

# UNITIZATION PROCEDURES FOR BULK EXPLOSIVES OR BULK PROPELLANTS PACKED IN 21-GALLON FIBERBOARD OR 21-GALLON METAL CONTAINERS, UNITIZED 12 CONTAINERS PER 35" X 45-1/2" 4-WAY ENTRY PALLET

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REVISIONS			DRAFTSMAN	PROJ ENG
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<b>U.S. ARMY AMC DRAWING</b>				
<b>JANUARY 1985</b>				
			CLASS	DIVISION
			DRAWING	FILE
			19	48
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**DO NOT SCALE**

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. DIMENSIONS, CUBE AND WEIGHT OF A PALLET UNIT WILL VARY SLIGHTLY DEPENDING UPON THE ACTUAL DIMENSIONS OF THE CONTAINERS AND THE WEIGHT OF THE SPECIFIC ITEM BEING UNITIZED.
- C. FOR DETAILS OF THE 21-GALLON FIBERBOARD CONTAINER, SEE MILITARY SPECIFICATION MIL-C-70470.  
CONTAINER DIAMETER ----- 16-1/8"  
CONTAINER HEIGHT ----- 27-5/8"  
GROSS WEIGHT ----- 176 LBS (APPROX)
- D. FOR DETAILS OF THE 21-GALLON METAL CONTAINER, SEE MILITARY SPECIFICATION MIL-C-70469.  
CONTAINER DIAMETER ----- 16-5/16"  
CONTAINER HEIGHT ----- 27-1/8"  
GROSS WEIGHT ----- 176 LBS (APPROX)
- E. DIMENSIONAL LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF A NOMINAL SIZE, UNLESS OTHERWISE SPECIFIED. FOR EXAMPLE, 1" X 6" MATERIAL IS ACTUALLY 3/4" THICK BY 5-1/2" WIDE AND 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE.
- F. UNLESS OTHERWISE SPECIFIED, A PLUS OR MINUS 1/4" IS ALLOWED ON OVERALL DIMENSIONS OF ANY DUNNAGE ASSEMBLY. SIMILAR PIECES IN AN ASSEMBLY, HOWEVER, MUST BE WITHIN 1/8" OF THE SAME DIMENSION.
- G. WHEN ASSEMBLING A PALLET UNIT, CARE SHALL BE TAKEN TO INSURE THAT THE CONTAINERS AND/OR DUNNAGE ASSEMBLIES ARE EVENLY ALIGNED HORIZONTALLY AND VERTICALLY, AS APPLICABLE, SO THAT THE SIDES AND ENDS OF THE PALLET UNIT DO NOT EXCEED A 1/2" TOLERANCE.
- H. IN ORDER TO OBTAIN COMPACT (SOUND) PALLET UNITS, ALL STRAPS SHALL BE LOCATED IN PROPER ALIGNMENT AND TENSIONED UNTIL THEY CUT INTO THE EDGE OF THE TOP DUNNAGE ASSEMBLY AND THE PALLET DECK. AFTER TENSIONING, ALL STRAPS WILL BE SECURED USING ONE SEAL CRIMPED WITH 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 ENDS THAT IT ENCOMPASSES.
- J. 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.
- K. INSTALL A HORIZONTAL STRAP TO ENCIRCLE EACH DUNNAGE ASSEMBLY AS SHOWN. HORIZONTAL STRAPS MUST BE TENSIONED AND SEALED PRIOR TO APPLICATION OF TIEDOWN STRAPS.
- L. INSTALL EACH TIEDOWN STRAP TO PASS UNDER THE TOP DECK BOARDS OF THE PALLET AND TO BE LOCATED AS SHOWN. TIEDOWN STRAPS WILL NOT BE APPLIED UNTIL THE HORIZONTAL STRAPS HAVE BEEN TENSIONED AND SEALED.
- M. FOR THE METHOD OF SECURING A STRAP CUTTER TO THE PALLET UNIT, SEE AMC (DARCOM) DRAWING 19-48-4127-20P1000.

(GENERAL NOTES CONTINUED AT RIGHT)

(GENERAL NOTES CONTINUED)

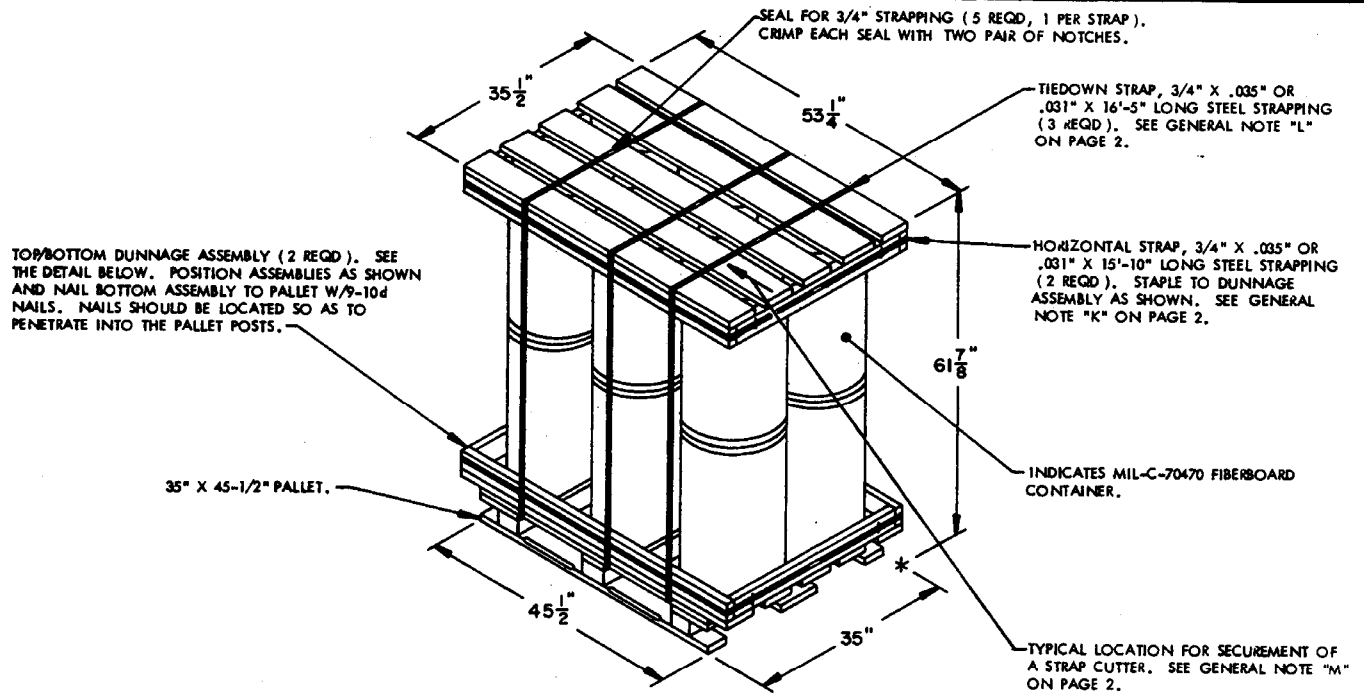
- N. IF LESS THAN 12 CONTAINERS ARE TO BE LOADED ON A PALLET, IT MAY BE ACCOMPLISHED BY SUBSTITUTING FILLER ASSEMBLIES, AS DEPICTED ON PAGES 3 AND 4 FOR THE OMITTED CONTAINERS. FILLER ASSEMBLIES WILL ONLY BE POSITIONED IN THE TOP LAYER OR LAYERS OF THE CENTER STACK OF A PALLET UNIT. THEREFORE, THE MAXIMUM QUANTITY OF FILLER ASSEMBLIES THAT CAN BE USED IN A TWO-LAYER PALLET UNIT IS FOUR; AND THE MAXIMUM QUANTITY OF FILLER ASSEMBLIES THAT CAN BE USED IN A ONE-LAYER PALLET UNIT IS TWO. IF THE REDUCED QUANTITY OF FOUR CONTAINERS FOR A TWO-LAYER PALLET UNIT IS INSUFFICIENT TO SATISFY REDUCED LOAD REQUIREMENTS, A COMBINATION OF AN OMITTED LAYER AND ONE OR TWO FILLER ASSEMBLIES MAY BE USED OR TWO PALLET UNITS WILL BE UTILIZED TO OBTAIN THE CORRECT QUANTITY OF OMITTED CONTAINERS.
- O. THE FILLER ASSEMBLIES, AS DELINEATED ON PAGES 3 AND 4, ARE FOR USE IN THE TOP LAYER OF A PALLET UNIT. FOR USE IN THE BOTTOM LAYER OF A TWO-LAYER PALLET UNIT OR FOR USE IN A ONE-LAYER PALLET UNIT, THE FILLER ASSEMBLY HEIGHT MUST BE INCREASED. THESE INCREASES WILL RESULT IN THE FILLER ASSEMBLY HEIGHT BEING 27-1/2" WHEN USED IN PLACE OF A FIBERBOARD CONTAINER AND 27-1/8" WHEN USED IN PLACE OF A METAL CONTAINER.
- P. ANY REQUEST FOR DEVIATION FROM THE PROCEDURES DELINEATED IN THIS DRAWING MUST BE DIRECTED TO THE COMMANDER, U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND, ATTN: SMCAR-ESK, ROCK ISLAND, IL 61299-7300, FOR SPECIFIC APPROVAL. FOR EXAMPLE, SPECIFIC APPROVAL MUST BE OBTAINED TO PALLETIZE DRUMS ONE UNIT HIGH RATHER THAN TWO UNITS HIGH.

MATERIAL SPECIFICATIONS

- PALLET ----- : MIL SPEC MIL-P-1501; 4-WAY ENTRY, STYLE 1A, TYPE I, CLASS 1, PRESERVATIVE TREATED.
- LUMBER ----- : TM 743-200-1 (DUNNAGE LUMBER) AND FED SPEC MM-L-751.
- NAILS ----- : FED SPEC FF-N-105; COMMON. ALT: ANNULAR-RING TYPE NAIL OR PALLET TYPE (MECHANICALLY DEFORMED) NAIL OF SAME SIZE.
- STRAPPING, STEEL ----- : FED SPEC QQ-S-781; CLASS 1, TYPE I OR IV, HEAVY DUTY, FINISH B (GRADE 2), SIZE 3/4" X .035" OR .031".
- SEAL, STRAP ----- : FED SPEC QQ-S-781; TYPE D, STYLE I, II, OR IV, CLASS H, FINISH B (GRADE 2).
- STAPLE, STRAP ----- : FED SPEC FF-N-105; TYPE III, STYLE 3, SIZE 15/16" X 3/4" LEG LENGTH.

REVISION

REVISION NO. 1, DATED MARCH 1986, CONSISTS OF:  
ADDING GENERAL NOTE "P".

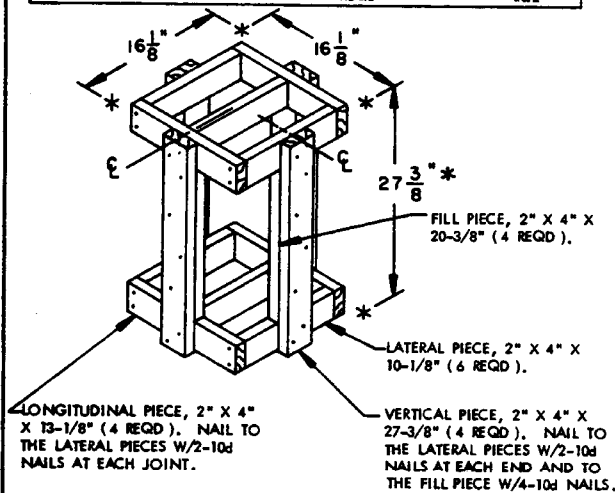


**FIBERBOARD CONTAINER PALLET UNIT**

SEE GENERAL NOTE "B" ON PAGE 2.

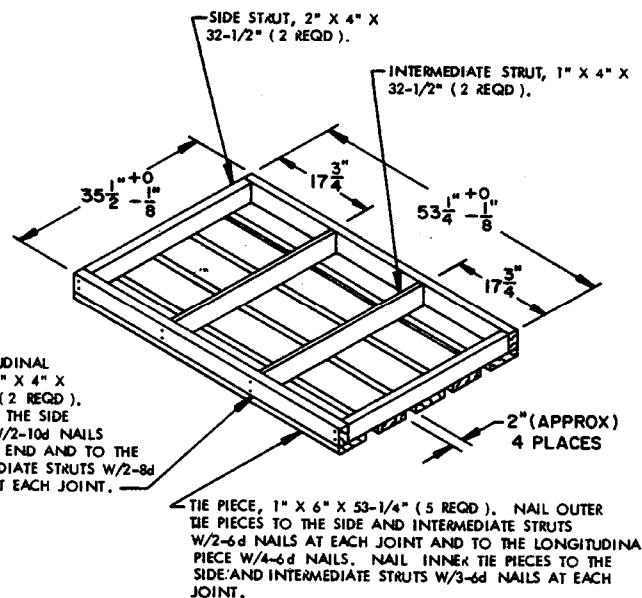
12 CONTAINERS OF BULK EXPLOSIVES @ 176 LBS	2,112 LBS (APPROX)
DUNNAGE	97 LBS
PALLET	65 LBS
<b>TOTAL WEIGHT</b>	<b>2,274 LBS (APPROX)</b>
<b>CUBE</b>	<b>67.7 CU FT (APPROX)</b>

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	10.83	3.61
1" X 6"	44.38	22.19
2" X 4"	28.58	19.06
NAILS	NO. REQD	POUNDS
6d (2")	120	0.71
8d (2-1/2")	16	0.17
10d (3")	25	0.38
PALLET, 35" X 45-1/2"	1 REQD	65 LBS
STEEL STRAPPING, 3/4"	80.92 REQD	5.78 LBS
SEAL FOR 3/4" STRAPPING	5 REQD	NIL
STAPLE, 15/16" X 3/4"	8 REQD	NIL



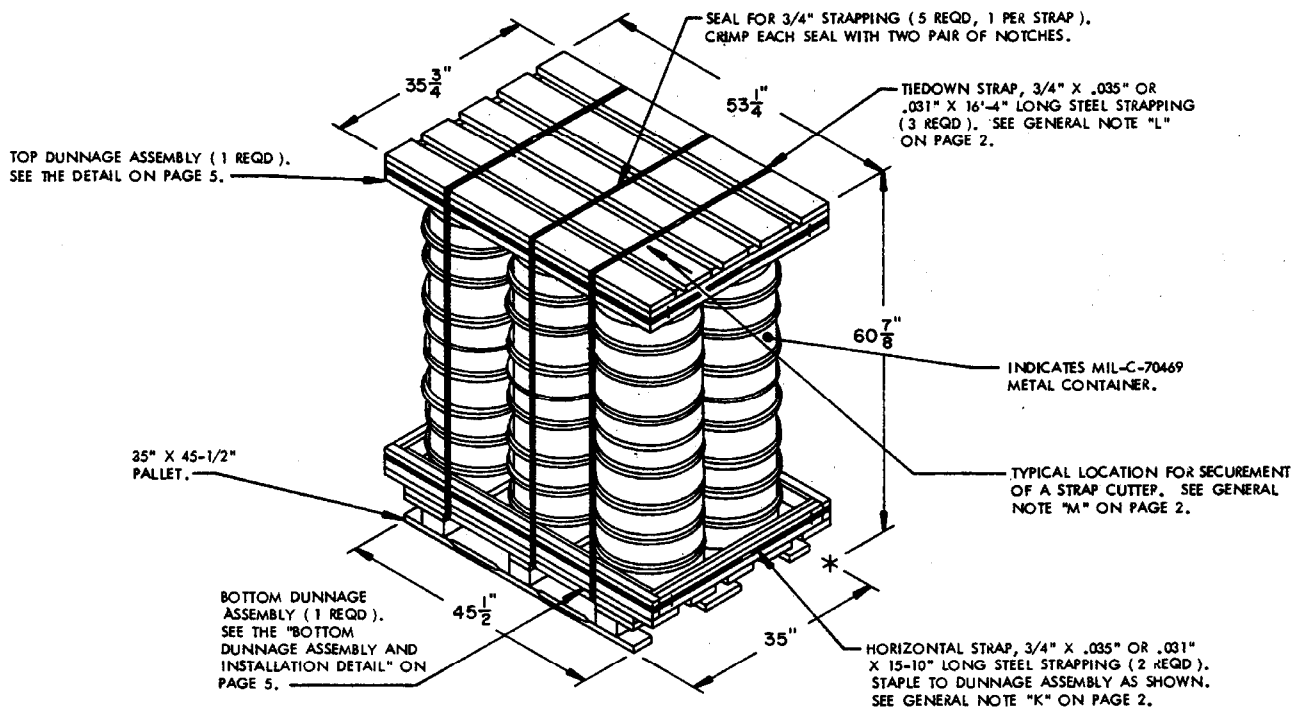
**FILLER ASSEMBLY**

(FOR MINUS ONE FIBERBOARD CONTAINER)  
\*SEE GENERAL NOTE "O" ON PAGE 2.



**TOP/BOTTOM DUNNAGE ASSEMBLY**

(FOR USE WITH FIBERBOARD CONTAINER)

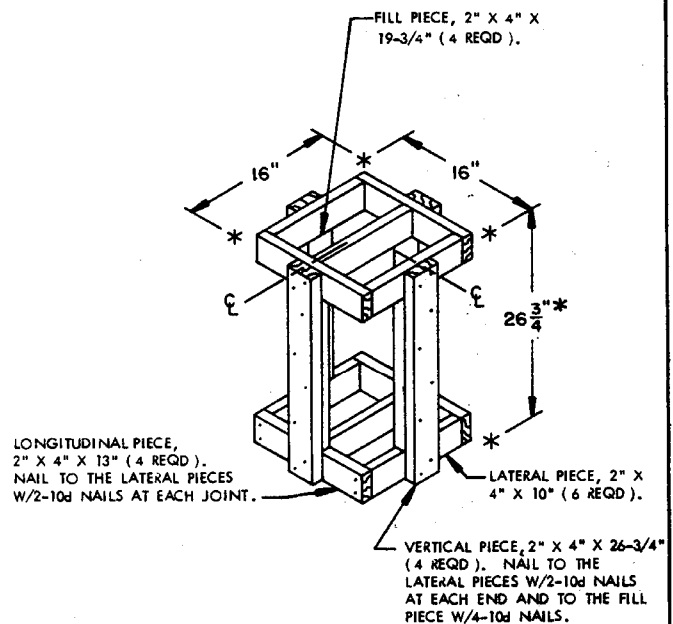


**METAL CONTAINER PALLET UNIT**

SEE GENERAL NOTE "B" ON PAGE 2.

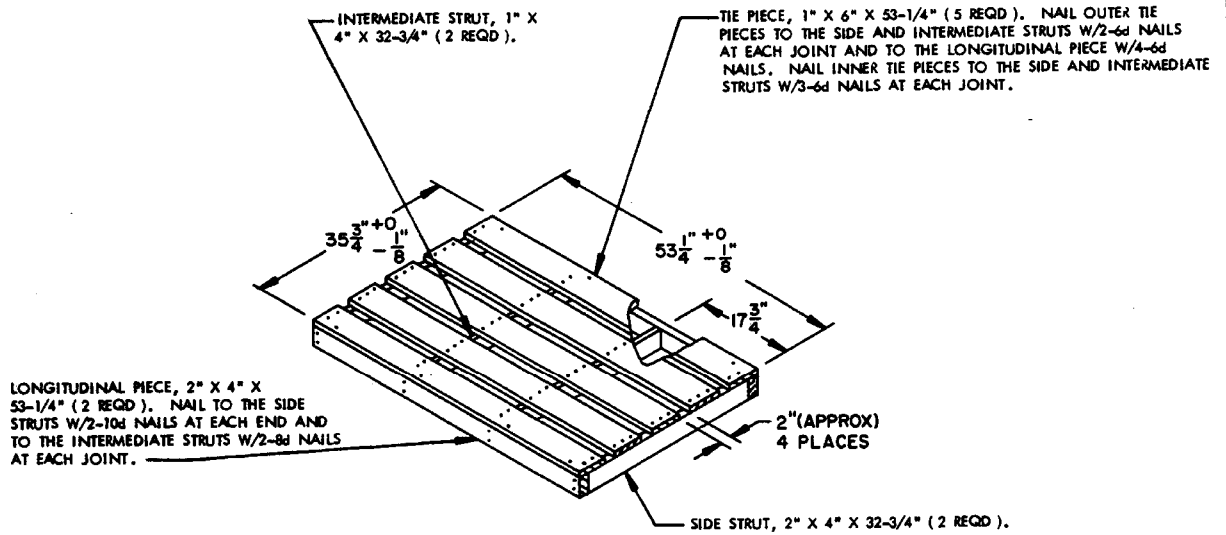
12 CONTAINERS OF BULK EXPLOSIVES @ 176 LBS	2,112 LBS (APPROX)
DUNNAGE	107 LBS
PALLET	65 LBS
<b>TOTAL WEIGHT</b>	<b>2,284 LBS (APPROX)</b>
<b>CUBE</b>	<b>67.1 CU FT (APPROX)</b>

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	10.92	3.64
1" X 6"	44.38	22.19
2" X 4"	34.13	22.75
NAILS	NO. REQD	POUNDS
6d (2")	122	0.72
8d (2-1/2")	8	0.08
10d (3")	33	0.51
PALLET, 35" X 45-1/2"	1 REQD	65 LBS
STEEL STRAPPING, 3/4"	80.62 REQD	5.76 LBS
SEAL FOR 3/4" STRAPPING	5 REQD	NIL
STAPLE, 15/16" X 3/4"	8 REQD	NIL
PLYWOOD, 1/2"	1.88 SQ FT REQD	2.58 LBS



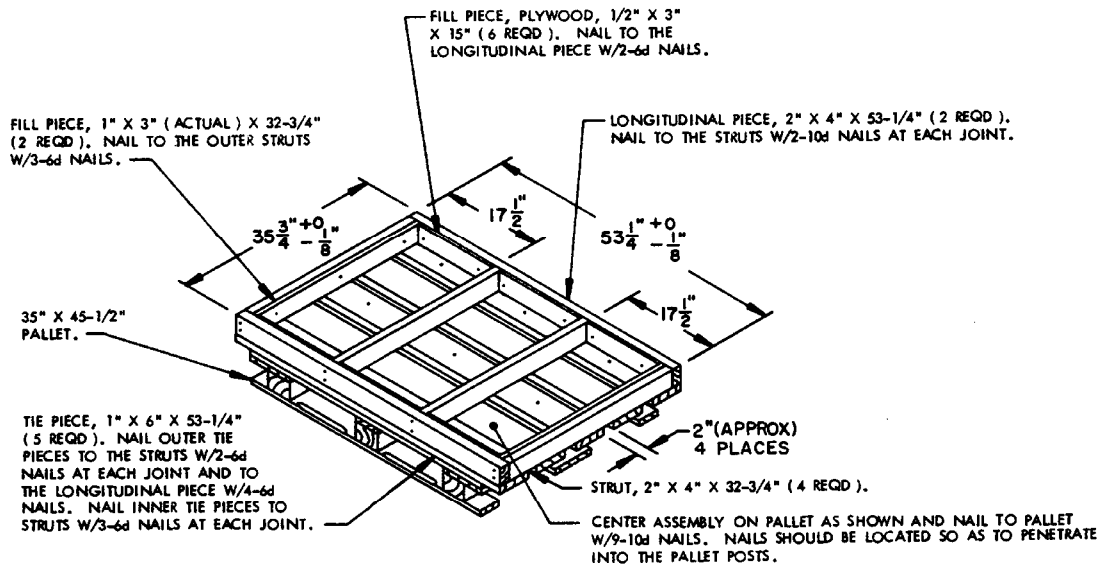
**FILLER ASSEMBLY**

(FOR MINUS ONE METAL CONTAINER)  
\* SEE GENERAL NOTE "O" ON PAGE 2.



**TOP DUNNAGE ASSEMBLY**

(FOR USE WITH METAL CONTAINER)



**BOTTOM DUNNAGE ASSEMBLY AND INSTALLATION DETAIL**

