

APPROVED BY
BUREAU OF EXPLOSIVES

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LOADING AND BRACING WITH WOODEN DUNNAGE IN SIDE OPENING ISO CONTAINERS OF CBU-87/B & CBU-89/B CLUSTER BOMBS IN CNU-327/E SHIPPING AND STORAGE CONTAINERS

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• LOADING AND BRACING SPECIFICATIONS SET FORTH WITHIN THIS DRAWING ARE APPLICABLE TO LOADS THAT ARE TO BE SHIPPED BY TRAILER/CONTAINER-ON-FLATCAR (T/COFC) RAIL CARRIER SERVICE. THESE SPECIFICATIONS MAY ALSO BE USED FOR LOADS THAT ARE TO BE MOVED BY MOTOR OR WATER CARRIERS.

U.S. ARMY MATERIEL COMMAND DRAWING			
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DO NOT SCALE

GENERAL NOTES

(GENERAL NOTES CONTINUED)

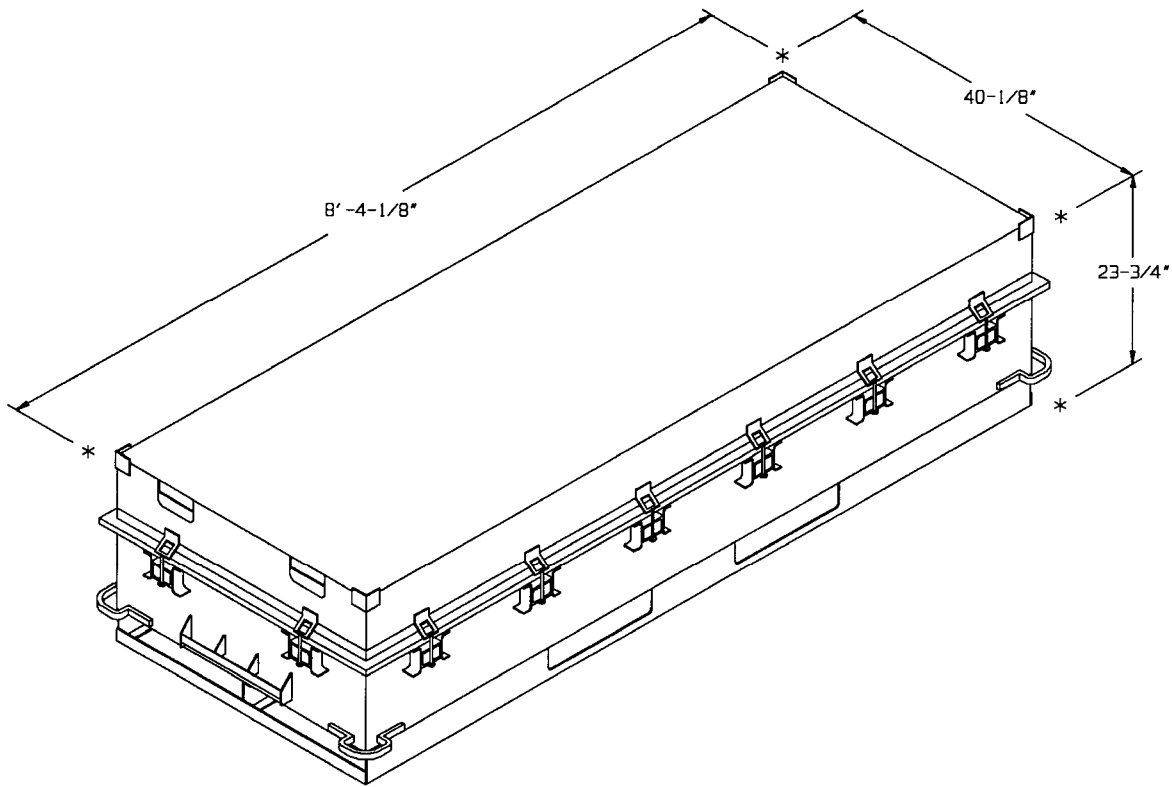
- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE SPECIFIED OUTLOADING PROCEDURES ARE APPLICABLE TO LOADS OF CBU-87/B AND CBU-89/B CLUSTER BOMBS IN THE CNU-327/E CONTAINER. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE CNU-327/E CONTAINER WITH BOMBS INSTALLED. SEE PAGE 3 FOR DETAIL OF THE CONTAINER. CAUTION: REGARDLESS OF THE QUANTITY OF CONTAINERS TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF THE SIDE OPENING ISO CONTAINER MUST NOT BE EXCEEDED.
- C. THE LOAD AS SHOWN IS BASED ON A 6,050 POUND 20' LONG BY 8' WIDE BY 8'-6" HIGH SIDE OPENING INTERMODAL COMMERCIAL CONTAINER WITH INSIDE DIMENSIONS OF 19'-4" LONG BY 89" WIDE BY 88" HIGH. THE LOAD IS DESIGNED FOR TRAILER/CONTAINER-ON-FLAT-CAR (T/COFC) SHIPMENT, HOWEVER, THE LOAD AS DESIGNED CAN ALSO BE MOVED BY OTHER SURFACE MODES OF TRANSPORT. NOTICE: OTHER CONTAINERS OF THE SAME DESIGN CONFIGURATION CAN BE USED.
- D. WHEN LOADING CONTAINERS, THEY ARE TO BE POSITIONED SO AS TO ACHIEVE A TIGHT LOAD (TIGHT AGAINST THE DUNNAGE ASSEMBLIES). ALTHOUGH A TOTAL OF 1-1/2" OF UNBLOCKED SPACE ACROSS THE WIDTH OF A LOAD BAY IS PERMITTED, LATERAL VOIDS WITHIN THE LOAD ARE TO BE HELD TO A MINIMUM. EXCESSIVE SLACK CAN BE ELIMINATED FROM A LOAD BY LAMINATING ADDITIONAL PIECES OF APPROPRIATE THICKNESS TO THE BEARING PIECES ON THE SIDE BLOCKING ASSEMBLIES. NAIL EACH ADDITIONAL PIECE W/1 APPROPRIATELY SIZED NAIL EVERY 12". ADDITIONALLY, THE THICKNESS OF THE BEARING PIECES ON THE SIDE BLOCKING ASSEMBLIES MAY BE ADJUSTED AS REQUIRED TO FACILITATE VARIANCE IN THE CONTAINER SIZE.
- E. DUNNAGE LUMBER SPECIFIED IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE AND 4" X 4" MATERIAL IS ACTUALLY 3-1/2" THICK BY 3-1/2" WIDE.
- F. A STAGGERED NAILING PATTERN WILL BE USED WHENEVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES OR WHEN LAMINATING DUNNAGE. 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.
- G. IN SOME CONTAINERS THERE IS A SLOT AT THE CORNERS OF THE ENDWALLS. PIECES OF DUNNAGE MATERIAL MUST BE LAMINATED TO THE BUFFER PIECES ON THE END BLOCKING ASSEMBLIES TO PROVIDE A FLAT SURFACE FOR THE BUFFER PIECES. A PIECE OF 2" X 4", 2" X 3" OR A SPECIAL WIDTH PIECE CUT-TO-FIT CAN BE USED. THIS FILL PIECE WILL BE NAILED WITH ONE APPROPRIATELY SIZED NAIL EVERY 12". THIS PIECE IS NOT REQUIRED WHEN THE CORNER PORTIONS OF THE CONTAINER ENDWALLS ARE SMOOTH AND FLAT.
- H. CAUTION: DO NOT NAIL DUNNAGE MATERIAL TO THE CONTAINER WALLS OR FLOOR. ALL NAILING WILL BE WITHIN THE DUNNAGE.

- J. PORTIONS OF THE CONTAINER DEPICTED WITHIN THIS DRAWING, SUCH AS THE SIDE DOORS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.
- K. REQUIREMENTS CITED WITHIN THE BUREAU OF EXPLOSIVES PAMPHLET 6C APPLY WHEN THE SHIPMENT MOVES BY TRAILER/CONTAINER-ON-FLAT-CAR (T/COFC). SPECIAL T/COFC NOTES FOLLOW:
 - 1. A LOADED CONTAINER MUST BE ON A CHASSIS EQUIPPED WITH TWO BOGIE ASSEMBLIES WHEN BEING MOVED IN TOFC SERVICE.
 - 2. THE LOAD LIMIT OF A T/COFC RAILCAR MUST NOT BE EXCEEDED, NOR WILL A CAR BE LOADED SO THAT THE TRUCK UNDER ONE END OF THE CAR CARRIES MORE THAN ONE-HALF OF THE LOAD LIMIT FOR THAT CAR.
- L. DURING INTRASTATE AND/OR INTERSTATE MOVES BY MOTOR CARRIER, A PROPER CHASSIS OR MODIFIED FLATBED TRAILER MUST BE USED TO PRECLUDE VIOLATION OF ONE OR MORE "WEIGHT LAWS" APPLICABLE TO THE STATE OR STATES INVOLVED.
- M. CONVERSION TO METRIC EQUIVALENTS: DIMENSIONS WITHIN THIS DOCUMENT ARE EXPRESSED IN INCHES AND WEIGHTS ARE EXPRESSED IN POUNDS. WHEN NECESSARY, THE METRIC EQUIVALENTS MAY BE COMPUTED ON THE BASIS OF ONE INCH EQUALS 25.4MM AND ONE POUND EQUALS 0.454KG.
- N. THE QUANTITY OF CONTAINERS SHOWN IN THE LOAD ON PAGE 4 MAY BE REDUCED FOR SHIPMENT, IF DESIRED. SEE THE "OMITTED CONTAINER PROCEDURES" DETAIL AND SPECIAL NOTES ON PAGE 9. WHEN A CONTAINER IS TO BE LOADED WITH A REDUCED QUANTITY OF LADING UNITS, THE LENGTHWISE CENTER OF GRAVITY OF THE LOAD MUST BE WITHIN 12", IN EITHER DIRECTION, OF THE MID-POINT OF THE CONTAINER.

(CONTINUED AT RIGHT)

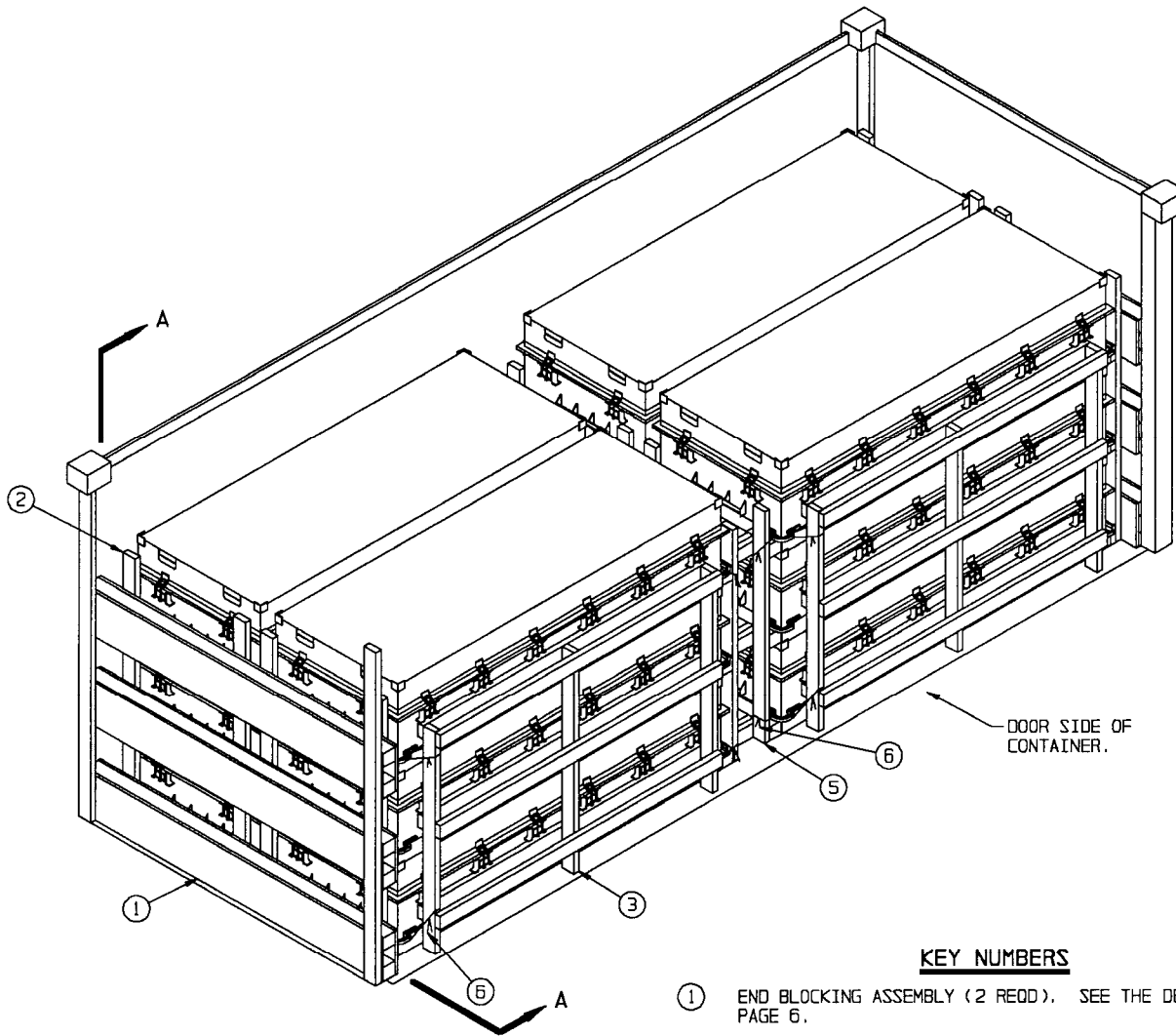
MATERIAL SPECIFICATIONS

- LUMBER - - - - - : SEE TM 743-200-1 (DUNNAGE LUMBER) AND FED SPEC MM-L-751.
- NAILS - - - - - : FED SPEC FF-N-105; COMMON.
- PLYWOOD - - - - - : COMMERCIAL ITEM DESCRIPTION
A-A-55057, TYPE A, CONSTRUCTION AND INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE C-D. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER INTERIOR OR AN EXTERIOR GRADE MAY BE SUBSTITUTED.
- STRAPPING, STEEL - - : ASTM D3953; FLAT STRAPPING, TYPE 1, HEAVY DUTY, FINISH A, B (GRADE 2), OR C.
- SEAL, STRAP - - - - : ASTM D3953; CLASS H, FINISH A, B (GRADE 2), OR C, DOUBLE NOTCH TYPE, STYLE I, II, OR IV.
- WIRE, CARBON STEEL - : ASTM A853; ANNEALED AT FINISH, BLACK OXIDE FINISH, .0800" DIA, GRADE 1006 OR BETTER.



CNU-327/E CONTAINER

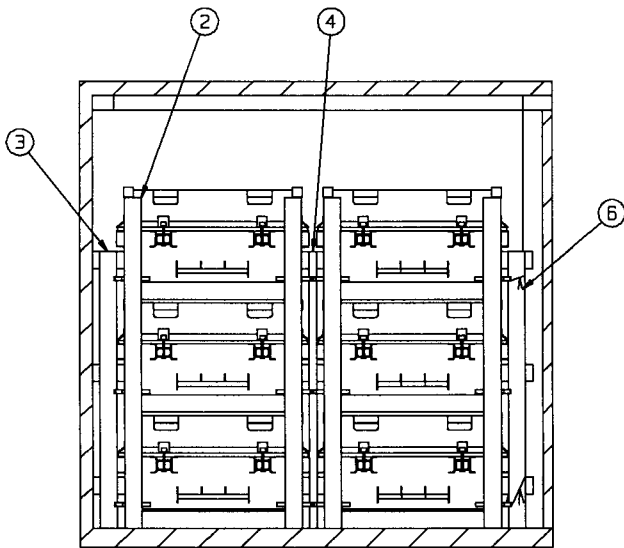
GROSS WEIGHT (CBU-87/B) ----- 2,486 LBS (APPROX)
 GROSS WEIGHT (CBU-89/B) ----- 1,886 LBS (APPROX)
 CUBE ----- 55.2 CUBIC FEET (APPROX)



ISOMETRIC VIEW

KEY NUMBERS

- ① END BLOCKING ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 6.
- ② SPACER ASSEMBLY (4 REQD). SEE THE DETAIL ON PAGE 7.
- ③ SIDE BLOCKING ASSEMBLY (4 REQD). SEE THE DETAIL ON PAGE 8. WIRE TIE TO THE CONTAINER LIFT/TIEDOWN RINGS AT TWO LOCATIONS AS DEPICTED IN THE "ISOMETRIC VIEW" ABOVE. SEE KEY NUMBER ⑥ BELOW.
- ④ CENTER FILL ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 6.
- ⑤ CENTER GATE ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 7. WIRE TIE TO THE CONTAINER LIFT/TIEDOWN RINGS AT FOUR LOCATIONS (TWO ON EACH LONGITUDINALLY ADJACENT CONTAINER) AS DEPICTED IN THE "ISOMETRIC VIEW" ABOVE. SEE KEY NUMBER ⑥ BELOW.
- ⑥ TIE WIRE, NO. 14 GAGE, 36" LONG (16 REQD). INSTALL TO FORM A COMPLETE LOOP AROUND DUNNAGE ASSEMBLIES. BRING END TOGETHER AND TWIST TAUT. SEE KEY NUMBERS ③ AND ⑤ FOR INSTALLATION REQUIREMENTS.



SECTION A-A

THE END BLOCKING ASSEMBLY, PIECE MARKED ①, HAS BEEN OMITTED FOR CLARITY.

RECOMMENDED SEQUENTIAL LOADING PROCEDURES

1. PRE-FABRICATE TWO END BLOCKING ASSEMBLIES, FOUR SPACER ASSEMBLIES, FOUR SIDE BLOCKING ASSEMBLIES, TWO CENTER FILL ASSEMBLIES AND TWO CENTER GATE ASSEMBLIES.
2. INSTALL ONE END BLOCKING ASSEMBLY, ONE SIDE BLOCKING ASSEMBLY AND POSITION ONE SPACER ASSEMBLY AGAINST THE END BLOCKING ASSEMBLY.
3. LOAD ONE STACK OF THREE CONTAINERS AND WIRE TIE THE SIDE BLOCKING ASSEMBLY TO THE CONTAINER LIFT/TIEDOWN RINGS AT TWO LOCATIONS.
4. REPEAT STEP 2.
5. REPEAT STEP 3.
6. INSTALL ONE CENTER GATE ASSEMBLY AND WIRE TIE TO THE CONTAINER LIFT/TIEDOWN RINGS AT FOUR LOCATIONS (TWO ON EACH LONGITUDINALLY ADJACENT CONTAINER).
7. INSTALL ONE CENTER FILL ASSEMBLY AND POSITION ONE SPACER ASSEMBLY AGAINST THE END BLOCKING ASSEMBLY.
8. LOAD ONE STACK OF THREE CONTAINERS.
9. REPEAT STEP 7.
10. REPEAT STEP 8.
11. REPEAT STEP 6.
12. INSTALL TWO SIDE BLOCKING ASSEMBLIES AND WIRE TIE EACH ASSEMBLY TO CONTAINER LIFT/TIEDOWN RINGS AT TWO LOCATIONS.

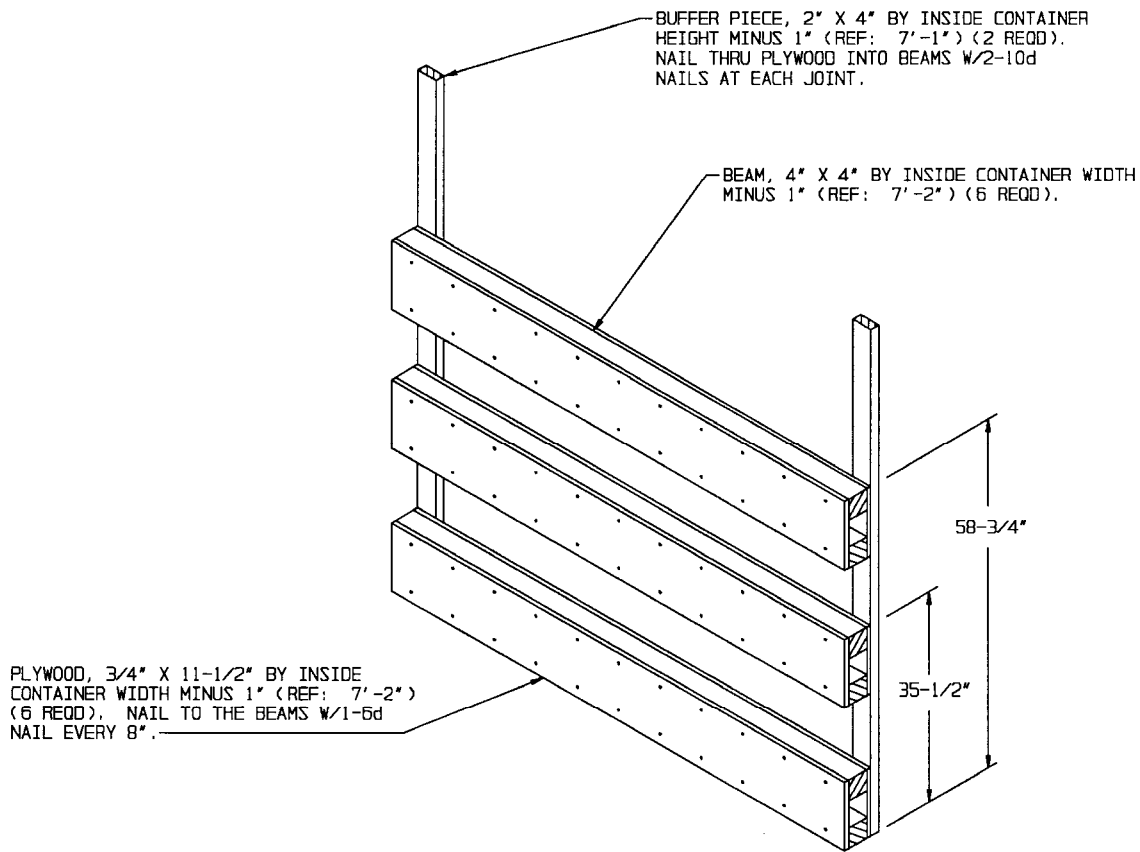
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CBU-87/B	12	29,832 LBS
DUNNAGE		1,231 LBS
CONTAINER		6,050 LBS
TOTAL WEIGHT		37,113 LBS (APPROX)

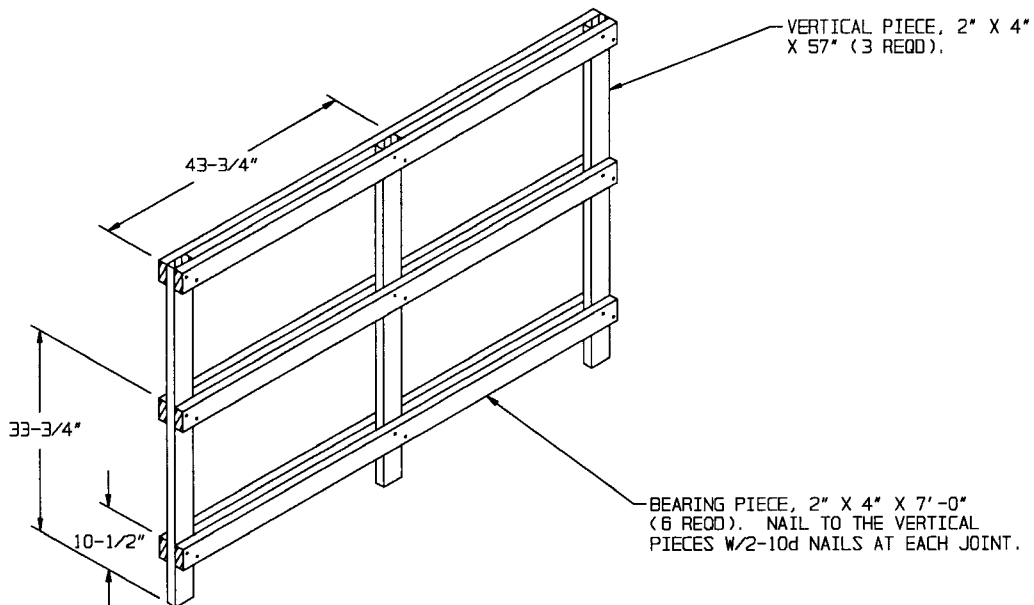
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	545	363
4" X 4"	122	163
NAILS	NO. REQD	POUNDS
6d (2")	264	1-3/4
10d (3")	540	7-1/2
WIRE, NO. 14 GAGE	48' REQD	1 LB
PLYWOOD, 3/4"	82.42 SQ FT REQD	170 LBS

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CBU-89/B	12	22,632 LBS
DUNNAGE		1,231 LBS
CONTAINER		6,050 LBS
TOTAL WEIGHT		29,913 LBS (APPROX)

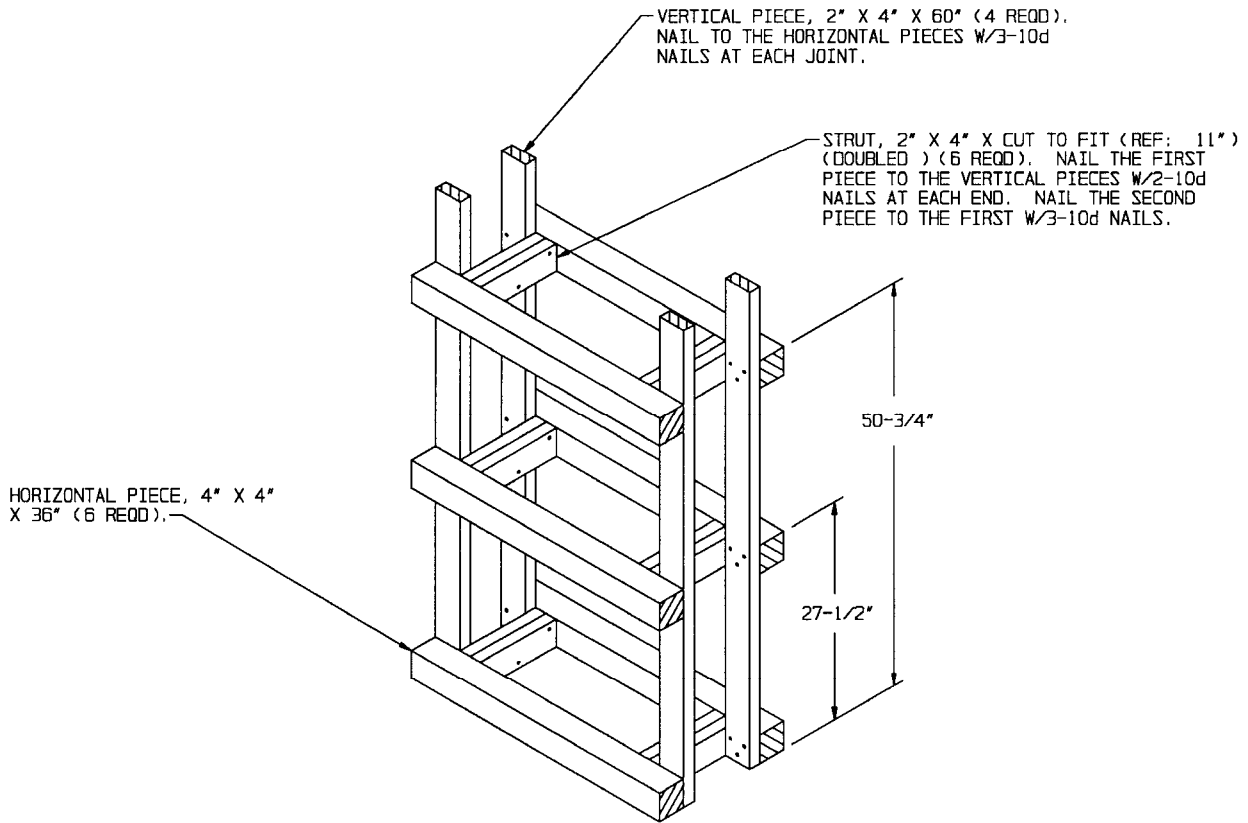


END BLOCKING ASSEMBLY

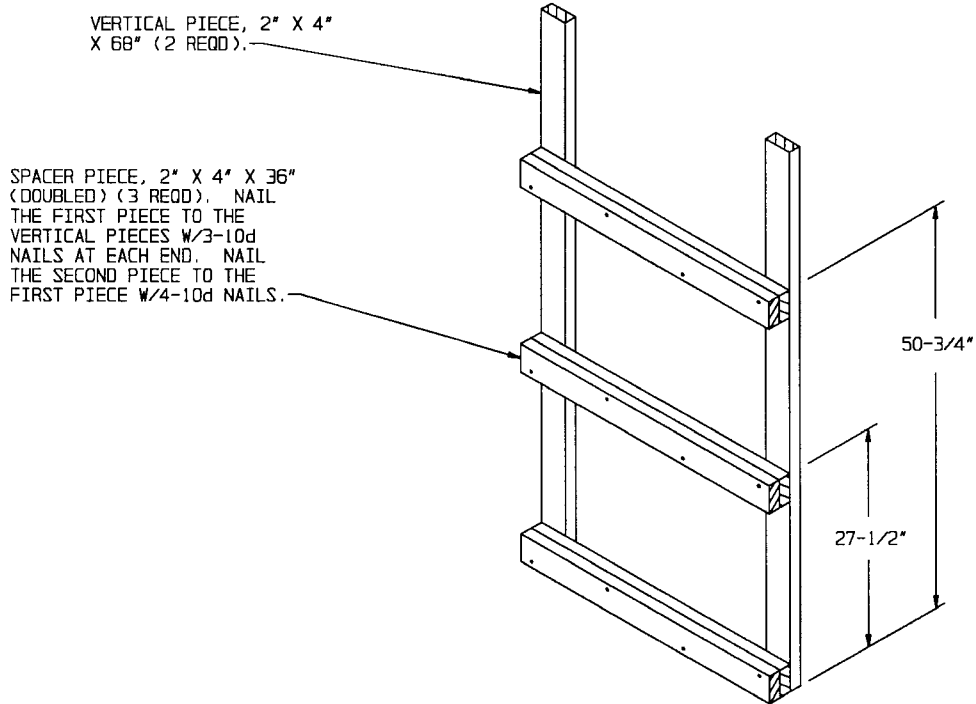


CENTER FILL ASSEMBLY

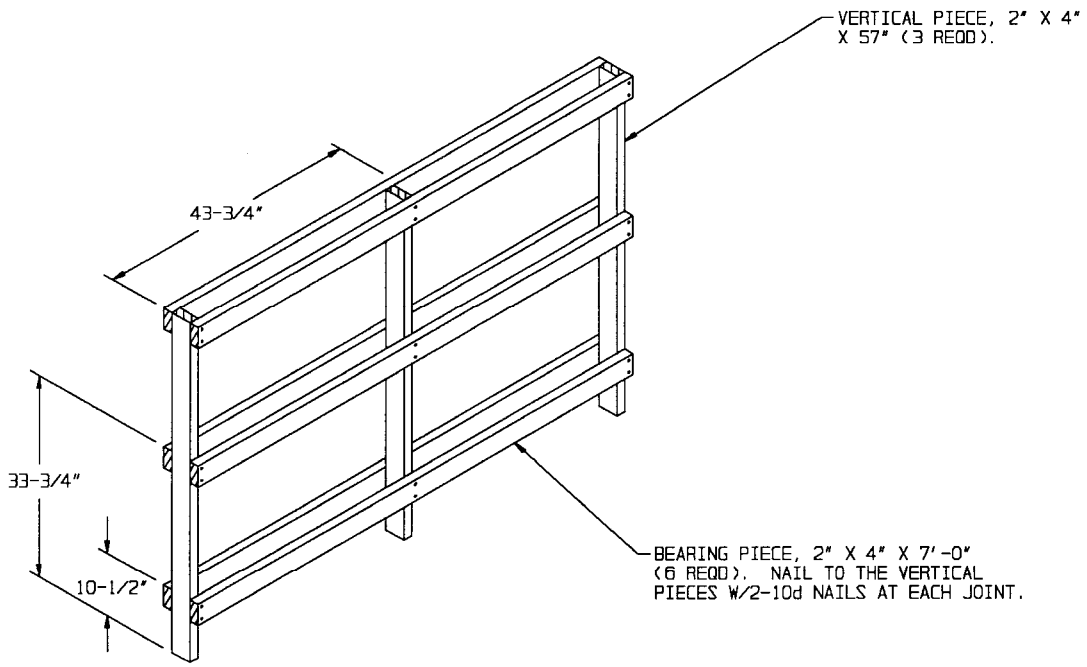
DETAILS



CENTER GATE ASSEMBLY

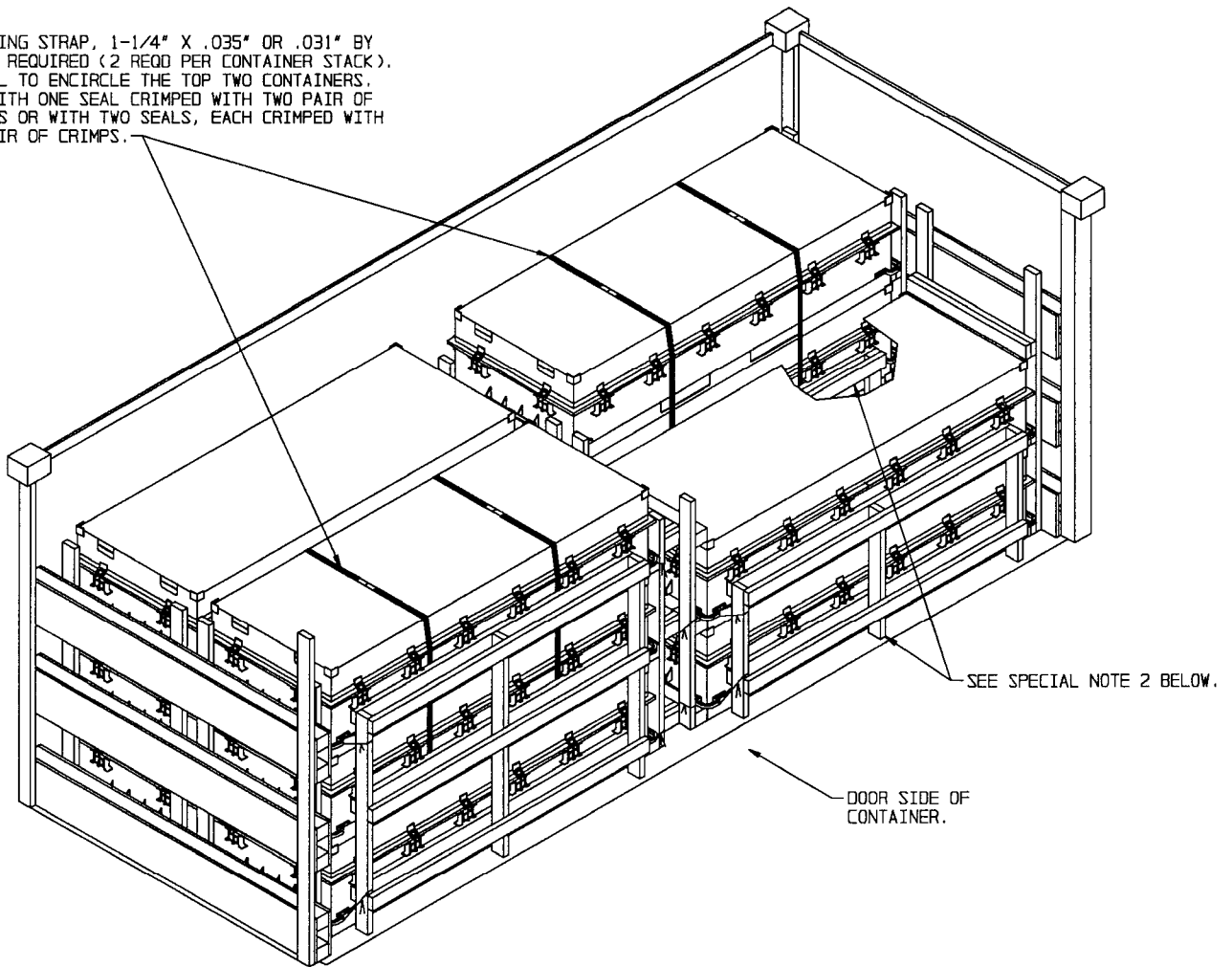


SPACER ASSEMBLY



SIDE BLOCKING ASSEMBLY

UNITIZING STRAP, 1-1/4" X .035" OR .031" BY
LENGTH REQUIRED (2 REQD PER CONTAINER STACK).
INSTALL TO ENCIRCLE THE TOP TWO CONTAINERS.
SEAL WITH ONE SEAL CRIMPED WITH TWO PAIR OF
NOTCHES OR WITH TWO SEALS, EACH CRIMPED WITH
TWO PAIR OF CRIMPS.



ISOMETRIC VIEW

SPECIAL NOTES:

1. WHEN REDUCING A LOAD BY ONE OR MORE CONTAINERS IT WILL BE NECESSARY TO UNITIZE THE CONTAINER STACKS WHICH ARE Laterally and longitudinally adjacent to the omitted container as depicted in the load view above. SEE GENERAL NOTE "N" ON PAGE 2.
2. THE SIDE BLOCKING AND CENTER FILL ASSEMBLIES WHICH ARE CONTACTING THE REDUCED CONTAINER STACK MAY BE REDUCED IN HEIGHT AS DEPICTED ABOVE.

