

# APPENDIX 18

## UNITIZING PROCEDURES FOR PROPELLING CHARGES PACKED IN CYLINDRICAL METAL CONTAINERS ON 4-WAY ENTRY PALLETS

### PA96 SERIES CONTAINER

#### INDEX

<u>ITEM</u>	<u>PAGE ( S )</u>
GENERAL NOTES -----	2
UNIT DETAIL AND PALLET DETAIL -----	4
DUNNAGE DETAILS -----	5
FILLERS AND INSTALLATION PROCEDURES FOR OMITTED CONTAINERS -----	6, 7

PALLET UNIT DATA						
ITEMS INCLUDED		HAZARD CLASSIFICATION <sup>Ⓢ</sup>				WEIGHT ( LBS )
NSN	DODIC	DOT CLASS	CG CLASS	QD CLASS	COMP GROUP	
UNASSIGNED						1, 783

**NOTICE:** THIS APPENDIX CANNOT STAND ALONE BUT MUST BE USED IN CONJUNCTION WITH THE BASIC UNITIZATION PROCEDURES DRAWING 19-48-4042A-20PM1001.

<sup>Ⓢ</sup>HAZARD CLASSIFICATION DATA CONTAINED IN THE ABOVE CHART IS FOR GUIDANCE AND INFORMATIONAL PURPOSES ONLY. VERIFICATION OF THE SPECIFIED DATA SHOULD BE MADE BY CONSULTING THE MOST RECENT JOINT HAZARD CLASSIFICATION SYSTEM LISTING OR OTHER APPROVED LISTING(S).

**DO NOT SCALE**

REVISIONS				DRAFTSMAN <i>W.R. HUNT</i>	PROJ ENG <i>W.R. HUNT</i>
				CHECKER <i>W.R. HUNT</i>	LOG ENGINE OFFICE <i>W.R. HUNT</i>
				APPROVED, U. S. ARMY AMMUNITION, MUNITIONS AND CHEMICAL COMMAND	
				APPROVED BY ORDER OF COMMANDING GENERAL, U. S. ARMY MATERIAL DEVELOPMENT AND READINESS COMMAND (DARCOM) <i>John L. Boyd</i> U. S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL	
U. S. ARMY DARCOM DRAWING					
NOVEMBER 1983					
CLASS	DIVISION	DRAWING	FILE		
19	48	4042A/ 18	20 PM 1001		

GENERAL NOTES

- A. THIS APPENDIX CANNOT STAND ALONE BUT MUST BE USED IN CONJUNCTION WITH THE BASIC UNITIZING PROCEDURES DRAWING 19-48-4042A-20PM1001. TO PRODUCE AN APPROVED UNIT LOAD, ALL PERTINENT PROCEDURES, SPECIFICATIONS AND CRITERIA SET FORTH WITHIN THE BASIC DRAWING WILL APPLY TO THE PROCEDURES DELINEATED IN THIS APPENDIX. ANY EXCEPTIONS TO THE BASIC PROCEDURES ARE SPECIFIED IN THIS APPENDIX.
- B. DIMENSIONS, CUBE AND WEIGHT OF A PALLET UNIT WILL VARY SLIGHTLY DEPENDING UPON THE ACTUAL DIMENSIONS OF THE CONTAINER, WEIGHT OF THE SPECIFIC ITEM, AND METHOD OF UNITIZATION.
- C. FOR OUTLOADING AND STORAGE OF THE ITEMS COVERED BY THIS APPENDIX, SEE DARCOM DRAWING 19-48-4042-1-2-5-11-14PM1000, REV NO. 1 (WILL BE SUPERSEDED BY ANOTHER 19-48 SERIES DARCOM DRAWING SPECIFICALLY FOR THE PA96 SERIES CONTAINER).
- D. FOR METHOD OF SECURING A STRAP CUTTER TO THE PALLET UNIT, SEE DARCOM DRAWING 19-48-4127-20P1000.
- E. IF ITEMS COVERED HEREIN ARE UNITIZED PRIOR TO ISSUANCE OF THIS APPENDIX, THE CONTAINERS NEED NOT BE REUNITIZED SOLELY TO CONFORM TO THIS APPENDIX.
- F. THE UNITIZATION PROCEDURES DEPICTED HEREIN MAY ALSO BE USED FOR UNITIZING PROPELLING CHARGES WHEN IDENTIFIED BY DIFFERENT NATIONAL STOCK NUMBERS (NSN) THAN THOSE SHOWN ON THE COVER PAGE, PROVIDED THE ITEM IS PACKED IN THE PA96 SERIES CONTAINER. THE EXPLOSIVE CLASSIFICATION OF OTHER ITEMS MAY BE DIFFERENT THAN THOSE SHOWN.
- G. FOR DETAILS OF THE PA96 SERIES CONTAINER, SEE US ARMY RESEARCH AND DEVELOPMENT COMMAND DRAWING NO. 9331259.

CONTAINER DIMENSIONS -----31-5/8" LONG BY 7-1/2" WIDE BY 7-1/2" HIGH.  
CONTAINER CUBE -----1.03 CUBIC FEET.  
CONTAINER WEIGHT (WITH CHARGE)---44 LBS (APPROX).

- H. IF DEEMED MORE ECONOMICAL FOR SHIPPING AND STORAGE BY THE RESPONSIBLE COMMAND, THE UNIT DEPICTED ON THE FOLLOWING PAGES MAY BE DECREASED BY ONE COMPLETE LAYER OF CONTAINERS. FOR FURTHER UNITIZATION GUIDANCE, SEE SPECIAL NOTES ON PAGE 4.

THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK.

SEAL FOR 1-1/4" STRAP (4 REQD, 1 PER STRAP). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES.

TOP DUNNAGE ASSEMBLY (1 REQD). SEE THE "TOP DUNNAGE ASSEMBLY" DETAIL ON PAGE 5.

LOAD STRAP, 1-1/4" X .031" OR .035" X 16'-9" LONG STEEL STRAPPING (2 REQD). SEE THE "PALLET DUNNAGE/STRAP LOCATION" DETAIL ON PAGE 5.

TIEDOWN STRAP, 1-1/4" X .031" OR .035" X 14'-9" LONG STEEL STRAPPING (2 REQD).

INTERMEDIATE DUNNAGE ASSEMBLY (3 REQD). SEE THE "INTERMEDIATE DUNNAGE ASSEMBLY" DETAIL ON PAGE 5.

INDICATES THE PA96 SERIES CONTAINER.

STAPLE, 1-17/32" WIDE BY 3/4" LEG LENGTH (16 REQD, 4 PER STRAP).

35" X 45-1/2" PALLET.

END DUNNAGE ASSEMBLY (2 REQD). SEE THE "END DUNNAGE ASSEMBLY" DETAIL ON PAGE 5.

TYPICAL LOCATION FOR SECUREMENT OF A STRAP CUTTER. SEE GENERAL NOTE "D" ON PAGE 2.

PLYWOOD PALLET DUNNAGE (3 REQD). SEE THE "PALLET DUNNAGE/STRAP LOCATION" DETAIL ON PAGE 5.

PALLET DUNNAGE ASSEMBLY (1 REQD). SEE THE "PALLET DUNNAGE ASSEMBLY" AND "PALLET DUNNAGE/STRAP LOCATION" DETAIL ON PAGE 5.

ISOMETRIC VIEW

VIEW A

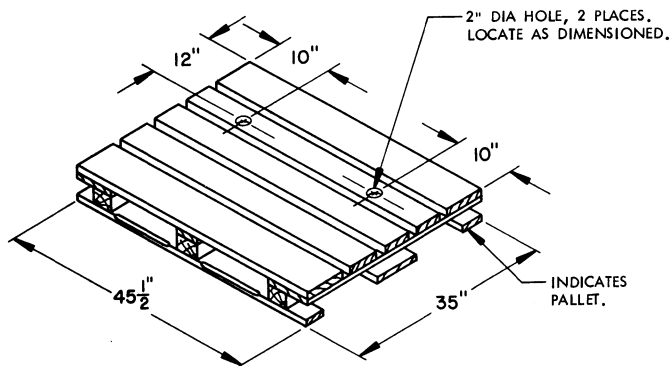
**SPECIAL NOTES:**

1. WHEN THE UNIT LOAD DEPICTED ABOVE IS TO BE USED FOR UNITIZING MARINE CORPS AMMUNITION, ONE LAYER OF CONTAINERS MUST BE OMITTED, THE UPPERMOST "INTERMEDIATE DUNNAGE ASSEMBLY" MUST BE OMITTED, TIEDOWN STRAP LENGTHS MUST BE DECREASED TO 13'-6", LOAD STRAP LENGTHS MUST BE DECREASED TO 15'-6" AND THE "END DUNNAGE ASSEMBLY" MUST BE MODIFIED. DUNNAGE ASSEMBLY MODIFICATIONS INCLUDE CHANGING VERTICAL PIECE LENGTH TO 37-3/4", LOCATING THE UPPER HORIZONTAL PIECE EVEN WITH THE TOP OF THE VERTICAL PIECES, AND CHANGING THE LOCATION DIMENSION OF THE HORIZONTAL PIECE SECOND FROM THE TOP TO 24-1/2". THIS WILL RESULT IN AN OVERALL UNIT HEIGHT OF 43-5/8", A GROSS UNIT WEIGHT OF 1,498 POUNDS, AND A UNIT CUBE OF 43.8 CUBIC FEET.
2. THE UNIT LOAD DEPICTED ABOVE MAY ALSO BE REDUCED BY ONE LAYER OF CONTAINERS, AS DESCRIBED IN SPECIAL NOTE 1, WHEN BEING SHIPPED BY MILVAN OR COMMERCIAL INTERMODAL FREIGHT CONTAINER, CONVENTIONAL VAN TRAILER OR CONVENTIONAL OR HIGH-CAPACITY BOXCAR. THE DETERMINATION TO REDUCE THE LOAD BY A LAYER WILL BE MADE BY THE RESPONSIBLE COMMAND AND WILL BE BASED UPON ECONOMICS OF TRANSPORTATION AND HANDLING.

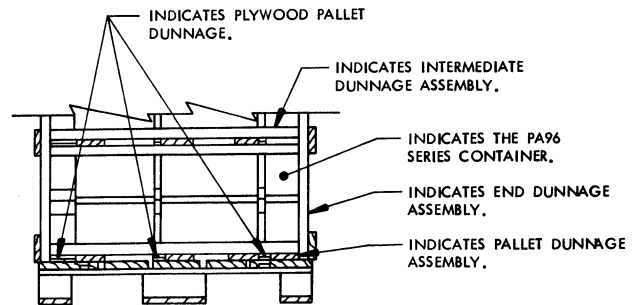
(SPECIAL NOTES CONTINUED)

3. DIMENSIONS GIVEN FOR DUNNAGE PIECES OR DUNNAGE ASSEMBLIES WILL BE FIELD CHECKED PRIOR TO THEIR ASSEMBLY TO THE PALLET UNIT. CONTAINERS MUST FIT SNUGLY IN THE DUNNAGE ASSEMBLIES. ALSO, DUE TO THE VARIATION OF CONTAINER DIMENSIONS, ADJUSTMENTS MAY BE REQUIRED AS TO THE LOCATION OF CERTAIN PIECES OF DUNNAGE IN A DUNNAGE ASSEMBLY.
4. ALTHOUGH THE PROPELLING CHARGE CONTAINERS DEPICTED IN THE UNIT LOAD ABOVE ARE CONSTRUCTED WITH INTERLOCKING DEVICES, THE INTERLOCKS WILL NOT FUNCTION PROPERLY UNLESS THE CONTAINERS ARE POSITIONED SO THAT THE "PINS" OF THE INTERLOCKS ARE IN AN UPRIGHT ORIENTATION. THIS ORIENTATION WILL PRECLUDE INTERFERENCE OF THE "PINS" AND THE PLYWOOD PALLET DUNNAGE AND WILL AID IN THE PREVENTION OF CONTAINER MOVEMENT, BOTH Laterally AND LONGITUDINALLY, DURING SHIPMENT OF THE UNIT LOAD.

(CONTINUED AT RIGHT)

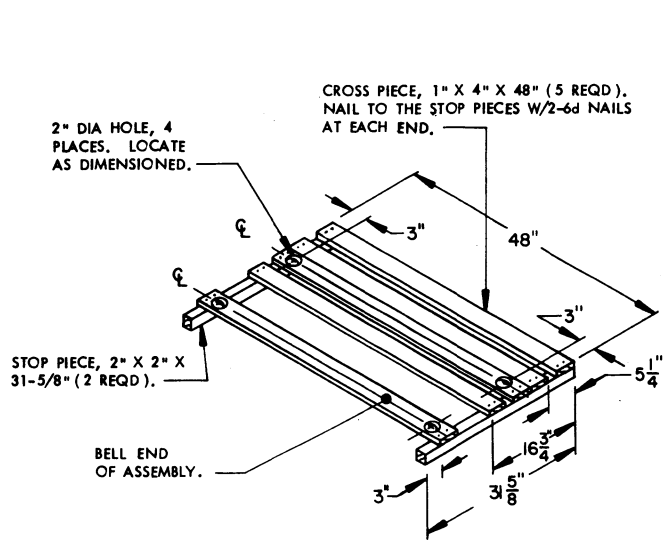


PALLET WITH PRE-DRILLED HOLES

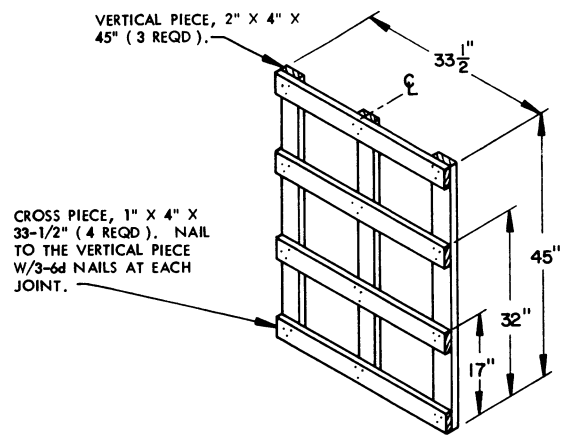


PARTIAL VIEW A

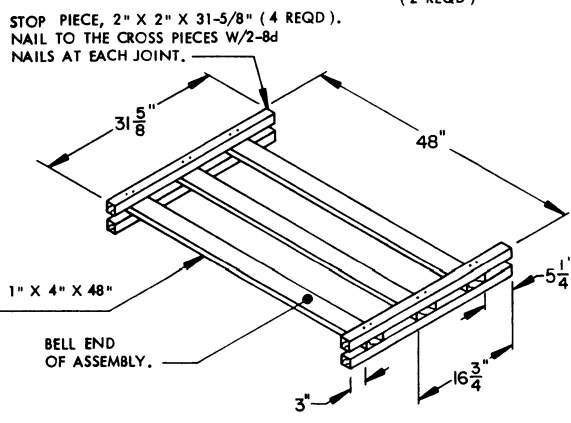
UNIT DETAIL AND PALLET DETAIL



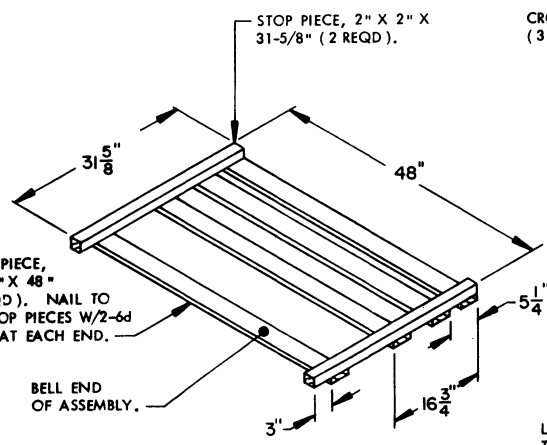
**TOP DUNNAGE ASSEMBLY**  
(1 REQD)



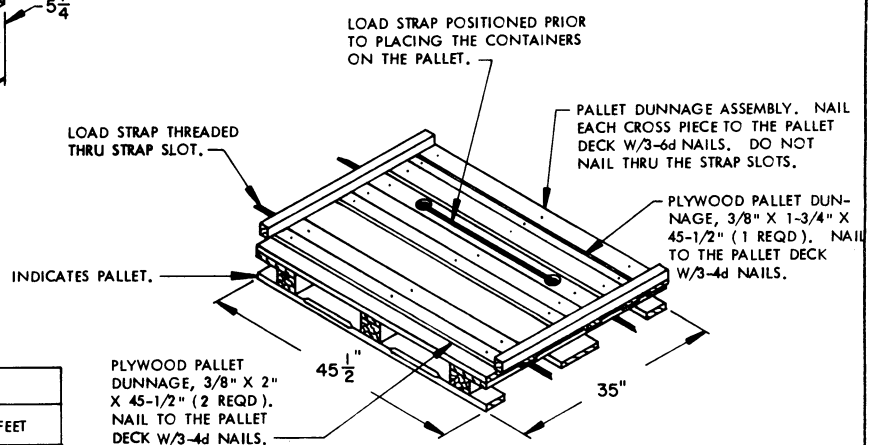
**END DUNNAGE ASSEMBLY**  
(2 REQD)



**INTERMEDIATE DUNNAGE ASSEMBLY**  
(3 REQD)



**PALLET DUNNAGE ASSEMBLY**  
(1 REQD)



**PALLET DUNNAGE/STRAP LOCATION**

BILL OF MATERIAL			
LUMBER	NO. REQD	LINEAR FEET	BOARD FEET
1" X 4" X 48"	18	72.00	24.00
1" X 4" X 33-1/2"	8	22.33	7.44
2" X 2" X 31-5/8"	16	42.17	14.06
2" X 4" X 45"	6	22.50	15.00
NAILS	NO. REQD	POUNDS	
4d (1-1/2")	9	0.03	
6d (2")	120	0.71	
8d (2-1/2")	72	0.76	
PALLET, 35" X 45-1/2"	1 REQD	65	65 LBS
STEEL STRAPPING, 1-1/4" X .031" OR .035"	63.00' REQD	9.00	9.00 LBS
SEAL FOR 1-1/4" STRAPPING	4 REQD	NIL	
STAPLE, 1-17/32" X 3/4"	16 REQD	NIL	
PLYWOOD, 3/8"	1.82 SQ FT REQD	1.88 LBS	

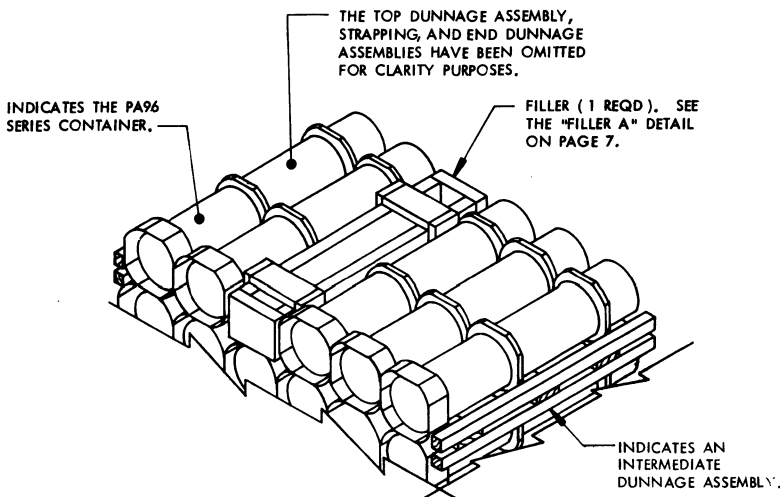
**UNIT DATA**

CUBE	-----	51.3 CUBIC FEET (APPROX)	
CONTAINER, PA 96 SERIES	-----	36 EACH @ 44 LBS	1,584 LBS (APPROX)
DUNNAGE	-----		134 LBS
PALLET	-----		65 LBS

TOTAL WEIGHT ----- 1,783 LBS (APPROX)

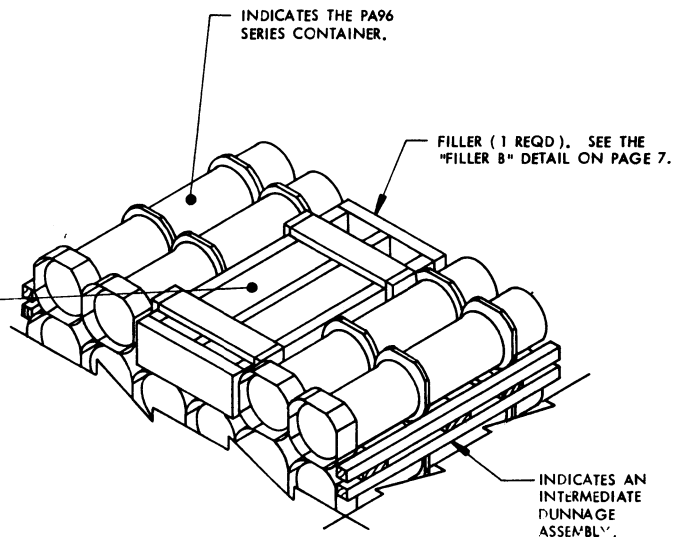
**SPECIAL NOTES:**

1. WHEN SIX CONTAINERS ARE TO BE OMITTED FROM A PALLET UNIT, A COMPLETE LAYER OF CONTAINERS MUST BE OMITTED. WHEN FIVE CONTAINERS ARE TO BE OMITTED FROM A PALLET UNIT, A COMBINATION OF FILLER ASSEMBLIES DEPICTED ON PAGE 7 MUST BE USED. WHEN FOUR OR LESS CONTAINERS ARE TO BE OMITTED FROM A PALLET UNIT, A COMBINATION OR ONE OF THE FILLER ASSEMBLIES DEPICTED ON PAGE 7 MAY BE USED. ALL FILLER ASSEMBLIES MUST BE INSTALLED IN THE MIDDLE OF THE TOP LAYER OR LAYERS OF A PALLET UNIT.
2. THE OVERALL HEIGHT OF THE FILLER ASSEMBLIES DEPICTED ON PAGE 7 MUST BE REDUCED FROM 7-1/2" TO 6-3/4" WHEN INSTALLED BETWEEN A TOP DUNNAGE ASSEMBLY AND AN INTERMEDIATE DUNNAGE ASSEMBLY OR BETWEEN ANOTHER FILLER ASSEMBLY AND AN INTERMEDIATE DUNNAGE ASSEMBLY.



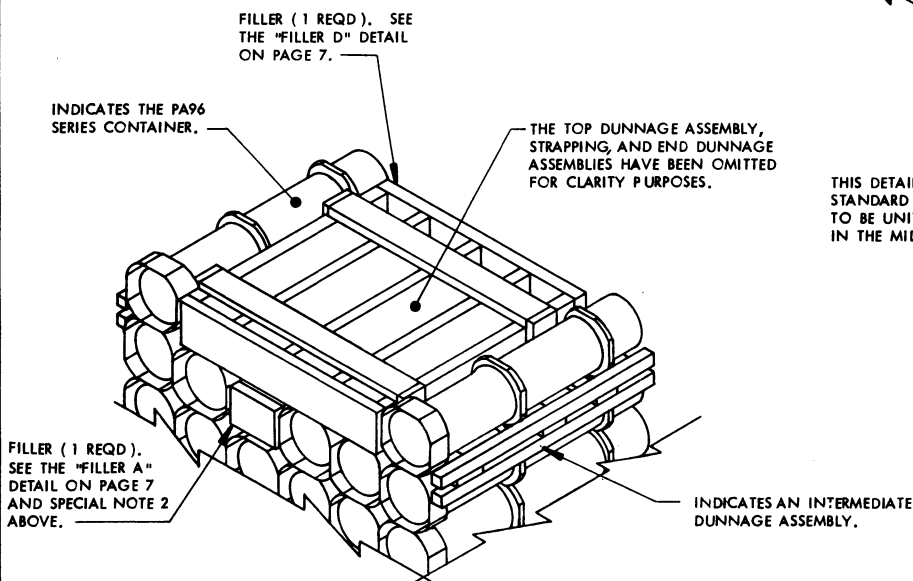
**DETAIL A**

THIS DETAIL DEPICTS PROCEDURES TO BE USED WHEN A STANDARD PALLET UNIT MINUS ONE CONTAINER IS TO BE UNITIZED. THE FILLER ASSEMBLY DEPICTED MUST BE INSTALLED IN THE MIDDLE OF THE TOP LAYER OF THE PALLET UNIT.



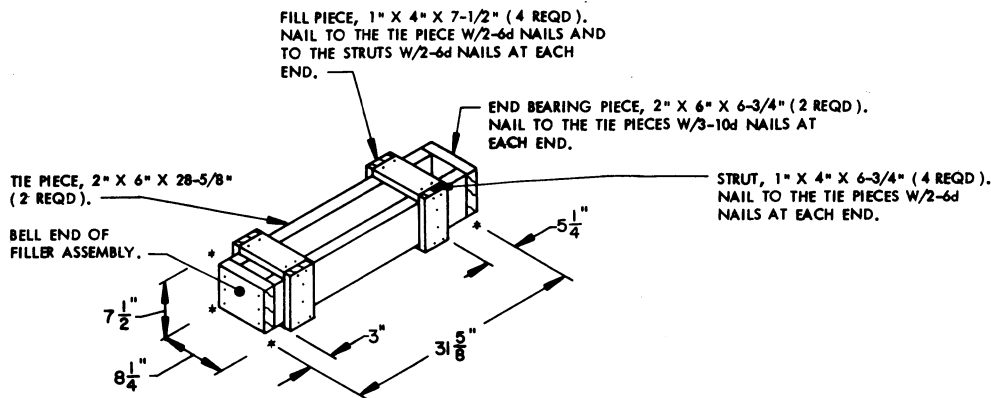
**DETAIL B**

THIS DETAIL DEPICTS PROCEDURES TO BE USED WHEN A STANDARD PALLET UNIT MINUS TWO CONTAINERS IS TO BE UNITIZED. THE FILLER ASSEMBLY MUST BE INSTALLED IN THE MIDDLE OF THE TOP LAYER OF THE PALLET UNIT.



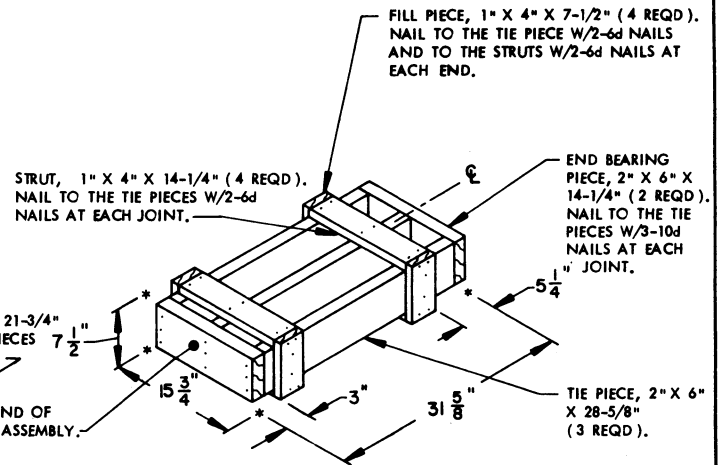
**DETAIL C**

THIS DETAIL DEPICTS PROCEDURES TO BE USED WHEN A STANDARD PALLET UNIT MINUS FIVE CONTAINERS IS TO BE UNITIZED. THE FILLER ASSEMBLIES DEPICTED MUST BE INSTALLED IN THE MIDDLE OF THE TOP LAYERS OF THE PALLET UNIT.



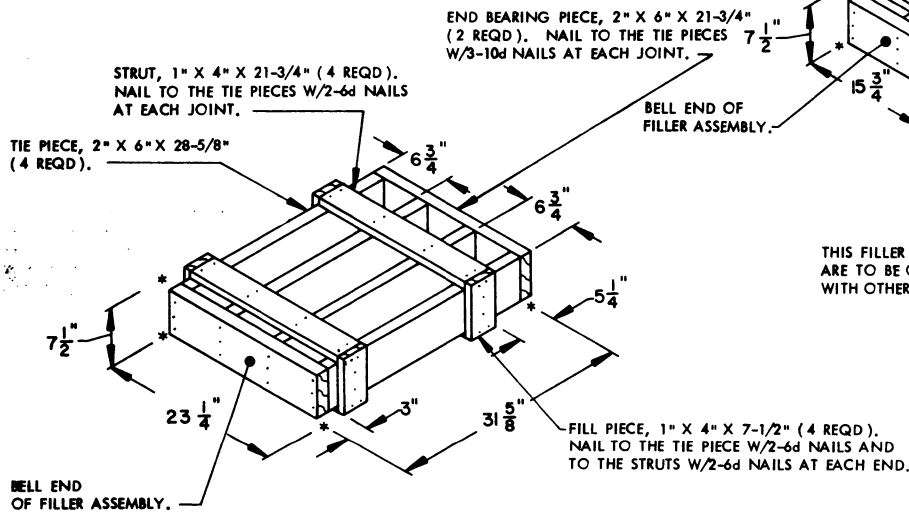
**FILLER A**

THIS FILLER ASSEMBLY IS TO BE USED WHEN ONE CONTAINER IS TO BE OMITTED FROM A PALLET UNIT, OR IN COMBINATION WITH OTHER FILLER ASSEMBLIES.



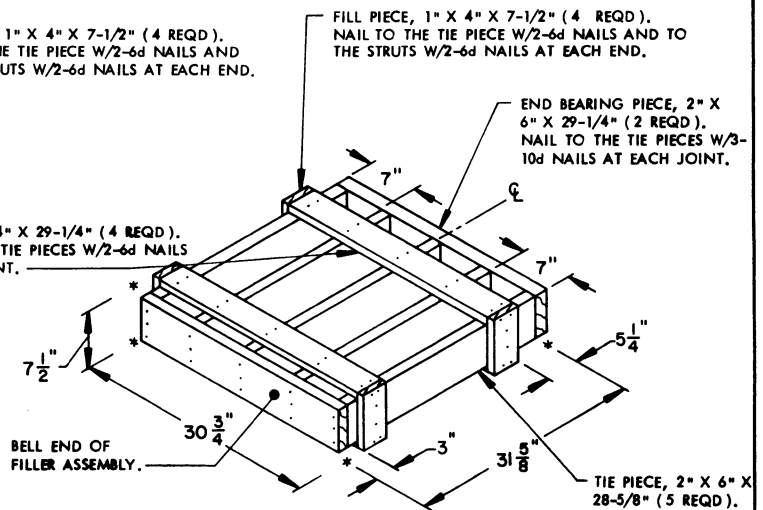
**FILLER B**

THIS FILLER ASSEMBLY IS TO BE USED WHEN TWO CONTAINERS ARE TO BE OMITTED FROM A PALLET UNIT, OR IN COMBINATION WITH OTHER FILLER ASSEMBLIES.



**FILLER C**

THIS FILLER ASSEMBLY IS TO BE USED WHEN THREE CONTAINERS ARE TO BE OMITTED FROM A PALLET UNIT, OR IN COMBINATION WITH OTHER FILLER ASSEMBLIES.



**FILLER D**

THIS FILLER ASSEMBLY IS TO BE USED WHEN FOUR CONTAINERS ARE TO BE OMITTED FROM A PALLET UNIT, OR IN COMBINATION WITH OTHER FILLER ASSEMBLIES.

