

# LOADING AND BRACING<sup>●</sup> IN END OPENING ISO CONTAINERS OF MXU-650/B AND MXU-651/B AIRFOIL GROUPS PACKAGED IN METAL DRUMS (PALLETIZED AND UNPALLETIZED)

- LOADING AND BRACING SPECIFICATIONS SET FORTH WITHIN THIS DRAWING ARE APPLICABLE TO LOADS THAT ARE TO BE SHIPPED BY TRAILER/CONTAINER-ON-FLAT CAR (T/COFC) RAIL CARRIER SERVICE. THESE SPECIFICATIONS MAY ALSO BE USED FOR LOADS THAT ARE TO BE MOVED BY MOTOR OR WATER CARRIERS. SEE GENERAL NOTE "M" ON PAGE 2.

U.S. ARMY MATERIEL COMMAND DRAWING			
APPROVED, U.S. ARMY INDUSTRIAL OPERATIONS COMMAND	DRAFTSMAN	TECHNICIAN	ENGINEER
<i>Jain E. Heckwisch</i>		R. HAYNES	
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND	VALIDATION ENGINEERING DIVISION	TRANSPORTATION ENGINEERING DIVISION	LOGISTICS ENGINEERING OFFICE
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U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL	SEPTEMBER 1995		
	CLASS	DIVISION	DRAWING
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			FILE
			SP15PF1

DO NOT SCALE

GENERAL NOTES

(GENERAL NOTES CONTINUED)

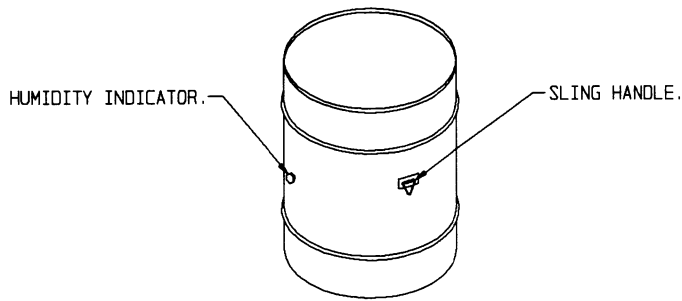
- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE SPECIFIED OUTLOADING PROCEDURES ARE APPLICABLE TO LOADS OF THE MXU-650/B AIRFOIL GROUPS PACKAGED IN 55-GALLON METAL DRUM AND THE MXU-651/B AIRFOIL GROUPS PACKAGED IN 80-GALLON METAL DRUM (UNPALLETIZED AND PALLETIZED). THESE PROCEDURES WILL ALSO APPLY TO OTHER ITEMS WHEN PACKAGED IN THE 55-GALLON OR 80-GALLON METAL DRUMS. SEE PAGE 3 FOR DETAILS. CAUTION: REGARDLESS OF THE QUANTITY OF CONTAINERS TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF THE END OPENING ISO CONTAINER MUST NOT BE EXCEEDED.
- C. THE LOADS AS SHOWN ARE BASED ON A 4,700 POUND 20' LONG BY 8' WIDE BY 8'-6" HIGH END OPENING ISO CONTAINER WITH INSIDE DIMENSIONS OF 19'-4" LONG BY 92" WIDE BY 95" HIGH (93" CLEAR HEIGHT) AND A MAXIMUM GROSS WEIGHT OF 52,910 POUNDS. 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 DRUMS OR PALLET UNITS, THEY ARE TO BE POSITIONED SO AS TO ACHIEVE A TIGHT LOAD (TIGHT AGAINST THE DUNNAGE ASSEMBLIES). THE UNBLOCKED SPACE ACROSS THE WIDTH LOAD BAY IS NOT TO EXCEED 1-1/2". EXCESSIVE SLACK CAN BE ELIMINATED FROM A LOAD BY PROPER POSITIONING OF THE DRUMS OR ADJUSTING THE WIDTH OF THE CRIB FILL ASSEMBLIES.
- 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 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 FORWARD WALL. PIECES OF DUNNAGE MATERIAL MUST BE LAMINATED TO THE BUFFER PIECES ON THE FORWARD 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 FORWARD WALL, ONLY THE CORNER POSTS OF THE CONTAINER SHOULD BE USED FOR FORWARD LONGITUDINAL BLOCKING.

- H. 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.
- J. CAUTION: DO NOT NAIL DUNNAGE MATERIAL TO THE CONTAINER WALLS OR FLOOR. ALL NAILING WILL BE WITHIN THE DUNNAGE.
- K. PORTIONS OF THE CONTAINER DEPICTED WITHIN THIS DRAWING, SUCH AS THE SIDEWALL, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.
- L. 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.
- M. 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.
- N. 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.
- O. 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 25.4 MM AND ONE POUND EQUALS 0.454 KG.
- P. THE 55-GALLON METAL DRUM IS DESIGNED TO "NEST" WHEN STACKED, THEREFORE NO DECKING IS REQUIRED BETWEEN LAYERS. THE 80-GALLON DRUM IS AN OPEN HEAD TYPE AND WILL NOT NEST. DECKING IS REQUIRED WHEN STACKING THIS DRUM.

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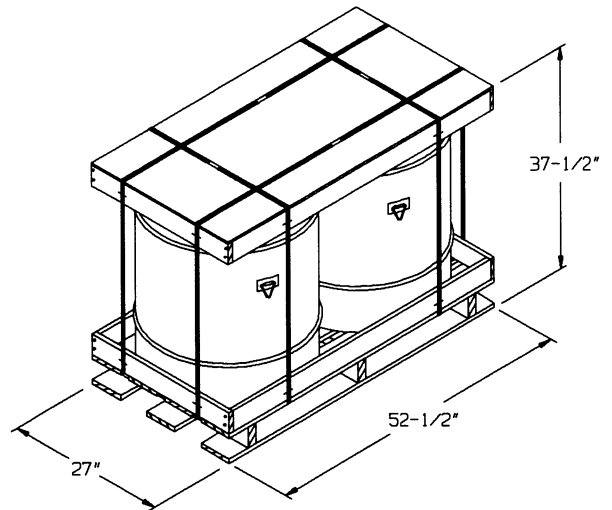
MATERIAL SPECIFICATIONS

- 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.
- STEEL, STRUCTURAL - : ASTM A501, STEEL STRUCTURAL TUBING; AND ASTM A570, STEEL, STRIP, HOT-ROLLED, GRADE 36 (MINIMUM).



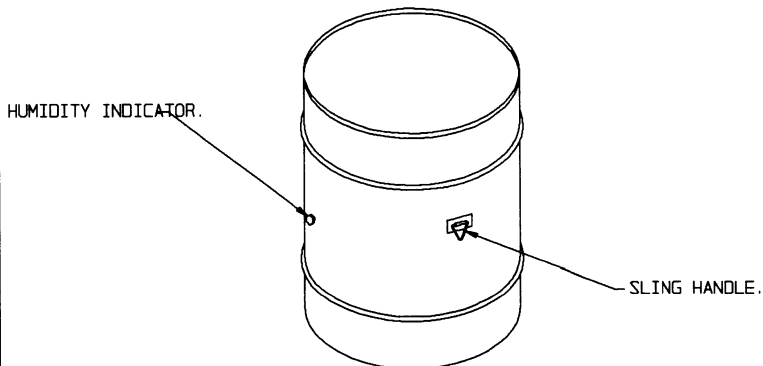
**AIRFOIL GROUP MXU-650/B**

25-1/2" DIA BY 34-1/2" HIGH  
 CUBE - - - - - 12.23 CU. FT. (APPROX)  
 GROSS WEIGHT - - 154 LBS (APPROX)



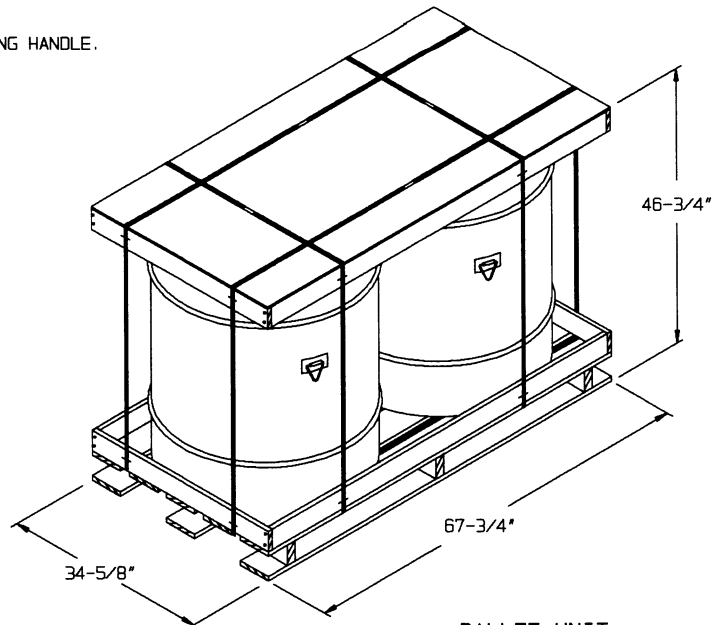
**PALLET UNIT**

CUBE - - - 30.76 CU. FT. (APPROX)  
 WEIGHT - - 383 POUNDS (APPROX)



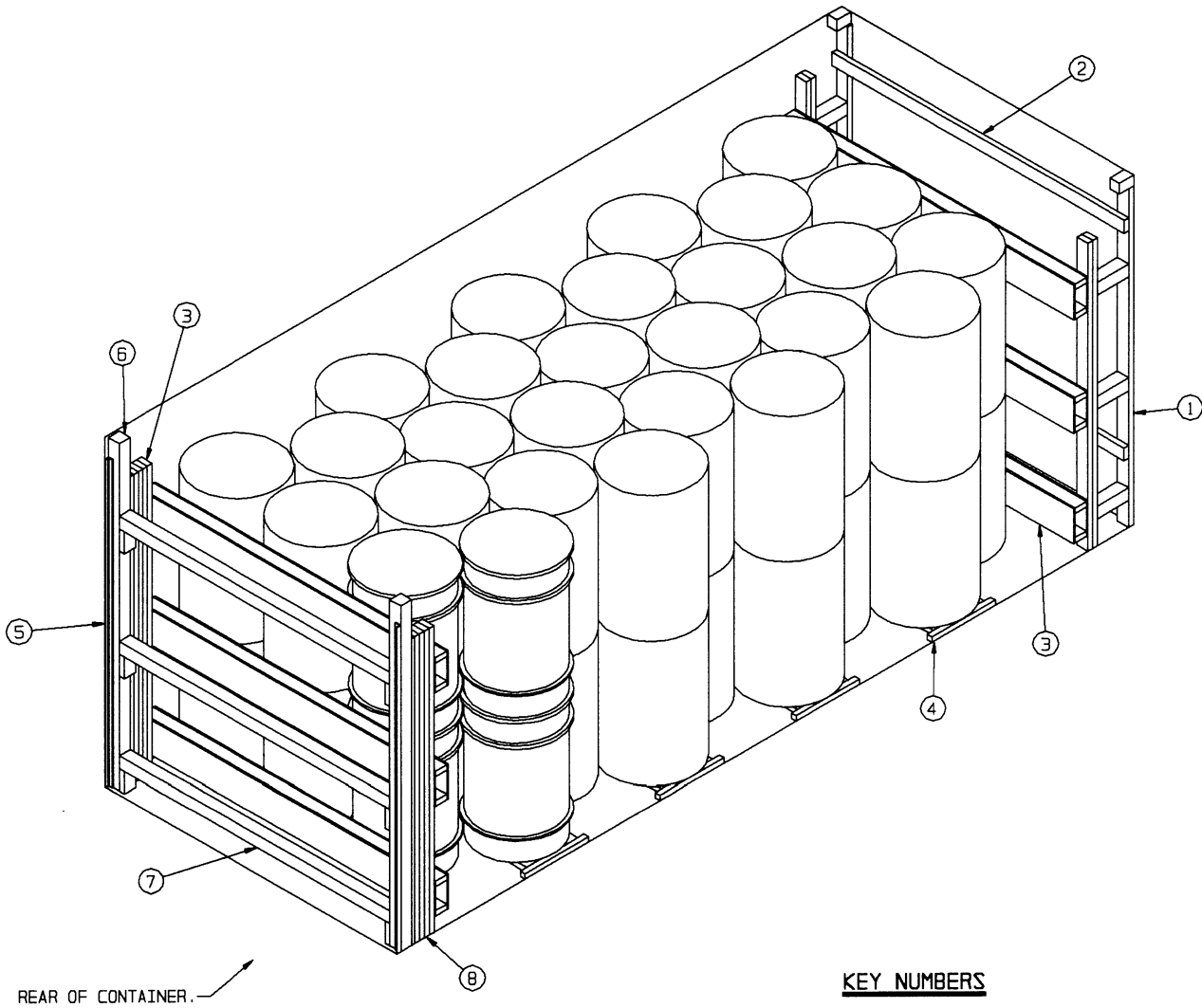
**AIRFOIL GROUP MXU-651/B**

33-1/8" DIA BY 41-1/2" HIGH  
 CUBE - - - - - 26.35 CU. FT. (APPROX)  
 GROSS WEIGHT - - 196 LBS (APPROX)



**PALLET UNIT**

CUBE - - - 63.47 CU. FT. (APPROX)  
 WEIGHT - - 492 POUNDS (APPROX)



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① FORWARD STRUT ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 16. SEE GENERAL NOTES "F" AND "G" ON PAGE 2.
- ② SPREADER PIECE, 2" X 4" BY INSIDE CONTAINER WIDTH MINUS 1" (REF: 7'-7") (2 REQD). NAIL TO THE VERTICALS OF PIECE MARKED ① W/2-10d NAILS AT EACH END.
- ③ FORWARD/REAR BLOCKING ASSEMBLY (2 REQD). SEE THE "FORWARD/REAR BLOCKING ASSEMBLY A" DETAIL ON PAGE 12. NAIL THROUGH THE BUFFER PIECES INTO THE VERTICAL PIECES OF PIECE MARKED ① W/7-10d NAILS.
- ④ RISER ASSEMBLY A (4 REQD). SEE THE DETAIL ON PAGE 14 AND SPECIAL NOTE 3 ON PAGE 5.
- ⑤ DOOR POST VERTICAL RETAINER (2 REQD). SEE THE "DOOR POST VERTICAL RETAINER" DETAIL AND "VIEW A" ON PAGE 18. NAIL THROUGH THE HOLES INTO THE DOOR POST VERTICAL W/4-10d NAILS.
- ⑥ DOOR POST VERTICAL (2 REQD). SEE THE "DOOR POST VERTICAL A" DETAIL ON PAGE 15 AND DETAILS "A" AND "B" ON PAGE 19.
- ⑦ DOOR SPANNER, 4" X 4" MATERIAL, CUT TO A LENGTH THAT WILL PROVIDE FOR A DRIVE FIT (REF: 7'-1-3/8") (3 REQD). TOENAIL TO THE DOOR POST VERTICAL PIECES W/2-12d NAILS AT EACH END. SEE THE "BEVEL-CUT" DETAIL ON PAGE 17.
- ⑧ FILL MATERIAL, 4" WIDE BY 7'-0" LONG MATERIAL (AS REQD). TOENAIL THE FIRST PIECE TO THE REAR BLOCKING ASSEMBLY W/7 NAILS OF A SUITABLE SIZE (10d NAILS FOR 2" THICK MATERIAL). TOENAIL EACH ADDITIONAL PIECE TO THE PREVIOUS PIECE IN A SIMILAR MANNER. NOTE: MULTIPLE PIECES MAY BE LAMINATED TOGETHER FIRST AND THEN TOENAILED TO THE REAR BLOCKING ASSEMBLY. SEE DETAILS "A" AND "B" ON PAGE 19.

RECOMMENDED SEQUENTIAL LOADING PROCEDURES:

1. PREFABRICATE TWO FORWARD STRUT ASSEMBLIES, TWO FORWARD/REAR BLOCKING ASSEMBLIES, FOUR RISER ASSEMBLIES, AND TWO DOOR POST VERTICALS.
2. INSTALL THE FORWARD STRUT ASSEMBLIES AND SPREADER PIECES.
3. INSTALL THE FORWARD BLOCKING ASSEMBLY.
4. LOAD SIX DRUMS.
5. INSTALL ONE RISER AND LOAD SIX DRUMS, REPEATING STEPS 4 AND 5 FOR THE REMAINDER OF THE LOAD.
6. INSTALL THE REAR BLOCKING ASSEMBLY.
7. INSTALL THE DOOR POST VERTICALS.
8. INSTALL THE THREE DOOR SPANNERS.
9. INSTALL THE FILL MATERIAL AS NEEDED.

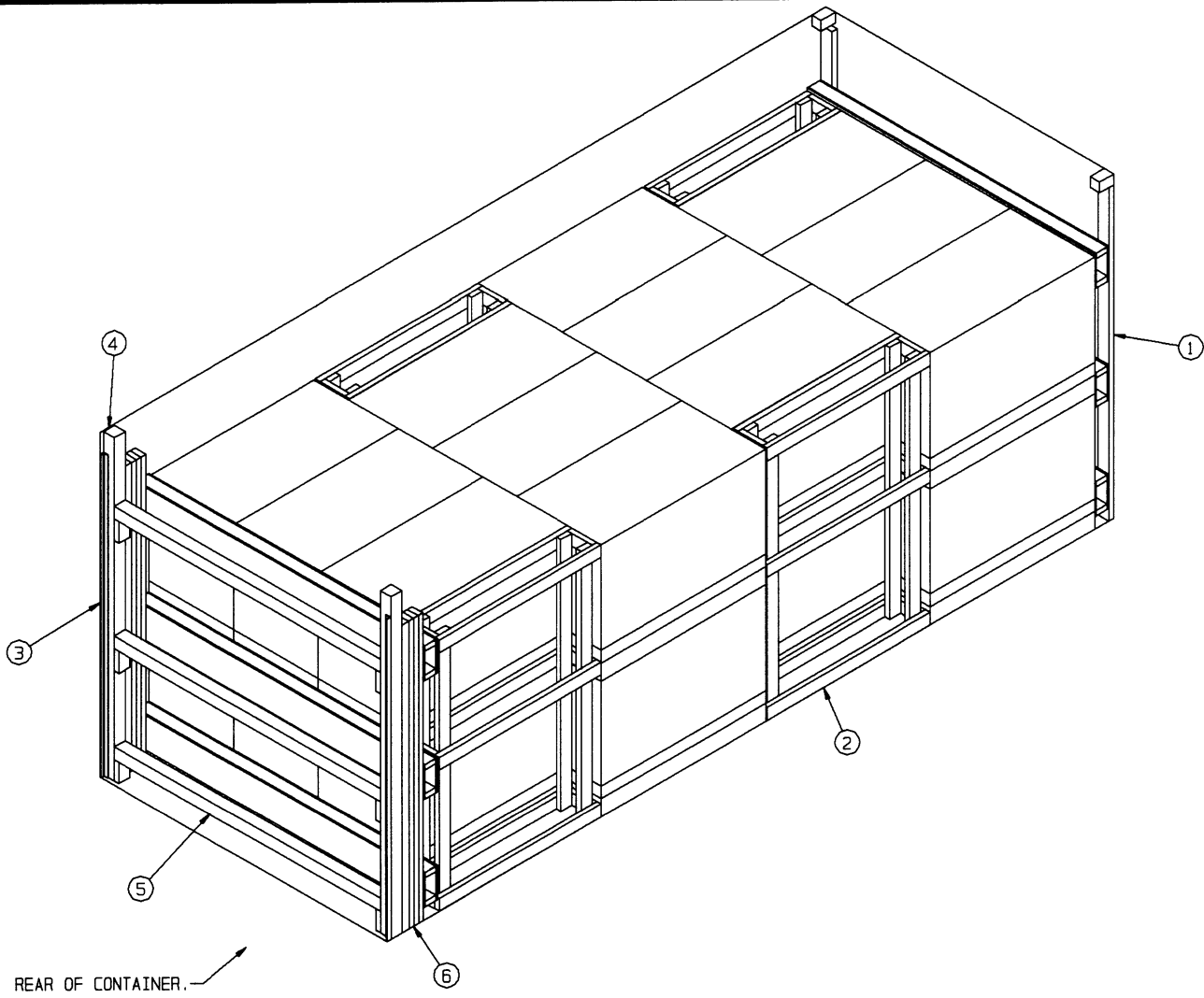
SPECIAL NOTES:

1. A 54-DRUM LOAD IS SHOWN IN AN END OPENING ISO CONTAINER.
2. TO SATISFY THE QUANTITY TO BE SHIPPED, THE SECOND LAYER OR A LOAD UNIT OF SIX DRUMS, MAY BE OMITTED FROM THE LOAD SHOWN ON PAGE 4.
3. IF DESIRED, THE "ALTERNATIVE RISER ASSEMBLY" SHOWN ON PAGE 20 MAY BE USED IN LIEU OF THE "RISER ASSEMBLY A" SHOWN IN THE LOAD ON PAGE 4.
4. WHEN LOADING THE TRAILER, POSITION THE FIRST LOAD UNIT OF DRUMS AT THE FORWARD END AGAINST THE FORWARD BLOCKING ASSEMBLY. EQUAL SPACE MUST BE MAINTAINED BETWEEN DRUMS. NEXT, POSITION THE SECOND LOAD UNIT OF DRUMS TO NEST BETWEEN THE FIRST SIX DRUMS. MAKE ADJUSTMENTS TO THE SPACE BETWEEN THE DRUMS AS NECESSARY TO FORM THE CONFIGURATION SHOWN IN THE VIEW ON PAGE 4. PROCEED WITH THE REMAINDER OF THE LOAD.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	14	5
2" X 4"	285	190
4" X 4"	42	56
NAILS	NO. REQD	POUNDS
6d (2")	264	1-1/2
10d (3")	188	2-3/4
12d (3-1/4")	12	NIL
PLYWOOD, 1/2" - - - - 72 SQ FT REQD - - - - 99 LBS		
DOOR POST VERTICAL RETAINER - 2 REQD - - - - 64 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
55 GALLON DRUM - - - -	54 - - - - -	8,316 LBS
DUNNAGE - - - - -	- - - - -	669 LBS
CONTAINER - - - - -	- - - - -	4,700 LBS
TOTAL WEIGHT - - - - -		13,685 LBS (APPROX)



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① FORWARD/REAR BLOCKING ASSEMBLY (2 REQD). SEE THE "FORWARD/REAR BLOCKING ASSEMBLY B" DETAIL ON PAGE 12. SEE GENERAL NOTE "G" ON PAGE 2.
- ② CRIB FILL (4 REQD). SEE THE "CRIB FILL A" DETAIL ON PAGE 16.
- ③ DOOR POST VERTICAL RETAINER (2 REQD). SEE THE "DOOR POST VERTICAL RETAINER" DETAIL AND "VIEW A" ON PAGE 18. NAIL THROUGH THE HOLES INTO THE DOOR POST VERTICAL W/4-10d NAILS.
- ④ DOOR POST VERTICAL (2 REQD). SEE THE "DOOR POST VERTICAL B" DETAIL ON PAGE 15 AND DETAILS "A" AND "B" ON PAGE 19.
- ⑤ DOOR SPANNER, 4" X 4" MATERIAL, CUT TO A LENGTH THAT WILL PROVIDE FOR A DRIVE FIT (REF: 7'-1-3/8") (3 REQD). TOENAIL TO THE DOOR POST VERTICAL PIECES W/2-12d NAILS AT EACH END. SEE THE "BEVEL-CUT" DETAIL ON PAGE 17.
- ⑥ FILL MATERIAL, 4" WIDE BY 7'-0" LONG MATERIAL (AS REQD). TOENAIL THE FIRST PIECE TO THE REAR BLOCKING ASSEMBLY W/7 NAILS OF A SUITABLE SIZE (10d NAILS FOR 2" THICK MATERIAL). TOENAIL EACH ADDITIONAL PIECE TO THE PREVIOUS PIECE IN A SIMILAR MANNER. NOTE: MULTIPLE PIECES MAY BE LAMINATED TOGETHER FIRST AND THEN TOENAILED TO THE REAR BLOCKING ASSEMBLY. SEE DETAILS "A" AND "B" ON PAGE 19.

RECOMMENDED SEQUENTIAL LOADING PROCEDURES:

1. PREFABRICATE TWO FORWARD/REAR BLOCKING ASSEMBLIES, FOUR CRIB FILL A ASSEMBLIES, AND TWO DOOR POST VERTICALS.
2. INSTALL THE FORWARD BLOCKING ASSEMBLY.
3. LOAD SIX PALLET UNITS AND INSTALL ONE CRIB FILL ASSEMBLY.
4. REPEAT STEP 3 FOR REMAINDER OF LOAD.
5. INSTALL THE REAR BLOCKING ASSEMBLY.
6. INSTALL THE DOOR POST VERTICALS.
7. INSTALL THE THREE DOOR SPANNERS.
8. INSTALL THE FILL MATERIAL AS REQUIRED.

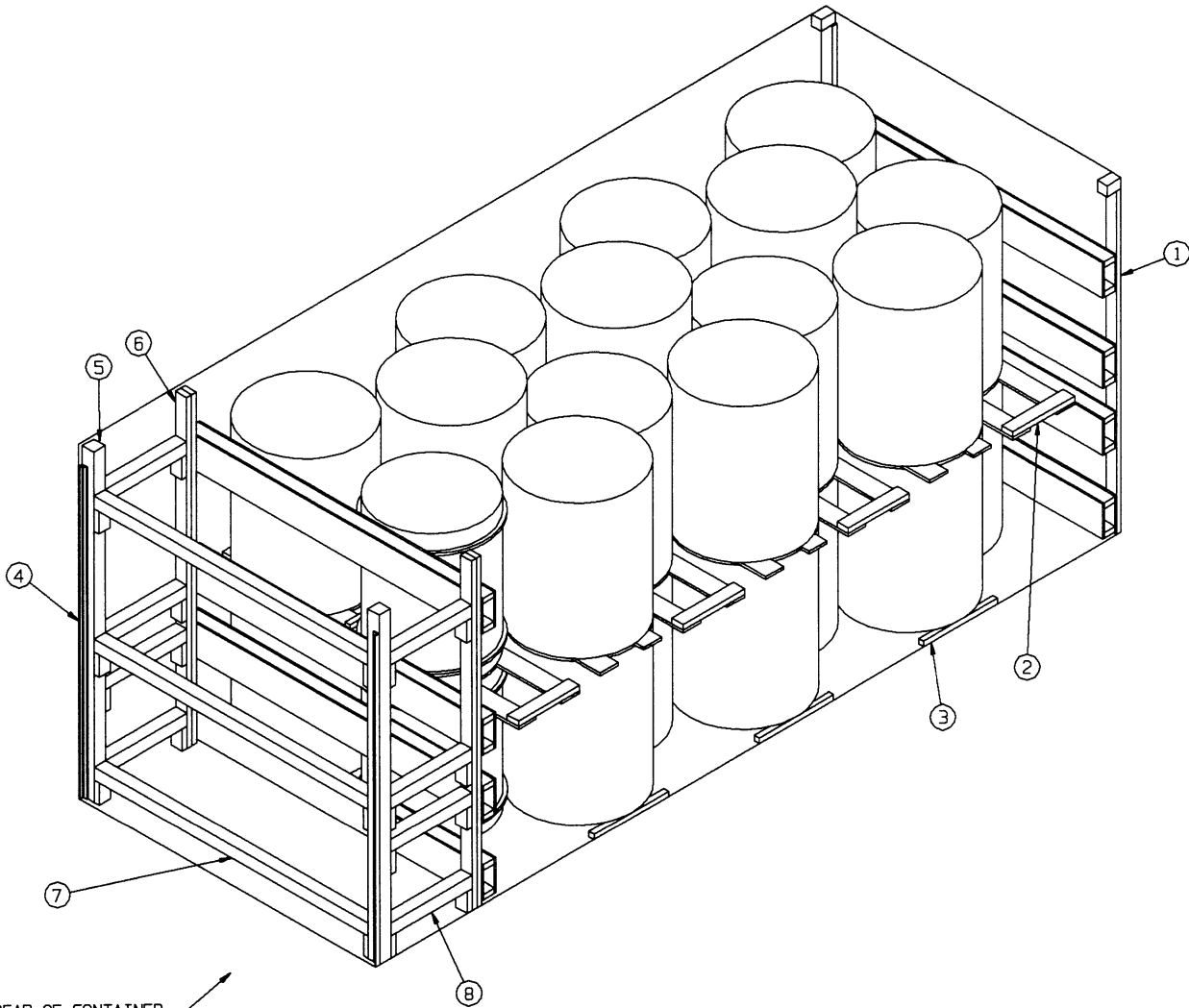
SPECIAL NOTE:

1. A 24-PALLET UNIT LOAD OF DRUMS IS SHOWN IN AN END OPENING ISO CONTAINER.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	386	257
4" X 4"	37	49
NAILS	NO. REQD	POUNDS
6d (2")	264	1-1/2
10d (3")	288	4-1/2
12d (3-1/4")	12	NIL
PLYWOOD, 1/2"	72 SQ FT REQD	99 LBS
DOOR POST VERTICAL RETAINER	2 REQD	64 LBS

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	24	9,192 LBS
DUNNAGE		781 LBS
CONTAINER		4,700 LBS
TOTAL WEIGHT		14,673 LBS (APPROX)



REAR OF CONTAINER. →

**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① FORWARD/REAR BLOCKING ASSEMBLY (2 REQD). SEE THE "FORWARD/REAR BLOCKING ASSEMBLY C" DETAIL ON PAGE 13. SEE GENERAL NOTE "G" ON PAGE 2.
- ② DECK ASSEMBLY (7 REQD). SEE THE DETAIL ON PAGE 14 AND GENERAL NOTE "P" ON PAGE 2.
- ③ RISER ASSEMBLY A (4 REQD). SEE THE DETAIL ON PAGE 14 AND SPECIAL NOTE 3 ON PAGE 9.
- ④ DOOR POST VERTICAL RETAINER (2 REQD). SEE THE "DOOR POST VERTICAL RETAINER" DETAIL AND "VIEW A" ON PAGE 18. NAIL THROUGH THE HOLES INTO THE DOOR POST VERTICAL W/4-10d NAILS.
- ⑤ DOOR POST VERTICAL (2 REQD). SEE THE "DOOR POST VERTICAL C" DETAIL ON PAGE 15 AND DETAILS "A" AND "B" ON PAGE 19.
- ⑥ REAR VERTICAL PIECE (2 REQD). SEE THE DETAIL ON PAGE 19. NAIL TO THE REAR BLOCKING, PIECE MARKED ①, W/7-10d NAILS.
- ⑦ DOOR SPANNER, 4" X 4" MATERIAL, CUT TO A LENGTH THAT WILL PROVIDE FOR A DRIVE FIT (REF: 7'-1-3/8") (3 REQD). TOENAIL TO THE DOOR POST VERTICAL PIECES W/2-12d NAILS AT EACH END. SEE THE "BEVEL-CUT" DETAIL ON PAGE 17.
- ⑧ STRUT, 4" X 4" BY CUT TO FIT (8 REQD). TOENAIL TO THE REAR VERTICAL PIECE AND TO THE DOOR POST VERTICAL W/2-12d NAILS AT EACH END. SEE THE "BEVEL-CUT" ON PAGE 17.



RECOMMENDED SEQUENTIAL LOADING PROCEDURES:

1. PREFABRICATE TWO FORWARD/REAR BLOCKING ASSEMBLIES, FOUR RISER ASSEMBLIES, SEVEN DECK ASSEMBLIES, TWO REAR VERTICAL PIECES, AND TWO DOOR POST VERTICALS.
2. INSTALL THE FORWARD BLOCKING ASSEMBLY.
3. LOAD SIX DRUMS AND ONE DECK ASSEMBLY.]
4. LOAD THE SECOND LOAD UNIT TO INCLUDE ONE RISER ASSEMBLY.
5. REPEAT STEPS 3 AND 4 FOR THE REMAINDER OF THE LOAD.
6. INSTALL THE REAR BLOCKING ASSEMBLY.
7. INSTALL THE REAR VERTICAL PIECES.
8. INSTALL THE DOOR POST VERTICALS.
9. INSTALL THE THREE DOOR SPANNERS.
10. INSTALL THE STRUTS.

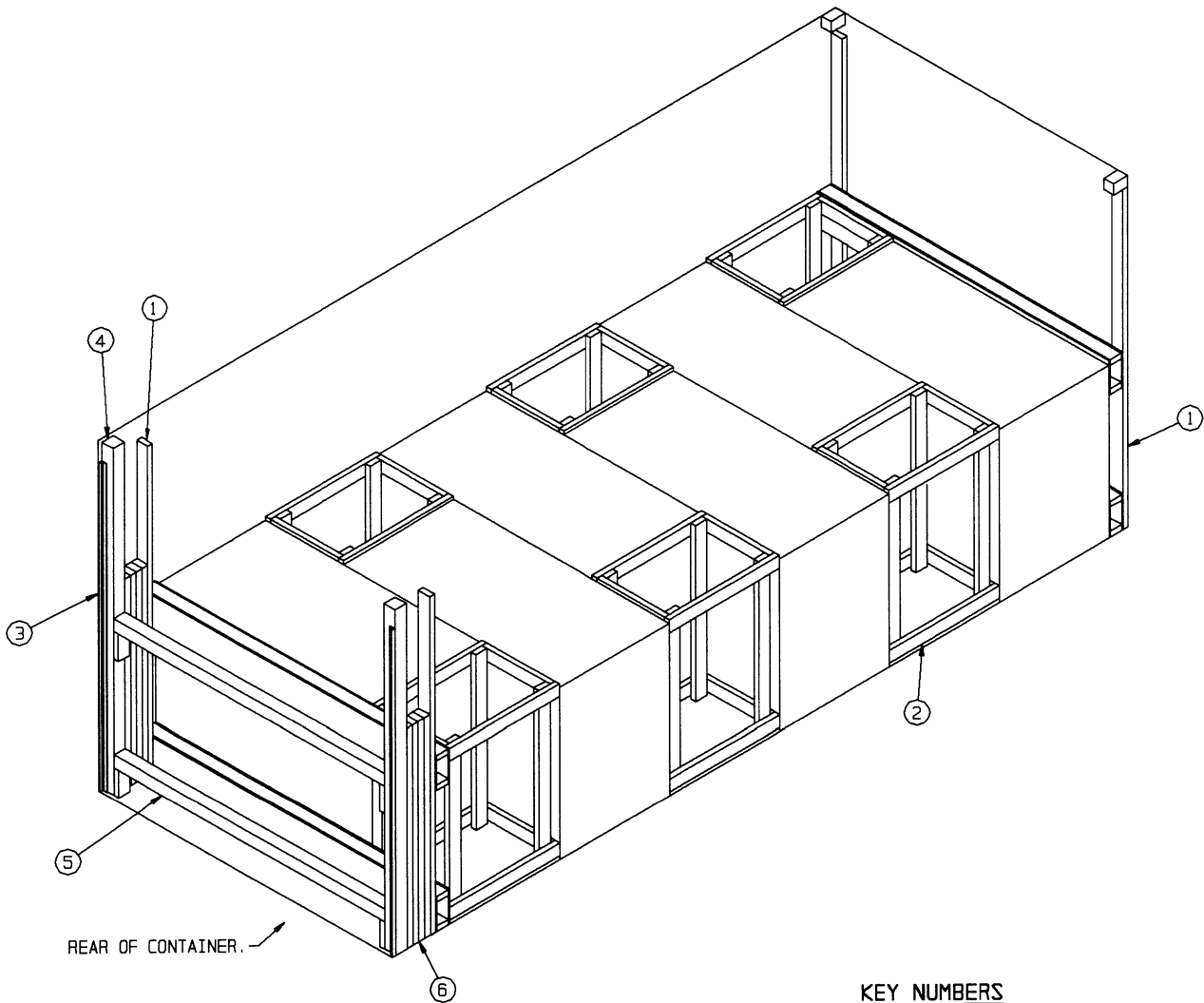
SPECIAL NOTES:

1. A 28-CONTAINER LOAD IS SHOWN IN AN END OPENING ISO CONTAINER.
2. TO SATISFY THE QUANTITY TO BE SHIPPED, THE SECOND LAYER OR A LOAD UNIT OF FOUR DRUMS MAY BE OMITTED FROM THE LOAD ON PAGE 8.
3. IF DESIRED, THE "ALTERNATIVE RISER ASSEMBLY" SHOWN ON PAGE 20 MAY BE USED IN LIEU OF THE "RISER ASSEMBLY A" SHOWN IN THE LOAD ON PAGE 8.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	106	53
2" X 2"	27	9
2" X 4"	250	167
4" X 4"	53	71
NAILS	NO. REQD	POUNDS
6d (2")	436	2-1/2
10d (3")	154	2-1/2
12d (3-1/4")	44	3/4
PLYWOOD, 1/2"	96 SQ FT REQD	132 LBS
DOOR POST VERTICAL RETAINER	2 REQD	64 LBS

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
80-GALLON DRUM	28	5,488 LBS
DUNNAGE		802 LBS
CONTAINER		4,700 LBS
TOTAL WEIGHT		10,990 LBS (APPROX)



REAR OF CONTAINER. →

**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① FORWARD/REAR BLOCKING ASSEMBLY (2 REQD). SEE THE "FORWARD/REAR BLOCKING ASSEMBLY D" DETAIL ON PAGE 13. SEE GENERAL NOTE "G" ON PAGE 2.
- ② CRIB FILL (6 REQD). SEE THE "CRIB FILL B" DETAIL ON PAGE 17.
- ③ DOOR POST VERTICAL RETAINER (2 REQD). SEE THE "DOOR POST VERTICAL RETAINER" DETAIL AND "VIEW A" ON PAGE 18. NAIL THROUGH THE HOLES INTO THE DOOR POST VERTICAL W/4-10d NAILS.
- ④ DOOR POST VERTICAL (2 REQD). SEE THE "DOOR POST VERTICAL D" DETAIL ON PAGE 15 AND DETAILS "A" AND "B" ON PAGE 19.
- ⑤ DOOR SPANNER, 4" X 4" MATERIAL, CUT TO A LENGTH THAT WILL PROVIDE FOR A DRIVE FIT (REF: 7'-1-3/8") (2 REQD). TOENAIL TO THE DOOR POST VERTICAL PIECES W/2-12d NAILS AT EACH END. SEE THE "BEVEL-CUT" DETAIL ON PAGE 17.
- ⑥ FILL MATERIAL, 4" WIDE BY 60" LONG MATERIAL (AS REQD). TOENAIL THE FIRST PIECE TO THE REAR BLOCKING ASSEMBLY W/7 NAILS OF A SUITABLE SIZE (10d NAILS FOR 2" THICK MATERIAL). TOENAIL EACH ADDITIONAL PIECE TO THE PREVIOUS PIECE IN A SIMILAR MANNER. NOTE: MULTIPLE PIECES MAY BE LAMINATED TOGETHER FIRST AND THEN TOENAILED TO THE REAR BLOCKING ASSEMBLY. SEE DETAILS "A" AND "B" ON PAGE 19.

RECOMMENDED SEQUENTIAL LOADING PROCEDURES:

1. PREFABRICATE TWO FORWARD/REAR BLOCKING ASSEMBLIES, SIX CRIB FILL ASSEMBLIES, AND TWO DOOR POST VERTICALS.
2. INSTALL THE FORWARD BLOCKING ASSEMBLY.
3. LOAD ONE PALLET UNIT AND INSTALL ONE CRIB FILL ASSEMBLY.
4. REPEAT STEP 3 FOR THE REMAINDER OF THE LOAD.
5. INSTALL THE REAR BLOCKING ASSEMBLY.
6. INSTALL THE DOOR POST VERTICALS.
7. INSTALL THE TWO DOOR SPANNERS.
8. INSTALL THE FILL MATERIAL AS REQUIRED.

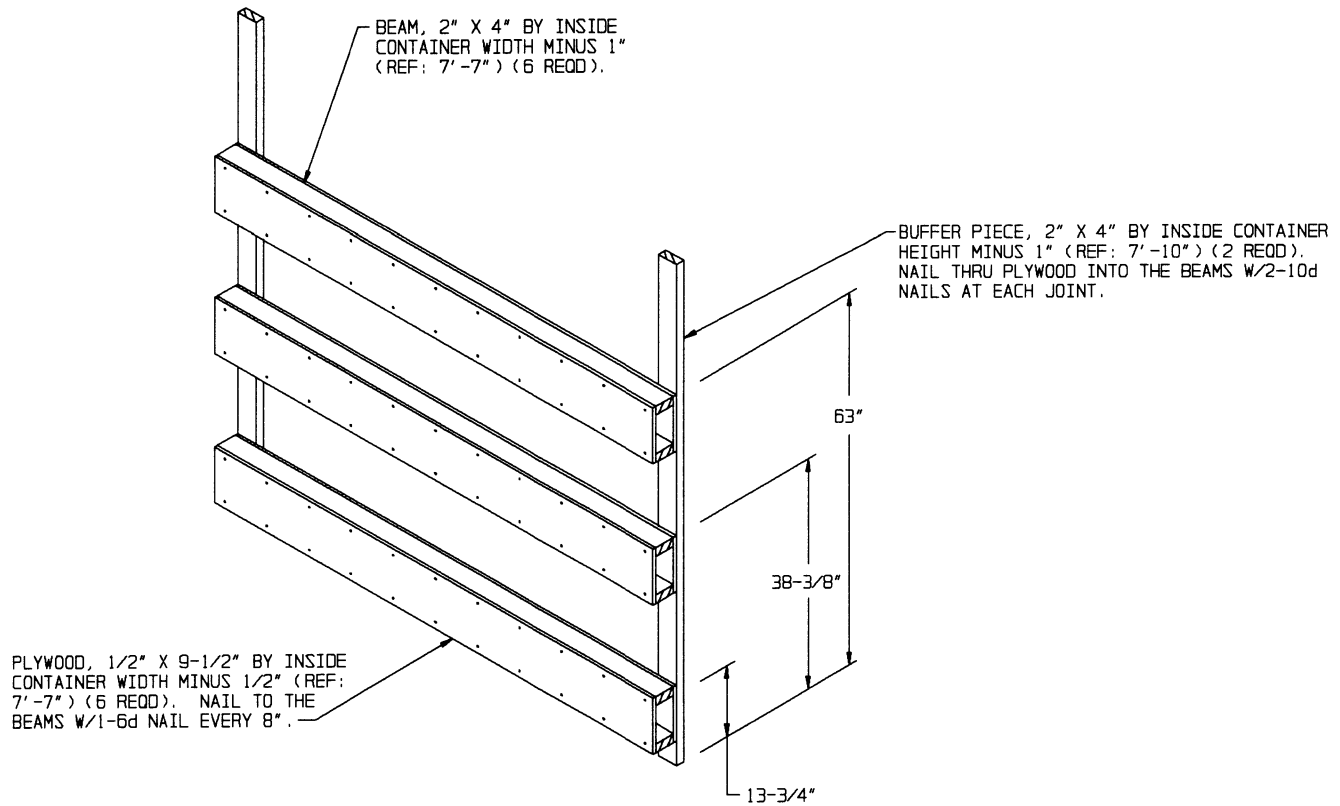
SPECIAL NOTE:

1. A 6-PALLET UNIT LOAD OF DRUMS IS SHOWN IN AN END OPENING ISO CONTAINER.

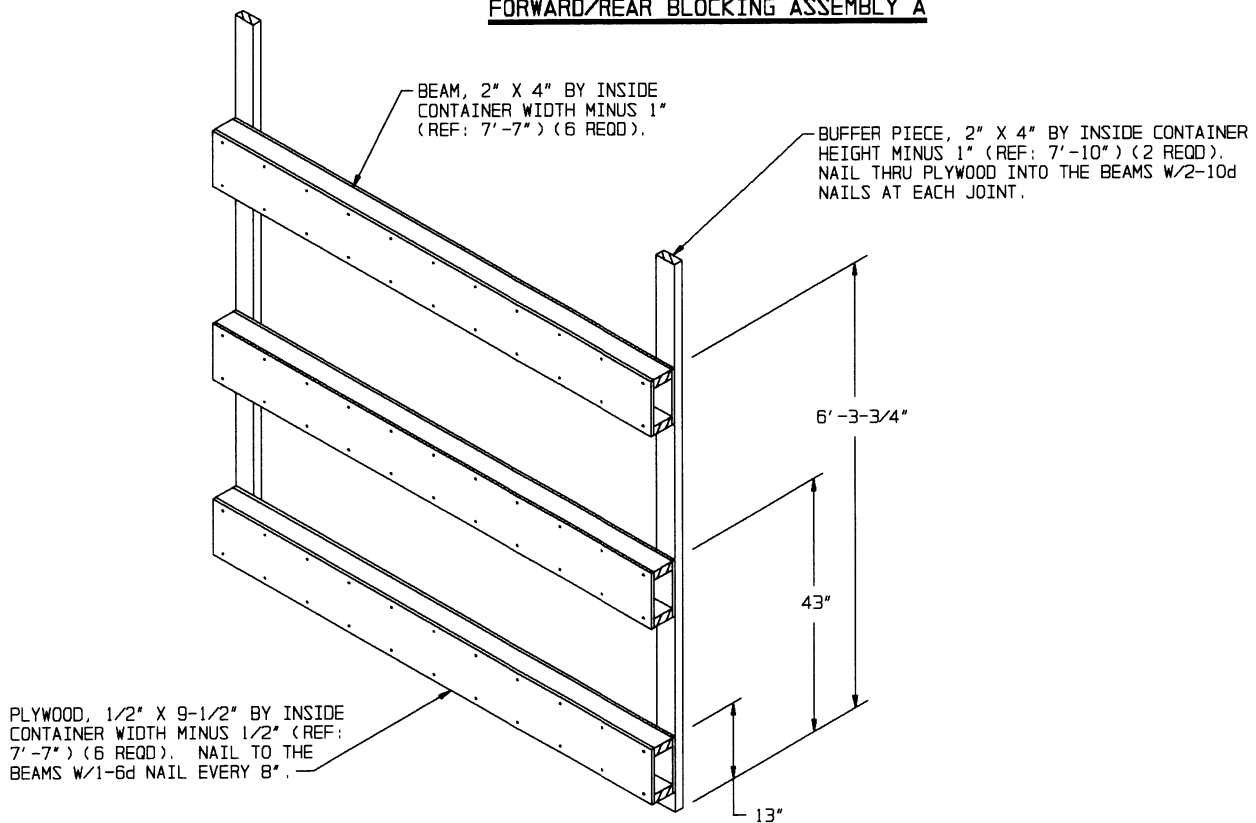
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	321	214
4" X 4"	30	40
NAILS	NO. REQD	POUNDS
6d (2")	176	1
10d (3")	264	4
12d (3-1/4")	8	NIL
PLYWOOD, 1/2" - - - - -	48 SQ FT REQD - - - - -	66 LBS
DOOR POST VERTICAL RETAINER - 2 REQD - - - - -		64 LBS

LOAD AS SHOWN

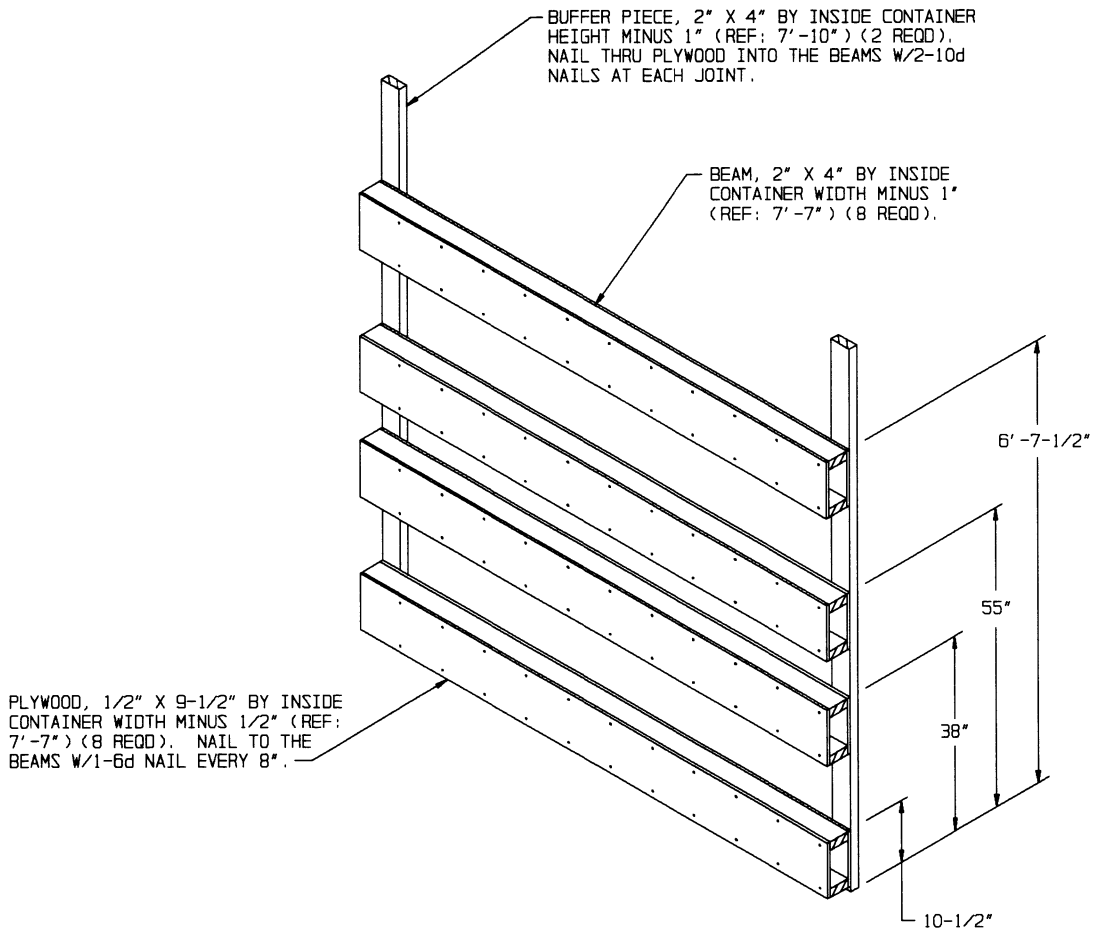
ITEM	QUANTITY	WEIGHT (APPROX)
80-GALLON DRUM (PALLETIZED)	6	2,952 LBS
DUNNAGE		643 LBS
CONTAINER		4,700 LBS
TOTAL WEIGHT		8,295 LBS (APPROX)



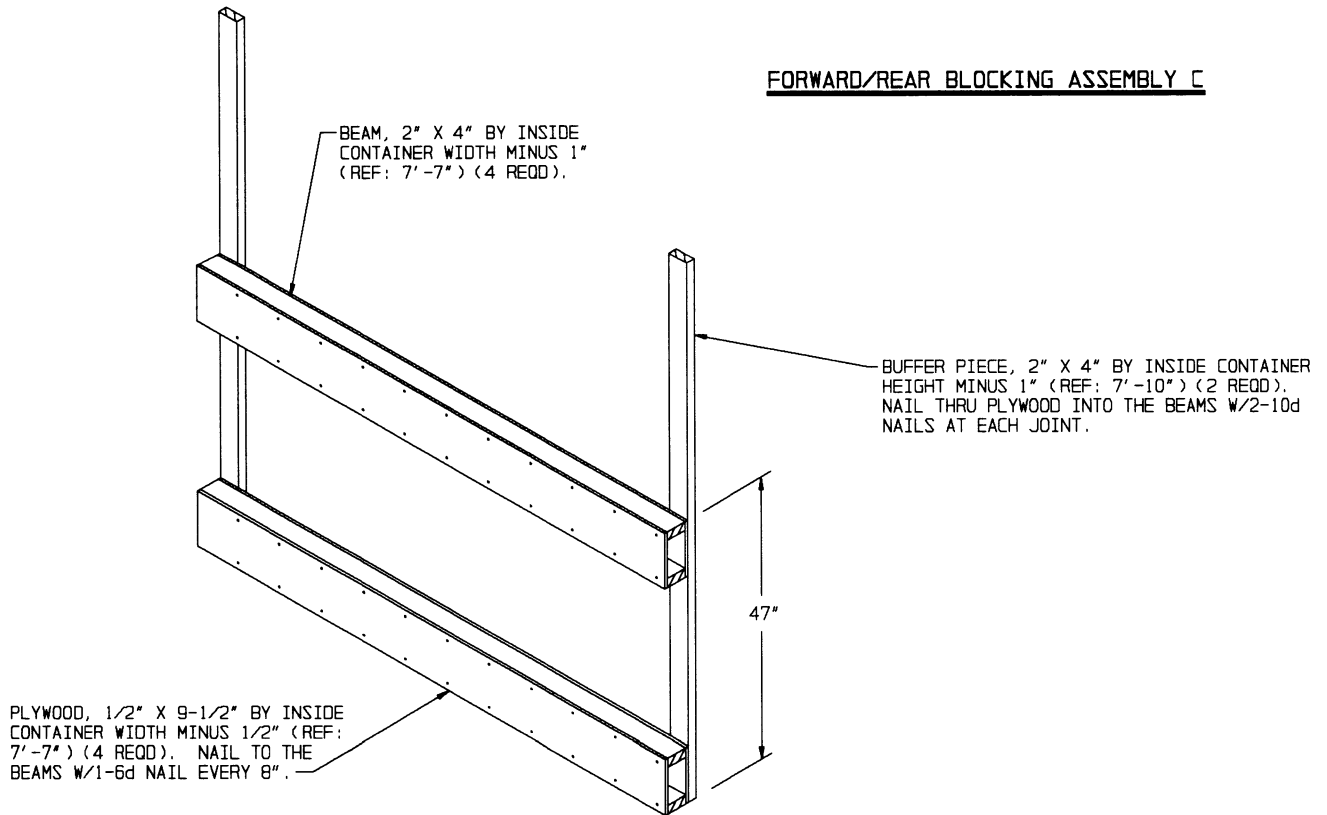
**FORWARD/REAR BLOCKING ASSEMBLY A**



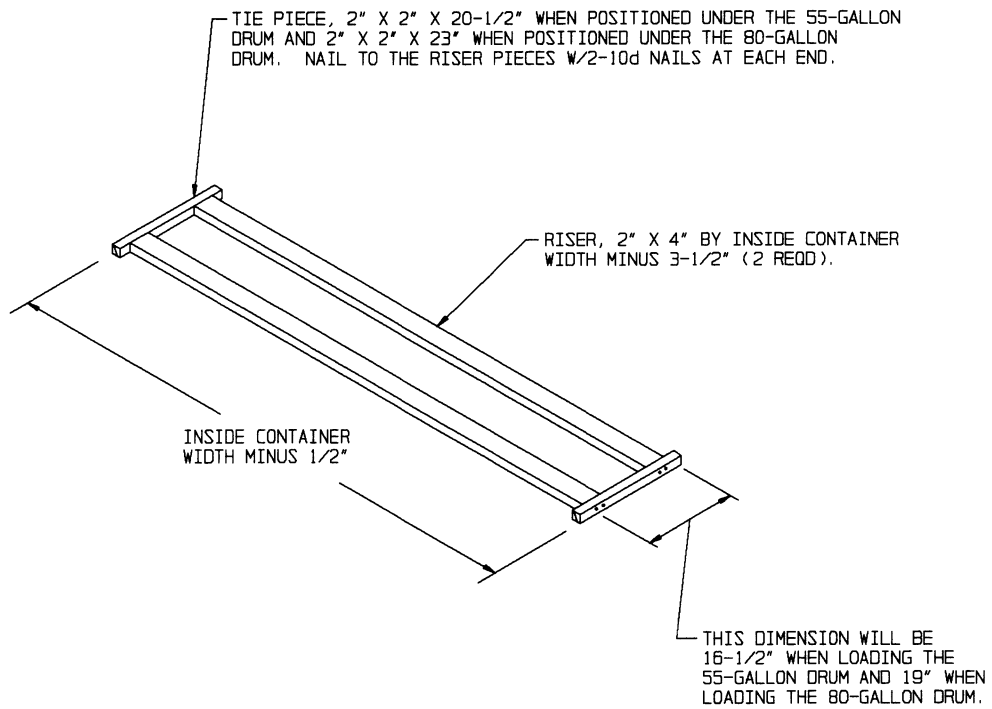
**FORWARD/REAR BLOCKING ASSEMBLY B**



**FORWARD/REAR BLOCKING ASSEMBLY C**

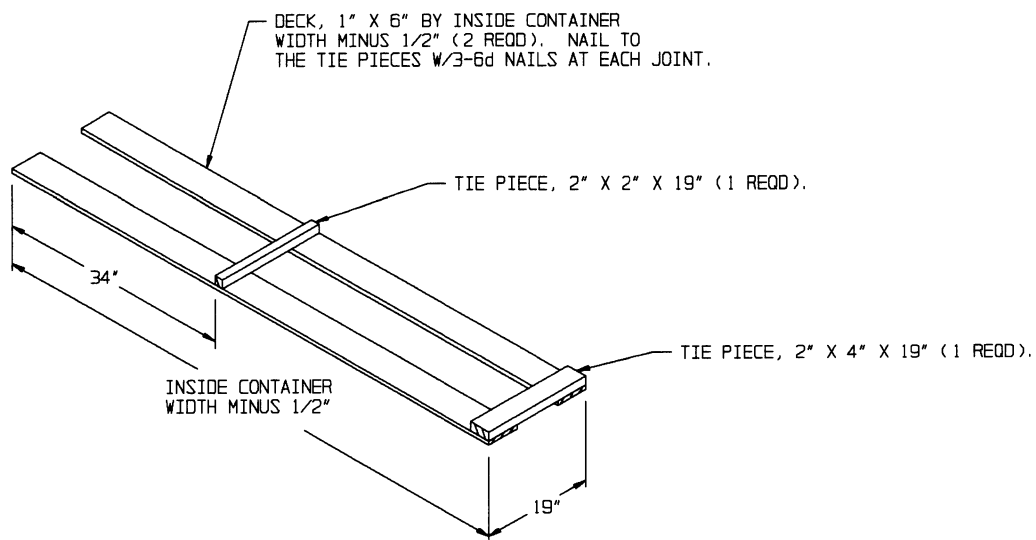


**FORWARD/REAR BLOCKING ASSEMBLY D**



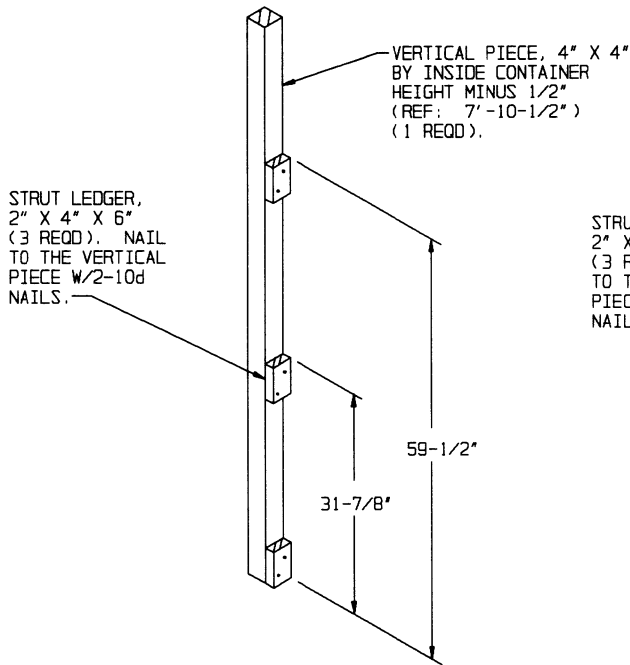
**RISER A**

THIS RISER IS FOR USE WITH THE 55-GALLON DRUM OR THE 80-GALLON DRUM. WHEN FABRICATING THIS RISER FIELD CHECK DIMENSIONS WITHIN THE LOAD TO ASSURE A FIT BETWEEN ROWS OF DRUMS.

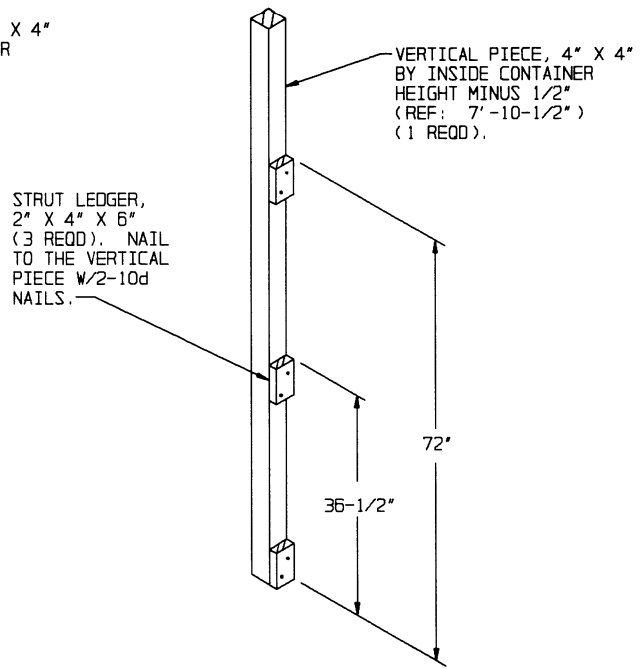


**DECK ASSEMBLY**

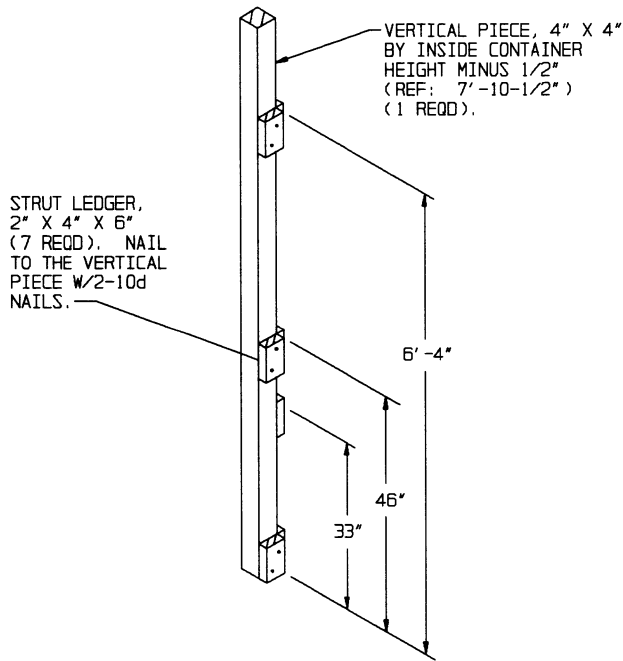
THIS ASSEMBLY IS FOR USE WITH THE 80-GALLON DRUM. WHEN FABRICATING THIS DECKING ASSEMBLY FIELD CHECK DIMENSIONS WITHIN THE LOAD TO ASSURE A FIT BETWEEN ROWS OF DRUMS.



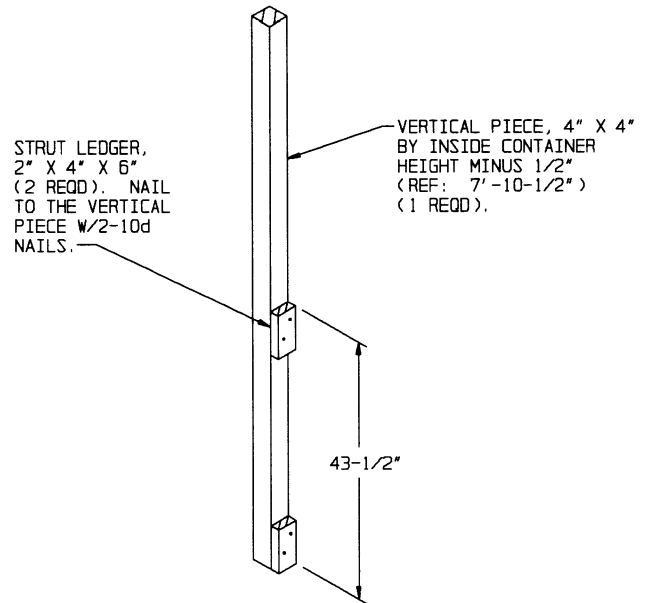
**DOOR POST VERTICAL A**



**DOOR POST VERTICAL B**



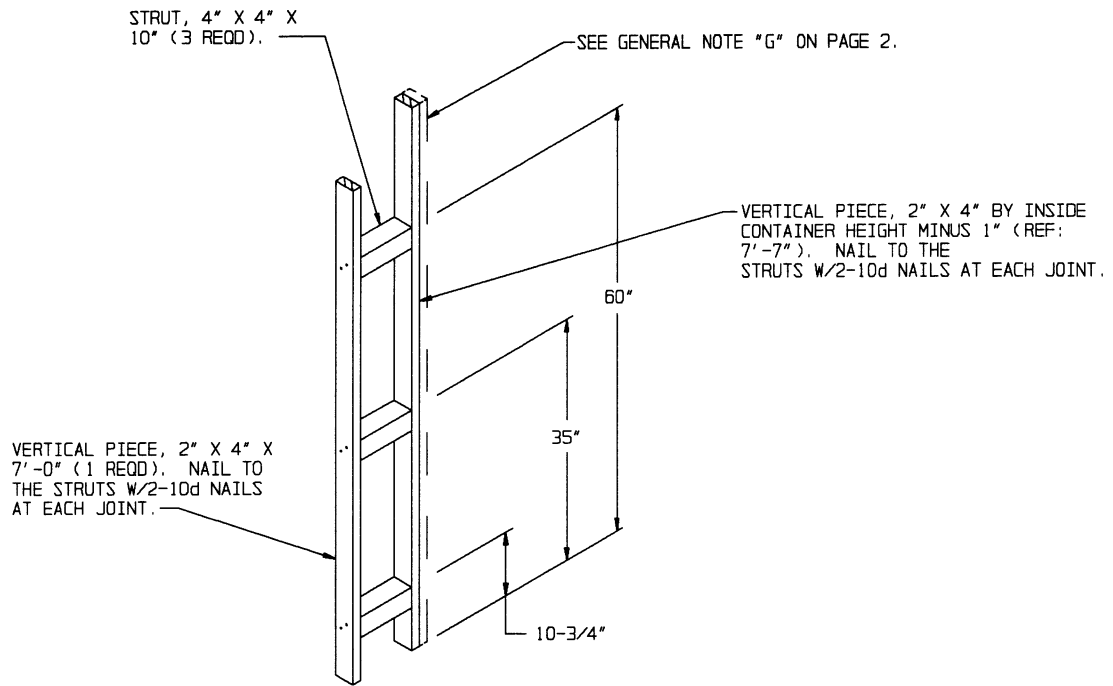
**DOOR POST VERTICAL C**



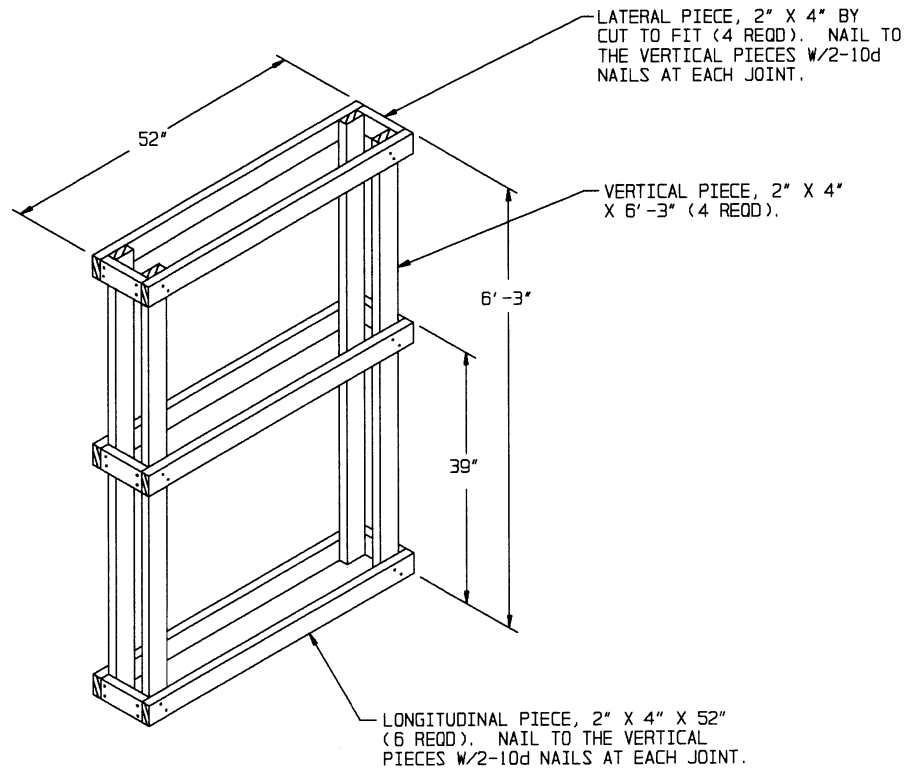
**DOOR POST VERTICAL D**

**NOTE:**

IF THE ISO CONTAINER TO BE LOADED IS NOT EQUIPPED WITH PRE-WELDED LOAD RETAINERS, THE DOOR POST VERTICAL MUST BE NAILED TO THE DOOR POST VERTICAL RETAINER. NAIL THROUGH THE HOLES IN THE DOOR POST VERTICAL RETAINER INTO THE DOOR POST VERTICAL W/4-10d NAILS.

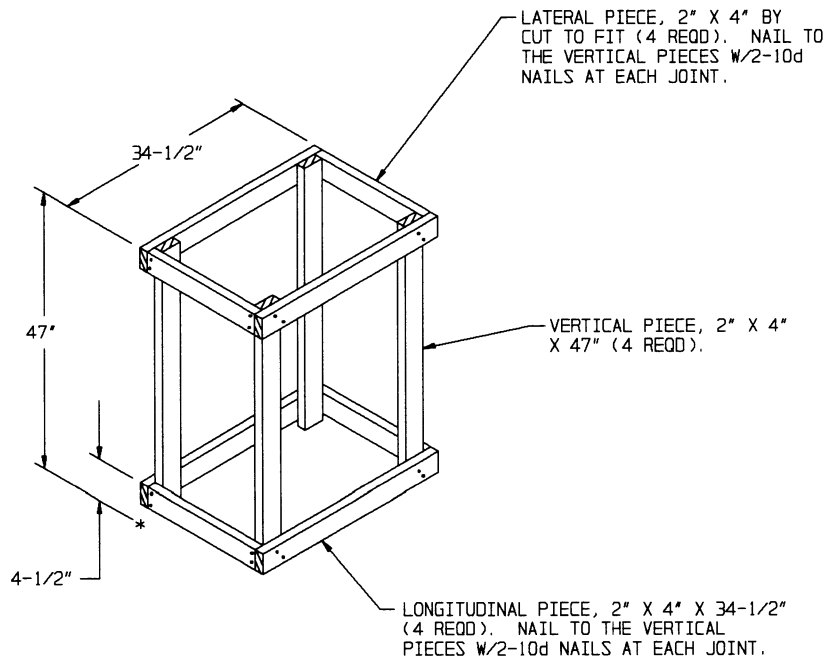


**FORWARD STRUT ASSEMBLY**

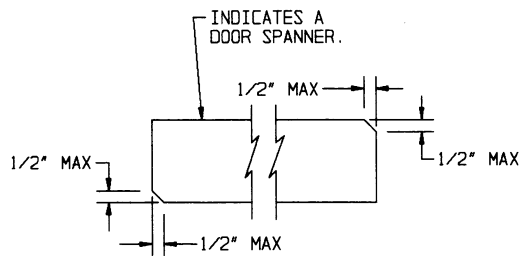


**CRIB FILL A**





**CRIB FILL B**

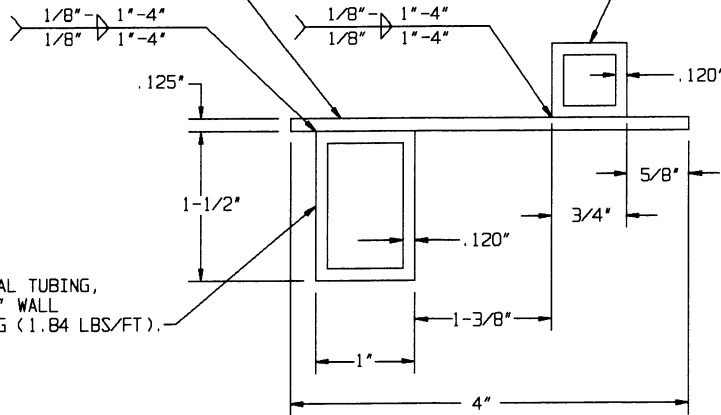


**BEVEL-CUT**

IF DESIRED, EACH END OF A DOOR SPANNER PIECE MAY BE BEVEL-CUT AS SHOWN ABOVE TO FACILITATE THE ACHIEVEMENT OF A TIGHT DOOR-POST-TO-DOOR-POST FIT.

STEEL STRIP, 1/8" THICK BY 4" WIDE  
BY 83" LONG (1.70 LBS/FT).

SQUARE STRUCTURAL TUBING, 3/4" SQUARE  
BY .120" WALL THICKNESS BY 83" LONG  
(1.03 LBS/FT).



RECTANGULAR STRUCTURAL TUBING,  
1-1/2" BY 1" BY .120" WALL  
THICKNESS BY 83" LONG (1.84 LBS/FT).

**VIEW A**

VIEW A  
SQUARE STRUCTURAL TUBING,  
3/4" SQUARE BY .120" WALL  
THICKNESS BY 83" LONG  
(1.03 LBS/FT).



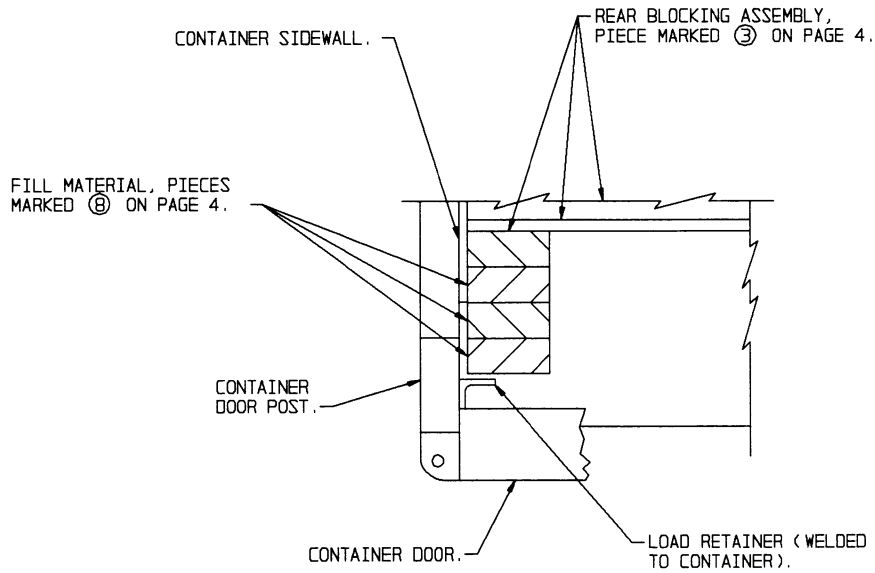
RECTANGULAR STRUCTURAL TUBING,  
1-1/2" BY 1" BY .120" WALL  
THICKNESS  
BY 83" LONG (1.84 LBS/FT).

DRILL 5/32", 4 HOLES.

STEEL STRIP, 1/8" THICK BY 4" WIDE  
BY 83" LONG (1.70 LBS/FT).

**DOOR POST VERTICAL RETAINER**

NOTE: THE ABOVE ASSEMBLY HAS BEEN SHOWN ROTATED 90° FROM THE ORIENTATION IN WHICH IT IS INSTALLED IN THE LEFT REAR CORNER OF THE CONTAINER. THE ASSEMBLY HAS BEEN ROTATED FOR HOLE LOCATION CLARITY.

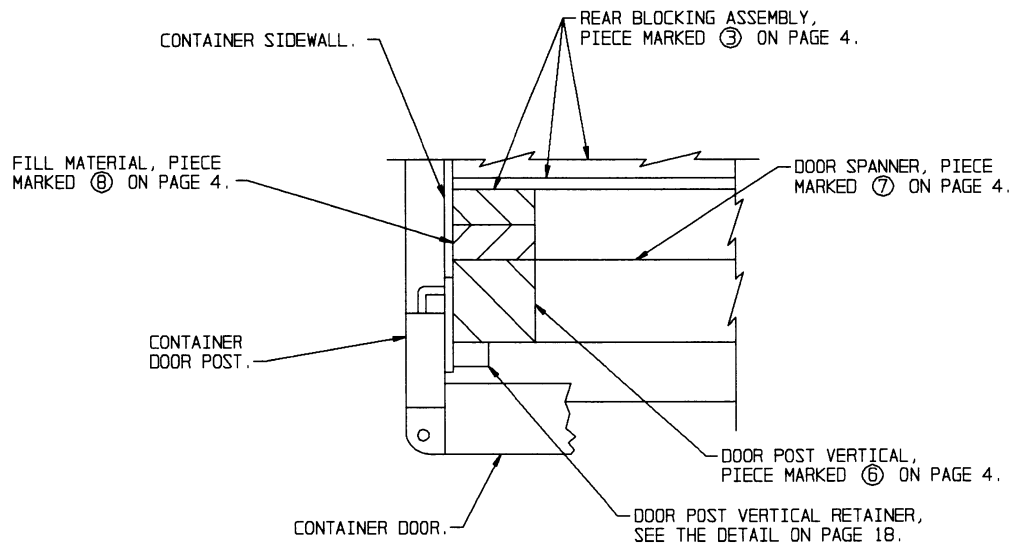


**DETAIL A**

A TYPICAL PARTIAL PLAN VIEW OF THE LEFT REAR PORTION OF THE CONTAINER IS SHOWN DEPICTING THE PROPER POSITION OF THE FILL MATERIAL AND ADJACENT DUNNAGE PIECES.

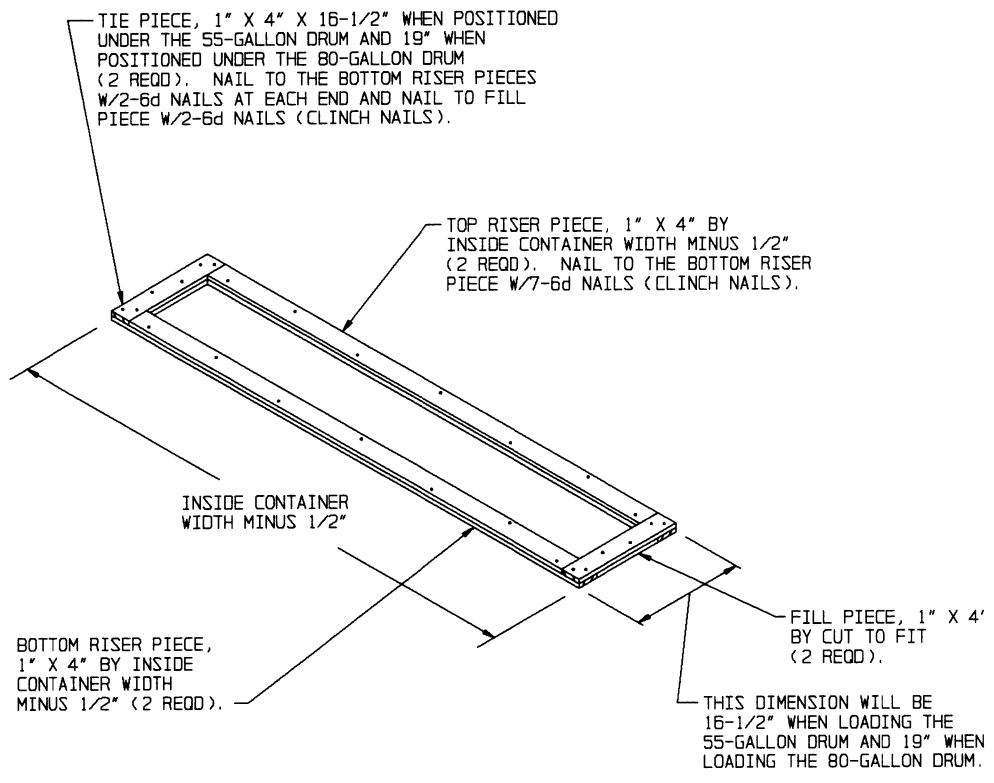
**SPECIAL NOTE:**

WHEN ISO CONTAINERS ARE NOT EQUIPPED WITH PRE-WELDED LOAD RETAINERS, AS DEPICTED IN "DETAIL A" ABOVE, DOOR POST VERTICALS, DOOR POST VERTICAL RETAINERS AND DOOR SPANNERS WILL BE REQUIRED FOR THE LOADS DEPICTED WITHIN THIS DRAWING. SEE PAGE 18 FOR DETAILS OF THE METAL DOOR POST VERTICAL RETAINER.



**DETAIL B**

A TYPICAL PARTIAL PLAN VIEW OF THE LEFT REAR PORTION OF THE CONTAINER IS SHOWN DEPICTING THE PROPER POSITION OF THE DOOR POST VERTICAL RETAINER AND ADJACENT DUNNAGE PIECES.



**ALTERNATIVE RISER ASSEMBLY**

THIS RISER IS FOR USE WITH THE 55-GALLON DRUM OR THE 80-GALLON DRUM. WHEN FABRICATING THIS RISER FIELD CHECK DIMENSIONS WITHIN THE LOAD TO ASSURE A FIT BETWEEN ROWS OF DRUMS. THIS ALTERNATIVE RISER ASSEMBLY MAY BE USED IN LIEU OF THE "RISER ASSEMBLY A" IF DESIRED OR IF THE 2" X 2" TIE PIECE SPLITS WHEN NAILING.