGE 13.
- ⑥ STRUT, 2" X 6" BY CUT TO FIT BETWEEN VERTICALS OF GATES MARKED ⑤ (DOUBLED) (8 REQD). LAMINATE W/1-10d NAIL EVERY 6". TOENAIL TO GATE VERTICALS W/2-12d NAILS AT EACH END. SEE "STRUT BRACING" DETAIL ON PAGE 20.
- ⑦ GATE HOLD-DOWN/STOP, 2" X 3" BY CUT TO SPAN THE VOID BETWEEN LONGITUDINALLY ADJACENT CONTAINER STACKS AND TO EXTEND 6" UNDER A SECOND-LAYER CONTAINER BODY AT EACH END. (2 REQD). POSITION ON EDGE AND NAIL TO THE VERTICALS OF THE CENTER GATES MARKED ⑤ W/2-10d NAILS AT EACH JOINT AND NAIL TO THE STRUT W/3-10d NAILS.



SECTION B-B

SPECIAL NOTES:

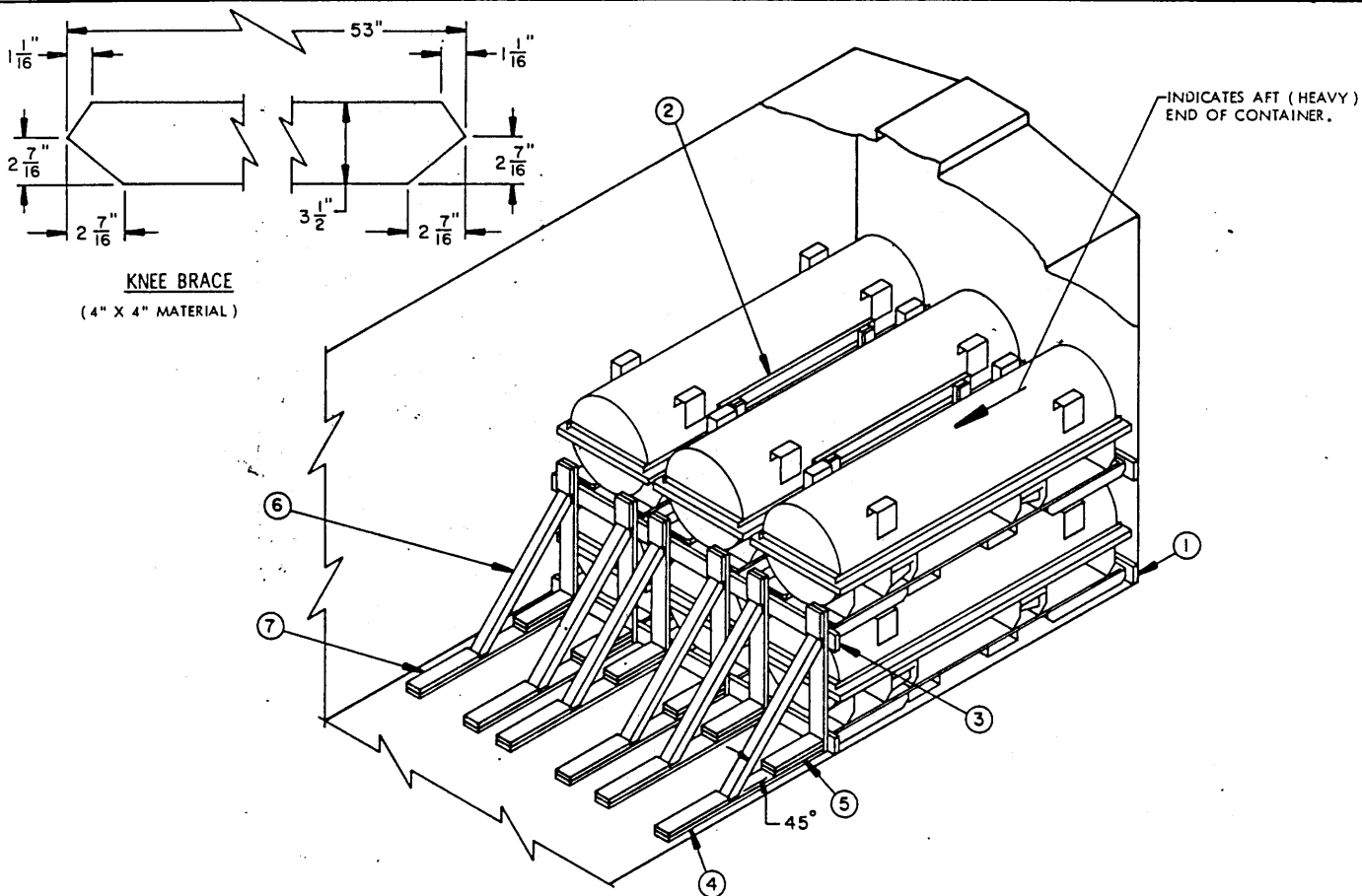
1. A 16-UNIT LOAD IS SHOWN IN A 40'-6" LONG BY 8'-6" WIDE CONVENTIONAL BOX CAR EQUIPPED WITH 8'-0" WIDE THROUGH DOOR OPENINGS WITH CONVENTIONAL SLIDING OR PLUG TYPE DOORS. WIDER CARS CAN BE USED. ALSO, CARS WITH WIDER OR NARROWER DOORS CAN BE USED. HOWEVER, TO FACILITATE LOADING AND UNLOADING OPERATIONS, CARS SHOULD HAVE NOT LESS THAN 8'-0" WIDE DOOR OPENINGS. SEE NOTE 3 BELOW.
2. THE DEPICTED LOAD CAN ALSO BE SHIPPED IN AN ALL-METAL CAR, IF THE CAR HAS A NAILABLE FLOOR. HOWEVER, A "BUFFER ASSEMBLY" AS DETAILED ON PAGE 13 MUST BE USED AT EACH END-WALL OF THE CAR IN LIEU OF PIECES MARKED ①. ALSO, "ANTI-CHAFING ASSEMBLIES" AS DETAILED ON PAGE 14 MUST BE USED BETWEEN THE CONTAINERS AND THE CAR SIDE-WALLS.
3. IF THE CAR BEING LOADED IS EQUIPPED WITH STAGGERED DOOR OPENINGS OR 12'-0" WIDE OR WIDER THROUGH DOOR OPENINGS, IN ADDITION TO SIDE BLOCKING PIECES MARKED ②, DOORWAY PROTECTION BUNDLING STRAPS, SPECIFIED AS PIECES MARKED ⑧ AND ⑨ IN THE LOAD VIEW ON PAGE 4, WILL BE REQUIRED FOR EACH LOAD UNIT OF CONTAINERS WHICH EXTENDS MORE THAN HALF THE LENGTH OF A CONTAINER INTO THE "DOORWAY AREA" ON EITHER SIDE OF THE CAR. HOWEVER, IF ONE END OF A LOAD UNIT IN THE DOORWAY AREA IS RETAINED BY AT LEAST 6" OF THE CAR SIDEWALL ON BOTH SIDES OF THE CAR, THE BUNDLING STRAP AT THAT END OF THE LOAD UNIT MAY BE OMITTED. NOTE THAT EACH BUFFER ASSEMBLY, PIECE MARKED ④ ON PAGE 6 WHEN LOCATED IN THE DOORWAY AREA, MUST BE PROVIDED WITH TWO (2) STOP-BLOCKS TO PREVENT LATERAL MOVEMENT OF THE ASSEMBLY. FOR APPLICATION OF STOP-BLOCKS SEE THE "PARTIAL DUNNAGE PLAN VIEW" ON PAGE 5. SEE GENERAL NOTE "G" ON PAGE 2.
4. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE TO THE SHIPMENT OF A 20-UNIT LOAD IN A 50'-6" LONG BY 8'-6" WIDE OR WIDER BOX CAR.
5. TO SATISFY THE SHIPMENT OF A LESS-THAN-FULL-LOAD QUANTITY OF CONTAINERS, ONE OR TWO CONTAINERS MAY BE OMITTED FROM THE SECOND LAYER OF ONE OR MORE LOAD UNITS. HOWEVER, A "FILLER ASSEMBLY", AS DETAILED ON PAGE 17, MUST BE USED IN THE PLACE OF EACH OMITTED CONTAINER. WHEN ONLY ONE CONTAINER IS TO BE OMITTED FROM A LOAD UNIT, THE "PROCEDURES FOR OMITTED CONTAINER" SPECIFIED ON PAGE 16 WILL APPLY. NOTE THAT THE LOAD UNIT MUST BE ADJACENT TO A CAR SIDEWALL WHICH HAS SUFFICIENT AREA TO PROVIDE FULL BEARING FOR THE "WALL BEARING PIECE" OF THE REQUIRED SIDE BLOCKING ASSEMBLY SPECIFIED ON PAGE 16. IF TWO (2) SECOND-LAYER CONTAINERS ARE TO BE OMITTED FROM A LOAD UNIT, TWO (2) SIDE BLOCKING PIECES MARKED ② AND TWO (2) "FILLER ASSEMBLIES" MUST BE USED. ALSO, THE TWO (2) "ANTI-SWAY BRACES" MARKED ③ MUST BE USED BETWEEN THE FLANGES OF THE FIRST-LAYER CONTAINERS.

| BILL OF MATERIAL | | |
|------------------|-------------|------------|
| LUMBER | LINEAR FEET | BOARD FEET |
| 1" X 4" | 46 | 16 |
| 2" X 2" | 17 | 6 |
| 2" X 3" | 5 | 3 |
| 2" X 4" | 114 | 76 |
| 2" X 6" | 170 | 170 |
| NAILS | NO. REQD | POUNDS |
| 6d (2") | 32 | 1/4 |
| 10d (3") | 214 | 3-1/2 |
| 12d (3-1/4") | 84 | 1-1/2 |
| 16d (3-1/2") | 144 | 3-1/4 |

LOAD AS SHOWN

| ITEM | QUANTITY | WEIGHT (APPROX) |
|----------------------|----------|-----------------|
| M544 CONTAINER ----- | 16 ----- | 30,400 LBS |
| DUNNAGE ----- | | 686 LBS |
| TOTAL WEIGHT ----- | | 31,086 LBS |

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KNEE BRACE
(4" X 4" MATERIAL)

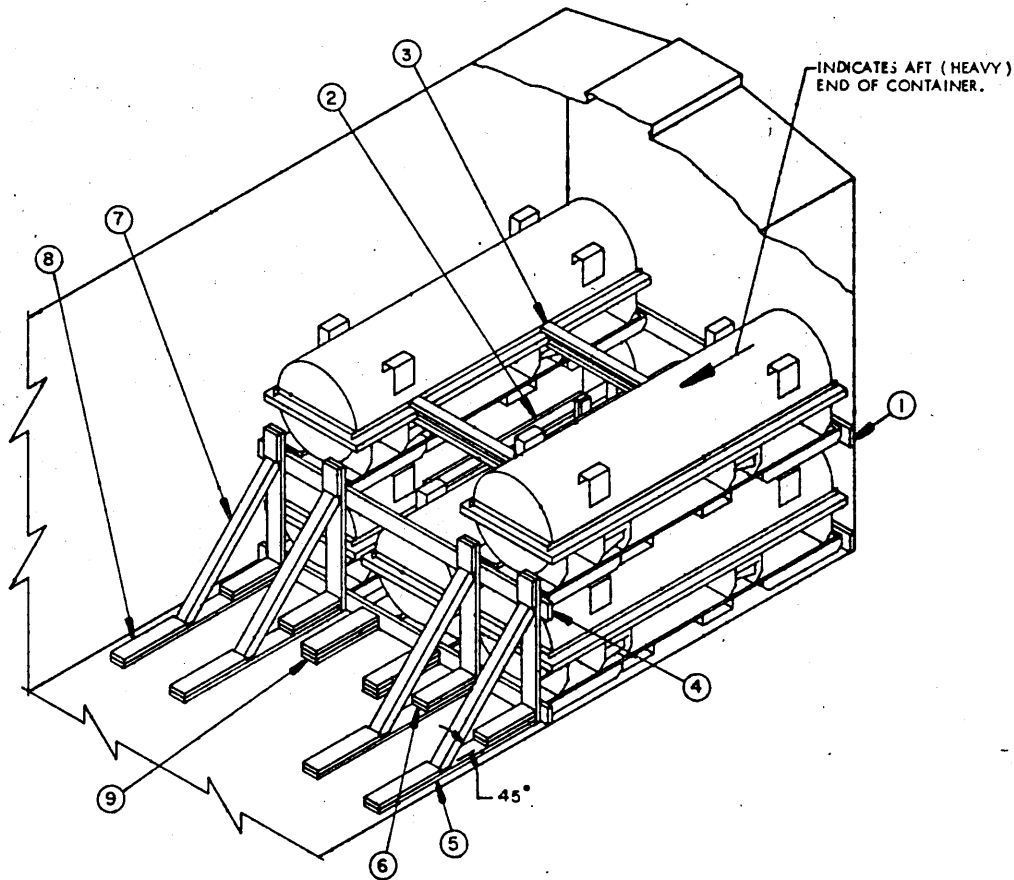
ISOMETRIC VIEW

SPECIAL NOTES:

1. A 6-UNIT LOAD IS SHOWN IN A 9'-2" WIDE CONVENTIONAL BOX CAR. WIDER CARS CAN BE USED.
2. ALL-METAL CARS CAN BE USED IF EQUIPPED WITH NAILABLE FLOORS. HOWEVER, A "BUFFER ASSEMBLY" AS DETAILED ON PAGE 13 MUST BE USED AT THE END-WALL OF THE CAR IN LIEU OF PIECES MARKED ①. ALSO, AN ANTI-CHAFING ASSEMBLY, PIECE MARKED ②, MUST BE USED BETWEEN A CONTAINER STACK AND THE CAR SIDEWALL.
3. A 12-UNIT LOAD CAN BE SHIPPED IN A 40'-6" LONG OR LONGER CAR BY APPLYING THE DEPICTED "KNEE-BRACE" PROCEDURES TO BLOCK AND BRACE A 6-CONTAINER LOAD UNIT, AS SHOWN, IN EACH END OF THE CAR.
4. IF A CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS IS OFFERED FOR SHIPMENT, THE "PROCEDURES FOR CARS EQUIPPED WITH LOAD DIVIDERS" ON PAGES 18 AND 19 WILL APPLY. NOTE THAT THE CAR MUST COMPLY WITH THE REQUIREMENTS SPECIFIED ON PAGE 19.
5. THE KNEE-BRACE ASSEMBLIES AS SHOWN ARE ADEQUATE FOR RETAINING A MAXIMUM LOAD OF 6 CONTAINERS.

KEY NUMBERS

- ① END BUFFER, 2" X 6" BY CAR WIDTH MINUS 1/2" (2 REQD). POSITION TO CENTER ON SKIDS OF CONTAINERS AND NAIL TO THE CAR END-WALL W/1-12d NAIL EVERY 8". SEE GENERAL NOTE "N" ON PAGE 2.
- ② ANTI-CHAFING ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 14.
- ③ KNEE-BRACE GATE (1 REQD). SEE THE DETAIL ON PAGE 15.
- ④ FLOOR CLEAT, 2" X 6" X 62" (6 REQD). ALIGN WITH VERTICAL PIECE OF GATE MARKED ③ AND NAIL TO THE CAR FLOOR W/1-16d NAIL EVERY 6". SEE GENERAL NOTE "L" ON PAGE 2.
- ⑤ POCKET CLEAT, 2" X 6" X 18" (DOUBLED) (6 REQD). NAIL THE FIRST PIECE TO THE FLOOR CLEAT MARKED ④ W/4-40d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/4-40d NAILS AND TOENAIL TO THE VERTICAL OF GATE MARKED ③.
- ⑥ KNEE-BRACE, 4" X 4" X 53" (6 REQD). SEE THE DETAIL ABOVE. TOENAIL TO THE VERTICAL OF GATE MARKED ③ AND TO THE FLOOR CLEAT MARKED ④ W/2-16d NAILS AT EACH END.
- ⑦ BACK-UP CLEAT, 2" X 6" X 24" (6 REQD). NAIL TO THE FLOOR CLEAT MARKED ④ W/5-40d NAILS.



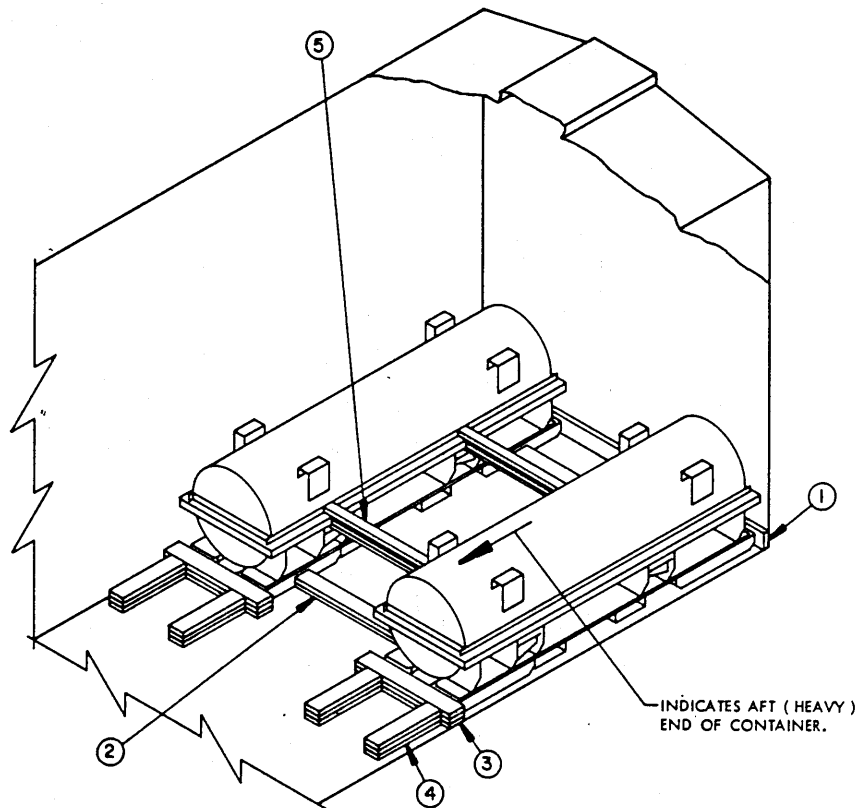
ISOMETRIC VIEW

SPECIAL NOTES:

1. A 5-UNIT LOAD IS SHOWN IN A 9'-2" WIDE CONVENTIONAL BOX CAR. WIDER CARS CAN BE USED.
2. ALL METAL CARS CAN BE USED IF EQUIPPED WITH A NAILABLE FLOOR. HOWEVER, A "BUFFER ASSEMBLY" AS DETAILED ON PAGE 13 MUST BE USED AT THE END-WALL OF THE CAR IN LIEU OF PIECES MARKED ①. ALSO, AN "ANTI-CHAFING ASSEMBLY", AS DETAILED ON PAGE 14, MUST BE USED BETWEEN A CONTAINER STACK AND THE CAR SIDEWALL.
3. FOR SHIPMENT OF A 4-UNIT LOAD, THE CENTER FIRST-LAYER CONTAINER MAY BE OMITTED AND TWO (2) SIDE BLOCKING PIECES, SHOWN AS PIECES MARKED ② ON PAGE 6, WILL BE USED BETWEEN THE SKIDS OF LATERALLY ADJACENT FIRST-LAYER CONTAINERS. NOTE THAT "ANTI-CHAFING ASSEMBLY" PIECES MARKED ② AND BACK-UP CLEATS MARKED ⑨ ABOVE WILL NOT BE REQUIRED.
4. A TEN-UNIT LOAD CAN BE SHIPPED IN A 40'-6" LONG OR LONGER CAR BY APPLYING THE DEPICTED "KNEE BRACE" PROCEDURES TO BLOCK AND BRACE A 5-CONTAINER LOAD UNIT, AS SHOWN, IN EACH END OF THE CAR.
5. IF A CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS IS OFFERED FOR SHIPMENT, THE "PROCEDURES FOR CARS EQUIPPED WITH LOAD DIVIDERS" ON PAGES 18 AND 19 WILL APPLY. NOTE THAT THE CAR MUST COMPLY WITH THE REQUIREMENTS SPECIFIED ON PAGE 19.
6. THE KNEE BRACE ASSEMBLIES AS SHOWN ARE ADEQUATE FOR RETAINING A MAXIMUM LOAD OF 5-CONTAINERS.

KEY NUMBERS

- ① END BUFFER, 2" X 6" BY CAR WIDTH MINUS 1/2" (2 REQD). POSITION TO CENTER ON SKIDS OF CONTAINERS AND NAIL TO THE CAR END-WALL W/1-12d NAIL EVERY 8". SEE GENERAL NOTE "N" ON PAGE 2.
- ② ANTI-CHAFING ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 14.
- ③ ANTI-SWAY BRACE (2 REQD). POSITION BETWEEN LATERALLY ADJACENT SECOND-LAYER CONTAINERS TO ALIGN WITH CONTAINER LIFTING BARS AND TO BEAR ON OPENING FLANGES. SEE THE DETAIL ON PAGE 14.
- ④ KNEE-BRACE GATE (1 REQD). SEE THE DETAIL ON PAGE 15.
- ⑤ FLOOR CLEAT, 2" X 6" X 62" (4 REQD). ALIGN WITH VERTICAL PIECE OF GATE MARKED ④ AND NAIL TO THE CAR FLOOR W/1-16d NAIL EVERY 6". SEE GENERAL NOTE "L" ON PAGE 2.
- ⑥ POCKET CLEAT, 2" X 6" X 18" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE FLOOR CLEAT MARKED ⑤ W/4-40d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/4-40d NAILS AND TOENAIL TO THE VERTICAL OF GATE MARKED ④ W/2-12d NAILS.
- ⑦ KNEE-BRACE, 4" X 4" X 53" (4 REQD). SEE THE DETAIL ON PAGE 9. TOENAIL TO THE VERTICAL OF GATE MARKED ④ AND TO THE FLOOR CLEAT MARKED ⑤ W/2-16d NAILS AT EACH END.
- ⑧ BACK-UP CLEAT 2" X 6" X 24" (4 REQD), NAIL TO THE FLOOR CLEAT MARKED ⑤ W/5-40d NAILS.
- ⑨ BACK-UP CLEAT, 2" X 6" X 24" (TRIPLED) (2 REQD). ALIGN WITH CONTAINER SKIDS AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL EACH ADDITIONAL PIECE W/5-40d NAILS.



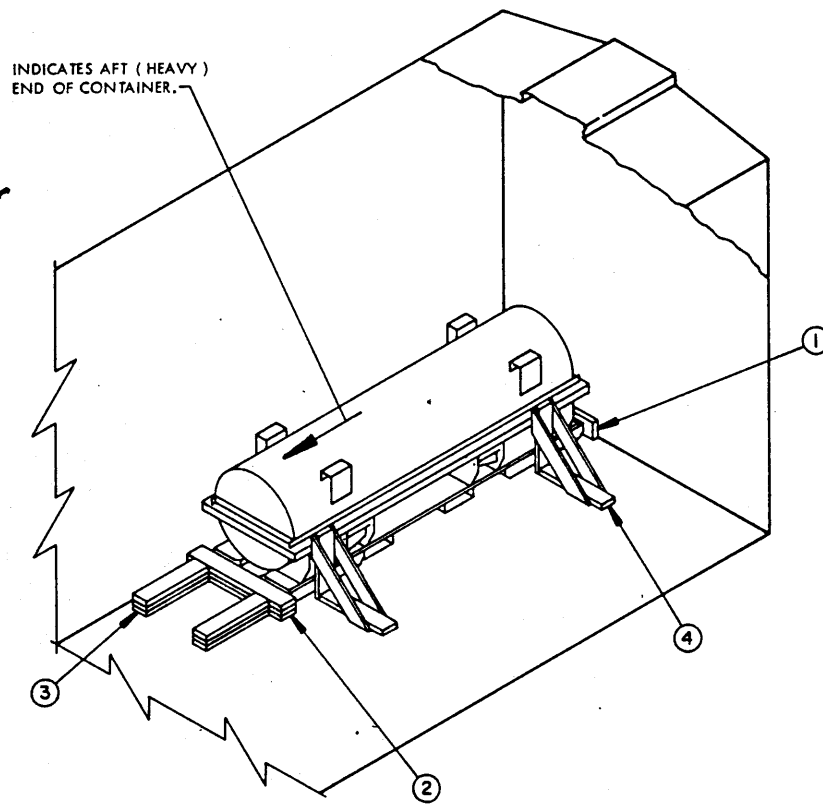
ISOMETRIC VIEW

SPECIAL NOTES:

1. A 2-UNIT LOAD IS SHOWN IN A 9'-2" WIDE CONVENTIONAL BOX CAR. A NARROWER OR WIDER CAR CAN BE USED.
2. TWO (2) BACK-UP CLEATS, SHOWN AS PIECES MARKED ④, AND USED WITH A HEADER, SHOWN AS PIECE MARKED ③, ARE ADEQUATE FOR RETAINING A MAXIMUM LCL LOAD OF TWO (2) CONTAINERS IN LENGTH. HOWEVER, AN ADDITIONAL HEADER MARKED ③ MUST BE POSITIONED BETWEEN LONGITUDINALLY ADJACENT CONTAINERS AND NAILED TO THE CAR FLOOR.

KEY NUMBERS

- ① END BUFFER, 2" X 6" BY CAR WIDTH MINUS 1/2" (1 REQD). POSITION TO CONTACT END OF SKIDS OF CONTAINERS AND NAIL TO THE CAR END WALL W/1-12d NAIL EVERY 8". SEE GENERAL NOTE "N" ON PAGE 2.
- ② SIDE BLOCKING, 2" X 6" BY CUT TO FIT BETWEEN SKIDS OF LATERALLY ADJACENT CONTAINERS (DOUBLED) (2 REQD). CENTER ON SKIDS AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/9-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ③ HEADER, 2" X 6" X 36" (TRIPLED) (2 REQD). POSITION TO CONTACT CONTAINER SKIDS AS SHOWN. NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL EACH ADDITIONAL PIECE W/5-40d NAILS.
- ④ BACK-UP CLEAT, 2" X 6" X 24" (TRIPLED) (4 REQD). POSITION TO ALIGN WITH CONTAINER SKIDS. NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL EACH ADDITIONAL PIECE W/5-40d NAILS.
- ⑤ ANTI-SWAY BRACE ASSEMBLY (2 REQD). POSITION BETWEEN LATERALLY ADJACENT CONTAINERS TO ALIGN WITH CONTAINER LIFTING BARS AND TO BEAR ON OPENING FLANGES. SEE THE DETAILS ON PAGE 14.



ISOMETRIC VIEW

SPECIAL NOTES:

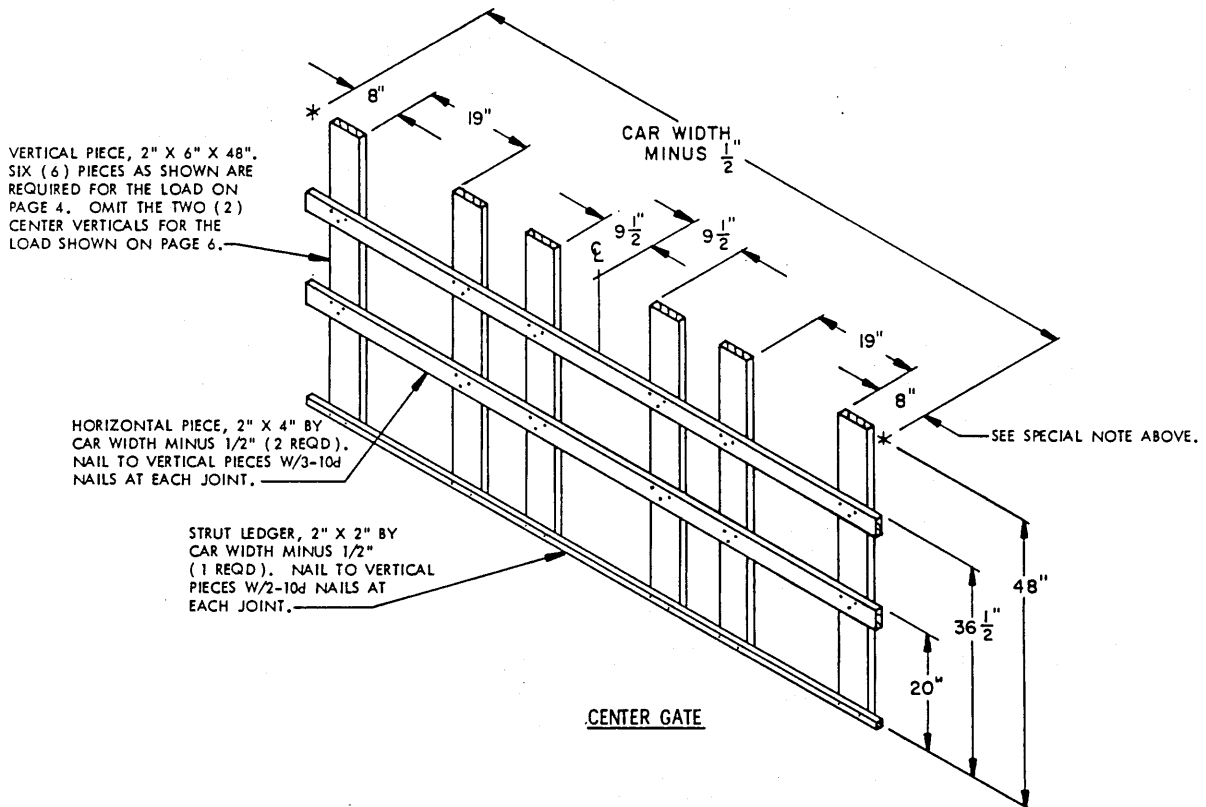
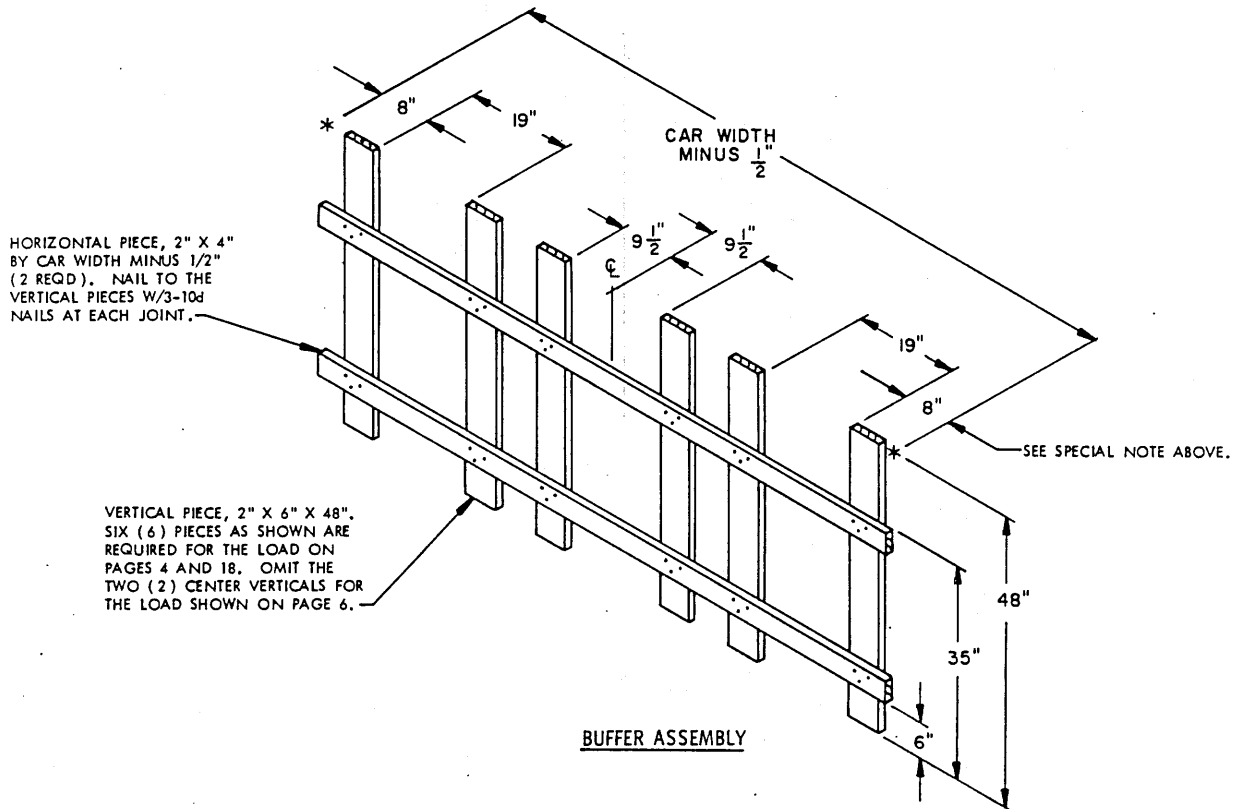
1. A 1-UNIT LOAD IS SHOWN IN AN 8'-6" WIDE CONVENTIONAL BOX CAR. A WIDER CAR CAN BE USED.
2. EACH LCL BRACE AS APPLIED FOR LATERAL BRACING WILL SUPPORT 8,000 POUNDS OF LADING, RESPECTIVELY. IF DESIRED, LCL BRACES MAY BE USED ON BOTH SIDES OF THE CONTAINER. USE OF LCL BRACES IS LIMITED TO A 1-LAYER LOAD.

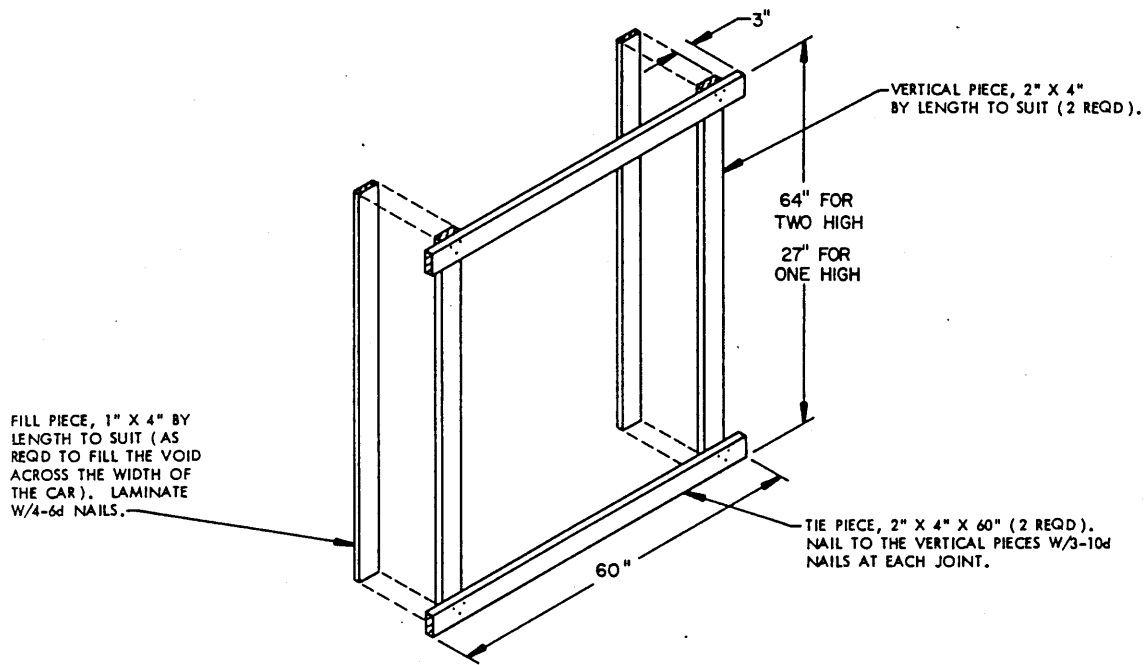
KEY NUMBERS

- ① END BUFFER, 2" X 6" X 36" (1 REQD). POSITION TO CONTACT END OF SKIDS OF CONTAINER AND NAIL TO CAR END-WALL W/4-12d NAILS. SEE GENERAL NOTE "N" ON PAGE 2.
- ② HEADER, 2" X 6" X 36" (TRIPLED) (1 REQD). POSITION TO CONTACT CONTAINER SKIDS AS SHOWN. NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL EACH ADDITIONAL PIECE W/5-40d NAILS.
- ③ BACK-UP CLEAT, 2" X 6" X 24" (TRIPLED) (2 REQD). POSITION TO ALIGN WITH CONTAINER SKIDS. NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL EACH ADDITIONAL PIECE W/5-40d NAILS.
- ④ LCL BRACE (2 REQD). SEE THE DETAIL ON PAGE 15. POSITION AS SHOWN AND NAIL TO THE CAR FLOOR W/7-16d NAILS. SEE SPECIAL NOTE 2 AT THE LEFT.

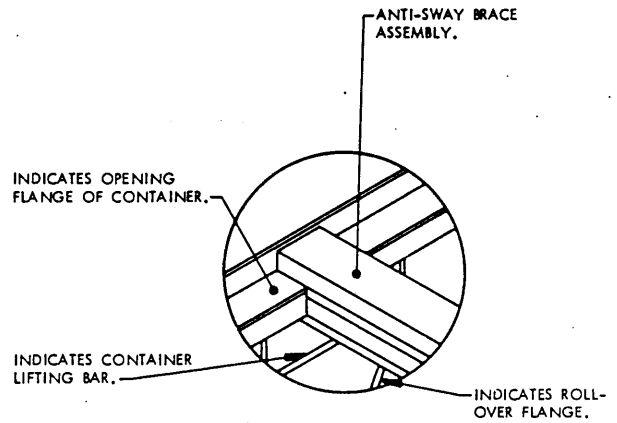
SPECIAL NOTE:

IF AN ALL-METAL CAR IS TO BE LOADED, THE 8" DIMENSIONS MUST BE INCREASED TO 9-1/2" TO PROVIDE FOR THE THICKNESS OF THE ANTI-CHAFING ASSEMBLIES, AS DETAILED ON PAGES 14, WHICH MUST BE USED BETWEEN THE CONTAINERS AND THE CAR SIDEWALLS.





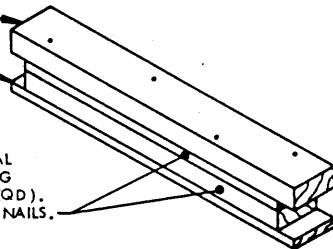
ANTI-CHAFING ASSEMBLY



LOCATION OF ANTI-SWAY BRACE ASSEMBLY

STRUT RETAINER PIECE, 2" X 4" ON TOP AND 1" X 4" ON BOTTOM BY CUT-TO-FIT BETWEEN THE OPENING FLANGES ON THE CONTAINERS PLUS 4" (1 OF EACH REQD). NAIL TO THE STRUT W/4-10d NAILS EACH.

STRUT, 1" X 4" AND 2" X 4" MATERIAL BY CUT-TO-FIT BETWEEN THE OPENING FLANGES ON THE CONTAINERS (1 REQD). LAMINATE THRU 1" MATERIAL W/4-6d NAILS.



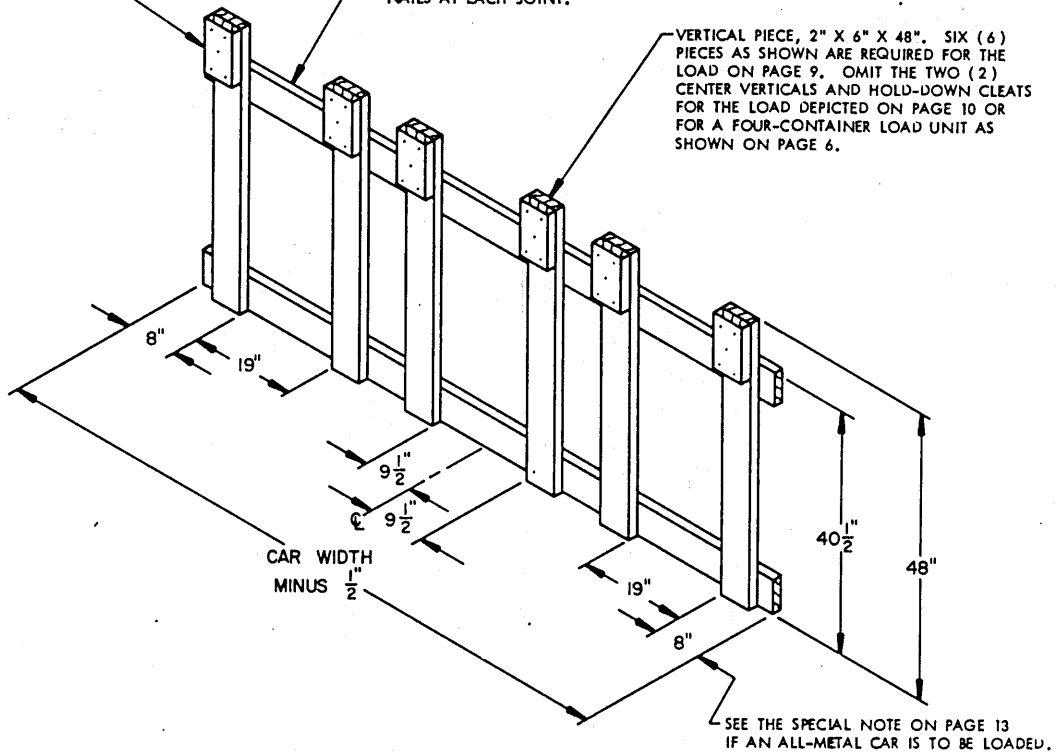
ANTI-SWAY BRACE ASSEMBLY

SEE "LOCATION OF ANTI-SWAY BRACE ASSEMBLY" AT RIGHT.

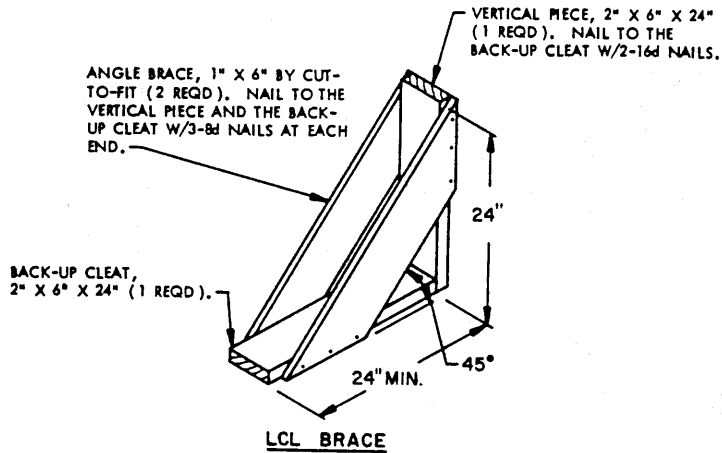
HOLD-DOWN CLEAT, 2" X 6" X 9"
(6 REQD). NAIL TO THE VERTICAL
PIECE W/5-10d NAILS.

LOAD BEARING PIECE, 2" X 6" BY
CAR WIDTH MINUS 1/2" (2 REQD).
NAIL TO THE VERTICAL PIECES W/3-10d
NAILS AT EACH JOINT.

VERTICAL PIECE, 2" X 6" X 48". SIX (6)
PIECES AS SHOWN ARE REQUIRED FOR THE
LOAD ON PAGE 9. OMIT THE TWO (2)
CENTER VERTICALS AND HOLD-DOWN CLEATS
FOR THE LOAD DEPICTED ON PAGE 10 OR
FOR A FOUR-CONTAINER LOAD UNIT AS
SHOWN ON PAGE 6.

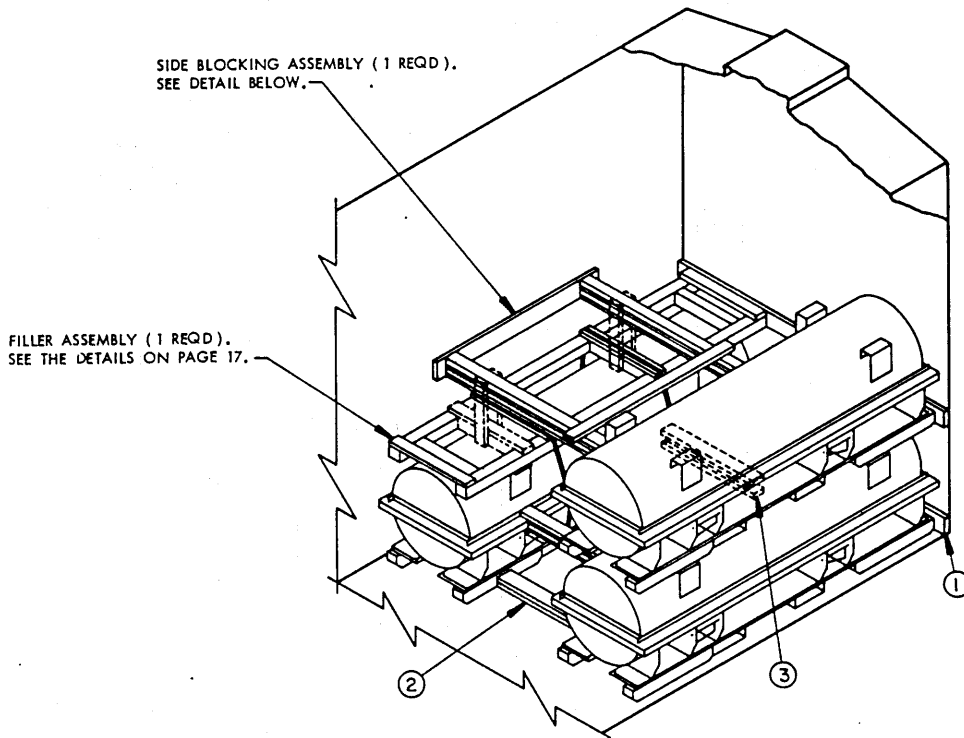


KNEE-BRACE GATE



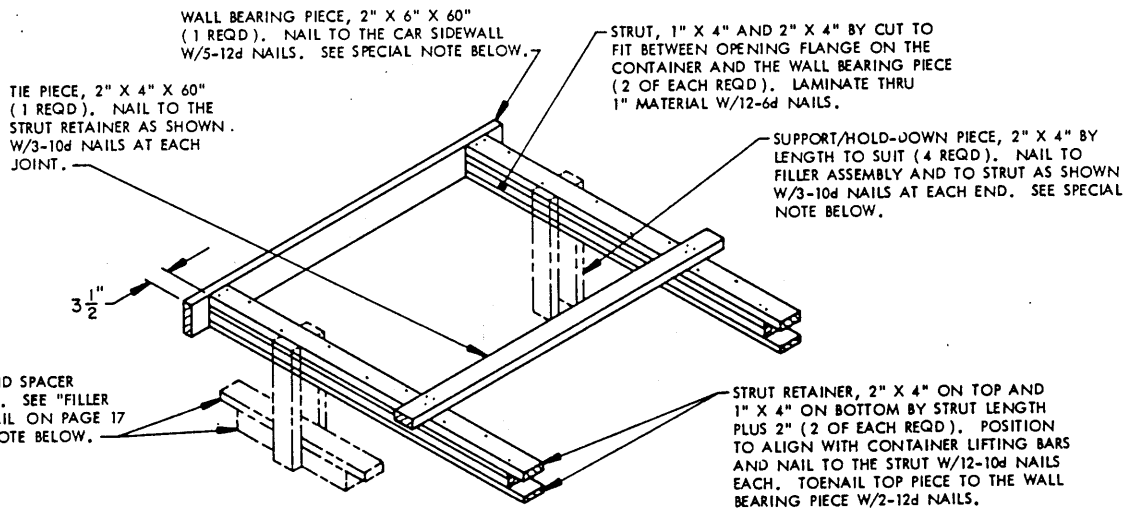
LCL BRACE

DETAILS



ISOMETRIC VIEW

THESE PROCEDURES ARE APPLICABLE FOR AN OMITTED CONTAINER IN THE LOAD DEPICTED ON PAGES 6 AND 7. IF BOTH SECOND-LAYER CONTAINERS ARE OMITTED, THE "SIDE BLOCKING ASSEMBLY" WILL CONSEQUENTLY NOT BE REQUIRED. HOWEVER, TWO (2) "FILLER ASSEMBLIES" MUST BE USED; ONE (1) SUBSTITUTED IN PLACE OF EACH OMITTED CONTAINER. FOR KEY NUMBERS SHOWN, SEE PAGE 6. NOTE THAT FOR A LOAD UNIT WITH OMITTED CONTAINER(S), TWO (2) PIECES MARKED ③ MUST BE USED BETWEEN THE OPENING FLANGES OF THE FIRST-LAYER CONTAINERS.



WALL BEARING PIECE, 2" X 6" X 60"
(1 REQD). NAIL TO THE CAR SIDEWALL
W/5-12d NAILS. SEE SPECIAL NOTE BELOW.

TIE PIECE, 2" X 4" X 60"
(1 REQD). NAIL TO THE
STRUT RETAINER AS SHOWN.
W/3-10d NAILS AT EACH
JOINT.

STRUT, 1" X 4" AND 2" X 4" BY CUT TO
FIT BETWEEN OPENING FLANGE ON THE
CONTAINER AND THE WALL BEARING PIECE
(2 OF EACH REQD). LAMINATE THRU
1" MATERIAL W/12-6d NAILS.

SUPPORT/HOLD-DOWN PIECE, 2" X 4" BY
LENGTH TO SUIT (4 REQD). NAIL TO
FILLER ASSEMBLY AND TO STRUT AS SHOWN
W/3-10d NAILS AT EACH END. SEE SPECIAL
NOTE BELOW.

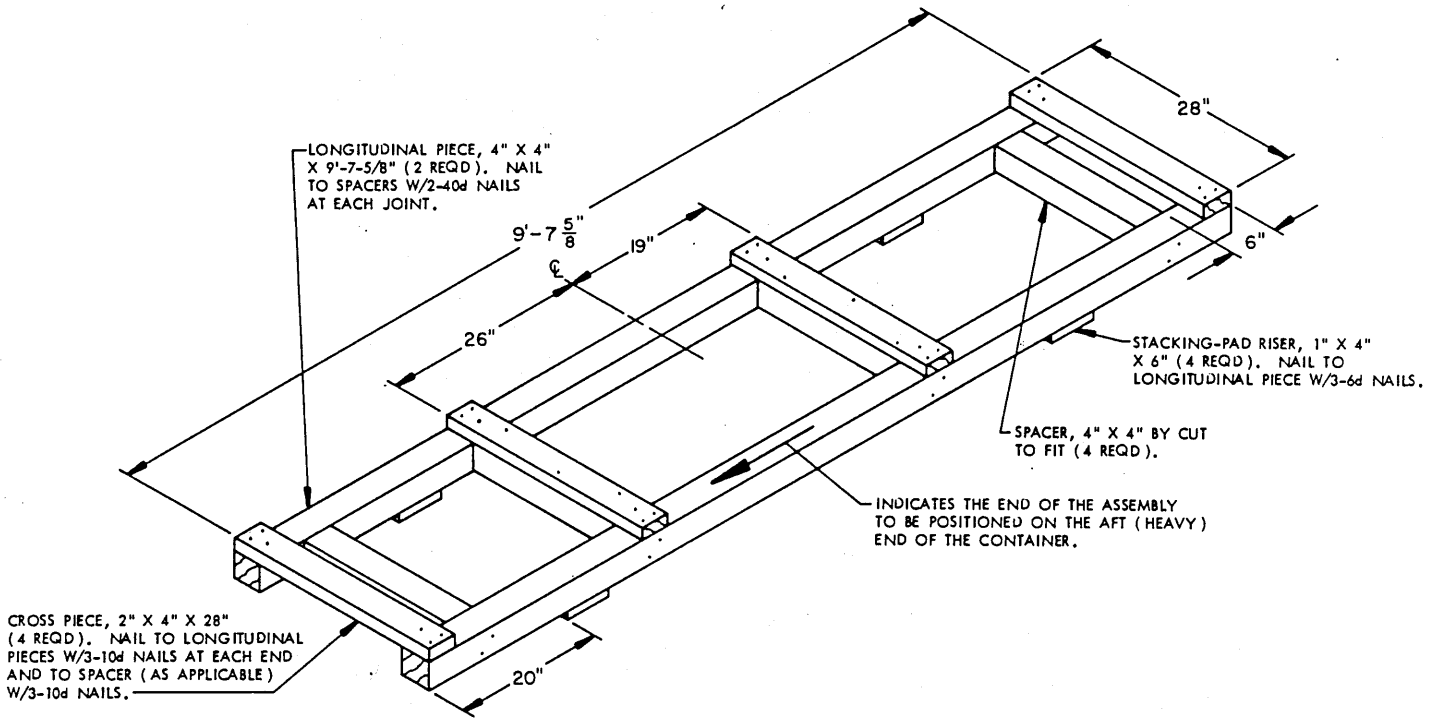
CROSS PIECE AND SPACER
(1 EACH REQD). SEE "FILLER
ASSEMBLY" DETAIL ON PAGE 17
AND SPECIAL NOTE BELOW.

STRUT RETAINER, 2" X 4" ON TOP AND
1" X 4" ON BOTTOM BY STRUT LENGTH
PLUS 2" (2 OF EACH REQD). POSITION
TO ALIGN WITH CONTAINER LIFTING BARS
AND NAIL TO THE STRUT W/12-10d
EACH. TOENAIL TOP PIECE TO THE WALL
BEARING PIECE W/2-12d NAILS.

SIDE BLOCKING ASSEMBLY

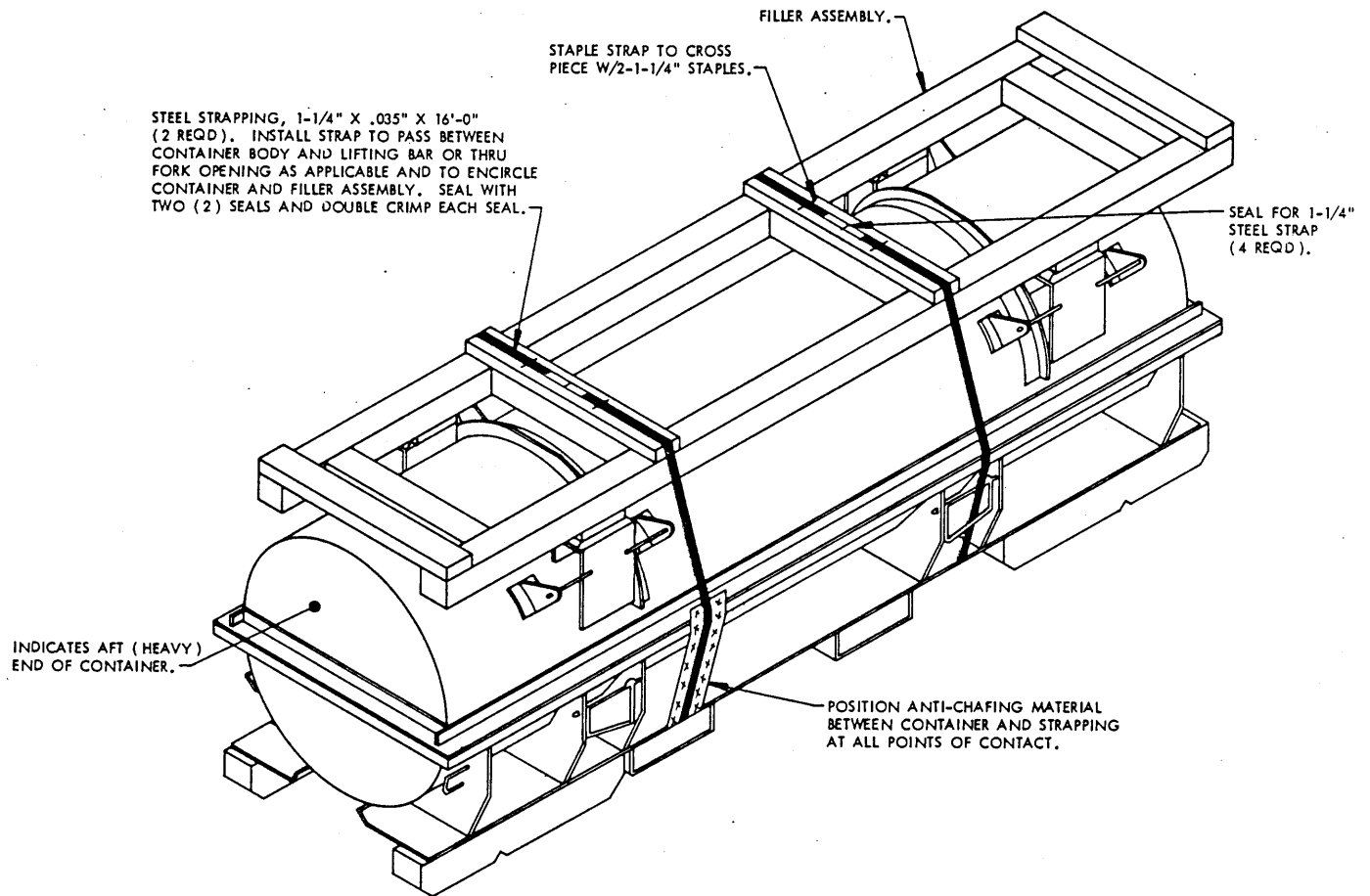
SPECIAL NOTE:

IF THE CAR BEING LOADED IS AN ALL-METAL CAR OR A CAR EQUIPPED WITH SIDE FILLER PANELS, IN LIEU OF NAILING THE WALL BEARING PIECE OF THE SIDE BLOCKING ASSEMBLY TO THE CAR SIDEWALL, SUPPORT/HOLD-DOWN PIECES MUST BE PROVIDED AND NAILED TO THE FILLER ASSEMBLY AND TO THE STRUTS AS SHOWN. NOTE THAT AN ADDITIONAL CROSS PIECE AND SPACER MUST BE PROVIDED ON THE FILLER ASSEMBLY AT THE AFT END OF THE CONTAINER AND MUST BE IN VERTICAL ALIGNMENT WITH THE APPLICABLE STRUT AND RETAINER PIECES OF THE SIDE BLOCKING ASSEMBLY.

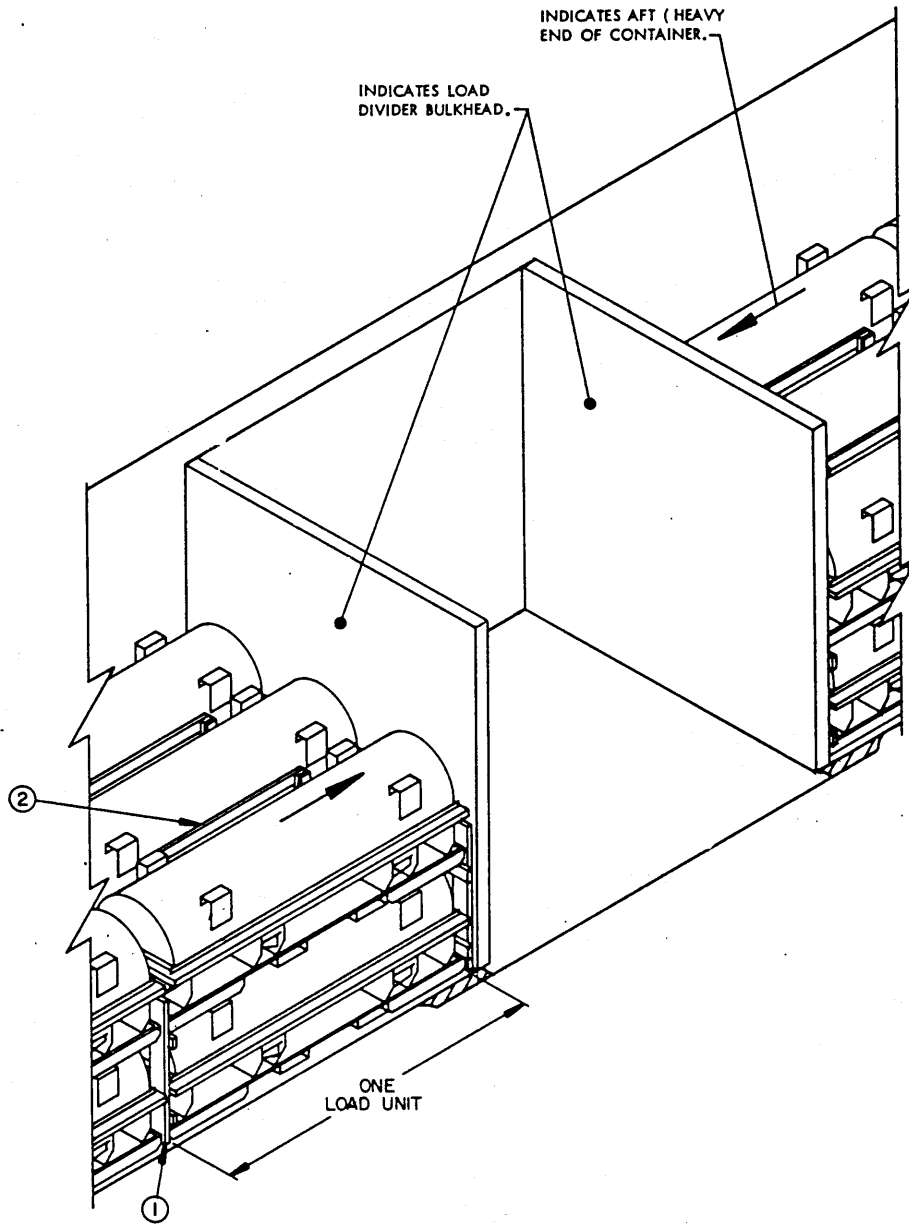


FILLER ASSEMBLY

THIS ASSEMBLY IS DESIGNED TO BE USED IN THE PLACE OF EACH OMITTED SECOND-LAYER CONTAINER IN THE LOADS DEPICTED ON PAGES 4, 6, AND 18.



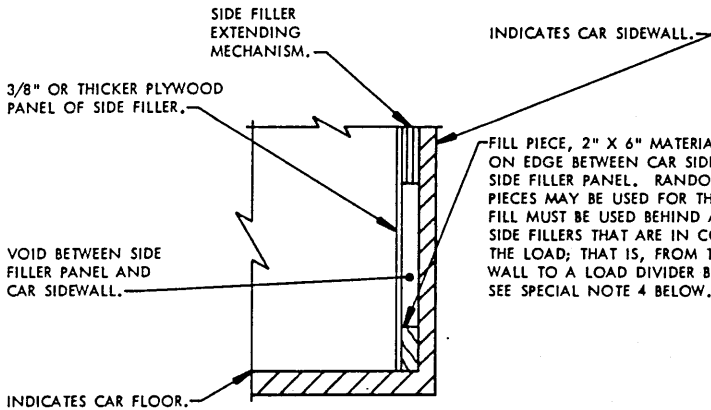
APPLICATION OF FILLER ASSEMBLY



ISOMETRIC VIEW

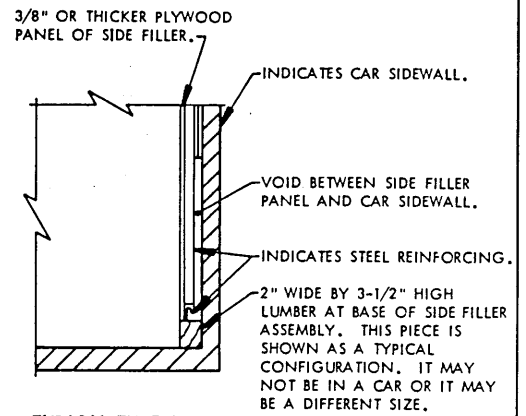
KEY NUMBERS

- ① BUFFER ASSEMBLY (6 REQD). SEE THE DETAIL ON PAGE 13. POSITION ONE AT EACH END-WALL OF THE CAR AND AS SHOWN. SEE GENERAL NOTE "N" ON PAGE 2.
- ② ANTI-CHAFING ASSEMBLY (8 REQD). SEE THE DETAIL ON PAGE 14.



TYPICAL TYPE A

THIS VIEW SHOWS THE INSTALLATION OF A "FILL PIECE" IN A CAR EQUIPPED WITH A STANDARD ADJUSTABLE SIDE FILLER.



TYPICAL TYPE B

THIS VIEW SHOWS A TYPICAL SECTION OF A CAR EQUIPPED WITH HEAVY DUTY, STEEL REINFORCED, ADJUSTABLE SIDE FILLERS. A "FILL PIECE", AS SHOWN IN THE "TYPICAL TYPE A" DETAIL AT LEFT, IS NOT REQUIRED IN CARS SO EQUIPPED.

(SPECIAL NOTES CONTINUED)

8. TO SATISFY A LESS-THAN-FULL-LOAD QUANTITY, THE CENTER CONTAINER IN THE SECOND LAYER OF ONE OR MORE LOAD UNITS MAY BE OMITTED. A "FILLER ASSEMBLY", AS DETAILED ON PAGE 17, MUST BE USED IN THE PLACE OF EACH OMITTED CONTAINER. ALSO, A LOAD UNIT WITH AN OMITTED CONTAINER WILL REQUIRE TWO (2) "ANTI-SWAY BRACE ASSEMBLIES", AS DETAILED ON PAGE 14, FOR LATERAL BRACING OF THE SECOND-LAYER CONTAINERS AS TYPICALLY DEPICTED IN THE ISOMETRIC VIEW ON PAGE 10, PIECE MARKED ③.

SPECIAL NOTES:

1. THESE OUTLOADING PROCEDURES DEPICT A METHOD OF OUTLOADING THE M544 CONTAINERS IN CUSHIONED BOX CARS WHICH ARE EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH OR WITHOUT ADJUSTABLE SIDE FILLERS. CAUTION: ONLY CARS EQUIPPED WITH LOAD DIVIDERS MANUFACTURED BY EVANS, EQUIPCO, OR PRECO MAY BE USED. LOAD DIVIDERS MANUFACTURED BY TRANSOCO ARE NOT ACCEPTABLE, WHETHER OF ALUMINUM OR STEEL CONSTRUCTION. ALSO, ONLY CUSHIONED CARS THAT HAVE SLIDING CENTER SILL TYPE CUSHIONING DEVICES OR END-OF-CAR TYPE DEVICES WHICH HAVE AT LEAST FIFTEEN INCHES (15") OF TRAVEL ARE ACCEPTABLE.
2. BOX CARS EQUIPPED WITH ADJUSTABLE SIDE FILLERS THAT HAVE 3/8" OR THICKER PANELS MAY BE USED. HOWEVER, THESE SIDE FILLERS MUST NOT BE USED FOR LATERAL BLOCKING; THEY MUST BE RETRACTED AND LOCKED AGAINST THE CAR SIDEWALL. A "FILL PIECE" MUST BE INSTALLED IN THE VOID BETWEEN THE CAR SIDEWALL AND THE SIDE FILLER PANEL. SEE THE "TYPICAL TYPE A" VIEW ABOVE FOR GUIDANCE. IF THE BACKS OF THE SIDE FILLER PANELS ARE REINFORCED WITH VERTICAL AND HORIZONTAL STEEL MEMBERS AS SHOWN IN THE "TYPICAL TYPE B" VIEW ABOVE, THE "FILL PIECE" MATERIAL IS NOT REQUIRED. NOTE: DUNNAGE MATERIALS MUST NOT BE NAILED TO SIDE FILLERS.
3. AFTER THE LOAD DIVIDER BULKHEADS ARE POSITIONED AGAINST THE LADING, AND THE LOCKING PINS ARE ENGAGED IN THE HOLES OF THE RAILS, THE LOWER LOCKING PINS MUST BE INSPECTED TO ENSURE THAT THE PINS ARE FULLY ENGAGED IN THE LOCKING HOLES. IF THE PINS ARE NOT FULLY SEATED IN THE LOCKING HOLES, THE LINKAGE MECHANISM WILL BE ADJUSTED AS REQUIRED SO THAT THE PINS WILL BE FULLY SEATED INTO THE LOCKING HOLES OF THE LOWER RAILS. IF PRESENT, DEBRIS MUST BE REMOVED FROM BENEATH THE LOCKING HOLES WHICH HAVE BEEN SELECTED FOR SECURING A LOAD DIVIDER BULKHEAD.
4. NAILING OF "FILL PIECES" IS NOT REQUIRED EXCEPT THAT EACH "FILL PIECE" LOCATED NEAREST THE DOOR OPENINGS OF THE CAR WILL BE SECURED AGAINST LONGITUDINAL MOVEMENT W/1-6d NAIL DRIVEN THROUGH THE SIDE FILLER PANEL AND INTO THE "FILL PIECE".
5. A 24-UNIT LOAD IS SHOWN IN A 50'-6" LONG BY 9'-2" WIDE BOX CAR HAVING 10'-0" WIDE THROUGH DOORS OF THE CONVENTIONAL SLIDING OR PLUG TYPE. WIDER CARS AND CARS HAVING WIDER THROUGH DOOR OPENINGS OR STAGGERED DOOR OPENINGS CAN BE USED. HOWEVER, FOR CARS WITH THROUGH DOOR OPENINGS WIDER THAN 10'-6" OR WITH STAGGERED DOORS OF ANY WIDTH, DOORWAY PROTECTION WILL BE REQUIRED AS APPLICABLE. SEE SPECIAL NOTE 7 BELOW.
6. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR SHIPMENT OF A 30-UNIT LOAD IN A 60'-8" LONG BY 9'-2" MINIMUM WIDE CAR HAVING THROUGH DOOR OPENINGS NOT LESS THAN 10'-0" WIDE OR STAGGERED DOOR OPENINGS OF ANY WIDTH. HOWEVER, FOR CARS WITH THROUGH DOOR OPENINGS 11'-6" WIDE OR WIDER OR WITH STAGGERED DOOR OPENINGS OF ANY WIDTH, DOORWAY PROTECTION WILL BE REQUIRED AS APPLICABLE. SEE SPECIAL NOTE 7 BELOW.
7. CARS WITH STAGGERED DOOR OPENINGS AND CARS WITH THROUGH DOOR OPENINGS OF WIDTHS REFERENCED IN NOTES 5 AND 6 ABOVE WILL REQUIRE DOORWAY PROTECTION, AS APPLICABLE, USING SIDE BLOCKING AND BUNDLING STRAPS, SHOWN AS PIECES MARKED ⑦, ⑧ AND ⑨ ON PAGE 4, AND/OR STOP-BLOCKS AS SHOWN IN THE "PARTIAL DUNNAGE PLAN VIEW" ON PAGE 5. FOR SPECIFIC REQUIREMENTS AND GUIDANCE, SEE SPECIAL NOTE 3 ON PAGE 5.

(CONTINUED AT LEFT)

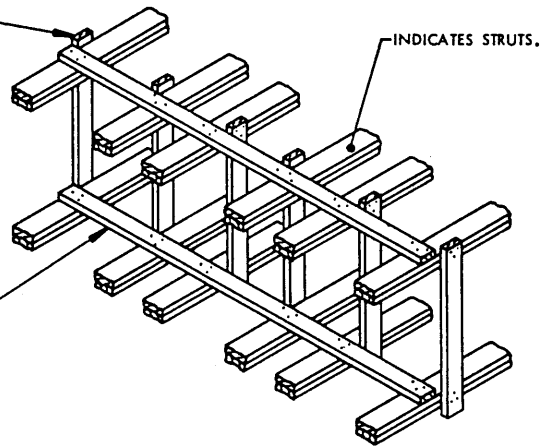
| BILL OF MATERIAL | | |
|------------------|-------------|------------|
| LUMBER | LINEAR FEET | BOARD FEET |
| 1" X 4" | 87 | 29 |
| 2" X 4" | 276 | 184 |
| 2" X 6" | 144 | 144 |
| NAILS | NO. REQD | POUNDS |
| 6d (2") | 64 | 1/2 |
| 10d (3") | 312 | 5 |

LOAD AS SHOWN

| ITEM | QUANTITY | WEIGHT (APPROX) |
|---------------------|----------|-------------------|
| M544 CONTAINER | 24 | 45,600 LBS |
| DUNNAGE | | 899 LBS |
| TOTAL WEIGHT | | 46,499 LBS |

VERTICAL STRUT BRACING, 2" X 4"
X 42" (6 REQD). NAIL TO THE
STRUTS W/3-10d NAILS AT EACH
JOINT.

HORIZONTAL STRUT BRACING,
2" X 4" BY CUT TO FIT
(2 REQD). NAIL TO THE
STRUTS W/3-10d NAILS AT
EACH JOINT.



STRUT BRACING

STRUT BRACING IS REQUIRED WHEN STRUTS ARE
48" OR GREATER IN LENGTH. ONE (1) SET OF
BRACING IS REQUIRED FOR EVERY 48" OF STRUT
LENGTH.