

APPROVED BY
 BUREAU OF EXPLOSIVES
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 DATE 3/7/74

HAWK

LOADING AND BRACING (TL) ON
 M172A1 LOW BED SEMI-TRAILER
 OF THE COMPLETE ROUND, IN
 THE XM430 OR XM611 CONTAINER,
 LOADED SIX (6) EACH ON AF 463L
 PALLETS

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NOTICE:

SPECIAL AUTHORITY MUST BE ACQUIRED FROM THE U. S. ARMY MISSILE COMMAND, PRIOR TO IMPLEMENTING THE OUTLOADING PROCEDURES SPECIFIED WITHIN THIS DRAWING. THE PROCEDURES OF THIS DRAWING ARE FOR LIMITED USAGE. THEY ARE ONLY TO BE USED FOR A "SHORT HAUL" MOVEMENT BETWEEN A STORAGE DEPOT AND AN AIR FIELD OR BETWEEN AN AIR FIELD AND A STORAGE DEPOT, WHEN AN AIR LIFT IS PART OF THE SCHEDULED MOVEMENT.

REVISIONS			DRAWN <i>AA</i>	PROJ. ENG. <i>AWW/BLW</i>
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U. S. ARMY MATERIEL COMMAND				
APRIL 1974				
	CLASS	DIVISION	DRAWING	FILE
	19	48	5945	GM 11HA4

DO NOT SCALE

GENERAL NOTES

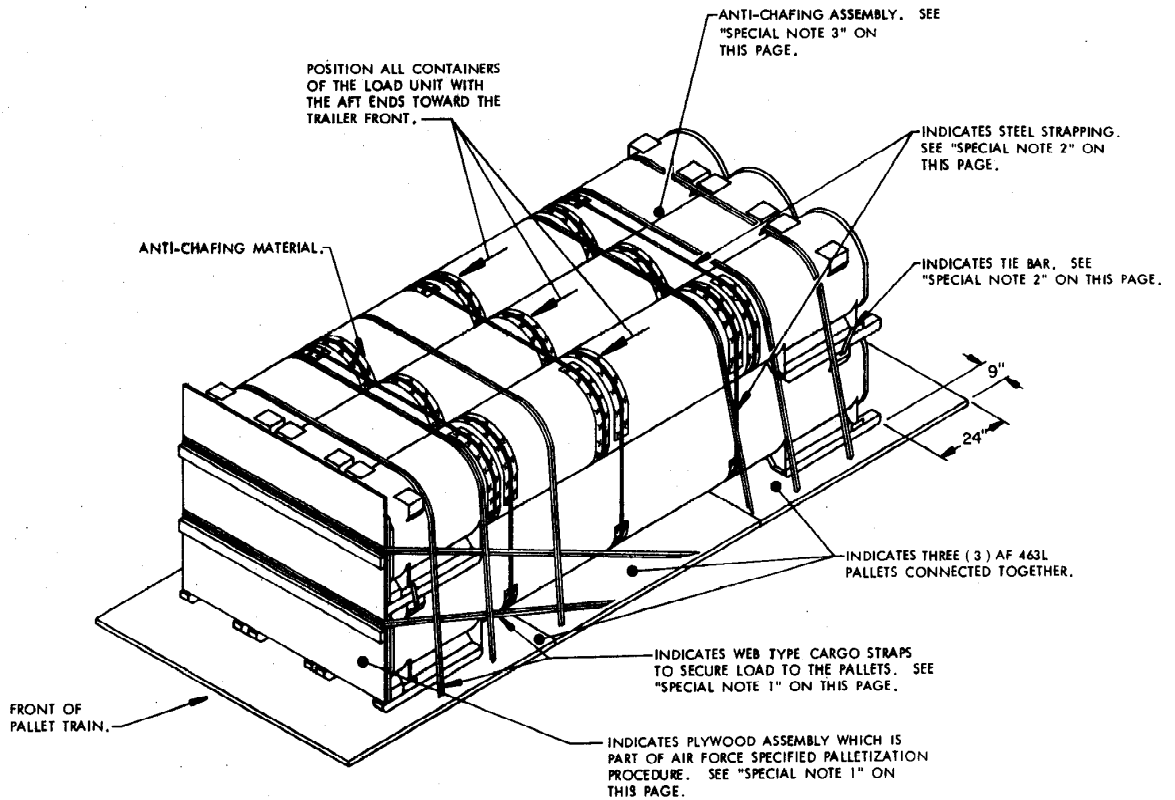
- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AMCR 740-13, AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE LOAD AS SHOWN IS BASED ON A 9'-7" WIDE M172A1 LOW BED SEMI-TRAILER HAVING A WOOD AND METAL FLOOR. NOTE: DUE TO THE OVER-WIDTH OF THE TRAILER, SPECIAL AUTHORITY FROM THE STATES INVOLVED WILL BE REQUIRED FOR TRANSPORTING THE DEPICTED LOAD OVER PUBLIC HIGHWAYS.
- C. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE TO THE COMPLETE ROUND, IN THE XM430 OR XM611 CONTAINER FOR THE HAWK MISSILE SYSTEM, LOADED SIX (6) EACH ON THREE (3) AF 463L PALLETS, WHICH ARE ASSEMBLED INTO A PALLET TRAIN, AS SHOWN ON PAGE 3. SUBSEQUENT REFERENCE TO CONTAINER MERRIN MEANS THE CONTAINER WITH MISSILE COMPONENTS.
- D. FOR DETAILS OF XM430 CONTAINER, SEE DRAWING NO. 9073970. FOR DETAILS OF XM611 CONTAINER, SEE DRAWING NO. 8035841.
CONTAINER DIMENSIONS ----- 216" LONG X 28-3/4" WIDE X 41-1/2" HIGH.
GROSS WEIGHT (MAX) ----- 3,351 POUNDS (APPROX).
TARE WEIGHT ----- 1,950 POUNDS (APPROX).
- E. THIS ITEM IS A CLASS "A" EXPLOSIVE. THESE PROCEDURES CAN ALSO BE UTILIZED FOR THE SHIPMENT OF THE CONTAINERS WHEN THEY ARE LOADED WITH AN ITEM OTHER THAN THE HAWK COMPLETE ROUND, OR WHEN THEY ARE EMPTY. NOTE: 18" X 32" PLACARD BOARDS MUST BE PROVIDED AS REQUIRED BY LAW AND/OR REGULATION. CAUTION: PLACARD BOARDS AND BOARD MOUNTING BRACKETS MUST NOT BE NAILED TO LADING; THEY WILL BE NAILED TO THE CARRYING VEHICLE.
- F. TO ACCOMPLISH TRANSFERRING THE PALLET LOAD FROM THE TRAILER TO THE AIRCRAFT, THE TRAILER MAY BE DRIVEN ONTO RAMPS OR DUNNAGE TO BRING CONVEYER ROLLER TO THE SAME ELEVATION AS ROLLERS ON HANDLING EQUIPMENT (K-LOADER). THE TRAILER AND HANDLING EQUIPMENT SHOULD BOTH BE AS LEVEL AS PRACTICAL TO FACILITATE THE LOAD TRANSFER.
- G. CAUTION: LOADING OF THE DEPICTED ITEM IS RESTRICTED TO NOT MORE THAN TWO (2) LAYERS IN HEIGHT.
- H. SELECTION OF A VEHICLE TO BE USED TO TRANSPORT THE DESIGNATED ITEM MUST COMPLY WITH AR 55-355, CHAPTER 213, FOR EXPLOSIVES OR OTHER DANGEROUS ARTICLES, IN FULL.
- J. THE OUTLOADING PROCEDURE DEPICTED HEREIN IS TO BE USED ONLY FOR SHORT HAUL MOVEMENTS, SUCH AS MIGHT BE REQUIRED TO MOVE ITEMS FROM A DEPOT TO AN AIRPORT.
- K. TIE TWO INCH (2") STRAPPING SHALL BE APPLIED TO FORM A COMPLETE LOOP WHICH ENCOMPASSES BOTH THE LADING AND THE TRAILER FRAME AND/OR B.D. CAUTION: AVOID TRAILER WHEELS, FIFTH WHEEL PLATE, CONTROLS AND OTHER APPURTENANCES. USE EDGE PROTECTORS ON ALL SHARP EDGES.
- L. WHEN ANY STRAP IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF TWO (2) SEALS, BUTTED TOGETHER, WITH TWO (2) PAIR OF CRIMPS PER SEAL MUST BE USED TO SEAL THE JOINT. CAUTION: EXERCISE CARE DURING TENSIONING TO PREVENT DAMAGE TO THE CONTAINERS.
- M. THE PROCEDURES SHOWN HEREIN ARE TYPICAL. MINOR ADJUSTMENTS MAY BE MADE TO COMPENSATE FOR MINOR VARIATIONS IN TRAILER WIDTH, STAKE POCKET LOCATIONS, CONVEYER SECTION TYPE AND STYLE, AND OTHER SIMILAR ITEMS, PROVIDED THE BASIC PRINCIPLES, AS SHOWN HEREIN, ARE ADHERED TO.
- N. WHEN MOVING THE TRAILER WITHOUT A LOAD, BUT WITH ONLY THE MECHANICAL BRACING SYSTEM DEPICTED HEREIN, THE MECHANICAL BRACING SYSTEM SHOULD BE COMPLETELY ASSEMBLED AND SECURED TO THE TRAILER WITH METAL OR WEB TYPE STRAPPING, AS REQUIRED TO PREVENT LOSS DURING A HIGHWAY MOVEMENT.

LOADING SEQUENCE *

- STEP 1 - INSTALL "CONVEYER RISER ASSEMBLIES A AND B", (KEY NUMBERS ① AND ② ON PAGE 6) ON TRAILER PLATFORM. FOR ADDITIONAL INFORMATION SEE PAGES 4 AND 5.
- STEP 2 - INSTALL ROLLER CONVEYER (KEY NUMBER ③ ON PAGE 6) ON "CONVEYER RISER ASSEMBLIES A AND B". FOR ADDITIONAL INFORMATION SEE PAGES 4 AND 5.
- STEP 3 - INSTALL "FRONT AND REAR RISERS" (KEY NUMBERS ④ AND ⑤ ON PAGE 6) ON "CONVEYER RISER ASSEMBLIES A AND B". FOR ADDITIONAL INFORMATION SEE PAGE 7.
- STEP 4 - POSITION A 3-PALLET TRAIN ON TOP OF THE ROLLER CONVEYERS. POSITION SIX (6) CONTAINERS SO THAT THEY CENTER LONGITUDINALLY AND LATERALLY ON THREE (3) 463L PALLETS SECURED IN TRAIN. UNITIZE THE CONTAINERS IN ACCORDANCE WITH DRAWING NO. 19-48-3581-GM11A71 TO FORM A LOAD UNIT. TIE DOWN THE LADING TO THE PALLETS WITH WEB TYPE CARGO STRAPS. FOR ADDITIONAL INFORMATION SEE PAGE 3.
- STEP 5 - INSTALL THE HEADERS (KEY NUMBER ⑥ ON PAGE 6) AT BOTH ENDS OF THE LOAD UNIT SO THAT THEY CONTACT THE SKIDS OF THE CONTAINER IN THE FIRST LAYER AND BOLT HEADERS TO FRONT AND REAR RISERS. FOR ADDITIONAL INFORMATION SEE PAGE 7.
- STEP 6 - INSTALL THE SIDE BLOCKING (KEY NUMBER ⑦ ON PAGE 6) AT EACH CORNER OF THE LOAD UNIT SO THAT THEY CONTACT THE SIDE OF THE SKIDS OF THE OUTSIDE CONTAINERS IN THE FIRST LAYER AND BOLT THE SIDE BLOCKING TO THE HEADER. FOR ADDITIONAL INFORMATION SEE PAGES 7 AND 8.
- STEP 7 - SECURE THE LADING TO THE TRAILER WITH THREE (3) LOOPS OF 2" X .050" X 34'-0" STEEL STRAPPING (KEY NUMBER ⑧ ON PAGE 6). INSTALL STRAPPING TO FORM A COMPLETE LOOP WHICH ENCOMPASSES BOTH THE LADING AND THE TRAILER FRAME AND/OR BED.
- *LOADING GUIDANCE SET FORTH ABOVE IS APPLICABLE WHEN A "LOAD UNIT" AS SHOWN ON PAGE 3 IS BEING PREPARED FOR SHIPMENT FROM A DEPOT TO AN AIRPORT. THIS LOADING GUIDANCE IS ALSO APPLICABLE IN PART WHEN A "LOAD UNIT" IS TO BE MOVED FROM AN AIRPORT TO A DEPOT. NORMALLY, AN INBOUND SHIPMENT WILL BE DELIVERED BY AIRCRAFT TO AN AIRPORT IN A CONFIGURATION AS DELINEATED ON PAGE 3. HOWEVER, IF THE CONTAINERS ON AN INBOUND SHIPMENT ARE NOT UNITIZED WITH TIE BARS AND STEEL STRAPPING AND BUNDLED WITH STEEL STRAPPING AS SPECIFIED ON PAGE 3, INBOUND LOADS ARE NOT ACCEPTABLE FOR MOVEMENT BY THE LOADING AND BRACING SPECIFICATIONS OF THIS DRAWING.

MATERIAL SPECIFICATIONS

STRAPPING, STEEL -----	TYPE I OR IV, CLASS A, B, OR C, FED SPEC QQ-5-781.
SEAL, STRAP, PROTECTOR, EDGE -----	COMMERCIAL GRADE.
STRUCTURAL STEEL -----	ROLLED SHAPES, PLATE, AND BAR, FED SPEC QQ-5-741D.
BOLTS -----	SAE GRADE 1 CARBON STEEL.



ISOMETRIC VIEW

SPECIAL NOTES:

1. THE METHOD OF SECURING THE SIX (6) CONTAINERS TO THE 463L PALLETS WITH WEB STRAP TIEDOWN DEVICES MUST COMPLY WITH THE APPLICABLE AIR FORCE REQUIREMENTS. THIS WEB STRAPPING WILL BE IN ADDITION TO THE UNITIZING AND TIEDOWN STRAPPING.
2. THE SIX (6) CONTAINERS WILL BE UNITIZED, BUNDLED, AND HANDLED IN ACCORDANCE WITH THE REQUIREMENTS OF DRAWING 19-48-5581-GM11A71.
3. ANTI-CHAFING ASSEMBLIES WILL BE PROVIDED, AS REQUIRED BY DRAWING 19-48-5581-GM11A71. IF CONTAINERS BEING TRANSPORTED HAVE THE NEW WIDER SKID, IT WILL BE NECESSARY TO LOCATE THE ANTI-CHAFING ASSEMBLY TO THE INBOARD END OF THE SKID, TO PROVIDE CLEARANCE FOR THE WIDER SKIDS.

ROLLER CONVEYER, 22'-8-1/2" LONG
(3 REQD.), SEE PAGE 5.

INDICATES WHEEL
WELLS.

CONVEYER RISER ASSEMBLY A
(4 REQD.), SEE DETAIL BELOW.

CONVEYER RISER ASSEMBLY B
(2 REQD.). SEE DETAIL ON
PAGE 5.

INDICATES M172A1 TRAILER.

TRAILER FRONT.
(GOOSE NECK OF
TRAILER OMITTED
FOR CLARITY).

ISOMETRIC VIEW

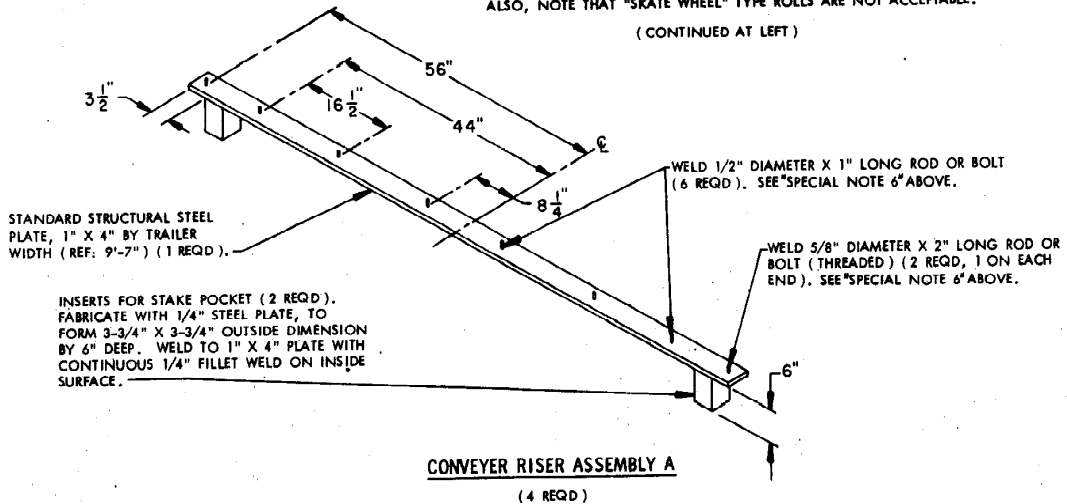
(SPECIAL NOTES CONTINUED)

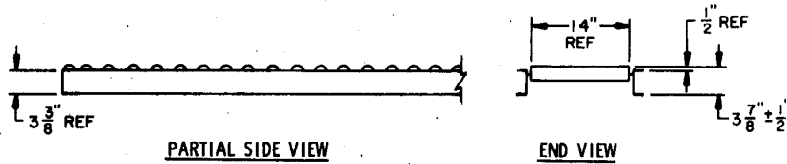
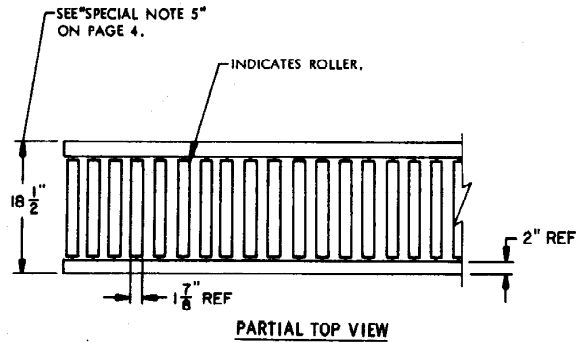
SPECIAL NOTES:

1. THE FOUR CONVEYER RISER ASSEMBLY A UNITS WILL BE INSTALLED BY PLACING THE INSERTS INTO THE TRAILER STAKE POCKETS.
2. THE TWO CONVEYER RISER ASSEMBLY B UNITS WILL BE INSTALLED BY POSITIONING AS SHOWN (REF: DIMENSIONAL DATA SHOWN FOR ROLLER CONVEYER DETAIL ON PAGE 5).
3. POSITION THE ROLLER CONVEYER UNITS OVER THE 1/2" DIAMETER RODS SO THAT EACH UNIT IS FULLY ENGAGED.
4. WELDS CONNECTING 1/2" AND/OR 5/8" STEEL RODS AND/OR BOLTS TO THE 1" X 4" STEEL PLATE MUST BE GROUND FLUSH ON BOTTOM SURFACE OF THE PLATE.
5. CONVEYER SECTIONS SIMILAR TO THE ONE SHOWN MAY BE USED PROVIDED PROPER ADJUSTMENTS ARE MADE. CONVEYERS NARROWER OR WIDER WILL REQUIRE RELOCATION OF THE 1/2" RODS ON THE CONVEYER RISER ASSEMBLIES. CONVEYER HEIGHT MUST BE CAREFULLY SELECTED SO THAT THE HEADER CHANNEL WILL PROPERLY BEAR AGAINST THE CONTAINER SKIDS. NOTE THAT THE NUMBER OF ROLLERS PER CONVEYER SECTION CAN VARY FROM THE NUMBER SHOWN IN THE TYPICAL CONVEYER SECTION DELINEATED ON PAGE 5; HOWEVER, CONVEYERS WITH ROLLS SPACED MORE THAN NINE INCHES (9") ON CENTER ARE NOT ACCEPTABLE. ALSO, NOTE THAT "SKATE WHEEL" TYPE ROLLS ARE NOT ACCEPTABLE.

(CONTINUED AT LEFT)

6. TO FACILITATE ATTACHMENT OF 1/2" AND 5/8" RODS OR BOLTS TO CONVEYER RISER ASSEMBLY PLATES, RESPECTIVELY, 3/8" AND 1/2" DIAMETER HOLES WILL BE DRILLED THRU THE 1/4" STEEL PLATES AT THE LOCATIONS OF THE RODS OR BOLTS.





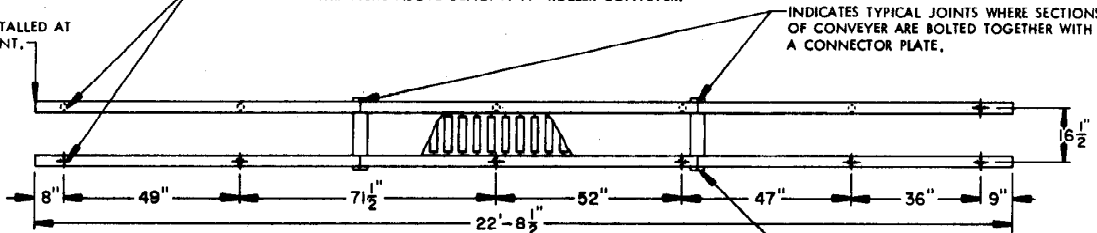
9/16" HOLE (12 REQD). FOR SECUREMENT OF CONVEYER ON "CONVEYER RISER ASSEMBLY".

THIS END IS INSTALLED AT THE TRAILER FRONT.

THE VIEWS ABOVE DEPICT A 14" ROLLER CONVEYER.

END VIEW

INDICATES TYPICAL JOINTS WHERE SECTIONS OF CONVEYER ARE BOLTED TOGETHER WITH A CONNECTOR PLATE.

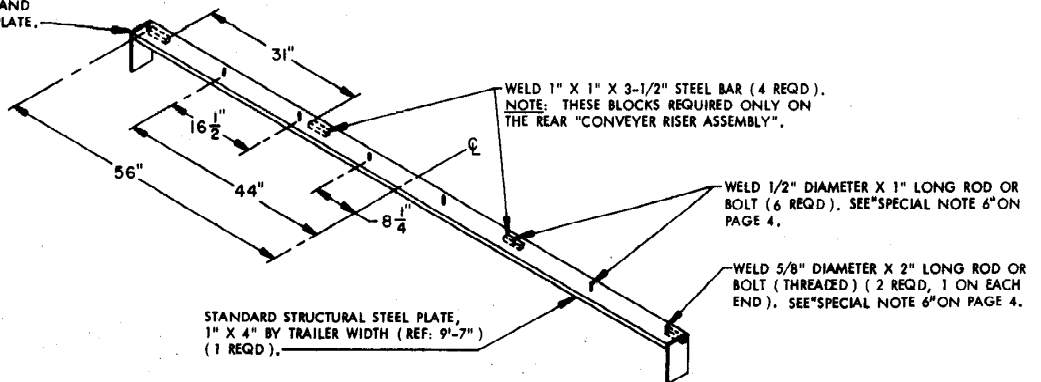


ROLLER CONVEYER

TO ACHIEVE THE LENGTH DIMENSIONED ABOVE, ASSORTED LENGTHS OF ROLLER CONVEYER SECTIONS MUST BE BOLTED TOGETHER. INDIVIDUAL PIECES SHOULD BE AS LONG AS POSSIBLE. SPLICES WILL BE MADE WITH CONNECTOR PLATES BOLTED TO BOTH SECTIONS, AND A RISER PLATE WILL BE USED UNDER EACH JOINT AS SHOWN ABOVE IF A JOINT IS NOT SUPPORTED BY "RISER ASSEMBLY". NOTE THAT CONVEYER SECTIONS ON REAR OF TRAILER MUST BE AT LEAST SEVEN FEET LONG.

RISER PLATE, 1" STEEL PLATE X 4" X 20" (QUANTITY AS REQD), PRE-DRILL PIECE W/2-1/8" DIAMETER HOLES NEAR EACH END, LOCATE A RISER PLATE UNDER EACH BUTT JOINT BETWEEN CONVEYER SECTIONS, AND NAIL TO TRAILER FLOOR W/2-10# NAILS.

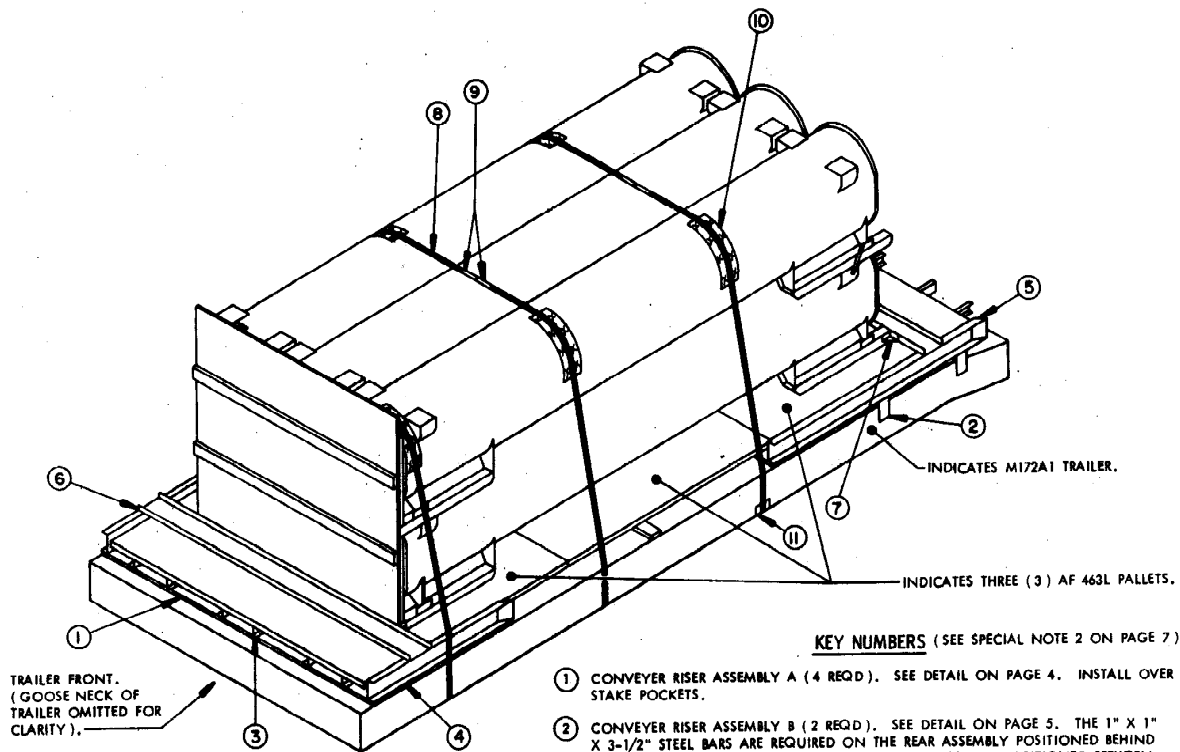
1/4" STEEL PLATE X 4" X 7" (2 REQD), WELD TO 1" X 4" PLATE WITH CONTINUOUS 1/4" FILLET WELD ON TOP AND BOTTOM OF 1" X 4" PLATE.



CONVEYER RISER ASSEMBLY B

(2 REQD)

STANDARD STRUCTURAL STEEL PLATE, 1" X 4" BY TRAILER WIDTH (REF: 9'-7") (1 REQD).



ISOMETRIC VIEW

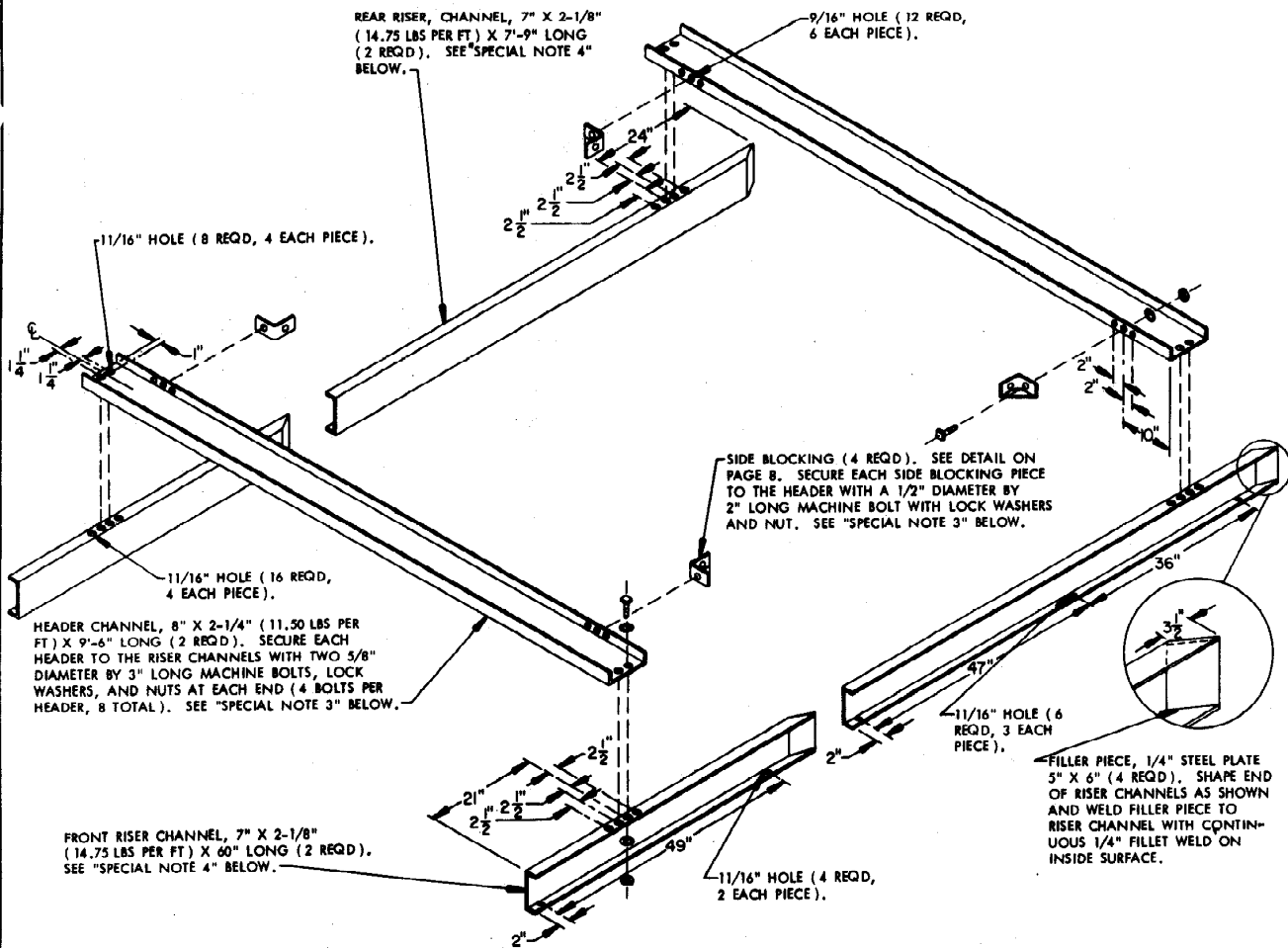
BILL OF MATERIAL FOR METAL PARTS

DESCRIPTION AND SIZE	NO. REQD
ROLLER CONVEYER - 14" X 22'-8-1/2"	3
STEEL, FLAT - 1" X 4" X 9'-7"	6
STEEL, FLAT - 1" X 1" X 3-1/2"	4
STEEL, FLAT - 1/4" X 4" X 7"	4
STEEL, FLAT - 1/4" X 3-3/4" X 6"	32
STEEL, FLAT - 1/4" X 2-1/4" X 8"	4
STEEL, FLAT - 1/4" X 3-3/4" X 6-1/2"	4
STEEL, FLAT - 1/4" X 5" X 6"	4
STEEL, ROD - 5/8" DIA. X 1"	12
STEEL, ROD - 1/2" DIA. X 1"	36
STEEL, CHANNEL - 7" X 2-1/8" X 60"	2
STEEL, CHANNEL - 7" X 2-1/8" X 7'-9"	2
STEEL, CHANNEL - 8" X 2-1/4" X 9'-6"	2
BOLT, MACHINE - 5/8" DIA. X 3"	8
BOLT, MACHINE - 1/2" DIA. X 2"	4
NUT, HEX - 5/8" DIA.	18
NUT, HEX - 1/2" DIA.	4
WASHER, LOCK - 5/8" DIA.	18
WASHER, LOCK - 1/2" DIA.	4
COTTER PINS	22
STEEL STRAPPING, 2" X .050" -----	102' REQD
SEAL FOR 2" STRAPPING -----	6 REQD

KEY NUMBERS (SEE SPECIAL NOTE 2 ON PAGE 7)

- ① CONVEYER RISER ASSEMBLY A (4 REQD). SEE DETAIL ON PAGE 4. INSTALL OVER STAKE POCKETS.
- ② CONVEYER RISER ASSEMBLY B (2 REQD). SEE DETAIL ON PAGE 5. THE 1" X 1" X 3-1/2" STEEL BARS ARE REQUIRED ON THE REAR ASSEMBLY POSITIONED BEHIND THE WHEEL WELLS, BUT NOT REQUIRED ON THE ASSEMBLY POSITIONED BETWEEN THE WHEEL WELLS.
- ③ ROLLER CONVEYER, 22'-8-1/2" (3 REQD). SEE DETAILS ON PAGE 5. POSITION OVER 1/2" DIAMETER ROD ON "CONVEYER RISER ASSEMBLIES A AND B" MARKED ① AND ②.
- ④ FRONT RISER (2 REQD). SEE DETAIL ON PAGE 7. POSITION OVER THREADED 5/8" DIAMETER ROD ON "CONVEYER RISER ASSEMBLY A" MARKED ① AND SECURE W/2-5/8" DIAMETER NUTS AND LOCK WASHERS ON EACH SIDE.
- ⑤ REAR RISER (2 REQD). SEE DETAIL ON PAGE 7. POSITION OVER THREADED 5/8" DIAMETER ROD ON ONE (1) "CONVEYER RISER ASSEMBLY A" MARKED ① AND "CONVEYER RISER ASSEMBLY B" MARKED ② AND SECURE W/3-5/8" DIAMETER NUTS AND LOCK WASHERS ON EACH SIDE.
- ⑥ HEADER (2 REQD). SEE DETAIL ON PAGE 7. SECURE TO "FRONT AND REAR RISERS" MARKED ④ AND ⑤ W/4-5/8" DIAMETER BOLTS, NUTS AND LOCK WASHERS (2 EACH END). SEE SPECIAL NOTE 1 ON PAGE 7.
- ⑦ SIDE BLOCKING (4 REQD). SEE DETAIL ON PAGE 8. SECURE TO "HEADER" MARKED ⑥ W/1-1/2" DIAMETER BOLT, NUT AND LOCK WASHER. SEE SPECIAL NOTE 1 ON PAGE 7.
- ⑧ HOLD-DOWN STRAP, 2" X .050" X 34'-0" STEEL STRAPPING (3 REQD). INSTALL TO ENCIRCLE THE LOAD AND TRAILER.
- ⑨ SEAL FOR 2" STEEL STRAPPING (6 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL.
- ⑩ ANTI-CHAFING NEUTRAL BARRIER MATERIAL (AS REQD). PLACE UNDER STRAPS AT ALL POINTS OF CONTACT WITH CONTAINER.
- ⑪ EDGE PROTECTOR (AS REQD). PLACE UNDER STRAPS AT POINTS OF CONTACT WITH SHARP CORNERS.

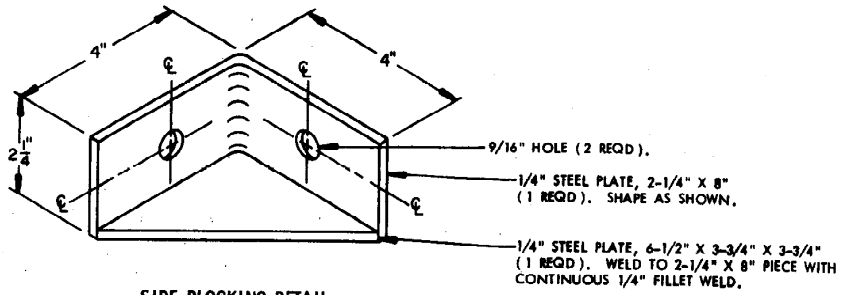
6-UNIT LOAD ON A LOW BED TRAILER



RISER AND HEADER DETAIL

SPECIAL NOTES:

1. TO ASSURE A TIGHT FIT OF THE HEADER AND SIDE BLOCKING (LOAD BEARING PIECES) AGAINST THE SKIDS OF THE CONTAINER, ADDITIONAL HOLES HAVE BEEN PROVIDED IN THE FRONT/REAR RISERS AND HEADERS SO THAT ADJUSTMENTS CAN BE MADE WHEN BOLTING THESE PIECES TOGETHER. IF MORE THAN 1/2" EXISTS BETWEEN SKIDS AND HEADERS, OR BETWEEN SKIDS AND SIDE BLOCKING, FILLER PIECES (PLYWOOD OR OTHER SUITABLE MATERIAL) WILL BE INSTALLED IN THE VOID AND SECURED WITH ANNEALED WIRE.
2. THE ISOMETRIC VIEW ON PAGE 6 SHOWS THE LOAD SECURED TO THE TRAILER WITH 2" STEEL STRAPPING. THE 1-1/4" STEEL STRAPS AND THE WEB TYPE CARGO STRAPS HAVE BEEN OMITTED FOR CLARITY PURPOSES. REFER TO PAGE 3 FOR GUIDANCE PERTAINING TO STEEL UNITIZING STRAPPING AND WEB STRAP TIEDOWNS.
3. ALL BOLTS WILL HAVE A HOLE DRILLED LATERALLY SO THAT A COTTER PIN CAN BE INSTALLED TO PREVENT LOOSENING OF THE NUT. COTTER PIN TO BE INSTALLED BETWEEN THE NUT AND THE END OF THE BOLT.
4. POSITION FRONT AND REAR RISER CHANNELS OVER THREADED BOLTS ON CONVEYER RISER ASSEMBLIES AND SECURE EACH WITH A 5/8" LOCK WASHER AND NUT. SEE "SPECIAL NOTE 3".
5. EDGE OF HEADER CHANNEL MUST PROVIDE FULL BEARING ON END OF CONTAINER SKIDS. TO COMPENSATE FOR POSSIBLE VARIATION IN HEIGHT OF COMPONENT ITEMS, A METAL SHIM (7" X 2-1/8" X THICKNESS REQD) DRILLED TO MATCH HOLES IN END OF HEADER CHANNEL, MAY BE PROVIDED BETWEEN THE HEADER CHANNELS AND THE RISER CHANNELS, IF REQUIRED. BOLTS WILL PASS THRU HOLES IN SHIMS TO PRECLUDE ANY DISPLACEMENT.



SIDE BLOCKING DETAIL
(4 REQD)