LOADING AND BRACING (TL & LTL) ON FLATBED TRAILERS ⊕ OF MAVERICK (AGM-65) MISSILES PACKED IN CNU-399/E AND CNU-425/E SHIPPING AND STORAGE CONTAINERS

INDEX

⊕ CAUTION: THE OUTLOADING PROCEDURES SHOWN HEREIN ARE ONLY APPLICABLE TO HIGHWAY MOVEMENTS, NOT TRAILER-ON-FLATCAR MOVEMENTS.

U.S. ARMY MATERIEL COMMAND DRAWING

APPROVED, U.S. ARMY INDUSTRIAL OPERATIONS COMMAND

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AUGUST 1995

REVISION NO. 2 — JULY 1997

SEE THE REVISION LISTING ON PAGE 2

APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND

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PROJECT SP 170-89

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 LOADS AS SHOWN HEREIN ARE BASED ON FLATBED TRAILERS 40'-0" LONG AND 45'-0" LONG BY 8'-0" WIDE AND TRAILERS 48'-0" LONG BY 8'-6" WIDE HAVING WOOD OR WOOD AND METAL FLOORS. TRAILERS HAVING ALL METAL FLOORS WILL NOT BE USED. TRAILERS OF OTHER SIZES CAN BE USED. CAUTION: IF THE TRAILER FLOOR IS EQUIPPED WITH EXPOSED METAL DECKING ABOVE THE BOGIE ASSEMBLY, OR ELSEWHERE, FIELD MEASUREMENTS SHOULD BE MADE TO ENSURE THAT THE METAL DECKING DOES NOT INTERFERE WITH THE PROPER POSITIONING AND NAILING OF THE DUNNAGE AS SPECIFIED BY THE PROCEDURES SHOWN HEREIN.

C. THE OUTLOADING PROCEDURES DEPICTED HEREIN ARE APPLICABLE TO THE MAVERICK (AGM-65) MISSILE PACKED IN THE CNU-399/E AND CNU-425/E SHIPPING AND STORAGE CONTAINERS. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE SHIPPING AND STORAGE CONTAINERS WITH MISSILE COMPONENTS.

D. FOR DETAILS OF THE CNU-399/E OR CNU-425/E CONTAINER, SEE THE "CONTAINER STACK DETAIL" ON PAGE 3.

CONTAINER DIMENSIONS - 9'-2" LONG BY 32" WIDE BY 29-3/8" HIGH.

GROSS WEIGHT ---------- 1,015 LBS (APPROX).
TARE WEIGHT ---------- 350 LBS (APPROX).

E. SELECTION OF A VEHICLE USED TO TRANSPORT THE DESIGNATED ITEM MUST COMPLY WITH AR 55-355, CHAPTER 29, FOR EXPLOSIVES AND OTHER DANGEROUS ARTICLES, IN FULL.

F. GROSS WEIGHT AND AXLE DISTRIBUTION OF WEIGHT FOR A LOAD WILL BE THE RESPONSIBILITY OF THE CARRIER. THE CARRIER WILL ADVISE THE SHIPPER OF APPLICABLE LOADING REQUIREMENTS, AND THE SHIPPER WILL LOAD ACCORDINGLY.

G. NOTICE: A SHIPMENT WILL BE POSITIONED ON A TRAILER CONSISTENT WITH STATE WEIGHT LAWS.

H. OTHER TYPES OF LADING ITEMS MAY BE LOADED ON A TRAILER WHICH IS PARTIALLY LOADED WITH THE DESIGNATED ITEM, PROVIDING THE TOTAL LOAD IS COMPATIBLE, EXISTING DIRECTIVES ARE NOT VIOLATED, AND THE OTHER LADING ITEMS ARE BLOCKED AND BRACED TO EQUAL THE BLOCKING AND BRACING CRITERIA SPECIFIED HEREIN.

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.
STRAP, WEB	WEB SLING AND TIEDOWN ASSOCIATION RECOMMENDED STANDARD SPECIFICATION FOR SYNTHETIC WEB TIEDOWNS, FIRST PUBLISHED IN 1991.
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.
WIRE, CARBON STEEL	ASTM A853; ANNEALED AT FINISH, BLACK OXIDE FINISH, .0800" DIA, GRADE 1006 OR BETTER.
STAPLE, STRAP	COMMERCIAL GRADE.
STAKE POCKET PROTECTOR	COMMERCIAL GRADE.
CHAIN	NATIONAL ASSOCIATION OF CHAIN MANUFACTURER'S WELDED CHAIN SPECIFICATION ADOPTED NOVEMBER 1975.
LOAD BINDER	FED SPEC GGG-B-325.

(GENERAL NOTES CONTINUED)

J. CAUTION: REGARDLESS OF THE TYPE OF TRAILER INVOLVED, ONLY THOSE TRAILERS HAVING TIEDOWN ANCHORING FACILITIES WHICH PROVIDE HOLDING STRENGTH EQUAL TO OR GREATER THAN THE STRENGTH OF THE HOLD-DOWN STRAPS OR CHAINS AND WHICH ALIGN NEAR THE INDICATED LOCATIONS FOR THE HOLD-DOWN STRAPS OR CHAINS SHOULD BE USED. IF TRAILER ANCHOR DEVICES ARE NOT PROPERLY POSITIONED TO RECEIVE TWO INCH STRAPPING OR CHAINS, AS SHOWN, OR IF THE ANCHOR DEVICES ARE NOT EQUAL TO OR GREATER THAN THE STRENGTH OF THE TIEDOWN STRAPS OR CHAINS, THE STRAPS MAY BE APPLIED TO FORM A COMPLETE LOOP WHICH ENCOMPASSES BOTH THE LADING AND THE TRAILER FRAME AND/OR BED. CAUTION: AVOID TRAILER WHEELS, FIFTH WHEEL PLATE, CONTROLS AND OTHER APPURTENANCES. USE EDGE PROTECTORS ON ALL SHARP EDGES. NEITHER CHAINS NOR WEB STRAPS WILL BE APPLIED TO FORM A COMPLETE LOOP WHICH ENCOMPASSES BOTH THE LADING AND THE TRAILER FRAME AND/OR BED.

K. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE AND 2" X 10" MATERIAL IS ACTUALLY 1-1/2" THICK BY 9-1/4" WIDE.

L. A STAGGERED NAILING PATTERN WILL BE USED WHEN DUNNAGE IS NAILED TO THE FLOOR OF THE TRANSPORTING VEHICLE, OR WHEN LAMINATING DUNNAGE. THE NAILING PATTERN WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL DOES NOT PENETRATE INTO OR NEAR A CRACK BETWEEN FLOOR BOARDS. 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.

M. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM 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. REFER TO THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 13.

N. THE LADING MAY BE SECURED BY CHAINS AND LOAD BINDERS. SEE THE PROCEDURES ON PAGES 10 AND 11 FOR GUIDANCE. THE TRANSPORTING VEHICLE OPERATOR SHOULD BE INSTRUCTED TO PERIODICALLY INSPECT THE TIEDOWN CHAINS AND LOAD BINDERS DURING TRANSIT AND TIGHTEN IF NECESSARY.

O. CAUTION: WHEN INSTALLING THE UNITIZING STRAPS, BUNDLING STRAPS, HOLD-DOWN STRAPS, CHAINS AND LOAD BINDERS, OR WEB STRAPS, EXTREME CARE MUST BE USED WHILE TENSIONING THE STRAPS OR CHAINS TO PREVENT DAMAGE TO THE CNU-399/E OR CNU-425/E CONTAINERS.

P. ENSURE THAT THE LIFTING RINGS ARE IN AN UPRIGHT POSITION PRIOR TO PLACING THE SIDE BLOCKING AGAINST A LOWER CONTAINER.

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 0.454 KG.

R. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTION WHICH IS IMMEDIATELY ADJACENT TO A DEPICTED OUTLOADING METHOD.

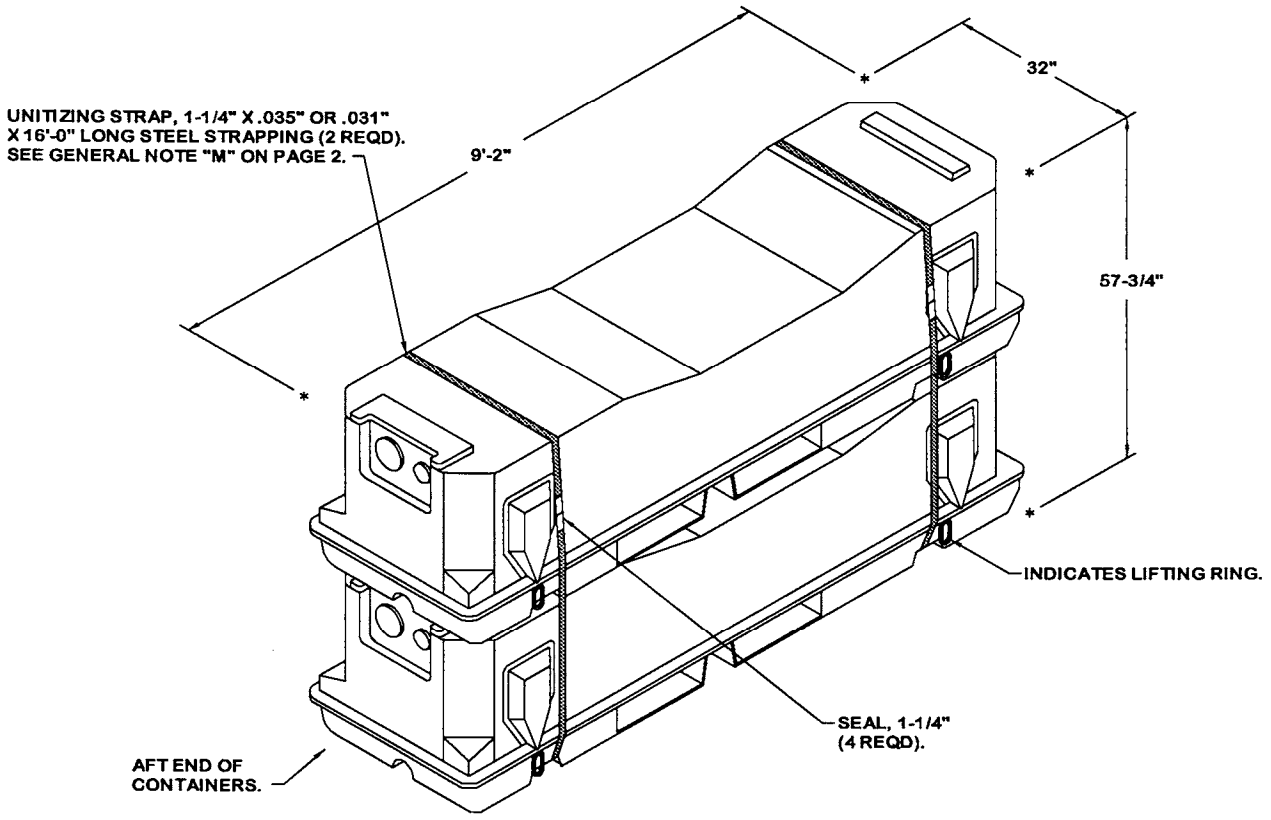
REVISIONS

REVISION NO. 1, DATED JULY 1993, CONSISTS OF:

1. ADDING PROCEDURES FOR 3-WIDE LOADS.
2. REMOVING BACK-UP CLEATS.
3. CHANGES AS NECESSARY TO UPDATE DRAWING FORMAT.

REVISION NO. 2, DATED JULY 1997, CONSISTS OF:

1. ADDING PROCEDURES FOR WEB STRAP TIEDOWNS.
2. INCLUDING PROVISIONS FOR THE USE OF FIREHOSE.
3. UPDATING DRAWING FORMAT.



CONTAINER STACK DETAIL

CNU-399/E OR CNU-425/E CONTAINER

DIMENSIONS - - - 9'-2" L BY 32" W BY 29-3/8" H
CUBE - - - - - - - - - - 59.9 CU FT (APPROX)
GROSS WEIGHT - - - - - - 1,015 LBS (APPROX)

UNITIZATION AND HANDLING PROCEDURAL GUIDANCE

1. STACKING CONTAINERS FOR UNITIZING.

   A. PLACE THE UPPER CONTAINER DIRECTLY ON TOP OF THE LOWER CONTAINER.

   B. POSITION THE AFT END OF THE UPPER CONTAINER ABOVE THE AFT END OF THE LOWER CONTAINER.

2. INSTALLATION OF 1-1/4" X .035" OR .031" UNITIZING STEEL STRAPPING. SEE GENERAL NOTE "M" ON PAGE 2.

   A. POSITION STRAPS SO AS TO ENCIRCLE THE CONTAINER NEAR THE ENDS AS SHOWN IN THE CONTAINER STACK DETAIL AND SO THAT THE STRAPPING LAYS FLAT AND STRAIGHT WITH THE BODY SURFACES OF THE CONTAINERS; I.E., VERTICAL ALONG THE SIDES AND FLAT ACROSS THE TOP AND BOTTOM OF THE STACK.

   B. THE STRAPPING WILL BE FIRMLY TENSIONED BUT NOT SO MUCH SO AS TO DAMAGE THE CONTAINERS. EACH END-OVER-END LAP JOINT WILL BE SEALED WITH TWO DOUBLE CRIMPED STRAP SEALS. SEE THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 15. THE LAP JOINT WILL BE MADE ALONG THE SIDE OF THE STACK. EXCESS STRAPPING (STRAP ENDS) SHOULD BE CUT OFF OR BROKEN OFF NEAR THE JOINT SEAL. SEE GENERAL NOTE "O" ON PAGE 2.

(CONTINUED AT RIGHT)

(UNITIZATION AND HANDLING PROCEDURAL GUIDANCE CONTINUED)

3. CONTAINER OR CONTAINER STACK HANDLING:

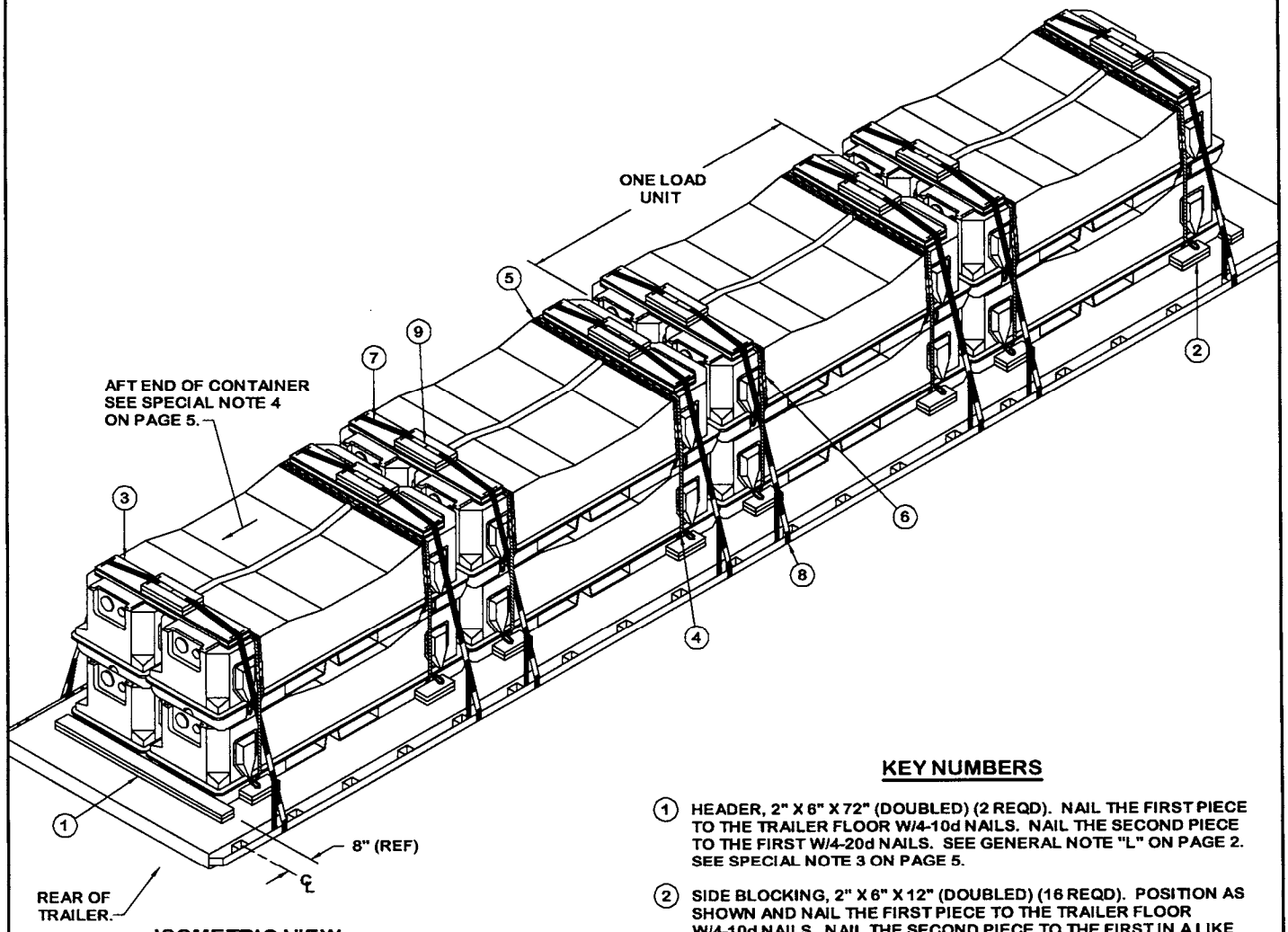
   NOTES: (1) APPROVED MATERIALS HANDLING EQUIPMENT (MHE) IS SPECIFIED IN OTHER DOCUMENTS. MHE IS INTENDED TO MEAN EQUIPMENT SUCH AS FORKLIFT TRUCKS, CRANES, HAND TRUCKS, DOLLIES, ROLLER ASSEMBLIES, SLINGS AND SPREADER BARS.

   (2) PRECAUTIONARY HANDLING TECHNIQUES NORMALLY EMPLOYED OR AS SPECIFIED FOR THE TYPE OF COMMODITY INVOLVED WILL BE OBSERVED.

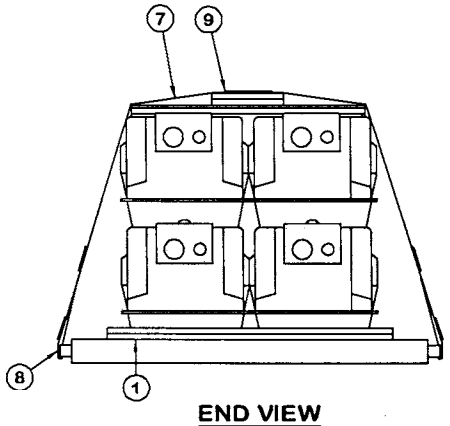
   A. ONLY APPROVED AND APPROPRIATELY SIZED MATERIAL HANDLING EQUIPMENT WILL BE USED FOR HANDLING THE DEPICTED CONTAINERS.

   B. IF HANDLING IS ACCOMPLISHED WITH A FORKLIFT TRUCK, THE CONTAINERS MUST BE HANDLED FROM A SIDE POSITION. CARE MUST BE EXERCISED WHEN INSERTING FORKS UNDER A CONTAINER, TO PREVENT DAMAGE TO A CONTAINER BY THE FORK TINES OR THE FORKLIFT PACKAGE GUARD.

   C. IF A CONTAINER OR STACK OF CONTAINERS IS HANDLED BY SLINGING, THE SLING MUST BE OF SUCH A DESIGN THAT LIFTING IS DONE ON THE BOTTOM OF THE LOWER CONTAINER.



ISOMETRIC VIEW



END VIEW

KEY NUMBERS

(1) HEADER, 2" X 6" X 72" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/4-20d NAILS. SEE GENERAL NOTE "L" ON PAGE 2. SEE SPECIAL NOTE 3 ON PAGE 5.

(2) SIDE BLOCKING, 2" X 6" X 12" (DOUBLED) (16 REQD). POSITION AS SHOWN AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTE "P" ON PAGE 2.

(3) STRAPPING/CHAIN BOARD ASSEMBLY (8 REQD). SEE THE "STRAPPING/CHAIN BOARD ASSEMBLY A" DETAIL ON PAGE 14. POSITION ADJACENT TO THE STOP PIECE AT EACH END OF THE CONTAINER COVER.

(4) VERTICAL UNITIZING STRAP, 1-1/4" X .035" OR .031" X 16'-0" LONG STEEL STRAPPING (16 REQD). INSTALL AS SHOWN IN THE "UNITIZATION AND HANDLING PROCEDURAL GUIDANCE" ON PAGE 3.

(5) BUNDLING STRAP, 1-1/4" X .035" OR .031" X 17'-0" LONG STEEL STRAPPING (8 REQD). INSTALL SO AS TO ENCIRCLE THE LATERALLY ADJACENT CONTAINERS IN THE TOP LAYER. SEE GENERAL NOTE "M" ON PAGE 2.

(6) SEAL FOR 1-1/4" STEEL STRAPPING (48 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.

(7) HOLD-DOWN STRAP, 2" X .050" OR .044" X 26'-0" LONG STEEL STRAPPING (8 REQD). INSTALL EACH STRAP FROM TWO 13'-0" LONG PIECES. STAPLE TO THE STRAPPING/CHAIN BOARD ASSEMBLY, PIECE MARKED (3), WITH THREE STAPLES. SEE GENERAL NOTE "J" ON PAGE 2.

(8) PAD, 2" X .050" OR .044" X 18" LONG STEEL STRAPPING (16 REQD). POSITION BETWEEN THE HOLD-DOWN STRAP, PIECE MARKED (7), AND THE TRAILER SIDE RAIL OR STAKE POCKET AND SEAL TO THE HOLD-DOWN STRAP. SEE "DETAIL A" ON PAGE 15. ALT: STAKE POCKET PROTECTOR (32 REQD). USE TWO UNDER EACH ANCHORING FACILITY WITH A HOLD-DOWN STRAP. SEE "DETAIL B" ON PAGE 15.

(9) SEAL FOR 2" STEEL STRAPPING (48 REQD, 6 PER STRAP). DOUBLE CRIMP EACH SEAL, EXCEPT THOSE USED TO SECURE THE PADS, PIECE MARKED (8). SEE THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 15.

16-CONTAINER LOAD ON A 40'-0" LONG TRAILER

PROJECT SP 170-89

SPECIAL NOTES:

1. A 16-CONTAINER LOAD IS SHOWN ON A 40'-0" LONG BY 8'-0" WIDE FLATBED TRAILER. TRAILERS OF OTHER SIZES CAN BE USED. A TRAILER MUST BE AT LEAST 38'-6" LONG FOR SHIPMENT OF THE DEPICTED LOAD.

2. THE CNU-399/E OR CNU-425/E CONTAINERS MUST BE UNITIZED PRIOR TO LOADING ON THE FLATBED TRAILER. ALL STRAPS MUST BE INSTALLED NEAR THE STRONG POINTS OR REINFORCED AREAS OF THE CONTAINERS AS SHOWN IN THE "UNITIZATION AND HANDLING PROCEDURAL GUIDANCE" ON PAGE 3 AND IN THE "ISOMETRIC VIEW" ON PAGE 4. SEE GENERAL NOTE "O" ON PAGE 2.

3. THE 8" REFERENCE DIMENSION AT THE REAR OF THE LOAD WILL POSITION THE CONTAINERS SO AS TO BE APPROXIMATELY CENTERED ON THE LENGTH OF THE TRAILER. THIS DIMENSION MAY BE ADJUSTED AS DESIRED.

4. ALL CONTAINER STACKS IN EACH LOAD UNIT MUST BE POSITIONED WITH THE "AFT" END IN THE SAME DIRECTION, EITHER ALL FORWARD OR ALL REARWARD. THIS POSITIONING IS NECESSARY IN ORDER TO ALIGN THE STRONG POINTS OF ADJACENT STACKS FOR PLACEMENT OF THE STRAPPING/CHAIN BOARD ASSEMBLIES.

5. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. MULTIPLES OF TWO CONTAINERS CAN BE OMITTED FROM THE TOP LAYER OF ONE OR MORE LOAD UNITS, OR MULTIPLES OF FOUR CONTAINERS CAN BE OMITTED BY OMITTING ONE OR MORE LOAD UNITS.

6. IF A 45'-0" LONG BY 8'-6" WIDE TRAILER IS FURNISHED FOR LOADING, REFER TO THE LOADING PROCEDURES ON PAGES 6 AND 7 FOR GUIDANCE. TWENTY-FOUR CONTAINERS CAN BE LOADED. IF A 48'-0" LONG BY 8'-6" WIDE TRAILER IS FURNISHED, 30 CONTAINERS CAN BY LOADED, USING THE PROCEDURES ON PAGES 6 AND 7.

7. IF IT IS DESIRED TO USE CHAINS AND LOAD BINDERS FOR LOAD SECUREMENT IN LIEU OF THE STEEL STRAPPING SHOWN ON PAGE 4, REFER TO THE LOADING PROCEDURES ON PAGES 10 AND 11 FOR GUIDANCE. BASED ON A TRAILER EQUIPPED WITH STAKE POCKETS SPACED 24" ON CENTER, THE CONTAINERS MUST BE SPACED APART IN ORDER TO ALIGN THE STRONG POINTS OF THE CONTAINERS WITH THE STAKE POCKETS. THIS SPACING WILL LIMIT A LOAD SECURED WITH CHAINS ON A 40'-0" LONG TRAILER TO 12 CONTAINERS.

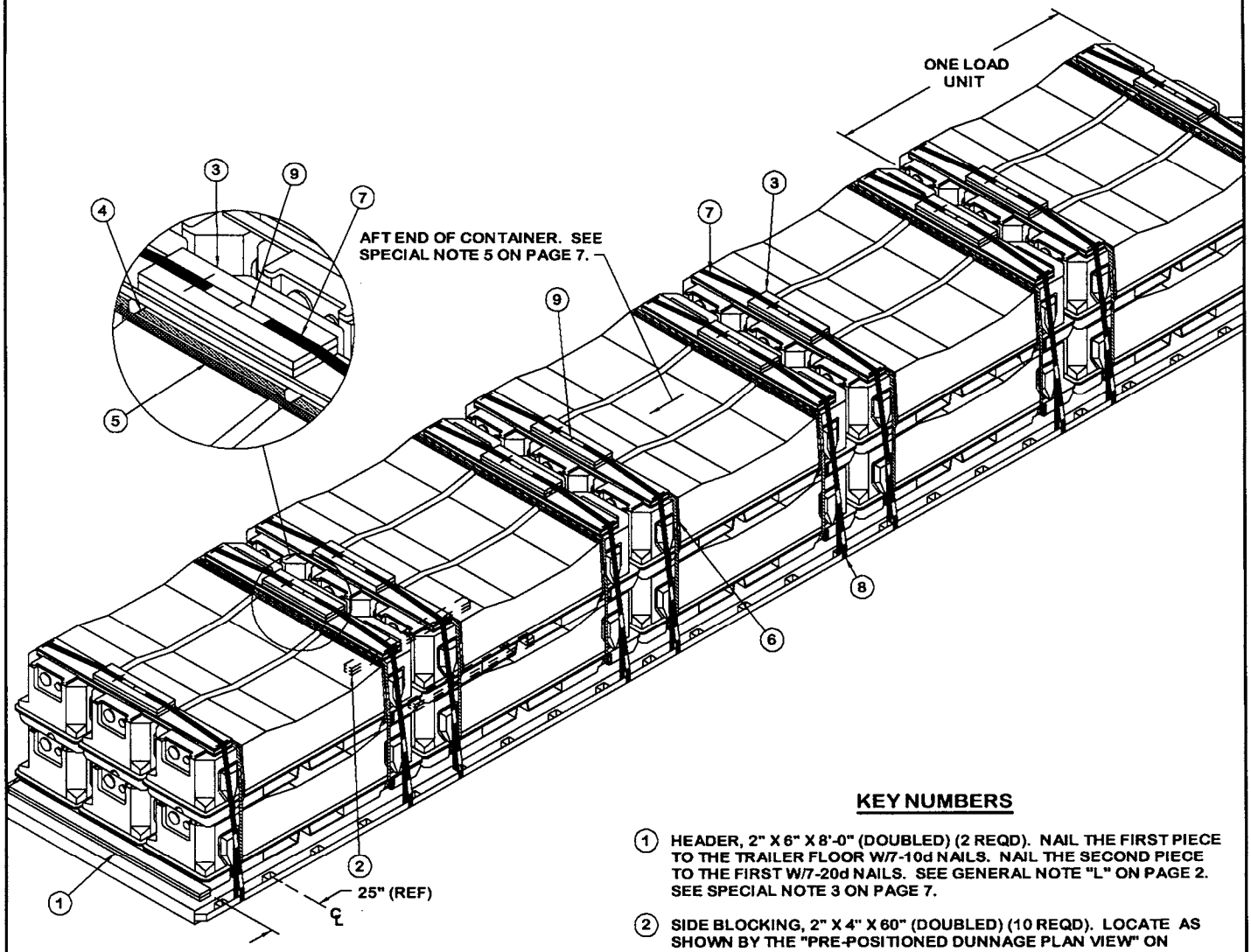
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 6" 2" X 10"	56 63	56 105
NAILS	**NO. REQD**	**POUNDS**
6d (2") 10d (3") 20d (4")	112 184 8	3/4 3 1/2

PLYWOOD, 3/4" --- 60 SQ FT REQD --- 124 LBS
1-1/4" STEEL STRAPPING --- 392' REQD --- 56 LBS
2" STEEL STRAPPING --- 232' REQD --- 78 LBS
SEAL FOR 1-1/4" STRAPPING --- 48 REQD --- 2 LBS
SEAL FOR 2" STRAPPING --- 48 REQD --- 10 LBS
STAPLE FOR 2" STRAPPING --- 24 REQD --- NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER	16	16,240 LBS
DUNNAGE		596 LBS
TOTAL WEIGHT		16,836 LBS (APPROX)



ISOMETRIC VIEW

KEY NUMBERS

(1) HEADER, 2" X 6" X 8'-0" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/7-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/7-20d NAILS. SEE GENERAL NOTE "L" ON PAGE 2. SEE SPECIAL NOTE 3 ON PAGE 7.

(2) SIDE BLOCKING, 2" X 4" X 60" (DOUBLED) (10 REQD). LOCATE AS SHOWN BY THE "PRE-POSITIONED DUNNAGE PLAN VIEW" ON PAGE 7. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTE "P" ON PAGE 2.

(3) STRAPPING/CHAIN BOARD ASSEMBLY (10 REQD). SEE THE "STRAPPING/CHAIN BOARD ASSEMBLY B" DETAIL ON PAGE 14. POSITION ADJACENT TO THE STOP PIECE AT EACH END OF THE CONTAINER COVER.

(4) VERTICAL UNITIZING STRAP, 1-1/4" X .035" OR .031" X 16'-0" LONG STEEL STRAPPING (30 REQD). INSTALL AS SHOWN IN THE "UNITIZATION AND HANDLING PROCEDURAL GUIDANCE" ON PAGE 3.

(5) BUNDLING STRAP, 1-1/4" X .035" OR .031" X 27'-6" LONG STEEL STRAPPING (10 REQD). INSTALL SO AS TO ENCIRCLE ALL SIX CONTAINERS IN A LOAD UNIT. SEE GENERAL NOTE "M" ON PAGE 2.

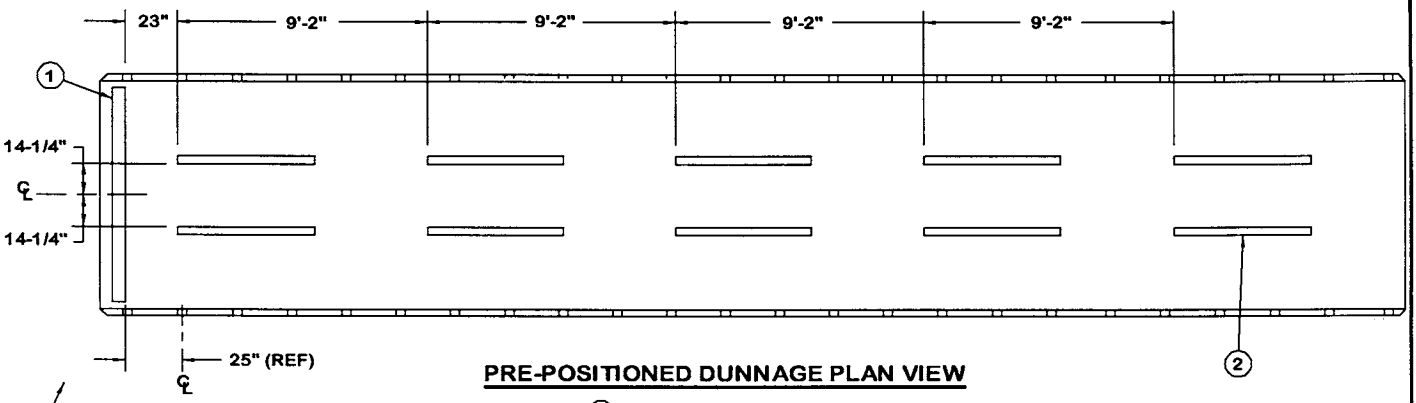
(6) SEAL FOR 1-1/4" STEEL STRAPPING (80 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.

(7) HOLD-DOWN STRAP, 2" X .050" OR .044" X 27'-0" LONG STEEL STRAPPING (10 REQD). INSTALL EACH STRAP FROM TWO 13'-6" LONG PIECES. STAPLE TO THE STRAPPING/CHAIN BOARD ASSEMBLY, PIECE MARKED (3), WITH THREE STAPLES. SEE GENERAL NOTE "J" ON PAGE 2.

(8) PAD, 2" X .050" OR .044" X 18" LONG STEEL STRAPPING (20 REQD). POSITION BETWEEN THE HOLD-DOWN STRAP, PIECE MARKED (7), AND THE TRAILER SIDE RAIL OR STAKE POCKET AND SEAL TO THE HOLD-DOWN STRAP. SEE "DETAIL A" ON PAGE 15. ALT: STAKE POCKET PROTECTOR (40 REQD). USE TWO UNDER EACH ANCHORING FACILITY WITH A HOLD-DOWN STRAP. SEE "DETAIL B" ON PAGE 15.

(9) SEAL FOR 2" STEEL STRAPPING (60 REQD, 6 PER STRAP). DOUBLE CRIMP EACH SEAL, EXCEPT THOSE USED TO SECURE THE PADS, PIECE MARKED (8). SEE THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 15.

30-CONTAINER LOAD ON A 48'-0" LONG BY 8'-6" WIDE TRAILER



PRE-POSITIONED DUNNAGE PLAN VIEW

PIECE MARKED ① DOES NOT NEED TO BE PRE-POSITIONED. IT IS SHOWN SOLELY TO PROVIDE A STARTING POINT FOR DIMENSIONING OF PIECE MARKED ②.

(SPECIAL NOTES CONTINUED)

6. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. ONE CONTAINER CAN BE OMITTED BY INSTALLING A FILLER ASSEMBLY IN THE PLACE OF A CONTAINER OMITTED FROM THE TOP LAYER OF THE CENTER ROW. SEE THE "FILLER ASSEMBLY" DETAIL ON PAGE 14. OTHER QUANTITIES CAN BE ATTAINED BY USING A COMBINATION OF DIFFERENT QUANTITY LOAD UNITS AS FOLLOWS.

NO. OF CNTRS	6-UNIT	4-UNIT	3-UNIT	2-UNIT
30	5			
28	4	1		
27	4		1	
26	4			1
25	3	1	1	
24	4			
23	3		1	1
22	3	1		
21	3		1	
20	3			1
20		5		
19		4	1	
18	3			
18		4		1
17		3	1	1
17	2		1	1

7. CHAINS AND LOAD BINDERS CANNOT BE USED FOR THE SHIPMENT OF A 30-CONTAINER LOAD BECAUSE THE CONTAINERS MUST BE SPACED APART IN ORDER TO ALIGN THE BEARING AREA OF THE CONTAINERS WITH THE TRAILER STAKE POCKETS TO WHICH THE CHAINS MUST BE FASTENED. FOR SHIPMENT OF A 24-CONTAINER LOAD USING CHAINS AND LOAD BINDERS FOR LOAD SECUREMENT, REFER TO THE PROCEDURES ON PAGES 10 AND 11.

SPECIAL NOTES:

1. A 30-CONTAINER LOAD IS SHOWN ON A 48'-0" LONG BY 8'-6" WIDE FLATBED TRAILER. SHORTER TRAILERS CANNOT BE USED FOR SHIPMENT OF THE DEPICTED LOAD.
2. THE CNU-399/E OR THE CNU-425/E CONTAINERS MUST BE UNITIZED PRIOR TO LOADING ON THE FLATBED TRAILER. ALL STRAPS MUST BE INSTALLED NEAR THE STRONG POINTS OR REINFORCED AREAS OF THE CONTAINERS AS SHOWN IN THE "UNITIZATION AND HANDLING PROCEDURAL GUIDANCE" ON PAGE 3 AND IN THE "ISOMETRIC VIEW" ON PAGE 6. SEE GENERAL NOTE "O" ON PAGE 2.
3. THE 25" REFERENCE DIMENSION AT THE REAR OF THE LOAD WILL POSITION THE CONTAINERS SO AS TO BE APPROXIMATELY CENTERED ON THE LENGTH OF THE TRAILER. THIS DIMENSION MAY BE ADJUSTED AS DESIRED.
4. THE SIDE BLOCKING CANNOT EASILY BE NAILED AFTER THE CONTAINER STACKS ARE IN PLACE AND SHOULD BE PRE-POSITIONED AS SHOWN BY THE "PRE-POSITIONED DUNNAGE PLAN VIEW" ABOVE. NOTE THAT THE CENTER ROW OF CONTAINER STACKS MUST BE LIFTED BY INSERTING THE TINES OF THE FORKLIFT TRUCK INTO THE FORK OPENINGS OF THE UPPER CONTAINER FOR PLACEMENT WITHIN THE PRE-POSITIONED SIDE BLOCKING, PIECE MARKED ②.
5. ALL CONTAINER STACKS IN EACH LOAD UNIT MUST BE POSITIONED WITH THE "AFT" END IN THE SAME DIRECTION, EITHER ALL FORWARD OR ALL REARWARD. THIS POSITIONING IS NECESSARY IN ORDER TO ALIGN THE STRONG POINTS OF ADJACENT STACKS FOR PLACEMENT OF THE STRAPPING/CHAIN BOARD ASSEMBLIES.

(CONTINUED AT LEFT)

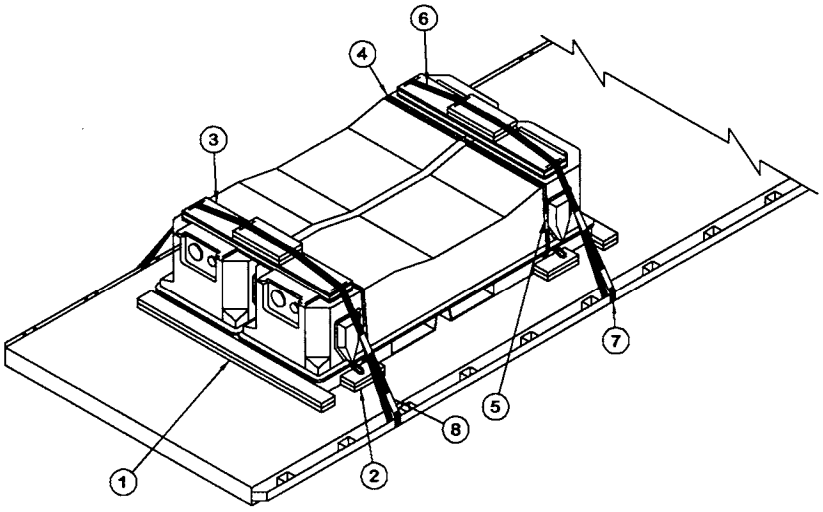
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	100	67
2" X 6"	32	32
2" X 10"	128	214
NAILS	**NO. REQD**	**POUNDS**
6d (2")	220	1-1/2
10d (3")	214	3-1/2
20d (4")	14	1/2

PLYWOOD, 3/4" -------- 115 SQ FT REQD -------- 238 LBS
1-1/4" STEEL STRAPPING ----- 755' REQD -------- 108 LBS
2" STEEL STRAPPING -------- 300' REQD -------- 100 LBS
SEAL FOR 1-1/4" STRAPPING --- 80 REQD ---------- 4 LBS
SEAL FOR 2" STRAPPING ----- 60 REQD ---------- 12 LBS
STAPLE FOR 2" STRAPPING --- 30 REQD ---------- NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER	30	30,450 LBS
DUNNAGE		1,094 LBS
TOTAL WEIGHT		31,544 LBS (APPROX)



ISOMETRIC VIEW

SPECIAL NOTES:

1. A 2-UNIT LOAD IS SHOWN ON AN 8'-0" WIDE FLATBED TRAILER. WIDER TRAILERS CAN BE USED.
2. WHEN INSTALLING THE SIDE BLOCKING, PIECE MARKED (2), THE TIEDOWN RINGS MUST BE RAISED SO THE 2" X 6" PIECES WILL CONTACT THE CONTAINER BODY.
3. ALL STRAPS MUST BE INSTALLED NEAR THE STRONG POINTS OR REINFORCED AREAS OF THE CONTAINERS AS SHOWN IN THE "ISOMETRIC VIEW" ABOVE. SEE GENERAL NOTE "O" ON PAGE 2.

KEY NUMBERS

(1) HEADER, 2" X 6" X 72" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/3-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/3-20d NAILS. SEE GENERAL NOTE "L" ON PAGE 2.

(2) SIDE BLOCKING, 2" X 6" X 12" (DOUBLED) (4 REQD). POSITION AS SHOWN AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTE "P" ON PAGE 2.

(3) STRAPPING/CHAIN BOARD ASSEMBLY (2 REQD). SEE THE "STRAPPING/CHAIN BOARD ASSEMBLY A" DETAIL ON PAGE 14.

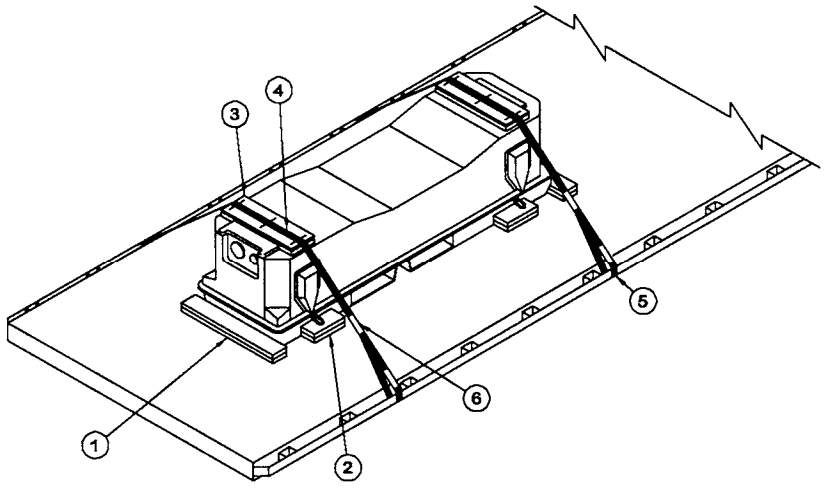
(4) BUNDLING STRAP, 1-1/4" X .035" OR .031" X 17'-0" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE THE LATERALLY ADJACENT CONTAINERS AS SHOWN. SEE GENERAL NOTE "O" ON PAGE 2.

(5) SEAL FOR 1-1/4" STEEL STRAPPING (4 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "M" ON PAGE 2.

(6) HOLD-DOWN STRAP, 2" X .050" OR .044" X 20'-0" LONG STEEL STRAPPING (2 REQD). INSTALL EACH STRAP FROM ONE PIECE OF STRAPPING. ANCHOR A STRAP TO A TIE-DOWN FACILITY ON ONE SIDE OF THE TRAILER, RUN IT OVER THE LOAD, PASS IT THROUGH A TIEDOWN FACILITY ON THE OPPOSITE SIDE OF THE TRAILER, AND BRING IT BACK UP ABOVE THE TRAILER FLOOR WHERE IT CAN BE TENSIONED AND SEALED. SEE GENERAL NOTES "J" AND "O" ON PAGE 2.

(7) PAD, 2" X .050" OR .044" X 18" LONG STEEL STRAPPING (4 REQD). POSITION BETWEEN THE HOLD-DOWN STRAP, PIECE MARKED (6), AND THE TRAILER SIDE RAILS AND SEAL TO THE HOLD-DOWN STRAP. SEE "DETAIL A" ON PAGE 15. ALT: STAKE POCKET PROTECTOR (8 REQD). USE TWO UNDER EACH ANCHORING FACILITY WITH A HOLD-DOWN STRAP. SEE "DETAIL B" ON PAGE 15.

(8) SEAL FOR 2" STEEL STRAPPING (8 REQD, 4 PER STRAP). DOUBLE CRIMP EACH SEAL, EXCEPT THOSE USED TO SECURE THE PADS, PIECE MARKED (7). SEE THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 15.



SPECIAL NOTES:

1. A 1-UNIT LOAD IS SHOWN ON AN 8'-0" WIDE FLATBED TRAILER. WIDER TRAILERS CAN BE USED.
2. WHEN INSTALLING THE SIDE BLOCKING, PIECE MARKED ②, THE TIEDOWN RINGS MUST BE RAISED SO THE 2" X 6" PIECES WILL CONTACT THE CONTAINER BODY.
3. ALL STRAPS MUST BE INSTALLED NEAR THE STRONG POINTS OR REINFORCED AREAS OF THE CONTAINER AS SHOWN IN THE "ISOMETRIC VIEW" ABOVE.

KEY NUMBERS

① HEADER, 2" X 6" X 36" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/3-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/3-20d NAILS. SEE GENERAL NOTE "L" ON PAGE 2.

② SIDE BLOCKING, 2" X 6" X 12" (DOUBLED) (4 REQD). POSITION AS SHOWN AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTE "P" ON PAGE 2.

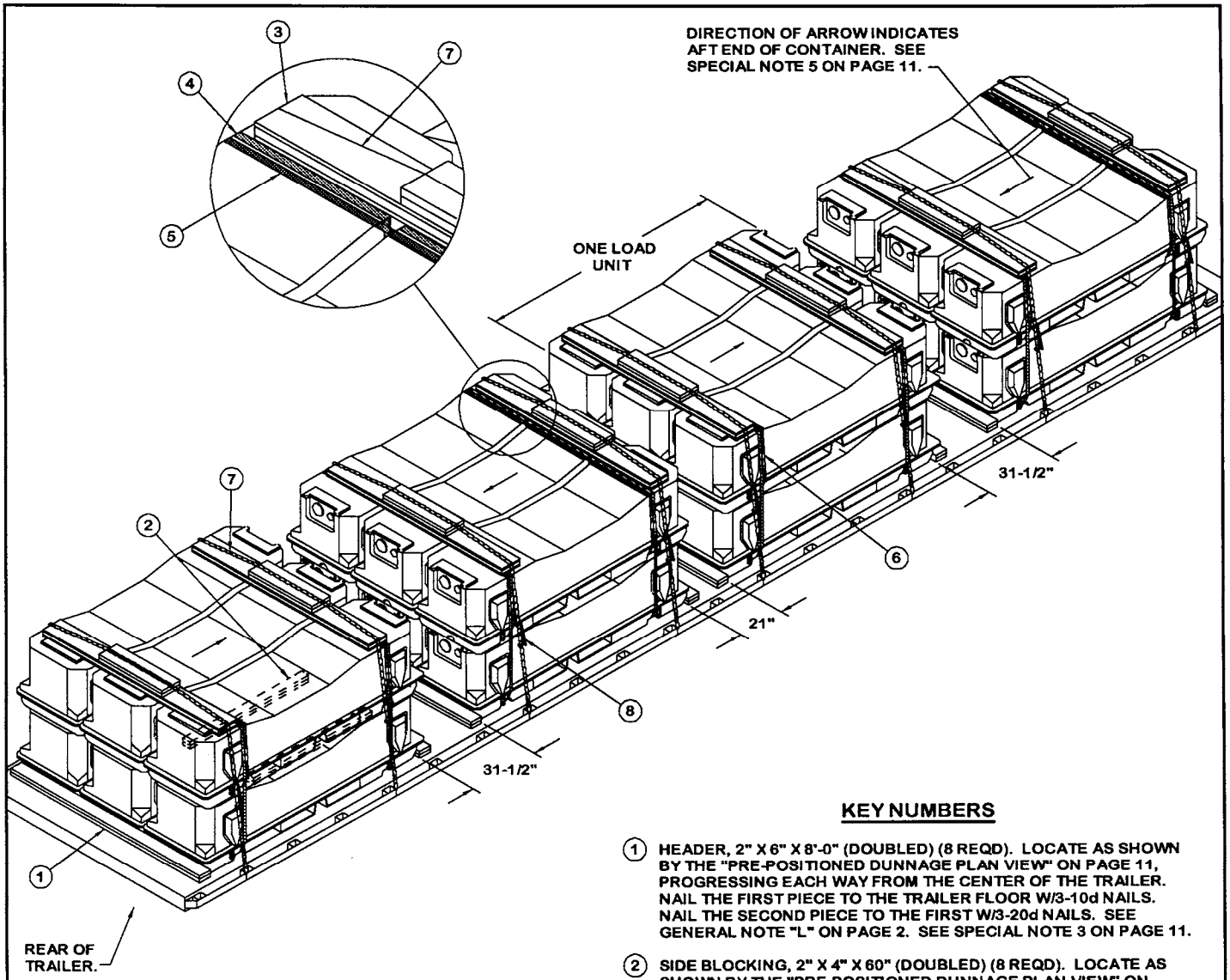
③ STRAPPING/CHAIN BOARD ASSEMBLY (2 REQD). SEE THE "STRAPPING/CHAIN BOARD ASSEMBLY C" DETAIL ON PAGE 14.

④ HOLD-DOWN STRAP, 2" X .050" OR .044" X 16'-0" LONG STEEL STRAPPING (2 REQD). INSTALL EACH STRAP FROM ONE PIECE OF STRAPPING. ANCHOR A STRAP TO A TIE-DOWN FACILITY ON ONE SIDE OF THE TRAILER, RUN IT OVER THE LOAD, PASS IT THROUGH A TIEDOWN FACILITY ON THE OPPOSITE SIDE OF THE TRAILER, AND BRING IT BACK UP ABOVE THE TRAILER FLOOR WHERE IT CAN BE TENSIONED AND SEALED. SEE GENERAL NOTES "J" AND "O" ON PAGE 2.

⑤ PAD, 2" X .050" OR .044" X 18" LONG STEEL STRAPPING (4 REQD). POSITION BETWEEN THE HOLD-DOWN STRAP, PIECE MARKED ④, AND THE TRAILER SIDE RAILS AND SEAL TO THE HOLD-DOWN STRAP. SEE "DETAIL A" ON PAGE 15. ALT: STAKE POCKET PROTECTOR (8 REQD). USE TWO UNDER EACH ANCHORING FACILITY WITH A HOLD-DOWN STRAP. SEE "DETAIL B" ON PAGE 15.

⑥ SEAL FOR 2" STRAPPING (8 REQD, 4 PER STRAP). DOUBLE CRIMP EACH SEAL, EXCEPT THOSE USED TO SECURE THE PADS, PIECE MARKED ⑤. SEE THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 15.

TYPICAL LTL (1-CONTAINER LOAD)



ISOMETRIC VIEW

KEY NUMBERS

(1) HEADER, 2" X 6" X 8'-0" (DOUBLED) (8 REQD). LOCATE AS SHOWN BY THE "PRE-POSITIONED DUNNAGE PLAN VIEW" ON PAGE 11, PROGRESSING EACH WAY FROM THE CENTER OF THE TRAILER. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/3-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/3-20d NAILS. SEE GENERAL NOTE "L" ON PAGE 2. SEE SPECIAL NOTE 3 ON PAGE 11.

(2) SIDE BLOCKING, 2" X 4" X 60" (DOUBLED) (8 REQD). LOCATE AS SHOWN BY THE "PRE-POSITIONED DUNNAGE PLAN VIEW" ON PAGE 11. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTE 4 ON PAGE 11. SEE GENERAL NOTE "P" ON PAGE 2.

(3) STRAPPING/CHAIN BOARD ASSEMBLY (8 REQD). SEE THE "STRAPPING/CHAIN BOARD ASSEMBLY B" DETAIL ON PAGE 14.

(4) VERTICAL UNITIZING STRAP, 1-1/4" X .035" OR .031" X 16'-0" LONG STEEL STRAPPING (24 REQD). INSTALL AS SHOWN IN THE "UNITIZATION AND HANDLING PROCEDURAL GUIDANCE" ON PAGE 3.

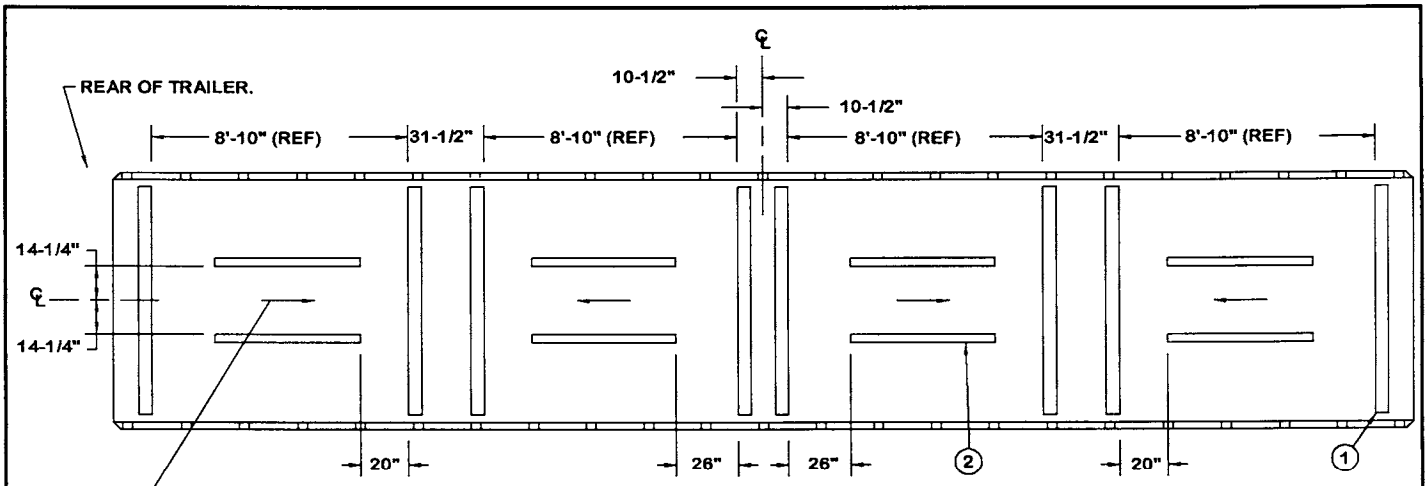
(5) BUNDLING STRAP, 1-1/4" X .035" OR .031" X 27'-6" LONG STEEL STRAPPING (8 REQD). INSTALL SO AS TO ENCIRCLE ALL SIX CONTAINERS IN A LOAD UNIT. SEE GENERAL NOTE "O" ON PAGE 2.

(6) SEAL FOR 1-1/4" STEEL STRAPPING (64 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "M" ON PAGE 2.

(7) CHAIN, BINDING, 5/16", GRADE 70 BY A LENGTH-TO-SUIT (8 REQD). POSITION AS SHOWN. ATTACH TO A TRAILER STAKE POCKET, NOT TO A RUB RAIL. SEE THE "SPECIAL PROVISIONS FOR CHAIN TIEDOWN" ON PAGE 16.

(8) LOAD BINDER, 5/16", OVER-CENTER TYPE (8 REQD, 1 PER CHAIN). WIRE TIE HANDLE TO PREVENT OPENING DURING TRANSPORT. FASTEN THE TENSIONED CHAIN, PIECE MARKED (7), TO THE STRAPPING/CHAIN BOARD ASSEMBLY, PIECE MARKED (3), W/1-20d NAIL AT EACH END AND ONE AT THE CENTER BY DRIVING EACH NAIL INTO THE PIECES THRU AN OPENING IN A CHAIN LINK AND BENDING IT OVER THE LINK.

24-CONTAINER LOAD ON A 45'-0" LONG BY 8'-6" WIDE TRAILER (CHAIN TIEDOWN METHOD)



PRE-POSITIONED DUNNAGE PLAN VIEW

SPECIAL NOTES:

1. A 24-CONTAINER LOAD IS SHOWN ON A 45'-0" LONG BY 8'-6" WIDE FLATBED TRAILER EQUIPPED WITH THE END STAKE POCKETS LOCATED 6" FROM THE END OF THE TRAILER AND THE REMAINING STAKE POCKETS 24" ON CENTER. LONGER TRAILERS CAN BE USED.
2. THE CNU-399/E OR CNU-425/E CONTAINERS MUST BE UNITIZED PRIOR TO LOADING ON THE FLATBED TRAILER. THE UNITIZING STRAPS AND THE BUNDLING STRAPS MUST BE INSTALLED NEAR THE STRONG POINTS OR REINFORCED AREAS OF THE CONTAINERS AS SHOWN IN THE "UNITIZATION AND HANDLING PROCEDURAL GUIDANCE" ON PAGE 3 AND IN THE "ISOMETRIC VIEW" ON PAGE 10.
3. THE HEADERS, PIECE MARKED ①, MAY BE PRE-POSITIONED, IF DESIRED. THE REFERENCED 8'-10" DIMENSION BETWEEN THE HEADERS SHOULD PROVIDE FOR A SNUG FIT OF THE CONTAINERS. THIS DIMENSION MAY BE ADJUSTED, IF NECESSARY. THE HEADERS ARE LOCATED ON THE TRAILER TO PROPERLY ALIGN THE BEARING AREA OF THE CONTAINERS WITH THE STAKE POCKETS ON THE TRAILER FOR ATTACHMENT OF THE CHAINS BASED ON SPACING OF THE POCKETS SPECIFIED ABOVE. THESE DIMENSIONS MAY BE ADJUSTED AS NECESSARY.
4. THE SIDE BLOCKING CANNOT EASILY BE NAILED AFTER THE CONTAINER STACKS ARE IN PLACE AND SHOULD BE PRE-POSITIONED AS SHOWN BY THE "PRE-POSITIONED DUNNAGE PLAN VIEW" ABOVE. NOTE THAT THE CENTER ROW OF CONTAINER STACKS MUST BE LIFTED BY INSERTING THE TINES OF THE FORKLIFT TRUCK INTO THE FORK OPENINGS OF THE UPPER CONTAINER FOR PLACEMENT WITHIN THE PRE-POSITIONED SIDE BLOCKING, PIECE MARKED ②.
5. ALL CONTAINER STACKS IN EACH LOAD UNIT MUST BE POSITIONED WITH THE "AFT" END IN THE DIRECTION INDICATED ON THE "ISOMETRIC VIEW" ON PAGE 10 AND ON THE "PRE-POSITIONED DUNNAGE PLAN VIEW" ABOVE. THIS POSITIONING IS NECESSARY IN ORDER TO ALIGN THE STRONG POINTS OF ADJACENT STACKS FOR PLACEMENT OF THE STRAPPING/CHAIN BOARD ASSEMBLIES.
6. IF THE TRAILER FURNISHED FOR LOADING IS 8'-0" WIDE IN LIEU OF 8'-6" WIDE, 3-WIDE LOADING OF THE CONTAINERS CANNOT BE ACCOMPLISHED. REFER TO PAGES 4 AND 5 FOR 2-WIDE LOADING PROCEDURES.

(CONTINUED AT LEFT)

(SPECIAL NOTES CONTINUED)

7. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. ONE CONTAINER CAN BE OMITTED BY INSTALLING A FILLER ASSEMBLY IN THE PLACE OF A CONTAINER OMITTED FROM THE TOP LAYER OF THE CENTER ROW. SEE THE "FILLER ASSEMBLY" DETAIL ON PAGE 14. OTHER QUANTITIES CAN BE ATTAINED BY USING A COMBINATION OF DIFFERENT QUANTITY LOAD UNITS AS FOLLOWS.

NO. OF CNTRS	6-UNIT	4-UNIT	3-UNIT	2-UNIT
24	4			
22	3	1		
21	3		1	
20	3			1
20	2	2		
18	3			
17	2		1	1

8. THE TRANSPORTING VEHICLE OPERATOR SHOULD BE INSTRUCTED TO PERIODICALLY INSPECT THE TIEDOWN CHAINS AND LOAD BINDERS DURING TRANSPORT AND TIGHTEN IF NECESSARY.

BILL OF MATERIAL

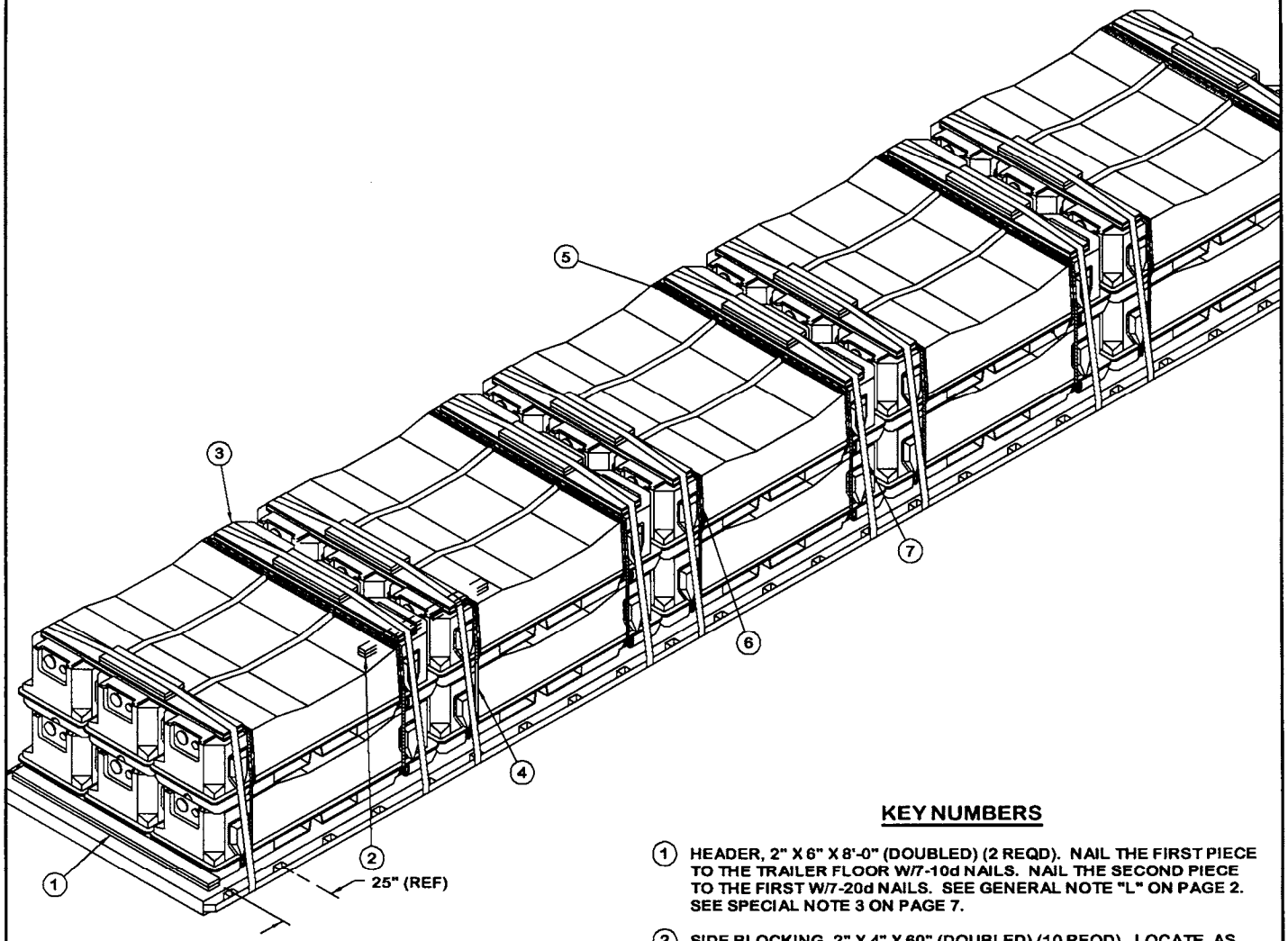
LUMBER	LINEAR FEET	BOARD FEET
2" X 4" 2" X 6" 2" X 10"	80 128 102	54 128 170
NAILS	**NO. REQD**	**POUNDS**
6d (2") 10d (3") 20d (4")	176 184 24	1 3 1

PLYWOOD, 3/4" --- 92 SQ FT REQD --- 190 LBS
1-1/4" STEEL STRAPPING --- 604' REQD --- 87 LBS
SEAL FOR 1-1/4" STRAPPING --- 64 REQD --- 3 LBS
CHAIN, BINDING, 5/16" --- 220' REQD --- 264 LBS
BINDER, LOAD --- 8 REQD --- 48 LBS
WIRE, NO. 14 GAGE --- 24' REQD --- 1/2 LB

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER	24	24,360 LBS
DUNNAGE		1,301 LBS
TOTAL WEIGHT		25,661 LBS (APPROX)

24-CONTAINER LOAD ON A 45'-0" LONG BY 8'-6" WIDE TRAILER (CHAIN TIEDOWN METHOD)



ISOMETRIC VIEW

KEY NUMBERS

(1) HEADER, 2" X 6" X 8'-0" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/7-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/7-20d NAILS. SEE GENERAL NOTE "L" ON PAGE 2. SEE SPECIAL NOTE 3 ON PAGE 7.

(2) SIDE BLOCKING, 2" X 4" X 60" (DOUBLED) (10 REQD). LOCATE AS SHOWN BY THE "PRE-POSITIONED DUNNAGE PLAN VIEW" ON PAGE 7. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTE "P" ON PAGE 2.

(3) STRAPPING/CHAIN BOARD ASSEMBLY (10 REQD). SEE THE "STRAPPING/CHAIN BOARD ASSEMBLY B" DETAIL ON PAGE 14. POSITION ADJACENT TO THE STOP PIECE AT EACH END OF THE CONTAINER COVER.

(4) VERTICAL UNITIZING STRAP, 1-1/4" X .035" OR .031" X 16'-0" LONG STEEL STRAPPING (30 REQD). INSTALL AS SHOWN IN THE "UNITIZATION AND HANDLING PROCEDURAL GUIDANCE" ON PAGE 3.

(5) BUNDLING STRAP, 1-1/4" X .035" OR .031" X 27'-6" LONG STEEL STRAPPING (10 REQD). INSTALL SO AS TO ENCIRCLE ALL SIX CONTAINERS IN A LOAD UNIT. SEE GENERAL NOTE "M" ON PAGE 2.

(6) SEAL FOR 1-1/4" STEEL STRAPPING (80 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.

(7) WEB STRAP ASSEMBLY (10 REQD, 2 PER LOAD UNIT). POSITION TO EXTEND FROM A WINCH ON ONE SIDE OF THE TRAILER, OVER THE CONTAINERS, TO AN ATTACHMENT POINT ON THE OPPOSITE SIDE. SEE THE "SPECIAL PROVISIONS FOR WEB STRAP TIEDOWN" ON PAGE 13.

30-CONTAINER LOAD ON A 48'-0" LONG BY 8'-6" WIDE TRAILER (WEB STRAP TIEDOWN METHOD)

SPECIAL PROVISIONS FOR WEB STRAP TIEDOWN

LADING MAY BE SECURED TO A FLATBED TRAILER BY WEB STRAP ASSEMBLIES IN LIEU OF STEEL STRAPPING OR CHAINS AND LOAD BINDERS, PROVIDED THE FOLLOWING CONDITIONS ARE MET.

1. ONLY WEB STRAPS OF GOOD QUALITY WILL BE USED. ALL WEB STRAPS AND ASSOCIATED HARDWARE SHALL CONFORM TO THE WEB SLING & TIEDOWN ASSOCIATION RECOMMENDED STANDARD SPECIFICATION FOR SYNTHETIC WEB TIEDOWNS, FIRST PUBLISHED IN 1991.
2. ALL WEB STRAP TIEDOWN ASSEMBLIES SHALL BE PERMANENTLY LABELED WITHIN 18" OF ONE END TO SHOW:
   A. NAME OR TRADEMARK OF MANUFACTURER
   B. WORKING LOAD LIMIT (WLL)
   C. DATE OF MANUFACTURE (MONTH AND YEAR)
3. WEB STRAP ASSEMBLY MINIMUM BREAKING STRENGTH WILL BE AT LEAST THREE TIMES THE WLL MARKED ON THE STRAP.
4. THE TOTAL MINIMUM BREAKING STRENGTH (MBS) OF THE STRAPS USED TO RESTRAIN AMMUNITION ITEMS WILL BE AT LEAST 1-1/2 TIMES THE TOTAL WEIGHT OF THE ITEMS, WITH A MINIMUM OF TWO STRAPS POSITIONED OVER EACH LOAD UNIT ON A TRAILER. WRITTEN PROOF OF THE MBS OF THE STRAPS SHALL BE PROVIDED BY THE CARRIER TO THE SHIPPING ACTIVITY IF REQUESTED.
5. CARRIERS MUST COMPLY WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS APPLICABLE TO CARGO RESTRAINT USING WEB STRAPS.
6. WHEN USING STRAPS AND WINCHES FOR CARGO RESTRAINT, THE STRAPS WILL BE TENSIONED UNTIL TIGHT WITHOUT CAUSING DAMAGE TO THE CARGO. ONLY WINCH BARS WILL BE USED FOR OPERATING THE STRAP WINCHES.
7. BEFORE AND DURING INSTALLATION, THE WEB STRAP ASSEMBLIES SHALL BE INSPECTED FOR DEFECTS. STRAPS HAVING ANY OF THE FOLLOWING DEFECTS WILL NOT BE USED FOR THE RESTRAINT OF ANY AMMUNITION LOAD, WITH THE EXCEPTION OF ONE WITH FRAYED ENDS. A STRAP HAVING FRAYED ENDS CAN BE USED IF THE FRAYED END IS TRIMMED AND MELTED WITH HEAT OR FLAME UNTIL ALL STRANDS ARE SEIZED.
   A. STRAP ASSEMBLY HARDWARE: SHALL BE INSPECTED FOR BENT HOOKS, GOUGES, CORROSION, SIGNS OF REPAIR, BENT RATCHETS OR WINCHES, WEAR, OR ANY OTHER NOTICEABLE DEFECTS.
   B. STRAP WEBBING: SHALL BE INSPECTED FOR KNOTS, EXCESSIVE ABRASIVE WEAR, TEARS, PUNCTURES, CUTS, ACID OR CAUSTIC BURNS, BROKEN STITCHES, FRAYED ENDS, OIL OR GREASE SPOTS EXCEEDING 6 SQUARE INCHES, BLEACHING OF COLOR, INCREASED STIFFNESS, SPLICES, VISIBLE WEAR INDICATOR THREADS, OR ANY OTHER NOTICEABLE DEFECTS.
8. RATCHET HANDLES MUST BE IN THE LOCKED POSITION AND/OR WINCH LOCKING DEVICES MUST BE FULLY SEATED IN THE TEETH OF THE WINCH.
9. IF THE WINCHES BEING USED ARE THE REMOVABLE TYPE HAVING BOLTS FOR ATTACHMENT TO THE TRAILER, CARE MUST BE EXERCISED WHEN ATTACHING THE WINCHES TO THE TRAILER. IF EXCESSIVE FORCE IS EXERTED ON THE BOLT DURING TENSIONING, DEFORMATION OF THE WINCH BRACKET MAY OCCUR, AND SUBSEQUENTLY CAUSE FAILURE OF THE WINCH BRACKET DURING TRANSPORT. WINCHES MUST BE FASTENED TO THE TRAILER WITH A MINIMUM OF TWO BOLTS.

(CONTINUED AT RIGHT)

SPECIAL NOTES:

1. A 30-CONTAINER LOAD IS SHOWN ON A 48'-0" LONG BY 8'-6" WIDE FLATBED TRAILER. SHORTER TRAILERS CANNOT BE USED FOR SHIPMENT OF THE DEPICTED LOAD.
2. THE CNU-399/E OR THE CNU-425/E CONTAINERS MUST BE UNITIZED PRIOR TO LOADING ON THE FLATBED TRAILER. ALL STRAPS MUST BE INSTALLED NEAR THE STRONG POINTS OR REINFORCED AREAS OF THE CONTAINERS AS SHOWN IN THE "UNITIZATION AND HANDLING PROCEDURAL GUIDANCE" ON PAGE 3 AND IN THE "ISOMETRIC VIEW" ON PAGE 6. SEE GENERAL NOTE "O" ON PAGE 2.
3. THE 25" REFERENCE DIMENSION AT THE REAR OF THE LOAD WILL POSITION THE CONTAINERS SO AS TO BE APPROXIMATELY CENTERED ON THE LENGTH OF THE TRAILER. THIS DIMENSION MAY BE ADJUSTED AS DESIRED.
4. THE SIDE BLOCKING CANNOT EASILY BE NAILED AFTER THE CONTAINER STACKS ARE IN PLACE AND SHOULD BE PRE-POSITIONED AS SHOWN BY THE "PRE-POSITIONED DUNNAGE PLAN VIEW" ON PAGE 7. NOTE THAT THE CENTER ROW OF CONTAINER STACKS MUST BE LIFTED BY INSERTING THE TINES OF THE FORKLIFT TRUCK INTO THE FORK OPENINGS OF THE UPPER CONTAINER FOR PLACEMENT WITHIN THE PRE-POSITIONED SIDE BLOCKING, PIECE MARKED ②.
5. ALL CONTAINER STACKS IN EACH LOAD UNIT MUST BE POSITIONED WITH THE "AFT" END IN THE SAME DIRECTION, EITHER ALL FORWARD OR ALL REARWARD. THIS POSITIONING IS NECESSARY IN ORDER TO ALIGN THE STRONG POINTS OF ADJACENT STACKS FOR PLACEMENT OF THE STRAPPING/CHAIN BOARD ASSEMBLIES.
6. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. ONE CONTAINER CAN BE OMITTED BY INSTALLING A FILLER ASSEMBLY IN THE PLACE OF A CONTAINER OMITTED FROM THE TOP LAYER OF THE CENTER ROW. SEE THE "FILLER ASSEMBLY" DETAIL ON PAGE 14. OTHER QUANTITIES CAN BE ATTAINED BY USING A COMBINATION OF DIFFERENT QUANTITY LOAD UNITS AS SHOWN ON PAGE 7.
7. CHAINS AND LOAD BINDERS CANNOT BE USED FOR THE SHIPMENT OF A 30-CONTAINER LOAD BECAUSE THE CONTAINERS MUST BE SPACED APART IN ORDER TO ALIGN THE BEARING AREA OF THE CONTAINERS WITH THE TRAILER STAKE POCKETS TO WHICH THE CHAINS MUST BE FASTENED. FOR SHIPMENT OF A 24-CONTAINER LOAD USING CHAINS AND LOAD BINDERS FOR LOAD SECUREMENT, REFER TO THE PROCEDURES ON PAGES 10 AND 11.

(SPECIAL PROVISIONS FOR WEB STRAP TIEDOWN CONTINUED)

10. DRIVERS MUST BE INSTRUCTED TO PERIODICALLY CHECK THE TIGHTNESS OF THE WEB STRAP ASSEMBLIES AND RE-TIGHTEN, IF NECESSARY.
11. IF PROVIDED ON OR WITH THE WEB STRAP ASSEMBLIES, SCUFF SLEEVES/WEB PROTECTORS WILL BE USED WHEREVER THE STRAP PASSES OVER A SHARP CORNER OR IRREGULAR SURFACE. IF NOT PROVIDED, ANTI-CHAFING MATERIAL OF A SUITABLE THICKNESS WILL BE USED TO INSURE THAT THE STRAP WEBBING IS NOT DAMAGED DURING TRANSPORT OF THE LOAD.
12. THE HARDWARE FITTING OF THE TIEDOWN ASSEMBLIES MUST BE ATTACHED TO THE TRAILER IN SUCH A MANNER THAT THEY WILL REMAIN IN PLACE IF SLACK DEVELOPS IN THE STRAP DURING TRANSPORT.

BILL OF MATERIAL

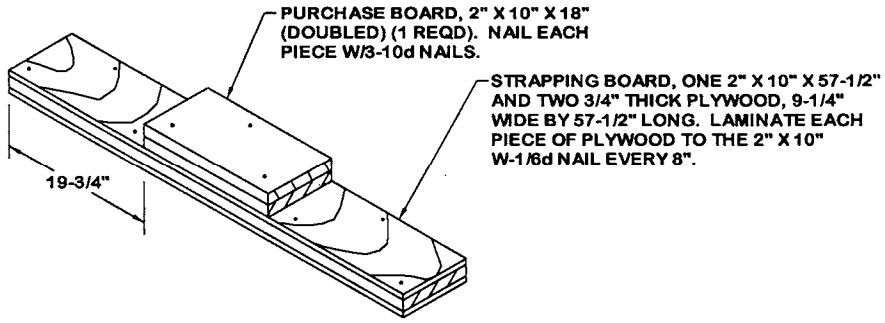
LUMBER	LINEAR FEET	BOARD FEET
2" X 4" 2" X 6" 2" X 10"	100 32 128	
NAILS	**NO. REQD**	**POUNDS**
6d (2") 10d (3") 20d (4")	220 214 14	1-1/2 3-1/2 1/2

PLYWOOD, 3/4" ---------- 115 SQ FT REQD ---------- 238 LBS
1-1/4" STEEL STRAPPING ------ 755' REQD ---------- 108 LBS
SEAL FOR 1-1/4" STRAPPING ---- 80 REQD ---------- 4 LBS
WEB STRAP ASSEMBLIES ---------- 10 REQD

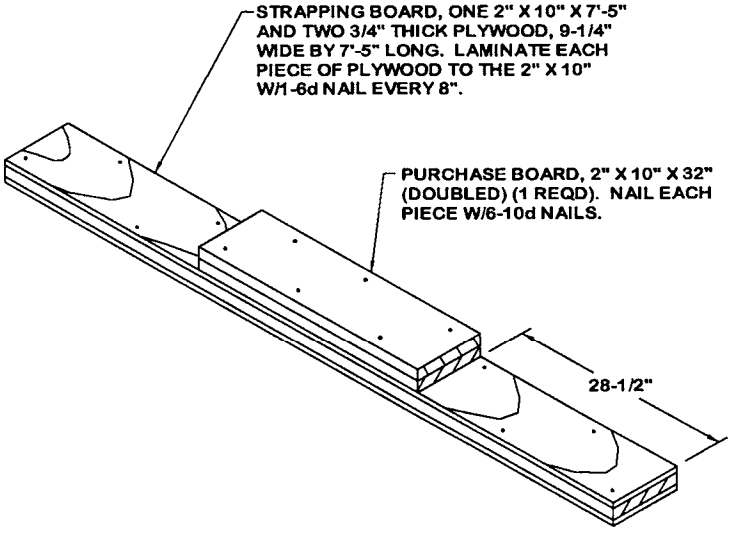
LOAD AS SHOWN

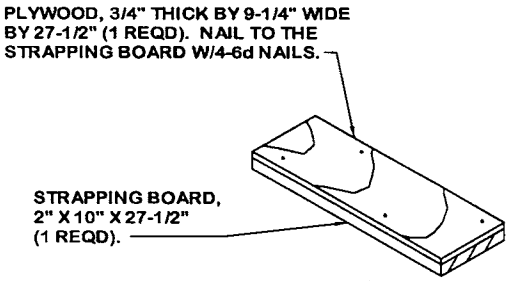
ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER	30	30,450 LBS
DUNNAGE		982 LBS
TOTAL WEIGHT		31,432 LBS (APPROX)

30-CONTAINER LOAD ON A 48'-0" LONG BY 8'-6" WIDE TRAILER (WEB STRAP TIEDOWN METHOD)



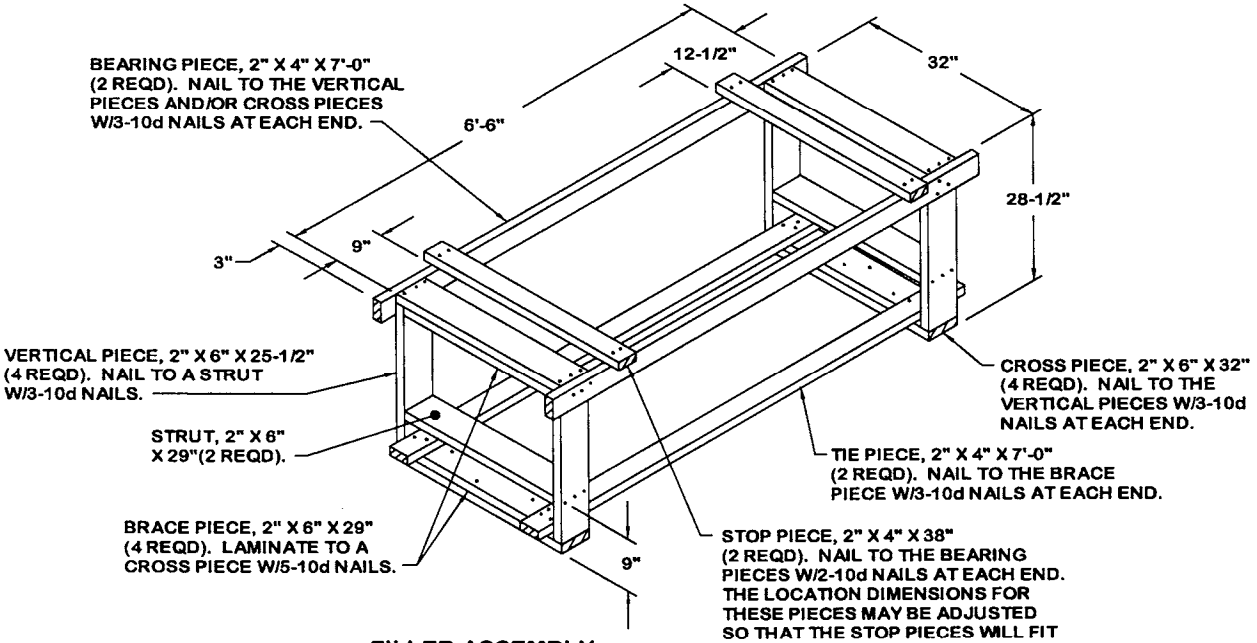
STRAPPING/CHAIN BOARD ASSEMBLY A





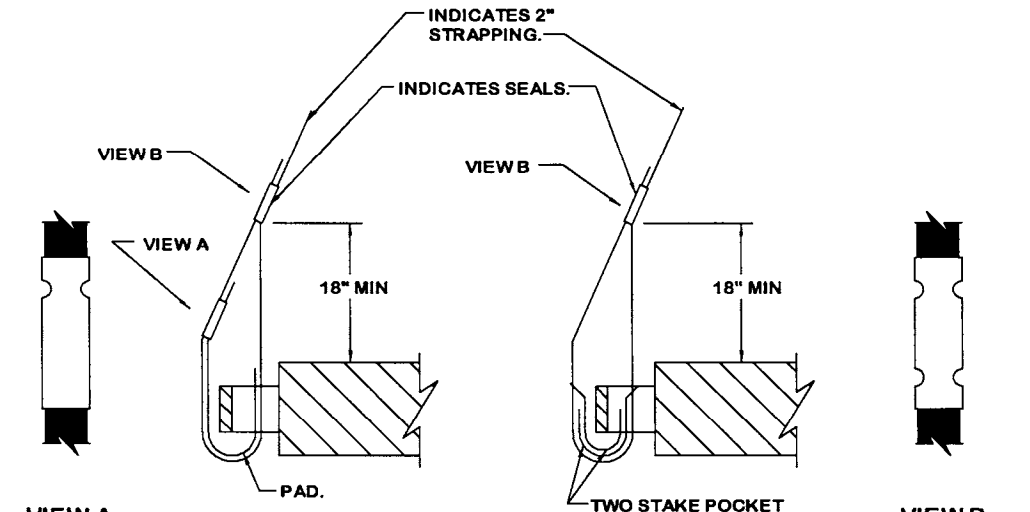
STRAPPING/CHAIN BOARD ASSEMBLY C

STRAPPING/CHAIN BOARD ASSEMBLY B



FILLER ASSEMBLY

DETAILS



VIEW A

ONE SEAL WITH ONE PAIR OF CRIMPS.

VIEW B

ONE SEAL WITH TWO PAIR OF CRIMPS.

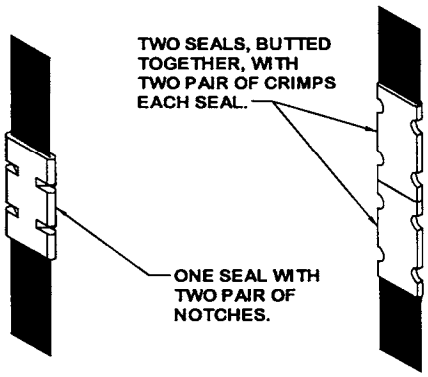
DETAIL A

METHOD OF INSTALLING 2" STRAPPING AND PAD AT ANCHORING FACILITY.

DETAIL B

METHOD OF INSTALLING 2" STRAPPING AND STAKE POCKET PROTECTORS (ALT PAD).

HOLD-DOWN STRAP ANCHORING DETAILS



STRAP JOINT A

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

STRAP JOINT B

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

END-OVER-END LAP JOINT DETAILS

SPECIAL PROVISIONS FOR CHAIN TIEDOWN

LADING MAY BE SECURED TO THE FLATBED TRAILER BY CARRIER-OWNED CHAINS AND LOAD BINDERS IN LIEU OF SPECIFIED STRAPPING, PROVIDED THE FOLLOWING CONDITIONS.

1. ONLY CHAINS AND LOAD BINDERS OF GOOD QUALITY WILL BE USED. ALL CHAINS AND LOAD BINDERS SHALL CONFORM TO THE NATIONAL ASSOCIATION OF CHAIN MANUFACTURER'S WELDED CHAIN SPECIFICATION ADOPTED NOVEMBER 1975.

2. ALL CHAINS SHALL BE MARKED AS PRESCRIBED BY THE NATIONAL ASSOCIATION OF CHAIN MANUFACTURER'S WELDED CHAIN SPECIFICATION ADOPTED NOVEMBER 1975. AT LEAST ONE LINK IN EVERY 36 LINKS SHALL CARRY THE MANUFACTURER'S PERMANENT AND DISTINCTIVE MARK IDENTIFYING THE GRADE OF CHAIN. CHAINS NOT MARKED IN THIS MANNER SHALL NOT BE USED. IN ADDITION TO THE GRADE MARKING, THE CHAIN MAY ALSO CARRY LETTER MARKINGS OR SYMBOLS IDENTIFYING THE CHAIN MANUFACTURER. THE PRESENCE OF THE MANUFACTURER'S IDENTIFICATION MARKING IS NOT MANDATORY.

3. BEFORE AND DURING INSTALLATION, THE CHAINS AND LOAD BINDERS SHALL BE INSPECTED FOR BENT HOOKS, STRETCH, GOUGES, BENT LINKS, WEAR, OR ANY OTHER NOTICEABLE DEFECTS. ANY DEFICIENCY SHALL BE CAUSE FOR REJECTION OF A CHAIN OR LOAD BINDER. CHAINS MUST NOT BE TWISTED DURING INSTALLATION. CAUTION: EXTREME CARE MUST BE EXERCISED WHEN TENSIONING CHAINS TO PREVENT DAMAGE OR PERMANENT DEFORMATION TO THE LADING.

4. CHAIN SIZES AND GRADES APPROVED FOR USE WITH FLATBED TRAILER LOADS ARE AS FOLLOWS:

   A. 3/8", GRADE 43 HIGH TEST CHAIN
   B. 5/16", GRADE 70 BINDING CHAIN
   C. 3/8", GRADE 70 BINDING CHAIN
   D. 5/16", GRADE 80 ALLOY STEEL CHAIN
   E. 3/8", GRADE 80 ALLOY STEEL CHAIN

5. THE GRABHOOKS ON THE ENDS OF THE CHAIN MAY BE OF THE FOLLOWING TYPES WITH GRADE MARKINGS AS INDICATED.

   A. CLEVIS GRABHOOKS, 3/8" SIZE, DO NOT REQUIRE GRADE MARKING. ALLOY GRABHOOKS, 5/16" SIZE, SHALL CARRY THE MANUFACTURER'S GRADE MARK OF 7, 70, OR 700. THE HOOKS SHALL BE USED ON THE APPROPRIATE SIZE CHAIN.

   B. CLOSED EYE GRABHOOKS, 3/8" AND 5/16" SIZE, MAY BE USED ON THE APPROPRIATE SIZE CHAIN IF THEY ARE A PART OF A CHAIN ASSEMBLY WHICH WAS PROVIDED BY A CHAIN MANUFACTURER, AND THE CHAIN ASSEMBLY CARRIES THE CORRECT GRADE IDENTIFICATION MARKING AS PREVIOUSLY STATED. CLOSED EYE GRABHOOKS THAT FORM A PART OF THE CHAIN ASSEMBLY ARE EXEMPT FROM GRADE MARKINGS.

6. CONNECTING LINKS USED FOR CHAIN REPAIR MUST BE CORRECTLY MARKED AND BE EQUAL TO OR GREATER IN STRENGTH THAN THE CHAIN THEY ARE REPAIRING. CHAINS WITH UNMARKED CONNECTING LINKS SHALL NOT BE USED.

7. CHAIN AND FITTING OF A HIGHER GRADE MAY BE SUBSTITUTED FOR THE GRADES SPECIFIED IN NOTE 4 ABOVE.

8. LOAD BINDERS SHALL BE 5/16" TO 3/8" SIZE AND HAVE A MINIMUM BREAKING STRENGTH OF 16,200 POUNDS (WORKING LOAD LIMIT OF 5,400 POUNDS). OVERCENTER TYPE LOAD BINDERS SHALL BE SAFETY WIRED TO PREVENT ACCIDENTAL OPENING DURING TRANSPORT. LOAD BINDER SIZE SHALL BE COMPATIBLE WITH THE SIZE OF THE CHAIN BEING USED.

PROVISIONS FOR THE USE OF FIREHOSE IN LIEU OF CHAIN BOARDS OR STRAPPING BOARDS

FIRE HOSE THAT IS NO LONGER SUITABLE FOR USE IN FIRE FIGHTING APPLICATIONS CAN BE SUBSTITUTED FOR THE WOODEN CHAIN BOARDS OR STRAPPING BOARDS, AS SPECIFIED HEREIN, PROVIDED THE FOLLOWING CONDITIONS ARE MET.

1. SUBSTITUTION AND APPLICATION GUIDANCE

   A. FIRE HOSE MAY BE USED WHEREVER A CHAIN OR STRAPPING BOARD CONTACTS A RIGID SURFACE OF THE LOAD PROVIDED GOUGING, SCRATCHING, CRACKING, BENDING, CRUSHING, OR OTHER VISIBLE DAMAGE DOES NOT OCCUR TO THE LOAD.

   B. ONE OR MORE SEGMENTS OF FIRE HOSE MAY BE USED TO REPLACE EACH CHAIN OR STRAPPING BOARD PROVIDING LOAD PROTECTION DURING TENSIONING OF TIEDOWNS AND LOAD SHIPMENT; I.E., A CHAIN BOARD NEED NOT BE REPLACED BY A SINGLE SEGMENT OF HOSE, MULTIPLE SEGMENTS MAY BE USED INSTEAD, AS LONG AS THEY ARE SECURELY FASTENED TO THE TIEDOWN. REGARDLESS OF THE NUMBER OF SEGMENTS USED, THE HOSE LENGTH WILL BE SUCH THAT IT EXTENDS AT LEAST 6" BEYOND THE EDGE OF THE LOAD.

   C. FIRE HOSE CANNOT BE USED IN PLACE OF A PURCHASE BOARD ON A LOAD CONSISTING OF MORE THAN TWO PALLETS OR CONTAINERS ACROSS THE WIDTH OF THE TRAILER. THE FIRE HOSE CAN BE APPLIED TO THE OUTER STACKS, HOWEVER, A PURCHASE BOARD ASSEMBLY WILL STILL BE REQUIRED TO PROVIDE VERTICAL HOLD-DOWN ON THE CENTER STACK(S).

2. ACCEPTABLE FIRE HOSE

   A. FIRE HOSE TO BE USED WILL BE A RUBBER LINED SINGLE OR DOUBLE JACKETED TYPE; I.E., IT MUST HAVE A RUBBER LINING INSIDE A SINGLE OR DOUBLED FABRIC (COTTON, LINEN, ETC.) JACKET.

   B. THE COLLAPSED WIDTH OF THE HOSE MUST BE A MINIMUM OF 2-1/2".

   C. THE HOSE SEGMENTS USED MUST NOT CONTAIN DEFECTS THAT WILL ALLOW DIRECT CONTACT OF THE CHAIN OR LOAD BINDER WITH THE LOAD. THE HOSE THICKNESS MUST ALSO BE OF SUCH A THICKNESS THAT DENTING OR DAMAGE TO THE LOAD DOES NOT OCCUR DURING CHAIN OR STRAP TENSIONING.

3. SECUREMENT TO CHAINS OR STRAPS

   A. THE SEGMENTS OF HOSE USED UNDER EACH CHAIN OR STRAP WILL BE SECURED TO THE CHAIN OR STRAP WITH ONE FASTENER EVERY 12", WITH A MINIMUM OF TWO FASTENERS REQUIRED PER HOSE SEGMENT.

   B. FASTENERS CAN CONSIST OF PLASTIC ELECTRICAL TIES, NO. 14 GAGE WIRE, OR TAPE. REGARDLESS OF THE TYPE OF FASTENING USED, IT MUST PROVIDE A POSITIVE MEANS OF SECUREMENT OF THE HOSE TO THE CHAIN OR STRAP AND MUST NOT DAMAGE THE SURFACE OF THE CONTAINER, PALLET, OR ITEM IT CONTACTS.