

APPENDIX 21

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

PA100 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 ^①				WEIGHT (LBS)
NSN	DODIC	DOT CLASS	CG CLASS	QD CLASS	COMP GROUP	
UNASSIGNED	—	—	—	—	—	1,478

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

① 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 (S).

DO NOT SCALE

REVISIONS		DESIGNED BY	PROJ ENG
1	JULY 86	<i>WRF/luw</i>	R1-91
		<i>W.P. Coates</i>	
		<small>APPROVED, U. S. ARMY ARMAMENT, POSITIONING AND ORIGNAL COMMAND</small> <i>William F. Ernst</i>	
		<small>APPROVED BY ORDER OF COMMANDING GENERAL, U. S. ARMY MATERIEL DEVELOPMENT AND READINESS COMMAND (DARCOM)</small> <i>John F. Bennett</i>	
		<small>U. S. ARMY DEFENSE ACQUISITION CENTER AND SCHOOL</small> U. S. ARMY DARCOM DRAWING SEPTEMBER 1983	
		CLASS	DIVISION
		DRAWING	FILE
		19	48
		4042A/21	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. OUTLOADING AND STORAGE OF THE ITEMS COVERED BY THIS APPENDIX SHALL BE ACCOMPLISHED IN ACCORDANCE WITH AMC (DARCOM) DRAWINGS IDENTIFIED WITHIN DA PAMPHLET 75-5.
- 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 PA100 SERIES CONTAINER. THE EXPLOSIVE CLASSIFICATION OF OTHER ITEMS MAY BE DIFFERENT THAN THOSE SHOWN.
- G. FOR DETAILS OF THE PA100 SERIES CONTAINER, SEE US ARMY ARMAMENT RESEARCH AND DEVELOPMENT COMMAND DRAWING NO. 9331205.

CONTAINER DIMENSIONS ----- 31-1/2" LONG BY 6-1/2" WIDE
BY 6-1/2" HIGH.
CONTAINER CUBE ----- 0.77 CUBIC FEET.
CONTAINER WEIGHT (WITH CHARGE) ---- 26 LBS (APPROX).

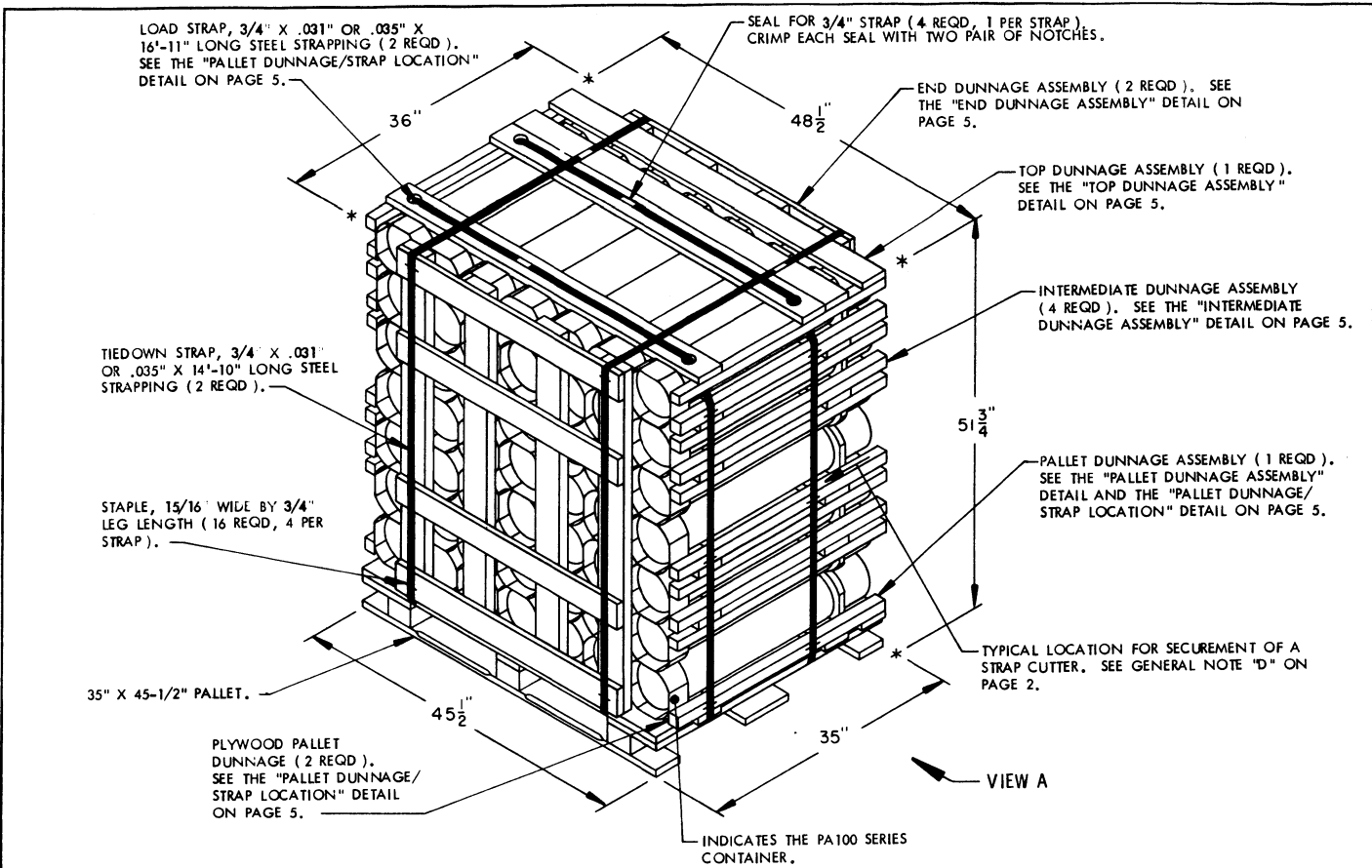
- H. IF DEEMED MORE ECONOMICAL FOR SHIPPING AND STORAGE BY THE RESPONSIBLE COMMAND, THE UNIT DEPICTED ON THE FOLLOWING PAGES MAY BE DECREASED BY ONE OR TWO COMPLETE LAYERS OF CONTAINERS. FOR FURTHER UNITIZATION GUIDANCE, SEE SPECIAL NOTES ON PAGE 4.

REVISION

REVISION NO. 1, DATED JULY 1986, CONSISTS OF:

CHANGING 1-1/4" STRAPPING TO 3/4" STRAPPING.

THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK.



ISOMETRIC VIEW

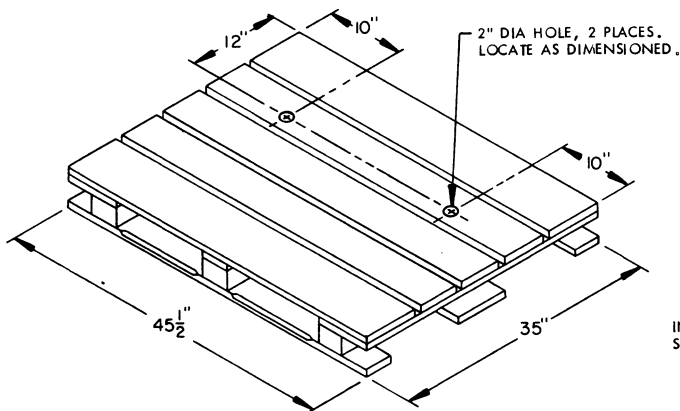
SPECIAL NOTES:

1. WHEN THE UNIT LOAD DEPICTED ABOVE IS TO BE USED FOR UNITIZING MARINE CORPS AMMUNITION, TWO LAYERS OF CONTAINERS MUST BE OMITTED, THE TWO UPPERMOST "INTERMEDIATE DUNNAGE ASSEMBLIES" MUST BE OMITTED, TIEDOWN STRAP LENGTHS MUST BE DECREASED TO 12'-8", LOAD STRAP LENGTHS MUST BE DECREASED TO 14'-9", AND THE "END DUNNAGE ASSEMBLIES" MUST BE MODIFIED. DUNNAGE ASSEMBLY MODIFICATIONS INCLUDE CHANGING VERTICAL PIECE LENGTH TO 33", 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 22". THIS WILL RESULT IN AN OVERALL UNIT HEIGHT OF 38-5/8", A GROSS UNIT WEIGHT OF 1,077 POUNDS, AND A UNIT CUBE OF 39.0 CUBIC FEET.

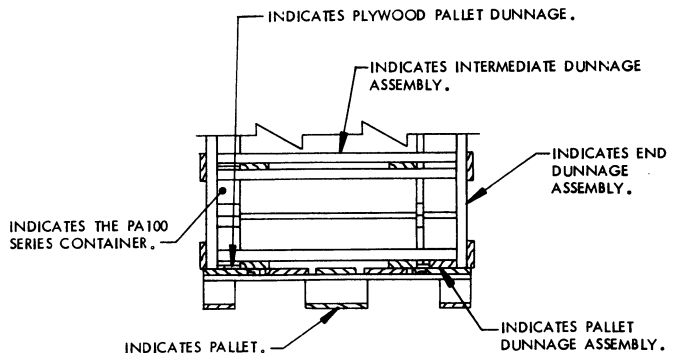
(CONTINUED AT RIGHT)

(SPECIAL NOTES CONTINUED)

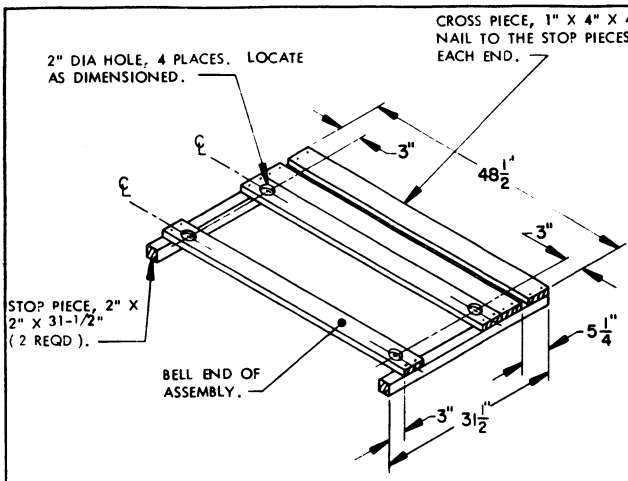
2. THE UNIT LOAD DEPICTED ABOVE MAY ALSO BE REDUCED BY ONE OR TWO LAYERS OF CONTAINERS, AS DESCRIBED IN SPECIAL NOTE 1, WHEN BEING SHIPPED BY MILVAN OR COMMERCIAL INTERMODAL FREIGHT CONTAINER. THE DETERMINATION TO REDUCE THE LOAD BY A LAYER WILL BE MADE BY THE RESPONSIBLE COMMAND AND WILL BE BASED UPON ECONOMICS OF TRANSPORTATION AND HANDLING.
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 UP-RIGHT 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.



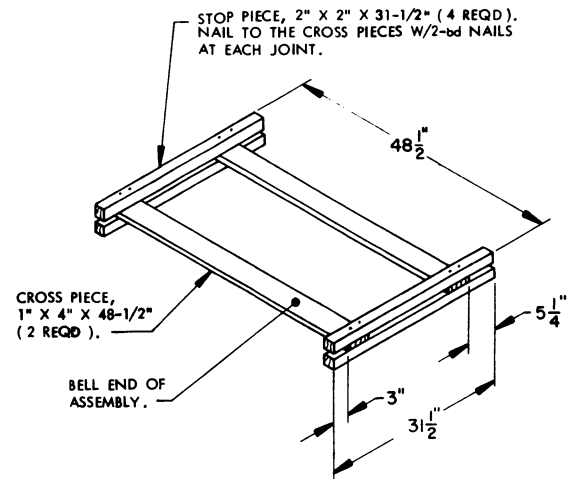
PALLET WITH PREDRILLED HOLES



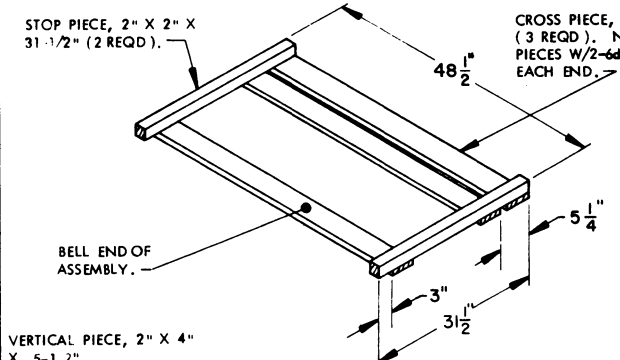
PARTIAL VIEW A



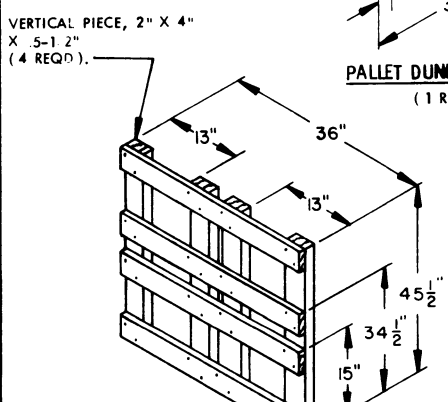
TOP DUNNAGE ASSEMBLY
(1 REQD)



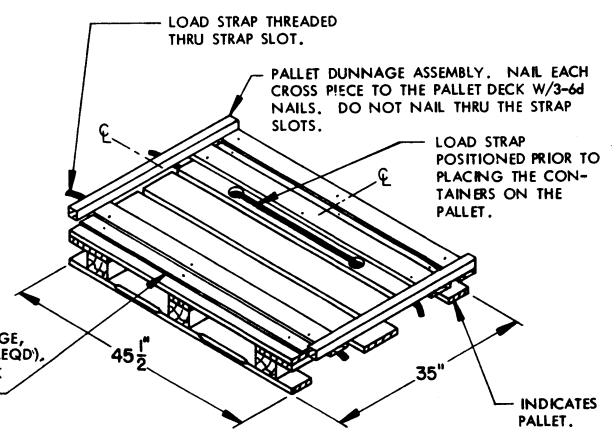
INTERMEDIATE DUNNAGE ASSEMBLY
(2 REQD)



PALLET DUNNAGE ASSEMBLY
(1 REQD)



END DUNNAGE ASSEMBLY
(2 REQD)

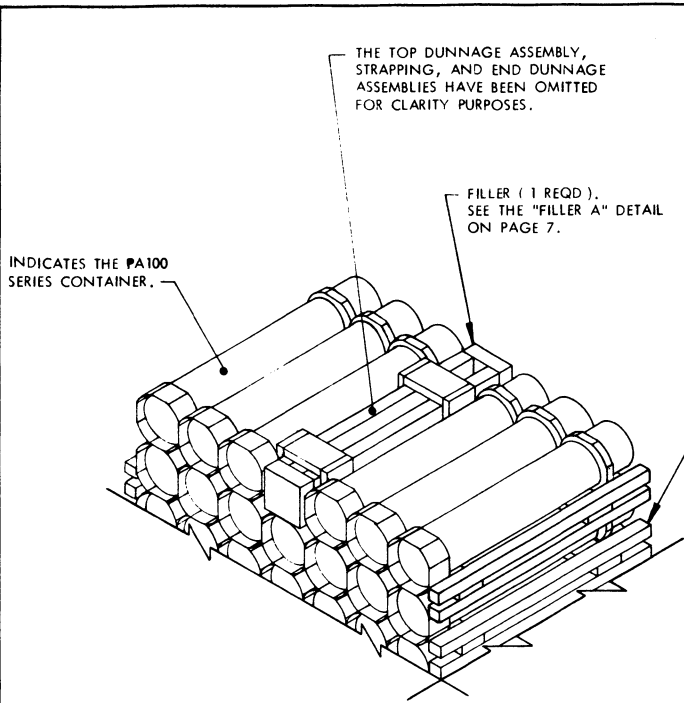


PALLET DUNNAGE/STRAP LOCATION

BILL OF MATERIAL			
LUMBER	NO. REQD	LINEAR FEET	BOARD FEET
1" X 4" X 36"	8	24.00	8.00
1" X 4" X 48-1/2"	15	60.67	20.21
2" X 2" X 31-1/2"	20	52.50	17.50
2" X 4" X 45-1/2"	8	30.37	20.22
NAILS	NO. REQD	POUNDS	
4d (1-1/2")	6	0.02	
6d (2")	101	0.59	
8d (2-1/2")	6	0.67	
PALLET, 35" X 45-1/2"	1 REQD	65 LBS	
STEEL STRAPPING, 3/4" X .031" OR .035"	63.50' REQD	4.54 LBS	
SEAL FOR 3/4" STRAPPING	4 REQD	NIL	
STAPLE, 15/16" X 3/4"	16 REQD	NIL	
PLYWOOD, 3/8"	1.11 SQ FT REQD	1.14 LBS	

UNIT DATA	WEIGHT
CUBE -----	52.3 CUBIC FT (APPROX)
CONTAINER -----	49 EACH @ 26 LBS -- 1,274 LBS (APPROX)
DUNNAGE -----	139 LBS
PALLET -----	65 LBS
TOTAL WEIGHT -----	1,478 LBS (APPROX)

DUNNAGE DETAILS

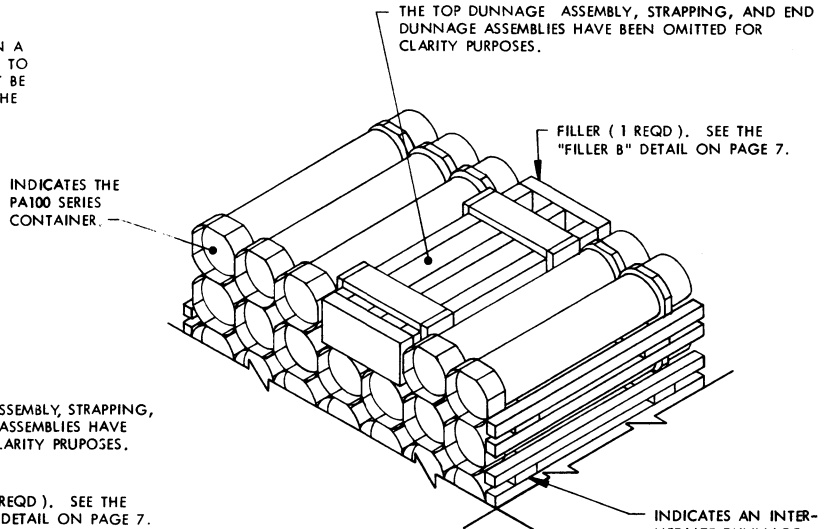


DETAIL A

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.

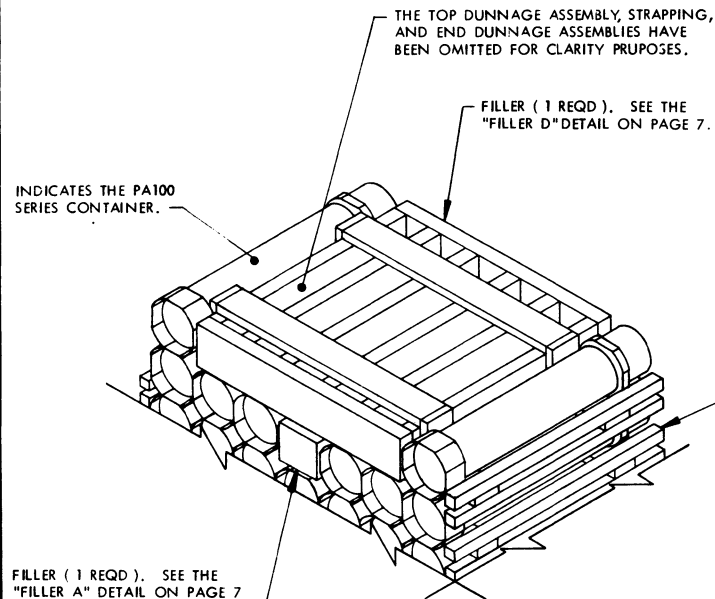
SPECIAL NOTES:

1. WHEN SEVEN CONTAINERS ARE TO BE OMITTED FROM A PALLET UNIT, A COMPLETE LAYER OF CONTAINERS MUST BE OMITTED. WHEN SIX CONTAINERS ARE TO BE OMITTED FROM A PALLET UNIT, A COMBINATION OF FILLER ASSEMBLIES DEPICTED ON PAGE 7 MUST BE USED. WHEN FIVE 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 5-1/2" TO 5-5/8" WHEN INSTALLED BETWEEN A TOP DUNNAGE ASSEMBLY AND AN INTERMEDIATE DUNNAGE ASSEMBLY OR BETWEEN ANOTHER FILLER ASSEMBLY AND AN INTERMEDIATE DUNNAGE ASSEMBLY.



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

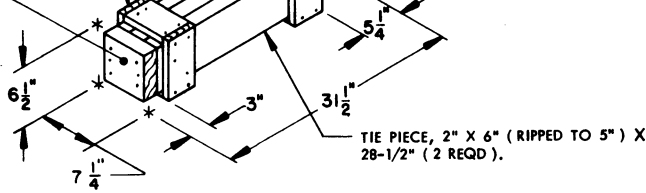
THIS DETAIL DEPICTS PROCEDURES TO BE USED WHEN A STANDARD PALLET UNIT MINUS SIX CONTAINERS IS TO BE UNITIZED. THE FILLER ASSEMBLIES DEPICTED MUST BE INSTALLED IN THE MIDDLE OF THE TOP LAYERS OF THE PALLET UNIT.

FILL PIECE, 1" X 4" X 6-1/2"
(4 REQD.). NAIL TO THE TIE PIECE
W/2-6d NAILS AND TO THE STRUTS
W/2-6d NAILS AT EACH END.

STRUT, 1" X 4" X 5-3/4" (4 REQD.).
NAIL TO THE TIE PIECES W/2-6d
NAILS AT EACH END.

END BEARING PIECE, 2" X 6" (RIPPED TO 5") X
5-3/4" (2 REQD.). NAIL TO THE TIE PIECES
W/3-10d NAILS AT EACH END.

BELL END OF
FILLER.



FILLER A

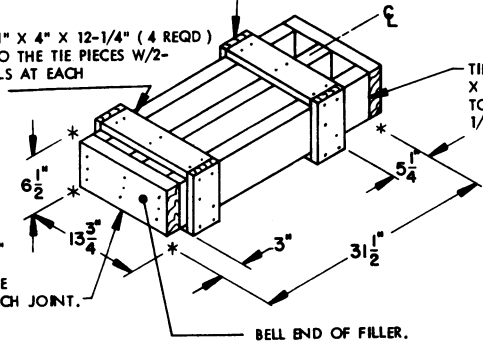
THIS FILLER ASSEMBLY IS TO BE USED WHEN ONE
CONTAINER IS TO BE OMITTED FROM A PALLET UNIT,
OR IN COMBINATION WITH OTHER FILLER ASSEMBLIES.

FILL PIECE, 1" X 4" X 6-1/2" (4 REQD.).
NAIL TO THE TIE PIECE W/2-6d NAILS
AND TO THE STRUTS W/2-6d NAILS
AT EACH END.

STRUT, 1" X 4" X 12-1/4" (4 REQD.)
NAIL TO THE TIE PIECES W/2-
6d NAILS AT EACH
JOINT.

TIE PIECE, 2"
X 6" (RIPPED
TO 5") X 28-
1/2" (3 REQD.)

END BEARING PIECE, 2" X 6"
(RIPPED TO 5") X 12-1/4"
(2 REQD.). NAIL TO THE TIE
PIECES W/3-10d NAILS AT EACH
JOINT.



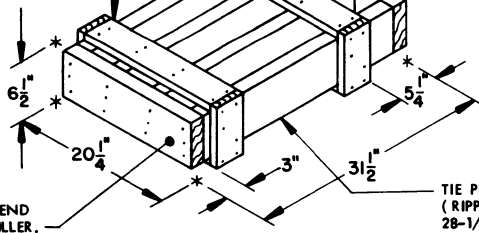
FILLER B

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.

STRUT, 1" X 4" X 18-3/4"
(4 REQD.). NAIL TO THE
TIE PIECES W/2-6d NAILS
AT EACH JOINT.

FILL PIECE, 1" X 4" X 6-1/2" (4 REQD.).
NAIL TO THE TIE PIECE W/2-6d NAILS AND
TO THE STRUTS W/2-6d NAILS AT EACH END.

END BEARING PIECE, 2" X 6"
(RIPPED TO 5") X 18-3/4" (2 REQD.).
NAIL TO THE TIE PIECES W/3-10d
NAILS AT EACH JOINT.



BELL END OF
FILLER.

FILLER C

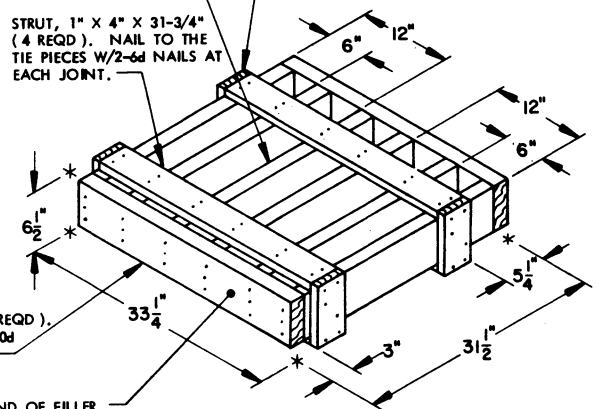
THIS FILLER ASSEMBLY IS TO BE USED WHEN THREE
CONTAINERS ARE TO BE OMITTED FROM A PALLET
UNIT, OR IN COMBINATION WITH OTHER FILLER
ASSEMBLIES.

TIE PIECE, 2" X 6" (RIPPED TO 5") X
28-1/2" (6 REQD.).

FILL PIECE, 1" X 4" X 6-1/2" (4 REQD.).
NAIL TO THE TIE PIECE W/2-6d NAILS AND
TO THE STRUTS W/2-6d NAILS AT EACH END.

STRUT, 1" X 4" X 31-3/4"
(4 REQD.). NAIL TO THE
TIE PIECES W/2-6d NAILS AT
EACH JOINT.

END BEARING PIECE, 2" X 6"
(RIPPED TO 5") X 31-3/4" (2 REQD.).
NAIL TO THE TIE PIECES W/3-10d
NAILS AT EACH JOINT.



BELL END OF FILLER.

FILLER D

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

