

# MILITARY STANDARD

## RAILCAR LOADING OF HAZARDOUS MATERIALS

### PROJECTILES 5/54 IN PALLET ADAPTER MK II AND MODS FLEET ISSUE UNIT LOAD

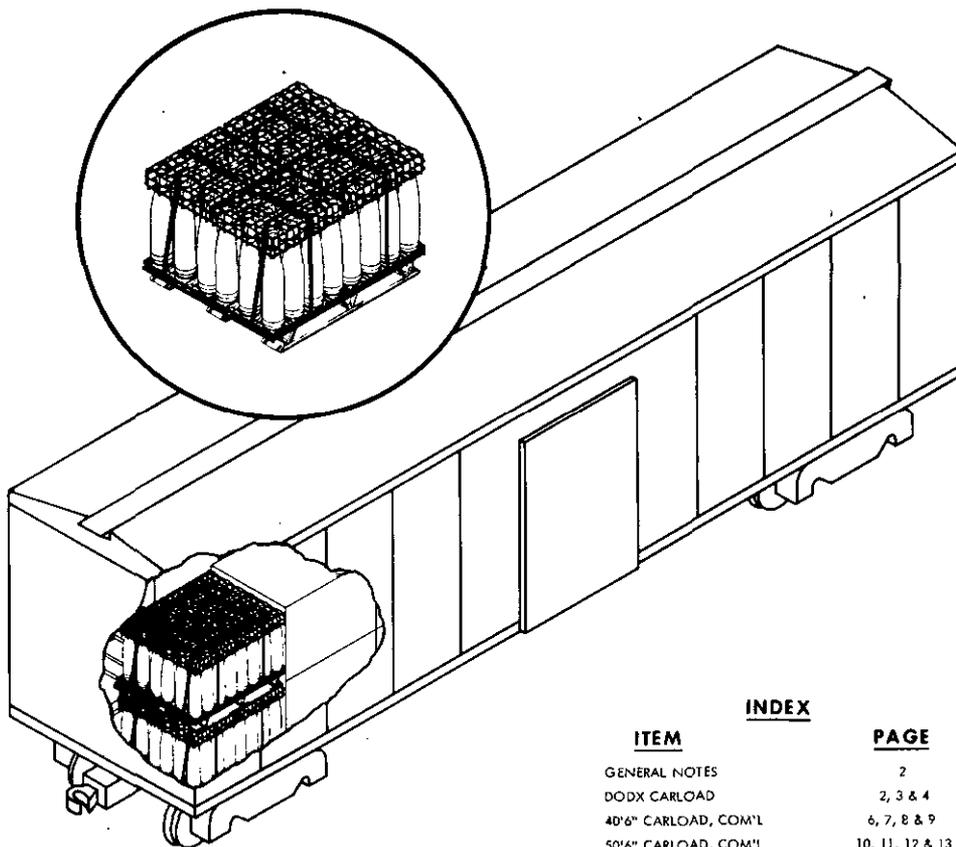
**MIL-STD 1325-15**  
**(NAVY)**

22 DEC 1975

SUPERSEDING WR 52/15  
23 MARCH 1965

**UNIT LOAD DATA**

UNIT LOAD DRAWINGS ..... WR-54/6 AND WR-54/271  
WEIGHT ..... SEE TABLE I  
DIMENSIONS ..... SEE TABLE I  
CUBE ..... SEE TABLE I  
HAZARD CLASSIFICATION ..... SEE TABLE II



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**NOTES:**

1. UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
2. FOR CROSS REFERENCE TO ASSOCIATED PALLETIZING, TRUCK-LOADING AND CONTAINERLOADING MILITARY STANDARDS, REFER TO INDEX TO STANDARDS MIL-HDBK-236 (NAVY).

**FSC 8140**

**AUTHORIZED AND RELEASED FOR  
GENERAL USE.**

**APPROVED BY BUREAU OF EXPLOSIVES**

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## MIL-STD-1325-15 (NAVY)

## GENERAL NOTES

- FOR GENERAL INFORMATION CONCERNING ORDERING, INSPECTING, AND PREPARING CARS, AND FOR DUNNAGING MATERIALS, DESIGN, AND INSTALLATION OF DUNNAGE SEE THE GENERAL DOCUMENT MIL-STD-1325 (NAVY) "RAILCAR LOADING OF HAZARDOUS MATERIALS".
- WHEN PLANNING SHIPMENTS ORDER THE MINIMUM NUMBER OF CARS OF THE CAPACITY REQUIRED FOR THE SHIPMENT. UTILITY LOADER CARS SHALL BE SERIES DODX 29000.
- LOADING PLANS SHOWN ARE FOR DODX UTILITY LOADER CAR WITH 50 FT 6 INCHES INSIDE LENGTH, 107 3/4 INCHES INSIDE WIDTH BETWEEN RAILS (111 INCHES INSIDE WIDTH BETWEEN SIDE WALLS), COMMERCIAL BOXCARS WITH 40 FT 6 INCHES INSIDE LENGTH, 110 INCHES INSIDE WIDTH, AND COMMERCIAL BOXCARS WITH 50 FT 6 INCHES INSIDE LENGTH, 110 INCHES INSIDE WIDTH.
- THE "LOAD LIMIT" OF A CAR MUST NOT BE EXCEEDED NOR SHOULD THE RAILCAR BE LOADED SO THAT MORE THAN ONE-HALF OF THE "LOAD LIMIT" IS CARRIED BY ONE SET OF TRUCKS.
- IF END WALLS OF CARS ARE NOT SQUARE THEY MUST BE SQUARED OFF BEFORE STARTING TO LOAD CAR.
- THE LOAD CONSISTS OF 5"/54 PROJECTILES PALLETIZED IN ACCORDANCE WITH WR-54/6 OR WR-54/271.
- THE UNIT LOADS ARE HANDLED AND LOADED WITH A SUITABLE FORK LIFT TRUCK.
- UNLESS OTHERWISE SPECIFIED NAILING SHALL BE IN ACCORDANCE WITH MIL-STD-1325 (NAVY).
- ALL STRAP JOINTS SHALL BE CRIMP-TYPE JOINTS MADE WITH A CRIMPING TOOL THAT DOES NOT CUT THE SEAL OR STRAP, RATHER THAN A TOOL THAT MAKES A NOTCH-TYPE JOINT. THE STRAPPING MUST BE IN ACCORDANCE WITH NAVSUP NOTICE 4642 DATED 21 APRIL 1971.
- APPLICABLE MATERIAL SPECIFICATIONS:  
DUNNAGE LUMBER - FED. SPEC MM-L-751  
NAILS - FED. SPEC FF-N-105  
STRAPPING - FED. SPEC OO-S-781, TYPE I, HEAVY DUTY, CLASS A, DRY (UNLUBRICATED)  
SEALS - FED. SPEC OO-S-781, STYLE III, HEAVY DUTY
- AFTER BLOCKING AND BRACING HAS BEEN INSPECTED ATTACH SHIPPING DOCUMENTS INSIDE THE CAR IN AN ACCESSIBLE AREA, CLOSE AND SEAL BOXCAR DOORS, AND ATTACH APPLICABLE PLACARDS TO THE OUTSIDE OF CAR AS PRESCRIBED IN OP 2165 (VOL. 1).

## 50 FT 6 IN. BOXCAR, DODX

- THE CARLOAD CONSISTS OF 28 OR 30 UNIT LOADS WHICH MUST BE LOADED AND DUNNAGED IN ACCORDANCE WITH THIS PROCEDURAL DRAWING.
- A DETAILED DESCRIPTION AND OPERATING INSTRUCTIONS FOR THE UTILITY LOADER ARE CONTAINED IN OP 1750.
- TO PREVENT UNUSED "DF" EQUIPMENT FROM BECOMING DISLODGED DURING TRANSIT OF DODX CARS SECURE IT AT ANY LOCATION IN THE BOXCAR WHICH WILL NOT INTERFERE WITH UNLOADING.
- WHEN LESS THAN CARLOAD (LCL) QUANTITIES ARE REQUIRED TO BE SHIPPED IN DODX BOXCARS THE SAME PROCEDURES AND METHODS OF BLOCKING ARE APPLICABLE. ANY BAYS OR PORTION THEREOF MAY BE USED PROVIDING THE WEIGHT DISTRIBUTION REQUIREMENTS OF THE AAR ARE COMPLIED WITH (SEE MIL-STD-1325 (NAVY)). EACH CROSSMEMBER WILL BE USED IN SUCH A MANNER THAT IT WILL RETAIN NOT MORE THAN 2000 LBS OF THE LADING.

TABLE I

TYPE OF PROJECTILE	UNIT LOAD DIMENSIONS L W H	UNIT LOAD WT (LBS) * PALLET ADAPTER MK 11		CUBE CU FT
		MOD 0	MOD 1	
PROJECTILE W/O WATERPROOF PROTECTING CAP	40 x 48 x 31 3/4	3683	3627	35.2
PROJECTILE W/WATERPROOF PROTECTING CAP	40 x 48 x 33 3/4	3779	3723	37.5
ROCKET ASSISTED PROJECTILE MK 58 MOD 0	40 x 48 x 34	3443	3387	37.9
PROJECTILEW/PLASTIC ROTATING BAND (HI-FRAG)	40 x 48 x 34 3/4	3632 **		38.6

\* WEIGHTS ARE APPROXIMATE

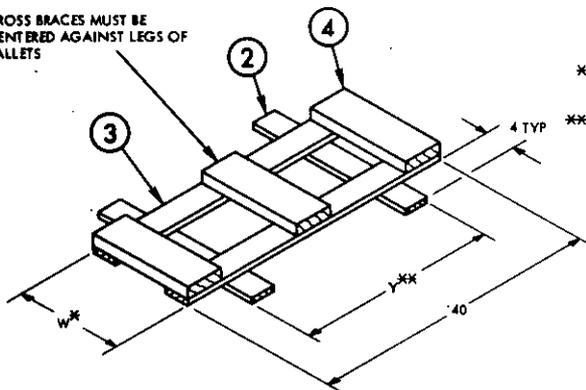
\*\* PALLET ADAPTER MK 11 MOD 2 BOTTOM AND MK 11 MOD 1 TOP

TABLE II

HAZARD CLASSIFICATION	
TYPE OF PROJECTILE	DOT
TP	B
HE-CVT	A
CHAFF	B
SMK-WP	A
VT	A
AAC	A
HC	A
COM	A
IR	A
ILLUM	B
HE-PD	A
VT-NF	B
IR-NF	B
HI-FRAG	A

MIL-STD-1325-15 (NAVY)

CROSS BRACES MUST BE CENTERED AGAINST LEGS OF PALLETS

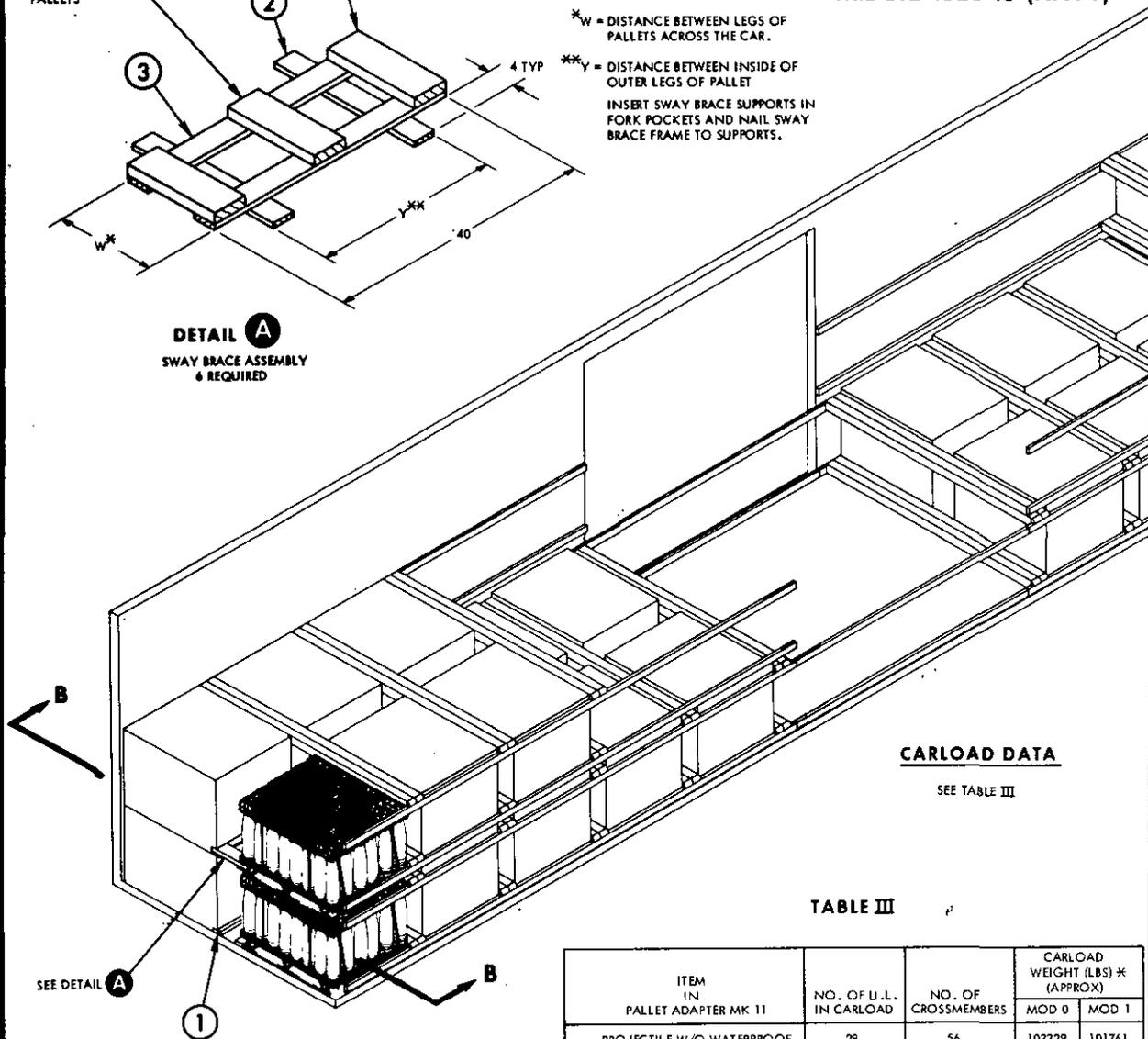


\*W = DISTANCE BETWEEN LEGS OF PALLETS ACROSS THE CAR.

\*\*Y = DISTANCE BETWEEN INSIDE OF OUTER LEGS OF PALLET

INSERT SWAY BRACE SUPPORTS IN FORK POCKETS AND NAIL SWAY BRACE FRAME TO SUPPORTS.

**DETAIL A**  
SWAY BRACE ASSEMBLY  
6 REQUIRED



**CARLOAD DATA**

SEE TABLE III

**TABLE III**

ITEM IN PALLET ADAPTER MK 11	NO. OF U.L. IN CARLOAD	NO. OF CROSSMEMBERS	CARLOAD WEIGHT (LBS) * (APPROX)	
			MOD 0	MOD 1
PROJECTILE W/O WATERPROOF PROTECTING CAP	28	56	103329	101761
PROJECTILE W/WATERPROOF PROTECTING CAP	28	56	106017	104429
ROCKET ASSISTED PROJECTILE MK 58 MOD 0	30	60	103495	101815
** PROJECTILE W/PLASTIC ROTATING BAND (HI-FRAG)	28	56	101901	

\* INCLUDES 205 LBS (APPROX) DUNNAGE WEIGHT

\*\* UNIT LOAD HAS PALLET ADAPTER MK 11 MOD 2 BOTTOM AND MK 11 MOD 1 TOP

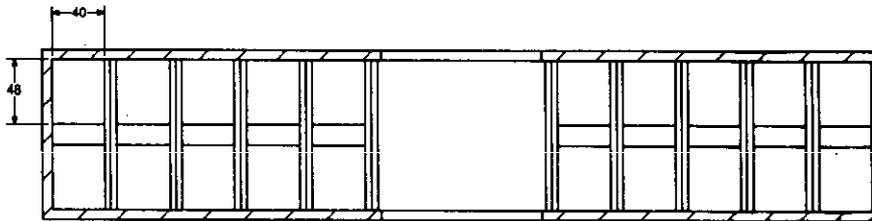
\* W = DISTANCE BETWEEN LEGS OF PALLETS ACROSS THE CAR

\*\* PIECE 3 NAILS TO PIECE 4 WITH 10d NAILS, CLINCHED, 3 PER JOINT, AND TO PIECE 2 WITH 6d NAILS, 1 PER JOINT

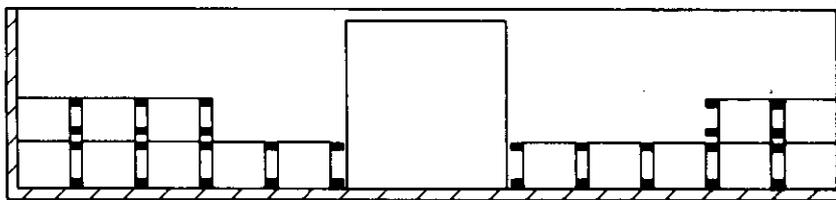
PIECE NO.	DESCRIPTION	SIZE	NO. PCS REQD	NAIL TO	NUMBER SIZE NAILS	
4	CROSS BRACE	2 x 6 x W *	15	SEE 3	-	-
3	SWAY BRACE LONGITUDINAL	1 x 4 x 40	10	2, 4	SEE NOTE **	
2	SWAY BRACE SUPPORT	1 x 4 x (W + e) *	10	SEE 3	-	-
1	SLEEPER	2 x 4 x 40	20	CAR FLOOR	2 PER FOOT	16d

LIST OF MATERIALS AND NAILING DATA

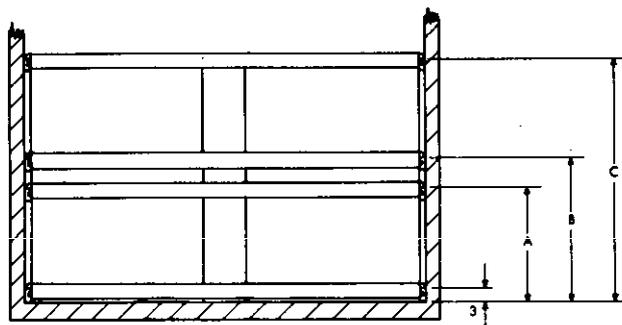
MIL-STD-1325-15 (NAVY)



LOADING PLAN



LOADING PLAN  
ELEVATION



SECTION B-B

SHOWING LOCATION OF WALL MEMBERS  
USED FOR CROSSMEMBERS  
SEE TABLE IV

TABLE IV

ITEM	A	B	C
PROJECTILE W/O WATERPROOF PROTECTING CAP	32	38	64
PROJECTILE W/WATERPROOF PROTECTING CAP	32	40	68
ROCKET ASSISTED PROJECTILE MK 58 MOD 0	32	40	68
PROJECTILE W/PLASTIC ROTATING BAND (HI-FRAG)	32	40	68

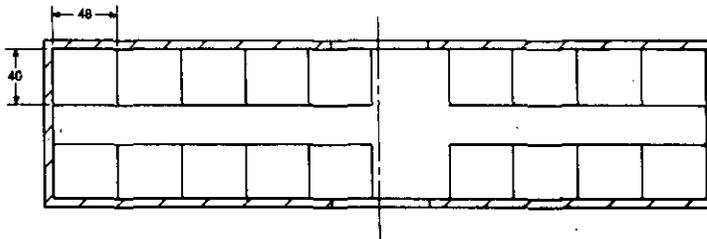
**MIL-STD-1325-15 (NAVY)**

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## MIL-STD-1325-15 (NAVY)

## 40 FT 6 IN. BOXCAR, COMMERCIAL

1. THE CARLOAD MAY CONSIST OF 36 UNIT LOADS WITH 18 IN THE FIRST LAYER AND 18 IN THE SECOND LAYER (48" DIMENSION OF U.L. LENGTHWISE IN THE CAR), OR 34 UNIT LOADS BY SUBSTITUTING DUMMY UNIT LOADS IN THE SECOND LAYER OF THE DOORWAY STACK. THE CARLOAD MAY ALSO CONSIST OF 22 UNIT LOADS IN A SINGLE LAYER (48" DIMENSION OF U.L. CROSSWISE IN THE CAR), OR A SINGLE LAYER OF 22 UNIT LOADS WITH A PARTIAL UPPER LAYER OF UP TO 12 UNIT LOADS (UPPER PARTIAL LAYER DIVIDED APPROXIMATELY EQUALLY EACH END OF THE CAR). THE PARTIAL LAYER SHALL BE DUNNAGED BY PARTIAL LAYER BRACING IN ACCORDANCE WITH THE PROCEDURES DEPICTED IN MIL-STD-1325-100 (NAVY) AND/OR MIL-STD-1325-102 (NAVY). THE NUMBER OF UNIT LOADS IN THE CAR DEPENDS ON THE QUANTITY TO BE SHIPPED AND THE LOAD LIMIT OF THE BOXCAR.
2. WHEN LESS THAN CARLOAD (LCL) QUANTITIES ARE REQUIRED TO BE SHIPPED IN COMMERCIAL BOXCARS AND A PARTIAL LAYER RESULTS, THE PARTIAL LAYER OF LADING SHALL BE BRACED BY MEANS OF END BRACING AND/OR PARTIAL LAYER BRACING CONSTRUCTED IN ACCORDANCE WITH WR-52/100. SELECT THE TYPE OF BRACE TO COMPLY WITH THE WEIGHT OF THE UNITS TO BE RETAINED. THE CENTER GATE HEIGHT SHOULD BE ADJUSTED AS REQUIRED. THE WEIGHT DISTRIBUTION REQUIREMENTS OF THE AAR MUST BE COMPLIED WITH, SEE MIL-STD-1325 (NAVY).
3. THE LOADS AS SHOWN ARE BASED ON CARS WHICH HAVE 6 FT WIDE DOORWAY OPENINGS AND ARE EQUIPPED WITH CONVENTIONAL SLIDING TYPE DOORS. THE DEPICTED PROCEDURES AND METHODS OF BLOCKING ARE APPLICABLE TO BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING TYPE DOORS OTHER THAN 6 FT WIDE PROVIDED DOORWAY PROTECTION WHEN REQUIRED IS INSTALLED IN ACCORDANCE WITH MIL-STD-1325 (NAVY).



## LOADING PLAN

\* USE SWAY BRACE ASSEMBLY DETAIL A FOR STEEL FLOOR CARS

\*\* W = DISTANCE BETWEEN LEGS OF PALLETS ACROSS THE CAR

\*\*\* PIECE 3 NAILS TO PIECE 4 WITH 10d NAILS, CLINCHED, 3 PER JOINT AND TO PIECE 2 WITH 6d NAILS, 1 PER JOINT

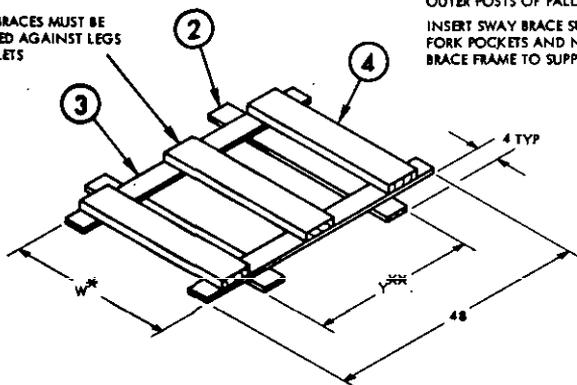
\*\*\*\* 2 x 6 STRUTS DOUBLED AND LAMINATED WITH 10d NAILS MAY BE SUBSTITUTED IN PLACE OF 4 x 4'S.

13	HORIZONTAL DOORWAY MEMBER	2 x 4 x DOOR WIDTH	8	12	2 PER JOINT	10d
12	VERTICAL DOORWAY MEMBER	2 x 3 x 90	4	DOOR POST	2 PER FOOT	20d
11	STRUT	4 x 4 x WEDGE FIT ****	32	6	2 PER JOINT	16d
10	HOLD DOWN CLEAT	2 x 3 x CUT TO FIT	4	9	5	16d
9	HOLD DOWN CLEAT	2 x 3 x CUT TO FIT	4	8	5	10d
8	HOLD DOWN SPACER	2 x 4 x CAR WIDTH-1	2	6	3 PER JOINT	10d
7	CENTER GATE STRUT CLEAT	2 x 4 x CAR WIDTH-1	8	6	3 PER JOINT	10d
6	CENTER GATE VERTICAL	2 x 6 x 72	16	SEE 5	-	-
5	CENTER GATE HORIZONTAL	2 x 6 x CAR WIDTH-1	8	6	3 PER JOINT	10d
4	CROSS BRACE	2 x 6 x W **	27	SEE 3	-	-
3	SWAY BRACE LONGITUDINAL	1 x 4 x 48	18	2, 4	SEE NOTE ***	***
2	SWAY BRACE SUPPORT	1 x 4 x (W+8) **	18	SEE 3	-	-
1	SLEEPER	2 x 4 x 48 *	18	CAR FLOOR	2 PER FOOT	16d
PIECE NO.	DESCRIPTION	SIZE	NO. PCS REQD	NAIL TO	NUMBER	SIZE
					NAILS	

LIST OF MATERIALS AND NAILING DATA

MIL-STD 1325-15 (NAVY)

CROSS BRACES MUST BE CENTERED AGAINST LEGS OF PALLETS



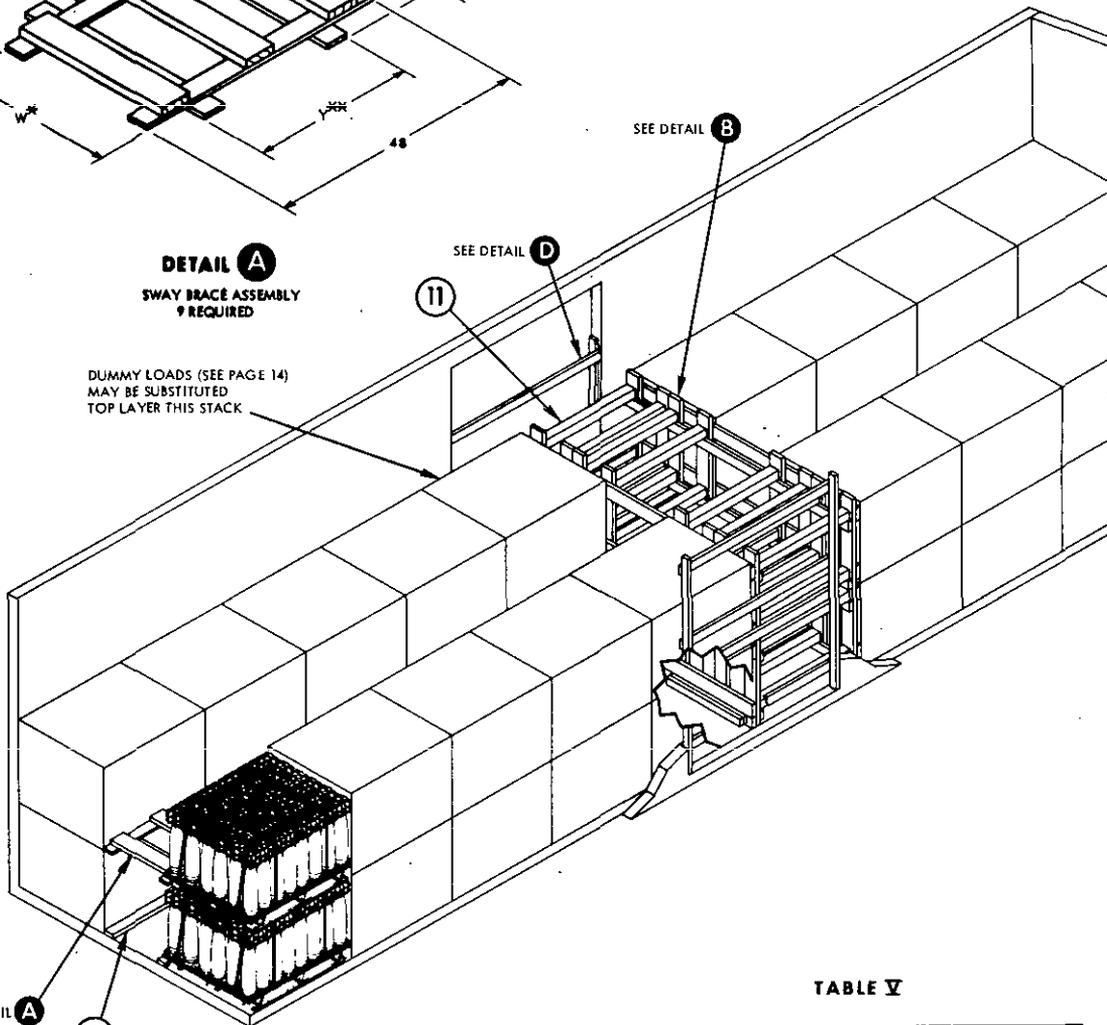
\*W = DISTANCE BETWEEN LEGS OF PALLETS ACROSS THE CAR.

\*\*Y = DISTANCE BETWEEN INSIDE OF OUTER POSTS OF PALLET.

INSERT SWAY BRACE SUPPORTS IN FORK POCKETS AND NAIL SWAY BRACE FRAME TO SUPPORTS.

**DETAIL A**  
SWAY BRACE ASSEMBLY  
9 REQUIRED

DUMMY LOADS (SEE PAGE 14)  
MAY BE SUBSTITUTED  
TOP LAYER THIS STACK



SEE DETAIL A

USE SWAY BRACE ASSEMBLY  
DETAIL A FOR STEEL FLOOR  
CARS

**CARLOAD DATA**

NUMBER OF UNIT LOADS ..... 36  
CARLOAD WEIGHT ..... SEE TABLE V

**TABLE V**

ITEM	CARLOAD WEIGHT (LBS) (INCLUDES LBS APPROX DUNNAGE WT) * PALLET ADAPTER MK 11	
	MOD 0	MOD 1
PROJECTILE W/O WATERPROOF PROTECTING CAP	133850	131834
PROJECTILE W/WATERPROOF PROTECTING CAP	137306	135290
ROCKET ASSISTED PROJECTILE MK 58 MOD 0	125210	123194
** PROJECTILE W/PLASTIC ROTATING BAND (HI-FRAG)	132014	

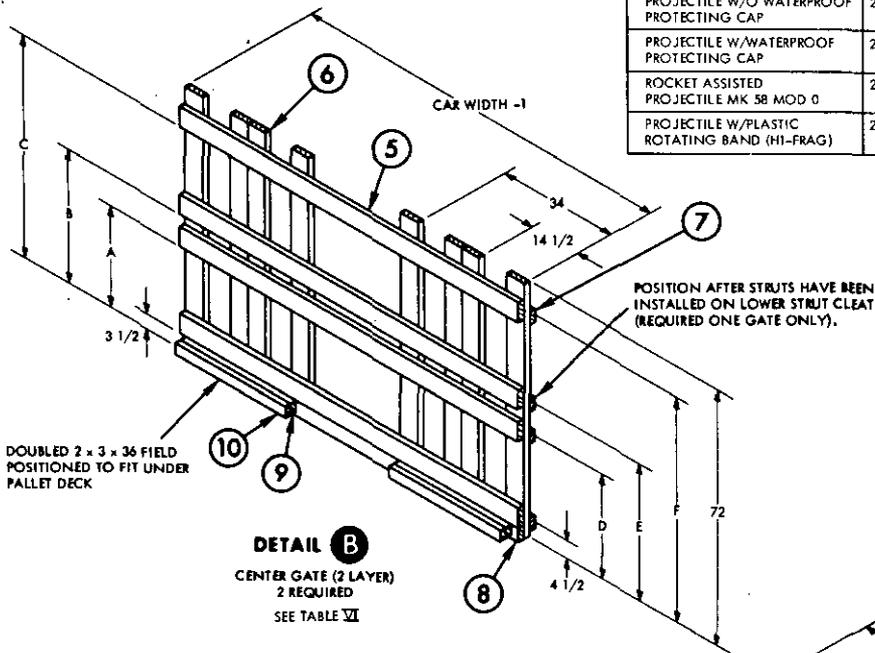
\* APPROXIMATE DUNNAGE WT = 1262 LBS (APPROX)

\*\* UNIT LOAD HAS PALLET ADAPTER MK 11 MOD 2  
BOTTOM AND MK 11 MOD 1 TOP

MIL-STD-1325-15 (NAVY)

TABLE VI

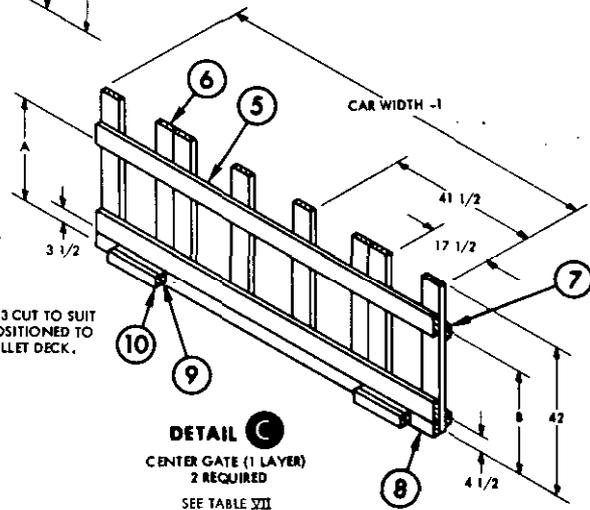
ITEM	A	B	C	D	E	F
PROJECTILE W/O WATERPROOF PROTECTING CAP	26 1/4	35 1/4	58	27 1/4	36 1/4	59
PROJECTILE W/WATERPROOF PROTECTING CAP	28 1/4	37 1/4	62	29 1/4	38 1/4	63
ROCKET ASSISTED PROJECTILE MK 58 MOD 0	28 1/2	37 1/2	62 1/2	29 1/2	38 1/2	63 1/2
PROJECTILE W/PLASTIC ROTATING BAND (HI-FRAG)	29 1/4	38 1/4	64	30 1/4	39 1/4	65



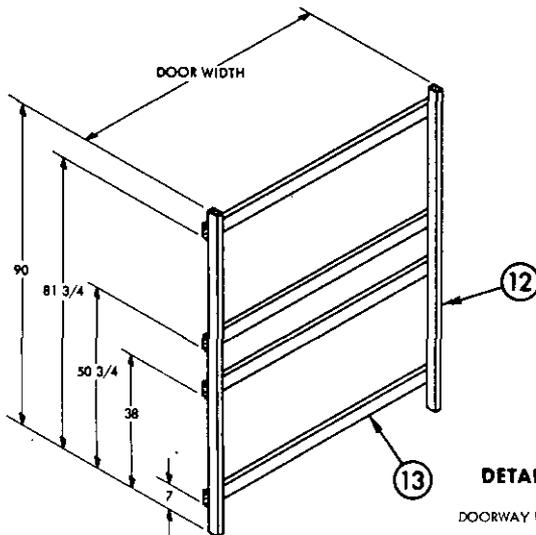
**DETAIL B**  
CENTER GATE (2 LAYER)  
2 REQUIRED  
SEE TABLE VI

TABLE VII

ITEM	A	B
PROJECTILE W/O WATERPROOF PROTECTING CAP	26 1/4	27 1/4
PROJECTILE W/WATERPROOF PROTECTING CAP	28 1/4	29 1/4
ROCKET ASSISTED PROJECTILE MK 58 MOD 0	28 1/2	29 1/2
PROJECTILE W/PLASTIC ROTATING BAND (HI-FRAG)	29 1/4	30 1/4



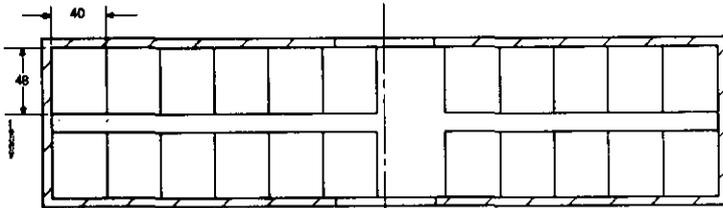
**DETAIL C**  
CENTER GATE (1 LAYER)  
2 REQUIRED  
SEE TABLE VII



**DETAIL D**  
DOORWAY PROTECTION  
2 REQUIRED

WHEN BOXCAR HAS STEEL DOOR POSTS, DOORWAY PROTECTION AS PER MIL-STD-1325 (NAVY) PAGE 46, FIG. 21 IS REQUIRED.

**MIL-STD-1325-15 (NAVY)**



**LOADING PLAN**  
(SINGLE LAYER - 22 UNIT LOADS)

**CARLOAD DATA**

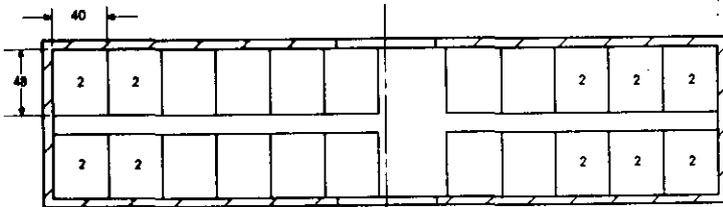
NUMBER OF UNIT LOADS ..... 22  
CARLOAD WEIGHT ..... SEE TABLE VIII

**TABLE VIII**

ITEM	CARLOAD WEIGHT (LBS) PALLET ADAPTER MK 11	
	MOD 0	MOD 1
PROJECTILE W/O WATERPROOF PROTECTING CAP	81641	80410
PROJECTILE W/WATERPROOF PROTECTING CAP	83754	82522
ROCKET ASSISTED PROJECTILE MK 58 MOD 0	76362	75130
PROJECTILE W/PLASTIC * ROTATING BAND (HI-FRAG)	80520	

INCLUDES 616 LBS (APPROX.) DUNNAGE WT.

\*U.L. HAS PALLET ADAPTER MK 11 MOD 2 BOTTOM AND MK 11 MOD 1 TOP



**LOADING PLAN**  
(PARTIAL UPPER LAYER - 32 UNIT LOADS SHOWN)

**CARLOAD DATA**

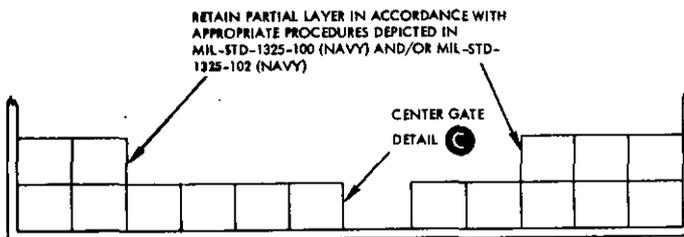
NUMBER OF UNIT LOADS ..... 32  
CARLOAD WEIGHT ..... SEE TABLE IX

**TABLE IX**

ITEM	CARLOAD WEIGHT (LBS) (APPROX) PALLET ADAPTER MK 11	
	MOD 0	MOD 1
PROJECTILE W/O WATERPROOF PROTECTING CAP	119456	117664
PROJECTILE W/WATERPROOF PROTECTING CAP	122528	120736
ROCKET ASSISTED PROJECTILE MK 58 MOD 0	111776	109984
*PROJECTILE W/PLASTIC ROTATING BAND (HI-FRAG)	117824	

INCLUDES 1600 LBS (APPROX.) DUNNAGE WT.

\*UNIT LOAD HAS PALLET ADAPTER MK 11 MOD 2 BOTTOM AND MK 11 MOD 1 TOP

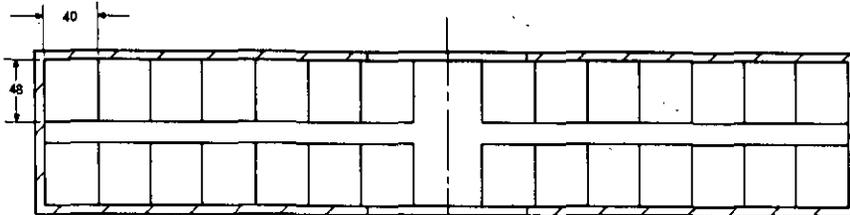


**ELEVATION**

MIL-STD-1325-15 (NAVY)

50 FT 6 IN. BOXCAR, COMMERCIAL

- THE CARLOAD MAY CONSIST OF EITHER 40 UNIT LOADS WITH 28 UNIT LOADS IN THE FIRST LAYER AND A PARTIAL LAYER OF 12 UNIT LOADS IN THE SECOND LAYER (48" DIMENSION OF U. L. CROSSWISE IN THE CAR), OR 28 UNIT LOADS COMPRISING THE FIRST LAYER ONLY. THE PARTIAL LAYER SHALL BE DUNNAGED IN ACCORDANCE WITH THE PROCEDURES DEPICTED IN THIS DOCUMENT WHEN LOADING BOXCARS WITH WOOD SIDEWALLS. WHEN LOADING PARTIAL LAYERS WITH OTHER THAN THE QUANTITY OF UNIT LOADS SHOWN OR WHEN LOADING PARTIAL LAYERS IN BOXCARS WITH METAL SIDEWALLS, DUNNAGING SHALL BE IN ACCORDANCE WITH THE PROCEDURES DEPICTED IN MIL-STD-1325-100 (NAVY) OR MIL-STD-1325-102 (NAVY) RESPECTIVELY. SELECT THE TYPE OF BRACE TO COMPLY WITH THE WEIGHT OF THE UNITS TO BE RETAINED. QUANTITIES CAN ALSO BE ADJUSTED BY SUBSTITUTING DUMMY UNIT LOADS, (SEE PAGE 14) AS REQUIRED TO COMPLY WITH THE LOAD LIMIT OF THE BOXCAR.
- WHEN LESS THAN CARLOAD (LCL) QUANTITIES ARE REQUIRED TO BE SHIPPED IN COMMERCIAL BOXCARS AND A PARTIAL LAYER RESULTS, THE PARTIAL LAYER OF LADING SHALL BE BRACED BY MEANS OF END BRACING AND/OR PARTIAL LAYER BRACING CONSTRUCTED IN ACCORDANCE WITH WR-52/100 OR PARTIAL UPPER LAYER BRACING IN ACCORDANCE WITH MIL-STD-1325-102 (NAVY). SELECT THE TYPE OF BRACE TO COMPLY WITH THE WEIGHT OF THE UNITS TO BE RETAINED. THE WEIGHT DISTRIBUTION REQUIREMENTS OF THE AAR MUST BE COMPLIED WITH, SEE MIL-STD-1325 (NAVY).
- THE LOADS AS SHOWN ARE BASED ON CARS WHICH HAVE 10 FT WIDE DOORWAY OPENINGS, AND ARE EQUIPPED WITH CONVENTIONAL SLIDING TYPE DOORS. THE DEPICTED PROCEDURES AND METHODS OF BLOCKING ARE APPLICABLE TO BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING TYPE DOORS OTHER THAN 10 FT WIDE.
- THE DEPICTED PROCEDURES AND METHODS OF BLOCKING ARE ALSO APPLICABLE TO BOXCARS EQUIPPED WITH PLUG TYPE DOORS. DUNNAGE MATERIAL MUST NOT BE NAILED TO ANY PLUG DOOR, WHETHER MAIN OR AUXILIARY, EXCEPT WHEN THE CAR HAS A COMBINATION OF A CONVENTIONAL SLIDING TYPE DOOR AND A PLUG TYPE DOOR, AND AN ADEQUATE NAILING STRIP IS PROVIDED ON THE PLUG TYPE DOOR. IF LUMBER OF SUFFICIENT LENGTH TO SPAN DOORS IS NOT AVAILABLE, RANDOM LENGTH MATERIAL, DOUBLED AND SPLICED, BUT WITH JOINTS OF SPLICES OFFSET, MAY BE USED. STACKS WITH MORE THAN HALF OF THE UNIT LOAD IN THE DOORWAY AREA MUST BE UNITIZED WITH TWO LATERALLY APPLIED 1 1/4" STEEL STRAPS PER STACK, EACH TENSIONED AND SEALED WITH TWO DOUBLE CRIMPED SEALS AND A TOP SWAY BRACE CONSISTING OF A SUPPORT PIECE AND A CROSS PIECE, TWO PER STACK (SEE DETAIL D) MUST BE INSTALLED BETWEEN THE ROWS OF THE DOORWAY STACKS. STRAP IS SECURED TO SUPPORT PIECE WITH TWO 1 1/4" STAPLES. SECURELY CLOSE DOORS AND WIRE TOGETHER WITH A FLEXIBLE STEEL WIRE INSERTED THROUGH THE HOLES IN THE DOOR LATCH ASSEMBLY ONE OR MORE TIMES AND THE WIRE ENDS TWISTED TOGETHER.



CARLOAD DATA

NUMBER OF UNIT LOADS ..... 28  
 CARLOAD WEIGHT ..... SEE TABLE X

LOADING PLAN  
 (SINGLE LAYER - 28 UNIT LOADS)

TABLE X

ITEM	CARLOAD WEIGHT (LBS) (APPROX) PALLET ADAPTER MK 11	
	MOD 0	MOD 1
PROJECTILE W/O WATERPROOF PROTECTIVE CAP	103,871	102,303
PROJECTILE W/WATER-PROOF PROTECTIVE CAP	106,559	104,991
ROCKET ASSISTED PROJECTILE MK 58 MOD 0	97,151	95,583
*PROJECTILE W/PLASTIC ROTATING BAND (HI-FRAG)	102,443	

INCLUDES 747 LBS (APPROX) DUNNAGE WT.  
 \*UNIT LOAD HAS PALLET ADAPTER MK 11 MOD 2 BOTTOM AND MK 11 MOD 1 TOP.

\* USE SWAY BRACE ASSEMBLY, DETAIL A, FOR STEEL FLOOR CARS.

\*\* W = DISTANCE BETWEEN LEGS OF PALLETS ACROSS THE CAR.

\*\*\* 2 x 6 STRUTS DOUBLED AND LAMINATED WITH 10d NAILS MAY BE SUBSTITUTED IN PLACE OF 4 x 4'S.

PIECE NO.	DESCRIPTION	SIZE	NO. PCS. REQ'D	NAIL TO	NUMBER	SIZE	PIECE NO.	DESCRIPTION	SIZE	NO. PCS. REQ'D	NAIL TO	NUMBER	SIZE
25	UPPER WALL CLEAT	2 x 4 x 18	4	CAR WALL	4	10d	13	HORIZONTAL DOORWAY MEMBER	2 x 4 x DOOR WIDTH	4	11	2 PER JOINT	10d
24	INTERMEDIATE WALL CLEAT	2 x 4 x 23	4	CAR WALL	4	10d	12	VERTICAL DOORWAY MEMBER	2 x 3 x 42	4	DOOR POST	2 PER JOINT	20d
23	HORIZONTAL BACK-UP CLEAT	2 x 6 x EXTEND ACROSS DOOR	8	6	18	16d	11	STRUT	4 x 4 x *** WEDGE FIT	8	5	2 PER JOINT	16d
22	DIAGONAL BRACE	4 x 4 x 70 3/8	8	16, 18	1 EA END.	60d	10	HOLD DOWN CLEAT	2 x 3 x CUT TO FIT	4	8	5	16d
21	HORIZONTAL POCKET CLEAT	2 x 6 x 24	8	19	7	16d	9	HOLD DOWN CLEAT	2 x 3 x CUT TO FIT	4	7	5	10d
20	HORIZONTAL POCKET CLEAT	2 x 6 x 36	8	18	10	16d	8	HOLD DOWN SPACER	2 x 4 x CAR WIDTH -1	2	5	3 PER JOINT	10d
19	HORIZONTAL WALL CLEAT	2 x 6 x EXTEND ACROSS DOOR	8	CAR WALL	40	10d	7	CENTER GATE STRUT CLEAT	2 x 4 x CAR WIDTH -1	4	5	3 PER JOINT	10d
18	CENTER CLEAT	2 x 4 x 36	4	15	7	16d	6	CENTER GATE VERTICAL	2 x 6 x 42	16	SEE 4	-	-
17	CROSS BRACE STIFFENER	2 x 6 x CAR WIDTH	4	15	2 PER FOOT	12d	5	CENTER GATE HORIZONTAL	2 x 6 x CAR WIDTH -1	4	5	3 PER JOINT	10d
16	CROSS BRACE	4 x 4 x CAR WIDTH	4	SEE 14	-	-	4	CROSS BRACE	2 x 4 x W **	18	SEE 3	-	-
15	CROSS BRACE STIFFENER	2 x 6 x CAR WIDTH	4	3	2 PER FOOT	10d	3	SWAY BRACE LONGITUDINAL	1 x 4 x 40	12	2, 4	3 PER JOINT	10d
14	LOWER WALL CLEAT	2 x 4 x 4	4	CAR WALL	3	10d	2	SWAY BRACE SUPPORT	1 x 4 x (W + B) **	12	SEE 3	-	-
							1	SLEEPER	2 x 4 x 40 <sup>X</sup>	28	CAR FLOOR	2 PER FOOT	16d

LIST OF MATERIALS AND NAILING DATA

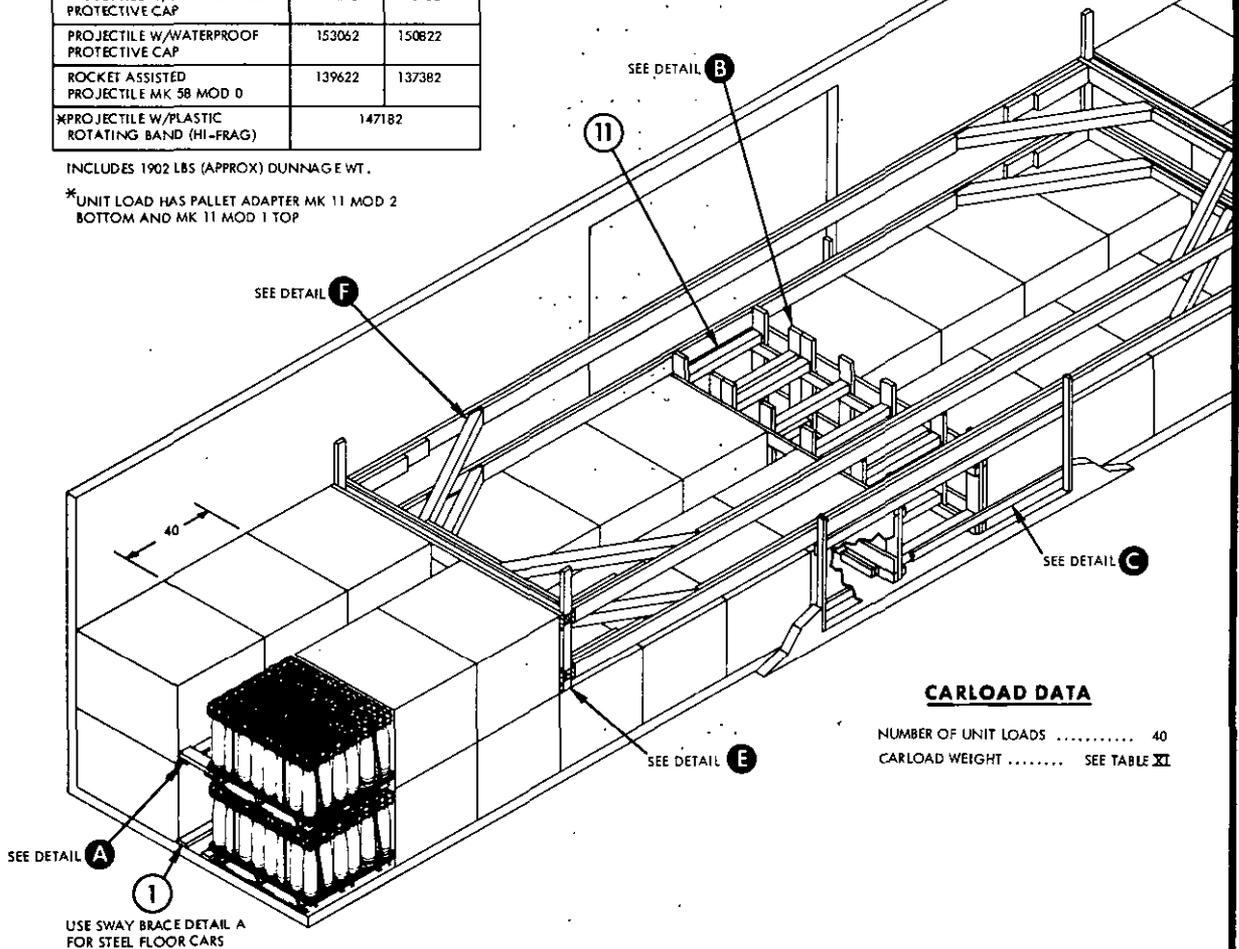
LIST OF MATERIALS AND NAILING DATA

TABLE XI

ITEM	CARLOAD WEIGHT (LBS) (APPROX) PALLET ADAPTER MK 11	
	MOD 0	MOD 1
PROJECTILE W/O WATERPROOF PROTECTIVE CAP	149222	146982
PROJECTILE W/WATERPROOF PROTECTIVE CAP	153062	150822
ROCKET ASSISTED PROJECTILE MK 58 MOD 0	139622	137382
PROJECTILE W/PLASTIC ROTATING BAND (HI-FRAG)	147182	

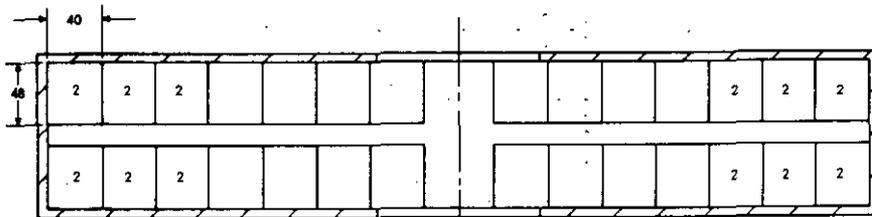
INCLUDES 1902 LBS (APPROX) DUNNAGE WT.

\*UNIT LOAD HAS PALLET ADAPTER MK 11 MOD 2 BOTTOM AND MK 11 MOD 1 TOP

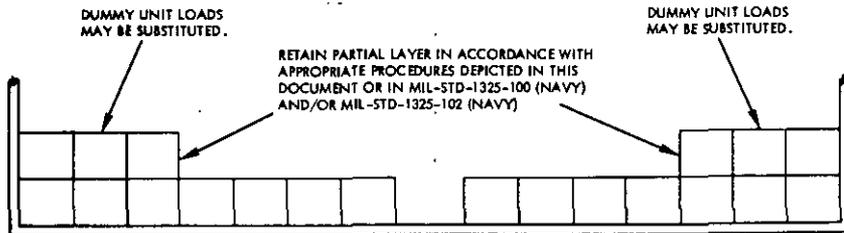


**CARLOAD DATA**

NUMBER OF UNIT LOADS ..... 40  
 CARLOAD WEIGHT ..... SEE TABLE XI

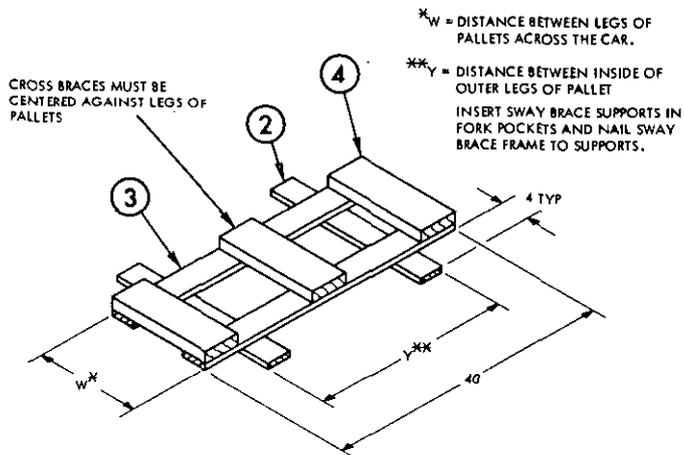


**LOADING PLAN**



**ELEVATION**

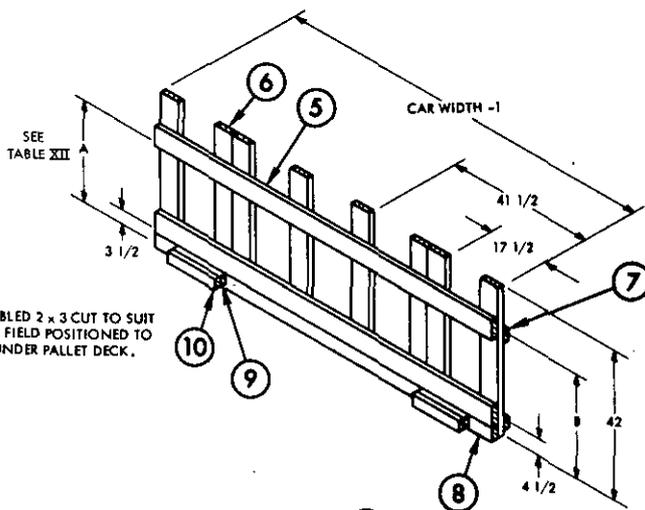
**MIL-STD-1325-15 (NAVY)**



**TABLE XII**

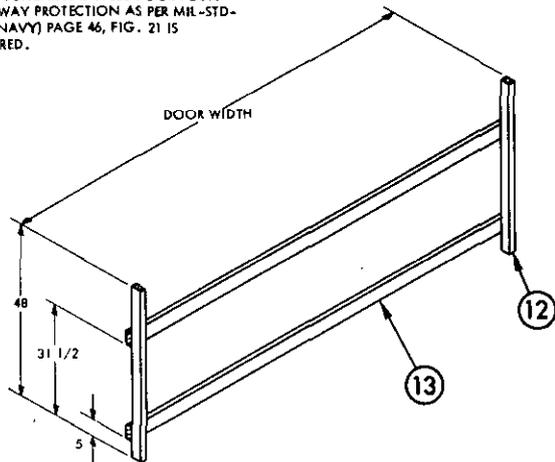
ITEM	A	B
PROJECTILE W/O WATERPROOF PROTECTING CAP	26 1/4	27 1/4
PROJECTILE W/WATERPROOF PROTECTING CAP	28 1/4	29 1/4
ROCKET ASSISTED PROJECTILE MK 58 MOD 0	28 1/2	29 3/4
PROJECTILE W/PLASTIC ROTATING BAND (HI-FRAG)	29 1/2	30 1/4

**DETAIL A**  
SWAY BRACE ASSEMBLY  
6 REQUIRED

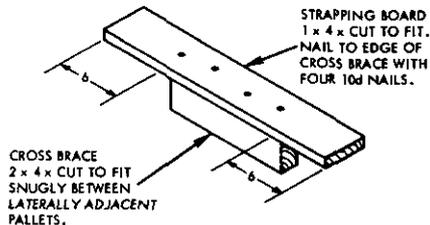


**DETAIL B**  
CENTER GATE (1 LAYER)  
2 REQUIRED  
SEE TABLE XII

WHEN BOXCAR HAS STEEL DOOR POSTS  
DOORWAY PROTECTION AS PER MIL-STD-  
1325 (NAVY) PAGE 46, FIG. 21 IS  
REQUIRED.

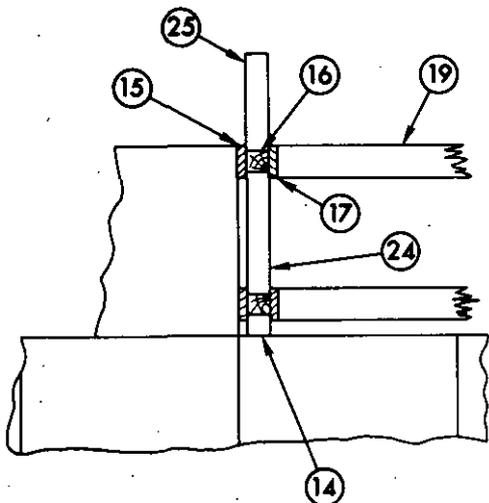


**DETAIL C**  
DOORWAY PROTECTION  
2 REQUIRED

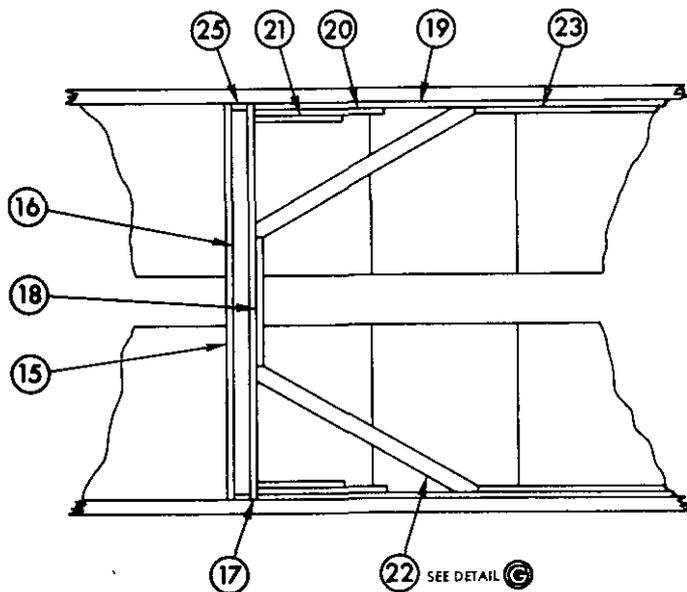


**DETAIL D**  
TOP SWAY BRACE

MIL-STD-1325-15 (NAVY)

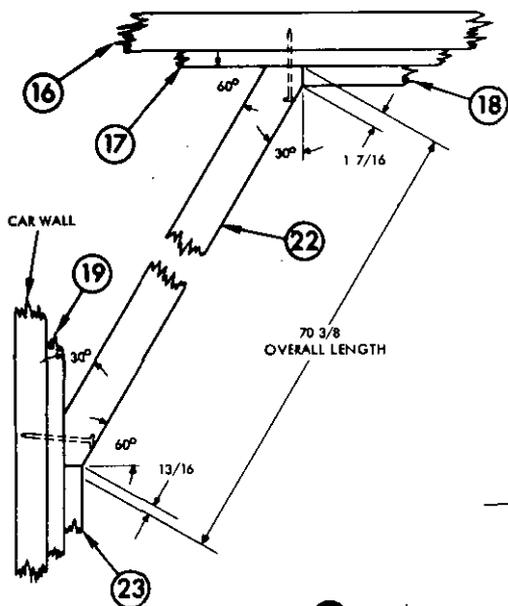


DETAIL E

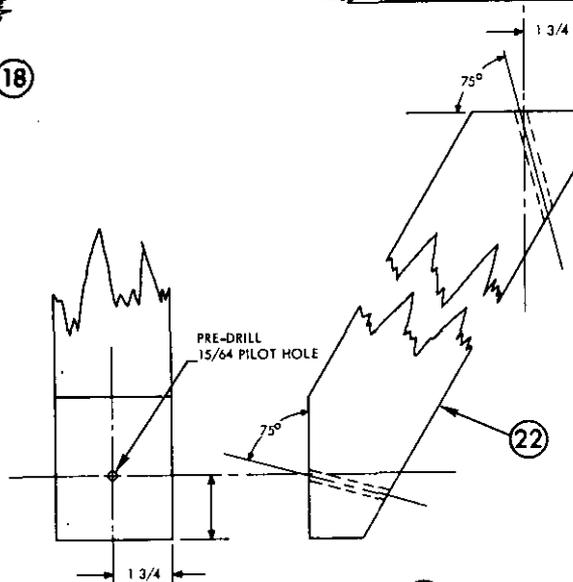
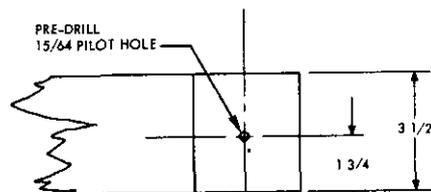


DETAIL F  
PARTIAL LAYER BRACING

NOTE:  
BE CERTAIN THAT SHORTER  
DIAGONAL CUT IS PLACED  
AGAINST CLEAT.



DETAIL G  
POSITIONING OF  
DIAGONAL BRACE



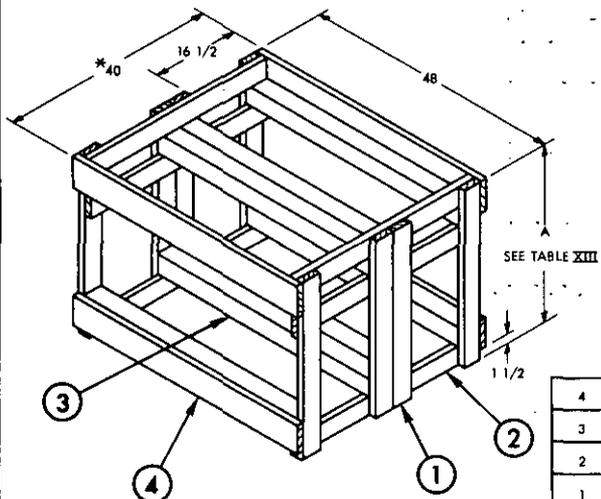
DETAIL I  
DIAGONAL BRACE  
LOCATION OF PILOT HOLE  
FOR 60d NAIL

MIL-STD-1325-15 (NAVY)

DUMMY UNIT LOAD

TABLE XIII

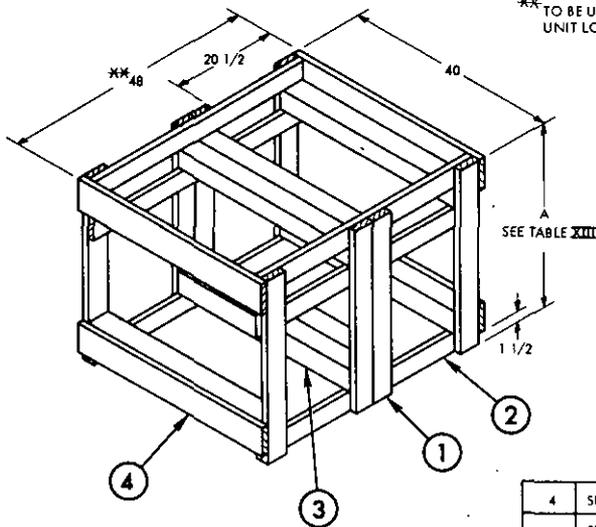
ITEM	A
PROJECTILE W/O WATERPROOF PROTECTING CAP	31 3/4
PROJECTILE W/WATERPROOF PROTECTING CAP	33 3/4
ROCKET ASSISTED PROJECTILE MK 58 MOD 0	34
PROJECTILE W/PLASTIC ROTATING BAND (HI-FRAG)	34 3/4



PIECE NO.	DESCRIPTION	SIZE	NO. PCS REQD	NAIL TO	NUMBER	SIZE
4	SIDE LONGITUDINAL	2 x 6 x 48	4	1 & 2	3 PER JOINT	10d
3	STRUT	4 x 4 x 45	8	SEE 1	-	-
2	CROSS BRACE	2 x 4 x 37	6	SEE 1	-	-
1	END VERTICAL	2 x 4 x SEE TABLE "A"	8	3 2	2/JOINT 3/JOINT	16d 10d
LIST OF MATERIALS AND NAILING DATA						

\* TO BE USED WHEN THE 48" DIMENSION OF THE UNIT LOAD IS LENGTHWISE IN THE CAR.

\*\* TO BE USED WHEN THE 48" DIMENSION OF THE UNIT LOAD IS CROSSWISE IN THE CAR.



PIECE NO.	DESCRIPTION	SIZE	NO. PCS REQD	NAIL TO	NUMBER	SIZE
4	SIDE LONGITUDINAL	2 x 6 x 40	4	1 & 2	3 PER JOINT	10d
3	STRUT	4 x 4 x 37	8	SEE 1	-	-
2	CROSS BRACE	2 x 4 x 45	6	SEE 1	-	-
1	END VERTICAL	2 x 4 x SEE TABLE "A"	8	3 2	2/JOINT 3/JOINT	16d 10d
LIST OF MATERIALS AND NAILING DATA						

REVIEW ACTIVITY  
NAVY - OS

PREPARING ACTIVITY  
NAVY - OS  
(PROJECT NO. 8140-N303)

FOLD

POSTAGE AND FEES PAID



**OFFICIAL BUSINESS**  
PENALTY FOR PRIVATE USE \$300

COMMANDING OFFICER  
NAVAL WEAPONS STATION EARLE  
NAVAL WEAPONS HANDLING LABORATORY (803)  
COLTS NECK, NEW JERSEY 07722

FOLD

