

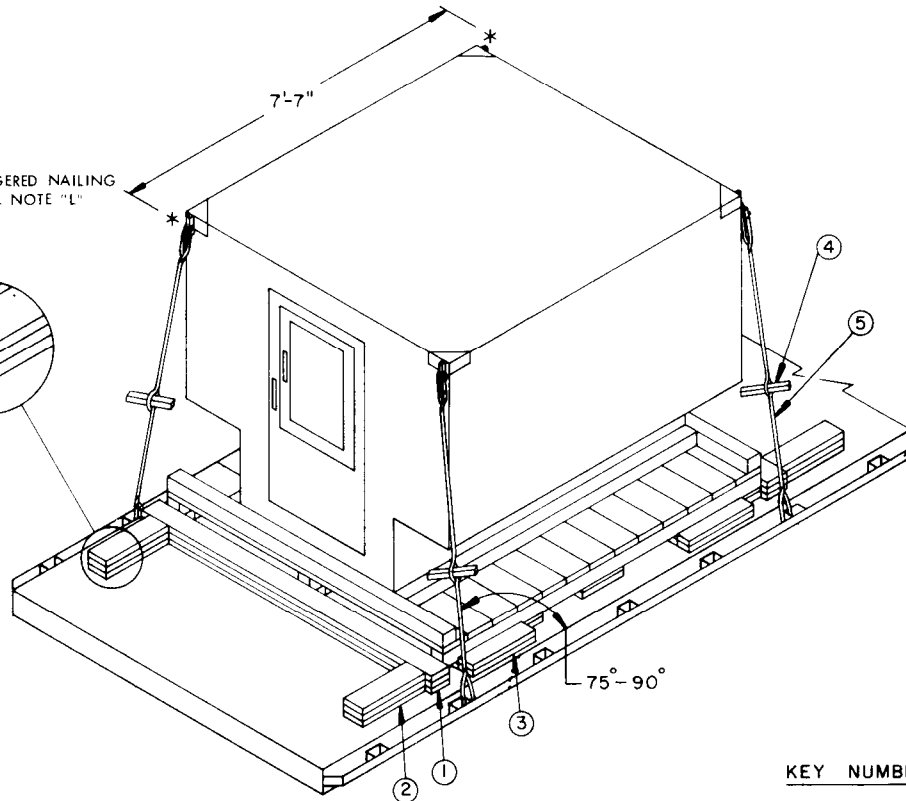
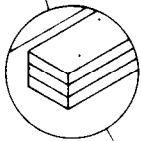
TOW

LOADING AND BRACING ON FLAT BED OR "LOW-BOY" TRAILER OF CONTACT SHOP SET

REVISIONS				DRAFTSMAN	PROJ ENG
				/ <i>inp</i>	/ <i>AKZ/JNW</i>
				CHECKER	LOG ENGRS OFFICE
				/ <i>AKK</i>	/ <i>AKZ/JNW</i>
				APPROVED	
				<i>W. J. Egan</i> <small>U. S. ARMY MISSILE COMMAND</small>	
				<small>APPROVED BY ORDER OF COMMANDING GENERAL.</small> <small>U. S. ARMY MATERIEL COMMAND</small> <i>W. J. Egan</i> <small>USAMC AMMO CENTER</small>	
				U. S. ARMY MATERIEL COMMAND	
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DO NOT SCALE

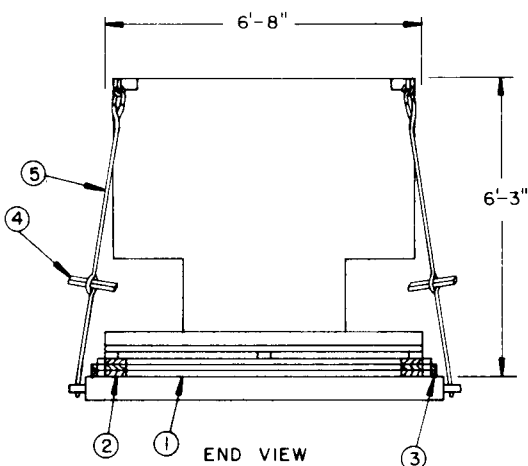
APPLICATION OF STAGGERED NAILING PATTERN, SEE GENERAL NOTE "L" ON PAGE 3.



ISOMETRIC VIEW

KEY NUMBERS

- ① HEADER, 2" X 6" X 7'-0" (TRIPLED) (2 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/10-12d NAILS. NAIL EACH ADDITIONAL PIECE W/10-20d NAILS. SEE GENERAL NOTE "L" ON PAGE 3.
- ② BACK-UP CLEAT, 2" X 6" X 18" (TRIPLED) (4 REQD). ALIGN WITH SKIDS OF LADING BASE AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/5-12d NAILS. NAIL EACH ADDITIONAL PIECE W/5-20d NAILS.
- ③ SIDE BLOCKING, 2" X 4" X 18" (DOUBLED) (4 REQD). POSITION AGAINST SKID OF LADING BASE AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/5-12d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ④ WIRE TWISER, 2" X 2" BY A LENGTH TO SUIT (4 REQD). SEE GENERAL NOTE "F" ON PAGE 3.
- ⑤ SIX (6) 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 TRAILER THRU THE LADING TIE DOWN DEVICE AND BACK TO THE TRAILER TIE DOWN FACILITY. TWIST TAUT WITH PIECE MARKED ④. SEE GENERAL NOTES "F", "G", AND "J" ON PAGE 3. **NOTE:** IF DESIRED, 3/8" STEEL WIRE ROPE (OR LARGER) MAY BE INSTALLED IN LIEU OF THE TWISTED WIRE HOLD DOWNS. USE A THIMBLE ("OPEN PATTERN" RECOMMENDED) AT EACH TRANSPORTER TIE DOWN FACILITY AND AT EACH LADING TIE DOWN DEVICE (ONLY IF IT IS TEAR RING OR ROUND RING TYPE). USE FOUR (4) CLIPS PER EACH CABLE JOINT AND ONE (1) TO SECURE EACH THIMBLE. NOTE THAT NUTS ON 3/8" CABLE CLIPS WILL BE TIGHTENED TO A TORQUE OF 35 TO 40 FOOT POUNDS. SEE GENERAL NOTE "H" ON PAGE 3.



END VIEW

SPECIAL PROVISIONS (FOR UNCRATED SHOPS) :

LADING MAY BE SECURED BY CARRIER-OWNED CHAINS AND LOAD BINDERS IN LIEU OF SPECIFIED STRANDED ANNEALLED 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 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 MARKED (5). CHAINS SHALL BE INSTALLED AT THE SAME LOCATIONS SHOWN FOR STRANDED WIRE CABLES AND IN THE SAME MANNER AS DIRECTED IN GENERAL NOTE "J".
3. IF DESIRED, CHAINS OF A LARGER SIZE THAN SPECIFIED ABOVE MAY BE USED.
4. 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.
5. 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 CHAINS AND LADING AT ALL POINTS OF CONTACT EXCEPT AT DEFINITIVE TIE DOWN POINTS.

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. 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 DEPEND-ENT 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 OVER-ALL DIMENSIONS MUST MEET STATE LAW REQUIREMENTS.
- E. LADING DATA:

ITEM	WEIGHT (APPROX)	DIMENSIONS
CONTACT SHOP SET (UNCRATED) -----	1,200 LBS -----	7'-7" LONG X 6'-8" WIDE X 6'-3" HIGH.
CONTACT SHOP SET (CRATED) -----	1,500 LBS -----	7'-7" LONG X 7'-0" WIDE X 6'-8" HIGH.
- 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.
- G. SEE THE "SPECIAL PROVISIONS" AT THE LEFT FOR SPECIFICATIONS WHICH MUST BE APPLIED IF CHAINS AND LOAD BINDERS ARE USED FOR SECURING UNCRATED SHOPS, AND THE "SPECIAL PROVISIONS" ON PAGE 5 FOR SPECIFICATIONS WHICH APPLY FOR CRATED SHOPS.
- H. 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 TIE DOWNS BE INSTALLED TO APPROXIMATE THE ANGLE SHOWN; HOWEVER, IF PLACEMENT OF TRANSPORTER TIE DOWN FACILITIES PREVENTS THIS, CARE MUST BE EXERCISED TO ENSURE THAT THE CABLE TIE DOWNS ON THE SAME SIDE OF THE LADING ARE INSTALLED SO THEIR RETENTION FORCES ACT IN OPPOSITE LONGITU-DINAL DIRECTIONS-----CONTACT OF CABLE WITH THE EDGE OF THE LADING IS PROHIBITED.
- K. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE OR 1-5/8" THICK BY 5-5/8" 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.
- M. WHEN ANY STRAP IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF TWO (2) SEALS, BITTED TOGETHER, WITH TWO (2) PAIR OF CRIMPS PER SEAL MUST BE USED TO SEAL THE JOINT.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	6	2
2" X 4"	12	8
2" X 6"	60	60
NAILS	NO. REQD	POUNDS
12d (3-1/4")	80	1-1/2
20d (4")	80	3
WIRE, NO. 8 GAGE ----- 200' REQD ----- 18 LBS		

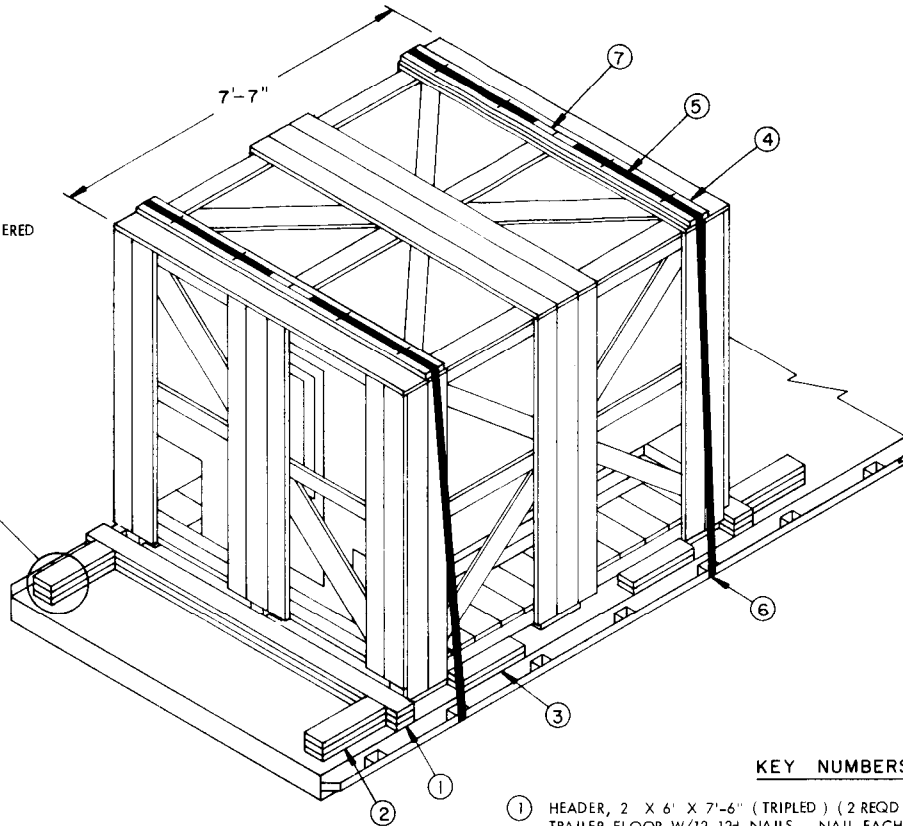
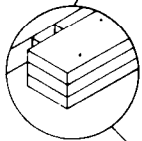
MATERIAL SPECIFICATIONS

- LUMBER -----: DOUGLAS FIR OR COMPARABLE LUMBER WITH STRAIGHT GRAIN AND FREE OF MATERIAL DEFECTS. REF: FED SPEC MM-L-751.
- NAILS -----: COMMON, CEMENT-COATED OR CHEMICALLY ETCHED, REF: FED SPEC FF-N-105. ALT: ANNULAR-RING TYPE NAIL OF SAME SIZE.
- WIRE -----: ANNEALLED, BLACK. REF: FED SPEC QQ-W-461.
- 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 1, CLASS 1.
- STRAPPING, STEEL ---: TYPE 1, CLASS A, B, OR C. FED SPEC QQ-S-781. (FOR FSN SEE 58-38-100).
- STRAP SEAL; STRAP STAPLE; STAKE
- POCKET PROTECTOR---: COMMERCIAL GRADE.

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
SHOP SET (UNCRATED) -----	1 -----	1,200 LBS
DUNNAGE -----		198 LBS
TOTAL WEIGHT -----		1,398 LBS

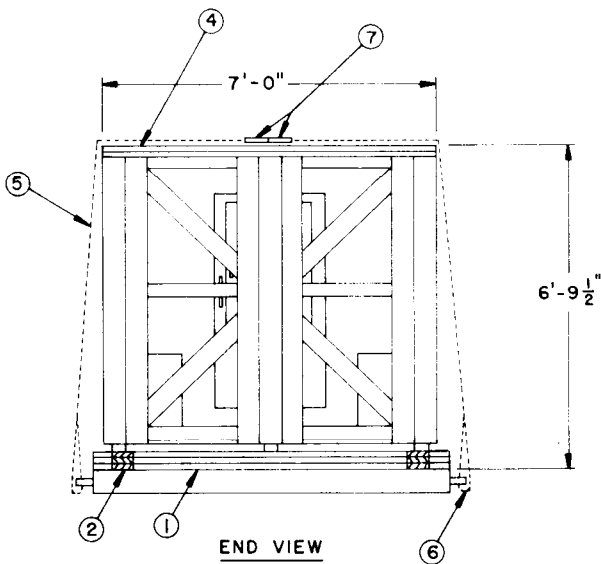
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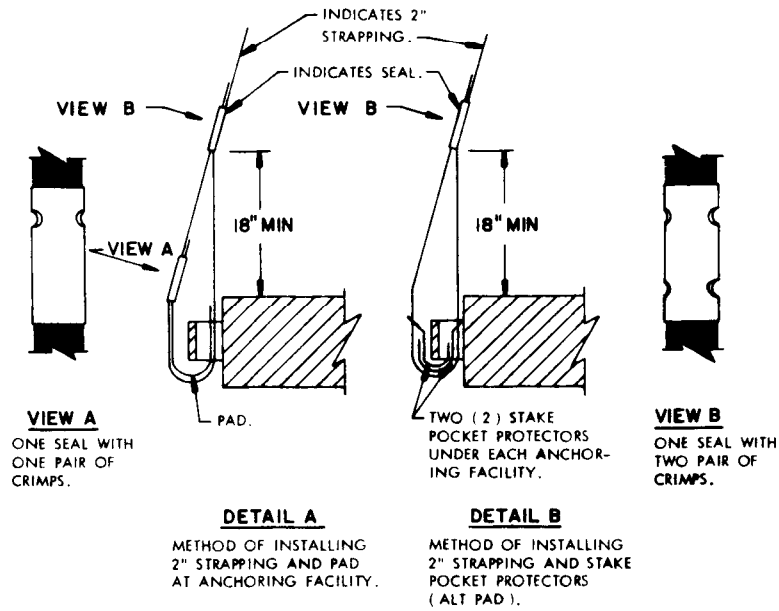
ISOMETRIC VIEW

KEY NUMBERS

- ① HEADER, 2 X 6" X 7'-6" (TRIPLED) (2 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/12-12d NAILS. NAIL EACH ADDITIONAL PIECE W/12-20d NAILS. SEE GENERAL NOTE "L" ON PAGE 3.
- ② BACK-UP CLEAT, 2" X 6" X 18" (TRIPLED) (4 REQD). ALIGN WITH CRATE SKIDS AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/5-12d NAILS. NAIL EACH ADDITIONAL PIECE W/5-20d NAILS.
- ③ SIDE BLOCKING, 2" X 4" X 18" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/5-12d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ④ STRAPPING BOARD, 2 X 6" X 7'-0" (2 REQD).
- ⑤ HOLD-DOWN STRAP, 2" X .050" X 30'-0" LONG STEEL STRAPPING (2 REQD). INSTALL EACH STRAP FROM TWO (2) 15'-0" LONG PIECES. STAPLE TO PIECE MARKED ④ W/4-2" STAPLES. SEE THE "SPECIAL PROVISIONS" ON PAGE 5.
- ⑥ PAD, 2" X .050" X 18" LONG STEEL STRAPPING (4 REQD). POSITION UNDER ANCHORING FACILITY AND SEAL TO A PIECE MARKED ⑤. SEE DETAIL A" ON PAGE 5. ALT: STAKE POCKET PROTECTOR (8 REQD). USE TWO (2) UNDER EACH ANCHORING FACILITY WITH A PIECE MARKED ⑤. SEE "DETAIL B" ON PAGE 5.
- ⑦ SEAL FOR 2" STRAPPING (12 REQD, 6 PER STRAP). SEE GENERAL NOTE "M".



END VIEW



SPECIAL PROVISIONS (FOR CRATED SHOPS):

LADING MAY BE SECURED BY CARRIER-OWNED CHAINS AND LOAD BINDERS IN LIEU OF SPECIFIED HOLD-DOWN 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 SHOP SET CRATE.
2. IN LIEU OF EACH HOLD-DOWN STRAP MARKED ⑤, ONE (1) LINE OF 1/4" CHAIN MAY BE USED. THE STRAPPING BOARD MARKED ④ MUST BE DOUBLED AND LAMINATED W/1-10d NAIL EVERY 12". EACH CHAIN SHALL BE SECURED TO LAMINATED BOARDS W/4-20d NAILS BY DRIVING EACH NAIL INTO THE BOARD THRU AN OPENING IN A CHAIN LINK AND BENDING IT OVER THE LINK.
3. IF DESIRED, CHAINS OF A LARGER SIZE THAN SPECIFIED ABOVE MAY BE USED.
4. 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.
5. 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.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	12	8
2" X 6"	77	77
NAILS	NO. REQD	POUNDS
2" X 6"	77	77
NAILS	NO. REQD	POUNDS
12d (3-1/4")	84	1-1/2
20d (4")	88	3-1/4
STEEL STRAPPING, 2" X .050" ----- 66' REQD ----- 22 LBS		
SEAL FOR 2" STRAPPING ----- 12 REQD ----- 3 LBS		
STAPLE FOR 2" STRAPPING ----- 8 REQD ----- NIL		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
SHOP SET (CRATED)	1	1,500 LBS
DUNNAGE		242 LBS
TOTAL WEIGHT		1,742 LBS