APPROVED BY
BUREAU OF EXPLOSIVES

DATE 5/13/94

LOADING AND BRACING WITH WOODEN
DUNNAGE IN SIDE OPENING ISO
CONTAINERS OF AIR INFLATABLE
RETARDER, BSU-49/B PACKED IN THE
CNU-335/E OR CNU-335A/E CONTAINER,
AND BSU-50/B PACKED IN THE
CNU-336/E OR CNU-336A/E 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 ARMAMENT, MUNITIONS AND	DRAFT	NAMZ	TECHNICIAN	ENGINEER
	CHEMICAL COMMAND			G. GUAY	
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	APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND	VALIDA ENGINEE DIVIS	RING	TRANSPORTATION ENGINEERING DIVISION	LOGISTICS ENGINEERING OFFICE
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	John L Byrd fr		UNE 1994		
	U.S. ARMY DEFENSE AMMUNITION CENTER AND SOCIOL	CLASS	NOISIVIO	DRAWING	FILE
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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).
- B. THE SPECIFIED OUTLOADING PROCEDURES ARE APPLICABLE TO LOADS OF AIR INFLATABLE RETARDER, BSU-49/B PACKED IN THE CNU-335/E OR CNU-335A/E CONTAINER OR BSU-50/B PACKED IN THE CNU-336A/E CONTAINER OR CNU-336A/E CONTAINER. SEE PAGE 3 FOR DETAILS OF THE CONTAINERS. CAUTION: REGARDLESS OF THE QUANTITY OF CONTAINERS 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 5,050 POUND 20' LONG BY 8' WIDE BY B'-6' HIGH SIDE OPENING INTERMODAL COMMERCIAL CONTAINER WITH INSIDE DIMENSIONS OF 19'-4" LONG BY 89" WIDE BY 8B" 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 CONTAINERS, 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 SIDE FILL ASSEMBLIES FOR THE LOAD ON PAGE 4 AND THE FILLER ASSEMBLIES FOR THE LOAD ON PAGE 4. AND THE FILLER ASSEMBLIES FOR THE LOAD ON PAGE 8. NAIL EACH ADDITIONAL PIECE W/1 APPROPRIATELY SIZED NAIL EVERY 12". ADDITIONALLY, THE THICKNESS AND/OR QUANTITY OF THE DUNNAGE LUMBER MAY BE ADJUSTED AS REQUIRED TO FACILITATE VARIANCE IN THE CONTAINER 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 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" 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. 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". THIS PIECE IS NOT REQUIRED WHEN THE CORNER PORTIONS OF THE CONTAINER ENDWALLS ARE SMOOTH AND FLAT.
- H. <u>CAUTION</u>: DO NOT NAIL DUNNAGE MATERIAL TO THE CONTAINER WALLS OR FLOOR. ALL NAILING WILL BE WITHIN THE DUNNAGE.
- J. PORTIONS OF THE CONTAINER DEPICTED WITHIN THIS DRAWING, SUCH AS THE SIDE DOORS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.

(CONTINUED AT RIGHT)

#### MATERIAL SPECIFICATIONS

NAILS - - - - - -: FED SPEC FF-N-105; COMMON.

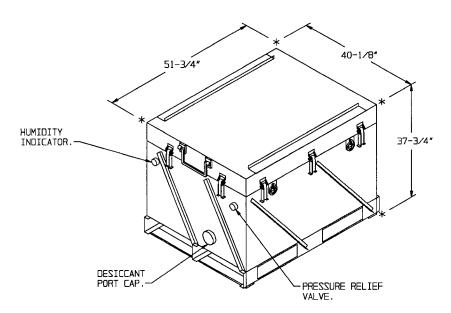
PLYWOOD - - - - - - COMMERCIAL ITEM DESCRIPTION
A-A-55057, TYPE A, CONSTRUCTION AND
INDUSTRIAL PLYWOOD, INTERIOR WITH
EXTERIOR GLUE, GRADE C-D. IF
SPECIFIED GRADE IS NOT AVAILABLE, A
BETTER INTERIOR OR AN EXTERIOR GRADE
MAY BE SUBSTITUTED.

STRAPPING, STEEL - -: ASTM D3953; FLAT STRAPPING, TYPE 1, HEAVY DUTY, FINISH B (GRADE 2), SIZE 3/4" X .035" OR .031".

SEAL, STRAP ---: ASTM D3953; CLASS H, FINISH B (GRADE 2), DOUBLE NOTCH TYPE, STYLE I, II, OR IV.

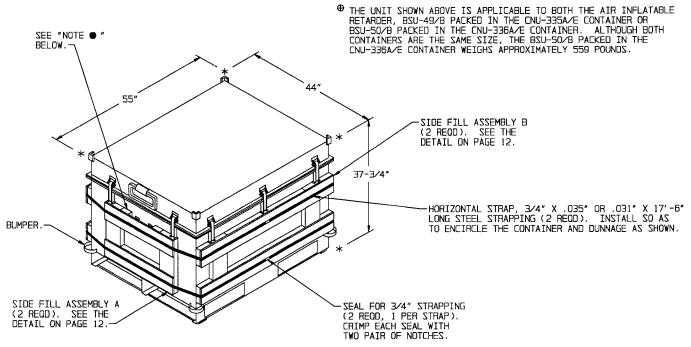
#### (GENERAL NOTES CONTINUED)

- K. REQUIREMENTS CITED WITHIN THE BUREAU OF EXPLOSIVES PAMPHLET BC APPLY WHEN THE SHIPMENT MOVES BY TRAILER/CONTAINER-ON-FLAT-CAR (T/COFC). SPECIAL T/COFC NOTES FOLLOW:
  - A LOADED CONTAINER MUST BE ON A CHASSIS ÉQUIPPED 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.
- L. 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.
- M. 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.
- N. THE QUANTITY OF CONTAINERS SHOWN IN THE LOADS ON PAGE 4 AND PAGE 8 MAY BE REDUCED FOR SHIPMENT, IF DESIRED. SEE THE OMITTED CONTAINER ASSEMBLIES ON PAGE 13. 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.
  - IF A LOAD IS REDUCED BY ONLY A SMALL AMOUNT (ONE OR TWO LADING UNITS), LADING UNITS NORMALLY MAY BE ELIMINATED FROM THE CENTER OF THE LOAD.
  - 2. IF A LOAD IS REDUCED BY A LARGE AMOUNT (MORE THAN TWO LADING UNITS), LADING UNITS SHOULD BE ELIMINATED AS REQUIRED AND THE TOTAL LOAD SHIFTED FORE OR AFT, AS NECESSARY, TO ACHIEVE A SYMMETRICAL WEIGHT DISTRIBUTION. THE DEPICTED PROCEDURES WILL BE FOLLOWED AS CLOSELY AS POSSIBLE, MAKING ONLY THOSE ADJUSTMENTS TO THE DUNNAGE WHICH ARE REQUIRED TO ACCOMMODATE THE NUMBER OF UNITS TO BE SHIPPED.



## ISOMETRIC VIEW

⊕ AIR INFLATABLE RETARDER, BSU-49/B (CNU-335A/E CNTR) - - 1,038 LBS (APPROX)



## ISOMETRIC VIEW

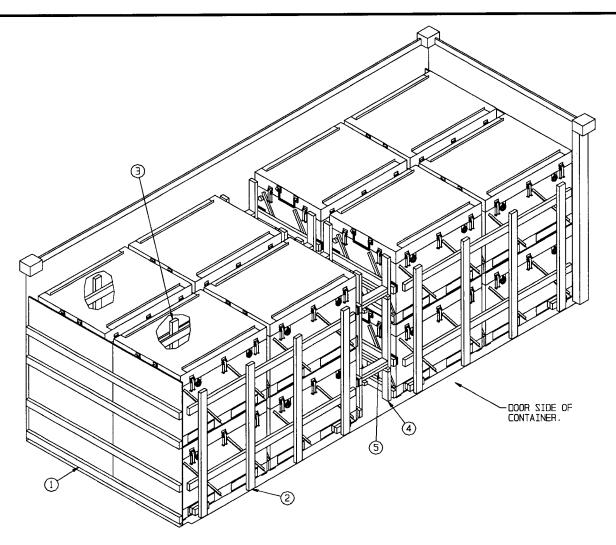
TOTAL WEIGHT - - - - 1,120 LBS (APPROX)

- THE UNIT SHOWN ABOVE IS APPLICABLE TO BOTH THE AIR INFLATABLE RETARDER, BSU-49/B PACKED IN THE CNU-335/E CONTAINER OR BSU-50/B PACKED IN THE CNU-336/E CONTAINER. ALTHOUGH BOTH CONTAINERS ARE THE SAME SIZE, THE BSU-50/B PACKED IN THE CNU-336/E CONTAINER WEIGHS APPROXIMATELY 64! POUNDS.
- NOTE: THE INTERMEDIATE FILLER PIECE OF THE "SIDE FILL ASSEMBLY A" MAY BE NOTCHED OR PARTIALLY OMITTED AS NECESSARY TO PROVIDE ACCESS TO THE HUMIDITY INDICATOR AND PRESSURE RELIEF VALVE. SEE "DETAIL A" ON PAGE 12.

BILL OF MATERIAL			
LINEAR FEET BOARD FEET			
31	31		
NO. REQD	ZDNUOP		
88	3/4		
	LINEAR FEET 31 NO. REOD		

STEEL STRAPPING, 3/4" - - 35.00' REOD - - 2-1/2 LBS SEAL FOR 3/4" STRAPPING - - - 2 REOD - - - - NIL PLYWOOD, 1/2" - - 11.77 SO FT REOD - 16.19 LBS

CONTAINER DETAILS



ISOMETRIC VIEW

### KEY NUMBERS

- () END BLOCKING ASSEMBLY A (2 REOD). SEE THE DETAIL ON PAGE  $\overline{\mathbf{6}}$  .
- $\bigcirc$  SIDE FILL ASSEMBLY (4 REOD). SEE THE DETAIL ON PAGE 6.
- 3 SPACER ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 7.
- 4 CENTER GATE (4 REQD). SEE THE DETAIL ON PAGE 7.
- (5) STRUT, 2" X 4" X CUT TO FIT (REF: 15") (DOUBLED) (8 REOD). LAMINATE W/4-10d NAILS. TOENAIL TO THE VERTICAL PIECES OF THE CENTER GATES, PIECE MARKED (4), W/2-10d NAILS AT EACH END.

### RECOMMENDED SEQUENTIAL LOADING PROCEDURES

- PRE-FABRICATE TWO END BLOCKING ASSEMBLIES A, FOUR SIDE FILL ASSEMBLIES, TWO SPACER ASSEMBLIES AND FOUR CENTER FILL ASSEMBLIES.
- INSTALL ONE END BLOCKING ASSEMBLY, ONE SIDE FILL ASSEMBLY AND LOAD FOUR CONTAINERS.
- 3. REPEAT STEP 2.
- 4. INSTALL TWO CENTER FILL ASSEMBLIES WITH STRUTS.
- 5. INSTALL ONE SPACER ASSEMBLY AND LOAD FOUR CONTAINERS.
- 6. REPEAT STEP 5.
- 7. REPEAT STEP 4.
- 8. INSTALL THE TWO REMAINING SIDE FILL ASSEMBLIES.

### NWOHZ ZA DAOJ

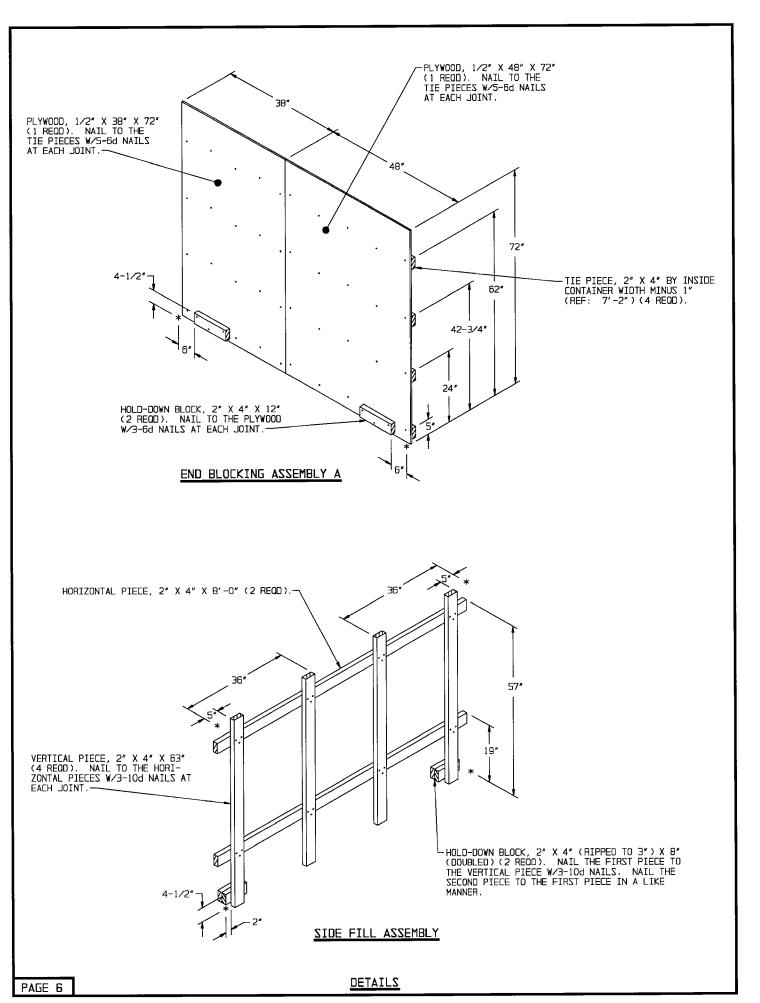
ITEM	QUANTITY	WEIGHT (APPROX)
DUNNAGE	INER - 16	- 701 LBS
TOTAL	WEIGHT	23,359 LBS (APPROX)

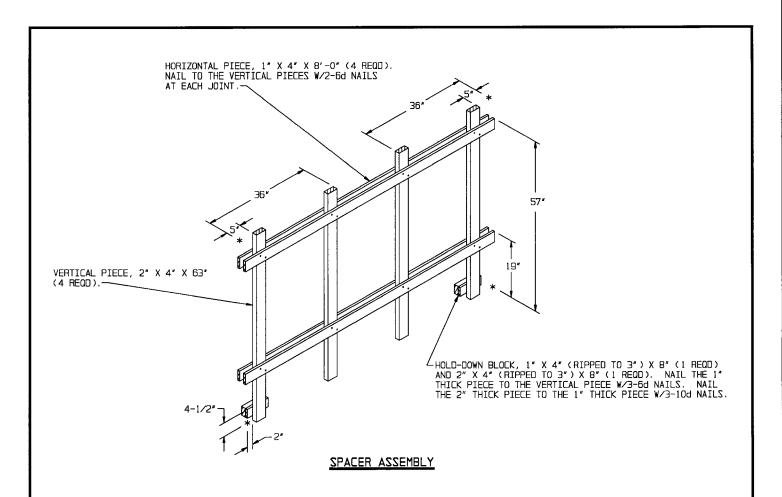
BILL OF MATERIAL				
LUMBER	LINEAR FEET BOARD FEET			
1" X 4" 2" X 2" 2" X 4"	67 27 379	22 9 253		
ZJIAN	NO. REQD	ZONUO9		
6d (2") 10d (3")	272 336			
PLYWOOD, 1/2" 91.40 SQ FT REQD 126 LBS				

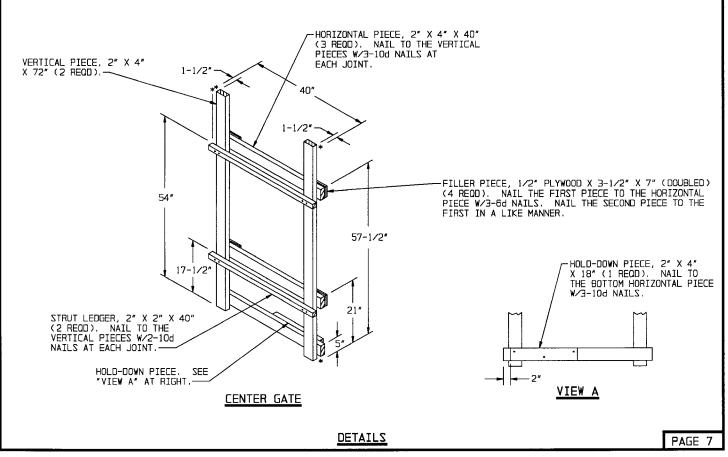
## LOAD AS SHOWN

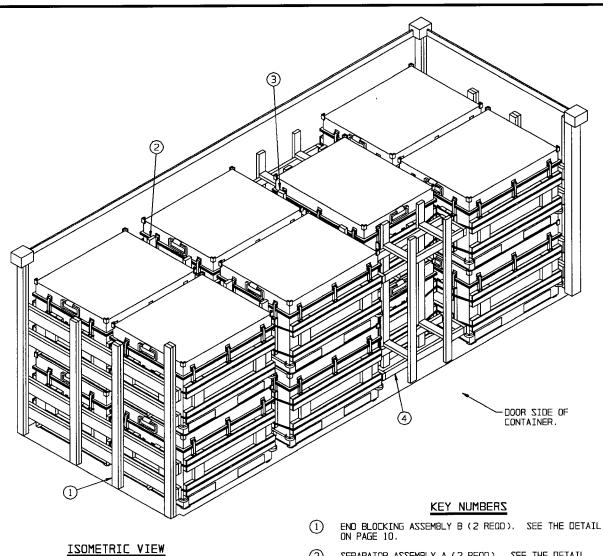
ITEM	QUANTITY	WEIGHT	(APPROX)
DUNNAGE	ER - 16 	- 701	LBZ
TOTAL WE	IGHT	15,695	LBS (APPROX)

16-CONTAINER LOAD









 $\bigcirc$  SEPARATOR ASSEMBLY A (2 REOD). SEE THE DETAIL ON PAGE 11.

- SEPARATOR ASSEMBLY B (1 REDD). SEE THE DETAIL ON PAGE 11. INSTALL WITH THE HOLD-DOWN FACING THE TWO-WIDE CONTAINER STACKS.

## RECOMMENDED SEQUENTIAL LOADING PROCEDURES

- PRE-FABRICATE TWO END BLOCKING ASSEMBLIES B, TWO SEPARATOR ASSEMBLIES A, ONE SEPARATOR ASSEMBLY B AND TWO FILLER ASSEMBLIES.
- 2. INSTALL ONE END BLOCKING ASSEMBLY.
- 3. LOAD ONE STACK OF TWO CONTAINERS, INSTALL ONE SEPARATOR A AND LOAD ANOTHER STACK OF TWO CONTAINERS.
- 4. REPEAT STEP 2.
- 5. LOAD ONE STACK OF TWO CONTAINERS.
- 6. REPEAT STEP 3.
- 7 REPEAT STEP 5.
- 8. INSTALL ONE FILLER ASSEMBLY, LOAD ONE STACK OF TWO CONTAINERS, INSTALL THE SEPARATOR ASSEMBLY B AND INSTALL THE REMAINING FILL ASSEMBLY.

# LOAD AS SHOWN

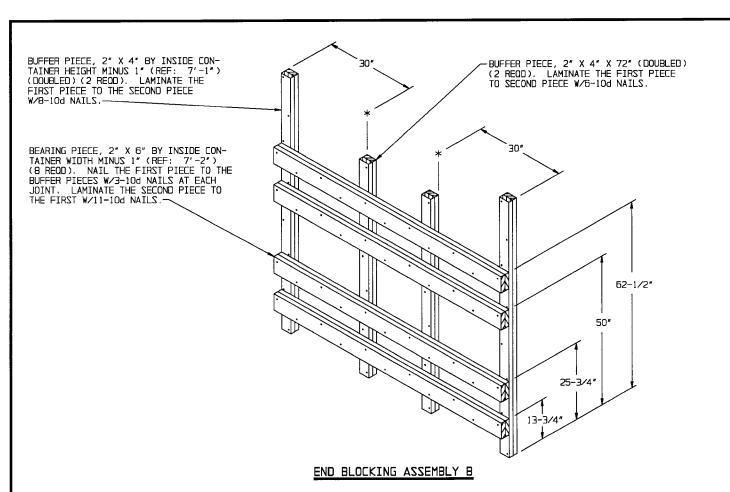
ITEM	QUANTITY	WEIGHT (APPROX)	
DUNNAGE	NTAINER 14	- 675 LBS	
TOT	TAL WEIGHT	22,405 LBS (APPROX)	

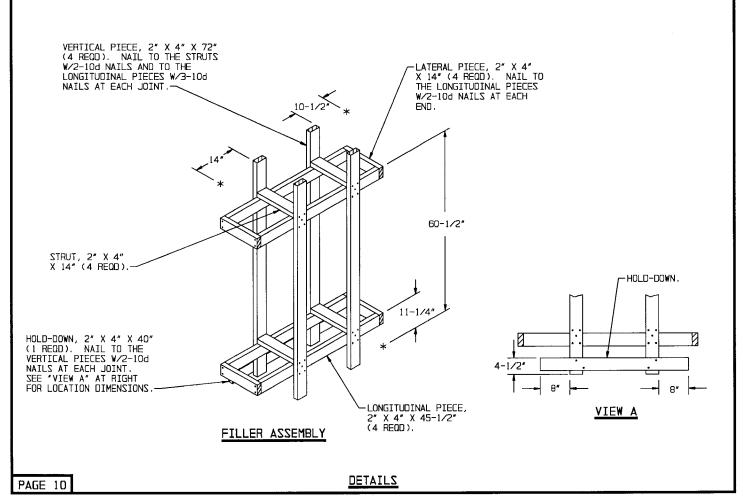
BILL OF MATERIAL				
LUMBER	LINEAR FEET BOARD FEET			
2" X 4" 2" X 6"	328 115	219 115		
ZJIAN	NO. REQD	SONUOS		
10d (3")	396 6-1/4			

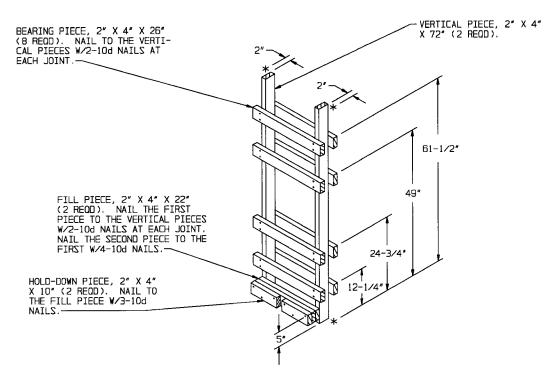
# NWOHZ ZA DAOL

ITEM	QUANTITY	<u>WEIGHT</u> (	(APPROX)
DUNNAGE	AINER 14	– <sup>1</sup> 675 L	_BZ
TOTAL	WEIGHT	15,699 L	_BS (APPROX)

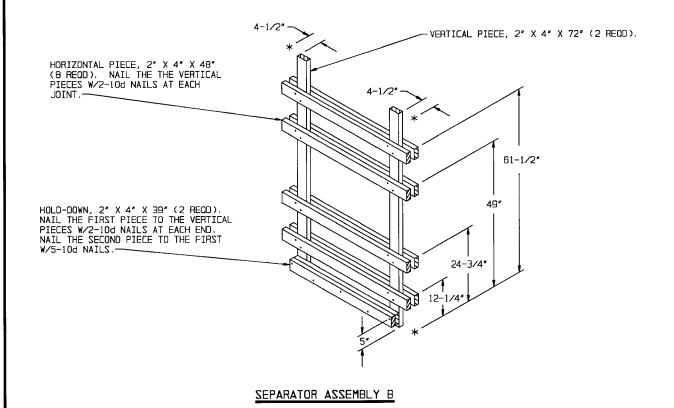
14-CONTAINER LOAD



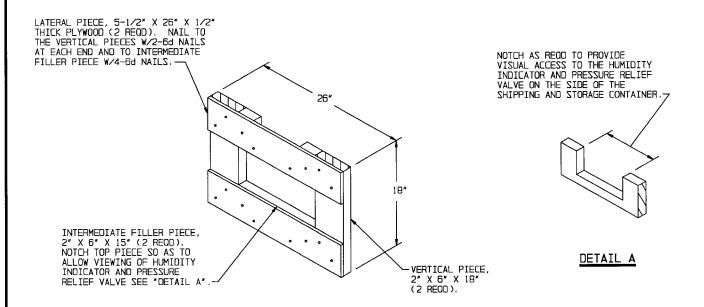




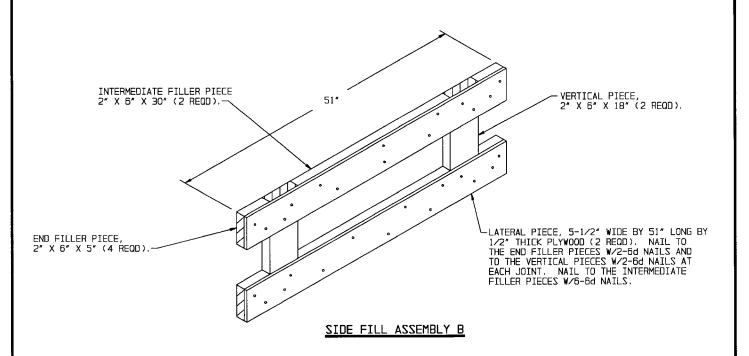
# SEPARATOR ASSEMBLY A



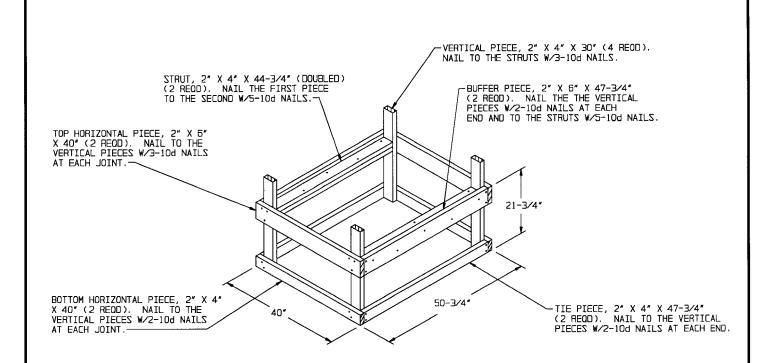
<u>DETAILS</u>



# SIDE FILL ASSEMBLY A

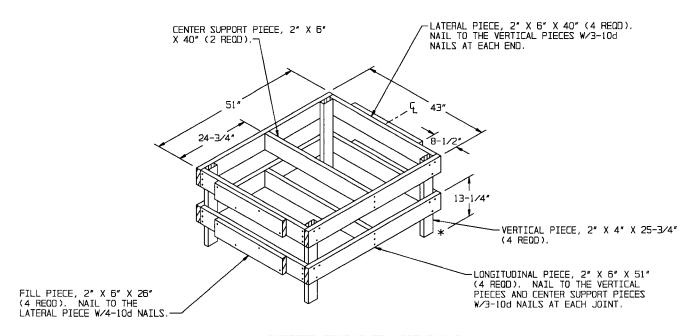


DETAILS



### OMITTED CONTAINER ASSEMBLY A

THIS ASSEMBLY IS TO BE USED FOR THE LOAD SHOWN ON PAGE 4 WHEN OMITTING CONTAINER UNITS. SEE GENERAL NOTE "N" ON PAGE 2.



### DMITTED CONTAINER ASSEMBLY B

THIS ASSEMBLY IS TO BE USED FOR THE LOAD SHOWN ON PAGE 8 WHEN OMITTING CONTAINER UNITS. SEE GENERAL NOTE "N" ON PAGE 2.

<u>DETAILS</u>

