

# LOADING AND BRACING ( TL & LTL ) ON FLATBED TRAILERS<sup>⊕</sup> OF CHARGE, DEMOLITION, LINEAR, HE M58A3 AND INERT M68A2, IN METAL SHIPPING AND STORAGE CONTAINER

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⊕ 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	DRAFTSMAN	TECHNICIAN	ENGINEER
<i>Justin R. Fore</i>		R. HAYNES	
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND	VALIDATION ENGINEERING DIVISION	TRANSPORTATION ENGINEERING DIVISION	LOGISTICS ENGINEERING OFFICE
<i>William Ernst</i>	<i>JAK</i>	<i>G. L. Willis</i>	<i>T. J. Muehl</i>
U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL	JULY 1995		
	CLASS	DIVISION	DRAWING
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			11J1008

DO NOT SCALE

**GENERAL NOTES**

(GENERAL NOTES CONTINUED)

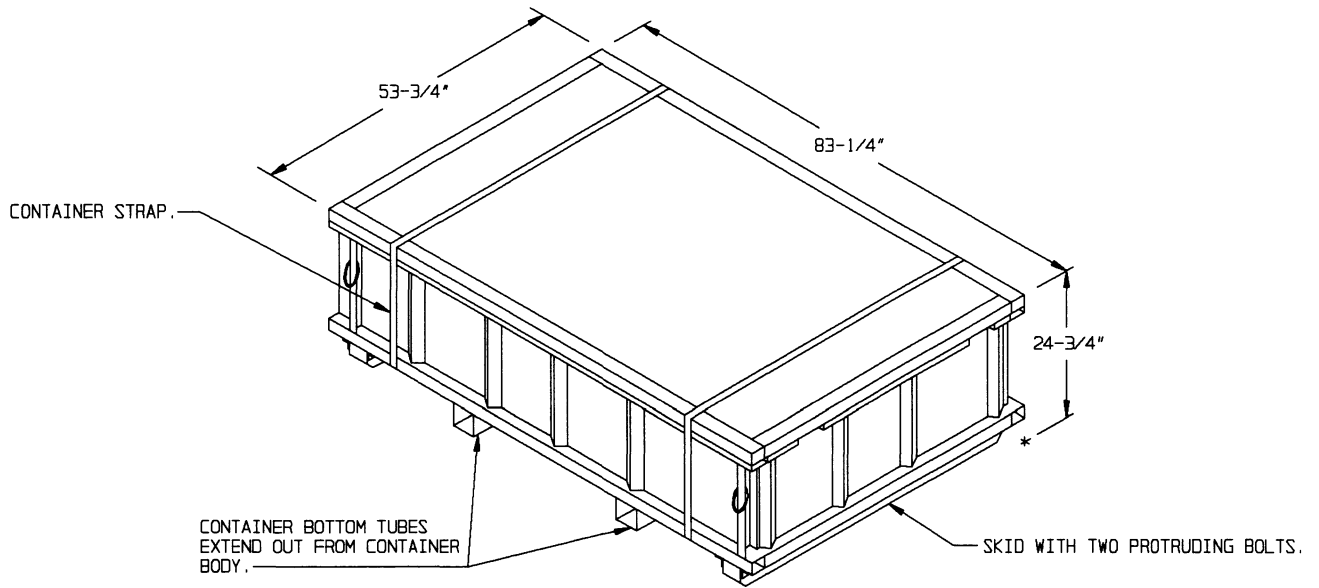
- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1, AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE TO LOADS OF LINEAR DEMOLITION CHARGES, HE M58A3 AND INERT M68A2, IN METAL SHIPPING AND STORAGE CONTAINER. REFERENCE TO CONTAINER HEREIN MEANS THE CONTAINER WITH CONTENTS.
- C. FOR DETAILS OF THE SHIPPING AND STORAGE CONTAINER, SEE PAGE 3.  
  
CONTAINER DIMENSIONS - 6'-11-1/4" LONG BY 53-3/4" WIDE BY 24-3/4" HIGH.  
GROSS WEIGHT (APPROX):  
WITH HE COMP C4 M58A3 CHARGE, DODIC M913 - 2,900 LBS  
WITH INERT M68A2 CHARGE, DODIC M914 - - - 2,790 LBS  
CUBE - - - - - 64.1 CUBIC FEET
- D. THIS ITEM, WHEN A M58A3 CHARGE, IS A DOT CLASS "A" EXPLOSIVE; WHEN A M68A2 CHARGE, IS INERT. THE OUTLOADING PROCEDURES SPECIFIED HEREIN CAN ALSO BE UTILIZED FOR THE SHIPMENT OF THE DEPICTED CONTAINERS WHEN THEY ARE LOADED WITH AN ITEM WHICH IS IDENTIFIED DIFFERENTLY BY NOMENCLATURE THAN THE ITEM DESIGNATED WITHIN THE DRAWING TITLE.
- E. THE LOADS AS SHOWN HEREIN ARE BASED ON 45'-0" LONG BY 8'-0" WIDE, AND 40'-0" LONG BY 8'-0" WIDE, FLATBED TRAILERS. TRAILERS OF OTHER LENGTH 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.
- F. 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.
- G. 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.
- H. NOTICE: A SHIPMENT WILL BE POSITIONED ON A TRAILER CONSISTENT WITH STATE WEIGHT LAWS.
- J. 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.

(CONTINUED AT RIGHT)

- K. 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 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 OR PADS 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. A STAGGERED NAILING PATTERN WILL BE USED WHEREVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES. ALSO, 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 THE PIECE 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 "STRAP JOINT A" AND "STRAP JOINT B" DETAILS ON PAGE 12.
- N. THE TRANSPORTING VEHICLE OPERATOR SHOULD BE INSTRUCTED TO PERIODICALLY INSPECT THE TIEDOWN CHAINS AND LOAD BINDERS DURING TRANSIT AND TIGHTEN IF NECESSARY.
- O. 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.
- P. 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.
- 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.

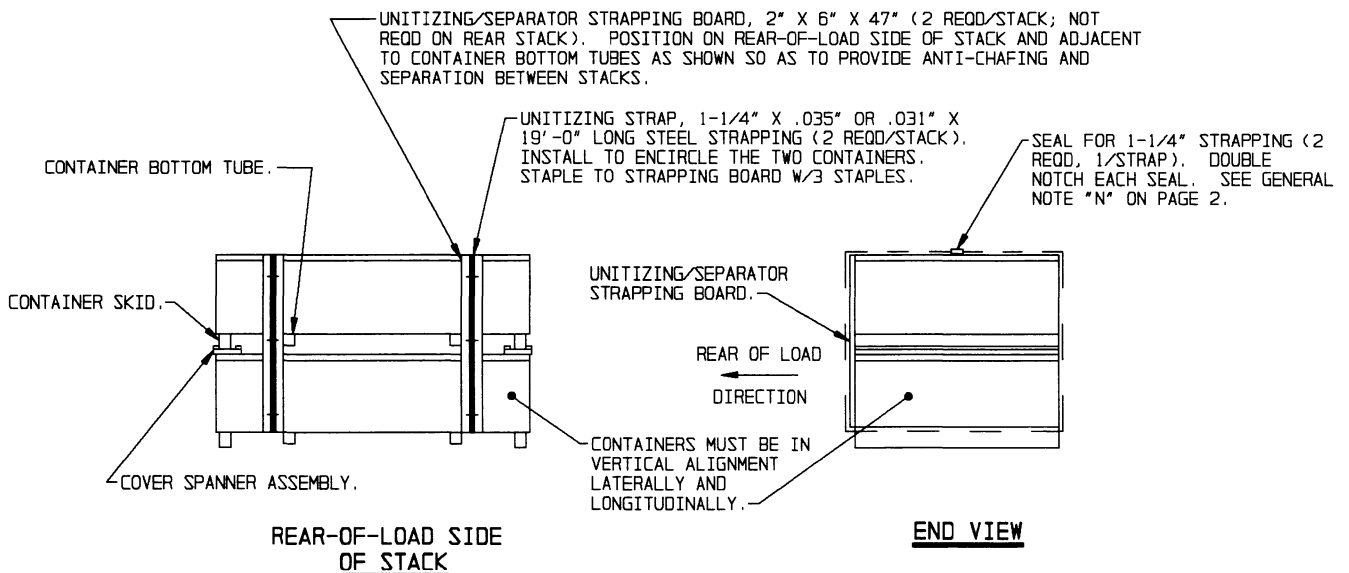
**MATERIAL SPECIFICATIONS**

- LUMBER - - - - - : SEE TM 743-200-1 (DUNNAGE LUMBER) AND FED SPEC MM-L-751.
- NAILS - - - - - : FED SPEC FF-N-105; COMMON.
- 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.
- CHAIN - - - - - : NATIONAL ASSOCIATION OF CHAIN MANUFACTURER'S WELDED CHAIN SPECIFICATION ADOPTED NOVEMBER 1975.
- LOAD BINDER - - - - : FED SPEC GGG-B-325.



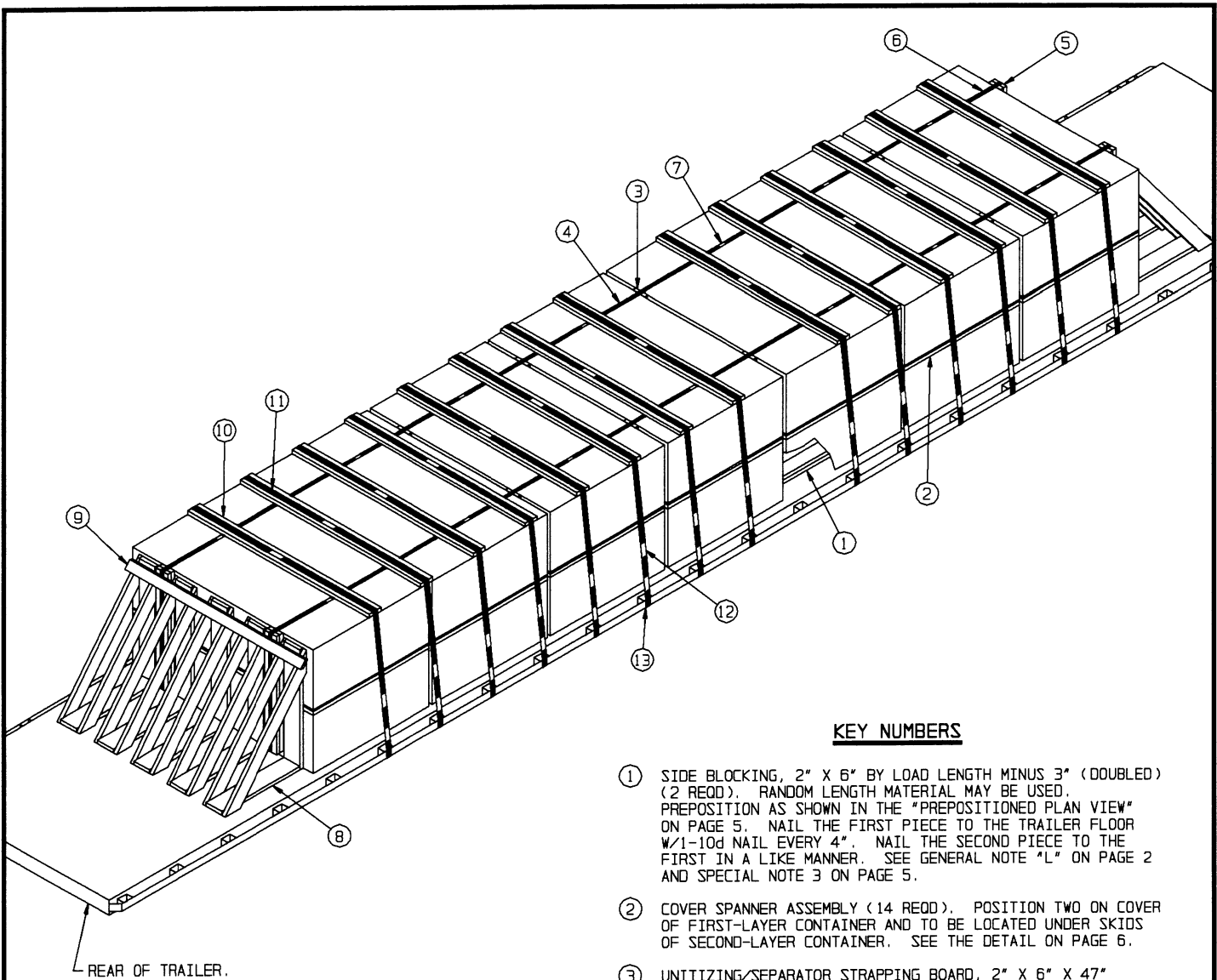
**CONTAINER DETAIL**

NOTE: CONTAINERS CANNOT BE STACKED UNLESS COVER SPANNER ASSEMBLIES ARE PROVIDED UNDER SKIDS BETWEEN LAYERS.



**STACK UNITIZING DETAILS**

**CONTAINER DETAIL**



REAR OF TRAILER.

**ISOMETRIC VIEW**

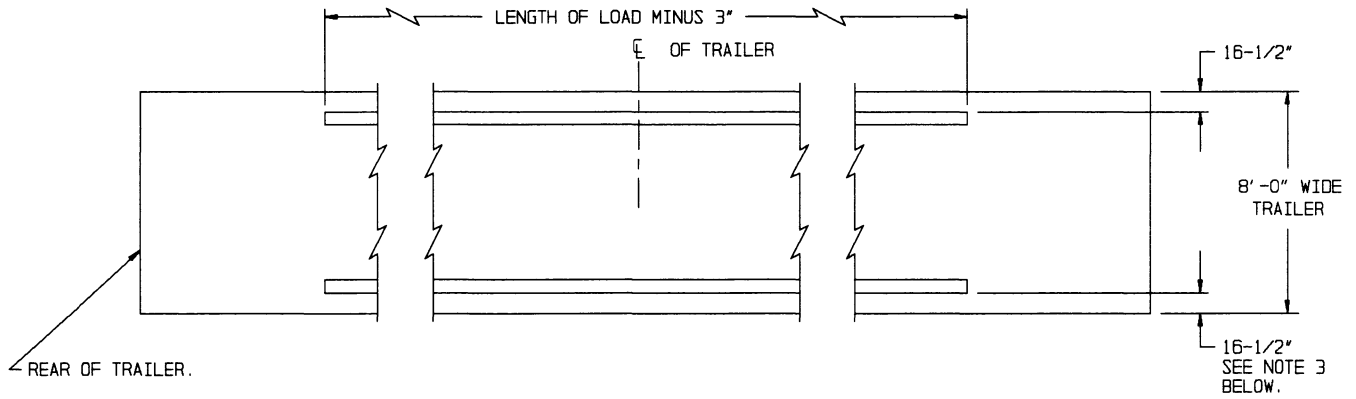
**KEY NUMBERS**

- ① SIDE BLOCKING, 2" X 6" BY LOAD LENGTH MINUS 3" (DOUBLED) (2 REQD). RANDOM LENGTH MATERIAL MAY BE USED. PREPOSITION AS SHOWN IN THE "PREPOSITIONED PLAN VIEW" ON PAGE 5. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/1-10d NAIL EVERY 4". NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTE "L" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 5.
- ② COVER SPANNER ASSEMBLY (14 REQD). POSITION TWO ON COVER OF FIRST-LAYER CONTAINER AND TO BE LOCATED UNDER SKIDS OF SECOND-LAYER CONTAINER. SEE THE DETAIL ON PAGE 6.
- ③ UNITIZING/SEPARATOR STRAPPING BOARD, 2" X 6" X 47" (12 REQD, 2 PER STACK EXCEPT NOT REQD FOR REAR STACK). SEE THE "STACK UNITIZING DETAILS" ON PAGE 3.
- ④ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 18'-6" LONG STEEL STRAPPING (14 REQD, 2 PER STACK). INSTALL TO ENCIRCLE THE TWO CONTAINERS AND, WHERE APPLICABLE, THE STRAPPING BOARD, PIECE MARKED ③. STAPLE TO STRAPPING BOARD W/3 STAPLES. SEE THE "STACK UNITIZING DETAILS" ON PAGE 3.
- ⑤ END-OF-LOAD STRAPPING BOARD, 2" X 6" X 47" (DOUBLED) (4 REQD, 2 AT EACH END OF LOAD). LAMINATE W/1-10d NAIL EVERY 8". POSITION ADJACENT TO CONTAINER BOTTOM TUBES. SEE THE "LOAD BUNDLING STRAP INSTALLATION DETAILS" ON PAGE 6.
- ⑥ LOAD BUNDLING STRAP, 1-1/4" X .035" OR .031" X 76'-0" LONG STEEL STRAPPING (2 REQD). PREPOSITION ON TRAILER FLOOR AS LOADING OPERATIONS PROGRESS. INSTALL TO ENCIRCLE THE ENTIRE LOAD OF CONTAINERS AND END-OF-LOAD STRAPPING BOARDS, PIECES MARKED ⑤. AFTER TENSIONING, STAPLE TO PIECES MARKED ⑤ W/5 STAPLES EACH. SEE THE DETAIL ON PAGE 3.
- ⑦ SEAL FOR 1-1/4" STRAP (16 REQD, 1 PER STRAP). DOUBLE NOTCH EACH SEAL. SEE GENERAL NOTE "M" ON PAGE 2.
- ⑧ KNEE BRACE (10 REQD). SEE THE "KNEE BRACE ASSEMBLY A" DETAIL ON PAGE 7. POSITION AS SHOWN IN THE "KNEE BRACE PLACEMENT DETAILS" ON PAGE 6. NAIL TO THE TRAILER FLOOR W/12-10d NAILS EACH.
- ⑨ TIE PIECE, 2" X 4" X 7'-0" (2 REQD). POSITION NEAR TOP OF KNEE BRACES AND NAIL TO EACH DIAGONAL PIECE OF THE KNEE BRACES W/2-10d NAILS AT EACH JOINT.

(KEY NUMBERS CONTINUED)

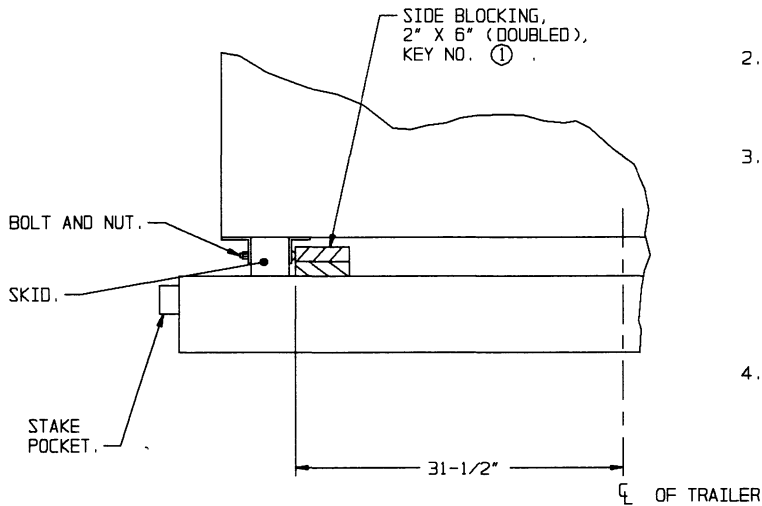
- ⑩ HOLD DOWN STRAPPING BOARD, 2" X 6" BY CONTAINER LENGTH (14 REQD).
- ⑪ HOLD DOWN STRAP, 2" X .050" OR .044" X 24'-0" LONG STEEL STRAPPING (14 REQD). INSTALL EACH STRAP FROM TWO 12'-0" LONG PIECES. STAPLE TO STRAPPING BOARD, PIECE MARKED ⑩, W/2 STAPLES. SEE GENERAL NOTE "K" ON PAGE 2.
- ⑫ SEAL FOR 2" STRAPPING (70 REQD, 5 PER STRAP). DOUBLE NOTCH EACH SEAL, EXCEPT FOR THOSE USED TO SECURE THE PADS, PIECES MARKED ③. SEE "HOLD-DOWN STRAP ANCHORING DETAILS" AND "END-OVER-END LAP JOINT DETAILS" ON PAGE 12.
- ⑬ PAD, 2" X .050" OR .044" X 18" LONG STEEL STRAPPING (28 REQD). POSITION UNDER ANCHORING FACILITY AND SEAL TO HOLD DOWN STRAP, PIECE MARKED ⑪. ALT: STAKE POCKET PROTECTOR (56 REQD). USE TWO UNDER EACH ANCHORING FACILITY WITH A HOLD DOWN STRAP. SEE THE "HOLD-DOWN STRAP ANCHORING DETAILS" ON PAGE 12.

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**PREPOSITIONED DUNNAGE PLAN VIEW**

(SEE DETAIL BELOW)



**SIDE BLOCKING LOCATION DETAIL**

(SEE NOTE 3 AT RIGHT)

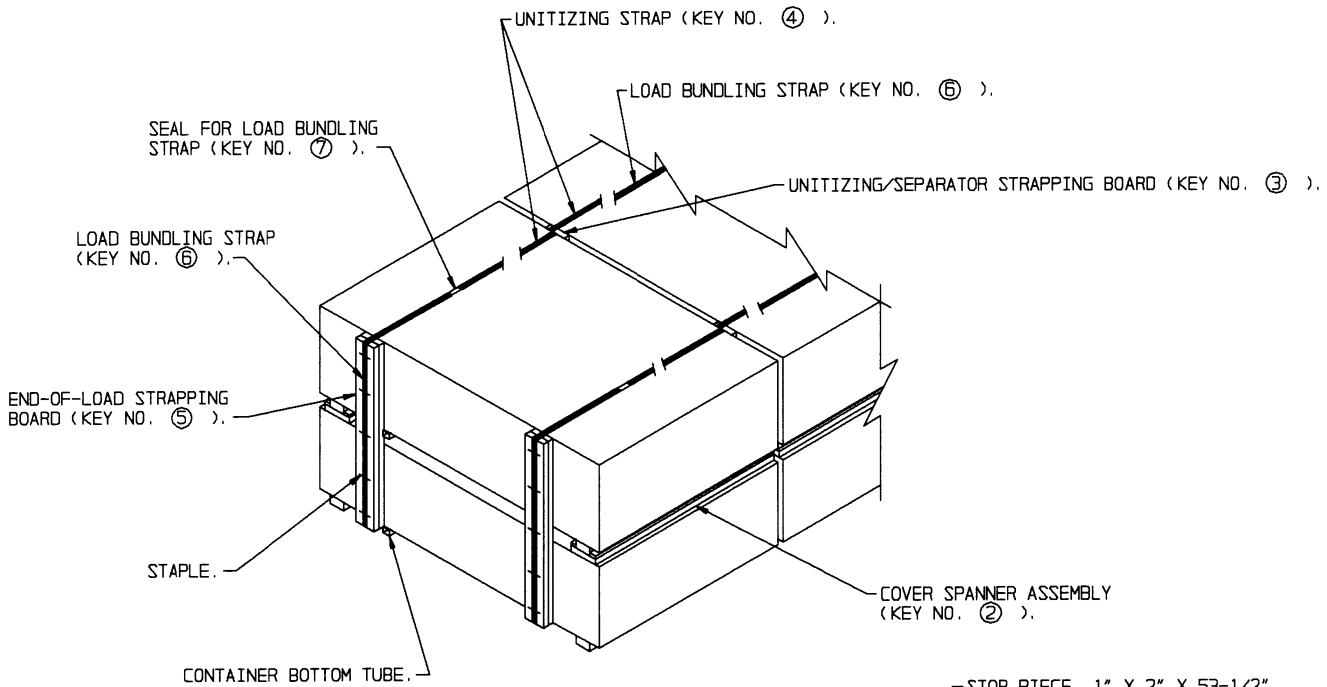
**SPECIAL NOTES:**

1. A 14-CONTAINER LOAD IS SHOWN ON A 45'-0" LONG BY 8'-0" WIDE FLAT BED TRAILER. TRAILERS OF OTHER DIMENSIONS MAY BE USED.
2. THE PROCEDURES DEPICTED ON PAGES 4 AND 5 CAN BE USED FOR ANY LOADS HAVING LESSER EVEN QUANTITIES OF CONTAINERS. FOR LOADS HAVING UNEVEN QUANTITIES OF CONTAINERS, SEE THE PROCEDURES SPECIFIED ON PAGE 11.
3. THE DIMENSIONS OF 16-1/2" AND 31-1/2" FOR LOCATING THE SIDE BLOCKING, PIECES MARKED ①, FROM THE EDGE (RUB RAIL) OR CENTERLINE OF THE TRAILER SHOULD BE VERIFIED WHEN LOADING DUE TO THE PROTRUSION OF THE BOLTS AND/OR NUTS WHICH SECURE THE SKIDS TO THE CONTAINERS. IT SHOULD BE NOTED THAT THE BOLTS AND NUTS MAY BE INSTALLED OPPOSITE HAND ON SOME CONTAINERS AND IF SO, AS LOADING PROGRESSES, IT MAY BECOME NECESSARY TO ADJUST THE LOCATION OF SOME SECTIONS OF THE SIDE BLOCKING TO ASSURE THAT EACH STACK IS BLOCKED AGAINST LATERAL MOVEMENT.
4. IF DESIRED, AND THE CAPACITY OF THE MHE PERMITS, TWO CONTAINERS MAY BE STACKED AND UNITIZED WITH TWO STEEL STRAPS AND STRAPPING BOARDS, AS SPECIFIED, PRIOR TO PLACEMENT ON THE TRAILER.

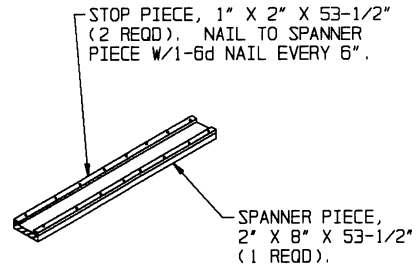
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 2"	125	21
2" X 4"	14	9
2" X 6"	410	410
2" X 8"	136	181
NAILS	NO. REQD	POUNDS
6d (2")	252	1-1/2
10d (3")	680	10-1/2
16d (3-1/2")	30	3/4
STEEL STRAPPING, 1-1/4"	411' REQD	59 LBS
SEAL FOR 1-1/4" STRAPPING	16 REQD	1 LB
STEEL STRAPPING, 2"	378' REQD	126 LBS
SEAL FOR 2" STRAPPING	70 REQD	14 LBS
STRAP STAPLE	62 REQD	1/2 LB

**LOAD AS SHOWN**

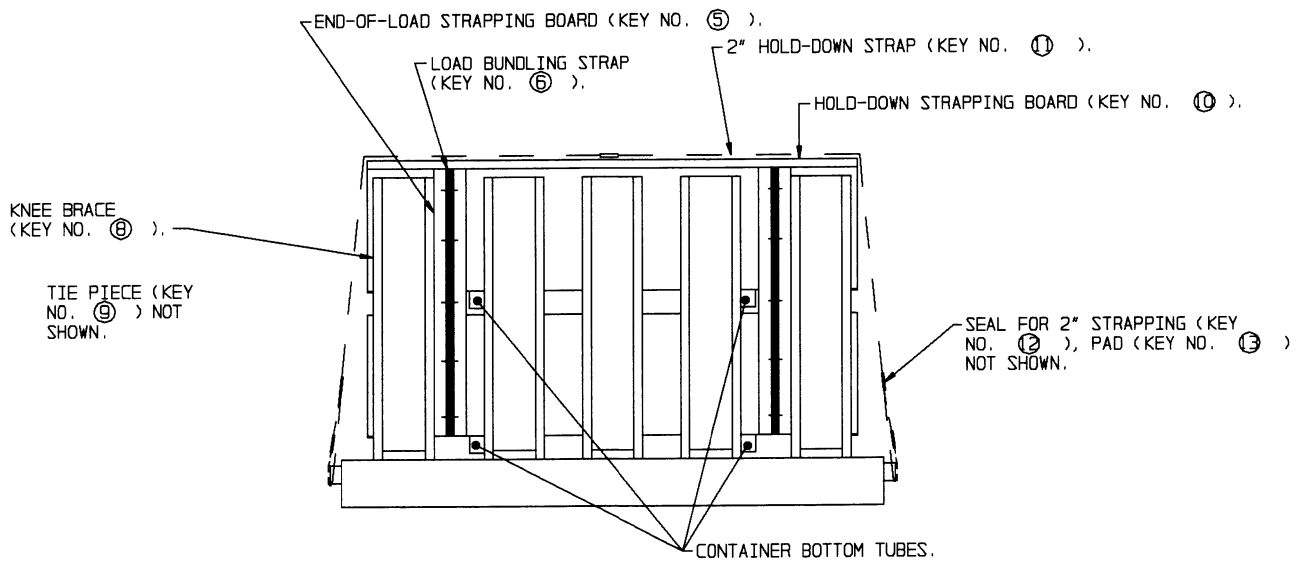
ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER	14	40,600 LBS
DUNNAGE		1,455 LBS
<b>TOTAL WEIGHT</b>		<b>42,055 LBS (APPROX)</b>



**LOAD BUNDLING STRAP INSTALLATION DETAIL**



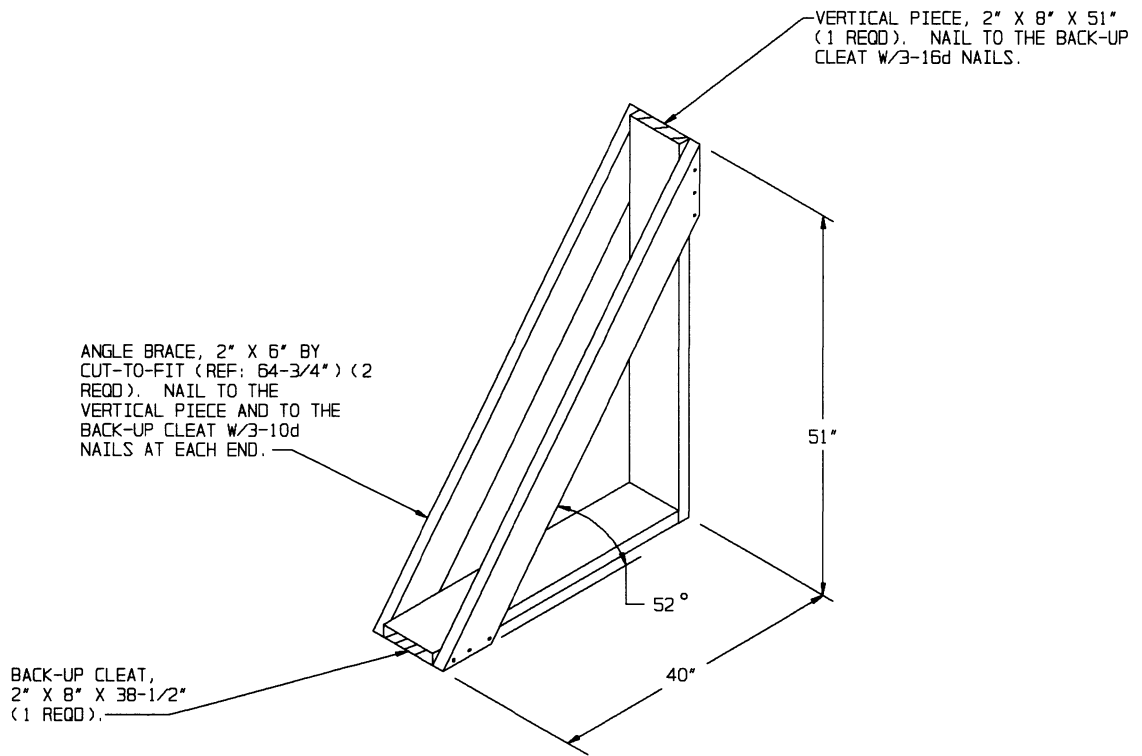
**COVER SPANNER ASSEMBLY**



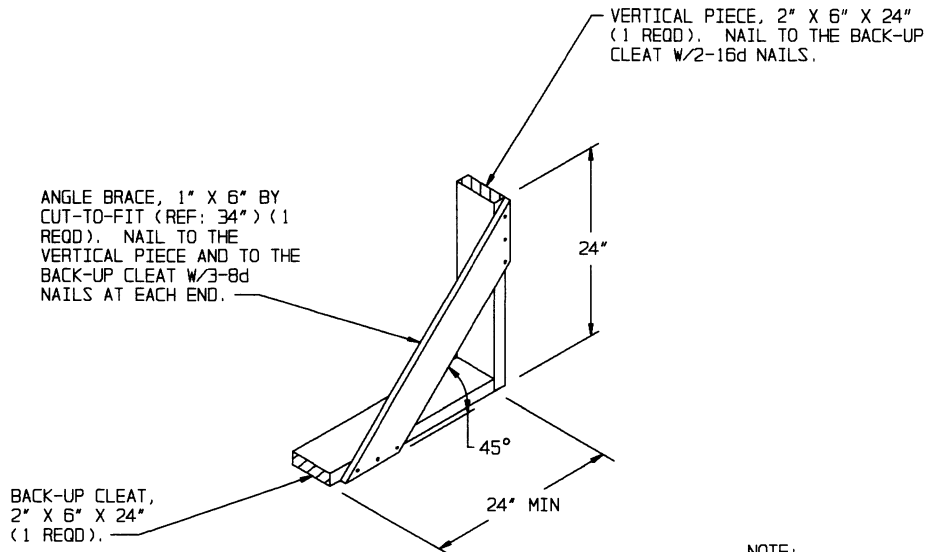
**KNEE BRACE PLACEMENT DETAILS**

NOTE: FOR KEY NUMBERS, REFER TO PAGE 4.

**DETAILS**



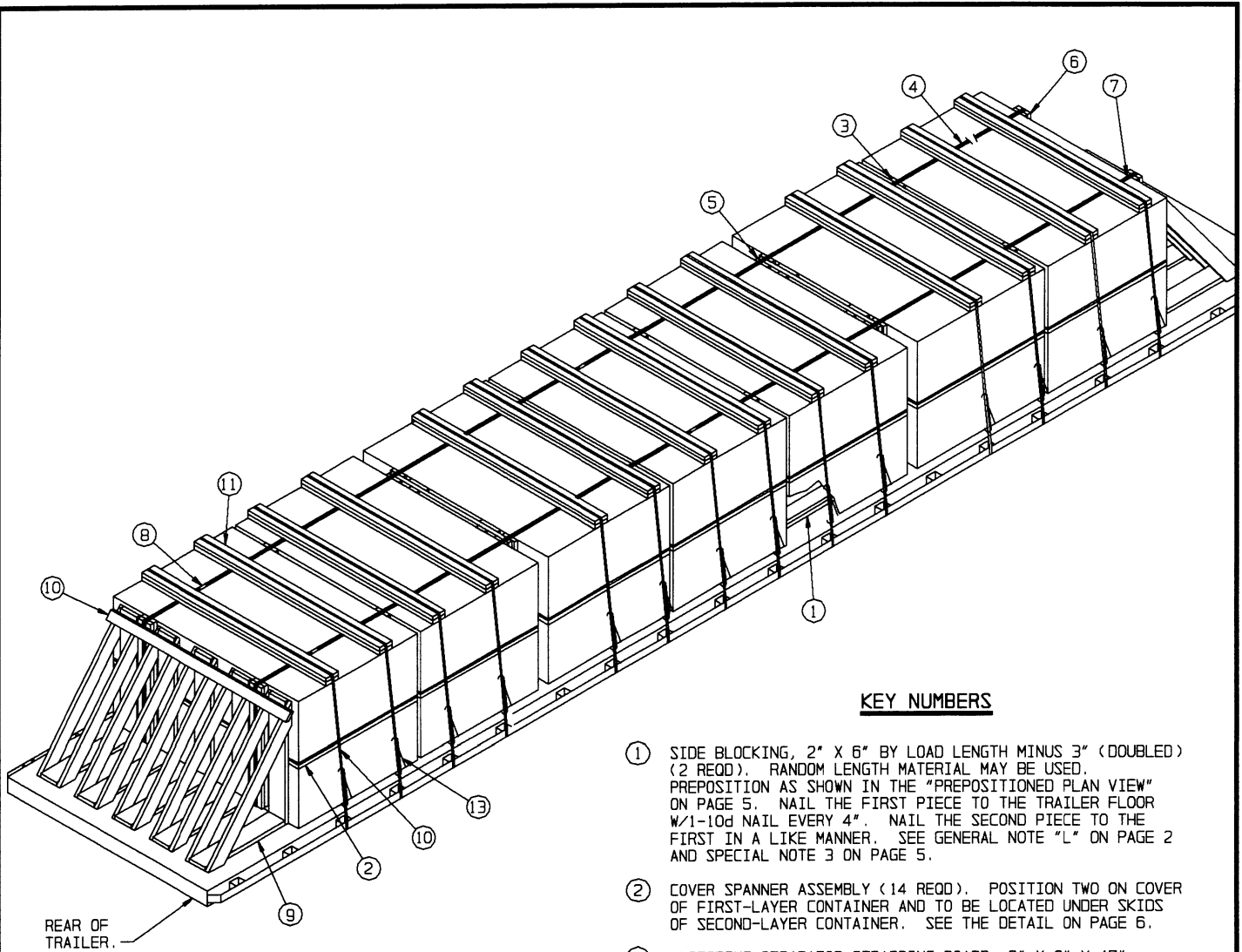
**KNEE BRACE A**



**LTL BRACE**

**NOTE:**

EACH LTL BRACE AS APPLIED FOR LONGITUDINAL BRACING WILL SUPPORT 2,000 POUNDS OF LADING. NOT LESS THAN THREE (3) LTL BRACES WILL BE USED ACROSS THE WIDTH OF THE TRAILER.



**ISOMETRIC VIEW**

(KEY NUMBERS CONTINUED)

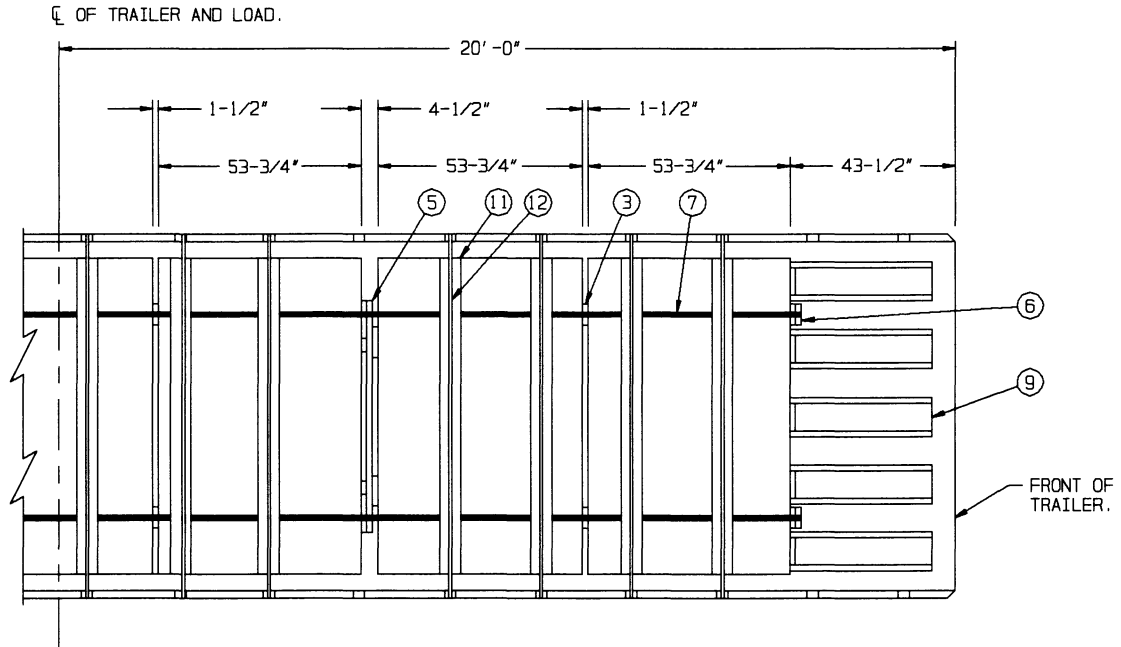
- ⑩ TIE PIECE, 2" X 4" X 7'-0" (2 REQD). POSITION NEAR TOP OF KNEE BRACES AND NAIL TO EACH DIAGONAL PIECE OF THE KNEE BRACES W/2-10d NAILS AT EACH JOINT.
- ⑪ CHAIN BOARD, 2" X 6" BY CONTAINER LENGTH (DOUBLED) (14 REQD). LAMINATE W/5-10d NAILS.
- ⑫ CHAIN, BINDING, 5/16, GRADE 70, BY A LENGTH TO SUIT (14 REQD). POSITION AS SHOWN ABOVE, FASTENING THE CHAIN GRABHOOKS TO THE TRAILER STAKE POCKETS. SEE THE "SPECIAL PROVISIONS FOR CHAIN TIE DOWN" ON PAGE 14.
- ⑬ LOAD BINDER, 5/16 OVERCENTER TYPE (14 REQD, 1 PER CHAIN). WIRE TIE HANDLE TO PREVENT OPENING DURING TRANSPORT. FASTEN THE TENSIONED CHAIN, PIECE MARKED ⑫, TO THE CHAIN BOARD, PIECE MARKED ⑪, W/1-16d NAIL AT EACH END, BENDING OVER TO FORM A LOOP AROUND THE CHAIN LINK. SEE THE "SPECIAL PROVISIONS FOR CHAIN TIE DOWN" ON PAGE 14.

**KEY NUMBERS**

- ① SIDE BLOCKING, 2" X 6" BY LOAD LENGTH MINUS 3" (DOUBLED) (2 REQD). RANDOM LENGTH MATERIAL MAY BE USED. PREPOSITION AS SHOWN IN THE "PREPOSITIONED PLAN VIEW" ON PAGE 5. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/1-10d NAIL EVERY 4". NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTE "L" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 5.
- ② COVER SPANNER ASSEMBLY (14 REQD). POSITION TWO ON COVER OF FIRST-LAYER CONTAINER AND TO BE LOCATED UNDER SKIDS OF SECOND-LAYER CONTAINER. SEE THE DETAIL ON PAGE 6.
- ③ UNITIZING/SEPARATOR STRAPPING BOARD, 2" X 6" X 47" (12 REQD, 2 PER STACK EXCEPT NOT REQD FOR REAR STACK). SEE THE "STACK UNITIZING DETAILS" ON PAGE 3.
- ④ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 18'-6" LONG STEEL STRAPPING (14 REQD, 2 PER STACK). INSTALL TO ENCIRCLE THE TWO CONTAINERS AND, WHERE APPLICABLE, THE STRAPPING BOARD, PIECE MARKED ③. STAPLE TO STRAPPING BOARD W/3 STAPLES. SEE THE "STACK UNITIZING DETAILS" ON PAGE 3.
- ⑤ SPACER ASSEMBLY (2 REQD). LOCATE WHERE SHOWN. POSITION EACH ASSEMBLY SO THAT THE STOP BLOCKS ARE FACING THE FORWARD END OF THE TRAILER AND ARE ADJACENT TO THE UNITIZING/STRAPPING BOARDS, PIECES MARKED ③, ON THE STACK AHEAD. SEE THE "SPACER ASSEMBLY" DETAIL ON PAGE 10 AND SPECIAL NOTE 3 ON PAGE 9.
- ⑥ END-OF-LOAD STRAPPING BOARD, 2" X 6" X 47" (DOUBLED) (4 REQD, 2 AT EACH END OF LOAD). LAMINATE W/1-10d NAIL EVERY 8". POSITION ADJACENT TO CONTAINER BOTTOM TUBES. SEE THE "LOAD BUNDLING STRAP INSTALLATION DETAILS" ON PAGE 6.
- ⑦ LOAD BUNDLING STRAP, 1-1/4" X .035" OR .031" X 76'-0" LONG STEEL STRAPPING (2 REQD). PREPOSITION ON TRAILER FLOOR AS LOADING OPERATIONS PROGRESS. INSTALL TO ENCIRCLE THE ENTIRE LOAD OF CONTAINERS AND END-OF-LOAD STRAPPING BOARDS, PIECES MARKED ⑥. AFTER TENSIONING, STAPLE TO PIECES MARKED ⑤ W/5 STAPLES EACH. SEE THE DETAIL ON PAGE 6.
- ⑧ SEAL FOR 1-1/4" STRAP (16 REQD, 1 PER STRAP). DOUBLE NOTCH EACH SEAL. SEE GENERAL NOTE "M" ON PAGE 2.
- ⑨ KNEE BRACE (10 REQD). SEE THE "KNEE BRACE A" DETAIL ON PAGE 7. POSITION AS SHOWN IN THE "KNEE BRACE PLACEMENT DETAILS" ON PAGE 6. NAIL TO THE TRAILER FLOOR W/12-10d NAILS EACH.

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**HALF PLAN VIEW**

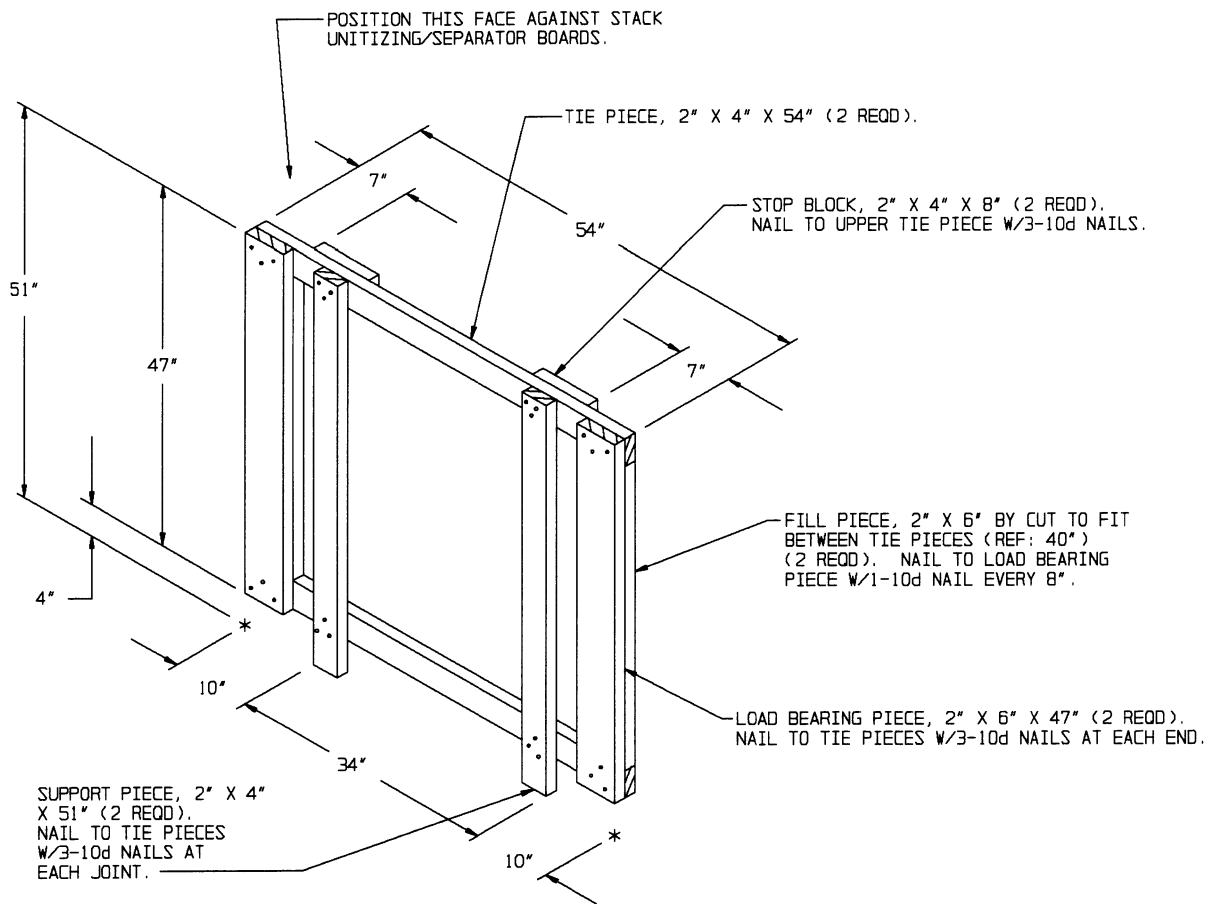
**SPECIAL NOTES:**

1. A 14-CONTAINER LOAD IS SHOWN ON A 40'-0" LONG BY 8'-0" WIDE FLAT BED TRAILER HAVING 20 STAKE POCKETS ON EACH SIDE AND SPACED 24" ON CENTERS. SHORTER TRAILERS CANNOT BE USED FOR SHIPMENT OF A 14-CONTAINER LOAD. SEE NOTE 3 BELOW.
2. THE PROCEDURES DEPICTED ON PAGES 8 AND 9 CAN BE USED FOR ANY LOADS HAVING LESSER EVEN QUANTITIES OF CONTAINERS. NOTE: THE CHAINS MUST BE ATTACHED TO THE TRAILER STAKE POCKETS AND VERTICALLY IN LINE WITH THE CHAIN BOARDS. THE CHAIN BOARDS CAN BE SHIFTED LEFT OR RIGHT BUT MUST NOT BE POSITIONED CLOSER THAN 6" FROM THE EDGE OF THE CONTAINER COVER TO PROVIDE FOR VERTICAL ALIGNMENT. IT MAY BE NECESSARY IN SOME LOADS TO SHIFT THE CONTAINERS WITH DUNNAGE TO COMPLY WITH THIS LOADING REQUIREMENT. SEE GENERAL NOTE "N" ON PAGE 2. FOR LOADS HAVING UNEVEN QUANTITIES OF CONTAINERS, SEE THE PROCEDURES SPECIFIED ON PAGE 11.
3. NOTE THAT TWO (2) SPACER ASSEMBLIES, PIECES MARKED ⑤, ARE NECESSARY SO AS TO PROPERLY LOCATE THE CONTAINERS IN RELATION TO THE STAKE POCKET OF THE TRAILER TO ASSURE COMPLIANCE WITH THE REQUIREMENTS OF NOTE 2 ABOVE AS PERTAINS TO VERTICAL ALIGNMENT OF CHAINS, CHAIN BOARDS AND TRAILER STAKE POCKETS. THEREFORE, THE SPACER ASSEMBLIES MUST BE POSITIONED IN THE LOAD WHERE SHOWN IN THE LOAD VIEWS.
4. IF DESIRED, AND THE CAPACITY OF THE MHE PERMITS, TWO CONTAINERS MAY BE STACKED AND UNITIZED WITH TWO STEEL STRAPS AND STRAPPING BOARDS, AS SPECIFIED, PRIOR TO PLACEMENT ON THE TRAILER.

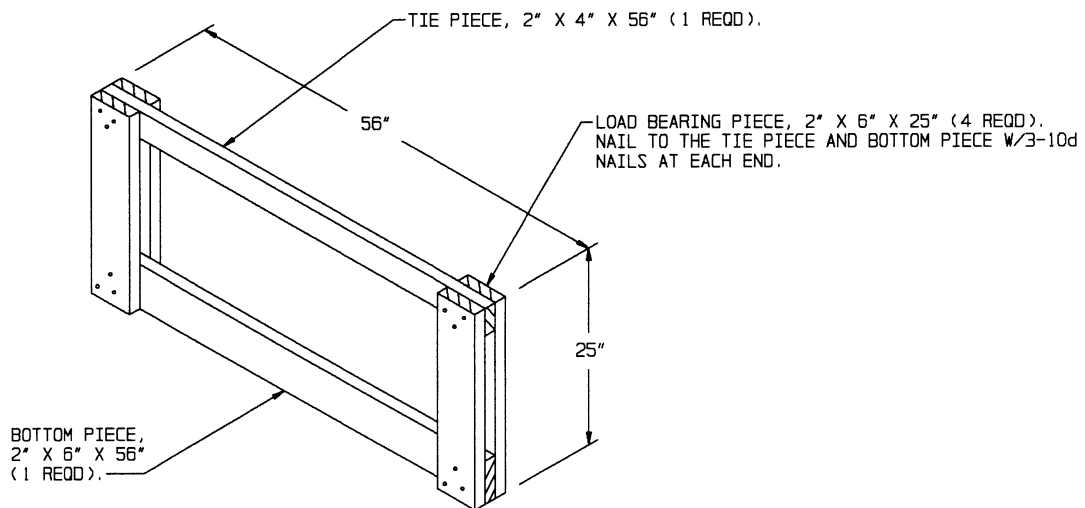
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 2"	125	21
2" X 4"	52	35
2" X 6"	536	536
2" X 8"	136	181
NAILS	NO. REQD	POUNDS
6d (2")	252	1-1/2
10d (3")	838	13
16d (3-1/2")	58	1
CHAIN, BINDING, 5/16"	280' REQD	336 LBS
BINDER, LOAD	14 REQD	84 LBS
STEEL STRAPPING, 1-1/4"	411' REQD	59 LBS
SEAL FOR 1-1/4" STRAPPING	58 REQD	1 LB
STRAP STAPLE	62 REQD	1/2 LB

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER	14	40,600 LBS
DUNNAGE		2,042 LBS
<b>TOTAL WEIGHT</b>		<b>42,642 LBS (APPROX)</b>

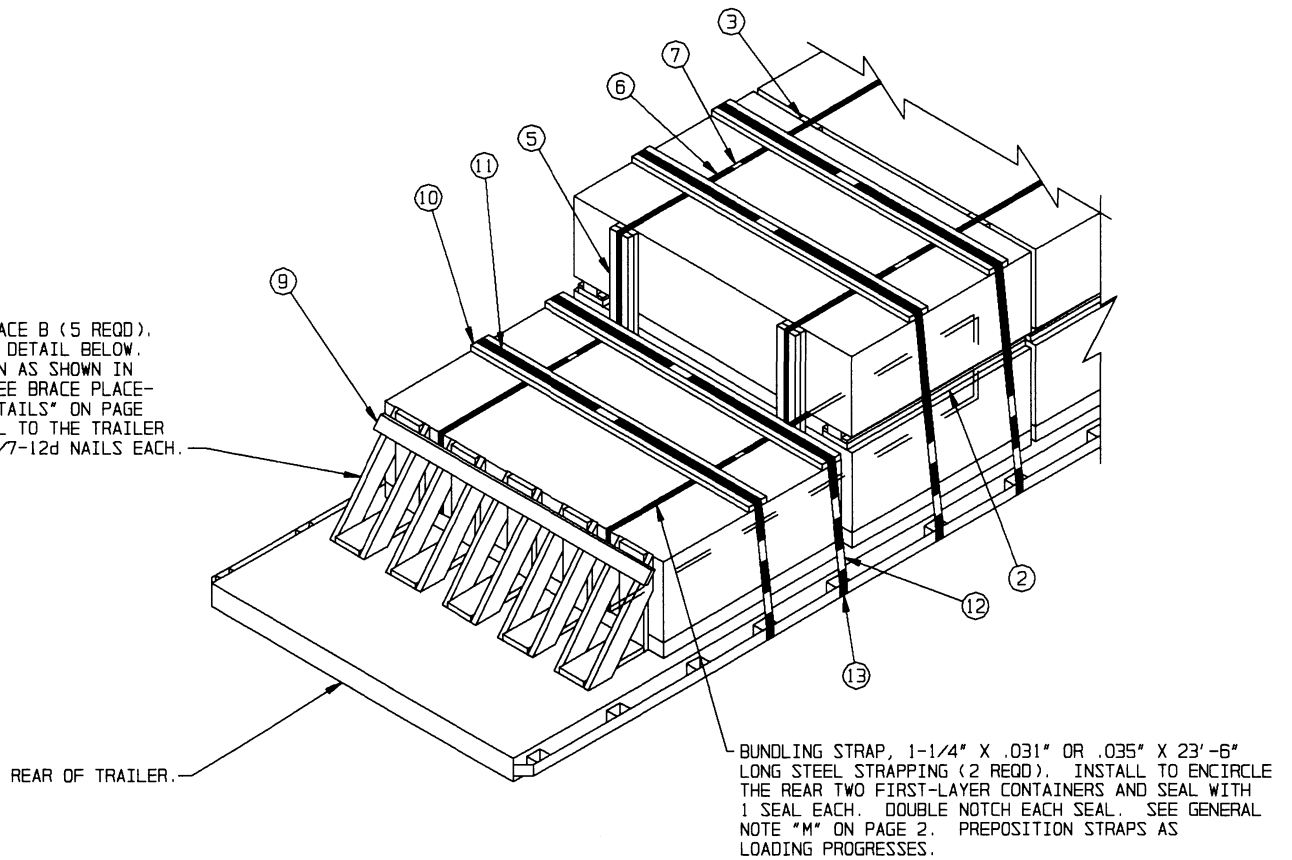


**SPACER ASSEMBLY**



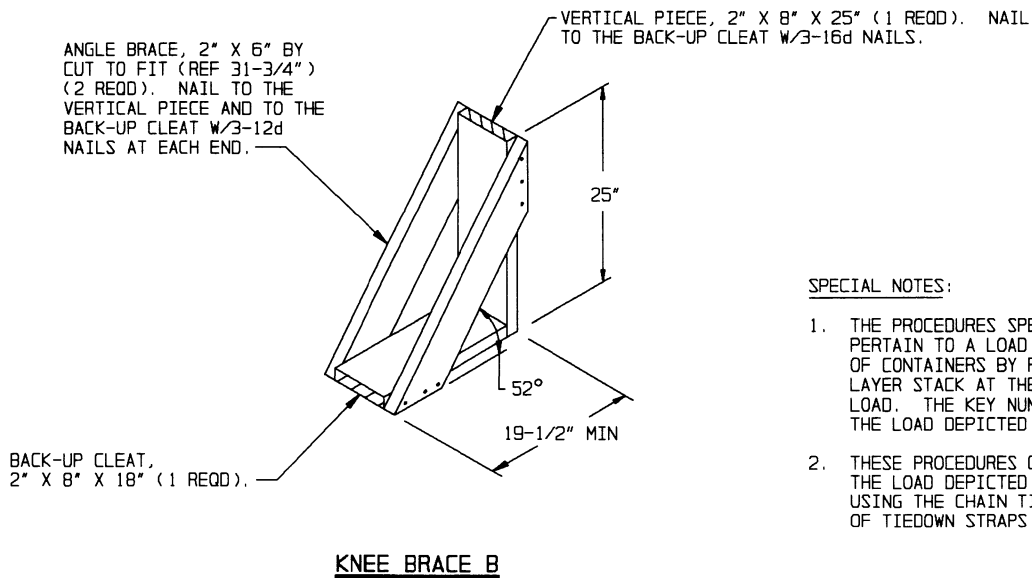
**SEPARATOR GATE**

KNEE BRACE B (5 REQD).  
SEE THE DETAIL BELOW.  
POSITION AS SHOWN IN  
THE "KNEE BRACE PLACE-  
MENT DETAILS" ON PAGE  
6. NAIL TO THE TRAILER  
FLOOR W/7-12d NAILS EACH.



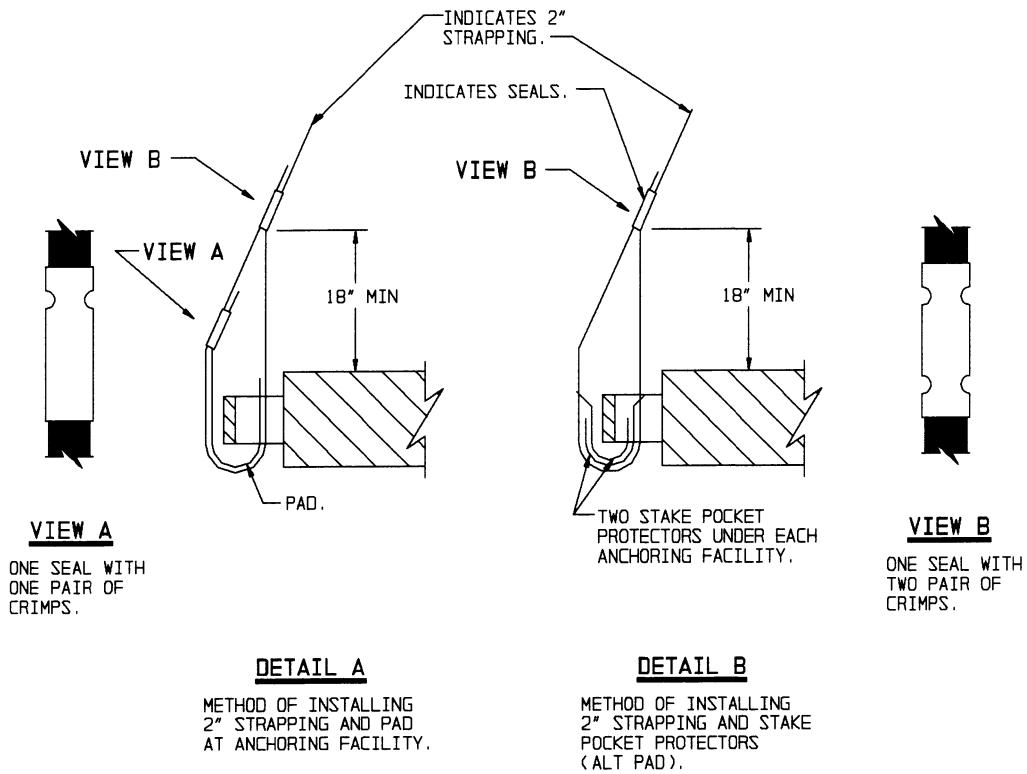
**PARTIAL ISOMETRIC VIEW**

(FOR KEY NUMBERS, SEE PAGES 4 AND 5)

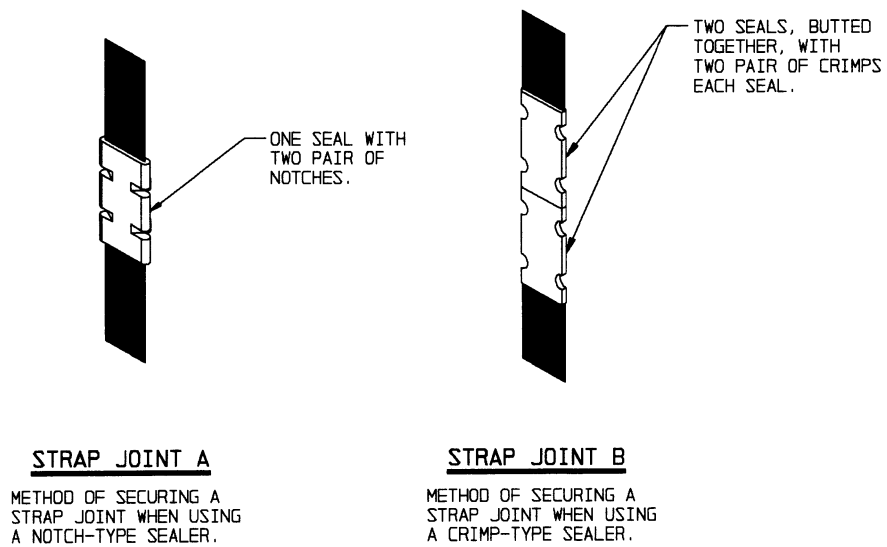


**SPECIAL NOTES:**

1. THE PROCEDURES SPECIFIED ON THIS PAGE PERTAIN TO A LOAD OF AN UNEVEN QUANTITY OF CONTAINERS BY PROVIDING FOR A ONE-LAYER STACK AT THE REAR OF ANY TWO-LAYER LOAD. THE KEY NUMBERS SHOWN RELATE TO THE LOAD DEPICTED ON PAGES 4 AND 5.
2. THESE PROCEDURES CAN ALSO BE ADAPTED TO THE LOAD DEPICTED ON PAGES 8 AND 9 USING THE CHAIN TIEDOWN METHOD IN LIEU OF TIEDOWN STRAPS.

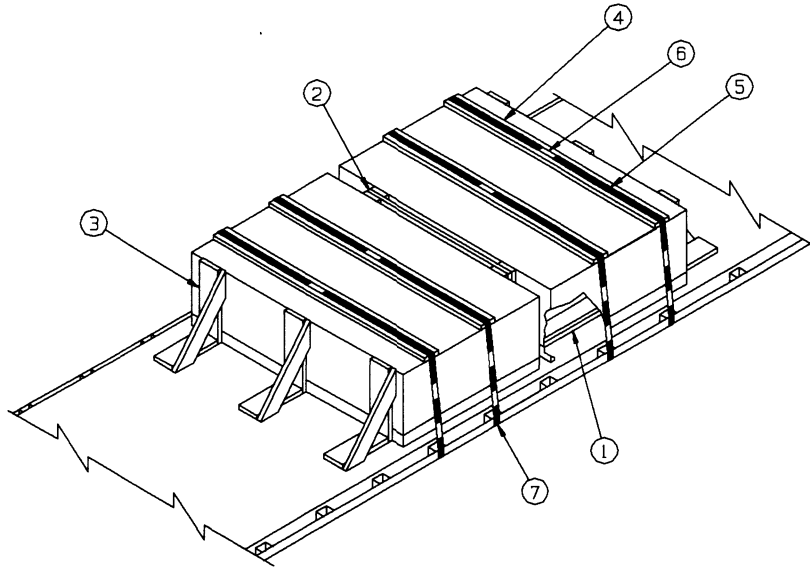


**HOLD-DOWN STRAP ANCHORING DETAILS**



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

**DETAILS**



**ISOMETRIC VIEW**

**KEY NUMBERS**

**SPECIAL NOTES:**

1. A 2-CONTAINER LOAD IS SHOWN REQUIRING A TOTAL OF 6 LTL BRACES. FOR A 3-CONTAINER LOAD A TOTAL OF 10 LTL BRACES MUST BE USED.
2. EACH LTL BRACE AS APPLIED FOR LONGITUDINAL BRACING WILL SUPPORT 2,000 POUNDS OF LADING, HOWEVER, DUE TO THE LENGTH OF THE CONTAINER, NOT LESS THAN THREE (3) LTL BRACES WILL BE USED ACROSS THE WIDTH OF THE TRAILER.

- ① SIDE BLOCKING, 2" X 6" BY LOAD LENGTH MINUS 3" (DOUBLED) (2 REQD). RANDOM LENGTH MATERIAL MAY BE USED. PREPOSITION AS SHOWN IN THE "PREPOSITIONED DUNNAGE PLAN VIEW" ON PAGE 5. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/1-12d NAIL EVERY 4". NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTE "L" ON PAGE 2.
- ② SEPARATOR GATE (1 REQD). SEE THE DETAIL ON PAGE 10.
- ③ LTL BRACE (6 REQD). AS APPLICABLE, ALIGN WITH SKIDS OF THE CONTAINER AND NAIL TO THE TRAILER FLOOR W/10-12d NAILS. SEE THE DETAIL ON PAGE 7.
- ④ STRAPPING BOARD, 2" X 6" BY LENGTH OF THE CONTAINER COVER (4 REQD).
- ⑤ HOLD-DOWN STRAP, 2" X .050" OR .044" X 22'-0" LONG STEEL STRAPPING (4 REQD). INSTALL EACH STRAP FROM TWO 11'-0" LONG PIECES. STAPLE TO STRAPPING BOARD, PIECE MARKED ④, W/2 STAPLES. SEE GENERAL NOTE "M" ON PAGE 2.
- ⑥ SEAL FOR 2" STEEL STRAPPING (20 REQD, 5 PER STRAP). DOUBLE NOTCH EACH SEAL, EXCEPT THOSE USED TO SECURE THE PADS, PIECES MARKED ⑦. SEE "HOLD-DOWN STRAP ANCHORING DETAILS" AND "END-OVER-END LAP JOINT DETAILS" ON PAGE 12.
- ⑦ PAD, 2" X .050" OR .044" X 18" LONG STEEL STRAPPING (8 REQD). POSITION UNDER ANCHORING FACILITY AND SEAL TO HOLD-DOWN STRAP, PIECE MARKED ⑤. ALT: STAKE POCKET PROTECTOR (16 REQD). USE TWO UNDER EACH ANCHORING FACILITY WITH A HOLD-DOWN STRAP. SEE "HOLD-DOWN STRAP ANCHORING DETAILS" ON PAGE 12.

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.