

**ISOMETRIC VIEW**

APPLICATION OF STAGGERED NAILING PATTERN. SEE GENERAL NOTE "N".

SEE GENERAL NOTE "F".

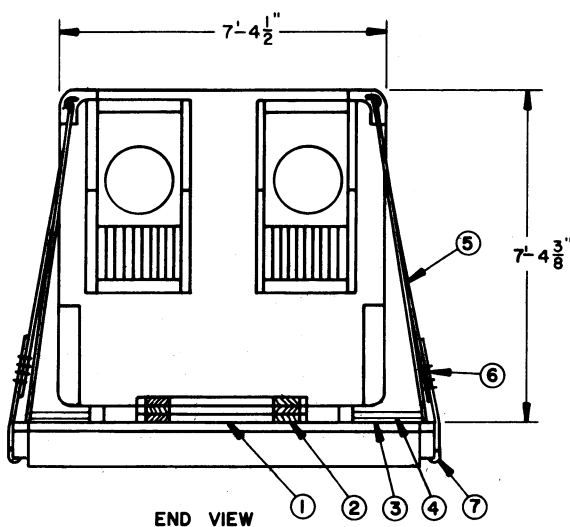
**KEY NUMBERS**

- ① HEADER, 2" X 6" X 44" (TRIPLED) (2 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/9-20d NAILS. NAIL EACH ADDITIONAL PIECE W/9-50d NAILS. SEE GENERAL NOTE "N".
- ② BACK-UP CLEAT, 2" X 6" X 30" (TRIPLED) (4 REQD). POSITION 3" FROM THE END OF PIECE MARKED ① AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/8-20d NAILS. NAIL EACH ADDITIONAL PIECE W/8-50d NAILS. SEE GENERAL NOTE "G".
- ③ SIDE BLOCKING, 1" X 6" X 18" (4 REQD). POSITION AGAINST THE CONTAINER SKID AS SHOWN.
- ④ SIDE BLOCKING, 2" X 6" X 18" (4 REQD). NAIL THRU PIECE MARKED ③ AND INTO THE CAR FLOOR W/5-20d NAILS.
- ⑤ STEEL WIRE ROPE, 3/8" DIAMETER, 6.56 TONS (4 REQD). INSTALL THE CABLE TO APPROXIMATE THE ANGLE SHOWN AND TO FORM A COMPLETE LOOP FROM THE STAKE POCKET ON THE CAR THRU THE LADING TIE DOWN DEVICE AND BACK TO THE STAKE POCKET. NOTE: CABLE OF A LARGER SIZE MAY BE USED. SEE GENERAL NOTES "E", "F", "K", AND "L". SEE THE "SPECIAL PROVISIONS" ON PAGE 3.
- ⑥ CLIP, SIZE 3/8" (24 REQD). USE FOUR (4) PER CABLE JOINT AND ONE (1) PER THIMBLE. SEE GENERAL NOTE "E".
- ⑦ THIMBLE, STANDARD, SIZE 3/8" (8 REQD). USE ONE (1) PER STAKE POCKET AND ONE (1) PER LADING TIE DOWN DEVICE. SECURE TO PIECE MARKED ⑤ W/1-CLIP PER THIMBLE. A STANDARD THIMBLE, AS SPECIFIED, CAN BE SECURED TO A WIRE ROPE WITH A 3/8" CLIP. HOWEVER, IF DESIRED, OR IF THE 3/8" THIMBLE BEING USED IS OF A TYPE WHICH CANNOT BE SECURED TO A CABLE WITH A 3/8" CLIP, A 1/2" CLIP MAY BE USED. NOTE THAT AN "OPEN PATTERN" THIMBLE IS RECOMMENDED.

**REVISIONS**

REVISION NO. 1, DATED JULY 1981, CONSISTS OF:

- 1. ADDING PROCEDURES FOR TEST SET, UNCRATED, MOUNTED ON SKID BASE.
- 2. CHANGES AS NECESSARY TO UPDATE "GENERAL NOTES", "MATERIAL SPECIFICATIONS" AND "DRAWING FORMAT".



**END VIEW**

**SPECIAL PROVISIONS:**

AN UNCRATED RADAR TEST SET MAY BE SECURED ON A CUSHIONED FMS TYPE CAR WITH CHAIN TIE DOWN ASSEMBLIES IN LIEU OF USING THE DEPICTED GENERAL SERVICE FM TYPE CAR AND THE SPECIFIED TIE DOWN MATERIALS, PROVIDING THE FOLLOWING CONDITIONS ARE MET:

1. THE CAR MUST HAVE A NAILABLE FLOOR AREA AT LEAST 8'-8" WIDE BETWEEN THE OUTER CHANNELS FOR THE SECUREMENT OF PIECES MARKED ① THRU ④ .
2. ONE ( 1 ) MOVABLE ANCHOR WITH CHAIN ASSEMBLY TIE DOWN DEVICE MUST BE SUBSTITUTED FOR EACH WIRE ROPE CABLE TIE DOWN MARKED ⑤ . CHAINS WILL BE ATTACHED TO THE LADING AT THE SAME LOCATIONS SHOWN FOR THE WIRE ROPE. NOTE THAT IF THE LADING TIE DOWN DEVICE IS NOT LARGE ENOUGH TO PERMIT PASSAGE OF THE HOOK ON THE CHAIN ASSEMBLY, A 5/8" ( OR LARGER ) SHACKLE MAY BE USED FOR ATTACHMENT OF THE CHAIN. ANCHOR DEVICES WILL BE LOCATED SO AS TO POSITION THE CHAINS WITHIN THE ANGULAR TOLERANCES SPECIFIED ON THE LOAD VIEWS.
3. BEFORE AND DURING INSTALLATION, THE ANCHOR DEVICES SHALL BE INSPECTED FOR BENT HOOKS, STRETCH, GOUGES, BENT LINKS, AND WEAR IN THE CHAINS, AND FOR DAMAGED LOAD BINDERS OR WINCHES, OR ANY OTHER NOTICEABLE DEFECTS. ANY DEFICIENCY SHALL BE CAUSE FOR NOT USING AN ANCHOR AND CHAIN ASSEMBLY.
4. CHAINS MUST NOT BE TWISTED DURING INSTALLATION. CHAINS ARE TO BE STRUCK WITH A HAMMER OR BAR AFTER TIGHTENING TO ELIMINATE ANY POSSIBLE MISALIGNMENT OF LINKS. FURTHER TIGHTENING MAY BE REQUIRED TO TAKE UP ANY SLACK THAT DEVELOPS DUE TO LINK ALIGNMENT.
5. TURNBUCKLES OR OTHER TENSIONING DEVICES NOT EQUIPPED WITH SELF-LOCKING DEVICES MUST BE WIRED OR PINNED TO PREVENT THEM FROM TURNING OR LOOSENING DURING TRANSIT.
6. OPEN HOOKS MUST BE SECURED WITH WIRE AS REQUIRED TO PREVENT THE HOOK FROM BECOMING DISENGAGED FROM THE CHAIN LINK TO WHICH IT IS ATTACHED.

**GENERAL NOTES**

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1.
- B. THE LOADS AS SHOWN ARE BASED ON FLAT CARS 9'-2" WIDE ( PLATFORM ); WIDER CARS CAN BE USED. ONLY ONE UNIT OF LADING IS SHOWN IN EACH LOAD VIEW; HOWEVER, MULTIPLES OF UNITS, AS SHOWN OR DISSIMILAR IN NATURE, MAY BE LOADED ON A CAR. THE NUMBER OF UNITS TO BE LOADED ON A CAR WILL BE DEPENDENT ON THE SIZE OF THE CAR USED OR THE QUANTITIES OF UNITS TO BE SHIPPED, WITH THE VIEW OF FULL UTILIZATION OF CARRIER EQUIPMENT.

**NOTICE TO TRANSPORTATION OFFICER:**

FOR THE SHIPMENT OF AN UNCRATED RADAR TEST SET, IN LIEU OF REQUISITIONING A GENERAL SERVICE FM\* FLAT CAR AS DEPICTED HEREIN, EVERY EFFORT SHOULD BE MADE TO ACQUIRE AN FMS\* TYPE CUSHIONED FLAT CAR EQUIPPED WITH SPECIAL TIE DOWN CHANNELS AND MOVABLE ANCHOR AND CHAIN ASSEMBLY TIE DOWN DEVICES \*\* , SUCH AS IS USED FOR TRANSPORTING AGRICULTURAL MACHINERY AND HEAVY, EARTH MOVING EQUIPMENT. SEE "SPECIAL PROVISIONS" AT THE LEFT FOR GUIDANCE.

\* ASSOCIATION OF AMERICAN RAILROADS ( AAR ) MECHANICAL DESIGNATION FOR CAR TYPE. REFERENCE IS MADE TO THE "OFFICIAL RAILWAY EQUIPMENT REGISTER".

\*\* A TYPICAL CAR OF THIS TYPE IS SHOWN BY FIGURE 88 B OF SECTION 6 IN PUBLICATION OF AAR TITLED "GENERAL RULES GOVERNING THE LOADING OF COMMODITIES ON OPEN TOP CARS".

- C. CAUTION: THE EYE LOOPS AT THE FOUR TOP CORNERS OF THE TEST SET WERE NOT DESIGNED TO BE USED AS LIFTING DEVICES FOR THE TEST SET, BUT WILL ONLY BE USED AS TIEDOWN FACILITIES. LIFTING OF THE TEST SET IN ANY CONFIGURATION MUST BE ACCOMPLISHED WITH A FORKLIFT TRUCK OR WITH SLINGS POSITIONED UNDER THE UNIT AND AGAINST THE OUTWARD ENDS OF THE SKIDS. SLINGS MUST BE PROVIDED WITH SPREADER BARS TO PREVENT DAMAGE TO THE ITEM.

**D. LADING DATA:**

ITEM	WEIGHT ( APPROX )	DIMENSIONS
TEST SET, RADAR AN/MPM-57		
UNCRATED -----	5,100 LBS	16'-0" L X 7'-4-1/2" W X 7'-4-3/8" H.
CRATED -----	7,285 LBS	16'-8-1/2" L X 7'-10-1/2" W X 8'-2-1/2" H.
UNCRATED, MOUNTED ON SKID BASE -----	6,300 LBS	16'-6-1/2" L X 7'-8-1/2" W X 7'-8-1/2" H.

- E. REFER TO ORD DWG 19-48-C-ORDJU-588, "WIRE ROPE AND ANNEALED WIRE APPLICATION METHODS FOR SECURING LADING ON RAIL & MOTOR CARRIER EQUIP", FOR PROPER TIE DOWN APPLICATION, EXCEPT THAT THE NUTS ON 3/8" CABLE CLIPS WILL BE TIGHTENED TO A TORQUE OF 35 TO 40 FOOT POUNDS.

- F. REFER TO ASSOCIATION OF AMERICAN RAILROADS MANUAL, "GENERAL RULES GOVERNING THE LOADING OF COMMODITIES ON OPEN TOP CARS", FOR APPLICABLE LOADING RULES: PREFACE, 1-A, 2, 3, 4, 5, 9, 14, AND 15.

- G. ONLY CARS WITH "SOUND" FLOORS WILL BE USED. CARS WITH STEEL FLOOR ENDS AND/OR EXPOSED STEEL BOLSTERS WHICH INTERFERE WITH PROPER POSITIONING OR NAILING OF THE DUNNAGE WILL NOT BE USED. SEE THE "TYPICAL END BLOCKING FOR CARS WITH EXPOSED STEEL BOLSTERS" DETAIL ON PAGE 6 FOR APPLICATION OF DUNNAGE METHODS WHICH PERMIT THE USE OF SOME CARS THAT HAVE EXPOSED STEEL COMPONENTS.

- H. WHEN ANY STRAP IS SEALED AT AN END-OVER-END LAP JOINT, OR AS SHOWN IN DETAILS "A" AND "B" ON PAGE 6, A MINIMUM OF TWO ( 2 ) SEALS, BUTTED TOGETHER, WITH TWO ( 2 ) PAIR OF CRIMPS PER SEAL MUST BE USED.

- J. CAUTION: STAKE POCKETS 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 THAT WILL NOT DEFORM A STRAP, ESPECIALLY AT THE EDGES, WHEN IT IS TENSIONED.

- K. TO ACHIEVE PROPER CABLE TENSION, EMPLOY TWO ( 2 ) CABLE "GRIPPERS" AND AN APPLICABLY SIZED "COME-A-LONG" TYPE MECHANICAL HOIST.

- L. CAUTION: IT IS RECOMMENDED THAT CABLE BE INSTALLED TO APPROXIMATE THE ANGLE SHOWN; HOWEVER, IF PLACEMENT OF THE CAR STAKE POCKETS PREVENTS THIS, CARE MUST BE EXERCISED TO ENSURE THAT THE CABLES ON THE SAME SIDE OF THE LADING ARE INSTALLED SO THEIR RETENTION FORCES ACT IN OPPOSITE LONGITUDINAL DIRECTIONS --- CONTACT OF THE CABLE WITH THE EDGE OF THE LADING IS PROHIBITED.

- M. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF 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.

- N. NOTICE: A STAGGERED NAILING PATTERN WILL BE USED WHEN DUNNAGE IS NAILED TO THE FLOOR OF THE TRANSPORTING VEHICLE, OR WHEN LAMINATING DUNNAGE. ADDITIONALLY, THE NAILING PATTERN FOR AN UPPER PIECE OF LAMINATED DUNNAGE WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL FOR THAT PIECE WILL NOT BE DRIVEN THROUGH ONTO OR RIGHT BESIDE A NAIL IN A LOWER PIECE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	6	3
2" X 6"	58	58
NAILS	NO. REQD	POUNDS
20d ( 4" )	70	2-1/2
50d ( 5-1/2" )	100	7-3/4
ROPE, STEEL WIRE, 3/8" -----	80' REQD -----	20 LBS
CLIP, 3/8" -----	24 REQD -----	8 LBS
THIMBLE, STANDARD, 3/8" -----	8 REQD -----	2 LBS
CLIP, 1/2" ( ALT FOR 3/8" ) -----	8 REQD -----	4 LBS

**MATERIAL SPECIFICATIONS**

**LUMBER** ----- : DOUGLAS FIR OR COMPARABLE LUMBER WITH STRAIGHT GRAIN AND FREE OF MATERIAL DEFECTS. REF: FED SPEC MM-L-751.

**NAILS** ----- : COMMON. REF: FED SPEC FF-N-105.

**ROPE** ----- : STEEL WIRE, PLAIN, PREFORMED, REGULAR LAY, 6.56 TONS, 6 X 19, FLEXIBLE IWRC, MACWHYTE WIRE ROPE CO (OR EQUAL). REF: FED SPEC RR-W-410.

**CLIPS** ----- : "U" BOLT, CROSBY, HEAVY DUTY ( OR EQUAL ). REF: FED SPEC FF-C-450, TYPE I, CLASS 1.

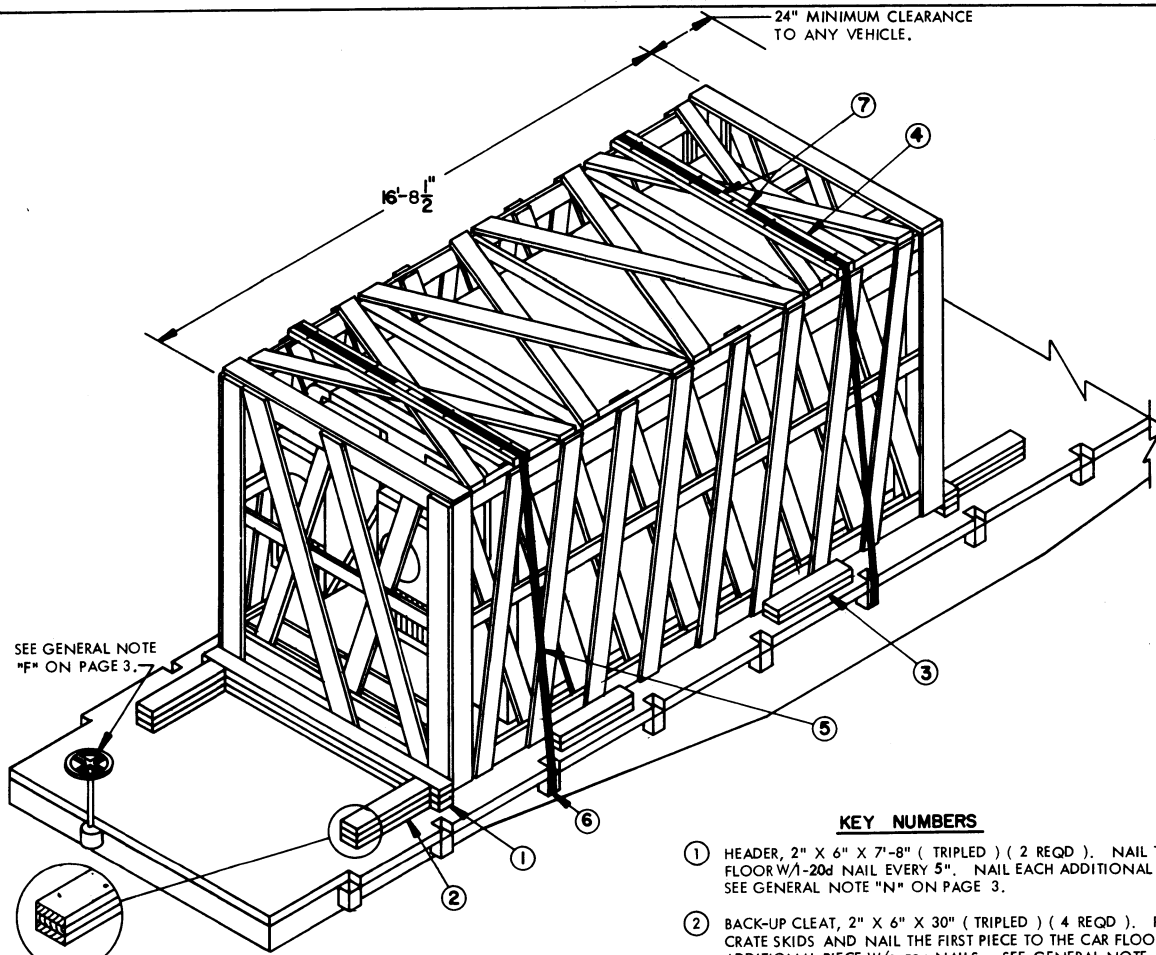
**STRAPPING, STEEL** ----- : CLASS 1, TYPE I, FINISH A, B, OR C. REF: FED SPEC QQ-S-781.

**STRAP SEAL** ----- : TYPE D, STYLE I, II OR IV, CLASS H, FINISH A, B, OR C. REF: FED SPEC QQ-S-781.

**STRAP STAPLE, STAKE POCKET PROTECTOR** ----- : COMMERCIAL GRADE.

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT ( APPROX )
RADAR TEST SET ( UNCRATED )-----	1-----	5,100 LBS
DUNNAGE-----		163 LBS
TOTAL WEIGHT-----		5,263 LBS



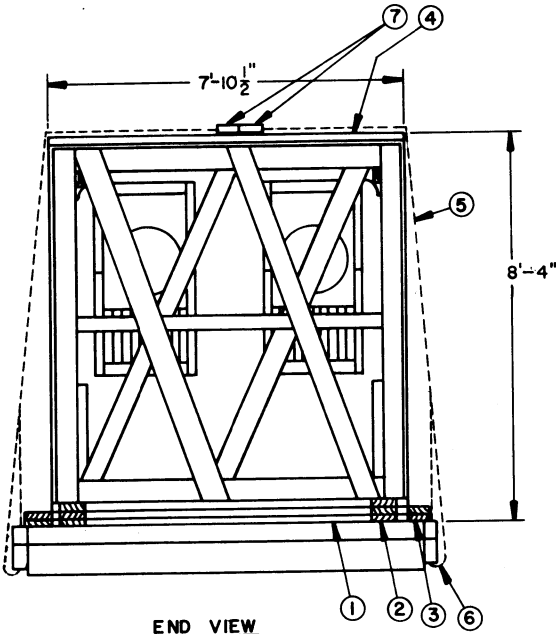
SEE GENERAL NOTE "F" ON PAGE 3.

**ISOMETRIC VIEW**

APPLICATION OF STAGGERED NAILING PATTERN. SEE GENERAL NOTE "N" ON PAGE 3.

**KEY NUMBERS**

- ① HEADER, 2" X 6" X 7'-8" ( TRIPLED ) ( 2 REQD ). NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-20d NAIL EVERY 5". NAIL EACH ADDITIONAL PIECE W/1-50d NAIL EVERY 5". SEE GENERAL NOTE "N" ON PAGE 3.
- ② BACK-UP CLEAT, 2" X 6" X 30" ( TRIPLED ) ( 4 REQD ). POSITION TO ALIGN WITH THE CRATE SKIDS AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/8-20d NAILS. NAIL EACH ADDITIONAL PIECE W/8-50d NAILS. SEE GENERAL NOTE "G" ON PAGE 3.
- ③ SIDE BLOCKING, 2" X 6" X 30" ( DOUBLED ) ( 4 REQD ). NAIL THE FIRST PIECE TO THE CAR FLOOR W/8-20d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ④ STRAPPING BOARD, 2" X 6" X 7'-6". ( 2 REQD ).
- ⑤ HOLD-DOWN STRAP, 2" X .050" X 36'-0" LONG STEEL STRAPPING ( 2 REQD ). INSTALL EACH STRAP FROM TWO ( 2 ) 18'-0" LONG PIECES. STAPLE TO PIECE MARKED ④ W/4-2" STAPLES.
- ⑥ PAD, 2" X .050" X 24" LONG STEEL STRAPPING ( 4 REQD ). POSITION UNDER AND SEAL TO A PIECE MARKED ⑤. SEE "DETAIL A" ON PAGE 6. ALT: STAKE POCKET PROTECTOR ( 8 REQD ). USE TWO ( 2 ) UNDER EACH TIE DOWN FACILITY WITH A PIECE MARKED ⑤. SEE "DETAIL B" ON PAGE 6.
- ⑦ SEAL FOR 2" STRAPPING ( 16 REQD, 8 PER STRAP ). SEE GENERAL NOTE "H" ON PAGE 3.



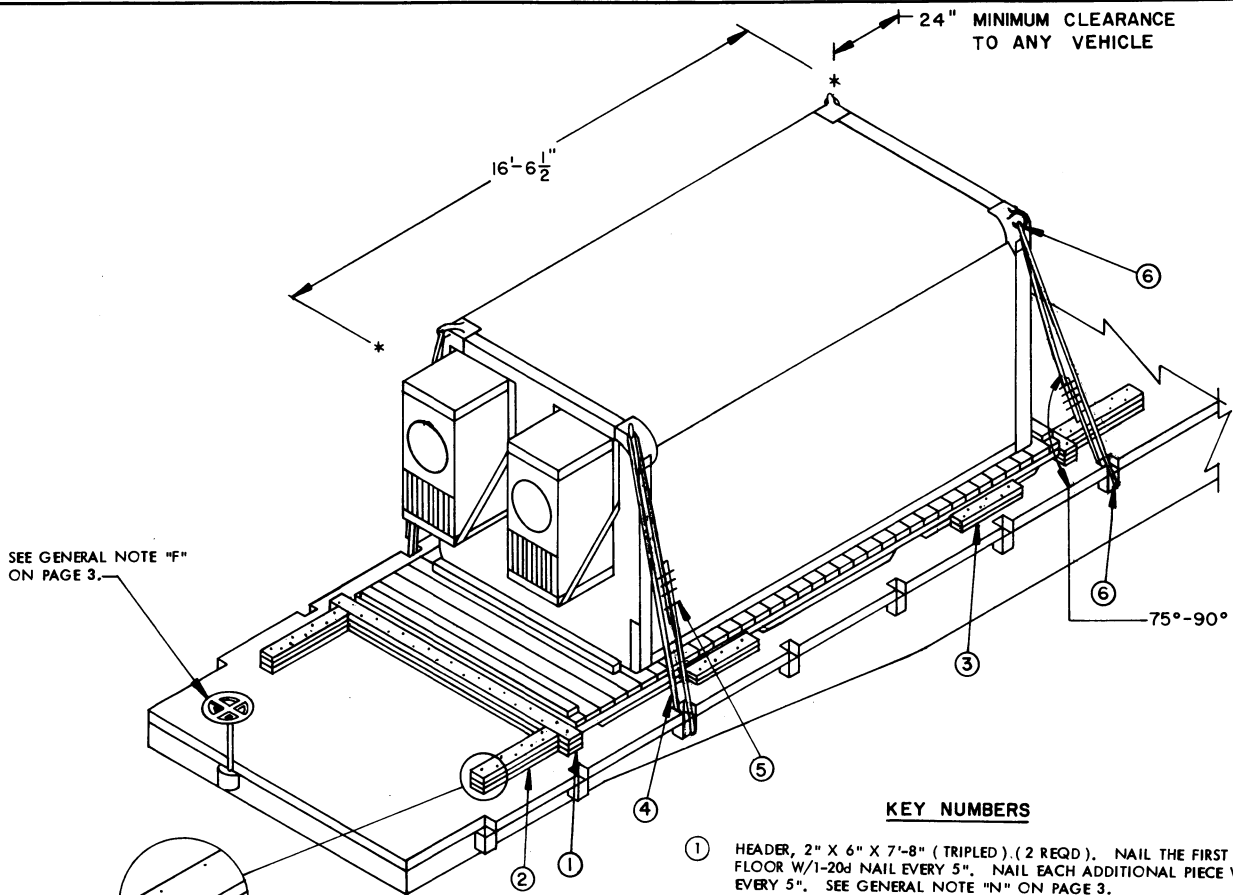
**END VIEW**

**BILL OF MATERIAL**

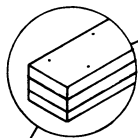
LUMBER	LINEAR FEET	BOARD FEET
2" X 6"	111	111
NAILS	NO. REQD	POUNDS
20d ( 4" )	134	5
50d ( 5-1/2" )	140	11
STEEL STRAPPING, 2" X .050"	80' REQD	27 LBS
SEALS FOR 2" STRAPPING	16 REQD	3 LBS
STAPLES FOR 2" STRAPPING	8 REQD	NIL

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT ( APPROX )
RADAR TEST SET ( CRATED )	1	7,285 LBS
DUNNAGE		268 LBS
<b>TOTAL WEIGHT</b>		<b>7,553 LBS</b>



SEE GENERAL NOTE "F" ON PAGE 3.

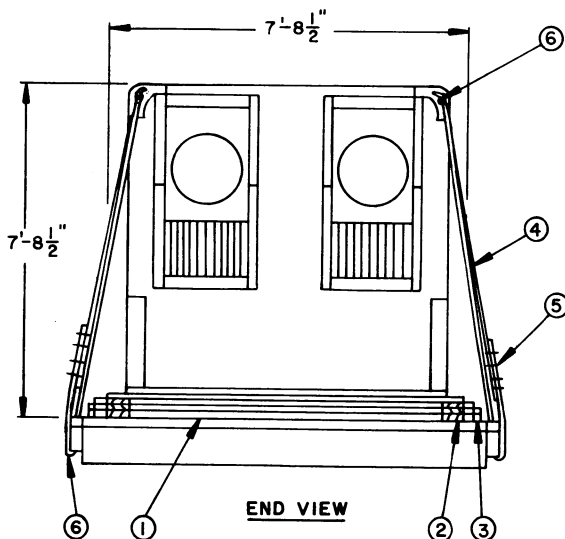


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- ② BACK-UP CLEAT, 2" X 6" X 30" (TRIPLED) (4 REQD). POSITION TO ALIGN WITH THE BASE SKIDS AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/8-20d NAILS. NAIL EACH ADDITIONAL PIECE W/8-50d NAILS. SEE GENERAL NOTE "G" ON PAGE 3.
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- ⑤ CLIP, SIZE 3/8" (24 REQD). USE FOUR (4) PER CABLE JOINT AND ONE (1) PER THIMBLE. SEE GENERAL NOTE "E".
- ⑥ THIMBLE, STANDARD, SIZE 3/8" (8 REQD). USE ONE (1) PER STAKE POCKET AND ONE (1) PER LADING TIE DOWN DEVICE. SECURE TO PIECE MARKED ④ W/1-CLIP PER THIMBLE. A STANDARD THIMBLE, AS SPECIFIED, CAN BE SECURED TO A WIRE ROPE WITH A 3/8" CLIP. HOWEVER, IF DESIRED, OR IF THE 3/8" THIMBLE BEING USED IS OF A TYPE WHICH CANNOT BE SECURED TO A CABLE WITH A 3/8" CLIP, A 1/2" CLIP MAY BE USED. NOTE THAT AN "OPEN PATTERN" THIMBLE IS RECOMMENDED.



END VIEW

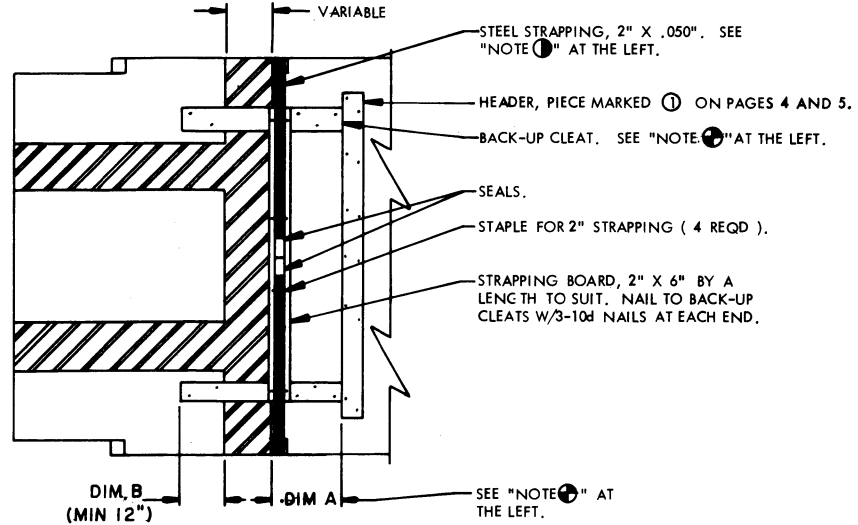
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 6"	96	96
NAILS		NO. REQD
20d (4)	134	5
50d (5-1/2")	140	11
ROPE, STEEL WIRE, 3/8"	88' REQD	22 LBS
CLIP, 3/8"	24 REQD	8 LBS
THIMBLE, STANDARD, 3/8"	8 REQD	2 LBS
CLIP, 1/2" (ALT FOR 3/8")	8 REQD	4 LBS

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
RADAR TEST SET (UNCRATED, MOUNTED ON SKID BASE)	1	6,300 LBS
DUNNAGE		240 LBS
<b>TOTAL WEIGHT</b>		<b>6,540 LBS</b>

**NOTE ②:**  
 WHEN LOADING CARS WHICH HAVE EXPOSED STEEL BOLSTERS, DIMENSION "B" MUST BE AT LEAST 12", AND THE TOTAL OF DIMENSIONS "A" AND "B" MUST BE EQUAL TO OR GREATER THAN THE LENGTH OF A BACK-UP CLEAT (PIECE MARKED ②) TO PROVIDE FOR PROPER NAILING TO THE CAR FLOOR. SEE PIECE MARKED ② ON PAGE 2, 4 OR 5 FOR PROPER NAILING.

**NOTE ①:**  
 THE STRAP HOLD-DOWN FOR END BLOCKING AS SHOWN AT THE RIGHT IS OPTIONAL; IT MAY BE USED FOR CARS WITH EXPOSED STEEL BOLSTERS AS SHOWN, OR IT MAY BE USED FOR CARS WHICH DO NOT HAVE EXPOSED STEEL BOLSTERS.



**TYPICAL END BLOCKING FOR CARS WITH EXPOSED STEEL BOLSTERS**

SEE GENERAL NOTE "G" ON PAGE 3. THE BLOCKING AS SHOWN IS APPLICABLE FOR THE CRATED ITEM OR UNCRATED ITEM MOUNTED ON SKID BASE. ADJUST AS NECESSARY FOR THE UNCRATED LOAD ON PAGE 2.

