

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 THE ROCKET MOTOR M22E8 OR M112, WHEN IT IS PACKED IN A WOODEN CRATE. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE WOODEN SHIPPING CRATE WITH CONTENTS.
- C. LADING DATA:
 FOR DETAILS OF THE CONTAINER FOR THE M22E8 MOTOR, SEE DRAWING NO. 9070094, AND DRAWING NO. 19-48-AMXAC-4103, REV. 1.
 CONTAINER DIMENSIONS --- 113-1/2" LONG X 20-3/4" WIDE X 23-1/2" HIGH.
 GROSS WEIGHT ----- 1,091 POUNDS (APPROX).
 FOR DETAILS OF THE CONTAINER FOR THE M112 MOTOR, SEE DRAWING NO. 10242897, AND DRAWING NO. 19-48-AMXAC-4321.
 CONTAINER DIMENSIONS --- 118" LONG X 20-1/4" WIDE X 22-7/8" HIGH.
 GROSS WEIGHT ----- 1,128 POUNDS (APPROX).
- D. CAUTIONARY NOTES:
 - 1. A SHIPMENT WILL BE POSITIONED IN A RAILCAR IN COMPLIANCE WITH THE WEIGHT DISTRIBUTION REQUIREMENTS OF THE AAR.
 - 2. FOR LESS-THAN-CARLOAD SHIPMENTS, AS TYPICALLY SHOWN ON PAGES 8 AND 9, CARS MUST HAVE AVAILABLE FLOORS.
 - 3. PLACARD BOARDS AND BOARD MOUNTING BRACKETS MUST NOT BE NAILED TO THE LADING.
 - 4. EXERCISE CARE DURING TENSIONING OF STEEL STRAPPING TO PREVENT DAMAGE TO THE LADING ITEMS.
- E. THIS PROCEDURAL DRAWING IS APPLICABLE TO GONDOLA CARS WITH WOOD, WOOD AND METAL, OR METAL FLOORS, AND WITH SIDE WALLS EQUIPPED WITH STRAP ANCHOR TIE-DOWN FACILITIES. IF CARS WITH STRAP ANCHOR TIE-DOWN FACILITIES ARE NOT READILY AVAILABLE, STRAP ANCHOR DEVICES MAY BE LOCALLY FABRICATED IN ACCORDANCE WITH THE DETAIL SHOWN ON PAGE 12. SEE "CAUTIONARY NOTE D-2" ABOVE.
- F. THE 100-UNIT LOAD OF M112 MOTORS AS SHOWN ON PAGES 4 AND 5 IS BASED ON A GONDOLA CAR 52'-6" LONG BY 9'-6" WIDE WITH A 42" CAR SIDE HEIGHT. HOWEVER, FOR A 100-UNIT LOAD OF M22E8 MOTORS, A GONDOLA CAR THAT IS ONLY 50'-6" LONG IS REQUIRED. THE 63-UNIT LOAD OF M22E8 MOTORS AS SHOWN ON PAGES 6 AND 7 IS BASED ON A GONDOLA CAR 41'-6" LONG BY 9'-0" WIDE WITH A 42" CAR SIDE HEIGHT. A 41'-6" LONG CAR IS ALSO ADEQUATE FOR A 63-UNIT LOAD OF M112 MOTORS. LONGER CARS AND CARS WITH OTHER THAN A 42" CAR SIDE HEIGHT MAY BE USED; HOWEVER, CARS LONGER THAN SPECIFIED SHOULD NOT BE ORDERED FOR SHIPMENT OF THE LOADS DEPICTED HEREIN. ALSO, CARS SHORTER THAN SPECIFIED CANNOT BE USED.
- G. THESE ITEMS ARE DOT CLASS "B" EXPLOSIVES. THESE PROCEDURES CAN ALSO BE UTILIZED FOR THE SHIPMENT OF THE CONTAINERS WHEN THEY ARE LOADED WITH AN ITEM WHICH IS IDENTIFIED DIFFERENTLY BY NOMENCLATURE THAN THE ITEM DESIGNATED WITHIN THE DRAWING TITLE, OR WHEN THEY ARE EMPTY. NOTE: IF THE CAR IS NOT SO EQUIPPED, 18" X 24" PLACARD BOARDS MUST BE PROVIDED FOR BOTH SIDES AND BOTH ENDS OF A LOAD AS REQUIRED BY LAW AND/OR REGULATION. SEE "CAUTIONARY NOTE D-8" ABOVE.
- H. THE APPROVED DUNNAGING METHODS FOR THE LOADS SPECIFIED HEREIN 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 FOR BLOCKING, BRACING AND STAYING MUST BE FOLLOWED AS CLOSELY AS POSSIBLE. SEE "CAUTIONARY NOTE D-1" ABOVE.
- 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 HEREIN.

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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 THE SAME SIZE.
- STRAPPING, STEEL ----- : TYPE I OR IV, FINISH A OR B FOR 1-1/4" STRAPPING AND FINISH A, B OR C FOR 2" STRAPPING; FED SPEC QQ-5-781.
- STRAP SEALS, ANTI-SKID PLATES, EDGE PROTECTORS, STRAP STAPLES ----- : COMMERCIAL GRADE.

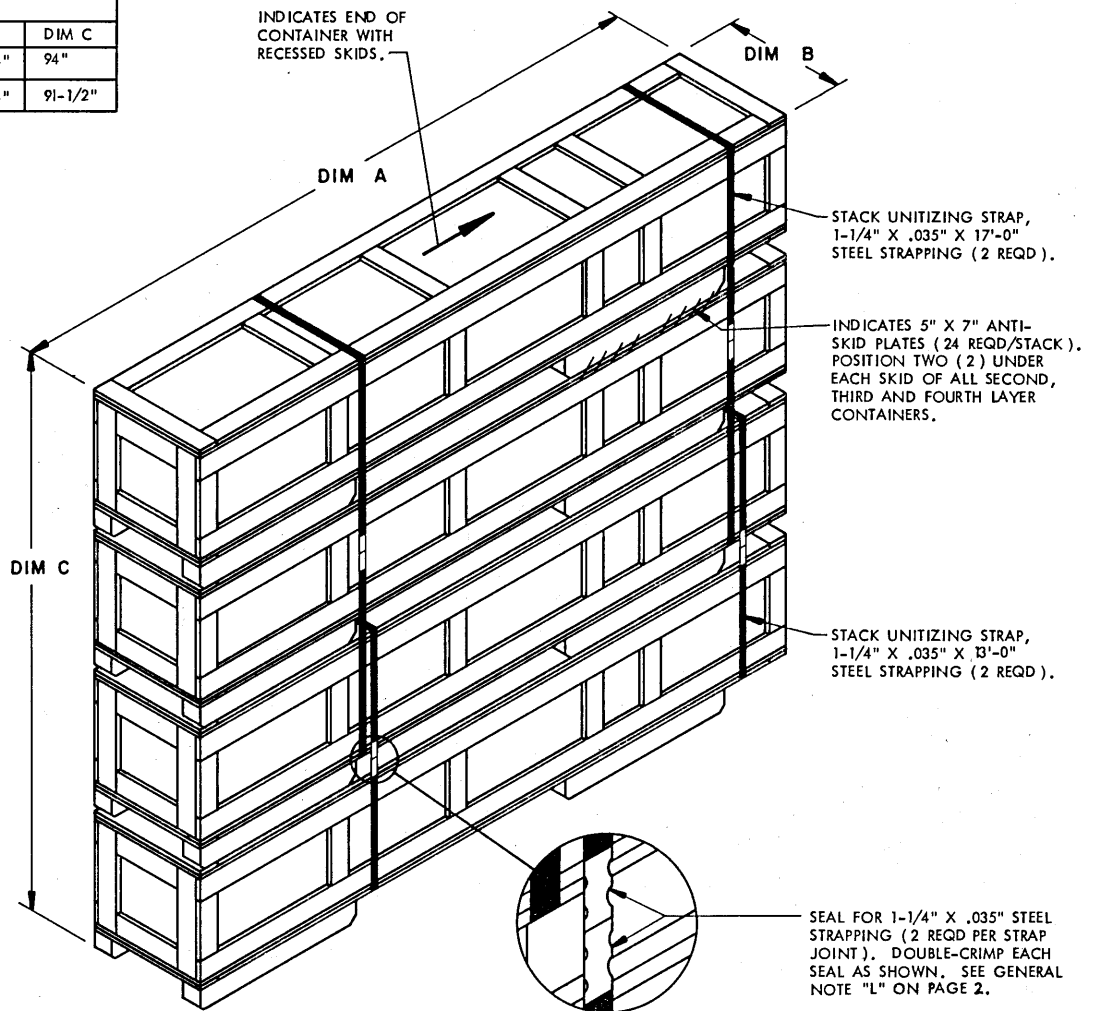
- K. THE SELECTION OF RAILCARS FOR TRANSPORT OF THE DESIGNATED ITEMS WILL BE IN ACCORDANCE WITH HAZARDOUS MATERIALS REGULATIONS OF DOT AND AR 55-355, CHAPTER 213, FOR EXPLOSIVES AND OTHER DANGEROUS ARTICLES, IN FULL.
- L. WHEN ANY STRAP IS SEALED, IRRESPECTIVE OF THE TYPE OF JOINT MADE, A MINIMUM OF TWO (2) SEALS (BUTTED TOGETHER) WITH TWO (2) PAIR OF CRIMPS PER SEAL MUST BE USED. SEE "CAUTIONARY NOTE D-4" AT LEFT.
- M. THE WORDS "ANTI-SKID PLATE" WILL BE STENCILED IN ONE INCH (1") HIGH LETTERS ON BOTH SIDES OF A CONTAINER JUST ABOVE THE LOCATIONS OF THESE PLATES.
- N. IF EDGE PROTECTORS FOR 2" STEEL STRAPPING ARE NOT COMMERCIALY AVAILABLE, THEY MAY BE FORMED FROM 18 (MINIMUM) GAGE SHEET STEEL PIECES WHICH ARE 9" LONG BY 6" WIDE.
- O. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 1" X 4" MATERIAL IS ACTUALLY 3/4" THICK BY 3-1/2" WIDE OR 3/4" 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.
- P. 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 OF THE TRANSPORTING VEHICLE, OR WHEN LAMINATING DUNNAGE. THE NAILING PATTERN WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL DOES NOT PENETRATE INTO OR NEAR A CRACK BETWEEN FLOOR BOARDS. ADDITIONALLY, THE NAILING PATTERN FOR AN UPPER PIECE OF LAMINATED DUNNAGE WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL FOR THAT PIECE WILL NOT BE DRIVEN THROUGH ONTO OR RIGHT BESIDE A NAIL IN A LOWER PIECE.
- Q. IF THE CAPACITY OF THE AVAILABLE MATERIAL HANDLING EQUIPMENT (MHE) PERMITS, IT IS RECOMMENDED THAT CONTAINERS BE UNITIZED PRIOR TO PLACEMENT ABOARD A GONDOLA CAR. IN SOME INSTANCES, CONTAINERS WILL ALREADY BE UNITIZED INTO STACKS WHEN OFFERED FOR LOADING. THESE UNITIZED STACKS SHOULD BE INSPECTED, AND AS REQUIRED, LOOSE UNITIZING STEEL STRAPPING MUST BE REPLACED. SEE NOTE "5" BELOW.
- R. PORTIONS OF THE CARS DEPICTED WITHIN THIS PROCEDURAL DRAWING, SUCH AS A CAR SIDE WALL, HAVE BEEN OMITTED FOR CLARITY PURPOSES.
- S. FOR SPECIFIC GUIDANCE, ATTENTION IS DIRECTED TO THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3, AND TO THE "SPECIAL NOTES" SECTION WHICH IS IMMEDIATELY ADJACENT TO A DEPICTED OUTLOADING METHOD.

REVISIONS

REVISION NO. 2, DATED JULY 1975, CONSISTS OF:

- 1. ADDING PROCEDURES FOR SHIPPING THE M112 MOTOR.
- 2. ADDING "UNITIZING AND HANDLING PROCEDURAL GUIDANCE".
- 3. CHANGES AS NECESSARY TO UPDATE DRAWING FORMAT.
- 4. CHANGING DRAWING FILE NO. FROM GMSA139 TO GMSHA5.

DIMENSION CHART			
CONTAINER	DIM A	DIM B	DIM C
M22E8	113-1/2"	20-3/4"	94"
M112	118"	20-1/4"	91-1/2"



TYPICAL STACK

**UNITIZING AND HANDLING
PROCEDURAL GUIDANCE**

1. STACKING CONTAINERS FOR UNITIZING.
 - A. PLACE AN UPPER CONTAINER AS CLOSELY AS POSSIBLE IN VERTICAL ALIGNMENT WITH THE NEXT LOWER CONTAINER.
 - B. INSTALL ANTI-SKID PLATES BETWEEN LAYERS AS SHOWN.
 - C. POSITION THE FORWARD END OF AN UPPER CONTAINER ABOVE THE FORWARD END OF THE NEXT LOWER CONTAINER.
2. INSTALLATION OF 1-1/4" X .035" UNITIZING STEEL STRAPPING. SEE GENERAL NOTE "L" ON PAGE 2.
 - A. POSITION EACH STRAP TO ENCRIRCLE THE CONTAINERS NEAR THE AFT END OF THE SKIDS AND SO THAT THE STRAPPING LAYS FLAT AND STRAIGHT WITH THE BODY SURFACES OF THE CONTAINERS; I.E., VERTICAL ALONG THE SIDES AND FLAT ACROSS THE TOP AND BOTTOM OF THE STACK.
 - B. THE STRAPPING WILL BE FIRMLY TENSIONED SO THAT EACH STRAP CRUSHES SLIGHTLY INTO THE UPPER AND LOWER EDGES OF THE CONTAINER. EACH END-OVER-END LAP JOINT WILL BE SEALED WITH TWO SEALS (BUTTED TOGETHER) WITH TWO PAIR OF CRIMPS PER SEAL AS SHOWN. THE LAP JOINT WILL BE MADE ALONG THE SIDE OF THE STACK. EXCESS STRAPPING (STRAP ENDS) SHOULD BE CUT OFF OR BROKEN OFF NEAR THE JOINT SEALS.

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3. CONTAINER OR CONTAINER STACK HANDLING.

NOTES: (1) APPROVED MATERIALS HANDLING EQUIPMENT (MHE) IS SPECIFIED IN OTHER DOCUMENTS. MHE IS INTENDED TO MEAN EQUIPMENT SUCH AS FORKLIFT TRUCKS, CRANES, HAND TRUCKS, DOLLIES, ROLLER ASSEMBLIES, SLINGS AND SPREADER BARS.

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

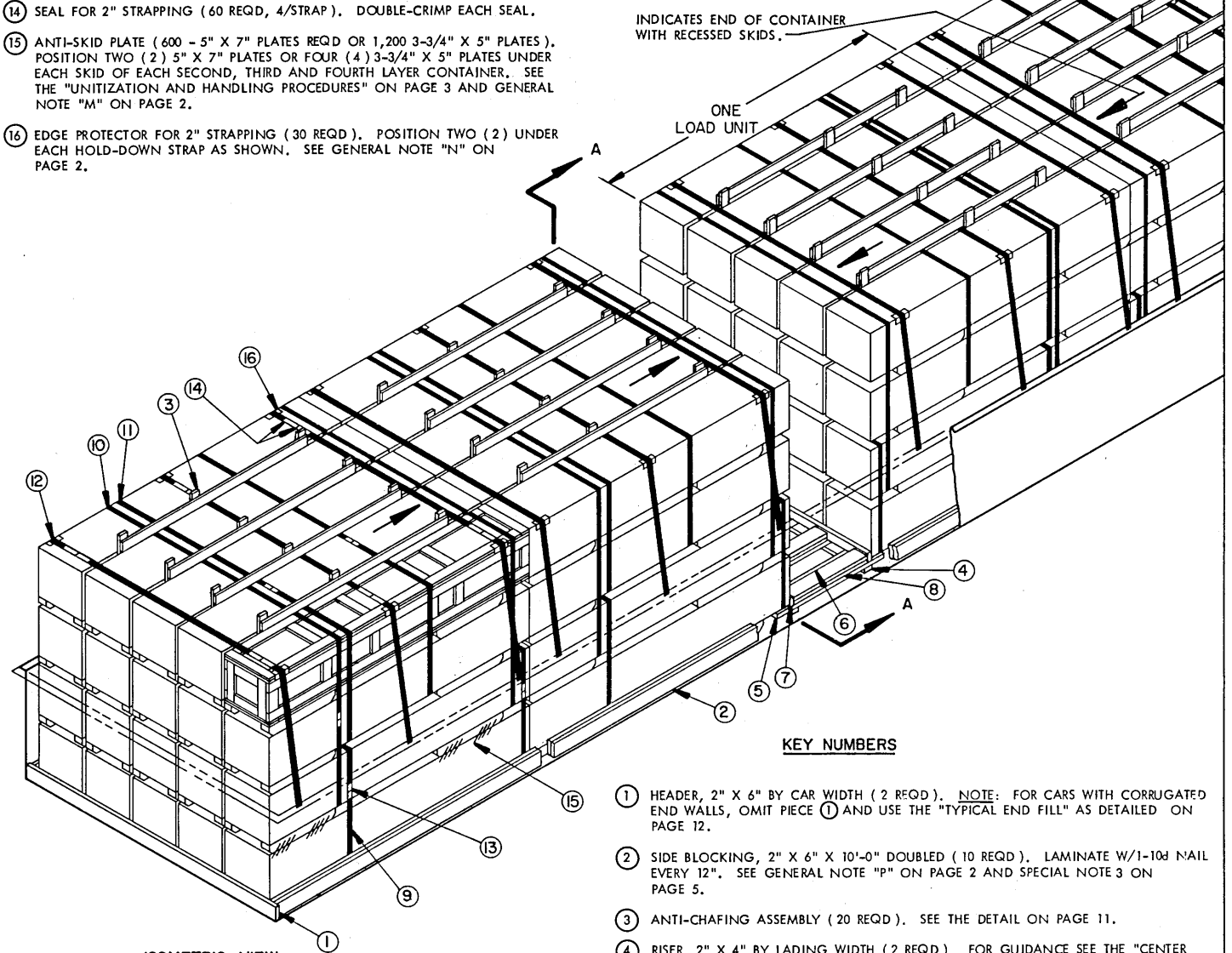
 - A. ONLY APPROVED AND APPROPRIATELY SIZED MATERIALS HANDLING EQUIPMENT WILL BE USED FOR HANDLING THE DEPICTED CONTAINERS.
 - B. IF HANDLING IS ACCOMPLISHED WITH A FORKLIFT TRUCK, THE CONTAINERS SHOULD BE HANDLED FROM A SIDE POSITION AS MUCH AS POSSIBLE. CARE MUST BE EXERCISED WHEN INSERTING FORKS UNDER A CONTAINER, TO PREVENT DAMAGE TO A CONTAINER BY THE FORK TINES OR THE FORKLIFT PACKAGE GUARD. FOR VERY SHORT "INCHING" SPEED MOVEMENTS, SUCH AS WILL BE EXPERIENCED DURING CAR LOADING, A CONTAINER STACK MAY BE HANDLED BY INSERTING THE FORKS OF THE FORKLIFT TRUCK UNDER THE BODY OF THE SECOND OR THIRD LAYER CONTAINER.
 - C. IF A CONTAINER OR STACK OF CONTAINERS IS HANDLED BY SLINGING, THE SLING MUST BE OF SUCH A DESIGN THAT LIFTING IS DONE ON THE BOTTOM OF THE LOWEST CRATE.

(KEY NUMBERS CONTINUED)

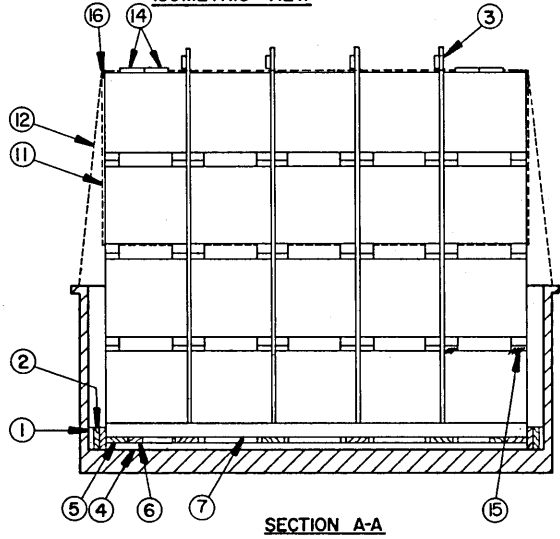
- 12 HOLD-DOWN STRAP, 2" X .050" X 32'-0" LONG STEEL STRAPPING (15 REQ'D). SEE THE "STRAP THREADING DETAIL" ON PAGE 7 AND GENERAL NOTE "E" ON PAGE 2.
- 13 SEAL FOR 1-1/4" STRAPPING (220 REQ'D, 2/STRAP). DOUBLE-CRIMP EACH SEAL. SEE GENERAL NOTE "L" ON PAGE 2.
- 14 SEAL FOR 2" STRAPPING (60 REQ'D, 4/STRAP). DOUBLE-CRIMP EACH SEAL.
- 15 ANTI-SKID PLATE (600 - 5" X 7" PLATES REQ'D OR 1,200 3-3/4" X 5" PLATES). POSITION TWO (2) 5" X 7" PLATES OR FOUR (4) 3-3/4" X 5" PLATES UNDER EACH SKID OF EACH SECOND, THIRD AND FOURTH LAYER CONTAINER. SEE THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3 AND GENERAL NOTE "M" ON PAGE 2.
- 16 EDGE PROTECTOR FOR 2" STRAPPING (30 REQ'D). POSITION TWO (2) UNDER EACH HOLD-DOWN STRAP AS SHOWN. SEE GENERAL NOTE "N" ON PAGE 2.

INDICATES END OF CONTAINER WITH RECESSED SKIDS.

ONE LOAD UNIT



ISOMETRIC VIEW

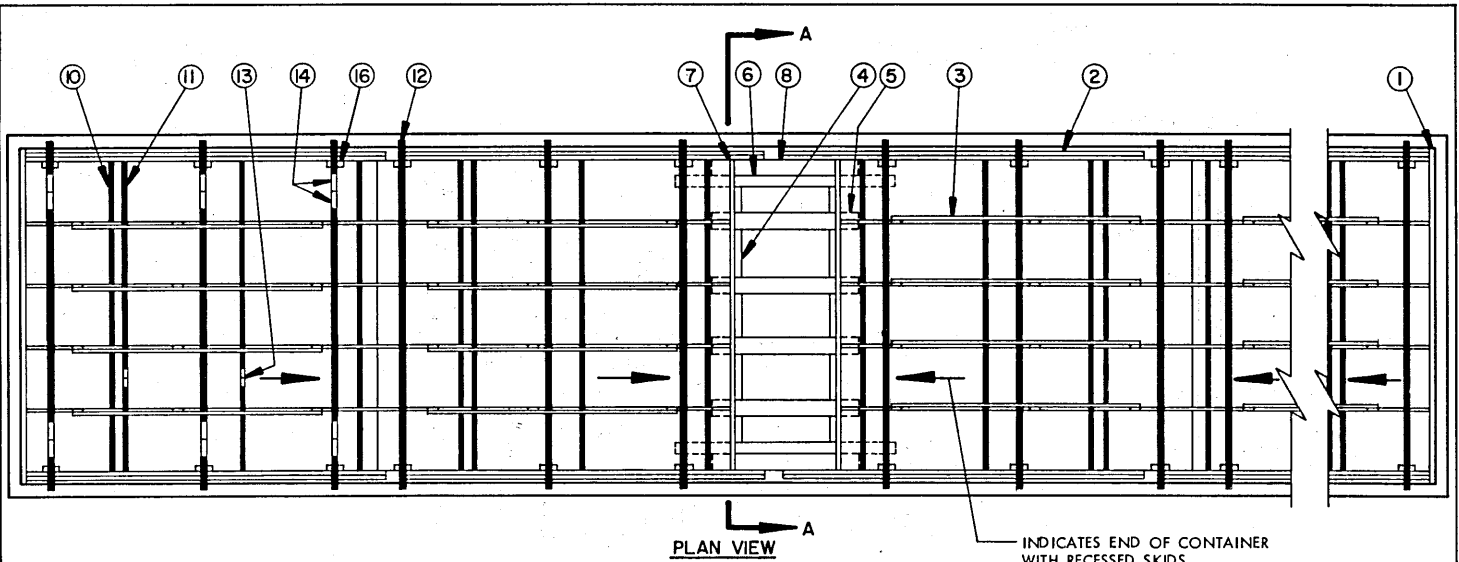


SECTION A-A

KEY NUMBERS

- 1 HEADER, 2" X 6" BY CAR WIDTH (2 REQ'D). NOTE: FOR CARS WITH CORRUGATED END WALLS, OMIT PIECE 1 AND USE THE "TYPICAL END FILL" AS DETAILED ON PAGE 12.
- 2 SIDE BLOCKING, 2" X 6" X 10'-0" DOUBLED (10 REQ'D). LAMINATE W/1-10d NAIL EVERY 12". SEE GENERAL NOTE "P" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 5.
- 3 ANTI-CHAFING ASSEMBLY (20 REQ'D). SEE THE DETAIL ON PAGE 11.
- 4 RISER, 2" X 4" BY LADING WIDTH (2 REQ'D). FOR GUIDANCE SEE THE "CENTER BLOCKING" DETAIL ON PAGE 10.
- 5 HOLD-DOWN, 2" X 6" BY CUT TO EXTEND 6" UNDER A CONTAINER AT EACH END (6 REQ'D). POSITION AS SHOWN AND NAIL TO THE RISERS MARKED 4 W/2-10d NAILS AT EACH JOINT.
- 6 STOP PIECE, 2" X 4" BY CUT TO EXTEND 18" UNDER A CONTAINER AT EACH END (REF: 72") (2 REQ'D). POSITION AS SHOWN AND NAIL TO RISERS MARKED 4 W/3-10d NAILS AT EACH JOINT.
- 7 BEARING PIECE, 2" X 4" BY LADING WIDTH (2 REQ'D).
- 8 STRUT, 2" X 6" BY CUT-TO-FIT (DOUBLED) (6 REQ'D). NAIL THE FIRST PIECE TO THE HOLD-DOWN MARKED 5 W/1-10d NAIL EVERY 8". NAIL THE SECOND PIECE TO THE FIRST W/1-30d NAIL EVERY 8". TOENAIL THE TOP PIECE TO THE BEARING PIECES MARKED 7 W/2-12d NAILS AT EACH END. SEE SPECIAL NOTE 2 ON PAGE 5.
- 9 LOWER UNITIZING STRAP, 1-1/4" X .035" X 13'-0" LONG STEEL STRAPPING (50 REQ'D, 2/STACK). INSTALL TO ENCIROLE THE LOWER TWO CONTAINERS OF A STACK. SEE THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3 AND GENERAL NOTE "L" ON PAGE 2.
- 10 UPPER UNITIZING STRAP, 1-1/4" X .035" X 17'-0" LONG STEEL STRAPPING (50 REQ'D, 2/STACK). INSTALL TO ENCIROLE THE UPPER THREE CONTAINERS OF A STACK.
- 11 BUNDLING STRAP, 1-1/4" X .035" X 29'-0" LONG STEEL STRAPPING (10 REQ'D, 2/LOAD UNIT). INSTALL TO ENCIROLE THE TOP TWO (2) LAYERS OF CONTAINERS. SEE SPECIAL NOTE 6 ON PAGE 5.

(CONTINUED ABOVE)



SPECIAL NOTES:

1. A 100-UNIT LOAD OF M112 MOTORS IS SHOWN IN A 52'-6" LONG BY 9'-6" WIDE CAR (INSIDE DIMENSION) HAVING A 42" CAR SIDE HEIGHT. A LONGER OR WIDER CAR MAY BE USED; HOWEVER, A CAR LONGER THAN 52'-6" SHOULD NOT BE ORDERED. SHORTER CARS CANNOT BE USED. SEE GENERAL NOTE "F" ON PAGE 2.
2. IF STRUTS MARKED (8) EXCEED 48" IN LENGTH, A "STRUT HOLD-DOWN" MUST BE APPLIED AS DETAILED ON PAGE 10.
3. IF THE CAR IS WIDER THAN 9'-6", IN LIEU OF THE SIDE BLOCKING PIECES MARKED (2), THE METHOD FOR SIDE BLOCKING SHOWN AS PIECE MARKED (2) ON PAGE 6 SHOULD BE USED.
4. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR A SHIPMENT OF A 100-UNIT LOAD OF M22E8 MOTORS. HOWEVER, A CAR LONGER THAN 50'-6" SHOULD NOT BE ORDERED. SHORTER CARS CANNOT BE USED. NOTE: IT MAY BE NECESSARY TO REDUCE THE THICKNESS OF THE SIDE BLOCKING PIECES MARKED (2) TO A SINGLE THICKNESS OF 2" X 6" MATERIAL. SEE GENERAL NOTE "F" ON PAGE 2.
5. THE DEPICTED LOAD CONFIGURATION MAY BE ADJUSTED TO SATISFY THE QUANTITY OF ITEMS TO BE SHIPPED BY OMITTING AN ENTIRE LOAD UNIT; BY OMITTING THE TOP LAYER OF ONE OR MORE LOAD UNITS; OR BY OMITTING CONTAINERS FROM THE TOP LAYER OF ONE OR MORE LOAD UNITS AND USING "SPACER ASSEMBLIES", AS TYPICALLY ILLUSTRATED ON PAGE 6. TWO (2) SPACER ASSEMBLIES MUST NOT BE POSITIONED SIDE-BY-SIDE; THEREFORE, ONLY TWO (2) CONTAINERS MAY BE OMITTED FROM THE TOP LAYER OF EACH LOAD UNIT.
6. CAUTION: LOAD BUNDLING STRAPS, PIECES MARKED (11), MUST BE INSTALLED WITH CARE SO AS TO NOT HAVE AN EDGE-TO-EDGE CONTACT WITH THE UPPER UNITIZING STRAPS MARKED (10).

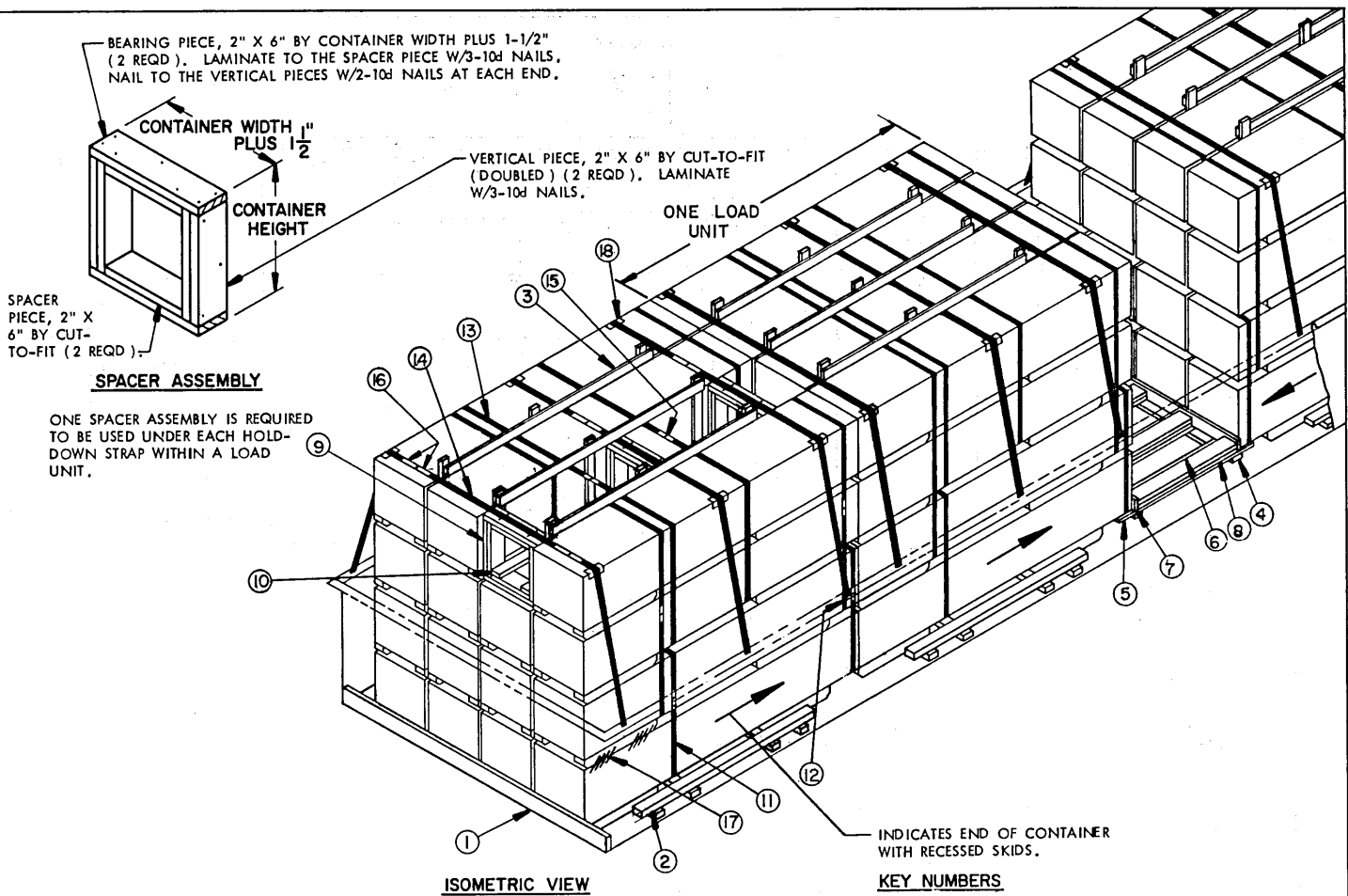
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	640	213
2" X 4"	47	32
2" X 6"	277	277
NAILS	NO., REQD	POUNDS
6d (2")	180	1
10d (3")	160	2-1/2
12d (3-1/4")	24	1/2
30d (4-1/2")	24	1-1/4
STEEL STRAPPING, 1-1/4" X .035" -----	1,790' REQD	256 LBS
STEEL STRAPPING, 2" X .050" -----	480' REQD	160 LBS
SEAL FOR 1-1/4" STRAPPING -----	220 REQD	11 LBS
SEAL FOR 2" STRAPPING -----	60 REQD	12 LBS
EDGE PROTECTOR -----	30 REQD	8 LBS
ANTI-SKID PLATE, 5" X 7" -----	600 REQD	150 LBS

LOAD AS SHOWN

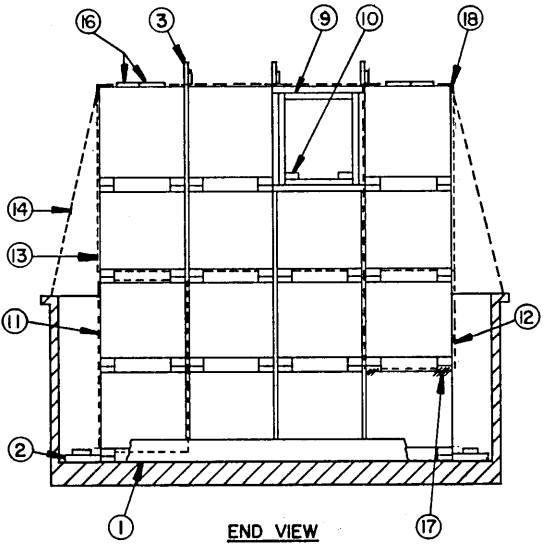
ITEM	QUANTITY	WEIGHT (APPROX)
ROCKET MOTOR	100	112,800 LBS*
(M112)		1,907 LBS
DUNNAGE		114,707 LBS
TOTAL WEIGHT		114,707 LBS

* LADING WEIGHT FOR THE M22E8 ROCKET MOTOR WILL BE 109,100 POUNDS.

100-UNIT LOAD IN A 52'-6" LONG BY 9'-6" WIDE CAR



- ① HEADER, 2" X 6" BY CAR WIDTH (2 REQD). NOTE: FOR CARS WITH CORRUGATED END WALLS, OMIT PIECE ① AND USE THE "TYPICAL END FILL" AS DETAILED ON PAGE 12.
- ② SIDE BLOCKING ASSEMBLY (8 REQD). SEE THE DETAIL ON PAGE 11. SEE GENERAL NOTE "P" ON PAGE 2 AND SPECIAL NOTE 5 ON PAGE 7.
- ③ ANTI-CHAFING ASSEMBLY (12 REQD). SEE THE DETAIL ON PAGE 11.
- ④ RISER, 2" X 4" BY LADING WIDTH (2 REQD). FOR GUIDANCE SEE THE "CENTER BLOCKING" DETAIL ON PAGE 10.
- ⑤ HOLD-DOWN, 2" X 6" BY CUT TO EXTEND 6" UNDER A CONTAINER AT EACH END (5 REQD). POSITION AS SHOWN AND NAIL TO THE RISERS MARKED ④ W/2-10d NAILS AT EACH JOINT.
- ⑥ STOP PIECE, 2" X 4" BY CUT TO EXTEND 18" UNDER A CONTAINER AT EACH END (REF: 78") (2 REQD). POSITION AS SHOWN AND NAIL TO RISERS MARKED ④ W/3-10d NAILS AT EACH JOINT.
- ⑦ BEARING PIECE, 2" X 4" BY LADING WIDTH (2 REQD).
- ⑧ STRUT, 2" X 6" BY CUT-TO-FIT (DOUBLED) (5 REQD). NAIL THE FIRST PIECE TO THE HOLD-DOWN MARKED ⑤ W/1-10d NAIL EVERY 8". NAIL THE SECOND PIECE TO THE FIRST W/1-30d NAIL EVERY 8". TOENAIL THE TOP PIECE TO THE BEARING PIECES MARKED ⑦ W/2-12d NAILS AT EACH END. SEE SPECIAL NOTE 3 ON PAGE 7.
- ⑨ SPACER ASSEMBLY (3 REQD). SEE THE DETAIL ABOVE AND SPECIAL NOTE 4 ON PAGE 7.
- ⑩ TIE PIECE, 2" X 4" X 9'-0" (2 REQD). NAIL TO THE SPACER ASSEMBLIES MARKED ⑨ W/3-10d NAILS AT EACH JOINT.
- ⑪ LOWER UNITIZING STRAP, 1-1/4" X .035" X 13'-0" LONG STEEL STRAPPING (32 REQD, 2/STACK). INSTALL TO ENCIRCLE THE LOWER TWO CONTAINERS OF A STACK. SEE THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3 AND GENERAL NOTE "L" ON PAGE 2.
- ⑫ UPPER UNITIZING STRAP, 1-1/4" X .035" X 17'-0" LONG STEEL STRAPPING (32 REQD, 2/STACK). INSTALL TO ENCIRCLE THE UPPER THREE CONTAINERS OF A STACK.
- ⑬ BUNDLING STRAP, 1-1/4" X .035" X 25'-0" LONG STEEL STRAPPING (8 REQD, 2/LOAD UNIT). INSTALL TO ENCIRCLE THE TOP TWO (2) LAYERS OF CONTAINERS. SEE SPECIAL NOTE 7 ON PAGE 7.



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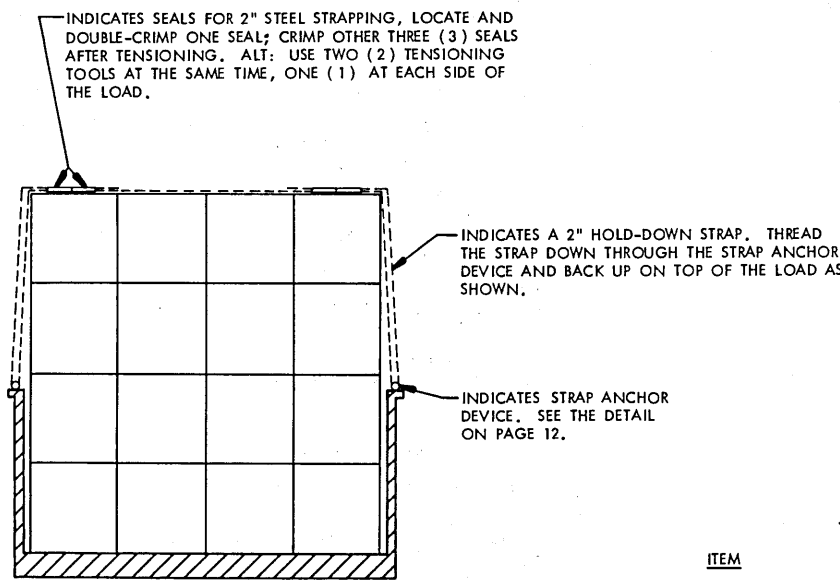
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- ⑭ HOLD-DOWN STRAP, 2" X .050" X 32'-0" LONG STEEL STRAPPING (12 REQD). SEE THE "STRAP THREADING DETAIL" ON PAGE 7 AND GENERAL NOTE "E" ON PAGE 2. WHERE APPLICABLE, STAPLE EACH STRAP TO A "SPACER ASSEMBLY" W/2-2" STAPLES.
- ⑮ SEAL FOR 1-1/4" STRAPPING (144 REQD, 2/STRAP). DOUBLE-CRIMP EACH SEAL. SEE GENERAL NOTE "L" ON PAGE 2.
- ⑯ SEAL FOR 2" STRAPPING (48 REQD, 4/STRAP). DOUBLE-CRIMP EACH SEAL.
- ⑰ ANTI-SKID PLATE (376 - 5" X 7" PLATES REQD OR 752 - 3-3/4" X 5" PLATES), POSITION TWO (2) 5" X 7" PLATES OR FOUR (4) 3-3/4" X 5" PLATES UNDER EACH SKID OF EACH SECOND, THIRD AND FOURTH LAYER CONTAINER. SEE THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3 AND GENERAL NOTE "M" ON PAGE 2.
- ⑱ EDGE PROTECTOR FOR 2" STRAPPING (24 REQD). POSITION TWO (2) UNDER EACH HOLD-DOWN STRAP AS SHOWN. SEE GENERAL NOTE "N" ON PAGE 2.

SPECIAL NOTES:

- 1. A 63-UNIT LOAD OF M22E8 MOTORS IS SHOWN IN A 41'-6" LONG BY 9'-0" WIDE CAR (INSIDE DIMENSION) HAVING A 42" CAR SIDE HEIGHT. A LONGER OR WIDER CAR MAY BE USED; HOWEVER, A CAR LONGER THAN 41'-6" SHOULD NOT BE ORDERED FOR SHIPMENT OF A 63-UNIT LOAD. SEE GENERAL NOTE "F" ON PAGE 2.
- 2. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE SHIPMENT OF A 63-UNIT LOAD OF M112 MOTORS IN A 41'-6" LONG CAR. SEE GENERAL NOTE "F" ON PAGE 2.
- 3. IF STRUTS MARKED ⑥ EXCEED 48" IN LENGTH, A "STRUT HOLD-DOWN" MUST BE APPLIED AS DETAILED ON PAGE 10.
- 4. THE USE OF "SPACER ASSEMBLIES" IS SPECIFIED FOR THE DEPICTED LOAD ONLY TO SHOW A TYPICAL APPLICATION. ONE (1) SPACER ASSEMBLY IS REQUIRED UNDER EACH HOLD-DOWN STRAP MARKED ⑭. TWO (2) SPACER ASSEMBLIES MUST NOT BE POSITIONED SIDE-BY-SIDE; THEREFORE, ONLY ONE (1) CONTAINER MAY BE OMITTED FROM THE TOP LAYER OF EACH LOAD UNIT.
- 5. IF A NARROWER CAR IS USED WHICH DOES NOT LEAVE SUFFICIENT SPACE FOR INSTALLATION OF SIDE BLOCKING ASSEMBLIES MARKED ②, THE SIDE BLOCKING PROCEDURES ILLUSTRATED ON PAGE 4 MUST BE IMPLEMENTED.
- 6. THE DEPICTED LOAD CONFIGURATION MAY BE ADJUSTED TO SATISFY THE QUANTITY OF ITEMS TO BE SHIPPED BY OMITTING AN ENTIRE LOAD UNIT OF SIXTEEN (16) CONTAINERS, BY OMITTING FOUR (4), EIGHT (8), TWELVE (12) OR SIXTEEN (16) FROM THE TOP LAYER, OR BY OMITTING ONE (1), TWO (2) OR THREE (3) CONTAINERS FROM THE TOP LAYER AND USING "SPACER ASSEMBLIES". SEE SPECIAL NOTE 4 ABOVE.
- 7. **CAUTION:** LOAD BUNDLING STRAPS, PIECES MARKED ⑬, MUST BE INSTALLED WITH CARE SO AS TO NOT HAVE AN EDGE-TO-EDGE CONTACT WITH THE UPPER UNITIZING STRAPS MARKED ⑭.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	384	128
2" X 4"	143	96
2" X 6"	112	112
NAILS	NO. REQD	POUNDS
6d (2")	108	3/4
10d (3")	231	3-3/4
12d (3-1/4")	20	1/2
30d (4-1/2")	25	1-1/4
STEEL STRAPPING, 1-1/4" X .035" - 1,160' REQD ---- 166 LBS		
STEEL STRAPPING, 2" X .050" ----- 384' REQD ---- 128 LBS		
SEAL FOR 1-1/4" STRAPPING ----- 144 REQD ---- 7 LBS		
SEAL FOR 2" STRAPPING ----- 48 REQD ---- 10 LBS		
EDGE PROTECTOR ----- 24 REQD ---- 6 LBS		
ANTI-SKID PLATE ----- 376 REQD ---- 94 LBS		
STRAP STAPLE, 2" ----- 6 REQD ---- NIL		



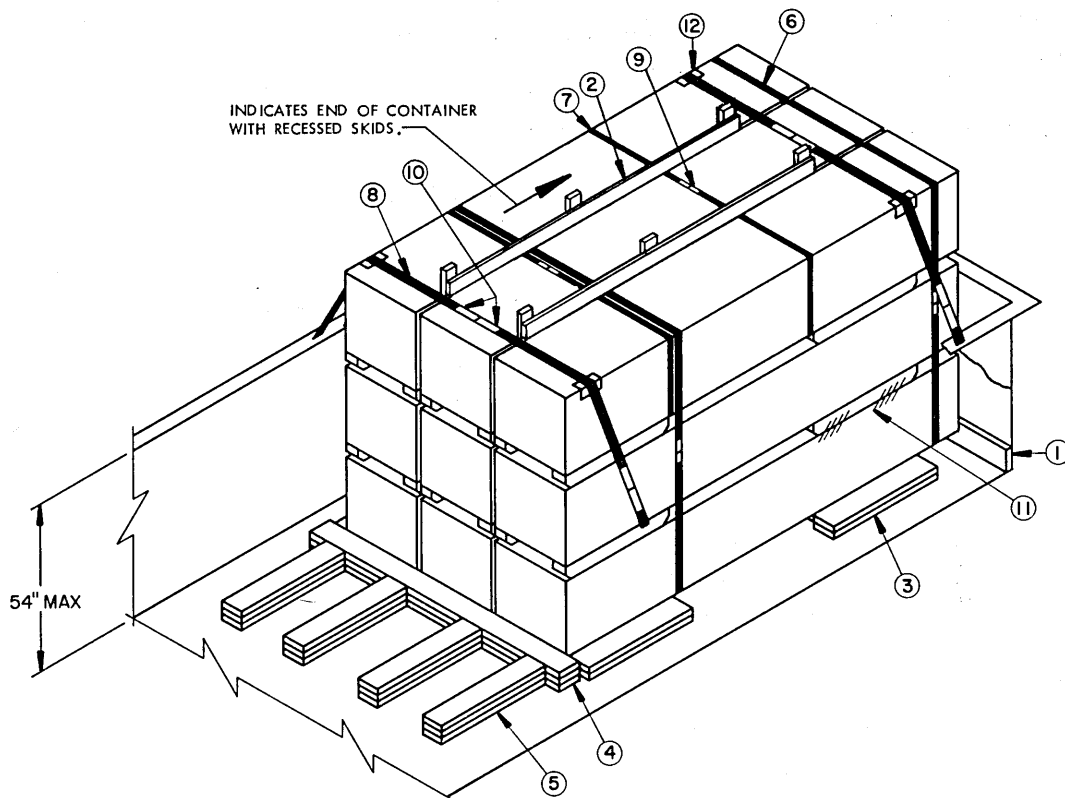
STRAP THREADING DETAIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
ROCKET MOTOR (M22E8)	63	68,733 LBS *
DUNNAGE		1,257 LBS
TOTAL WEIGHT		69,990 LBS

*LOADING WEIGHT FOR THE M112 MOTOR WILL BE 71,064 LBS.

63-UNIT LOAD IN A 41'-6" LONG BY 9'-0" WIDE CAR



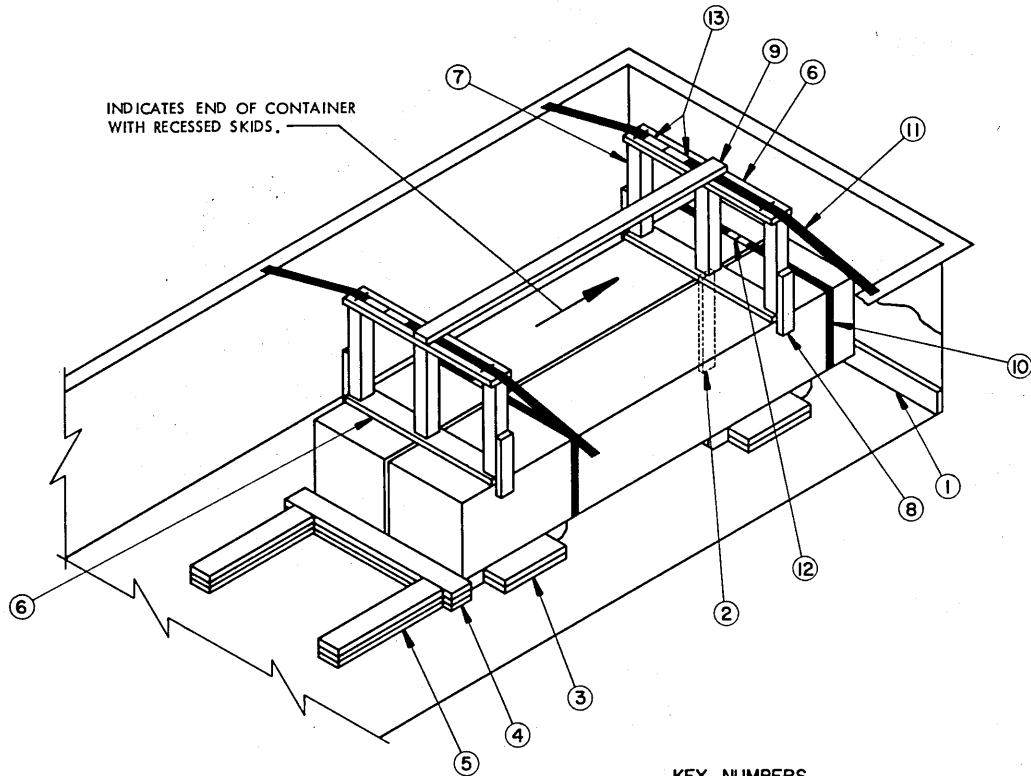
ISOMETRIC VIEW

SPECIAL NOTES:

1. A 9-UNIT LOAD OF M22E8 OR M112 MOTORS IS SHOWN IN A GONDOLA CAR OF ANY WIDTH HAVING A NAILABLE FLOOR AND A 54" MAXIMUM CAR SIDE HEIGHT.
2. FOUR (4) BACK-UP CLEATS, SHOWN AS PIECES MARKED ⑤, ARE ADEQUATE FOR RETAINING A MAXIMUM LCL LOAD OF NOT MORE THAN 14,000 POUNDS.

KEY NUMBERS

- ① HEADER, 2" X 6" BY CAR WIDTH (1 REQD). NOTE: FOR CARS WITH CORRUGATED END WALLS, OMIT PIECE ① AND USE THE "TYPICAL END FILL" AS DETAILED ON PAGE 12.
- ② ANTI-CHAFING ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 11 AND GENERAL NOTE "P" ON PAGE 2.
- ③ SIDE BLOCKING, 2" X 6" X 30" (DOUBLED) (4 REQD). LOCATE AS SHOWN AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/6-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ④ HEADER, 2" X 6" X 72" (TRIPLED) (1 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/9-16d NAILS. NAIL EACH ADDITIONAL PIECE W/9-40d NAILS.
- ⑤ BACK-UP CLEAT, 2" X 6" X 30" (TRIPLED) (4 REQD). LOCATE AS SHOWN AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/6-16d NAILS. NAIL EACH ADDITIONAL PIECE W/6-40d NAILS. SEE SPECIAL NOTE 2 AT LEFT.
- ⑥ STACK UNITIZING STRAP, 1-1/4" X .035" X 17'-0" STEEL STRAPPING (6 REQD). INSTALL AT THE LOCATION SHOWN AND TO ENCIRCLE ALL THREE CONTAINERS OF EACH STACK. SEE THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3 AND GENERAL NOTE "L" ON PAGE 2.
- ⑦ BUNDLING STRAP, 1-1/4" X .035" X 17'-0" STEEL STRAPPING (2 REQD). INSTALL AT THE LOCATION SHOWN AND TO ENCIRCLE ALL THREE CONTAINERS OF THE UPPER LAYER.
- ⑧ HOLD-DOWN STRAP, 2" X .050" X 22'-0" STEEL STRAPPING (2 REQD). INSTALL EACH STRAP FROM TWO 11'-0" LONG PIECES. SEE GENERAL NOTE "E" ON PAGE 2.
- ⑨ SEAL FOR 1-1/4" STRAPPING (16 REQD, 2/STRAP). DOUBLE-CRIMP EACH SEAL. SEE GENERAL NOTE "L" ON PAGE 2.
- ⑩ SEAL FOR 2" STRAPPING (12 REQD, 6/STRAP). DOUBLE-CRIMP EACH SEAL.
- ⑪ ANTI-SKID PLATE (48 - 5" X 7" PLATES REQD OR 96 - 3-3/4" X 5" PLATES). POSITION TWO (2) 5" X 7" PLATES OR FOUR (4) 3-3/4" X 5" PLATES UNDER EACH SKID OF EACH SECOND AND THIRD LAYER CONTAINER. SEE THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3 AND GENERAL NOTE "M" ON PAGE 2.
- ⑫ EDGE PROTECTOR FOR 2" STRAPPING (4 REQD). POSITION TWO (2) UNDER EACH HOLD-DOWN STRAP AS SHOWN. SEE GENERAL NOTE "N" ON PAGE 2.



ISOMETRIC VIEW

SPECIAL NOTES:

1. A 2-UNIT LOAD OF M22E8 OR M112 MOTORS IS SHOWN IN A GONDOLA CAR OF ANY WIDTH HAVING A NAILABLE FLOOR.
2. TWO (2) BACK-UP CLEATS, SHOWN AS PIECES MARKED ⑤ ARE ADEQUATE FOR RETAINING A MAXIMUM LCL LOAD OF NOT MORE THAN 7,000 POUNDS.

KEY NUMBERS

- ① HEADER, 2" X 6" BY CAR WIDTH (1 REQD). NOTE: FOR CARS WITH CORRUGATED END WALLS, OMIT PIECE ① AND USE THE "TYPICAL END FILL" AS DETAILED ON PAGE 12.
- ② ANTI-CHAFING PIECE, 1" X 4" BY LOAD HEIGHT (2 REQD). POSITION BETWEEN CONTAINERS AS SHOWN.
- ③ SIDE BLOCKING, 2" X 6" X 18" (DOUBLED) (4 REQD). CENTER ON A CONTAINER SKID AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTE "P" ON PAGE 2.
- ④ HEADER, 2" X 6" X 48" (TRIPLED) (1 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/6-16d NAILS. NAIL EACH ADDITIONAL PIECE W/6-40d NAILS.
- ⑤ BACK-UP CLEAT, 2" X 6" X 30" (TRIPLED) (2 REQD). LOCATE AS SHOWN AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/6-16d NAILS. NAIL EACH ADDITIONAL PIECE W/6-40d NAILS. SEE SPECIAL NOTE 2 AT LEFT.
- ⑥ LATERAL PIECE, 2" X 6" BY LADING WIDTH (4 REQD). NAIL TO THE RISERS MARKED ⑦ W/3-12d NAILS AT EACH JOINT.
- ⑦ RISER, 4" X 4" BY A LENGTH TO EXTEND 6" ABOVE CAR SIDEWALL (6 REQD).
- ⑧ SUPPORT PIECE, 2" X 4" X 15" (4 REQD). POSITION TO EXTEND 3" BELOW THE TOP OF THE CONTAINER. NAIL TO THE RISER W/6-12d NAILS.
- ⑨ TIE PIECE, 2" X 4" X 7'-6" (1 REQD). NAIL TO THE LATERAL PIECES W/3-10d NAILS AT EACH JOINT.
- ⑩ BUNDLING STRAP, 1-1/4" X .035" X 13'-0" STEEL STRAPPING (2 REQD). INSTALL AT THE LOCATION SHOWN AND TO ENCIRCLE BOTH CONTAINERS.
- ⑪ HOLD-DOWN STRAP, 2" X .050" X 20'-0" STEEL STRAPPING (2 REQD). INSTALL EACH STRAP FROM TWO UNEQUAL LENGTHS. SEE GENERAL NOTE "E" ON PAGE 2. STAPLE TO PIECE MARKED ⑥ W/3-2" STAPLES.
- ⑫ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2/STRAP). DOUBLE-CRIMP EACH SEAL. SEE GENERAL NOTE "L" ON PAGE 2.
- ⑬ SEAL FOR 2" STRAPPING (12 REQD, 6/STRAP). DOUBLE-CRIMP EACH SEAL.

STRAPPING, STEEL, 2" X .050" BY LENGTH-TO-SUIT (1 REQD). STAPLE TO STRAPPING BOARD W/6-2" STAPLES.

STRAPPING BOARD, 2" X 6" BY LADING WIDTH (1 REQD). NAIL TO THE UPRIGHT PIECES W/3-12d NAILS AT EACH JOINT.

UPRIGHT PIECE, 4" X 4" BY LENGTH TO EXTEND 6" ABOVE CAR SIDEWALL (5 REQD). TOENAIL TO TIE PIECE W/4-16d NAILS.

RISER PIECE MARKED ④ ON PAGES 4 AND 6.

BEARING PIECE MARKED ⑦ ON PAGES 4 AND 6.

HOLD-DOWN PIECE MARKED ⑤ ON PAGES 4 AND 6.

STOP PIECE MARKED ⑥ ON PAGES 4 AND 6.

TIE PIECE, 2" X 6" BY LADING WIDTH PLUS 2" IN LENGTH (1 REQD). NAIL TO THE STRUTS MARKED ⑧ W/3-12d NAILS AT EACH JOINT.

STRUT, PIECE MARKED ⑧ ON PAGES 4 AND 6.

STRUT HOLD-DOWN

THE DETAIL AS SHOWN IS FOR THE 4-CONTAINER-WIDE LOAD ON PAGE 6 AND DEPICTS ADDITIONAL CENTER BLOCKING WHICH MUST BE APPLIED WHEN STRUTS MARKED ⑧ EXCEED 48" IN LENGTH. FOR A 5-CONTAINER-WIDE LOAD, AS SHOWN ON PAGE 4, AN ADDITIONAL 4" X 4" UPRIGHT PIECE WILL BE REQUIRED.

STOP PIECE MARKED ⑥ ON PAGES 4 AND 6.

BEARING PIECE MARKED ⑦ ON PAGES 4 AND 6.

HOLD-DOWN PIECE MARKED ⑤ ON PAGES 4 AND 6.

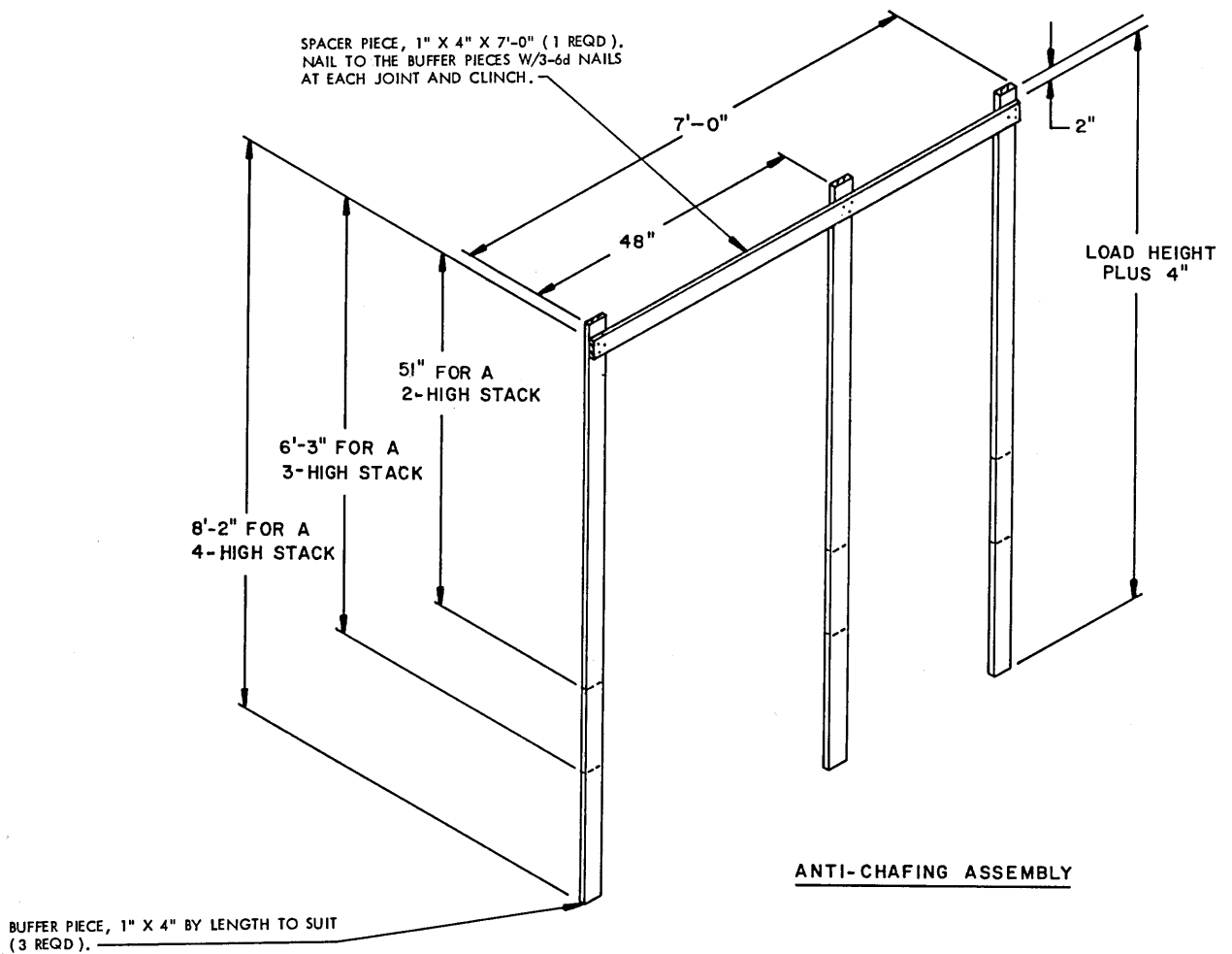
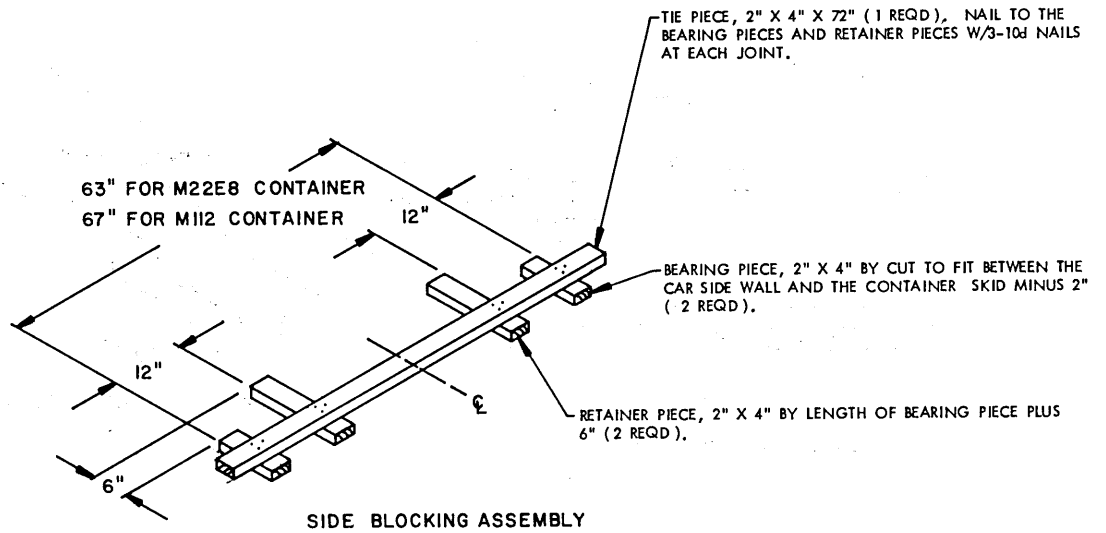
INDICATES SKID OF CONTAINER.

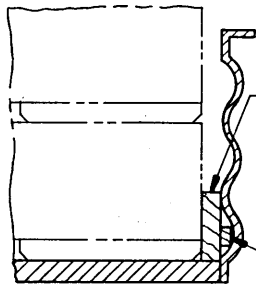
RISER PIECE MARKED ④ ON PAGES 4 AND 6.

STRUT, PIECE MARKED ⑧ ON PAGES 4 AND 6.

CENTER BLOCKING

THE DETAIL AS SHOWN IS FOR THE 4-CONTAINER-WIDE LOAD ON PAGE 6. FOR A 5-CONTAINER-WIDE LOAD, AS SHOWN ON PAGE 4, THE QUANTITY OF PIECES MARKED ⑤ AND ⑧ WILL BE INCREASED AS SPECIFIED IN THE KEY NUMBERS. NOTE: IF STRUTS MARKED ⑧ EXCEED 48" IN LENGTH, A "STRUT HOLD-DOWN" AS DETAILED ABOVE MUST BE APPLIED.



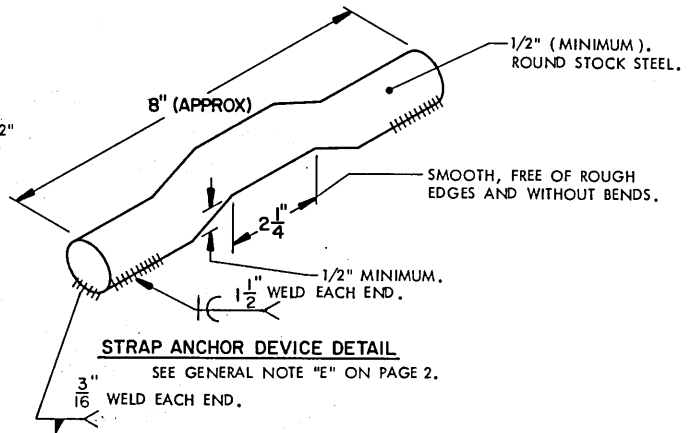


BUFFER PIECE, 3" X 12" BY CAR WIDTH. ALT: 2" X 12" BY CAR WIDTH (DOUBLED) AND LAMINATED W/10d NAILS.

SOLID FILL (AS REQD). NAIL TO BUFFER PIECE.

TYPICAL END FILL

FOR CARS WITH CORRUGATED END WALLS.



STRAP ANCHOR DEVICE DETAIL

SEE GENERAL NOTE "E" ON PAGE 2.

3/16" WELD EACH END.