

LOADING AND BRACING (TL & LTL) ON FLATBED TRAILER* OF BLU-122 BOMBS PACKED IN CNU-658 CONTAINERS

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

U.S. ARMY MATERIEL COMMAND DRAWING

APPROVED, U.S. ARMY JOINT MUNITIONS COMMAND <i>Det Lt Cassler</i> AMSTA-LET FUL RICH NEBITT	CAUTION: VERIFY PRIOR TO USE AT WWW.DAC.ARMY.MIL THAT THIS IS THE MOST CURRENT VERSION OF THIS DOCUMENT. THIS IS PAGE 1 OF 12.			
	DO NOT SCALE		MARCH 2007	
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND <i>Charles Stoo</i> U.S. ARMY DEFENSE AMMUNITION CENTER	ENGINEER OR TECHNICIAN	BASIC REV.	RICHARD GARSIDE	
	TRANSPORTATION ENGINEERING DIVISION	<i>[Signature]</i>	TESTED	CLASS DIVISION DRAWING FILE
	VALIDATION ENGINEERING DIVISION	<i>[Signature]</i>	19	48
ENGINEERING DIRECTORATE	<i>[Signature]</i>			

GENERAL NOTES

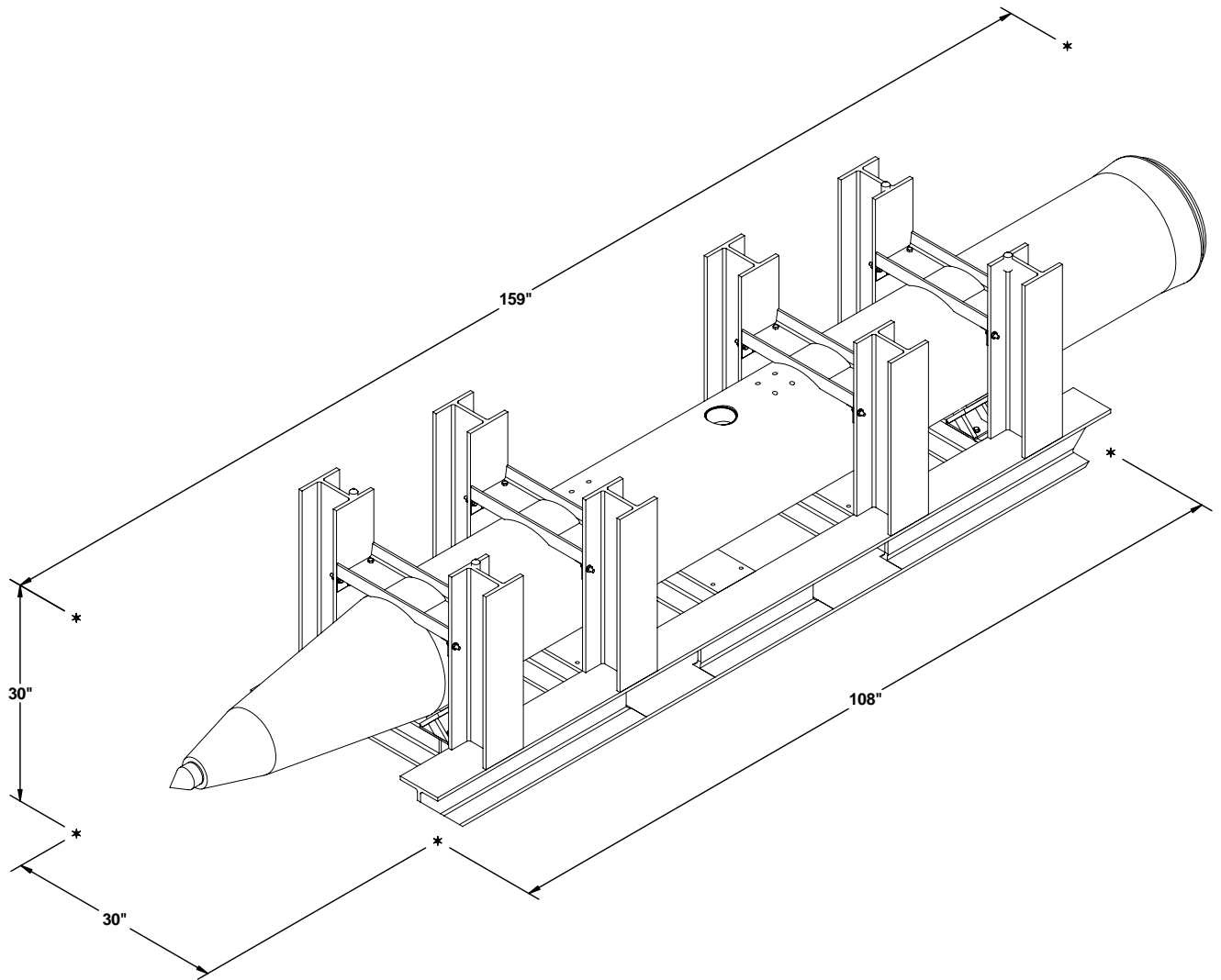
(GENERAL NOTES CONTINUED)

- 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 BLU-122 BOMBS IN CNU-658 CONTAINERS. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE CONTAINER WITH BOMB INSTALLED. SEE PAGE 3 AND AIR FORCE DRAWING X20065101 FOR DETAILS OF THE CONTAINER.
- C. THE LOADS AS SHOWN HEREIN 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.
- D. SELECTION OF A VEHICLE FOR THE TRANSPORT OF THE DESIGNATED ITEM IS THE RESPONSIBILITY OF THE ORIGINATING CARRIER AND THE SHIPPER. ONLY VEHICLES IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPLICABLE REGULATORY DOCUMENTS WILL BE SELECTED FOR USE.
- E. 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.
- F. 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. **NOTICE:** A SHIPMENT WILL BE POSITIONED ON A TRAILER CONSISTENT WITH STATE WEIGHT LAWS.
- G. 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.
- H. THESE PROCEDURES CAN ALSO BE UTILIZED FOR THE SHIPMENT OF THE CONTAINERS WHEN THEY ARE LOADED WITH AN ITEM WHICH IS IDENTIFIED DIFFERENTLY BY NOMENCLATURE THAN THE ITEM IDENTIFIED IN THE DRAWING TITLE, OR WHEN THEY ARE EMPTY.
- 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.
- 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, STEEL STRAPPING, OR CHAINS, AND WHICH ALIGN NEAR THE INDICATED LOCATIONS 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 WHICH ENCOMPASSES 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 ON TO 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 DETAILS ON PAGE 11 FOR GUIDANCE.
- N. THE TRANSPORTING VEHICLE OPERATOR SHOULD BE INSTRUCTED TO PERIODICALLY INSPECT THE CHAINS AND LOAD BINDERS DURING TRANSIT AND TIGHTEN IF NECESSARY.
- O. 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.
- 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 25.4MM, AND ONE POUND EQUALS 0.454 KG.

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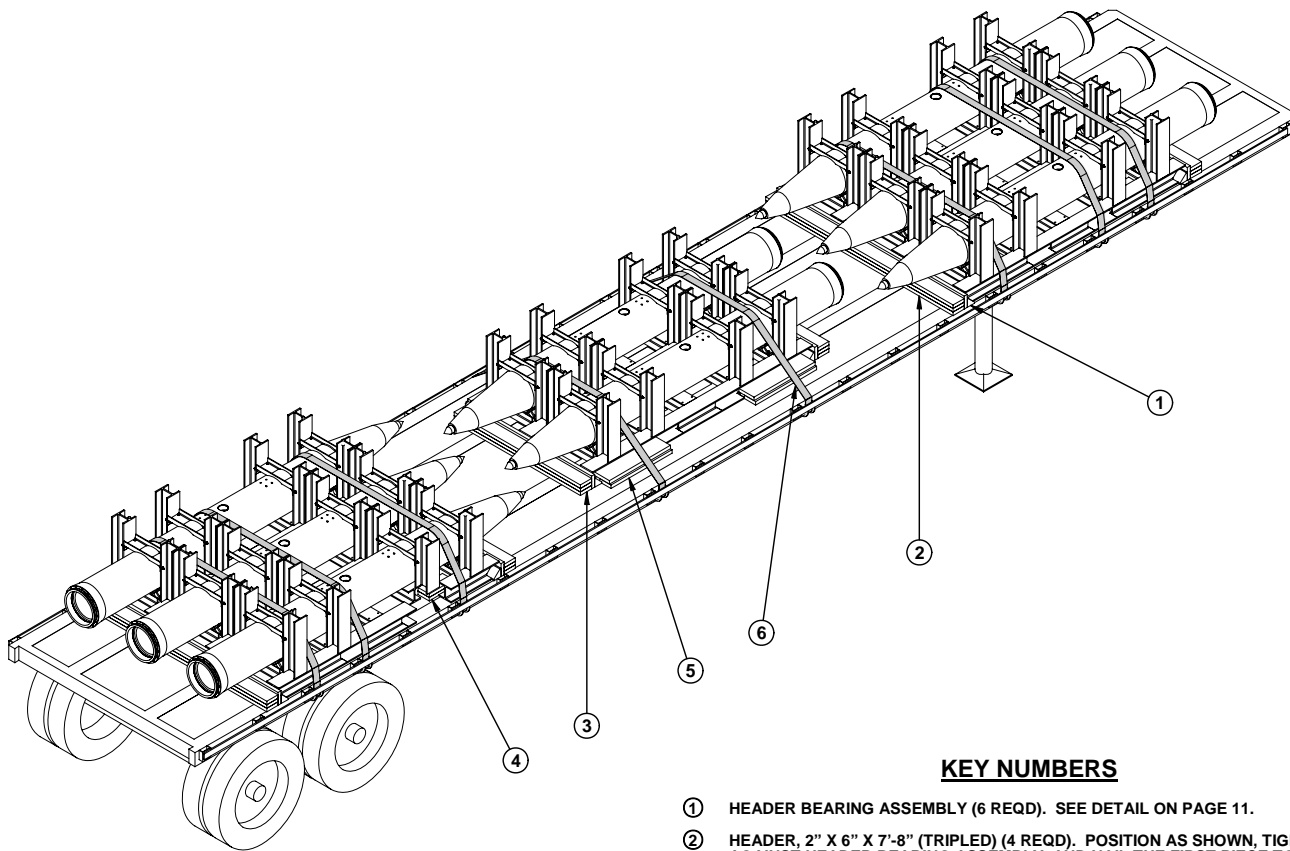
MATERIAL SPECIFICATIONS

LUMBER	- - - - -	SEE TM 743-200-1 (DUNNAGE LUMBER) AND VOLUNTARY PRODUCT STANDARD PS 20.
NAILS	- - - - -	ASTM F1667; COMMON STEEL NAIL (NLCMS OR NLCMS).
STRAP, WEB, COMMERCIAL	- - - - -	WEB SLING AND TIEDOWN ASSOCIATION RECOMMENDED STANDARD SPECIFICATION FOR SYNTHETIC WEB TIEDOWNS, REVISED 1998.
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-PRF-121 (OR EQUAL); NEUTRAL BARRIER MATERIAL.
CHAIN	- - - - -	NATIONAL ASSOCIATION OF CHAIN MANUFACTURER'S WELDED CHAIN SPECIFICATIONS ADOPTED NOVEMBER 1999.
LOAD BINDER	- - - - -	FED SPEC GG-BG325.



CNU-658 CONTAINER

GROSS WEIGHT	-----	4,915 LBS (APPROX)
CUBE	-----	82.8 CU FT (APPROX)



ISOMETRIC VIEW

KEY NUMBERS

- ① HEADER BEARING ASSEMBLY (6 REQD). SEE DETAIL ON PAGE 11.
- ② HEADER, 2" X 6" X 7'-8" (TRIPLED) (4 REQD). POSITION AS SHOWN, TIGHT AGAINST HEADER BEARING ASSEMBLY, AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/9-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST AND THE THIRD PIECE TO THE SECOND W/9-20d NAILS EACH. TOENAIL TO HEADER BEARING ASSEMBLY W/6-10d NAILS.
- ③ HEADER, 2" X 6" X 62" (TRIPLED) (2 REQD). POSITION AS SHOWN, TIGHT AGAINST HEADER BEARING ASSEMBLY, AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/5-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST AND THE THIRD PIECE TO THE SECOND W/5-20d NAILS EACH. TOENAIL TO HEADER BEARING ASSEMBLY W/4-10d NAILS.
- ④ SIDE BLOCKING, 2" X 6" X 12" (DOUBLED) (16 REQD). PREPOSITION AS SHOWN IN THE PLAN VIEW ON PAGE 7. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/4-10d NAILS.
- ⑤ SIDE BLOCKING, 2" X 6" X 30" AND 2" X 8" X 30" (4 REQD). POSITION THE 2" X 6" PIECE AGAINST THE BOTTOM FLANGE OF THE CONTAINER SKID AND NAIL TO THE TRAILER FLOOR W/8-10d NAILS. POSITION THE 2" X 8" PIECE ON TOP OF THE 2" X 6" PIECE AND AGAINST THE WEB OF THE CONTAINER SKID. NAIL TO THE 2" X 6" PIECE W/8-10d NAILS. SEE THE SIDE BLOCKING DETAIL ON PAGE 11.
- ⑥ 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 5.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" x 6"	206	206
2" X 8"	10	13
4" X 4"	41	55
NAI LS	NO. REQD	POUNDS
10d (3")	334	5-1/4
20d (4")	92	3-1/4
ANTI-CHAFING MATERIAL	AS REQD	NIL
WEB STRAP ASSEMBLY		8 REQD

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER	8	39,320 LBS
DUNNAGE		639 LBS
TOTAL WEIGHT		39,959 LBS (APPROX)

SPECIAL NOTES:

1. AN EIGHT 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 6 AND 7 FOR GUIDANCE. IF CHAINS AND LOAD BINDERS ARE TO BE USED FOR LOAD SECUREMENT, REFER TO THE PROCEDURES ON PAGES 8 AND 9 FOR GUIDANCE.
3. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED.

SPECIAL PROVISIONS FOR WEB STRAP TIEDOWN

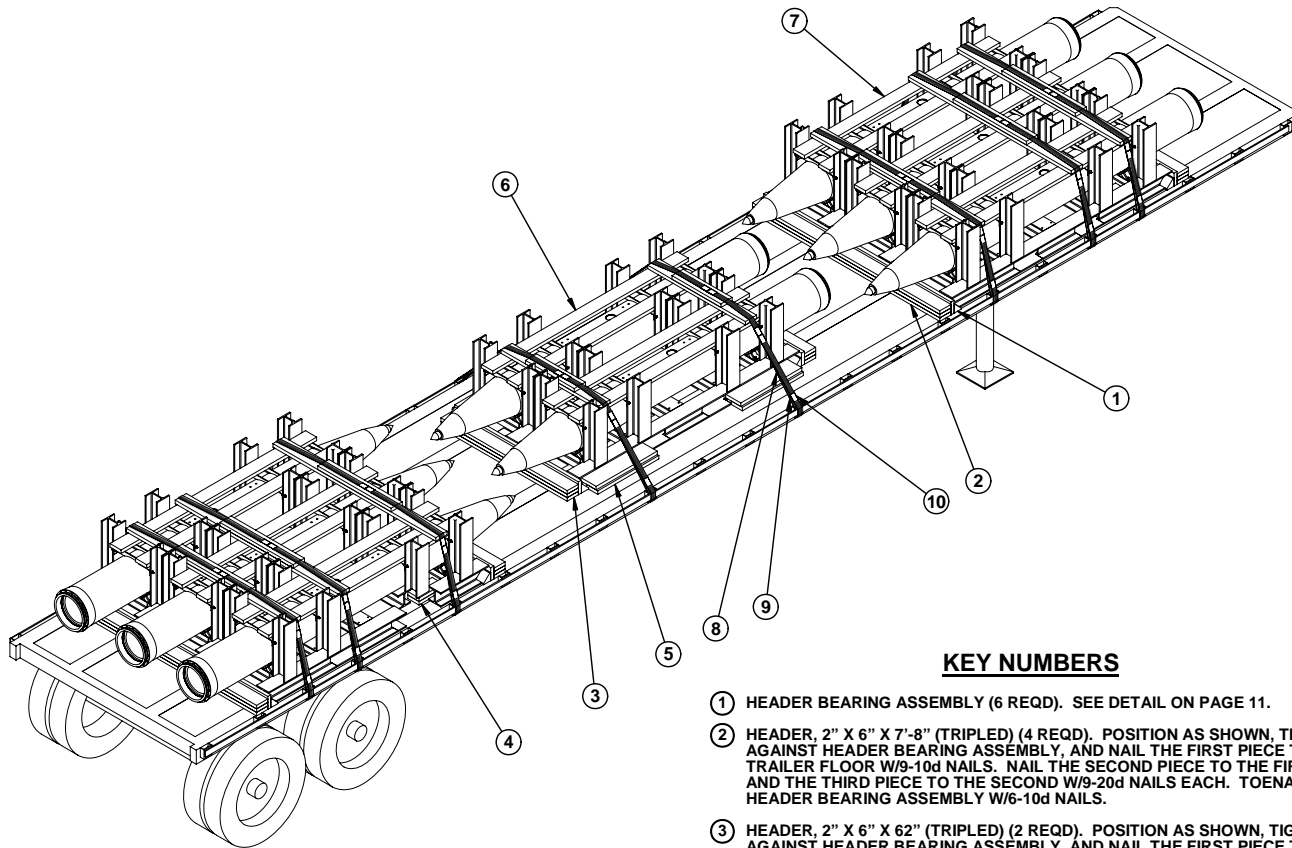
LADING MAY BE SECURED TO A FLATBED TRAILER BY WEB STRAP ASSEMBLIES IN LIEU OF STEEL STRAPPING, PROVIDED THE FOLLOWING CONDITIONS ARE MET.

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.

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(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.



ISOMETRIC VIEW

KEY NUMBERS

- ① HEADER BEARING ASSEMBLY (6 REQD). SEE DETAIL ON PAGE 11.
- ② HEADER, 2" X 6" X 7'-8" (TRIPLED) (4 REQD). POSITION AS SHOWN, TIGHT AGAINST HEADER BEARING ASSEMBLY, AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/9-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST AND THE THIRD PIECE TO THE SECOND W/9-20d NAILS EACH. TOENAIL TO HEADER BEARING ASSEMBLY W/6-10d NAILS.
- ③ HEADER, 2" X 6" X 62" (TRIPLED) (2 REQD). POSITION AS SHOWN, TIGHT AGAINST HEADER BEARING ASSEMBLY, AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/5-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST AND THE THIRD PIECE TO THE SECOND W/5-20d NAILS EACH. TOENAIL TO HEADER BEARING ASSEMBLY W/4-10d NAILS.
- ④ SIDE BLOCKING, 2" X 6" X 12" (DOUBLED) (16 REQD). PREPOSITION AS SHOWN IN THE PLAN VIEW ON PAGE 7. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/4-10d NAILS.
- ⑤ SIDE BLOCKING, 2" X 6" X 30" AND 2" X 8" X 30" (4 REQD). POSITION THE 2" X 6" PIECE AGAINST THE BOTTOM FLANGE OF THE CONTAINER SKID AND NAIL TO THE TRAILER FLOOR W/8-10d NAILS. POSITION THE 2" X 8" PIECE ON TOP OF THE 2" X 6" PIECE AND AGAINST THE WEB OF THE CONTAINER SKID. NAIL TO THE 2" X 6" PIECE W/8-10d NAILS. SEE THE SIDE BLOCKING DETAIL ON PAGE 11.
- ⑥ STRAPPING ASSEMBLY A (1 REQD). SEE DETAIL ON PAGE 10.
- ⑦ STRAPPING ASSEMBLY B (2 REQD). SEE DETAIL ON PAGE 10.
- ⑧ HOLD-DOWN STRAP, 2" X .050" OR .044" X 18'-0" LONG STEEL STRAPPING (8 REQD). INSTALL EACH STRAP FROM TWO 9'-0" LONG PIECES. DO NOT OVERTENSION THE HOLD-DOWN STRAP.
- ⑨ PAD, 2" X .050" OR .044" X 18" LONG STEEL STRAPPING (16 REQD). POSITION BETWEEN THE HOLD-DOWN STRAP AND THE TRAILER STAKE POCKET AND SEAL TO THE HOLD-DOWN STRAP. SEE "DETAIL A" ON PAGE 12. ALT: STAKE POCKET PROTECTOR (16 REQD, 2 PER STRAP). USE TWO UNDER EACH ANCHORING FACILITY WITH A HOLD-DOWN STRAP. SEE "DETAIL B" ON PAGE 12.
- ⑩ SEAL FOR 2" STEEL STRAPPING (40 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 11.

BILL OF MATERIAL

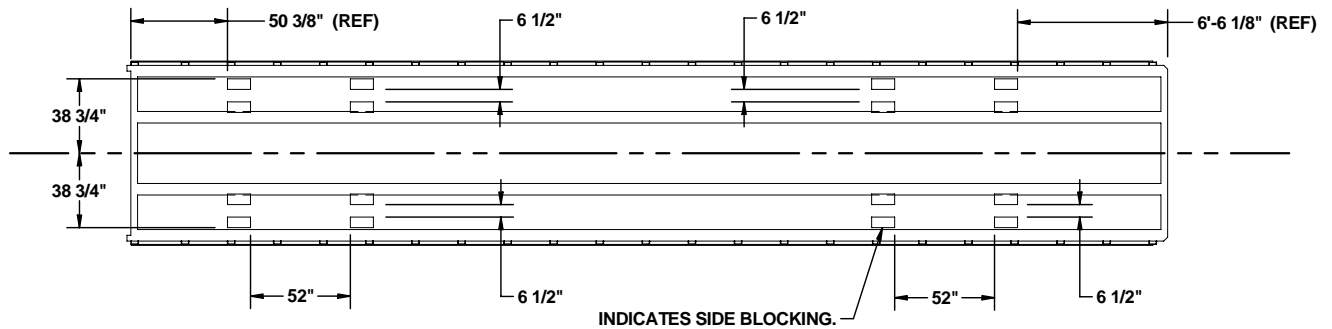
LUMBER	LINEAR FEET	BOARD FEET
2" X 6"	404	404
2" X 8"	10	13
4" X 4"	41	55
NAILS		POUNDS
10d (3")	510	8
20d (4")	92	3-1/4
STEEL STRAPPING, 2" - - - 144' REQD - - - 48 LBS		
ANTI-CHAFING MATERIAL - - - AS REQD - - - NIL		
SEAL FOR 2" STRAPPING - - - 40 REQD - - - 8 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER	8	39,320 LBS
DUNNAGE		1,011 LBS
TOTAL WEIGHT		40,331 LBS (APPROX)

SPECIAL NOTES:

1. AN EIGHT 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 4 AND 5 FOR GUIDANCE. IF CHAINS AND LOAD BINDERS ARE TO BE USED FOR LOAD SECUREMENT, REFER TO THE PROCEDURES ON PAGES 8 AND 9 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.



PRE-POSITIONED BLOCKING PLAN VIEW

Provisions for the Use of Fire Hose in Lieu of Chain Boards or Strapping Boards

FIRE HOSE THAT IS NO LONGER SUITABLE FOR USE IN FIRE FIGHTING APPLICATIONS CAN BE SUBSTITUTED FOR THE DOUBLED 2" BY 6" WOODEN CHAIN BOARDS OR SINGLE 2" BY 6" STRAPPING BOARDS, AS SPECIFIED HEREIN, PROVIDED THE FOLLOWING CONDITIONS ARE MET.

1. SUBSTITUTION AND APPLICATION GUIDANCE

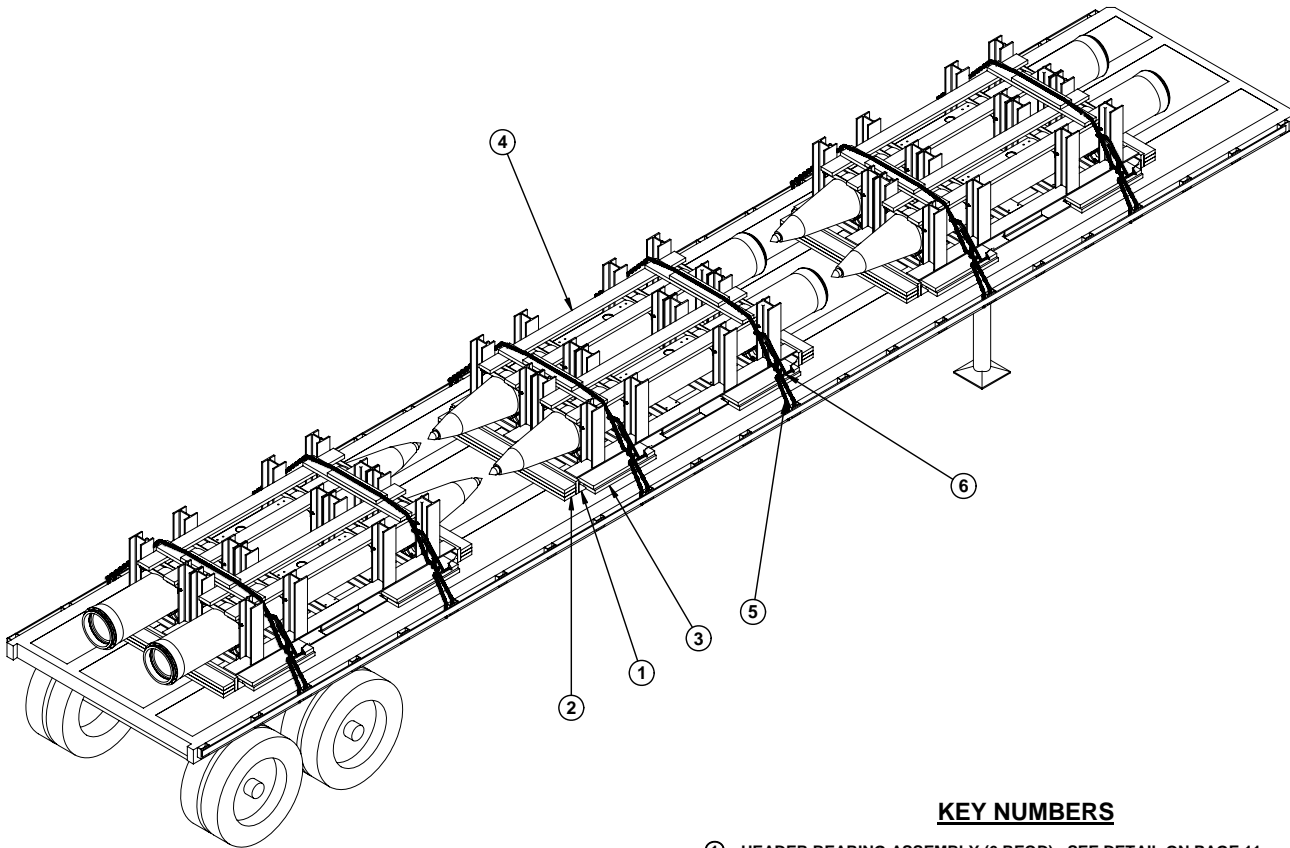
- A. FIRE HOSE MAY BE USED WHEREVER A CHAIN OR STRAPPING BOARD CONTACTS A RIGID SURFACE OF THE LOAD PROVIDED GOUGING, SCRATCHING, CRACKING, BENDING, CRUSHING, OR OTHER VISIBLE DAMAGE DOES NOT OCCUR TO THE LOAD.
- B. ONE OR MORE SEGMENTS OF FIRE HOSE MAY BE USED TO REPLACE EACH CHAIN OR STRAPPING BOARD PROVIDING LOAD PROTECTION DURING TENSIONING OF TIEDOWNS AND LOAD SHIPMENT; I.E., A CHAIN BOARD NEED NOT BE REPLACED BY A SINGLE SEGMENT OF HOSE, MULTIPLE SEGMENTS MAY BE USED INSTEAD, AS LONG AS THEY ARE SECURELY FASTENED TO THE TIEDOWN. REGARDLESS OF THE NUMBER OF SEGMENTS USED, THE HOSE LENGTH WILL BE SUCH THAT IT EXTENDS AT LEAST 6" BEYOND THE EDGE OF THE LOAD.
- C. FIRE HOSE CANNOT BE USED IN PLACE OF A PURCHASE BOARD ON A LOAD CONSISTING OF MORE THAN TWO PALLETS OR CONTAINERS ACROSS THE WIDTH OF THE TRAILER. THE FIRE HOSE CAN BE APPLIED TO THE OUTER STACKS, HOWEVER, A PURCHASE BOARD ASSEMBLY WILL STILL BE REQUIRED TO PROVIDE VERTICAL HOLD-DOWN ON THE CENTER STACK(S).

2. ACCEPTABLE FIRE HOSE

- A. FIRE HOSE TO BE USED WILL BE A RUBBER LINED SINGLE OR DOUBLE JACKETED TYPE; I.E., IT MUST HAVE A RUBBER LINING INSIDE A SINGLE OR DOUBLED FABRIC (COTTON, LINEN, ETC.) JACKET.
- B. THE COLLAPSED WIDTH OF THE HOSE MUST BE A MINIMUM OF 2-1/2".
- C. THE HOSE SEGMENTS USED MUST NOT CONTAIN DEFECTS THAT WILL ALLOW DIRECT CONTACT OF THE CHAIN OR LOAD BINDER WITH THE LOAD. THE HOSE THICKNESS MUST ALSO BE OF SUCH A THICKNESS THAT DENTING OR DAMAGE TO THE LOAD DOES NOT OCCUR DURING CHAIN OR STRAP TENSIONING.

3. SECUREMENT TO CHAINS OR STRAPS

- A. THE SEGMENTS OF HOSE USED UNDER EACH CHAIN OR STRAP WILL BE SECURED TO THE CHAIN OR STRAP WITH ONE FASTENER EVERY 12", WITH A MINIMUM OF TWO FASTENERS REQUIRED PER HOSE SEGMENT.
- B. FASTENERS CAN CONSIST OF PLASTIC ELECTRICAL TIES, NO. 14 GAGE WIRE, OR TAPE. REGARDLESS OF THE TYPE OF FASTENING USED, IT MUST PROVIDE A POSITIVE MEANS OF SECUREMENT OF THE HOSE TO THE CHAIN OR STRAP AND MUST NOT DAMAGE THE SURFACE OF THE CONTAINER, PALLET, OR ITEM IT CONTACTS.



ISOMETRIC VIEW

KEY NUMBERS

- ① HEADER BEARING ASSEMBLY (6 REQD). SEE DETAIL ON PAGE 11.
- ② HEADER, 2" X 6" X 62" (TRIPLED) (6 REQD). POSITION AS SHOWN, TIGHT AGAINST HEADER BEARING ASSEMBLY, AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/5-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST AND THE THIRD PIECE TO THE SECOND W/5-20d NAILS EACH. TOENAIL TO HEADER BEARING ASSEMBLY W/4-10d NAILS.
- ③ SIDE BLOCKING, 2" X 6" X 30" AND 2" X 8" X 30" (12 REQD). POSITION THE 2" X 6" PIECE AGAINST THE BOTTOM FLANGE OF THE CONTAINER SKID AND NAIL TO THE TRAILER FLOOR W/8-10d NAILS. POSITION THE 2" X 8" PIECE ON TOP OF THE 2" X 6" PIECE AND AGAINST THE WEB OF THE CONTAINER SKID. NAIL TO THE 2" X 6" PIECE W/8-10d NAILS. SEE THE SIDE BLOCKING DETAIL ON PAGE 11.
- ④ STRAPPING ASSEMBLY A (3 REQD). SEE DETAIL ON PAGE 10.
- ⑤ CHAIN, BINDING, 5/16" GRADE 70 BY A LENGTH TO SUIT (6 REQD). POSITION AS SHOWN ABOVE, FASTENING THE CHAIN TO THE TRAILER STAKE POCKETS. SEE THE "SPECIAL PROVISIONS FOR CHAIN TIEDOWN" ON PAGE 9.
- ⑥ LOAD BINDER, 5/16", OVER-CENTER TYPE (6 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 9.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 6"	286	286
2" X 8"	30	40
4" X 4"	31	41
NAI LS	NO. REQD	POUNDS
10d (3")	390	6
20d (4")	72	2-1/2
CHAIN, BINDING, 5/16"	108' REQD	130 LBS
BINDER, LOAD	6 REQD	36 LBS

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER	6	29,490 LBS
DUNNAGE		909 LBS
TOTAL WEIGHT		30,399 LBS (APPROX)

SPECIAL NOTES:

1. A SIX 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 4 AND 5 FOR GUIDANCE. IF STEEL STRAPS ARE TO BE USED FOR LOAD SECUREMENT, REFER TO THE PROCEDURES ON PAGES 6 AND 7 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 OR INCREASED TO SUIT THE QUANTITY TO BE SHIPPED.

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 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)

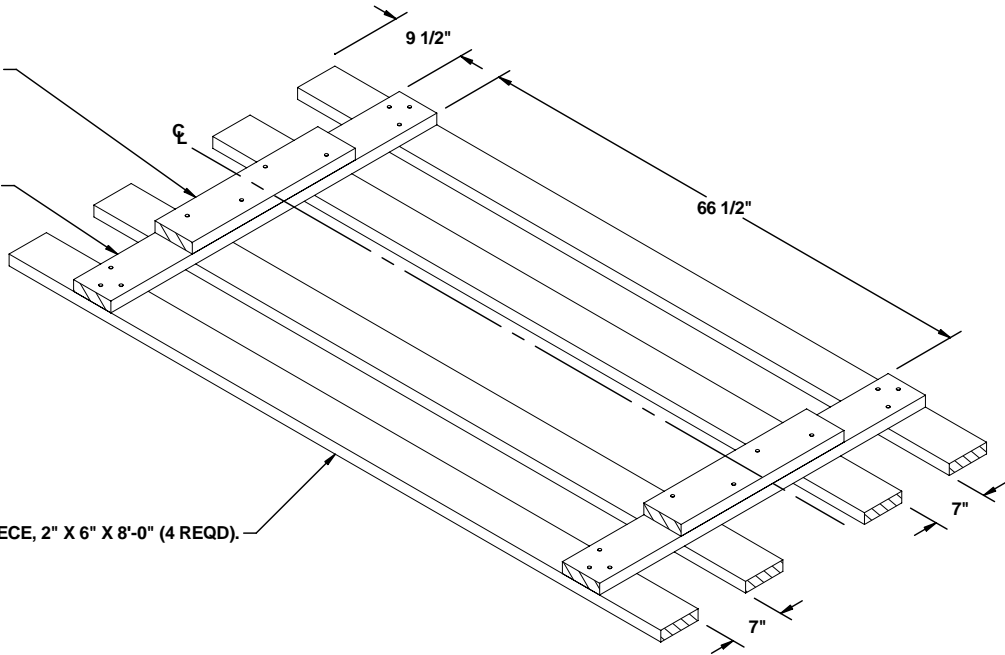
(SPECIAL PROVISIONS FOR CHAIN TIEDOWN CONTINUED)

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). 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.

PURCHASE BOARD, 2" X 6" X 24"
(2 REQD). CENTER AND NAIL TO
STRAPPING BOARD W/4-10d NAILS.

STRAPPING BOARD, 2" X 6" X 48"
(2 REQD). NAIL TO LATERAL PIECE
W/3-10d NAILS AT EACH JOINT.

LATERAL PIECE, 2" X 6" X 8'-0" (4 REQD).

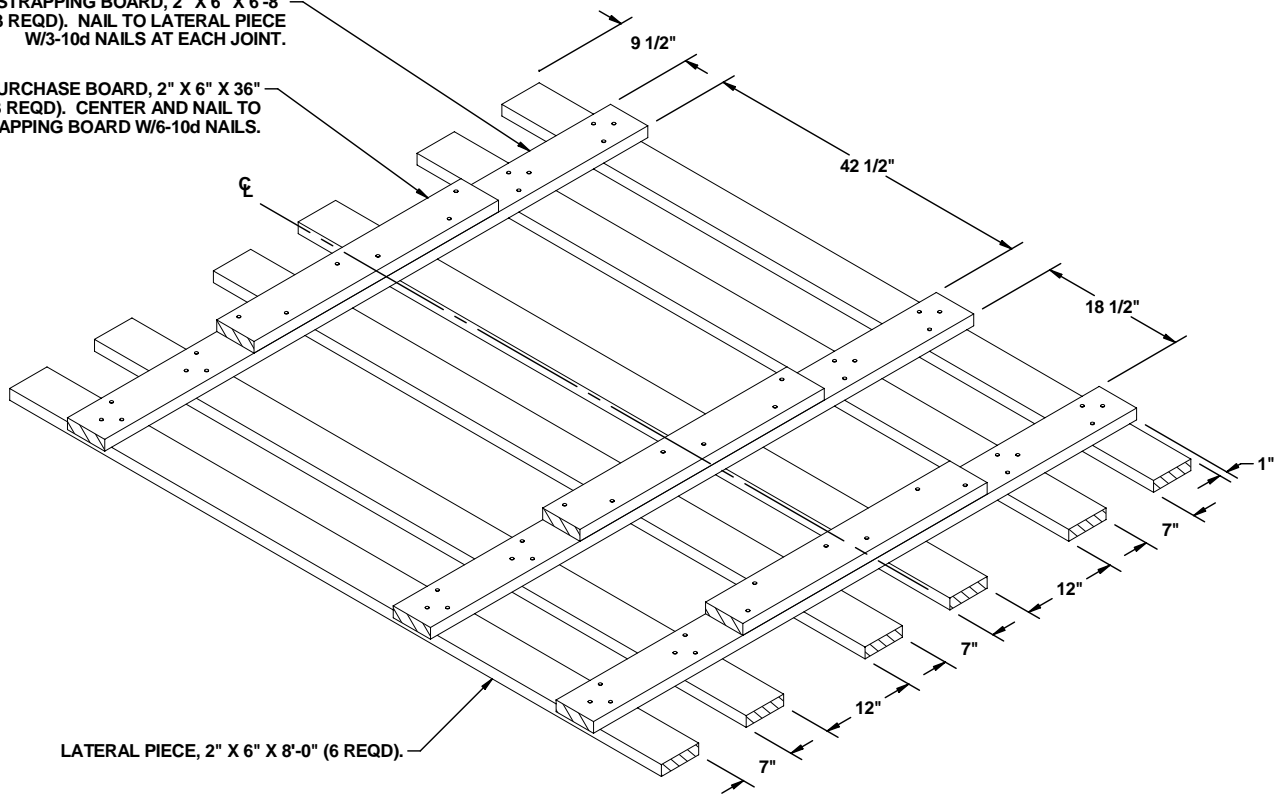


STRAPPING ASSEMBLY A

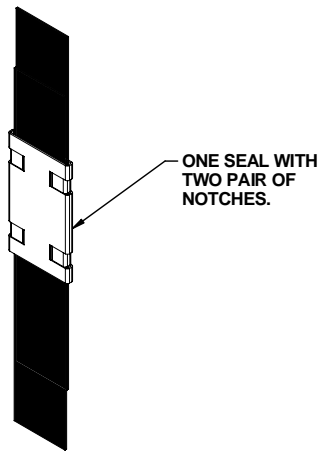
STRAPPING BOARD, 2" X 6" X 6'-8"
(3 REQD). NAIL TO LATERAL PIECE
W/3-10d NAILS AT EACH JOINT.

PURCHASE BOARD, 2" X 6" X 36"
(3 REQD). CENTER AND NAIL TO
STRAPPING BOARD W/6-10d NAILS.

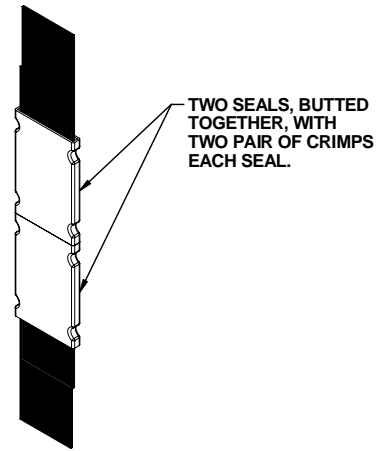
LATERAL PIECE, 2" X 6" X 8'-0" (6 REQD).



STRAPPING ASSEMBLY B

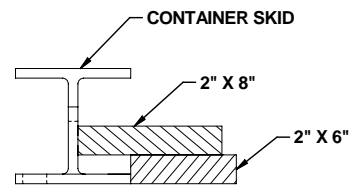


STRAP JOINT A
 METHOD OF SECURING A STRAP JOINT WHEN USING A NOTCH-TYPE SEALER.

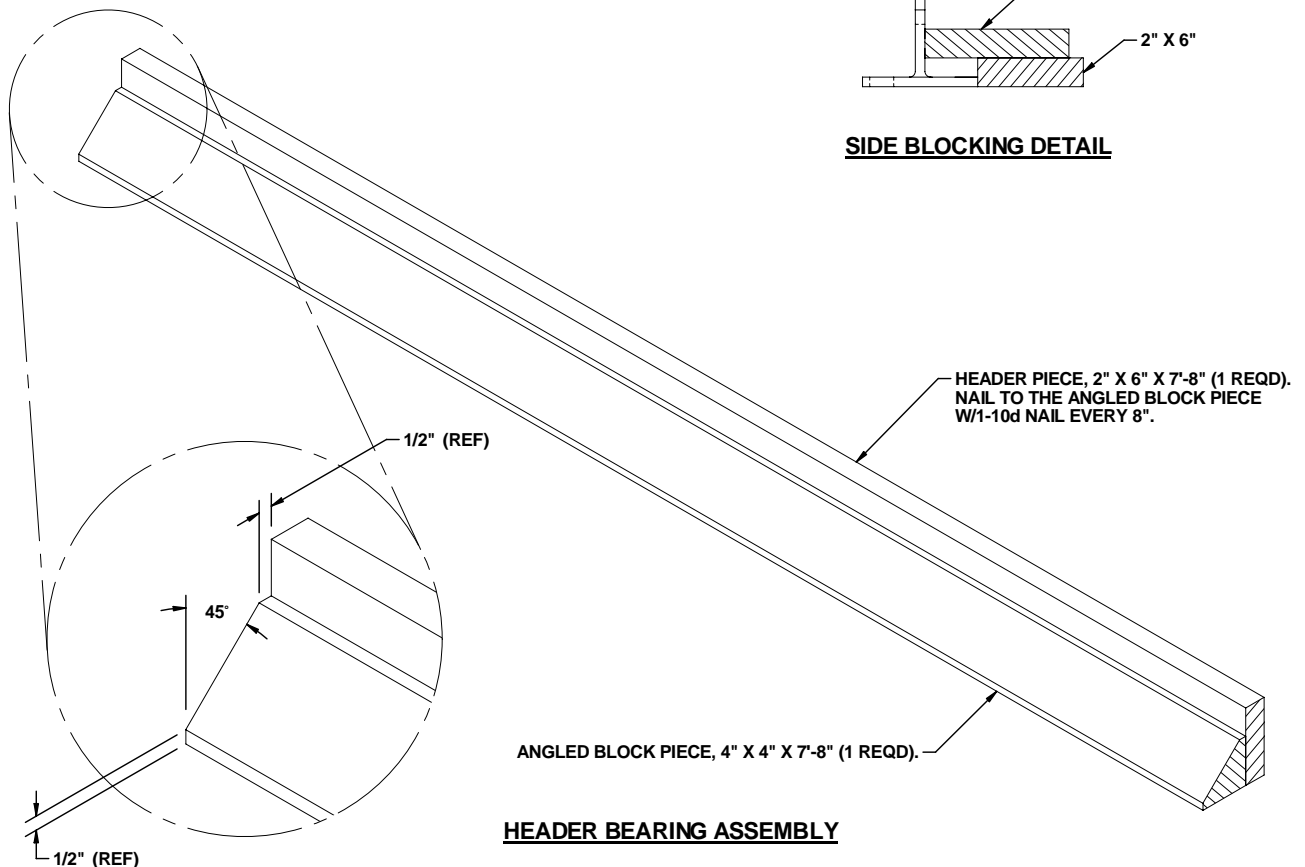


STRAP JOINT B
 METHOD OF SECURING A STRAP JOINT WHEN USING A CRIMP-TYPE SEALER.

END-OVER-END LAP JOINT DETAILS

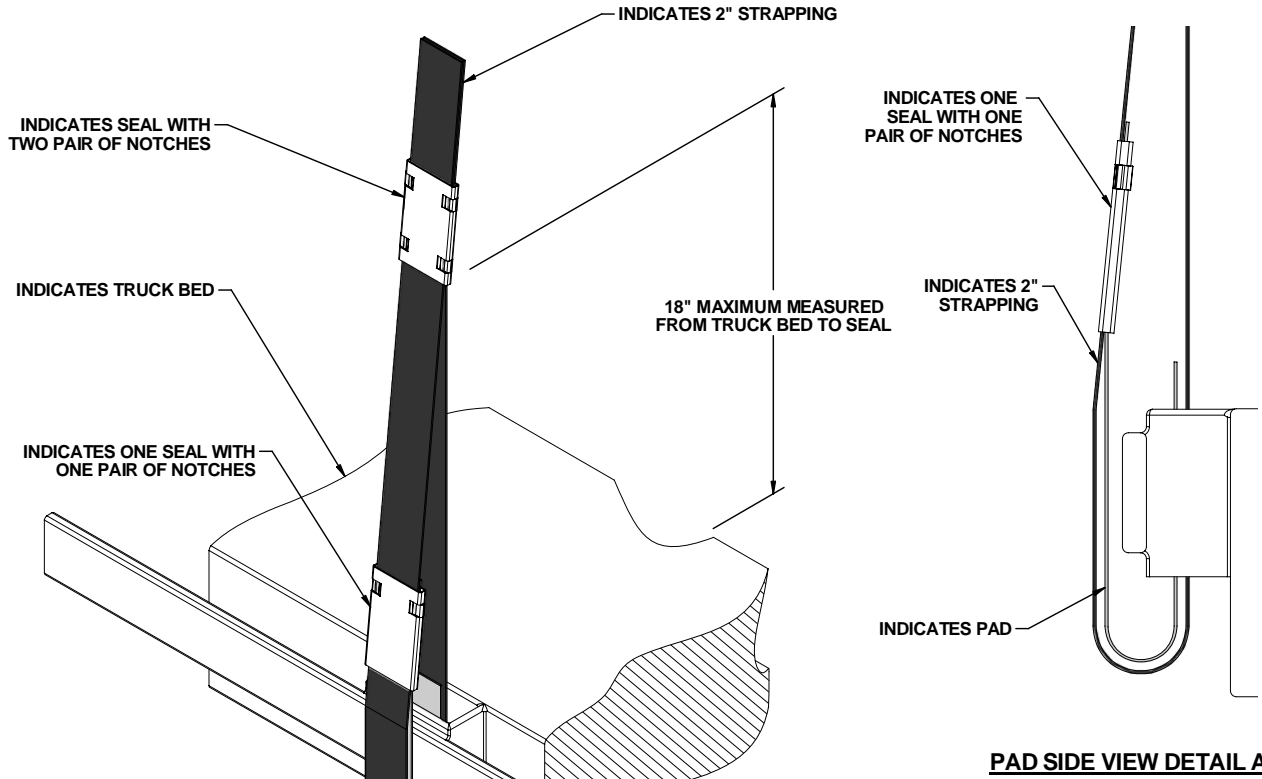


SIDE BLOCKING DETAIL



HEADER BEARING ASSEMBLY

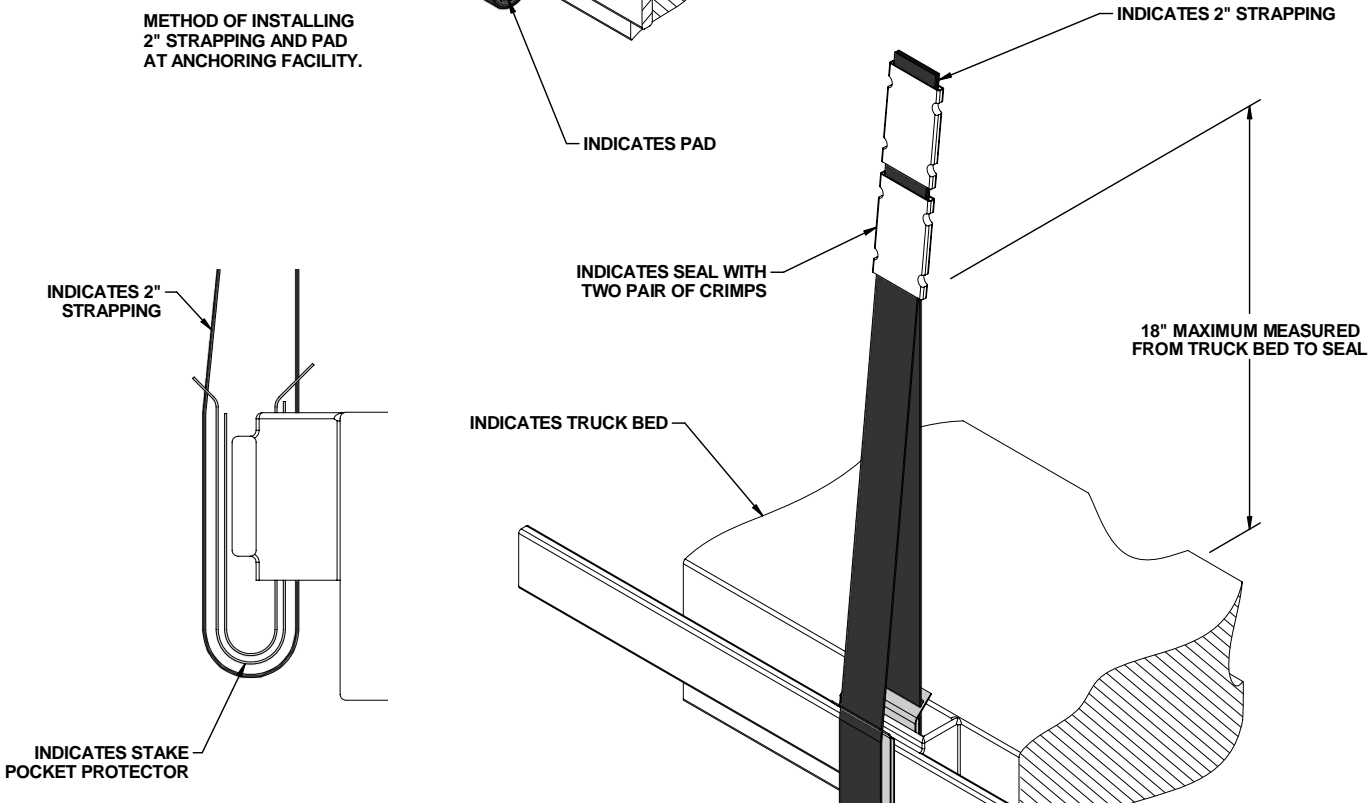
NOTE: REDUCE THE ASSEMBLY LENGTH TO 62" FOR TWO UNIT WIDE LOADS AND TO 32" FOR ONE UNIT WIDE LOADS.



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