

# LANCE

## LOADING & BRACING ON FLAT BED OR "LOW-BOY" TRAILER OF LAUNCHER, ZERO LENGTH, GUIDED MISSILE, XM740

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DRAFTSMAN <b>RJK &amp; EGG</b>	PROJ ENG DIW/R-7M 1/2" per P-02 025m LC	SUBMITTED <i>B. B. Abrams, Col.</i>
CHECKER <i>JDS</i>	AMC AMMO CLR <i>[Signature]</i>	COMMANDING OFFICER, SAVANNA ARMY DEPOT
<b>REVISIONS</b>		APPROVED <i>Andrew W. [Signature]</i>
1	MAY 71 <i>[Signature]</i>	ARMY MISSILE COMMAND
		APPROVED BY ORDER OF COMMANDING GENERAL, U. S. ARMY MATERIEL COMMAND <i>[Signature]</i>
		U. S. ARMY MATERIEL COMMAND
		19 SEPTEMBER 1967
		CLASS    DIVISION    DRAWING    FILE
		19        48        7538        GSE IILC3

**DO NOT SCALE**

## GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AMCR 740-13.
- B. EACH 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. TRAILERS WITH ALL-METAL FLOORS WILL NOT BE USED. 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 USED OR THE QUANTITIES OF UNITS TO BE SHIPPED WITH THE VIEW OF FULL UTILIZATION OF 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 SPECIFIED DUNNAGE LUMBER, AND A SUFFICIENT NUMBER OF TIE DOWN FACILITIES OF A STRENGTH EQUAL TO OR BETTER THAN SPECIFIED LADING TIE DOWN ASSEMBLIES.
- D. SHIPMENT GROSS WEIGHT, AXLE DISTRIBUTION OF LADING WEIGHT AND OVERALL DIMENSIONS MUST MEET STATE LAW REQUIREMENTS.
- E. LADING DATA ( W/TOW BAR ):
- ITEM DIMENSIONS ---- 21'-0-1/2" LONG X 6'-6" WIDE X 6'-7-1/2" HIGH.  
ITEM GROSS WEIGHT --3,240 POUNDS ( APPROX ).
- LADING DATA ( W/O TOW BAR ):
- ITEM DIMENSIONS ---- 11'-11-3/4" LONG X 6'-6" WIDE X 6'-7-1/2" HIGH.  
ITEM GROSS WEIGHT --2,922 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 TWISTED WIRE CABLE INSTALLATION, AVOID CONTACT WITH ALL ELECTRICAL WIRING, VEHICLE CONTROLS AND OTHER APPURTENANCES. METAL FILLERS OR COMPARABLE CUSHIONING MATERIAL 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 HAND BRAKES MUST BE "SET", WITH THE HAND LEVERS WIRE TIED OR BLOCKED.
- G. SEE "SPECIAL PROVISIONS" ON THIS PAGE FOR SPECIFICATIONS WHICH MUST BE APPLIED IF CHAINS AND LOAD BINDERS ARE USED.
- H. CAUTION: IT IS RECOMMENDED THAT TWISTED WIRE CABLE TIE DOWNS BE INSTALLED TO APPROXIMATE ANGLE SHOWN; HOWEVER, IF PLACEMENT OF TRANSPORTER TIE DOWN FACILITIES PREVENTS THIS, CARE MUST BE EXERCISED TO ENSURE THAT WIRE TIE DOWNS ON THE SAME SIDE OF THE LADING ARE INSTALLED SO THEIR RETENTION FORCES ACT IN OPPOSITE LONGITUDINAL DIRECTIONS.
- J. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-5/8" THICK BY 3-5/8" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-5/8" THICK BY 5-5/8" WIDE.
- K. 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.
- L. WHEN ANY STRAP IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF TWO ( 2 ) SEALS ( BUTTED TOGETHER ) WITH TWO ( 2 ) PAIRS OF CRIMPS PER SEAL MUST BE USED TO SEAL THE JOINT.

## MATERIAL SPECIFICATIONS

- LUMBER ----- : DOUGLAS FIR OR COMPARABLE LUMBER WITH STRAIGHT GRAIN AND FREE FROM MATERIAL DEFECTS. REF: FED SPEC MM-L-751.
- NAILS ----- : COMMON, CEMENT COATED OR CHEMICALLY ETCHED. REF: FED SPEC FF-N-105. ALT: ANNULAR-RING TYPE NAIL OF SAME SIZE.
- WIRE ----- : ANNEALED, BLACK. REF: FED SPEC QQ-W-461.
- STRAPPING, STEEL : TYPE I, CLASS "A" OR "C". REF: FED SPEC QQ-S-781.  
( FOR FSN SEE SB-38-100 ).
- STRAP ANCHOR PLATE ----- : FSN 5340-252-3015.
- ROPE ----- : STEEL WIRE, PLAIN, PREFORMED, REGULAR LAY, 11.5 TONS, 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.

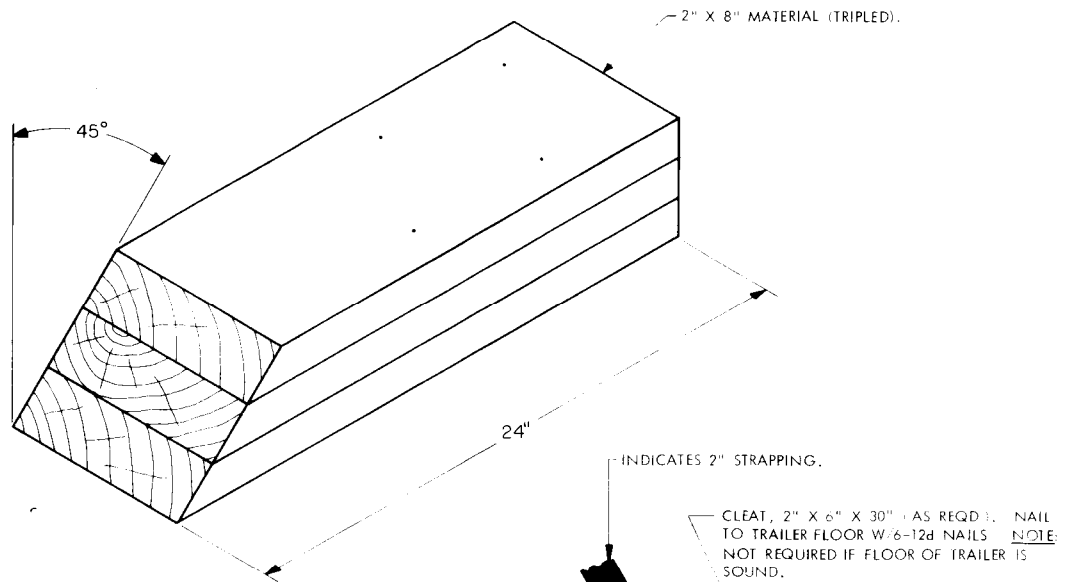
## REVISIONS

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

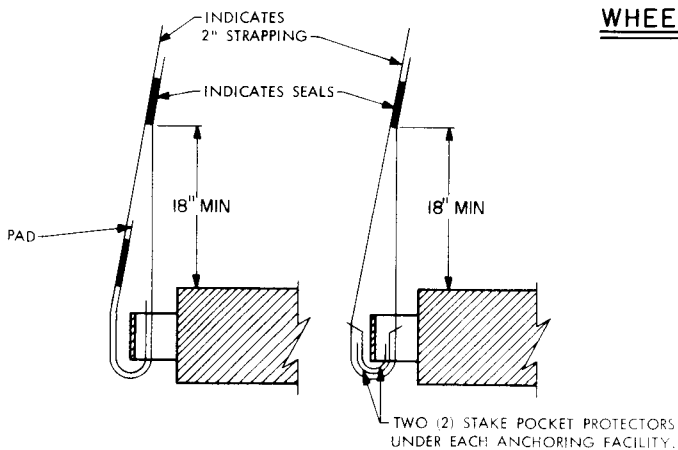
1. CHANGES NECESSARY TO UPDATE "GENERAL NOTES".
2. ADDING "SPECIAL PROVISIONS" FOR USE OF CHAINS AND LOAD BINDERS.

### SPECIAL PROVISIONS:

- A. LADING MAY BE SECURED BY CARRIER-OWNED CHAINS AND LOAD BINDERS IN LIEU OF SPECIFIED STRANDED ANNEALED WIRE TIE DOWN AND/OR STEEL STRAPPING 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 OR DEFORMATION OF THE LADING TIE DOWN FACILITIES.
  2. ONE ( 1 ) LINE OF 1/4" CHAIN MAY BE SUBSTITUTED FOR EACH STRANDED WIRE TIE DOWN CABLE, PIECE MARKED ⑦ ON PAGE 4 AND/OR PIECE MARKED ⑨ ON PAGE 6. CHAINS SHALL BE INSTALLED AT THE SAME LOCATIONS SHOWN FOR THE STRANDED WIRE CABLES AND IN THE SAME MANNER AS DIRECTED IN GENERAL NOTE "H" AT THE LEFT.
  3. IN LIEU OF EACH HOLD-DOWN STRAP MARKED ⑩ ON PAGE 6, ONE ( 1 ) LINE OF 1/4" CHAIN MAY BE USED. THE STRAPPING BOARD MARKED ⑦ MUST BE DOUBLED AND LAMINATED W/3-10d NAILS. THE CHAIN SHALL BE SECURED TO THE LAMINATED BOARD W/2-20d NAILS BY DRIVING EACH NAIL INTO THE BOARD THROUGH AN OPENING IN A CHAIN LINK AND BENDING IT OVER THE LINK.
  4. FOR WHEEL SECUREMENT, IN LIEU OF TWO ( 2 ) STRANDED WIRE TIE DOWNS, PIECE MARKED ④ ON PAGE 4 AND/OR PIECE MARKED ⑧ ON PAGE 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.
  5. IF DESIRED, CHAINS OF A LARGER SIZE THAN SPECIFIED ABOVE MAY BE USED.
  6. 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.
  7. THE TENSIONING DEVICE OF EACH LOAD BINDER MUST BE SAFETY-WIRE TIED TO PREVENT ACCIDENTAL OPENING OR LOOSENING IN TRANSIT.
  8. 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 AND/OR STRAPPING BOARDS.



**WHEEL BLOCK**

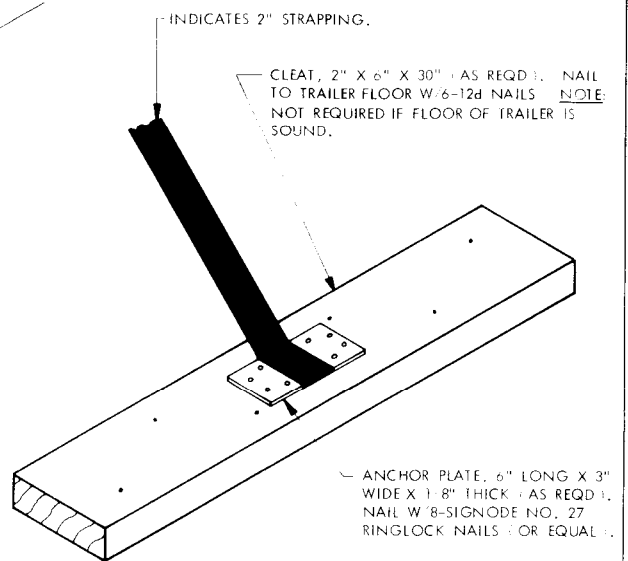


**DETAIL A**

METHOD OF INSTALLING 2" STRAPPING AND PAD AT ANCHORING FACILITY.

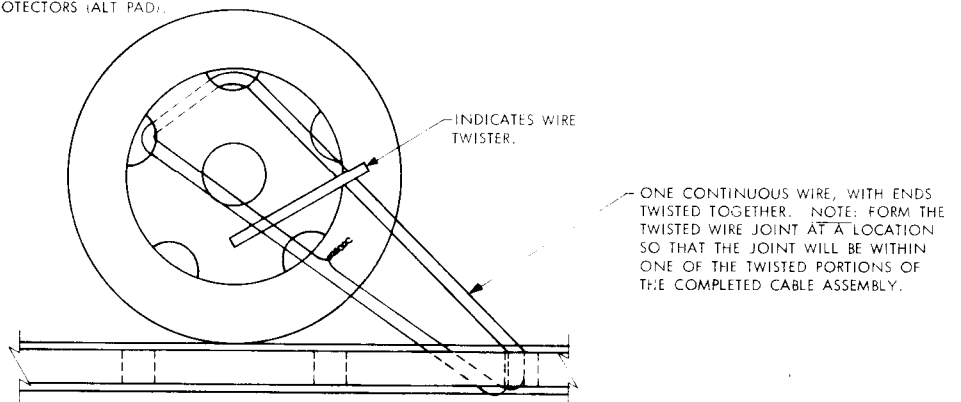
**DETAIL B**

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



**DETAIL C**

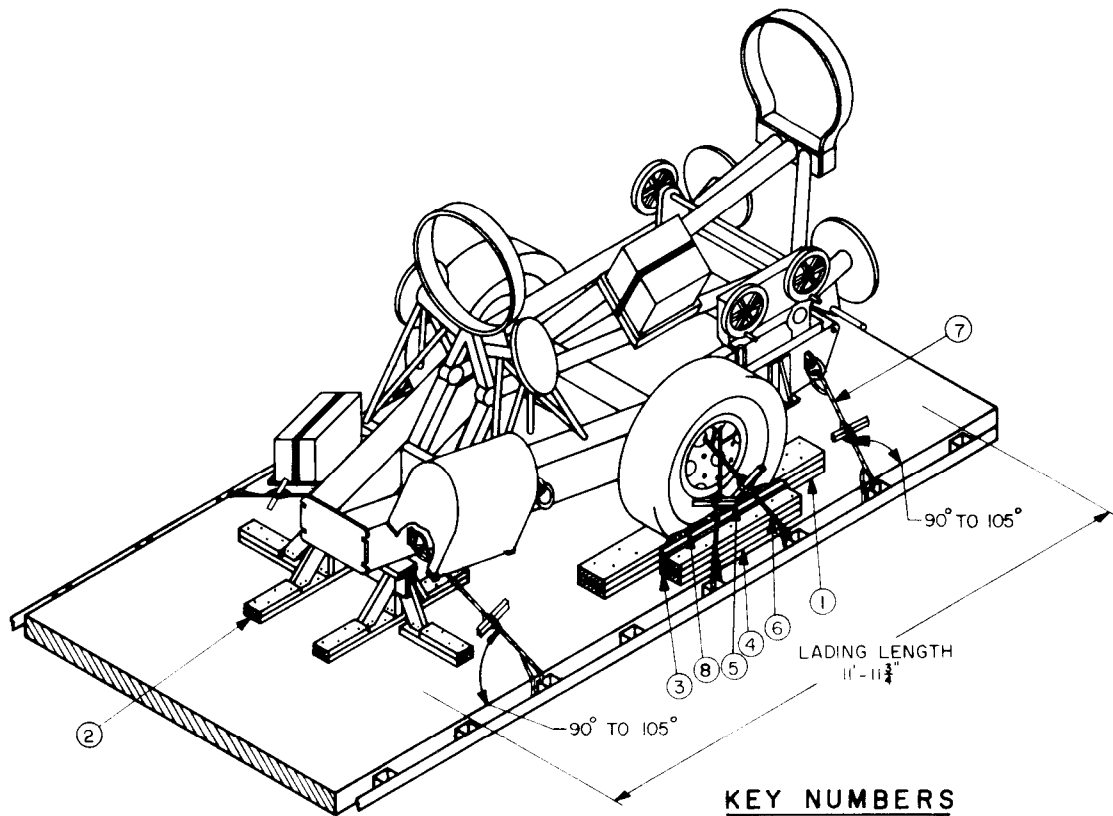
AN ALTERNATIVE STRAP ANCHORING METHOD IS SHOWN, WHICH MAY BE USED TO SECURE THE SPECIFIED 2" X .050" STEEL STRAPPING IN LIEU OF ANCHORING TO STAKE POCKETS ON THE TRAILER.



**WHEEL SECUREMENT**

A FOUR (4) STRAND INSTALLATION OF NO. 8 GAGE BLACK ANNEALED WIRE IS SHOWN, PASSED THRU HOLES IN WHEEL AND TRAILER TIE DOWN FACILITY TO FORM A COMPLETE LOOP, AND READY TO BE TWISTED TAUT WITH WIRE TWISTER.

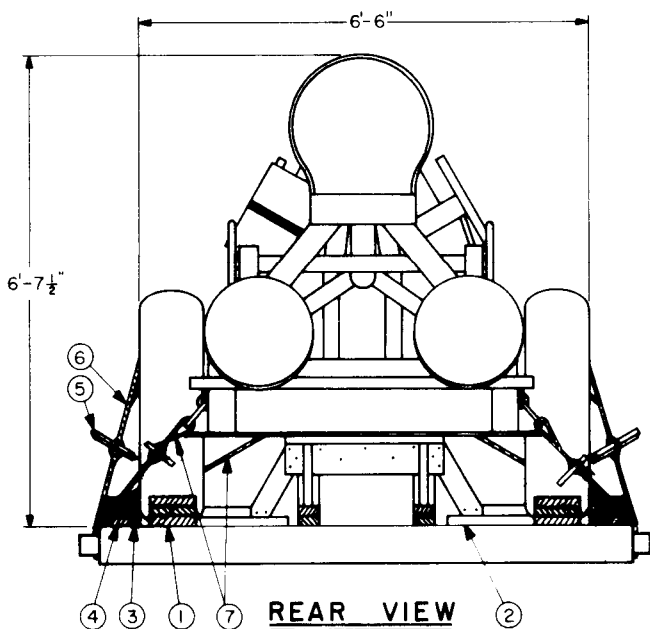
**DETAILS**



**ISOMETRIC VIEW**

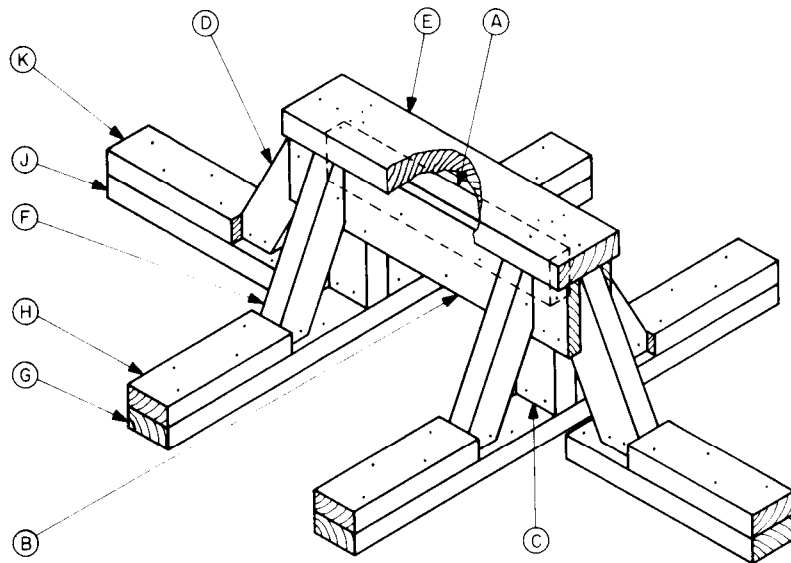
**KEY NUMBERS**

- ① WHEEL BLOCK (4 REQD). SEE DETAIL ON PAGE 3. LOCATE BEVELED END OF BLOCK AGAINST WHEEL. NAIL FIRST PIECE TO THE TRAILER FLOOR W/5-12d NAILS. NAIL EACH ADDITIONAL PIECE W/4-20d NAILS.
- ② FORWARD BLOCKING (1 REQD). SEE "FORWARD BLOCKING ASSEMBLY A" DETAIL ON PAGE 5. SEE GENERAL NOTE "K" ON PAGE 2.
- ③ RUBBING STRIP, 2" X 6" X 3/8" (2 REQD). POSITION ON EDGE AND NAIL TO LOWER PIECE MARKED ④ W/5-12d NAILS.
- ④ SIDE BLOCKING, 2" X 4" X 3/8" (TRIPLED) (2 REQD). NAIL FIRST PIECE TO TRAILER FLOOR W/6-12d NAILS. NAIL EACH ADDITIONAL PIECE IN A LIKE MANNER.
- ⑤ WIRE TWISTER, 2" X 2" X LENGTH TO SUIT (8 REQD). SEE GENERAL NOTE "F" ON PAGE 2.
- ⑥ FOUR (4) STRANDS OF NO. 8 GAGE BLACK ANNEALED WIRE (4 REQD). PASS THRU HOLES IN WHEEL AND TRAILER TIE DOWN FACILITY TO FORM A COMPLETE LOOP. TWIST TAUT WITH PIECE MARKED ③. SEE GENERAL NOTE "F" ON PAGE 2 AND "WHEEL SECUREMENT" DETAIL ON PAGE 3.
- ⑦ TEN (10) STRANDS OF NO. 8 GAGE BLACK ANNEALED WIRE (4 REQD). INSTALL WIRE TO APPROXIMATE ANGLE SHOWN AND TO FORM A COMPLETE LOOP FROM A TIE DOWN FACILITY ON THE TRANSPORTER THRU A LADING TIE DOWN DEVICE AND BACK TO THE TRANSPORTER TIE DOWN FACILITY. TWIST TAUT WITH PIECE MARKED ⑤. NOTE: IF DESIRED, 3/8" CABLE (OR LARGER) MAY BE INSTALLED IN LIEU OF WIRE HOLD DOWNS. SECURE A THIMBLE W/1-CLIP AT EACH END OF THE COMPLETE LOOP, ONE (1) PER TRANSPORTER TIE DOWN FACILITY AND ONE (1) PER LADING TIE DOWN DEVICE. SEE GENERAL NOTES "F" AND "H" AND THE "SPECIAL PROVISIONS" ON PAGE 2.
- ⑧ WATERPROOF PAPER OR BURLAP OF A SUFFICIENT SIZE TO POSITION UNDER AND EXTEND 2" ABOVE PIECE MARKED ③.

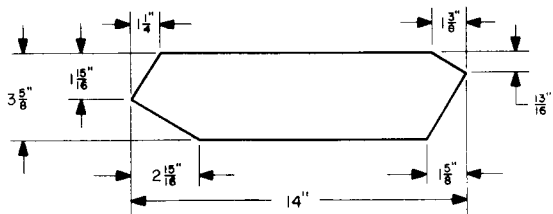


**REAR VIEW**

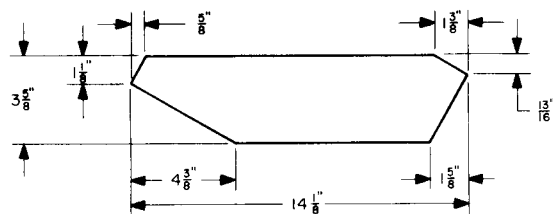
**LAUNCHER WITHOUT TOWBAR**



**FORWARD BLOCKING ASSEMBLY A**



**DETAIL: PIECE D**



**DETAIL: PIECE F**

- (A) 2" X 4" X 22" (1 REQD).
- (B) 1" X 6" X 27" (2 REQD). NAIL TO PIECE MARKED (A) W/5-6d NAILS AND NAIL TO PIECES MARKED (C) AND (D) W/3-6d NAILS.
- (C) 2" X 4" X 8-1/2" (2 REQD). CENTER ON AND TOENAIL TO PIECE MARKED (G) W/4-16d NAILS.
- (D) 2" X 4" X 14" (2 REQD). DOUBLE BEVEL EACH END. SEE DETAIL OF PIECE FOR BEVEL CUTS REQUIRED. TOENAIL TO PIECE MARKED (J) W/4-16d NAILS AFTER PARTIAL ASSEMBLY (PIECES MARKED (A) THRU (C)) HAS BEEN LOCATED ON THE TRAILER AND PIECE MARKED (J) HAS BEEN NAILED TO THE TRAILER FLOOR.
- (E) 2" X 6" X 27" (1 REQD). NAIL TO PIECE MARKED (A) W/4-12d NAILS AND TO PIECES MARKED (D) AND (F) W/2-12d NAILS AT EACH JOINT.
- (F) 2" X 4" X 14-1/8" (4 REQD). DOUBLE BEVEL EACH END. SEE DETAIL OF PIECE FOR BEVEL CUTS REQUIRED. TOENAIL TO PIECE MARKED (B) W/2-16d NAILS AND TO PIECE MARKED (G) W/4-16d NAILS.
- (G) 2" X 4" X 41" (2 REQD). LOCATE PARTIAL ASSEMBLY (PIECES MARKED (A) THRU (C)) UNDER ITEM AND NAIL PIECE MARKED (G) TO TRAILER FLOOR W/1-12d NAIL EVERY 8"
- (H) 2" X 4" X 12" (4 REQD). POSITION AGAINST PIECE MARKED (F) AND NAIL TO PIECE MARKED (G) W/4-20d NAILS.
- (J) 2" X 4" X 18" (2 REQD). LOCATE UNDER PIECE MARKED (D) AS SHOWN AND NAIL TO TRAILER FLOOR W/5-12d NAILS.
- (K) 2" X 4" X 12" (2 REQD). POSITION AGAINST PIECE MARKED (B) AND NAIL TO PIECE MARKED (J) W/4-20d NAILS.

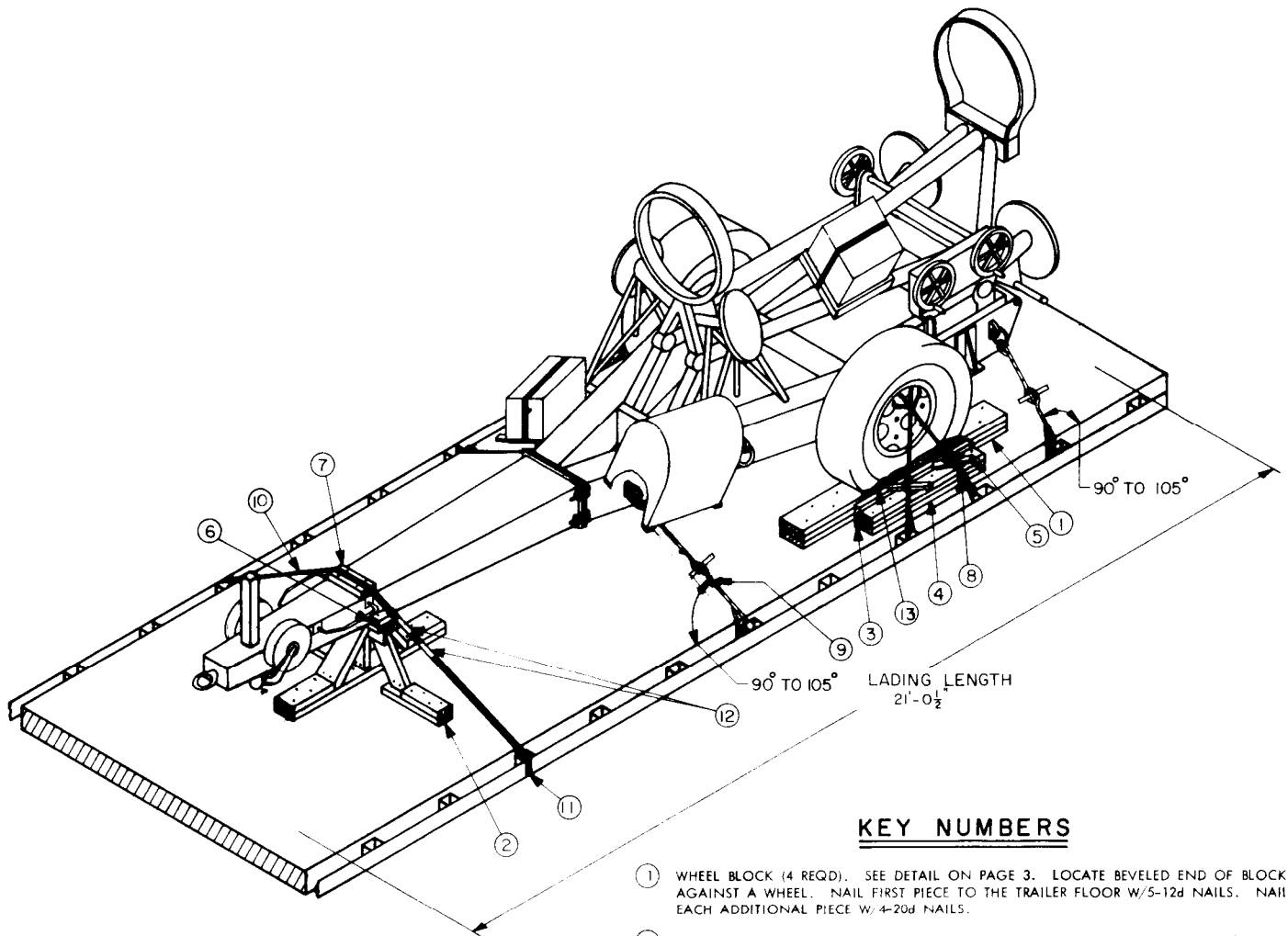
**BILL OF MATERIAL**

LUMBER	LINEAL FEET	BOARD FEET
1" X 6"	5	3
2" X 2"	12	4
2" X 4"	45	30
2" X 6"	9	9
2" X 8"	24	32
NAILS	NO REQD	POUNDS
6d (2")	34	1/4
12d (3-1/4")	104	1-3/4
16d (3-1/2")	40	1
20d (4")	56	2
WIRE, NO. 8 GAGE ----- 220' REQD -----		20 LBS
WATERPROOF PAPER OR BURLAP -----AS REQD -----		NIL

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
LAUNCHER (WITHOUT TOWBAR)-----	1	2,922 LBS
DUNNAGE -----		220 LBS
TOTAL WEIGHT -----		3,142 LBS

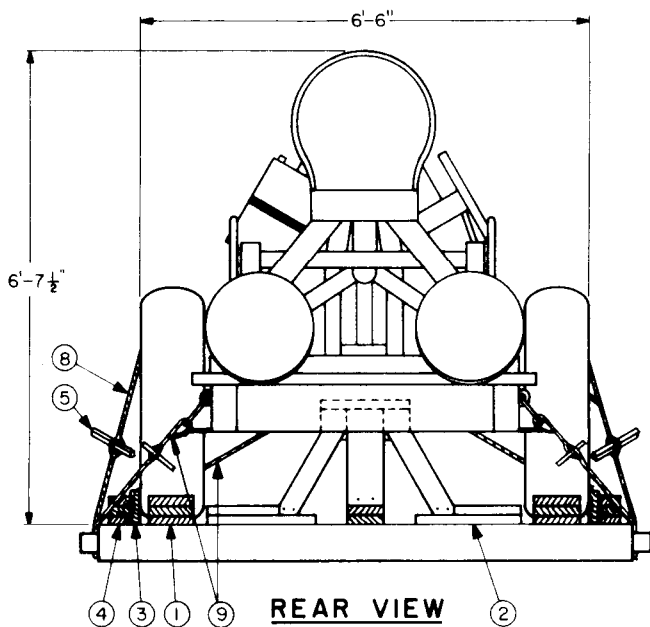
**LAUNCHER WITHOUT TOWBAR**



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① WHEEL BLOCK (4 REQD). SEE DETAIL ON PAGE 3. LOCATE BEVELED END OF BLOCK AGAINST A WHEEL. NAIL FIRST PIECE TO THE TRAILER FLOOR W/5-12d NAILS. NAIL EACH ADDITIONAL PIECE W/4-20d NAILS.
- ② FORWARD BLOCKING (1 REQD). SEE "FORWARD BLOCKING ASSEMBLY B" DETAIL ON PAGE 7. SEE GENERAL NOTE "K" ON PAGE 2.
- ③ RUBBING STRIP, 2" X 6" X 36" (2 REQD). POSITION ON EDGE AND NAIL TO LOWER PIECE MARKED ④ W/5-12d NAILS.
- ④ SIDE BLOCKING, 2" X 4" X 36" (TRIPLED) (2 REQD). NAIL FIRST PIECE TO TRAILER FLOOR W/5-12d NAILS. NAIL EACH ADDITIONAL PIECE IN LIKE MANNER.
- ⑤ WIRE TWISTER, 2" X 2" X LENGTH TO SUIT (8 REQD).
- ⑥ ANTI-SWAY CLEAT, 2" X 4" X 6" (2 REQD). POSITION AS SHOWN. NAIL TO PIECE MARKED ② W/2-12d NAILS.
- ⑦ STRAPPING BOARD, 2" X 4" X LENGTH TO SUIT (1 REQD). POSITION AS SHOWN.
- ⑧ FOUR (4) STRANDS NO. 8 GAGE BLACK ANNEALED WIRE (4 REQD). PASS THRU HOLES IN WHEEL AND TRAILER TIE DOWN FACILITY TO FORM A COMPLETE LOOP. TWIST TAUT WITH PIECE MARKED ⑤. SEE "WHEEL SECUREMENT" DETAIL ON PAGE 3 AND GENERAL NOTE "F" ON PAGE 2.
- ⑨ TEN (10) STRANDS OF NO. 8 GAGE BLACK ANNEALED WIRE (4 REQD). INSTALL WIRE TO APPROXIMATE ANGLE SHOWN AND TO FORM A COMPLETE LOOP FROM A TIE DOWN FACILITY ON THE TRANSPORTER THRU A LADING TIEDOWN DEVICE AND BACK TO THE TRANSPORTER TIE DOWN FACILITY. TWIST TAUT WITH PIECE MARKED ⑤. NOTE: IF DESIRED, 3/8" CABLE (OR LARGER) MAY BE INSTALLED IN LIEU WIRE HOLD DOWNS. SECURE A THIMBLE W/1-CLIP AT EACH END OF THE COMPLETE LOOP, ONE (1) PER TRANSPORTER TIE DOWN FACILITY AND ONE (1) PER LADING TIE DOWN DEVICE. SEE GENERAL NOTES "F" AND "H" AND "SPECIAL PROVISIONS" ON PAGE 2.
- ⑩ STEEL STRAPPING, 2" X .050" X 20'-0" (1 REQD). STAPLE TO PIECE MARKED ⑦ W/2-2" STAPLES. SEE "DETAIL C" ON PAGE 3 FOR ALTERNATIVE STRAP ANCHORING METHOD.
- ⑪ PAD, 2" X .050" STRAP 24" LONG (2 REQD). POSITION UNDER AND SEAL TO PIECE MARKED ⑩. SEE "DETAIL A" ON PAGE 3. ALT: STAKE POCKET PROTECTOR (4 REQD). USE TWO (2) UNDER EACH TIE DOWN FACILITY WITH PIECE MARKED ⑩. SEE "DETAIL B" ON PAGE 3.
- ⑫ SEAL FOR 2" STRAPPING (6 REQD). SEE GENERAL NOTE "L" ON PAGE 2.
- ⑬ WATERPROOF PAPER OR BURLAP OF A SUFFICIENT SIZE TO POSITION UNDER AND EXTEND 2" ABOVE PIECE MARKED ③.



**REAR VIEW**

**LAUNCHER WITH TOWBAR**