

HAWK

LOADING AND BRACING ON FLAT BED OR "LOW-BOY" TRAILER OF LAUNCHER, ZERO LENGTH, GUIDED MISSILE, XM78E3 AND/OR XMI92

● FOR TRAILERS EQUIPPED WITH A PNEUMATIC (AIR RIDE) SUSPENSION SYSTEM, SEE THE "ADDITIONAL SPECIAL PROVISIONS" ON PAGE 4.

THIS DRAWING, INCLUDING REVISION NO. 2, SUPERSEDES DRAWING 19-48-7414-GSE11HA23, DATED 25 OCTOBER 1960, INCLUDING REVISION NO. 1 THERETO, DATED JULY 1971.

DO NOT SCALE

REVISIONS				DRAFTSMAN	PROJ. ENG.
2	FEB 79	/	Wm J. Hoquien	DAK	RWS/H
		/	John Royal	RSTV	LOG ENGRG OFFICE
		/			APPROVED, U.S. ARMY MISSILE MATERIEL READINESS COMMAND
		/			William J. Hoquien
		/			APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL DEVELOPMENT AND READINESS COMMAND (DARCOM)
		/			John A. Byrd
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		/			U.S. ARMY DARCOM DRAWING
		/			FEBRUARY 1979
		/		CLASS	DIVISION
		/		19	48
		/		DRAWING	FILE
		/		7414	GSE 11 HA23

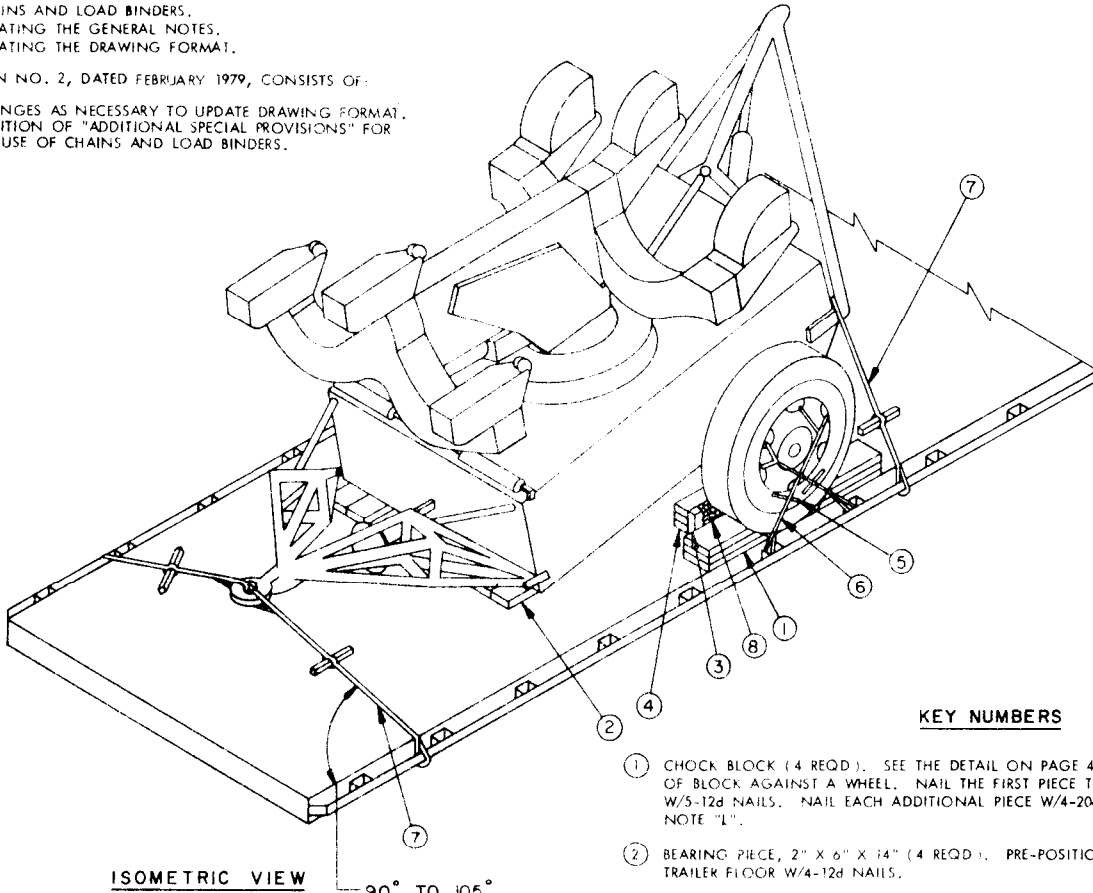
REVISIONS

REVISION NO. 1, DATED JULY 1971, CONSISTS OF:

1. INCLUDING THE XM192 LAUNCHER.
2. ADDING "SPECIAL PROVISIONS" FOR THE USE OF CHAINS AND LOAD BINDERS.
3. UPDATING THE GENERAL NOTES.
4. UPDATING THE DRAWING FORMAT.

REVISION NO. 2, DATED FEBRUARY 1979, CONSISTS OF:

1. CHANGES AS NECESSARY TO UPDATE DRAWING FORMAT.
2. ADDITION OF "ADDITIONAL SPECIAL PROVISIONS" FOR THE USE OF CHAINS AND LOAD BINDERS.

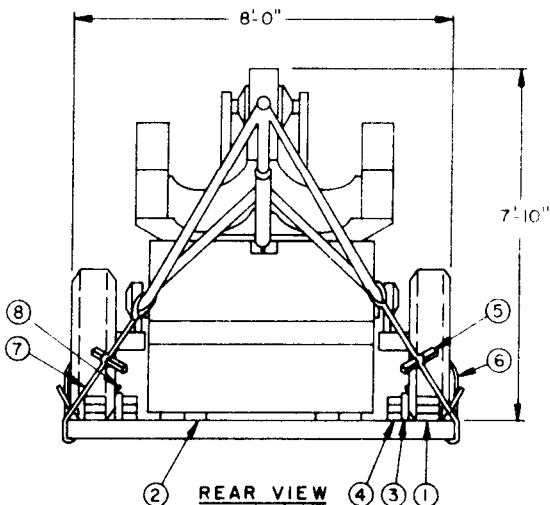


ISOMETRIC VIEW

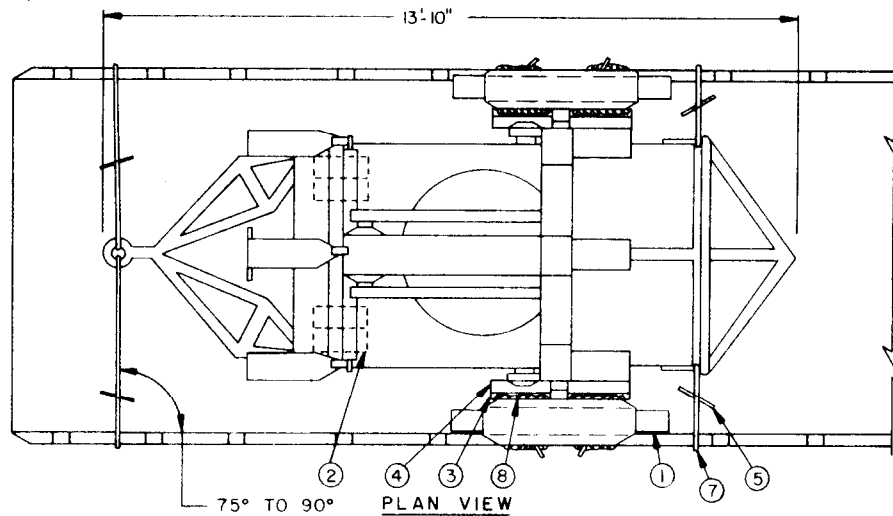
90° TO 105°

KEY NUMBERS

- ① CHOCK BLOCK (4 REQD.). SEE THE DETAIL ON PAGE 4. LOCATE BEVELED END OF BLOCK AGAINST A WHEEL. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/5-12d NAILS. NAIL EACH ADDITIONAL PIECE W/4-20d NAILS. SEE GENERAL NOTE "L".
- ② BEARING PIECE, 2" X 6" X 14" (4 REQD.). PRE-POSITION AND NAIL TO THE TRAILER FLOOR W/4-12d NAILS.
- ③ RUBBING STRIP, 2" X 6" X 36" (2 REQD.). POSITION ON EDGE AND NAIL TO A LOWER PIECE MARKED ④ W/5-12d NAILS.
- ④ SIDE BLOCKING, 2" X 4" X 36" (TRIPLED) (2 REQD.). PRE-POSITION AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/5-12d NAILS. NAIL EACH ADDITIONAL PIECE IN A LIKE MANNER.
- ⑤ WIRE TWISTER, 2" X 2" BY A LENGTH TO SUIT (8 REQD.). SEE GENERAL NOTE "F".
- ⑥ SIX (6) STRANDS OF NO. 8 GAGE BLACK ANNEALED WIRE (4 REQD.). PASS THRU HOLES IN A WHEEL AND THRU A TRANSPORTER TIE DOWN FACILITY TO FORM A COMPLETE LOOP. TWIST TAUT WITH PIECE MARKED ⑤. SEE GENERAL NOTE "F" ON PAGE 3, THE "WHEEL SECUREMENT" DETAIL ON PAGE 4, AND THE "SPECIAL PROVISIONS" ON PAGE 4.
- ⑦ TWELVE (12) STRANDS OF NO. 8 GAGE BLACK ANNEALED WIRE (4 REQD.). INSTALL WIRE TO APPROXIMATE THE ANGLE SHOWN AND TO FORM A COMPLETE LOOP FROM A TIE DOWN FACILITY ON THE TRANSPORTER THRU THE LADING LUNETTE AT THE FRONT OF THE TRAILER AND/OR AROUND THE REAR CORNER OF THE UNIT AS SHOWN, AND BACK TO THE TRANSPORTER TIE DOWN FACILITY. TWIST TAUT WITH PIECE MARKED ⑤. NOTE: IF DESIRED, 3/8" STEEL WIRE ROPE (OR LARGER) MAY BE INSTALLED IN LIEU OF THE WIRE HOLD DOWNS. USE FOUR (4) CLIPS FOR EACH CABLE JOINT. NOTE THAT NUTS ON 3/8" CABLE CLIPS WILL BE TIGHTENED TO A TORQUE OF 35 TO 40 FOOT POUNDS. SEE GENERAL NOTES "H" AND "J". SEE THE "SPECIAL PROVISIONS" ON PAGE 4.
- ⑧ WATERPROOF PAPER OR BURLAP OF A SUFFICIENT SIZE TO POSITION UNDER AND EXTEND 2" ABOVE PIECE MARKED ③.



REAR VIEW



(GENERAL NOTES CONTINUED)

- K. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE.
- L. 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.

GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AMCR 740-13.
- B. THE LOAD AS SHOWN IS BASED ON A FLAT BED OR "LOW-BOY" TRAILER 8'-0" WIDE WITH A WOOD OR A WOOD AND METAL FLOOR. ONLY ONE UNIT OF LADING IS SHOWN; HOWEVER, MULTIPLES OF UNITS, AS SHOWN OR DISSIMILAR IN NATURE, MAY BE LOADED ON A TRAILER. THE NUMBER OF UNITS TO BE LOADED ON A TRAILER WILL BE DEPENDENT ON THE SIZE OF THE TRAILER TO BE USED OR THE QUANTITIES OF UNITS TO BE SHIPPED, WITH THE VIEW OF FULL UTILIZATION OF THE CARRIER EQUIPMENT.
- C. ONLY TRAILERS CAPABLE OF SAFELY TRANSPORTING THE LADING TO DESTINATION WITHOUT DAMAGE WILL BE SELECTED. TRAILERS SELECTED MUST HAVE "SOUND" FLOORS WHICH PROVIDE NAIL RETENTION PROPERTIES EQUAL TO OR BETTER THAN THE SPECIFIED DUNNAGE LUMBER, AND A SUFFICIENT NUMBER OF TIE DOWN FACILITIES OF A STRENGTH EQUAL TO OR BETTER THAN THE SPECIFIED LADING TIE DOWN ASSEMBLIES.
- D. SHIPMENT GROSS WEIGHT, AXLE DISTRIBUTION OF THE LADING WEIGHT AND OVER-ALL DIMENSIONS MUST MEET STATE LAW REQUIREMENTS.
- E. LADING DATA FOR THE XM78E3:
 - ITEM DIMENSIONS ----- 13'-10" LONG X 8'-0" WIDE X 7'-10" HIGH.
 - ITEM GROSS WEIGHT -- 4,380 POUNDS (APPROX).
- LADING DATA FOR THE XM192:
 - ITEM DIMENSIONS ----- 13'-10" LONG X 8'-0" WIDE X 7'-10" HIGH.
 - ITEM GROSS WEIGHT -- 4,340 POUNDS (APPROX).
- F. 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. CAUTION: DURING DUNNAGE INSTALLATION, AVOID CONTACT WITH ALL ELECTRICAL WIRING, VEHICLE CONTROLS AND OTHER APPURTENANCES. METAL FILLERS OR COMPARABLE CUSHIONING MATERIALS MUST BE USED BETWEEN TIE DOWN WIRES AND/OR CABLES AND ALL SHARP EDGES, AND ANTI-CHAFING MATERIAL MUST BE USED BETWEEN CONTACTING TIE DOWN WIRES AND LADING TIRES. ADDITIONALLY, LADING TIRES WILL BE INFLATED TO HIGHWAY OPERATING PRESSURE AND ALL BRAKES MUST BE "SET" WITH THE HAND LEVERS WIRE-TIED OR BLOCKED.
- G. SEE THE "SPECIAL PROVISIONS" ON PAGE 4 FOR SPECIFICATIONS WHICH MUST BE APPLIED IF CHAINS AND LOAD BINDERS ARE USED.
- H. TWISTED WIRE CABLE AND/OR STEEL WIRE ROPE MUST BE TENSIONED SUFFICIENTLY TO CAUSE SLIGHT VEHICLE BODY DEPRESSION, AS APPLICABLE. TENSIONING OF STEEL WIRE ROPE CAN BE ACCOMPLISHED BY EMPLOYING TWO (2) CABLE GRIPPERS AND AN APPLICABLY SIZED "COME-A-LONG" TYPE MECHANICAL HOIST.
- J. CAUTION: IT IS RECOMMENDED THAT TWISTED WIRE CABLE AND/OR STEEL WIRE ROPE BE INSTALLED TO APPROXIMATE THE ANGLE SHOWN; HOWEVER, IF PLACEMENT OF THE TRANSPORTER TIE DOWN FACILITIES PREVENTS THIS, CARE MUST BE EXERCISED TO ENSURE THAT CABLES ON THE SAME SIDE OF THE LADING ARE INSTALLED SO THEIR RETENTION FORCES ACT IN OPPOSITE LONGITUDINAL DIRECTIONS.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	12	4
2" X 4"	18	12
2" X 6"	11	11
2" X 8"	16	21
NAILS	NO. REQD	POUNDS
12d (3-1/4")	90	1-1/2
20d (4")	56	2
WIRE, NO. 8 GAGE -----	325' REQD -----	29 LBS
WATERPROOF PAPER OR BURLAP -----	AS REQD -----	NIL

MATERIAL SPECIFICATIONS

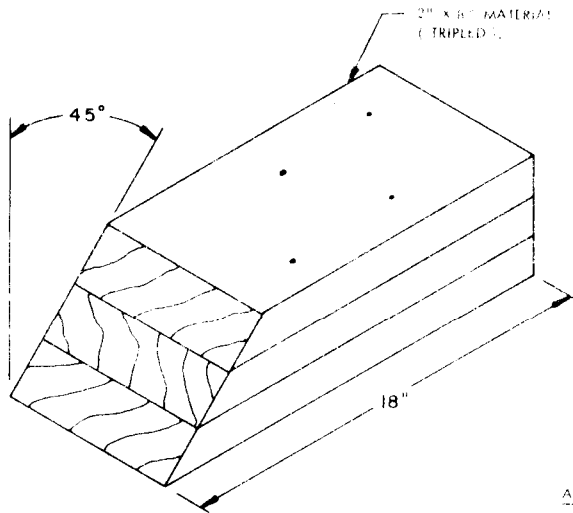
- LUMBER -- DOUGLAS FIR OR COMPARABLE LUMBER WITH STRAIGHT GRAIN AND FREE OF MATERIAL DEFECTS. REF: FED SPEC MM-L-751.
- NAILS -- COMMON. REF: FED SPEC FF-N-105.
- WIRE -- ANNEALED, BLACK. REF: FED SPEC QQ-W-461.
- ROPE -- STEEL WIRE, PLAIN, PREFORMED, REGULAR LAY, 6 X 19, FLEXIBLE IWRC, MACWHYTE WIRE ROPE CO (OR EQUAL). REF: FED SPEC RR-W-410.
- CLIP -- "U" BOLT, CROSBY, HEAVY DUTY (OR EQUAL). REF: FED SPEC FF-C-450, TYPE I, CLASS 1.

(CONTINUED AT LEFT)

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
LAUNCHER, XM78E3 -----	1 -----	4,380 LBS *
DUNNAGE -----		178 LBS
TOTAL WEIGHT -----		4,558 LBS

*4,340 LBS FOR THE XM192 LAUNCHER.



CHOCK BLOCK

SPECIAL PROVISIONS: (SEE CONDITION NO. 8 BELOW)

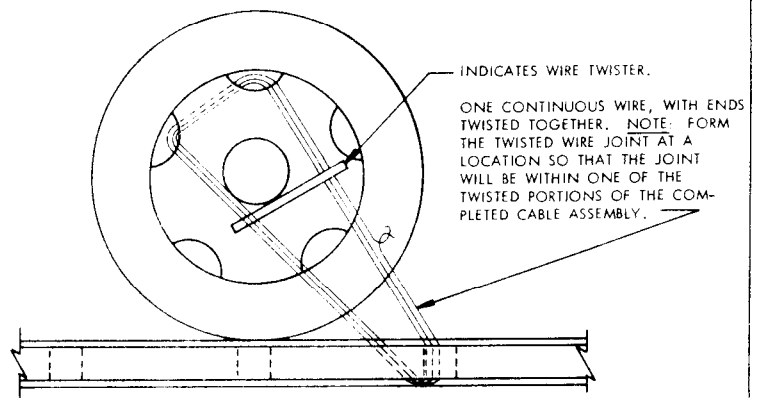
LADING MAY BE SECURED BY CARRIER-OWNED CHAINS AND LOAD BINDERS IN LIEU OF SPECIFIED STRANDED ANNEALED WIRE TIE DOWN DUNNAGE MATERIALS, PROVIDING THE FOLLOWING CONDITIONS ARE MET:

1. ONLY CHAINS AND LOAD BINDERS OF GOOD QUALITY SHOULD BE USED. **CAUTION:** EXTREME CARE MUST BE USED IN TENSIONING CHAINS TO PREVENT DAMAGE TO THE LADING.
2. ONE (1) LINE OF 1/4" CHAIN MAY BE SUBSTITUTED FOR EACH STRANDED WIRE TIE DOWN CABLE MARKED (7). CHAINS SHALL BE INSTALLED AT THE SAME LOCATIONS SHOWN FOR STRANDED WIRE CABLES AND IN THE SAME MANNER AS DIRECTED IN GENERAL NOTE "J" ON PAGE 3.
3. FOR WHEEL SECUREMENT, IN LIEU OF TWO (2) STRANDED WIRE TIE DOWNS MARKED (6), ONE (1) LINE OF 1/4" CHAIN MAY BE USED. TO PREVENT DAMAGE TO THE LIGHTENING HOLES AND WHEELS OF THE LADING, AND TO FACILITATE THE APPLICATION OF CHAINS AND LOAD BINDERS, A CHAIN MAY BE INSTALLED FROM A FORWARD TIE DOWN FACILITY AT THE SIDE OF THE TRANSPORTER, PASSED BEHIND THE WHEEL AND OVER THE AXLE OF THE LADING, AND THEN TO A REARWARD TIE DOWN FACILITY ON THE SAME SIDE OF THE TRANSPORTER.
4. IF DESIRED, CHAINS OF A LARGER SIZE THAN SPECIFIED ABOVE MAY BE USED.
5. BEFORE AND DURING INSTALLATION, THE CHAINS AND LOAD BINDERS SHALL BE INSPECTED FOR BENT HOOKS, STRETCH, GOUGES, BENT LINKS, WEAR, AND ANY OTHER NOTICEABLE DEFECTS. ANY DEFICIENCY SHALL BE CAUSE FOR REJECTION OF A CHAIN OR LOAD BINDER. CHAINS MUST NOT BE TWISTED DURING INSTALLATION.
6. THE TENSIONING DEVICE OF EACH LOAD BINDER MUST BE SAFETY-WIRE TIED TO PREVENT ACCIDENTAL OPENING OR LOOSENING IN TRANSIT.
7. 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.
8. FOR TRAILERS EQUIPPED WITH A PNEUMATIC (AIR RIDE) SUSPENSION SYSTEM, SEE THE "ADDITIONAL SPECIAL PROVISIONS" AT RIGHT, WHICH WILL APPLY.

ADDITIONAL SPECIAL PROVISIONS:

FOR TRAILERS EQUIPPED WITH A PNEUMATIC (AIR RIDE) SUSPENSION SYSTEM, THE LADING MAY BE SECURED BY CARRIER-OWNED CHAINS AND LOAD BINDERS IN ACCORDANCE WITH NOTES 1, 4, 5, 6 AND 7 OF THE "SPECIAL PROVISIONS" AT LEFT, AND THE FOLLOWING CONDITIONS, WHICH WILL BE MET INSTEAD OF THOSE CONDITIONS SPECIFIED BY NOTES 2 AND 3 AT LEFT:

1. IN LIEU OF THE TWO (2) STRANDED WIRE TIE DOWNS MARKED (7) ON PAGE 2, ONE (1) LINE OF 3/8" CHAIN MAY BE SUBSTITUTED FOR SECURING THE LADING LUNETTE. WHEN THE CHAIN IS INSTALLED IT SHALL BE THREADED TO ENCIRCLE ONE SIDE OF THE LUNETTE RING. THE ENDS OF THE CHAIN WILL BE SECURELY FASTENED AT OPPOSITE SIDES OF THE TRANSPORTER.
2. FOR WHEEL AND LADING SECUREMENT ON ONE SIDE, IN LIEU OF THE TWO (2) STRANDED WIRE TIE DOWNS MARKED (6) ON PAGE 2 AND THE ONE (1) STRANDED WIRE TIE DOWN MARKED (7) ON PAGE 2, ONE (1) LINE OF 3/8" CHAIN MAY BE SUBSTITUTED. THE CHAIN MAY BE INSTALLED IN ONE OF THE FOLLOWING TWO WAYS. IT MAY RUN FROM A TRANSPORTER TIE DOWN FACILITY REAR OF THE LADING WHEEL, THRU A LIGHTENING HOLE WITHIN THE UPPER AND FORWARD PART OF THE LADING WHEEL, REARWARD AND BACK THRU AN ADJACENT LIGHTENING HOLE OF THE LADING WHEEL, AND FORWARD AND DOWN TO A TRANSPORTER TIE DOWN FACILITY IN FRONT OF THE LADING WHEEL. TO PREVENT DAMAGE TO THE LIGHTENING HOLES AND WHEELS OF THE LADING, A CHAIN MAY BE INSTALLED FROM A REARWARD TIE DOWN FACILITY AT THE SIDE OF THE TRANSPORTER, PASSED BEHIND THE LADING WHEEL AND OVER THE LADING AXLE, AND DOWN TO A FORWARD TIE DOWN FACILITY ON THE SAME SIDE OF THE TRANSPORTER.



WHEEL SECUREMENT

A SIX (6) STRAND INSTALLATION OF NO. 8 GAGE BLACK ANNEALED WIRE IS SHOWN, PASSED THRU HOLES IN A WHEEL AND A TRAILER TIE DOWN FACILITY TO FORM A COMPLETE LOOP, AND READY TO BE TWISTED TAUT WITH A WIRE TWISTER.