

APPROVED BY
 BUREAU OF EXPLOSIVES
[Signature]
 SUPERVISOR, MILITARY & INTERMODAL SERVICES
 DATE 8/2/89

LOADING AND BRACING¹ ON COMMERCIAL FLATRACK CONTAINERS OF AGM-65 MAVERICK MISSILE IN CNU-131/E SHIPPING AND STORAGE CONTAINER

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① LOADING AND BRACING SPECIFICATIONS SET FORTH WITHIN THIS DRAWING ARE APPLICABLE TO LOADS THAT ARE TO BE SHIPPED BY TRAILER/CONTAINER ON-FLAT-CAR (T/COFC) RAIL CARRIER SERVICE. THESE SPECIFICATIONS MAY ALSO BE USED FOR LOADS THAT ARE TO BE MOVED BY MOTOR OR WATER CARRIERS. SEE GENERAL NOTE "L".

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DO NOT SCALE

GENERAL NOTES

(GENERAL NOTES CONTINUED)

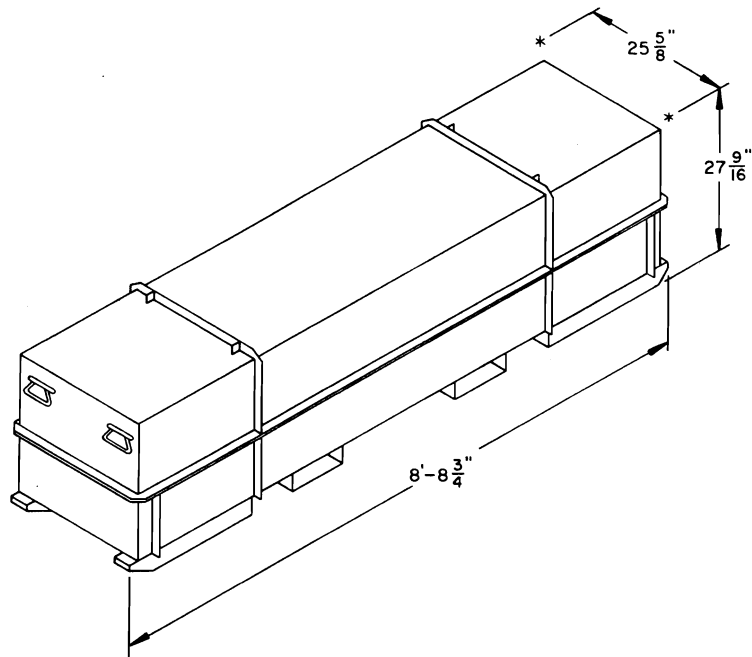
- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1, AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. ALL LOADS SHIPPED BY THE PROCEDURES DEPICTED IN THIS DRAWING MUST BE IN ACCORDANCE WITH THE REQUIREMENTS SET FORTH IN TITLE 49, THE UNITED STATES CODE OF FEDERAL REGULATIONS; AR 55-355/AFM 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 THE AGM-65, MAVERICK MISSILE IN A CNU-131/E CONTAINER. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE CNU-131/E CONTAINER WITH MISSILES INSTALLED. SEE PAGE 3 FOR DETAIL OF THE CONTAINER. **CAUTION:** REGARDLESS OF THE QUANTITY OF CONTAINERS TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF THE FLATRACK INCLUDING LADING AND DUNNAGE MUST NOT BE EXCEEDED.
- D. A STAGGERED NAILING PATTERN WILL BE USED WHEREVER POSSIBLE, WHEN NAILS ARE DRIVEN INTO THE 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.
- E. THE LOADS AS SHOWN ARE BASED ON A 20'-0" LONG BY 8'-0" WIDE COMMERCIAL FLAT RACK CONTAINER WITH FULL HEIGHT END WALLS, AND INSIDE DIMENSIONS OF 18'-8" LONG BY 7'-10" WIDE. THE LOADS AS SHOWN CAN BE SHIPPED BY ANY FORM OF SURFACE TRANSPORTATION. **NOTICE:** OTHER FLAT RACK CONTAINERS OF THE SAME DESIGN CONFIGURATION CAN ALSO BE USED.
- F. DUNNAGE LUMBER SPECIFIED IS OF A 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.
- G. WHEN LOADING THE CNU-131/E CONTAINERS THEY ARE TO BE POSITIONED SO AS TO ACHIEVE A TIGHT LOAD BETWEEN THE LOAD BEARING GATES AND THE LADING. ALTHOUGH A TOTAL OF ONE INCH (1") OF UNBLOCKED SPACE ACROSS THE WIDTH OF THE LOAD IS PERMITTED, LONGITUDINAL VOIDS WITHIN THE LOAD ARE TO BE HELD TO A MINIMUM, NOT EXCEEDING ONE-HALF INCH (1/2"). EXCESSIVE SLACK CAN BE ELIMINATED FROM A LOAD BY LAMINATING ADDITIONAL PIECES OF APPROPRIATE THICKNESS DUNNAGE TO THE LOAD BEARING GATE (5). NAIL EACH ADDITIONAL PIECE OF DUNNAGE TO THE LOAD BEARING GATE ASSEMBLY W/1 APPROPRIATELY SIZED NAIL EVERY EIGHT INCHES (8").
- H. PORTIONS OF THE FLAT RACK END WALLS DEPICTED WITHIN THIS DRAWING HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.
- J. WHEN INSTALLING THE LOAD BEARING GATES, THE GATE ASSEMBLY MUST BE POSITIONED SO AS TO BE SUPPORTED AND IN LINE WITH THE STRONG POINTS OF THE FLAT RACK END WALLS. **NOTE:** SOME FLAT RACK END WALLS WILL REQUIRE FILL PIECES TO BE INSTALLED ON THE LOAD BEARING GATE TO PROVIDE A UNIFORM LOAD BEARING SURFACE. NAIL THESE FILL PIECES TO THE LOAD BEARING GATE W/1 APPROPRIATELY SIZED NAIL EVERY SIX INCHES (6").
- K. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF ONE (1) SEAL WITH TWO (2) PAIR OF NOTCHES WILL BE USED TO SEAL THE JOINT WHEN A NOTCH-TYPE SEALER IS BEING USED. A MINIMUM OF TWO (2) SEALS, BUTTED TOGETHER, WITH TWO (2) PAIR OF CRIMPS PER SEAL WILL BE USED TO SEAL THE JOINT WHEN A CRIMP-TYPE SEALER IS BEING USED. REFER TO THE "STRAP JOINT A" AND "STRAP JOINT B" DETAILS ON PAGE 8 FOR GUIDANCE.
- L. 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 RAIL CAR MUST NOT BE EXCEEDED, NOR WILL A CAR BE LOADED SO THAT THE TRUCK UNDER ONE END OF THE CARRIES MORE THAN ONE-HALF OF THE LOAD LIMIT FOR THAT CAR.
- M. 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 OF THROUGH THE FORKLIFT POCKETS OF THE FLATRACK CONTAINER. ADDITIONALLY, THE FLATRACK TIEDOWN

- N. DURING INTRASTATE AND/OR INTERSTATE MOVES BY MOTOR CARRIER, A PROPER CHASSIS OR MODIFIED FLAT BED TRAILER MUST BE USED TO PRECLUDE VIOLATION OF ONE OR MORE "WEIGHT LAWS" APPLICABLE TO THE STATE OR STATES INVOLVED.
- O. 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, 1A, 2, 5, 10, AND 15. NOTE THAT ALL STRAPPING USED FOR LOAD SECUREMENT, I.E., HOLD-DOWN STRAPS, MUST BE MARKED AS SPECIFIED IN LOADING RULE 15.
- P. THE OUTLOADING PROCEDURES SPECIFIED HEREIN CAN ALSO BE UTILIZED FOR THE SHIPMENT OF THE DEPICTED CNU-131/E CONTAINERS WHEN THEY ARE LOADED WITH AN ITEM WHICH IS IDENTIFIED DIFFERENTLY BY NOMENCLATURE THAN THE ITEM DESIGNATED WITHIN THE DRAWING TITLE, PROVIDED THE GROSS WEIGHT OF THE CONTAINER DOES NOT EXCEED 1,200 POUNDS.
- Q. 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.

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MATERIAL SPECIFICATIONS

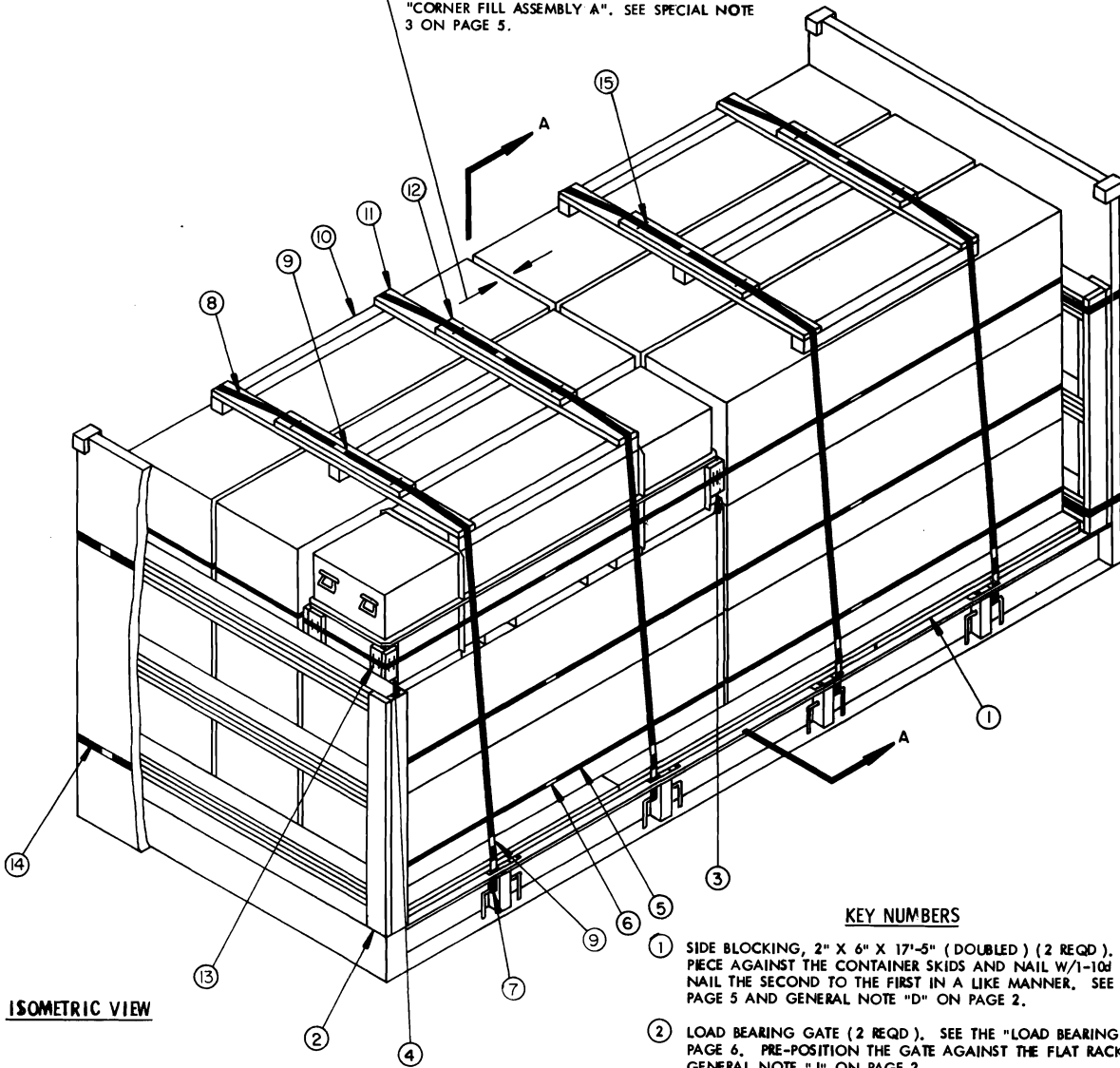
- LUMBER -----: SEE TM 743-200-1, DUNNAGE LUMBER. FED SPEC MM-L-751.
- NAILS -----: COMMON, FED SPEC FF-N-105.
- STRAPPING, STEEL---: CLASS 1, TYPE I OR IV, HEAVY DUTY, FINISH A, B (GRADE 2), OR C, FED SPEC QQ-S-781.
- STRAP SEAL-----: TYPE D, STYLE I, II, OR III, CLASS H, FINISH A, B (GRADE 2), OR C. FED SPEC QQ-S-781.
- STRAP STAPLE-----: COMMERCIAL GRADE.



CNU-131/E CONTAINER DETAIL

CONTAINER ----- 365 LBS (APPROX)
 CUBE ----- 42.8 CUBIC FT (APPROX)
 GROSS WEIGHT ----- 825 LBS (APPROX)

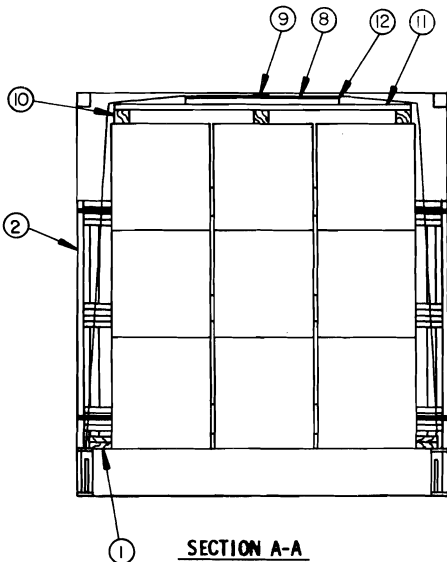
ARROWS INDICATE CONTAINER ENDS HAVING "CORNER FILL ASSEMBLY A". SEE SPECIAL NOTE 3 ON PAGE 5.



ISOMETRIC VIEW

KEY NUMBERS

- ① SIDE BLOCKING, 2" X 6" X 17'-5" (DOUBLED) (2 REQD). POSITION THE FIRST PIECE AGAINST THE CONTAINER SKIDS AND NAIL W/1-10d NAIL EVERY 6". NAIL THE SECOND TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTE 1 ON PAGE 5 AND GENERAL NOTE "D" ON PAGE 2.
- ② LOAD BEARING GATE (2 REQD). SEE THE "LOAD BEARING GATE" DETAIL ON PAGE 6. PRE-POSITION THE GATE AGAINST THE FLAT RACK END WALLS. SEE GENERAL NOTE "J" ON PAGE 2.
- ③ CORNER FILL ASSEMBLY (18 REQD). SEE THE "CORNER FILL ASSEMBLY A" DETAIL ON PAGE 7. SEE CORNER FILL ASSEMBLY NOTE AND SPECIAL NOTE ON PAGE 7.
- ④ CORNER FILL ASSEMBLY (36 REQD). SEE THE "CORNER FILL ASSEMBLY B" DETAIL ON PAGE 7. SEE CORNER FILL ASSEMBLY NOTE AND SPECIAL NOTE ON PAGE 7.
- ⑤ BUNDLING STRAP, 3/4" X .035" OR .031" BY LENGTH-TO-SUIT (REF: 24'-0") (18 REQD). SEE DETAILS ON PAGE 7 FOR INSTALLATION.
- ⑥ SEAL FOR 3/4" STRAPPING (22 REQD, 1 PER STRAP). FASTEN EACH BUNDLING STRAP, PIECE MARKED ⑤, AND EACH GATE STRAP, PIECE MARKED ⑫, WITH ONE SEAL, CRIMPED WITH TWO PAIR OF NOTCHES. SEE GENERAL NOTE "K" ON PAGE 2.
- ⑦ PAD, STRAPPING, 2" X .050" X 18" (8 REQD). PRE-POSITION THE PAD BETWEEN THE HOLD DOWN STRAP, PIECE MARKED ⑧, AND THE FLATRACK TIEDOWN PROVISION AND SECURE WITH ONE SEAL CRIMPED WITH ONE PAIR OF NOTCHES. SEE THE "TIEDOWN DETAIL" ON PAGE 8.
- ⑧ HOLD DOWN STRAP, 2" X .050" BY LENGTH-TO-SUIT (REF: 26'-0") (4 REQD). INSTALL EACH STRAP FROM TWO 13'-0" LONG PIECES FASTENED TO THE TIEDOWN PROVISIONS AS SHOWN. JOIN AND TENSION ON TOP OF THE LOAD. SEE GENERAL NOTE "K" AND "M" ON PAGE 2.
- ⑨ SEAL FOR 2" STRAPPING (20 REQD, 5 PER STRAP). FASTEN EACH HOLD-DOWN STRAP, PIECE MARKED ⑧, AT THREE LOCATIONS WITH ONE SEAL CRIMPED WITH TWO PAIR OF NOTCHES AT EACH LOCATION. FASTEN EACH STRAPPING PAD, PIECE MARKED ⑦, WITH ONE SEAL CRIMPED WITH ONE PAIR OF NOTCHES. SEE GENERAL NOTE "K" ON PAGE 2.
- ⑩ SUPPORT PIECE, 4" X 4" X 54-3/4" (6 REQD). PRE-POSITION AS SHOWN ABOVE. SEE SPECIAL NOTE 2 ON PAGE 5.
- ⑪ STRAPPING BOARD, 2" X 6" X 6'-0" (4 REQD). POSITION ON TOP OF THE LOAD AS SHOWN ABOVE AND NAIL TO THE SUPPORT PIECES, PIECES MARKED ⑩, W/3-10d NAILS AT EACH JOINT.
- ⑫ PURCHASE BOARD, 2" X 6" X 36" (4 REQD). CENTER ON THE STRAPPING BOARD, PIECE MARKED ⑪, AND NAIL W/3-10d NAILS.



SECTION A-A

(KEY NUMBERS CONTINUED)

- ⑬ STAPLE, 15/16" X 3/4" LEG LENGTH (288 REQD). FASTEN PIECE MARKED ⑤ TO PIECES MARKED ③ AND ④ WITH FOUR (4) STAPLES PER EACH CNU-131/E CONTAINER CORNER. SEE CORNER FILL ASSEMBLY DETAILS ON PAGE 7 FOR STAPLE PLACEMENT.
- ⑭ GATE STRAP, 3/4" X .035" OR .031" BY A LENGTH TO SUIT (REF: 22'-0") (4 REQD). POSITION AROUND THE FLAT RACK END WALL AND PIECE MARKED ② AS SHOWN IN THE ISOMETRIC VIEW ON PAGE 4.
- ⑮ STAPLE, 2-1/8" X 1" LEG LENGTH (8 REQD). FASTEN HOLD-DOWN STRAPS, PIECES MARKED ⑧, TO THE PURCHASE BOARDS, PIECES MARKED ⑫, WITH TWO STAPLES AS SHOWN IN THE ISOMETRIC VIEW ON PAGE 4.

SPECIAL NOTES:

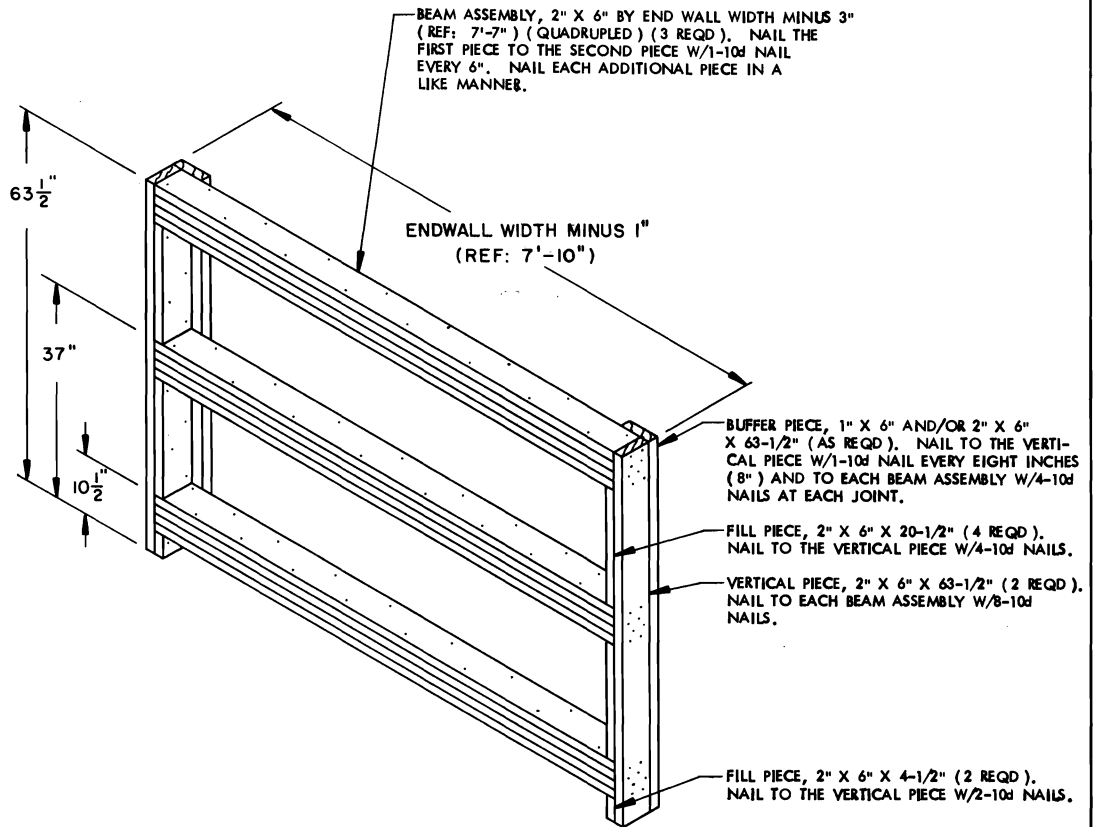
1. FOR FLAT RACKS WHERE THE SIDE BLOCKING CANNOT BE NAILED TO THE FLOOR, A DOUBLE 2" X 4" SIDE BLOCKING CAN BE USED, USING THE FOLLOWING PROCEDURES:
 - A. SIDE STAKES: 4" X 4" (CUT FOR WEDGE FIT) X 16" (AS REQD). PRE-POSITION THE SIDE STAKES INTO THE FLAT RACK SIDE POCKETS WITH A FORCED FIT.
 - B. SIDE BLOCKING: 2" X 4" BY LOAD LENGTH (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE SECOND W/1-10d NAIL EVERY SIX INCHES (6"). POSITION THE SIDE BLOCKING BETWEEN THE CONTAINER SKIDS AND SIDE STAKES AND TOENAIL THE SIDE BLOCKING TO THE SIDE STAKES W/2-12d NAILS PER JOINT.
- NOTE: IF REQUIRED ADD 1" X 4" X 12" AND/OR 2" X 4" X 12" FILL PIECES BETWEEN THE SIDE STAKES AND SIDE BLOCKING TO ALLOW NO MORE THAN ONE HALF INCH (1/2") OF CLEARANCE BETWEEN THE LOAD UNIT AND THE SIDE BLOCKING. FASTEN FILL PIECES W/3-10d NAILS FOR 2" X 4" FILL PIECES AND W/3-8d NAILS FOR 1" X 4" FILL PIECES. NAIL THE SIDE BLOCKING WITH FILL PIECES TO THE SIDE STAKES W/2-12d NAILS PER EACH JOINT. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE SUPPORT PIECES MUST BE LONG ENOUGH TO CONTACT THE CONTAINER INTERLOCKS WITH THE TWO (2) OUTER SUPPORT PIECES BEING IN LINE WITH THE OUTSIDE EDGE OF THE CONTAINERS AND THE THIRD SUPPORT PIECE CENTERED ON THE MIDDLE CONTAINER.
 3. FOR PROPER LOADING OF THE CNU-131/E CONTAINER ALL CONTAINERS WITH "CORNER FILL ASSEMBLY A" SHOULD BE POSITIONED IN THE DIRECTION OF THE CENTER OF THE FLAT RACK. SEE CORNER FILL ASSEMBLY NOTE ON PAGE 7.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	27	18
2" X 6"	400	400
2" X 10"	36	60
4" X 4"	28	38
NAILS	NO. REQD	POUNDS
10d (3")	908	14
STEEL STRAPPING, 3/4" X .035" OR .031" - 520' REQD	38	38 LBS
SEAL FOR 3/4" STRAPPING	22	22 REQD 1 LB
STAPLE FOR 2" STRAPPING	8	8 REQD NIL
STEEL STRAPPING, 2" X .050"	116'	116' REQD 39 LBS
SEAL FOR 2" STRAPPING	20	20 REQD 4 LBS
STAPLE FOR 3/4" STRAPPING	288	288 REQD 1 LB

LOAD AS SHOWN

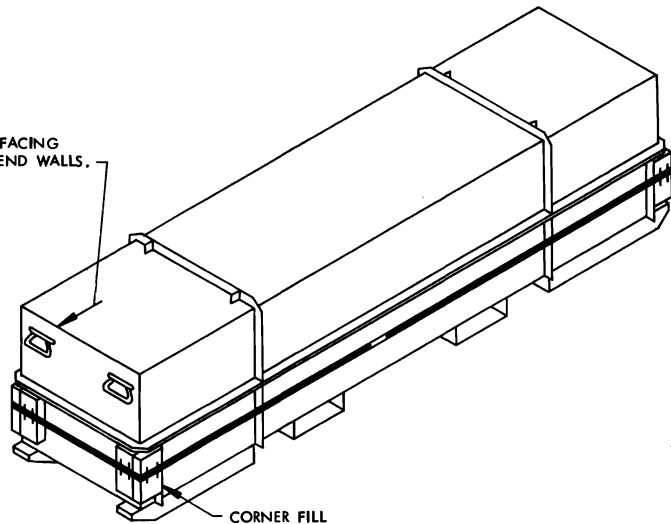
ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER	18 @ 825 LBS	14,850 LBS
DUNNAGE		1,130 LBS
FLAT RACK CONTAINER		5,732 LBS
TOTAL WEIGHT		21,712 LBS



LOAD BEARING GATE DETAIL

SEE GENERAL NOTE "J" ON PAGE 2.

INDICATES END FACING THE FLAT RACK END WALLS.



CORNER FILL ASSEMBLY "A" (1 REQD PER CONTAINER).

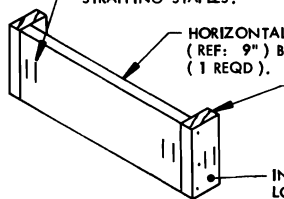
CORNER FILL ASSEMBLY "B" (2 REQD PER CONTAINER).

CNU-131/E CONTAINER WITH CORNER FILL ASSEMBLIES INSTALLED

SPECIAL NOTE:

PRIOR TO PLACING A CNU-131/E CONTAINER UPON A FLAT RACK FOR SHIPMENT, CORNER FILL ASSEMBLIES, AS DETAILED AND SPECIFIED BELOW, MUST BE INSTALLED ON THE CORNERS OF THE CONTAINER AS SHOWN ABOVE. CORNER FILL ASSEMBLY INSTALLATION WILL BE ACCOMPLISHED UTILIZING ONE 3/4" X .031" STEEL STRAP AND ONE 3/4" SEAL CRIMPED WITH TWO PAIR OF NOTCHES.

INDICATES PLACEMENT OF STRAPPING STAPLES.



HORIZONTAL PIECE, 2" X 10" (RIPPED TO FIT) (REF: 9") BY A LENGTH TO SUIT (REF: 23-3/4") (1 REQD).

SIDE PIECE, 2" X 6" (RIPPED TO FIT) (REF: 4") X 9" (2 REQD). NAIL TO THE HORIZONTAL W/3-10d NAILS.

INDICATES SIDE FACING THE LONG SIDE OF THE CONTAINER.

ASSEMBLY A

INDICATES PLACEMENT OF STRAPPING STAPLES.



END PIECE, 2" X 4" (RIPPED TO FIT) (REF: 3") X 9" (1 REQD).

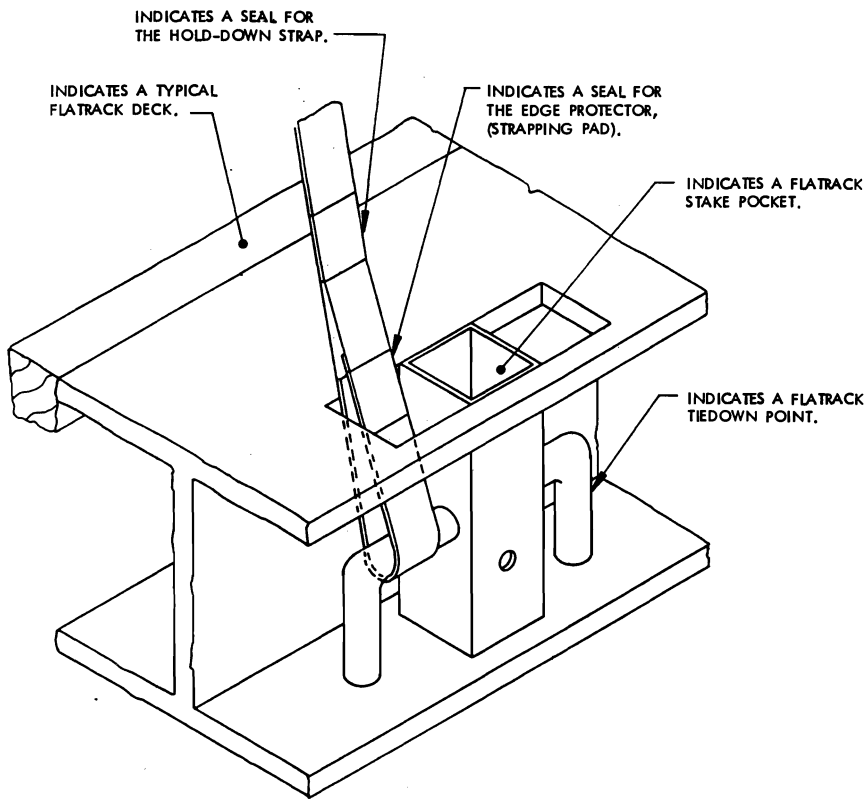
SIDE PIECE, 2" X 6" (RIPPED TO FIT) (REF: 4") X 9". NAIL TO THE END PIECE W/3-10d NAILS.

INDICATES PIECE FACING THE LONG SIDE OF THE CONTAINER.

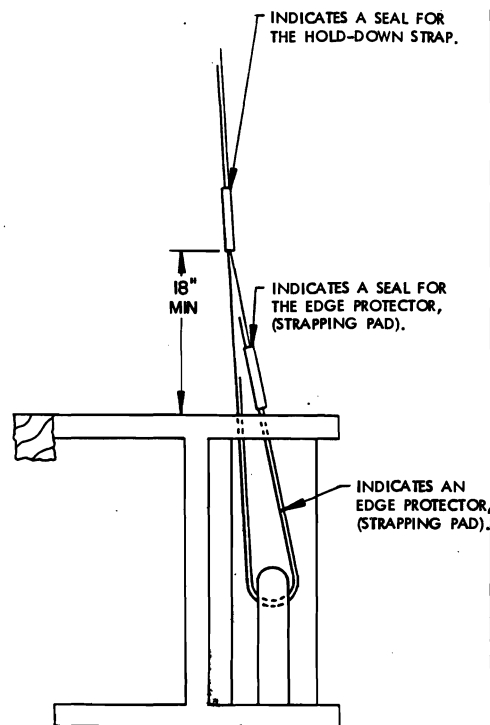
ASSEMBLY B

CORNER FILL ASSEMBLIES

NOTE: USE ONE (1) CORNER FILL ASSEMBLY "A" FOR THE CONTAINER END THAT HAS NO OBSTRUCTIONS AND TWO (2) CORNER FILL ASSEMBLIES "B" FOR THE CONTAINER END HAVING OBSTRUCTIONS. POSITION THE CONTAINERS ON THE FLAT RACK WITH CORNER FILL ASSEMBLIES B AGAINST THE LOAD BEARING GATES.



ISOMETRIC VIEW



SIDE VIEW

TIEDOWN DETAIL

NOTE: THIS PROCEDURE IS USED FOR TIE-DOWN OF THE LOAD USING FLATRACK SIDE RAIL TIEDOWN POINTS. SEE GENERAL NOTE "M" ON PAGE 2.



ONE SEAL WITH TWO PAIR OF NOTCHES.

STRAP JOINT A

METHOD OF SECURING A STRAP JOINT WHEN USING A NOTCH-TYPE SEALER.



TWO SEALS, BUTTED TOGETHER, WITH TWO PAIR OF CRIMPS EACH SEAL.

STRAP JOINT B

METHOD OF SECURING A STRAP JOINT WHEN USING A CRIMP-TYPE SEALER.

STRAP/SEAL DETAIL

DETAILS