BUREAU OF EXPLOSIVES
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DATE 1-18- 2008

APPROVED BY

LOADING AND BRACING IN SIDE OPENING ISO CONTAINERS OF PROPELLING CHARGES PACKED IN CYLINDRICAL METAL CONTAINERS

M14 SERIES CONTAINER

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● LOADING AND BRACING SPECIFICATIONS SET FORTH WITHIN THIS DRAWING ARE APPLICABLE TO LOADS THAT ARE TO BE SHIPPED BY TRAILER/CONTAINER-ON-FLATCAR (T/COFC) RAIL CARRIER SERVICE. THESE SPECIFICATIONS MAY ALSO BE USED FOR LOADS THAT ARE TO BE MOVED BY MOTOR OR WATER CARRIERS.

U.S. ARMY MATERIEL COMMAND DRAWING APPROVED, U.S. ARMY CAUTION: VERIFY PRIOR TO USE AT WWW.DAC.ARMY.MIL THAT THIS IS JOINT MUNITIONS COMMAND THE MOST CURRENT VERSION OF THIS DOCUMENT. THIS IS PAGE 1 OF 10. DO NOT SCALE OCTOBER 2007 BASIC LAURA FIEFFER ENGINEER OR **TECHNICIAN** APPROVED BY ORDER OF COMMANDING GENERAL TRANSPORTATION U.S. ARMY MATERIEL COMMAND **ENGINEERING** -CHE DIVISION CLASS DIVISION DRAWING VALIDATION FILE **ENGINEERING** DIVISION 19 15PM1003 48 4264/3 ENGINEERING DIRECTORATE U.S. ARMY DEFENSE AMMUNITION CENTER WHER

PROJECT

CA 277/3-92

GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCOR-DANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE TO LOADS OF PALLETIZED PROPELLING CHARGES PACKED IN M14 SERIES CYLINDRICAL METAL CONTAINERS. SUB-SEQUENT REFERENCE TO PALLET UNIT HEREIN MEANS THE PAL-LET UNIT WITH PROPELLING CHARGES. SEE PAGE 3 AND AMC DRAWING 19-48-4042A/3-20PM1001 FOR DETAILS OF THE PALLET UNITS. CAUTION: REGARDLESS OF THE QUANTITY OF UNITS TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF THE SIDE OPENING ISO CONTAINER MUST NOT BE EXCEEDED.
- C. THE LOADS AS SHOWN ARE BASED ON A 6,050 POUND 20' LONG BY 8' WIDE BY 8'-6" HIGH SIDE OPENING ISO CONTAINER WITH INSIDE DIMENSIONS OF 19'-5-1/4" LONG BY 89-3/4" WIDE BY 88" AND A MAXIMUM GROSS WEIGHT OF 52,910 POUNDS. THE LOAD IS DE-SIGNED FOR TRAILER/CONTAINER-ON-FLATCAR (T/COFC) SHIP-MENT, HOWEVER, THE LOAD AS DESIGNED CAN ALSO BE MOVED BY MOTOR OR WATER CARRIERS. NOTICE: OTHER CONTAINERS OF THE SAME DESIGN CONFIGURATION CAN ALSO BE USED
- D. WHEN LOADING THE UNITS, THEY ARE TO BE POSITIONED SO AS TO ACHIEVE A TIGHT LOAD (TIGHT AGAINST THE DUNNAGE AS-SEMBLIES). THE UNBLOCKED SPACE ACROSS THE WIDTH OF A LOAD BAY'S NOT TO EXCEED 1-1/2". EXCESSIVE SLACK CAN BE ELIMINATED FROM A LOAD BY LAMINATING ADDITIONAL PIECES OF APPROPRIATE THICKNESS TO THE CRIB FILL OR SIDE FILL AS-SEMBLIES. NAIL EACH ADDITIONAL PIECE TO THE HORIZONTAL OR LONGITUDINAL PIECE W/1 APPROPRIATELY SIZED NAIL EVERY 12". ADDITIONALLY, THE THICKNESS AND QUANTITY OF THE DUN-NAGE LUMBER OR THE LENGTH OF THE LATERAL PIECES USED MAY BE ADJUSTED AS REQUIRED TO FACILITATE VARIANCE IN THE SIZE OF THE PALLET UNITS.
- E. DUNNAGE LUMBER SPECIFIED IS OF NOMINAL SIZE. FOR EXAMPLE, 1" X 6" MATERIAL IS ACTUALLY 3/4" THICK BY 5-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE.
- F. A STAGGERED NAILING PATTERN WILL BE USED WHENEVER POS-SIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE AS-SEMBLIES OR WHEN LAMINATING DUNNAGE. ADDITIONALLY, THE NAILING PATTERN FOR AN UPPER PIECE OF LAMINATED DUNNAGE WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL FOR THAT PIECE WILL NOT BE DRIVEN THROUGH ONTO OR RIGHT BESIDE A NAIL IN A LOWER PIECE.
- G. IN SOME CONTAINERS THERE IS A SLOT AT THE CORNERS OF THE ENDWALLS. PIECES OF DUNNAGE MATERIAL MUST BE LAMINATED TO THE BUFFER PIECES ON THE END BLOCKING ASSEMBLIES TO PROVIDE A FLAT SURFACE FOR THE BUFFER PIECES. A PIECE OF 2" X 4", 2" X 3" OR A SPECIAL WIDTH PIECE CUT-TO-FIT CAN BE USED. THIS FILL PIECE WILL BE NAILED WITH ONE APPROPRIATELY SIZED NAIL EVERY 12". NOTE THAT SOME CONTAINERS ARE EQUIPPED WITH "TIE-BARS" IN THE CORNER SLOT, WHICH PRECLUDE THE USE OF A FULL HEIGHT FILL PIECE. WHEN "TIE-BARS" ARE PRESENT, THE FILL PIECE MUST BE INSTALLED IN SEGMENTS DESIGNED TO FIT BETWEEN THE "TIE-BARS" VERTICALLY. THE FILL PIECE(S) IS NOT REQUIRED WHEN THE CORNER PORTIONS OF THE CONTAINER ENDWALLS ARE SMOOTH AND FLAT. DO NOT ALLOW ANY DUN-NAGE ASSEMBLY TO CONTACT THE CONTAINER ENDWALLS, ONLY THE CORNER POSTS OF THE CONTAINER SHOULD BE USED FOR LONGITUDINAL BLOCKING.

(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

<u>LUMBER</u> :	SEE TM 743-200-1 (DUNNAGE LUMBER) AND VOLUNTARY PRODUCT STANDARD PS 20.
<u>NAILS</u> :	ASTM F1667; COMMON STEEL NAIL (NLCMS OR NLCMMS).
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.
WIRE, CARBON STEEL -:	ASTM A853; ANNEALED AT FINISH, BLACK OXIDE FINISH, 0.0800" DIA, GRADE 1006 OR BETTER.

MATERIAL - - - - -: MIL-B-121 (OR EQUAL); NEUTRAL BARRIER MATERIAL. HARDBOARD - - - - -: ANSI/AHA A135.4, CLASS 1.

(GENERAL NOTES CONTINUED)

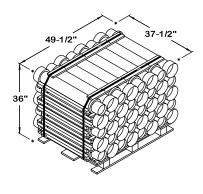
- H. CAUTION: DO NOT NAIL DUNNAGE MATERIAL TO THE CONTAINER WALLS OR FLOOR. ALL NAILING WILL BE WITHIN THE DUNNAGE. PORTIONS OF THE CONTAINER DEPICTED WITHIN THIS DRAWING, SUCH AS THE SIDE DOORS, HAVE NOT BEEN SHOWN IN THE LOAD VIEW FOR CLARITY PURPOSES.
- J. CONVERSION TO METRIC EQUIVALENTS: DIMENSIONS WITHIN THIS DOCUMENT ARE EXPRESSED IN INCHES AND WEIGHTS ARE EXPRESSED IN POUNDS. WHEN NECESSARY, THE METRIC EQUIVA-LENTS MAY BE COMPUTED ON THE BASIS OF ONE INCH EQUALS 25.4MM AND ONE POUND EQUALS 0.454 KG.

K. MAXIMUM LOAD WEIGHT CRITERIA:

THE MAXIMUM LOAD WEIGHTS ARE CONTROLLED BY EQUIPMENT CAPABILITY FACTORS. ALTHOUGH THE HEAVIEST MAXIMUM LOADS ARE DELINEATED IN THE LOAD VIEWS, PROVISIONS ARE INCLUDED WITHIN THIS DRAWING SO THAT THE BASIC LOADS CAN BE ADJUSTED TO SATISFY A LESSER QUANTITY OF LADING UNITS. DEPENDING ON TRANSPORTATION ROUTING, IT MAY BE NECES. SARY TO REDUCE THE LOAD WEIGHT TO SATISFY "WEIGHT LAWS" OF CERTAIN STATES. ALSO, IT MAY BE NECESSARY TO REDUCE THE LOAD WEIGHT TO SATISFY OTHER WEIGHT RESTRICTIONS IM-POSED ON THE INTERMODAL CONTAINER SYSTEM.

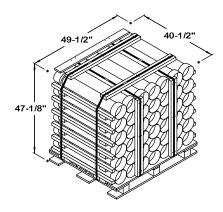
- L. REQUIREMENTS CITED WITHIN THE ASSOCIATION OF AMERICAN RAILROADS (AAR) INTERMODAL LOADING GUIDE APPLY WHEN THE SHIPMENT MOVES BY TRAILER/CONTAINER-ON-FLATCAR (T/COFC). SPECIAL T/COFC NOTES FOLLOW:
 - A LOADED CONTAINER MUST BE ON A CHASSIS EQUIPPED WITH TWO BOGIE ASSEMBLIES WHEN BEING MOVED IN TOFC SERVICE.
 - 2. THE LOAD LIMIT OF A T/COFC RAILCAR MUST NOT BE EXCEEDED, NOR WILL A CAR BE LOADED SO THAT THE TRUCK UNDER ONE END OF THE CAR CARRIES MORE THAN ONE-HALF OF THE LOAD LIMIT FOR THAT CAR.
- M. DURING INTRASTATE AND/OR INTERSTATE MOVES BY MOTOR CARRIER, A PROPER CHASSIS OR MODIFIED FLATBED TRAILER MUST BE USED TO PRECLUDE VIOLATION OF ONE OR MORE "WEIGHT LAWS" APPLICABLE TO THE STATE OR STATES IN-VOLVED.
- N. WHETHER A CONTAINER IS FULL OR IS LOADED WITH A REDUCED QUANTITY OF LADING UNITS, THE LENGTHWISE CENTER OF GRAV-ITY OF THE LOAD MUST BE WITHIN 12", IN EITHER DIRECTION, OF THE MID-POINT OF THE CONTAINER.
- O. THE QUANTITY OF PALLET UNITS SHOWN IN THE LOADS ON PAGES 4 AND 5 MAY BE REDUCED FOR SHIPMENT, IF DESIRED. SEE THE FILLER ASSEMBLY ON PAGE 10.
- P. THE CONFIGURATION SHOWN IN THE LOAD ON PAGE 4 IS APPLICA-BLE TO THE ALTERNATED CONTAINERS PALLET UNITS ONLY, EI-THER BASIC OR INCREASED HEIGHT. THE CONFIGURATION SHOWN IN THE LOAD ON PAGE 5 IS APPLICABLE TO ANY OF THE PALLET UNITS SHOWN ON PAGE 3.
- Q. IF THE LOAD ON PAGE 5 IS USED TO SHIP ALTERNATED CONTAIN-ER PALLET UNITS, ANTI-CHAFING MUST BE INSTALLED BETWEEN THE SIDE OPENING CONTAINER AND THE PALLET UNITS. IF FIBER-BOARD IS USED AS ANTI-CHAFING, AFFIX (STRAP TAPE, ETC.) THE FIBERBOARD TO THE SIDEWALL OR THE PALLET UNIT SECURELY. PLYWOOD OR HARDBOARD MAY ALSO BE USED AS ANTI-CHAFING MATERIAL, AS LONG AS IT IS SECURED TO PREVENT UNDUE MOVEMENT. THE SIDE FILL ASSEMBLIES DEPICTED ON PAGE 10 MAY ALSO BE USED FOR ANTI-CHAFING IN PLACE OF THE FIBER-BOARD, IF SPACE PERMITS.

ANTI-CHAFING



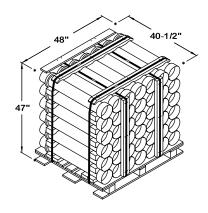
ALTERNATED CONTAINERS (BASIC HEIGHT)

CONTAINER - - - - - - - - - - 40 EACH @ 29 LBS (APPROX) CUBE - - - - - - - - - - 38.7 CU FT (APPROX) GROSS WEIGHT - - - - - - - - - 1,304 LBS (APPROX)



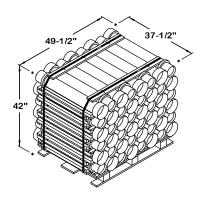
FLAT DUNNAGE (BASIC HEIGHT)

CONTAINER - - - - - 42 EACH @ 29 LBS (APPROX) CUBE - - - - - - 54.7 CU FT (APPROX) GROSS WEIGHT - - - 1, 433 LBS (APPROX)



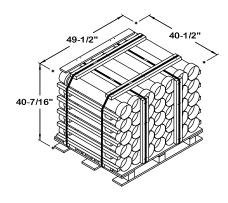
ROUTED DUNNAGE (BASIC HEIGHT)

CONTAINER - - - - - 42 EACH @ 29 LBS (APPROX) CUBE - - - - - 52.9 CU FT (APPROX) GROSS WEIGHT - - - - 1,435 LBS (APPROX)



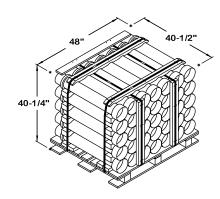
ALTERNATED CONTAINERS (INCREASED HEIGHT)

CONTAINER - - - - - - - - - - - 48 EACH @ 29 LBS (APPROX) CUBE - - - - - - - - - - - - 45.1 CU FT (APPROX) GROSS WEIGHT - - - - - - - - - - - 1,553 LBS (APPROX)



FLAT DUNNAGE (DECREASED HEIGHT)

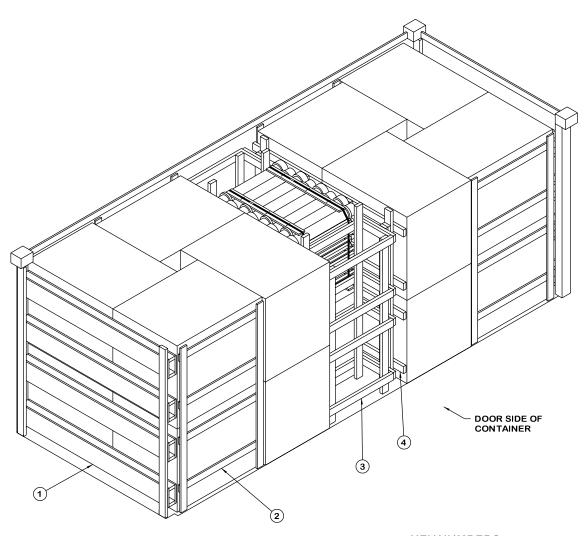
CONTAINER - - - - - - - - 35 EACH @ 29 LBS (APPROX) CUBE - - - - - - - - - - 46.9 CU FT (APPROX) GROSS WEIGHT - - - - - - - - 1,217 LBS (APPROX)



ROUTED DUNNAGE (DECREASED HEIGHT)

CONTAINER - - - - - - - - 35 EACH @ 29 LBS (APPROX)
CUBE - - - - - - - - - 45.3 CU FT (APPROX)
GROSS WEIGHT - - - - - - - 1,216 LBS (APPROX)

PAGE 3



ISOMETRIC VIEW

KEY NUMBERS

- (1) END BLOCKING ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 9.
- 2 SIDE FILL ASSEMBLY (4 REQD). SEE THE DETAIL ON PAGE 10.
- 3 CRIB FILL ASSEMBLY A (2 REQD). SEE THE DETAIL ON PAGE 6.
- 4 CENTER GATE A (1 REQD). SEE THE DETAIL ON PAGE 6.

BILL OF MATERIAL				
LUMBER	LINEAR FEET	BOARD FEET		
2" x 4"	409	272		
NAILS	NO. REQD	POUNDS		
6d (2") 10d (3")	416 2-1/2 304 4-3/4			
PLYWOOD, 3/4" 90.78 SQ FT REQD 187.23 LBS				

* THE LOAD AS SHOWN DEPICTS THE ALTERNATED CONTAINERS (INCREASED HEIGHT) PALLET UNIT. THE PROCEDURES DEPICTED ABOVE MAY ALSO BE USED FOR LOADING THE ALTERNATED CONTAINERS (BASIC HEIGHT) PALLET UNIT. THE BILL OF MATERIAL WILL VARY SLIGHTLY DEPENDING ON THE PALLET UNIT LOADED.

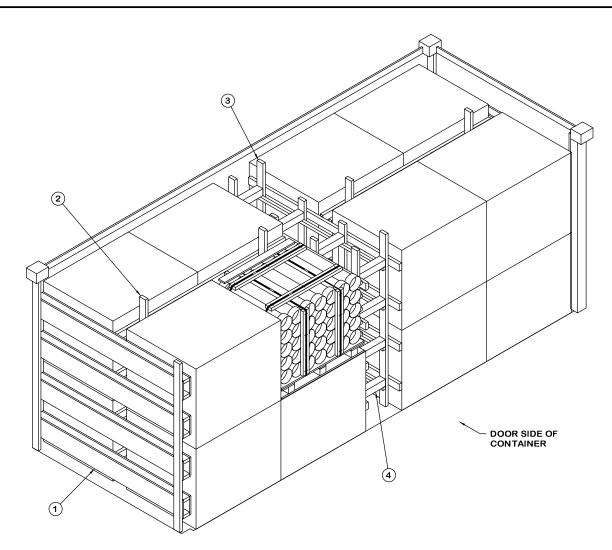
LOAD AS SHOWN *

ITEM	QUANTITY	WEIGHT (APPROX)
DUNNAGE	18	⁸¹⁹ LBS

TOTAL WEIGHT - - - - - - 30,341 LBS (APPROX)

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18 UNIT LOAD



ISOMETRIC VIEW

<u>KEY NUMBERS</u>

- (1) END BLOCKING ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 9.
- (2) CRIB FILL ASSEMBLY B (2 REQD). SEE THE DETAIL ON PAGE 8.
- (3) CENTER GATE B (2 REQD). SEE THE DETAIL ON PAGE 7.
- (4) STRUT, 4" X 4" BY CUT TO FIT (REF: 15") (16 REQD). TOENAIL TO THE CENTER GATES W/2-12d NAILS AT EACH END. SEE THE "BEVEL-CUT" DETAIL ON PAGE 8.

BILL OF MATERIAL				
LUMBER LINEAR FEET BOARD FEE				
1" X 4" 2" X 2" 2" X 4" 4" X 4"	66 52 442 20	22 18 295 27		
NAILS	NO. REQD	POUNDS		
6d (2") 416 2-1/2 10d (3") 320 5				
PLYWOOD, 3/4" 90.78 SQ FT REQD 187.23 LBS				

* THE LOAD AS SHOWN DEPICTS THE FLAT DUNNAGE (DECREASED HEIGHT) PALLET UNIT. THE PROCEDURES DEPICTED ABOVE MAY ALSO BE USED FOR LOADING ANY OF THE OTHER PALLET UNITS DEPICTED ON PAGE 3. THE BILL OF MATERIAL WILL VARY SLIGHTLY DEPENDING ON THE PALLET UNIT LOADED. SEE GENERAL NOTE "Q" ON PAGE 2.

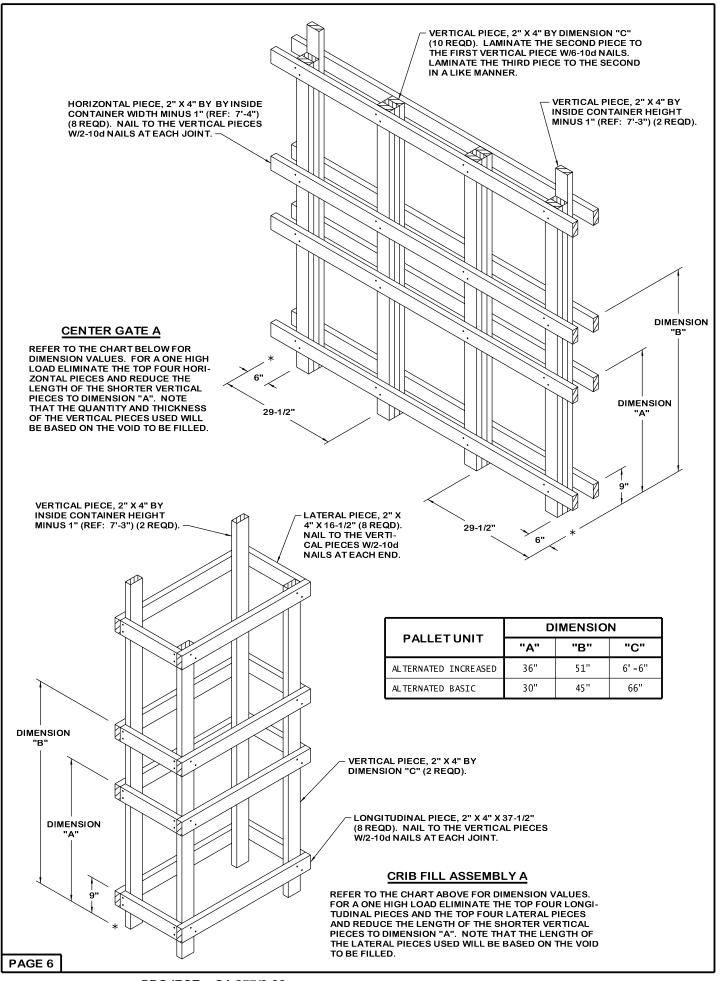
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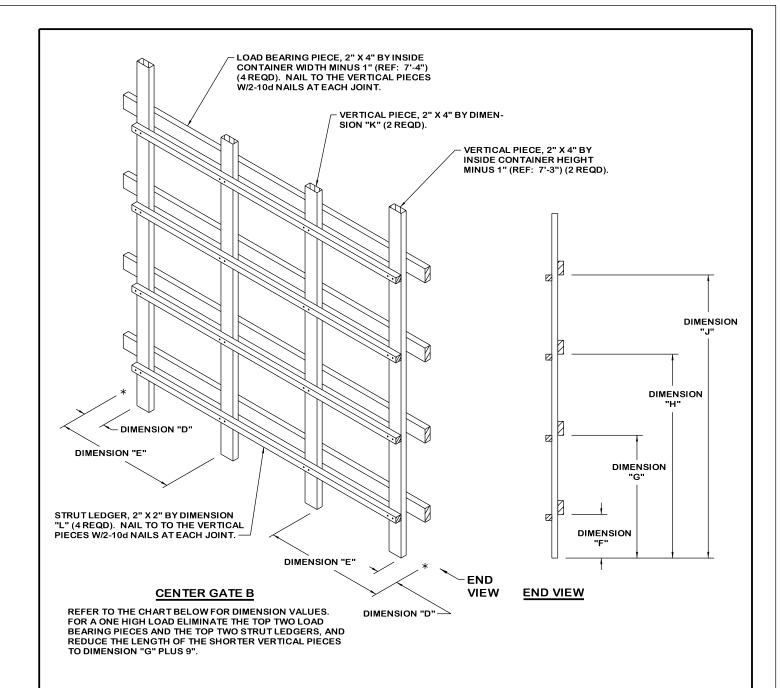
ITEM	QUANTITY	WEIGHT (APPROX)
DUNNAGE	16	917 LBS

TOTAL WEIGHT - - - - - - 26, 439 LBS (APPROX)

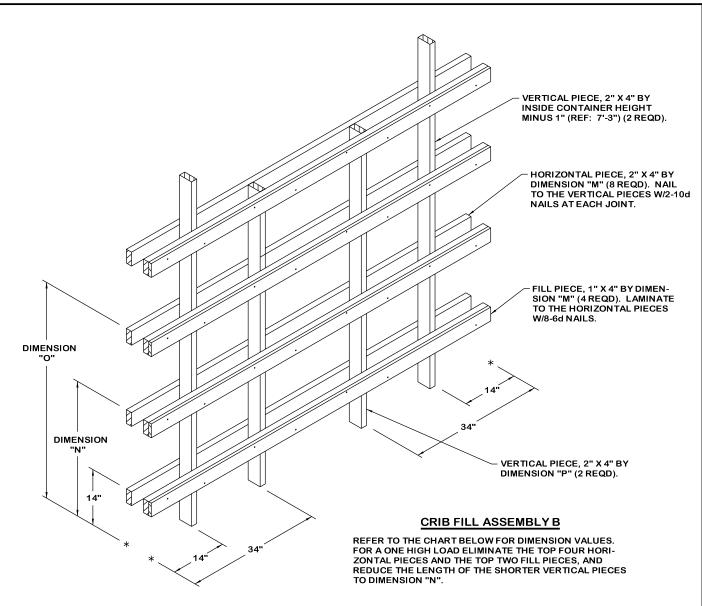
16 UNIT LOAD

PAGE 5

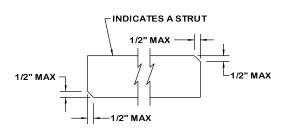




DALLETUNIT	DIMENSION							
PALLETUNIT	"D"	"E"	"F"	"G"	"H"	"J"	"K"	"L"
ALTERNATED INCREASED	4-1/2"	28"	10"	33"	52"	6' -3-1/2"	7' -0''	6' -7"
ALTERNATED BASIC	4-1/2"	28"	10"	28"	46"	63-1/2"	72"	6' -7"
ROUTED BASIC	4"	30"	10-1/2"	7"			46"	6' -8"
ROUTED DECREASED	4"	30"	10-1/2"	30-1/2"	50-1/2"	70-1/2"	6' -7"	6' -8"
FLAT BASIC	5-1/2"	30"	11"	38"			47"	6' -5"
FLAT DECREASED	5-1/2"	30"	11"	31"	51-1/2"	71-1/2"	6' -5"	6' -5"



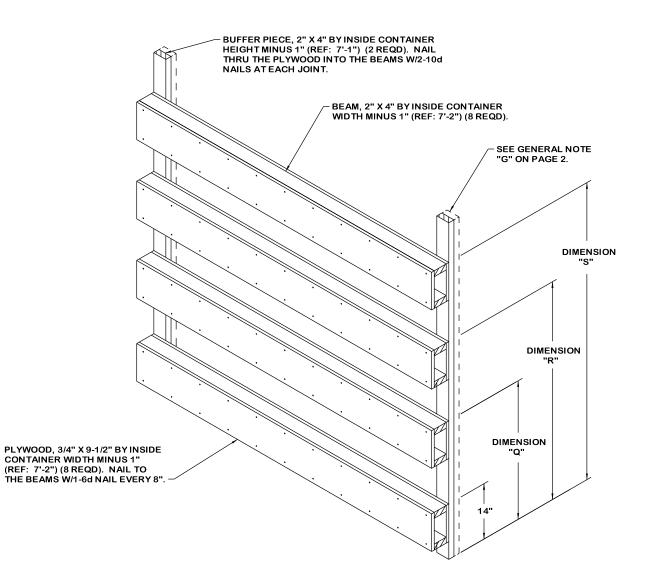
DALLETINUT	DIMENSION			
PALLETUNIT	"M"	"N"	"0"	"P"
ALTERNATED INCREASED	8' -3"	37"	55-1/2"	6' -5-1/2"
ALTERNATED BASIC	8' -3"	31-1/2"	49-1/2"	67-1/2"
ROUTED BASIC	8' -0"	40-1/2"		40-1/2"
ROUTED DECREASED	8' -0''	34"	54"	6' -2"
FLAT BASIC	8' -3"	40-1/2"		40-1/2"
FLAT DECREASED	8' -3"	34"	54"	6' -2"



BEVEL-CUT

IF DESIRED, EACH END OF A STRUT MAY BE BEVEL-CUT AS SHOWN ABOVE TO FACILITATE THE ACHIEVEMENT OF A TIGHT CENTER OF LOAD FIT.

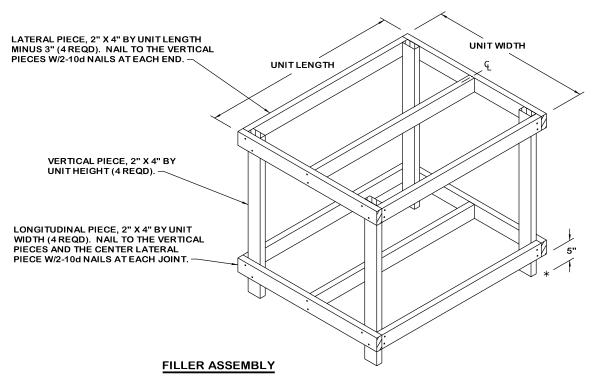
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END BLOCKING ASSEMBLY

REFER TO THE CHART BELOW FOR DIMENSION VALUES. FOR A ONE HIGH LOAD ELIMINATE THE TOP TWO BEAM ASSEMBLIES.

DALLETUNIT	DIMENSION		
PALLET UNIT	"Q"	"R"	"S"
ALTERNATED INCREASED	37"	57"	6' -7"
ALTERNATED BASIC	35"	51"	71"
ROUTED BASIC	40-1/2"		
ROUTED DECREASED	34"	55"	6' -2"
FLAT BASIC	41"		
FLAT DECREASED	35"	55"	6' -3"



THIS ASSEMBLY IS FOR USE IN PLACE OF AN OMITTED PALLET UNIT. NO MORE THAN THREE FILLER ASSEMBLIES MAY BE USED PER TWO-HIGH LOAD, AND NO MORE THAN ONE FILLER ASSEMBLY MAY BE USED PER ONE-HIGH LOAD. DO NOT INSTALL A FILLER ASSEMBLY IMMEDIATELY ADJACENT TO ANOTHER FILLER ASSEMBLY, OR TO A CENTER GATE. WIRE TIE TO ADJACENT PALLET UNIT(S) IN TWO PLACES WITH 0.0800" DIA WIRE.

