

APPROVED BY  
 MECH DIV AAR, THEIR LETTER  
 DATED Apr 8, 1980 FILE LR-11.0.71  
 SIGNED A.W. Mosblech  
 DATE 22 APRIL 1980  
 TEA, MTMC, FT EUSTIS, VA.

# LOADING AND BRACING ON/IN FLAT CARS AND GONDOLA CARS OF EMPTY 20-FOOT INTERMODAL FREIGHT CONTAINERS

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**NOTICE:** THE PROCEDURES DELINEATED ON THE FOLLOWING PAGES DEPICT THE USE OF FLAT AND GONDOLA CARS FOR THE SHIPMENT OF EMPTY INTERMODAL FREIGHT CONTAINERS. A FLAT CAR WHICH IS EQUIPPED WITH CONTAINER PEDESTALS (CGFC, ~~RAIL CAR~~) HOWEVER, IS PREFERRED AND SHOULD BE USED, WHENEVER AVAILABLE, FOR THE SHIPMENT OF EMPTY INTERMODAL FREIGHT CONTAINERS BECAUSE OF THE INVOLVED SHIPPING COSTS.

 **CAUTION:**

THE PROCEDURES SHOWN HEREIN, FOR BOTH TYPES OF CARS, ARE APPLICABLE ONLY FOR EMPTY CONTAINERS, NOT LOADED CONTAINERS.

**DO NOT SCALE**

REVISIONS				DRAFTSMAN RB.	PROJ ENG WRE/PAK
				CHECKER RSH	LOG ENGR OFFICER W F Conits
APPROVED, U. S. ARMY ARMAMENT MATERIEL READINESS COMMAND					
<i>David C. Fetter</i>					
APPROVED BY ORDER OF COMMANDING GENERAL, U. S. ARMY MATERIEL DEVELOPMENT AND READINESS COMMAND (DARCOM)					
<i>John L. Ryan</i>					
U. S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL					
U. S. ARMY DARCOM DRAWING					
MAY 1980					
CLASS	DIVISION	DRAWING	FILE		
19	48	7056	SP5H2		

## GENERAL NOTES

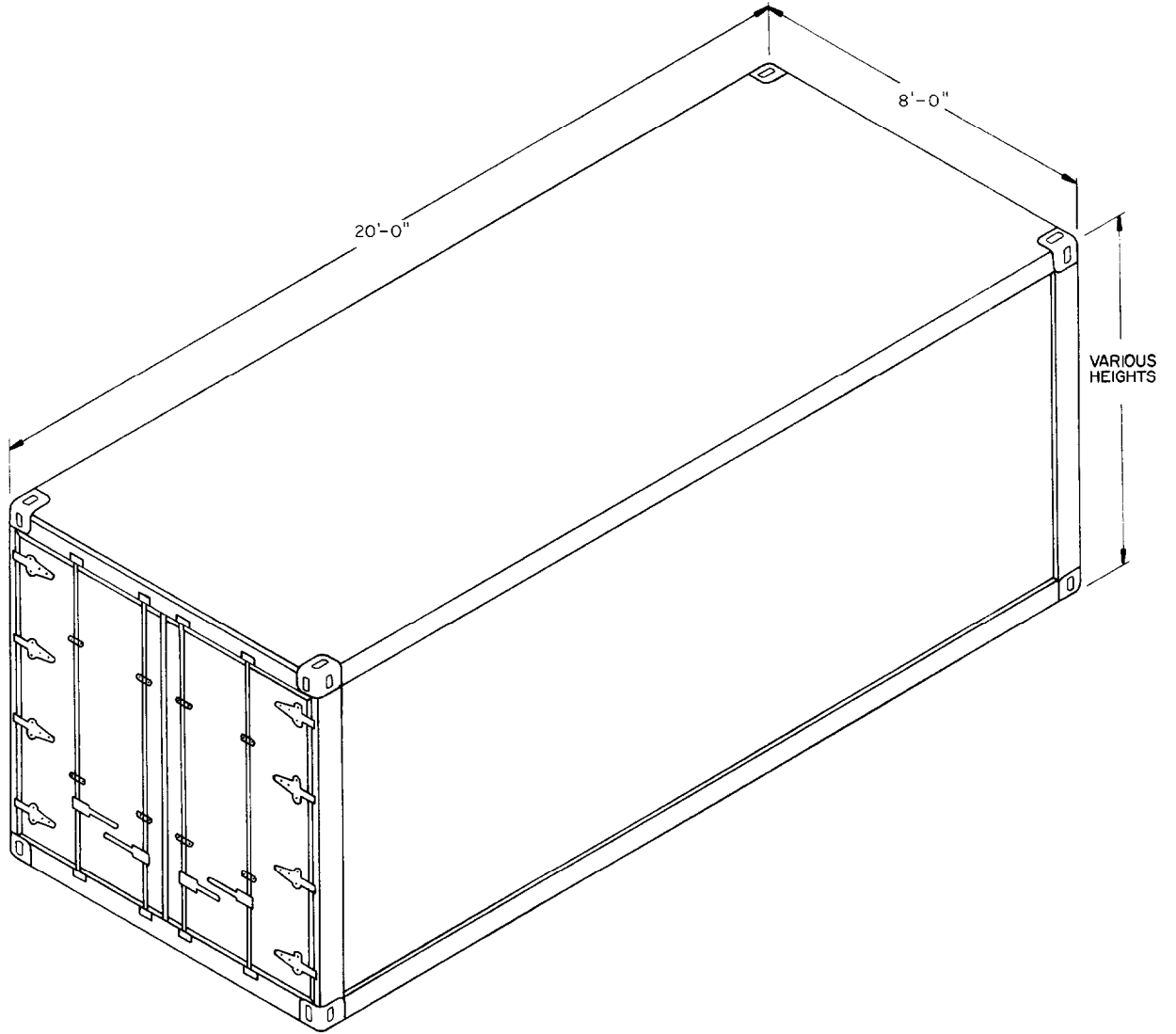
( GENERAL NOTES CONTINUED )

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1, AND AUGMENTS TM 743-200-1 ( CHAPTER 5 ).
- B. THE OUTLOADING PROCEDURES SPECIFIED HEREIN ARE APPLICABLE ONLY TO EMPTY 20-FOOT LONG BY 8-FOOT WIDE INTERMODAL FREIGHT CONTAINERS. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS AN EMPTY 20-FOOT LONG BY 8-FOOT WIDE INTERMODAL FREIGHT CONTAINER.
- C. THE LOAD AS SHOWN ON PAGES 4 AND 5 IS BASED ON A FLAT CAR 46'-6" LONG BY 9'-2" WIDE WITH STAKE POCKETS SPACED 42" ON CENTER.
- D. THE LOAD AS SHOWN ON PAGES 6 AND 7 IS BASED ON A FLAT CAR 40'-6" LONG BY 9'-2" WIDE WITH STAKE POCKETS SPACED 42" ON CENTER.
- E. THIS PROCEDURAL DRAWING, PAGES 8 THROUGH 13, IS APPLICABLE TO GONDOLA CARS WITH WOOD, WOOD AND METAL, OR METAL FLOORS AND WITH SIDE WALLS EQUIPPED WITH STRAP ANCHOR TIE-DOWN FACILITIES. IF CARS WITH STRAP ANCHOR TIE-DOWN FACILITIES ARE NOT READILY AVAILABLE, STRAP ANCHOR DEVICES MAY BE LOCALLY FABRICATED IN ACCORDANCE WITH THE DETAIL SHOWN ON PAGE 16. THE ONE-CONTAINER LOAD SHOWN ON PAGES 12 AND 13 MUST HAVE NAILABLE FLOORS. LONGER AND/OR WIDER CARS THAN SPECIFIED MAY BE USED, HOWEVER, LONGER CARS SHOULD NOT BE ORDERED.
- F. THE LOAD AS SHOWN ON PAGES 8 AND 9 IS BASED ON A GONDOLA CAR 65'-6" LONG BY 9'-2" WIDE WITH A 42" CAR SIDE HEIGHT, HOWEVER, CARS WITH ANY HEIGHT SIDE WALLS CAN BE USED.
- G. THE LOAD AS SHOWN ON PAGES 10 AND 11 IS BASED ON A GONDOLA CAR 46'-0" LONG BY 9'-2" WIDE WITH A 42" CAR SIDE WALL HEIGHT, HOWEVER, CARS WITH ANY HEIGHT SIDE WALLS CAN BE USED.
- H. THE LOAD AS SHOWN ON PAGES 12 AND 13 IS BASED ON A GONDOLA CAR 40'-0" LONG BY 9'-2" WIDE WITH A 42" CAR SIDE WALL HEIGHT, HOWEVER, CARS WITH ANY HEIGHT SIDE WALLS CAN BE USED. ALSO, THIS CAR MUST HAVE A NAILABLE FLOOR.
- J. OTHER TYPES OF LADING ITEMS MAY BE LOADED IN/ON A RAIL CAR WHICH IS PARTIALLY LOADED WITH THE DESIGNATED CONTAINER, PROVIDING THE OTHER ITEMS ARE BLOCKED AND BRACED EQUAL TO THE BLOCKING AND BRACING CRITERIA SPECIFIED HEREIN AND ARE NOT PLACED INSIDE THE CONTAINERS.
- K. WHEN STEEL STRAPPING IS SEALED AT A LAP-BACK-ON-SELF JOINT, TWO ( 2 ) SEALS, BUTTED TOGETHER, WITH TWO ( 2 ) PAIR OF NOTCHES PER SEAL MUST BE USED TO SEAL THE JOINT, EXCEPT FOR SECURING A PAD. SEE DETAILS "A" AND "B" ON PAGE 14 AND "TIE-DOWN DETAIL" ON PAGE 16.
- L. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF A NOMINAL SIZE. FOR EXAMPLE, 1" X 6" MATERIAL IS ACTUALLY 3/4" THICK BY 5-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE.
- M. A STAGGERED NAILING PATTERN WILL BE USED WHEREVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES. ALSO, A STAGGERED NAILING PATTERN WILL BE USED WHEN DUNNAGE IS NAILED TO THE FLOOR OF THE TRANSPORTING VEHICLE, OR WHEN LAMINATING DUNNAGE. THE NAILING PATTERN WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL DOES NOT PENETRATE INTO OR NEAR A CRACK BETWEEN FLOOR BOARDS. ADDITIONALLY, THE NAILING PATTERN FOR AN UPPER PIECE OF LAMINATED DUNNAGE WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL FOR THAT PIECE WILL NOT BE DRIVEN THROUGH ONTO OR RIGHT BESIDE A NAIL IN A LOWER PIECE.
- N. ONLY FLAT CARS WITH "SOUND" FLOORS WILL BE USED. FLAT CARS WITH STEEL FLOOR ENDS AND/OR EXPOSED STEEL BOLSTERS WHICH INTERFERE WITH PROPER POSITIONING OR NAILING OF THE DUNNAGE WILL NOT BE USED. IF THE CAR TO BE USED HAS SUCH EXPOSED STEEL COMPONENTS, THE CAR MAY NECESSARILY HAVE TO BE LONGER THAN THE ONE SPECIFIED FOR THE APPLICABLE LOAD.
- O. CAUTION: STAKE POCKETS ON FLAT CARS WILL BE USED FOR ANCHORING TIE-DOWN STRAPPING WHENEVER POSSIBLE. DO NOT USE SWIVEL RING TYPE ANCHOR DEVICES. IF OTHER TYPES ARE USED, THEY MUST BE OF SUFFICIENT WIDTH TO RECEIVE 2" STRAPPING AND ALSO BE OF A DESIGN WHICH WILL PROVIDE A BEARING SURFACE ACROSS THE FULL WIDTH OF THE STRAPPING, THEREBY ELIMINATING STRAP DEFORMATION DURING TENSIONING, ESPECIALLY AT THE EDGES.

( CONTINUED AT RIGHT )

## MATERIAL SPECIFICATIONS

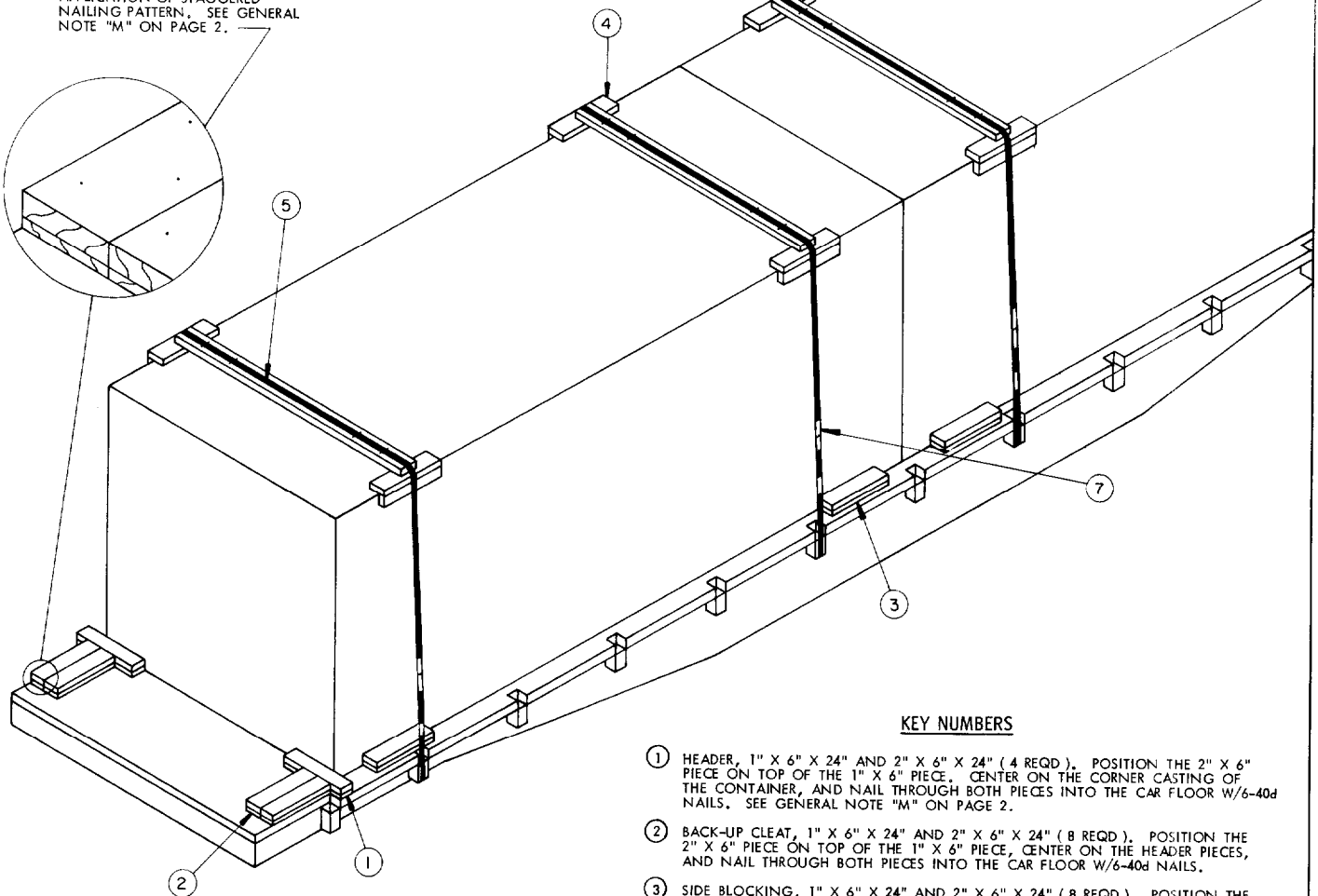
- LUMBER ----- : TM 743-200-1 ( DUNNAGE LUMBER ) AND FED SPEC MM-L-751.
- NAILS ----- : FED SPEC FF-N-105; COMMON.
- STRAPPING, STEEL ----- : FED SPEC QQ-S-781; CLASS I, TYPE I, HEAVY DUTY, FINISH A, B ( GRADE 2 ), OR C.
- SEAL, STRAP ----- : FED SPEC QQ-S-781; TYPE D, STYLE I, II, OR IV, CLASS H.
- STAKE POCKET PROTECTOR -- : COMMERCIAL GRADE.



ISOMETRIC VIEW

CONTAINER WEIGHT ----- 5,300 LBS (APPROX)  
CONTAINER CUBE ----- 1,280 TO 1,520 CUBIC FEET (APPROX)

APPLICATION OF STAGGERED NAILING PATTERN. SEE GENERAL NOTE "M" ON PAGE 2.

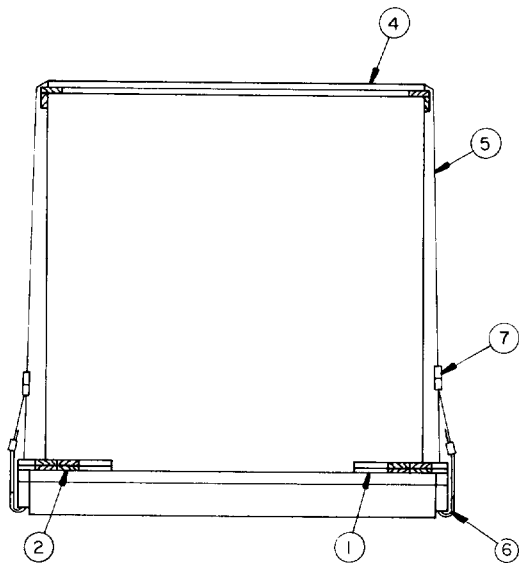


**ISOMETRIC VIEW**

A 46'-6" LONG BY 9'-2" WIDE FLAT CAR IS DEPICTED.

**KEY NUMBERS**

- ① HEADER, 1" X 6" X 24" AND 2" X 6" X 24" ( 4 REQD ). POSITION THE 2" X 6" PIECE ON TOP OF THE 1" X 6" PIECE. CENTER ON THE CORNER CASTING OF THE CONTAINER, AND NAIL THROUGH BOTH PIECES INTO THE CAR FLOOR W/6-40d NAILS. SEE GENERAL NOTE "M" ON PAGE 2.
- ② BACK-UP CLEAT, 1" X 6" X 24" AND 2" X 6" X 24" ( 8 REQD ). POSITION THE 2" X 6" PIECE ON TOP OF THE 1" X 6" PIECE, CENTER ON THE HEADER PIECES, AND NAIL THROUGH BOTH PIECES INTO THE CAR FLOOR W/6-40d NAILS.
- ③ SIDE BLOCKING, 1" X 6" X 24" AND 2" X 6" X 24" ( 8 REQD ). POSITION THE 2" X 6" PIECE ON TOP OF THE 1" X 6" PIECE, LOCATE APPROXIMATELY 10" FROM THE END OF THE CONTAINER, AND NAIL THROUGH BOTH PIECES INTO THE CAR FLOOR W/6-40d NAILS.
- ④ STRAPPING BOARD ( 4 REQD ). SEE THE "STRAPPING BOARD ASSEMBLY" DETAIL ON PAGE 14.
- ⑤ TIE-DOWN STRAP, 2" X .050" X 37'-0" LONG STEEL STRAPPING ( 4 REQD ). INSTALL FROM ONE PIECE OF STRAP. ANCHOR STRAP AT ONE SIDE OF CAR, PASS OVER THE STRAPPING BOARD, TENSION AND SEAL STRAP AT THE OTHER SIDE OF THE CAR. SEE GENERAL NOTE "K" ON PAGE 2.
- ⑥ PAD, 2" X .050" X 24" LONG STEEL STRAPPING ( 8 REQD ). POSITION UNDER STAKE POCKET AND SEAL TO THE TIE-DOWN STRAP, PIECE MARKED ⑤. SEE "DETAIL A" ON PAGE 14. ALT: STAKE POCKET PROTECTOR ( 16 REQD ). USE TWO ( 2 ) UNDER EACH STAKE POCKET WITH A TIE-DOWN STRAP. SEE "DETAIL B" ON PAGE 14.
- ⑦ SEAL FOR 2" STRAPPING ( 24 REQD, 6 PER TIE-DOWN STRAP ). DOUBLE NOTCH EACH SEAL, EXCEPT THOSE USED TO SECURE PADS, PIECES MARKED ⑥.



**END VIEW**

SPECIAL NOTES:

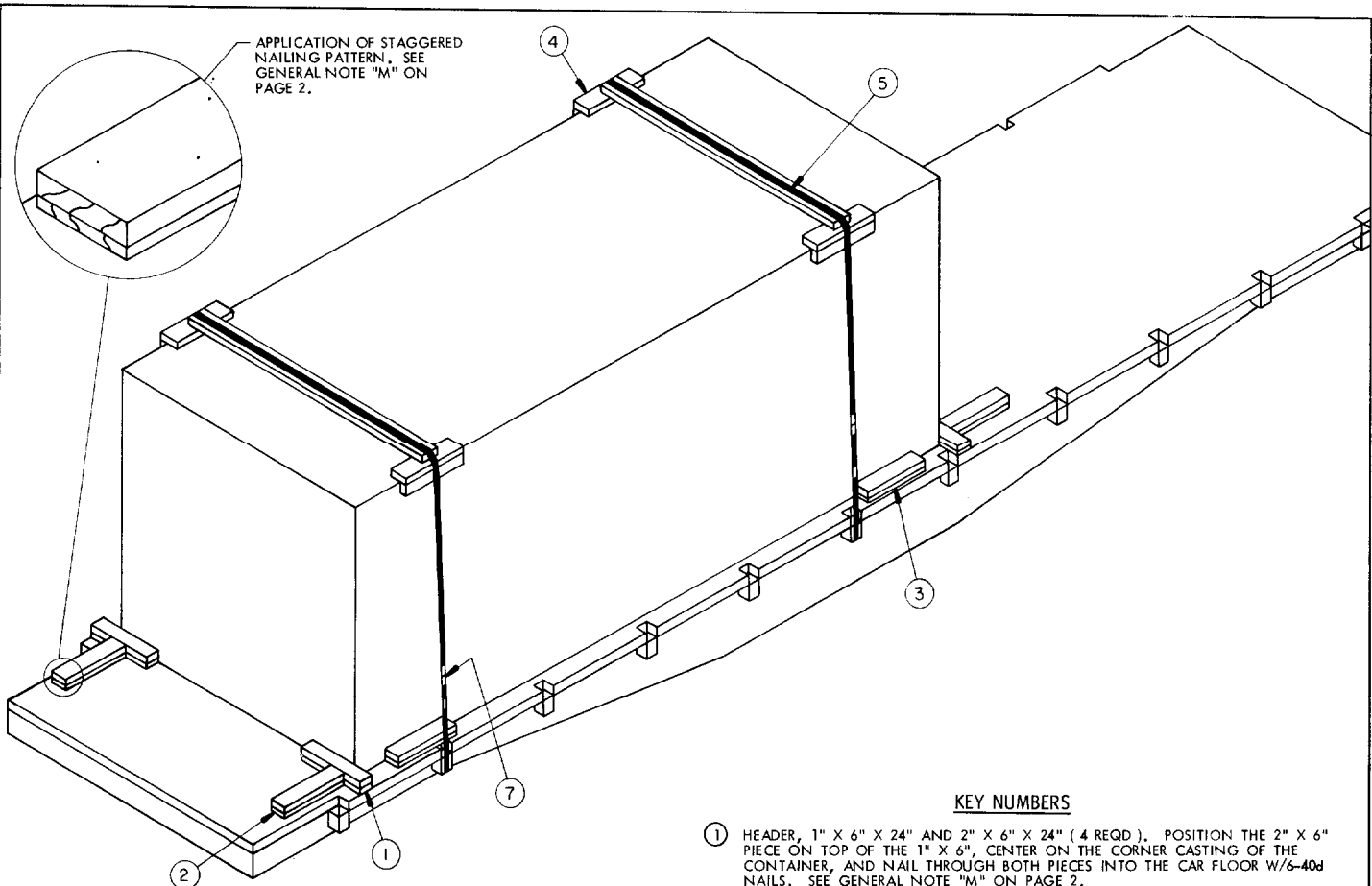
1. A TWO-CONTAINER LOAD IS SHOWN ON A 46'-6" LONG BY 9'-2" WIDE ( PLATFORM ) FLAT CAR. LARGER CARS CAN BE USED; HOWEVER, A LONGER OR WIDER CAR SHOULD NOT BE ORDERED FOR THE SHIPMENT OF A TWO-CONTAINER LOAD. A 45'-0" LONG FLAT CAR WITH "SOUND" FLOORS AT THE END OF THE CAR CAN ALSO BE USED, HOWEVER, THE BACK-UP CLEATS WILL EXTEND TO THE END OF THE CAR.
2. IF A FLAT CAR EQUIPPED WITH FIXED END BULKHEADS IS OFFERED FOR OUTLOADING EMPTY CONTAINERS, THE PROCEDURES DEPICTED ON PAGES 4 AND 6 MUST BE USED IN COMBINATION WITH THE PROCEDURES SHOWN ON PAGE 17. SEE THE "ALTERNATIVE CENTER BLOCKING FOR FLAT CARS EQUIPPED WITH FIXED END BULKHEADS" DETAIL ON PAGE 17.
3. IF A FLAT CAR EQUIPPED WITH SPECIAL HEAVY DUTY TIE-DOWN ANCHORS AND CHAIN ASSEMBLIES IS OFFERED FOR OUTLOADING OF EMPTY CONTAINERS, SEE THE DETAILS ON PAGE 18. ALSO, THE PROCEDURES DEPICTED ON PAGE 4 AND 6 MUST BE USED IN COMBINATION WITH THE PROCEDURES SHOWN ON PAGE 18.

**BILL OF MATERIAL**

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	40	20
2" X 4"	16	11
2" X 6"	88	88
NAILS	NO. REQD	POUNDS
8d ( 2-1/2" )	72	1
40d ( 5" )	120	7
STEEL STRAPPING, 2" X .050" -----	164 REQD -----	55 LBS
SEAL FOR 2" STRAPPING -----	24 REQD -----	5 LBS
STAPLE FOR 2" STRAPPING -----	16 REQD -----	1/4 LB

**LOAD AS SHOWN**

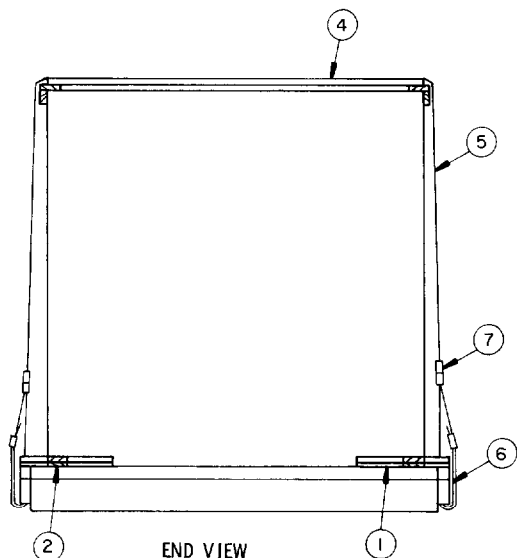
ITEM	QUANTITY	WEIGHT ( APPROX )
CONTAINER -----	2 -----	10,600 LBS
DUNNAGE -----	-----	307 LBS
TOTAL WEIGHT -----		10,907 LBS



**ISOMETRIC VIEW**  
A 40'-6" LONG BY 9'-2" WIDE FLAT CAR IS DEPICTED.

**KEY NUMBERS**

- ① HEADER, 1" X 6" X 24" AND 2" X 6" X 24" ( 4 REQD ), POSITION THE 2" X 6" PIECE ON TOP OF THE 1" X 6", CENTER ON THE CORNER CASTING OF THE CONTAINER, AND NAIL THROUGH BOTH PIECES INTO THE CAR FLOOR W/6-40d NAILS, SEE GENERAL NOTE "M" ON PAGE 2.
- ② BACK-UP CLEAT, 1" X 6" X 24" AND 2" X 6" X 24" ( 4 REQD ). POSITION THE 2" X 6" PIECE ON TOP OF THE 1" X 6" PIECE, CENTER ON THE HEADER PIECES, AND NAIL THROUGH BOTH PIECES INTO THE CAR FLOOR W/6-40d NAILS.
- ③ SIDE BLOCKING, 1" X 6" X 24" AND 2" X 6" X 24" ( 4 REQD ), POSITION THE 2" X 6" PIECE ON TOP OF THE 1" X 6" PIECE, LOCATE APPROXIMATELY 10" FROM THE END OF THE CONTAINER, AND NAIL THROUGH BOTH PIECES INTO THE CAR FLOOR W/6-40d NAILS.
- ④ STRAPPING BOARD ( 2 REQD ), SEE THE "STRAPPING BOARD ASSEMBLY" DETAIL ON PAGE 14.
- ⑤ TIE-DOWN STRAP, 2" X .050" X 37'-0" LONG STEEL STRAPPING ( 2 REQD ). INSTALL FROM ONE PIECE OF STRAP. ANCHOR STRAP AT ONE SIDE OF CAR, PASS OVER THE STRAPPING BOARD, TENSION, AND SEAL STRAP AT THE OTHER SIDE OF THE CAR. STAPLE TO THE STRAPPING BOARD W/4 STAPLES. SEE GENERAL NOTE "K" ON PAGE 2.
- ⑥ PAD, 2" X .050" X 24" LONG STEEL STRAPPING ( 4 REQD ). POSITION UNDER STAKE POCKET AND SEAL TO THE TIE-DOWN STRAP, PIECE MARKED ⑤. SEE "DETAIL A" ON PAGE 14. ALT: STAKE POCKET PROTECTOR ( 8 REQD ). USE TWO ( 2 ) UNDER EACH STAKE POCKET WITH A TIE-DOWN STRAP. SEE "DETAIL B" ON PAGE 14.
- ⑦ SEAL FOR 2" STRAPPING ( 12 REQD, 6 PER TIE-DOWN STRAP ). DOUBLE NOTCH EACH SEAL, EXCEPT THOSE USED TO SECURE THE PADS, PIECES MARKED ⑥.



**END VIEW**

SPECIAL NOTE:

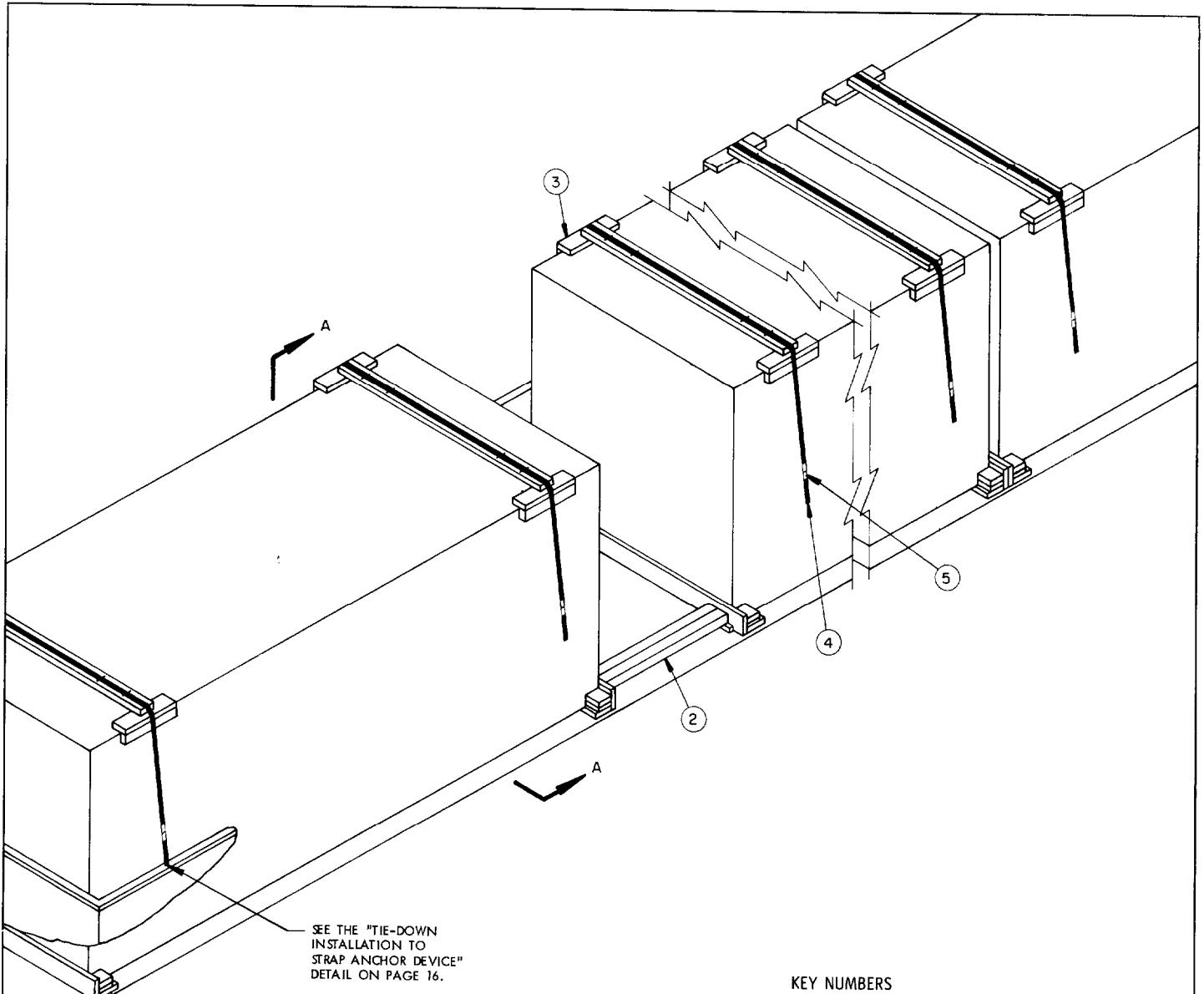
1. A ONE-CONTAINER LOAD IS SHOWN ON A 40'-6" LONG BY 9'-2" WIDE (PLATFORM) FLAT CAR. LARGER FLAT CARS CAN BE USED; HOWEVER, A LONGER OR WIDER CAR SHOULD NOT BE ORDERED FOR THE SHIPMENT OF A ONE-CONTAINER LOAD.

**BILL OF MATERIAL**

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	24	12
2" X 4"	8	6
2" X 6"	48	48
NAILS	NO. REQD	POUNDS
8d (2-1/2")	36	1/2
40d (5")	72	4-1/4
STEEL STRAPPING, 2" X .050" ----- 82' REQD ----- 28 LBS		
SEAL FOR 2" STRAPPING ----- 12 REQD ----- 2-1/2 LBS		
STAPLE FOR 2" STRAPPING ----- 8 REQD ----- NIL		

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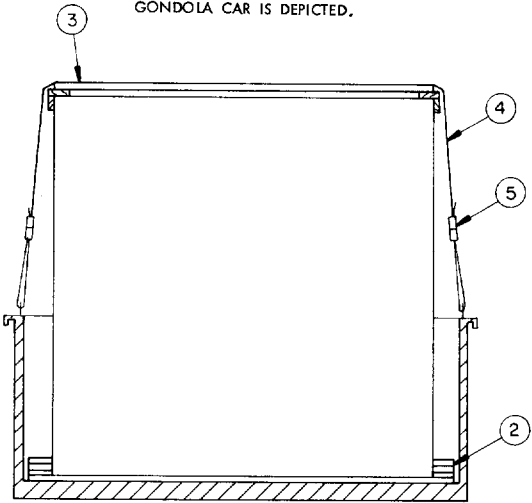
<u>ITEM</u>	<u>QUANTITY</u>	<u>WEIGHT ( APPROX )</u>
CONTAINER -----	1 -----	5,300 LBS
DUNNAGE -----		168 LBS
TOTAL WEIGHT -----		5,468 LBS



SEE THE "TIE-DOWN  
INSTALLATION TO  
STRAP ANCHOR DEVICE"  
DETAIL ON PAGE 16.

**ISOMETRIC VIEW**

A 65'-6" LONG BY 9'-2" WIDE  
GONDOLA CAR IS DEPICTED.



**SECTION A-A**

**KEY NUMBERS**

- ① END BLOCKING (4 REQD). SEE THE "END BLOCKING ASSEMBLY" DETAIL ON PAGE 15. NOTE: FOR CARS WITH CORRUGATED END WALLS, SEE THE "TYPICAL END FILL" DETAIL ON PAGE 16.
- ② CENTER BLOCKING (1 REQD). SEE THE "CENTER BLOCKING ASSEMBLY A" DETAIL ON PAGE 15.
- ③ STRAPPING BOARD (6 REQD). SEE THE "STRAPPING BOARD ASSEMBLY" DETAIL ON PAGE 14.
- ④ TIE-DOWN STRAP, 2" X .050" X 25'-0" LONG STEEL STRAPPING (6 REQD). INSTALL FROM ONE PIECE OF STRAP. ANCHOR STRAP AT ONE SIDE OF CAR, PASS OVER THE STRAPPING BOARD, TENSION, AND SEAL STRAP AT THE OTHER SIDE OF THE CAR. STAPLE TO THE STRAPPING BOARD W/4-STAPLES. SEE GENERAL NOTES "E" AND "K" ON PAGE 2.
- ⑤ SEAL FOR 2" STRAPPING (24 REQD, 4 PER TIE-DOWN STRAP). DOUBLE NOTCH EACH SEAL.



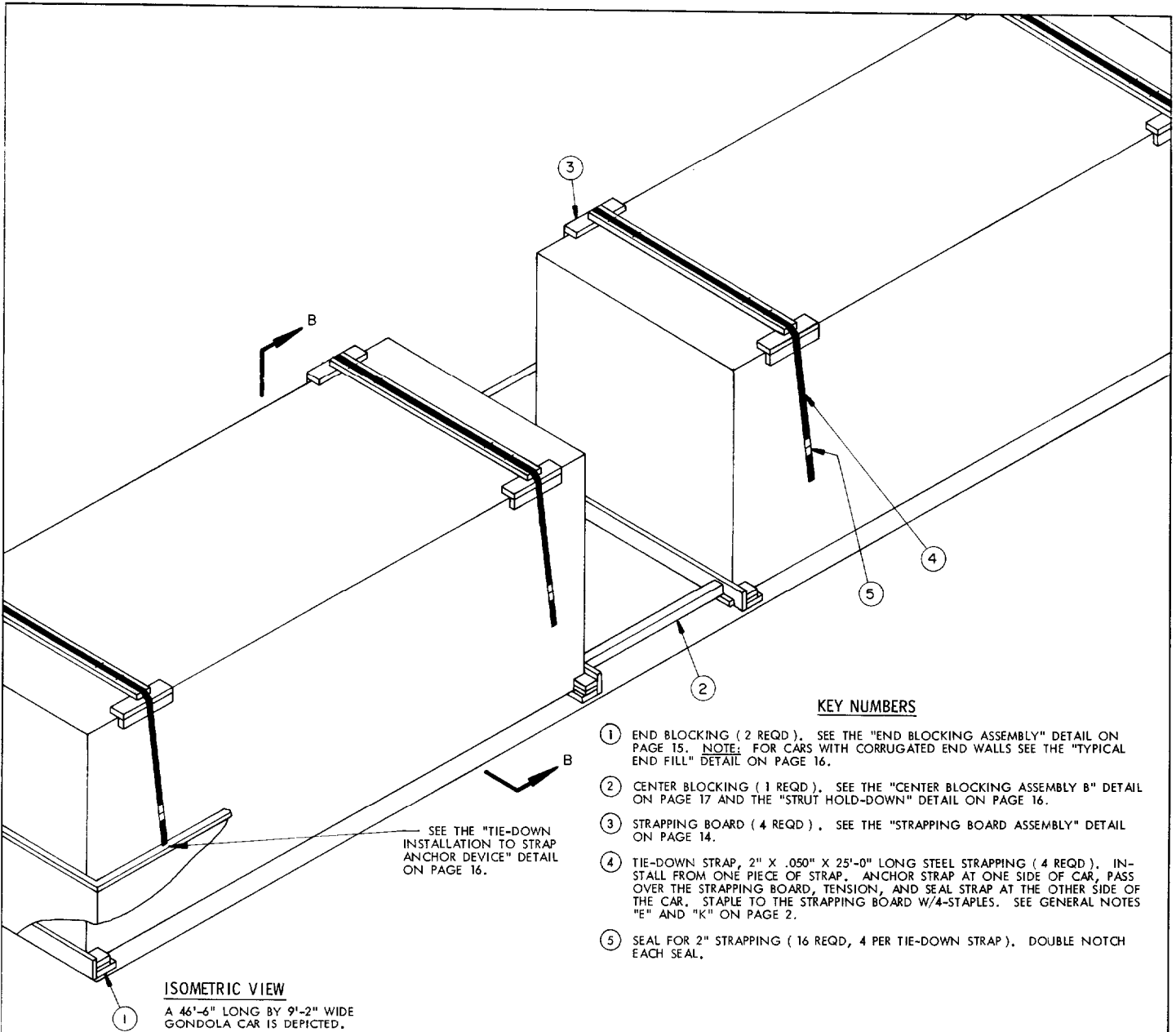
SPECIAL NOTE:

1. A THREE-CONTAINER LOAD IS SHOWN IN A 65'-6" LONG BY 9'-2" WIDE (INSIDE DIMENSIONS) GONDOLA CAR. LARGER CARS CAN BE USED; HOWEVER, A LONGER OR WIDER CAR SHOULD NOT BE ORDERED FOR THE SHIPMENT OF A THREE-CONTAINER LOAD.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	6	3
2" X 2"	4	2
2" X 4"	24	16
2" X 6"	132	132
2" X 8"	54	72
4" X 4"	19	26
NAILS	NO. REQD	POUNDS
8d ( 2-1/2" )	108	1-1/4
10d ( 3" )	72	1-1/4
12d ( 3-1/4" )	24	1/2
16d ( 3-1/2" )	36	1
STEEL STRAPPING, 2" X .050"----- 150' REQD ----- 50 LBS		
SEAL FOR 2" STRAPPING ----- 24 REQD ----- 5 LBS		
STAPLE FOR 2" STRAPPING----- 24 REQD----- 1/2 LB		

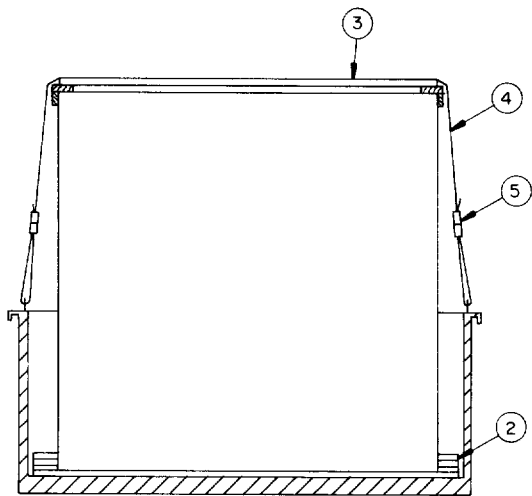
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<u>ITEM</u>	<u>QUANTITY</u>	<u>WEIGHT ( APPROX )</u>
CONTAINER -----	3 -----	15,900 LBS
DUNNAGE -----	-----	562 LBS
TOTAL WEIGHT-----		16,462 LBS



**KEY NUMBERS**

- ① END BLOCKING ( 2 REQD ). SEE THE "END BLOCKING ASSEMBLY" DETAIL ON PAGE 15. NOTE: FOR CARS WITH CORRUGATED END WALLS SEE THE "TYPICAL END FILL" DETAIL ON PAGE 16.
- ② CENTER BLOCKING ( 1 REQD ). SEE THE "CENTER BLOCKING ASSEMBLY B" DETAIL ON PAGE 17 AND THE "STRUT HOLD-DOWN" DETAIL ON PAGE 16.
- ③ STRAPPING BOARD ( 4 REQD ). SEE THE "STRAPPING BOARD ASSEMBLY" DETAIL ON PAGE 14.
- ④ TIE-DOWN STRAP, 2" X .050" X 25'-0" LONG STEEL STRAPPING ( 4 REQD ), INSTALL FROM ONE PIECE OF STRAP. ANCHOR STRAP AT ONE SIDE OF CAR, PASS OVER THE STRAPPING BOARD, TENSION, AND SEAL STRAP AT THE OTHER SIDE OF THE CAR. STAPLE TO THE STRAPPING BOARD W/4-STAPLES. SEE GENERAL NOTES "E" AND "K" ON PAGE 2.
- ⑤ SEAL FOR 2" STRAPPING ( 16 REQD, 4 PER TIE-DOWN STRAP ). DOUBLE NOTCH EACH SEAL.



**SECTION B-B**

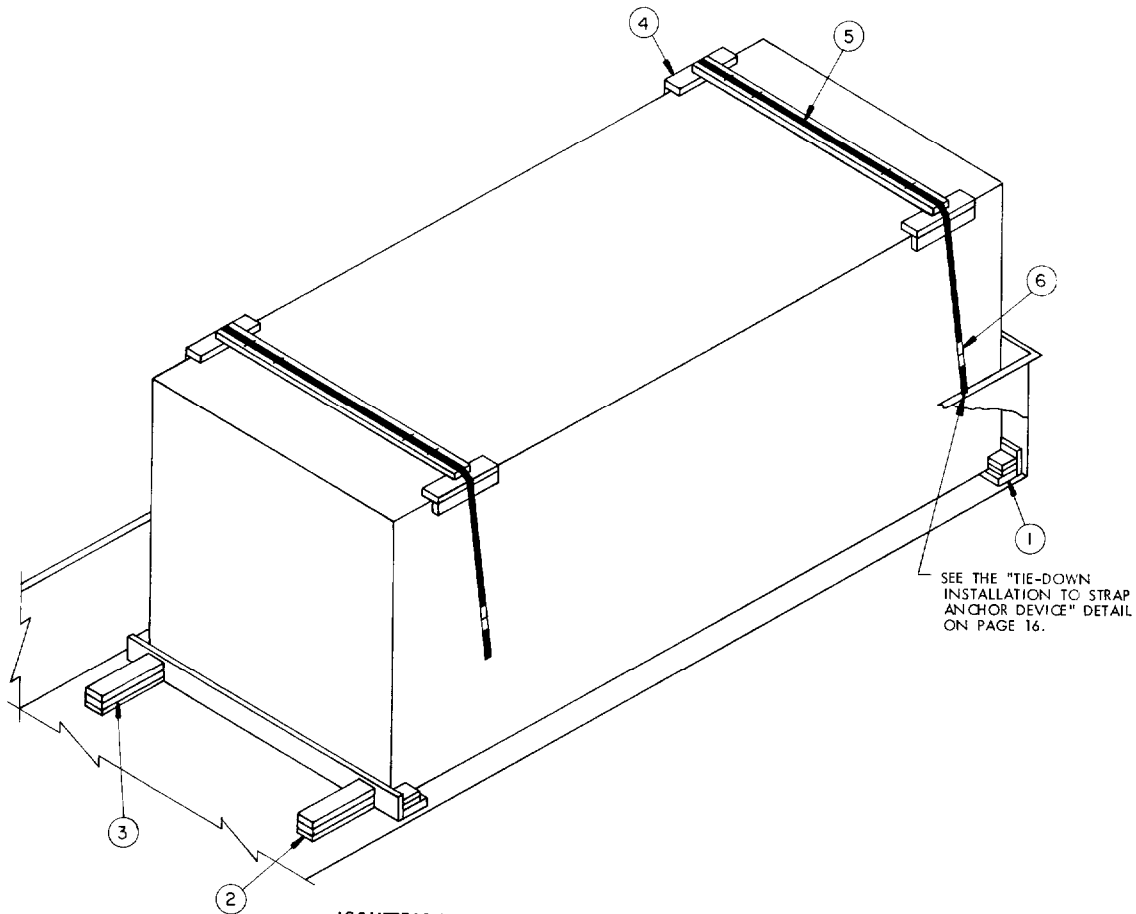
**SPECIAL NOTE:**

1. A TWO-CONTAINER LOAD IS SHOWN IN A 46'-6" LONG BY 9'-2" WIDE (INSIDE DIMENSIONS) GONDOLA CAR. LARGER CARS CAN BE USED; HOWEVER, A LONGER OR WIDER CAR SHOULD NOT BE ORDERED FOR THE SHIPMENT OF A TWO-CONTAINER LOAD. ANY CAR 42'-6" THROUGH 46'-6" LONG BY 9'-2" WIDE CAN BE USED TO SHIP A TWO CONTAINER LOAD.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	4	2
2" X 2"	4	1
2" X 4"	16	11
2" X 6"	88	88
2" X 8"	36	48
4" X 4"	12	16
NAILS	NO. REQD	POUNDS
8d ( 2-1/2" )	72	1/2
10d ( 3" )	52	1
12d ( 3-1/4" )	12	1/4
16d ( 3-1/2" )	24	1/2
STEEL STRAPPING, 2" X .050" ----- 100' REQD ----- 34 LBS		
SEAL FOR 2" STRAPPING ----- 16 REQD ----- 3-1/4 LBS		
STAPLE FOR 2" STRAPPING ----- 16 REQD ----- 1/4 LB		

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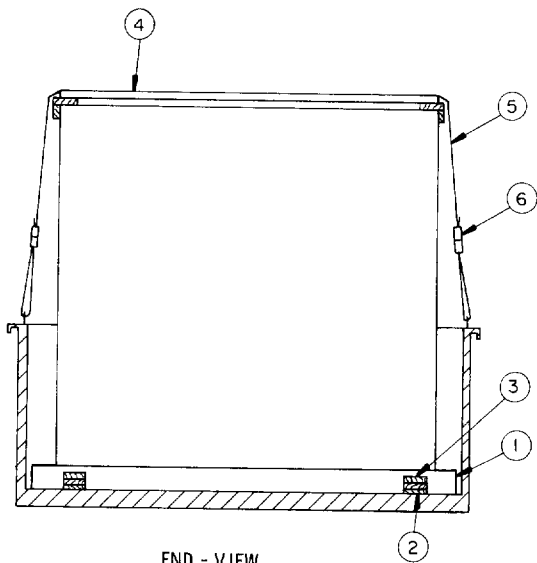
ITEM	QUANTITY	WEIGHT ( APPROX )
CONTAINER -----	2 -----	10,600 LBS
DUNNAGE -----	-----	372 LBS
TOTAL WEIGHT -----		10,972 LBS



**ISOMETRIC VIEW**  
A 9'-2" WIDE GONDOLA CAR IS DEPICTED

**KEY NUMBERS**

- ① END BLOCKING (2 REQD). SEE THE "END BLOCKING ASSEMBLY" DETAIL ON PAGE 15. SEE SPECIAL NOTE 2 ON PAGE 13. FOR CARS WITH CORRUGATED END WALLS SEE THE "TYPICAL END FILL" DETAIL ON PAGE 15.
- ② RISER, 1" X 6" X 24" (2 REQD).
- ③ BACK-UP CLEAT, 2" X 6" X 24" (DOUBLED) (2 REQD). POSITION A 2" X 6" PIECE ON TOP OF THE 1" X 6" RISER PIECE, CENTER ON CORNER FITTING AND NAIL THROUGH BOTH PIECES INTO THE CAR FLOOR W/6-40d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTES "M" AND "R" ON PAGE 2.
- ④ STRAPPING BOARD (2 REQD). SEE THE "STRAPPING BOARD ASSEMBLY" DETAIL ON PAGE 14.
- ⑤ TIE-DOWN STRAP, 2" X .050" X 25'-0" LONG STEEL STRAPPING (2 REQD). INSTALL FROM ONE PIECE OF STRAP. ANCHOR STRAP AT ONE SIDE OF CAR, PASS OVER THE STRAPPING BOARD, TENSION, AND SEAL STRAP AT THE OTHER SIDE OF CAR. STAPLE TO THE STRAPPING BOARD W/4-STAPLES. SEE GENERAL NOTES "E" AND "K" ON PAGE 2.
- ⑥ SEAL FOR 2" STRAPPING (8 REQD, 4 PER TIE-DOWN STRAP). DOUBLE NOTCH EACH SEAL.



**END - VIEW**

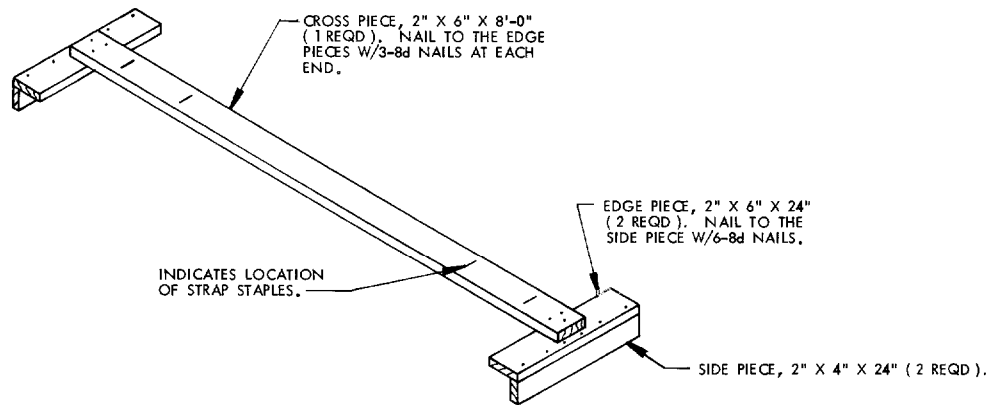
**SPECIAL NOTES:**

1. A ONE-CONTAINER LOAD IS SHOWN IN A 9'-2" WIDE ( INSIDE DIMENSION ) GONDOLA CAR, WIDER CARS CAN BE USED; HOWEVER, A WIDER CAR SHOULD NOT BE ORDERED FOR THE SHIPMENT OF A ONE-CONTAINER LOAD. FOR A ONE-CONTAINER LOAD THE CAR MUST HAVE A WOOD OR NAILABLE METAL FLOOR.
2. IF DESIRED, ADDITIONAL RISER PIECES AND BACK-UP CLEATS, PIECES MARKED ② AND ③, MAY BE USED AT BOTH ENDS OF THE CONTAINER, IN LIEU OF USING THE CAR END WALL.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	6	3
2" X 4"	8	6
2" X 6"	52	52
2" X 8"	18	24
NAILS	NO. REQD	POUNDS
8d ( 2-1/2" )	36	1/2
10d ( 3" )	20	1/2
16d ( 3-1/2" )	12	1/4
40d ( 5" )	24	1-1/2
STEEL STRAPPING, 2" X .050" ---- 50' REQD ----- 17 LBS		
SEAL FOR 2" STRAPPING ----- B REQD ---- 1-3/4 LBS		
STAPLE FOR 2" STRAPPING ----- B REQD ----- NIL		

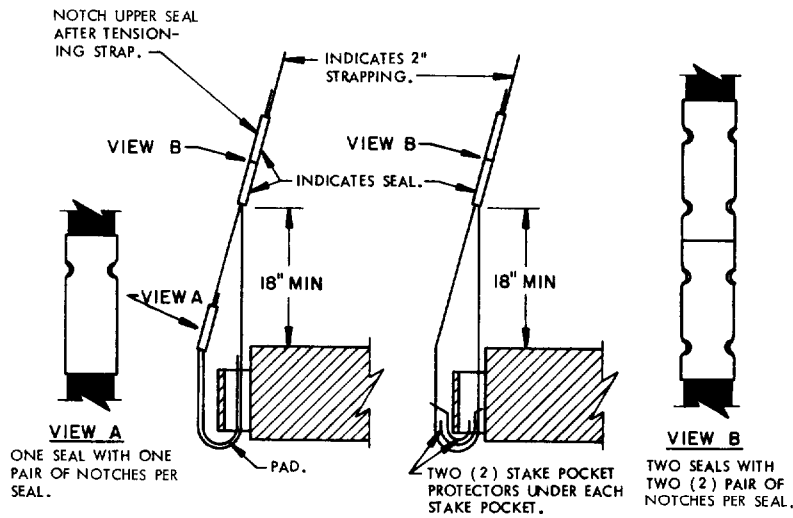
**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT ( APPROX )
CONTAINER -----	1 -----	5,300 LBS
DUNNAGE -----	-----	192 LBS
TOTAL WEIGHT -----		5,492 LBS



**STRAPPING BOARD ASSEMBLY**

THE CROSS PIECE WILL NOT BE NAILED UNTIL THE SUBASSEMBLIES HAVE BEEN PROPERLY LOCATED ON TOP OF THE CONTAINER. THE CROSS PIECE WILL BE CENTERED ON THE LENGTH OF THE SUBASSEMBLIES.



**DETAIL A**

METHOD OF INSTALLING 2"  
STRAPPING AND PAD AT  
STAKE POCKET.

**DETAIL B**

METHOD OF INSTALLING  
2" STRAPPING AND STAKE  
POCKET PROTECTORS (ALT  
PAD).

SIDE BLOCKING, 2" X 6" BY CUT TO FIT (2 REQD.). NAIL THROUGH THE 1" X 6" PIECE INTO THE RISER PIECE W/3-16d NAILS.

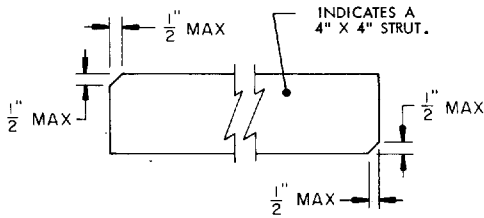
BEARING PIECE, 2" X 6" BY CAR WIDTH MINUS 1" (1 REQD.). NAIL TO THE RISER PIECE W/1-10d NAIL EVERY 12".

SIDE BLOCKING, 1" X 6" BY CUT TO FIT (2 REQD.).

RISER PIECE, 2" X 8" BY CAR WIDTH MINUS 1" (1 REQD.).

8'-0 1/2"

**END BLOCKING ASSEMBLY**



**BEVEL CUT**

IF DESIRED, EACH END OF A STRUT MAY BE BEVEL-CUT AS SHOWN ABOVE TO FACILITATE ACHIEVEMENT OF A TIGHT FIT BETWEEN THE END BLOCKING ASSEMBLIES AT THE CENTER OF THE CAR.

STRUT LEDGER, 2" X 2" X 12" (4 REQD.). NAIL TO THE BEARING PIECE OF THE END BLOCKING ASSEMBLY W/3-10d NAILS.

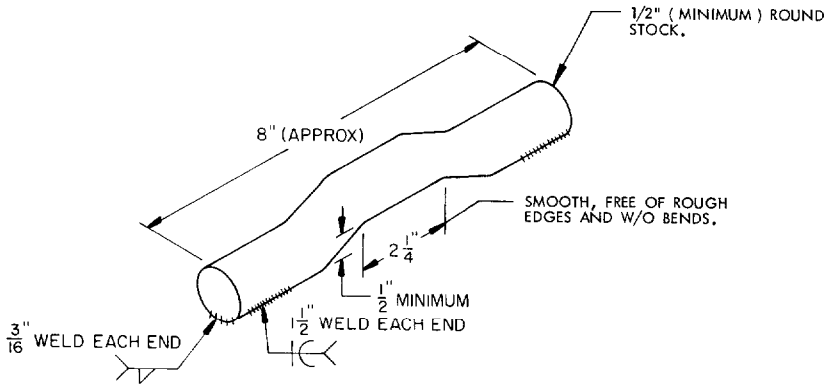
STRUT, 4" X 4" BY CUT FOR A DRIVE FIT (4 REQD.). SEE "BEVEL CUT" DETAIL ABOVE. TOENAIL TO A BEARING PIECE W/3-12d NAILS AT EACH END.

7'-4" (REF)

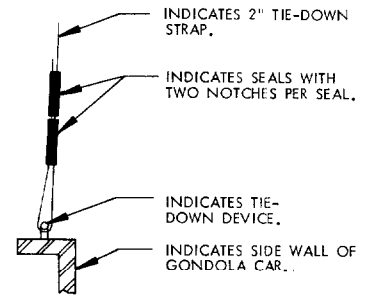
8'-0 1/2"

END BLOCKING (2 REQD.). SEE THE "END BLOCKING ASSEMBLY" DETAIL ABOVE.

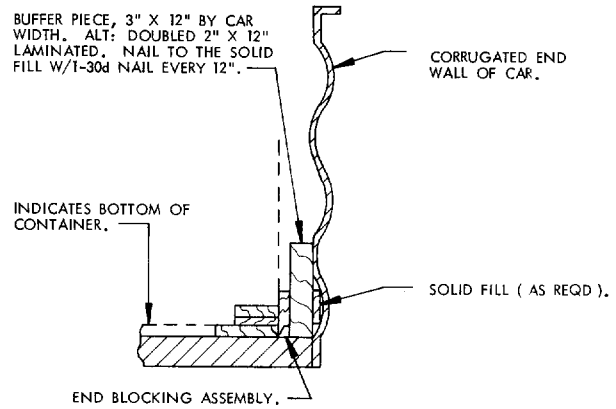
**CENTER BLOCKING ASSEMBLY A**



**STRAP ANCHOR DEVICE**  
SEE GENERAL NOTE "E" ON PAGE 2.

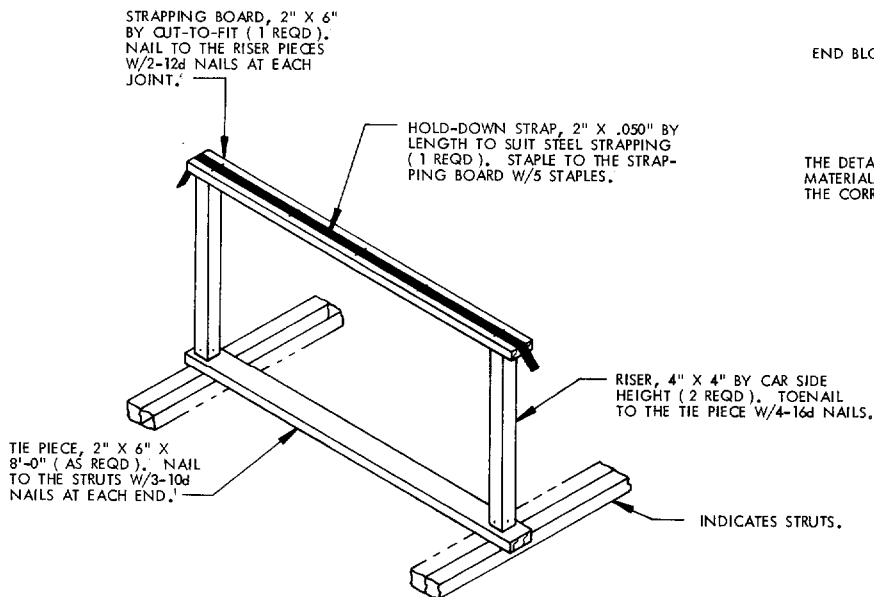


**TIE-DOWN INSTALLATION TO STRAP ANCHOR DEVICE**



**TYPICAL END FILL**

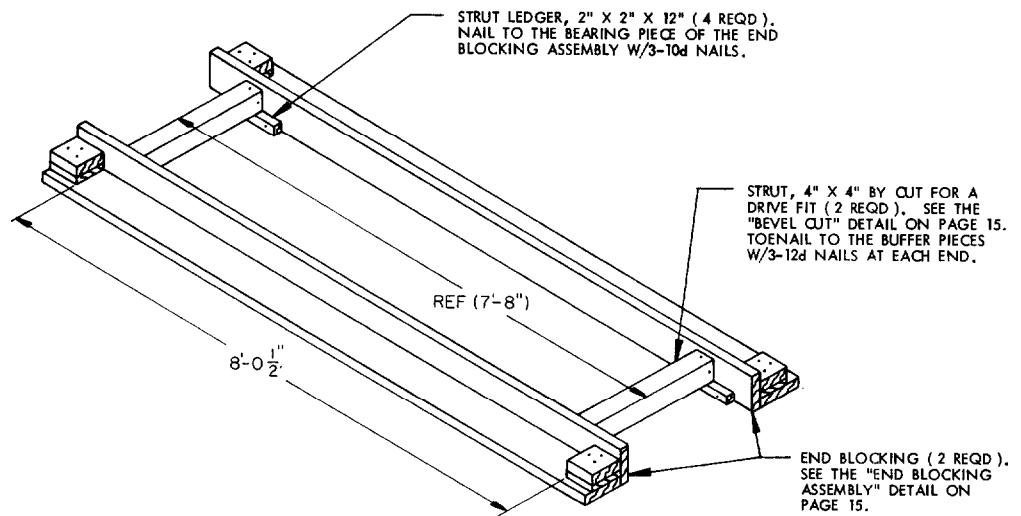
THE DETAIL ABOVE DEPICTS THE METHOD OF PLACING FILL MATERIAL BETWEEN THE END BLOCKING ASSEMBLY AND THE CORRUGATED END WALL OF THE GONDOLA CAR.



**STRUT HOLD - DOWN**

A HOLD-DOWN MUST BE USED WHEN STRUTS ARE GREATER THAN 72" IN LENGTH.

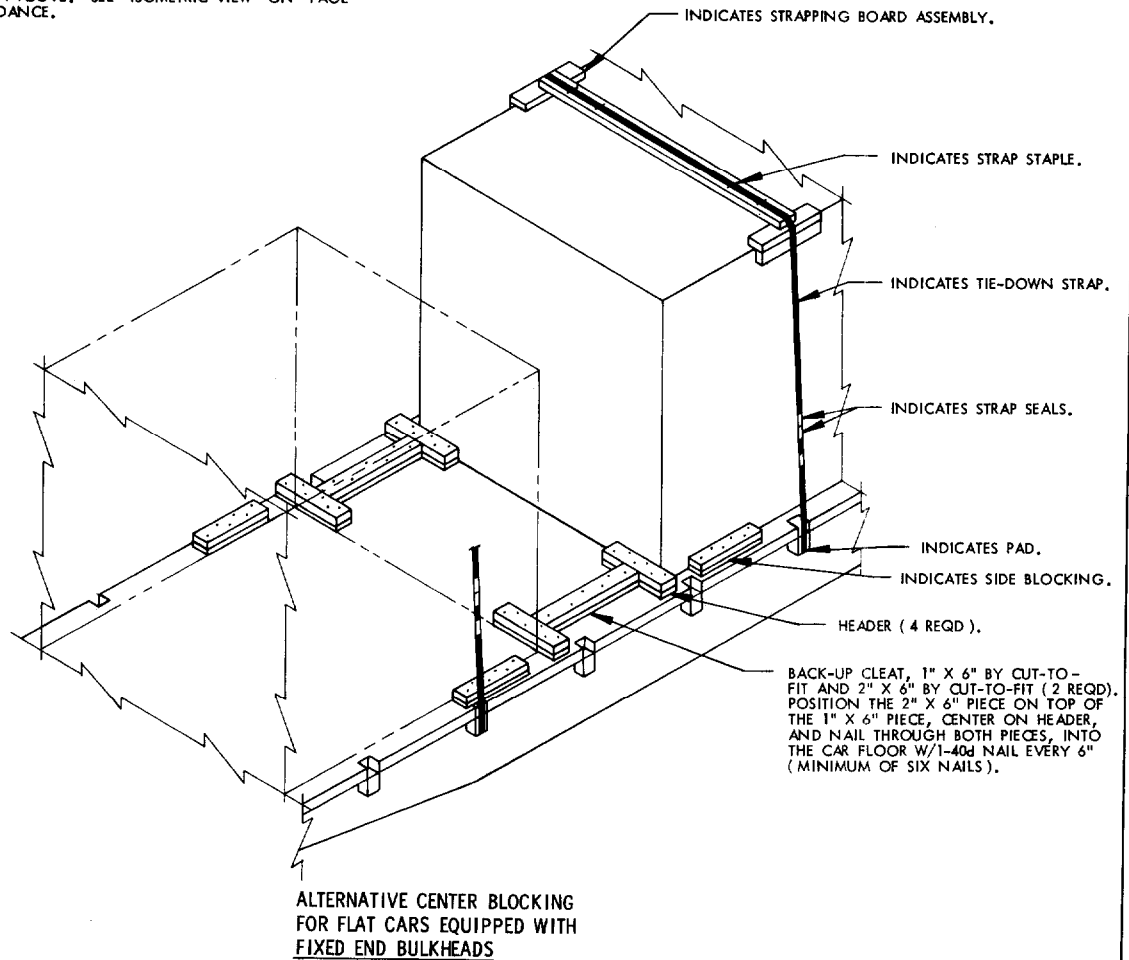


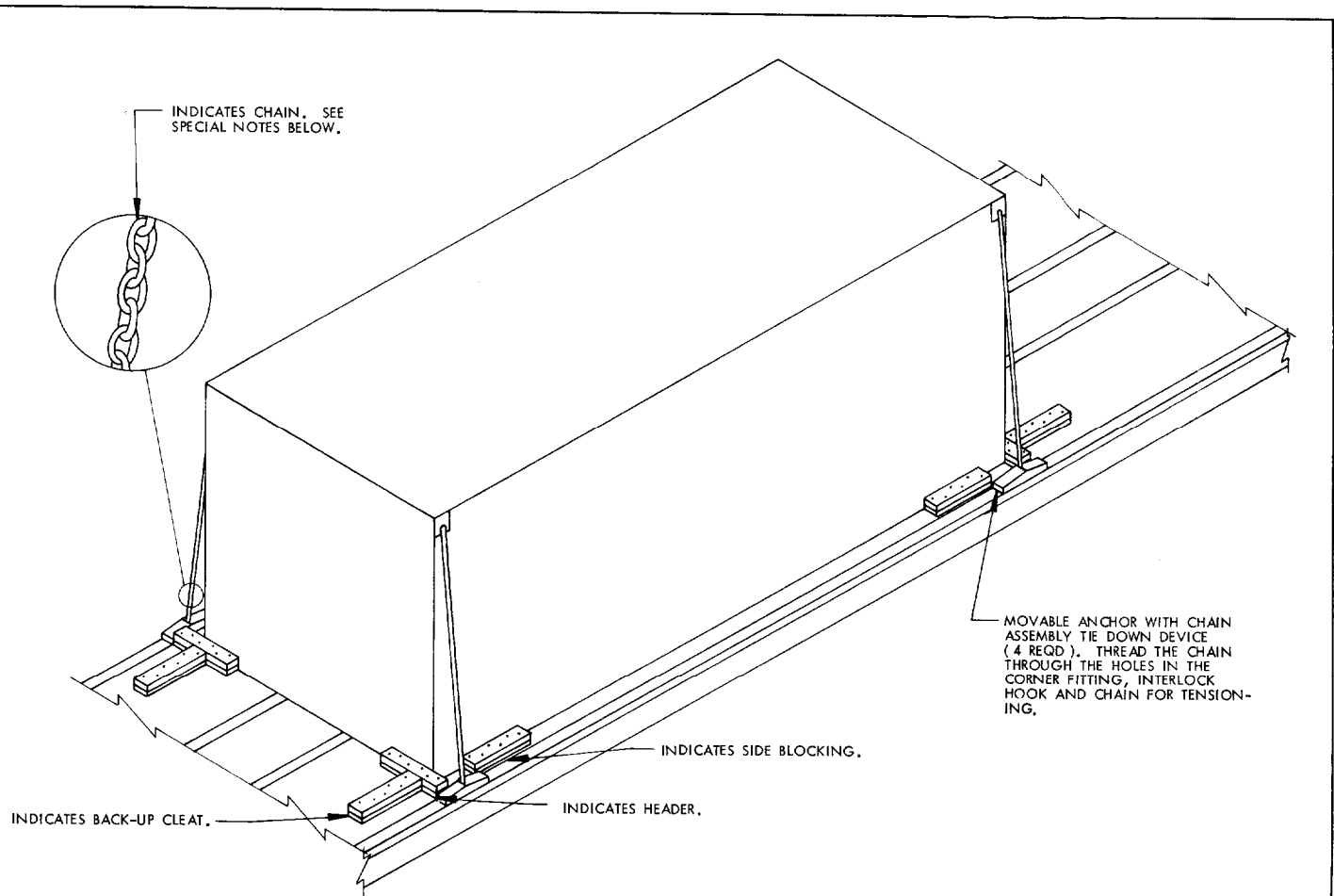


**CENTER BLOCKING ASSEMBLY B**

**SPECIAL NOTE:**

1. WHEN FLAT CARS EQUIPPED WITH FIXED END BULKHEADS, ARE OFFERED FOR OUTLOADING OF EMPTY CONTAINERS, THE FOLLOWING PROCEDURES MUST BE APPLIED:
  - A. POSITION THE EMPTY CONTAINERS DIRECTLY AGAINST THE END OF CAR BULKHEADS.
  - B. REFER TO THE KEY NUMBER SECTION ON PAGE 6 FOR NAILING GUIDANCE.
  - C. WHEN THE SPACE BETWEEN THE HEADER PIECES IS 60" OR GREATER, TWO 24" LONG BACK-UP CLEATS CAN BE USED IN LIEU OF THE CUT-TO-FIT PIECES AS SHOWN ABOVE. SEE "ISOMETRIC VIEW" ON PAGE 6 FOR ADDITIONAL GUIDANCE.





ISOMETRIC VIEW

SPECIAL NOTES:

1. ONE CONTAINER IS SHOWN ON AN FMS TYPE CAR 10'-6" WIDE ( DECK WIDTH ). NARROWER CARS OF THIS TYPE MAY BE USED. NOTE THAT THE CAR MUST HAVE A NAILABLE FLOOR AREA FOR THE SECUREMENT OF NAILABLE FLOOR LINE DUNNAGE. THE USE OF THIS TYPE OF CAR ELIMINATES THE REQUIREMENT FOR 2" STRAPPING, SEALS, STRAP STAPLES, AND STRAPPING BOARD ASSEMBLIES.
2. THE CAR DEPICTED IS EQUIPPED WITH SPECIAL HEAVY DUTY TIE-DOWN ANCHORS AND CHAIN ASSEMBLIES. THE TIE-DOWN CHAINS MUST BE OF A SUFFICIENT LENGTH TO PASS THROUGH THE HOLES IN THE CORNER FITTING AND THEN PASS BACK TO INTERLOCK HOOK AND CHAIN FOR TENSIONING.
3. BEFORE AND DURING INSTALLATION, THE ANCHOR DEVICES SHALL BE INSPECTED FOR BENT HOOKS, STRETCH, GOUGES, BENT LINKS, WEAR IN THE CHAINS, DAMAGED LOAD BINDERS OR WINCHES, OR ANY OTHER NOTICEABLE DEFECT. ANY DEFICIENCY SHALL BE SUFFICIENT CAUSE FOR NOT USING A MOVABLE ANCHOR WITH CHAIN ASSEMBLY TIE DOWN DEVICE.
4. CHAINS MUST NOT BE TWISTED DURING INSTALLATION.
5. AS APPLICABLE, THE CHAIN ASSEMBLY TIE DOWN DEVICES MUST BE TENSIONED SUFFICIENTLY TO PREVENT DISPLACEMENT.
6. EACH INSTALLED CHAIN ASSEMBLY TIE DOWN DEVICE SHALL HAVE THE HOOK WIRE-TIED IN PLACE TO PREVENT DISPLACEMENT.
7. SEE THE "ISOMETRIC VIEW" ON PAGE 6 FOR NAILING AND DUNNAGE REQUIREMENTS FOR FLOOR LINE BLOCKING.