

# UNITIZATION PROCEDURES FOR GBU-39 SMALL DIAMETER BOMB SINGLE WEAPON, PACKED ONE PER CNU-659 CONTAINER, ON 4- WAY ENTRY PALLETS

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## U.S. ARMY MATERIEL COMMAND DRAWING

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APPROVED, U.S. ARMY JOINT MUNITIONS COMMAND RUS.ALLEN.J .1230354282 <small>Digitally signed by RUS.ALLEN.J.1230354282 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=RUS.ALLEN.J.1230354282 Date: 2017.07.13 08:16:14 -0500</small> <b>AMSJM-MMT</b>		<b>DO NOT SCALE</b>	
APPROVEDBY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND SHIMP.UPTON .R.1231257183 <small>Digitally signed by SHIMP.UPTON.R.1231257183 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=SHIMP.UPTON.R.1231257183 Date: 2017.07.13 10:32:38 -0500</small> <b>U.S. ARMY DEFENSE AMMUNITION CENTER</b>		DESIGN ENGINEER BASIC REV. LAURA A. FIEFFER QUYEN TRAN	<b>JUNE 2005</b>  REVISION NO. 2 JUNE 2017  <b>SEE THE REVISION LISTING ON PAGE 4</b>
TEST ENGINEER TEST REPORT NA		ENGINEERING DIVISON FIEFFER.LAUR A.A.1230375727 <small>Digitally signed by FIEFFER.LAURA.A.1230375727 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=FIEFFER.LAURA.A.1230375727 Date: 2017.05.30 08:42:15 -0500</small>	CLASS DIVISION DRAWING FILE
EXPLOSIVE SAFETY DIRECTORATE		TIRONE.JOSEPH.A NDREW.10266837 49 <small>Digitally signed by TIRONE.JOSEPH.ANDREW.1026683749 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=TIRONE.JOSEPH.ANDREW.1026683749 Date: 2017.06.22 08:08:18 -0500</small>	<b>19</b> <b>48</b> <b>8826</b> <b>SP20J1</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. A PLUS-OR-MINUS 1/4" IS ALLOWED ON OVERALL DIMENSIONS OF ANY DUNNAGE ASSEMBLY. HOWEVER, SIMILAR PIECES IN AN ASSEMBLY MUST BE WITHIN 1/8" OF THE SAME DIMENSION.
- C. WHEN ASSEMBLING A PALLET UNIT, CARE SHALL BE TAKEN TO INSURE THAT THE CNU-659 CONTAINERS AND DUNNAGE ASSEMBLIES, AS APPLICABLE, ARE EVENLY ALIGNED SO THAT THE SIDES AND ENDS OF THE PALLET UNIT DO NOT EXCEED A 1/2" TOLERANCE, RELATIVE TO THE PALLET, AND THAT THE CONTAINER INTERLOCKS PROPERLY ENGAGE.
- D. IN ORDER TO OBTAIN COMPACT (SOUND) UNITS, ALL STRAPS SHALL BE LOCATED IN PROPER ALIGNMENT AND TENSIONED UNTIL THEY CUT INTO THE PALLET DECK. AFTER TENSIONING, EACH STRAP WILL BE SECURED USING ONE SEAL AND TWO PAIR OF NOTCHES PER SEAL. ALL STRAPPING MUST BE STRAIGHT WITHIN 2" ON ANY SURFACE OF THE UNITIZED LOAD; I.E., TOP, BOTTOM, SIDES, OR END THAT IT ENCOMPASSES. ALSO, SEE GENERAL NOTE "G" BELOW FOR ACCEPTABLE SEALLESS OR CLIPLESS TOOL INFORMATION.
- E. PALLET UNIT LOADS SHALL BE INSPECTED FOR TORN, DETERIORATED OR LOOSENED STRAPPING PRIOR TO SHIPPING.
1. TORN OR BROKEN STRAPS SHOULD BE REPLACED BY CONTRACTORS, BUT MAY BE REPAIRED AT THE DEPOT/FIELD LEVEL BY SPLICING IN A MANNER SIMILAR TO THAT DESCRIBED IN "E.4(B)" BELOW.
  2. DETERIORATION DUE TO A MINOR AMOUNT OF RUST WILL NOT NECESSARILY BE CAUSE FOR REPLACING A STRAP. HOWEVER, AN EXTENSIVELY RUSTED/SCALED/PITTED STRAP IS CAUSE FOR REPLACING THE STRAP.
  3. A DAMAGED OR DEFECTIVE SEAL IS SUFFICIENT CAUSE FOR REPLACEMENT OF THE SEAL.
  4. LOOSE STRAPS SHOULD BE CHECKED FOR DEGREE OF LOOSENESS BY POSITIONING THE HOOK OF A SCALE (COMMONLY KNOWN AS A FISH SCALE) BEHIND THE STRAPS NEAR THE MIDPOINT AT THE TOP OR SIDE OF THE UNIT LOAD. PULL THE SCALE UNTIL A READING OF 20 POUNDS IS OBTAINED. THE DISTANCE BETWEEN THE CONTAINER AND THE STRAP MUST NOT EXCEED 1-1/2". IF MEASUREMENT EXCEEDS 1-1/2", THE STRAP MUST BE TIGHTENED OR REPLACED. TIGHTENING CAN BE ACCOMPLISHED BY EITHER OF TWO METHODS.
    - (A) A STRAP TENSIONING TOOL CAN BE USED IF THE STRAP HAS AT LEAST A 6" LONG TAB AT THE SEAL.
    - (B) AN 18" OR LONGER STRAP CAN BE USED AS A SPLICE PIECE. CUT THE LOOSE STRAP ON BOTH SIDES OF THE ORIGINAL SEAL AND DISCARD THE CUT OUT SECTION. OVERLAP ONE END OF THE STRAP SPLICE PIECE TO ONE END OF THE ORIGINAL STRAPPING SO AS TO PROTRUDE SLIGHTLY BEYOND THE END OF THE SEAL TO BE USED. POSITION AND SECURE SEAL TO OVERLAPPED SECTION WITH TWO PAIR OF NOTCHES. USING A STRAPPING TOOL, TENSION AND SEAL THE LENGTHENED STRAP. THE STRAP SPLICE PIECE MAY BE CUT FROM NEW STRAP OR USED STRAP, PROVIDED IT IS AT LEAST OF AS GOOD A QUALITY AS THE STRAP TO WHICH IT IS BEING SECURED. **NOTE:** ONLY ONE SPLICE PER STRAP IS ALLOWED ON UNIT LOADS OF AMMUNITION.
  5. **CAUTION:** WHEN A STRAP IS REPLACED/SPLICED OR RETENSIONED, AND THE OTHER STRAPS ON A UNIT LOAD ARE NOT, CARE MUST BE EXERCISED TO INSURE THAT THE TENSION ON THE AFFECTED STRAP IS NEARLY THE SAME AS THAT OF THE OTHER STRAPS.

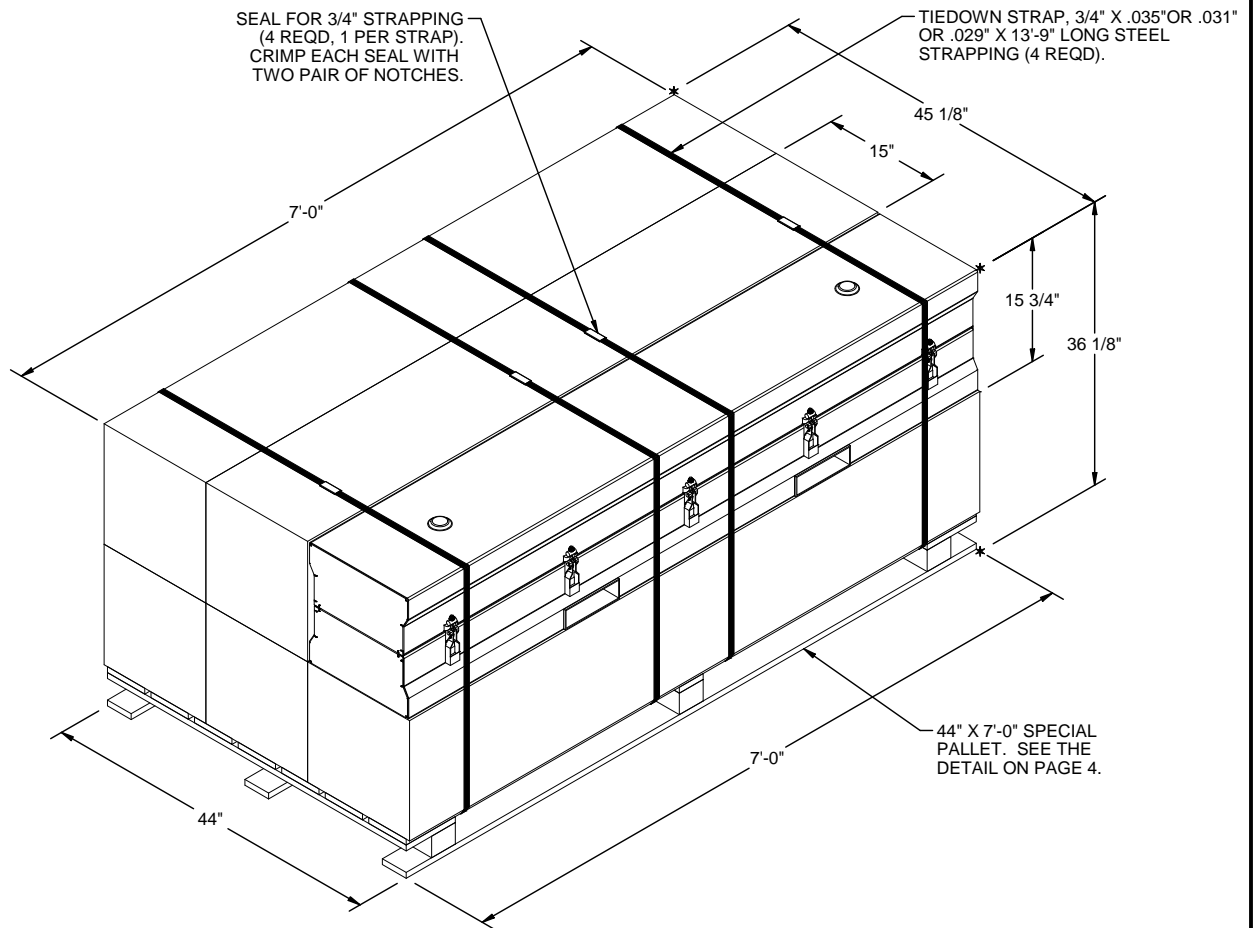
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## MATERIAL SPECIFICATIONS

- LUMBER** - - - - - : SEE TM 743-200-1 (DUNNAGE LUMBER) AND VOLUNTARY PRODUCT STANDARD PS 20 FOR FILLER ASSEMBLIES; AND ASTM D 6199, CLASS 2, GROUP II, III, OR IV, PRESERVATIVE AND HEAT TREATED FOR PALLET.
- NAILS** - - - - - : ASTM F1667; COMMON STEEL NAIL (NLCMS OR NLCMMS) FOR DUNNAGE, PALLET NAIL (NLPL) FOR PALLET.
- STRAPPING, STEEL** - - : ASTM D3953; FLAT STRAPPING, TYPE 1, HEAVY DUTY, FINISH B (GRADE 2). **NOTE:** BRIE 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. GRI TTED BACKING IS NOT PERMITTED.
- ANTI-CHAFING MATERIAL** - - - - - : MIL-PRF-121 (OR EQUAL); NEUTRAL BARRIER MATERIAL.

## (GENERAL NOTES CONTINUED)

- 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 THE 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. REFER TO DAC DRAWING ACV00617 FOR APPROVED SOURCES FOR SEALLESS (CLIPLESS) SEALING TOOL. THESE APPROVED SEALING TOOLS CAN BE USED IN PLACE OF SEALS CURRENTLY SPECIFIED IN THE "MATERIAL SPECIFICATIONS" LISTED BELOW.
- H. THE FOLLOWING AMC DRAWINGS ARE APPLICABLE FOR OUTLOADING AND STORAGE OF THE ITEMS COVERED BY THIS APPENDIX.
- |                  |         |                             |
|------------------|---------|-----------------------------|
| CARLOADING       | - - - - | 19-48-8827-SP5J36           |
| TRUCKLOADING     | - - - - | 19-48-8828-SP11J43          |
| STORAGE          | - - - - | 19-48-8832-SP1-3-4-14-22J52 |
| END OPENING ISO  |         |                             |
| CONTAINER        | - - - - | 19-48-8829-SP15J158         |
| MILVAN           | - - - - | 19-48-8831-SP15J160         |
| SIDE OPENING ISO |         |                             |
| CONTAINER        | - - - - | 19-48-8830-SP15J159         |
- J. UNIT LOADS MUST ONLY BE MADE UP WITH FULL LAYERS. FOR REDUCED QUANTITIES, HOWEVER, ONE FULL LAYER MAY BE OMITTED, AND/OR A FULL LAYER MAY CONSIST OF CNU-659 CONTAINERS AND FILLER ASSEMBLIES OR EMPTY CNU-659 CONTAINERS. SEE THE "FILLER ASSEMBLY" ON PAGE 3. ONLY ONE UNIT LOAD HAVING A REDUCED QUANTITY OF ITEMS SHOULD BE PERMITTED PER LOT OF THAT ITEM.
- K. IF THE REQUISITION QUANTITY IN SUPPORT OF AN AMMUNITION SHIPMENT IS LESS THAN A FULL LAYER QUANTITY OF CONTAINERS FOR A UNIT LOAD, THE CONTAINERS NEED NOT BE PALLETIZED FOR SHIPMENT. THE CONTAINERS MAY BE PALLETIZED, HOWEVER, FOR ENHANCED HANDLING, CLASSIFIED/SENSITIVE ITEM CONSIDERATIONS, ETC., BUT DO NOT REQUIRE FILLER ASSEMBLIES TO COMPLETELY FILL OUT THE PALLET. NOTE THAT THE METHOD FOR BRACING AND STAYING ON THE LOOSE OR PALLETIZED CONTAINERS MUST COMPLY WITH THE METHODS SPECIFIED WITHIN THE APPLICABLE 19-48 SERIES OUTLOADING PROCEDURAL DRAWING.
- L. DIMENSIONS GIVEN FOR FILLER ASSEMBLIES WILL BE FIELD CHECKED PRIOR TO THEIR ASSEMBLY. THIS GUIDANCE MUST BE APPLIED PRIOR TO BEGINNING A PALLETIZING OPERATION. ALSO, DUE TO VARIATIONS OF CONTAINER DIMENSIONS, ADJUSTMENTS MAY BE REQUIRED AS TO THE LOCATION OF CERTAIN PIECES ON FILLER ASSEMBLIES. THESE ASSEMBLIES SHALL NOT PROTRUDE PAST THE TOP AND/OR SIDES OF THE CONTAINERS.
- M. ALL WOODEN DUNNAGE USED IN UNIT LOADS SHALL BE TREATED WITH PRESERVATIVE 13060578, TYPE I OR III, IN ACCORDANCE WITH ARDEC DRAWING 13064136. IF THE DUNNAGE CONSISTS OF MORE THAN ONE COMPONENT, IT MUST BE ASSEMBLED PRIOR TO TREATMENT. PRESERVATIVE MARKING SHALL BE APPLIED IAW MIL-STD-129 TO AT LEAST TWO LOCATIONS ON THE ASSEMBLY OR COMPONENT IN LETTERS A MINIMUM OF ONE INCH HIGH.
- N. ALL NON-MANUFACTURED WOOD USED IN THE PALLETIZED LOAD SHALL BE HEAT TREATED TO A CORE TEMPERATURE OF 56 DEGREES CELSIUS FOR A MINIMUM OF 30 MINUTES. THE PALLET MANUFACTURER AND THE MANUFACTURER OF WOOD TO BUILD FILLER ASSEMBLIES FOR THE PALLETIZED LOAD SHALL BE AFFILIATED WITH AN INSPECTION AGENCY ACCREDITED BY THE AMERICAN LUMBER STANDARDS COMMITTEE. THE PALLET MANUFACTURER AND THE MANUFACTURER OF WOOD USED TO BUILD FILLER ASSEMBLIES FOR THE PALLETIZED LOAD SHALL ENSURE TRACEABILITY TO THE ORIGINAL SOURCE OF HEAT TREATMENT. EACH PALLET OR FILLER ASSEMBLY SHALL BE MARKED TO SHOW THE CONFORMANCE TO THE INTERNATIONAL PLANT PROTECTION CONVENTION STANDARD. PALLET AND FILLER ASSEMBLIES MADE OF NON-MANUFACTURED WOOD SHALL BE HEAT TREATED AND MARKED APPROPRIATELY. THE QUALITY MARK FOR THE PALLET SHALL BE PLACED ON TWO OPPOSITE END POSTS ON THE SAME SIDE AS THE PRESERVATIVE MARKING. THE QUALITY MARK FOR THE FILLER ASSEMBLIES SHALL BE PLACED ON TWO OPPOSITE SIDES.
- O. WHEN UN PERFORMANCE ORIENTED PACKAGING (POP) MARKING IS REQUIRED ON CONTAINERS, THIS MARKING WILL SHOW IN AT LEAST ONE PLACE ON THE UNITIZED LOADS.
- P. UNIT LOAD MARKING WILL BE ACCOMPLISHED IN ACCORDANCE WITH DAC DRAWING ACV00561, UNIT LOAD MARKING FOR SHIPMENT AND STORAGE, AMMUNITION AND EXPLOSIVES.
- Q. DIMENSIONAL LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE UNLESS OTHERWISE SPECIFIED. FOR EXAMPLE, 1" X 4" MATERIAL IS ACTUALLY 3/4" THICK BY 3-1/2" WIDE AND 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE.
- R. ANTI-CHAFING MATERIAL MAY BE INSTALLED AT POINTS OF CONTACT BETWEEN CONTAINERS, AND BETWEEN CONTAINERS AND STEEL STRAPPING, IF DESIRED, TO PREVENT CHAFING DAMAGE TO CONTAINER PAINT AND MARKINGS.
- S. FOR DETAIL OF THE CNU-659 CONTAINER, SEE BOEING DRAWING 70P993152-1003.

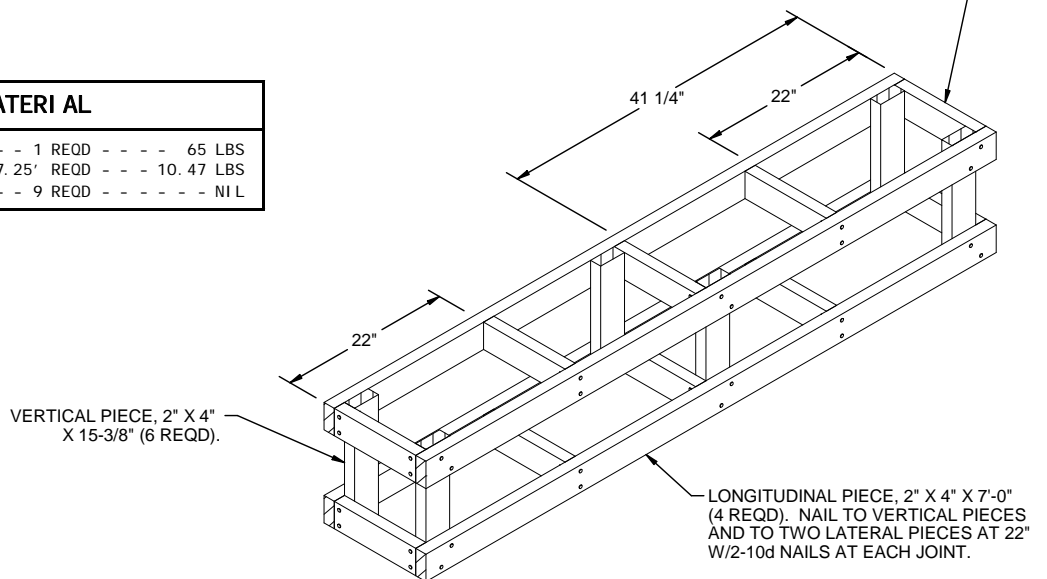


**PALLET UNIT**

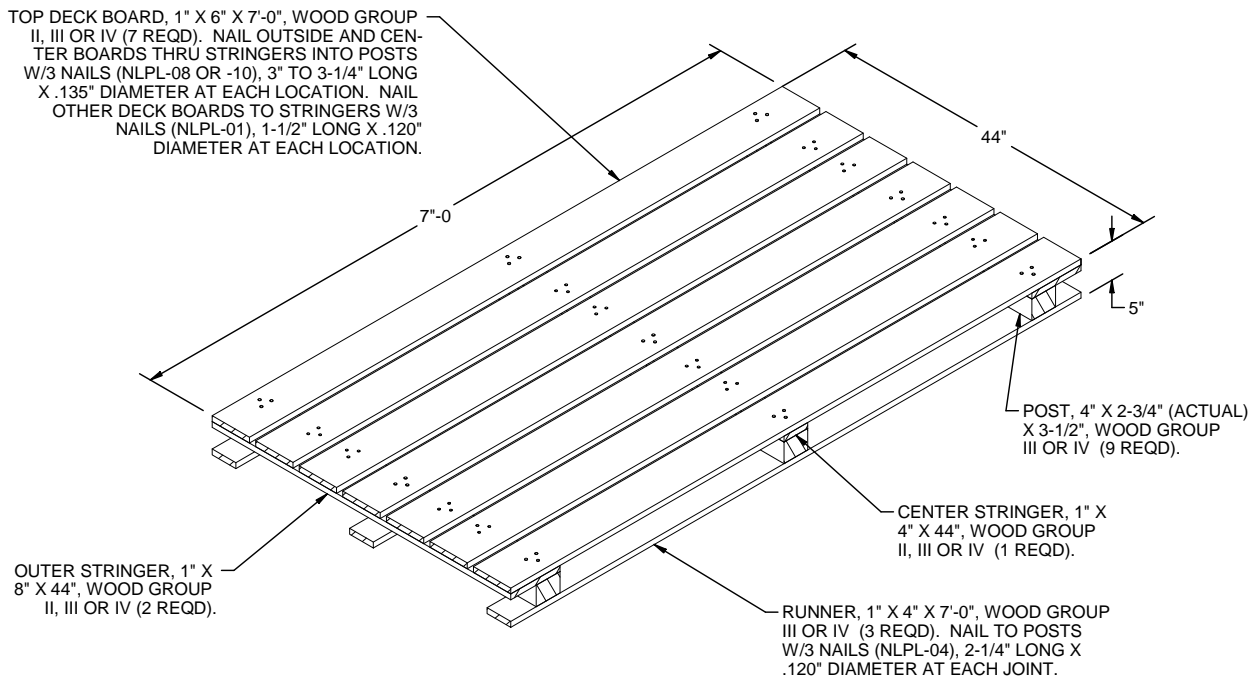
6 CONTAINERS OF		
SMALL DIAMETER BOMB (1 PER CNTR) @ 399 LBS	--	2,394 LBS
DUNNAGE	-	5 LBS
PALLET	-	90 LBS
<b>TOTAL WEIGHT</b>	-	<b>2,489 LBS (APPROX)</b>
<b>CUBE</b>	-	<b>79.2 CU FT (APPROX)</b>

BILL OF MATERIAL			
PALLET, 35" X 45-1/2"	1 REQD	65 LBS	
STEEL STRAPPING, 3/4"	117.25' REQD	10.47 LBS	
SEAL FOR 3/4" STRAPPING	9 REQD	NIL	

LATERAL PIECE, 2" X 4" X 12" (10 REQD).  
NAIL OUTER AND CENTER LATERAL  
PIECES TO VERTICAL PIECES W/2-10d  
NAILS AT EACH END.



**FILLER ASSEMBLY**  
(FOR MINUS ONE CONTAINER, STAPLE  
TIEDOWN STRAPS TO FILLER ASSEMBLIES)



**SPECIAL PALLET**

WOOD GROUPS (FROM TM 743-200-1)			
GROUP I	GROUP II	GROUP III	GROUP IV
FIR, DOUGLAS HEMLOCK, WESTERN LARCH, WESTERN PINE, SOUTHERN SPRUCE, SITKA	CEDAR, WESTERN RED CYPRESS FIR, BALSAM FIR, NORTHERN WHITE FIR, WHITE HEMLOCK, EASTERN HEMLOCK, WESTERN PINE, IDAHO WHITE PINE, LODGEPOLE PINE, JACK PINE, NORTHERN WHITE PINE, NORWAY PINE, PONDEROSA PINE, SUGAR REDWOOD SPRUCE, EASTERN SPRUCE, ENGLEMAN	ASPEN, BIGTOOTH ASH, BLACK ELM, WHITE GUM, BLACK GUM, RED GUM, TUPELO MAPLE, SOFT SYCAMORE	ASH, WHITE BEECH BIRCH ELM, ROCK HACKBERRY HICKORY MAPLE, HARD OAK

**REVISION**

REVISION NO. 1, DATED OCTOBER 2006, CONSISTS OF:

1. UPDATING CONTAINER WEIGHT.
2. UPDATING CONTAINER DRAWING NUMBER.

REVISION NO. 2, DATED JUNE 2017, CONSISTS OF:

1. REMOVING EDGE PROTECTORS AND CUSHIONING MATERIAL ON PAGE 3 AND IN MATERIAL SPECIFICATIONS.
2. ADDING ANTI-CHAFING GENERAL NOTE "R".
3. UPDATING PRESERVATIVE TREATMENT GENERAL NOTE "M"
4. REMOVING DRAWING NUMBER FROM BOTTOM OF PAGES.
5. UPDATING TO CURRENT FORMAT AND SPECIFICATIONS.