

# APPENDIX 43P

## UNITIZATION PROCEDURES\* FOR BOXED AMMUNITION AND COMPONENTS ON 4-WAY ENTRY PALLET

**CARTRIDGE, 81MM, PACKED 3 PER PA157  
METAL BOX, UNITIZED 21 BOXES PER 40" X  
48" PALLET; APPROX BOX SIZE 14-11/32" L  
X 5-45/64" W X 29-1/16" H**

\*FOR MARINE CORPS USE ONLY.

**NOTICE: THIS APPENDIX CANNOT STAND ALONE BUT MUST BE USED IN CONJUNCTION WITH  
THE BASIC UNITIZATION PROCEDURES DRAWING 19-48-4116-20PA1002.**

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### U.S. ARMY MATERIEL COMMAND DRAWING

APPROVED, U.S. ARMY OPERATIONS SUPPORT COMMAND <i>David A. Piskorik</i> AMSTA-AR-WEP-RP		ENGINEER	BASIC REV.	SANDRA SCHULTZ LAURA FIEFFER	DO NOT SCALE			
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DRAFTSMAN	BASIC REV.		DEBORAH WHITMORE		<b>JANUARY 1993</b>			
	APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND  <i>J. P. White</i> U.S. ARMY DEFENSE AMMUNITION CENTER		TRANSPORTATION ENGINEERING DIVISION	<i>[Signature]</i>		REVISION NO. 3		NOVEMBER 2001
VALIDATION ENGINEERING DIVISION			SEE THE REVISION LISTING ON PAGE 2					
		ENGINEERING DIRECTORATE	<i>William R. French</i>		CLASS	DIVISION	DRAWING	FILE
					19	48	4116/ 43P	20PA1002

PROJECT FSA 146/43P-75

PALLET UNIT DATA				
ITEMS INCLUDED		● HAZARD CLASS AND DIVISION		APPROX WEIGHT LBS
NSN	DODIC	QD CLASS	COMP GROUP	
1315- 01-379-1026 01-353-7620 01-353-7617	C484 C870 C871	1.2 (03)1.3 1.3	G G G	1,371 1,413 1,287

● 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).

### REVISIONS

REVISION NO. 1, DATED MARCH 1995, CONSISTS OF:

1. ADDING ITEM BY NATIONAL STOCK NUMBER TO "PALLET UNIT DATA" CHART.
2. CHANGING WEIGHTS AND HAZARD CLASSIFICATIONS OF ITEMS IN "PALLET UNIT DATA" CHART.
3. ADDING NOTES TO PAGES 3 AND 4.

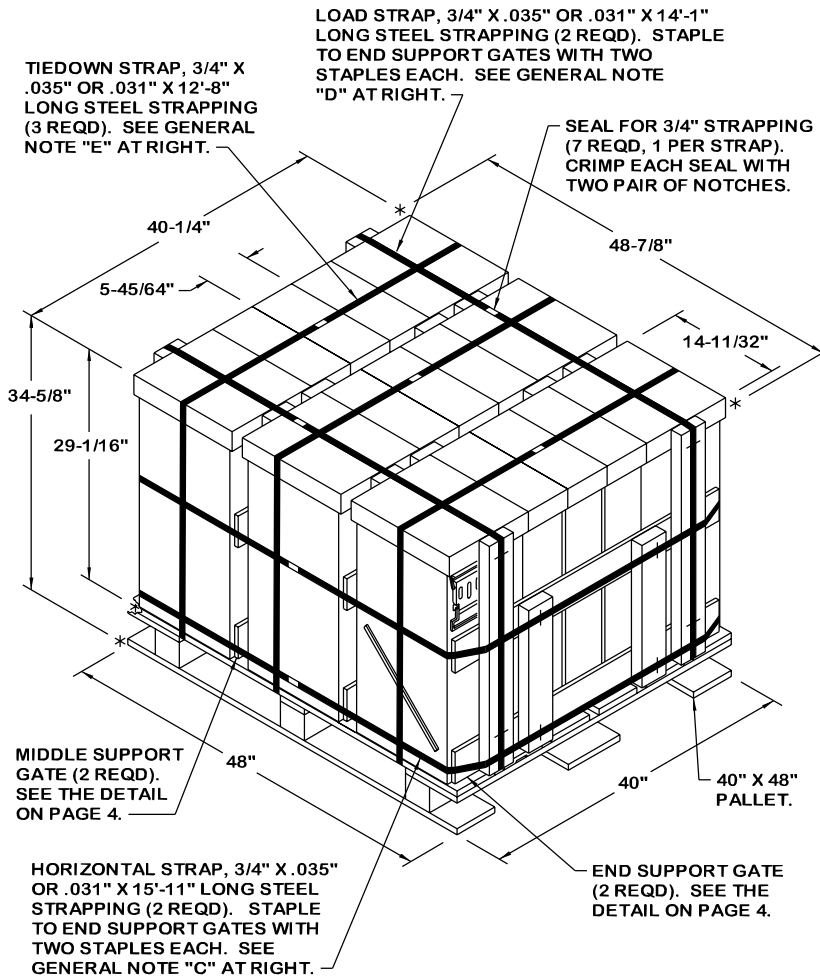
REVISION NO. 2, DATED JANUARY 1996, CONSISTS OF:

1. REVISING GENERAL NOTES.

REVISION NO. 3, DATED NOVEMBER 2001, CONSISTS OF CHANGES PER ECP R1K3005 INCLUDING:

1. MODIFYING END AND MIDDLE SUPPORT GATES.
2. ADDING GENERAL NOTES "L" AND "N".

**GENERAL NOTES**



**PALLET UNIT**

SEE GENERAL NOTE "B" AT RIGHT.

21 BOXES OF 81MM CARTRIDGES (3 PER BOX) @ 60 LBS	--	1,260 LBS (APPROX)
DUNNAGE	-----	73 LBS
PALLET	-----	80 LBS

TOTAL WEIGHT	-----	1,413 LBS (APPROX)
CUBE	-----	39.5 CU FT (APPROX)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	35	24
NAILS	NO. REQD	POUNDS
6d (2")	96	3/4
PALLET, 40" X 48"	----- 1 REQD	----- 80 LBS
STEEL STRAPPING, 3/4"	----- 98.00' REQD	----- 8.75 LBS
SEAL FOR 3/4" STRAPPING	----- 7 REQD	----- NIL
PLYWOOD, 1/2"	----- 11.23 SQ FT REQD	----- 15.44 LBS
STAPLE, 15/16" W X 3/4"	----- 16 REQD	----- NIL

(GENERAL NOTES CONTINUED)

- M. ALL DUNNAGE SHALL BE PRESERVATIVE TREATED IN ACCORDANCE WITH GENERAL NOTE "AA" IN THE BASIC PROCEDURES.
- N. FOR DETAILS OF THE PA157 METAL BOX SEE ARDEC DRAWING 12944510.

- A. THIS APPENDIX CANNOT STAND ALONE BUT MUST BE USED IN CONJUNCTION WITH THE BASIC UNITIZATION PROCEDURES DRAWING 19-48-4116-20PA1002. 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 BOXES AND THE WEIGHT OF THE SPECIFIC ITEM BEING UNITIZED.
- C. THE LOAD STRAPS MUST BE PRE-POSITIONED ON THE PALLET DECK PRIOR TO PLACING BOXES ON THE PALLET AND MUST BE TENSIONED AND SEALED PRIOR TO APPLICATION OF TIEDOWN AND HORIZONTAL STRAPS.
- D. INSTALL EACH HORIZONTAL STRAP TO BE LOCATED AS SHOWN. CENTER EACH STRAP ON THE END SUPPORT GATE HORIZONTAL PIECE. HORIZONTAL STRAPS MUST BE TENSIONED AND SEALED AFTER THE APPLICATION OF LOAD STRAPS AND PRIOR TO THE APPLICATION OF TIEDOWN STRAPS.
- E. INSTALL EACH TIEDOWN STRAP TO PASS UNDER THE TOP DECK BOARDS OF THE PALLET AND TO BE LOCATED AS SHOWN. TIEDOWN STRAPS WILL NOT BE APPLIED UNTIL THE LOAD AND HORIZONTAL STRAPS HAVE BEEN TENSIONED AND SEALED.
- F. THE FOLLOWING AMC DRAWINGS ARE APPLICABLE FOR OUTLOADING AND STORAGE OF THE ITEMS COVERED BY THIS APPENDIX.
 

CARLOADING	----	19-48-4115-5PA1002
TRUCKLOADING	----	19-48-4117-11PA1003
STORAGE	----	19-48-4118-1-2-3-4-14-22PA1002
END OPENING ISO CONTAINER	----	19-48-4153-15PA1002
MILVAN	----	19-48-4166-15PA1003
SIDE OPENING ISO CONTAINER	----	19-48-4267-15PA1009

- G. IF ITEMS COVERED HEREIN ARE UNITIZED PRIOR TO ISSUANCE OF THIS REVISION TO THIS APPENDIX, THE BOXES NEED NOT BE REUNITIZED SOLELY TO CONFORM TO THIS REVISION.
- H. THE UNITIZATION PROCEDURES DEPICTED HEREIN MAY ALSO BE USED FOR UNITIZING 81MM CARTRIDGES WHEN IDENTIFIED BY DIFFERENT NATIONAL STOCK NUMBERS (NSN) THAN WHAT IS SHOWN ON PAGE 2, PROVIDED THE BOX PACK DOES NOT VARY FROM WHAT IS DELINEATED HEREIN. THE EXPLOSIVE CLASSIFICATION OF OTHER ITEMS MAY BE DIFFERENT THAN WHAT IS SHOWN.
- J. THE STYLE 1 PALLET DELINEATED IN THE DETAIL AT LEFT NEED NOT HAVE CHAMFERS OR STRAP SLOTS AS SPECIFIED WITHIN MILITARY SPECIFICATION MIL-P-15011 WHEN USED FOR THE UNITIZATION OF ITEMS COVERED BY THIS APPENDIX.
- K. DIMENSIONS GIVEN FOR DUNNAGE PIECES WILL BE FIELD CHECKED PRIOR TO THEIR ASSEMBLY TO THE PALLET UNIT. THE ASSEMBLIES MUST NOT PROTRUDE PAST THE TOPS AND/OR SIDES OF THE PA157 CONTAINERS. THE ASSEMBLIES MAY BE SHORTER THAN 29" PROVIDED THE TIEDOWN STRAPS ARE PREVENTED FROM DAMAGING THE EDGES OF THE PA157 CONTAINERS AND ARE NOT IN CONTACT WITH THE STACKING AIDS ON THE CONTAINER LIDS. THE GATE HORIZONTAL PIECES MUST NOT BEAR AGAINST THE PA157 CONTAINER HANDLE OR LATCH ASSEMBLY.
- L. IF THERE IS NEED FOR FILLER ASSEMBLIES AND AT LEAST TWO PALLET UNITS ARE BEING CONSTRUCTED, NOT MORE THAN 17 FILLERS WILL BE INSTALLED IN ANY ONE PALLET UNIT. ADDITIONAL FILLERS CAN BE PUT IN A SECOND PALLET UNIT AS REQUIRED WHEN THE QUANTITY OF 17 FILLERS IN THE FIRST REDUCED PALLET UNIT IS INSUFFICIENT TO SATISFY THE TOTAL REDUCTION NEEDED. USING TWO PALLET UNITS TO SATISFY THE PALLETIZATION CRITERIA APPLICABLE TO LESS-THAN-FULL PALLET UNITS IS AN EXCEPTION TO THE BASIC PROCEDURES. HOWEVER, THE EXCEPTION IS NECESSARY FOR THE AMMUNITION PACK COVERED BY THIS APPENDIX TO MOST EFFECTIVELY GET AN ACCEPTABLE, COMPACT AND SOUND PALLET UNIT.

(CONTINUED AT LEFT)

VERTICAL PIECE, 2" X 4" X 29" (4 REQD).

HORIZONTAL PIECE, PLYWOOD, 1/2" X 3-1/2" X 38-1/2" (4 REQD). NAIL TO THE VERTICAL PIECES W/2-6d NAILS AT EACH JOINT.

BEARING PIECE, 2" X 4" X 18" (2 REQD).

VERTICAL PIECE, 2" X 4" X 29" (2 REQD).

HORIZONTAL PIECE, PLYWOOD, 1/2" X 3-1/2" X 38-1/2" (2 REQD). NAIL TO THE VERTICAL AND BEARING PIECES W/2-6d NAILS AT EACH JOINT.

### MIDDLE SUPPORT GATE

SEE GENERAL NOTE "K" ON PAGE 3.

### END SUPPORT GATE

SEE GENERAL NOTE "K" ON PAGE 3.

SUPPORT PIECE, 2" X 4" BY CUT-TO-FIT (AS REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS.  
NOTE: WHEN MORE THAN 15 BOXES ARE OMITTED FROM A PALLET UNIT THE FILLER ASSEMBLY OR ASSEMBLIES LOCATED ON A 48" SIDE OF THE PALLET WILL REQUIRE SUPPORT PIECES AS SHOWN.

HORIZONTAL PIECE, 2" X 4" X BOX LENGTH MINUS 1-1/2" (4 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH END.

FILL PIECE, 1" X 4" X BOX WIDTH (2 REQD). NAIL TO THE VERTICAL PIECES W/2-6d NAILS.

BOX WIDTH

BOX LENGTH

VERTICAL PIECE, 2" X 4" (RIPPED TO BOX WIDTH MINUS 3") X BOX HEIGHT (2 REQD).

BOX HEIGHT

### FILLER ASSEMBLY

(FOR MINUS ONE BOX)