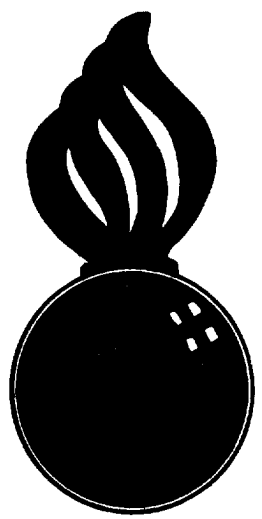


REV 1 APPROVED
 BUREAU OF EXPLOSIVES
A. F. Grassmuck
 DATE 6/26/63



LOADING & BRACING (CL & LCL) IN BOX CARS OF CBU ITEMS, PACKED IN XM468 CONTAINER

INDEX

<u>ITEM</u>	<u>PAGE(S)</u>
GENERAL NOTES, MATERIAL SPECIFICATIONS AND DETAILS.....	2
LCL PARTIAL FIRST LAYER.....	3
LCL PARTIAL SECOND LAYER.....	4 & 5
CL 40'-6" CAR.....	6 & 7
CL 50'-6" CAR.....	8 & 9

LOADING & BRACING (CL & LCL) IN BOX CARS OF CBU ITEMS, PACKED IN XM468 CONTAINER

DRAWN BY <i>K.S.J.</i>	CHECKED <i>RHA</i>	DESIGNED <i>D.W.</i>	SUBMITTED <i>W.D.</i>
REVISIONS			EXAMINED & APPROVED <i>Ralph Hall</i> AMMUNITION PROCUREMENT & SUPPLY AGENCY
1	22 SEPT 64	JDS	APPROVED BY ORDER OF COMMANDER, ARMY MATERIEL COMMAND <i>George J. Kelly Col. GS.</i> SUPPLY & MAINTENANCE COMMAND
			MATERIEL COMMAND U.S.A. 18 APRIL 1961
			CLASS DIVISION DRAWINGS FILE 19 48 7013 SP5MI

DO NOT SCALE

GENERAL NOTES

- LOADS AS SHOWN ARE BASED ON BOX CARS 40'-6" LONG (8'-0" DOORWAY OPENING) AND 50'-6" LONG (10'-0" MINIMUM DOORWAY OPENING) x 8'-6" WIDE INSIDE. DIMENSION PRINCIPLES SHOWN HEREIN WILL BE APPLIED TO CARS OF OTHER DIMENSIONS. 8'-6" BOX CARS SHOULD BE USED WHEN AVAILABLE.
- DETAIL OF XM468 CONTAINER:
CONTAINER DIMENSIONS-136" LONG X 30" WIDE X 28-1/2" HIGH.
GROSS WEIGHT-1,282 LBS (APPROX).
- DOORWAY PROTECTION IS REQUIRED FOR THIS ITEM WHEN MORE THAN 1/2 THE LENGTH OF THE CONTAINER EXTENDS INTO DOORWAY AREA. SEE ISOMETRIC VIEW, PAGE 6, FOR PROPER APPLICATION. NO DOORWAY PROTECTION IS REQUIRED WHEN THE SIDE OF CAR AND THE CENTER POST OF DOUBLE DOORS HOLD BOTH ENDS OF CONTAINER FROM SIDWARD MOVEMENT.
- WHEN PLANNING SHIPMENTS, THE MINIMUM NUMBER OF CARS OF 27 AND 36 UNIT CAPACITIES REQUIRED TO UTILIZE THE MAXIMUM SPACE CAPACITY OF ALL CARS SHOULD BE ORDERED. CARS WITH DOUBLE DOOR OPENINGS ARE PREFERRED, TO FACILITATE CAR LOADING AND UNLOADING.
- THIS ITEM IS AN ICC CLASS "A" EXPLOSIVE. PROCEDURES SHOWN HEREIN ARE APPLICABLE FOR THE SHIPMENT OF CONTAINERS WITH INERT LOADED, EMPTY OR PRACTICE ITEMS, AND OF EMPTY CONTAINERS.
- WHEN ANY STRAP IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF TWO (2) SEALS WITH TWO (2) CRIMPS PER SEAL MUST BE USED.
- WHEN A LOAD IS BEING SHIPPED WHICH CONTAINS A SMALLER QUANTITY OF CONTAINERS THAN LOADS SHOWN HEREIN, A "FILLER ASSEMBLY" OR ASSEMBLIES, DETAIL "E" SHOWN ON THIS PAGE, MAY BE USED AS APPLICABLE IN PLACE OF CONTAINER(S) OMITTED FROM THE TOP LOAD LAYER.

MATERIAL SPECIFICATIONS

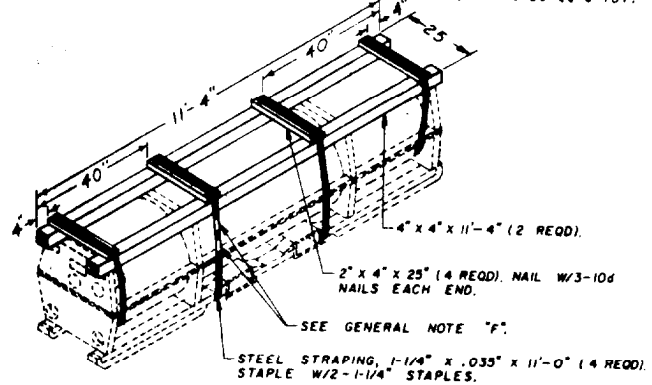
LUMBER: SEE ORDM 3-4

NAILS: COMMON, CEMENT COATED, FED SPEC FF-N-105.

ALT: ANNULAR-RING TYPE NAIL OF SAME SIZE.

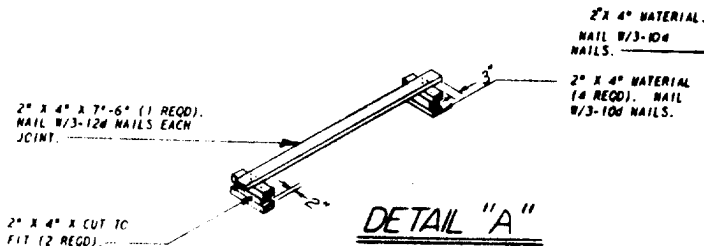
ANTI-CHAFING MATERIAL: NEUTRAL BARRIER MATERIAL, WIL-B-121.

STRAPPING, STEEL: TYPE 1, CLASS "A" OR "C", FED SPEC QG-S-781.

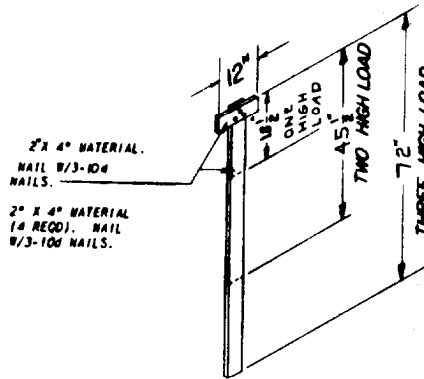


DETAIL "E"

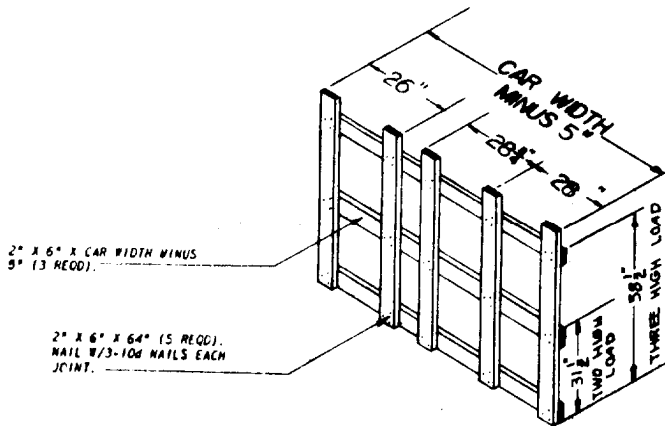
SEE GENERAL NOTE "G"



DETAIL "A"

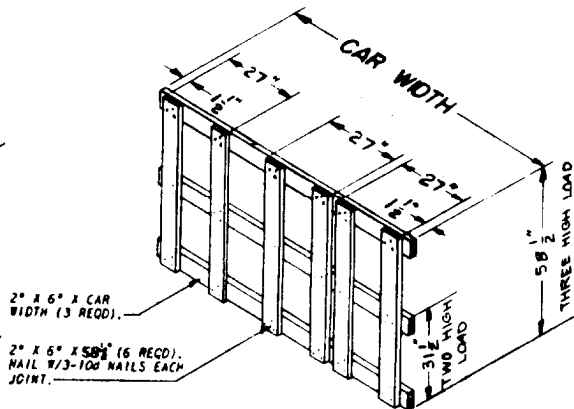


DETAIL "B"



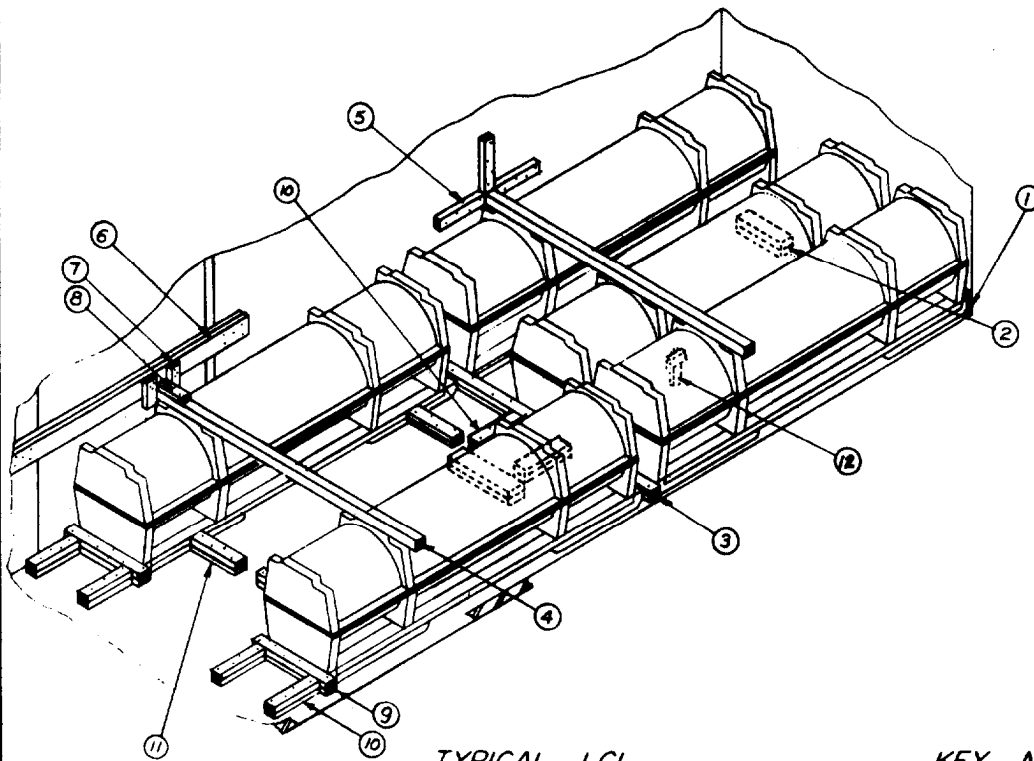
DETAIL "C"

2 REQD, ONE RIGHT HAND AS SHOWN AND ONE LEFT HAND



DETAIL "D"

SEE DETAIL "G", PAGE 5.



TYPICAL LCL

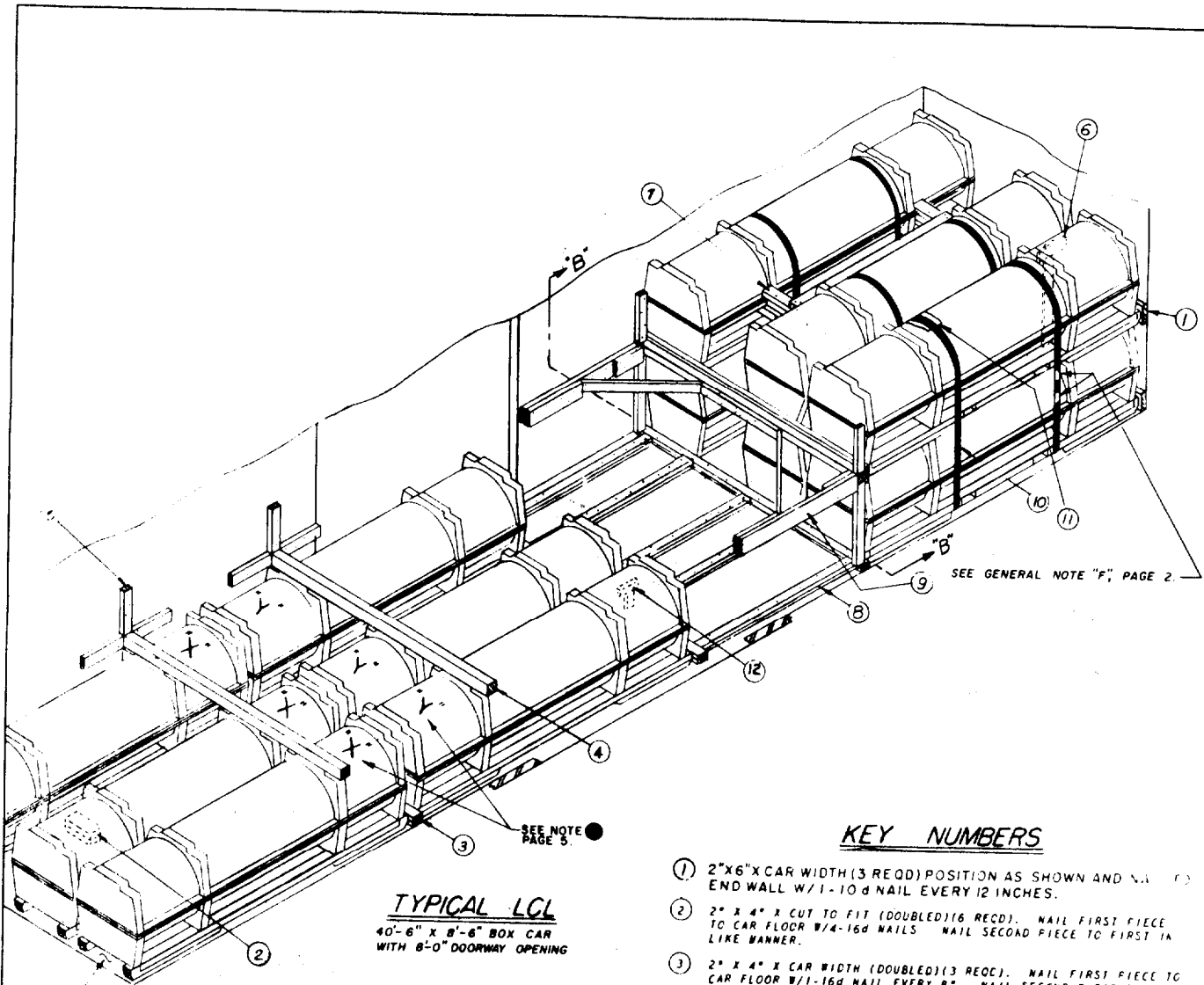
KEY NUMBERS

- ① 2" X 6" X CAR WIDTH (1 REQD). STAND ON EDGE AT FLOOR LINE AND NAIL TO END WALL W/ 1-10d NAIL EVERY 12 INCHES.
- ② 2" X 4" X CUT TO FIT (DOUBLED) (2 REQD). NAIL FIRST PIECE TO CAR FLOOR W/ 4-16d NAILS. NAIL SECOND PIECE TO FIRST IN LIKE MANNER.
- ③ 2" X 4" X CAR WIDTH (DOUBLED) (1 REQD). NAIL FIRST PIECE TO CAR FLOOR W/ 1-16d NAIL EVERY 8". NAIL SECOND PIECE TO FIRST W/ 1-40d NAIL EVERY 8".
- ④ 4" X 4" X CAR WIDTH (2 REQD). CUT PIECE IN DOORWAY TO EXTEND 2" BEYOND PIECE ⑥ ON EACH END.
- ⑤ 2" X 4" X 18" (6 REQD). NAIL TO CAR WALL W/ 4-12d NAILS.
- ⑥ 2" X 6" X DOOR WIDTH PLUS 24" (4 REQD). NAIL TO CAR WALL W/ 5-12d NAILS EACH END. NAIL SECOND PIECE TO FIRST.
- ⑦ 2" X 4" X 12" (4 REQD). NAIL TO ⑤ W/ 3-10d NAILS.
- ⑧ 2" X 4" X 12" (2 REQD). NAIL TO ④ W/ 3-10d NAILS.
- ⑨ 2" X 4" X 30" (DOUBLED) (2 REQD). NAIL FIRST PIECE TO CAR FLOOR W/ 6-16d NAILS. NAIL SECOND PIECE TO FIRST W/ 6-40d NAILS.
- ⑩ 2" X 4" X 90" (DOUBLED) (6 REQD). NAIL FIRST PIECE TO CAR FLOOR W/ 6-16d NAILS. NAIL SECOND PIECE TO FIRST W/ 6-40d NAILS.
- ⑪ 2" X 4" X 30" (DOUBLED) (4 REQD). NAIL FIRST PIECE TO CAR FLOOR W/ 4-16d NAILS. NAIL SECOND PIECE TO FIRST IN LIKE MANNER.
- ⑫ ANTI-CHAFING BOARD (2 REQD) SEE DETAIL "B", PAGE 2.

<u>BILL OF MATERIAL</u>		
(8'-6" CAR)		
LUMBER	LINEAL FEET	BOARD FEET
2" X 4"	82	88
2" X 6"	49	49
4" X 4"	16	24
NAILS	NO. REQD	POUNDS
10d (3")	24	1
12d (3-1/4")	44	1
16d (3-1/2")	85	2 1/2
40d (5")	61	3 1/2

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT
CONTAINERS	5	6,410 LBS (APPROX)
DUNNAGE		328 LBS
TOTAL WEIGHT		6,738 LBS (APPROX)



TYPICAL LCL
 40'-6" x 8'-6" BOX CAR
 WITH 8'-0" DOORWAY OPENING

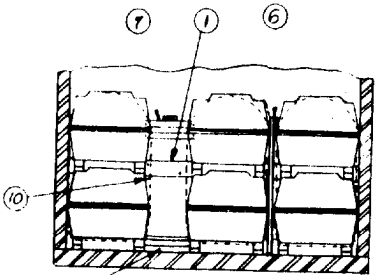
PIECE ① NOT SHOWN

SEE NOTE PAGE 5.

SEE GENERAL NOTE "F", PAGE 2.

KEY NUMBERS

- ① 2" X 6" X CAR WIDTH (3 REQD) POSITION AS SHOWN AND NAIL TO END WALL W/ 1-10d NAIL EVERY 12 INCHES.
- ② 2" X 4" X CUT TO FIT (DOUBLED) (16 REQD). NAIL FIRST PIECE TO CAR FLOOR W/ 1-16d NAILS. NAIL SECOND PIECE TO FIRST IN LIKE MANNER.
- ③ 2" X 4" X CAR WIDTH (DOUBLED) (3 REQD). NAIL FIRST PIECE TO CAR FLOOR W/ 1-16d NAIL EVERY 8". NAIL SECOND PIECE TO FIRST W/ 1-40d NAIL EVERY 8".
- ④ 4" X 4" X CAR WIDTH (2 REQD).
- ⑤ 2" X 4" X 19" (12 REQD). NAIL TO CAR WALL W/ 4-17d NAILS.
- ⑥ ANTI-CHAFING BOARD (2 REQD). SEE DETAIL "B", PAGE 2.
- ⑦ SPACER (1 REQD). SEE DETAIL "A", PAGE 2.
- ⑧ 2" X 4" X CUT-TO FIT (DOUBLED) (5 REQD). NAIL FIRST PIECE TO CAR FLOOR W/ 12-16d NAILS. NAIL SECOND PIECE TO FIRST W/ 12-40d NAILS.
- ⑨ K - BRACING (1 REQD). SEE DETAIL.
- ⑩ STEEL STRAPPING, 1 1/2" X .035" X 14'-0" (6 REQD).
- ⑪ ANTI-CHAFING, NEUTRAL BARRIER MATERIAL. POSITION UNDER ALL STRAPS AT POINTS OF CONTACT WITH CONTAINER.
- ⑫ ANTI-CHAFING BOARD (4 REQD) SEE DETAIL "B", PAGE 2

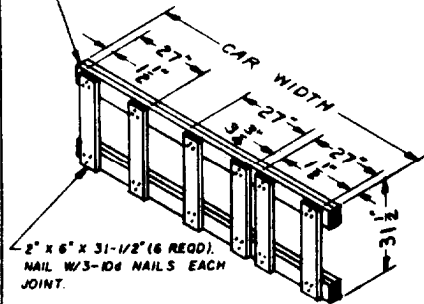


② **SECTION "B-B"**

LUMBER AND NAILING DATA				
PC	LUMBER	NO. REQD	NAIL TO	NAILS
A	2" X 5" X CAR WIDTH	1	B	1-12d NAIL EVERY 8"
B	4" X 4" X CAR WIDTH	1		
C	2" X 4" X 24" (32" FOR 9'-2" CAR)	1	B	7-12d NAILS
D	2" X 6" X 4'-4" *	2	CAR WALL	1-12d NAIL EVERY 3"
E	2" X 6" X 18"	2	D	4-20d NAILS
F	2" X 4" X 56" DOUBLE BEVEL EACH END. SEE DETAIL.	2	B & D	2-16d NAILS EACH END
G	2" X 6" X 30"	2	D	8-20d NAILS
H	2" X 4" X 18"	2	CAR WALL	4-12d NAILS
J	2" X 4" X 18"	2	CAR WALL	4-12d NAILS

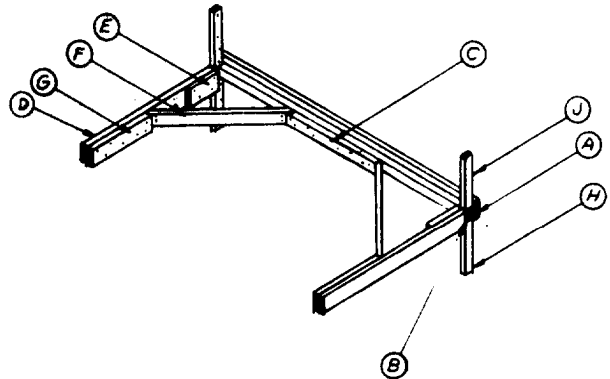
* SEE DRAWING NO 19-48-2213-5P34 FOR REINFORCEMENT PROCEDURES TO USE WHEN PIECE MARKED (D) EXTENDS INTO DOORWAY OPENING.

2" X 6" X CAR WIDTH (DOUBLED) (2 REQD).
LAMINATE W/1-10d NAIL EVERY 12".



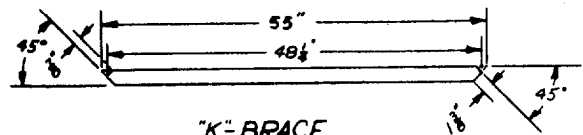
DETAIL "G"

SEE NOTE ●



"K" BRACING DETAIL

SEE NOTE ●



"K"-BRACE BRACE DETAIL (C)

NOTE ●

WHEN "K"-BRACE BLOCKING A PARTIAL SECOND LAYER LOCATED IN THE LOAD SUCH AS ABOVE CONTAINERS MARKED "X" ON PAGE 4, THE WIDTH OF PIECE (C) LOCATED BETWEEN CONTAINERS MARKED "X" AND "Y" MUST BE CHANGED TO 2" X 8" MATERIAL, TO PROVIDE CLEARANCE BETWEEN FIRST LAYER CONTAINERS MARKED "Y" AND COMPONENTS OF "K"-BRACE.

WHEN "K"-BRACE BLOCKING A PARTIAL THIRD LAYER LOCATED IN THE LOAD SUCH AS SHOWN BY CONTAINERS MARKED "C" ON PAGES 6 & 8, A SPACER GATE, DETAIL "G", MUST BE USED IMMEDIATELY UNDER THE "K"-BRACE IN LIEU OF "TWO HIGH LOAD" SPACER GATE, DETAIL "D" ON PAGE 2, TO PROVIDE CLEARANCE BETWEEN SECOND LAYER CONTAINERS AND COMPONENTS OF "K"-BRACE.

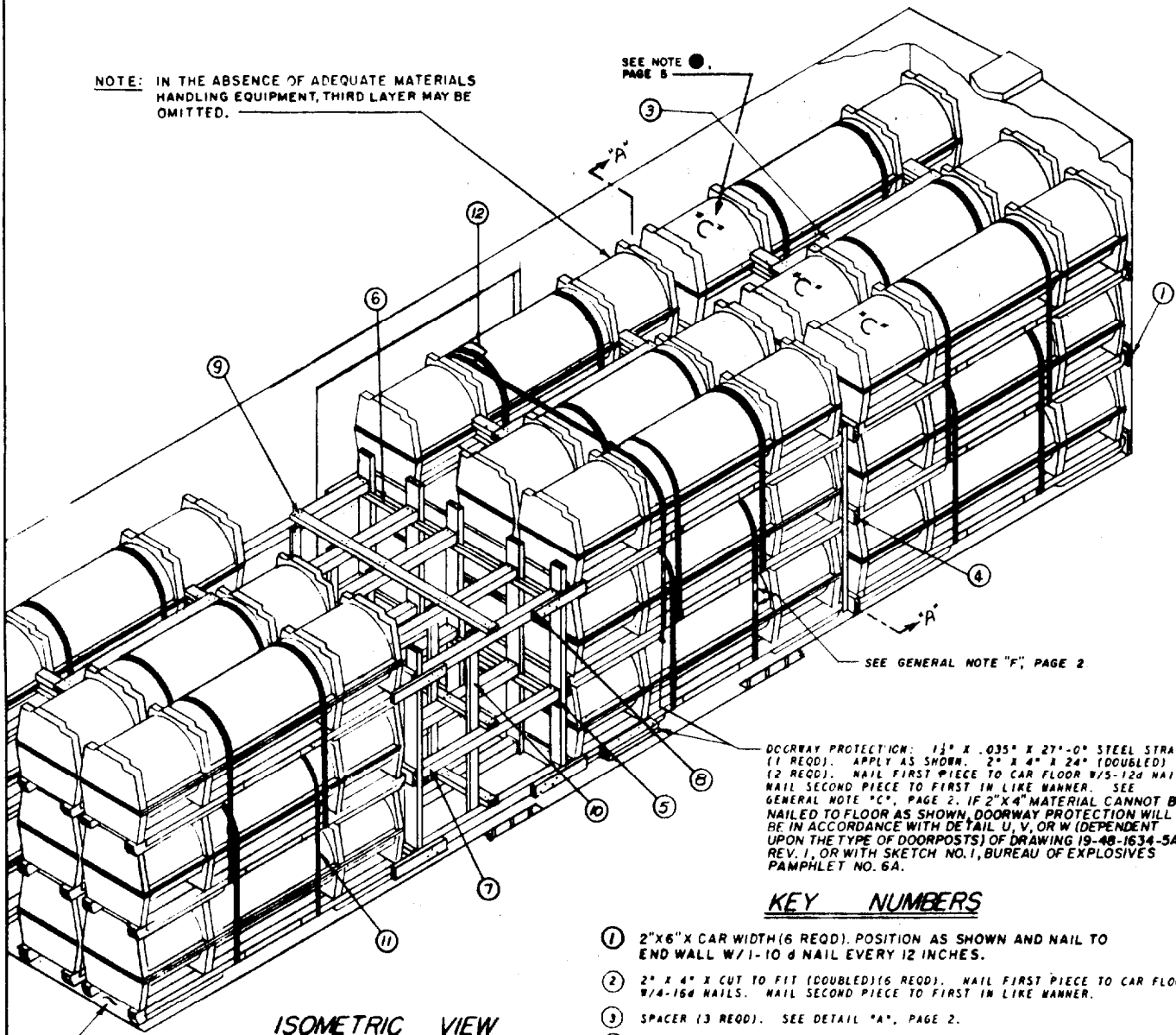
(8'-6" CAR) BILL OF MATERIAL		
LUMBER	LINEAL FEET	BOARD FEET
2" X 4"	194	130
2" X 6"	52	52
4" X 4"	26	35
NAILS	NO. REQD	POUNDS
10d (3")	57	1
12d (3-1/4")	106	2
16d (3-1/2")	143	3 1/2
20d (4")	24	1
40d (5")	87	5 1/2
STEEL STRAPPING, 1 1/2" X .035" - 84' REQD - 12 LBS		
ANTI-CHAFING MATERIAL - AS REQD		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT
CONTAINERS	12	15,384 LBS (APPROX)
DUNNAGE		592 LBS
TOTAL WEIGHT		15,976 LBS (APPROX)

NOTE: IN THE ABSENCE OF ADEQUATE MATERIALS HANDLING EQUIPMENT, THIRD LAYER MAY BE OMITTED.

SEE NOTE ● PAGE 5



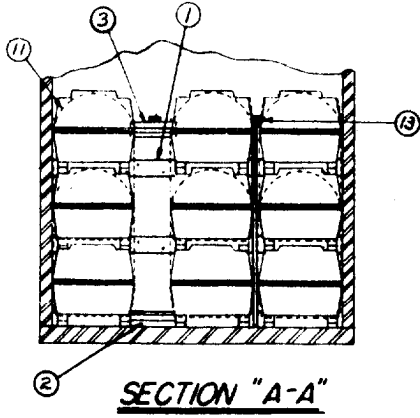
DOORWAY PROTECTION: 1 1/2" X .035" X 27'-0" STEEL STRAP (1 REQD). APPLY AS SHOWN. 2" X 4" X 24" (DOUBLED) (2 REQD). NAIL FIRST PIECE TO CAR FLOOR W/5-12d NAILS. NAIL SECOND PIECE TO FIRST IN LIKE MANNER. SEE GENERAL NOTE "C", PAGE 2. IF 2" X 4" MATERIAL CANNOT BE NAILED TO FLOOR AS SHOWN, DOORWAY PROTECTION WILL BE IN ACCORDANCE WITH DETAIL U, V, OR W (DEPENDENT UPON THE TYPE OF DOORPOSTS) OF DRAWING 19-48-1634-5A29, REV. 1, OR WITH SKETCH NO. 1, BUREAU OF EXPLOSIVES PAMPHLET NO. 6A.

KEY NUMBERS

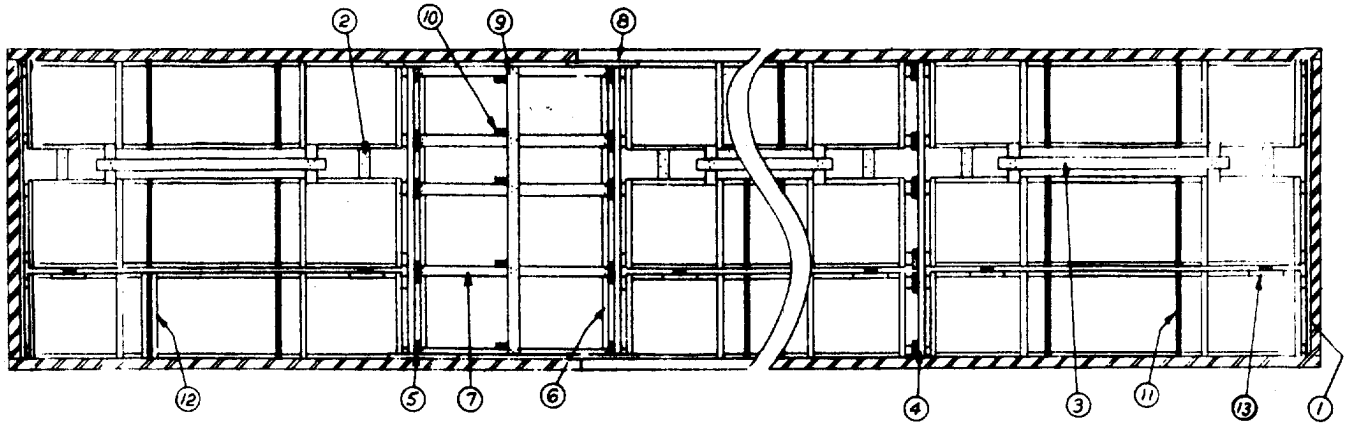
- ① 2" X 6" X CAR WIDTH (6 REQD). POSITION AS SHOWN AND NAIL TO END WALL W/1-10 d NAIL EVERY 12 INCHES.
- ② 2" X 4" X CUT TO FIT (DOUBLED) (6 REQD). NAIL FIRST PIECE TO CAR FLOOR W/4-16d NAILS. NAIL SECOND PIECE TO FIRST IN LIKE MANNER.
- ③ SPACER (3 REQD). SEE DETAIL "A", PAGE 2.
- ④ SPACER GATE, SEE DETAIL "D", PAGE 2; (1 REQD).
- ⑤ CENTER GATE (2 REQD). SEE DETAIL "C", PAGE 2.
- ⑥ 2" X 2" X CAR WIDTH MINUS 8" (4 REQD). NAIL TO ⑤ W/2-10d NAILS EACH JOINT.
- ⑦ STRUTS, 4" X 4" X CUT TO FIT (15 REQD). TOENAIL TO ⑤ W/2-12d NAILS EACH END.
- ⑧ GATE HOLD DOWN, 2" X 4" X 24" (8 REQD). POSITION AS SHOWN AND NAIL TO ⑦ W/4-12d NAILS. NAIL PIECES ADJACENT TO CAR WALL TO ⑦ PRIOR TO PLACEMENT OF ⑦.
- ⑨ 2" X 4" X CAR WIDTH MINUS 5" (3 REQD). NAIL TO ⑦ W/3-12d NAILS EACH JOINT.
- ⑩ 2" X 4" X 60" (5 REQD). NAIL TO ⑦ W/3-12d NAILS EACH JOINT.
- ⑪ STEEL STRAPPING, 1 1/2" X .035" X 14'-0" (36 REQD).
- ⑫ ANTI-CHAFING, NEUTRAL BARRIER MATERIAL. POSITION UNDER ALL STRAPS AT POINTS OF CONTACT WITH CONTAINER.
- ⑬ ANTI-CHAFING BOARD (6 REQD). SEE DETAIL "B", PAGE 2, AND PLAN VIEW, PAGE 7.

ISOMETRIC VIEW

PIECES ⑦ NOT SHOWN



SECTION "A-A"



PLAN VIEW

40'-6" X 8'-6" BOX CAR WITH 8'-0"
DOORWAY OPENING

(8'-6" CAR) BILL OF MATERIAL		
LUMBER	LINEAL FEET	BOARD FEET
2" X 2"	33	11
2" X 4"	167	111
2" X 6"	208	208
4" X 4"	85	115
NAILS	NO. REQD	POUNDS
10d (3")	238	5-3/4
12d (3-1/4")	200	3-1/2
16d (3-1/2")	48	1 1/2
STEEL STRAPPING, 1 1/2" X .035" - 504' REQD - 72 LBS		
ANTI-CHAFING MATERIAL - AS REQD		

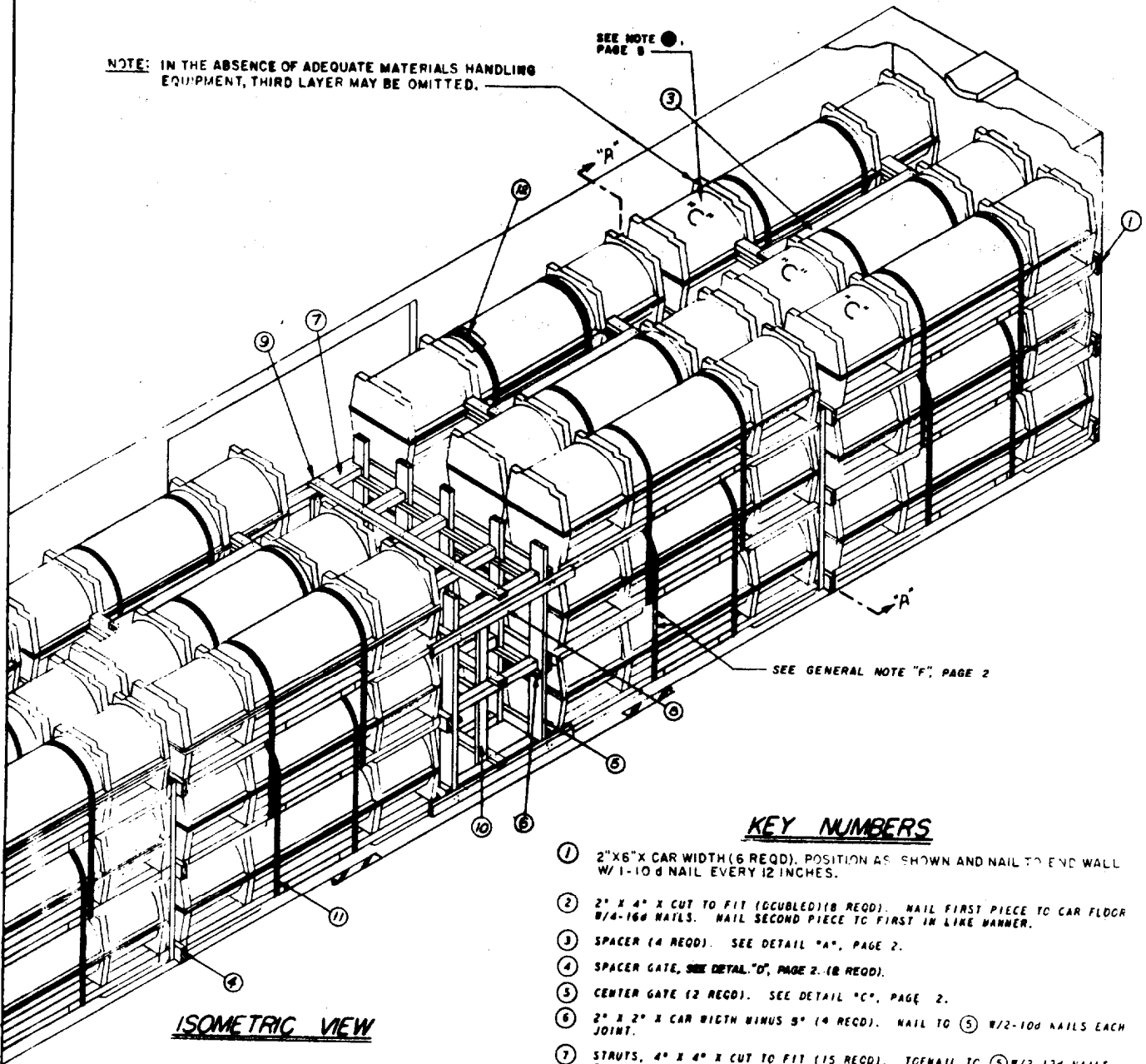
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT
CONTAINERS	27 *	34,614 LBS (APPROX)
DUNNAGE		1,194 LBS
TOTAL WEIGHT		35,808 LBS (APPROX)

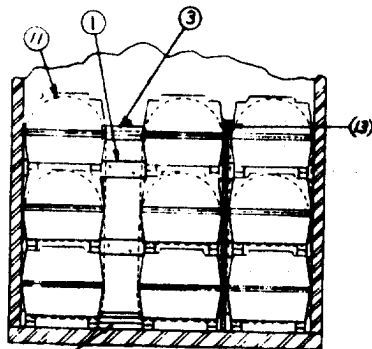
*SEE NOTE, PAGE 6.

NOTE: IN THE ABSENCE OF ADEQUATE MATERIALS HANDLING EQUIPMENT, THIRD LAYER MAY BE OMITTED.

SEE NOTE ● PAGE 8



ISOMETRIC VIEW



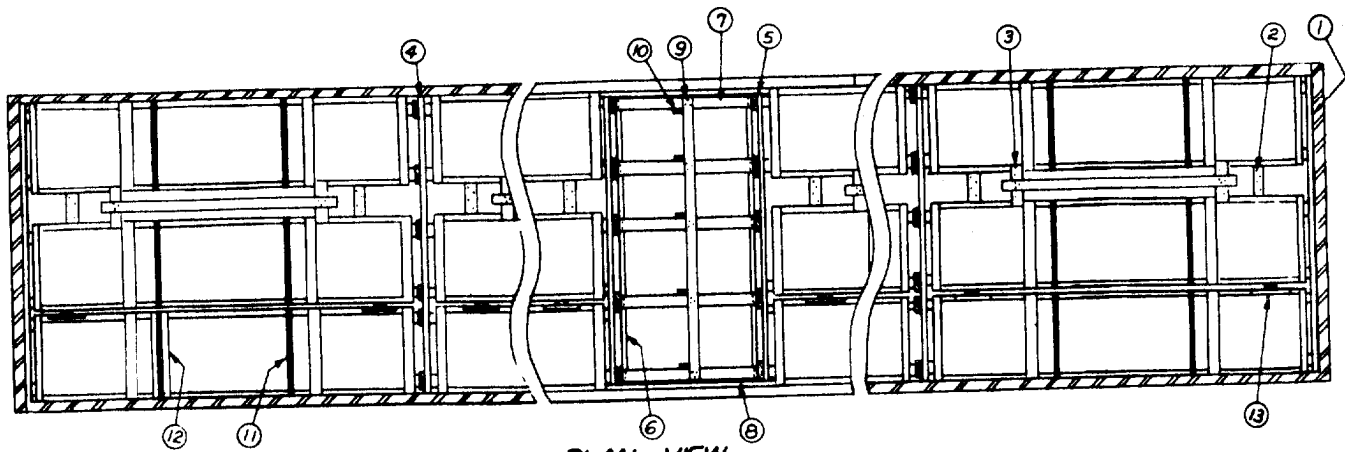
SECTION "A-A"

SEE GENERAL NOTE "F", PAGE 2

KEY NUMBERS

- ① 2" X 6" X CAR WIDTH (6 REQD). POSITION AS SHOWN AND NAIL TO END WALL W/ 1-10d NAIL EVERY 12 INCHES.
- ② 2" X 4" X CUT TO FIT (DOUBLE) (8 REQD). NAIL FIRST PIECE TO CAR FLOOR W/ 4-16d NAILS. NAIL SECOND PIECE TO FIRST IN LIKE MANNER.
- ③ SPACER (4 REQD). SEE DETAIL "A", PAGE 2.
- ④ SPACER GATE, SEE DETAIL "D", PAGE 2. (8 REQD).
- ⑤ CENTER GATE (2 REQD). SEE DETAIL "C", PAGE 2.
- ⑥ 2" X 2" X CAR WIDTH MINUS 5" (4 REQD). NAIL TO ⑤ W/ 2-10d NAILS EACH JOINT.
- ⑦ STRUTS, 4" X 4" X CUT TO FIT (15 REQD). TO NAIL TO ⑤ W/ 2-12d NAILS EACH END.
- ⑧ GATE HOLDDOWN, 2" X 4" X 72" (4 REQD). POSITION AS SHOWN. NAIL TO ⑤ W/ 3-12d NAILS EACH JOINT.
- ⑨ 2" X 4" X CAR WIDTH MINUS 5" (3 REQD). NAIL TO ⑦ W/ 3-12d NAILS EACH JOINT.
- * ⑩ 2" X 4" X 60" (15 REQD). NAIL TO ⑦ W/ 3-12d NAILS EACH JOINT.
- ⑪ STEEL STRAPPING, 1-1/4" X .035" X 14'-0" (48 REQD).
- ⑫ ANTI-CHAFING, NEUTRAL BARRIER MATERIAL. POSITION UNDER ALL STRAPS AT POINTS OF CONTACT WITH CONTAINER.
- ⑬ ANTI-CHAFING BOARD (8 REQD). SEE DETAIL "B", PAGE 2.

* STRUT BRACING, PIECES ⑨ & ⑩, REQUIRED WHEN STRUTS, PIECE ⑦, ARE 48" OR GREATER.



PLAN VIEW

50'-6" X 8'-6" BOX CAR WITH 10'-0" (MIN)
DOORWAY OPENING

(8'-6" CAR) BILL OF MATERIAL		
LUMBER	LINEAL FEET	BOARD FEET
2" X 2"	33	11
2" X 4"	209	140
2" X 6"	263	263
4" X 4"	62	63
NAILS	NO. REQD	POUNDS
10d (3")	310	5
12d (3-1/4")	198	3 1/2
16d (3-1/2")	64	1 1/2
STEEL STRAPPING, 1 1/2" X .035" - 672' REQD - 96 LBS		
ANTI-CHAFING MATERIAL - AS REQD		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT
CONTAINERS	36 *	46,152 LBS (APPROX)
DUNNAGE		1,349 LBS
TOTAL WEIGHT		47,501 LBS (APPROX)

* SEE NOTE, PAGE 8