

# UNITIZATION PROCEDURES FOR ABRAMS ARMOR TILES UNITIZED IN PALLET BOXES

## ABRAMS REACTIVE ARMOR TILE II (ARAT II), XM32, UNITIZED 31 PER PALLET BOX

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### U.S. ARMY MATERIEL COMMAND DRAWING

APPROVED, U.S. ARMY RESEARCH, DEVELOPMENT AND ENGINEERING COMMAND <b>PISKORIK.DAVID.</b> A.1229069167 <small>Digitally signed by PISKORIK.DAVID.A.1229069167 DN: cn=PISKORIK.DAVID.A.1229069167, c=US, o=U.S. Government, ou=DoD, PKI, USA Reason: I have reviewed this document Date: 2008.02.04 07:12:00 -0600</small>		<b>CAUTION: VERIFY PRIOR TO USE AT WWW.DAC.ARMY.MIL THAT THIS IS THE MOST CURRENT VERSION OF THIS DOCUMENT. THIS IS PAGE 1 OF 6.</b>			
APPROVED, U.S. ARMY JOINT MUNITIONS COMMAND <b>CASILLAS.GILBERT.J.1230393644</b> <small>AMSJD-AAR-AIL-TP (R)</small> <small>Digitally signed by CASILLAS.GILBERT.J.1230393644 DN: cn=CASILLAS.GILBERT.J.1230393644, c=US, o=U.S. Government, ou=DoD, PKI, USA Date: 2008.02.04 07:49:09 -0600</small>		<b>DO NOT SCALE</b>		<b>FEBRUARY 2008</b>	
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND <b>CARNEY.GARY.</b> <b>BURTON.10387080</b> 38 <small>Digitally signed by CARNEY.GARY. DN: cn=CARNEY.GARY, c=US, o=U.S. Government, ou=DoD, PKI, USA Reason: I have reviewed this document Date: 2008.02.04 12:33:10 -0600</small>		ENGINEER OR TECHNICIAN	BASIC REV.	<b>MELVIN SIX</b>	
U.S. ARMY DEFENSE AMMUNITION CENTER		TRANSPORTATION ENGINEERING DIVISION	<b>FIEFFER.LAURA</b> A.1230375727 <small>Digitally signed by FIEFFER.LAURA. DN: cn=FIEFFER.LAURA.A.1230375727, c=US, o=U.S. Government, ou=DoD, PKI, USA Reason: I am approving this document Date: 2008.01.11 14:43:53 -0600</small>	TESTED	CLASS
		VALIDATION ENGINEERING DIVISION	<b>BEAVER.JERRY</b> W.1230949952 <small>Digitally signed by BEAVER.JERRY. DN: cn=BEAVER.JERRY.W.1230949952, c=US, o=U.S. Government, ou=DoD, PKI, USA Reason: I am approving this document Date: 2008.01.14 07:20:48 -0600</small>	DIVISION	DRAWING
		ENGINEERING DIRECTORATE	<b>NORTUNEN.LARRY</b> R.1230549628 <small>Digitally signed by NORTUNEN.LARRY. DN: cn=NORTUNEN.LARRY.R.1230549628, c=US, o=U.S. Government, ou=DoD, PKI, USA Reason: I have reviewed this document Date: 2008.01.15 15:38:12 -0600</small>	FILE	<b>19</b>
				<b>48</b>	<b>4221/25</b>
				<b>20PA1009</b>	

**GENERAL NOTES**

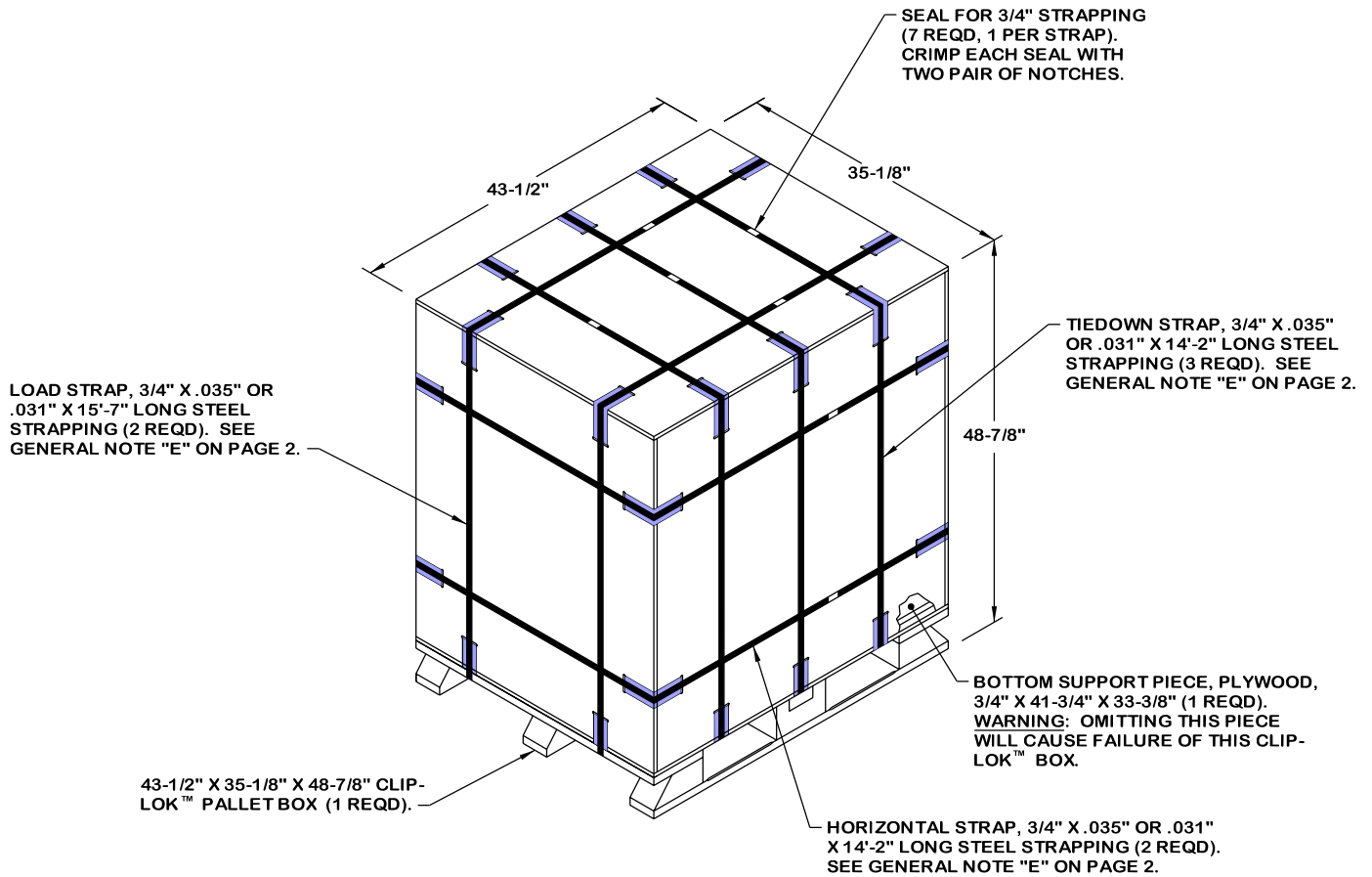
- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1, AND AUGMENTS TM 743-200-1 (CHAPTER 5) AND CONFORMS TO MIL-STD-1660.
- B. FOR DETAILS OF THE FIBERBOARD BOX SEE ARDEC DRAWING 130018658.  
  
BOX DIMENSIONS: 21-1/8" LONG X 17" WIDE X 5-1/4" HIGH  
BOX CUBE: 1.1 CUBIC FEET  
BOX WEIGHT: 38 POUNDS
- C. 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
- D. UNLESS OTHERWISE SPECIFIED, A MANUFACTURING TOLERANCE OF PLUS-OR-MINUS 1/4" IS ALLOWED ON ALL DIMENSIONS. HOWEVER, SIMILAR PIECES IN AN ASSEMBLY MUST BE WITHIN 1/8" OF THE SAME DIMENSION.
- E. INSTALL EACH HORIZONTAL, LOAD OR TIEDOWN STRAP TO BE LOCATED AS SHOWN. HORIZONTAL STRAPS MUST BE TENSIONED AND SEALED PRIOR TO THE APPLICATION OF TIEDOWN AND LOAD STRAPS. LOAD STRAPS MUST BE TENSIONED AND SEALED AFTER THE HORIZONTAL STRAPS AND PRIOR TO THE TIEDOWN STRAPS.
- F. WHEN APPLYING ANY STRAP, CARE MUST BE EXERCISED TO ASSURE THAT THE END OF THE STRAP ON THE UNDERSIDE OF THE JOINT EXTENDS AT LEAST 6" BEYOND THE SEAL. THIS EXTRA MINIMUM LENGTH OF STRAP IS REQUIRED TO PERMIT SUBSEQUENT TIGHTENING OF LOOSENED STRAPPING. RETENSIONING CAN BE ACCOMPLISHED WITHOUT REPLACING STRAPPING OR SPLICING STRAPPING THROUGH THE USE OF A MANUAL OR PNEUMATIC FEEDWHEEL TYPE TENSIONING TOOL AND THE APPLICATION OF ONE ADDITIONAL SEAL.
- G. IN ORDER TO OBTAIN COMPACT AND SOUND UNITS, ALL STRAPS SHALL BE LOCATED IN PROPER ALIGNMENT AND TENSIONED UNTIL THEY CUT INTO THE EDGE OF THE PALLET BOX AND THE PALLET DECK. AFTER TENSIONING, ALL STRAPS WILL BE SECURED USING ONE SEAL AND TWO PAIR OF NOTCHES PER SEAL.
- H. CLIP-LOK BOXES, HARDBOARD, FIBERBOARD, AND PLYWOOD ARE MANUFACTURED WOOD AND THEREFORE DO NOT REQUIRE HEAT TREATMENT.
- J. UNIT LOAD MARKING MUST BE APPLIED IN ACCORDANCE WITH ARDEC DRAWING 13018657.
- K. ARMOR TILE BOXES MUST FIT SNUGLY WITHIN THE PALLET BOX. THE UNBLOCKED SPACE WITHIN THE PALLET BOX MUST NOT EXCEED 1/2" IN ANY DIRECTION. FILLERS SUCH AS PLYWOOD, FIBERBOARD, HONEYCOMB FILLER, FOAM CUSHIONING MATERIAL OR HARDBOARD SHALL BE ADDED AS REQUIRED TO OBTAIN A TIGHT PACK.
- L. 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.

PALLET UNIT DATA				
ITEMS INCLUDED		HAZARD CLASS AND DIVISION	COMPATIBILITY GROUP	APPROX WEIGHT LBS
NSN	DODIC			
1375-01-557-1600	MP22	1. 2. 3	D	1, 374

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).

**MATERIAL SPECIFICATIONS**

- PALLET BOX - - - - -: CLIP-LOK™ REFERENCE NUMBER CL-433548-PB-3200; CLIP-LOK™ SIMPAK USA, INC. ALTERNATIVE: FRASER LEAGUE MANUFACTURING REFERENCE NUMBER ARM-0706-A; FRASER LEAGUE MANUFACTURING, 608 FURMAN ROAD, PO BOX 3626, GREENVILLE, SC 29608-3626
- PLYWOOD - - - - -: COMMERCIAL ITEM DESCRIPTION A-A-55057, INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE C-D. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER INTERIOR OR AN EXTERIOR GRADE MAY BE SUBSTITUTED.
- STRAPPING, STEEL - -: ASTM D3953; FLAT STRAPPING, TYPE 1, HEAVY DUTY, FINISH B (GRADE 2), SIZE 3/4" OR 1-1/4" X .035" OR .031", NOTE: BRITTE OR SLIT EDGES SHALL HAVE FINISH A OVERLAY.
- SEAL, STRAP - - - -: ASTM D3953; CLASS H, FINISH B (GRADE 2), DOUBLE NOTCH TYPE, STYLE I, II, III, OR IV. ALTERNATIVE SEAL FINISH: SIGNODE OR DELTA PAINTED SEALS MAY BE USED AS AN ALTERNATIVE IF ALL SURFACES ARE PAINTED. GRITTED BACKING IS NOT PERMITTED.
- HARDBOARD - - - - -: ANSI/AHA A135.4, CLASS 1.
- FIBERBOARD - - - - -: ASTM D4727.
- HONEYCOMB FILLER - -: FIBERBOARD, FACING PAPER WEIGHT 69 POUNDS/1,000 SQUARE FEET, CORE PAPER WEIGHT 33 POUNDS/1,000 SQUARE FEET, 1/2" CORE CELL CENTERS, PACTIV CORPORATION (OR EQUAL).
- FOAM CUSHIONING MATERIAL - - - - -: COMMERCIAL ITEM DESCRIPTION A-A-59136, CLASS 1, TYPE III, GRADE A, OR COMMERCIAL EQUIVALENT.



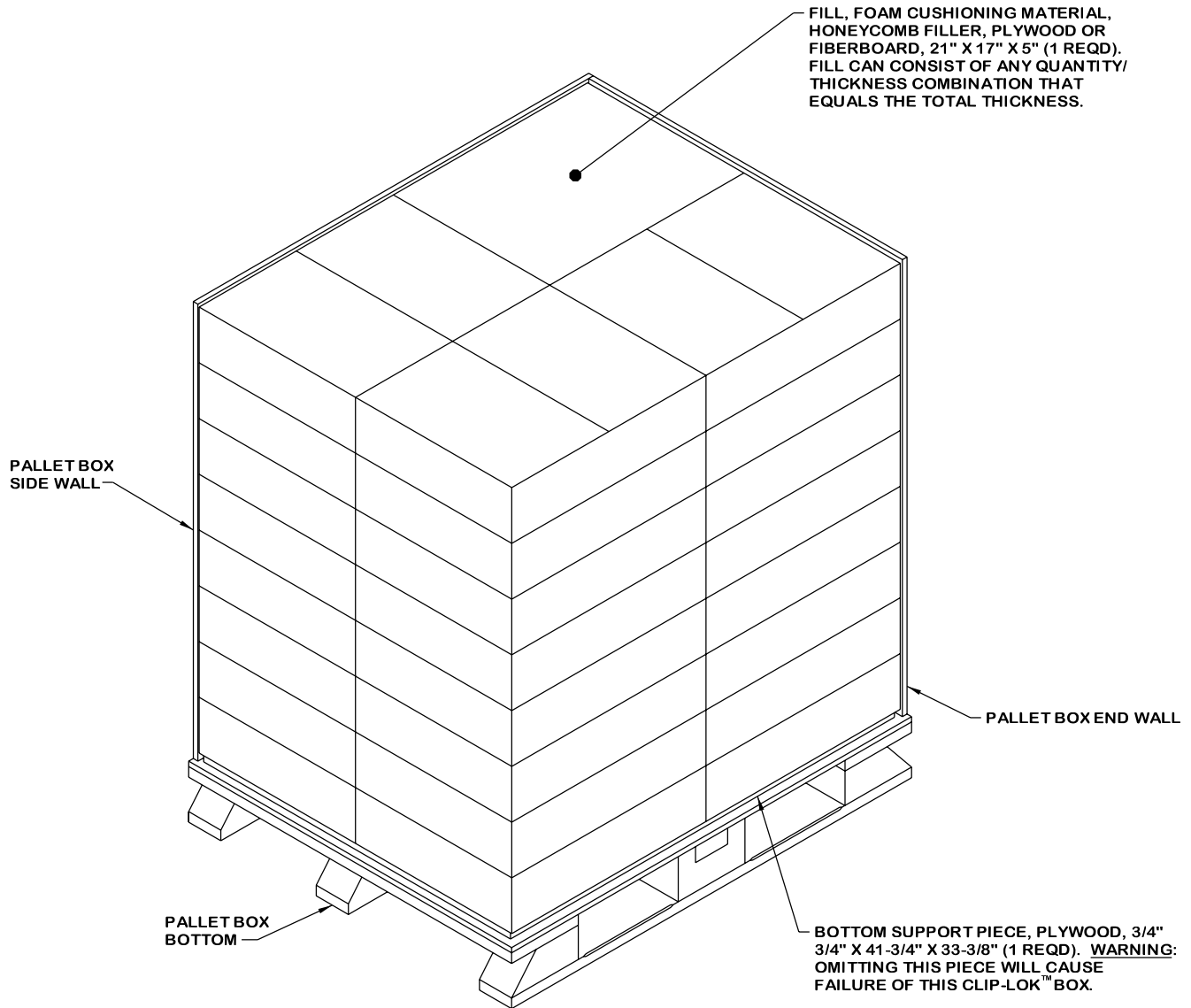
**PALLET UNIT**

31 BOXES OF ARMOR TILES @ 38 LBS	-----	1,178 LBS (APPROX)
DUNNAGE	-----	11 LBS
PALLET BOX	-----	185 LBS
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TOTAL WEIGHT	-----	1,374 LBS (APPROX)
CUBE	-----	43.2 CU FT (APPROX)

BILL OF MATERIAL		
PALLET BOX, CLIP-LOK™	----- 1 REQD	185 LBS
STEEL STRAPPING, 3/4"	----- 102.00' REQD	9.11 LBS
SEAL FOR 3/4" STRAPPING	----- 7 REQD	NIL
HONEYCOMB, 2"	----- 2.48 SQ FT REQD	0.82 LBS
HONEYCOMB, 3"	----- 2.48 SQ FT REQD	1.07 LBS

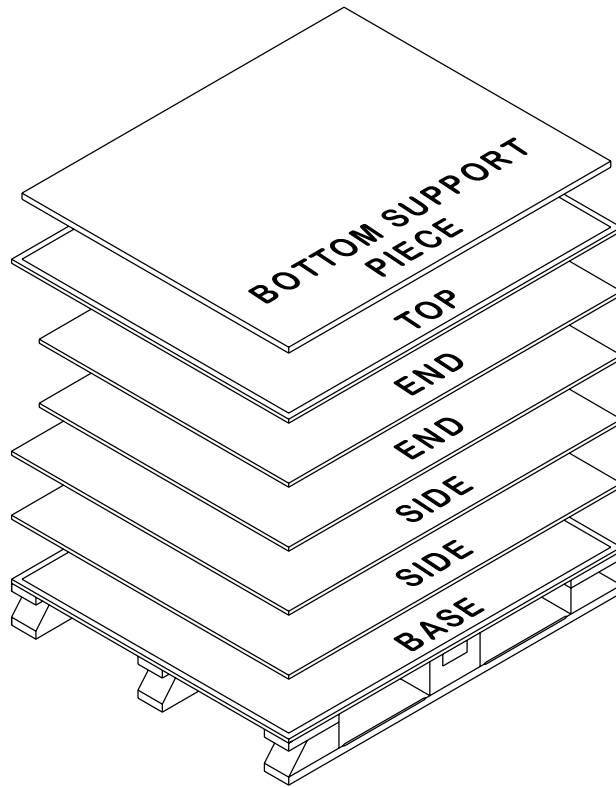
**SPECIAL NOTES:**

1. SOURCES OF SUPPLY: THE CLIP-LOK™ REFERENCE NUMBER CL-433548-PB-3200 IS APPROVED FOR USE. THIS PALLET BOX CAN BE OBTAINED FROM CLIP-LOK SIMPAK™ USA, INC., 1-800-448-CLIP. THE FRASER LEAGUE MANUFACTURING REFERENCE NUMBER ARM-0706-A IS ALSO APPROVED FOR USE. THIS PALLET BOX CAN BE OBTAINED FROM FRASER LEAGUE MANUFACTURING, 608 FURMAN ROAD, PO BOX 3626, GREENVILLE, SC 29608-3626
2. OTHER VENDERS' PALLET BOXES MAY BE QUALIFIED FOR USE BY SUBMITTING SAMPLE BOXES TO THE DEFENSE AMMUNITION CENTER, 1 C TREE ROAD, MCALESTER, OK 74501-9053. CONTACT THE RDECOM-ARDEC PACKAGING OFFICE, AMSRD-AAR-AIL-TP, TELEPHONE 309-782-8205, OR THE DAC TRANSPORTATION ENGINEERING DIVISION, SJMAC-DET, TELEPHONE 918-420-8927, E-MAIL MCAL.DAC.SJMAC-DET@CONUS.ARMY.MIL.



**PALLETT UNIT INTERNAL DUNNAGE**

SEE GENERAL NOTE "K" ON PAGE 2.

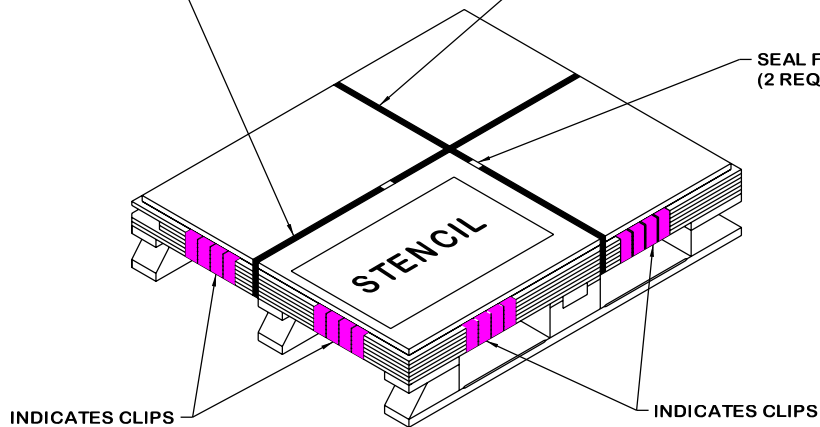


**STACKING FOR COLLAPSED CLIP-LOK™ BOX**

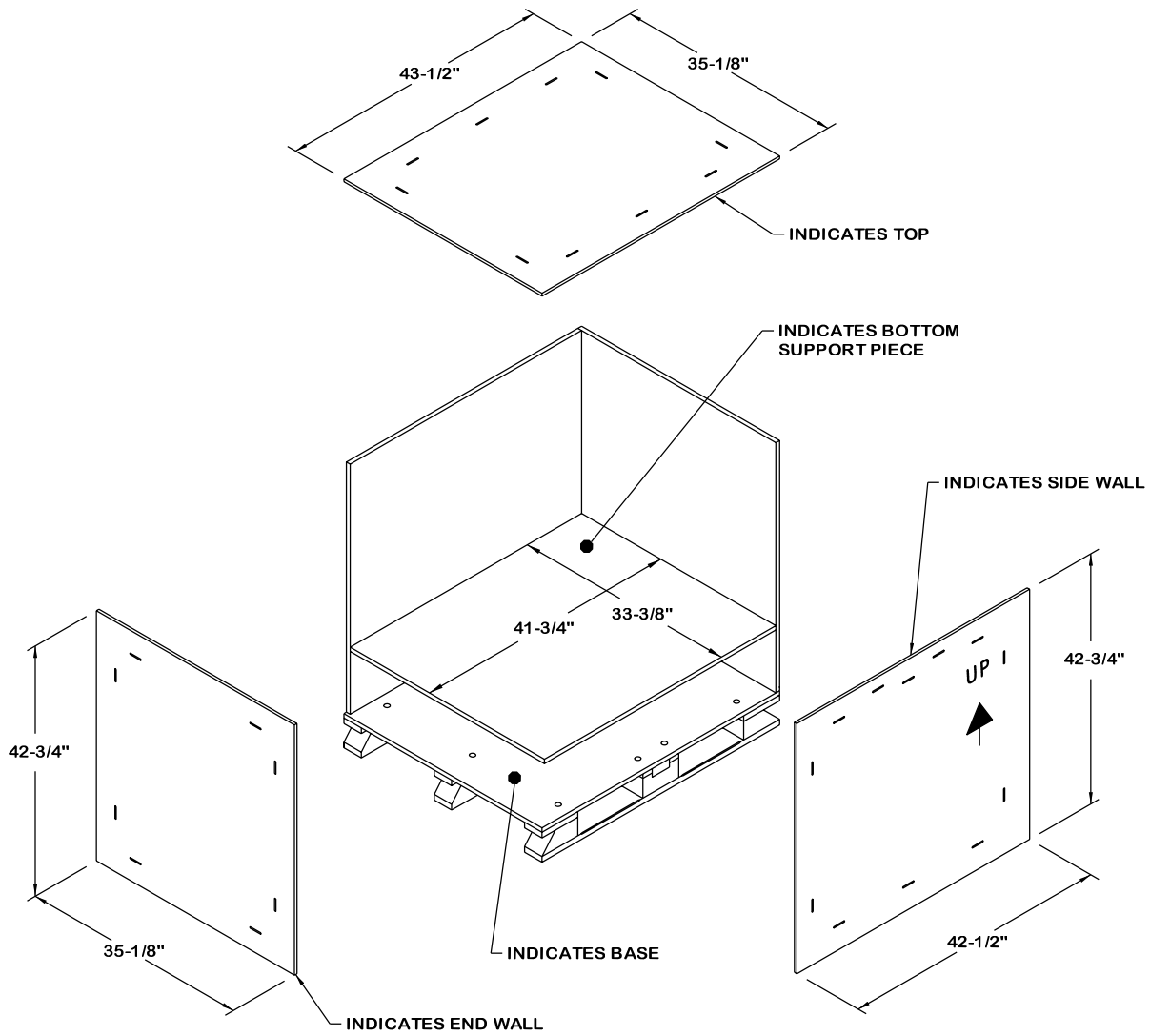
BUNDLING LOAD STRAP, 3/4" X .035" OR .031" X 9'-9" LONG STEEL STRAPPING (1 REQD).

BUNDLING TIEDOWN STRAP, 3/4" X .035" OR .031" X 8'-6" LONG STEEL STRAPPING (1 REQD).

SEAL FOR 3/4" STRAPPING (2 REQD, 1 PER STRAP).



**COLLAPSED BOX**



**STENCIL (FOR APPLICATION TO BOTTOM SUPPORT PIECE)**

**SPECIAL NOTES:**

1. THE DETAIL DEPICTED ABOVE WILL BE STENCILED ON THE BOTTOM SUPPORT PIECE TO SHOW ASSEMBLY INSTRUCTIONS. SEE THE "COLLAPSED BOX" DETAIL ON PAGE 5.
2. AN ARROW WITH UP WILL BE STENCILED ON THE SIDE PIECES AS SHOWN TO ENSURE THE STACKING SLOTS ARE ON TOP.