

APPROVED BY
 BUREAU OF EXPLOSIVES
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 DATE 1/10/68

LOADING & BRACING (CL & LCL) IN BOX CARS OF CBU ITEMS PACKED IN THE CNU-92/E CONTAINER

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			12 DECEMBER 1967
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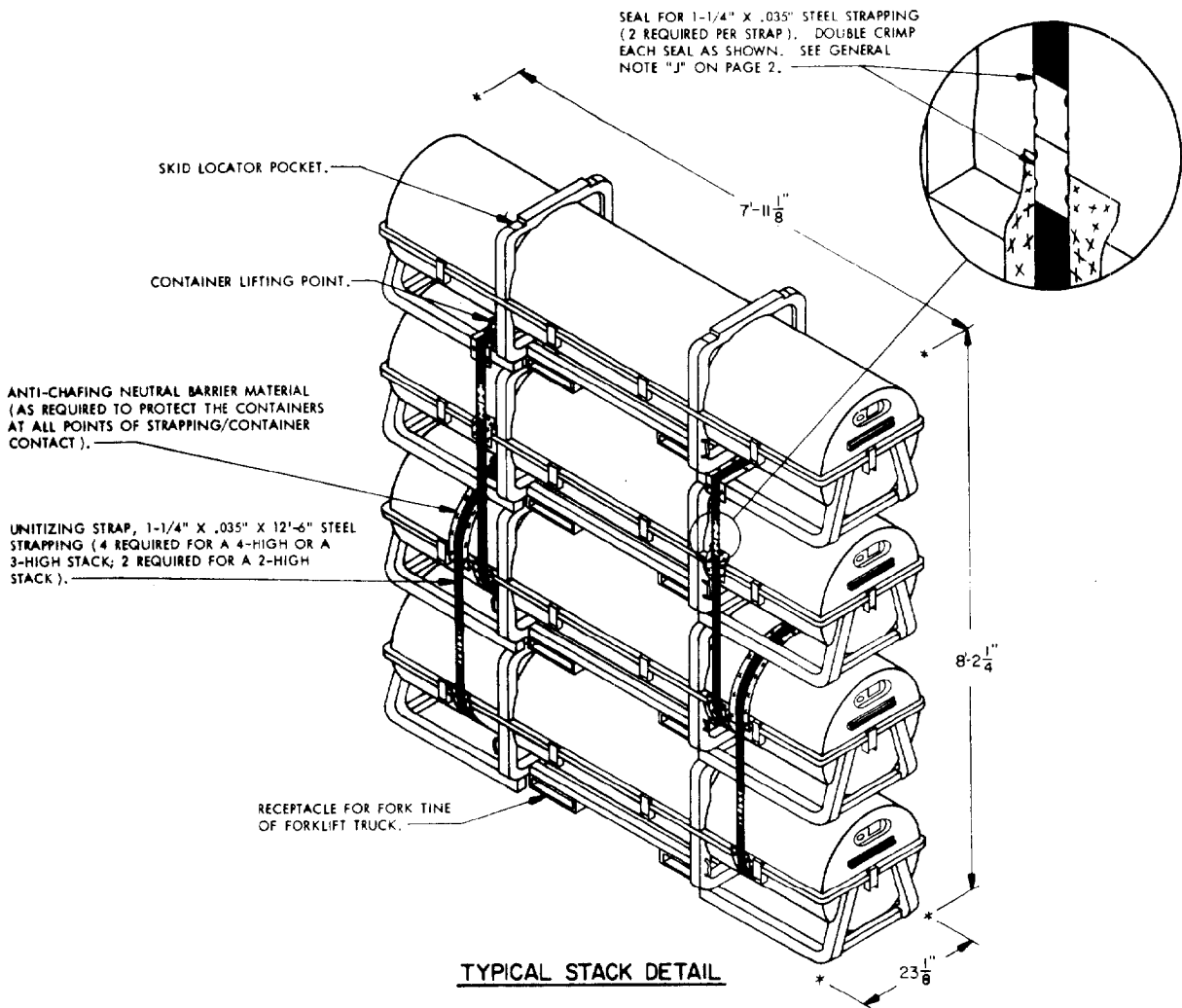
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GENERAL NOTES

- A. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE FOR CONVENTIONAL TYPE BOX CARS OF VARIOUS LENGTH AND WIDTH COMBINATIONS. NOTE: ALL METAL CARS CAN BE USED FOR THE LOADS DELINEATED ON PAGES 4 THROUGH 7 PROVIDING A K-BRACE TYPE OF PARTIAL LAYER BLOCKING IS NOT REQUIRED, AND FOR LCL LOADS AS TYPICALLY SHOWN ON PAGES 8 AND 9 IF THE CARS BEING USED HAVE AVAILABLE FLOORS.
- B. THE LOADS AS SHOWN ARE BASED ON CARS WHICH HAVE 8'-0" WIDE DOORS OF THE CONVENTIONAL SLIDING TYPE. THE DEPICTED OUTLOADING PROCEDURES ARE ALSO APPLICABLE TO CARS WHICH ARE EQUIPPED WITH PLUG 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.
- C. THE OUTLOADING PROCEDURES SPECIFIED HEREIN ARE APPLICABLE TO CBU ITEMS WHEN THEY ARE PACKAGED IN THE CNU-92/E CONTAINER. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE CNU-92/E CONTAINER WITH CONTENTS.
- D. FOR DETAILS OF THE CONTAINER SEE DRAWING NO. 9211645.
CONTAINER DIMENSIONS --- 95-1/8" LONG X 23-1/8" WIDE X 24-15/16" HIGH.
GROSS WEIGHT ----- 1,150 POUNDS (APPROX).
TARE WEIGHT ----- 341 POUNDS (APPROX).
- E. THE NUMBER OF LADING UNITS MAY BE ADJUSTED TO FIT THE SIZE OF THE BOX CAR BEING LOADED OR THE QUANTITY TO BE SHIPPED, AND COMBINATIONS OF THE OUTLOADING PROCEDURES SPECIFIED FOR THE VARIOUS LOADS SHOWN HEREIN MAY BE USED AS REQUIRED. HOWEVER, THE APPROVED METHODS SPECIFIED HEREIN FOR FULL OR PARTIAL CARLOADS MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING, AND STAYING OF THE DESIGNATED ITEMS.
- F. OTHER TYPES OF LADING ITEMS MAY BE LOADED IN BOX CARS WHICH ARE PARTIALLY LOADED WITH ITEMS PACKED IN THE CNU-92/E CONTAINERS, 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.
- G. 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 ITEMS DESIGNATED WITHIN THE DRAWING TITLE.
- H. ONE AND ONE-QUARTER INCH (1-1/4") STEEL STRAPPING WILL BE USED TO UNITIZE STACKED CONTAINERS AS SHOWN ON PAGE 3, AND AS SPECIFIED BY THE APPLICABLE OUTLOADING METHODS DEPICTED HEREIN. IF THE CAPACITY OF THE MATERIAL HANDLING EQUIPMENT USED TO LOAD THE CONTAINERS ABOARD A CAR PERMITS, IT IS RECOMMENDED THAT THE CONTAINERS BE UNITIZED PRIOR TO PLACEMENT WITHIN THE CAR. NOTICE: IN SOME INSTANCES, CONTAINERS WILL ALREADY BE UNITIZED WHEN OFFERED FOR LOADING. THESE UNITIZED STACKS SHOULD BE INSPECTED AND AS REQUIRED, LOOSE UNITIZING STEEL STRAPPING MUST BE REPLACED.
- J. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT AS SHOWN, A MINIMUM OF TWO (2) SEALS BUTTED TOGETHER WITH TWO (2) CRIMPS PER SEAL MUST BE USED TO SEAL THE JOINT.
- K. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 6" MATERIAL IS ACTUALLY 1-5/8" THICK BY 5-5/8" WIDE AND 1" X 4" MATERIAL IS ACTUALLY 3/4" THICK BY 3-5/8" WIDE.
- L. 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.
- M. 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 THE DEPICTED OUTLOADING METHODS.

MATERIAL SPECIFICATIONS

- LUMBER ----- : SEE TM 715-5500-1, 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 SAME SIZE.
- STRAPPING, STEEL ---- : TYPE I OR IV, CLASS "A" OR "B", FED SPEC QQ-S-781.
- ANTI-CHAFING MATERIAL: NEUTRAL BARRIER MATERIAL, MIL-B-121 (OR EQUAL).



UNITIZING AND HANDLING PROCEDURAL GUIDANCE

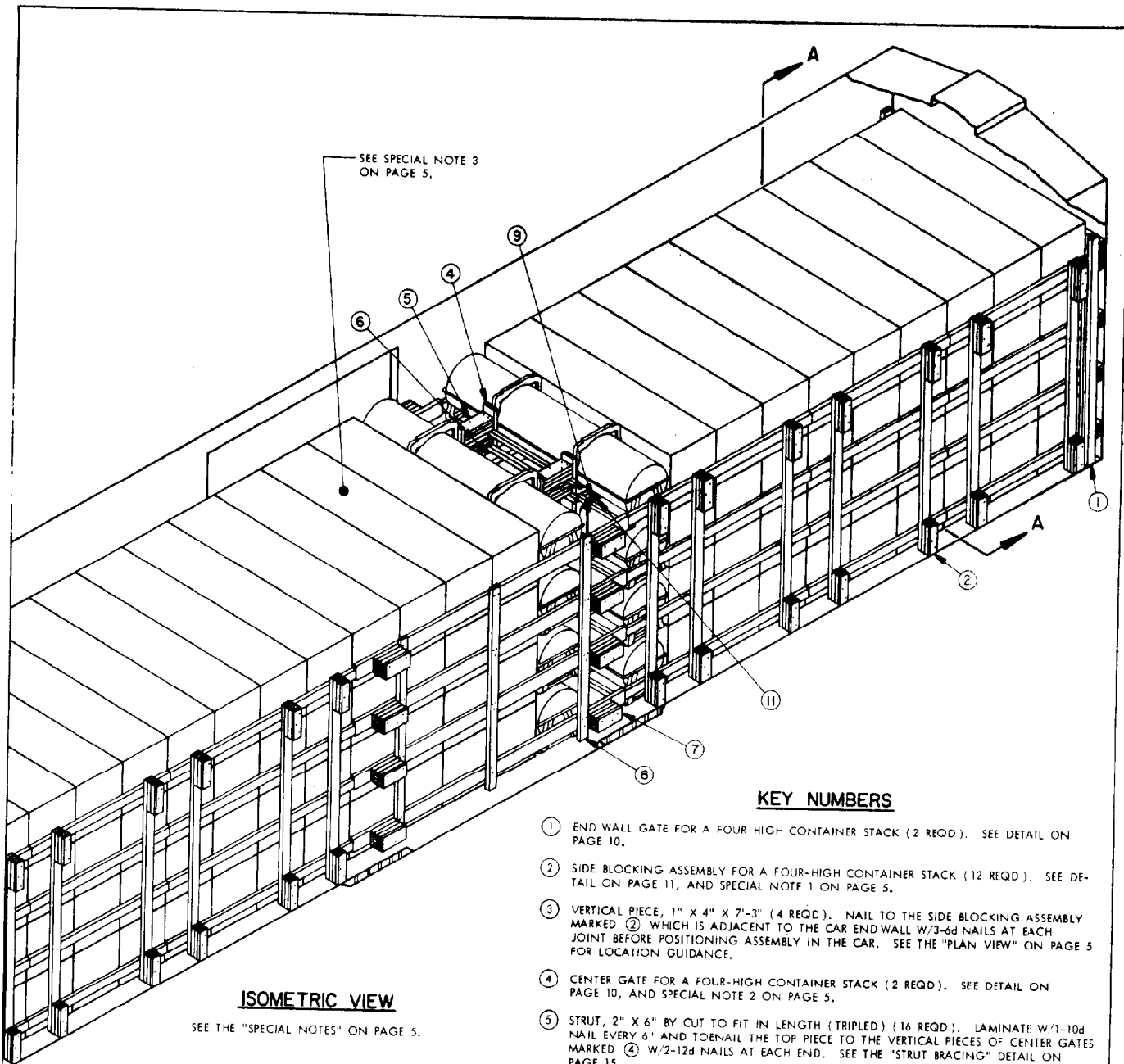
(UNITIZING AND HANDLING PROCEDURAL GUIDANCE CONTINUED)

1. STACKING CONTAINERS FOR UNITIZING.
 - A. AN UPPER CONTAINER SHOULD BE PLACED AS CLOSE AS POSSIBLE IN VERTICAL ALIGNMENT WITH THE NEXT LOWER CONTAINER.
 - B. POSITION THE AFT END OF AN UPPER CONTAINER ABOVE THE AFT END OF THE NEXT LOWER CONTAINER.
 - C. THE CONTAINER SKIDS OF AN UPPER CONTAINER SHOULD BE FULLY SEATED IN SKID LOCATOR POCKETS ON THE COVER OF THE NEXT LOWER CONTAINER.
2. INSTALLATION OF 1-1/4" X .035" UNITIZING STEEL STRAPPING. SEE GENERAL NOTE "H" ON PAGE 2.
 - A. EACH OF THE TWO SETS OF UNITIZING STRAPS SHOULD BE POSITIONED AROUND THE CONTAINERS AS SHOWN, AND SO THAT STRAPPING LAYS FLAT AND STRAIGHT WITH THE BODY SURFACES OF THE CONTAINERS; I.E., VERTICAL ALONG SIDES AND STRAIGHT ACROSS TOP AND BOTTOM OF THE STACK.
 - B. PLACE ANTI-CHAFING MATERIAL UNDER THE STRAPPING AT ALL POINTS OF STRAPPING/CONTAINER CONTACT, 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 ENCIRCLING TUBES BY WINDING THE MATERIAL AROUND AND 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. 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 INSURE THAT THE CONTAINERS ARE NOT DAMAGED. EXCESS STRAPPING (STRAP ENDS) SHOULD BE CUT OFF OR BROKEN OFF NEAR THE JOINT SEALS.
3. CONTAINER OR CONTAINER STACK HANDLING.

NOTES: (1) APPROVED MATERIAL HANDLING EQUIPMENT (FORKLIFT TRUCKS, CRANES, HAND TRUCKS, DOLLIES, ROLLER ASSEMBLIES, SLINGS, SPREADER BARS, ETC.) IS SPECIFIED ELSEWHERE.

(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 UNITIZED THREE OR FOUR-HIGH CONTAINER STACK MAY BE HANDLED BY INSERTING THE FORKS OF A FORKLIFT TRUCK INTO THE FORK RECEPTACLES OF AN UPPER CONTAINER. IF ONE CONTAINER IS HANDLED BY SLINGING, THE SLING MAY BE ATTACHED TO THE LIFTING POINTS ON THE CONTAINER. HOWEVER, IF A TWO, THREE OR FOUR-HIGH STACK IS HANDLED BY SLINGING, DO NOT ATTACH THE SLING TO THE LIFTING POINTS ON A CONTAINER. THE SLING USED MUST BE OF SUCH A DESIGN THAT THE LIFTING IS DONE ON THE BOTTOM OF THE LOWEST CONTAINER.

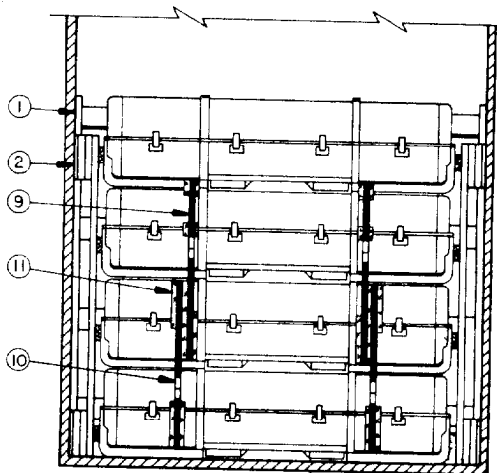


ISOMETRIC VIEW

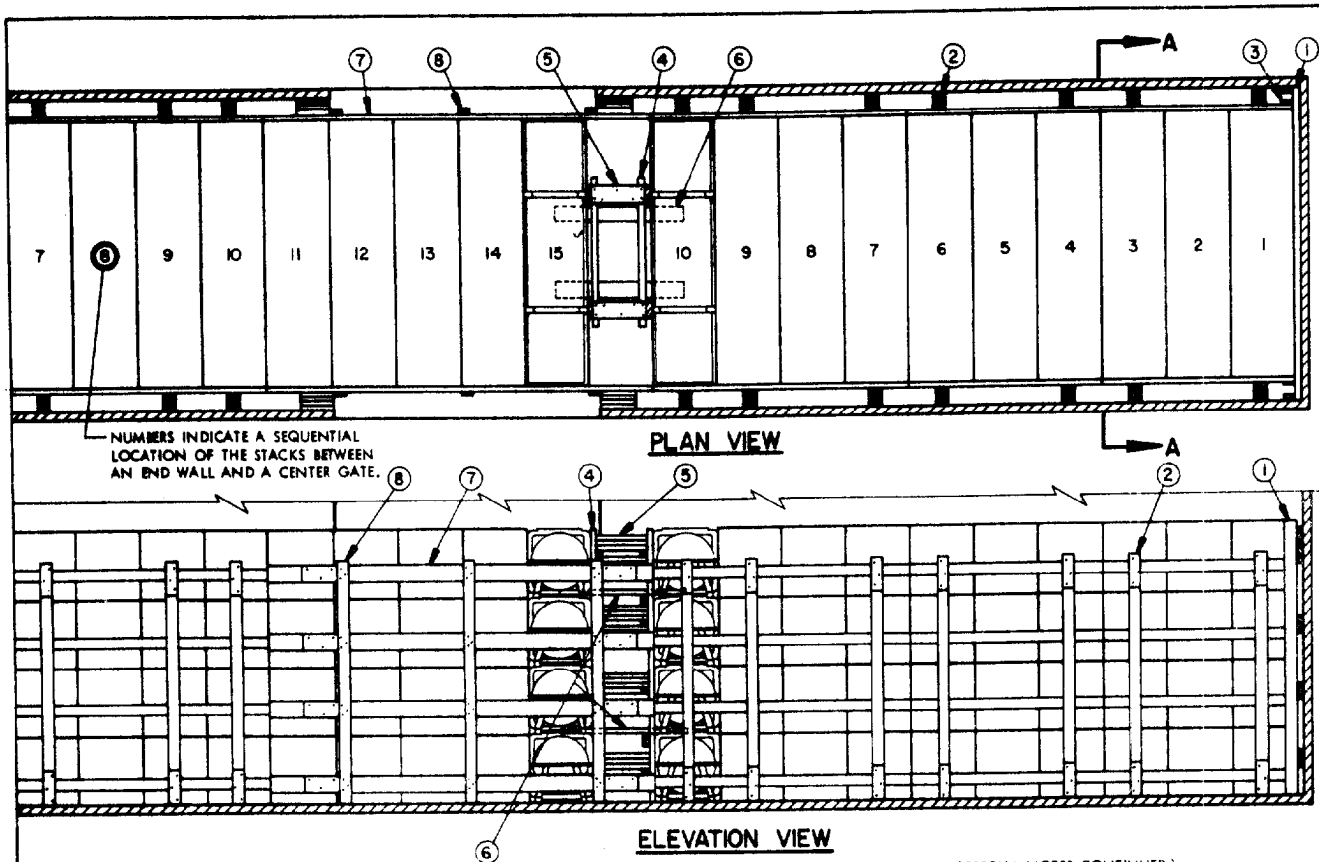
SEE THE "SPECIAL NOTES" ON PAGE 5.

KEY NUMBERS

- ① END WALL GATE FOR A FOUR-HIGH CONTAINER STACK (2 REQD). SEE DETAIL ON PAGE 10.
- ② SIDE BLOCKING ASSEMBLY FOR A FOUR-HIGH CONTAINER STACK (12 REQD). SEE DETAIL ON PAGE 11, AND SPECIAL NOTE 1 ON PAGE 5.
- ③ VERTICAL PIECE, 1" X 4" X 7'-3" (4 REQD). NAIL TO THE SIDE BLOCKING ASSEMBLY MARKED ② WHICH IS ADJACENT TO THE CAR END WALL W/3-6d NAILS AT EACH JOINT BEFORE POSITIONING ASSEMBLY IN THE CAR. SEE THE "PLAN VIEW" ON PAGE 5 FOR LOCATION GUIDANCE.
- ④ CENTER GATE FOR A FOUR-HIGH CONTAINER STACK (2 REQD). SEE DETAIL ON PAGE 10, AND SPECIAL NOTE 2 ON PAGE 5.
- ⑤ STRUT, 2" X 6" BY CUT TO FIT IN LENGTH (TRIPLED) (16 REQD). LAMINATE W/1-10d NAIL EVERY 6" AND TOENAIL THE TOP PIECE TO THE VERTICAL PIECES OF CENTER GATES MARKED ④ W/2-12d NAILS AT EACH END. SEE THE "STRUT BRACING" DETAIL ON PAGE 15.
- ⑥ GATE RETAINING PIECE, 2" X 4" BY A LENGTH TO EXTEND 12" INTO FORK OPENINGS OF CONTAINERS ADJACENT TO THE CENTER GATES (4 REQD). NAIL TO THE 2" X 4" HORIZONTAL PIECES OF THE CENTER GATES MARKED ④ W/2-12d NAILS AT EACH JOINT. NOTE: THESE PIECES MUST BE INSERTED INTO THE FORK OPENINGS OF THE SECOND AND FOURTH LAYERS OF CONTAINERS IN THE LAST STACK LOADED IN ONE END OF THE CAR PRIOR TO LOADING THE LAST CONTAINER STACK INTO THE OPPOSITE END OF THE CAR; EACH STACK BEING ADJACENT TO A CENTER GATE MARKED ④. SEE THE VIEWS ON PAGE 5 FOR LOCATION GUIDANCE.
- ⑦ DOORWAY PROTECTION ASSEMBLY (8 REQD). SEE DETAIL ON PAGE 11, AND SPECIAL NOTES 1 AND 2 ON PAGE 5.
- ⑧ DOORWAY PROTECTION SUPPORT PIECE, 2" X 4" X 7'-3" (6 REQD). POSITION AS SHOWN AND NAIL TO PIECES MARKED ⑦ W/3-10d NAILS AT EACH JOINT AFTER THE DOORWAY PROTECTION ASSEMBLY PIECES HAVE BEEN ALIGNED WITH THE SIDE BLOCKING ASSEMBLY PIECES MARKED ② AS SHOWN.
- ⑨ UNITIZING STRAP, 1-1/4" X .035" X 12'-6" STEEL STRAPPING (100 REQD). SEE THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3, AND GENERAL NOTES "H" AND "J" ON PAGE 2.
- ⑩ SEAL FOR 1-1/4" STRAPPING (200 REQD).
- ⑪ ANTI-CHAFING NEUTRAL BARRIER MATERIAL (AS REQD). POSITION UNDER ALL STRAPPING AT ALL POINTS OF STRAPPING/CONTAINER CONTACT.



SECTION A-A



NUMBERS INDICATE A SEQUENTIAL LOCATION OF THE STACKS BETWEEN AN END WALL AND A CENTER GATE.

PLAN VIEW

ELEVATION VIEW

(SPECIAL NOTES CONTINUED)

SPECIAL NOTES

1. A 50'-6" LONG BY 9'-2" WIDE BOX CAR EQUIPPED WITH 8'-0" WIDE DOOR OPENINGS IS SHOWN. A WIDER CAR CAN BE USED FOR THE SHIPMENT OF THE DEPICTED LOAD OR A CAR OF LESSER WIDTH MAY BE USED. ADJUST THICKNESS OF SIDE BLOCKING ASSEMBLIES MARKED ② AND THE DOORWAY PROTECTION ASSEMBLIES MARKED ⑦ BY INCREASING OR DECREASING THE NUMBER AND/OR THICKNESS OF FILLER CLEATS ON THOSE ASSEMBLIES. **CAUTION:** THE ALIGNMENT OF THE CONTAINERS MUST BE MAINTAINED AS SHOWN, AND A TIGHT-AS-POSSIBLE LOAD ACROSS THE WIDTH OF THE CAR MUST BE ACCOMPLISHED.
2. A CAR WITH THROUGH DOORS WHICH ARE WIDER OR NARROWER THAN SHOWN OR A CAR WITH STAGGERED DOORS CAN BE USED FOR THE SHIPMENT OF THE DEPICTED LOAD. THE LENGTHS OF PIECES MARKED ② AND ⑦, AND THE LOCATION OF THE CENTER GATES MARKED ④, MUST BE ADJUSTED TO BEST SUIT THE DOOR SIZE ON THE CAR BEING USED. FOR A CAR WITH 12'-0" OR WIDER DOOR OPENINGS THERE IS NO ADVANTAGE TO BE GAINED BY USING THE "OFF-SET" CENTER GATE METHOD WHICH IS DEPICTED; THE CAR MAY BE LOADED WITH THE CENTER GATES NEAR THE MIDPOINT OF THE CAR LENGTH IF DESIRED. **CAUTION:** IF THE CAR BEING LOADED IS EQUIPPED WITH DOORS WIDER THAN 10'-0", THE 2" X 6" DOOR SPANNER PIECES OF THE DOORWAY PROTECTION ASSEMBLIES MARKED ⑦ MUST BE DOUBLED AND LAMINATED

W/1-10d NAIL EVERY 12". ADJUST THE NUMBER OF FILLER CLEATS AS NECESSARY.

3. WHEN SHIPPING LOADS OF NEARLY FULL-LAYER QUANTITIES, A "FILLER ASSEMBLY" AS DETAILED ON PAGE 13 AND INSTALLED AS SHOWN WITHIN THE LCL LOAD DEPICTED ON PAGE 8 MUST BE USED WITHIN THE TOP LAYER OF A LOAD FOR EACH OMITTED CONTAINER. FILLER ASSEMBLIES SHOULD BE INSTALLED NEAR THE MID-POINT OF THE LOAD LENGTH; HOWEVER, DO NOT PLACE THEM IMMEDIATELY ADJACENT TO A CENTER GATE OR TO EACH OTHER. ALSO, IF THE LOAD QUANTITY TO BE SHIPPED CANNOT BE SATISFIED BEST BY THE OMISSION OF FULL STACKS OR LAYERS FROM THE DEPICTED LOAD PATTERN, THE LOAD QUANTITY MAY BE ADJUSTED BY OMITTING A PORTION OF THE TOP LAYER AND BLOCKING THE REMAINING CONTAINERS OF THAT LAYER WITH A "K-BRACE ASSEMBLY" AS DETAILED ON PAGE 12, OR BY AN APPLICABLY SIZED K-BRACE AS REFERENCED UNDER THE DETAIL, AND AS SHOWN WITHIN THE LOAD DEPICTED ON PAGES 6 AND 7.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	85	29
1" X 6"	16	8
2" X 2"	62	21
2" X 4"	743	496
2" X 6"	351	351
NAILS	NO. REQD	POUNDS
6d (2")	264	1-3/4
10d (3")	1,116	17-1/4
12d (3-1/4")	80	1-1/2
STEEL STRAPPING, 1-1/4" X .035"	1,250 FT REQD	179 LBS
SEAL FOR 1-1/4" STRAPPING	200 REQD	10 LBS
ANTI-CHAFING MATERIAL	AS REQD	NIL

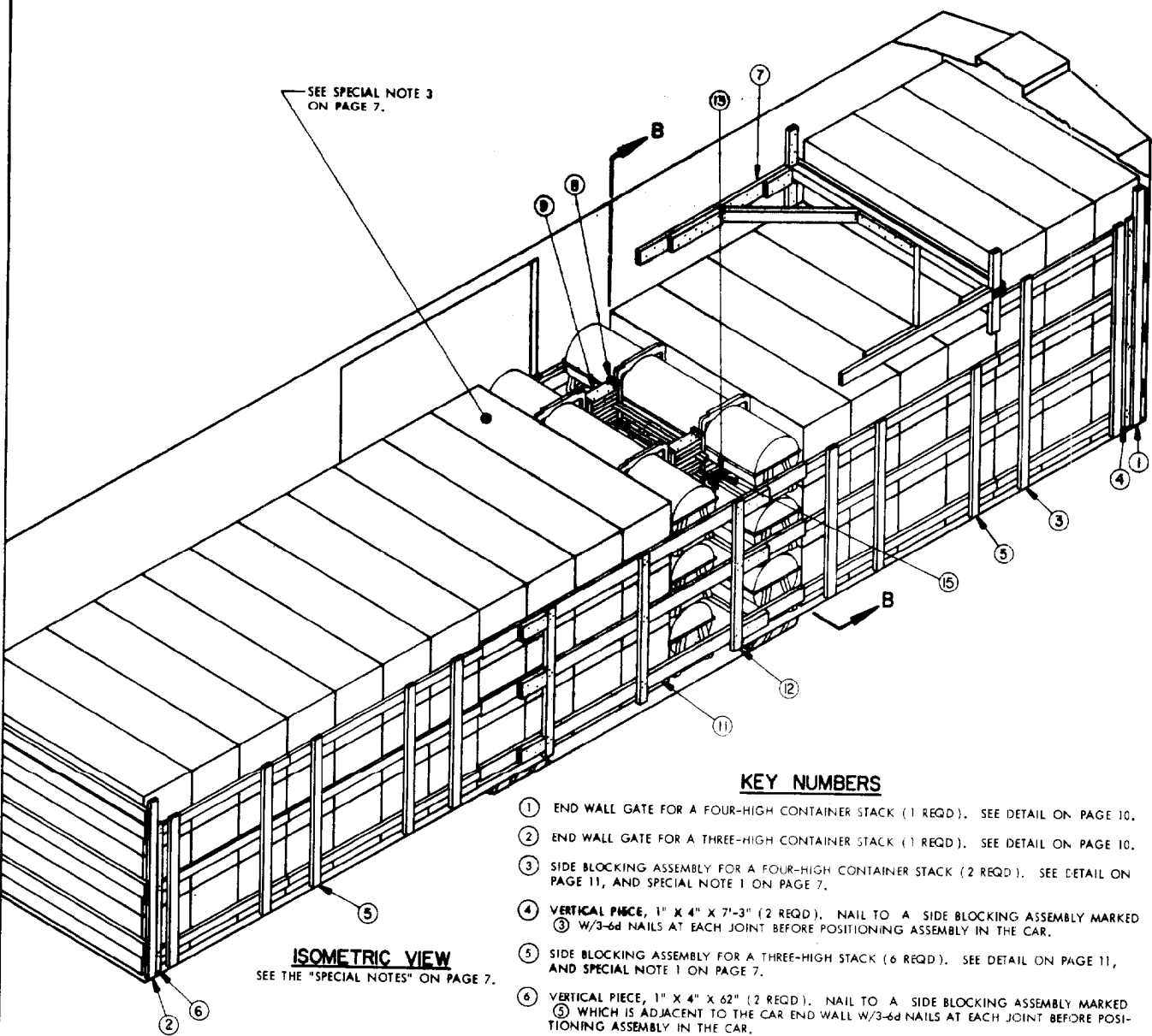
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER	100	115,000 LBS
(W/CBU ITEM)		
DUNNAGE		2,473 LBS
TOTAL WEIGHT --		117,473 LBS

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

PAGE 5

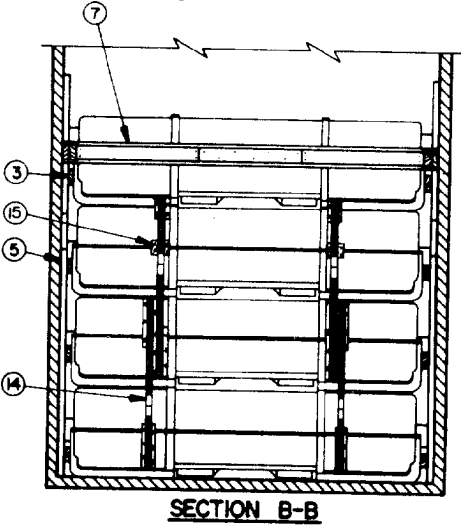
SEE SPECIAL NOTE 3 ON PAGE 7.



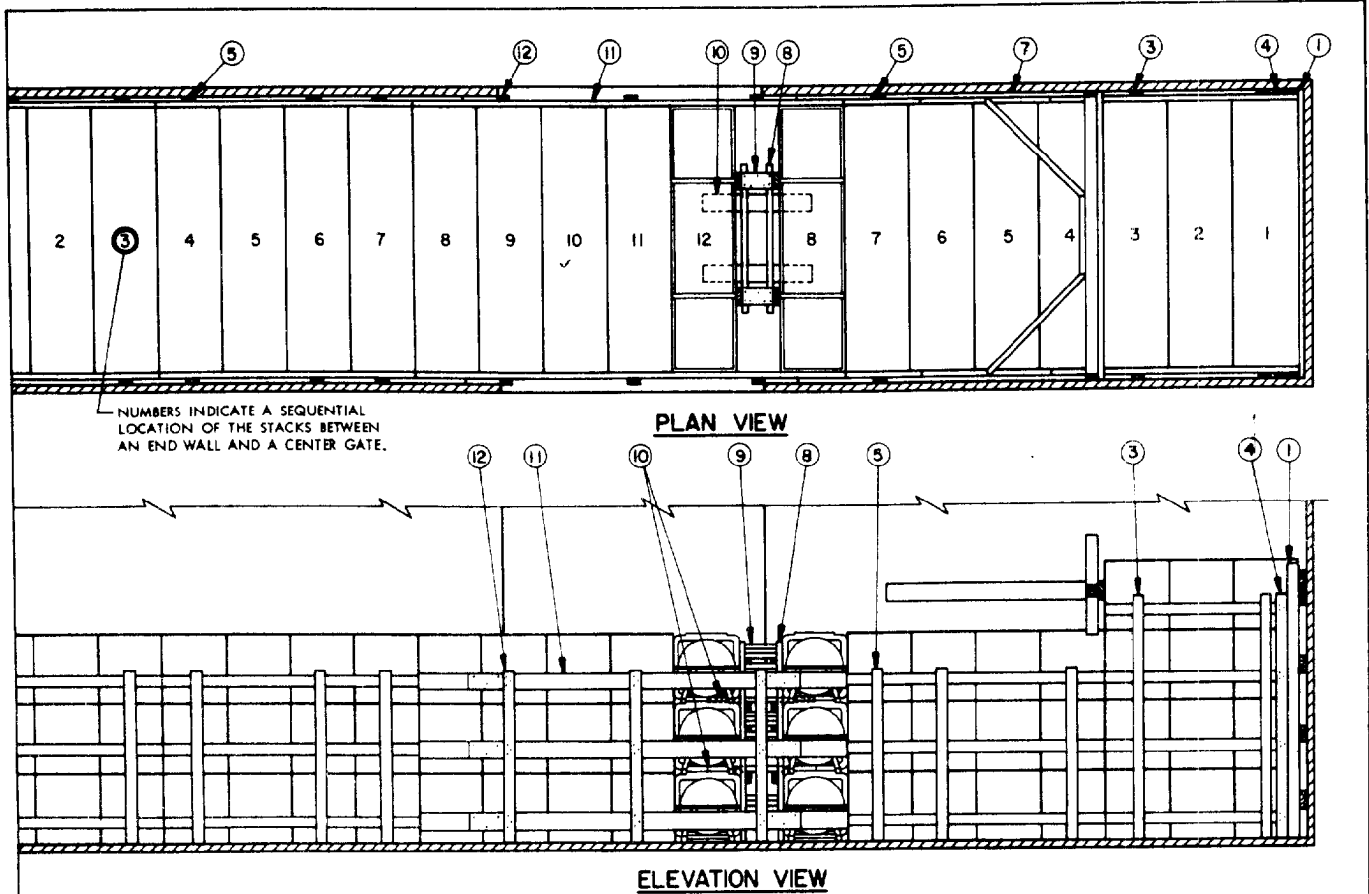
ISOMETRIC VIEW
SEE THE "SPECIAL NOTES" ON PAGE 7.

KEY NUMBERS

- ① END WALL GATE FOR A FOUR-HIGH CONTAINER STACK (1 REQD). SEE DETAIL ON PAGE 10.
- ② END WALL GATE FOR A THREE-HIGH CONTAINER STACK (1 REQD). SEE DETAIL ON PAGE 10.
- ③ SIDE BLOCKING ASSEMBLY FOR A FOUR-HIGH CONTAINER STACK (2 REQD). SEE DETAIL ON PAGE 11, AND SPECIAL NOTE 1 ON PAGE 7.
- ④ VERTICAL PIECE, 1" X 4" X 7'-3" (2 REQD). NAIL TO A SIDE BLOCKING ASSEMBLY MARKED ③ W/3-6d NAILS AT EACH JOINT BEFORE POSITIONING ASSEMBLY IN THE CAR.
- ⑤ SIDE BLOCKING ASSEMBLY FOR A THREE-HIGH STACK (6 REQD). SEE DETAIL ON PAGE 11, AND SPECIAL NOTE 1 ON PAGE 7.
- ⑥ VERTICAL PIECE, 1" X 4" X 62" (2 REQD). NAIL TO A SIDE BLOCKING ASSEMBLY MARKED ⑤ WHICH IS ADJACENT TO THE CAR END WALL W/3-6d NAILS AT EACH JOINT BEFORE POSITIONING ASSEMBLY IN THE CAR.
- ⑦ K-BRACE ASSEMBLY (1 REQD). SEE DETAIL ON PAGE 12, AND SPECIAL NOTE 3 ON PAGE 7.
- ⑧ CENTER GATE FOR A THREE-HIGH CONTAINER STACK (2 REQD). SEE DETAIL ON PAGE 10, AND SPECIAL NOTE 2 ON PAGE 7.
- ⑨ STRUT, 2" X 6" BY CUT TO FIT IN LENGTH (TRIPLED) (12 REQD). LAMINATE W/1-10d NAIL EVERY 6" AND TOENAIL THE TOP PIECE TO THE VERTICAL PIECES OF CENTER GATES MARKED ⑧ W/2-12d NAILS AT EACH END. SEE THE "STRUT BRACING" DETAIL ON PAGE 15.
- ⑩ GATE RETAINING PIECE, 2" X 4" BY A LENGTH TO EXTEND 12" INTO FORK OPENINGS OF CONTAINERS ADJACENT TO THE CENTER GATES (4 REQD). NAIL TO THE 2" X 4" HORIZONTAL PIECES OF THE CENTER GATES MARKED ⑧ W/2-12d NAILS AT EACH JOINT. **NOTE:** THESE PIECES MUST BE INSERTED INTO THE FORK OPENINGS OF THE SECOND AND THIRD LAYERS OF CONTAINERS IN THE LAST STACK LOADED INTO ONE END OF THE CAR PRIOR TO LOADING THE LAST CONTAINER STACK IN THE OPPOSITE END OF THE CAR, EACH STACK BEING ADJACENT TO A CENTER GATE MARKED ⑧. SEE THE VIEWS ON PAGE 7 FOR LOCATION GUIDANCE.
- ⑪ DOORWAY PROTECTION ASSEMBLY (6 REQD). SEE DETAIL ON PAGE 11, AND SPECIAL NOTES 1 AND 2 ON PAGE 7.
- ⑫ DOORWAY PROTECTION SUPPORT PIECE, 2" X 4" X 62" (6 REQD). POSITION AS SHOWN AND NAIL TO PIECES MARKED ⑪ W/3-10d NAILS AT EACH JOINT AFTER THE DOORWAY PROTECTION ASSEMBLY PIECES HAVE BEEN ALIGNED WITH THE SIDE BLOCKING ASSEMBLY PIECES MARKED ⑤. AS SHOWN.
- ⑬ UNITIZING STRAP, 1-1/4" X .035" X 12'-6" STEEL STRAPPING (80 REQD). SEE THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3, AND GENERAL NOTES "H" AND "J" ON PAGE 2.
- ⑭ SEAL FOR 1-1/4" STRAPPING (160 REQD).
- ⑮ ANTI-CHAFING NEUTRAL BARRIER MATERIAL (AS REQD). POSITION UNDER ALL STRAPPING AT ALL POINTS OF STRAPPING/CONTAINER CONTACT.



SECTION B-B



NUMBERS INDICATE A SEQUENTIAL LOCATION OF THE STACKS BETWEEN AN END WALL AND A CENTER GATE.

PLAN VIEW

ELEVATION VIEW

SPECIAL NOTES

1. A 40'-6" LONG BY 8'-6" WIDE BOX CAR EQUIPPED WITH 8'-0" WIDE DOOR OPENINGS IS SHOWN. A WIDER CAR CAN BE USED FOR THE SHIPMENT OF THE DEPICTED LOAD BY INCREASING THE THICKNESS OF THE SIDE BLOCKING ASSEMBLIES MARKED ③ AND ⑤ AND THE DOORWAY PROTECTION ASSEMBLIES MARKED ⑪ BY ADDING OR INCREASING THE NUMBER AND/OR THICKNESS OF FILLER CLEATS ON THOSE ASSEMBLIES. **CAUTION:** THE ALIGNMENT OF THE CONTAINERS MUST BE MAINTAINED AS SHOWN, AND A TIGHT-AS-POSSIBLE LOAD ACROSS THE WIDTH OF THE CAR MUST BE ACCOMPLISHED.
2. A CAR WITH THROUGH DOORS WHICH ARE WIDER OR NARROWER THAN SHOWN OR A CAR WITH STAGGERED DOORS CAN BE USED FOR THE SHIPMENT OF THE DEPICTED LOAD. THE LENGTH OF PIECES MARKED ③ AND ⑤ AND THE LOCATION OF THE CENTER GATES MARKED ⑧ MUST BE ADJUSTED TO BEST SUIT THE DOOR SIZE OF THE CAR BEING USED. FOR A CAR WITH 12'-0" OR WIDER DOOR OPENINGS THERE IS NO ADVANTAGE TO BE GAINED BY USING THE "OFF-SET" CENTER GATE METHOD WHICH IS DEPICTED; THE CAR MAY BE LOADED WITH THE CENTER GATES NEAR THE MIDPOINT OF THE CAR LENGTH IF DESIRED. **CAUTION:** IF THE CAR BEING LOADED IS EQUIPPED WITH DOORS WIDER THAN 10'-0", THE 2" X 6" DOOR SPANNER PIECES OF THE DOORWAY PROTECTION ASSEMBLIES MARKED ⑪ MUST BE DOUBLED AND LAMINATED W/1-10d NAIL EVERY 12". IF THE SHIPMENT IS BEING MADE IN A CAR EQUIPPED WITH PLUG DOORS, IT WILL BE NECESSARY TO CUT OUT THE ADDED DOOR SPANNER PIECES TO ALLOW FOR THE APPLICATION OF THE DOORWAY PROTECTION SUPPORT PIECES MARKED ⑫.

(SPECIAL NOTES CONTINUED)

3. THE K-BRACE ASSEMBLY, SHOWN AS PIECE MARKED ⑦, IS DEPICTED IN ONE END OF THE CAR AS TYPICAL ONLY. THE ASSEMBLY MAY BE OMITTED OR MAY BE USED IN BOTH ENDS OF THE CAR AS NECESSARY TO ACHIEVE THE AMOUNT IT IS DESIRED TO SHIP. ADDITIONALLY, AS THE QUANTITY TO BE SHIPPED MIGHT DICTATE, FILLER ASSEMBLIES MAY BE INSTALLED WITHIN THE TOP LAYER OF A LOAD AS SPECIFIED WITHIN SPECIAL NOTE 3 ON PAGE 5.

BILL OF MATERIAL

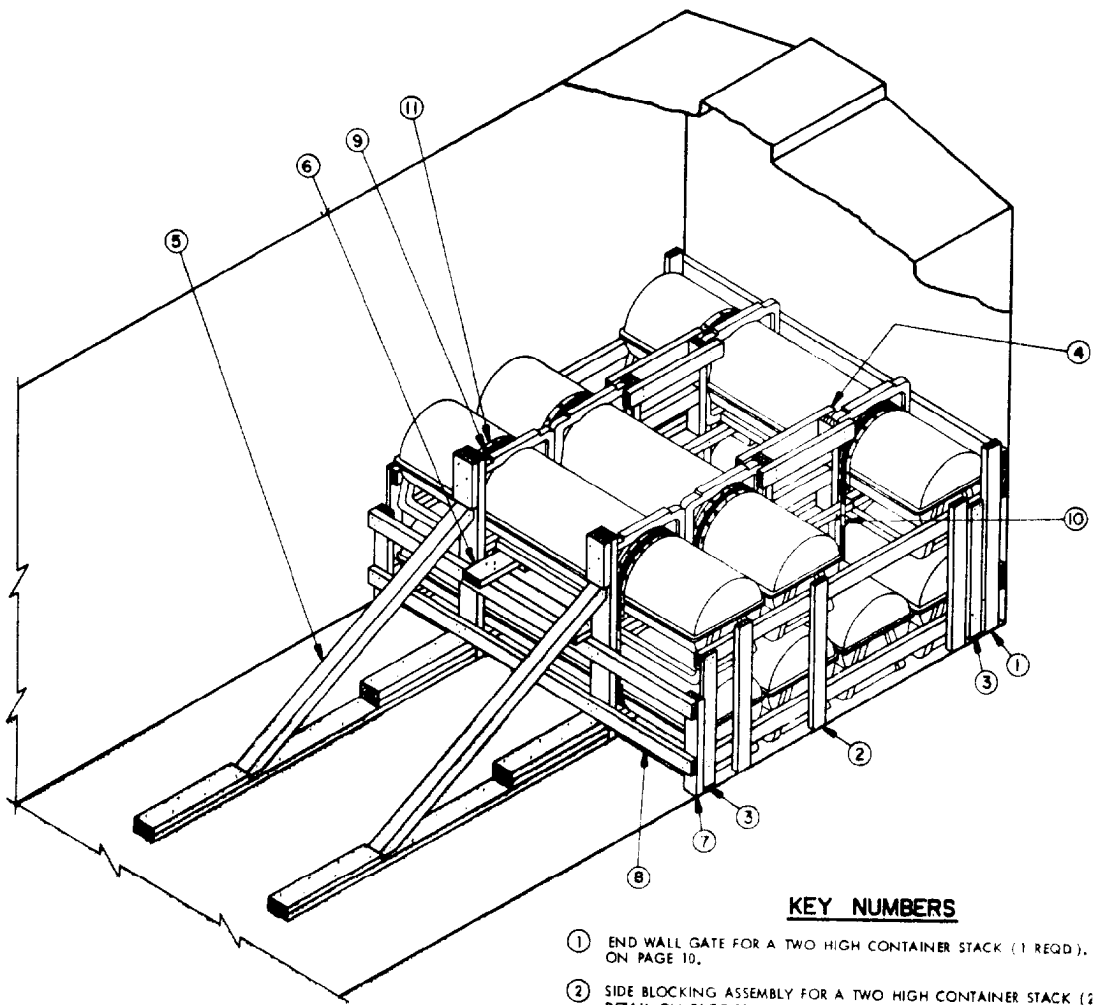
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	25	9
2" X 2"	45	15
2" X 4"	333	222
2" X 6"	269	269
4" X 4"	9	12
NAILS	NO. REQD	POUNDS
6d (2")	42	1/4
10d (3")	454	7
12d (3-1/4")	136	2-1/2
16d (3-1/2")	32	3/4
STEEL STRAPPING, 1-1/4" X .035" ----- 1,000 FT REQD --- 143 LBS		
SEAL FOR 1-1/4" STRAPPING ----- 160 REQD ----- 8 LBS		
ANTI-CHAFING MATERIAL ----- AS REQD ----- NIL		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER	63	72,490 LBS
(W/CBU ITEM)		
DUNNAGE		1,480 LBS
TOTAL WEIGHT		73,970 LBS

63-UNIT LOAD IN A 40'-6" LONG BY 8'-6" WIDE CAR

PAGE 7



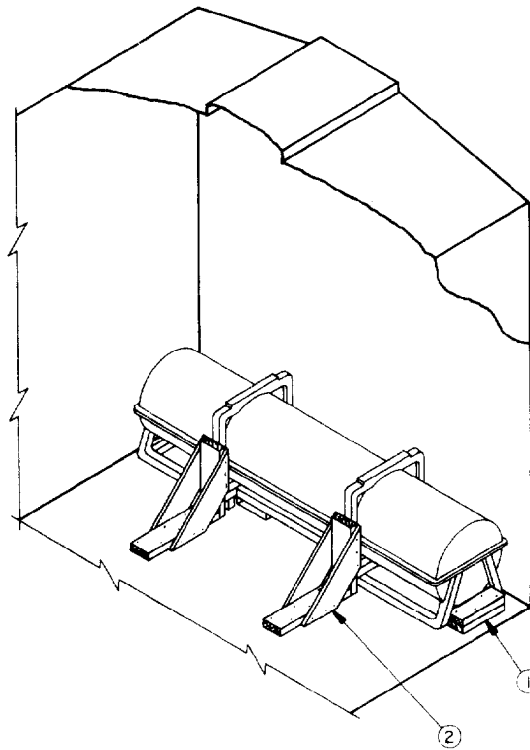
TYPICAL LCL
SEE THE "SPECIAL NOTES" BELOW.

KEY NUMBERS

- ① END WALL GATE FOR A TWO HIGH CONTAINER STACK (1 REQD.). SEE DETAIL ON PAGE 10.
- ② SIDE BLOCKING ASSEMBLY FOR A TWO HIGH CONTAINER STACK (2 REQD.). SEE DETAIL ON PAGE 11, AND SPECIAL NOTE 1 ON THIS PAGE.
- ③ VERTICAL PIECE, 1" X 4" X 36" (4 REQD.). POSITION AS SHOWN AND NAIL TO A SIDE BLOCKING ASSEMBLY MARKED ② W/3-6d NAILS AT EACH JOINT BEFORE POSITIONING THE ASSEMBLY IN THE CAR.
- ④ FILLER ASSEMBLY (2 REQD.). SEE DETAIL ON PAGE 13, AND SPECIAL NOTE 3 ON THIS PAGE.
- ⑤ KNEE BRACE ASSEMBLY (2 REQD.). SEE DETAIL ON PAGE 14 FOR SPECIFICATIONS; HOWEVER, IT SHOULD BE NOTED THAT THE ASSEMBLIES MUST BE CONSTRUCTED IN PLACE. CENTER THE VERTICAL PIECE OF A BRACE ON A CONTAINER COLLAR AS SHOWN. SEE SPECIAL NOTE 2 ON THIS PAGE.
- ⑥ KNEE BRACE HOLD-DOWN ASSEMBLY (1 REQD.). SEE DETAIL ON PAGE 13. INSERT INTO FORK OPENINGS OF THE SECOND LAYER CONTAINER.
- ⑦ SUPPORT PIECE, 2" X 4" X 25" (2 REQD.).
- ⑧ KNEE BRACE ALIGNING PIECE, 2" X 4" BY CAR WIDTH (2 REQD.). POSITION THE PIECES AS SHOWN, ELEVATE THE TOP PIECE TO BEAR SNUGLY UNDER PIECE MARKED ⑤, AND NAIL TO THE VERTICAL PIECES OF KNEE BRACE ASSEMBLIES MARKED ⑤ W/3-10d NAILS AT EACH JOINT, AND NAIL TO PIECES MARKED ⑦ W/3-10d NAILS AT EACH END.
- ⑨ UNITIZING STRAP, 1-1/4" X .035" X 12'-6" STEEL STRAPPING (6 REQD.). SEE THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3, AND GENERAL NOTES "H" AND "J" ON PAGE 2.
- ⑩ SEAL FOR 1-1/4" STRAPPING (12 REQD.).
- ⑪ ANTI-CHAFING NEUTRAL BARRIER MATERIAL (AS REQD.). POSITION UNDER ALL STRAPPING AT ALL POINTS OF STRAPPING/CONTAINER CONTACT.

SPECIAL NOTES

1. AN 8'-6" WIDE BOX CAR IS SHOWN. A WIDER CAR CAN BE USED FOR THE SHIPMENT OF THE DEPICTED LOAD BY INCREASING THE THICKNESS OF THE SIDE BLOCKING ASSEMBLIES MARKED ②. CAUTION: THE ALIGNMENT OF THE CONTAINERS MUST BE MAINTAINED AS SHOWN AND A TIGHT-AS-POSSIBLE LOAD ACROSS THE WIDTH OF THE CAR ACCOMPLISHED.
2. TWO (2) KNEE BRACE ASSEMBLIES, SHOWN AS PIECES MARKED ⑤, ARE ADEQUATE FOR RETAINING AN LCL LOAD OF NOT MORE THAN 14,000 POUNDS OR TWELVE (12) CONTAINERS WITH CONTENTS.
3. THE APPLICATION OF FILLER ASSEMBLIES AS SHOWN IS TYPICAL ONLY. A CONTAINER WITH CONTENTS MAY BE LOADED IN THE SPACE OCCUPIED BY THE TWO ASSEMBLIES. NOTE: FILLER ASSEMBLIES WILL ONLY BE USED WITHIN THE TOP LAYER AND CAN ONLY BE USED BETWEEN CONTAINERS.
4. IF THE CAR BEING USED FOR THE SHIPMENT OF THE DEPICTED LOAD IS EQUIPPED WITH A NAILABLE METAL FLOOR AND A NAIL SIZE FOR FLOOR NAILING IS MARKED ON THE SIDE WALL OF THE CAR, THAT GUIDANCE SHOULD BE APPLIED TO THE NAILING OF PIECES MARKED ③ ON THIS PAGE AND THE LCL BRACES MARKED ② ON PAGE 9. IF A NAIL SIZE IS NOT SPECIFIED IN THE CAR, 30d NAILS SHOULD BE USED.



TYPICAL LCL

SPECIAL NOTES

1. AN 8'-6" WIDE BOX CAR IS SHOWN; HOWEVER, ANY WIDTH CAR CAN BE USED FOR THE TYPE OF UNLOADING DEPICTED.
2. EACH LCL BRACE AS APPLIED FOR LONGITUDINAL BRACING WILL SUPPORT 2,000 POUNDS. AT LEAST TWO (2) BRACES MUST BE USED AGAINST A CONTAINER. ADDITIONAL BRACES MAY BE APPLIED AS NECESSARY.

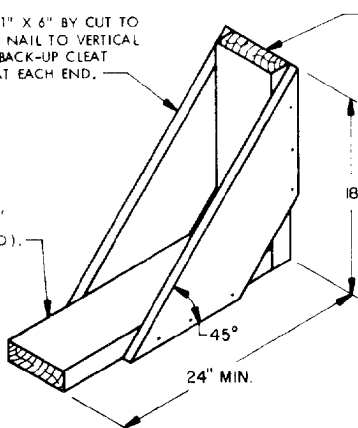
KEY NUMBERS

- ① SIDE BLOCKING, 2" X 6" X 14" (DOUBLED) (1 REQD.). POSITION AGAINST A CONTAINER END AFTER THE ADJACENT CONTAINER HAS BEEN PLACED TIGHTLY AGAINST THE CAR SIDE WALL ON THE OPPOSITE SIDE, AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO FIRST IN A LIKE MANNER.
- ② LCL BRACE (2 REQD.). SEE THE DETAIL BELOW. POSITION AS SHOWN AND NAIL TO THE CAR FLOOR W/7-16d NAILS. SEE SPECIAL NOTE 2 ON THIS PAGE AND SPECIAL NOTE 4 ON PAGE 3.

ANGLE BRACE, 1" X 6" BY CUT TO FIT (2 REQD.). NAIL TO VERTICAL PIECE AND TO BACK-UP CLEAT W/3-8d NAILS AT EACH END.

VERTICAL PIECE, 2" X 6" X 18" (1 REQD.). NAIL TO BACK-UP CLEAT W/2-16d NAILS.

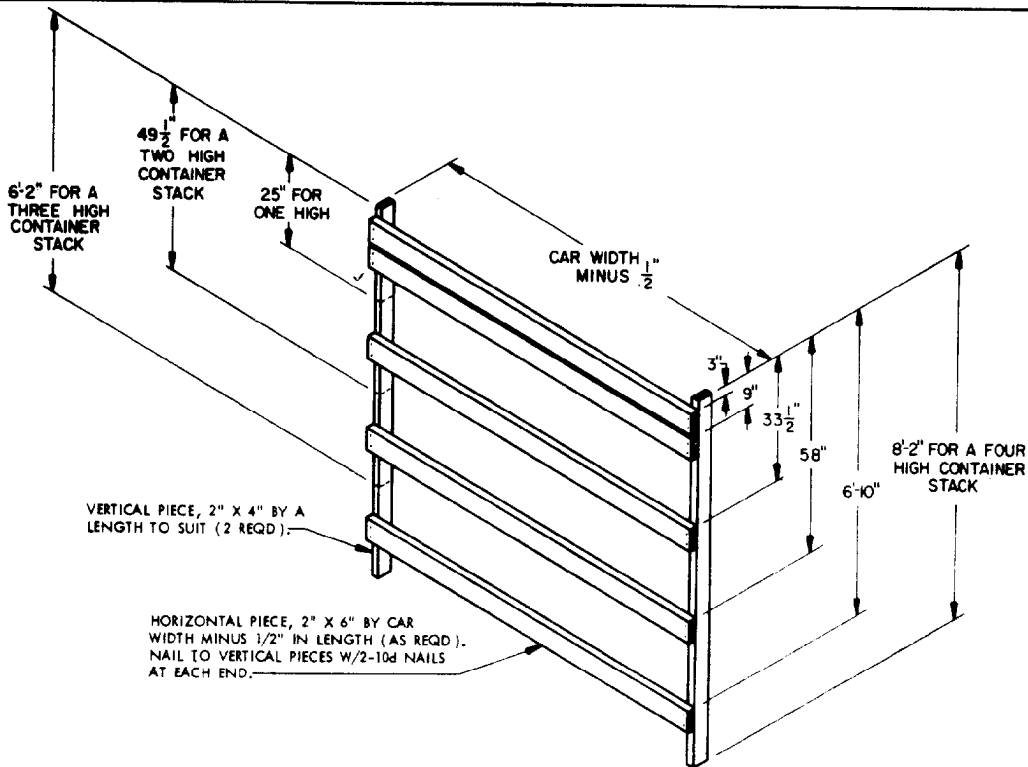
BACK-UP CLEAT, 2" X 6" X 24" (MIN) (1 REQD.).



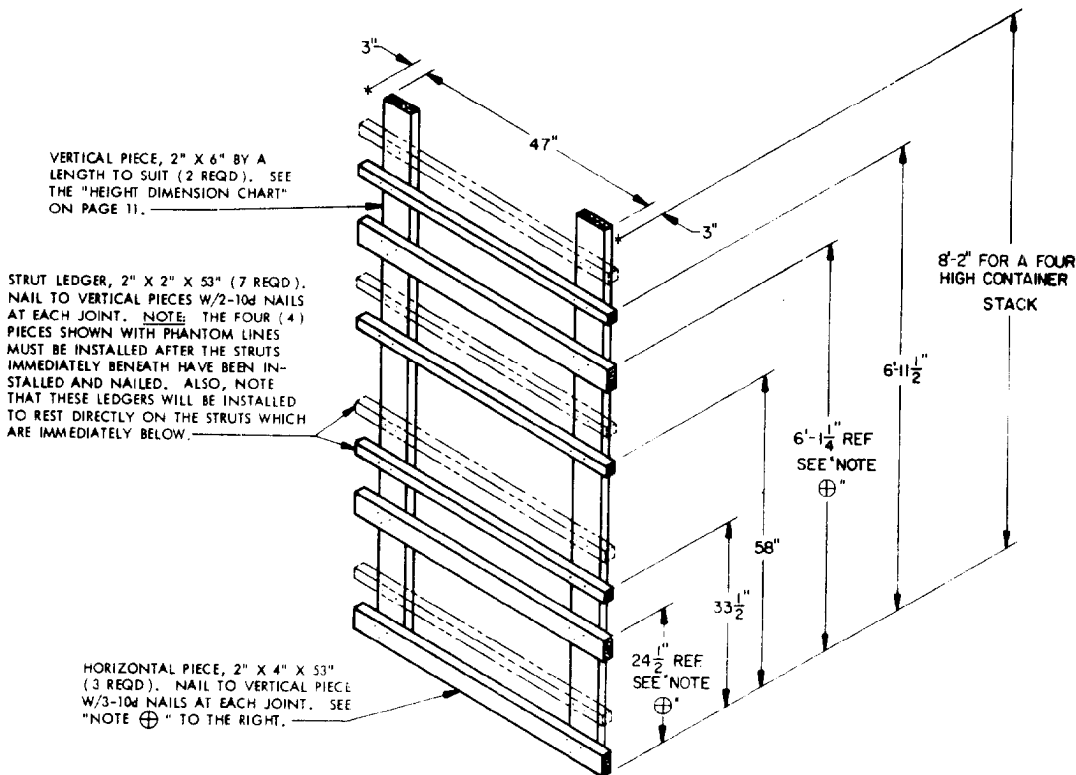
LCL BRACE

SEE SPECIAL NOTE 2 ABOVE.

TYPICAL LCL (1-UNIT LOAD)



END WALL GATE



CENTER GATE

THE CENTER GATE AS SHOWN IS DESIGNED FOR THE BRACING OF A FOUR-HIGH LOAD. ADJUST HEIGHT OF VERTICAL PIECES, AS NECESSARY TO CORRESPOND WITH THE NUMBER OF LAYERS BEING BRACED. SEE THE "HEIGHT DIMENSION CHART" ON PAGE 11. ALSO, ADJUST THE QUANTITIES OF HORIZONTAL PIECES AND STRUT LEDGERS, AS NECESSARY.

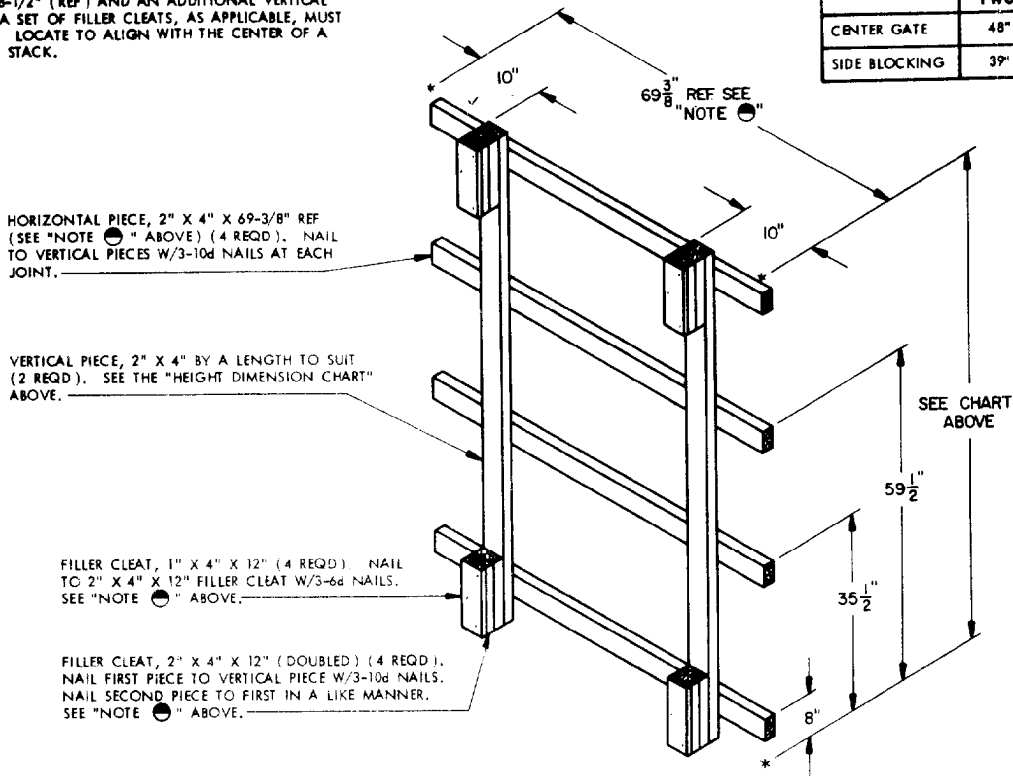
NOTE ⊕ :

THE TWO (2) 2" X 4" HORIZONTAL PIECES SHOWN WITH REFERENCE DIMENSIONS MUST BE LOCATED SO THAT A PIECE MARKED ⊕ ON PAGE 4 AND A COMPARABLE PIECE ON PAGE 6 WILL FIT SNUGLY AGAINST THE INSIDE TOP SURFACE OF THE ADJACENT FORKLIFT OPENING; THESE HORIZONTAL PIECES MUST BE POSITIONED AND NAILED AFTER THE CENTER GATES HAVE BEEN INSTALLED WITHIN THE LOAD.

NOTE 

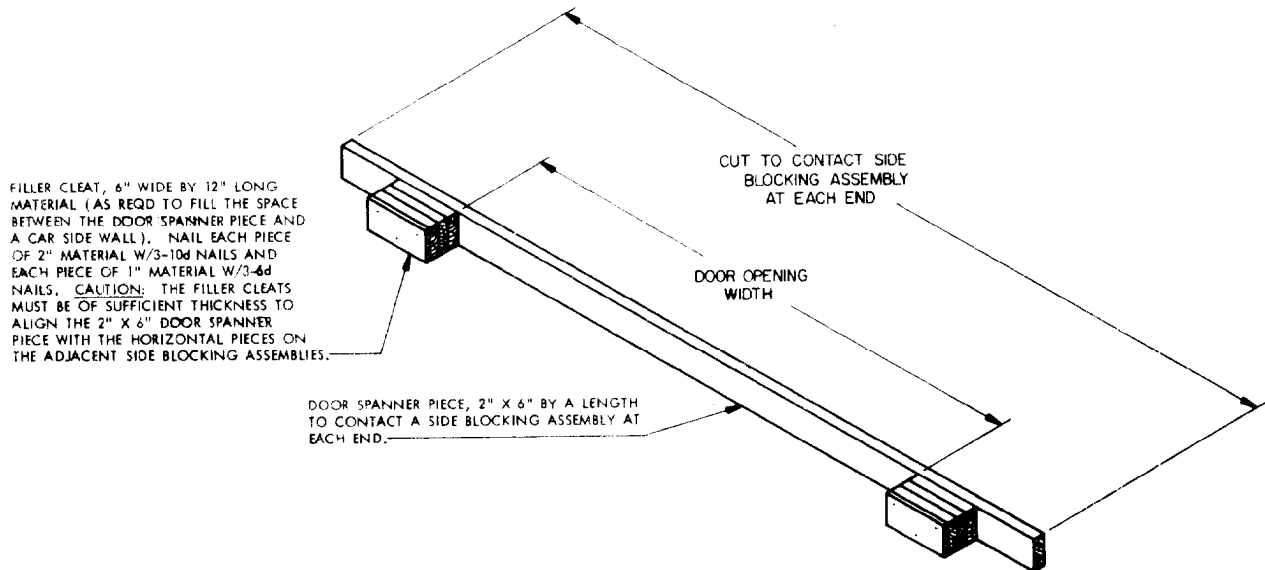
A SIDE BLOCKING ASSEMBLY AS SHOWN IS DESIGNED FOR THE LATERAL BRACING OF THREE (3) STACKS. IF FOUR (4) STACKS ARE TO BE BRACED, THE HORIZONTAL PIECES WILL BE 7'-8-1/2" (REF) AND AN ADDITIONAL VERTICAL PIECE AND A SET OF FILLER CLEATS, AS APPLICABLE, MUST BE APPLIED. LOCATE TO ALIGN WITH THE CENTER OF A CONTAINER STACK.

HEIGHT DIMENSION CHART			
ASSEMBLY	CONTAINER STACK HEIGHT		
	TWO	THREE	FOUR
CENTER GATE	48"	72"	8'-2"
SIDE BLOCKING	39"	62"	7'-3"



SIDE BLOCKING ASSEMBLY

THE SIDE BLOCKING ASSEMBLY AS SHOWN IS DESIGNED FOR USE IN A 9'-0" WIDE CAR. FOR USE IN AN 8'-6" WIDE CAR, OMIT ALL FILLER CLEATS. FOR OTHER WIDTH CARS, ADJUST THE LAYERS OF FILLER CLEATS AS NECESSARY, FILLING THE EXCESS WIDTH OF THE CAR AS MUCH AS POSSIBLE. CAUTION: TO MAINTAIN CONTAINER ALIGNMENT, ALL SIDE BLOCKING ASSEMBLIES ON ONE SIDE OF THE CAR MUST BE OF THE SAME THICKNESS.

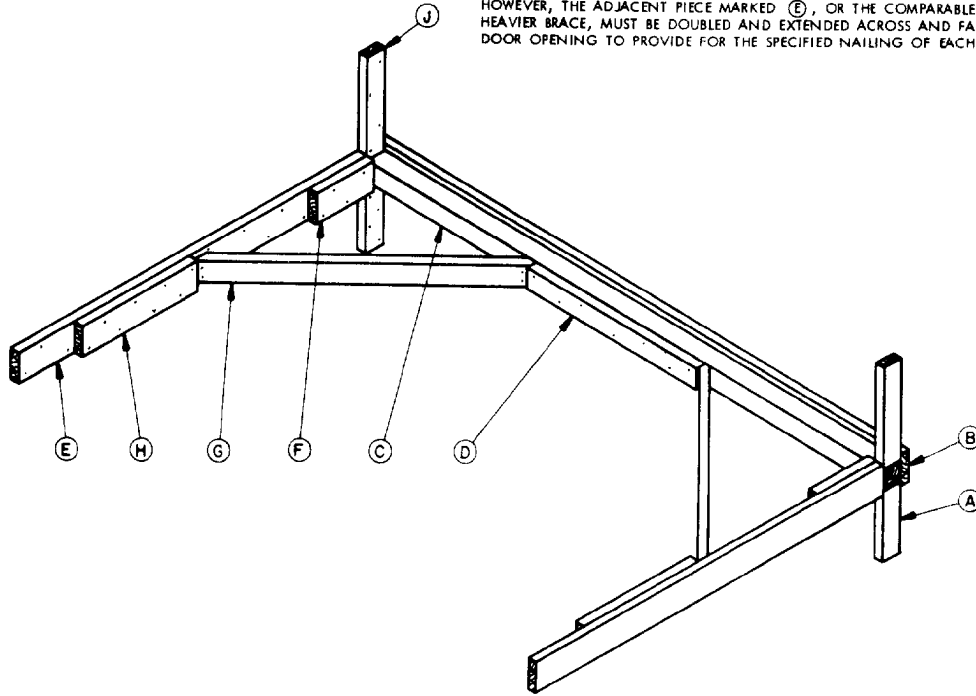


DOORWAY PROTECTION ASSEMBLY

IF THE DOOR OPENING WIDTH IS GREATER THAN 10'-0" REFER TO THE "SPECIAL NOTES" IMMEDIATELY ADJACENT TO THE LOAD VIEWS FOR APPLICABLE GUIDANCE.

CAUTION:

SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL LAYER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES (A), (B), (C), (E), AND (J) OR THE COMPARABLE PIECES ON A HEAVIER BRACE MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDE WALL. IT IS ALRIGHT FOR THE END OF A DIAGONAL BRACE MARKED (C), OR THE COMPARABLE PIECE ON A HEAVIER BRACE, TO BEAR IN FRONT OF A DOOR OPENING; HOWEVER, THE ADJACENT PIECE MARKED (E), OR THE COMPARABLE PIECE ON A HEAVIER BRACE, MUST BE DOUBLED AND EXTENDED ACROSS AND FAR ENOUGH PAST THE DOOR OPENING TO PROVIDE FOR THE SPECIFIED NAILING OF EACH PIECE.

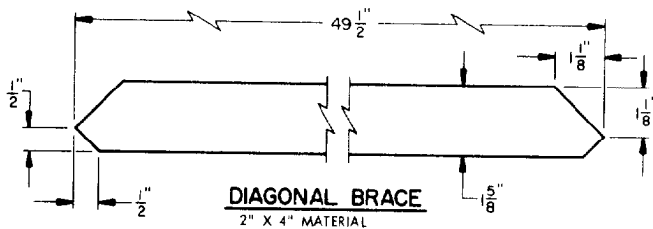


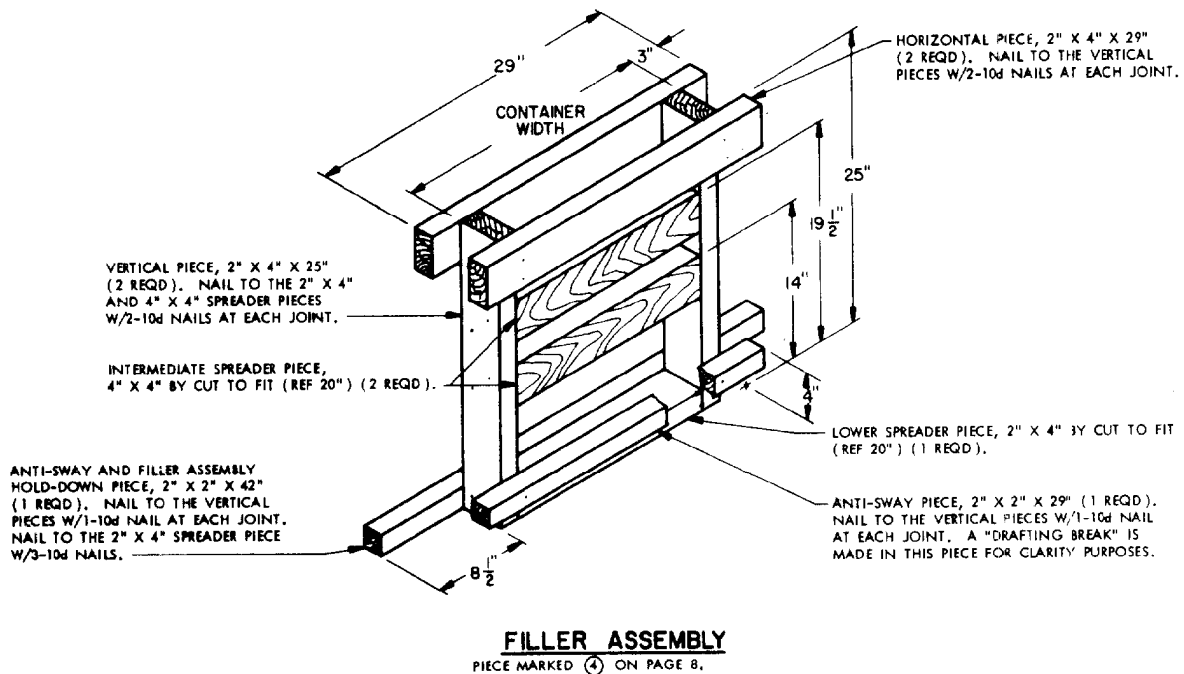
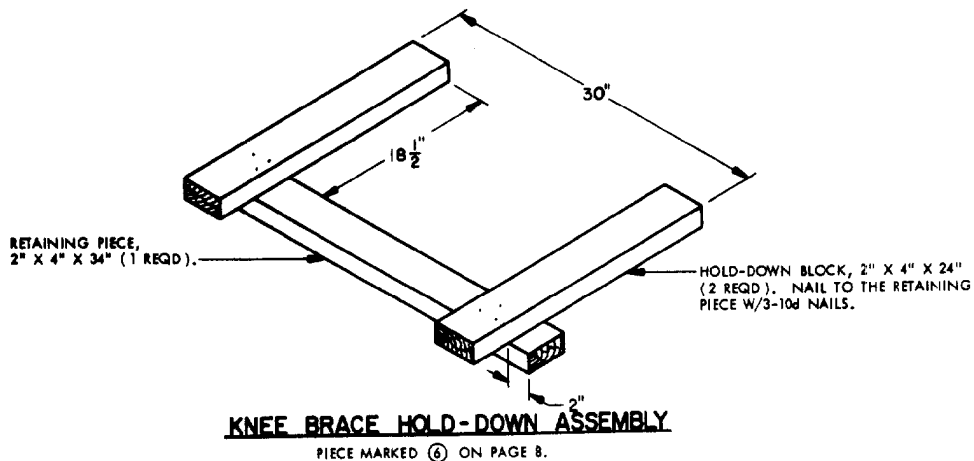
K-BRACE ASSEMBLY

A K-BRACE ASSEMBLY AS SHOWN IS ADEQUATE FOR RETAINING A PARTIAL LAYER LOAD OF NOT MORE THAN 4,000 POUNDS OR THREE (3) CONTAINERS WITH CONTENTS. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO DRAWING 19-48-4016-SM1001 FOR THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THAT BRACE. SEE THE "CAUTION" NOTE ABOVE.

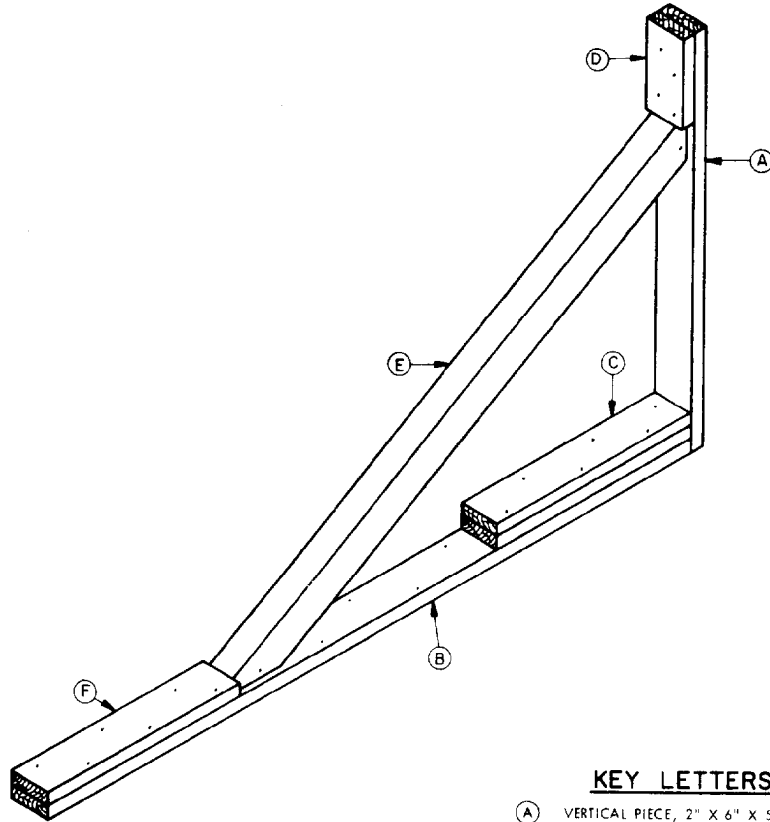
KEY LETTERS

- (A) WALL CLEAT, 2" X 4" X 12" (2 REQD.). NAIL TO A CAR SIDE WALL W/4-12d NAILS.
- (B) HORIZONTAL PIECE, 2" X 6" BY CAR WIDTH (CUT TO FIT) (1 REQD.). NAIL TO THE PIECE MARKED (C) W/1-12d NAIL EVERY 6".
- (C) CROSS CAR BRACE, 4" X 4" BY CAR WIDTH (CUT TO FIT) (1 REQD.).
- (D) CENTER CLEAT, 2" X 4" X 28" FOR AN 8'-6" WIDE CAR OR 2" X 4" X 36" FOR A 9'-2" WIDE CAR (1 REQD.). NAIL TO THE PIECE MARKED (C) W/7-12d NAILS.
- (E) HORIZONTAL WALL CLEAT, 2" X 6" X 72" (2 REQD.). NAIL TO A CAR SIDE WALL W/16-12d NAILS.
- (F) POCKET CLEAT, 2" X 6" X 12" (2 REQD.). NAIL TO A PIECE MARKED (E) W/4-16d NAILS.
- (G) DIAGONAL BRACE, 2" X 4" X 49-1/2" (2 REQD.). SEE "DIAGONAL BRACE" DETAIL ON THIS PAGE. TOENAIL TO THE PIECE MARKED (C) AND TO A PIECE MARKED (E) W/2-16d NAILS AT EACH END.
- (H) BACK-UP CLEAT, 2" X 6" X 24" (2 REQD.). NAIL TO A PIECE MARKED (E) W/8-16d NAILS.
- (J) HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD.). NAIL TO A CAR SIDE WALL W/4-12d NAILS.





DETAILS

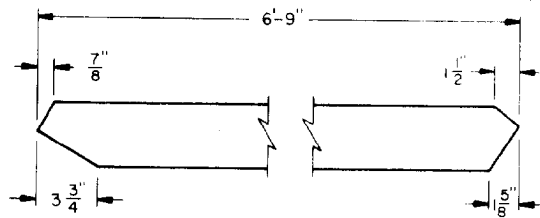


KNEE BRACE ASSEMBLY

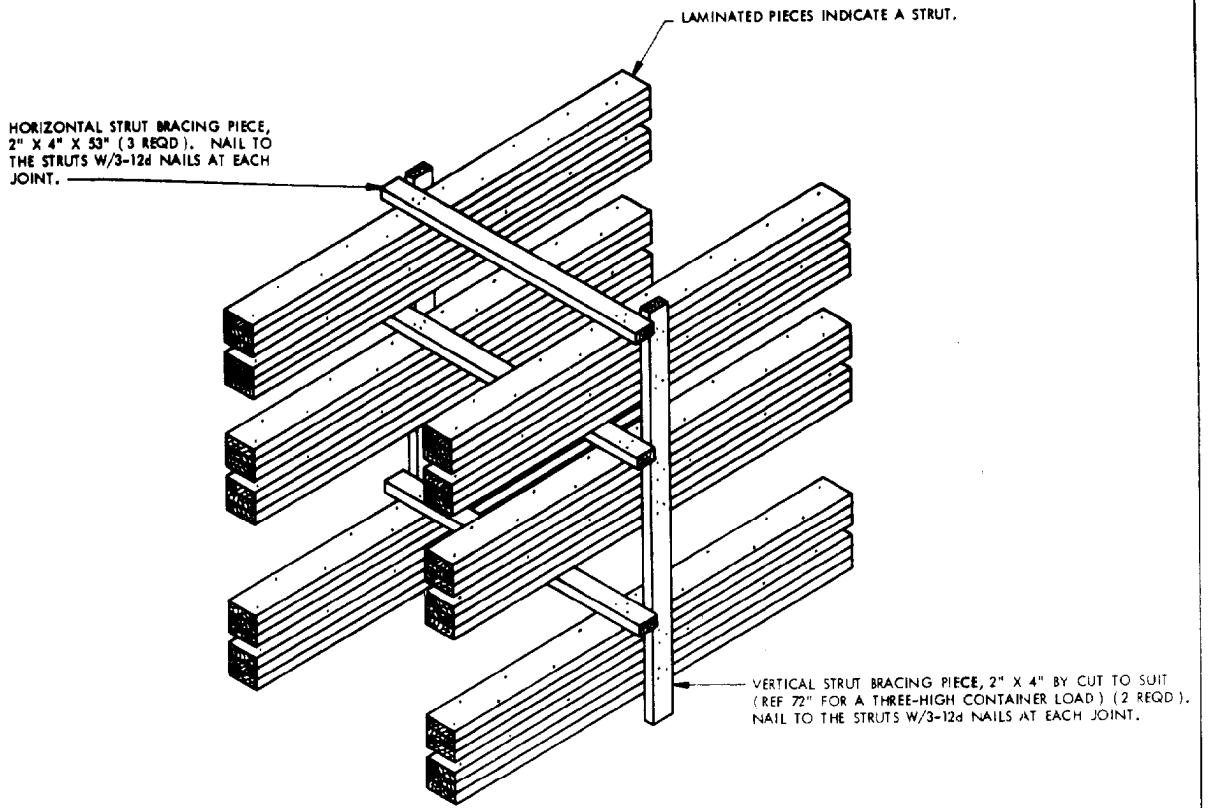
NOTE: THE DEPICTED ASSEMBLY CANNOT BE PRE-ASSEMBLED; IT MUST BE ASSEMBLED AS IT IS INSTALLED WITHIN A CAR TO BRACE A PARTIAL LOAD.

KEY LETTERS

- (A) VERTICAL PIECE, 2" X 6" X 54" (1 REQD).
- (B) FLOOR CLEAT, 2" X 6" X 8'-4" (1 REQD). NAIL TO THE CAR FLOOR W/1-16d NAIL EVERY 8".
- (C) POCKET CLEAT, 2" X 6" X 30" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE PIECE MARKED (B) W/6-40d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- (D) HOLD-DOWN CLEAT, 2" X 6" X 12" (1 REQD). NAIL TO THE PIECE MARKED (A) W/4-10d NAILS.
- (E) KNEE BRACE, 4" X 4" X 6'-9" (1 REQD). SEE DETAIL. TOENAIL TO THE PIECES MARKED (A) AND (B) W/2-16d NAILS AT EACH END.
- (F) BACK-UP CLEAT, 2" X 6" X 30" (1 REQD). NAIL TO THE PIECE MARKED (B) W/6-40d NAILS.



KNEE BRACE
PIECE MARKED (E).



STRUT BRACING

STRUT BRACING AS SHOWN ABOVE IS REQUIRED WHEN STRUTS ARE 72" OR GREATER IN LENGTH. ONE (1) SET OF BRACING IS REQUIRED FOR EVERY 72" OF STRUT LENGTH.