

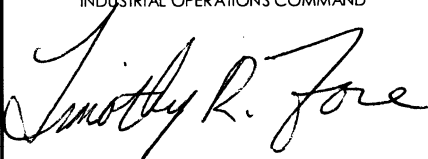

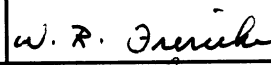
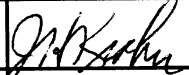

# LOADING AND BRACING (TL & LTL) IN VAN TRAILERS OF PALLETIZED SEPARATE LOADING PROJECTILES

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● CAUTION: THE LOADING 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 INDUSTRIAL OPERATIONS COMMAND  	ENGINEER	BASIC		DO NOT SCALE			
		REV.		WEBSITE: <a href="http://www.dac.army.mil">HTTP://WWW.DAC.ARMY.MIL</a>			
	TECHNICIAN	BASIC	RALPH ARNOLD	JULY 1961			
		REV.	RICHARD HAYNES				
DRAFTSMAN	BASIC	LEONARD/SPOULE	REVISION NO. 6		JULY 1998		
	REV.		SEE THE REVISION LISTING ON PAGE 3				
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND  	TRANSPORTATION ENGINEERING DIVISION			CLASS	DIVISION	DRAWING	FILE
	VALIDATION ENGINEERING DIVISION			TESTED			
	LOGISTICS ENGINEERING OFFICE			19	48	4019	11PE1000
U.S. ARMY DEFENSE AMMUNITION CENTER				PROJECT <u>FSA 20-59</u>			

**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 PALLETIZED SEPARATE LOADING PROJECTILES. SUBSEQUENT REFERENCE TO PALLET UNIT MEANS THE PALLET UNIT WITH AMMUNITION ITEMS.
- C. LADING DATA: SEE PAGES 4 AND 5.
- D. THE OUTLOADING PROCEDURES DEPICTED WITHIN THIS DOCUMENT ARE APPLICABLE FOR SHIPMENTS IN CONVENTIONAL TYPE VAN TRAILERS AND APPLY TO TRAILERS HAVING WOOD, OR WOOD AND METAL, OR ALL METAL FLOORS. REGARDLESS OF THE DIMENSIONS OF THE VAN TRAILERS SHOWN, THE PROCEDURES ARE ALSO APPLICABLE FOR TRAILERS WHICH ARE 89" THRU 99" IN WIDTH AND FOR TRAILERS OF OTHER LENGTHS FROM THE SHORTEST TO THE LONGEST AVAILABLE (REF: 24' TO 53'), AND FOR STRAIGHT TRUCK VANS. THE SPECIFIED BRACING IS ADEQUATE FOR LOADS WEIGHING UP TO AND INCLUDING THE MAXIMUM WEIGHTS PERMITTED BY LAW.
- E. 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.
- F. THE GROSS WEIGHT AND AXLE DISTRIBUTION OF WEIGHT FOR A LOAD WILL BE THE RESPONSIBILITY OF THE CARRIER. THE CARRIER WILL ADVISE THE SHIPPER OF THE APPLICABLE LOADING REQUIREMENTS, AND THE SHIPPER WILL LOAD ACCORDINGLY. THE TOTAL WEIGHT OF THE LADING, OF THE DUNNAGE, OF THE TRACTOR, AND OF THE SEMITRAILER CARRYING THE LADING MUST NOT EXCEED THE MAXIMUM GROSS WEIGHT ALLOWED FOR THE STATE OR STATES THRU WHICH THE LOAD IS TO BE TRANSPORTED BY MOTOR CARRIER. LIKEWISE, THE GROSS WEIGHT ON A SINGLE OR TANDEM AXLE MUST NOT EXCEED THE MAXIMUM ALLOWABLE WEIGHT. IF THERE IS ANY DOUBT AS TO WHETHER THE TOTAL GROSS WEIGHT OR AXLE WEIGHT EXCEEDS THE MAXIMUM ALLOWED, WEIGHT SHOULD BE VERIFIED BY ACTUALLY WEIGHING THE LOADED VEHICLE.
- G. NOTICE: A SHIPMENT WILL BE POSITIONED IN THE TRAILER CONSISTENT WITH STATE WEIGHT LAWS. THE NUMBER OF LADING UNITS MAY BE ADJUSTED TO FIT THE SIZE OF THE TRAILER TO BE LOADED OR THE QUANTITY TO BE SHIPPED. COMBINATIONS OF THE OUTLOADING PROCEDURES SPECIFIED MAY BE USED, HOWEVER, THE APPROVED METHODS SHOWN MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING, AND STAYING OF THE DESIGNATED ITEMS.
- H. THE "LOAD AS SHOWN" FOR MOST OF THE FULL LOADS DEPICTED HEREIN IS BASED ON AN APPROXIMATE LADING WEIGHT OF 43,000 POUNDS. THE SPECIFIED BLOCKING AND BRACING FOR THE FULL LOADS IS ADEQUATE FOR THE RETENTION OF LOADS, UP TO 45,000 POUNDS, IF IT IS DESIRED TO INCREASE THE LADING WEIGHT.

(CONTINUED AT RIGHT)

- J. OTHER TYPES OF LADING ITEMS MAY BE LOADED INTO TRAILERS WHICH ARE PARTIALLY LOADED WITH PALLET UNITS OF PROJECTILES, 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. SOME LOADS ARE SHOWN IN TRAILERS HAVING ROUNDED CORNERS AT THE FORWARD END. IF THE CONVENTIONAL VAN TRAILER BEING USED IS EQUIPPED WITH A SQUARE FRONT OR WITH AN INSTALLED BULKHEAD, OMIT THE FORWARD BLOCKING ASSEMBLY, AND POSITION THE PALLET UNITS DIRECTLY AGAINST THE FORWARD PORTION OF THE TRAILER.
- L. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF ONE SEAL WITH TWO PAIR OF NOTCHES WILL BE USED TO SEAL THE JOINT WHEN A NOTCH-TYPE SEALER IS BEING USED. A MINIMUM OF TWO SEALS, BUTTED TOGETHER WITH TWO PAIR OF CRIMPS PER SEAL WILL BE USED TO SEAL THE JOINT WHEN A CRIMP-TYPE SEALER IS BEING USED. REFER TO THE "STRAP JOINT A" AND "STRAP JOINT B" DETAILS ON PAGE 45.
- M. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE.
- N. NOTICE: A STAGGERED NAILING PATTERN WILL BE USED 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.
- O. POWER DRIVEN STAPLES MAY BE USED AS ALTERNATIVE FASTENERS FOR NAILS WHEN CONSTRUCTING DUNNAGE ASSEMBLIES WHICH ARE TO BE USED IN THE DELINEATED TRAILER LOADS SHOWN THROUGHOUT THIS DRAWING. THE STAPLES TO BE USED MUST BE EQUAL IN LENGTH TO THE SPECIFIED NAIL SIZE AND MUST BE SUBSTITUTED ON A ONE STAPLE FOR ONE NAIL BASIS. STAPLES WHICH ARE 2-1/2" OR LESS IN LENGTH SHOULD BE IN ACCORDANCE WITH ASTM F1667 AS NEARLY AS PRACTICABLE. STAPLES WHICH ARE LONGER THAN 2-1/2" WILL BE A COMMERCIAL GRADE, OF A QUALITY EQUIVALENT TO THOSE MANUFACTURED BY SENCO PRODUCTS INCORPORATED. NOTE: STAPLES WILL NOT BE SUBSTITUTED FOR NAILS IN ANY LOAD RESTRAINING FLOOR DUNNAGE APPLICATION.
- P. THE NUMBER OF PALLET UNITS MAY BE ADJUSTED TO FIT THE CAPACITY OF THE TRAILER BEING LOADED OR THE QUANTITY TO BE SHIPPED. HOWEVER, THE APPROVED METHODS SPECIFIED HEREIN MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING, AND STAYING OF THE SPECIFIED PALLET UNITS.

CAUTION: DO NOT NAIL BLOCKING TO THE TRAILER WALLS. ALL BLOCKING WILL BE WITHIN THE DUNNAGE OR TO THE TRAILER FLOOR, AS INDICATED.

PORTIONS OF THE TRAILERS, SUCH AS SIDEWALLS, END WALLS, AND ROOFS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.

(CONTINUED ON PAGE 3)

**MATERIAL SPECIFICATIONS**

- LUMBER ----- : SEE TM 743-200-1 (DUNNAGE LUMBER) AND VOLUNTARY PRODUCTS STANDARD PS 20.
- NAILS ----- : ASTM F1667; COMMON STEEL NAILS (NLCMS OR NLCMMS).
- 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.
- WIRE, CARBON STEEL - : ASTM A853; ANNEALED AT FINISH, BLACK OXIDE FINISH, .0800" DIA, GRADE 1006 OR BETTER.

(GENERAL NOTES CONTINUED FROM PAGE 2)

- S. IF THE SPACE AT THE REAR OF THE LOAD, BETWEEN THE PALLET UNITS AND THE REAR DOOR MEASUREMENTS 1-1/2" OR LESS, REAR BLOCKING IS NOT REQUIRED.
- T. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.
- U. 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 0.454KG.

### REVISIONS

REVISION NO. 3, DATED APRIL 1976, CONSISTS OF:

1. DELETING LOADS FOR 155MM 12/PALLET, 240MM 2/PALLET, AND 280MM 1/CRATE.
2. ADDING LOADS FOR 175MM 6/PALLET AND 175MM 20/PALLET.
3. ADDING LTL PROCEDURES.
4. CHANGING THE FULL LOADS FROM 30' TO 40' TRAILERS.
5. ADDING PROCEDURES FOR 1-BLOCK PATTERN LOADS.
6. CHANGES AS NECESSARY TO UPDATE DRAWING FORMAT.
7. ADDING PROCEDURES FOR TRAILERS EQUIPPED WITH MECHANICAL BRACING.

REVISION NO. 4, DATED AUGUST 1981, CONSISTS OF:

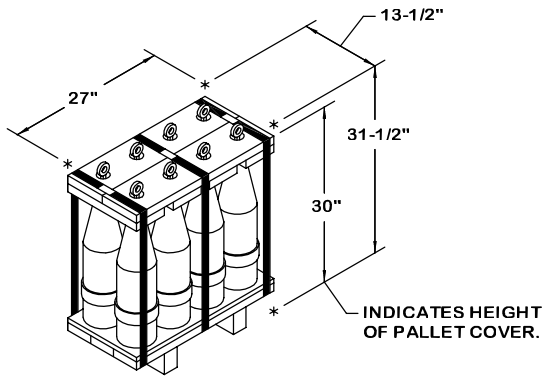
1. ADDING PROCEDURES FOR 155MM PROJECTILES PALLETIZED 8/LARGE PALLET, AND 8" PROJECTILES PALLETIZED 6/LARGE PALLET IN CONVENTIONAL VAN TRAILERS AND TRAILERS EQUIPPED WITH MECHANICAL BRACING DEVICES.

REVISION NO. 5, DATED NOVEMBER 1984, CONSISTS OF:

1. ADDING PROCEDURES FOR THE 8" TALL PROJECTILE UNITIZED 6/SMALL PALLET.
2. UPDATING DRAWING FORMAT.

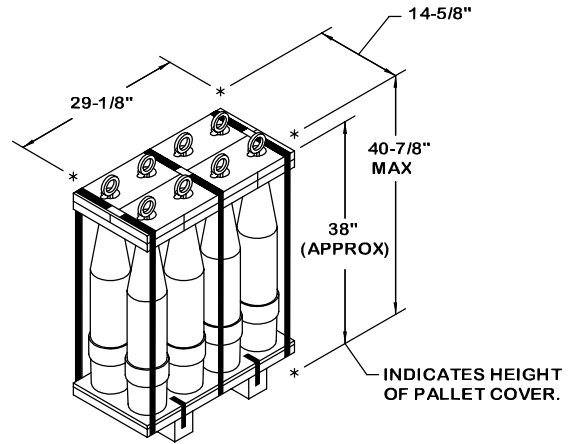
REVISION NO. 6, DATED JULY 1998, CONSISTS OF:

1. DELETING LOADS FOR 175MM PROJECTILES.
2. DELETING PROCEDURES FOR TRAILERS EQUIPPED WITH MECHANICAL BRACING.
3. CHANGES AS NECESSARY TO UPDATE DRAWING FORMAT.
4. ADDING PROCEDURES FOR NAILED HEADER METHOD OF BLOCKING.



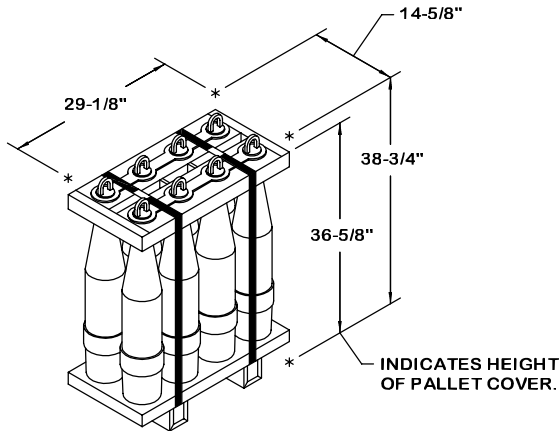
**155MM SLP, 8/SMALL PALLET**

800 POUNDS (APPROX)



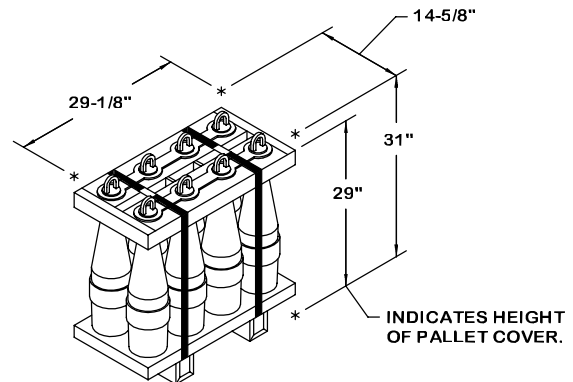
**155MM SLP, 8/LARGE PALLET**

874 POUNDS (APPROX)



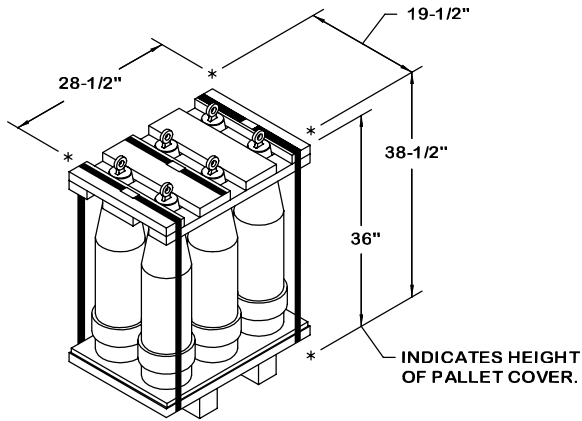
**155MM SLP, 8 TALL/METAL PALLET**

897 POUNDS (APPROX)



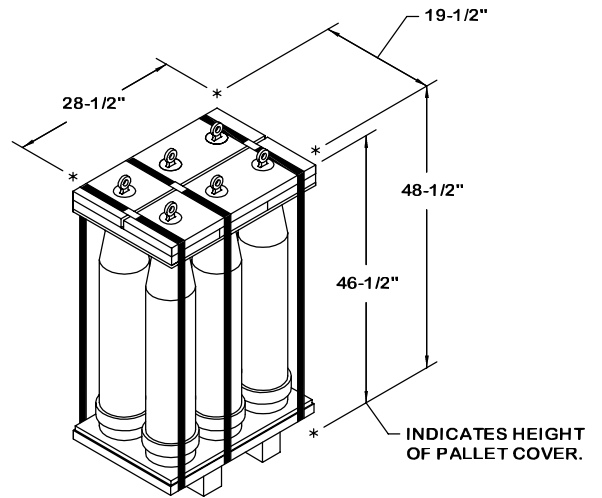
**155MM SLP, 8 SHORT/METAL PALLET**

857 POUNDS (APPROX)



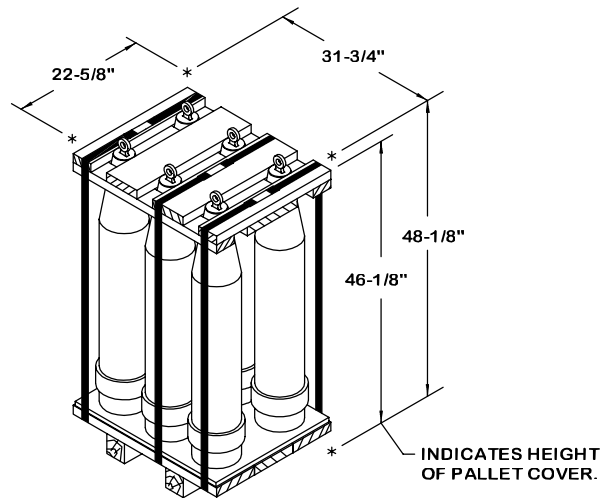
**8" SLP, 6/SMALL PALLET**

1,256 POUNDS (APPROX)



**8" SLP, 6 TALL/SMALL PALLET**

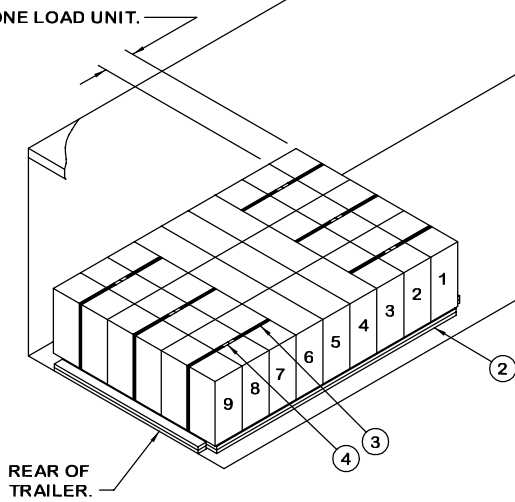
1,256 POUNDS (APPROX)



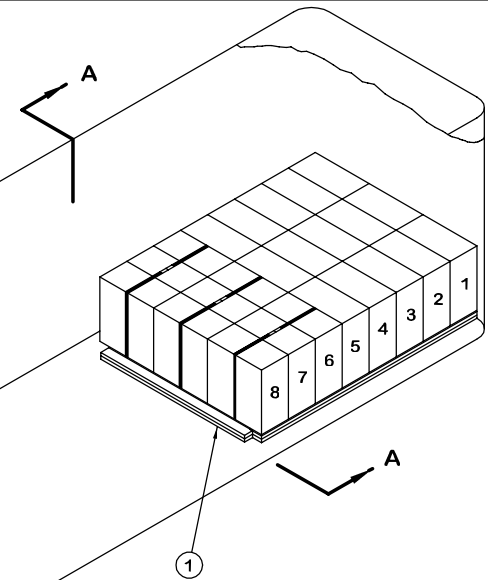
**8" SLP, 6/LARGE PALLET**

1,301 POUNDS (APPROX)

ONE LOAD UNIT.

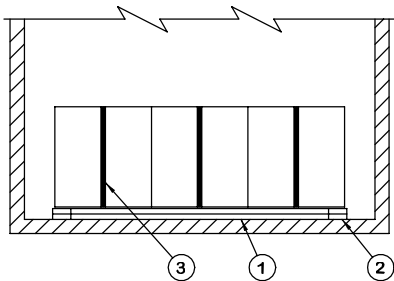


**ISOMETRIC VIEW**



**KEY NUMBERS**

- ① END BLOCKING, 2" X 4" X 72" (DOUBLED) (3 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/6-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/6-20d NAILS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ② SIDE BLOCKING, 2" X 6" BY LENGTH TO SUIT (DOUBLED) (4 REQD). PRE-POSITION AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/1-10d NAIL EVERY 12". NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ③ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 13'-0" LONG STEEL STRAPPING (9 REQD). INSTALL SO AS TO ENCIRCLE THREE PALLET UNITS AS SHOWN. SEE SPECIAL NOTE 2 ON PAGE 7.
- ④ SEAL FOR 1-1/4" STRAPPING (18 REQD, 2 PER STRAP JOINT). SEE GENERAL NOTE "L" ON PAGE 2. DOUBLE CRIMP EACH SEAL.



**SECTION A-A**

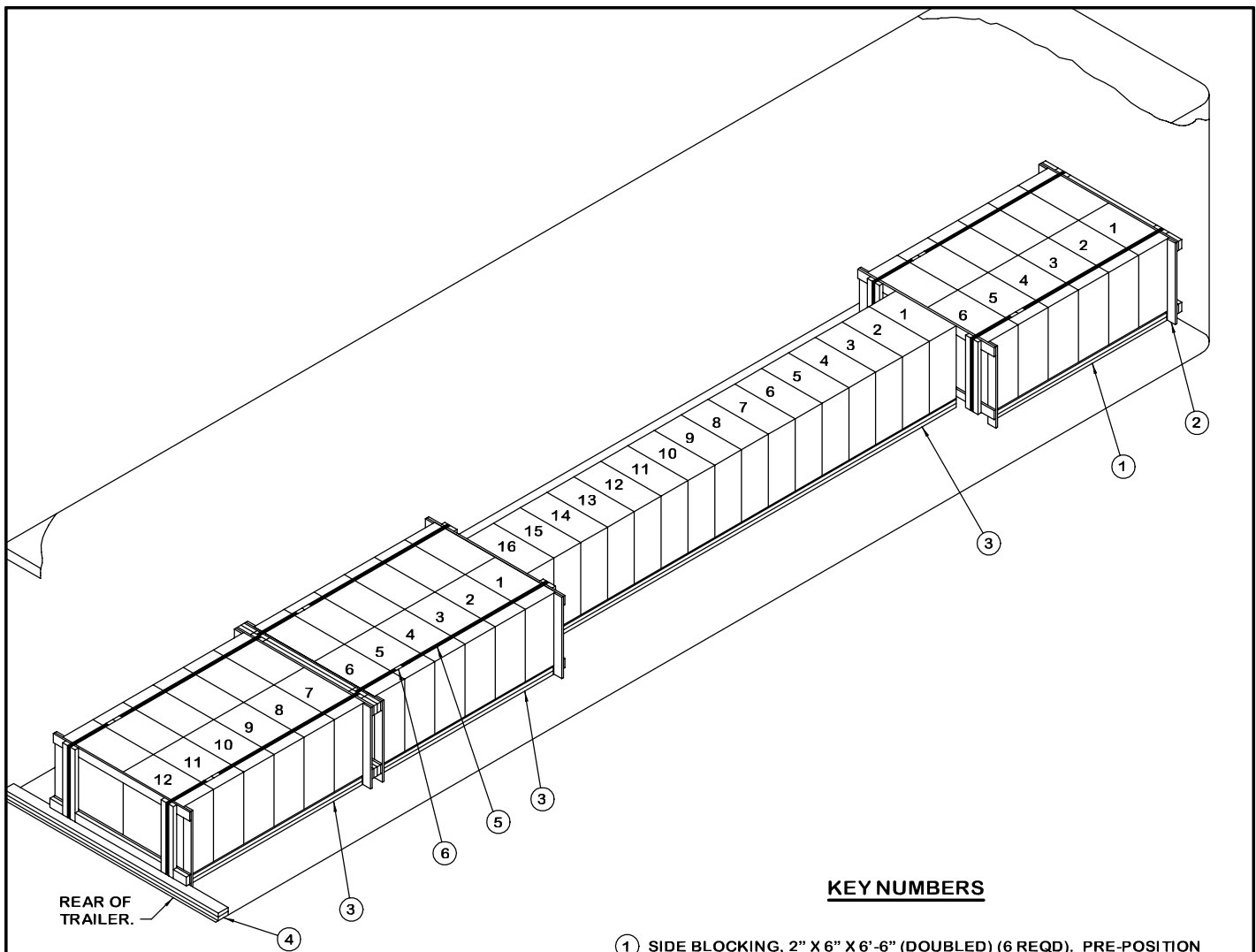
**SPECIAL NOTES:**

1. A 51- UNIT LOAD OF 155MM PROJECTILES PALLETIZED 8 PER PALLET IS SHOWN IN A 48'-0" LONG BY 7'-6" WIDE (INSIDE DIMENSION) VAN TRAILER. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. A TRAILER HAVING ROUNDED CORNERS AT THE FORWARD END IS SHOWN. IF DESIRED, OR IF THE ROUNDED CORNERS INTERFERE WITH PLACEMENT OF THE PALLET UNITS AGAINST THE FRONT WALL, AN ADDITIONAL END BLOCKING, PIECE MARKED ①, MAY BE INSTALLED.
3. IN LIEU OF BUNDLING THE FRONT 3 AND REAR 3 PALLET UNITS IN EACH ROW AT THE REAR OF THE LOAD, ONE 29'-0" LONG UNITIZING STRAP CAN BE INSTALLED SO AS TO ENCIRCLE ALL 9 PALLET UNITS. CAUTION: TEN IS THE MAXIMUM QUANTITY THAT CAN BE UNITIZED. IF A PORTION OF THE LOAD IS MORE THAN 10 PALLET UNITS LONG, UNITIZING STRAPS MUST BE APPLIED AROUND THE 3 UNITS AT THE END OF THE ROW AS SHOWN.
4. A LOAD CAN BE INCREASED OR DECREASED BY A MULTIPLE OF THREE (3) PALLET UNITS BY ADDING OR OMITTING ONE OR MORE FULL LOAD UNITS. IF IT IS NECESSARY TO OMIT ONE OR TWO PALLET UNITS FROM A LOAD, A "FILLER ASSEMBLY" MUST BE SUBSTITUTED FOR THE UNIT (S) OMITTED FROM THE MIDDLE ROW. SEE THE "FILLER ASSEMBLY A" AND THE "APPLICATION OF FILLER ASSEMBLY A" DETAILS ON PAGE 11 FOR GUIDANCE.
5. DEPENDING UPON THE TYPE AND WEIGHT OF THE TRAILER BEING LOADED, AND THE WEIGHT OF THE TRACTOR TO BE USED FOR TRANSPORTING THE LOADED TRAILER, IT MAY BE NECESSARY TO ADJUST THE QUANTITY OF UNITS IN THE FORWARD AND REAR PORTIONS OF THE LOAD IN ORDER TO COMPLY WITH WEIGHT DISTRIBUTION REQUIREMENTS. SEE GENERAL NOTES "F" AND "G" ON PAGE 2.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" x 4"	36	24
2" x 6"	77	77
NAILS	NO. REQD	POUNDS
10d (3")	94	1-1/2
20d (4")	18	1/2
STEEL STRAPPING, 1-1/4" - 117' REQD - - - - - 17 LBS		
SEAL FOR 1-1/4" STRAP - - - 18 REQD - - - - - 1 LBS		

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
155MM, 8/PALLET	51	40,800 LBS
DUNNAGE		222 LBS
TOTAL WEIGHT		41,022 LBS (APPROX)



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① SIDE BLOCKING, 2" X 6" X 6'-6" (DOUBLED) (6 REQD). PRE-POSITION AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/12-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ② LOAD BEARING GATE (6 REQD). SEE THE DETAIL ON PAGE 44. SEE SPECIAL NOTE 2 ON PAGE 9.
- ③ SIDE BLOCKING, 2" X 6" X 18'-0" (DOUBLED) (2 REQD). PRE-POSITION AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/12-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. NOTE THAT RANDOM LENGTH PIECES MAY BE USED.
- ④ REAR BLOCKING, 2" X 4" BY TRAILER WIDTH MINUS 1/2" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/8-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑤ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 21'-0" LONG STEEL STRAPPING (6 REQD). INSTALL TO ENIRCLE SIX PALLET UNITS AND TWO LOAD BEARING GATES AS SHOWN. SEE SPECIAL NOTE 5 ON PAGE 9.
- ⑥ SEAL FOR 1-1/4" STRAPPING (12 REQD, 2 PER STRAP JOINT). SEE GENERAL NOTE "L" ON PAGE 2. DOUBLE CRIMP EACH SEAL.



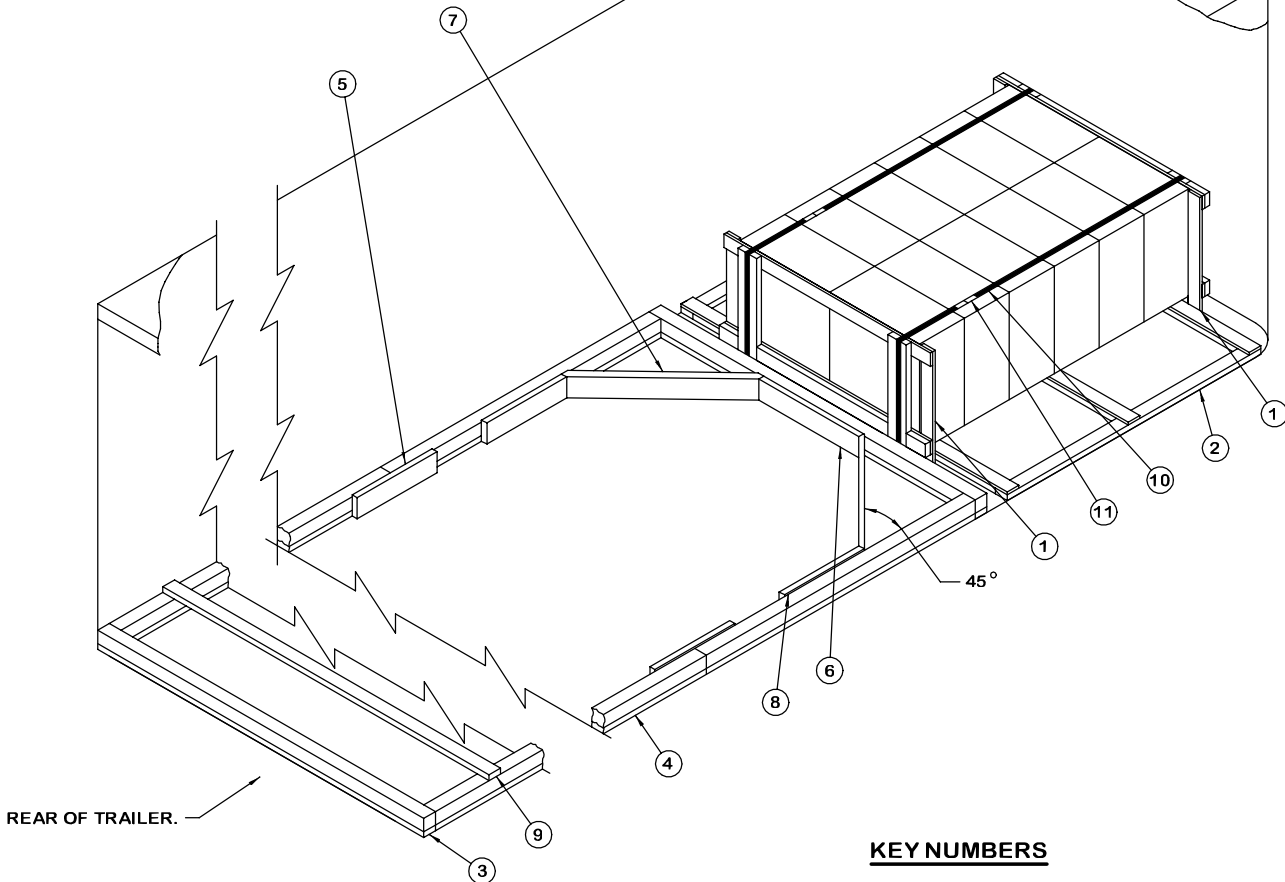
**SPECIAL NOTES:**

1. A 52-UNIT LOAD OF 155MM PROJECTILES IS SHOWN IN A 40'-0" LONG BY 7'-6" WIDE (INSIDE DIMENSION) VAN TRAILER. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. THE LOAD BEARING GATE, PIECE MARKED ②, WHICH IS POSITIONED AGAINST THE TRAILER FRONT WALL, AS WELL AS THE GATES WHICH ARE POSITIONED WITHIN THE REAR 2-WIDE PORTION, MUST HAVE FILL PIECES APPLIED TO BOTH THE UPPER AND LOWER HORIZONTAL PIECES. FILL PIECES ARE NOT REQUIRED ON THE GATES USED BETWEEN THE 1-WIDE AND 2-WIDE PORTIONS OF THE LOAD. AT THE REAR OF THE LOAD, THE LOAD BEARING GATE MUST HAVE FILL PIECES APPLIED ONLY TO THE LOWER HORIZONTAL PIECE.
3. IF A LOAD PATTERN OTHER THAN AS SHOWN IS USED AND THE 2-WIDE PORTION AT THE REAR OF THE LOAD IS 10 PALLETS OR LESS IN LENGTH, THAT 2-WIDE PORTION NEED NOT BE SEPARATED INTO TWO GROUPS AS SHOWN. OMIT THE TWO CENTRALLY LOCATED LOAD BEARING GATES, PIECES MARKED ②, AND UNITIZE EACH ROW WITH ONE STRAP ENCIRCLING THE PALLET UNITS AND THE GATES AT EACH END OF THE GROUP. NOTE THAT A 2-WIDE PORTION OF A LOAD, EITHER AT THE FRONT OR REAR OF THE TRAILER, WHICH IS MORE THAN 10 PALLETS IN LENGTH MUST BE DIVIDED INTO TWO GROUPS.
4. A LOAD CAN BE INCREASED OR DECREASED BY ONE OR MORE PALLET UNITS BY INCREASING OR DECREASING THE LENGTH OF THE 2-WIDE PORTION AT THE FRONT AND/OR REAR OF THE LOAD AND DECREASING OR INCREASING THE LENGTH OF THE 1-WIDE PORTION. ADJUST THE LENGTH OF THE SIDE BLOCKING, PIECES MARKED ① AND ③, AS NECESSARY.
5. DEPENDING UPON THE TYPE AND WEIGHT OF THE TRAILER BEING LOADED, AND THE WEIGHT OF THE TRACTOR TO BE USED FOR TRANSPORTING THE LOADED TRAILER, IT MAY BE NECESSARY TO ADJUST THE QUANTITY OF UNITS IN THE 1-WIDE PORTION AND IN THE FORWARD AND/OR REAR PORTIONS OF THE LOAD IN ORDER TO COMPLY WITH WEIGHT DISTRIBUTION REQUIREMENTS. SEE GENERAL NOTES "F" AND "G" ON PAGE 2.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" x 4"	92	31
2" x 4"	42	28
2" x 6"	180	180
NAILS	NO. REQD	POUNDS
6d (2")	207	1-1/4
10d (3")	208	3-1/4
STEEL STRAPPING, 1-1/4" - 126' REQD - - - - - 18 LBS		
SEAL FOR 1-1/4" STRAP - - - 12 REQD - - - - - 1/2 LBS		

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
155MM, 8/PALLET	52	41,600 LBS
DUNNAGE		500 LBS
TOTAL WEIGHT		42,100 LBS (APPROX)



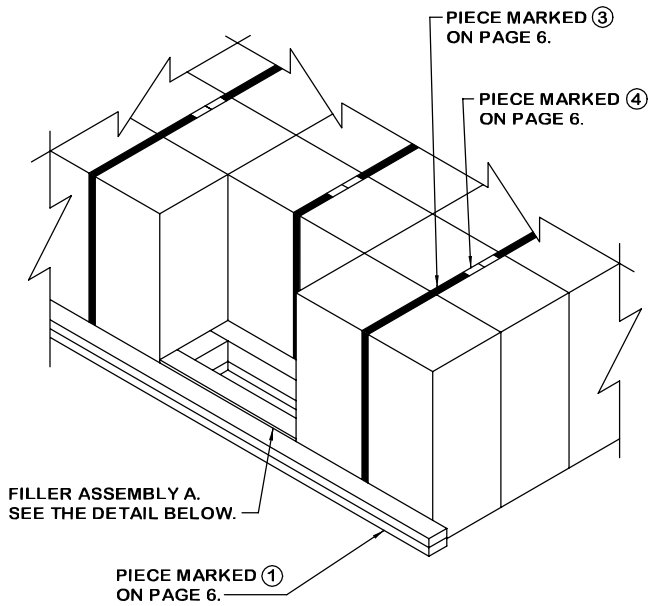
**ISOMETRIC VIEW**

**SPECIAL NOTES:**

1. THESE OUTLOADING PROCEDURES DEPICT THE USE OF "K-BRACE" TYPE BLOCKING A 7'-6" WIDE VAN TRAILER. WIDER OR NARROWER TRAILERS MAY BE USED.
2. THE "K-BRACE" TYPE BLOCKING, SHOWN AS PIECES MARKED ② THRU ⑨, IS ADEQUATE FOR RETAINING NOT MORE THAN THIRTY-TWO (32) PALLET UNITS. NOTE THAT IN ORDER TO AVOID EXCESSIVE STRAP LENGTHS, LOADS OF MORE THAN 20 PALLET UNITS MUST BE UNITIZED IN TWO GROUPS. POSITION TWO LOAD BEARING GATES, PIECES MARKED ①, WITH FILL PIECES ADDED, BACK-TO-BACK BETWEEN THE GROUPS. ENCIRCLE EACH PALLET GROUP AND THE TWO GATES FOR THE GROUP WITH UNITIZING STRAPS, PIECES MARKED ⑩, OF AN APPROPRIATE LENGTH.
3. IF A TRAILER WITH A NAILABLE FLOOR IS BEING USED, NAILED FLOORLINE BLOCKING AS SHOWN IN THE LOAD VIEW ON PAGE 8 MAY BE USED IN LIEU OF THE BLOCKING DEPICTED IN THE ABOVE VIEW.
4. THE DEPICTED BLOCKING IS APPLICABLE FOR BRACING AN EVEN NUMBERED QUANTITY OF PALLET UNITS (A MINIMUM OF 6). FOR SHIPMENT OF AN ODD QUANTITY (INCLUDING 5 UNITS), IT WILL BE NECESSARY TO INSTALL A FILLER ASSEMBLY AND A SPACER IN THE PLACE OF A UNIT OMITTED FROM THE CENTRAL PORTION OF A ROW. SEE THE "FILLER ASSEMBLY B" AND "SPACER A" DETAILS ON PAGE 11. REFER TO THE LOAD VIEW ON PAGE 20 FOR A TYPICAL INSTALLATION.
5. FOR SHIPMENT OF 2 OR 4 PALLET UNITS, REFER TO THE PROCEDURES DEPICTED ON PAGES 40 AND 41.

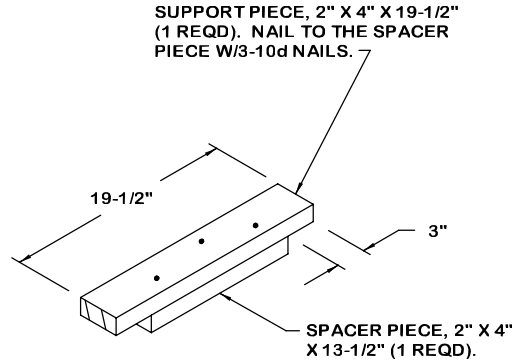
**KEY NUMBERS**

- ① LOAD BEARING GATE (2 REQD). SEE THE DETAIL ON PAGE 44 AND GENERAL NOTE "N" ON PAGE 2. SEE SPECIAL NOTE 2 ON PAGE 9.
- ② SIDE BLOCKING (2 REQD). SEE THE "SIDE BLOCKING C" DETAIL ON PAGE 43.
- ③ HEADER, 2" X 4" AND 4" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD). LAMINATE W/1-10d NAIL EVERY 12". SEE SPECIAL NOTE 4 ON PAGE 13.
- ④ SIDE STRUT, 2" X 4" AND 4" X 4" BY CUT TO FIT BETWEEN THE TWO HEADERS (2 REQD). LAMINATE W/1-10d NAIL EVERY 12" AND TOENAIL THE TOP PIECE TO THE HEADERS W/2-16d NAILS AT EACH END.
- ⑤ SPLICE PIECE, 2" X 6" X 24" (AS REQD). CENTER ON A JOINT OF PIECES MARKED ④ AND NAIL W/4-12d NAILS AT EACH END.
- ⑥ CENTER CLEAT, 2" X 6" X 30" (1 REQD). NAIL TO THE FORWARD PIECE MARKED ③ W/7-12d NAILS.
- ⑦ DIAGONAL BRACE, 2" X 6" BY CUT TO FIT (2 REQD). DOUBLE BEVEL EACH END WITH 45° CUTS. INSTALL AT A 45° ANGLE AS SHOWN AND NAIL TO PIECES MARKED ③ AND ④ W/2-16d NAILS AT EACH END.
- ⑧ SIDE CLEAT, 2" X 6" X 24" (2 REQD). NAIL TO PIECE MARKED ④ W/6-12d NAILS.
- ⑨ STRUT BRACING, 2" X 4" BY TRAILER WIDTH IN LENGTH (CUT TO FIT). (MINIMUM OF 1 REQD). ONE (1) ADDITIONAL BRACE IS REQUIRED FOR EVERY 7'-0" OF SIDE STRUT LENGTH. NAIL TO PIECES MARKED ④ W/3-12d NAILS AT EACH END.
- ⑩ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 21'-0" LONG STEEL STRAPPING (2 REQD). INSTALL TO ENCIRCLE SIX PALLET UNITS AND TWO LOAD BEARING GATES, PIECES MARKED ①, AS SHOWN. SEE SPECIAL NOTE 2 AT LEFT.
- ⑪ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP JOINT). SEE GENERAL NOTE "L" ON PAGE 2. DOUBLE CRIMP EACH SEAL.

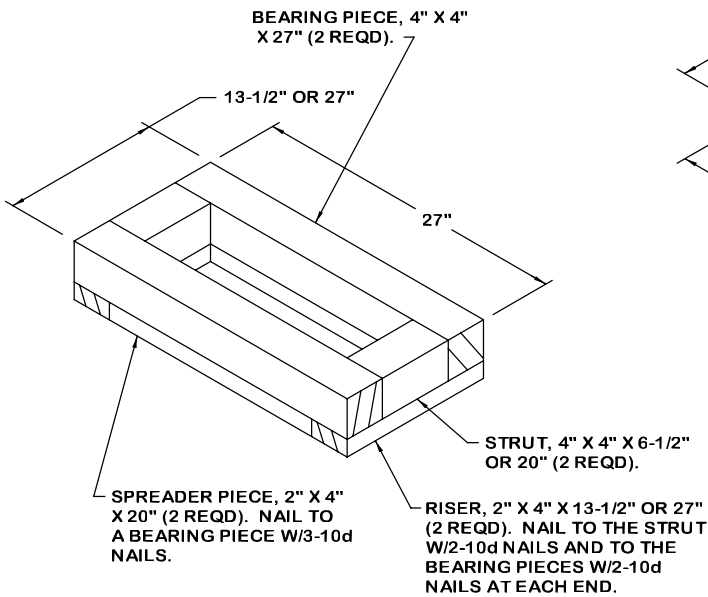


**APPLICATION OF FILLER ASSEMBLY A**

THIS VIEW DEPICTS THE METHOD OF USING A "FILLER ASSEMBLY A" IN THE PLACE OF ONE OMITTED PALLET UNIT OF 155MM PROJECTILES. THE METHOD IS ALSO APPLICABLE FOR THE OMISSION OF TWO PALLET UNITS FROM THE MIDDLE ROW OF THE LOAD SHOWN ON PAGE 6.

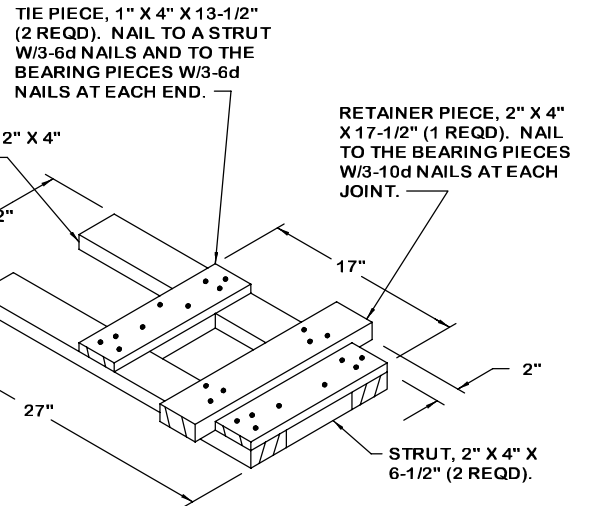


**SPACER A**



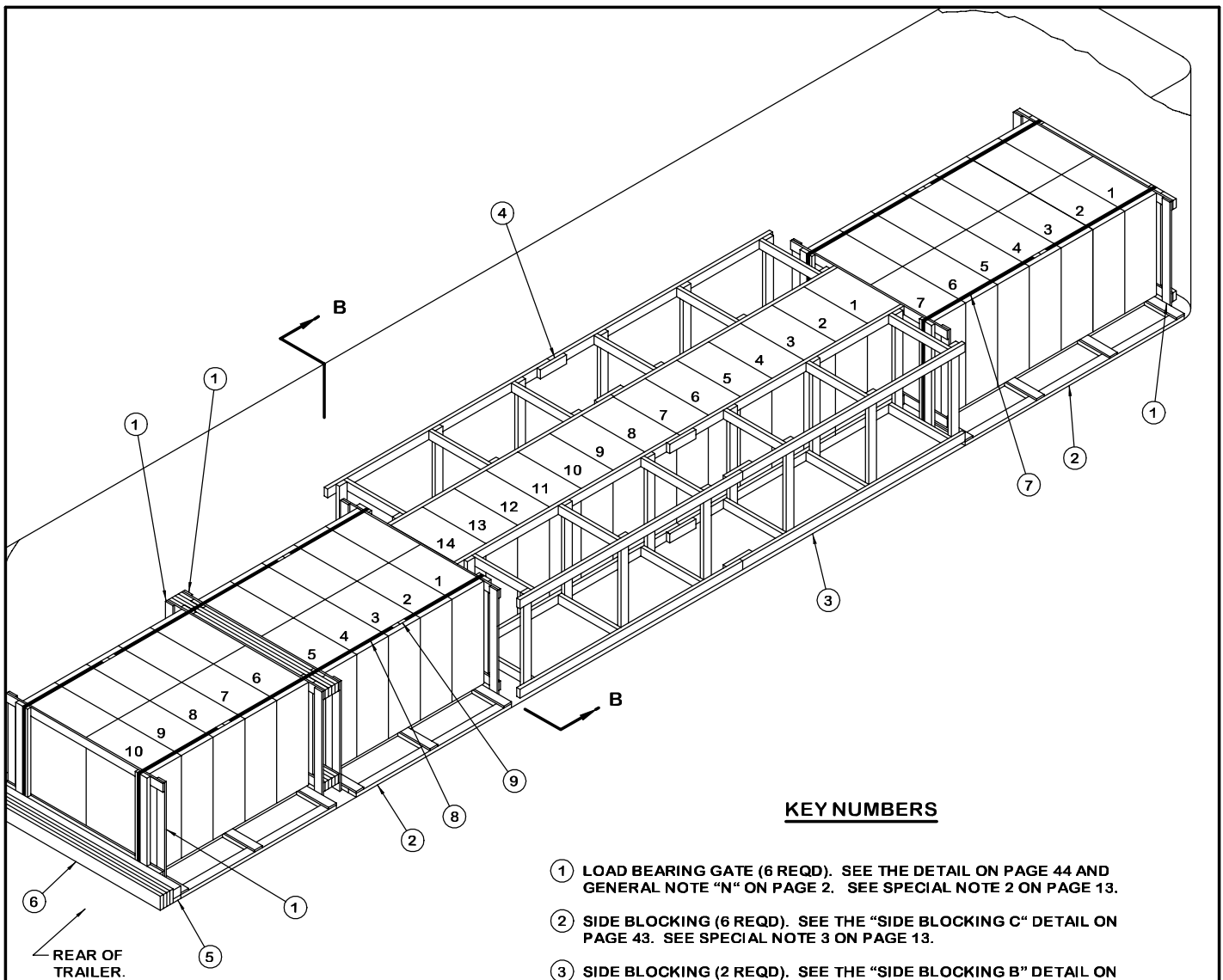
**FILLER ASSEMBLY A**

THIS ASSEMBLY IS FOR USE WITHIN THE LOAD SHOWN ON PAGE 6 TO REDUCE A LOAD BY ONE OR TWO PALLET UNITS. SEE THE "APPLICATION OF FILLER ASSEMBLY A" DETAIL ABOVE FOR GUIDANCE.



**FILLER ASSEMBLY B**

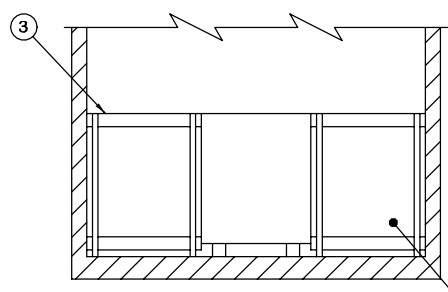
THIS ASSEMBLY, IN CONJUNCTION WITH THE "SPACER A" ABOVE, IS FOR USE IN OBTAINING AN UNEVEN QUANTITY OF PALLET UNITS FOR THE LOAD SHOWN ON PAGE 10. SEE THE LOAD VIEW ON PAGE 36 FOR A TYPICAL INSTALLATION.



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① LOAD BEARING GATE (6 REQD). SEE THE DETAIL ON PAGE 44 AND GENERAL NOTE "N" ON PAGE 2. SEE SPECIAL NOTE 2 ON PAGE 13.
- ② SIDE BLOCKING (6 REQD). SEE THE "SIDE BLOCKING C" DETAIL ON PAGE 43. SEE SPECIAL NOTE 3 ON PAGE 13.
- ③ SIDE BLOCKING (2 REQD). SEE THE "SIDE BLOCKING B" DETAIL ON PAGE 43.
- ④ SPLICE PIECE, 2" X 4" X 12" (AS REQD). CENTER ON A JOINT OF PIECES MARKED ③ AND NAIL WITH 2-10d NAILS AT EACH END.
- ⑤ HEADER, 2" X 4" AND 4" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (1 REQD). LAMINATE W/1-12d NAIL EVERY 12". SEE SPECIAL NOTE 4 ON PAGE 13.
- ⑥ SOLID FILL, 6" WIDE MATERIAL BY TRAILER WIDTH MINUS 1/2" IN LENGTH BY THE THICKNESS REQUIRED TO FILL THE VOID BETWEEN THE HEADER, PIECE MARKED ⑤, AND THE REAR DOORS OF THE TRAILER WHEN THEY ARE CLOSED (AS REQD). NAIL TO THE HEADER, PIECE MARKED ⑤, W/1-10d NAIL EVERY 12". LAMINATE ADDITIONAL PIECES, IF APPLICABLE, WITH ONE APPLICABLY SIZED NAIL FOR EVERY 12". SEE SPECIAL NOTE 5 ON PAGE 13.
- ⑦ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 25'-0" LONG STEEL STRAPPING (2 REQD). INSTALL TO ENCIRCLE SEVEN PALLET UNITS AND TWO LOAD BEARING GATES, PIECES MARKED ①. SEE SPECIAL NOTE 6 ON PAGE 13.
- ⑧ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 21'-0" LONG STEEL STRAPPING (4 REQD). INSTALL TO ENCIRCLE FIVE PALLET UNITS AND TWO LOAD BEARING GATES, PIECES MARKED ①. SEE SPECIAL NOTE 6 ON PAGE 13.
- ⑨ SEAL FOR 1-1/4" STRAPPING (12 REQD, 2 PER STRAP JOINT). SEE GENERAL NOTE "L" ON PAGE 2. DOUBLE CRIMP EACH SEAL.



**SECTION B-B**

THE 2-WIDE PORTION OF THE LOAD AT THE FRONT OF THE TRAILER IS OMITTED FOR CLARITY.

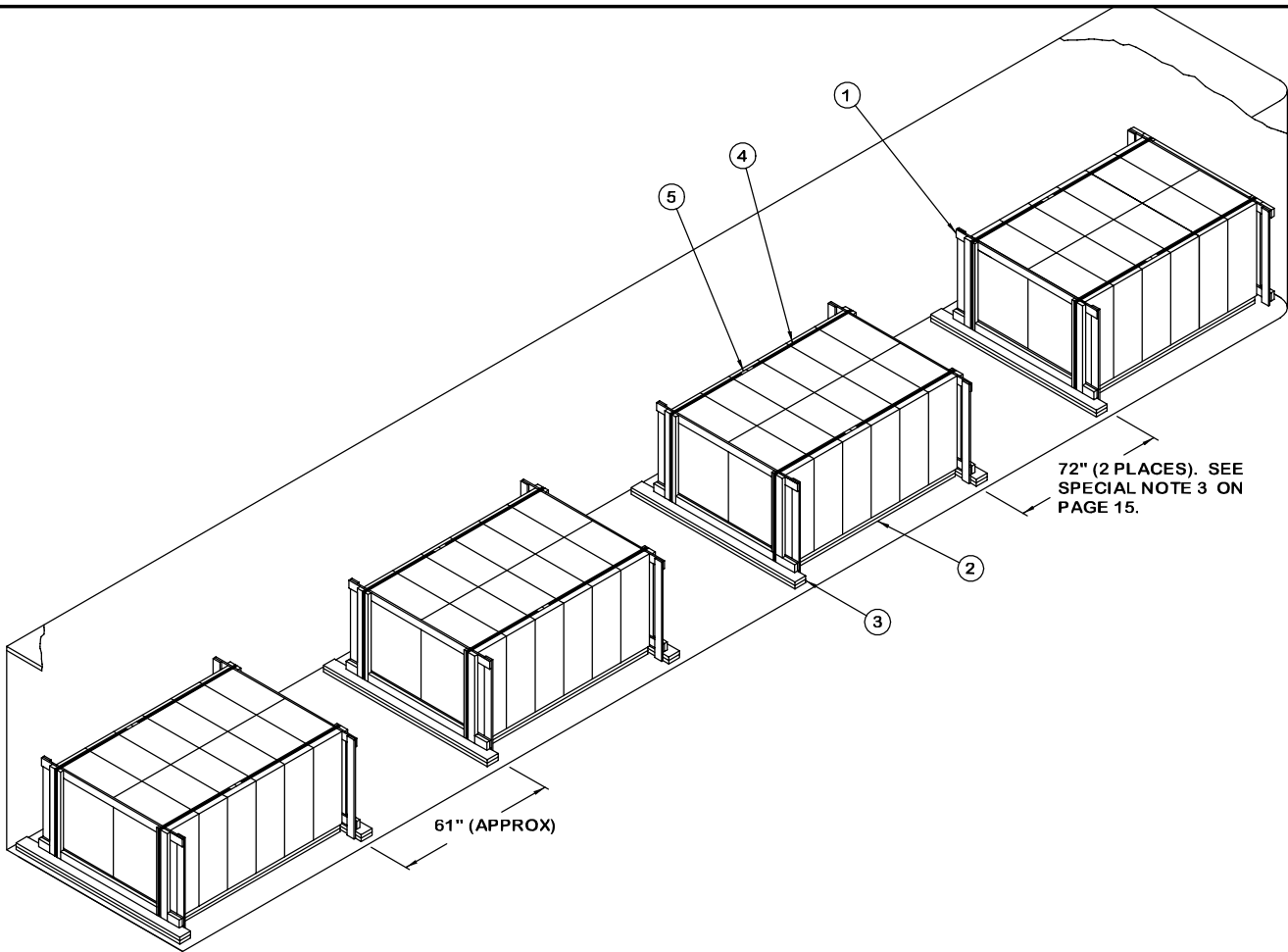
**SPECIAL NOTES:**

1. A 48-UNIT LOAD OF 155MM PROJECTILES PALLETIZED 8 PER LARGE PALLET UNIT IS SHOWN IN A 40'-0" LONG BY 7'-6" WIDE (INSIDE DIMENSION) VAN TRAILER EQUIPPED WITH A NON-NAILABLE FLOOR. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. THE LOAD BEARING GATE, PIECE MARKED ①, WHICH IS POSITIONED AGAINST THE TRAILER FRONT WALL, AS WELL AS THE GATES WHICH ARE POSITIONED WITHIN THE REAR 2-WIDE PORTION, MUST HAVE FILL PIECES APPLIED TO BOTH THE UPPER AND LOWER HORIZONTAL PIECES, FILL PIECES ARE NOT REQUIRED ON THE GATES USED BETWEEN THE 1-WIDE AND 2-WIDE PORTIONS OF THE LOAD. AT THE REAR OF THE LOAD THE LOAD BEARING GATE MUST HAVE FILL PIECES APPLIED ONLY TO THE LOWER HORIZONTAL PIECE.
3. A TRAILER HAVING ROUNDED CORNERS AT THE FORWARD END IS SHOWN. IF THE TRAILER BEING USED IS EQUIPPED WITH A SQUARE FRONT OR WITH AN INSTALLED BULKHEAD, THE SIDE BLOCKING, PIECE MARKED ②, AGAINST EACH SIDE OF THE FORWARD 2-WIDE PORTION OF THE LOAD SHOULD BE LENGTHENED SO AS TO CONTACT THE LOAD BEARING GATE, PIECE MARKED ①.
4. IF 4" X 4" MATERIAL IS NOT AVAILABLE, THE HEADER, PIECE MARKED ⑤, CAN BE CONSTRUCTED OF THREE (3) THICKNESSES OF 2" X 4" MATERIAL LAMINATED W/1-10d NAIL EVERY 8", OR 4" X 6" ON-EDGE MATERIAL CAN BE USED.
5. STRUT TYPE REAR BLOCKING WILL BE USED IN LIEU OF THE REAR BLOCKING SHOWN IN THE LOAD VIEW, WHEN THE SPACE BETWEEN THE REARMOST LOAD BEARING GATE, PIECE MARKED ①, AND THE TRAILER DOORS IS 12" OR MORE. SEE PIECES MARKED ⑤ AND ⑥ ON PAGE 18 FOR GUIDANCE.
6. IF A LOAD PATTERN OTHER THAN AS SHOWN IS USED AND THE 2-WIDE PORTION AT THE REAR OF THE LOAD IS 9 PALLETS OR LESS IN LENGTH, THAT 2-WIDE PORTION NEED NOT BE SEPARATED INTO TWO GROUPS AS SHOWN. OMIT THE TWO CENTRALLY LOCATED LOAD BEARING GATES, PIECES MARKED ①, AND UNITIZE EACH ROW WITH ONE STRAP ENCIROING THE PALLET UNITS AND THE GATES AT EACH END OF THE GROUP. NOTE THAT A 2-WIDE PORTION OF THE LOAD, EITHER AT THE FRONT OR REAR OF THE TRAILER, WHICH IS MORE THAN 9 PALLETS IN LENGTH MUST BE DIVIDED INTO TWO GROUPS.
7. A LOAD CAN BE INCREASED OR DECREASED BY ONE OR MORE PALLET UNITS BY INCREASING OR DECREASING THE LENGTH OF THE 2-WIDE PORTION AT THE FRONT AND/OR REAR OF THE LOAD AND DECREASING OR INCREASING THE LENGTH OF THE 1-WIDE PORTION. ADJUST THE LENGTH OF THE SIDE BLOCKING, PIECES MARKED ② AND ③, AS NECESSARY.
8. DEPENDING UPON THE TYPE AND WEIGHT OF THE TRAILER BEING LOADED, AND WEIGHT OF THE TRACTOR TO BE USED FOR TRANSPORTING THE LOADED TRAILER, IT MAY BE NECESSARY TO ADJUST THE QUANTITY OF UNITS IN THE 1-WIDE PORTION AND IN THE FORWARD AND/OR REAR PORTIONS OF THE LOAD IN ORDER TO COMPLY WITH WEIGHT DISTRIBUTION REQUIREMENTS. SEE GENERAL NOTES "F" AND "G" ON PAGE 2.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	140	47
2" X 4"	462	308
2" X 6"	65	65
4" X 4"	8	10
NAILS	NO. REQD	POUNDS
6d (2")	387	2-1/4
10d (3")	304	4-3/4
12d (3-1/4")	8	NIL
STEEL STRAPPING, 1-1/4" - 134' REQD - - - - - 20 LBS		
SEAL FOR 1-1/4" STRAP - - - 12 REQD - - - - - 3/4 LBS		

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
155MM, 8/PALLET	48	41,952 LBS
DUNNAGE		888 LBS
<hr/>		
TOTAL WEIGHT		42,840 LBS (APPROX)



72" (2 PLACES). SEE SPECIAL NOTE 3 ON PAGE 15.

61" (APPROX)

REAR OF TRAILER.

### ISOMETRIC VIEW

### KEY NUMBERS

- ① LOAD BEARING GATE (8 REQD). SEE THE DETAIL ON PAGE 44 AND GENERAL NOTE "N" ON PAGE 2. SEE SPECIAL NOTE 2 ON PAGE 15.
- ② SIDE BLOCKING, 2" X 6" X 7'-0" (DOUBLED) (8 REQD). PRE-POSITION AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/1-10d NAIL EVERY 12". NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ③ END BLOCKING, 2" X 4" X 7'-0" (DOUBLED) (7 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/6-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/6-20d NAILS.
- ④ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 23'-0" LONG STEEL STRAPPING (8 REQD). INSTALL TO ENCIRCLE SIX PALLET UNITS AND TWO LOAD BEARING GATES, PIECES MARKED ①.
- ⑤ SEAL FOR 1-1/4" STRAPPING (16 REQD, 2 PER STRAP JOINT). SEE GENERAL NOTE "L" ON PAGE 2. DOUBLE CRIMP EACH SEAL.

**SPECIAL NOTES:**

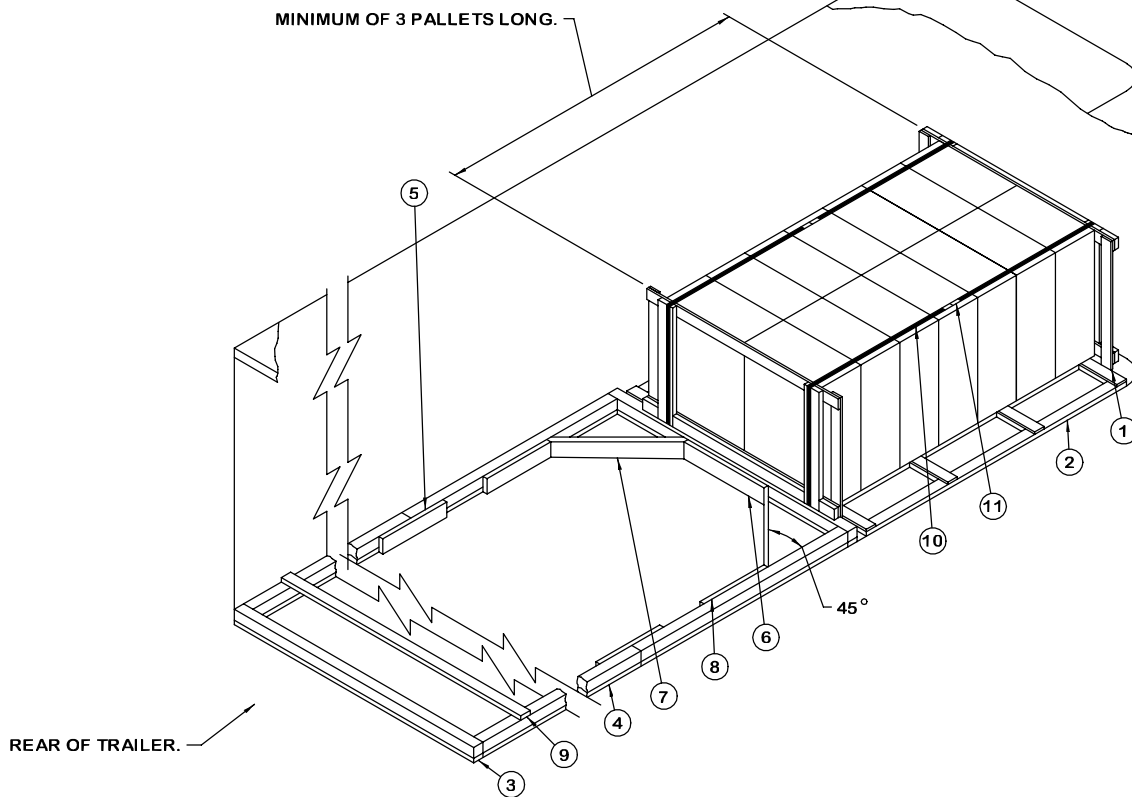
1. A 48-UNIT LOAD OF 155MM PROJECTILES PALLETIZED 8 PER LARGE PALLET IS SHOWN IN A 48'-0" LONG BY 7'-6" WIDE (INSIDE DIMENSION) VAN TRAILER EQUIPPED WITH A AVAILABLE FLOOR. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. THE LOAD BEARING GATE, PIECE MARKED ①, WHICH IS POSITIONED AGAINST THE TRAILER FRONT WALL MUST HAVE FILL PIECES APPLIED TO BOTH THE UPPER AND LOWER HORIZONTAL PIECES.
3. DEPENDING UPON THE TYPE AND WEIGHT OF THE TRAILER BEING LOADED, AND THE WEIGHT OF THE TRACTOR TO BE USED FOR TRANSPORTING THE LOADED TRAILER, IT MAY BE NECESSARY TO ADJUST THE QUANTITY OF UNITS IN THE LOAD, OR TO SHIFT THE LOCATION OF THE LOAD PORTIONS IN ORDER TO COMPLY WITH THE WEIGHT DISTRIBUTION REQUIREMENTS.

**BILL OF MATERIAL**

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	144	49
2" X 4"	144	96
2" X 6"	162	162
NAILS	NO. REQD	POUNDS
6d (2")	87	1/2
10d (3")	140	2
20d (4")	42	1-1/2
STEEL STRAPPING, 1-1/4" - 184' REQD - - - - - 26 LBS		
SEAL FOR 1-1/4" STRAP - - - 16 REQD - - - - - 3/4 LBS		

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
155MM, 8/PALLET - - - -	48 - - - - -	41,952 LBS
DUNNAGE - - - - -	- - - - -	645 LBS
TOTAL WEIGHT - - - - -		42,597 LBS (APPROX)



**ISOMETRIC VIEW**

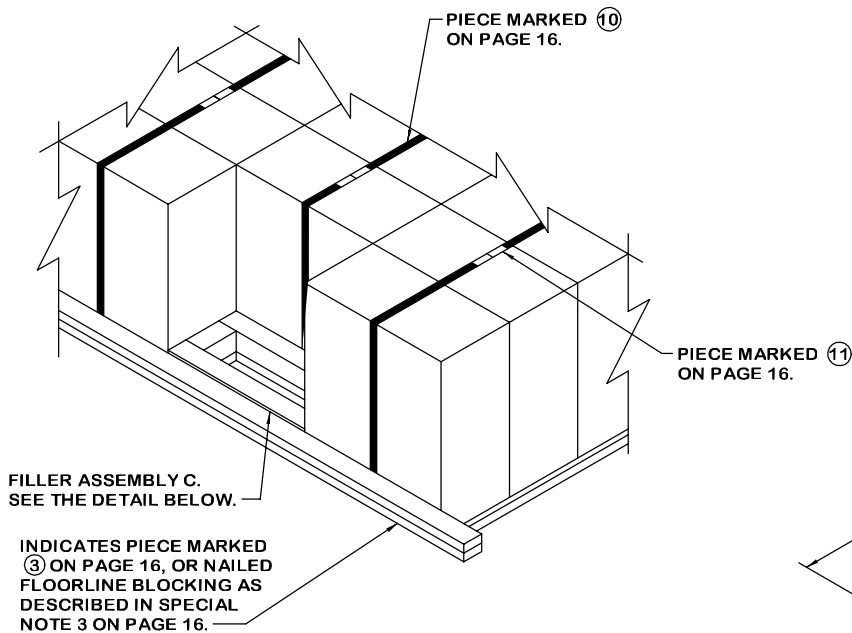
**KEY NUMBERS**

- ① LOAD BEARING GATE (2 REQD). SEE THE DETAIL ON PAGE 44 AND GENERAL NOTE "N" ON PAGE . SEE SPECIAL NOTE 2 ON PAGE 15.
- ② SIDE BLOCKING (2 REQD). SEE THE "SIDE BLOCKING C" DETAIL ON PAGE 43.
- ③ HEADER, 2" X 4" AND 4" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD). LAMINATE W/1-10d NAIL EVERY 12". SEE SPECIAL NOTE 3 AT LEFT.
- ④ SIDE STRUT, 2" X 4" AND 4" X 4" BY CUT TO FIT BETWEEN THE TWO HEADERS (2 REQD). LAMINATE W/1-10d NAIL EVERY 12" AND TOENAIL THE TOP PIECE TO THE HEADERS W/2-16d NAILS AT EACH END.
- ⑤ SPLICE PIECE, 2" X 6" X 24" (AS REQD). CENTER ON A JOINT OF PIECES MARKED ④ AND NAIL W/4-12d NAILS AT EACH END.
- ⑥ CENTER CLEAT, 2" X 6" X 30" (1 REQD). NAIL TO THE FORWARD PIECE MARKED ③ W/7-12d NAILS.
- ⑦ DIAGONAL BRACE, 2" X 6" BY CUT TO FIT (2 REQD). DOUBLE BEVEL EACH END WITH 45° CUTS. INSTALL AT A 45° ANGLE AS SHOWN AND NAIL TO PIECES MARKED ③ AND ④ W/2-16d NAILS AT EACH END.
- ⑧ SIDE CLEAT, 2" X 6" X 24" (2 REQD). NAIL TO PIECE MARKED ④ W/6-12d NAILS.
- ⑨ STRUT BRACING, 2" X 4" BY TRAILER WIDTH IN LENGTH (CUT TO FIT) (MINIMUM OF 1 REQD). ONE (1) ADDITIONAL BRACE IS REQUIRED FOR EVERY 7'-0" OF SIDE STRUT LENGTH. NAIL TO PIECES MARKED ④ W/3-12d NAILS AT EACH END.
- ⑩ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 25'-0" LONG STEEL STRAPPING (2 REQD). INSTALL TO ENCIRCLE SEVEN PALLET UNITS AND TWO LOAD BEARING GATES, PIECES MARKED ①, AS SHOWN. SEE SPECIAL NOTE 2 AT LEFT.
- ⑪ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP JOINT). SEE GENERAL NOTE "L" ON PAGE 2. DOUBLE CRIMP EACH SEAL.

**SPECIAL NOTES:**

- 1. THESE OUTLOADING PROCEDURES DEPICT THE USE OF "K-BRACE" TYPE BLOCKING IN A 7'-6" WIDE VAN TRAILER. WIDER OR NARROWER TRAILERS CAN BE USED.
- 2. THE "K-BRACE" TYPE BLOCKING, SHOWN AS PIECES MARKED ③ THRU ⑨, IS ADEQUATE FOR RETAINING NOT MORE THAN TWENTY-NINE (29) PALLET UNITS. NOTE THAT IN ORDER TO AVOID EXCESSIVE STRAP LENGTHS, LOADS OF MORE THAN 16 PALLET UNITS MUST BE UNITIZED IN TWO GROUPS. POSITION TWO LOAD BEARING GATES, PIECES MARKED ①, WITH FILL PIECES ADDED, BACK-TO-BACK BETWEEN THE GROUPS. ENCIRCLE EACH PALLET GROUP AND THE TWO GATES FOR THE GROUP WITH UNITIZING STRAPS, PIECES MARKED ⑩, OF AN APPROPRIATE LENGTH.
- 3. IF A TRAILER WITH A NAILABLE FLOOR IS BEING USED, NAILED FLOORLINE BLOCKING AS SHOWN IN THE LOAD ON PAGE 14 MAY BE USED IN LIEU OF THE BLOCKING DEPICTED IN THE ABOVE VIEW.
- 4. THE DEPICTED BLOCKING IS APPLICABLE FOR BRACING AN EVEN NUMBERED QUANTITY OF PALLET UNITS (A MINIMUM OF 6). FOR SHIPMENT OF AN ODD QUANTITY (INCLUDING 5 UNITS), IT WILL BE NECESSARY TO INSTALL A FILLER ASSEMBLY AND A SPACER IN THE PLACE OF AN UNIT OMITTED FROM THE CENTRAL PORTION OF A ROW. SEE THE "FILLER ASSEMBLY D" AND "SPACER B" DETAILS ON PAGE 17. REFER TO THE LOAD VIEW ON PAGE 20.
- 5. FOR SHIPMENT OF 2 OR 4 PALLET UNITS, REFER TO THE PROCEDURES DEPICTED ON 40 AND 41.



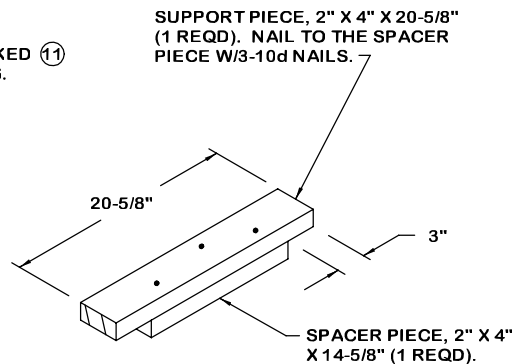


FILLER ASSEMBLY C.  
SEE THE DETAIL BELOW.

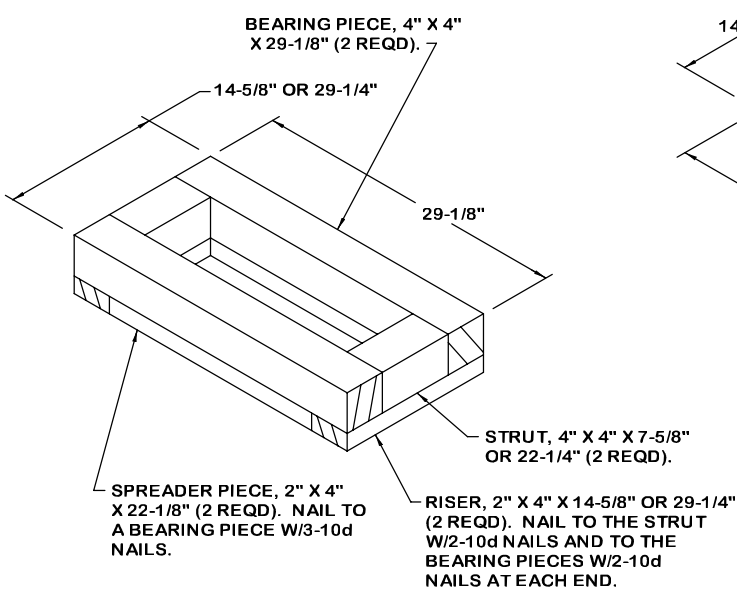
INDICATES PIECE MARKED 3 ON PAGE 16, OR NAILED FLOORLINE BLOCKING AS DESCRIBED IN SPECIAL NOTE 3 ON PAGE 16.

**APPLICATION OF FILLER ASSEMBLY C**

THIS VIEW DEPICTS THE METHOD OF USING A "FILLER ASSEMBLY C" IN THE PLACE OF ONE OMITTED PALLET UNIT OF 155MM PROJECTILES. THE METHOD IS ALSO APPLICABLE FOR THE OMISSION OF TWO PALLET UNITS FROM THE MIDDLE ROW OF THE LOAD SHOWN ON PAGE 6.

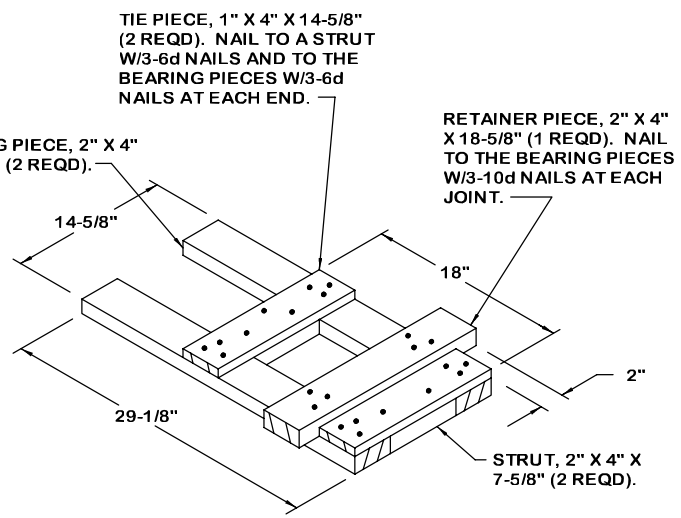


**SPACER B**



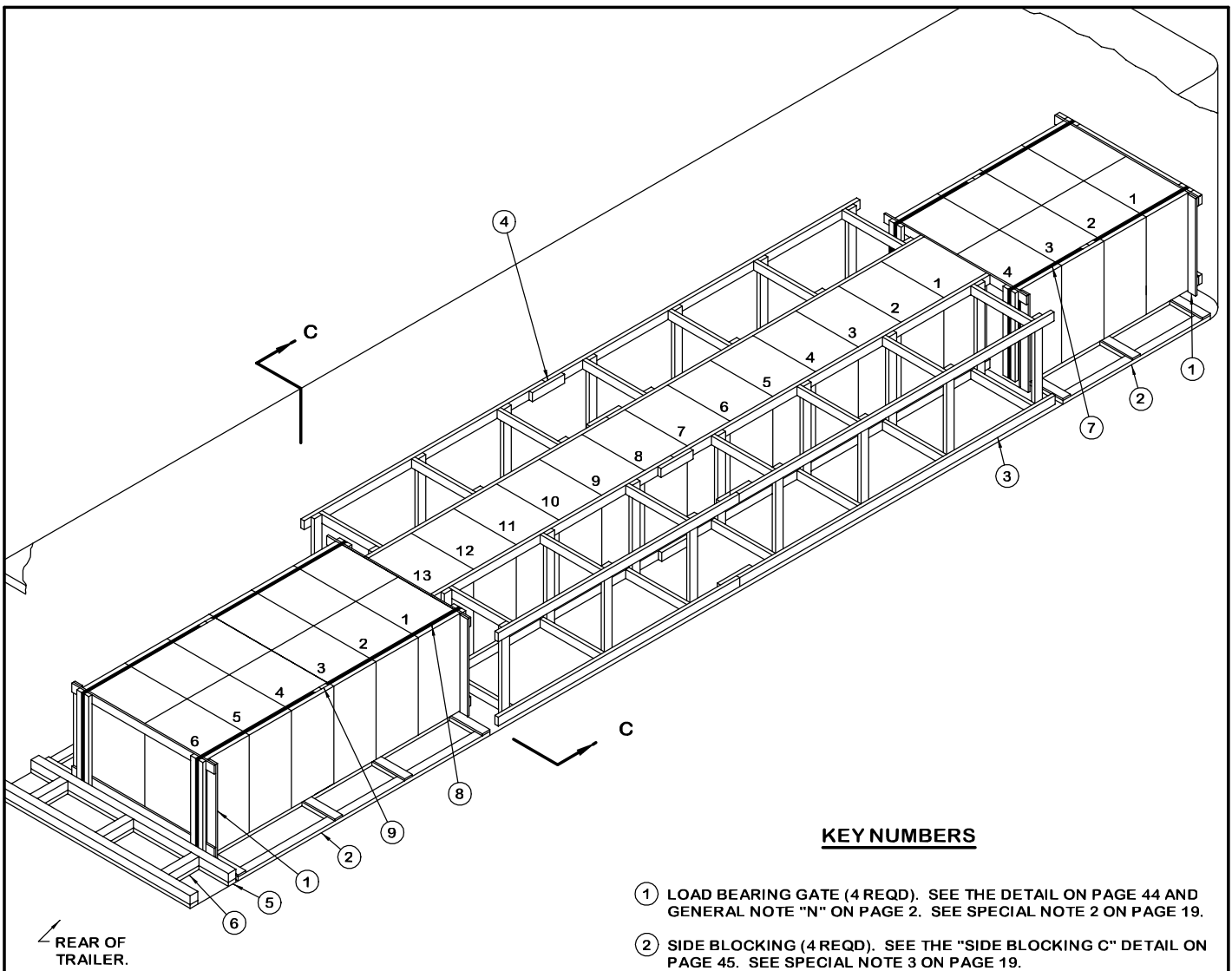
**FILLER ASSEMBLY C**

THIS ASSEMBLY IS FOR USE WITHIN THE LOAD SHOWN ON PAGE 14 TO REDUCE A LOAD BY ONE OR TWO PALLET UNITS. SEE THE "APPLICATION OF FILLER ASSEMBLY C" DETAIL ABOVE FOR GUIDANCE.



**FILLER ASSEMBLY D**

THIS ASSEMBLY, IN CONJUNCTION WITH THE "SPACER B" ABOVE, IS FOR USE IN OBTAINING AN UNEVEN QUANTITY OF PALLET UNITS FOR THE LOAD SHOWN ON PAGE 16. SEE THE LOAD VIEW ON PAGE 36 FOR A TYPICAL INSTALLATION.

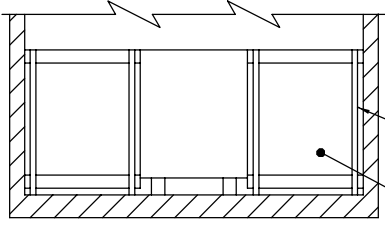


REAR OF TRAILER.

**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① LOAD BEARING GATE (4 REQD). SEE THE DETAIL ON PAGE 44 AND GENERAL NOTE "N" ON PAGE 2. SEE SPECIAL NOTE 2 ON PAGE 19.
- ② SIDE BLOCKING (4 REQD). SEE THE "SIDE BLOCKING C" DETAIL ON PAGE 45. SEE SPECIAL NOTE 3 ON PAGE 19.
- ③ SIDE BLOCKING (2 REQD). SEE THE "SIDE BLOCKING B" DETAIL ON PAGE 43.
- ④ SPLICE PIECE, 2" X 4" X 12" (AS REQD). CENTER ON A JOINT OF PIECES MARKED ③ AND NAIL W/2-10d NAILS AT EACH END.
- ⑤ HEADER, 2" X 4" AND 4" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD). LAMINATE W/1-10d NAIL EVERY 12". SEE SPECIAL NOTE 4 ON PAGE 19.
- ⑥ STRUT, 2" X 4" AND 4" X 4" BY CUT TO FIT (3 REQD). LAMINATE W/1-10d NAIL EVERY 12" (MIN 2) AND TOENAIL THE TOP PIECE TO THE HEADERS, PIECES MARKED ⑤, W/2-16d NAILS AT EACH END. SEE SPECIAL NOTE 5 ON PAGE 19.
- ⑦ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 22'-0" LONG STEEL STRAPPING (2 REQD). INSTALL TO ENCIRCLE FOUR PALLET UNITS AND TWO LOAD BEARING GATES, PIECES MARKED ①, AS SHOWN.
- ⑧ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 28'-0" LONG STEEL STRAPPING (2 REQD). INSTALL TO ENCIRCLE SIX PALLET UNITS AND TWO LOAD BEARING GATES, PIECES MARKED ①, AS SHOWN.
- ⑨ SEAL FOR 1-1/4" STRAPPING (8 REQD, 2 PER STRAP JOINT). SEE GENERAL NOTE "L" ON PAGE 2. DOUBLE CRIMP EACH SEAL.



THE 2-WIDE PORTION OF THE LOAD AT THE FRONT OF THE TRAILER IS OMITTED FOR CLARITY.

**SECTION C-C**

**SPECIAL NOTES:**

1. A 33-UNIT LOAD OF 8" PROJECTILES PALLETIZED 6 PER SMALL PALLET IS SHOWN IN A 40'-0" LONG BY 7'-6" WIDE (INSIDE DIMENSION) VAN TRAILER WITH A NON-NAILABLE FLOOR. IF A TRAILER WITH A NAILABLE FLOOR IS USED, SEE THE PROCEDURES DEPICTED ON PAGES 22 AND 23. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. THE LOAD BEARING GATE, PIECE MARKED ①, WHICH IS POSITIONED AGAINST THE TRAILER FRONT WALL, AS WELL AS GATES WHICH MAY BE POSITIONED WITHIN THE REAR 2-WIDE PORTION, MUST HAVE FILL PIECES APPLIED TO BOTH THE UPPER AND LOWER HORIZONTAL PIECES. FILL PIECES ARE NOT REQUIRED ON THE GATES USED BETWEEN THE 1-WIDE AND 2-WIDE PORTIONS OF THE LOAD. AT THE REAR OF THE LOAD THE LOAD BEARING GATE MUST HAVE FILL PIECES APPLIED ONLY TO THE LOWER HORIZONTAL PIECE.
3. A TRAILER HAVING ROUNDED CORNERS AT THE FORWARD END IS SHOWN. IF THE TRAILER BEING USED IS EQUIPPED WITH A SQUARE FRONT OR WITH AN INSTALLED BULKHEAD, THE SIDE BLOCKING, PIECE MARKED ②, AGAINST EACH SIDE OF THE FORWARD 2-WIDE PORTION OF THE LOAD SHOULD BE LENGTHENED SO AS TO CONTACT THE LOAD BEARING GATE, PIECE MARKED ①.
4. IF 4" X 4" MATERIAL IS NOT AVAILABLE, THE HEADERS AND STRUTS, PIECES MARKED ⑤ AND ⑥, CAN BE CONSTRUCTED OF THREE (3) THICKNESSES OF 2" X 4" MATERIAL LAMINATED W/1-10d NAIL EVERY 8", OR 4" X 6" ON-EDGE MATERIAL CAN BE USED.
5. SOLID FILL TYPE REAR BLOCKING WILL BE USED IN LIEU OF THE REAR BLOCKING SHOWN IN THE LOAD VIEW, WHEN THE SPACE BETWEEN THE REARMOST LOAD BEARING GATE, PIECE MARKED ①, AND THE TRAILER DOORS IS LESS THAN 12". THE SOLID FILL MATERIAL WILL BE USED IN THE PLACE OF THE REARMOST HEADER, PIECE MARKED ⑤, AND THE STRUTS, PIECES MARKED ⑥. REFER TO PIECE MARKED ⑦ ON PAGE 32 FOR GUIDANCE.
6. IF A LOAD PATTERN OTHER THAN SHOWN IS USED AND THE 2-WIDE PORTION OF THE LOAD EITHER AT THE FRONT OR REAR OF THE TRAILER IS MORE THAN 6 PALLETS IN LENGTH, THAT 2-WIDE PORTION MUST BE SEPARATED INTO TWO GROUPS. POSITION TWO LOAD BEARING GATES, PIECES MARKED ①, WITH FILL PIECES ADDED, BACK-TO-BACK BETWEEN THE GROUPS. ENCIRCLE EACH PALLET GROUP AND THE TWO GATES FOR THE GROUP WITH UNITIZING STRAPS OF AN APPROPRIATE LENGTH. SEE THE REAR PORTION OF THE LOAD SHOWN ON PAGE 12 FOR GUIDANCE.
7. A LOAD CAN BE INCREASED OR DECREASED BY ONE OR MORE PALLET UNITS BY INCREASING OR DECREASING THE LENGTH OF THE 2-WIDE PORTION AT THE FRONT AND/OR REAR OF THE LOAD AND DECREASING OR INCREASING THE LENGTH OF THE 1-WIDE PORTION. ADJUST THE LENGTH OF THE SIDE BLOCKING, PIECES MARKED ② AND ③, AS NECESSARY.
8. DEPENDING UPON THE TYPE AND WEIGHT OF THE TRAILER BEING LOADED, AND THE WEIGHT OF THE TRACTOR TO BE USED FOR TRANSPORTING THE LOADED TRAILER, IT MAY BE NECESSARY TO ADJUST THE QUANTITY OF UNITS IN THE 1-WIDE PORTION AND IN THE FORWARD AND/OR REAR PORTIONS OF THE LOAD IN ORDER TO COMPLY WITH WEIGHT DISTRIBUTION REQUIREMENTS. SEE GENERAL NOTE "F" ON PAGE 2.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	95	32
2" X 4"	434	290
2" X 6"	22	22
4" X 4"	19	26
NAILS	NO. REQD	POUNDS
6d (2")	249	1-1/2
10d (3")	337	5
16d (3-1/2")	12	1/2
STEEL STRAPPING, 1-1/4" - 100' REQD - - - - - 15 LBS		
SEAL FOR 1-1/4" STRAP - - - 8 REQD - - - - - 1/2 LBS		

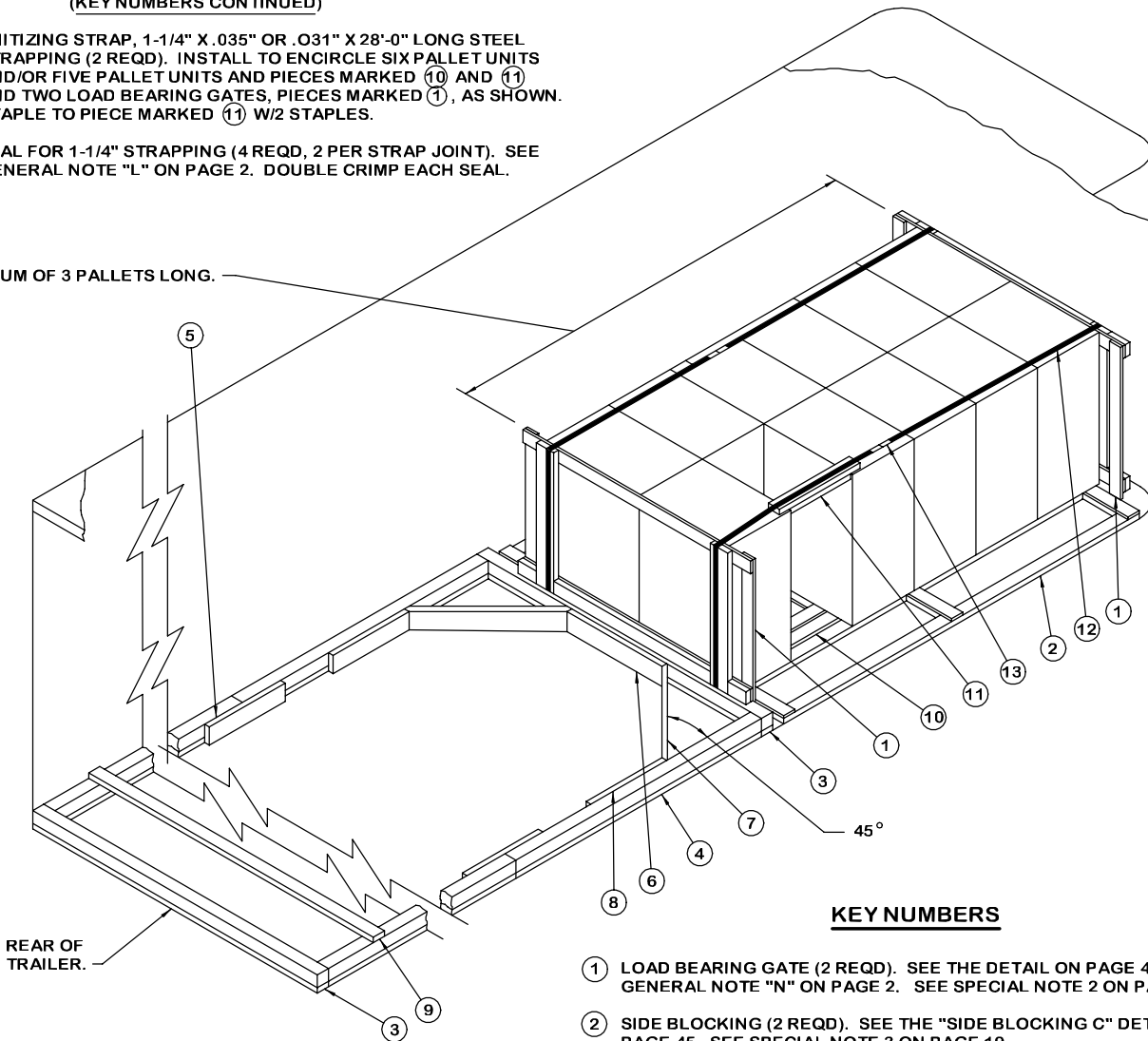
**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
8", 6/PALLET	33	41, 448 LBS
DUNNAGE	-	763 LBS
TOTAL WEIGHT		42, 211 LBS (APPROX)

(KEY NUMBERS CONTINUED)

- ⑫ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 28'-0" LONG STEEL STRAPPING (2 REQD). INSTALL TO ENCIRCLE SIX PALLET UNITS AND/OR FIVE PALLET UNITS AND PIECES MARKED ⑩ AND ⑪ AND TWO LOAD BEARING GATES, PIECES MARKED ①, AS SHOWN. STAPLE TO PIECE MARKED ⑪ W/2 STAPLES.
- ⑬ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP JOINT). SEE GENERAL NOTE "L" ON PAGE 2. DOUBLE CRIMP EACH SEAL.

MINIMUM OF 3 PALLETS LONG.



**ISOMETRIC VIEW**

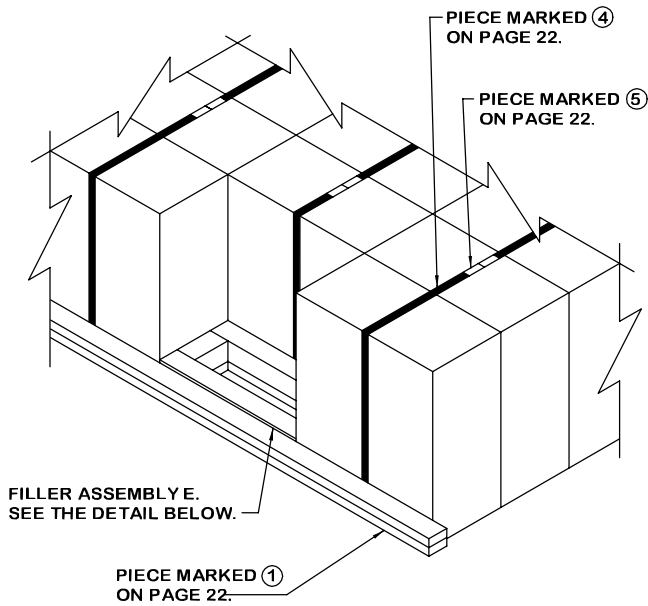
**KEY NUMBERS**

- ① LOAD BEARING GATE (2 REQD). SEE THE DETAIL ON PAGE 44 AND GENERAL NOTE "N" ON PAGE 2. SEE SPECIAL NOTE 2 ON PAGE 19.
- ② SIDE BLOCKING (2 REQD). SEE THE "SIDE BLOCKING C" DETAIL ON PAGE 45. SEE SPECIAL NOTE 3 ON PAGE 19.
- ③ HEADER, 2" X 4" AND 4" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD). LAMINATE W/1-10d NAIL EVERY 12". SEE SPECIAL NOTE 4 ON PAGE 19.
- ④ SIDE STRUT, 2" X 4" AND 4" X 4" BY CUT TO FIT BETWEEN THE TWO HEADERS (2 REQD). LAMINATE W/1-10d NAIL EVERY 12" AND TOENAIL THE TOP PIECE TO THE HEADERS W/2-16d NAILS AT EACH END.
- ⑤ SPLICE PIECE, 2" X 6" X 24" (AS REQD). CENTER ON A JOINT OF PIECES MARKED ④ AND NAIL W/4-12d NAILS AT EACH END.
- ⑥ CENTER CLEAT, 2" X 6" X 30" (1 REQD). NAIL TO THE FORWARD PIECE MARKED ③ W/7-12d NAILS.
- ⑦ DIAGONAL BRACE, 2" X 6" BY CUT TO FIT (2 REQD). DOUBLE BEVEL EACH END WITH 45° CUTS. INSTALL AT A 45° ANGLE AS SHOWN AND NAIL TO PIECES MARKED ③ AND ④ W/2-16d NAILS AT EACH END.
- ⑧ SIDE CLEAT, 2" X 6" X 24" (2 REQD). NAIL TO PIECE MARKED ④ W/6-12d NAILS.
- ⑨ STRUT BRACING, 2" X 4" BY TRAILER WIDTH IN LENGTH (CUT TO FIT) (MINIMUM OF 1 REQD). ONE (1) ADDITIONAL BRACE IS REQUIRED FOR EVERY 7'-0" OF SIDE STRUT LENGTH. NAIL TO PIECES MARKED ④ W/3-10d NAILS AT EACH END.
- ⑩ FILLER ASSEMBLY (1 REQD). SEE THE "FILLER ASSEMBLY F" DETAIL ON PAGE 21. SEE SPECIAL NOTE 4 AT LEFT
- ⑪ SPACER (1 REQD). SEE THE "SPACER C" DETAIL ON PAGE 21.

**SPECIAL NOTES:**

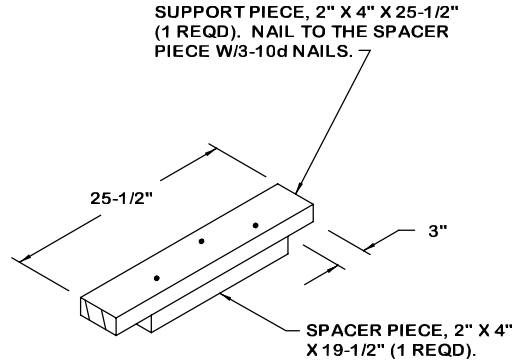
- 1. THESE OUTLOADING PROCEDURES DEPICT THE USE OF "K-BRACE" TYPE BLOCKING IN A 7'-6" WIDE VAN TRAILER. WIDER OR NARROWER TRAILERS MAY BE USED.
- 2. THE "K-BRACE" TYPE BLOCKING, SHOWN AS PIECES MARKED ③ THRU ⑨, IS ADEQUATE FOR RETAINING NOT MORE THAN TWENTY (20) PALLET UNITS. NOTE THAT IN ORDER TO AVOID EXCESSIVE STRAP LENGTHS, LOADS OF MORE THAN 12 PALLET UNITS MUST BE UNITIZED IN TWO GROUPS. POSITION TWO LOAD BEARING GATES, PIECES MARKED ①, WITH FILLER PIECES ADDED, BACK-TO-BACK BETWEEN THE GROUPS. ENCIRCLE EACH GROUP AND THE TWO GATES WITH UNITIZING STRAPS, PIECES MARKED ⑫, OF AN APPROPRIATE LENGTH.
- 3. IF A TRAILER WITH A NAILABLE FLOOR IS BEING USED, NAILED FLOORLINE BLOCKING AS SHOWN IN THE LOAD ON PAGE 22 MAY BE USED IN LIEU OF THE BLOCKING DEPICTED IN THE ABOVE VIEW.
- 4. THE DEPICTED BLOCKING IS ALSO APPLICABLE FOR BRACING AN EVEN NUMBERED QUANTITY OF PALLET UNITS (A MINIMUM OF 6). THE FILLER ASSEMBLY AND SPACER, PIECES MARKED ⑩ AND ⑪, ARE ONLY SHOWN TO DEPICT A TYPICAL INSTALLATION.
- 5. FOR SHIPMENT OF 2 OR 4 PALLET UNITS, REFER TO THE PROCEDURES DEPICTED ON PAGES 40 AND 41.

(CONTINUED AT UPPER LEFT)

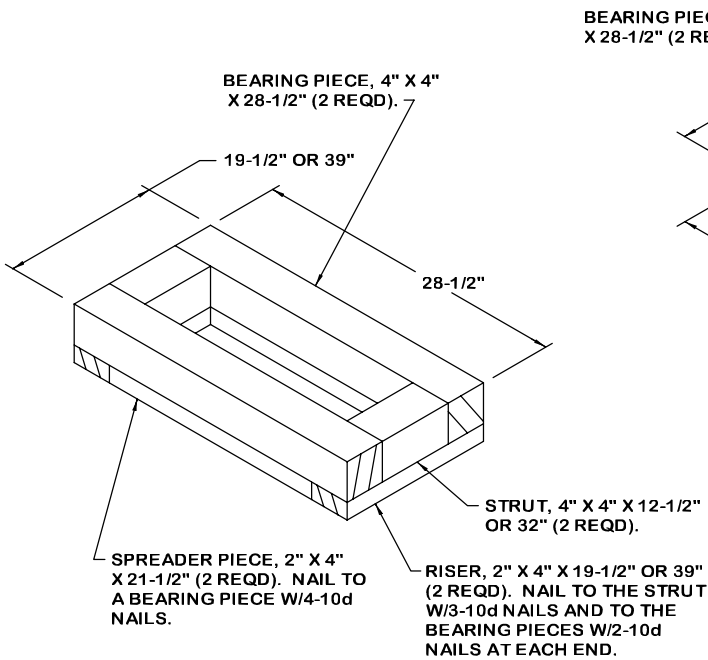


**APPLICATION OF FILLER ASSEMBLY E**

THIS VIEW DEPICTS THE METHOD OF USING A "FILLER ASSEMBLY E" IN THE PLACE OF ONE OMITTED PALLET UNIT OF 8" PROJECTILES. THE METHOD IS ALSO APPLICABLE FOR THE OMISSION OF TWO PALLET UNITS FROM THE MIDDLE ROW OF THE LOAD SHOWN ON PAGE 22.

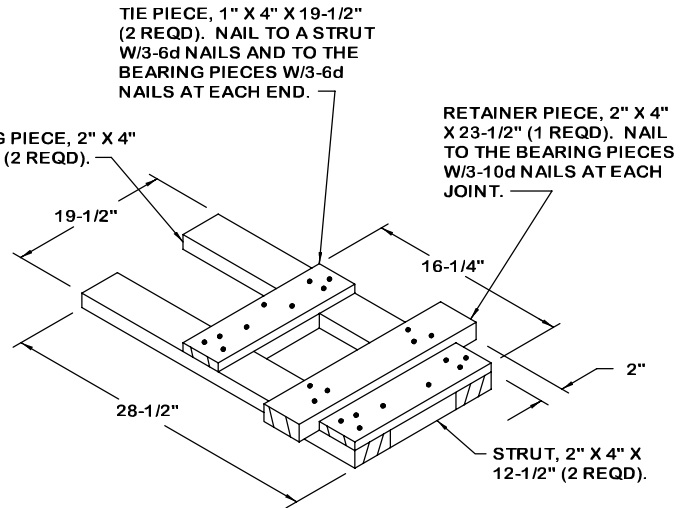


**SPACER C**



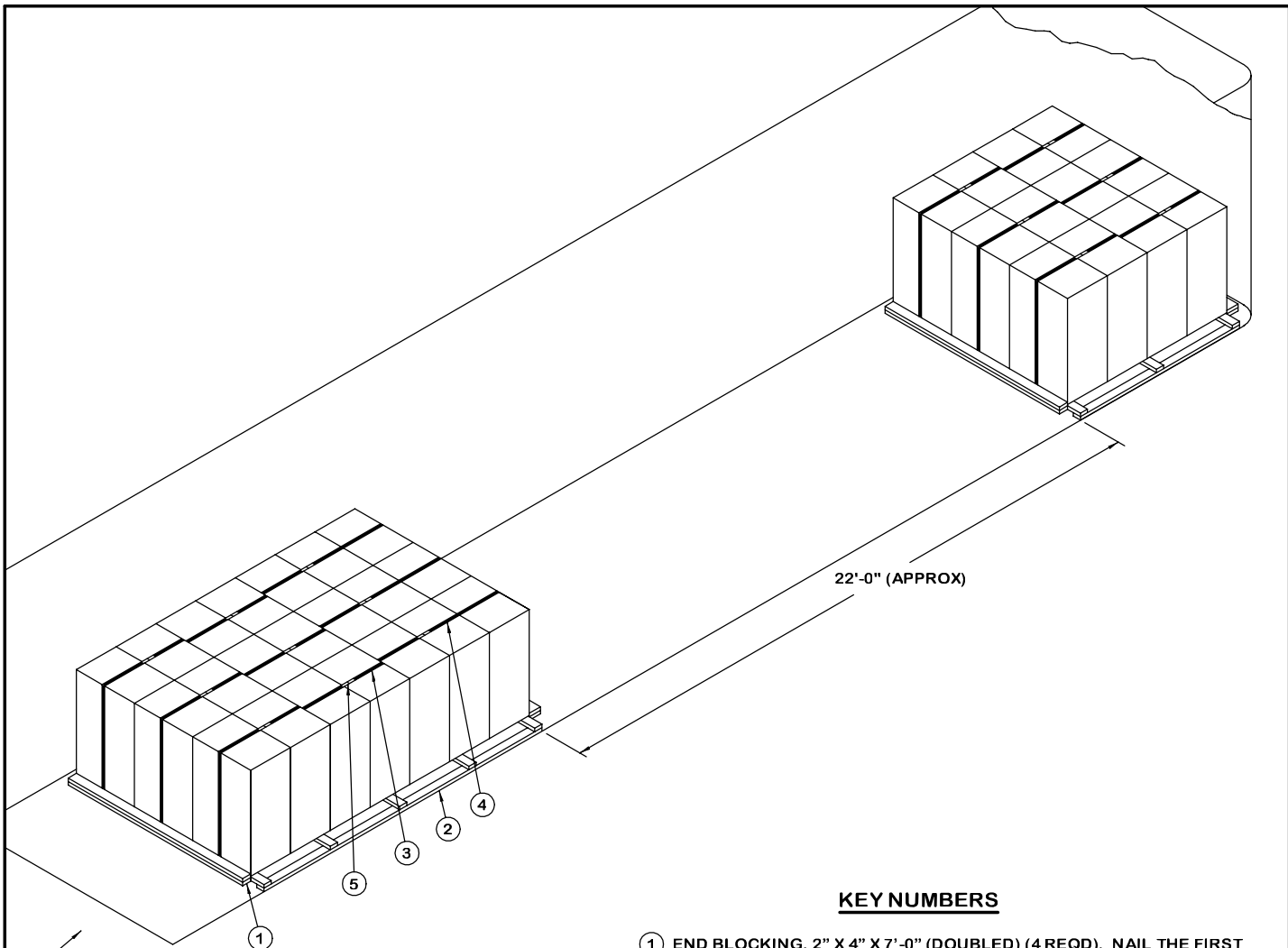
**FILLER ASSEMBLY E**

THIS ASSEMBLY IS FOR USE WITHIN THE LOAD SHOWN ON PAGE 22 TO REDUCE A LOAD BY ONE OR TWO PALLET UNITS. SEE THE "APPLICATION OF FILLER ASSEMBLY E" DETAIL ABOVE FOR GUIDANCE.



**FILLER ASSEMBLY F**

THIS ASSEMBLY, IN CONJUNCTION WITH THE "SPACER C" ABOVE, IS FOR USE IN OBTAINING AN UNEVEN QUANTITY OF PALLET UNITS FOR THE LOAD SHOWN ON PAGE 22. SEE THE LOAD VIEW ON PAGE 20 FOR A TYPICAL INSTALLATION.



22'-0" (APPROX)

REAR OF TRAILER.

**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① END BLOCKING, 2" X 4" X 7'-0" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/12-10d NAILS. LAMINATE THE SECOND PIECE W/12-20d NAILS. NOTE: THE END BLOCKING AT THE FORWARD END OF THE TRAILER SHOULD BE POSITIONED APPROXIMATELY SIX INCHES (6") FROM THE FORWARD WALL. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ② SIDE BLOCKING ASSEMBLY (4 REQD). SEE THE "SIDE BLOCKING ASSEMBLY A" DETAIL ON PAGE 42 AND SPECIAL NOTE 2 ON PAGE 23. SEE GENERAL NOTE "N" ON PAGE 2.
- ③ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 14'-0" LONG STEEL STRAPPING (12 REQD). INSTALL SO AS TO ENCIRCLE 2 PALLET UNITS AS SHOWN.
- ④ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 17'-6" LONG STEEL STRAPPING (3 REQD). INSTALL SO AS TO ENCIRCLE 3 PALLET UNITS AS SHOWN.
- ⑤ SEAL FOR 1-1/4" STEEL STRAPPING (30 REQD, 2 PER STRAP JOINT.) SEE GENERAL NOTE "L" ON PAGE 2. DOUBLE CRIMP EACH SEAL.

**SPECIAL NOTES:**

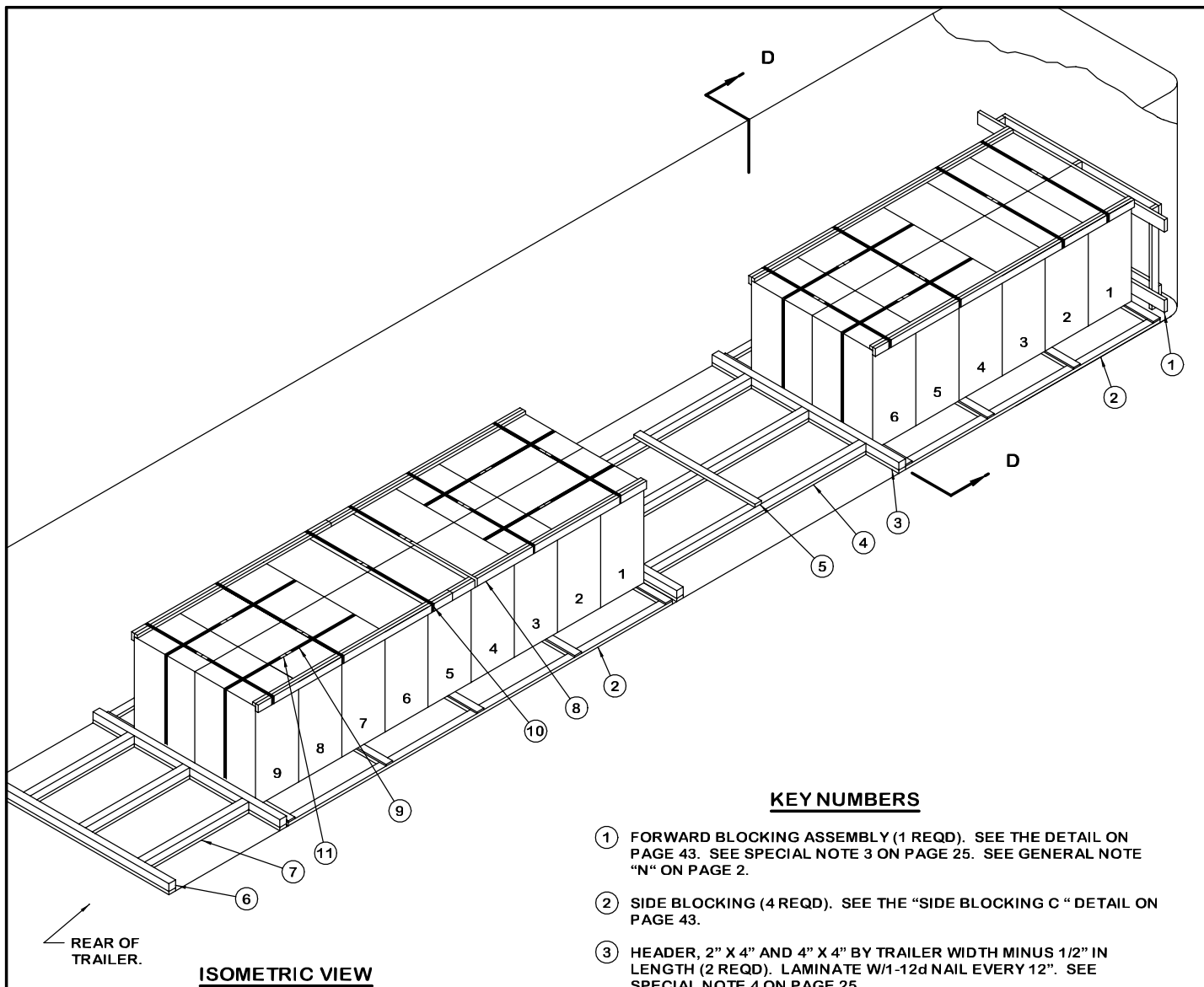
1. A 33-UNIT LOAD OF 8" PROJECTILES PALLETIZED 6 PER PALLET IS SHOWN IN A 45'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) VAN TRAILER EQUIPPED WITH A NAILABLE FLOOR. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. A TRAILER HAVING ROUNDED CORNERS AT THE FORWARD END IS SHOWN. IF THE TRAILER BEING USED IS EQUIPPED WITH A SQUARE FRONT, THE END BLOCKING, PIECE MARKED ①, AT THE FRONT OF THE LOAD MAY BE OMITTED. POSITION THE PALLET UNITS DIRECTLY AGAINST THE FRONT WALL.
3. IN LIEU OF BUNDLING THE PALLET UNITS IN MULTIPLES OF TWO OR THREE, ONE 20'-0" LONG OR 29'-6" LONG UNITIZING STRAP CAN BE INSTALLED SO AS TO ENCIRCLE ALL 4 OR 7 PALLET UNITS IN EACH ROW. CAUTION: SEVEN IS THE MAXIMUM QUANTITY OF PALLET UNITS THAT CAN BE UNITIZED.
4. A LOAD CAN BE INCREASED OR DECREASED BY A MULTIPLE OF THREE (3) PALLET UNITS BY ADDING OR OMITTING ONE OR MORE FULL LOAD UNITS. IF IT IS NECESSARY TO OMIT ONE OR TWO PALLET UNITS FROM A LOAD, A "FILLER ASSEMBLY" MUST BE SUBSTITUTED FOR THE UNIT(S) OMITTED FROM THE MIDDLE ROW. SEE THE "FILLER ASSEMBLY E" AND THE "APPLICATION OF FILLER ASSEMBLY E" DETAILS ON PAGE 21 FOR GUIDANCE.
5. DEPENDING UPON THE TYPE AND WEIGHT OF THE TRAILER BEING LOADED, AND THE WEIGHT OF THE TRACTOR TO BE USED FOR TRANSPORTING THE LOADED TRAILER, IT MAY BE NECESSARY TO ADJUST THE QUANTITY OF UNITS IN THE FORWARD AND REAR PORTIONS OF THE LOAD IN ORDER TO COMPLY WITH WEIGHT DISTRIBUTION REQUIREMENTS. SEE GENERAL NOTES "F" AND "G" ON PAGE 2.

**BILL OF MATERIAL**

LUMBER	LINEAR FEET	BOARD FEET
2" x 4"	136	91
NAILS	NO. REQD	POUNDS
10d (3")	144	2-1/4
20d (4")	48	1-3/4
STEEL STRAPPING, 1-1/4" - 221' REQD - - - - -		32 LBS
SEAL FOR 1-1/4" STRAP - - - 30 REQD - - - - -		2 LBS

**LOAD AS SHOWN**

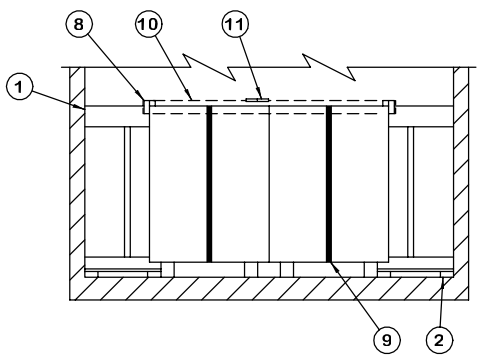
ITEM	QUANTITY	WEIGHT (APPROX)
8", 6/PALLET	33	41,448 LBS
DUNNAGE		220 LBS
TOTAL WEIGHT - - - - -		41,668 LBS (APPROX)



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 43. SEE SPECIAL NOTE 3 ON PAGE 25. SEE GENERAL NOTE "N" ON PAGE 2.
- ② SIDE BLOCKING (4 REQD). SEE THE "SIDE BLOCKING C" DETAIL ON PAGE 43.
- ③ HEADER, 2" X 4" AND 4" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD). LAMINATE W/1-12d NAIL EVERY 12". SEE SPECIAL NOTE 4 ON PAGE 25.
- ④ STRUT, 2" X 4" AND 4" X 4" X 9'-9" (3 REQD). LAMINATE W/1-12d NAIL EVERY 8" AND TOENAIL THE TOP PIECE TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE SPECIAL NOTE 5 ON PAGE 25.
- ⑤ STRUT BRACING, 2" X 4" X 66" (1 REQD FOR EVERY 7'-0" OF STRUT LENGTH). NAIL TO PIECES MARKED ④ W/3-12d NAILS AT EACH JOINT.
- ⑥ REAR BLOCKING HEADER, 2" X 4" AND 4" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD). LAMINATE W/1-12d NAIL EVERY 12".
- ⑦ REAR BLOCKING STRUT, 2" X 4" AND 4" X 4" BY LENGTH TO SUIT (3 REQD). LAMINATE W/1-12d NAIL EVERY 12" AND TOENAIL THE TOP PIECE TO PIECES MARKED ⑥ W/2-16d NAILS AT EACH END.
- ⑧ CAP ASSEMBLY (6 REQD). SEE THE DETAIL ON PAGE 29.
- ⑨ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 20'-0" LONG STEEL STRAPPING (6 REQD). INSTALL TO ENCIRCLE THREE PALLET UNITS AS SHOWN. SEE SPECIAL NOTE 6 ON PAGE 25.
- ⑩ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 14'-0" LONG STEEL STRAPPING (10 REQD). INSTALL TO ENCIRCLE THE COVERS OF TWO LATERALLY ADJACENT PALLET UNITS AND 2 CAP ASSEMBLIES, PIECES MARKED ⑧.
- ⑪ SEAL FOR 1-1/4" STRAPPING (32 REQD, 2 PER STRAP). SEE GENERAL NOTE "L" ON PAGE 2. DOUBLE CRIMP EACH SEAL.



**SECTION D-D**



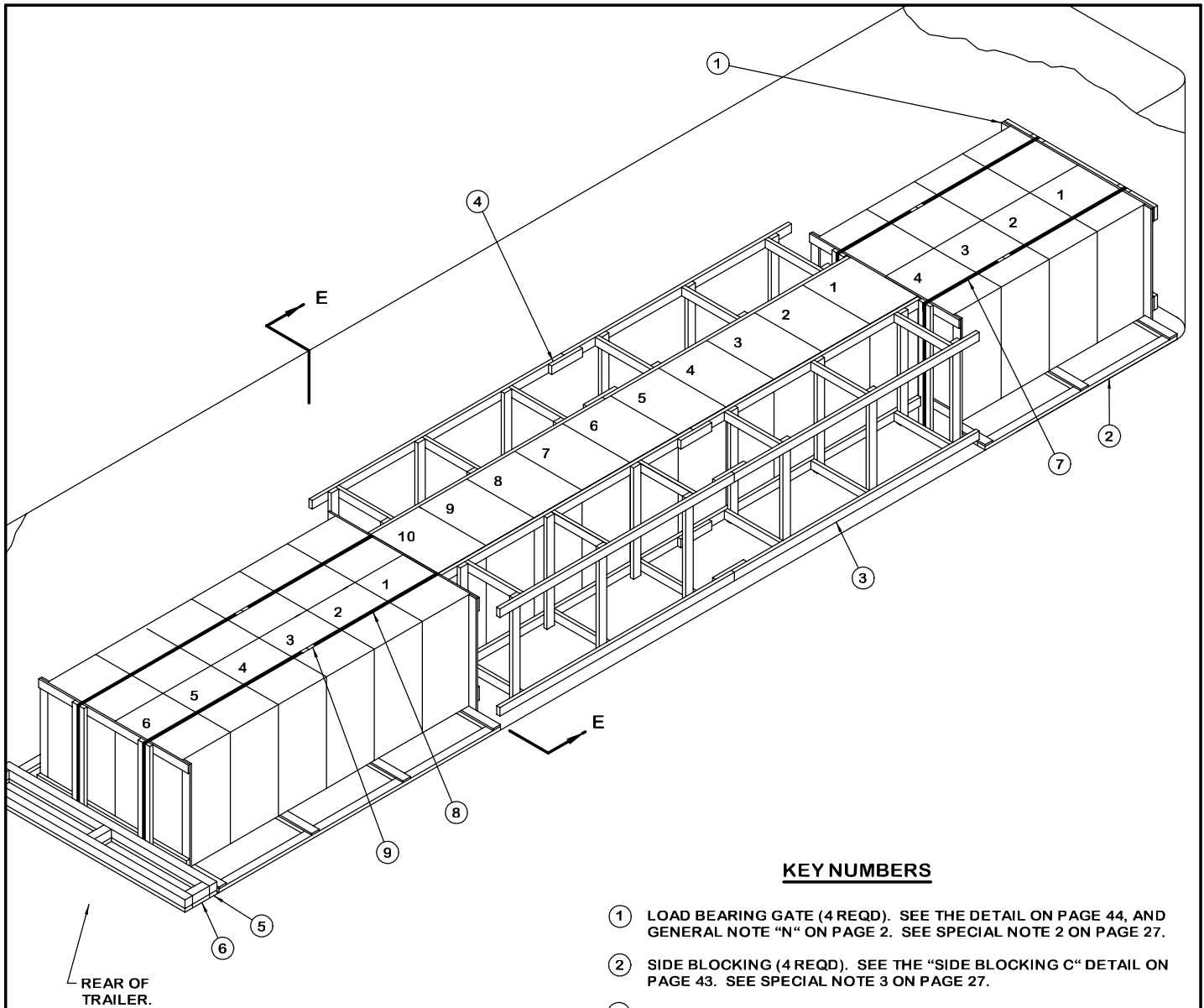
**SPECIAL NOTES:**

1. A 30-UNIT OF 8" PROJECTILES PALLETIZED 6 PER LARGE PALLET IS SHOWN IN A 45'-0" LONG BY 7'-6" WIDE (INSIDE DIMENSION) VAN TRAILER. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. THE LOADING PROCEDURE SHOWN ON PAGE 24 IS APPLICABLE FOR TRAILERS WHICH HAVE ALL METAL FLOORS. THE PROCEDURES MAY ALSO BE USED IN TRAILERS HAVING NAILABLE FLOORS IF NAILING TO THE TRAILER FLOOR IS NOT DESIRABLE. SEE THE PROCEDURES ON PAGE 22.
3. A TRAILER HAVING ROUNDED CORNERS AT THE FORWARD END IS SHOWN. IF THE TRAILER BEING USED IS EQUIPPED WITH A SQUARE FRONT OR WITH AN INSTALLED BULKHEAD, OMIT THE FORWARD BLOCKING, PIECE MARKED ①, AND POSITION THE PALLET UNITS DIRECTLY AGAINST THE FORWARD PORTION OF THE TRAILER.
4. IF 4" X 4" MATERIAL IS NOT AVAILABLE, THE HEADERS AND STRUTS, PIECES MARKED ③, ④, ⑥, AND ⑦, CAN BE CONSTRUCTED OF THREE (3) THICKNESSES OF 2" X 4" MATERIAL LAMINATED W/1-10d NAIL EVERY 8", OR 4" X 6" ON-EDGE MATERIAL CAN BE USED.
5. SOLID FILL TYPE REAR BLOCKING WILL BE USED IN LIEU OF THE REAR BLOCKING SHOWN IN THE LOAD VIEW, WHEN THE SPACE BETWEEN THE LADING AND THE TRAILER DOORS IS 12" OR LESS.
6. IF THE REAR PORTION OF THE LOAD IS 5 PALLETS OR LESS IN LENGTH, ONE UNITIZING STRAP OF AN APPROPRIATE LENGTH CAN BE INSTALLED SO AS TO ENIRCLE ALL THE PALLET UNITS IN A ROW. CAUTION: FIVE IS THE MAXIMUM QUANTITY THAT CAN BE UNITIZED. IF THE REAR PORTION OF THE LOAD IS MORE THAN 5 PALLET UNITS LONG, UNITIZING STRAPS MUST BE APPLIED AROUND THE 3 UNITS AT EACH END OF THE ROW AS SHOWN.
7. A LOAD CAN BE INCREASED OR DECREASED BY A MULTIPLE OF TWO (2) PALLET UNITS BY ADDING OR OMITTING ONE OR MORE FULL LOAD UNITS. IF IT IS NECESSARY TO OMIT ONE PALLET UNIT FROM A LOAD, A FILLER ASSEMBLY AND A SPACER MUST BE SUBSTITUTED FOR THE UNIT OMITTED. SEE THE "FILLER ASSEMBLY G" DETAIL AND THE "SPACER D" DETAIL ON PAGE 29. SEE PIECES MARKED ⑩ AND ⑪ ON PAGE 20 FOR A TYPICAL INSTALLATION.
8. DEPENDING UPON THE TYPE AND WEIGHT OF THE TRAILER BEING LOADED, AND THE WEIGHT OF THE TRACTOR TO BE USED FOR TRANSPORTING THE LOADED TRAILER, IT MAY BE NECESSARY TO ADJUST THE QUANTITY OF UNITS IN THE FORWARD AND REAR PORTIONS OF THE LOAD IN ORDER TO COMPLY WITH WEIGHT DISTRIBUTION REQUIREMENTS. SEE GENERAL NOTES "F" AND "G" ON PAGE 2.

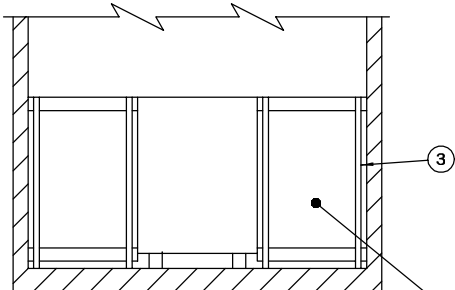
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	21	7
2" X 2"	57	19
2" X 4"	219	146
2" X 6"	29	29
4" X 4"	73	97
NAILS	NO. REQD	POUNDS
6d (2")	162	1-1/4
10d (3")	80	1-1/4
12d (3-1/4")	98	1-1/2
16d (3-1/2")	24	1/2
STEEL STRAPPING, 1-1/4" - 260' REQD - - - - - 38 LBS		
SEAL FOR 1-1/4" STRAP - - - 32 REQD - - - - 1-1/2 LBS		

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
8", 6/PALLET	30	38,640 LBS
DUNNAGE		640 LBS
TOTAL WEIGHT		39,280 LBS (APPROX)



**ISOMETRIC VIEW**



**SECTION E-E**

THE 2-WIDE PORTION OF THE LOAD AT THE FRONT OF THE TRAILER IS OMITTED FOR CLARITY.

**KEY NUMBERS**

- ① LOAD BEARING GATE (4 REQD). SEE THE DETAIL ON PAGE 44, AND GENERAL NOTE "N" ON PAGE 2. SEE SPECIAL NOTE 2 ON PAGE 27.
- ② SIDE BLOCKING (4 REQD). SEE THE "SIDE BLOCKING C" DETAIL ON PAGE 43. SEE SPECIAL NOTE 3 ON PAGE 27.
- ③ SIDE BLOCKING (2 REQD). SEE THE "SIDE BLOCKING B" DETAIL ON PAGE 43.
- ④ SPLICE PIECE, 2" X 4" X 12" (AS REQD). CENTER ON A JOINT OF PIECES MARKED ③ AND NAIL W/2-10d NAILS AT EACH END.
- ⑤ HEADER, 2" X 4" AND 4" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD). LAMINATE W/1-12d NAIL EVERY 12". SEE SPECIAL NOTE 4 ON PAGE 27.
- ⑥ STRUT, 2" X 4" AND 4" X 4" BY CUT TO FIT (3 REQD). LAMINATE W/1-12d NAIL EVERY 12" (MIN 2) AND TOENAIL THE TOP PIECE TO THE HEADERS, PIECES MARKED ⑤, W/2-16d NAILS AT EACH END. SEE SPECIAL NOTE 5 ON PAGE 27.
- ⑦ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 25'-0" LONG STEEL STRAPPING (2 REQD). INSTALL TO ENCIRCLE FOUR PALLET UNITS AND TWO LOAD BEARING GATES, PIECES MARKED ①, AS SHOWN.
- ⑧ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 32'-0" LONG STEEL STRAPPING (2 REQD). INSTALL TO ENCIRCLE SIX PALLET UNITS AND TWO LOAD BEARING GATES, PIECES MARKED ①, AS SHOWN. SEE SPECIAL NOTE 6 ON PAGE 27.
- ⑨ SEAL FOR 1-1/4" STRAPPING (8 REQD, 2 PER STRAP JOINT). SEE GENERAL NOTE "L" ON PAGE 2. DOUBLE CRIMP EACH SEAL.

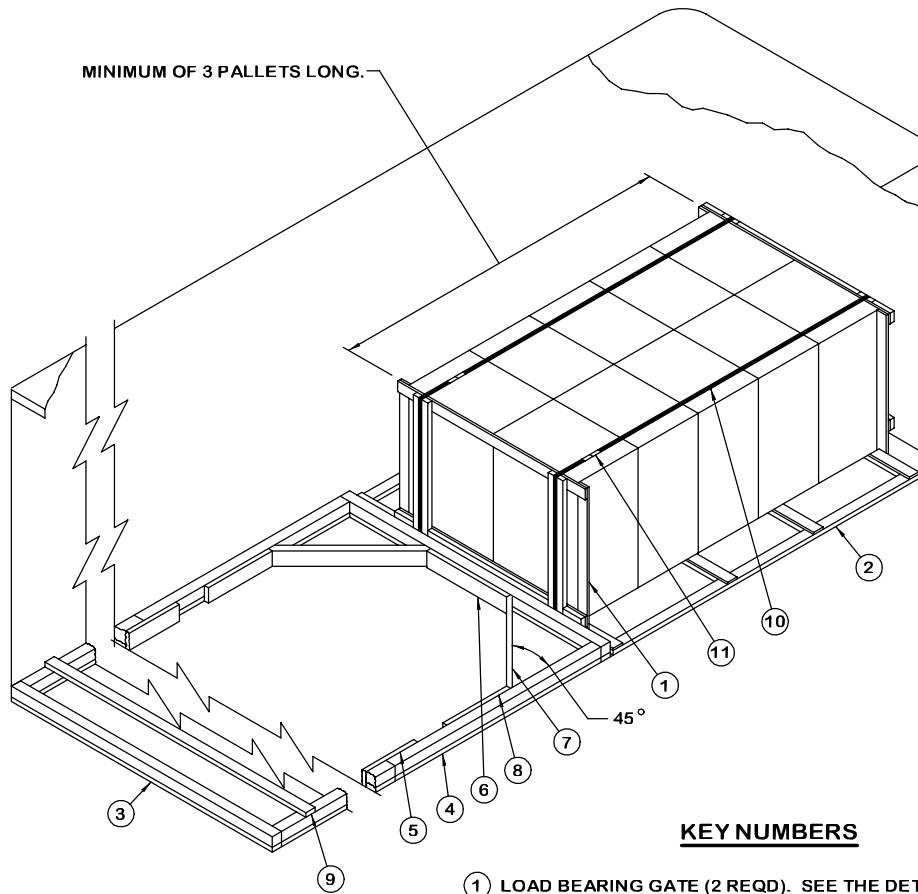
**SPECIAL NOTES:**

1. A 30-UNIT LOAD OF 8" PROJECTILES PALLETIZED 6 PER LARGE PALLET IS SHOWN IN A 40'-0" LONG BY 7'-6" WIDE (INSIDE DIMENSION) VAN TRAILER. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. THE LOAD BEARING GATE, PIECE MARKED ①, WHICH IS POSITIONED AGAINST THE TRAILER FRONT WALL, AS WELL AS GATES WHICH MAY BE POSITIONED WITHIN THE REAR 2-WIDE PORTION, MUST HAVE FILL PIECES APPLIED TO BOTH THE UPPER AND LOWER HORIZONTAL PIECES. FILL PIECES ARE NOT REQUIRED ON THE GATES USED BETWEEN THE 1-WIDE AND 2-WIDE PORTIONS OF THE LOAD. AT THE REAR OF THE LOAD THE LOAD BEARING GATE MUST HAVE FILL PIECES APPLIED ONLY TO THE LOWER HORIZONTAL PIECE.
3. A TRAILER HAVING ROUNDED CORNERS AT THE FORWARD END IS SHOWN. IF THE TRAILER BEING USED IS EQUIPPED WITH A SQUARE FRONT OR WITH AN INSTALLED BULKHEAD, THE SIDE BLOCKING, PIECE MARKED ②, AGAINST EACH SIDE OF THE FORWARD 2-WIDE PORTION OF THE LOAD SHOULD BE LENGTHENED SO AS TO CONTACT THE LOAD BEARING GATE, PIECE MARKED ①.
4. IF 4" X 4" MATERIAL IS NOT AVAILABLE, THE HEADER AND STRUTS, PIECES MARKED ⑤ AND ⑥, CAN BE CONSTRUCTED OF THREE (3) THICKNESSES OF 2" X 4" MATERIAL LAMINATED W/1-10d NAIL EVERY 8", OR 4" X 6" ON-EDGE MATERIAL CAN BE USED.
5. SOLID FILL TYPE REAR BLOCKING WILL BE USED IN LIEU OF THE REAR BLOCKING SHOWN IN THE LOAD VIEW, WHEN THE SPACE BETWEEN THE REARMOST LOAD BEARING GATE, PIECE MARKED ① AND THE TRAILER DOORS IS LESS THAN 12". THE SOLID FILL MATERIAL WILL BE USED IN THE PLACE OF THE REARMOST HEADER, PIECE MARKED ⑤, AND THE STRUTS, PIECES MARKED ⑥. REFER TO PIECE MARKED ⑦ ON PAGE 32.
6. IF A LOAD PATTERN OTHER THAN SHOWN IS USED AND THE 2-WIDE PORTION OF THE LOAD EITHER AT THE FRONT OR REAR OF THE TRAILER IS MORE THAN 6 PALLETS IN LENGTH, THAT 2-WIDE PORTION MUST BE SEPARATED INTO TWO GROUPS. POSITION TWO LOAD BEARING GATES, PIECES MARKED ①, WITH FILL PIECES ADDED, BACK-TO-BACK BETWEEN THE GROUPS. ENCIRCLE EACH PALLET GROUP AND THE TWO GATES FOR THE GROUP WITH UNITIZING STRAPS OF AN APPROPRIATE LENGTH. SEE THE REAR PORTION OF THE LOAD SHOWN ON PAGE 12.
7. A LOAD CAN BE INCREASED OR DECREASED BY ONE OR MORE PALLET UNITS BY INCREASING OR DECREASING THE LENGTH OF THE 2-WIDE PORTION AT THE FRONT AND/OR REAR OF THE LOAD AND DECREASING OR INCREASING THE LENGTH OF THE 1-WIDE PORTION. ADJUST THE LENGTH OF THE SIDE BLOCKING PIECES MARKED ② AND ③, AS NECESSARY.
8. DEPENDING UPON THE TYPE AND WEIGHT OF THE TRAILER BEING LOADED, AND THE WEIGHT OF THE TRACTOR TO BE USED FOR TRANSPORTING THE LOADED TRAILER, IT MAY BE NECESSARY TO ADJUST THE QUANTITY OF UNITS IN THE 1-WIDE PORTION AND IN THE FORWARD AND/OR REAR PORTIONS OF THE LOAD IN ORDER TO COMPLY WITH WEIGHT REQUIREMENTS; SEE GENERAL NOTES "F" AND "G" ON PAGE 2.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	98	33
2" X 4"	425	284
2" X 6"	28	28
4" X 4"	18	23
NAILS	NO. REQD	POUNDS
6d (2")	249	1-1/2
10d (3")	272	4-1/4
12d (3-1/4")	22	1/2
16d (3-1/2")	12	1/2
STEEL STRAPPING, 1-1/4" - 114' REQD - - - - - 17 LBS		
SEAL FOR 1-1/4" STRAP - - - 8 REQD - - - - - 1/2 LBS		

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
8", 6/PALLET	30	38,640 LBS
DUNNAGE		761 LBS
TOTAL WEIGHT		39,401 LBS (APPROX)



**ISOMETRIC VIEW**

**KEY NUMBERS**

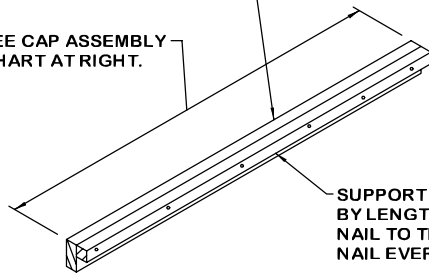
- ① LOAD BEARING GATE (2 REQD). SEE THE DETAIL ON PAGE 44 AND GENERAL NOTE "N" ON PAGE 2. SEE SPECIAL NOTE 2 ON PAGE 27.
- ② SIDE BLOCKING (2 REQD). SEE THE "SIDE BLOCKING C" DETAIL ON PAGE 43. SEE SPECIAL NOTE 3 ON PAGE 27.
- ③ HEADER, 2" X 4" AND 4" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD). LAMINATE W/1-10d NAIL EVERY 12". SEE SPECIAL NOTE 4 ON PAGE 27.
- ④ SIDE STRUT, 2" X 4" AND 4" X 4" BY CUT TO FIT BETWEEN THE TWO HEADERS (2 REQD). LAMINATE W/1-10d NAIL EVERY 12" AND TOENAIL THE TOP PIECE TO THE HEADERS W/2-16d NAILS AT EACH END.
- ⑤ SPLICE PIECE, 2" X 6" X 24" (AS REQD). CENTER ON A JOINT OF PIECES MARKED ④ AND NAIL W/4-12d NAILS AT EACH END.
- ⑥ CENTER CLEAT, 2" X 6" X 30" (1 REQD). NAIL TO THE FORWARD PIECE MARKED ③ W/7-12d NAILS.
- ⑦ DIAGONAL BRACE, 2" X 6" BY CUT TO FIT (2 REQD). DOUBLE BEVEL EACH END WITH 45° CUTS. INSTALL AT A 45° ANGLE AS SHOWN AND NAIL TO PIECES MARKED ③ AND ④ W/2-16d NAILS AT EACH END.
- ⑧ SIDE CLEAT, 2" X 6" X 24" (2 REQD). NAIL TO PIECE MARKED ④ W/6-12d NAILS.
- ⑨ STRUT BRACING, 2" X 4" BY TRAILER WIDTH IN LENGTH (CUT TO FIT) (MINIMUM OF 1 REQD). ONE (1) ADDITIONAL BRACE IS REQUIRED FOR EVERY 7'-0" OF SIDE STRUT LENGTH. NAIL TO PIECES MARKED ④ W/3-12d NAILS AT EACH END.
- ⑩ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 29'-0" LONG STEEL STRAPPING (2 REQD). INSTALL TO ENCIRCLE FIVE PALLET UNITS AND TWO LOAD BEARING GATES, PIECES MARKED ①, AS SHOWN. SEE SPECIAL NOTE 2 AT LEFT.
- ⑪ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP JOINT). SEE GENERAL NOTE "L" ON PAGE 2. DOUBLE CRIMP EACH SEAL.

**SPECIAL NOTES:**

1. THESE OUTLOADING PROCEDURES DEPICT THE USE OF "K-BRACE" TYPE BLOCKING A 7'-6" WIDE VAN TRAILER. WIDER OR NARROWER TRAILERS CAN BE USED.
2. THE "K-BRACE" TYPE BLOCKING, SHOWN AS PIECES MARKED ③ THRU ⑨, IS ADEQUATE FOR RETAINING NOT MORE THAN TWENTY (20) PALLET UNITS. NOTE THAT IN ORDER TO AVOID EXCESSIVE STRAP LENGTHS, LOADS OF MORE THAN 12 PALLET UNITS MUST BE UNITIZED IN TWO GROUPS. POSITION TWO LOAD BEARING GATES, PIECES MARKED ①, WITH FILL PIECES ADDED, BACK-TO-BACK BETWEEN THE GROUPS. ENCIRCLE EACH PALLET GROUP AND THE TWO GATES FOR THE GROUP WITH UNITIZING STRAPS, PIECES MARKED ⑩, OF AN APPROPRIATE LENGTH.
3. IF A TRAILER WITH A NAILABLE FLOOR IS BEING USED, NAILED FLOORLINE BLOCKING AS SHOWN IN THE LOAD ON PAGE 30 MAY BE USED IN LIEU OF THE BLOCKING DEPICTED IN THE ABOVE VIEW.
4. THE DEPICTED BLOCKING IS APPLICABLE FOR BRACING AN EVEN NUMBERED QUANTITY OF PALLET UNITS (A MINIMUM OF 6). FOR SHIPMENT OF AN ODD QUANTITY (INCLUDING 5 UNITS), IT WILL BE NECESSARY TO INSTALL A FILLER ASSEMBLY AND A SPACER IN THE PLACE OF A UNIT OMITTED FROM THE CENTRAL PORTION OF A ROW. SEE THE "FILLER ASSEMBLY G" AND "SPACER D" DETAILS ON PAGE 29. REFER TO THE LOAD VIEW ON PAGE 20 FOR A TYPICAL INSTALLATION.
5. FOR SHIPMENT OF 2 OR PALLET UNITS, REFER TO THE PROCEDURES DEPICTED ON PAGES 40 AND 41.

SIDE PIECE, 2" X 4" BY LENGTH TO SUIT (1 REQD).

SEE CAP ASSEMBLY CHART AT RIGHT.



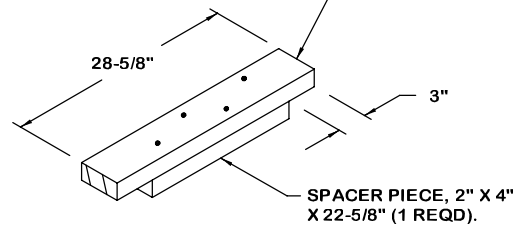
SUPPORT PIECE, 2" X 2" BY LENGTH TO SUIT (1 REQD). NAIL TO THE SIDE PIECE W/1-10d NAIL EVERY 12".

CAP ASSEMBLY CHART	
NO. PALLETS LONG	LENGTH
3	68"
4	7'-6"
5	9'-5"
6	11'-4"
7	13'-2"
8	15'-1"

### CAP ASSEMBLY

THIS ASSEMBLY IS FOR USE IN THE LOAD SHOWN ON PAGES 24 AND 30.

SUPPORT PIECE, 2" X 4" X 28-5/8" (1 REQD). NAIL TO THE SPACER PIECE W/4-10d NAILS.



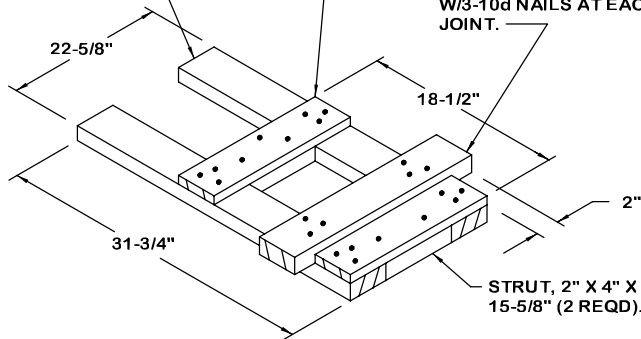
SPACER PIECE, 2" X 4" X 22-5/8" (1 REQD).

### SPACER D

TIE PIECE, 1" X 4" X 22-5/8" (2 REQD). NAIL TO A STRUT W/3-6d NAILS AND TO THE BEARING PIECES W/3-6d NAILS AT EACH END.

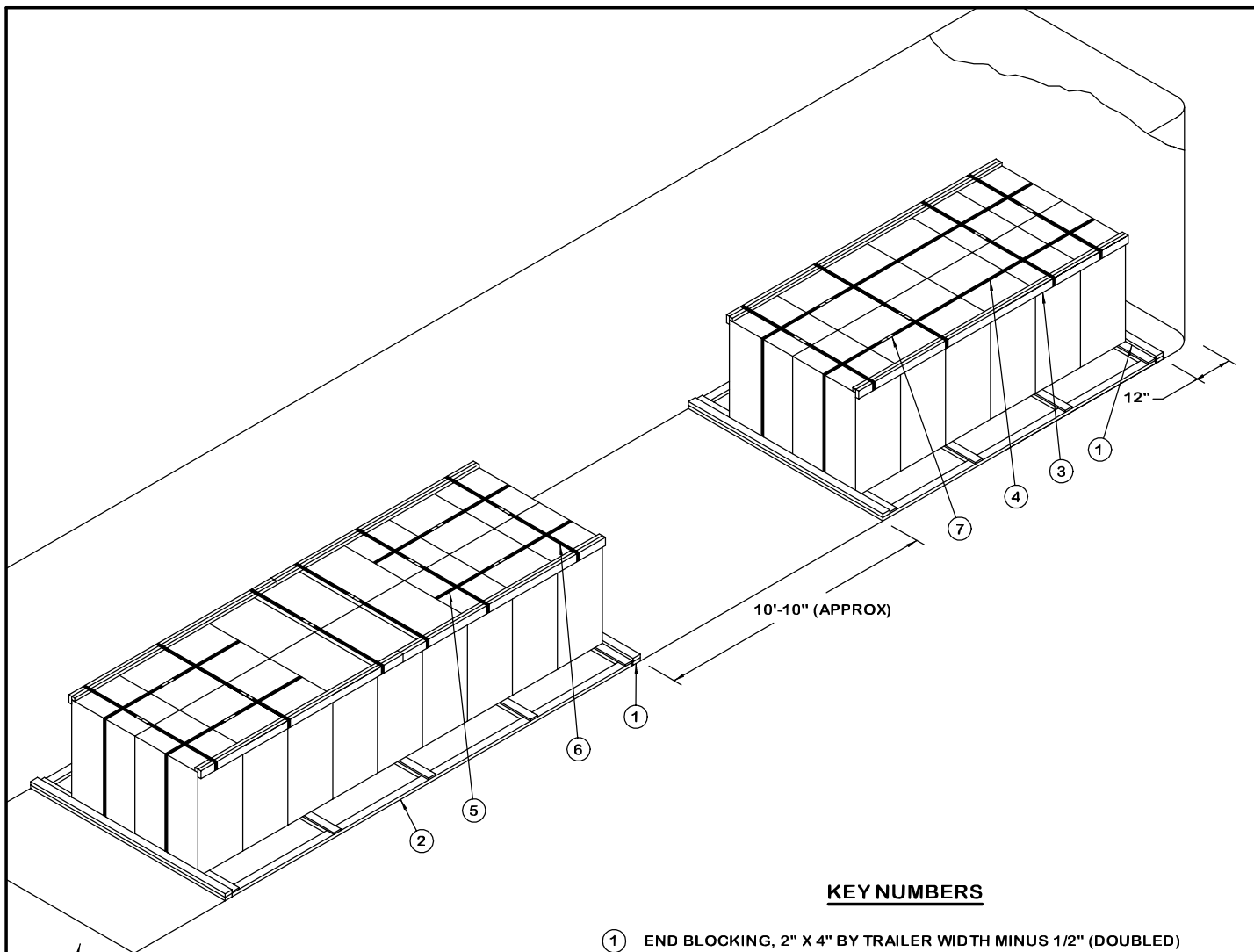
BEARING PIECE, 2" X 4" X 31-3/4" (2 REQD).

RETAINER PIECE, 2" X 4" X 26-5/8" (1 REQD). NAIL TO THE BEARING PIECES W/3-10d NAILS AT EACH JOINT.



### FILLER ASSEMBLY G

THIS ASSEMBLY, IN CONJUNCTION WITH THE "SPACER D" ABOVE, IS FOR USE IN OBTAINING AN UNEVEN QUANTITY OF PALLET UNITS FOR THE LOAD SHOWN ON PAGE 28. SEE THE LOAD VIEW ON PAGE 20 FOR A TYPICAL INSTALLATION.



REAR OF TRAILER.

**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① END BLOCKING, 2" X 4" BY TRAILER WIDTH MINUS 1/2" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/10-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/10-20d NAILS. NOTE: THE END BLOCKING AT THE FORWARD END OF THE TRAILER SHOULD BE POSITIONED APPROXIMATELY TWELVE INCHES (12") FROM THE FORWARD WALL. SEE GENERAL NOTE "N" ON PAGE 2.
- ② SIDE BLOCKING ASSEMBLY (4 REQD). SEE THE "SIDE BLOCKING ASSEMBLY C" DETAIL ON PAGE 43.
- ③ CAP ASSEMBLY (6 REQD). SEE THE DETAIL ON PAGE 29.
- ④ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 32'-0" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE 6 PALLET UNITS AS SHOWN.
- ⑤ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 20'-0" LONG STEEL STRAPPING (4 REQD). INSTALL SO AS TO ENCIRCLE 3 PALLET UNITS AS SHOWN.
- ⑥ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 20'-0" LONG STEEL STRAPPING (10 REQD). INSTALL TO ENCIRCLE THE COVERS OF TWO LATERALLY ADJACENT PALLET UNITS AND 2 CAP ASSEMBLIES, PIECES MARKED ③.
- ⑦ SEAL FOR 1-1/4" STRAPPING (32 REQD, 2 PER STRAP). SEE GENERAL NOTE "L" ON PAGE 2. DOUBLE CRIMP EACH SEAL.

**SPECIAL NOTES:**

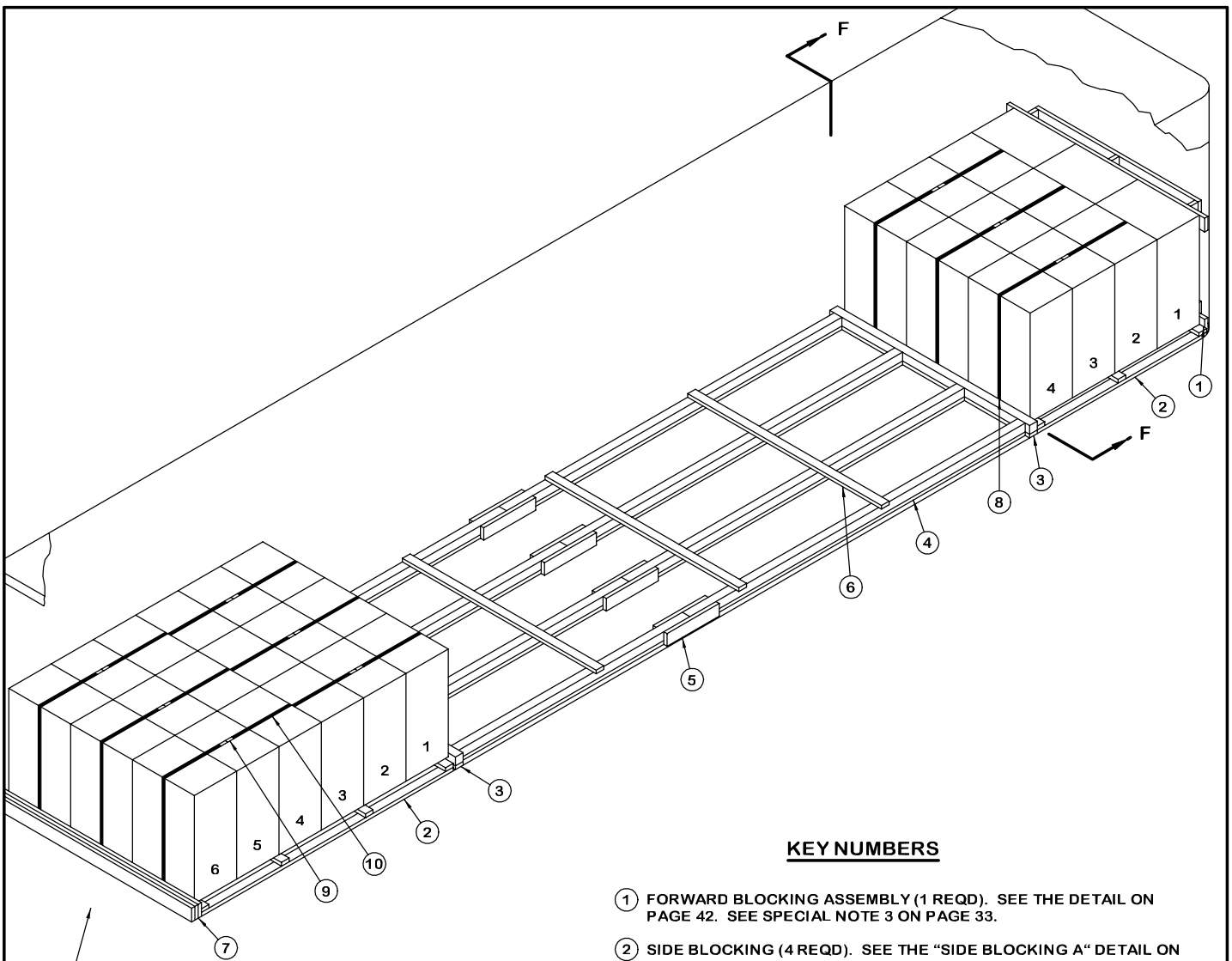
1. A 30-UNIT LOAD OF 8" PROJECTILES PALLETIZED 6/LARGE PALLET IS SHOWN IN A 45'-0" LONG BY 7'-6" WIDE (INSIDE DIMENSION) VAN TRAILER EQUIPPED WITH A NAILABLE FLOOR. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. A TRAILER HAVING ROUNDED CORNERS AT THE FORWARD END IS SHOWN. IF THE TRAILER BEING USED IS EQUIPPED WITH A SQUARE FRONT, THE END BLOCKING, PIECE MARKED ①, AT THE FRONT OF THE LOAD MAY BE OMITTED. POSITION THE PALLET UNITS DIRECTLY AGAINST THE FRONT WALL.
3. A LOAD CAN BE INCREASED OR DECREASED BY A MULTIPLE OF TWO (2) PALLET UNITS BY ADDING OR OMITTING ONE OR MORE FULL LOAD UNITS. IF IT IS NECESSARY TO OMIT ONE PALLET UNIT FROM A LOAD, A "FILLER ASSEMBLY" MUST BE SUBSTITUTED FOR THE OMITTED UNIT. SEE THE "FILLER ASSEMBLY G" ON PAGE 29 AND THE LOAD VIEW ON PAGE 20 FOR GUIDANCE.
4. DEPENDING UPON THE TYPE AND WEIGHT OF THE TRAILER BEING LOADED, AND THE WEIGHT OF THE TRACTOR TO BE USED FOR TRANSPORTING THE LOADED TRAILER, IT MAY BE NECESSARY TO ADJUST THE QUANTITY OF UNITS IN THE FORWARD AND REAR PORTIONS OF THE LOAD IN ORDER TO COMPLY WITH WEIGHT DISTRIBUTION REQUIREMENTS. SEE GENERAL NOTES "F" AND "G" ON PAGE 2.

**BILL OF MATERIAL**

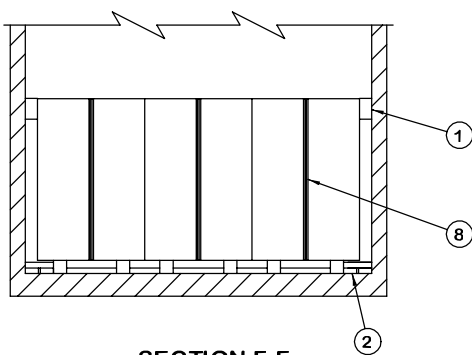
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	39	13
2" X 2"	57	19
2" X 4"	237	158
NAILS	NO. REQD	POUNDS
6d (2")	162	1
10d (3")	94	1-1/2
20d (4")	40	1-1/2
STEEL STRAPPING, 1-1/4" - 344' REQD - - - - - 50 LBS		
SEAL FOR 1-1/4" STRAP - - - 32 REQD - - - 1-1/2 LBS		

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
8", 6/PALLET	30	38,640 LBS
DUNNAGE		435 LBS
<b>TOTAL WEIGHT</b>		<b>39,075 LBS (APPROX)</b>



**ISOMETRIC VIEW**



**SECTION F-F**

**KEY NUMBERS**

- ① FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 42. SEE SPECIAL NOTE 3 ON PAGE 33.
- ② SIDE BLOCKING (4 REQD). SEE THE "SIDE BLOCKING A" DETAIL ON PAGE 42. SEE GENERAL NOTE "N" ON PAGE 2.
- ③ HEADER, 2" X 4" AND 4" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD). LAMINATE W/1-12d NAIL EVERY 12". SEE SPECIAL NOTE 4 ON PAGE 33.
- ④ STRUT, 2" X 4" X 21'-7" AND 4" X 4" X 21'-7" (4 REQD). LAMINATE W/1-12d NAIL EVERY 8" AND TOENAIL THE TOP PIECE TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. INSTALL IN RANDOM LENGTH PIECES AND SPLICE WITH PIECES MARKED ⑤. SEE SPECIAL NOTE 5 ON PAGE 33.
- ⑤ SPLICE PIECE, 2" X 6" X 24" (8 REQD). POSITION AS SHOWN IN THE "ISOMETRIC VIEW" AND NAIL TO PIECE MARKED ④ W/8-10d NAILS, TWO NAILS INTO THE 2" X 4" AND TWO NAILS INTO THE 4" X 4" MATERIAL ON EACH SIDE OF THE JOINT.
- ⑥ STRUT BRACING, 2" X 4" X 7'-0" (1 REQD FOR EVERY 7'-0" OF STRUT LENGTH). NAIL TO PIECES MARKED ④ W/3-12d NAILS AT EACH JOINT.
- ⑦ SOLID FILL, 6" WIDE MATERIAL BY TRAILER WIDTH MINUS 1/2" IN LENGTH BY THE THICKNESS REQUIRED TO FILL THE VOID BETWEEN THE REAR OF THE LOAD AND THE DOORS OF THE TRAILER WHEN THEY ARE CLOSED (AS REQD). LAMINATE W/1-APPLICABLY SIZED NAIL EVERY 12". SEE SPECIAL NOTE 6 ON PAGE 33.
- ⑧ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 17'-0" LONG STEEL STRAPPING (9 REQD). INSTALL TO ENCIRCLE THREE PALLET UNITS AS SHOWN. SEE SPECIAL NOTE 7 ON PAGE 33.
- ⑨ SEAL FOR 1-1/4" STRAPPING (18 REQD, 2 PER STRAP JOINT. SEE GENERAL NOTE "L" ON PAGE 2. DOUBLE CRIMP EACH SEAL.

**8" PROJECTILES (6 TALL PROJECTILES/SMALL PALLET)  
30-UNIT LOAD IN A 40'-0" LONG TRAILER (METHOD I)**



**SPECIAL NOTES:**

1. A 30-UNIT LOAD OF 8" PROJECTILES PALLETIZED 6 PER PALLET IS SHOWN IN A 40'-0" LONG BY 7'-6" WIDE (INSIDE DIMENSION) VAN TRAILER. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. THE LOADING PROCEDURE SHOWN ON PAGE 32 IS APPLICABLE FOR TRAILERS WHICH HAVE ALL METAL FLOORS. THE PROCEDURES MAY ALSO BE USED IN TRAILERS HAVING NAILABLE FLOORS IF NAILING TO THE TRAILER FLOOR IS NOT DESIRABLE.
3. A TRAILER HAVING ROUNDED CORNERS AT THE FORWARD END IS SHOWN. IF THE TRAILER BEING USED IS EQUIPPED WITH A SQUARE FRONT OR WITH AN INSTALLED BULKHEAD, OMIT THE FORWARD BLOCKING ASSEMBLY, PIECE MARKED ①, AND POSITION THE PALLET UNITS DIRECTLY AGAINST THE FORWARD PORTION OF THE TRAILER.
4. IF 4" X 4" MATERIAL IS NOT AVAILABLE, THE HEADERS AND STRUTS, PIECES MARKED ③ AND ④, CAN BE CONSTRUCTED OF THREE (3) THICKNESSES OF 2" X 4" MATERIAL LAMINATED W/1-10d NAIL EVERY 8", OR 4" X 6" ON-EDGE MATERIAL MAY BE USED.
5. THE LENGTH OF THE STRUTS, PIECES MARKED ④ IN THE LOAD SHOWN ON PAGE 32, IS CALCULATED SO AS TO ALLOW THE USE OF SOLID FILL TYPE BLOCKING AT THE REAR OF THE TRAILER, WHEN A FORWARD BLOCKING ASSEMBLY IS USED AT THE FRONT OF THE TRAILER AND THE LOAD IS 11 PALLETS LONG, OR A DIFFERENT LENGTH TRAILER, OR THE OMISSION OF THE DEPICTED FORWARD BLOCKING ASSEMBLY MAY NECESSITATE AN ADJUSTMENT IN THE STRUT LENGTH.
6. STRUT TYPE REAR BLOCKING WILL BE USED IN LIEU OF THE REAR BLOCKING SHOWN IN THE LOAD VIEW, WHEN THE SPACE BETWEEN THE LADING AND THE TRAILER DOORS IS 12" OR MORE. SEE PIECES MARKED ⑤ AND ⑥ ON PAGE 34.
7. IF THE REAR PORTION OF THE LOAD IS 6 PALLETS OR LESS IN LENGTH, ONE UNITIZING STRAP OF AN APPROPRIATE LENGTH CAN BE INSTALLED SO AS TO ENCIRCLE ALL THE PALLET UNITS IN A ROW. CAUTION: SIX IS THE MAXIMUM QUANTITY THAT CAN BE UNITIZED. IF THE REAR PORTION OF THE LOAD IS MORE THAN 6 PALLET UNITS LONG, UNITIZING STRAPS MUST BE APPLIED AROUND THE 3 UNITS AT EACH END OF THE ROW AS SHOWN.
8. A LOAD CAN BE INCREASED OR DECREASED BY A MULTIPLE OF THREE (3) PALLET UNITS BY ADDING OR OMITTING ONE OR MORE FULL LOAD UNITS. IF IT IS NECESSARY TO OMIT ONE OR TWO PALLET UNITS FROM A LOAD UNIT, A "FILLER ASSEMBLY" MUST BE SUBSTITUTED FOR THE UNIT (S) OMITTED FROM THE MIDDLE ROW. SEE THE "FILLER ASSEMBLY "H" AND THE "APPLICATION OF FILLER ASSEMBLY H" DETAILS ON PAGE 37 FOR GUIDANCE.
9. DEPENDING UPON THE TYPE AND WEIGHT OF THE TRAILER BEING LOADED, AND THE WEIGHT OF THE TRACTOR TO BE USED FOR TRANSPORTING THE LOADED TRAILER, IT MAY BE NECESSARY TO ADJUST THE QUANTITY OF UNITS IN THE FORWARD AND REAR PORTIONS OF THE LOAD IN ORDER TO COMPLY WITH WEIGHT DISTRIBUTION REQUIREMENTS. SEE GENERAL NOTES "F" AND "G" ON PAGE 2.

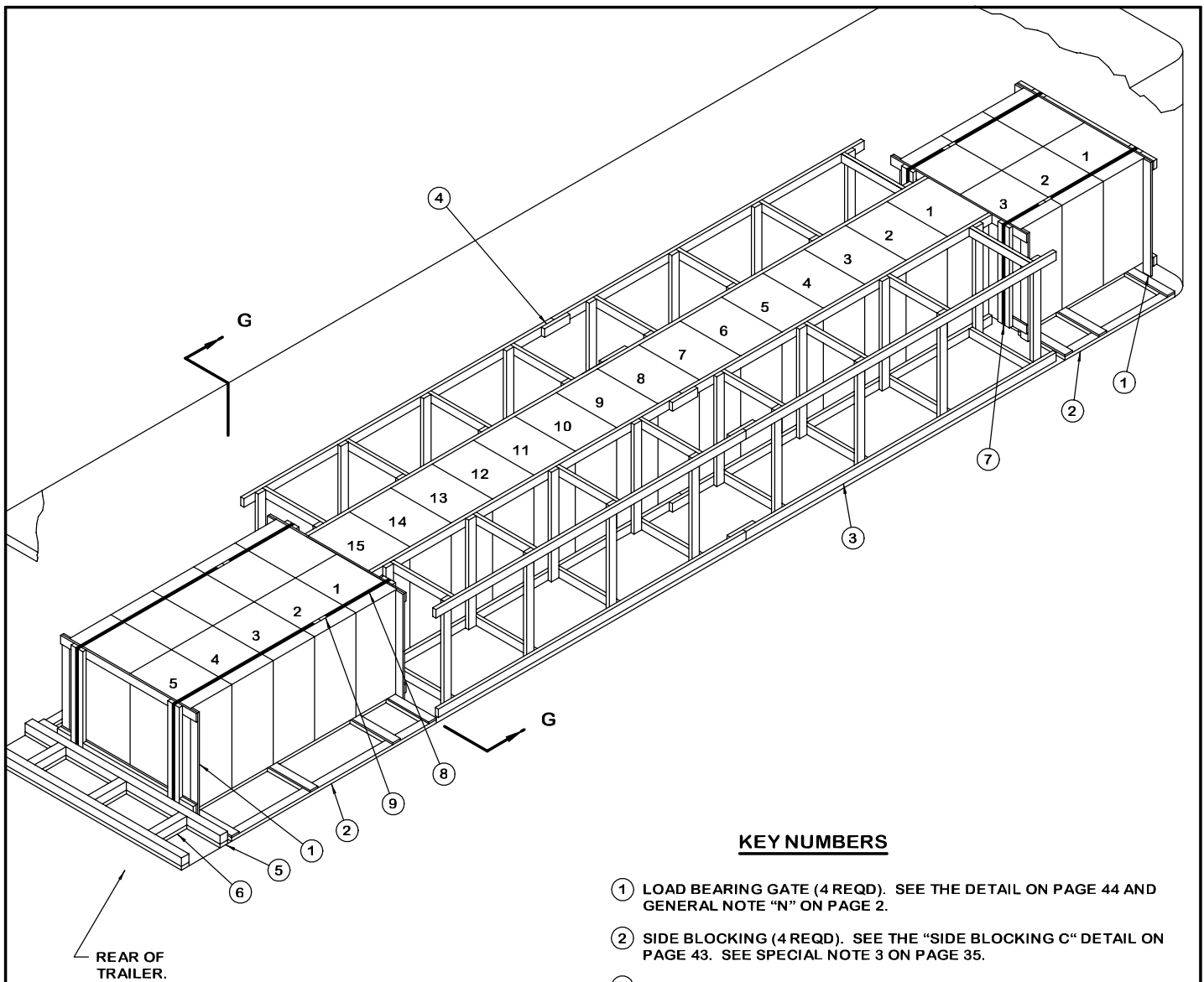
**BILL OF MATERIAL**

LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	211	141
2" X 6"	66	66
4" X 4"	103	138
NAILS	NO. REQD	POUNDS
10d (3")	200	3-1/4
12d (3-1/4")	172	3
16d (3-1/2")	16	1/2
STEEL STRAPPING, 1-1/4" - 168' REQD		24 LBS
SEAL FOR 1-1/4" STRAP - 18 REQD		1 LBS

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
8", 6/PALLET	30	38,880 LBS
DUNNAGE		722 LBS
TOTAL WEIGHT		39,602 LBS (APPROX)

**8" PROJECTILES (6 TALL PROJECTILES/SMALL PALLET)  
30-UNIT LOAD IN A 40'-0" LONG TRAILER (METHOD I)**

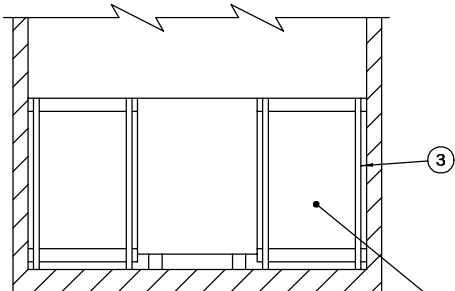


**ISOMETRIC VIEW**

REAR OF TRAILER.

**KEY NUMBERS**

- ① LOAD BEARING GATE (4 REQD). SEE THE DETAIL ON PAGE 44 AND GENERAL NOTE "N" ON PAGE 2.
- ② SIDE BLOCKING (4 REQD). SEE THE "SIDE BLOCKING C" DETAIL ON PAGE 43. SEE SPECIAL NOTE 3 ON PAGE 35.
- ③ SIDE BLOCKING (2 REQD). SEE THE "SIDE BLOCKING B" DETAIL ON PAGE 43.
- ④ SPLICE PIECE, 2" X 4" X 12" (AS REQD). CENTER ON A JOINT OF PIECES MARKED ③ AND NAIL W/2-10d NAILS AT EACH END.
- ⑤ HEADER, 2" X 4" AND 4" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD). LAMINATE W/1-12d NAIL EVERY 12". SEE SPECIAL NOTE 4 ON PAGE 35.
- ⑥ STRUT, 2" X 4" AND 4" X 4" BY CUT TO FIT (3 REQD). LAMINATE W/1-12d NAIL EVERY 12" (MIN 2) AND TOENAIL THE TOP PIECE TO THE HEADERS, PIECES MARKED ⑤, W/2-16d NAILS AT EACH END. SEE SPECIAL NOTE 5 ON PAGE 35.
- ⑦ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 22'-0" LONG STEEL STRAPPING (2 REQD). INSTALL TO ENCIRCLE THREE PALLET UNITS AND TWO LOAD BEARING GATES, PIECES MARKED ①, AS SHOWN.
- ⑧ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 28'-0" LONG STEEL STRAPPING (2 REQD). INSTALL TO ENCIRCLE FIVE PALLET UNITS AND TWO LOAD BEARING GATES, PIECES MARKED ①, AS SHOWN. SEE SPECIAL NOTE 6 ON PAGE 35.
- ⑨ SEAL FOR 1-1/4" STRAPPING (8 REQD, 2 PER STRAP JOINT). SEE GENERAL NOTE "L" ON PAGE 2. DOUBLE CRIMP EACH SEAL.



**SECTION G-G**

THE 2-WIDE PORTION OF THE LOAD AT THE FRONT OF THE TRAILER IS OMITTED FOR CLARITY.

**8" PROJECTILES (6 TALL PROJECTILES/SMALL PALLET)  
31-UNIT LOAD IN A 40'-0" LONG TRAILER (METHOD II)**

**SPECIAL NOTES:**

1. A 31-UNIT LOAD OF 8" PROJECTILES PALLETIZED 6 PER PALLET IS SHOWN IN A 40'-0" LONG BY 7'-6" WIDE (INSIDE DIMENSION) VAN TRAILER. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. THE LOAD BEARING GATE, PIECE MARKED ①, WHICH IS POSITIONED AGAINST THE TRAILER FRONT WALL, AS WELL AS GATES WHICH MAY BE POSITIONED WITHIN THE REAR 2-WIDE PORTION, MUST HAVE FILL PIECES APPLIED TO BOTH THE UPPER, AND LOWER HORIZONTAL PIECES. FILL PIECES ARE NOT REQUIRED ON THE GATES USED BETWEEN THE 1-WIDE AND 2-WIDE PORTIONS OF THE LOAD. AT THE REAR OF THE LOAD, THE LOAD BEARING GATE MUST HAVE FILL PIECES APPLIED ONLY TO THE LOWER HORIZONTAL PIECE.
3. A TRAILER HAVING ROUNDED CORNERS AT THE FORWARD END IS SHOWN. IF THE TRAILER BEING USED IS EQUIPPED WITH A SQUARE FRONT OR WITH AN INSTALLED BULKHEAD, THE SIDE BLOCKING, PIECE MARKED ②, AGAINST EACH SIDE OF THE FORWARD 2-WIDE PORTION OF THE LOAD SHOULD BE LENGTHENED SO AS TO CONTACT THE LOAD BEARING GATE, PIECE MARKED ①.
4. IF 4" X 4" MATERIAL IS NOT AVAILABLE, THE HEADERS AND STRUTS, PIECES MARKED ⑤ AND ⑥, CAN BE CONSTRUCTED OF THREE (3) THICKNESSES OF 2" X 4" MATERIAL LAMINATED W/1-10d NAIL EVERY 8", OR 4" X 6" ON-EDGE MATERIAL CAN BE USED.
5. SOLID FILL TYPE REAR BLOCKING WILL BE USED IN LIEU OF THE REAR BLOCKING SHOWN IN THE LOAD VIEW, WHEN THE SPACE BETWEEN THE REARMOST LOAD BEARING GATE, PIECE MARKED ① AND THE TRAILER DOORS IS LESS THAN 12". THE SOLID FILL MATERIAL WILL BE USED IN THE PLACE OF THE REARMOST HEADER, PIECE MARKED ⑤, AND THE STRUTS, PIECES MARKED ⑥. REFER TO PIECE MARKED ⑦ ON PAGE 32.
6. IF A LOAD PATTERN OTHER THAN SHOWN IS USED AND THE 2-WIDE PORTION OF THE LOAD EITHER AT THE FRONT OR REAR OF THE TRAILER IS MORE THAN 6 PALLETS IN LENGTH, THAT 2-WIDE PORTION MUST BE SEPARATED INTO TWO GROUPS. POSITION TWO LOAD BEARING GATES, PIECES MARKED ①, WITH FILL PIECES ADDED, BACK-TO-BACK BETWEEN THE GROUPS. ENCIRCLE EACH PALLET GROUP AND THE TWO GATES FOR THE GROUP WITH UNITIZING STRAPS OF AN APPROPRIATE LENGTH. SEE THE REAR PORTION OF THE LOAD SHOWN.
7. A LOAD CAN BE INCREASED OR DECREASED BY ONE OR MORE PALLET UNITS BY INCREASING OR DECREASING THE LENGTH OF THE 2-WIDE PORTION AT THE FRONT AND/OR REAR OF THE LOAD AND DECREASING OR INCREASING THE LENGTH OF THE 1-WIDE PORTION. ADJUST THE LENGTH OF THE SIDE BLOCKING, PIECES MARKED ② AND ③, AS NECESSARY.
8. DEPENDING UPON THE TYPE AND WEIGHT OF THE TRAILER BEING LOADED, AND THE WEIGHT OF THE TRACTOR TO BE USED FOR TRANSPORTING THE LOADED TRAILER, IT MAY BE NECESSARY TO ADJUST THE QUANTITY OF UNITS IN THE 1-WIDE PORTION AND IN THE FORWARD AND/OR REAR PORTIONS OF THE LOAD IN ORDER TO COMPLY WITH WEIGHT DISTRIBUTION REQUIREMENTS. SEE GENERAL NOTES "F" AND "G" ON PAGE 2.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	102	34
2" X 4"	528	352
2" X 6"	29	29
4" X 4"	19	26
NAILS	NO. REQD	POUNDS
6d (2")	249	1-1/2
10d (3")	392	6-1/2
12d (3-1/4")	25	1/2
16d (3-1/2")	12	1/2
STEEL STRAPPING, 1-1/4" - 100' REQD - - - - - 15 LBS		
SEAL FOR 1-1/4" STRAP - - - 8 REQD - - - - - 1/2 LBS		

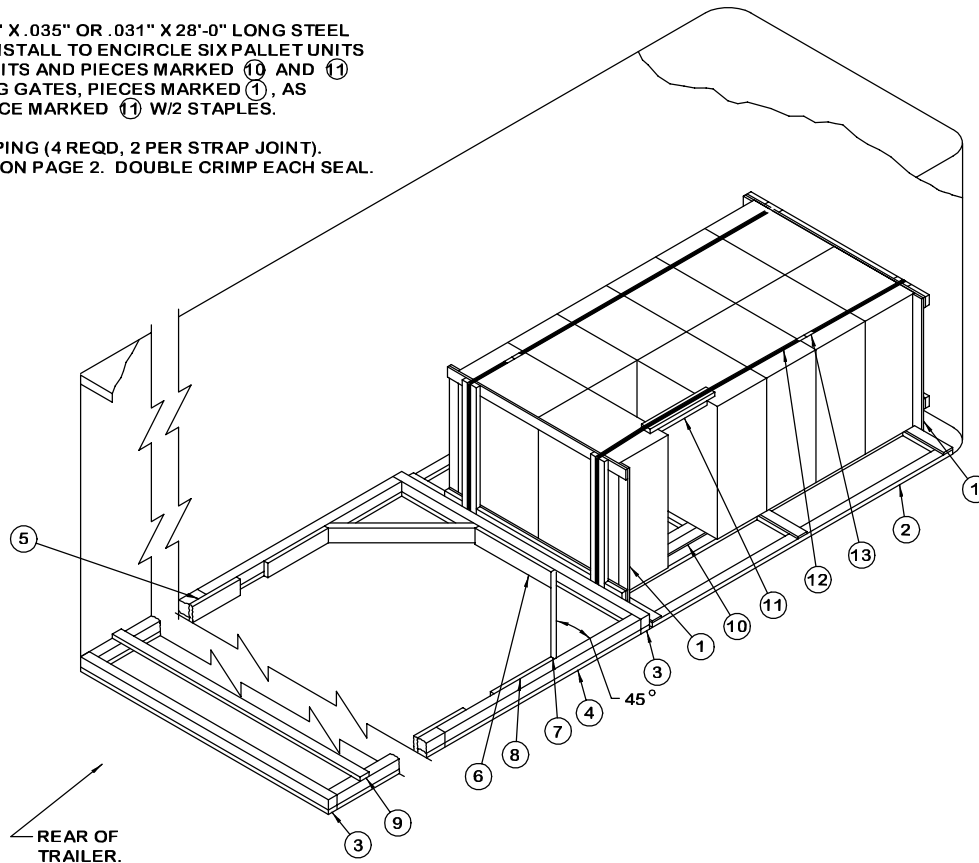
**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
8", 6/PALLET	- - - - - 31	- - - - - 40,176 LBS
DUNNAGE	- - - - -	- - - - - 855 LBS
TOTAL WEIGHT		- - - - - 41,031 LBS (APPROX)

**8" PROJECTILES (6 TALL PROJECTILES/SMALL PALLET)  
31-UNIT LOAD IN A 40'-0" LONG TRAILER (METHOD II)**

(KEY NUMBERS CONTINUED)

- ⑪ SPACER (1 REQD). SEE THE "SPACER E" DETAIL ON PAGE 37.
- ⑫ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 28'-0" LONG STEEL STRAPPING (2 REQD). INSTALL TO ENCIRCLE SIX PALLET UNITS AND/OR FIVE PALLET UNITS AND PIECES MARKED ⑩ AND ⑪ AND TWO LOAD BEARING GATES, PIECES MARKED ①, AS SHOWN. STAPLE TO PIECE MARKED ⑪ W/2 STAPLES.
- ⑬ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP JOINT). SEE GENERAL NOTE "L" ON PAGE 2. DOUBLE CRIMP EACH SEAL.



**ISOMETRIC VIEW**

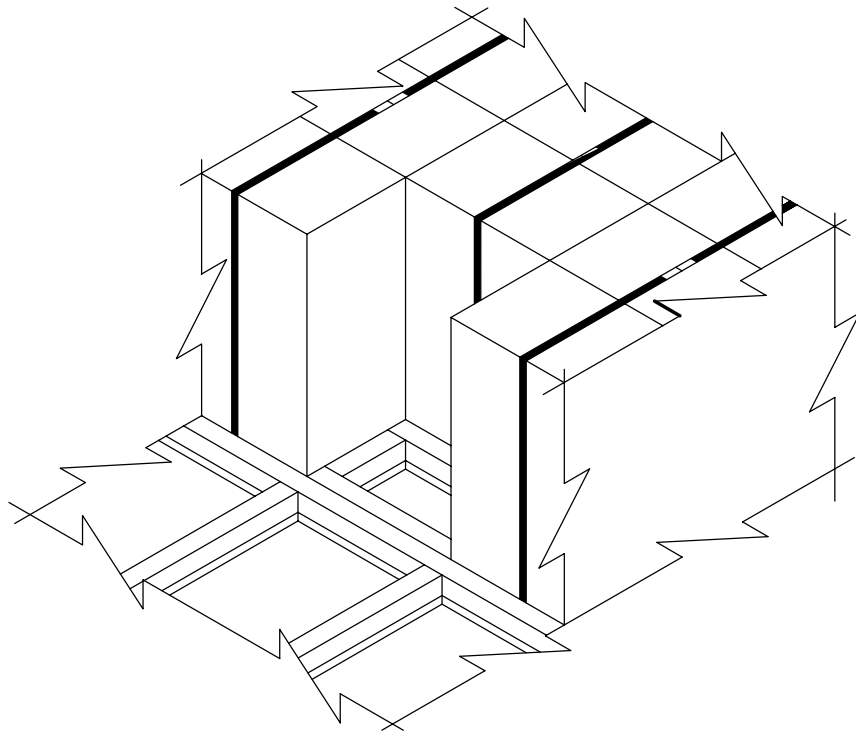
**KEY NUMBERS**

- ① LOAD BEARING GATE (2 REQD). SEE THE DETAIL ON PAGE 44 AND GENERAL NOTE "N" ON PAGE 2. SEE SPECIAL NOTE 2 ON PAGE 35.
- ② SIDE BLOCKING (2 REQD). SEE THE "SIDE BLOCKING C" DETAIL ON PAGE 43. SEE SPECIAL NOTE 3 ON PAGE 35.
- ③ HEADER, 2" X 4" AND 4" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD). LAMINATE W/1-10d NAIL EVERY 12". SEE SPECIAL NOTE 4 ON PAGE 35.
- ④ SIDE STRUT, 2" X 4" AND 4" X 4" BY CUT TO FIT BETWEEN THE TWO HEADERS (2 REQD). LAMINATE W/1-10d NAIL EVERY 12" AND TOENAIL THE TOP PIECE TO THE HEADERS W/2-16d NAILS AT EACH END.
- ⑤ SPLICE PIECE, 2" X 6" X 24" (AS REQD). CENTER ON A JOINT OF PIECES MARKED ④ AND NAIL W/4-12d NAILS AT EACH END.
- ⑥ CENTER CLEAT, 2" X 6" X 30" (1 REQD). NAIL TO THE FORWARD PIECE MARKED ③ W/7-12d NAILS.
- ⑦ DIAGONAL BRACE, 2" X 6" BY CUT TO FIT (2 REQD). DOUBLE BEVEL EACH END WITH 45° CUTS. INSTALL AT A 45° ANGLE AS SHOWN AND NAIL TO PIECES MARKED ③ AND ④ W/2-16d NAILS AT EACH END.
- ⑧ SIDE CLEAT, 2" X 6" X 24" (2 REQD). NAIL TO PIECE MARKED ④ W/6-12d NAILS.
- ⑨ STRUT BRACING, 2" X 4" BY TRAILER WIDTH IN LENGTH (CUT TO FIT) (MINIMUM OF 1 REQD). ONE (1) ADDITIONAL BRACE IS REQUIRED FOR EVERY 7'-0" OF SIDE STRUT LENGTH. NAIL TO PIECES MARKED ④ W/3-12d NAILS AT EACH END.
- ⑩ FILLER ASSEMBLY (1 REQD). SEE THE "FILLER ASSEMBLY J" ON PAGE 37. SEE SPECIAL NOTE 3 AT THE LEFT.

**SPECIAL NOTES:**

- 1. THESE OUTLOADING PROCEDURES DEPICT THE USE OF "K-BRACE" TYPE BLOCKING IN A 7'-6" WIDE VAN TRAILER. WIDER OR NARROWER TRAILERS MAY BE USED.
- 2. THE "K-BRACE" TYPE BLOCKING, SHOWN AS PIECES MARKED ③ THRU ⑨, IS ADEQUATE FOR RETAINING NOT MORE THAN TWENTY (20) PALLET UNITS. NOTE THAT IN ORDER TO AVOID EXCESSIVE STRAP LENGTHS, LOADS OF MORE THAN 12 PALLET UNITS MUST BE UNITIZED IN TWO GROUPS. POSITION TWO LOAD BEARING GATES, PIECES MARKED ①, WITH FILL PIECES ADDED, BACK-TO-BACK BETWEEN THE GROUPS. ENCIRCLE EACH PALLET GROUP AND THE TWO GATES FOR THE GROUP WITH UNITIZING STRAPS, PIECES MARKED ⑫ OF AN APPROPRIATE LENGTH.
- 3. THE DEPICTED BLOCKING IS ALSO APPLICABLE FOR BRACING AN EVEN NUMBERED QUANTITY OF PALLET UNITS (A MINIMUM OF 6). THE FILLER ASSEMBLY AND SPACER, PIECES MARKED ⑩ AND ⑪, ARE ONLY SHOWN TO DEPICT A TYPICAL INSTALLATION.
- 4. FOR SHIPMENT OF 2 OR 4 PALLET UNITS, REFER TO THE PROCEDURES ON PAGES 40 AND 41.

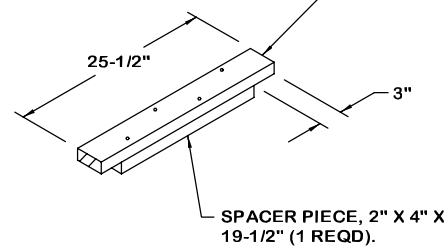
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**APPLICATION OF FILLER ASSEMBLY H**

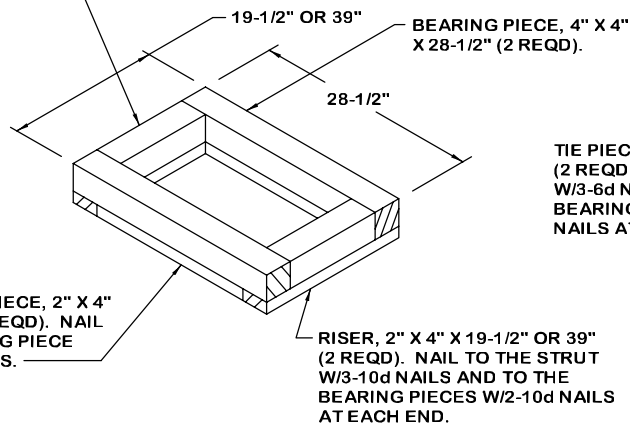
THIS VIEW DEPICTS THE METHOD OF USING A "FILLER ASSEMBLY H" IN THE PLACE OF AN OMITTED PALLET UNIT OF 8" PROJECTILES.

SUPPORT PIECE, 2" X 4" X 25-1/2"  
(1 REQD). NAIL TO THE SPACER  
PIECE W/4-10d NAILS.



**SPACER E**

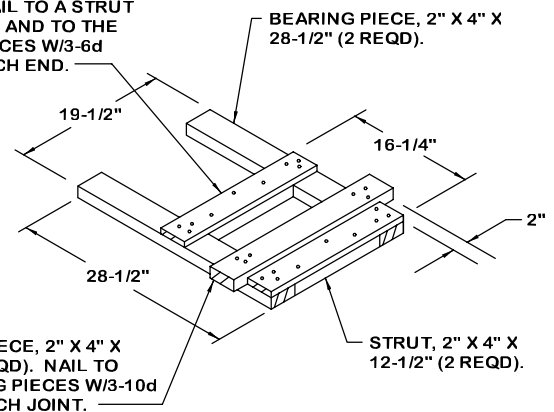
STRUT, 4" X 4" X 12-1/2"  
OR 32" (2 REQD).



**FILLER ASSEMBLY H**

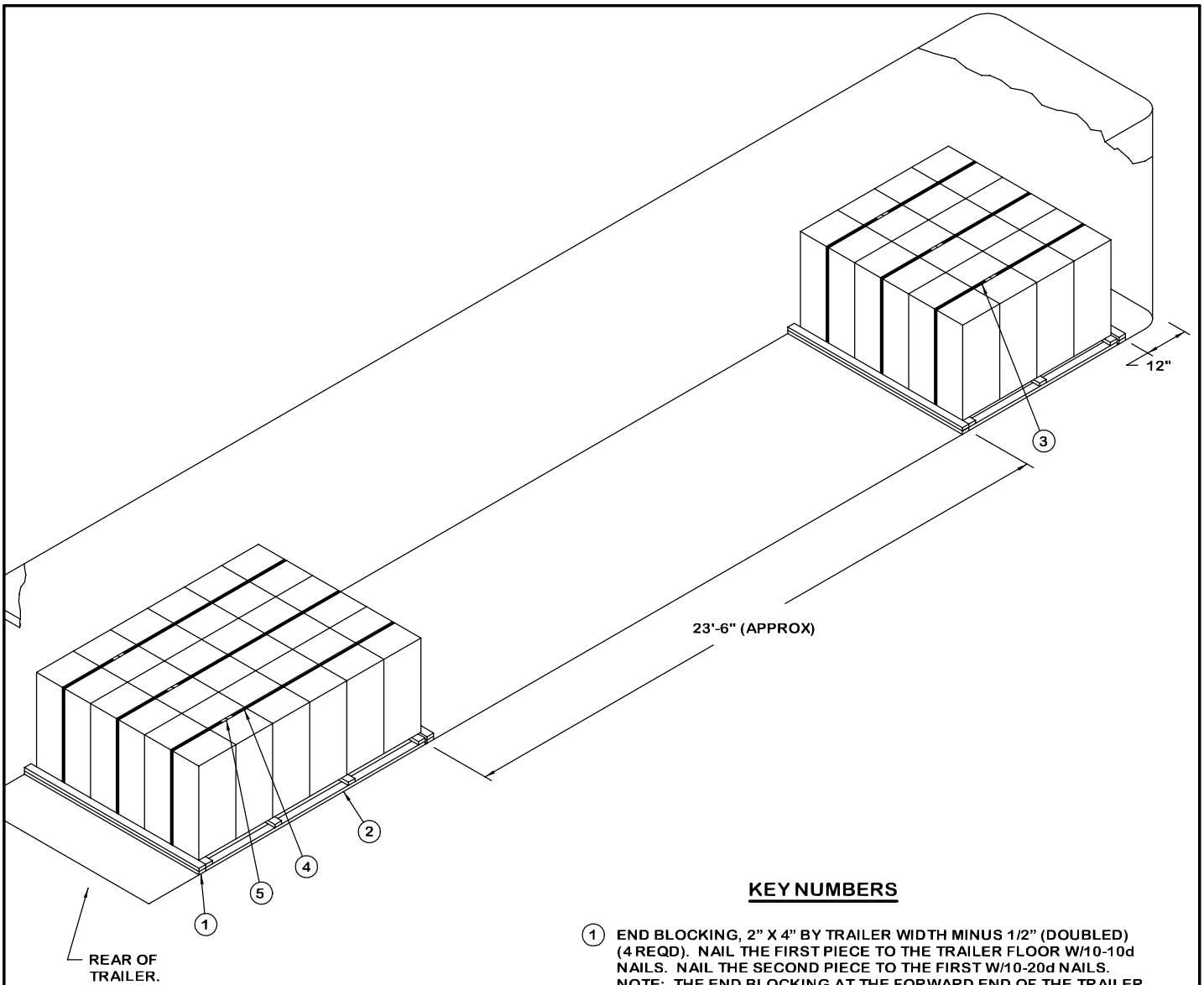
THIS ASSEMBLY IS FOR USE WITHIN THE LOAD ON PAGE 32 TO REDUCE A LOAD BY ONE OR TWO PALLET UNITS. SEE THE "APPLICATION OF FILLER ASSEMBLY H" DETAIL ABOVE FOR GUIDANCE.

TIE PIECE, 1" X 4" X 19-1/2"  
(2 REQD). NAIL TO A STRUT  
W/3-6d NAILS AND TO THE  
BEARING PIECES W/3-6d  
NAILS AT EACH END.



**FILLER ASSEMBLY J**

THIS ASSEMBLY, IN CONJUNCTION WITH THE "SPACER E" ABOVE, IS SHOWN BEING USED IN OBTAINING AN UNEVEN QUANTITY OF PALLET UNITS FOR THE LOAD SHOWN ON PAGE 36. SEE SPECIAL NOTE 3 ON PAGE 39.



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① END BLOCKING, 2" X 4" BY TRAILER WIDTH MINUS 1/2" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/10-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/10-20d NAILS. NOTE: THE END BLOCKING AT THE FORWARD END OF THE TRAILER SHOULD BE POSITIONED APPROXIMATELY TWELVE INCHES (12") FROM THE FORWARD WALL. SEE GENERAL NOTE "N" ON PAGE 2.
- ② SIDE BLOCKING ASSEMBLY (4 REQD). SEE THE "SIDE BLOCKING ASSEMBLY A" DETAIL ON PAGE 42.
- ③ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 21'-6" LONG STEEL STRAPPING (3 REQD). INSTALL SO AS TO ENCIRCLE 4 PALLET UNITS AS SHOWN.
- ④ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 28'-0" LONG STEEL STRAPPING (3 REQD). INSTALL SO AS TO ENCIRCLE 6 PALLET UNITS AS SHOWN.
- ⑤ SEAL FOR 1-1/4" STRAPPING (12 REQD, 2 PER STRAP). SEE GENERAL NOTE "L" ON PAGE 2. DOUBLE CRIMP EACH SEAL.

**SPECIAL NOTES:**

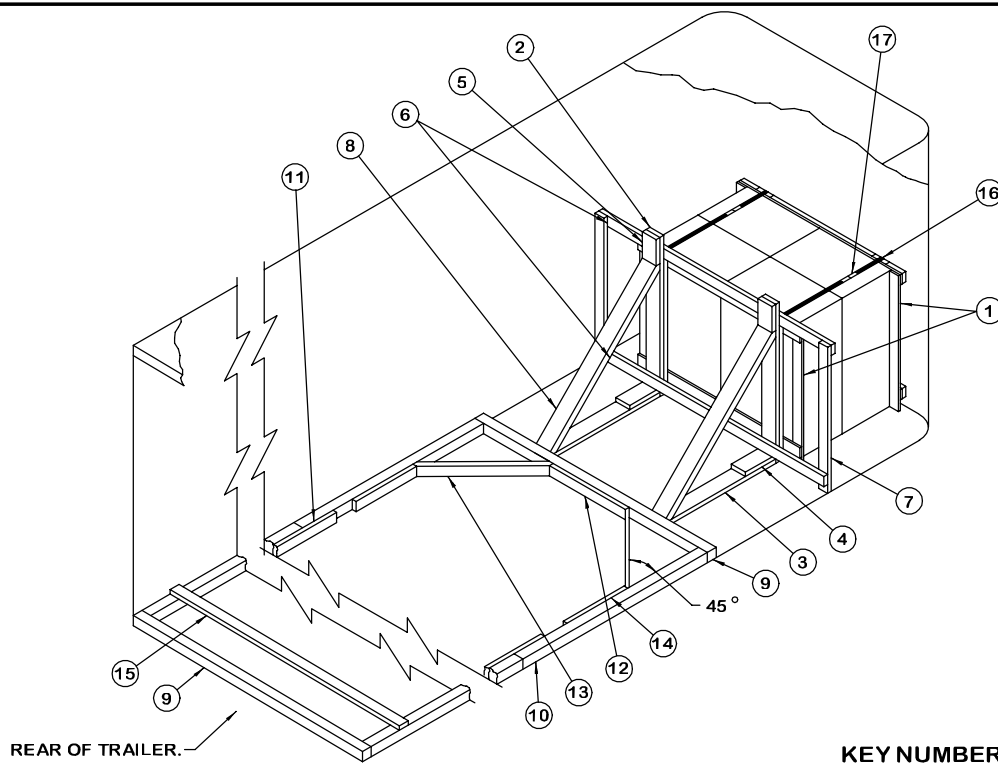
1. A 30-UNIT LOAD OF 8" PROJECTILES PALLETIZED 6 PER PALLET IS SHOWN IN A 45'-0" LONG BY 8'-0" WIDE (INSIDE DIMENSION) VAN TRAILER EQUIPPED WITH A NAILABLE FLOOR. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. A TRAILER HAVING ROUNDED CORNERS AT THE FORWARD END IS SHOWN. IF THE TRAILER BEING USED IS EQUIPPED WITH A SQUARE FRONT OF SUFFICIENT WIDTH, THE END BLOCKING, PIECE MARKED ①, AT THE FRONT OF THE LOAD MAY BE OMITTED. POSITION THE PALLET UNITS DIRECTLY AGAINST THE FRONT WALL.
3. A LOAD CAN BE INCREASED OR DECREASED BY A MULTIPLE OF THREE (3) PALLET UNITS BY ADDING OR OMITTING ONE OR MORE LOAD UNITS. IF IT IS NECESSARY TO OMIT ONE PALLET UNIT FROM A LOAD, A "FILLER ASSEMBLY" MUST BE SUBSTITUTED FOR THE OMITTED UNIT. SEE THE "FILLER ASSEMBLY J" DETAIL ON PAGE 37 AND THE LOAD VIEW ON PAGE 36 FOR GUIDANCE.
4. DEPENDING UPON THE TYPE AND WEIGHT OF THE TRAILER BEING LOADED, AND THE WEIGHT OF THE TRACTOR TO BE USED FOR TRANSPORTING THE LOADED TRAILER, IT MAY BE NECESSARY TO ADJUST THE QUANTITY OF UNITS IN THE FORWARD AND REAR PORTION OF THE LOAD, OR TO SHIFT THE LOCATIONS OF THE LOAD PORTIONS IN ORDER TO COMPLY WITH WEIGHT DISTRIBUTION REQUIREMENTS. CAUTION: DO NOT POSITION PALLET UNITS IN THE CENTER OF THE TRAILER LENGTH. SEE GENERAL NOTES "F" AND "G" ON PAGE 2.

**BILL OF MATERIAL**

LUMBER	LINEAR FEET	BOARD FEET
2" x 4"	102	68
NAILS	NO. REQD	POUNDS
10d (3")	124	2
20d (4")	40	1-1/2
STEEL STRAPPING, 1-1/4" - 149' REQD - - - - - 21 LBS		
SEAL FOR 1-1/4" STRAP - - - 12 REQD - - - - - 1/2 LBS		

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
8", 6/PALLET	30	38,880 LBS
DUNNAGE		161 LBS
TOTAL WEIGHT		39,041 LBS (APPROX)



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① LOAD BEARING GATE (2 REQD). SEE THE DETAIL ON PAGE 44 AND GENERAL NOTE "N" ON PAGE 2. SEE SPECIAL NOTE 3 AT LEFT.
- ② VERTICAL PIECE, 2" X 6" BY PALLET UNIT COVER HEIGHT PLUS 8" (2 REQD). NAIL TO STRAPPING BOARD OF THE ADJACENT PIECE MARKED ① W/4-10d NAILS.
- ③ FLOOR CLEAT, 2" X 6" BY PALLET UNIT COVER HEIGHT MINUS 2-1/2" (2 REQD).
- ④ POCKET CLEAT, 2" X 6" X 12" (2 REQD). NAIL TO PIECE MARKED ③ W/3-10d NAILS. TOENAIL TO PIECE MARKED ② W/2-12d NAILS.
- ⑤ HOLD DOWN CLEAT, 2" X 6" X 9" (2 REQD). NAIL TO PIECE MARKED ② W/3-10d NAILS.
- ⑥ HORIZONTAL PIECE, 2" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD). NAIL TO PIECES MARKED ② W/3-10d NAILS AT EACH JOINT.
- ⑦ BUFFER PIECE, 2" X 4" BY PALLET UNIT COVER HEIGHT PLUS 4" (2 REQD). NAIL TO PIECES MARKED ⑥ W/3-10d NAILS AT EACH JOINT.
- ⑧ KNEE BRACE, 2" X 6" BY CUT TO FIT (2 REQD). DOUBLE BEVEL EACH END WITH 45° CUTS. TOENAIL TO PIECES MARKED ② AND ③ W/2-12d NAILS AT EACH END.
- ⑨ HEADER, 4" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD). TOENAIL TO THE FORWARD PIECES MARKED ⑥ 8 W/2-16d NAILS AT EACH JOINT.
- ⑩ SIDE STRUT, 4" X 4" BY CUT TO FIT BETWEEN THE TWO HEADERS (2 REQD). TOENAIL TO THE HEADERS W/2-16d NAILS AT EACH END.
- ⑪ SPLICE PIECE, 2" X 4" X 24" (AS REQD). CENTER ON A JOINT OF PIECES MARKED ⑩ AND NAIL W/4-10d NAILS AT EACH END.
- ⑫ CENTER CLEAT, 2" X 4" X 30" (1 REQD). NAIL TO THE FORWARD PIECE MARKED ⑨ W/7-10d NAILS.
- ⑬ DIAGONAL BRACE, 2" X 4" BY CUT TO FIT (2 REQD). DOUBLE BEVEL EACH END WITH 45° CUTS. INSTALL AT A 45° ANGLE AS SHOWN AND NAIL TO PIECES MARKED ⑨ AND ⑩ W/2-16d NAILS AT EACH END.
- ⑭ SIDE CLEAT, 2" X 4" X 24" (2 REQD). NAIL TO PIECE MARKED ⑩ W/6-10d NAILS.
- ⑮ STRUT BRACING, 2" X 4" BY TRAILER WIDTH IN LENGTH (CUT TO FIT) (MINIMUM OF 1 REQD). ONE (1) ADDITIONAL BRACE IS REQUIRED FOR EVERY 7'-0" OF SIDE STRUT LENGTH. NAIL TO PIECES MARKED ⑩ W/3-10d NAILS AT EACH END.

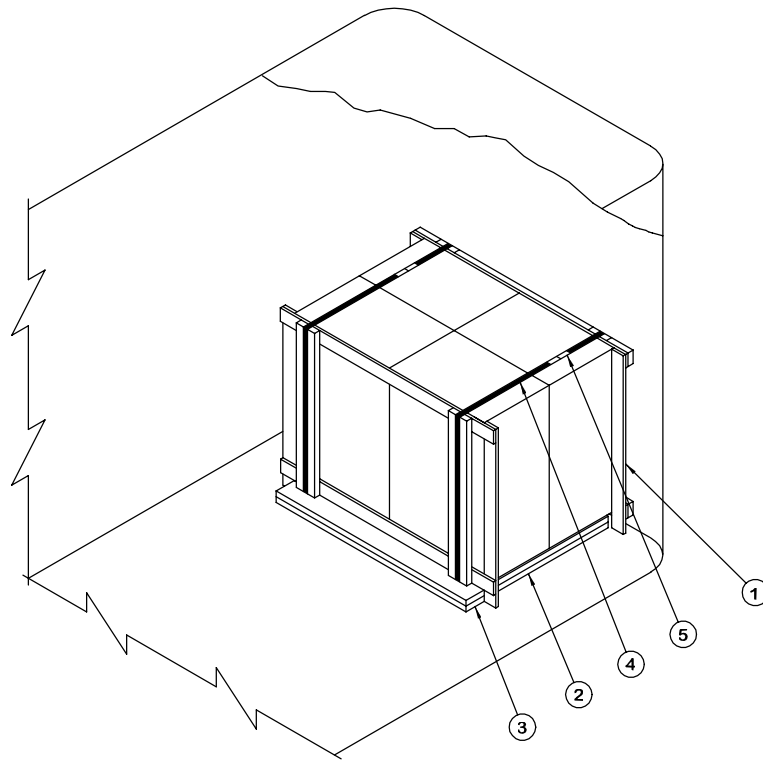
**SPECIAL NOTES:**

- 1. THESE OUTLOADING PROCEDURES DEPICT THE USE OF "K-BRACE" TYPE BLOCKING IN A 7'-6" WIDE VAN TRAILER. WIDER OR NARROWER TRAILERS CAN BE USED.
- 2. A 4-UNIT LOAD OF 8" PROJECTILES PALLETIZED 6 PER SMALL PALLET IS SHOWN AS TYPICAL. THE PROCEDURES ARE ALSO APPLICABLE FOR THE BRACING OF A 4-UNIT LOAD OF ANY OF THE DEPICTED PALLETIZED PROJECTILES.
- 3. THE LOAD BEARING GATE, PIECE MARKED ①, WHICH IS POSITIONED AGAINST THE TRAILER FRONT WALL MUST HAVE FILL PIECES APPLIED TO BOTH THE UPPER AND LOWER HORIZONTAL PIECES. FILL PIECES ARE NOT REQUIRED ON THE GATE AT THE REAR OF THE LOAD.

**(KEY NUMBERS CONTINUED)**

- ⑮ UNITIZING STRAP, 1-1/4" X .035" OR .031" STEEL STRAPPING OF A LENGTH TO SUIT (2 REQD). INSTALL TO ENIRCLE TWO PALLET UNITS AND TWO LOAD BEARING GATES, PIECES MARKED ①, AS SHOWN.
- ⑰ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP JOINT). SEE GENERAL NOTE "L" ON PAGE 2. DOUBLE CRIMP EACH SEAL.





**ISOMETRIC VIEW**

**KEY NUMBERS**

**SPECIAL NOTES:**

1. THESE OUTLOADING PROCEDURES DEPICT THE USE OF NAILED FLOORLINE TYPE BLOCKING IN A 7'-6" WIDE VAN TRAILER. WIDER OR NARROWER TRAILERS CAN BE USED.
2. A 4-UNIT LOAD OF 8" PROJECTILES PALLETIZED 6 PER SMALL PALLET IS SHOWN AS TYPICAL. THE PROCEDURES ARE ALSO APPLICABLE FOR THE BRACING OF A 4-UNIT LOAD OF ANY OF THE DEPICTED PALLETIZED PROJECTILES.
3. THE LOAD BEARING GATE, PIECE MARKED ①, WHICH IS POSITIONED AGAINST THE TRAILER FRONT WALL MUST HAVE FILL PIECES APPLIED TO BOTH THE UPPER AND LOWER HORIZONTAL PIECES. FILL PIECES ARE NOT REQUIRED ON THE GATE AT THE REAR OF THE LOAD.

- ① LOAD BEARING GATE (2 REQD). SEE THE DETAIL ON PAGE 44 AND GENERAL NOTE "N" ON PAGE 2. SEE SPECIAL NOTE 3 AT LEFT.
- ② SIDE BLOCKING, 2" X 6" X 36" (DOUBLED) (2 REQD). PRE-POSITION AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/8-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ③ HEADER, 2" X 6' X 54' (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/6-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ④ UNITIZING STRAP, 1-1/4" X .035" OR .031" STEEL STRAPPING OF A LENGTH TO SUIT (2 REQD). INSTALL TO ENCIRCLE TWO PALLET UNITS AND TWO LOAD BEARING GATES, PIECES MARKED ①, AS SHOWN.
- ⑤ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP JOINT). SEE GENERAL NOTE "L" ON PAGE 2. DOUBLE CRIMP EACH SEAL.

**NOTE ⊕:**

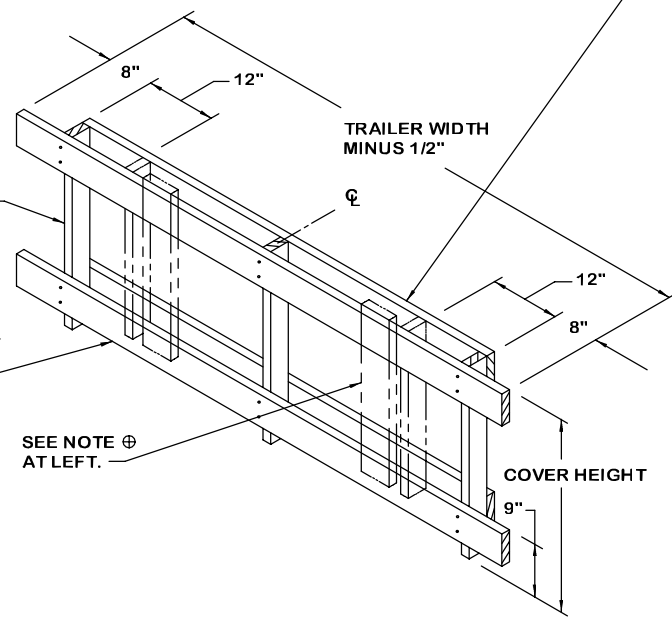
WHEN THE FORWARD BLOCKING ASSEMBLY IS USED IN TRAILERS EQUIPPED WITH LARGE-ANGLED FRONT CORNERS AS SHOWN ON PAGE 46, TWO (2) ADDITIONAL UPRIGHT PIECES MUST BE ADDED TO THE ASSEMBLY. ALSO, TWO (2) STRAPPING BOARDS, 2" X 6" BY COVER HEIGHT MINUS 3-1/2" MUST BE PRE-POSITIONED AND NAILED TO THE REAR HORIZONTAL PIECES AS SHOWN. THE STRAPPING BOARDS MUST BE POSITIONED SO THAT THE UNITIZING STRAPS WILL NOT CONTACT THE PALLET SKIDS.

FRONT HORIZONTAL, 2" X 6" BY CUT TO FIT (2 REQD). NAIL TO THE UPRIGHTS W/2-10d NAILS AT EACH JOINT.

UPRIGHT, 2" X 4" BY COVER HEIGHT (3 REQD). SEE NOTE ⊕ AT THE LEFT.

REAR HORIZONTAL, 2" X 6" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD). NAIL TO THE UPRIGHTS W/2-10d NAILS AT EACH JOINT.

SEE NOTE ⊕ AT LEFT.



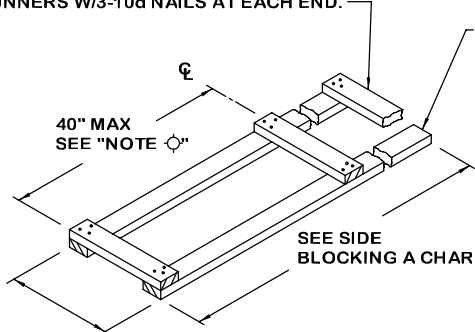
TIE PIECE, 2" X 4" BY CUT TO FIT BETWEEN PALLET SKID AND TRAILER SIDEWALL (AS REQD). NAIL TO THE RUNNERS W/3-10d NAILS AT EACH END.

RUNNER, 2" X 4" BY LENGTH TO SUIT (2 REQD).

40" MAX SEE "NOTE ⊕"

SEE SIDE BLOCKING A CHART

\* CUT TO FIT



**FORWARD BLOCKING ASSEMBLY**

THIS ASSEMBLY IS FOR USE AT THE FORWARD END OF A TRAILER WITH ROUNDED CORNERS. IF THE ROUNDED CORNERS ARE OF A GREATER RADIUS THAN SIX INCHES, ADDITIONAL 6" WIDE MATERIAL MAY BE LAMINATED TO THE FRONT HORIZONTAL PIECE AND/OR 2" X 6" MATERIAL MAY BE USED IN LIEU OF THE 2" X 4" MATERIAL FOR THE UPRIGHTS.

**NOTE ⊕:**

THE 40" MAX DIMENSION SHOWN SPECIFIES THE MAXIMUM DIMENSION ALLOWED FOR SPACING OF THE TIE PIECES. FOR A SIDE BLOCKING ASSEMBLY OR PORTION OF AN ASSEMBLY WHICH, WHEN INSTALLED, WILL BE ADJACENT TO THE PORTION OF A LOAD WHICH IS NOT BUNDLED, THE TIE PIECES MUST BE POSITIONED, AS A MINIMUM, ON EVERY OTHER JOINT BETWEEN LONGITUDINALLY ADJACENT PALLET UNITS.

**SIDE BLOCKING A**

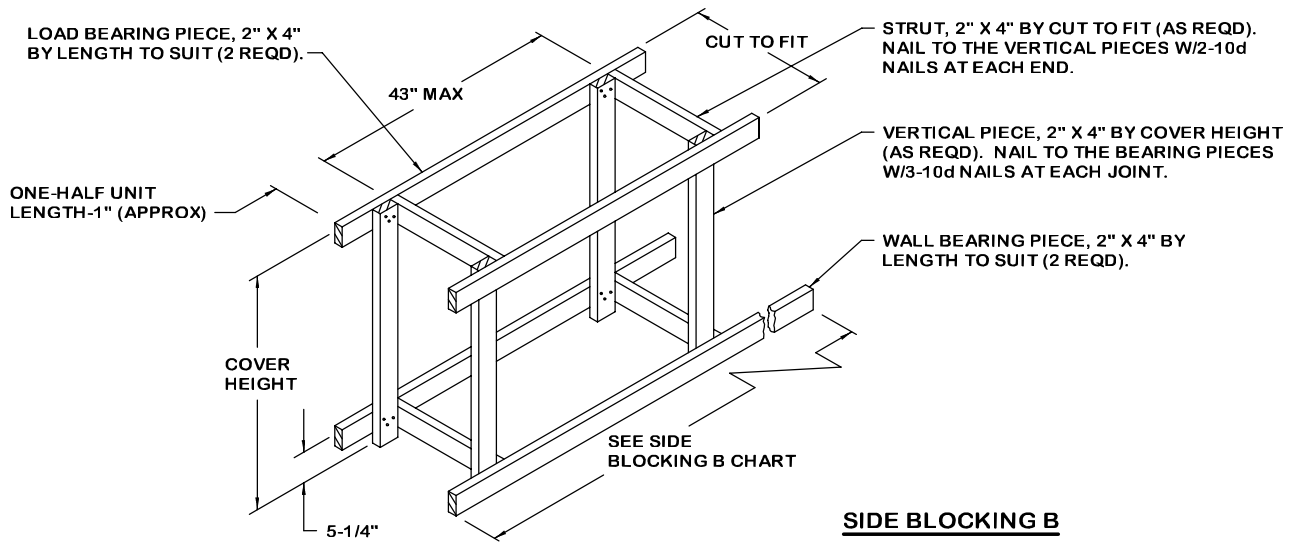
THE ABOVE ASSEMBLY IS FOR USE AS LATERAL BLOCKING OF PALLET UNITS WHEN THE DISTANCE BETWEEN THE PALLET SKID AND THE TRAILER SIDEWALL IS LESS THAN 12".

**SIDE BLOCKING A CHART**

155MM SMALL PALLET		8" 3/PALLET		8" 6/SMALL PALLET		8" 6 TALL/SMALL PALLET	
NO. LONG	LENGTH	NO. LONG	LENGTH	NO. LONG	LENGTH	NO. LONG	LENGTH
2	27"	3	28-1/2"	2	39"	2	39"
3	40-1/2"	4	38"	3	58-1/2"	3	58-1/2"
4	54"	5	47-1/2"	4	6'-6"	4	6'-6"
5	67-1/2"	6	57"	5	8'-1-1/2"	5	8'-1-1/2"
6	6'-9"	7	66-1/2"	6	9'-8"	6	9'-8"
7	7'-10-1/2"	8	6'-4"	7	11'-4-1/2"	7	11'-4-1/2"
8	9'-0"	9	7'-1-1/2"	8	13'-0"	8	13'-0"
9	10'-1-1/2"	10	7'-11"	9	14'-7-1/2"	9	14'-7-1/2"
10	11'-3"	11	8'-8-1/2"	10	16'-3"	10	16'-3"
11	12'-4-1/2"	12	9'-6"	11	17'-10-1/2"	11	17'-10-1/2"
12	13'-6"	13	10'-3-1/2"	12	19'-6"	12	19'-6"

\* A 1/4" SPACE BETWEEN THE TRAILER SIDEWALL AND AN ASSEMBLY WHEN THE ASSEMBLY IS IN CONTACT WITH THE PALLET SKID IS ACCEPTABLE.

**DETAILS**



**SIDE BLOCKING B**

THE ABOVE ASSEMBLY IS FOR USE AS LATERAL BLOCKING OF THE 1-WIDE PORTIONS OF LOADS.

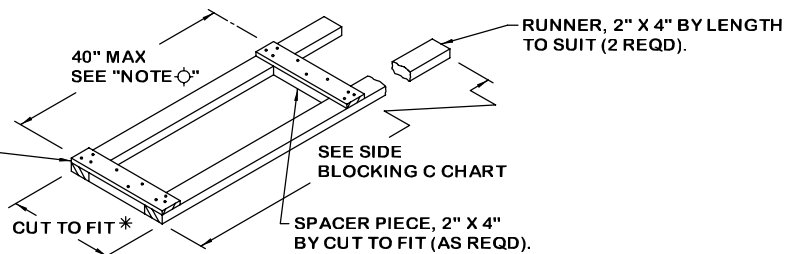
**SIDE BLOCKING B CHART**

155MM SMALL PALLET		155MM LARGE PALLET		8" 3/PALLET		8" 6/SMALL PALLET		8" 6/LARGE PALLET		8" 6 TALL/SMALL PALLET	
NO. LONG	LENGTH	NO. LONG	LENGTH	NO. LONG	LENGTH	NO. LONG	LENGTH	NO. LONG	LENGTH	NO. LONG	LENGTH
13	14'-7-1/2"	13	15'-10"	27	21'-4-1/2"	10	16'-3"	8	15'-1"	10	16'-3"
14	15'-9"	14	17'-0-1/2"	28	22'-2"	11	17'-10-1/2"	9	16'-11-1/2"	11	17'-10-1/2"
15	16'-10-1/2"	15	18'-3"	29	22'-11-1/2"	12	19'-6"	10	18'-10"	12	19'-6"
16	18'-0"	16	19'-6"	30	23'-9"	13	21'-1-1/2"	11	20'-9"	13	21'-1-1/2"
17	19'-1-1/2"	17	20'-8-1/2"	31	24'-6-1/2"	14	22'-9"	12	22'-7-1/2"	14	22'-9"
18	20'-3"	18	21'-11"	32	25'-4"	15	24'-4-1/2"	13	24'-6"	15	24'-4-1/2"

**SIDE BLOCKING C CHART**

155MM SMALL PALLET		155MM LARGE PALLET		8" 3/PALLET		8" 6/SMALL PALLET		8" 6/LARGE PALLET		8" 6 TALL/SMALL PALLET	
NO. LONG	LENGTH	NO. LONG	LENGTH	NO. LONG	LENGTH	NO. LONG	LENGTH	NO. LONG	LENGTH	NO. LONG	LENGTH
5	66"	3	42"	6	55-1/2"	3	57"	3	66"	3	57"
6	6'-7-1/2"	4	55-1/2"	7	65"	4	6'-4-1/2"	4	7'-5"	4	6'-4-1/2"
7	7'-9"	5	71-1/2"	8	6'-2-1/2"	5	8'-0"	5	9'-3-1/2"	5	8'-0"
10	11'-1-1/2"	6	7'-2"	9	7'-0"	6	9'-7-1/2"	6	11'-2"	6	9'-7-1/2"
11	12'-3"	7	8'-4-1/2"	10	7'-9-1/2"	7	11'-3"	7	13'-1"	7	11'-3"
12	13'-4-1/2"	8	9'-7-1/2"	11	8'-7"	8	12'-10-1/2"	8	14'-11-1/2"	8	12'-10-1/2"
13	14'-6"	9	10'-10"	12	9'-4-1/2"	9	14'-6"	9	16'-10"	9	14'-6"

TIE PIECE, 1" X 4" BY CUT TO FIT BETWEEN PALLET SKID AND TRAILER SIDEWALL (AS REQD). NAIL TO THE SPACER PIECE W/3-6d NAILS AND TO THE RUNNERS W/3-6d NAILS AT EACH END.



\* A 1/4" SPACE BETWEEN THE TRAILER SIDEWALL AND AN ASSEMBLY WHEN THE ASSEMBLY IS IN CONTACT WITH THE PALLET SKID IS ACCEPTABLE.

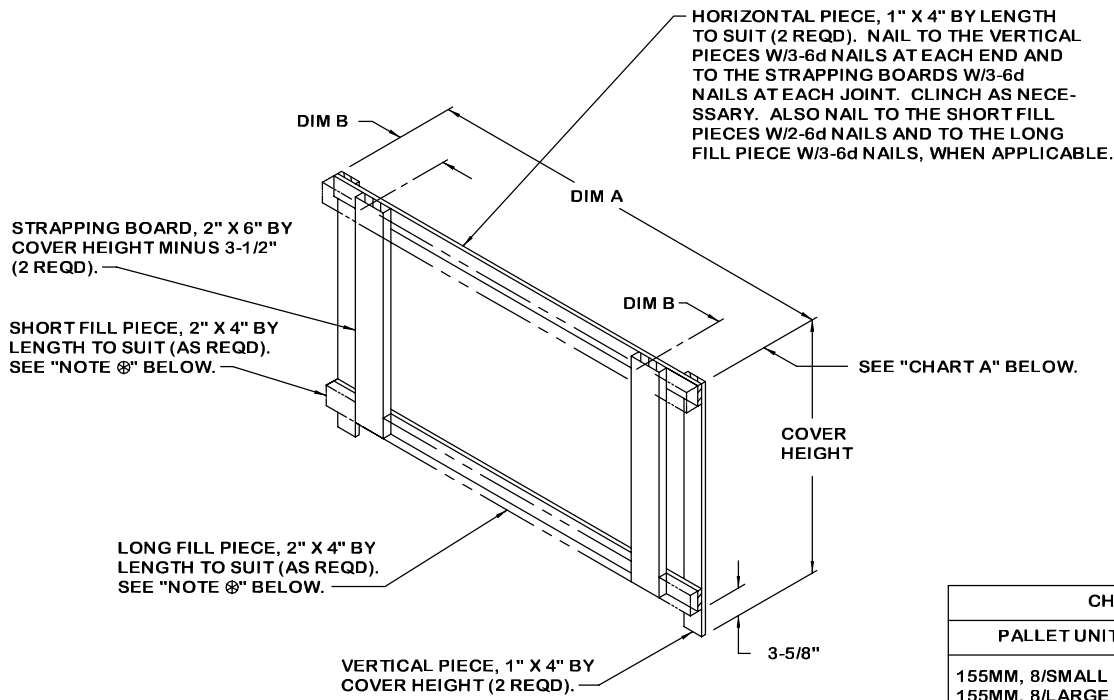
**NOTE**

THE 40" MAX DIMENSION SHOWN SPECIFIES THE MAXIMUM DIMENSION ALLOWED FOR SPACING OF THE SPACER PIECES AND THE TIE PIECES. FOR A SIDE BLOCKING ASSEMBLY OR PORTION OF AN ASSEMBLY WHICH, WHEN INSTALLED, WILL BE ADJACENT TO THE PORTION OF A LOAD WHICH IS NOT BUNDLED, THE SPACER PIECES AND THE TIE PIECES MUST BE POSITIONED, AS A MINIMUM, ON EVERY OTHER JOINT BETWEEN LONGITUDINALLY ADJACENT PALLET UNITS.

**SIDE BLOCKING C**

THE ABOVE ASSEMBLY IS FOR USE AS LATERAL BLOCKING OF PALLET UNITS WHEN THE DISTANCE BETWEEN THE PALLET SKID AND THE TRAILER SIDEWALL IS GREATER THAN 12".

**DETAILS**



**LOAD BEARING GATE**

CHART A		
PALLET UNIT	DIM A	DIM B
155MM, 8/SMALL PALLET	62"	8-1/2"
155MM, 8/LARGE PALLET	72"	8-1/2"
8", 3/PALLET	65"	6-1/2"
8", 6/SMALL PALLET	65"	6-1/2"
8", 6/LARGE PALLET	67"	7"
8", 6/TALL PALLET	65"	6-1/2"

**NOTE Ⓞ:**

THE SHORT AND LONG FILL PIECES INDICATED BY PHANTOM LINES AT THE TOP AND NEAR THE BOTTOM OF THE LOAD BEARING GATE ARE REQUIRED ON GATES TO BE POSITIONED AGAINST THE TRAILER FRONT WALL. AT THE REAR OF A LOAD, THE SHORT AND LONG FILL PIECES ARE REQUIRED ONLY AT THE BOTTOM LEVEL. WHEN LOAD BEARING GATES ARE USED WITHIN A LOAD, THE REQUIREMENT FOR FILL PIECES WILL BE SPECIFIED IN THE SPECIAL NOTES SECTION WHICH IS IMMEDIATELY ADJACENT TO A DEPICTED LOAD.



ONE SEAL WITH  
TWO PAIR OF  
NOTCHES.

**STRAP JOINT A**

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

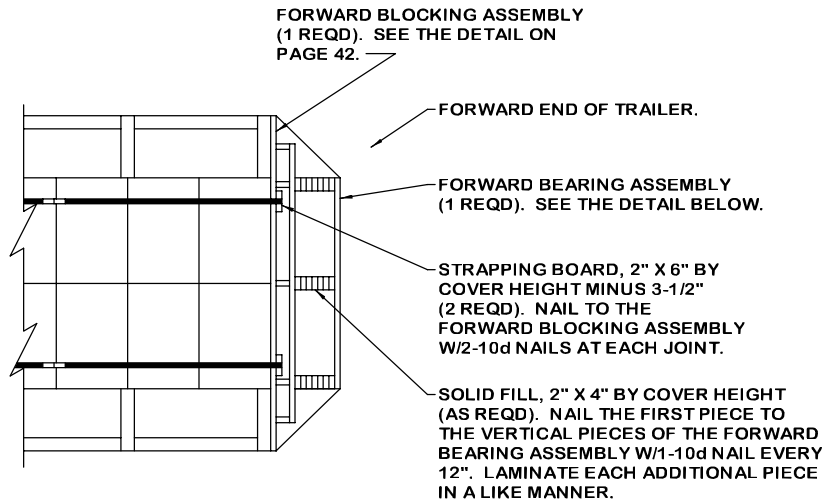


TWO SEALS, BUTTED  
TOGETHER, WITH  
TWO PAIR OF CRIMPS  
EACH SEAL.

**STRAP JOINT B**

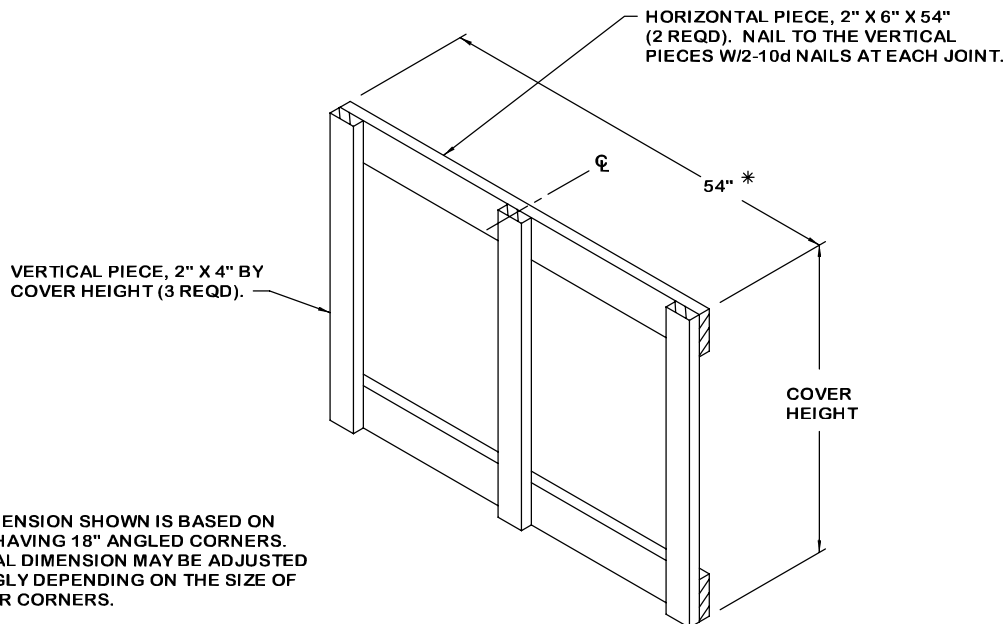
METHOD OF SECURING A  
STRAP JOINT WHEN USING  
A CRIMP-TYPE SEALER.

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



### ALTERNATIVE FORWARD LOADING PATTERN

THIS PROCEDURE IS APPLICABLE TO THE LOADING OF PALLET UNITS IN THE FORWARD END OF A VAN TRAILER HAVING LARGE-ANGLED FRONT CORNERS (REF: 18"). THE PROCEDURES MAY ALSO BE USED IN TRAILERS HAVING ANGLED CORNERS OF ANOTHER SIZE. THE 8" SLP, 6 TALL PROJECTILES/SMALL PALLET, UNIT IS SHOWN. THE PROCEDURE IS ALSO APPLICABLE FOR THE OTHER UNITS DEPICTED WITHIN THIS DOCUMENT, INCLUDING THE 3-PALLET UNIT WIDE LOADS.



### FORWARD BEARING ASSEMBLY