LOADING AND BRACING (TL & LTL) ON FLATBED TRAILERS ⊕ 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-336/E OR CNU-336A/E CONTAINER

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

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JULY 1994

REVISION NO. 1 — **MARCH 1997**

SEE THE REVISION LISTING ON PAGE 2

CLASS	DIVISION	DRAWING	FILE
19	48	8536	SP11J20

PROJECT SP 238-92

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 OUTLOADING PROCEDURES IN THIS DRAWING ARE APPLICABLE FOR THE AIR INFLATABLE RETARDER, BSU-49/B PACKED IN THE CNU-335/E ON CNU-335A/E CONTAINER OR BSU-50/B PACKED IN THE CNU-336/E OR CNU-336A/E CONTAINER.

C. SEE THE PICTORIAL VIEWS ON PAGE 3 FOR SIZE AND WEIGHT OF CONTAINERS AND REFER TO T.O. 11A6-13-7 FOR FURTHER INFORMATION.

D. THE LOADS AS SHOWN HEREIN ARE BASED ON 40'-0" LONG BY 8'-0" WIDE FLATBED TRAILERS. TRAILERS OF OTHER LENGTHS MAY BE USED. TRAILERS MUST HAVE WOOD OR WOOD AND METAL FLOORS. TRAILERS HAVING ALL-METAL FLOORS CANNOT 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.

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.

J. IF THE CAPACITY OF THE MATERIALS HANDLING EQUIPMENT PERMITS, IT IS RECOMMENDED THAT CONTAINERS BE UNITIZED PRIOR TO PLACEMENT ABOARD THE TRAILER.

(CONTINUED AT RIGHT)

(GENERAL NOTES CONTINUED)

K. CAUTION: REGARDLESS OF THE TYPE OF TRAILER INVOLVED, ONLY THOSE TRAILERS HAVING TIE-DOWN 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 TIE-DOWN 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. THE CHAINS WILL NOT BE APPLIED TO FORM A COMPLETE LOOP WHICH ENCOMPASSES BOTH THE LADING AND THE TRAILER FRAME AND/OR BED.

L. 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 7.

M. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING 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.

N. NOTICE: 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 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.

O. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE SPECIAL NOTES SECTIONS IMMEDIATELY ADJACENT TO DEPICTED OUTLOADING METHODS.

P. 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 25.4 MM, AND ONE POUND EQUALS 0.454 KG.

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

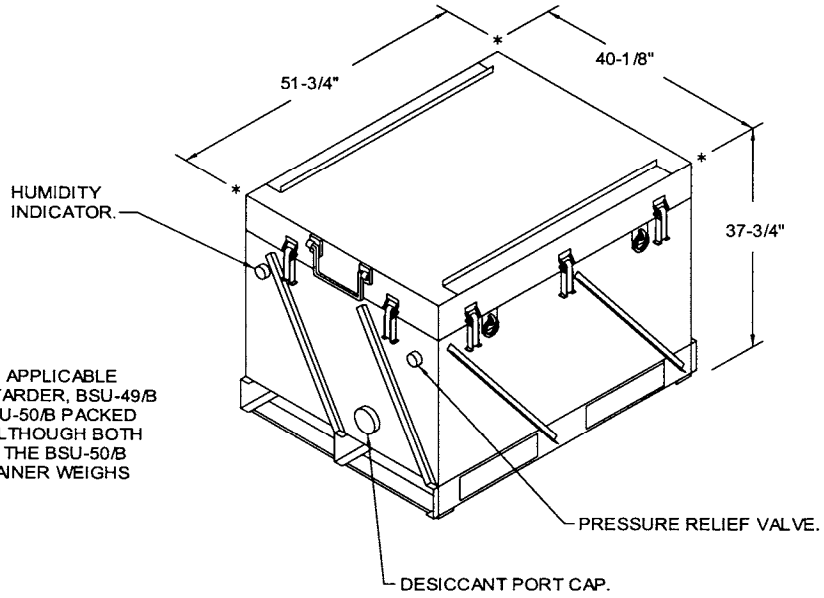
MATERIAL SPECIFICATIONS

LUMBER	SEE TM 743-200-1 (DUNNAGE LUMBER) AND FED SPEC MM-L-751.
NAILS	FED SPEC FF-N-105; COMMON.
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.
STAPLE, STRAP	COMMERCIAL GRADE.
STAKE POCKET PROTECTOR	COMMERCIAL GRADE.
ANTI-CHAFING MATERIAL	MIL-B-121 (OR EQUAL); NEUTRAL BARRIER MATERIAL.
CHAIN	NATIONAL ASSOCIATION OF CHAIN MANUFACTURER'S WELDED CHAIN SPECIFICATION ADOPTED NOVEMBER 1975.
LOAD BINDER	FED SPEC GGG-B-325.

REVISION

REVISION NO. 1, DATED FEBRUARY 1997, CONSISTS OF:

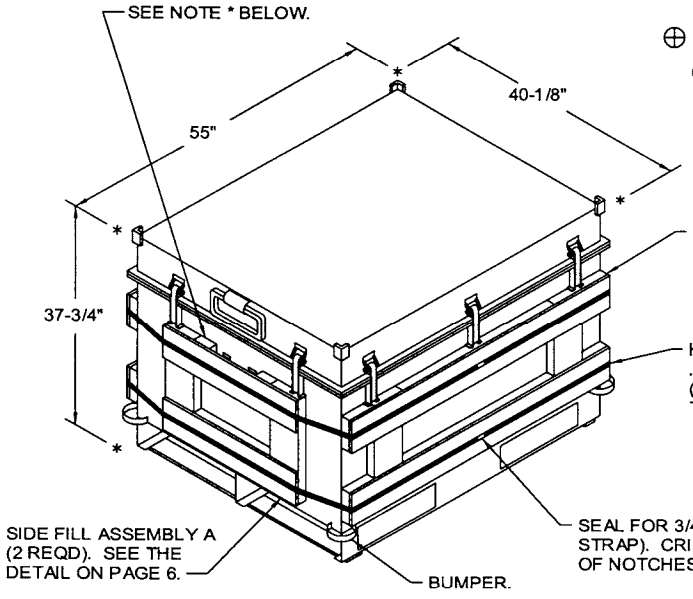
1. ADDING WEB STRAP TIEDOWN METHOD.
2. UPDATING DRAWING FORMAT.



⊕ THE UNIT SHOWN AT THE RIGHT IS APPLICABLE TO BOTH THE AIR INFLATABLE RETARDER, BSU-49/B PACKED IN THE CNU-335A/E OR BSU-50/B PACKED IN THE CNU-336A/E CONTAINER. ALTHOUGH BOTH CONTAINERS ARE THE SAME SIZE, THE BSU-50/B PACKED IN THE CNU-336A/E CONTAINER WEIGHS APPROXIMATELY 559 POUNDS.

ISOMETRIC VIEW

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



ISOMETRIC VIEW

◑ AIR INFLATABLE RETARDER, BSU-49/B (CNU-335/E CNTR) - - - - - - - - 1,038 LBS (APPROX)
DUNNAGE - - - - - - - - - - - - - - - - - 92 LBS

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 641 POUNDS.

NOTE *: THE INTERMEDIATE FILLER PIECE OF 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 6.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 6"	31	31
NAILS	NO. REQD	POUNDS
6d (2")	88	1/2

STEEL STRAPPING, 3/4" - - - - - - 35' REQD - - - - - - 2-1/2 LBS
SEAL FOR 3/4" STRAPPING - - - - - 2 REQD - - - - - - - - - - - NIL
PLYWOOD, 1/2" - - - - - 11.77 SQ FT REQD - - - - - - 16.19 LBS

CONTAINER DETAILS

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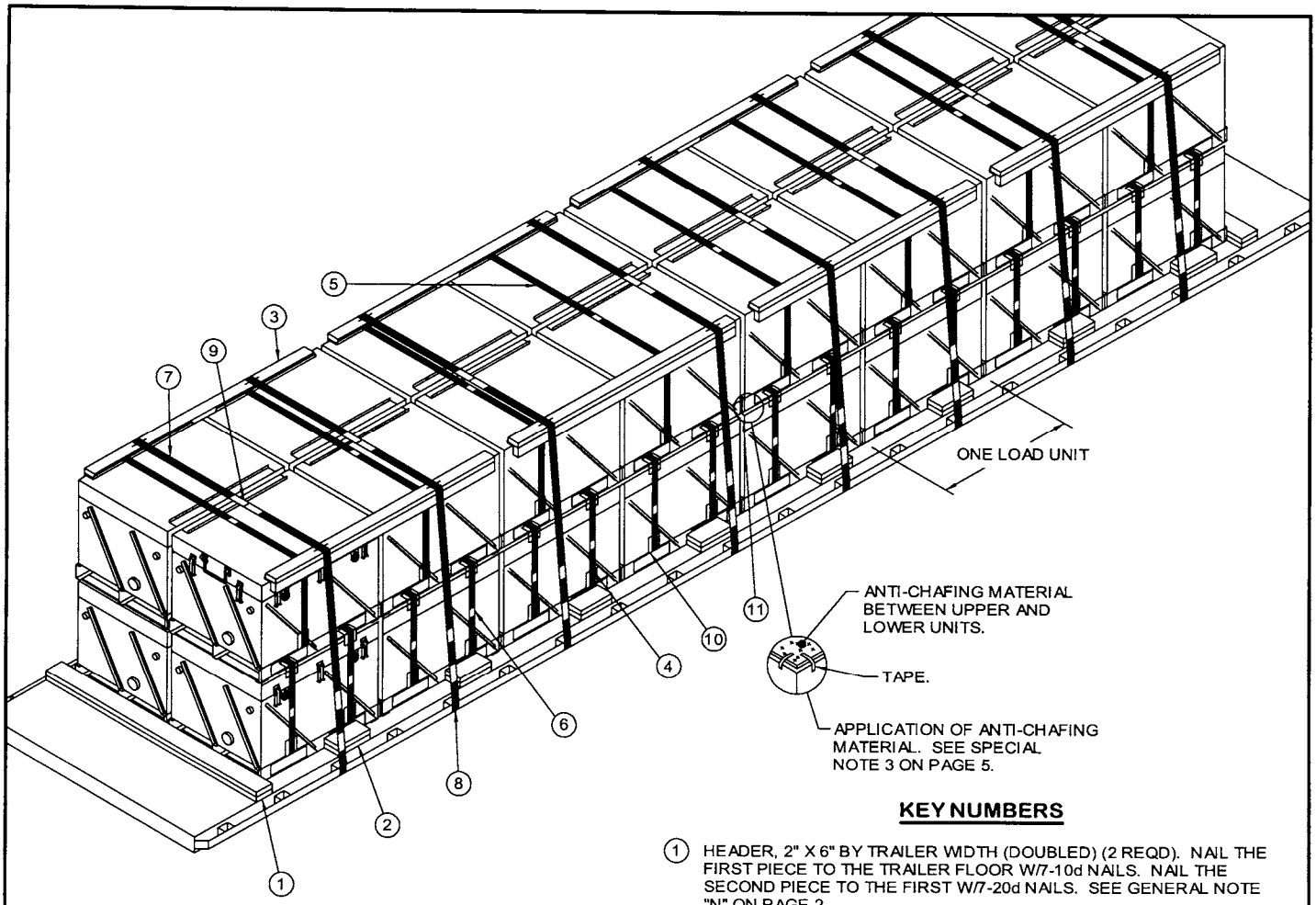


ISOMETRIC VIEW

KEY NUMBERS

(1) HEADER, 2" X 6" BY TRAILER WIDTH (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 "N" ON PAGE 2.

(2) SIDE BLOCKING, 2" X 6" X 12" (DOUBLED) (16 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(3) CAP (8 REQD). SEE THE DETAIL ON PAGE 5. POSITION AS SHOWN.

(4) UNITIZING STRAP, 1-1/4" X .035" OR .031" X 14'-0" LONG STEEL STRAPPING (32 REQD, 2 PER STACK). INSTALL THROUGH FORK TINE OPENINGS OF UPPER AND LOWER CONTAINERS.

(5) BUNDLING STRAP, 1-1/4" X .035" OR .031" X 21'-0" LONG STEEL STRAPPING (8 REQD, 1 PER LOAD UNIT). INSTALL TO ENCIRCLE, THRU FORK TINE OPENINGS, TWO LATERALLY ADJACENT CONTAINERS IN THE TOP LAYER AS SHOWN. STRAPS SHOULD BE POSITIONED AS CLOSELY AS POSSIBLE TO THE CENTER OF A LOAD UNIT AS THE FORK TINE OPENINGS PERMIT.

(6) SEAL FOR 1-1/4" STRAPPING (40 REQD, 1 PER STRAP). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES. SEE GENERAL NOTE "L" ON PAGE 2 AND "END-OVER-END LAP JOINT DETAILS" ON PAGE 7.

(7) HOLD-DOWN STRAP, 2" X .050" OR .044" X 28'-0" LONG STEEL STRAPPING (8 REQD). INSTALL EACH STRAP FROM TWO 14'-0" LONG PIECES. STAPLE TO EACH CAP W/1 STAPLE.

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

(9) SEAL FOR 2" STEEL STRAPPING (48 REQD, 6 PER STRAP). DOUBLE CRIMP EACH SEAL, EXCEPT THOSE USED TO SECURE THE PADS, PIECES MARKED (8). SEE GENERAL NOTE "L" ON PAGE 2.

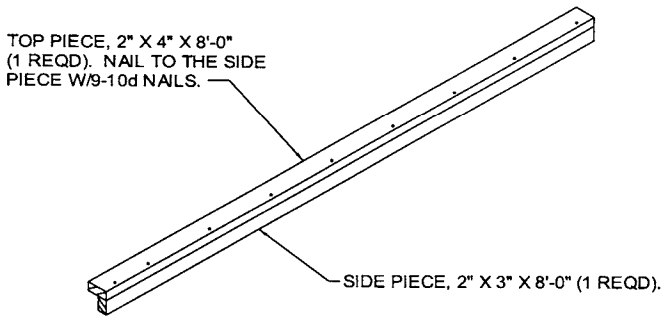
(10) ANTI-CHAFING NEUTRAL BARRIER MATERIAL (AS REQD). POSITION UNDER ALL STRAPS AT POINTS OF CONTACT WITH THE CONTAINERS.

(11) ANTI-CHAFING MATERIAL (AS REQD). PLACE SO AS TO BE BETWEEN THE SKIDS OF AN UPPER CONTAINER AND THE COVER ASSEMBLY OF A LOWER CONTAINER. SEE SPECIAL NOTE 3 ON PAGE 5.

32-UNIT (CNU-335A/E) LOAD ON A 40'-0" LONG BY 8'-0" WIDE FLATBED TRAILER

SPECIAL NOTES:

1. A 32-CONTAINER LOAD OF BSU-49/B RETARDERS PACKED IN CNU-335A/E CONTAINERS IS SHOWN ON A 40'-0" LONG BY 8'-0" WIDE FLATBED TRAILER. LONGER OR WIDER TRAILERS MAY BE USED.
2. THE DEPICTED LOAD MAY BE ADJUSTED TO SATISFY THE QUANTITY OF ITEMS TO BE SHIPPED. A LOAD MAY BE REDUCED IN MULTIPLES OF TWO CONTAINERS OR ENTIRE LOAD UNITS OF FOUR CONTAINERS.
3. ANTI-CHAFING MATERIAL, SUCH AS CORRUGATED OR THIN SOLID FIBERBOARD SHOULD BE PLACED BETWEEN THE AREAS OF CONTACT BETWEEN THE SKIDS (RUNNERS) OF AN UPPER CONTAINER AND THE COVER ASSEMBLY OF A LOWER CONTAINER. TEN FOLDS OF 50-POUND BASE WEIGHT OR HEAVIER KRAFT PAPER COULD BE SUBSTITUTED FOR THE FIBERBOARD MATERIAL. REGARDLESS OF THE TYPE OF ANTI-CHAFING MATERIAL USED, IT SHOULD BE FASTENED TO THE COVER ASSEMBLY OF A LOWER CONTAINER BY TAPING THE ENDS OF THE MATERIAL TO THE SIDEWALLS OF THE LOWER CONTAINER WITH SHORT PIECES OF SUITABLE TAPE.



CAP

NOTE: FOR A LESS-THAN-TRAILER-LOAD AS SHOWN ON PAGE 12, REDUCE THE LENGTHS OF THE TOP AND SIDE PIECES TO 48" AND NAIL THE TOP PIECE TO THE SIDE PIECE W/5-10d NAILS.

BILL OF MATERIAL

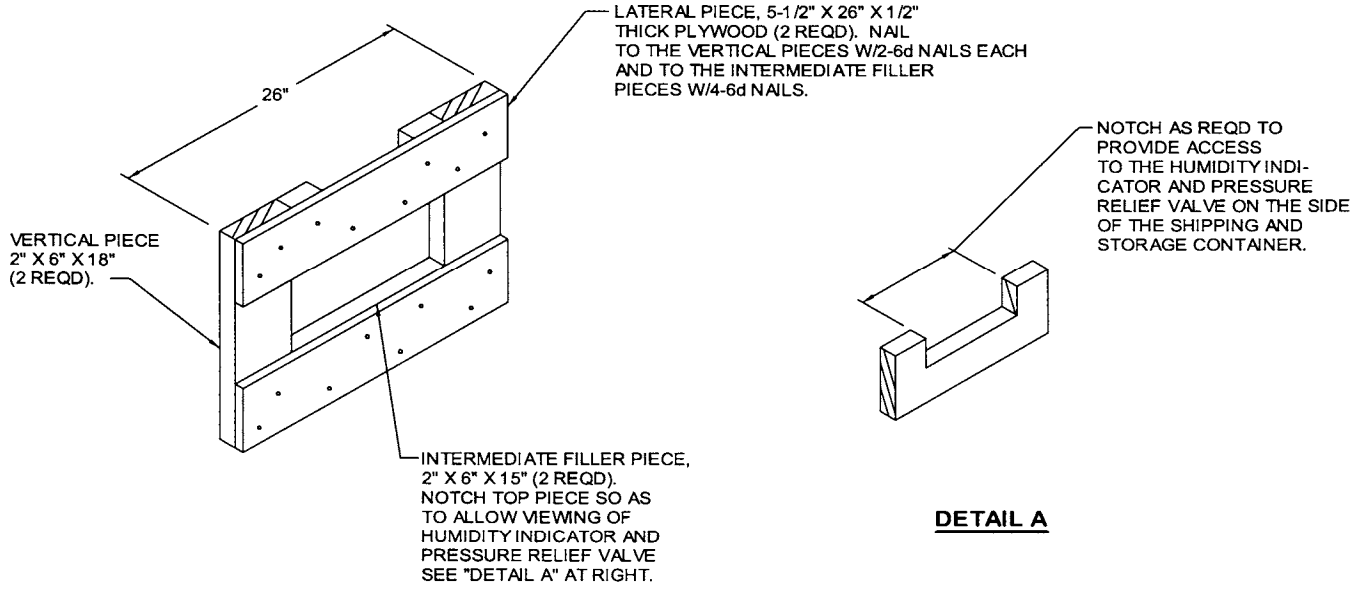
LUMBER	LINEAR FEET	BOARD FEET
2" X 3" 2" X 4" 2" X 6"	64 64 62	32 43 62
NAILS	**NO. REQD**	**POUNDS**
10d (3") 20d (4")	214 14	3-1/4 1/2

STEEL STRAPPING, 1-1/4" ----- 616' REQD --------- 88 LBS
SEAL FOR 1-1/4" STRAPPING ---- 40 REQD ---------- 2 LBS
STEEL STRAPPING, 2" --------- 248' REQD --------- 83 LBS
SEAL FOR 2" STRAPPING -------- 48 REQD --------- 10 LBS
STAPLE FOR 2" STRAPPING ----- 16 REQD ----------- NIL
ANTI-CHAFING MATERIAL ------ AS REQD ----------- NIL

LOAD AS SHOWN

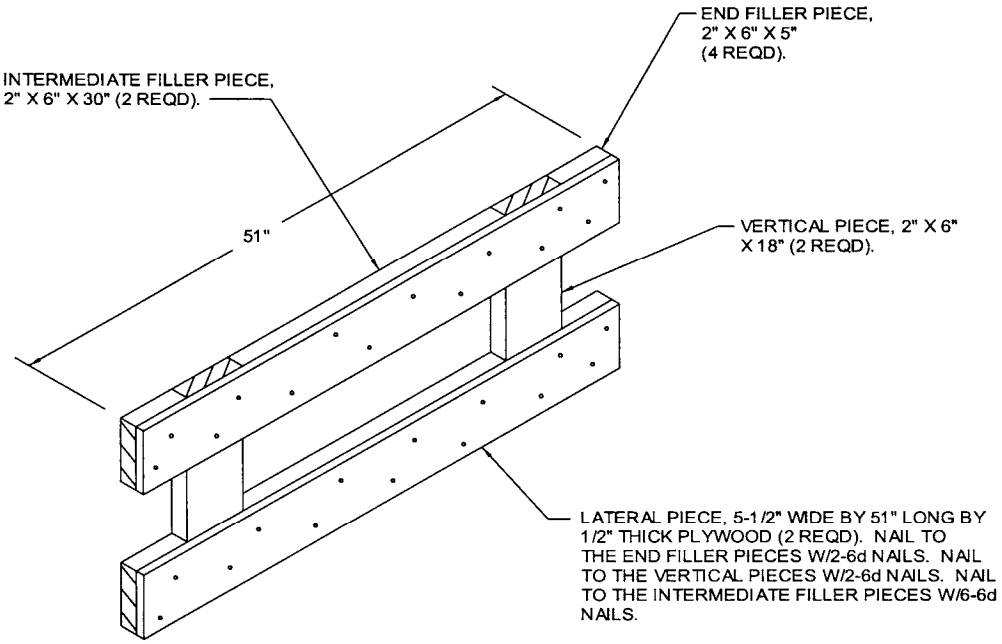
ITEM	QUANTITY	WEIGHT (APPROX)
CNU-335A/E	32	33,216 LBS *
DUNNAGE		461 LBS
TOTAL WEIGHT		34,677 LBS (APPROX)

* CNU-336A/E CONTAINERS WILL WEIGH 17,888 LBS.



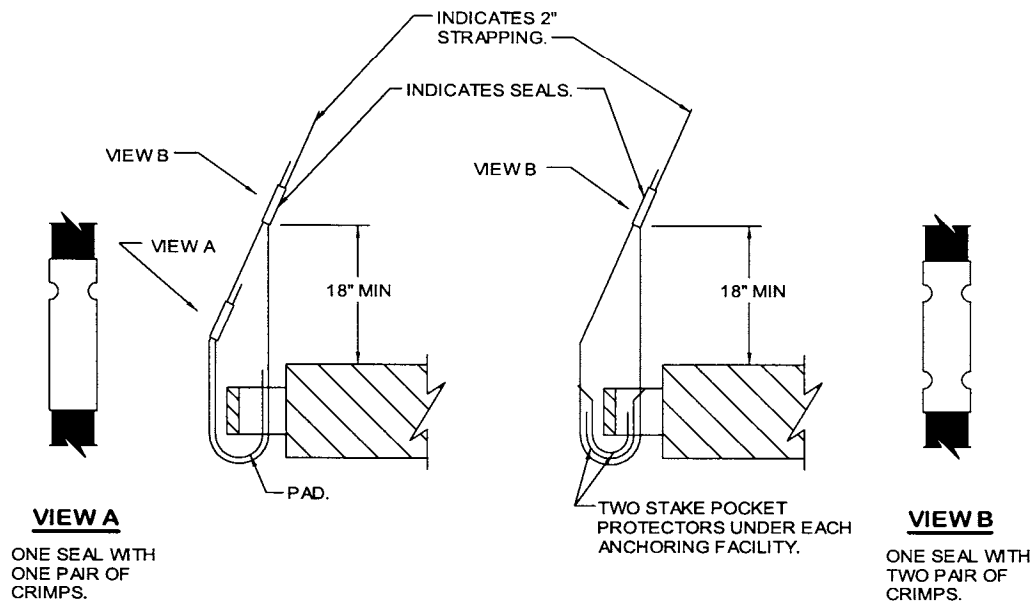
DETAIL A

SIDE FILL ASSEMBLY A



SIDE FILL ASSEMBLY B

NOTE: THE DUNNAGE ASSEMBLIES DETAILED ON THIS PAGE ARE DESIGNED FOR USE WITH THE CNU-335/E AND CNU-336/E CONTAINERS. THEY ARE NOT TO BE USED WITH THE CNU-335A/E OR CNU-336A/E CONTAINERS. SEE THE CONTAINER DETAILS ON PAGE 3.



VIEW A

ONE SEAL WITH ONE PAIR OF CRIMPS.

VIEW B

ONE SEAL WITH TWO PAIR OF CRIMPS.

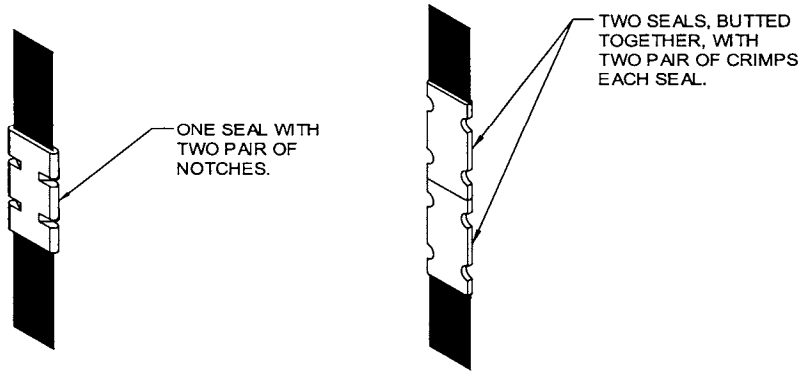
DETAIL A

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



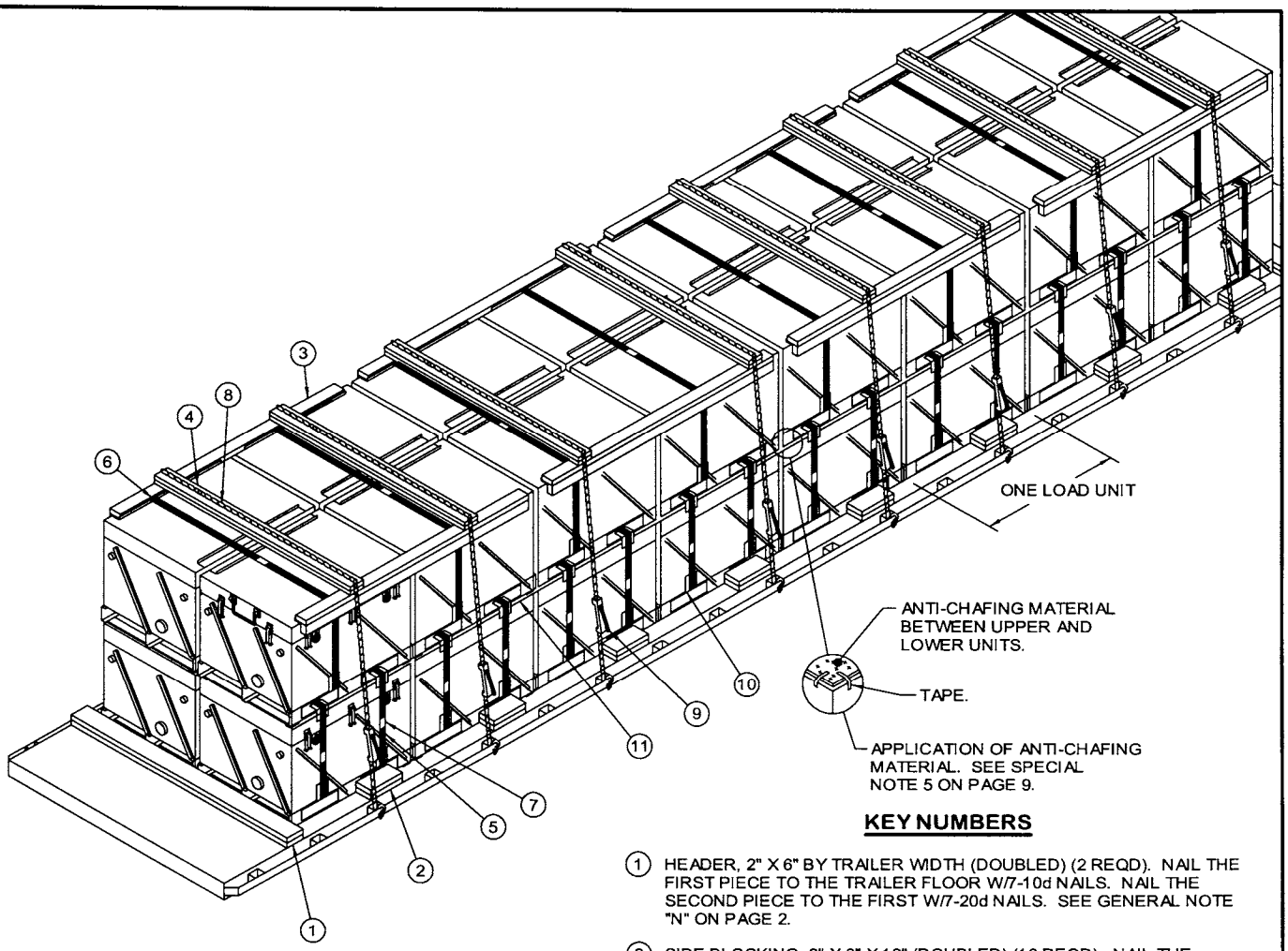
STRAP JOINT A

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



ISOMETRIC VIEW

KEY NUMBERS

(1) HEADER, 2" X 6" BY TRAILER WIDTH (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 "N" ON PAGE 2.

(2) SIDE BLOCKING, 2" X 6" X 12" (DOUBLED) (16 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(3) CAP (8 REQD). SEE THE DETAIL ON PAGE 5. POSITION AS SHOWN.

(4) CHAIN BOARD, 2" X 6" X LOAD WIDTH (DOUBLED) (8 REQD). NAIL THE FIRST PIECE TO THE CAP W/2-10d NAILS AT EACH END. LAMINATE THE SECOND PIECE TO THE FIRST W/5-10d NAILS. SEE SPECIAL NOTE 4 ON PAGE 9.

(5) UNITIZING STRAP, 1-1/4" X .035" OR .031" X 14'-0" LONG STEEL STRAPPING (32 REQD, 2 PER STACK). INSTALL THROUGH FORK TINE OPENINGS OF UPPER AND LOWER CONTAINERS.

(6) BUNDLING STRAP, 1-1/4" X .035" OR .031" X 21'-0" LONG STEEL STRAPPING (8 REQD, 1 PER LOAD UNIT). INSTALL TO ENCIRCLE, THRU FORK TINE OPENINGS, TWO LATERALLY ADJACENT CONTAINERS IN THE TOP LAYER AS SHOWN. STRAPS SHOULD BE POSITIONED AS CLOSELY AS POSSIBLE TO THE CENTER OF A LOAD UNIT AS THE FORK TINE OPENINGS PERMIT.

(7) SEAL FOR 1-1/4" STRAPPING (40 REQD, 1 PER STRAP). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES. SEE GENERAL NOTE "L" ON PAGE 2 AND "END-OVER-END LAP JOINT DETAILS" ON PAGE 7.

(8) 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 9 AND SPECIAL NOTE 3 ON PAGE 9.

(9) 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 (8), TO THE CHAIN BOARD, PIECE MARKED (4), W/4-20d NAILS BY DRIVING EACH NAIL INTO THE CHAIN BOARD THRU AN OPENING IN A CHAIN LINK AND BENDING IT OVER THE LINK.

(10) ANTI-CHAFING NEUTRAL BARRIER MATERIAL (AS REQD). POSITION UNDER ALL STRAPS AT POINTS OF CONTACT WITH THE CONTAINERS.

(11) ANTI-CHAFING MATERIAL (AS REQD). PLACE SO AS TO BE BETWEEN THE SKIDS OF AN UPPER CONTAINER AND THE COVER ASSEMBLY OF A LOWER CONTAINER. SEE SPECIAL NOTE 5 ON PAGE 9.

32-UNIT LOAD ON A 40'-0" LONG BY 8'-0" WIDE FLATBED TRAILER (CHAIN TIEDOWN METHOD)

SPECIAL NOTES:

1. A 32-CONTAINER LOAD IS SHOWN ON A 40'-0" LONG BY 8'-0" WIDE FLATBED TRAILER. LONGER OR WIDER TRAILERS MAY BE USED.
2. THE DEPICTED LOAD MAY BE ADJUSTED TO SATISFY THE QUANTITY OF ITEMS TO BE SHIPPED. A LOAD MAY BE REDUCED IN MULTIPLES OF TWO CONTAINERS OR ENTIRE LOAD UNITS OF FOUR CONTAINERS.
3. THE TRANSPORTING VEHICLE OPERATOR SHOULD BE INSTRUCTED TO PERIODICALLY INSPECT THE TIEDOWN CHAINS AND LOAD BINDERS DURING TRANSPORT AND TIGHTEN IF NECESSARY.
4. CHAIN BOARDS, PIECES MARKED ④, MUST BE PLACED ON TOP OF THE CONTAINERS WHEREVER THE CHAIN PASSES OVER THE CONTAINER.
5. ANTI-CHAFING MATERIAL, SUCH AS CORRUGATED OR THIN SOLID FIBERBOARD SHOULD BE PLACED BETWEEN THE AREAS OF CONTACT BETWEEN THE SKIDS (RUNNERS) OF AN UPPER CONTAINER AND THE COVER ASSEMBLY OF A LOWER CONTAINER. TEN FOLDS OF 50-POUND BASE WEIGHT OR HEAVIER KRAFT PAPER COULD BE SUBSTITUTED FOR THE FIBERBOARD MATERIAL. REGARDLESS OF THE TYPE OF ANTI-CHAFING MATERIAL USED, IT SHOULD BE FASTENED TO THE COVER ASSEMBLY OF A LOWER CONTAINER BY TAPING THE ENDS OF THE MATERIAL TO THE SIDEWALLS OF THE LOWER CONTAINER WITH SHORT PIECES OF SUITABLE TAPE.

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 ARE MET AND THE PROCEDURES CONTAINED ON PAGES 8 AND 9 ARE FOLLOWED.

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.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 3" 2" X 4" 2" X 6"	64 64 169	32 43 169
NAILS	NO. REQD	POUNDS
10d (3") 20d (4")	286 46	4-1/2 1-1/2

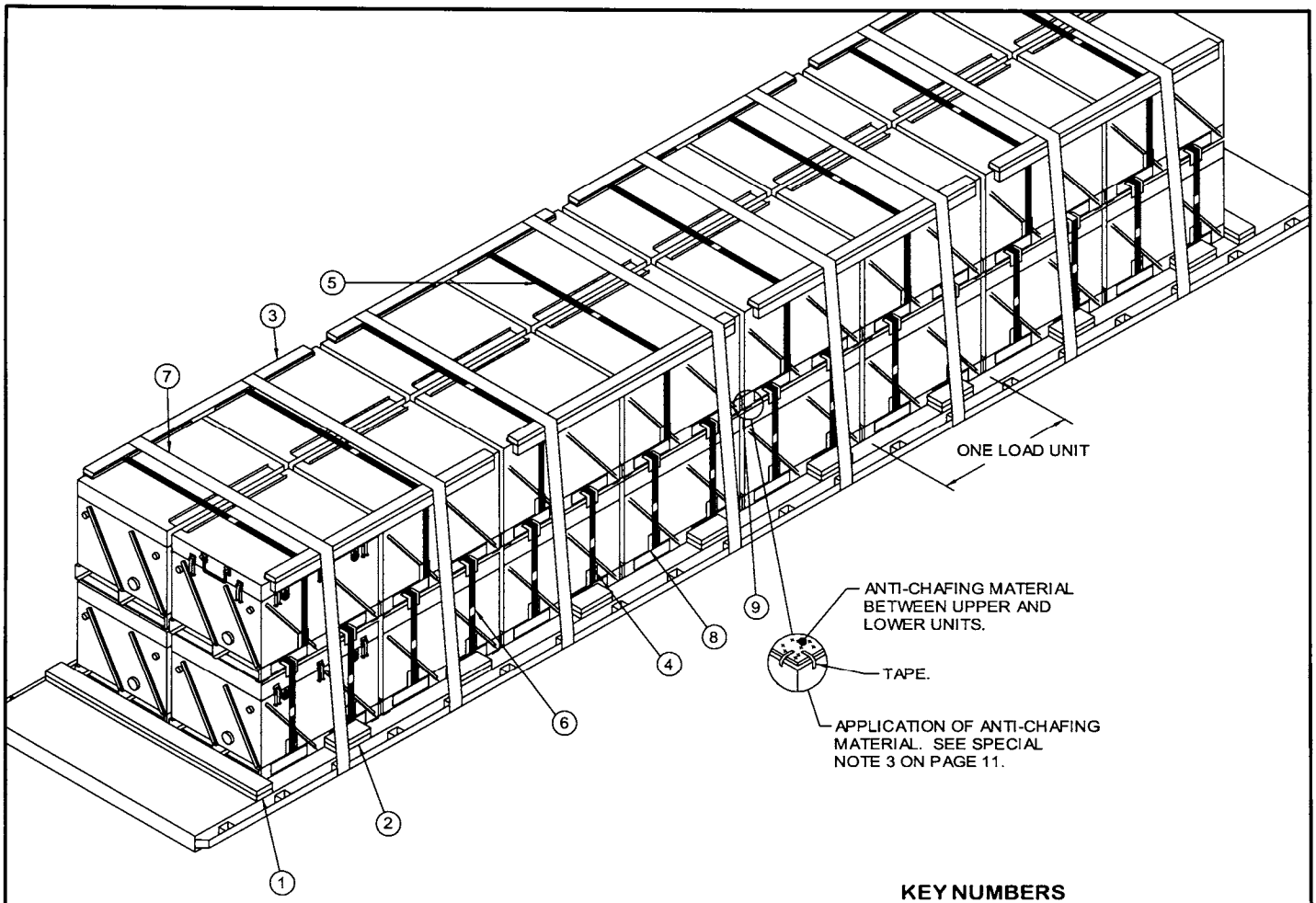
STEEL STRAPPING, 1-1/4" ----- 616' REQD -------- 88 LBS
SEAL FOR 1-1/4" STRAPPING ---- 40 REQD --------- 2 LBS
CHAIN, BINDING, 5/16" --------190' REQD ------- 225 LBS
BINDER, LOAD ---------- 8 REQD --------- 48 LBS
ANTI-CHAFING MATERIAL ------ AS REQD ---------- NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CNU-335A/E	32	33,216 LBS *
DUNNAGE		856 LBS
TOTAL WEIGHT		34,072 LBS (APPROX)

* CNU-336A/E CONTAINERS WILL WEIGH 17,888 LBS.

32-UNIT LOAD ON A 40'-0" LONG BY 8'-0" WIDE FLATBED TRAILER (CHAIN TIEDOWN METHOD)



ISOMETRIC VIEW

KEY NUMBERS

(1) HEADER, 2" X 6" BY TRAILER WIDTH (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 "N" ON PAGE 2.

(2) SIDE BLOCKING, 2" X 6" X 12" (DOUBLED) (16 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(3) CAP (8 REQD). SEE THE DETAIL ON PAGE 5. POSITION AS SHOWN.

(4) UNITIZING STRAP, 1-1/4" X .035" OR .031" X 14'-0" LONG STEEL STRAPPING (32 REQD, 2 PER STACK). INSTALL THROUGH FORK TINE OPENINGS OF UPPER AND LOWER CONTAINERS.

(5) BUNDLING STRAP, 1-1/4" X .035" OR .031" X 21'-0" LONG STEEL STRAPPING (8 REQD, 1 PER LOAD UNIT). INSTALL TO ENCIRCLE, THRU FORK TINE OPENINGS, TWO LATERALLY ADJACENT CONTAINERS IN THE TOP LAYER AS SHOWN. STRAPS SHOULD BE POSITIONED AS CLOSELY AS POSSIBLE TO THE CENTER OF A LOAD UNIT AS THE FORK TINE OPENINGS PERMIT.

(6) SEAL FOR 1-1/4" STRAPPING (40 REQD, 1 PER STRAP). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES. SEE GENERAL NOTE "L" ON PAGE 2 AND "END-OVER-END LAP JOINT DETAILS" ON PAGE 7.

(7) WEB STRAP ASSEMBLY (8 REQD). 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 11.

(8) ANTI-CHAFING NEUTRAL BARRIER MATERIAL (AS REQD). POSITION UNDER ALL STRAPS AT POINTS OF CONTACT WITH THE CONTAINERS.

(9) ANTI-CHAFING MATERIAL (AS REQD). PLACE SO AS TO BE BETWEEN THE SKIDS OF AN UPPER CONTAINER AND THE COVER ASSEMBLY OF A LOWER CONTAINER. SEE SPECIAL NOTE 3 ON PAGE 11.

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. 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.

(SPECIAL PROVISIONS CONTINUED AT RIGHT)

SPECIAL NOTES:

1. A 32-CONTAINER LOAD OF BSU-49/B RETARDERS PACKED IN CNU-335A/E CONTAINERS IS SHOWN ON A 40'-0" LONG BY 8'-0" WIDE FLATBED TRAILER. LONGER OR WIDER TRAILERS MAY BE USED.
2. THE DEPICTED LOAD MAY BE ADJUSTED TO SATISFY THE QUANTITY OF ITEMS TO BE SHIPPED. A LOAD MAY BE REDUCED IN MULTIPLES OF TWO CONTAINERS OR ENTIRE LOAD UNITS OF FOUR CONTAINERS.
3. ANTI-CHAFING MATERIAL, SUCH AS CORRUGATED OR THIN SOLID FIBERBOARD SHOULD BE PLACED BETWEEN THE AREAS OF CONTACT BETWEEN THE SKIDS (RUNNERS) OF AN UPPER CONTAINER AND THE COVER ASSEMBLY OF A LOWER CONTAINER. TEN FOLDS OF 50-POUND BASE WEIGHT OR HEAVIER KRAFT PAPER COULD BE SUBSTITUTED FOR THE FIBERBOARD MATERIAL. REGARDLESS OF THE TYPE OF ANTI-CHAFING MATERIAL USED, IT SHOULD BE FASTENED TO THE COVER ASSEMBLY OF A LOWER CONTAINER BY TAPING THE ENDS OF THE MATERIAL TO THE SIDEWALLS OF THE LOWER CONTAINER WITH SHORT PIECES OF SUITABLE TAPE.

(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 3" 2" X 4" 2" X 6"	64 64 62	32 43 62
NAILS	**NO. REQD**	**POUNDS**
10d (3") 20d (4")	214 14	3-1/4 1/2

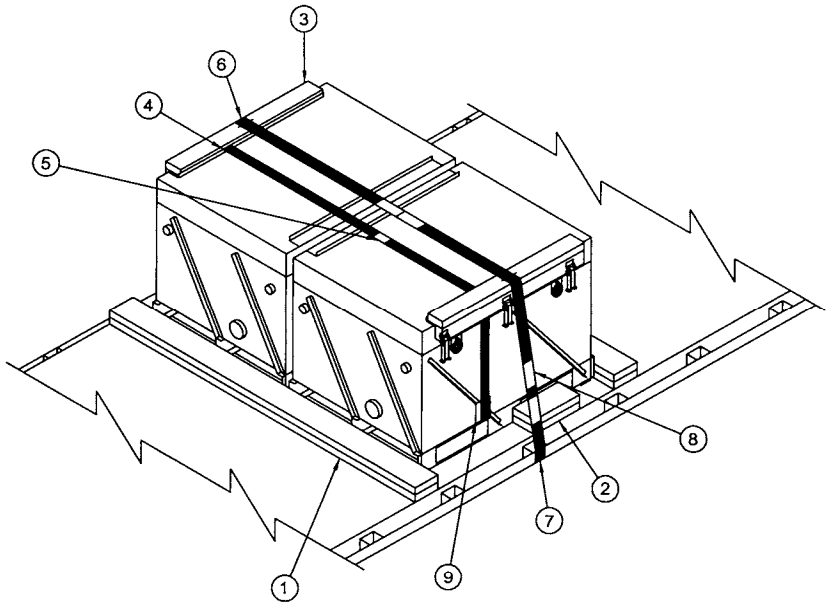
STEEL STRAPPING, 1-1/4" ----- 616' REQD -------- 88 LBS
SEAL FOR 1-1/4" STRAPPING ---- 40 REQD --------- 2 LBS
WEB STRAP ASSEMBLIES ---------- 8 REQD
ANTI-CHAFING MATERIAL ------ AS REQD ---------- NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CNU-335A/E	32	33,216 LBS *
DUNNAGE		368 LBS
TOTAL WEIGHT		33,584 LBS (APPROX)

* CNU-336A/E CONTAINERS WILL WEIGH 17,795 LBS.

32-UNIT LOAD ON A 40'-0" LONG BY 8'-0" WIDE FLATBED TRAILER (WEB STRAP TIEDOWN METHOD)



ISOMETRIC VIEW

SPECIAL NOTES:

1. THE LTL LOAD ABOVE DEPICTS A 2-UNIT LOAD ON AN 8'-0" WIDE FLATBED TRAILER HAVING A NAILABLE FLOOR. TRAILERS OF OTHER WIDTHS MAY BE USED.
2. FOR A 1-UNIT LOAD, REDUCE LENGTH OF THE HEADER, PIECE MARKED ①, TO 48" NAILED W/3-10d NAILS IN THE FIRST PIECE AND W/3-20d NAILS IN THE SECOND PIECE, REMOVE PIECES MARKED ④ AND ⑤, AND SHORTEN THE HOLD-DOWN STRAP, PIECE MARKED ⑥, TO 22'-0".
3. SEE THE "SPECIAL PROVISIONS FOR CHAIN TIEDOWN" ON PAGE 9 FOR THE USE OF CHAINS IN LIEU OF STEEL STRAPPING. SEE THE "SPECIAL PROVISIONS FOR WEB STRAP TIEDOWN" ON PAGE 11 FOR THE USE OF WEB STRAPS IN LIEU OF STEEL STRAPPING.

KEY NUMBERS

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

② SIDE BLOCKING, 2" X 6" X 12" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

③ CAP (2 REQD). SEE THE DETAIL AND NOTE ON PAGE 5. POSITION AS SHOWN.

④ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 21'-0" LONG STEEL STRAPPING (1 REQD). INSTALL TO ENCIRCLE, THRU FORK TINE OPENINGS, THE TWO LATERALLY ADJACENT CONTAINERS AS SHOWN. THE STRAP SHOULD BE POSITIONED AS CLOSELY AS POSSIBLE TO THE CENTER OF A LOAD UNIT AS THE FORK TINE OPENINGS PERMIT.

⑤ SEAL FOR 1-1/4" STRAPPING (1 REQD, 1 PER STRAP). CRIMP WITH TWO PAIR OF NOTCHES. SEE GENERAL NOTE "L" ON PAGE 2 AND "END-OVER-END LAP JOINT DETAILS" ON PAGE 7.

⑥ HOLD-DOWN STRAP, 2" X .050" OR .044" X 23'-0" LONG STEEL STRAPPING (1 REQD). INSTALL EACH STRAP FROM TWO 11'-6" LONG PIECES. STAPLE TO EACH CAP W/1-STAPLE.

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

⑧ SEAL FOR 2" STEEL STRAPPING (6 REQD). DOUBLE CRIMP EACH SEAL, EXCEPT THOSE USED TO SECURE THE PADS, PIECES MARKED ⑦. SEE GENERAL NOTE "L" ON PAGE 2.

⑨ ANTI-CHAFING NEUTRAL BARRIER MATERIAL (AS REQD). POSITION UNDER ALL STRAPS AT POINTS OF CONTACT WITH THE CONTAINERS.

TYPICAL LTL (2-UNIT LOAD)