

UNITIZATION PROCEDURES FOR SMOKE GRENADES PACKED IN SURE-PAK CONTAINERS FOR IN-TRA-THEATER GROUND MOVEMENT ONLY

NOTICE: THE PROCEDURES DELINEATED IN THIS DRAWING ARE FOR INTRA-THEATER GROUND MOVEMENT ONLY.

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U.S. ARMY MATERIEL COMMAND DRAWING

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AMSJM-LIT		DESIGN ENGINEER	BASIC REV.		
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GENERAL NOTES

A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).

B. THE SPECIFIED UNITIZATION PROCEDURES ARE APPLICABLE TO LOADS OF SMOKE GRENADE LOADED IN SURE-PAK CONTAINERS. SUBSEQUENT REFERENCE TO PALLET UNIT HEREIN MEANS THE SURE-PAK WITH AMMUNITION ITEMS. **CAUTION:** REGARDLESS OF THE QUANTITY OF GRENADES TO BE SHIPPED, THE "MAXIMUM NET WEIGHT" OF THE SURE-PAK MUST NOT EXCEED 2,000 POUNDS.

C. THE LOADS SHOWN ON PAGES 4 AND 6 ARE BASED ON A 48" LONG BY 40" WIDE BY 51-1/2" HIGH SURE-PAK CONTAINER WITH AN INSIDE HEIGHT OF 45", ALL WITH A MAXIMUM NET WEIGHT OF 2,000 POUNDS. ANY OF THE SURE-PAK CONTAINERS LISTED IN THE MATERIAL SPECIFICATIONS BELOW MAY BE USED, BUT MAY RESULT IN EITHER A REDUCTION IN THE QUANTITY SHIPPED OR THE USE OF MORE FILL MATERIAL TO OCCUPY THE VOID.

D. THE FOLLOWING AMC DRAWINGS ARE APPLICABLE FOR OUTLOADING AND STORAGE OF THE ITEMS COVERED BY THIS DRAWING. THE DELINEATED PROCEDURES ARE INTENDED FOR INTRA-THEATER GROUND MOVEMENT ONLY.

STORAGE - - - - 19-48-4118-1-2-3-4-14-22PA1002
TACTICAL VEHICLE - 19-48-4901/4-CA1702
TRUCKLOADING - - - 19-48-4117-11PA1003

E. AMMUNITION SHOULD BE RELOADED AND TRANSPORTED IN ORIGINAL FACTORY PACKAGING WHENEVER POSSIBLE; HOWEVER, THERE ARE SITUATIONS WHEN THIS IS NOT POSSIBLE. IN ORDER TO ENSURE THE HIGHEST LEVEL OF EXPLOSIVES SAFETY PRACTICABLE, USE THE FOLLOWING PACKAGING PRIORITIES WHEN PLANNING AMMUNITION TRANSPORT. FIRST, USE FACTORY PACKAGING IF AT ALL POSSIBLE. THE SECOND OPTION IS TO LOAD SMOKE GRENADES IN EMPTY WATER BOTTLE INTO METAL CANS, AS DEPICTED ON PAGE 6 AND 7. THE THIRD AND LEAST DESIREABLE METHOD OF SECURING AMMUNITION FOR TRANSPORT IS TO USE EMPTY WATER BOTTLES TO PACK SMOKE GRENADES DIRECTLY INTO SURE-PAK CONTAINERS, AS DEPICTED ON PAGES 4 AND 5.

F. WHEN LOADING GRENADES, THEY ARE TO BE POSITIONED SO AS TO ACHIEVE A TIGHT LOAD. THE UNBLOCKED SPACE ACROSS THE WIDTH OR LENGTH OF A SURE-PAK CONTAINER OR ANY DIMENSION IN A METAL BOX IS NOT TO EXCEED 1/2", AND UNBLOCKED SPACE IN THE HEIGHT OF THE SURE-PAK IS NOT TO EXCEED 1". EXCESSIVE SLACK CAN BE ELIMINATED FROM A LOAD BY ADDING FILLER MATERIAL SUCH AS CARDBOARD, EMPTY WATER BOTTLES, EMPTY BOXES, SHREDDED CLOTH, OR OTHER SIMILAR MATERIAL.

G. METAL BOXES THAT MAY BE USED FOR SHIPMENT OF AMMUNITION USING THE PROCEDURES HEREIN INCLUDE M2 SERIES CONTAINERS AND M548 CONTAINERS.

H. FILLER MATERIAL IS DEFINED HEREIN AS ANY AVAILABLE MATERIAL WITH SUFFICIENT CUSHIONING TO PROTECT THE AMMUNITION ITEMS. SOME POTENTIAL SOURCES OF FILLER MATERIAL INCLUDE BUT ARE NOT LIMITED TO EMPTY WATER BOTTLES, SHREDDED UNIFORMS (CLEAN WITHOUT SHARP PROJECTIONS), DISCARDED CARDBOARD CARTONS, EGG CARTONS, WOOD SCRAPS (WITHOUT NAILS), TOILET PAPER AND PAPER TOWEL CARDBOARD TUBES, NEWSPAPER, SHREDDED COPY PAPER, AND DISCARDED BANDOLERS. **CAUTION:** ALL FILLER MATERIAL MUST BE NON-STATIC PRODUCING AND FREE FROM PROJECTIONS AND SHARP EDGES, AS WELL AS FREE FROM FOOD RESIDUE AND EXCESS WATER OR LIQUID RESIDUE.

J. CARE SHOULD BE TAKEN WHEN LOADING SURE-PAK CONTAINERS TO ENSURE AN EVENLY BALANCED LOAD. ARRANGE THE LOAD IN SUCH A MANNER THAT THE CENTER OF GRAVITY IS CLOSE TO THE PHYSICAL CENTER OF SURE-PAK.

K. IF SURE-PAK CONTAINERS ARE TIGHTLY PACKED AND LOADED WITH AMMUNITION ITEMS TO WITHIN 1" OF THE TOP ON THE SIDEWALLS, THE SURE-PAKS MAY BE STACKED FOR SHORT TERM STORAGE UP TO THREE HIGH. IF, HOWEVER, THE SURE-PAK CONTAINER LOAD CONSISTS OF MORE THAN ONE INCH OF FILL MATERIAL ON THE TOP OF THE LOAD, THE SURE-PAK CONTAINERS WILL NOT BE STACKED, AND SHOULD BE MARKED AS SUCH. THE ONLY EXCEPTION TO THIS REQUIREMENT IS IF THE FILL MATERIAL IS AS STRONG AS OR STRONGER THAN THE GRENADES BEING LOADED, SUCH AS THE USE OF EMPTY M2 SERIES CANS. IN THIS CASE, THE SURE-PAK CONTAINERS MAY BE STACKED AS OUTLINED ABOVE.

L. EACH SURE-PAK CONTAINER MUST BE SECURED WITH A MINIMUM OF TWO WEB STRAPS ORIENTED AROUND THE 40" LENGTH AND THE HEIGHT OF THE LOAD. THE TWO STRAPS SHOULD BE EVENLY SPACED ACROSS THE LENGTH OF THE LOAD. CARE MUST BE TAKEN TO ENSURE THAT STRAP RATCHETS WILL NOT INTERFERE WITH EITHER STACKING OF THE SURE-PAK CONTAINERS OR LONGITUDINAL LOADING FOR TRANSPORT. IF WEB STRAPS ARE NOT AVAILABLE, SIMILAR STRENGTH PLASTIC STRAPPING IAW ASTM D3950 MAY BE USED.

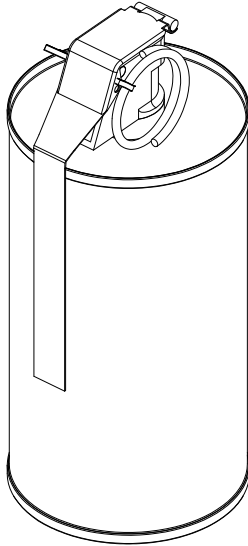
M. PORTIONS OF THE SURE-PAK CONTAINER DEPICTED WITHIN THIS DRAWING, SUCH AS THE TOP AND SIDEWALL, HAVE NOT BEEN SHOWN IN SOME LOAD VIEWS FOR CLARITY PURPOSES.

N. THE QUANTITY OF GRENADES SHOWN IN THE LOADS HEREIN MAY BE REDUCED FOR SHIPMENT, IF DESIRED. ADDITIONAL FILL MATERIAL MUST BE INSTALLED IN ORDER TO MEET THE REQUIREMENTS IN GENERAL NOTE "F".

O. 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.

MATERIAL SPECIFICATIONS

<u>SURE-PAK CONTAINER</u> - - - -	SHIPPING AND STORAGE SYSTEM; SURE-PAK KIT INCLUDING TOP, BASE, SLEEVE AND 8 LOCKING CLIPS; 8115-01-556-2579 (30-1/2" HIGH), 8115-01-556-2580 (36-1/2" HIGH), OR 8115-01-556-2581 (51-1/2" HIGH).
<u>STRAPPING, WEB</u> - - - -	TIE DOWN, CARGO, VEHICLE, 2" NOMINAL STRAP, 2,000 POUND MINIMUM WORKING LOAD LIMIT, 3990-01-204-3009 OR EQUIVALENT.
<u>HARDBOARD</u> - - - -	ANSI/AHA A135.4, CLASS 1.
<u>FIBERBOARD</u> - - - -	ASTM D4727.
<u>TAPE, DUCT</u> - - - -	COMMERCIAL GRADE.
<u>HONEYCOMB FILLER</u> - - - -	FIBERBOARD, FACING PAPER WEIGHT 69 POUNDS/1,000 SQUARE FEET, SORE PAPER WEIGHT 33 POUNDS/1,000 SQUARE FEET, 1/2" CORE CELL CENTERS, INTERNATIONAL HONEYCOMB CORPORATION (OR EQUAL).
<u>FOAM CUSHIONING MATERIAL</u> - - - -	COMMERCIAL ITEM DESCRIPTION A-A-59136, CLASS 1, TYPE III, GRADE A, OR COMMERCIAL EQUIVALENT.
<u>WATER BOTTLE</u> - - - -	COMMERCIAL GRADE, 20 OUNCE OR 0.5 LITER.

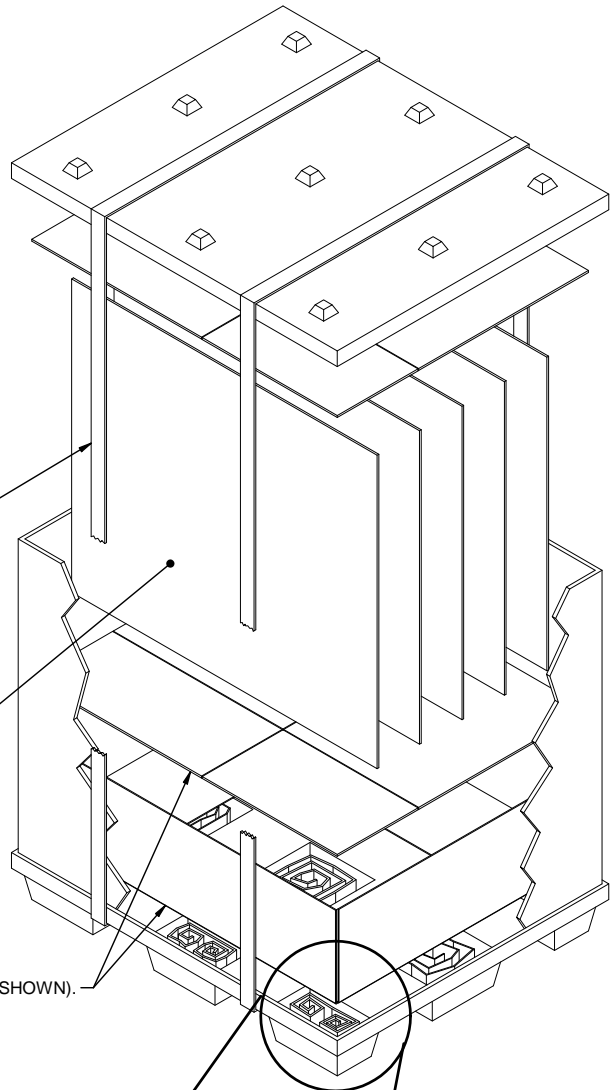


TYPICAL SMOKE GRENADE

WEB STRAP ASSEMBLY, 2" (2 REQD), INSTALL AS SHOWN AROUND THE SHORT DIMENSION OF THE SURE-PAK CONTAINER. SEE GENERAL NOTE "L" ON PAGE 2.

VERTICAL SEPARATOR (CARBOARD SHOWN)

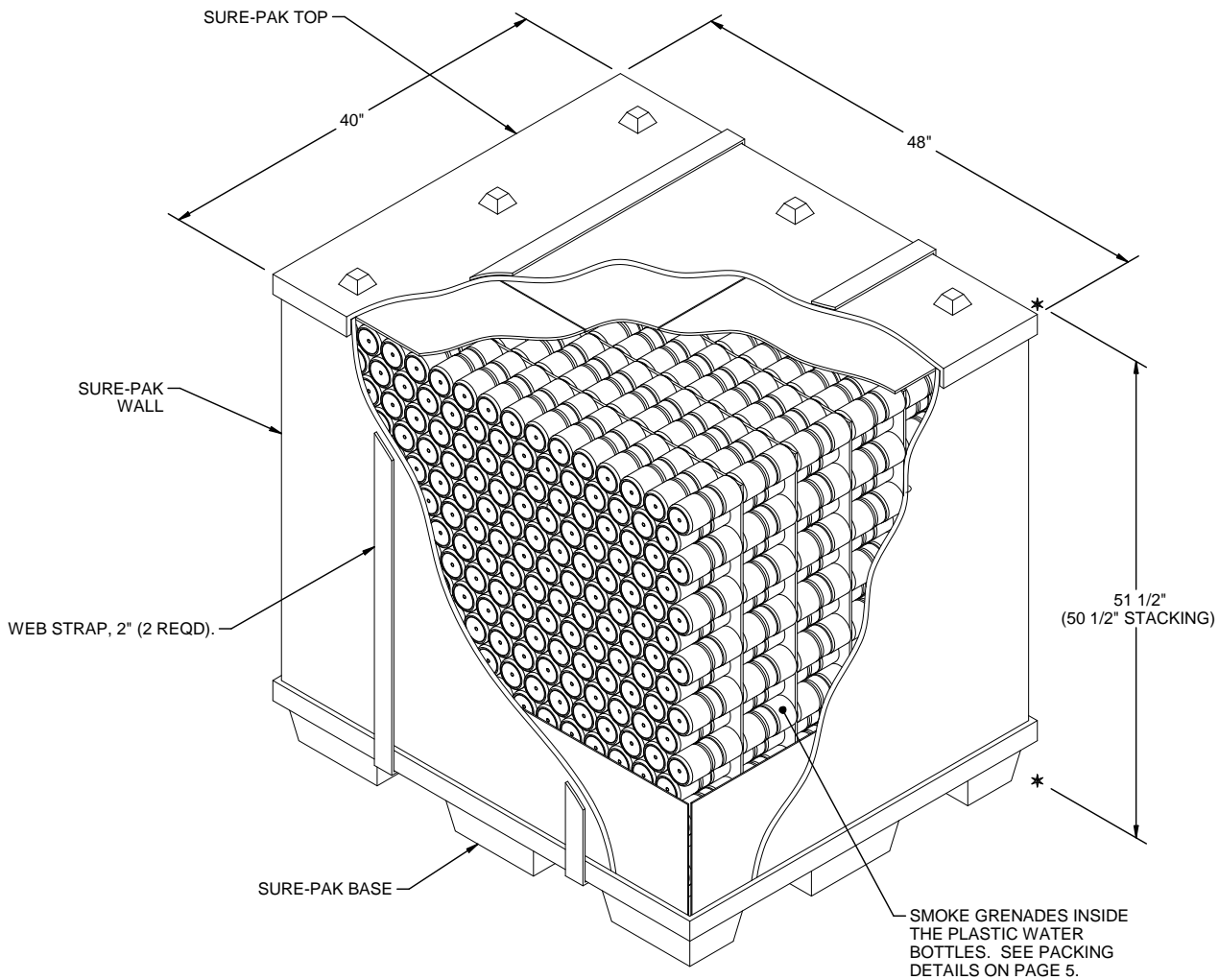
TYPICAL FILL MATERIAL (CARBOARD SHOWN).



CARBOARD SUPPORT, ROLLED (9 PLACES). SEE NOTE 2 ON PAGES 5 AND 7.

TYPICAL STRAPPED SURE-PAK CONTAINER

THE DETAIL ABOVE DEPICTES A SURE-PAK CONTAINER WITH THE MINIMUM REQUIRED FILL MATERIAL (CARBOARD SHOWN) AND THE REQUIRED WEB STRAPS. THE SMOKE GRENADES HAVE NOT BEEN SHOWN FOR CLARITY PURPOSES.



SMOKE GRENADE PALLET UNIT

SEE GENERAL NOTE "F" ON PAGE 2, AND "FRONT VIEW" NEXT PAGE.

1,536 SMOKE GRENADES (MAXIMUM) @ 1.1875 LB	-----	1,824 LBS
DUNNAGE	-----	52 LBS
PALLET	-----	63 LBS
<hr/>		
TOTAL WEIGHT	-----	1,939 LBS (APPROX)
CUBE	-----	57.2 CU FT (APPROX)

BILL OF MATERIAL		
SURE-PAK, 40" X 48" X 51-1/2"	-----	1 REQD -- 63.0 LBS
EMPTY WATER BOTTLE @ 5 GRMS/BOTTLE	-----	1,536 REQD -- 17.0 LBS
CARDBOARD	-----	AS REQD -- 24.0 LBS
WEB STRAP ASSEMBLY, 2"	-----	2 REQD -- 11.0 LBS

SURE-PAK CONTAINER LOADING PROCEDURES

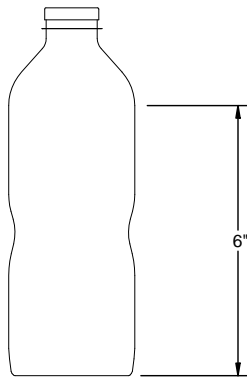


FIGURE 1

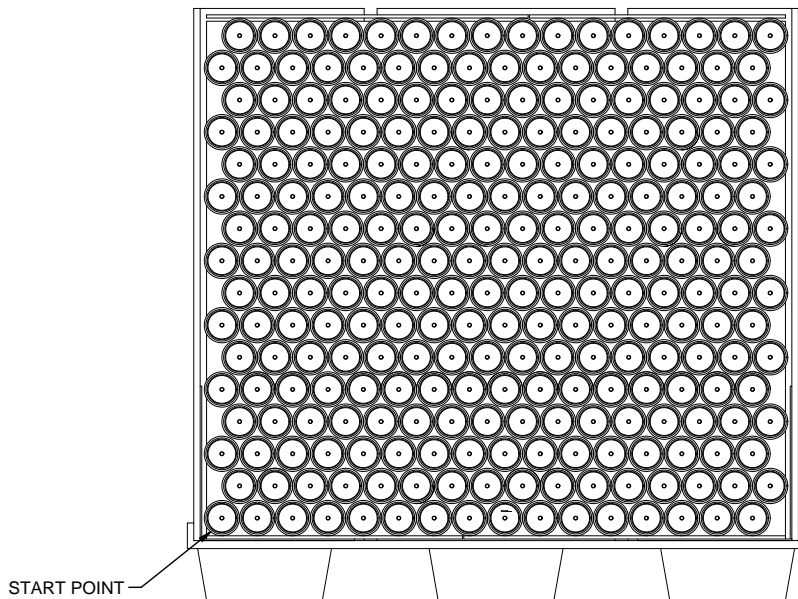


FIGURE 2



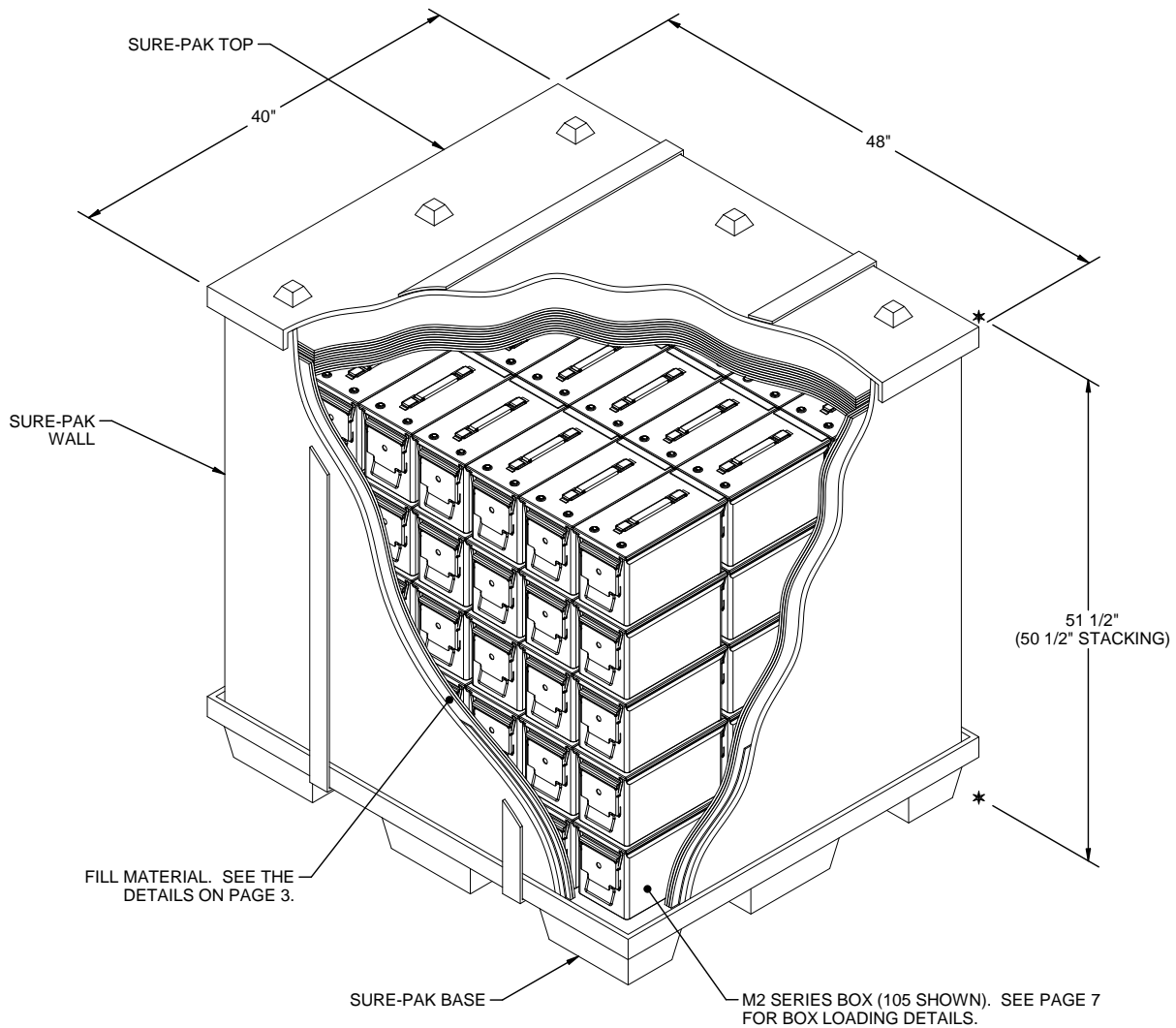
FIGURE 3

1. SET UP THE SURE-PAK BASE AND SLEEVE, ENGAGING THE FOUR BOTTOM LOCKING DEVICES.
2. INSTALL CARDBOARD IN THE BOTTOM OF THE SURE-PAK TO FILL VOID AREAS. SEE FIGURE 4 ON PAGE 8.
3. INSTALL CARDBOARD, BENT AT 90°, AROUND THE BOTTOM INTERIOR EDGE OF THE SURE-PAK, ENSURING THAT THE CARDBOARD EXTENDS AT LEAST 8" ONTO THE SURE-PAK BASE AND 8" UP THE SURE-PAK SIDEWALL. SEE FIGURE 5 ON PAGE 8.
4. CUT THE EMPTY WATER BOTTLE 6" FROM THE BOTTOM. THEN CUT THE SIDE OF BOTTLE FROM THE OPEN FACE 4" IN DEPTH. SEE FIGURES 1 AND 2 AT LEFT.
5. LOAD SMOKE GRENADE IN THE CUT BOTTLE WITH THE FUZE POINTED TOWARDS BOTTLE BASE. **CAUTION:** TAPE MAY NEED TO BE APPLIED AT A MINIMUM ONE COMPLETE LOOP AROUND OF THE BOTTLE OVER THE SIDED CUT. SEE FIGURE 3 AT LEFT.
6. REPEAT STEP 5 AS MANY TIMES AS NECESSARY TO LOAD ALL SMOKE GRENADES INTO WATER BOTTLES.
7. LOAD THE SMOKE GRENADE INTO SURE-PAK FROM THE BOTTOM TO THE TOP STARTING FROM THE CORNER AS SHOWN IN THE FRONT VIEW BELOW. (APPROXIMATELY 256 GRENADES)
8. INSTALL THE VERTICAL SEPARATOR THEN LOAD NEXT ROW IN SIMILAR PATTERN AS OF THE FIRST ROW. REPEAT THESE TWO STEPS UNTIL REACHING THE OPPOSITE SIDE WALL.
9. DO NOT EXCEED 2,000 POUNDS GROSS WEIGHT FOR THE SURE-PAK AND CONTENTS.
10. WHEN THE SURE-PAK IS FILLED, ADD CARDBOARD OR OTHER VOID FILLER AS NEEDED TO FILL OUT THE TOP OF THE SURE-PAK, SEE GENERAL NOTE "H" ON PAGE 2.
11. INSTALL THE SURE-PAK TOP.
12. INSTALL TWO WEB STRAPS (MINIMUM) AROUND THE SHORT DIMENSION OF THE SURE-PAK. SEE PAGE 3 FOR DETAILS.



FRONT VIEW

SURE-PAK TOP, SIDE FILL MATERIAL, AND PORTION OF BASE NOT SHOWN FOR CLARITY.



BOXED SMOKE GRENADE PALLET UNIT

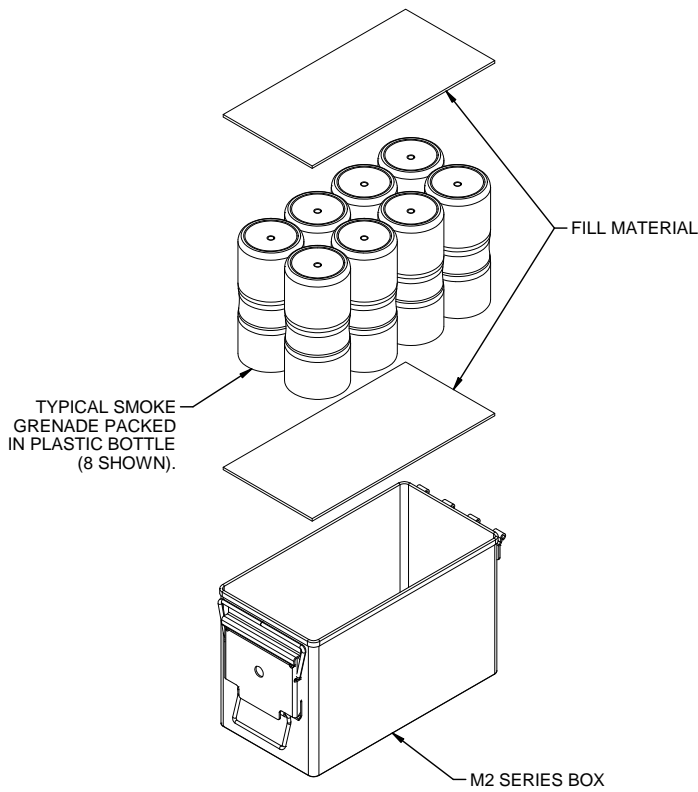
SEE GENERAL NOTE "F" ON PAGE 2.

105 M2 SERIES BOXES OF SMOKE GRENADES (8/BOX) @ 15 LBS PER BOX	-	1,575 LBS
DUNNAGE	-	40 LBS
PALLET	-	63 LBS
<hr/>		
TOTAL WEIGHT	-	1,678 LBS (APPROX)
CUBE	-	57.2 CU FT (APPROX)

BILL OF MATERIAL			
SURE-PAK, 40" X 48" X 51-1/2"	- - - - -	1 REQD	- - 63.0 LBS
EMPTY WATER BOTTLE @ 5 GRMS/BOTTLE	- - - - -	840 REQD	- - 9.0 LBS
CARDBOARD	- - - - -	AS REQD	- - 20.0 LBS
WEB STRAP ASSEMBLY, 2"	- - - - -	2 REQD	- - 11.0 LBS

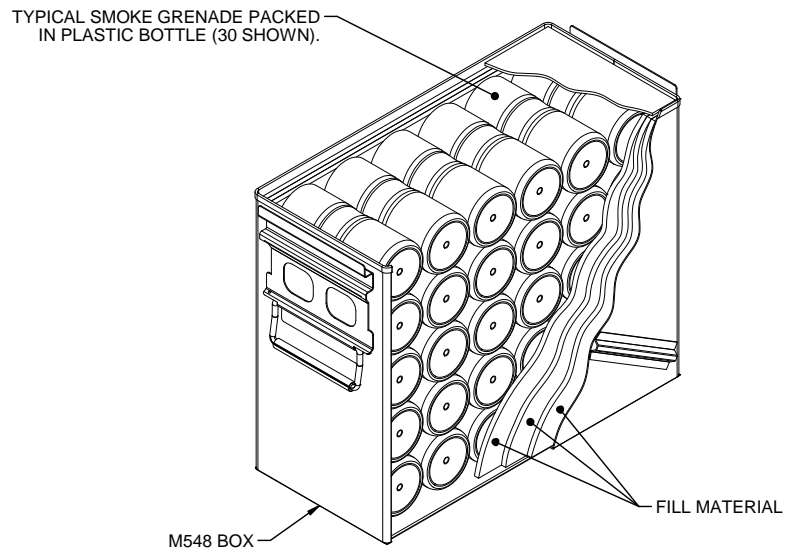
SURE-PAK CONTAINER LOADING PROCEDURES

1. SET UP THE SURE-PAK BASE AND SLEEVE, ENGAGING THE FOUR BOTTOM LOCKING DEVICES.
2. INSTALL CARDBOARD IN THE BOTTOM OF THE SURE-PAK TO FILL VOID AREAS. SEE FIGURE 4 ON PAGE 8.
3. INSTALL CARDBOARD, BENT AT 90°, AROUND THE BOTTOM INTERIOR EDGE OF THE SURE-PAK, ENSURING THAT THE CARDBOARD EXTENDS AT LEAST 8" ONTO THE SURE-PAK BASE AND 8" UP THE SURE-PAK SIDEWALL. SEE FIGURE 5 ON PAGE 8.
4. LOAD M2 SERIES BOXES INTO SURE-PAK WITH THE HINGES FACING SAME DIRECTION. SEE THE DETAILS AT LEFT FOR TYPICAL LOADING OF SMOKE GRENADES INTO M2 SERIES BOXES. M548 BOXES MAY BE USED TO LOAD SMOKE GRENADE AS SHOWN BELOW. CARDBOARD MUST BE INSTALLED AT A MINIMUM AGAINST ALL SURE-PAK SIDEWALLS AND THE BASE, TO THE HEIGHT OF THE TOP OF THE BOXES OR TO THE TOP OF THE SIDEWALLS. SEE FIGURE 6 ON PAGE 8.
5. INSTALL EXTRA FILL MATERIAL AS NEEDED TO THROUGHOUT LOADING, ENSURING THAT THE SURE-PAK LOAD IS TIGHT.
6. DO NOT EXCEED 2,000 POUNDS GROSS WEIGHT FOR THE SURE-PAK AND CONTENTS.
7. WHEN THE SURE-PAK IS FILLED, ADD CARDBOARD OR OTHER VOID FILLER AS NEEDED TO FILL OUT THE TOP OF THE SURE-PAK, SEE GENERAL NOTE "H" ON PAGE 2.
8. INSTALL THE SURE-PAK TOP.
9. INSTALL TWO WEB STRAPS (MINIMUM) AROUND THE SHORT DIMENSION OF THE SURE-PAK. SEE PAGE 3 FOR DETAILS.



TYPICAL M2 SERIES BOX LOAD OF SMOKE GRENADE

BOX LID NOT SHOWN FOR CLARITY.



TYPICAL M548 BOX LOAD OF SMOKE GRENADE

BOX LID NOT SHOWN FOR CLARITY.

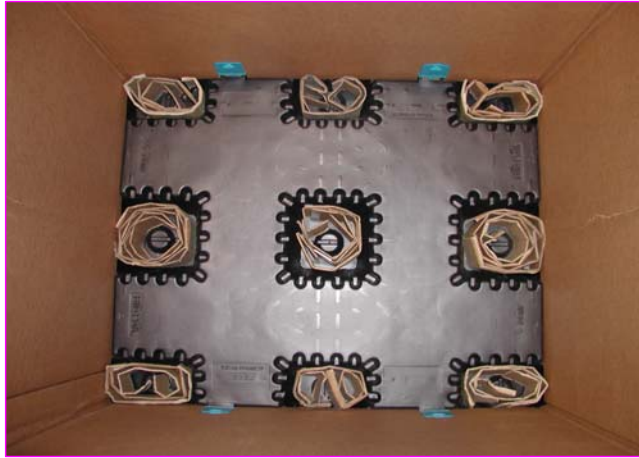


FIGURE 4



FIGURE 5



FIGURE 6