

APPROVED BY
 BUREAU OF EXPLOSIVES
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LOADING AND BRACING (CL & LCL) IN BOX CARS \odot OF BLU-27 AND BLU-32 FIRE BOMB SERIES PACKED IN OPEN WOODEN CRATES

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\odot INCLUDES PROCEDURES FOR CONVENTIONAL BOX CARS AND BOX CARS EQUIPPED WITH MECHANICAL BRACING DEVICES OF VARIOUS DESIGN AND MANUFACTURE.

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			19 48 4556 5CB3

DO NOT SCALE

GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AMCR 740-13, AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE OUTLOADING PROCEDURES SPECIFIED HEREIN ARE APPLICABLE TO THE BLU-27 AND BLU-32 FIRE BOMBS WHEN PACKAGED IN AN OPEN, WIREBOUND, WOODEN CRATE. SUBSEQUENT REFERENCE TO CRATE HEREIN MEANS THE CRATE WITH CONTENTS.
- C. THE LOADS AS SHOWN HEREIN ARE BASED ON BOX CARS EQUIPPED WITH MECHANICAL BRACING DEVICES HAVING ADJUSTABLE AND/OR FIXED WALL MEMBERS, OR ARE BASED ON CONVENTIONAL BOX CARS.
- D. BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS HAVE BEEN SHOWN. HOWEVER, THE DEPICTED OUTLOADING PROCEDURES ARE ALSO APPLICABLE FOR CARS EQUIPPED WITH PLUG DOORS. **CAUTION:** DUNNAGE MATERIAL MUST NOT BE NAILED TO ANY PLUG DOOR, WHETHER AUXILIARY OR MAIN.
- E. THE OUTLOADING PROCEDURES SPECIFIED ON PAGES 4 THROUGH 8 ARE FOR CONVENTIONAL TYPE BOX CARS OF VARIOUS LENGTH AND WIDTH COMBINATIONS.
- F. THE OUTLOADING PROCEDURES SPECIFIED ON PAGES 14 THROUGH 19 ARE FOR BOX CARS EQUIPPED WITH MECHANICAL BRACING DEVICES, AND MAY BE ADAPTED AS REQUIRED TO FACILITATE THE USE OF BOX CARS EQUIPPED WITH VARIOUS TYPES OF SELF-CONTAINED MECHANICAL BRACING DEVICES. HOWEVER, FIXED OR ADJUSTABLE WALL MEMBERS AND DOORWAY MEMBERS WITHIN THESE CARS MUST PROVIDE FOR THE INSTALLATION OF LOAD BLOCKING CROSS MEMBERS AT THE HEIGHTS SPECIFIED HEREIN. **CAUTION:** BOX CARS EQUIPPED WITH MEMBERS WHICH DO NOT MEET THE LOCATION REQUIREMENTS MUST NOT BE USED.
1. A CROSS MEMBER, WHEN USED AS SPECIFIED BY ANY ONE OF THE OUTLOADING METHODS CONTAINED HEREIN, WILL NOT BE RELIED UPON TO RETAIN MORE LADING WEIGHT ON EITHER SIDE THAN AS SHOWN FOR THE SPECIFIC OUTLOADING METHOD BEING USED. VOIDS LENGTHWISE WITHIN THE LOAD MUST BE HELD TO A MINIMUM AND CROSS MEMBERS MUST BE PLACED AGAINST THE LADING AS TIGHTLY AS THE SPACING OF LOCKING HOLES IN THE WALL MEMBER PERMITS. LOCKING BARS (LEVER JACKS) SHOULD BE USED FOR THIS PURPOSE. AN ADDITIONAL 1/2" OF ADJUSTMENT CAN BE MADE BY TURNING A CROSS MEMBER END-FOR-END WHEN LOCKING PINS ON THE CROSS MEMBER ARE OFF-CENTER. **NOTE:** IT IS RECOMMENDED THAT EACH CROSS MEMBER BE INSTALLED WITH THE ENDS ATTACHED AS NEARLY AS POSSIBLE IN "MATED" POSITIONS (AT EQUAL HEIGHTS AND AT EQUAL DISTANCES FROM THE END OF THE CAR).
 2. **CAUTION:** ALL BLOCKING AND BRACING COMPONENTS IN EMPTY CARS AND ALL UNUSED COMPONENTS IN LOADED CARS MUST BE "SECURED" FOR SHIPMENT---ADJUSTABLE WALL MEMBERS TO VERTICAL WALL ATTACHMENT RAILS, AND CROSS MEMBERS TO ADJUSTABLE WALL MEMBERS OR TO FIXED HORIZONTAL WALL MEMBERS OR TO DOORWAY MEMBERS, AND DOORWAY MEMBERS TO DOOR POSTS. COMPONENTS ASSIGNED TO EACH CAR MUST REMAIN THEREWITH EVEN THOUGH UNUSED DURING SOME SHIPMENTS.
 3. IF A CAR HAS A "BOWED END", RATHER THAN SQUARING OFF THE END BY INSTALLING DUNNAGE, ADDITIONAL CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED" END. THESE CROSS MEMBERS SHOULD BE INSTALLED IN THE SAME QUANTITY AND AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS.
- G. DETAILS OF CRATE:
- | | |
|-----------------------|--|
| CRATE DIMENSIONS | ----- 116-1/4" LONG X 25-3/4" WIDE X 35-1/8" HIGH. |
| GROSS WEIGHT (BLU-27) | ----- 1,020 POUNDS (APPROX). |
| GROSS WEIGHT (BLU-32) | ----- 766 POUNDS (APPROX). |
| TARE WEIGHT | ----- 270 POUNDS (APPROX). |

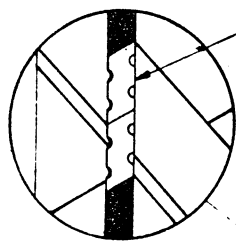
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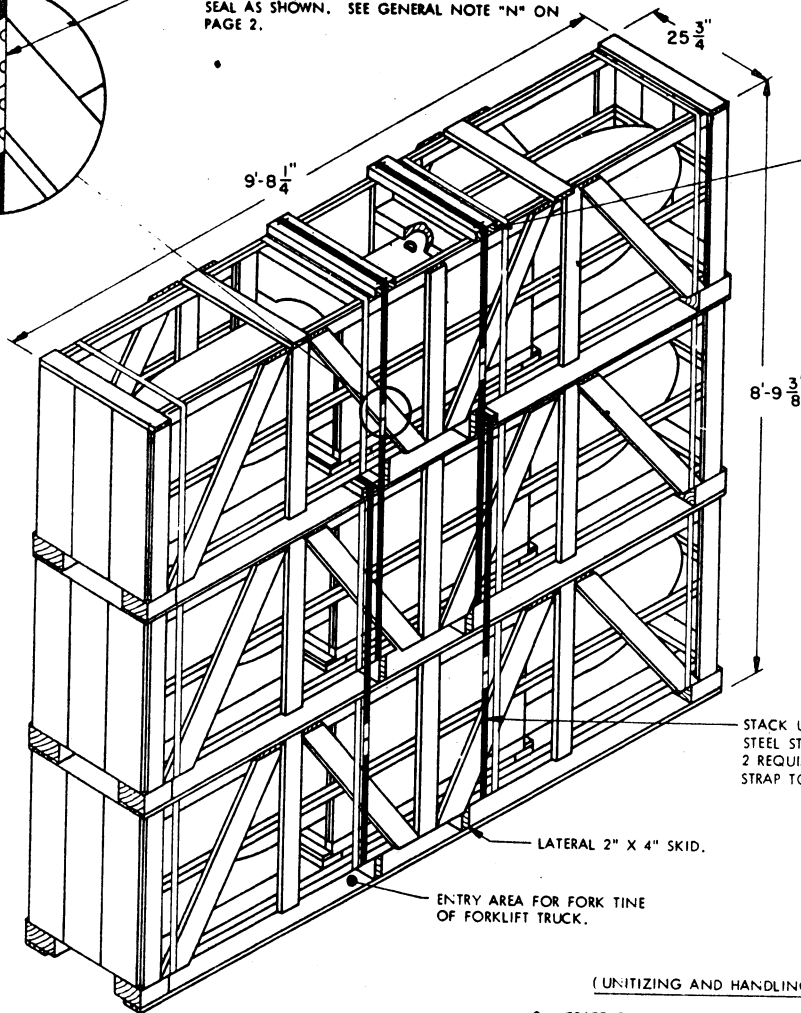
- H. THESE ITEMS ARE CLASSED AS A "FLAMMABLE LIQUID" AND WILL BE SHIPPED UNDER DOT SPECIAL PERMIT NO. 4580.
- J. THE NUMBER OF LADING UNITS MAY BE ADJUSTED TO FIT THE SIZE OF THE BOX CAR BEING LOADED OR THE QUANTITY TO BE SHIPPED; HOWEVER, THE APPROVED METHODS SPECIFIED HEREIN MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING, AND STAYING OF THE DESIGNATED ITEMS.
- K. OTHER TYPES OF LADING ITEMS MAY BE LOADED IN THE CARS WHICH ARE PARTIALLY LOADED WITH THE DESIGNATED ITEMS, PROVIDING THE TOTAL LOAD IS COMPATIBLE, EXISTING DIRECTIVES ARE NOT VIOLATED, AND THE OTHER LADING ITEMS ARE BLOCKED AND BRACED TO EQUAL THE BLOCKING AND BRACING CRITERIA SPECIFIED HEREIN.
- L. ONE AND ONE-QUARTER INCH (1-1/4") STEEL STRAPPING WILL BE USED TO UNITIZE STACKED CRATES AS SHOWN ON PAGE 3. IT IS RECOMMENDED THAT CRATES BE UNITIZED PRIOR TO PLACEMENT ABOARD THE CAR., SEE GENERAL NOTE "M".
- M. IN SOME INSTANCES, CRATES WILL ALREADY BE UNITIZED INTO STACKS WHEN OFFERED FOR LOADING. THESE UNITIZED STACKS SHOULD BE INSPECTED AND AS REQUIRED, LOOSE UNITIZING STEEL STRAPPING MUST BE REPLACED.
- N. WHEN ANY STRAP IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF TWO (2) SEALS (BUTTED TOGETHER) WITH TWO PAIR OF CRIMPS PER SEAL MUST BE USED TO SEAL THE JOINT.
- O. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-5/8" THICK BY 3-5/8" WIDE, AND 1" X 4" MATERIAL IS ACTUALLY 3/4" THICK BY 3-5/8" WIDE.
- P. **NOTICE:** A STAGGERED NAILING PATTERN WILL BE USED WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES. ALSO, A STAGGERED NAILING PATTERN WILL BE USED WHEN DUNNAGE IS NAILED TO THE FLOOR OR A SIDE WALL OF THE TRANSPORTING VEHICLE, OR WHEN LAMINATING DUNNAGE. ADDITIONALLY, THE NAILING PATTERN FOR AN UPPER PIECE OF LAMINATED DUNNAGE WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL FOR THAT PIECE WILL NOT BE DRIVEN THROUGH ONTO OR RIGHT BESIDE A NAIL IN A LOWER PIECE.
- Q. IF THE CAR BEING USED FOR A SHIPMENT IS EQUIPPED WITH A NAILABLE METAL FLOOR AND A NAIL SIZE FOR FLOOR NAILING IS MARKED ON THE SIDE WALL OF THE CAR, THAT GUIDANCE SHOULD BE APPLIED TO THE NAILING OF THE DEPICTED FLOOR-LINE BLOCKING. IF A NAIL SIZE IS NOT SPECIFIED IN THE CAR, 30d NAILS SHOULD BE USED.
- R. THROUGHOUT THIS PROCEDURAL DRAWING PORTIONS OF THE BLOCKING COMPONENTS AND OF THE DEPICTED CARS, SUCH AS A CAR SIDE WALL, HAVE BEEN OMITTED FROM THE LOAD VIEWS FOR CLARITY PURPOSES.
- S. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3 AND TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.

MATERIAL SPECIFICATIONS

- LUMBER -----: SEE TM 743-200-1, DUNNAGE LUMBER; FED SPEC MM-L-751.
- NAILS -----: COMMON, CEMENT COATED OR CHEMICALLY ETCHED, FED SPEC FF-N-105.
ALT: ANNULAR-RING TYPE NAILS OF THE SAME SIZE.
- STRAPPING, STEEL -----: TYPE I OR IV, CLASS A OR B, FED SPEC QQ-5-781.
- WIRE -----: FED SPEC QQ-W-461.
- STRAP SEAL, STRAP STAPLE: COMMERCIAL GRADE.



SEAL FOR 1-1/4" STEEL STRAPPING (2 REQUIRED PER UNITIZING STRAP). DOUBLE CRIMP EACH SEAL AS SHOWN. SEE GENERAL NOTE "N" ON PAGE 2.



STRAPPING BOARD, 2" X 4" X 25-3/4" (4 REQUIRED FOR A 3-HIGH STACK; 2 REQUIRED FOR A 2-HIGH STACK).

STACK UNITIZING STRAP, 1-1/4" X .035" X 17'-0" STEEL STRAPPING (4 REQUIRED FOR A 3-HIGH STACK; 2 REQUIRED FOR A 2-HIGH STACK). SECURE EACH STRAP TO A STRAPPING BOARD WITH TWO STAPLES.

LATERAL 2" X 4" SKID.

ENTRY AREA FOR FORK TINE OF FORKLIFT TRUCK.

TYPICAL STACK

UNITIZING AND HANDLING PROCEDURAL GUIDANCE

1. STACKING CRATES FOR UNITIZING.
 - A. PLACE AN UPPER CRATE AS CLOSE AS POSSIBLE IN VERTICAL ALIGNMENT WITH THE NEXT LOWER CRATE.
2. INSTALLATION OF 1-1/4" X .035" UNITIZING STEEL STRAPPING. SEE GENERAL NOTE "M" ON PAGE 2.
 - A. POSITION EACH OF THE TWO SETS OF UNITIZING STRAPS AROUND THE CRATES AS SHOWN. PLACE STRAPPING AS NEAR AS PRACTICAL TO THE LATERAL 2" X 4" SKIDS. THE STRAPPING SHOULD LAY FLAT AND STRAIGHT WITH THE BODY SURFACE OF THE CRATES; I.E., VERTICAL ALONG THE SIDES AND STRAIGHT ACROSS THE TOP AND BOTTOM OF THE STACK.
 - B. THE STRAPPING WILL BE FIRMLY TENSIONED, AND EACH END-OVER-END LAP JOINT WILL BE SEALED WITH TWO SEALS (BUTTED TOGETHER) WITH TWO PAIR OF CRIMPS PER SEAL AS SHOWN. SEE GENERAL NOTE "N" ON PAGE 2. THE LAP JOINT WILL BE MADE ALONG THE SIDE OF THE CRATE. DURING STRAP TENSIONING, CARE SHOULD BE EXERCISED TO INSURE THAT THE CRATES ARE NOT DAMAGED. EXCESS STRAPPING (STRAP ENDS) SHOULD BE CUT OFF OR BROKEN OFF NEAR THE JOINT SEALS. SECURE EACH STRAP TO A STRAPPING BOARD WITH TWO STAPLES.

(UNITIZING AND HANDLING PROCEDURAL GUIDANCE CONTINUED)

3. CRATE OR CRATE STACK HANDLING.

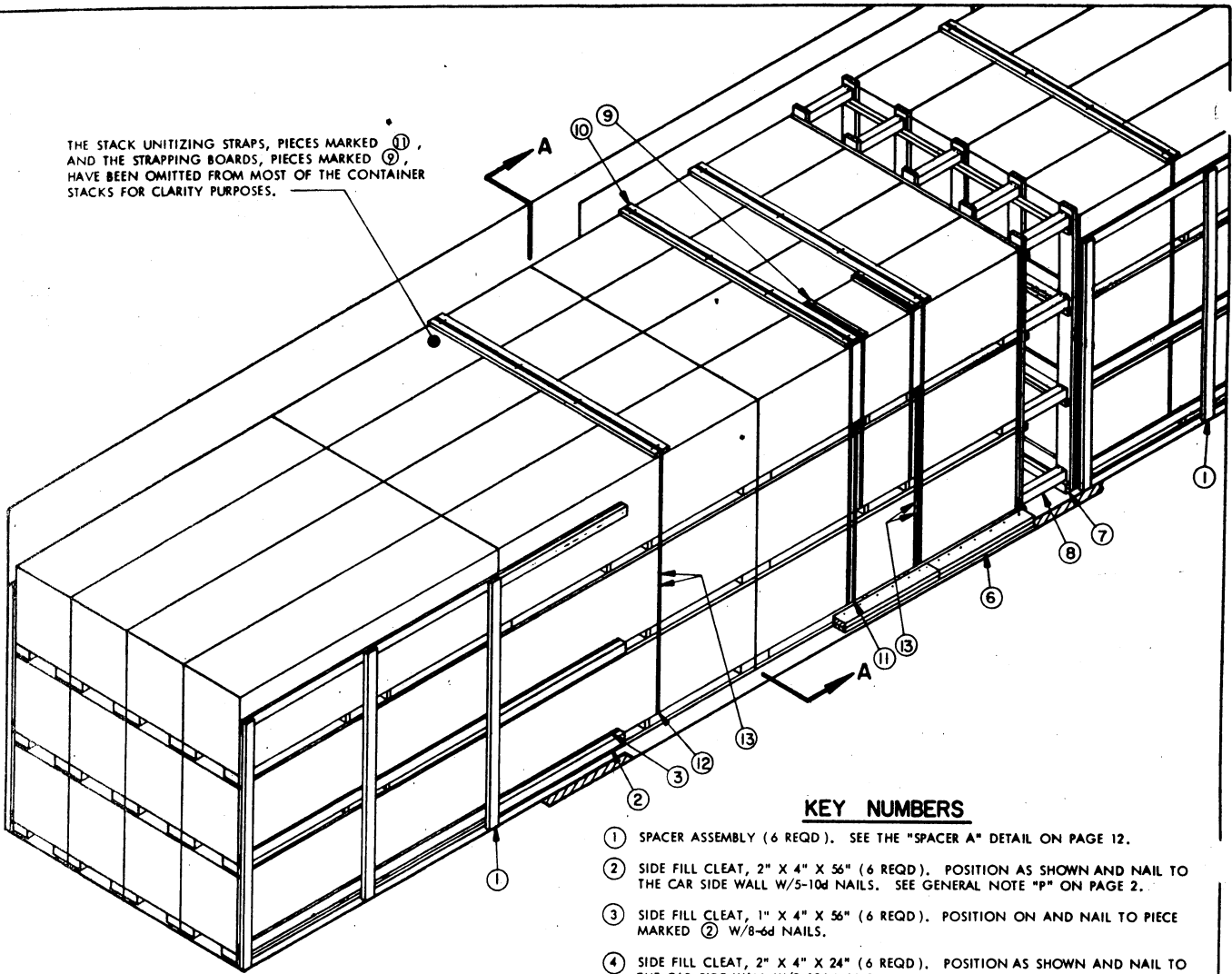
NOTES: (1) APPROVED MATERIALS HANDLING EQUIPMENT (FORKLIFT TRUCKS, CRANES, HAND TRUCKS, DOLLIES, ROLLER ASSEMBLIES, SLINGS, SPREADER BARS, ETC.) IS SPECIFIED ELSEWHERE THAN HEREIN.

(2) PRECAUTIONARY HANDLING TECHNIQUES NORMALLY EMPLOYED OR AS SPECIFIED FOR THE TYPE OF COMMODITY INVOLVED WILL BE OBSERVED.

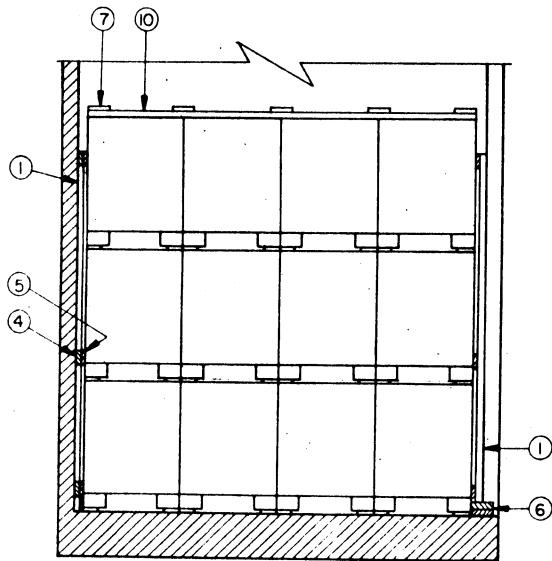
- A. ONLY APPROVED AND APPROPRIATELY-SIZED MATERIALS HANDLING EQUIPMENT WILL BE USED FOR HANDLING THE DEPICTED CRATES.
- B. IF HANDLING IS ACCOMPLISHED WITH A FORKLIFT TRUCK, THE CRATES SHOULD BE HANDLED FROM A SIDE POSITION. CAUTION: THE USUALLY APPLIED END-HANDLING IS NOT PERMITTED. CARE MUST BE EXERCISED WHEN INSERTING FORKS UNDER A CRATE, TO PREVENT DAMAGE TO A CRATE BY THE FORK TINES OR THE FORKLIFT PACKAGE GUARD. FOR VERY SHORT "INCHING" SPEED MOVEMENTS, SUCH AS WILL BE EXPERIENCED DURING CAR LOADING, A TWO OR THREE-CRATE STACK MAY BE HANDLED BY INSERTING THE FORKS OF THE FORKLIFT TRUCK UNDER THE BODY OF AN UPPER CRATE.
- C. IF THE CRATES ARE HANDLED BY SLINGING, THE SLING MUST BE OF SUCH A DESIGN THAT LIFTING IS DONE FROM THE BOTTOM OF THE LOWEST CRATE. DO NOT PASS THE SLING UNDER THE RUBBING STRIP OF THE LOWEST CRATE.

UNITIZATION AND HANDLING PROCEDURES

THE STACK UNITIZING STRAPS, PIECES MARKED ⑪, AND THE STRAPPING BOARDS, PIECES MARKED ⑨, HAVE BEEN OMITTED FROM MOST OF THE CONTAINER STACKS FOR CLARITY PURPOSES.



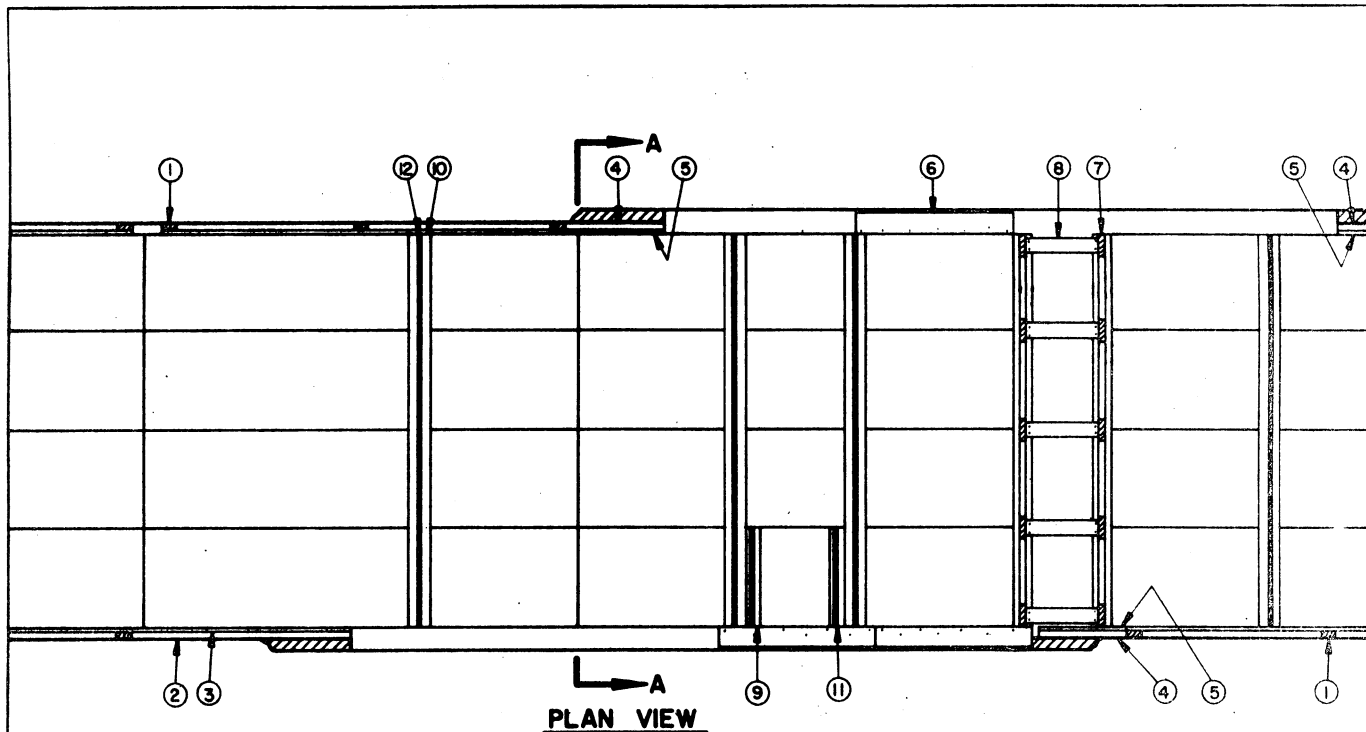
ISOMETRIC VIEW



SECTION A-A

KEY NUMBERS

- ① SPACER ASSEMBLY (6 REQD). SEE THE "SPACER A" DETAIL ON PAGE 12.
- ② SIDE FILL CLEAT, 2" X 4" X 36" (6 REQD). POSITION AS SHOWN AND NAIL TO THE CAR SIDE WALL W/5-10d NAILS. SEE GENERAL NOTE "P" ON PAGE 2.
- ③ SIDE FILL CLEAT, 1" X 4" X 36" (6 REQD). POSITION ON AND NAIL TO PIECE MARKED ② W/8-6d NAILS.
- ④ SIDE FILL CLEAT, 2" X 4" X 24" (6 REQD). POSITION AS SHOWN AND NAIL TO THE CAR SIDE WALL W/3-10d NAILS.
- ⑤ SIDE FILL CLEAT, 1" X 4" X 24" (6 REQD). POSITION ON AND NAIL TO PIECE MARKED ④ W/5-6d NAILS.
- ⑥ DOORWAY AREA SIDE BLOCKING, 2" X 6" X 36" (DOUBLED) (3 REQD). POSITION AS SHOWN AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/7-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTE 3 ON PAGE 5 AND GENERAL NOTE "Q" ON PAGE 2.
- ⑦ CENTER GATE (2 REQD). SEE THE "GATE A" DETAIL ON PAGE 10.
- ⑧ STRUT, 4" X 4" BY CUT TO FIT (20 REQD). TOENAIL TO THE VERTICAL PIECES OF CENTER GATES MARKED ⑦ W/2-16d NAILS AT EACH END.
- ⑨ STRAPPING BOARD, 2" X 4" X 25-3/4" (80 REQD, 4 PER CONTAINER STACK). SEE THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3.
- ⑩ STRAPPING BOARD, 2" X 6" BY LOAD WIDTH (REF: 8'-98") (4 REQD FOR THE LOAD AS SHOWN). SEE SPECIAL NOTE 3 ON PAGE 5.
- ⑪ STACK UNITIZING STRAP, 1-1/4" X .035" X 17'-0" STEEL STRAPPING (80 REQD). SECURE TO PIECE MARKED ⑨ W/2 STAPLES. SEE GENERAL NOTE "N" ON PAGE 2.
- ⑫ DOORWAY PROTECTION UNITIZING STRAP, 1-1/4" X .035" X 36'-0" STEEL STRAPPING (4 REQD FOR THE LOAD AS SHOWN). SECURE TO PIECE MARKED ⑩ W/4 STAPLES. SEE SPECIAL NOTE 3 ON PAGE 5.
- ⑬ SEAL FOR 1-1/4" STRAPPING (168 REQD, 2 PER STRAP JOINT).



SPECIAL NOTES

1. A 60-UNIT LOAD IS SHOWN IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR THAT IS EQUIPPED WITH 15'-0" WIDE STAGGERED DOOR OPENINGS. NOTE THAT THE DOOR HEIGHT MUST BE AT LEAST 9'-0". A WIDER CAR CAN BE USED FOR SHIPMENT OF THE DEPICTED LOAD.
2. SEVENTY-TWO (72) UNITS CAN BE OUTLOADED IN A 60'-6" LONG CAR, PROVIDED THE CAR IS EQUIPPED WITH 15'-0" WIDE STAGGERED DOOR OPENINGS. THIS IS THE PREFERRED LOADING, BUT IS DEPENDENT UPON THE AVAILABILITY OF THIS LENGTH OF CAR.
3. A CAR EQUIPPED WITH 15'-0" WIDE STAGGERED DOOR OPENINGS IS PREFERRED, TO FACILITATE THE LOADING AND UNLOADING OPERATIONS. THOUGH NOT AS EASILY, LOADING CAN BE ACCOMPLISHED IN A CAR HAVING 12'-0" WIDE THRU DOORS. IN A CAR WITH 12'-0" DOORS, FOUR ADDITIONAL PIECES MARKED ① WILL BE REQUIRED, ALONG WITH ONE ADDED PIECE MARKED ⑥. PIECES MARKED ④ AND ⑤ WILL NOT BE REQUIRED, AND ONLY TWO EACH OF PIECES MARKED ⑩ AND ⑫ WILL BE NEEDED.
4. IF THE DELINEATED OUTLOADING METHOD IS USED FOR THE SHIPMENT OF A LOAD WHICH CONTAINS LESS CRATES THAN SHOWN IN ORDER TO SATISFY A LESS-THAN-FULL-LOAD QUANTITY, AND THE QUANTITY CANNOT BE SATISFIED BY OMITTING A COMPLETE LAYER, A "FILLER ASSEMBLY" AS DETAILED ON PAGE 12, MUST BE SUBSTITUTED IN THE PLACE OF EACH OMITTED CRATE. IF A CRATE IS TO BE OMITTED, THE TOP LAYER OF EITHER OF THE CENTER ROWS OF THE END LOAD UNIT IN THE 2-LOAD-UNIT END OF THE CAR IS THE PREFERRED PLACE FOR THE INSTALLATION OF THE FILLER ASSEMBLY. FOR SOME LESS-THAN-FULL-LOAD QUANTITIES IT MAY BE MORE DESIRABLE TO USE ONE OR TWO "K-BRACE" ASSEMBLIES, AS DETAILED ON PAGE 9, FOR THE BRACING OF A PARTIAL LAYER. A "FILLER ASSEMBLY" MAY BE USED IN CONJUNCTION WITH A "K-BRACE", IF NECESSARY, FOR FURTHER ADJUSTMENT.
5. WHEN SHIPPING LOADS WHICH ARE ONLY 2-LAYERS IN HEIGHT, IT WILL BE NECESSARY TO ADJUST THE HEIGHT OF THE SPACER ASSEMBLIES, PIECES MARKED ①, AND THE CENTER GATES, PIECES MARKED ⑦, TO SUIT. NOTE THAT ONLY FIVE (5) STRUTS (1 LEVEL) CAN BE OMITTED WHEN SHIPPING A 2-LAYER LOAD.
6. IF THE CAR BEING LOADED HAS PLUG DOORS, THE DOORWAY AREA SIDE BLOCKING, PIECES MARKED ⑧, MUST BE REPLACED WITH DOUBLED 2" X 3" X 10'-0" LONG PIECES CENTERED ON THE LENGTH OF THE CRATE. NOTE THAT THESE PIECES MAY BE RIPPED FROM 2" X 6" MATERIAL. NAIL THE FIRST PIECE TO THE CAR FLOOR W/14-16d NAILS, EVENLY SPACED. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	211	71
2" X 2"	52	18
2" X 4"	381	254
2" X 6"	246	246
4" X 4"	31	42
NAILS	NO. REQD	POUNDS
6d (2")	240	1-1/2
10d (3")	332	5-1/4
16d (3-1/2")	122	2-3/4
STEEL STRAPPING, 1-1/4" X .035"	1504' REQD	215 LBS
SEAL FOR 1-1/4" STRAPPING	168 REQD	9 LBS
STAPLE FOR 1-1/4" STRAPPING	176 REQD	2 LBS

LOAD AS SHOWN

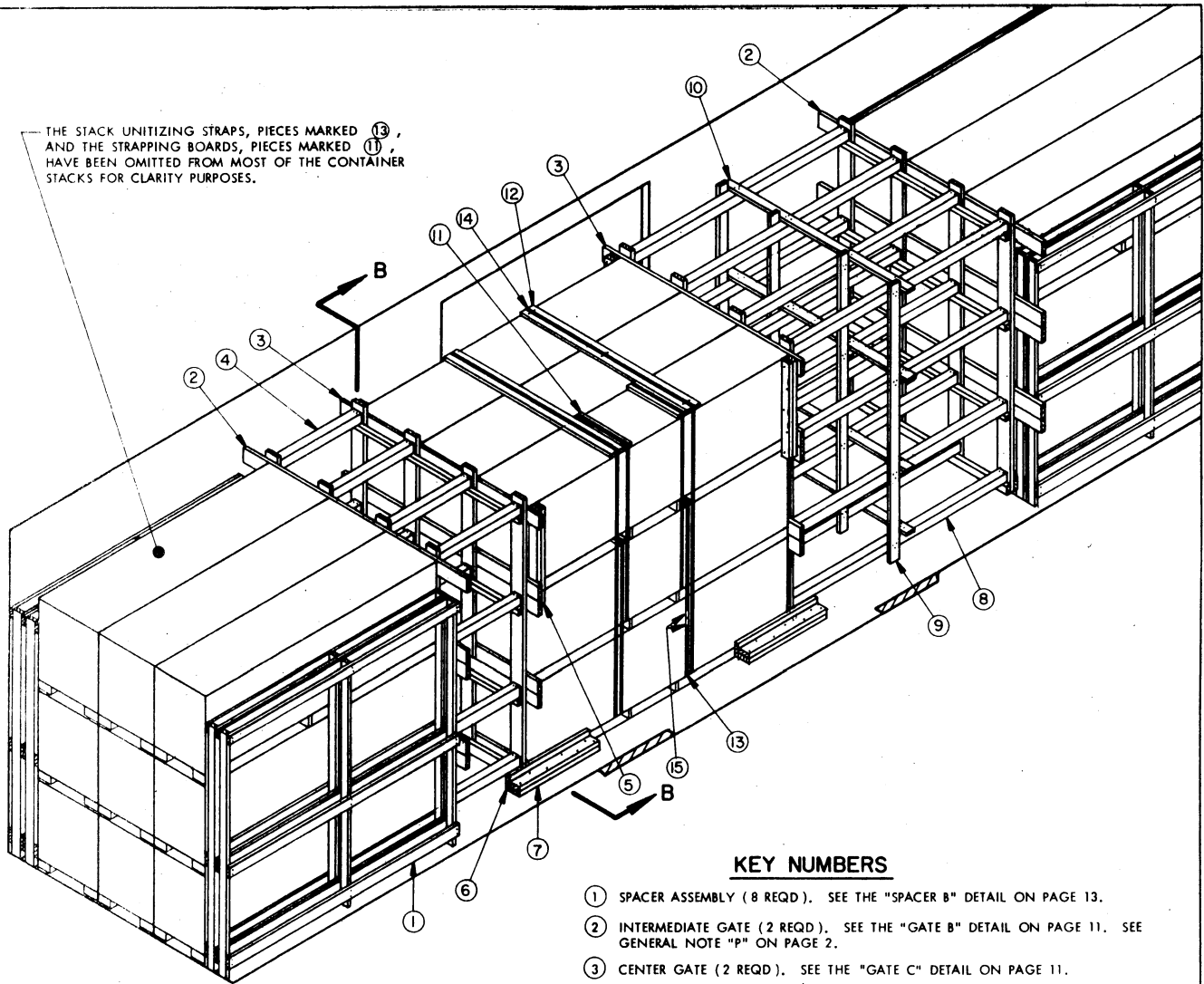
ITEM	QUANTITY	WEIGHT (APPROX)
CRATE WITH BLU-27	60	61,200 LBS *
SERIES FIRE BOMB		
DUNNAGE		1,804 LBS
TOTAL WEIGHT		63,004 LBS

* LOAD WEIGHT WITH BLU-32 SERIES FIRE BOMB IS 45,960 POUNDS.

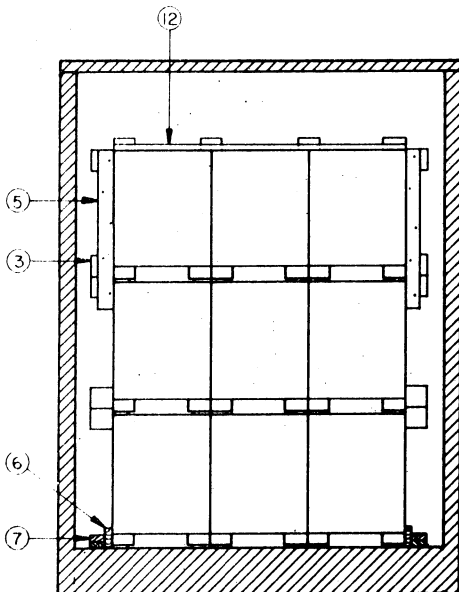
60-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE BOX CAR

PAGE 5

THE STACK UNITIZING STRAPS, PIECES MARKED ⑬, AND THE STRAPPING BOARDS, PIECES MARKED ⑪, HAVE BEEN OMITTED FROM MOST OF THE CONTAINER STACKS FOR CLARITY PURPOSES.



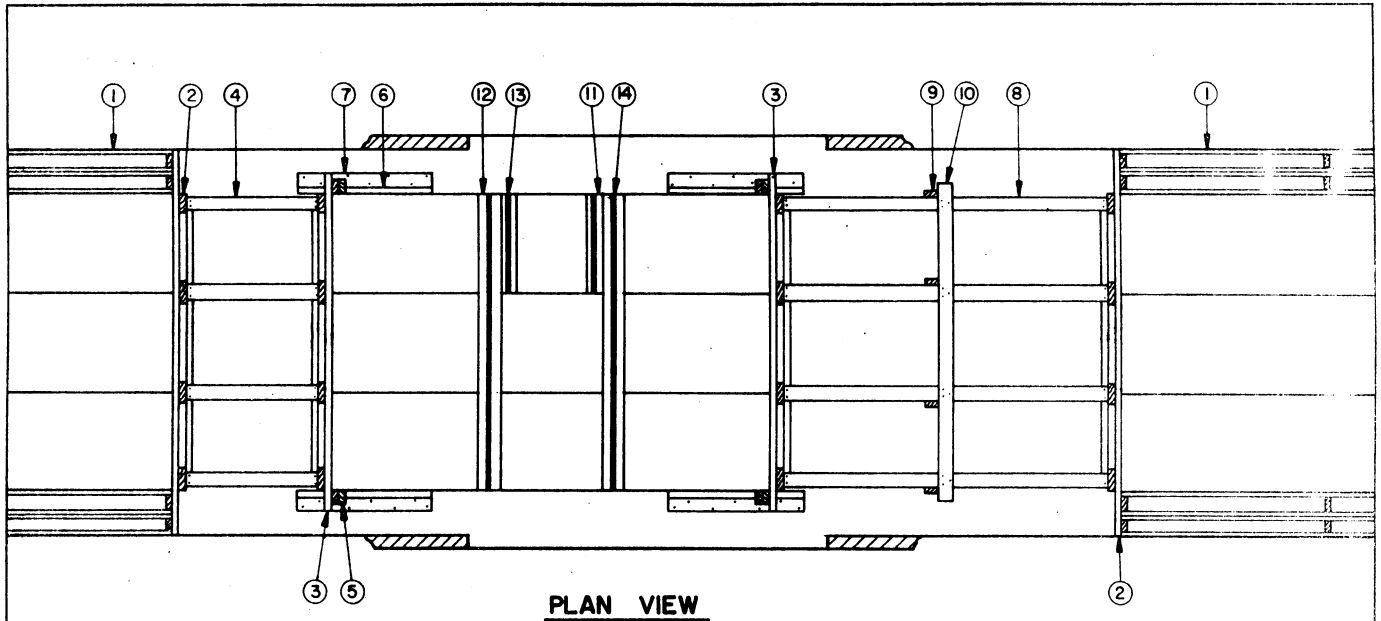
ISOMETRIC VIEW



SECTION B-B

KEY NUMBERS

- ① SPACER ASSEMBLY (8 REQD). SEE THE "SPACER B" DETAIL ON PAGE 13.
- ② INTERMEDIATE GATE (2 REQD). SEE THE "GATE B" DETAIL ON PAGE 11. SEE GENERAL NOTE "P" ON PAGE 2.
- ③ CENTER GATE (2 REQD). SEE THE "GATE C" DETAIL ON PAGE 11.
- ④ INTERMEDIATE STRUT, 4" X 4" X 36" (16 REQD). TOENAIL TO THE VERTICAL PIECES OF THE INTERMEDIATE AND CENTER GATES MARKED ② AND ③ W/2-16d NAILS AT EACH END.
- ⑤ GATE LOCATOR CLEAT, 2" X 4" X 42" (DOUBLED) (4 REQD). POSITION AGAINST CRATE AND NAIL THE FIRST PIECE TO THE HORIZONTAL PIECES OF CENTER GATE MARKED ③ W/3-10d NAILS AT EACH JOINT. NAIL THE SECOND PIECE TO THE FIRST W/5-10d NAILS.
- ⑥ RUBBING STRIP, 2" X 6" X 36" (4 REQD). POSITION ON EDGE AND NAIL TO THE LOWER PIECE MARKED ⑦ W/5-12d NAILS.
- ⑦ SIDE BLOCKING, 2" X 4" X 36" (DOUBLED) (4 REQD). POSITION AS SHOWN AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/7-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTE "Q" ON PAGE 2.
- ⑧ CENTER STRUT, 4" X 4" BY CUT TO FIT (16 REQD). TOENAIL TO THE VERTICAL PIECES OF THE INTERMEDIATE AND CENTER GATES MARKED ② AND ③ W/2-16d NAILS AT EACH END.
- ⑨ VERTICAL STRUT BRACING, 2" X 4" X 9'-0" (4 REQD). NAIL TO THE CENTER STRUTS MARKED ⑧ W/3-12d NAILS AT EACH JOINT.
- ⑩ HORIZONTAL STRUT BRACING, 2" X 4" X 7'-0" (4 REQD). NAIL TO THE CENTER STRUTS MARKED ⑧ W/3-12d NAILS AT EACH JOINT.
- ⑪ STRAPPING BOARD, 2" X 4" X 25-3/4" (36 REQD, 4 PER CONTAINER STACK). SEE THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3.
- ⑫ STRAPPING BOARD, 2" X 6" BY LOAD WIDTH (REF: 6'-6") (2 REQD).
- ⑬ STACK UNITIZING STRAP, 1-1/4" X .035" X 17'-0" STEEL STRAPPING (36 REQD). SECURE TO PIECE MARKED ⑪ W/2 STAPLES. SEE GENERAL NOTE "N" ON PAGE 2.
- ⑭ DOORWAY PROTECTION UNITIZING STRAP, 1-1/4" X .035" X 32'-0" STEEL STRAPPING (2 REQD). SECURE TO PIECE MARKED ⑫ W/3 STAPLES.
- ⑮ SEAL FOR 1-1/4" STRAPPING (76 REQD, 2 PER STRAP JOINT).



PLAN VIEW

SPECIAL NOTES

1. A 27-UNIT LOAD IS SHOWN IN A 40'-6" LONG BY 8'-6" WIDE CONVENTIONAL BOX CAR THAT IS EQUIPPED WITH 8'-0" WIDE DOOR OPENINGS. NOTE THAT THE DOOR HEIGHT MUST BE AT LEAST 9'-0". A WIDER CAR CAN BE USED FOR SHIPMENT OF THE DEPICTED LOAD.
2. THIRTY-SIX (36) UNITS, CAN BE OUTLOADED IN A 40'-6" LONG BY 9'-2" WIDE CAR. A COMBINATION OF THE TWO LOADING PROCEDURES SHOWN ON PAGES 4 AND 5 WILL BE USED AS FOLLOWS: USE PIECE MARKED ① ON PAGE 4 IN LIEU OF PIECE MARKED ① ON THIS PAGE; USE CENTER GATES MARKED ⑦ ON PAGE 4 IN LIEU OF GATES MARKED ② AND ③ (HORIZONTAL PIECES OF GATES AGAINST THE LOAD UNITS IN THE END OF THE CAR MUST BE CAR WIDTH IN ORDER TO RETAIN THE SPACER ASSEMBLIES); USE SIDE FILL CLEATS OF AN APPROPRIATE LENGTH (PIECES MARKED ② AND ③ ON PAGE 4) BETWEEN THE CENTER LOAD UNIT, AND THE GATE AGAINST THIS LOAD UNIT, AND THE ADJACENT CAR SIDE WALL; USE PIECES MARKED ④ ON PAGE 4 IN LIEU OF PIECES MARKED ⑥ AND ⑦ ON THIS PAGE. ADJUST LENGTH AND/OR QUANTITIES OF OTHER DUNNAGE PIECES AS NECESSARY.
3. A CAR WITH DOORS OF A LARGER SIZE THAN SHOWN OR WITH STAGGERED DOORS CAN BE USED FOR THE SHIPMENT OF THE DEPICTED LOAD.
4. IF THE DELINEATED OUTLOADING METHOD IS USED FOR THE SHIPMENT OF A LOAD WHICH CONTAINS LESS CRATES THAN SHOWN IN ORDER TO SATISFY A LESS-THAN-FULL-LOAD QUANTITY, AND THE QUANTITY CANNOT BE SATISFIED BY OMITTING A COMPLETE LAYER, A "FILLER ASSEMBLY", AS DETAILED ON PAGE 12, MUST BE SUBSTITUTED IN THE PLACE OF EACH OMITTED CRATE. IF A CRATE IS TO BE OMITTED, THE CENTER CRATE IN THE TOP LAYER OF A LOAD UNIT IN AN END OF THE CAR IS THE PREFERRED PLACE FOR THE INSTALLATION OF THE FILLER ASSEMBLY. FOR SOME LESS-THAN-FULL-LOAD QUANTITIES IT MAY BE MORE DESIRABLE TO USE ONE OR TWO "K-BRACE" ASSEMBLIES, AS DETAILED ON PAGE 9, FOR THE BRACING OF A PARTIAL LAYER. A "FILLER ASSEMBLY" MAY BE USED IN CONJUNCTION WITH A "K-BRACE", IF NECESSARY, FOR FURTHER ADJUSTMENT.
5. WHEN SHIPPING LOADS WHICH ARE ONLY 2-LAYERS IN HEIGHT, IT WILL BE NECESSARY TO ADJUST THE HEIGHT OF THE SPACER ASSEMBLIES, PIECES MARKED ①, AND THE INTERMEDIATE AND CENTER GATES, PIECES MARKED ② AND ③, TO SUIT. NOTE THAT ONLY FOUR (4) STRUTS (1 LEVEL) CAN BE OMITTED FROM EACH BLOCKING STATION WHEN SHIPPING A 2-LAYER LOAD.
6. IF THE CAR BEING LOADED HAS PLUG DOORS, NO SPECIAL CHANGES TO THE SPECIFIED PROCEDURES ARE REQUIRED; HOWEVER, THE CRITERIA SET FORTH IN GENERAL NOTE "D" ON PAGE 2 WILL BE OBSERVED.

BILL OF MATERIAL

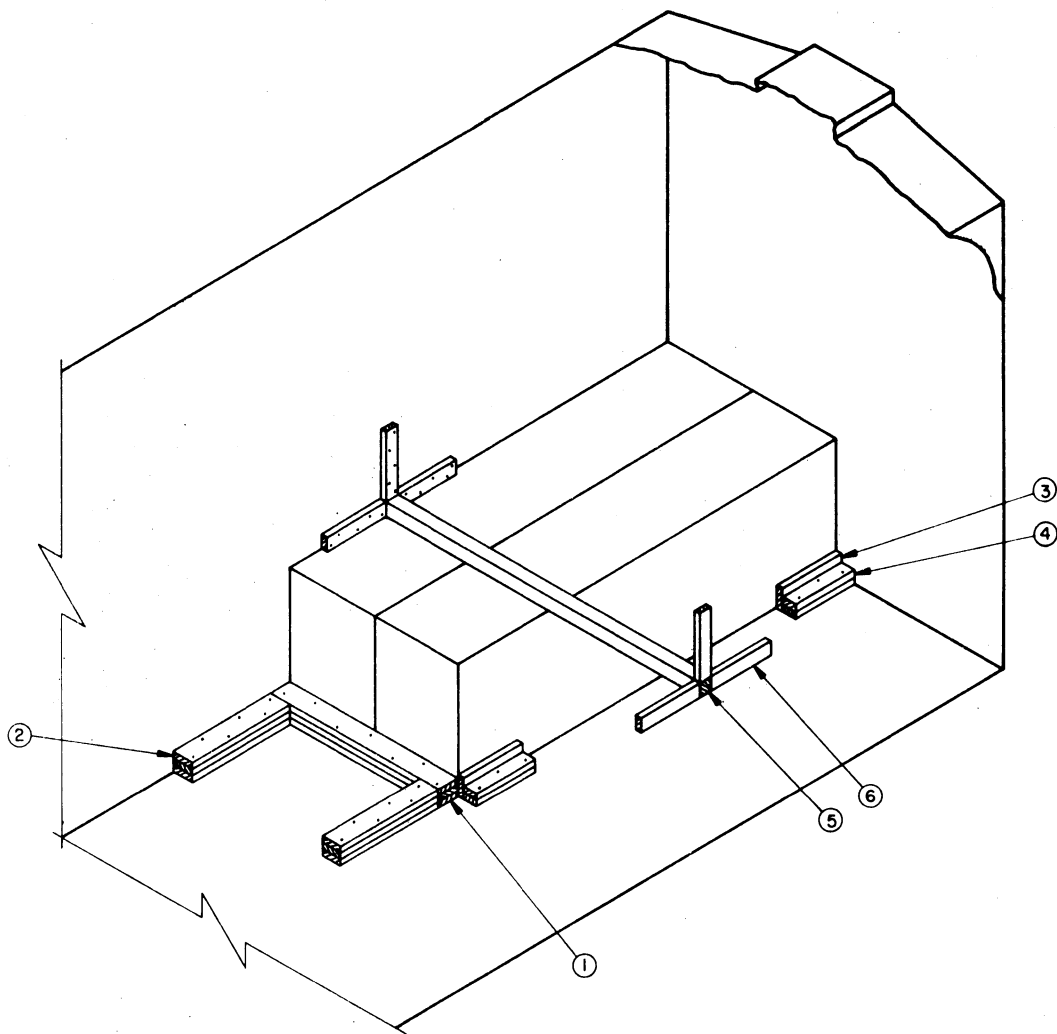
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	456	152
2" X 2"	78	26
2" X 4"	428	286
2" X 6"	195	195
4" X 4"	166	222
NAILS	NO. REQD	POUNDS
6d (2")	288	1-3/4
10d (3")	508	8
12d (3-1/4")	184	3-1/4
16d (3-1/2")	116	2-3/4
STEEL STRAPPING, 1-1/4" X .035" ----- 676' REQD		97 LBS
SEAL FOR 1-1/4" STRAPPING ----- 76 REQD		4 LBS
STAPLE FOR 1-1/4" STRAPPING ----- 78 REQD		1 LB

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CRATE W/BLU-27	27	27,540 LBS *
SERIES FIRE BOMB		
DUNNAGE		2,321 LBS
TOTAL WEIGHT		29,961 LBS

* LOAD WEIGHT WITH BLU-32 SERIES FIRE BOMB IS 20,682 POUNDS.

27-UNIT LOAD IN A 40'-6" LONG BY 8'-6" WIDE BOX CAR



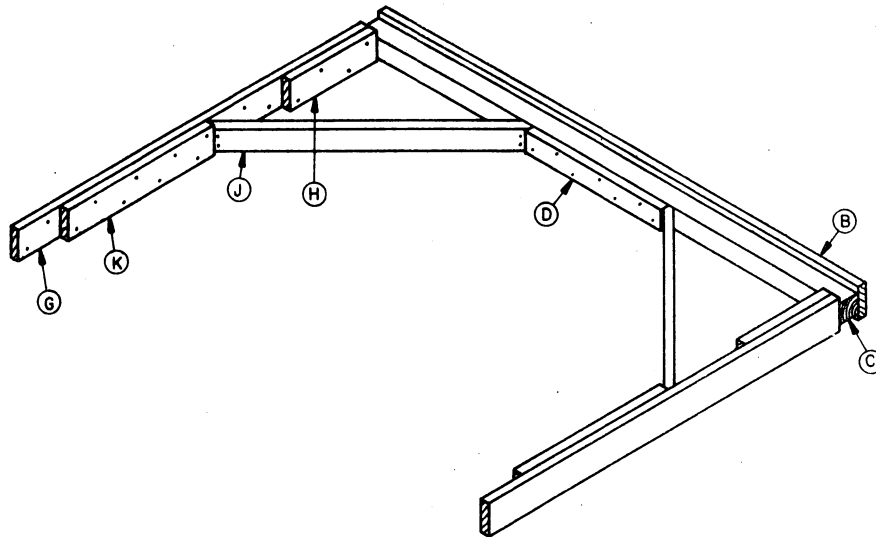
ISOMETRIC VIEW

KEY NUMBERS

- ① HEADER, 2" X 6" X 52" (TRIPLED) (1 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/7-16d NAILS. NAIL EACH ADDITIONAL PIECE TO THE PREVIOUSLY APPLIED PIECE W/7-40d NAILS. SEE GENERAL NOTES "P" AND "Q" ON PAGE 2.
- ② BACK-UP CLEAT, 2" X 6" X 30" (TRIPLED) (2 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/6-16d NAILS. NAIL EACH ADDITIONAL PIECE TO THE PREVIOUSLY APPLIED PIECE W/6-40d NAILS. SEE SPECIAL NOTE 2.
- ③ RUBBING STRIP, 2" X 6" X 18" (2 REQD). POSITION ON EDGE AND NAIL TO A LOWER PIECE MARKED ④ W/4-12d NAILS.
- ④ SIDE BLOCKING, 2" X 4" X 18" (2 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/3-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑤ CONTAINER HOLD-DOWN, 4" X 4" BY CAR WIDTH (CUT TO FIT) (1 REQD).
- ⑥ POCKET CLEAT, 2" X 4" X 18" (6 REQD). NAIL TO THE CAR SIDE WALL W/5-10d NAILS.

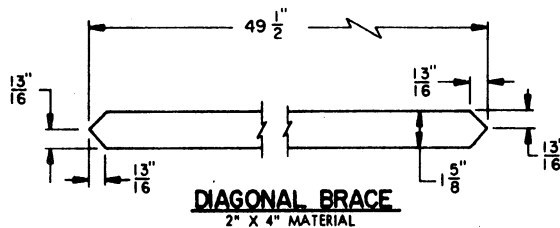
SPECIAL NOTES

- 1. A 2-UNIT LOAD IS SHOWN AS A TYPICAL LCL LOAD IN AN 8'-6" WIDE BOX CAR. A WIDER CAR CAN BE USED.
- 2. TWO (2) BACK-UP CLEATS, SHOWN AS PIECES MARKED ②, ARE ADEQUATE FOR RETAINING A MAXIMUM LOAD WEIGHT OF 7,500 POUNDS.



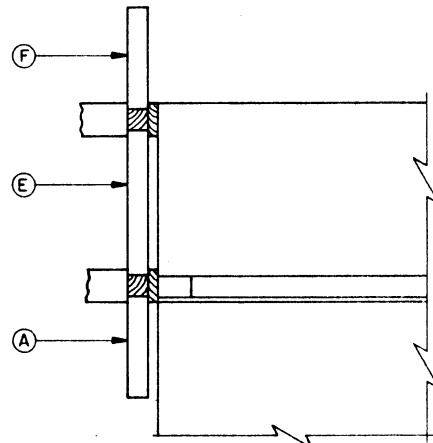
K-BRACE ASSEMBLY

TWO (2) K-BRACE ASSEMBLIES, INSTALLED AS SHOWN IN THE "PLACEMENT OF K-BRACE" DETAIL BELOW, ARE ADEQUATE FOR RETAINING A MAXIMUM PARTIAL LAYER LOAD OF FOUR (4) CRATES WITH BOMBS. REFER TO DRAWING 19-48-4016-5M1001 FOR K-BRACE SPECIFICATIONS APPLICABLE TO THE BLOCKING OF MORE CRATES. NOTE: FOR THE BRACING OF MORE THAN FOUR CRATES, ONE (1) K-BRACE ASSEMBLY AS SHOWN ABOVE IS ADEQUATE FOR BLOCKING AGAINST THE TOP OF THE MAXIMUM QUANTITY OF CRATES. FOR BLOCKING AGAINST THE BASE OF THE CRATES, ONE-HALF OF A HEAVIER K-BRACE ASSEMBLY DEPICTED IN THE AFORE MENTIONED DRAWING SHOULD BE USED. IN DETERMINING THE PROPER K-BRACE ASSEMBLY TO CHOOSE, THE TOTAL WEIGHT OF THE PARTIAL LAYER SHOULD BE CONSIDERED AS BEING RETAINED BY THE LOWER K-BRACE. SEE THE "CAUTION" NOTE BELOW.



KEY LETTERS

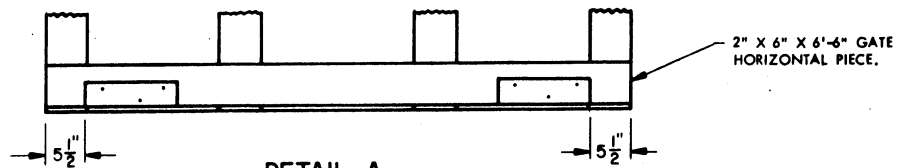
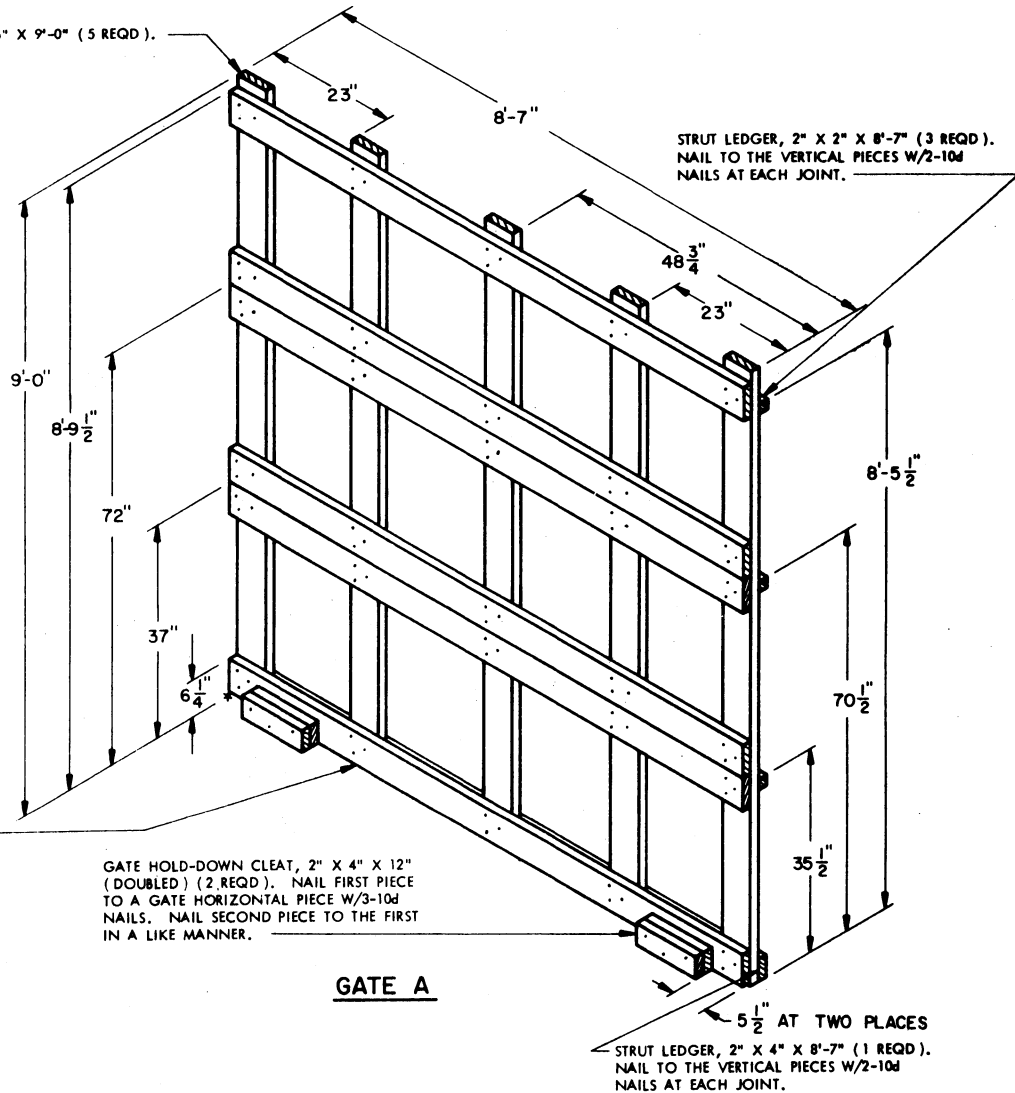
- (A) WALL CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO CAR SIDE WALL W/5-12d NAILS.
- (B) HORIZONTAL PIECE, 2" X 6" BY CAR WIDTH (CUT TO FIT) (2 REQD). NAIL TO PIECE MARKED (C) W/1-12d NAIL EVERY 6".
- (C) CROSS CAR BRACE, 4" X 4" BY CAR WIDTH (CUT TO FIT) (2 REQD).
- (D) CENTER CLEAT, 2" X 4" X 28" FOR AN 8'-6" WIDE CAR OR 2" X 4" X 36" FOR A 9'-2" WIDE CAR (2 REQD). NAIL TO PIECE MARKED (E) W/7-12d NAILS.
- (E) VERTICAL SPACER CLEAT, 2" X 4" X 26" (2 REQD). NAIL TO THE CAR SIDE WALL W/5-12d NAILS.
- (F) HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDE WALL W/4-12d NAILS.
- (G) HORIZONTAL WALL CLEAT, 2" X 6" X 72" (4 REQD). NAIL TO THE CAR SIDE WALL W/16-12d NAILS.
- (H) POCKET CLEAT, 2" X 6" X 12" (4 REQD). NAIL TO PIECE MARKED (G) W/4-16d NAILS.
- (J) DIAGONAL BRACE, 2" X 4" X 49-1/2" (4 REQD). SEE THE "DIAGONAL BRACE" DETAIL ABOVE. TOENAIL TO PIECE MARKED (C) AND TO PIECE MARKED (G) W/2-16d NAILS AT EACH END.
- (K) BACK-UP CLEAT, 2" X 6" X 24" (4 REQD). NAIL TO PIECE MARKED (G) W/8-16d NAILS.



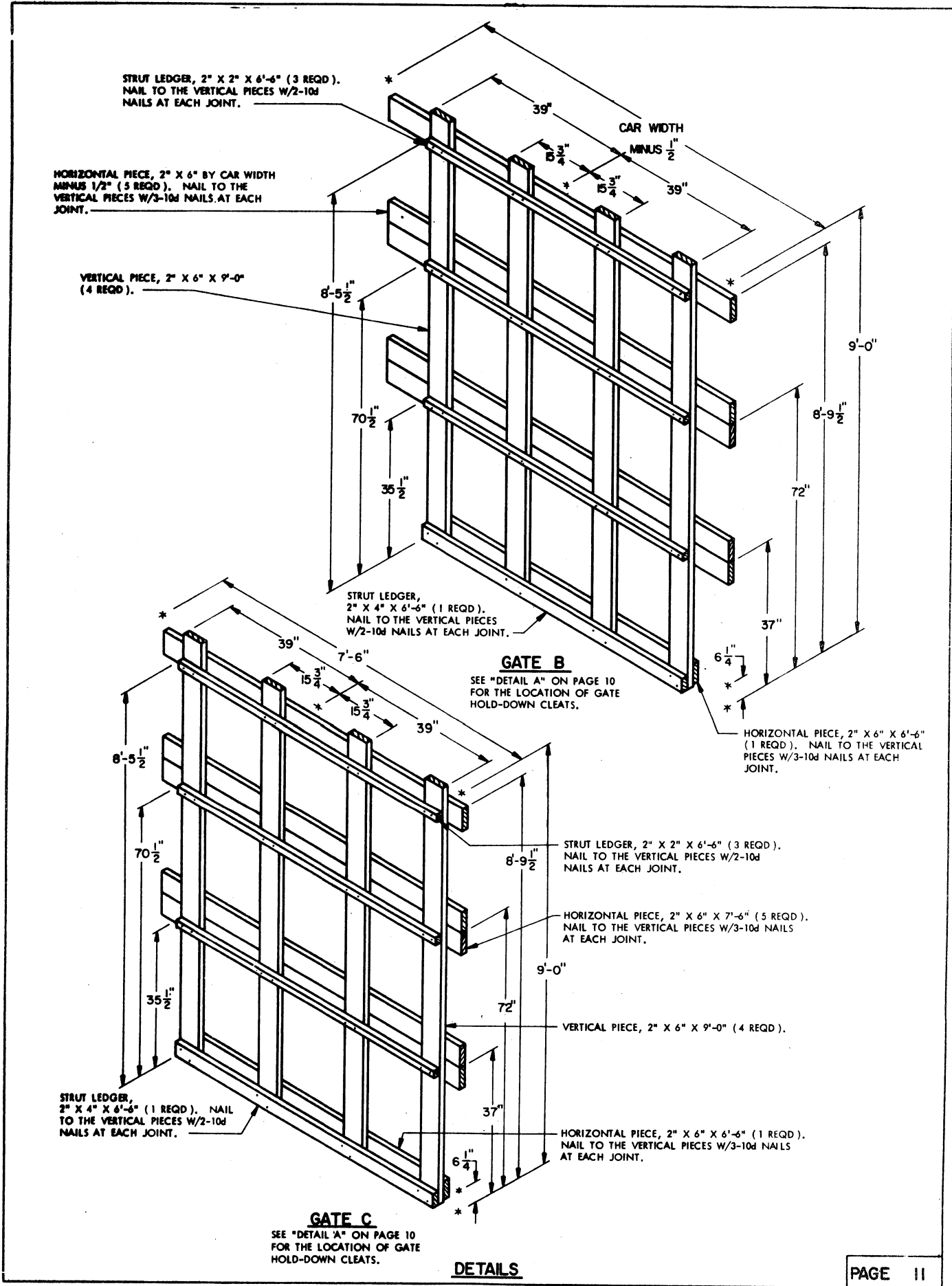
PLACEMENT OF K-BRACE

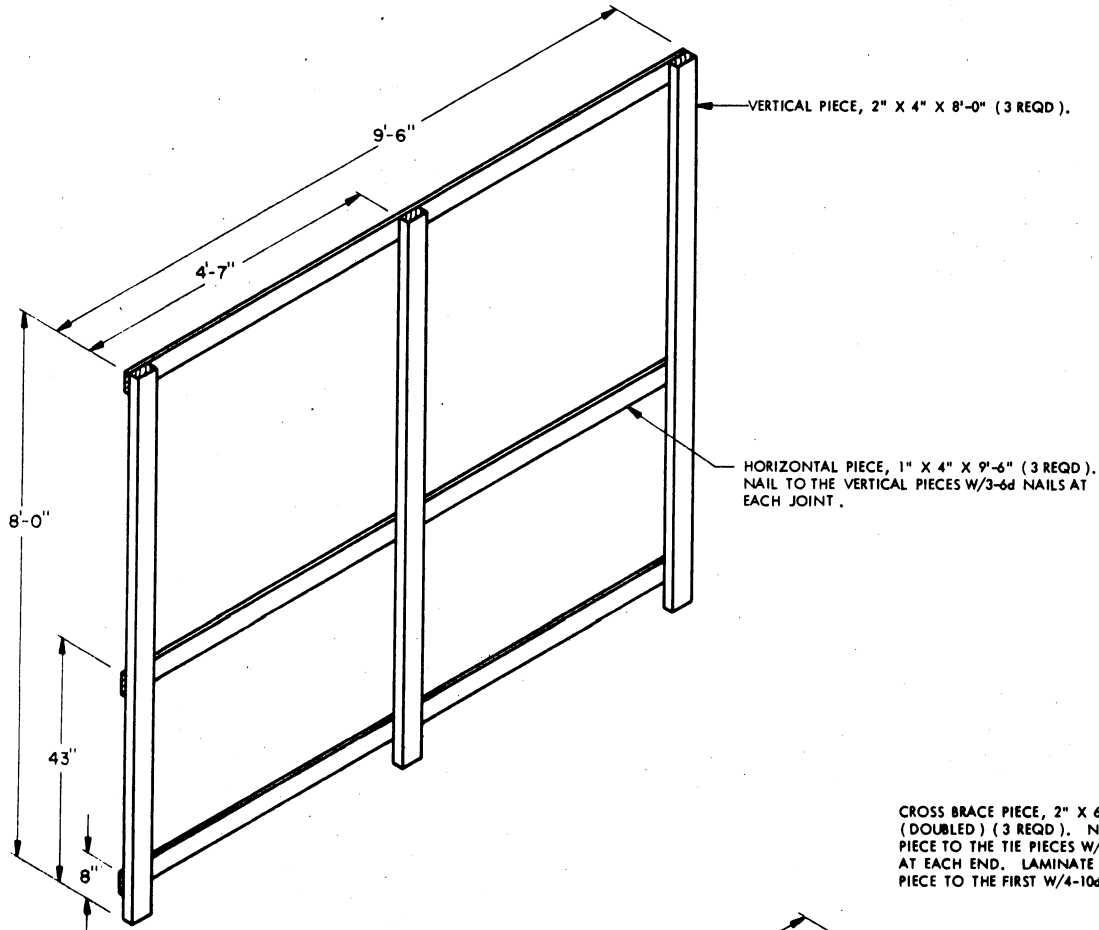
CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL LAYER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED (A), (B), (C), (E), AND (H), OR THE COMPARABLE PIECES ON A HEAVIER BRACE, MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDE WALL. IT IS ALRIGHT FOR THE END OF THE DIAGONAL BRACE MARKED (J), OR THE COMPARABLE PIECE ON A HEAVIER BRACE, TO BEAR IN FRONT OF A DOOR OPENING; HOWEVER, THE ADJACENT PIECE MARKED (G), OR THE COMPARABLE PIECE ON A HEAVIER BRACE, MUST BE DOUBLED AND EXTENDED ACROSS AND FAR ENOUGH PAST THE DOOR OPENING TO PROVIDE FOR THE SPECIFIED NAILING OF EACH PIECE.

VERTICAL PIECE, 2" X 6" X 9'-0" (5 REQD).



THIS VIEW SHOWS THE LOCATION OF THE GATE HOLD-DOWN CLEATS WHICH MUST BE APPLIED TO THE "GATE B" AND THE "GATE C" ON PAGE 11.





SPACER A

VERTICAL PIECE, 2" X 4" X 8'-0" (3 REQD).

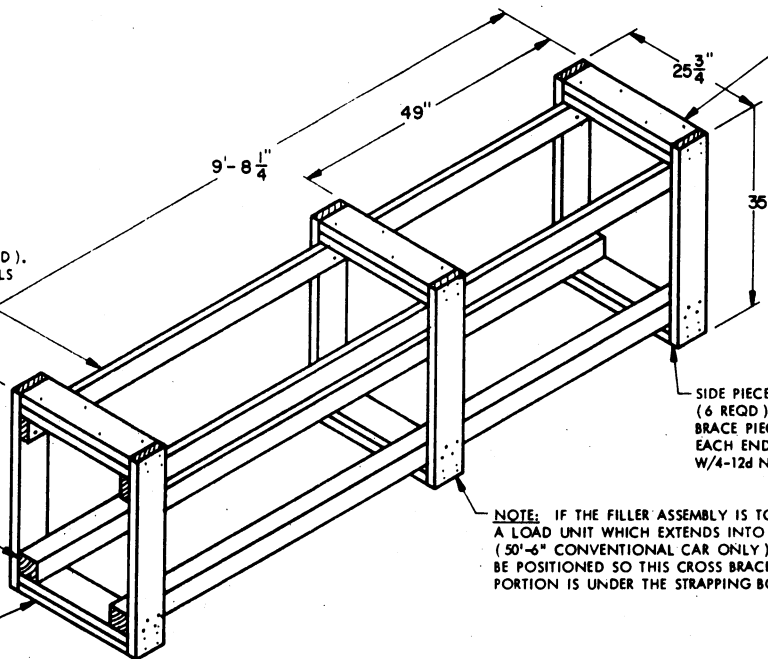
HORIZONTAL PIECE, 1" X 4" X 9'-6" (3 REQD).
NAIL TO THE VERTICAL PIECES W/3-6d NAILS AT EACH JOINT.

CROSS BRACE PIECE, 2" X 6" X 22-1/2" (DOUBLED) (3 REQD). NAIL THE FIRST PIECE TO THE TIE PIECES W/2-12d NAILS AT EACH END. LAMINATE THE SECOND PIECE TO THE FIRST W/4-10d NAILS.

TIE PIECE, 2" X 4" X 9'-8-1/4" (2 REQD).
NAIL TO THE SIDE PIECES W/3-10d NAILS AT EACH JOINT.

STRUT, 4" X 4" X 9'-8-1/4" (2 REQD).

CROSS BRACE PIECE, 2" X 6" X 22-1/2" (DOUBLED) (3 REQD). NAIL THE FIRST PIECE TO THE STRUTS W/3-12d NAILS AT EACH END. LAMINATE THE SECOND PIECE TO THE FIRST W/4-10d NAILS.



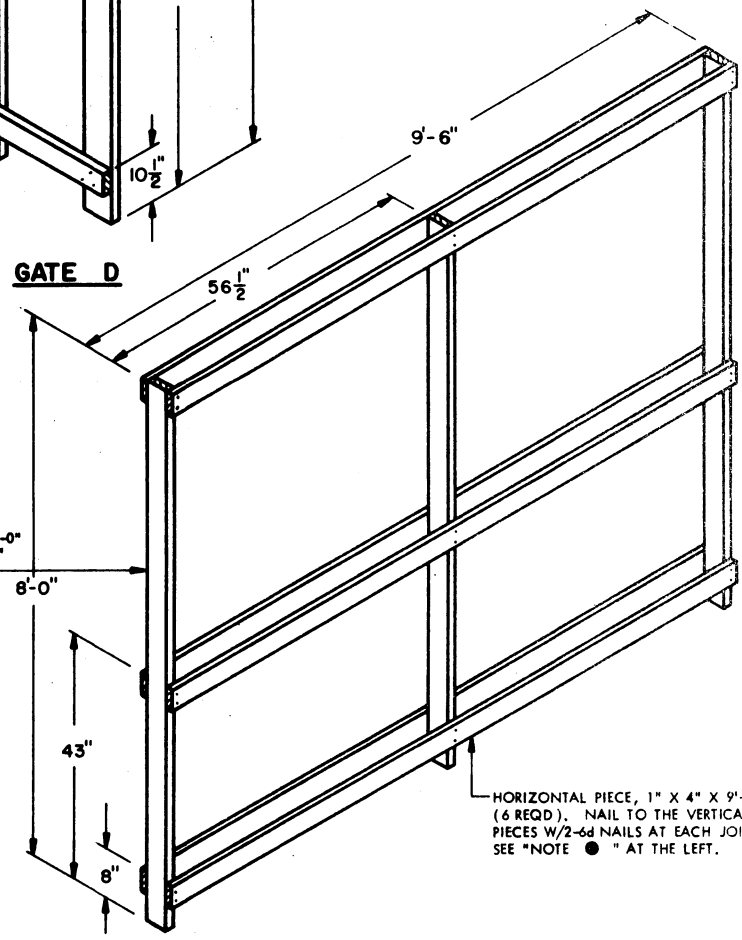
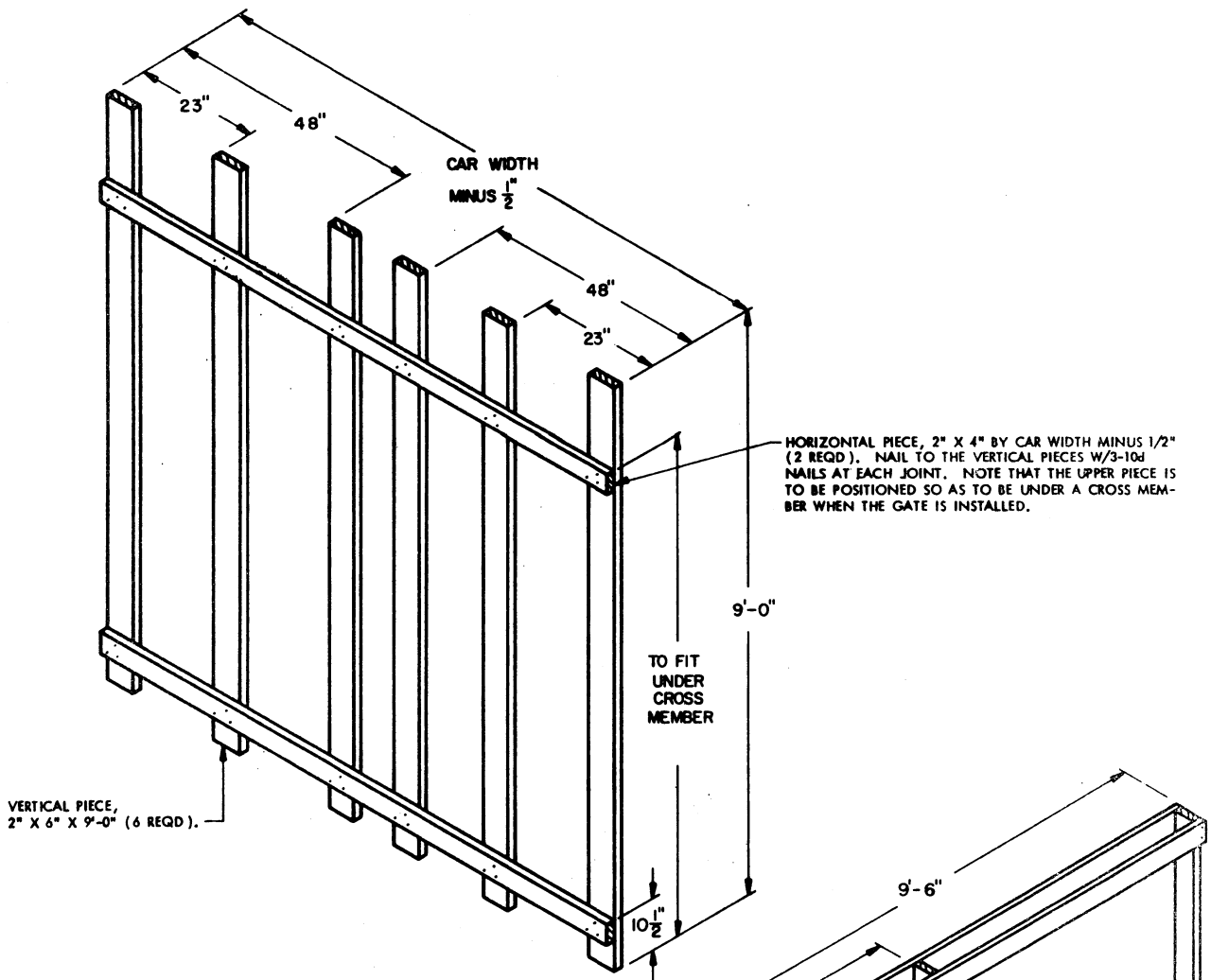
SIDE PIECE, 2" X 6" X 35" (6 REQD). NAIL TO THE CROSS BRACE PIECES W/4-12d NAILS AT EACH END AND TO THE STRUT W/4-12d NAILS AT EACH JOINT.

NOTE: IF THE FILLER ASSEMBLY IS TO BE INSTALLED WITHIN A LOAD UNIT WHICH EXTENDS INTO THE DOORWAY AREA (50'-6" CONVENTIONAL CAR ONLY), THE ASSEMBLY MUST BE POSITIONED SO THIS CROSS BRACE PIECE AND SIDE PIECE PORTION IS UNDER THE STRAPPING BOARD.

FILLER ASSEMBLY

IT MAY BE NECESSARY TO USE THIS FILLER ASSEMBLY, WHICH IS DESIGNED FOR USE IN THE PLACE OF AN OMITTED CRATE, TO ADJUST A LOAD QUANTITY. SEE THE "SPECIAL NOTES" SECTION ADJACENT TO A DEPICTED OUTLOADING PROCEDURE FOR ADDITIONAL INSTALLATION GUIDANCE.

DETAILS



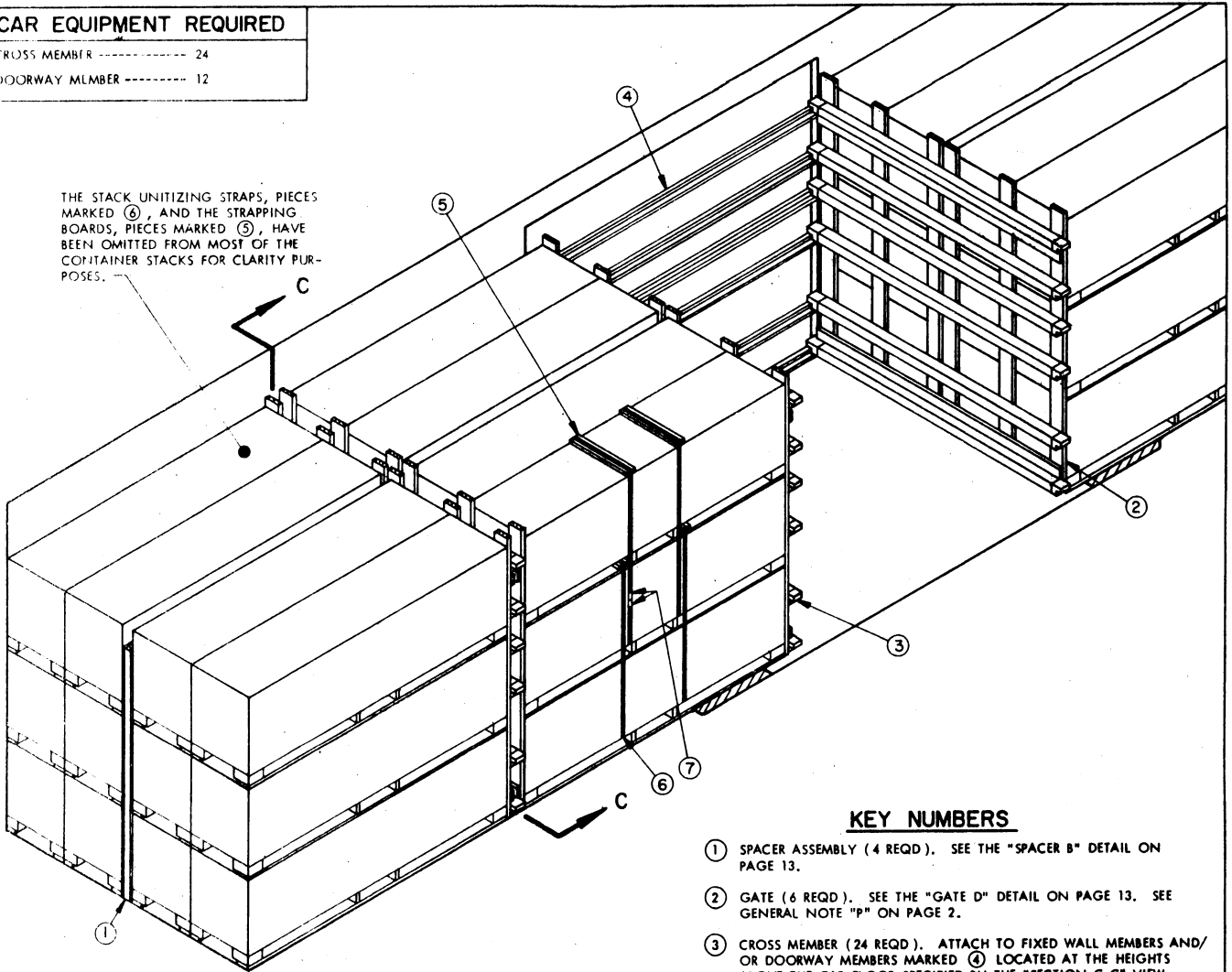
NOTE ● :
 AS NECESSARY TO COMPENSATE FOR VARIATIONS IN CRATE WIDTH OR CAR SIZE, THE WIDTH OF THE VERTICAL PIECES MAY BE INCREASED OR DECREASED. ALSO, THE THICKNESS OF THE HORIZONTAL PIECES ON ONE OR BOTH SIDES MAY BE INCREASED, OR ADDITIONAL THICKNESSES MAY BE LAMINATED TO ONE OR BOTH SIDES, AS REQUIRED.

DETAILS

CAR EQUIPMENT REQUIRED

CROSS MEMBER	-----	24
DOORWAY MEMBER	-----	12

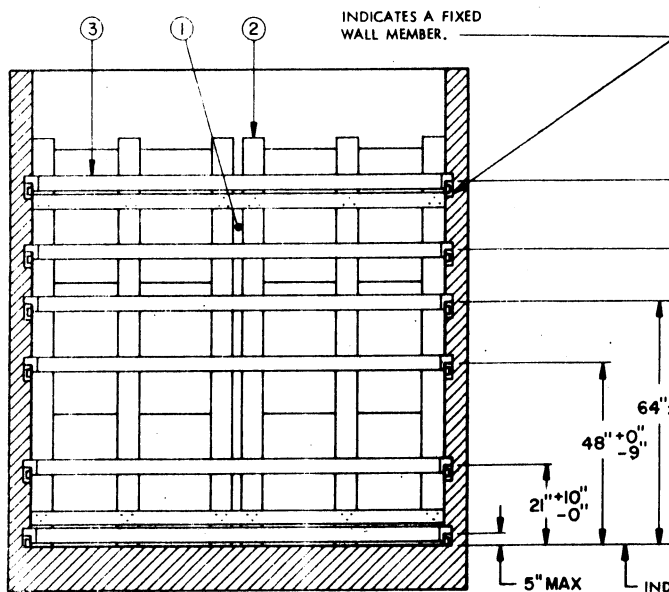
THE STACK UNITIZING STRAPS, PIECES MARKED ⑥, AND THE STRAPPING BOARDS, PIECES MARKED ⑤, HAVE BEEN OMITTED FROM MOST OF THE CONTAINER STACKS FOR CLARITY PURPOSES.



ISOMETRIC VIEW

KEY NUMBERS

- ① SPACER ASSEMBLY (4 REQD). SEE THE "SPACER B" DETAIL ON PAGE 13.
- ② GATE (6 REQD). SEE THE "GATE D" DETAIL ON PAGE 13. SEE GENERAL NOTE "P" ON PAGE 2.
- ③ CROSS MEMBER (24 REQD). ATTACH TO FIXED WALL MEMBERS AND/OR DOORWAY MEMBERS MARKED ④ LOCATED AT THE HEIGHTS ABOVE THE CAR FLOOR SPECIFIED BY THE "SECTION C-C" VIEW. SEE GENERAL NOTE "F" ON PAGE 2.
- ④ DOORWAY MEMBER (12 REQD). POSITION AT THE HEIGHTS SPECIFIED BY THE "SECTION C-C" VIEW.
- ⑤ STRAPPING BOARD, 2" X 4" X 25-3/4" (64 REQD). SEE THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3.
- ⑥ STACK UNITIZING STRAP, 1-1/4" X .035" X 17'-0" STEEL STRAPPING (64 REQD). SECURE TO PIECE MARKED ⑤ W/2 STAPLES. SEE GENERAL NOTE "N" ON PAGE 2.
- ⑦ SEAL FOR 1-1/4" STRAPPING (128 REQD; 2 PER STRAP JOINT).



SECTION C-C

EACH DIMENSIONED HEIGHT ABOVE THE CAR FLOOR TO A FIXED WALL MEMBER AND/OR A DOORWAY MEMBER MARKED ④ IS SPECIFIED TO LOCATE THE CENTER LINE OF A CROSS MEMBER.

SPECIAL NOTES

1. A 48-UNIT LOAD IS SHOWN IN A 50'-6" LONG BY 9'-2" WIDE (INSIDE CLEARANCE) BOX CAR EQUIPPED WITH FIXED WALL MEMBERS, AND HAVING 12'-0" WIDE DOOR OPENINGS. NOTE THAT THE DOOR HEIGHT MUST BE AT LEAST 9'-0".
2. A WIDER OR A NARROWER CAR MAY BE USED FOR SHIPMENT OF THE DEPICTED LOAD; HOWEVER, FOR EASE OF LOADING AND UNLOADING THE CRATES, THE INSIDE WIDTH OF THE CAR SHOULD BE AT LEAST 8'-11".
3. A CAR HAVING 12'-0" WIDE DOOR OPENINGS IS SHOWN; HOWEVER, 10'-0" WIDE DOOR OPENINGS ARE ADEQUATE. A CAR HAVING WIDER "THROUGH" DOORS, OR CARS HAVING STAGGERED DOOR OPENINGS CAN BE USED FOR THE SHIPMENT OF THE DEPICTED LOAD.
4. IF THE DELINEATED OUTLOADING METHOD IS USED FOR THE SHIPMENT OF A LOAD WHICH CONTAINS LESS CRATES THAN SHOWN IN ORDER TO SATISFY A LESS-THAN-FULL-LOAD QUANTITY, AND THE QUANTITY CANNOT BE SATISFIED BY OMITTING A COMPLETE LAYER FROM A LOAD UNIT, A "FILLER ASSEMBLY", AS DETAILED ON PAGE 12, MUST BE SUBSTITUTED IN THE PLACE OF EACH OMITTED CRATE.
5. WHEN SHIPPING LOADS WHICH ARE LESS THAN 3-LAYERS IN HEIGHT, IT WILL BE NECESSARY TO ADJUST THE HEIGHT OF THE SPACER ASSEMBLIES, PIECES MARKED ①, AND THE GATES, PIECES MARKED ②, TO SUIT.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	228	76
2" X 4"	343	229
2" X 6"	324	324
NAILS	NO. REQD	POUNDS
6d (2")	144	1
10d (3")	216	3-1/2
STEEL STRAPPING, 1-1/4" X .035" -----	1,088' REQD	156 LBS
SEAL FOR 1-1/4" STRAPPING -----	128 REQD	7 LBS
STAPLE FOR 1-1/4" STRAPPING -----	128 REQD	1 LB

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CRATE WITH BLU-27 -----	48 -----	48,960 LBS *
SERIES FIRE BOMB		
DUNNAGE -----	1 -----	1,742 LBS
TOTAL WEIGHT -----		50,702 LBS

* LOAD WEIGHT WITH BLU-32 SERIES FIRE BOMB IS 36,768 POUNDS.

48-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE BOX CAR (MECHANICAL)

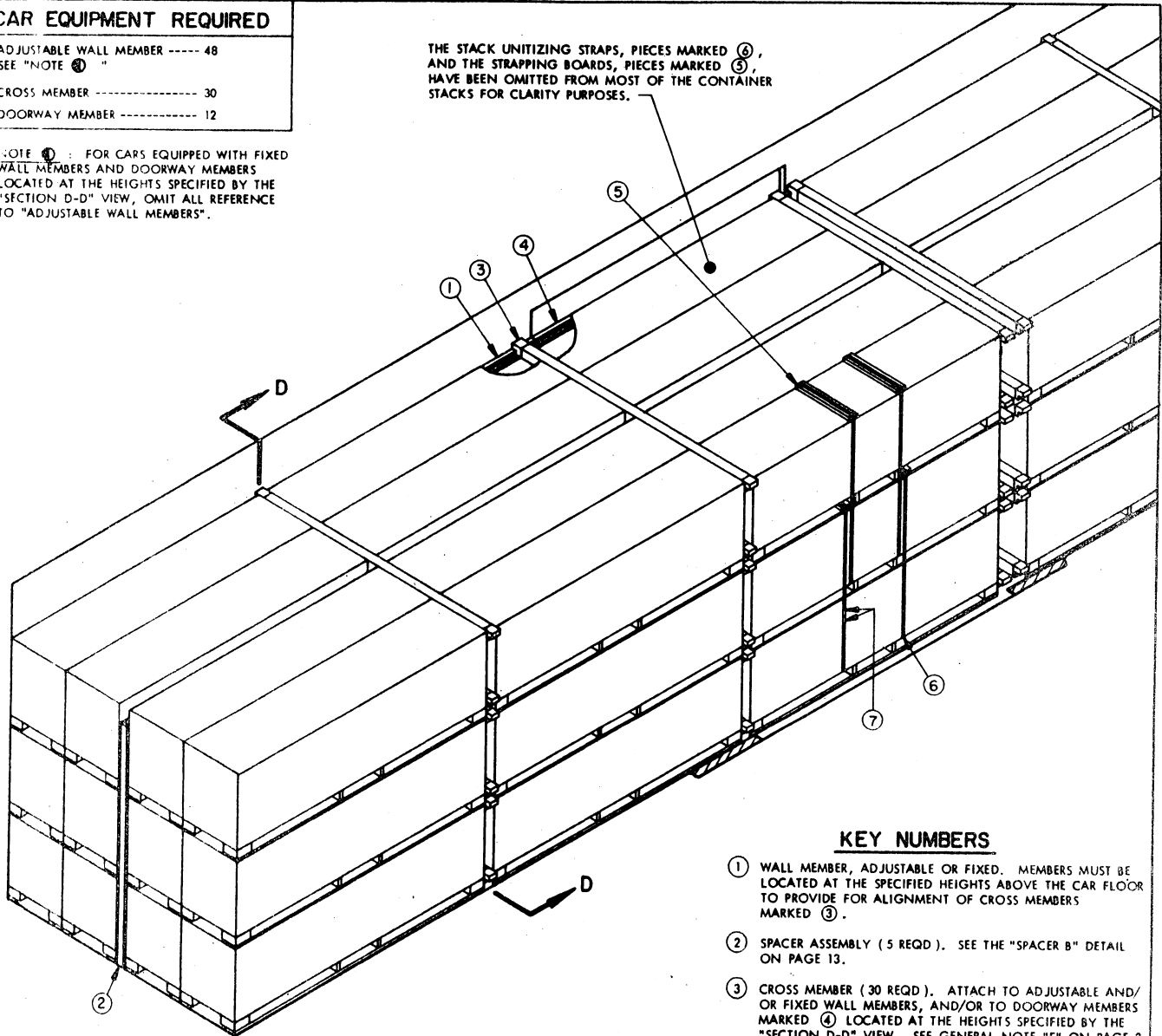
PAGE 15

CAR EQUIPMENT REQUIRED

ADJUSTABLE WALL MEMBER ----- 48
 SEE "NOTE ①"
 CROSS MEMBER ----- 30
 DOORWAY MEMBER ----- 12

NOTE ①: FOR CARS EQUIPPED WITH FIXED WALL MEMBERS AND DOORWAY MEMBERS LOCATED AT THE HEIGHTS SPECIFIED BY THE "SECTION D-D" VIEW, OMIT ALL REFERENCE TO "ADJUSTABLE WALL MEMBERS".

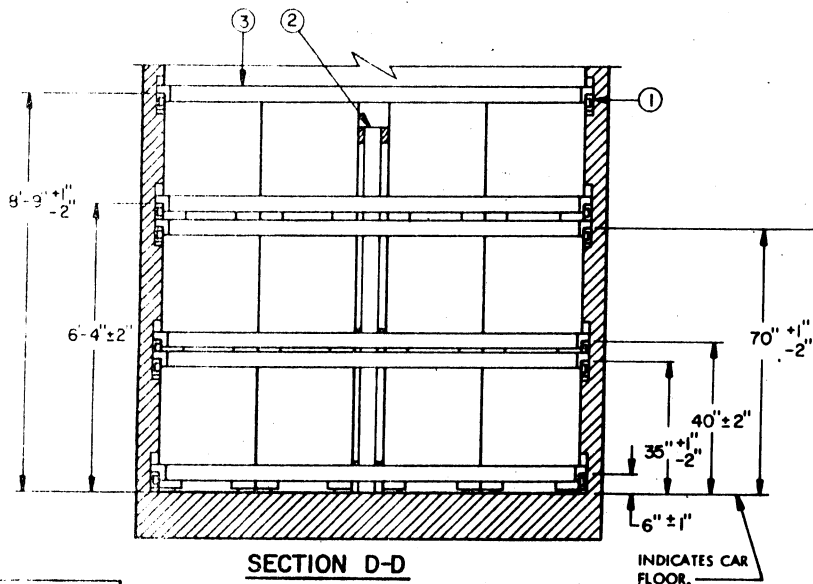
THE STACK UNITIZING STRAPS, PIECES MARKED ⑥, AND THE STRAPPING BOARDS, PIECES MARKED ⑤, HAVE BEEN OMITTED FROM MOST OF THE CONTAINER STACKS FOR CLARITY PURPOSES.



ISOMETRIC VIEW

KEY NUMBERS

- ① WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE FOR ALIGNMENT OF CROSS MEMBERS MARKED ③.
- ② SPACER ASSEMBLY (5 REQD). SEE THE "SPACER B" DETAIL ON PAGE 13.
- ③ CROSS MEMBER (30 REQD). ATTACH TO ADJUSTABLE AND/OR FIXED WALL MEMBERS, AND/OR TO DOORWAY MEMBERS MARKED ④ LOCATED AT THE HEIGHTS SPECIFIED BY THE "SECTION D-D" VIEW. SEE GENERAL NOTE "F" ON PAGE 2.
- ④ DOORWAY MEMBER (12 REQD). POSITION AT THE HEIGHTS SPECIFIED BY THE "SECTION D-D" VIEW. SEE SPECIAL NOTE 4 ON PAGE 17.
- ⑤ STRAPPING BOARD, 2" X 4" X 25-3/4" (80 REQD). SEE THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3.
- ⑥ STACK UNITIZING STRAP, 1-1/4" X .035" X 17'-0" STEEL STRAPPING (80 REQD). SECURE TO PIECE MARKED ⑤ W/2 STAPLES. SEE GENERAL NOTE "N" ON PAGE 2.
- ⑦ SEAL FOR 1-1/4" STRAPPING (160 REQD, 2 PER STRAP JOINT).



SECTION D-D

INDICATES CAR FLOOR.

EACH DIMENSIONED HEIGHT ABOVE THE CAR FLOOR TO AN ADJUSTABLE AND/OR FIXED WALL MEMBER MARKED ① AND/OR A DOORWAY MEMBER MARKED ④ IS SPECIFIED TO LOCATE THE CENTER LINE OF A CROSS MEMBER.

SPECIAL NOTES

1. A 60-UNIT LOAD IS SHOWN IN A 50'-6" LONG BY 9'-2" LONG (INSIDE CLEARANCE) BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS, AND HAVING 10'-0" WIDE DOOR OPENINGS. NOTE THAT THE DOOR HEIGHT MUST BE AT LEAST 9'-0".
2. A WIDER OR A NARROWER CAR MAY BE USED FOR SHIPMENT OF THE DEPICTED LOAD; HOWEVER, FOR EASE OF LOADING AND UNLOADING THE CRATES, THE INSIDE WIDTH OF THE CAR SHOULD BE AT LEAST 8'-11".
3. A CAR HAVING WIDER "THROUGH" DOORS CAN BE USED, AND IS PREFERRED, FOR THE SHIPMENT OF THE DEPICTED LOAD. A CAR HAVING STAGGERED DOOR OPENINGS CANNOT BE USED FOR A SHIPMENT OF FIVE (5) LOAD UNITS.
4. IF THE CAR BEING USED FOR A SHIPMENT IS NOT EQUIPPED WITH TWELVE (12) DOORWAY MEMBERS, IT WILL BE NECESSARY TO OMIT THE TOP LAYER FROM ANY LOAD UNIT WHICH EXTENDS INTO THE DOORWAY AREA.
5. IF THE DELINEATED OUTLOADING METHOD IS USED FOR THE SHIPMENT OF A LOAD WHICH CONTAINS LESS CRATES THAN SHOWN IN ORDER TO SATISFY A LESS-THAN-FULL-LOAD QUANTITY, AND THE QUANTITY CANNOT BE SATISFIED BY OMITTING A COMPLETE LAYER FROM A LOAD UNIT, A "FILLER ASSEMBLY", AS DETAILED ON PAGE 12, MUST BE SUBSTITUTED IN THE PLACE OF EACH OMITTED CRATE.

BILL OF MATERIAL

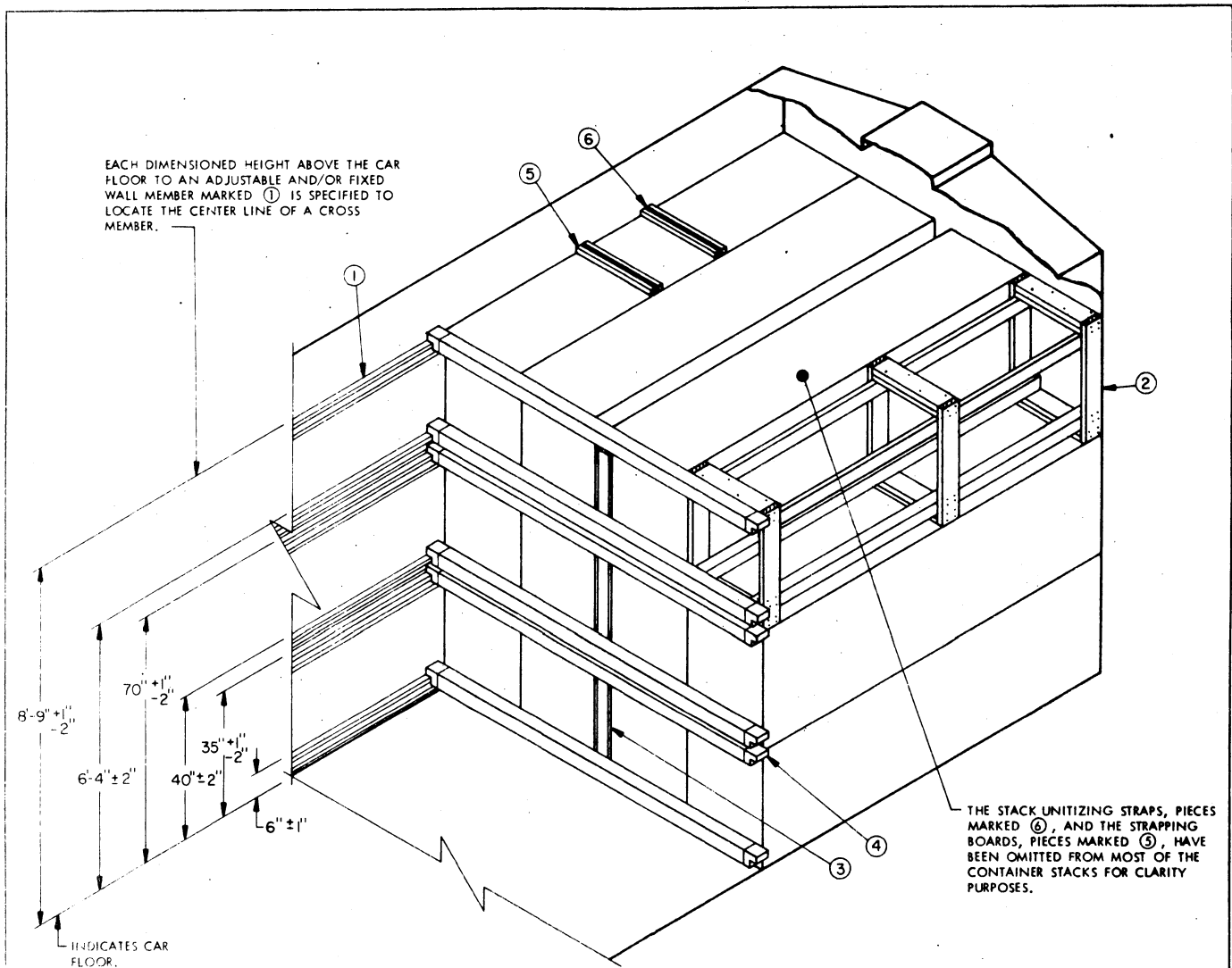
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	285	95
2" X 4"	292	195
NAILS	NO. REQD	POUNDS
6d (2")	180	1-1/4
STEEL STRAPPING, 1-1/4" X .035" -----	1,360' REQD -----	195 LBS
SEAL FOR 1-1/4" STRAPPING -----	160 REQD -----	8 LBS
STAPLE FOR 1-1/4" STRAPPING -----	160 REQD -----	2 LBS

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CRATE WITH BLU-27 -----	60 -----	61,200 LBS *
SERIES FIRE BOMB		
DUNNAGE -----		932 LBS
TOTAL WEIGHT -----		62,132 LBS

* LOAD WEIGHT WITH BLU-32 SERIES FIRE BOMB IS 45,960 POUNDS.

60-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE BOX CAR (MECHANICAL)



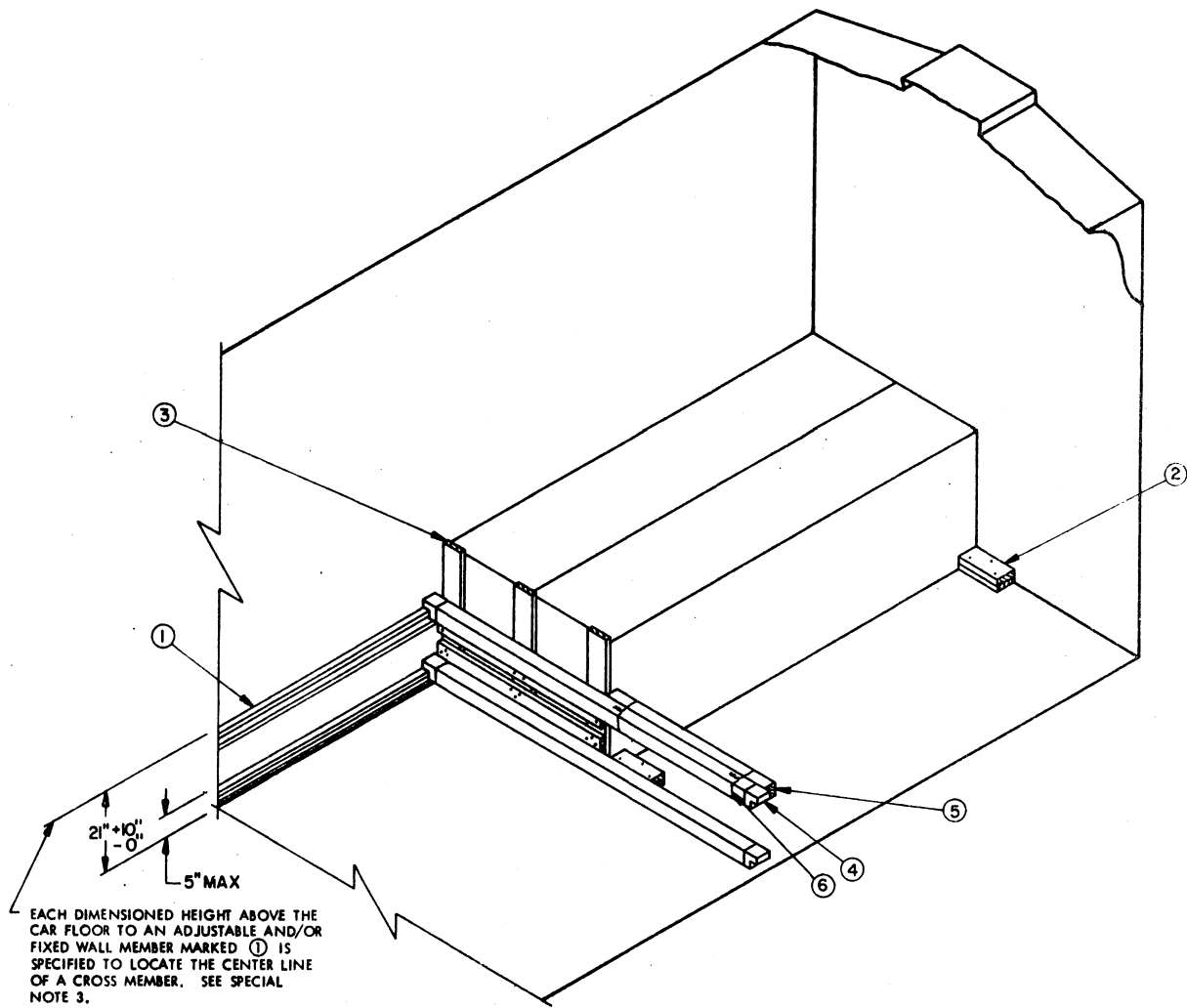
ISOMETRIC VIEW

KEY NUMBERS

SPECIAL NOTES

1. AN 11-UNIT LOAD IS SHOWN IN A 9'-2" WIDE (INSIDE CLEARANCE) BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS. A WIDER CAR CAN BE USED.
2. THE USE OF A "FILLER ASSEMBLY" IS SHOWN ONLY TO DEPICT A TYPICAL INSTALLATION. A CRATE MAY BE LOADED IN THE PLACE OF THE "FILLER ASSEMBLY", IF DESIRED.

- ① WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE FOR ALIGNMENT OF CROSS MEMBERS MARKED ④.
- ② FILLER ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 12.
- ③ SPACER ASSEMBLY (1 REQD). SEE THE "SPACER B" DETAIL ON PAGE 13.
- ④ CROSS MEMBER (6 REQD). ATTACH TO ADJUSTABLE AND/OR FIXED WALL MEMBERS LOCATED AT THE HEIGHTS SPECIFIED BY THE "ISOMETRIC VIEW". SEE GENERAL NOTE "F" ON PAGE 2.
- ⑤ STRAPPING BOARD, 2" X 4" X 25-3/4" (14 REQD). SEE THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3.
- ⑥ STACK UNITIZING STRAP, 1-1/4" X .035" X 17'-0" STEEL STRAPPING (14 REQD). SECURE TO PIECE MARKED ⑤ W/2 STAPLES. SEE GENERAL NOTE "N" ON PAGE 2.
- ⑦ SEAL FOR 1-1/4" STRAPPING (28 REQD, 2 PER STRAP JOINT).



ISOMETRIC VIEW

SPECIAL NOTES

1. A 2-UNIT LOAD IS SHOWN IN AN 8'-6" WIDE (INSIDE CLEARANCE) BOX CAR EQUIPPED WITH FIXED WALL MEMBERS. A WIDER CAR CAN BE USED.
2. IF FOUR UNITS ARE TO BE LOADED IN ONE BAY OF A WIDER CAR, A SPACER ASSEMBLY, AS SHOWN IN THE "SPACER B" DETAIL ON PAGE 13, WILL BE SUBSTITUTED FOR THE PIECES MARKED ②, ⑤, AND ⑥ IN THE DEPICTED LOAD.
3. IF CROSS MEMBERS CAN BE INSTALLED AT THE HEIGHTS SPECIFIED ON PAGE 18 FOR THE BRACING OF THE FIRST LAYER OF CRATES, THE GATE, PIECE MARKED ③, WILL NOT BE REQUIRED.

KEY NUMBERS

- ① WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE FOR ALIGNMENT OF CROSS MEMBERS MARKED ③. SEE SPECIAL NOTES 1 AND 3.
- ② SIDE BLOCKING, 2" X 6" X 12" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/3-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTES "P" AND "Q" ON PAGE 2.
- ③ GATE (1 REQD). SEE THE "GATE D" DETAIL ON PAGE 13.
- ④ CROSS MEMBER (2 REQD). ATTACH TO ADJUSTABLE AND/OR FIXED WALL MEMBERS LOCATED AT THE HEIGHTS SPECIFIED BY THE "ISOMETRIC VIEW". SEE GENERAL NOTE "F" ON PAGE 2.
- ⑤ ANTI-SWAY BLOCK, 4" X 4" BY CUT TO FIT BETWEEN A CRATE AND THE CAR SIDE WALL (1 REQD).
- ⑥ TIE WIRE, NO. 14 GAGE BLACK ANNEALED WIRE 48" LONG INSTALLED TO FORM TWO WRAPS AROUND PIECES MARKED ④ AND ⑤, OR NO. 8 GAGE WIRE 30" LONG INSTALLED TO FORM ONE WRAP AROUND PIECES MARKED ④ AND ⑤ (2 REQD). TWIST TIE THE ENDS TOGETHER TIGHTLY.

