

LOADING AND BRACING (TL & LTL) IN VAN TRAILERS OF MK20 AND MODS (ROCKEYE II) AND CBU-78/B (GATOR) PACKED IN THE MK18 MOD 0 CRADLE

INDEX

ITEM	PAGE(S)
GENERAL NOTES AND MATERIAL SPECIFICATIONS	2
UNITIZATION, STACKING AND HANDLING PROCEDURES	3
29-UNIT LOAD IN A 48'-0" LONG BY 8'-2" WIDE VAN TRAILER	4,5
30-UNIT LOAD IN A 45'-0" LONG BY 7'-8" WIDE VAN TRAILER	6,7
32-UNIT LOAD IN A 40'-0" LONG BY 7'-8" WIDE VAN TRAILER	8,9
TYPICAL LTL (2-UNIT LOAD)	10-12
DETAILS	13,14

CAUTION: THE OUTLOADING PROCEDURES SHOWN HEREIN ARE ONLY APPLICABLE TO HIGHWAY MOVEMENTS, NOT TRAILER-ON-FLATCAR MOVEMENTS.

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GENERAL NOTES

(GENERAL NOTES CONTINUED)

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE FOR MK20 AND MODS (ROCKEYE II) AND CBU-78/B (GATOR) WHEN PACKED IN THE MK18 MOD 0 CRADLE. SUBSEQUENT REFERENCE TO CRADLE HEREIN MEANS THE MK18 MOD 0 CRADLE WITH CONTENTS.

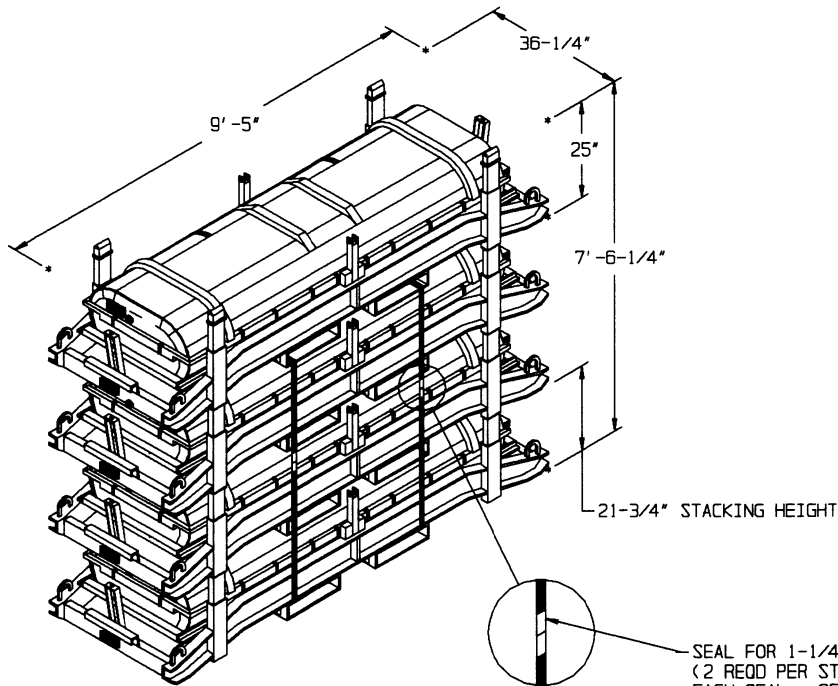
 CRADLE DIMENSIONS - - - 113" L X 36-1/4" W X 25" H
 CRADLE WEIGHT - - - - 1,455 LBS (APPROX)
 CRADLE CUBE - - - - - 59.3 CUBIC FEET (APPROX)
- C. THE OUTLOADING PROCEDURES DEPICTED WITHIN THIS DOCUMENT ARE APPLICABLE FOR SHIPMENTS IN CONVENTIONAL TYPE VAN TRAILERS AND APPLY TO TRAILERS HAVING WOOD, OR WOOD AND METAL, OR ALL METAL FLOORS. VAN TRAILERS WHICH ARE 48'-0" LONG BY 8'-2" WIDE (INSIDE DIMENSION) AND 45'-0" AND 40'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) HAVE BEEN SHOWN, HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE FOR TRAILERS WHICH ARE 89" THRU 99" IN WIDTH AND FOR TRAILERS OF OTHER LENGTHS FROM THE SHORTEST TO THE LONGEST AVAILABLE (REF: 24' TO 53'), AND FOR STRAIGHT TRUCK VANS. THE SPECIFIED BRACING IS ADEQUATE FOR LOADS WEIGHING UP TO AND INCLUDING THE MAXIMUM WEIGHTS PERMITTED BY LAW.
- D. SELECTION OF A VEHICLE TO BE USED TO TRANSPORT THE DESIGNATED ITEM MUST COMPLY WITH AR 55-355, CHAPTER 29, FOR EXPLOSIVES AND OTHER DANGEROUS ARTICLES, IN FULL.
- E. THE GROSS WEIGHT AND AXLE DISTRIBUTION OF WEIGHT FOR A LOAD WILL BE THE RESPONSIBILITY OFF THE CARRIER. THE CARRIER WILL ADVISE THE SHIPPER OF THE APPLICABLE LOADING REQUIREMENTS, AND THE SHIPPER WILL LOAD ACCORDINGLY. THE TOTAL WEIGHT OF THE LADING, OF THE DUNNAGE, OF THE TRACTOR, AND OF THE SEMITRAILER CARRYING THE LADING MUST NOT EXCEED THE MAXIMUM GROSS WEIGHT ALLOWED FOR THE STATE OR STATES THRU WHICH THE LOAD IS TO BE TRANSPORTED BY MOTOR CARRIER. LIKEWISE, THE GROSS WEIGHT ON A SINGLE OR TANDEM AXLE MUST NOT EXCEED THE MAXIMUM ALLOWABLE WEIGHT. IF THERE IS ANY DOUBT AS TO WHETHER THE TOTAL GROSS WEIGHT OR AXLE WEIGHT EXCEEDS THE MAXIMUM ALLOWED, WEIGHT SHOULD BE VERIFIED BY ACTUALLY WEIGHING THE LOADED VEHICLE.
- F. NOTICE: A SHIPMENT WILL BE POSITIONED IN THE TRAILER CONSISTENT WITH STATE WEIGHT LAWS. THE NUMBER OF LADING UNITS MAY BE ADJUSTED TO FIT THE SIZE OF THE TRAILER TO BE LOADED OR THE QUANTITY TO BE SHIPPED. COMBINATIONS OF THE OUTLOADING PROCEDURES SPECIFIED MAY BE USED, HOWEVER, THE APPROVED METHODS SHOWN MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING, AND STAYING OF THE DESIGNATED ITEMS.
- G. OTHER TYPES OF LADING ITEMS MAY BE LOADED INTO TRAILERS WHICH ARE PARTIALLY LOADED WITH PALLET UNITS OF COMPLETE ROUNDS, PROVIDING THE TOTAL LOAD IS COMPATIBLE, EXISTING DIRECTIVES ARE NOT VIOLATED, AND THE OTHER LADING ITEMS ARE BLOCKED AND BRACED TO EQUAL THE BLOCKING AND BRACING CRITERIA SPECIFIED HEREIN.
- H. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF ONE SEAL WITH TWO PAIR OF NOTCHES WILL BE USED TO SEAL THE JOINT WHEN A NOTCH-TYPE SEALER IS BEING USED. A MINIMUM OF TWO SEALS, BUTTED TOGETHER WITH TWO PAIR OF CRIMPS PER SEAL WILL BE USED TO SEAL THE JOINT WHEN A CRIMP-TYPE SEALER IS BEING USED. REFER TO THE "STRAP JOINT A" AND "STRAP JOINT B" DETAILS ON PAGE 13 FOR GUIDANCE.
- J. 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.

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MATERIAL SPECIFICATIONS

- LUMBER - - - - - : SEE TM 743-200-1 (DUNNAGE LUMBER) AND FED SPEC MM-L-751.
- NAILS - - - - - : FED SPEC FF-N-105; COMMON.
- STRAPPING, STEEL - - : ASTM D3953; FLAT STRAPPING, TYPE 1, HEAVY DUTY, FINISH A, B (GRADE 2), OR C.
- SEAL, STRAP - - - - : ASTM D3953; CLASS H, FINISH A, B (GRADE 2), OR C, DOUBLE NOTCH TYPE, STYLE I, II, OR IV.

- K. NOTICE: A STAGGERED NAILING PATTERN WILL BE USED WHEREVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES. ALSO, A STAGGERED NAILING PATTERN WILL BE USED WHEN DUNNAGE IS NAILED TO THE FLOOR OF THE TRANSPORTING VEHICLE, OR WHEN LAMINATING DUNNAGE. THE NAILING PATTERN WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL DOES NOT PENETRATE INTO OR NEAR A CRACK BETWEEN FLOOR BOARDS. 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 THE PIECE ONTO OR RIGHT BESIDE A NAIL IN A LOWER PIECE.
- L. POWER DRIVEN STAPLES MAY BE USED AS ALTERNATIVE FASTENERS FOR NAILS WHEN CONSTRUCTING DUNNAGE ASSEMBLIES WHICH ARE TO BE USED IN THE DELINEATED TRAILER LOADS SHOWN THROUGHOUT THIS DRAWING. THE STAPLES TO BE USED MUST BE EQUAL IN LENGTH TO THE SPECIFIED NAIL SIZE AND MUST BE SUBSTITUTED ON A ONE STAPLE FOR ONE NAIL BASIS. STAPLES WHICH ARE 2-1/2" OR LESS IN LENGTH SHOULD BE IN ACCORDANCE WITH FEDERAL SPECIFICATION FF-N-105 AS NEARLY AS PRACTICABLE. STAPLES WHICH ARE LONGER THAN 2-1/2" WILL BE A COMMERCIAL GRADE, OF A QUALITY EQUIVALENT TO THOSE MANUFACTURED BY SENCO PRODUCTS INCORPORATED. NOTE: STAPLES WILL NOT BE SUBSTITUTED FOR NAILS IN ANY LOAD RESTRAINING FLOOR DUNNAGE APPLICATION.
- M. PORTIONS OF THE TRAILERS, SUCH AS SIDEWALLS, ENDWALLS, AND ROOFS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.
- N. IF THE SPACE AT THE REAR OF THE LOAD, BETWEEN THE CRADLES AND THE REAR DOOR MEASURES LESS THAN 9", USE THE "REAR BLOCKING ASSEMBLY B" AS DEPICTED ON PAGE 14. IF THE VOID AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE "REAR BLOCKING ASSEMBLY A", AS SHOWN ON PAGE 14.
- O. CAUTION: WHEN POWER OR PNEUMATIC NAILERS ARE BEING USED IN THE APPLICATION OF NAILED FLOORLINE BLOCKING OR BRACING, CRADLES BEING LOADED INTO THE CONVEYANCE MUST BE POSITIONED TO ALLOW A CLEAR PATH OF EXIT FOR THE OPERATOR AT ALL TIMES, SHOULD AN EMERGENCY EXIT BECOME NECESSARY.
- P. CONVERSION TO METRIC EQUIVALENTS: DIMENSIONS WITHIN THIS DOCUMENT ARE EXPRESSED IN INCHES, AND WEIGHTS ARE EXPRESSED IN POUNDS. WHEN NECESSARY, THE METRIC EQUIVALENTS MAY BE COMPUTED ON THE BASIS OF ONE INCH EQUALS 25.4 MM AND ONE POUND EQUALS 0.454 KG.



MK18 MOD 0 CRADLE STACK DETAIL

UNITIZING AND HANDLING GUIDANCE

1. STACKING CRADLES FOR UNITIZING.
 - A. AN UPPER CRADLE SHOULD BE PLACED AS CLOSE AS POSSIBLY IN VERTICAL ALIGNMENT WITH THE NEXT LOWER CRADLE.
 - B. POSITION THE AFT END OF AN UPPER CRADLE ABOVE THE FORE END OF THE NEXT LOWER CRADLE.
 - C. MAKE CERTAIN THE SUPPORT POSTS ARE PROPERLY ENGAGED.
2. INSTALLATION OF 1-1/4" X .035" OR .031" UNITIZING STRAPPING.
 - A. EACH OF THE TWO UNITIZING STRAPS SHOULD BE POSITIONED THRU THE FORK POCKETS AS SHOWN, AND SO THAT STRAPPING LAYS FLAT AND STRAIGHT WITH THE SURFACES OF THE CRADLES; I.E., VERTICAL ALONG SIDES AND STRAIGHT ACROSS THRU THE FORK OPENINGS.
 - B. STRAPPING WILL BE FIRMLY TENSIONED, AND EACH END-OVER-END LAP JOINT WILL BE SEALED WITH TWO DOUBLE CRIMPED STRAP SEALS AS SHOWN. THE LAP JOINTS WILL BE MADE ALONG THE SIDE OF THE STACK. DURING STRAP TENSIONING, CARE SHOULD BE EXERCISED TO ENSURE THAT THE CRADLES ARE NOT DAMAGED. EXCESS STRAPPING (STRAP ENDS) SHOULD BE CUT OFF OR BROKEN OFF NEAR THE JOINT SEALS.
3. CRADLE OR CRADLE STACK HANDLING.

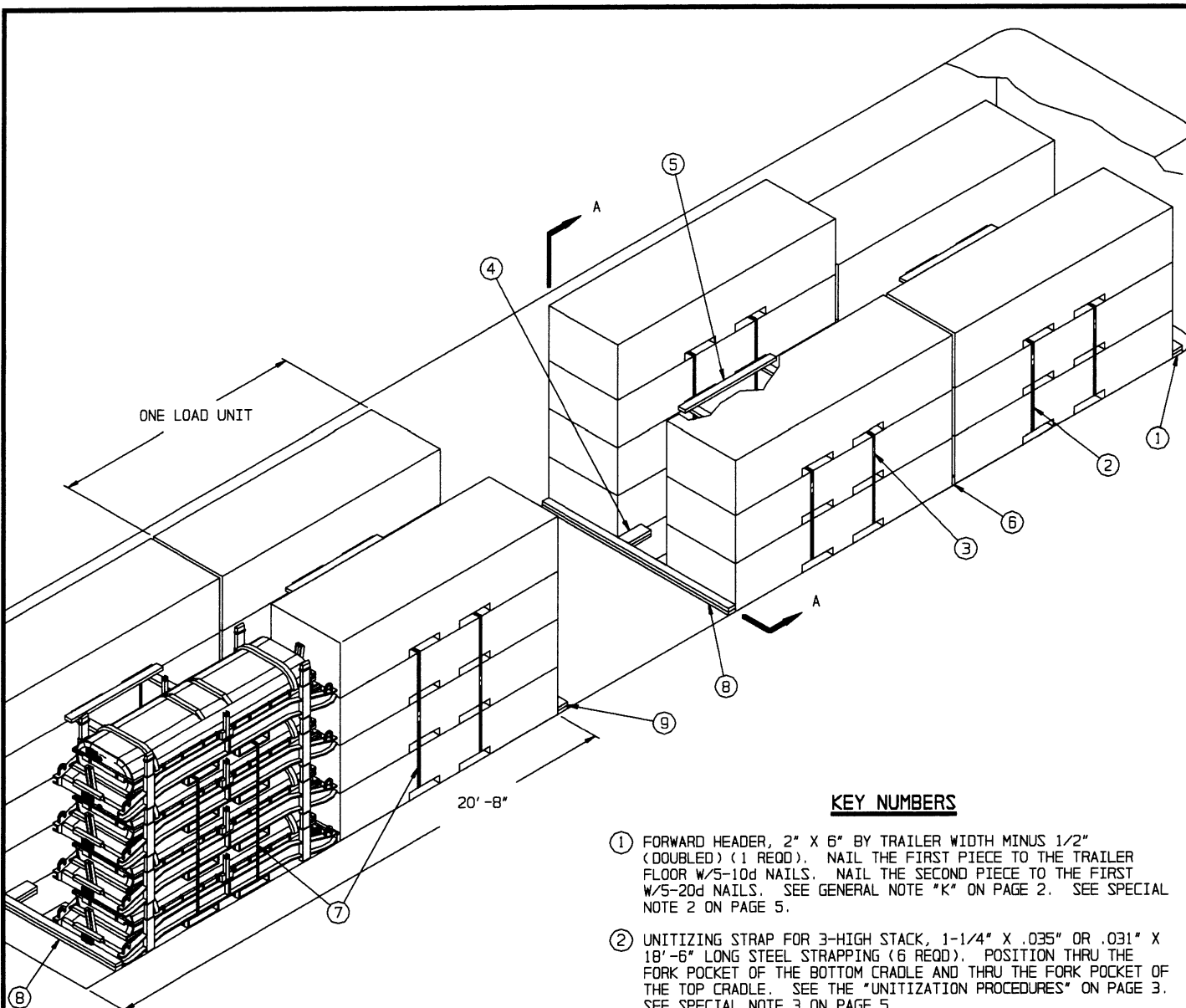
NOTES: (1) APPROVED MATERIAL HANDLING EQUIPMENT (FORKLIFT TRUCKS, CRANES, HAND TRUCKS, DOLLIES, ROLLER ASSEMBLIES, SLINGS, SPREADER BARS, ETC.) IS SPECIFIED ELSEWHERE.

(2) PRECAUTIONARY HANDLING TECHNIQUES NORMALLY EMPLOYED OR AS SPECIFIED FOR THE TYPE OF COMMODITY INVOLVED WILL BE OBSERVED.

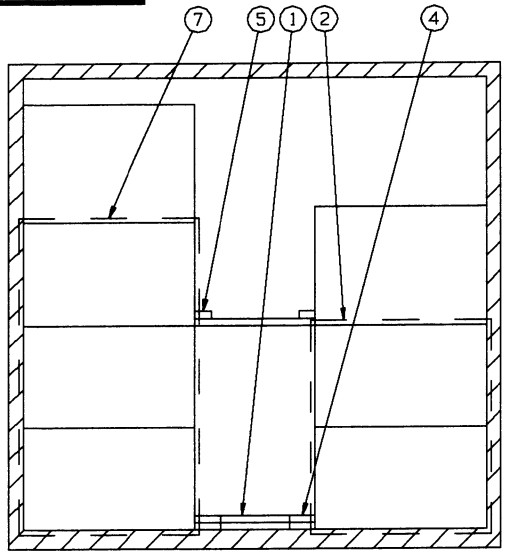
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(UNITIZING AND HANDLING GUIDANCE CONTINUED)

- A. ONLY APPROVED AND APPROPRIATELY SIZED MATERIALS HANDLING EQUIPMENT WILL BE USED FOR HANDLING THE DEPICTED CRADLES.
- B. IF HANDLING IS ACCOMPLISHED WITH A FORKLIFT TRUCK, THE CRADLES SHOULD BE HANDLED FROM A SIDE POSITION AS MUCH AS POSSIBLE. CARE MUST BE EXERCISED WHEN INSERTING FORKS UNDER A CRADLE, TO PREVENT DAMAGE TO THE CRADLE BY THE FORK TINES OR THE FORKLIFT PACKAGE GUARD. FOR END HANDLING MOVEMENTS, SUCH AS WILL BE NECESSARY DURING TRAILER LOADING, A UNITIZED STACK MAY BE HANDLED BY INSERTING THE FORK OF A FORKLIFT TRUCK UNDER THE FRAME OF AN UPPER CRADLE. IF ONE CRADLE IS HANDLED BY SLINGING, THE SLING MAY BE ATTACHED TO THE LIFTING POINTS ON THE CRADLE. HOWEVER, IF A TWO, THREE, OR FOUR-HIGH STACK IS HANDLED BY SLINGING, DO NOT ATTACH THE SLING TO THE LIFTING POINTS ON A CRADLE. THE SLING USED MUST BE OF SUCH A DESIGN THAT THE LIFTING IS DONE ON THE BOTTOM OF THE LOWEST CRADLE.
- C. WHEN LOADING A CRADLE OR CRADLE STACK, THE CRADLES OR STACK WILL BE PARTIALLY PLACED INTO THE END OF THE TRAILER BY HANDLING WITH A FORKLIFT FROM THE SIDE. THE FORKLIFT THEN MUST INSERT ITS TINES FROM THE END OF THE CRADLE OR STACK, LIFT THE END SLIGHTLY, THEN PROCEED TO PUSH THE CRADLE OR STACK INTO ITS FINAL POSITION WITHIN THE TRAILER. CARE MUST BE EXERCISED TO AVOID DAMAGE TO THE CRADLE ENDS, ETC., DURING PUSHING OPERATIONS.
- D. WHEN UNLOADING A CRADLE OR CRADLE STACK FROM THE TRAILER, THE FORKLIFT TINES WILL BE INSERTED UNDER THE LOWER CRADLE, THE FORKLIFT WILL THEN ELEVATE THE END SLIGHTLY ABOVE THE FLOOR, AND BEGIN DRAGGING THE CRADLE OR STACK FROM THE TRAILER AFTER ATTACHING A CHAIN OR WEB STRAP FROM A LOWER CRADLE LIFT POINT AROUND THE FORKLIFT MAST TO A LOWER LIFT POINT ON THE OPPOSITE SIDE OF THE CRADLE.



ISOMETRIC VIEW



SECTION A-A

KEY NUMBERS

- ① FORWARD HEADER, 2" X 6" BY TRAILER WIDTH MINUS 1/2" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/5-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/5-20d NAILS. SEE GENERAL NOTE "K" ON PAGE 2. SEE SPECIAL NOTE 2 ON PAGE 5.
- ② UNITIZING STRAP FOR 3-HIGH STACK, 1-1/4" X .035" OR .031" X 18'-6" LONG STEEL STRAPPING (6 REQD). POSITION THRU THE FORK POCKET OF THE BOTTOM CRADLE AND THRU THE FORK POCKET OF THE TOP CRADLE. SEE THE "UNITIZATION PROCEDURES" ON PAGE 3. SEE SPECIAL NOTE 3 ON PAGE 5.
- ③ SEAL FOR 1-1/4" STEEL STRAPPING (32 REQD). CRIMP EACH SEAL WITH TWO PAIR OF CRIMPS. SEE THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 13. SEE GENERAL NOTE "H" ON PAGE 2.
- ④ SIDE BLOCKING, 2" X 6" X 12" (DOUBLED) (16 REQD). POSITION NEAR END OF CRADLE AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTE 4 ON PAGE 5.
- ⑤ ANTI-SWAY BRACE (4 REQD). SEE THE DETAIL ON PAGE 13. INSTALL BETWEEN LATERALLY ADJACENT CRADLES IN THE UPPER LAYER.
- ⑥ SEPARATOR PIECE, 2" X 4" BY TRAILER WIDTH MINUS 1/2" (2 REQD). POSITION ON EDGE BETWEEN LONGITUDINALLY ADJACENT LOAD UNITS.
- ⑦ UNITIZING STRAP FOR 4-HIGH STACK, 1-1/4" X .035" OR .031" X 22'-0" LONG STEEL STRAPPING (10 REQD). POSITION THRU THE FORK POCKET OF THE BOTTOM CRADLE AND THRU THE FORK POCKET OF THE TOP CRADLE. SEE THE "UNITIZATION PROCEDURES" ON PAGE 3.
- ⑧ REAR HEADER, 2" X 4" BY TRAILER WIDTH MINUS 1/2" (DOUBLED) (2 REQD). POSITION AGAINST REAR OF CRADLE AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/8-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTE 6 ON PAGE 5.
- ⑨ INTERMEDIATE HEADER, 2" X 6" BY TRAILER WIDTH MINUS 1/2" (DOUBLED) (1 REQD). POSITION AGAINST FORWARD END OF CRADLE AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/5-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/5-20d NAILS.

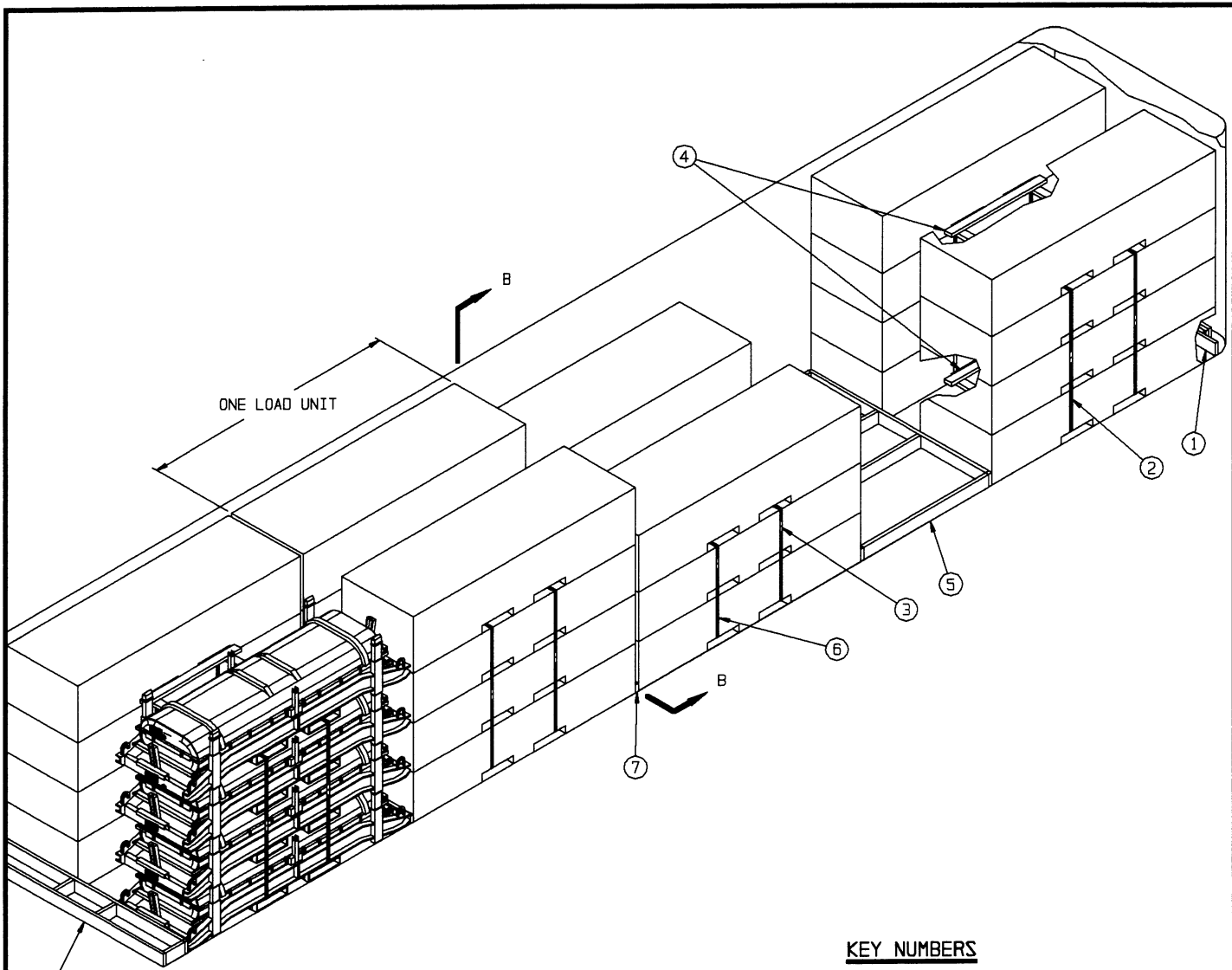
SPECIAL NOTES:

1. A 29-UNIT LOAD IS SHOWN IN A 48'-0" LONG BY 8'-2" WIDE (INSIDE DIMENSION) VAN TRAILER. TRAILERS OF OTHER LENGTHS AND WIDTHS MAY BE USED.
2. THE FORWARD HEADER, PIECE MARKED ①, IS FOR USE IN TRAILERS HAVING ROUNDED FRONT CORNERS AND SHOULD BE POSITIONED FAR ENOUGH FROM THE TRAILER FRONT WALL TO AVOID THE ROUNDED CORNER PORTION OF THE FRONT WALL. IF DESIRED, THE FORWARD BLOCKING ASSEMBLY, AS DETAILED ON PAGE 13 MAY MAYBE USED IN LIEU OF THE NAILED HEADER. IF THE TRAILER HAS A SQUARE FRONT WALL, A 2" X 6" BY TRAILER WIDTH MINUS 1/2" PIECE POSITIONED ON EDGE MAY BE USED.
3. THE CRADLES MUST BE UNITIZED PRIOR TO BEING MOVED INTO THE TRAILER. THE STACKS WILL BE FORMED AT THE REAR OF THE TRAILER BY POSITIONING THE CRADLES WITH ONE END RESTING JUST INSIDE THE REAR OF THE TRAILER. ONE CRADLE WILL BE POSITIONED ON TOP OF ANOTHER UNTIL THE DESIRED STACK HEIGHT IS REACHED. THE UNITIZING STRAPS WILL BE INSTALLED AND THE STACK CAN THEN BE PARTIALLY LIFTED FROM THE REAR AND PUSHED INTO THE TRAILER. USE CAUTION SO AS NOT TO DAMAGE THE CRADLES.
4. ANTI-SWAY BRACES, PIECES MARKED ⑤, MAY ALSO BE USED BETWEEN THE CRADLES IN THE BOTTOM LAYER, IF DESIRED, IN LIEU OF USING THE NAILED SIDE BLOCKING, PIECES MARKED ④.
5. IN LIEU OF USING THE THE NAILED HEADERS SHOWN AS THE FORWARD PIECE MARKED ③ AND PIECE MARKED ②, A SPACER ASSEMBLY MAY BE USED. SEE THE DETAIL ON PAGE 14, AND PIECE MARKED ⑥ ON PAGE 6 FOR A TYPICAL INSTALLATION. NOTE THAT A STRUT BRACING PIECE MUST BE INSTALLED AT THE CENTER OF THE STRUT LENGTH.
6. IN LIEU OF THE REAR HEADER, PIECE MARKED ⑧, AT THE REAR OF THE LOAD, A "REAR BLOCKING ASSEMBLY A" OR A "REAR BLOCKING ASSEMBLY B", AS APPLICABLE, MAY BE USED. SEE THE DETAILS ON PAGE 14.
7. THE DEPICTED 29-UNIT LOAD CAN BE TRANSPORTED PROVIDING THE TRACTOR "DRIVE" AXLES DO NOT WEIGH MORE THAN 16,450 POUNDS AND THE TRAILER AXLES DO NOT WEIGH MORE THAN 9,550 POUNDS. A 30-UNIT LOAD CANNOT BE SHIPPED WITHOUT EXCEEDING THE AXLE WEIGHT LIMITATIONS.
8. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. IF OMITTING JUST ONE CRADLE, OMIT IT FROM EITHER THE FIRST OR SECOND LOAD UNIT. INSTALL THE ANTI-SWAY BRACE, PIECE MARKED ⑤, BETWEEN THE THE TOP LAYER OF LATERALLY ADJACENT CRADLES. ADJUST THE LENGTH OF THE UNITIZING STRAPS, AS NECESSARY. NOTE THAT A STRAP FOR A 2-HIGH STACK WILL BE 15'-0" LONG.
9. THE RECOMMENDED LOCATION OF THE SIX AND SEVEN-CRADLE LOAD UNITS AND THE PLACEMENT OF THE INTERMEDIATE HEADER, PIECE MARKED ⑨, ARE NOT MANDATORY BUT ARE FURNISHED AS GUIDANCE ONLY. LIKEWISE, THE MAXIMUM WEIGHTS GIVEN FOR TRACTOR "DRIVE" AXLES AND TRAILER AXLES ARE FOR GUIDANCE.

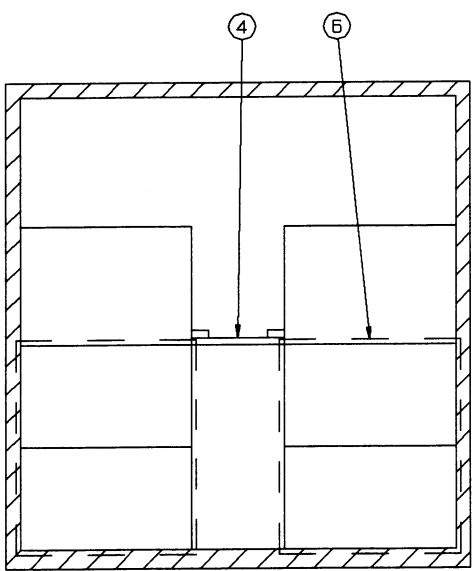
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	147	98
2" X 6"	65	65
NAILS	NO. REQD	POUNDS
10d (3")	218	3-1/2
20d (4")	10	1/2
STEEL STRAPPING, 1-1/4" -- 331' REQD ----- 48 LBS		
SEAL FOR 1-1/4" STRAPPING -- 32 REQD ----- 1-1/2 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CRADLE	29	42,195 LBS
DUNNAGE		380 LBS
<hr/>		
TOTAL WEIGHT		42,575 LBS (APPROX)



ISOMETRIC VIEW



SECTION B-B

FORWARD LOAD UNITS NOT SHOWN FOR CLARITY

KEY NUMBERS

- ① FORWARD BLOCKING ASSEMBLY (1 REOD). SEE THE DETAIL ON PAGE 13. SEE SPECIAL NOTE 2 ON PAGE 7. SEE GENERAL NOTE "K" ON PAGE 2.
- ② UNITIZING STRAP FOR 4-HIGH STACK, 1-1/4" X .035" OR .031" X 22'-0" LONG STEEL STRAPPING (12 REOD). POSITION THRU THE FORK POCKET OF THE BOTTOM CRADLE AND THRU THE FORK POCKET OF THE TOP CRADLE. SEE THE "UNITIZATION PROCEDURES" ON PAGE 3. SEE SPECIAL NOTE 3 ON PAGE 7.
- ③ SEAL FOR 1-1/4" STEEL STRAPPING (32 REOD, 2 PER STRAP). CRIMP EACH SEAL WITH TWO PAIR OF CRIMPS. SEE THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 13. SEE GENERAL NOTE "H" ON PAGE 2.
- ④ ANTI-SWAY BRACE (8 REOD). SEE THE DETAIL ON PAGE 13. INSTALL BETWEEN LATERALLY ADJACENT CRADLES IN THE BOTTOM LAYER AND IN THE UPPER LAYER. SEE SPECIAL NOTE 4 ON PAGE 7.
- ⑤ SPACER ASSEMBLY, 60" LONG (1 REOD). SEE THE DETAIL ON PAGE 14. SEE SPECIAL NOTE 5 ON PAGE 7.
- ⑥ UNITIZING STRAP FOR 3-HIGH STACK, 1-1/4" X .035" OR .031" X 18'-6" LONG STEEL STRAPPING (4 REOD). POSITION THRU THE FORK POCKET OF THE BOTTOM CRADLE AND THRU THE FORK POCKET OF THE TOP CRADLE. SEE THE "UNITIZATION PROCEDURES" ON PAGE 3.
- ⑦ SEPARATOR PIECE, 2" X 4" BY TRAILER WIDTH MINUS 1/2" (2 REOD). POSITION ON EDGE BETWEEN LONGITUDINALLY ADJACENT LOAD UNITS.
- ⑧ REAR BLOCKING ASSEMBLY A (1 REOD). SEE THE DETAIL ON PAGE 14. SEE SPECIAL NOTE 6 ON PAGE 7.

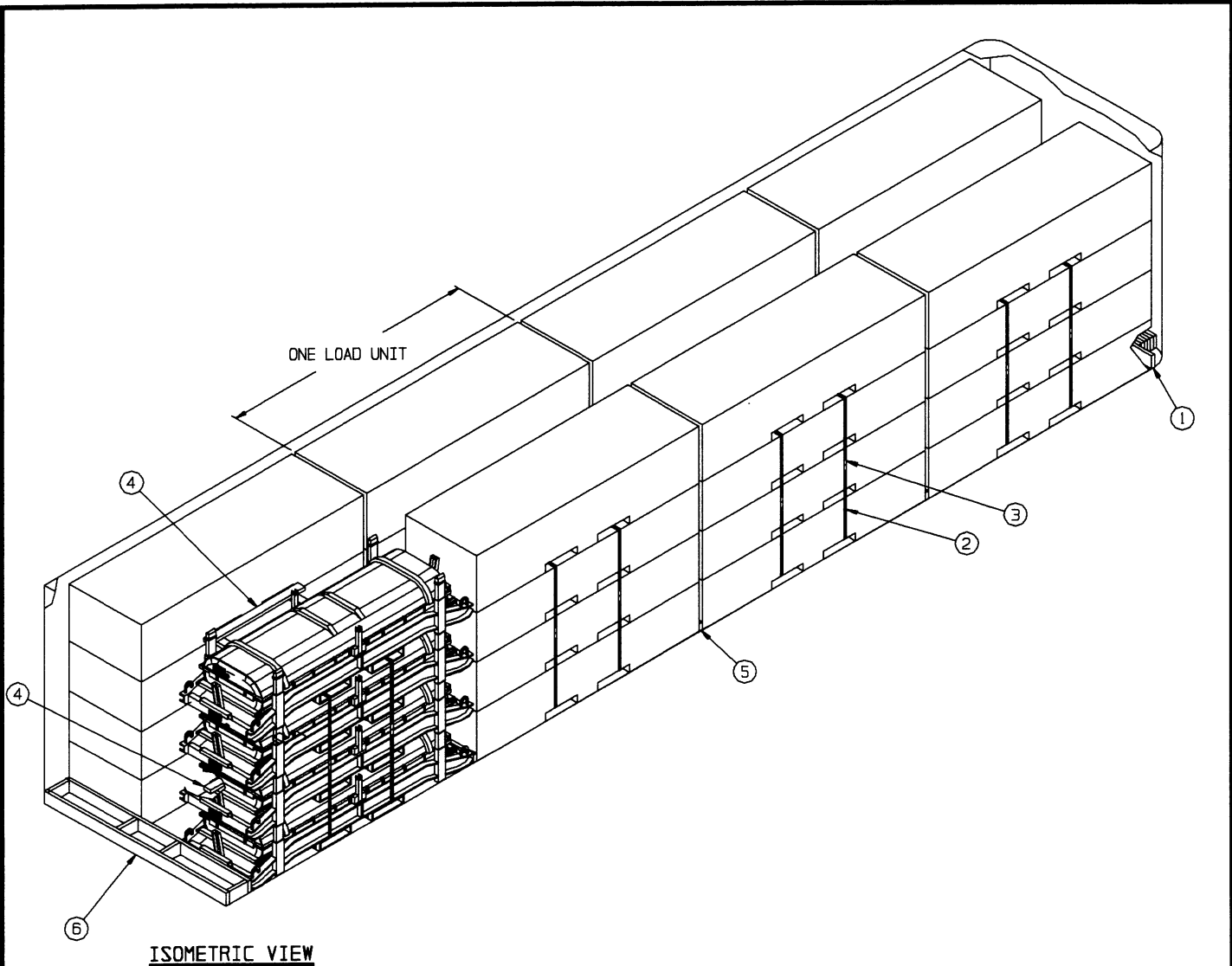
SPECIAL NOTES:

1. A 30-UNIT LOAD IS SHOWN IN A 45'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) TRAILER. TRAILERS OF OTHER LENGTHS AND WIDTHS MAY BE USED. SEE SPECIAL NOTES 7 AND 8.
2. THE FORWARD BLOCKING ASSEMBLY, PIECE MARKED ①, IS FOR USE IN TRAILERS HAVING ROUNDED FRONT CORNERS. FOR A SHIPMENT OF 30 CRADLES, IF THE TRAILER HAS A SQUARE FRONT WALL, A 2" X 6" BY TRAILER WIDTH MINUS 1/2" PIECE POSITIONED ON EDGE MAY BE USED. IF 31 CRADLES ARE TO BE LOADED, THE FORWARD BLOCKING ASSEMBLY MUST BE USED IN ORDER TO POSITION THE LOAD REARWARD FOR PROPER WEIGHT DISTRIBUTION.
3. THE CRADLES MUST BE UNITIZED PRIOR TO BEING MOVED INTO THE TRAILER. THE STACKS WILL BE FORMED AT THE REAR OF THE TRAILER BY POSITIONING THE CRADLES WITH ONE END RESTING JUST INSIDE THE REAR OF THE TRAILER. ONE CRADLE WILL BE POSITIONED ON TOP OF ANOTHER UNTIL THE DESIRED STACK HEIGHT IS REACHED. THE UNITIZING STRAPS WILL BE INSTALLED AND THE STACK CAN THEN BE PARTIALLY LIFTED FROM THE REAR AND PUSHED INTO THE TRAILER. USE CAUTION SO AS NOT TO DAMAGE THE CRADLES.
4. NAILED SIDE BLOCKING MAY BE USED BETWEEN THE CRADLES IN THE BOTTOM LAYER, IF DESIRED, IN LIEU OF USING THE ANTI-SWAY BRACES, PIECES MARKED ④.
5. IN LIEU OF USING THE SPACER ASSEMBLY, PIECE MARKED ⑤, NAILED HEADERS MAY BE USED. AT THE REAR OF THE FIRST LOAD UNIT, INSTALL A PIECE MARKED ⑥ AS SHOWN ON PAGE 4. AT THE FRONT OF THE SECOND LOAD UNIT, REFERENCE 60" FROM THE FIRST LOAD UNIT, INSTALL A PIECE MARKED ⑥ AS SHOWN ON PAGE 4.
6. IN LIEU OF INSTALLING THE REAR BLOCKING ASSEMBLY A, PIECE MARKED ③, AT THE REAR OF THE LOAD, A NAILED HEADER MAY BE USED, PROVIDED THE TRAILER IS NOT EQUIPPED WITH A THRESHOLD PLATE WHICH WOULD PREVENT NAILING. SEE PIECE MARKED ③ ON PAGE 4 FOR GUIDANCE.
7. THE LOCATION OF THE 6-CRADLE LOAD UNIT AND THE LONGITUDINAL PLACEMENT OF THE SPACER ASSEMBLY, PIECE MARKED ⑤, ARE BASED ON THE USE OF A 45'-0" LONG TRAILER OF THE "WESTERN" TYPE, WHICH HAS THE REAR TANDEM LOCATED AT THE EXTREME REAR OF THE TRAILER. THE 30-UNIT LOAD REQUIRES A VEHICLE WITH TRACTOR "DRIVE" AXLES WHICH WEIGH NO MORE THAN 15,000 POUNDS AND WITH TRAILER AXLES WHICH WEIGH NO MORE THAN 9,000 POUNDS. ONE CRADLE MAY BE ADDED IN THE SECOND LOAD UNIT IF THE TRACTOR "DRIVE" AXLES DO NOT WEIGH MORE THAN APPROXIMATELY 14,200 POUNDS AND THE TRAILER AXLES WEIGH NO MORE THAN APPROXIMATELY 8,300 POUNDS. IF ADDING A CRADLE, REPLACE THE UNITIZING STRAPS, PIECES MARKED ②, WITH TWO PIECES MARKED ②. NOTE THAT THE FORWARD BLOCKING ASSEMBLY, PIECE MARKED ①, MUST BE USED REGARDLESS IF THE TRAILER TO BE LOADED HAS A SQUARE FRONT OR NOT, IN ORDER TO POSITION THE LOAD REARWARD FOR PROPER WEIGHT DISTRIBUTION. IT IS RECOMMENDED THAT THE EMPTY TRAILER EQUIPMENT BE WEIGHED PRIOR TO LOADING, AND THAT THE LOADED TRAILER BE WEIGHED TO ENSURE THAT MAXIMUM AXLE LOADS ARE NOT EXCEEDED.
8. IF A TRAILER OTHER THAN A "WESTERN" TYPE IS FURNISHED FOR LOADING, THE LOADING PATTERN MUST BE CHANGED. THE 6-CRADLE LOAD UNIT MUST BE POSITIONED AT THE FRONT OF THE LOAD AND THE SPACER ASSEMBLY, PIECE MARKED ⑤, MUST BE POSITIONED BETWEEN THE SECOND AND THIRD LOAD UNITS. FOR A 30-UNIT LOAD, THE TRACTOR "DRIVE" AXLES MUST NOT WEIGH MORE THAN 15,700 POUNDS IF THE FORWARD BLOCKING ASSEMBLY IS USED OR 15,400 POUNDS IF IT IS NOT. THE TRAILER AXLE WEIGHTS MUST NOT BE MORE THAN 8,250 AND 8,550 POUNDS, RESPECTIVELY. FOR A LOAD OF 31 CRADLES, THE "DRIVE" AXLES MUST NOT EXCEED 14,350 OR 14,050 POUNDS FOR LOADS WITH OR WITHOUT THE FORWARD BLOCKING ASSEMBLY, RESPECTIVELY. THE TRAILER AXLE WEIGHTS MUST NOT EXCEED 8,150 OR 8,550 POUNDS, RESPECTIVELY.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" x 6"	7	4
2" X 4"	122	82
2" X 6"	80	80
NAILS	NO. REQD	POUNDS
6d (2")	7	NIL
10d (3")	165	2-3/4
STEEL STRAPPING, 1-1/4" - - 338' REQD - - - 49 LBS		
SEAL FOR 1-1/4" STRAPPING - - 32 REQD - - - 1-1/2 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CRADLE - - - - -	30 - - - - -	43,650 LBS
DUNNAGE - - - - -	- - - - -	386 LBS
<hr/>		
TOTAL WEIGHT - - - - -		44,036 LBS (APPROX)



ISOMETRIC VIEW

KEY NUMBERS

- ① FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 13. SEE SPECIAL NOTE 2 ON PAGE 9. SEE GENERAL NOTE "K" ON PAGE 2.
- ② UNITIZING STRAP FOR 4-HIGH STACK, 1-1/4" X .035" OR .031" X 22'-0" LONG STEEL STRAPPING (16 REQD). POSITION THRU THE FORK POCKET OF THE BOTTOM CRADLE AND THRU THE FORK POCKET OF THE TOP CRADLE. SEE THE "UNITIZATION PROCEDURES" ON PAGE 3. SEE SPECIAL NOTE 3 ON PAGE 9.
- ③ SEAL FOR 1-1/4" STEEL STRAPPING (32 REQD, 2 PER STRAP). CRIMP EACH SEAL WITH TWO PAIR OF CRIMPS. SEE THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 13. SEE GENERAL NOTE "H" ON PAGE 2.
- ④ ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 13. INSTALL BETWEEN LATERALLY ADJACENT CRADLES IN THE BOTTOM LAYER AND IN THE UPPER LAYER.
- ⑤ SEPARATOR PIECE, 2" X 4" BY TRAILER WIDTH MINUS 1/2" (3 REQD). POSITION ON EDGE BETWEEN LONGITUDINALLY ADJACENT LOAD UNITS.
- ⑥ REAR BLOCKING ASSEMBLY A (1 REQD). SEE THE DETAIL ON PAGE 14. SEE SPECIAL NOTE 5 ON PAGE 9.

SPECIAL NOTES:

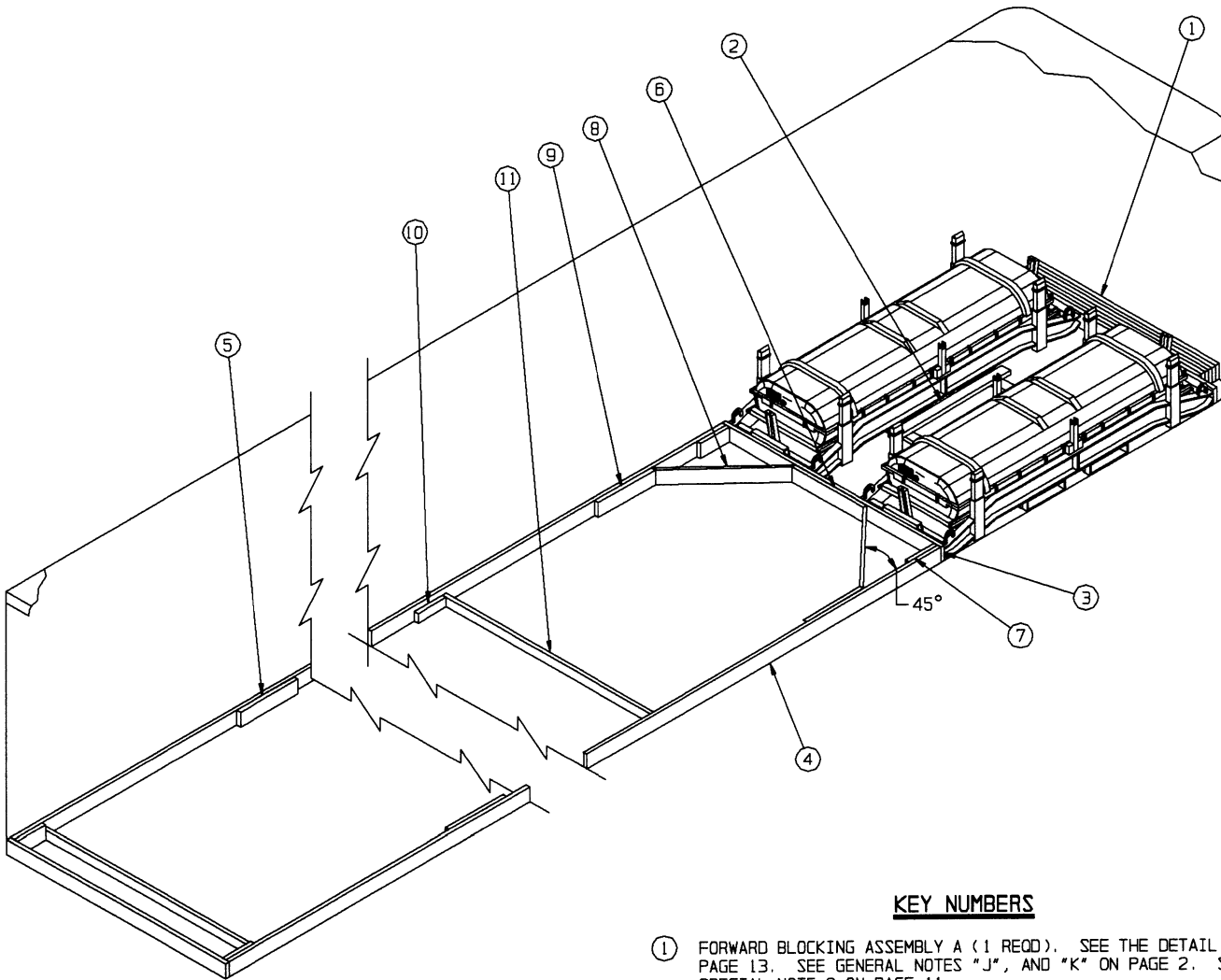
1. A 32-UNIT LOAD IS SHOWN IN A 40'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) TRAILER. TRAILERS OF OTHER LENGTHS AND WIDTHS MAY BE USED.
2. THE FORWARD BLOCKING ASSEMBLY, PIECE MARKED ①, IS FOR USE IN TRAILERS HAVING ROUNDED FRONT CORNERS. IF THE TRAILER HAS A SQUARE FRONT WALL, A 2" X 6" BY TRAILER WIDTH MINUS 1/2" PIECE POSITIONED ON EDGE MAY BE USED.
3. THE CRADLES MUST BE UNITIZED PRIOR TO BEING MOVED INTO THE TRAILER. THE STACKS WILL BE FORMED AT THE REAR OF THE TRAILER BY POSITIONING THE CRADLES WITH ONE END RESTING JUST INSIDE THE REAR OF THE TRAILER. ONE CRADLE WILL BE POSITIONED ON TOP OF ANOTHER UNTIL THE DESIRED STACK HEIGHT IS REACHED. THE UNITIZING STRAPS WILL BE INSTALLED AND THE STACK CAN THEN BE PARTIALLY LIFTED FROM THE REAR AND PUSHED INTO THE TRAILER. USE CAUTION SO AS NOT TO DAMAGE THE CRADLES.
4. NAILED SIDE BLOCKING MAY BE USED BETWEEN THE CRADLES IN THE BOTTOM LAYER, IF DESIRED, IN LIEU OF USING THE ANTI-SWAY BRACES, PIECES MARKED ④.
5. IN LIEU OF INSTALLING THE REAR BLOCKING ASSEMBLY A, PIECE MARKED ⑥, AT THE REAR OF THE LOAD, A NAILED HEADER MAY BE USED. SEE PIECE MARKED ⑧ ON PAGE 4 FOR GUIDANCE.
6. THE 32-UNIT LOAD IN A "WESTERN" TYPE TRAILER, WHICH HAS THE REAR TANDEMS AT THE EXTREME REAR OF THE TRAILER, REQUIRES A VEHICLE WITH TRACTOR "DRIVE" AXLES WHICH WEIGH NO MORE THAN 11,350 POUNDS IF A FORWARD BLOCKING ASSEMBLY IS USED, OR 10,750 POUNDS IF A 2" X 6" ON EDGE PIECE IS USED. FOR A TRAILER OTHER THAN A "WESTERN" TYPE, 32 CRADLES CANNOT BE LOADED WHEN THE FORWARD BLOCKING ASSEMBLY IS USED IF THE TRAILER WEIGHS MORE THAN 7,300 POUNDS. IF THE FORWARD BLOCKING ASSEMBLY IS NOT REQUIRED, 32 UNITS CAN BE LOADED IF THE TRAILER DOES NOT WEIGH MORE THAN 7,850 POUNDS. IT IS RECOMMENDED THAT THE EMPTY TRAILER EQUIPMENT BE WEIGHED PRIOR TO LOADING, AND THAT THE LOADED TRAILER BE WEIGHED TO ENSURE THAT MAXIMUM AXLE LOADS ARE NOT EXCEEDED.
7. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. ONE CRADLE CAN BE OMITTED, PREFERABLY FROM THE FRONT PORTION OF THE LOAD IN A "WESTERN" TYPE TRAILER OR FROM THE REAR PORTION IN A TRAILER OTHER THAN A "WESTERN" TYPE. INSTALL THE ANTI-SWAY BRACE, PIECE MARKED ④, BETWEEN THE NEXT LOWER LAYER OF CRADLES IN THE STACK. IF TWO CRADLES ARE TO BE OMITTED, ALSO OMIT THE LATERALLY ADJACENT CRADLE. ADJUST THE LENGTH OF THE STRAPS, AS NECESSARY. NOTE THAT A STRAP FOR A 3-HIGH STACK WILL BE 18'-6" LONG.
8. THE MAXIMUM WEIGHTS GIVEN FOR TRACTOR "DRIVE" AXLES AND TRAILER AXLES FOR DIFFERENT TYPE TRAILERS WITH OR WITHOUT THE USE OF THE FORWARD BLOCKING ASSEMBLY ARE NOT MANDATORY AND ARE FOR GUIDANCE ONLY.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" x 6"	7	4
2" X 4"	129	86
2" X 6"	49	49
NAILS	NO. REQD	POUNDS
6d (2")	7	NIL
10d (3")	141	2-1/4
STEEL STRAPPING, 1-1/4" - - 352' REQD - - - 51 LBS		
SEAL FOR 1-1/4" STRAPPING - - 32 REQD - - - 1-1/2 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CRADLE - - - - -	32 - - - - -	46,560 LBS
DUNNAGE - - - - -	- - - - -	333 LBS
TOTAL WEIGHT - - - - -		46,893 LBS (APPROX)



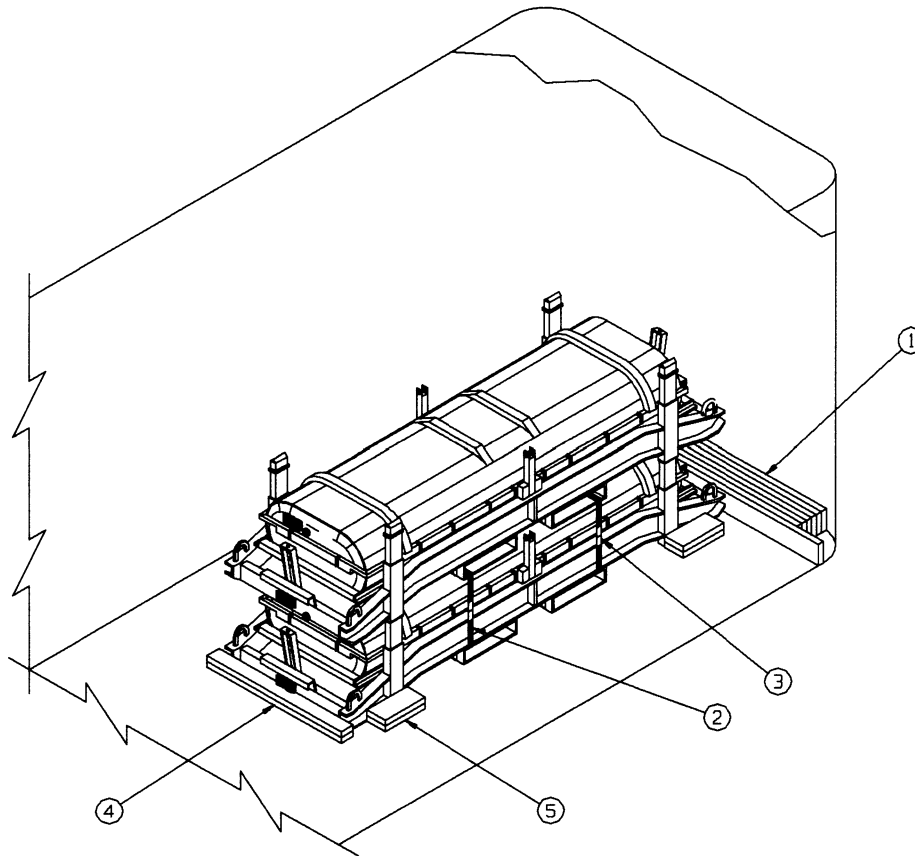
ISOMETRIC VIEW

KEY NUMBERS

- ① FORWARD BLOCKING ASSEMBLY A (1 REOD). SEE THE DETAIL ON PAGE 13. SEE GENERAL NOTES "J", AND "K" ON PAGE 2. SEE SPECIAL NOTE 2 ON PAGE 11.
- ② ANTI-SWAY BRACE (1 REOD). SEE THE DETAIL ON PAGE 13.
- ③ HEADER, 2" X 6" BY TRAILER WIDTH (CUT TO FIT) (2 REOD).
- ④ SIDE STRUT, 2" X 6" BY CUT TO FIT BETWEEN THE HEADERS, PIECES MARKED ③.
- ⑤ SPLICE PIECE, 2" X 6" X 24" (AS REOD). POSITION SO AS TO CENTER ON THE JOINT OF THE SIDE STRUTS, PIECES MARKED ④, AND NAIL W/4-10d NAILS AT EACH END.
- ⑥ CENTER CLEAT, 2" X 6" X 30" (1 REOD). NAIL TO THE FORWARD HEADER, PIECE MARKED ③, W/6-10d NAILS.
- ⑦ POCKET CLEAT, 2" X 6" X 12" (4 REOD). NAIL TO A SIDE STRUT, PIECE MARKED ④, W/5-10d NAILS. TOENAIL TO THE ADJACENT HEADER, PIECE MARKED ③, W/3-12d NAILS.
- ⑧ DIAGONAL BRACE, 2" X 6" BY CUT TO FIT (2 REOD). DOUBLE BEVEL EACH END WITH 45° CUTS. INSTALL AT A 45° ANGLE AS SHOWN AND TOENAIL TO THE ADJACENT HEADER, PIECE MARKED ③, AND/OR THE SIDE STRUT, PIECE MARKED ④, W/2-16d NAILS AT EACH END.
- ⑨ BACK-UP CLEAT, 2" X 6" X 24" (2 REOD). NAIL TO A SIDE STRUT, PIECE MARKED ④, W/8-10d NAILS.
- ⑩ STRUT BRACE RETAINER CLEAT, 2" X 4" X 12" (AS REOD). NAIL TO A SIDE STRUT, PIECE MARKED ④, W/3-10d NAILS. SEE SPECIAL NOTE 3 ON PAGE 11.
- ⑪ STRUT BRACE, 2" X 4" BY TRAILER WIDTH MINUS 3" (CUT TO FIT) (MINIMUM OF ONE REOD). NAIL TO THE POCKET CLEATS, PIECES MARKED ⑦, AND/OR TO THE STRUT BRACE RETAINER CLEATS, PIECES MARKED ⑩, W/2-12d NAILS AT EACH END.

SPECIAL NOTES:

1. A 2-UNIT LOAD IS SHOWN IN A 7'-8" WIDE (INSIDE DIMENSION) VAN TRAILER. TRAILERS OF OTHER WIDTHS CAN BE USED.
2. A TRAILER EQUIPPED WITH ROUNDED FRONT CORNERS IS SHOWN. IF THE TRAILER TO BE LOADED HAS A SQUARE FRONT, A 2" X 6" BY TRAILER WIDTH MINUS 1/2" PIECE MAY BE POSITIONED ON EDGE AT THE FRONT OF THE LOAD.
3. ALL LTL LOADS, REGARDLESS OF THEIR SIZE, REQUIRE ONE STRUT BRACE POSITIONED AT THE REAR OF THE TRAILER AND NAILED TO THE POCKET CLEATS, PIECES MARKED ⑦. IF THE SIDE STRUTS, PIECES MARKED ④, ARE LONGER THAN 7'-0", AN ADDITIONAL STRUT BRACE, PIECE MARKED ①, AND TWO STRUT BRACE RETAINING CLEATS, PIECES MARKED ⑩, MUST BE APPLIED FOR EVERY 7'-0" OF SIDE STRUT LENGTH.
4. THE K-BRACE BLOCKING, SHOWN AS PIECES MARKED ③ THRU ①, IS ADEQUATE FOR RETAINING A MAXIMUM OF 17 MK18 MOD 0 CRADLES.
5. TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY BE USED; HOWEVER, THE NAILED-HEADER TYPE METHOD OF REAR BLOCKING MUST BE INSTALLED IN LIEU OF THE "K-BRACE" TYPE BLOCKING, PIECES MARKED ③ THRU ①. SEE PIECE MARKED ⑥ ON PAGE 4 FOR GUIDANCE. A HEADER WILL BE NAILED WITH NOT LESS THAN 6-10d NAILS IN EACH LAYER. A HEADER WITH 6 NAILS IS ADEQUATE FOR AN LTL LOAD OF NOT MORE THAN 10 CRADLES. A HEADER WITH 8 NAILS PER LAYER WILL RETAIN 13 CRADLES, OR USE A HEADER WITH 10 NAILS FOR 17 CRADLES.



ISOMETRIC VIEW

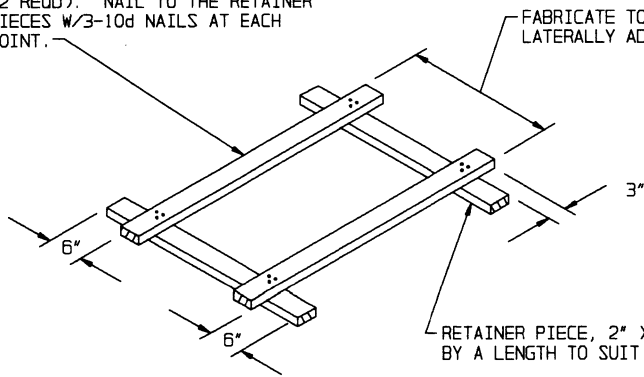
KEY NUMBERS

SPECIAL NOTES:

1. A 2-UNIT LOAD IS SHOWN IN A 7'-8" WIDE (INSIDE DIMENSION) VAN TRAILER. TRAILERS OF OTHER WIDTHS MAY BE USED.
2. THE FORWARD BLOCKING ASSEMBLY, PIECE MARKED ①, IS FOR USE IN TRAILERS HAVING ROUNDED FRONT CORNERS. IF THE TRAILER HAS A SQUARE FRONT WALL, A 2" X 6" BY TRAILER WIDTH MINUS 1/2" PIECE POSITIONED ON EDGE MAY BE USED.
3. THE CRADLES MUST BE UNITIZED PRIOR TO BEING MOVED INTO THE TRAILER. THE STACKS WILL BE FORMED AT THE REAR OF THE TRAILER BY POSITIONING THE CRADLES WITH ONE END RESTING JUST INSIDE THE REAR OF THE TRAILER. ONE CRADLE WILL BE POSITIONED ON TOP OF ANOTHER UNTIL THE DESIRED STACK HEIGHT IS REACHED. THE UNITIZING STRAPS WILL BE INSTALLED AND THE STACK CAN THEN BE PARTIALLY LIFTED FROM THE REAR AND PUSHED INTO THE TRAILER. USE CAUTION SO AS NOT TO DAMAGE THE CRADLES.

- ① FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 13. SEE GENERAL NOTE "K" ON PAGE 2.
- ② UNITIZING STRAP, 1-1/4" X .035" OR .031" X 11'-0" LONG STEEL STRAPPING (2 REQD). POSITION THRU THE FORK POCKET OF THE BOTTOM CRADLE AND THRU THE FORK POCKET OF THE TOP CRADLE. SEE THE "UNITIZATION PROCEDURES" ON PAGE 3. SEE SPECIAL NOTE 3 AT LEFT.
- ③ SEAL FOR 1-1/4" STEEL STRAPPING (4 REQD, 2 PER STRAP). CRIMP EACH SEAL WITH TWO PAIR OF CRIMPS. SEE THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 13. SEE GENERAL NOTE "H" ON PAGE 2.
- ④ HEADER, 2" X 4" X 40" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/3-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑤ SIDE BLOCKING, 2" X 6" X 12" (DOUBLED) (4 REQD). POSITION NEAR END OF CRADLE AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

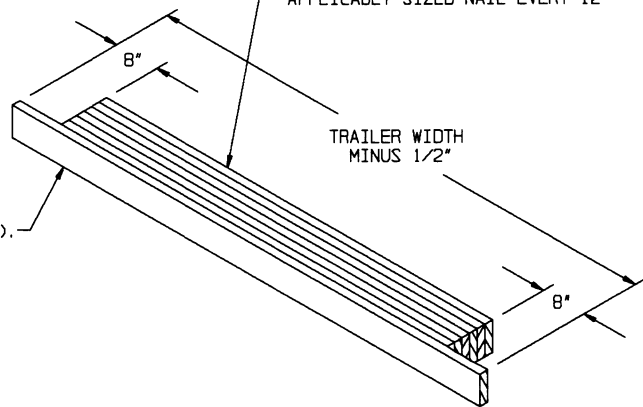
BUFFER PIECE, 2" X 4" X 48"
(2 REQD). NAIL TO THE RETAINER
PIECES W/3-10d NAILS AT EACH
JOINT.



ANTI-SWAY BRACE

LATERAL PIECE, 2" X 6" AND/OR 1" X 6"
BY TRAILER WIDTH MINUS 16-1/2" (AS REQD).
POSITION ON EDGE AND LAMINATE W/1
APPLICABLY SIZED NAIL EVERY 12"

LOAD BEARING PIECE,
2" X 6" BY TRAILER
WIDTH MINUS 1/2" (1 REQD).



FORWARD BLOCKING ASSEMBLY



ONE SEAL WITH
TWO PAIR OF
NOTCHES.

STRAP JOINT A

METHOD OF SECURING A
STRAP JOINT WHEN USING
A NOTCH-TYPE SEALER.

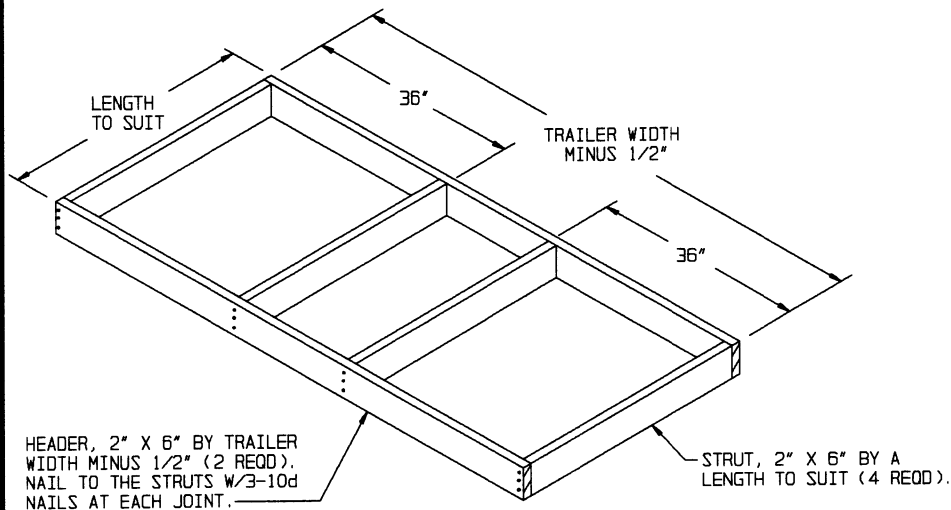


TWO SEALS, BUTTED
TOGETHER, WITH
TWO PAIR OF CRIMPS
EACH SEAL.

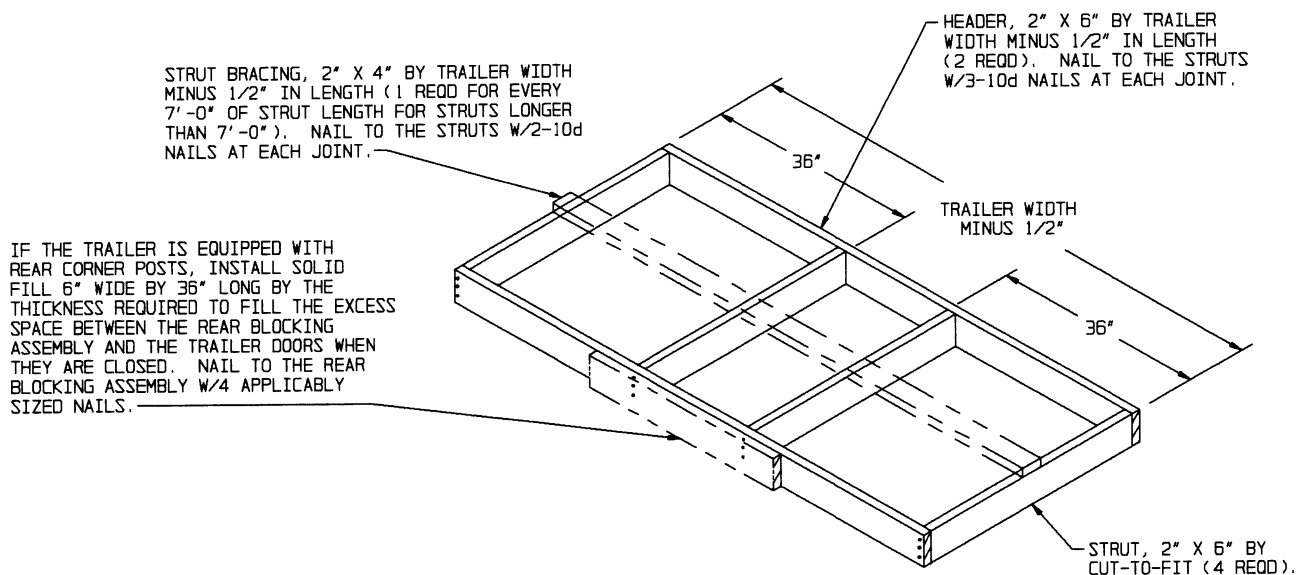
STRAP JOINT B

METHOD OF SECURING A
STRAP JOINT WHEN USING
A CRIMP-TYPE SEALER.

END-OVER-END LAP JOINT DETAILS

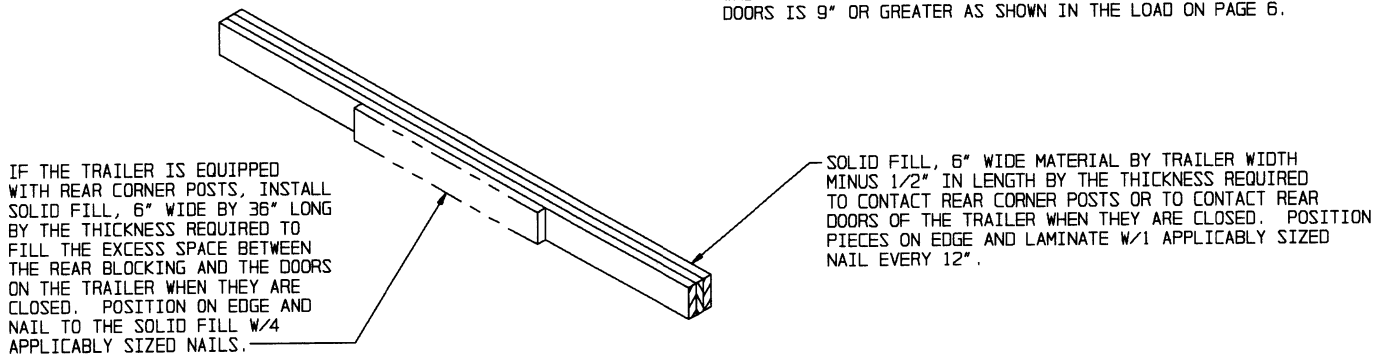


SPACER ASSEMBLY



REAR BLOCKING ASSEMBLY A

THIS ASSEMBLY IS DESIGNED FOR USE AT THE REAR OF A LOAD WHEN THE EXCESS SPACE BETWEEN THE LADING AND THE TRAILER DOORS IS 9" OR GREATER AS SHOWN IN THE LOAD ON PAGE 6.



REAR BLOCKING ASSEMBLY B

THIS REAR BLOCKING IS DESIGNED FOR USE AT THE REAR OF A LOAD WHEN THE SPACE BETWEEN THE LADING AND THE TRAILER DOORS IS LESS THAN 9".

DETAILS