BUREAU OF EXPLOSIVES

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MILITARY ASSISTANT

DATE 8/2/67

LOADING & BRACING IN A TRAILER'
OR CONTAINER EQUIPPED WITH A
MECHANICAL BRACING SYSTEM OF
THE 750-POUND BOMB PACKED
TWO PER WOODEN PALLET FOR
TRAILER-ON-FLAT-CAR (TOFC) OR
CONTAINER-ON-FLAT-CAR (COFC)
SHIPMENT

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THE OUTLOADING PROCEDURES SPECIFIED HEREIN ARE ALSO APPLICABLE TO MOTOR CARRIER SHIPMENTS. FOR SPECIFIC GUIDANCE, ATTENTION IS DIRECTED TO THE "NOTICE" STATEMENT JUST BELOW THE RIGHT HAND COLUMN OF THE GENERAL NOTES ON PAGE 2.

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#### **GENERAL NOTES**

- THIS PROCEDURAL DRAWING IS APPLICABLE TO A TRAILER OR CONTAINER WHICH IS EQUIPPED WITH A MECHANICAL LOAD BRACING SYSTEM AS SPECIFIED WITHIN THE BUREAU OF EXPLOSIVES PAMPHLET NO. 6C AND APPENDICES THERETO. SUBSE-QUENT REFERENCE TO A TRAILER THROUGHOUT THIS DOCUMENT MEANS A TRAILER OR A CONTAINER. FOR TOPE AND/OR COFE SHIPMENTS, ONLY RAILCARS WHICH ARE SPECIFIED BY THE BUREAU OF EXPLOSIVE PAMPHLET NO. 6C, OR THE AFORE MENTIONED APPENDICES, WILL BE USED.
- THE LOAD AS SHOWN IS BASED ON A TRAILER WHICH IS 37'-0" LONG BY 7'-6" WIDE (INSIDE DIMENSION) WITH A WOOD OR A WOOD AND METAL, OR A METAL FLOOR. THE DELINEATED OUTLOADING PROCEDURES ARE ALSO APPLICABLE TO LONGER TRAILERS AND TO TRAILERS WHICH ARE EIGHTY-NINE INCHES (89") THROUGH NINETY-THREE INCHES (93") IN WIDTH.
- THE OUTLOADING PROCEDURES SPECIFIED HEREIN ARE APPLICABLE TO PALLETIZED T54 SERIES 750-POUND HE BOMBS AS SHOWN. THESE PROCEDURES CAN ALSO BE APPLIED FOR THE SHIPMENT OF THE PALLETIZED MC-1 TYPE 750-POUND CBR BOMBS, REFER TO PAGE 9 FOR SPECIFICATIONS WHICH MUST BE USED WHEN SHIPPING CBR BOMBS WHICH ARE PALLETIZED ON A 55" LONG PALLET. CAUTION: THE 45-1/2" LONG AND THE 55" LONG PALLETS CAN ONLY BE MIXED WITHIN A BAY OF CROSSWISE POSITIONED UNITS. ALL PALLETS WITHIN A TWO-HIGH BAY MUST BE OF THE SAME SIZE.
- DETAILS OF PALLET UNIT: D.

UNIT DIMENSIONS ---- 55" LONG X 32-1/4" WIDE X 22-7/8" HIGH. GROSS WEIGHT ----- 1,590 POUNDS (APPROX).

- THE DEPICTED HE ITEM IS A CLASS "A" EXPLOSIVE. E.
- THE GROSS WEIGHT AND AXLE DISTRIBUTION OF WEIGHT FOR A LOAD WILL BE THE RESPONSIBILITY OF THE CARRIER. THE CARRIER WILL ADVISE THE SHIPPER OF THE APPLICABLE LOADING REQUIREMENTS, AND THE SHIPPER WILL LOAD ACCORDINGLY. NOTICE: A SHIPMENT WILL BE POSITIONED IN A TRAILER CONSISTENT WITH THE WEIGHT LAWS OF THE STATES THROUGH WHICH THE TRAILER WILL BE TRANSPORTED BY HIGHWAY (MOTOR CARRIER).
- THE NUMBER OF LADING UNITS MAY BE ADJUSTED TO FIT THE SIZE OF THE PROVED METHODS SHOWN HEREIN MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING, AND STAYING OF THE DESIGNATED ITEM.
- OTHER TYPES OF LADING ITEMS MAY BE LOADED INTO TRAILERS WHICH ARE PARTIALLY LOADED WITH THE DEPICTED PALLETIZED BOMBS, PROVIDING THE TOTAL LOAD IS COMPATIBLE, EXISTING DIRECTIVES ARE NOT VIOLATED, AND THE OTHER LADING ITEMS ARE BLOCKED AND BRACED TO EQUAL THE BLOCKING AND BRACE-ING CRITERIA SPECIFIED HEREIN.
- THE HEIGHT LOCATIONS SPECIFIED WITHIN THIS DRAWING FOR THE INSTALLATION OF CROSS MEMBERS ARE IDENTICAL WITH THOSE RECOMMENDED WITHIN THE BUREAU OF EXPLOSIVES PAMPHLET NO. 6C AND APPENDICES THERETO. <u>CAUTION:</u> TRAILERS EQUIPPED WITH FACILITIES WHICH DO NOT MEET THE LOCATION REQUIREMENTS AS SPECIFIED HEREIN MUST NOT BE USED.
- A CROSS MEMBER WILL NOT BE RELIED UPON TO RETAIN MORE LADING ON EITHER A CROSS MEMBER WILL NOT BE RELIED UPON TO RETAIN MORE DEVINED ON EITHER SIDE THAN AS SHOWN WITHIN THE LOAD. REFERRING TO THE DEPICTED LOAD, NOT MORE THAN EIGHT (8) PALLET UNITS MAY BE LOADED WITHIN ANY ONE BAY, AS SHOWN WITHIN THE TWO-PALLET-HIGH PORTION OF THE LOAD, AND NOT MORE THAN TWO (2) CROSSWISE PALLET UNITS MAY BE POSITIONED IN ONE BAY, AS SHOWN AT THE FORWARD END OF THE DEPICTED LOAD.

#### (GENERAL NOTES CONTINUED)

- VOIDS WITHIN THE LENGTH OF A LOAD MUST BE HELD TO A MINIMUM. CROSS MEMBERS MUST BE PLACED AGAINST THE LADING AS TIGHTLY AS THE HOLE SPACING IN THE CROSS MEMBER ATTACHMENT FACILITY PERMITS. AS REQUIRED, THE THICKNESS OF THE SPECIFIED RUBBING STRIPS SHOULD BE INCREASED TO PROVIDE FOR A TIGHT LOAD. ALSO, EACH CROSS MEMBER WILL BE INSTALLED WITH THE ENDS ATTACHED AS NEARLY AS POSSIBLE IN "MATED" POSITIONS (AT EQUAL HEIGHTS AND AT EQUAL DISTANCES FROM THE END OF THE
- CROSS MEMBERS IN EMPTY TRAILERS AND THOSE NOT USED IN LOADED TRAILERS MUST BE "SECURED" FOR SHIPMENT. COMPONENTS ASSIGNED TO EACH TRAILER MUST REMAIN THEREWITH EVEN THOUGH UNUSED DURING SOME SHIP-
- DO NOT NAIL BLOCKING SHOWN HEREIN TO THE TRAILER WALLS OR FLOOR. ALL NAILING WILL BE WITHIN THE DUNNAGE.
- ONE AND ONE-QUARTER INCH (1-1/4") STEEL STRAPPING WILL BE USED TO UNITIZE PALLETS OF BOMBS AS SHOWN ON PAGE 3, AND AS SPECIFIED BY THE OUTLOADING METHOD DELINEATED ON PAGE 4. IF THE CAPACITY OF THE MATERIALS HANDLING EQUIPMENT USED TO LOAD THE PALLET UNITS ABOARD A TRAILER PERMITS, IT IS RECOMMENDED THAT THE PALLET UNITS BE UNITIZED PRIOR TO PLACEMENT WITHIN THE TRAILER.
- WHEN ANY STRAP IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF TWO (2) SEALS (BUTTED TOGETHER) WITH TWO (2) CRIMPS PER SEAL MUST BE
- DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 1" X 4" MATERIAL IS ACTUALLY 3/4" THICK BY 3-5/8" WIDE AND 2" X 4" MATERIAL IS ACTUALLY 1-5/8" THICK BY 3-5/8" WIDE.
- PORTIONS OF THE TRAILER BODY DEPICTED WITHIN THIS PROCEDURAL DRAWING, SUCH AS ONE OF THE SIDE WALLS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.
- FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3 AND TO THE "SPECIAL NOTES" SECTION WHICH IS IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHOD.

### NOTICE:

- THE OUTLOADING PROCEDURES DELINEATED HEREIN ARE ALSO APPLICABLE TO SHIPMENTS WHICH ARE MOVED BY MOTOR CARRIER ONLY, IF THE CARRYING EQUIPMENT BEING USED CONTAINS A MECHANICAL LOAD-BLOCKING SYSTEM CONFORMING TO THE SYSTEM REQUIREMENTS SPECIFIED WITHIN GENERAL NOTES "A" AND "J".
- IF DESIRED, ONE OR MORE OF THE FOLLOWING ITEMIZED CHANGES MAY BE MADE TO THE BASIC LOAD, AS SHOWN ON PAGES 4 AND 5, WHEN OUTLOADING A LOAD FOR A MOTOR CARRIER MOVEMENT.
  - THE PLYWOOD "FILLER" DUNNAGE SPECIFIED AS PIECES MARKED (5) MAY BE OMITTED.
  - ONE (1) CROSS MEMBER MAY BE OMITTED FROM EACH OF THE THREE BLOCKING STATIONS MARKED WITH THE SYMBOL & ON THE "ELEVATION VIEW" WHICH IS SHOWN ON PAGE 5.
  - C. THE NUMBER OF PALLET UNITS WHICH CAN BE PLACED INTO A 1-HIGH CROSSWISE-LOADED BAY MAY BE INCREASED FROM A MAXIMUM OF TWO (2) UNITS AS SHOWN TO A MAXIMUM OF SIX (6) UNITS. TWO SIDE-BLOCKING SPACER ASSEMBLIES WILL BE REQUIRED FOR EACH UNIT POSI-TIONED CROSSWISE.
- UNLESS PERMITTED OTHERWISE BY CRITERIA OF PARAGRAPH 2 ABOVE, ALL OUTLOADING SPECIFICATIONS AS DELINEATED HEREIN WILL APPLY.

## MATERIAL SPECIFICATIONS

LUMBER ----: SEE TM 715-5500-1, DUNNAGE LUMBER;

FED SPEC MM-L-751.

PLYWOOD \*----: TYPE III, CLASS I, GROUP I OR 2, GRADE C-D; FED SPEC NN-P-530.

NAILS----: COMMON, CEMENT COATED OR CHEMICALLY ETCHED, FED SPEC FF-N-105.

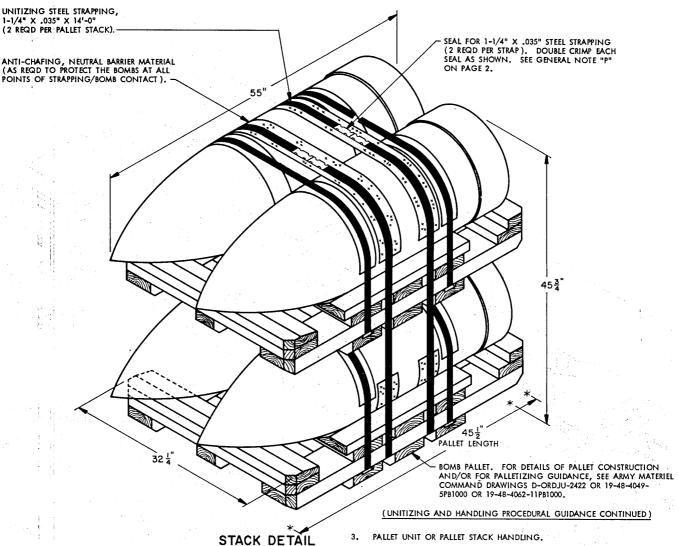
ALT: ANNULAR-RING TYPE NAIL OF SAME SIZE.

STRAPPING, STEEL: TYPE I OR IV, CLASS A OR C, FED SPEC QQ-S-781.

WIRE ----- ANNEALED, BLACK, FED SPEC QQ-W-461.

ANTI-CHAFING --: NEUTRAL BARRIER MATERIAL, MIL-B-121 (OR EQUAL). MATERIAL -

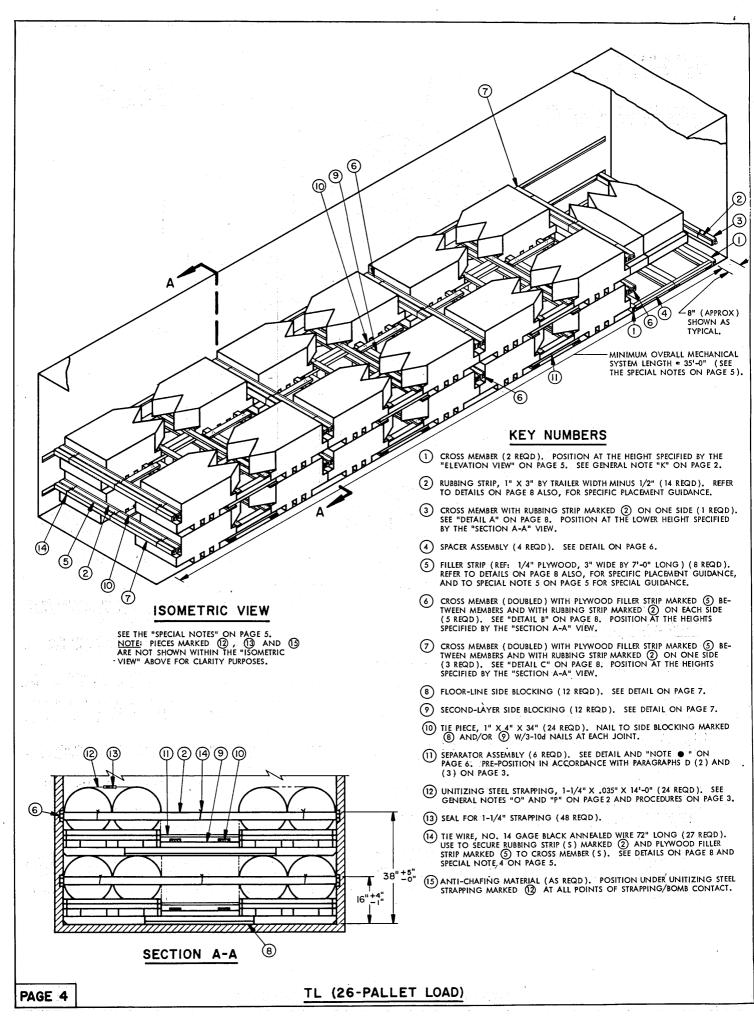
\* IF SPECIFIED PLYWOOD IS NOT AVAILABLE, OTHER TYPES. CLASSES, GROUPS, AND GRADES, OR COMBINATIONS THEREOF, MAY BE SUBSTITUTED.

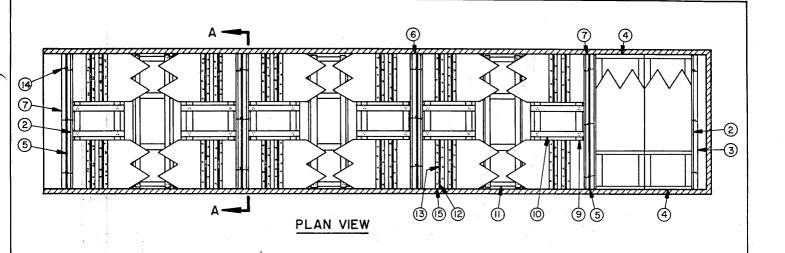


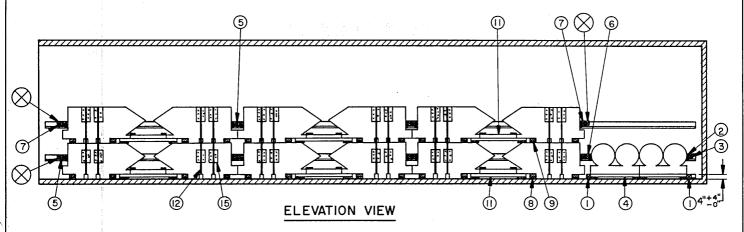
## UNITIZING AND HANDLING PROCEDURAL GUIDANCE

- STACKING PALLETS FOR UNITIZING.
  - A. THE UPPER PALLET SHOULD BE PLACED AS CLOSE AS POSSIBLE IN VERTICAL ALIGN-MENT WITH THE LOWER PALLET.
  - POSITION THE BASE END OF THE UPPER PALLET ABOVE THE BASE END OF THE LOWER PALLET.
- INSTALLATION OF 1-1/4" X .035" UNITIZING STEEL STRAPPING. SEE GENERAL NOTE
  - EACH OF THE TWO UNITIZING STRAPS SHOULD BE POSITIONED AROUND THE PALLET UNITS AS SHOWN. THE STRAPPING SHOULD LAY FLAT AND STRAIGHT; I.E., VERTICAL ALONG THE SIDES AND STRAIGHT ACROSS THE TOP AND BOTTOM OF
  - B. PLACE ANTI-CHAFING MATERIAL UNDER THE UNITIZING STRAPPING AT ALL POINTS OF STRAPPING/BOMB CONTACT, AND SECURE TO PREVENT DISLODGEMENT DURING AND AFTER STRAP APPLICATION. STRIPS OF ANTI-CHAFING MATERIAL MAY BE TAPED TO THE BOMBS OR STRING-TIED TO THE STRAPPING, OR IT CAN BE FORMED INTO STRAP ENCIRCLING TUBES BY WINDING THE MATERIAL AROUND AND AROUND THE STRAPPING TO FORM A SELF-HOLDING UNIT.
  - STRAPPING WILL BE TENSIONED TAUT SO THAT EACH STRAP CRUSHES SLIGHTLY IN-TO THE OUTSIDE EDGES OF THE STRINGERS ON THE LOWER PALLET. EACH END-OVER-END LAP JOINT WILL BE SEALED WITH TWO DOUBLED CRIMPED SEALS WHICH ARE BUTTED TOGETHER AS SHOWN. THE LAP JOINTS WILL BE MADE AT THE TOP OF THE STACK SO THAT THE SEALS WILL NOT BE IN CONTACT WITH THE BOMBS. EX-CESS STRAPPING (STRAP ENDS) SHOULD BE CUT OFF OR BROKEN OFF NEAR THE JOINT SEALS.

- PALLET UNIT OR PALLET STACK HANDLING.
  - NOTES: (1) APPROVED MATERIALS HANDLING EQUIPMENT (FORKLIFT TRUCKS, CRANES, HAND TRUCKS, DOLLIES, ROLLER ASSEMBLIES, SLINGS, SPREADER BARS, ETC.) IS SPECIFIED ELSEWHERE.
    - (2) PRECAUTIONARY HANDLING TECHNIQUES NORMALLY EMPLOYED OR AS SPECIFIED FOR THE TYPE OF COMMODITY INVOLVED WILL BE OBSERVED.
  - A. ONLY APPROVED AND APPROPRIATELY SIZED MATERIALS HANDLING EQUIP-MENT WILL BE USED FOR HANDLING A PALLET UNIT OR A UNITIZED STACK.
  - B. IF HANDLING IS ACCOMPLISHED WITH A FORKLIFT TRUCK, CARE MUST BE EXERCISED WHEN INSERTING FORKS UNDER A PALLET UNIT TO PREVENT DAMAGE TO THE PALLET OR TO A BOMB BY THE FORK TINES OR THE FORK-LIFT PACKAGE GUARD.
  - C. WHEN PLACING UNITS WITHIN A LOAD, THEY WILL BE PLACED TIGHTLY AGAINST A SIDE WALL OF THE TRAILER AND/OR A FORWARD CROSS MEMBER OR DUNNAGE ASSEMBLY.
  - D. POSITIONING OF THE CROSSWISE LOADED UNITS IS OBVIOUS. WHEN FORMING A LENGTHWISE LOADED BAY:
    - (1) POSITION THE UNITS OF THE FORWARD STACK AS SHOWN.
    - (2) PUT A SEPARATOR ASSEMBLY IN PLACE ON THE FLOOR OF THE TRAILER AND AGAINST THE PALLETS OF THE FORWARD STACK.
    - (3) PUT A SECOND-LAYER SEPARATOR ASSEMBLY IN PLACE AS SHOWN, AND PROVIDE VERTICAL SUPPORT FOR THE REAR END AS REQUIRED SO THAT IT WILL RECEIVE THE REAR STACK UNITS AS THEY ARE LOADED.
    - (4) POSITION THE UNITS OF THE REAR STACK AS SHOWN AND SO THAT THE PALLETS OF THE UNITS BEAR TIGHTLY AGAINST THE SEPARATOR ASSEMBLIES AT BOTH LEVELS.







#### SPECIAL NOTES:

- A 26-UNIT LOAD IS SHOWN IN A 37'-0" LONG TRAILER WHICH IS EQUIPPED WITH A MECHANICAL LOAD BLOCKING SYSTEM THAT CONTAINS (19) CROSS MEMBERS AND IS AT LEAST 35'-0" IN LENGTH. A LOAD CONFIGURATION TO SATISFY WEIGHT DISTRIBUTION REQUIREMENTS, AS DELINEATED IN SPECIAL NOTE 2, COULD REQUIRE A MAXIMUM OF TWENTY-THREE (23) CROSS MEMBERS.
- 2. IF REQUIRED TO SATISFY A WEIGHT DISTRIBUTION REQUIREMENT, THE CROSSWISE POSITIONED PALLET UNITS AT THE FORWARD END OF THE VAN MAY BE LOCATED ELSEWHERE WITHIN THE LOAD. THIS WILL REQUIRE AN ADDITIONAL THREE CROSS MEMBERS. OR AS AN ALTERNATE METHOD A VOID MAY BE PROVIDED BETWEEN THE BAYS OF EIGHT PALLET UNITS. THIS LATTER METHOD WILL REQUIRE THE USE OF FOUR ADDITIONAL CROSS MEMBERS. CAUTION: EACH LAYER OF A BAY MUST BE BLOCKED AGAINST LONGITUDINAL MOVEMENT IN BOTH DIRECTIONS WITH AT LEAST THE SAME QUANTITY OF CROSS MEMBERS AS SHOWN.

	L OF MATERIA	٨١	
DII	L OF WATERIA	<u> </u>	
LUMBER	LINEAR FEET	BOARD FEET	
1" X 3"	105	27	
1" X 4"	268	90	
1" X 6"	45	23	
2" X 2"	22	8	
2" X 4"	239	160	
2" X 6"	45	45	
4" X 4"	48	64	
NAILS	NO. REQD	POUNDS	
6d (2")	438	2-3/4	
104 (3")	336	5-1/4	
12d (3-1/4")	136	2-1/2	
	4" X .035" 336'		
	PING 48		
	< 7'-0" 8		
	162' AL AS		
ANTI-CHAPING MATERI	4F W2	KEGD NIL	

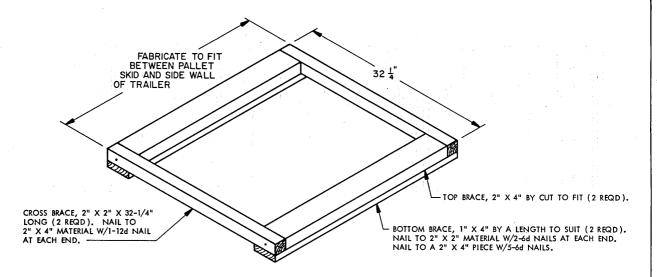
#### (SPECIAL NOTES CONTINUED)

- 3. ALSO, THE NUMBER OF PALLET UNITS MAY BE ADJUSTED AS NECESSARY.TO SATISFY A WEIGHT REQUIREMENT OR THE QUANTITY TO BE SHIPPED OR THE SIZE OF TRAILER BEING USED. A LOAD QUANTITY OF ONE OR TWO LESS THAN SHOWN MAY BE ACHIEVED BY OMITTING ONE OR BOTH OF THE CROSSWISE POSITIONED PALLET UNITS. A LOAD MAY BE ADJUSTED BY A MULTIPLE OF FOUR BY OMITTING A COMPLETE LAYER FROM A DEPICTED 2-HIGH BAY. CAUTION: A LENGTHWISE LOADED BAY MUST CONTAIN EITHER FOUR (4) OR EIGHT (8) PALLET UNITS. BY EMPLOYING EITHER PROCEDURE JUST DESCRIBED OR A COMBINATION OF THOSE PROCEDURES, ANY LOAD QUANTITY TO BE SHIPPED CAN BE SATISFIED.
- 4. IF 14 GAGE BLACK ANNEALED WIRE IS NOT AVAILABLE FOR SECURING RUBBING STRIPS AND FILLER STRIPS TO CROSS MEMBERS, TWO (2) WRAPS OF 8 GAGE BLACK ANNEALED WIRE OR ONE (1) LOOP OF 5/8" X .020", OR HEAVIER, TENSIONED STEEL STRAPPING MAY BE USED AT EACH LOCATION IN LIEU OF THE 14 GAGE WIRE.
- 5. A 1/4" THICK FILLER STRIP HAS BEEN SPECIFIED FOR THE DEPICTED LOAD. HOWEVER, IF THE VOID BETWEEN A PAIR OF LONGITUDINALLY ADJACENT CROSS MEMBES IS GREATER THAN 1/4", FILLER MATERIAL OF A THICKNESS WHICH WILL COMPLETELY OCCUPY THE VOID SPACE BETWEEN THE TWO MEMBERS MUST BE USED.

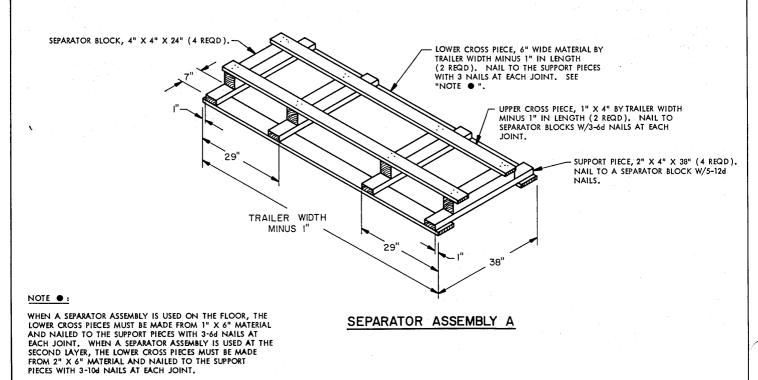
#### LOAD AS SHOWN

IT EM	QUANTITY WE	IGHT	(APPROX)
	26 41,340		
DUNNAGE -	1,118	LBS	
	TOTAL WEIGHT 42,458	LBS	

TL (26-PALLET LOAD)

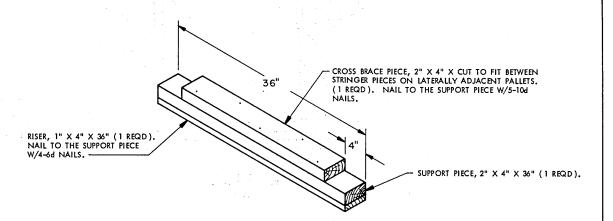


## SPACER ASSEMBLY A

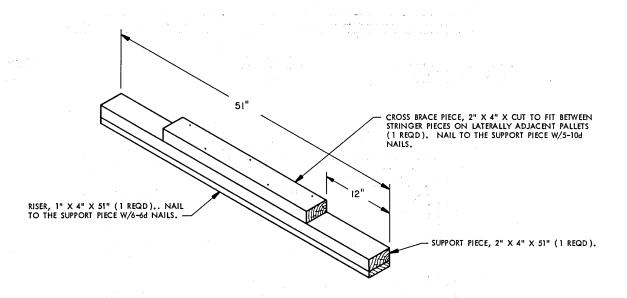


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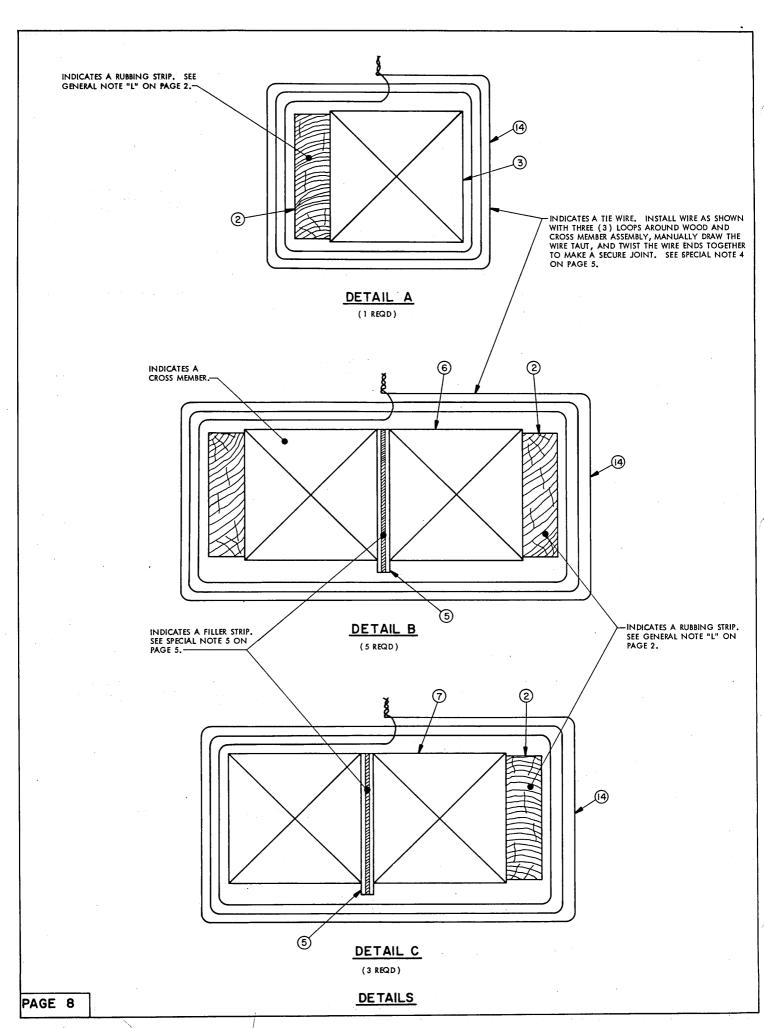
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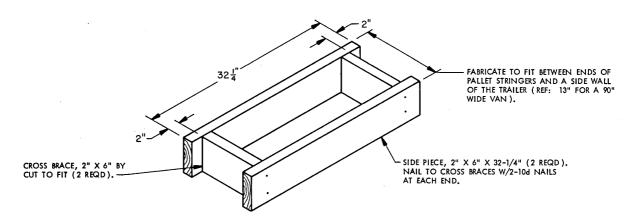


## FLOOR - LINE SIDE BLOCKING



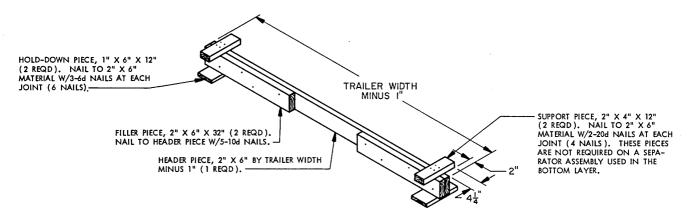
SECOND - LAYER
SIDE BLOCKING





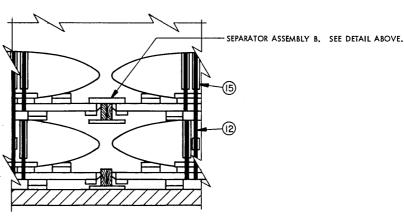
## SPACER ASSEMBLY B

THIS ASSEMBLY WILL BE USED AT THE NOSE END OF THE BOMB UNIT IN LIEU OF A "SPACER ASSEMBLY A" WHEN SHIPPING THE MC-1 TYPE 750-POUND BOMBS WHICH ARE PALLETIZED ON A 55" LONG PALLET.



## SEPARATOR ASSEMBLY B

THIS SEPARATOR ASSEMBLY WILL BE USED IN LIEU OF A "SEPARATOR ASSEMBLY A" WHEN SHIPPING THE MC-1 TYPE 750-POUND BOMBS WHICH ARE PALLETIZED ON A 55" LONG PALLET.



## PARTIAL ELEVATION

THIS VIEW DEPICTS THE SEPARATOR ASSEMBLY B INSTALLED BETWEEN MC-1 BOMB PALLET UNITS IN EACH LAYER, NOTE THAT THE 2" X 4" SUPPORT PIECE IS NOT USED ON THE ASSEMBLY INSTALLED IN THE BOTTOM LAYER,

**DETAILS**