

REV NO. 1 APPROVED BY
 BUREAU OF EXPLOSIVES
A. F. Grassmuck
 SUPERVISOR, MILITARY & INTERMODAL SERVICES
 DATE 6/25/74

CHAPARRAL

LOADING AND BRACING (CL & LCL) IN BOX CARS OF COMPLETE ROUND IN THE M570 SHIPPING AND STORAGE CONTAINER (PALLETIZED)

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THIS DRAWING, INCLUDING REVISION I, SUPERSEDES
 DRAWING 19-48-5496-GM5K4, DATED FEBRUARY 1971.

REVISIONS				DRAFTSMAN	PROJ ENG	AMSMI-SP
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				MAY 1974		
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				19	48	5496
						FILE
						GM 5CHI

DO NOT SCALE

GENERAL NOTES

(GENERAL NOTES CONTINUED)

- 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 IN THIS DRAWING ARE APPLICABLE TO THE CHAPARRAL MISSILE, WHEN PACKAGED IN THE M570 SHIPPING AND STORAGE CONTAINER PALLETIZED FOUR PER PALLET UNIT. SUBSEQUENT REFERENCE TO UNIT MEANS THE PALLETIZED UNIT.
- C. FOR DETAIL OF PALLET UNIT SEE USAMC DRAWING NUMBER 19-48-5235-20CH1 AND "UNIT DETAIL" VIEW ON PAGE 3.
- PALLET UNIT DIMENSIONS --- 128-1/4" LONG BY 36" WIDE BY 44-5/8" HIGH
(APPROX).
GROSS WEIGHT ----- 1,402 POUNDS (APPROX).
CUBE ----- 119.2 CUBIC FEET.
- D. THIS ITEM IS A DOT CLASS "A" EXPLOSIVE. THE OUTLOADING PROCEDURES SPECIFIED CAN ALSO BE UTILIZED FOR THE SHIPMENT OF THE DEPICTED CONTAINERS WHEN THEY ARE EMPTY OR LOADED WITH AN ITEM WHICH IS IDENTIFIED DIFFERENTLY BY NOMENCLATURE THAN THE ITEM DESIGNATED WITHIN THE TITLE OF THIS DOCUMENT.
- E. THE LOAD AS SHOWN ON PAGES 4 AND 5 IS BASED ON 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CARS WITH NAILABLE FLOORS AND EQUIPPED WITH 15'-0" WIDE STAGGERED DOORS OF THE CONVENTIONAL SLIDING TYPE OR PLUG TYPE DOORS. A 14'-0" WIDE STAGGERED DOOR OPENING IS THE MINIMUM WIDTH OPENING THAT CAN BE USED FOR SHIPMENT OF THE DEPICTED LOAD IN A 50'-6" LONG CAR. WIDER CARS AND/OR ALL-METAL CARS CAN BE USED IF EQUIPPED WITH NAILABLE FLOORS. NOTE: ALL-METAL CARS CAN NOT BE USED FOR A LOAD REQUIRING A K-BRACE TYPE OF PARTIAL LAYER BLOCKING AS DEPICTED ON PAGE 7. SEE GENERAL NOTE "G" BELOW.
- F. THE DEPICTED OUTLOADING PROCEDURES ARE ALSO APPLICABLE TO THE SHIPMENT OF AN 18-UNIT LOAD IN A 40'-6" LONG BY 9'-2" WIDE CAR; HOWEVER, THE CAR MUST BE EQUIPPED WITH STAGGERED OR THROUGH DOOR OPENINGS NOT LESS THAN 12'-0" WIDE.
- G. IF THE CAR BEING LOADED HAS PLUG DOORS, NO SPECIAL CHANGES TO THE SPECIFIED PROCEDURES ARE REQUIRED IN THE DOORWAY AREA. THE "DOORWAY AREA" WITHIN A CAR IS DEFINED AS THE CARGO SPACE THAT IS ADJACENT TO A CONVENTIONAL TYPE AND/OR A PLUG TYPE DOOR. THE LENGTH OF A "DOORWAY AREA" CAN BE AS MUCH AS 24 FEET IN SOME CARS THAT ARE EQUIPPED WITH STAGGERED DOORS. CAUTION: DUNNAGE MATERIAL MUST NOT BE NAILED TO ANY PLUG DOOR, WHETHER AUXILIARY OR MAIN, EXCEPT TO A NAILING STRIP FOR SECURING SUCH ITEMS AS THE DOORWAY SPANNER PIECE OF A K-BRACE ASSEMBLY, IF A DOOR IS SO EQUIPPED. ALSO, AFTER THE PLUG DOORS ON A CAR ARE CLOSED AND READY FOR THE INSTALLATION OF "CAR SEALS", A PIECE OF WIRE OF SUITABLE SIZE WILL BE USED IN ADDITION TO, AND IN CONJUNCTION WITH, EACH CAR SEAL USED TO "SEAL" THE CAR. THE WIRE WILL BE THREADED THROUGH THE HOLES IN THE DOOR LATCH ASSEMBLY ONE OR MORE TIMES, AND THE WIRE ENDS WILL BE TWISTED TOGETHER.
- H. NOTE: A SHIPMENT WILL BE POSITIONED IN THE CAR IN COMPLIANCE WITH THE WEIGHT DISTRIBUTION REQUIREMENTS OF THE AAR. THE APPROVED BLOCKING, BRACING, AND STAYING METHODS FOR THE LOADS SPECIFIED MUST BE FOLLOWED. THE NUMBER OF UNITS MAY BE ADJUSTED TO FIT THE SIZE OF THE CAR TO BE LOADED, OR THE QUANTITY TO BE SHIPPED. FOR A LOAD QUANTITY OTHER THAN SPECIFIED, THE APPROVED METHODS MUST BE FOLLOWED AS CLOSELY AS POSSIBLE.
- J. OTHER TYPES OF LADING ITEMS MAY BE LOADED IN A CAR WHICH IS PARTIALLY LOADED WITH THE DESIGNATED ITEM, PROVIDING THE TOTAL LOAD IS COMPATIBLE, EXISTING DIRECTIVES ARE NOT VIOLATED, AND THE OTHER LADING ITEMS ARE BLOCKED AND BRACED TO EQUAL THE BLOCKING AND BRACING CRITERIA SPECIFIED.
- K. THE SELECTION OF RAILCARS FOR THE TRANSPORT OF THE DESIGNATED ITEM WILL BE IN ACCORDANCE WITH HAZARDOUS MATERIALS REGULATIONS OF DOT AND AR 55-355, CHAPTER 213, FOR EXPLOSIVES OR OTHER DANGEROUS ARTICLES, IN FULL.
- L. 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 FOR THE NAILING OF THE APPLICABLE DUNNAGE PIECES. IF THE NAIL SIZE IS NOT SPECIFIED IN THE CAR, 30d NAILS SHOULD BE USED IN LIEU OF THOSE SPECIFIED IN THE KEY NUMBERS.
- M. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE OR 1-5/8" THICK BY 3-5/8" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE OR 1-5/8" THICK BY 5-5/8" WIDE.
- N. NOTE: A STAGGERED NAILING PATTERN WILL BE USED WHEREVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES. ALSO, A STAGGERED NAILING PATTERN WILL BE USED WHEN DUNNAGE IS NAILED TO THE FLOOR 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.
- P. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTION WHICH IS IMMEDIATELY ADJACENT TO DEPICTED OUTLOADING METHODS.
- Q. 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.
- R. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF TWO (2) SEALS, BUTTED TOGETHER, WITH TWO (2) PAIR OF CRIMPS PER SEAL MUST BE USED TO SEAL THE JOINT. CAUTION: EXERCISE CARE DURING TENSIONING TO PREVENT DAMAGE TO LADING ITEMS.

(CONTINUED AT RIGHT)

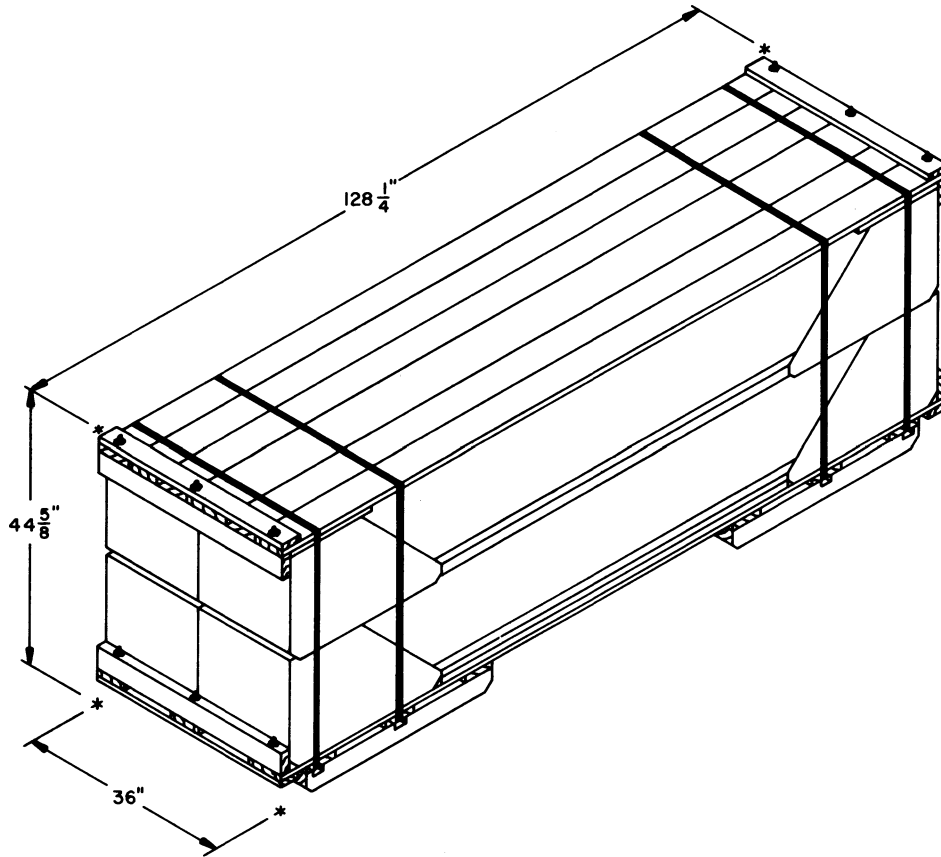
REVISIONS

REVISION NO. 1, DATED MAY 1974, CONSISTS OF:

1. CHANGING PALLET UNIT DETAILS.
2. CHANGING LOCATION OF GATE HOLD-DOWN ON CENTER GATES.
3. CHANGING "FILLER ASSEMBLY" DETAIL.
4. CHANGING DRAWING FILE NUMBER FROM GM5K4 TO GM5CH1.

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 NAIL OF SAME SIZE.
- STRAPPING, STEEL ----- : TYPE I OR IV, CLASS A, B OR C, FED SPEC QQ-S-781.
FOR FSN SEE 58-38-100.
- STRAP SEALS,
STRAP STAPLES ----- : COMMERCIAL GRADE.

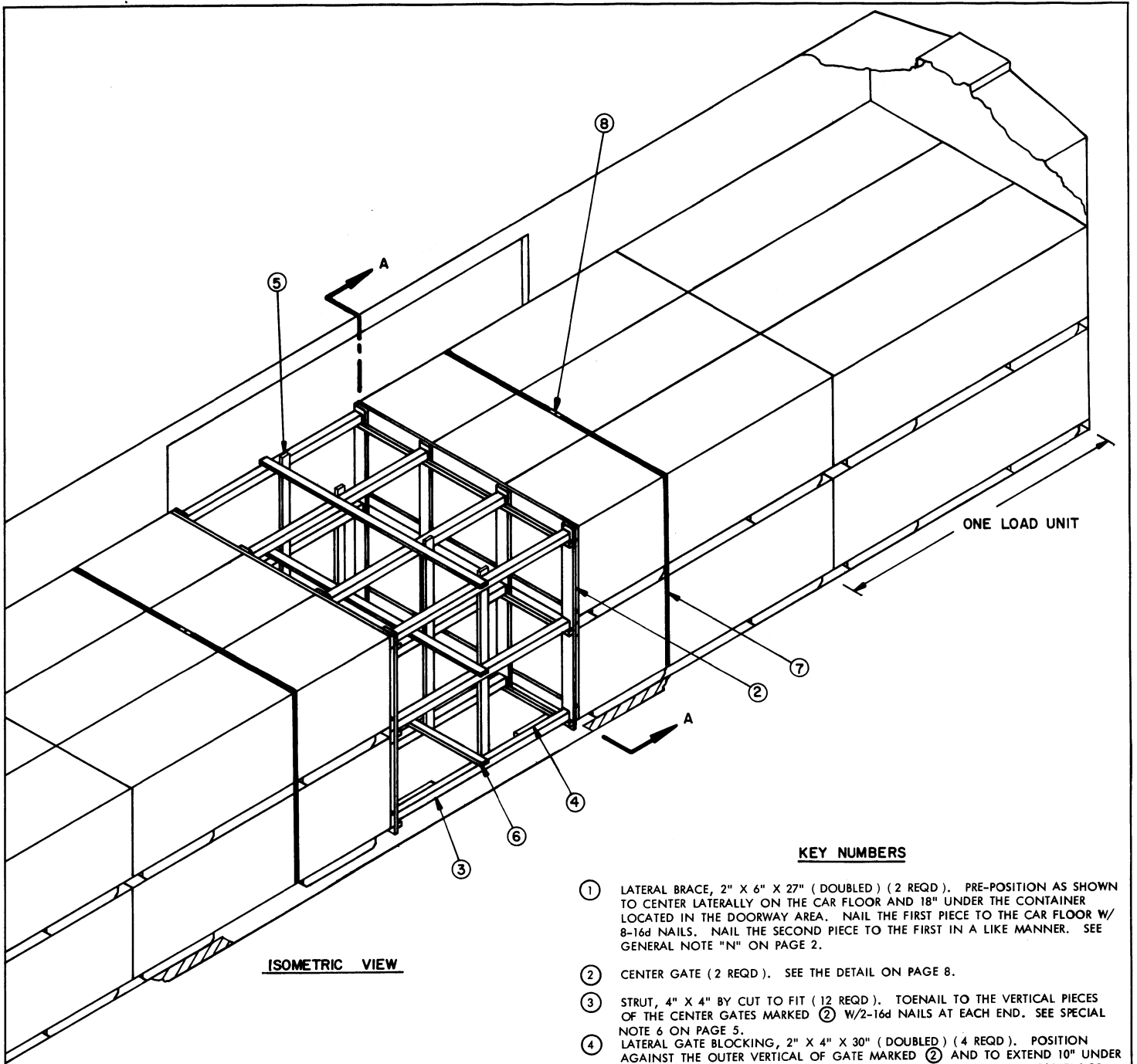


UNIT DETAIL

FOR ADDITIONAL UNIT DATA, SEE
 USAMC DRAWING NUMBER 19-48-5235-GM20CH1.

PALLET UNIT DATA:

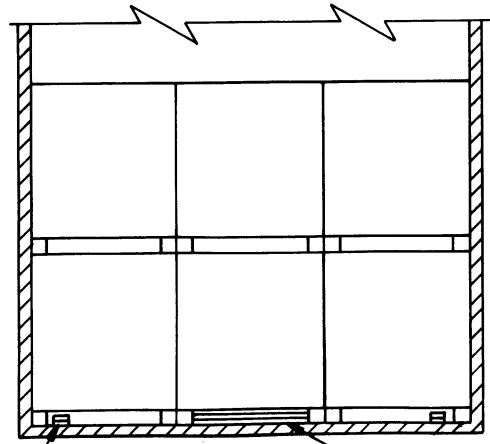
NUMBER OF CONTAINERS ----- FOUR (4).
 GROSS WEIGHT----- 1,402 POUNDS (APPROX).
 CUBE----- 119.2 CUBIC FEET.



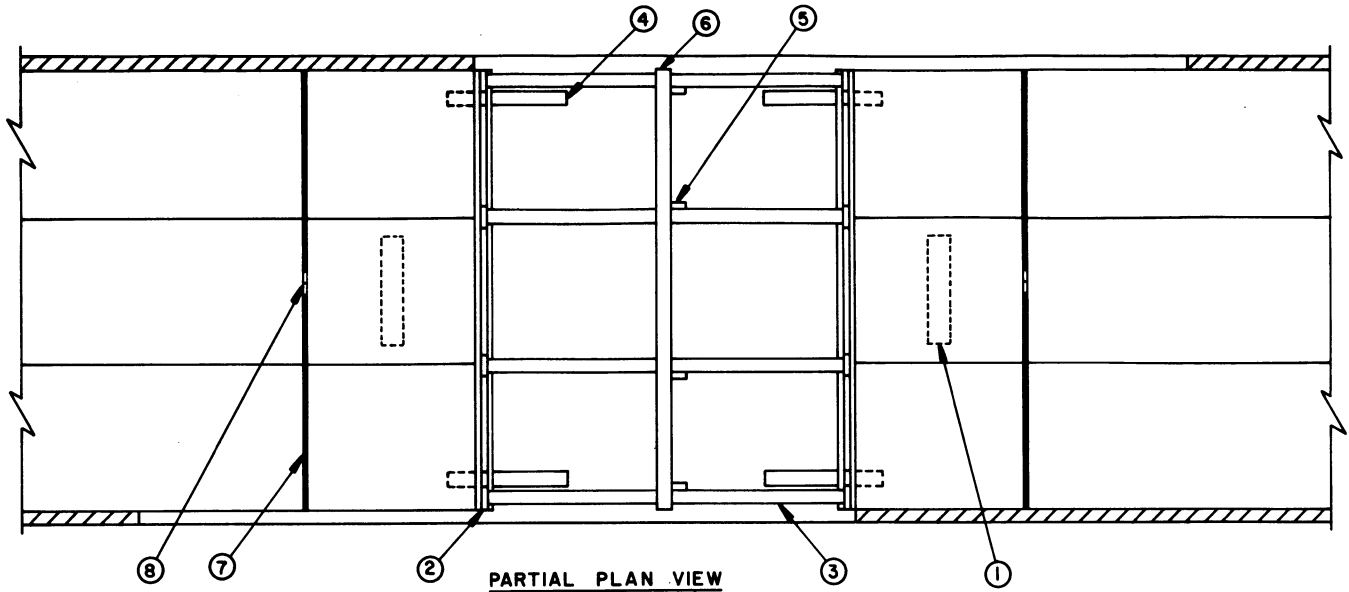
ISOMETRIC VIEW

KEY NUMBERS

- ① LATERAL BRACE, 2" X 6" X 27" (DOUBLED) (2 REQD). PRE-POSITION AS SHOWN TO CENTER Laterally ON THE CAR FLOOR AND 18" UNDER THE CONTAINER LOCATED IN THE DOORWAY AREA. NAIL THE FIRST PIECE TO THE CAR FLOOR W/ 8-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTE "N" ON PAGE 2.
- ② CENTER GATE (2 REQD). SEE THE DETAIL ON PAGE 8.
- ③ STRUT, 4" X 4" BY CUT TO FIT (12 REQD). TOENAIL TO THE VERTICAL PIECES OF THE CENTER GATES MARKED ② W/2-16d NAILS AT EACH END. SEE SPECIAL NOTE 6 ON PAGE 5.
- ④ LATERAL GATE BLOCKING, 2" X 4" X 30" (DOUBLED) (4 REQD). POSITION AGAINST THE OUTER VERTICAL OF GATE MARKED ② AND TO EXTEND 10" UNDER THE ADJACENT PALLET UNIT AS SHOWN. NAIL THE FIRST PIECE TO CAR FLOOR W/4-16d NAILS. NAIL SECOND PIECE TO FIRST IN A LIKE MANNER.
- ⑤ VERTICAL STRUT BRACING, 2" X 4" X 7'-4" (4 REQD). NAIL TO STRUTS MARKED ③ W/3-10d NAILS AT EACH JOINT.
- ⑥ LATERAL STRUT BRACING, 2" X 4" BY CAR WIDTH (3 REQD). NAIL TO STRUTS MARKED ③ W/3-10d NAILS AT EACH JOINT.
- ⑦ DOORWAY PROTECTION UNITIZING STRAP, 1-1/4" X .035" X 35'-0" STEEL STRAPPING (2 REQD). SEE GENERAL NOTE "R" ON PAGE 2.
- ⑧ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP JOINT).



SECTION A-A



PARTIAL PLAN VIEW

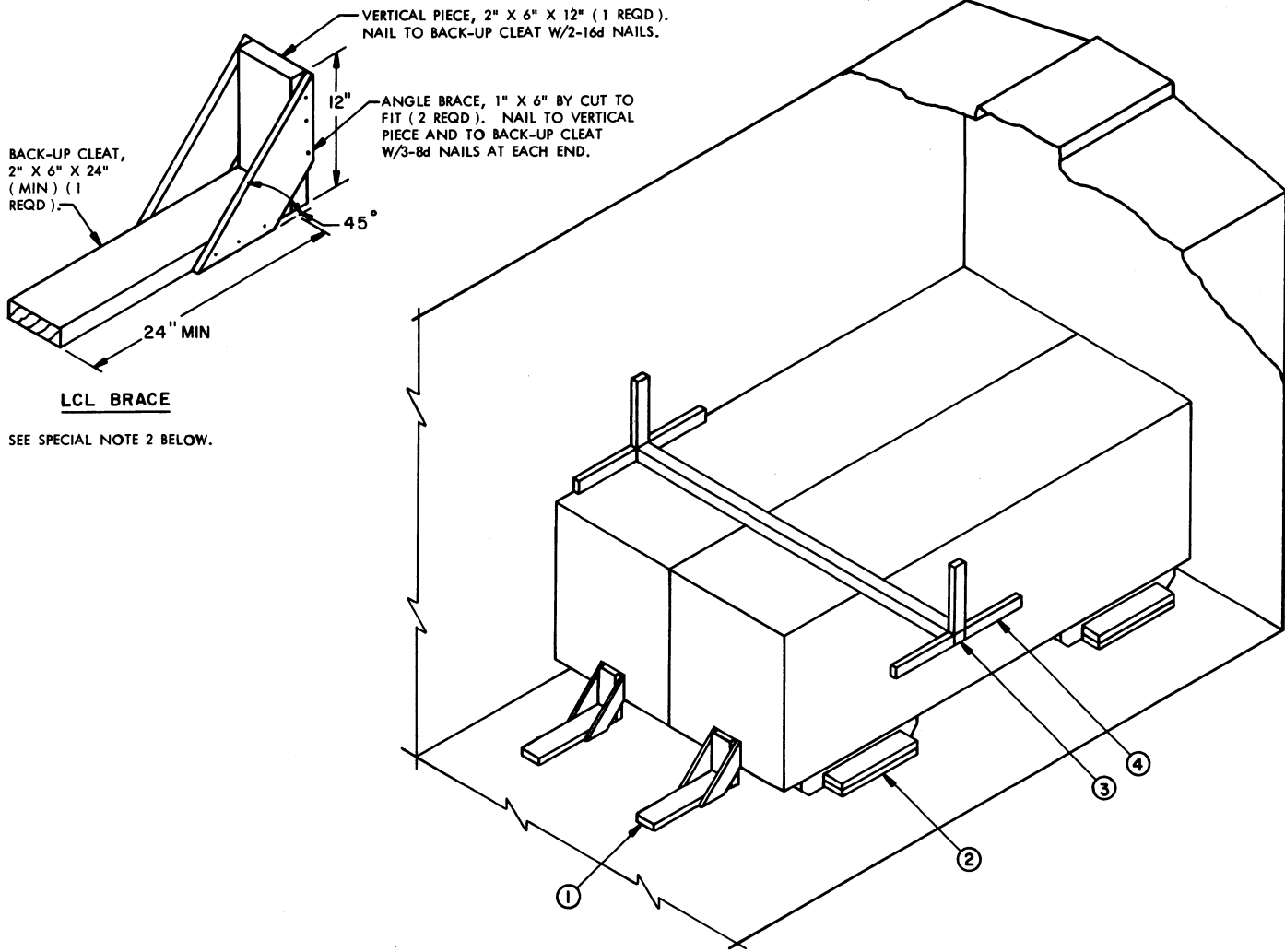
SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR EQUIPPED WITH 15'-0" WIDE STAGGERED DOOR OPENINGS IS SHOWN. A 14'-0" WIDE STAGGERED DOOR OPENING IS THE MINIMUM WIDTH OPENING THAT CAN BE USED FOR SHIPMENT OF THE DEPICTED LOAD IN A 50'-6" LONG CAR. THE DEPICTED PROCEDURES APPLY TO CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS OR PLUG TYPE DOORS. WIDER CARS CAN BE USED BY PROVIDING A "SIDE BLOCKING" ASSEMBLY, AS SHOWN ON PAGE 8, ON EACH SIDE OF A LOAD UNIT. AS REQUIRED, THE LENGTH OF THE "SIDE BLOCKING" ASSEMBLY WILL BE REDUCED SO AS TO NOT EXTEND INTO A DOOR OPENING.
2. THE SPECIFIED PROCEDURES ALSO APPLY TO THE SHIPMENT OF AN 18-UNIT LOAD IN A 40'-6" LONG CAR WHICH HAS STAGGERED OR THROUGH DOOR OPENINGS NOT LESS THAN 12'-0" WIDE. POSITION TWO (2) LOAD UNITS IN ONE END OF THE CAR AND ONE (1) LOAD UNIT IN THE OPPOSITE END.
3. FOR EACH LOAD UNIT WHICH EXTENDS 10'-0" OR MORE INTO THE DOORWAY AREA ON ONE OR BOTH SIDES OF THE CAR, TWO (2) SETS OF PIECES MARKED ①, ⑦ AND ⑧ MUST BE INSTALLED (ONE SET AT EACH END) TO BUNDLE AND BLOCK THAT UNIT. FOR EACH LOAD UNIT WHICH EXTENDS MORE THAN 64" PAST A DOOR POST INTO THE DOORWAY AREA ON ONE OR BOTH SIDES OF THE CAR, ONE (1) SET OF PIECES MARKED ①, ⑦ AND ⑧ MUST BE INSTALLED TO BUNDLE AND BLOCK THAT UNIT AS SHOWN WITHIN THE BASIC LOAD VIEWS. FOR EACH LOAD UNIT WHICH DOES NOT EXTEND MORE THAN 64" PAST A DOOR POST, OMIT PIECES MARKED ①, ⑦ AND ⑧. SEE GENERAL NOTE "G" ON PAGE 2.
4. IF THE DELINEATED OUTLOADING METHOD IS USED FOR THE SHIPMENT OF A LOAD WHICH CONTAINS LESS UNITS THAN SHOWN TO SATISFY A LESS-THAN-FULL-LOAD QUANTITY, AND THE QUANTITY CANNOT BE SATISFIED BY OMITTING A COMPLETE LAYER OR STACK, A "FILLER ASSEMBLY", AS DETAILED ON PAGE 9, MUST BE SUBSTITUTED FOR EACH OMITTED UNIT. A UNIT MAY BE OMITTED AT ANY LOCATION WITHIN THE TOP LAYER OF A LOAD UNIT, PREFERABLY THE CENTER UNIT.
5. IF THE QUANTITY TO BE SHIPPED CANNOT BE READILY ACHIEVED BY THE SUBSTITUTION OF ONE OR MORE FILLER ASSEMBLIES FOR THE OMITTED UNITS, IT WILL BE NECESSARY TO INSTALL A K-BRACE ASSEMBLY TO RETAIN A PARTIAL LAYER. REFER TO PAGE 7 FOR BRACE AND INSTALLATION SPECIFICATIONS.
6. IF DESIRED, A DOUBLED 2" X 4" STRUT MAY BE SUBSTITUTED FOR EACH 4" X 4" STRUT IDENTIFIED BY KEY NUMBER ③ ON PAGE 4. DOUBLED 2" X 4" STRUTS WILL BE LAMINATED W/1-10d NAIL EACH 6 INCHES.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	55	19
2" X 3"	7	4
2" X 4"	84	56
2" X 6"	141	141
4" X 4"	86	116
NAILS	NO. REQD	POUNDS
10d (3")	240	3-3/4
16d (3-1/2")	112	2-1/2
STEEL STRAPPING, 1-1/4" X .035" --- 70' REQD -----		10 LBS
SEAL FOR 1-1/4" STRAPPING ----- 4 REQD -----		NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	24 -----	33,648 LBS
DUNNAGE -----		857 LBS
TOTAL WEIGHT -----		34,505 LBS



LCL BRACE

SEE SPECIAL NOTE 2 BELOW.

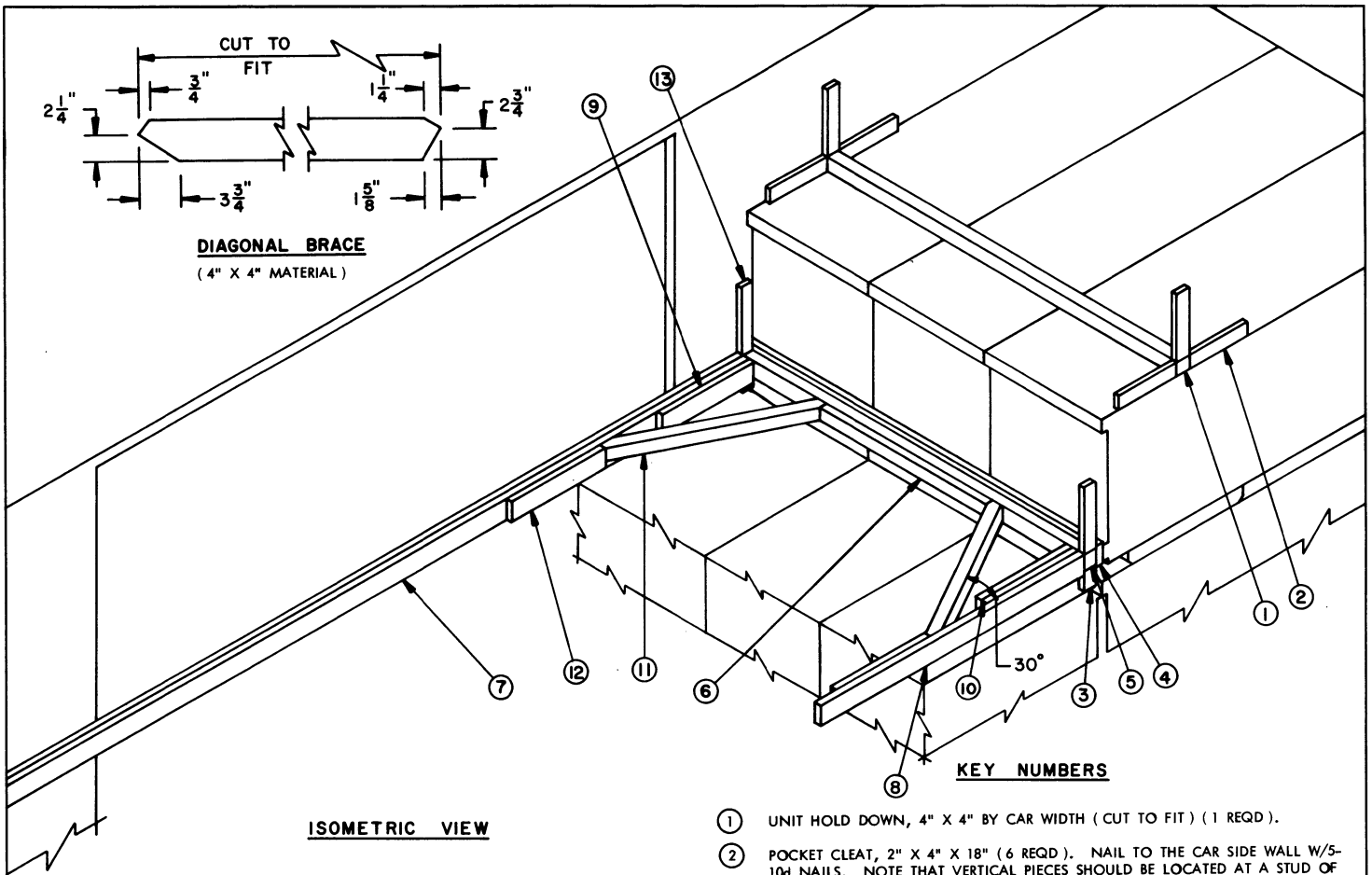
ISOMETRIC VIEW

KEY NUMBERS

SPECIAL NOTES:

1. THESE LCL OUTLOADING PROCEDURES ARE SHOWN DEPICTING THE USE OF LCL BRACES IN A BOX CAR WITH A WOOD OR NAILABLE METAL FLOOR.
2. EACH LCL BRACE AS APPLIED FOR LONGITUDINAL BRACING WILL SUPPORT 2,000 POUNDS OF LADING. FOR LONGITUDINAL BRACING, AT LEAST ONE (1) BRACE IS REQUIRED FOR EACH UNIT.

- ① LCL BRACE (2 REQD). SEE THE DETAIL AT LEFT ABOVE. CENTER ON THE END OF THE UNIT AND NAIL TO THE CAR FLOOR W/9-16d NAILS.
- ② SIDE BLOCKING, 2" X 6" X 24" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/6-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ③ UNIT HOLD DOWN, 4" X 4" BY CAR WIDTH (CUT TO FIT) (1 REQD).
- ④ POCKET CLEAT, 2" X 4" X 18" (6 REQD). NAIL TO CAR SIDE WALL W/5-10d NAILS. NOTE THAT VERTICAL PIECES SHOULD BE LOCATED AT A STUD OF THE CAR WALL.



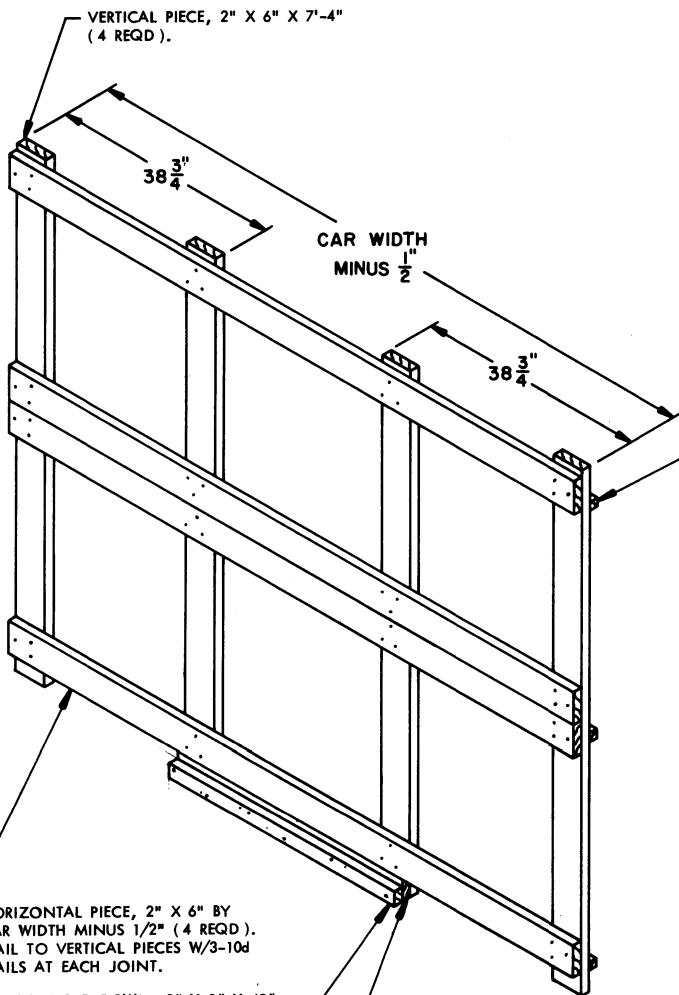
ISOMETRIC VIEW

KEY NUMBERS

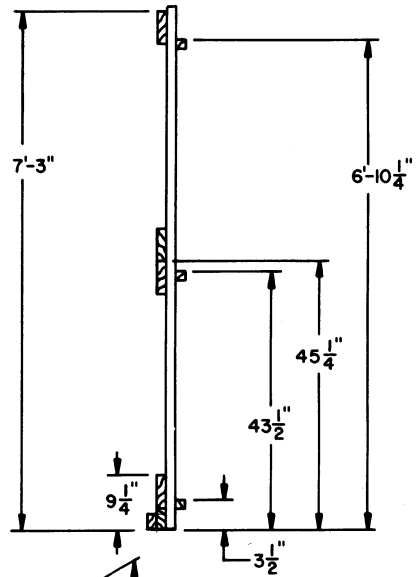
SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 15'-0" STAGGERED DOOR OPENINGS, WITH A PARTIAL SECOND (2nd) LAYER IS SHOWN. THE "K-BRACE" ASSEMBLY AS SHOWN IS ADEQUATE FOR RETAINING A MAXIMUM PARTIAL LAYER OF 6,000 POUNDS. SEE GENERAL NOTE "G" ON PAGE 2.
2. SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL LAYER BRACING" BECAUSE OF THE LENGTH OF THE PARTIAL LAYER TO BE SHIPPED.
3. PORTIONS OF THE CAR, UNITS OF THE FIRST LAYER AND RELATED BLOCKING AND BRACING ARE OMITTED FROM THE "ISOMETRIC VIEW" ABOVE FOR CLARITY PURPOSES. REFER TO PAGES 4 AND 5 FOR APPLICABLE BLOCKING AND BRACING PROCEDURES TO BE USED IN CONJUNCTION WITH PARTIAL LAYER BRACING SPECIFIED ABOVE.

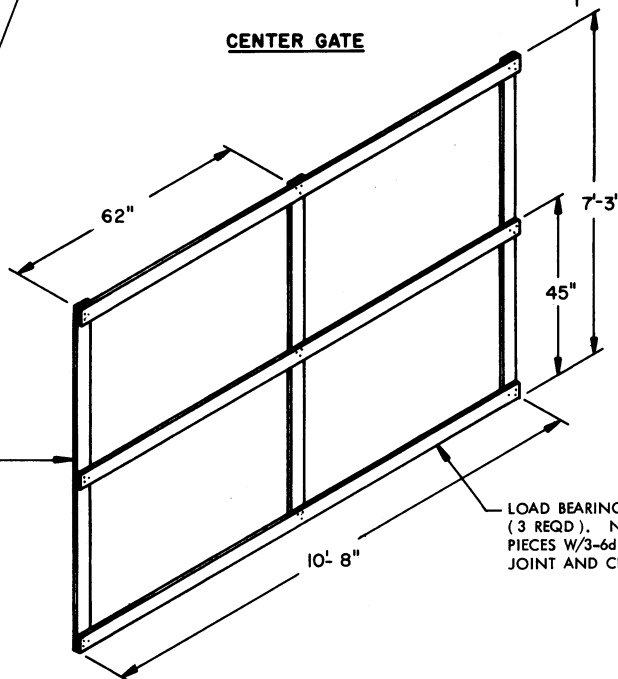
- ① UNIT HOLD DOWN, 4" X 4" BY CAR WIDTH (CUT TO FIT) (1 REQD).
- ② POCKET CLEAT, 2" X 4" X 18" (6 REQD). NAIL TO THE CAR SIDE WALL W/5-10d NAILS. NOTE THAT VERTICAL PIECES SHOULD BE LOCATED AT A STUD OF THE CAR WALL.
- ③ WALL CLEAT, 2" X 4" X 5" (2 REQD). NAIL TO THE CAR SIDE WALL W/2-10d NAILS.
- ④ HORIZONTAL PIECE, 2" X 6" BY CAR WIDTH (CUT TO FIT) (1 REQD). NAIL TO CROSS CAR BRACE MARKED ⑤ W/1-12d NAIL EVERY 6". SEE GENERAL NOTE "N" ON PAGE 2.
- ⑤ CROSS CAR BRACE, 4" X 4" BY CAR WIDTH (CUT TO FIT) (1 REQD).
- ⑥ CENTER CLEAT, 2" X 4" X 36" (1 REQD). NAIL TO THE CROSS CAR BRACE MARKED ⑤ W/7-12d NAILS.
- ⑦ HORIZONTAL WALL CLEAT, 2" X 6" BY LENGTH TO SUIT (DOUBLED) (1 REQD). CLEAT WILL BE LENGTH NECESSARY TO EXTEND ACROSS THE DOORWAY AND FAR ENOUGH PAST DOOR OPENING TO PROVIDE A TOTAL WALL BEARING SURFACE OF 7'-0" LONG, I.E., THE SUM OF THE WALL BEARING SURFACE ON BOTH SIDES OF THE DOOR OPENING. HOWEVER, A MINIMUM OF 12" OF WALL BEARING SURFACE MUST BE AVAILABLE ON THE LOAD SIDE OF THE DOOR OPENING FOR ADEQUATE NAILING. NAIL FIRST PIECE TO CAR WALL W/16-12d NAILS. NAIL SECOND PIECE TO FIRST W/1-10d NAIL EVERY 8".
- ⑧ HORIZONTAL WALL CLEAT, 2" X 6" X 8'-0" (1 REQD). NAIL TO CAR SIDE WALL W/16-12d NAILS.
- ⑨ CROSS CAR BRACE CLEAT, 2" X 6" X 30" (1 REQD). NAIL TO HORIZONTAL WALL CLEAT MARKED ⑦ W/10-16d NAILS.
- ⑩ CROSS CAR BRACE CLEAT, 2" X 6" X 30" (DOUBLED) (1 REQD). NAIL FIRST PIECE TO HORIZONTAL WALL CLEAT MARKED ⑧ W/10-16d NAILS. NAIL SECOND PIECE TO FIRST IN A LIKE MANNER.
- ⑪ DIAGONAL BRACE, 4" X 4" BY CUT TO FIT (2 REQD). SEE DETAIL AT LEFT ABOVE. TOENAIL TO CROSS CAR BRACE MARKED ⑤ AND TO HORIZONTAL WALL CLEAT MARKED ⑦ AND/OR ⑧ W/1-60d NAIL AT EACH END.
- ⑫ BACK-UP CLEAT, 2" X 6" X 30" (2 REQD). NAIL TO HORIZONTAL WALL CLEAT MARKED ⑦ AND/OR ⑧ W/14-16d NAILS.
- ⑬ HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO CAR SIDE WALL W/4-12d NAILS.



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

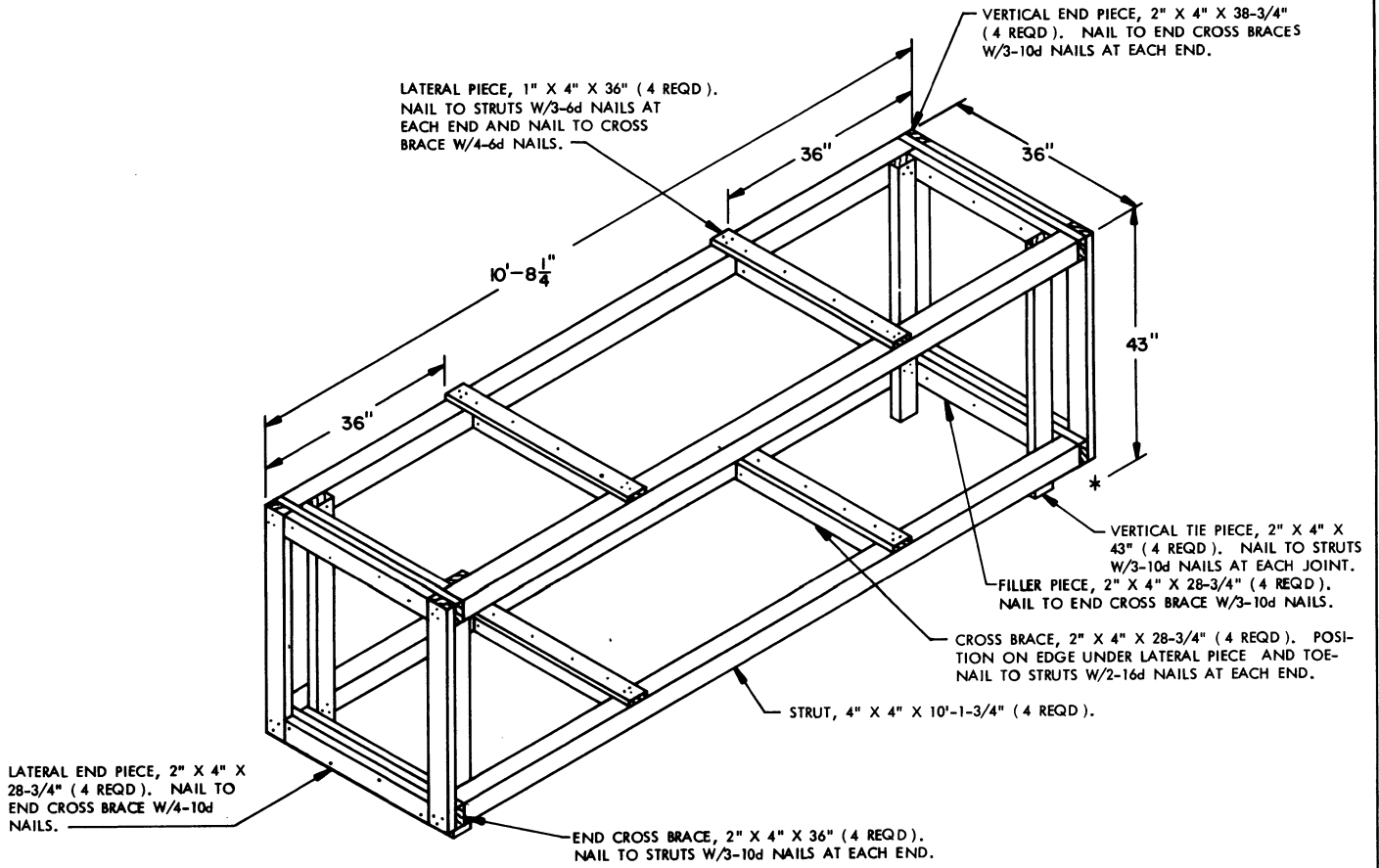


CENTER GATE



SIDE BLOCKING

DETAILS



FILLER ASSEMBLY

