

UNITIZATION PROCEDURES FOR ARMORED MULTI-PURPOSE VEHICLE (AMPV) HIGH BACK ARMOR TILES UNITIZED IN PALLET BOXES

TILE, ARMOR, BRADLEY, M3A1, M4A1, AND TILE, ARMOR, ABRAMS, M19, OR TILE, ARMOR, BRADLEY, INERT, XM51, XM52, AND TILE, ARMOR, ABRAMS, INERT, XM53, UNITIZED 25 FIBERBOARD BOXES PER PALLET BOX

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U.S. ARMY MATERIEL COMMAND DRAWING

APPROVED, COMBAT CAPABILITIES DEVELOPMENT COMMAND ARMAMENTS CENTER HANSEN.JOSEP H.W.1376495538 <small>Digitally signed by HANSEN.JOSEP.W.1376495538 Date: 2021.04.13 14:58:06 -05'00'</small> FCDD-ACE-LTP		CAUTION: VERIFY PRIOR TO USE AT https://www.dau.edu/cop/ammo/Pages/Default.aspx THAT THIS IS THE MOST CURRENT VERSION OF THIS DOCUMENT. THIS IS PAGE 1 OF 6.			
APPROVED, U.S. ARMY JOINT MUNITIONS COMMAND WARD.GINA. M.1369379808 <small>Digitally signed by WARD.GINA.M.1369379808 Date: 2021.04.14 12:20:33 -05'00'</small> AMSJM-MLT		DO NOT SCALE		<h1>MARCH 2021</h1>	
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND BRAILSFORD.KEITH H.ANTHONY.10286 55661 <small>Digitally signed by BRAILSFORD.KEITH.ANTHONY.1028655661 Date: 2021.04.14 15:02:28 -05'00'</small> U.S. ARMY DEFENSE AMMUNITION CENTER		DESIGN ENGINEER BASIC REV.	SPENCER HOVEY		
		ENGINEERING DIVISON	FIEFFER.LAUR A.A.1230375727 <small>Digitally signed by FIEFFER.LAURA.A.1230375727 Date: 2021.03.11 09:40:26 -05'00'</small>		
		TEST ENGINEER TEST REPORT	FELICIANO.AD IN.1259200373 <small>Digitally signed by FELICIANO.ADIN.1259200373 Date: 2021.03.16 14:38:37 -05'00'</small>		CLASS
		EXPLOSIVE SAFETY DIRECTORATE	FAIRHURST.ROBE RT.JOHN.10157668 80 <small>Digitally signed by FAIRHURST.ROBERT.JOHN.1015766880 Date: 2021.03.18 07:35:28 -05'00'</small>		DIVISION
					DRAWING
					FILE
					19 48 4221/32 20PA1009

GENERAL NOTES

(GENERAL NOTES CONTINUED)

- 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. THE PROCEDURES SPECIFIED HEREIN ARE APPLICABLE TO A PORTION OF THE FOLLOWING ARMOR TILE SETS: THE AMPV HIGH BACK XM1218 SET, WHICH IS COMPOSED OF THREE PALLET BOXES, ONE OF THE CONFIGURATION DEPICTED ON PAGE 3, AND TWO OF THE M19 CONFIGURATIONS; AND THE AMPV HIGH BACK INERT XM1206 SET, WHICH IS COMPOSED OF THREE PALLET BOXES, ONE OF THE CONFIGURATION DEPICTED ON PAGE 3, AND TWO OF THE XM53 CONFIGURATION. THE M19 OR XM53 CONFIGURATIONS ARE DEPICTED IN AMC DRAWING 19-48-4221/30-20PA1009.
- C. M3A1, M4A1, XM51 AND XM52 ARMOR TILES ARE PACKED THREE PER FIBERBOARD BOX. M19 AND XM53 TILES ARE PACKED ONE PER FIBERBOARD BOX. FOR DETAILS OF THE INDIVIDUAL FIBERBOARD BOXES, SEE BELOW.

M3A1 OR XM51:
 CCDC DRAWING: 13075285
 BOX DIMENSIONS: 13-1/2" X 11" X 13"
 BOX WEIGHT: 117 POUNDS
 BOX CUBE: 1.1 CU FT

M4A1 OR XM52:
 CCDC DRAWING: 13075288
 BOX DIMENSIONS: 20" X 12-5/8" X 5"
 BOX WEIGHT: 65 POUNDS
 BOX CUBE: 0.731 CU FT

M19 OR XM53:
 CCDC DRAWING: 13075291
 BOX DIMENSIONS: 16-7/8" X 13-7/8" X 8-3/8"
 BOX WEIGHT: 71 POUNDS
 BOX CUBE: 1.135 CU FT

- D. THE FOLLOWING AMC DRAWINGS ARE APPLICABLE FOR UNLOADING 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

- E. 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.
- F. 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.
- G. 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.
- H. 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.
- J. CLIP-LOK™ PALLET BOXES, HARDBOARD, FIBERBOARD, AND PLYWOOD ARE MANUFACTURED WOOD AND THEREFORE DO NOT REQUIRE HEAT TREATMENT.
- K. UNIT LOAD MARKING MUST BE APPLIED IN ACCORDANCE WITH ARDEC DRAWING 13075296.
- L. 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.

(CONTINUED AT RIGHT)

- M. 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			
PART NUMBER	*HAZARD CLASS AND DIVISION	*COMPATIBILITY GROUP	QUANTITY PER PALLET BOX
12909997	1. 2. 3	D	36
12909998	1. 2. 3	D	9
13009240	1. 2. 3	D	10
12909997-1	1. 2. 3	D	36
12909998-1	1. 2. 3	D	9
13009240-1	1. 2. 3	D	10
12909956	-----INERT-----		36
12909960	-----INERT-----		9
13017060	-----INERT-----		10

*HAZARD AND 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™ PART NUMBER 41X315X3925; PackIQ, 1 AMERICAN WAY, ANDERSON, SC, WWW.PACKIQ.COM

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" X .035" OR .031" OR .029", OR 1-1/4" X .035" OR .031". NOTE: BRITTE OR SLIT EDGES SHALL HAVE FINISH A OVERLAY.

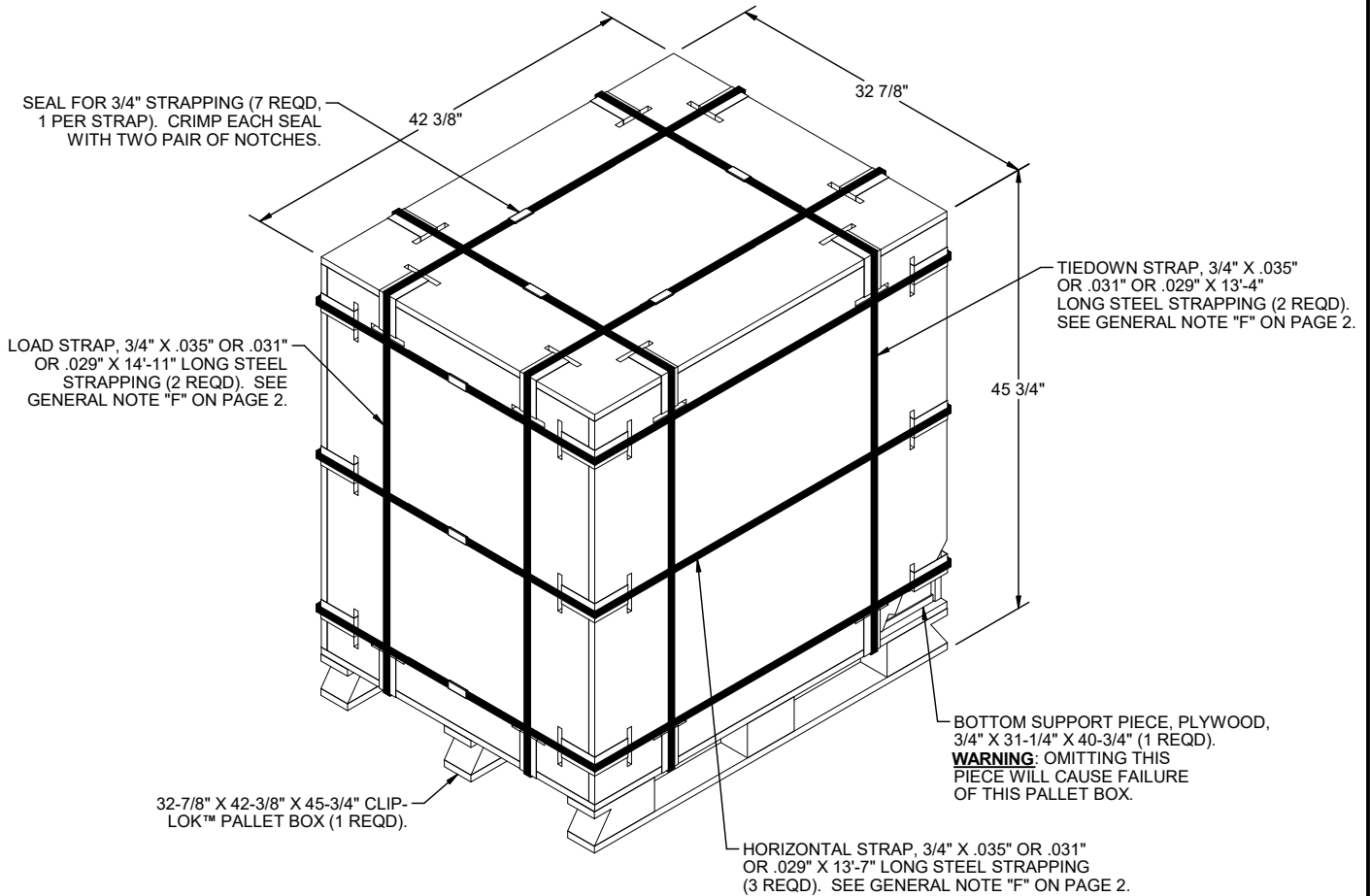
SEAL, STRAP - - - - -: ASTM D3953; CLASS H, FINISH B (GRADE 2), DOUBLE NOTCH TYPE, STYLE I, II, III, OR IV. ALTERNATIVE SEAL FINISH: SIGNODE OR DELTA PAINTED SEALS MAY BE USED AS AN ALTERNATIVE IF ALL SURFACES ARE PAINTED. GRITTED BACKING IS NOT PERMITTED.

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.



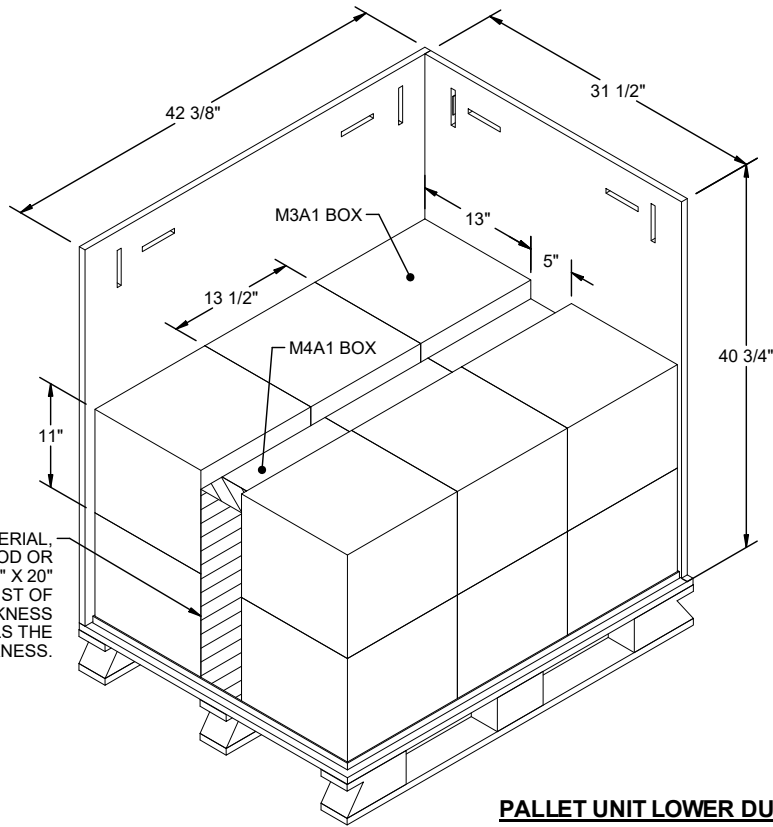
PALLET UNIT

12 BOXES OF M3A1 ARMOR TILES (3 PER BOX) @ 117 LBS	- -	1,404 LBS (APPROX)
3 BOXES OF M4A1 ARMOR TILES (3 PER BOX) @ 65 LBS	- - -	195 LBS
10 BOXES OF M19 ARMOR TILES (1 PER BOX) @ 71 LBS	- - -	710 LBS
DUNNAGE	- -	13 LBS
PALLET BOX	- - - - -	220 LBS
TOTAL WEIGHT		2,542 LBS (APPROX)
CUBE		36.9 CU FT (APPROX)

BILL OF MATERIAL		
PALLET BOX, CLIP-LOK™	- - - - - 1 REQD	- - - - - 220 LBS
STEEL STRAPPING, 3/4"	- - - 97.75' REQD	- - - - - 8.73 LBS
SEAL FOR 3/4" STRAPPING	- - - - - 7 REQD	- - - - - NIL
FIBERBOARD, 1/4"	- - - 0.39 SQ FT REQD	- - - - - 0.97 LBS
HONEYCOMB, 2"	- - - - - 2.39 SQ FT REQD	- - - - - 0.89 LBS
HONEYCOMB, 1"	- - - - - 4.56 SQ FT REQD	- - - - - 1.02 LBS
HONEYCOMB, 3/4"	- - - - - 0.69 SQ FT REQD	- - - - - 0.31 LBS
HONEYCOMB, 3/8"	- - - - - 4.27 SQ FT REQD	- - - - - 0.34 LBS

SPECIAL NOTES:

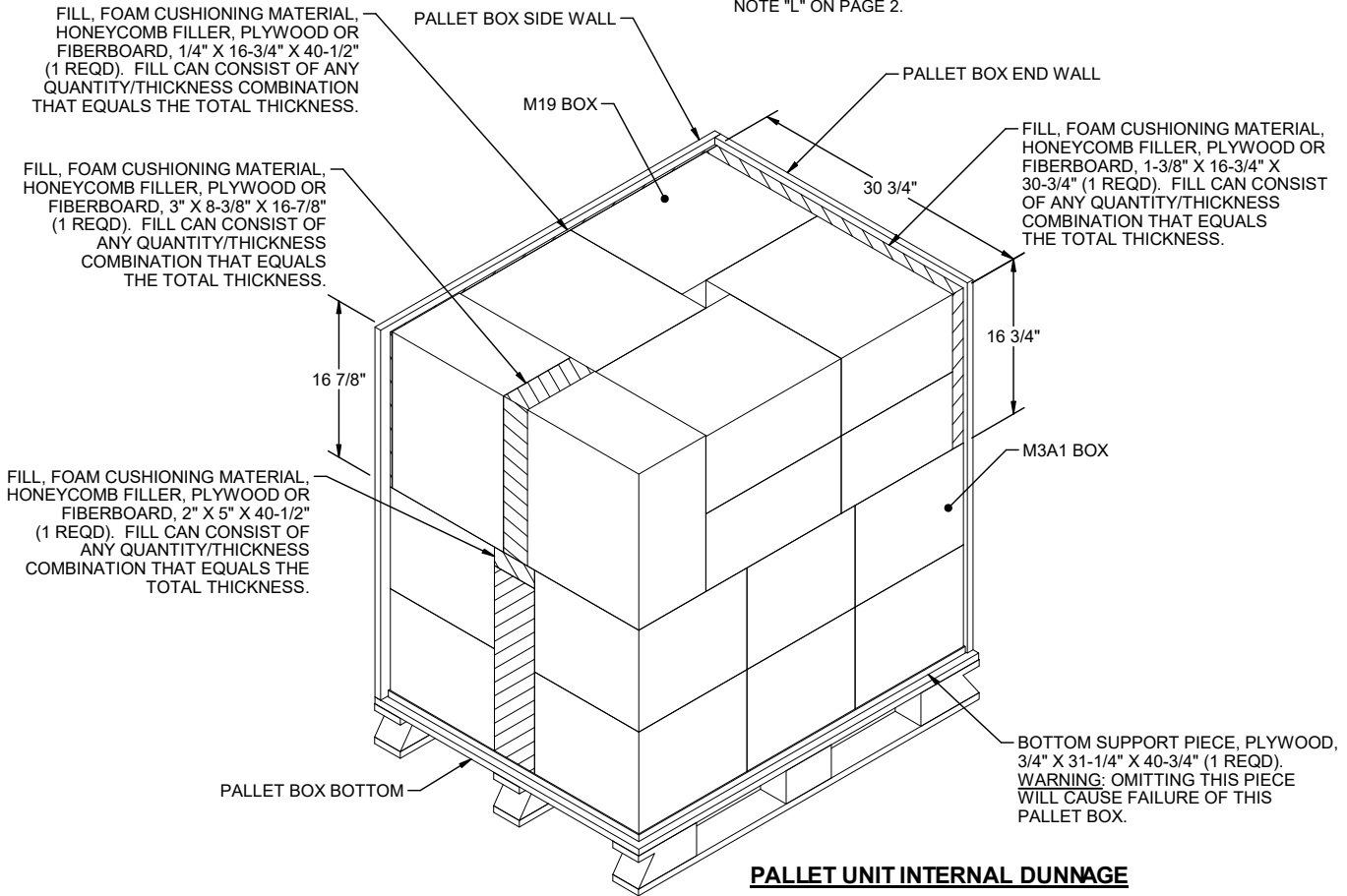
- SOURCES OF SUPPLY: THE CLIP-LOK™ PALLET BOX, PART NUMBER 41X315X3925 IS APPROVED FOR USE. THIS PALLET BOX CAN BE OBTAINED FROM PackIQ, 1 AMERICAL WAY, ANDERSON, SC, WWW.PACKIQ.COM
- OTHER VENDORS' PALLET BOXES MAY BE QUALIFIED FOR USE BY SUBMITTING SAMPLE BOXES TO THE DEFENSE AMMUNITION CENTER, 1 C TREE ROAD, MCALESTER, OK 74501-9053. CONTACT THE DAC EXPLOSIVES SAFETY ENGINEERING DIVISION, ATCL-ACE, E-MAIL USARMY.MCALESTER.USAMC.MBX.DAC-DET@MAIL.MIL



FILL, FOAM CUSHIONING MATERIAL, HONEYCOMB FILLER, PLYWOOD OR FIBERBOARD, 2-5/8" X 5" X 20" (1 REQD). FILL CAN CONSIST OF ANY QUANTITY/THICKNESS COMBINATION THAT EQUALS THE TOTAL THICKNESS.

PALLET UNIT LOWER DUNNAGE

M3A1 AND M4A1 BOXES SHOWN. SEE GENERAL NOTE "L" ON PAGE 2.



FILL, FOAM CUSHIONING MATERIAL, HONEYCOMB FILLER, PLYWOOD OR FIBERBOARD, 1/4" X 16-3/4" X 40-1/2" (1 REQD). FILL CAN CONSIST OF ANY QUANTITY/THICKNESS COMBINATION THAT EQUALS THE TOTAL THICKNESS.

FILL, FOAM CUSHIONING MATERIAL, HONEYCOMB FILLER, PLYWOOD OR FIBERBOARD, 3" X 8-3/8" X 16-7/8" (1 REQD). FILL CAN CONSIST OF ANY QUANTITY/THICKNESS COMBINATION THAT EQUALS THE TOTAL THICKNESS.

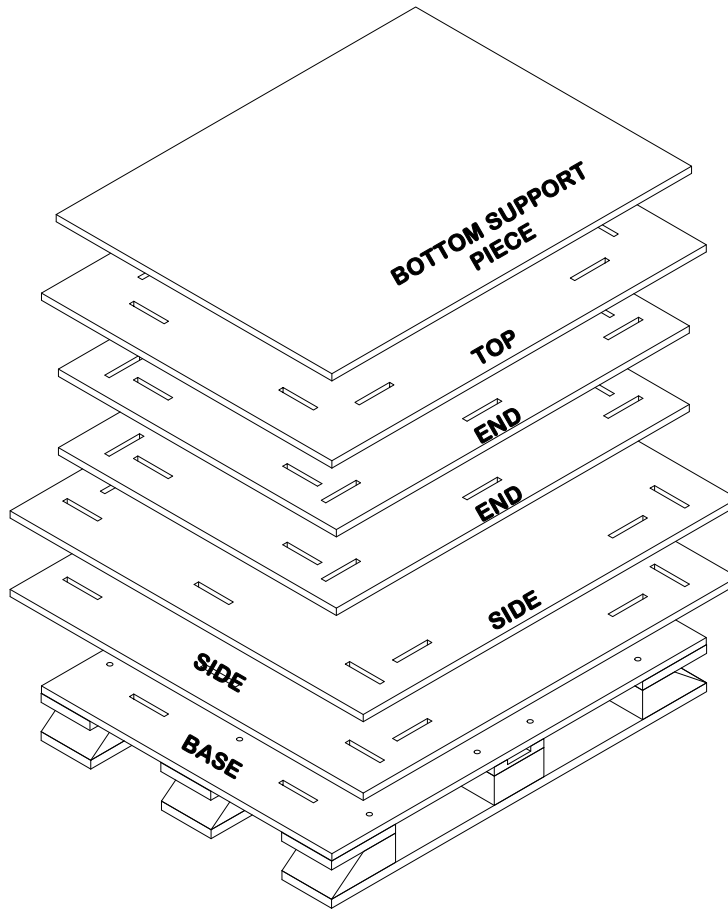
FILL, FOAM CUSHIONING MATERIAL, HONEYCOMB FILLER, PLYWOOD OR FIBERBOARD, 2" X 5" X 40-1/2" (1 REQD). FILL CAN CONSIST OF ANY QUANTITY/THICKNESS COMBINATION THAT EQUALS THE TOTAL THICKNESS.

FILL, FOAM CUSHIONING MATERIAL, HONEYCOMB FILLER, PLYWOOD OR FIBERBOARD, 1-3/8" X 16-3/4" X 30-3/4" (1 REQD). FILL CAN CONSIST OF ANY QUANTITY/THICKNESS COMBINATION THAT EQUALS THE TOTAL THICKNESS.

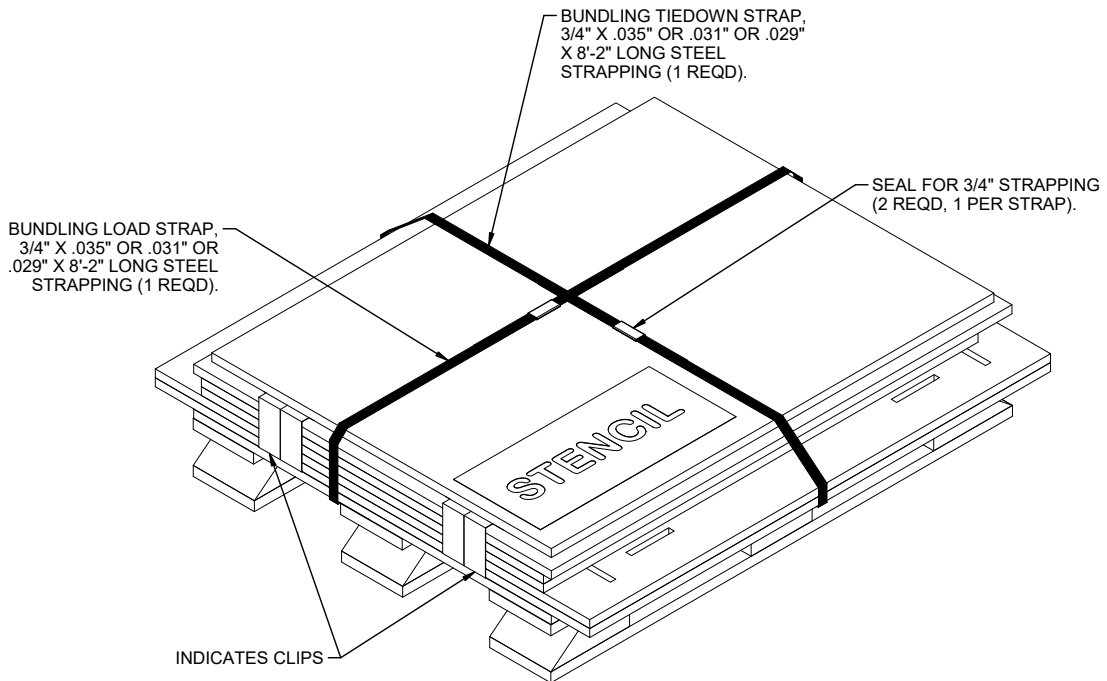
BOTTOM SUPPORT PIECE, PLYWOOD, 3/4" X 31-1/4" X 40-3/4" (1 REQD). WARNING: OMITTING THIS PIECE WILL CAUSE FAILURE OF THIS PALLET BOX.

PALLET UNIT INTERNAL DUNNAGE

M3A1 AND M19 BOXES SHOWN - THE M4A1 BOXES ARE NOT VISIBLE IN THE "PALLET UNIT INTERNAL DUNNAGE DETAIL." SEE THE "PALLET UNIT LOWER DUNNAGE" DETAIL ABOVE FOR THE PLACEMENT OF THE M4A1 BOXES. SEE GENERAL NOTE "L" ON PAGE 2.

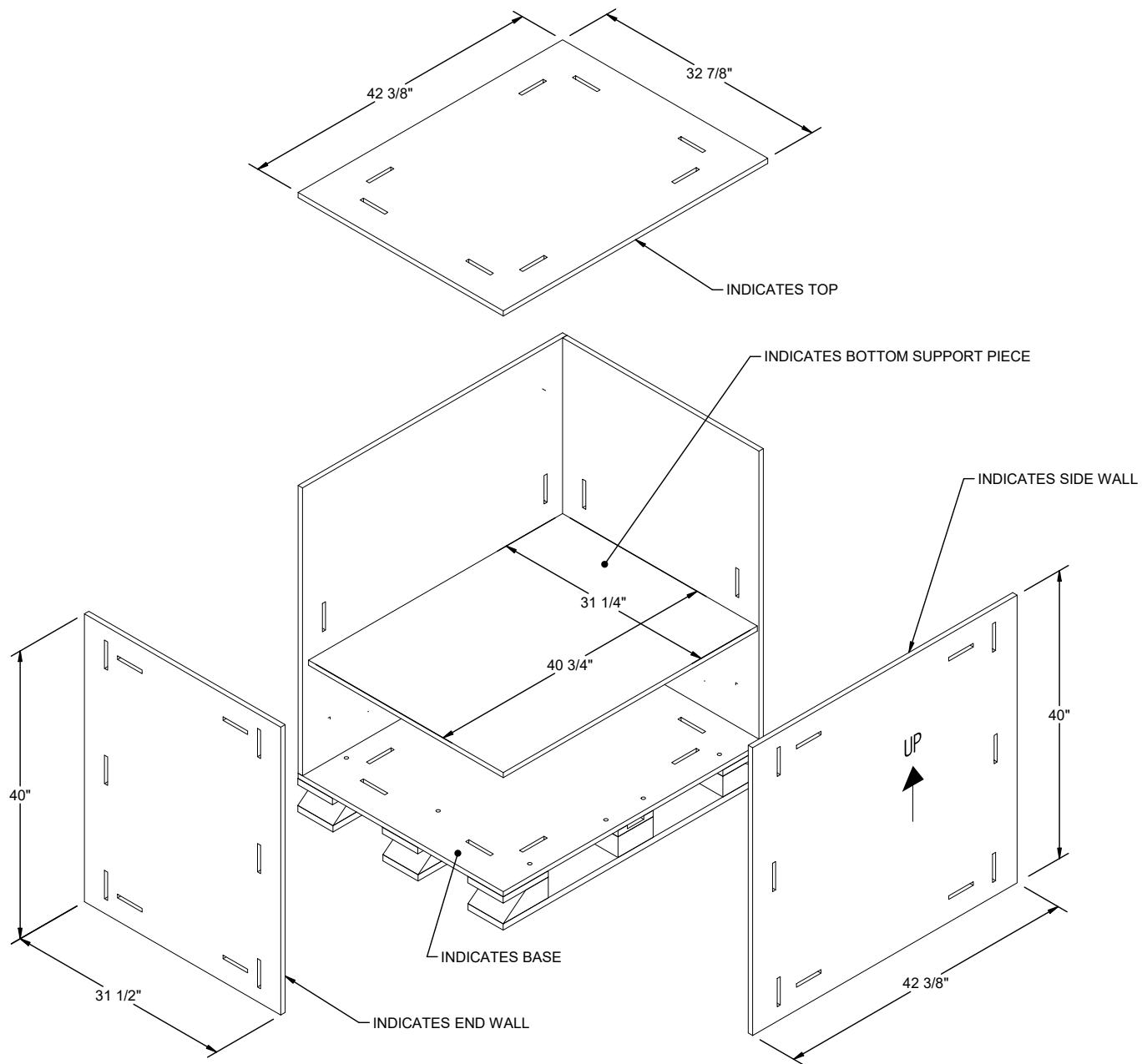


STACKING FOR COLLAPSED CLIP-LOK™ BOX



COLLAPSED BOX

SEE THE STENCIL DETAIL ON PAGE 6.



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.