APPROVED BY
BUREAU OF EXPLOSIVES

Ja Haraman DATE 5/13/94

TOW

LOADING AND BRACING WITH WOODEN DUNNAGE IN SIDE OPENING ISO CONTAINERS OF GUIDED MISSILES, PACKED ONE PER WIREBOUND BOX, PALLETIZED AND UNPALLETIZED

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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 MISSILE COMMAND	DRAFT	SMAN	TECHNICIAN	ENGINEER	
				G. GUAY		
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	APPROVED BY ORDER OF COMMANDING GENERAL, U.S.	VALIDAT ENGINEE DIVIST	RING	TRANSPORTATION ENGINEERING DIVISION	LOGISTICS ENGINEERING OFFICE	
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			DECEMBER 1993			
	U.S. ARMY DEFENSE AMMUNITION TENTER AND SCHOOL	CLASS	DIVISION	DRAWING	FILE	
		19	48	8206	GM15T04	

DO NOT SCALE

GENERAL NOTES

- THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE TO THE TOW GUIDED MISSILE PACKED ONE PER WIREBOUND CONTAINER (OVERPACK). SUBSECUENT REFERENCE TO CONTAINER HEREIN MEANS THE CONTAINER WITH MISSILE COMPONENTS. SUBSECUENT REFERENCE TO PALLET UNIT MEANS THE 3-WIDE BY 4-HIGH PALLET UNIT OR THE 4-WIDE BY 3-HIGH PALLET UNIT WITH CONTENTS. CAUTION: REGARDLESS OF THE OUANTITY OF UNITS TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF THE CONTAINER MUST NOT BE EXCEEDED.
- FOR DETAILS OF THE WIREBOUND CONTAINER, SEE DRAWING NO. 10224699 AND THE "WIREBOUND CONTAINER" DETAIL ON PAGE 3.

CONTAINER DIMENSIONS - - - 58-1/2" LONG X 11-5/8" WIDE X 11-5/8" HIGH (APPROX).

GROSS WEIGHT - - - - - - - 87 POUNDS (APPROX).

FOR DETAILS OF THE PALLETIZED UNITS, SEE U.S. ARMY MATERIEL COMMAND DRAWING NO. 19-48-5229-GM20TOL AND THE "PALLET UNIT" DETAILS ON PAGE 3.

3-WIDE BY 4-HIGH PALLET UNIT DIMENSIONS - - - - 35-1/4" LONG X 58-1/4" VIDE X 51-1/4" HIGH (APPROX). GROSS WEIGHT -----1,112 POUNDS (APPROX) CUBE - - - - - - - - 60.9 CUBIC FEET (APPROX).

4-WIDE BY 3-HIGH PALLET UNIT DIMENSIONS - - - - 58-1/4" LONG X 48" WIDE X 39-3/4" HIGH (APPROX).
GROSS WEIGHT - - - - - 1,126 POUNDS (APPROX). CUBE - - - - - - - - 64.3 CUBIC FEET (APPROX).

- THESE PROCEDURES CAN ALSO BE UTILIZED FOR THE SHIPMENT OF THE CONTAINERS WHEN THEY ARE LOADED WITH AN ITEM OTHER THAN THE SPECIFIED GUIDED MISSILE, OR WHEN THEY ARE EMPTY.
- THE LOADS AS SHOWN ARE BASED ON 6,050 POUND 20' LONG BY THE LOADS AS SHOWN ARE BASED ON 6,050 POUND 20 LONG BY BY BY-6" HIGH SIDE OPPNING ISO CONTAINER WITH INSIDE DIMENSIONS OF 19'-4" LONG BY B9" WIDE BY B8" HIGH 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 MOTOR OR WATER CARRIERS. NOTICE: OTHER CONTAINERS OF THE SAME DESIGN CONFIGURATION CAN ALSO BE USED.
- WHEN LOADING THE UNITS, 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 DUNNAGE ASSEMBLIES. NAIL EACH ADDITIONAL PIECE W/1 APPROPRIATELY SIZED NAIL EVERY 12". ADDITIONALLY, THE THICKNESS AND QUANTITY OF THE DUNNAGE LUMBER USED MAY BE ADJUSTED AS REQUIRED TO FACILITATE VARIANCE IN THE STZF OF THE LANTHE INIT FACILITATE VARIANCE IN THE SIZE OF THE LADING UNIT.
- 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.
- 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.

(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

SEE TM 743-200-1 (DUNNAGE LUMBER) AND LUMBER - - - - - -: FED SPEC MM-L-751.

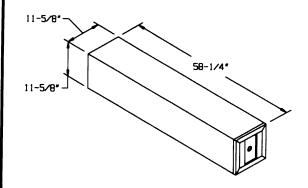
NAILS ----: FED SPEC FF-N-105; COMMON.

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 PLYW000 ----:

EXTERIOR GRADE MAY BE SUBSTITUTED

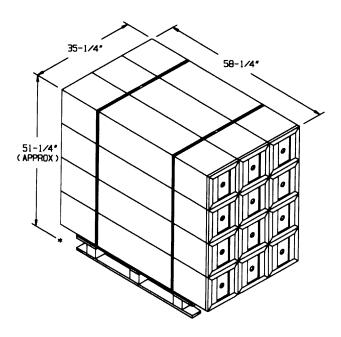
(GENERAL NOTES CONTINUED)

- IN SOME CONTAINERS THERE IS A SLOT AT THE CORNERS OF THE ENDWALLS. A PIECE OF DUNNAGE MATERIAL MUST BE LAMINATED TO THE BUFFER PIECES OF END BLOCKING ASSEMBLY "C" TO PROVIDE A FLAT SURFACE FOR THE 2" X 4" BUFFER PIECES. A HAUVIUE A HLAI SUMFALE FOR THE 2" X 4" BUFFER FIELES. 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 ENDWALL OF THE CONTAINER IS THIS PIECE SMOOTH AND FLAT.
- CAUTION: DO NOT NAIL DUNNAGE MATERIAL TO THE CONTAINER WALLS OR FLOOR. ALL NAILING WILL BE WITHIN THE DUNNAGE.
- M. PORTIONS OF THE CONTAINER DEPICTED WITHIN THIS DRAWING, SUCH AS THE SIDE DOORS, HAVE NOT BEEN SHOWN IN THE LOAD VIEW FOR CLARITY PURPOSES.
- 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. REQUIREMENTS CITED WITHIN THE BUREAU OF EXPLOSIVES PAMPHLET OF APPLY WHEN THE SHIPMENT MOVES BY TRAILER/CONTAINER-ON-FLATCAR (T/COFC). SPECIAL T/COFC NOTES
 - A LOADED CONTAINER MUST BE ON A CHASSIS EQUIPPED WITH TWO BOGIE ASSEMBLIES WHEN BEING MOVED IN TOFC
 - 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.
- P. 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.
- THE QUANTITY OF LADING UNITS SHOWN IN THE LOADS MAY BE REDUCED FOR SHIPMENT, IF DESIRED. 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
 - 1. IF THE LOAD ON PAGE 4 IS TO BE REDUCED, SEE THE "OMITTED UNIT ASSEMBLY A" DETAIL ON PAGE 16. IF THE LOAD ON PAGE 8 IS TO BE REDUCED, SEE THE "OMITTED CONTAINER ASSEMBLY B" DETAIL ON PAGE 16. CONTAINERS MUST BE OMITTED FROM THE TOP LAYER ONLY FOR THE LOAD
 - 2. IF THE LOAD ON PAGE 6 IS TO BE REDUCED, PALLET UNITS IF THE LOAD ON PALE 5 IS TO BE REDUCED, PALLET UNITS SHOULD BE ELIMINATED AS REQUIRED AND THE TOTAL LOAD 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.

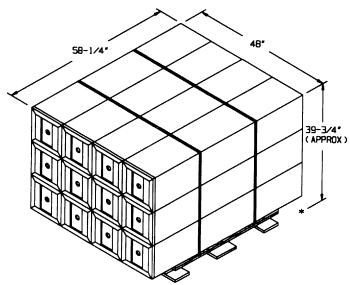


WIREBOUND CONTAINER

GROSS WEIGHT ----- 87 LBS (APPROX)

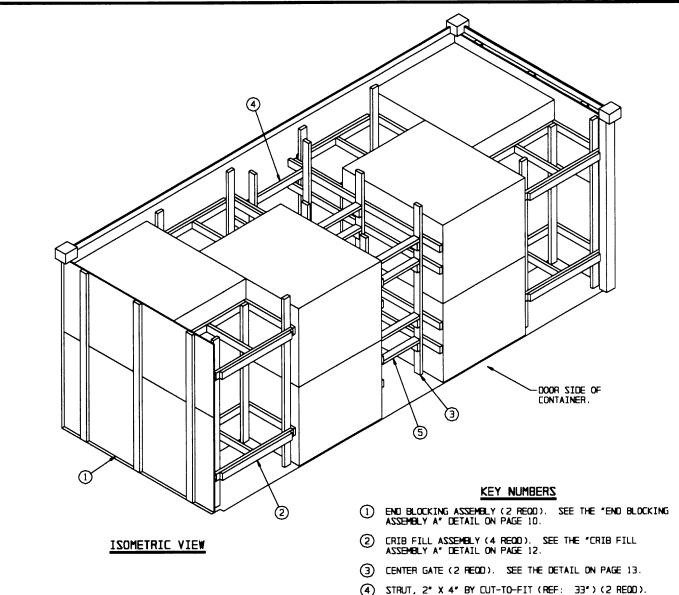


PALLET UNIT (3-WIDE BY 4-HIGH)



PALLET UNIT (4-WIDE BY 3-HIGH)

CONTAINER AND PALLET UNIT DETAILS



- (4) STRUT, 2" X 4" BY CUT-TO-FIT (REF: 33") (2 REQD). POSITION AT THE SAME HEIGHTS AS THE TOP AND BOTTOM HORIZONTAL PIECES OF PIECE MARKED (3) AND NAIL TO THE VERTICALS OF PIECE MARKED (3) W/2-10d NAILS AT EACH END.
- (5) STRUT, 2" X 4" BY CUT-TO-FIT (REF: 30") (8 REOD).
 NAIL TO PIECE MARKED (3) W/2-104 NAILS AT EACH END.

RECOMMENDED SEQUENTIAL LOADING PROCEDURES

- 1. PREFABRICATE TWO END BLOCKING ASSEMBLIES A, FOUR CRIB FILL ASSEMBLIES A AND TWO CENTER GATES.
- 2. INSTALL ONE END BLOCKING ASSEMBLY, LOAD TWO PALLET UNITS AND INSTALL ONE CRIB FILL ASSEMBLY.
- 3. REPEAT STEP 2.
- 4. INSTALL ONE CRIB FILL ASSEMBLY AND LOAD TWO PALLET UNITS.
- 5. REPEAT STEP 4.
- 6. INSTALL TWO CENTER GATES WITH STRUTS.

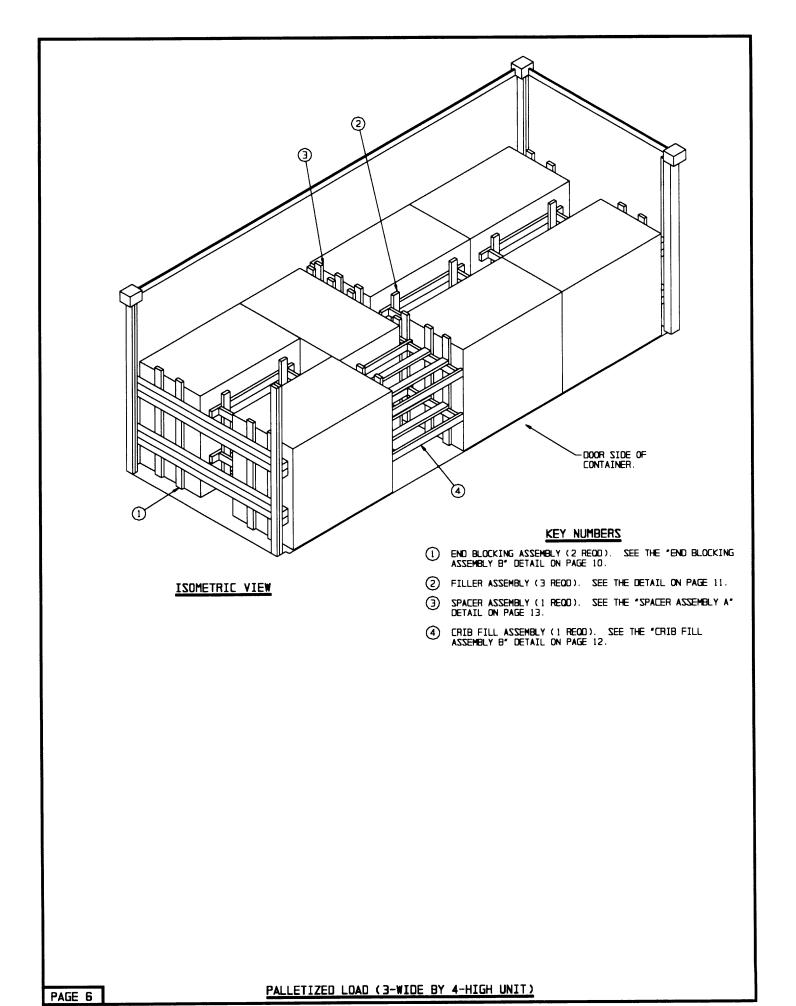
BILL OF MATERIAL			
LUMBER	LINEAR FEET	BOARD FEET	
2" X 4"	420	290	
NAILS	NO. REQD	20NU09	
6d (2°) 10d (3°)	60 316	1/2 5	
PLYW000, 1/2" 101.53 S0 FT RE00 139.60 LBS			

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ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT DUNNAGE CONTAINER		705 LBC

TOTAL WEIGHT - - - - - - 15,763 LBS (APPROX)

PALLETIZED LOAD (4-WIDE BY 3-HIGH UNIT)



RECOMMENDED SEQUENTIAL LOADING PROCEDURES

- PREFABRICATE TWO END BLOCKING ASSEMBLIES B, THREE FILLER ASSEMBLIES, ONE SPACER ASSEMBLY A AND ONE CRIB FILL ASSEMBLY B.
- INSTALL ONE END BLOCKING ASSEMBLY, LOAD TWO PALLET UNITS AND ONE FILLER ASSEMBLY.
- 3. REPEAT STEP 2.
- 4. LOAD TWO PALLET UNITS AND ONE FILLER ASSEMBLY.
- 5. LOAD ONE PALLET UNIT AND INSTALL THE SPACER ASSEMBLY AND CRIB FILL ASSEMBLY.

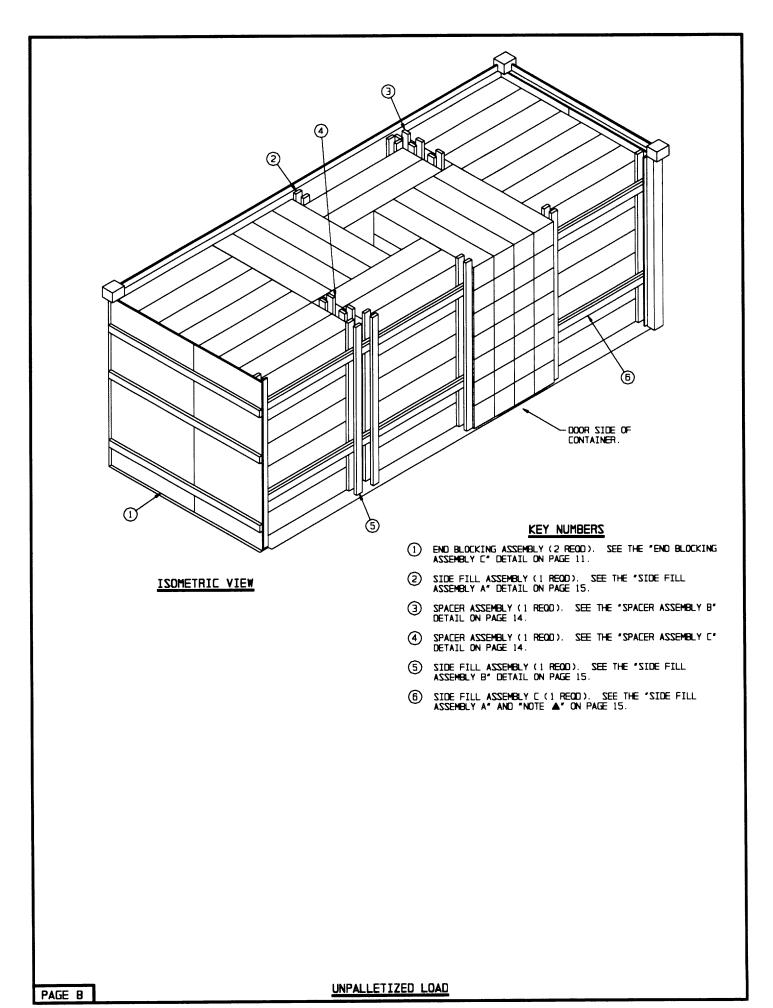
BILL OF MATERIAL			
Lumber	LINEAR FEET	BOARD FEET	
2" X 4" 4" X 4"	333 57	222 76	
NAILS	NO. REOD	POUNDS	
10d (3°)	382	6	

LDAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT DUNNAGE CONTAINER -		- 7,784 LBS - 602 LBS - 6,050 LBS

TOTAL WEIGHT - - - - - - 14,436 LBS (APPROX)

PALLETIZED LOAD (3-WIDE BY 4-HIGH UNIT)



RECOMMENDED SEQUENTIAL LOADING PROCEDURES

- PREFABRICATE TWO END BLOCKING ASSEMBLIES C, ONE SIDE FILL ASSEMBLY A, ONE SPACER ASSEMBLY B, ONE SPACER ASSEMBLY C, ONE SIDE FILL ASSEMBLY B AND ONE SIDE FILL ASSEMBLY C.
- INSTALL ONE END BLOCKING ASSEMBLY AND LOAD FORTY-NINE WIREBOUND CONTAINERS.
- 3. REPEAT STEP 2.
- 4. LOAD TWENTY-EIGHT WIREBOUND CONTAINERS.
- 5. INSTALL SIDE FILL ASSEMBLY A, LOAD FOURTEEN VIREBOUND CONTAINERS AND INSTALL SPACER ASSEMBLY 8.
- 6. LOAD FORTY-TWO WIREBOUND CONTAINERS AND INSTALL SPACER ASSEMBLY C.
- 7. INSTALL SIDE FILL ASSEMBLIES B AND C.

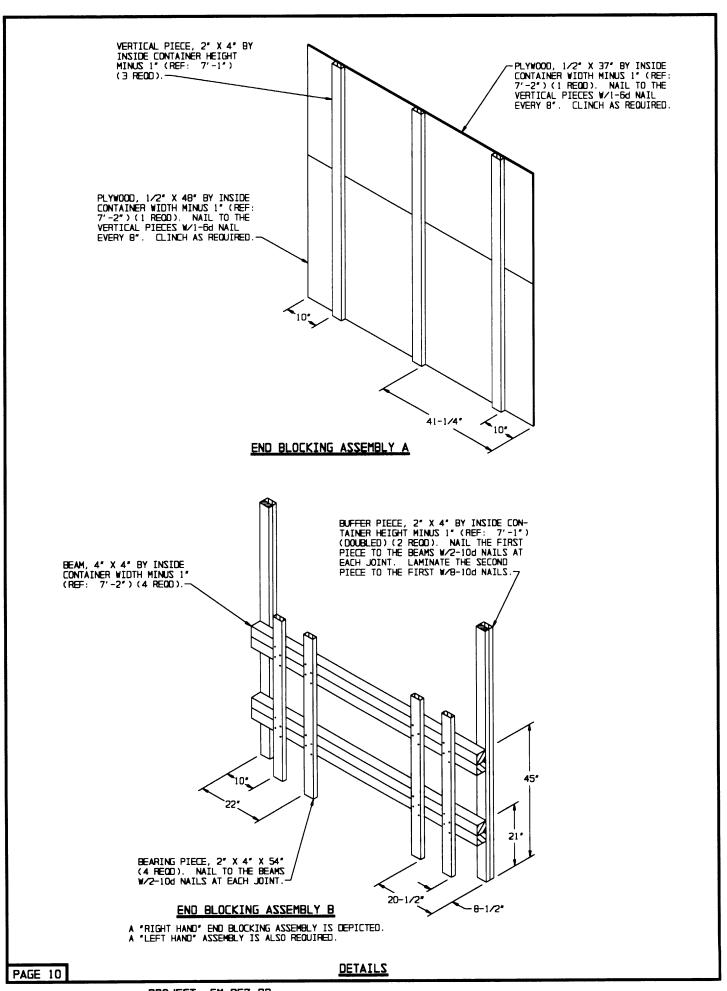
BILL OF MATERIAL			
LUMBER	LINEAR FEET	BOARD FEET	
1" X 4" 2" X 4"	14 327	5 218	
NAILS	NO REOD	ZONUOS	
6d (2°) 10d (3°)	80 189	1/2 3	
PLYW000, 3/4" 101.53 S0 FT RE00 209.40 LBS			

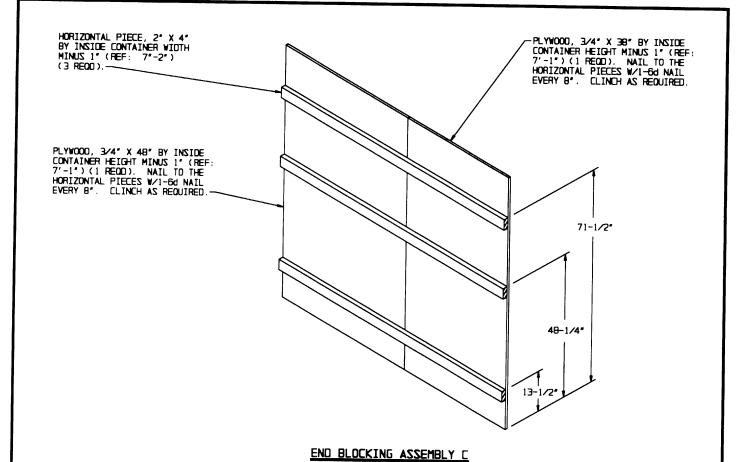
LOAD AS SHOWN

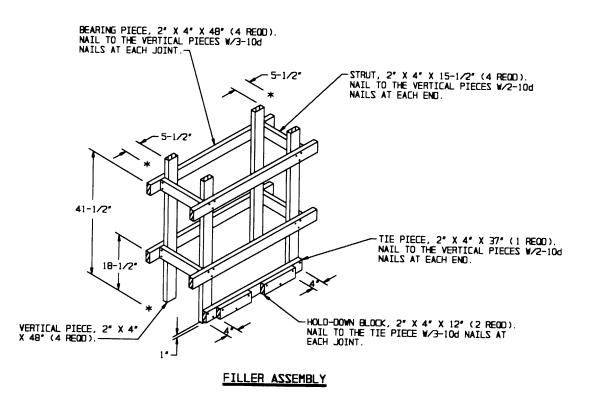
ITEM	QUANTITY	WEIGHT (APPROX)
VIREBOUND CONTAINER DUNNAGE CONTAINER		650 I BC

TOTAL WEIGHT - - - - - 22,543 LBS (APPROX)

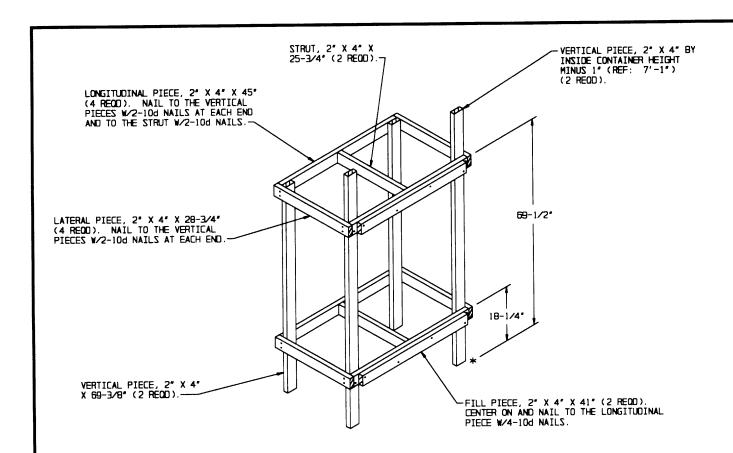
UNPALLETIZED LOAD



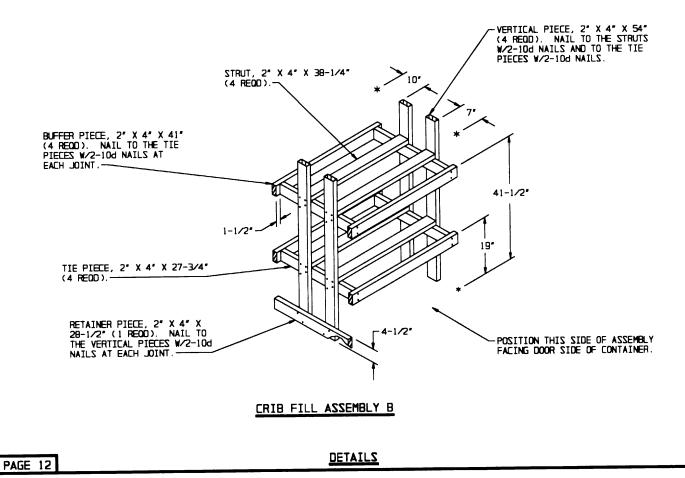


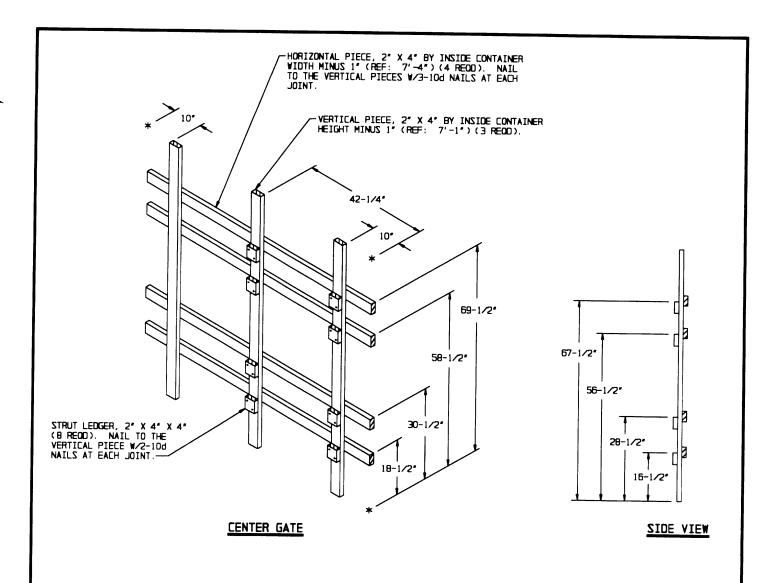


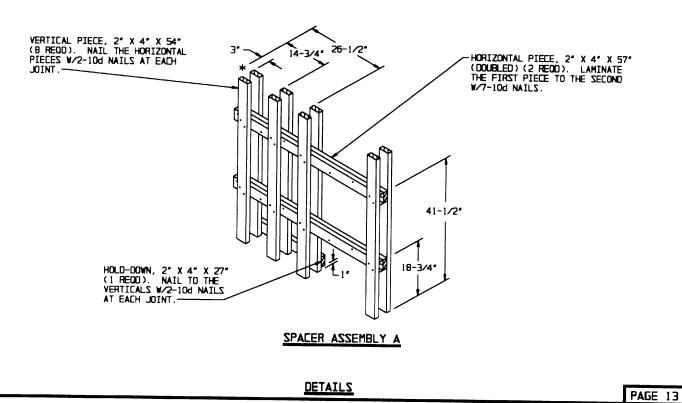
DETAILS

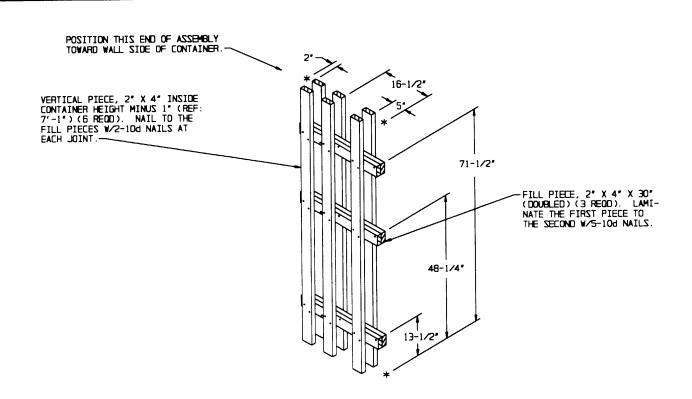


CRIB FILL ASSEMBLY A



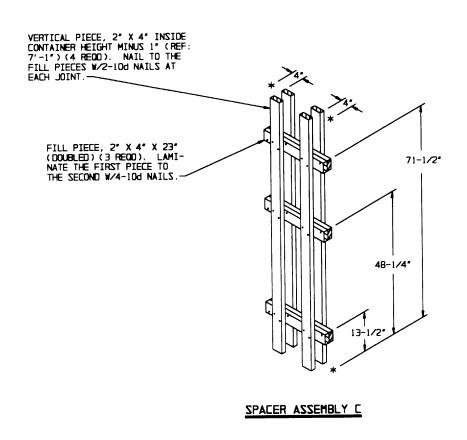


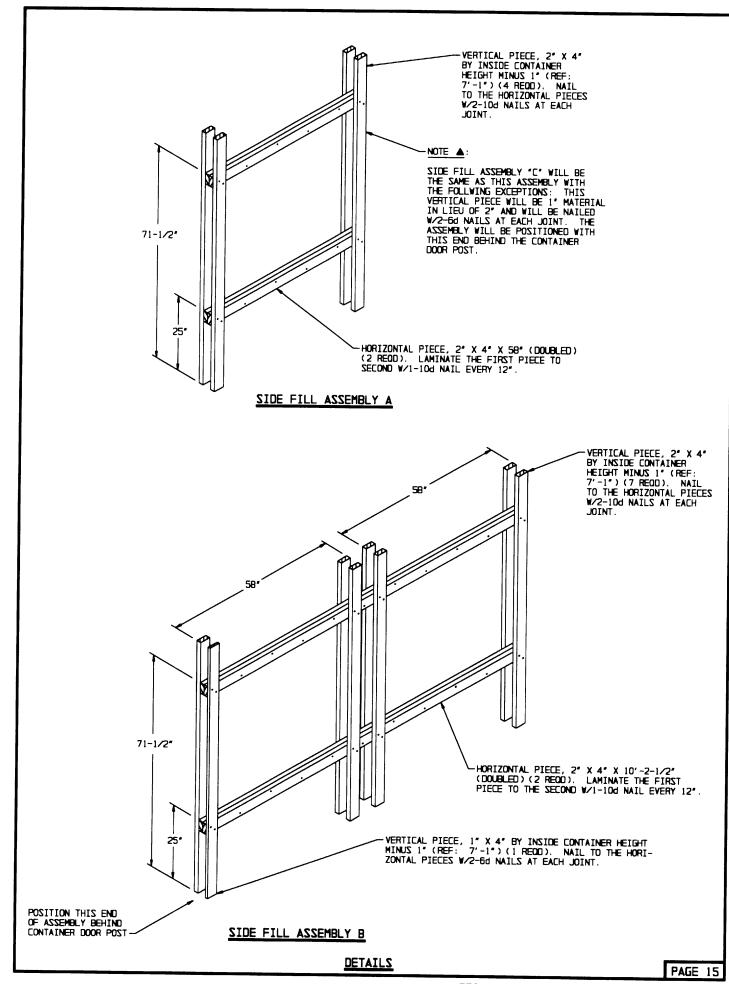


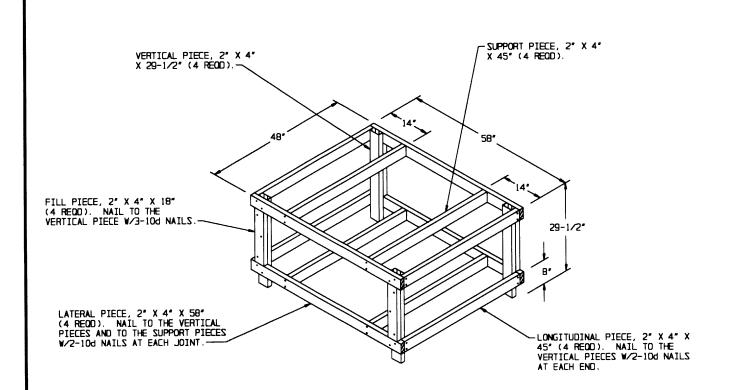


SPACER ASSEMBLY B

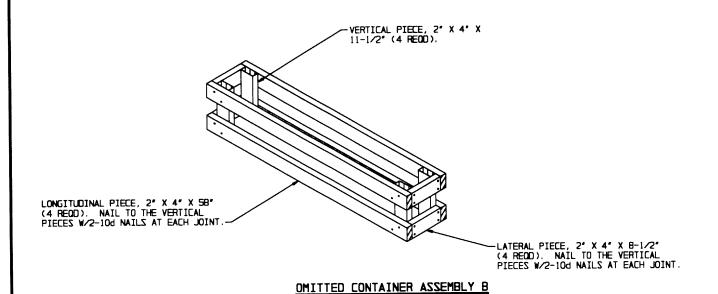
DETAILS







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DETAILS