

REV NO. 1 APPROVED BY
 MECH DIV AAR, THEIR LETTER
 DATED 9 Nov 79 FILE LR-11.0.66
 SIGNED A. W. Marshall
 DATE 14 Dec 1979
 TEA, MTMC, FT EUSTIS, VA.

CHAPARRAL

LOADING AND BRACING ON FLAT CAR OF TRACKED VEHICLE, M730, W/O FIRE UNIT

THIS OUTLOADING PROCEDURAL DRAWING INCLUDES PROCEDURES FOR GENERAL SERVICE FLAT CARS (FM) AND FOR CUSHIONED FLAT CARS (FMS) EQUIPPED WITH SPECIAL CHAIN TIE-DOWN DEVICES OF VARIOUS DESIGN AND MANUFACTURE.

THIS DRAWING, INCLUDING REVISION 1, SUPERSEDES DRAWING 19-48-7183-GSE 5CH5, DATED MARCH 1970.

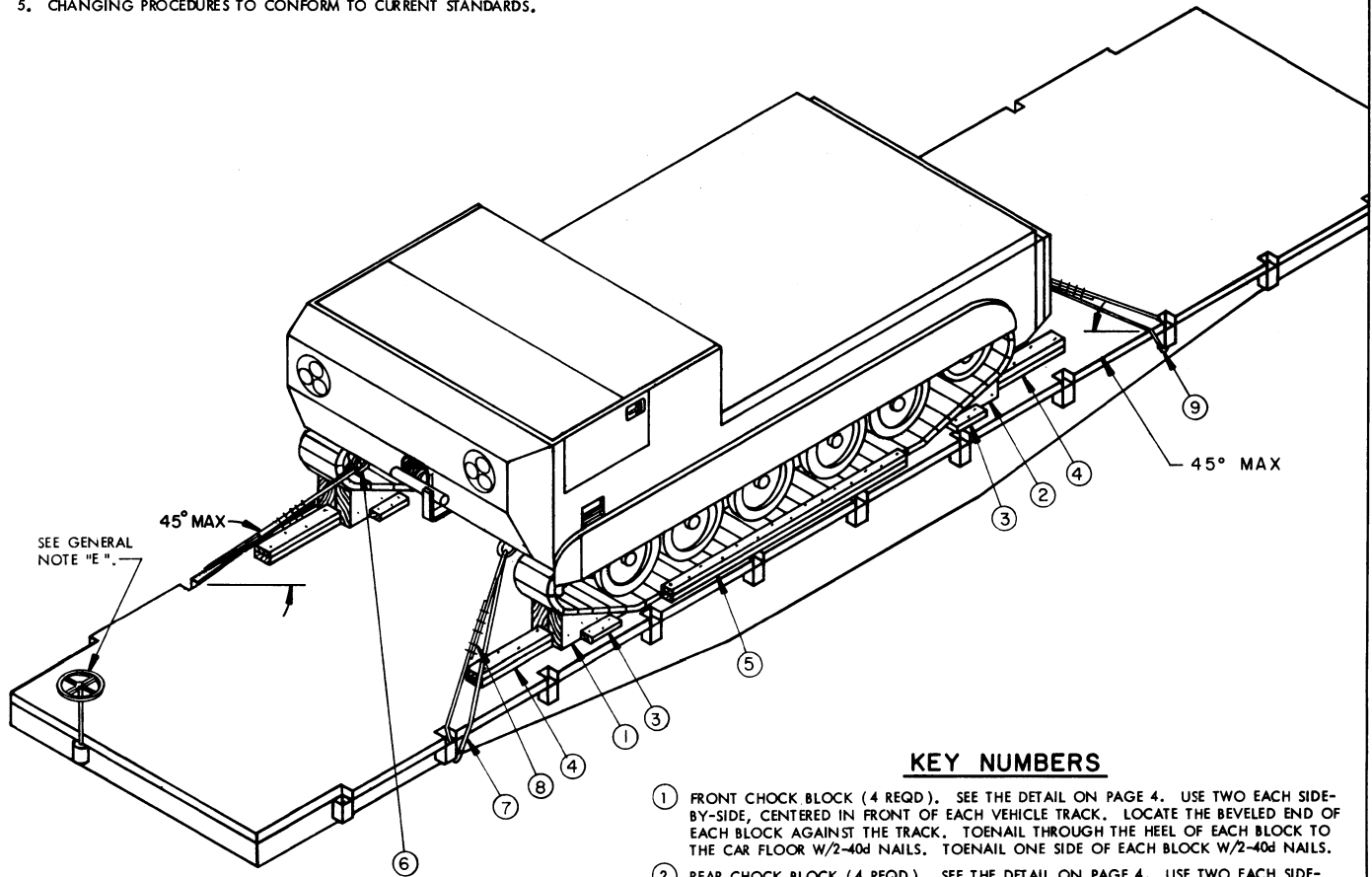
DO NOT SCALE

REVISIONS		DESIGNED BY	CHKD BY	DRSM - SP
1	JUL 79	<i>WTE</i>	<i>WJH</i>	<i>MWD/NEW</i>
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				U.S. ARMY DARCOM DRAWING
				JULY 1979
				CLASS DIVISION DRAWING FILE
				19 48 7183 GSE 5CH5

REVISIONS

REVISION NO. 1, DATED JULY 1979, CONSISTS OF:

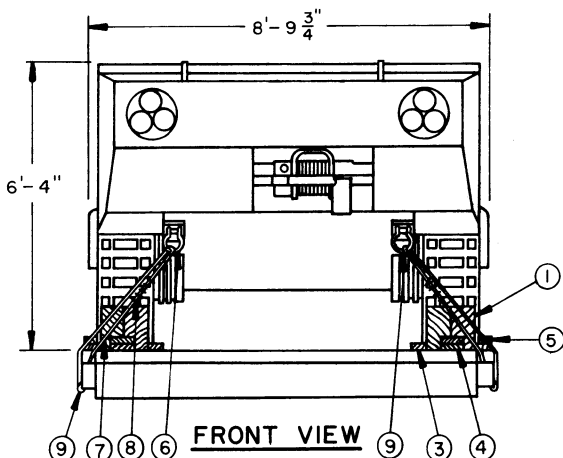
1. DELETING BOW MOUNTING BRACKETS.
2. DELETING X FROM XM730.
3. CHANGING LADING DATA.
4. ADDING "SPECIAL PROVISIONS" FOR FMS TYPE MAIL CARS.
5. CHANGING PROCEDURES TO CONFORM TO CURRENT STANDARDS.



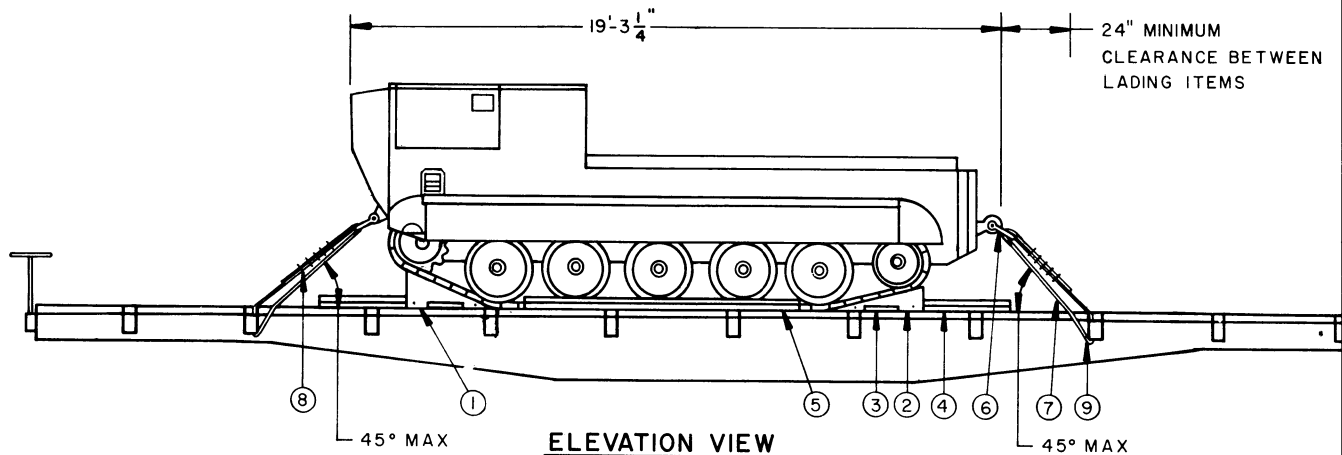
ISOMETRIC VIEW

KEY NUMBERS

- ① FRONT CHOCK BLOCK (4 REQD). SEE THE DETAIL ON PAGE 4. USE TWO EACH SIDE-BY-SIDE, CENTERED IN FRONT OF EACH VEHICLE TRACK. LOCATE THE BEVELED END OF EACH BLOCK AGAINST THE TRACK. TOENAIL THROUGH THE HEEL OF EACH BLOCK TO THE CAR FLOOR W/2-40d NAILS. TOENAIL ONE SIDE OF EACH BLOCK W/2-40d NAILS.
- ② REAR CHOCK BLOCK (4 REQD). SEE THE DETAIL ON PAGE 4. USE TWO EACH SIDE-BY-SIDE, CENTERED BEHIND EACH VEHICLE TRACK. LOCATE THE BEVELED END OF EACH BLOCK AGAINST THE TRACK. TOENAIL THROUGH THE HEEL OF EACH BLOCK TO THE CAR FLOOR W/2-40d NAILS. TOENAIL ONE SIDE OF EACH BLOCK TO THE CAR FLOOR W/2-40d NAILS.
- ③ SIDE CLEAT, 2" X 4" X 12" (8 REQD). POSITION AGAINST THE SIDE OF PIECES MARKED ① AND/OR ② AS SHOWN. NAIL TO THE CAR FLOOR W/3-30d NAILS. SEE GENERAL NOTE "H".
- ④ BACK-UP CLEAT, 2" X 6" X 30" (DOUBLED) (4 REQD). CENTER AGAINST THE ENDS OF PIECES MARKED ① AND/OR ②. NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-30d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/4-60d NAILS.
- ⑤ SIDE BLOCKING, 2" X 4" X 8'-0" (DOUBLED) (2 REQD). POSITION AGAINST THE OUTSIDE OF EACH TRACK AS SHOWN. NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-30d NAIL EVERY 8". NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑥ SHACKLE, SIZE 7/8" (4 REQD). INSTALL ONE EACH AT THE TWO FRONT AND TWO REAR TIE-DOWN POINTS ON THE VEHICLE. NOTE: THESE SHACKLES ARE NOT REQUIRED IF THE VEHICLE IS ALREADY SO EQUIPPED WHEN OFFERED FOR SHIPMENT. IF THE VEHICLE HAS TOW HOOKS ATTACHED TO THE TIE-DOWN POINTS, THESE SHALL BE REMOVED AND STORED IN THE DRIVER'S COMPARTMENT. SEE GENERAL NOTE "J".
- ⑦ STEEL WIRE ROPE, 5/8" DIAMETER, 17.9 TONS (4 REQD). INSTALL THE CABLE ANGULARLY AS SHOWN AND TO FORM A COMPLETE LOOP FROM THE STAKE POCKET ON THE CAR, THROUGH THE SHACKLE, PIECE MARKED ⑥, AND BACK TO THE STAKE POCKET. SEE GENERAL NOTE "D" AND "F". NOTE: CABLE OF A LARGER SIZE MAY BE USED IF THE SPECIFIED CABLE IS NOT AVAILABLE.
- ⑧ CLIP, WIRE ROPE, SIZE 5/8" (28 REQD). USE FIVE (5) PER CABLE JOINT AND ONE (1) PER THIMBLE. A STANDARD THIMBLE AS SPECIFIED CAN BE SECURED TO A CABLE WITH 5/8" CLIP. HOWEVER, IF DESIRED OR IF THE 5/8" THIMBLE BEING USED IS OF A TYPE WHICH CANNOT BE SECURED TO A CABLE WITH A 5/8" CLIP, A 3/4" CLIP MAY BE USED.
- ⑨ THIMBLE, STANDARD, SIZE 5/8" (8 REQD). ONE (1) PER STAKE POCKET AND ONE (1) PER LADING TIE-DOWN DEVICE (SHACKLE). SECURE TO THE WIRE ROPE MARKED ⑦ W/1-CLIP PER THIMBLE. NOTE THAT AN "OPEN PATTERN" THIMBLE IS RECOMMENDED.



FRONT VIEW



ELEVATION VIEW

GENERAL NOTES

(GENERAL NOTES CONTINUED FROM RIGHT)

- H. NOTICE: A STAGGERED NAILING PATTERN WILL BE USED WHEN NAILING DUNNAGE TO THE FLOOR OF THE TRANSPORTING VEHICLE, OR WHEN LAMINATING DUNNAGE. ALSO, 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. MORE DISTANCE MAY BE REQUIRED BETWEEN THE DRILLED PADS AT THE OPEN END OF A SHACKLE SO THAT IT WILL FIT PROPERLY OVER THE THICKNESS OF THE TOWING/TIEDOWN BRACKET ON THE VEHICLE. TO PROVIDE THE NEEDED CLEARANCE, EQUAL AMOUNTS OF MATERIAL MAY BE REMOVED FROM THE SHACKLE PADS BY GRINDING OR MACHINING.

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1.
- B. THE LOAD AS SHOWN IS BASED ON A FLAT CAR 9'-2" WIDE (PLATFORM), WIDER CARS CAN BE USED. ONLY ONE UNIT OF LADING IS SHOWN; 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:

IN LIEU OF REQUISITIONING A GENERAL SERVICE FM[®] FLAT CAR AS DEPICTED HEREIN, EVERY EFFORT SHOULD BE MADE TO ACQUIRE AN FMS[®] TYPE CAR. THIS IS A CUSHIONED CAR EQUIPPED WITH SPECIAL TIE DOWN CHANNELS AND MOVEABLE ANCHOR AND CHAIN ASSEMBLY TIE DOWN DEVICES^{**}, SUCH AS IS USED FOR TRANSPORTING AGRICULTURAL MACHINERY AND HEAVY, EARTH MOVING EQUIPMENT. SEE THE "SPECIAL PROVISIONS" ON PAGE 4 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. LADING DATA:

ITEM DIMENSIONS --- 19'-3-1/4" LONG X 8'-9-3/4" WIDE X 6'-4" HIGH.
ITEM GROSS WEIGHT --- 16,233 POUNDS (APPROX).

- D. REFER TO ORD DWG 19-48-C-ORDJU-588, "WIRE ROPE AND ANNEALED WIRE APPLICATION METHODS FOR SECURING LADING ON RAIL AND MOTOR CARRIER EQUIPMENT", FOR PROPER TIEDOWN APPLICATION, EXCEPT THAT THE NUTS ON 5/8" CLIPS WILL BE TIGHTENED TO A TORQUE OF 135 TO 150 FOOT POUNDS. NOTE: IF A TORQUE WRENCH IS NOT AVAILABLE FOR TIGHTENING CLIP NUTS, THE PROPER TORQUE FOR CLIP NUTS CAN BE ACHIEVED BY USING BOX AND/OR OPEN-END OR SOCKET WRENCHES THAT HAVE 24" LONG HANDLES. CAUTION: DURING WIRE ROPE INSTALLATION AVOID CONTACT WITH ALL ELECTRICAL WIRING, VEHICLE CONTROLS AND OTHER APPURTENANCES.
- E. 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, 15, AND 19-A.
- F. TO ACHIEVE PROPER CABLE TENSION, EMPLOY TWO (2) CABLE "GRIPPERS" AND AN APPLICABLE SIZED "COME-A-LONG" TYPE MECHANICAL HOIST. NOTE: CABLES WILL BE TENSIONED SUFFICIENTLY TO CAUSE THE BODY OF THE TRACK VEHICLE TO DEPRESS APPROXIMATELY ONE INCH (1").
- G. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE UNLESS OTHERWISE DIMENSIONED. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE.

(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	40	27
2" X 6"	20	20
6" X 8"	6	24
6" X 12"	5	30
NAILS	NO. REQD	POUNDS
30d (4-1/2")	88	4-1/2
40d (5")	32	2
60d (6")	16	1-3/4
ROPE, STEEL WIRE, 5/8" DIA -----	70' REQD -----	48 LBS
CLIP, 5/8" -----	28 REQD -----	18 LBS
CLIP, 3/4" (ALT FOR 5/8") -----	8 REQD -----	6 LBS
THIMBLE, STANDARD, 5/8" -----	8 REQD -----	2 LBS
SHACKLE, 7/8" -----	4 REQD -----	9 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.

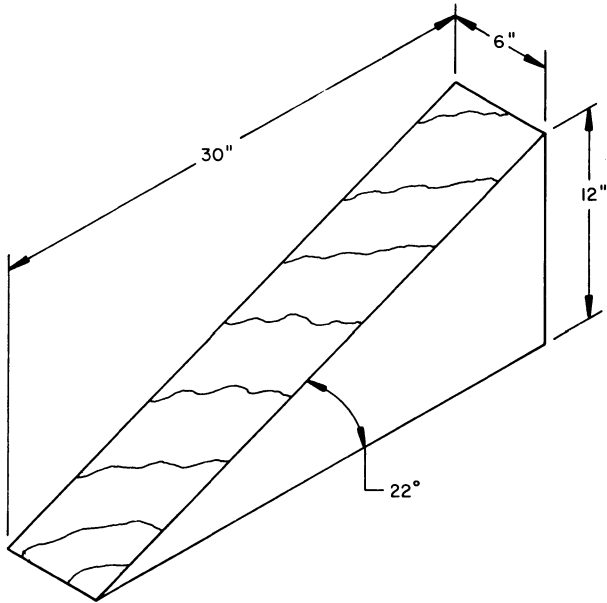
ROPE --: STEEL WIRE, PLAIN, PREFORMED, REGULAR LAY, 17.9 TONS, 6 X 19, FLEXIBLE IWRC, MACWHYTE WIRE ROPE CO. (OR EQUAL). REF: FED SPEC RR-W-410.

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

SHACKLE: TYPE IV, CLASS 4. REF: FED SPEC RR-C-271.

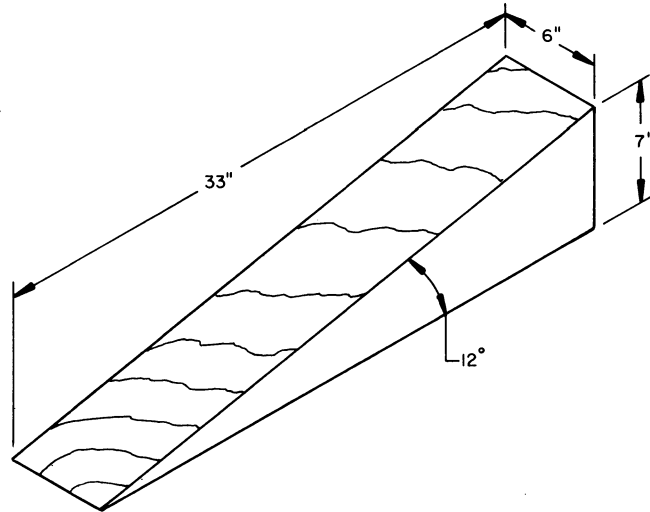
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
M730, MTD	1	16,233 LBS
DUNNAGE		288 LBS
TOTAL WEIGHT		16,521 LBS



FRONT CHOCK BLOCK

REFER TO KEY NUMBER ① ON PAGE 2 FOR NAILING SPECIFICATIONS.
NOTE: IF 6" X 12" MATERIAL IS NOT AVAILABLE, THE FRONT CHOCK BLOCKS MAY BE CONSTRUCTED FROM FOUR (4) THICKNESSES OF NOMINAL 2" X 12" MATERIAL, LAMINATE W/10d NAILS.



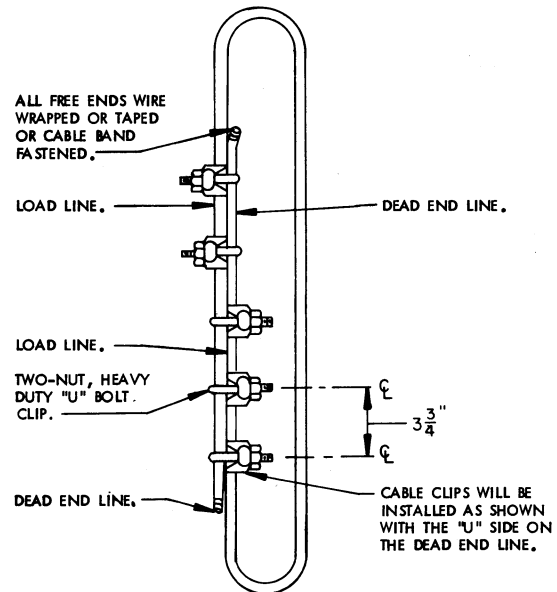
REAR CHOCK BLOCK

REFER TO KEY NUMBER ② ON PAGE 2 FOR NAILING SPECIFICATIONS. NOTE: IF 6" X 8" MATERIAL IS NOT AVAILABLE, THE REAR CHOCK BLOCKS MAY BE CONSTRUCTED FROM FOUR (4) THICKNESSES OF NOMINAL 2" X 8" MATERIAL, LAMINATE W/10d NAILS.

SPECIAL PROVISIONS:

LADING MAY BE SECURED ON A CUSHIONED FMS TYPE FLAT 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. ONE (1) MOVABLE ANCHOR WITH CHAIN ASSEMBLY TIE DOWN DEVICE MUST BE SUBSTITUTED FOR EACH WIRE ROPE CABLE TIE DOWN MARKED ⑦. CHAINS WILL BE ATTACHED TO THE LADING AT THE SAME LOCATIONS SHOWN FOR THE WIRE ROPE. ANCHOR DEVICES WILL BE LOCATED SO AS TO POSITION THE CHAINS WITHIN THE ANGULAR TOLERANCES SPECIFIED ON THE LOAD VIEWS.
2. 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 NOTICABLE DEFECTS. ANY DEFICIENCY SHALL BE CAUSE FOR NOT USING AN ANCHOR AND CHAIN ASSEMBLY.
3. 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.
4. 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.
5. OPEN HOOKS MUST BE SECURED WITH A WIRE AS REQUIRED TO PREVENT THE HOOK FROM BECOMING DISENGAGED FROM THE CHAIN LINK TO WHICH IT IS ATTACHED.
6. ANTI-CHAFING MATERIAL MUST BE PLACED AND SECURED BETWEEN THE CHAINS AND THE LADING AT ALL POINTS OF CONTACT EXCEPT AT DEFINITIVE TIE DOWN POINTS.



CABLE JOINT

PROPER TIGHTENING OF THE WIRE ROPE CLIP NUTS CAN BE ACCOMPLISHED BY UTILIZING A PROPER SIZED TORQUE WRENCH. AFTER THE NUTS HAVE BEEN INITIALLY TIGHTENED TO THE SPECIFIED TORQUE, THE "U" SIDE OF EACH CLIP MUST BE STRUCK SEVERAL TIMES WITH A HAMMER TO INSURE PROPER SEATING INTO THE DEAD END LINE. FINAL TORQUE WILL BE ACQUIRED BY REPEATEDLY AND ALTERNATELY TIGHTENING EACH CLIP NUT.