

APPROVED BY
 BUREAU OF EXPLOSIVES
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LOADING AND BRACING¹ IN VAN TYPE TRAILERS OF SEPARATE LOADING PROJECTILES FOR TRAILER-ON-FLAT-CAR (TOFC) SHIPMENT UTILIZING PALLA - GARD DEVICES

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1. LOADING AND BRACING SPECIFICATIONS SET FORTH WITHIN THIS DRAWING ARE APPLICABLE TO LOADS THAT ARE TO BE SHIPPED BY TRAILER-ON-FLAT-CAR (TOFC) RAIL CARRIER SERVICE. THESE SPECIFICATIONS MAY ALSO BE USED FOR LOADS THAT ARE TO BE MOVED BY MOTOR CARRIERS. SEE GENERAL NOTE "D" ON PAGE 2.

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JUNE 1986					
CLASS	DIVISION	DRAWING	FILE		
19	48	4183	15 PE 1004		

DO NOT SCALE

GENERAL NOTES

(GENERAL NOTES CONTINUED)

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1, AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE OUTLOADING PROCEDURES SPECIFIED HEREIN ARE APPLICABLE TO PALLETIZED UNITS OF 155MM, 175MM, AND 8" SEPARATE LOADING PROJECTILES, UNITIZED, FOR TRAILER-ON-FLAT-CAR (TOFC) SHIPMENT UTILIZING PALLA-GARD DEVICES. SUBSEQUENT REFERENCE TO PALLET UNIT MEANS THE PALLET UNIT WITH AMMUNITION ITEMS.
- C. FOR DETAILS OF PALLETIZED SEPARATE LOADING PROJECTILES, DEPICTED WITHIN THIS DRAWING, SEE PAGE 3.
- D. THE OUTLOADING PROCEDURES DEPICTED WITHIN THIS DOCUMENT ARE BASED UPON TRAILERS WHICH ARE 40'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION), UNLESS OTHERWISE SPECIFIED. THE TRAILERS, ADDITIONALLY, MUST BE OF THE TYPE SPECIFICALLY DESIGNED FOR TRAILER-ON-FLAT-CAR (TOFC) RAIL CARRIER SERVICE I.E., THE TRAILER CONSTRUCTION MUST BE SUCH THAT THE FORWARD END WALL IS CAPABLE OF RESTRAINING A FULL LOAD DURING NORMAL TOFC TRANSPORTATION AND HANDLING. THE TRAILERS MUST ALSO HAVE WOOD OR WOOD AND METAL FLOORS WHICH WILL ALLOW FOR PROPER INSTALLATION AND PLACEMENT OF THE PALLA-GARD LOAD RESTRAINING DEVICES. FOR TOFC SHIPMENTS, ONLY RAILCARS WHICH ARE SPECIFIED BY BUREAU OF EXPLOSIVES PAMPHLET 6C WILL BE UTILIZED.
- E. THE GROSS WEIGHT AND AXLE DISTRIBUTION OF WEIGHT FOR A LOAD WILL BE THE RESPONSIBILITY OF THE CARRIER. THE CARRIER WILL ADVISE THE SHIPPER OF THE APPLICABLE LOADING REQUIREMENTS, AND THE SHIPPER WILL LOAD ACCORDINGLY. NOTICE: A LOAD WILL BE POSITIONED IN A TRAILER CONSISTENT WITH THE WEIGHT LAWS OF THE STATE OR STATES THROUGH WHICH THE TRAILER WILL BE TRANSPORTED BY HIGHWAY (MOTOR CARRIER).
- F. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT, ONE (1) SEAL CRIMPED WITH TWO PAIR OF NOTCHES WILL BE USED TO SEAL THE JOINT.
- G. EXCEPT FOR PLYWOOD, 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 AND 4" X 4" MATERIAL IS ACTUALLY 3-1/2" THICK BY 3-1/2" WIDE.
- H. NOTICE: A STAGGERED NAILING PATTERN WILL BE USED WHEREVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES 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. CAUTION: DO NOT NAIL DUNNAGE MATERIAL TO THE TRAILER WALLS OR FLOOR. ALL NAILING WILL BE WITHIN THE DUNNAGE.
- J. POWER DRIVEN STAPLES MAY BE USED AS ALTERNATIVE FASTENERS FOR NAILS WHEN CONSTRUCTING DUNNAGE ASSEMBLIES WHICH ARE TO BE USED IN THE DELINEATED TRAILER LOADS SHOWN THROUGHOUT THIS DRAWING. THE STAPLES TO BE USED MUST BE EQUAL IN LENGTH TO THE SPECIFIED NAIL SIZE AND MUST BE SUBSTITUTED ON A ONE STAPLE FOR ONE NAIL BASIS. STAPLES WHICH ARE 2-1/2" OR LESS IN LENGTH SHOULD BE IN ACCORDANCE WITH FEDERAL SPECIFICATION FF-N-105 AS NEARLY AS PRACTICABLE. STAPLES WHICH ARE LONGER THAN 2-1/2" WILL BE A COMMERCIAL GRADE, OF A QUALITY EQUIVALENT TO THOSE MANUFACTURED BY SENCO PRODUCTS INCORPORATED.
- K. REQUIREMENTS CITED WITHIN THE BUREAU OF EXPLOSIVES PAMPHLET 6C APPLY WHEN THE SHIPMENT MOVES BY TOFC. SPECIAL TOFC NOTE FOLLOWS.

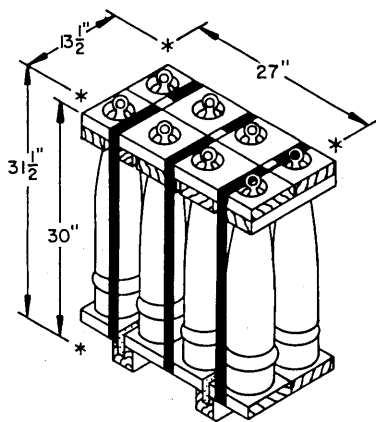
THE LOAD LIMIT OF A TOFC RAIL CAR MUST NOT BE EXCEEDED, NOR WILL A CAR BE LOADED SO THAT THE TRUCK UNDER ONE END OF THE CAR CARRIES MORE THAN ONE-HALF OF THE LOAD LIMIT FOR THAT CAR.
- L. TRAILERS HAVING WIDTH AND LENGTH DIMENSIONS DIFFERENT THAN THOSE SPECIFIED WITHIN THIS DOCUMENT MAY BE USED FOR SHIPMENT OF THE DEPICTED LOADS PROVIDED THAT THE TRAILERS CONFORM TO THE GUIDANCE CONTAINED IN GENERAL NOTE "D". WIDER OR NARROWER TRAILERS MAY BE USED BY ADJUSTING ANTI-SWAY BRACE ASSEMBLIES APPROPRIATELY. WHEN USING TRAILERS OF A LENGTH DIFFERENT THAN THOSE DEPICTED IN THE LOAD VIEWS, CARE MUST BE TAKEN TO INSURE THAT THERE IS AT LEAST A 12" VOID FROM THE REAR OF THE PALLA-GARD UNITS TO THE METAL THRESHOLD OF THE TRAILER. THIS 12" VOID WILL PERMIT PROPER ENGAGEMENT OF THE PALLA-GARD DEVICES INTO THE WOOD FLOOR OF THE TOFC TRAILER WHEN THE LOAD INCURS FORCES INCIDENT TO NORMAL TRANSPORTATION.
- M. PORTIONS OF THE TRAILERS, SUCH AS SIDEWALLS, END WALLS, AND ROOFS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.

- N. SELECTION OF A VEHICLE TO BE USED FOR TRANSPORTATION OF THE DESIGNATED ITEM MUST COMPLY WITH AR 55-355, CHAPTER 213, FOR EXPLOSIVES AND OTHER DANGEROUS ARTICLES, IN FULL.
- O. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.
- P. CONVERSION TO METRIC EQUIVALENTS: THE DIMENSIONS WITHIN THIS DRAWING ARE EXPRESSED IN INCHES, AND THE WEIGHTS ARE EXPRESSED IN POUNDS. WHEN NECESSARY, THE METRIC EQUIVALENT MAY BE COMPUTED ON THE BASIS OF ONE INCH EQUALS 25.4MM AND ONE POUND EQUALS 0.454KG.
- Q. THE NUMBER OF LADING UNITS MAY BE ADJUSTED TO FIT THE SIZE OF THE TRAILER TO BE LOADED OR THE QUANTITY TO BE SHIPPED; HOWEVER, THE APPROVED METHODS SHOWN HEREIN MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR THE BLOCKING AND BRACING OF THE DESIGNATED ITEM.
- R. OTHER TYPES OF LADING ITEMS MAY BE LOADED INTO TRAILERS WHICH ARE PARTIALLY LOADED WITH THE DEPICTED 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 HEREIN.
- S. IF THE EXCESS SPACE ACROSS THE WIDTH OF A TRAILER, MEASURED BETWEEN THE LADING OF LATERALLY ADJACENT UNIT LOADS EXCEEDS 2", ANTI-SWAY BRACING MUST BE INSTALLED BETWEEN THE UNIT LOADS TO PREVENT LATERAL DISPLACEMENT DURING TRANSPORT. FOR ADDITIONAL GUIDANCE, SEE THE ANTI-SWAY BRACE DETAILS ON PAGE 16. LATERAL BRACING IS NOT REQUIRED IF THE EXCESS SPACE MEASURES 2" OR LESS.
- T. TO PRECLUDE DAMAGE TO THE UNIT LOADS POSITIONED IMMEDIATELY FORWARD OF THE PALLA-GARD DEVICES, THE UNIT LOADS POSITIONED ON THE DEVICES MUST BE FLUSH WITH OR OVERHANG THE FORWARD EDGES OF THE PALLA-GARD DEVICES. IF NECESSARY, A FILLER ASSEMBLY WILL BE PLACED BETWEEN THE BACK SIDE OF THE UNIT LOAD AND THE PALLA-GARD DEVICE SO THAT THE FORWARD SIDE OF THE UNIT IS FLUSH OR OVERHANGING THE DEVICE. FOR ADDITIONAL GUIDANCE, SEE THE "TYPICAL PALLA-GARD UNIT DETAIL" ON PAGE 5.

(GENERAL NOTES CONTINUED AT RIGHT)

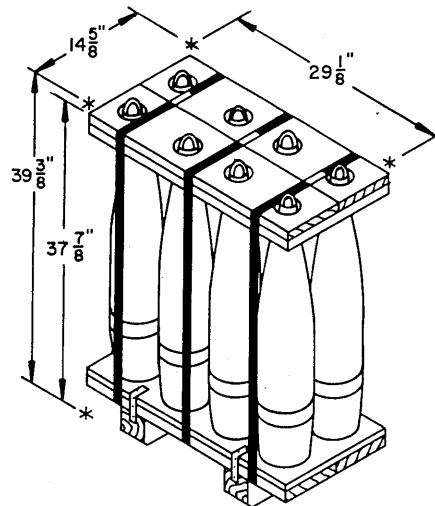
MATERIAL SPECIFICATIONS

- LUMBER-----: SEE TM 743-200-1, DUNNAGE LUMBER, FED SPEC MM-L-751.
- NAILS-----: COMMON, FED SPEC FF-N-105.
- PLYWOOD-----: GROUP B, CONSTRUCTION AND INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE C-D. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER INTERIOR OR EXTERIOR GRADE MAY BE SUBSTITUTED: FED SPEC NN-P-530.
- STRAPPING, STEEL ---: CLASS 1, TYPE I OR IV, HEAVY DUTY, FINISH A, B (GRADE 2), OR C: FED SPEC QQ-5-781.
- STRAP SEAL-----: TYPE D, STYLE I, II, OR IV, CLASS H: FED SPEC QQ-5-781.
- WIRE-----: ANNEALED, BLACK: FED SPEC QQ-W-461.



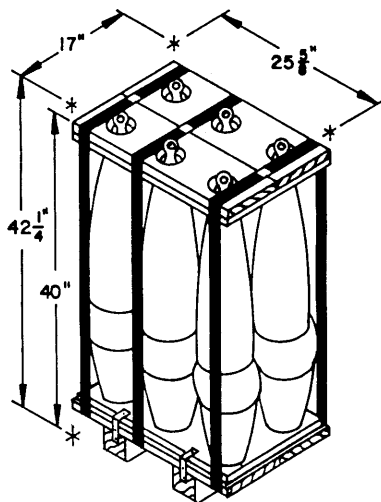
155MM, 8/PALLET (SMALL)

UNIT WEIGHT ----- 800 LBS (APPROX)
 CUBE ----- 6.6 CU FT



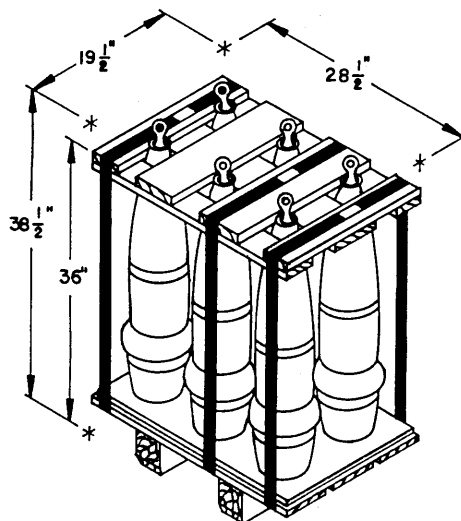
155MM, 8/PALLET (LARGE)

UNIT WEIGHT ----- 830 LBS (APPROX)
 CUBE ----- 9.7 CU FT



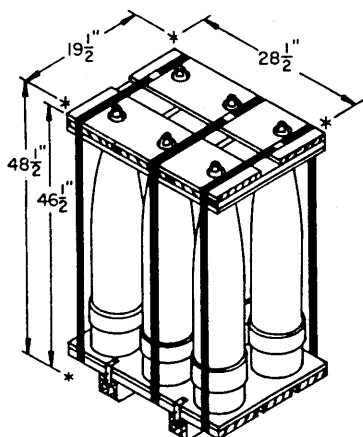
175MM, 6/PALLET

UNIT WEIGHT ----- 934 LBS (APPROX)
 CUBE ----- 10.7 CU FT



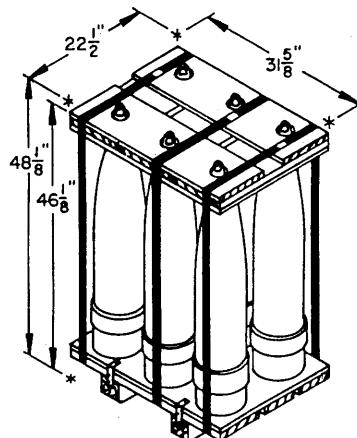
8', 6/PALLET (SMALL)

UNIT WEIGHT ----- 1,256 LBS (APPROX)
 CUBE ----- 12.4 CU FT



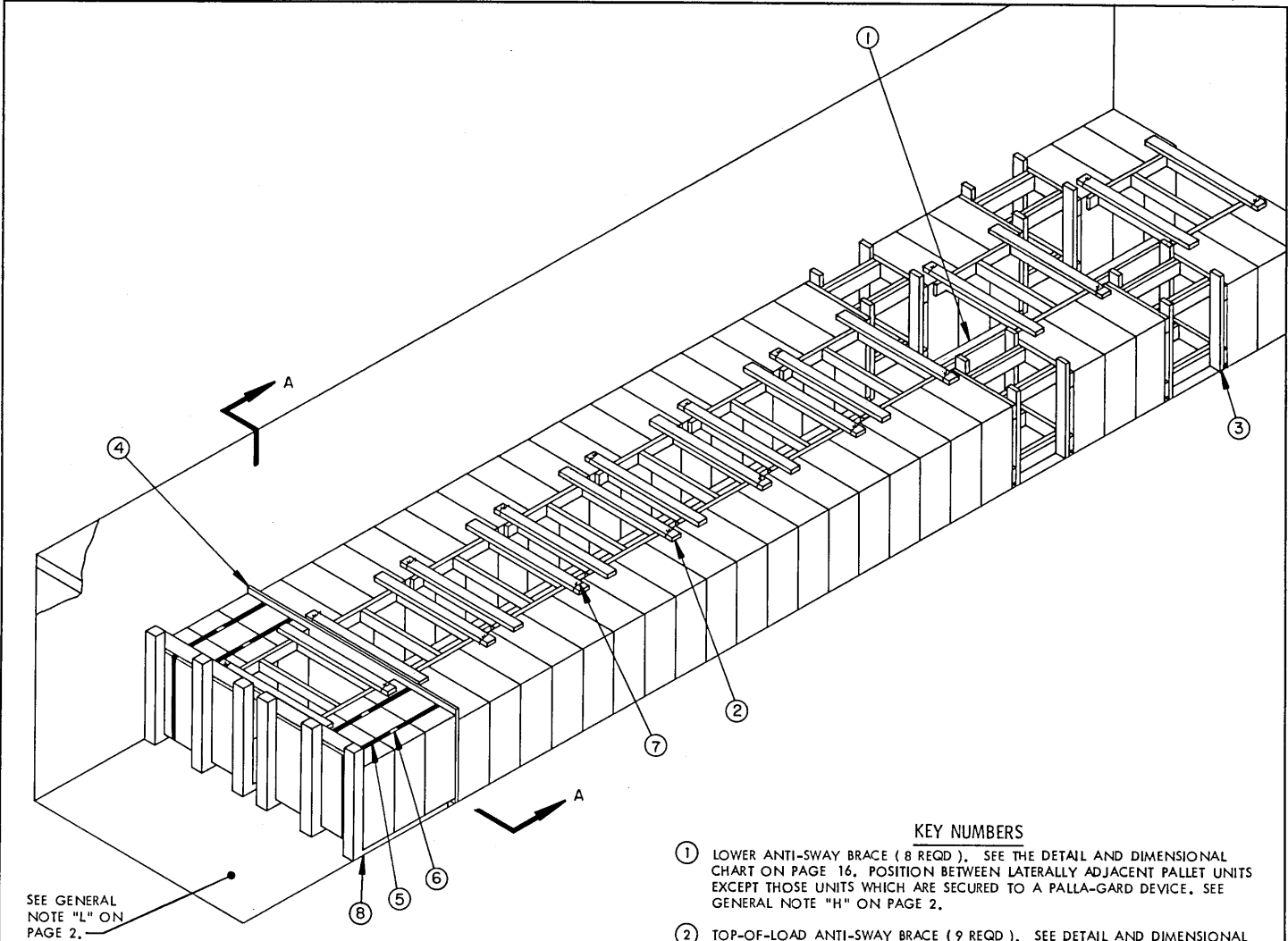
8', 6/PALLET (TALL)

UNIT WEIGHT ----- 1,296 LBS (APPROX)
 CUBE ----- 15.6 CU FT



8', 6/PALLET (LARGE)

UNIT WEIGHT ----- 1,301 LBS (APPROX)
 CUBE ----- 19.8 CU FT

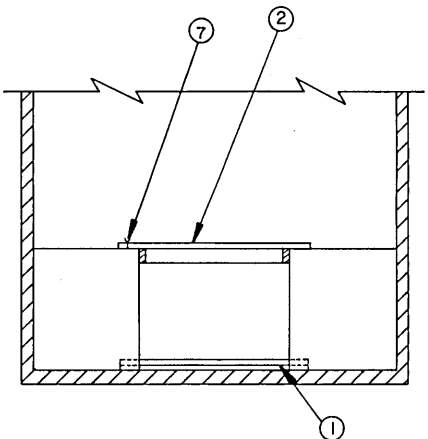


SEE GENERAL NOTE "L" ON PAGE 2.

ISOMETRIC VIEW

KEY NUMBERS

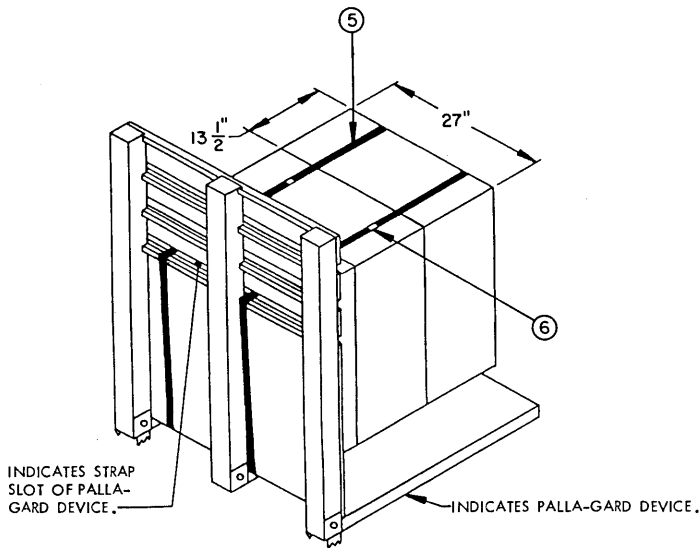
- ① LOWER ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL AND DIMENSIONAL CHART ON PAGE 16, POSITION BETWEEN LATERALLY ADJACENT PALLET UNITS EXCEPT THOSE UNITS WHICH ARE SECURED TO A PALLA-GARD DEVICE. SEE GENERAL NOTE "H" ON PAGE 2.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (9 REQD). SEE DETAIL AND DIMENSIONAL CHART ON PAGE 16. WIRE TIE W/NO. 14 GAGE WIRE AT DIAGONALLY OPPOSITE CORNERS TO PALLET UNIT STRAPS.
- ③ FILLER ASSEMBLY FOR 2-UNITS (4 REQD). SEE THE "FILLER ASSEMBLY" DETAIL AND DIMENSIONAL CHART ON PAGE 17.
- ④ LOAD BEARING GATE, PLYWOOD, 3/4" X 48" X 7'-6" (1 REQD).
- ⑤ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 13'-0" LONG STEEL STRAPPING (4 REQD). INSTALL TO FORM A COMPLETE LOOP AROUND PALLET UNITS AND PALLA-GARD DEVICE UTILIZING THE LOWEST STRAP SLOT IN THE PALLA-GARD DEVICE. SEE THE "TYPICAL PALLA-GARD UNIT DETAIL" ON PAGE 5.
- ⑥ SEAL FOR 1-1/4" STRAPPING (4 REQD, 1 PER STRAP). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES. SEE GENERAL NOTE "F" ON PAGE 2.
- ⑦ TIE WIRE, NO. 14 GAGE WIRE 18" LONG (18 REQD). INSTALL TO FORM A COMPLETE LOOP AROUND THE TOP-OF-LOAD ANTI-SWAY BRACE AND A PALLET UNIT STRAP AS APPLICABLE. BRING ENDS TOGETHER AND TWIST TAUT.
- ⑧ PALLA-GARD DEVICE (2 REQD). SEE THE "TYPICAL PALLA-GARD UNIT DETAIL" ON PAGE 5.



SECTION A-A

SPECIAL NOTES:

1. A 40'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) TOFC VAN TRAILER IS SHOWN. TRAILERS OF OTHER DIMENSIONS CAN BE USED. SEE GENERAL NOTES "D" AND "L" ON PAGE 2.
2. THE SEPARATE LOADING PROJECTILE UNIT SHOWN IN THE ISOMETRIC VIEW IS THE 155MM PROJECTILE, 8/PALLET (SMALL) WHICH IS 13-1/2" LONG BY 27" WIDE BY 31-1/2" HIGH WITH AN APPROXIMATE WEIGHT OF 800 POUNDS PER UNIT.
3. THE NUMBER OF FILLER ASSEMBLIES MAY BE INCREASED AS NECESSARY TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION OR QUANTITY TO BE SHIPPED. SEE GENERAL NOTE "E" ON PAGE 2.



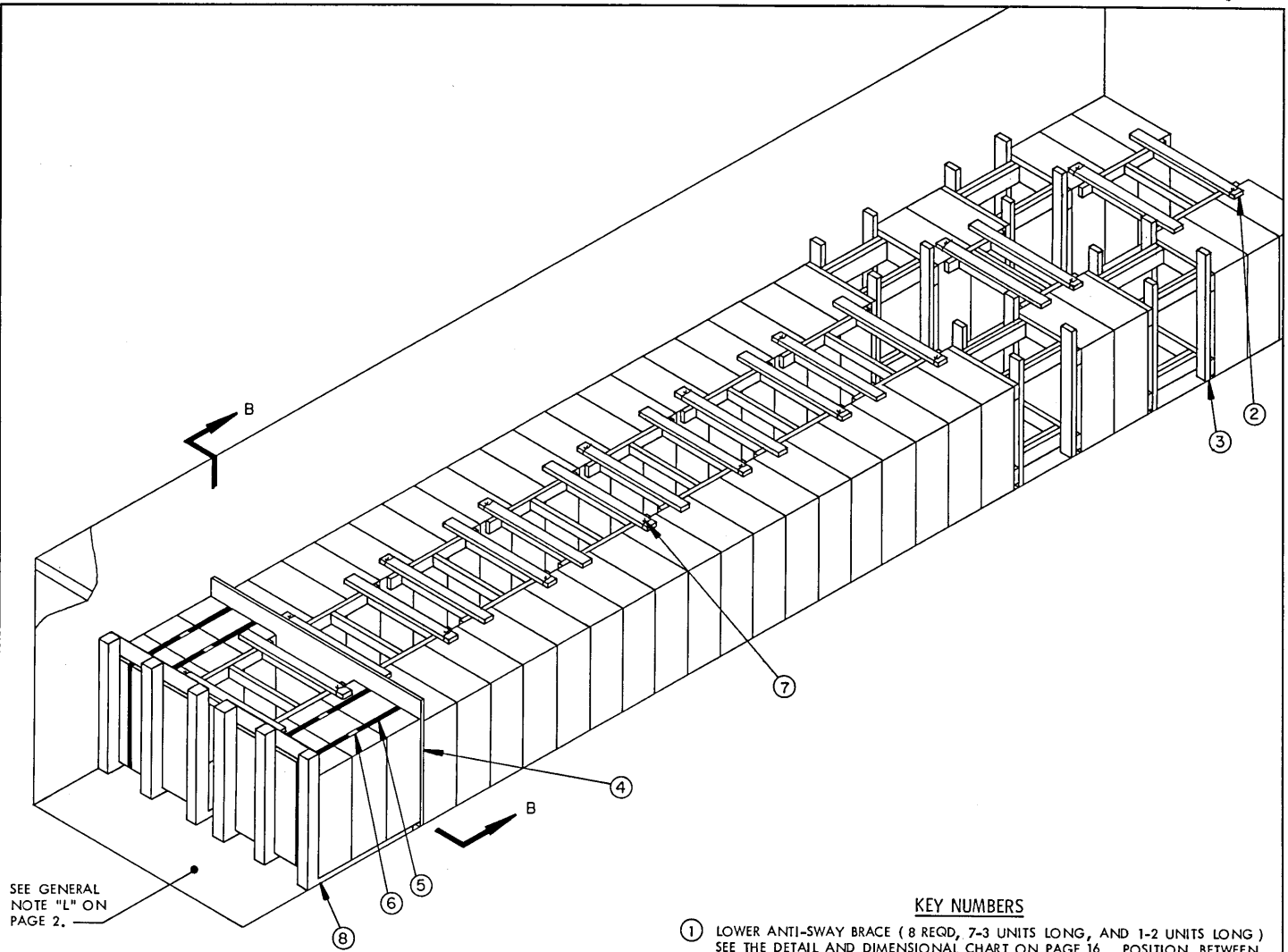
TYPICAL PALLA-GARD UNIT DETAIL

ALTHOUGH THE UNIT SHOWN ABOVE DEPICTS THREE PALLET UNITS OF 155MM SEPARATE LOADING PROJECTILES, OTHER PALLET UNITS DEPICTED WITHIN THIS DRAWING MAY BE SHIPPED USING THE PALLA-GARD DEVICE. A SPACER ASSEMBLY, SHOWN AS PIECE MARKED (7) ON PAGE 8 AND DETAILED ON PAGE 18 IS NEEDED IF THE UNITS ARE NOT EQUAL TO OR DO NOT OVERHANG THE "DECK" OF THE PALLA-GARD DEVICE. NOTE: PALLET UNITS MUST BE ALIGNED FLUSH WITH THE OUTER EDGE OF THE PALLA-GARD. DEPICTED IS A LEFT-HAND UNIT, ONE RIGHT-HAND AND ONE LEFT-HAND UNIT ARE REQUIRED FOR THE LOADS SHOWN WITHIN THIS DRAWING.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	9	3
2" X 3"	7	4
2" X 4"	462	308
2" X 6"	100	100
NAILS	NO. REQD	POUNDS
10d (3")	588	9
PLYWOOD, 3/4" THICK	-----30 SQ FT REQD	----- 66 LBS
STEEL STRAPPING, 1-1/4"	----- 52' REQD	----- 7-1/2 LBS
SEAL FOR 1-1/4" STRAPPING	----- 4 REQD	----- NIL
WIRE, NO. 14 GAGE	----- 27' REQD	----- NIL
PALLA-GARD DEVICE	----- 2 REQD	----- 620 LBS

LOAD AS SHOWN

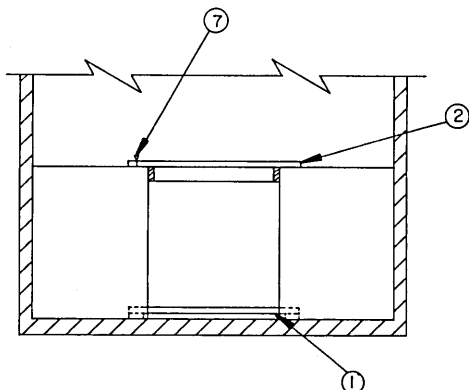
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	----- 54	----- 43,200 LBS
DUNNAGE	-----	----- 913 LBS
TOTAL WEIGHT		----- 44,733 LBS



ISOMETRIC VIEW

KEY NUMBERS

- ① LOWER ANTI-SWAY BRACE (8 REQD, 7-3 UNITS LONG, AND 1-2 UNITS LONG) SEE THE DETAIL AND DIMENSIONAL CHART ON PAGE 16. POSITION BETWEEN LATERALLY ADJACENT PALLET UNITS EXCEPT THOSE UNITS WHICH ARE SECURED TO A PALLA-GARD DEVICE. SEE GENERAL NOTE "H" ON PAGE 2.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (9 REQD, 8-3 UNITS LONG AND 1-2 UNITS LONG). SEE THE DETAIL AND DIMENSIONAL CHART ON PAGE 16. WIRE TIE W/NO. 14 GAGE WIRE AT DIAGONALLY OPPOSITE CORNERS TO PALLET UNIT STRAPS.
- ③ FILLER ASSEMBLY FOR 2- UNITS (4 REQD). SEE THE "FILLER ASSEMBLY" DETAIL AND DIMENSIONAL CHART ON PAGE 17.
- ④ LOAD BEARING GATE, PLYWOOD, 3/4" X 48" X 7'-6" (1 REQD).
- ⑤ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 14'-6" LONG STEEL STRAPPING (4 REQD). INSTALL TO FORM A COMPLETE LOOP AROUND PALLET UNITS AND PALLA-GARD DEVICE. SEE THE "TYPICAL PALLA-GARD UNIT DETAIL" ON PAGE 5.
- ⑥ SEAL FOR 1-1/4" STRAPPING (4 REQD, 1 PER STRAP). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES. SEE GENERAL NOTE "F" ON PAGE 2.
- ⑦ TIE WIRE, NO. 14 GAGE WIRE 18" LONG (18 REQD). INSTALL TO FORM A COMPLETE LOOP AROUND THE TOP-OF-LOAD ANTI-SWAY BRACE AND A PALLET UNIT STRAP AS APPLICABLE. BRING ENDS TOGETHER AND TWIST TAUT.
- ⑧ PALLA-GARD DEVICE (2 REQD). SEE THE "TYPICAL PALLA-GARD UNIT DETAIL" ON PAGE 5.



SECTION B-B

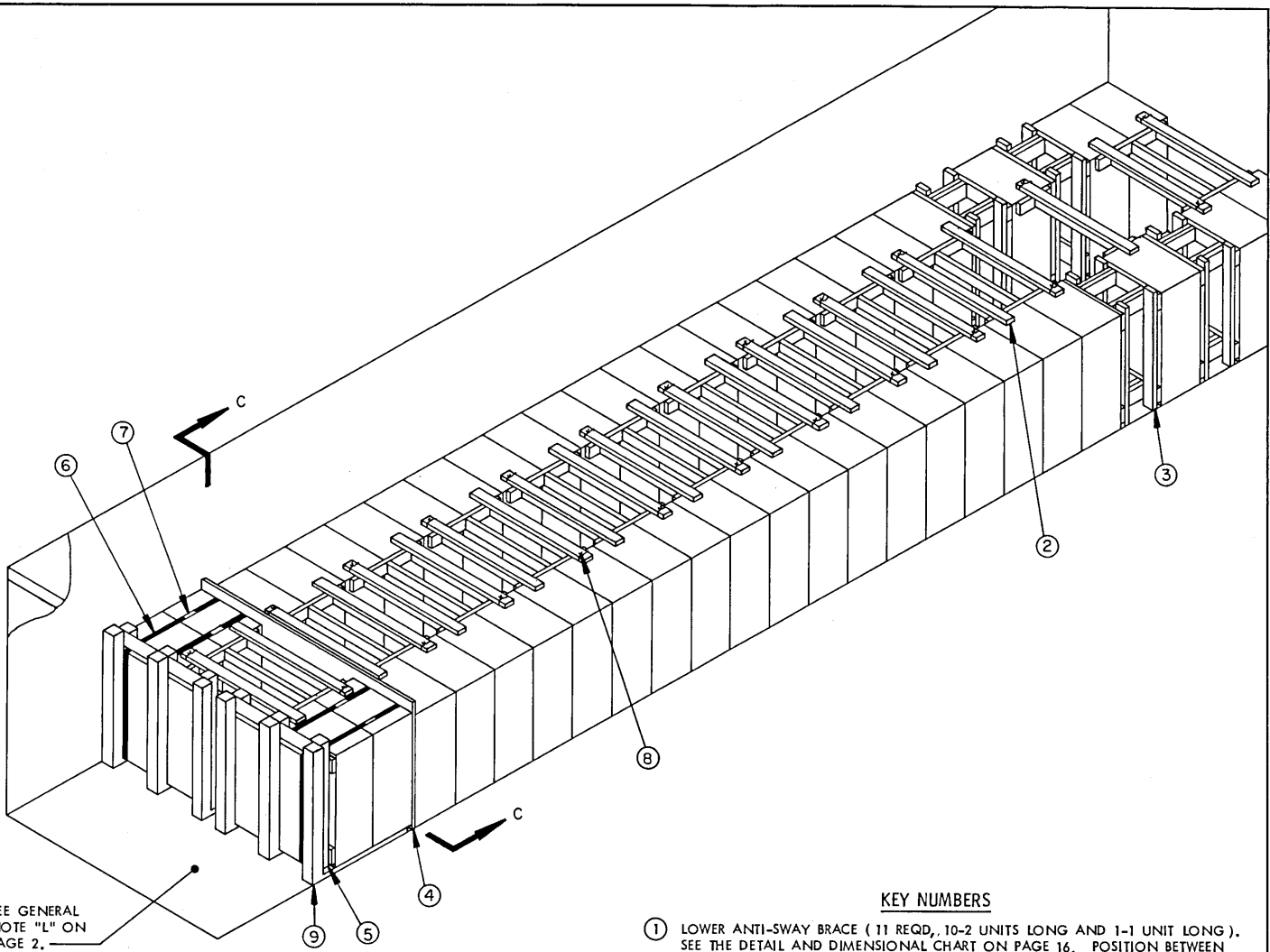
SPECIAL NOTES:

1. A 40'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) TOFC VAN TRAILER IS SHOWN. TRAILERS OF OTHER DIMENSIONS CAN BE USED. SEE GENERAL NOTES "D" AND "L" ON PAGE 2.
2. THE SEPARATE LOADING PROJECTILE UNIT SHOWN IN THE ISOMETRIC VIEW IS THE 155MM PROJECTILE, 8/PALLET (LARGE) WHICH IS 14-5/8" LONG BY 29-1/8" WIDE BY 39-3/8" HIGH WITH AN APPROXIMATE WEIGHT OF 830 POUNDS PER UNIT.
3. THE NUMBER OF FILLER ASSEMBLIES MAY BE INCREASED AS NECESSARY TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION OR QUANTITY OF UNITS TO BE SHIPPED. SEE GENERAL NOTE "E" ON PAGE 2.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	5	2
2" X 3"	4	2
2" X 4"	395	264
2" X 6"	108	108
NAILS	NO. REQD	POUNDS
10d (3")	588	9
PLYWOOD, 3/4" THICK ----- 30 SQ FT REQD ----- 66 LBS		
STEEL STRAPPING, 1-1/4" ----- 58' REQD ----- 8 LBS		
SEAL FOR 1-1/4" STRAPPING ----- 4 REQD ----- NIL		
WIRE, NO. 14 GAGE ----- 27' REQD ----- NIL		
PALLA-GARD DEVICE ----- 2 REQD ----- 620 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	52	43,160 LBS
DUNNAGE		835 LBS
		<u>TOTAL WEIGHT ----- 44,615 LBS</u>

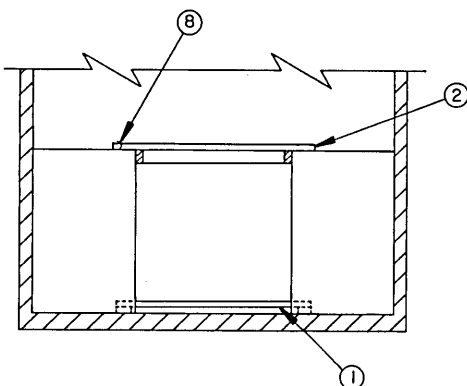


SEE GENERAL NOTE "L" ON PAGE 2.

ISOMETRIC VIEW

KEY NUMBERS

- ① LOWER ANTI-SWAY BRACE (11 REQD., 10-2 UNITS LONG AND 1-1 UNIT LONG). SEE THE DETAIL AND DIMENSIONAL CHART ON PAGE 16. POSITION BETWEEN LATERALLY ADJACENT PALLET UNITS EXCEPT THOSE UNITS WHICH ARE SECURED TO A PALLA-GARD DEVICE. SEE GENERAL NOTE "H" ON PAGE 2.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (12 REQD., 11-2 UNITS LONG AND 1-1 UNIT LONG). SEE THE DETAIL AND DIMENSIONAL CHART ON PAGE 16. WIRE TIE W/NO. 14 GAGE WIRE AT DIAGONALLY OPPOSITE CORNERS TO PALLET UNIT STRAPS. NOTE THAT THE 1- UNIT LONG WILL BE WIRE TIED TO EACH END.
- ③ FILLER ASSEMBLY FOR 1- UNIT (4 REQD.). SEE THE "FILLER ASSEMBLY" DETAIL AND DIMENSIONAL CHART ON PAGE 17.
- ④ LOAD BEARING GATE, PLYWOOD, 3/4" X 48" X 7'-6" (1 REQD.).
- ⑤ SPACER ASSEMBLY (2 REQD.). SEE THE DETAIL ON PAGE 18. POSITION BETWEEN PALLET UNIT AND PALLA-GARD DEVICE. SEE SPECIAL NOTE ON PAGE 9 AND GENERAL NOTE "T" ON PAGE 2
- ⑥ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 15'-0" LONG STEEL STRAPPING (4 REQD.). INSTALL TO FORM A COMPLETE LOOP AROUND PALLET UNITS, SPACER ASSEMBLY, AND PALLA-GARD DEVICE UTILIZING THE THIRD FROM THE BOTTOM STRAP SLOT IN THE PALLA-GARD DEVICE. SEE THE "TYPICAL PALLA-GARD UNIT DETAIL" ON PAGE 5.
- ⑦ SEAL FOR 1-1/4" STRAPPING (4 REQD., 1 PER STRAP). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES. SEE GENERAL NOTE "F" ON PAGE 2.
- ⑧ TIE WIRE, NO. 14 GAGE WIRE 18" LONG (24 REQD.). INSTALL TO FORM A COMPLETE LOOP AROUND THE TOP-OF-LOAD ANTI-SWAY BRACE AND PALLET UNIT STRAP AS APPLICABLE. BRING ENDS TOGETHER AND TWIST TAUT.
- ⑨ PALLA-GARD DEVICE (2 REQD.). SEE THE "TYPICAL PALLA-GARD UNIT DETAIL" ON PAGE 5.



SECTION C-C

SPECIAL NOTES:

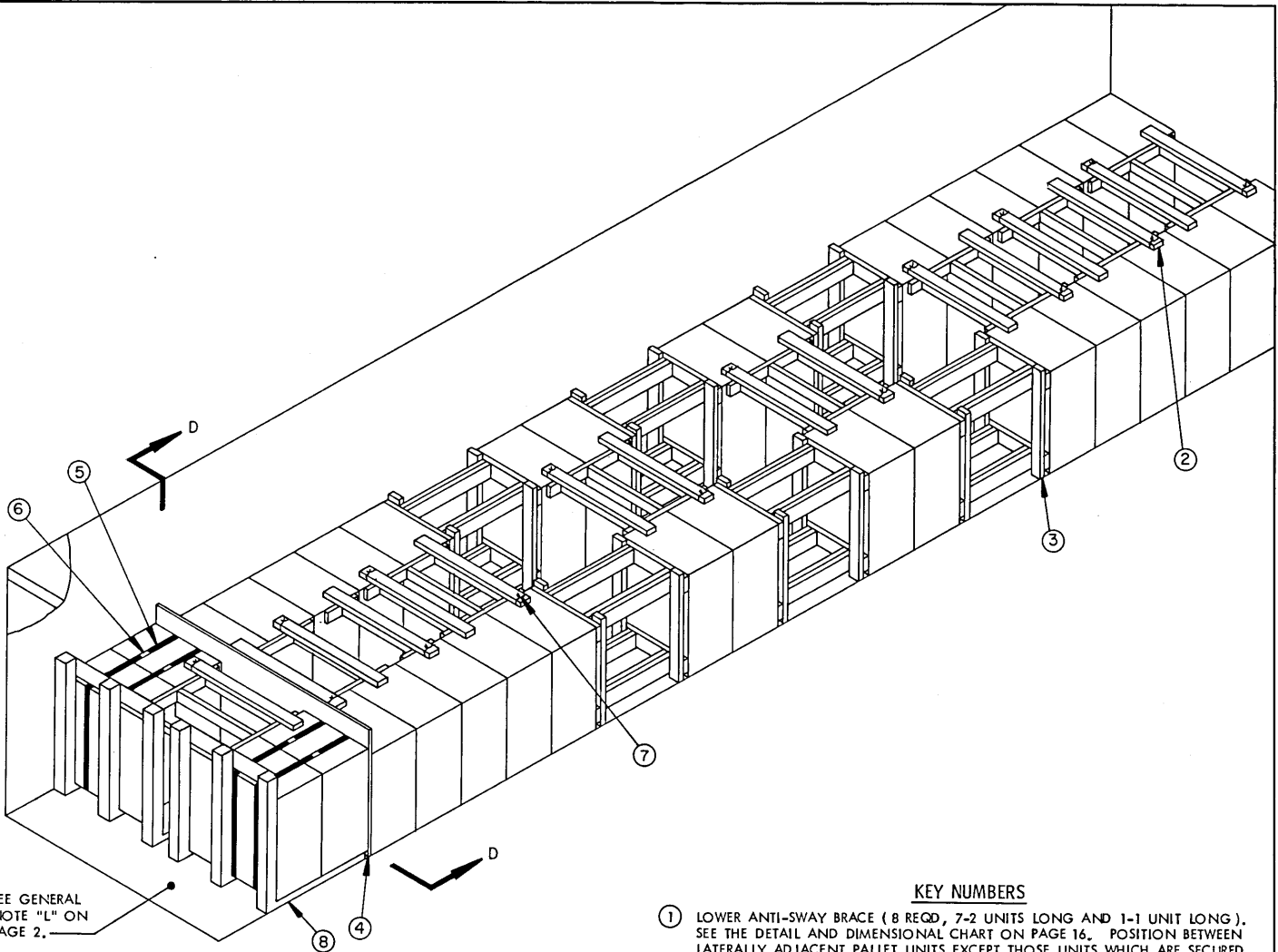
1. A 40'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) TOFC VAN TRAILER IS SHOWN. TRAILERS OF OTHER DIMENSIONS CAN BE USED. SEE GENERAL NOTES "D" AND "L" ON PAGE 2.
2. THE SEPARATE LOADING PROJECTILE UNIT SHOWN IN THE ISOMETRIC VIEW IS THE 175MM PROJECTILE, 6/PALLET WHICH IS 17' LONG BY 25-5/8" WIDE BY 42-1/4" HIGH WITH AN APPROXIMATE WEIGHT OF 934 POUNDS PER UNIT.
3. THE NUMBER OF FILLER ASSEMBLIES MAY BE INCREASED AS NECESSARY TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION OR QUANTITY OF UNITS TO BE SHIPPED. SEE GENERAL NOTE "E" ON PAGE 2.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	9	3
2" X 3"	5	3
2" X 4"	514	343
2" X 6"	80	80
4" X 4"	24	32
NAILS	NO. REQD	POUNDS
10d (3")	696	10-3/4
PLYWOOD, 3/4" THICK -----30 SQ FT REQD----- 66 LBS. STEEL STRAPPING, 1-1/4"----- 60' REQD----- 8-1/2 LBS SEAL FOR 1-1/4" STRAPPING ----- 4 REQD----- NIL WIRE, NO. 14 GAGE ----- 36' REQD----- 1/2 LB PALLA-GARD DEVICE-----2 REQD----- 620 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	46	42,964 LBS
DUNNAGE		1,008 LBS
TOTAL WEIGHT		44,592 LBS

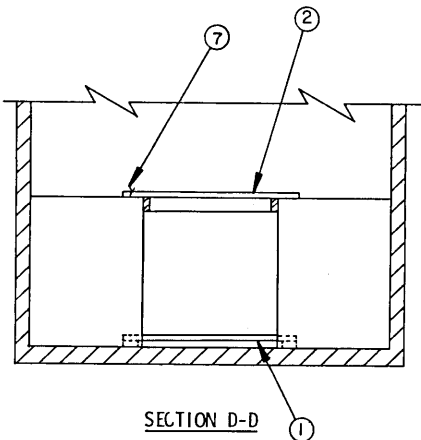


SEE GENERAL NOTE "L" ON PAGE 2.

ISOMETRIC VIEW

KEY NUMBERS

- ① LOWER ANTI-SWAY BRACE (8 REQD, 7-2 UNITS LONG AND 1-1 UNIT LONG). SEE THE DETAIL AND DIMENSIONAL CHART ON PAGE 16. POSITION BETWEEN LATERALLY ADJACENT PALLET UNITS EXCEPT THOSE UNITS WHICH ARE SECURED TO A PALLA-GARD DEVICE. SEE GENERAL NOTE "H" ON PAGE 2.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD, 7-2 UNITS LONG AND 1-1 UNIT LONG). SEE THE DETAIL AND DIMENSIONAL CHART ON PAGE 16. WIRE TIE W/NO. 14 GAGE WIRE AT DIAGONALLY OPPOSITE CORNERS TO PALLET UNIT STRAPS. NOTE THAT 1- UNIT LONG WILL BE WIRE TIED AT EACH END.
- ③ FILLER ASSEMBLY FOR 2- UNITS (6 REQD). SEE THE "FILLER ASSEMBLY" DETAIL AND DIMENSIONAL CHART ON PAGE 17.
- ④ LOAD BEARING GATE, PLYWOOD, 3/4" X 48" X 7'-6" (1 REQD).
- ⑤ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 15'-0" LONG STEEL STRAPPING (4 REQD). INSTALL TO FORM A COMPLETE LOOP AROUND PALLET UNITS AND PALLA-GARD DEVICE UTILIZING THE SECOND FROM THE BOTTOM STRAP SLOT IN THE PALLA-GARD DEVICE. SEE THE "TYPICAL PALLA-GARD UNIT DETAIL" ON PAGE 5.
- ⑥ SEAL FOR 1-1/4" STRAPPING (4 REQD, 1 PER STRAP). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES. SEE GENERAL NOTE "F" ON PAGE 2.
- ⑦ TIE WIRE, NO. 14 GAGE WIRE 18" LONG (18 REQD). INSTALL TO FORM A COMPLETE LOOP AROUND THE TOP-OF-LOAD ANTI-SWAY BRACE AND A PALLET UNIT STRAP AS APPLICABLE. BRING ENDS TOGETHER AND TWIST TAUT.
- ⑧ PALLA-GARD DEVICE (2 REQD). SEE THE "TYPICAL PALLA-GARD UNIT DETAIL" ON PAGE 5.



SECTION D-D

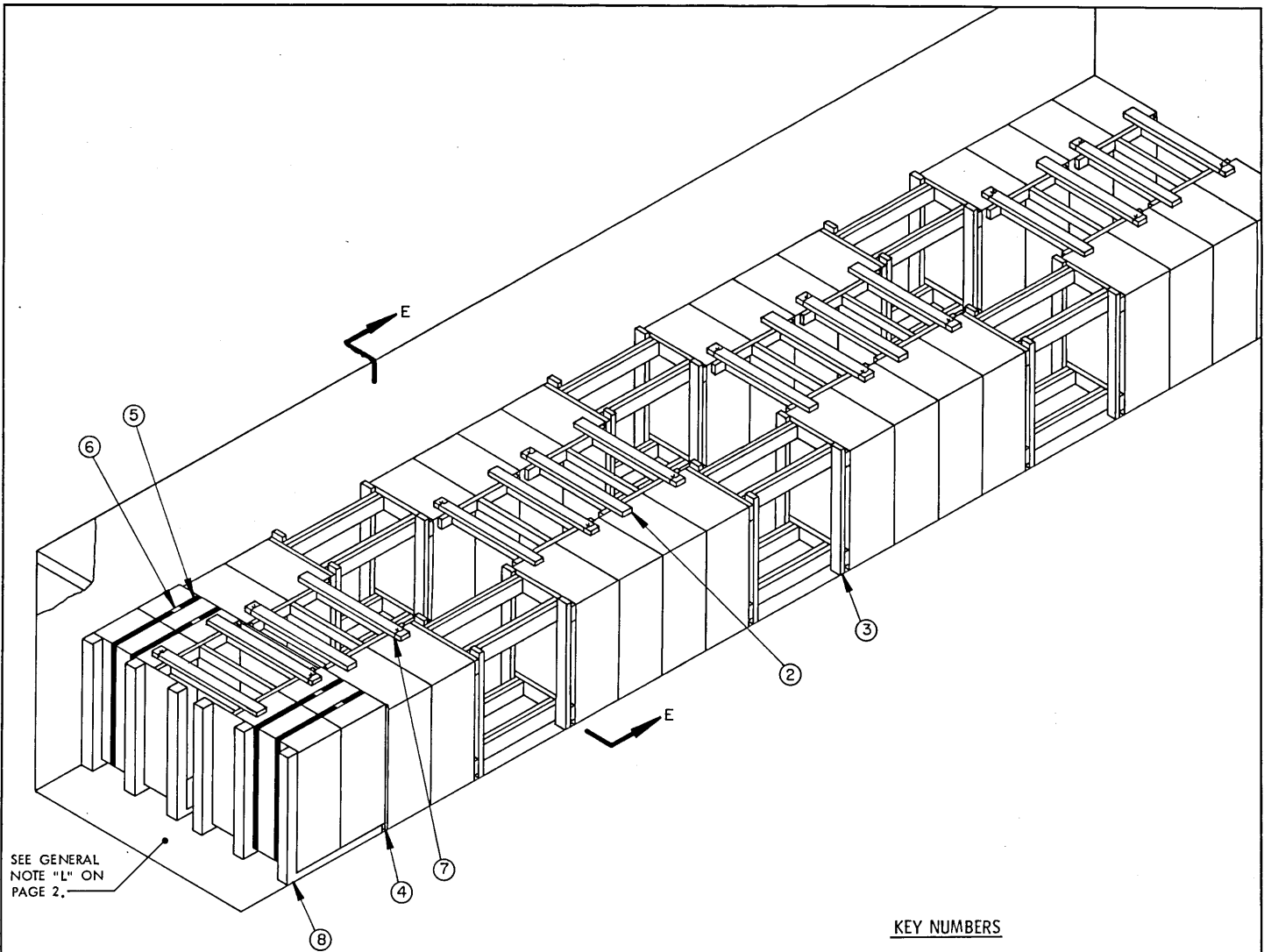
SPECIAL NOTES:

1. A 40'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) TOFC VAN TRAILER IS SHOWN. TRAILERS OF OTHER DIMENSIONS CAN BE USED. SEE GENERAL NOTES "D" AND "L" ON PAGE 2.
2. THE SEPARATE LOADING PROJECTILE UNIT SHOWN IN THE ISOMETRIC VIEW IS THE 8" PROJECTILE, 6/PALLET (SMALL) WHICH IS 19-1/2" LONG BY 28-1/2" WIDE BY 38-1/2" HIGH WITH AN APPROXIMATE WEIGHT OF 1,256 POUNDS PER UNIT.
3. THE NUMBER OF FILLER ASSEMBLIES MAY BE INCREASED AS NECESSARY TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION OR QUANTITY OF UNITS TO BE SHIPPED. SEE GENERAL NOTE "E" ON PAGE 2.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	15	5
2" X 3"	8	3
2" X 4"	378	252
2" X 6"	201	201
NAILS	NO. REQD	POUNDS
10d (3")	660	10
PLYWOOD, 3/4" THICK ----- 30 SQ FT REQD ----- 66 LBS STEEL STRAPPING, 1-1/4" ----- 60' REQD ----- 8-1/2 LBS SEAL FOR 1-1/4" STRAPPING ----- 4 REQD ----- NIL WIRE, NO. 14 GAGE ----- 27' REQD ----- 1/2 LB		
PALLA-GARD DEVICE -----	2 REQD -----	620 LBS

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	34 -----	42,704 LBS
DUNNAGE -----	-----	1,007 LBS
TOTAL WEIGHT -----		43,324 LBS

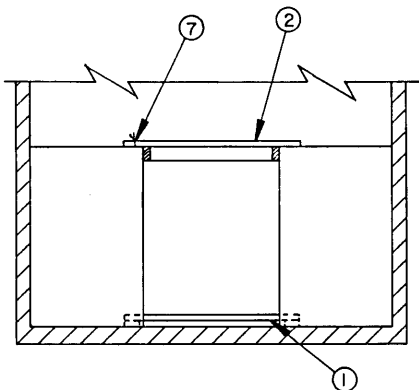


ISOMETRIC VIEW

SEE GENERAL NOTE "L" ON PAGE 2.

KEY NUMBERS

- ① LOWER ANTI-SWAY BRACE (7 REQD, 2 UNITS LONG). SEE THE DETAIL AND DIMENSIONAL CHART ON PAGE 14. POSITION BETWEEN LATERALLY ADJACENT PALLET UNITS EXCEPT THOSE UNITS WHICH ARE SECURED TO A PALLA-GARD DEVICE. SEE GENERAL NOTE "H" ON PAGE 2.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD, 2 UNITS LONG). SEE THE DETAIL AND DIMENSIONAL CHART ON PAGE 16. WIRE TIE W/NO. 14 GAGE WIRE AT DIAGONALLY OPPOSITE CORNERS TO PALLET UNIT STRAPS.
- ③ FILLER ASSEMBLY FOR 2-UNITS (6 REQD). SEE THE "FILLER ASSEMBLY" DETAIL AND DIMENSIONAL CHART ON PAGE 17.
- ④ LOAD BEARING GATE, PLYWOOD, 3/4" X 48" X 7'-6" (1 REQD).
- ⑤ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 16'-6" LONG STEEL STRAPPING (4 REQD). INSTALL TO FORM A COMPLETE LOOP AROUND PALLET UNITS AND PALLA-GARD DEVICE. STRAP WILL PASS OVER THE TOP OF THE PALLA-GARD DEVICE. SEE THE "TYPICAL PALLA-GARD UNIT DETAIL" ON PAGE 5.
- ⑥ SEAL FOR 1-1/4" STRAPPING (4 REQD, 1 PER STRAP). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES. SEE GENERAL NOTE "F" ON PAGE 2.
- ⑦ TIE WIRE, NO. 14 GAGE WIRE 18" LONG (16 REQD). INSTALL TO FORM A COMPLETE LOOP AROUND THE TOP-OF-LOAD ANTI-SWAY BRACE AND A PALLET UNIT STRAP AS APPLICABLE. BRING ENDS TOGETHER AND TWIST TAUT.
- ⑧ PALLA-GARD DEVICE (2 REQD). SEE THE "TYPICAL PALLA-GARD UNIT DETAIL" ON PAGE 5.



SECTION E-E

SPECIAL NOTES:

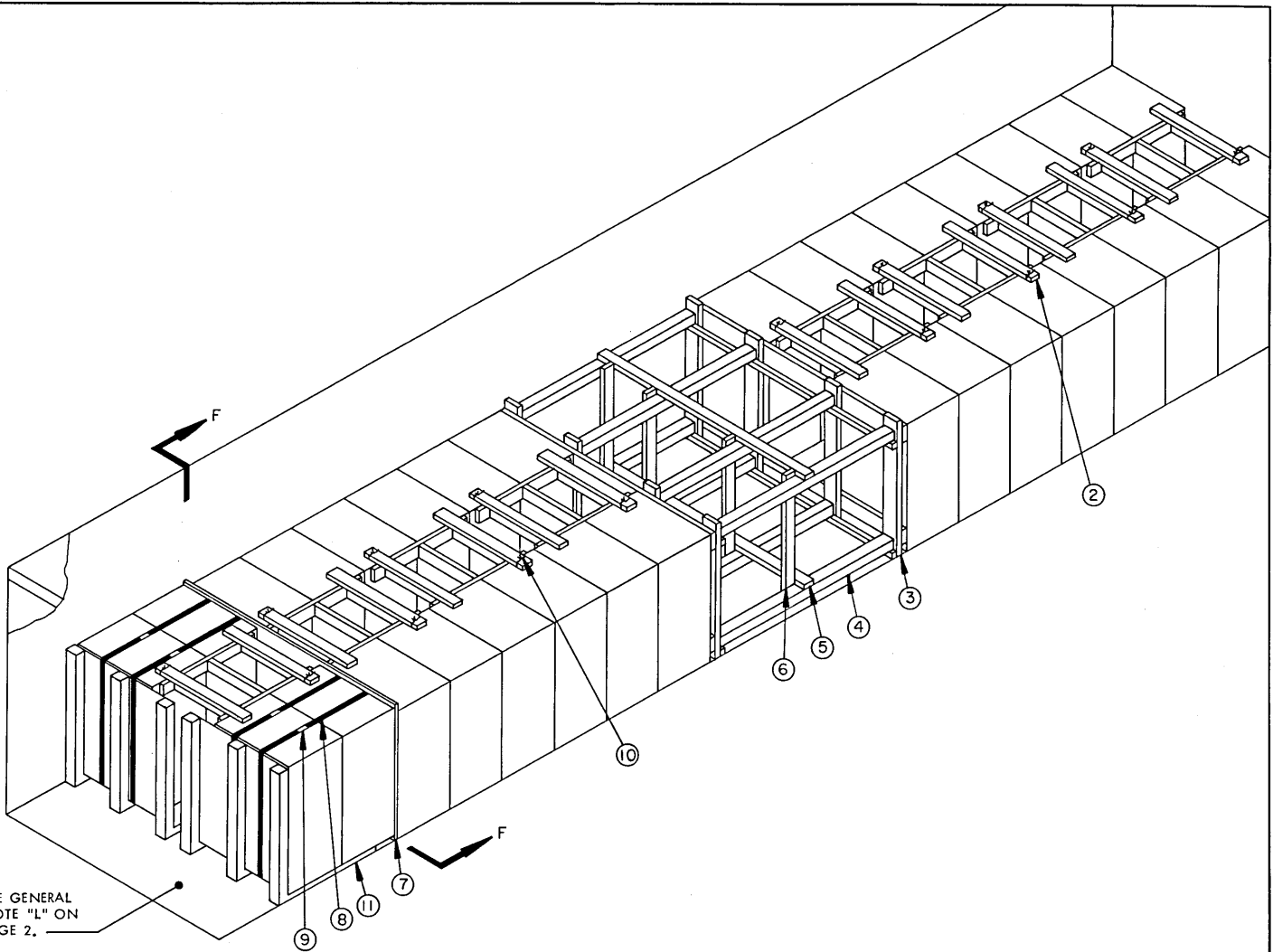
1. A 40'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) TOFC VAN TRAILER IS SHOWN. TRAILERS OF OTHER DIMENSIONS CAN BE USED. SEE GENERAL NOTES "D" AND "L" ON PAGE 2.
2. THE SEPARATE LOADING PROJECTILE UNIT SHOWN IN THE ISOMETRIC VIEW IS THE 8" PROJECTILE, 6/PALLET (TALL) WHICH IS 19-1/2" LONG BY 28-1/2" WIDE X 48-1/2" HIGH WITH AN APPROXIMATE WEIGHT OF 1,296 POUNDS PER UNIT.
3. THE NUMBER OF FILLER ASSEMBLIES MAY BE INCREASED AS NECESSARY TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION OR QUANTITY OF UNITS TO BE SHIPPED. SEE GENERAL NOTE "E" ON PAGE 2.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	15	5
2" X 3"	8	4
2" X 4"	403	269
2" X 6"	201	201
NAILS	NO. REQD	POUNDS
10d (3")	740	11-1/2
PLYWOOD, 3/4" THICK -----	30 SQ FT REQD -----	66 LBS
STEEL STRAPPING, 1-1/4" -----	66' REQD -----	9-1/2 LBS
SEAL FOR 1-1/4" STRAPPING ----	4 REQD -----	1 NIL
WIRE, NO. 14 GAGE -----	24' REQD -----	1/2 LB
PALLA-GARD DEVICE -----	2 REQD -----	620 LBS

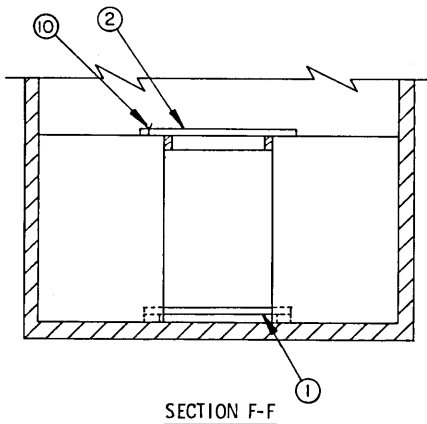
LOAD AS SHOWN

<u>ITEM</u>	<u>QUANTITY</u>	<u>WEIGHT (APPROX):</u>
PALLET UNIT -----	32 -----	41,472 LBS
DUNNAGE -----		1,666 LBS
TOTAL WEIGHT -----		43,138 LBS



SEE GENERAL NOTE "L" ON PAGE 2.

ISOMETRIC VIEW



SECTION F-F

KEY NUMBERS

- ① LOWER ANTI-SWAY BRACE (7 REQD). SEE THE DETAIL AND DIMENSIONAL CHART ON PAGE 16, POSITION BETWEEN LATERALLY ADJACENT PALLET UNITS EXCEPT THOSE UNITS WHICH ARE SECURED TO A PALLA-GARD DEVICE. SEE GENERAL NOTE "H" ON PAGE 2.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL AND DIMENSIONAL CHART ON PAGE 16. WIRE TIE W/NO. 14 GAGE WIRE AT DIAGONALLY OPPOSITE CORNERS TO PALLET UNIT STRAPS.
- ③ CENTER GATE (2 REQD). SEE THE DETAIL ON PAGE 17.
- ④ STRUT, 4" X 4" BY LENGTH TO SUIT (REF: 6'-6") (8 REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE SPECIAL NOTE 3 ON PAGE 15.
- ⑤ HORIZONTAL STRUT BRACING, 2" X 4" BY TRAILER WIDTH MINUS 1/2" (2 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT. SEE SPECIAL NOTE 4 ON PAGE 15.
- ⑥ VERTICAL STRUT BRACING, 2" X 4" BY CUT TO EXTEND 2" ABOVE THE TOP STRUT (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑦ LOAD BEARING GATE, PLYWOOD 3/4" X 48" X 7'-6" (1 REQD).
- ⑧ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 17'-6" LONG STEEL STRAPPING (4 REQD). INSTALL TO FORM A COMPLETE LOOP AROUND PALLET UNITS AND PALLA-GARD DEVICE. STRAP WILL PASS OVER THE TOP OF THE PALLA-GARD DEVICE AS SHOWN. SEE THE "TYPICAL PALLA-GARD UNIT DETAIL" ON PAGE 5.
- ⑨ SEAL FOR 1-1/4" STRAPPING (4 REQD, 1 PER STRAP). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES. SEE GENERAL NOTE "F" ON PAGE 2.
- ⑩ TIE WIRE, NO. 14 GAGE WIRE 18" LONG (16 REQD). INSTALL TO FORM A COMPLETE LOOP AROUND THE TOP-OF-LOAD ANTI-SWAY BRACE AND PALLET UNIT STRAP AS APPLICABLE. BRING ENDS TOGETHER AND TWIST TAUT.
- ⑪ PALLA-GARD DEVICE (2 REQD). SEE THE "PALLA-GARD UNIT DETAIL" ON PAGE 5.

SPECIAL NOTES:

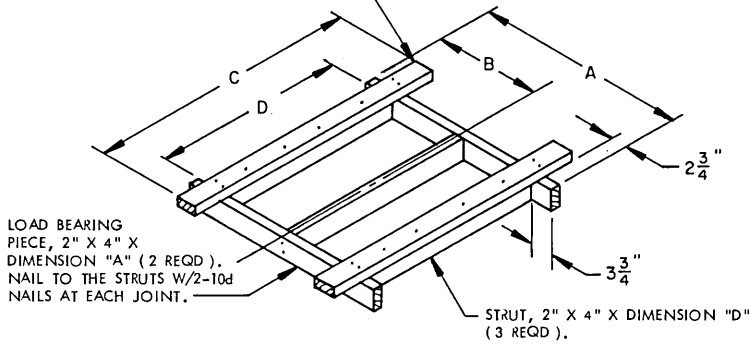
1. A 40'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) TOFC VAN TRAILER IS SHOWN. TRAILERS OF OTHER DIMENSIONS CAN BE USED. SEE GENERAL NOTES "D" AND "L" ON PAGE 2.
2. THE SEPARATE LOADING PROJECTILE UNIT SHOWN IN THE ISOMETRIC VIEW IS THE 8" PROJECTILE, 6/PALLET (LARGE) WHICH IS 22-1/2" LONG BY 31-5/8" WIDE BY 48-1/8" HIGH WITH AN APPROXIMATE WEIGHT OF 1,301 POUNDS PER UNIT.
3. THE LENGTH OF THE STRUTS, PIECES MARKED ④, MAY BE ADJUSTED AS NECESSARY TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION. SEE GENERAL NOTE "E" ON PAGE 2.
4. LOAD-BLOCKING STRUTS WHICH ARE 48" OR LONGER MUST BE STIFFENED BY THE APPLICATION OF HORIZONTAL AND VERTICAL STRUT BRACING AS SHOWN IN THE ISOMETRIC VIEW. IN THE EVENT IT IS NECESSARY TO USE STRUTS WHICH ARE 8'-0" OR MORE IN LENGTH, IT WILL BE NECESSARY TO APPLY AN ADDITIONAL SET OF HORIZONTAL AND VERTICAL STRUT BRACING PIECES. STRUT BRACING SHOULD BE APPLIED SO AS TO PROVIDE NEARLY EQUAL SPACES BETWEEN THE BRACING PIECES AND THE CENTER GATES AND/OR BETWEEN ADJACENT STRUT BRACING PIECES.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	31	10
2" X 4"	332	221
2" X 6"	65	65
4" X 4"	52	69
NAILS	NO. REQD	POUNDS
10d (3")	476	7-1/2
16d (3-1/2")	32	3/4
PLYWOOD, 3/4" THICK -----30 SQ FT REQD ----- 66 LBS STEEL STRAPPING, 1-1/4"-----70' REQD ----- 10 LBS SEAL FOR 1-1/4" STRAPPING ----- 4 REQD ----- NIL WIRE, NO. 14 GAGE -----24' REQD ----- NIL		
PALLA-GARD DEVICE -----2 REQD-----		620 LBS

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	32 -----	41,632 LBS
DUNNAGE -----		814 LBS
TOTAL WEIGHT -----		43,066 LBS

RETAINER PIECE 2" X 4" X DIMENSION "C"
(2 REQD). NAIL TO THE LOAD BEARING
PIECES W/2-10d NAILS AT EACH JOINT
AND TO THE STRUT W/4-10d NAILS.

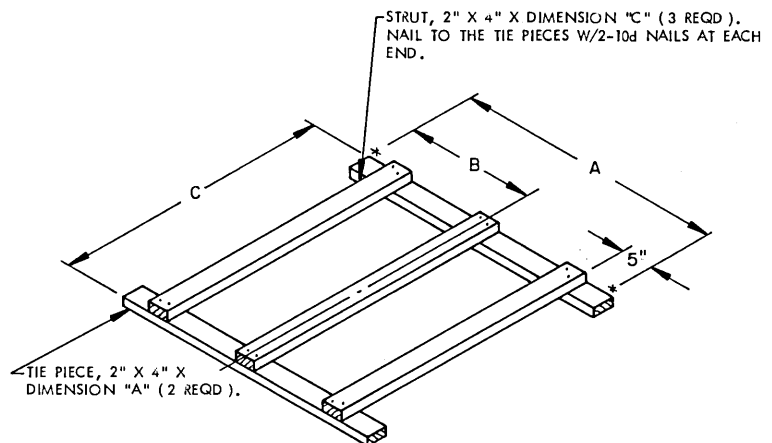


TOP-OF-LOAD ANTI-SWAY BRACE

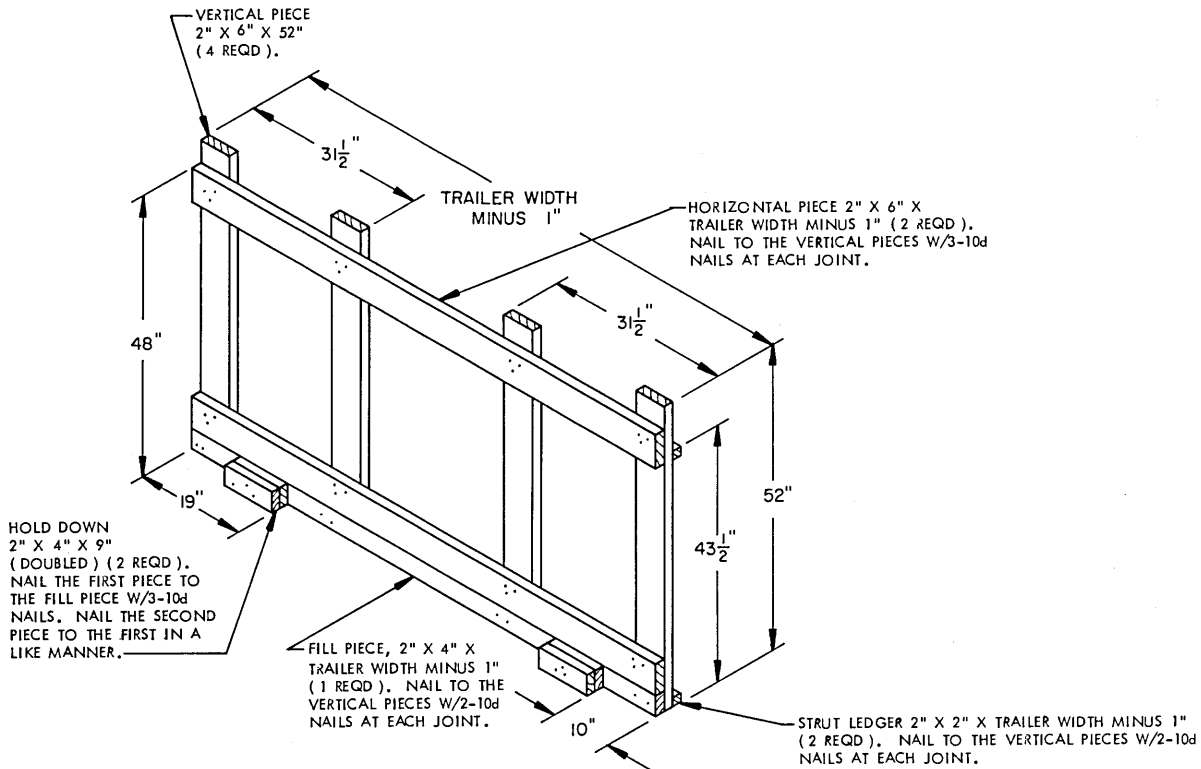
TOP-OF-LOAD ANTI-SWAY BRACE DIMENSIONAL CHART					
ITEM	NO UNITS	DIMENSION			
		A	B	C	D
155MM (SMALL)	2 3	23" 36"	11-1/2" 18"	48" 48"	35" 35"
155MM (LARGE)	2 3	24-1/2" 39"	12-1/4" 19-1/2"	43" 43"	30" 30"
175MM 6/PALLET	*1 2	12" 30"	— 15"	50" 50"	37" 37"
8" 6/PALLET (SMALL)	*1 2	15" 36"	— 18"	45" 45"	32" 32"
8" 6/PALLET (TALL)	*1 2	15" 36"	— 18"	45" 45"	32" 32"
8" 6/PALLET (LARGE)	2	41-1/2"	20-3/4"	38"	25"

* TOP-OF-LOAD ANTI-SWAY BRACES SO INDICATED WILL BE
MODIFIED BY THE OMISSION OF TWO STRUTS AND ONE
RETAINER PIECE.

LOWER ANTI-SWAY BRACE DIMENSIONAL CHART				
ITEM	NO UNITS	DIMENSION		
		A	B	C
155MM (SMALL)	2 3	26-1/2" 40"	13-1/4" 20"	48" 48"
155MM (LARGE)	2 3	28-3/4" 43-1/4"	14-1/4" 21-1/2"	43-3/4" 43-3/4"
175MM 6/PALLET	1 2	16-1/2" 33"	— 16-1/2"	50-3/4" 50-3/4"
8" 6/PALLET (SMALL)	1 2	19" 38"	— 19"	47-1/4" 47-1/4"
8" 6/PALLET (TALL)	1 2	19" 38"	— 19"	47-1/4" 47-1/4"
8" 6/PALLET (LARGE)	1 2	22" 44"	11" 22"	41" 41"



LOWER ANTI-SWAY BRACE



CENTER GATE

STRUT, 2" X 6" BY LENGTH TO SUIT (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE VERTICAL PIECES W/2-10d NAILS AT EACH END. NAIL THE SECOND PIECE TO THE FIRST W/1-10d NAIL EVERY 6" (MINIMUM OF 2). NOTE THAT THE ASSEMBLY IS TO BE POSITIONED ONLY WITH THE STRUTS LONGITUDINALLY IN A TRAILER.

HORIZONTAL PIECE, 2" X 6" X DIMENSION "C" (4 REQD).

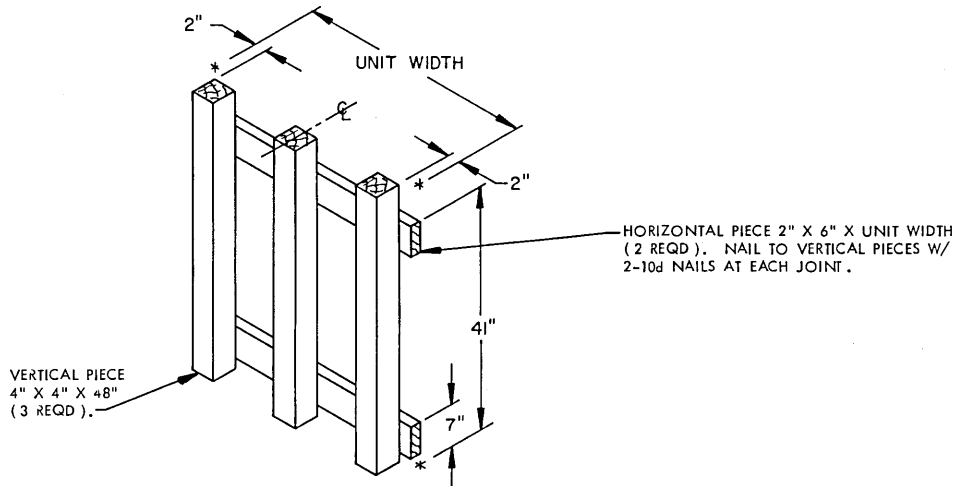
ITEM	DIMENSION					
	A	B	C	D	E	F
155MM (SMALL)	36"	32"	27"	10"	8-1/2"	27"
155MM (LARGE)	48"	40"	29"	12"	8-1/2"	29"
175MM 6/PALLET	46"	42"	25-1/2"	6-1/2"	9-1/2"	17"
8" 6/PALLET (SMALL)	42"	38"	28-1/2"	7-1/2"	10-1/4"	39"
8" 6/PALLET (TALL)	52"	48"	28-1/2"	7-1/2"	10-1/4"	45"

VERTICAL PIECE, 2" X 4" X DIMENSION "A" (4 REQD). NAIL TO THE HORIZONTAL PIECES W/3-10d NAILS AT EACH JOINT.

FILL PIECE, 2" X 2" X DIMENSION "C" (1 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH END.

HOLD DOWN CLEAT, 2" X 3" X DIMENSION "D" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE HORIZONTAL PIECE AND OR FILL PIECE W/2-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

FILLER ASSEMBLY



SPACER ASSEMBLY

ALTHOUGH THIS ASSEMBLY IS DESIGNED FOR USE WITH THE LOAD SHOWN ON PAGE 8, A SIMILAR ASSEMBLY MAY BE CONSTRUCTED AND USED WITH THE OTHER LOADS DEPICTED WITHIN THIS DRAWING WHEN THE LOAD IS NOT EQUAL TO OR DOES NOT OVERHANG THE DECK OF THE PALLA-GARD DEVICE. THE HORIZONTAL PIECES WILL BE POSITIONED SO AS TO CONTACT THE BASE AND TOP OF THE PALLET UNIT.