

LOADING AND BRACING[®] IN SIDE OPENING ISO CONTAINERS OF M129 LEAFLET BOMBS PACKED IN CRATES

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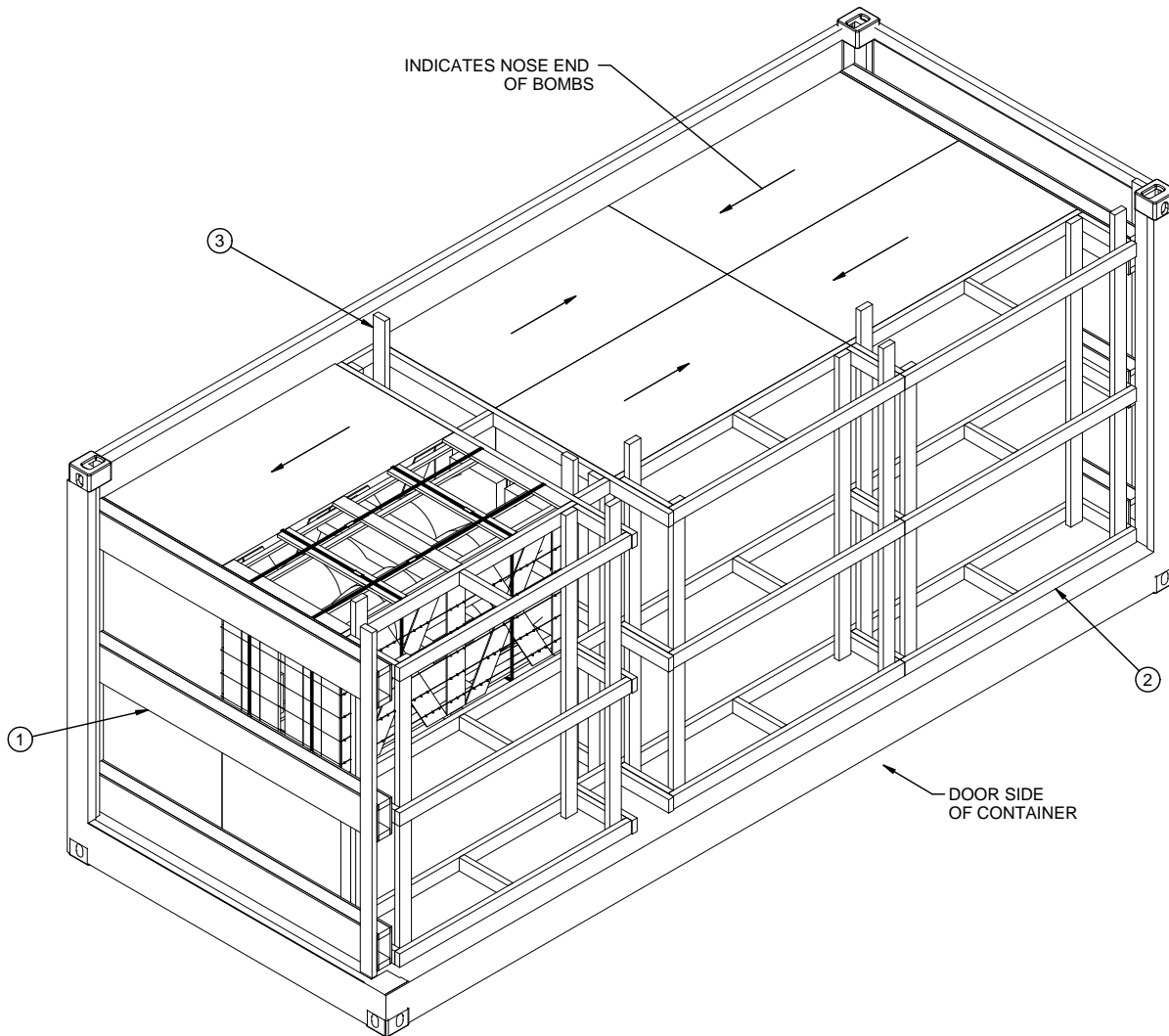
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[®] THE PROCEDURES SHOWN HEREIN ARE APPLICABLE TO LOADS THAT ARE TO
BE SHIPPED BY TRAILER/CONTAINER-ON-FLATCAR (T/COFC) RAIL, MOTOR, OR
WATER CARRIERS.

U.S. ARMY MATERIEL COMMAND DRAWING

<p>APPROVED, U.S. ARMY JOINT MUNITIONS COMMAND</p> <p>RUS.ALLEN.J .1230354282</p> <p><small>Digitally signed by RUS.ALLEN.J.1230354282 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=RUS.ALLEN.J.1230354282 Date: 2016.12.15 12:30:33 -06'00'</small></p>	<p>CAUTION: VERIFY PRIOR TO USE AT HTTPS://MHP.REDSTONE.ARMY.MIL THAT THIS IS THE MOST CURRENT VERSION OF THIS DOCUMENT. THIS IS PAGE 1 OF 8.</p>																						
<p>APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND</p> <p>SHIMP.UPTON .R.1231257183</p> <p><small>Digitally signed by SHIMP.UPTON.R.1231257183 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=SHIMP.UPTON.R.1231257183 Date: 2016.12.16 12:13:24 -06'00'</small></p> <p>U.S. ARMY DEFENSE AMMUNITION CENTER</p>	<p>ENGINEERING DIVISION</p> <p>TEST ENGINEER</p> <p>TEST REPORT</p> <p>EXPLOSIVE SAFETY DIRECTORATE</p>	<p>FELICIANO.ADN.1259200373</p> <p>FELICIANO.ADN.1259200373</p> <p>IN.1259200373</p> <p>NA</p> <p>TIRONE.JOSEPH.A NDREW.10266837 49</p>	<p><small>Digitally signed by FELICIANO.ADN.1259200373 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=FELICIANO.ADN.1259200373 Date: 2016.11.14 10:20:40 -06'00'</small></p> <p><small>Digitally signed by FELICIANO.ADN.1259200373 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=FELICIANO.ADN.1259200373 Date: 2016.12.01 07:36:54 -06'00'</small></p> <p><small>Digitally signed by TIRONE.JOSEPH.ANDREW.1026683749 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=TIRONE.JOSEPH.ANDREW.1026683749 Date: 2016.12.09 10:53:47 -06'00'</small></p>	<table border="1"> <tr> <td colspan="2" data-bbox="1047 1644 1295 1722">DO NOT SCALE</td> <td colspan="2" data-bbox="1295 1644 1550 1722">JANUARY 2017</td> </tr> <tr> <td data-bbox="1047 1722 1295 1791">ENGINEER OR TECHNICIAN</td> <td data-bbox="1295 1722 1377 1791">BASIC REV.</td> <td colspan="2" data-bbox="1377 1722 1550 1791">SPENCER HOVEY</td> </tr> <tr> <td data-bbox="1047 1791 1295 1829">CLASS</td> <td data-bbox="1295 1791 1377 1829">DIVISION</td> <td data-bbox="1377 1791 1550 1829">DRAWING</td> <td data-bbox="1550 1791 1550 1829">FILE</td> </tr> <tr> <td data-bbox="1047 1829 1295 1971">19</td> <td data-bbox="1295 1829 1377 1971">48</td> <td data-bbox="1377 1829 1550 1971">4324</td> <td data-bbox="1550 1829 1550 1971">15CB1003</td> </tr> </table>				DO NOT SCALE		JANUARY 2017		ENGINEER OR TECHNICIAN	BASIC REV.	SPENCER HOVEY		CLASS	DIVISION	DRAWING	FILE	19	48	4324	15CB1003
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ISOMETRIC VIEW

KEY NUMBERS

- ① END BLOCKING ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 6.
- ② SIDE FILL ASSEMBLY (3 REQD). SEE THE DETAIL ON PAGE 5.
- ③ CENTER FILL ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 5.

BI LL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	415	277
NAI LS	NO. REQD	POUNDS
6d (2")	264	2
10d (3")	300	4-1/2
PLYWOOD, 3/4" - - 68.08 SQ FT REQD - - 140.4 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CRATE - - - - -	12 - - - - -	5,520 LBS
DUNNAGE - - - - -	- - - - -	700 LBS
CONTAINER - - - - -	- - - - -	6,500 LBS

TOTAL WEIGHT - - - - - 12,720 LBS (APPROX)

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 M129 LEALET BOMBS PACKED IN CRATES. SEE PAGE 4 AND TPO DRAWING 00-275-5131 FOR DETAILS OF THE CRATE. **CAUTION:** REGARDLESS OF THE QUANTITY OF UNITS 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 6,500 POUND 20' LONG BY 8' WIDE BY 8'-6" HIGH SIDE OPENING ISO CONTAINER WITH INSIDE DIMENSIONS OF 19'-6-1/4" LONG BY 90" WIDE BY 89" HIGH, WITH A MAXIMUM GROSS WEIGHT OF 52,910 POUNDS. OLDER/OTHER CONTAINERS MAY HAVE DIFFERENT INSIDE MEASUREMENTS, VERIFY INSIDE CONTAINER DIMENSIONS PRIOR TO FABRICATING DUNNAGE. 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 THE CRATES, THEY ARE TO BE POSITIONED SO AS TO ACHIEVE A TIGHT LOAD (TIGHT AGAINST THE DUNNAGE ASSEMBLIES). THE UNBLOCKED SPACE ACROSS THE WIDTH OF A LOAD BAY IS NOT TO EXCEED 1-1/2". EXCESSIVE SLACK CAN BE ELIMINATED FROM A LOAD BY LAMINATING ADDITIONAL PIECES OF APPROPRIATE THICKNESS TO THE LONGITUDINAL PIECES ON THE SIDE FILL ASSEMBLIES. NAIL EACH ADDITIONAL PIECE W/1 APPROPRIATELY SIZED NAIL EVERY 12". ADDITIONALLY, THE LENGTH OF THE LATERAL PIECES IN THE SIDE FILL ASSEMBLIES MAY BE ADJUSTED AS REQUIRED TO FACILITATE VARIANCE IN THE SIZE OF THE PALLET UNIT. THE LOADS MUST BE AS TIGHT AS POSSIBLE LONGITUDINALLY, BUT THE VOID MUST NOT EXCEED 3/4" OVERALL. EXCESSIVE SLACK CAN BE ELIMINATED BY ADDING 4" WIDE BY 7'-5" LONG FILLER PIECES TO THE CENTER FILL ASSEMBLY HORIZONTAL PIECE. LAMINATE EACH ADDITIONAL FILLER PIECE TO A HORIZONTAL PIECE W/1-10d NAIL EVERY 8".
- E. 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.
- F. IN SOME CONTAINERS THERE IS A SLOT AT THE CORNERS OF THE END-WALL. PIECES OF DUNNAGE MATERIAL MUST BE LAMINATED TO THE BUFFER PIECES ON THE END BLOCKING ASSEMBLY 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". NOTE THAT SOME CONTAINERS ARE EQUIPPED WITH "TIE-BARS" IN THE CORNER SLOT, WHICH PRECLUDE THE USE OF A FULL HEIGHT FILL PIECE. WHEN "TIE-BARS" ARE PRESENT, THE FILL PIECE MUST BE INSTALLED IN SEGMENTS DESIGNED TO FIT BETWEEN THE "TIE-BARS" VERTICALLY. THE FILL PIECE(S) IS NOT REQUIRED WHEN THE CORNER PORTIONS OF THE CONTAINER FORWARD WALL ARE SMOOTH AND FLAT. DO NOT ALLOW ANY DUNNAGE ASSEMBLY TO CONTACT THE CONTAINER ENDWALLS, ONLY THE CORNER POSTS OF THE CONTAINER SHOULD BE USED FOR FORWARD LONGITUDINAL BLOCKING.
- G. WHETHER A CONTAINER IS FULL OR IS 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.
- 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 SIDEWALL, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.
- K. **MAXIMUM LOAD WEIGHT CRITERIA:**
- THE MAXIMUM LOAD WEIGHTS ARE CONTROLLED BY EQUIPMENT CAPABILITY FACTORS. ALTHOUGH THE HEAVIEST MAXIMUM LOADS ARE DELINEATED IN THE LOAD VIEWS, PROVISIONS ARE INCLUDED WITHIN THIS DRAWING SO THAT THE BASIC LOADS CAN BE ADJUSTED TO SATISFY A LESSER QUANTITY OF LADING UNITS. DEPENDING ON TRANSPORTATION ROUTING, IT MAY BE NECESSARY TO REDUCE THE LOAD WEIGHT TO SATISFY "WEIGHT LAWS" OF CERTAIN STATES. ALSO, IT MAY BE NECESSARY TO REDUCE THE LOAD WEIGHT TO SATISFY OTHER WEIGHT RESTRICTIONS IMPOSED ON THE INTERMODAL CONTAINER SYSTEM.
- L. REQUIREMENTS CITED WITHIN THE ASSOCIATION OF AMERICAN RAILROADS (AAR) INTERMODAL LOADING GUIDE 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.

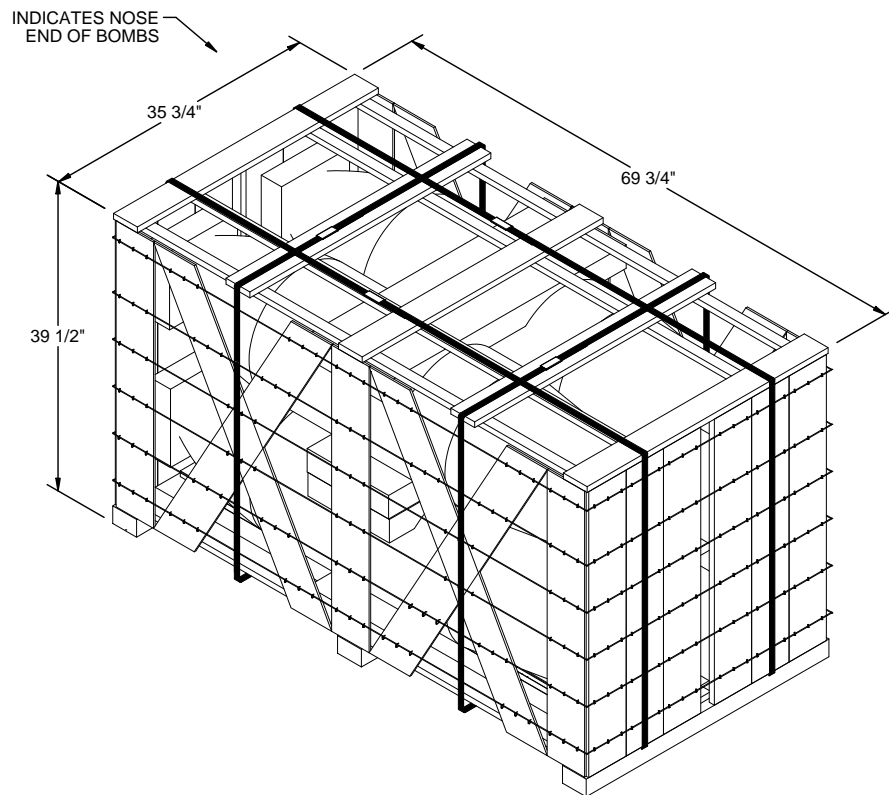
(CONTINUED AT RIGHT)

(GENERAL NOTES CONTINUED)

- M. 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.
- N. 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.
- O. THE QUANTITY OF CRATES SHOWN IN THE LOAD ON PAGE 2 MAY BE REDUCED FOR SHIPMENT, IF DESIRED. SEE THE "LESS-THAN-FULL LOAD PROCEDURE" ON PAGE 7.
1. IF A LOAD IS REDUCED BY ONLY A SMALL AMOUNT (ONE, TWO OR THREE LADING UNITS), LADING UNITS NORMALLY MAY BE ELIMINATED FROM THE CENTER OF THE LOAD.
 2. IF A LOAD IS REDUCED BY A LARGE AMOUNT (MORE THAN THREE LADING UNITS), LADING UNITS SHOULD BE ELIMINATED AS REQUIRED AND THE VOID IN THE LONGITUDINAL CENTER OF THE CONTAINER SHIFTED FORE OR AFT, AS NECESSARY, TO ACHIEVE A SYMMETRICAL WEIGHT DISTRIBUTION. THE DEPICTED PROCEDURES WILL BE FOLLOWED AS CLOSELY AS POSSIBLE, MAKING ONLY THOSE ADJUSTMENTS TO THE DUNNAGE WHICH ARE REQUIRED TO ACCOMMODATE THE NUMBER OF UNITS TO BE SHIPPED.
- P. 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.
- Q. LOAD-BLOCKING STRUTS WHICH ARE 48" OR LONGER MUST BE STIFFENED BY THE APPLICATION OF HORIZONTAL AND VERTICAL STRUT BRACING AS SHOWN IN THE LOAD ON PAGE 7. BRACING IS NOT REQUIRED IF THE STRUTS FOR THE LOAD BEING SHIPPED ARE SHORTER THAN 48". THE LENGTH OF THE LOAD-BLOCKING STRUTS SHOULD BE KEPT AS SHORT AS POSSIBLE (APPROX 18" MINIMUM), BUT IN THE EVENT IT IS NECESSARY TO USE STRUTS WHICH ARE 8'-0" OR MORE IN LENGTH, IT WILL BE NECESSARY TO APPLY AN ADDITIONAL SET OF HORIZONTAL AND VERTICAL STRUT BRACING PIECES. STRUT BRACING SHOULD BE APPLIED SO AS TO PROVIDE NEARLY EQUAL SPACES BETWEEN THE BRACING PIECES AND THE CENTER GATES AND/OR BETWEEN ADJACENT STRUT BRACING PIECES. NOTE THAT HORIZONTAL STRUT BRACING PIECES FOR THE UPPER LEVEL OF STRUTS FOR ALL BUT THE UPPERMOST TIER OF A LOAD MAY BE DIFFICULT TO APPLY TO THE TOP SURFACES OF THE STRUT AS DEPICTED. STRUT BRACING WILL BE EQUALLY EFFECTIVE IF APPLIED TO THE UNDER SIDE OF THOSE STRUTS.

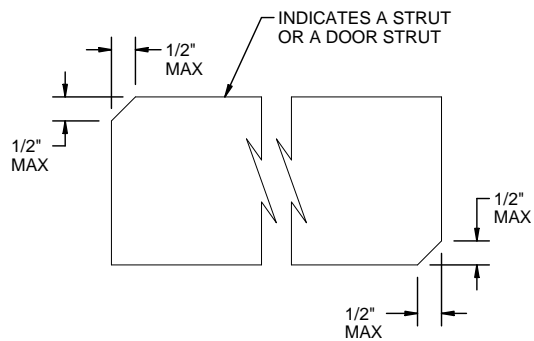
MATERIAL SPECIFICATIONS

- LUMBER - - - - - -: SEE TM 743-200-1 (DUNNAGE LUMBER) AND VOLUNTARY PRODUCT STANDARD PS 20.
- NAILS - - - - - -: ASTM F1667; COMMON STEEL NAIL NLCMS OR NLCMS).
- PLYWOOD - - - - - -: COMMERCIAL ITEM DESCRIPTION A-A-55057, 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.
- WIRE, CARBON STEEL -: ASTM A853; ANNEALED AT FINISH, BLACK OXIDE FINISH, 0.0800" DIA, GRADE 1006 OR BETTER.
- STAPLE, STRAP - - - -: COMMERCIAL GRADE



PALLET UNIT DATA

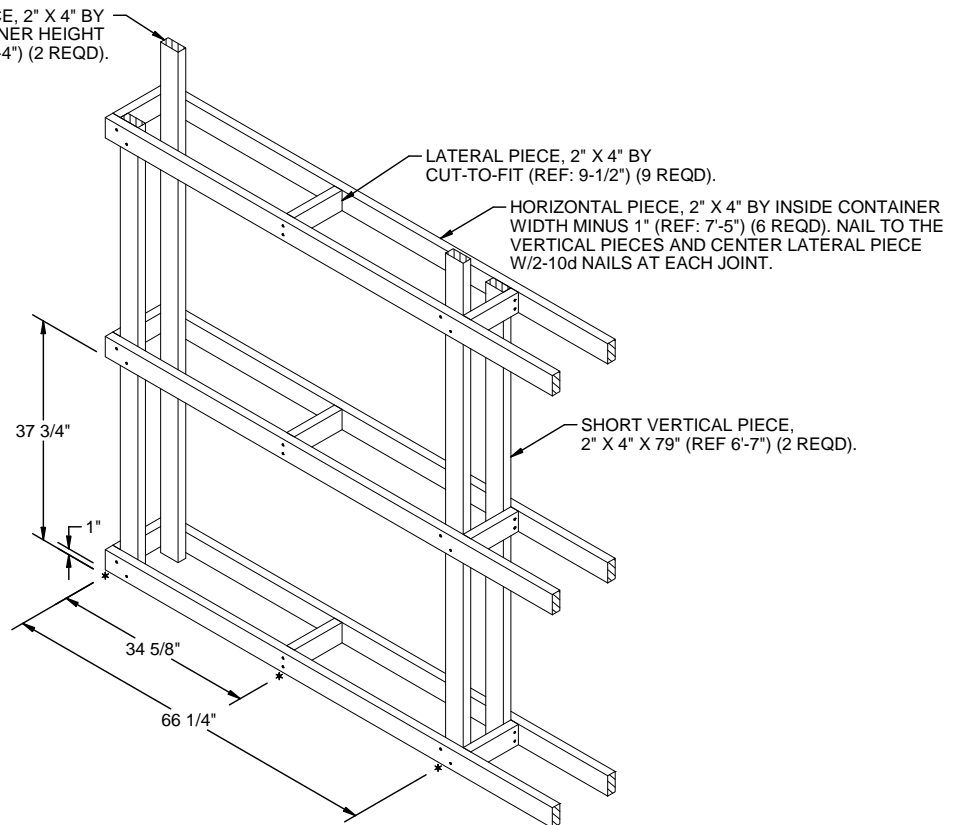
GROSS WEIGHT - - - - - 460 LBS (APPROX)
CUBE - - - - - 57.0 CU FT (APPROX)



BEVEL CUT

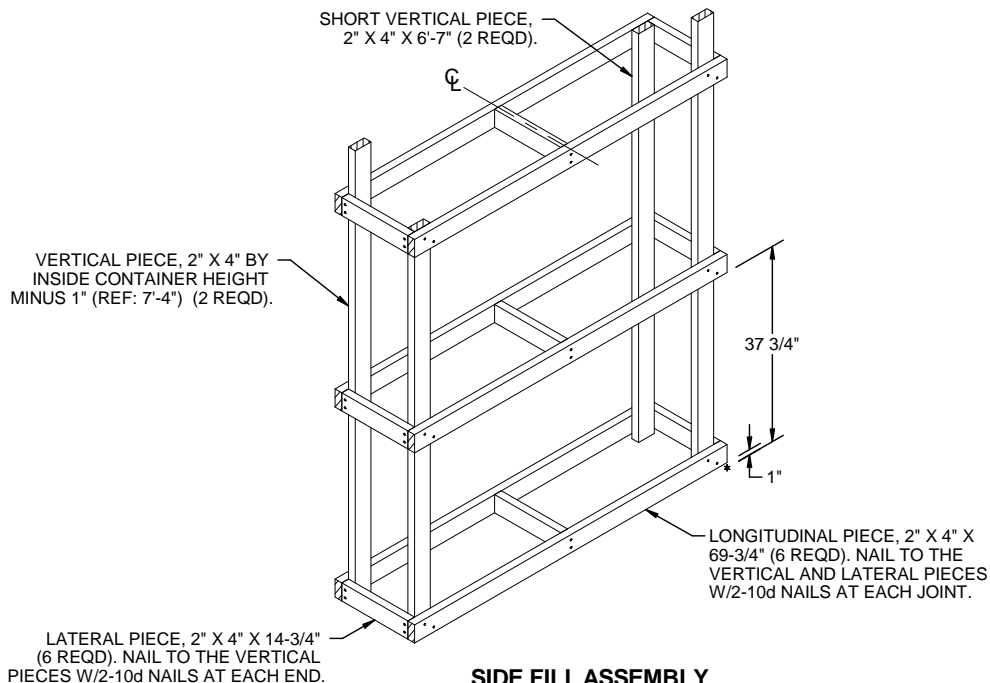
IF DESIRED, EACH END OF A STRUT MAY BE BEVEL-CUT
AS SHOWN ABOVE TO FACILITATE INSTALLING THE
STRUTS WITH A "DRIVE" FIT.

VERTICAL PIECE, 2" X 4" BY
INSIDE CONTAINER HEIGHT
MINUS 1" (REF 7'-4") (2 REQD).



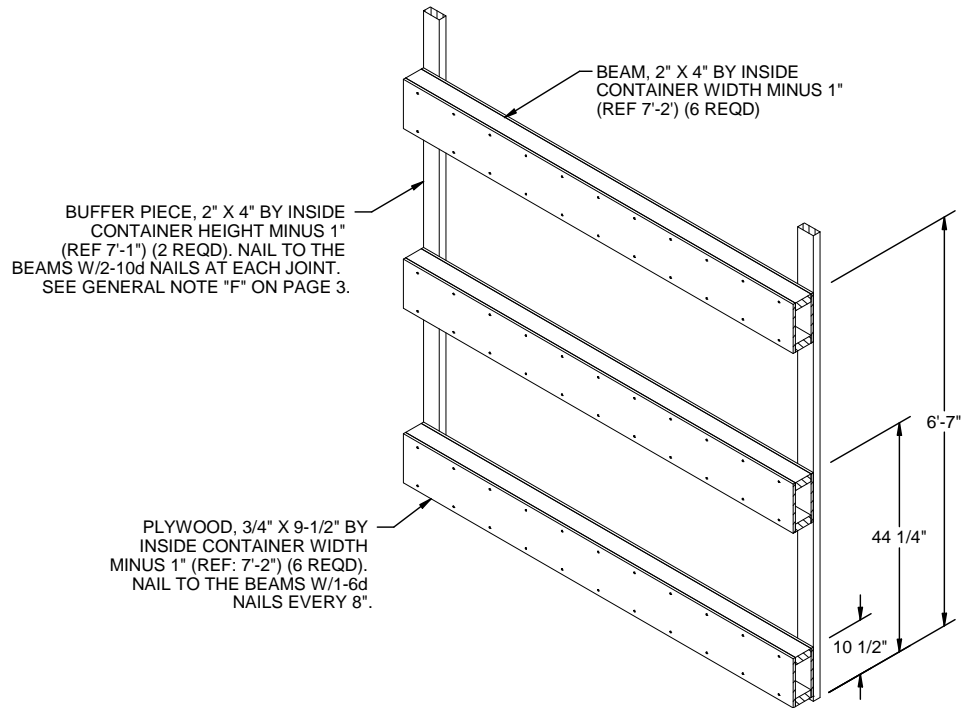
CENTER FILL ASSEMBLY

FOR A ONE HIGH LOAD, ELIMINATE THE TOP TWO HORIZONTAL AND TOP THREE LATERAL PIECES. ALSO REDUCE THE HEIGHT OF THE SHORT VERTICAL PIECES TO 39-1/2" AND LOWER THE MIDDLE SET OF HORIZONTAL AND LATERAL PIECES TO 36".



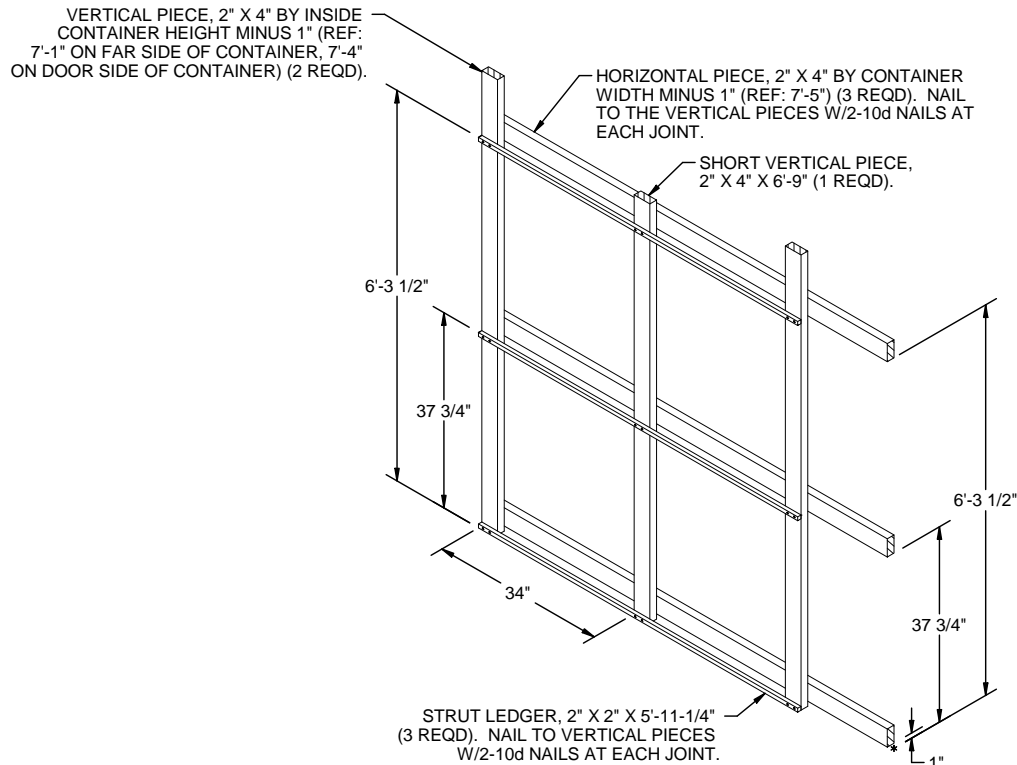
SIDE FILL ASSEMBLY

THE SIDE FILL ASSEMBLY ABOVE IS TO BE USED FOR A TWO HIGH LOAD. FOR A ONE HIGH LOAD, ELIMINATE THE TOP THREE LATERAL AND TOP TWO LONGITUDINAL PIECES AND REDUCE THE SHORT VERTICAL PIECES TO 39-1/2". ALSO, LOWER THE MIDDLE SET OF HORIZONTAL AND LATERAL PIECES TO 36".



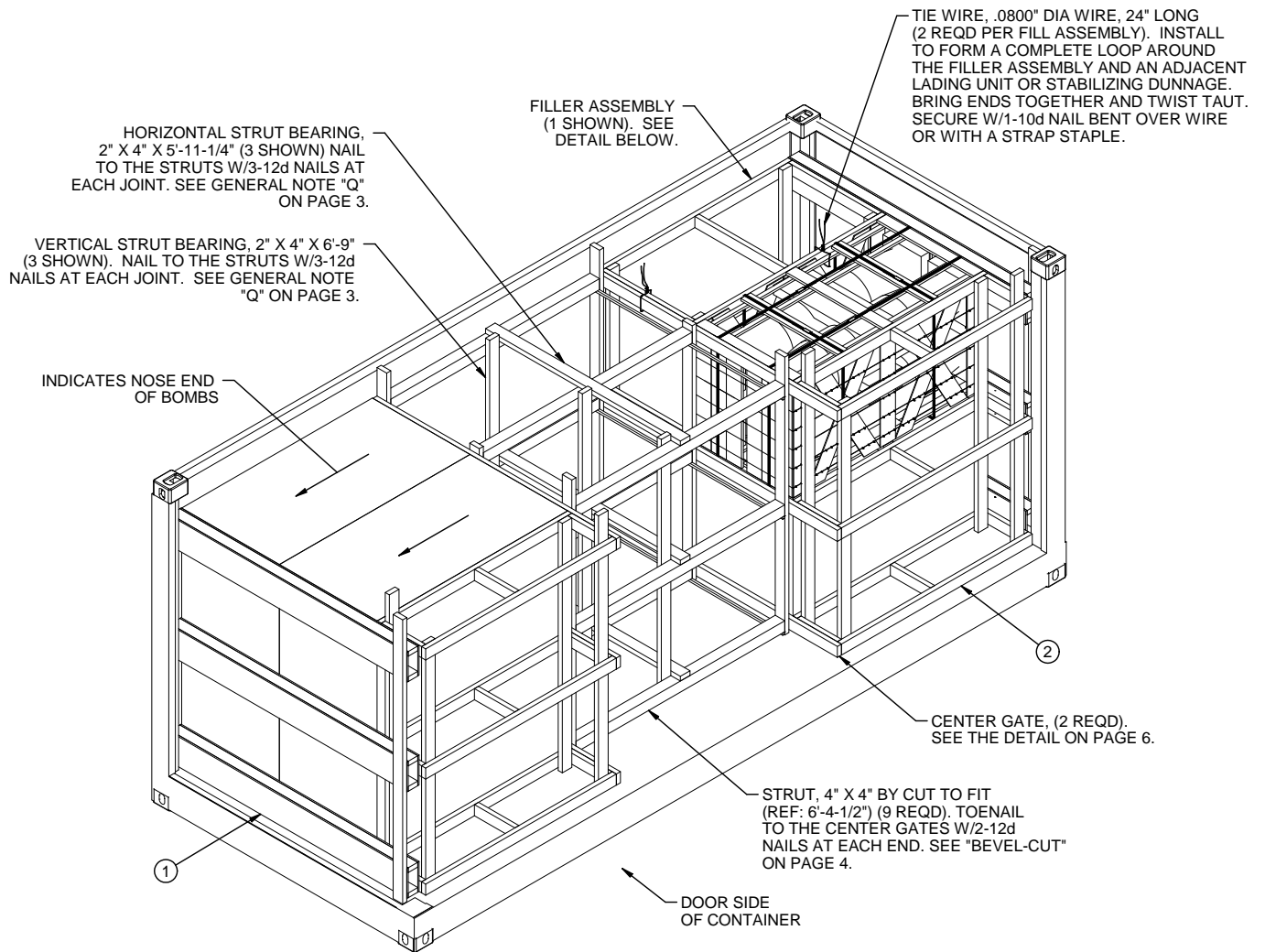
END BLOCKING ASSEMBLY

FOR A ONE HIGH LOAD, ELIMINATE THE TOP BOX BEAM ASSEMBLY AND LOWER THE MIDDLE BOX BEAM ASSEMBLY TO 39-1/2".



CENTER GATE ASSEMBLY

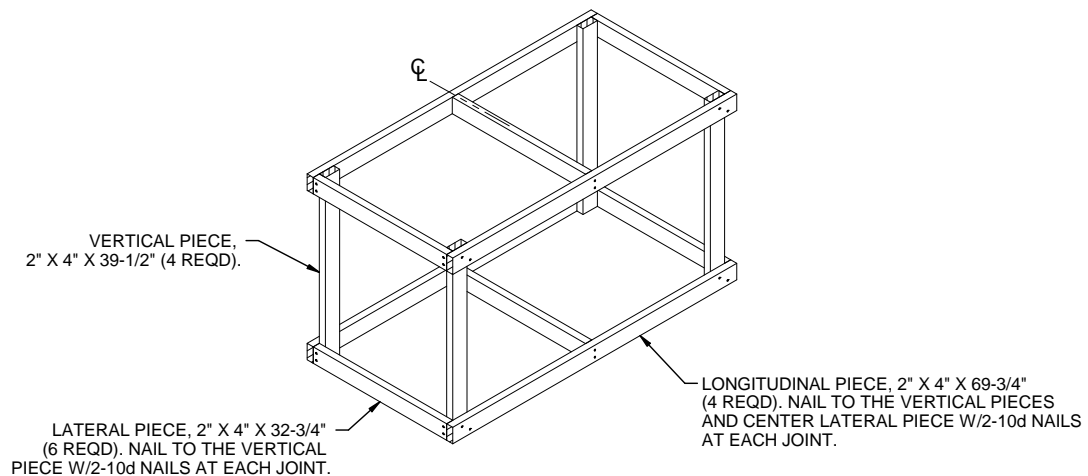
THE DETAIL ABOVE DEPICTS A CENTER GATE TO BE USED IN THE "LESS-THAN-FULL LOAD PROCEDURE". FOR A ONE HIGH LOAD, ELIMINATE THE UPPER HORIZONTAL PIECE AND STRUT LEDGER AND REDUCE THE SHORT VERTICAL PIECE TO 43". A RIGHT HAND ASSEMBLY IS SHOWN. A LEFT HAND ASSEMBLY IS ALSO REQUIRED.



ISOMETRIC VIEW

LESS-THAN-FULL-LOAD PROCEDURE

THE DETAIL ABOVE DEPICTS A BLOCKING METHOD TO BE USED IN A LESS -THAN-FULL CONTAINER LOAD (LESS THAN 8 UNITS). KEY NUMBERS REFER TO KEY NUMBERS ON PAGE 2. SEE GENERAL NOTES "G" AND "O" ON PAGE 3.



FILLER ASSEMBLY

FOR MINUS ONE CRATE. FILLER ASSEMBLIES MUST BE WIRE TIED TO ADJACENT CRATES OR DUNNAGE TO PREVENT UNDUE MOVEMENT. NO MORE THAN THREE FILLER ASSEMBLIES MAY BE USED PER LOAD TOP LAYER.

