

BUREAU OF EXPLOSIVES
PAMPHLET NO. 6A
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ILLUSTRATING
APPROVED METHODS FOR LOADING
AND BRACING CARLOAD SHIPMENTS OF
MILITARY AMMUNITION AND EXPLOSIVES

BUREAU OF EXPLOSIVES
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A C K N O W L E D G M E N T

The Bureau of Explosives expresses its appreciation for the cooperation and assistance from the Departments of the Army and Navy and of the Railroad industry in conducting tests and assembling the data contained herein.

P R E F A C E

The methods of loading and bracing of Military Ammunition included in this Pamphlet have the endorsement of the Departments of the Army and of the Navy and can be used by these Departments when specific Military drawings are not available. Likewise, these Departments should be consulted for approved drawings for loading and bracing individual ammunition items which have not been made part of this Pamphlet.

Methods of bracing, other than shown herein, should be submitted to the Bureau of Explosives for approval.

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GENERAL RULES

1. Closed cars for loading of Class A Explosives must be thoroughly inspected and certified for such loading by a qualified person of the originating carrier and must conform to provisions of the Department of Transportation regulations governing such inspection and certification.
2. Closed cars for loading of Class B Explosives must be in good condition and into which sparks cannot enter.
3. Open-Top cars or flat cars may be used for loading of wooden boxed bombs, rocket ammunition or rocket motors, Class A or Class B explosives, which, due to size, cannot be loaded in closed cars and as so provided for in the Department of Transportation regulations. Open-top cars selected for such loading of Class A explosive items must be inspected and certified by a qualified person of the originating carrier.
4. Class C Explosives may be loaded into any closed car in good condition.
5. The weight of the load in or on a car must not exceed the load limit stenciled on the car.
6. The weight of the load on one truck must not exceed one-half (1/2) of the load limit stenciled on the car. In case of doubt, the weight on each truck must be verified by weighing the loaded car.
7. The percentages (see Page 6) of stenciled load limits must not be exceeded for loads located between truck centers, measured lengthwise of car.
8. Combined center of gravity (measured from top of rail) of car and load must not exceed 98". (See Rule 89 - Field Manual - A.A.R. (Mechanical Division) Interchange Rules.)

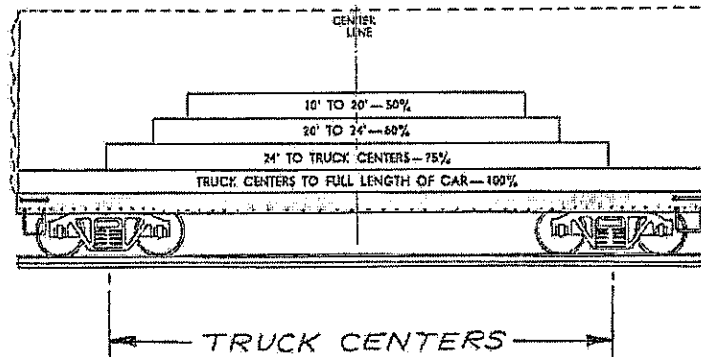
Cars with 4-wheel trucks having 6-1/2 x 12" journals or larger, having truck centers within the range of 28' to 45' and loaded center of gravity exceeding 84" above top of rail, to be equipped with 3-11/16" travel springs and approved supplemental snubbing device or devices in each spring group. (See Rule 88 - Office Manual - A.A.R. (Mechanical Division) Interchange Rules.)
9. All steel cars (i.e., cars with steel lining and steel floors, nailable or non-nailable) must not be used for the loading of bulk explosives such as T.N.T., black powder, dynamite, propellant powders and similar explosives. Unless contact with the steel lining is avoided by method of placement of lading within the car or by use of wood, plywood or tempered hardboard, such cars should not be used for loading of unboxed items which overhang pallets, such as bombs or propelling charges and propelling cartridges packed in metal containers.
10. Cars equipped with bracing devices (belt rails and crossmembers) and load divider cars **MUST NOT** be used for loading of bulk explosives such as T.N.T., black powder, dynamite, propellant powders and similar explosives, which are liable to sift or become lodged in the belt rails, floor tracks or mechanism of the bracing devices in the event of container failure. **EXCEPTION:** Cars equipped with recessed, flat stock, perforated belt rails, when lined with plywood or tempered hardboard to at least one foot (1') above the lading height and provided crossmembers are not used, may be employed as a conventional box car and loaded with bulk explosives.

11. Cars with bowed ends (2" or greater) must have the ends squared by use of a bulkhead and shim material (see Pages 7-8-9) to insure a flush, solid and adequate bearing surface for the lading.
12. Tight loading - all lost space, particularly lengthwise, must be avoided by compactly loading and by exerting pressure on each package and/or unit load towards the end of the car.
13. Lengthwise voids that are not occupied by lading, such as in the doorway area of cars or which might develop from loading packages and/or unit loads of uneven lengths or from employing a staggered loading pattern, must be filled with adequately fabricated space fillers or random length solid fill material or adequately fabricated strut braced center gates.
14. Lateral voids must be filled with blocking nailed to the car floor or adequately fabricated sway braces or space fillers or combinations thereof.
15. Lading must be blocked and braced by the one who loads the car so as to prevent change of position or contact with the doors under the ordinary shocks incident to transportation.
16. Lumber used for blocking and bracing must be sound, free from cross-grain knots, knot holes or splits which impair the strength of the material or interfere with adequate nailing.
17. Nails should be used in sufficient number and of a length to provide penetration of both the blocking lumber and a minimum of 2/3 of the car floor or lining. Nails used to secure blocking to car lining should be driven into studding when possible. To avoid splitting of blocking lumber, nails must not be too large and should be used in a staggered pattern, rather than along one grain of the lumber. Whenever possible, nails should be driven straight and "toenailing" should be avoided. Nails may be common or cement-coated.
18. Partial layers must be blocked and braced in accordance with methods detailed on Pages 10 and 11 for cars with nailable wood lining or with methods detailed on Pages 12 thru 20 for cars with steel lining.
19. Doorway protection (see Page 21) must be provided for lading extending into the doorway area of cars, EXCEPT that no doorway protection is required for palletized unit loads or large containers or large crates if not more than one-half (1/2) of the length of the unit load or large container or large crate extends beyond a doorpost on either side of the car.
20. Plug doors in cars so equipped will be protected from pressure of lading loaded directly adjacent thereto by use of door spanner lumber (see Pages 128 and 129) or by use of steel strapping and strapping boards (see Pages 38, 39, 41, 51, 52, 60, 66, 68, 74, 136 and 140) to laterally unitize and bundle the lading that extends into the doorway area. No dunnaging material will be nailed to plug doors unless the doors are equipped with an adequate nailing strip.
21. For methods of bracing less-carload (L/C/L) shipments, see Bureau of Explosives Pamphlet No. 6 or applicable approved Military drawings.

THE WEIGHT OF LOAD IN OR ON A CAR MUST NOT EXCEED THE LOAD LIMIT STENCILED ON CAR.

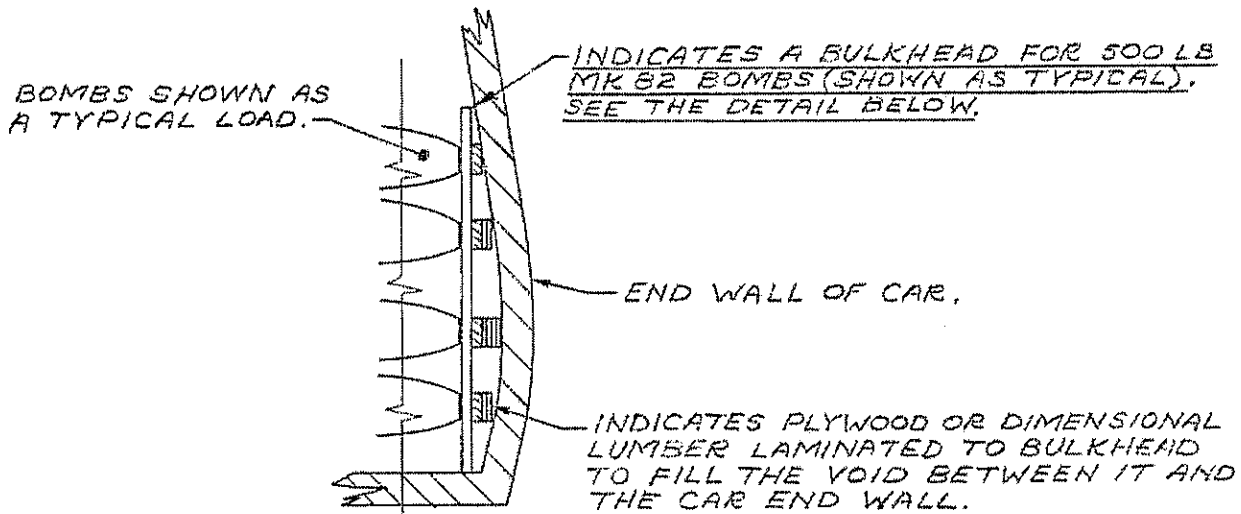
THE WEIGHT OF LOAD ON ONE TRUCK MUST NOT EXCEED ONE-HALF OF THE LOAD LIMIT STENCILED ON CAR. IN CASE OF DOUBT, THIS SHOULD BE VERIFIED BY WEIGHING.

THE PERCENTAGES OF STENCILED LOAD LIMITS, AS SHOWN BELOW, MUST NOT BE EXCEEDED FOR LOADS LOCATED BETWEEN TRUCK CENTERS, MEASURED LENGTHWISE OF CAR, UNLESS CAR OWNER HAS OTHERWISE DESIGNATED BY NOTE IN THE "OFFICIAL EQUIPMENT REGISTER" THAT THESE PERCENTAGES MAY BE CHANGED.



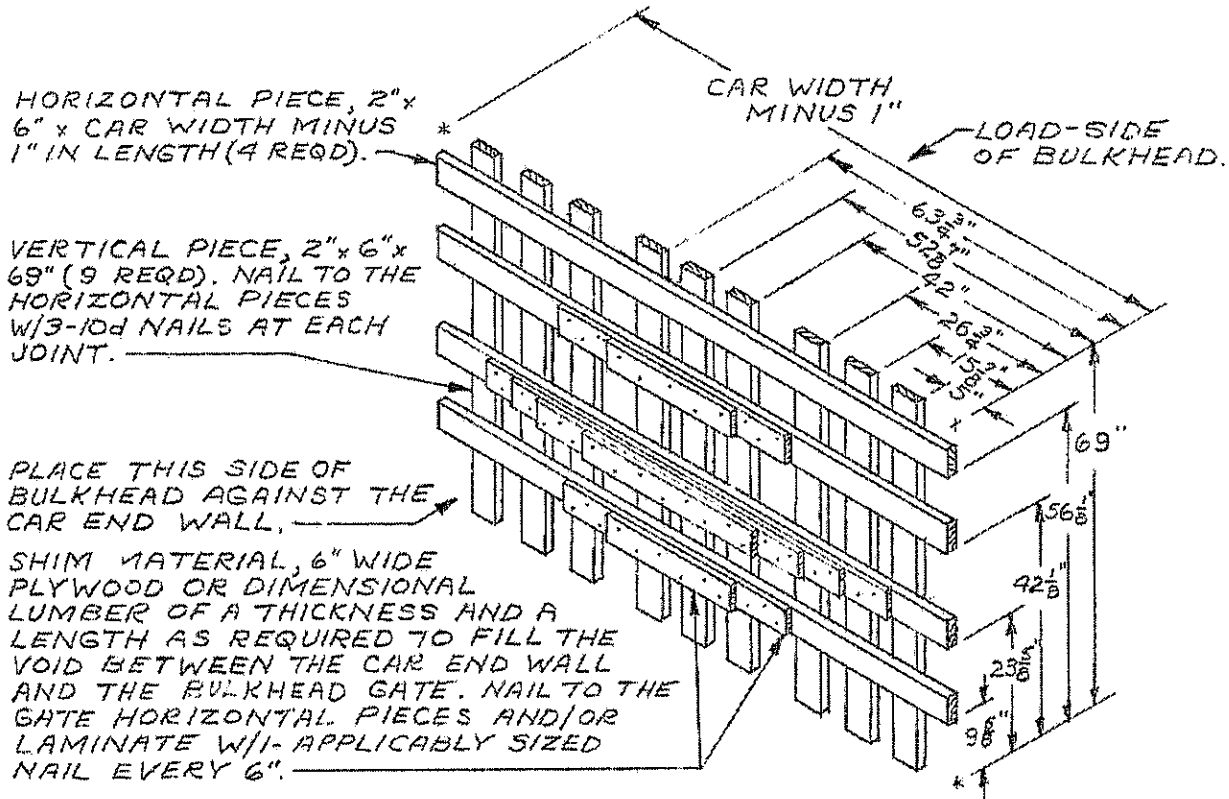
WEIGHT OF MATERIAL LOADED IN EITHER END BETWEEN TRUCK CENTERS AND END OF CAR MUST NOT EXCEED 15% OF STENCILED LOAD LIMIT FOR CARS BUILT PRIOR JANUARY 1, 1966, AND 25% FOR CARS BUILT SUBSEQUENT JANUARY 1, 1966.

FOR PROPER DISTRIBUTION OF WEIGHT CROSSWISE OF CAR, THE LOAD MUST BE LOCATED SO THAT THE WEIGHT ALONG BOTH SIDES OF CAR IS ABOUT EQUAL FOR THE ENTIRE LENGTH OF THE LOAD.

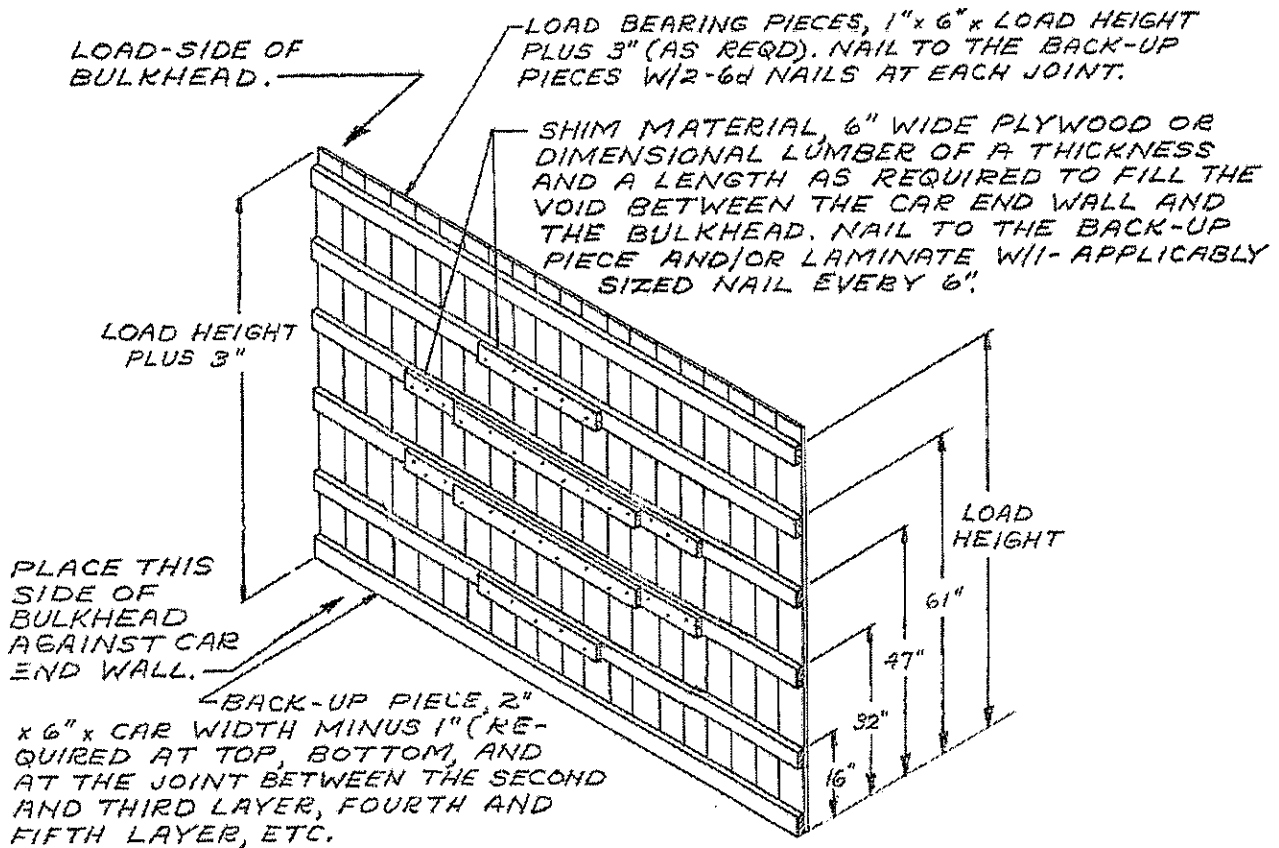


TYPICAL BOWED END WALL

AN END WALL BOWED OUTWARD FROM BOTTOM TO TOP IS SHOWN. A WALL COULD ALSO BE BOWED OUTWARD FROM SIDE TO SIDE, OR A COMBINATION OF THE TWO. IF A CAR HAS A BOWED END AMOUNTING TO 2" OR MORE, A BULKHEAD MUST BE USED. SUFFICIENT SHIM MATERIAL MUST BE FABRICATED AND NAILED TO THE BULKHEAD SO AS TO INSURE FULL BEARING ACROSS THE BOWED END OF THE CAR.

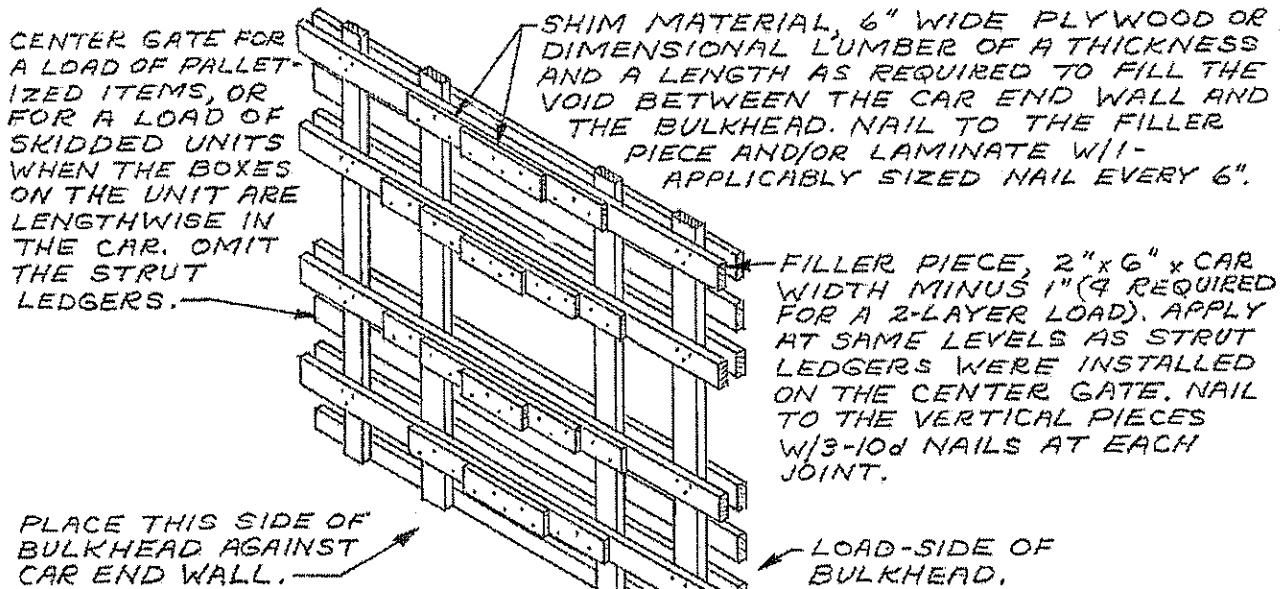


BULKHEAD
FOR USE AT END OF LOAD OF 500
POUND MK 82 BOMBS.



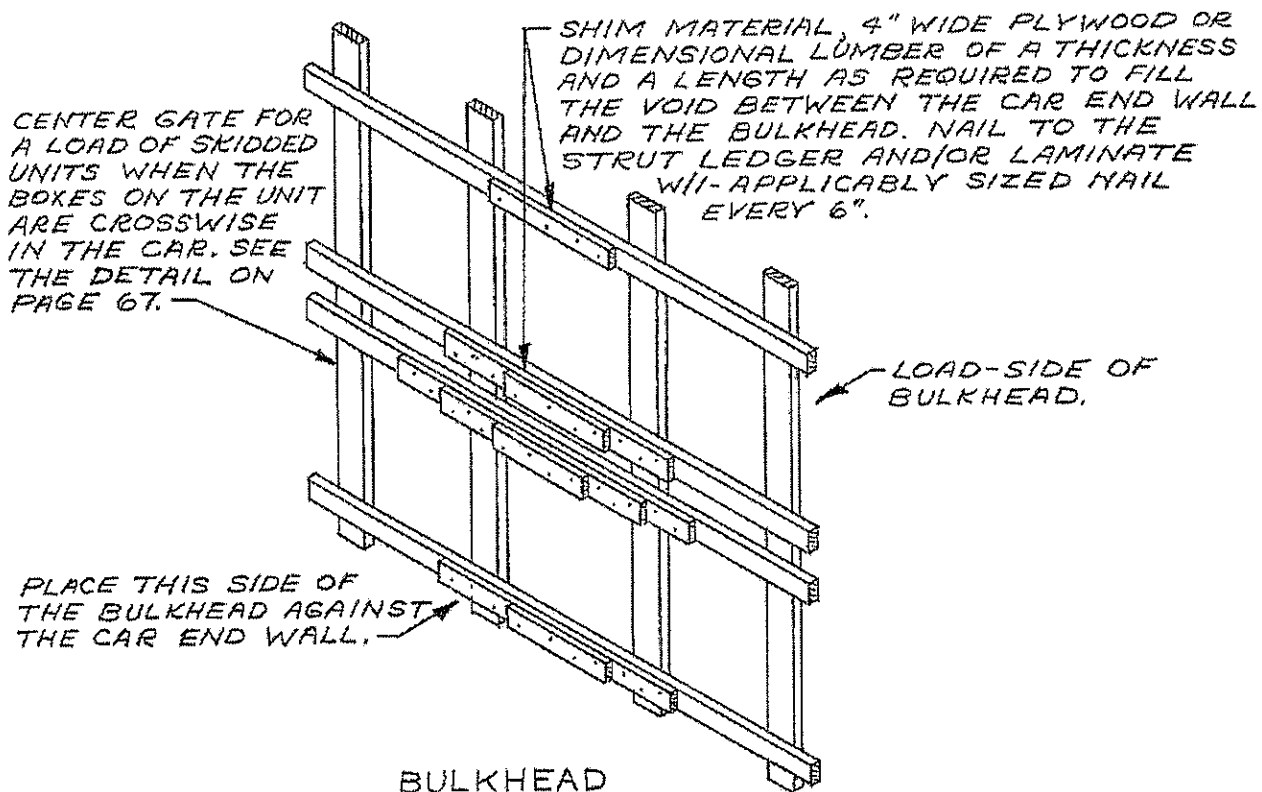
BULKHEAD

FOR USE AT THE END OF A LOAD OF FIBERBOARD AND LIGHTLY CONSTRUCTED BOXES



BULKHEAD

FOR USE AT THE END OF A LOAD OF PALLETIZED ITEMS, OR OF SKIDDED UNITS (BOXES LENGTHWISE)



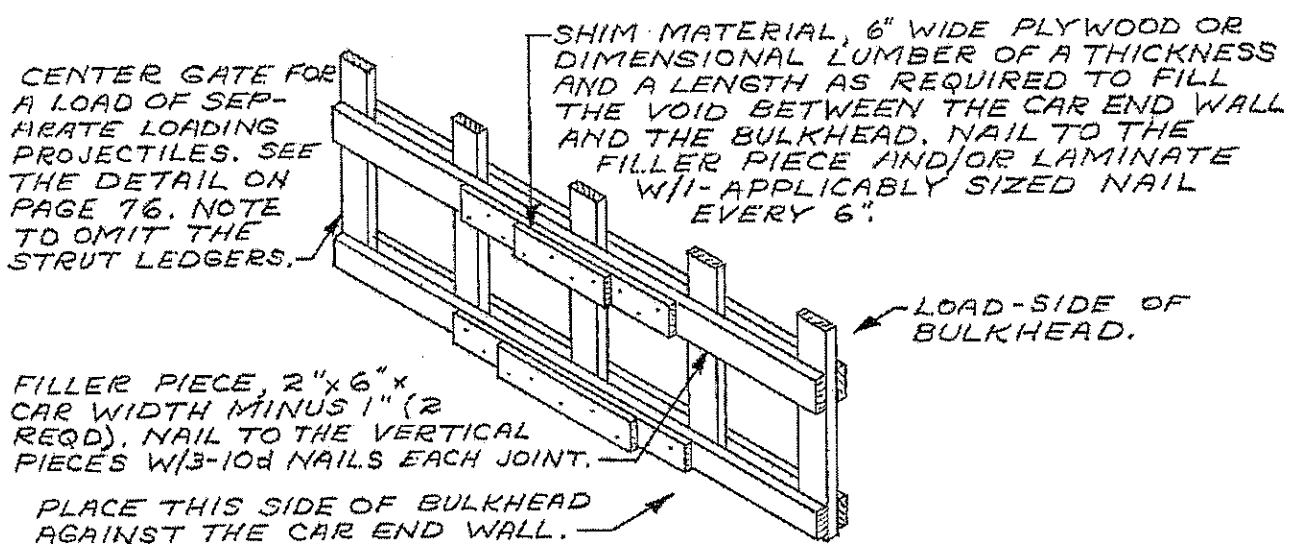
CENTER GATE FOR A LOAD OF SKIDDED UNITS WHEN THE BOXES ON THE UNIT ARE CROSSWISE IN THE CAR. SEE THE DETAIL ON PAGE 67.

SHIM MATERIAL, 4" WIDE PLYWOOD OR DIMENSIONAL LUMBER OF A THICKNESS AND A LENGTH AS REQUIRED TO FILL THE VOID BETWEEN THE CAR END WALL AND THE BULKHEAD. NAIL TO THE STRUT LEDGER AND/OR LAMINATE W/1-APPLICABLY SIZED NAIL EVERY 6".

LOAD-SIDE OF BULKHEAD.

PLACE THIS SIDE OF THE BULKHEAD AGAINST THE CAR END WALL.

BULKHEAD
FOR USE AT THE END OF A LOAD OF SKIDDED UNITS (BOXES CROSSWISE).



CENTER GATE FOR A LOAD OF SEPARATE LOADING PROJECTILES. SEE THE DETAIL ON PAGE 76. NOTE TO OMIT THE STRUT LEDGERS.

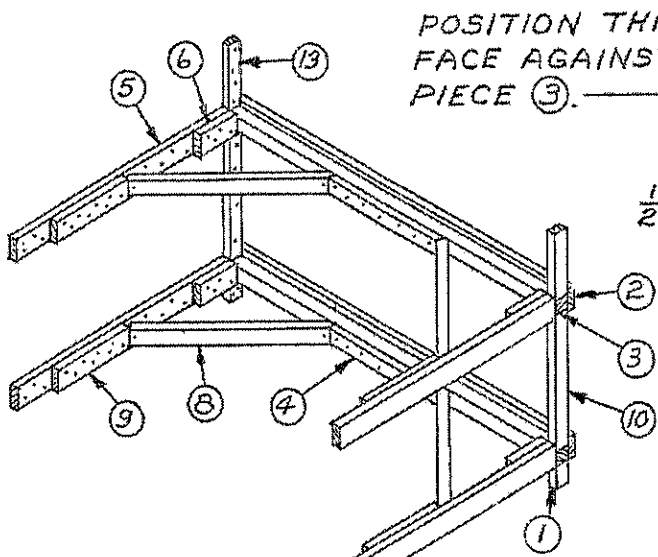
SHIM MATERIAL, 6" WIDE PLYWOOD OR DIMENSIONAL LUMBER OF A THICKNESS AND A LENGTH AS REQUIRED TO FILL THE VOID BETWEEN THE CAR END WALL AND THE BULKHEAD. NAIL TO THE FILLER PIECE AND/OR LAMINATE W/1-APPLICABLY SIZED NAIL EVERY 6".

LOAD-SIDE OF BULKHEAD.

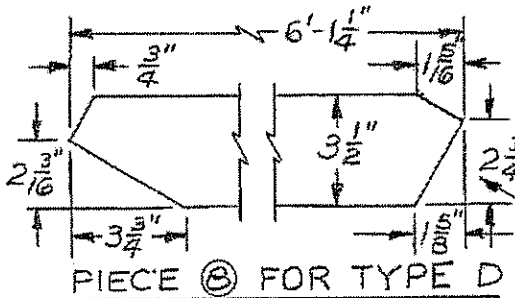
FILLER PIECE, 2"x6"x CAR WIDTH MINUS 1" (2 REQD), NAIL TO THE VERTICAL PIECES W/3-10d NAILS EACH JOINT.

PLACE THIS SIDE OF BULKHEAD AGAINST THE CAR END WALL.

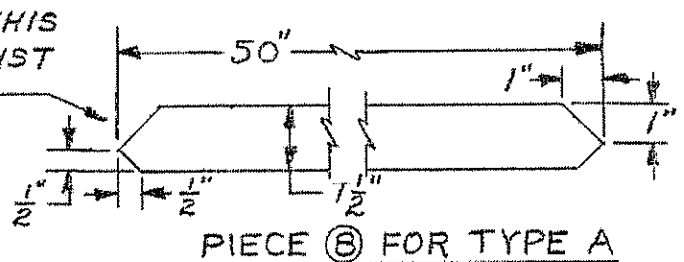
BULKHEAD
FOR USE AT THE END OF A LOAD OF SEPARATE LOADING PROJECTILES.



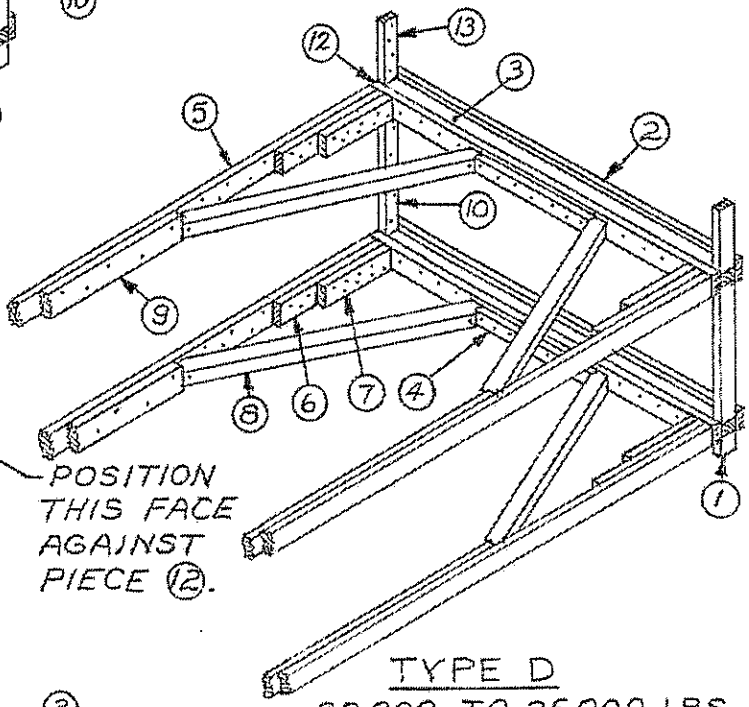
TYPE A
8,000 LBS OR LESS



PIECE 8 FOR TYPE D

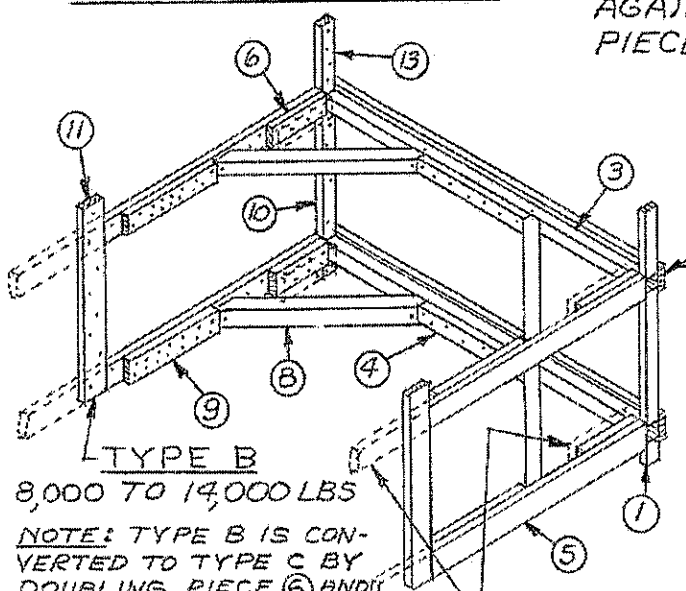


PIECE 6 FOR TYPE A



TYPE D
20,000 TO 25,000 LBS

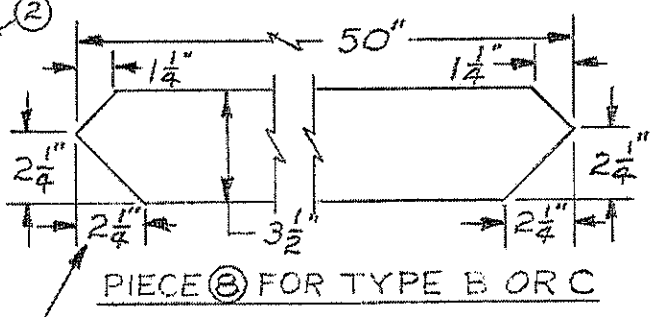
POSITION THIS FACE AGAINST PIECE 12.



TYPE B
8,000 TO 14,000 LBS

NOTE: TYPE B IS CONVERTED TO TYPE C BY DOUBLING PIECE 6 AND EXTENDING PIECE 5 ACROSS DOORWAY TO MEET BRACE IN OPPOSITE END. OMIT PIECE 11

TYPE C
14,000 TO 20,000 LBS.



PIECE 6 FOR TYPE B OR C

POSITION THIS FACE AGAINST PIECE 3.

PARTIAL-LAYER BRACING

LUMBER AND NAILING DATA

TYPE BRACE	PIECE NO.	SIZE	NO. REQD	NAIL TO	NAIL	
					NUMBER	SIZE
A-B-C-D	1	2" x 4" x 6"	2	WALL	3	10d
A-B-C-D	2	2" x 6" x CAR WIDTH	2	3	2 PER FT	12d
A-B-C-D	3	4" x 4" x CAR WIDTH	2	-	-	-
A-B-C-D	4	2" x 4" x (SEE NOTE *)	2	3	7	16d
A-B	5	2" x 6" x 72"	4	WALL	16	10d
C-D	5	2" x 6" x EXTEND ACROSS DOOR	4	WALL	40	10d
A-	6	2" x 6" x 12"	4	5	4	16d
B-	6	2" x 6" x 18"	4	5	7	16d
C-	6	2" x 6" x 18"	8	5-6	7	16d
D	6	2" x 6" x 36"	4	5	10	16d
D	7	2" x 6" x 24"	4	6	7	16d
A-	8	2" x 4" (SEE DETAIL)	4	3-5	1 EA END	16d
B-C-	8	4" x 4" (SEE DETAIL)	4	3-5	1 EA END	60d
D	8	4" x 4" (SEE DETAIL)	4	5-12	1 EA END	60d
A-	9	2" x 6" x 24"	4	5	8	16d
B-C	9	2" x 6" x 30"	4	5	14	16d
D	9	2" x 6" x EXTEND ACROSS DOOR	4	5	18	16d
A-B-C-D	10	2" x 4" - GOVERNED BY UNIT HEIGHT	2	WALL	4	10d
B	11	2" x 6" - SLIGHTLY ABOVE LOAD	2	WALL	8	10d
D	12	2" x 6" x CAR WIDTH	2	3	2 PER FT	12d
A-B-C-D	13	2" x 4" x 18", IF CAR HEIGHT PERMITS	2	WALL	4	10d
APPROX BOARD FEET LUMBER PER BRACE (BASED ON 9'-2" WIDE CAR)			TYPE A --- 101 TYPE B --- 125 TYPE C --- 136 TYPE D --- 175			

NOTE *: PIECE NO. 4 IS 28" LONG FOR 8'-6" WIDE CAR, 31" LONG FOR 8'-9" CAR, AND 36" LONG FOR 9'-2" CAR.

CAUTION:

PIECES MARKED ①, ②, ③, ⑩, ⑪, ⑫ AND ⑬ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDE WALL. IT IS ALRIGHT FOR THE END OF A DIAGONAL BRACE TO BEAR IN FRONT OF A DOOR OPENING; HOWEVER, THE ADJACENT PIECE MARKED ⑤ MUST BE DOUBLED AND EXTENDED ACROSS AND FAR ENOUGH PAST THE DOOR OPENING TO PROVIDE FOR THE SPECIFIED NAILING.

PARTIAL-LAYER BRACING

LONG KNEE BRACE, 4" x 4" x CUT TO FIT (8 REQD). SEE DETAIL ON PAGE 14. TOENAIL W/2-16d NAILS AT EACH END.

TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 14. WIRE TIE EACH END TO A SKID STRAP W/NO. 14 GAGE WIRE.

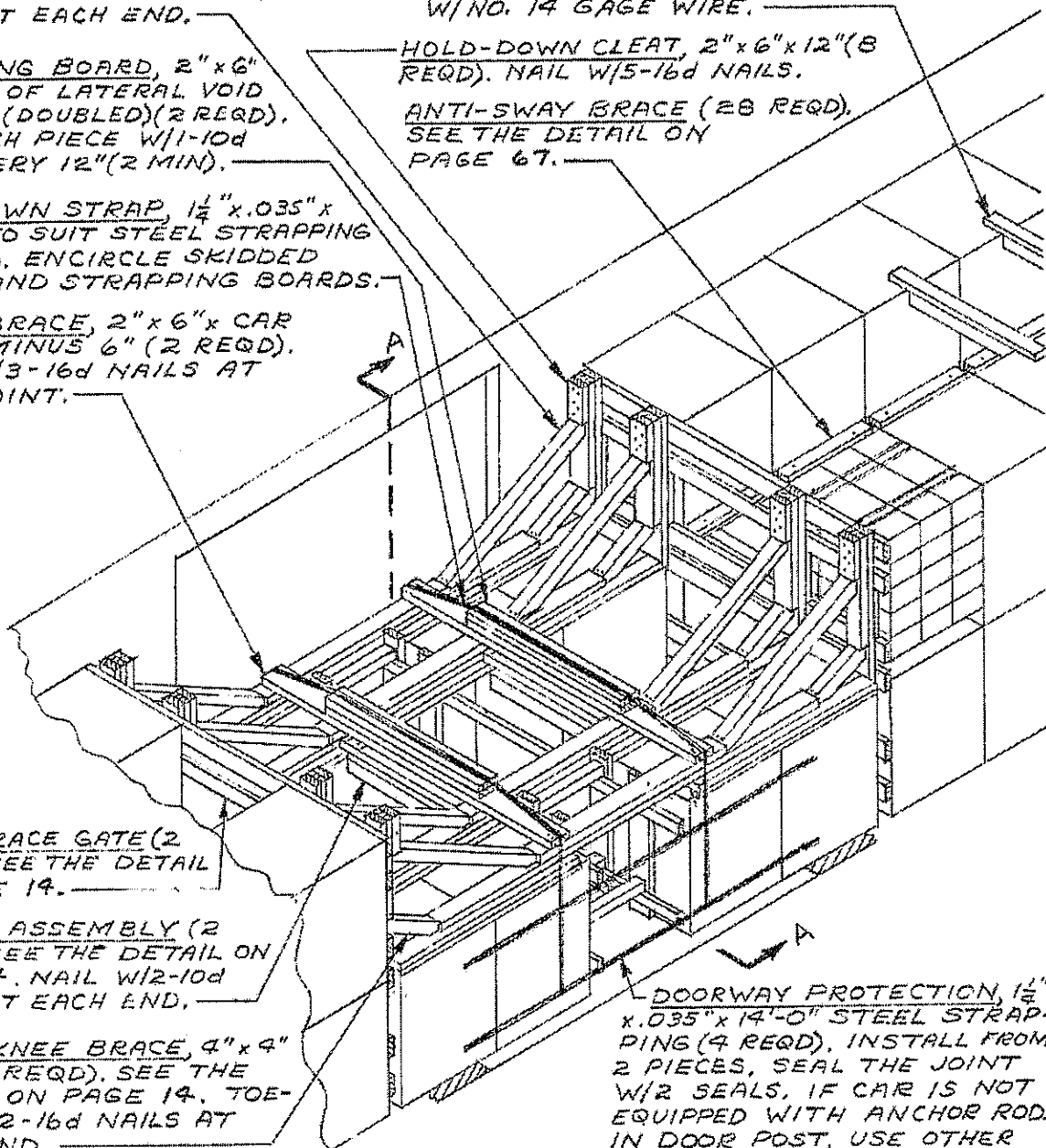
STRAPPING BOARD, 2" x 6" x WIDTH OF LATERAL VOID PLUS 16" (DOUBLED) (2 REQD). NAIL EACH PIECE W/1-10d NAIL EVERY 12" (2 MIN).

HOLD-DOWN CLEAT, 2" x 6" x 12" (8 REQD). NAIL W/5-16d NAILS.

ANTI-SWAY BRACE (28 REQD). SEE THE DETAIL ON PAGE 67.

HOLD-DOWN STRAP, 1 1/2" x .035" x LENGTH TO SUIT STEEL STRAPPING (2 REQD). ENCIRCLE SKIDDED UNITS AND STRAPPING BOARDS.

CROSS BRACE, 2" x 6" x CAR WIDTH MINUS 6" (2 REQD). NAIL W/3-16d NAILS AT EACH JOINT.



KNEE BRACE GATE (2 REQD). SEE THE DETAIL ON PAGE 14.

SPACER ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 14. NAIL W/2-10d NAILS AT EACH END.

SHORT KNEE BRACE, 4" x 4" x 20" (8 REQD). SEE THE DETAIL ON PAGE 14. TOENAIL W/2-16d NAILS AT EACH END.

DOORWAY PROTECTION, 1 1/2" x .035" x 14'-0" STEEL STRAPPING (4 REQD). INSTALL FROM 2 PIECES, SEAL THE JOINT W/2 SEALS, IF CAR IS NOT EQUIPPED WITH ANCHOR RODS IN DOOR POST, USE OTHER METHODS DEPICTED ELSEWHERE HEREIN.

NOTE:
THE KNEE BRACES AS SHOWN ARE ADEQUATE FOR RETAINING NOT MORE THAN 20,000 LBS IN EACH END OF A CAR.

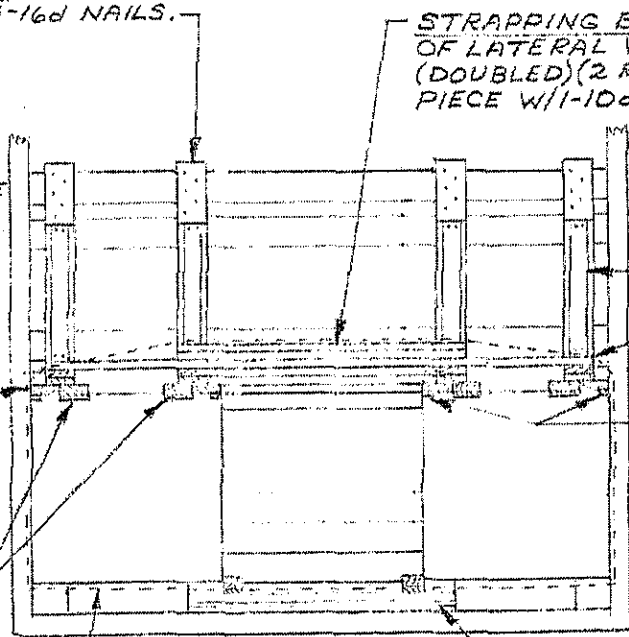
NOTE:
THE PRINCIPLES OF BLOCKING AND BRACING SHOWN ABOVE ARE ALSO APPLICABLE FOR PALLET UNITS OF BOXES.

TYPICAL LCL LOAD OF SKIDDED UNITS IN A 9'-2" WIDE ALL-STEEL BOX CAR USING KNEE BRACE METHOD OF PARTIAL-LAYER BRACING

HOLD-DOWN CLEAT, 2" x 6" x 12"
(8 REQ'D). NAIL W/5-16d NAILS.

STRAPPING BOARD, 2" x 6" x WIDTH
OF LATERAL VOID PLUS 16"
(DOUBLED)(2 REQ'D). NAIL EACH
PIECE W/1-10d NAIL EVERY 12"

BEARING PIECE, 2" x
6" x CUT TO FIT BE-
TWEEN CENTER GATE
AND KNEE BRACE
GATE MINUS 3" (16
REQ'D), POSITION 2
SIDE BY SIDE TO BE
CENTERED AGAINST
VERTICAL OF GATE.
TOENAIL W/1-12d
NAIL EACH.



LONG KNEE BRACE.

CROSS BRACE.

FILLER PIECE, 1" x 2" x
LENGTH OF BEARING
PIECE (8 REQ'D). NAIL
W/1-6d NAIL EVERY
12". NOT REQ'D FOR
BOXES WITHOUT
TOP CLEATS.

FILLER PIECE, 1" x 6" x
LENGTH OF BEARING
PIECE (8 REQ'D). NAIL
W/1-6d NAIL EVERY
12". NOT REQ'D FOR
BOXES WITHOUT
TOP CLEATS.

HOLD-DOWN STRAP.

SECTION A-A

ANTI-SWAY BRACE.

STRUT, 4" x 4" x CUT TO FIT (8
REQ'D). TOENAIL TO CENTER
GATE VERTICALS W/2-16d
NAILS AT EACH END.

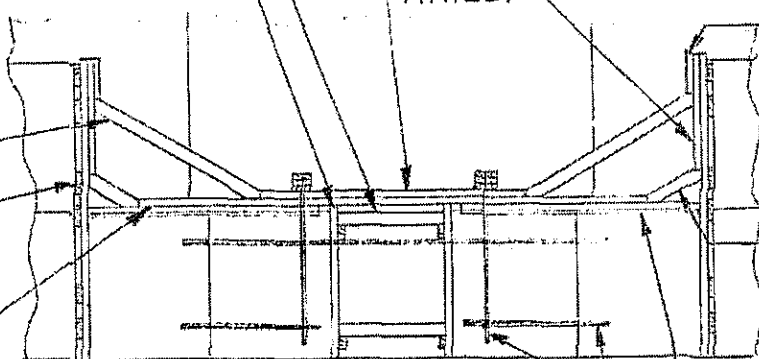
BACK-UP CLEAT, 2" x 6" x CUT TO FIT
BETWEEN LONG KNEE BRACES (9 REQ'D).
NAIL W/1-10d NAIL EVERY 6".

CENTER GATE (2 REQ'D). SEE
THE DETAIL ON PAGE 67.

HOLD-DOWN CLEAT, 2" x 6" x UNIT
HEIGHT MINUS 9" (8 REQ'D). NAIL TO
KNEE BRACE GATE W/12-10d
NAILS.

LONG KNEE
BRACE.

KNEE BRACE
GATE.



HOLD-DOWN
CLEAT, 2" x 6" x
12" (8 REQ'D).
NAIL W/5-16d
NAILS.

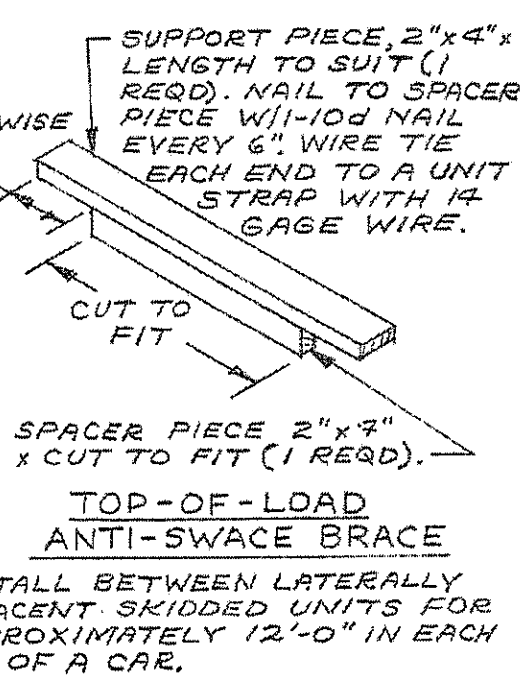
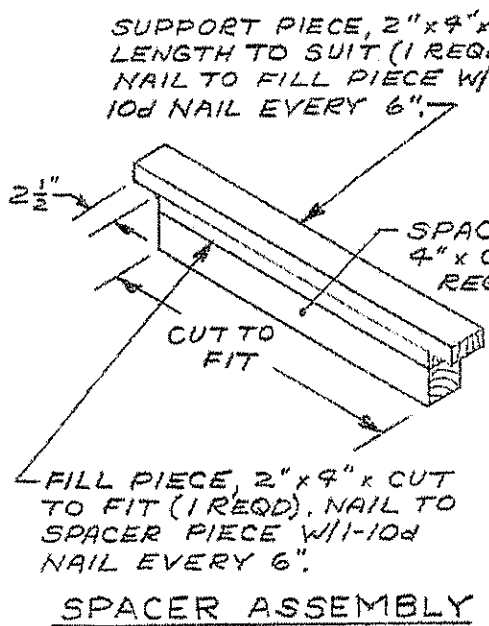
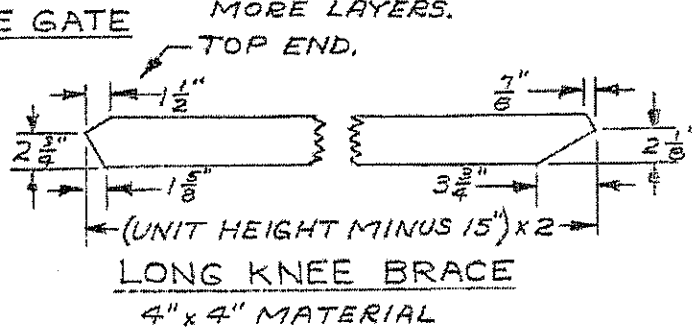
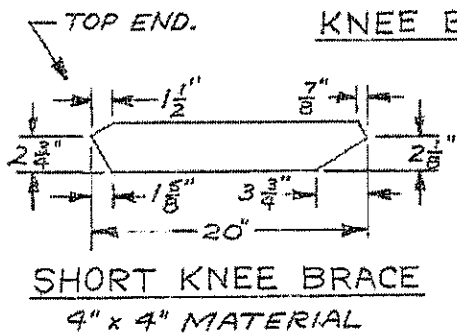
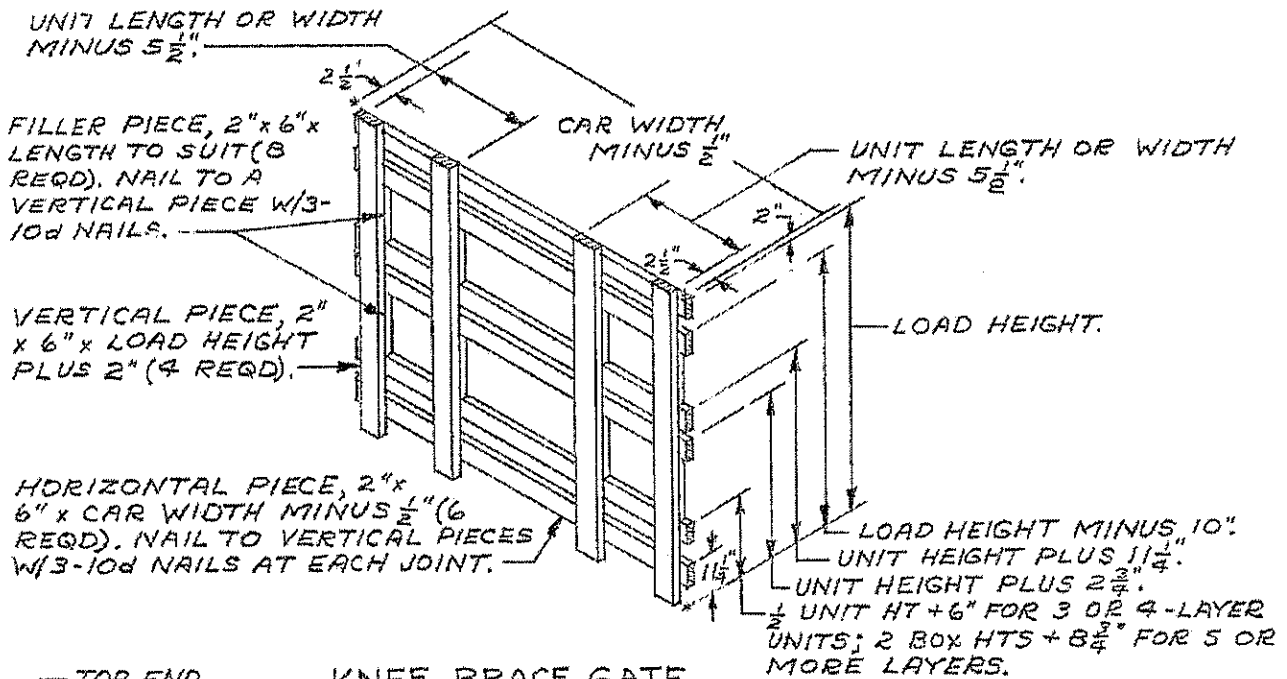
SHORT KNEE
BRACE.

FILLER PIECE, 1" x 2"
x LENGTH OF BEAR-
ING PIECE (8 REQ'D).
NAIL W/1-6d NAIL
EVERY 12".

BACK-UP CLEAT, 2" x 6" x CUT TO
FIT BETWEEN THE SHORT KNEE
BRACES (9 REQ'D). NAIL TO EACH
BEARING PIECE W/1-10d NAIL
EVERY 12".

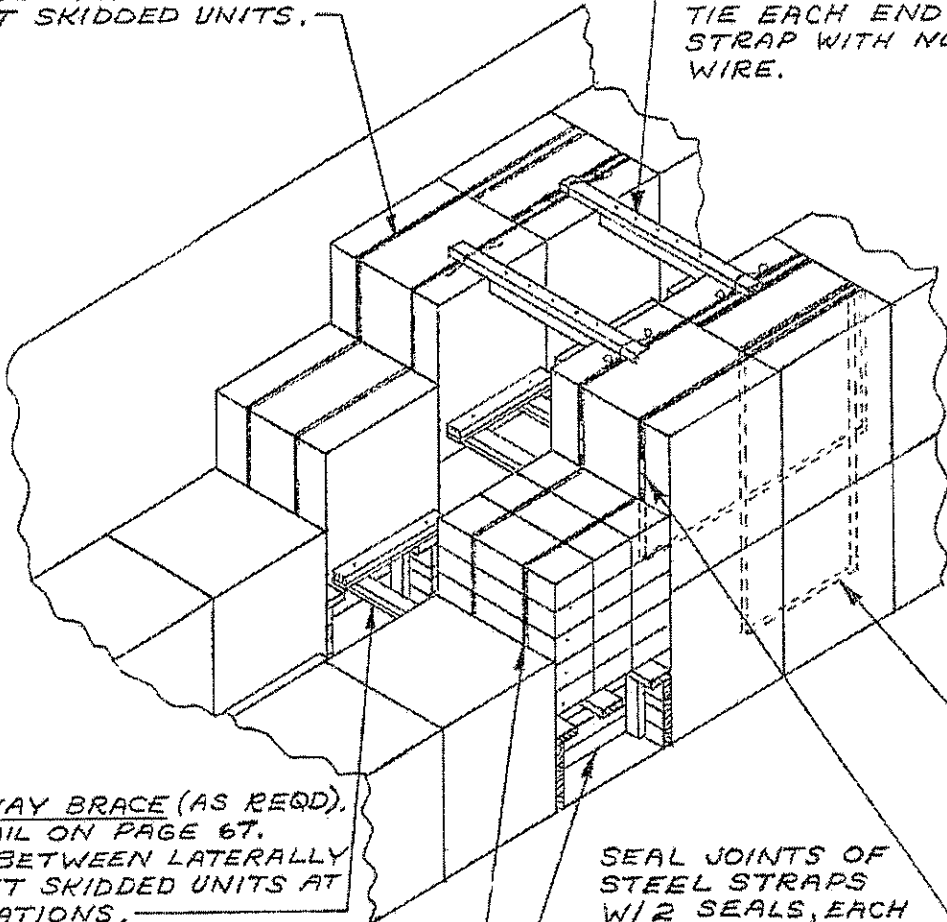
HOLD-DOWN STRAP.

DOORWAY PROTECTION
STRAP.



BUNDLING STRAP, $1\frac{1}{2}$ " x .035" x LENGTH TO SUIT STEEL STRAPPING (4 REQD), INSTALL TO ENCIRCLE TWO LONGITUDINALLY ADJACENT SKIDDED UNITS.

TOP-OF-LOAD ANTI-SWAY BRACE (AS REQD), SEE THE DETAIL ON PAGE 14. WIRE TIE EACH END TO SKID STRAP WITH NO. 14 GAGE WIRE.



ANTI-SWAY BRACE (AS REQD), SEE DETAIL ON PAGE 67. INSTALL BETWEEN LATERALLY ADJACENT SKIDDED UNITS AT ALL LOCATIONS.

SEAL JOINTS OF STEEL STRAPS W/ 2 SEALS, EACH DOUBLE CRIMPED.

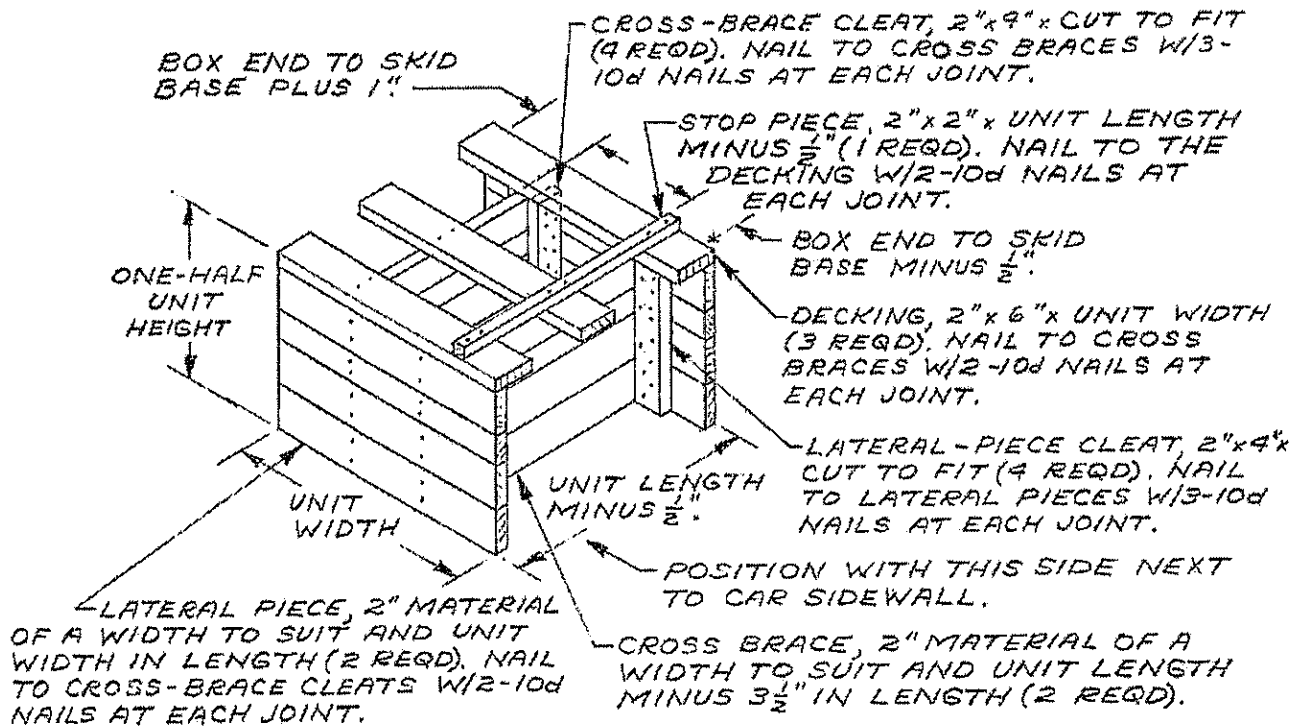
REINFORCING STRAP, $1\frac{1}{2}$ " x .035" x LENGTH TO SUIT STEEL STRAPPING (4 REQD). INSTALL TO ENCIRCLE SKIDDED UNITS WHICH ARE ON RISERS. POSITION NEAR POSTS.

UNITIZING STRAP, $1\frac{1}{2}$ " x .035" x LENGTH TO SUIT STEEL STRAPPING (4 REQD). INSTALL TO ENCIRCLE THE SECOND STACK OF SKIDDED UNITS FROM THE RISERS.

RISER (2 REQD), SEE THE DETAILS ON PAGE 16.

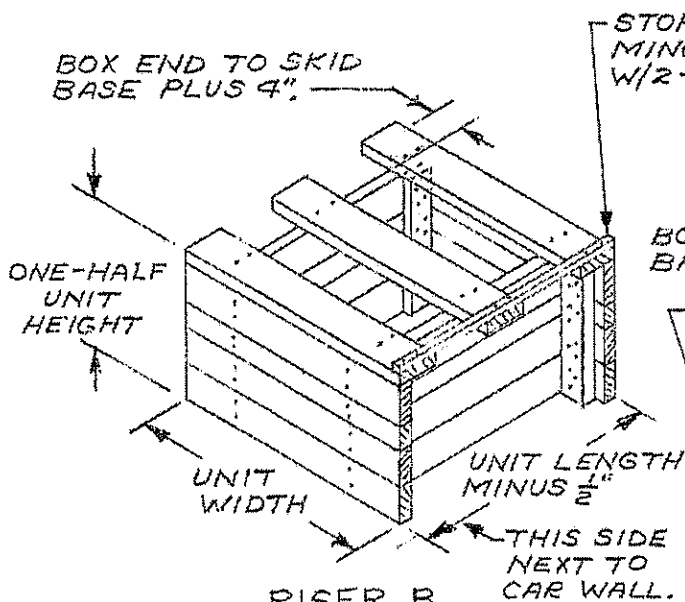
NOTE:
THE PRINCIPLES OF BLOCKING AND BRACING SHOWN ABOVE ARE ALSO APPLICABLE FOR PALLET UNITS OF BOXES. THE LADING WEIGHT RETAINED BY A RISER MUST NOT EXCEED 8,000 POUNDS.

TYPICAL LCL LOAD OF SKIDDED UNITS IN A 9'-2" WIDE ALL-STEEL BOX CAR USING RISER METHOD OF PARTIAL-LAYER BRACING



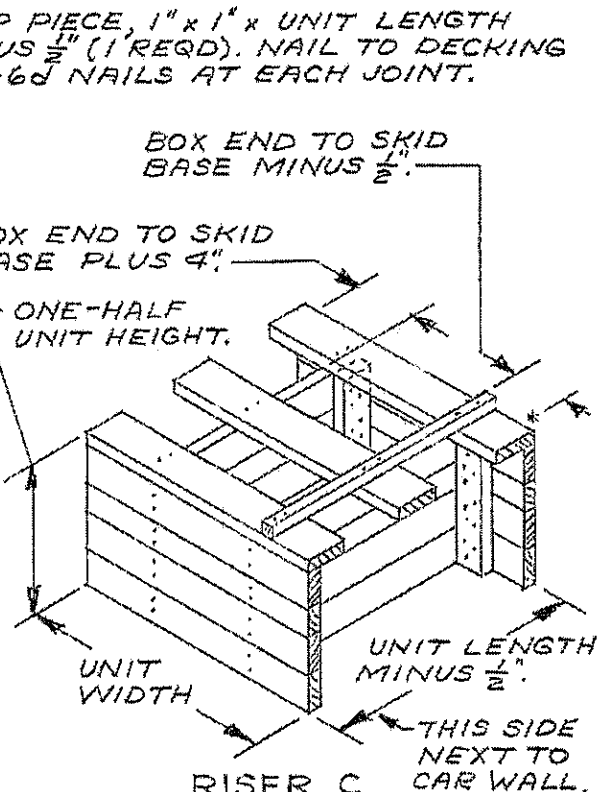
RISER A

FOR TYPE I AND TYPE IA SKID BASES WHEN BOXES ARE CROSSWISE IN CAR.



RISER B

FOR TYPE II SKID BASES WHEN BOXES HAVE TOP CLEATS AND ARE CROSSWISE IN CAR.



RISER C

FOR TYPE II SKID BASES WHEN BOXES DO NOT HAVE TOP CLEATS AND ARE CROSSWISE IN CAR.

NOTE:
FOR MATERIAL NOT SPECIFIED BY THE DETAILS FOR RISER B AND RISER C, REFER TO THE RISER A DETAIL ABOVE.

DECKING, 2" x 6" x UNIT LENGTH (2 REQD). NAIL TO CROSS BRACES W/2-10d NAILS AT EACH JOINT.

CROSS-BRACE CLEAT, 2" x 4" x CUT TO FIT (6 REQD). NAIL TO CROSS BRACES W/3-10d NAILS AT EACH JOINT.

BOX END TO SKID BASE PLUS 1"

STOP PIECE, 2" x 2" x CUT TO FIT (1 REQD). NAIL TO DECKING W/2-10d NAILS AT EACH JOINT.

ONE-HALF UNIT HEIGHT

CROSS BRACE, 2" MATERIAL OF A WIDTH TO SUIT AND UNIT WIDTH MINUS 3 1/2" IN LENGTH (3 REQD).

UNIT LENGTH

UNIT WIDTH MINUS 1/2"

LATERAL PIECE, 2" MATERIAL OF A WIDTH TO SUIT BY UNIT LENGTH (2 REQD). NAIL TO CROSS BRACE CLEATS W/2-10d NAILS AT EACH JOINT.

POSITION WITH THIS SIDE NEXT TO CAR SIDE WALL.

RISER D

FOR TYPE II SKID BASES WHEN BOXES ARE LENGTHWISE IN CAR.

DECKING, 2" x 6" x UNIT LENGTH (2 REQD). NAIL TO CROSS BRACES W/2-10d NAILS AT EACH JOINT.

CROSS-BRACE CLEAT, 2" x 4" x CUT TO FIT (6 REQD). NAIL TO CROSS BRACES W/3-10d NAILS AT EACH JOINT.

BOX END TO SKID BASE MINUS 1"

STOP PIECE, 2" x 4" x 12" (2 REQD). NAIL TO DECKING W/3-10d NAILS.

ONE-HALF UNIT HEIGHT

CROSS BRACE, 2" MATERIAL OF A WIDTH TO SUIT AND UNIT WIDTH MINUS 3 1/2" IN LENGTH (3 REQD).

UNIT LENGTH

UNIT WIDTH MINUS 1/2"

LATERAL PIECE, 2" MATERIAL OF A WIDTH TO SUIT BY UNIT LENGTH (2 REQD). NAIL TO CROSS BRACE CLEATS W/2-10d NAILS AT EACH JOINT.

POSITION WITH THIS SIDE NEXT TO CAR SIDEWALL.

RISER E

FOR TYPE I AND TYPE IA SKID BASES WHEN BOXES ARE LENGTHWISE IN CAR.

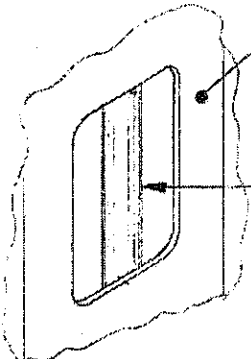
BULKHEAD STRAP, 2" x .050" x LENGTH TO SUIT STEEL STRAPPING (3 REQD). INSTALL FROM TWO (2) PIECES AS SHOWN BY THE "STRAP APPLICATION" VIEW BELOW.

BUNDLING STRAP, 1 1/2" x .035" x LENGTH TO SUIT STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE SKIDDED UNIT AND TO EXTEND BEHIND GATE HORIZONTAL PIECES.

BULKHEAD GATE (1 REQD). SEE THE "BULKHEAD GATE A" DETAIL ON PAGE 19.

STRAP RETAINER, 2" x 4" x LENGTH TO SUIT (2 REQD). NAIL TO BULKHEAD GATE W/ 2-12# NAILS ABOVE AND 2-12# NAILS BELOW EACH BULKHEAD STRAP.

CAR SIDEWALL (INSIDE).



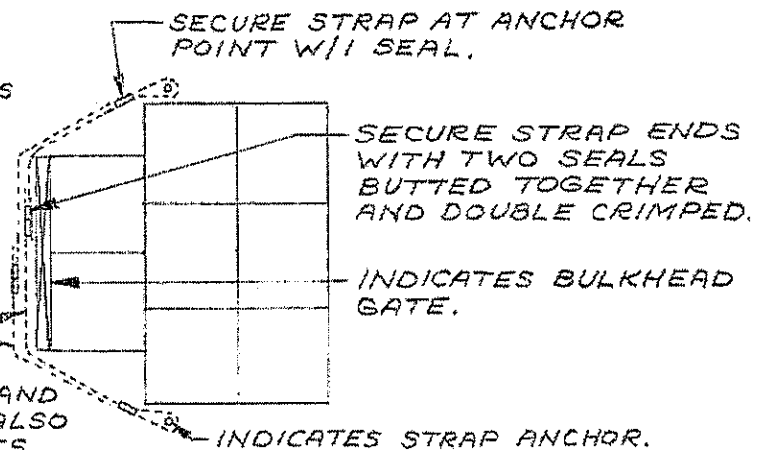
TYPICAL STRAP ANCHOR

1" DIAMETER ROUND STOCK WELDED TO CAR SIDEWALL.

NOTE:
A BULKHEAD GATE WITH TWO (2) BULKHEAD STRAPS WILL RETAIN 12,000 POUNDS. A GATE WITH THREE (3) STRAPS WILL RETAIN 18,000 POUNDS.

EACH BULKHEAD STRAP CONSISTS OF TWO PIECES. EACH PIECE IS INSTALLED SO THAT ONE END EXTENDS APPROXIMATELY 48" BEYOND OTHER END SO THAT THE SEALS FOR ONE PAIR OF STRAP ENDS WILL NOT BE APPLIED ON TOP OF THE SEALS FOR THE OTHER PAIR OF STRAP ENDS.

NOTE:
THE PRINCIPLES OF BLOCKING AND BRACING SHOWN ABOVE ARE ALSO APPLICABLE FOR PALLET UNITS OF BOXES.



SECURE STRAP AT ANCHOR POINT W/ 1 SEAL.

SECURE STRAP ENDS WITH TWO SEALS BUTTED TOGETHER AND DOUBLE CRIMPED.

INDICATES BULKHEAD GATE.

INDICATES STRAP ANCHOR.

STRAP APPLICATION

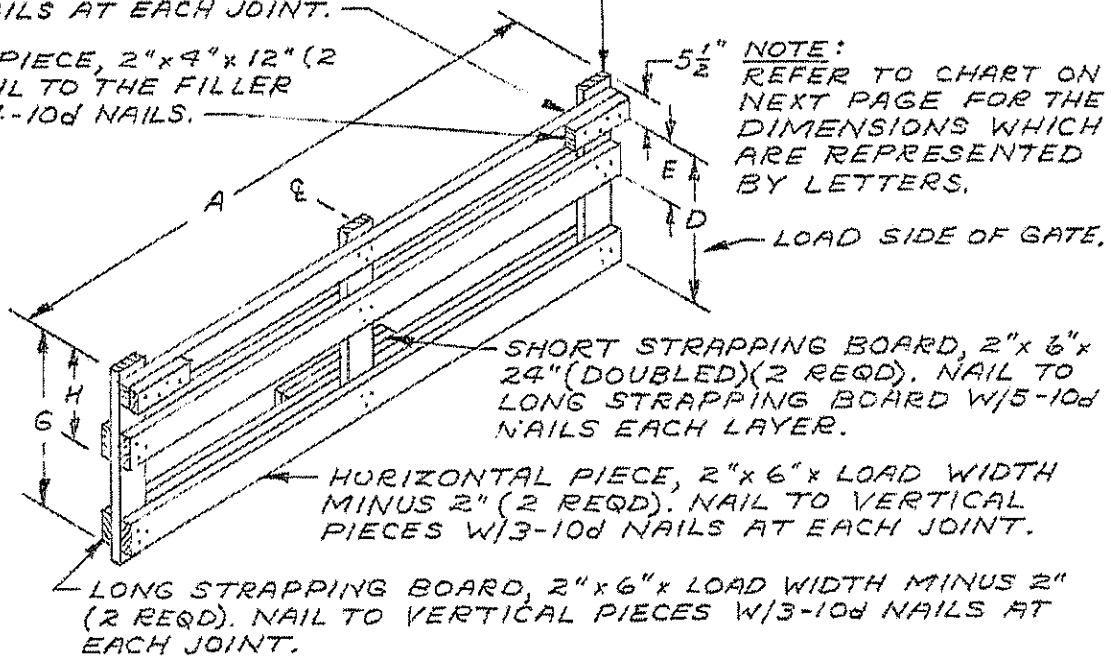
TYPICAL LCL LOAD OF SKIDDED UNITS IN A 9'-6" WIDE ALL-STEEL ANCHOR-EQUIPPED BOX CAR USING BULKHEAD GATE METHOD OF PARTIAL-LAYER BRACING

FILLER PIECE, 2"x4"x LOAD WIDTH MINUS 2" (1 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

VERTICAL PIECE, 2"x6"x UNIT HEIGHT PLUS 1 1/2" (3 REQD).

SUPPORT PIECE, 2"x4"x 12" (2 REQD). NAIL TO THE FILLER PIECE W/4-10d NAILS.

NOTE:
REFER TO CHART ON NEXT PAGE FOR THE DIMENSIONS WHICH ARE REPRESENTED BY LETTERS.

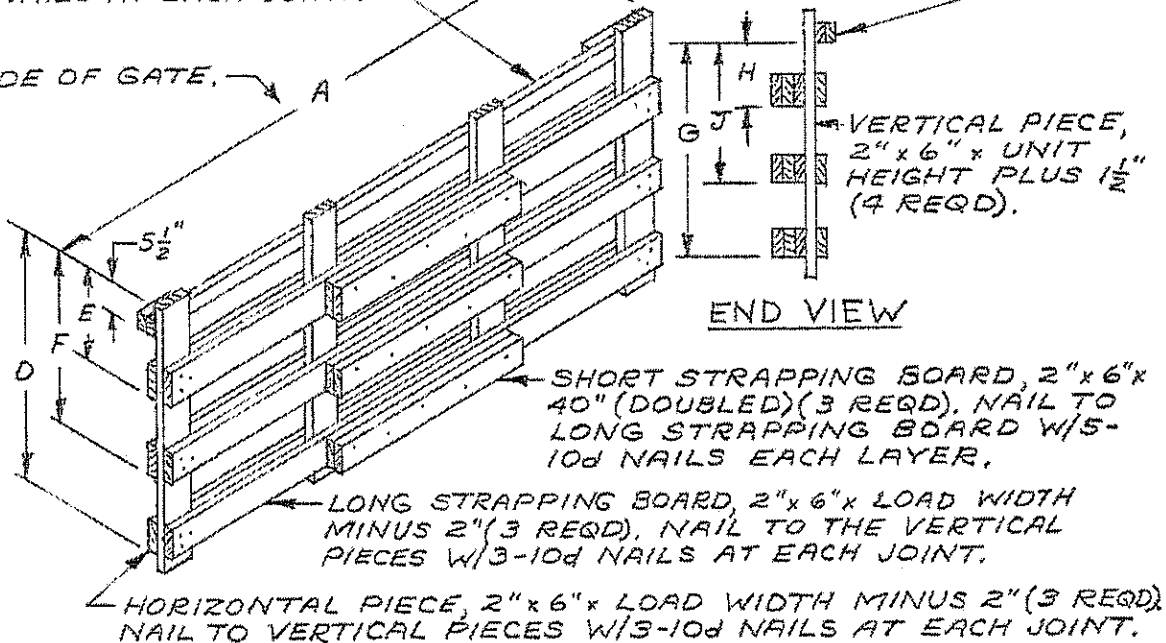


BULKHEAD GATE A
FOR 2-WIDE LOADS W/O
A CENTER VOID.

FILLER PIECE, 2"x4"x LOAD WIDTH MINUS 2" (1 REQD). NAIL TO VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

SUPPORT PIECE, 2"x4"x 12" (2 REQD). NAIL TO FILLER PIECE W/4-10d NAILS.

LOAD SIDE OF GATE, → A



END VIEW

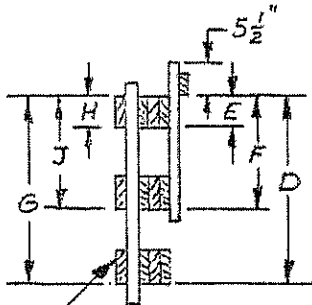
BULKHEAD GATE B

FOR 3-WIDE LOADS HAVING LITTLE
OR NO LATERAL VOID.

SUPPORT PIECE, 2"x4" x WIDTH OF LATERAL VOID PLUS 12" (1 REQD). NAIL TO RISER PIECES W/3-10d NAILS AT EACH JOINT.

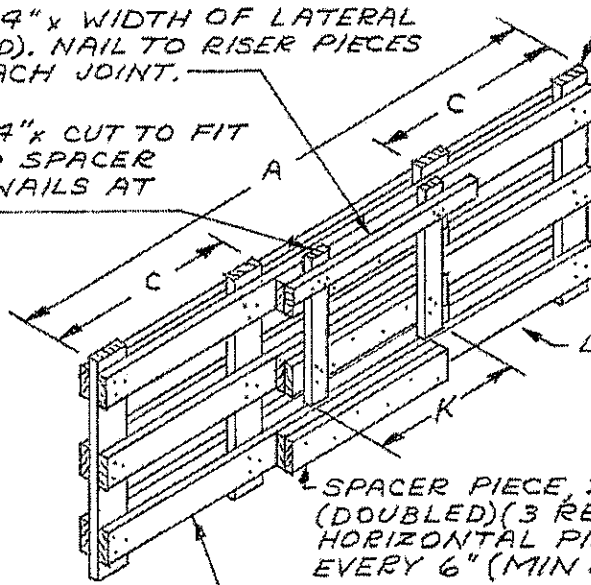
RISER PIECE, 2"x4" x CUT TO FIT (2 REQD), NAIL TO SPACER PIECES W/3-10d NAILS AT EACH JOINT.

VERTICAL PIECE, 2" x 6" x UNIT HEIGHT MINUS " (4 REQD).



END VIEW

STRAPPING BOARD, 2"x6" x LOAD WIDTH MINUS 2" (3 REQD). NAIL TO VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.



SPACER PIECE, 2"x6" x CUT TO FIT (DOUBLED) (3 REQD). NAIL TO THE HORIZONTAL PIECE W/1-10d NAIL EVERY 6" (MIN 2) IN EACH LAYER.

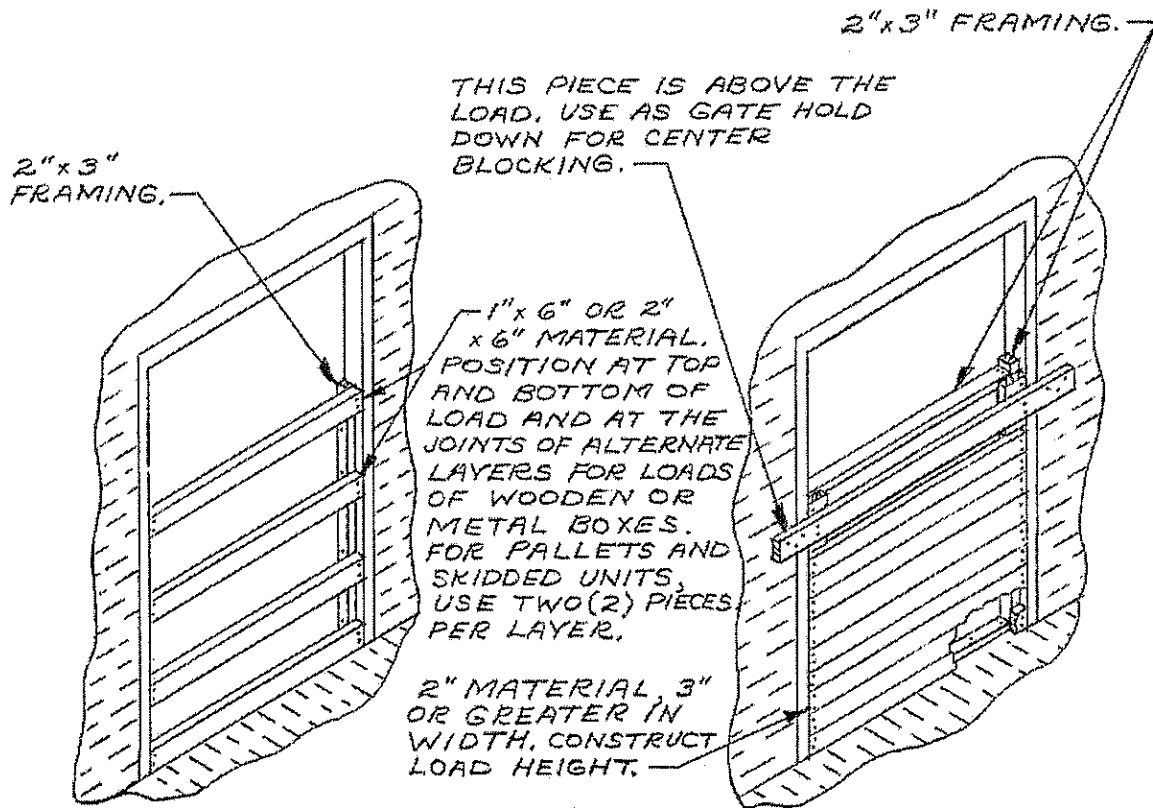
HORIZONTAL PIECE, 2"x6" x LOAD WIDTH MINUS 2" (3 REQD). NAIL TO VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

BULKHEAD GATE C

FOR 2-WIDE LOADS AGAINST WALL WITH THE CENTER AREA VOID.

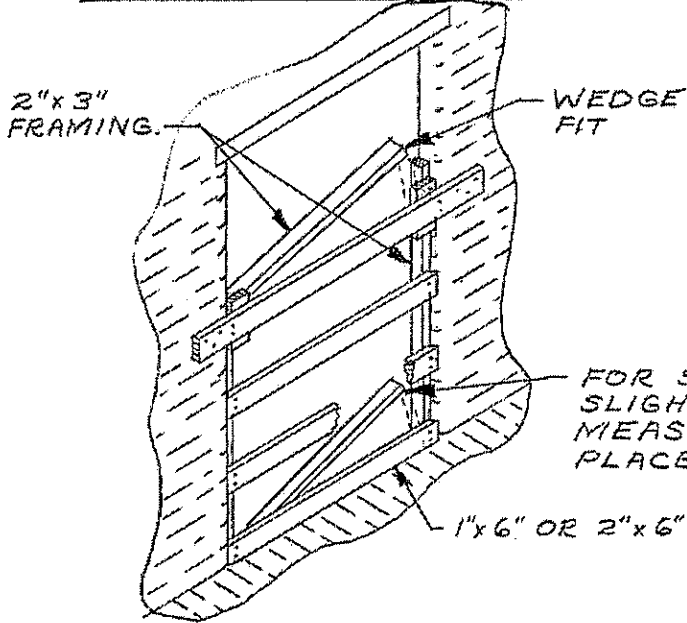
BULKHEAD GATE CHART

LOCATION	DESCRIPTION FOR POSITIONING LUMBER IN ASSEMBLY
A	LOAD WIDTH MINUS 2".
B	UNIT LENGTH OR WIDTH PLUS 1 3/4".
C	UNIT LENGTH OR WIDTH MINUS 1".
D	UNIT HEIGHT MINUS 6".
E	5 1/2" FOR UNITS CONSISTING OF 4 OR LESS LAYERS; 1 BOX HEIGHT PLUS 2 3/4" FOR UNITS CONSISTING OF 5 OR MORE LAYERS.
F	3 BOX HEIGHTS PLUS 2 3/4" FOR UNITS CONSISTING OF 5 OR MORE LAYERS; 2 BOX HEIGHTS PLUS 2 3/4" FOR 4-LAYER UNITS; 1 1/2 BOX HEIGHTS PLUS 2 3/4" FOR 3-LAYER UNITS; 1 BOX HEIGHT PLUS 2 3/4" FOR 2-LAYER UNITS. NOT REQUIRED FOR UNITS 1 BOX HIGH.
G	DIMENSION "D" PLUS 2" OR MINUS 4".
H	DIMENSION "E" PLUS 4" OR MINUS 2".
J	DIMENSION "F" PLUS OR MINUS 4".
K	WIDTH OF LATERAL VOID MINUS 4".



FOR USE WITH DOOR POSTS OF WOOD, OR STEEL WITH HOLES FOR NAILING.

FOR USE WITH SQUARED STEEL DOOR POSTS WITHOUT NAILING HOLES.



SOLID-FACED GATES AS SHOWN ABOVE ARE REQUIRED FOR LOADS OF FIBER BOARD BOXES AND OTHER LIGHTLY CONSTRUCTED BOXES AND CONTAINERS.

FOR STEEL THRESHOLDS, CUT SLIGHTLY LONGER THAN MEASURED AND WEDGE INTO PLACE.

FOR USE WITH ROUNDED STEEL DOOR POSTS.

NOTE:
FOR CARS EQUIPPED WITH PLUG DOORS, SEE GENERAL RULE 20 ON PAGE 5.

DOORWAY PROTECTION

LOAD DIVIDER EQUIPPED CARS

GENERAL INFORMATION

CARS EQUIPPED WITH LOAD DIVIDERS HAVE BEEN TESTED AND APPROVED FOR THE LOADING OF AMMUNITION ITEMS, SUBJECT TO PROVISIONS OF THE FOLLOWING NOTES AND ILLUSTRATIONS. (DETAILED LOADING METHODS FOR SELECTED AMMUNITION ITEMS ARE CONTAINED WITHIN THIS PAMPHLET).

CARS EQUIPPED WITH LOAD DIVIDERS MUST NOT BE USED FOR SHIPMENTS OF SO-CALLED BULK EXPLOSIVES (SEE NOTE 6 ON THE FOLLOWING PAGE).

SEE NOTE 2 BELOW FOR THOSE MANUFACTURERS WHOSE LOAD DIVIDER BULKHEADS HAVE BEEN TESTED AND APPROVED.

LOAD DIVIDER CARS FOR LOADING OF AMMUNITION ITEMS MUST BE CUSHIONED WITH UNDER CAR OR END-OF-CAR CUSHIONING HAVING AT LEAST 15" OF TRAVEL (SEE NOTE 1 BELOW).

THOSE LOAD DIVIDER EQUIPPED CARS HAVING DRAIN HOLES MUST HAVE SAID DRAINS PLUGGED WITH A NON-FLAMMABLE MATERIAL PRIOR TO BEING SELECTED FOR LOADING WITH EXPLOSIVE AMMUNITION ITEMS.

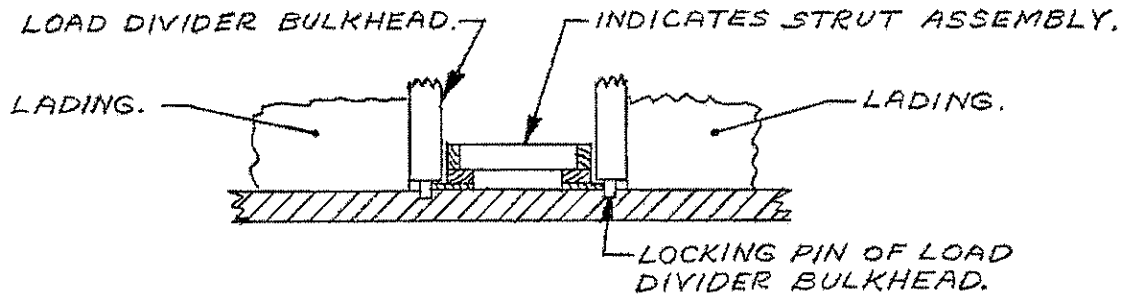
IN ADDITION TO PROVISIONS OF THE DEPARTMENT OF TRANSPORTATION REGULATIONS COVERING INSPECTION AND CERTIFICATION OF CARS FOR CLASS "A" EXPLOSIVES, THE BULKHEADS, LOCKING MECHANISM AND LOCKING PINS OF LOAD DIVIDER EQUIPPED CARS MUST BE CAREFULLY INSPECTED PRIOR TO BEING CERTIFIED FOR CLASS "A" OR SELECTED FOR CLASS "B" AND "C", EXPLOSIVE AMMUNITION LOADING

LOAD DIVIDER NOTES

1. CARS THAT ARE EQUIPPED WITH LOAD DIVIDERS MUST BE CUSHIONED. ONLY CUSHIONED CARS THAT HAVE SLIDING CENTER SILL TYPE CUSHIONING DEVICES OR END-OF-CAR TYPE DEVICES WHICH HAVE AT LEAST 15" OF TRAVEL ARE ACCEPTABLE.
2. ONLY CARS EQUIPPED WITH LOAD DIVIDERS MANUFACTURED BY EVANS EQUIPCO, OR PRECO MAY BE USED. LOAD DIVIDERS MANUFACTURED BY TRANSCO ARE NOT ACCEPTABLE, WHETHER OF ALUMINUM OR STEEL CONSTRUCTION.
3. BOX CARS EQUIPPED WITH ADJUSTABLE SIDE FILLERS THAT HAVE $\frac{3}{8}$ " OR THICKER PANELS MAY BE USED. HOWEVER THESE SIDE FILLERS MUST NOT BE USED FOR LATERAL BLOCKING; THEY MUST BE RETRACTED AND LOCKED AGAINST THE SIDEWALL. A "FILL PIECE" MUST BE INSTALLED IN THE VOID BETWEEN THE CAR WALL AND THE SIDE FILLER PANEL. SEE THE "TYPICAL TYPE A" VIEW ON PAGE 26 FOR GUIDANCE. IF THE BACK OF THE SIDE FILLER PANELS ARE REINFORCED WITH VERTICAL AND HORIZONTAL STEEL MEMBERS AS SHOWN IN THE "TYPICAL TYPE B" VIEW ON PAGE 26, THE "FILL PIECE" MATERIAL IS NOT REQUIRED.
4. AFTER THE LOAD DIVIDER BULKHEADS IN A LOAD-DIVIDER-EQUIPPED CAR ARE POSITIONED AGAINST THE LADING AND THE LOCKING PINS ARE ENGAGED IN THE HOLES OF THE RAILS, THE LOWER LOCKING PINS MUST BE INSPECTED TO ENSURE THAT THE PINS ARE FULLY ENGAGED IN THE LOCKING HOLES. IF THE PINS ARE NOT FULLY SEATED IN THE HOLES, THE LINKAGE MECHANISM WILL BE ADJUSTED AS REQUIRED SO THAT THE PINS WILL BE FULLY SEATED INTO THE LOCKING HOLES OF THE LOWER RAILS. IF PRESENT, DEBRIS MUST BE REMOVED FROM BENEATH THE LOCKING HOLES SELECTED FOR SECURING A DIVIDER.
5. A "STRUT ASSEMBLY" MUST BE INSTALLED BETWEEN THE LOAD DIVIDER BULKHEADS IF THE LOAD IN EITHER END OF A CAR CONSISTS OF 50,000 POUNDS OR MORE OF CLASS "A" OR CLASS "B" EXPLOSIVES. SEE THE DETAILS ON PAGE 24.

LOAD DIVIDER NOTES (CONTINUED)

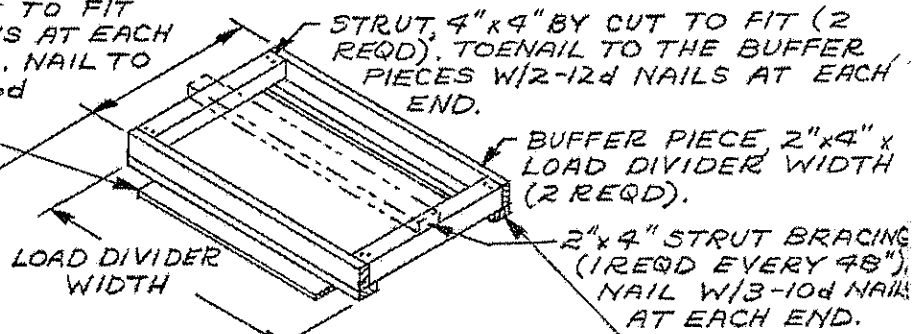
6. CAUTION: CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS MUST NOT BE USED FOR SHIPMENT OF EXPLOSIVES SUCH AS DYNAMITE, TNT, BLACK POWDER, SMOKELESS POWDER (PROPELLANT EXPLOSIVES), TETRYL AND SIMILAR EXPLOSIVES (EXCEPT AS A COMPONENT PART OF AMMUNITION OR PROPELLING CHARGES) WHICH ARE LIABLE TO SIFT OR BECOME LODGED IN THE MECHANISM OF THE LOADING AND BRACING DEVICE IN THE EVENT OF A CONTAINER FAILURE.
7. CAUTION: THE TOTAL WEIGHT OF A LOAD IN A CAR MUST NOT EXCEED THE LOAD LIMIT WHICH IS STENCILED ON THE SIDE OF THE CAR. ALSO, THE LOAD WEIGHT ON ONE TRUCK MUST NOT EXCEED ONE-HALF OF THE STENCILED LOAD LIMIT.
8. IN THE EVENT THAT A "STRUT ASSEMBLY IS OF SUCH A LENGTH THAT THE 4" x 4" STRUTS OF THE ASSEMBLY ARE LONGER THAN 12'-0" A SPECIAL HOLD DOWN ASSEMBLY MUST BE USED. SEE THE "STRUT ASSEMBLY HOLD DOWN" DETAIL ON PAGE 25 FOR GUIDANCE.
9. THE NORMAL LOADING PATTERN IN CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS IS TO POSITION THE LADING BETWEEN THE CAR END WALL AND A LOAD DIVIDER BULKHEAD IN FULL LAYERS. OBVIOUSLY, A LOAD QUANTITY MUST THEN BE A MULTIPLE OF THE NUMBER OF CONTAINERS (PALLET, ETC) WHICH ARE IN ONE LOAD UNIT. A LOAD UNIT IS DEFINED AS A STACK OF CONTAINERS WHICH IS FULL CAR WIDTH BY FULL LOAD HEIGHT BY ONE CONTAINER IN LENGTH. IF THE QUANTITY TO BE SHIPPED CANNOT BE ATTAINED BY ADJUSTING THE NUMBER OF LAYERS IN ONE OR BOTH ENDS OF A CAR, OR BY ADJUSTING THE NUMBER OF LOAD UNITS IN EITHER END OF THE CAR, ONE OF THE FOLLOWING PROCEDURES MUST BE USED IN ORDER TO OBTAIN THE DESIRED QUANTITY.
 - A. FOR LOADS OF SMALL BOXES, RISER ASSEMBLIES CAN BE USED. THE LOCATION AND/OR QUANTITY OF RISERS CAN BE ADJUSTED TO INCREASE OR DECREASE A LOAD QUANTITY.
 - B. FOR LOADS OF WOODEN, METAL, OR PLASTIC CONTAINERS, ONE OR MORE FILLER ASSEMBLIES CAN BE INSTALLED TO ADJUST A LOAD QUANTITY DOWNWARD BY OTHER THAN A MULTIPLE OF A LOAD UNIT. CONSTRUCT A FILLER ASSEMBLY TO EQUAL THE SIZE AND STRENGTH OF THE CONTAINER.
 - C. FOR LOADS OF PALLETIZED UNITS OR SKIDDED UNITS, A "GATES AND STRUTS" METHOD OF OMITTING A UNIT MAY BE USED TO ADJUST A LOAD QUANTITY DOWNWARD BY OTHER THAN A MULTIPLE OF A LOAD UNIT.
 - D. A K-BRACE MAY BE USED TO BRACE A PARTIAL LAYER IF THE CAR IS NOT EQUIPPED WITH ADJUSTABLE SIDE FILLERS AND HAS AVAILABLE SIDEWALLS.
 - E. A LOAD CAN CONTINUE TOWARD THE CENTER OF A CAR FROM THE INSTALLED LOAD DIVIDER BULKHEADS, AND THEN BE BLOCKED AND BRACED WITH CENTER GATES AND STRUTS AS IN A CONVENTIONAL CAR LOAD.
 - F. A SINGLE UNIT OR TWO CAN BE PLACED AGAINST THE CENTER-OF-CAR SIDE OF A LOAD DIVIDER BULKHEAD AND BLOCKED WITH LCL BRACES.
10. NOTE: IF AN INDIVIDUAL CONTAINER, OR THE END OF A CONTAINER IN A PALLET UNIT IS LESS THAN 18" IN WIDTH, A LUMBER-CONSTRUCTED OR A PLYWOOD-AND-LUMBER CONSTRUCTED SEPARATOR GATE MUST BE INSTALLED BETWEEN THE LADING AND A LOAD DIVIDER BULKHEAD.



INSTALLATION OF STRUT ASSEMBLY

THIS VIEW SHOWS THE STRUT ASSEMBLY INSTALLED BETWEEN THE LOAD DIVIDER BULKHEADS. NOTE THE SPACE ($\frac{1}{2}$ " TO $\frac{3}{4}$ " TOTAL) INTENTIONALLY PROVIDED BETWEEN THE ASSEMBLY AND THE BULKHEADS.

HOLD DOWN, 1"x8"x CUT TO FIT BETWEEN LOCKING PINS AT EACH SIDE OF LOAD DIVIDER. NAIL TO STRUT LEDGER W/1-6d NAIL EVERY 8".

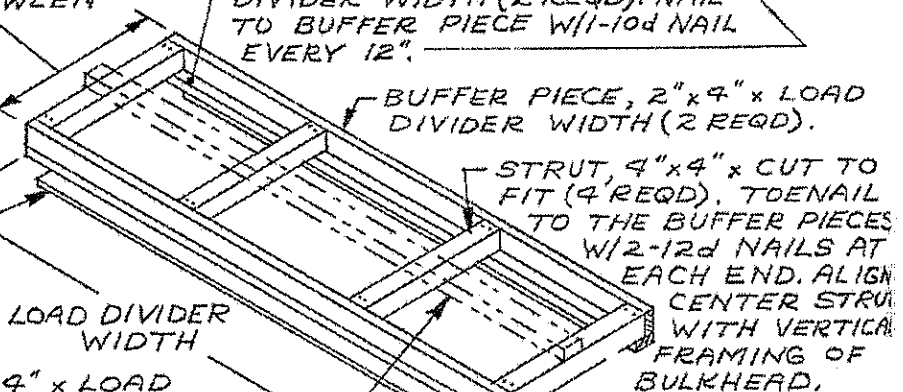


STRUT ASSEMBLY FOR 2-PIECE BULKHEADS

FABRICATE TO FIT BETWEEN LOAD DIVIDERS MINUS $\frac{1}{2}$ " TO $\frac{3}{4}$ ". CAUTION: THE ASSEMBLY IS INTENTIONALLY DESIGNED FOR A LOOSE FIT BETWEEN THE LOAD DIVIDERS.

STRUT LEDGER, 2"x4" x LOAD DIVIDER WIDTH (2 REQD). NAIL TO BUFFER PIECE W/1-10d NAIL EVERY 12".

HOLD DOWN, 1"x8"x CUT TO FIT BETWEEN LOCKING PINS AT EACH SIDE OF LOAD DIVIDER. NAIL TO STRUT LEDGER W/1-6d NAIL EVERY 8".



STRUT ASSEMBLY FOR 1-PIECE BULKHEADS

NOTE: A STRUT ASSEMBLY IS REQUIRED WHEN A LOAD OF CLASS A OR CLASS B EXPLOSIVES BEHIND EITHER LOAD DIVIDER BULKHEAD EXCEEDS 50,000 POUNDS. IF A STRUT ASSEMBLY IS LONGER THAN 12'-0", THE ASSEMBLY MUST BE HELD DOWN IN THE CENTER. SEE THE DETAILS ON PAGE 25.

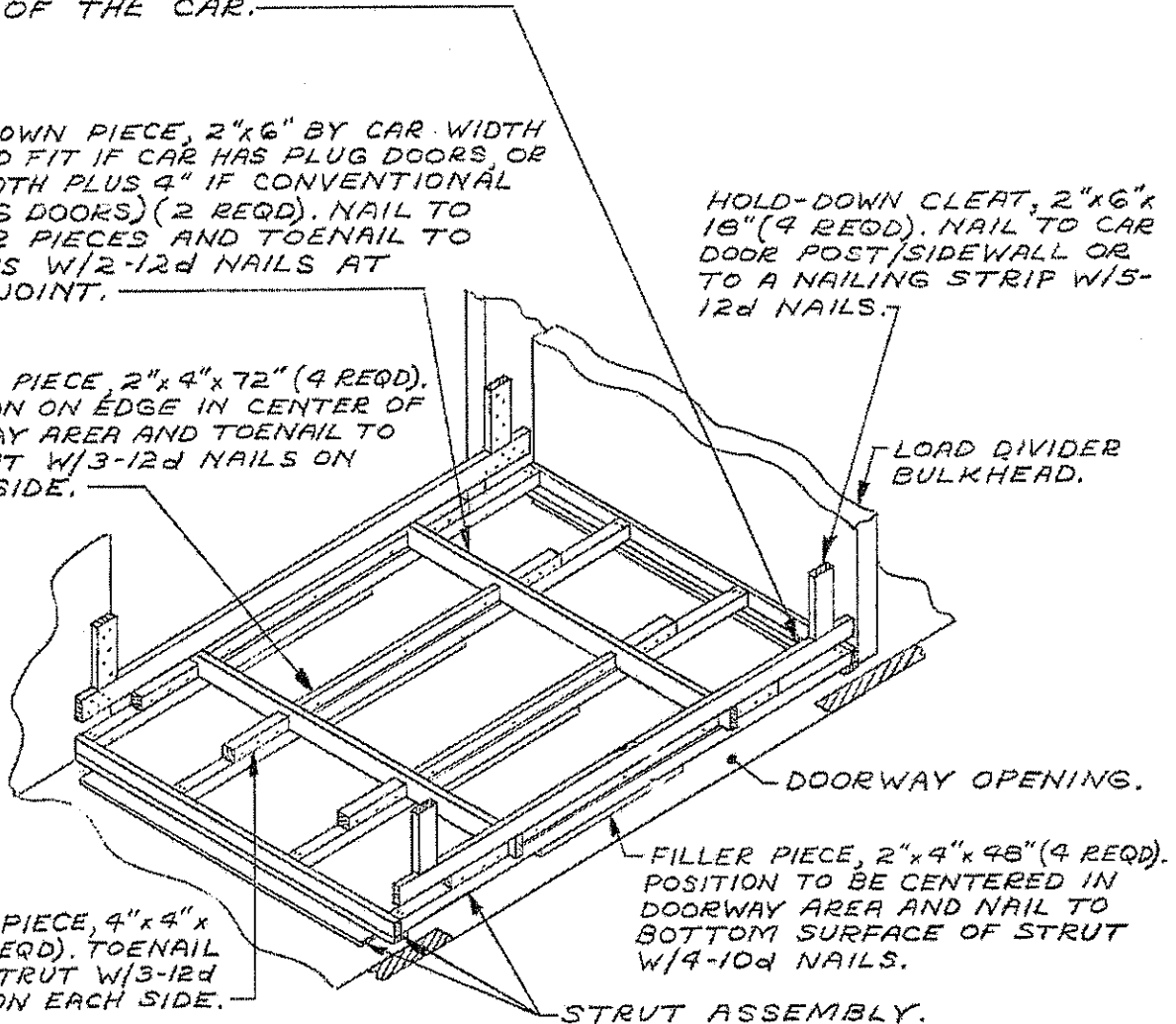
DOOR SPANNER PIECE, 2"x6" x DOOR OPENING WIDTH PLUS 24" (2 REQD). NAIL TO CAR DOOR POST/SIDEWALL OR TO A NAILING STRIP W/5-12d NAILS AT EACH END.
 NOTE: PRIOR TO NAILING THESE PIECES IN PLACE, THE STRUTS OF THE ASSEMBLY ARE TO BE PRESSED DOWNWARD UNTIL THE FILLER PIECES ARE TOUCHING OR ALMOST TOUCHING THE FLOOR OF THE CAR.

HOLD-DOWN PIECE, 2"x6" BY CAR WIDTH (CUT TO FIT IF CAR HAS PLUG DOORS, OR CAR WIDTH PLUS 4" IF CONVENTIONAL SLIDING DOORS) (2 REQD). NAIL TO SPACER PIECES AND TOENAIL TO STRUTS W/2-12d NAILS AT EACH JOINT.

HOLD-DOWN CLEAT, 2"x6" x 16" (4 REQD). NAIL TO CAR DOOR POST/SIDEWALL OR TO A NAILING STRIP W/5-12d NAILS.

SPACER PIECE, 2"x4" x 72" (4 REQD). POSITION ON EDGE IN CENTER OF DOORWAY AREA AND TOENAIL TO A STRUT W/3-12d NAILS ON EACH SIDE.

LOAD DIVIDER BULKHEAD.



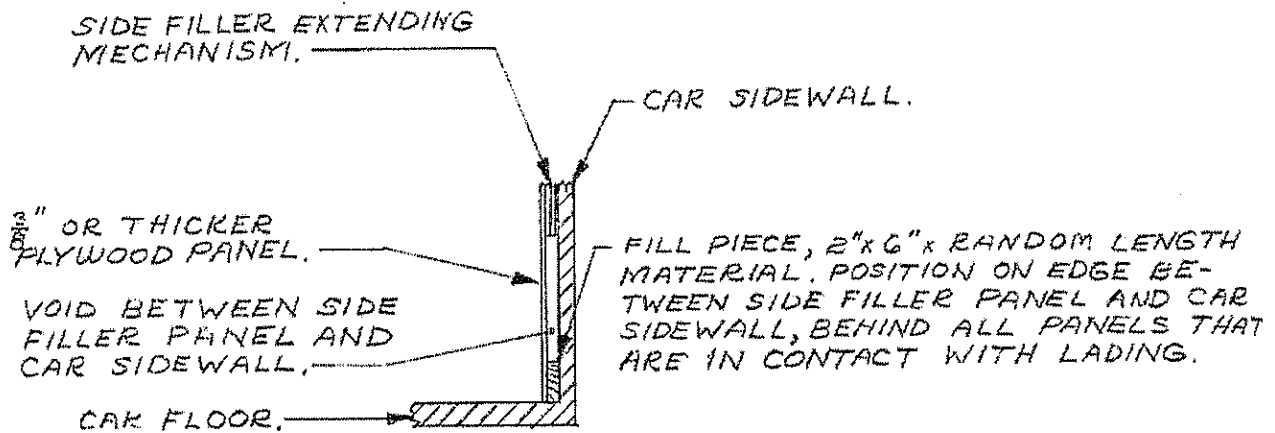
BRACE PIECE, 4"x4" x 16" (8 REQD). TOENAIL TO A STRUT W/3-12d NAILS ON EACH SIDE.

FILLER PIECE, 2"x4" x 96" (4 REQD). POSITION TO BE CENTERED IN DOORWAY AREA AND NAIL TO BOTTOM SURFACE OF STRUT W/4-10d NAILS.

STRUT ASSEMBLY.

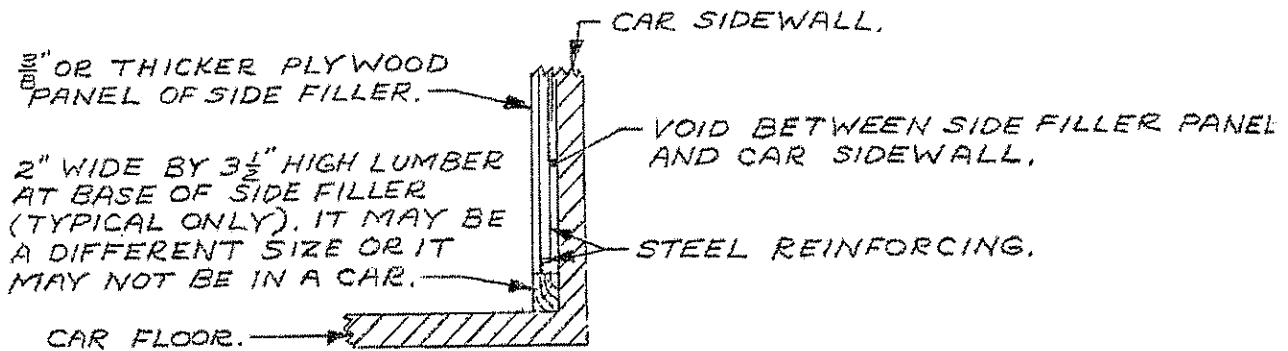
STRUT ASSEMBLY HOLD DOWN

THIS VIEW DEPICTS THE HOLD-DOWN BLOCKING WHICH IS REQUIRED WHEN THE STRUTS OF THE "STRUT ASSEMBLY" USED IN A LOAD DIVIDER CAR ARE LONGER THAN 12'-0". NOTE THAT THE SPECIAL STRUT HOLD DOWN AND THE STRUT ASSEMBLY ARE ONLY REQUIRED IF THE LOAD BEHIND EITHER BULKHEAD IS MORE THAN 50,000 POUNDS.



TYPICAL TYPE A

THIS VIEW SHOWS THE INSTALLATION OF A "FILL PIECE" IN A CAR EQUIPPED WITH A STANDARD ADJUSTABLE SIDE FILLER.

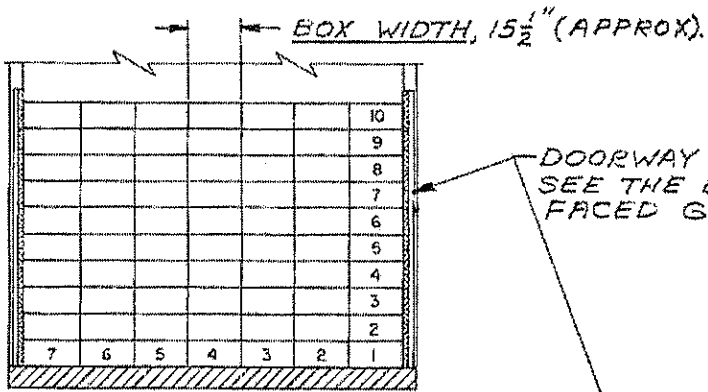


TYPICAL TYPE B

THIS VIEW SHOWS A TYPICAL SECTION OF A CAR EQUIPPED WITH HEAVY DUTY, STEEL REINFORCED, ADJUSTABLE SIDE FILLERS. A "FILL PIECE", AS SHOWN IN "TYPICAL TYPE A" DETAIL ABOVE, IS NOT REQUIRED IN CARS SO EQUIPPED.

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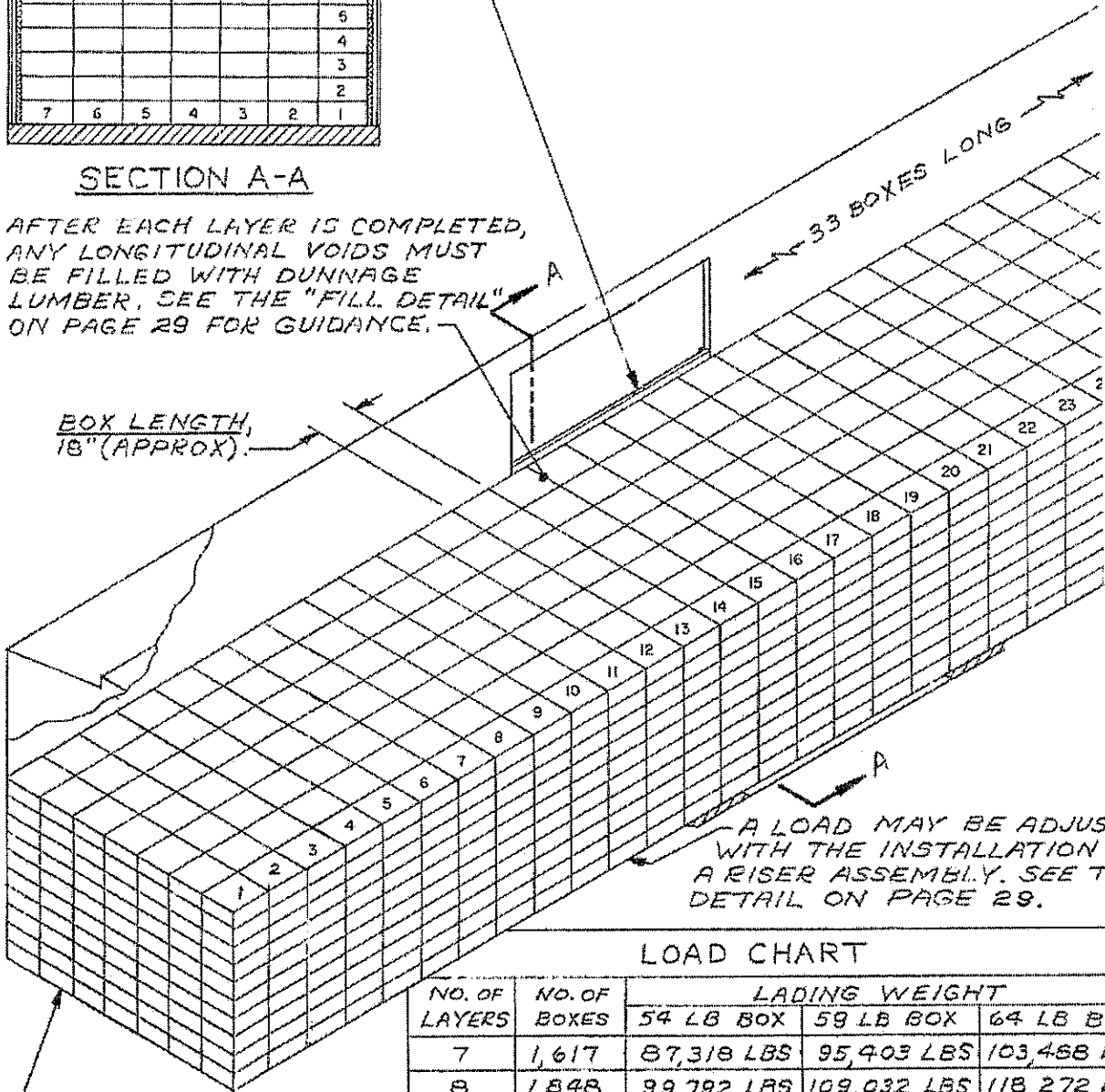


SECTION A-A

AFTER EACH LAYER IS COMPLETED, ANY LONGITUDINAL VOIDS MUST BE FILLED WITH DUNNAGE LUMBER, SEE THE "FILL DETAIL" ON PAGE 29 FOR GUIDANCE.

BOX LENGTH, 18" (APPROX).

DOORWAY PROTECTION (2 REQD). SEE THE DETAIL OF THE SOLID-FACED GATE ON PAGE 21.



A LOAD MAY BE ADJUST WITH THE INSTALLATION A RISER ASSEMBLY. SEE THE DETAIL ON PAGE 29.

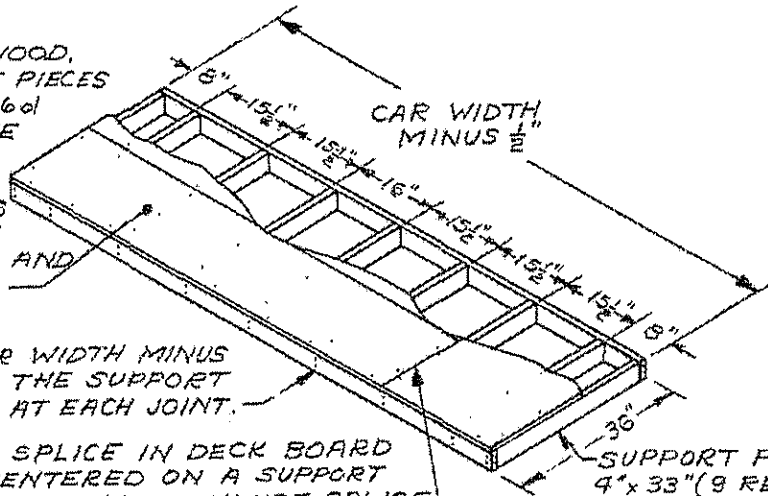
LOAD CHART

NO. OF LAYERS	NO. OF BOXES	LOADING WEIGHT		
		54 LB BOX	59 LB BOX	64 LB BOX
7	1,617	87,318 LBS	95,403 LBS	103,488 LBS
8	1,848	99,792 LBS	109,032 LBS	118,272 LBS
9	2,079	112,266 LBS	122,661 LBS	133,056 LBS
10	2,310	124,740 LBS	136,290 LBS	147,840 LBS
11	2,541	137,214 LBS	149,919 LBS	
12	2,772	149,688 LBS		

IF A CAR HAS BOWED END WALLS, SEE THE "BULKHEAD" DETAIL ON PAGE 8 FOR GUIDANCE.

TYPICAL LOAD OF BULK EXPLOSIVES IN FIBERBOARD BOXES (UNPALLETIZED) IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

DECK BOARD, $\frac{1}{2}$ " PLYWOOD,
 NAIL TO THE SUPPORT PIECES
 AND TIE PIECES W/1-6d
 NAIL EVERY 12". NOTE
 THAT NOMINAL 1"
 MATERIAL MAY BE
 SUBSTITUTED. PIECES
 WILL BE CAR WIDTH
 MINUS $\frac{1}{2}$ " IN LENGTH AND
 NAILED W/6d NAILS.



TIE PIECE, 2"x4"x CAR WIDTH MINUS
 $\frac{1}{2}$ " (2 REQD). NAIL TO THE SUPPORT
 PIECES W/2-10d NAILS AT EACH JOINT.

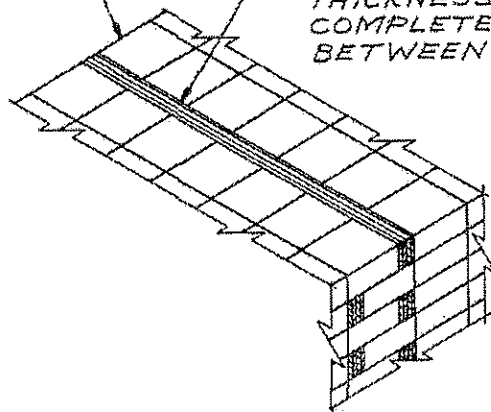
CROSSWISE SPLICE IN DECK BOARD
 MUST BE CENTERED ON A SUPPORT
 PIECE AS SHOWN. LENGTHWISE SPLICE
 CAN BE LOCATED AT ANY POSITION.

SUPPORT PIECE, 2"x
 4"x 33" (9 REQD).

RISER ASSEMBLY

THE ASSEMBLY SHOWN ABOVE IS DESIGNED
 TO RAISE TWO (2) STACKS. THIS IS THE
 MINIMUM NUMBER OF STACKS PERMITTED
 WHEN APPLYING A RISER IN THE LOAD
 DEPICTED ON PAGE 28.

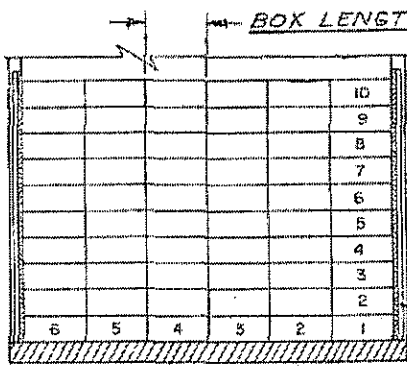
INDICATES SIDE
 OF LOAD.



FILL MATERIAL, 8" WIDE LUMBER BY
 CAR WIDTH IN LENGTH AND OF A
 THICKNESS AS REQUIRED TO
 COMPLETELY FILL THE VOID SPACE
 BETWEEN BOXES AS SHOWN,

FILL DETAIL

THE DETAIL SHOWN ABOVE DEPICTS THE METHOD
 OF INSTALLING FILL MATERIAL IN EACH LAYER.
 FILL MATERIAL MUST BE INSTALLED ALTERNATELY
 IN EACH LAYER AND SHOULD BE USED NEAR THE
 CENTER OF THE LOAD. FILL MATERIAL IS
 REQUIRED TO FILL ANY LONGITUDINAL VOID
 WITHIN THE LAYERS OF A LOAD. ALTHOUGH THE
 DETAIL SHOWS LENGTHWISE POSITIONED BOXES,
 THE PRINCIPLES ARE ALSO APPLICABLE FOR LOADS
 OF CROSSWISE POSITIONED BOXES,

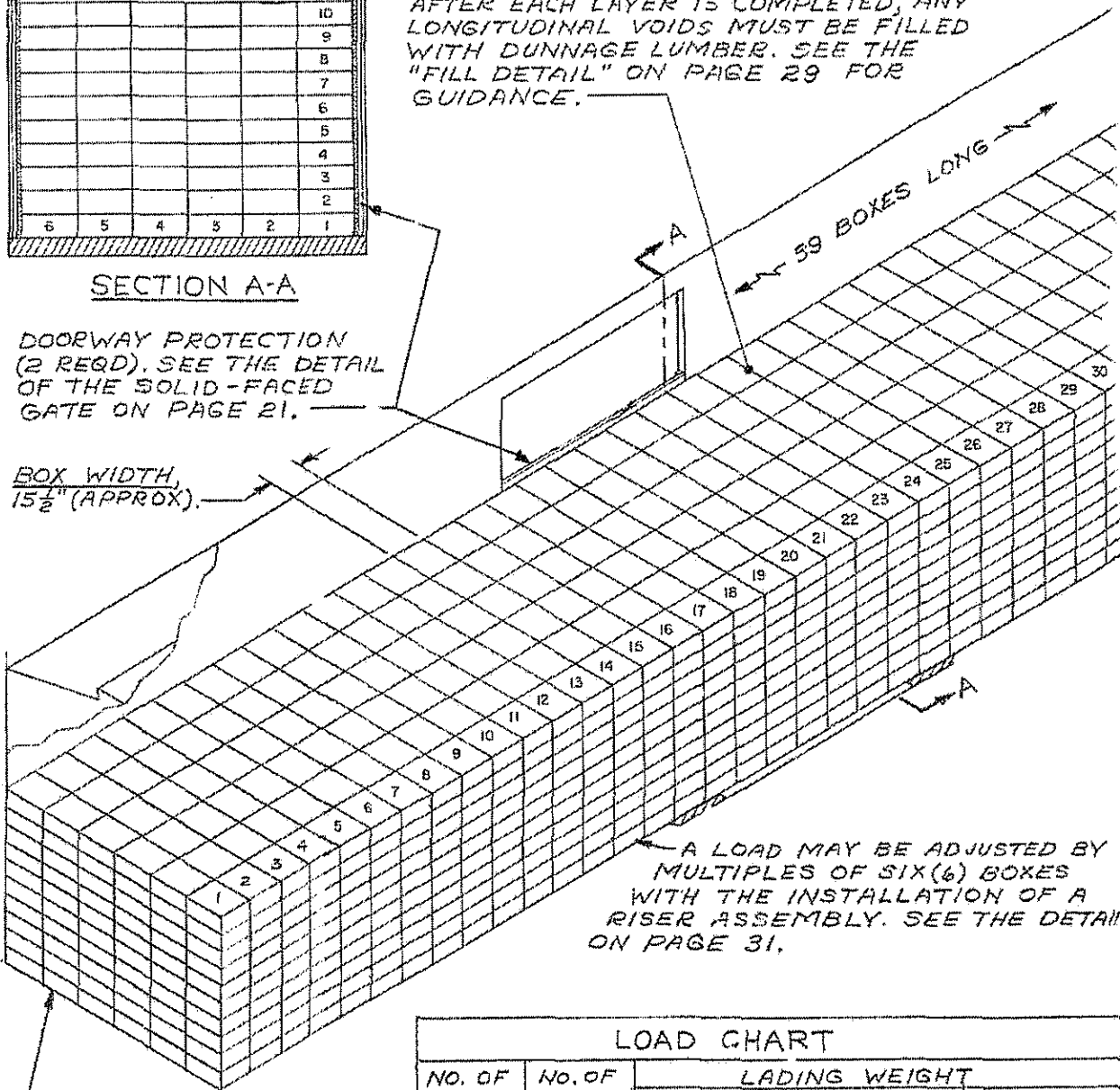


SECTION A-A

AFTER EACH LAYER IS COMPLETED, ANY LONGITUDINAL VOIDS MUST BE FILLED WITH DUNNAGE LUMBER. SEE THE "FILL DETAIL" ON PAGE 29 FOR GUIDANCE.

DOORWAY PROTECTION (2 REQD). SEE THE DETAIL OF THE SOLID-FACED GATE ON PAGE 21.

BOX WIDTH, 15½" (APPROX).

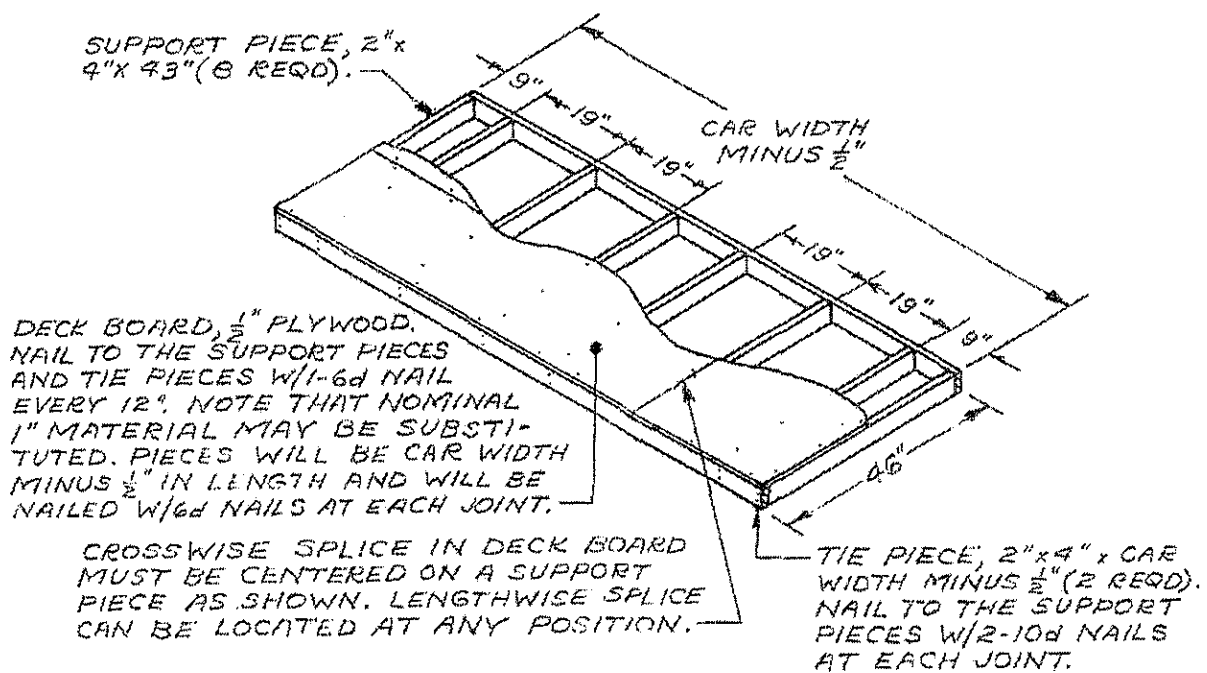


A LOAD MAY BE ADJUSTED BY MULTIPLES OF SIX (6) BOXES WITH THE INSTALLATION OF A RISER ASSEMBLY. SEE THE DETAIL ON PAGE 31.

IF A CAR HAS BOWED END WALLS, SEE "BULKHEAD" DETAIL ON PAGE 8 FOR GUIDANCE.

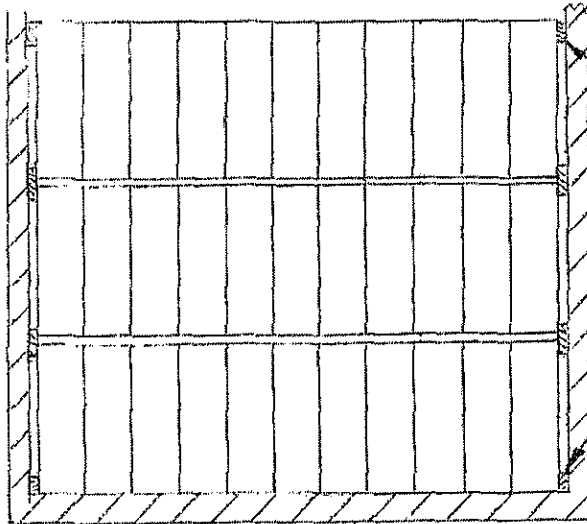
		LOAD CHART		
NO. OF LAYERS	NO. OF BOXES	LOADING WEIGHT		
		54 LB BOX	59 LB BOX	64 LB BOX
7	1,638	88,452 LBS	96,642 LBS	104,832 LBS
8	1,872	101,088 LBS	110,448 LBS	119,808 LBS
9	2,106	113,724 LBS	124,254 LBS	134,784 LBS
10	2,340	126,360 LBS	138,060 LBS	149,760 LBS
11	2,574	138,996 LBS	151,866 LBS	
12	2,808	151,632 LBS		

TYPICAL LOAD OF BULK EXPLOSIVES IN FIBERBOARD BOXES (UNPALLETIZED) IN A 50'-6" LONG BY 9'-4" WIDE CONVENTIONAL BOX CAR



RISER ASSEMBLY

THE ASSEMBLY SHOWN ABOVE IS DESIGNED TO RAISE THREE (3) STACKS. THIS IS THE MINIMUM NUMBER OF STACKS PERMITTED WHEN APPLYING A RISER IN THE LOAD DEPICTED ON PAGE 30.



SECTION A-A

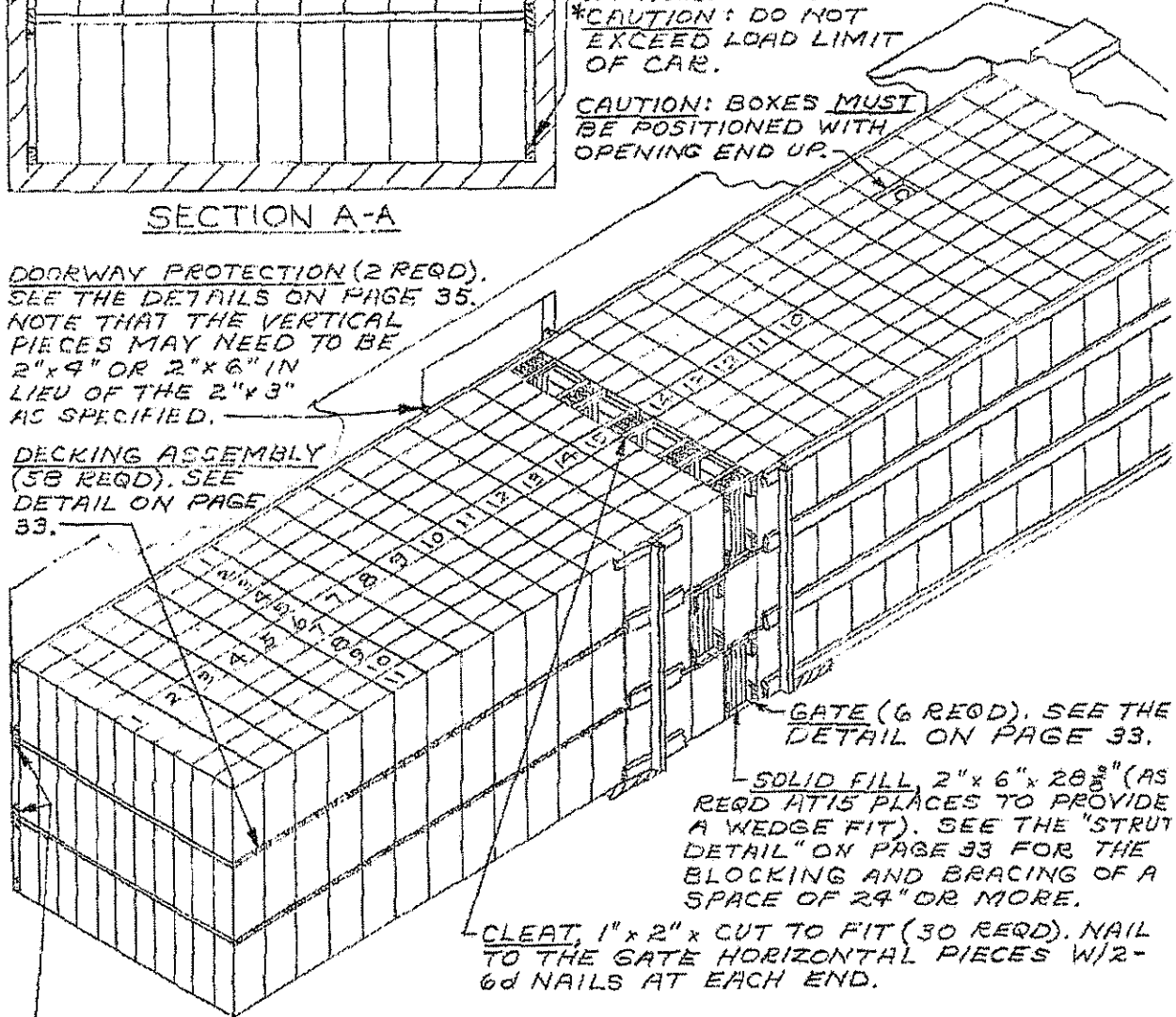
SIDE FILL, 2"x4" x CUT TO FIT FROM CAR END WALL TO DOOR OPENING (8 REQD FOR 9'-2" WIDE CAR). POSITION AT TOP AND BOTTOM OF LOAD. NAIL TO CAR SIDEWALL W/1-10d NAIL EVERY 12". ADD 1"x4" AND/OR 2"x4" MATERIAL TO EACH SIDE FILL FOR SHIPMENTS IN A 9'-4" WIDE CAR.

3 LAYERS = 957 BOXES = 145,877 LBS.*
 2 LAYERS = 638 BOXES = 98,124 LBS.
 *CAUTION: DO NOT EXCEED LOAD LIMIT OF CAR.

CAUTION: BOXES MUST BE POSITIONED WITH OPENING END UP.

DOORWAY PROTECTION (2 REQD). SEE THE DETAILS ON PAGE 35. NOTE THAT THE VERTICAL PIECES MAY NEED TO BE 2"x4" OR 2"x6" IN LIEU OF THE 2"x3" AS SPECIFIED.

DECKING ASSEMBLY (58 REQD). SEE DETAIL ON PAGE 33.



GATE (6 REQD). SEE THE DETAIL ON PAGE 33.

SOLID FILL, 2"x6"x 28 3/8" (AS REQD AT 15 PLACES TO PROVIDE A WEDGE FIT). SEE THE "STRUT DETAIL" ON PAGE 33 FOR THE BLOCKING AND BRACING OF A SPACE OF 24" OR MORE.

CLEAT, 1"x2" x CUT TO FIT (30 REQD). NAIL TO THE GATE HORIZONTAL PIECES W/2-6d NAILS AT EACH END.

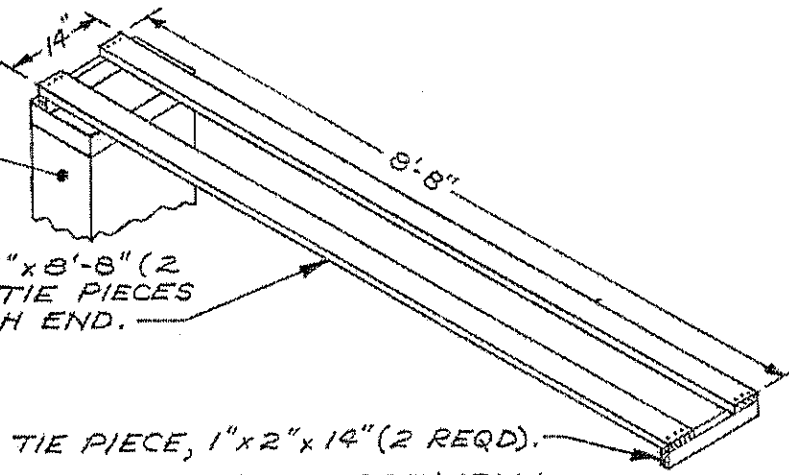
SIDE FILL, 2"x6" x CUT TO FIT FROM CAR END WALL TO DOOR OPENING (8 REQD FOR 9'-2" WIDE CAR). POSITION AT JOINTS OF LAYERS AND NAIL TO CAR SIDEWALL W/1-10d NAIL EVERY 12". ADD 1"x6" AND/OR 2"x6" TO EACH SIDE FILL FOR SHIPMENTS IN 9'-4" WIDE CARS.

TYPICAL LOAD OF PROPELLANT PACKED IN M2 AND MK 7 STEEL BOXES IN A 40'-6" LONG BY 9'-2" OR 9'-4" WIDE CONVENTIONAL BOX CAR

INDICATES THE MKT OR M2 STEEL BOX WITH DECKING ASSEMBLY POSITIONED ON TOP.

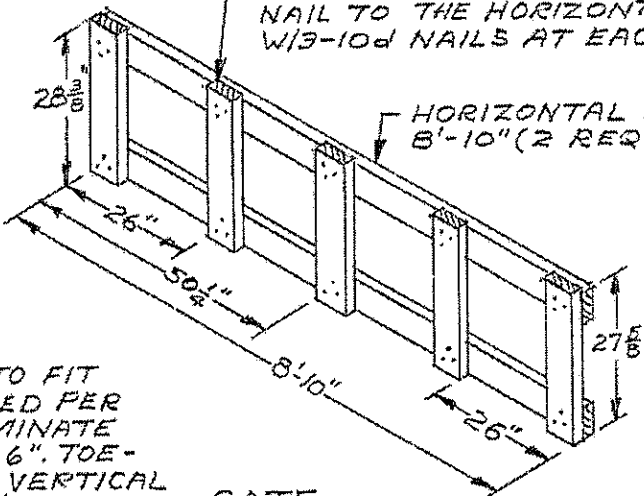
BEARING PIECE, 1" x 4" x 8'-8" (2 REQD). NAIL TO THE TIE PIECES W/3-6d NAILS AT EACH END.

TIE PIECE, 1" x 2" x 14" (2 REQD).
DECKING ASSEMBLY



VERTICAL PIECE, 2" x 6" x 28³/₈" (5 REQD). NAIL TO THE HORIZONTAL PIECES W/3-10d NAILS AT EACH JOINT.

HORIZONTAL PIECE, 2" x 6" x 8'-10" (2 REQD).

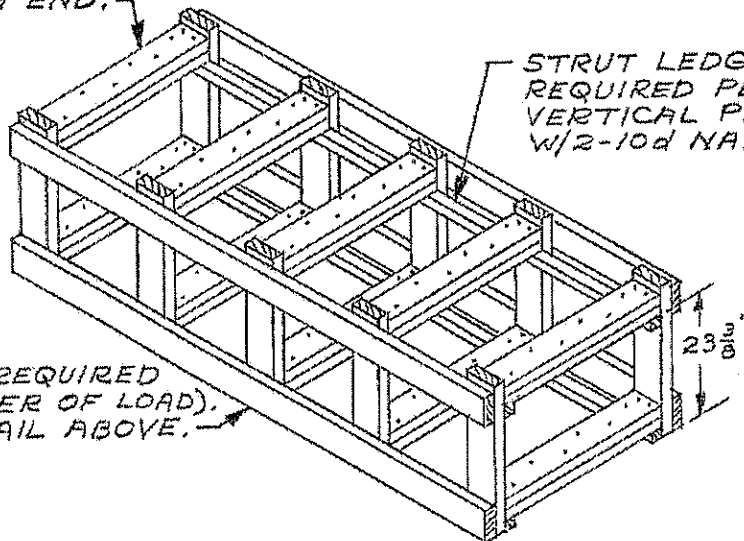


STRUT, 2" x 6" x CUT TO FIT (DOUBLED) (10 REQUIRED PER LAYER OF LOAD). LAMINATE W/1-10d NAIL EVERY 6". TOE-NAIL TOP PIECE TO VERTICAL PIECES OF GATES W/2-12d NAILS EACH END.

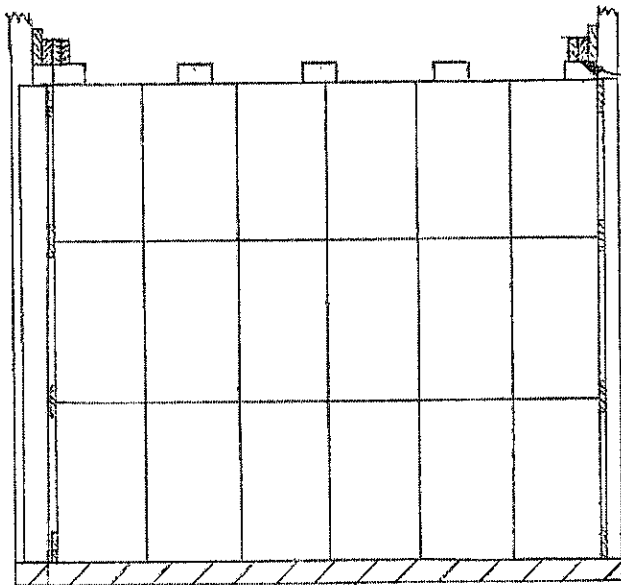
GATE

STRUT LEDGER, 2" x 2" x 8'-10" (2 REQUIRED PER GATE). NAIL TO VERTICAL PIECES OF GATE W/2-10d NAILS EACH JOINT.

GATE (2 REQUIRED PER LAYER OF LOAD). SEE DETAIL ABOVE.



STRUT DETAIL



SECTION A-A

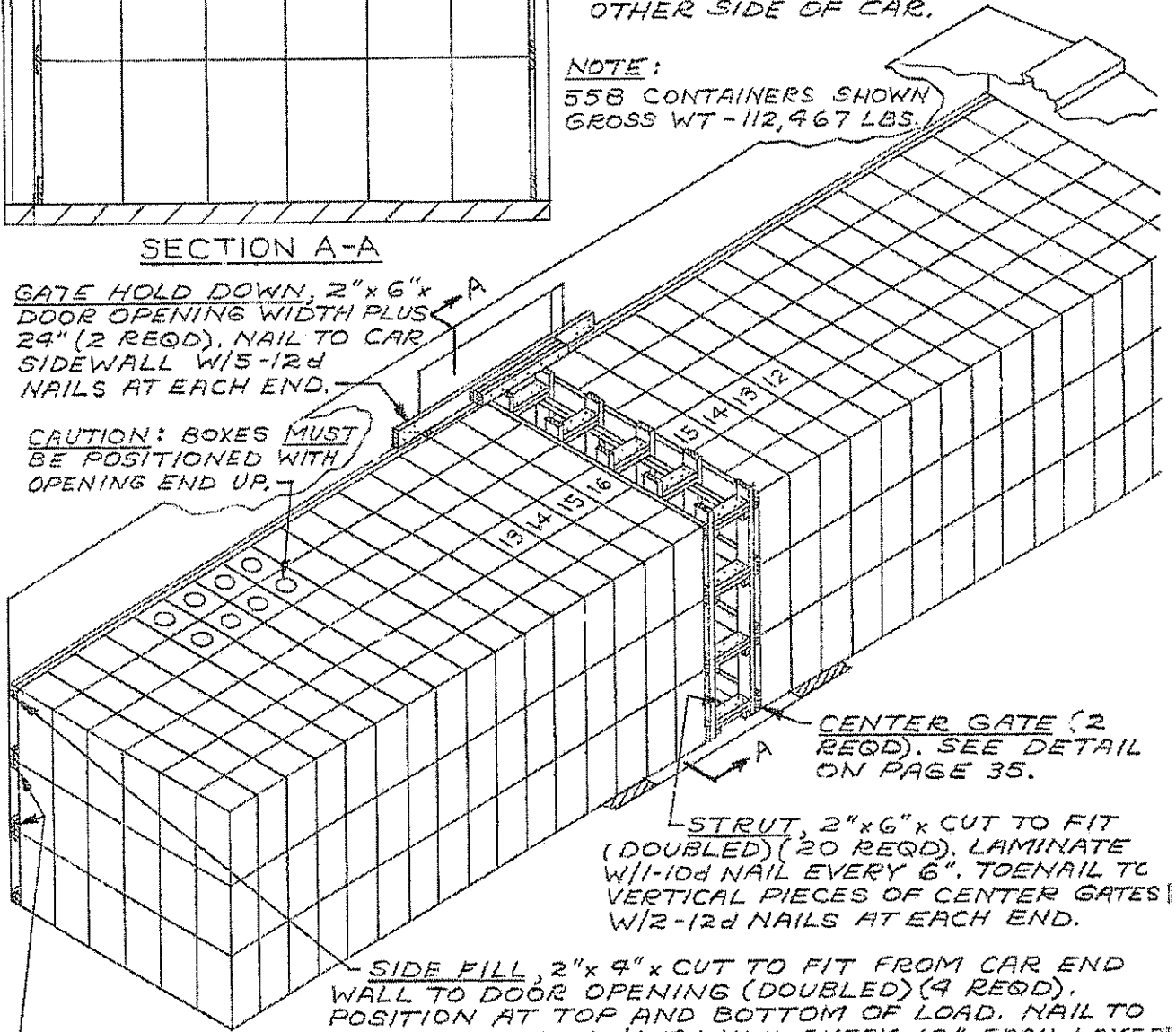
GATE HOLD DOWN CLEAT, 2"x4"x 42" (2 REQD, 1 DOUBLED & 1 TRIPLED). NAIL FIRST PIECE TO GATE HOLD DOWN W/6-10d NAILS. NAIL ADDITIONAL PIECES IN A LIKE MANNER.

DOORWAY PROTECTION (2 REQD). SEE THE DETAIL ON PAGE 35. NOTE THAT 2"x6" VERTICAL PIECES MUST BE USED FOR THE ASSEMBLY ON OTHER SIDE OF CAR.

NOTE:
558 CONTAINERS SHOWN
GROSS WT - 112,467 LBS.

GATE HOLD DOWN, 2"x6"x DOOR OPENING WIDTH PLUS 24" (2 REQD), NAIL TO CAR SIDEWALL W/5-12d NAILS AT EACH END.

CAUTION: BOXES MUST BE POSITIONED WITH OPENING END UP.



CENTER GATE (2 REQD). SEE DETAIL ON PAGE 35.

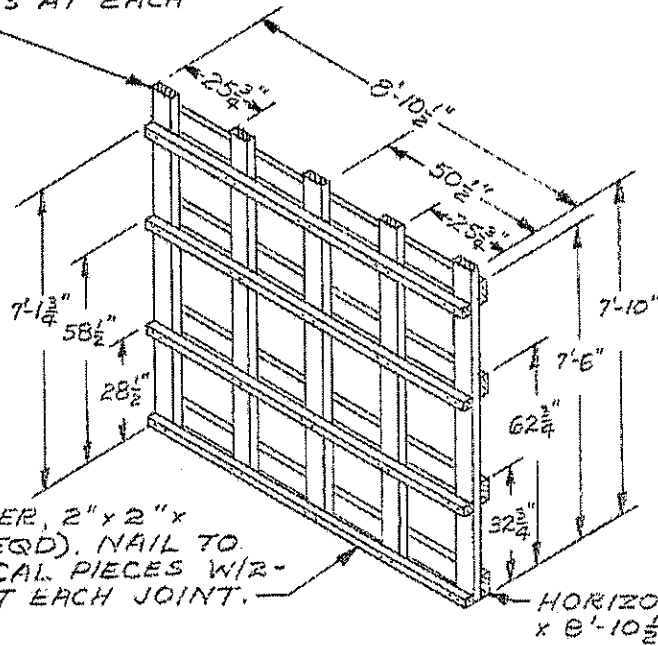
STRUT, 2"x6"x CUT TO FIT (DOUBLED) (20 REQD). LAMINATE W/1-10d NAIL EVERY 6". TOENAIL TO VERTICAL PIECES OF CENTER GATES W/2-12d NAILS AT EACH END.

SIDE FILL, 2"x4"x CUT TO FIT FROM CAR END WALL TO DOOR OPENING (DOUBLED) (4 REQD). POSITION AT TOP AND BOTTOM OF LOAD. NAIL TO CAR SIDEWALL W/1-10d NAIL EVERY 12" EACH LAYER.

SIDE FILL, 2"x6"x CUT TO FIT FROM CAR END WALL TO DOOR OPENING (DOUBLED) (4 REQD). POSITION AT JOINTS OF LAYERS AND NAIL TO CAR SIDEWALL W/1-10d NAIL EVERY 12" FOR EACH LAYER.

TYPICAL LOAD OF PROPELLANT PACKED IN M24 METAL LINED WOODEN BOX IN A 40'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

VERTICAL PIECE, 2" x 6" x 7'-10" (5 REQD). NAIL TO THE HORIZONTAL PIECES W/3-10d NAILS AT EACH JOINT.



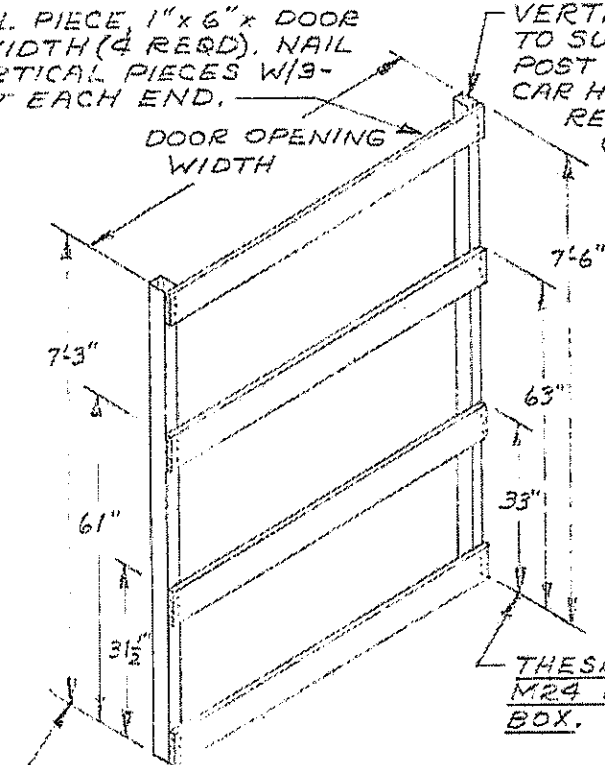
STRUT LEDGER, 2" x 2" x 5'-10 1/2" (4 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.

HORIZONTAL PIECE, 2" x 6" x 8'-10 1/2" (9 REQD).

CENTER GATE

HORIZONTAL PIECE, 1" x 6" x DOOR OPENING WIDTH (4 REQD). NAIL TO THE VERTICAL PIECES W/3-6d NAILS AT EACH END.

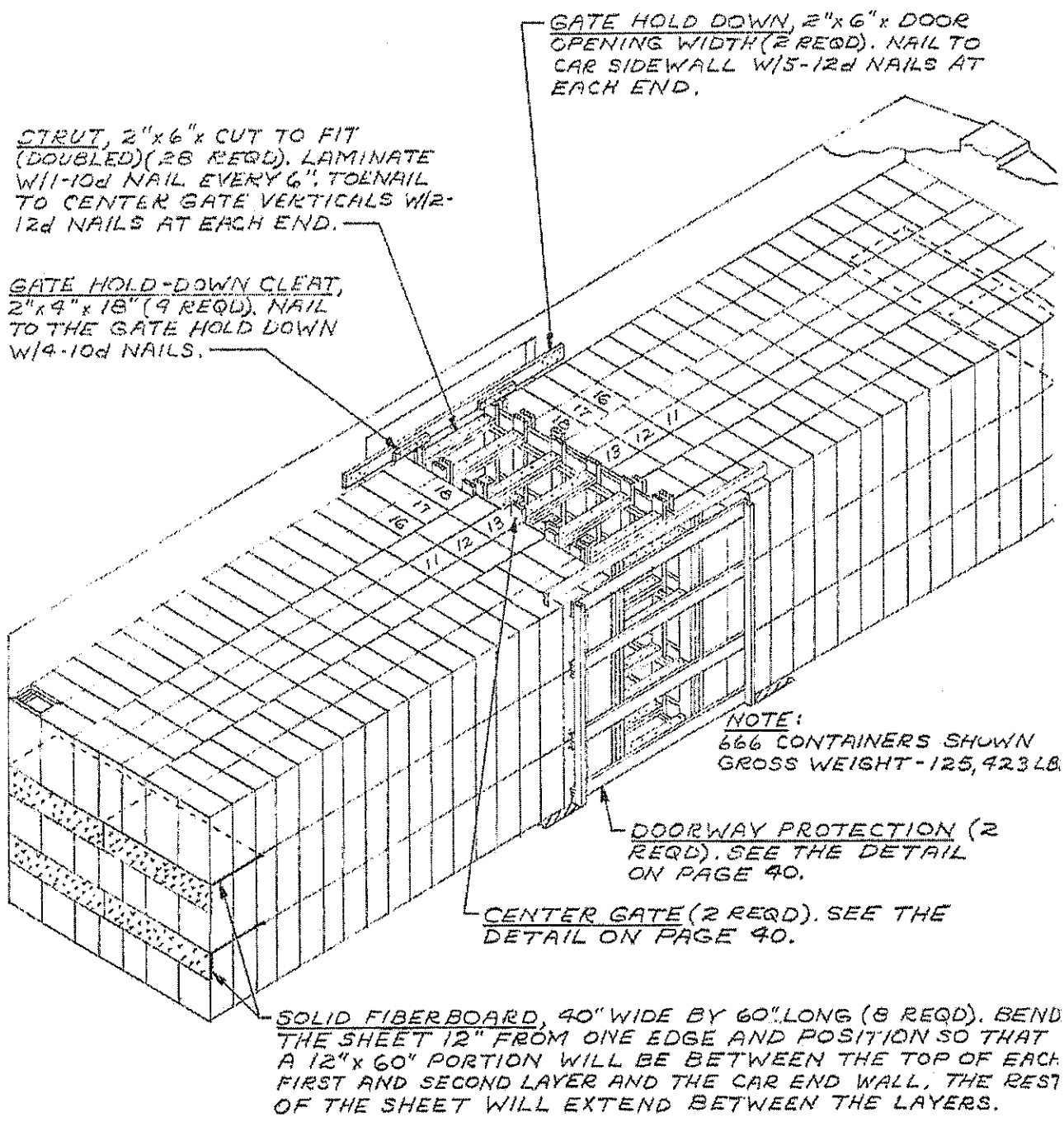
VERTICAL PIECE, 2" x 3" x LENGTH TO SUIT (2 REQD). NAIL TO DOOR POST W/1-12d NAIL EVERY 12". IF CAR HAS NON-NAILABLE POSTS, REFER TO PAGE 21 FOR GUIDANCE.



THESE HEIGHTS ARE FOR THE M2 AND MK7 STEEL BOXES.

THESE HEIGHTS ARE FOR THE M24 METAL-LINED WOODEN BOX.

DOORWAY PROTECTION



STRUT, 2"x6" x CUT TO FIT (DOUBLED) (28 REQD). LAMINATE W/1-10d NAIL EVERY 6". TOENAIL TO CENTER GATE VERTICALS W/2-12d NAILS AT EACH END.

GATE HOLD-DOWN CLEAT, 2"x4" x 18" (9 REQD). NAIL TO THE GATE HOLD DOWN W/4-10d NAILS.

GATE HOLD DOWN, 2"x6" x DOOR OPENING WIDTH (2 REQD). NAIL TO CAR SIDEWALL W/5-12d NAILS AT EACH END.

NOTE:
666 CONTAINERS SHOWN
GROSS WEIGHT - 125,423 LB.

DOORWAY PROTECTION (2 REQD). SEE THE DETAIL ON PAGE 40.

CENTER GATE (2 REQD). SEE THE DETAIL ON PAGE 40.

SOLID FIBERBOARD, 40" WIDE BY 60" LONG (8 REQD). BEND THE SHEET 12" FROM ONE EDGE AND POSITION SO THAT A 12" x 60" PORTION WILL BE BETWEEN THE TOP OF EACH FIRST AND SECOND LAYER AND THE CAR END WALL. THE REST OF THE SHEET WILL EXTEND BETWEEN THE LAYERS.

TYPICAL LOAD OF PA54 CONTAINERS WITH PROPELLANT IN A 40'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

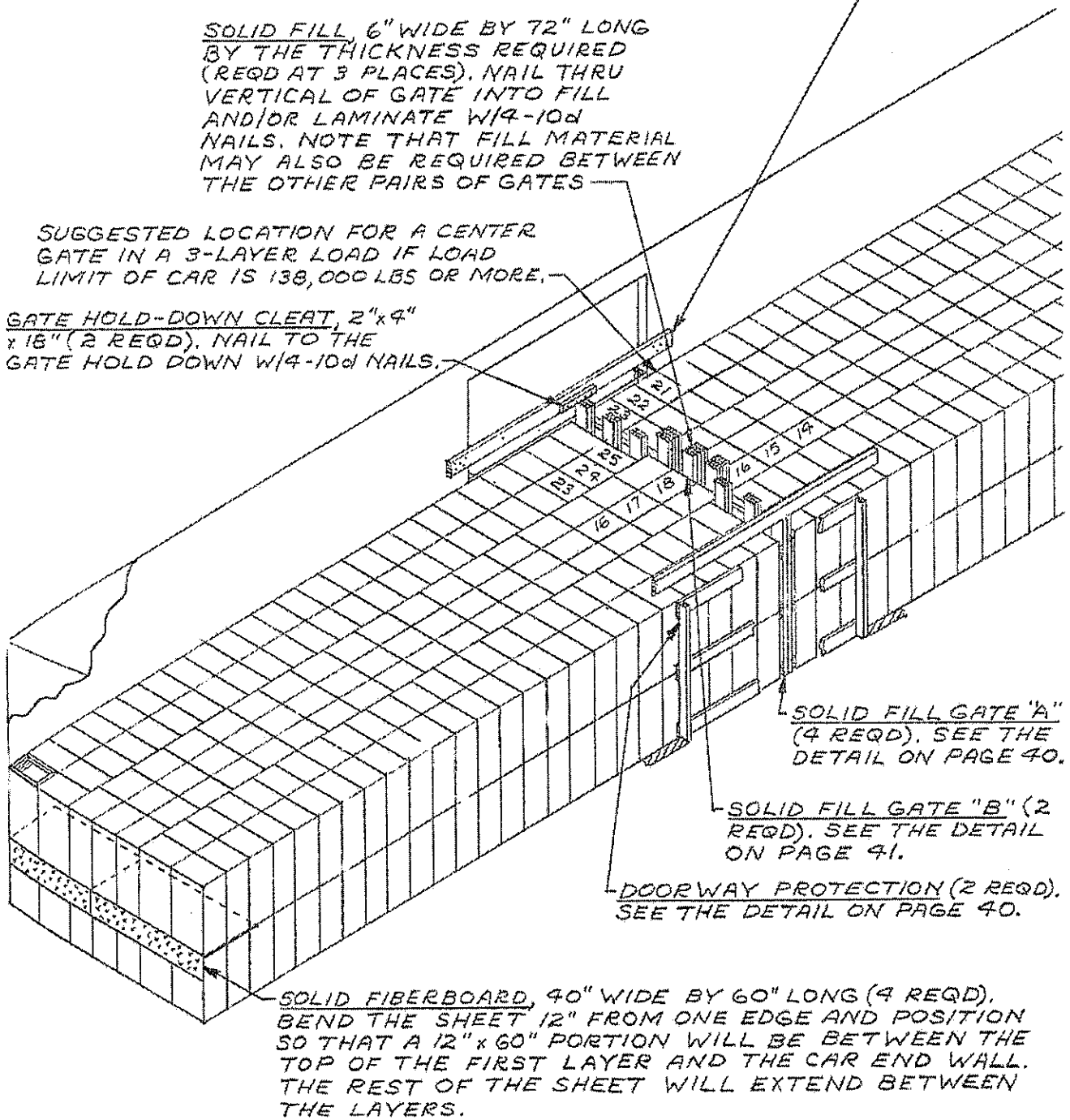
NOTE:
 586 CONTAINERS SHOWN
 GROSS WEIGHT- 109,980 LBS

GATE HOLD DOWN, 2"x6" DOOR
OPENING WIDTH PLUS 24" (2 REQD),
NAIL TO CAR SIDEWALL W/5-12d
NAILS AT EACH END.

SOLID FILL, 6" WIDE BY 72" LONG
BY THE THICKNESS REQUIRED
(REQD AT 3 PLACES). NAIL THRU
VERTICAL OF GATE INTO FILL
AND/OR LAMINATE W/4-10d
NAILS. NOTE THAT FILL MATERIAL
MAY ALSO BE REQUIRED BETWEEN
THE OTHER PAIRS OF GATES

SUGGESTED LOCATION FOR A CENTER
GATE IN A 3-LAYER LOAD IF LOAD
LIMIT OF CAR IS 138,000 LBS OR MORE.

GATE HOLD-DOWN CLEAT, 2"x4"
x 18" (2 REQD), NAIL TO THE
GATE HOLD DOWN W/4-10d NAILS.



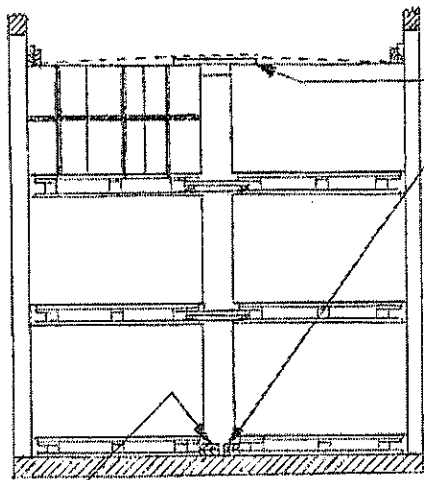
SOLID FILL GATE "A"
(4 REQD). SEE THE
DETAIL ON PAGE 40.

SOLID FILL GATE "B" (2
REQD). SEE THE DETAIL
ON PAGE 41.

DOORWAY PROTECTION (2 REQD).
SEE THE DETAIL ON PAGE 40.

SOLID FIBERBOARD, 40" WIDE BY 60" LONG (4 REQD).
BEND THE SHEET 12" FROM ONE EDGE AND POSITION
SO THAT A 12" x 60" PORTION WILL BE BETWEEN THE
TOP OF THE FIRST LAYER AND THE CAR END WALL.
THE REST OF THE SHEET WILL EXTEND BETWEEN
THE LAYERS.

TYPICAL LOAD OF PA54 CONTAINERS WITH
PROPELLANT IN A 50'-6" LONG BY 9'-2"
WIDE CONVENTIONAL BOX CAR



SECTION A-A

SPACER BLOCK (2 REQD). SEE THE DETAIL ON PAGE 41.

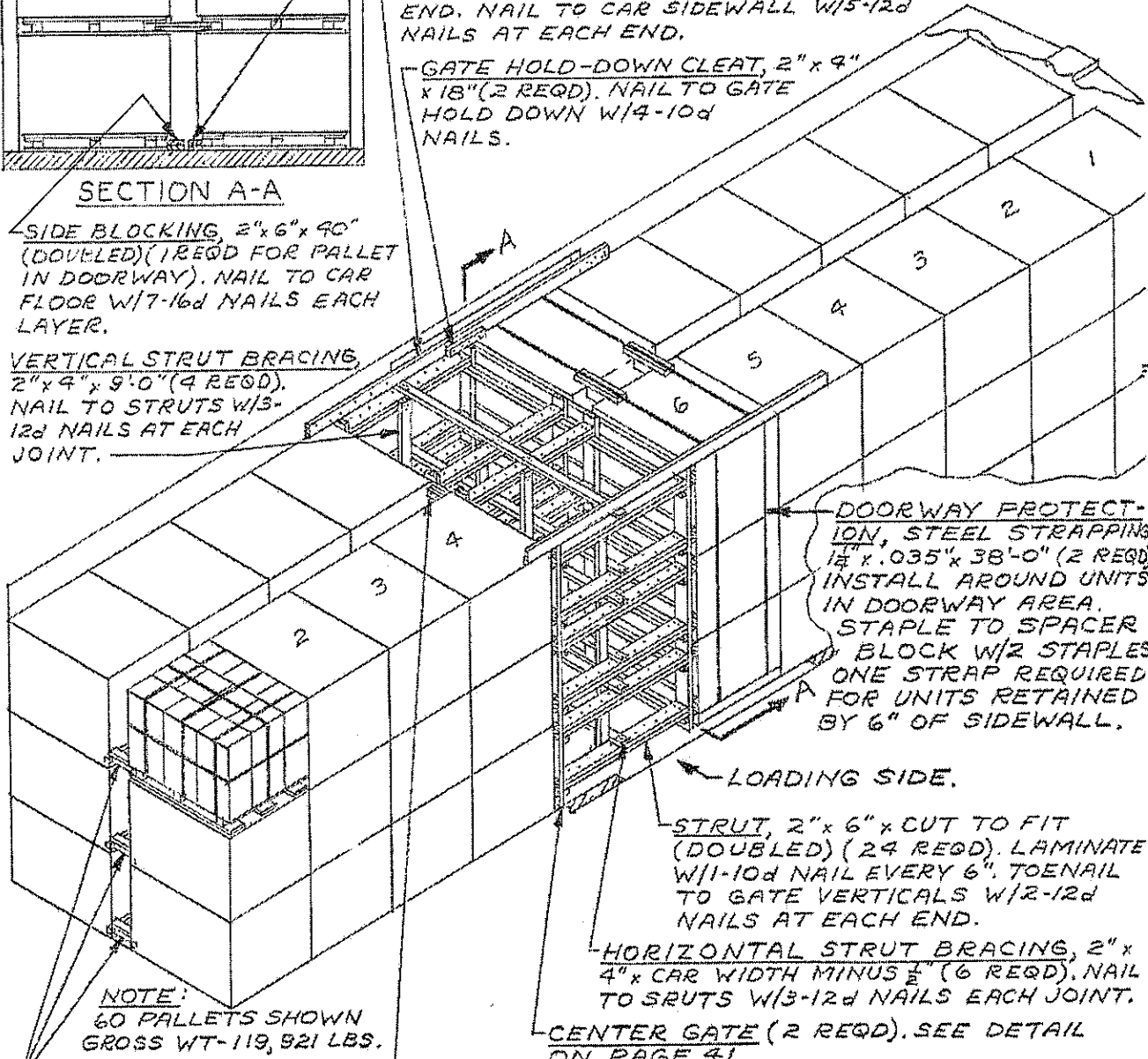
SIDE BLOCKING, 2"x4"x40" (DOUBLED) (1 REQD FOR PALLET IN DOORWAY). NAIL TO CAR FLOOR W/7-16d NAILS EACH LAYER.

GATE HOLD DOWN, 2"x6"x12" FAST CENTER GATE ON ONE END AND 12" FAST DOOR OPENING ON OPPOSITE END. NAIL TO CAR SIDEWALL W/5-12d NAILS AT EACH END.

GATE HOLD-DOWN CLEAT, 2"x9"x18" (2 REQD). NAIL TO GATE HOLD DOWN W/4-10d NAILS.

SIDE BLOCKING, 2"x6"x40" (DOUBLED) (1 REQD FOR PALLET IN DOORWAY). NAIL TO CAR FLOOR W/7-16d NAILS EACH LAYER.

VERTICAL STRUT BRACING, 2"x4"x9'-0" (4 REQD). NAIL TO STRUTS W/3-12d NAILS AT EACH JOINT.



DOORWAY PROTECTION, STEEL STRAPPING, 1/2" x .035" x 38'-0" (2 REQD). INSTALL AROUND UNITS IN DOORWAY AREA. STAPLE TO SPACER BLOCK W/2 STAPLES. ONE STRAP REQUIRED FOR UNITS RETAINED BY 6" OF SIDEWALL.

LOADING SIDE.

STRUT, 2"x6"x CUT TO FIT (DOUBLED) (24 REQD). LAMINATE W/1-10d NAIL EVERY 6". TO NAIL TO GATE VERTICALS W/2-12d NAILS AT EACH END.

HORIZONTAL STRUT BRACING, 2"x4"x CAR WIDTH MINUS 1/2" (6 REQD). NAIL TO STRUTS W/3-12d NAILS EACH JOINT.

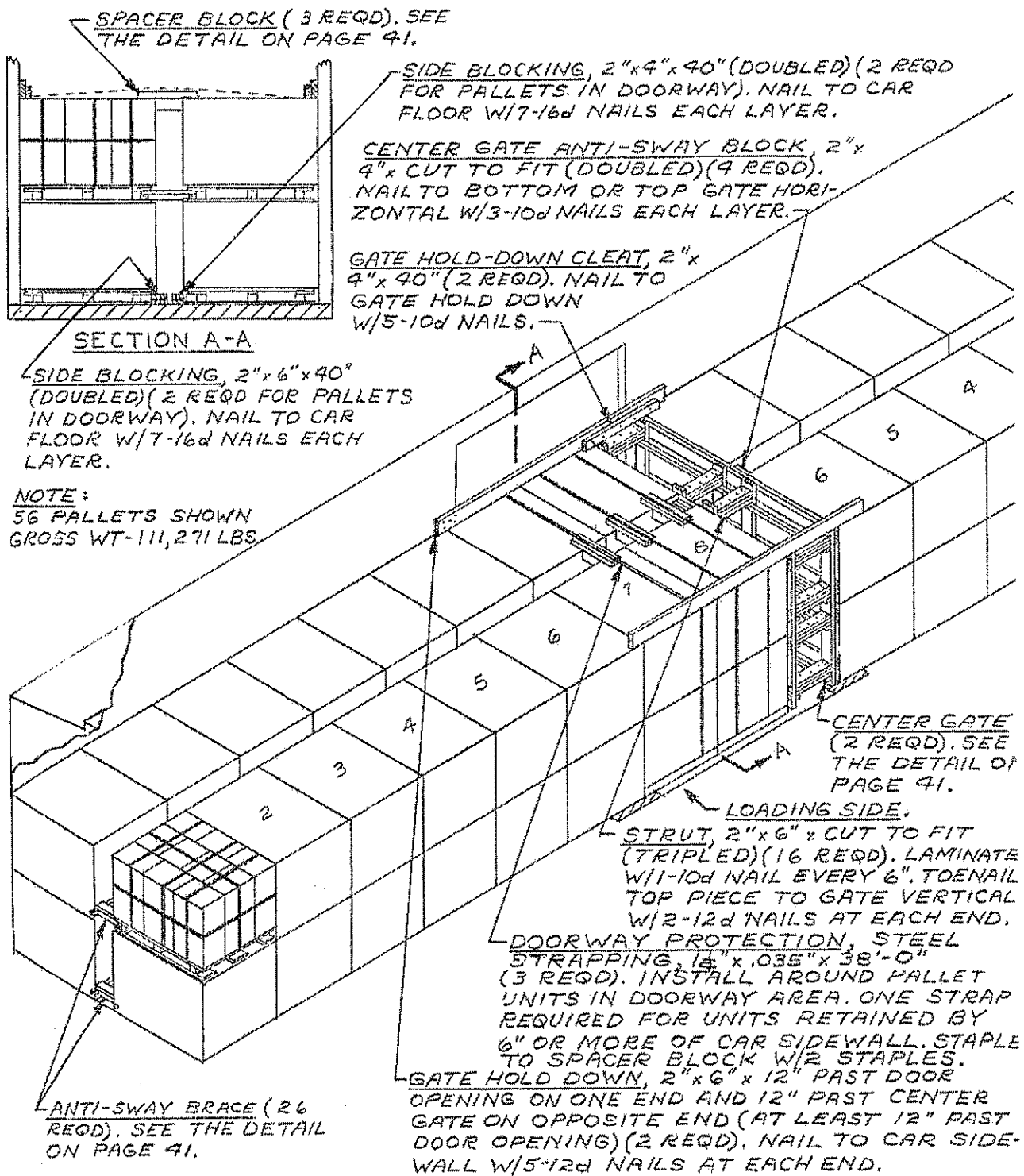
CENTER GATE (2 REQD). SEE DETAIL ON PAGE 41.

CENTER GATE ANTI-SWAY BLOCK, 2"x4"x CUT TO FIT (DOUBLED) (4 REQD). NAIL TO BOTTOM OR TOP GATE HORIZONTAL W/3-10d NAILS EACH LAYER.

NOTE: 60 PALLETS SHOWN GROSS WT-119,921 LBS.

ANTI-SWAY BRACE (29 REQD). SEE THE DETAIL ON PAGE 41.

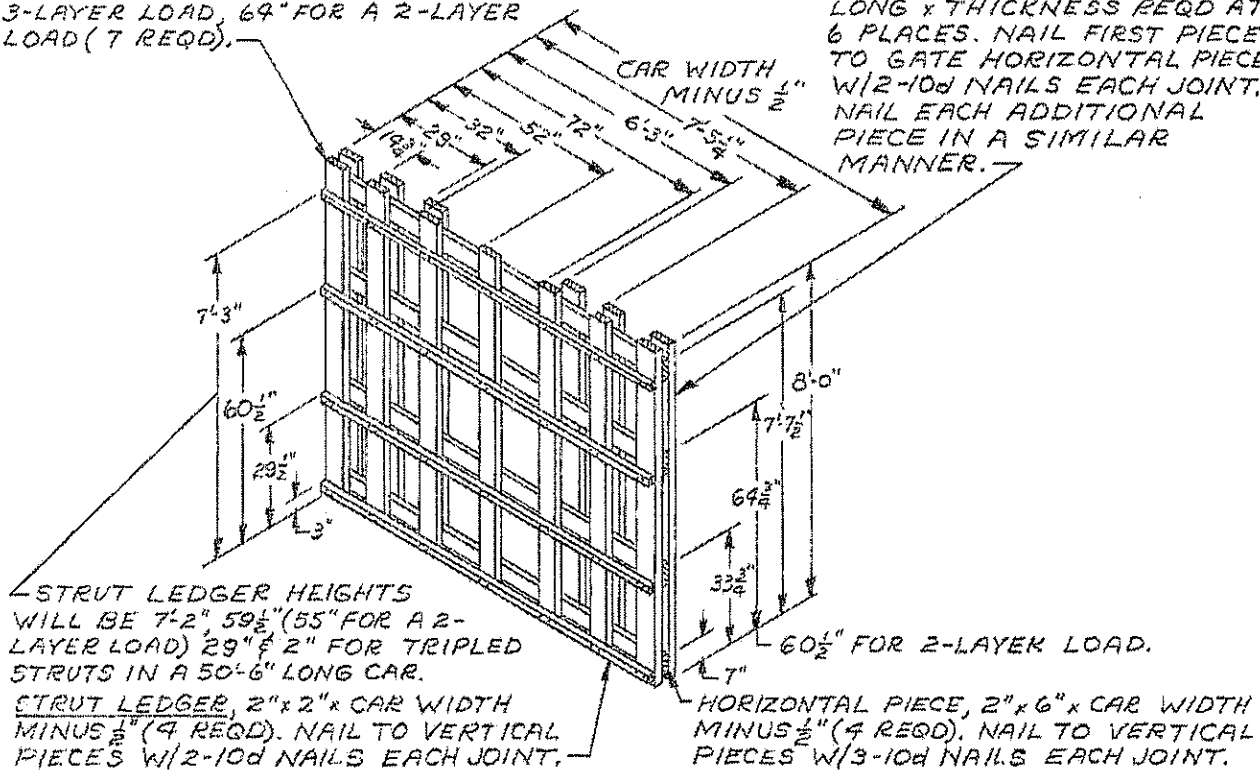
TYPICAL LOAD OF PALLETIZED PA54 CONTAINERS WITH PROPELLANT IN A 40'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR



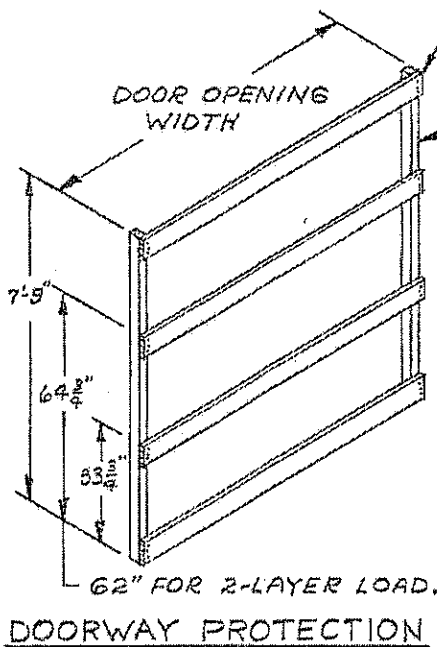
TYPICAL LOAD OF PALLETIZED PA54 CONTAINERS
WITH PROPELLANT IN A 50'-6" LONG BY
9'-2" WIDE CONVENTIONAL BOX CAR

VERTICAL PIECE, 2" x 6" x 8'-0" FOR A 3-LAYER LOAD, 69" FOR A 2-LAYER LOAD (7 REQD).

SOLID FILL, 6" WIDE x 8'-0" LONG x THICKNESS REQD AT 6 PLACES. NAIL FIRST PIECE TO GATE HORIZONTAL PIECE W/2-10d NAILS EACH JOINT. NAIL EACH ADDITIONAL PIECE IN A SIMILAR MANNER.



CENTER GATE



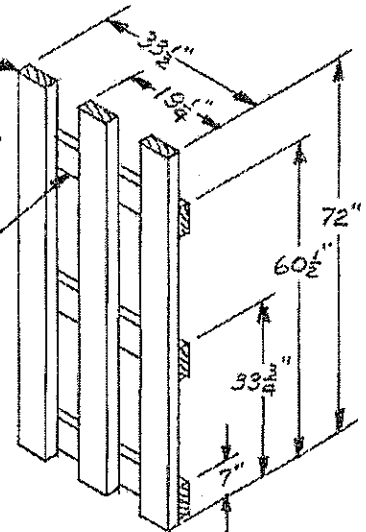
DOORWAY PROTECTION

HORIZONTAL PIECE, 1" x 6" x DOOR OPENING WIDTH (4 REQD). NAIL TO THE VERTICAL PIECES W/3-6d NAILS AT EACH END.

VERTICAL PIECE, 2" x 3" x 7'-9" (2 REQD). NAIL TO A DOOR POST W/1-12d NAIL EVERY 12". IF CAR HAS NON-NAILABLE POSTS, REFER TO PAGE 21 FOR GUIDANCE.

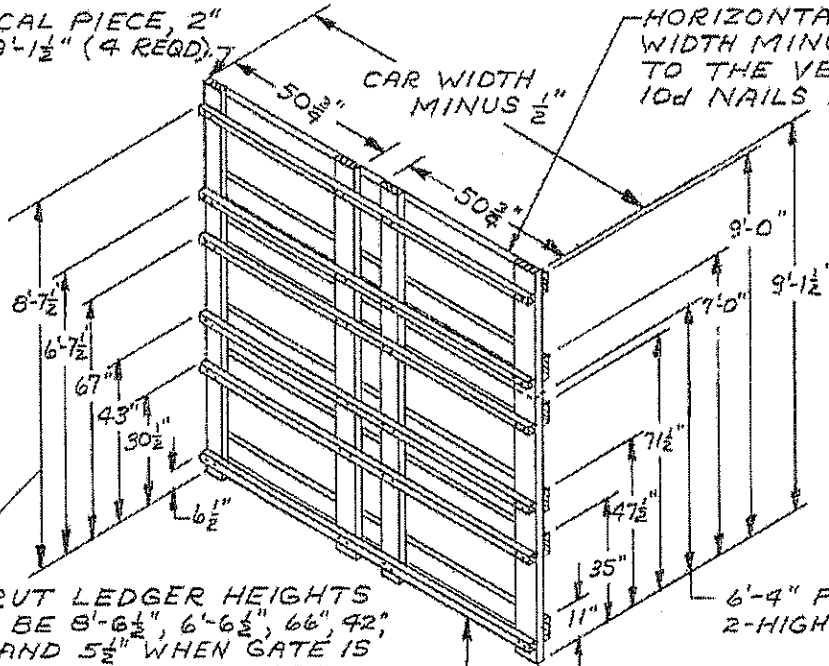
VERTICAL PIECE, 2" x 6" x 72" (3 REQD).

HORIZONTAL PIECE, 2" x 6" x 33 1/2" (3 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT



SOLID FILL GATE A

VERTICAL PIECE, 2" x 6" x 9'-1 1/2" (4 REQD).



STRUT LEDGER HEIGHTS WILL BE 8'-6 1/2", 6'-6 1/2", 66", 42", 29 1/2" AND 5 1/2" WHEN GATE IS TO BE USED FOR A LOAD IN A 50'-6" LONG CAR.

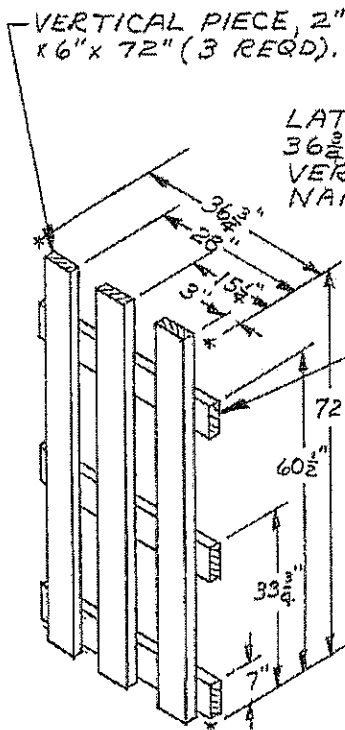
STRUT LEDGER, 2" x 2" x CAR WIDTH MINUS 1/2" (6 REQD). NAIL TO VERTICAL PIECES W/2-10d NAILS EACH JOINT.

CENTER GATE

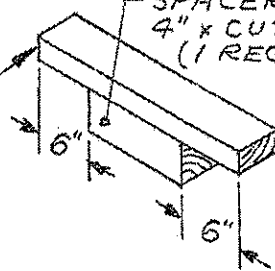
SUPPORT PIECE, 2" x 4" x LENGTH TO SUIT (1 REQD). NAIL TO SPACER PIECE W/3-12d NAILS.

SPACER PIECE, 4" x 4" x CUT TO FIT (1 REQD).

VERTICAL PIECE, 2" x 6" x 72" (3 REQD).



LATERAL PIECE, 2" x 6" x 36 3/4" (3 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

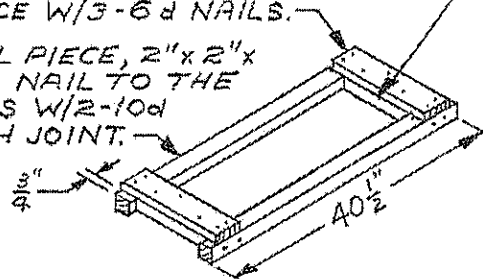


SPACER BLOCK

CLEAT, 1" x 4" x LENGTH TO SUIT (2 REQD). NAIL TO THE LONGITUDINAL PIECES W/2-6d NAILS AT EACH END AND TO A CROSS BRACE W/3-6d NAILS.

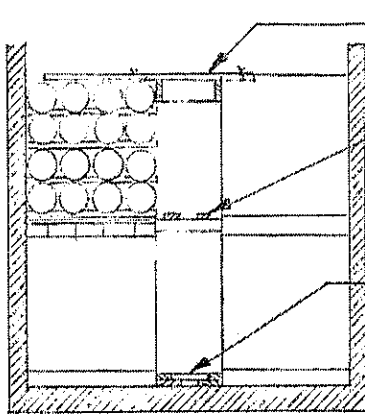
CROSS BRACE, 2" x 4" x CUT TO FIT (2 REQD).

LONGITUDINAL PIECE, 2" x 2" x 40 1/2" (2 REQD). NAIL TO THE CROSS BRACES W/2-10d NAILS AT EACH JOINT.



SOLID FILL GATE B

ANTI-SWAY BRACE



SECTION A-A

TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE DETAIL ON PAGE 51. WIRE TIE EACH END TO A PALLET UNIT WITH NO. 8 GAGE WIRE.

SECOND-LAYER ANTI-SWAY BRACE (7 REQD). SEE DETAIL ON PAGE 45.

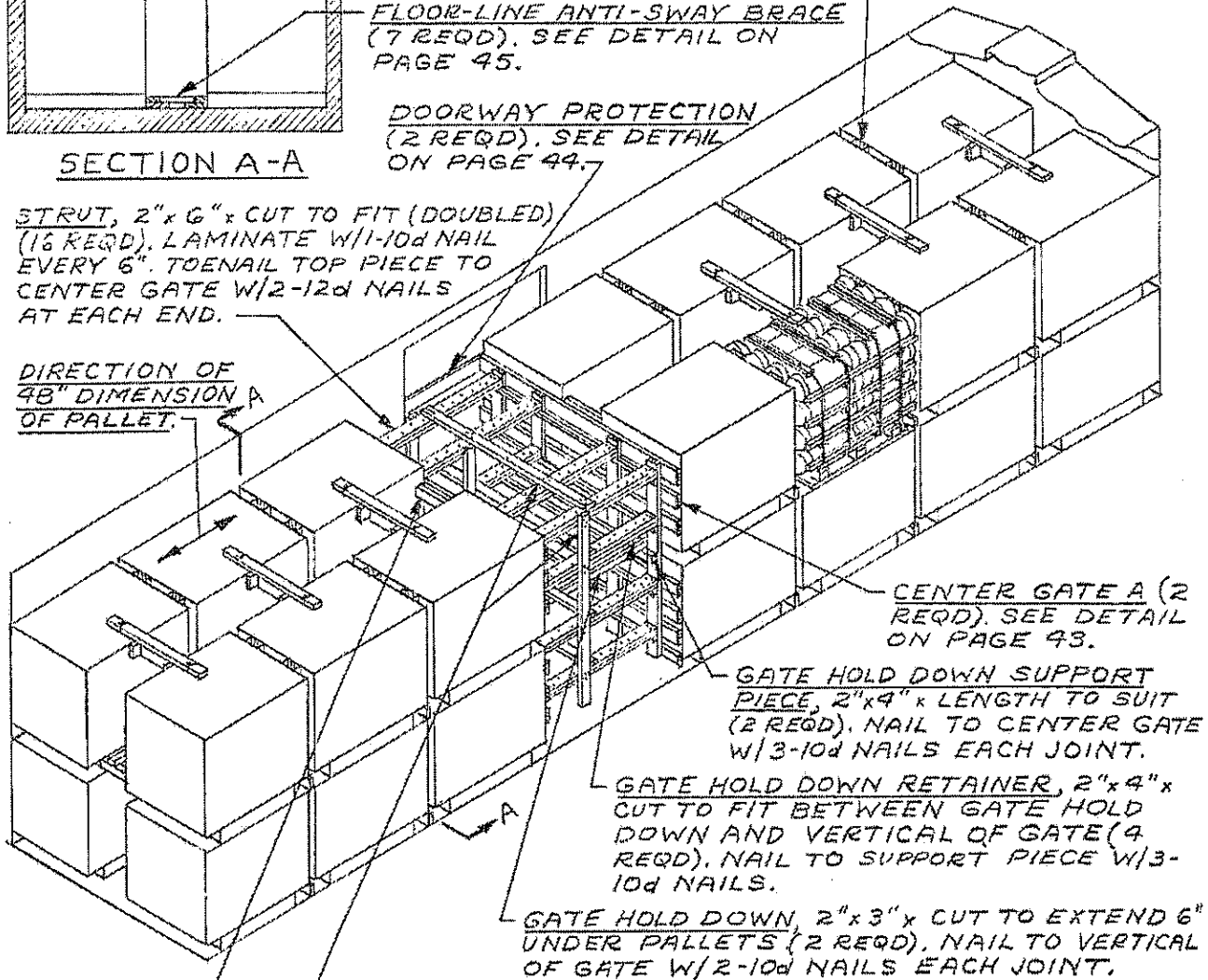
SEPARATOR GATE (5 REQD). NOTE: 28 PALLETS SHOWN GROSS WT-54,613 LBS. SEE THE DETAIL ON PAGE 44.

FLOOR-LINE ANTI-SWAY BRACE (7 REQD). SEE DETAIL ON PAGE 45.

DOORWAY PROTECTION (2 REQD). SEE DETAIL ON PAGE 44.

STRUT, 2"x6"x CUT TO FIT (DOUBLED) (16 REQD). LAMINATE W/1-10d NAIL EVERY 6". TOENAIL TOP PIECE TO CENTER GATE W/2-12d NAILS AT EACH END.

DIRECTION OF 48" DIMENSION A OF PALLET.



CENTER GATE A (2 REQD). SEE DETAIL ON PAGE 43.

GATE HOLD DOWN SUPPORT PIECE, 2"x4"x LENGTH TO SUIT (2 REQD). NAIL TO CENTER GATE W/3-10d NAILS EACH JOINT.

GATE HOLD DOWN RETAINER, 2"x4"x CUT TO FIT BETWEEN GATE HOLD DOWN AND VERTICAL OF GATE (4 REQD). NAIL TO SUPPORT PIECE W/3-10d NAILS.

GATE HOLD DOWN, 2"x3"x CUT TO EXTEND 6" UNDER PALLETS (2 REQD). NAIL TO VERTICAL OF GATE W/2-10d NAILS EACH JOINT.

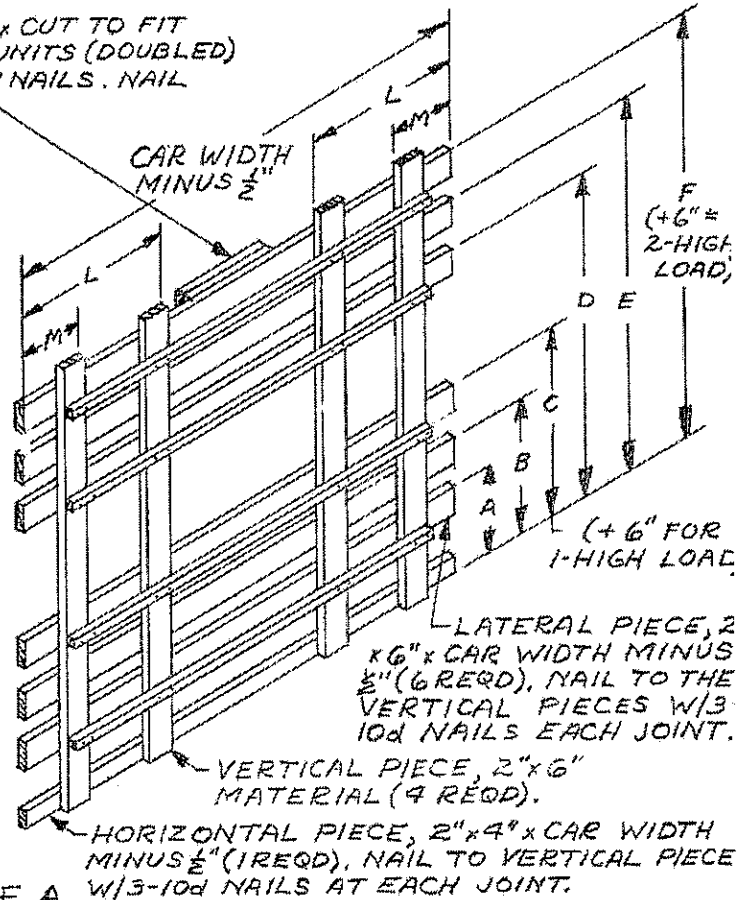
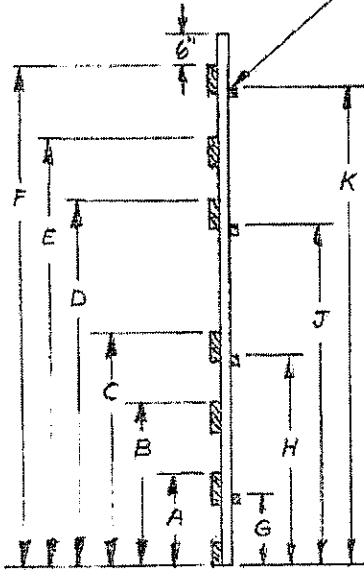
VERTICAL AND LATERAL STRUT BRACING, 2"x4"x CUT TO FIT (4 EACH REQD). NAIL TO STRUTS W/3-10d NAILS AT EACH JOINT.

CENTER GATE ANTI-SWAY BLOCK, 2"x4"x CUT TO FIT BETWEEN PALLET UNITS (DOUBLED) (2 REQD). NAIL FIRST PIECE TO GATE W/5-10d NAILS. NAIL SECOND PIECE IN LIKE MANNER.

TYPICAL LOAD OF PALLETIZED PROPELLING CHARGES IN A 40'-6" LONG BY 8'-6" WIDE CONVENTIONAL BOX CAR

GATE ANTI-SWAY BLOCK, 2"x4"x CUT TO FIT BETWEEN LATERALLY ADJACENT UNITS (DOUBLED) (1 REQD). NAIL FIRST PIECE W/5-10d NAILS. NAIL SECOND PIECE IN LIKE MANNER.

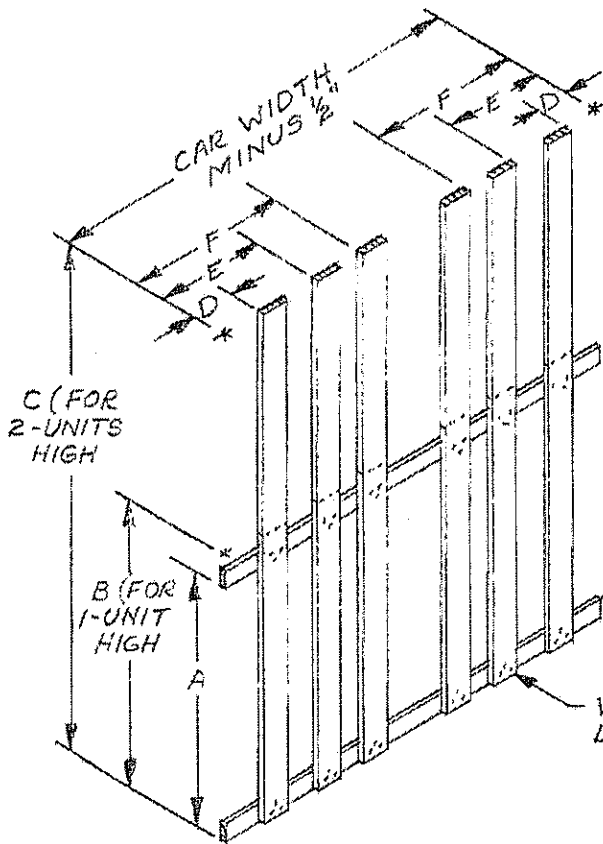
STRUT LEDGER, 2"x2"x LENGTH TO SUIT (4 REQD), NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.



CENTER GATE A

CENTER GATE CHART

DIMENSION	AMMO, AND CNTR MODEL NO.					
	8"	155MM	8"φ 155	8"	175MM	175MM
	M10	M13	M18	M19	M460 W/COVER	M460
A	20"	17½"	17¾"	19¼"	18¾"	18½"
B	30¾"	29¼"	30½"	29¾"	28¾"	28½"
C	41"	41"	43¾"	39½"	38¾"	38½"
D	69¼"	64½"	68½"	66¾"	63¾"	64¾"
E	6'-7½"	6'-4"	6'-9"	6'-4¾"	6'-1¼"	6'-2¾"
F	7'-6¼"	7'-4"	7'-10"	7'-2¾"	6'-11½"	7'-0¾"
G	15¾"	13"	13½"	15"	14¾"	14½"
H	36¾"	37"	39½"	35¼"	34"	34½"
J	65"	60½"	64"	62½"	59¼"	60¾"
K	7'-2"	7'-0"	7'-6"	6'-10¾"	6'-7¼"	6'-6¾"
L	35½"	33½"	37"	33"	33½"	34"
M	14"	12¼"	12¾"	13¾"	13½"	14"
N	55½"	52"	54¼"	53½"	51¾"	52¾"



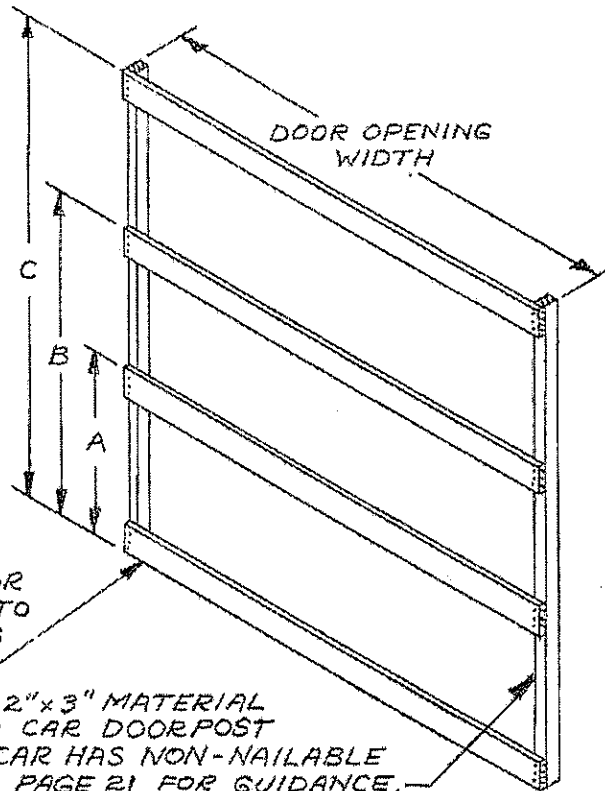
SEPARATOR GATE							
CNTR	AMMO	DIMENSIONS					
		A	B	C	D	E	F
M10	8"	49 $\frac{1}{4}$ "	54 $\frac{1}{4}$ "	8'-3"	9 $\frac{1}{4}$ "		30 $\frac{3}{4}$ "
M13	155MM	46"	51"	7'-8"	7 $\frac{3}{4}$ "	10 $\frac{1}{2}$ "	28 $\frac{1}{4}$ "
M18	8" ϕ 155	50 $\frac{1}{4}$ "	55 $\frac{1}{4}$ "	8'-6"	8 $\frac{1}{2}$ "	2 1 $\frac{1}{4}$ "	32 $\frac{1}{4}$ "
M19	8"	47 $\frac{1}{4}$ "	52 $\frac{1}{4}$ "	8'-0"	8 $\frac{3}{4}$ "		28 $\frac{1}{2}$ "
M460 (W/COVER)	175MM	45 $\frac{1}{2}$ "	50 $\frac{1}{2}$ "	7'-8"	8 $\frac{1}{4}$ "		28 $\frac{1}{4}$ "
M460	175MM	46 $\frac{1}{2}$ "	51 $\frac{1}{2}$ "		8 $\frac{1}{2}$ "		27 $\frac{1}{2}$ "

LATERAL PIECE, 1"x4" x CAR WIDTH MINUS $\frac{1}{2}$ " (2 REQD), NAIL TO VERTICAL PIECES W/3-6d NAILS AT EACH JOINT. CLINCH.

VERTICAL PIECE, 1"x6" x LENGTH TO SUIT (AS REQD).

SEPARATOR GATE

DOORWAY PROTECTION				
CNTR	AMMO	DIMENSIONS		
		A	B	C
M10	8"	41"	68 $\frac{1}{4}$ "	7'-5"
M13	155MM	40"	63"	7'-2"
M14	155MM	46"	54"	7'-9"
M16	155MM	44"	56"	7'-10"
M18	8" ϕ 155	44"	56"	7'-10"
M19	8"	39"	67"	7'-2"
M460 (W/COVER)	175MM	42"	58"	7'-9"
M460	175MM	41"	66"	7'-4"
GREEN BAG	175MM	46"	6'-0 $\frac{1}{2}$ "	8'-1 $\frac{1}{2}$ "



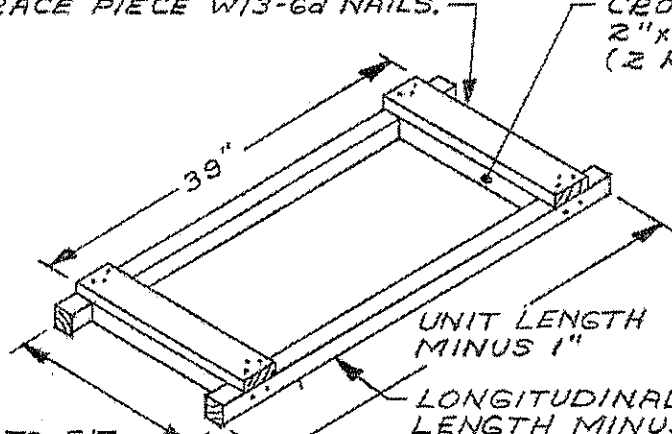
HORIZONTAL PIECE, 1"x6" x DOOR OPENING WIDTH (4 REQD). NAIL TO VERTICAL PIECES W/3-6d NAILS AT EACH END.

VERTICAL PIECE, 2"x3" MATERIAL (2 REQD). NAIL TO CAR DOORPOST W/12d NAILS. IF CAR HAS NON-NAILABLE POSTS, REFER TO PAGE 21 FOR GUIDANCE.

DOORWAY PROTECTION

CLEAT, 1" x 4" x LENGTH TO SUIT (2 REQD). NAIL TO LONGITUDINAL PIECE W/2-6d NAILS AT EACH END AND TO CROSS BRACE PIECE W/3-6d NAILS.

CROSS BRACE PIECE, 2" x 4" x CUT TO FIT (2 REQD).

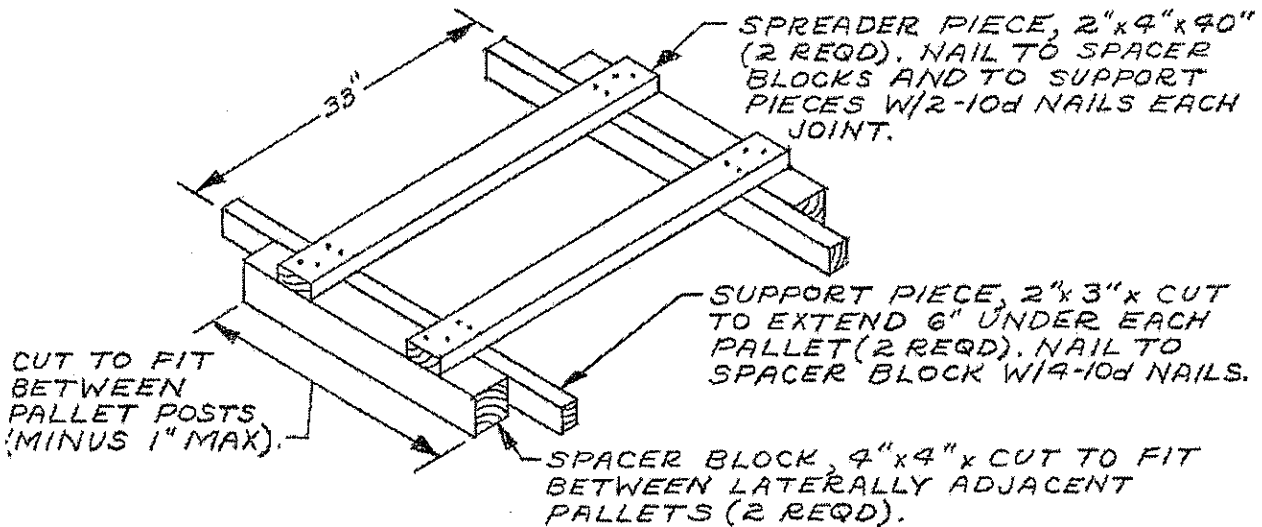


FABRICATE TO FIT BETWEEN POSTS ON LATERALLY ADJACENT POSTS (MINUS 1" MAX).

UNIT LENGTH MINUS 1"

LONGITUDINAL PIECE, 2" x 2" x UNIT LENGTH MINUS 1" (2 REQD). NAIL TO CROSS BRACE PIECES W/2-10d NAILS AT EACH JOINT.

ANTI-SWAY BRACE ASSEMBLY



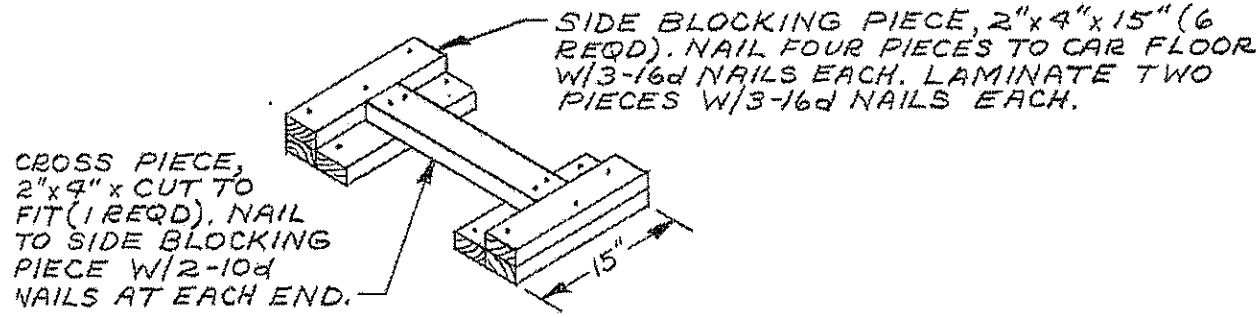
SPREADER PIECE, 2" x 4" x 90" (2 REQD). NAIL TO SPACER BLOCKS AND TO SUPPORT PIECES W/2-10d NAILS EACH JOINT.

CUT TO FIT BETWEEN PALLET POSTS (MINUS 1" MAX).

SUPPORT PIECE, 2" x 3" x CUT TO EXTEND 6" UNDER EACH PALLET (2 REQD). NAIL TO SPACER BLOCK W/4-10d NAILS.

SPACER BLOCK, 4" x 4" x CUT TO FIT BETWEEN LATERALLY ADJACENT PALLETS (2 REQD).

SECOND-LAYER ANTI-SWAY BRACE

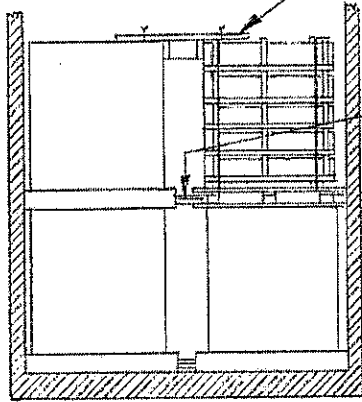


SIDE BLOCKING PIECE, 2" x 4" x 15" (6 REQD). NAIL FOUR PIECES TO CAR FLOOR W/3-16d NAILS EACH. LAMINATE TWO PIECES W/3-16d NAILS EACH.

CROSS PIECE, 2" x 4" x CUT TO FIT (1 REQD). NAIL TO SIDE BLOCKING PIECE W/2-10d NAILS AT EACH END.

FLOOR-LINE ANTI-SWAY BRACE

TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 51. WIRE TIE EACH END TO A PALLET UNIT WITH NO. 8 GAGE WIRE.



SECTION A-A

ANTI-SWAY BRACE ASSEMBLY (20 REQD, 10 EACH LAYER). SEE THE DETAIL ON PAGE 45.

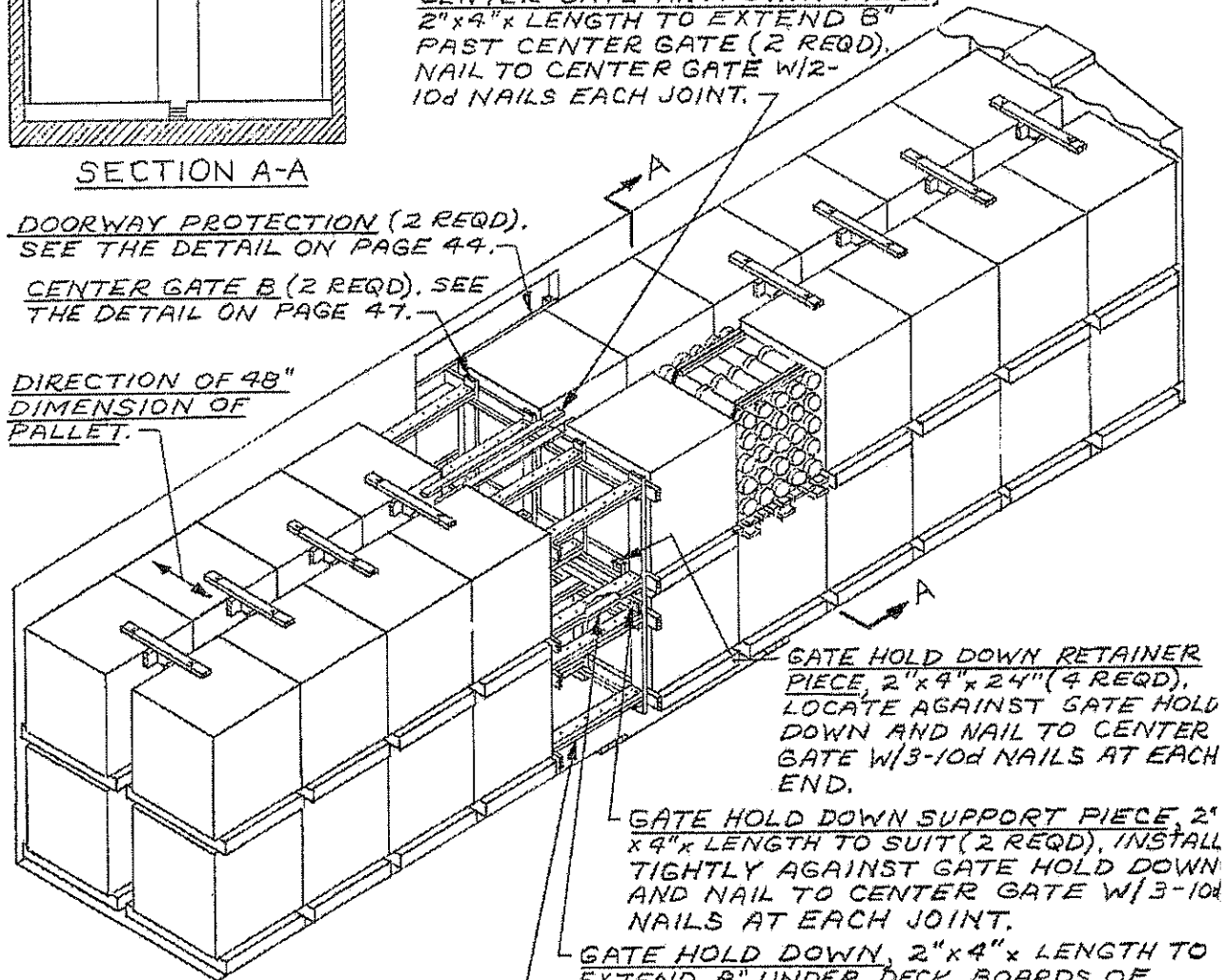
NOTE:
40 PALLETS SHOWN
GROSS WT. - 63,720 LBS.

CENTER GATE ANTI-SWAY PIECE, 2" x 4" x LENGTH TO EXTEND 8" PAST CENTER GATE (2 REQD). NAIL TO CENTER GATE W/2-10d NAILS EACH JOINT.

DOORWAY PROTECTION (2 REQD). SEE THE DETAIL ON PAGE 44.

CENTER GATE B (2 REQD). SEE THE DETAIL ON PAGE 47.

DIRECTION OF 48" DIMENSION OF PALLET.



GATE HOLD DOWN RETAINER PIECE, 2" x 4" x 24" (4 REQD). LOCATE AGAINST GATE HOLD DOWN AND NAIL TO CENTER GATE W/3-10d NAILS AT EACH END.

GATE HOLD DOWN SUPPORT PIECE, 2" x 4" x LENGTH TO SUIT (2 REQD). INSTALL TIGHTLY AGAINST GATE HOLD DOWN AND NAIL TO CENTER GATE W/3-10d NAILS AT EACH JOINT.

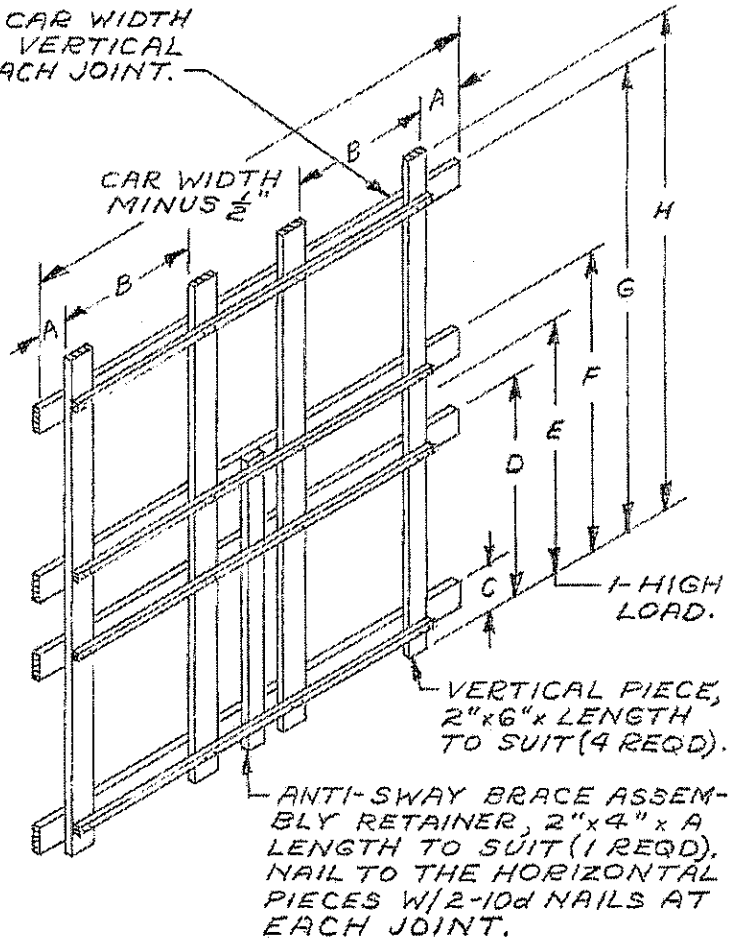
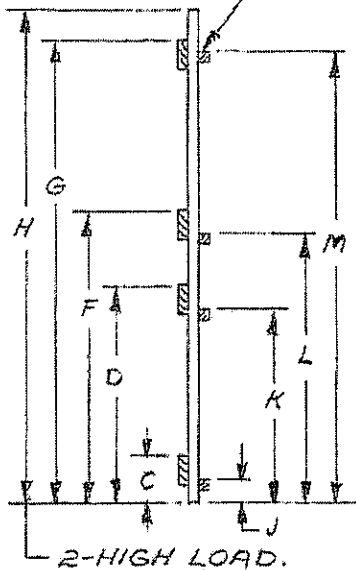
GATE HOLD DOWN, 2" x 4" x LENGTH TO EXTEND 8" UNDER DECK BOARDS OF PALLETS (2 REQD). NAIL TO GATE HOLD DOWN SUPPORT PIECE W/2-10d NAILS AT EACH JOINT.

STRUT, 2" x 6" x CUT TO FIT (DOUBLED) (16 REQD). LAMINATE W/1-10d NAIL EVERY 6". TOENAIL TOP PIECE TO CENTER GATE W/2-12d NAILS AT EACH END.

TYPICAL LOAD OF PALLETIZED PROPELLING CHARGES IN A 40'-6" LONG BY 8'-6" WIDE CONVENTIONAL BOX CAR

HORIZONTAL PIECE, 2"x6" x CAR WIDTH MINUS 1/2" (4 REQD). NAIL TO VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

STRUT LEDGER, 2"x2" x LENGTH TO SUIT (4 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.



CENTER GATE B

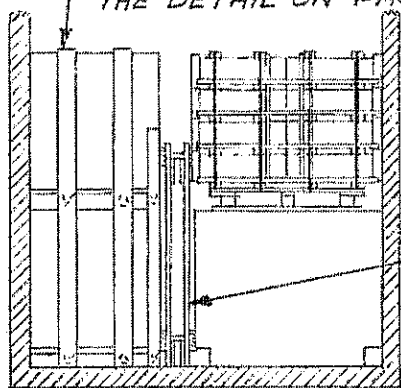
CENTER GATE CHART

AMMO, AND CNTR MODEL NO.

DIM.	AMMO, AND CNTR MODEL NO.							
	8" M10	155MM M13	155MM M14	155MM M16	8" & 155MM M18	175MM GREEN BG	175MM M460 W/COVER	175MM M460
A	4"	2 1/2"	8 3/8"	6"	2 1/2"	8 1/2"	8 3/4"	3 1/2"
B	45"	44"	25 1/2"	29 3/4"	42"	28"	31 1/2"	46"
C	9 1/2"	8 3/4"	9 1/4"	9 1/4"	9 1/4"	17"	13 1/2"	9"
D	40 3/4"	41 1/4"	43 1/4"	44"	44"	45"	43"	37"
E	49 1/2"	48"	48"	51"	51"	52"	46"	46 1/2"
F	59"	55 1/2"	57 3/4"	59 1/2"	59 1/2"	59"	58 3/4"	55"
G	7'-6"	7'-4"	7'-7 1/4"	7'-10 1/4"	7'-10 1/4"	7'-11"	7'-4 1/2"	7'-2"
H	8'-3"	7'-10"	8'-0"	8'-5"	8'-5"	8'-4"	7'-7"	7'-8"
J	5 1/2" *	4 1/4" *	5"	4 3/4" *	4 3/4" *	12 1/2"	9" *	5" *
K	37 5/8" *	36 1/2" *	39"	39 3/4" *	39 3/4" *	40 1/2"	38 3/4" *	33" *
L	55" *	51" *	53 1/2"	55"	55" *	54 1/2"	54 1/4" *	51" *
M	7'-2" *	6'-11 1/4" *	7'-3"	7'-6"	7'-6" *	7'-6 1/2"	7'-0" *	6'-10" *

* MINUS 3/4" AND USE TRIPLED STRUTS IN 50'-6" CAR.

SEPARATOR GATE (8 REQD). SEE THE DETAIL ON PAGE 51.



SECTION A-A

NOTE:
48 PALLETS SHOWN
GROSS WT-92, 128 LBS.

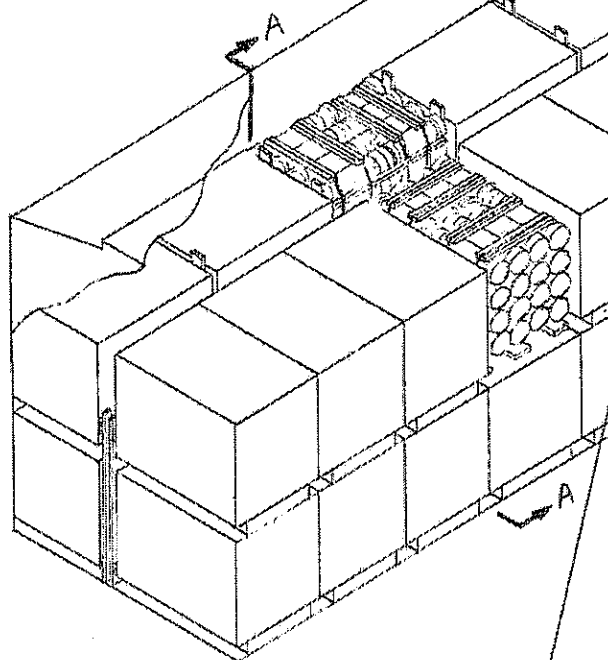
DIRECTIONS OF 48"
DIMENSIONS OF THE
PALLETS.

CENTER GATE C (2 REQD)
SEE THE DETAIL ON
PAGE 49.7

FILLER ASSEMBLY (14
REQD). SEE "FILLER A"
OR "FILLER B" DETAIL
ON PAGE 50.

DOORWAY PROTECTION (2
REQD). SEE DETAIL ON PAGE 44.7

STRUT, 2"x6"x CUT TO FIT (DOUBLED)
(8 REQD). LAMINATE W/1-10d
NAIL EVERY 6". TOENAIL TO
CENTER GATES W/2-12d
NAILS AT EACH END.



CENTER GATE
D (2 REQD).
SEE DETAIL
ON PAGE 49.

GATE HOLD DOWN SUPPORT
PIECE, 2"x4" BY LENGTH
TO SUIT (2 REQD). NAIL TO
CENTER GATE W/3-10d
NAILS AT EACH JOINT.

GATE HOLD DOWN, 2"x4" BY
CUT TO EXTEND 6" UNDER
PALLETS (2 REQD). NAIL TO
CENTER GATE W/2-10d NAILS
AT EACH JOINT.

GATE HOLD DOWN RETAINER, 2"x
4"x24" (4 REQD), NAIL TO CENTER
GATE W/3-10d NAILS EACH END.

STRUT, 2"x6"x CUT TO FIT (TRIPLED)
(8 REQD). LAMINATE W/1-10d NAIL
EVERY 6". TOENAIL TO CENTER GATES
W/2-12d NAILS AT EACH END.

FILLER RETAINER (1 REQD). NAIL TO
FILLER ASSEMBLIES W/3-10d
NAILS AT EACH END.

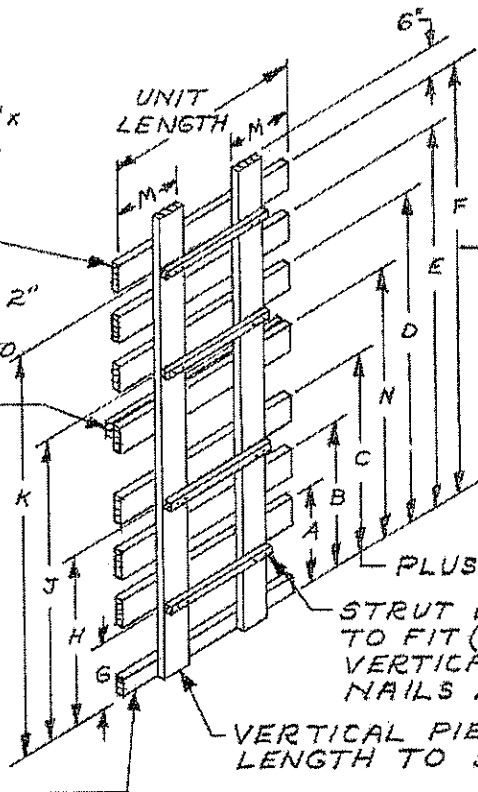
CENTER GATE SIDE BLOCKING, 2"x4"x
12" (DOUBLED) (2 REQD). NAIL TO CAR
FLOOR W/2-12d NAILS EACH LAYER.

TYPICAL LOAD OF PALLETIZED PROPELLING
CHARGES IN A 50'-6" LONG BY 9'-2" WIDE
CONVENTIONAL BOX CAR

HORIZONTAL PIECE, 2"x6"x
LENGTH TO SUIT (7 REQD).
NAIL TO THE VERTICAL
PIECES W/3-10d NAILS
AT EACH JOINT.

GATE HOLD-DOWN PIECE, 2"
x 3" x LENGTH TO SUIT
(DOUBLED) (1 REQD). NAIL TO
HORIZONTAL PIECE W/6-
10d NAILS EACH LAYER.

HORIZONTAL PIECE, 2"x4"x
LENGTH TO SUIT (1 REQD).
NAIL TO THE VERTICAL
PIECES W/3-10d NAILS
AT EACH JOINT.



SEE "CENTER GATE
CHART" ON PAGE
47 FOR LETTERED
DIMENSIONS.

PLUS 6" FOR I-HIGH LOAD.

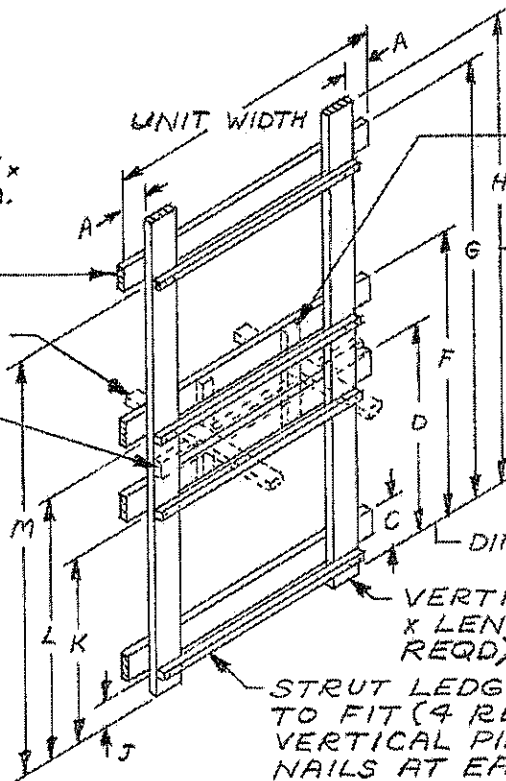
STRUT LEDGER, 2"x2"x CUT
TO FIT (4 REQD). NAIL TO
VERTICAL PIECES W/2-10d
NAILS AT EACH END.

VERTICAL PIECE, 2"x6" x
LENGTH TO SUIT (2 REQD).

CENTER GATE C

HORIZONTAL PIECE, 2"x6"x
LENGTH TO SUIT (4 REQD).
NAIL TO THE VERTICAL
PIECES W/3-10d NAILS
AT EACH JOINT.

GATE HOLD DOWN.
GATE HOLD DOWN
SUPPORT PIECE.



GATE HOLD DOWN
RETAINER PIECE.

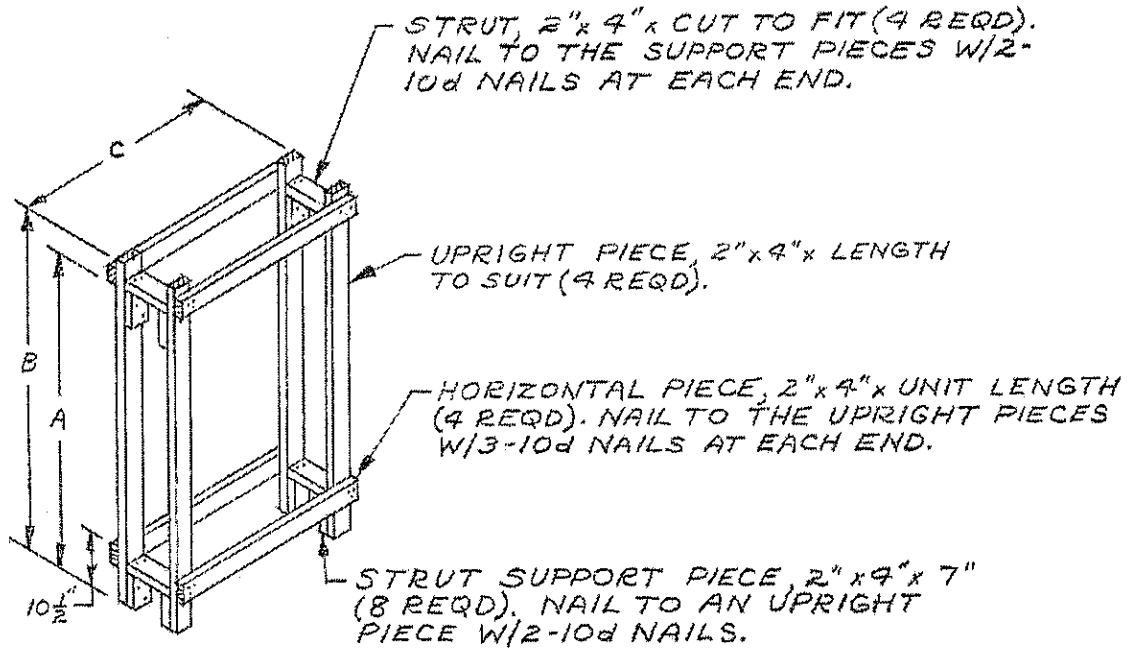
SEE "CENTER GATE
CHART" ON PAGE
47 FOR LETTERED
DIMENSIONS.

DIM. "E" FOR I-HI LOAD.

VERTICAL PIECE, 2"x6"
x LENGTH TO SUIT (2
REQD).

STRUT LEDGER, 2"x2"x CUT
TO FIT (4 REQD). NAIL TO
VERTICAL PIECES W/2-10d
NAILS AT EACH END.

CENTER GATE D

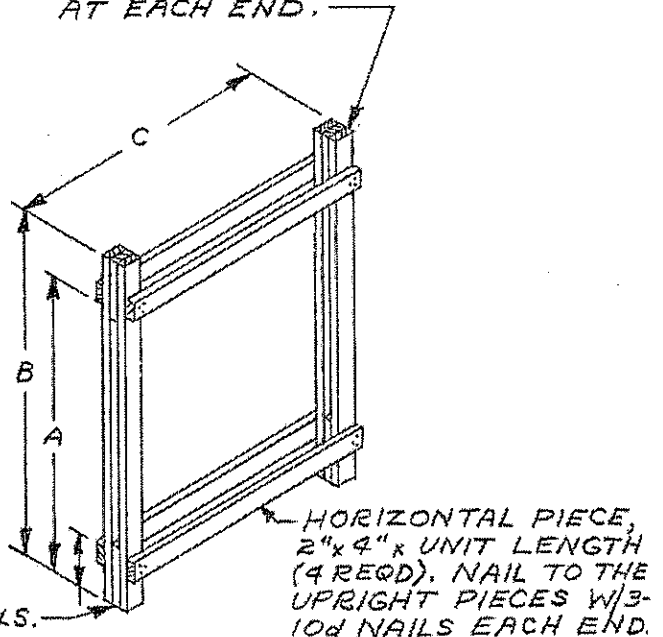


FILLER A

TO BE USED BETWEEN LATERALLY ADJACENT PALLET UNITS WHEN SPACE IS 10" OR GREATER. FILLER MAY BE PREFABRICATED OR MAY BE ASSEMBLED IN PLACE.

UPRIGHT PIECE, 2" x 4" x LENGTH TO SUIT (4 REQD). NAIL TO THE FILLER PIECES W/3-10d NAILS AT EACH END.

FILLER A OR B				
CNTR	AMMO	DIMENSIONS		
		A	B	C
M10	8"	65 $\frac{3}{4}$ "	72"	42 $\frac{3}{4}$ "
M13	155MM	60"	65"	39 $\frac{1}{2}$ "
M18	8" & 155	64 $\frac{1}{2}$ "	69"	43 $\frac{1}{2}$ "
M19	8"	62 $\frac{3}{4}$ "	68"	40 $\frac{1}{2}$ "
M460	175MM	60 $\frac{1}{2}$ "	65 $\frac{1}{2}$ "	39 $\frac{1}{2}$ "
M460				
W/COVER	175MM	60"	65"	39 $\frac{1}{2}$ "

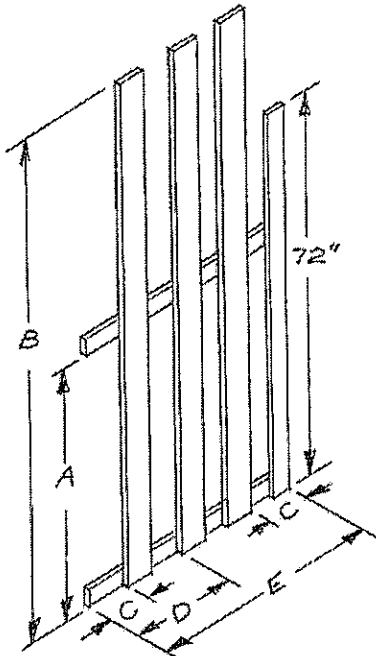


FILLER B

TO BE USED BETWEEN LATERALLY ADJACENT PALLET UNITS WHEN SPACE IS LESS THAN 10".

FILLER PIECE, 4" WIDE x 12" LONG MATERIAL OF A THICKNESS TO SUIT (4 REQD). IF APPLICABLE, LAMINATE W/3 PROPER SIZE NAILS.

SEPARATOR GATE						
CNTR	AMMO	DIMENSIONS				
		A	B	C	D	E
M10	8"	45 $\frac{1}{2}$ "	8'-3"	8 $\frac{3}{4}$ "		43 $\frac{1}{4}$ "
M13	155MM	46"	7'-8"	8 $\frac{1}{4}$ "	21 $\frac{1}{4}$ "	40"
M18	8" ϕ 155	50 $\frac{1}{4}$ "	8'-6"	8 $\frac{1}{4}$ "	21 $\frac{1}{4}$ "	44"
M19	8"	47 $\frac{1}{2}$ "	8'-0"	8 $\frac{3}{4}$ "		41"
M460 W/COVER	175MM	45 $\frac{1}{2}$ "	7'-8"	8 $\frac{3}{4}$ "		40"
M460	175MM	46 $\frac{1}{2}$ "	7'-10"	8 $\frac{3}{4}$ "		40"

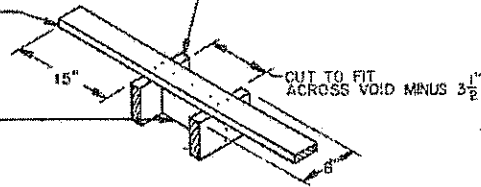


SEPARATOR GATE

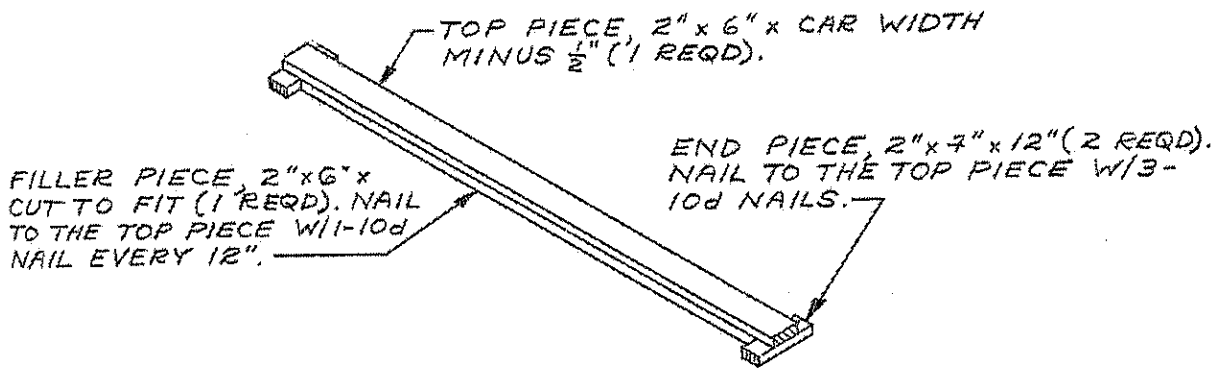
SUPPORT PIECE, 2" x 4" x LENGTH TO SUIT (1 REQD). NAIL TO SPACER PIECE W/2-10d NAILS AND TO BUFFER PIECES W/2-10d NAILS AT EACH JOINT.

BUFFER PIECE, 2" x 6" x 6" (2 REQD). NAIL TO SPACER PIECE W/3-10d NAILS.

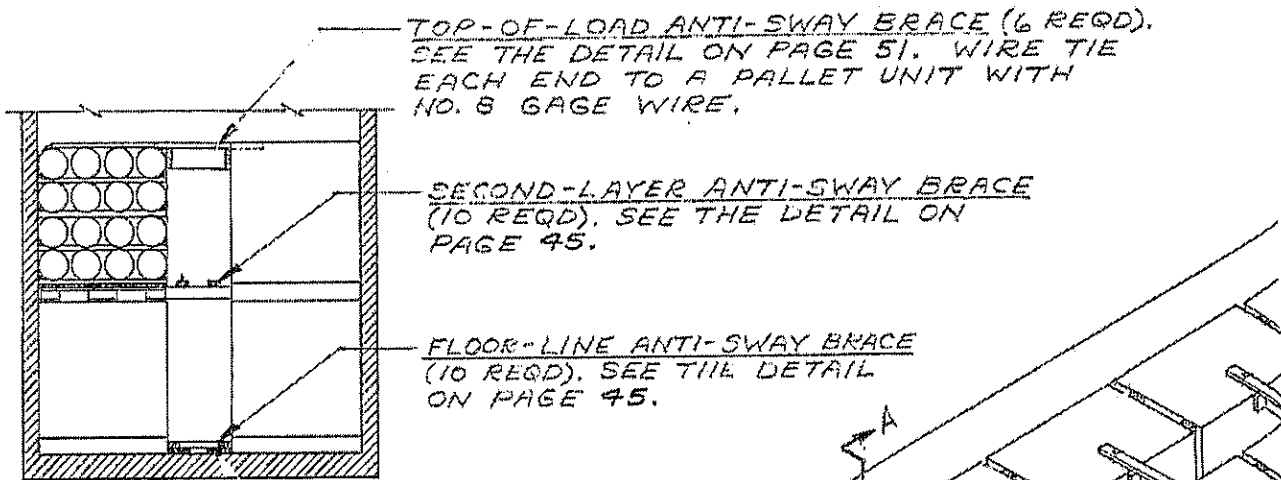
SPACER PIECE, 2" x 6" x CUT TO FIT (1 REQD).



TOP-OF-LOAD ANTI-SWAY BRACE



STRAPPING BOARD

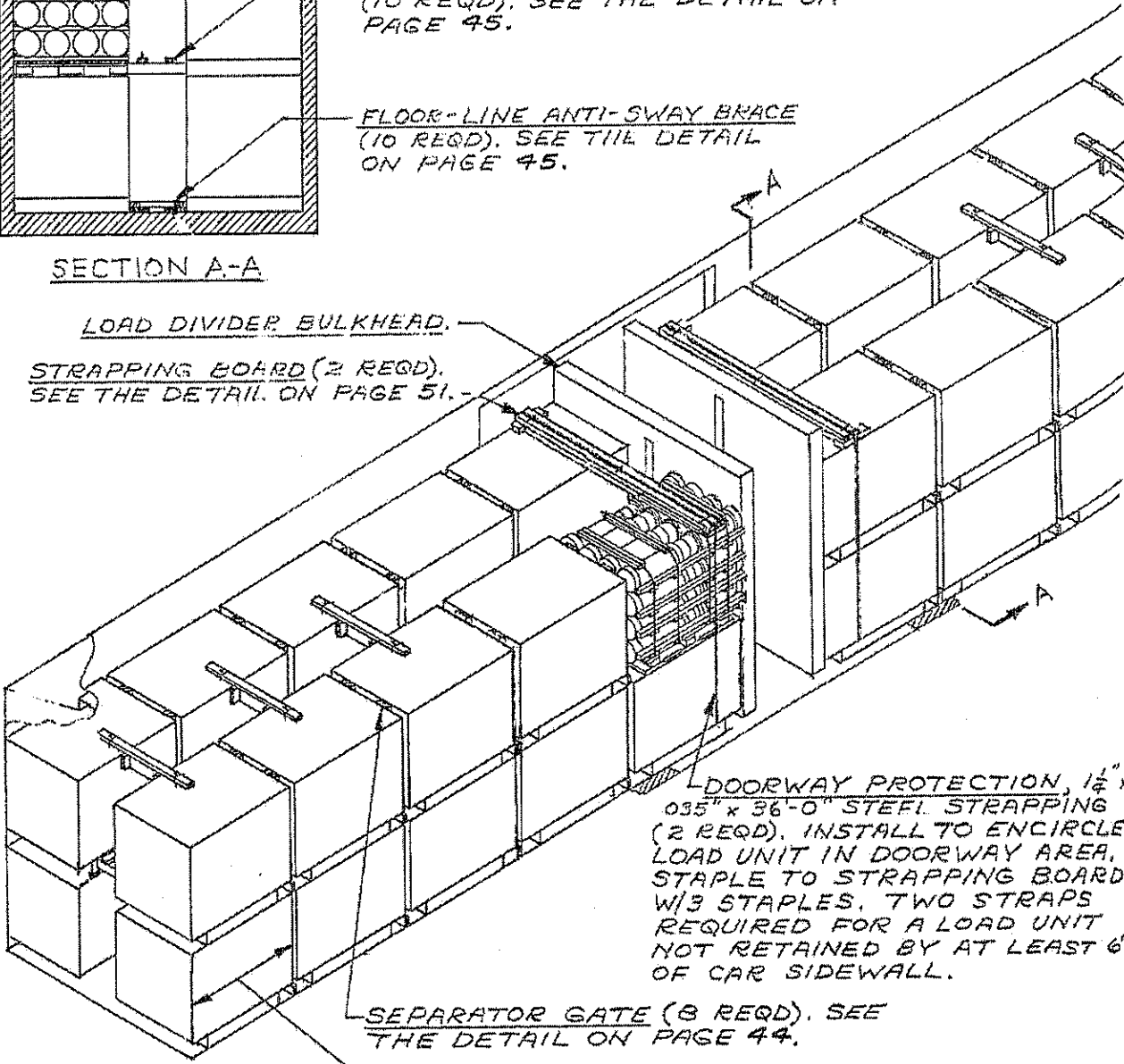


TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD).
SEE THE DETAIL ON PAGE 51. WIRE TIE
EACH END TO A PALLET UNIT WITH
NO. 8 GAGE WIRE.

SECOND-LAYER ANTI-SWAY BRACE
(10 REQD). SEE THE DETAIL ON
PAGE 45.

FLOOR-LINE ANTI-SWAY BRACE
(10 REQD). SEE THE DETAIL
ON PAGE 45.

SECTION A-A



LOAD DIVIDER BULKHEAD.

STRAPPING BOARD (2 REQD).
SEE THE DETAIL ON PAGE 51.

DOORWAY PROTECTION, 1 1/2" x
035" x 36'-0" STEEL STRAPPING
(2 REQD). INSTALL TO ENIRCLE
LOAD UNIT IN DOORWAY AREA,
STAPLE TO STRAPPING BOARD
W/3 STAPLES. TWO STRAPS
REQUIRED FOR A LOAD UNIT
NOT RETAINED BY AT LEAST 6"
OF CAR SIDEWALL.

SEPARATOR GATE (8 REQD). SEE
THE DETAIL ON PAGE 44.

DIRECTION OF 48"
DIMENSION OF PALLET.

NOTE:
40 PALLETS SHOWN
GROSS WT. - 76,640 LBS.

REFER TO PAGES 22 THRU 26 FOR NOTES ON LOAD DIVIDER CARS.

TYPICAL LOAD OF PALLETIZED PROPELLING
CHARGES IN A 50'-6" LONG BY 9'-2" WIDE
CAR EQUIPPED WITH LOAD DIVIDERS

THIS PAGE INTENTIONALLY

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CENTER GATE (2 REQD). SEE THE
DETAIL ON PAGE 55.

STRUT, 4"x4" x CUT TO FIT (16 REQD).
TOENAIL TO CENTER GATE W/2-
16d NAILS AT EACH END.

GATE HOLD-DOWN CLEAT, 2"x6"x48"
(2 REQD); NAIL TO THE GATE HOLD
DOWN W/7-10d NAILS.

ANTI-SWAY BRACE (12 REQD).
SEE THE DETAIL ON
PAGE 55.

DOORWAY PROTECTION
(2 REQD). SEE DETAIL
ON PAGE 55.

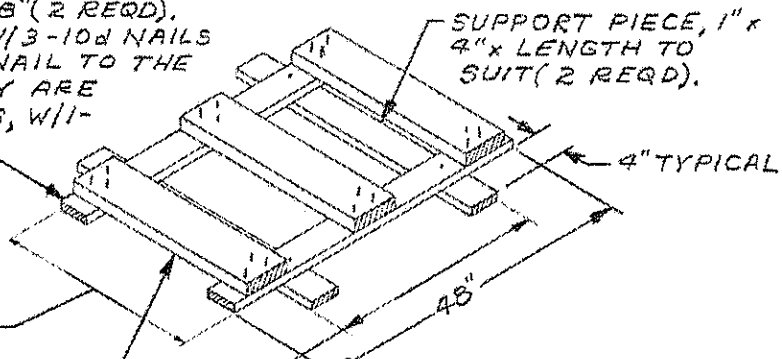
GATE HOLD DOWN, 2"x6" x DOOR
OPENING WIDTH PLUS 24" (2 REQD)
NAIL TO THE CAR SIDEWALL W/5-
10d NAILS AT EACH END.

NOTE:
48 PALLET UNITS SHOWN
GROSS WT. - 87,648 LBS.

SIDE BLOCKING, 2"x4"x48" (24 REQD). NAIL
TO THE CAR FLOOR W/1-16d NAIL EVERY 6".

TYPICAL LOAD OF 3"/50 CARTRIDGE IN TANK M5
AND MODS (FLEET ISSUE UNIT LOAD) IN
A 50'-6" LONG CONVENTIONAL BOX CAR

LONGITUDINAL PIECE, 1" x 4" x 48" (2 REQD).
 NAIL TO THE CROSS BRACES W/3-10d NAILS
 AT EACH JOINT AND CLINCH. NAIL TO THE
 SUPPORT PIECES, AFTER THEY ARE
 INSERTED IN FORK POCKETS, W/1-
 6d NAIL AT EACH JOINT.



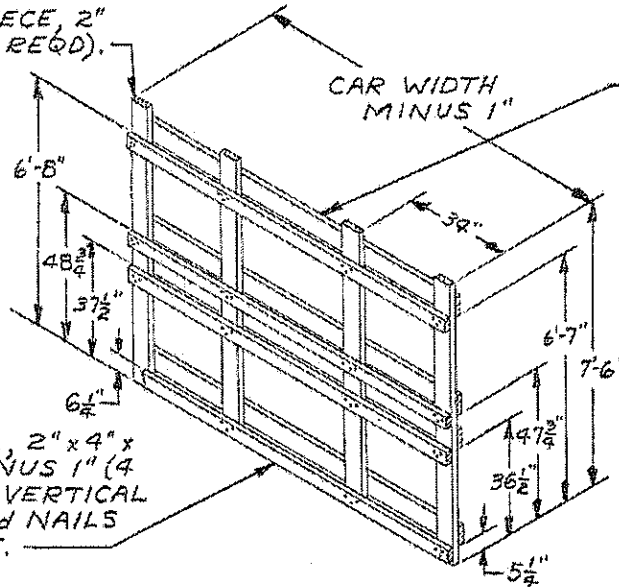
DISTANCE BETWEEN POSTS
 OF PALLETS ACROSS THE CAR.

CROSS BRACE, 2" x 6" x CUT TO FIT
 BETWEEN POSTS OF LATERALLY
 ADJACENT PALLETS (3 REQD).

DISTANCE BETWEEN INSIDE OF
 OUTER POSTS OF PALLET.

ANTI-SWAY BRACE

VERTICAL PIECE, 2"
 x 6" x 7'-6" (4 REQD).



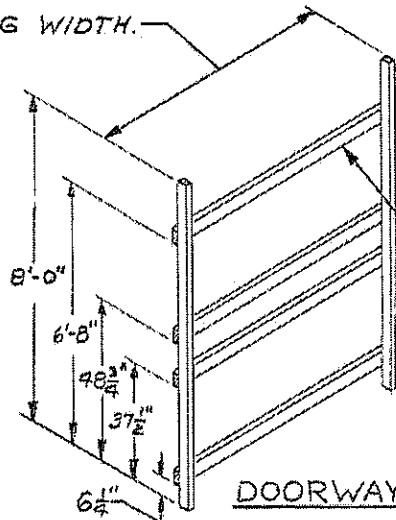
CAR WIDTH
 MINUS 1"

HORIZONTAL PIECE, 2"
 x 6" x CAR WIDTH MINUS
 1" (4 REQD). NAIL TO THE
 VERTICAL PIECES W/3-
 10d NAILS AT EACH
 JOINT.

STRUT LEDGER, 2" x 4" x
 CAR WIDTH MINUS 1" (4
 REQD). NAIL TO VERTICAL
 PIECES W/3-10d NAILS
 AT EACH JOINT.

CENTER GATE

DOOR OPENING WIDTH.

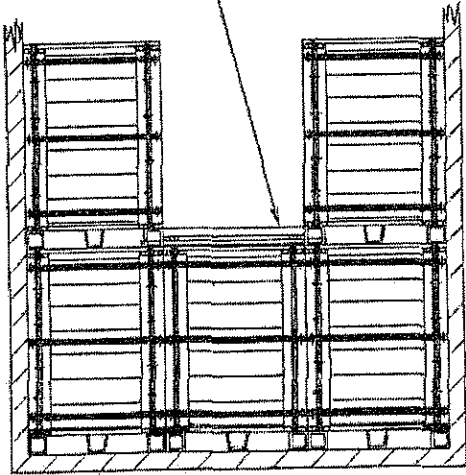


VERTICAL PIECE, 2" x 3" x 8'-0" (2
 REQD). NAIL TO A DOOR POST
 W/1-12d NAIL EVERY 12". IF CAR
 HAS NON-NAILABLE POSTS,
 REFER TO PAGE 21 FOR
 GUIDANCE.

HORIZONTAL PIECE, 2" x 4" x DOOR
 OPENING WIDTH (4 REQD). NAIL
 TO THE VERTICAL PIECES W/2-
 10d NAILS AT EACH END.

DOORWAY PROTECTION

ANTI-SWAY BRACE (11 REQD), SEE THE DETAIL ON PAGE 57.



SECTION A-A

HORIZONTAL STRUT BRACING, 2"x4" x CAR WIDTH-1 (4 REQD), NAIL W/3-10d NAILS AT EACH JOINT.

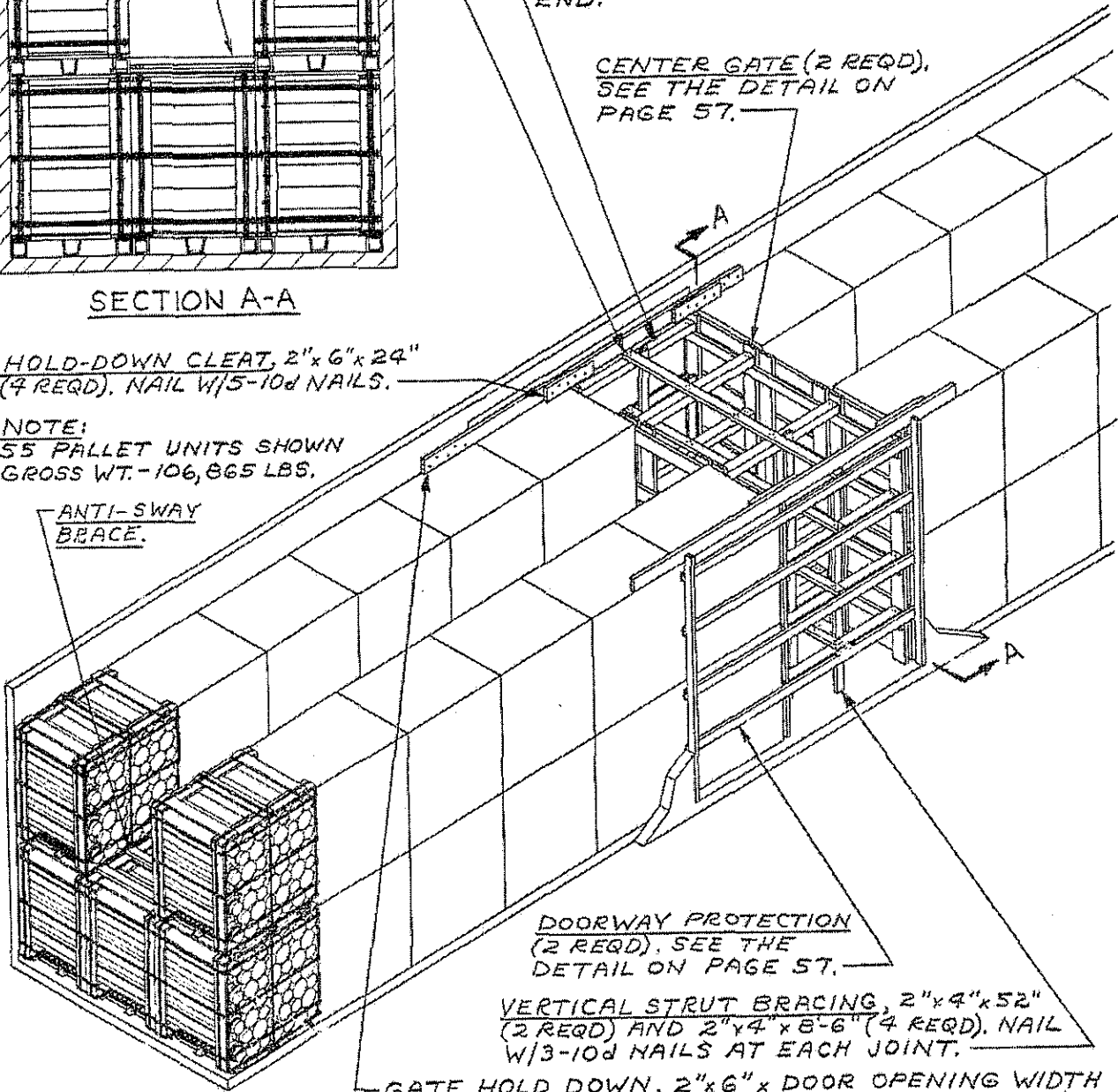
STRUT, 4"x4" x CUT TO FIT (20 REQD), TOE-NAIL TO GATE W/2-16d NAILS AT EACH END.

CENTER GATE (2 REQD), SEE THE DETAIL ON PAGE 57.

HOLD-DOWN CLEAT, 2"x6"x24" (4 REQD), NAIL W/5-10d NAILS.

NOTE:
55 PALLET UNITS SHOWN
GROSS WT.-106,865 LBS.

ANTI-SWAY BRACE.



DOORWAY PROTECTION (2 REQD), SEE THE DETAIL ON PAGE 57.

VERTICAL STRUT BRACING, 2"x4"x52" (2 REQD) AND 2"x4" x 8'-6" (4 REQD), NAIL W/3-10d NAILS AT EACH JOINT.

GATE HOLD DOWN, 2"x6" x DOOR OPENING WIDTH + 24" (2 REQD), NAIL TO THE CAR SIDEWALL W/5-10d NAILS AT EACH END.

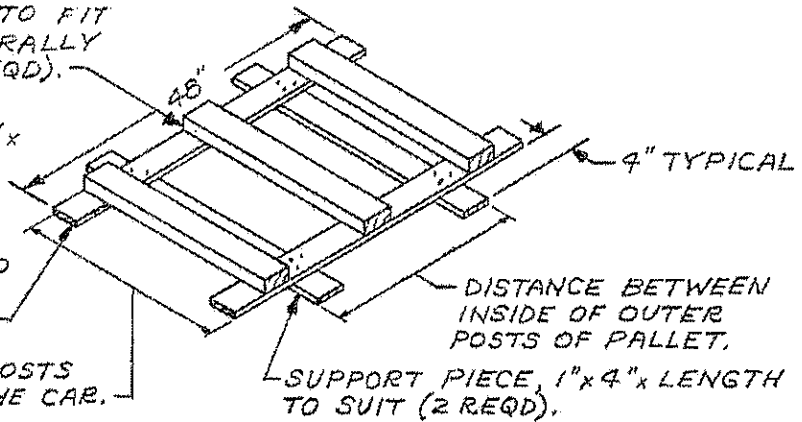
NOTE: IN 40'-6" LONG CARS, LOAD 6 UNIT LOADS IN EACH STACK, USE 24 STRUTS.

TYPICAL LOAD OF 5"/54 CARTRIDGE IN TANK M14 (DOMESTIC UNIT LOAD) IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

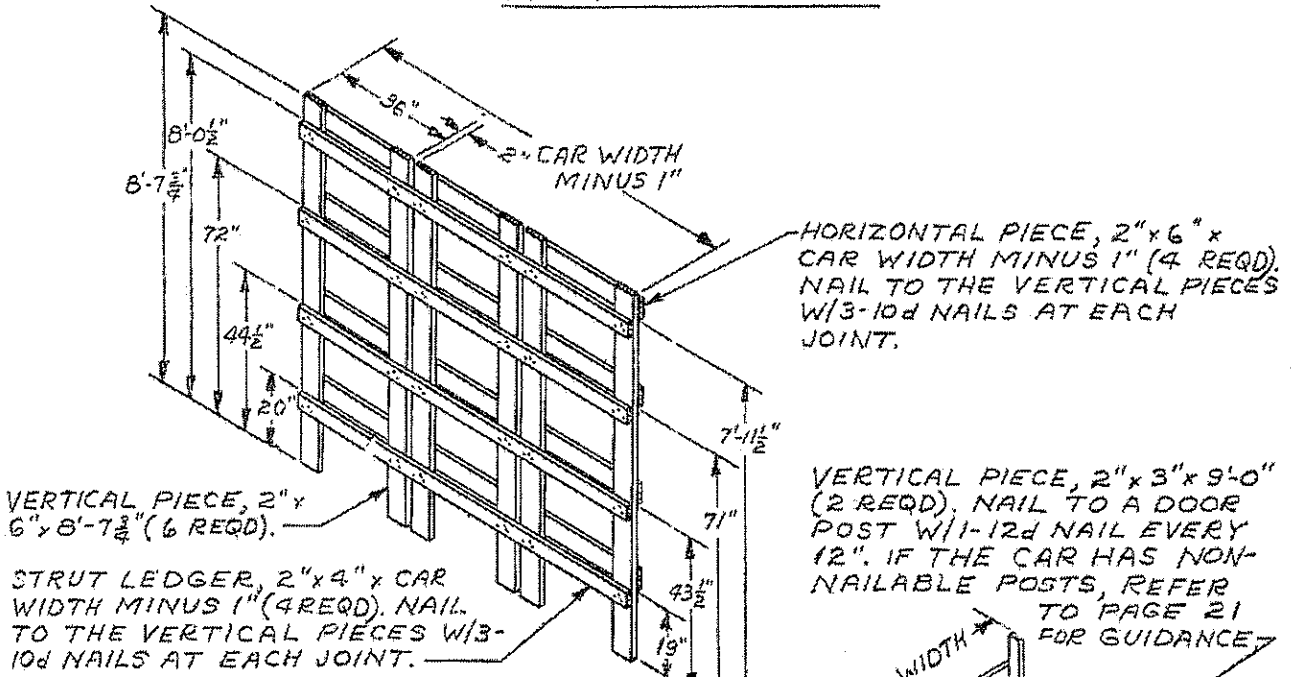
CROSS BRACE, 2"x4" x CUT TO FIT BETWEEN POSTS OF LATERALLY ADJACENT PALLETS (3 REQD).

LONGITUDINAL PIECE, 1"x4" x 48" (2 REQD), NAIL TO THE CROSS BRACES W/3-6d NAILS AT EACH JOINT, NAIL TO THE SUPPORT PIECES, AFTER THEY ARE INSERTED IN FORK POCKETS, W/3-6d NAILS AT EACH JOINT.

DISTANCE BETWEEN POSTS OF PALLETS ACROSS THE CAR.



ANTI-SWAY BRACE



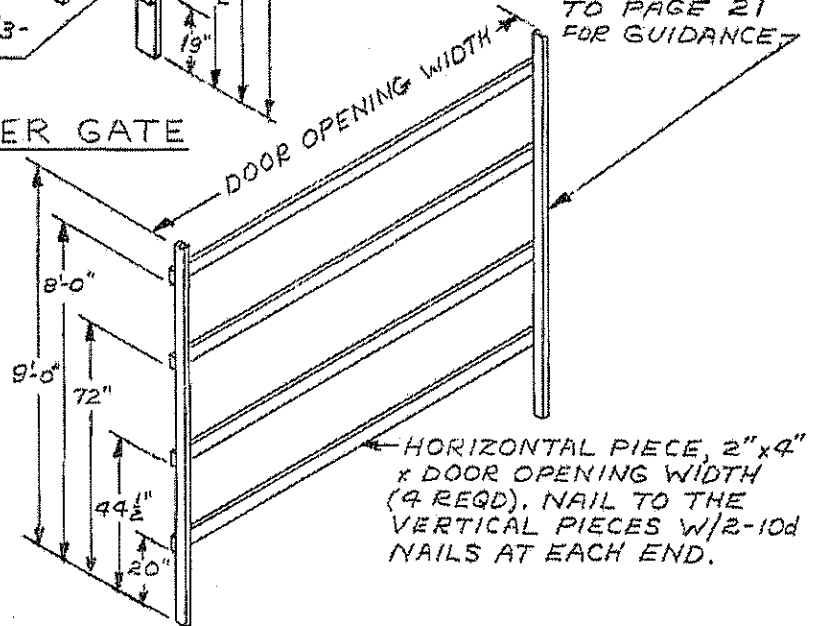
VERTICAL PIECE, 2" x 6" x 8'-7 3/4" (6 REQD).

STRUT LEDGER, 2" x 4" x CAR WIDTH MINUS 1" (4 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

HORIZONTAL PIECE, 2" x 6" x CAR WIDTH MINUS 1" (4 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

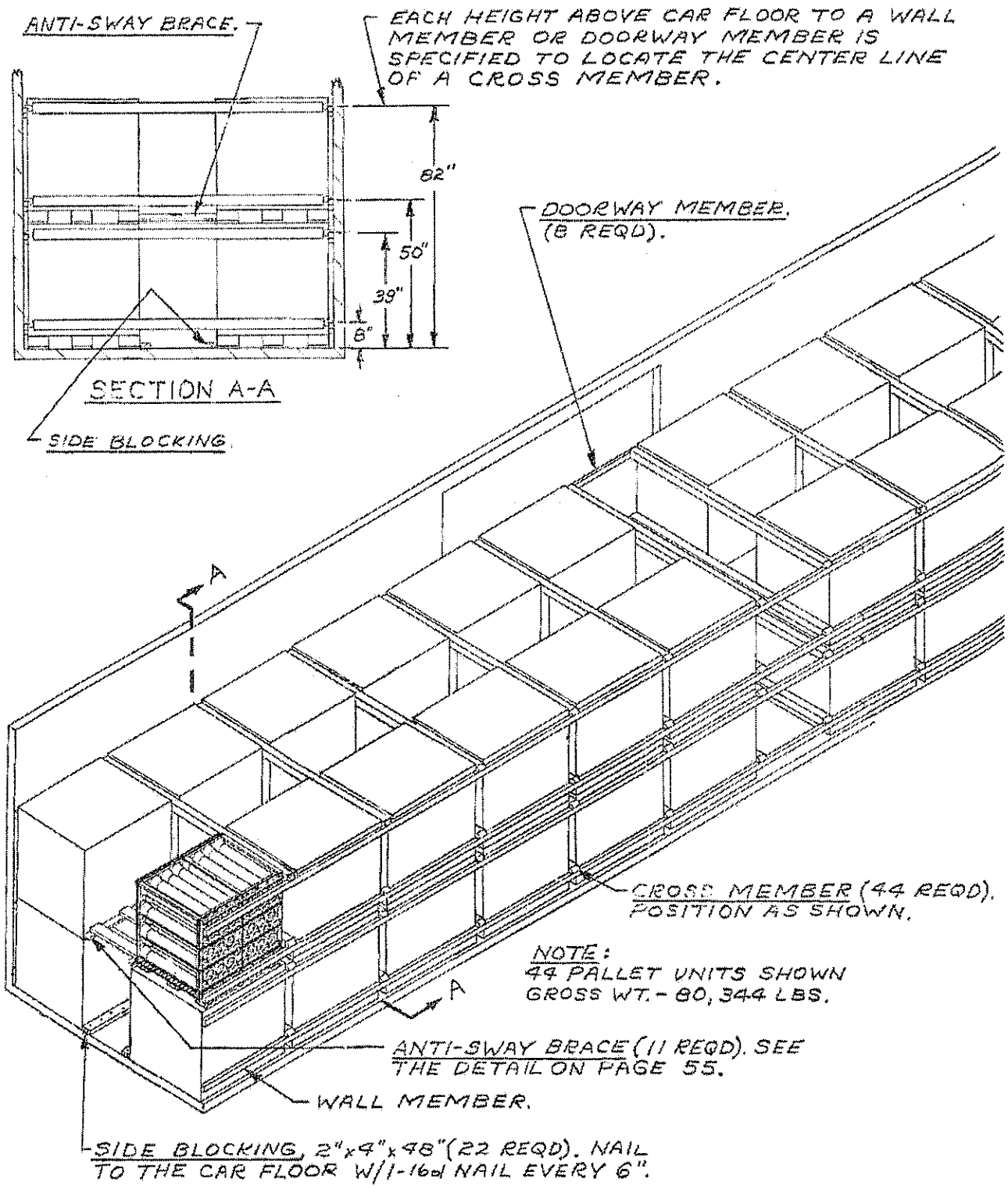
VERTICAL PIECE, 2" x 3" x 9'-0" (2 REQD). NAIL TO A DOOR POST W/1-12d NAIL EVERY 12". IF THE CAR HAS NON-AVAILABLE POSTS, REFER TO PAGE 21 FOR GUIDANCE.

CENTER GATE

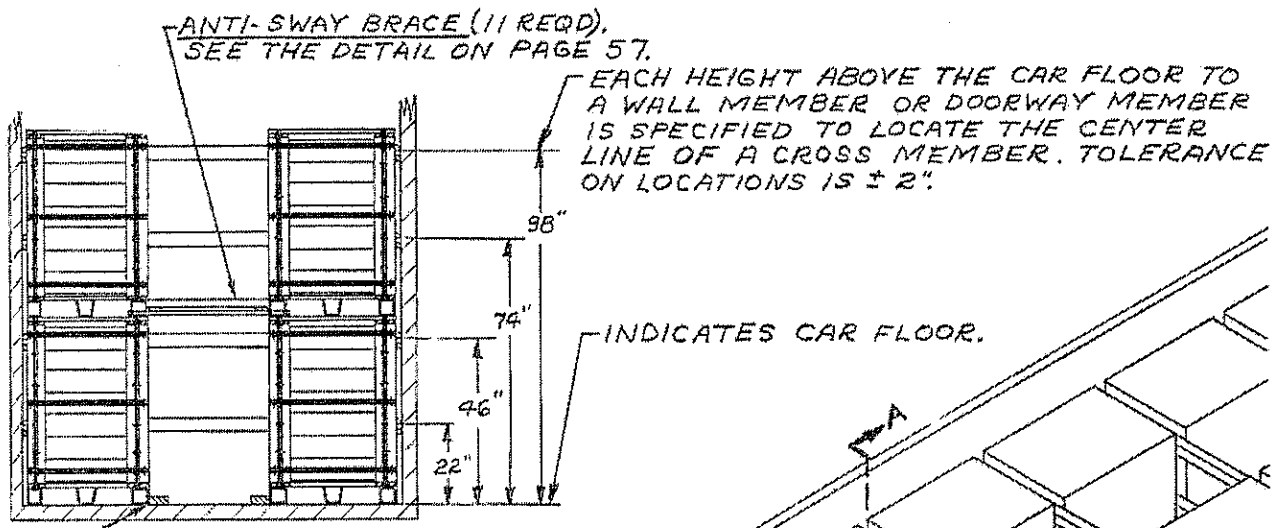


HORIZONTAL PIECE, 2" x 4" x DOOR OPENING WIDTH (4 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH END.

DOORWAY PROTECTION



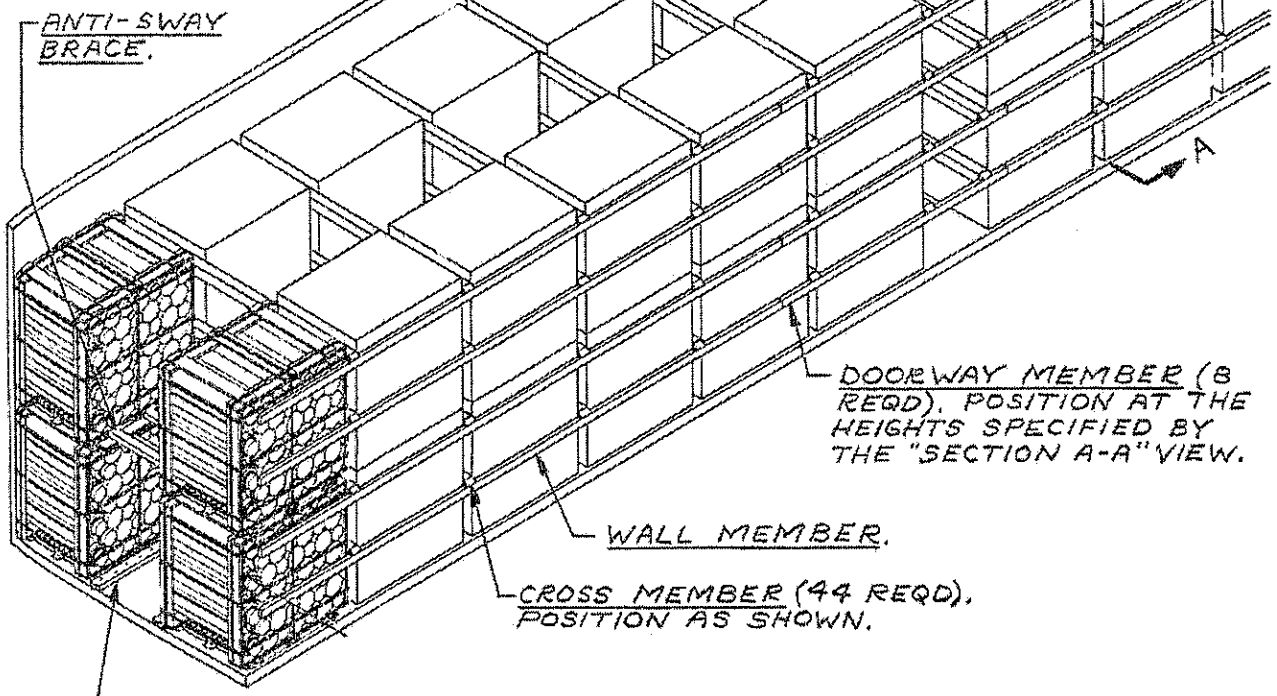
TYPICAL LOAD OF 3"/50 CARTRIDGE IN TANK M5
AND MODS (FLEET ISSUE UNIT LOAD) IN A 50'-6"
LONG BOX CAR EQUIPPED WITH MECHANICAL
BRACING DEVICES (CROSS MEMBERS)



SECTION A-A

-SIDE BLOCKING.

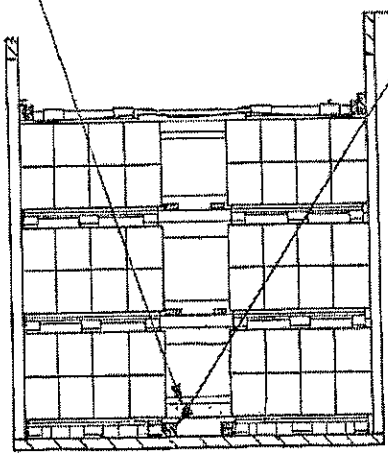
NOTE:
44 PALLET UNITS SHOWN
GROSS WT. - 85,492 LBS.



SIDE BLOCKING, 2" x 4" x 98" (22 REQD), NAIL TO THE CAR FLOOR W/1-16d NAIL EVERY 6".

TYPICAL LOAD OF 5"/54 CARTRIDGE IN TANK M14
(DOMESTIC UNIT LOAD) IN A 50'-6" LONG BOX
CAR EQUIPPED WITH MECHANICAL BRACING
DEVICES (CROSS MEMBERS)

LOWER GATE-LOCK PIECE, 2"x9"x CUT TO FIT BETWEEN PALLET UNITS (1 REQD). NAIL TO GATE HORIZONTAL W/4-10d NAILS.



SECTION A-A

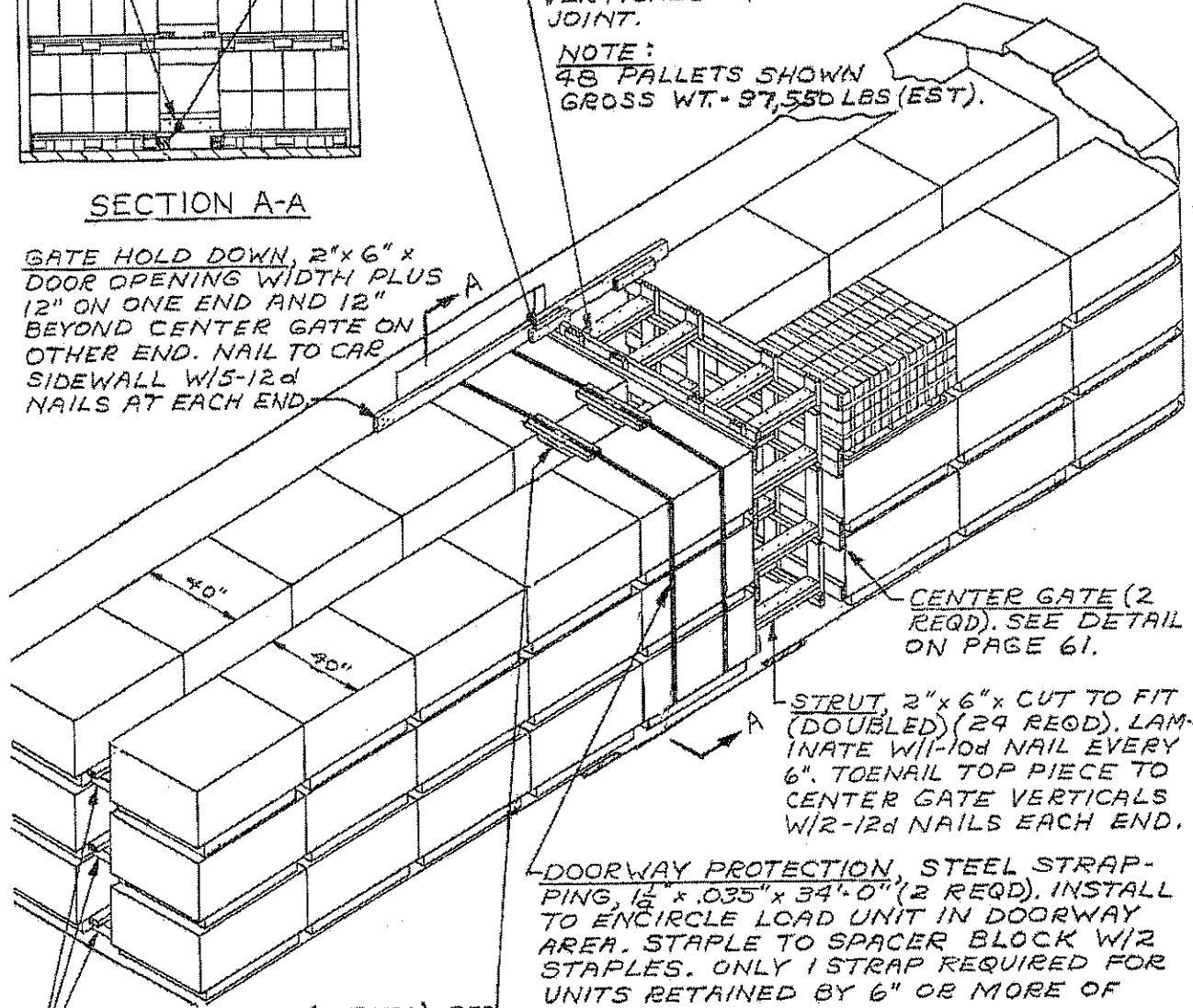
DOORWAY BLOCKING, 2"x4"x48" (DOUBLED) (2 REQD). POSITION AGAINST PALLET AND NAIL THE FIRST PIECE TO CAR FLOOR W/7-16d NAILS. NAIL SECOND PIECE TO FIRST IN A LIKE MANNER.

GATE HOLD-DOWN CLEAT, 2"x4"x18" (4 REQD). CENTER ABOVE GATE AND NAIL TO GATE HOLD DOWN W/5-10d NAILS.

UPPER GATE-LOCK PIECE, 2"x9"x CAR WIDTH MINUS 6 1/2" (1 REQD). NAIL TO CENTER GATE VERTICALS W/3-10d NAILS AT EACH JOINT.

NOTE:
48 PALLETS SHOWN
GROSS WT. - 97,550 LBS (EST).

GATE HOLD DOWN, 2"x6"x DOOR OPENING WIDTH PLUS 12" ON ONE END AND 12" BEYOND CENTER GATE ON OTHER END. NAIL TO CAR SIDEWALL W/5-12d NAILS AT EACH END.



CENTER GATE (2 REQD). SEE DETAIL ON PAGE 61.

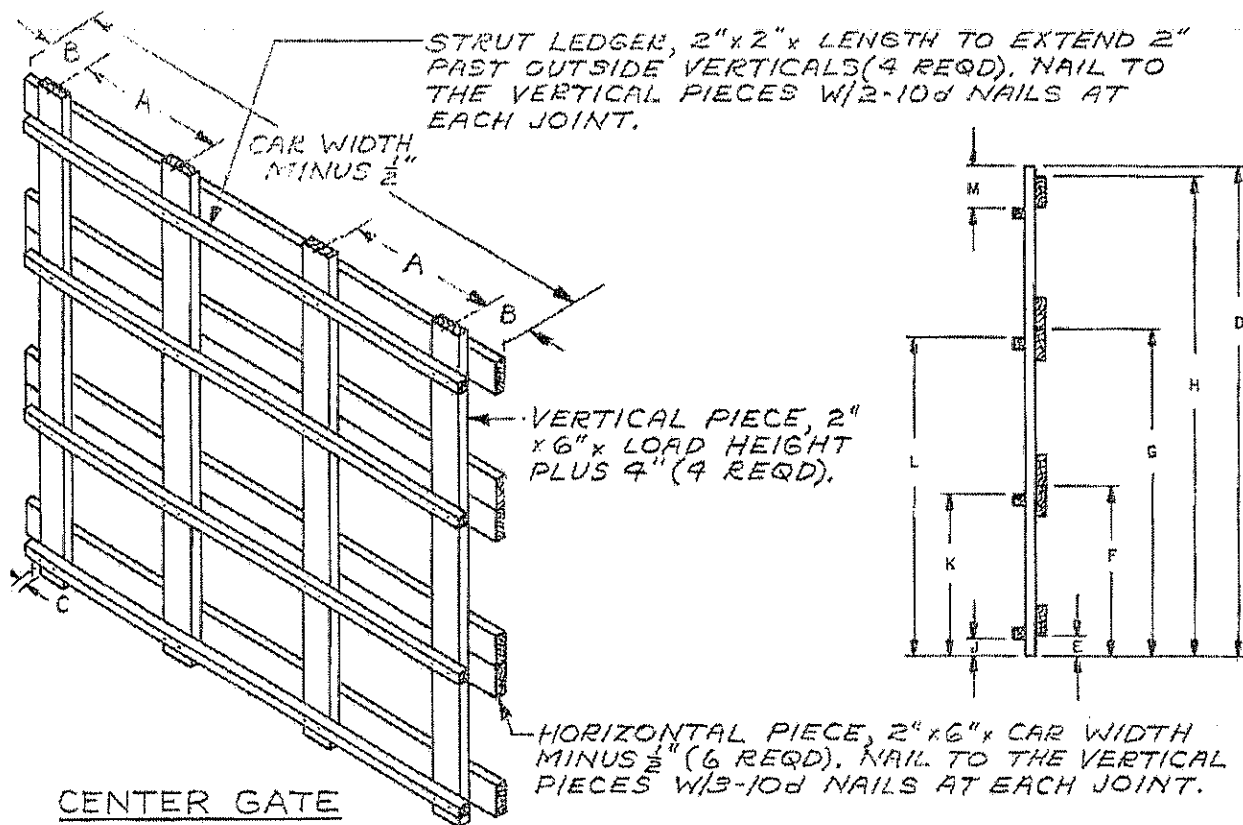
STRUT, 2"x6"x CUT TO FIT (DOUBLED) (24 REQD). LAMINATE W/1-10d NAIL EVERY 6". TOENAIL TOP PIECE TO CENTER GATE VERTICALS W/2-12d NAILS EACH END.

DOORWAY PROTECTION, STEEL STRAPPING, 1/2" x .035" x 34'-0" (2 REQD). INSTALL TO ENCIRCLE LOAD UNIT IN DOORWAY AREA. STAPLE TO SPACER BLOCK W/2 STAPLES. ONLY 1 STRAP REQUIRED FOR UNITS RETAINED BY 6" OR MORE OF CAR SIDEWALL.

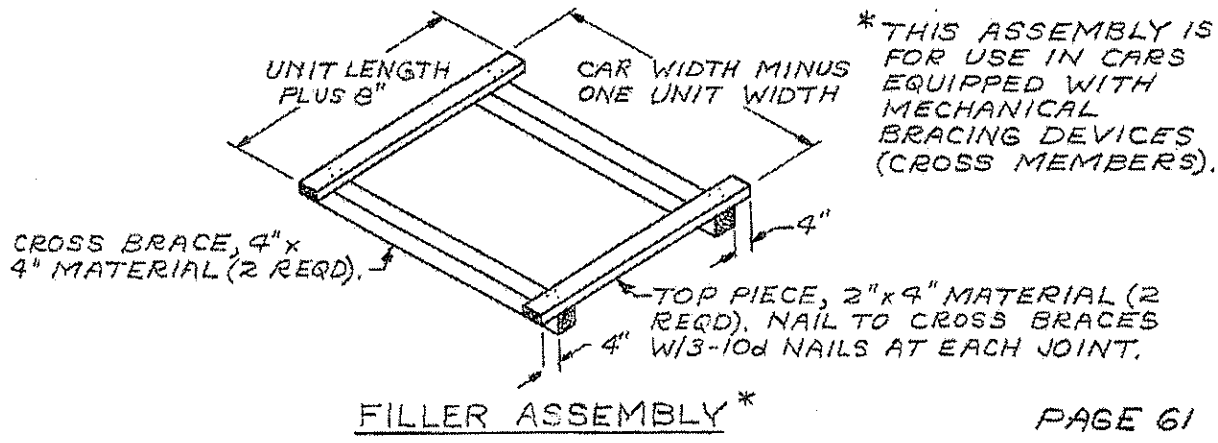
SPACER BLOCK (2 REQD). SEE THE DETAIL ON PAGE 41.

ANTI-SWAY BRACE (25 REQD). SEE THE "SECOND-LAYER ANTI-SWAY BRACE" DETAIL ON PAGE 45.

TYPICAL LOAD OF PALLETIZED BOXED AMMUNITION IN A 40'-6" LONG BY 8'-6" WIDE CONVENTIONAL BOX CAR



GATE CONSTRUCTION CHART	
DIM.	DESCRIPTION FOR POSITIONING LUMBER
A	CENTER AGAINST STRONG POINTS OF PALLET UNIT (OUTER BATTENS OR PALLET POSTS).
B	DISTANCE BETWEEN SIDEWALL AND CENTER OF OUTSIDE VERTICAL PIECE MINUS $\frac{1}{4}$ ".
C	2"
D	LOAD HEIGHT PLUS 4".
E	$3\frac{3}{4}$ "
F	$2\frac{3}{4}$ " ABOVE TOP OF FIRST LAYER.
G	$2\frac{3}{4}$ " ABOVE TOP OF SECOND LAYER.
H	LOAD HEIGHT PLUS 1".
J	$3\frac{3}{4}$ "
K	1" ABOVE TOP OF FIRST LAYER.
L	1" ABOVE TOP OF SECOND LAYER.
M	8"



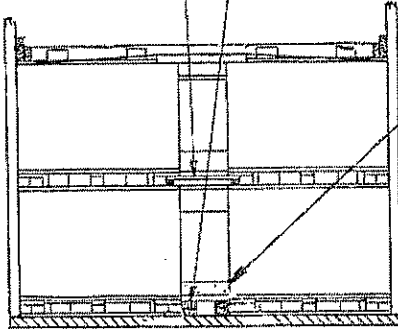
ANTI-SWAY BRACE (32 REQD). SEE DETAIL ON PAGE 45.

DOORWAY BLOCKING, 2"x4"x90" (DOUBLED) (2 REQD). POSITION AGAINST PALLET STRINGERS AND NAIL THE FIRST PIECE TO CAR FLOOR W/7-16d NAILS. NAIL SECOND PIECE TO FIRST IN LIKE MANNER.

GATE HOLD-DOWN CLEAT, 2"x4"x18" (4 REQD). CENTER ABOVE GATE AND NAIL TO GATE HOLD DOWN W/5-10d NAILS.

LOWER GATE-LOCK PIECE, 2"x4"x9" CUT TO FIT BETWEEN PALLET UNITS (1 REQD). NAIL TO GATE HORIZONTAL W/4-10d NAILS.

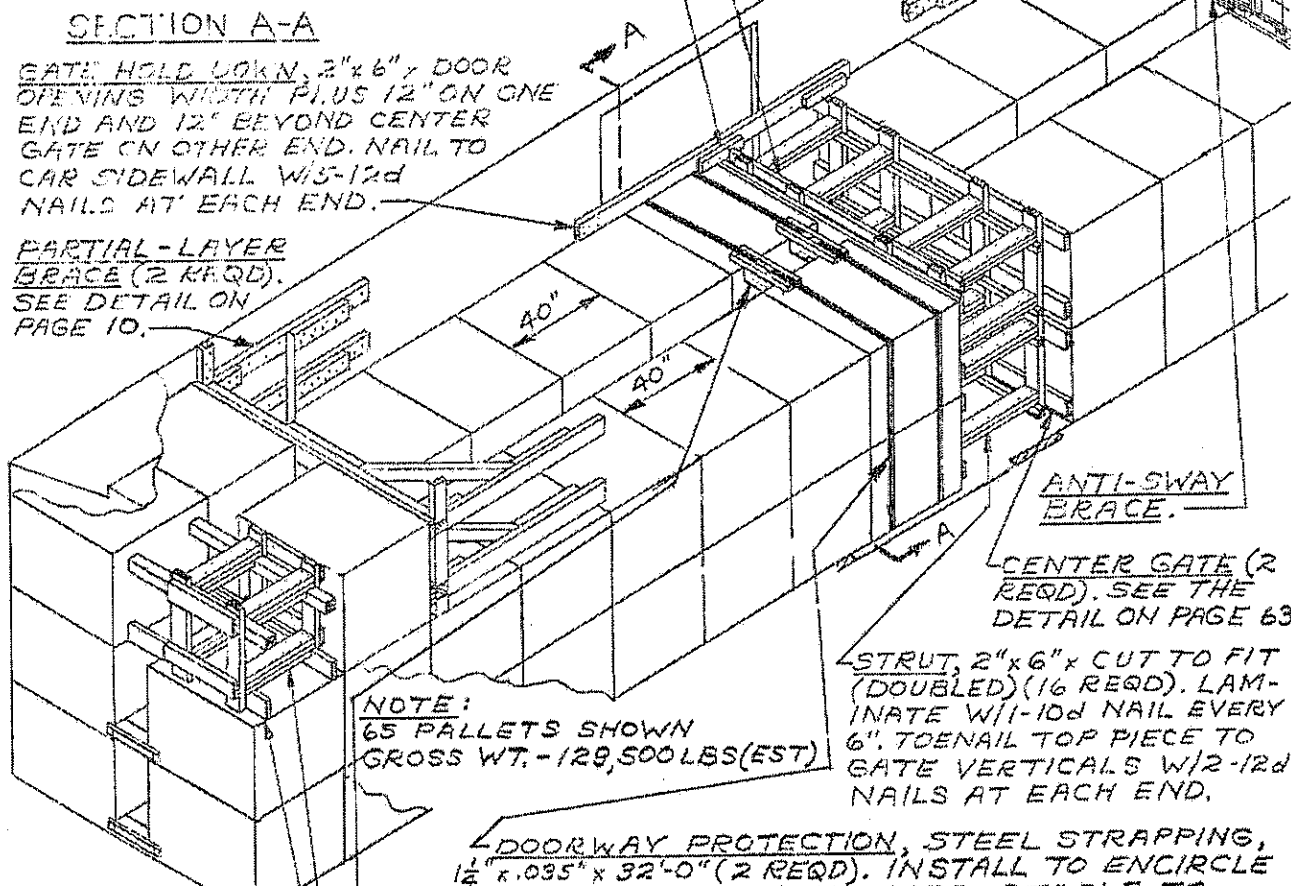
UPPER GATE-LOCK PIECE, 2"x4"x CAR WIDTH MINUS 65" (1 REQD). NAIL TO CENTER GATE VERTICALS W/3-10d NAILS AT EACH JOINT.



SECTION A-A

GATE HOLD DOWN, 2"x6" x DOOR OPENING WIDTH PLUS 12" ON ONE END AND 12" BEYOND CENTER GATE ON OTHER END. NAIL TO CAR SIDEWALL W/5-12d NAILS AT EACH END.

PARTIAL-LAYER BRACE (2 REQD). SEE DETAIL ON PAGE 10.



ANTI-SWAY BRACE.

CENTER GATE (2 REQD). SEE THE DETAIL ON PAGE 63.

STRUT, 2"x6" x CUT TO FIT (DOUBLED) (16 REQD). LAMINATE W/1-10d NAIL EVERY 6". TOENAIL TOP PIECE TO GATE VERTICALS W/2-12d NAILS AT EACH END.

NOTE: 65 PALLET SHOWN GROSS WT. - 129,500 LBS (EST)

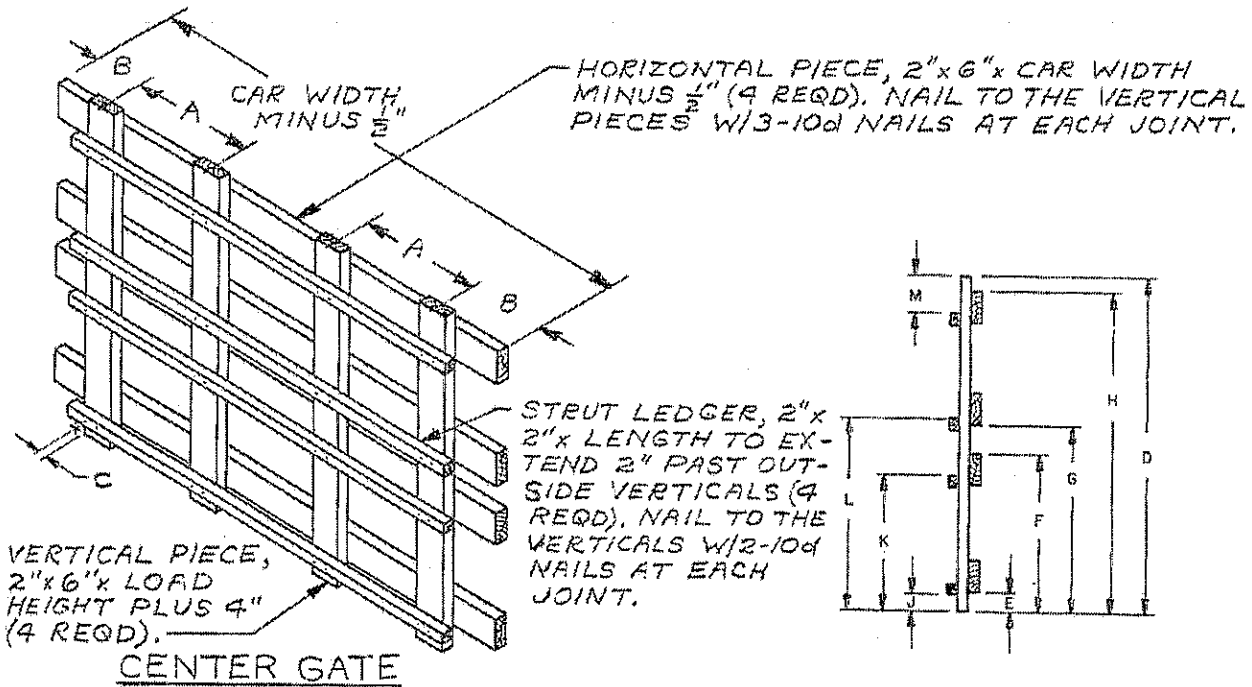
DOORWAY PROTECTION, STEEL STRAPPING, 1/2" x .095" x 32'-0" (2 REQD). INSTALL TO ENCIRCLE LOAD UNIT IN DOORWAY AREA. STAPLE TO SPACER BLOCK W/2-STAPLES.

SPACER BLOCK (2 REQD). SEE DETAIL ON PAGE 41.

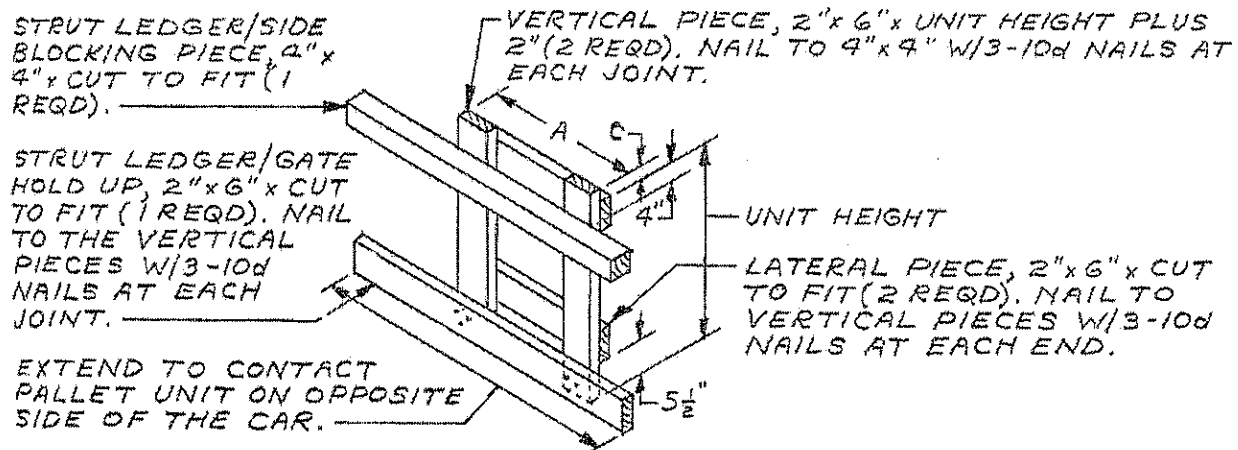
STRUT, 2"x6" x CUT TO FIT (TRIPLED) (4 REQD). POSITION AS SHOWN. LAMINATE W/6-10d NAILS AND TOENAIL TOP PIECE TO GATE VERTICALS W/2-12d NAILS AT EACH END.

OMITTED-UNIT GATE (2 REQD). SEE DETAIL ON PAGE 63. NAIL ONE TO CAR END WALL W/4-10d NAILS.

TYPICAL LOAD OF PALLETIZED BOXED AMMUNITION IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

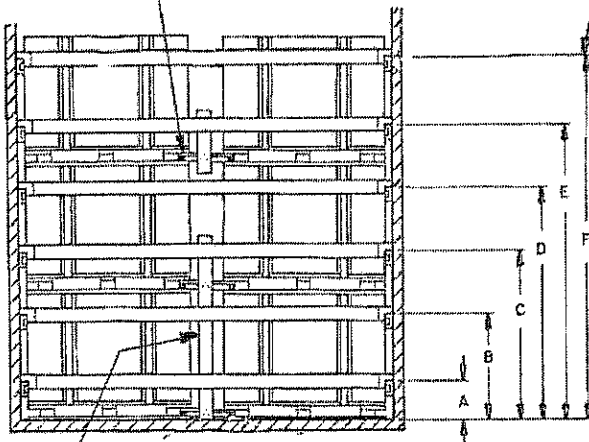


GATE CONSTRUCTION CHART	
DIM.	DESCRIPTION FOR POSITIONING LUMBER
A	CENTER AGAINST STRONG POINTS OF PALLET UNIT (OUTER BATTENS OR PALLET POSTS).
B	DISTANCE BETWEEN SIDEWALL AND CENTER OF OUTSIDE VERTICAL PIECE MINUS $\frac{1}{4}$ ".
C	2".
D	LOAD HEIGHT PLUS 4".
E	$3\frac{3}{4}$ ".
F	TOP OF FIRST LAYER.
G	$4\frac{1}{2}$ " ABOVE TOP OF FIRST LAYER.
H	LOAD HEIGHT PLUS 1".
J	$3\frac{1}{4}$ ".
K	$4\frac{1}{2}$ " BELOW TOP OF FIRST LAYER.
L	$5\frac{1}{2}$ " ABOVE TOP OF FIRST LAYER.
M	8"



OMITTED-UNIT GATE

-ANTI-SWAY BRACE (29 REQD). SEE DETAIL ON PAGE 45.



EACH HEIGHT ABOVE CAR FLOOR TO A WALL MEMBER OR DOORWAY MEMBER IS SPECIFIED TO LOCATE THE CENTER LINE OF A CROSS MEMBER. SEE CHART BELOW.

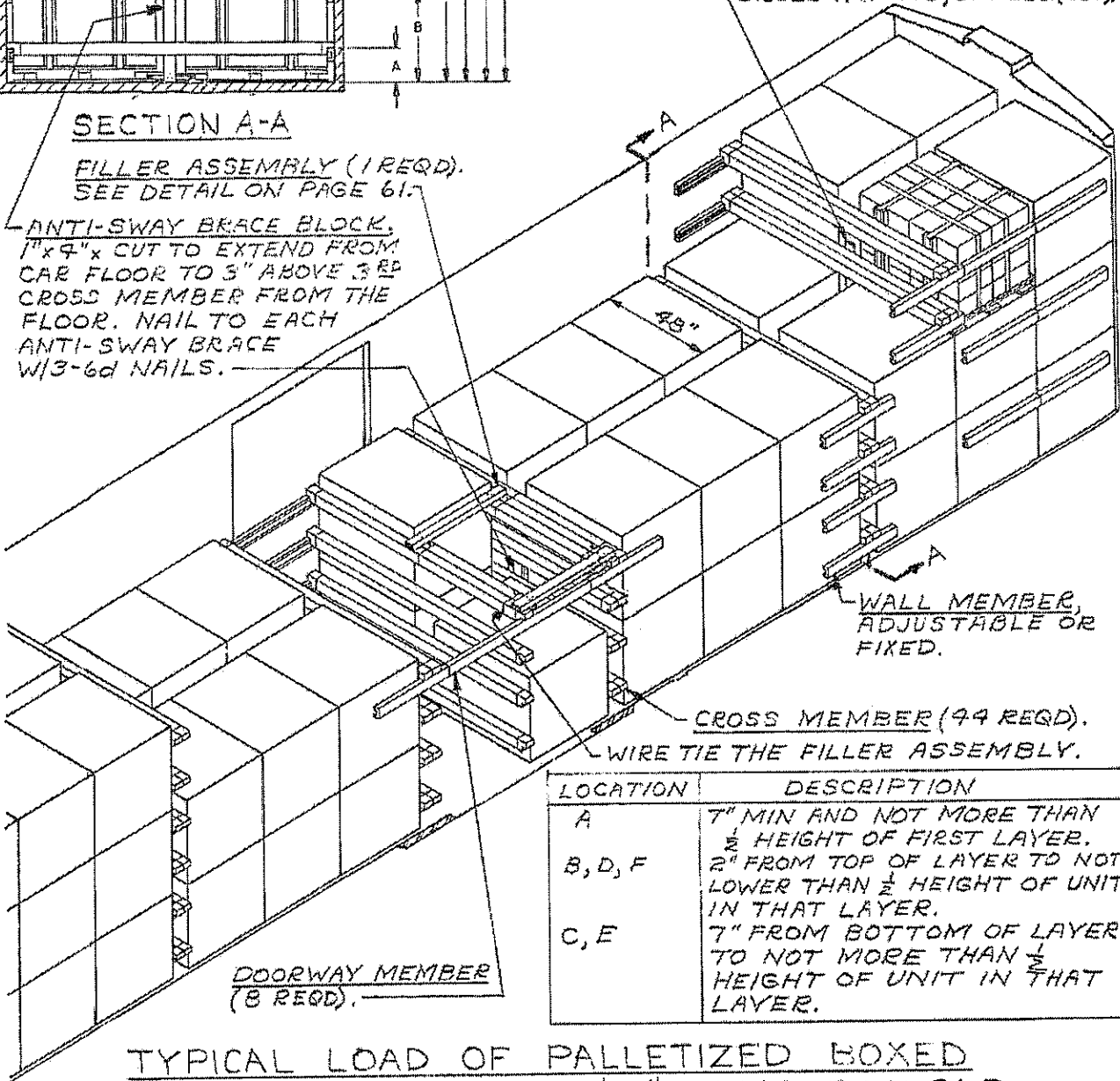
-ANTI-SWAY BRACE BLOCK, 1" x 4" x LENGTH TO SUIT (4 REQD). NAIL TO ANTI-SWAY BRACE W/3-6d NAILS.

NOTE:
58 PALLETS SHOWN
GROSS WT. = 110,600 LBS.(EST).

SECTION A-A

FILLER ASSEMBLY (1 REQD).
SEE DETAIL ON PAGE 61.

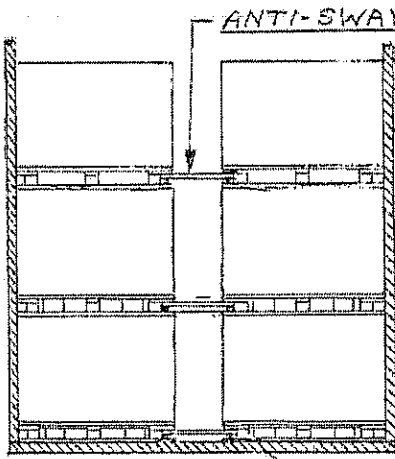
-ANTI-SWAY BRACE BLOCK, 1" x 4" x CUT TO EXTEND FROM CAR FLOOR TO 3" ABOVE 3RD CROSS MEMBER FROM THE FLOOR. NAIL TO EACH ANTI-SWAY BRACE W/3-6d NAILS.



LOCATION	DESCRIPTION
A	7" MIN AND NOT MORE THAN $\frac{1}{2}$ HEIGHT OF FIRST LAYER.
B, D, F	2" FROM TOP OF LAYER TO NOT LOWER THAN $\frac{1}{2}$ HEIGHT OF UNIT IN THAT LAYER.
C, E	7" FROM BOTTOM OF LAYER TO NOT MORE THAN $\frac{1}{2}$ HEIGHT OF UNIT IN THAT LAYER.

DOORWAY MEMBER (8 REQD).

TYPICAL LOAD OF PALLETIZED BOXED AMMUNITION IN A 50'-6" LONG BOX CAR EQUIPPED WITH MECHANICAL BRACING DEVICES (CROSS MEMBERS)

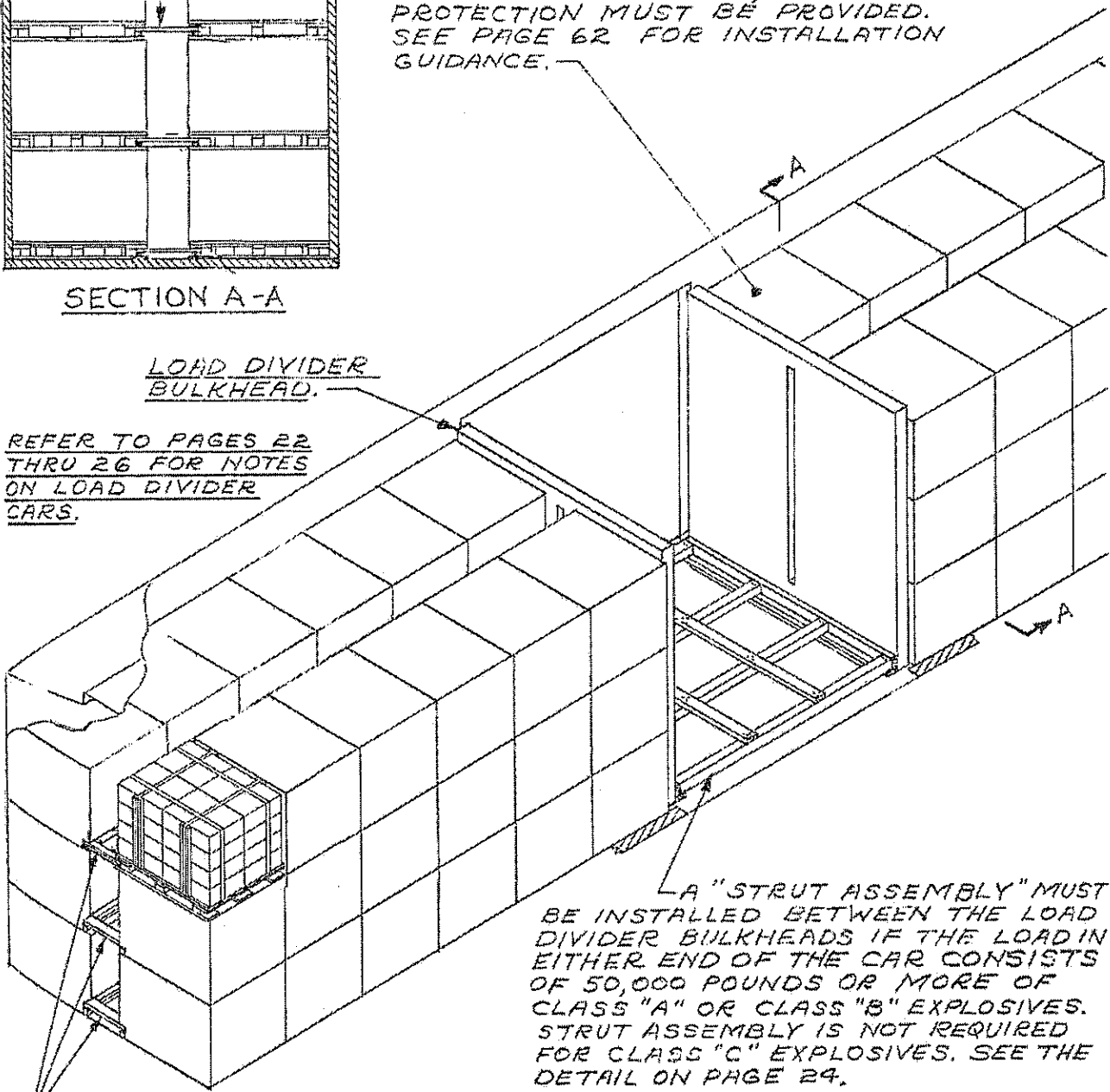


SECTION A-A

IF PALLET UNITS EXTEND INTO THE DOORWAY AREA BY MORE THAN ONE-HALF THE UNIT LENGTH, DOORWAY PROTECTION MUST BE PROVIDED. SEE PAGE 62 FOR INSTALLATION GUIDANCE.

LOAD DIVIDER BULKHEAD.

REFER TO PAGES 22 THRU 26 FOR NOTES ON LOAD DIVIDER CARS.

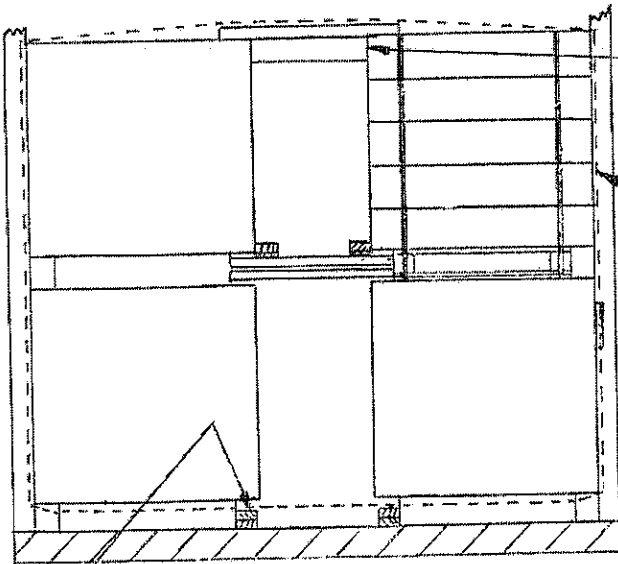


A "STRUT ASSEMBLY" MUST BE INSTALLED BETWEEN THE LOAD DIVIDER BULKHEADS IF THE LOAD IN EITHER END OF THE CAR CONSISTS OF 50,000 POUNDS OR MORE OF CLASS "A" OR CLASS "B" EXPLOSIVES. STRUT ASSEMBLY IS NOT REQUIRED FOR CLASS "C" EXPLOSIVES. SEE THE DETAIL ON PAGE 24.

ANTI-SWAY BRACE (36 REQD). SEE THE DETAIL ON PAGE 45. POSITION BETWEEN ALL LATERALLY ADJACENT PALLET UNITS.

NOTE:
72 PALLETS SHOWN
GROSS WEIGHT - 145,000 LBS (EST)

TYPICAL LOAD OF PALLETIZED BOXED AMMUNITION IN A 50'-6" LONG BY 9'-2" WIDE CAR EQUIPPED WITH LOAD DIVIDERS



SPACER BLOCK (2 REQD). SEE THE DETAIL ON PAGE 41.

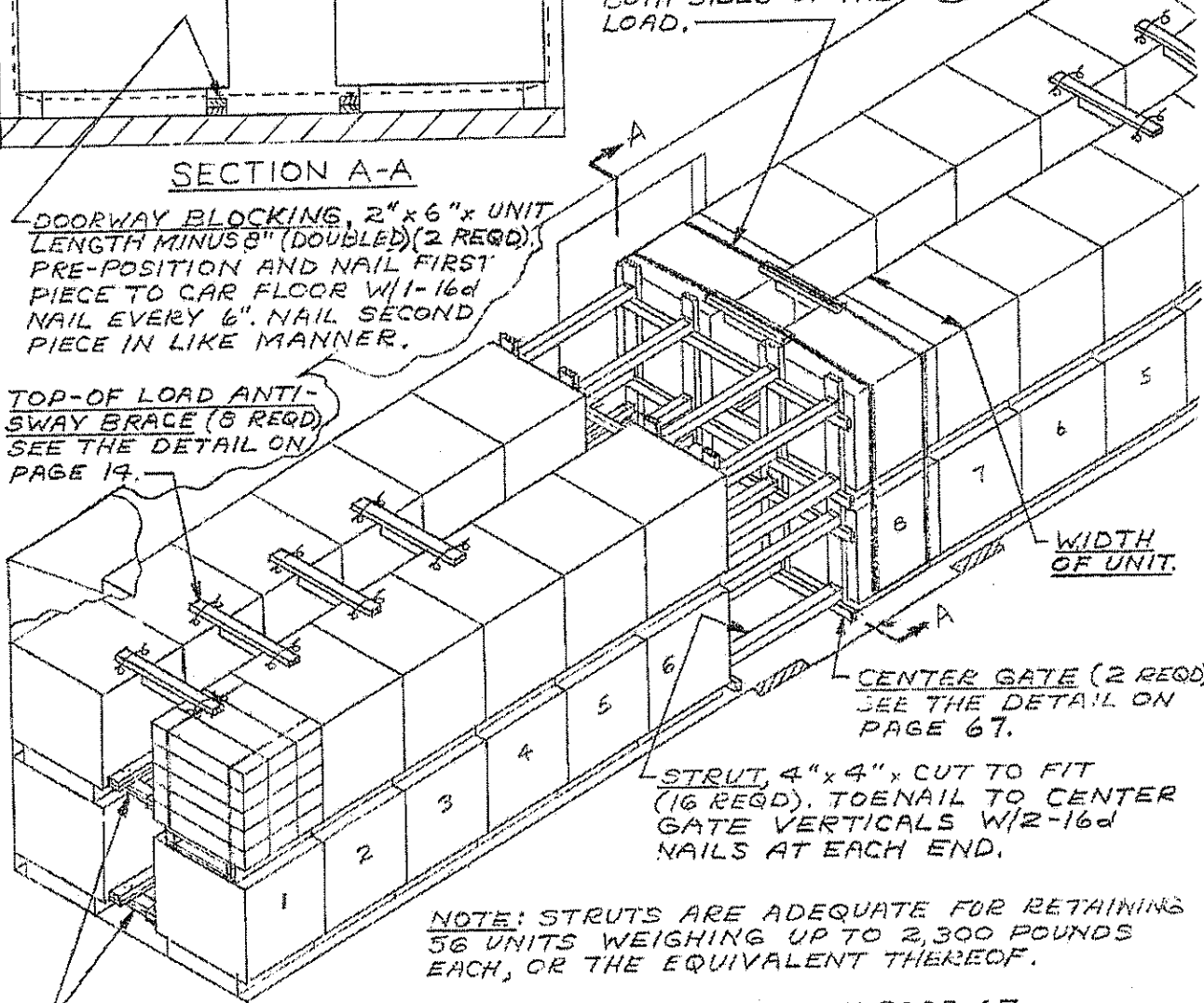
NOTE: 56 SKIDDED UNITS SHOWN
GROSS WT. - 123,000 LBS. (EST).

DOORWAY PROTECTION STRAP, $1\frac{1}{2}$ " x .035" x REF 35'-0" STEEL STRAPPING (2 REQD). INSTALL AROUND LOAD UNIT IN DOORWAY. STAPLE TO SPACER BLOCK W/2 STAPLES. ONLY ONE STRAP REQUIRED IF UNIT IS RETAINED BY AT LEAST 6" OF CAR WALL ON BOTH SIDES OF THE LOAD.

SECTION A-A

DOORWAY BLOCKING, 2" x 6" x UNIT LENGTH MINUS 8" (DOUBLED) (2 REQD). PRE-POSITION AND NAIL FIRST PIECE TO CAR FLOOR W/1-16d NAIL EVERY 6". NAIL SECOND PIECE IN LIKE MANNER.

TOP-OF LOAD ANTI-SWAY BRACE (8 REQD) SEE THE DETAIL ON PAGE 14.



WIDTH OF UNIT.

CENTER GATE (2 REQD) SEE THE DETAIL ON PAGE 67.

STRUT, 4" x 4" x CUT TO FIT (16 REQD). TOENAIL TO CENTER GATE VERTICALS W/2-16d NAILS AT EACH END.

NOTE: STRUTS ARE ADEQUATE FOR RETAINING 56 UNITS WEIGHING UP TO 2,300 POUNDS EACH, OR THE EQUIVALENT THEREOF.

ANTI-SWAY BRACE (27 REQD). SEE THE DETAIL ON PAGE 67. INSTALL BETWEEN LATERALLY ADJACENT SKIDDED UNITS AT ALL LOCATIONS EXCEPT BOTTOM LAYER OF LOAD UNIT NO. 8 WHICH IS IN DOORWAY AREA.

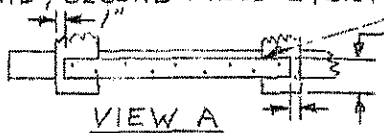
TYPICAL LOAD OF SKIDDED UNITS OF BOXED AMMUNITION IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

DISTANCE FROM END OF BOX TO SKID BASE PLUS 3" FOR TYPE I BASE, OR PLUS 5" FOR TYPE II.

STRUT LEDGER, 2"x4"x CAR WIDTH MINUS 1/2" (4 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

VERTICAL PIECE, 2"x6"x LOAD HEIGHT PLUS 4" (4 REQD).

GATE HOLD DOWN AND LATERAL BLOCKING CLEAT, 2"x3"x CUT TO FIT (DOUBLED) (2 REQD). NAIL FIRST PIECE TO GATE VERTICAL W/3-10d NAILS EACH END & SECOND PIECE EVERY 4"



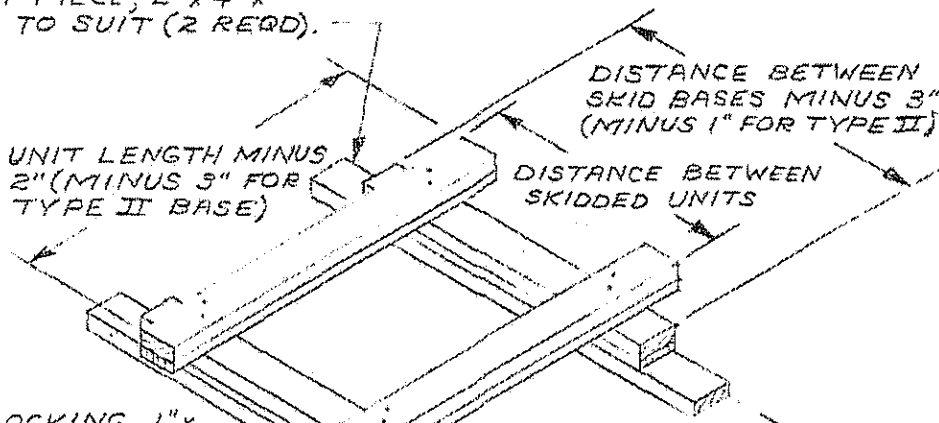
4 3/4" FOR TYPE I BASE, 4" FOR TYPE II.

CENTER GATE

6" FOR TYPE I BASE, 5" FOR TYPE II BASE.

THIS GATE IS FOR USE ONLY AGAINST THE WIDTH OF A SKIDDED UNIT (SIDES OF BOXES). GATE SHOWN IS FOR A 2-LAYER LOAD. A GATE FOR A 1-HIGH LOAD WILL BE UNIT HEIGHT PLUS 4".

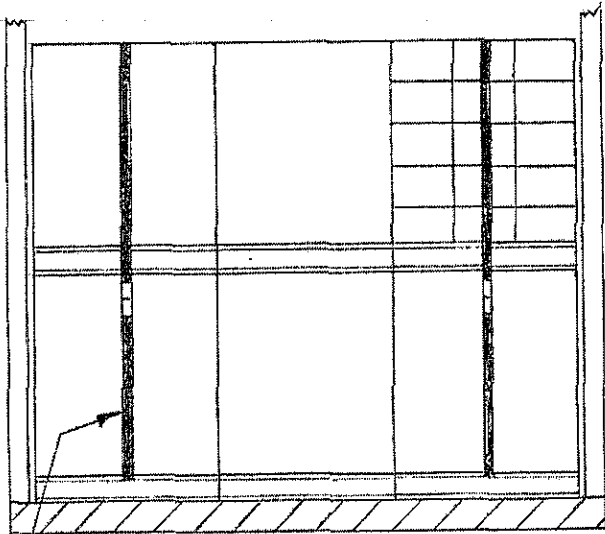
SUPPORT PIECE, 2"x4"x LENGTH TO SUIT (2 REQD).



SIDE BLOCKING, 1"x4" AND 2"x4"x UNIT LENGTH MINUS 2" (2 EACH REQD). NAIL 2"x4" THRU 1"x4" TO CROSS PIECES W/2-20d NAILS AT EACH JOINT.

CROSS PIECE, 1"x4" AND 2"x4"x DISTANCE BETWEEN SKID BASES MINUS 3" (2 EACH REQD). NAIL 2"x4" THRU 1"x4" TO THE SUPPORT PIECE W/1-12d NAIL NEAR EACH END.

ANTI-SWAY BRACE



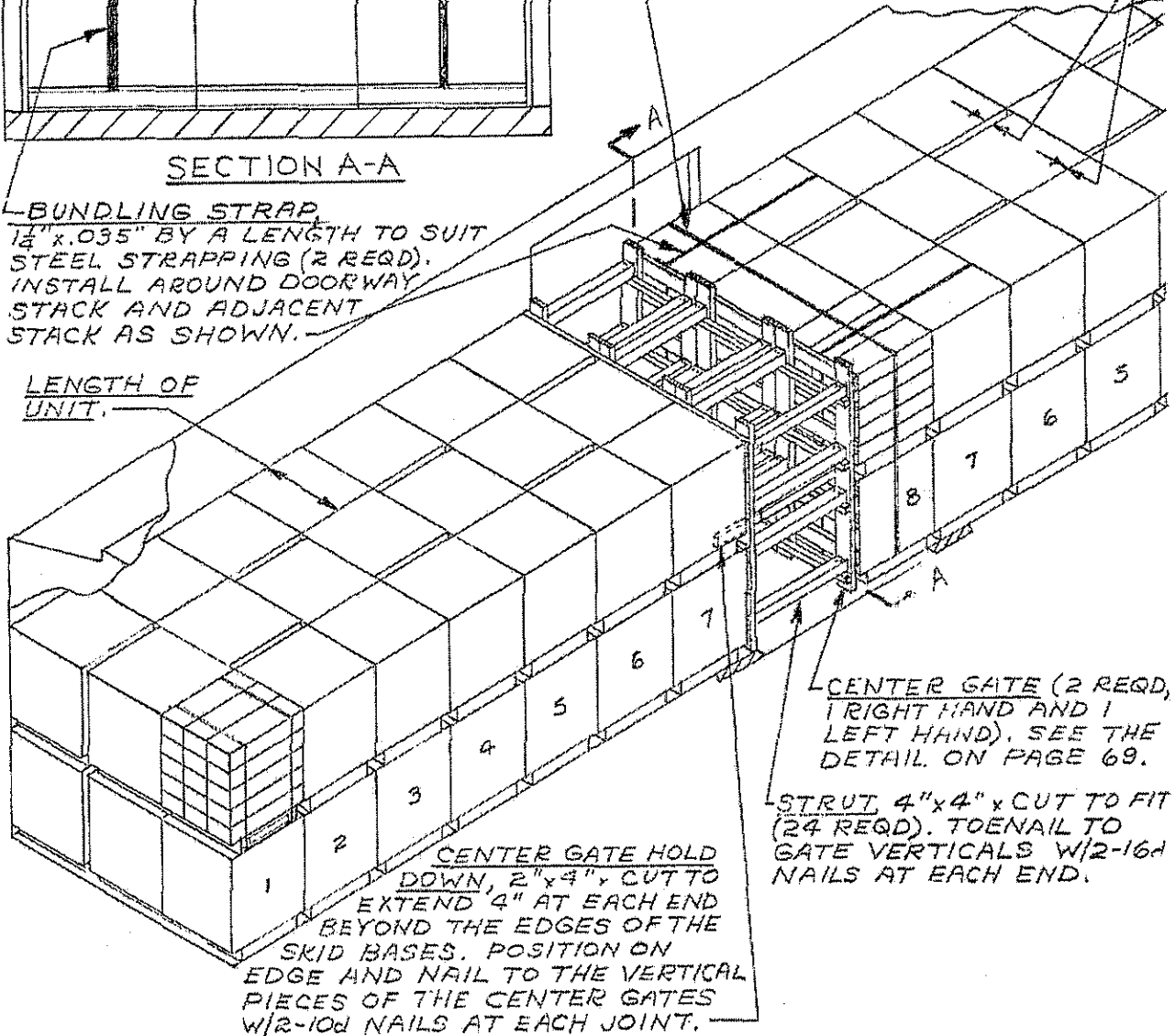
SECTION A-A

NOTE THAT IF THE TOTAL EXCESS SPACE ACROSS THE WIDTH OF THE CAR EQUALS OR EXCEEDS THE WIDTH OF TWO VERTICAL END CLEATS OF A BOX, ANTI-SWAY BRACING MUST BE INSTALLED. SEE THE DETAIL ON PAGE 69.

DOORWAY PROTECTION STRAP, $\frac{1}{2}$ " x .035" BY A LENGTH TO SUIT STEEL STRAPPING (1 REQD). INSTALL AROUND LOAD UNIT IN DOORWAY.

BUNDLING STRAP, $\frac{1}{2}$ " x .035" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD). INSTALL AROUND DOORWAY STACK AND ADJACENT STACK AS SHOWN.

LENGTH OF UNIT.



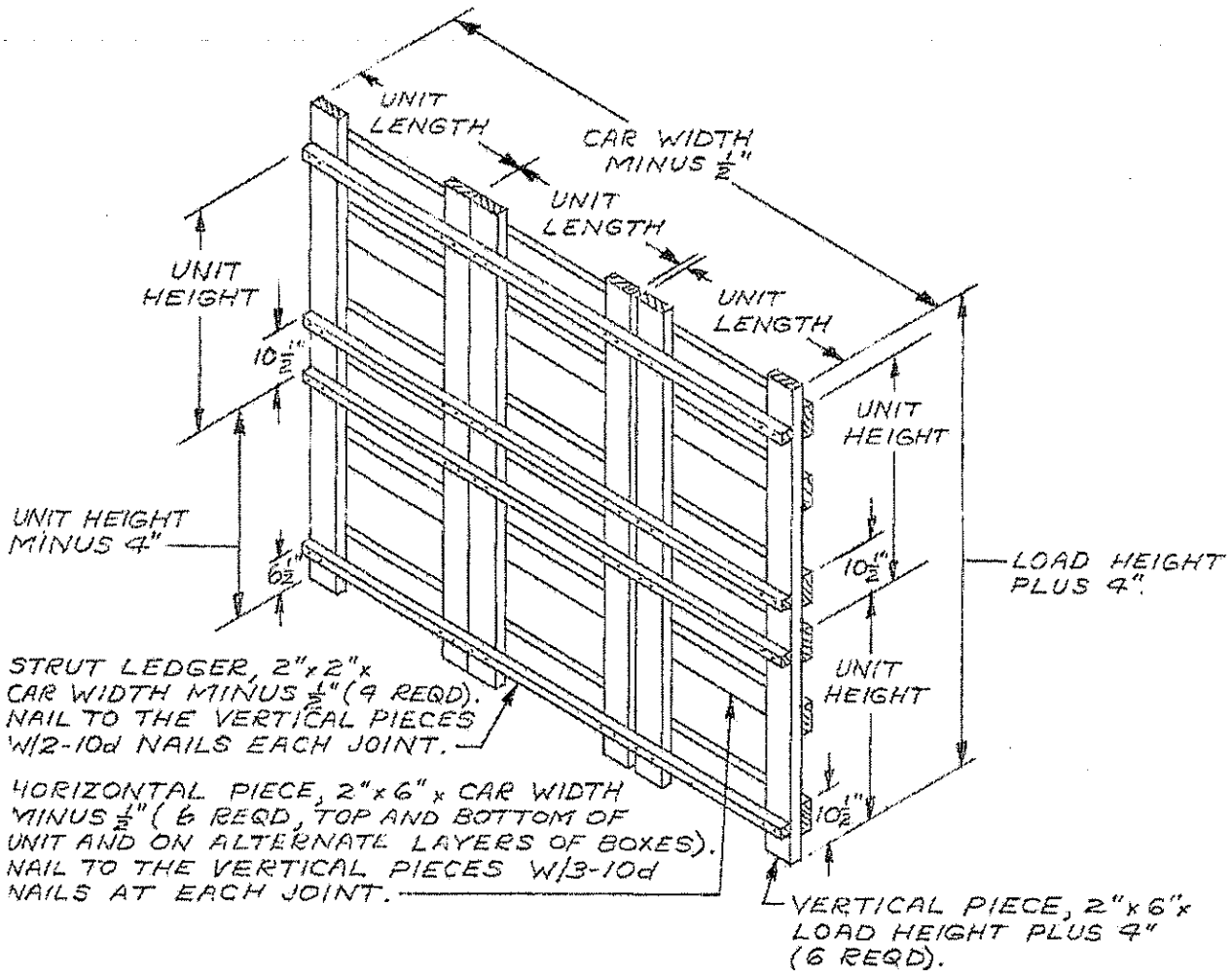
CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE DETAIL ON PAGE 69.

STRUT, 4" x 4" x CUT TO FIT (24 REQD). TOENAIL TO GATE VERTICALS W/2-16d NAILS AT EACH END.

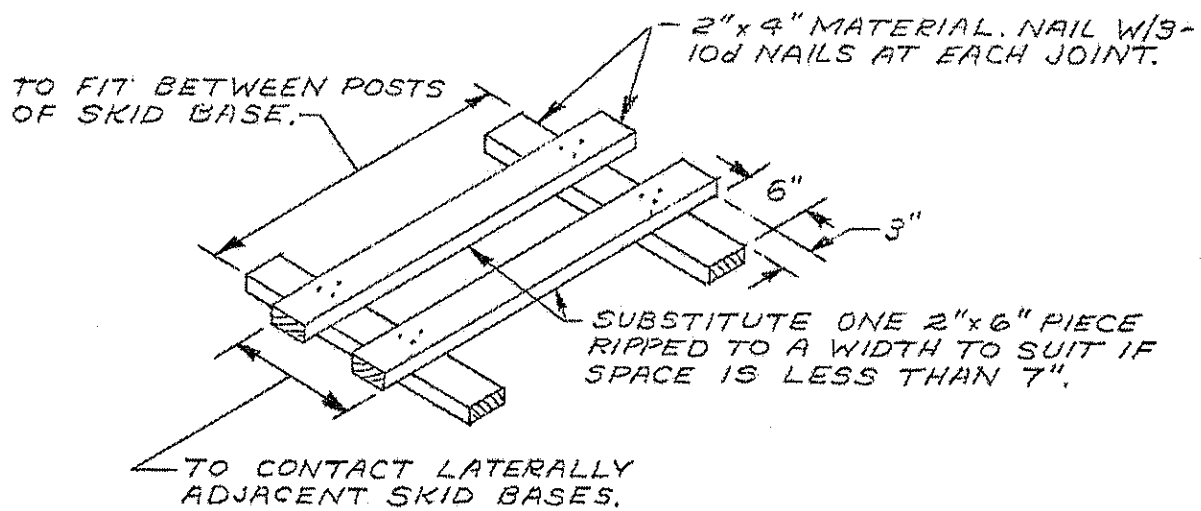
CENTER GATE HOLD DOWN, 2" x 4" x CUT TO EXTEND 4" AT EACH END BEYOND THE EDGES OF THE SKID BASES. POSITION ON EDGE AND NAIL TO THE VERTICAL PIECES OF THE CENTER GATES W/2-10d NAILS AT EACH JOINT.

NOTE: 90 SKIDDED UNITS SHOWN
GROSS WT - 124,200 LBS (EST).

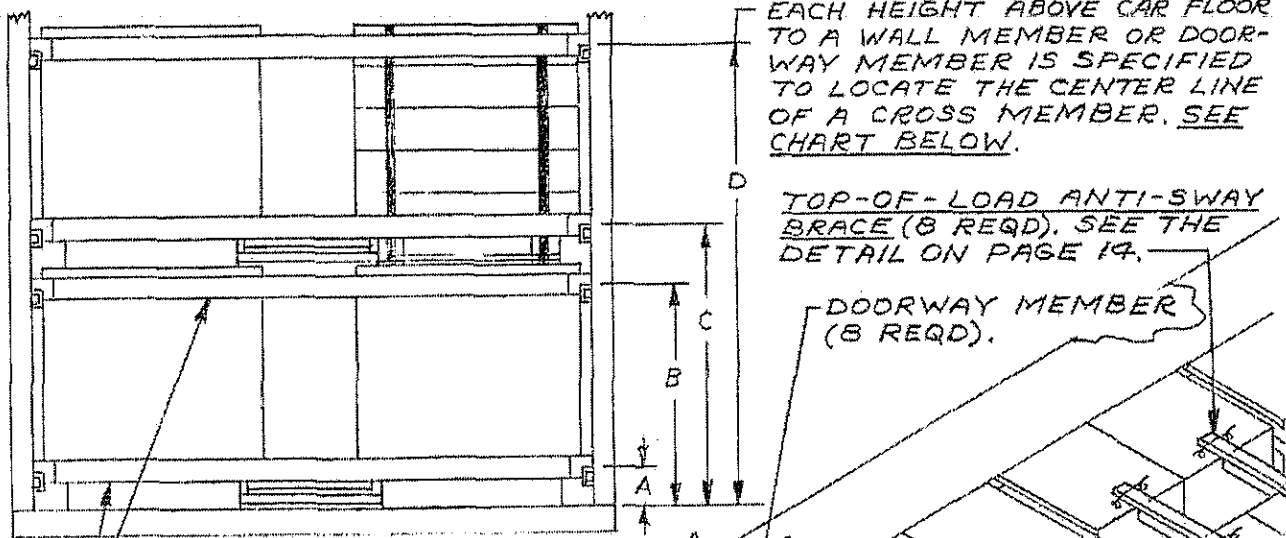
TYPICAL LOAD OF SKIDDED UNITS OF BOXED AMMUNITION IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR



CENTER GATE



ANTI-SWAY BRACE



EACH HEIGHT ABOVE CAR FLOOR TO A WALL MEMBER OR DOORWAY MEMBER IS SPECIFIED TO LOCATE THE CENTER LINE OF A CROSS MEMBER. SEE CHART BELOW.

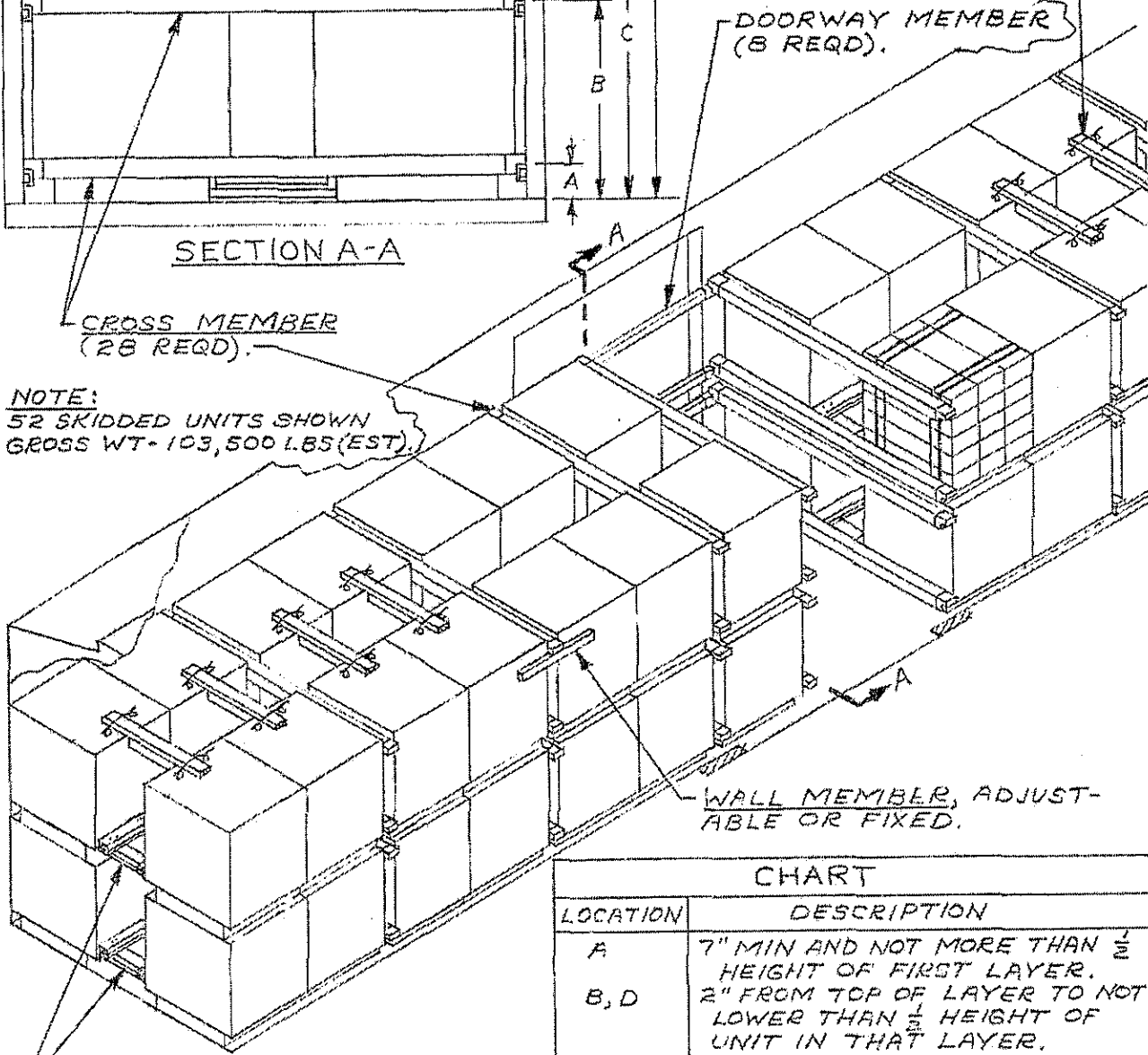
TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 19.

DOORWAY MEMBER (8 REQD).

SECTION A-A

CROSS MEMBER (28 REQD).

NOTE:
52 SKIDDED UNITS SHOWN
GROSS WT- 103,500 LBS (EST).



ANTI-SWAY BRACE (26 REQD). SEE DETAIL ON PAGE 67. INSTALL BETWEEN LATERALLY ADJACENT SKIDDED UNITS AT ALL LOCATIONS.

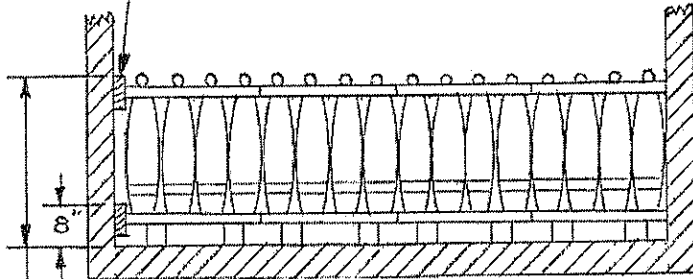
WALL MEMBER, ADJUSTABLE OR FIXED.

CHART	
LOCATION	DESCRIPTION
A	7" MIN AND NOT MORE THAN $\frac{1}{2}$ HEIGHT OF FIRST LAYER.
B, D	2" FROM TOP OF LAYER TO NOT LOWER THAN $\frac{1}{2}$ HEIGHT OF UNIT IN THAT LAYER.
C	7" FROM BOTTOM OF LAYER TO NOT MORE THAN $\frac{1}{2}$ HEIGHT OF UNIT IN THAT LAYER.

TYPICAL LOAD OF SKIDDED UNITS OF BOXED AMMUNITION IN 50'-6" LONG BOX CAR EQUIPPED WITH MECHANICAL BRACING DEVICES (CROSS MEMBERS)

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SIDE FILL, 2" x 6" x CAR LENGTH (2 REQD). RANDOM LENGTHS MAY BE USED. NAIL TO CAR SIDEWALL W/1-10d NAIL EVERY 24". PIECES MUST SPAN DOOR OPENING, AND MUST NOT BE NAILED TO A PLUG DOOR. ADJUST THICKNESS OF SIDE FILL AS NECESSARY SO THERE WILL NOT BE MORE THAN $\frac{3}{4}$ " OF TOTAL ACCUMULATED VOID ACROSS CAR.

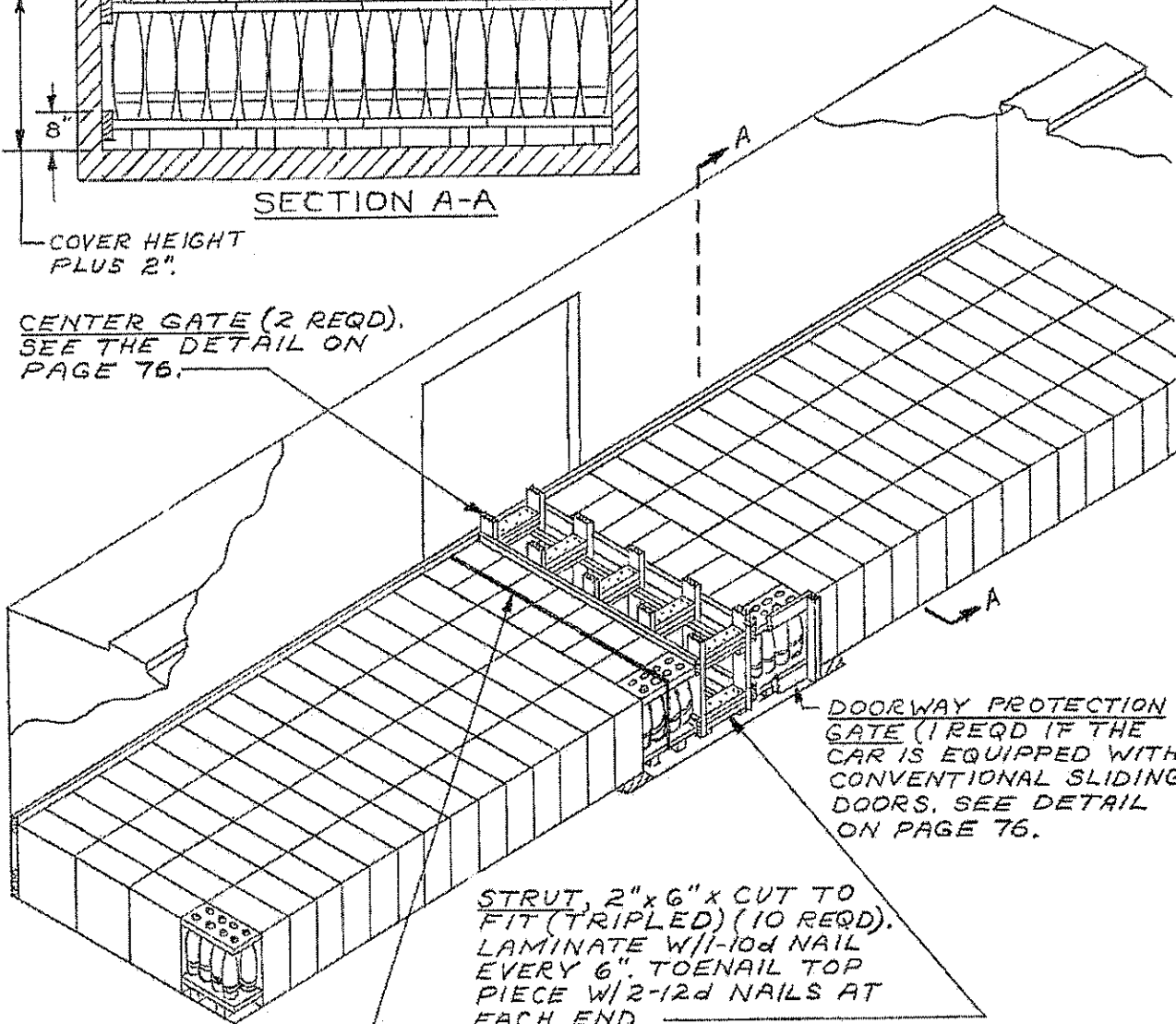


SECTION A-A

COVER HEIGHT PLUS 2".

NOTE:
46 PALLETS SHOWN
GROSS WT.- 45,383 LBS.

CENTER GATE (2 REQD).
SEE THE DETAIL ON
PAGE 76.

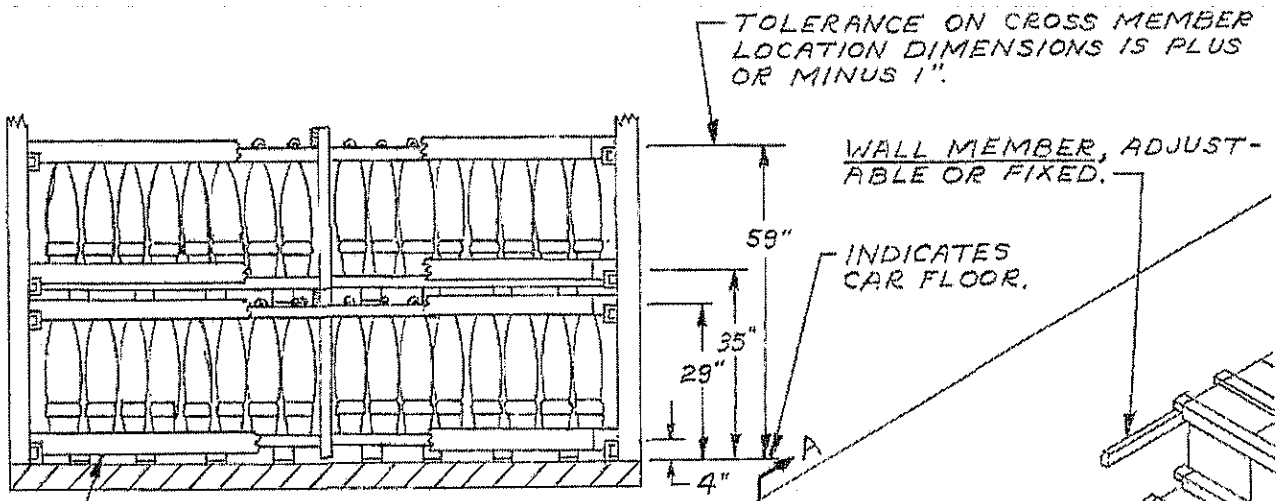


DOORWAY PROTECTION GATE (1 REQD IF THE CAR IS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. SEE DETAIL ON PAGE 76.

STRUT, 2" x 6" x CUT TO FIT (TRIPLED) (10 REQD). LAMINATE W/1-10d NAIL EVERY 6". TOENAIL TOP PIECE W/2-12d NAILS AT EACH END.

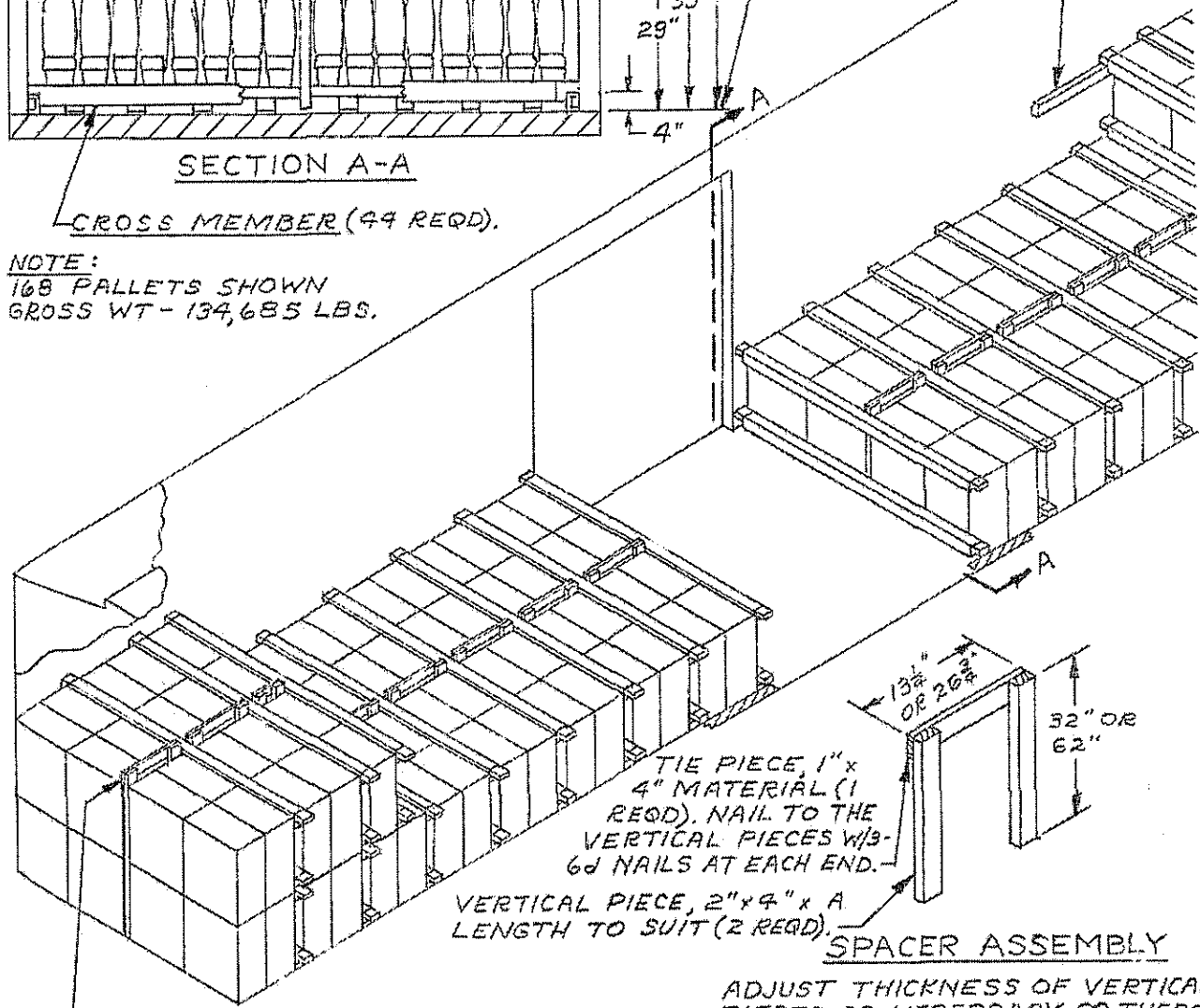
DOORWAY PROTECTION STRAP, $1\frac{1}{2}$ " x .035" BY A LENGTH TO SUIT STEEL STRAPPING. REQUIRED ONLY IF CAR IS EQUIPPED WITH PLUG DOORS. INSTALL TO ENCIRCLE EACH LOAD UNIT THAT EXTENDS INTO THE DOORWAY AREA.

TYPICAL LOAD OF 155MM SEPARATE LOADING PROJECTILES, PALLETIZED 8 PER PALLET, IN A 40'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR



CROSS MEMBER (44 REQD).

NOTE:
168 PALLETS SHOWN
GROSS WT - 134,685 LBS.



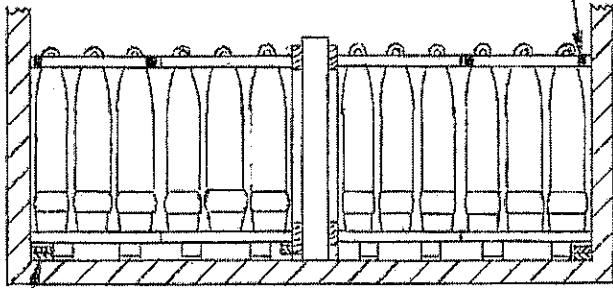
SPACER ASSEMBLY (18 REQD). SEE THE DETAIL AT RIGHT.

TYPICAL LOAD OF 155MM SEPARATE LOADING PROJECTILES, PALLETIZED 8 PER PALLET, IN A 50'-6" LONG BY 9'-2" WIDE BOX CAR EQUIPPED WITH MECHANICAL BRACING DEVICES (CROSS MEMBERS)

STEEL STRAPPING, $1\frac{1}{2}$ " x .035" x 8'-0"
(4 REQD). INSTALL AROUND COVERS
OF PALLET UNIT IN DOORWAY AND
THE ADJACENT PALLET UNIT AS
SHOWN IN LOAD VIEW BELOW.

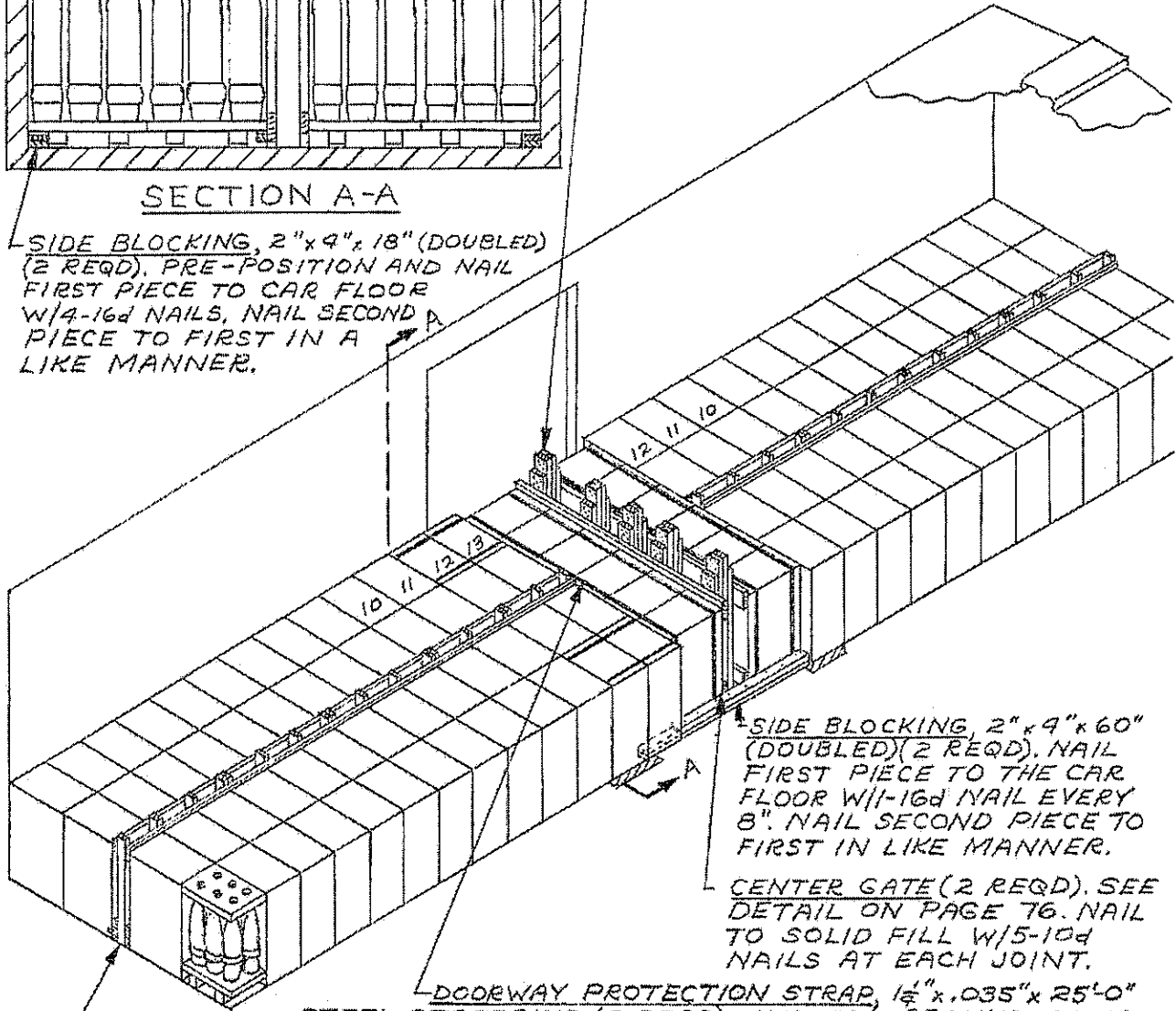
SOLID FILL, 6" WIDE BY 54" LONG BY
THE THICKNESS REQUIRED (REQD
AT 5 PLACES). LAMINATE W/5-10d
NAILS EACH PIECE.

NOTE:
1/2 PALLETS SHOWN
GROSS WT - 105,390 LBS.



SECTION A-A

SIDE BLOCKING, 2" x 4" x 18" (DOUBLED)
(2 REQD). PRE-POSITION AND NAIL
FIRST PIECE TO CAR FLOOR
W/4-16d NAILS, NAIL SECOND
PIECE TO FIRST IN A
LIKE MANNER.



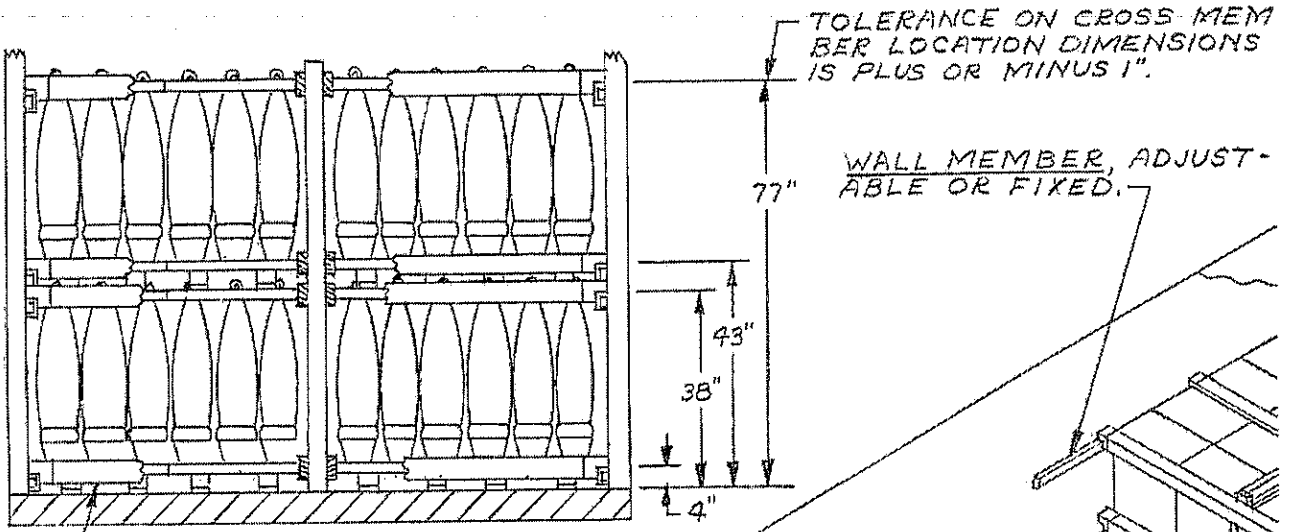
SIDE BLOCKING, 2" x 4" x 60"
(DOUBLED) (2 REQD). NAIL
FIRST PIECE TO THE CAR
FLOOR W/1-16d NAIL EVERY
8". NAIL SECOND PIECE TO
FIRST IN LIKE MANNER.

CENTER GATE (2 REQD). SEE
DETAIL ON PAGE 76. NAIL
TO SOLID FILL W/5-10d
NAILS AT EACH JOINT.

DOORWAY PROTECTION STRAP, $1\frac{1}{2}$ " x .035" x 25'-0"
STEEL STRAPPING (4 REQD). INSTALL AROUND CROSS-
WISE PALLET UNITS IN DOORWAY AREA.

CRIB FILL (7 REQD FOR 3-LONG, 2 REQD
FOR 2-LONG). SEE THE DETAIL ON
PAGE 75. ADD LAMINATIONS AS
NECESSARY TO PROVIDE FOR NOT
MORE THAN $\frac{3}{4}$ " VOID.

TYPICAL LOAD OF 175 MM SEPARATE LOADING
PROJECTILES, PALLETIZED 6 PER PALLET, IN A
40'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

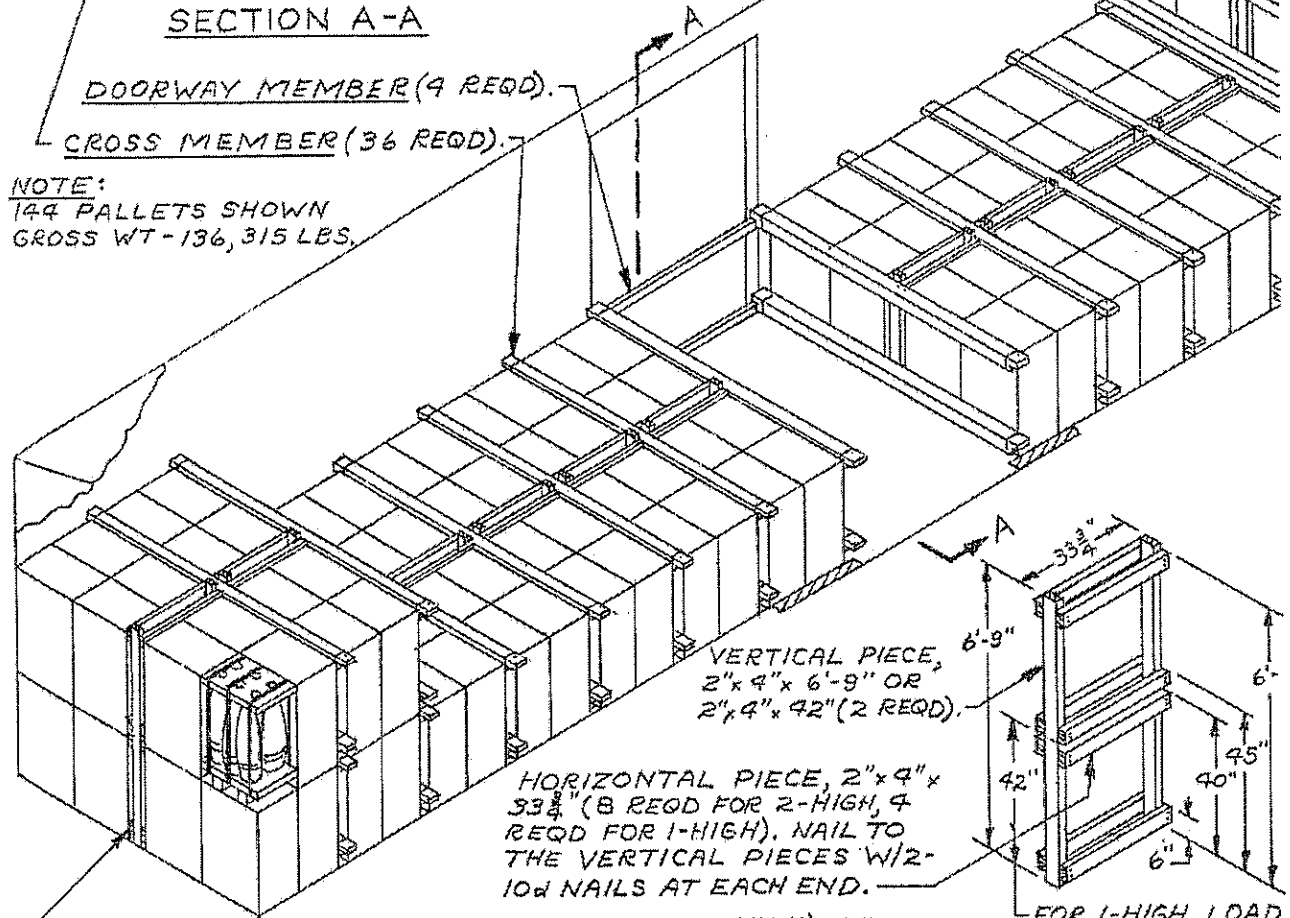


SECTION A-A

DOORWAY MEMBER (4 REQD).

CROSS MEMBER (36 REQD).

NOTE:
144 PALLETS SHOWN
GROSS WT - 136,315 LBS.



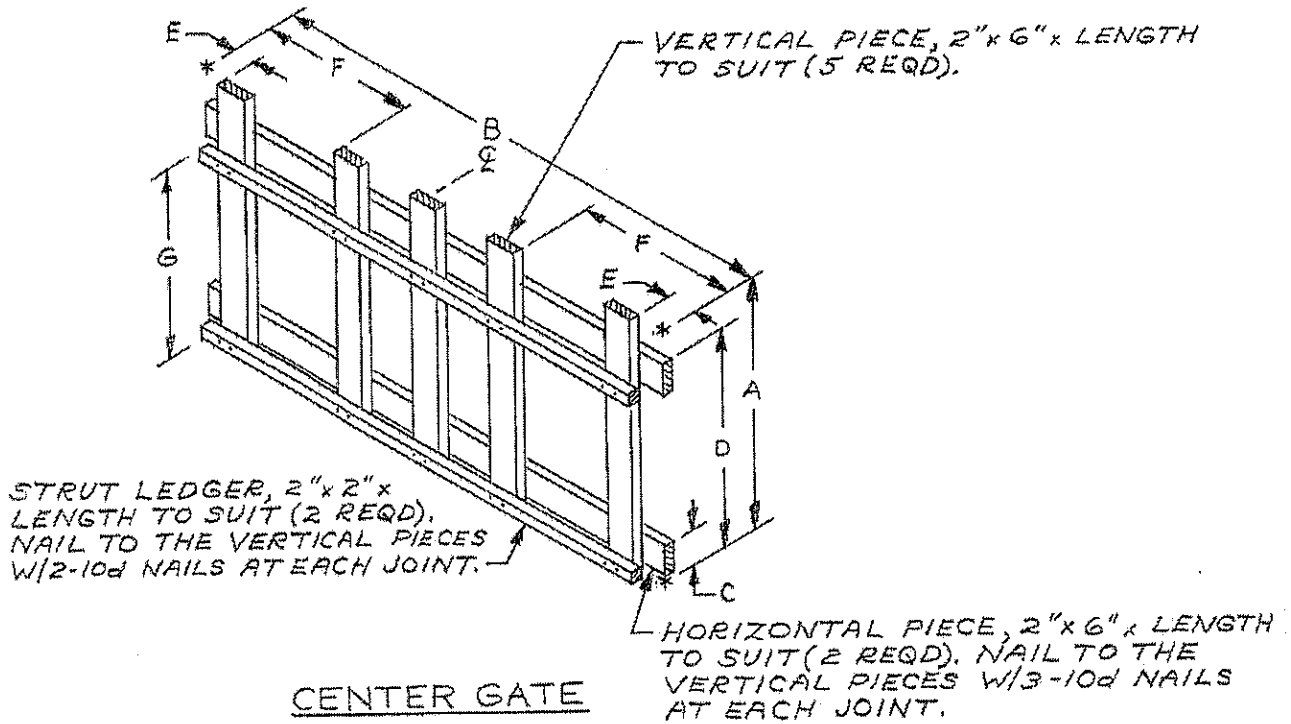
VERTICAL PIECE,
2"x4"x 6'-9" OR
2"x4"x 42" (2 REQD).

HORIZONTAL PIECE, 2"x4"x
33 3/4" (8 REQD FOR 2-HIGH, 4
REQD FOR 1-HIGH). NAIL TO
THE VERTICAL PIECES W/2-
10d NAILS AT EACH END.

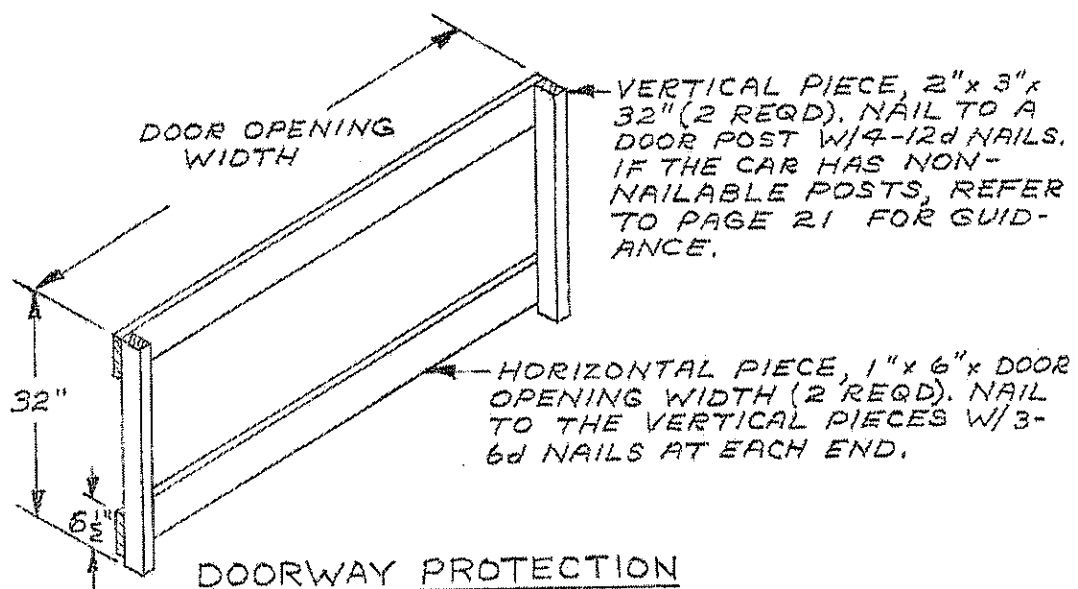
FOR 1-HIGH LOAD
CRIB FILL

CRIB FILL (4 REQD FOR 2-HIGH, 10 REQD FOR 1-HIGH). SEE
DETAIL AT RIGHT. ADJUST WIDTH OF VERTICAL PIECES
OR THICKNESS OF HORIZONTAL PIECES SO THERE WILL NOT
BE MORE THAN 3/4" OF TOTAL ACCUMULATED VOID ACROSS CAR.

TYPICAL LOAD OF 175MM SEPARATE LOADING
PROJECTILES, PALLETIZED 6 PER PALLET, IN A
50'-6" LONG BY 9'-2" WIDE BOX CAR EQUIPPED WITH
MECHANICAL BRACING DEVICES (CROSS MEMBERS)

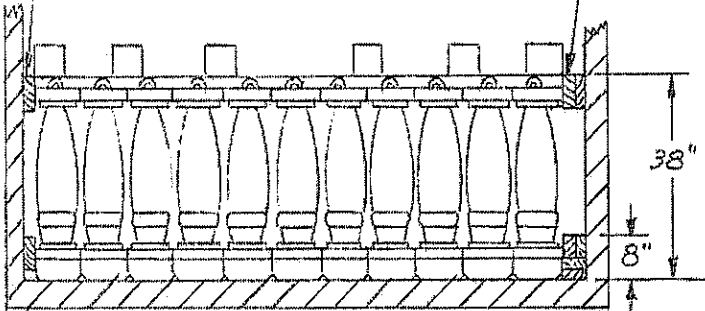


CENTER GATE CHART								
ITEM	PAGE REF	DIMENSION						
		A	B	C	D	E	F	G
155 MM	72	40"	3'-0"	6 1/2"	32"	0"	24 1/2"	27"
175 MM 6/PALLET	74	48"	8'-6"	6 1/2"	41"	5"	31 1/4"	36"



SIDE FILL, 2"x6" x CUT TO FIT (4 REQD). NAIL TO THE CAR SIDEWALL W/1-10d NAIL EVERY 24". RANDOM LENGTH MATERIAL MAY BE USED.

ADJUST THICKNESS OF SIDE FILL AS NECESSARY SO THERE WILL BE NOT MORE THAN $\frac{3}{4}$ " OF TOTAL ACCUMULATED VOID ACROSS THE CAR.

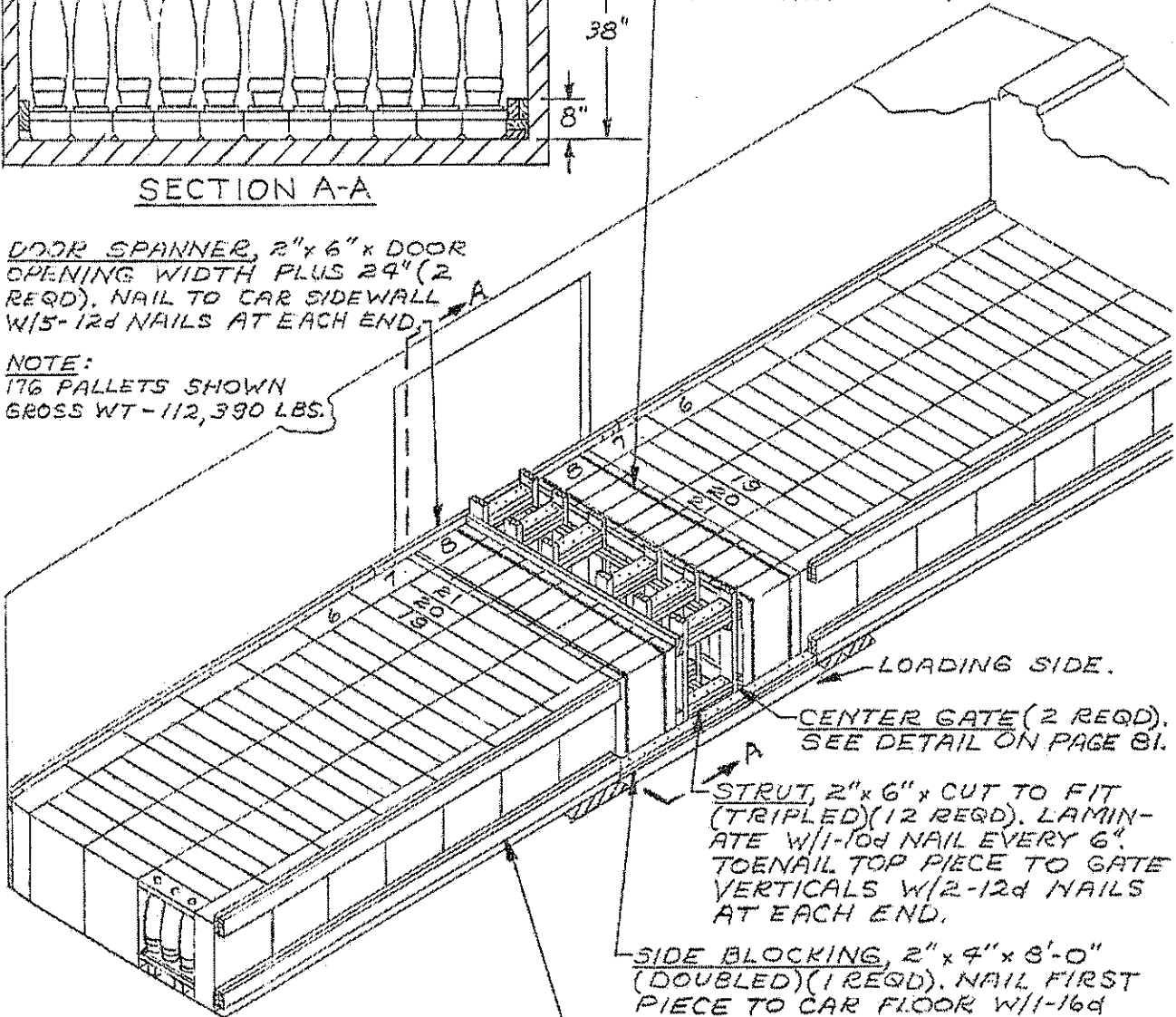


SECTION A-A

DOORWAY PROTECTION, STEEL STRAPPING, $\frac{1}{2}$ " x .035" x 25'-0" (4 REQD). INSTALL AROUND CROSSWISE PALLET UNITS IN DOORWAY AREA.

DOOR SPANNER, 2"x6" x DOOR OPENING WIDTH PLUS 24" (2 REQD). NAIL TO CAR SIDEWALL W/5-12d NAILS AT EACH END.

NOTE:
176 PALLETS SHOWN
GROSS WT - 112,390 LBS.



LOADING SIDE.

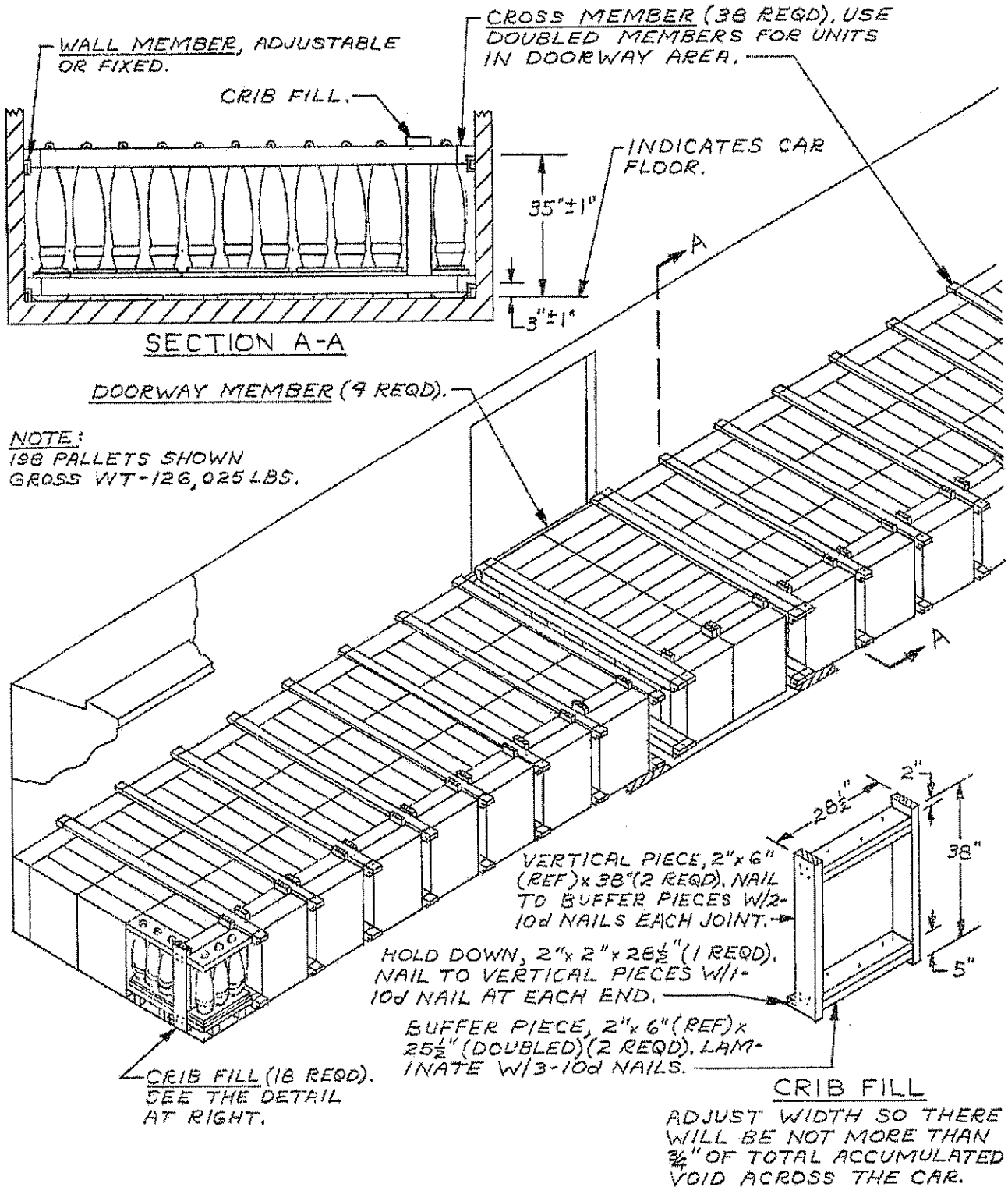
CENTER GATE (2 REQD). SEE DETAIL ON PAGE 81.

STRUT, 2"x6" x CUT TO FIT (TRIPLED) (12 REQD). LAMINATE W/1-10d NAIL EVERY 6". TOENAIL TOP PIECE TO GATE VERTICALS W/2-12d NAILS AT EACH END.

SIDE BLOCKING, 2" x 4" x 8'-0" (DOUBLED) (1 REQD). NAIL FIRST PIECE TO CAR FLOOR W/1-16d NAIL EVERY 6". NAIL SECOND PIECE TO FIRST IN A LIKE MANNER.

SIDE FILL, 2" x 6" x LENGTH TO SUIT (DOUBLED) (4 REQD). NAIL FIRST PIECE TO CAR SIDEWALL W/1-10d NAIL EVERY 24". NAIL SECOND PIECE TO FIRST IN A LIKE MANNER. RANDOM LENGTH MATERIAL MAY BE USED.

TYPICAL LOAD OF 8" SEPARATE LOADING PROJECTILES, PALLETIZED 3 PER PALLET, IN A 40'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

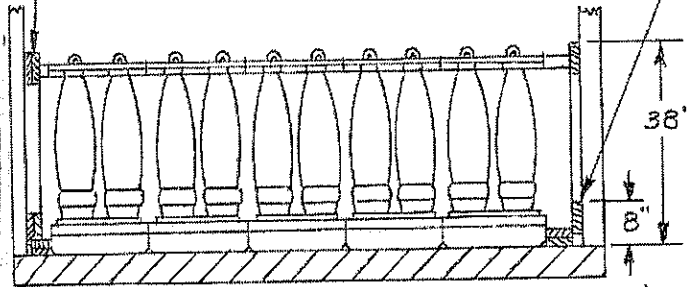


TYPICAL LOAD OF 8" SEPARATE LOADING PROJECTILES, PALLETIZED 3 PER PALLET, IN A 50'-6" LONG BY 9'-2" WIDE BOX CAR EQUIPPED WITH MECHANICAL BRACING DEVICES (CROSS MEMBERS)

SIDE FILL, 2"x6"x16'-0" (DOUBLED) (4 REQD).
 NAIL FIRST PIECE TO CAR SIDEWALL W/1-10d
 NAIL EVERY 24". NAIL SECOND PIECE
 TO FIRST IN A LIKE MANNER. RANDOM
 LENGTH MATERIAL MAY BE USED.

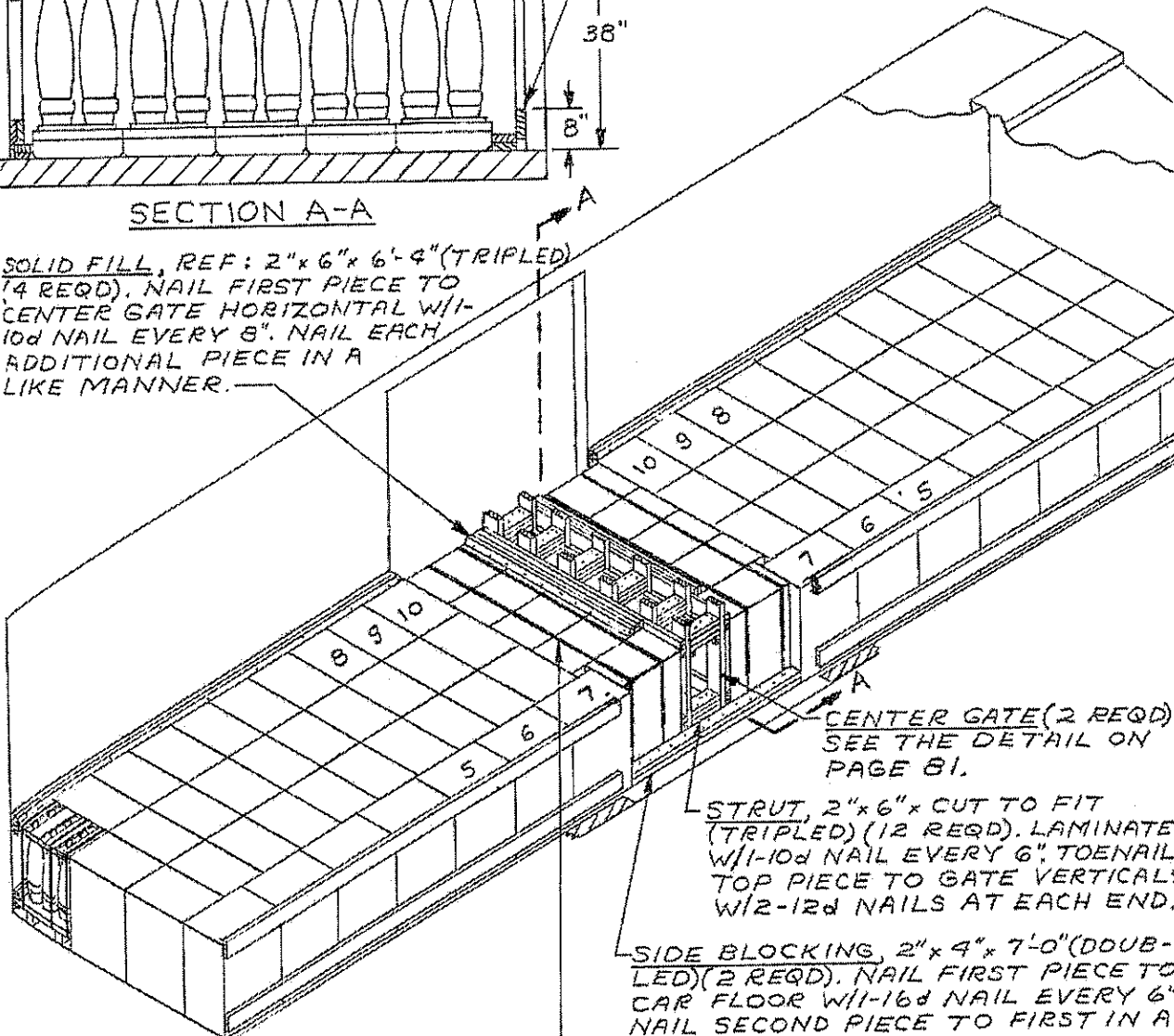
SIDE FILL, 2"x6"x16'-0" (4 REQD).
 NAIL TO CAR SIDEWALL W/1-10d
 NAIL EVERY 24". RANDOM
 LENGTH MATERIAL MAY BE USED.

NOTE:
 84 PALLETS SHOWN
 GROSS WT - 106,610 LBS.



SECTION A-A

SOLID FILL, REF: 2"x6"x6'-4" (TRIPLED)
 (4 REQD). NAIL FIRST PIECE TO
 CENTER GATE HORIZONTAL W/1-10d
 NAIL EVERY 8". NAIL EACH
 ADDITIONAL PIECE IN A
 LIKE MANNER.



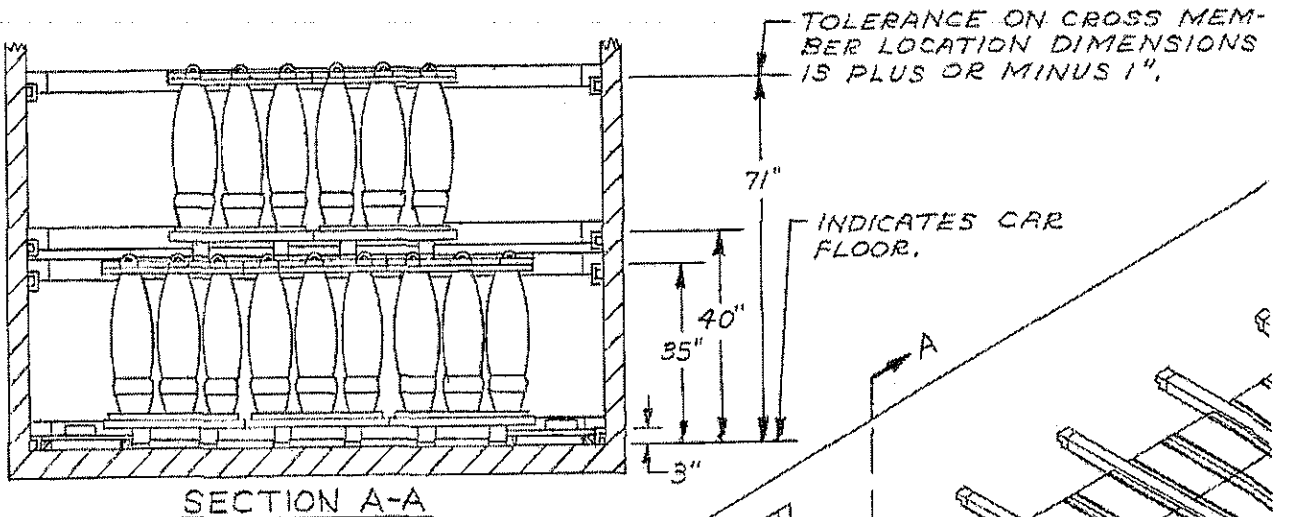
CENTER GATE (2 REQD)
 SEE THE DETAIL ON
 PAGE 81.

STRUT, 2"x6"x CUT TO FIT
 (TRIPLED) (12 REQD). LAMINATE
 W/1-10d NAIL EVERY 6". TOENAIL
 TOP PIECE TO GATE VERTICALS
 W/2-12d NAILS AT EACH END.

SIDE BLOCKING, 2"x4"x7'-0" (DOUB-
 LED) (2 REQD). NAIL FIRST PIECE TO
 CAR FLOOR W/1-16d NAIL EVERY 6".
 NAIL SECOND PIECE TO FIRST IN A
 LIKE MANNER.

DOORWAY PROTECTION,
 STEEL STRAPPING, 1/4" x .035" x 23'-6"
 (4 REQD). INSTALL AROUND CROSS-
 WISE PALLETS IN DOORWAY AREA.

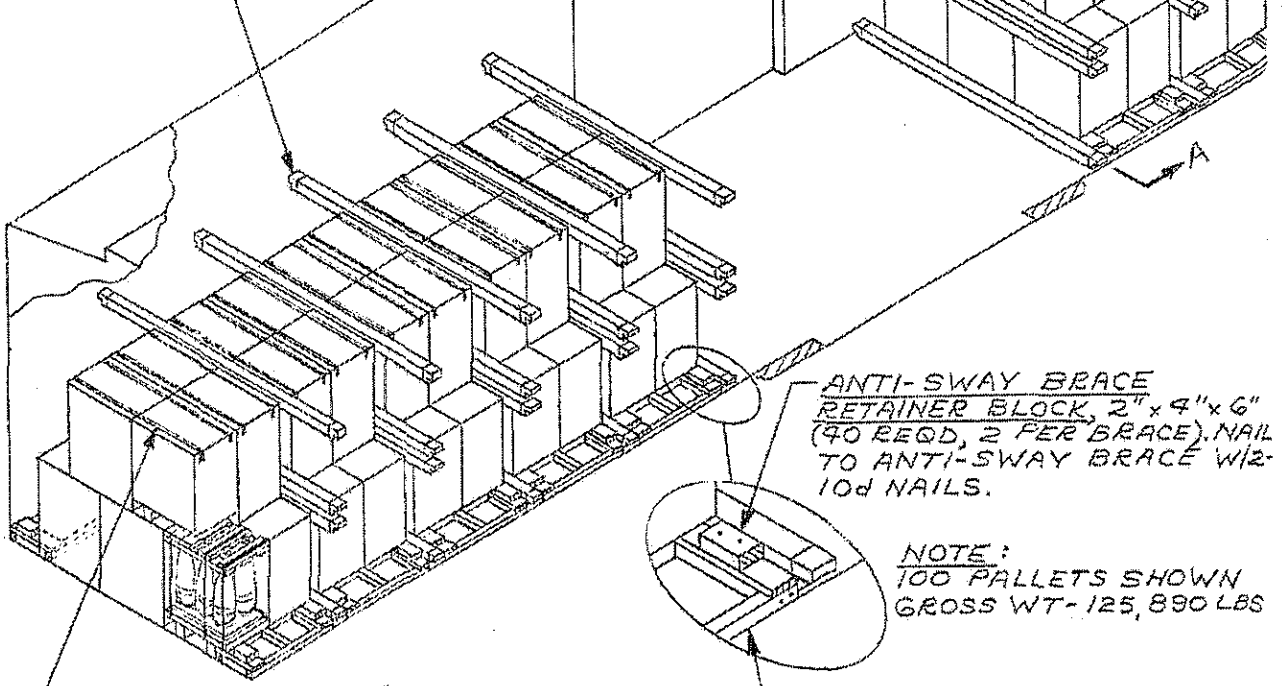
TYPICAL LOAD OF 8" SEPARATE LOADING
PROJECTILES, PALLETIZED 6 PER PALLET, IN A
40'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR



SECTION A-A

WALL MEMBER, ADJUST-
ABLE OR FIXED.

CROSS MEMBER
(40 REQD).



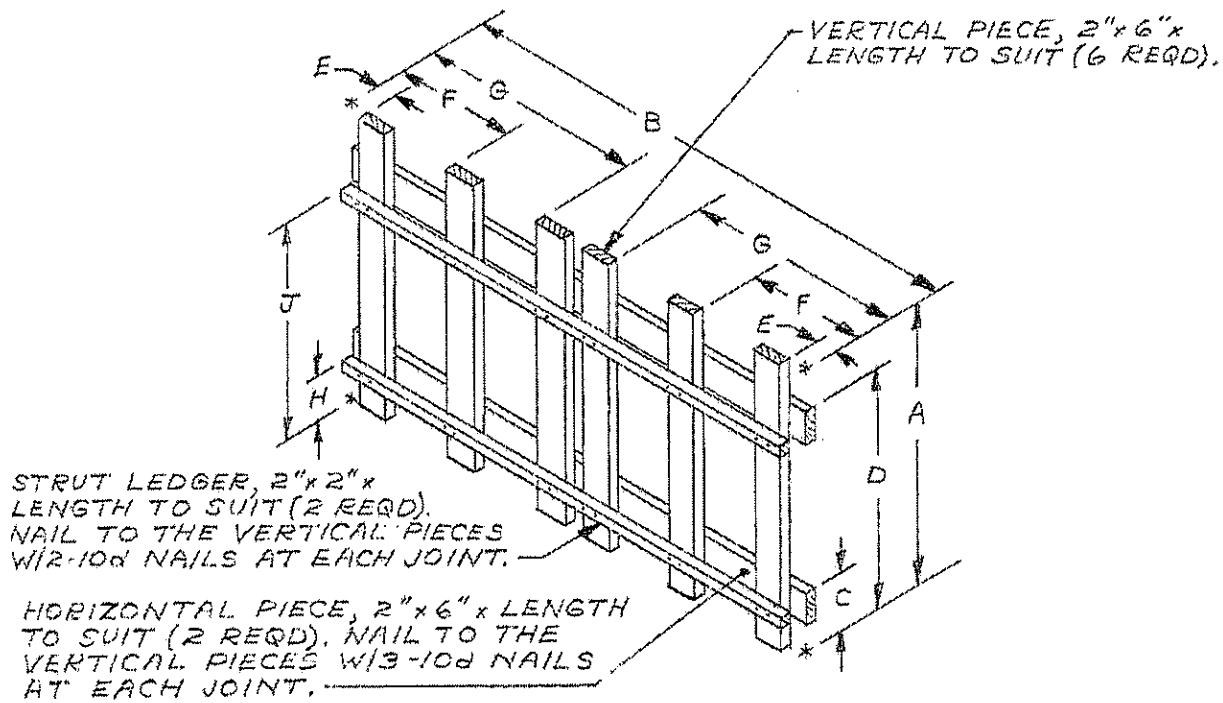
ANTI-SWAY BRACE
RETAINER BLOCK, 2" x 4" x 6"
(40 REQD, 2 PER BRACE). NAIL
TO ANTI-SWAY BRACE W/2-
10d NAILS.

NOTE:
100 PALLETS SHOWN
GROSS WT- 125, 890 LBS

STEEL STRAPPING, 1 1/2" x .035" x 11'-6"
(40 REQD). INSTALL TO ENCIRCLE
COVERS OF Laterally ADJACENT
PALLETS.

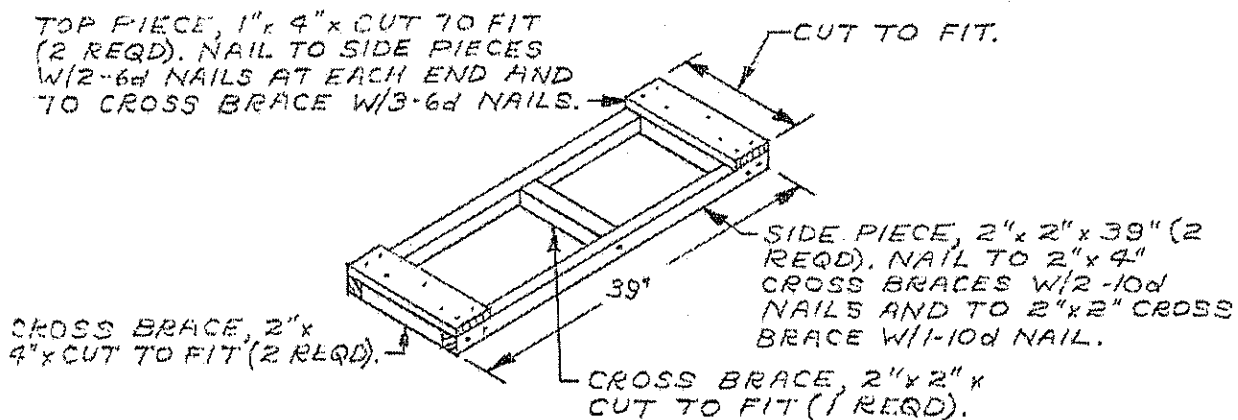
ANTI-SWAY BRACE (20 REQD)
SEE THE DETAIL ON PAGE 81.

TYPICAL LOAD OF 8" SEPARATE LOADING
PROJECTILES, PALLETIZED 6 PER PALLET, IN A
50'-6" LONG BY 9'-2" WIDE BOX CAR EQUIPPED WITH
MECHANICAL BRACING DEVICES (CROSS MEMBERS)

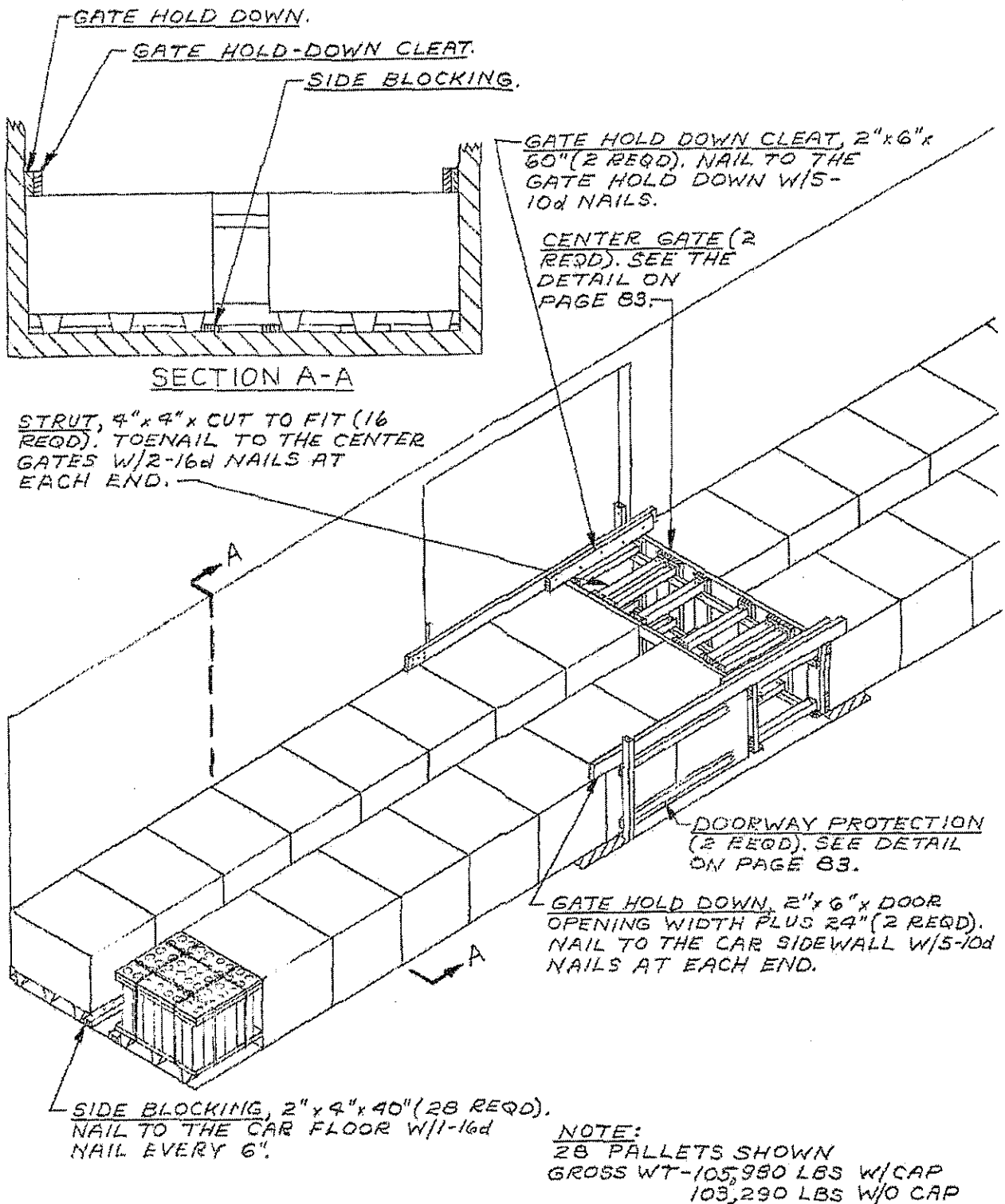


CENTER GATE

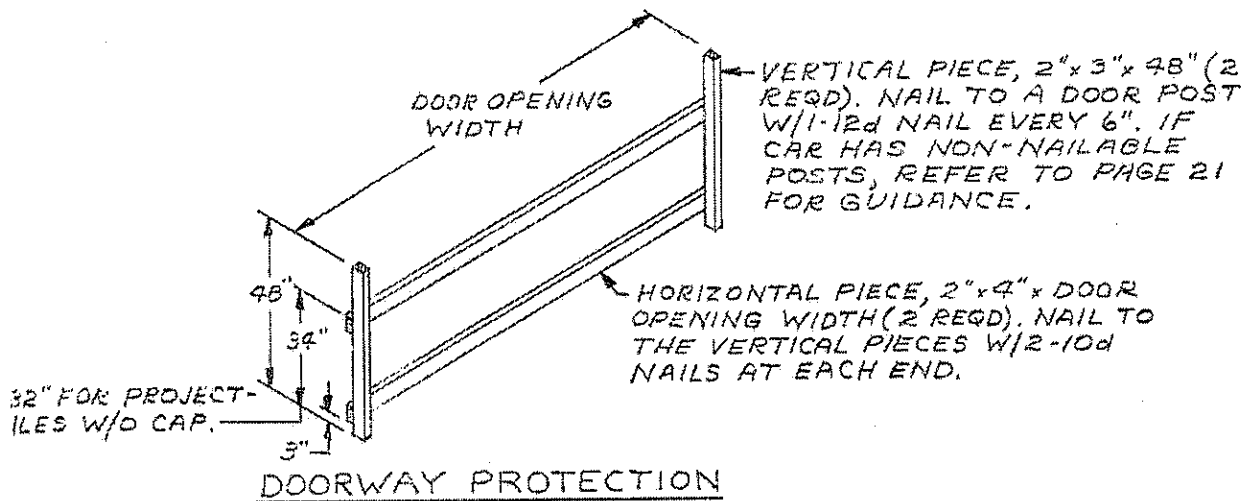
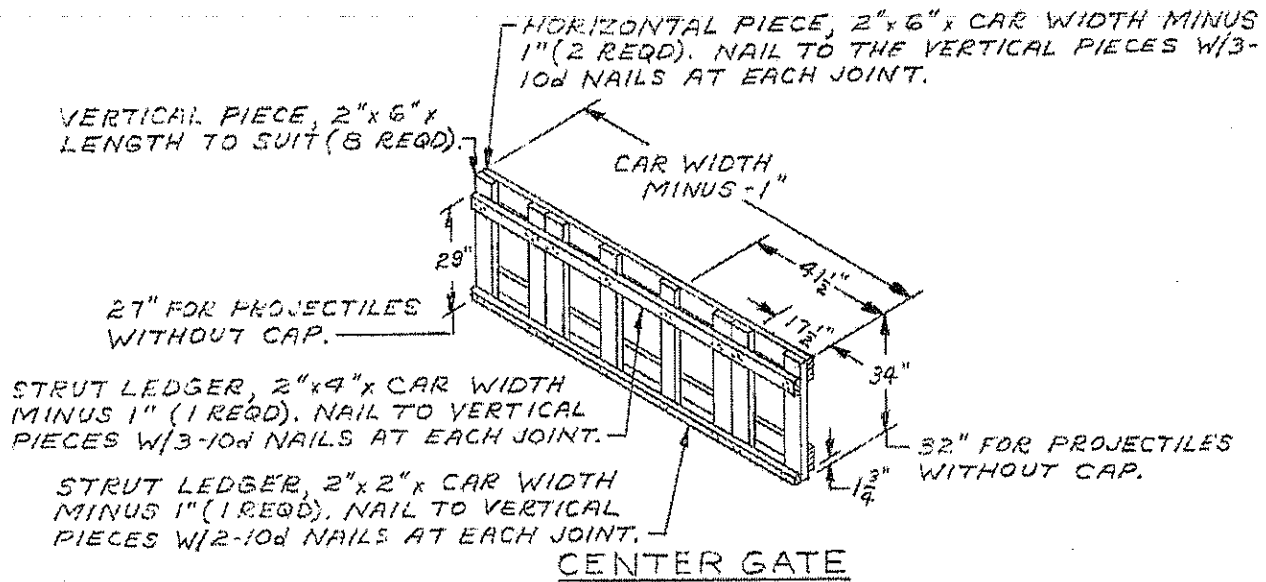
CENTER GATE CHART										
ITEM	PAGE REF	DIMENSION								
		A	B	C	D	E	F	G	H	J
8" 3/PALLET	77	45"	8'-0 $\frac{1}{2}$ "	6 $\frac{1}{2}$ "	38"	0"	16 $\frac{1}{4}$ "	35 $\frac{1}{4}$ "	1 $\frac{1}{2}$ "	33"
8" 6/PALLET	79	45"	8'-1 $\frac{1}{2}$ "	6 $\frac{1}{2}$ "	38"	0"	16 $\frac{3}{8}$ "	36 $\frac{1}{4}$ "	1 $\frac{1}{2}$ "	33"



ANTI-SWAY BRACE

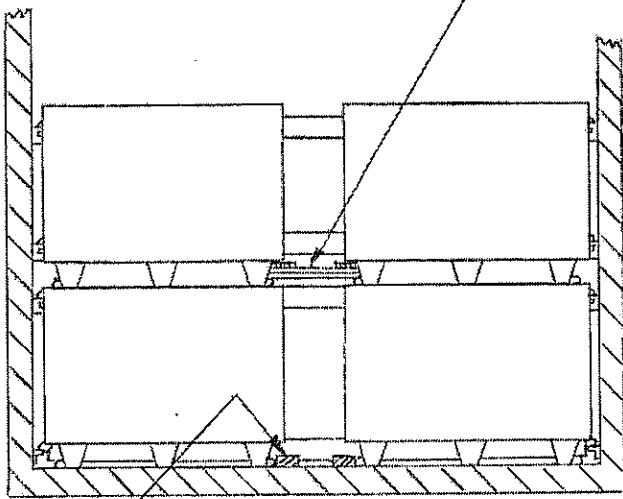


TYPICAL LOAD OF 5"/54 PROJECTILE M41, 48 £
MODS IN ADAPTER MKII £ MODS IN A
50'-6" LONG CONVENTIONAL BOX CAR



ANTI-SWAY BRACE (3 REQD).
SEE THE DETAIL BELOW.

EACH HEIGHT ABOVE CAR FLOOR TO
A WALL MEMBER OR DOORWAY
MEMBER IS SPECIFIED TO LOCATE
THE CENTER LINE OF A CROSS
MEMBER.



SECTION A-A

* THESE DIMENSIONS
WILL BE 28", 38", AND 60"
WHEN LOADING PROJ-
ECTILES WITHOUT
CAPS.

CAR FLOOR.

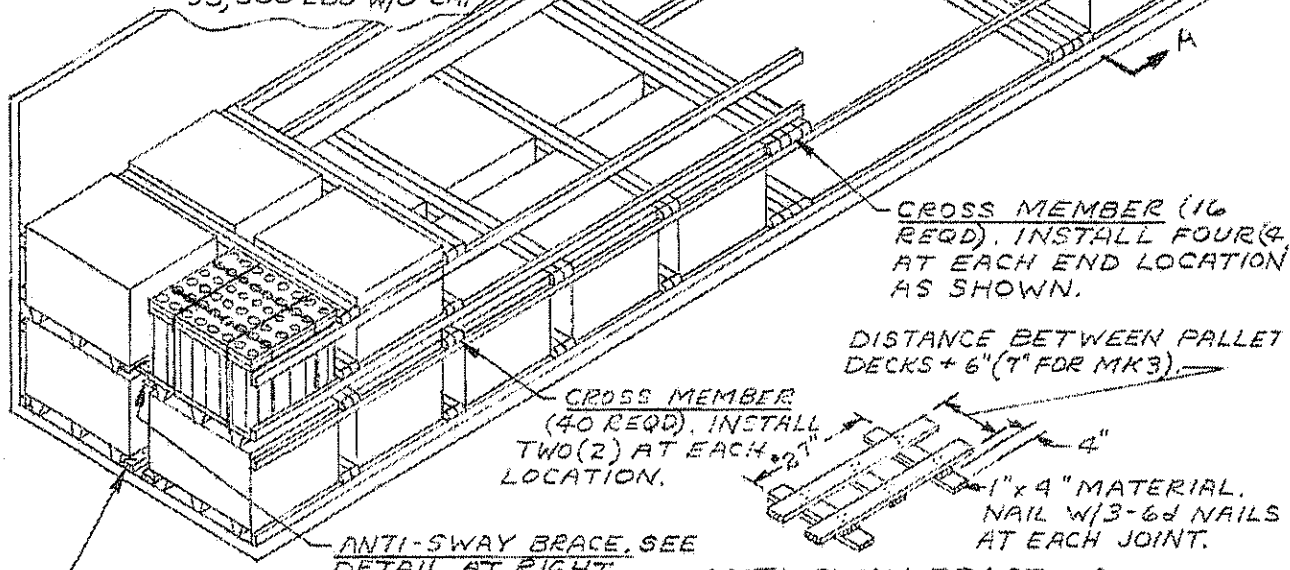
SIDE BLOCKING, 2"x4"x40"
(20 REQD), NAIL TO THE CAR
FLOOR W/1-16d NAIL EVERY 6".

DOORWAY MEMBER.

WALL MEMBER.

NOTE:

26 PALLETS SHOWN
GROSS WT. - 97,380 LBS W/CAP
95,380 LBS W/O CAP



CROSS MEMBER (16
REQD). INSTALL FOUR (4)
AT EACH END LOCATION
AS SHOWN.

DISTANCE BETWEEN PALLET
DECKS + 6" (7" FOR MK3).

CROSS MEMBER
(40 REQD). INSTALL
TWO (2) AT EACH
LOCATION.

1"x4" MATERIAL.
NAIL W/3-6d NAILS
AT EACH JOINT.

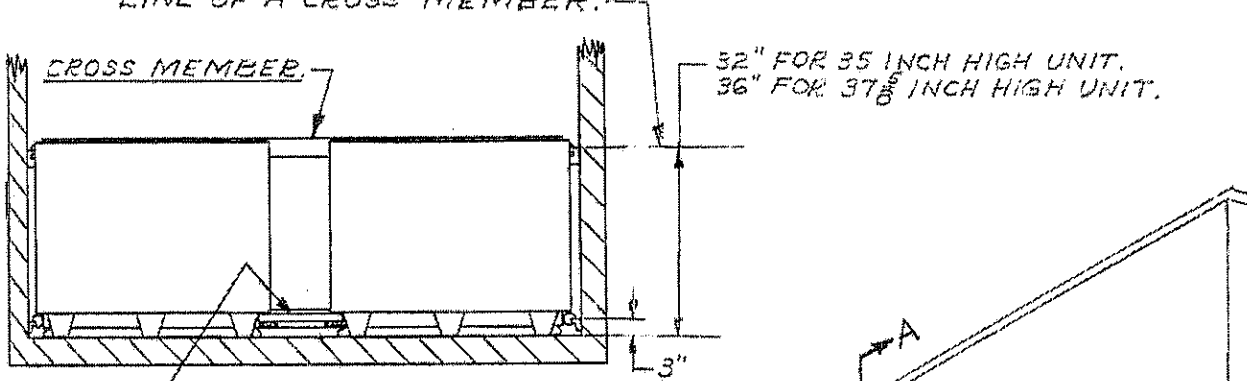
ANTI-SWAY BRACE, SEE
DETAIL AT RIGHT.

ANTI-SWAY BRACE *29" FOR
MK3.

SIDE BLOCKING.

TYPICAL LOAD OF 5"/54 PROJECTILE M41, 48 &
MODS IN ADAPTER MK II & MODS IN A 50'-6" LONG
BOX CAR EQUIPPED WITH MECHANICAL BRACING
DEVICES (CROSS MEMBERS)

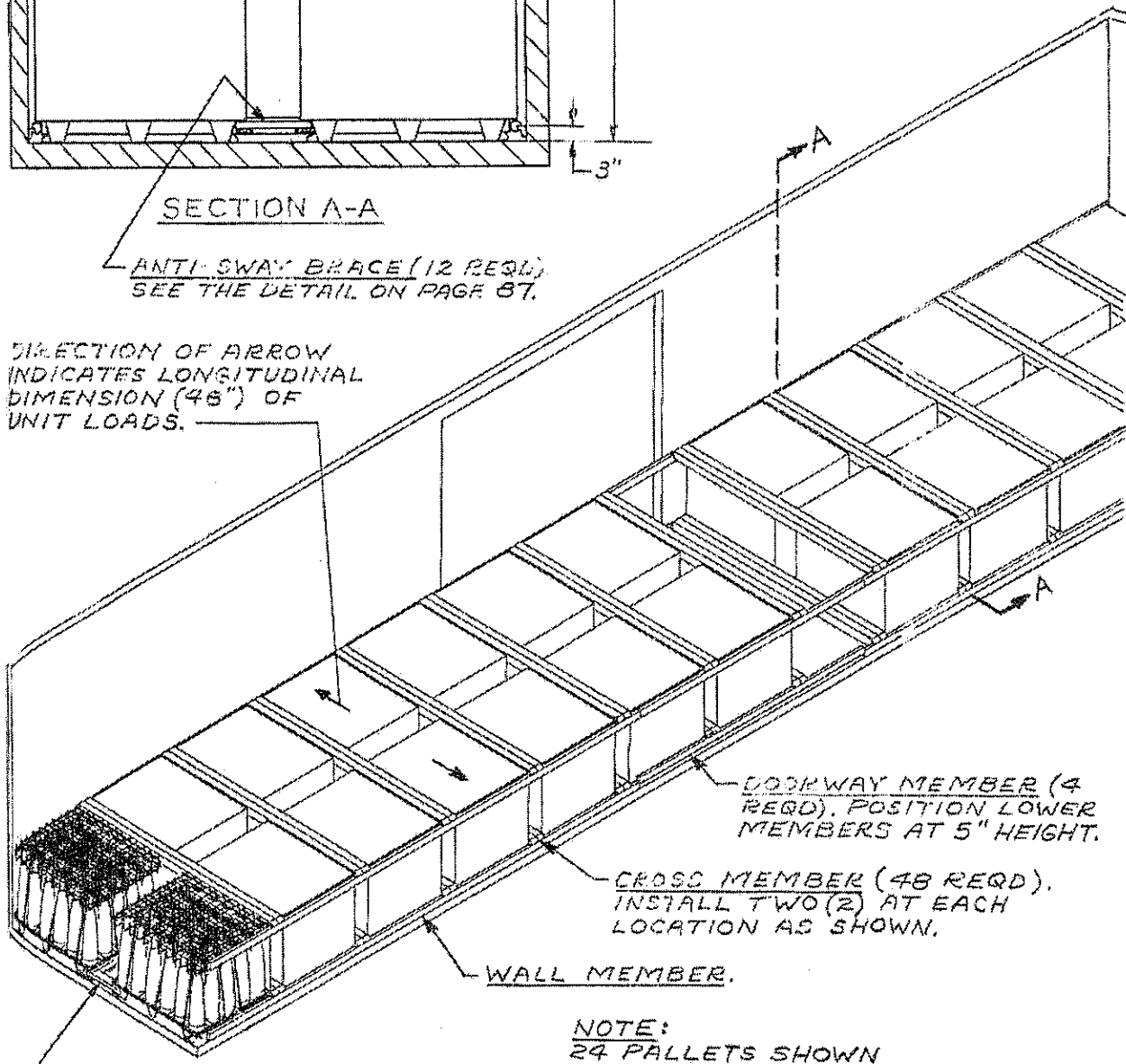
EACH HEIGHT ABOVE CAR FLOOR TO A WALL MEMBER OR DOORWAY MEMBER IS SPECIFIED TO LOCATE THE CENTER LINE OF A CROSS MEMBER.



SECTION A-A

ANTI-SWAY BRACE (12 REQD.)
SEE THE DETAIL ON PAGE 87.

DIRECTION OF ARROW
INDICATES LONGITUDINAL
DIMENSION (48") OF
UNIT LOADS.



DOORWAY MEMBER (4
REQD.) POSITION LOWER
MEMBERS AT 5" HEIGHT.

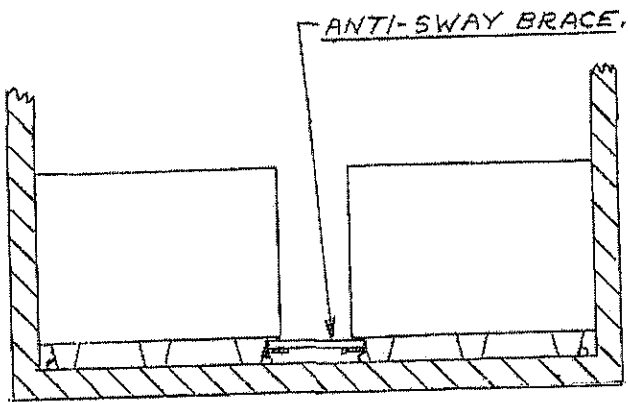
CROSS MEMBER (48 REQD.)
INSTALL TWO (2) AT EACH
LOCATION AS SHOWN.

WALL MEMBER.

ANTI-SWAY BRACE (12 REQD.)
SEE THE DETAIL ON PAGE 87.

NOTE:
24 PALLETS SHOWN
GROSS WT. - 82,719 LBS.

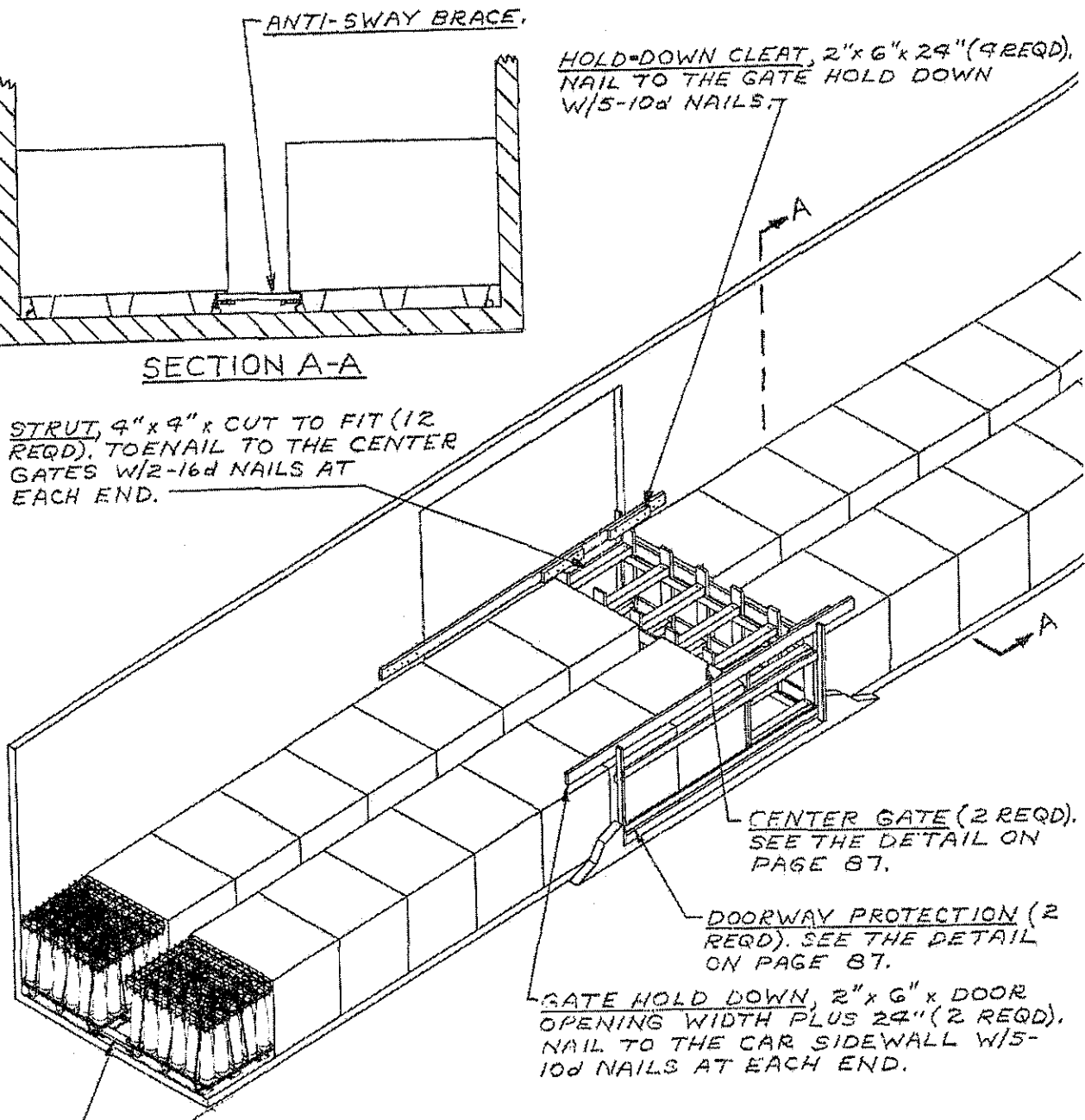
TYPICAL LOAD OF PROJECTILE, 6" AAC OR HC, IN PALLET
ADAPTER MK20 MOD O (FLEET ISSUE UNIT LOAD)
IN 50'-6" LONG BOX CAR EQUIPPED WITH MECHANICAL
BRACING DEVICES (CROSS MEMBERS)



SECTION A-A

HOLD-DOWN CLEAT, 2" x 6" x 24" (4 REQD),
NAIL TO THE GATE HOLD DOWN
W/5-10d NAILS.

STRUT, 4" x 4" x CUT TO FIT (12
REQD). TOENAIL TO THE CENTER
GATES W/2-16d NAILS AT
EACH END.



CENTER GATE (2 REQD).
SEE THE DETAIL ON
PAGE 87.

DOORWAY PROTECTION (2
REQD). SEE THE DETAIL
ON PAGE 87.

GATE HOLD DOWN, 2" x 6" x DOOR
OPENING WIDTH PLUS 24" (2 REQD).
NAIL TO THE CAR SIDEWALL W/5-
10d NAILS AT EACH END.

ANTI-SWAY BRACE (14 REQD). SEE
THE DETAIL ON PAGE 87.

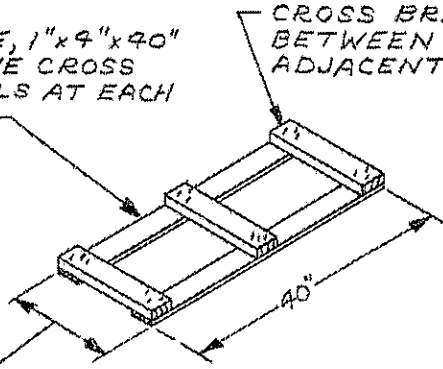
NOTE:
28 PALLETS SHOWN
GROSS WT. - 97,053 LBS.

TYPICAL LOAD OF PROJECTILE, 6" AAC OR HC, IN PALLET
ADAPTER MK20 MOD 0 (FLEET ISSUE UNIT LOAD)
IN A 50'-6" LONG CONVENTIONAL BOX CAR

LONGITUDINAL PIECE, 1"x4"x40"
(2 REQD). NAIL TO THE CROSS
BRACES W/3-10d NAILS AT EACH
JOINT AND CLINCH.

CROSS BRACE, 2"x4"x CUT TO FIT
BETWEEN LEGS OF LATERALLY
ADJACENT PALLETS.

DISTANCE BETWEEN
LEGS OF PALLETS
ACROSS THE CAR.



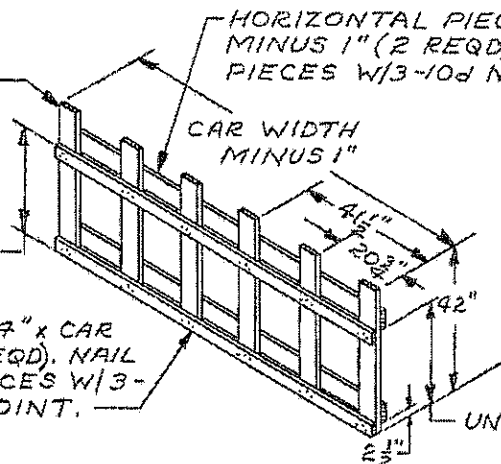
ANTI-SWAY BRACE

VERTICAL PIECE, 2"
x6"x42"(6 REQD).

HORIZONTAL PIECE, 2"x6"x CAR WIDTH
MINUS 1"(2 REQD). NAIL TO VERTICAL
PIECES W/3-10d NAILS AT EACH JOINT.

UNIT HEIGHT MINUS 4 1/2"

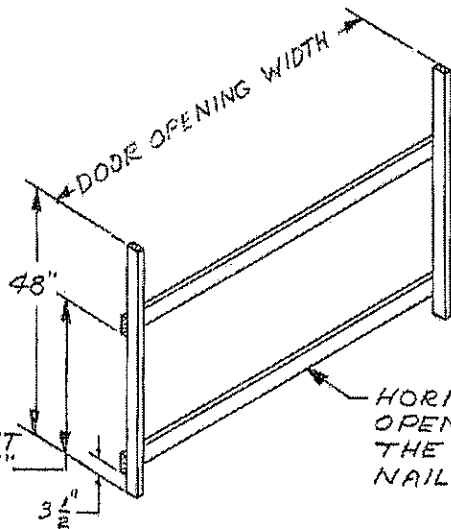
CAR WIDTH
MINUS 1"



STRUT LEDGER, 2"x4"x CAR
WIDTH MINUS 1"(2 REQD). NAIL
TO THE VERTICAL PIECES W/3-
10d NAILS AT EACH JOINT.

UNIT HEIGHT MINUS 5 1/2"

CENTER GATE



VERTICAL PIECE, 2"x3"x48"
(2 REQD). NAIL TO A DOOR
POST W/1-12d NAIL EVERY 6".
IF CAR HAS NON-NAILABLE
POSTS, REFER TO PAGE
21 FOR GUIDANCE.

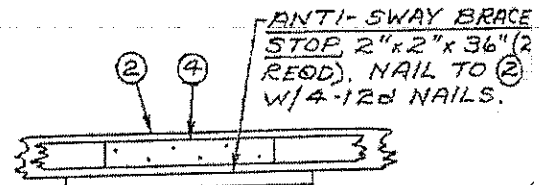
UNIT HEIGHT
MINUS 4 1/2"

HORIZONTAL PIECE, 2"x4"x DOOR
OPENING WIDTH(2 REQD). NAIL TO
THE VERTICAL PIECES W/2-10d
NAILS AT EACH END.

DOORWAY PROTECTION

NOTE: 36 PALLET UNITS SHOWN
GROSS WT. - 118,626 LBS.

FOR A 40'-6" CAR:
30 PALLET UNITS
GROSS WEIGHT - 99,069 LBS.



SEE THE PARTIAL-LAYER BRACING
TYPE B ON PAGE 10.

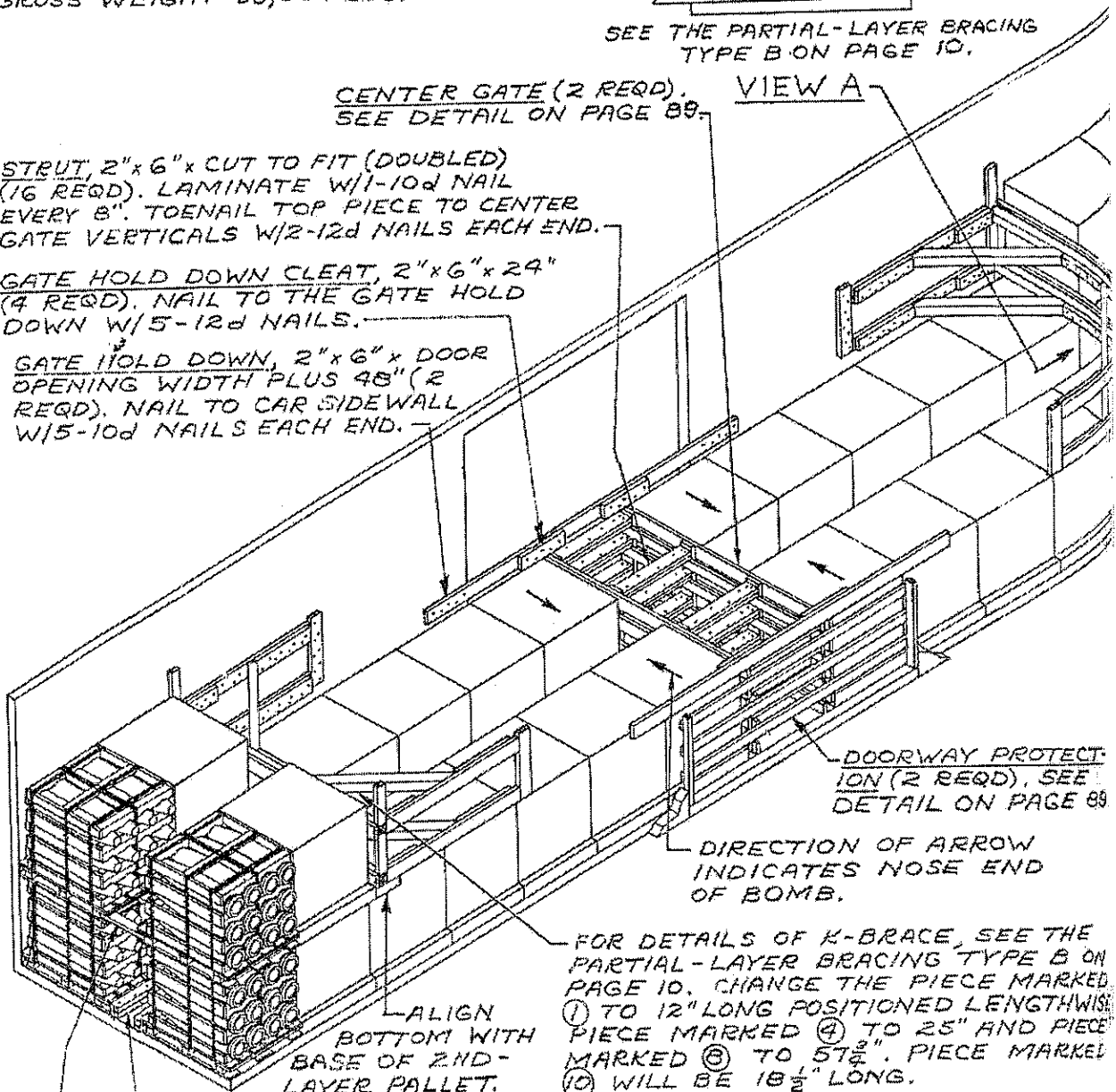
CENTER GATE (2 REQD).
SEE DETAIL ON PAGE 89.

VIEW A

STRUT, 2" x 6" x CUT TO FIT (DOUBLED)
(16 REQD). LAMINATE W/1-10d NAIL
EVERY 8". TOENAIL TOP PIECE TO CENTER
GATE VERTICALS W/2-12d NAILS EACH END.

GATE HOLD DOWN CLEAT, 2" x 6" x 24"
(4 REQD). NAIL TO THE GATE HOLD
DOWN W/5-12d NAILS.

GATE HOLD DOWN, 2" x 6" x DOOR
OPENING WIDTH PLUS 48" (2
REQD). NAIL TO CAR SIDEWALL
W/5-10d NAILS EACH END.



DOORWAY PROTECT
ION (2 REQD), SEE
DETAIL ON PAGE 89

DIRECTION OF ARROW
INDICATES NOSE END
OF BOMB.

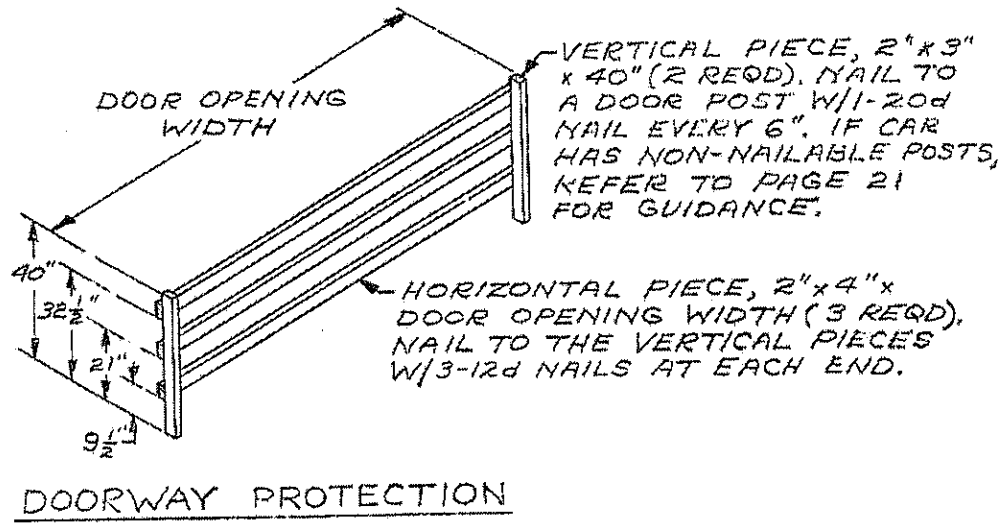
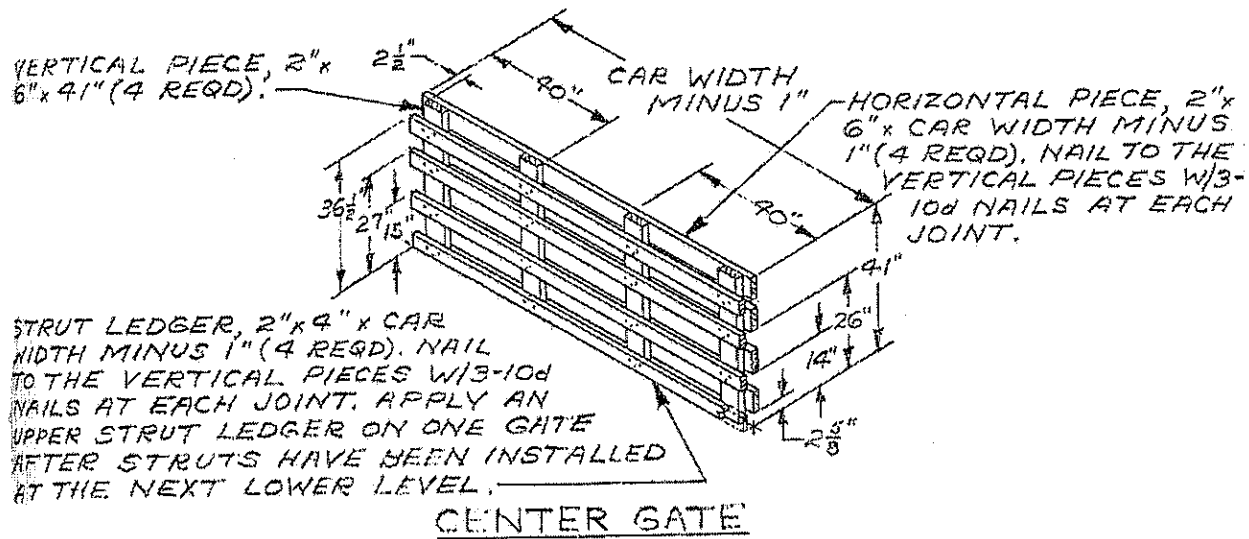
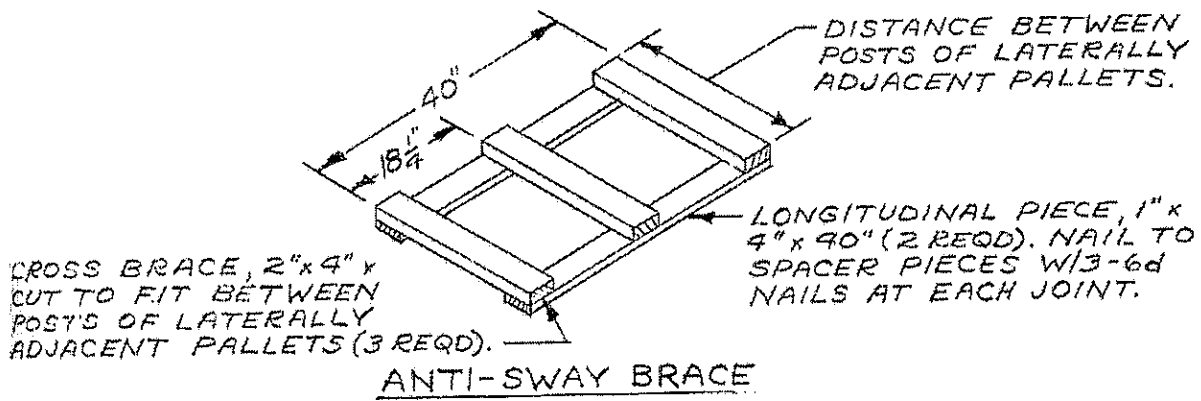
FOR DETAILS OF K-BRACE, SEE THE
PARTIAL-LAYER BRACING TYPE B ON
PAGE 10. CHANGE THE PIECE MARKED
① TO 12" LONG POSITIONED LENGTHWISE.
PIECE MARKED ④ TO 25" AND PIECE
MARKED ③ TO 57½". PIECE MARKED
⑩ WILL BE 18½" LONG.

ALIGN
BOTTOM WITH
BASE OF 2ND-
LAYER PALLET.

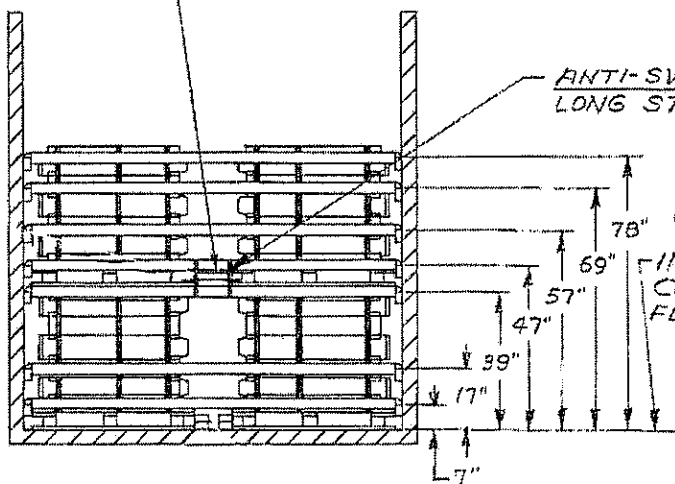
SIDE BLOCKING, 2" x 4" x 40" (DOUBLED).
(28 REQD). NAIL FIRST PIECE TO CAR
FLOOR W/5-16d NAILS. NAIL SECOND
PIECE W/5-30d NAILS.

ANTI-SWAY BRACE (4 REQD). SEE
THE DETAIL ON PAGE 89.

TYPICAL LOAD OF BOMBS, 250 LB MKBI & MODS
(AIR FORCE UNIT LOAD PER TPO 1325-092-9498, REV H
IN A 50'-6" LONG CONVENTIONAL BOX CAR



ANTI-SWAY BRACE (2 REQD). SEE DETAIL ON PAGE 89.



ANTI-SWAY BRACE STOP $\frac{5}{8}$ " x .020" x 90"
LONG STEEL STRAPPING (4 REQD).

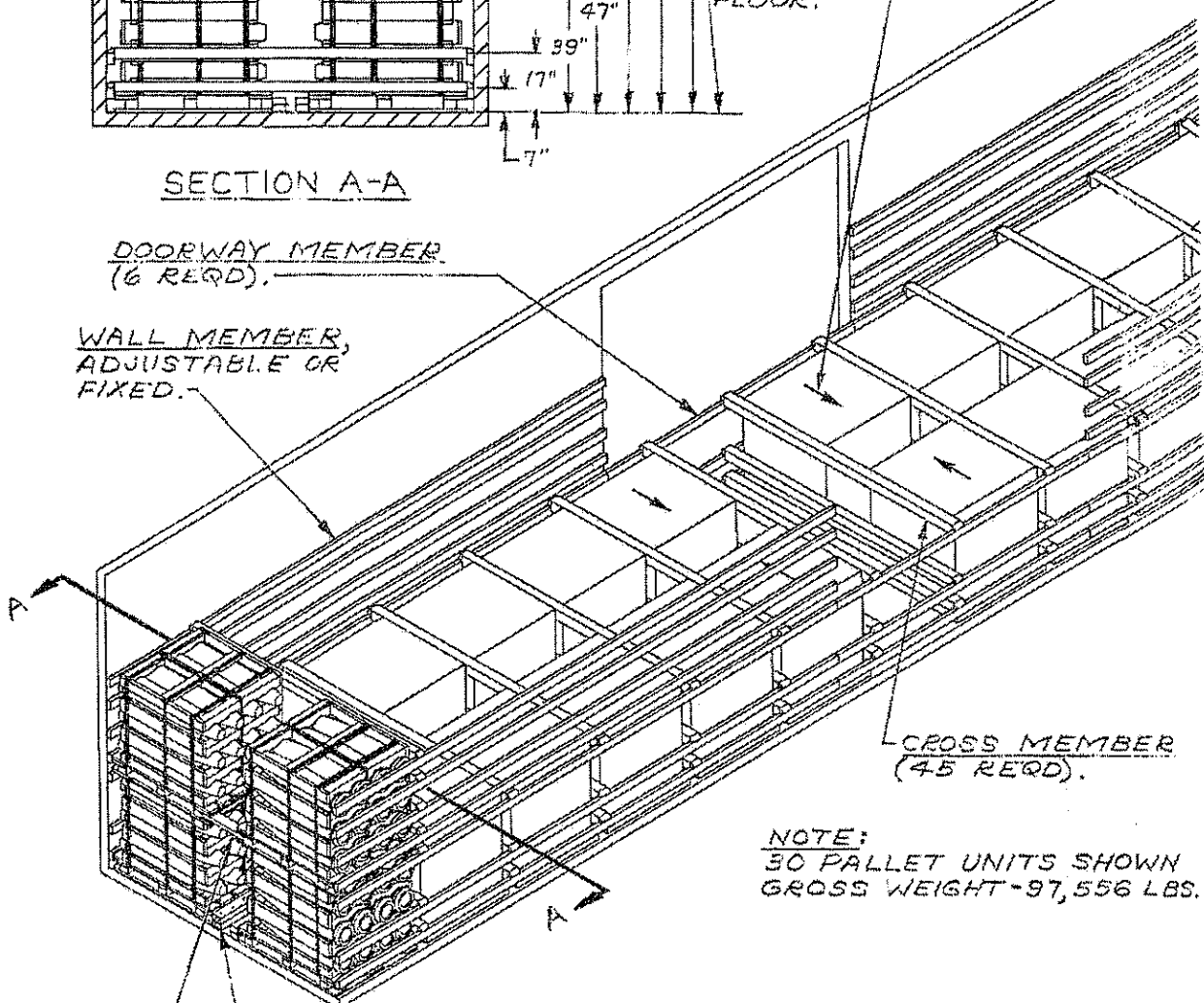
DIRECTION OF ARROW
INDICATES NOSE END
OF BOMB.

INDICATES
CAR
FLOOR.

SECTION A-A

DOORWAY MEMBER
(6 REQD).

WALL MEMBER,
ADJUSTABLE OR
FIXED.



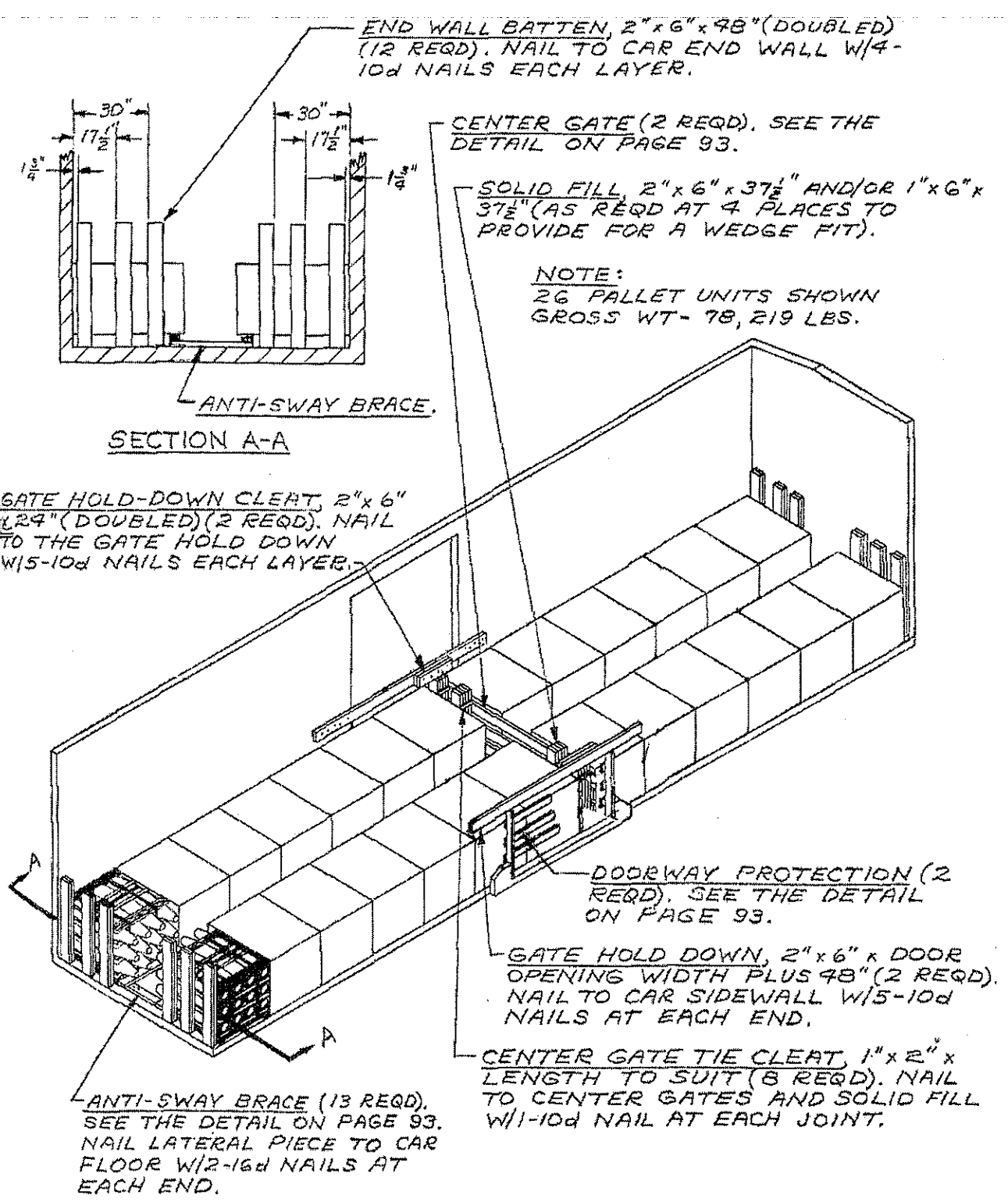
CROSS MEMBER
(45 REQD).

NOTE:
30 PALLET UNITS SHOWN
GROSS WEIGHT-97,556 LBS.

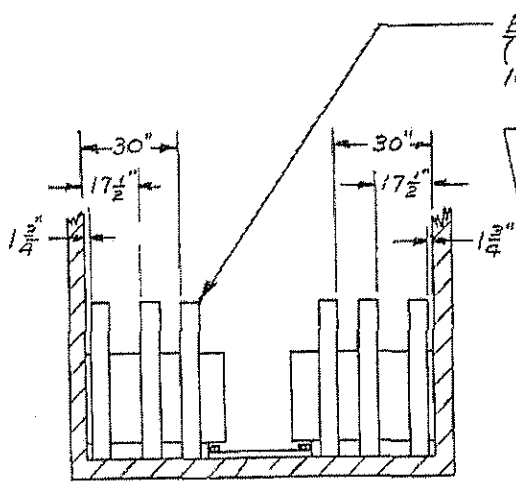
SIDE BLOCKING, 2" x 4" x 40" (DOUBLED) (13 REQD). NAIL FIRST
PIECE TO CAR FLOOR W/5-16d NAILS. NAIL SECOND
PIECE W/5-30d NAILS.

ANTI-SWAY BRACE (2 REQD). SEE DETAIL ON PAGE 89.

TYPICAL LOAD OF BOMBS, 250 LB MK81 & MODS
(AIR FORCE UNIT LOAD PER TPO 1325-092-9498, REV H
IN A 50'-6" LONG BOX CAR EQUIPPED WITH
MECHANICAL BRACING DEVICES (CROSS MEMBERS).



TYPICAL LOAD OF BOMBS, 250 LB MK81 & MODS
IN PALLET MK8 MOD 0 (FLEET ISSUE UNIT LOAD)
IN A 40'-6" LONG CONVENTIONAL BOX CAR



SECTION A-A

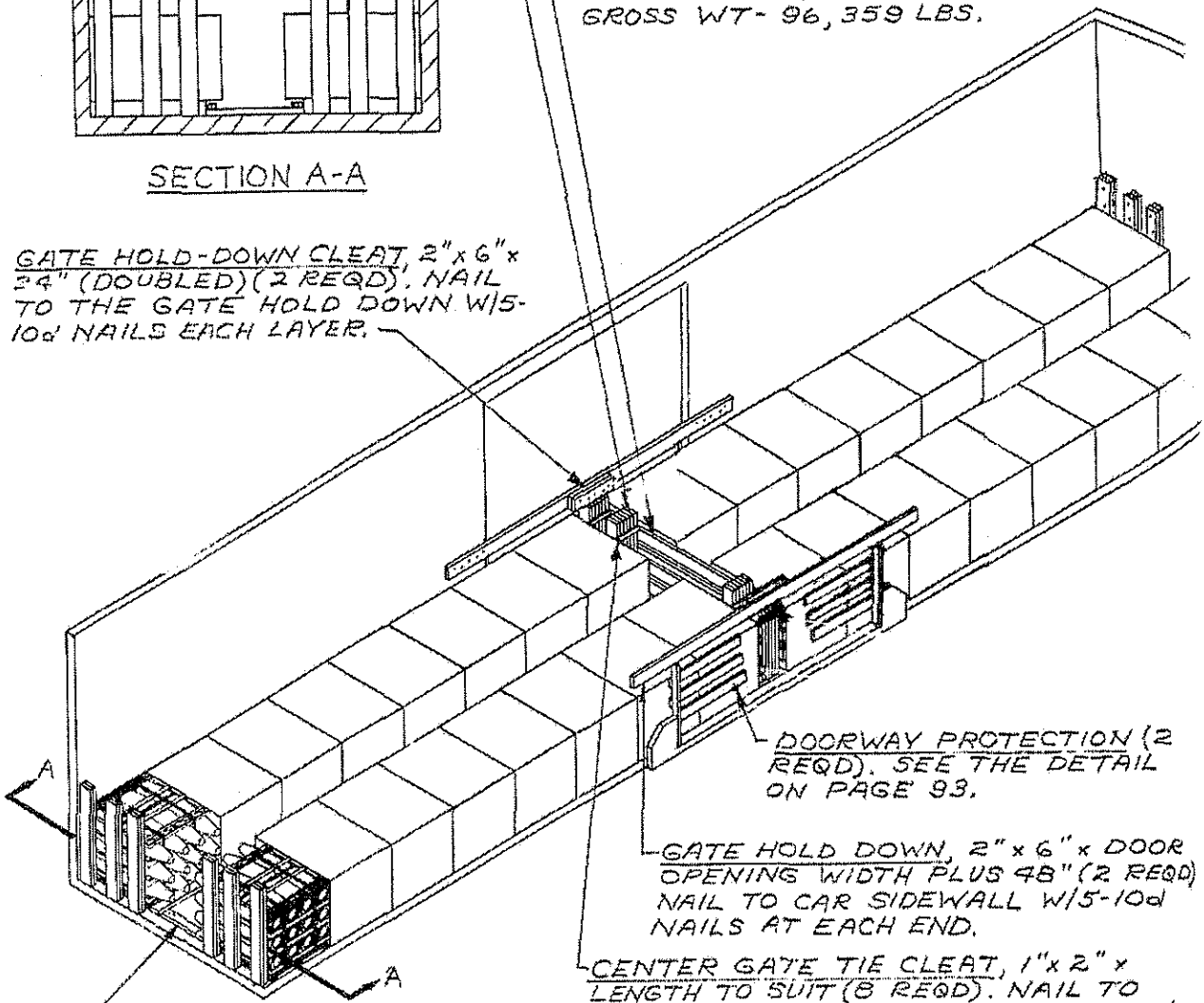
END WALL BATTEN, 2" x 6" x 98" (DOUBLED)
 (12 REQD). NAIL TO CAR END WALL W/4-10d NAILS EACH LAYER.

SOLID FILL, 2" x 6" x 37 1/2" AND/OR 1" x 6" x 37 1/2"
 (AS REQD AT 4 PLACES TO PROVIDE FOR A WEDGE FIT).

CENTER GATE (2 REQD). SEE THE DETAIL ON PAGE 93.

NOTE:
 32 PALLET UNITS SHOWN
 GROSS WT- 96,359 LBS.

GATE HOLD-DOWN CLEAT 2" x 6" x 24" (DOUBLED) (2 REQD), NAIL TO THE GATE HOLD DOWN W/5-10d NAILS EACH LAYER.



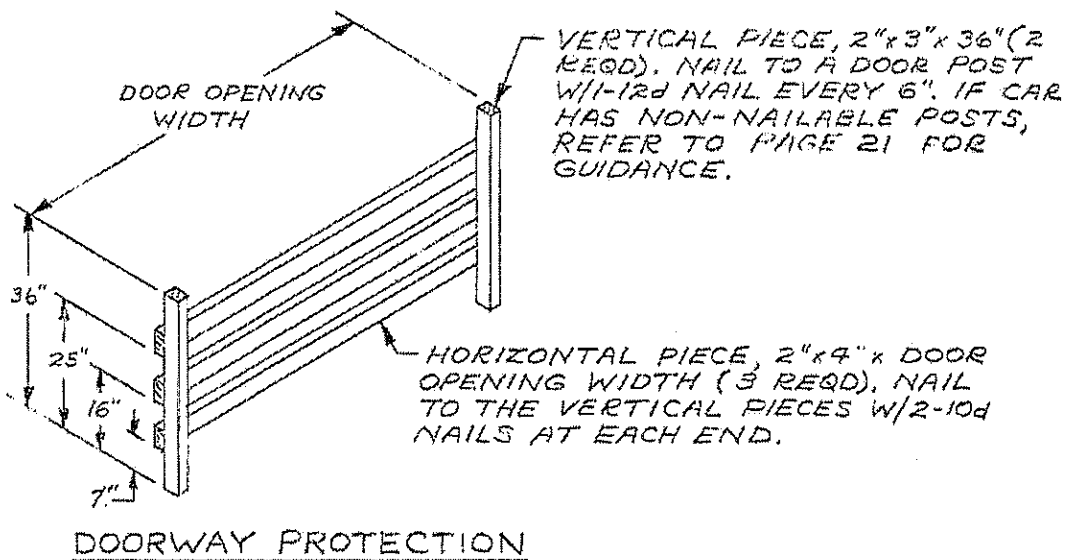
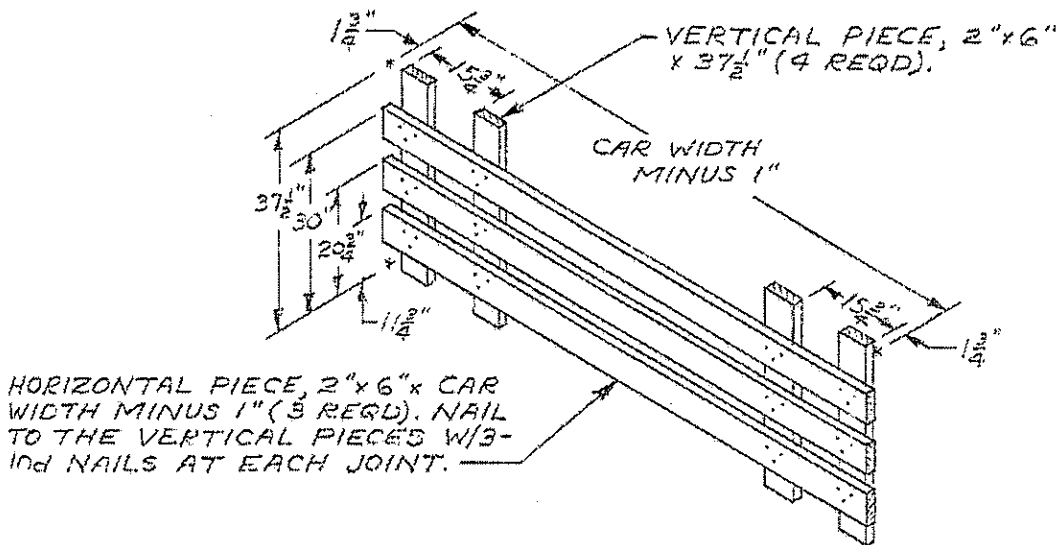
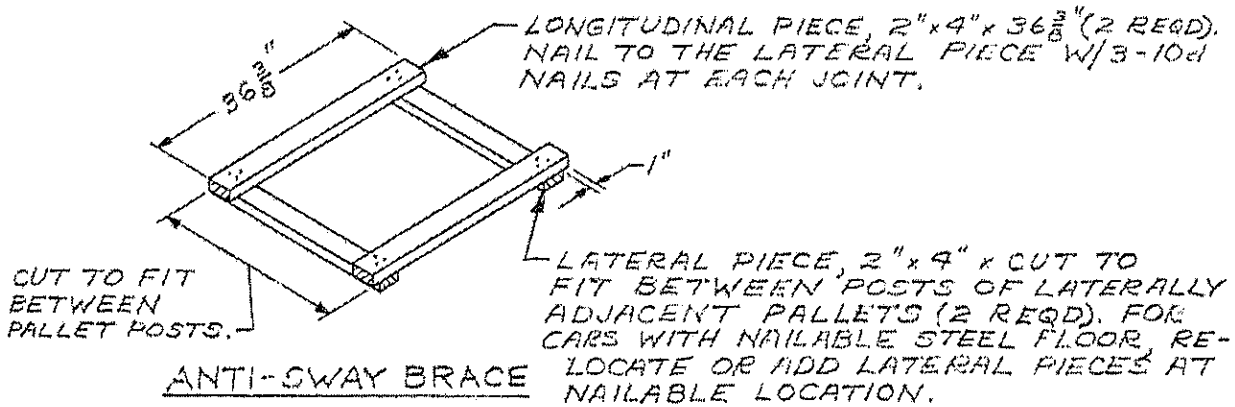
DOORWAY PROTECTION (2 REQD). SEE THE DETAIL ON PAGE 93.

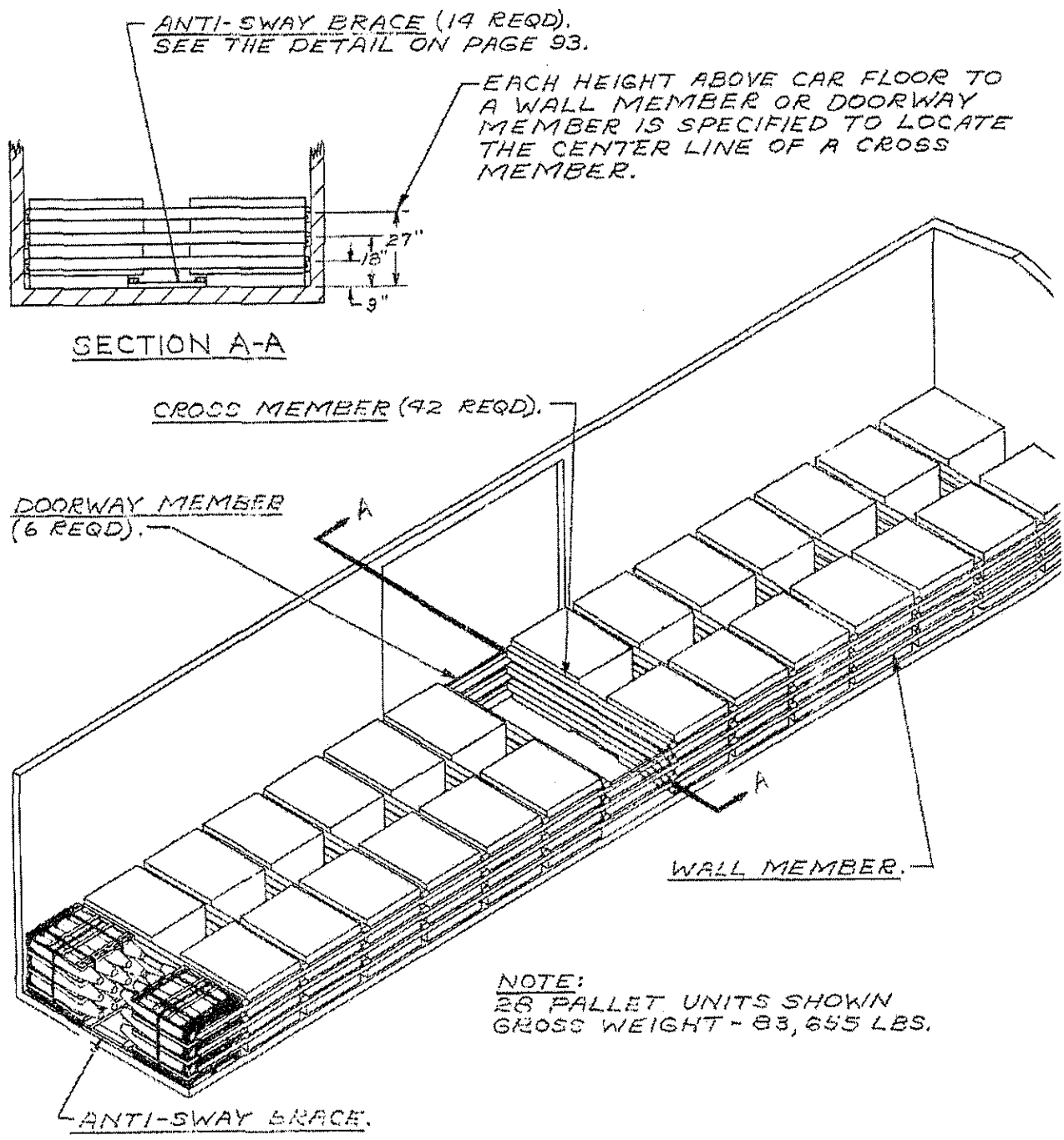
GATE HOLD DOWN, 2" x 6" x DOOR OPENING WIDTH PLUS 48" (2 REQD)
 NAIL TO CAR SIDEWALL W/5-10d NAILS AT EACH END.

CENTER GATE TIE CLEAT, 1" x 2" x LENGTH TO SUIT (8 REQD). NAIL TO CENTER GATES AND SOLID FILL W/1-10d NAIL AT EACH JOINT.

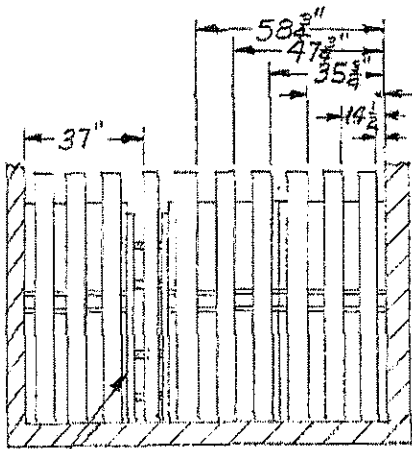
ANTI-SWAY BRACE (16 REQD). SEE THE DETAIL ON PAGE 93. NAIL LATERAL PIECE TO CAR FLOOR W/2-16d NAILS AT EACH END.

TYPICAL LOAD OF BOMBS, 250 LB MK81 & MODS
IN PALLET MK8 MOD 0 (FLEET ISSUE UNIT LOAD)
IN A 50'-6" LONG CONVENTIONAL BOX CAR





TYPICAL LOAD OF BOMBS, 250 LB MK81 & MODS
IN PALLET MK8 MOD 0 (FLEET ISSUE UNIT LOAD)
IN A 50'-6" LONG BOX CAR EQUIPPED WITH
MECHANICAL BRACING DEVICES (CROSS MEMBERS)



SECTION A-A

ANTI-SWAY BRACE (8 REQD). SEE DETAIL ON PAGE 97.

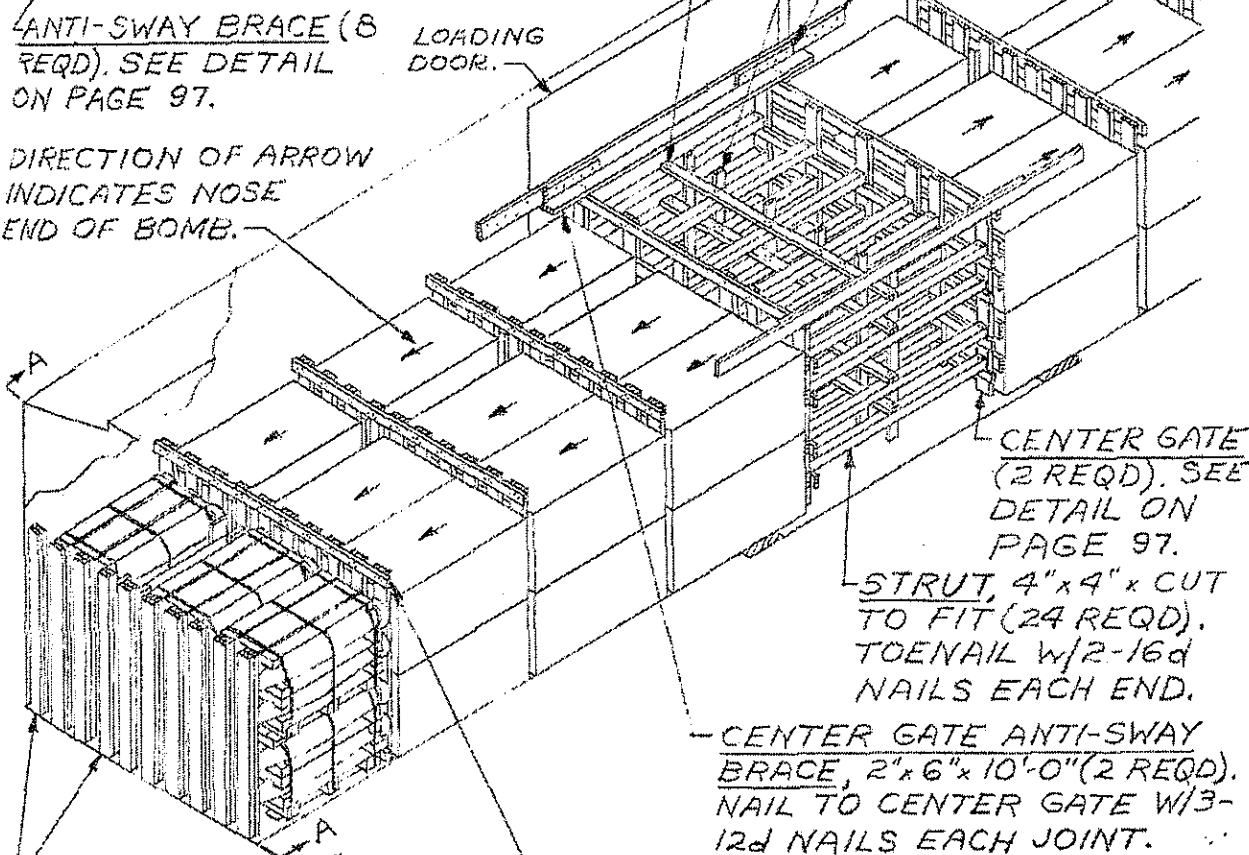
DIRECTION OF ARROW INDICATES NOSE END OF BOMB.

GATE HOLD DOWN, 2"x6"x DOOR WIDTH PLUS 24" (2 REQD). NAIL W/5-12d NAILS EACH END.

2 1/2" HOLD-DOWN CLEAT, 2"x6"x24" (4 REQD). NAIL W/5-10d NAILS.

VERTICAL STRUT BRACING, 2"x4"x66" (6 REQD). NAIL W/3-12d NAILS AT EACH JOINT.

HORIZONTAL STRUT BRACING, 2"x4"x CAR WIDTH - 1" (4 REQD). NAIL W/3-12d NAILS AT EACH JOINT.



WALL BATTEN, 2"x4" x72" (DOUBLED) (2 REQD). NAIL W/6-10d NAILS EACH LAYER.

WALL BATTEN, 2"x6" x 72" (DOUBLED) (18 REQD). NAIL W/6-10d NAILS EACH LAYER.

SEPARATOR GATE (6 REQD, 3 LEFT HAND AND 3 RIGHT HAND). SEE THE DETAIL ON PAGE 97.

CENTER GATE (2 REQD). SEE DETAIL ON PAGE 97.

STRUT, 4"x4" x CUT TO FIT (24 REQD). TOENAIL W/2-16d NAILS EACH END.

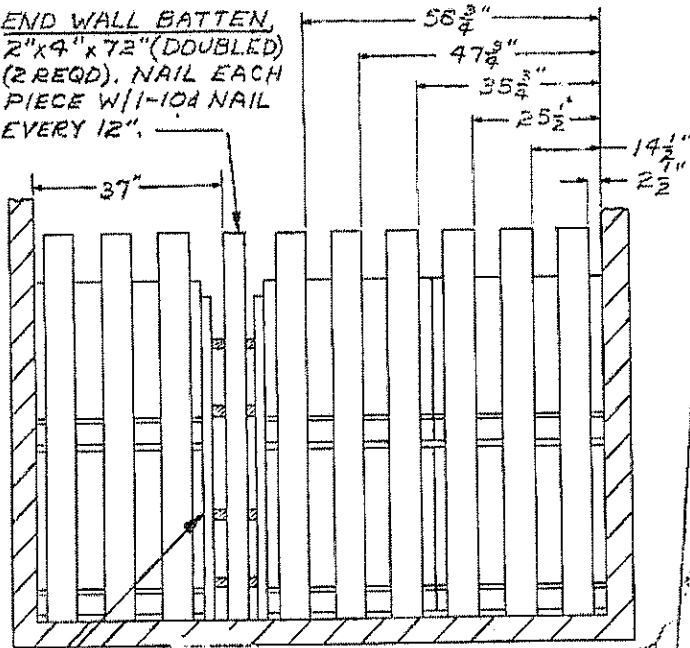
CENTER GATE ANTI-SWAY BRACE, 2"x6" x 10'-0" (2 REQD). NAIL TO CENTER GATE W/3-12d NAILS EACH JOINT.

NOTE:
48 PALLET UNITS SHOWN
GROSS WT. - 152,882 LBS.

TYPICAL LOAD OF BOMBS, 500 LB MK82 & MODS (AIR FORCE UNIT LOAD PER TPO 1325-294-4152 - REV R THR V) IN A 50'-6"

LONG CONVENTIONAL BOX CAR

END WALL BATTEN,
2"x4"x72" (DOUBLED)
(2 REQD). NAIL EACH
PIECE W/1-10d NAIL
EVERY 12".



SECTION A-A

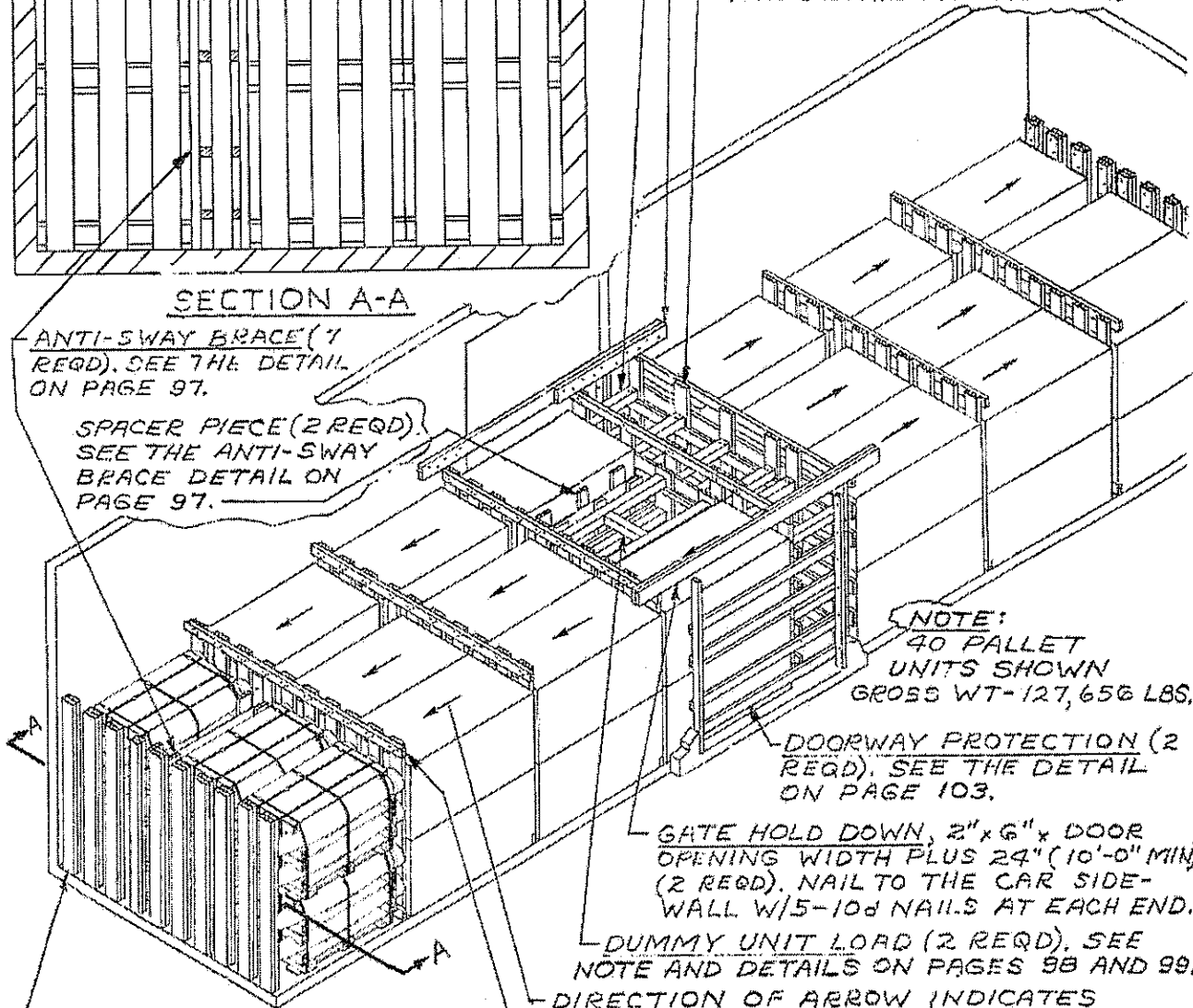
ANTI-SWAY BRACE (1
REQD). SEE THE DETAIL
ON PAGE 97.

SPACER PIECE (2 REQD).
SEE THE ANTI-SWAY
BRACE DETAIL ON
PAGE 97.

STRUT, 4"x4"x CUT TO FIT (24
REQD). TOENAIL TO THE CENTER
GATES W/2-16d NAILS AT EACH
END.

GATE HOLD-DOWN CLEAT, 2"x6"
60" (2 REQD). NAIL TO THE GATE
HOLD DOWN W/1-10d NAIL
EVERY 6".

CENTER GATE (2 REQD, 1 LEFT
HAND AND 1 RIGHT HAND). SEE
THE DETAIL ON PAGE 97.



NOTE:
40 PALLET
UNITS SHOWN
GROSS WT-127,656 LBS.

DOORWAY PROTECTION (2
REQD). SEE THE DETAIL
ON PAGE 103.

GATE HOLD DOWN, 2"x6"x DOOR
OPENING WIDTH PLUS 24" (10'-0" MIN)
(2 REQD). NAIL TO THE CAR SIDE-
WALL W/5-10d NAILS AT EACH END.

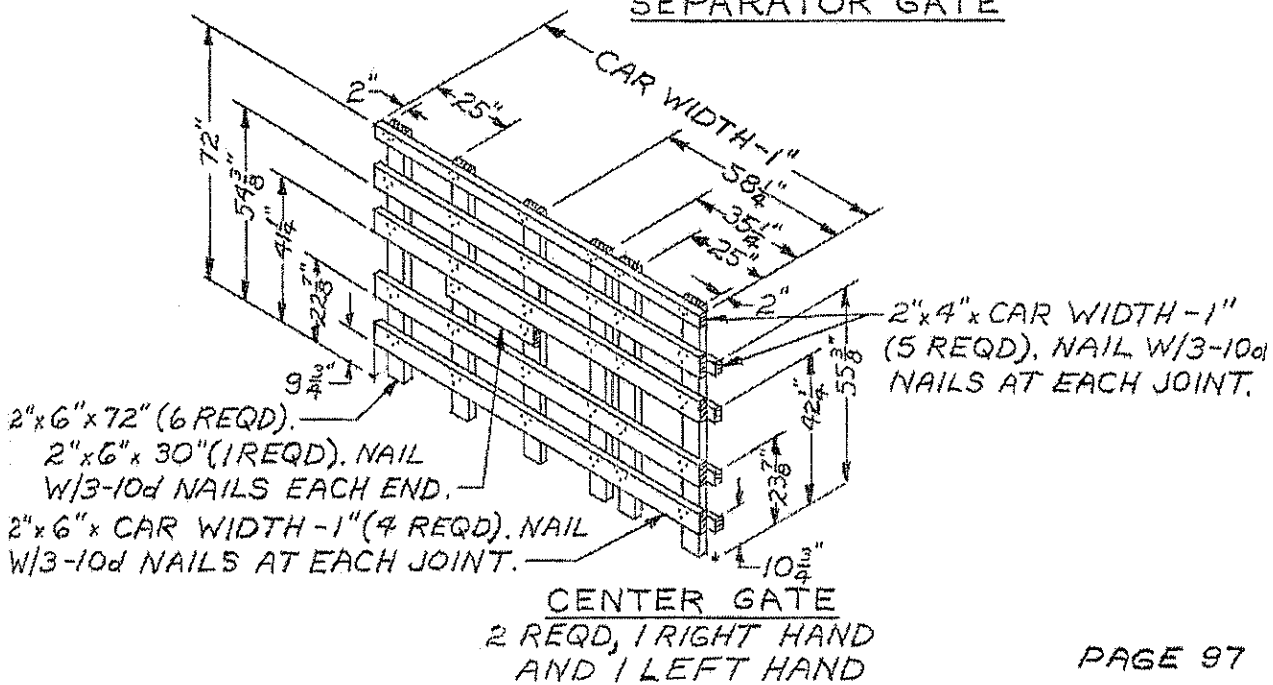
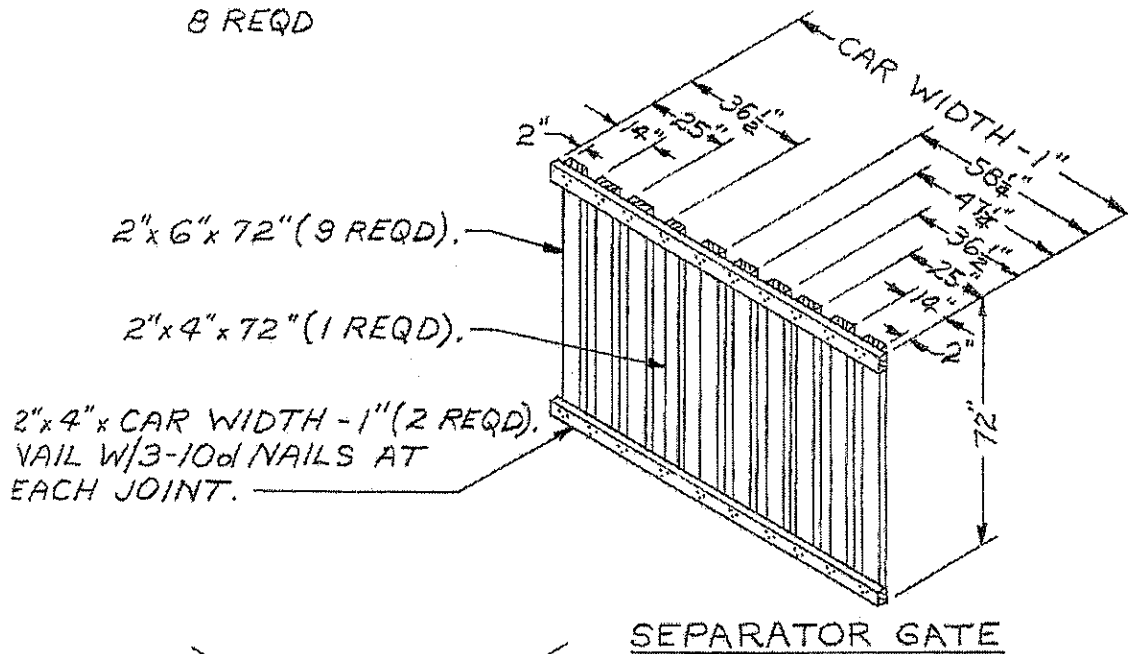
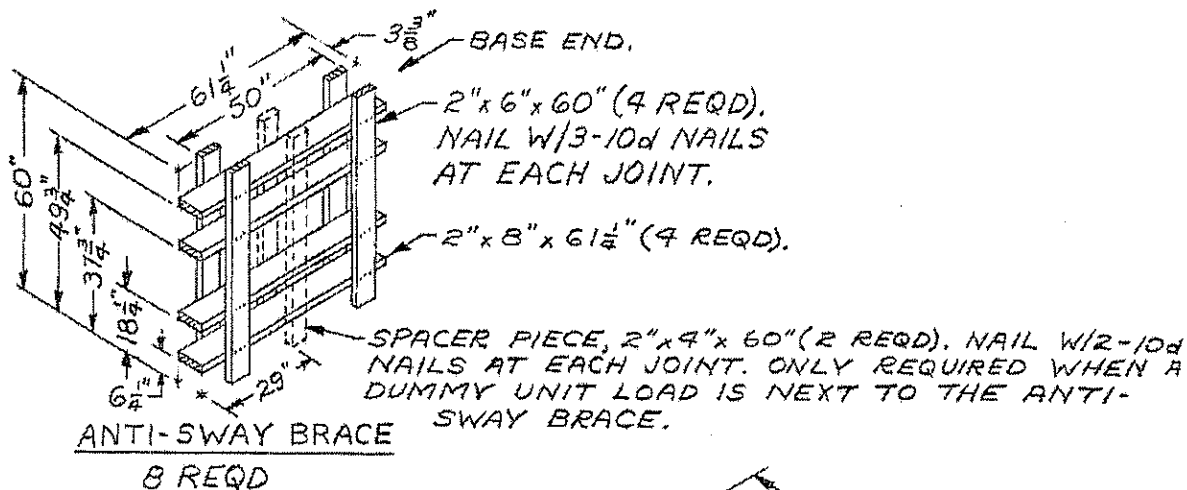
DUMMY UNIT LOAD (2 REQD). SEE
NOTE AND DETAILS ON PAGES 98 AND 99.

DIRECTION OF ARROW INDICATES
NOSE END OF BOMB.

SEPARATOR GATE (5 REQD, 2 RIGHT HAND
AND 3 LEFT HAND). SEE THE DETAIL ON
PAGE 97.

END WALL BATTEN, 2"x6"
x72" (DOUBLED) (18 REQD).
NAIL EACH PIECE TO THE CAR
END WALL W/1-10d NAIL
EVERY 12".

TYPICAL LOAD OF BOMBS, 500 LB MK82 & MODS
(AIR FORCE UNIT LOAD PER TPO 1325-294-4152, REV R
THRU V) IN A 40'-6" LONG CONVENTIONAL BOX CAR



UPPER SUPPORT PIECE, 2"x4"x 33 $\frac{1}{4}$ " (2 REQD). TOENAIL TO A BUFFER STRIP W/1-10d NAIL EVERY 12".

BUFFER STRIP, 2"x4"x 61 $\frac{3}{4}$ " (4 REQD). NAIL TO THE END ASSEMBLIES W/2-16d NAILS AT EACH END AND TO A SPACER PIECE W/4-16d NAILS.

UPPER SUPPORT PIECE, 2"x4"x 38 $\frac{1}{2}$ " (2 REQD). NAIL W/2-16d NAILS AT EACH END. TOENAIL TO STRUTS W/2-10d NAILS AT EACH JOINT.

STRUT, 4"x4"x 58 $\frac{1}{2}$ " (4 REQD). TOENAIL TO END ASSEMBLIES W/3-16d NAILS AT EACH END.

END ASSEMBLY (2 REQD) SEE DETAIL BELOW.

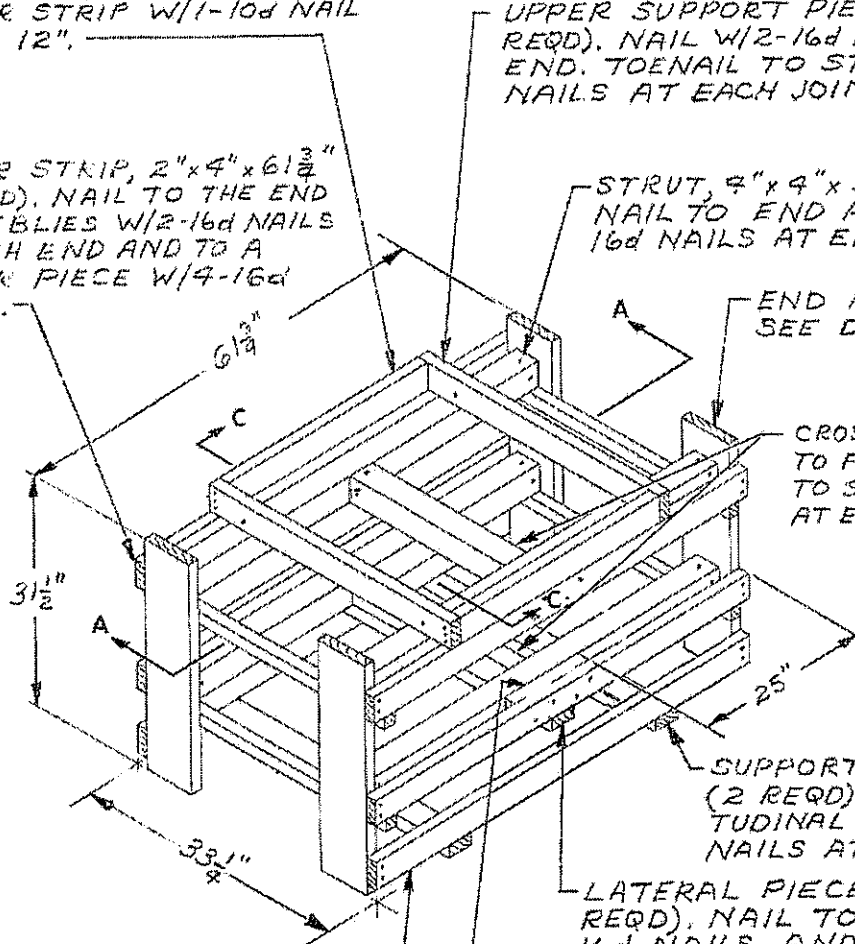
CROSS BRACE, 4"x4"x CUT TO FIT (2 REQD). TOENAIL TO STRUT W/3-16d NAILS AT EACH END.

SUPPORT PIECE, 2"x4"x 33 $\frac{1}{4}$ " (2 REQD). NAIL TO LONGITUDINAL PIECE W/2-16d NAILS AT EACH END.

LATERAL PIECE, 2"x4"x 33 $\frac{1}{4}$ " (1 REQD). NAIL TO CROSS BRACE W/4 16d NAILS AND TO THE STRUTS, SPACERS AND BUFFER STRIPS W/1-16d NAIL AT EACH JOINT.

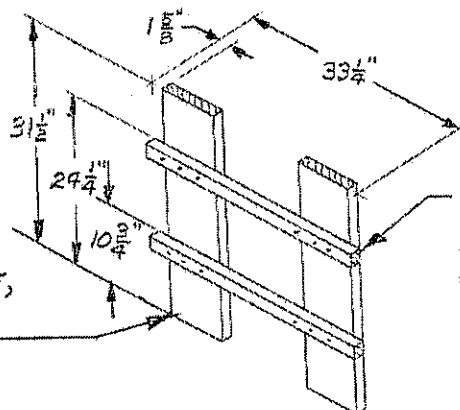
SPACER, 2"x4"x 12" (4 REQD). NAIL TO THE STRUTS W/4-10d NAILS.

LONGITUDINAL PIECE, 2"x4"x 61 $\frac{3}{4}$ " (2 REQD). NAIL TO THE END ASSEMBLIES W/2-16d NAILS AT EACH END.



DUMMY UNIT LOAD

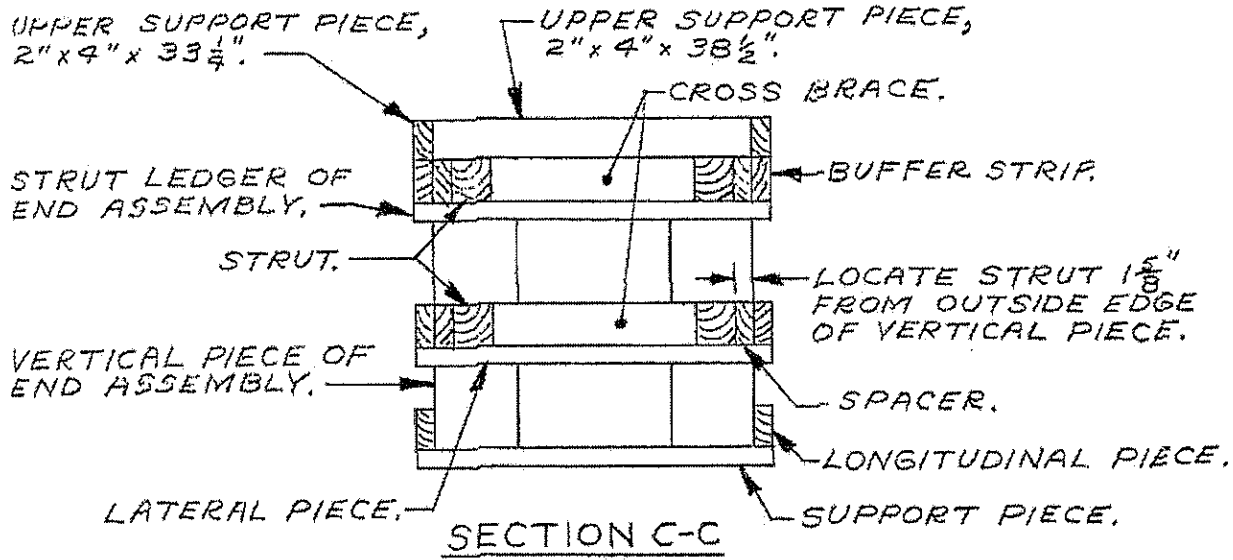
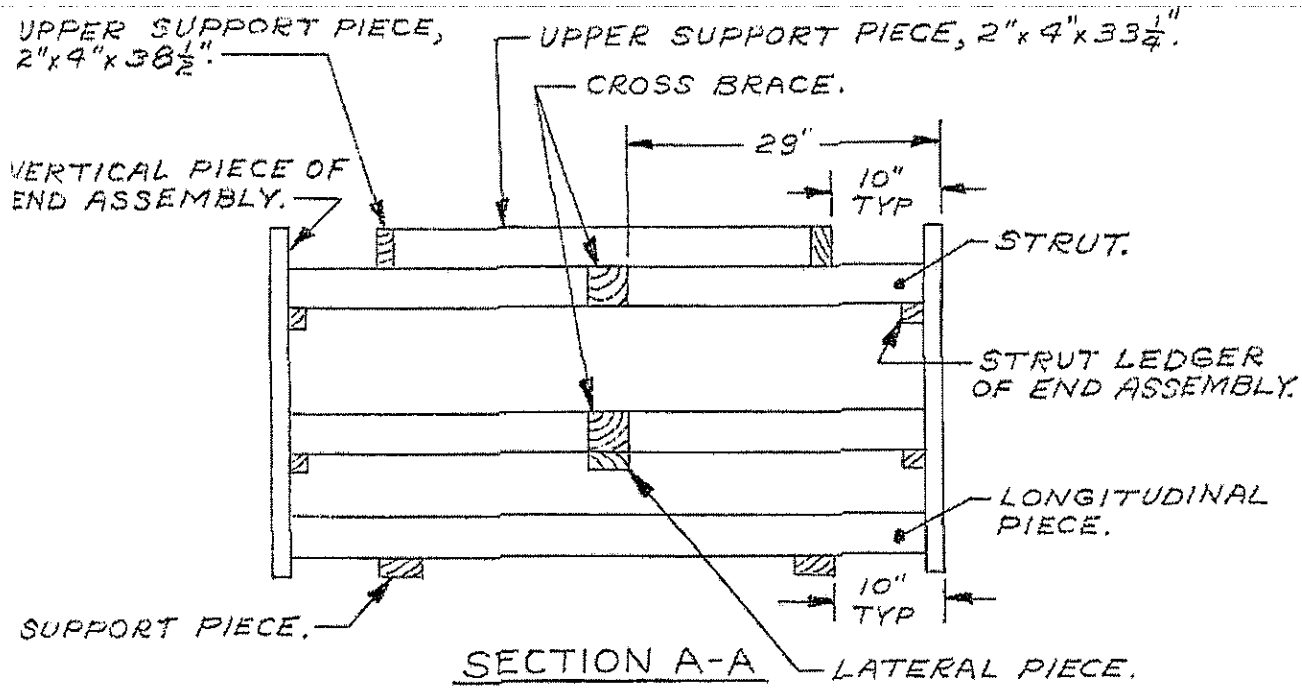
NOTE: DUMMY UNIT LOADS WILL BE USED ONLY AS NEEDED TO AVOID EXCEEDING THE LOAD LIMIT OF A CAR, OR TO SHIP A REDUCED LOAD.

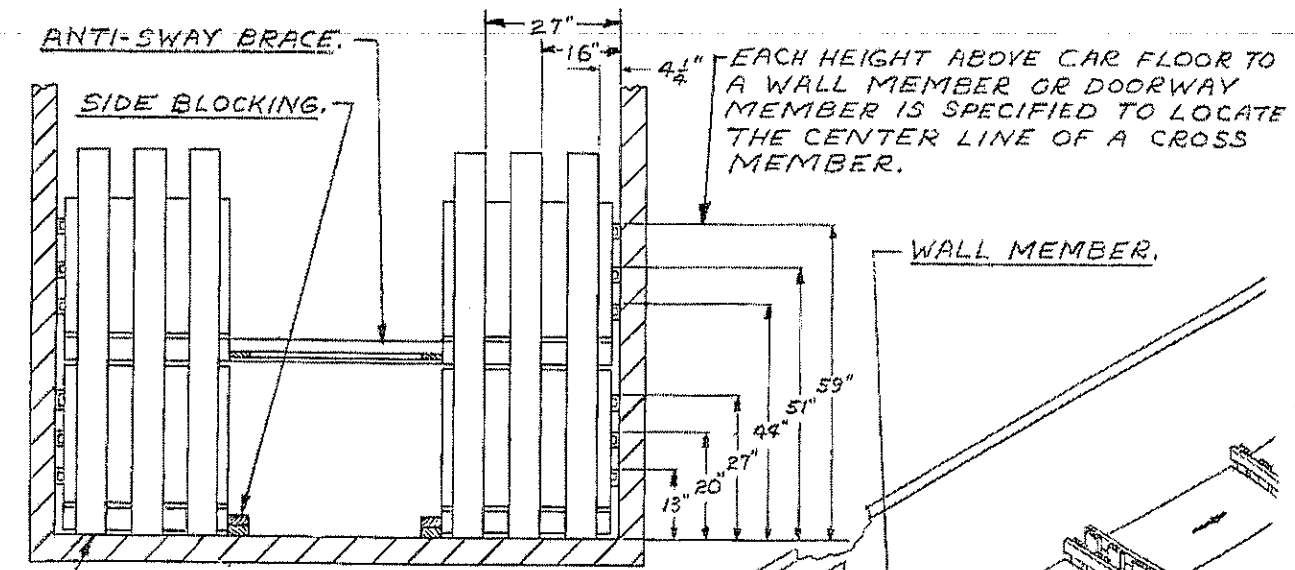


VERTICAL PIECE, 2"x8"x 31 $\frac{1}{2}$ " (2 REQD).

STRUT LEDGER, 2"x2"x 33 $\frac{1}{4}$ " (2 REQD). NAIL TO THE VERTICAL PIECES W/3-16d NAILS AT EACH JOINT. CLINCH.

END ASSEMBLY

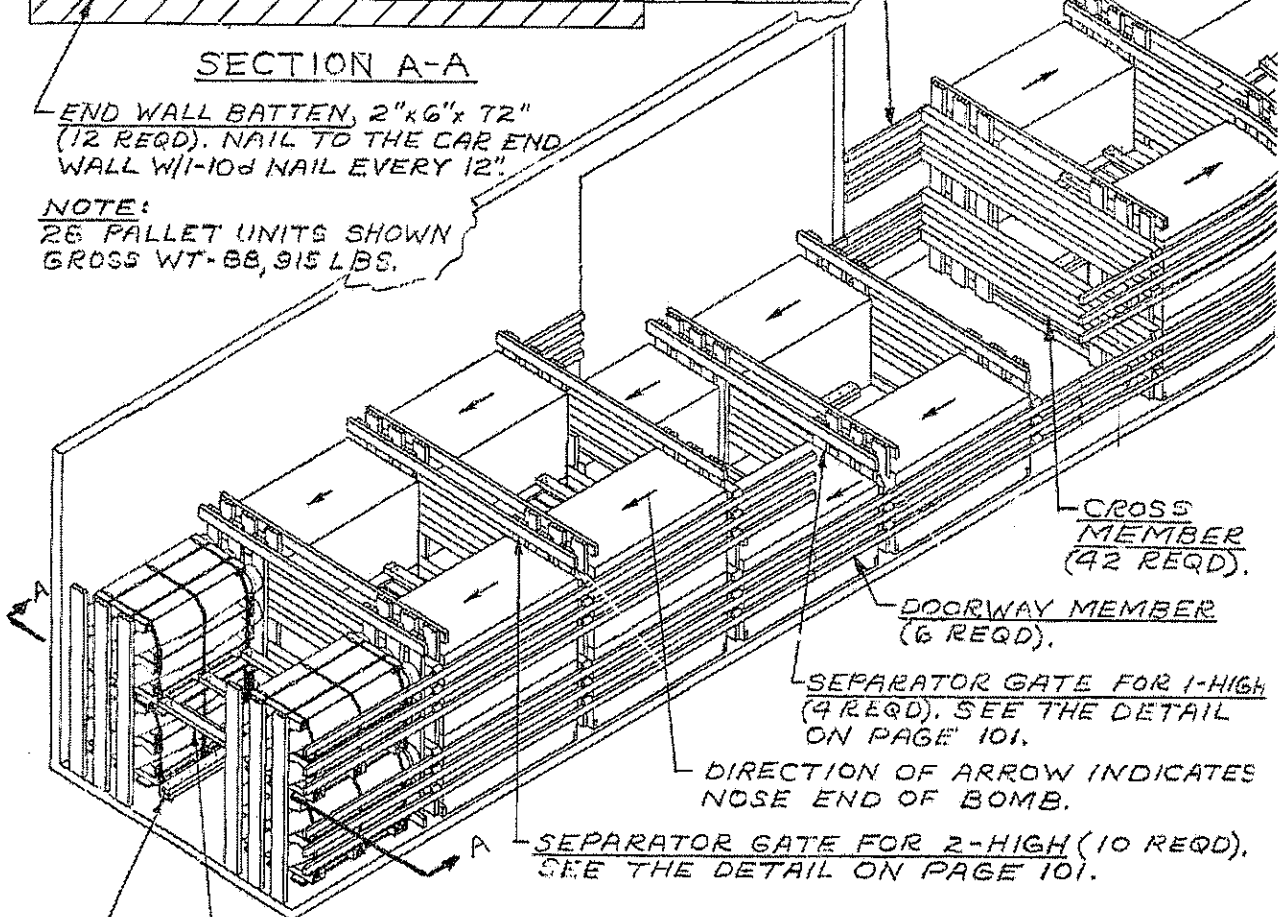




SECTION A-A

END WALL BATTEN, 2"x6"x72" (12 REQD). NAIL TO THE CAR END WALL W/1-10d NAIL EVERY 12".

NOTE:
26 PALLET UNITS SHOWN
GROSS WT-88,915 LBS.



CROSS MEMBER (42 REQD).

DOORWAY MEMBER (6 REQD).

SEPARATOR GATE FOR 1-HIGH (4 REQD). SEE THE DETAIL ON PAGE 101.

DIRECTION OF ARROW INDICATES NOSE END OF BOMB.

SEPARATOR GATE FOR 2-HIGH (10 REQD). SEE THE DETAIL ON PAGE 101.

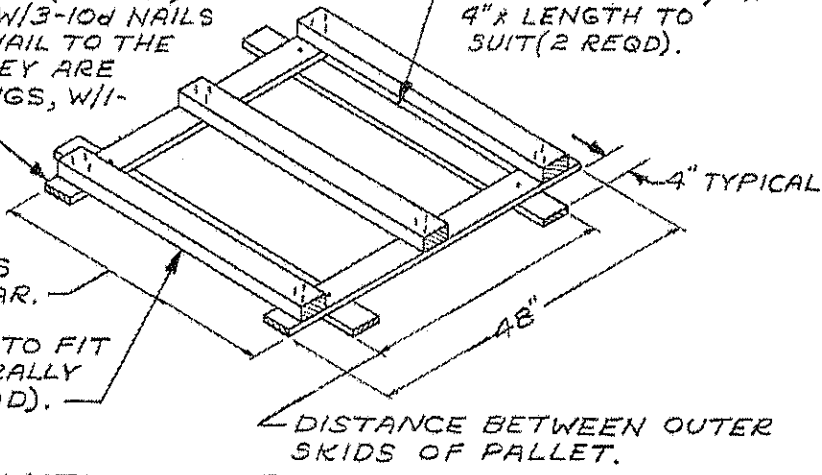
ANTI-SWAY BRACE (6 REQD). SEE THE DETAIL ON PAGE 101.

SIDE BLOCKING, 2"x4"x98" (DOUBLED) (16 REQD), NAIL FIRST PIECE TO CAR FLOOR W/1-16d NAIL EVERY 6". NAIL SECOND PIECE W/1-30d EVERY 6"

TYPICAL LOAD OF BOMBS, 500 LB MK82 & MODS (AIR FORCE UNIT LOAD PER TPO 1325-294-4152, REV R THRU V) IN A 50'-6" LONG BOX CAR EQUIPPED WITH MECHANICAL BRACING DEVICES (CROSS MEMBERS)

LONGITUDINAL PIECE, 1" x 4" x 48" (2 REQD).
 NAIL TO THE CROSS BRACES W/3-10d NAILS
 AT EACH JOINT AND CLINCH, NAIL TO THE
 SUPPORT PIECES, AFTER THEY ARE
 INSERTED IN FORK OPENINGS, W/1-
 6d NAIL AT EACH JOINT.

SUPPORT PIECE, 1" x
 4" x LENGTH TO
 SUIT (2 REQD).



DISTANCE BETWEEN SKIDS
 OF PALLETS ACROSS THE CAR.

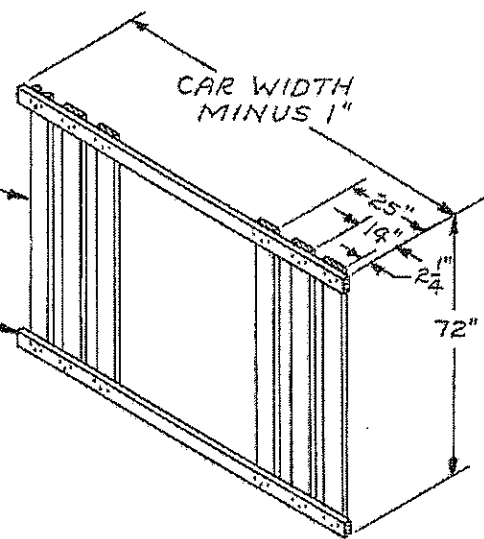
CROSS BRACE, 2" x 4" x CUT TO FIT
 BETWEEN SKIDS OF LATERALLY
 ADJACENT PALLETS (3 REQD).

DISTANCE BETWEEN OUTER
 SKIDS OF PALLET.

ANTI-SWAY BRACE

VERTICAL PIECE, 2" x
 6" x 72" (6 REQD).

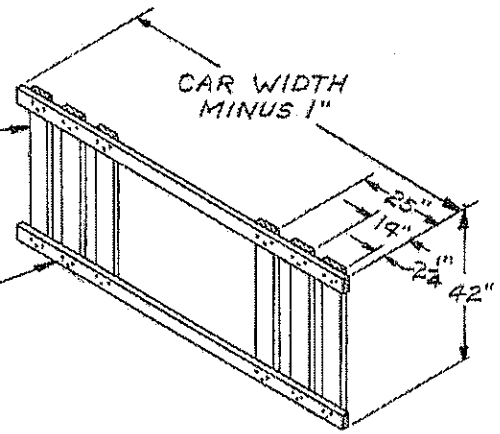
HORIZONTAL PIECE, 2" x 4" x CAR
 WIDTH MINUS 1" (2 REQD). NAIL
 TO THE VERTICAL PIECES W/3-
 10d NAILS AT EACH JOINT.



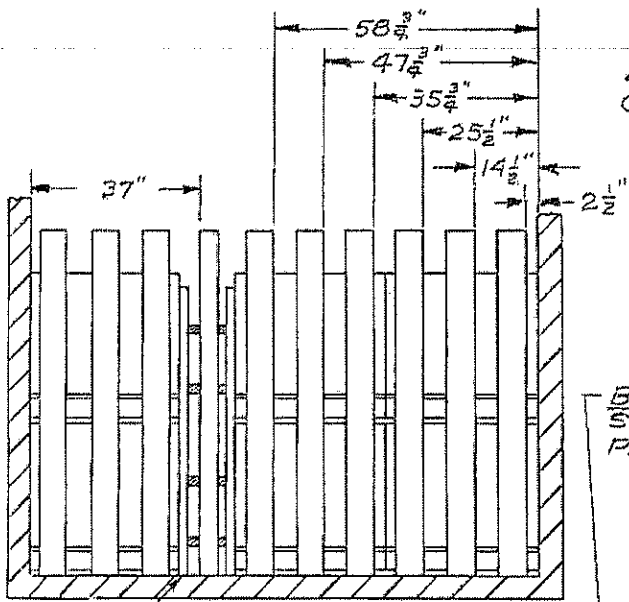
SEPARATOR GATE FOR 2-HIGH

VERTICAL PIECE, 2" x
 6" x 42" (6 REQD).

HORIZONTAL PIECE, 2" x 4" x CAR
 WIDTH MINUS 1" (2 REQD). NAIL
 TO THE VERTICAL PIECES W/3-
 10d NAILS AT EACH JOINT.



SEPARATOR GATE FOR 1-HIGH



NOTE:
46 PALLET UNITS SHOWN
GROSS WEIGHT-143,979 POUNDS

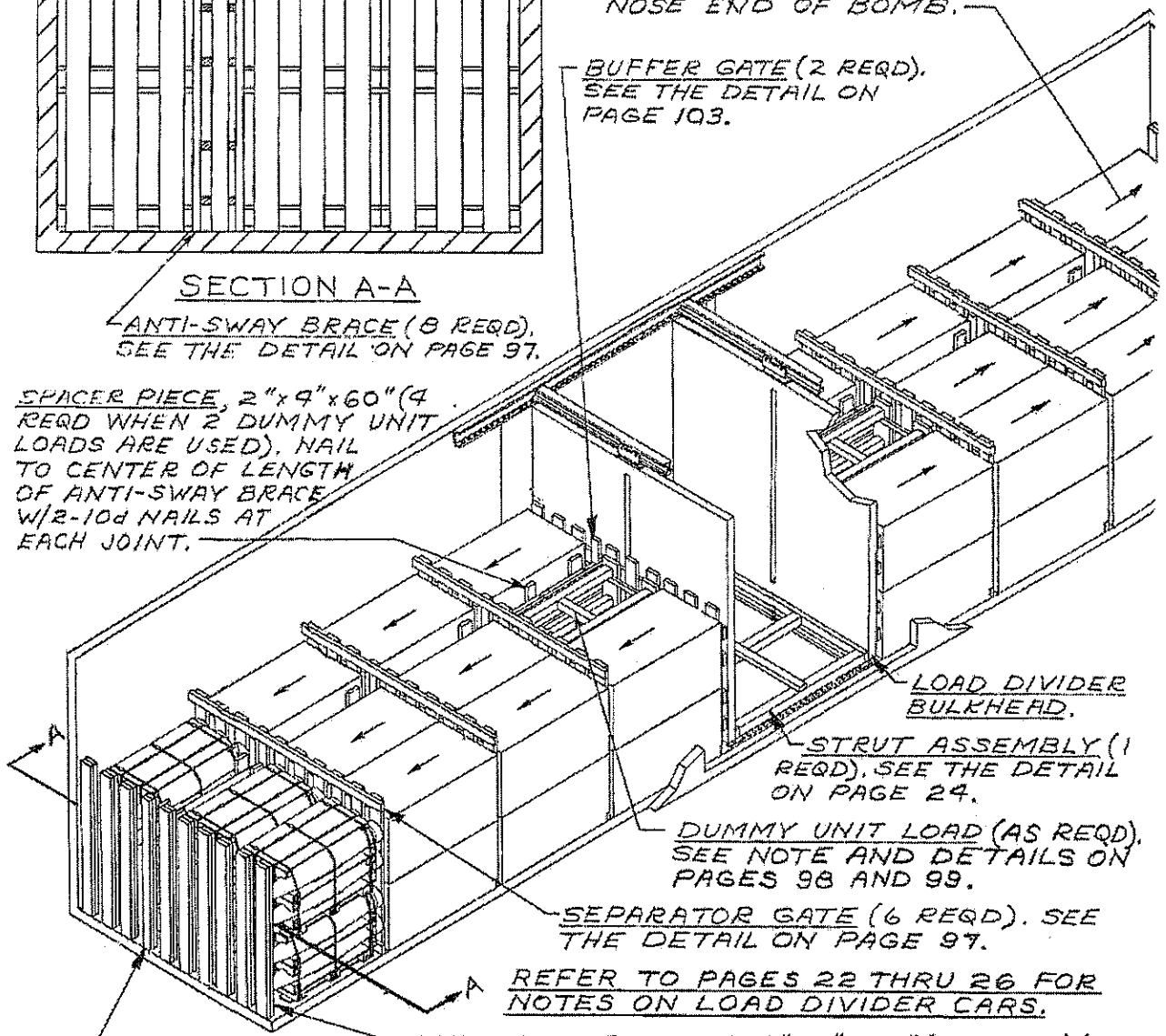
DIRECTION OF ARROW INDICATES
NOSE END OF BOMB.

BUFFER GATE (2 REQD).
SEE THE DETAIL ON
PAGE 103.

SECTION A-A

ANTI-SWAY BRACE (8 REQD).
SEE THE DETAIL ON PAGE 97.

SPACER PIECE, 2"x9"x60" (4
REQD WHEN 2 DUMMY UNIT
LOADS ARE USED). NAIL
TO CENTER OF LENGTH
OF ANTI-SWAY BRACE
W/2-10d NAILS AT
EACH JOINT.



LOAD DIVIDER
BULKHEAD.

STRUT ASSEMBLY (1
REQD). SEE THE DETAIL
ON PAGE 24.

DUMMY UNIT LOAD (AS REQD).
SEE NOTE AND DETAILS ON
PAGES 98 AND 99.

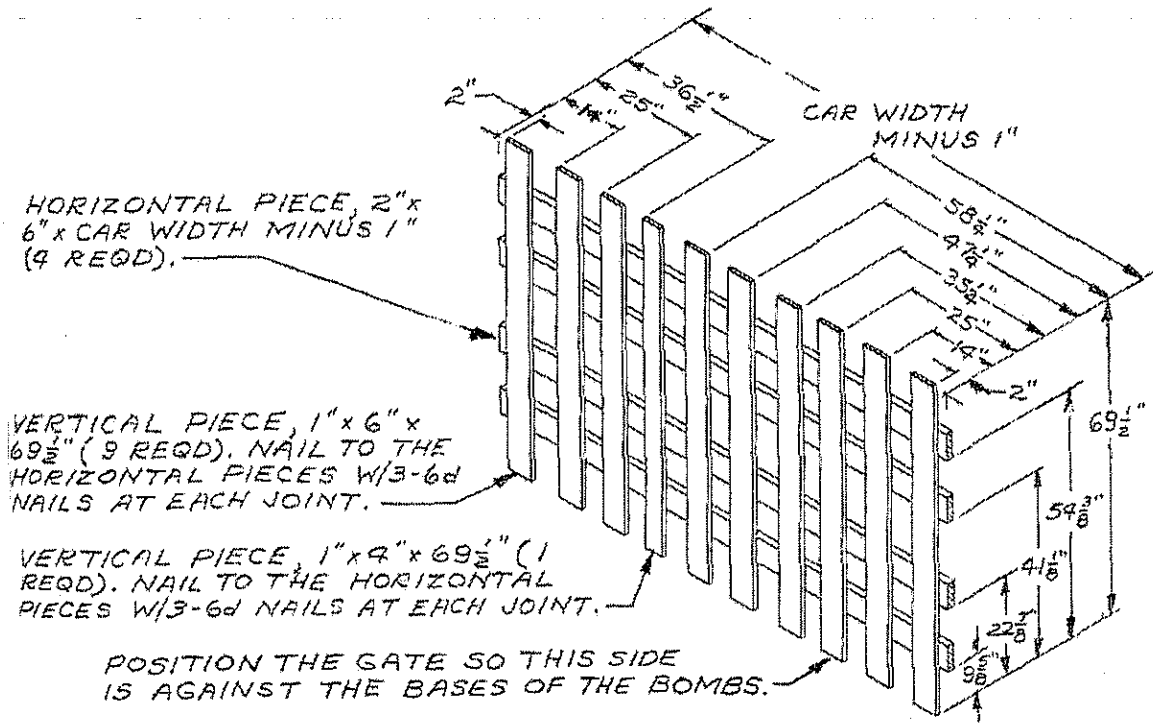
SEPARATOR GATE (6 REQD). SEE
THE DETAIL ON PAGE 97.

REFER TO PAGES 22 THRU 26 FOR
NOTES ON LOAD DIVIDER CARS.

END WALL BATTEN, 2"x6"x72" (DOUBLED) (18
REQD). NAIL EACH PIECE TO CAR END WALL
W/1-10d NAIL EVERY 12".

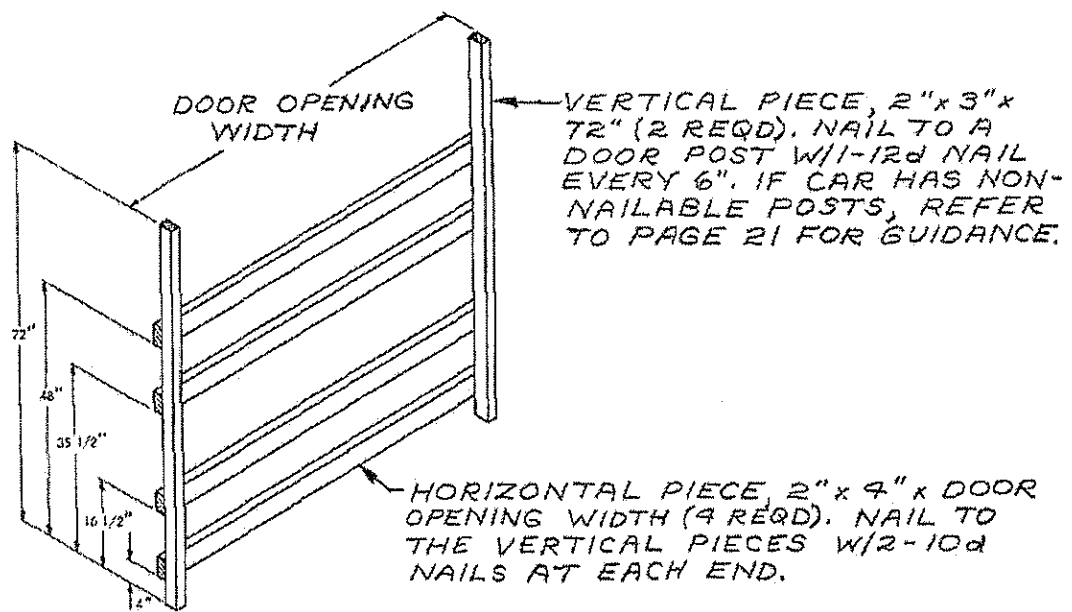
END WALL BATTEN, 2"x4"x72" (DOUBLED) (2 REQD). NAIL EACH
PIECE TO CAR END WALL W/1-10d NAIL EVERY 12".

TYPICAL LOAD OF BOMBS, 500 LB MK82 & MODS
(AIR FORCE UNIT LOAD PER TPO 1325-294-4152, REV R
THRU V) IN A 50'-6" LONG BY 9'-2" WIDE
CAR EQUIPPED WITH LOAD DIVIDERS



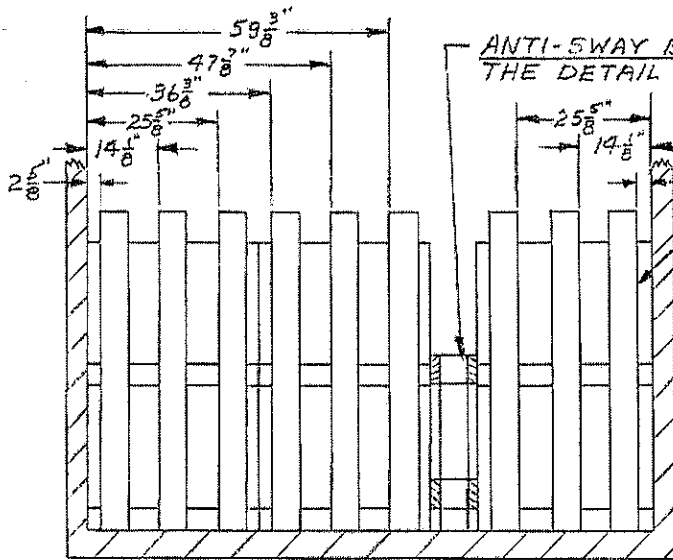
BUFFER GATE

2 REQD, 1 RIGHT HAND AND 1 LEFT HAND.



DOORWAY PROTECTION

FOR USE IN THE LOAD SHOWN ON PAGE 96.



SECTION A-A

ANTI-SWAY BRACE (6 REQD). SEE THE DETAIL ON PAGE 106.

NOTE:

36 PALLET UNITS SHOWN
GROSS WT. - 115,545 LBS.

END WALL BATTEN, 2"x6"x60"
(DOUBLED)(18 REQD). NAIL FIRST
PIECE TO CAR END WALL W/1-10d
NAIL EVERY 12". NAIL THE SECOND
PIECE IN A LIKE MANNER.

STRUT, 4"x4"x CUT TO FIT (24 REQD).
TOENAIL TO GATES W/2-16d NAILS
AT EACH END.

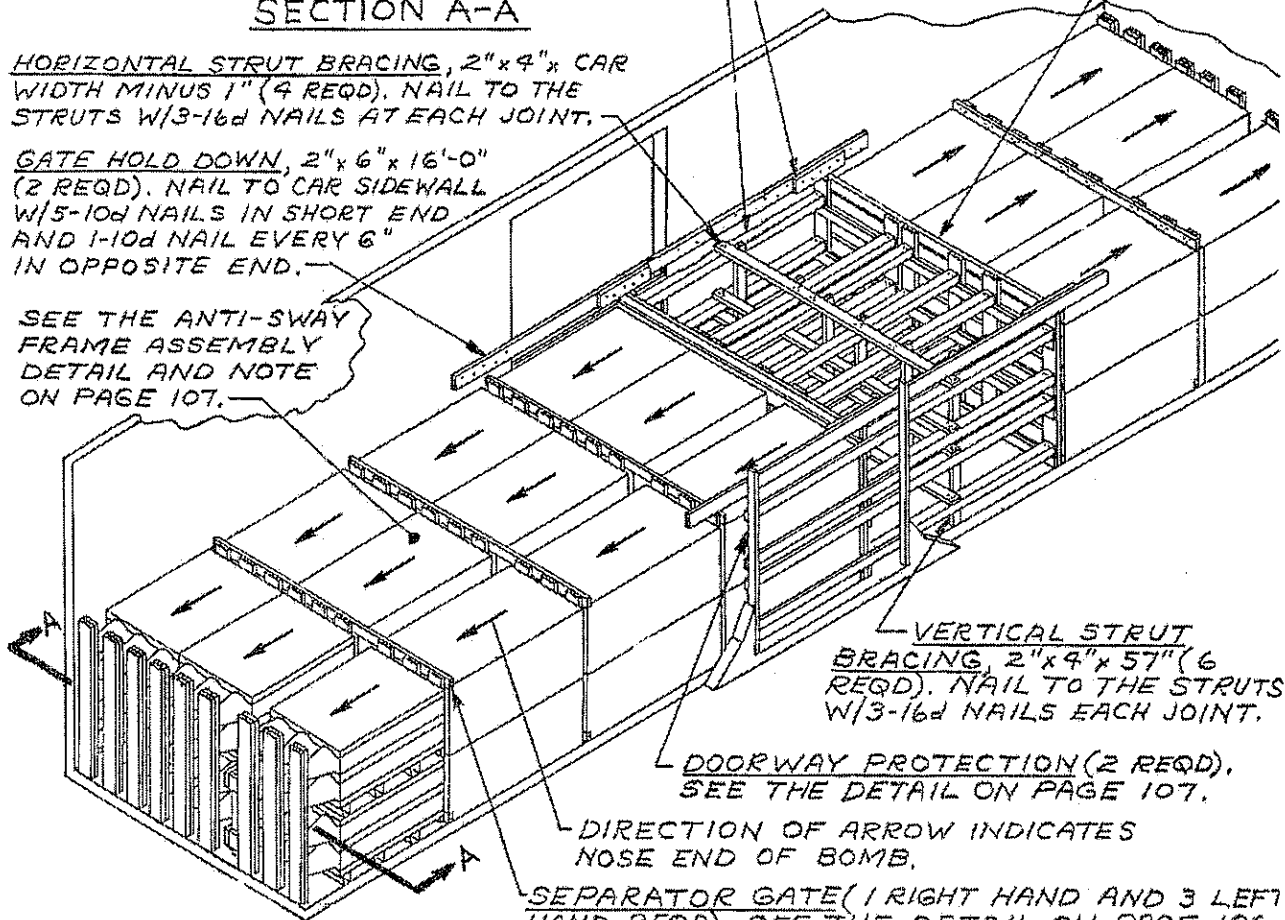
GATE HOLD-DOWN CLEAT, 2"x6"x
24"(4 REQD). NAIL TO GATE
HOLD DOWN W/5-10d NAILS.

CENTER GATE (2 REQD). SEE THE
DETAIL ON PAGE 106.

HORIZONTAL STRUT BRACING, 2"x4"x CAR
WIDTH MINUS 1" (4 REQD). NAIL TO THE
STRUTS W/3-16d NAILS AT EACH JOINT.

GATE HOLD DOWN, 2"x6"x16'-0"
(2 REQD). NAIL TO CAR SIDEWALL
W/5-10d NAILS IN SHORT END
AND 1-10d NAIL EVERY 6"
IN OPPOSITE END.

SEE THE ANTI-SWAY
FRAME ASSEMBLY
DETAIL AND NOTE
ON PAGE 107.



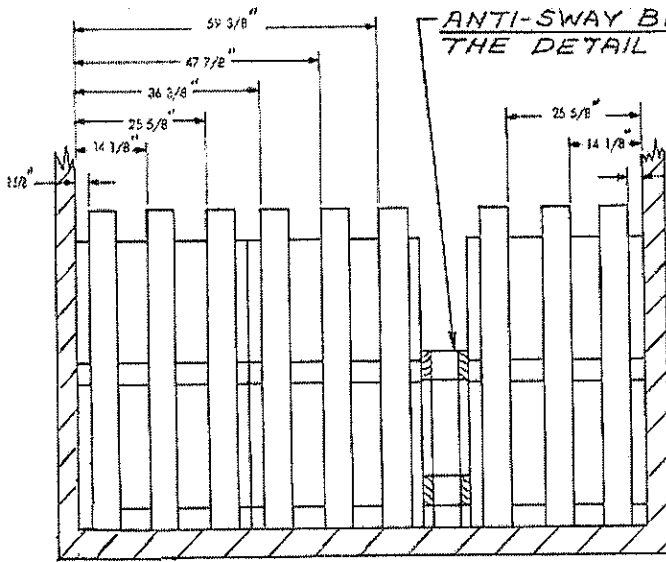
VERTICAL STRUT
BRACING, 2"x4"x57" (6
REQD). NAIL TO THE STRUTS
W/3-16d NAILS EACH JOINT.

DOORWAY PROTECTION (2 REQD).
SEE THE DETAIL ON PAGE 107.

DIRECTION OF ARROW INDICATES
NOSE END OF BOMB.

SEPARATOR GATE (1 RIGHT HAND AND 3 LEFT
HAND REQD). SEE THE DETAIL ON PAGE 106.

TYPICAL LOAD OF BOMBS, 500 LB MKB2 & MODS
(WITH PLASTIC NOSE PLUGS) IN PALLET MK9
MOD 0 (FLEET ISSUE UNIT LOAD) IN A 40'-6" LONG
CONVENTIONAL BOX CAR



ANTI-SWAY BRACE (8 REQD), SEE THE DETAIL ON PAGE 106.

SEPARATOR GATE (6 REQD, 2 RIGHT HAND AND 4 LEFT HAND). SEE THE SEPARATOR GATE DETAIL ON PAGE 106.

STRUT 4" x 4" x CUT TO FIT (24 REQD). TOENAIL TO THE CENTER GATES W/2-16d NAILS AT EACH END.

CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE DETAIL ON PAGE 106.

SECTION A-A

GATE HOLD-DOWN CLEAT, 2" x 6" x 24" (4 REQD). NAIL TO THE GATE HOLD DOWN W/5-10d NAILS.

GATE HOLD DOWN, 2" x 6" x 16'-0" (2 REQD). NAIL TO CAR SIDEWALL W/1-10d NAIL EVERY 6" (5 MIN) AT EACH END.

DIRECTION OF ARROW INDICATES NOSE END OF BOMB.

VERTICAL STRUT BRACING, 2" x 4" x 57" (5 REQD). NAIL TO STRUTS W/3-16d NAILS EACH JOINT.

DOORWAY PROTECTION (2 REQD). SEE DETAIL ON PAGE 107.

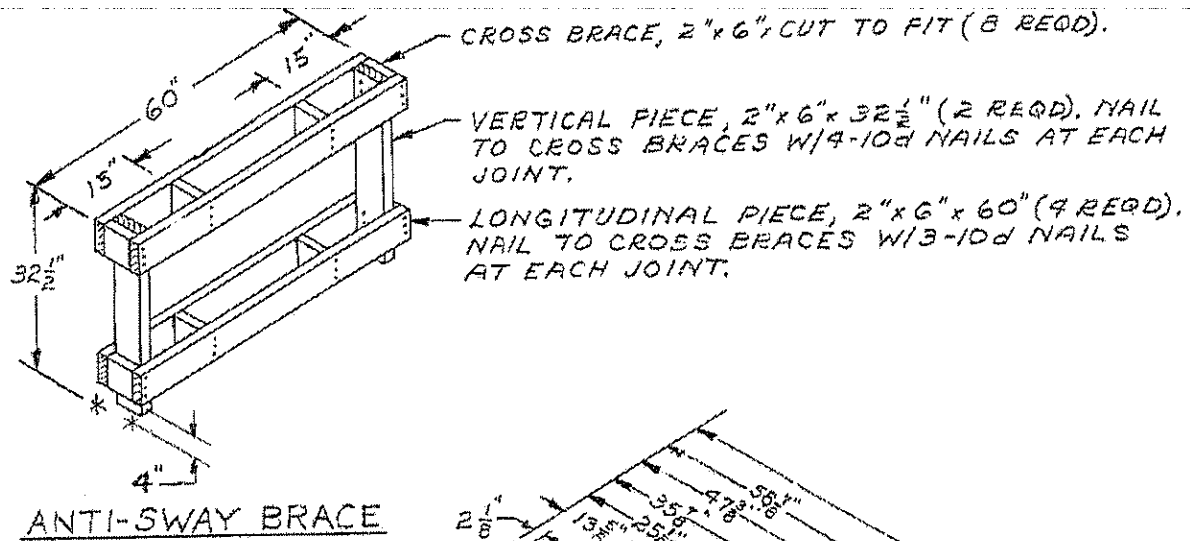
HORIZONTAL STRUT BRACING, 2" x 4" x CAR WIDTH MINUS 1" (4 REQD). NAIL TO THE STRUTS W/3-16d NAILS AT EACH JOINT.

SEE THE ANTI-SWAY FRAME ASSEMBLY DETAIL AND NOTE ON PAGE 107.

END WALL BATTEN, 2" x 6" x 60" (DOUBLED) (18 REQD). NAIL EACH LAYER TO CAR END WALL W/5-10d NAILS.

NOTE:
4B PALLET UNITS SHOWN
GROSS WT-153,330 LBS.

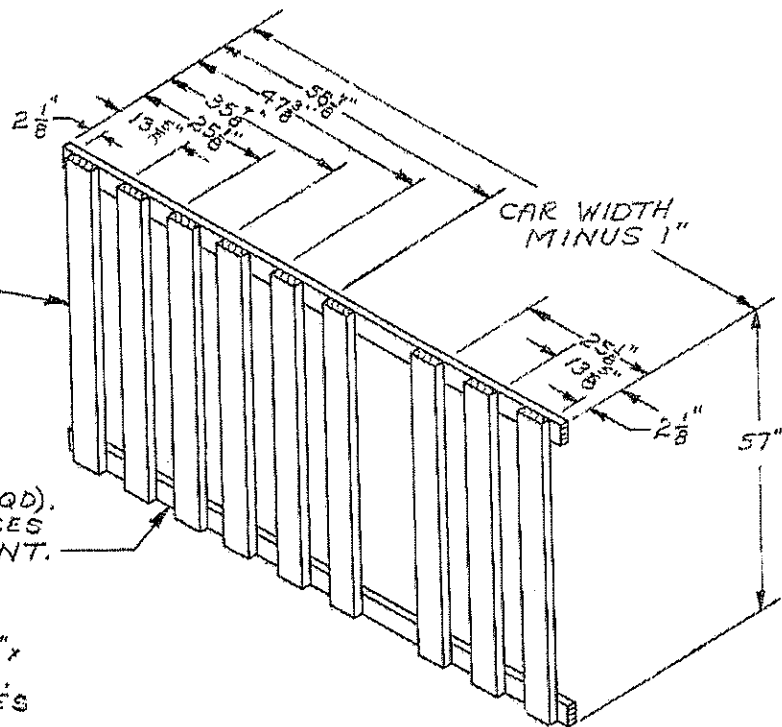
TYPICAL LOAD OF BOMBS, 500 LB MK82 & MODS (WITH PLASTIC NOSE PLUGS) IN PALLET MK9 MOD 0 (FLEET ISSUE UNIT LOAD) IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR



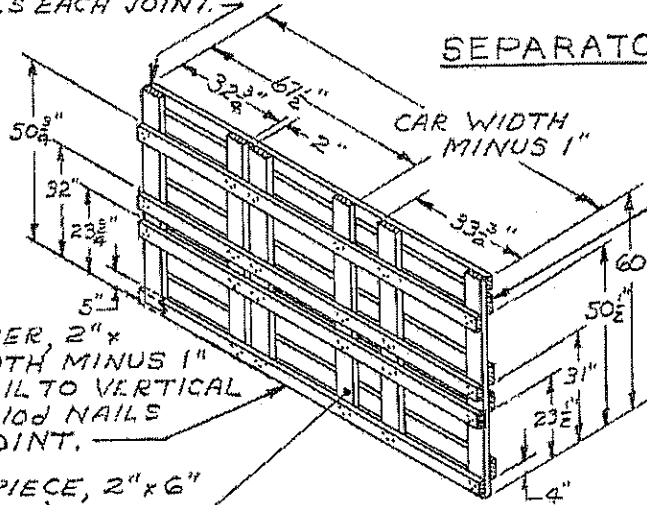
VERTICAL PIECE, 2"x6"x 57" (9 REQD).

HORIZONTAL PIECE, 2"x4"x CAR WIDTH MINUS 1" (2 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

TOP HORIZONTAL PIECE, 2"x9"x CAR WIDTH MINUS 1" (1 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS EACH JOINT.



SEPARATOR GATE



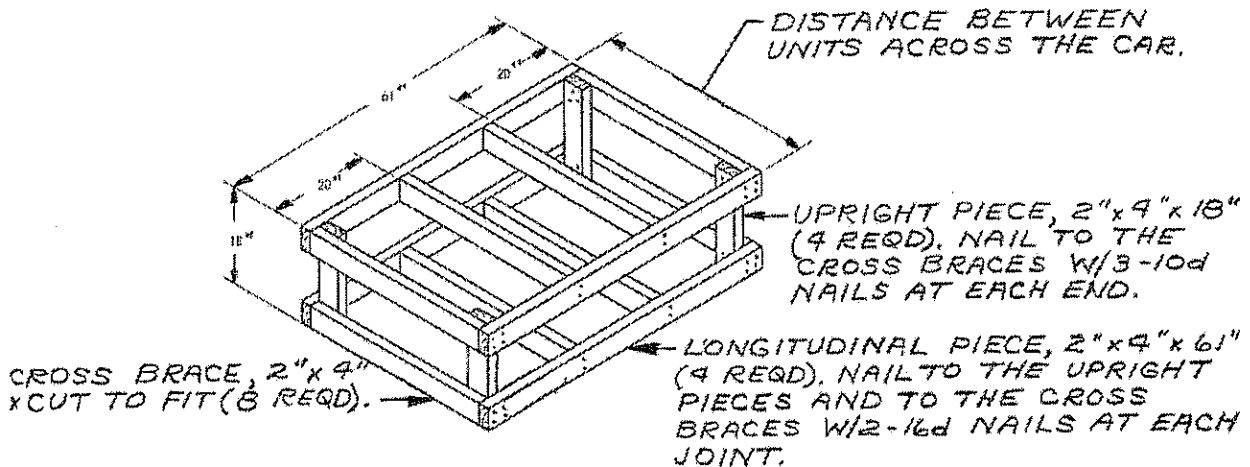
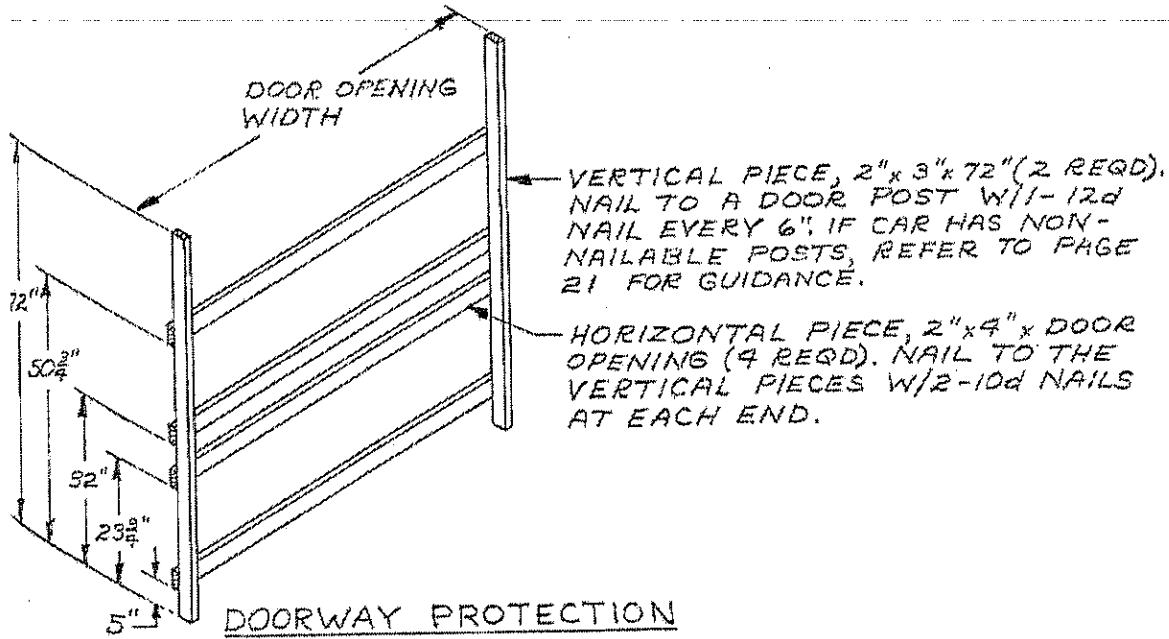
HORIZONTAL PIECE, 2"x6"x CAR WIDTH MINUS 1" (4 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

STRUT LEDGER, 2"x4"x CAR WIDTH MINUS 1" (4 REQD). NAIL TO VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

VERTICAL PIECE, 2"x6"x 60" (6 REQD).

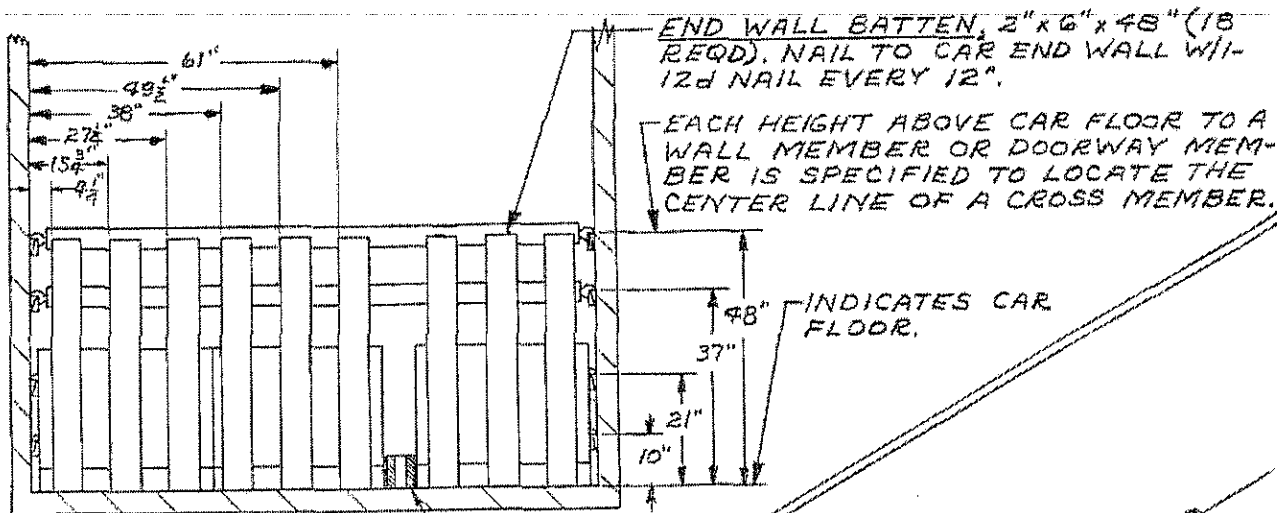
CENTER GATE

2 REQD, 1 RIGHT HAND AND 1 LEFT HAND.

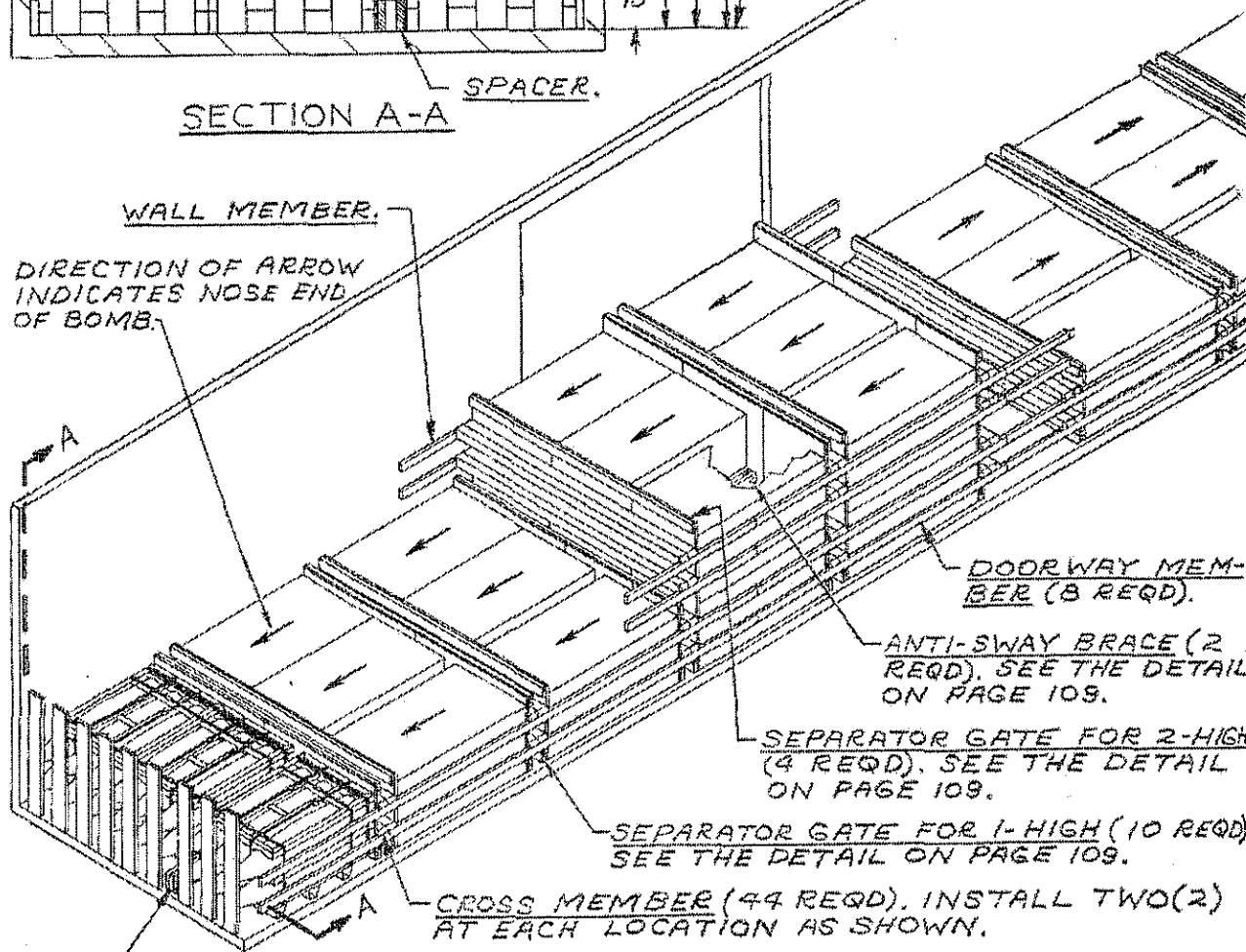


ANTI-SWAY FRAME ASSEMBLY

NOTE: ANTI-SWAY FRAME ASSEMBLIES MAY BE USED IN THE PLACE OF A COMPLETE ROW OF PALLET UNITS TO ADJUST A LOAD QUANTITY. FOR INSTANCE, 40 UNITS CAN BE LOADED IN A 50'-6" CAR OR 30 UNITS CAN BE LOADED IN A 40'-6" CAR BY USING THESE ASSEMBLIES. TO ADJUST A LOAD BY LESS THAN A COMPLETE ROW, INSTALL DUMMY UNIT LOADS IN THE PLACE OF OMITTED PALLET UNITS. SEE THE DUMMY UNIT LOAD DETAILS ON PAGES 112 AND 113.



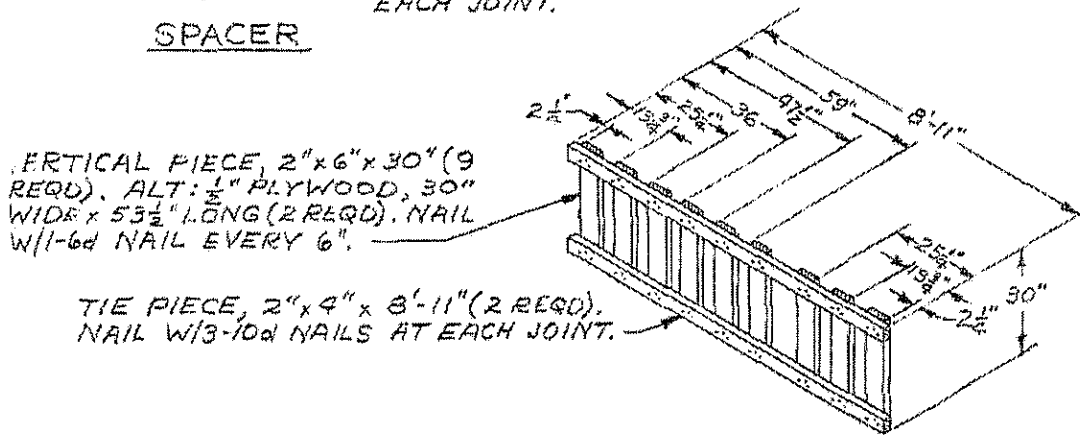
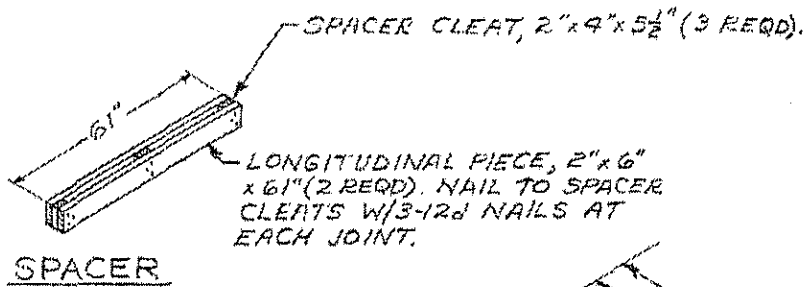
SECTION A-A
SPACER.



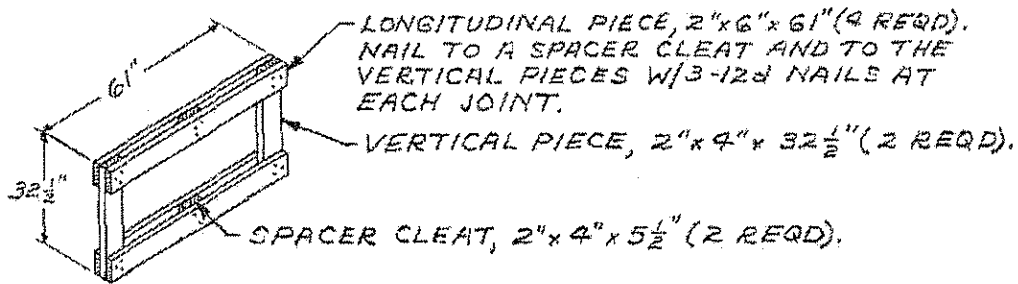
SPACER (6 REQD). SEE THE DETAIL ON PAGE 109.

NOTE:
30 PALLET UNITS SHOWN
GROSS WT. - 93,900 LBS.

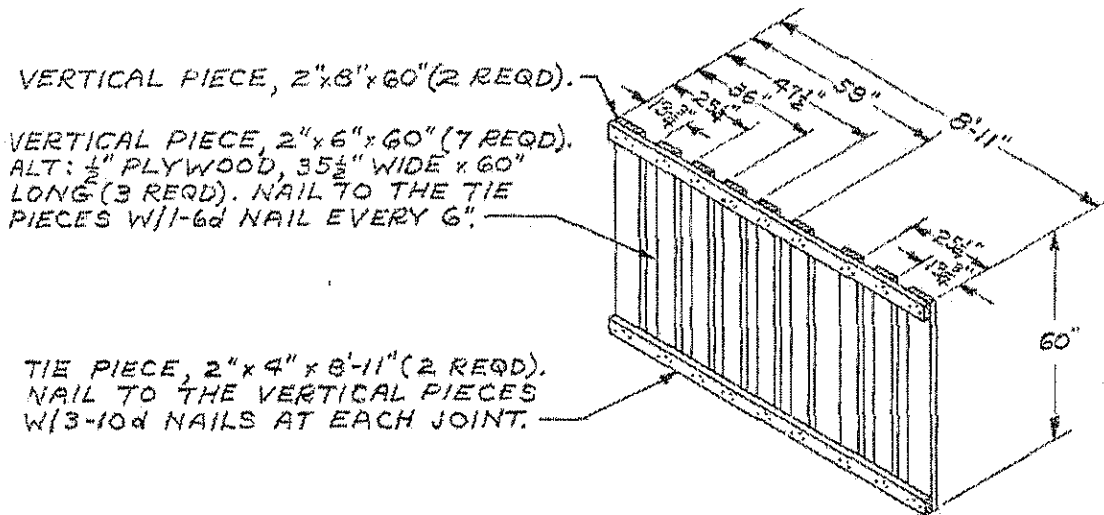
TYPICAL LOAD OF BOMBS, 500 LB MK82 & MODS (WITH PLASTIC NOSE PLUGS) IN PALLET MK9 MOD 0 (FLEET ISSUE UNIT LOAD) IN A 50'-6" LONG BOX CAR EQUIPPED WITH MECHANICAL BRACING DEVICES (CROSS MEMBERS)



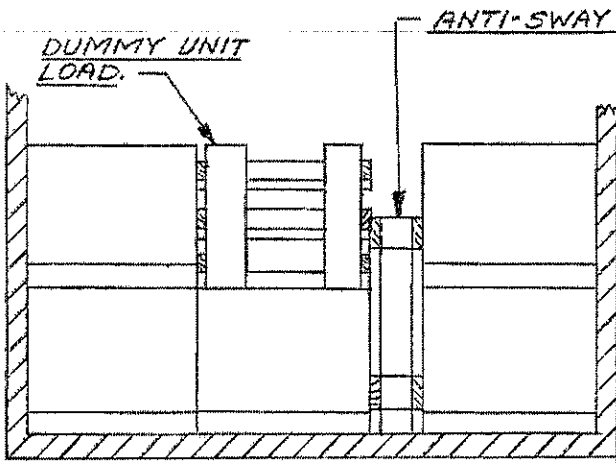
SEPARATOR GATE FOR 1-HIGH



ANTI-SWAY BRACE



SEPARATOR GATE FOR 2-HIGH



NOTE:
46 PALLET UNITS SHOWN
GROSS WT - 146,053 LBS.

STRUT ASSEMBLY (1 REQD).
SEE THE DETAILS ON PAGE 24.

ANTI-SWAY BRACE.

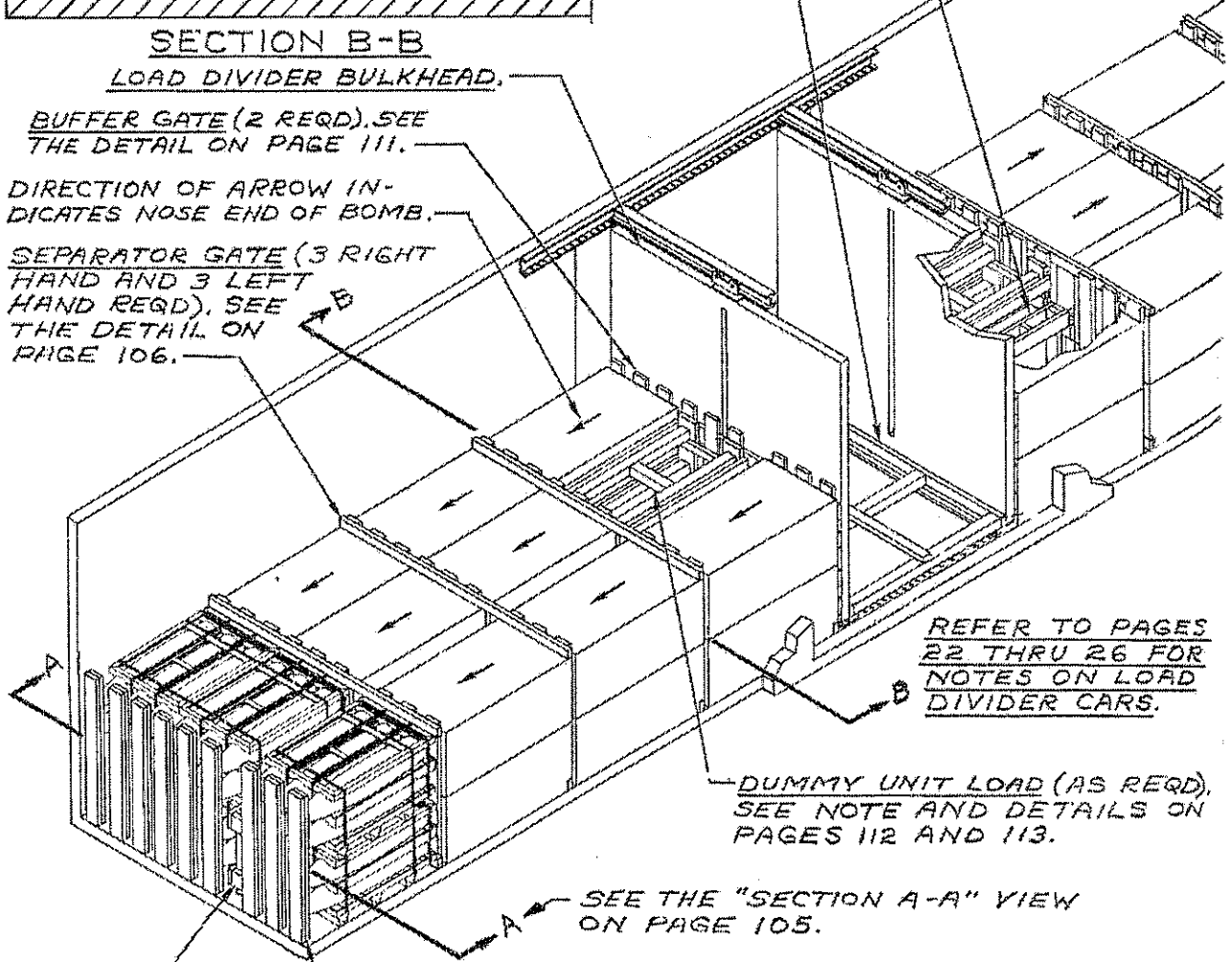
SECTION B-B

LOAD DIVIDER BULKHEAD.

BUFFER GATE (2 REQD). SEE
THE DETAIL ON PAGE 111.

DIRECTION OF ARROW IN-
DICATES NOSE END OF BOMB.

SEPARATOR GATE (3 RIGHT
HAND AND 3 LEFT
HAND REQD). SEE
THE DETAIL ON
PAGE 106.



REFER TO PAGES
22 THRU 26 FOR
NOTES ON LOAD
DIVIDER CARS.

DUMMY UNIT LOAD (AS REQD).
SEE NOTE AND DETAILS ON
PAGES 112 AND 113.

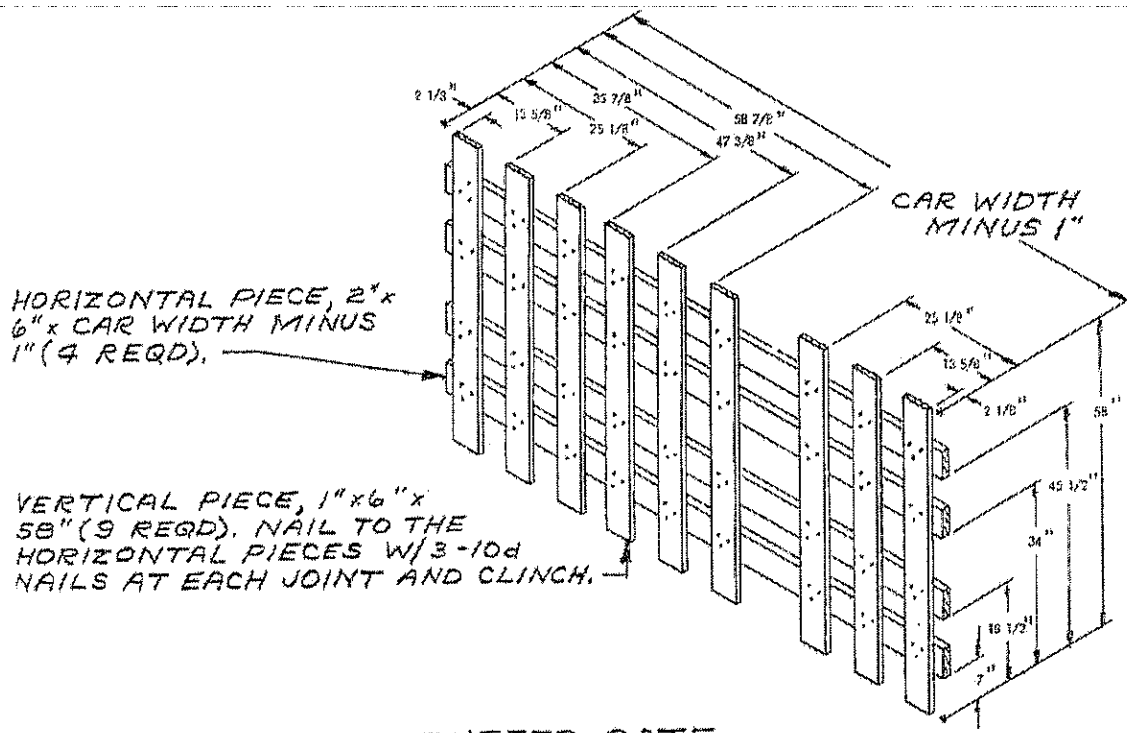
SEE THE "SECTION A-A" VIEW
ON PAGE 105.

END WALL BATTEN, 2"x6"x60" (DOUBLED) (18 REQD).
NAIL FIRST PIECE TO CAR END WALL W/1-10d NAIL EVERY
12". NAIL SECOND PIECE IN A LIKE MANNER.

ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 106.

TYPICAL LOAD OF BOMBS, 500 LB MK82 & MODS
(WITH PLASTIC NOSE PLUGS) IN PALLET MK 9
MOD 0 (FLEET ISSUE UNIT LOAD) IN A 50'-6" LONG

BY 9'-2" WIDE CAR EQUIPPED WITH LOAD DIVIDERS



BUFFER GATE
 2 REQD, 1 RIGHT HAND
 AND 1 LEFT HAND.

UPPER SUPPORT PIECE, 2"x4" x 34⁵/₈" (2 REQD). TOENAIL TO A BUFFER STRIP W/1-10d NAIL EVERY 12".

BUFFER STRIP, 2"x4" x 61⁷/₈" (4 REQD). NAIL TO THE END ASSEMBLIES W/2-16d NAILS AT EACH END AND TO A SPACER PIECE W/4-16d NAILS.

UPPER SUPPORT PIECE, 2"x4" x 33³/₄" (2 REQD), NAIL W/2-16d NAILS AT EACH END. TOENAIL TO THE STRUTS W/2-10d NAILS AT EACH JOINT, EACH SIDE.

STRUT, 4"x4" x 58⁵/₈" (4 REQD). TOENAIL TO END ASSEMBLIES W/3-16d NAILS AT EACH END.

END ASSEMBLY (2 REQD) SEE DETAIL BELOW. NAIL TO STRUTS W/2-16d NAILS EACH.

CROSS BRACE, 4"x4" x 4" x CUT TO FIT (2 REQD). TOENAIL TO THE STRUTS W/3-16d NAILS AT EACH END.

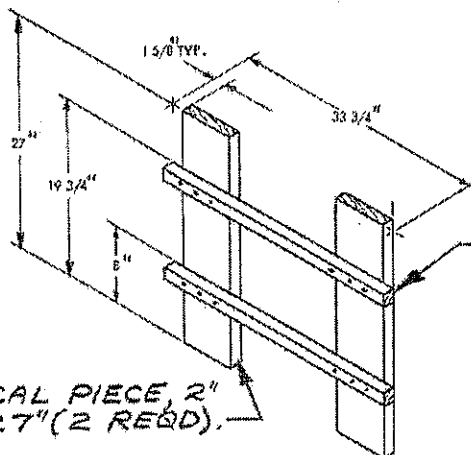
SUPPORT PIECE, 2"x4" x 33³/₄" (2 REQD). NAIL TO THE LONGITUDINAL PIECES W/2-16d NAILS AT EACH END.

LATERAL PIECE, 2"x4" x 33³/₄" (1 REQD). NAIL TO CROSS BRACE W/4-16d NAILS AND TO STRUTS, SPACERS AND BUFFER STRIPS W/1-16d NAIL AT EACH JOINT.

SPACER, 2"x4" x 12" (4 REQD), NAIL TO THE STRUTS W/4-10d NAILS,

LONGITUDINAL PIECE, 2"x4" x 61⁷/₈" (2 REQD). NAIL TO THE END ASSEMBLIES W/2-16d NAILS AT EACH END.

DUMMY UNIT LOAD

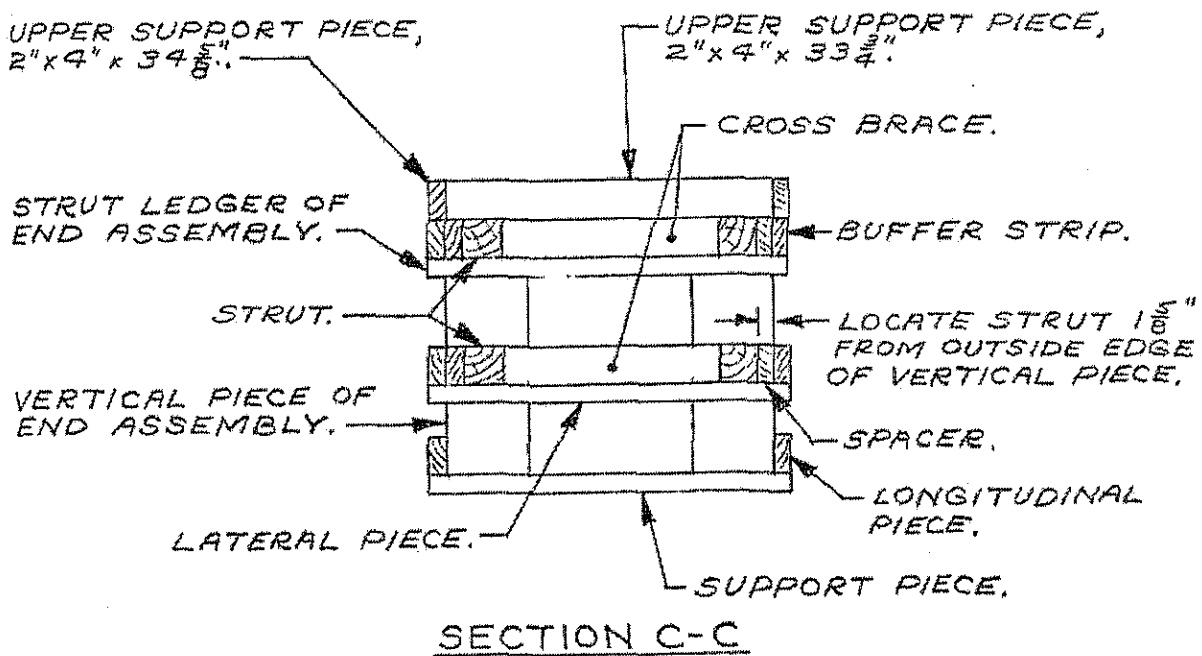
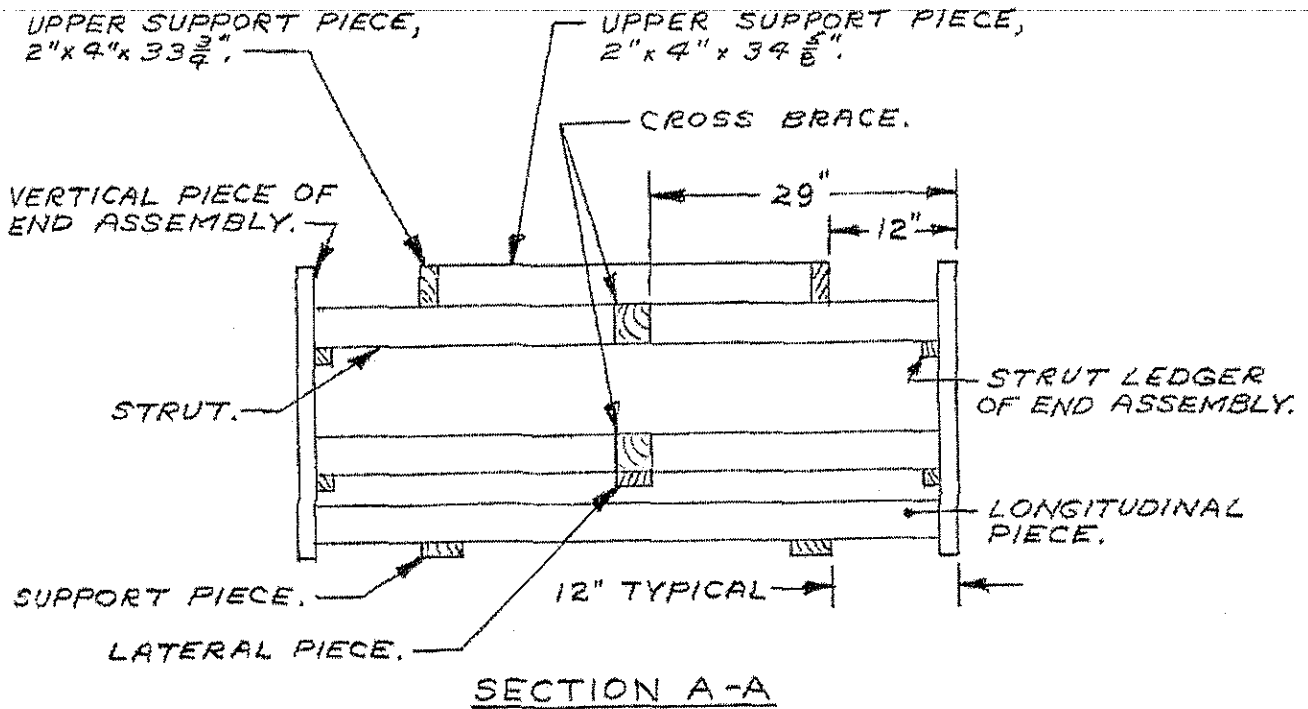


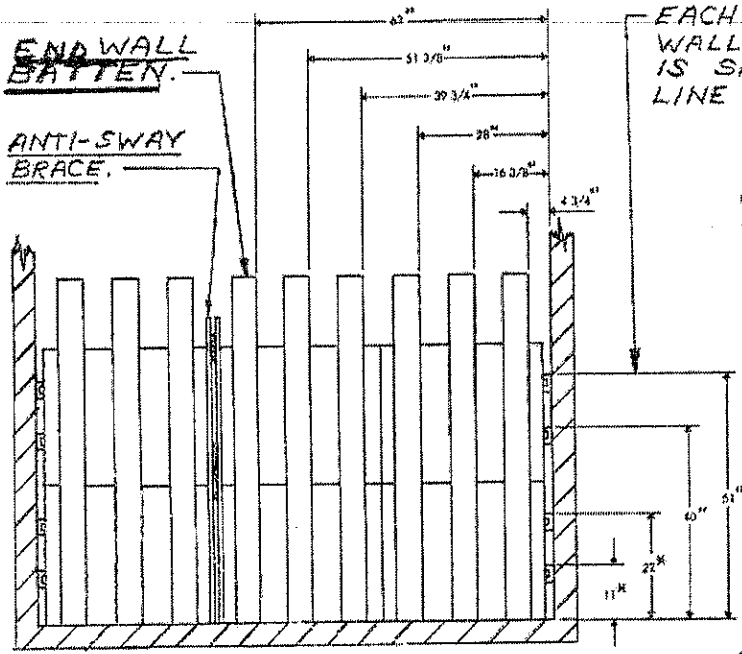
VERTICAL PIECE, 2" x 8" x 27" (2 REQD).

NOTE: DUMMY UNIT LOADS WILL BE USED ONLY AS NEEDED TO AVOID EXCEEDING THE LOAD LIMIT OF A CAR, OR TO SHIP A REDUCED LOAD.

STRUT LEDGER, 2"x2" x 33³/₄" (2 REQD), NAIL TO THE VERTICAL PIECES W/3-16d NAILS AT EACH JOINT AND CLINCH.

END ASSEMBLY





EACH HEIGHT ABOVE CAR FLOOR TO A WALL MEMBER OR DOORWAY MEMBER IS SPECIFIED TO LOCATE THE CENTER LINE OF A CROSS MEMBER.

DIRECTION OF ARROW INDICATES NOSE END OF BOMB.

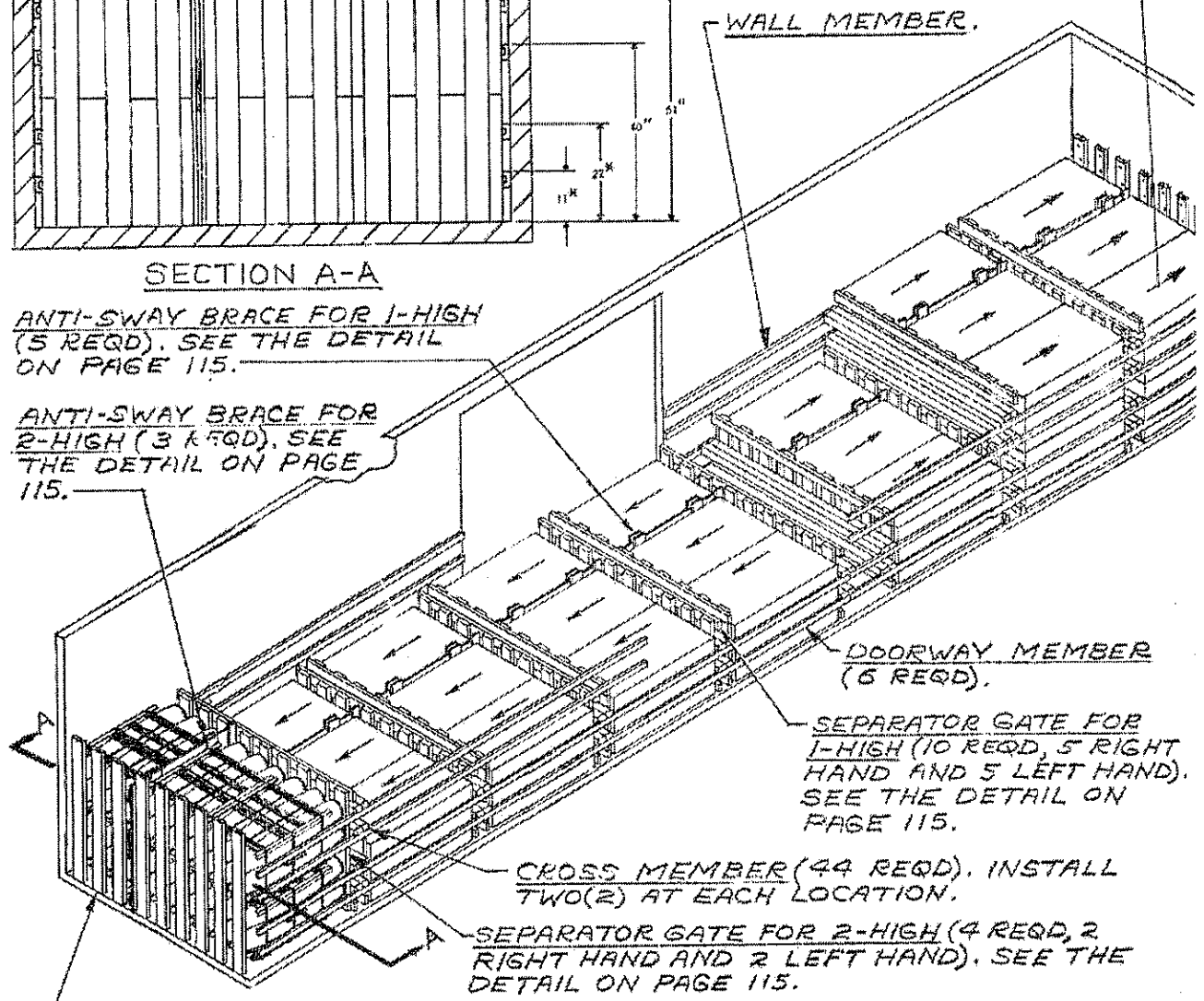
* INDICATES LOCATION FOR DOORWAY MEMBERS.

WALL MEMBER.

SECTION A-A

ANTI-SWAY BRACE FOR 1-HIGH (3 REQ'D). SEE THE DETAIL ON PAGE 115.

ANTI-SWAY BRACE FOR 2-HIGH (3 REQ'D). SEE THE DETAIL ON PAGE 115.



DOORWAY MEMBER (6 REQ'D).

SEPARATOR GATE FOR 1-HIGH (10 REQ'D, 5 RIGHT HAND AND 5 LEFT HAND). SEE THE DETAIL ON PAGE 115.

CROSS MEMBER (44 REQ'D). INSTALL TWO(2) AT EACH LOCATION.

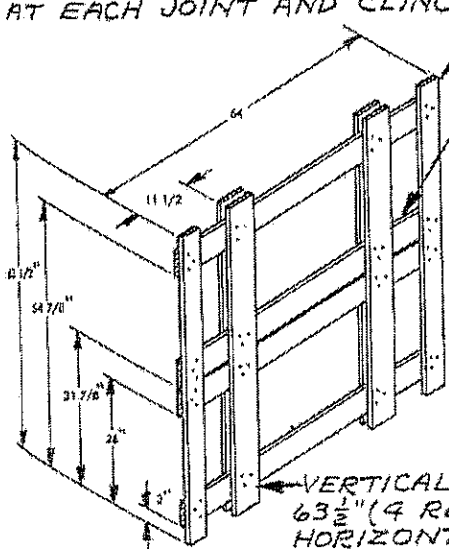
SEPARATOR GATE FOR 2-HIGH (4 REQ'D, 2 RIGHT HAND AND 2 LEFT HAND). SEE THE DETAIL ON PAGE 115.

END WALL BATTEN, 2"x 6"x 72" (18 REQ'D). NAIL TO CAR END WALL W/1-10d NAIL EVERY 12". SEE "SECTION A-A".

NOTE: 33 PALLET UNITS SHOWN GROSS WT. - 104,261 LBS.

TYPICAL LOAD OF BOMBS, 500 LB MK82 & MODS, THERMALLY PROTECTED, ON PALLET MHU-122/E (FLEET ISSUE UNIT LOAD) IN A 50'-6" LONG BY 9'-2" WIDE BOX CAR EQUIPPED WITH MECHANICAL BRACING DEVICES (CROSS MEMBERS)

STOP PIECE, 1" x 4" x 63 1/2" (2 REQD). NAIL TO THE HORIZONTAL PIECES W/3-6d NAILS AT EACH JOINT AND CLINCH.

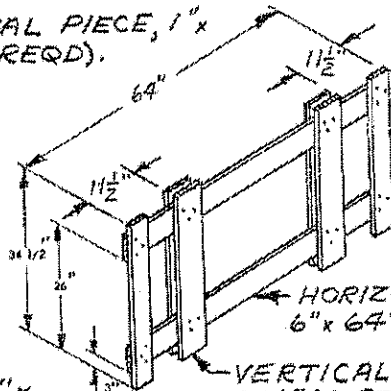


HORIZONTAL PIECE, 1" x 6" x 64" (4 REQD).

VERTICAL PIECE, 1" x 6" x 63 1/2" (4 REQD), NAIL TO THE HORIZONTAL PIECES W/3-6d NAILS AT EACH JOINT.

ANTI-SWAY BRACE FOR 2-HIGH

STOP PIECE, 1" x 4" x 34 1/2" (2 REQD). NAIL TO THE HORIZONTAL PIECES W/3-6d NAILS AT EACH JOINT AND CLINCH.

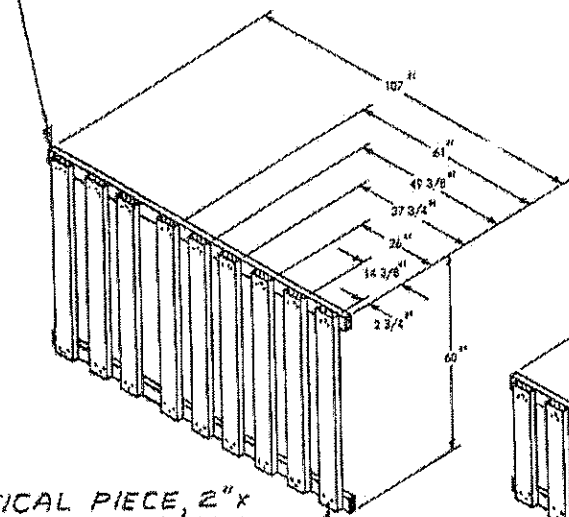


HORIZONTAL PIECE, 1" x 6" x 64" (2 REQD).

VERTICAL PIECE, 1" x 6" x 34 1/2" (4 REQD). NAIL TO THE HORIZONTAL PIECES W/3-6d NAILS AT EACH JOINT.

ANTI-SWAY BRACE FOR 1-HIGH

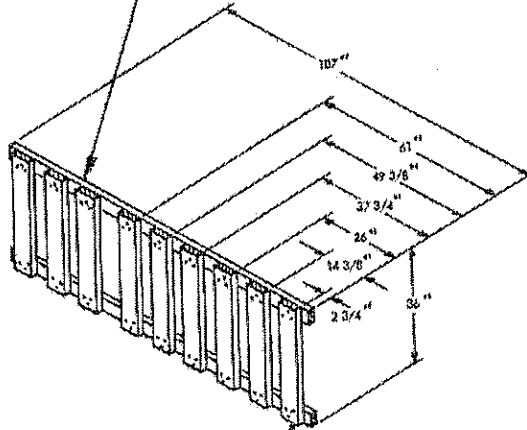
TIE PIECE, 2" x 4" x 107" (2 REQD).



VERTICAL PIECE, 2" x 6" x 60" (9 REQD). NAIL TO THE TIE PIECES W/3-10d NAILS AT EACH END.

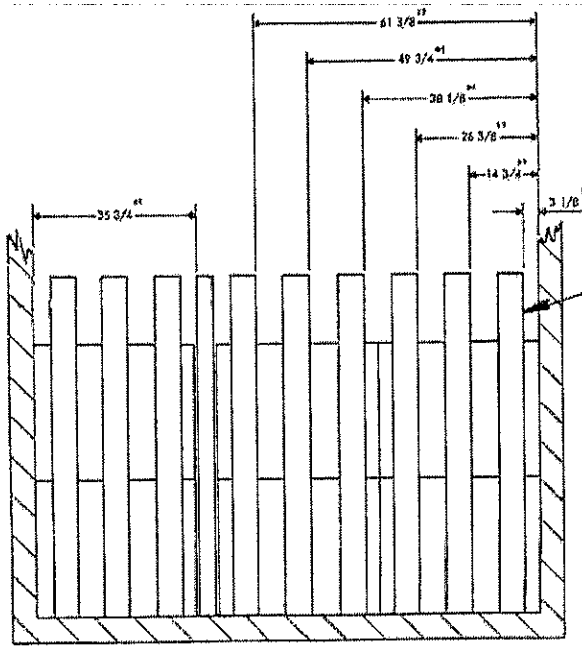
SEPARATOR GATE FOR 2-HIGH

TIE PIECE, 2" x 4" x 107" (2 REQD).



VERTICAL PIECE, 2" x 6" x 36" (9 REQD). NAIL TO THE TIE PIECES W/3-10d NAILS AT EACH END.

SEPARATOR GATE FOR 1-HIGH



SECTION A-A

NOTE:
 36 PALLET UNITS SHOWN
 GROSS WT. - 114,329 LBS.

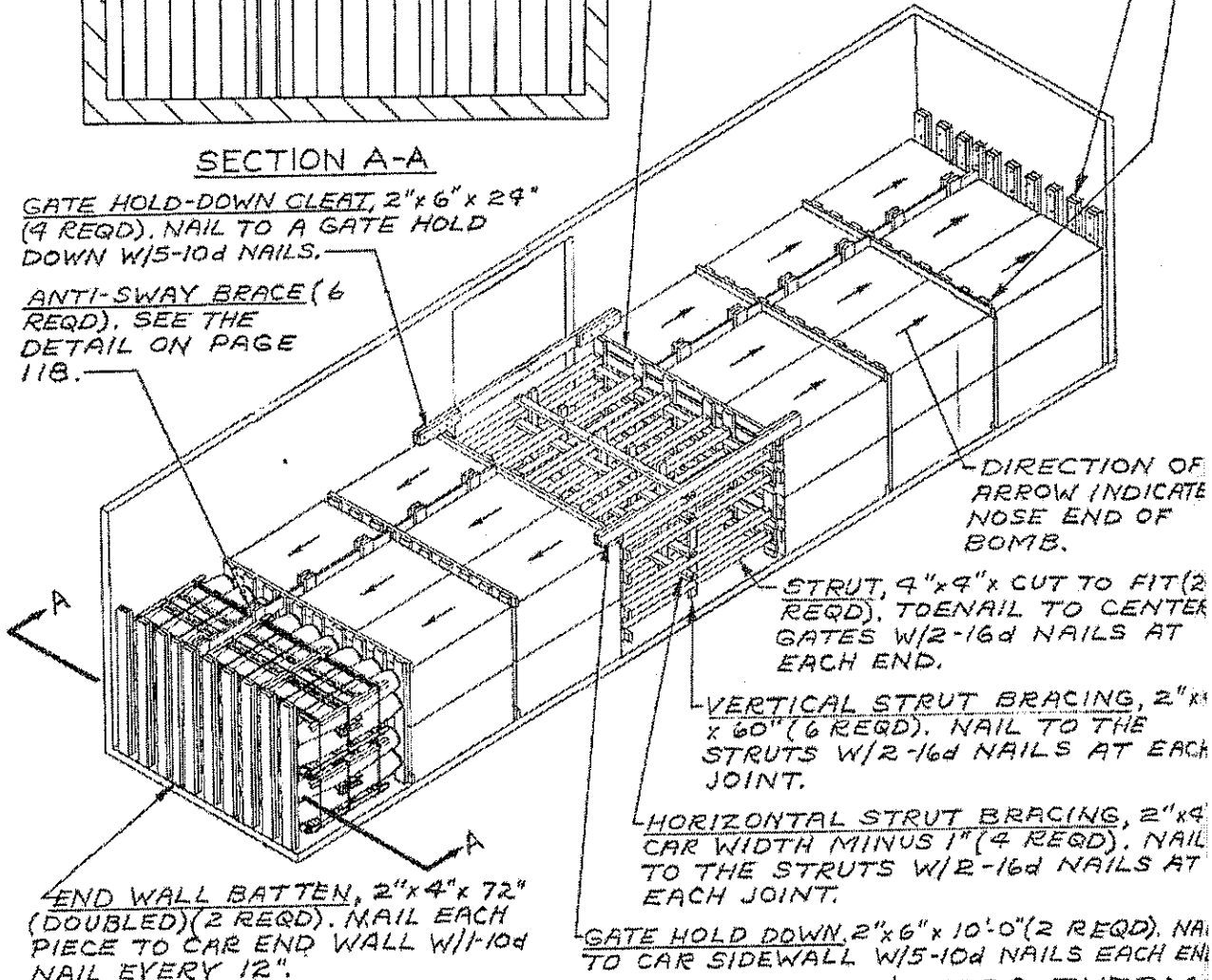
SEPARATOR GATE (4 REQD,
 2 RIGHT HAND AND 2 LEFT
 HAND). SEE DETAIL ON PAGE 122.

END WALL BATTEN, 2"x6"x72"
 (DOUBLED) (18 REQD). NAIL EACH
 PIECE TO CAR END WALL W/1-10d
 NAIL EVERY 12".

CENTER GATE (2 REQD, 1 RIGHT
 HAND AND 1 LEFT HAND). SEE
 THE DETAIL ON PAGE 118.

GATE HOLD-DOWN CLEAT, 2"x6"x24"
 (4 REQD). NAIL TO A GATE HOLD
 DOWN W/5-10d NAILS.

ANTI-SWAY BRACE (6
 REQD). SEE THE
 DETAIL ON PAGE
 118.



DIRECTION OF
 ARROW INDICATE
 NOSE END OF
 BOMB.

STRUT, 4"x4"x CUT TO FIT (2
 REQD). TO NAIL TO CENTER
 GATES W/2-16d NAILS AT
 EACH END.

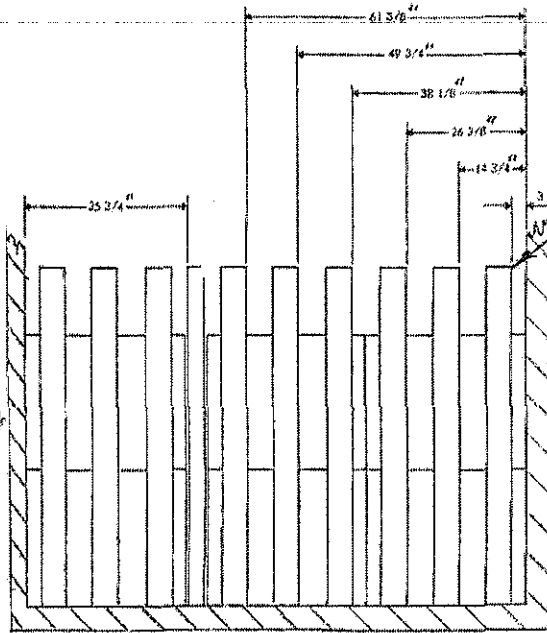
VERTICAL STRUT BRACING, 2"x4"
 x 60" (6 REQD). NAIL TO THE
 STRUTS W/2-16d NAILS AT EACH
 JOINT.

HORIZONTAL STRUT BRACING, 2"x4"
 CAR WIDTH MINUS 1" (4 REQD). NAIL
 TO THE STRUTS W/2-16d NAILS AT
 EACH JOINT.

GATE HOLD DOWN, 2"x6"x10'-0" (2 REQD). NAIL
 TO CAR SIDEWALL W/5-10d NAILS EACH END

END WALL BATTEN, 2"x4"x72"
 (DOUBLED) (2 REQD). NAIL EACH
 PIECE TO CAR END WALL W/1-10d
 NAIL EVERY 12".

TYPICAL LOAD OF BOMBS, 500 LB MK82 & MODS, THERM-
 ALLY PROTECTED, ON PALLET MHU-122/E (FLEET
 ISSUE UNIT LOAD) IN A 40'-6" LONG BY 9'-2"
 WIDE CONVENTIONAL BOX CAR



NOTE:
 48 PALLET UNITS SHOWN
 GROSS WT. - 151,912 LBS.

END WALL BATTEN, 2"x6"x72"
 (DOUBLED) (18 REQD). NAIL EACH
 PIECE TO CAR END WALL W/1-10d
 NAIL EVERY 12".

**SEPARATOR GATE (6 REQD, 3 RIGHT
 HAND AND 3 LEFT HAND)**. SEE
 THE DETAIL ON PAGE 122.

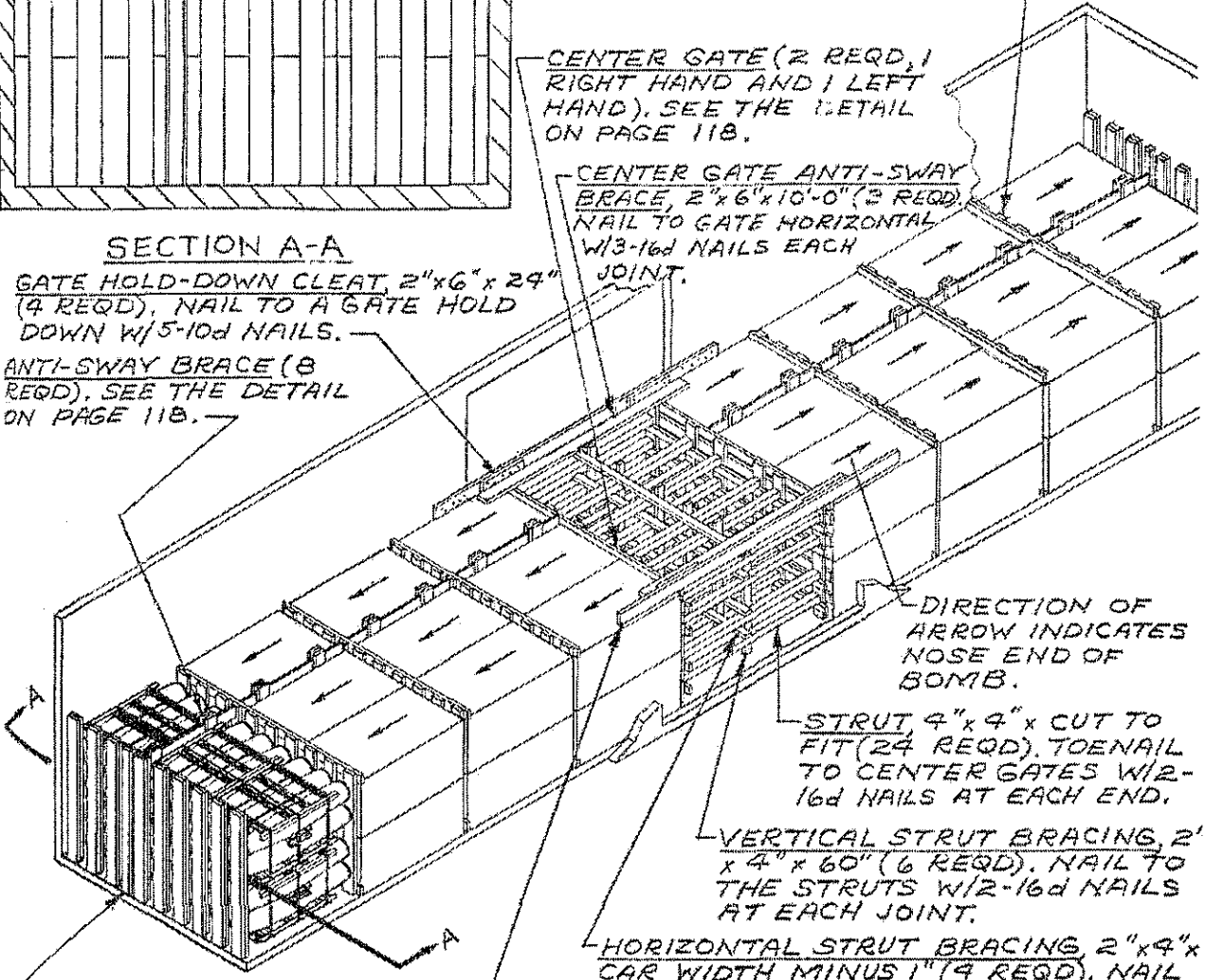
**CENTER GATE (2 REQD, 1
 RIGHT HAND AND 1 LEFT
 HAND)**. SEE THE DETAIL
 ON PAGE 118.

**CENTER GATE ANTI-SWAY
 BRACE, 2"x6"x10'-0"** (3 REQD).
 NAIL TO GATE HORIZONTAL
 W/3-16d NAILS EACH
 JOINT.

SECTION A-A

GATE HOLD-DOWN CLEAT, 2"x6"x24"
 (4 REQD), NAIL TO A GATE HOLD
 DOWN W/5-10d NAILS.

**ANTI-SWAY BRACE (8
 REQD)**. SEE THE DETAIL
 ON PAGE 118.



DIRECTION OF
 ARROW INDICATES
 NOSE END OF
 BOMB.

**STRUT, 4"x4"x CUT TO
 FIT (24 REQD)**, TOENAIL
 TO CENTER GATES W/2-
 16d NAILS AT EACH END.

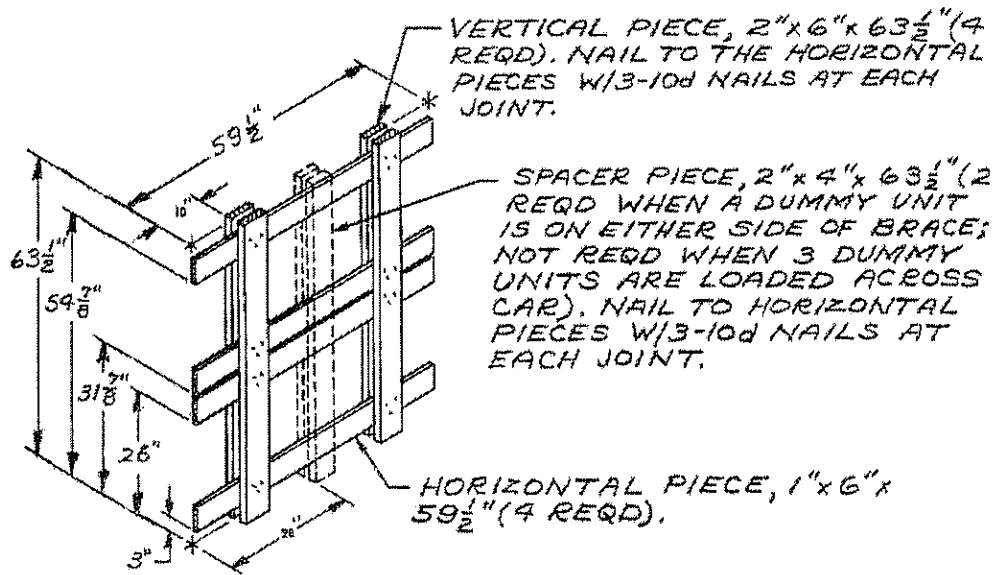
**VERTICAL STRUT BRACING, 2'
 x 4" x 60"** (6 REQD). NAIL TO
 THE STRUTS W/2-16d NAILS
 AT EACH JOINT.

**HORIZONTAL STRUT BRACING 2"x4"
 CAR WIDTH MINUS 1"** (4 REQD). NAIL
 TO THE STRUTS W/2-16d NAILS AT
 EACH JOINT.

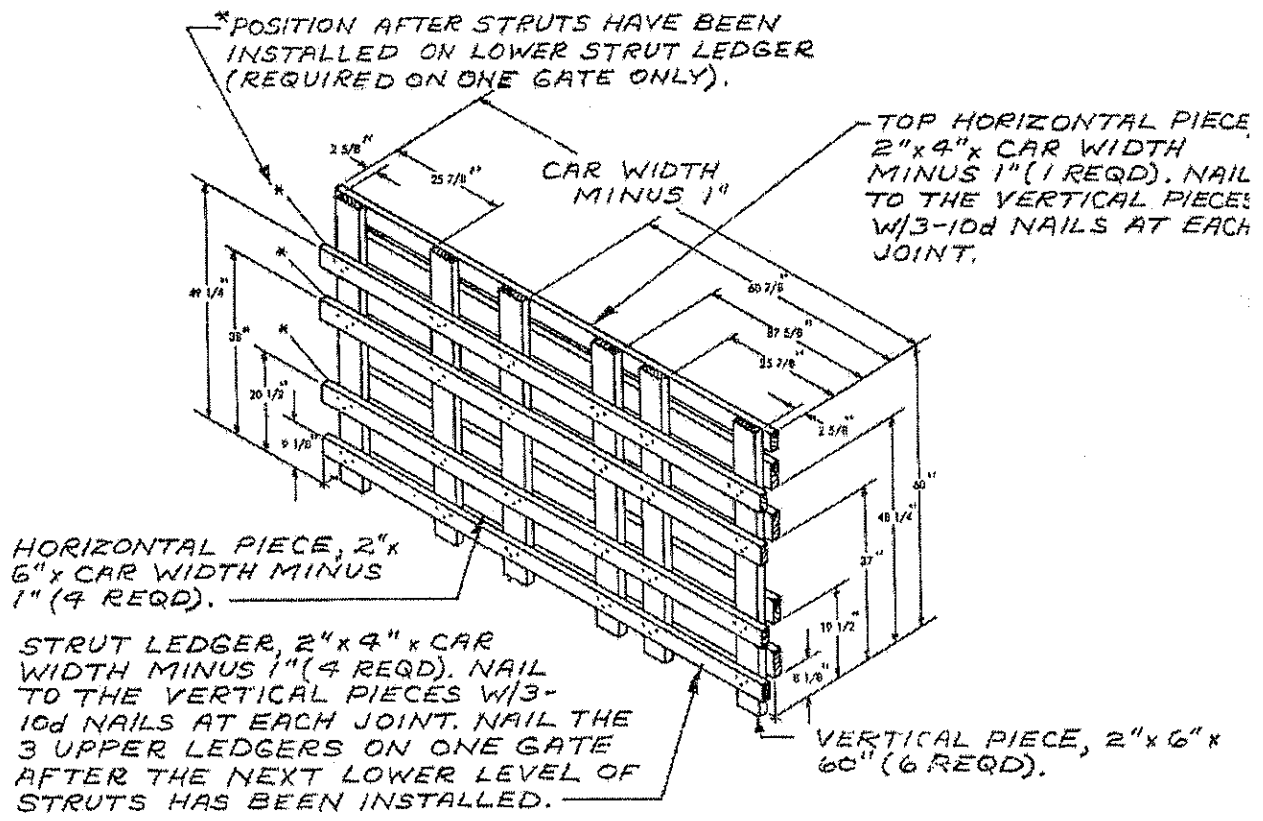
END WALL BATTEN, 2"x4"x72"
 (DOUBLED) (2 REQD). NAIL EACH
 PIECE TO CAR END WALL W/1-
 10d NAIL EVERY 12".

GATE HOLD DOWN, 2"x6"x14'-0" (2 REQD). NAIL
 TO CAR SIDEWALL W/5-10d NAILS EACH END.

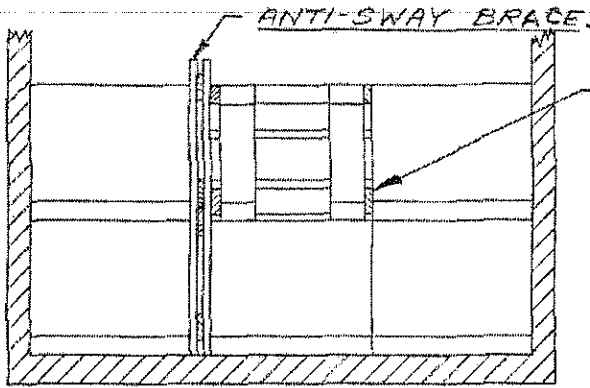
**TYPICAL LOAD OF BOMBS, 500 LB MKB2 & MODS, THERM-
 ALLY PROTECTED, ON PALLET MHU-122/E (FLEET
 ISSUE UNIT LOAD) IN A 50'-6" LONG BY 9'-2"
 WIDE CONVENTIONAL BOX CAR**



ANTI-SWAY BRACE



CENTER GATE



SECTION B-B

REFER TO PAGES 22 THRU 26 FOR NOTES ON LOAD DIVIDER CARS.

STRUT ASSEMBLY (1 REQD), SEE THE DETAIL ON PAGE 24.

LOAD DIVIDER BULKHEAD.

BUFFER GATE (2 REQD), SEE THE DETAIL ON PAGE 122.

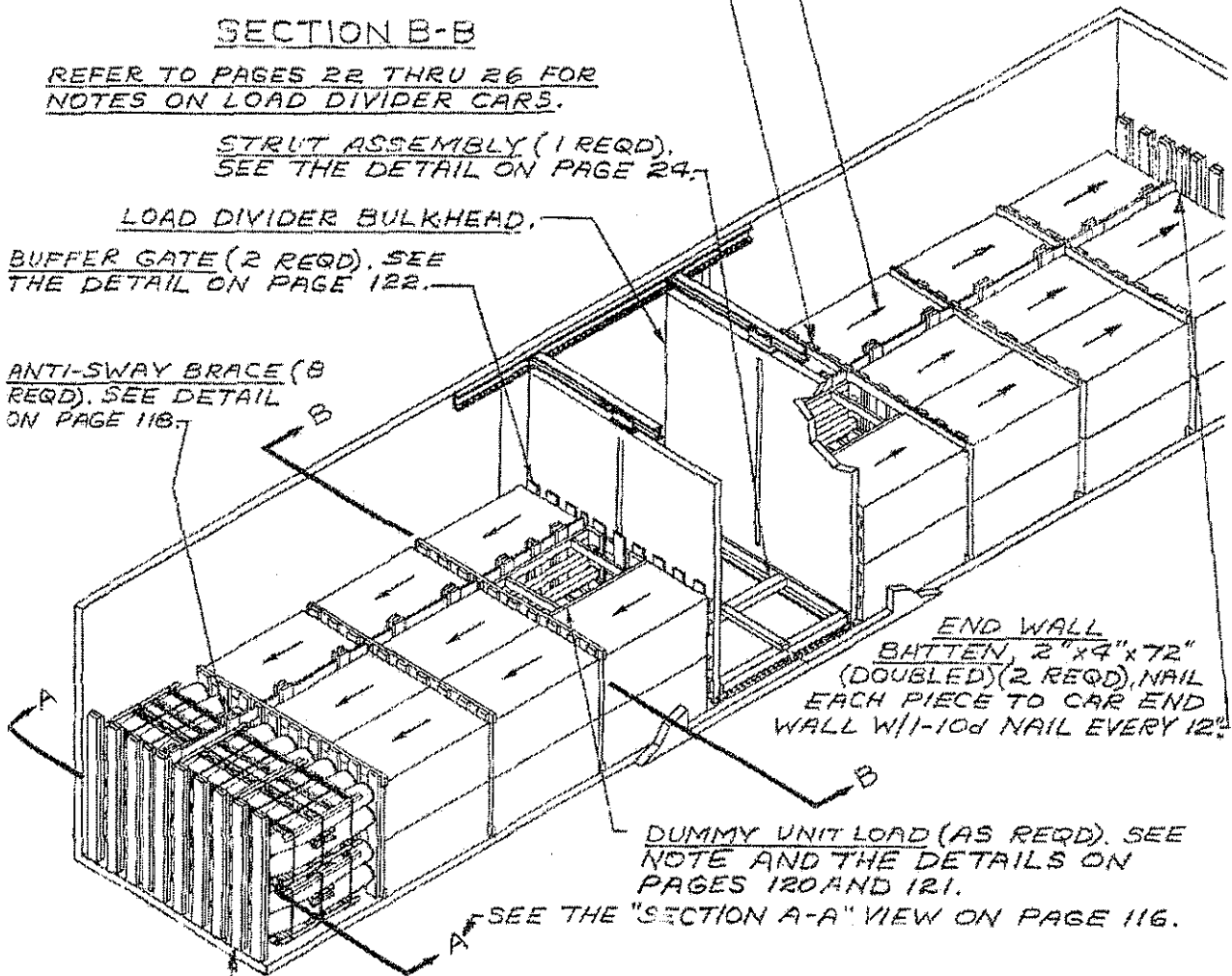
ANTI-SWAY BRACE (8 REQD), SEE DETAIL ON PAGE 118.

DUMMY UNIT LOAD.

NOTE:
46 PALLET UNITS SHOWN
GROSS WT. - 145,281 LBS.

SEPARATOR GATE (6 REQD, 3 RIGHT HAND AND 3 LEFT HAND). SEE THE DETAIL ON PAGE 122.

DIRECTION OF ARROW INDICATES NOSE END OF BOMB.



END WALL BATTEN 2"x4"x72" (DOUBLED) (2 REQD), NAIL EACH PIECE TO CAR END WALL W/1-10d NAIL EVERY 12".

DUMMY UNIT LOAD (AS REQD). SEE NOTE AND THE DETAILS ON PAGES 120 AND 121.

SEE THE "SECTION A-A" VIEW ON PAGE 116.

END WALL BATTEN, 2"x6"x72" (DOUBLED) (18 REQD). NAIL EACH PIECE TO THE CAR END WALL W/1-10d NAIL EVERY 12".

TYPICAL LOAD OF BOMBS, 500 LB MK82 & MODS, THERMALLY PROTECTED, ON PALLET MHU-122/E (FLEET ISSUE UNIT LOAD) IN A 50'-6" LONG BY 9'-2" WIDE CAR EQUIPPED WITH LOAD DIVIDERS

NOTE: DUMMY UNIT LOADS WILL BE USED ONLY AS NEEDED TO AVOID EXCEEDING THE LOAD LIMIT OF A CAR, OR TO SHIP A REDUCED LOAD.

TOP LONGITUDINAL PIECE, 2"x4" x 59 7/8" (2 REQD). NAIL TO THE END FRAMES AND TO THE TOP CROSS BRACES W/2-16d NAILS AT EACH JOINT.

TOP CROSS BRACE, 2"x4" x CUT TO FIT (2 REQD).

STRUT, 4"x4" x CUT TO FIT (4 REQD). TOENAIL TO END FRAMES W/3-16d NAILS AT EACH END.

END FRAME (1 REQD). SEE THE DETAIL ON PAGE 121.

CROSS BRACE, 2"x6" x CUT TO FIT (2 REQD).

SUPPORT PIECE, 2"x4" x 35" (2 REQD). NAIL TO THE LONGITUDINAL PIECES W/2-16d NAILS AT EACH END AND TO THE CROSS BRACE W/5-16d NAILS.

END FRAME WITH CLEAT (1 REQD). SEE THE DETAIL BELOW.

LONGITUDINAL PIECE, 2"x6" x 59 7/8" (2 REQD). NAIL TO THE END FRAMES AND TO THE CROSS BRACES W/3-16d NAILS EACH JOINT.

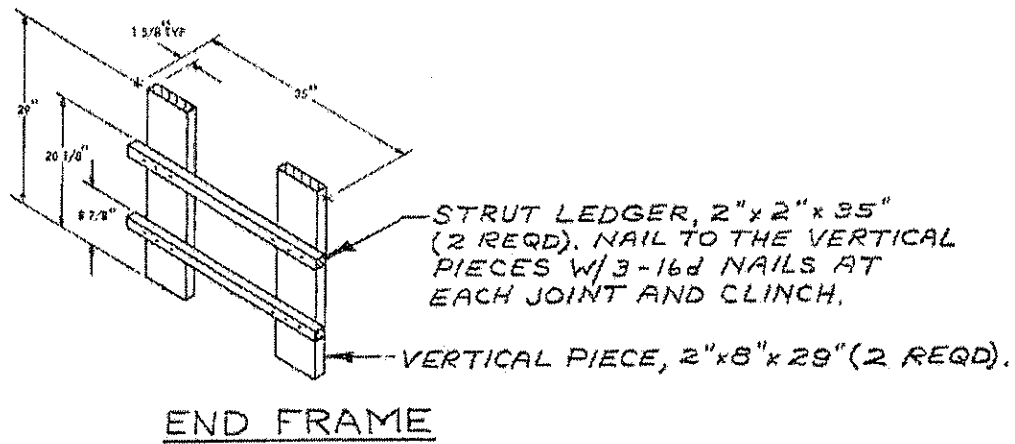
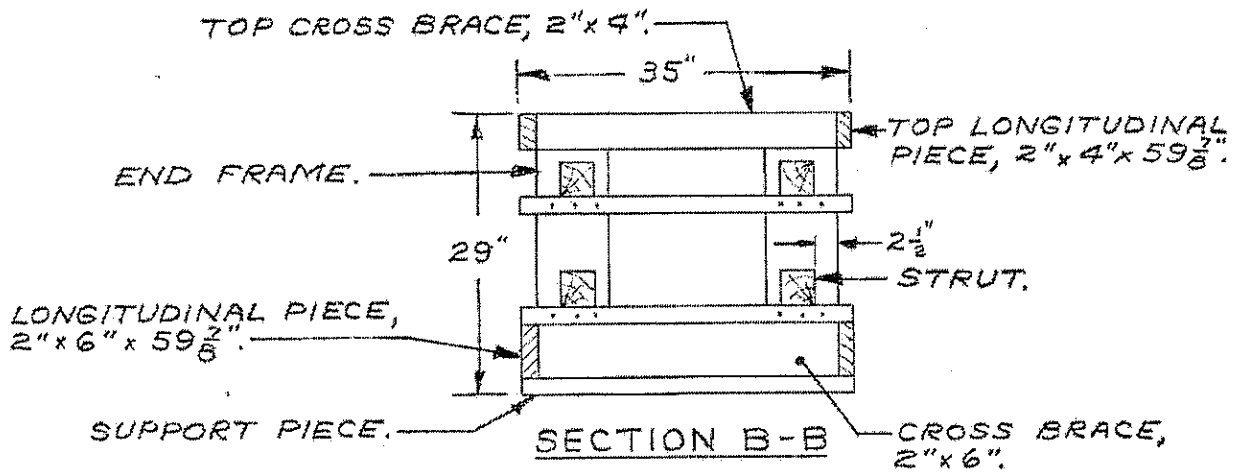
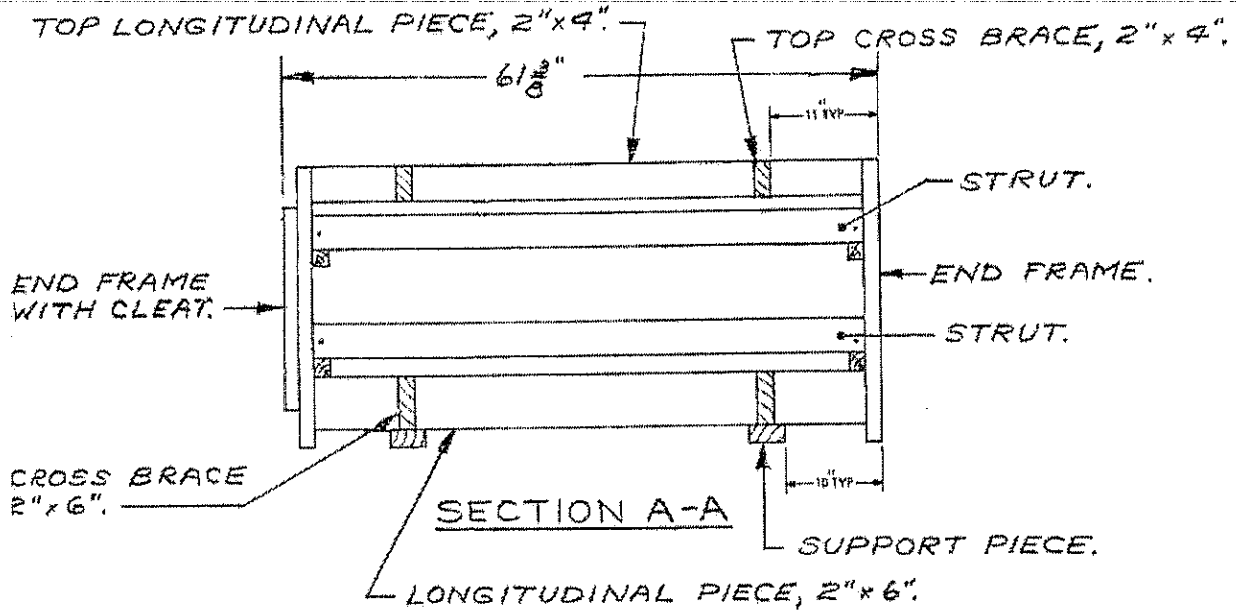
DUMMY UNIT LOAD

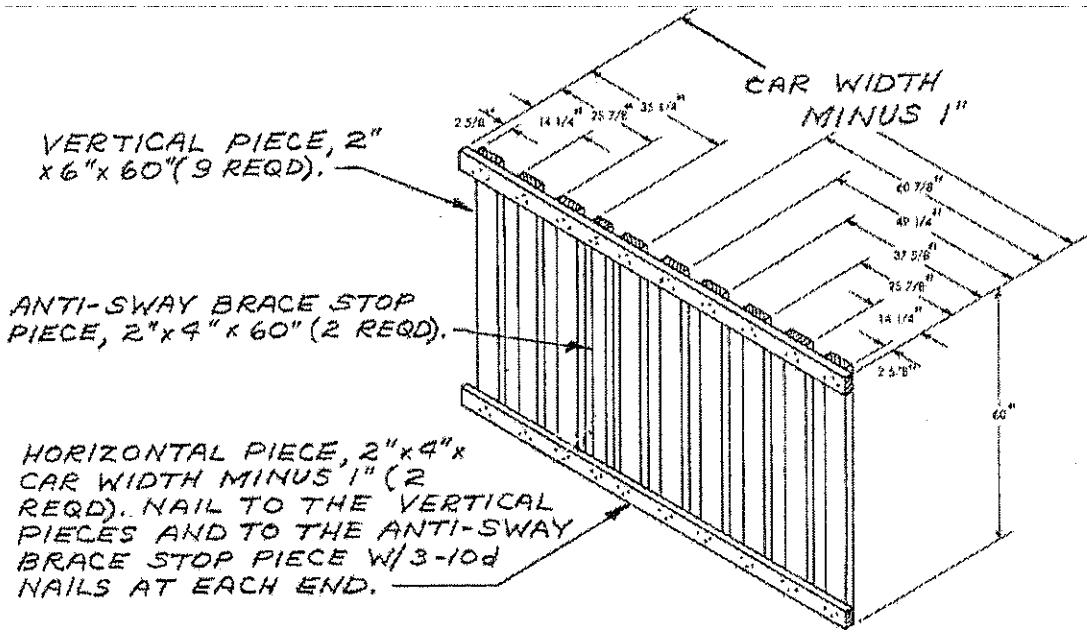
VERTICAL PIECE, 2"x8" x 29" (2 REQD).

VERTICAL CLEAT, 2"x8" x 21" (2 REQD). NAIL TO THE VERTICAL PIECE W/4-10d NAILS.

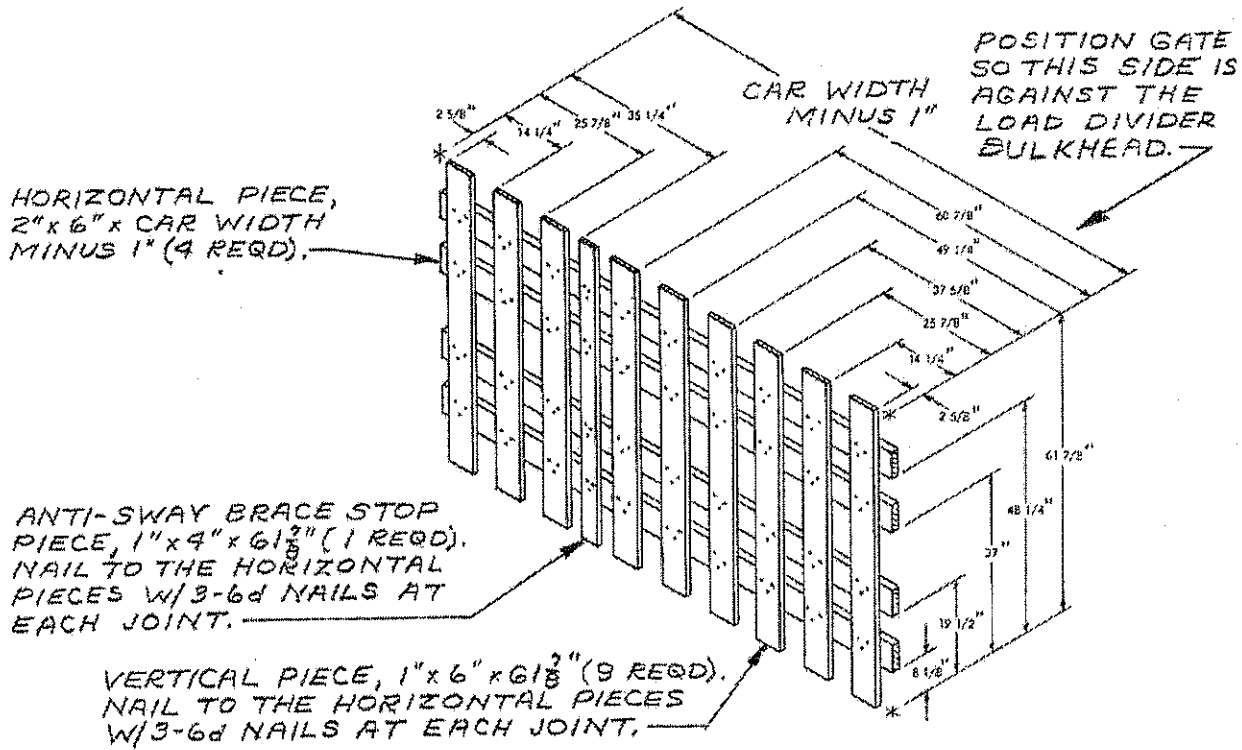
STRUT LEDGER, 2"x2" x 35" (2 REQD). NAIL TO THE VERTICAL PIECES W/3-16d NAILS AT EACH JOINT AND CLINCH.

END FRAME WITH CLEAT





SEPARATOR GATE

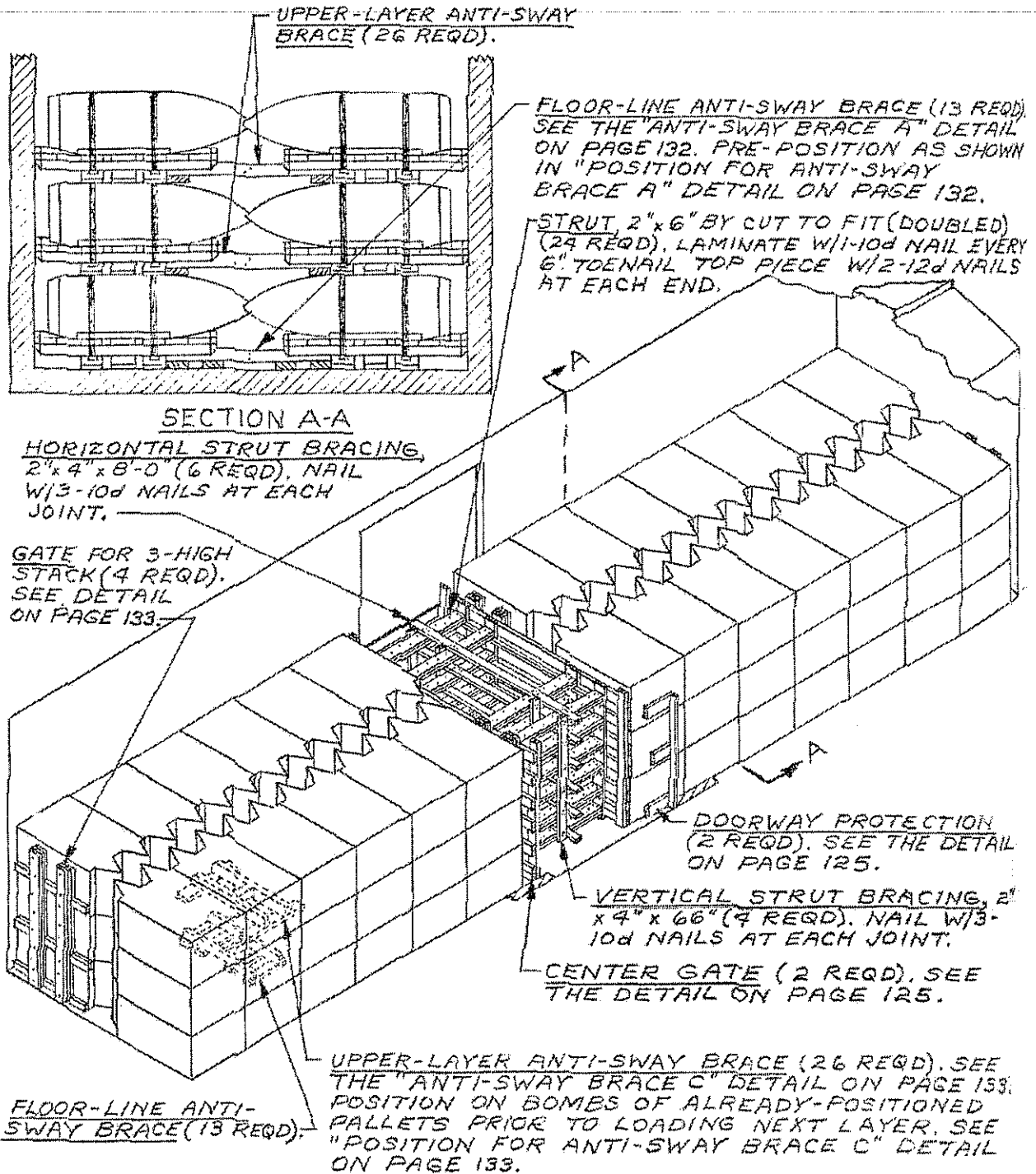


BUFFER GATE

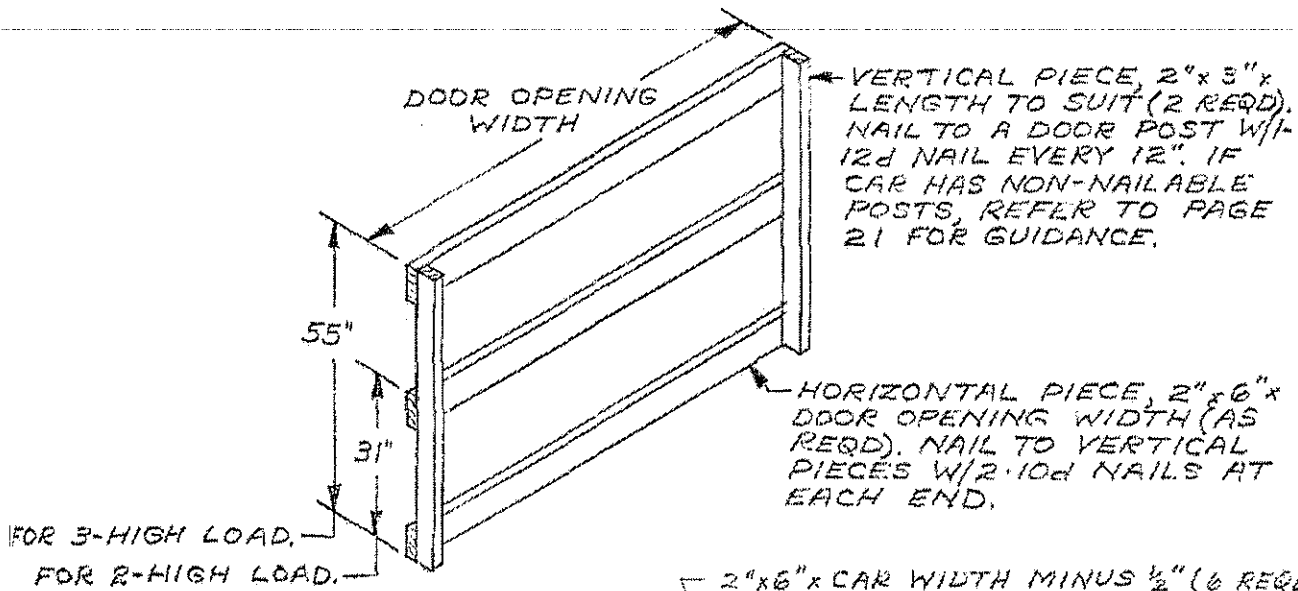
2 REQD, 1 RIGHT HAND AND 1 LEFT HAND.

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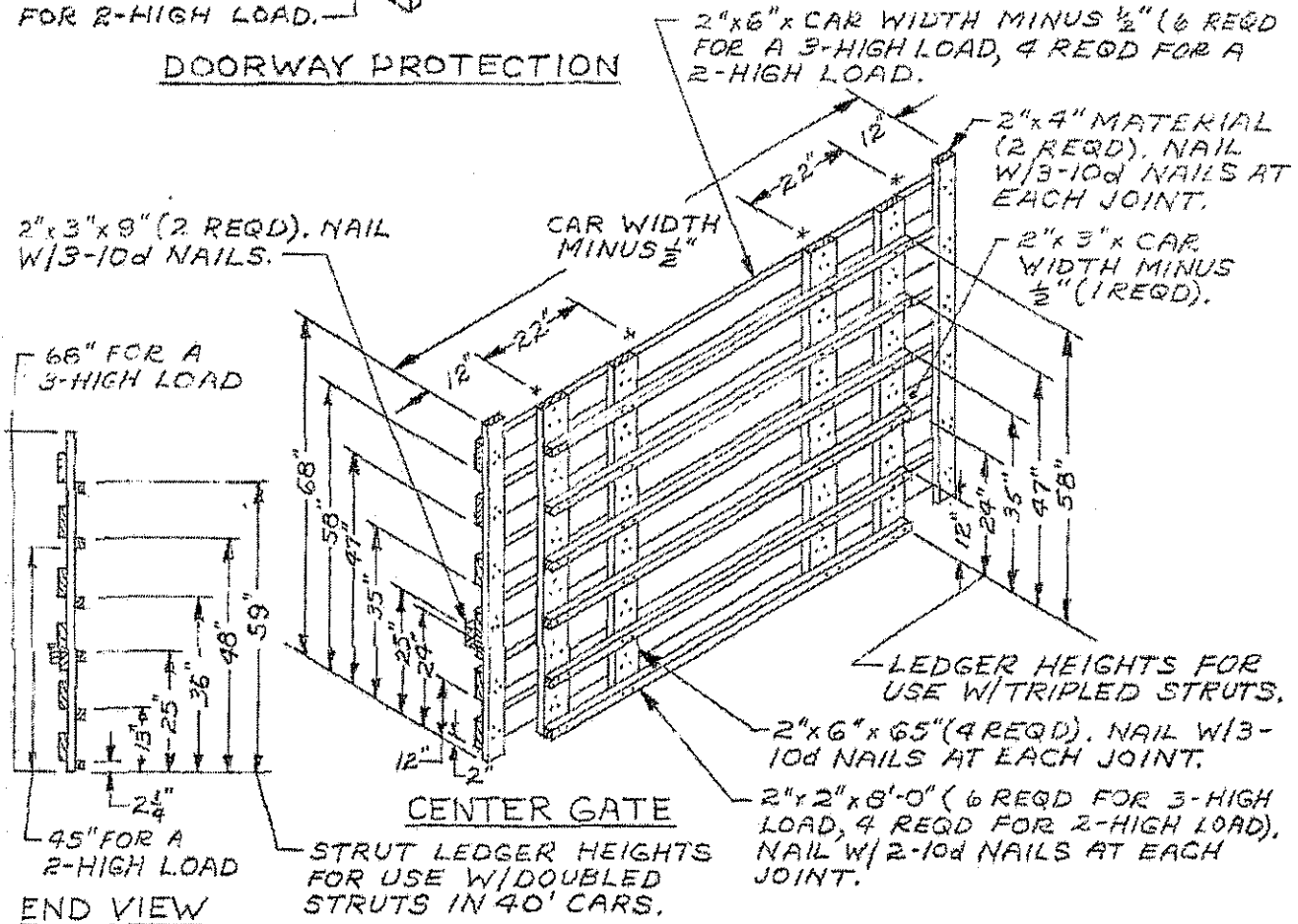
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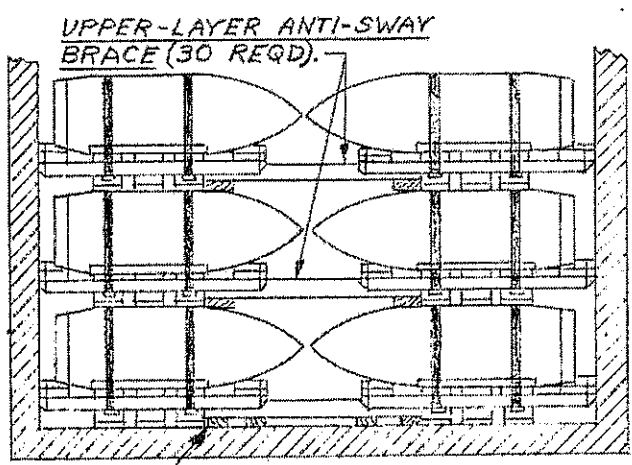
TYPICAL LOAD OF BOMBS, 750 LB, PALLETIZED (AIR FORCE UNIT LOAD PER TPO 1325-926-1868) IN A 40'-6" LONG BY 9'-2" WIDE OR LESS CONVENTIONAL BOX CAR



DOORWAY PROTECTION



NOTE: GATE IS FOR EITHER 2 OR 3-LAYER LOADS. STRUT LEDGER HEIGHTS SHOWN BY VIEW ABOVE ARE APPLICABLE FOR A TRIPLED STRUT INSTALLATION IN 50'-6" LONG CAR. LEDGER HEIGHTS BY THE END VIEW ARE APPLICABLE FOR DOUBLED STRUTS IN 90' CARS. IF CAR HAS "PLUG" DOORS AND A PALLET EXTENDS INTO DOORWAY MORE THAN 15" PAST A DOOR POST, USE THE GATE SHOWN ON PAGES 128 AND 129 IN LIEU OF THE ABOVE.



PARTIAL-LAYER GATE (2 REQD). SEE THE DETAIL ON PAGE 127.

STRUT, 2"x6" BY CUT TO FIT (TRIPLED) (16 REQD). LAMINATE W/1-10d NAIL EVERY 6". TOENAIL TOP PIECE W/2-12d NAILS AT EACH END.

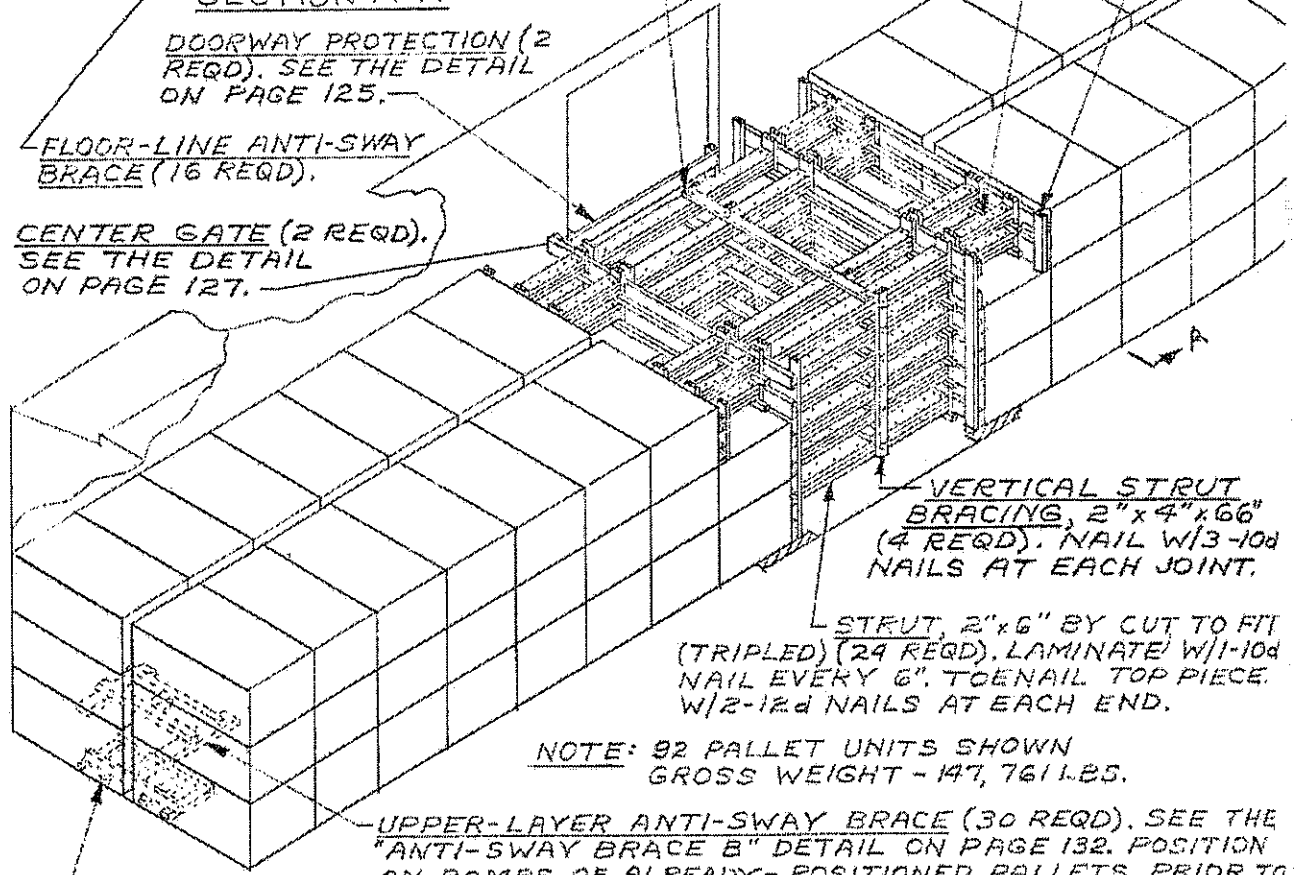
HORIZONTAL STRUT BRACING, 2"x4"x8'-0" (6 REQD), NAIL W/3-10d NAILS AT EACH JOINT.

SECTION A-A

DOORWAY PROTECTION (2 REQD). SEE THE DETAIL ON PAGE 125.

FLOOR-LINE ANTI-SWAY BRACE (16 REQD).

CENTER GATE (2 REQD). SEE THE DETAIL ON PAGE 127.

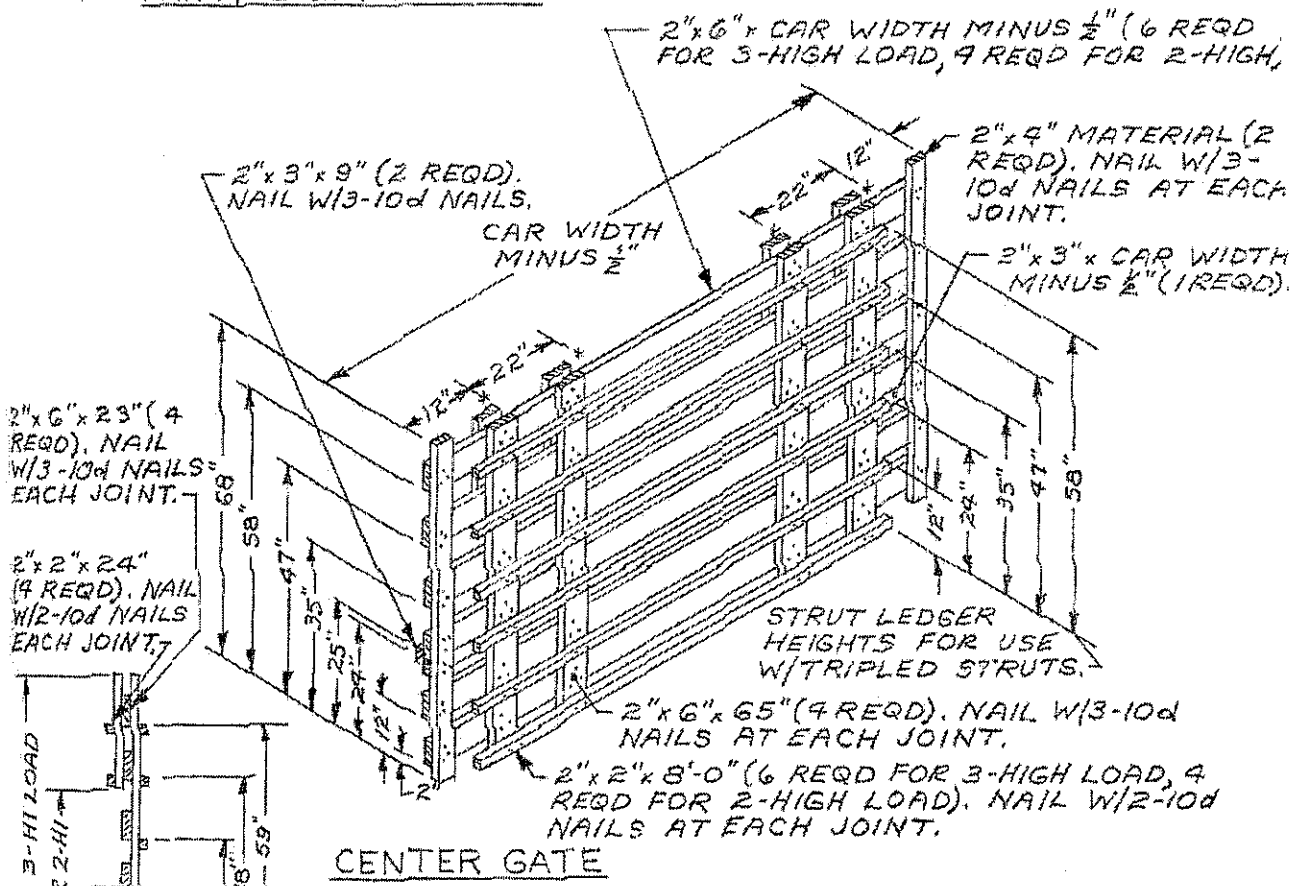
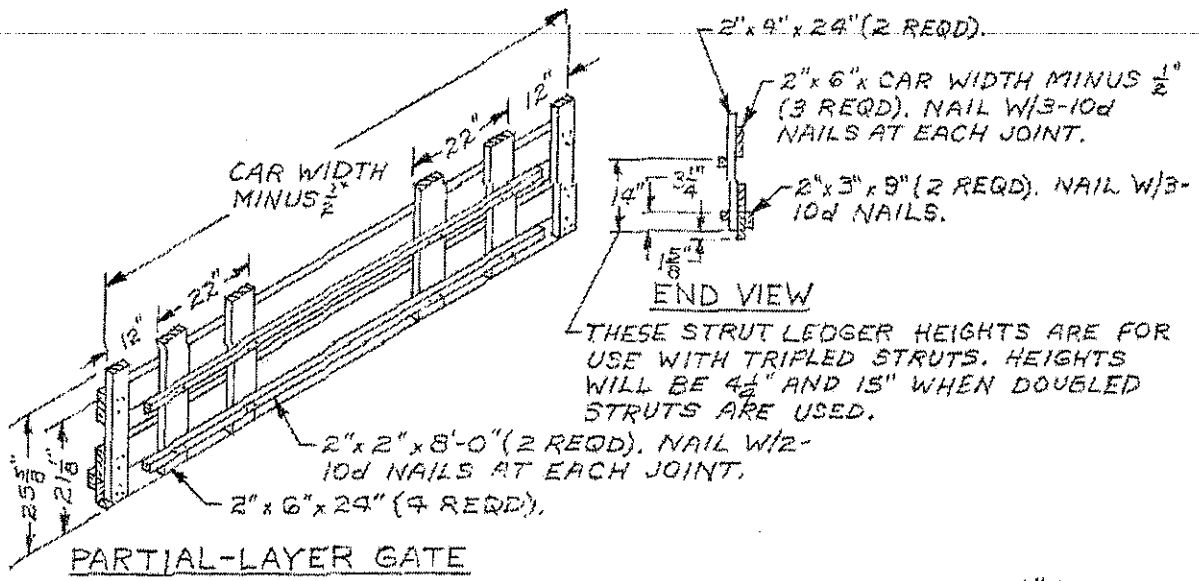


NOTE: 92 PALLET UNITS SHOWN
GROSS WEIGHT - 147,761 LBS.

UPPER-LAYER ANTI-SWAY BRACE (30 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 132. POSITION ON BOMES OF ALREADY-POSITIONED PALLET PRIOR TO LOADING NEXT LAYER. SEE "POSITION FOR ANTI-SWAY BRACE B" DETAIL ON PAGE 132.

FLOOR-LINE ANTI-SWAY BRACE (16 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 132. PRE-POSITION AS SHOWN IN "POSITION FOR ANTI-SWAY BRACE A" DETAIL ON PAGE 132.

TYPICAL LOAD OF BOMBS, 750 LB, PALLETIZED (AIR FORCE UNIT LOAD PER TPO 1325-926-1868) IN A 50'-6" LONG BY 9'-4" OR WIDER CONVENTIONAL BOX CAR



NOTE: GATE IS FOR EITHER 2-LAYER OR 3-LAYER LOADS. STRUT LEDGER HEIGHTS SHOWN BY VIEW ABOVE ARE APPLICABLE FOR A TRIPLED STRUT INSTALLATION IN 50'-6" LONG CAR. LEDGER HEIGHTS BY THE END VIEW ARE APPLICABLE FOR DOUBLED STRUTS IN 40' CARS. IF CAR HAS "PLUG" DOORS AND A PALLET EXTENDS INTO DOORWAY MORE THAN 15" PAST A DOOR POST, USE THE GATE SHOWN ON PAGES 128 AND 129 IN LIEU OF THE ABOVE.

VERTICAL PIECE, 2" x 6" x 48" (4 REQD). NAIL TO TOP CROSS BRACE AND TO THE HORIZONTAL PIECES W/3-10d NAILS AT EACH JOINT.

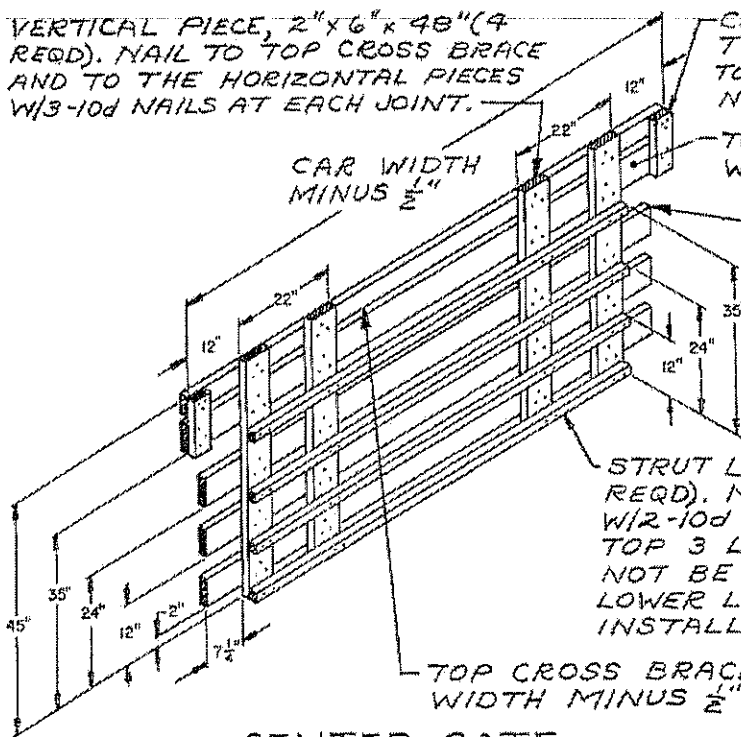
CLEAT, 2" x 4" x 10" (2 REQD). NAIL TO TOP CROSS BRACE AND TO THE TOP HORIZONTAL PIECE W/3-10d NAILS AT EACH JOINT.

TOP HORIZONTAL PIECE, 2" x 6" x CAR WIDTH MINUS 1/2" (1 REQD).

LOWER HORIZONTAL PIECE, 2" x 6" x CAR WIDTH MINUS 10" (3 REQD).

STRUT LEDGER, 2" x 2" x CUT TO FIT (4 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT. NOTE: THE TOP 3 LEDGERS ON ONE GATE SHOULD NOT BE APPLIED UNTIL THE NEXT LOWER LEVEL OF STRUTS HAS BEEN INSTALLED.

TOP CROSS BRACE, 2" x 4" x CAR WIDTH MINUS 1/2" (1 REQD).

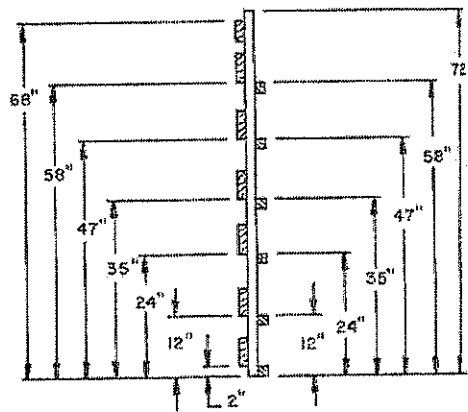


CENTER GATE

FOR USE IN PLUG DOOR CARS WITH THE LOADS ON PAGES 124 AND 126. OMIT LEDGERS IF SOLID FILL CENTER BLOCKING IS USED. INCREASE VERTICALS TO 60" AND 6'-6" FOR 2 AND 3-HIGH LOADS, RESPECTIVELY.

NOTES:

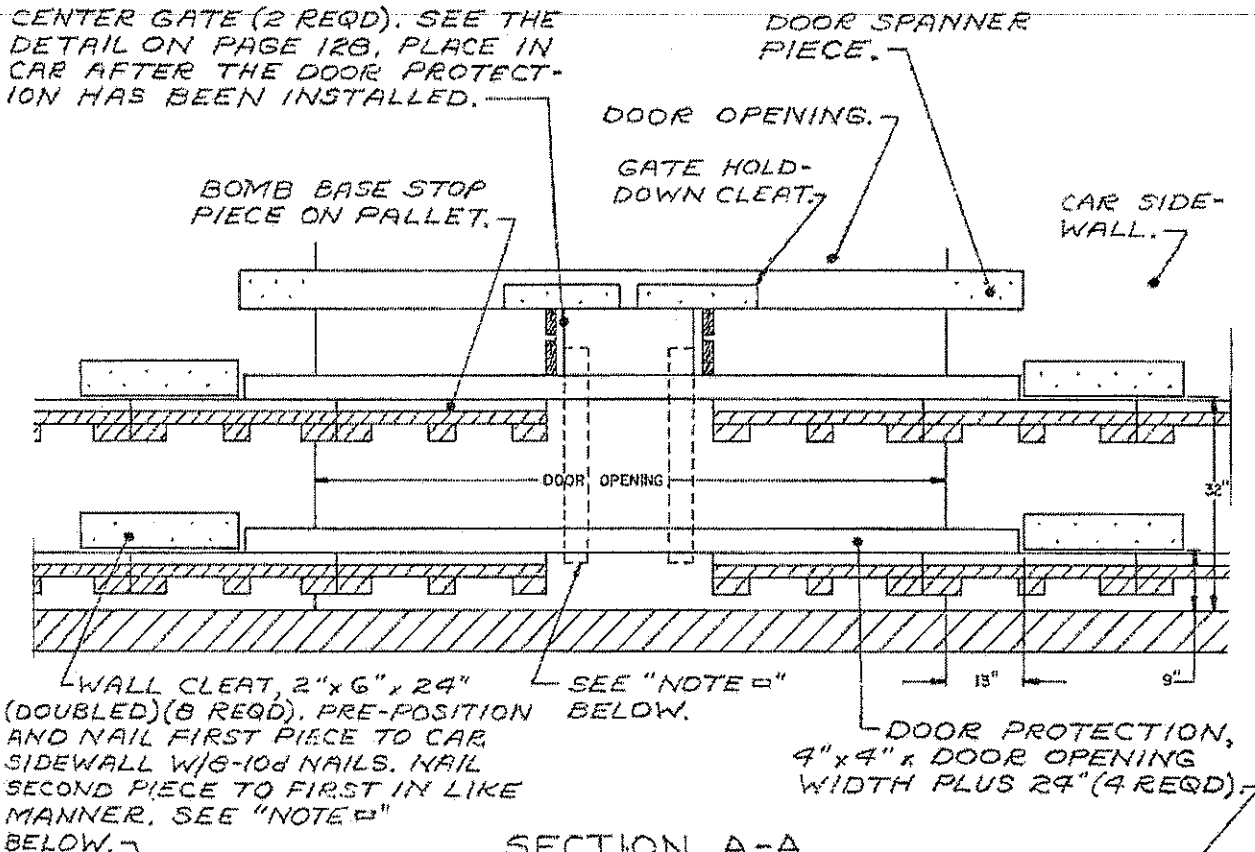
1. THE PROVISIONS ON THIS PAGE AND ON PAGE 129 ARE APPLICABLE FOR THE LOADS OF 750LB BOMBS SHOWN ON PAGES 124 AND 126 WHEN SHIPPED IN A CAR EQUIPPED WITH PLUG DOORS, AND WHEN THE PALLET UNIT EXTENDS INTO THE DOORWAY AREA AT LEAST FIFTEEN INCHES (15").
2. EACH OF THE 4" x 4" DOOR PROTECTION PIECES MUST BE OF ONE-PIECE MATERIAL; SPLICING IS NOT PERMITTED.
3. IF A CAR HAS A COMBINATION PLUG AND CONVENTIONAL SLIDING DOOR INSTALLED SIDE-BY-SIDE, THE ONE-PIECE 4" x 4" DOOR PROTECTION MUST BE OF ADEQUATE LENGTH TO SPAN BOTH DOORS AS THOUGH THEY WERE ONE.
4. NEAR-SIDE LOADING GUIDANCE:
 - A. SLIDE ONE END OF 4" x 4" BACK OVER WALL CLEAT TO FACILITATE LOWERING OTHER END TO JUST ABOVE BOMB BASE STOP PIECE.
 - B. SLIDE 4" x 4" IN OPPOSITE DIRECTION TO CONTACT ADJACENT WALL CLEAT. PRESS 4" x 4" DOWNWARD ALONG ENTIRE LENGTH TO CONTACT TOP SURFACE OF EACH BOMB BASE STOP PIECE ON LOWER LAYER PALLETS.



END VIEW

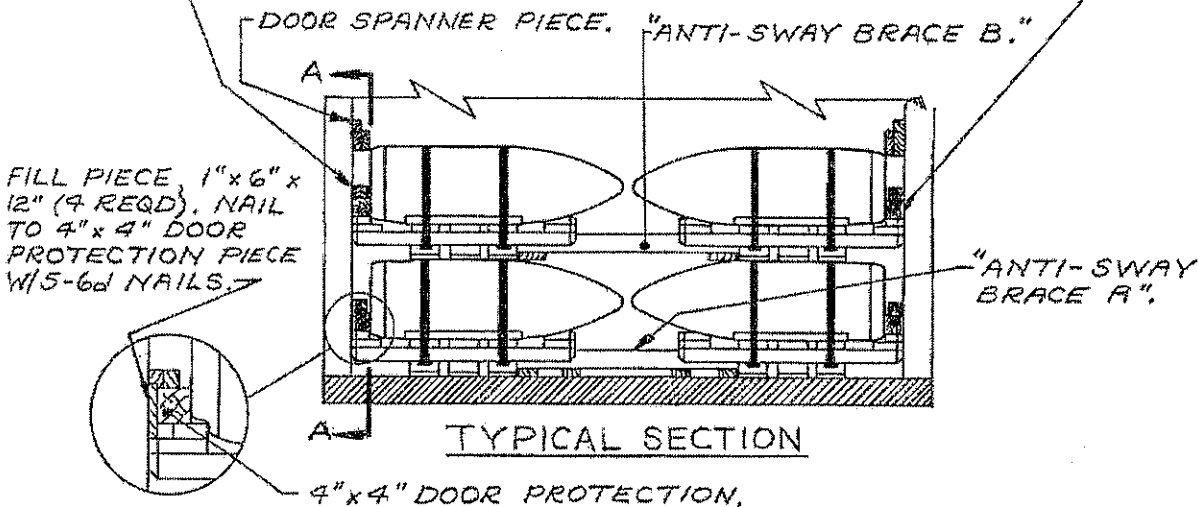
THE DIMENSIONS ABOVE ARE FOR A 3-HIGH LOAD.

CENTER GATE (2 REQD). SEE THE DETAIL ON PAGE 128, PLACE IN CAR AFTER THE DOOR PROTECTION HAS BEEN INSTALLED.



SECTION A-A

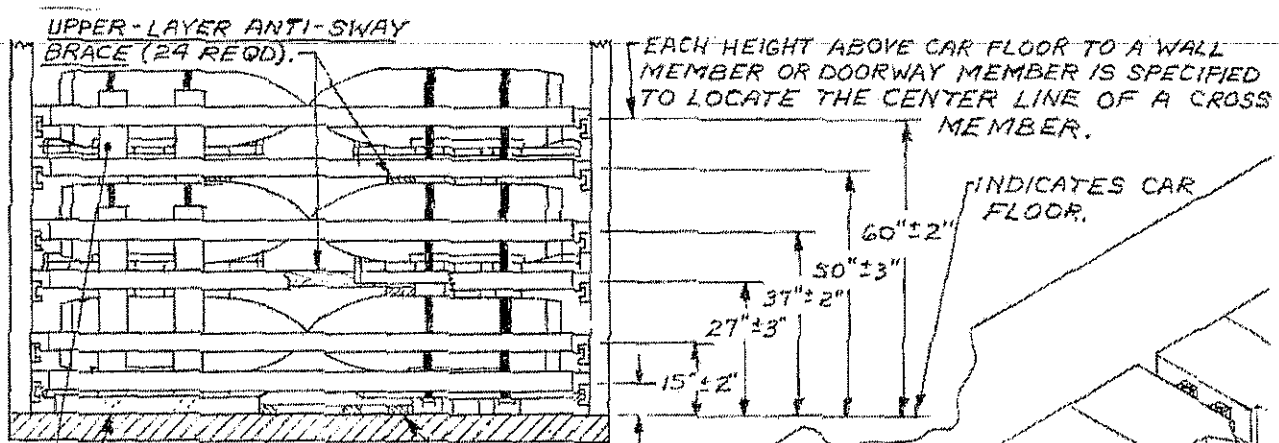
THIS SECTION DEPICTS PROPER INSTALLATION OF DOOR PROTECTION DUNNAGE AND THE CENTER GATES SHOWN ON PAGE 128 IN CARS EQUIPPED WITH PLUG DOORS.



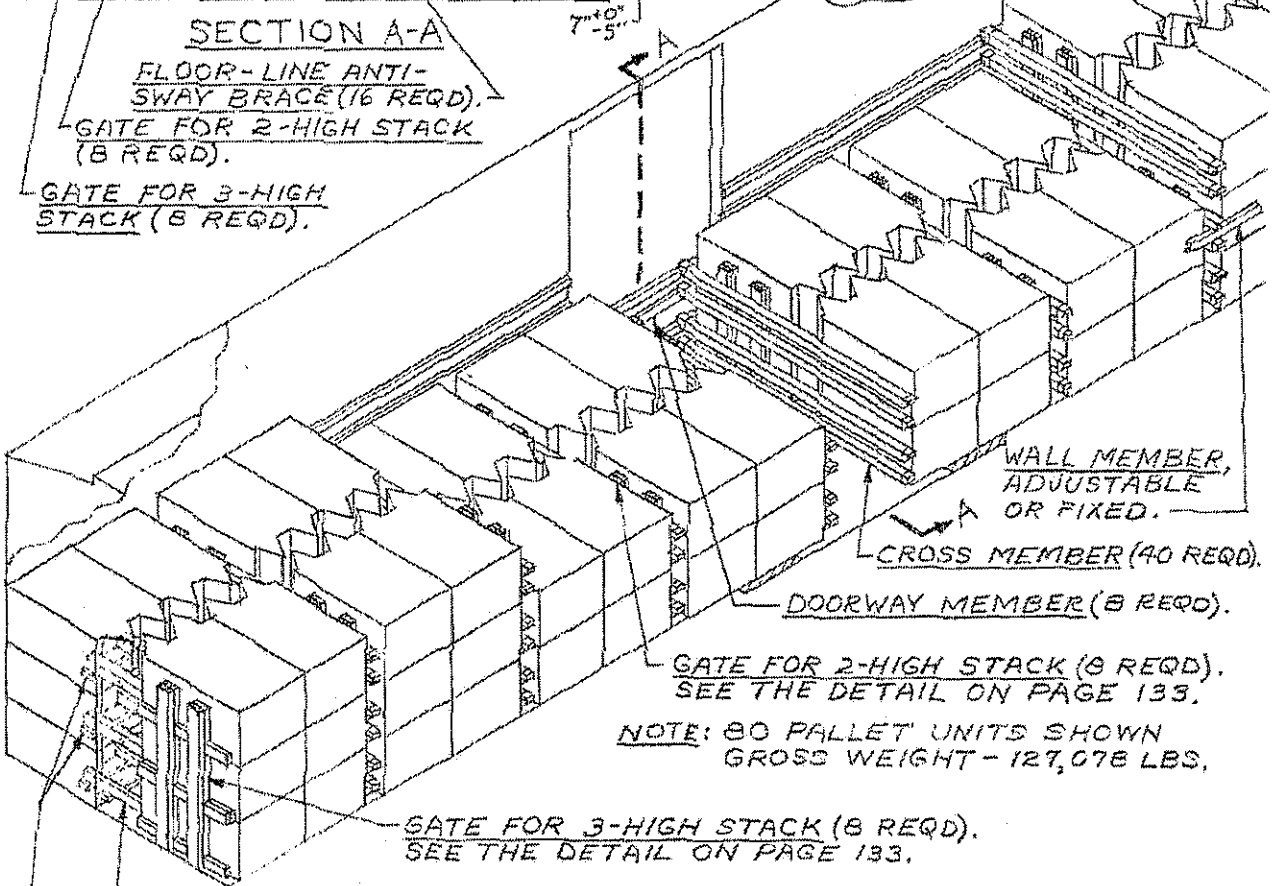
TYPICAL SECTION

THIS BLOWN UP VIEW SHOWS A 1" x 6" FILL PIECE NAILED TO EACH END OF 4" x 4" DOOR PROTECTION TO PROVIDE CONTACT WITH CAR WALL WHEN DISTANCE FROM BASE OF BOMB TO CAR WALL IS GREATER THAN 3 1/2". THIS FILL REQD FOR PLUG DOORS, OPTIONAL FOR SLIDING DOORS.

NOTE A: 4" x 4" DOOR PROTECTION CAN BE HELD LONGITUDINALLY BY PLACING A 2" x 4" x 36" VERTICALLY IN CONTACT WITH CENTER GATE. NAIL TO 4" x 4" PIECES W/3-10d NAILS EACH JOINT. OMIT WALL CLEATS.



SECTION A-A
 FLOOR-LINE ANTI-SWAY BRACE (16 REQD).
 GATE FOR 2-HIGH STACK (8 REQD).
 GATE FOR 3-HIGH STACK (8 REQD).

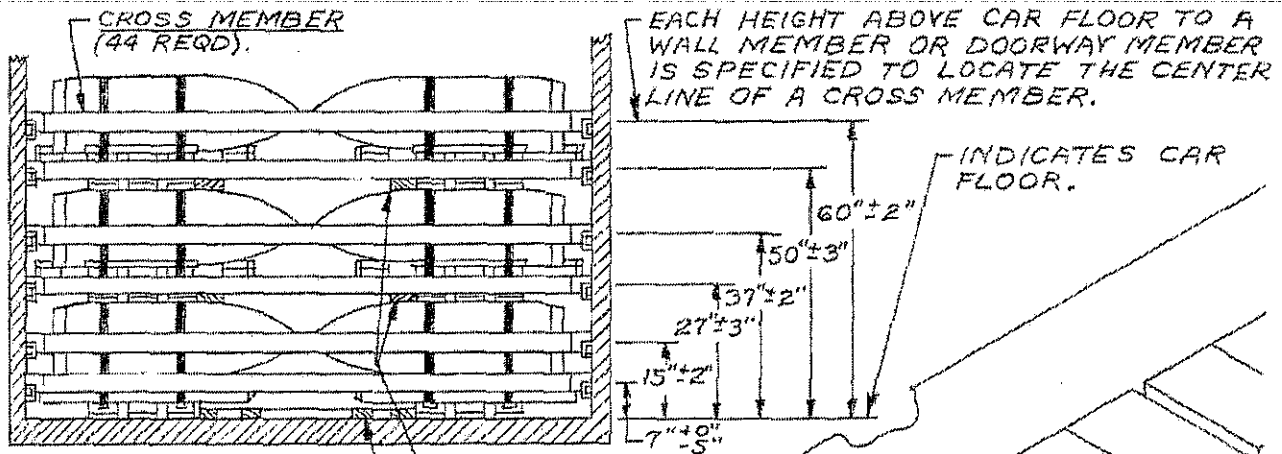


NOTE: 80 PALLET UNITS SHOWN
 GROSS WEIGHT - 127,076 LBS.

FLOOR-LINE ANTI-SWAY BRACE (16 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 132. PRE-POSITION AS SHOWN IN "POSITION FOR ANTI-SWAY BRACE A" DETAIL ON PAGE 132.

UPPER-LAYER ANTI-SWAY BRACE (24 REQD). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 133. POSITION ON BOMBS OF ALREADY-POSITIONED PALLETS PRIOR TO LOADING NEXT LAYER. SEE THE "POSITION FOR ANTI-SWAY BRACE C" DETAIL ON PAGE 133.

TYPICAL LOAD OF BOMBS, 750 LB, PALLETIZED
(AIR FORCE UNIT LOAD PER TPO 1325-926-1868) IN
50'-6" LONG BY 9'-2" WIDE OR LESS BOX CAR EQUIPPED WITH
MECHANICAL BRACING DEVICES (CROSS MEMBERS)

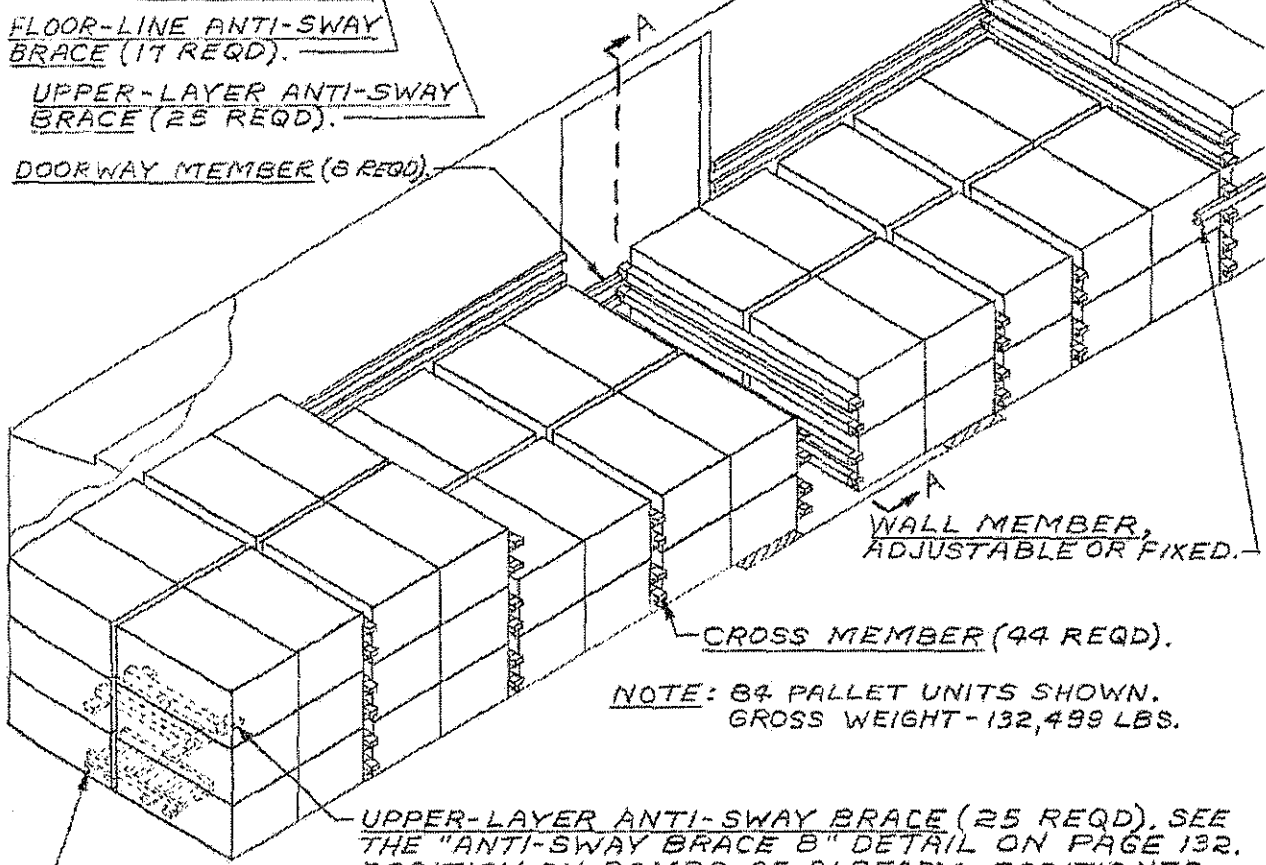


SECTION A-A

FLOOR-LINE ANTI-SWAY BRACE (17 REQD).

UPPER-LAYER ANTI-SWAY BRACE (25 REQD).

DOORWAY MEMBER (8 REQD).

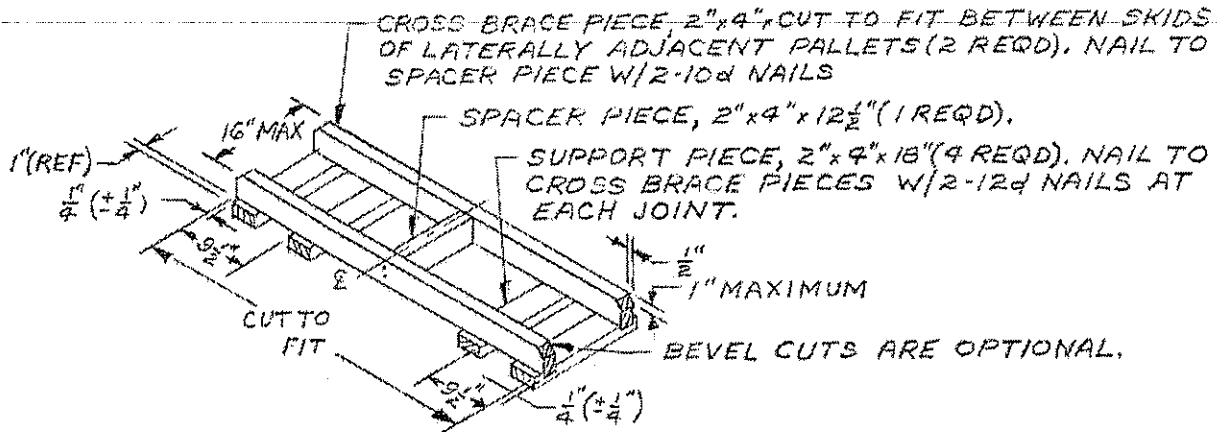


NOTE: 84 PALLET UNITS SHOWN. GROSS WEIGHT - 132,499 LBS.

UPPER-LAYER ANTI-SWAY BRACE (25 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 132. POSITION ON BOMBS OF ALREADY-POSITIONED PALLET'S PRIOR TO LOADING NEXT LAYER. SEE "POSITION FOR ANTI-SWAY BRACE B" DETAIL ON PAGE 132.

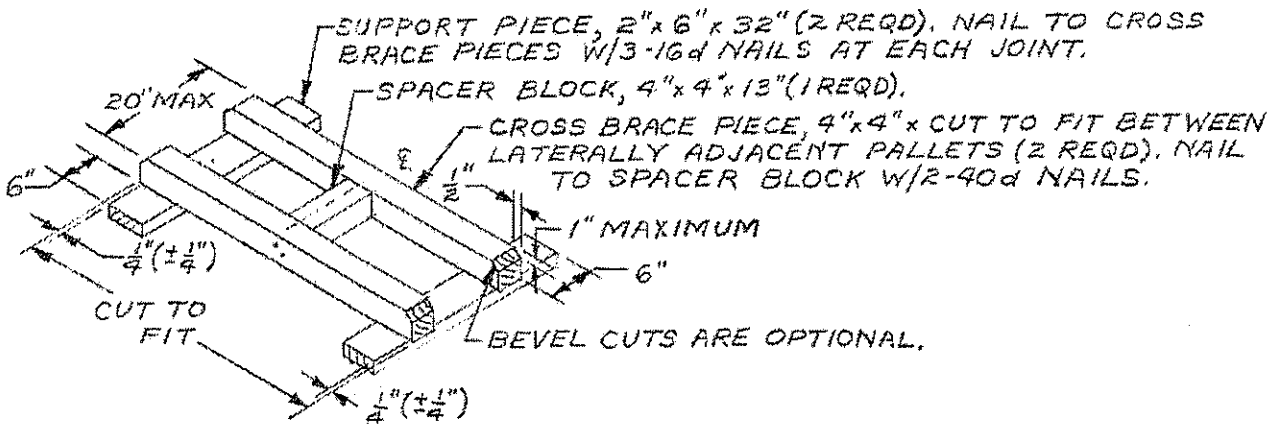
FLOOR-LINE ANTI-SWAY BRACE (17 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 132. PRE-POSITION AS SHOWN IN "POSITION FOR ANTI-SWAY BRACE A" DETAIL ON PAGE 132.

TYPICAL LOAD OF BOMBS, 750 LB, PALLETIZED (AIR FORCE UNIT LOAD PER TPO 1325-926-1868) IN 50'-6" LONG BY 9'-4" OR WIDER BOX CAR EQUIPPED WITH MECHANICAL BRACING DEVICES (CROSS MEMBERS) PAGE 131



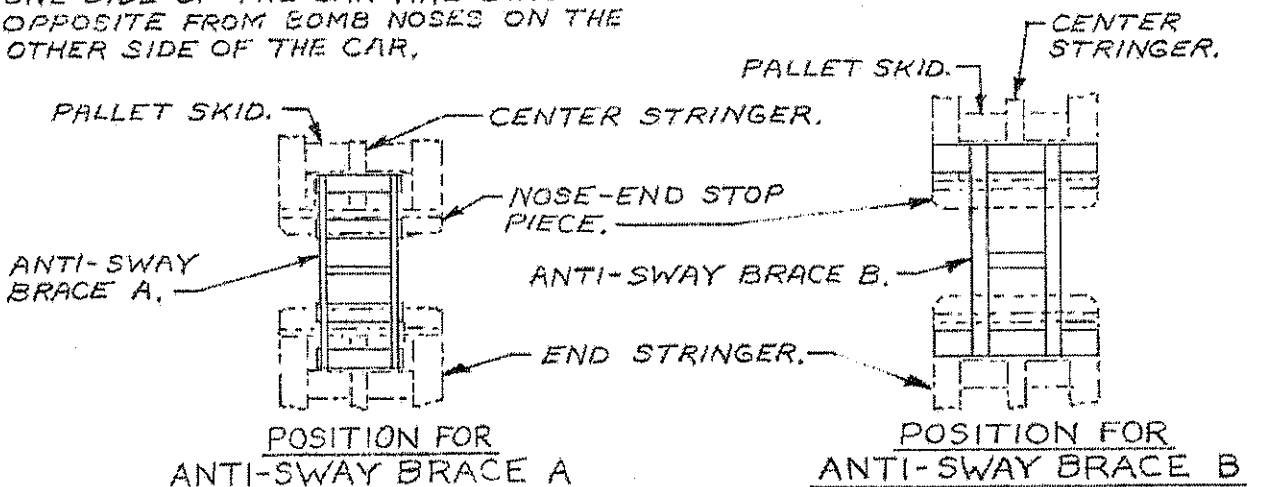
ANTI-SWAY BRACE A

THIS ANTI-SWAY BRACE IS DESIGNED FOR FLOOR-LINE LATERAL BRACING.



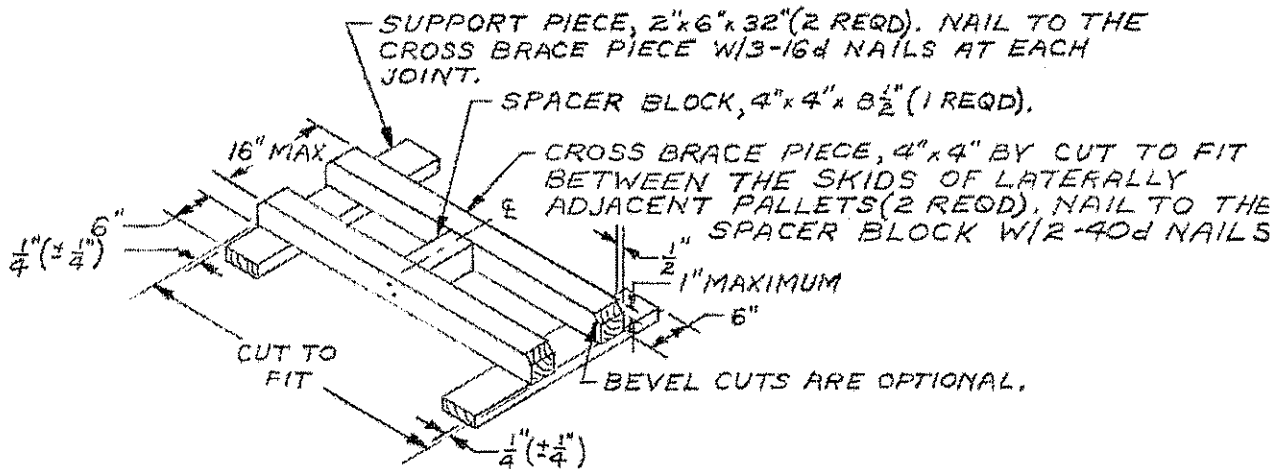
ANTI-SWAY BRACE B

THIS ANTI-SWAY BRACE IS DESIGNED FOR LATERAL BRACING IN 2ND OR 3RD LAYER OF LOAD WHEN BOMB NOSES ON ONE SIDE OF THE CAR ARE DIRECTLY OPPOSITE FROM BOMB NOSES ON THE OTHER SIDE OF THE CAR.



THIS VIEW SHOWS LOCATION OF ANTI-SWAY BRACE A USED FOR LATERAL BRACING IN BOTTOM LAYER OF A LOAD.

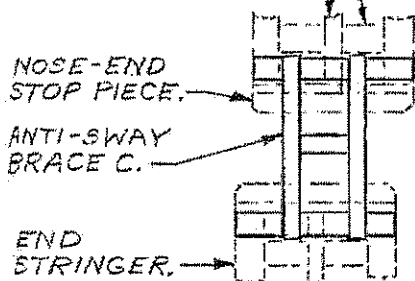
THIS VIEW SHOWS LOCATION OF ANTI-SWAY BRACE B USED FOR LATERAL BRACING IN THE SECOND AND THIRD LAYERS OF A LOAD.



ANTI-SWAY BRACE C

THIS ANTI-SWAY BRACE IS DESIGNED FOR LATERAL BRACING IN 2ND OR 3RD LAYER OF LOAD WHEN BOMB NOSES ON ONE SIDE OF THE CAR HAVE BEEN OFFSET FROM BOMB NOSES ON THE OTHER SIDE OF THE CAR.

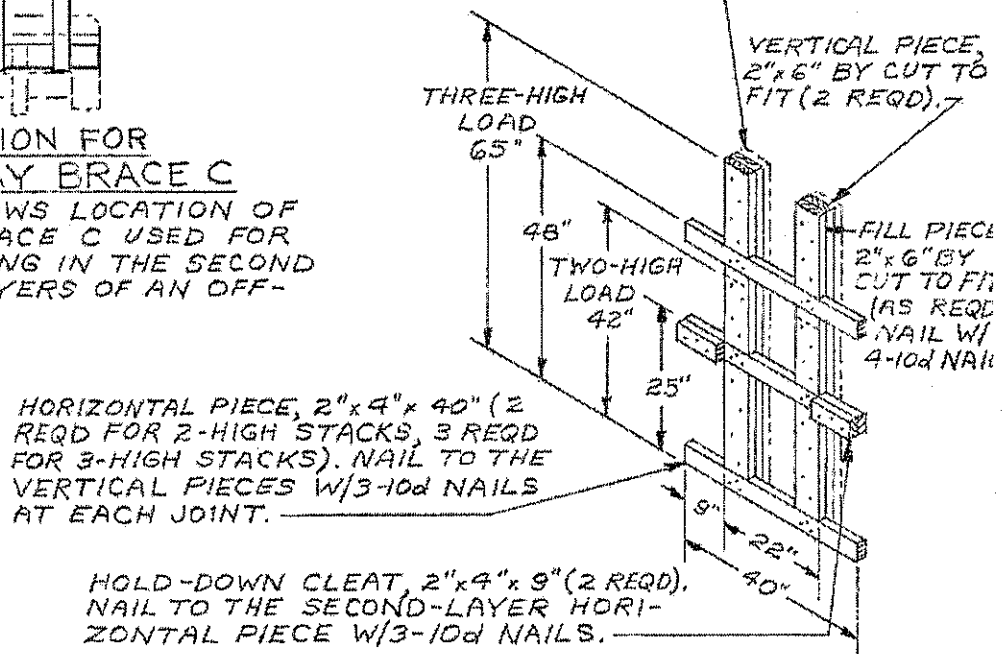
CENTER STRINGER, PALLET SKID.



POSITION FOR ANTI-SWAY BRACE C

THIS VIEW SHOWS LOCATION OF ANTI-SWAY BRACE C USED FOR LATERAL BRACING IN THE SECOND AND THIRD LAYERS OF AN OFF-SET LOAD.

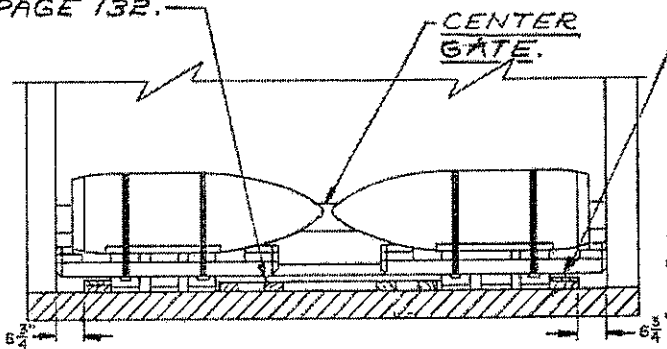
SOLID FILL, 2"x6" MATERIAL (SINGLE THICK FOR 9'-0" AND 9'-2" WIDE CARS, DOUBLED FOR LESS THAN 9'-0"). NAIL W/1-10d NAIL EVERY 8".



GATE

FLOOR-LINE ANTI-SWAY BRACE (17 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 132. PRE-POSITION AS SHOWN IN "POSITION FOR ANTI-SWAY BRACE A" DETAIL ON PAGE 132.

REFER TO PAGES 22 THRU 26 FOR NOTES ON LOAD DIVIDER CARS.



DOORWAY PROTECTION AND SIDE BLOCKING, 2" x 6" x 28" AND 1" x 6" x 28" (6 EACH REQD). PRE-POSITION AS SHOWN AND NAIL THE 1" x 6" PIECE THRU THE 2" x 6" PIECE INTO THE CAR FLOOR W/6-20d NAILS.

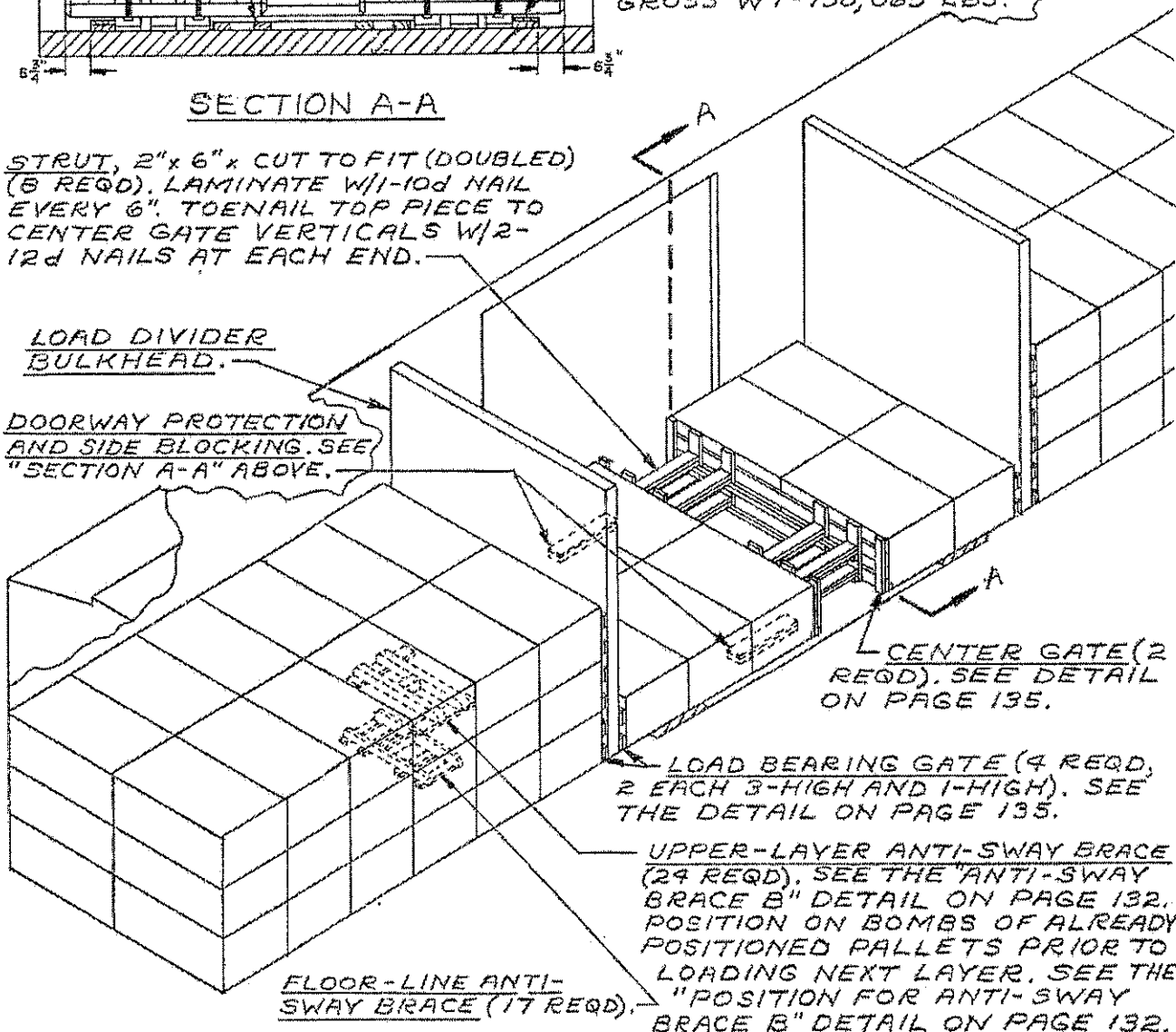
NOTE:
82 PALLET UNITS SHOWN
GROSS WT-130,065 LBS.

SECTION A-A

STRUT, 2" x 6" x CUT TO FIT (DOUBLED) (8 REQD). LAMINATE W/1-10d NAIL EVERY 6". TOENAIL TOP PIECE TO CENTER GATE VERTICALS W/2-12d NAILS AT EACH END.

LOAD DIVIDER BULKHEAD.

DOORWAY PROTECTION AND SIDE BLOCKING. SEE "SECTION A-A" ABOVE.



CENTER GATE (2 REQD). SEE DETAIL ON PAGE 135.

LOAD BEARING GATE (4 REQD, 2 EACH 3-HIGH AND 1-HIGH). SEE THE DETAIL ON PAGE 135.

UPPER-LAYER ANTI-SWAY BRACE (24 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 132. POSITION ON BOMBS OF ALREADY-POSITIONED PALLET'S PRIOR TO LOADING NEXT LAYER. SEE "POSITION FOR ANTI-SWAY BRACE B" DETAIL ON PAGE 132.

FLOOR-LINE ANTI-SWAY BRACE (17 REQD).

TYPICAL LOAD OF BOMBS, 750 LB, PALLETIZED (AIR FORCE UNIT LOAD PER TPO 1325-926-1868) IN A 50'-6" LONG BY 9'-2" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDERS

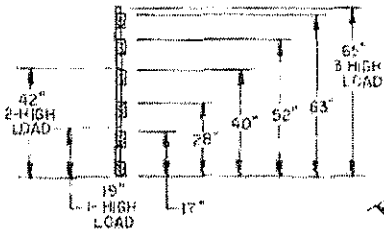
FILL PIECE, 2"x6"x12" (AS REQD). NAIL TO BEARING PIECE W/3-10d NAILS.

FILL PIECE, 2"x6"x CUT TO FIT (AS REQD). NAIL TO A BEARING PIECE W/1-10d NAIL EVERY 6".

VERTICAL PIECE, 2"x9" x LENGTH TO SUIT (2 REQD). NAIL TO THE BEARING PIECES W/3-10d NAILS EACH JOINT.

BEARING PIECE, 2"x6" x CAR WIDTH MINUS 1/2" (AS REQD).

STOP BLOCK, 2"x4"x9" (2 REQD). NAIL TO LOWER FILL PIECE W/3-10d NAILS. NOTE: ONLY REQUIRED WHEN GATE IS IN DOORWAY AREA OF LOAD DIVIDER CAR EQUIPPED WITH CONVENTIONAL SLIDING DOORS.



END VIEW

LOAD BEARING GATE

NOTE THAT 1/2" OR THICKER PLYWOOD, IN CONJUNCTION WITH BEARING PIECES APPLIED AT THE SPECIFIED HEIGHTS, MAY BE USED IN LIEU OF THE ABOVE GATE.

VERTICAL SUPPORT PIECE, 2"x4"x24" (2 REQD). NAIL TO HORIZONTAL PIECES AND/OR FILL PIECE W/3-10d NAILS AT EACH JOINT.

HORIZONTAL PIECE, 2"x6" x CAR WIDTH MINUS 1/2" (2 REQD)

HOLD DOWN, 2"x2"x9" (2 REQD). NAIL TO THE FILL PIECE W/2-10d NAILS.

FILL PIECE, 2" x 3" x CAR WIDTH MINUS 1/2" (1 REQD).

CAR WIDTH MINUS 1/2"

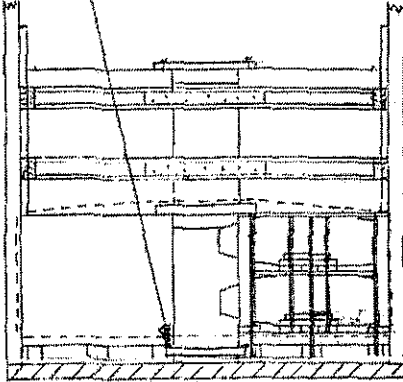
STRUT LEDGER, 2"x2"x8'-0" (2 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT. THE TOP LEDGER SHOULD NOT BE NAILED UNTIL BOTTOM STRUT IS INSTALLED.

CENTER GATE

VERTICAL PIECE, 2"x6"x24" (4 REQD). NAIL TO HORIZONTAL PIECES AND/OR FILL PIECE W/3-10d NAILS AT EACH JOINT.

WHEN GATES ARE FOR USE WITH SOLID FILL IN LIEU OF STRUTS, OMIT LEDGERS AND INCREASE VERTICAL PIECES TO 36".

DOORWAY BLOCKING, 2"x4"x CUT TO FIT BETWEEN PALLETS AND 2"x4"x CUT TO FIT PLUS 4" (6 EACH REQD, 3 PER LOAD UNIT). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/5-16d NAILS.



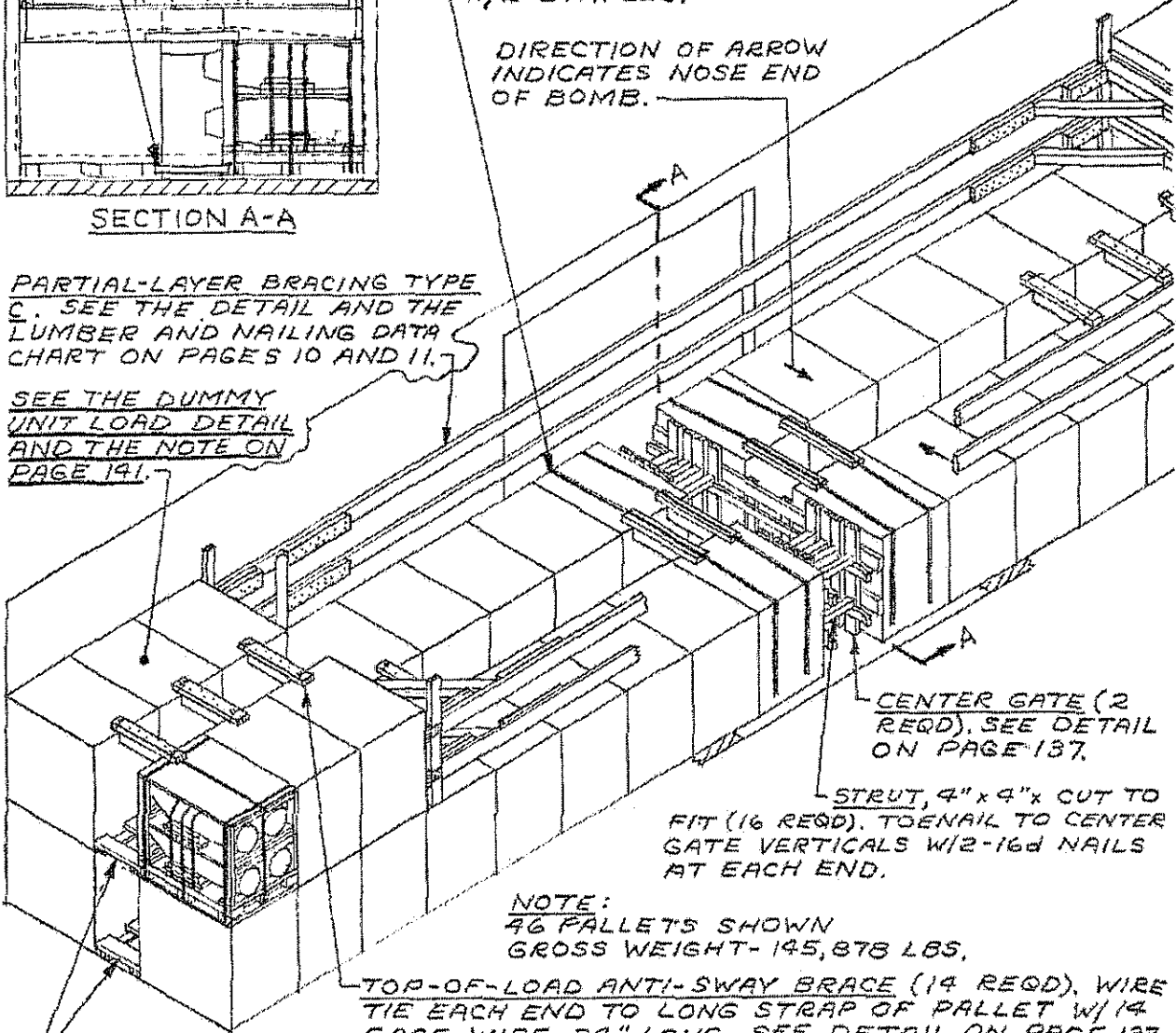
SECTION A-A

DOORWAY PROTECTION, 1 1/2" x .035" x 28'-0" LONG STEEL STRAPPING (4 REQD), THREAD BETWEEN DECK BOARDS AND SKIDS, ADJACENT TO OUTER STRINGER OF PALLET. STAPLE TO TOP-OF-LOAD ANTI-SWAY BRACE W/2 STAPLES.

DIRECTION OF ARROW INDICATES NOSE END OF BOMB.

PARTIAL-LAYER BRACING TYPE C. SEE THE DETAIL AND THE LUMBER AND NAILING DATA CHART ON PAGES 10 AND 11.

SEE THE DUMMY UNIT LOAD DETAIL AND THE NOTE ON PAGE 191.



CENTER GATE (2 REQD). SEE DETAIL ON PAGE 137.

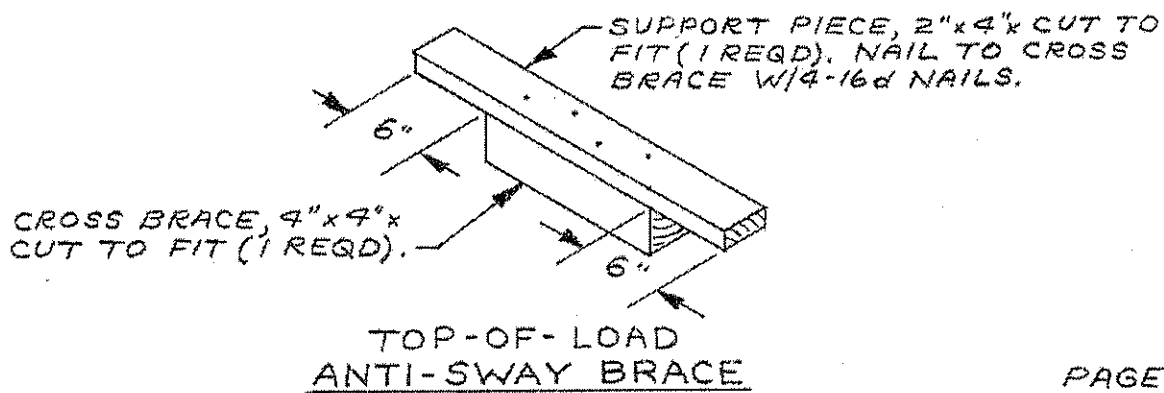
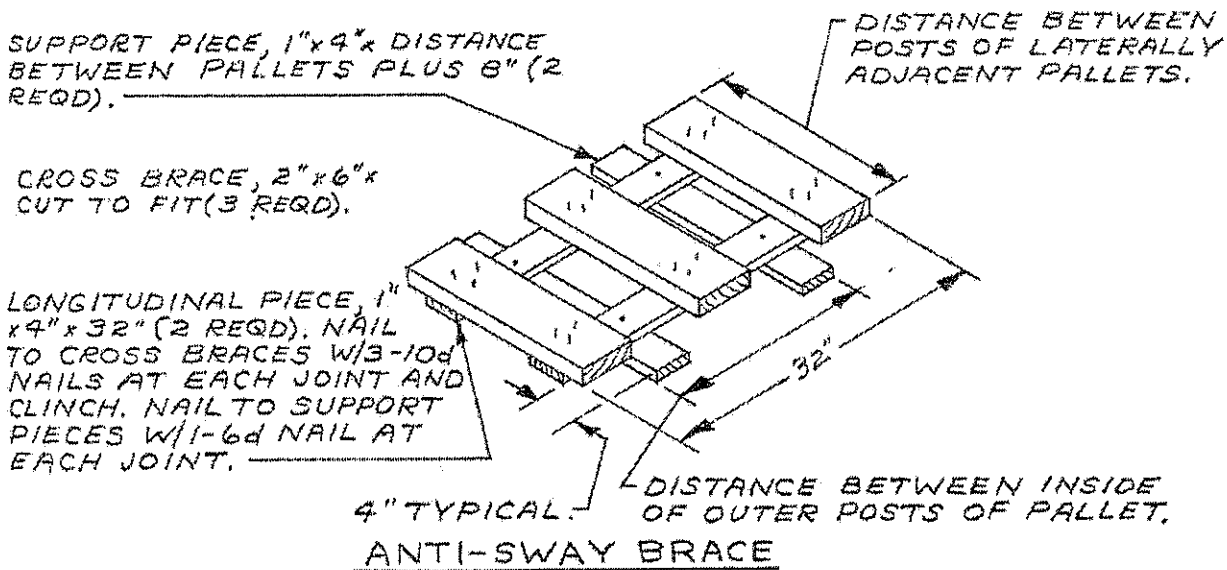
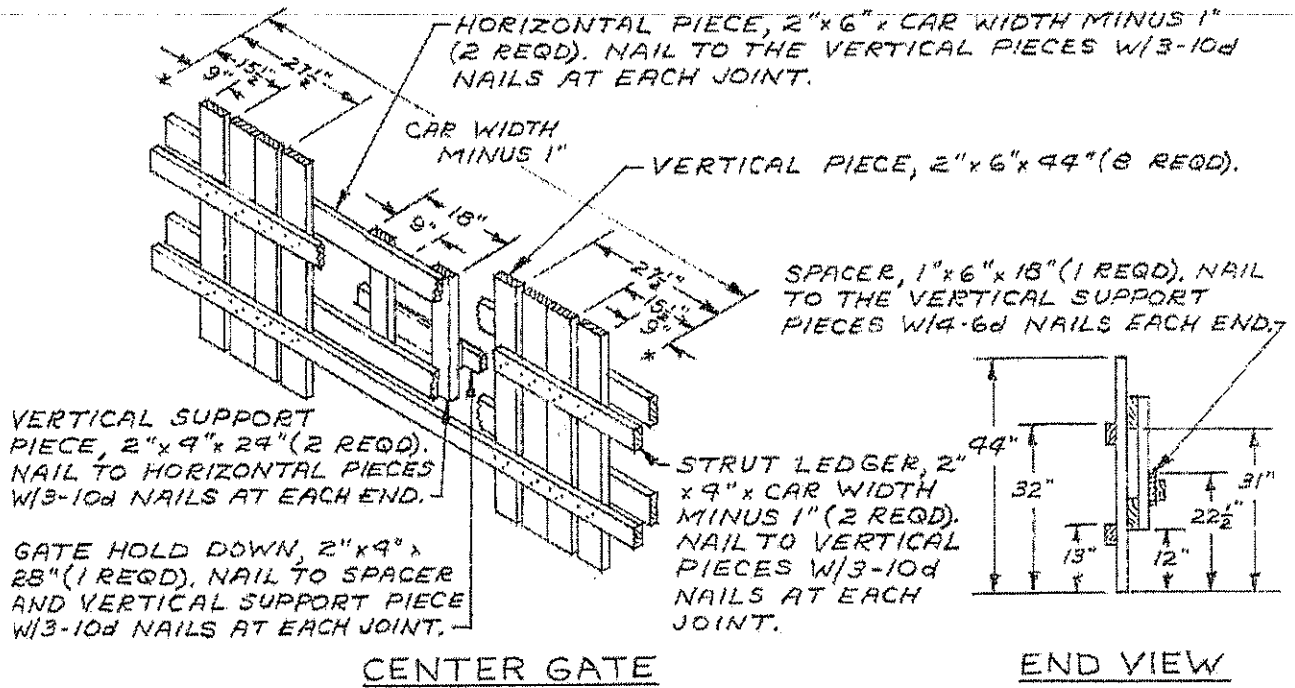
STRUT, 4" x 4" x CUT TO FIT (16 REQD). TOENAIL TO CENTER GATE VERTICALS W/2-16d NAILS AT EACH END.

NOTE:
46 PALLETS SHOWN
GROSS WEIGHT-145,878 LBS.

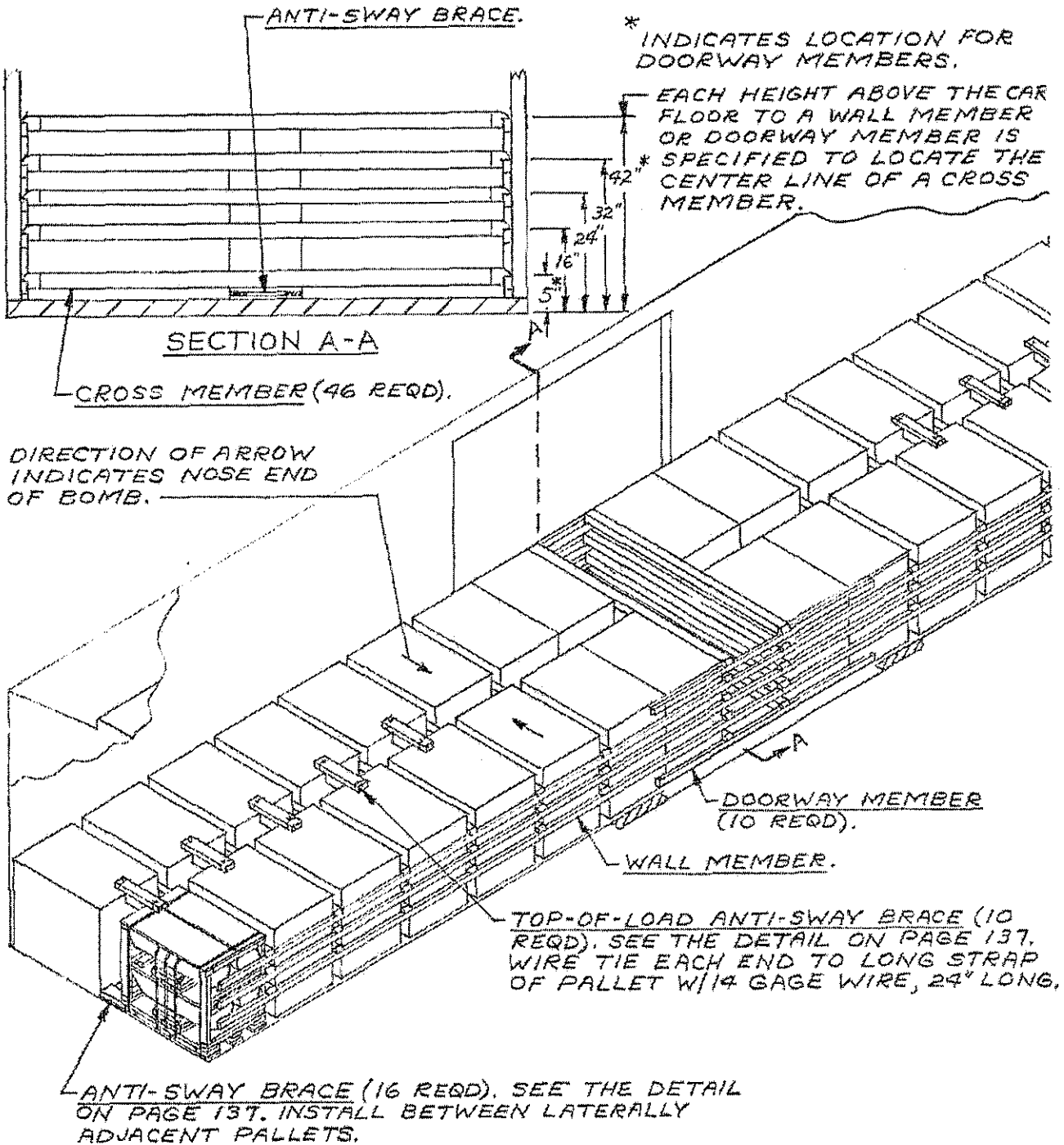
TOP-OF-LOAD ANTI-SWAY BRACE (14 REQD), WIRE TIE EACH END TO LONG STRAP OF PALLET W/14 GAGE WIRE, 24" LONG. SEE DETAIL ON PAGE 137.

ANTI-SWAY BRACE (21 REQD). SEE DETAIL ON PAGE 137. INSTALL BETWEEN ALL LATERALLY ADJACENT PALLETS EXCEPT THOSE IN DOORWAY.

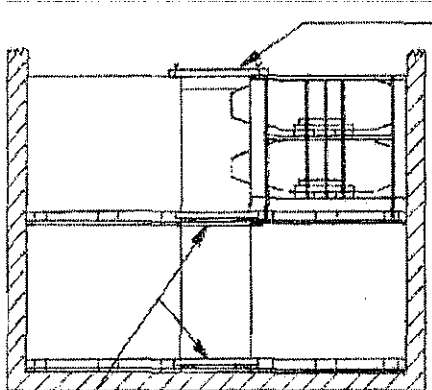
TYPICAL LOAD OF BOMBS, 750 LB, PALLETIZED 4 PER PALLET (AIR FORCE UNIT LOAD PER TPO 1325-232-6331, REV F) IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR



NOTE:
 32 PALLET UNITS SHOWN
 GROSS WT. - 100,400 LBS.



TYPICAL LOAD OF BOMBS, 750 LB, PALLETIZED 4 PER PALLET (AIR FORCE UNIT LOAD PER TPO 1325-232-6331, REV F) IN A 50'-6" LONG BOX CAR EQUIPPED WITH MECHANICAL BRACING DEVICES (CROSS MEMBERS)



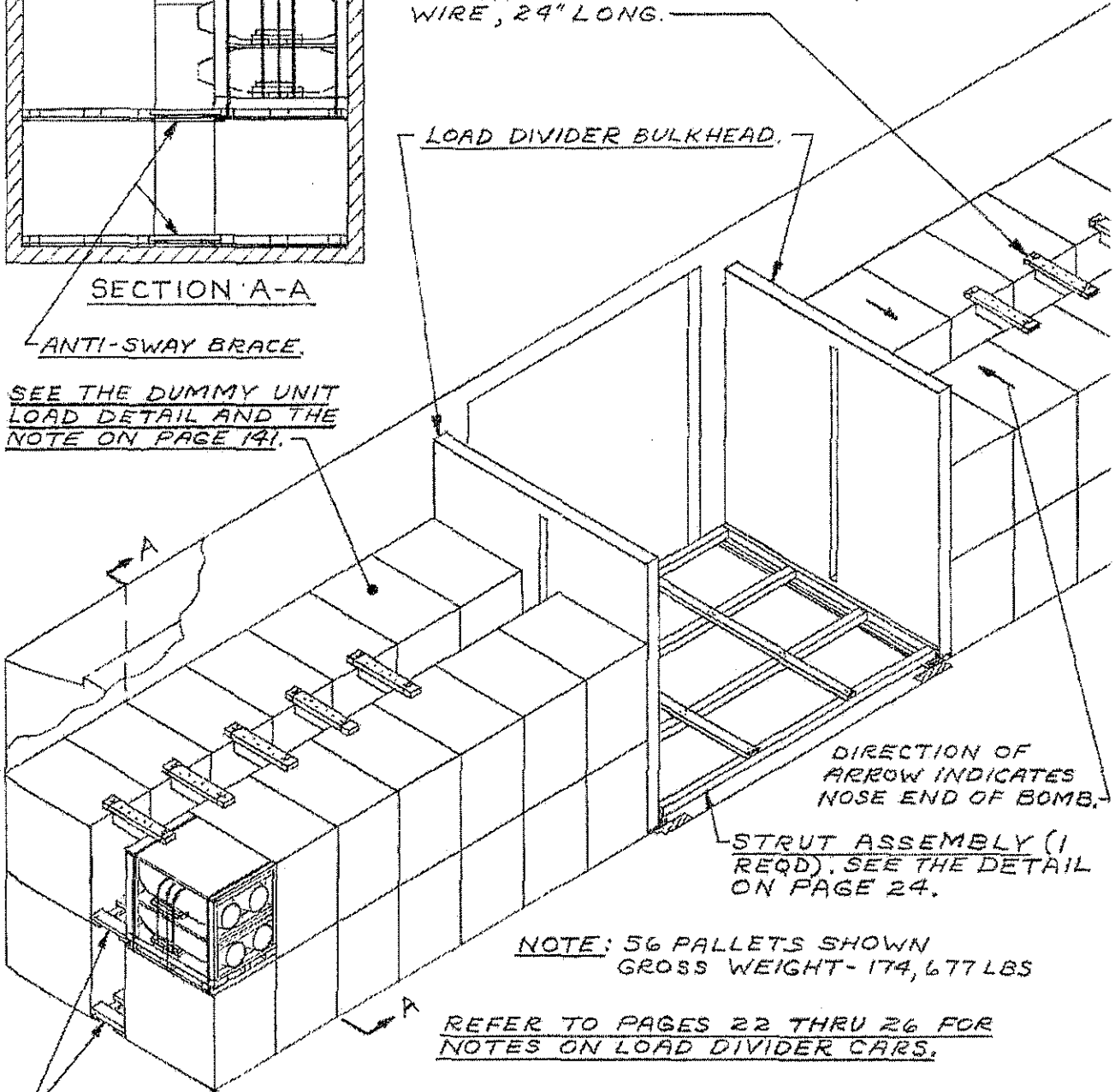
SECTION A-A

ANTI-SWAY BRACE.

TOP-OF-LOAD ANTI-SWAY BRACE (10 REQD). SEE THE DETAIL ON PAGE 137. WIRE TIE EACH END TO LONG STRAP OF PALLET W/19 GAGE WIRE, 24" LONG.

LOAD DIVIDER BULKHEAD.

SEE THE DUMMY UNIT LOAD DETAIL AND THE NOTE ON PAGE 141.



DIRECTION OF ARROW INDICATES NOSE END OF BOMB.

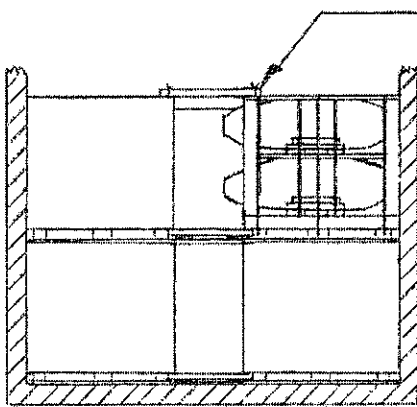
STRUT ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 24.

NOTE: 56 PALLETS SHOWN GROSS WEIGHT- 174,677 LBS

REFER TO PAGES 22 THRU 26 FOR NOTES ON LOAD DIVIDER CARS.

ANTI-SWAY BRACE (28 REQD). SEE DETAIL ON PAGE 137. INSTALL BETWEEN LATERALLY ADJACENT PALLETS IN BOTH LAYERS.

TYPICAL LOAD OF BOMBS, 750 LB, PALLETIZED 4 PER PALLET (AIR FORCE UNIT LOAD PER TPO 1325-232-6331, REV F) IN A 50'-6" LONG BY 9'-2" WIDE CAR EQUIPPED WITH LOAD DIVIDERS



SECTION A-A

TOP-OF-LOAD ANTI-SWAY BRACE (14 REQD). SEE DETAIL ON PAGE 137. WIRE TIE EACH END TO LONG STRAP OF PALLET W/1/4 GAGE WIRE, 29" LONG.

LOAD DIVIDER BULKHEAD.

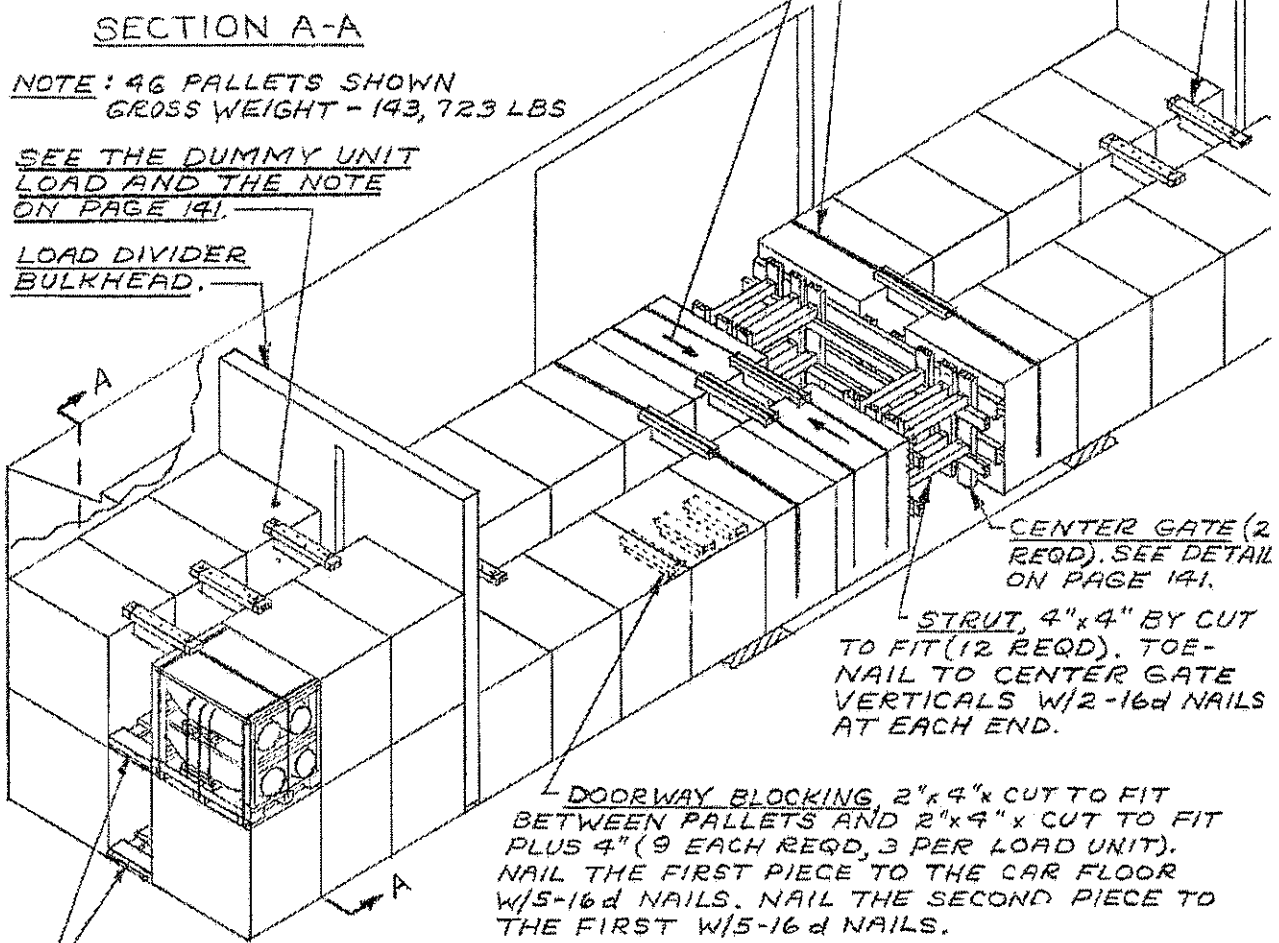
DOORWAY PROTECTION, 1/2" x .035" x 27'0" LONG STEEL STRAPPING (4 REQD). THREAD BETWEEN DECK BOARDS AND SKIDS, ADJACENT TO OUTER STRINGER OF PALLET. STAPLE TO TOP-OF-LOAD ANTI-SWAY BRACE W/2 STAPLES.

DIRECTION OF ARROW INDICATES NOSE END OF BOMB.

NOTE: 46 PALLETS SHOWN
GROSS WEIGHT - 143,723 LBS

SEE THE DUMMY UNIT
LOAD AND THE NOTE
ON PAGE 141.

LOAD DIVIDER
BULKHEAD.



CENTER GATE (2 REQD). SEE DETAIL ON PAGE 141.

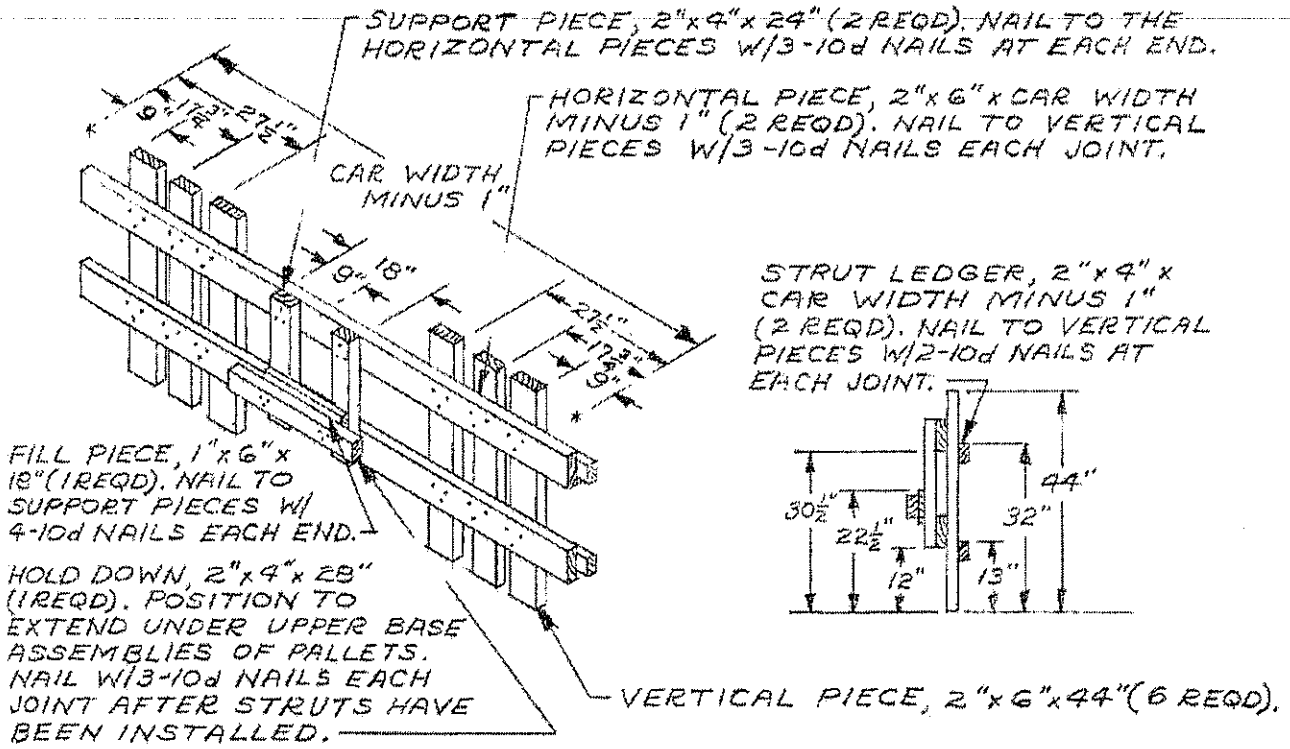
STRUT, 4" x 4" BY CUT
TO FIT (12 REQD). TOE-NAIL TO CENTER GATE VERTICALS W/2-16d NAILS AT EACH END.

DOORWAY BLOCKING, 2" x 4" x CUT TO FIT
BETWEEN PALLETS AND 2" x 4" x CUT TO FIT
PLUS 4" (9 EACH REQD, 3 PER LOAD UNIT).
NAIL THE FIRST PIECE TO THE CAR FLOOR
W/5-16d NAILS. NAIL THE SECOND PIECE TO
THE FIRST W/5-16d NAILS.

ANTI-SWAY BRACE (20 REQD). SEE THE DETAIL ON PAGE 137. INSTALL BETWEEN ALL LATERALLY ADJACENT PALLETS IN BOTH LAYERS EXCEPT THOSE UNITS IN THE DOORWAY.

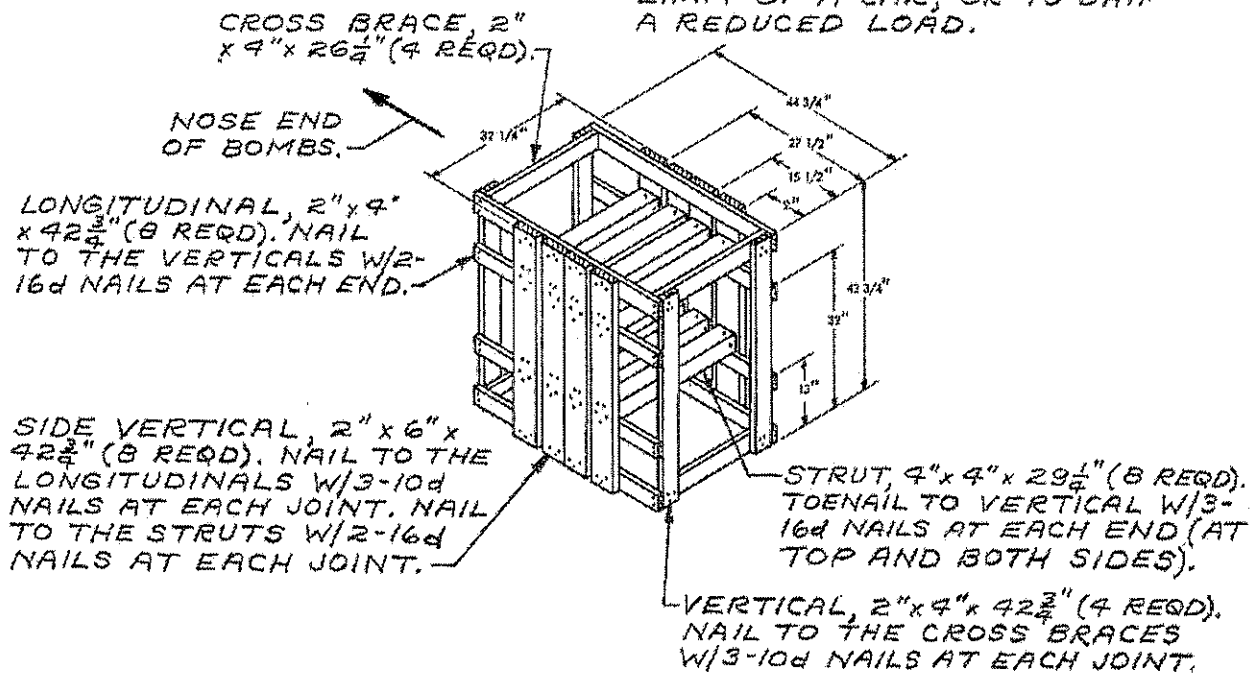
REFER TO PAGES 22
THRU 26 FOR NOTES
ON LOAD DIVIDER
CARS.

TYPICAL LOAD OF BOMBS, 750 LB, PALLETIZED 4 PER
PALLET (AIR FORCE UNIT LOAD PER TPO 1325-232-
6331, REV F) IN A 50'-6" LONG BY 9'-2" WIDE
CAR EQUIPPED WITH LOAD DIVIDERS

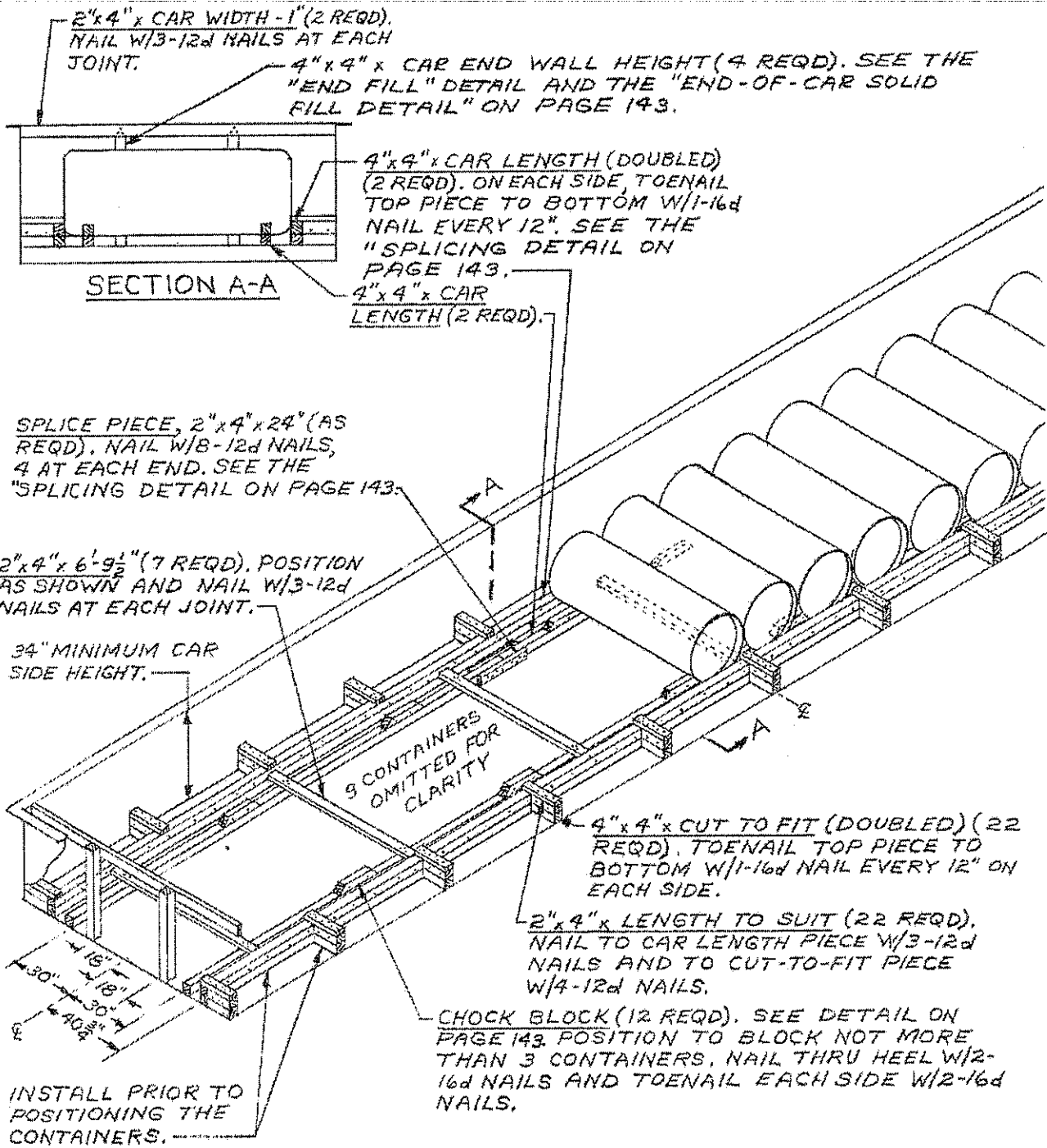


CENTER GATE

NOTE: DUMMY UNIT LOADS WILL BE USED ONLY AS NEEDED TO AVOID EXCEEDING THE LOAD LIMIT OF A CAR, OR TO SHIP A REDUCED LOAD.

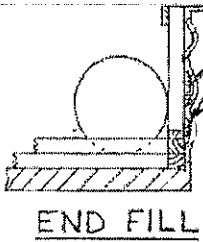


DUMMY UNIT LOAD



NOTE:
20 CONTAINERS SHOWN
GROSS WT. - 53,455 LBS.

TYPICAL LOAD OF ONE-TON CONTAINERS
IN 50'-6" LONG BY 9'-6" WIDE GONDOLA CAR



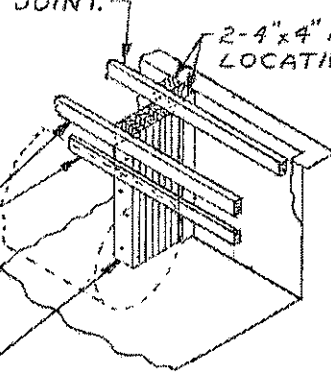
SOLID FILL TO FILL VOIDS OF CORRUGATIONS NEAR POINT OF CONTAINER CONTACT WITH 9"x4" UPRIGHTS, NAIL W/12d NAILS.

2"x4"x CAR WIDTH-1" NAIL W/3-12d NAILS AT EACH JOINT.

2-4"x4" AT EACH LOCATION.

2"x4"x CAR WIDTH-1" (2 REQD), POSITION 1 AT TOP OF FILL AND 1 AS LOW AS PRACTICAL, NAIL W/3-12d NAILS AT EACH JOINT.

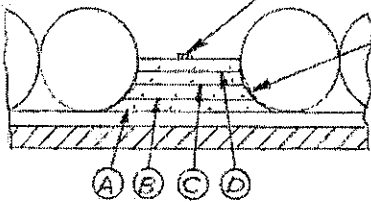
FILL MATERIAL, 2"x6"x CAR SIDE HEIGHT-4", NAIL TO 9"x4" AND/OR LAMINATE W/4-10d NAILS.



SOLID FILL DETAIL

THIS TYPE FILL IS APPLICABLE FOR UP TO 12" IN EITHER END OF A CAR. FOR AN EXCESS SPACE OF MORE THAN 24", SEE THE "CENTER FILL DETAIL" BELOW.

TIE PIECE, 2"x4"x CAR WIDTH-1" (1 REQD EVERY 48"). NAIL W/3-12d NAILS EACH JOINT.



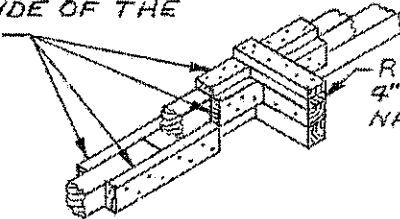
TOENAIL EACH SIDE W/1-16d NAIL EVERY 12".

CENTER FILL DETAIL

THIS TYPE FILL IS APPLICABLE FOR A SPACE OF 24" OR MORE. FOR LESS THAN 24" SPACE, SEE THE "SOLID FILL DETAIL" ABOVE.

SPLICE PIECE, 2"x4"x 24" (2 REQD EACH JOINT). NAIL W/4-12d NAILS ON EACH SIDE OF THE JOINT.

RISER PIECE, 2"x4"x CUT TO FIT. NAIL W/4-12d NAILS.



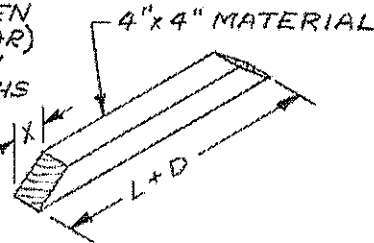
SPLICING DETAIL

THIS VIEW SHOWS TYPICAL SPLICING OF THE TOP LAYER OF THE DOUBLED 4"x4"x CAR LENGTH PIECES WHEN JOINT IS NEAR A STRUT, AND ALSO THE SPLICING OF THE BOTTOM LAYER PIECES.

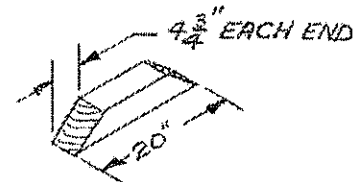
CENTER FILL CHART			
	X	ANGLE	L*
A	4-3/4"	37°	20"
B	2-1/4"	53°	10-1/2"
C	1-1/4"	70°	4-1/4"
D	-	90°	AS REQD

*LENGTH OF PIECE MARKED (D) (LENGTH OF VOID SPACE BETWEEN CONTAINERS NEAR CENTER OF CAR) MUST BE ADDED TO LENGTH IN THE CHART FOR TOTAL LENGTHS OF CHOCK BLOCKS (A), (B) OR (C).

EACH END.



CENTER-FILL CHOCK BLOCK



CHOCK BLOCK
4"x4" MATERIAL