# LOADING AND BRACING⊕ IN END OPENING ISO CONTAINER AND ON FLATBED TRAILER OF AMMUNITION ITEMS PACKED IN STORAGE AND TRANSPORT FRAMES (STF)

INDEX





**⊕ THE PROCEDURES SHOWN HEREIN ARE APPLICABLE TO LOADS THAT ARE TO BE SHIPPED BY TRAILER/CONTAINER-ON-FLATCAR (T/COFC) RAIL, MOTOR, OR WATER CARRIERS (FOR ISO CONTAINER LOADS) AND HIGHWAY MOVEMENTS (FOR FLATBED TRAILER LOADS).**

## U.S. ARMY MATERIEL COMMAND DRAWING

APPROVED, U.S. ARMY
JOINT MUNITIONS COMMAND

RUS.ALLEN.J.1230354282 — Digitally signed by RUS.ALLEN.J.1230354282 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=RUS.ALLEN.J.1230354282 Date: 2016.02.17 10:51:02 -06'00'

**CAUTION: VERIFY PRIOR TO USE AT HTTPS://MHP.REDSTONE.ARMY.MIL THAT THIS IS THE MOST CURRENT VERSION OF THIS DOCUMENT. THIS IS PAGE 1 OF 14.**

**DO NOT SCALE**

**FEBRUARY 2016**

| | | |
|---|---|---|
| DESIGN ENGINEER | BASIC | RICHARD GARSIDE |
| | REV. | |

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

SHIMP.UPTON.R.1231257183 — Digitally signed by SHIMP.UPTON.R.1231257183 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=SHIMP.UPTON.R.1231257183 Date: 2016.02.17 16:26:23 -06'00'

U.S. ARMY DEFENSE AMMUNITION CENTER

| | | |
|---|---|---|
| ENGINEERING DIVISON | | FIEFFER.LAURA.A.1230375727 — Digitally signed by FIEFFER.LAURA.A.1230375727 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=FIEFFER.LAURA.A.1230375727 Date: 2015.11.30 15:06:44 -06'00' |
| TEST ENGINEER | | TRAN.CANH.THANG.1385731813 — Digitally signed by TRAN.CANH.THANG.1385731813 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=TRAN.CANH.THANG.1385731813 Date: 2015.12.01 08:57:59 -06'00' |
| TEST REPORT | 12-26 | |
| EXPLOSIVE SAFETY DIRECTORATE | | TIRONE.JOSEPH.ANDREW.1026683749 — Digitally signed by TIRONE.JOSEPH.ANDREW.1026683749 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=TIRONE.JOSEPH.ANDREW.1026683749 Date: 2016.01.19 08:41:18 -06'00' |

| CLASS | DIVISION | DRAWING | FILE |
|---|---|---|---|
| 19 | 48 | 4350 | 11-15A1000 |

**PROJECT** CA 369-03

## 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 SPECIFIED OUTLOADING PROCEDURES ARE APPLICABLE TO LOADS OF STORAGE AND TRANSPORT FRAMES (STF) PACKED WITH AMMUNITION ITEMS. SUBSEQUENT REFERENCE TO STF CONTAINER HEREIN MEANS STF CONTAINER WITH AMMUNITION ITEMS. SEE PAGE 5 AND AMC DRAWING 19-48-4349-16A1001 FOR DETAILS OF THE LOADED STF. **CAUTION:** REGARDLESS OF THE QUANTITY OF STF CONTAINERS TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF THE END OPENING ISO CONTAINER MUST NOT BE EXCEEDED.

C. THE LOADS AS SHOWN ON PAGES 4 AND 7 ARE BASED ON A 4,700 POUND 20' LONG BY 8' WIDE BY 8'-6" HIGH END OPENING ISO CONTAINER WITH INSIDE DIMENSIONS OF 19'-4" LONG BY 92" WIDE BY 93" HIGH, WITH A MAXIMUM GROSS WEIGHT OF 52,910 POUNDS. OLDER/OTHER CONTAINERS MAY HAVE A TOTAL INSIDE HEIGHT OF 95", BUT A CLEAR HEIGHT UNDER THE ROOF BOWS OF 93", VERIFY INSIDE CONTAINER HEIGHT PRIOR TO FABRICATING DUNNAGE. THE LOAD IS DESIGNED FOR TRAILER/CONTAINER-ON-FLATCAR (T/COFC) SHIPMENT, HOWEVER, THE LOAD AS DESIGNED CAN ALSO BE MOVED BY OTHER SURFACE MODES OF TRANSPORT. **NOTICE:** OTHER CONTAINERS OF THE SAME DESIGN CONFIGURATION CAN BE USED.

D. THE LOADS AS SHOWN ON PAGES 8, 10 AND 12 ARE BASED ON 48'-0" LONG BY 8'-0" WIDE FLATBED TRAILERS. TRAILERS OF OTHER LENGTHS AND WIDTHS 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 FOR THE TRANSPORT OF THE DESIGNATED ITEM IS THE RESPONSIBILITY OF THE ORIGINATING CARRIER AND THE SHIPPER AND MUST COMPLY WITH AR 55-355, CHAPTER 29, FOR EXPLOSIVES AND OTHER DANGEROUS ARTICLES, IN FULL. ONLY VEHICLES IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPLICABLE REGULATORY DOCUMENTS WILL BE SELECTED FOR USE.

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. WHEN LOADING STF INTO ISO CONTAINERS, THEY ARE TO BE POSITIONED SO AS TO ACHIEVE A TIGHT LOAD (TIGHT AGAINST THE DUNNAGE ASSEMBLIES). THE UNBLOCKED SPACE ACROSS THE WIDTH OF A LOAD BAY IS NOT TO EXCEED 1-1/2". EXCESSIVE SLACK CAN BE ELIMINATED FROM A LOAD BY LAMINATING ADDITIONAL PIECES OF APPROPRIATE THICKNESS TO THE SIDE BLOCKING. NAIL EACH ADDITIONAL PIECE W/1 APPROPRIATELY SIZED NAIL EVERY 12". THE LOADS MUST BE AS TIGHT AS POSSIBLE LONGITUDINALLY, BUT THE VOID MUST NOT EXCEED 3/4" OVERALL. EXCESSIVE SLACK CAN BE ELIMINATED BY INSTALLING ADDITIONAL FILL MATERIAL OF APPROPRIATE THICKNESS TO THE DOOR POST VERTICALS. SEE KEY NUMBER 6 ON PAGE 4.

J. THIS DRAWING DEPICTS A FIVE UNIT LOAD IN AN ISO CONTAINER, WITH A MAXIMUM LADING WEIGHT OF 34,464 POUNDS. DUE TO RESTRICTIONS ENACTED BY THE SURFACE DEPLOYMENT AND DISTRIBUTION COMMAND AND THE JOINT MUNITIONS COMMAND, ANY ISO CONTAINER DESTINED TO BE MOVED OVER CONUS HIGHWAYS CAN NOT EXCEED 40,000 POUNDS GROSS WEIGHT. FOR CONFIGURATIONS OF LESS THAN FIVE STF CONTAINERS, SEE THE "LESS-THAN-FULL LOAD PROCEDURE" ON PAGE 7 FOR DETAILS.

K. IN SOME ISO CONTAINERS THERE IS A SLOT AT THE CORNERS OF THE FORWARD WALL. PIECES OF DUNNAGE MATERIAL MUST BE LAMINATED TO THE VERTICAL PIECES ON THE FORWARD BLOCKING ASSEMBLY TO PROVIDE A FLAT SURFACE FOR THE VERTICAL PIECES. A PIECE OF 2" X 4", 2" X 3" OR A SPECIAL WIDTH PIECE CUT-TO-FIT CAN BE USED. THIS FILL PIECE WILL BE NAILED WITH ONE APPROPRIATELY SIZED NAIL EVERY 12". NOTE THAT SOME CONTAINERS ARE EQUIPPED WITH "TIE-BARS" IN THE CORNER SLOT, WHICH PRECLUDE THE USE OF A FULL HEIGHT FILL PIECE. WHEN "TIE-BARS" ARE PRESENT, THE FILL PIECE MUST BE INSTALLED IN SEGMENTS DESIGNED TO FIT BETWEEN THE "TIE-BARS" VERTICALLY. THE FILL PIECE(S) IS NOT REQUIRED WHEN THE CORNER PORTIONS OF THE CONTAINER FORWARD WALL ARE SMOOTH AND FLAT. DO NOT ALLOW ANY DUNNAGE ASSEMBLY TO CONTACT THE CONTAINER FORWARD WALL, ONLY THE CORNER POSTS OF THE CONTAINER SHOULD BE USED FOR FORWARD LONGITUDINAL BLOCKING.

L. WHETHER AN ISO CONTAINER IS FULL OR IS LOADED WITH A REDUCED QUANTITY OF STF CONTAINERS, THE LENGTHWISE CENTER OF GRAVITY OF THE LOAD MUST BE WITHIN 12", IN EITHER DIRECTION, OF THE MID-POINT OF THE ISO CONTAINER.

M. SIX UNIVERSAL LOAD RETAINERS, AS DEPICTED IN THE LOADS ON PAGES 4 AND 7, ARE REQUIRED. REFER TO DAC DRAWING ACV00682 FOR DETAILS OF THE UNIVERSAL LOAD RETAINER CONSTRUCTION, AND TO DEPARTMENT OF THE ARMY DRAWING DA-116 FOR DETAILS FOR INSTALLATION TO THE DOOR POST VERTICAL, PLACEMENT INTO THE CONTAINER, AND FOR OTHER METHODS OF REAR-OF-LOAD RESTRAINT.

N. **CAUTION:** DO NOT NAIL DUNNAGE MATERIAL TO THE ISO CONTAINER WALLS OR FLOOR. ALL NAILING WILL BE WITHIN THE DUNNAGE.

(CONTINUED AT RIGHT)

(GENERAL NOTES CONTINUED)

O. PORTIONS OF THE ISO CONTAINER DEPICTED WITHIN THIS DRAWING, SUCH AS THE SIDEWALL, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.

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 INTERMODAL 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 FOLLOW:

1. A LOADED ISO CONTAINER MUST BE ON A CHASSIS EQUIPPED WITH TWO BOGIE ASSEMBLIES WHEN BEING MOVED IN TOFC SERVICE.

2. THE LOAD LIMIT OF A T/COFC RAILCAR MUST NOT BE EXCEEDED, NOR WILL A CAR BE LOADED SO THAT THE TRUCK UNDER ONE END OF THE CAR CARRIES MORE THAN ONE-HALF OF THE LOAD LIMIT FOR THAT CAR.

R. DURING INTRASTATE AND/OR INTERSTATE MOVES BY MOTOR CARRIER, A PROPER CHASSIS OR MODIFIED FLATBED TRAILER MUST BE USED TO PRECLUDE VIOLATION OF ONE OR MORE "WEIGHT LAWS" APPLICABLE TO THE STATE OR STATES INVOLVED.

S. 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.

T. **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 THE TRAILER ANCHOR DEVICES ARE NOT PROPERLY POSITIONED TO RECEIVE 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, STEEL 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 OR PADS ON ALL SHARP EDGES. NEITHER CHAINS NOR WEB STRAPS WILL BE APPLIED TO FORM A COMPLETE LOOP THAT ENCOMPASSES THE LADING AND THE TRAILER FRAME AND/OR BED.

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

V. A STAGGERED NAILING PATTERN WILL BE USED WHEREVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES, WHEN LAMINATING DUNNAGE, OR WHEN DUNNAGE IS NAILED TO THE FLOOR OF THE TRANSPORTING VEHICLE. 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 THE PIECE ONTO OR RIGHT BESIDE A NAIL IN A LOWER PIECE.

W. THE NUMBER OF LADING UNITS MAY BE ADJUSTED TO FIT THE SIZE OF THE TRAILER TO BE LOADED OR THE QUANTITY TO BE SHIPPED. THE APPROVED METHODS SHOWN HEREIN MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING AND STAYING OF THE DESIGNATED ITEM. SEE THE "LESS-THAN-FULL LOAD PROCEDURE" ON PAGE 7 FOR SPECIFIC GUIDANCE IN REDUCING AN ISO CONTAINER LOAD.

X. THESE PROCEDURES CAN ALSO BE UTILIZED FOR THE SHIPMENT OF THE STF CONTAINERS WHEN THEY ARE LOADED AT LESS THAN CAPACITY OR WHEN THEY ARE EMPTY.

Y. 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 STRAP JOINT DETAILS ON PAGE 13 FOR GUIDANCE.

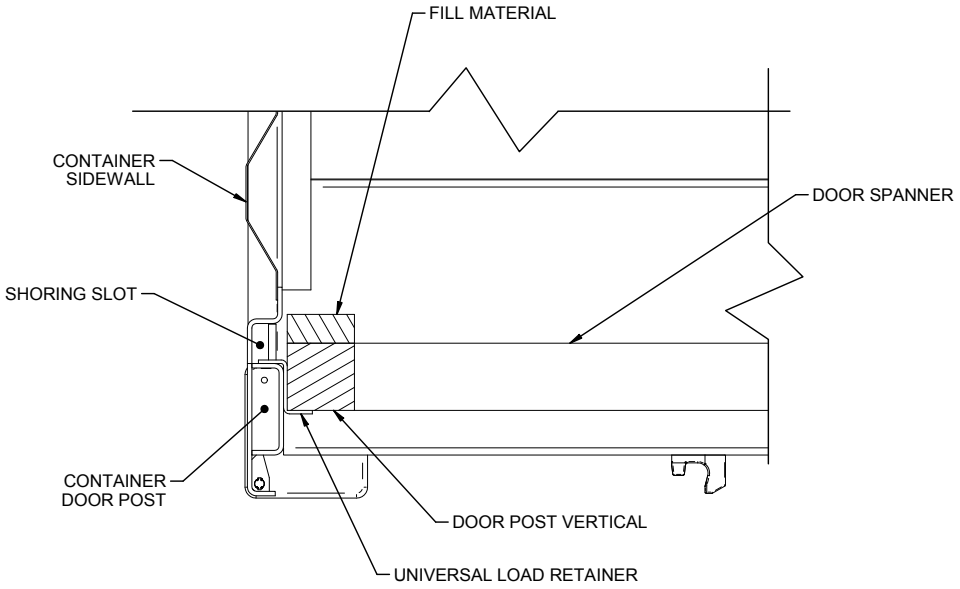
Z. ANTI-CHAFING MATERIAL MAY BE INSTALLED AT POINTS OF CONTACT BETWEEN STF CONTAINERS, BETWEEN STF CONTAINERS AND THE END OPENING ISO CONTAINER, OR BETWEEN THE STF CONTAINERS AND STEEL STRAPPING OR CHAINS, IF DESIRED, TO PREVENT CHAFING DAMAGE TO STF CONTAINER PAINT AND MARKINGS. STRIPS OF ANTI-CHAFING MATERIAL MAY BE TAPED OR STRING-TIED TO THE CONTAINER, OR IT CAN BE FORMED INTO STRAP OR CHAIN ENCIRCLING TUBES BY WINDING MATERIAL AROUND THE STRAP OR CHAIN TO FORM A SELF-HOLDING UNIT.

(CONTINUED ON PAGE 3)

(GENERAL NOTES CONTINUED FROM PAGE 2)

AA. 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.

BB. 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.

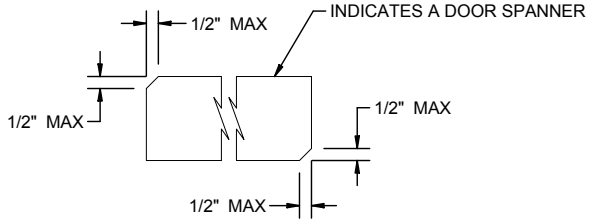



## DETAIL A

A PARTIAL PLAN VIEW OF THE LEFT REAR PORTION OF THE CONTAINER IS SHOWN DEPICTING THE PROPER POSITION OF THE DOOR POST VERTICAL RETAINER AND ADJACENT DUNNAGE PIECES. THE REARMOST STF HAS BEEN OMITTED FOR CLARITY PURPOSES.

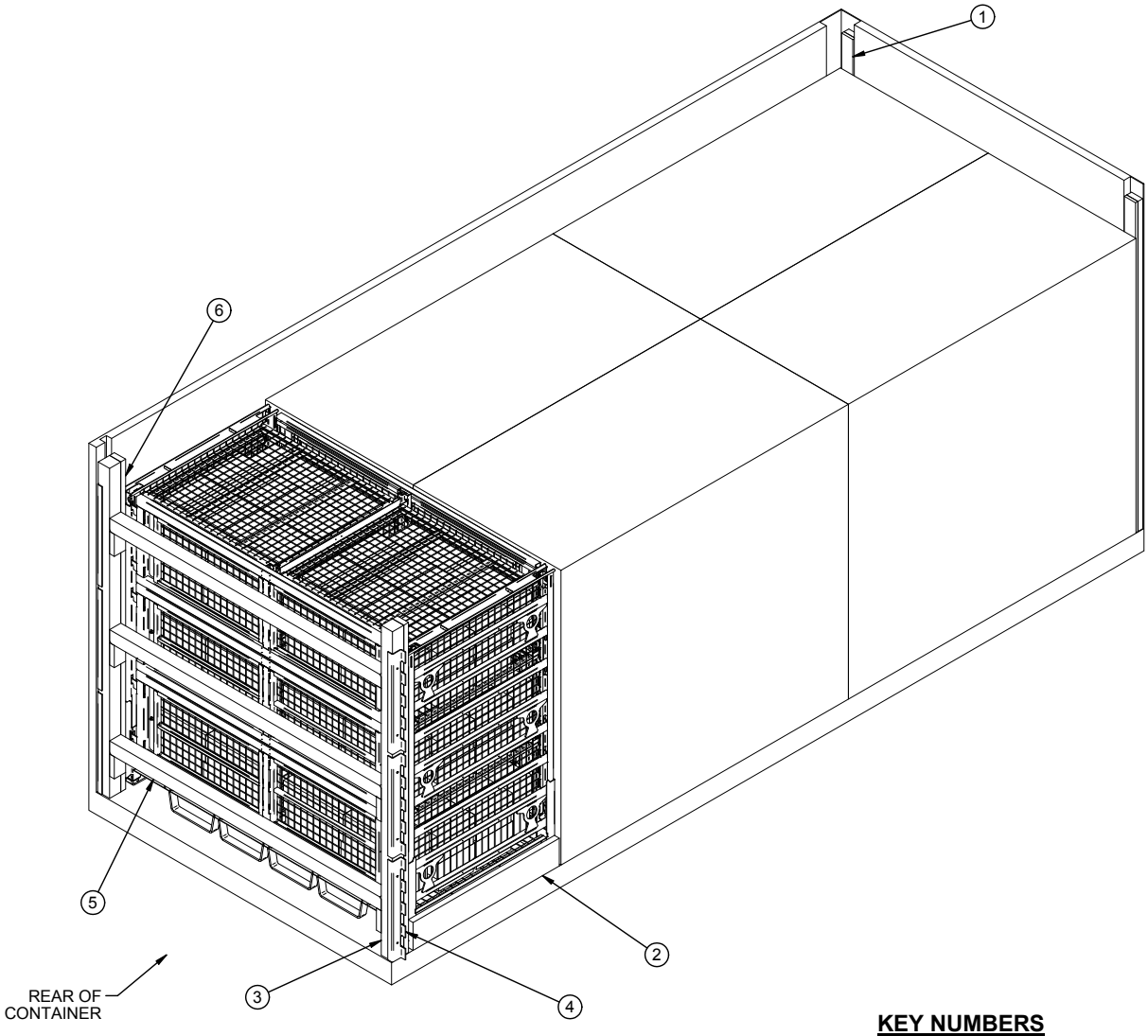
## MATERIAL SPECIFICATIONS

| | |
|---|---|
| LUMBER | SEE TM 743-200-1 (DUNNAGE LUMBER) AND VOLUNTARY PRODUCT STANDARD PS 20. |
| NAILS | ASTM F1667; COMMON STEEL NAIL NLCMS OR NLCMMS). |
| STRAP, WEB, COMMERCIAL | WEB SLING AND TIEDOWN ASSOCIATION RECOMMENDED STANDARD SPECIFICATION FOR SYNTHETIC WEB TIEDOWNS, WSTDA-T-1, REVISED 2005. |
| 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. |
| STAKE POCKET PROTECTOR | COMMERCIAL GRADE. |
| ANTI-CHAFING MATERIAL | MIL-PRF-121 (OR EQUAL); NEUTRAL BARRIER MATERIAL. |
| CHAIN | NATIONAL ASSOCIATION OF CHAIN MANUFACTURER'S WELDED CHAIN SPECIFICATION ADOPTED NOVEMBER 1999. |
| LOAD BINDER | FED SPEC GG-BG325. |
| WIRE, CARBON STEEL | ASTM A853; ANNEALED AT FINISH, BLACK OXIDE FINISH, 0.0800" DIA, GRADE 1006 OR BETTER. |




## BEVEL CUT

IF DESIRED, EACH END OF A DOOR SPANNER MAY BE BEVEL-CUT AS SHOWN ABOVE TO FACILITATE THE ACHIEVEMENT OF A TIGHT END OF LOAD FIT.




## ISOMETRIC VIEW

**NOTE**: CENTER THE STF LOADED NEAREST THE DOOR TO ALLOW EQUAL QUANTITY OF SIDE BLOCKING ON EACH SIDE AND TO MAKE SURE THERE IS CONTACT WITH THE FILL MATERIAL ON EACH SIDE OF THE ISO CONTAINER.

| BILL OF MATERIAL | | |
|---|---|---|
| LUMBER | LINEAR FEET | BOARD FEET |
| 1" X 4" | 15 | 5 |
| 2" X 4" | 33 | 22 |
| 2" X 8" | 8 | 10 |
| 4" X 4" | 36 | 48 |
| NAILS | NO. REQD | POUNDS |
| 6d (2") | 16 | 1/4 |
| 10d (3") | 38 | 1/2 |
| 12d (3-1/4") | 12 | 1/4 |
| UNIVERSAL LOAD RETAINER - - 6 REQD - - - 39 LBS | | |

## KEY NUMBERS

① FORWARD BLOCKING ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 6.

② SIDE BLOCKING, 1" OR 2" X 8" X 45-1/2" MATERIAL AS REQD (2 REQD). LAMINATE W/1 APPROPRIATELY SIZED NAIL EVERY 12". USE MATERIAL AS REQUIRED TO FILL THE LATERAL VOID BETWEEN THE SIDES OF THE STF AND THE CONTAINER SIDEWALLS.

③ DOOR POST VERTICAL (2 REQD). SEE THE DETAIL ON PAGE 6, "DETAIL A" ON PAGE 3, AND GENERAL NOTE "M" ON PAGE 2.

④ UNIVERSAL LOAD RETAINER (6 REQD, 3 PER SIDE). NAIL THROUGH THE HOLES INTO THE DOOR POST VERTICAL W/2-10d NAILS. SEE DEPARTMENT OF ARMY DRAWING DA-116 AND GENERAL NOTE "M" ON PAGE 2.

⑤ DOOR SPANNER, 4" X 4" BY CUT TO A LENGTH THAT WILL PROVIDE A DRIVE FIT (REF: 7'-1") (3 REQD). TOENAIL TO THE DOOR POST VERTICAL W/2-12d NAILS AT EACH END. SEE THE "BEVEL-CUT" DETAIL ON PAGE 3.

⑥ FILL MATERIAL, 4" WIDE BY 7'-5" LONG MATERIAL (AS REQD). NAIL THE FIRST PIECE TO THE DOOR POST VERTICAL W/6 NAILS OF A SUITABLE SIZE (10d FOR 2" THICK MATERIAL). NAIL EACH ADDITIONAL PIECE TO THE PREVIOUS PIECE IN A SIMILAR MANNER. **NOTE**: MULTIPLE PIECES MAY BE LAMINATED TOGETHER FIRST AND THEN TOENAILED TO THE DOOR POST VERTICAL. SEE "DETAIL A" ON PAGE 3.

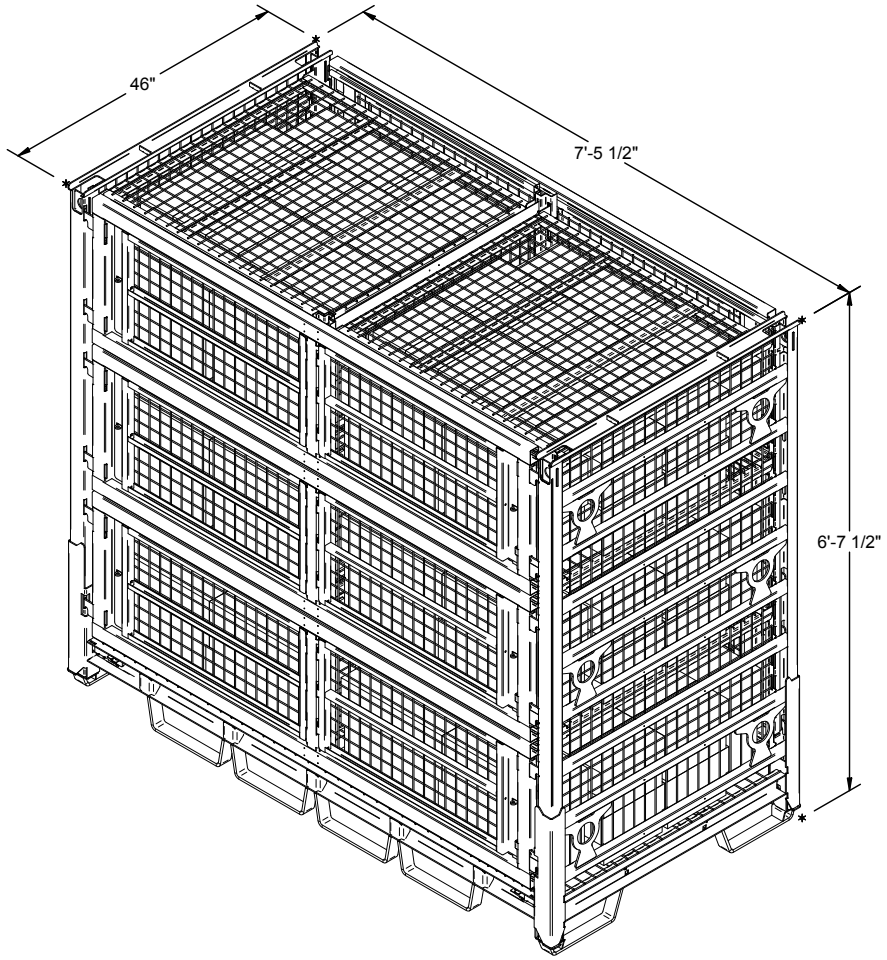
## LOAD AS SHOWN

| ITEM | QUANTITY | WEIGHT (APPROX) |
|---|---|---|
| STF | 5 | 29,555 LBS |
| DUNNAGE | | 209 LBS |
| ISO CONTAINER | | 4,700 LBS |
| | TOTAL WEIGHT | 34,464 LBS |

## FIVE UNIT LOAD IN AN ISO CONTAINER



**PROJECT CA 369-03**

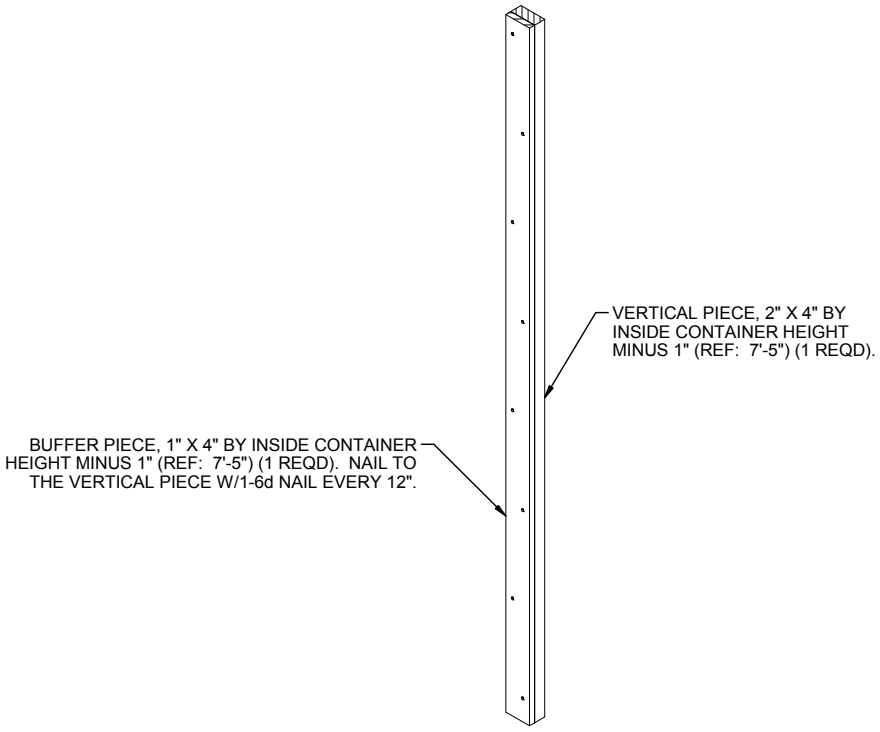



**MAXIMUM LOADED STF DATA**

| | |
|---|---|
| GROSS WEIGHT - - - - - - - - - - - - - | 5,911 LBS |
| CUBE - - - - - - - - - - - - - - - - - | 189 CU FT |



**PROJECT CA 369-03**




**FORWARD BLOCKING ASSEMBLY**

## PROVISIONS FOR THE USE OF FIRE HOSE IN LIEU OF STRAPPING BOARD ASSEMBLY

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

1. SUBSTITUTION AND APPLICATION GUIDANCE

   A. FIRE HOSE MAY BE USED WHEREVER A STRAPPING BOARD ASSEMBLY 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 STRAPPING BOARD ASSEMBLY PROVIDING LOAD PROTECTION DURING TENSIONING OF TIEDOWNS AND LOAD SHIPMENT; I.E., A STRAPPING BOARD ASSEMBLY 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.

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.

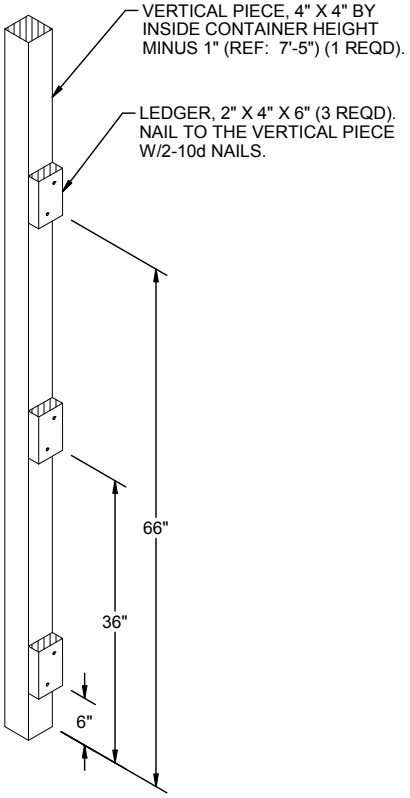
   B. THE COLLAPSED WIDTH OF THE HOSE MUST BE A MINIMUM OF 2-1/2".

   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.

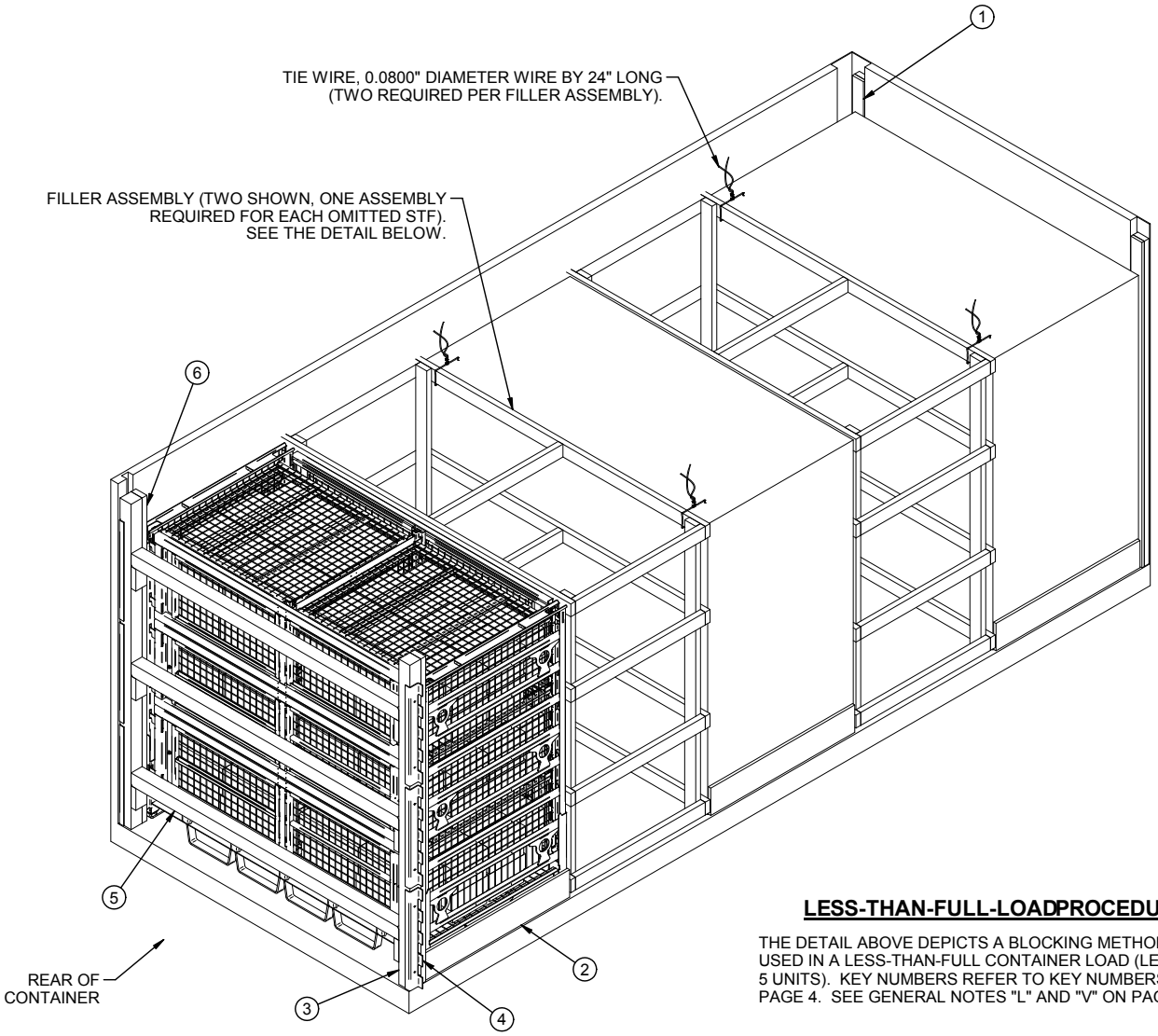
3. SECUREMENT TO CHAINS OR STRAPS

   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, .0800" DIA 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 IT CONTACTS.



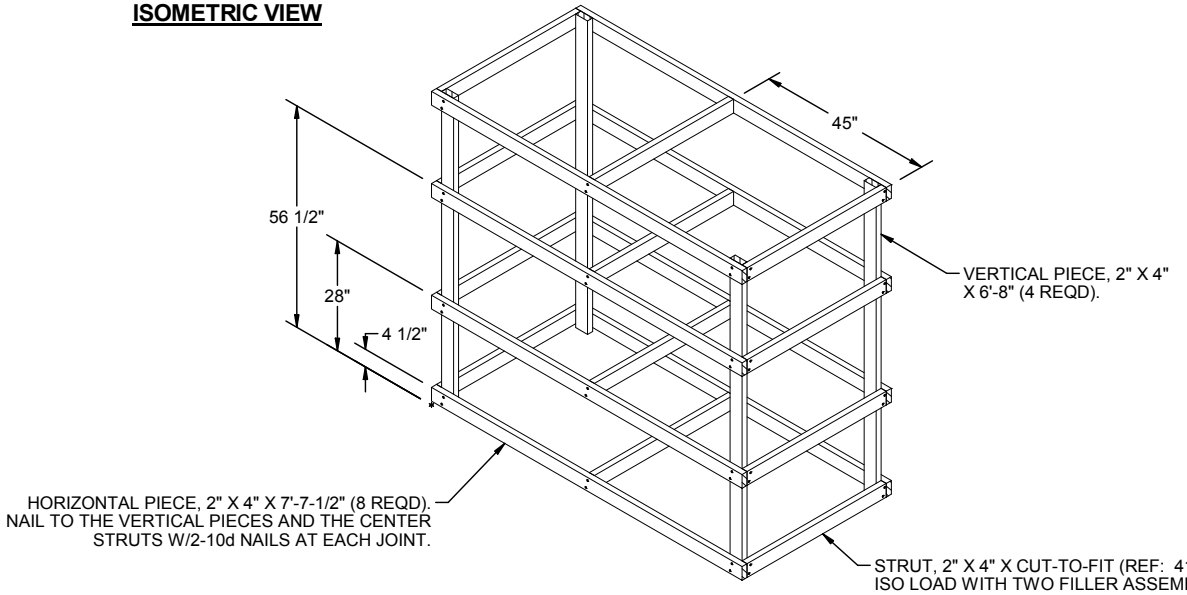

**DOOR POST VERTICAL**




**ISOMETRIC VIEW**

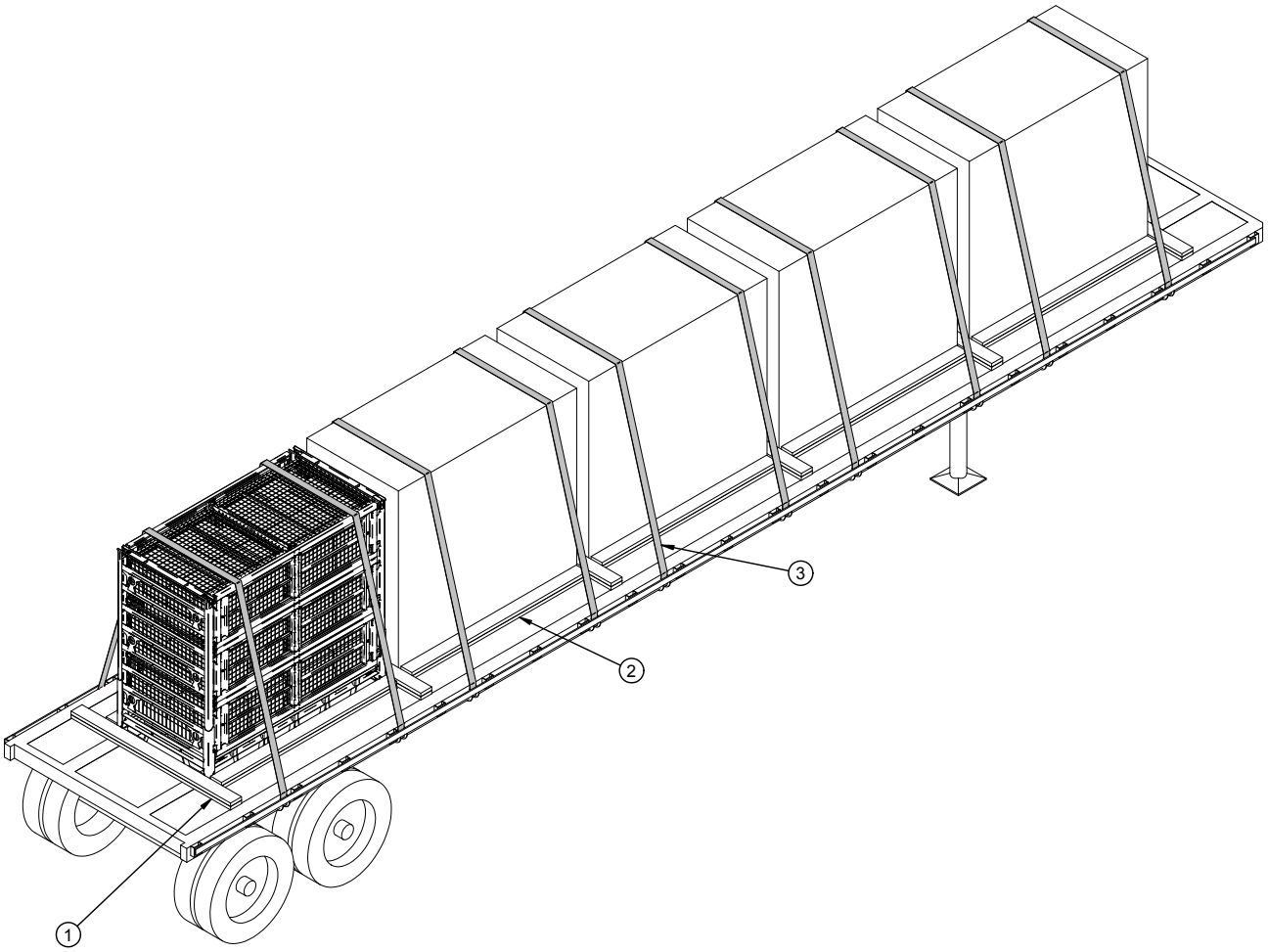
## LESS-THAN-FULL-LOADPROCEDURE

THE DETAIL ABOVE DEPICTS A BLOCKING METHOD TO BE USED IN A LESS-THAN-FULL CONTAINER LOAD (LESS THAN 5 UNITS). KEY NUMBERS REFER TO KEY NUMBERS ON PAGE 4. SEE GENERAL NOTES "L" AND "V" ON PAGE 2.




## FILLER ASSEMBLY

THE ASSEMBLY DEPICTED ABOVE IS FOR USE IN PLACE OF AN OMITTED STF UNIT. FILLER ASSEMBLY MUST BE WIRE TIED TO AN ADJACENT STF UNIT TO PREVENT UNDUE MOVEMENT. NO MORE THAN THREE FILLER ASSEMBLIES WILL BE USED IN ANY LOAD. ELIMINATE STF CONTAINERS FROM THE CENTER OF THE LOAD ONLY.




**ISOMETRIC VIEW**

## KEY NUMBERS

① HEADER, 2" X 6" X 6'-8" (DOUBLED) (6 REQD). POSITION AT FORWARD AND AFT ENDS OF STF LOAD AND BETWEEN EACH STF IN LOAD. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/6-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST PIECE W/6-20d NAILS.

② SIDE BLOCKING, 2" X 6" X 7'-4" (DOUBLED) (10 REQD). POSITION ON EACH SIDE OF AN STF. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/6-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST PIECE W/6-10d NAILS.

③ WEB STRAP ASSEMBLY (10 REQD). POSITION TO EXTEND FROM A WINCH ON ONE SIDE OF THE TRAILER, OVER THE CONTAINER, TO AN ATTACHMENT POINT ON THE OPPOSITE SIDE. SEE THE "SPECIAL PROVISIONS FOR WEB STRAP TIEDOWN" ON PAGE 9.

| BILL OF MATERIAL | | |
|---|---|---|
| LUMBER | LINEAR FEET | BOARD FEET |
| 2" x 6" | 230 | 230 |
| NAILS | NO. REQD | POUNDS |
| 10d (3")<br>20d (4") | 156<br>36 | 2-1/2<br>1-1/4 |
| WEB STRAP ASSEMBLY - - - - - - - - - - - - 10 REQD<br>ANTI-CHAFING MATERIAL - - - AS REQD - - - - NIL | | |

**LOAD AS SHOWN**

| ITEM | QUANTITY | WEIGHT (APPROX) |
|---|---|---|
| STF | 5 | 29,555 LBS |
| DUNNAGE | | 567 LBS |
| TOTAL WEIGHT | | 30,122 LBS |



**FIVE UNIT LOAD ON A 48'-0" LONG BY 8'-0" WIDE FLATBED TRAILER (WEB STRAP TIEDOWN METHOD)**

**SPECIAL NOTES:**

1. A FIVE UNIT LOAD IS SHOWN ON A 48'-0" LONG BY 8'-0" WIDE FLATBED TRAILER. LONGER OR WIDER TRAILERS MAY BE USED.

2. STEEL STRAPS OR CHAINS AND LOAD BINDERS MAY BE USED FOR LOAD SECUREMENT IN LIEU OF THE WEB STRAPPING. IF STEEL STRAPS ARE TO BE USED FOR LOAD SECUREMENT, REFER TO THE PROCEDURES ON PAGES 12 AND 13 FOR GUIDANCE. IF CHAINS AND LOAD BINDERS ARE TO BE USED FOR LOAD SECUREMENT, REFER TO THE PROCEDURES ON PAGES 10 AND 11 FOR GUIDANCE.

3. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED.

## SPECIAL PROVISIONS FOR WEB STRAP TIEDOWN

LADING MAY BE SECURED TO A FLATBED TRAILER BY WEB STRAP ASSEMBLIES IN LIEU OF STEEL STRAPPING, 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, REVISED IN 1998.

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. THE CARRIER SHALL PROVIDE WRITTEN PROOF OF THE MBS OF THE STRAPS 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.

(CONTINUED AT RIGHT)

(SPECIAL PROVISIONS FOR WEB STRAP TIEDOWN CONTINUED)

   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.

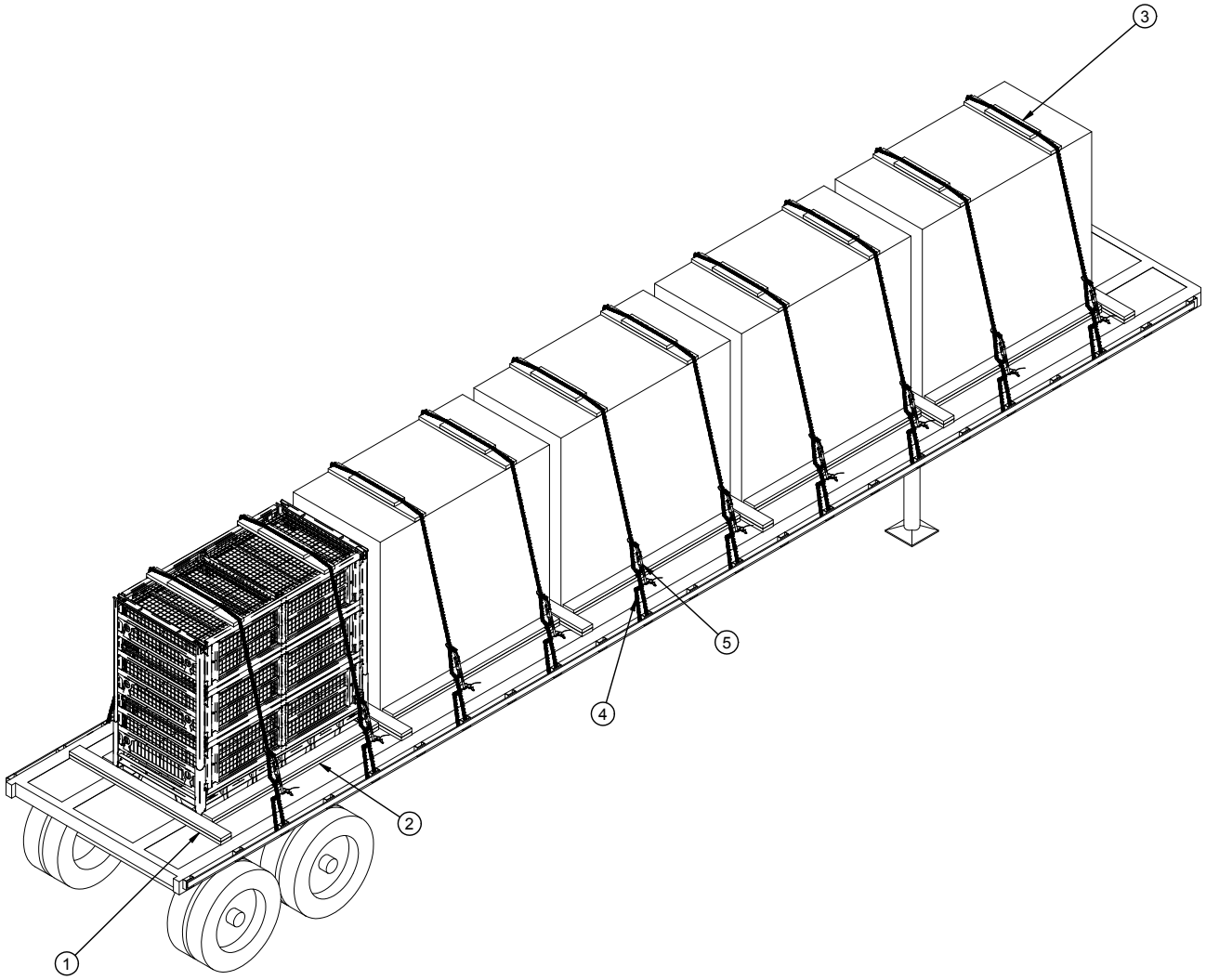
9. IF THE WINCHES BEING USED ARE THE REMOVABLE TYPE HAVING BOLTS FOR ATTACHMENT TO THE TRAILER, CARE MUST BE EXERCISED WHEN ATTACHING THE WINCHES TO THE TRAILER. IF EXCESSIVE FORCE IS EXERTED ON THE BOLT DURING TENSIONING, DEFORMATION OF THE WINCH BRACKET MAY OCCUR, AND SUBSEQUENTLY CAUSE FAILURE OF THE WINCH BRACKET DURING TRANSPORT. WINCHES MUST BE FASTENED TO THE TRAILER WITH A MINIMUM OF TWO BOLTS.

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 ENSURE 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.

**FIVE UNIT LOAD ON A 48'-0" LONG BY 8'-0" WIDE FLATBED TRAILER (WEB STRAP TIEDOWN METHOD)**




**ISOMETRIC VIEW**

## KEY NUMBERS

① HEADER, 2" X 6" X 6'-8" (DOUBLED) (6 REQD). POSITION AT FORWARD AND AFT ENDS OF STF LOAD AND BETWEEN EACH STF IN LOAD. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/6-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST PIECE W/6-20d NAILS.

② SIDE BLOCKING, 2" X 6" X 7'-4" (DOUBLED) (10 REQD). POSITION ON EACH SIDE OF AN STF. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/6-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST PIECE W/6-10d NAILS.

③ STRAPPING BOARD ASSEMBLY (10 REQD). SEE DETAIL ON PAGE 11.

④ CHAIN, BINDING, 5/16" GRADE 70 BY A LENGTH TO SUIT (10 REQD). POSITION AS SHOWN ABOVE, FASTENING THE CHAIN TO THE TRAILER STAKE POCKETS. SEE THE "SPECIAL PROVISIONS FOR CHAIN TIEDOWN" ON PAGE 11.

⑤ LOAD BINDER, 5/16", OVER-CENTER TYPE (10 REQD, 1 PER CHAIN). WIRE TIE HANDLE TO PREVENT OPENING DURING TRANSPORT. FASTEN THE CHAIN TO THE STRAPPING ASSEMBLY W/1-20d NAIL AT EACH END, BENDING OVER TO FORM A LOOP AROUND THE CHAIN LINK. SEE THE "SPECIAL PROVISIONS FOR CHAIN TIEDOWN" ON PAGE 11.

| BILL OF MATERIAL | | |
|---|---|---|
| LUMBER | LINEAR FEET | BOARD FEET |
| 2" x 6" | 288 | 288 |
| NAILS | NO. REQD | POUNDS |
| 10d (3")<br>20d (4") | 186<br>36 | 3<br>1-1/4 |
| CHAIN, BINDING, 5/16" - - 225' REQD - - 270 LBS<br>BINDER, LOAD - - - - - - - - 10 REQD - - 60 LBS | | |

**LOAD AS SHOWN**

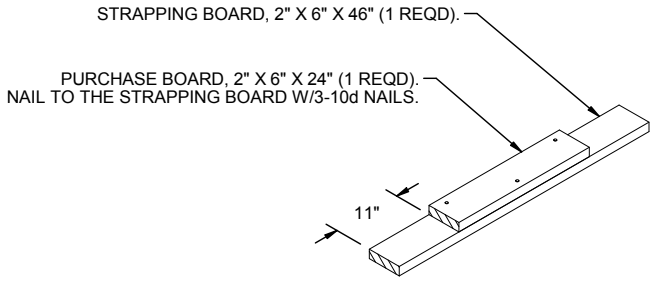
| ITEM | QUANTITY | WEIGHT (APPROX) |
|---|---|---|
| STF | 5 | 29,555 LBS |
| DUNNAGE | | 911 LBS |
| TOTAL WEIGHT | | 30,466 LBS |



**FIVE UNIT LOAD ON A 48'-0" LONG BY 8'-0" WIDE FLATBED TRAILER (CHAIN TIEDOWN METHOD)**

**SPECIAL NOTES:**

1. A FIVE UNIT LOAD IS SHOWN ON A 48'-0" LONG BY 8'-0" WIDE FLATBED TRAILER. LONGER OR WIDER TRAILERS MAY BE USED.
2. WEB STRAPS OR STEEL STRAPS MAY BE USED FOR LOAD SECUREMENT IN LIEU OF THE CHAINS AND LOAD BINDERS. IF WEB STRAPS ARE TO BE USED FOR LOAD SECUREMENT, REFER TO THE PROCEDURES ON PAGES 8 AND 9 FOR GUIDANCE. IF STEEL STRAPS ARE TO BE USED FOR LOAD SECUREMENT, REFER TO THE PROCEDURES ON PAGES 12 AND 13 FOR GUIDANCE.
3. **CAUTION:** THE CHAINS MUST BE IN VERTICAL ALIGNMENT WITH THE TRAILER STAKE POCKET PROVISIONS AND WITH THE STRAPPING BOARD ON THE STRAPPING ASSEMBLY. SHIFT THE LOAD FORE OR AFT AS NECESSARY TO ACCOMMODATE VARIATIONS IN STRAPPING LOCATION.
4. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED.




**STRAPPING BOARD ASSEMBLY**

## 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 10 AND 11 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 1999.
2. ALL CHAINS SHALL BE MARKED AS PRESCRIBED BY THE NATIONAL ASSOCIATION OF CHAIN MANUFACTURER'S WELDED CHAIN SPECIFICATION ADOPTED NOVEMBER 1999. 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 TRANSPORT CHAIN
   C. 3/8", GRADE 70 TRANSPORT CHAIN
   D. 5/16", GRADE 80 ALLOY STEEL CHAIN
   E. 3/8", GRADE 80 ALLOY STEEL CHAIN

(CONTINUED AT RIGHT)

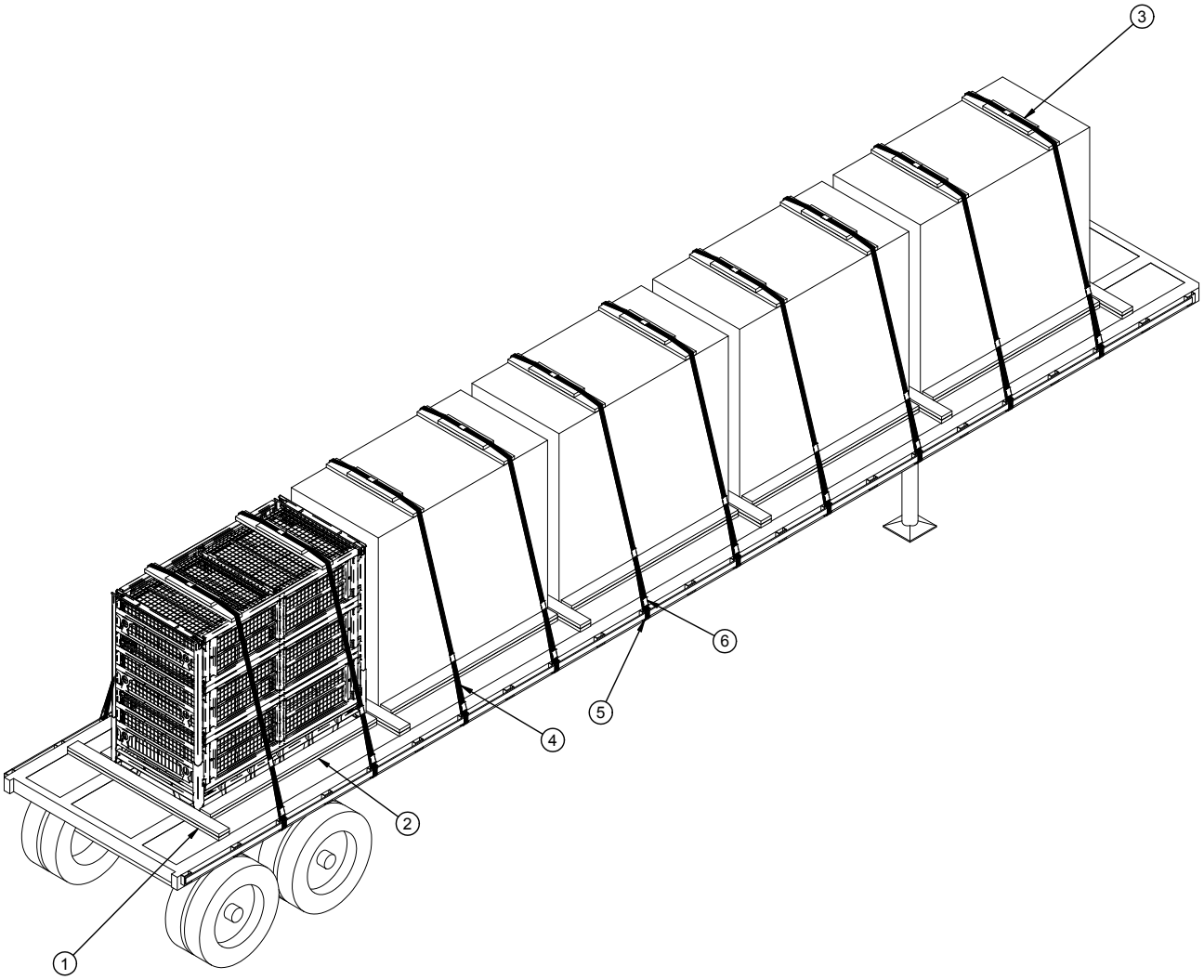
(SPECIAL PROVISIONS FOR CHAIN TIEDOWN CONTINUED)

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). OVER-CENTER 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.




**ISOMETRIC VIEW**

## KEY NUMBERS

① HEADER, 2" X 6" X 6'-8" (DOUBLED) (6 REQD). POSITION AT FORWARD AND AFT ENDS OF STF LOAD AND BETWEEN EACH STF IN LOAD. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/6-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST PIECE W/6-20d NAILS.

② SIDE BLOCKING, 2" X 6" X 7'-4" (DOUBLED) (10 REQD). POSITION ON EACH SIDE OF AN STF. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/6-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST PIECE W/6-10d NAILS.

③ STRAPPING BOARD ASSEMBLY (10 REQD). SEE DETAIL ON PAGE 11.

④ HOLD-DOWN STRAP, 2" X .050" OR .044" X 22'-4" LONG STEEL STRAPPING (10 REQD). INSTALL EACH STRAP FROM TWO 11'-2" LONG PIECES. DO NOT OVERTENSION THE HOLD-DOWN STRAP.

⑤ PAD, 2" X .050" OR .044" X 18" LONG STEEL STRAPPING (20 REQD). POSITION BETWEEN THE HOLD-DOWN STRAP AND THE TRAILER STAKE POCKET AND SEAL TO THE HOLD-DOWN STRAP. SEE "DETAIL A" ON PAGE 14. ALT: STAKE POCKET PROTECTOR (40 REQD). USE TWO UNDER EACH ANCHORING FACILITY WITH A HOLD-DOWN STRAP. SEE "DETAIL B" ON PAGE 14.

⑥ SEAL FOR 2" STEEL STRAPPING (50 REQD, 5 PER STRAP). DOUBLE NOTCH EACH SEAL, EXCEPT THOSE USED TO SECURE THE PADS. SEE THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 13.

**BILL OF MATERIAL**

| LUMBER | LINEAR FEET | BOARD FEET |
|---|---|---|
| 2" x 6" | 288 | 288 |
| NAILS | NO. REQD | POUNDS |
| 10d (3")<br>20d (4") | 186<br>36 | 3<br>1-1/4 |
| STEEL STRAPPING, 2" - - - 224' REQD - - 75 LBS<br>SEAL FOR 2" STRAPPING - - - 50 REQD - - 10 LBS<br>ANTI-CHAFING MATERIAL - - - AS REQD - - - - NIL | | |

**LOAD AS SHOWN**

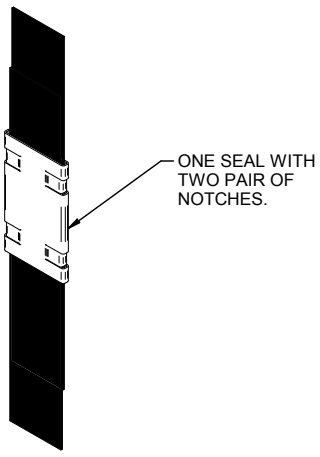
| ITEM | QUANTITY | WEIGHT (APPROX) |
|---|---|---|
| STF | 5 | 29,555 LBS |
| DUNNAGE | | 665 LBS |
| TOTAL WEIGHT | | 30,220 LBS |



**FIVE UNIT LOAD ON A 48'-0" LONG BY 8'-0" WIDE FLATBED TRAILER (STEEL STRAP TIEDOWN METHOD)**

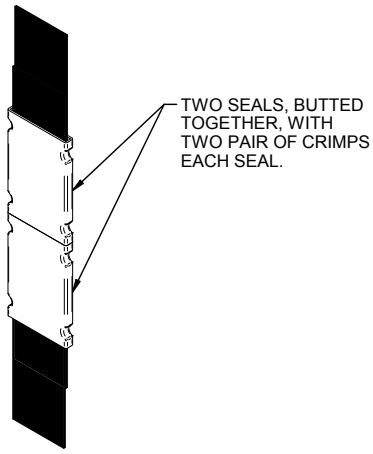
**SPECIAL NOTES:**

1. A FIVE UNIT LOAD IS SHOWN ON A 48'-0" LONG BY 8'-0" WIDE FLATBED TRAILER. LONGER OR WIDER TRAILERS MAY BE USED.
2. WEB STRAPS OR CHAINS AND LOAD BINDERS MAY BE USED FOR LOAD SECUREMENT IN LIEU OF THE STEEL STRAPPING. IF WEB STRAPS ARE TO BE USED FOR LOAD SECUREMENT, REFER TO THE PROCEDURES ON PAGES 8 AND 9 FOR GUIDANCE. IF CHAINS AND LOAD BINDERS ARE TO BE USED FOR LOAD SECUREMENT, REFER TO THE PROCEDURES ON PAGES 10 AND 11 FOR GUIDANCE.
3. **CAUTION:** THE STRAPPING MUST BE IN VERTICAL ALIGNMENT WITH THE TRAILER STAKE POCKET PROVISIONS AND WITH THE STRAPPING BOARD ON THE STRAPPING ASSEMBLY. SHIFT THE LOAD FORE OR AFT AS NECESSARY TO ACCOMMODATE VARIATIONS IN STRAPPING LOCATION.
4. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED.




**STRAP JOINT A**

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




**STRAP JOINT B**

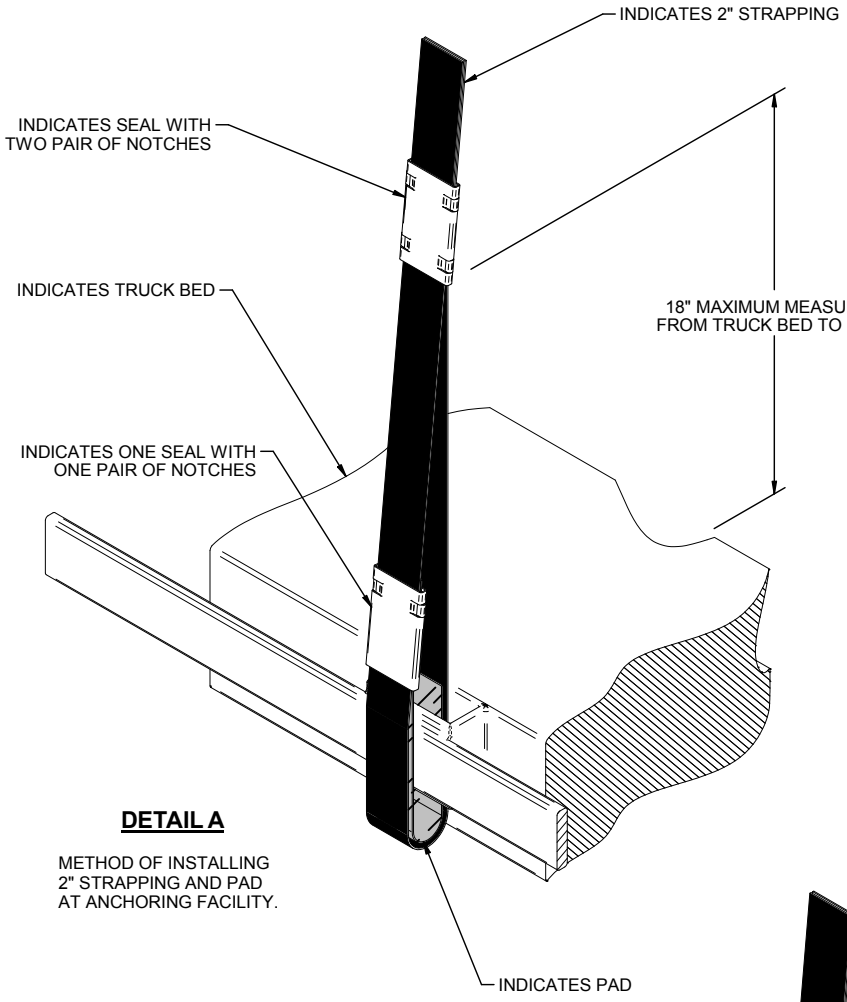
METHOD OF SECURING A STRAP JOINT WHEN USING A CRIMP-TYPE SEALER.

**END-OVER-END LAP JOINT DETAILS**

**FIVE UNIT LOAD ON A 48'-0" LONG BY 8'-0" WIDE FLATBED TRAILER (STEEL STRAP TIEDOWN METHOD)**

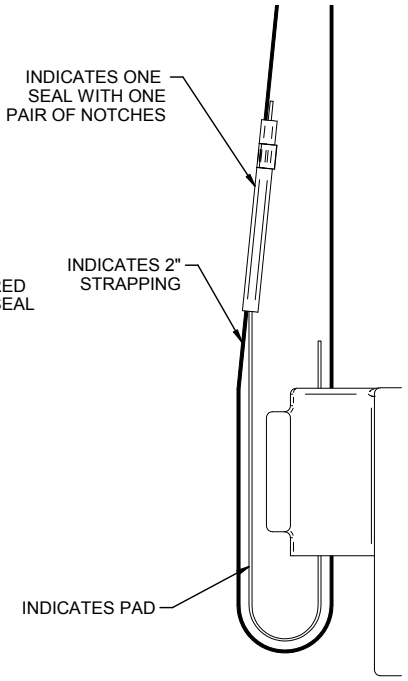


**PROJECT CA 369-03**

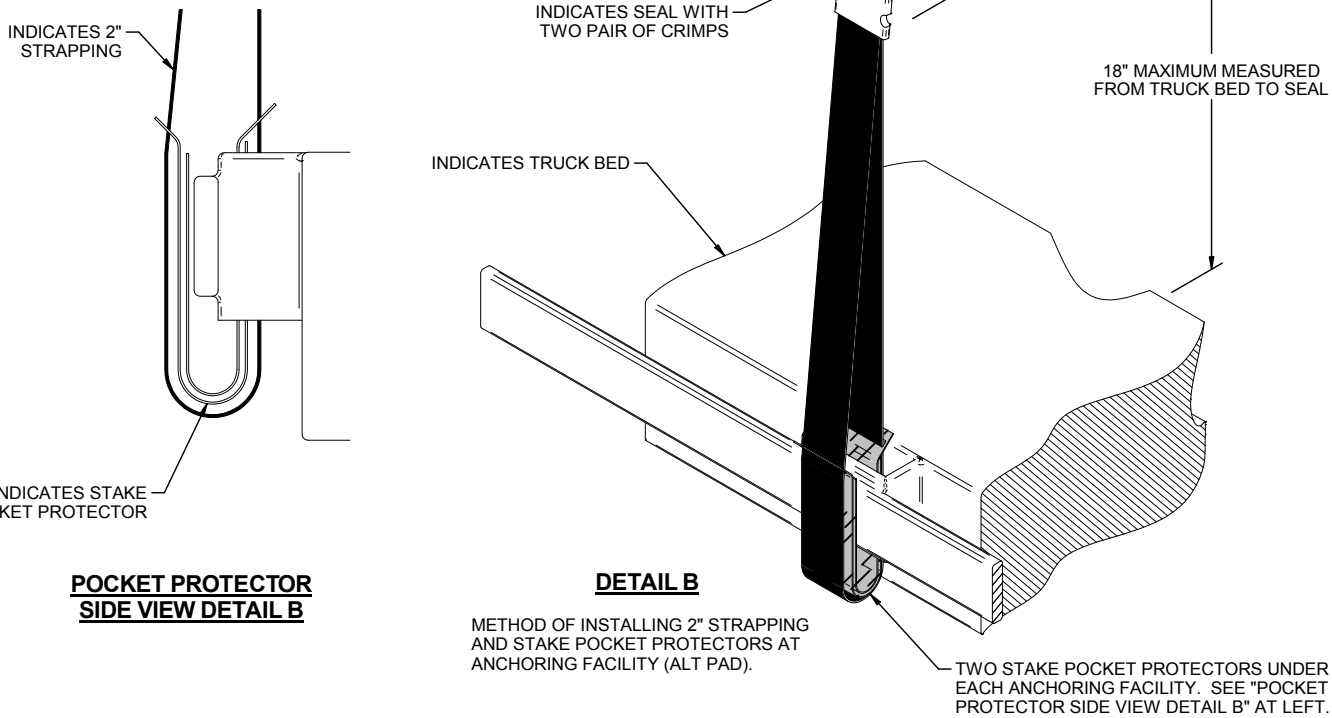



**DETAIL A**

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




**PAD SIDE VIEW DETAIL A**




**POCKET PROTECTOR SIDE VIEW DETAIL B**

**DETAIL B**

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

TWO STAKE POCKET PROTECTORS UNDER EACH ANCHORING FACILITY. SEE "POCKET PROTECTOR SIDE VIEW DETAIL B" AT LEFT.

**STAKE POCKET STRAP DETAILS**