LOADING AND BRACING^{*} ON COM-MERCIAL FLATRACK ISO CONTAIN-ERS OF MXU-787 AIRFOIL GROUP PACKED IN CNU-592 SHIPPING AND STORAGE CONTAINERS

INDEX I TEM PAGE(S) GENERAL NOTES AND MATERIAL SPECIFICATIONS - - - -2 3 - - -TYPICAL LOADING PROCEDURES - - - - - - - -4-5 DETAILS - - -6-8 - - - - - - - -[®] THE PROCEDURES SHOWN HEREIN ARE APPLICABLE TO LOADS THAT ARE TO DISTRIBUTION STATEMENT A BE SHIPPED BY TRAILER/CONTAINER-ON-FLATCAR (T/COFC) RAIL, MOTOR, OR APPROVED FOR PUBLIC RELEASE WATER CARRIERS. DISTRIBUTION IS UNLIMITED. **U.S. ARMY MATERIEL COMMAND DRAWING** APPROVED U.S. ARMY CAUTION: VERIFY PRIOR TO USE AT HTTPS://MHP.REDSTONE.ARMY.MIL THAT THIS IS JOINT MUNITIONS COMMAND THE MOST CURRENT VERSION OF THIS DOCUMENT. THIS IS PAGE 1 OF 8.
 RUS.ALLEN.J
 Digitally signed by RUS.ALLEN.J
 Display signed by RUS.ALLEN.J
 <thDisplay signed by RUS.ALLEN.J
 <thDisplay signed by RU DO NOT SCALE **NOVEMBER 2013** BASIC **QUYEN TRAN** DESIGN ENGINEER REV FIEFFER.LAUR APPROVED BY ORDER OF COMMANDING ENGINEERING A.A.1230375727 DN: c=US, o=U.S. Governm ou=DoD, ou=PKI, ou=USA, cn=FIEFFER.LAURA.A.123 GENERAL, U.S ARMY MATERIEL COMMAND DIVISON DIVISION DRAWING FII F CLASS TEST ENGINEER
 SHIMP.UPTON
 Digitally signed by SHIMP.UPTONR.1231257183

 DN: c-US, o-US, Government, ou=DoD, ON: C-US, o-US, Government, ou=DoD, on=SHIMP.UPTONR.1231257183

 Date: 2013.06.02 144442.0500
FELICIANO.AD TEST IN.1259200373 OU=DOE NA REPORT Date: 2013.04.03 07:23:56 -05'00 Digitally signed by WILLIAMS.KENYON.L.1231212392 DN: c=US, c=U.S. Government, cu= SP15J142 EXPLOSIVE 19 48 8762 WILLIAMS.KENY VILLIAIVIS.ICC. DI. CeUS, 040.3. GUILLIAIVIS.ICC. DI. CEUS, 040.3. GUILLIA SAFETY DIRECTORATE U.S. ARMY DEFENSE AMMUNITION CENTER

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. 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 SPECIFIED OUTLOADING PROCEDURES ARE APPLICABLE TO LOADS OF MXU-787 AIRFOIL GROUP PACKED IN CNU-592 SHIPPING AND STORAGE CON-TAINER. SEE AIR FORCE DRAWING 879570 AND PAGE 3 FOR DETAILS OF THE CONTAINER. <u>CAUTION</u>: REGARDLESS OF THE QUANTITY OF CONTAINERS TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF THE FLATRACK ISO CON-TAINER MUST NOT BE EXCEEDED.
- D. THE LOAD AS SHOWN IS BASED ON A 5,700 POUND 20' LONG BY 8' WIDE FLATRACK ISO CONTAINER WITH FULL HEIGHT ENDWALLS, AND INSIDE DI-MENSIONS OF 19'-4' LONG BY 86' WIDE. THE LOAD IS DESIGNED FOR TRAILER/ CONTAINER-ON-FLATCAR (T/COFC) SHIPMENT; HOWEVER, THE LOAD AS DE-SIGNED 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 ASSEMBLY AND THE LADING. ALTHOUGH A TOTAL OF 1" OF UNBLOCKED SPACE ACROSS THE WIDTH OF A LOAD IS PERMITTED, LONGITUDINAL VOIDS WITHIN THE LOAD 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 LAMI-NATING 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 BE-SIDE A NAIL IN A LOWER PIECE.
- H. WHEN INSTALLING END BLOCKING ASSEMBLIES AND ENDWALL GATES, THE ASSEMBLIES MUST BE POSITIONED SO AS TO BE SUPPORTED AND IN LINE WITH THE STRONG POINTS OF THE FLATRACK ENDWALLS. **MOTE:** SOME FLATRACK ENDWALLS WILL REQUIRE FILL PIECES TO BE INSTALLED ON THE END WALL GATES TO PROVIDE A UNIFORM LOAD BEARING SURFACE. NAIL THESE FILL PIECES TO THE END WALL GATES W/1 APPROPRIATELY SIZED NAIL EVERY SIX INCHES. THESE PIECES ARE NOT REQUIRED IF THE ENDWALL IS SMOOTH (IF THE HINGES DO NOT PROTRUDE).
- J. WHEN STEEL STRAPPING IS SEALED IN AN END-OVER-END LAP JOINT, A MINI-MUM OF ONE SEAL WITH TWO PAIR OF NOTCHES WILL BE USED TO SEAL THE JOINT WHEN A NOTCH-TYPE SEALER IS BEING USED. A MINIMUM OF TWO SEALS, BUTTED TOGETHER WITH TWO PAIR OF CRIMPS PER SEAL, WILL BE USED TO SEAL THE JOINT WHEN A CRIMP-TYPE SEALER IS BEING USED. RE-FER TO THE "STRAP JOINT A" AND "STRAP JOINT B" DETAILS ON PAGE 8 FOR GUIDANCE.
- K. THE 2" STRAPPING USED FOR LOAD SECUREMENT, I.E., HOLD-DOWN STRAPS, WILL ONLY BE FASTENED TO THE FLATRACK CONTAINER BY UTILIZING TIEDOWN PROVISIONS LOCATED ON THE TOP OR ALONG THE SIDE OF THE FLATRACK BOTTOM SIDE RAILS. **CAUTION**: THE LOAD SECUREMENT STRAPS WILL NOT BE POSITIONED AROUND THE UNDERSIDE OR THROUGH THE FORK-LIFT POCKETS OF THE FLATRACK CONTAINER. ADDITIONALLY, THE FLATRACK TIEDOWN PROVISIONS MUST BE AT LEAST AS STRONG AS THE 2" LOAD SE-CUREMENT STRAPPING BEING USED; AND BE OF A SUFFICIENT WIDTH TO RE-CEIVE THE 2" STRAPPING AND BE OF A DESIGN WHICH WILL PROVIDE A BEAR-ING SURFACE ACROSS THE FULL WIDTH OF THE 2" STRAPPING SO THAT THE STRAPPING WILL NOT BE DEFORMED, ESPECIALLY AT ITS EDGES, WHEN PROPERLY TENSIONED.
- L. REFER TO ASSOCIATION OF AMERICAN RAILROADS MANUAL "GENERAL RULES GOVERNING THE LOADING OF COMMODITIES ON OPEN TOP CARS" FOR APPLICABLE LOADING RULES AS FOLLOWS: PREFACE, 1, 2, 3, 5, 7, 10, 12, 13, 14, AND 15. NOTE THAT ALL STRAPPING USED FOR LOAD SECUREMENT, I.E., HOLD-DOWN STRAPS, MUST BE MARKED AS SPECIFIED IN LOADING RULE 15.
- M. WHETHER A CONTAINER IS FULL OR IS 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 CON-TAINER.

(CONTINUED AT RIGHT)

(GENERAL NOTES CONTINUED)

- N. <u>CAUTION</u>: DO NOT NAIL DUNNAGE MATERIAL TO THE CONTAINER WALLS OR FLOOR. ALL NAILING WILL BE WITHIN THE DUNNAGE.
- O. PORTIONS OF THE FLATRACK DEPICTED WITHIN THIS DRAWING, SUCH AS THE ENDWALL, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PUR-POSES.

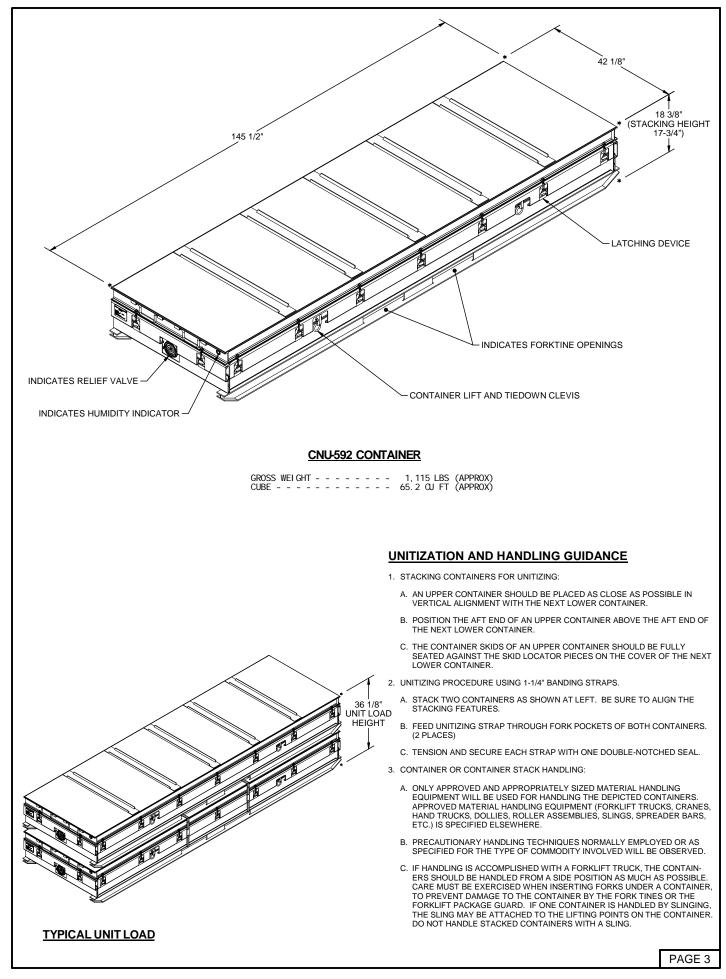
P. MAXIMUM LOAD WEIGHT CRITERIA:

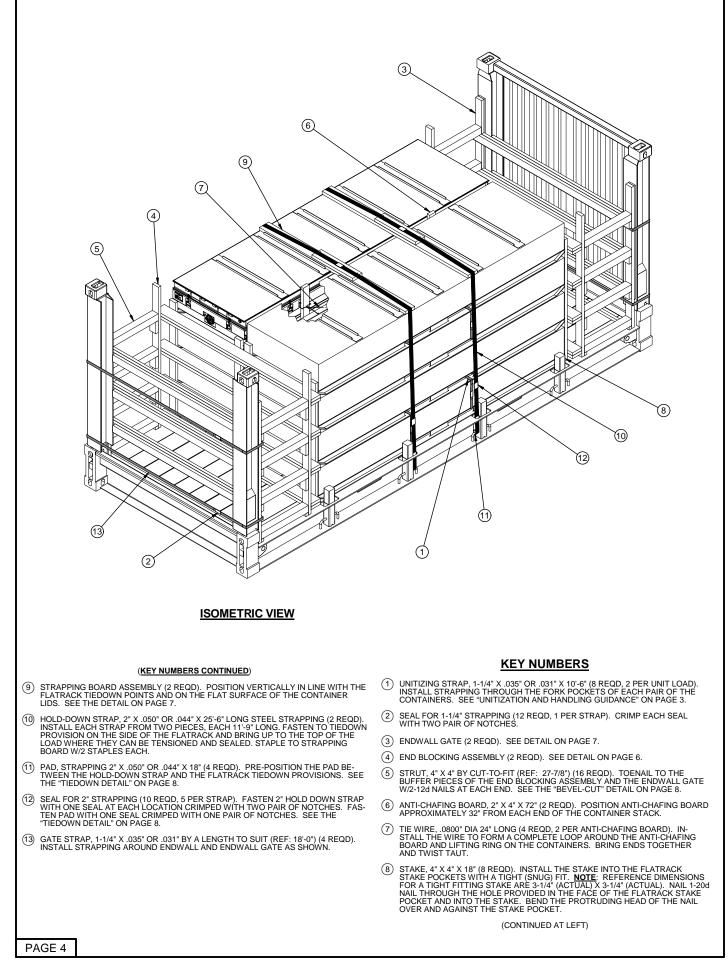
THE MAXIMUM LOAD WEIGHTS ARE CONTROLLED BY EQUIPMENT CAPABILITY FACTORS. ALTHOUGH THE HEAVIEST MAXIMUM LOADS ARE DELINEATED IN THE LOAD VIEWS, PROVISIONS ARE INCLUDED WITHIN THIS DRAWING SO THAT THE BASIC LOADS CAN BE ADJUSTED TO SATISFY A LESSER QUANTITY OF LADING UNITS. DEPENDING ON TRANSPORTATION 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 IN-TERMODAL CONTAINER SYSTEM.

- Q. 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 FOL-LOW:
 - 1. A LOADED CONTAINER MUST BE ON A CHASSIS EQUIPPED WITH TWO BO-GIE 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.
- R. DURING INTRASTATE AND/OR INTERSTATE MOVES BY MOTOR CARRIER, A PROPER CHASSIS OR MODIFIED FLATBED TRAILER MUST BE USED TO PRE-CLUDE VIOLATION OF ONE OR MORE "WEIGHT LAWS" APPLICABLE TO THE STATE OR STATES INVOLVED.
- S. THE LOAD AS SHOWN ON PAGE 4 MAY BE REDUCED BY ONE, TWO OR THREE LAYERS FOR A SHIPMENT OF SIX, FOUR OR TWO CONTAINERS, RESPECTIVELY, IF DESIRED.
- T. THE OUTLOADING PROCEDURES SPECIFIED HEREIN CAN ALSO BE UTI-LIZED FOR THE SHIPMENT OF THE DEPICTED CONTAINERS WHEN THEY ARE LOADED WITH AN ITEM WHICH IS IDENTIFIED DIFFERENTLY BY NO-MENCLATURE THAN THE ITEM DESIGNATED IN THE DRAWING TITLE.
- U. ANTI-CHAFING MATERIAL MAY BE INSTALLED AT POINTS OF CONTACT BE-TWEEN CONTAINERS AND STEEL STRAPPING, IF DESIRED, TO PREVENT CHAF-ING DAMAGE TO CONTAINER PAINT AND MARKINGS.
- V. CONVERSION TO METRIC EQUIVALENTS: DIMENSIONS WITHIN THIS DOCU-MENT 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 0.454 KG.

MATERIAL SPECIFICATIONS

<u>LUMBER</u> :	SEE TM 743-200-1 (DUNNAGE LUMBER) AND VOL- UNTARY PRODUCT STANDARD PS 20.
<u>NAILS</u> :	ASTM F1667; COMMON STEEL NAIL (NLCMS OR NLCMMS).
<u>PLYWOOD</u> :	COMMERCIAL ITEM DESCRIPTION A-A-55057, IN- DUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE C-D. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER INTERIOR OR AN EX- TERIOR GRADE MAY BE SUBSTITUTED.
STRAPPING, STEEL:	ASTM D3953; FLAT STRAPPING, TYPE 1, HEAVY DUTY, FINISH A, B (GRADE 2), OR C.
<u>SEAL, STRAP</u> :	ASTM D3953; CLASS H, FINISH A, B (GRADE 2), OR C, DOUBLE NOTCH TYPE, STYLE I, II, OR IV.
WIRE, CARBON STEEL -:	ASTM A853; ANNEALED AT FINISH, BLACK OXIDE FINISH, 0.0800" DIA, GRADE 1006 OR BETTER.
<u>STAPLE, STRAP</u> :	COMMERCIAL GRADE.
ANTI-CHAFING MATERIAL:	MIL-PRF-121 (OR EQUAL); NEUTRAL BARRIER MATERIAL.



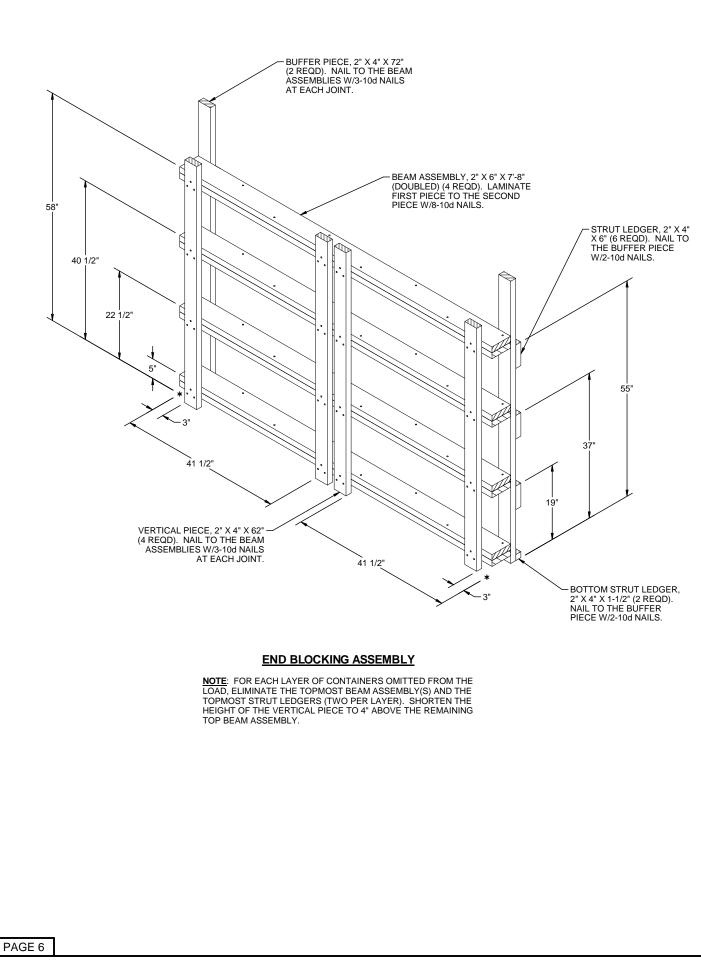


SPECIAL NOTES:

- 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 ASSEMBLIES AND THE HOLD-DOWN STRAPS SO AS TO BE VERTICALLY IN LINE WITH THE FLATRACK TIEDOWN POINTS.
- 3. THE LOAD AS SHOWN MAY BE REDUCED BY ONE, TWO OR THREE LAYERS, IF DESIRED FOR A SHIPMENT OF SIX, FOUR OR TWO CONTAINERS.

BILL OF MATERIAL			
LUMBER	LINEAR FEET	BOARD FEET	
1" X 4"	19	6	
2" X 2"	16	6	
2" X 4"	223	149	
2" X 6"	141	141	
4" X 4"	49	66	
NAI LS	NO. REQD	POUNDS	
6d (2")	24	1/4	
10d (3")	352	5-1/2	
12d (3-1/4")	64	1-1/4	
20d (4")	8	1/2	
STEEL STRAPPING, 1-1/4" - 156' REQD 23-3/4 LBS			
SEAL FOR 1-1/4" STRAPPING - 12 REQD 1/2 LBS			
STEEL STRAPPING, 2" 57' REQD 19 LBS			
SEAL FOR 2" STRAPPING 10 REQD 2 LBS			
STAPLE FOR 2" STRAPPING 4 REQD NIL			
WIRE, .080"DIA -	8' REQ	D 1/4 LBS	

LOAD AS SHOWN				
I TEM QUANTI TY	WEIGHT (APPROX)			
CNU CONTAI NER - - - 8 - <t< td=""><td>8, 920 LBS 789 LBS 5, 700 LBS</td></t<>	8, 920 LBS 789 LBS 5, 700 LBS			
TOTAL WEIGHT	15, 409 LBS (APPROX)			



PROJECT SP 461-02

