

APPROVED BY
BUREAU OF EXPLOSIVES

J.A. Rechner

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LOADING AND BRACING WITH WOODEN DUNNAGE IN SIDE OPENING ISO CONTAINERS OF MK20 AND MODS (ROCKEYE II) AND CBU-78/B (GATOR) PACKED IN THE MK18 MOD 0 CRADLE

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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 ARMAMENT, MUNITIONS AND CHEMICAL COMMAND	DRAFTSMAN	TECHNICIAN	ENGINEER
		G. GUAY	
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND	VALIDATION ENGINEERING DIVISION	TRANSPORTATION ENGINEERING DIVISION	LOGISTICS ENGINEERING OFFICE
	<i>John L. Byrd Jr.</i>	<i>JMK</i>	<i>W. French</i>
U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL			
JUNE 1994			
CLASS	DIVISION	DRAWING	FILE
19	48	8545	SP15J41

DO NOT SCALE

GENERAL NOTES

(GENERAL NOTES CONTINUED)

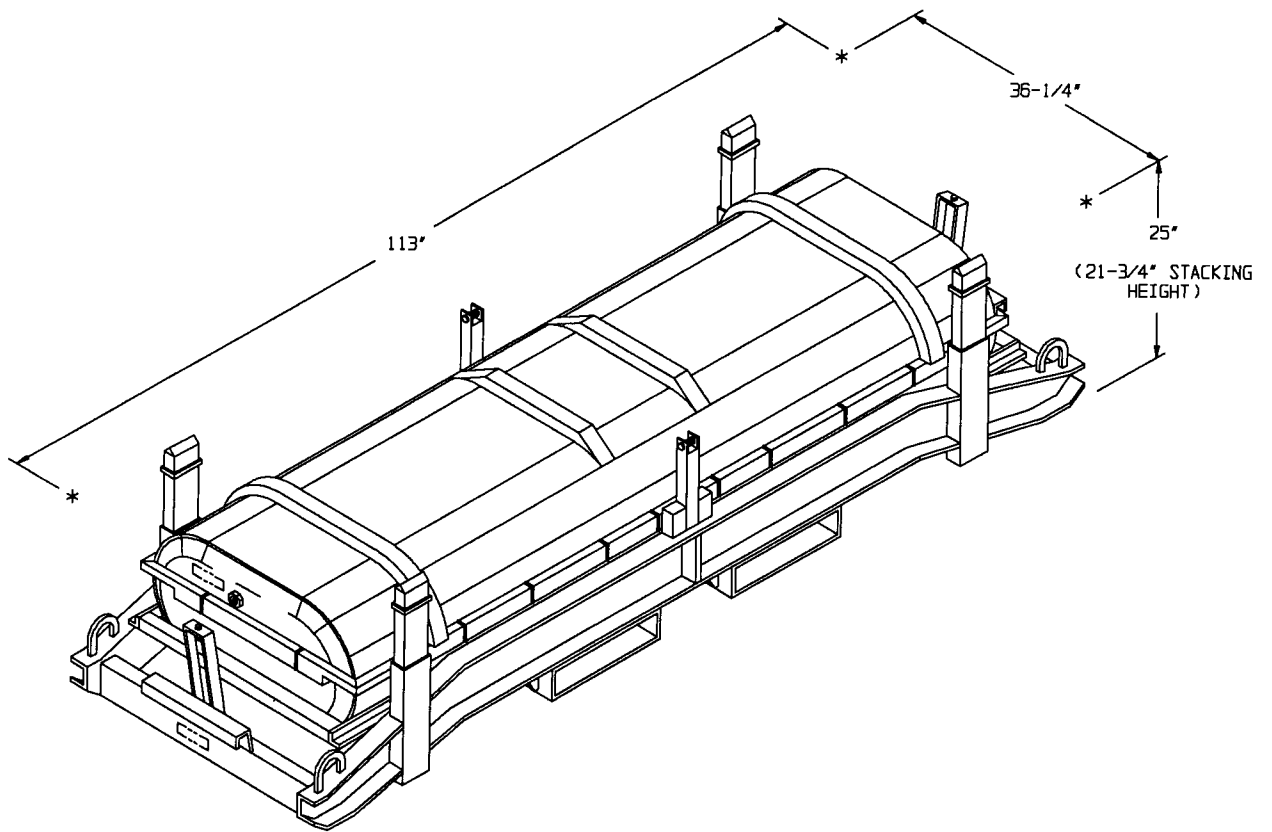
- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE SPECIFIED OUTLOADING PROCEDURES ARE APPLICABLE TO LOADS OF MK20 AND MODS (ROCKEYE II) AND CBU-7B/B (GATOR) WHEN PACKED IN THE MK18 MOD 0 CRADLE. SUBSEQUENT REFERENCE TO CRADLE HEREIN MEANS THE MK18 MOD 0 CRADLE WITH CONTENTS. SEE PAGE 3 FOR DETAIL OF THE CRADLE. CAUTION: REGARDLESS OF THE QUANTITY OF CRADLES TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF THE SIDE OPENING ISO CONTAINER MUST NOT BE EXCEEDED.
- C. THE LOAD AS SHOWN IS BASED ON A 6,050 POUND 20' LONG BY 8' WIDE BY 8'-6" HIGH SIDE OPENING INTERMODAL COMMERCIAL CONTAINER WITH INSIDE DIMENSIONS OF 19'-4" LONG BY 89" WIDE BY 88" HIGH. THE LOAD IS DESIGNED FOR TRAILER/CONTAINER-ON-FLAT-CAR (T/COFC) SHIPMENT, HOWEVER, THE LOAD AS DESIGNED CAN ALSO BE MOVED BY OTHER SURFACE MODES OF TRANSPORT. NOTICE: OTHER CONTAINERS OF THE SAME DESIGN CONFIGURATION CAN BE USED.
- D. WHEN LOADING THE CRADLES, THEY ARE TO BE POSITIONED SO AS TO ACHIEVE A TIGHT LOAD (TIGHT AGAINST THE DUNNAGE ASSEMBLIES). ALTHOUGH A TOTAL OF 1-1/2" OF UNBLOCKED SPACE ACROSS THE WIDTH OF A LOAD BAY IS PERMITTED, LATERAL VOIDS WITHIN THE LOAD ARE TO BE HELD TO A MINIMUM. EXCESSIVE SLACK CAN BE ELIMINATED FROM A LOAD BY LAMINATING ADDITIONAL PIECES OF APPROPRIATE THICKNESS TO THE VERTICAL PIECES ON THE SIDE FILL ASSEMBLIES. NAIL EACH ADDITIONAL PIECE W/1 APPROPRIATELY SIZED NAIL EVERY 12". ADDITIONALLY, THE THICKNESS OF THE VERTICAL PIECES ON THE SIDE FILL ASSEMBLIES MAY BE ADJUSTED AS REQUIRED TO FACILITATE VARIANCE IN THE CRADLE SIZE.
- E. DUNNAGE LUMBER SPECIFIED IS OF NOMINAL SIZE. 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.
- F. A STAGGERED NAILING PATTERN WILL BE USED WHENEVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES 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. CAUTION: DO NOT NAIL DUNNAGE MATERIAL TO THE CONTAINER WALLS OR FLOOR. ALL NAILING WILL BE WITHIN THE DUNNAGE.
- H. PORTIONS OF THE CONTAINER DEPICTED WITHIN THIS DRAWING, SUCH AS THE SIDE DOORS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.

- J. REQUIREMENTS CITED WITHIN THE BUREAU OF EXPLOSIVES PAMPHLET 6C APPLY WHEN THE SHIPMENT MOVES BY TRAILER/CONTAINER-ON-FLAT-CAR (T/COFC). SPECIAL T/COFC NOTES FOLLOW:
 - 1. 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.
- K. 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 INVOLVED.
- L. 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 0.454KG.
- M. THE QUANTITY OF CRADLES SHOWN IN THE LOAD ON PAGE 4 MAY BE REDUCED FOR SHIPMENT, IF DESIRED. SEE THE "OMITTED CRADLE PROCEDURES" DETAIL AND SPECIAL NOTES ON PAGE B. WHEN A CONTAINER IS TO BE LOADED WITH A REDUCED QUANTITY OF LADING UNITS, THE LENGTHWISE CENTER OF GRAVITY OF THE LOAD MUST BE WITHIN 12", IN EITHER DIRECTION, OF THE MID-POINT OF THE CONTAINER.

(CONTINUED AT RIGHT)

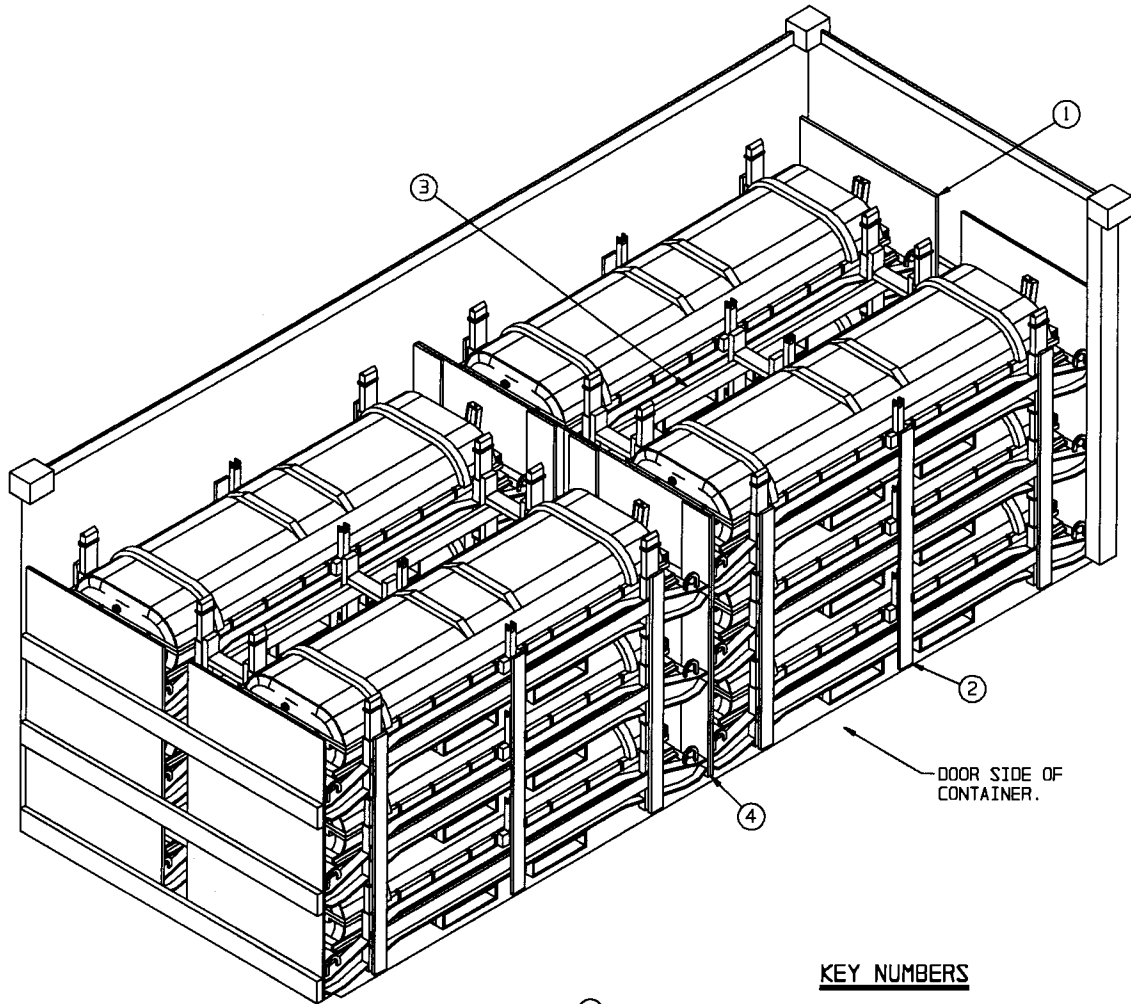
MATERIAL SPECIFICATIONS

- LUMBER - - - - - : SEE TM 743-200-1 (DUNNAGE LUMBER) AND FED SPEC MM-L-751.
- NAILS - - - - - : FED SPEC FF-N-105; COMMON.
- PLYWOOD - - - - - : COMMERCIAL ITEM DESCRIPTION A-A-55057, TYPE A, CONSTRUCTION AND 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.
- STRAPPING, STEEL - - : ASTM 03953; FLAT STRAPPING, TYPE 1, HEAVY DUTY, FINISH A, B (GRADE 2), OR C.
- SEAL, STRAP - - - - : ASTM 03953; CLASS H, FINISH A, B (GRADE 2), OR C, DOUBLE NOTCH TYPE, STYLE I, II, OR IV.
- ANTI-CHAFING MATERIAL - - - - - : MIL-B-121 (OR EQUAL); NEUTRAL BARRIER MATERIAL.



MK18 MOD 0 CRADLE

GROSS WEIGHT - - - - - 1,455 LBS (APPROX)
 CUBE - - - - - 59.3 CUBIC FEET (APPROX)



ISOMETRIC VIEW

KEY NUMBERS

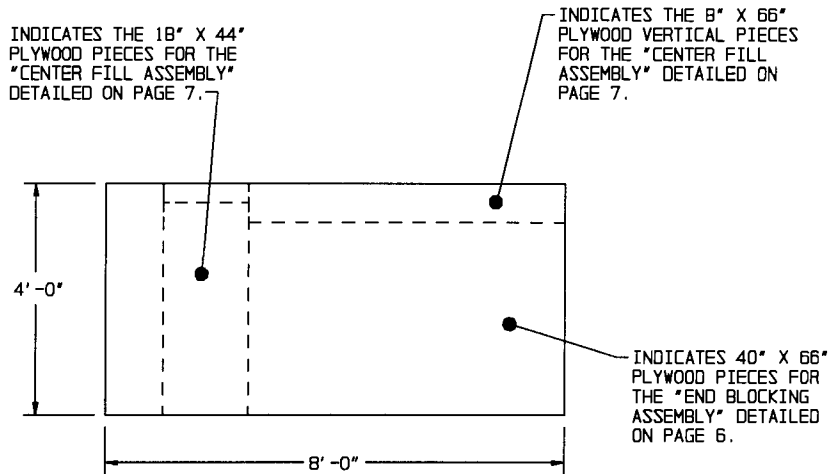
- ① END BLOCKING ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 6.
- ② SIDE FILL ASSEMBLY (4 REQD). SEE THE DETAIL ON PAGE 6.
- ③ SPACER ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 7.
- ④ CENTER FILL ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 7 AND THE SPECIAL NOTE ON PAGE 5.

RECOMMENDED SEQUENTIAL LOADING PROCEDURES

1. PRE-FABRICATE TWO END BLOCKING ASSEMBLIES, FOUR SIDE FILL ASSEMBLIES, TWO SPACER ASSEMBLIES AND ONE CENTER FILL ASSEMBLY.
2. INSTALL ONE END BLOCKING ASSEMBLY, ONE SIDE FILL ASSEMBLY AND LOAD ONE STACK OF THREE CRADLES.
3. REPEAT STEP 2.
4. INSTALL ONE SPACER ASSEMBLY AND LOAD ONE STACK OF THREE CRADLES.
5. REPEAT STEP 4.
6. INSTALL THE CENTER FILL ASSEMBLY.
7. INSTALL THE TWO REMAINING SIDE FILL ASSEMBLIES.

SPECIAL NOTE:

THE "CENTER FILL ASSEMBLY", PIECE MARKED ④, IS BASED ON A VOID OF 1-1/2" BETWEEN LONGITUDINALLY ADJACENT CRADLES. IF THE VOID IS LESS THAN 1-1/2", IT MAY BE NECESSARY TO USE 1/2" PLYWOOD INSTEAD OF THE SPECIFIED 3/4" PLYWOOD. A FIELD CHECK OF THE VOID BETWEEN THE LONGITUDINALLY ADJACENT CRADLES SHOULD BE MADE PRIOR TO ASSEMBLING THE CENTER FILL.



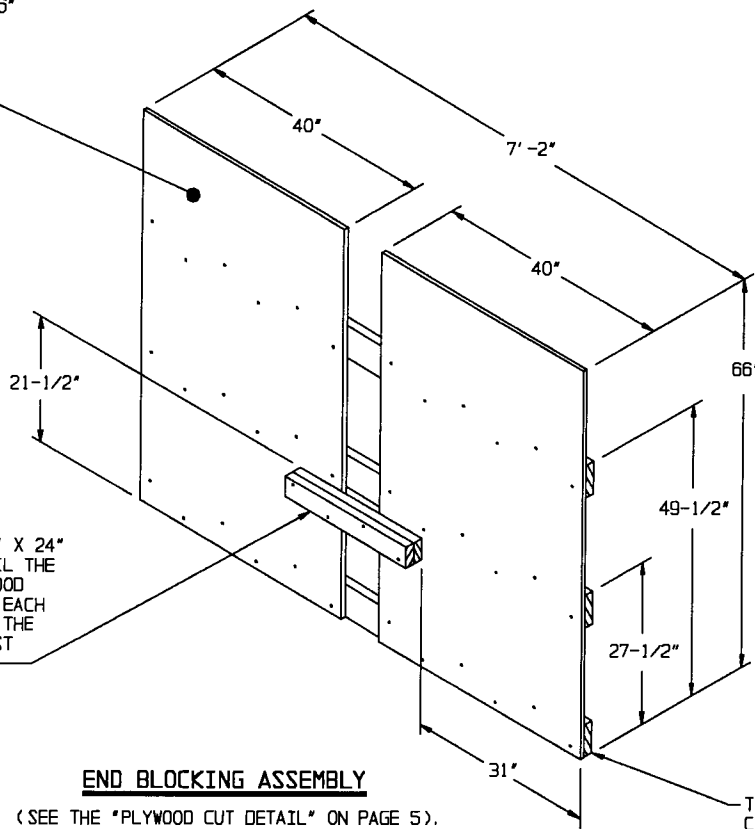
PLYWOOD CUT DETAIL

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	152	51
2" X 4"	176	117
2" X 6"	43	43
NAILS	ND. REQD	POUNDS
6d (2")	212	1-1/2
10d (3")	176	2-3/4
PLYWOOD, 3/4" - - - 128.33 SQ FT REQD		265 LBS

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CRADLE	12	17,460 LBS
DUNNAGE		691 LBS
CONTAINER		6,050 LBS
TOTAL WEIGHT		24,201 LBS (APPROX)

PLYWOOD, 3/4" X 40" X 66"
(2 REQD). NAIL TO THE
TIE PIECES W/6-6d NAILS
AT EACH JOINT.



HOLD-DOWN PIECE, 2" X 4" X 24"
(DOUBLED) (1 REQD). NAIL THE
FIRST PIECE TO THE PLYWOOD
PIECES W/2-10d NAILS AT EACH
JOINT AND CLINCH. NAIL THE
SECOND PIECE TO THE FIRST
W/4-10d NAILS.

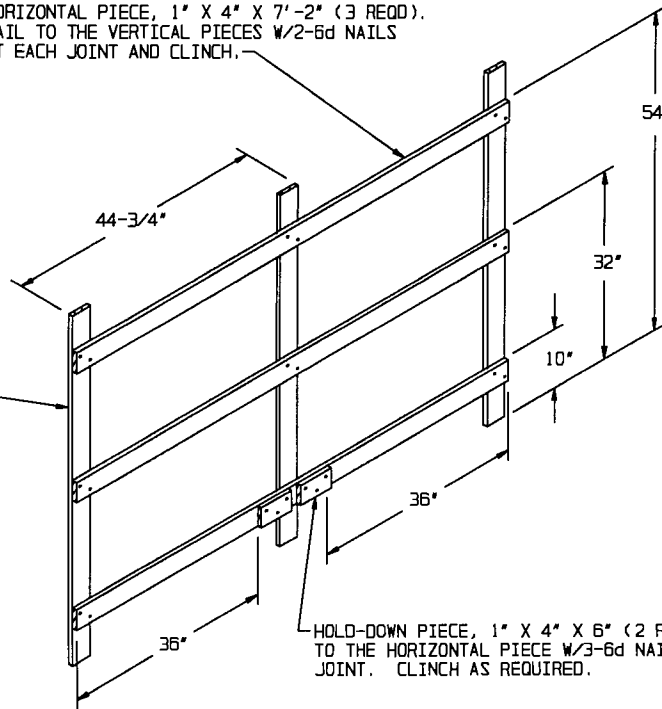
END BLOCKING ASSEMBLY

(SEE THE "PLYWOOD CUT DETAIL" ON PAGE 5).

TIE PIECE, 2" X 6" BY INSIDE
CONTAINER WIDTH MINUS 1"
(REF: 7'-2") (3 REQD).

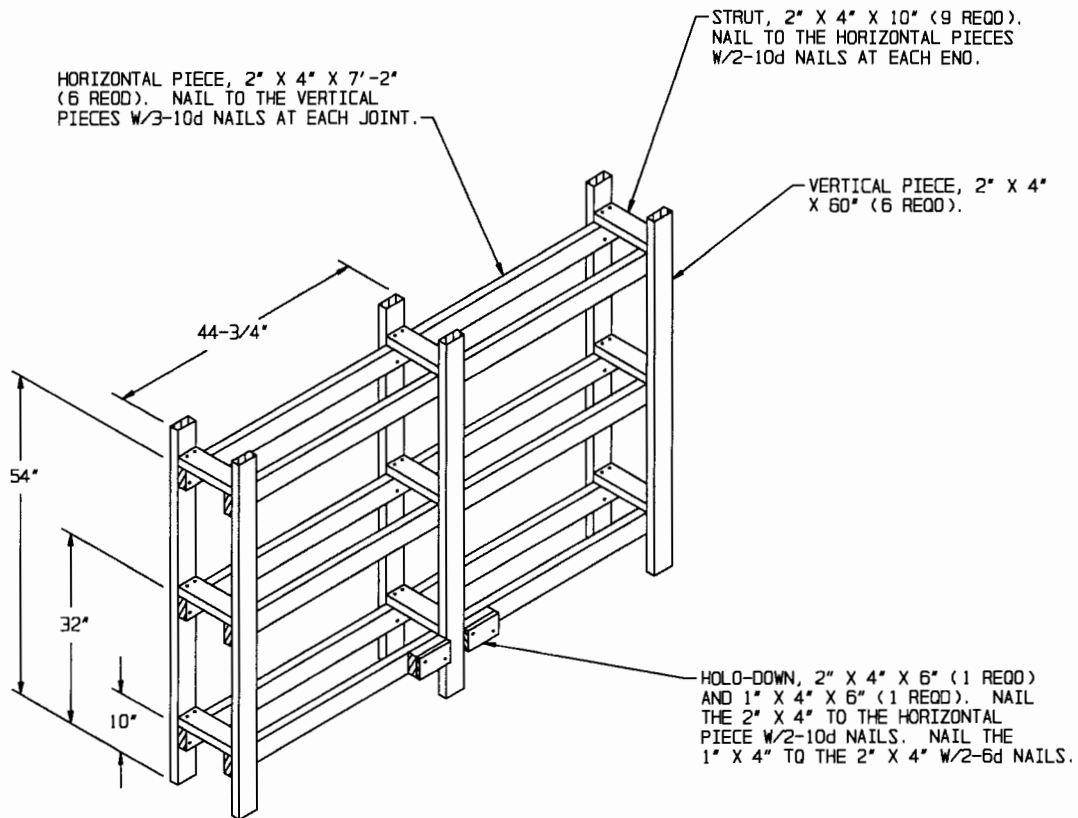
HORIZONTAL PIECE, 1" X 4" X 7'-2" (3 REQD).
NAIL TO THE VERTICAL PIECES W/2-6d NAILS
AT EACH JOINT AND CLINCH.

VERTICAL PIECE,
1" X 4" X 60"
(3 REQD).

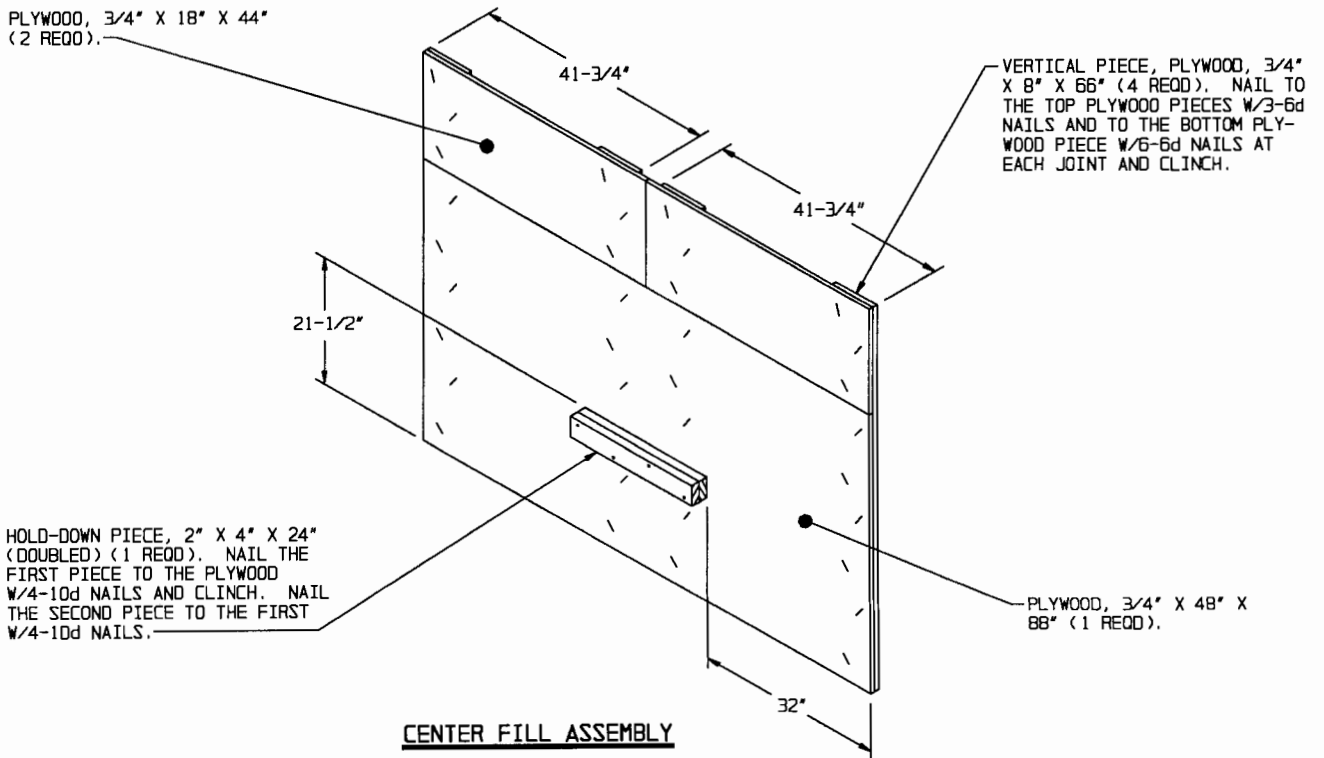


HOLD-DOWN PIECE, 1" X 4" X 6" (2 REQD). NAIL
TO THE HORIZONTAL PIECE W/3-6d NAILS AT EACH
JOINT. CLINCH AS REQUIRED.

SIDE FILL ASSEMBLY



SPACER ASSEMBLY

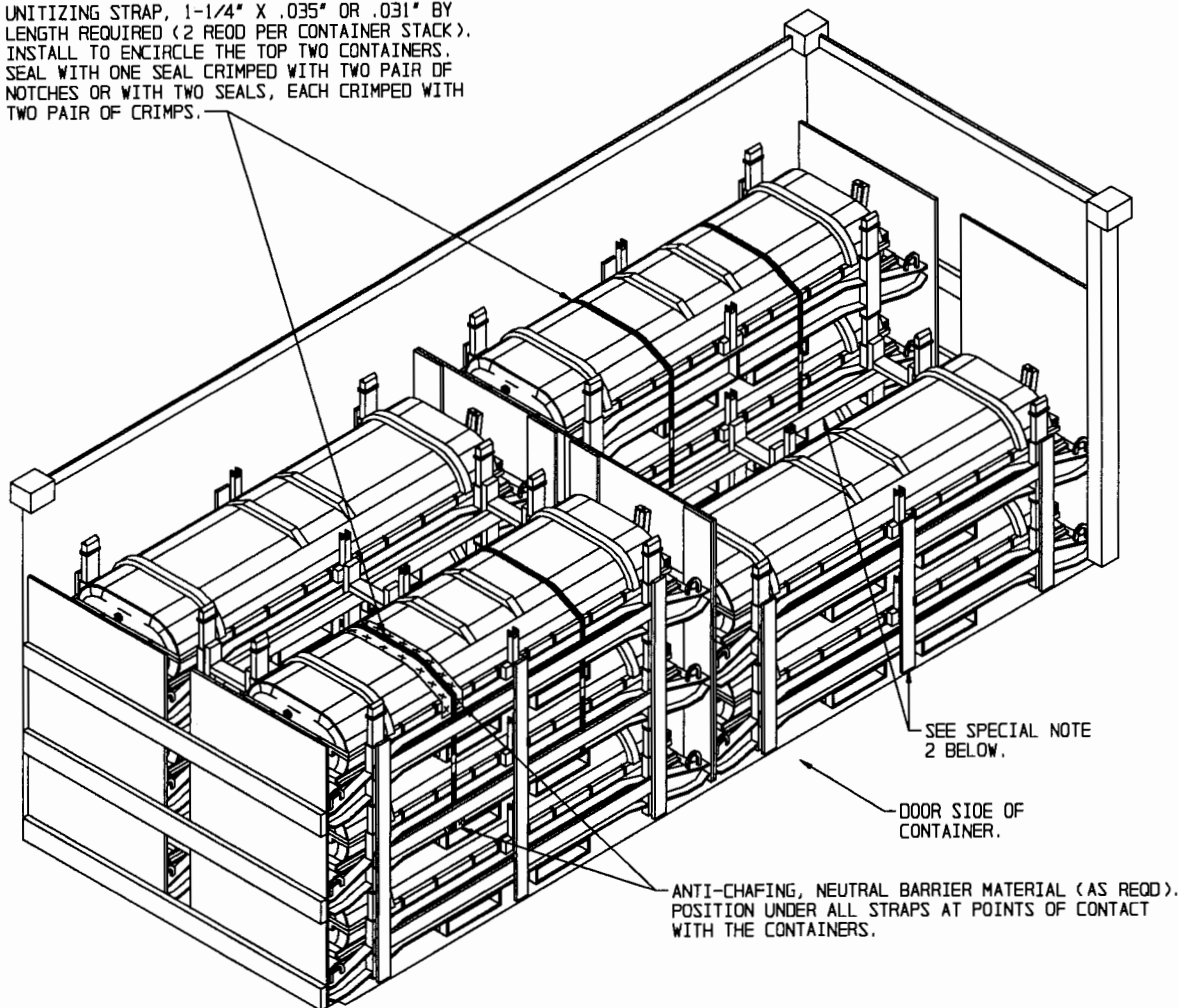


CENTER FILL ASSEMBLY

(SEE THE "PLYWOOD CUT DETAIL" ON PAGE 5).

DETAILS

UNITIZING STRAP, 1-1/4" X .035" OR .031" BY LENGTH REQUIRED (2 REQD PER CONTAINER STACK). INSTALL TO ENCIRCLE THE TOP TWO CONTAINERS. SEAL WITH ONE SEAL CRIMPED WITH TWO PAIR OF NOTCHES OR WITH TWO SEALS, EACH CRIMPED WITH TWO PAIR OF CRIMPS.



SEE SPECIAL NOTE 2 BELOW.

DOOR SIDE OF CONTAINER.

ANTI-CHAFING, NEUTRAL BARRIER MATERIAL (AS REQD). POSITION UNDER ALL STRAPS AT POINTS OF CONTACT WITH THE CONTAINERS.

ISOMETRIC VIEW

SPECIAL NOTES:

1. WHEN REDUCING A LOAD BY ONE OR MORE CRADLES, IT WILL BE NECESSARY TO UNITIZE THE CRADLE STACKS WHICH ARE LATERALLY AND LONGITUDINALLY ADJACENT TO THE OMITTED CRADLE AS DEPICTED IN THE LOAD VIEW ABOVE. SEE GENERAL NOTE "M" ON PAGE 2.
2. THE SIDE FILL AND SPACER ASSEMBLIES WHICH ARE CONTACTING THE REDUCED CRADLE STACK MAY BE REDUCED IN HEIGHT AS DEPICTED ABOVE.