

PATRIOT

LOADING AND BRACING (TL & LTL) ON FLATBED TRAILERS* OF PATRIOT (PAC-3) PACKED IN SHIPPING AND STORAGE CANISTERS

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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

<p style="text-align: center;">APPROVED, U.S. ARMY AVIATION ANDMISSILE COMMAND</p> <p>FISHER.JOSEP H.L.1230757859</p> <p><small>Digitally signed by FISHER.JOSEPH.L.1230757859 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=FISHER.JOSEPH.L.1230757859 Date: 2010.04.12 14:37:02 -05'00'</small></p>	<p>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 10.</p>															
<p style="text-align: center;">APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND</p> <p>CARNEY.GARY .BURTON.1038 708038</p> <p><small>Digitally signed by CARNEY.GARY.BURTON.1038708038 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=CARNEY.GARY.BURTON.1038708 038 Date: 2010.04.20 08:54:01 -05'00'</small></p> <p style="text-align: center;">U.S. ARMY DEFENSE AMMUNITION CENTER</p>	<p>DO NOT SCALE</p>		<p>AUGUST 2003</p>													
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<p style="text-align: center;">TRANSPORTATION ENGINEERING DIVISON</p> <p>FIEFFER.LAUR A.A.1230375727</p> <p><small>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: 2010.03.05 09:51:33 -05'00'</small></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">VALIDATION ENGINEERING DIVISON</td> <td style="width: 50%;">TESTED</td> </tr> <tr> <td style="text-align: center;"> <p>BARICKMAN.P HILIP.W.12302 02202</p> <p><small>Digitally signed by BARICKMAN.PHILIP.W.1230202202 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=BARICKMAN.PHILIP.W.1230202202 Date: 2010.04.01 08:01:18 -05'00'</small></p> </td> <td></td> </tr> </table>	VALIDATION ENGINEERING DIVISON	TESTED	<p>BARICKMAN.P HILIP.W.12302 02202</p> <p><small>Digitally signed by BARICKMAN.PHILIP.W.1230202202 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=BARICKMAN.PHILIP.W.1230202202 Date: 2010.04.01 08:01:18 -05'00'</small></p>		<p style="text-align: center;">SEE THE REVISION LISTING ON PAGE 2</p>		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">CLASS</td> <td style="width: 25%;">DIVISION</td> <td style="width: 25%;">DRAWING</td> <td style="width: 25%;">FILE</td> </tr> <tr> <td style="text-align: center;">19</td> <td style="text-align: center;">48</td> <td style="text-align: center;">8220</td> <td style="text-align: center;">GM11PA4</td> </tr> </table>	CLASS	DIVISION	DRAWING	FILE	19	48	8220	GM11PA4
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<p style="text-align: center;">ENGINEERING DIRECTORATE</p> <p>BEAVER.JERRY .W.1230949952</p> <p><small>Digitally signed by BEAVER.JERRY.W.1230949952 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=BEAVER.JERRY.W.1230949952 Date: 2010.04.02 07:28:56 -05'00'</small></p>				<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">CLASS</td> <td style="width: 25%;">DIVISION</td> <td style="width: 25%;">DRAWING</td> <td style="width: 25%;">FILE</td> </tr> <tr> <td style="text-align: center;">19</td> <td style="text-align: center;">48</td> <td style="text-align: center;">8220</td> <td style="text-align: center;">GM11PA4</td> </tr> </table>	CLASS	DIVISION	DRAWING	FILE	19	48	8220	GM11PA4				
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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 PATRIOT ADVANCED CAPABILITY-3 (PAC-3) COMPLETE ROUND, WHEN PACKED IN THE MISSILE CANISTER (SHIPPING, STORAGE AND LAUNCH CANISTER). SEE PAGE 3 AND LOCKHEAD-MARTIN DRAWING 13506000 FOR DETAILS OF THE CANISTERS.
- C. THE LOADS AS SHOWN HEREIN ARE BASED ON 48'-0" AND 53'-0" LONG BY 8'-0" AND 8'-6" 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. ALL LOADS ARE SHOWN WITH THE CANISTERS FACING IN THE SAME DIRECTION, THAT IS, WITH THE FORWARD END OF THE CANISTERS TOWARDS THE FORWARD END OF THE TRAILER. CANISTERS MAY BE SHIPPED FACING EITHER DIRECTION, I.E., WITH FORWARD ENDS TOWARDS THE FRONT OF THE TRAILER OR TOWARDS THE REAR OF THE TRAILER. A SINGLE LOAD MAY ALSO CONSIST OF CANISTERS FACING IN BOTH DIRECTIONS; HOWEVER, ALL CANISTERS IN A SINGLE LOAD BAY MUST FACE IN THE SAME DIRECTION.
- H. 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.
- J. THESE PROCEDURES CAN ALSO BE UTILIZED FOR THE SHIPMENT OF THE CANISTERS 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.
- K. 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)

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.
- STAKE POCKET PROTECTOR** - - - - - : COMMERCIAL GRADE.
- ANTI-CHAFING MATERIAL** - - - - - : MIL-PRF-121 (OR EQUAL); NEUTRAL BARRIER MATERIAL.

(GENERAL NOTES CONTINUED)

- L. **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 AND WHICH ALIGN NEAR THE INDICATED LOCATIONS FOR THE HOLD-DOWN STRAPS SHOULD BE USED. IF THE TRAILER ANCHOR DEVICES ARE NOT PROPERLY POSITIONED TO RECEIVE STRAPPING, AS SHOWN, OR IF THE ANCHOR DEVICES ARE NOT EQUAL TO OR GREATER THAN THE STRENGTH OF THE TIEDOWN STRAPS, 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. WEB STRAPS WILL NOT BE APPLIED TO FORM A COMPLETE LOOP THAT ENCOMPASSES THE LADING AND THE TRAILER FRAME AND/OR BED.
- M. 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.
- N. 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 10 FOR GUIDANCE.
- O. THE TRANSPORTING VEHICLE OPERATOR SHOULD BE INSTRUCTED TO PERIODICALLY INSPECT THE STRAPS DURING TRANSIT AND TIGHTEN IF NECESSARY.
- 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. ANTI-CHAFING MATERIAL MUST BE INSTALLED AT POINTS OF CONTACT BETWEEN CANISTERS.

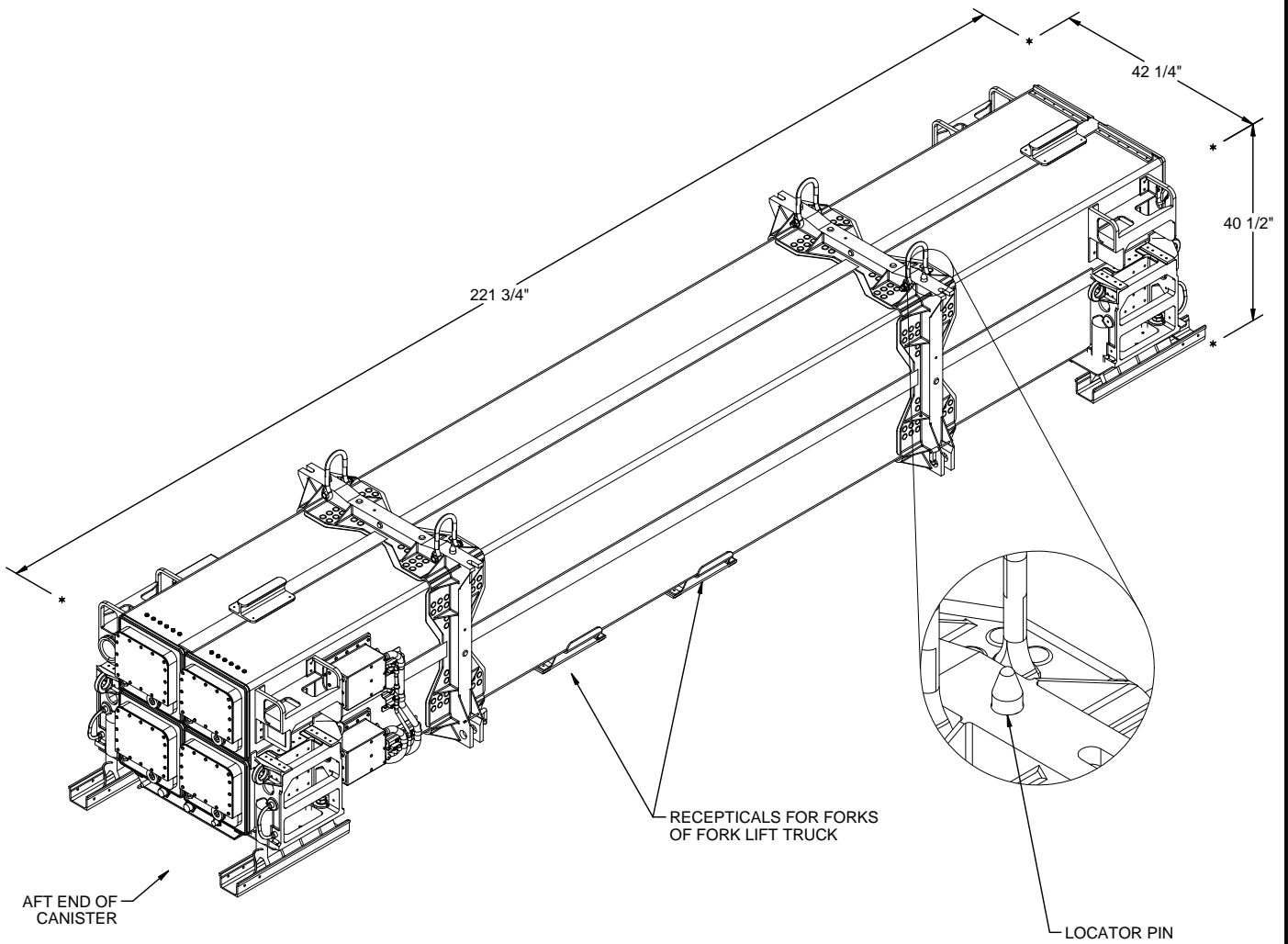
REVISIONS

REVISION NUMBER 1, DATED JULY 2006, CONSISTS OF:

1. ELIMINATING TWO HIGH LOADS IN ACCORDANCE WITH AMCOM MEMORANDUM DATED 7 OCTOBER 2004.
2. ELIMINATING THE USE OF CHAINS FOR TIEDOWN IN ACCORDANCE WITH AMCOM MEMORANDUM DATED 7 OCTOBER 2004.

REVISION NUMBER 2, DATED MARCH 2010, CONSISTS OF:

1. ADDING GENERAL NOTE "G".
2. ADDING A REFERENCE TO GENERAL NOTE "G" TO LOAD VIEW PAGES.

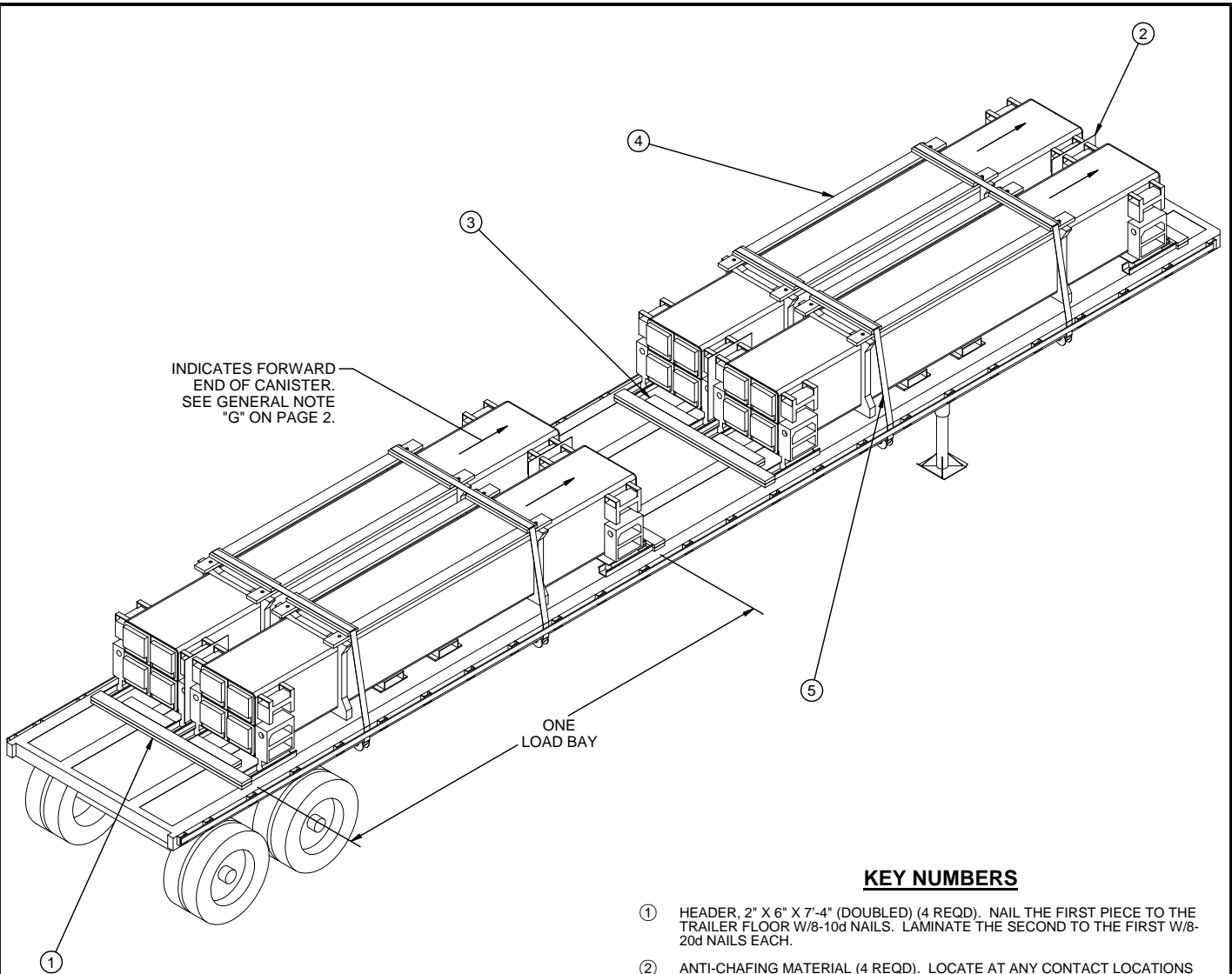


PATRIOT (PAC-3) DETAIL

GROSS WEIGHT - - - - - 4,399 LBS (APPROX)
 CUBE - - - - - 218.7 CU FT (APPROX)

CANISTER HANDLING PROCEDURAL GUIDANCE

1. APPROVED MATERIAL HANDLING EQUIPMENT (MHE) IS SPECIFIED IN OTHER DOCUMENTS. MHE IS INTENDED TO MEAN EQUIPMENT SUCH AS FORKLIFT TRUCKS, CRANES, HAND TRUCKS, DOLLIES, ROLLER ASSEMBLIES, SLINGS, AND SPREADER BARS.
2. PRECAUTIONARY HANDLING TECHNIQUES NORMALLY EMPLOYED OR AS SPECIFIED FOR THE TYPE OF COMMODITY INVOLVED WILL BE OBSERVED.
3. ONLY APPROVED AND APPROPRIATELY SIZED MATERIALS HANDLING EQUIPMENT WILL BE USED FOR HANDLING THE DEPICTED CANISTERS.
4. IF HANDLING IS ACCOMPLISHED WITH A FORK TRUCK, THE CANISTERS SHOULD BE HANDLED FROM A SIDE POSITION AS MUCH AS POSSIBLE. CARE MUST BE EXERCISED WHEN INSERTING FORKS UNDER A CANISTER, TO PREVENT DAMAGE TO THE CANISTER BY THE FORK TINES OR THE FORKLIFT PACKAGE GUARD.
5. SLINGING OF A CANISTER WILL BE IN ACCORDANCE WITH APPROVED PROCEDURES.



INDICATES FORWARD
END OF CANISTER.
SEE GENERAL NOTE
"G" ON PAGE 2.

ONE
LOAD BAY

ISOMETRIC VIEW

KEY NUMBERS

- ① HEADER, 2" X 6" X 7'-4" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/8-10d NAILS. LAMINATE THE SECOND TO THE FIRST W/8-20d NAILS EACH.
- ② ANTI-CHAFING MATERIAL (4 REQD). LOCATE AT ANY CONTACT LOCATIONS BETWEEN ADJACENT CANISTERS. USE TAPE, STRAP, OR WIRE TIES TO KEEP ANTI-CHAFING MATERIAL IN PLACE.
- ③ SIDE BLOCKING, 2" X 6" X 24" (DOUBLED) (8 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/6-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST W/6-10d NAILS.
- ④ TOP ASSEMBLY (4 REQD). SEE DETAIL ON PAGE 8. POSITION HOLES ON TOP ASSEMBLY LOCATOR PIECE OVER CANISTER LOCATOR PINS.
- ⑤ WEB STRAP ASSEMBLY (4 REQD). POSITION TO EXTEND FROM A WINCH ON ONE SIDE OF THE TRAILER, OVER CANISTERS, TO AN ATTACHMENT POINT ON THE OPPOSITE SIDE. SEE THE "SPECIAL PROVISIONS FOR WEB STRAP TIE-DOWN" ON PAGE 5.

BI LL OF MATERI AL

LUMBER	LI NEAR FEET	BOARD FEET
2" X 6"	194	194
NAI LS	NO. REQD	POUNDS
10d (3")	176	2-3/4
20d (4")	32	1-1/4
ANTI-CHAFING MATERI AL	AS REQD	NIL
WEB STRAP ASSEMBLY	4 REQD	

LOAD AS SHOWN

ITEM	QUANTI TY	WEI GHT (APPROX)
CANI STER	4	17,596 LBS
DUNNAGE		545 LBS

TOTAL WEI GHT - - - - - 18,141 LBS (APPROX)

SPECIAL NOTES:

1. A FOUR CANISTER LOAD IS SHOWN ON A 48'-0" LONG BY 8'-0" WIDE FLATBED TRAILER. OTHER LENGTH AND WIDTH TRAILERS MAY BE USED.
2. CHAINS AND LOAD BINDERS MAY NOT 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.
3. **CAUTION:** THE STRAPPING MUST BE IN VERTICAL ALIGNMENT WITH THE STRUT ON THE TOP ASSEMBLY. SHIFT THE LOAD FORE OR AFT AS NECESSARY TO ACCOMMODATE VARIATIONS IN STRAPPING LOCATION OR ADJUST STRUT LOCATION ON THE TOP ASSEMBLY.
4. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY ONE CANISTER OR ENTIRE LOAD UNITS OF TWO CANISTERS. SEE THE DETAILS ON PAGE 6 FOR OTHER LOADING CONFIGURATIONS AND QUANTITIES.

SPECIAL PROVISIONS FOR WEB STRAP TIEDOWN

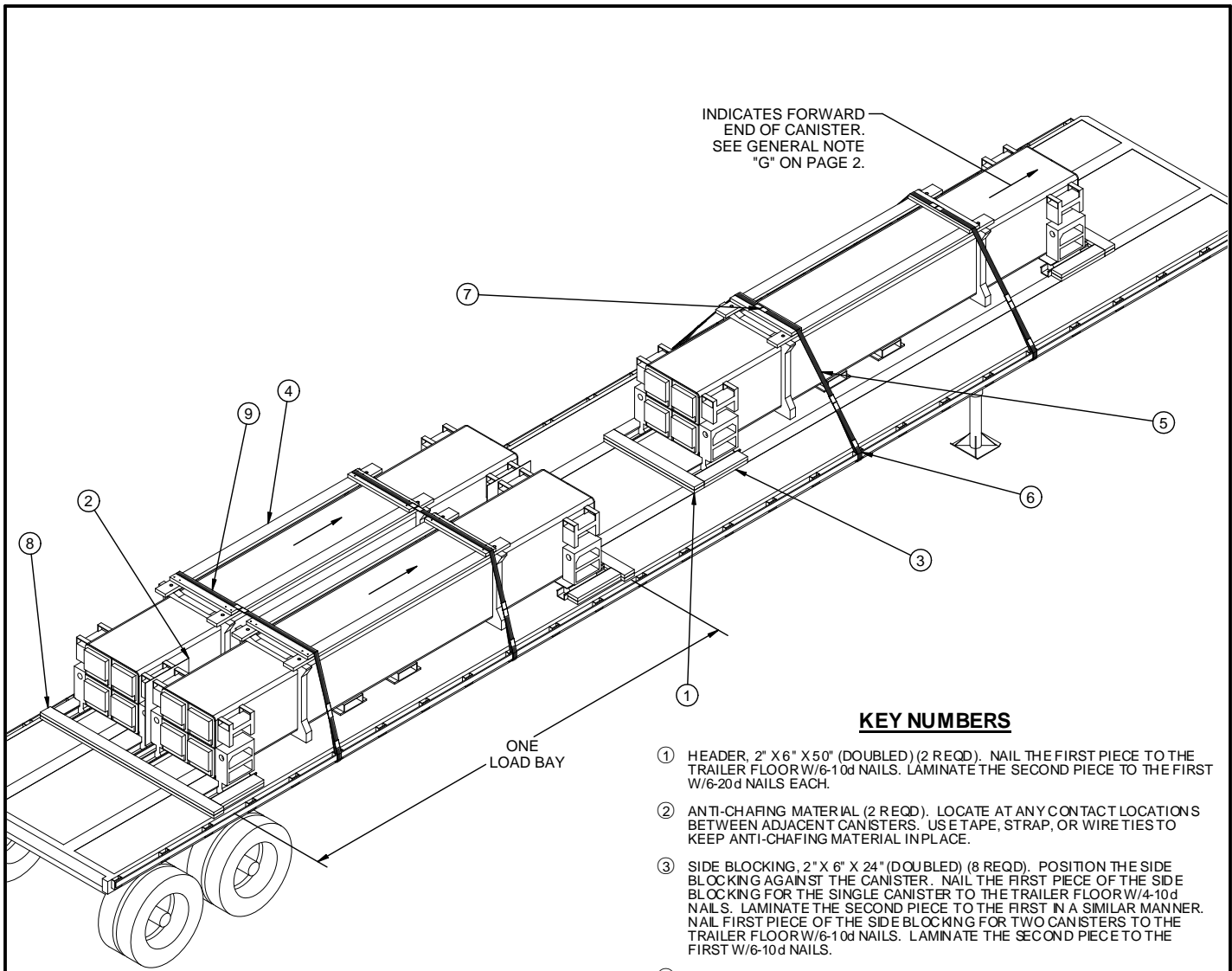
LADING MAY BE SECURED TO A FLATBED TRAILER BY WEB STRAP ASSEMBLIES IN LIEU OF STEEL STRAPPING, PROVIDED THE FOLLOWING CONDITIONS ARE MET.

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)
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.



ISOMETRIC VIEW

KEY NUMBERS

- ① HEADER, 2" X 6" X 50" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/6-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST W/6-20d NAILS EACH.
- ② ANTI-CHAFING MATERIAL (2 REQD). LOCATE AT ANY CONTACT LOCATIONS BETWEEN ADJACENT CANISTERS. USE TAPE, STRAP, OR WIRE TIES TO KEEP ANTI-CHAFING MATERIAL IN PLACE.
- ③ SIDE BLOCKING, 2" X 6" X 24" (DOUBLED) (8 REQD). POSITION THE SIDE BLOCKING AGAINST THE CANISTER. NAIL THE FIRST PIECE OF THE SIDE BLOCKING FOR THE SINGLE CANISTER TO THE TRAILER FLOOR W/4-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST IN A SIMILAR MANNER. NAIL FIRST PIECE OF THE SIDE BLOCKING FOR TWO CANISTERS TO THE TRAILER FLOOR W/6-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST W/6-10d NAILS.
- ④ TOP ASSEMBLY (3 REQD). SEE DETAIL ON PAGE 8. POSITION HOLES ON TOP ASSEMBLY LOCATOR PIECE OVER CANISTER LOCATOR PINS.
- ⑤ HOLD-DOWN STRAP, 2" X .050" OR .044" X 18'-0" LONG STEEL STRAPPING (2 REQD). INSTALL EACH STRAP FROM TWO 9'-0" LONG PIECES. DO NOT OVERTENSION THE HOLD-DOWN STRAP.
- ⑥ PAD, 2" X .050" OR .044" X 18" LONG STEEL STRAPPING (8 REQD). POSITION BETWEEN THE HOLD-DOWN STRAP AND THE TRAILER STAKE POCKET AND SEAL TO THE HOLD-DOWN STRAP. SEE "DETAIL A" ON PAGE 10. 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 10.
- ⑦ SEAL FOR 2" STEEL STRAPPING (32 REQD, 8 PER STRAP). DOUBLE CRIMP EACH SEAL, EXCEPT THOSE USED TO SECURE THE PADS. SEE THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 9.
- ⑧ HEADER, 2" X 6" X 8'-0" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/8-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST W/8-20d NAILS EACH.
- ⑨ HOLD-DOWN STRAP, 2" X .050" OR .044" X 21'-6" LONG STEEL STRAPPING (2 REQD). INSTALL EACH STRAP FROM TWO 10'-9" LONG PIECES. DO NOT OVERTENSION THE HOLD-DOWN STRAP.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 6"	158	158
NAI LS	NO. REQD	POUNDS
10d (3")	160	2-1/2
20d (4")	28	1
STEEL STRAPPING, 2" - - - 91.0'	REQD - - -	31 LBS
ANTI-CHAFING MATERIAL - - -	AS REQD - - -	NIL
SEAL FOR 2" STRAPPING - - -	24 REQD - - -	5 LBS

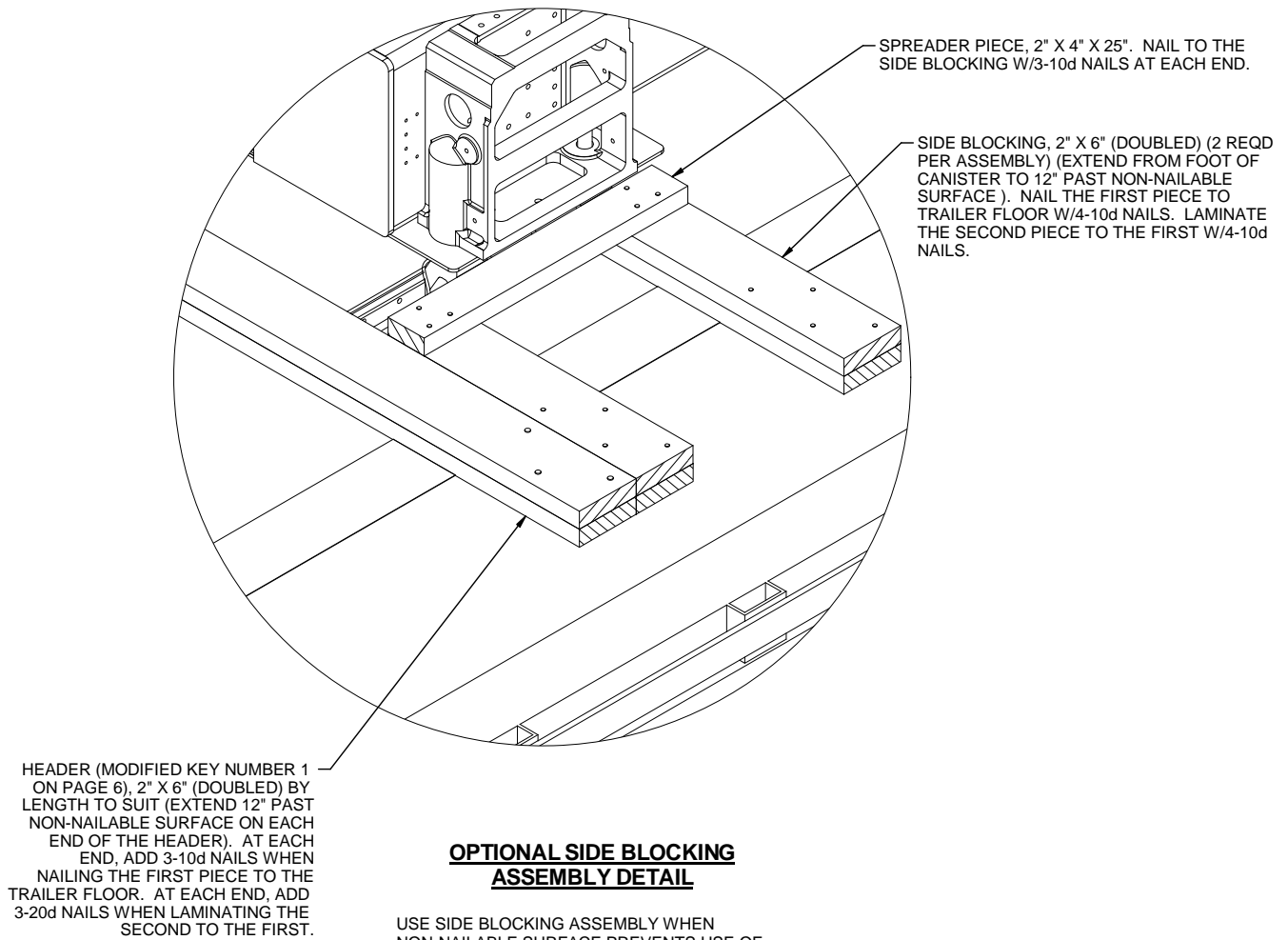
LOAD AS SHOWN

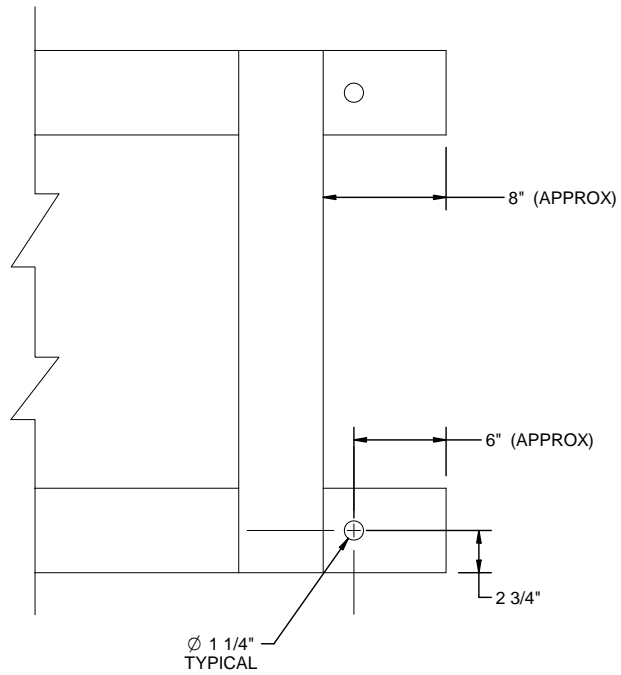
ITEM	QUANTI TY	WEIGHT (APPROX)
CANI STER - - - - -	3 - - - - -	13,197 LBS
DUNNAGE - - - - -	- - - - -	354 LBS

TOTAL WEIGHT - - - - - 13,551 LBS (APPROX)

SPECIAL NOTES:

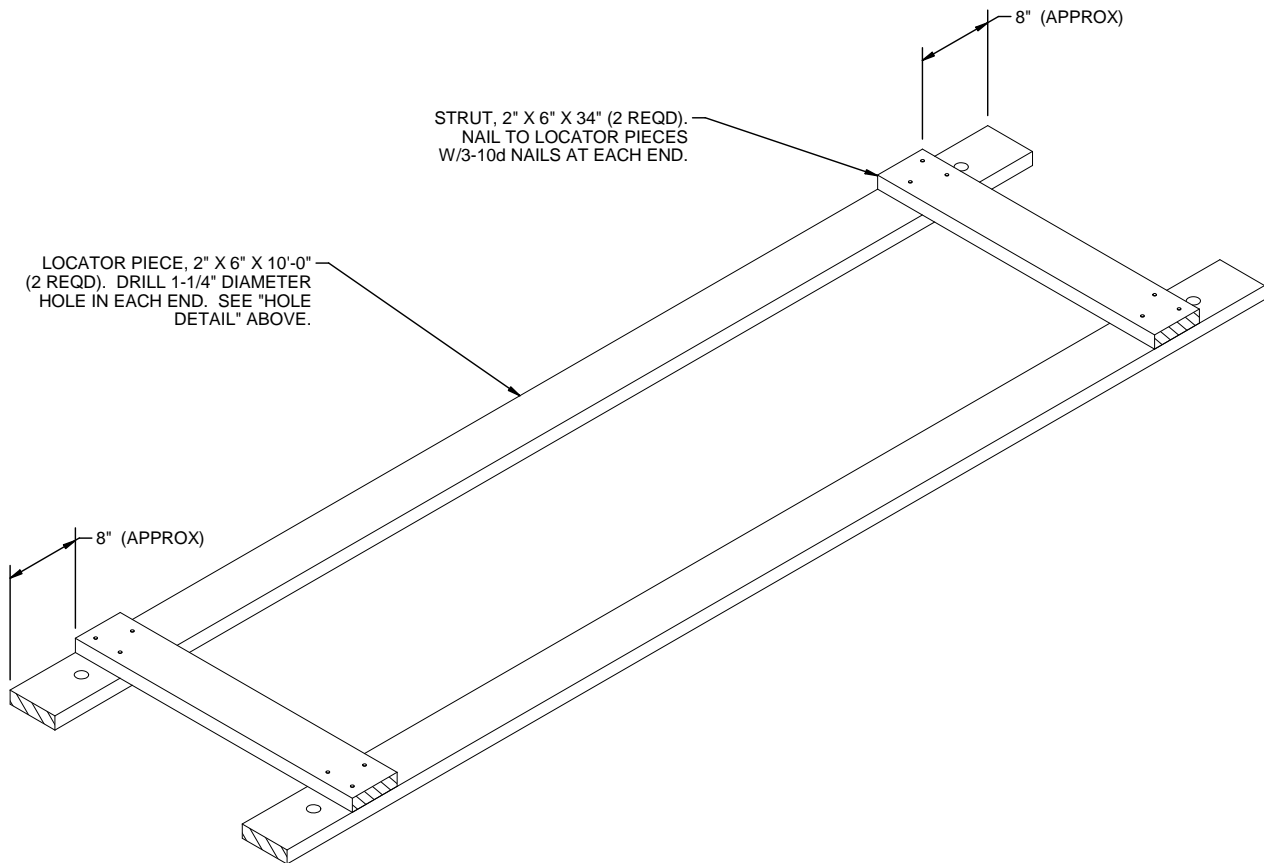
1. A THREE CANISTER LOAD IS SHOWN ON A 53'-0" LONG BY 8'-6" WIDE FLATBED TRAILER. OTHER LENGTH AND WIDTH TRAILERS MAY BE USED.
2. IF SIDE BLOCKING CAN NOT BE NAILED AT THE EDGE OF THE TRAILER, AS SHOWN ON PAGE 6, USE SIDE BLOCKING LAYOUT AS SHOWN ON PAGE 4.
3. **CAUTION:** THE STRAPPING MUST BE IN VERTICAL ALIGNMENT WITH THE TRAILER STAKE POCKET PROVISIONS AND WITH THE STRUT ON THE TOP ASSEMBLY. SHIFT THE LOAD FORE OR AFT AS NECESSARY TO ACCOMMODATE VARIATIONS IN STRAPPING LOCATION OR ADJUST STRUT LOCATION ON THE TOP ASSEMBLY, SEE DETAIL ON PAGE 8.
4. IF WEB STRAPS ARE TO BE USED FOR LOAD SECUREMENT IN LIEU OF THE STEEL HOLD-DOWN STRAPS, REFER TO THE PROCEDURES ON PAGES 4 AND 5 FOR GUIDANCE. CHAINS AND LOAD BINDERS MAY NOT BE USED FOR LOAD SECUREMENT.
5. THE DEPICTED LOAD CAN BE REDUCED OR INCREASED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY SINGLE CANISTERS. SEE THE DETAILS ON PAGE 4 FOR OTHER LOADING CONFIGURATIONS AND QUANTITIES.





HOLE DETAIL

NOTE: VERIFY DISTANCE BETWEEN CANISTER LOCATOR PINS BEFORE CONSTRUCTION. DISTANCE BETWEEN PINS IS 8'-11-3/4" APPROX.



TOP ASSEMBLY

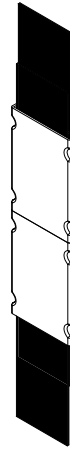
NOTE: USE THE 8" DIMENSION FROM END OF THE LOCATOR PIECE TO THE STRUT WHEN DISTANCE BETWEEN STRAPS ARE 8'-0". ADJUST ACCORDINGLY IF STRAPS ARE NOT 8'-0" APART, MAXIMUM DIMENSION 10".



ONE SEAL WITH
TWO PAIR OF
NOTCHES.

STRAP JOINT A

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

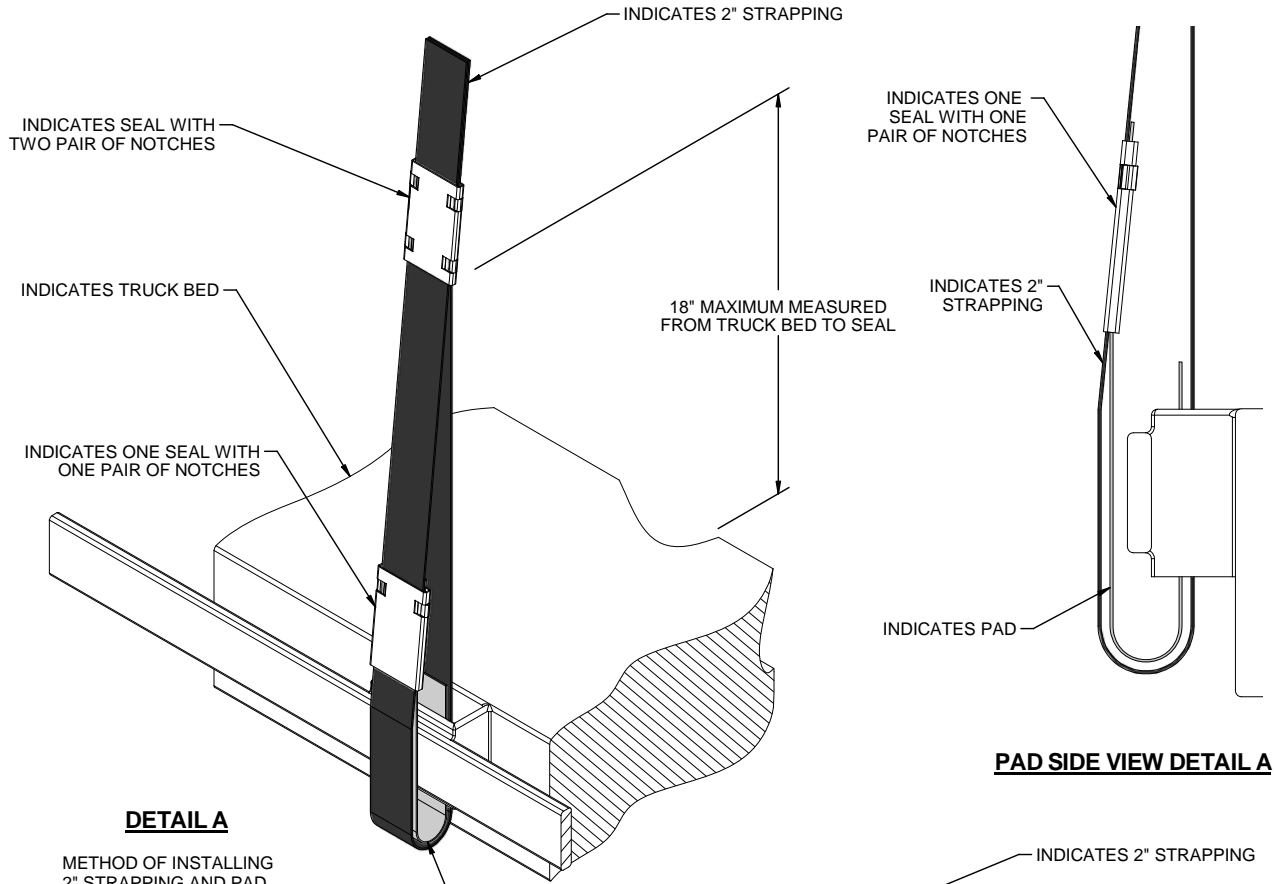


TWO SEALS, BUTTED
TOGETHER, WITH
TWO PAIR OF CRIMPS
EACH SEAL.

STRAP JOINT B

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

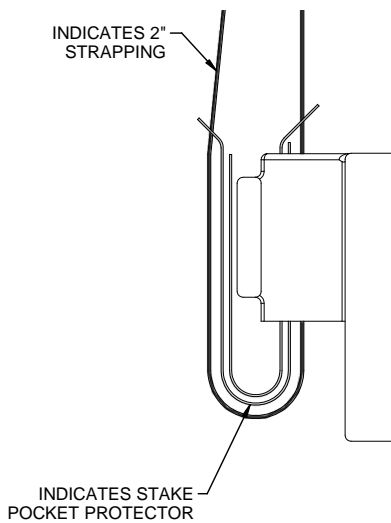
END-OVER-END LAP JOINT DETAILS



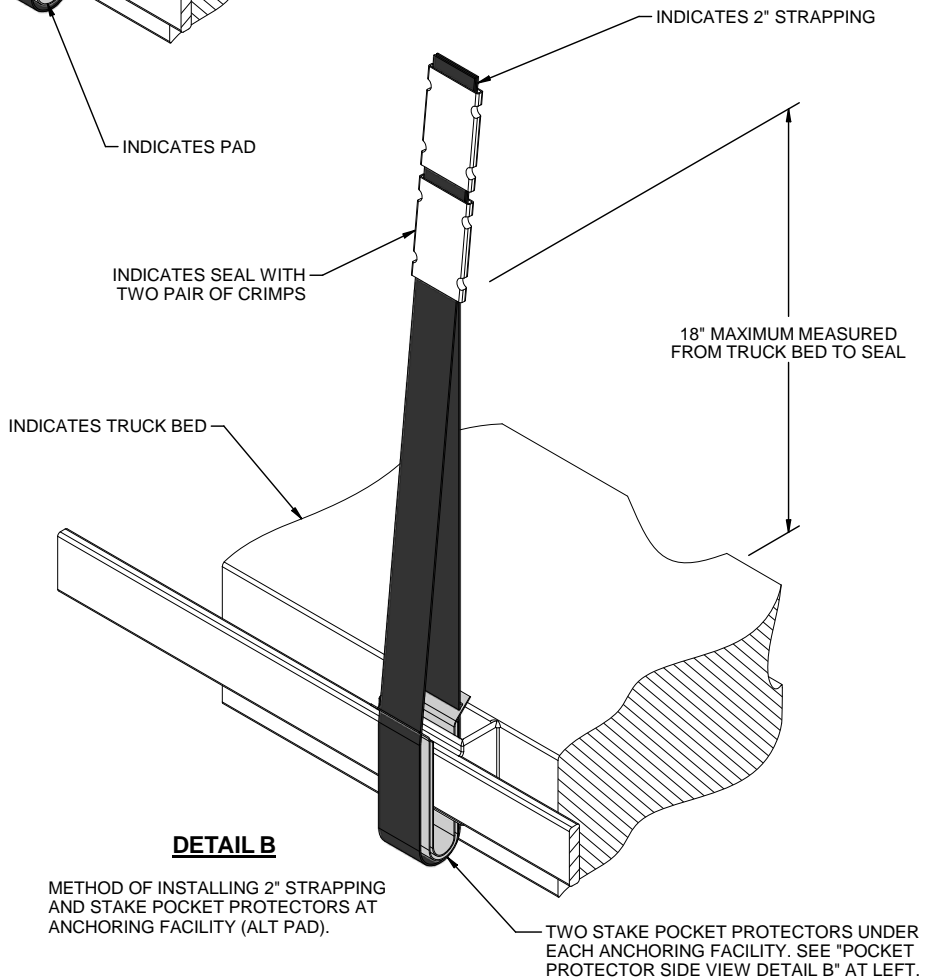
DETAIL A

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).

STAKE POCKET STRAP DETAILS