

APPROVED BY
BUREAU OF EXPLOSIVES

J. H. Ashman
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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-411/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			
APPROVED, U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND <i>Timothy R. Fone</i>	DRAFTSMAN	TECHNICIAN	ENGINEER
		G. GUAY	
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND <i>William F Ernst</i> U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL	VALIDATION ENGINEERING DIVISION	TRANSPORTATION ENGINEERING DIVISION	LOGISTICS ENGINEERING OFFICE
	<i>JAK</i>	<i>W. French</i>	<i>T. J. Michels</i>
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19	48	8555	SP15J50

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 SPECIFIED OUTLOADING PROCEDURES ARE APPLICABLE TO LOADS OF CBU-87/B AND CBU-89/B CLUSTER BOMBS IN THE CNU-411/E CONTAINER. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE CNU-411/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-FLATCAR (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 VERTICAL PIECES ON THE SIDE FILL ASSEMBLIES. NAIL EACH ADDITIONAL PIECE W/1 APPROPRIATELY SIZED NAIL EVERY 12". ADDITIONALLY, THE THICKNESS AND/OR QUANTITY OF THE VERTICAL AND BEARING PIECES IN THE SIDE FILL ASSEMBLIES MAY BE ADJUSTED AS REQUIRED TO FACILITATE VARIANCE IN THE CONTAINER SIZE.
- E. DUNNAGE LUMBER SPECIFIED IS OF NOMINAL SIZE. FOR EXAMPLE, 1" X 4" MATERIAL IS ACTUALLY 3/4" THICK BY 3-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" 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.

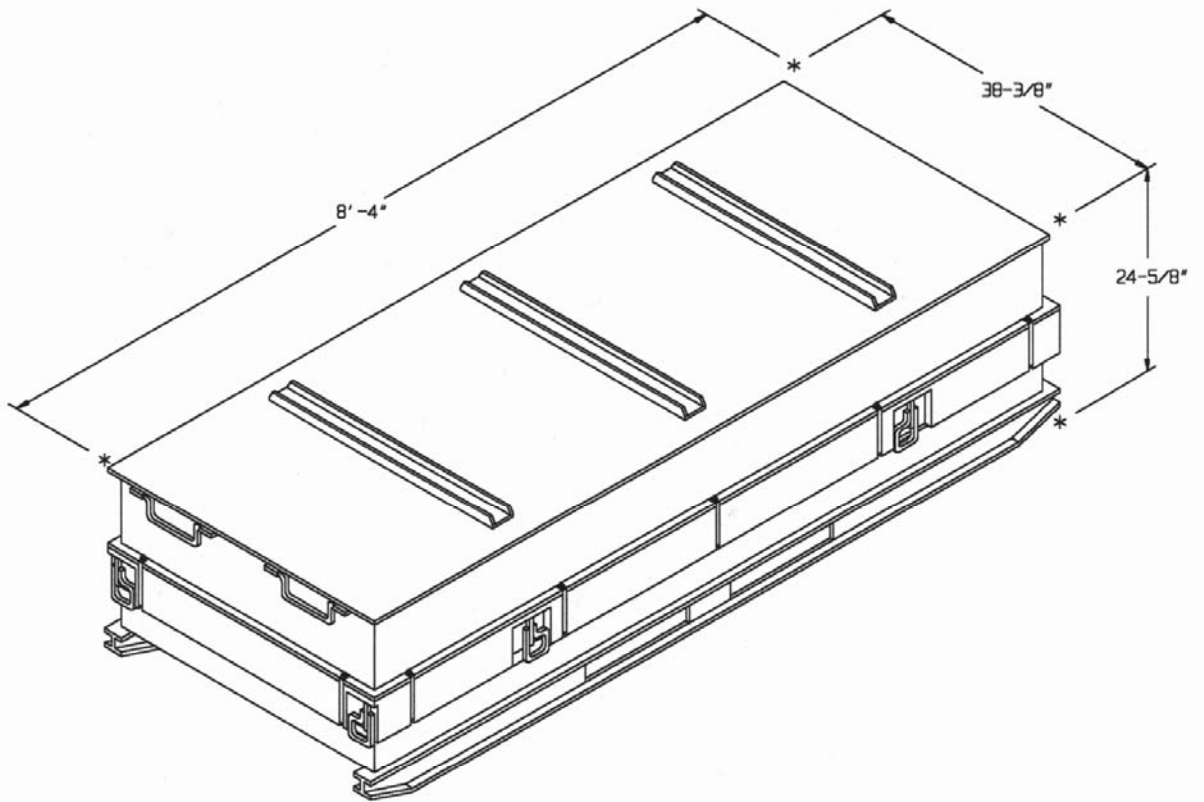
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(GENERAL NOTES CONTINUED)

- K. REQUIREMENTS CITED WITHIN THE BUREAU OF EXPLOSIVES PAMPHLET 6C APPLY WHEN THE SHIPMENT MOVES BY TRAILER/CONTAINER-ON-FLATCAR (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 0.454 KG.
- 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 8. 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.

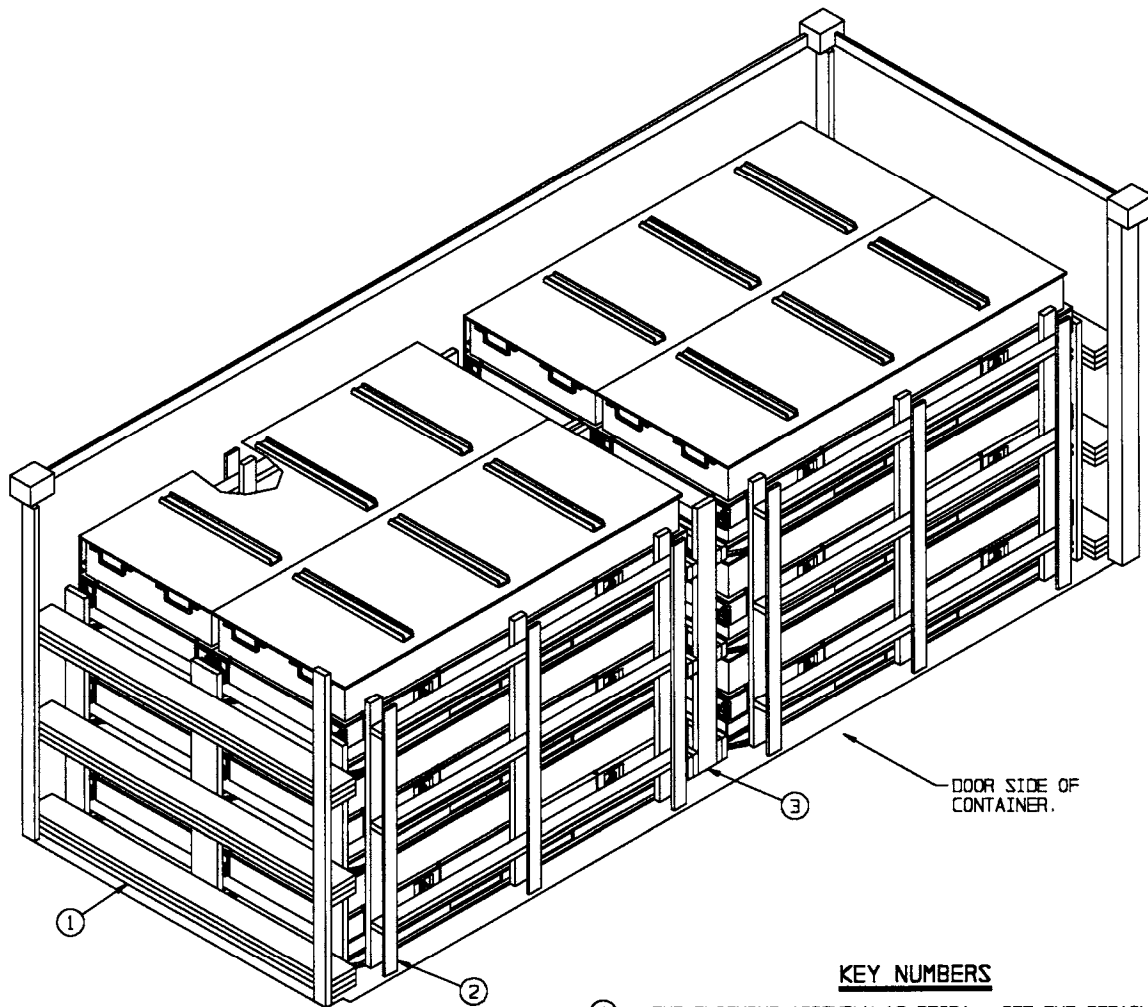
MATERIAL SPECIFICATIONS

- LUMBER - - - - - : SEE TM 743-200-1 (DUNNAGE LUMBER) AND FED SPEC MM-L-751.
- NAILS - - - - - : FED SPEC FF-N-105; COMMON.
- 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.



CNU-411/E CONTAINER

GROSS WEIGHT (CBU-87/B) ----- 2,370 LBS (APPROX)
 GROSS WEIGHT (CBU-89/B) ----- 1,930 LBS (APPROX)
 CUBE ----- 54.7 CUBIC FEET (APPROX)



ISOMETRIC VIEW

KEY NUMBERS

- ① END BLOCKING ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 6.
- ② SIDE FILL ASSEMBLY (4 REQD). SEE THE DETAIL ON PAGE 6.
- ③ CENTER GATE (2 REQD). SEE THE DETAIL ON PAGE 7 AND THE SPECIAL NOTE ON PAGE 5.

RECOMMENDED SEQUENTIAL LOADING PROCEDURES

1. PRE-FABRICATE TWO END BLOCKING ASSEMBLIES, FOUR SIDE FILL ASSEMBLIES AND TWO CENTER GATES.
2. INSTALL ONE END BLOCKING ASSEMBLY, ONE SIDE FILL ASSEMBLY AND LOAD ONE STACK OF THREE CONTAINERS.
3. INSTALL ONE CENTER GATE.
4. REPEAT STEP 2.
5. LOAD ONE STACK OF THREE CONTAINERS, INSTALL ONE CENTER GATE AND LOAD THE LAST STACK OF CONTAINERS.
6. INSTALL THE TWO REMAINING SIDE FILL ASSEMBLIES.

SPECIAL NOTE:

1. THE "CENTER GATE", PIECE MARKED ③ ON PAGE 4, IS BASED ON A VOID OF 11-1/2" BETWEEN LONGITUDINALLY ADJACENT CONTAINERS. IF THE VOID IS LESS THAN 11-1/2", THE THICKNESS OF THE BEARING PIECES MAY NEED TO BE ADJUSTED. A FIELD CHECK OF THE VOID BETWEEN LONGITUDINALLY ADJACENT CONTAINERS SHOULD BE MADE PRIOR TO ASSEMBLING THE CENTER GATES.

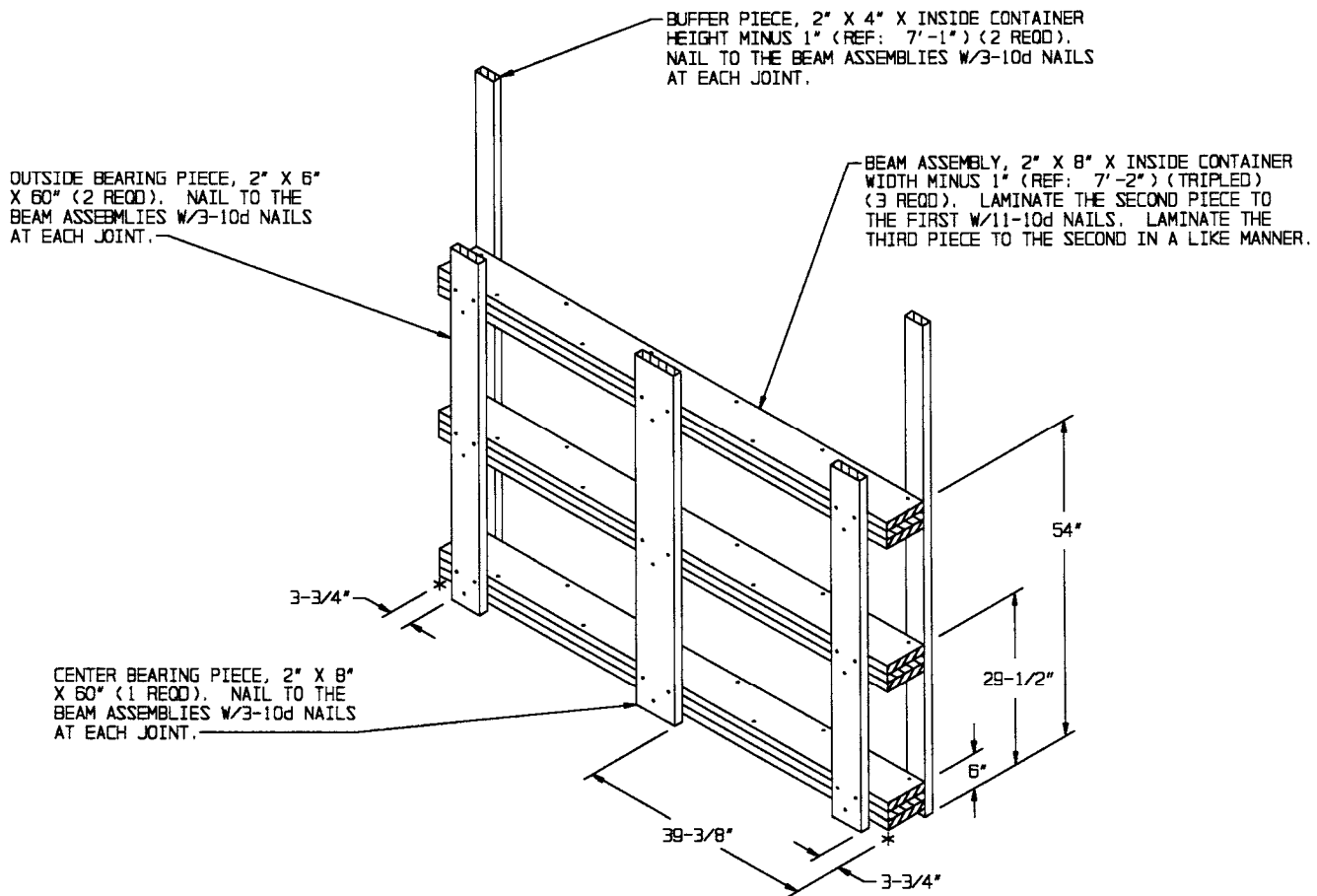
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CBU-87/B	12	28,440 LBS
DUNNAGE		883 LBS
CONTAINER		6,050 LBS
TOTAL WEIGHT		35,373 LBS (APPROX)

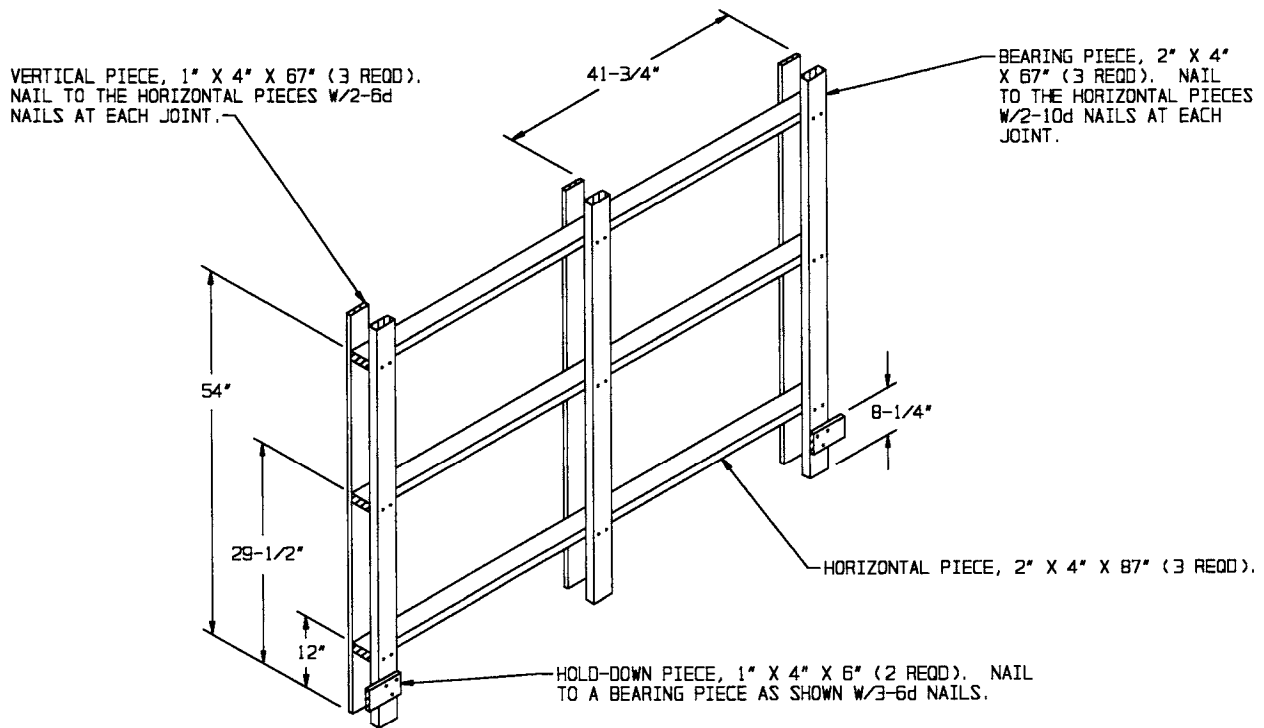
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	73	24
2" X 4"	242	161
2" X 6"	68	68
2" X 8"	139	185
NAILS	NO. REQD	POUNDS
6d (2")	96	3/4
10d (3")	406	6-1/4

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CBU-89/B	12	23,160 LBS
DUNNAGE		883 LBS
CONTAINER		6,050 LBS
TOTAL WEIGHT		30,093 LBS (APPROX)



END BLOCKING ASSEMBLY



SIDE FILL ASSEMBLY

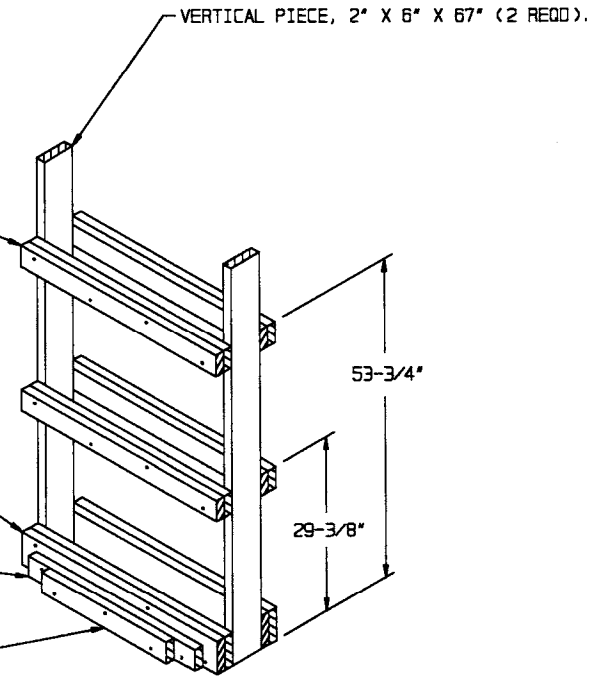
BEARING PIECE, 2" X 4" X 38"
(DOUBLED) (4 REQD). NAIL THE
FIRST PIECE TO THE VERTICAL
PIECES W/2-10d NAILS AT EACH
END. NAIL THE SECOND PIECE TO
THE FIRST W-4/10d NAILS.

BOTTOM BEARING PIECE, 2" X 6"
X 38" (DOUBLED) (2 REQD). NAIL
THE FIRST PIECE TO THE VERTICAL
PIECES W/2-10d NAILS AT EACH
END. NAIL THE SECOND PIECE TO
THE FIRST W-4/10d NAILS.

FILL PIECE, 2" X 4" X 32"
(1 REQD). CENTER ON AND
NAIL TO THE BOTTOM BEARING
PIECE W/4-10d NAILS.

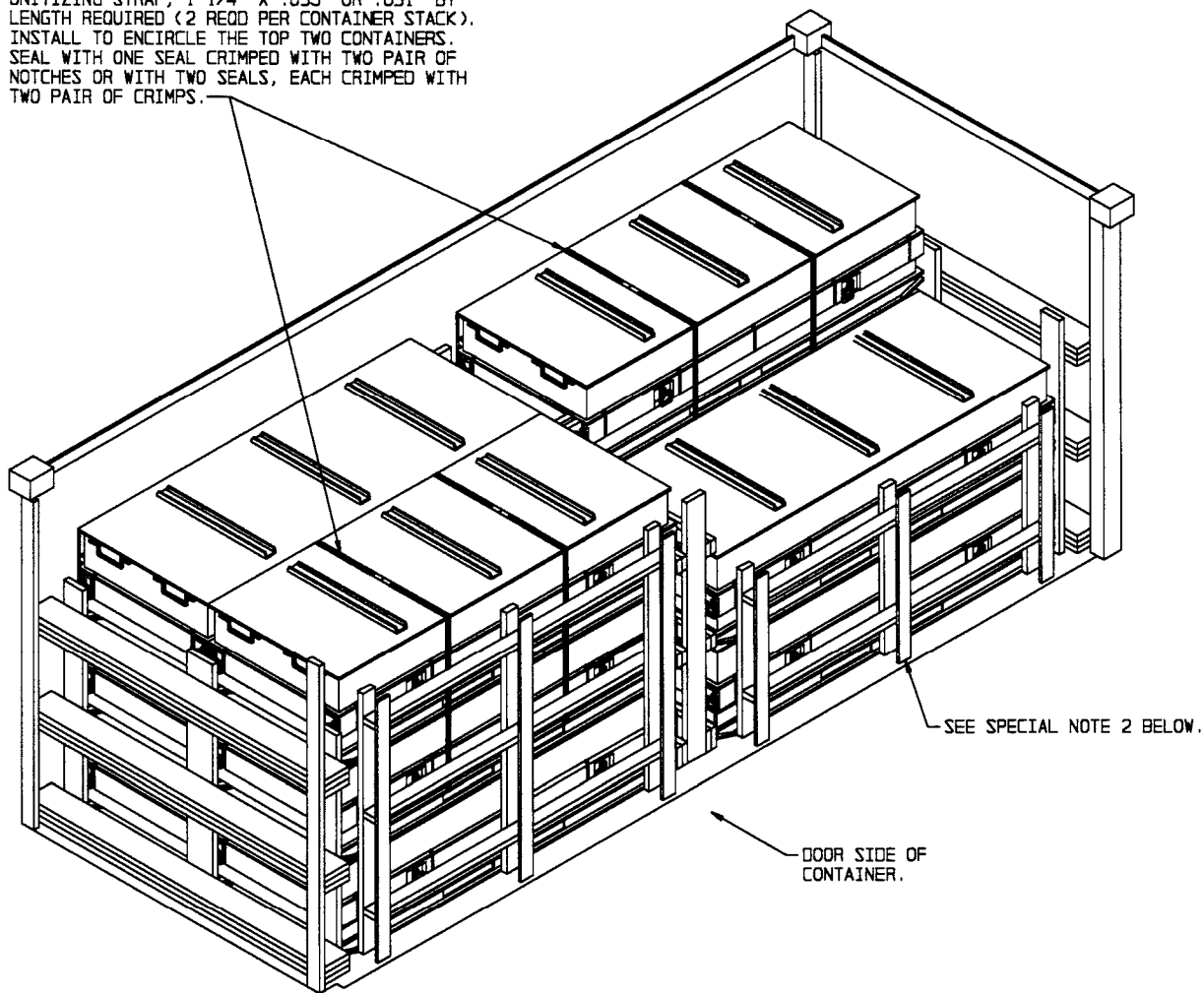
HOLD-DOWN PIECE, 2" X 4" X 24"
(1 REQD). CENTER ON AND NAIL
TO THE FILL PIECE W/3-10d NAILS.

VERTICAL PIECE, 2" X 6" X 67" (2 REQD).



CENTER GATE

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 FILL ASSEMBLY WHICH IS CONTACTING THE REDUCED CONTAINER STACK MAY BE REDUCED AS DEPICTED ABOVE.