

LOADING AND BRACING (CL & LCL) IN EUROPEAN BOXCARS OF PALLETIZED SEPARATE LOADING PROJECTILES

INDEX

<u>ITEM</u>	<u>PAGE(S)</u>
GENERAL NOTES, AND MATERIAL SPECIFICATIONS - - - - -	2
SPECIAL NAILING GUIDANCE - - - - -	3
LOADS FOR HBIS CARS - - - - -	4, 6, 8, 10, 12, 14
LOADS FOR TMS CARS - - - - -	5, 7, 9, 11, 13, 15
LOADS FOR GBS CARS - - - - -	16, 20, 22, 26, 28, 32
LOADS FOR TMS CARS - - - - -	18, 19, 24, 25, 30, 31
TYPICAL LOAD IN A LOAD DIVIDER CAR - - - - -	34, 35
TYPICAL LCL - - - - -	36, 37
DETAILS - - - - -	38-45
PALLET UNIT DETAILS - - - - -	46

● DELINEATED LOADING AND BRACING PROCEDURES COMPLY WITH THE REGOLAMENTO INTERNAZIONALE VEICOLI (RIV): REGULATIONS GOVERNING THE RECIPROCAL USE OF WAGONS IN INTERNATIONAL TRAFFIC.

U.S. ARMY MATERIEL COMMAND DRAWING

APPROVED, U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND <i>David P. Hadwick</i>	DRAFTSMAN	TECHNICIAN	ENGINEER
	S. WILSON	R. ARNOLD	
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND <i>John L. Byrd</i>	VALIDATION ENGINEERING DIVISION	TRANSPORTATION ENGINEERING DIVISION	LOGISTICS ENGINEERING OFFICE
	<i>JNK</i>	<i>W. Truiche</i>	<i>W.F. Ernst</i>
U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL			
MARCH 1994			
CLASS	DIVISION	DRAWING	FILE
19	48	4286	SPE1006

DO NOT SCALE

GENERAL NOTES

- 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 SHOWN HEREIN ARE APPLICABLE TO EUROPEAN BOXCARS THAT CONFORM TO THE RIV REQUIREMENTS.
- C. THE LOADS AS SHOWN ON PAGES 4 THRU 33 ARE BASED ON RIV BOXCARS (HBIS 297) 41'-10-7/8" (12,774MM) LONG BY 8'-9" (2,670MM) WIDE, RIV BOXCARS (TMS 658) 28'-8-7/8" (8,760MM) LONG BY 8'-11" (2,720MM) WIDE, RIV BOXCARS (GBS 252) 41'-8" (12,700MM) LONG BY 8'-6-1/4" (2,600MM) WIDE, AND RIV BOXCARS (TMS 651) 28'-8-3/4" (8,760MM) LONG BY 9'-0-5/8" (2,759MM) WIDE. THE LOAD SHOWN ON PAGE 34 IS BASED ON RIV BOXCAR (HBILLS-X 294) 41'-3" (12,576MM) LONG BY 8'-9" (2,670MM) WIDE. OTHER CARS THAT MAY BE USED, AND THE MAXIMUM QUANTITIES OF UNITS THAT CAN BE SHIPPED IN THOSE CARS, ARE SPECIFIED ON THE PAGES WITH THE LOADS.
- D. THE SPECIFIED OUTLOADING PROCEDURES ARE APPLICABLE TO PALLETIZED 155MM AND 8" SEPARATE LOADING PROJECTILES. SEE THE DETAILS ON PAGE 46. SUBSEQUENT REFERENCE TO PALLET UNIT HEREIN MEANS THE PALLET UNIT WITH AMMUNITION ITEMS INCLUDED.
- E. PORTIONS OF THE BOXCARS DEPICTED WITHIN THIS PROCEDURAL DRAWING, SUCH AS SIDEWALLS, ENDWALLS, AND ROOFS, AND PORTIONS OF THE BLOCKING AND BRACING COMPONENTS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.
- F. THE NUMBER OF UNITS MAY BE ADJUSTED TO FIT THE BOXCAR CONCERNED, OR THE QUANTITY TO BE SHIPPED; HOWEVER, THE APPROVED METHODS CONTAINED HEREIN MUST BE FOLLOWED FOR BLOCKING, BRACING, AND STAYING OF THESE ITEMS.
- G. OTHER TYPES OF LADING ITEMS MAY BE LOADED IN A CAR WHICH IS PARTIALLY LOADED WITH THE DESIGNATED ITEMS, 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.
- H. A STAGGERED NAILING PATTERN WILL BE USED WHENEVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES OR WHEN LAMINATING DUNNAGE. ALSO, A STAGGERED NAILING PATTERN WILL BE USED WHEN DUNNAGE IS NAILED TO THE FLOOR OF THE BOXCAR. 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.
- J. NAILS USED FOR FLOOR BLOCKING WILL HAVE A MINIMUM DIAMETER OF 5MM. NAIL SIZES WILL BE SELECTED TO PROVIDE A MINIMUM OF 40MM PENETRATION INTO THE CAR FLOOR. HOWEVER, THE LENGTH OF THE NAIL WILL BE SUCH THAT THE NAIL DOES NOT COMPLETELY PENETRATE THE FLOOR. SEE THE "NAIL CHART" ON PAGE 3. NAILS WHICH ARE OF OTHER SIZES, OR WHICH HAVE A NOMENCLATURE DIFFERENT THAN THAT USED HEREIN, MAY ALSO BE USED PROVIDED THEY MEET THE MINIMUM REQUIREMENTS STIPULATED IN THIS DOCUMENT.

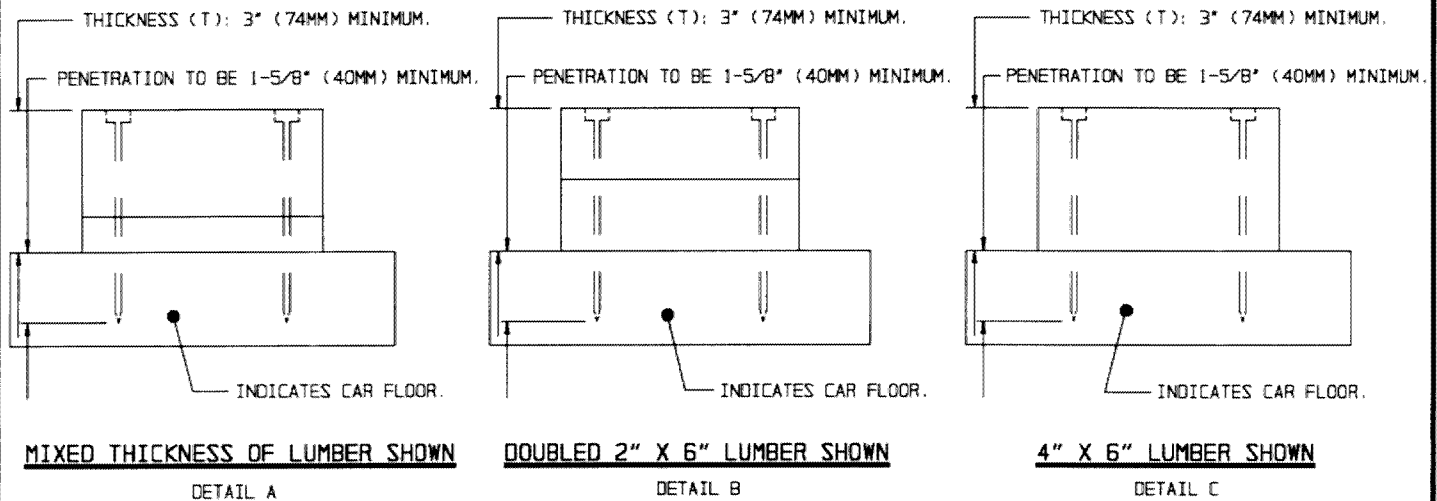
(CONTINUED AT RIGHT)

(GENERAL NOTES CONTINUED)

- K. NAILS USED FOR FABRICATING DUNNAGE ASSEMBLIES MUST BE OF A LENGTH TO PENETRATE TWO-THIRDS OF THE THICKNESS OF THE SECOND BOARD, WHILE PREVENTING THE NAIL POINT FROM COMPLETELY PENETRATING THE DUNNAGE ASSEMBLY. THE NAIL POINT IS TO BE CONCEALED WITHIN THE DUNNAGE ASSEMBLY, EXCEPT WHEN STATED OTHERWISE IN THE CONSTRUCTION DETAILS, TO PREVENT POSSIBLE DAMAGE TO THE LADING.
- L. THOSE MEMBERS SPECIFICALLY IDENTIFIED AS "STRUTS" WITHIN THE KEY NUMBERS OF A DEPICTED LOAD ARE SPECIFIED TO BE 4" X 4" (102MM X 102MM) MATERIAL. IT IS PERMISSIBLE TO USE TWO LAMINATED PIECES OF 2" X 6" (51MM X 152MM) MATERIAL IN LIEU OF EACH 4" X 4" (102MM X 102MM) STRUT. DOUBLED 2" X 6" (51MM X 152MM) STRUTS WILL BE LAMINATED WITH ONE NAIL EVERY 6" (152MM).
- M. LOAD BRACING STRUTS, EITHER 4" X 4" (102MM X 102MM) OR 2" X 6" (51MM X 152MM), WHICH ARE LONGER THAN 72" (1,829MM) WILL BE BRACED WITH HORIZONTAL AND VERTICAL STRUT BRACING PIECES. SEE PIECES MARKED ⑦ AND ⑧ ON PAGE 28 FOR A TYPICAL INSTALLATION.
- N. WHEN STEEL STRAPPING IS SEALED IN AN END-OVER-END LAP JOINT, A MINIMUM OF ONE SEAL WITH TWO PAIR OF NOTCHES WILL BE USED TO SEAL THE JOINT WHEN A NOTCH-TYPE SEALER IS BEING USED. A MINIMUM OF TWO SEALS, BUTTED TOGETHER, WITH TWO PAIR OF CRIMPS PER SEAL, WILL BE USED TO SEAL THE JOINT WHEN A CRIMP-TYPE SEALER IS BEING USED. SEE THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 44. CAUTION: EXERCISE CARE DURING TENSIONING TO PREVENT DAMAGE TO THE PALLET UNITS.
- O. THE PROCEDURES DEPICTED WITHIN THIS DRAWING ARE BASED ON THE USE OF DIMENSIONAL SIZED LUMBER. IN MOST CASES THE METRIC EQUIVALENT IS GIVEN IN PARENTHESIS FOLLOWING THE DIMENSION. HOWEVER, WHERE THE METRIC EQUIVALENT IS NOT SHOWN, IT MAY BE COMPUTED ON THE BASIS OF ONE INCH EQUALS 25.4MM AND ONE POUND EQUALS 0.454 KG.

MATERIAL SPECIFICATIONS

- LUMBER - - - - - : SEE TM 743-200-1 (DUNNAGE LUMBER) AND FED SPEC MM-L-751.
- NAILS - - - - - : FED SPEC FF-N-105; COMMON.
- STRAPPING, STEEL - - - : ASTM D3953; FLAT STRAPPING, TYPE I, HEAVY DUTY, FINISH A, B (GRADE 2), OR C.
- SEAL, STRAP - - - - : ASTM D3953; CLASS H, FINISH A, B (GRADE 2), OR C, DOUBLE NOTCH TYPE, STYLE I, II, OR IV.



TYPICAL NAILING OF FLOOR LINE BLOCKING TO CAR FLOOR

(FOR ADDITIONAL GUIDANCE, SEE "NAIL CHART" BELOW)

SPECIAL NOTES:

1. THE DETAILS ON THIS PAGE DEPICT POSSIBLE VARIATIONS THAT MAY RESULT FROM USING AVAILABLE LUMBER FOR FLOOR LINE BLOCKING. KEY NUMBERS THROUGHOUT THIS DOCUMENT SPECIFY DOUBLED PIECES OF LUMBER WHICH ARE 2" X 4" (51MM X 102MM) IN SIZE FOR SIDE BLOCKING, AS TYPICALLY SHOWN IN DETAIL B ABOVE. IT IS PERMISSIBLE TO USE 4" X 4" (102MM X 102MM) LUMBER, OR MIXED THICKNESSES OF LUMBER, AS TYPICALLY SHOWN IN DETAILS A AND C, IN LIEU OF THE SPECIFIED DOUBLED 2" X 4" (51MM X 102MM) LUMBER. THE INTENT OF THE SPECIFIED BLOCKING PROCEDURES MUST BE OBTAINED.
2. THE NUMBER OF NAILS USED TO SECURE EACH PIECE OF BLOCKING WILL BE AS SPECIFIED IN THE KEY NUMBERS FOR EACH SPECIFIC PROCEDURE. THE LENGTH OF THE NAILS SELECTED WILL BE ADEQUATE TO NAIL THROUGH THE BLOCKING AND ACHIEVE THE PENETRATION OF THE CAR FLOOR AS SPECIFIED. WHEN NAILING FLOOR LINE BLOCKING TO THE CAR FLOOR, AS DEPICTED IN DETAILS A, B, AND C, THE FOLLOWING APPLIES:

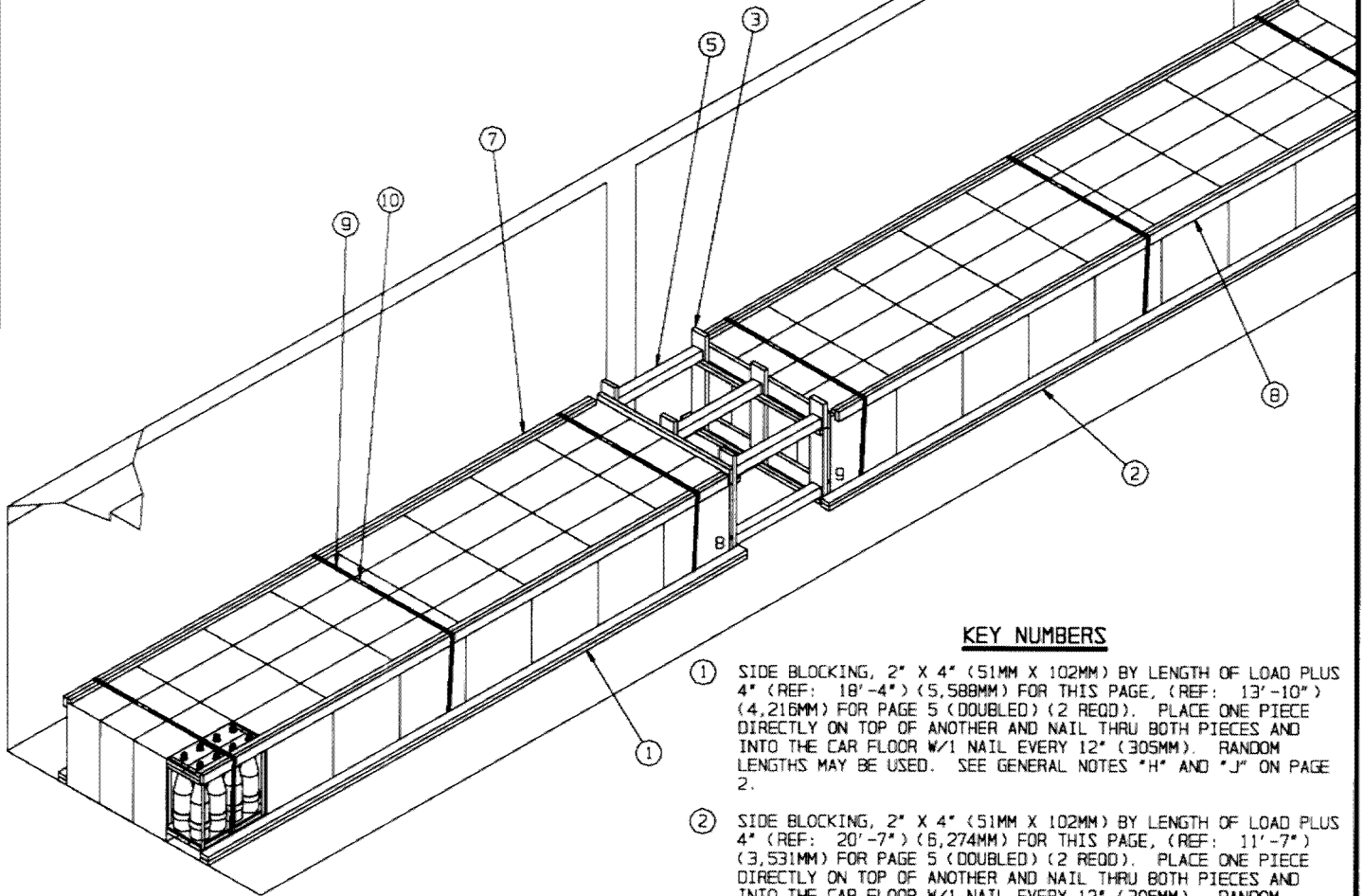
NAILING GUIDANCE CHART		
THICKNESS (T) OF BLOCKING		SIZE OF NAIL
MINIMUM	MAXIMUM	
3" (74MM)	3" (74MM)	30d (4-1/2") (114MM)
3" (74MM)	3-3/8" (87MM)	40d (5") (127MM)
3-3/8" (87MM)	4" (100MM)	50d (5-1/2") (140MM)
4" (100MM)	4-3/8" (112MM)	60d (6") (152MM)

NAIL CHART		
SIZE	LENGTH	DIAMETER
10d	3" (76MM)	0.148" (3.77MM)
12d	3-1/4" (83MM)	0.148" (3.77MM)
16d	3-1/2" (89MM)	0.162" (4.11MM)
20d	4" (102MM)	0.192" (4.88MM)
30d*	4-1/2" (114MM)	0.207" (5.26MM)
40d*	5" (127MM)	0.225" (5.72MM)
50d*	5-1/2" (140MM)	0.243" (6.19MM)
60d*	6" (152MM)	0.262" (6.67MM)

*NAILS WHICH HAVE ADEQUATE DIAMETER FOR NAILING FLOOR LINE BLOCKING. THE LENGTH OF THE NAIL MUST MEET THE REQUIREMENTS OF GENERAL NOTE "J".

RAILCARS THAT MAY BE USED

TYPE OF RAILCAR	LENGTH OF RAILCAR	MAX NO. OF ITEMS	MAXIMUM WEIGHT (APPROX)
HBIS - - 297/299	41'-10-7/8" (12,774MM)	70	56,000 LBS (25,424 KG)
HBILLS - 294/295	40'-3-5/8" (12,286MM)	68	54,400 LBS (24,698 KG)
HBILLS - 297/299	40'-6-5/8" (12,364MM)	70	56,000 LBS (25,424 KG)
TBIS - - 869/870 871/875	41'-10-7/8" (12,774MM)	69	55,200 LBS (25,061 KG)

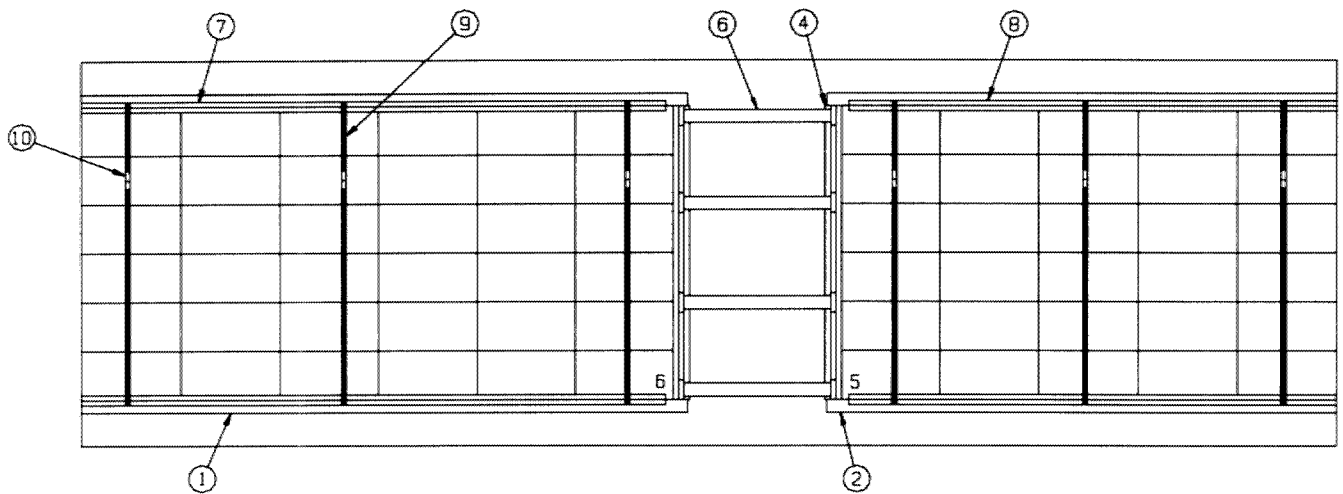


ISOMETRIC VIEW

KEY NUMBERS

- ① SIDE BLOCKING, 2" X 4" (51MM X 102MM) BY LENGTH OF LOAD PLUS 4" (REF: 18'-4") (5,588MM) FOR THIS PAGE, (REF: 13'-10") (4,216MM) FOR PAGE 5 (DOUBLED) (2 REOD). PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM). RANDOM LENGTHS MAY BE USED. SEE GENERAL NOTES "H" AND "J" ON PAGE 2.
- ② SIDE BLOCKING, 2" X 4" (51MM X 102MM) BY LENGTH OF LOAD PLUS 4" (REF: 20'-7") (6,274MM) FOR THIS PAGE, (REF: 11'-7") (3,531MM) FOR PAGE 5 (DOUBLED) (2 REOD). PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM). RANDOM LENGTHS MAY BE USED.
- ③ CENTER GATE A, FOR THIS PAGE (2 REOD). SEE THE DETAIL ON PAGE 38. SEE GENERAL NOTE "K" ON PAGE 2.
- ④ CENTER GATE B, FOR PAGE 5 (2 REOD). SEE THE DETAIL ON PAGE 38.
- ⑤ STRUT FOR THIS PAGE, 4" X 4" (102MM X 102MM) BY CUT TO FIT (REF: 38") (965MM) (6 REOD). TOENAIL TO THE CENTER GATES, PIECES MARKED ③, W/2 NAILS AT EACH END.
- ⑥ STRUT FOR PAGE 5, 4" X 4" (102MM X 102MM) BY CUT TO FIT (REF: 41") (1,041MM) (8 REOD). TOENAIL TO THE CENTER GATES, PIECES MARKED ④, W/2 NAILS AT EACH END.
- ⑦ CAP PIECE, LENGTH OF LOAD MINUS 2" (REF: 17'-10") (5,436MM) FOR THIS PAGE, (REF: 13'-4") (4,064MM) FOR PAGE 5. SEE THE DETAIL ON PAGE 44. POSITION AGAINST CAR ENDWALL.
- ⑧ CAP PIECE, LENGTH OF LOAD MINUS 2" (REF: 20'-1") (6,121MM) FOR THIS PAGE, (REF: 11'-1") (3,378MM) FOR PAGE 5 (2 REOD). SEE THE DETAIL ON PAGE 44. POSITION AGAINST CAR ENDWALL.
- ⑨ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 15'-6" (32MM X .889MM OR .787MM X 4,724MM) LONG STEEL STRAPPING FOR THIS PAGE, 19'-6" (5,944MM) LONG FOR PAGE 5 (6 REOD). INSTALL TO ENCIRCLE THE PALLET UNITS, EXTENDING UNDER THE PALLET BASES AND OVER THE CAP PIECES, PIECES MARKED ⑦ AND/OR ⑧.
- ⑩ SEAL FOR 1-1/4" STRAPPING (12 REOD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "N" ON PAGE 2.

**68-UNIT LOAD IN AN HBIS 297 CAR
155MM PROJECTILES, 8 PER SMALL WOODEN PALLET**



PLAN VIEW

RAILCARS THAT MAY BE USED			
TYPE OF RAILCAR	LENGTH OF RAILCAR	MAX NO. OF ITEMS	MAXIMUM WEIGHT (APPROX)
TIMS -- 858	28'-8-7/8" (8,760MM)	72	57,600 LBS (26,150 KG)
GIS -- 205	30'-5-5/8" (9,290MM)	75	60,000 LBS (26,150 KG)

SPECIAL NOTES FOR PAGE 4:

1. AN HBIS 297 CAR, 41'-10-7/8" (12,774MM) LONG BY 8'-9" (2,670MM) WIDE HAVING A MAXIMUM LOAD LIMIT OF 57,167 POUNDS (25,016 KG) IS SHOWN IN THE "ISOMETRIC VIEW" ON PAGE 4. CARS OF OTHER SIZES AND TYPES MAY BE USED. SEE THE CHART ON PAGE 4.
2. A 68-UNIT LOAD OF 155MM PROJECTILES, 8 PER SMALL PALLET, IS SHOWN ON PAGE 4. THE LOAD MAY BE INCREASED BY ONE OR TWO PALLET UNITS BY FORMING A 5-WIDE LOAD UNIT AT ONE END OR BOTH ENDS OF THE CAR, SIMILAR TO THE METHOD SHOWN AT THE END OF THE LOAD ON PAGE 8, IN LIEU OF THE 4-WIDE LOAD UNITS.
3. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED BY FORMING ONE OR MORE 3-WIDE LOAD UNITS AT ONE OR BOTH ENDS OF THE CAR, SIMILAR TO THE LOAD ON PAGE 8.

SPECIAL NOTES FOR THIS PAGE:

1. A TIMS 858 CAR, 28'-8-7/8" (8,752MM) LONG BY 8'-11" (2,720MM) WIDE HAVING A MAXIMUM LOAD LIMIT OF 58,406 POUNDS (26,516 KG) IS SHOWN IN THE "PLAN VIEW" ABOVE. CARS OF OTHER SIZES AND TYPES MAY BE USED. SEE THE CHART ABOVE.
2. A 66-UNIT LOAD OF 155MM PROJECTILES, 8 PER SMALL PALLET, IS SHOWN ABOVE. THE LOAD MAY BE INCREASED BY UP TO SIX PALLET UNITS BY FORMING 7-WIDE LOAD UNITS AT EACH END OF THE CAR, SIMILAR TO THE METHOD SHOWN AT THE END OF THE LOAD ON PAGE 8, IN LIEU OF THE 6-WIDE LOAD UNITS.
3. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED BY FORMING ONE OR MORE 5-WIDE LOAD UNITS AT ONE OR BOTH ENDS OF THE CAR, SIMILAR TO THE LOAD ON PAGE 8.

BILL OF MATERIAL (PAGE 4)		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2" (51MM X 51MM)	94 (28,651MM)	32
2" X 4" (51MM X 102MM)	232 (70,714MM)	155
2" X 6" (51MM X 152MM)	36 (10,973MM)	36
4" X 4" (102MM X 102MM)	19 (5,792MM)	26
NAILS	NO. REQD	POUNDS
SIZE AS REQD	238	7
STEEL STRAPPING, 1-1/4" --- 93' REQD --- 14 LBS		
SEAL FOR 1-1/4" STRAPPING -- 12 REQD --- 1 LB		

BILL OF MATERIAL (THIS PAGE)		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2" (51MM X 51MM)	76 (23,165MM)	26
2" X 4" (51MM X 102MM)	151 (46,025MM)	101
2" X 6" (51MM X 152MM)	51 (15,545MM)	51
4" X 4" (102MM X 102MM)	28 (8,535MM)	38
NAILS	NO. REQD	POUNDS
SIZE AS REQD	232	7
STEEL STRAPPING, 1-1/4" --- 117' REQD --- 17 LBS		
SEAL FOR 1-1/4" STRAPPING -- 12 REQD --- 1 LB		

LOAD AS SHOWN (PAGE 4)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	68	54,400 LBS (24,698 KG)
DUNNAGE		520 LBS (236 KG)
TOTAL WEIGHT		54,920 LBS (24,934 KG)

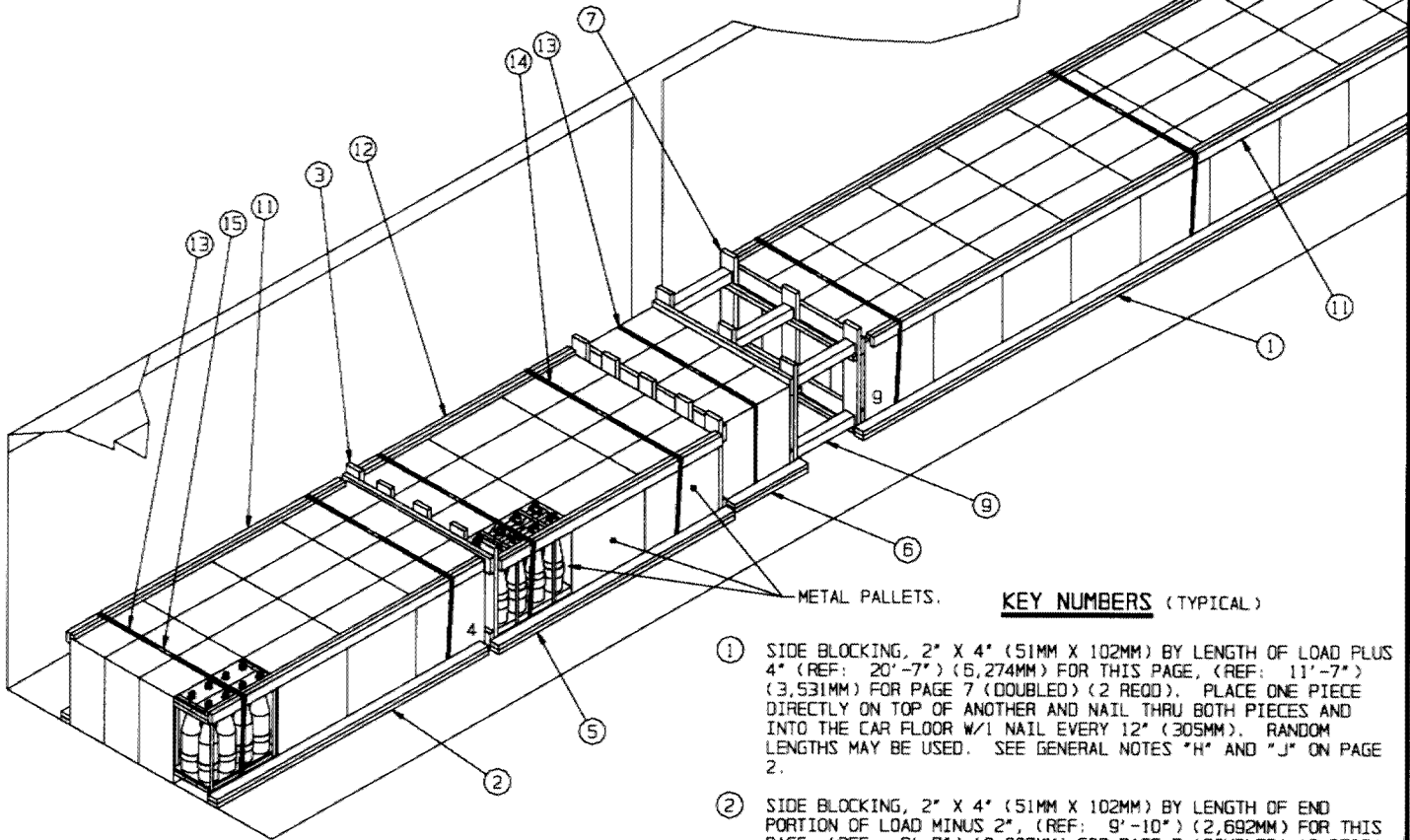
LOAD AS SHOWN (THIS PAGE)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	66	52,800 LBS (23,971 KG)
DUNNAGE		457 LBS (208 KG)
TOTAL WEIGHT		53,257 LBS (24,179 KG)

66-UNIT LOAD IN A TIMS 858 CAR
155MM PROJECTILES, 8 PER SMALL WOODEN PALLET

RAILCARS THAT MAY BE USED

TYPE OF RAILCAR	LENGTH OF RAILCAR	MAX NO. OF ITEMS	MAXIMUM WEIGHT (APPROX)
HBIS - - 297/299	41'-10-7/8" (12,774MM)	70 (58 WOODEN, 12 METAL)	56,684 LBS (25,735 KG)
HBILLS - 294/295	40'-3-5/8" (12,286MM)	67 (55 WOODEN, 12 METAL)	54,284 LBS (24,645 KG)
HBILS - 297/299	40'-6-5/8" (12,364MM)	70 (58 WOODEN, 12 METAL)	56,684 LBS (25,735 KG)
TBIS - - 869/870 871/875	41'-10-7/8" (12,774MM)	68 (56 WOODEN, 12 METAL)	55,084 LBS (25,008 KG)

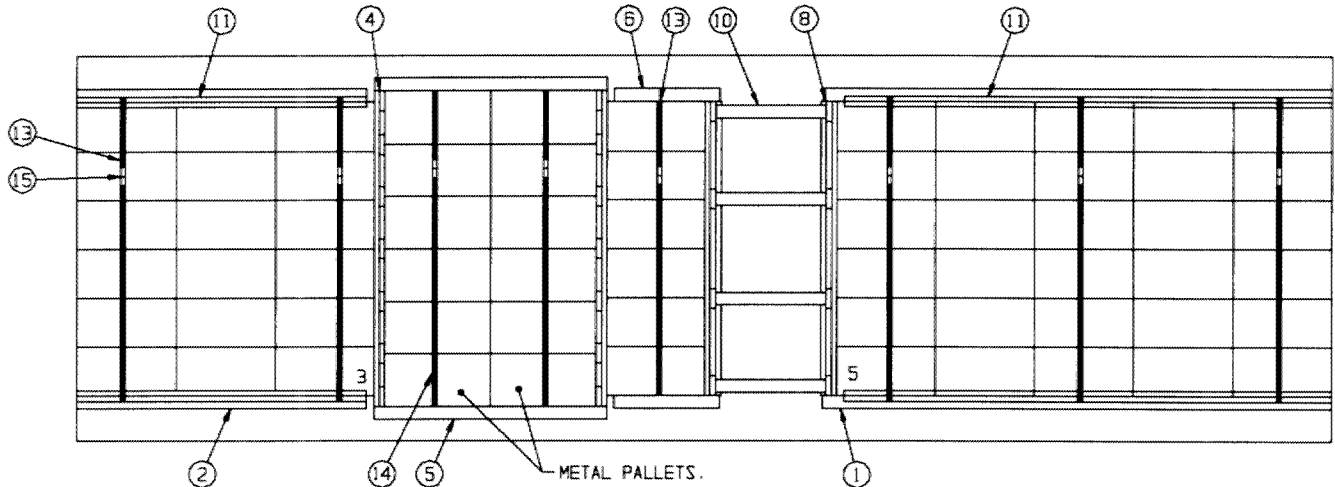


ISOMETRIC VIEW

KEY NUMBERS (TYPICAL)

- ① SIDE BLOCKING, 2" X 4" (51MM X 102MM) BY LENGTH OF LOAD PLUS 4" (REF: 20'-7" (6,274MM) FOR THIS PAGE, (REF: 11'-7" (3,531MM) FOR PAGE 7 (DOUBLED) (2 REOD). PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM). RANDOM LENGTHS MAY BE USED. SEE GENERAL NOTES "H" AND "J" ON PAGE 2.
 - ② SIDE BLOCKING, 2" X 4" (51MM X 102MM) BY LENGTH OF END PORTION OF LOAD MINUS 2", (REF: 9'-10" (2,692MM) FOR THIS PAGE, (REF: 6'-7" (2,007MM) FOR PAGE 7 (DOUBLED) (2 REOD). POSITION AGAINST CAR ENDWALL. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM). RANDOM LENGTHS MAY BE USED.
 - ③ SEPARATOR GATE A, FOR THIS PAGE (2 REOD). SEE THE DETAIL ON PAGE 40. POSITION WITH THE VERTICAL PIECES AGAINST THE METAL PALLETS. SEE GENERAL NOTE "K" ON PAGE 2.
 - ④ SEPARATOR GATE B, FOR PAGE 7 (2 REOD). SEE THE DETAIL ON PAGE 41. POSITION WITH THE VERTICAL PIECES AGAINST THE METAL PALLETS.
 - ⑤ SIDE BLOCKING, 2" X 4" (51MM X 102MM) BY LENGTH OF METAL PALLET PORTION OF LOAD PLUS 6", (REF: 7'-9-1/2" (2,375MM) FOR THIS PAGE, (REF: 58" (1,473MM) FOR PAGE 7 (2 REOD). PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM).
 - ⑥ SIDE BLOCKING, 2" X 4" X 29" (51MM X 102MM X 737MM) (2 REOD). POSITION 2" FROM A SEPARATOR GATE, PIECE MARKED ③ OR ④, AND NAIL TO THE CAR FLOOR W/3 NAILS.
 - ⑦ CENTER GATE A, FOR THIS PAGE (2 REOD). SEE THE DETAIL ON PAGE 38.
 - ⑧ CENTER GATE B, FOR PAGE 7 (2 REOD). SEE THE DETAIL ON PAGE 38.
 - ⑨ STRUT FOR THIS PAGE, 4" X 4" (102MM X 102MM) BY CUT TO FIT (REF: 26" (660MM) (6 REOD). TOENAIL TO THE CENTER GATES, PIECES MARKED ⑦, W/2 NAILS AT EACH END.
 - ⑩ STRUT FOR PAGE 7, 4" X 4" (102MM X 102MM) BY CUT TO FIT (REF: 31" (787MM) (8 REOD). TOENAIL TO THE CENTER GATES, PIECES MARKED ⑧, W/2 NAILS AT EACH END.
- (CONTINUED AT LEFT)
- (KEY NUMBERS CONTINUED)
- ⑪ CAP PIECE FOR WOOD PALLETS, LENGTH OF END PORTION OF LOAD MINUS 2". FOR THE NEAR END, (REF: 9'-10" (2,692MM) FOR THIS PAGE, (REF: 6'-7" (2,007MM) FOR PAGE 7 (2 REOD). FOR THE FAR END, (REF: 20'-1" (6,121MM) FOR PAGE 6, (REF: 11'-1" (3,378MM) FOR PAGE 7 (2 REOD). SEE THE DETAIL ON PAGE 44. POSITION AGAINST CAR ENDWALL.
 - ⑫ CAP PIECE FOR METAL PALLETS, (REF: 7'-3" (2,210MM) LONG FOR PAGE 6, (REF: 58" (1,473MM) FOR PAGE 7 (2 REOD). SEE THE DETAIL ON PAGE 44.
 - ⑬ BUNDLING STRAP FOR WOODEN PALLETS, 1-1/4" X .035" OR .031" X 15'-6" (32MM X .889MM OR .787MM X 4,724MM) LONG STEEL STRAPPING FOR THIS PAGE, 19'-6" (5,944MM) LONG FOR PAGE 7 (6 REOD). INSTALL TO ENCIRCLE THE PALLET UNITS, EXTENDING UNDER THE PALLET BASES AND OVER THE CAP PIECES, PIECES MARKED ⑪, OR OVER THE PALLET COVERS, AS APPLICABLE.
 - ⑭ BUNDLING STRAP FOR METAL PALLETS, 1-1/4" X .035" OR .031" X 15'-0" (32MM X .889MM OR .787MM X 4,877MM) LONG STEEL STRAPPING FOR THIS PAGE, 20'-0" (6,096MM) LONG FOR PAGE 7 (2 REOD). INSTALL TO ENCIRCLE THE PALLET UNITS, EXTENDING UNDER THE PALLET BASES AND OVER THE CAP PIECES, PIECES MARKED ⑫.
 - ⑮ SEAL FOR 1-1/4" STRAPPING (16 REOD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "N" ON PAGE 2.

**TYPICAL MIXED LOAD IN AN HBIS 297 CAR
155MM PROJECTILES, 8 PER SMALL WOODEN PALLET AND 8 PER SHORT METAL PALLET**



PLAN VIEW

RAILCARS THAT MAY BE USED			
TYPE OF RAILCAR	LENGTH OF RAILCAR	MAX NO. OF ITEMS	MAXIMUM WEIGHT (APPROX)
TIMS -- 858	28'-8-7/8" (8,760MM)	71 (59 WOODEN, 12 METAL)	57,484 LBS (26,098 KG)
GIS -- 205	30'-5-5/8" (9,290MM)	74 (62 WOODEN, 12 METAL)	59,884 LBS (27,187 KG)

SPECIAL NOTES FOR PAGE 6:

1. AN HBIS 297 CAR, 41'-10-7/8" (12,774MM) LONG BY 8'-9" (2,670MM) WIDE HAVING A MAXIMUM LOAD LIMIT OF 57,167 POUNDS (26,016 KG) IS SHOWN IN THE "ISOMETRIC VIEW" ON PAGE 6. CARS OF OTHER SIZES AND TYPES MAY BE USED. SEE THE CHART ON PAGE 6.
2. A MIXED LOAD OF 155MM PROJECTILES, 8 PER SMALL WOODEN PALLET AND 8 PER SHORT METAL PALLET, IS SHOWN ON PAGE 6. A QUANTITY OF 56 WOODEN AND 12 METAL PALLETS IS SHOWN AS A TYPICAL MIX. THE RATIO OF WOODEN AND METAL PALLETS MAY BE ADJUSTED TO SUIT. THE LOAD MAY BE INCREASED BY ONE WOODEN PALLET BY FORMING A 5-WIDE LOAD UNIT AT ONE END OF THE CAR, SIMILAR TO THE METHOD SHOWN AT THE END OF THE LOAD ON PAGE 8 IN LIEU OF A 4-WIDE.
3. THE QUANTITY OF WOODEN PALLETS IN THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED BY FORMING ONE OR MORE 3-WIDE LOAD UNITS AT ONE OR BOTH ENDS OF THE CAR, SIMILAR TO THE LOAD ON PAGE 8. THE QUANTITY OF METAL PALLETS CAN BE REDUCED BY OMITTING AN ENTIRE LOAD UNIT, OR BY INSTALLING A "FILLER ASSEMBLY A" IN THE PLACE OF AN OMITTED PALLET UNIT. SEE THE DETAIL ON PAGE 45.

SPECIAL NOTES FOR THIS PAGE:

1. A TIMS 858 CAR, 28'-8-7/8" (8,752MM) LONG BY 8'-11" (2,720MM) WIDE HAVING A MAXIMUM LOAD LIMIT OF 58,406 POUNDS (26,516 KG) IS SHOWN IN THE "PLAN VIEW" ABOVE. CARS OF OTHER SIZES AND TYPES MAY BE USED. SEE THE CHART ABOVE.
2. A MIXED LOAD OF 155MM PROJECTILES, 8 PER SMALL WOODEN PALLET AND 8 PER SHORT METAL PALLET, IS SHOWN IN THE "PLAN VIEW" ABOVE. A QUANTITY OF 54 WOODEN AND 12 METAL PALLETS IS SHOWN AS A TYPICAL MIX. THE RATIO OF WOODEN AND METAL PALLETS MAY BE ADJUSTED TO SUIT. THE LOAD MAY BE INCREASED BY UP TO FIVE WOODEN PALLET UNITS BY FORMING 7-WIDE LOAD UNITS AT EACH END OF THE CAR, SIMILAR TO THE METHOD SHOWN AT THE END OF THE LOAD ON PAGE 8. DO NOT LOAD 7-WIDE ADJACENT TO A SEPARATOR GATE. THE QUANTITY OF METAL PALLETS MAY ONLY BE INCREASED BY MULTIPLES OF SIX UNITS.
3. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED BY FORMING ONE OR MORE 5-WIDE LOAD UNITS OF WOODEN PALLETS AT ONE OR BOTH ENDS OF THE CAR, SIMILAR TO THE LOAD ON PAGE 8. THE QUANTITY OF METAL PALLETS CAN BE REDUCED BY OMITTING AN ENTIRE LOAD UNIT, OR BY INSTALLING A "FILLER ASSEMBLY A" IN THE PLACE OF AN OMITTED PALLET. SEE THE "FILLER ASSEMBLY A" DETAIL ON PAGE 45.

BILL OF MATERIAL (PAGE 6) (TYPICAL)		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2" (51MM X 51MM)	93 (28,347MM)	31
2" X 4" (51MM X 102MM)	235 (71,628MM)	156
2" X 6" (51MM X 152MM)	84 (25,604MM)	84
4" X 4" (102MM X 102MM)	13 (3,962MM)	18
NAILS		POUNDS
NO. REQD	300	8
SIZE AS REQD		
STEEL STRAPPING, 1-1/4" -- 125' REQD		18 LBS
SEAL FOR 1-1/4" STRAPPING -- 16 REQD		1 LB

BILL OF MATERIAL (THIS PAGE) (TYPICAL)		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2" (51MM X 51MM)	63 (19,202MM)	21
2" X 4" (51MM X 102MM)	138 (42,062MM)	92
2" X 6" (51MM X 152MM)	120 (36,576MM)	120
4" X 4" (102MM X 102MM)	21 (6,401MM)	28
NAILS		POUNDS
NO. REQD	286	7
SIZE AS REQD		
STEEL STRAPPING, 1-1/4" -- 157' REQD		23 LBS
SEAL FOR 1-1/4" STRAPPING -- 16 REQD		1 LB

LOAD AS SHOWN (PAGE 6) (TYPICAL)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT, WOODEN	56	44,800 LBS (20,339 KG)
PALLET UNIT, METAL	12	10,284 LBS (4,689 KG)
DUNNAGE		605 LBS (275 KG)
TOTAL WEIGHT		55,689 LBS (24,283 KG)

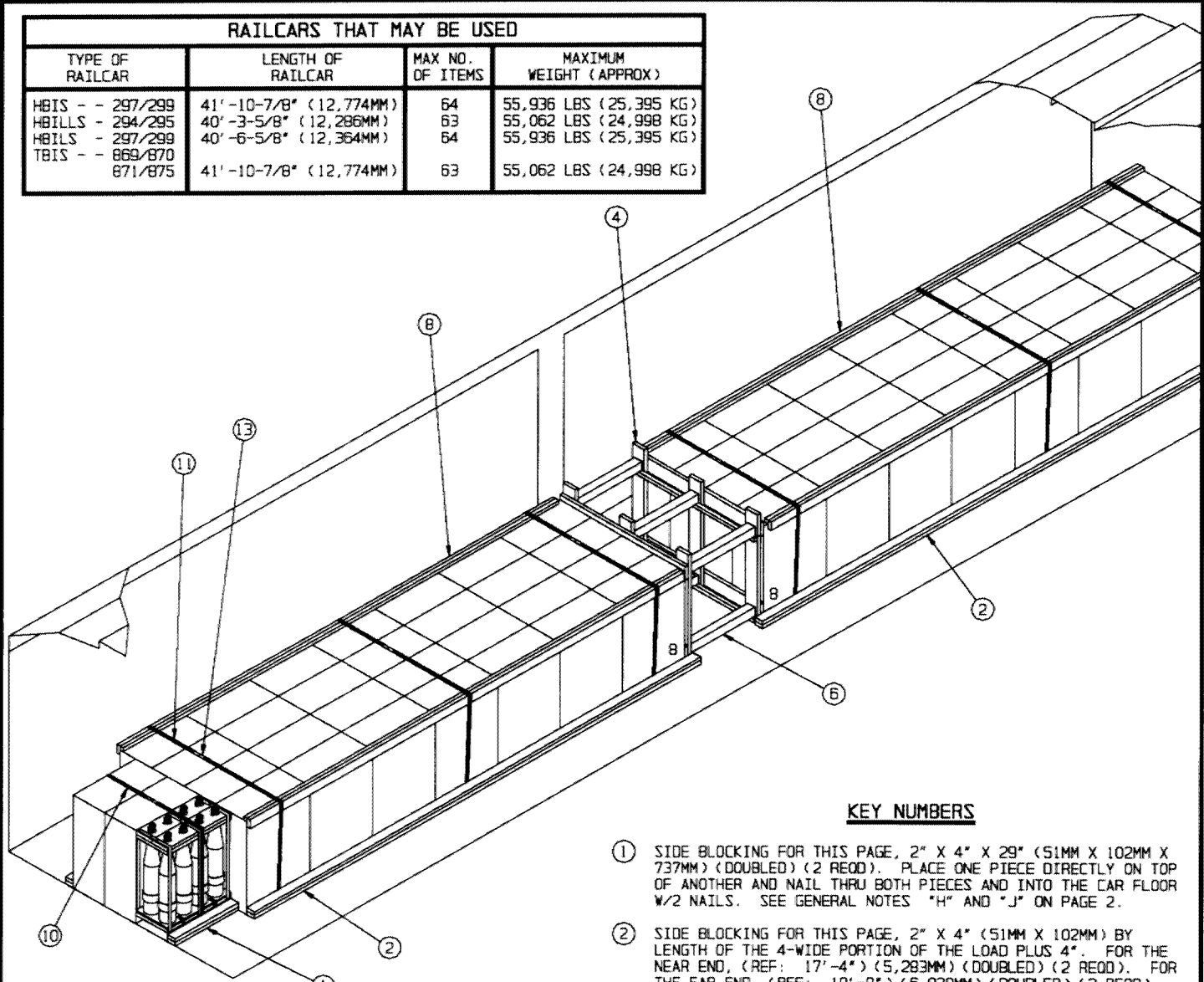
LOAD AS SHOWN (THIS PAGE) (TYPICAL)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT, WOODEN	54	43,200 LBS (19,613 KG)
PALLET UNIT, METAL	12	10,284 LBS (4,689 KG)
DUNNAGE		553 LBS (251 KG)
TOTAL WEIGHT		54,037 LBS (24,533 KG)

TYPICAL MIXED LOAD IN A TIMS 858 CAR
155MM PROJECTILES, 8 PER SMALL WOODEN PALLET AND 8 PER SHORT METAL PALLET

RAILCARS THAT MAY BE USED

TYPE OF RAILCAR	LENGTH OF RAILCAR	MAX NO. OF ITEMS	MAXIMUM WEIGHT (APPROX)
HBIS - - 297/299	41'-10-7/8" (12,774MM)	64	55,936 LBS (25,395 KG)
HBILLS - 294/295	40'-3-5/8" (12,286MM)	63	55,062 LBS (24,998 KG)
HBILS - 297/299	40'-6-5/8" (12,364MM)	64	55,936 LBS (25,395 KG)
TBIS - - 869/870 871/875	41'-10-7/8" (12,774MM)	63	55,062 LBS (24,998 KG)



ISOMETRIC VIEW

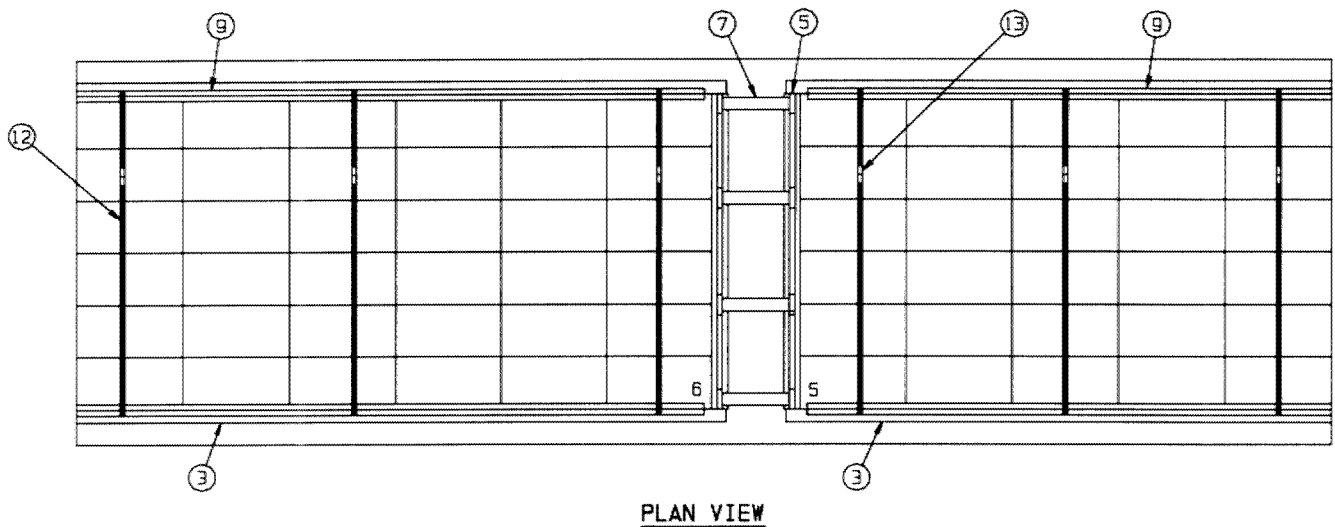
(KEY NUMBERS CONTINUED)

- ⑨ CAP PIECE FOR PAGE 9, LENGTH OF LOAD MINUS 2". FOR THE LEFT END, (REF: 14'-5") (4,394MM) (2 REQD). FOR THE RIGHT END, (REF: 12'-0") (3,658MM) (2 REQD). SEE THE DETAIL ON PAGE 44. POSITION AGAINST CAR ENDWALL.
- ⑩ BUNDLING STRAP FOR THIS PAGE, 1-1/4" X .035" OR .031" X 15'-0" (32MM X .889MM OR .787MM X 4,572MM) LONG STEEL STRAPPING (1 REQD). INSTALL TO ENCIRCLE THE PALLET UNITS, EXTENDING UNDER THE PALLET BASES AND OVER THE PALLET COVERS.
- ⑪ BUNDLING STRAP FOR THIS PAGE, 1-1/4" X .035" OR .031" X 17'-0" (32MM X .889MM OR .787MM X 5,182MM) LONG STEEL STRAPPING (6 REQD). INSTALL TO ENCIRCLE THE PALLET UNITS, EXTENDING UNDER THE PALLET BASES AND OVER THE CAP PIECES, PIECES MARKED ⑩.
- ⑫ BUNDLING STRAP FOR PAGE 9, 1-1/4" X .035" OR .031" X 22'-0" (32MM X .889MM OR .787MM X 6,706MM) LONG STEEL STRAPPING (6 REQD). INSTALL TO ENCIRCLE THE PALLET UNITS, EXTENDING UNDER THE PALLET BASES AND OVER THE CAP PIECES, PIECES MARKED ⑩.
- ⑬ SEAL FOR 1-1/4" STRAPPING (14 REQD, 2 PER STRAP FOR THIS PAGE, 12 REQD, 2 PER STRAP FOR PAGE 9). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "N" ON PAGE 2.

KEY NUMBERS

- ① SIDE BLOCKING FOR THIS PAGE, 2" X 4" X 29" (51MM X 102MM X 737MM) (DOUBLED) (2 REQD). PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/2 NAILS. SEE GENERAL NOTES "H" AND "J" ON PAGE 2.
- ② SIDE BLOCKING FOR THIS PAGE, 2" X 4" (51MM X 102MM) BY LENGTH OF THE 4-WIDE PORTION OF THE LOAD PLUS 4". FOR THE NEAR END, (REF: 17'-4") (5,283MM) (DOUBLED) (2 REQD). FOR THE FAR END, (REF: 19'-9") (6,020MM) (DOUBLED) (2 REQD). PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM). RANDOM LENGTHS MAY BE USED.
- ③ SIDE BLOCKING FOR PAGE 9, 2" X 4" (51MM X 102MM) BY LENGTH OF THE LOAD PLUS 4". FOR THE LEFT END, (REF: 14'-11") (4,547MM) (DOUBLED) (2 REQD). FOR THE RIGHT END, (REF: 12'-5-1/2") (3,797MM) (DOUBLED) (2 REQD). PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM). RANDOM LENGTHS MAY BE USED.
- ④ CENTER GATE C, FOR THIS PAGE (2 REQD). SEE THE DETAIL ON PAGE 38. SEE GENERAL NOTE "K" ON PAGE 2.
- ⑤ CENTER GATE D, FOR PAGE 9 (2 REQD). SEE THE DETAIL ON PAGE 39.
- ⑥ STRUT FOR THIS PAGE, 4" X 4" (102MM X 102MM) BY CUT TO FIT (REF: 31") (787MM) (6 REQD). TOENAIL TO THE CENTER GATES, PIECES MARKED ④, W/2 NAILS AT EACH END.
- ⑦ STRUT FOR PAGE 9, 4" X 4" (102MM X 102MM) BY CUT TO FIT (REF: 17'-1/2") (445MM) (8 REQD). TOENAIL TO THE CENTER GATES, PIECES MARKED ⑤, W/2 NAILS AT EACH END.
- ⑧ CAP PIECE FOR THIS PAGE, LENGTH OF 4-WIDE PORTION OF LOAD MINUS 2". FOR THE NEAR END, (REF: 16'-10") (5,131MM) (2 REQD). FOR THE FAR END, (REF: 19'-3") (5,867MM) (2 REQD). SEE THE DETAIL ON PAGE 44. POSITION AT START OF 4-WIDE LOAD, AS SHOWN, AND/OR AGAINST THE CAR ENDWALL.

(CONTINUED AT LEFT)



RAILCARS THAT MAY BE USED			
TYPE OF RAILCAR	LENGTH OF RAILCAR	MAX NO. OF ITEMS	MAXIMUM WEIGHT (APPROX)
TIMS -- 858	28'-8-7/8" (8,760MM)	66	57,684 LBS (26,188 KG)
GIS -- 205	30'-5-5/8" (9,290MM)	68	59,432 LBS (26,982 KG)

SPECIAL NOTES FOR PAGE 8:

1. AN HBIS 297 CAR, 41'-10-7/8" (12,774MM) LONG BY 8'-9" (2,670MM) WIDE HAVING A MAXIMUM LOAD LIMIT OF 57,167 POUNDS (26,016 KG) IS SHOWN IN THE "ISOMETRIC VIEW" ON PAGE 8. CARS OF OTHER SIZES AND TYPES MAY BE USED. SEE THE CHART ON PAGE 8.
2. A 63-UNIT LOAD OF 155MM PROJECTILES, 8 PER LARGE PALLET, IS SHOWN ON PAGE 8. A MAXIMUM LOAD QUANTITY CAN BE ATTAINED BY CHANGING THE 3-WIDE LOAD UNIT IN THE NEAR END OF THE CAR TO A 4-WIDE LOAD UNIT. ADJUST THE LENGTH OF THE SIDE BLOCKING AND THE CAP PIECES, PIECES MARKED ② AND ⑧. OMIT PIECES MARKED ① AND ⑩ AND TWO PIECES MARKED ⑬.
3. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED BY FORMING ADDITIONAL 3-WIDE LOAD UNITS AT ONE OR BOTH ENDS OF THE CAR.

SPECIAL NOTES FOR THIS PAGE:

1. A TIMS 858 CAR, 28'-8-7/8" (8,752MM) LONG BY 8'-11" (2,720MM) WIDE HAVING A MAXIMUM LOAD LIMIT OF 58,406 POUNDS (26,516 KG) IS SHOWN IN THE "PLAN VIEW" ABOVE. CARS OF OTHER SIZES AND TYPES MAY BE USED. SEE THE CHART ABOVE.
2. A 66-UNIT LOAD OF 155MM PROJECTILES, 8 PER LARGE PALLET, IS SHOWN ABOVE. A MAXIMUM LOAD QUANTITY IS SHOWN.
3. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED BY FORMING ONE OR MORE 5-WIDE LOAD UNITS AT ONE OR BOTH ENDS OF THE CAR, SIMILAR TO THE LOAD ON PAGE 8.

BILL OF MATERIAL (PAGE 8)		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2" (51MM X 51MM)	92 (28,042MM)	31
2" X 4" (51MM X 102MM)	231 (70,409MM)	154
2" X 6" (51MM X 152MM)	42 (12,802MM)	42
4" X 4" (102MM X 102MM)	16 (4,877MM)	22
NAILS	NO. REQD	POUNDS
SIZE AS REQD	234	7
STEEL STRAPPING, 1-1/4" -- 117' REQD --- 17 LBS		
SEAL FOR 1-1/4" STRAPPING -- 14 REQD --- 1 LB		

BILL OF MATERIAL (THIS PAGE)		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2" (51MM X 51MM)	83 (25,299MM)	28
2" X 4" (51MM X 102MM)	163 (49,683MM)	109
2" X 6" (51MM X 152MM)	59 (17,984MM)	59
4" X 4" (102MM X 102MM)	12 (3,658MM)	16
NAILS	NO. REQD	POUNDS
SIZE AS REQD	221	6
STEEL STRAPPING, 1-1/4" -- 132' REQD --- 19 LBS		
SEAL FOR 1-1/4" STRAPPING -- 12 REQD --- 1 LB		

LOAD AS SHOWN (PAGE 8)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	63	55,062 LBS (24,998 KG)
DUNNAGE		523 LBS (238 KG)
TOTAL WEIGHT		55,585 LBS (25,236 KG)

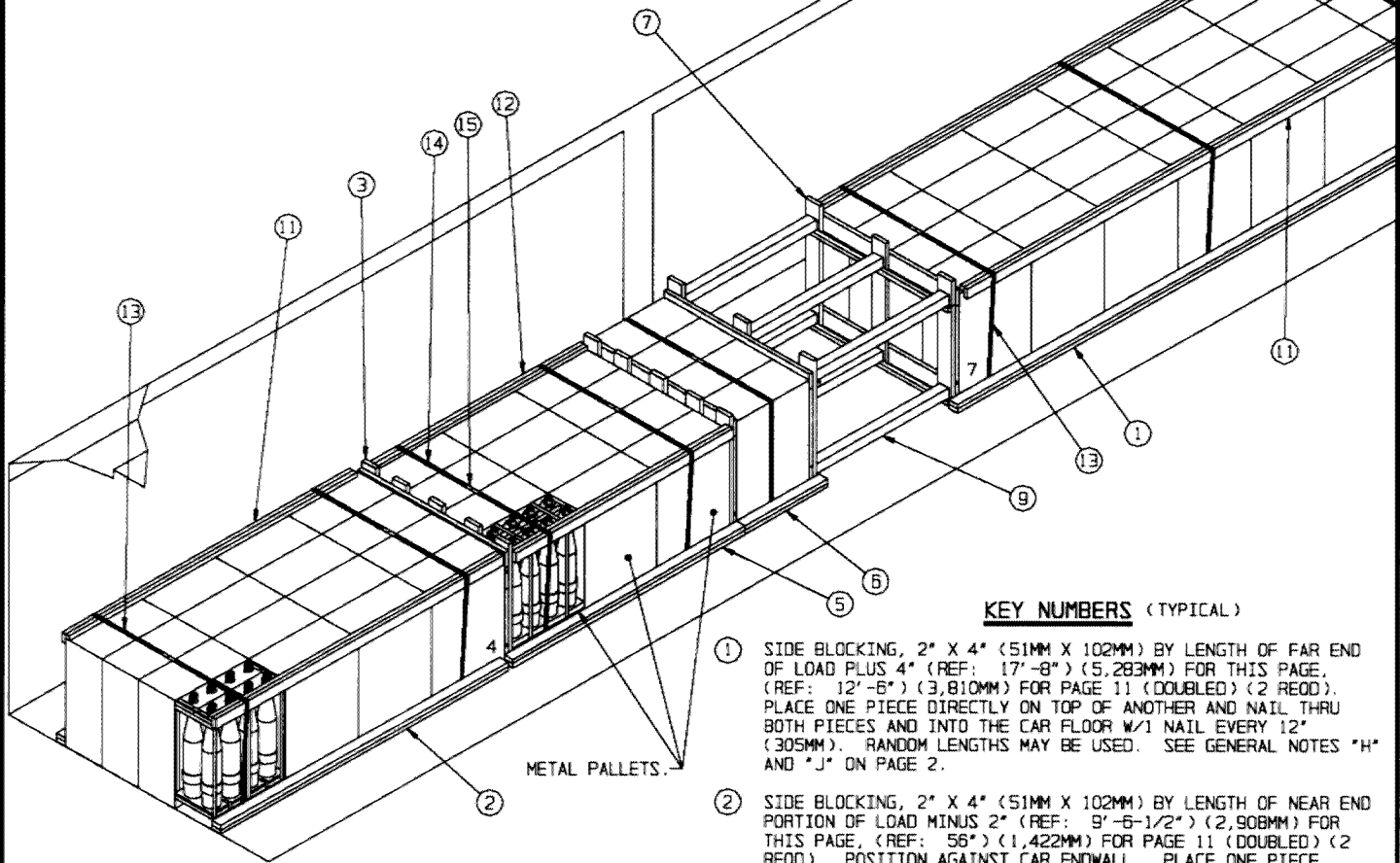
LOAD AS SHOWN (THIS PAGE)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	66	57,684 LBS (26,188 KG)
DUNNAGE		450 LBS (204 KG)
TOTAL WEIGHT		58,134 LBS (26,393 KG)

**66-UNIT LOAD IN A TIMS 858 CAR
155MM PROJECTILES, 8 PER LARGE WOODEN PALLET**

RAILCARS THAT MAY BE USED

TYPE OF RAILCAR	LENGTH OF RAILCAR	MAX NO. OF ITEMS	MAXIMUM WEIGHT (APPROX)
HBIS - - 297/299	41'-10-7/8" (12,774MM)	64 (52 WOODEN, 12 METAL)	56,212 LBS (25,520 KG)
HBILLS - 294/295	40'-3-5/8" (12,286MM)	61 (49 WOODEN, 12 METAL)	53,590 LBS (24,330 KG)
HBILS - 297/299	40'-6-5/8" (12,364MM)	64 (52 WOODEN, 12 METAL)	56,212 LBS (25,520 KG)
TBIS - - 869/870 871/875	41'-10-7/8" (12,774MM)	63 (51 WOODEN, 12 METAL)	55,338 LBS (25,123 KG)



ISOMETRIC VIEW

(KEY NUMBERS CONTINUED)

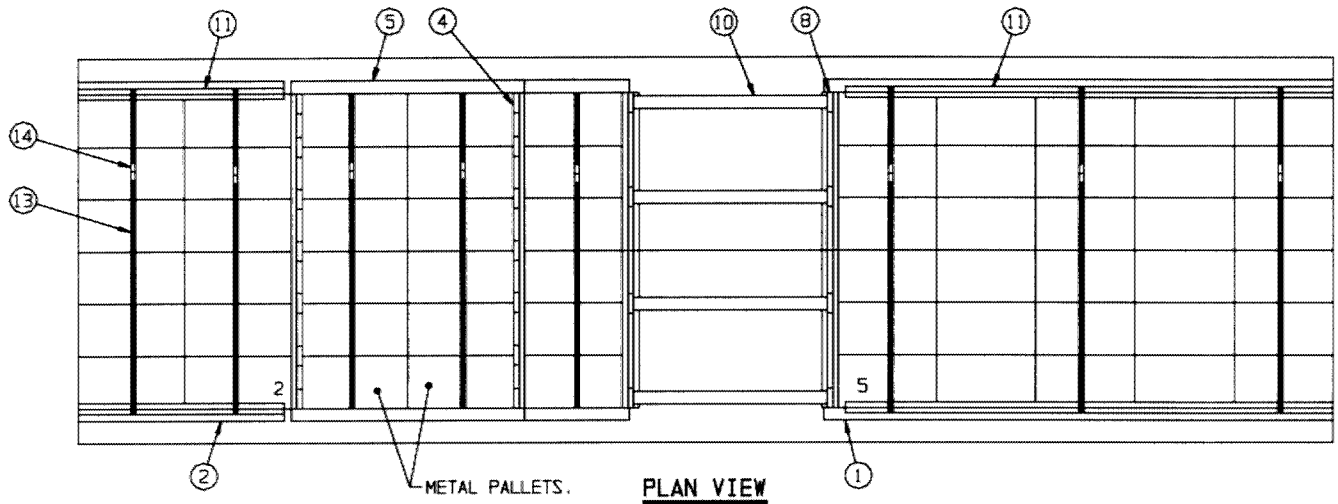
KEY NUMBERS (TYPICAL)

- ① SIDE BLOCKING, 2" X 4" (51MM X 102MM) BY LENGTH OF FAR END OF LOAD PLUS 4" (REF: 17'-8") (5,283MM) FOR THIS PAGE, (REF: 12'-6") (3,810MM) FOR PAGE 11 (DOUBLED) (2 REOD). PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM). RANDOM LENGTHS MAY BE USED. SEE GENERAL NOTES "H" AND "J" ON PAGE 2.
- ② SIDE BLOCKING, 2" X 4" (51MM X 102MM) BY LENGTH OF NEAR END PORTION OF LOAD MINUS 2" (REF: 9'-6-1/2") (2,908MM) FOR THIS PAGE, (REF: 56") (1,422MM) FOR PAGE 11 (DOUBLED) (2 REOD). POSITION AGAINST CAR ENDWALL. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM). RANDOM LENGTHS MAY BE USED.
- ③ SEPARATOR GATE C, FOR THIS PAGE (2 REOD). SEE THE DETAIL ON PAGE 41. POSITION WITH THE VERTICAL PIECES AGAINST THE METAL PALLETS. SEE GENERAL NOTE "K" ON PAGE 2.
- ④ SEPARATOR GATE D, FOR PAGE 11 (2 REOD). SEE THE DETAIL ON PAGE 41. POSITION WITH THE VERTICAL PIECES AGAINST THE METAL PALLETS.
- ⑤ SIDE BLOCKING, 2" X 4" (51MM X 102MM) BY LENGTH OF METAL PALLET PORTION OF LOAD PLUS 6" (REF: 7'-9") (2,362MM) FOR THIS PAGE, (REF: 58") (1,473MM) FOR PAGE 11 (2 REOD). PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM).
- ⑥ SIDE BLOCKING, 2" X 4" X (51MM X 102MM) BY LENGTH OF LOAD PLUS 4" (REF: 33") (838MM) (2 REOD). POSITION 2" FROM A SEPARATOR GATE, PIECE MARKED ③, AND NAIL TO THE CAR FLOOR W/3 NAILS.
- ⑦ CENTER GATE C, FOR THIS PAGE (2 REOD). SEE THE DETAIL ON PAGE 38.
- ⑧ CENTER GATE D, FOR PAGE 11 (2 REOD). SEE THE DETAIL ON PAGE 39.
- ⑨ STRUT FOR THIS PAGE, 4" X 4" (102MM X 102MM) BY CUT TO FIT (REF: 51") (1,295MM) (6 REOD). TOENAIL TO THE CENTER GATES, PIECES MARKED ⑦, W/2 NAILS AT EACH END.
- ⑩ STRUT FOR PAGE 11, 4" X 4" (102MM X 102MM) BY CUT TO FIT (REF: 41") (1,041MM) (8 REOD). TOENAIL TO THE CENTER GATES, PIECES MARKED ⑦ W/2 NAILS AT EACH END.
- ⑪ CAP PIECE FOR WOOD PALLETS, LENGTH OF END PORTION OF LOAD MINUS 2". FOR THE NEAR END, (REF: 9'-6-1/2") (2,908MM) FOR THIS PAGE, (REF: 56") (1,422MM) FOR PAGE 11 (2 REOD). FOR THE FAR END, (REF: 16'-10") (5,131MM) FOR THIS PAGE, (REF: 12'-0") (3,658MM) FOR PAGE 11 (3 REOD). SEE THE DETAIL ON PAGE 44. POSITION AGAINST CAR ENDWALL.
- ⑫ CAP PIECE FOR METAL PALLETS, (REF: 7'-3") (2,210MM) LONG (2 REOD). SEE THE DETAIL ON PAGE 44.
- ⑬ BUNDLING STRAP FOR WOODEN PALLETS, 1-1/4" X .035" OR .031" X 17'-0" (32MM X .889MM OR .787MM X 5,182MM) LONG STEEL STRAPPING FOR THIS PAGE, 22'-0" (6,706MM) LONG FOR PAGE 11 (5 REOD). INSTALL TO ENCIRCLE THE PALLET UNITS, EXTENDING UNDER THE PALLET BASES AND OVER THE CAP PIECES, PIECES MARKED ⑪, OR OVER THE PALLET COVERS, AS APPLICABLE.
- ⑭ BUNDLING STRAP FOR METAL PALLETS, 1-1/4" X .035" OR .031" X 17'-0" (32MM X .889MM OR .787MM X 5,182MM) LONG STEEL STRAPPING FOR THIS PAGE, 22'-0" (6,706MM) LONG FOR PAGE 11 (2 REOD). INSTALL TO ENCIRCLE THE PALLET UNITS, EXTENDING UNDER THE PALLET BASES AND OVER THE CAP PIECES, PIECES MARKED ⑫.
- ⑮ SEAL FOR 1-1/4" STRAPPING (16 REOD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "N" ON PAGE 2.

(KEY NUMBERS CONTINUED AT LEFT)

TYPICAL MIXED LOAD IN AN HBIS 297 CAR

155MM PROJECTILES, 8 PER LARGE WOODEN PALLET AND 8 PER TALL METAL PALLET



RAILCARS THAT MAY BE USED			
TYPE OF RAILCAR	LENGTH OF RAILCAR	MAX NO. OF ITEMS	MAXIMUM WEIGHT (APPROX)
TIMS -- 858	28'-8-7/8" (8,760MM)	65 (53 WOODEN, 12 METAL)	57,086 LBS (25,917 KG)
GIS -- 205	30'-5-5/8" (9,290MM)	68 (56 WOODEN, 12 METAL)	59,708 LBS (27,107 KG)

SPECIAL NOTES FOR PAGE 10:

1. AN HBIS 297 CAR, 41'-10-7/8" (12,774MM) LONG BY 8'-9" (2,670MM) WIDE HAVING A MAXIMUM LOAD LIMIT OF 57,167 POUNDS (26,016 KG) IS SHOWN IN THE "ISOMETRIC VIEW" ON PAGE 10. CARS OF OTHER SIZES AND TYPES MAY BE USED. SEE THE CHART ON PAGE 10.
2. A MIXED LOAD OF 155MM PROJECTILES, 8 PER LARGE WOODEN PALLET AND 8 PER TALL METAL PALLET, IS SHOWN ON PAGE 10. A QUANTITY OF 48 WOODEN AND 12 METAL PALLETS IS SHOWN AS A TYPICAL MIX. THE RATIO OF WOODEN AND METAL PALLETS MAY BE ADJUSTED TO SUIT. THE LOAD MAY BE INCREASED BY UP TO FOUR WOODEN PALLETS BY FORMING 5-WIDE LOAD UNITS AT THE END OF THE CAR, SIMILAR TO THE METHOD SHOWN ON PAGE 8. DO NOT LOAD 5-WIDE ADJACENT TO A SEPARATOR GATE. A LOAD MAY BE INCREASED BY FOUR METAL PALLETS BY FORMING ONE MORE LOAD UNIT OR BY A LESSER QUANTITY BY INCLUDING A FILLER ASSEMBLY. SEE THE "FILLER ASSEMBLY A" DETAIL ON PAGE 45.
3. THE QUANTITY OF WOODEN PALLETS IN THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED BY FORMING ONE OR MORE 3-WIDE LOAD UNITS AT ONE OR BOTH ENDS OF THE CAR, SIMILAR TO THE LOAD ON PAGE 8. THE QUANTITY OF METAL PALLETS CAN BE REDUCED BY OMITTING AN ENTIRE LOAD UNIT, OR BY INSTALLING A FILLER ASSEMBLY IN THE PLACE OF AN OMITTED PALLET UNIT. SEE THE "FILLER ASSEMBLY A" DETAIL ON PAGE 45.

SPECIAL NOTES FOR THIS PAGE:

1. A TIMS 858 CAR, 28'-8-7/8" (8,752MM) LONG BY 8'-11" (2,720MM) WIDE HAVING A MAXIMUM LOAD LIMIT OF 58,406 POUNDS (26,516 KG) IS SHOWN IN THE "PLAN VIEW" ABOVE. CARS OF OTHER SIZES AND TYPES MAY BE USED. SEE THE CHART ABOVE.
2. A MIXED LOAD OF 155MM PROJECTILES, 8 PER LARGE WOODEN PALLET AND 8 PER TALL METAL PALLET IS SHOWN IN THE "PLAN VIEW" ABOVE. A QUANTITY OF 48 WOODEN AND 12 METAL PALLETS IS SHOWN AS A TYPICAL MIX. THE RATIO OF WOODEN AND METAL PALLETS MAY BE ADJUSTED TO SUIT. THE LOAD MAY BE INCREASED BY UP TO FIVE WOODEN PALLET UNITS BY FORMING 7-WIDE LOAD UNITS AT EACH END OF THE CAR, SIMILAR TO THE METHOD SHOWN AT THE END OF THE LOAD ON PAGE 8. THE QUANTITY OF METAL PALLETS MAY ONLY BE INCREASED BY MULTIPLES OF SIX UNITS UNLESS A FILLER ASSEMBLY IS USED. SEE THE "FILLER ASSEMBLY A" DETAIL ON PAGE 45.
3. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED BY FORMING ONE OR MORE 5-WIDE LOAD UNITS OF WOODEN PALLETS AT ONE OR BOTH ENDS OF THE CAR, SIMILAR TO THE LOAD ON PAGE 8. THE QUANTITY OF METAL PALLETS CAN BE REDUCED BY OMITTING AN ENTIRE LOAD UNIT, OR BY INSTALLING A FILLER ASSEMBLY IN THE PLACE OF AN OMITTED PALLET. SEE THE "FILLER ASSEMBLY A" DETAIL ON PAGE 45.

BILL OF MATERIAL (PAGE 10) (TYPICAL)		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2" (51MM X 51MM)	87 (26,518MM)	29
2" X 4" (51MM X 102MM)	215 (65,532MM)	144
2" X 6" (51MM X 152MM)	97 (29,566MM)	97
4" X 4" (102MM X 102MM)	26 (7,925MM)	35
NAILS	NO. REQD	POUNDS
SIZE AS REQD	348	9
STEEL STRAPPING, 1-1/4" -- 146' REQD --- 21 LBS		
SEAL FOR 1-1/4" STRAPPING -- 16 REQD --- 1 LB		

BILL OF MATERIAL (THIS PAGE) (TYPICAL)		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2" (51MM X 51MM)	63 (19,202MM)	21
2" X 4" (51MM X 102MM)	132 (40,234MM)	88
2" X 6" (51MM X 152MM)	137 (41,758MM)	137
4" X 4" (102MM X 102MM)	28 (8,534MM)	38
NAILS	NO. REQD	POUNDS
SIZE AS REQD	282	7
STEEL STRAPPING, 1-1/4" -- 176' REQD --- 26 LBS		
SEAL FOR 1-1/4" STRAPPING -- 16 REQD --- 1 LB		

LOAD AS SHOWN (PAGE 10) (TYPICAL)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT, WOODEN	48	41,952 LBS (19,046 KG)
PALLET UNIT, METAL	12	10,764 LBS (4,887 KG)
DUNNAGE		641 LBS (291 KG)
TOTAL WEIGHT		53,357 LBS (24,224 KG)

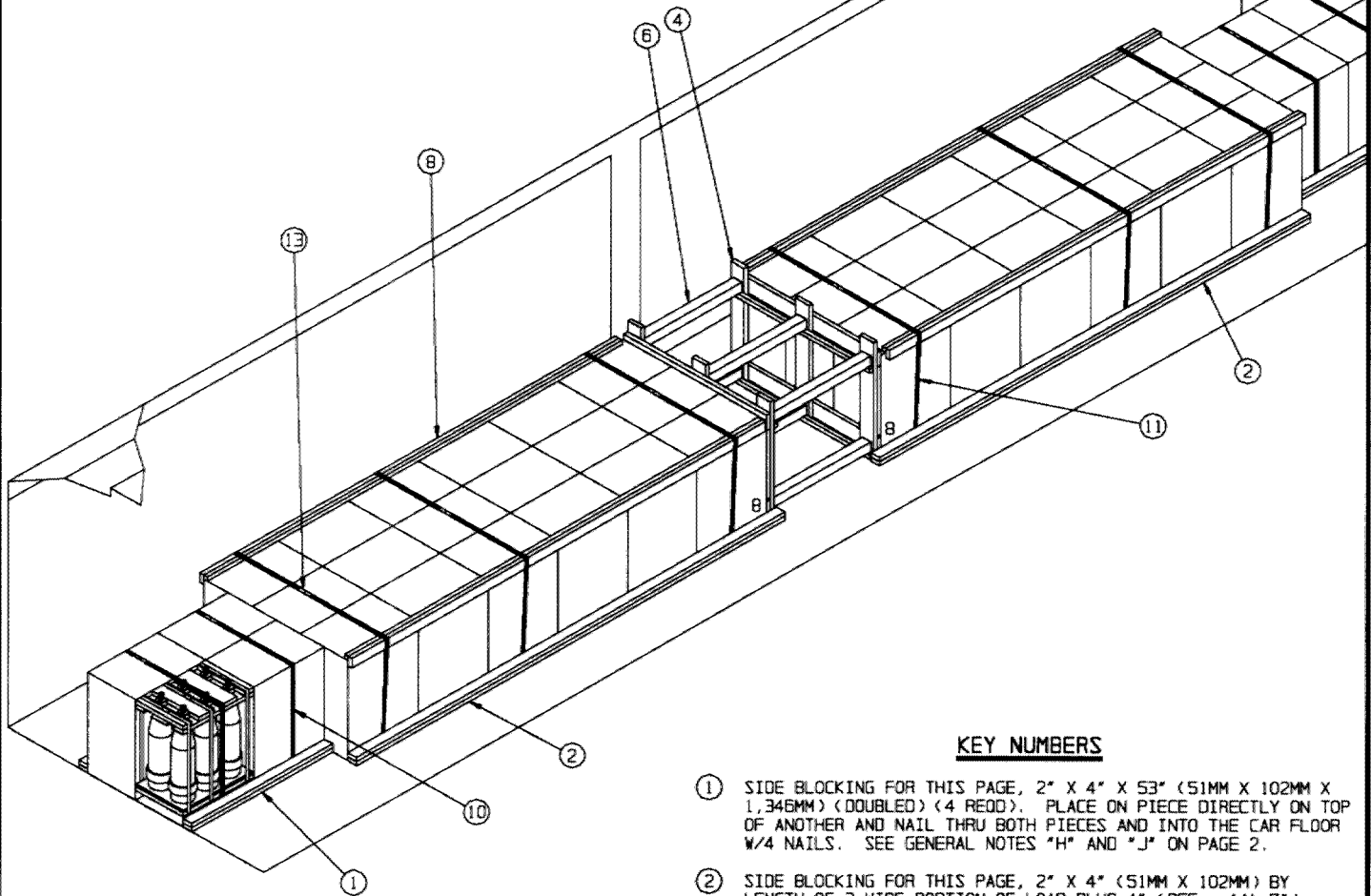
LOAD AS SHOWN (THIS PAGE) (TYPICAL)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT, WOODEN	48	41,952 LBS (19,046 KG)
PALLET UNIT, METAL	12	10,764 LBS (4,887 KG)
DUNNAGE		602 LBS (273 KG)
TOTAL WEIGHT		53,318 LBS (24,206 KG)

TYPICAL MIXED LOAD IN A TIMS 858 CAR
155MM PROJECTILES, 8 PER LARGE WOODEN PALLET AND 8 PER TALL METAL PALLET

RAILCARS THAT MAY BE USED

TYPE OF RAILCAR	LENGTH OF RAILCAR	MAX NO. OF ITEMS	MAXIMUM WEIGHT (APPROX)
HBIS - - 297/299	41'-10-7/8" (12,774MM)	45	56,520 LBS (25,660 KG)
HBILLS - 294/295	40'-3-5/8" (12,286MM)	43	54,008 LBS (24,520 KG)
HBILS - 297/299	40'-6-5/8" (12,364MM)	45	56,520 LBS (25,660 KG)
TBIS - - 869/870 871/875	41'-10-7/8" (12,774MM)	44	55,264 LBS (25,090 KG)



ISOMETRIC VIEW

(KEY NUMBERS CONTINUED)

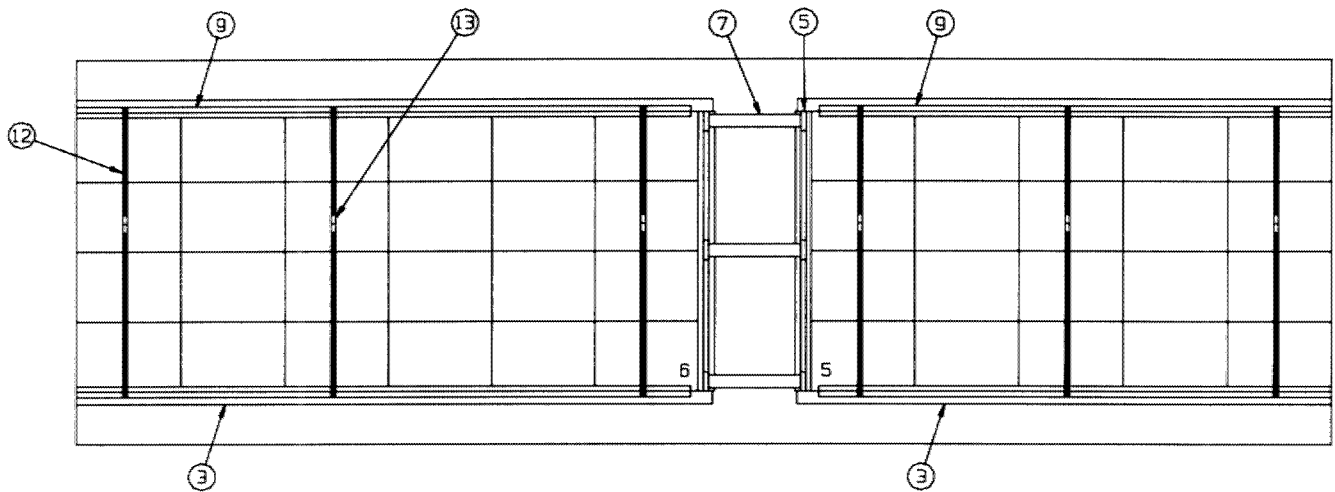
- ⑨ CAP PIECE FOR PAGE 13, LENGTH OF LOAD MINUS 2". FOR THE LEFT END, (REF: 14'-1") (4,293MM) (2 REOD). FOR THE RIGHT END, (REF: 11'-8-1/2") (3,569MM) (2 REOD). SEE THE DETAIL ON PAGE 44. POSITION AGAINST THE CAR ENDWALL.
- ⑩ BUNDLING STRAP FOR THIS PAGE, 1-1/4" X .035" OR .031" X 14'-0" (32MM X .889MM OR .787MM X 4,267MM) LONG STEEL STRAPPING (4 REOD). INSTALL TO ENCIRCLE THE PALLET UNITS, EXTENDING UNDER THE PALLET BASES AND OVER THE PALLET COVERS.
- ⑪ BUNDLING STRAP FOR THIS PAGE, 1-1/4" X .035" OR .031" X 17'-0" (32MM X .889MM OR .787MM X 5,182MM) LONG STEEL STRAPPING (6 REOD). INSTALL TO ENCIRCLE THE PALLET UNITS, EXTENDING UNDER THE PALLET BASES AND OVER THE CAP PIECES, PIECES MARKED ⑧.
- ⑫ BUNDLING STRAP FOR PAGE 13, 1-1/4" X .035" OR .031" X 20'-0" (32MM X .889MM OR .787MM X 6,096MM) LONG STEEL STRAPPING (6 REOD). INSTALL TO ENCIRCLE THE PALLET UNITS, EXTENDING UNDER THE PALLET BASES AND OVER THE CAP PIECES, PIECES MARKED ⑨.
- ⑬ SEAL FOR 1-1/4" STRAPPING (20 REOD, 2 PER STRAP FOR THIS PAGE, 12 REOD, 2 PER STRAP FOR PAGE 13). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "N" ON PAGE 2.

KEY NUMBERS

- ① SIDE BLOCKING FOR THIS PAGE, 2" X 4" X 53" (51MM X 102MM X 1,346MM) (DOUBLED) (4 REOD). PLACE ON PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/4 NAILS. SEE GENERAL NOTES "H" AND "J" ON PAGE 2.
- ② SIDE BLOCKING FOR THIS PAGE, 2" X 4" (51MM X 102MM) BY LENGTH OF 3-WIDE PORTION OF LOAD PLUS 4" (REF: 14'-7") (4,445MM) (DOUBLED) (2 REOD). PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM). RANDOM LENGTHS MAY BE USED.
- ③ SIDE BLOCKING FOR PAGE 13, 2" X 4" (51MM X 102MM) BY LENGTH OF LOAD PLUS 4". FOR THE LEFT END, (REF: 14'-7") (4,445MM) (DOUBLED) (2 REOD). FOR THE RIGHT END, (REF: 12'-2-1/2") (3,721MM) (DOUBLED) (2 REOD). PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM). RANDOM LENGTHS MAY BE USED.
- ④ CENTER GATE E, FOR THIS PAGE (2 REOD). SEE THE DETAIL ON PAGE 39. SEE GENERAL NOTE "K" ON PAGE 2.
- ⑤ CENTER GATE F, FOR PAGE 13 (2 REOD). SEE THE DETAIL ON PAGE 39.
- ⑥ STRUT FOR THIS PAGE, 4" X 4" (102MM X 102MM) BY CUT TO FIT (REF: 41") (1,041MM) (6 REOD). TOENAIL TO THE CENTER GATES, PIECES MARKED ④, W/2 NAILS AT EACH END.
- ⑦ STRUT FOR PAGE 13, 4" X 4" (102MM X 102MM) BY CUT TO FIT (REF: 24-1/2") (622MM) (6 REOD). TOENAIL TO THE CENTER GATES, PIECES MARKED ⑤, W/2 NAILS AT EACH END.
- ⑧ CAP PIECE FOR THIS PAGE, LENGTH OF THE 3-WIDE PORTION OF THE LOAD MINUS 2" (REF: 14'-1") (4,293MM) (4 REOD). SEE THE DETAIL ON PAGE 44. POSITION AS SHOWN.

(CONTINUED AT LEFT)

**44-UNIT LOAD IN AN HBIS 297 CAR
8" PROJECTILES, 6 PER SMALL WOODEN PALLET**



PLAN VIEW

RAILCARS THAT MAY BE USED			
TYPE OF RAILCAR	LENGTH OF RAILCAR	MAX NO. OF ITEMS	MAXIMUM WEIGHT (APPROX)
TIMS -- 858	28'-8-7/8" (8,760MM)	46	57,776 LBS (26,230 KG)
GLS -- 205	30'-5-5/8" (9,290MM)	47	59,032 LBS (26,800 KG)

SPECIAL NOTES FOR PAGE 12:

1. AN HBIS 297 CAR, 41'-10-7/8" (12,774MM) LONG BY 8'-9" (2,670MM) WIDE HAVING A MAXIMUM LOAD LIMIT OF 57,167 POUNDS (26,016 KG) IS SHOWN IN THE "ISOMETRIC VIEW" ON PAGE 12. CARS OF OTHER SIZES AND TYPES MAY BE USED. SEE THE CHART ON PAGE 12.
2. A 44-UNIT LOAD OF 8" PROJECTILES, 6 PER SMALL PALLET, IS SHOWN ON PAGE 12. THE LOAD MAY BE INCREASED BY ONE PALLET UNIT BY CHANGING ONE 2-WIDE LOAD UNIT WHICH IS ADJACENT TO A 3-WIDE LOAD UNIT TO THREE PALLETS.
3. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED BY FORMING ADDITIONAL 2-WIDE LOAD UNITS AT ONE OR BOTH ENDS OF THE CAR.

SPECIAL NOTES FOR THIS PAGE:

1. A TIMS 858 CAR, 28'-8-7/8" (8,752MM) LONG BY 8'-11" (2,720MM) WIDE HAVING A MAXIMUM LOAD LIMIT OF 58,406 POUNDS (26,516 KG) IS SHOWN IN THE "PLAN VIEW" ABOVE. CARS OF OTHER SIZES AND TYPES MAY BE USED. SEE THE CHART ABOVE.
2. A 44-UNIT LOAD OF 8" PROJECTILES, 6 PER SMALL PALLET, IS SHOWN ABOVE. A LOAD MAY BE INCREASED BY ONE OR TWO PALLET UNITS BY FORMING A 5-WIDE LOAD UNIT AT EACH END OF THE CAR, SIMILAR TO THE LOAD ON PAGE 12, IN LIEU OF 4-WIDE LOAD UNITS.
3. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED BY FORMING 3-WIDE LOAD UNITS AT ONE OR BOTH ENDS OF THE CAR.

BILL OF MATERIAL (PAGE 12)		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2" (51MM X 51MM)	76 (23,165MM)	26
2" X 4" (51MM X 102MM)	209 (63,703MM)	140
2" X 6" (51MM X 152MM)	41 (12,497MM)	41
4" X 4" (102MM X 102MM)	21 (6,401MM)	28
NAILS	NO. REQD	POUNDS
SIZE AS REQD	212	8
STEEL STRAPPING, 1-1/4" -- 158' REQD --- 23 LBS		
SEAL FOR 1-1/4" STRAPPING -- 20 REQD --- 1 LB		

BILL OF MATERIAL (THIS PAGE)		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2" (51MM X 51MM)	78 (23,775MM)	26
2" X 4" (51MM X 102MM)	159 (48,464MM)	106
2" X 6" (51MM X 152MM)	47 (14,326MM)	47
4" X 4" (102MM X 102MM)	13 (3,963MM)	18
NAILS	NO. REQD	POUNDS
SIZE AS REQD	190	5
STEEL STRAPPING, 1-1/4" -- 120' REQD --- 18 LBS		
SEAL FOR 1-1/4" STRAPPING -- 12 REQD --- 1 LB		

LOAD AS SHOWN (PAGE 12)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	44	55,264 LBS (25,090 KG)
DUNNAGE		502 LBS (228 KG)
TOTAL WEIGHT		55,766 LBS (25,318 KG)

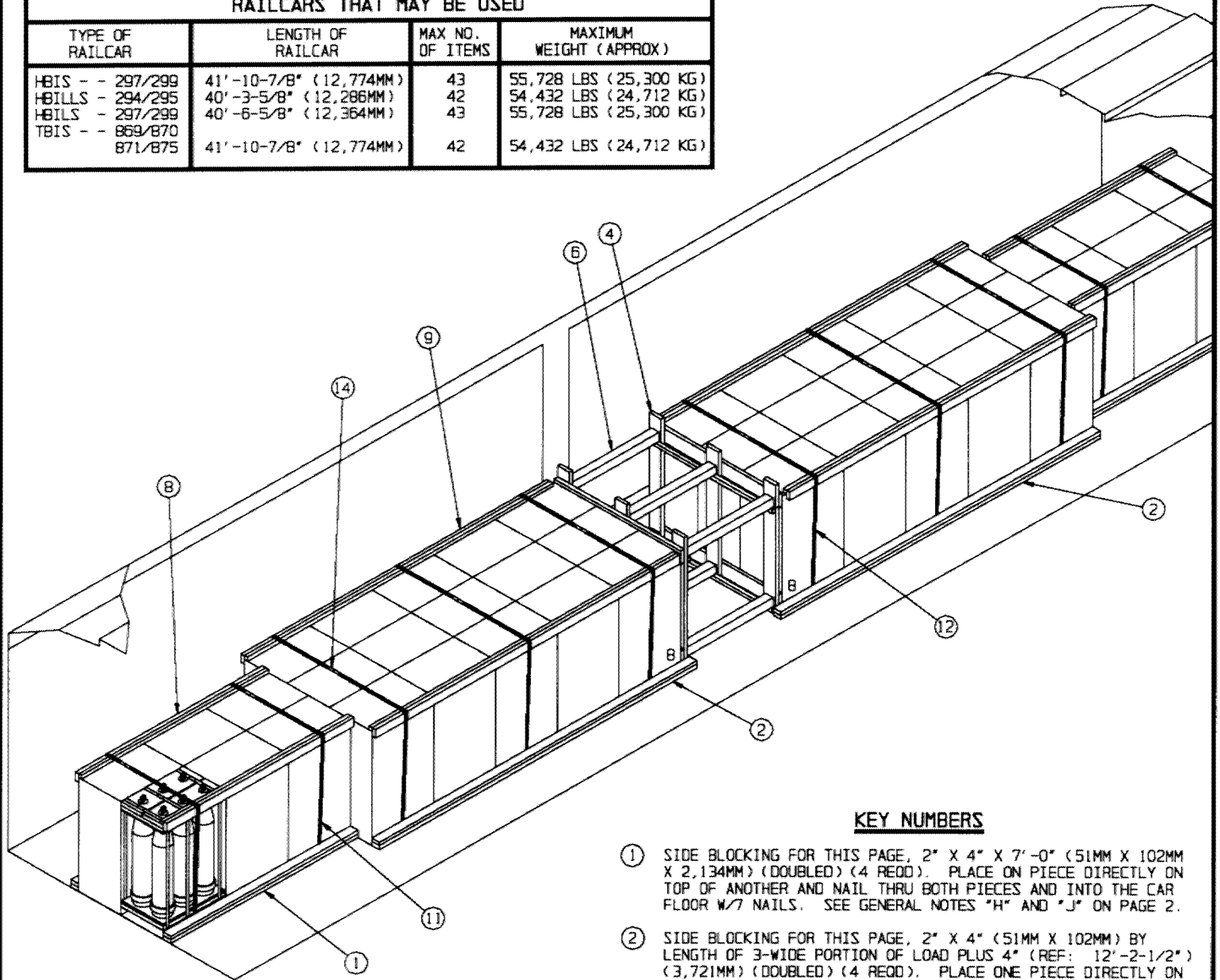
LOAD AS SHOWN (THIS PAGE)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	44	55,264 LBS (25,090 KG)
DUNNAGE		418 LBS (190 KG)
TOTAL WEIGHT		55,682 LBS (25,280 KG)

**44-UNIT LOAD IN A TIMS 858 CAR
8" PROJECTILES, 6 PER SMALL WOODEN PALLET**

RAILCARS THAT MAY BE USED

TYPE OF RAILCAR	LENGTH OF RAILCAR	MAX NO. OF ITEMS	MAXIMUM WEIGHT (APPROX)
HBIS - - 297/299	41'-10-7/8" (12,774MM)	43	55,728 LBS (25,300 KG)
HBILS - 294/295	40'-3-5/8" (12,286MM)	42	54,432 LBS (24,712 KG)
HBILS - 297/299	40'-6-5/8" (12,364MM)	43	55,728 LBS (25,300 KG)
TBIS - - 869/870	41'-10-7/8" (12,774MM)	42	54,432 LBS (24,712 KG)
871/875			



ISOMETRIC VIEW

(KEY NUMBERS CONTINUED)

- ⑩ CAP PIECE FOR PAGE 15, LENGTH OF LOAD MINUS 2" (REF: 11'-8-1/2") (3,569MM) (4 REOD). SEE THE DETAIL ON PAGE 44, POSITION AT END OF CAR.
- ⑪ BUNDLING STRAP FOR THIS PAGE, 1-1/4" X .035" OR .031" X 16'-0" (32MM X .889MM OR .787MM X 4,267MM) LONG STEEL STRAPPING (4 REOD). INSTALL TO ENCIRCLE THE PALLET UNITS, EXTENDING UNDER THE PALLET BASES AND OVER THE CAP PIECES, PIECES MARKED ⑧.
- ⑫ BUNDLING STRAP FOR THIS PAGE, 1-1/4" X .035" OR .031" X 18'-0" (32MM X .889MM OR .787MM X 5,486MM) LONG STEEL STRAPPING (6 REOD). INSTALL TO ENCIRCLE THE PALLET UNITS, EXTENDING UNDER THE PALLET BASES AND OVER THE CAP PIECES, PIECES MARKED ⑨.
- ⑬ BUNDLING STRAP FOR PAGE 15, 1-1/4" X .035" OR .031" X 22'-0" (32MM X .889MM OR .787MM X 6,706MM) LONG STEEL STRAPPING (6 REOD). INSTALL TO ENCIRCLE THE PALLET UNITS, EXTENDING UNDER THE PALLET BASES AND OVER THE CAP PIECES, PIECES MARKED ⑩.
- ⑭ SEAL FOR 1-1/4" STRAPPING (20 REOD, 2 PER STRAP FOR THIS PAGE, 12 REOD, 2 PER STRAP FOR PAGE 15). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "N" ON PAGE 2.

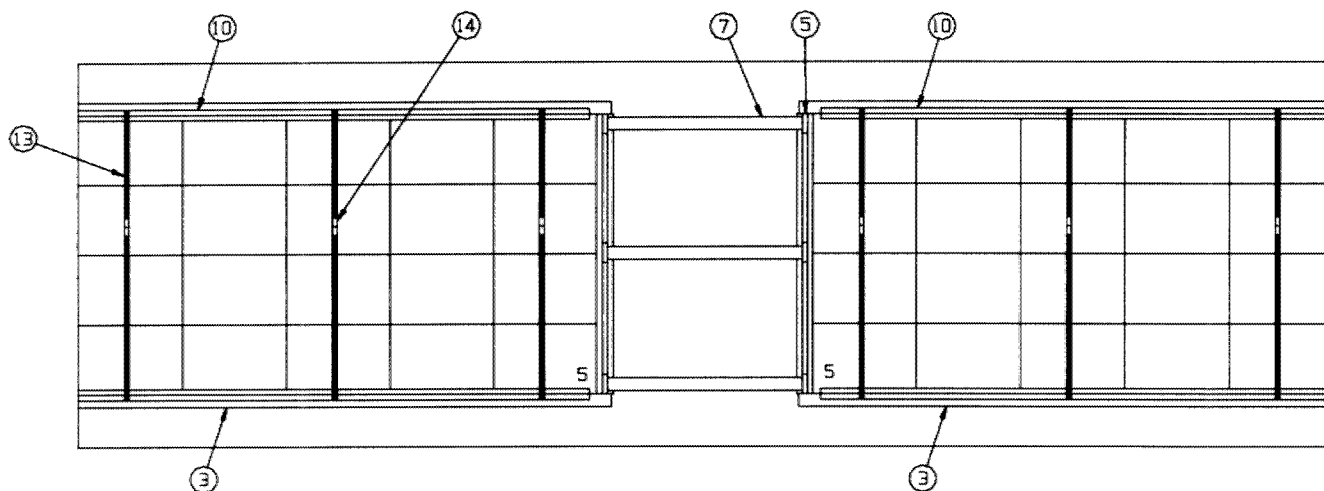
KEY NUMBERS

- ① SIDE BLOCKING FOR THIS PAGE, 2" X 4" X 7'-0" (51MM X 102MM X 2,134MM) (DOUBLED) (4 REOD). PLACE ON PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/7 NAILS. SEE GENERAL NOTES "H" AND "J" ON PAGE 2.
- ② SIDE BLOCKING FOR THIS PAGE, 2" X 4" (51MM X 102MM) BY LENGTH OF 3-WIDE PORTION OF LOAD PLUS 4" (REF: 12'-2-1/2") (3,721MM) (DOUBLED) (4 REOD). PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM). RANDOM LENGTHS MAY BE USED.
- ③ SIDE BLOCKING FOR PAGE 15, 2" X 4" (51MM X 102MM) BY LENGTH OF LOAD PLUS 4" (REF: 12'-2-1/2") (3,721MM) (DOUBLED) (4 REOD). PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM). RANDOM LENGTHS MAY BE USED.
- ④ CENTER GATE G, FOR THIS PAGE (2 REOD). SEE THE DETAIL ON PAGE 40. SEE GENERAL NOTE "K" ON PAGE 2.
- ⑤ CENTER GATE H, FOR PAGE 11 (2 REOD). SEE THE DETAIL ON PAGE 40.
- ⑥ STRUT FOR THIS PAGE, 4" X 4" (102MM X 102MM) BY CUT TO FIT (REF: 41") (1,041MM) (6 REOD). TOENAIL TO THE CENTER GATES, PIECES MARKED ④, W/2 NAILS AT EACH END.
- ⑦ STRUT FOR PAGE 15, 4" X 4" (102MM X 102MM) BY CUT TO FIT (REF: 53") (1,346MM) (6 REOD). TOENAIL TO THE CENTER GATES, PIECES MARKED ⑤, W/2 NAILS AT EACH END.
- ⑧ CAP PIECE FOR THIS PAGE, 7'-0" (2,134MM) LONG (4 REOD). SEE THE DETAIL ON PAGE 44.
- ⑨ CAP PIECE FOR THIS PAGE, LENGTH OF THE 3-WIDE PORTION OF THE LOAD MINUS 2" (REF: 11'-8-1/2") (4 REOD). SEE THE DETAIL ON PAGE 44. POSITION AT START OF 3-WIDE LOAD, AS SHOWN.

(CONTINUED AT LEFT)

42-UNIT LOAD IN AN HBIS 297 CAR

8" PROJECTILES, 6 TALL PROJECTILES PER SMALL WOODEN PALLET



PLAN VIEW

RAILCARS THAT MAY BE USED			
TYPE OF RAILCAR	LENGTH OF RAILCAR	MAX NO. OF ITEMS	MAXIMUM WEIGHT (APPROX)
TIMS -- 858	28'-8-7/8" (8,760MM)	44	57,024 LBS (25,889 KG)
GIS -- 205	30'-5-5/8" (9,290MM)	46	59,616 LBS (27,066 KG)

SPECIAL NOTES FOR PAGE 14:

1. AN HBIS 297 CAR, 41'-10-7/8" (12,776MM) LONG BY 8'-9" (2,670MM) WIDE HAVING A MAXIMUM LOAD LIMIT OF 57,167 POUNDS (26,016 KG) IS SHOWN IN THE "ISOMETRIC VIEW" ON PAGE 14. CARS OF OTHER SIZES AND TYPES MAY BE USED. SEE THE CHART ON PAGE 14.
2. A 42-UNIT LOAD OF 8" PROJECTILES, 6 TALL PER SMALL PALLET, IS SHOWN ON PAGE 14. THE LOAD MAY BE INCREASED BY ONE PALLET UNIT BY CHANGING ONE 2-WIDE UNIT WHICH IS ADJACENT TO A 3-WIDE LOAD UNIT TO THREE PALLETS. THE CAP PIECES, PIECES MARKED (13), ARE NOT REQUIRED FOR THE TWO LOAD UNIT LONG PORTION OF THE LOAD.
3. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED BY FORMING ADDITIONAL 2-WIDE LOAD UNITS AT ONE OR BOTH ENDS OF THE CAR, IN LIEU OF THE 3-WIDE LOAD UNITS.

SPECIAL NOTES FOR THIS PAGE:

1. A TIMS 858 CAR, 28'-8-7/8" (8,752MM) LONG BY 8'-11" (2,720MM) WIDE HAVING A MAXIMUM LOAD LIMIT OF 58,406 POUNDS (26,516 KG) IS SHOWN IN THE "PLAN VIEW" ABOVE. CARS OF OTHER SIZES AND TYPES MAY BE USED. SEE THE CHART ABOVE.
2. A 40-UNIT LOAD OF 8" PROJECTILES, 6 TALL PER SMALL PALLET, IS SHOWN ABOVE. A LOAD MAY BE INCREASED BY UP TO FOUR PALLET UNITS BY FORMING 5-WIDE LOAD UNITS AT EACH END OF THE CAR, SIMILAR TO THE LOAD ON PAGE 14, IN LIEU OF THE 4-WIDE LOAD UNITS.
3. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED BY FORMING 3-WIDE LOAD UNITS AT ONE OR BOTH ENDS OF THE CAR, IN LIEU OF THE 4-WIDE LOAD UNITS.

BILL OF MATERIAL (PAGE 14)		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2" (51MM X 51MM)	95 (28,956MM)	32
2" X 4" (51MM X 102MM)	229 (69,799MM)	153
2" X 6" (51MM X 152MM)	46 (14,021MM)	46
4" X 4" (102MM X 102MM)	21 (6,401MM)	28
NAILS	NO. REQD	POUNDS
SIZE AS REQD	198	5
STEEL STRAPPING, 1-1/4" -- 172' REQD --- 25 LBS		
SEAL FOR 1-1/4" STRAPPING -- 20 REQD --- 1 LB		

BILL OF MATERIAL (THIS PAGE)		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2" (51MM X 51MM)	73 (22,251MM)	25
2" X 4" (51MM X 102MM)	145 (44,196MM)	97
2" X 6" (51MM X 152MM)	52 (15,850MM)	52
4" X 4" (102MM X 102MM)	27 (8,230MM)	36
NAILS	NO. REQD	POUNDS
SIZE AS REQD	180	5
STEEL STRAPPING, 1-1/4" -- 132' REQD --- 19 LBS		
SEAL FOR 1-1/4" STRAPPING -- 12 REQD --- 1 LB		

LOAD AS SHOWN (PAGE 14)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	42	54,432 LBS (24,712 KG)
DUNNAGE		549 LBS (249 KG)
TOTAL WEIGHT		54,981 LBS (24,961 KG)

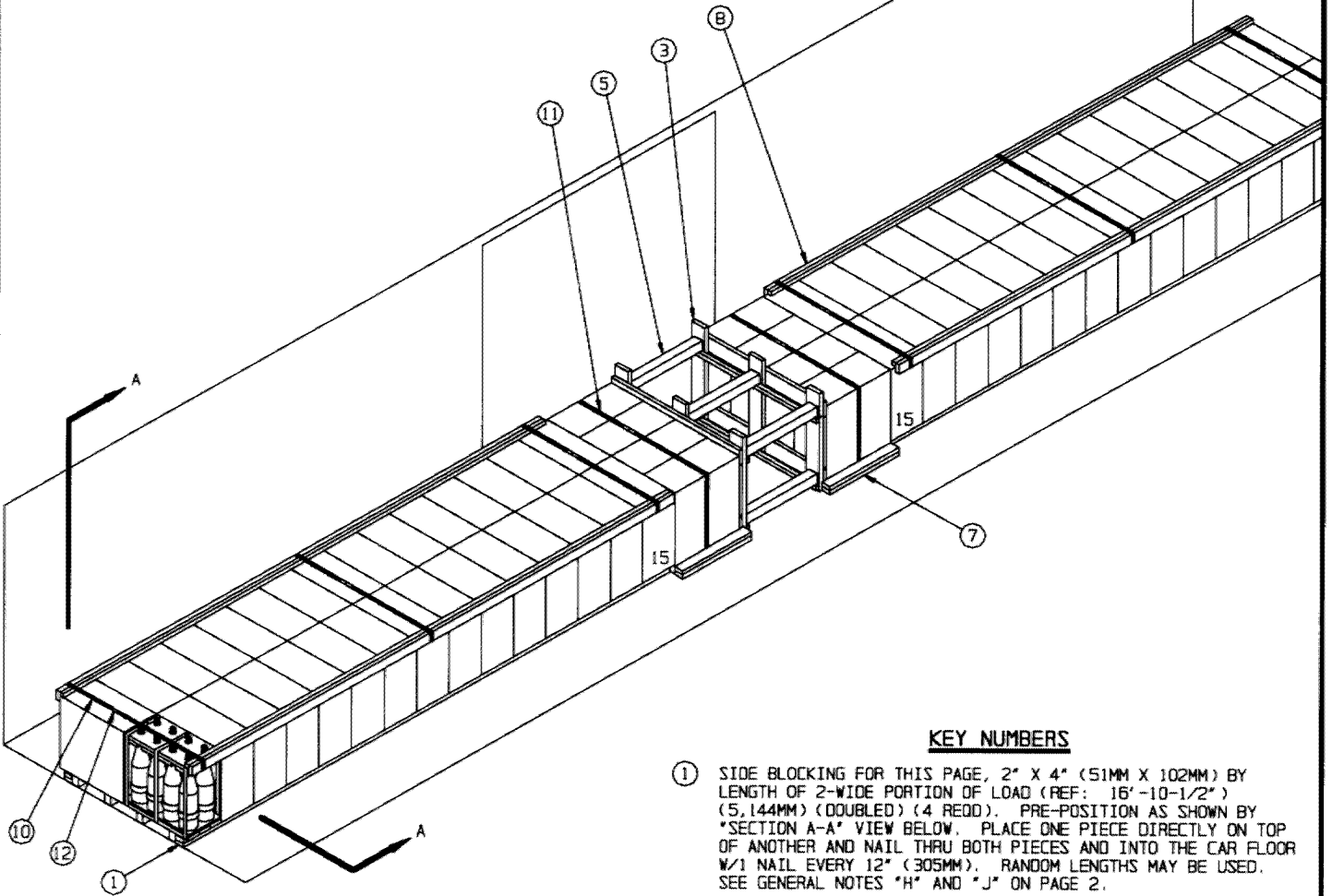
LOAD AS SHOWN (THIS PAGE)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	40	51,840 LBS (23,535 KG)
DUNNAGE		445 LBS (202 KG)
TOTAL WEIGHT		52,285 LBS (23,737 KG)

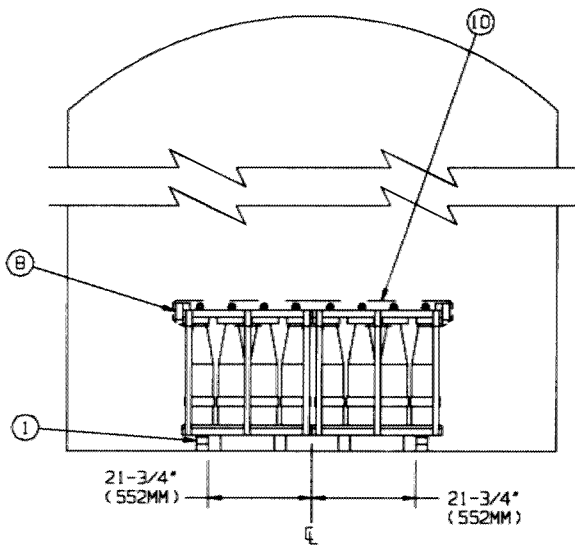
**40-UNIT LOAD IN A TIMS 858 CAR
8" PROJECTILES, 6 TALL PROJECTILES PER SMALL WOODEN PALLET**

RAILCARS THAT MAY BE USED

TYPE OF RAILCAR	LENGTH OF RAILCAR	MAX NO. OF ITEMS	MAXIMUM WEIGHT (APPROX)
GBS - - 252/254	41'-8" (12,700MM)	70	56,000 LBS (25,424 KG)
GOS - - 245/253	36'-9-1/4" (11,210MM)	72	57,600 LBS (26,150 KG)



ISOMETRIC VIEW



SECTION A-A

KEY NUMBERS

- ① SIDE BLOCKING FOR THIS PAGE, 2" X 4" (51MM X 102MM) BY LENGTH OF 2-WIDE PORTION OF LOAD (REF: 16'-10-1/2") (5,144MM) (DOUBLED) (4 REOD). PRE-POSITION AS SHOWN BY *SECTION A-A* VIEW BELOW. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM). RANDOM LENGTHS MAY BE USED. SEE GENERAL NOTES *H* AND *J* ON PAGE 2.
- ② SIDE BLOCKING FOR PAGE 18, 2" X 4" (51MM X 102MM) BY LENGTH OF 3-WIDE PORTION OF LOAD (REF: 11'-3") (3,429MM) FOR THE LEFT END OF THE LOAD, (REF: 10'-1-1/2") (3,086MM) FOR THE RIGHT END) (DOUBLED) (2 EACH REOD). PRE-POSITION AS SHOWN BY *SECTION B-B* VIEW ON PAGE 18. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM). RANDOM LENGTHS MAY BE USED.
- ③ CENTER GATE A, FOR THIS PAGE (2 REOD). SEE THE DETAIL ON PAGE 38. SEE GENERAL NOTE *K* ON PAGE 2.
- ④ CENTER GATE B, FOR PAGE 18 (2 REOD). SEE THE DETAIL ON PAGE 38.
- ⑤ STRUT FOR THIS PAGE, 4" X 4" (102MM X 102MM) BY CUT TO FIT (REF: 35") (889MM) (6 REOD). TOENAIL TO THE CENTER GATES, PIECES MARKED ③, W/2 NAILS AT EACH END.
- ⑥ STRUT FOR PAGE 18, 4" X 4" (102MM X 102MM) BY CUT TO FIT (REF: 27'-1/2") (699MM) (8 REOD). TOENAIL TO THE CENTER GATES, PIECES MARKED ④, W/2 NAILS AT EACH END.
- ⑦ SIDE BLOCKING/GATE STOP PIECE, 2" X 4" X 29" (51MM X 102MM X 737MM) (DOUBLED) (4 REOD). POSITION AS SHOWN. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/3 NAILS.
- ⑧ CAP PIECE FOR THIS PAGE, LENGTH OF 2-WIDE PORTION OF LOAD MINUS 2" (REF: 16'-8-1/2") (5,093MM) LONG (4 REOD). SEE THE DETAIL ON PAGE 44. POSITION AGAINST CAR ENDWALL.

(CONTINUED ON PAGE 17)

**68-UNIT LOAD IN A GBS 252 CAR
155MM PROJECTILES, 8 PER SMALL WOODEN PALLET**

(KEY NUMBERS CONTINUED FROM PAGE 16)

- ⑨ CAP PIECE FOR PAGE 18, LENGTH OF 3-WIDE PORTION OF LOAD MINUS 2" (REF: 11'-1") (3,378MM) LONG FOR THE LEFT END OF THE LOAD (2 REQD), (REF: 9'-11-1/2") (3,035MM) LONG FOR THE RIGHT END (2 REQD). SEE THE DETAIL ON PAGE 44. POSITION AGAINST CAR ENDWALL.
- ⑩ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 11'-6" (32MM X .889MM OR .787MM X 3,505MM) LONG STEEL STRAPPING FOR PAGE 16, 16'-0" (4,877MM) LONG FOR PAGE 18 (6 REQD). INSTALL TO ENCIRCLE THE PALLET UNITS, EXTENDING UNDER THE PALLET COVERS AND OVER THE CAP PIECES, PIECES MARKED ⑧ AND/OR ⑨.
- ⑪ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 15'-0" (32MM X .889MM OR .787MM X 4,572MM) LONG STEEL STRAPPING FOR PAGE 16, 19'-6" (5,944MM) LONG FOR PAGE 18 (2 REQD). INSTALL TO ENCIRCLE A CROSSWISE ROW.
- ⑫ SEAL FOR 1-1/4" STRAPPING (16 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "N" ON PAGE 2.

SPECIAL NOTES FOR PAGE 16:

- 1. A GBS 252 CAR, 41'-8" (12,700MM) LONG BY 8'-6" (2,600MM) WIDE HAVING A MAXIMUM LOAD LIMIT OF 57,304 POUNDS (26,016 KG) IS SHOWN IN THE "ISOMETRIC VIEW" ON PAGE 16. CARS OF OTHER SIZES AND TYPES MAY BE USED. SEE THE CHART ON PAGE 16.
- 2. A 68-UNIT LOAD OF 155MM PROJECTILES, 8 PER SMALL PALLET, IS SHOWN ON PAGE 16. THE LOAD MAY BE INCREASED BY ONE OR TWO PALLET UNITS BY FORMING 3-WIDE LOAD UNITS AT ONE OR BOTH ENDS OF THE CAR IN LIEU OF THE 2-WIDE LOAD UNITS SHOWN. CAP PIECES ARE NOT REQUIRED FOR ONE OR TWO 3-WIDE LOAD UNITS.
- 3. THE DEPICTED LOAD CAN BE REDUCED BY MULTIPLES OF TWO UNITS TO SUIT THE QUANTITY TO BE SHIPPED BY OMITTING ONE OR MORE LOAD UNITS FROM THE ENDS OF THE CAR. IF MORE THAN THREE LOAD UNITS ARE OMITTED, STRUT BRACING MUST BE APPLIED AS TYPICALLY SHOWN BY PIECES MARKED ⑦ AND ⑧ ON PAGE 28. A LOAD MAY BE REDUCED BY ONE PALLET UNIT BY INSTALLING A FILLER ASSEMBLY IN THE LENGTHWISE ROW. SEE THE "FILLER ASSEMBLY B" DETAIL ON PAGE 45.
- 4. REFER TO PAGE 18 FOR THE PLAN VIEW, SPECIAL NOTES, BILL OF MATERIAL, AND THE LOAD AS SHOWN FOR A LOAD IN A TMS 851 CAR.

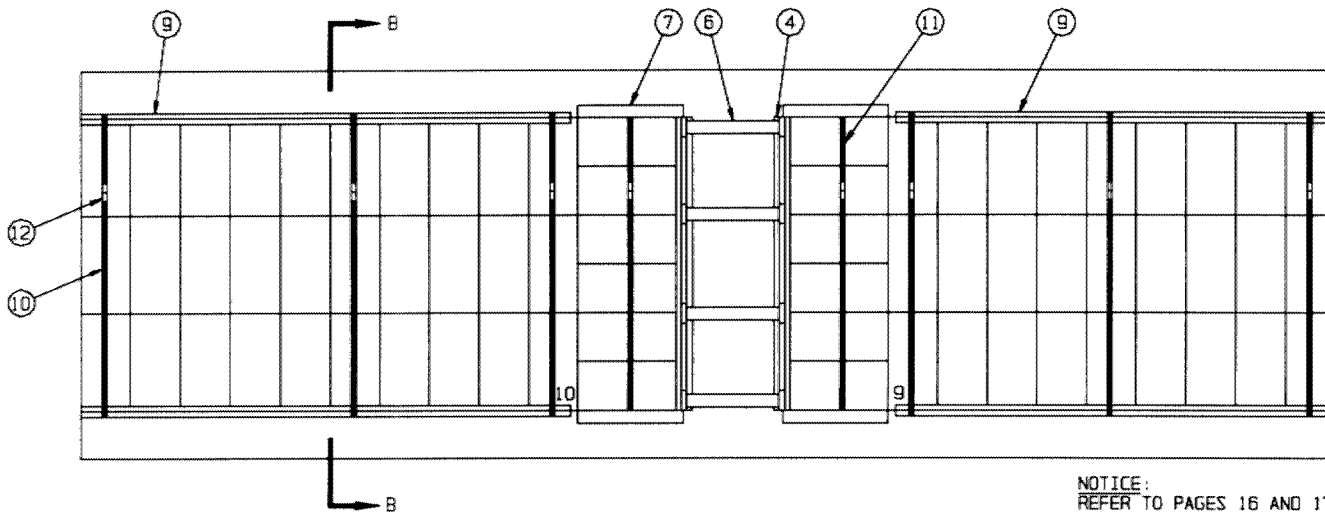
BILL OF MATERIAL (PAGE 16)

LUMBER	LINEAR FEET	BOARD FEET
2" X 2" (51MM X 51MM)	85 (25,908MM)	29
2" X 4" (51MM X 102MM)	222 (67,666MM)	148
2" X 6" (51MM X 152MM)	36 (10,973MM)	36
4" X 4" (102MM X 102MM)	18 (5,486MM)	24
NAILS	NO. REQD	POUNDS
SIZE AS REQD	232	7
STEEL STRAPPING, 1-1/4" --- 99' REQD --- 15 LBS		
SEAL FOR 1-1/4" STRAPPING -- 16 REQD --- 1 LB		

LOAD AS SHOWN (PAGE 16)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	68	54,400 LBS (24,698 KG)
DUNNAGE		497 LBS (226 KG)
TOTAL WEIGHT		54,897 LBS (24,924 KG)

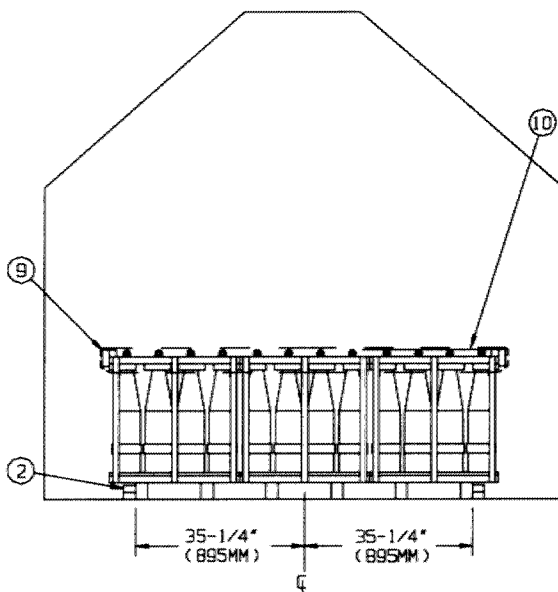
68-UNIT LOAD IN A GBS 252 CAR
155MM PROJECTILES, 8 PER SMALL WOODEN PALLET



PLAN VIEW

NOTICE:
REFER TO PAGES 16 AND 17
FOR "KEY NUMBERS".

RAILCARS THAT MAY BE USED			
TYPE OF RAILCAR	LENGTH OF RAILCAR	MAX NO. OF ITEMS	MAXIMUM WEIGHT (APPROX)
TMS -- 858	28'-8-3/4" (8,760MM)	69	55,200 LBS (25,061 KG)
GS -- 210/211/ 212/213/216	30'-5-5/8" (9,280MM)	75	60,000 LBS (27,240 KG)



SECTION B-B

SPECIAL NOTES FOR THIS PAGE:

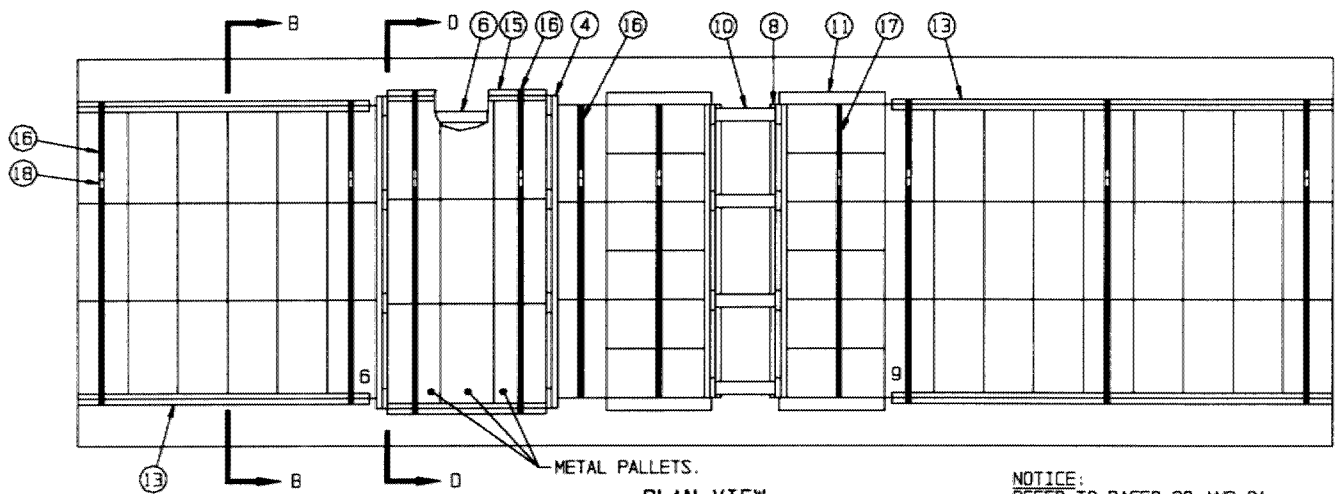
1. A TMS 851 CAR, 28'-8-3/4" (8,760MM) LONG BY 9'-0" (2,760MM) WIDE HAVING A MAXIMUM LOAD LIMIT OF 61,712 POUNDS (28,017 KG) IS SHOWN IN THE "PLAN VIEW" ABOVE. CARS OF OTHER SIZES AND TYPES MAY BE USED. SEE THE CHART ABOVE.
2. A 69-UNIT LOAD OF 155MM PROJECTILES, 8 PER SMALL PALLET, IS SHOWN ABOVE. A MAXIMUM LOAD QUANTITY IS SHOWN.
3. THE DEPICTED LOAD CAN BE REDUCED BY MULTIPLES OF THREE UNITS TO SUIT THE QUANTITY TO BE SHIPPED BY OMITTING ONE OR MORE LOAD UNITS FROM THE ENDS OF THE LOAD. IF MORE THAN TWO 3-WIDE LOAD UNITS ARE OMITTED, STRUT BRACING MUST BE APPLIED AS TYPICALLY SHOWN BY PIECES MARKED ⑦ AND ⑧ ON PAGE 28. THE LOAD CAN BE REDUCED BY ONE OR TWO UNITS BY FORMING ONE OR MORE 2-WIDE LOAD UNITS AT THE END OF THE CAR IN LIEU OF THE 3-WIDE LOAD UNITS SHOWN. CAP PIECES ARE NOT REQUIRED FOR ONE OR TWO 2-WIDE LOAD UNITS.

BILL OF MATERIAL (THIS PAGE)		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2" (51MM X 51MM)	70 (21,336MM)	24
2" X 4" (51MM X 102MM)	147 (44,806MM)	98
2" X 6" (51MM X 152MM)	51 (15,545MM)	51
4" X 4" (102MM X 102MM)	19 (5,791MM)	26
NAILS	NO. REQD	POUNDS
SIZE AS REQD	208	6
STEEL STRAPPING, 1-1/4" --	135' REQD --	20 LBS
SEAL FOR 1-1/4" STRAPPING --	16 REQD --	1 LB

LOAD AS SHOWN (THIS PAGE)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	69	55,200 LBS (25,061 KG)
DUNNAGE		425 LBS (193 KG)
TOTAL WEIGHT		55,627 LBS (25,254 KG)

69-UNIT LOAD IN A TMS 851 CAR
155MM PROJECTILES, 8 PER SMALL WOODEN PALLET

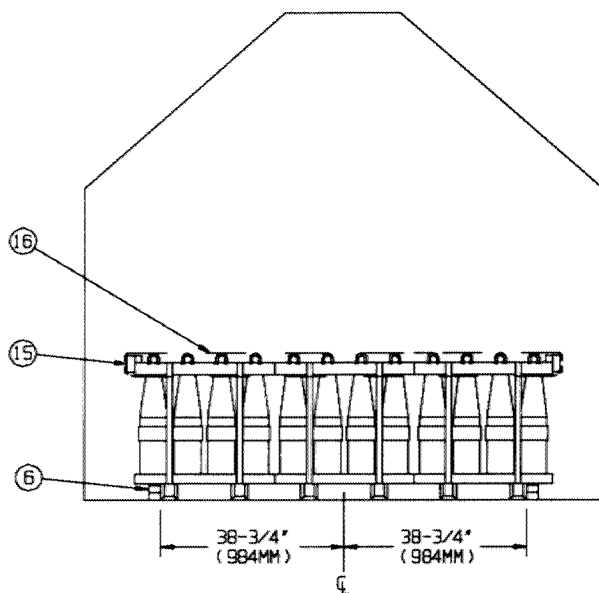


REFER TO "SECTION B-B"
VIEW ON PAGE 18.

PLAN VIEW

NOTICE:
REFER TO PAGES 20 AND 21
FOR "KEY NUMBERS".

RAILCARS THAT MAY BE USED			
TYPE OF RAILCAR	LENGTH OF RAILCAR	MAX NO. OF ITEMS	MAXIMUM WEIGHT (APPROX)
TMS - - - 858	28'-8-3/4" (8,760MM)	69 (60 WOODEN, 9 METAL)	55,713 LBS (25,294 KG)
GS - 210/211/212/ 213/216	30'-5-5/8" (9,290MM)	72 (63 WOODEN, 9 METAL)	58,113 LBS (26,383 KG)



SECTION D-D

SPECIAL NOTES FOR THIS PAGE:

1. A TMS 851 CAR, 28'-8-3/4" (8,760MM) LONG BY 9'-0" (2,760MM) WIDE HAVING A MAXIMUM LOAD LIMIT OF 61,712 POUNDS (28,017 KG) IS SHOWN IN THE "PLAN VIEW" ABOVE. CARS OF OTHER SIZES AND TYPES MAY BE USED. SEE THE CHART ABOVE.
2. A MIXED LOAD OF 155MM PROJECTILES, 8 PER SMALL WOODEN PALLET AND 8 PER SHORT METAL PALLET, IS SHOWN IN THE "PLAN VIEW" ABOVE. THE RATIO OF WOODEN AND METAL PALLETS MAY BE ADJUSTED TO SUIT. A MAXIMUM LOAD QUANTITY IS SHOWN.
3. THE QUANTITY OF WOODEN PALLETS IN THE DEPICTED LOAD CAN BE REDUCED BY MULTIPLES OF THREE UNITS TO SUIT THE QUANTITY TO BE SHIPPED BY OMITTING ONE OR MORE LOAD UNITS FROM THE ENDS OF THE LOAD. IF MORE THAN FOUR 3-WIDE LOAD UNITS OF WOODEN PALLET UNITS ARE OMITTED, STRUT BRACING MUST BE INSTALLED AS TYPICALLY SHOWN BY PIECES MARKED ⑦ AND ⑧ ON PAGE 28. THE QUANTITY OF METAL PALLETS CAN BE REDUCED BY MULTIPLES OF THREE PALLET UNITS BY OMITTING LOAD UNITS, OR BY ONE PALLET UNIT BY INSTALLING A "FILLER ASSEMBLY B" IN PLACE OF AN OMITTED PALLET UNIT. SEE THE DETAIL ON PAGE 45.

BILL OF MATERIAL (THIS PAGE) (TYPICAL)		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2" (51MM X 51MM)	68 (20,726MM)	23
2" X 4" (51MM X 102MM)	146 (44,501MM)	98
2" X 6" (51MM X 152MM)	103 (31,394MM)	103
4" X 4" (102MM X 102MM)	15 (4,572MM)	20
NAILS	NO. REQD	POUNDS
SIZE AS REQD	298	7
STEEL STRAPPING, 1-1/4" - -	167' REQD - - -	24 LBS
SEAL FOR 1-1/4" STRAPPING - -	20 REQD - - -	1 LB

LOAD AS SHOWN (THIS PAGE) (TYPICAL)

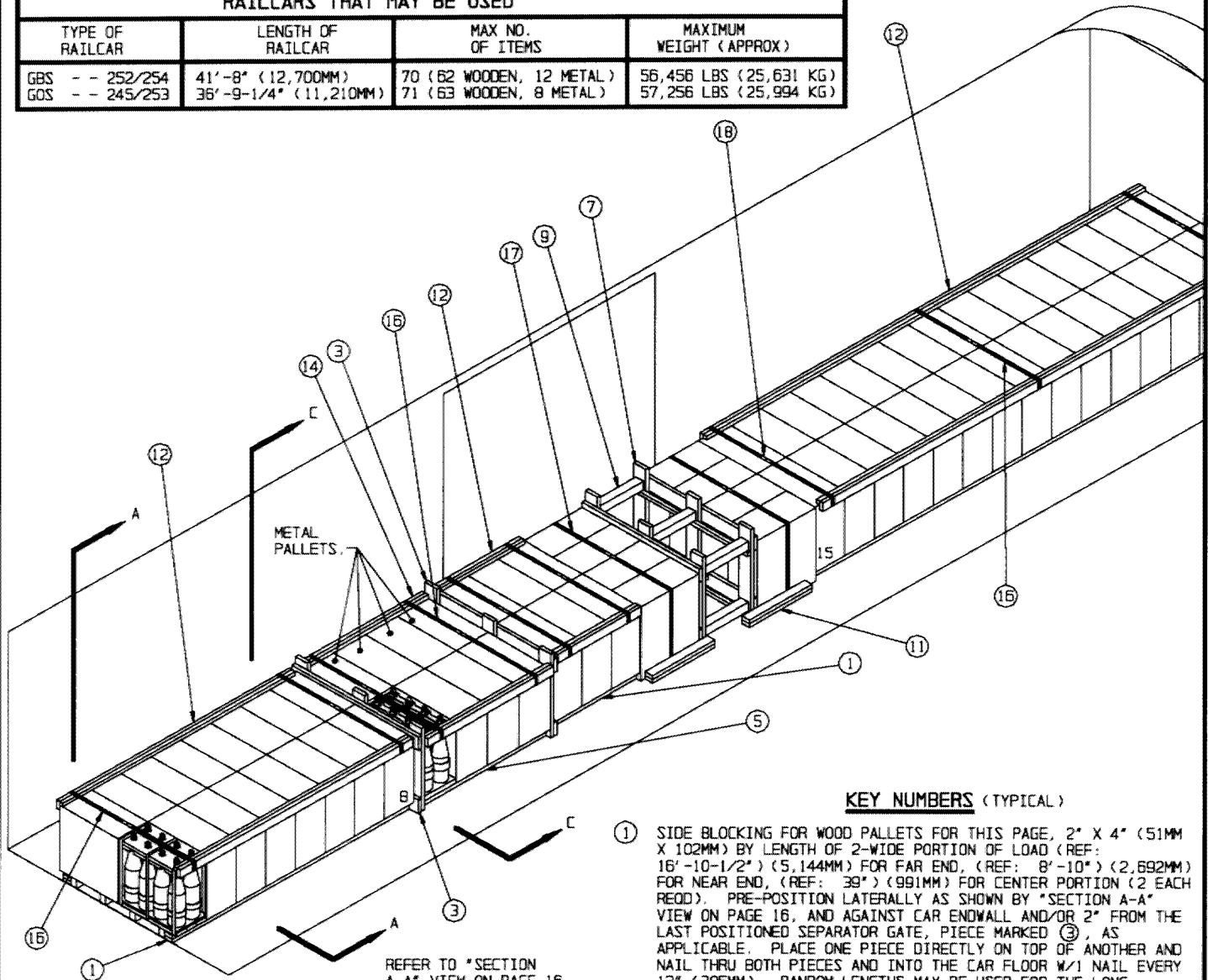
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT, WOODEN - -	60 - - - - -	48,000 LBS (21,792 KG)
PALLET UNIT, METAL - -	9 - - - - -	7,713 LBS (3,502 KG)
DUNNAGE - - - - -	- - - - -	520 LBS (236 KG)

TOTAL WEIGHT - - - - - 56,233 LBS (25,530 KG)

TYPICAL MIXED LOAD IN A TMS 851 CAR
155MM PROJECTILES, 8 PER SMALL WOODEN PALLET AND 8 PER SHORT METAL PALLET

RAILCARS THAT MAY BE USED

TYPE OF RAILCAR	LENGTH OF RAILCAR	MAX NO. OF ITEMS	MAXIMUM WEIGHT (APPROX)
GBS -- 252/254	41'-8" (12,700MM)	70 (62 WOODEN, 12 METAL)	56,456 LBS (25,631 KG)
GOS -- 245/253	36'-9-1/4" (11,210MM)	71 (63 WOODEN, 8 METAL)	57,256 LBS (25,994 KG)

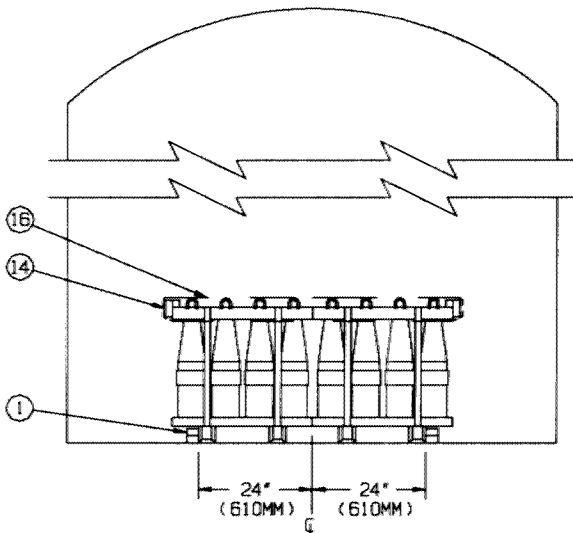


ISOMETRIC VIEW

KEY NUMBERS (TYPICAL)

- ① SIDE BLOCKING FOR WOOD PALLETS FOR THIS PAGE, 2" X 4" (51MM X 102MM) BY LENGTH OF 2-WIDE PORTION OF LOAD (REF: 16'-10-1/2" (5,144MM) FOR FAR END, (REF: 8'-10" (2,692MM) FOR NEAR END, (REF: 39" (991MM) FOR CENTER PORTION (2 EACH REQ)). PRE-POSITION LATERALLY AS SHOWN BY "SECTION A-A" VIEW ON PAGE 16, AND AGAINST CAR ENDWALL AND/OR 2" FROM THE LAST POSITIONED SEPARATOR GATE, PIECE MARKED ③, AS APPLICABLE. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM). RANDOM LENGTHS MAY BE USED FOR THE LONG PIECES. SEE GENERAL NOTES "H" AND "J" ON PAGE 2.
- ② SIDE BLOCKING FOR WOOD PALLETS ON PAGE 19, 2" X 4" (51MM X 102MM) BY LENGTH OF 3-WIDE PORTION OF LOAD (REF: 6'-7" (2,007MM) FOR THE LEFT END OF THE LOAD, (REF: 10'-1-1/2" (3,086MM) FOR THE RIGHT END, 12" (305MM) FOR THE CENTER PORTION (DOUBLED) (2 EACH REQ)). PRE-POSITION LATERALLY AS SHOWN BY "SECTION B-B" VIEW ON PAGE 18, AND AGAINST CAR ENDWALL AND/OR 2" FROM A SEPARATOR GATE, PIECE MARKED ④, AS APPLICABLE. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM) (2 NAILS REQ FOR THE 12" PIECES). RANDOM LENGTHS MAY BE USED FOR THE LONG PIECES.
- ③ SEPARATOR GATE E, FOR THIS PAGE (2 REQ). SEE THE DETAIL ON PAGE 42. POSITION WITH THE VERTICAL PIECES AGAINST THE METAL PALLETS. SEE GENERAL NOTE "K" ON PAGE 2.
- ④ SEPARATOR GATE F, FOR PAGE 19 (2 REQ). SEE THE DETAIL ON PAGE 42. POSITION WITH THE VERTICAL PIECES AGAINST THE METAL PALLETS.
- ⑤ SIDE BLOCKING FOR METAL PALLETS ON THIS PAGE, 2" X 4" X 54-1/2" (51MM X 102MM X 1,384MM) (2 REQ). PRE-POSITION LATERALLY AS SHOWN BY "SECTION C-C" VIEW AT LEFT AND 2" FROM AN INSTALLED SEPARATOR GATE, PIECE MARKED ③. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/4 NAILS.

(CONTINUED ON PAGE 21)



SECTION C-C

TYPICAL MIXED LOAD IN A GBS 252 CAR
155MM PROJECTILES, 8 PER SMALL WOODEN PALLET AND 8 PER SHORT METAL PALLET

(KEY NUMBERS CONTINUED FROM PAGE 20)

- ⑥ SIDE BLOCKING FOR METAL PALLETS ON PAGE 19, 2" X 4" X 40" (51MM X 102MM X 1,016MM) (2 REOD). PRE-POSITION Laterally AS SHOWN BY "SECTION D-D" VIEW ON PAGE 19 AND 2" FROM AN INSTALLED SEPARATOR GATE, PIECE MARKED ④. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/3 NAILS.
- ⑦ CENTER GATE A, FOR THIS PAGE (2 REOD). SEE THE DETAIL ON PAGE 38.
- ⑧ CENTER GATE B, FOR PAGE 19 (2 REOD). SEE THE DETAIL ON PAGE 38.
- ⑨ STRUT FOR PAGE 20, 4" X 4" (102MM X 102MM) BY CUT TO FIT (REF: 29") (737MM) (6 REOD). TOENAIL TO THE CENTER GATES, PIECES MARKED ⑦, W/2 NAILS AT EACH END.
- ⑩ STRUT FOR PAGE 19, 4" X 4" (102MM X 102MM) BY CUT TO FIT (REF: 21-1/2") (546MM) (8 REOD). TOENAIL TO THE CENTER GATES, PIECES MARKED ⑧, W/2 NAILS AT EACH END.
- ⑪ SIDE BLOCKING/GATE STOP PIECE, 2" X 4" X 29" (51MM X 102MM X 737MM) (DOUBLED) (4 REOD). POSITION AS SHOWN. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/3 NAILS.
- ⑫ CAP PIECE FOR WOOD PALLETS FOR PAGE 20, LENGTH OF 2-WIDE PORTION OF LOAD MINUS 2" (REF: 16'-8-1/2") (5,093MM) LONG FOR FAR END, (REF: 8'-10") (2,692MM) FOR THE NEAR END, (REF: 38-1/2") (978MM) FOR THE CENTER PORTION (2 EACH REOD). SEE THE DETAIL ON PAGE 44. POSITION AGAINST CAR ENDWALL, OR TO CENTER ON PALLETS, AS APPLICABLE.
- ⑬ CAP PIECE FOR WOOD PALLETS FOR PAGE 19, LENGTH OF 3-WIDE PORTION OF LOAD MINUS 2" (REF: 6'-7") (2,007MM) FOR THE LEFT END OF THE LOAD, (REF: 9'-11-1/2") (3,035MM) FOR THE RIGHT END (2 EACH REOD). SEE THE DETAIL ON PAGE 44. POSITION AGAINST CAR ENDWALL.
- ⑭ CAP PIECE FOR METAL PALLETS FOR PAGE 20, 58-1/2" (1,486MM) LONG (2 REOD). SEE THE DETAIL ON PAGE 44. POSITION TO CENTER ON PALLETS.
- ⑮ CAP PIECE FOR METAL PALLETS FOR PAGE 19, 43-1/2" (1,105MM) LONG (2 REOD). SEE THE DETAIL ON PAGE 44. POSITION TO CENTER ON PALLETS.
- ⑯ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 11'-6" (32MM X .889MM OR .787MM X 3,505MM) LONG STEEL STRAPPING FOR PAGE 20 (9 REOD), 16'-0" (4,877MM) LONG FOR PAGE 19 (8 REOD). INSTALL TO ENCIRCLE THE PALLET UNITS, EXTENDING UNDER THE PALLET COVERS AND OVER THE CAP PIECES, PIECES MARKED ⑫, ⑬, ⑭, AND/OR ⑮.
- ⑰ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 15'-0" (32MM X .889MM OR .787MM X 4,572MM) LONG STEEL STRAPPING FOR PAGE 20, 19'-6" (5,944MM) LONG FOR PAGE 19 (2 REOD). INSTALL TO ENCIRCLE A CROSSWISE ROW, EXTENDING UNDER THE PALLET BASES AND OVER THE PALLET COVERS.
- ⑱ SEAL FOR 1-1/4" STRAPPING (22 REOD, 2 PER STRAP FOR PAGE 20, 220 REOD, 2 PER STRAP FOR PAGE 19). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "N" ON PAGE 2.

SPECIAL NOTES FOR PAGE 20:

- 1. A GBS 252 CAR, 41'-8" (12,700MM) LONG BY 8'-6" (2,600MM) WIDE HAVING A MAXIMUM LOAD LIMIT OF 57,304 POUNDS (26,016 KG) IS SHOWN IN THE "ISOMETRIC VIEW" ON PAGE 20. CARS OF OTHER SIZES AND TYPES MAY BE USED. SEE THE CHART ON PAGE 20.
- 2. A MIXED LOAD OF 155MM PROJECTILES, 8 PER SMALL WOODEN PALLET AND 8 PER SHORT METAL PALLET IS SHOWN ON PAGE 20. A QUANTITY OF 60 WOODEN AND 8 METAL PALLETS IS SHOWN AS A TYPICAL MIX. THE RATIO OF WOODEN AND METAL PALLETS MAY BE ADJUSTED TO SUIT. THE LOAD OF WOODEN PALLETS MAY BE INCREASED BY FORMING 3-WIDE LOAD UNITS AT THE ENDS OF THE CAR IN LIEU OF THE 2-WIDE LOAD UNITS SHOWN. THE METAL PALLETS ARE LIMITED TO 2 PALLETS WIDE. THE QUANTITY CAN BE INCREASED BY TWO PALLET UNITS BY ADDING A LOAD UNIT, OR BY ONE PALLET UNIT BY ADDING A LOAD UNIT WHICH INCLUDES A "FILLER ASSEMBLY B". SEE THE DETAIL ON PAGE 45.
- 3. THE QUANTITY OF WOODEN PALLETS IN THE DEPICTED LOAD CAN BE REDUCED BY MULTIPLES OF TWO PALLET UNITS TO SUIT THE QUANTITY TO BE SHIPPED BY OMITTING ONE OR MORE LOAD UNITS FROM THE ENDS OF THE CAR. IF MORE THAN THREE 2-WIDE LOAD UNITS OF WOODEN PALLET UNITS ARE OMITTED, STRUT BRACING MUST BE INSTALLED AS TYPICALLY SHOWN BY PIECES MARKED ⑦ AND ⑧ ON PAGE 28. THE LOAD MAY BE REDUCED BY ONE WOODEN PALLET UNIT BY INSTALLING A "FILLER ASSEMBLY A" IN THE PLACE OF THE OMITTED PALLET UNIT IN A CROSSWISE ROW. SEE THE "FILLER ASSEMBLY A" DETAIL ON PAGE 45. THE QUANTITY OF METAL PALLETS CAN BE REDUCED BY OMITTING AN ENTIRE LOAD UNIT, OR BY INSTALLING A "FILLER ASSEMBLY B" IN THE PLACE OF AN OMITTED PALLET UNIT. SEE THE DETAIL ON PAGE 45.
- 4. REFER TO PAGE 19 FOR THE PLAN VIEW, SPECIAL NOTES, BILL OF MATERIAL, AND THE LOAD AS SHOWN FOR A TYPICAL MIXED LOAD IN A TMS 851 CAR.

BILL OF MATERIAL (PAGE 20) (TYPICAL)		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2" (51MM X 51MM)	86 (26,213MM)	29
2" X 4" (51MM X 102MM)	223 (67,970MM)	149
2" X 6" (51MM X 152MM)	73 (22,250MM)	73
4" X 4" (102MM X 102MM)	15 (4,572MM)	20
NAILS	NO. REOD	POUNDS
SIZE AS REOD	272	7
STEEL STRAPPING, 1-1/4" -- 134' REOD --- 20 LBS		
SEAL FOR 1-1/4" STRAPPING -- 22 REOD --- 1 LB		

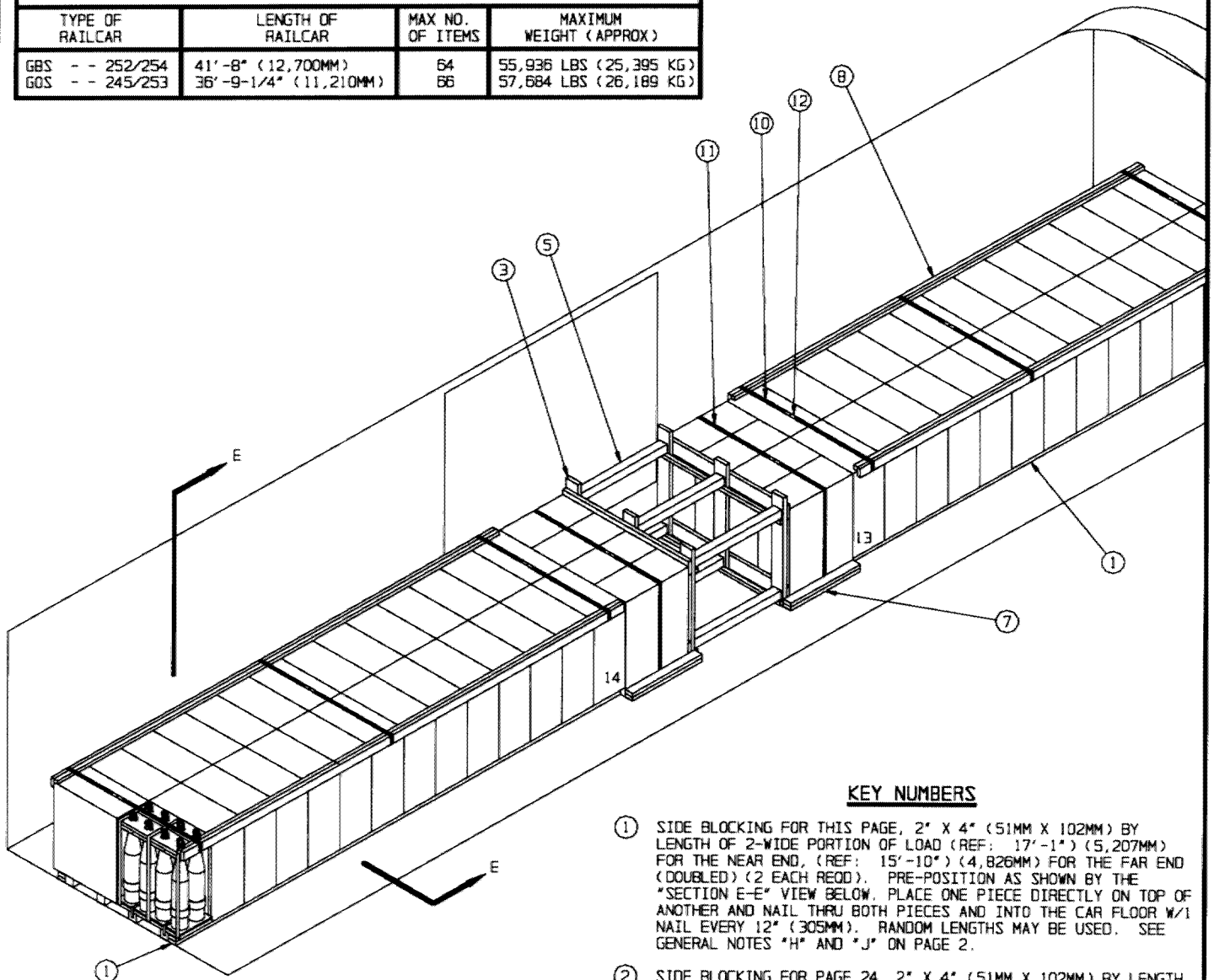
LOAD AS SHOWN (PAGE 20) (TYPICAL)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT, WOODEN	60	48,000 LBS (21,792 KG)
PALLET UNIT, METAL	8	6,856 LBS (3,113 KG)
DUNNAGE	---	570 LBS (259 KG)
TOTAL WEIGHT		55,426 LBS (25,164 KG)

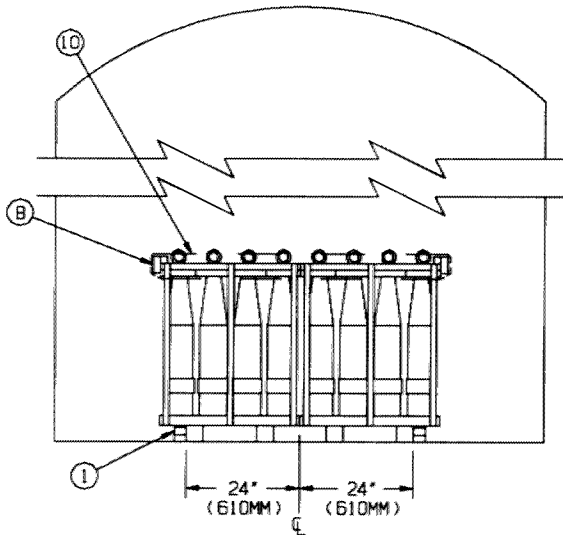
TYPICAL MIXED LOAD IN A GBS 252 CAR
155MM PROJECTILES, 8 PER SMALL WOODEN PALLET AND 8 PER SHORT METAL PALLET

RAILCARS THAT MAY BE USED

TYPE OF RAILCAR	LENGTH OF RAILCAR	MAX NO. OF ITEMS	MAXIMUM WEIGHT (APPROX)
GBS - - 252/254	41'-8" (12,700MM)	64	55,936 LBS (25,395 KG)
GOS - - 245/253	36'-9-1/4" (11,210MM)	66	57,684 LBS (26,189 KG)



ISOMETRIC VIEW



SECTION E-E

KEY NUMBERS

- ① SIDE BLOCKING FOR THIS PAGE, 2" X 4" (51MM X 102MM) BY LENGTH OF 2-WIDE PORTION OF LOAD (REF: 17'-1") (5,207MM) FOR THE NEAR END, (REF: 15'-10") (4,826MM) FOR THE FAR END (DOUBLED) (2 EACH REQD). PRE-POSITION AS SHOWN BY THE "SECTION E-E" VIEW BELOW. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM). RANDOM LENGTHS MAY BE USED. SEE GENERAL NOTES "H" AND "J" ON PAGE 2.
- ② SIDE BLOCKING FOR PAGE 24, 2" X 4" (51MM X 102MM) BY LENGTH OF 3-WIDE PORTION OF LOAD (REF: 11'-0") (3,353MM) FOR THE LEFT END OF THE LOAD, (REF: 9'-9") (2,972MM) FOR THE RIGHT END (DOUBLED) (2 EACH REQD). PRE-POSITION AS SHOWN BY THE "SECTION F-F" VIEW ON PAGE 24. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM). RANDOM LENGTHS MAY BE USED.
- ③ CENTER GATE C, FOR THIS PAGE (2 REQD). SEE THE DETAIL ON PAGE 38. SEE GENERAL NOTE "K" ON PAGE 2.
- ④ CENTER GATE D, FOR PAGE 24 (2 REQD). SEE THE DETAIL ON PAGE 39.
- ⑤ STRUT FOR THIS PAGE, 4" X 4" (102MM X 102MM) BY CUT TO FIT (REF: 43") (1,092MM) (6 REQD). TOENAIL TO THE CENTER GATES, PIECES MARKED ③, W/2 NAILS AT EACH END.
- ⑥ STRUT FOR PAGE 24, 4" X 4" (102MM X 102MM) BY CUT TO FIT (REF: 31") (787MM) (8 REQD). TOENAIL TO THE CENTER GATES, PIECES MARKED ④, W/2 NAILS AT EACH END.
- ⑦ SIDE BLOCKING/GATE STOP PIECE, 2" X 4" X 32" (51MM X 102MM X 813MM) (DOUBLED) (4 REQD). POSITION AS SHOWN. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/3 NAILS.
- ⑧ CAP PIECE FOR THIS PAGE, LENGTH OF 2-WIDE PORTION OF LOAD MINUS 2" (REF: 16'-11") (5,156MM) LONG FOR THE NEAR END OF THE LOAD (2 REQD), (REF: 15'-8") (4,775MM) LONG FOR THE FAR END (2 REQD). SEE THE DETAIL ON PAGE 44. POSITION AGAINST CAR ENDWALL.

(CONTINUED ON PAGE 23)

**62-UNIT LOAD IN A GBS 252 CAR
155MM PROJECTILES, 8 PER LARGE WOODEN PALLET**

(KEY NUMBERS CONTINUED FROM PAGE 22)

- ⑨ CAP PIECE FOR PAGE 24, LENGTH OF 3-WIDE PORTION OF THE LOAD MINUS 2". (REF: 10'-10") (3,302MM) LONG FOR THE LEFT END (2 REOD) (REF: 9'-7") (2,921MM) LONG FOR THE RIGHT END (2 REOD). SEE THE DETAIL ON PAGE 44. POSITION AGAINST CAR ENDWALL.
- ⑩ BUNDLING STRAP, 1-1/4" X .035" OR .031" (32MM X .889MM OR .787MM) X 12'-0" (3,658MM) LONG STEEL STRAPPING FOR PAGE 22, 16'-6" (5,029MM) LONG FOR PAGE 24 (6 REOD). INSTALL TO ENCIRCLE THE PALLET UNITS, EXTENDING UNDER THE PALLET COVERS AND OVER THE CAP PIECES, PIECES MARKED ⑧ AND/OR ⑨.
- ⑪ BUNDLING STRAP, 1-1/4" X .035" OR .031" (32MM X .889MM OR .787MM) X 17'-0" (5,182MM) LONG STEEL STRAPPING FOR PAGE 22, 22'-0" (6,706MM) LONG FOR PAGE 24 (2 REOD). INSTALL TO ENCIRCLE A CROSSWISE ROW.
- ⑫ SEAL FOR 1-1/4" STRAPPING (16 REOD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "N" ON PAGE 2.

SPECIAL NOTES FOR PAGE 22:

- 1. A GBS 252 CAR, 41'-8" (12,700MM) LONG BY 8'-6" (2,600MM) WIDE HAVING A MAXIMUM LOAD LIMIT OF 57,304 POUNDS (26,016 KG) IS SHOWN IN THE "ISOMETRIC VIEW" ON PAGE 22. CARS OF OTHER SIZES AND TYPES MAY BE USED. SEE THE CHART ON PAGE 22.
- 2. A 62-UNIT LOAD OF 155MM PROJECTILES, 8 PER LARGE PALLET, IS SHOWN ON PAGE 22. THE LOAD MAY BE INCREASED BY ONE OR TWO PALLET UNITS BY FORMING 3-WIDE LOAD UNITS AT ONE OR BOTH ENDS OF THE CAR IN LIEU OF THE 2-WIDE LOAD UNITS SHOWN.
- 3. THE DEPICTED LOAD CAN BE REDUCED BY MULTIPLES OF TWO PALLET UNITS TO SUIT THE QUANTITY TO BE SHIPPED BY OMITTING ONE OR MORE LOAD UNITS FROM THE ENDS OF THE CAR. IF MORE THAN TWO LOAD UNITS ARE OMITTED, STRUT BRACING MUST BE APPLIED AS TYPICALLY SHOWN BY PIECES MARKED ⑦ AND ⑧ ON PAGE 28. A LOAD MAY BE REDUCED BY ONE PALLET UNIT BY INSTALLING A "FILLER ASSEMBLY B" IN THE LENGTHWISE ROW. SEE THE "FILLER ASSEMBLY B" DETAIL ON PAGE 45.

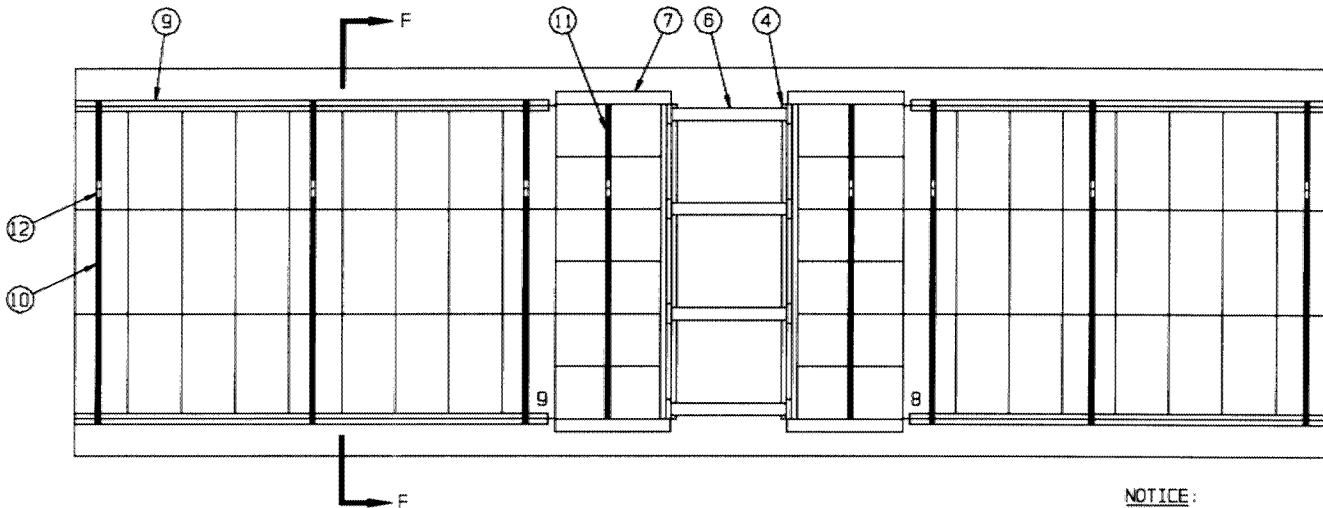
BILL OF MATERIAL (PAGE 22)

LUMBER	LINEAR FEET	BOARD FEET
2" X 2" (51MM X 51MM)	85 (25,908MM)	29
2" X 4" (51MM X 102MM)	219 (66,751MM)	146
2" X 6" (51MM X 152MM)	42 (12,802MM)	42
4" X 4" (102MM X 102MM)	22 (6,706MM)	30
NAILS	NO. REOD	POUNDS
SIZE AS REOD	22B	7
STEEL STRAPPING, 1-1/4" -- 106' REOD --- 16 LBS		
SEAL FOR 1-1/4" STRAPPING -- 16 REOD --- 1 LB		

LOAD AS SHOWN (PAGE 22)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	62	54,188 LBS (24,602 KG)
DUNNAGE		518 LBS (235 KG)
TOTAL WEIGHT		54,706 LBS (24,837 KG)

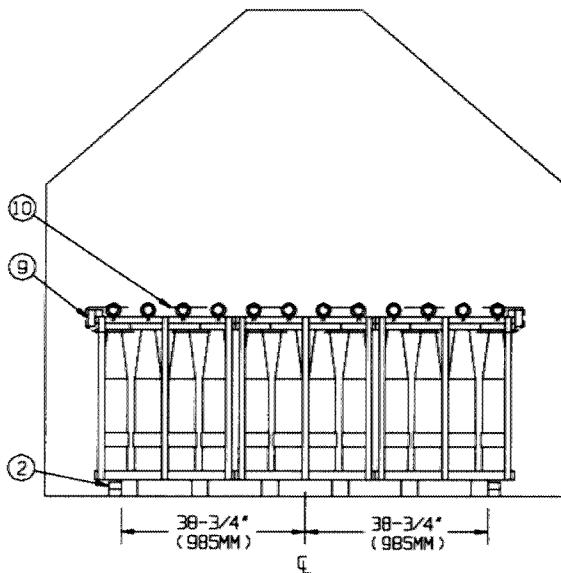
**62-UNIT LOAD IN A GBS 252 CAR
155MM PROJECTILES, 8 PER LARGE WOODEN PALLET**



PLAN VIEW

NOTICE:
REFER TO PAGE 22
FOR "KEY NUMBERS".

RAILCARS THAT MAY BE USED			
TYPE OF RAILCAR	LENGTH OF RAILCAR	MAX NO. OF ITEMS	MAXIMUM WEIGHT (APPROX)
TMS - - 851	28'-8-3/4" (8,760MM)	63	55,062 LBS (24,998 KG)
GS - - 210/211/ 212/213/216	30'-5-5/8" (9,280MM)	66	57,684 LBS (26,189 KG)



SECTION F-F

SPECIAL NOTES FOR THIS PAGE:

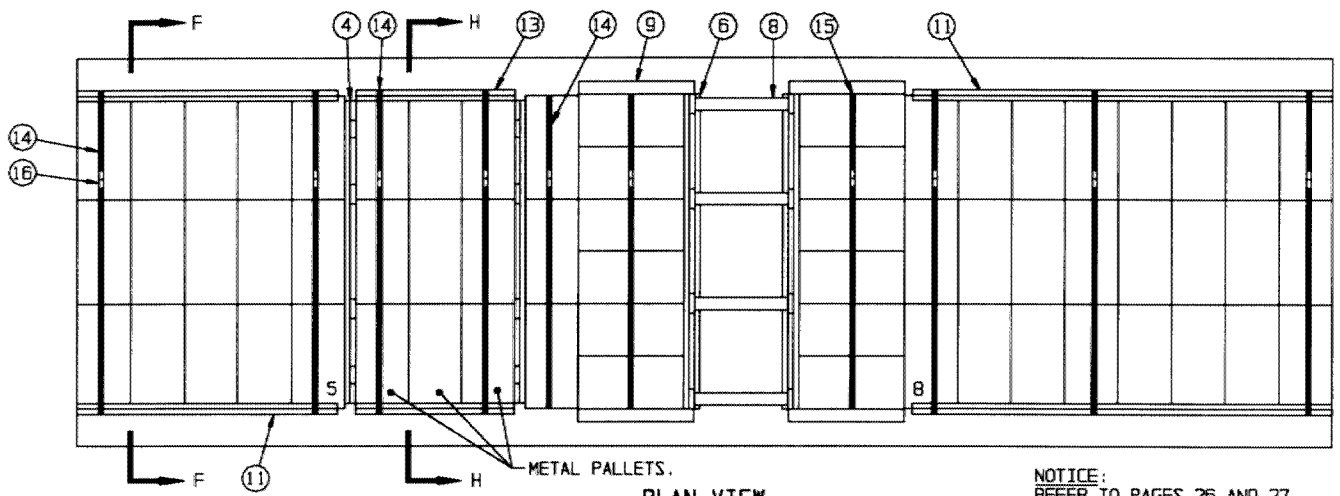
1. A TMS 851 CAR, 28'-8-3/4" (8,760MM) LONG BY 9'-0" (2,760MM) WIDE HAVING A MAXIMUM LOAD LIMIT OF 61,712 POUNDS (28,017 KG) IS SHOWN IN THE "PLAN VIEW" ABOVE. CARS OF OTHER SIZES AND TYPES MAY BE USED. SEE THE CHART ABOVE.
2. A 63-UNIT LOAD OF 155MM PROJECTILES, 8 PER LARGE PALLET, IS SHOWN ABOVE. A MAXIMUM LOAD IS SHOWN.
3. THE DEPICTED LOAD CAN BE REDUCED BY MULTIPLES OF THREE UNITS TO SUIT THE QUANTITY TO BE SHIPPED BY OMITTING ONE OR MORE LOAD UNITS FROM THE ENDS OF THE LOAD. IF MORE THAN THREE LOAD UNITS ARE OMITTED, STRUT BRACING MUST BE APPLIED AS TYPICALLY SHOWN BY PIECES MARKED ⑦ AND ⑧ ON PAGE 32. THE LOAD CAN BE REDUCED BY ONE OR TWO UNITS BY FORMING ONE OR MORE 2-WIDE LOAD UNITS AT THE END OF THE CAR IN LIEU OF THE 3-WIDE LOAD UNITS SHOWN.

BILL OF MATERIAL (THIS PAGE)		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2" (51MM X 51MM)	71 (21,641MM)	24
2" X 4" (51MM X 102MM)	146 (44,501MM)	98
2" X 6" (51MM X 152MM)	59 (17,983MM)	59
4" X 4" (102MM X 102MM)	21 (6,401MM)	28
NAILS	NO. REQD	POUNDS
SIZE AS REQD	208	6
STEEL STRAPPING, 1-1/4" - -	143' REQD - - -	22 LBS
SEAL FOR 1-1/4" STRAPPING - -	16 REQD - - -	1 LB

LOAD AS SHOWN (THIS PAGE)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT - - - - -	63 - - - - -	55,062 LBS (24,998 KG)
DUNNAGE - - - - -	- - - - -	447 LBS (203 KG)
TOTAL WEIGHT - - - - -		55,509 LBS (25,201 KG)

**63-UNIT LOAD IN A TMS 851 CAR
155MM PROJECTILES, 8 PER LARGE WOODEN PALLET**

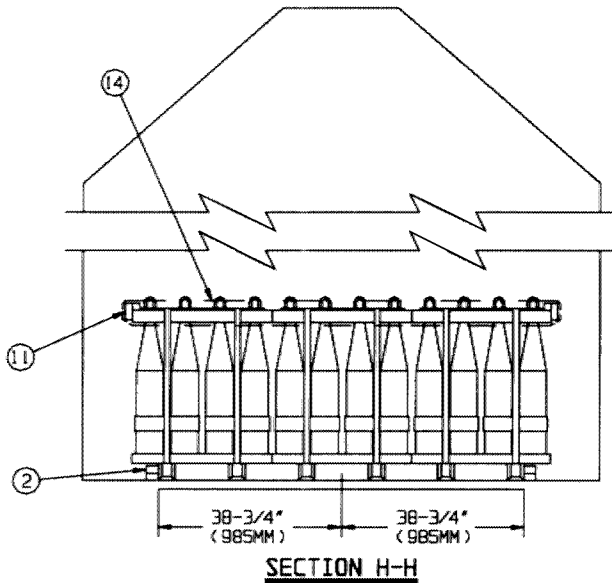


REFER TO "SECTION F-F"
VIEW ON PAGE 24.

PLAN VIEW

NOTICE:
REFER TO PAGES 26 AND 27
FOR "KEY NUMBERS".

RAILCARS THAT MAY BE USED			
TYPE OF RAILCAR	LENGTH OF RAILCAR	MAX NO. OF ITEMS	MAXIMUM WEIGHT (APPROX)
TMS - - - 85B	28'-8-3/4" (8,760MM)	63 (54 WOODEN, 9 METAL)	55,269 LBS (25,092 KG)
GS - 210/211/212/ 213/216	30'-5-5/8" (9,290MM)	66 (57 WOODEN, 9 METAL)	57,891 LBS (26,283 KG)



SECTION H-H

SPECIAL NOTES FOR THIS PAGE:

1. A TMS 851 CAR, 28'-8-3/4" (8,760MM) LONG BY 9'-0" (2,760MM) WIDE HAVING A MAXIMUM LOAD LIMIT OF 61,712 POUNDS (28,017 KG) IS SHOWN IN THE "PLAN VIEW" ABOVE. CARS OF OTHER SIZES AND TYPES MAY BE USED. SEE THE CHART ABOVE.
2. A MIXED LOAD OF 155MM PROJECTILES, 8 PER LARGE WOODEN PALLET AND 8 PER TALL METAL PALLET, IS SHOWN IN THE "PLAN VIEW" ABOVE. A QUANTITY OF 54 WOODEN AND 9 METAL PALLETS IS SHOWN AS A TYPICAL MIX. THE RATIO OF WOODEN AND METAL PALLETS MAY BE ADJUSTED TO SUIT. A MAXIMUM LOAD QUANTITY IS SHOWN.
3. THE QUANTITY OF WOODEN PALLETS IN THE DEPICTED LOAD CAN BE REDUCED BY MULTIPLES OF THREE PALLET UNITS TO SUIT THE QUANTITY TO BE SHIPPED BY OMITTING ONE OR MORE LOAD UNITS FROM THE ENDS OF THE LOAD. THE QUANTITY OF METAL PALLETS CAN BE REDUCED BY MULTIPLES OF THREE PALLET UNITS BY OMITTING LOAD UNITS, OR BY ONE PALLET UNIT BY INSTALLING A FILLER ASSEMBLY IN PLACE OF AN OMITTED UNIT IN A LENGTHWISE ROW. SEE THE "FILLER ASSEMBLY B" DETAIL ON PAGE 45. IF MORE THAN THREE LOAD UNITS OF EITHER WOODEN OR METAL PALLET UNITS ARE OMITTED, STRUT BRACING MUST BE INSTALLED AS TYPICALLY SHOWN BY PIECES MARKED ⑦ AND ⑧ ON PAGE 28.

BILL OF MATERIAL (THIS PAGE) (TYPICAL)		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2" (51MM X 51MM)	81 (24,689MM)	27
2" X 4" (51MM X 102MM)	165 (50,292MM)	110
2" X 6" (51MM X 152MM)	119 (36,271MM)	119
4" X 4" (102MM X 102MM)	17 (5,182MM)	23
NAILS	NO. REQD	POUNDS
SIZE AS REQD	291	8
STEEL STRAPPING, 1-1/4" - - 177' REQD - - - 26 LBS		
SEAL FOR 1-1/4" STRAPPING - - 20 REQD - - - 1 LB		

LOAD AS SHOWN (THIS PAGE) (TYPICAL)

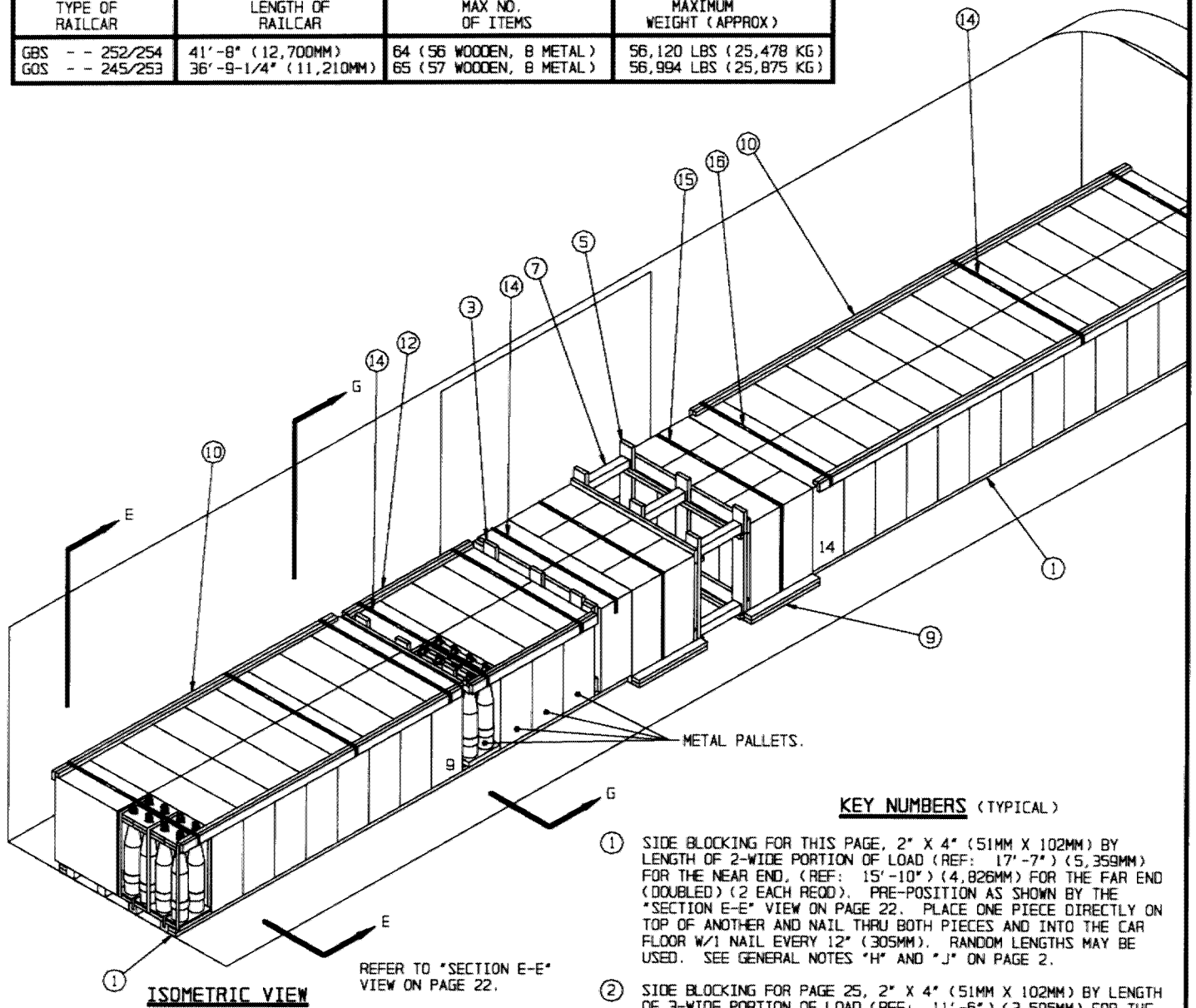
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT, WOODEN - - 54 - - - - -	54	47,196 LBS (21,427 KG)
PALLET UNIT, METAL - - 9 - - - - -	9	8,073 LBS (3,665 KG)
DUNNAGE - - - - -		593 LBS (269 KG)

TOTAL WEIGHT - - - - - 55,862 LBS (25,361 KG)

TYPICAL MIXED LOAD IN A TMS 851 CAR
155MM PROJECTILES, 8 PER LARGE WOODEN PALLET AND 8 PER TALL METAL PALLET

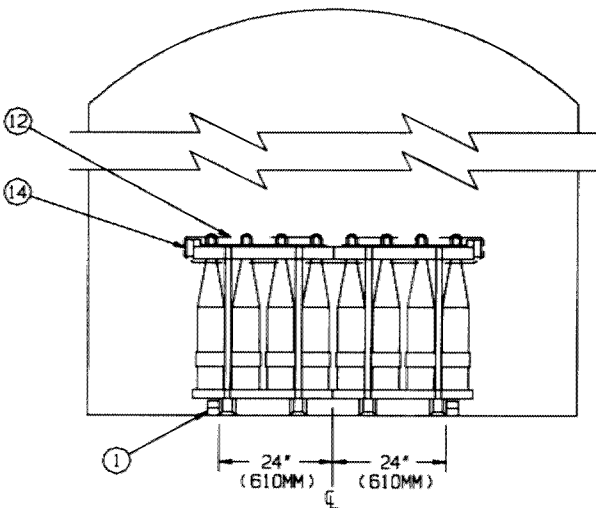
RAILCARS THAT MAY BE USED

TYPE OF RAILCAR	LENGTH OF RAILCAR	MAX NO. OF ITEMS	MAXIMUM WEIGHT (APPROX)
GBS -- 252/254	41'-8" (12,700MM)	64 (56 WOODEN, 8 METAL)	56,120 LBS (25,478 KG)
GOS -- 245/253	36'-9-1/4" (11,210MM)	65 (57 WOODEN, 8 METAL)	56,994 LBS (25,875 KG)



ISOMETRIC VIEW

REFER TO "SECTION E-E" VIEW ON PAGE 22.



SECTION G-G

KEY NUMBERS (TYPICAL)

- ① SIDE BLOCKING FOR THIS PAGE, 2" X 4" (51MM X 102MM) BY LENGTH OF 2-WIDE PORTION OF LOAD (REF: 17'-7" (5,359MM) FOR THE NEAR END, (REF: 15'-10" (4,826MM) FOR THE FAR END (DOUBLED) (2 EACH REQD)). PRE-POSITION AS SHOWN BY THE "SECTION E-E" VIEW ON PAGE 22. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM). RANDOM LENGTHS MAY BE USED. SEE GENERAL NOTES "H" AND "J" ON PAGE 2.
- ② SIDE BLOCKING FOR PAGE 25, 2" X 4" (51MM X 102MM) BY LENGTH OF 3-WIDE PORTION OF LOAD (REF: 11'-6" (3,505MM) FOR THE LEFT END OF THE LOAD, (REF: 9'-9" (2,972MM) FOR THE RIGHT END (DOUBLED) (2 EACH REQD)). PRE-POSITION AS SHOWN BY THE "SECTION H-H" VIEW ON PAGE 25. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM). RANDOM LENGTHS MAY BE USED.
- ③ SEPARATOR GATE G, FOR THIS PAGE (2 REQD). SEE THE DETAIL ON PAGE 43. POSITION WITH THE VERTICAL PIECES AGAINST THE METAL PALLETS. SEE GENERAL NOTE "K" ON PAGE 2.
- ④ SEPARATOR GATE H, FOR PAGE 25 (2 REQD). SEE THE DETAIL ON PAGE 43. POSITION WITH THE VERTICAL PIECES AGAINST THE METAL PALLETS.
- ⑤ CENTER GATE C, FOR THIS PAGE (2 REQD). SEE THE DETAIL ON PAGE 38.
- ⑥ CENTER GATE D, FOR PAGE 25 (2 REQD). SEE THE DETAIL ON PAGE 39.
- ⑦ STRUT FOR THIS PAGE, 4" X 4" (102MM X 102MM) BY CUT TO FIT (REF: 37" (940MM)). TOENAIL TO THE CENTER GATES, PIECES MARKED ⑤, W/2 NAILS AT EACH END.
- ⑧ STRUT FOR PAGE 25, 4" X 4" (102MM X 102MM) BY CUT TO FIT (REF: 25" (635MM) (8 REQD)). TOENAIL TO THE CENTER GATES, PIECES MARKED ⑥, W/2 NAILS AT EACH END.

(CONTINUED ON PAGE 27)

TYPICAL MIXED LOAD IN A GBS 252 CAR

155MM PROJECTILES, 8 PER LARGE WOODEN PALLET AND 8 PER TALL METAL PALLET

(KEY NUMBERS CONTINUED FROM PAGE 26)

SPECIAL NOTES FOR PAGE 26:

- ⑨ SIDE BLOCKING/GATE STOP PIECE, 2" X 4" X 32" (51MM X 102MM X 813MM) (DOUBLED) (4 REOD). POSITION AS SHOWN. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/3 NAILS.
- ⑩ CAP PIECE FOR WOODEN PALLETS FOR PAGE 26, LENGTH OF 2-WIDE PORTION OF LOAD MINUS 2" (REF: 12'-0") (3,658MM) LONG FOR THE NEAR END OF THE LOAD (2 REOD), (REF: 15'-10") (4,829MM) LONG FOR THE FAR END (2 REOD). SEE THE DETAIL ON PAGE 44. POSITION AGAINST CAR ENDWALL.
- ⑪ CAP PIECE FOR WOODEN PALLETS FOR PAGE 25, LENGTH OF 3-WIDE PORTION OF THE LOAD MINUS 2", (REF: 11'-4") (3,454MM) LONG FOR THE LEFT END (2 REOD) (REF: 9'-7") (2,921MM) LONG FOR THE RIGHT END (2 REOD). SEE THE DETAIL ON PAGE 44. POSITION AGAINST CAR ENDWALL.
- ⑫ CAP PIECE FOR METAL PALLETS FOR PAGE 26, 58-1/2" (1,486MM) LONG (2 REOD). SEE THE DETAIL ON PAGE 44. CENTER ON THE PALLETS.
- ⑬ CAP PIECE FOR METAL PALLETS FOR PAGE 25, 58-1/2" (1,486MM) LONG (2 REOD). SEE THE DETAIL ON PAGE 44. CENTER ON THE PALLETS.
- ⑭ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 12'-0" (32MM X .889MM OR .787MM X 3,658MM) LONG STEEL STRAPPING FOR PAGE 26 (8 REOD), 16'-6" (5,029MM) LONG FOR PAGE 25 (8 REOD). INSTALL TO ENCIRCLE THE PALLET UNITS, EXTENDING UNDER THE PALLET COVERS AND OVER THE CAP PIECES, PIECES MARKED ⑩ AND/OR ⑫, OR AROUND THE PALLET COVERS, AS APPLICABLE.
- ⑮ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 17'-0" (32MM X .889MM OR .787MM) (5,182MM) LONG STEEL STRAPPING FOR PAGE 26, 22'-6" (6,706MM) LONG FOR PAGE 25 (2 REOD). INSTALL TO EXTEND UNDER THE PALLET BASES AND OVER THE PALLET COVERS.
- ⑯ SEAL FOR 1-1/4" STRAPPING (22 REOD, 2 PER STRAP FOR PAGE 26, 20 REOD, 2 PER STRAP FOR PAGE 25). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "N" ON PAGE 2.

- 1. A GBS 252 CAR, 41'-8" (12,700MM) LONG BY 8'-6" (2,600MM) WIDE HAVING A MAXIMUM LOAD LIMIT OF 57,304 POUNDS (26,016 KG) IS SHOWN IN THE "ISOMETRIC VIEW" ON PAGE 26. CARS OF OTHER SIZES AND TYPES MAY BE USED. SEE THE CHART ON PAGE 26.
- 2. A MIXED LOAD OF 155MM PROJECTILES, 8 PER LARGE WOODEN PALLET AND 8 PER TALL METAL PALLET IS SHOWN ON PAGE 26. A QUANTITY OF 56 WOODEN AND 8 METAL PALLETS IS SHOWN AS A TYPICAL MIX. THE RATIO OF WOODEN AND METAL PALLETS MAY BE ADJUSTED TO SUIT. A MAXIMUM LOAD QUANTITY IS SHOWN.
- 3. THE QUANTITY OF WOODEN PALLETS IN THE DEPICTED LOAD CAN BE REDUCED BY MULTIPLES OF TWO PALLET UNITS TO SUIT THE QUANTITY TO BE SHIPPED BY OMITTING ONE OR MORE LOAD UNITS FROM THE ENDS OF THE CAR. THE QUANTITY OF METAL PALLETS CAN BE REDUCED BY OMITTING AN ENTIRE LOAD UNIT, OR BY INSTALLING A FILLER ASSEMBLY IN THE PLACE OF AN OMITTED PALLET UNIT. SEE THE "FILLER ASSEMBLY B" DETAIL ON PAGE 45. IF MORE THAN TWO LOAD UNITS OF EITHER WOODEN OR METAL PALLET UNITS ARE OMITTED, STRUT BRACING MUST BE INSTALLED AS TYPICALLY SHOWN BY PIECES MARKED ⑦ AND ⑧ ON PAGE 28.

BILL OF MATERIAL (PAGE 26) (TYPICAL)		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2" (51MM X 51MM)	86 (26,213MM)	29
2" X 4" (51MM X 102MM)	222 (67,666MM)	148
2" X 6" (51MM X 152MM)	85 (25,908MM)	85
4" X 4" (102MM X 102MM)	19 (5,791MM)	26
NAILS	NO. REOD	POUNDS
SIZE AS REOD	284	8
STEEL STRAPPING, 1-1/4" -- 153' REOD --- 22 LBS		
SEAL FOR 1-1/4" STRAPPING -- 22 REOD --- 1 LB		

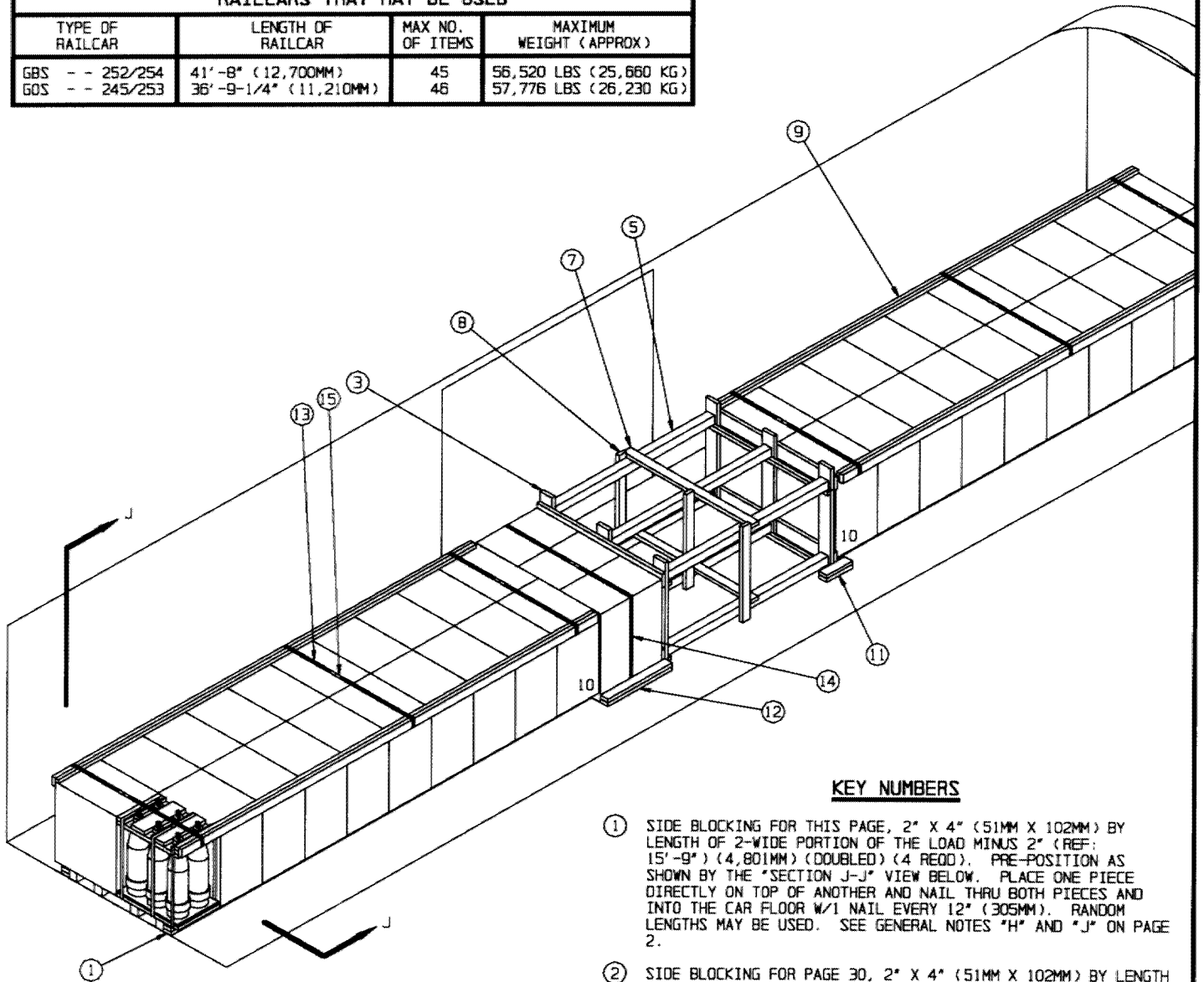
LOAD AS SHOWN (PAGE 26) (TYPICAL)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT, WOODEN	56	48,944 LBS (22,221 KG)
PALLET UNIT, METAL	8	7,176 LBS (3,258 KG)
DUNNAGE		606 LBS (275 KG)
TOTAL WEIGHT		56,726 LBS (25,754 KG)

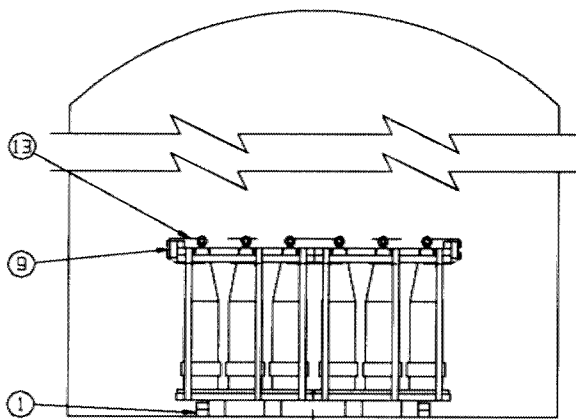
TYPICAL MIXED LOAD IN A GBS 252 CAR
155MM PROJECTILES, 8 PER LARGE WOODEN PALLET AND 8 PER TALL METAL PALLET

RAILCARS THAT MAY BE USED

TYPE OF RAILCAR	LENGTH OF RAILCAR	MAX NO. OF ITEMS	MAXIMUM WEIGHT (APPROX)
GBS -- 252/254	41'-8" (12,700MM)	45	56,520 LBS (25,660 KG)
GOS -- 245/253	36'-9-1/4" (11,210MM)	46	57,776 LBS (26,230 KG)



ISOMETRIC VIEW



SECTION J-J

22-1/4" (565MM) 22-1/4" (565MM)

KEY NUMBERS

- ① SIDE BLOCKING FOR THIS PAGE, 2" X 4" (51MM X 102MM) BY LENGTH OF 2-WIDE PORTION OF THE LOAD MINUS 2" (REF: 15'-9") (4,801MM) (DOUBLED) (4 REQD). PRE-POSITION AS SHOWN BY THE "SECTION J-J" VIEW BELOW. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM). RANDOM LENGTHS MAY BE USED. SEE GENERAL NOTES "H" AND "J" ON PAGE 2.
- ② SIDE BLOCKING FOR PAGE 30, 2" X 4" (51MM X 102MM) BY LENGTH OF 3-WIDE PORTION OF THE LOAD (REF: 9'-9") (29,72MM) (DOUBLED) (4 REQD). PRE-POSITION AS SHOWN BY THE "SECTION K-K" VIEW ON PAGE 30. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM). RANDOM LENGTHS MAY BE USED.
- ③ CENTER GATE E, FOR THIS PAGE (2 REQD). SEE THE DETAIL ON PAGE 39. SEE GENERAL NOTE "K" ON PAGE 2.
- ④ CENTER GATE F, FOR PAGE 30 (2 REQD). SEE THE DETAIL ON PAGE 39.
- ⑤ STRUT FOR THIS PAGE, 4" X 4" (102MM X 102MM) BY CUT TO FIT (REF: 6'-3-1/2") (1,918MM) (6 REQD). TOENAIL TO THE CENTER GATES, PIECES MARKED ③, W/2 NAILS AT EACH END.
- ⑥ STRUT FOR PAGE 30, 4" X 4" (102MM X 102MM) BY CUT TO FIT (REF: 47") (917MM) (6 REQD). TOENAIL TO THE CENTER GATES, PIECES MARKED ④, W/2 NAILS AT EACH END.
- ⑦ HORIZONTAL STRUT BRACING FOR THIS PAGE, 2" X 4" X 60" (51MM X 102MM X 1,524MM) (2 REQD). NAIL TO THE STRUTS, PIECES MARKED ⑤, W/3 NAILS AT EACH JOINT.
- ⑧ VERTICAL STRUT BRACING FOR THIS PAGE, 2" X 4" X 39" (51MM X 102MM X 991MM) (3 REQD). NAIL TO THE STRUTS, PIECES MARKED ⑤, W/3 NAILS AT EACH JOINT.
- ⑨ CAP PIECE FOR THIS PAGE, LENGTH OF 2-WIDE PORTION OF THE LOAD MINUS 2" (REF: 16'-1") (4,902MM) LONG (4 REQD). SEE THE DETAIL ON PAGE 44. POSITION AGAINST CAR ENDWALL.

(CONTINUED ON PAGE 29)

(KEY NUMBERS CONTINUED FROM PAGE 28)

- ⑩ CAP PIECE FOR PAGE 30, LENGTH OF 3-WIDE PORTION OF THE LOAD, (REF: 9'-9") (2,972MM) LONG (4 REOD). SEE THE DETAIL ON PAGE 44. POSITION AGAINST CAR ENDWALL.
- ⑪ GATE STOP PIECE FOR PAGE 28, 2" X 4" X 12" (51MM X 102MM X 305MM) (DOUBLED) (2 REOD). POSITION AS SHOWN. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/2 NAILS.
- ⑫ SIDE BLOCKING/GATE STOP PIECE, 2" X 4" X 30" (51MM X 102MM X 762MM) (DOUBLED) (2 REOD FOR PAGE 28, 4 REOD FOR PAGE 30). POSITION AS SHOWN. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/4 NAILS.
- ⑬ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 12'-0" (32MM X .889MM OR .787MM X 3658MM) LONG STEEL STRAPPING FOR PAGE 28, 16'-0" (4877MM) LONG FOR PAGE 30 (6 REOD). INSTALL TO ENCIRCLE THE PALLET UNITS, EXTENDING UNDER THE PALLET COVERS AND OVER THE CAP PIECES, PIECES MARKED ⑨ AND/OR ⑩.
- ⑭ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 16'-6" (32MM X .889MM OR .787MM X 5,029MM) LONG STEEL STRAPPING FOR PAGE 28 (1 REOD), 20'-0" (6,096MM) LONG FOR PAGE 30 (2 REOD). INSTALL TO ENCIRCLE A CROSSWISE ROW, EXTENDING UNDER THE PALLET BASES AND OVER THE PALLET COVERS.
- ⑮ SEAL FOR 1-1/4" STRAPPING (14 REOD, 2 PER STRAP FOR PAGE 28, 16 REOD, 2 PER STRAP FOR PAGE 30). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "N" ON PAGE 2.

SPECIAL NOTES FOR PAGE 28:

- 1. A GBS 252 CAR, 41'-8" (12,700MM) LONG BY 8'-6" (2,600MM) WIDE HAVING A MAXIMUM LOAD LIMIT OF 57,304 POUNDS (26,016 KG) IS SHOWN IN THE "ISOMETRIC VIEW" ON PAGE 28. CARS OF OTHER SIZES AND TYPES MAY BE USED. SEE THE CHART ON PAGE 28.
- 2. A 43-UNIT LOAD OF 8" PROJECTILES, 6 PER SMALL PALLET, IS SHOWN ON PAGE 28. THE LOAD MAY BE INCREASED BY TWO PALLET UNITS BY ADDING A 2-WIDE LOAD UNIT OR BY ONE PALLET UNIT BY FORMING A 3-WIDE LOAD UNIT AT ONE END OF THE CAR IN LIEU OF A 2-WIDE LOAD UNIT SHOWN.
- 3. THE DEPICTED LOAD CAN BE REDUCED BY MULTIPLES OF TWO UNITS TO SUIT THE QUANTITY TO BE SHIPPED BY OMITTING ONE OR MORE LOAD UNITS FROM THE ENDS OF THE CAR. THE LOAD CAN BE REDUCED BY THREE UNITS BY OMITTING THE CROSSWISE ROW. A LOAD MAY BE REDUCED BY ONE UNIT BY INSTALLING A "FILLER ASSEMBLY A" IN THE CENTER OF THE CROSSWISE ROW. SEE THE "FILLER ASSEMBLY A" DETAIL ON PAGE 45. AS AN ALTERNATIVE, A LOAD MAY BE REDUCED BY ONE UNIT BY FORMING A 3-WIDE LOAD UNIT IN LIEU OF TWO 2-WIDE LOAD UNITS.

BILL OF MATERIAL (PAGE 28)		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2" (51MM X 51MM)	84 (25,604MM)	28
2" X 4" (51MM X 102MM)	231 (70,409MM)	154
2" X 6" (51MM X 152MM)	41 (12,497MM)	41
4" X 4" (102MM X 102MM)	38 (11,583MM)	51
NAILS	NO. REOD	POUNDS
SIZE AS REOD	260	8
STEEL STRAPPING, 1-1/4" --- 89' REOD --- 13 LBS		
SEAL FOR 1-1/4" STRAPPING -- 14 REOD --- 1 LB		

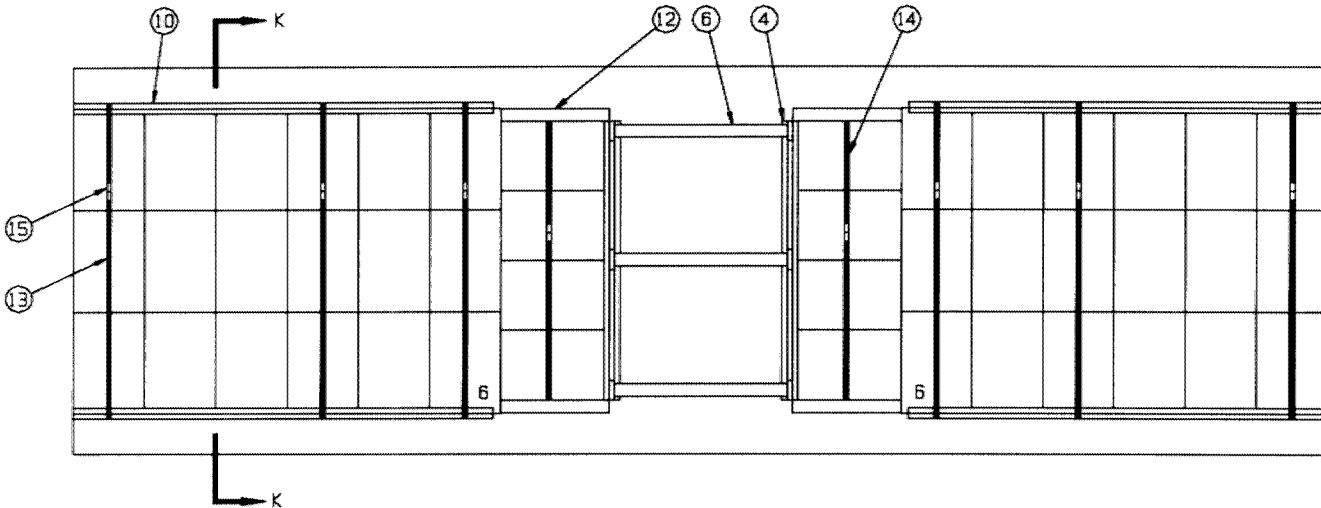
LOAD AS SHOWN (PAGE 28)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	43	54,008 LBS (24,520 KG)
DUNNAGE		571 LBS (260 KG)
TOTAL WEIGHT		54,579 LBS (24,780 KG)

43-UNIT LOAD IN A GBS 252 CAR
8" PROJECTILES, 6 PER SMALL WOODEN PALLET

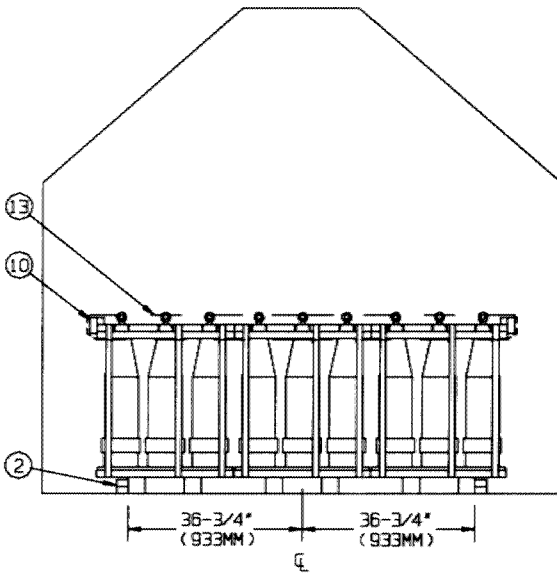
PAGE 29

PROJECT CA 303-93



PLAN VIEW

RAILCARS THAT MAY BE USED			
TYPE OF RAILCAR	LENGTH OF RAILCAR	MAX. NO. OF ITEMS	MAXIMUM WEIGHT (APPROX)
TMS - - 851	28'-8-3/4" (8,760MM)	47	59,032 LBS (26,801 KG)
GS - - - 210/211/ 212/213/216	30'-5-5/8" (9,280MM)	48	60,288 LBS (27,371 KG)



SECTION K-K

SPECIAL NOTES FOR THIS PAGE:

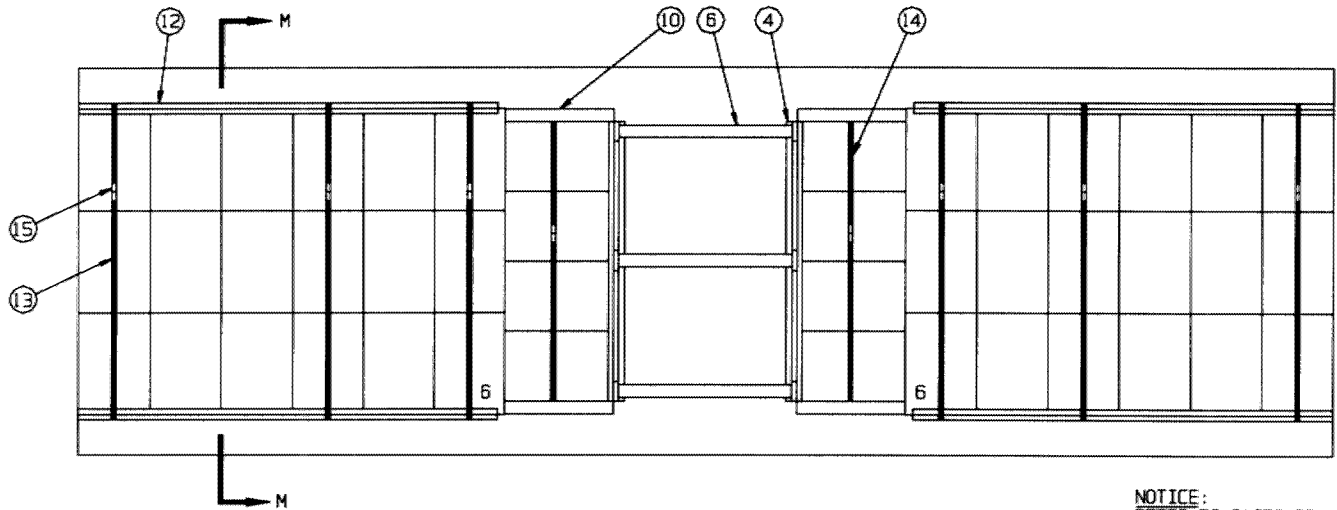
1. A TMS 851 CAR, 28'-8-3/4" (8,760MM) LONG BY 9'-0" (2,760MM) WIDE HAVING A MAXIMUM LOAD LIMIT OF 61,712 POUNDS (28,017 KG) IS SHOWN IN THE "PLAN VIEW" ABOVE. CARS OF OTHER SIZES AND TYPES MAY BE USED. SEE THE CHART ABOVE.
2. A 44-UNIT LOAD OF 8" PROJECTILES, 6 PER SMALL PALLET, IS SHOWN ABOVE. THE LOAD MAY BE INCREASED BY THREE PALLET UNITS BY ADDING A 3-WIDE LOAD UNIT IN ONE END OF THE LOAD, OR BY FOUR PALLET UNITS BY ADDING A CROSSWISE ROW IN ONE END. ADJUST THE LENGTH OF PIECES MARKED ②, ⑥, AND ⑩ OR THE LENGTH OF PIECE MARKED ⑫, AS APPLICABLE.
3. THE DEPICTED LOAD CAN BE REDUCED BY MULTIPLES OF THREE PALLET UNITS TO SUIT THE QUANTITY TO BE SHIPPED BY OMITTING ONE OR MORE LOAD UNITS FROM THE ENDS OF THE LOAD. IF MORE THAN ONE LOAD UNIT IS OMITTED, STRUT BRACING MUST BE APPLIED AS SHOWN BY PIECES MARKED ⑦ AND ⑧ ON PAGE 28. THE LOAD CAN BE REDUCED BY ONE OR TWO PALLET UNITS BY FORMING ONE OR MORE 2-WIDE LOAD UNITS AT THE END OF THE CAR IN LIEU OF THE 3-WIDE LOAD UNITS SHOWN.

BILL OF MATERIAL (THIS PAGE)		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2" (51MM X 51MM)	65 (19,812MM)	22
2" X 4" (51MM X 102MM)	137 (41,756MM)	92
2" X 6" (51MM X 152MM)	47 (14,326MM)	47
4" X 4" (102MM X 102MM)	24 (7,315MM)	32
NAILS	NO. REQD	POUNDS
SIZE AS REQD	180	5
STEEL STRAPPING, 1-1/4" - -	136' REQD - - -	20 LBS
SEAL FOR 1-1/4" STRAPPING - -	16 REQD - - -	1 LB

LOAD AS SHOWN (THIS PAGE)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT - - - - -	44 - - - - -	55,264 LBS (25,090 KG)
OUNNAGE - - - - -	- - - - -	408 LBS (186 KG)
TOTAL WEIGHT - - - - -	- - - - -	55,672 LBS (25,276 KG)

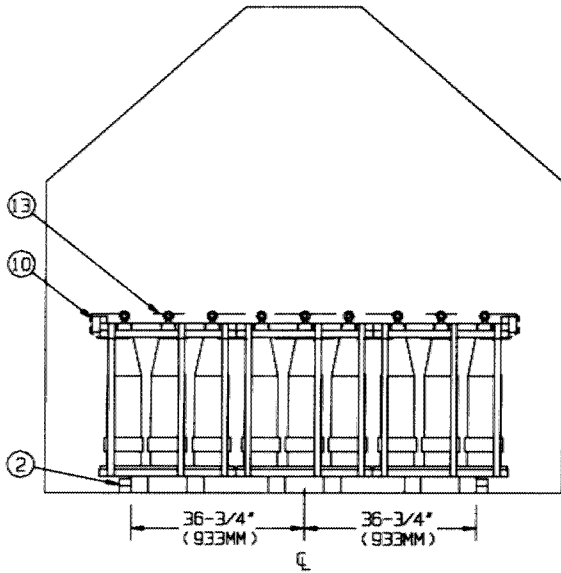
**44-UNIT LOAD IN A TMS 851 CAR
8" PROJECTILES, 6 PER SMALL WOODEN PALLET**



PLAN VIEW

NOTICE:
REFER TO PAGES 32 AND 33
FOR "KEY NUMBERS".

RAILCARS THAT MAY BE USED			
TYPE OF RAILCAR	LENGTH OF RAILCAR	MAX NO. OF ITEMS	MAXIMUM WEIGHT (APPROX)
TMS -- 851	28'-8-3/4" (8,760MM)	47	60,912 LBS (27,654 KG)
GS -- 210/211/ 212/213/216	30'-5-5/8" (9,280MM)	47	60,912 LBS (27,654 KG)



SECTION M-M

SPECIAL NOTES FOR THIS PAGE:

1. A TMS 851 CAR, 28'-8-3/4" (8,760MM) LONG BY 9'-0" (2,760MM) WIDE HAVING A MAXIMUM LOAD LIMIT OF 61,712 POUNDS (28,017 KG) IS SHOWN IN THE "PLAN VIEW" ABOVE. CARS OF OTHER SIZES AND TYPES MAY BE USED. SEE THE CHART ABOVE.
2. A 44-UNIT LOAD OF 8" PROJECTILES, 6 TALL PER SMALL PALLET, IS SHOWN ABOVE. THE LOAD MAY BE INCREASED BY THREE PALLET UNITS BY ADDING A 3-WIDE LOAD UNIT IN ONE END OF THE LOAD. ADJUST THE LENGTH OF PIECES MARKED ②, ⑥, AND ⑩. THE LOAD MAY BE INCREASED BY ONE OR TWO PALLET UNITS BY REPLACING ONE OR TWO THREE-WIDE LOAD UNITS WITH ONE OR TWO CROSSWISE ROWS. ADJUST LENGTHS OF PIECES MARKED ⑩ AND ⑫.
3. THE DEPICTED LOAD CAN BE REDUCED BY MULTIPLES OF THREE UNITS TO SUIT THE QUANTITY TO BE SHIPPED BY OMITTING ONE OR MORE LOAD UNITS FROM THE ENDS OF THE LOAD. IF MORE THAN ONE LOAD UNIT IS OMITTED, STRUT BRACING MUST BE APPLIED AS TYPICALLY SHOWN BY PIECES MARKED ⑦ AND ⑧ ON PAGE 28. THE LOAD CAN BE REDUCED BY ONE OR TWO UNITS BY FORMING ONE OR MORE 2-WIDE LOAD UNITS AT THE END OF THE CAR IN LIEU OF THE 3-WIDE LOAD UNITS SHOWN.

BILL OF MATERIAL (THIS PAGE)		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2" (51MM X 51MM)	65 (19,812MM)	22
2" X 4" (51MM X 102MM)	137 (41,758MM)	92
2" X 6" (51MM X 152MM)	52 (15,850MM)	52
4" X 4" (102MM X 102MM)	24 (7,315MM)	32
NAILS	NO. RECD	POUNDS
SIZE AS RECD	180	5
STEEL STRAPPING, 1-1/4" --	146' RECD --	21 LBS
SEAL FOR 1-1/4" STRAPPING --	16 RECD --	1 LB

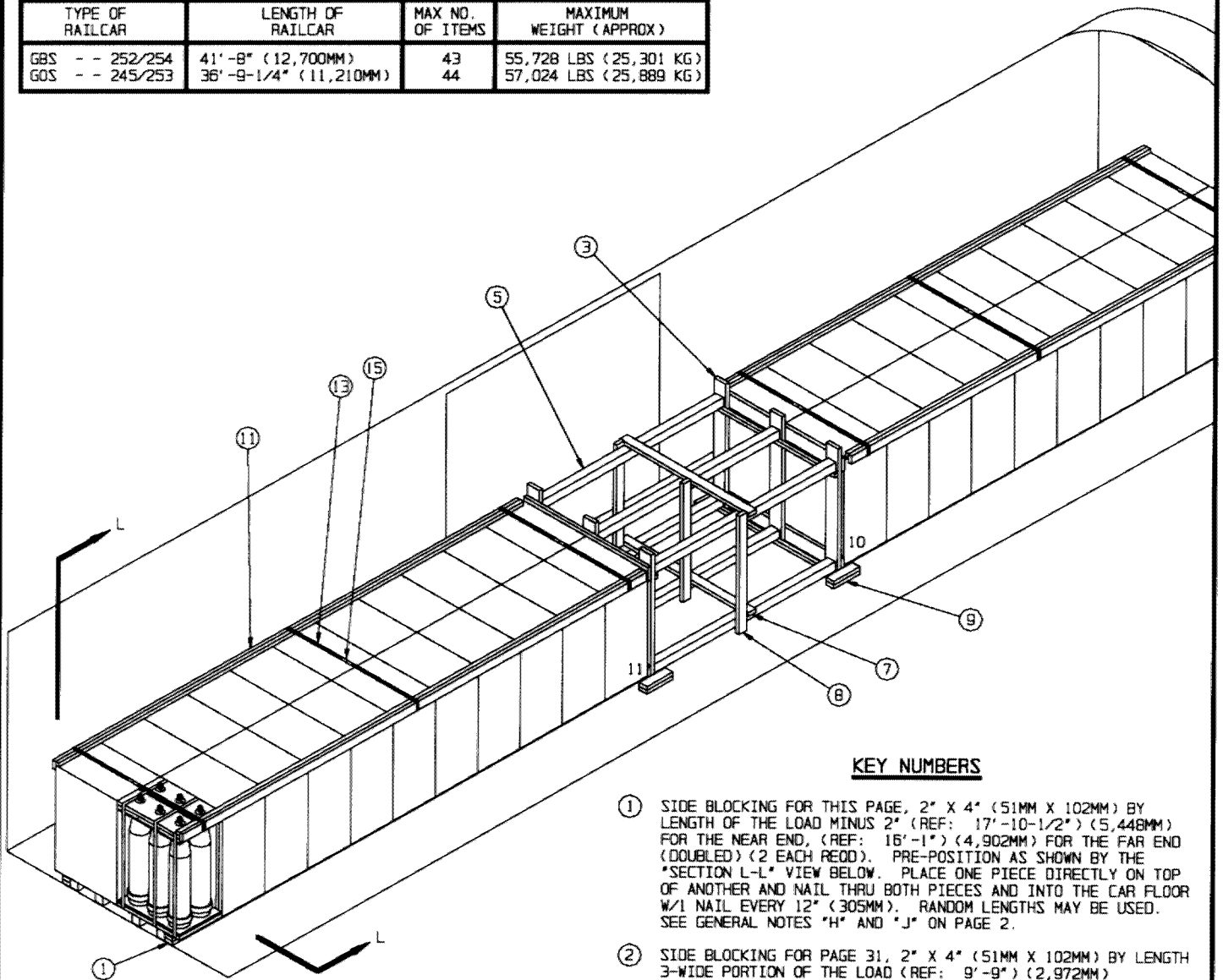
LOAD AS SHOWN (THIS PAGE)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	44	57,024 LBS (25,889 KG)
DUNNAGE		423 LBS (192 KG)
TOTAL WEIGHT		57,447 LBS (26,081 KG)

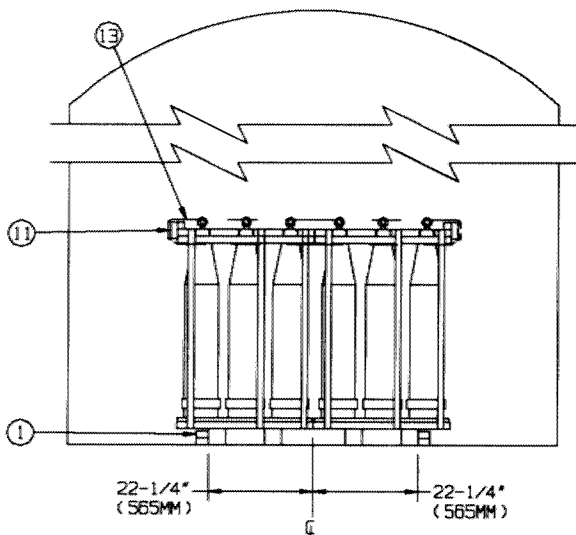
**44-UNIT LOAD IN A TMS 851 CAR
8" PROJECTILES, 6 TALL PER SMALL WOODEN PALLET**

RAILCARS THAT MAY BE USED

TYPE OF RAILCAR	LENGTH OF RAILCAR	MAX NO. OF ITEMS	MAXIMUM WEIGHT (APPROX)
GBS - - 252/254	41'-8" (12,700MM)	43	55,728 LBS (25,301 KG)
GOS - - 245/253	36'-9-1/4" (11,210MM)	44	57,024 LBS (25,889 KG)



ISOMETRIC VIEW



SECTION L-L

**42-UNIT LOAD IN A GBS 252 CAR
8" PROJECTILES, 6 TALL PER SMALL WOODEN PALLET**

KEY NUMBERS

- ① SIDE BLOCKING FOR THIS PAGE, 2" X 4" (51MM X 102MM) BY LENGTH OF THE LOAD MINUS 2" (REF: 17'-10-1/2") (5,448MM) FOR THE NEAR END, (REF: 16'-1") (4,902MM) FOR THE FAR END (DOUBLED) (2 EACH REQD). PRE-POSITION AS SHOWN BY THE "SECTION L-L" VIEW BELOW. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM). RANDOM LENGTHS MAY BE USED. SEE GENERAL NOTES "H" AND "J" ON PAGE 2.
- ② SIDE BLOCKING FOR PAGE 31, 2" X 4" (51MM X 102MM) BY LENGTH 3-WIDE PORTION OF THE LOAD (REF: 9'-9") (2,972MM) (DOUBLED) (4 REQD). PRE-POSITION AS SHOWN BY THE "SECTION M-M" VIEW ON PAGE 31. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM). RANDOM LENGTHS MAY BE USED.
- ③ CENTER GATE G, FOR THIS PAGE (2 REQD). SEE THE DETAIL ON PAGE 40. SEE GENERAL NOTE "K" ON PAGE 2.
- ④ CENTER GATE H, FOR PAGE 31 (2 REQD). SEE THE DETAIL ON PAGE 40.
- ⑤ STRUT FOR THIS PAGE, 4" X 4" (102MM X 102MM) BY CUT TO FIT (REF: 7'-0-1/2") (2,146MM) (6 REQD). TOENAIL TO THE CENTER GATES, PIECES MARKED ③, W/2 NAILS AT EACH END.
- ⑥ STRUT FOR PAGE 31, 4" X 4" (102MM X 102MM) BY CUT TO FIT (REF: 47") (917MM) (6 REQD). TOENAIL TO THE CENTER GATES, PIECES MARKED ④, W/2 NAILS AT EACH END.
- ⑦ HORIZONTAL STRUT BRACING FOR THIS PAGE, 2" X 4" X 60" (51MM X 102MM X 1,524MM) (2 REQD). NAIL TO THE STRUTS, PIECES MARKED ⑤, W/3 NAILS AT EACH JOINT.
- ⑧ VERTICAL STRUT BRACING FOR THIS PAGE, 2" X 4" X 48" (51MM X 102MM X 1,219MM) (3 REQD). NAIL TO THE STRUTS, PIECES MARKED ⑤, W/3 NAILS AT EACH JOINT.
- ⑨ GATE STOP PIECE FOR THIS PAGE, 2" X 4" X 12" (51MM X 102MM X 305MM) (DOUBLED) (4 REQD). PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/2 NAILS.

(CONTINUED ON PAGE 33)

(KEY NUMBERS CONTINUED FROM PAGE 32)

- ⑩ SIDE BLOCKING/GATE STOP PIECE FOR PAGE 31, 2" X 4" X 30" (51MM X 102MM X 762MM) (DOUBLED) (4 REOD). POSITION AS SHOWN. PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/4 NAILS.
- ⑪ CAP PIECE FOR PAGE 32, LENGTH OF 2-WIDE PORTION OF LOAD MINUS 2" (REF: 17'-8-1/2") (5,398MM) FOR THE NEAR END, (REF: 16'-1") (4,902MM) FOR THE FAR END (2 EACH REOD). SEE THE DETAIL ON PAGE 44. POSITION AGAINST CAR ENDWALL.
- ⑫ CAP PIECE FOR PAGE 31, LENGTH OF 3-WIDE PORTION OF LOAD MINUS 2" (REF: 9'-7") (2,921MM) (4 REOD). SEE THE DETAIL ON PAGE 44. POSITION AGAINST CAR ENDWALL.
- ⑬ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 12'-0" (32MM X .889MM OR .787MM X 3,658MM) LONG STEEL STRAPPING FOR PAGE 32, 17'-0" (5,182MM) LONG FOR PAGE 31 (6 REOD). INSTALL TO ENCIRCLE THE PALLET COVERS AND THE CAP PIECES, PIECES MARKED ⑪ AND/OR ⑫.
- ⑭ BUNDLING STRAP FOR PAGE 31, 1-1/4" X .035" OR .031" X 22'-0" (32MM X .889MM OR .787MM X 6,706MM) LONG STEEL STRAPPING (2 REOD). INSTALL TO ENCIRCLE A CROSSWISE ROW, EXTENDING UNDER THE PALLET BASES AND OVER THE PALLET COVERS.
- ⑮ SEAL FOR 1-1/4" STRAPPING (12 REOD, 2 PER STRAP FOR PAGE 32, 16 REOD, 2 PER STRAP FOR PAGE 31). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "N" ON PAGE 2.

SPECIAL NOTES FOR PAGE 32:

- 1. A GBS 252 CAR, 41'-8" (12,700MM) LONG BY 8'-6" (2,600MM) WIDE HAVING A MAXIMUM LOAD LIMIT OF 57,304 POUNDS (26,016 KG) IS SHOWN IN THE "ISOMETRIC VIEW" ON PAGE 32. CARS OF OTHER SIZES AND TYPES MAY BE USED. SEE THE CHART ON PAGE 32.
- 2. A 42-UNIT LOAD OF 8" PROJECTILES, 6 TALL PER SMALL PALLET, IS SHOWN ON PAGE 32. THE LOAD MAY BE INCREASED BY ONE PALLET UNIT BY FORMING A 3-WIDE LOAD UNIT AT ONE END OF THE CAR IN LIEU OF THE 2-WIDE LOAD UNIT SHOWN.
- 3. THE DEPICTED LOAD CAN BE REDUCED BY MULTIPLES OF TWO UNITS TO SUIT THE QUANTITY TO BE SHIPPED BY OMITTING ONE OR MORE LOAD UNITS FROM THE ENDS OF THE CAR. THE LOAD CAN BE REDUCED BY ONE PALLET UNIT BY FORMING A 3-WIDE LOAD UNIT AT THE END OF THE CAR AND OMITTING TWO 2-WIDE LOAD UNITS.

BILL OF MATERIAL (PAGE 32)		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2" (51MM X 51MM)	88 (26,822MM)	30
2" X 4" (51MM X 102MM)	234 (71,324MM)	156
2" X 6" (51MM X 152MM)	46 (14,021MM)	46
4" X 4" (102MM X 102MM)	43 (13,107MM)	58
NAILS	NO. REOD	POUNDS
SIZE AS REOD	264	7
STEEL STRAPPING, 1-1/4" - - - 72' REOD - - - 11 LBS		
SEAL FOR 1-1/4" STRAPPING - - 12 REOD - - - 1 LB		

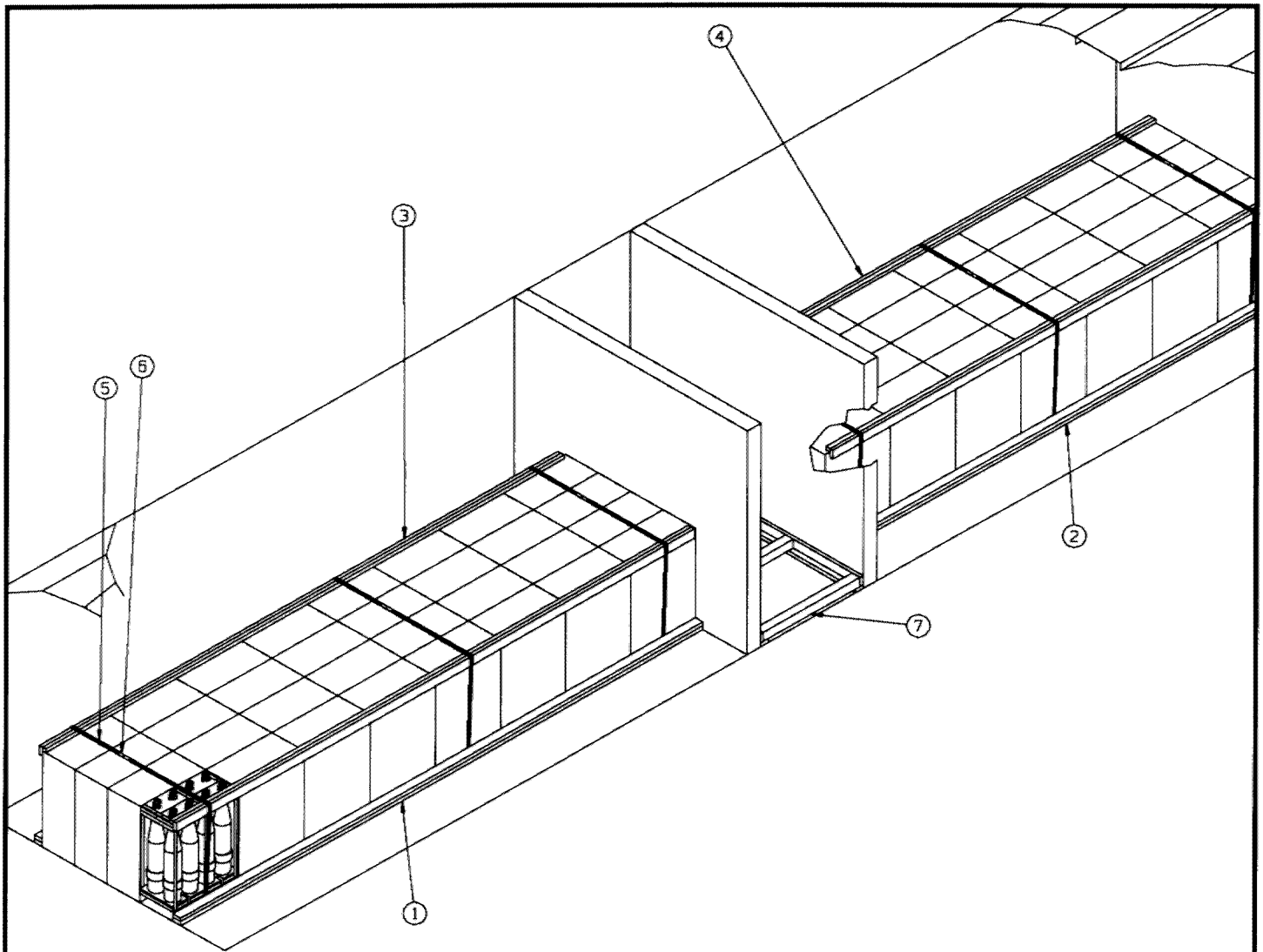
LOAD AS SHOWN (PAGE 32)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	42	54,432 LBS (24,713 KG)
DUNNAGE		599 LBS (272 KG)
TOTAL WEIGHT		55,031 LBS (24,985 KG)

42-UNIT LOAD IN A GBS 252 CAR
8" PROJECTILES, 6 TALL PER SMALL WOODEN PALLET

PAGE 33

PROJECT CA 303-93



ISOMETRIC VIEW

KEY NUMBERS

- ① SIDE BLOCKING, 2" X 4" (51MM X 102MM) BY LENGTH OF THE LOAD (REF: 19'-5") (5,918MM) (DOUBLED) (2 REOD). PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM). RANDOM LENGTHS MAY BE USED. SEE GENERAL NOTES "H" AND "J" ON PAGE 2.
- ② SIDE BLOCKING, 2" X 4" (51MM X 102MM) BY LENGTH OF THE LOAD (REF: 17'-0") (5,182MM) (DOUBLED) (2 REOD). PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM). RANDOM LENGTHS MAY BE USED.
- ③ CAP PIECE, LENGTH OF LOAD (REF: 19'-5") (5,918MM) (2 REOD). SEE THE DETAIL ON PAGE 44.
- ④ CAP PIECE, LENGTH OF LOAD (REF: 17'-0") (5,182MM) (2 REOD). SEE THE DETAIL ON PAGE 44.
- ⑤ BUNDLING STRAP, 1-1/4" X .035" OR .031" (32MM X .889MM OR .787MM) BY LENGTH TO SUIT (REF: 15'-0") (4,572MM) LONG STEEL STRAPPING (6 REOD). INSTALL TO ENCIRCLE THE PALLET UNITS, EXTENDING UNDER THE PALLET BASES AND OVER THE CAP PIECES, PIECES MARKED ③ AND/OR ④.
- ⑥ SEAL FOR 1-1/4" STRAPPING (12 REOD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "N" ON PAGE 2.
- ⑦ STRUT ASSEMBLY (1 REOD). SEE THE DETAIL ON PAGE 44.

SPECIAL NOTES:

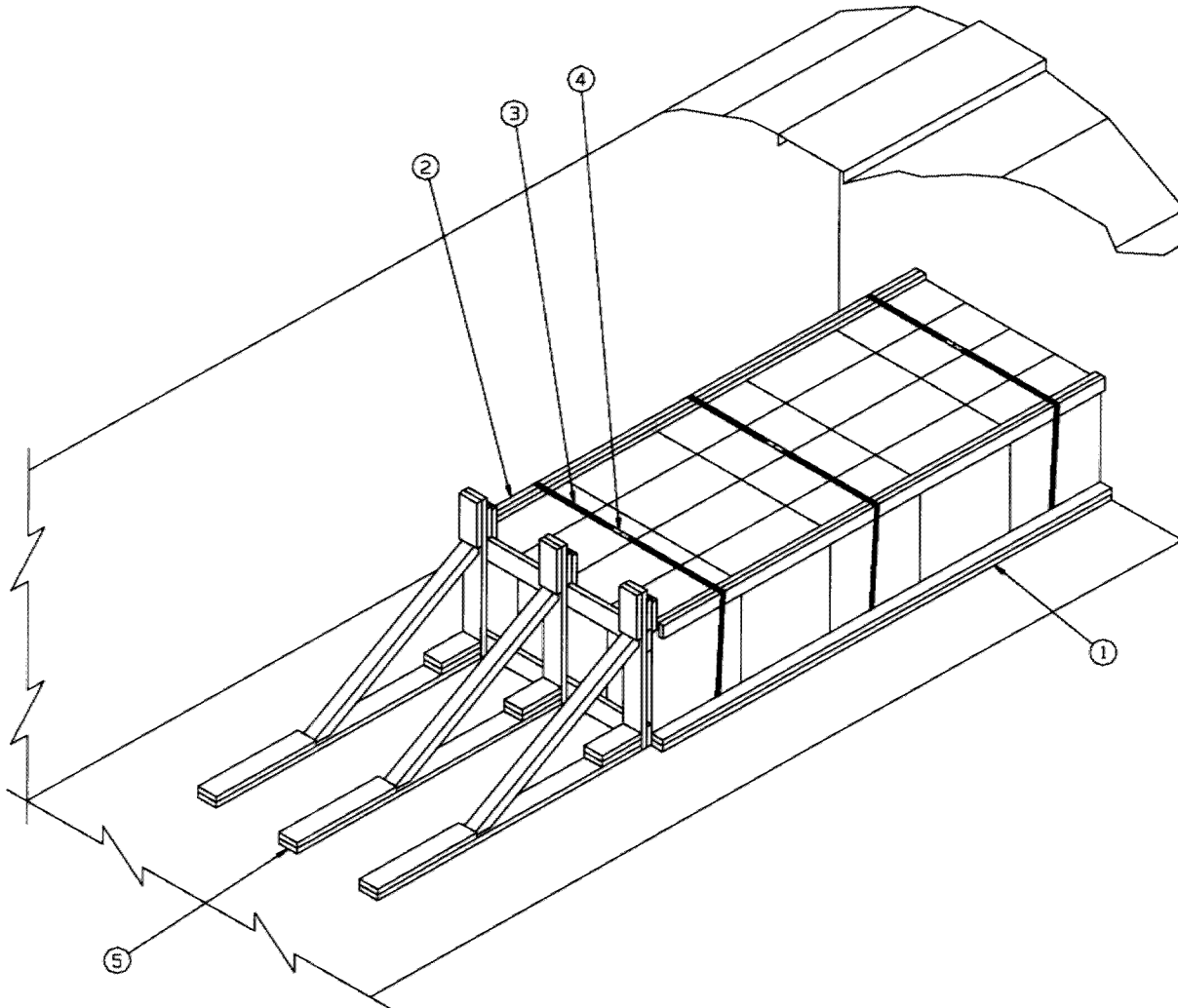
1. AN HBILLS 294 CAR, 41'-3" (12,576MM) LONG BY 8'-9" (2,670MM) WIDE HAVING A MAXIMUM LOAD LIMIT OF 57,304 POUNDS (26,016 KG) IS SHOWN IN THE "ISOMETRIC VIEW" ON PAGE 34. CARS OF OTHER SIZES MAY BE USED.
2. A 60-UNIT LOAD OF 155MM PROJECTILES, 8 PER LARGE PALLET, IS SHOWN AS A TYPICAL LOAD. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER PROJECTILE PALLET UNITS DEPICTED WITHIN THIS DRAWING.
3. A LOAD CAN BE INCREASED, LOAD LIMIT OF THE CAR AND THE CAR WIDTH PERMITTING, BY FORMING LOAD UNITS AT THE ENDS OF THE CAR WHICH ARE ONE MORE PALLET UNIT IN WIDTH THAN THE BALANCE OF THE LOAD.
4. A LOAD CAN BE REDUCED BY THE NUMBER OF PALLETS IN A LOAD UNIT BY ELIMINATING ONE OR MORE LOAD UNITS. A LOAD CAN BE REDUCED BY ONE PALLET UNIT BY FORMING A LOAD UNIT AT THE END OF THE CAR WHICH IS ONE PALLET LESS IN WIDTH THAN THE BALANCE OF THE LOAD. SEE THE LOAD ON PAGE 8 FOR A TYPICAL EXAMPLE.

BILL OF MATERIAL (TYPICAL)		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2" (51MM X 51MM)	69 (21,031MM)	23
2" X 4" (51MM X 102MM)	240 (73,152MM)	160
2" X 6" (51MM X 152MM)	17 (5,182MM)	23
4" X 4" (102MM X 102MM)	18 (5,486MM)	24
NAILS	NO. REQD	POUNDS
SIZE AS REQD	190	6
STEEL STRAPPING, 1-1/4" - - - 90'	REQD - - - 13	LBS
SEAL FOR 1-1/4" STRAPPING - - 12	REQD - - - 1	LB

LOAD AS SHOWN (TYPICAL)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT - - - - -	60 - - - - -	52,440 LBS (23,808 KG)
DUNNAGE - - - - -	- - - - -	482 LBS (219 KG)
TOTAL WEIGHT - - - - -		52,922 LBS (24,027 KG)

TYPICAL 60-UNIT LOAD IN A HBILLS 294 CAR
155MM PROJECTILES, 8 PER LARGE WOODEN PALLET



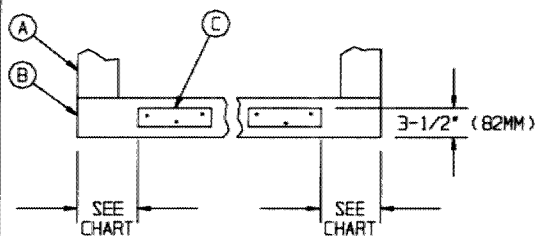
ISOMETRIC VIEW

SPECIAL NOTES:

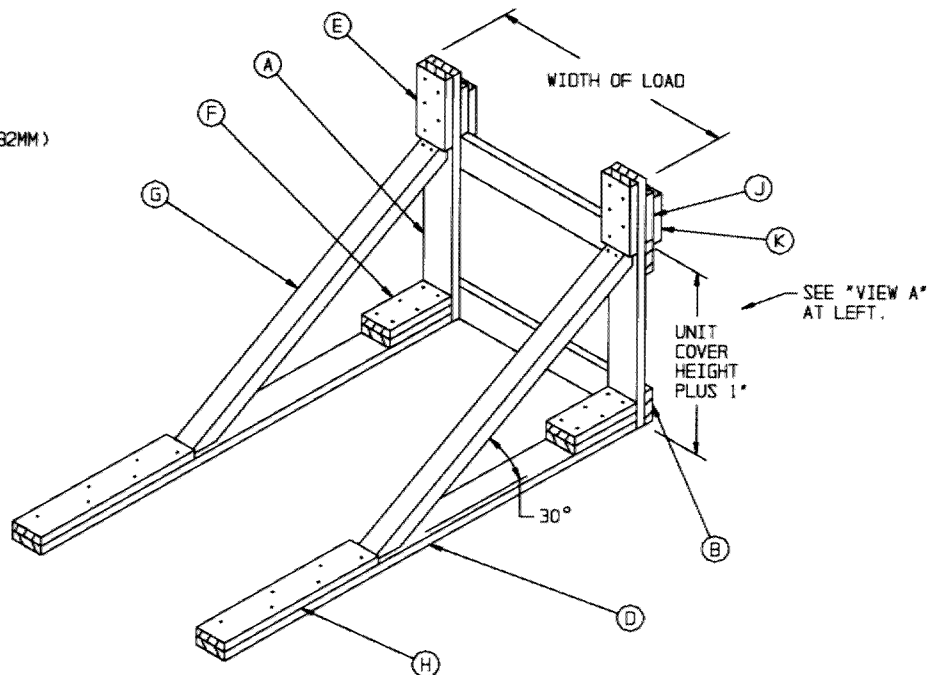
1. THE KNEE BRACE METHOD OF PARTIAL LAYER BRACING IS APPLICABLE FOR ANY OF THE TYPES OF CARS SHOWN HEREIN. KNEE BRACE TYPE OF BRACING SHOULD BE USED WHEN THE SPACE IN THE CENTER OF THE CAR IS APPROXIMATELY 12'-0" (3,658MM) OR MORE.
2. THE 155MM LARGE PALLET IS SHOWN AS A TYPICAL LOAD. THE PROCEDURES ARE ALSO APPLICABLE FOR ANY OF THE OTHER PALLET UNITS DEPICTED ON PAGE 46.
3. A CROSSWISE-POSITIONED LOAD IS SHOWN AS TYPICAL. THE LCL BRACE PROCEDURES ARE ALSO APPLICABLE FOR LENGTHWISE-POSITIONED PALLET UNITS.
4. THE NUMBER OF PALLET UNITS SHOWN IS TYPICAL AND MAY BE ADJUSTED TO SUIT THE QUANTITY TO BE SHIPPED.
5. THREE "KNEES" ARE SHOWN FOR BRACING OF THE TYPICAL 4-WIDE LOAD. FOR A 3-WIDE CROSSWISE LOAD, TWO KNEES WILL BE ADEQUATE. FOR A 6-WIDE CROSSWISE LOAD, AN ADDITIONAL KNEE SHOULD BE ADDED. FOR 2-WIDE LENGTHWISE LOADS, TWO KNEES ARE SUFFICIENT.
6. EACH END OF A CAR SHOULD BE LOADED WITH EQUAL QUANTITIES OF PALLET UNITS, TO THE MAXIMUM EXTENT POSSIBLE. THE NUMBER OF "KNEES" SPECIFIED IN SPECIAL NOTE 5 ABOVE WILL BE ADEQUATE FOR RETAINING THE MAXIMUM PALLET UNITS WHICH CAN BE LOADED IN ONE END OF A CAR.

KEY NUMBERS

- ① SIDE BLOCKING, 2" X 4" (51MM X 102MM) BY LENGTH OF THE LOAD (REF: 14'-7") (4,445MM) (DOUBLED) (2 REOD). PLACE ONE PIECE DIRECTLY ON TOP OF ANOTHER AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/1 NAIL EVERY 12" (305MM). RANDOM LENGTHS MAY BE USED. SEE GENERAL NOTES "H" AND "J" ON PAGE 2.
- ② CAP PIECE, LENGTH OF LOAD (REF: 14'-7") (4,445MM) (2 REOD). SEE THE DETAIL ON PAGE 44.
- ③ BUNDLING STRAP, 1-1/4" X .035" OR .031" (32MM X .889MM OR .787MM) BY A LENGTH TO SUIT (REF: 17'-0") (5,182MM) LONG STEEL STRAPPING (3 REOD). INSTALL TO ENCIRCLE THE PALLET UNITS, EXTENDING UNDER THE PALLET BASES AND OVER THE CAP PIECES, PIECES MARKED ②.
- ④ SEAL FOR 1-1/4" STRAPPING (6 REOD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "N" ON PAGE 2.
- ⑤ KNEE BRACE ASSEMBLY (AS REOD). SEE THE DETAIL ON PAGE 37. SEE SPECIAL NOTE 2 AT LEFT.



VIEW A

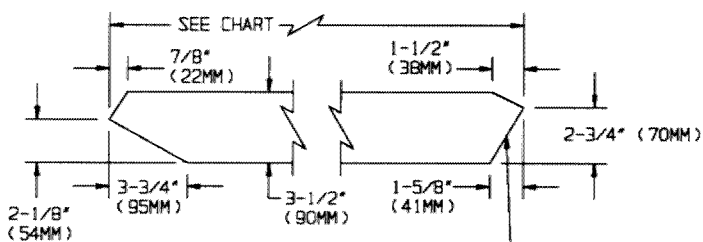


KNEE BRACE ASSEMBLY

KNEE BRACE ASSEMBLY CHART				
ITEM	LENGTH/LOCATION OF PIECE			
	LENGTH OF PIECE A	LOCATION OF PIECE C	LENGTH OF PIECE D	LENGTH OF PIECE G
155MM, SMALL PALLET	42" (1,067MM)	8-1/4" (210MM)	6'-8" (2,032MM)	57" (1,448MM)
155MM, LARGE PALLET	50" (1,270MM)	9-1/2" (241MM)	7'-10" (2,388MM)	6'-1" (1,854MM)
8" SMALL PALLET	48" (1,219MM)	10-1/2" (267MM)	7'-6" (2,286MM)	69" (1,753MM)
8" TALL/ SMALL PALLET	58-1/2" (1,486MM)	10-1/2" (267MM)	9'-0" (2,743MM)	7'-6" (2,286MM)
155MM, SHORT METAL PALLET	41" (1,041MM)	10" (254MM)	6'-6" (1,981MM)	55" (1,397MM)
155MM, TALL METAL PALLET	48-5/8" (1,235MM)	10" (254MM)	7'-7" (2,311MM)	70-1/4" (1,784MM)

KEY LETTERS

- (A) VERTICAL PIECE, 2" X 6" (51MM X 152MM) BY PALLET UNIT COVER HEIGHT PLUS 12" (304MM) (2 REOD). SEE CHART AT LEFT FOR REFERENCE DIMENSIONS.
- (B) HORIZONTAL PIECE, 2" X 6" (51MM X 152MM) BY LOAD WIDTH (2 REOD). NAIL TO THE VERTICAL PIECES, PIECES MARKED (A), W/3 NAILS AT EACH JOINT. SEE GENERAL NOTE "K" ON PAGE 2.
- (C) HOLD-DOWN CLEAT, 2" X 3" (51MM X 76MM) BY THE FOLLOWING LENGTHS (2 REOD). FOR THE 155MM SMALL AND LARGE PALLETS - 10" (254MM), FOR THE 8" SMALL AND TALL/SMALL PALLETS - 7-1/2" (191MM), FOR THE 155MM SHORT AND TALL METAL PALLETS - 9" (229MM). LOCATE AS SHOWN IN "VIEW A" ABOVE AND AS SPECIFIED BY THE CHART. PRE-DRILL AS NECESSARY AND NAIL TO A HORIZONTAL PIECE, PIECE MARKED (B), W/2 NAILS.
- (D) FLOOR CLEAT, 2" X 6" (51MM X 152MM) MATERIAL OF A LENGTH AS SPECIFIED IN THE CHART AT LEFT. ALIGN WITH A VERTICAL PIECE, PIECE MARKED (A), AND NAIL TO THE CAR FLOOR W/1 NAIL EVERY 8" (203MM).
- (E) HOLD-DOWN CLEAT, 2 X 6" X 12" (51MM X 102MM X 305MM) (2 REOD). NAIL TO A VERTICAL PIECE, PIECE MARKED (A), W/5 NAILS.
- (F) POCKET CLEAT, 2" X 6" X 12" (51MM X 152MM X 305MM) DOUBLED (2 REOD). NAIL THE FIRST PIECE TO THE FLOOR CLEAT, PIECE MARKED (D), W/4 NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER AND TOENAIL TO A VERTICAL PIECE, PIECE MARKED (A), W/2 NAILS.
- (G) BRACE, 4" X 4" (102MM X 102MM) MATERIAL OF A LENGTH AS SPECIFIED IN THE CHART AT LEFT (2 REOD). SEE THE "BRACE G" DETAIL AT LEFT FOR BEVEL CUTS REQUIRED. TOENAIL TO A VERTICAL PIECE AND TO A FLOOR CLEAT, PIECES MARKED (A) AND (D) W/2 NAILS.
- (H) BACK-UP CLEAT, 2" X 6" X 30" (51MM X 152MM X 762MM) (2 REOD). NAIL TO A FLOOR CLEAT, PIECE MARKED (D), W/6 NAILS.
- (J) FILLER PIECE, 2" X 6" X 8" (51MM X 152MM X 203MM) (2 REOD). NAIL TO A VERTICAL PIECE, PIECE MARKED (A), W/3 NAILS.
- (K) REINFORCING PIECE, 2" X 6" X 8" (51MM X 152MM X 203MM) (2 REOD). POSITION TO CONTACT PALLET COVER AND NAIL TO A FILLER PIECE, PIECE MARKED (J), W/3 NAILS.



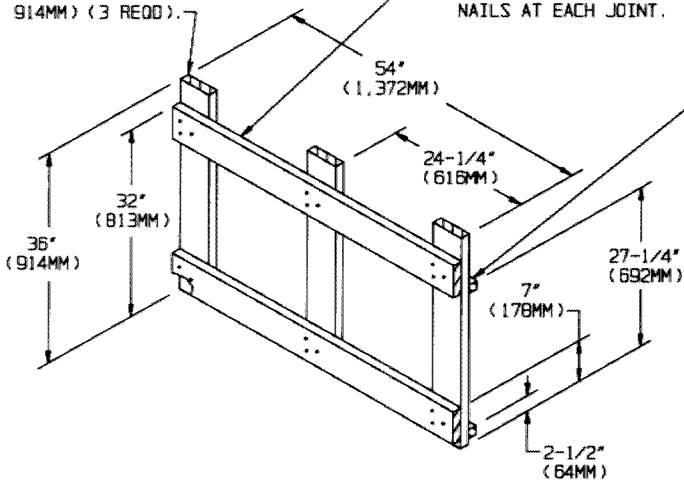
BRACE G
4" X 4" MATERIAL

THE BRACE MUST BE INSTALLED SO THAT THIS BEARING SURFACE WILL BE IN CONTACT WITH THE VERTICAL PIECE MARKED (A).

KNEE BRACE ASSEMBLY

VERTICAL PIECE,
2" X 6" X 36"
(51MM X 152MM X
914MM) (3 REQD).

HORIZONTAL PIECE, 2" X 6" X 54"
(51MM X 152MM X 1,372MM) (2 REQD).
NAIL TO THE VERTICAL PIECES W/3
NAILS AT EACH JOINT.



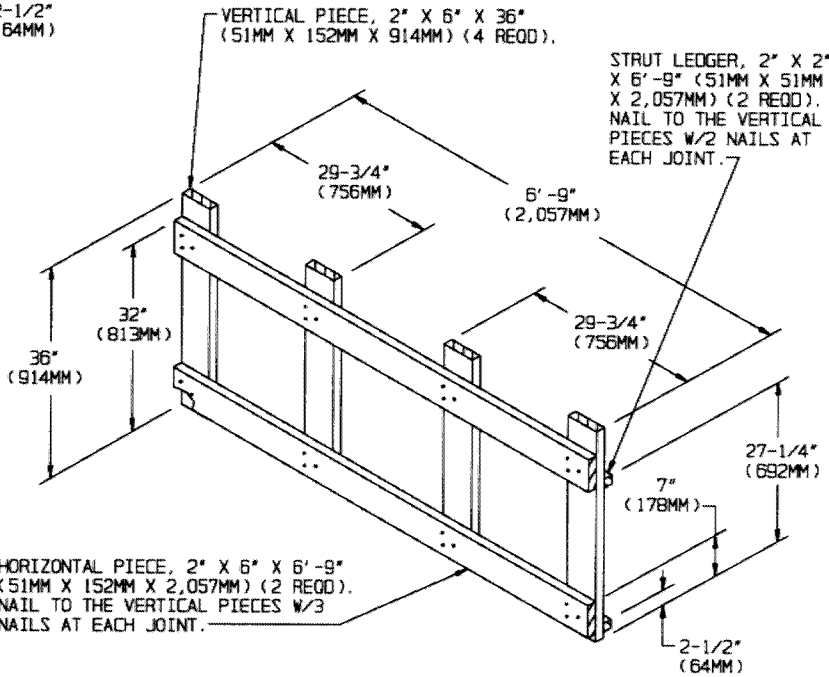
STRUT LEDGER, 2" X 2" X 54"
(51MM X 51MM X 1,372MM)
(2 REQD). NAIL TO THE
VERTICAL PIECES W/2 NAILS
AT EACH JOINT.

CENTER GATE A

FOR USE IN LOADS OF 155MM SMALL WOODEN
PALLETES ON PAGES 4, 6, 16, AND 20.

VERTICAL PIECE, 2" X 6" X 36"
(51MM X 152MM X 914MM) (4 REQD).

STRUT LEDGER, 2" X 2"
X 6'-9" (51MM X 51MM
X 2,057MM) (2 REQD).
NAIL TO THE VERTICAL
PIECES W/2 NAILS AT
EACH JOINT.

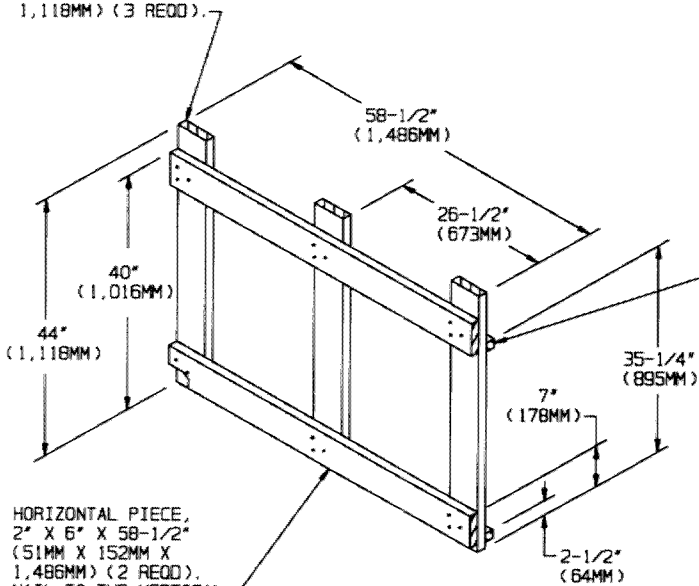


HORIZONTAL PIECE, 2" X 6" X 6'-9"
(51MM X 152MM X 2,057MM) (2 REQD).
NAIL TO THE VERTICAL PIECES W/3
NAILS AT EACH JOINT.

CENTER GATE B

FOR USE IN LOADS OF 155MM SMALL WOODEN
PALLETES ON PAGES 5, 7, 18, AND 19.

VERTICAL PIECE,
2" X 6" X 44"
(51MM X 152MM X
1,118MM) (3 REQD).



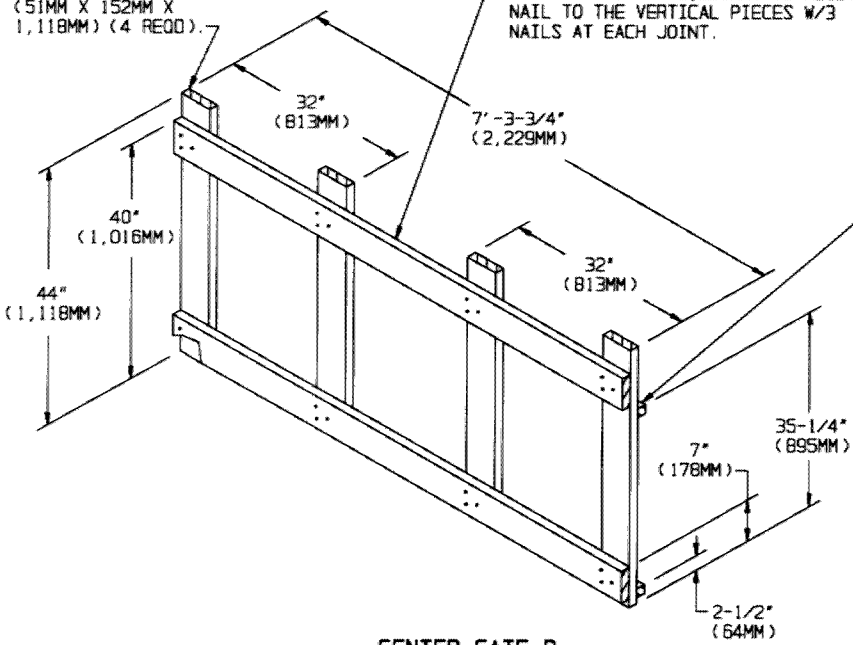
STRUT LEDGER, 2" X 2" X 58-1/2"
(51MM X 51MM X 1,486MM) (2 REQD).
NAIL TO THE VERTICAL
PIECES W/2 NAILS AT
EACH JOINT.

CENTER GATE C

FOR USE IN LOADS OF 155MM
LARGE WOODEN PALLETES ON
PAGES 8, 10, 22, AND 26.

VERTICAL PIECE,
2" X 6" X 44"
(51MM X 152MM X
1,118MM) (4 REQD).

HORIZONTAL PIECE, 2" X 6" X 7'-3-3/4"
(51MM X 152MM X 2,229MM) (2 REQD).
NAIL TO THE VERTICAL PIECES W/3
NAILS AT EACH JOINT.



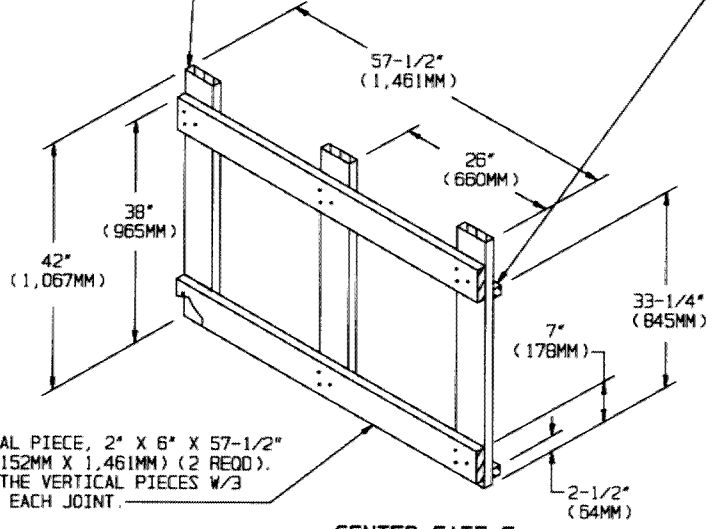
STRUT LEDGER, 2" X 2" X 7'-3-3/4"
(51MM X 51MM X 2,229MM) (2 REQD).
NAIL TO THE VERTICAL PIECES W/2
NAILS AT EACH JOINT.

CENTER GATE D

FOR USE IN LOADS OF 155MM
LARGE PALLETS ON PAGES 9,
11, 24, AND 25.

STRUT LEDGER, 2" X 2" X
57-1/2" (51MM X 51MM X
1,461MM) (2 REQD). NAIL
TO THE VERTICAL PIECES
W/2 NAILS AT EACH JOINT.

VERTICAL PIECE,
2" X 6" X 42"
(51MM X 152MM X
1,067MM) (3 REQD).

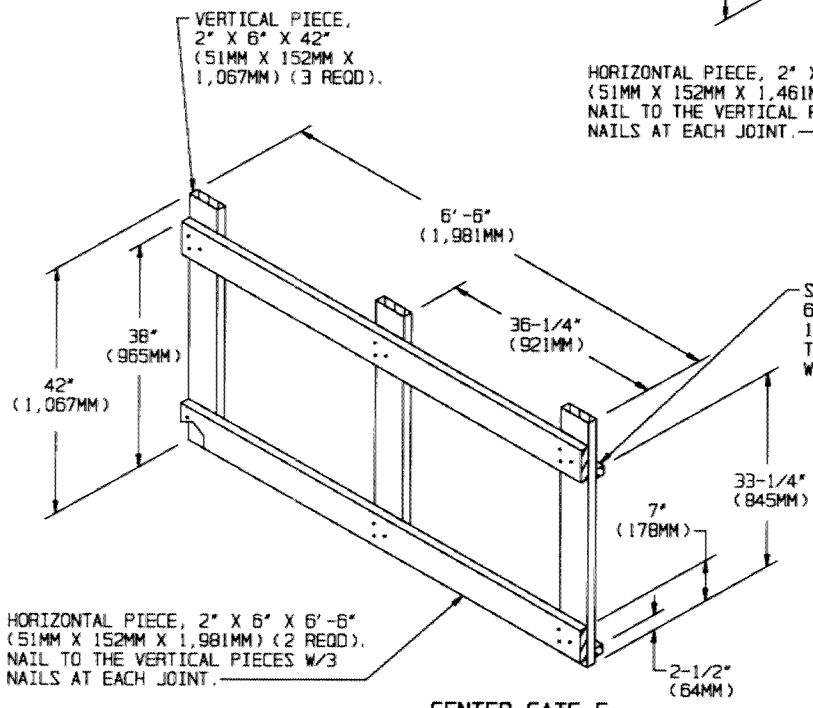


HORIZONTAL PIECE, 2" X 6" X 57-1/2"
(51MM X 152MM X 1,461MM) (2 REQD).
NAIL TO THE VERTICAL PIECES W/3
NAILS AT EACH JOINT.

CENTER GATE E

FOR USE IN LOADS OF 8" SMALL WOODEN
PALLETS ON PAGES 12 AND 28.

VERTICAL PIECE,
2" X 6" X 42"
(51MM X 152MM X
1,067MM) (3 REQD).



STRUT LEDGER, 2" X 2" X
6'-6" (51MM X 51MM X
1,981MM) (2 REQD). NAIL
TO THE VERTICAL PIECES
W/2 NAILS AT EACH JOINT.

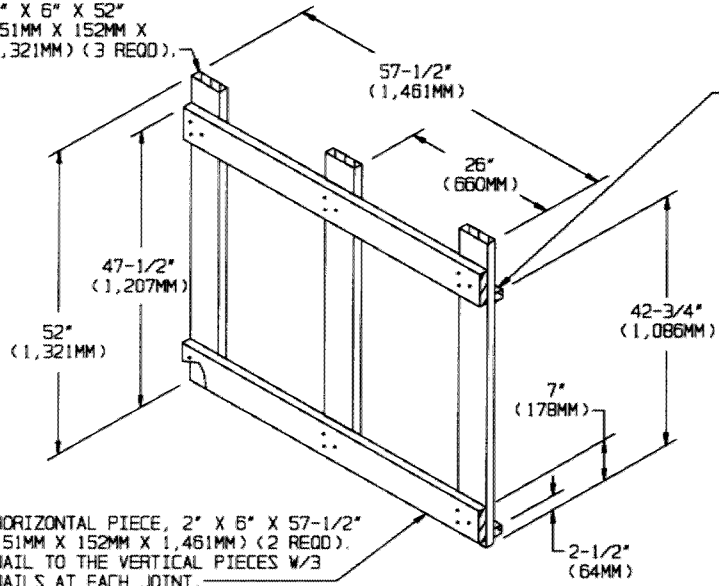
HORIZONTAL PIECE, 2" X 6" X 6'-6"
(51MM X 152MM X 1,981MM) (2 REQD).
NAIL TO THE VERTICAL PIECES W/3
NAILS AT EACH JOINT.

CENTER GATE F

FOR USE IN LOADS OF 8" SMALL WOODEN
PALLETS ON PAGES 13 AND 30.

DETAILS

VERTICAL PIECE,
2" X 6" X 52"
(51MM X 152MM X
1,321MM) (3 REQD).



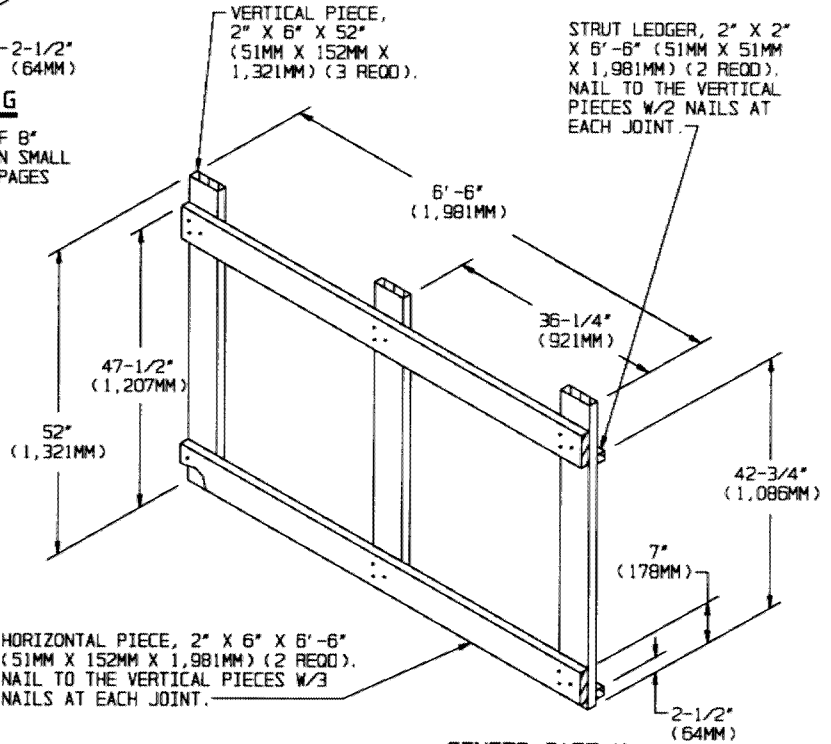
STRUT LEDGER, 2" X 2" X 57-1/2" (51MM X 51MM X 1,461MM) (2 REQD).
NAIL TO THE VERTICAL PIECES W/2 NAILS AT EACH JOINT.

HORIZONTAL PIECE, 2" X 6" X 57-1/2" (51MM X 152MM X 1,461MM) (2 REQD).
NAIL TO THE VERTICAL PIECES W/3 NAILS AT EACH JOINT.

CENTER GATE G

FOR USE IN LOADS OF 8" TALL PROJECTILES ON SMALL WOODEN PALLETS ON PAGES 14 AND 32.

VERTICAL PIECE, 2" X 6" X 52" (51MM X 152MM X 1,321MM) (3 REQD).

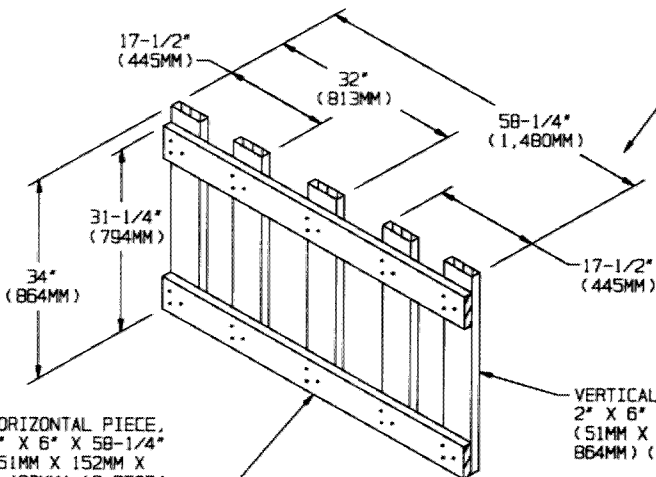


STRUT LEDGER, 2" X 2" X 6'-6" (51MM X 51MM X 1,981MM) (2 REQD).
NAIL TO THE VERTICAL PIECES W/2 NAILS AT EACH JOINT.

HORIZONTAL PIECE, 2" X 6" X 6'-6" (51MM X 152MM X 1,981MM) (2 REQD).
NAIL TO THE VERTICAL PIECES W/3 NAILS AT EACH JOINT.

CENTER GATE H

FOR USE IN LOADS OF 8" TALL PROJECTILES ON SMALL WOODEN PALLETS ON PAGES 15 AND 31.



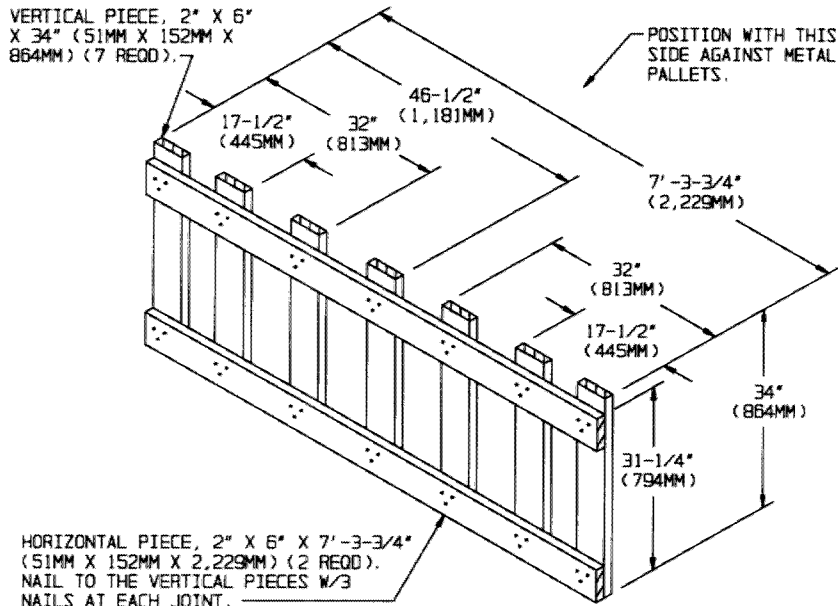
POSITION WITH THIS SIDE AGAINST METAL PALLETS.

HORIZONTAL PIECE, 2" X 6" X 58-1/4" (51MM X 152MM X 1,480MM) (2 REQD).
NAIL TO THE VERTICAL PIECES W/3 NAILS AT EACH JOINT.

VERTICAL PIECE, 2" X 6" X 34" (51MM X 152MM X 864MM) (5 REQD).

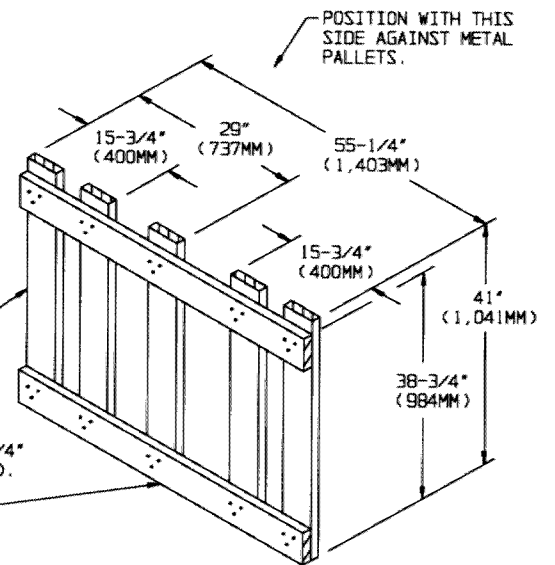
SEPARATOR GATE A

FOR USE IN MIXED LOADS OF 155MM SMALL WOODEN PALLETS AND SHORT METAL PALLETS ON PAGE 6.



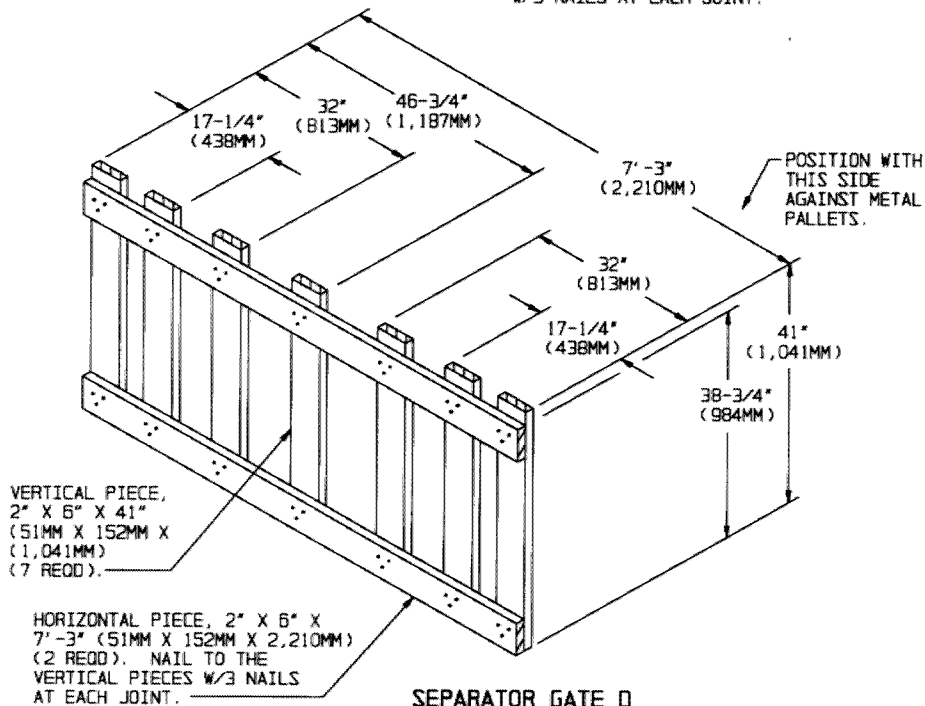
SEPARATOR GATE B

FOR USE IN MIXED LOADS OF 155MM SMALL WOODEN PALLETS AND SHORT METAL PALLETS ON PAGE 7.



SEPARATOR GATE C

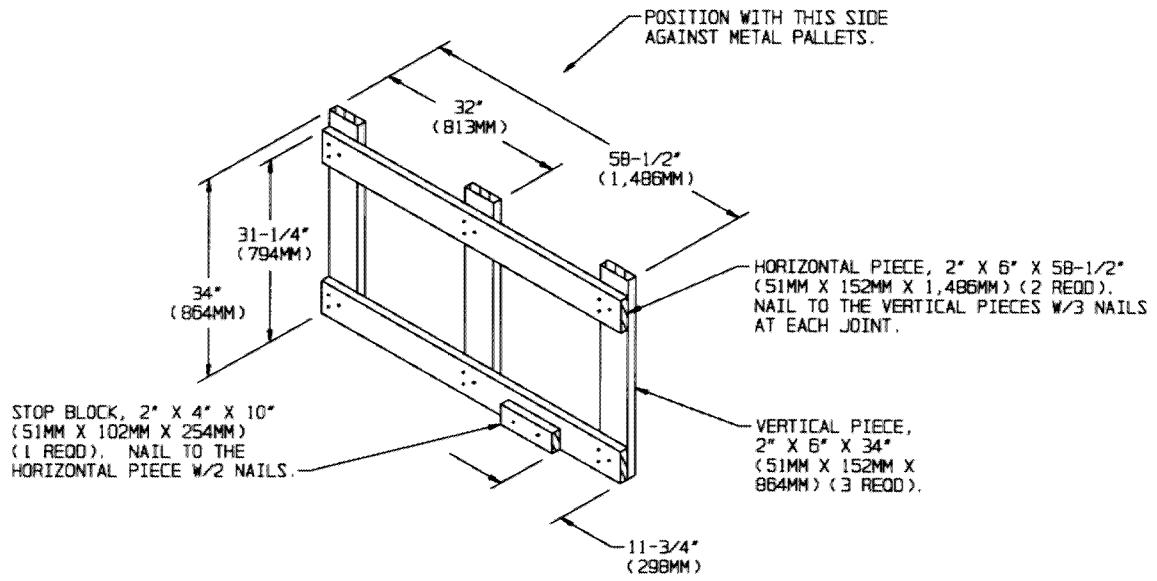
FOR USE IN MIXED LOADS OF 155MM LARGE WOODEN PALLETS AND TALL METAL PALLETS ON PAGE 10.



SEPARATOR GATE D

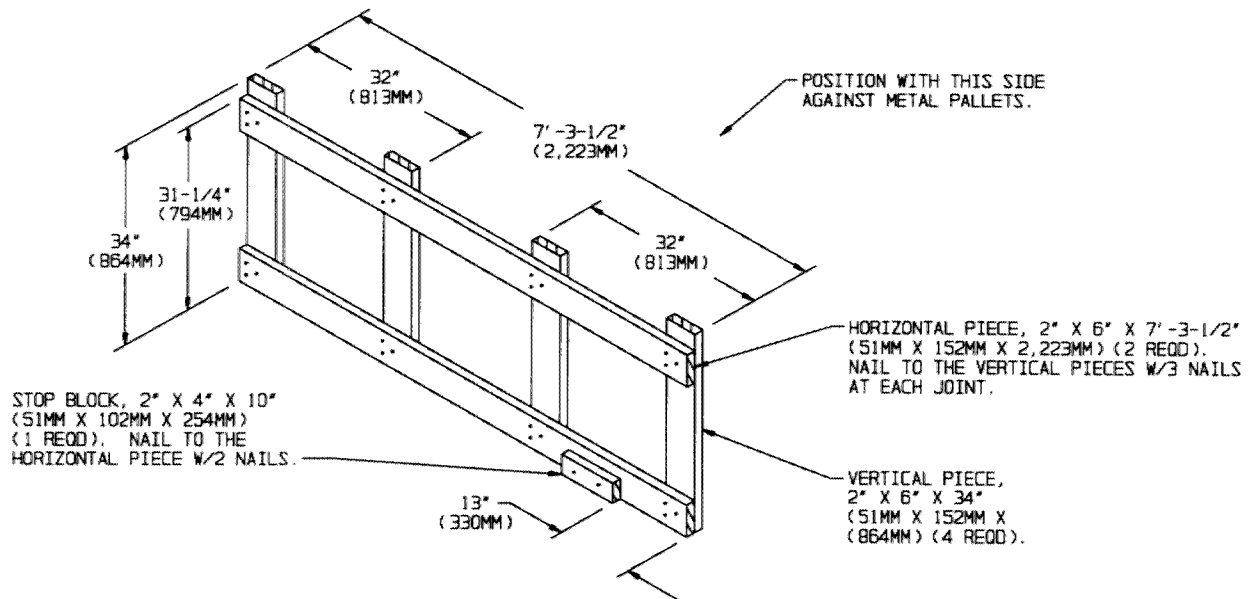
FOR USE IN MIXED LOADS OF 155MM LARGE WOODEN PALLETS AND TALL METAL PALLETS ON PAGE 11.

DETAILS



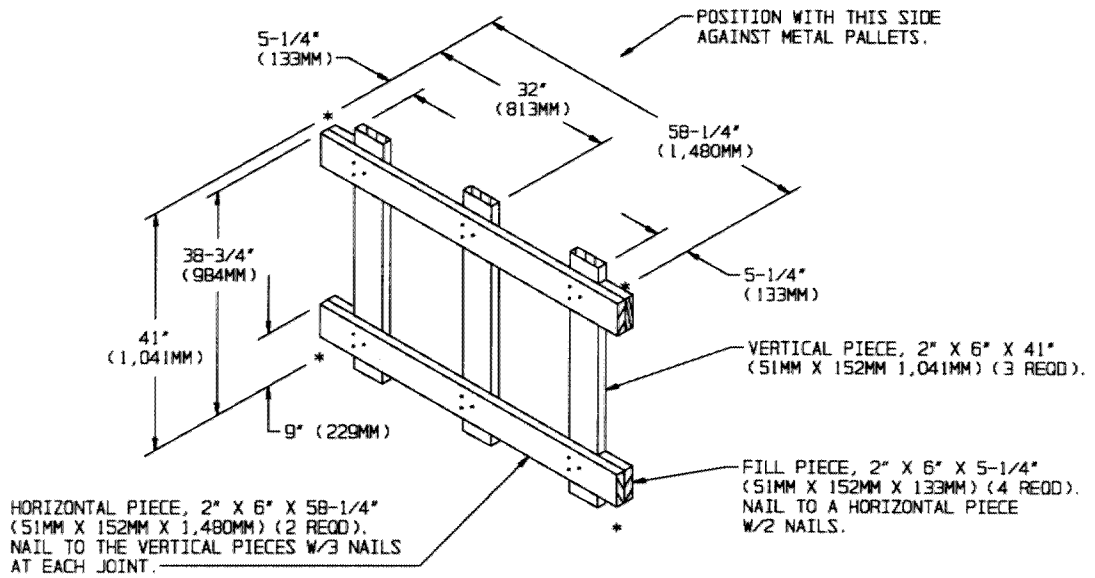
SEPARATOR GATE E

FOR USE IN MIXED LOADS OF 155MM SMALL WOODEN PALLETS AND SHORT METAL PALLETS ON PAGE 20.



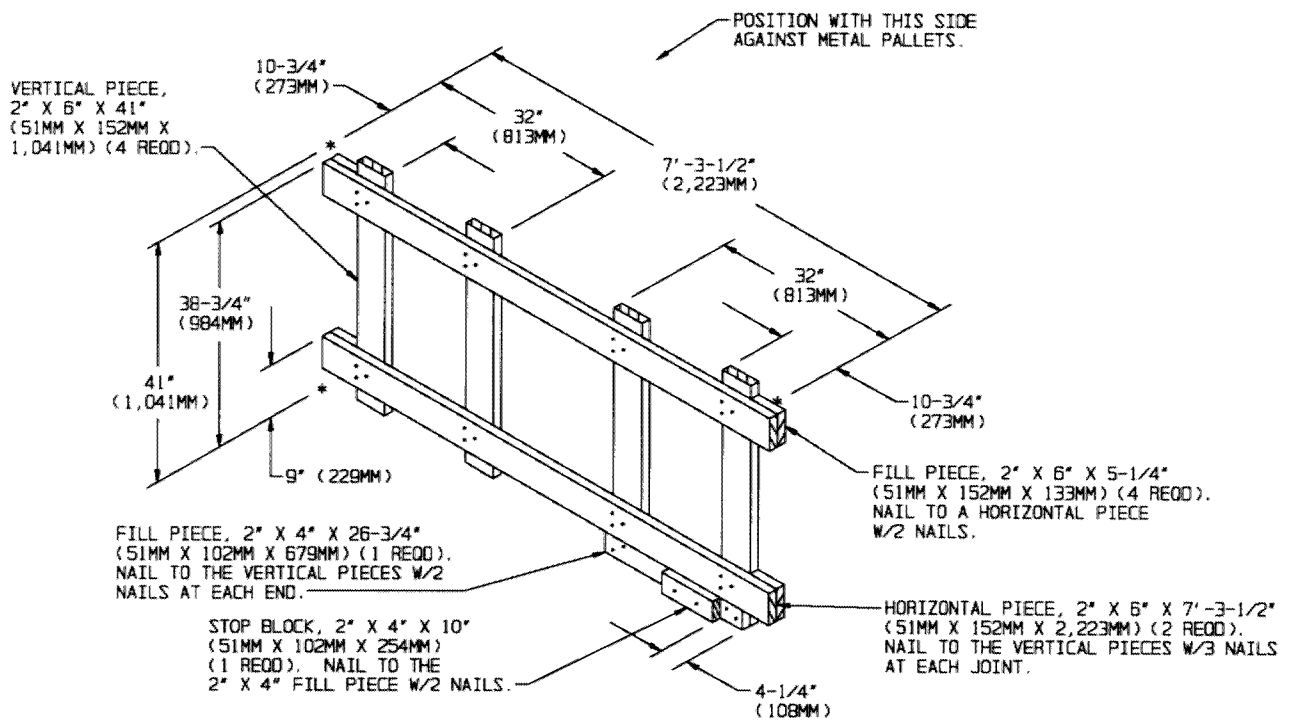
SEPARATOR GATE F

FOR USE IN MIXED LOADS OF 155MM SMALL WOODEN PALLETS AND SHORT METAL PALLETS ON PAGE 19.



SEPARATOR GATE G

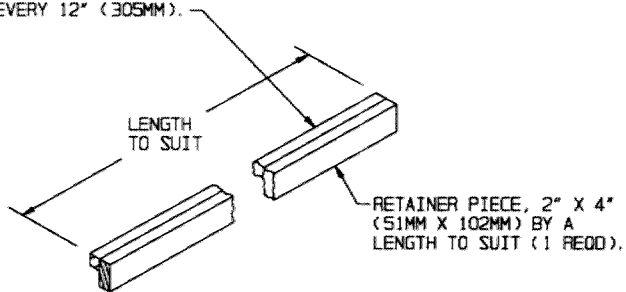
FOR USE IN MIXED LOADS OF 155MM LARGE WOODEN PALLETS AND TALL METAL PALLETS ON PAGE 26.



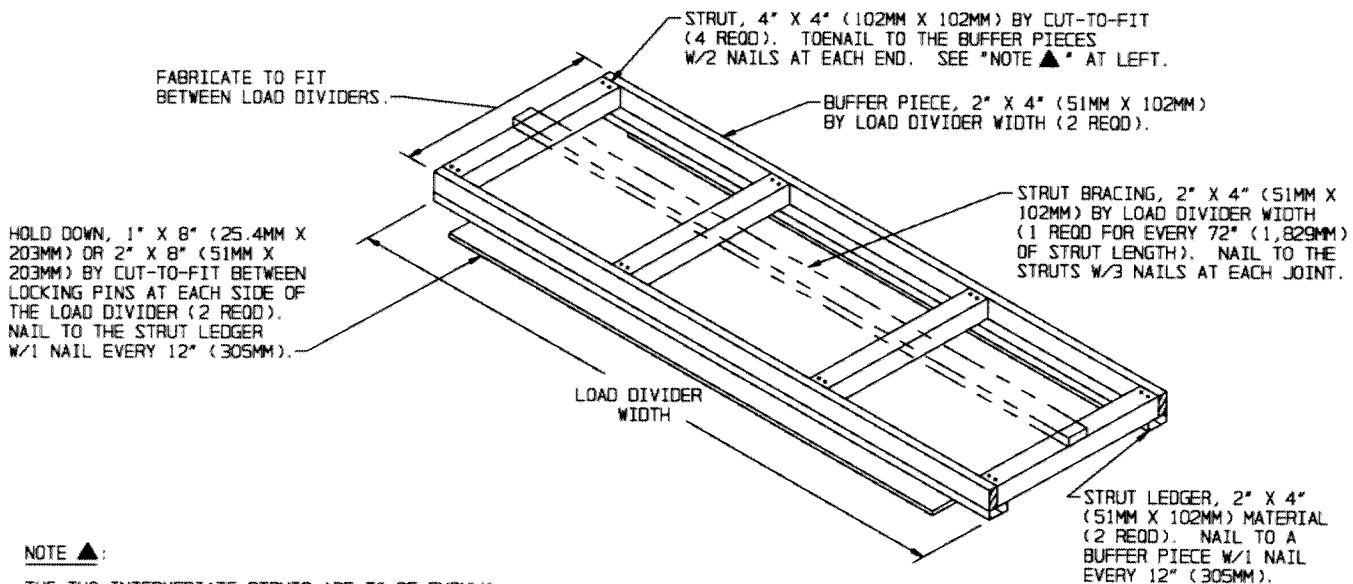
SEPARATOR GATE H

FOR USE IN MIXED LOADS OF 155MM LARGE WOODEN PALLETS AND TALL METAL PALLETS ON PAGE 25.

SUPPORT PIECE, 2" X 2" (51MM X 51MM) BY A LENGTH TO SUIT (1 REQD). NAIL TO THE RETAINER PIECE W/1 NAIL EVERY 12" (305MM).



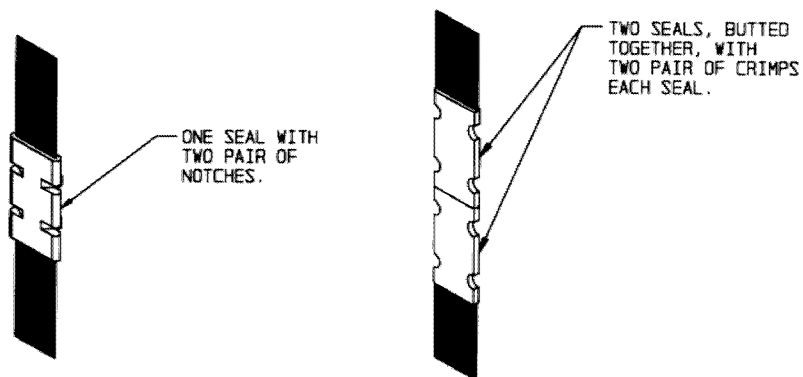
CAP PIECE



NOTE ▲:

THE TWO INTERMEDIATE STRUTS ARE TO BE EVENLY SPACED ON THE WIDTH OF THE DIVIDER BULKHEADS, WITH ADJUSTMENTS MADE SO AS TO ALIGN WITH VERTICAL FRAMING WITHIN THE BULKHEADS.

STRUT ASSEMBLY

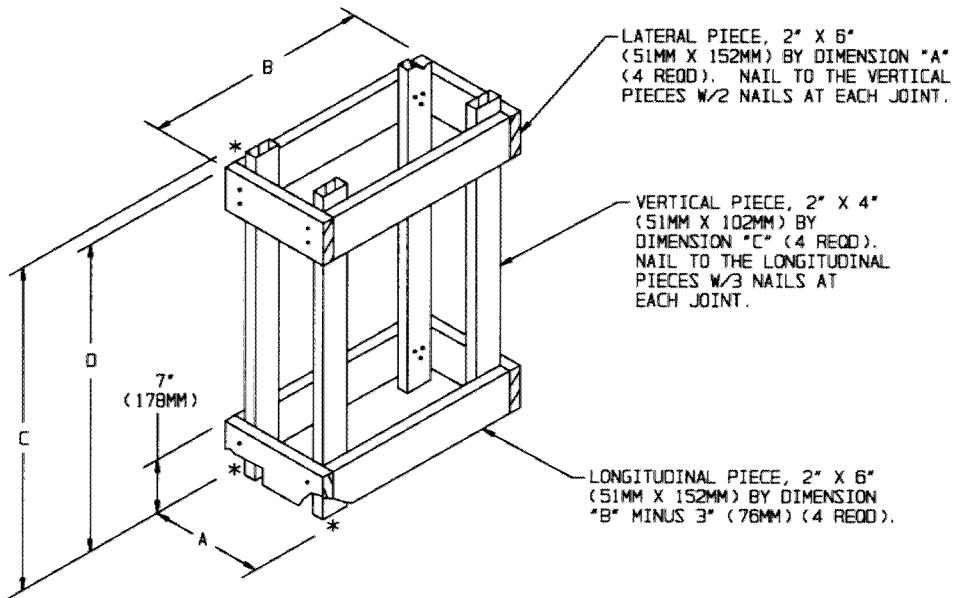


STRAP JOINT A
METHOD OF SECURING A STRAP JOINT WHEN USING A NOTCH-TYPE SEALER.

STRAP JOINT B
METHOD OF SECURING A STRAP JOINT WHEN USING A CRIMP-TYPE SEALER.

END-OVER-END LAP JOINT DETAILS

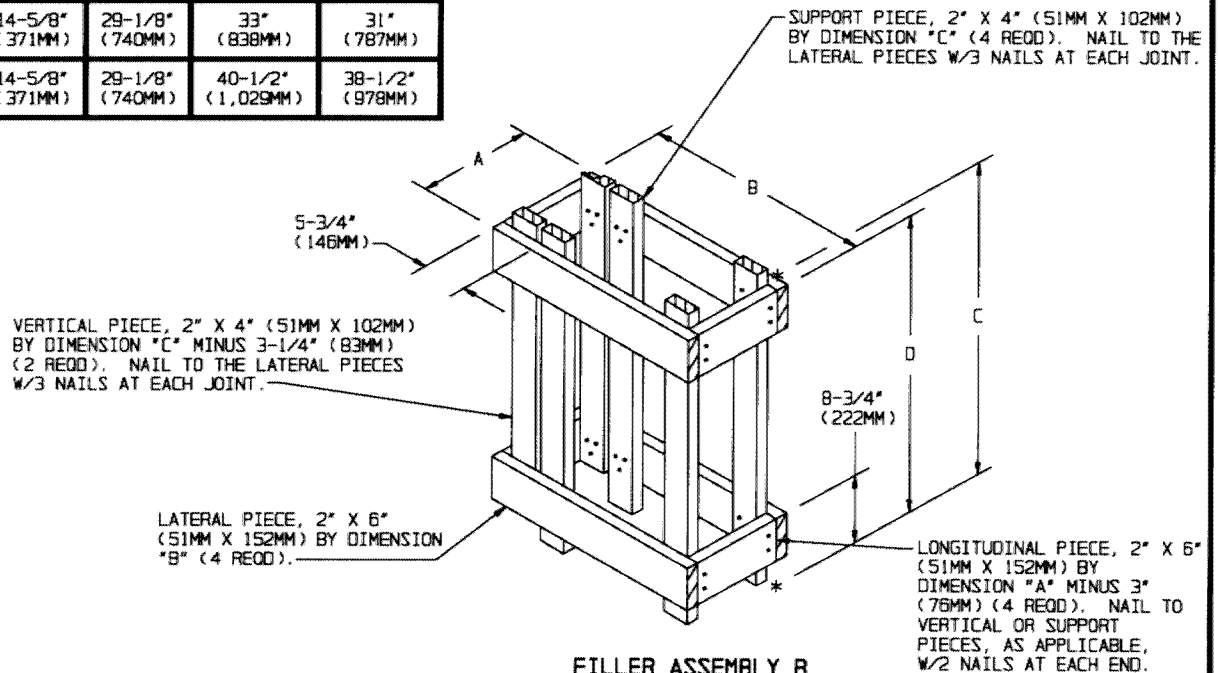
DETAILS



FILLER ASSEMBLY A

FOR USE IN PLACE OF AN OMITTED PALLET UNIT POSITIONED WITH THE LONG DIMENSION LENGTHWISE IN THE CAR. THE ASSEMBLY SHOULD BE INSTALLED NEAR THE CENTER AREA OF A LOAD BUT NOT ADJACENT TO A CENTER GATE.

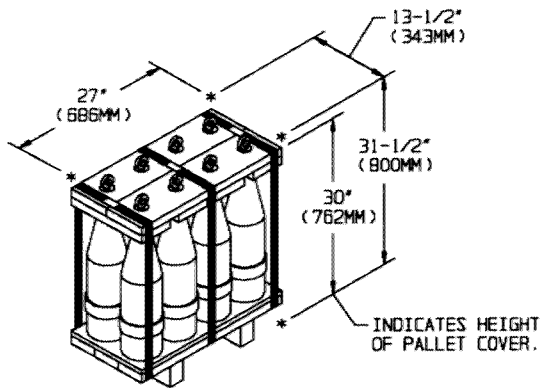
ITEM	DIMENSION			
	A	B	C	D
155MM, SMALL	13-1/2" (343MM)	27" (686MM)	34" (864MM)	32" (813MM)
155MM, LARGE	14-5/8" (371MM)	29-1/8" (740MM)	42" (1,067MM)	40" (1,016MM)
8", SMALL	19-1/2" (495MM)	28-1/2" (724MM)	40" (1,016MM)	38" (965MM)
8" TALL, SMALL PALLET	19-1/2" (495MM)	28-1/2" (724MM)	49-1/2" (1,257MM)	47-1/2" (1,207MM)
SHORT METAL PALLET	14-5/8" (371MM)	29-1/8" (740MM)	33" (838MM)	31" (787MM)
TALL METAL PALLET	14-5/8" (371MM)	29-1/8" (740MM)	40-1/2" (1,029MM)	38-1/2" (978MM)



FILLER ASSEMBLY B

FOR USE IN PLACE OF AN OMITTED PALLET UNIT POSITIONED WITH THE LONG DIMENSION CROSSWISE IN THE CAR. THE ASSEMBLY SHOULD BY INSTALLED NEAR THE CENTER AREA OF A LOAD BUT NOT ADJACENT TO A CENTER GATE.

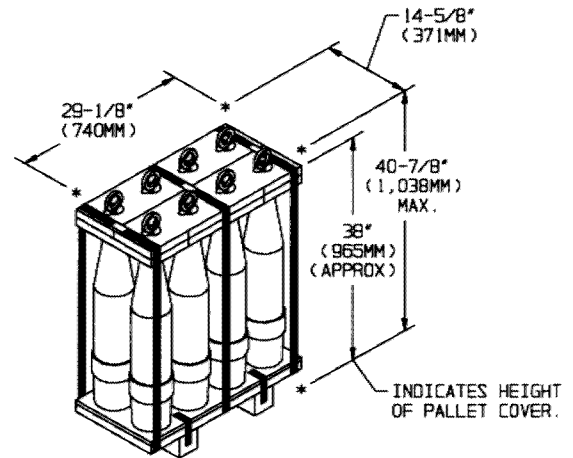
DETAILS



155MM SLP, 8/SMALL PALLET

800 POUNDS (363 KG) (APPROX)

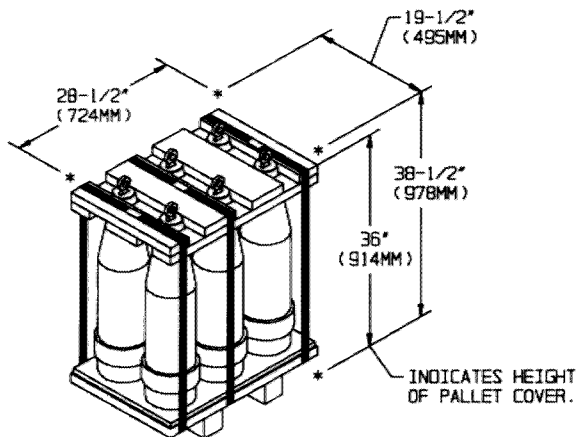
REFER TO THE LOADS ON PAGES 4, 5, 16 AND 18.



155MM SLP, 8/LARGE PALLET

874 POUNDS (397 KG) (APPROX)

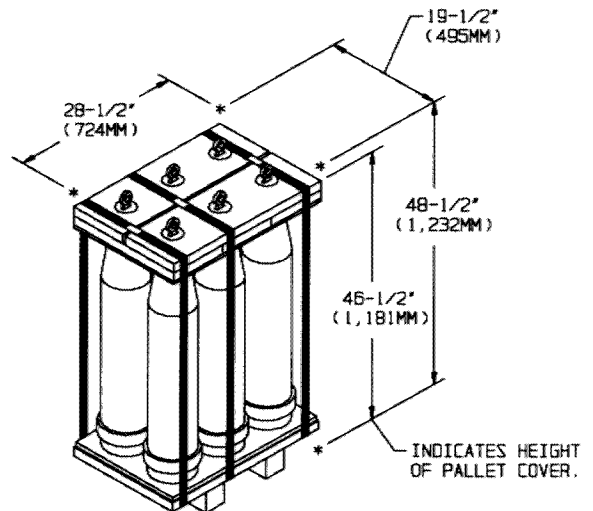
REFER TO THE LOADS ON PAGES 8, 9, 22, AND 24.



8" SLP, 6/SMALL PALLET

1,256 POUNDS (570 KG) (APPROX)

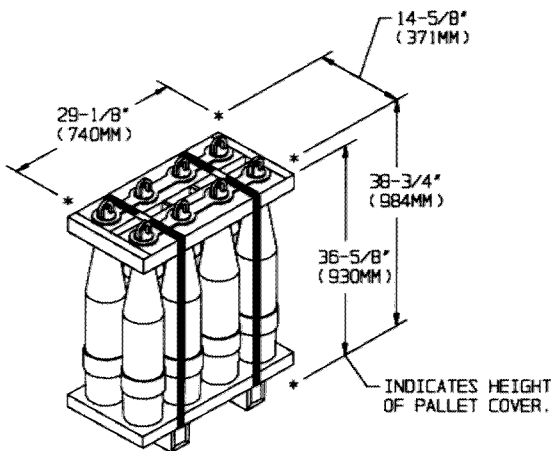
REFER TO THE LOADS ON PAGES 12, 13, 28, AND 30.



8" SLP, 6 TALL/SMALL PALLET

1,296 POUNDS (588 KG) (APPROX)

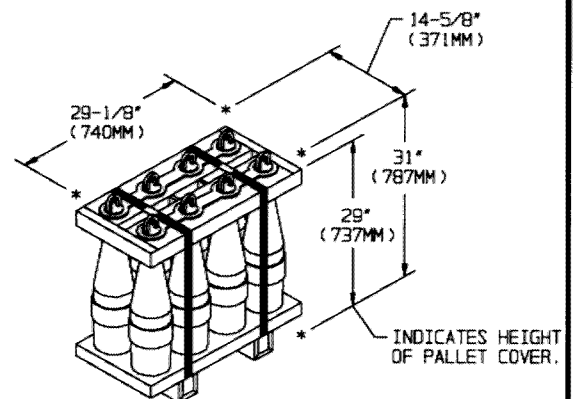
REFER TO THE LOADS ON PAGES 14, 15, 31, AND 32.



155MM SLP, 8 TALL/METAL PALLET

897 POUNDS (407 KG) (APPROX)

REFER TO THE MIXED LOADS ON PAGES 10, 11, 25, AND 26.



155MM SLP, 8 SHORT/METAL PALLET

857 POUNDS (389 KG) (APPROX)

REFER TO THE MIXED LOADS ON PAGES 6, 7, 19, AND 20.