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*David Hest*

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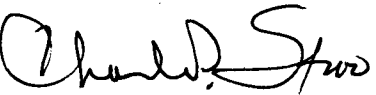
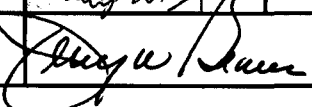
# LOADING AND BRACING\* ON COM- MERCIAL FLATRACK ISO CONTAINERS OF SIDEWINDER (AIM-9X) MISSILES PACKED IN CNU-609 SHIPPING AND STORAGE CONTAINERS

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\*THE PROCEDURES SHOWN HEREIN ARE APPLICABLE TO LOADS THAT ARE TO BE SHIPPED BY CONTAINER-ON-FLATCAR (COFC) RAIL, MOTOR, OR WATER CARRIERS.

## U.S. ARMY MATERIEL COMMAND DRAWING

APPROVED, U.S. ARMY JOINT MUNITIONS COMMAND  	CAUTION: VERIFY PRIOR TO USE AT WWW.DAC.ARMY.MIL THAT THIS IS THE MOST CURRENT VERSION OF THIS DOCUMENT. THIS IS PAGE 1 OF 8.							
	<b>DO NOT SCALE</b>				<b>FEBRUARY 2007</b>			
	ENGINEER OR TECHNICIAN	BASIC REV.	MELVIN SIX					
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND  	TRANSPORTATION ENGINEERING DIVISION	<i>Raura A. Ziff</i>		TESTED	CLASS	DIVISION	DRAWING	FILE
	VALIDATION ENGINEERING DIVISION	<i>William B. ...</i>			19	48	8846	SP15J168
U.S. ARMY DEFENSE AMMUNITION CENTER  	ENGINEERING DIRECTORATE	<i>Douglas R. ...</i>						

## GENERAL NOTES

## (GENERAL NOTES CONTINUED)

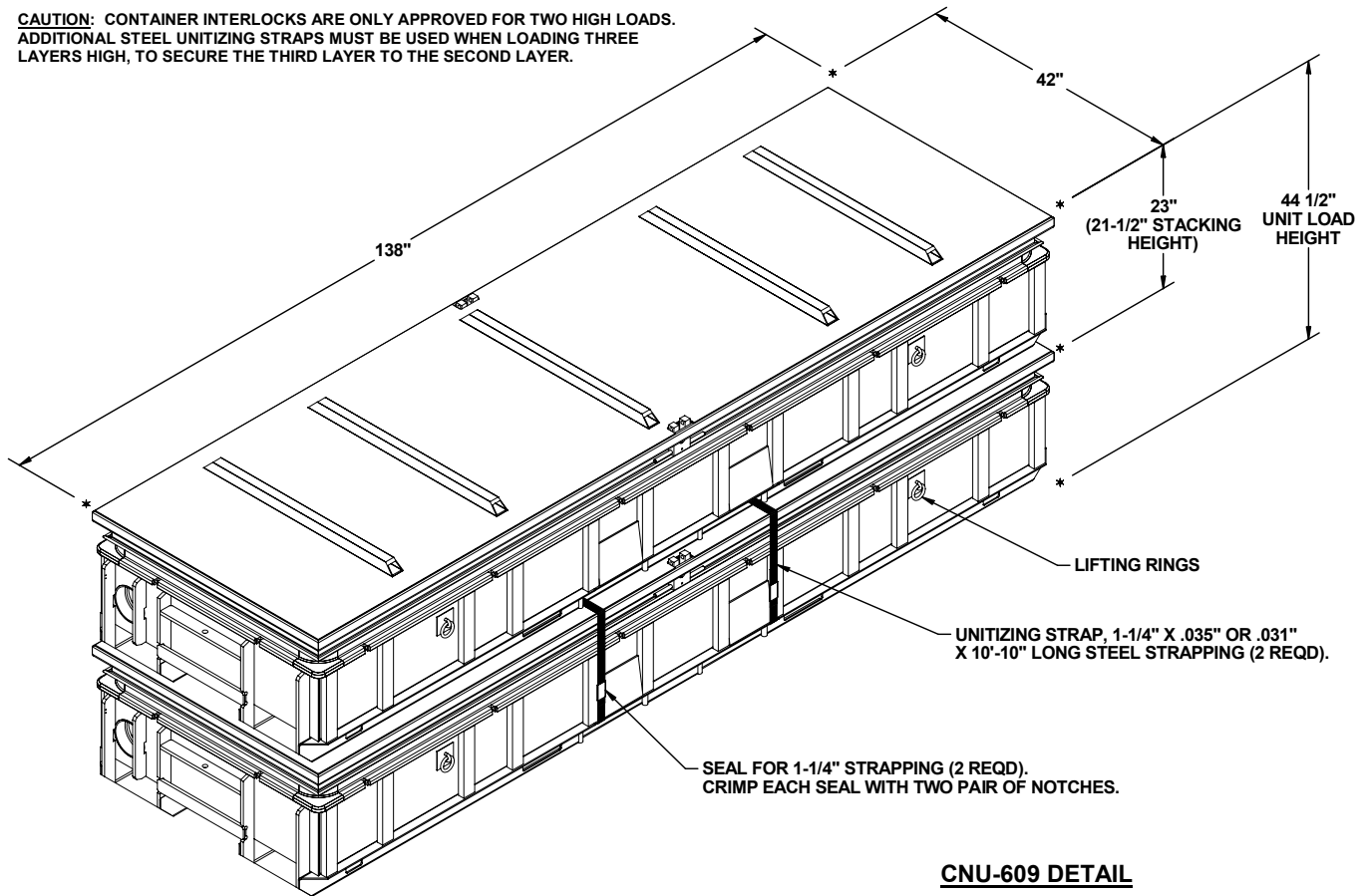
- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. ALL LOADS SHIPPED BY THE PROCEDURES DEPICTED IN THIS DRAWING MUST BE IN ACCORDANCE WITH THE REQUIREMENTS SET FORTH IN TITLE 49, THE UNITED STATES CODE OF FEDERAL REGULATIONS; AR 55-355/AFM 75-2; DOD 4500.32-R; DOD 5100.76-M; DOD 6055.9-STD; AS WELL AS ANY AND ALL OTHER APPLICABLE SERVICE REGULATIONS.
- C. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE TO SIDEWINDER (AIM-9X) MISSILES PACKED IN CNU-609 SHIPPING AND STORAGE CONTAINER. SEE PAGE 3 AND RAYTHEON DRAWING 2215440 FOR DETAILS OF THE CONTAINER. **CAUTION:** REGARDLESS OF THE QUANTITY OF CONTAINERS TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF THE FLATRACK ISO CONTAINER MUST NOT BE EXCEEDED.
- D. THE LOAD AS SHOWN IS BASED ON A 5,700 POUND 20' LONG BY 8'-0" WIDE FLATRACK ISO CONTAINER WITH FULL HEIGHT ENDWALLS, AND INSIDE DIMENSIONS OF 19'-4" LONG BY 7'-2" WIDE. THE LOAD IS DESIGNED FOR TRAILER/CONTAINER-ON-FLATCAR (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.
- E. WHEN LOADING CONTAINERS, THEY ARE TO BE POSITIONED SO AS TO ACHIEVE A TIGHT LOAD BETWEEN THE END BLOCKING ASSEMBLIES AND THE LADING. ALTHOUGH A TOTAL OF 1" OF UNBLOCKED SPACE ACROSS THE WIDTH OF A LOAD IS PERMITTED, LONGITUDINAL VOIDS WITHIN THE LOADS ARE TO BE HELD TO A MINIMUM, NOT EXCEEDING 1/2". EXCESSIVE SLACK CAN BE ELIMINATED FROM A LOAD BY INCREASING THE LENGTH OF THE STRUTS.
- F. 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.
- G. 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.
- H. PORTIONS OF THE CONTAINER DEPICTED WITHIN THIS DRAWING, SUCH AS THE ENDWALL, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.
- J. 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 NECESSARY 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 IMPOSED ON THE INTERMODAL CONTAINER SYSTEM.
- K. 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:
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.

(CONTINUED AT RIGHT)

## MATERIAL SPECIFICATIONS

- LUMBER - - - - - : SEE TM 743-200-1 (DUNNAGE LUMBER) AND VOLUNTARY PRODUCT STANDARD PS 20.
- NAILS - - - - - : ASTM F1667; COMMON STEEL NAIL (NLCMS OR NLCMMS).
- STRAPPING, STEEL - - : ASTM D3953; FLAT STRAPPING, TYPE 1, HEAVY DUTY, FINISH A, B (GRADE 2), OR C.
- SEAL, STRAP - - - - : ASTM D3953; CLASS H, FINISH A, B (GRADE 2), OR C, DOUBLE NOTCH TYPE, STYLE I, II, OR IV.
- STAPLE, STRAP - - - : COMMERCIAL GRADE.
- ANTI-CHAFING MATERIAL - - - - - : MIL-PRF-121 (OR EQUAL); NEUTRAL BARRIER MATERIAL.
- WIRE, CARBON STEEL - : ASTM A853; ANNEALED AT FINISH, BLACK OXIDE FINISH, 0.0800" DIA, GRADE 1006 OR BETTER. A36; 36,000 PSI MINIMUM YIELD OR BETTER.

CAUTION: CONTAINER INTERLOCKS ARE ONLY APPROVED FOR TWO HIGH LOADS. ADDITIONAL STEEL UNITIZING STRAPS MUST BE USED WHEN LOADING THREE LAYERS HIGH, TO SECURE THE THIRD LAYER TO THE SECOND LAYER.



**TYPICAL UNIT LOAD DETAIL**

NOTE: UNITIZATION USING THE CONTAINER INTERLOCKS IS THE PREFERRED METHOD. THE ALTERNATE STEEL STRAPPING METHOD IS DEPICTED ABOVE. SEE NAVAL SEA SYSTEMS COMMAND DRAWING 6214173 FOR FURTHER DETAILS.

**CNU-609 DETAIL**

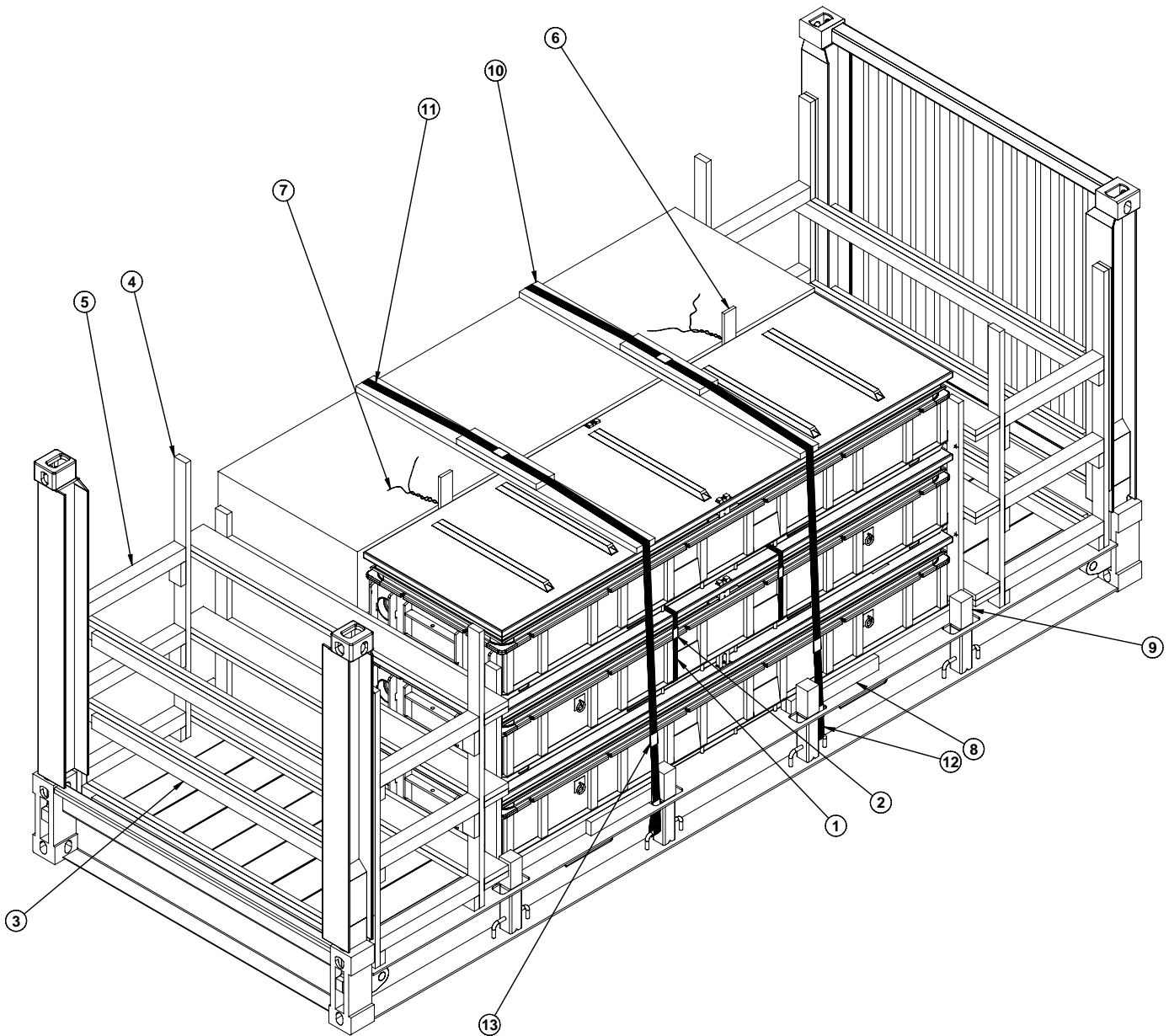
GROSS WEIGHT - - - - - 1,473 LBS (APPROX)  
 CUBE - - - - - 77.2 CU FT (APPROX)

**UNIT LOAD DETAIL (WITH STEEL STRAPPING)**

GROSS WEIGHT - - - - - 2,949 LBS (APPROX)  
 CUBE - - - - - 149.3 CU FT (APPROX)

**UNITIZATION PROCEDURAL GUIDANCE**

1. UNITIZING PROCEDURE USING PREFERRED INTERLOCKING FEATURE.
  - A. DETACH QUICK RELEASE PIN (BOTH SIDES) ON CONTAINER TO BE PLACED ON TOP.
  - B. STACK TWO CONTAINERS AS SHOWN. BE SURE TO ALIGN THE STACKING FEATURES.
  - C. SECURE TOP CONTAINER TO BOTTOM CONTAINER USING INTERLOCKING FEATURE.
  - D. INSTALL QUICK RELEASE PIN (BOTH SIDES).
2. UNITIZING PROCEDURE USING OPTIONAL 1-1/4" BANDING STRAPS.
  - A. STACK TWO CONTAINERS AS SHOWN. BE SURE TO ALIGN THE STACKING FEATURES.
  - B. FEED UNITIZING STRAP THROUGH FORK POCKETS OF BOTH CONTAINERS. (2 PLACES)
  - C. TENSION AND SECURE EACH STRAP WITH ONE DOUBLE-NOTCHED SEAL.



**ISOMETRIC VIEW**

**(KEY NUMBERS CONTINUED)**

- ⑧ SIDE BLOCKING ASSEMBLY (4 REQD). SEE DETAIL ON PAGE 6.
- ⑨ STAKE, 4" X 4" X 18" (8 REQD). INSTALL THE STAKE INTO THE FLATRACK STAKE POCKETS WITH A TIGHT (SNUG) FIT. NOTE: REFERENCE DIMENSIONS FOR A TIGHT FITTING STAKE ARE 3-1/4" (ACTUAL) X 3-1/4" (ACTUAL). NAIL 1-20d NAIL THROUGH THE HOLE PROVIDED IN THE FACE OF THE FLATRACK STAKE POCKET AND INTO THE STAKE. BEND THE PROTRUDING HEAD OF THE NAIL OVER AND AGAINST THE STAKE DETAIL.
- ⑩ STRAPPING BOARD ASSEMBLY (2 REQD). SEE DETAIL ON PAGE 7.
- ⑪ HOLD-DOWN STRAP, 2" X .050" OR .044" X 23'-6" LONG STEEL STRAPPING (2 REQD). INSTALL EACH STRAP FROM TWO PIECES, EACH 11'-9" LONG. FASTEN TO TIEDOWN PROVISION ON THE SIDE OF THE FLATRACK AND BRING UP TO THE TOP OF THE LOAD WHERE THEY CAN BE TENSIONED AND SEALED. STAPLE TO STRAPPING BOARD W/2 STAPLES EACH.
- ⑫ PAD, STRAPPING 2" X .050" OR .044" X 18" (4 REQD). PRE-POSITION THE PAD BETWEEN THE HOLD-DOWN STRAP AND THE FLATRACK TIEDOWN PROVISIONS. SEE THE "TIEDOWN DETAIL" ON PAGE 8.
- ⑬ SEAL FOR 2" STRAPPING (10 REQD, 5 PER STRAP). FASTEN 2" HOLD DOWN STRAP WITH ONE SEAL AT EACH LOCATION CRIMPED WITH TWO PAIR OF NOTCHES. FASTEN PAD WITH ONE SEAL CRIMPED WITH ONE PAIR OF NOTCHES. SEE THE "TIEDOWN DETAIL" ON PAGE 8.

**KEY NUMBERS**

- ① UNITIZING STRAP, 1-1/4" X .035" OR .031" X 8'-6" (4 REQD). INSTALL TO UNITIZED CONTAINER IN THE CENTER OF THE STACK TO THE CONTAINER ON THE TOP OF THE STACK. NOTE: THE LOAD SHOWN ABOVE DEPICTS THE CONTAINERS IN THE FIRST AND SECOND LAYERS AS BEING UNITIZED USING THE CONTAINER INTERLOCKS AND THE THIRD LAYER AS BEING UNITIZED USING STEEL STRAPPING. IF DESIRED, ALL THREE LAYERS CAN BE UNITIZED USING STRAPPING. SEE THE DETAILS ON PAGE 3.
- ② SEAL FOR 1-1/4" STRAPPING (4 REQD, 1 PER STRAP). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES.
- ③ ENDWALL GATE (2 REQD). SEE DETAIL ON PAGE 7.
- ④ END BLOCKING ASSEMBLY (2 REQD). SEE DETAIL ON PAGE 6.
- ⑤ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 30") (12 REQD). TOENAIL TO THE BUFFER PIECES OF THE END BLOCKING ASSEMBLY AND THE ENDWALL GATE W/2-12d NAILS AT EACH END. SEE THE "BEVEL-CUT" DETAIL ON PAGE 8.
- ⑥ ANTI-CHAFING BOARD, 1" X 4" X 72" (2 REQD). POSITION ANTI-CHAFING BOARD APPROXIMATELY 30" FROM EACH END OF THE CONTAINER STACK.
- ⑦ TIE WIRE, .0800" DIA 24" LONG (4 REQD, 2 PER ANTI-CHAFING BOARD). INSTALL THE WIRE TO FORM A COMPLETE LOOP AROUND THE ANTI-CHAFING BOARD AND LIFTING RING ON THE CONTAINERS. BRING ENDS TOGETHER AND TWIST TAUT.

SPECIAL NOTES:

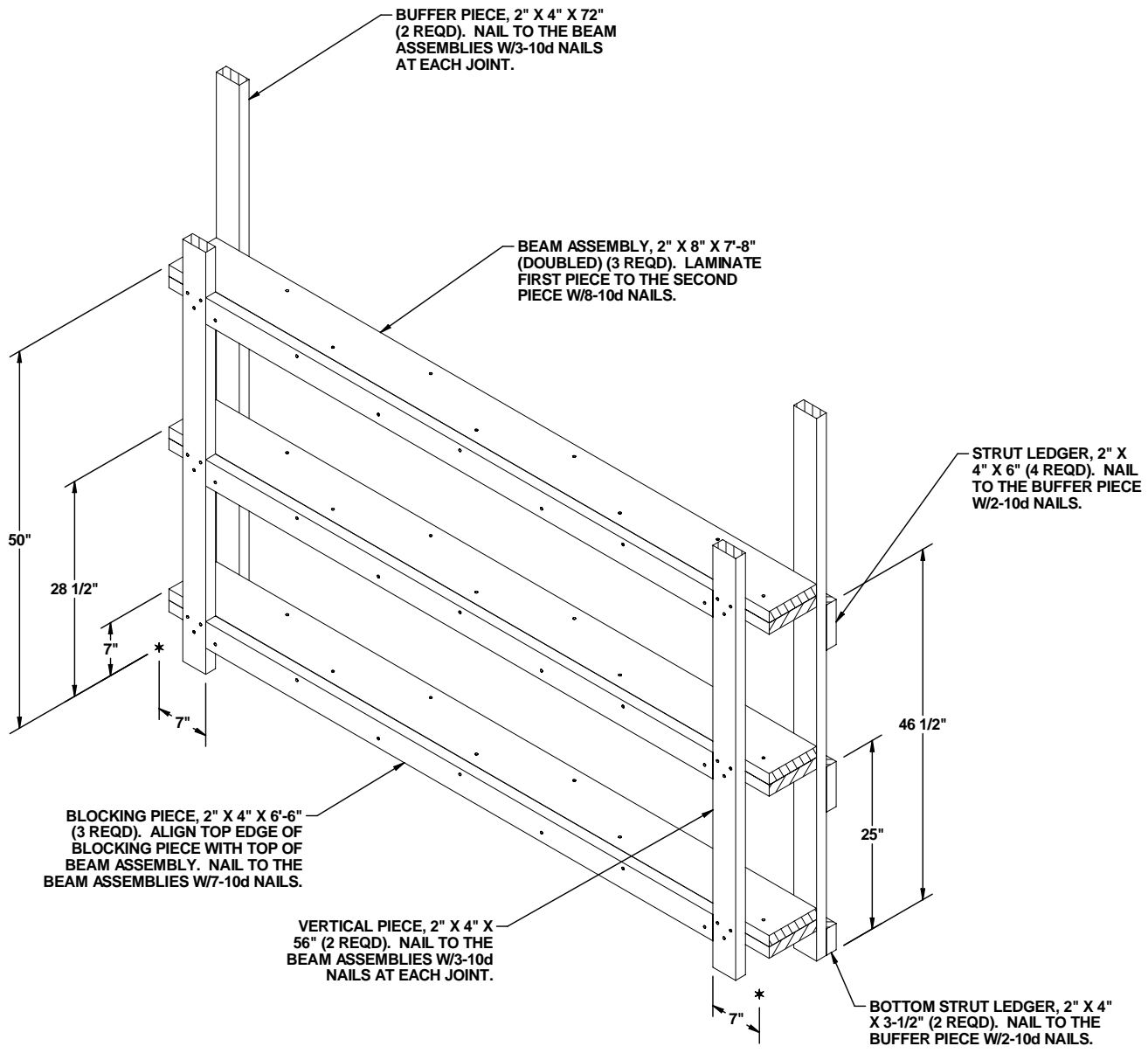
1. IF THE CORNER POSTS OF THE FLATRACK ARE SMOOTH, I.E., THE ENDWALL HINGE DOES NOT PROTRUDE FROM THE CORNER POST, THE FILL PIECES MAY BE ELIMINATED FROM THE ENDWALL GATES. ALSO, THE LENGTH OF THE FILL PIECE MUST BE ADJUSTED AS REQUIRED DEPENDING ON THE LENGTH OF THE PROTRUDING HINGE.
2. POSITION THE STRAPPING BOARD ASSEMBLY AND THE HOLD-DOWN STRAPS TO BE VERTICALLY IN LINE WITH THE FLATRACK TIEDOWN POINTS.
3. THE LOAD AS SHOWN MAY BE REDUCED BY ONE OR TWO LAYERS, IF DESIRED FOR A SHIPMENT OF FOUR OR TWO CONTAINERS.

**BILL OF MATERIAL**

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	35	12
2" X 4"	280	187
2" X 6"	18	18
2" X 8"	92	123
4" X 4"	42	56
NAI LS	NO. REQD	POUNDS
6d (2")	24	NIL
10d (3")	294	4-1/2
12d (3-1/4")	48	1
20d (4")	8	1/2
STEEL STRAPPING, 1-1/4" - - 34' REQD - - - 5 LBS		
SEAL FOR 1-1/4" STRAPPING - 4 REQD - - 1/4 LB		
STEEL STRAPPING, 2" - - - - 53' REQD - - 18 LBS		
SEAL FOR 2" STRAPPING - - - 12 REQD - - 2 LBS		
STAPLE FOR 2" STRAPPING - - - 4 REQD - - - NIL		
WI RE, .008" DIA - - - - - 8' REQD - - 1/4 LB		

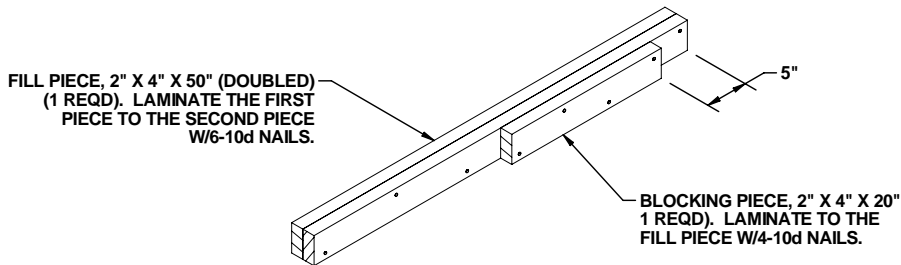
LOAD AS SHOWN

<u>ITEM</u>	<u>QUANTI TY</u>	<u>WEI GHT (APPROX)</u>
CNU-609 - - - - -	6 - - - - -	8,838 LBS
DUNNAGE - - - - -	- - - - -	820 LBS
CONTAI NER - - - - -	- - - - -	5,700 LBS
<u>TOTAL WEI GHT - - - - -</u>		<u>15,358 LBS (APPROX)</u>

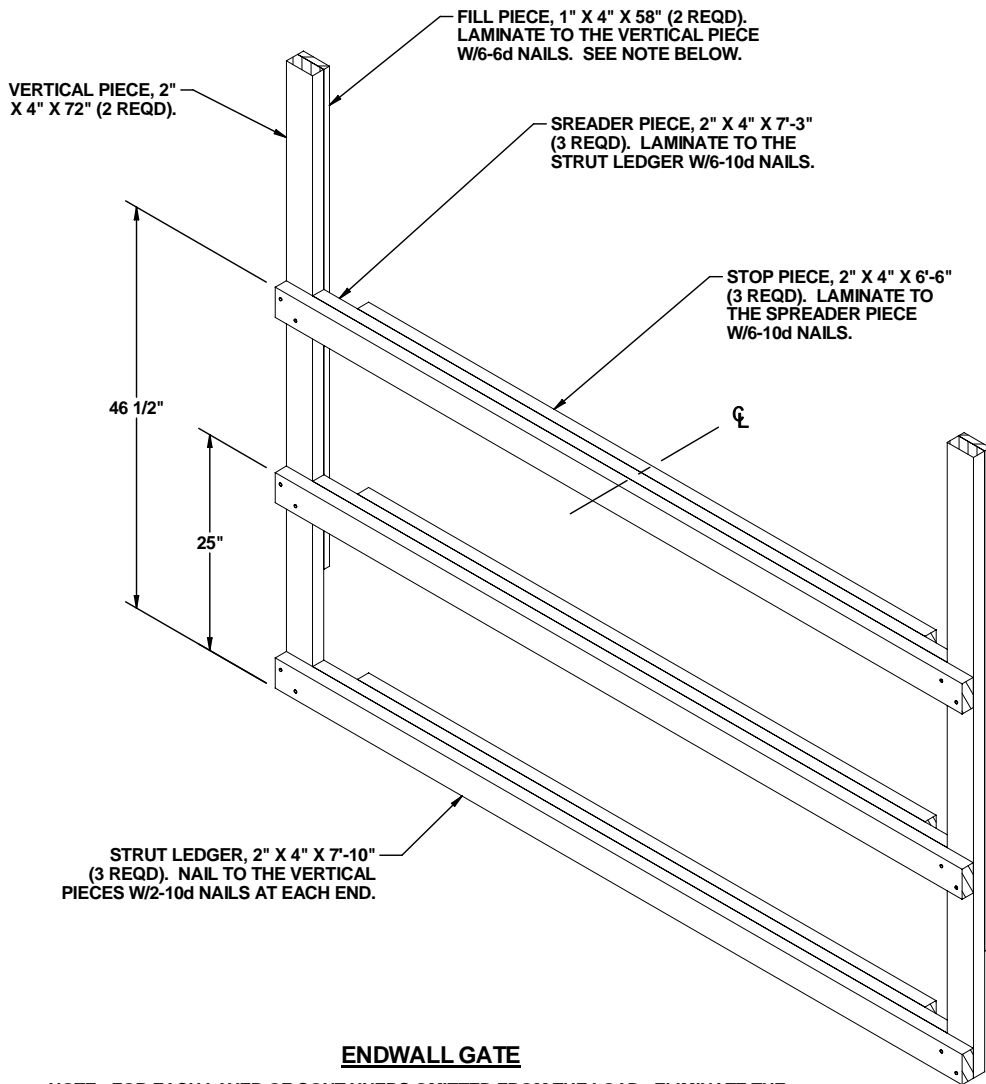


**END BLOCKING ASSEMBLY**

NOTE: FOR EACH LAYER OF CONTAINERS OMITTED FROM THE LOAD. ELIMINATE THE TOPMOST BEAM ASSEMBLY(S) AND THE TOPMOST STRUT LEDGERS (TWO PER LAYER). SHORTEN THE HEIGHT OF THE VERTICAL PIECES TO 6" ABOVE THE REMAINING TOP BEAM ASSEMBLY.



**SIDE BLOCKING ASSEMBLY**



**NOTE:** FOR EACH LAYER OF CONTAINERS OMITTED FROM THE LOAD, ELIMINATE THE TO PMOST STRUT LEDGER(S), SPREADER PIECE(S), AND STOP PIECE(S). SHORTEN THE VERTICAL FILL PIECES. THE FILL PIECES ARE ONLY REQUIRED IF THE ENDWALL HINGES PROTRUDE BEYOND THE EDGES OF THE FLATRACK CORNER POSTS, ELIMINATE IF THE CONTACT SURFACE IS FLAT.

