APPROVED BY BUREAU OF EXPLOSIVES

DATE 5/13/94

SHILLELAGH

LOADING AND BRACING WITH WOODEN DUNNAGE IN SIDE OPENING ISO CONTAINERS OF GUIDED MISSILES, PACKED IN THE M555 CONTAINER, PALLETIZED AND UNPALLETIZED

INDEX

<u>ITEM</u>	PAGE(S)
GENERAL NOTES AND MATERIAL SPECIFICATIONS	2
CONTAINER AND PALLET UNIT DETAILS	3
UNPALLETIZED CONTAINER LOAD	4, 5
PALLETIZED UNIT LOAD	6, 7
DETAILS	10-12

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 MATERIE	EL C	OMM	AND DF	RAWING	
APPROVED, U.S. ARMY MISSILE COMMAND	DRAFT	NAMZ	TECHNICIAN	ENGINEER	
Quil Rothy			G. GUAY	7	
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND	VALIDAT ENGINEE DIVIST	RING	TRANSPORTATION ENGINEERING DIVISION	LOGISTICS ENGINEERING OFFICE	
John Hogeld	0	NC NC		1993	
U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL	CLASS	OIZIVIO	N DRAWING	FILE	
	19	48	8205	GM15SH3	

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 APPLICABLE TO LOADS OF SHILLELAGH GUIDED MISSILE PACKED IN THE M555 CONTAINER. SUBSEQUENT REFERENCE TO CONTAIN APPLICABLE TO LOADS OF SHILLELAGH GUIDED MISSILE PACKED IN THE MS55 CONTAINER. SUBSEQUENT REFERENCE TO CONTAINER MEANS THE MS55 CONTAINER WITH CONTENTS. ALSO, SUBSEQUENT REFERENCE TO PALLET UNIT MEANS THE PALLET UNIT OF NINE MS55 CONTAINERS WITH CONTENTS. CAUTION: REGARDLESS OF THE QUANTITY OF UNITS TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF THE CONTAINER MUST NOT BE EXCEEDED.
- FOR DETAILS OF THE M555 CONTAINER, SEE DRAWING NO. 8034969 AND THE "CONTAINER" DETAIL ON PAGE 3.

CONTAINER DIMENSIONS - - - 52-1/2" LONG X 14-3/4" WIDE X 14-3/4" HIGH (APPROX).

GROSS WEIGHT - - - - - - 116 POUNDS (APPROX).

D. FOR DETAILS OF THE PALLETIZED M555 CONTAINER, SEE U.S. ARMY MATERIEL COMMAND DRAWING NO. 19-48-5225-GM20SH1 AND THE "PALLET UNIT" DETAIL ON PAGE 3.

PALLETIZED UNIT DIMENSIONS - - - - - 45" LONG X 52-1/2" WIDE X 51-1/2" HIGH (APPROX).
GROSS WEIGHT - - - - - 1,167 POUNDS (APPROX).
CUBE - - - - - - - 70.5 CUBIC FEET.

- 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
- THE LOADS AS SHOWN ARE BASED ON 6,050 POUND 20' LONG BY HE LUAUS AS SHOWN ARE BASED ON BY USO POUND 20" LUNG BY B' WIDE BY B' -6" HIGH SIDE OPENING ISO CONTAINER WITH INSIDE DIMENSIONS OF 19" -4" LONG BY 89" WIDE BY 88" 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 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 SIDE FILL OR FILLER ASSEMBLIES. NAIL EACH ADDITIONAL PIECE TO THE FILL PIECE W/I APPROPRIATELY SIZED NAIL EVERY 12". ADDITIONALLY, THE THICKNESS AND QUANTITY OF THE DUNNAGE LUMBER USED MAY BE ADDITIONAL OF AS DECURED TO ACCUST ASSEMBLY. ADJUSTED AS REQUIRED TO 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 2" X 6" MATERIAL IS ACTUALLY 1-1/2" BY 5-1/2" 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

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

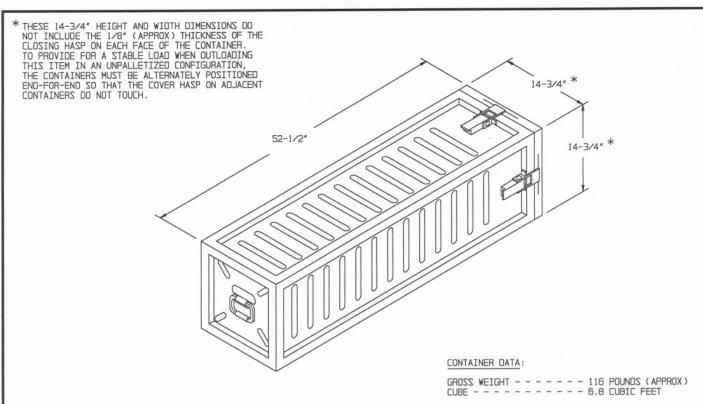
NAILS - - - - - : FED SPEC FF-N-105; COMMON.

COMMERCIAL ITEM DESCRIPTION A-A-S5057, TYPE A, CONSTRUCTION AND INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE C-D. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER INTERIOR OF AN EXTERIOR GRADE MAY BE SUBSTITUTED. MAY BE SUBSTITUTED.

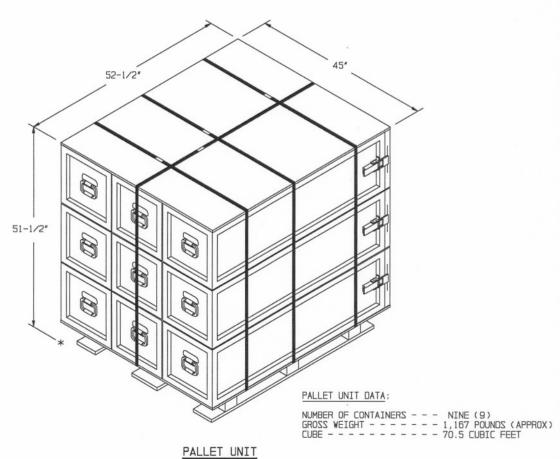
WIRE, CARBON STEEL -: ASTM AB53; ANNEALED AT FINISH, BLACK OXIDE FINISH, .0800" DIA, GRADE 1006 OR BETTER.

(GENERAL NOTES CONTINUED)

- K. 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 THE END BLOCKING ASSEMBLY TO PROVIDE A FLAT SURFACE FOR THE 1" X 4" OR 2" X 4" 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 ENDWALL OF THE CONTAINER ZIHT IS SMOOTH AND FLAT.
- L. <u>CAUTION</u>: 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.
- 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
- O. 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
 - 1. A LOADED CONTAINER MUST BE ON A CHASSIS EQUIPPED WITH TWO BOGIE ASSEMBLIES WHEN BEING MOVED IN TOFC
 - 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.
- Q. 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 CONTAINER.
 - 1. IF THE LOAD ON PAGE 4 IS TO BE REDUCED, SEE THE "OMITTED CONTAINER ASSEMBLY" DETAIL ON PAGE 12. UNITS MUST BE OMITTED FROM THE TOP LAYER ONLY.
 - 2. IF THE LOAD ON PAGE 6 IS TO BE REDUCED, PALLET UNITS SHOULD BE ELIMINATED FROM THE CENTER OF THE LOAD AS REQUIRED AND THE TOTAL LOAD SHIFTED FORE OR AFT, AS NECESSARY, TO ACHIEVE A SYMMETRICAL WEIGHT DISTRIBU-TION. 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.

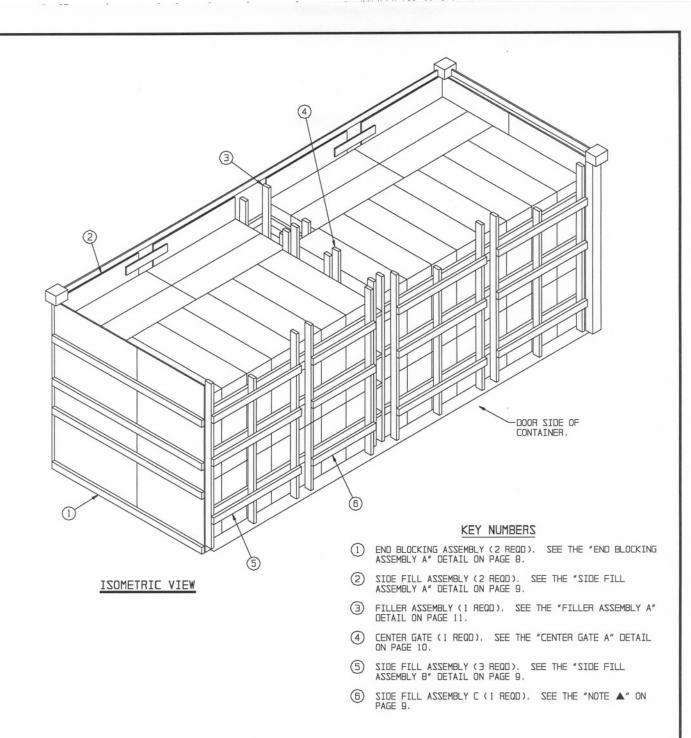


CONTAINER



TALLET GITT

CONTAINER AND PALLET UNIT DETAIL



RECOMMENDED SEQUENTIAL LOADING PROCEDURES

- PREFABRICATE TWO END BLOCKING ASSEMBLIES "A", ONE FILLER ASSEMBLY "A", ONE CENTER GATE "A", TWO SIDE FILL ASSEMBLIES "A", THREE SIDE FILL ASSEMBLIES "B" AND ONE SIDE FILL ASSEMBLY "C".
- 2. INSTALL ONE END BLOCKING ASSEMBLY, ONE SIDE FILL ASSEMBLY "A" AND LOAD 20 CONTAINERS.
- 3. REPEAT STEP 2.
- 4. INSTALL THE FILLER ASSEMBLY.
- 5. LOAD THIRTY-FIVE CONTAINERS.
- 6. LOAD FORTY CONTAINERS.
- 7. INSTALL THE CENTER FILL ASSEMBLY, THREE SIDE FILL ASSEMBLIES "B" AND ONE SIDE FILL ASSEMBLY "C".

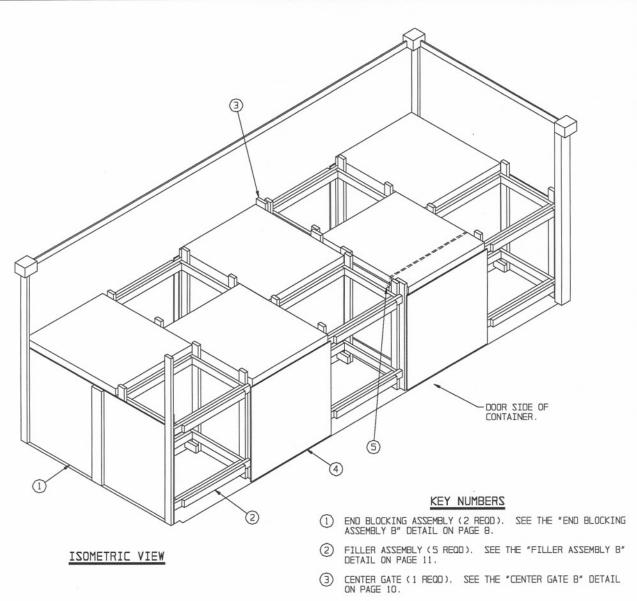
BILL OF MATERIAL											
LUMBER	LINEAR FEET	BOARD FEET									
2" X 4"	462	308									
NAILS	NO. REOD	SDNDO									
6d (2") 10d (3")	516 692	3 10-3/4									
PLYW00D, 1/2"	- 216.14 SQ FT RE	QD 297.26 LBS									

NWOHZ ZA DAOJ

ITEM						QUANTITY									WEIGHT	(APPROX)
CONTAINERS		_	_	-	_	-	11	15	-	_	_	_	-	_	13,340	LBZ
DUNNAGE -	-	-	-	-	-	-	-	-	-	-	-	_	-	-	772	LBS
CONTAINER	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6,050	LB2

TOTAL WEIGHT - - - - - - 20,162 LBS (APPROX)

UNPALLETIZED CONTAINER LOAD



- 4 SIDE FILL ASSEMBLY (5 REOD). SEE THE "SIDE FILL ASSEMBLY C" DETAIL ON PAGE 12.
- (5) TIE WIRE, NO. 14 GAGE WIRE 18" LONG (2 REQD). INSTALL TO FORM A COMPLETE LOOP AROUND THE TOP HORIZONTAL PIECE OF PIECE MARKED (3) AND A PALLET UNIT STRAP, ONE AT EACH END. BRING END TOGETHER AND TWIST TAUT.

RECOMMENDED SEQUENTIAL LOADING PROCEDURES

- 1. PREFABRICATE TWO END BLOCKING ASSEMBLIES "B", FIVE FILLER ASSEMBLIES "B", ONE CENTER GATE "B" AND FIVE SIDE FILL ASSEMBLIES "C".
- 2. INSTALL ONE END BLOCKING ASSEMBLY, ONE SIDE FILL ASSEMBLY, LOAD ONE PALLET UNIT AND INSTALL ONE FILLER
- 3. REPEAT STEP 2.
- 4. INSTALL ONE FILLER ASSEMBLY, LOAD ONE PALLET UNIT AND INSTALL ONE SIDE FILL ASSEMLBY.
- 5. REPEAT STEP 4.
- 6. INSTALL ONE SIDE FILL ASSEMBLY, LOAD ONE PALLET UNIT AND INSTALL THE CENTER GATE WITH TIE WIRES AND ONE FILLER ASSEMBLY.

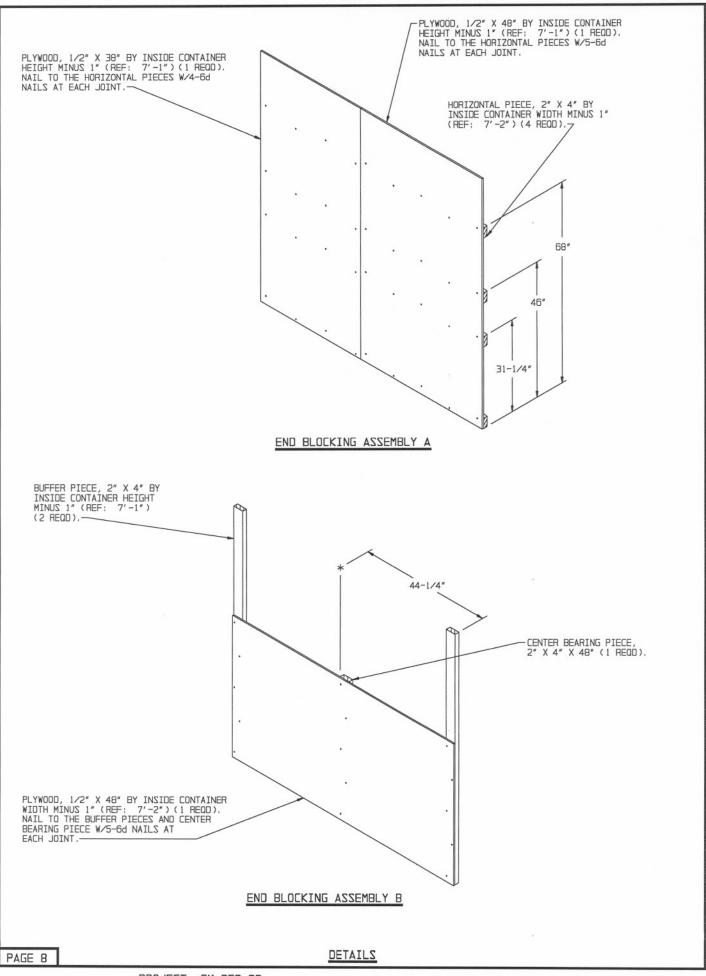
BILL OF MATERIAL											
LUMBER	LINEAR FEET	BOARD FEET									
1" X 4" 2" X 4" 2" X 6"	15 363 18	5 242 18									
NAILS	NO. REQD	ZONUOP									
6d (2") 10d (3")	69 320	1/2 5									
WIRE, NO. 14 GAG		OD NIL									

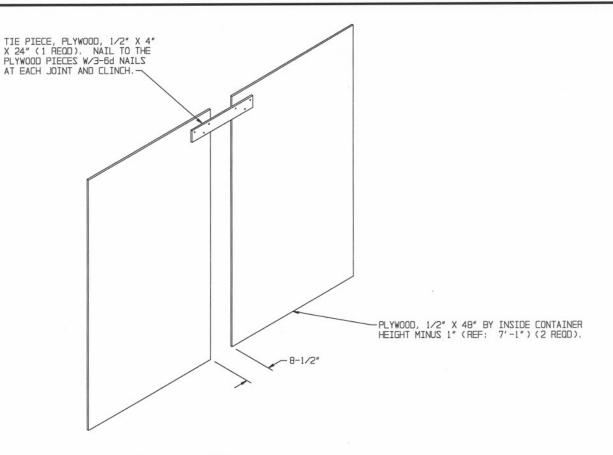
PLYWOOD 1/2" - - - 137.33 SQ FT REQD - 188.82 LBS

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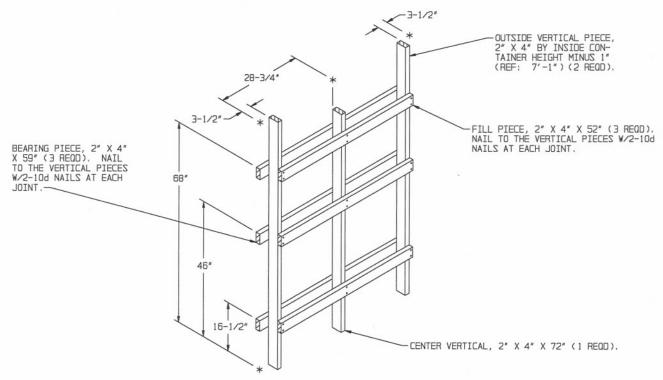
ITEM						QUANTITY									WEIGHT	(APF	PROX)	
PALLET UNIT		-	-	-	-	-	5	5	_	-	-	-	-	-	5,835	LBS		
DUNNAGE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	724	LB2		
CONTAINER -		-	-	-	-	-	-	-	-	-	-	-	-	-	6,050	LB2		
TO	T	AL	. 1	VE:	IG	н	-	-	-	-	-	-	-		12,609	LBZ	(APPRO	(X(

PALLETIZED CONTAINER LOAD





SIDE FILL ASSEMBLY A

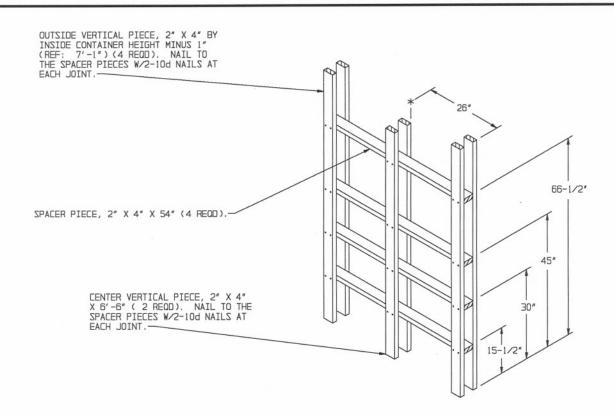


NOTE ▲:

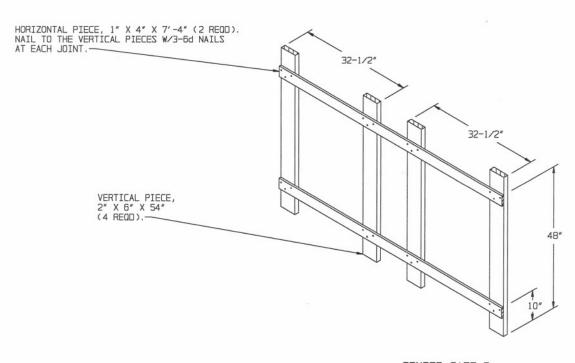
"SIDE FILL ASSEMBLY C", PIECE MARKED (6)
ON PAGE 4, WILL BE IDENTICAL TO "SIDE FILL
ASSEMBLY B" WITH THE FOLLOWING EXCEPTIONS:
THE CENTER FILL PIECE WILL BE DELETED, THE
BEARING PIECES WILL BE 44-1/2" LONG AND THE
FILL PIECES WILL BE 37-1/2" LONG.

SIDE FILL ASSEMBLY B

DETAILS



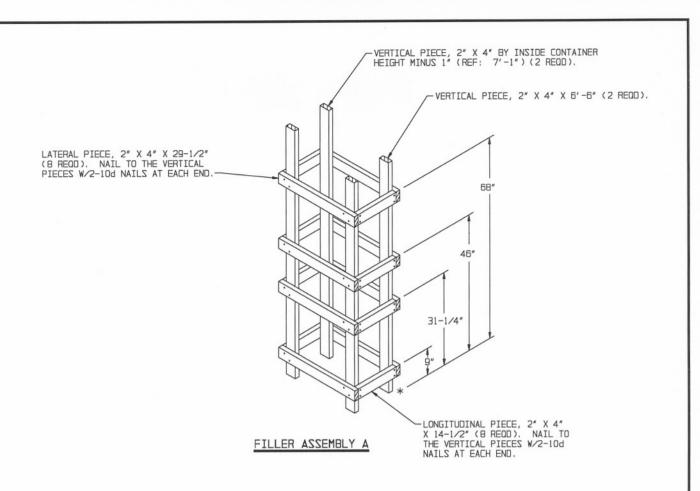
CENTER GATE A

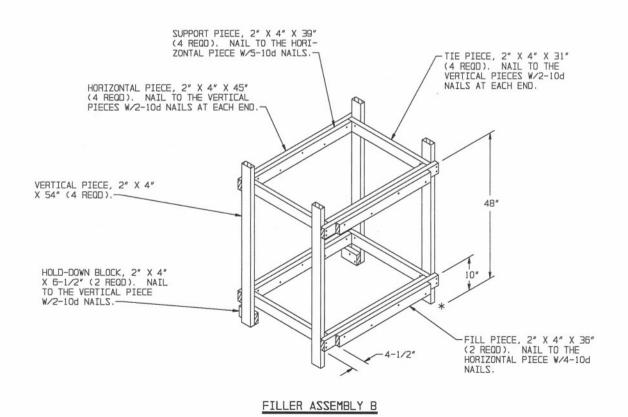


CENTER GATE B

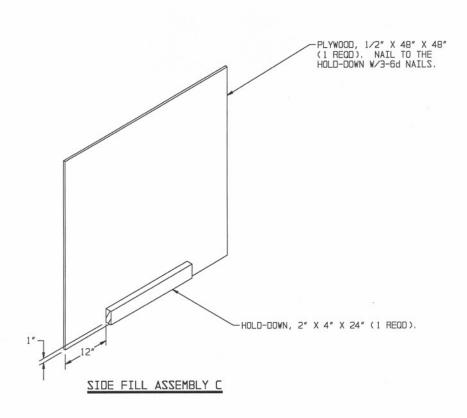
PAGE 10

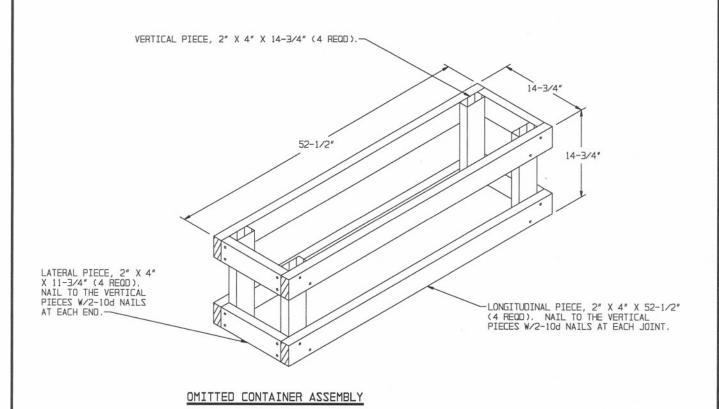
DETAILS





DETAILS





<u>DETAILS</u>