

LOADING AND BRACING (TL & LTL) IN CLOSED OR OPEN TOP VAN TRAILERS OF PROPELLANTS OR OTHER SOLIDS IN FIBERBOARD OR METAL DRUMS AND LIQUIDS IN METAL DRUMS

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THIS DOCUMENT INCLUDES PROCEDURES FOR CONVENTIONAL TYPE TRAILERS AND FOR TRAILERS WITH MECHANICAL BRACING DEVICES AS APPROVED BY THE BUREAU OF EXPLOSIVES, ASSOCIATION OF AMERICAN RAILROADS. CAUTION: PROCEDURES SHOWN HEREIN FOR MECHANICAL BRACING DEVICE EQUIPPED TRAILERS ARE ONLY APPLICABLE FOR HIGHWAY MOVEMENT, NOT FOR CONTAINER/TRAILER-ON-FLAT-CAR MOVEMENTS.

CAUTION

TRAILERS EQUIPPED WITH MECHANICAL BRACING DEVICES MUST NOT BE USED FOR SHIPMENT OF EXPLOSIVES SUCH AS DYNAMITE, TNT, BLACK POWDER, SMOKELESS POWDER (PROPELLANT EXPLOSIVES), TETRYL AND SIMILAR EXPLOSIVES (EXCEPT AS A COMPONENT PART OF AMMUNITION OR PROPELLING CHARGES) WHICH ARE LIABLE TO SIFT OR BECOME LODGED IN THE MECHANISM OF THE LOADING AND BRACING DEVICE IN THE EVENT OF CONTAINER FAILURE. IT IS PERMISSIBLE TO SHIP "CARPET ROLLS" OF PROPELLANTS WHEN PACKED IN EITHER METAL OR FIBERBOARD DRUMS.

THIS DRAWING SUPERSEDES DRAWING D-AMXSV-4164, DATED 23 MAY 69.

DO NOT SCALE

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GENERAL NOTES

- 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 DOCUMENT APPLY TO PROPELLANT POWDER AND OTHER SOLIDS IN FIBERBOARD OR METAL DRUMS, AND TO LIQUIDS IN METAL DRUMS. SEE "CAUTION" NOTE ON COVER PAGE. ALSO SEE GENERAL NOTE "Z" ON PAGE 3.
- C. FOR DETAILS AND SPECIFICATIONS OF DRUMS, SEE TYPICAL DRUM DETAILS ON PAGE 42.
- D. TO DETERMINE THE LOADING PATTERN AND DUNNAGE REQUIREMENTS, ETC, FOR OUTLOADING A COMMODITY, REFER TO THE FOLLOWING:
1. FROM THE "TYPICAL DRUM DETAIL" ON PAGE 42, SELECT THE DRUM TYPE TO BE OUTLOADED.
 2. FIND SPECIMEN CONTAINER IN CHART ON PAGE 4, READ ACROSS CHART FOR REQUIREMENTS, AND APPLY THE GUIDANCE OF SPECIAL NOTES ON PAGE 4 AND IN THE DETAILS ON PAGE 5.
- E. TYPICAL LOADS AS SHOWN ARE FOR CONVENTIONAL AND MECHANICAL BRACING DEVICE EQUIPPED VAN TRAILERS, WITH WOOD, WOOD AND METAL, OR METAL FLOORS. FOR ADDITIONAL GUIDANCE, SEE GENERAL NOTES "Q", "R", "S", "V", AND "X" AND "Z".
- F. THE PROCEDURES DEPICTED ON PAGES 28 THROUGH 38 ARE FOR TRAILERS EQUIPPED WITH VARIOUS TYPES OF SELF-CONTAINED MECHANICAL BRACING DEVICES. HOWEVER, CROSS MEMBER ATTACHMENT FACILITIES WITHIN THESE TRAILERS MUST PROVIDE FOR THE INSTALLATION OF LOAD BLOCKING CROSS MEMBERS AT THE HEIGHT REQUIREMENTS SPECIFIED WITHIN THIS DRAWING. THE HEIGHT REQUIREMENTS FOR INSTALLATION OF THE CROSS MEMBERS ARE IDENTICAL WITH THOSE RECOMMENDED BY THE BUREAU OF EXPLOSIVES PAMPHLET 6C AND APPENDICES THERE TO.
1. VOIDS LENGTHWISE WITHIN A LOAD MUST BE HELD TO A MINIMUM. CROSS MEMBERS MUST BE PLACED AGAINST THE LADING AS TIGHTLY AS THE HOLE SPACING IN THE CROSS MEMBER ATTACHMENT FACILITY PERMITS. EACH CROSS MEMBER WILL BE INSTALLED WITH THE ENDS ATTACHED AS NEARLY AS POSSIBLE IN "MATED" POSITIONS (AT EQUAL HEIGHTS, AND AT EQUAL DISTANCES FROM THE END OF THE TRAILER).
 2. CROSS MEMBERS IN EMPTY TRAILERS AND THOSE NOT USED IN LOADED TRAILERS MUST BE SECURED FOR SHIPMENT. COMPONENTS ASSIGNED TO EACH TRAILER MUST REMAIN THEREWITH EVEN THOUGH UNUSED DURING SOME SHIPMENTS.
- G. GROSS WEIGHT AND AXLE DISTRIBUTION OF WEIGHT WILL BE THE RESPONSIBILITY OF THE CARRIER. THE CARRIER WILL ADVISE THE SHIPPER OF THE APPLICABLE LOADING REQUIREMENTS AND THE SHIPPER WILL LOAD ACCORDINGLY.
- H. NOTICE: A SHIPMENT WILL BE POSITIONED IN THE TRAILER CONSISTENT WITH STATE WEIGHT LAWS. THE APPROVED METHODS FOR THE LOADS SPECIFIED MUST BE FOLLOWED. THE NUMBER OF CONTAINERS MAY BE ADJUSTED TO FIT THE SIZE OF THE TRAILER TO BE LOADED OR THE QUANTITY TO BE SHIPPED. FOR A LOAD QUANTITY OTHER THAN SPECIFIED, THE APPROVED METHODS FOR BLOCKING, BRACING, AND STAYING MUST BE FOLLOWED AS CLOSELY AS POSSIBLE.
- J. OTHER TYPES OF LADING ITEMS MAY BE LOADED IN A TRAILER WHICH IS PARTIALLY LOADED WITH THE DESIGNATED ITEMS, 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.
- K. WHEN A STRAP IS SEALED AT AN END-OVER-END LAP JOINT, ONE SEAL CRIMPED WITH TWO PAIR OF NOTCHES MUST BE USED TO SEAL THE JOINT.
- L. CAUTION: BLOCKING WILL NOT BE NAILED TO THE TRAILER WALLS. ALL NAILING WILL BE WITHIN THE DUNNAGE.
- M. EXCEPT FOR PLYWOOD, 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 AND 4" X 4" MATERIAL IS ACTUALLY 3-1/2" THICK BY 3-1/2" WIDE.
- N. PORTIONS OF THE SEMITRAILER BODIES DEPICTED WITHIN THIS PROCEDURAL DRAWING, SUCH AS ONE OF THE SIDE WALLS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.

(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

- LUMBER** ----- : SEE TM 743-200-1, DUNNAGE LUMBER; FED SPEC MM-L-751.
- NAILS** ----- : COMMON, FED SPEC FF-N-105.
- STRAPPING, STEEL** --- : CLASS I, TYPE I OR IV, HEAVY DUTY, FINISH A, B (GRADE 2), OR C; FED SPEC QQ-5-781.
- SEAL, STRAP** ----- : TYPE D, STYLE I, II, OR IV, CLASS H, FED SPEC QQ-5-781.
- PLYWOOD** ----- : GROUP B OR C, GRADE C-D (EXTERIOR), FED SPEC NN-P-530. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER EXTERIOR GRADE MAY BE SUBSTITUTED.
- TYGARD** ----- : POLYESTER YARN, 1100 POUNDS/INCH OF WIDTH STRENGTH.
- ADHESIVE** ----- : TYGARD ADHESIVE.

(GENERAL NOTES CONTINUED FROM LEFT)

- O. NOTICE: A STAGGERED NAILING PATTERN WILL BE USED WHENEVER 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. ADDITIONALLY, A 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. SEE GENERAL NOTE "W" BELOW.
- P. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "TYPICAL DRUM DETAILS" ON PAGE 42 AND TO THE "SPECIAL NOTES" SECTION WHICH IS IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.
- Q. ALTHOUGH MANY LOADS ARE SPECIFIED IN THIS DOCUMENT, ALL OF THE DIFFERENT DRUMS IN USE ARE NOT COVERED SPECIFICALLY. THE LOADS AS SHOWN ARE BASED ON DIFFERENT SIZE AND TYPE DRUMS THAT HAVE BEEN SELECTED TO REPRESENT THE FAMILY OF DRUMS. IF A DRUM IS TO BE SHIPPED AND THIS PROCEDURAL DRAWING DOES NOT SPECIFY PROCEDURES FOR THAT SPECIFIC DRUM, THE GUIDANCE DATA AND THE LOADING AND BLOCKING PRINCIPLES CONTAINED IN THIS DRAWING WILL BE APPLIED. SUFFICIENT MATERIAL IS INCLUDED TO MAKE IT POSSIBLE TO LOAD, BLOCK AND BRACE ANY DRUM IN ACCORDANCE WITH THESE APPROVED PROCEDURES. NOTICE/CAUTION: CARE MUST BE EXERCISED TO INSURE THAT AN ECONOMICAL LOAD IS BUILT FOR SHIPMENT, AND THAT THE "GROSS WEIGHT" OF THE VEHICLE BEING USED IS NOT EXCEEDED. SEE GENERAL NOTES "G", "H" AND "Y".
- R. WIDER, NARROWER, SHORTER OR LONGER TRAILERS THAN DEPICTED MAY BE USED. IF A WIDER OR NARROWER TRAILER IS USED FOR SHIPMENT OF A DEPICTED LOAD IT MAY BE NECESSARY TO CHANGE THE LOADING PATTERN DUE TO THE DIFFERENCE IN THE WIDTH OF THE TRAILER. THE LOADING PATTERN SHOULD BE DETERMINED BY THE CRITERIA SET FORTH IN SPECIAL NOTE 5 ON PAGE 4 BASED ON THE DIAMETER OF THE DRUMS TO BE SHIPPED AND THE INSIDE WIDTH OF THE TRAILER TO BE LOADED. WIDER OR LONGER TRAILERS MAY PERMIT A GREATER QUANTITY OF DRUMS TO BE SHIPPED, HOWEVER, THE WEIGHT LIMITATIONS PRESCRIBED IN GENERAL NOTES "G", "H" AND "Q" MUST BE COMPLIED WITH. BLOCKING AND BRACING AS SHOWN IN FULL LOADS IS ADEQUATE FOR RETAINING A LOAD IN ANY LENGTH TRAILER.
- S. TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS CAN BE USED BY APPLYING THE REAR-OF-LOAD PROCEDURES SPECIFIED ON PAGES 39 OR 40. THE PROCEDURES ON PAGE 39 DEPICT THE "NAILLED HEADER" METHOD WHICH REQUIRES THE TRAILER TO HAVE A NAILABLE FLOOR. PROCEDURES ON PAGE 40 DEPICT THE "TYGARD" METHOD USING FABRIC AND ADHESIVE FOR BLOCKING THE LOAD AT THE REAR OF THE TRAILER. WHEN TRAILERS WITH ROLL-UP TYPE DOORS ARE TO BE LOADED THE THREE STACKS AT THE REAR OF THE LOAD WILL BE LIMITED TO 1-LAYER AND WILL BE BUNDLED WITH STRAPPING AND GATES. ALSO, THE THREE 2-LAYER STACKS ADJACENT TO THE 1-LAYER STACKS WILL BE BUNDLED WITH STRAPPING AND GATES. THE REAR-OF-LOAD PROCEDURES AS SPECIFIED ON PAGES 39 AND 40 MAY ALSO BE USED FOR LOADS IN CONVENTIONAL TRAILERS EQUIPPED WITH HINGED DOORS.
- T. IF DESIRED, OR IF PLYWOOD IS NOT AVAILABLE, THE GATES AND FORWARD BLOCKING ASSEMBLIES REQUIRED FOR A LOAD OF FIBERBOARD DRUMS MAY BE CONSTRUCTED OF 1" NOMINAL THICK LUMBER BY RANDOM WIDTHS AND BY TRAILER WIDTH IN LENGTH MINUS 1/2" HOWEVER, THE EDGES OF THE TWO TOP BOARDS AND THE EDGES OF THE TWO BOTTOM BOARDS WILL BE BUTTED TOGETHER. THE REMAINING BOARDS MAY BE SPACED NOT MORE THAN 1-1/2" APART. EACH BOARD WILL BE NAILED TO THE VERTICAL OR TIE PIECES WITH NOT LESS THAN TWO NAILS AT EACH JOINT. SEE NOTE "AA" ON PAGE 3.
- U. THE PROCEDURES DEPICTED WITHIN THIS DRAWING ARE BASED ON ENGLISH MEASUREMENTS. THE METRIC EQUIVALENT MAY BE COMPUTED BY USING 1" EQUALS 25.4MM. METRIC EQUIVALENTS FOR WEIGHTS ARE BASED ON 1 POUND EQUALS 0.454KG.
- V. VAN TRAILERS WHICH ARE 40'-0" LONG BY 7'-6" OR 7'-8" WIDE (INSIDE DIMENSION) HAVE BEEN SHOWN. HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE FOR TRAILERS WHICH ARE EIGHTY-NINE INCHES (89") THRU NINETY-NINE (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.
- W. 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.
- X. THE LOAD CONFIGURATIONS AS TYPICALLY SHOWN HEREIN FOR FIBERBOARD DRUMS MAY ALSO BE USED FOR LOADS OF METAL DRUMS BY APPLYING THE LOADING PRINCIPLES AND PROCEDURES AS DEPICTED IN THE TYPICAL LOADS FOR METAL DRUMS, INCLUDING GATES, DUNNAGE ASSEMBLIES, DECKING, RISERS AND STRAPPING.

(CONTINUED ON PAGE 3)

(GENERAL NOTES CONTINUED FROM PAGE 2)

- Y. ANY NUMBER OF LAYERS OF DRUMS MAY BE LOADED AND WILL BE BASED ON THE HEIGHT OF THE DRUMS AND THE INSIDE HEIGHT OF THE TRAILER TO BE USED. HOWEVER, THE NUMBER OF LAYERS MAY BE LIMITED DUE TO THE "GROSS WEIGHT CAPACITY" OF THE TRAILER. THE HEIGHT OF THE GATE ASSEMBLIES WILL BE BASED ON THE HEIGHT OF THE LOAD AS INDICATED IN THE GATE DETAILS.
- Z. THE PROCEDURES SHOWN HEREIN FOR LOADS OF FIBERBOARD DRUMS DEPICT DRUMS HAVING A GROSS WEIGHT OF 100 POUNDS OR MORE. IF A TWO LAYER LOAD OF LIGHTER WEIGHT FIBERBOARD DRUMS ARE TO BE SHIPPED, ADDITIONAL SEPARATOR GATES WILL BE REQUIRED TO PROVIDE LOAD BAYS OF NOT MORE THAN 5 OR 6 STACKS THROUGHOUT THE LENGTH OF THE TRAILER TO PRECLUDE EXCESSIVE MILLING AND TIPPING OF THE LIGHTER DRUMS. IF THE WEIGHT OF THE DRUMS AND THE LOAD CAPACITY OF THE TRAILER PERMIT A FULL THREE LAYER LOAD OR A PARTIAL THIRD LAYER, THE LOAD PATTERN SHOULD BE DETERMINED FROM THIS DRAWING, BY SPECIAL NOTE 5 ON PAGE 4, AND PATTERNS ON PAGE 5, HOWEVER, THE BLOCKING AND BRACING PROCEDURES WILL BE AS SPECIFIED IN AMC DRAWING 79-48-4229-1111000.
- AA. THE USE OF 1/2" THICK PLYWOOD SPECIFIED HEREIN FOR FABRICATION OF THE FORWARD BLOCKING, VARIOUS GATES AND OTHER ASSEMBLIES, IS BASED ON NORMALLY AVAILABLE STANDARD SIZE SHEETS SUCH AS 4'-0" WIDE BY 8'-0" OR 10'-0" LONG, AND WILL REQUIRE CUTTING AND SOME SPLICING, WITH NOMINAL SIZE LUMBER, TO OBTAIN THE SPECIFIED DIMENSIONS OF THE WIDTH, HEIGHT AND/OR LENGTH OF THE ASSEMBLIES. IN SOME LOCALITIES IT MAY BE POSSIBLE TO OBTAIN 1/2" PLYWOOD SPECIALLY MANUFACTURED AS ONE PIECE TO THE WIDTH AND LENGTH DIMENSIONS REQUIRED FOR AN ASSEMBLY, THUS ELIMINATING CUTTING, WASTE, AND USE OF NOMINAL SIZE LUMBER FOR SPLICING, INCLUDING THE LABOR REQUIRED THEREWITH. THE COST PER SQUARE FOOT FOR THE SPECIAL SIZED SHEETS WILL MOST LIKELY EXCEED THE SQUARE FOOT COST OF STANDARD SIZE SHEETS, HOWEVER, THE OVERALL COST FOR FABRICATING AN ASSEMBLY WOULD BE REDUCED.

REVISIONS

REVISION NO. 1 DATED OCTOBER 1988, CONSISTS OF:

1. DELETING INTERMEDIATE DECKING FROM FIBERBOARD DRUM LOADS.
2. DELETING SOME BUNDLING STRAPS WHERE FEASIBLE.
3. ADDING GENERAL NOTE "Z".

REVISION NO. 2 DATED MARCH 1989, CONSISTS:

1. ADDING GENERAL NOTE "AA" ON PAGE 3.
2. RELOCATING "TYPICAL DRUM DETAILS" FROM PAGE 3 TO PAGE 42.
3. ADDING NOTES REGARDING ONE-PIECE PLYWOOD SHEETS ON APPLICABLE PAGES.

SPECIAL NOTES:

(SPECIAL NOTES CONTINUED FROM LEFT)

1. IN ALL LOADS, ALL DRUM STACKS MUST FORM STRAIGHT ROWS ACROSS THE WIDTH OF THE TRAILER. EXCEPT FOR TRAILERS EQUIPPED WITH MECHANICAL BRACING DEVICES, A FORWARD BLOCKING ASSEMBLY OR A SEPARATOR GATE WILL BE REQUIRED AT THE FRONT WALL OF THE TRAILER IN ANY FULL LOAD OF FIBERBOARD OR METAL DRUMS, AS SPECIFIED IN THE VARIOUS TYPICAL LOAD VIEWS DEPICTED HEREIN. SEE THE "FORWARD BLOCKING" DETAILS ON PAGE 5. IF THE FRONT WALL OF THE TRAILER HAS ROUNDED CORNERS, A FORWARD BLOCKING ASSEMBLY SHOULD BE USED. HOWEVER, IF THE FRONT OF THE TRAILER HAS SQUARE CORNERS, A SEPARATOR GATE MAY BE USED. ALSO, FOR A LOAD OF METAL DRUMS, RISER ASSEMBLIES ARE REQUIRED UNDER THE FIRST AND THIRD STACKS. SEE THE SPECIAL NOTE ON PAGE 42. UNLESS OTHERWISE INDICATED, BUNDLING STRAPS WILL NOT BE REQUIRED FOR 1-LAYER LTL LOADS AS TYPICALLY SHOWN ON PAGES 14 THRU 17 AND 34 THRU 37. ALSO, A 1-LAYER FULL LOAD OF 55 GALLON DRUMS WILL NOT REQUIRE BUNDLING.

2. WHEN LOADING DRUMS IN A TRAILER, AS SHOWN IN "PATTERN NO. 1" ON PAGE 5, POSITION THE FIRST DRUM TO CONTACT THE FORWARD BLOCKING OR SEPARATOR GATE AND TRAILER SIDE WALL. THE REMAINING DRUMS IN THAT STACK SHOULD BE POSITIONED TO CONTACT THE FORWARD BLOCKING, OR SEPARATOR GATE AND AN ADJACENT DRUM. THE REMAINING SPACE BETWEEN THE LAST POSITIONED DRUM IN THAT STACK AND THE TRAILER SIDE WALL SHOULD BE EQUAL TO ONE-HALF (1/2) OF THE DRUM DIAMETER, EXAMPLE: IF THE DRUM DIAMETER IS 16" THE REMAINING SPACE SHOULD BE 8".
 - A. IF THE REMAINING SPACE BETWEEN THE LAST POSITIONED DRUM AND THE TRAILER SIDE WALL IS LESS THAN ONE-HALF (1/2) OF THE DRUM DIAMETER, THE "PATTERN NO. 2" (NESTED) SHOULD BE SELECTED.
 - B. IF THE REMAINING SPACE BETWEEN THE LAST POSITIONED DRUM AND THE TRAILER SIDE WALL IS GREATER THAN ONE-HALF (1/2) OF THE DRUM DIAMETER, MOVE THE DRUMS IN THAT ROW APART EQUAL DISTANCES UNTIL THE REMAINING SPACE BETWEEN THE LAST POSITIONED DRUM AND THE TRAILER WALL IS EQUAL TO ONE-HALF (1/2) THE DRUM DIAMETER PLUS ONE-HALF (1/2) OF THE EQUAL DISTANCE BETWEEN PREVIOUSLY POSITIONED ADJACENT DRUMS.

3. WHEN LOADING DRUMS IN A TRAILER, AS SHOWN IN "PATTERN NO. 2" ON PAGE 5, POSITION THE OUTSIDE DRUMS TO CONTACT THE TRAILER SIDE WALL AND THE FORWARD BLOCKING OR SEPARATOR GATE. THE REMAINING DRUMS IN THAT STACK SHOULD BE POSITIONED TO CONTACT THE FORWARD BLOCKING OR SEPARATOR GATE AND WITH EQUAL DISTANCES BETWEEN ALL DRUMS IN THAT STACK.

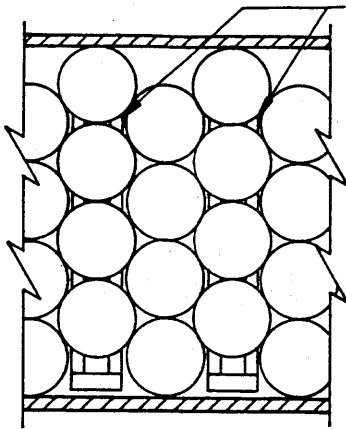
4. PLYWOOD SEPARATOR GATES AND/OR STRAPPING GATES WILL BE USED FOR FIBER BOARD DRUMS AND NOMINAL SIZE LUMBER GATES WILL BE USED FOR METAL DRUMS. SEE THE SPECIAL NOTE ON PAGE 3.
 - A. SEPARATOR GATES MAY BE USED IN CONVENTIONAL TRAILERS TO INCREASE THE LOAD LENGTH, TO REDUCE THE AMOUNT OF DUNNAGE AT THE REAR OF THE LOAD, OR TO DISTRIBUTE THE LOAD WEIGHT OVER A LONGER AREA OF THE TRAILER LENGTH.
 - B. SEPARATOR GATES MAY BE USED TO ALTERNATE A LOADING PATTERN, TO CHANGE THE NUMBER OF DRUMS TO BE OUTLOADED.
 - C. EACH INSTALLED SEPARATOR GATE OR STRAPPING GATE WILL INCREASE THE LOAD LENGTH BY AN AMOUNT EQUAL TO THE "NEST" OF ADJACENT STACKS PLUS THE THICKNESS OF THE GATE. ALSO, WHEN A SEPARATOR GATE OR STRAPPING GATE IS USED THERE MUST BE AT LEAST TWO (2) STACKS ON EACH SIDE OF THE GATE TO PREVENT LATERAL SHIFTING OF THE DRUMS. DRUMS ON ONE SIDE OF A GATE MUST BE DIRECTLY OPPOSITE DRUMS ON THE SECOND SIDE OF A GATE AS SHOWN IN THE LOAD VIEWS. SEE THE "LOADING PATTERN FOR DRUMS ADJACENT TO GATES" DETAIL ON PAGE 5.

- 5 THE FOLLOWING PROCEDURES CAN BE USED TO HELP SELECT THE PROPER "NESTED" LOADING PATTERN FOR A DRUM SHIPMENT. THE FORMULAS OF THESE PROCEDURES CAN BE USED TO DETERMINE THE NUMBER OF DRUMS IN THE FIRST STACK TO BE LOADED INTO A TRAILER; HOW TO POSITION THESE DRUMS ACROSS THE WIDTH OF THE TRAILER BEING USED, AND HOW TO DETERMINE THE NUMBER OF STACKS THAT CAN BE LOADED INTO A BAY AND/OR A TRAILER. INCHES ARE TO BE USED FOR ALL CALCULATIONS.
 - A. TO DETERMINE CONFIGURATION OF A "FIRST" STACK:
 - (1) DIVIDE THE INSIDE WIDTH OF THE TRAILER TO BE USED BY THE DIAMETER OF THE DRUM TO BE SHIPPED, TO OBTAIN THE NUMBER OF DRUMS WHICH CAN BE LOADED ACROSS THE WIDTH OF THE TRAILER. DISREGARD THE FRACTIONAL PART OF THIS ANSWER AND RETAIN THE WHOLE NUMBER PART. EXCEPTION: IF THE FRACTIONAL PART OF ANSWER IS EXACTLY ONE-HALF (1/2), OR SLIGHTLY MORE, THE "OFF-SET NESTED PATTERN" MAY BE SELECTED IMMEDIATELY, AND THE FOLLOWING STEPS (2), (3) AND (4) DISREGARDED.
 - (2) MULTIPLY THE WHOLE NUMBER OF THE ANSWER FOUND BY (1) ABOVE BY THE DRUM DIAMETER TO OBTAIN THE TOTAL LOAD WIDTH, AND SUBTRACT THIS ANSWER FROM THE INSIDE WIDTH OF THE TRAILER TO FIND THE AMOUNT OF EXCESS (UNUSED) SPACE ACROSS THE WIDTH OF THE TRAILER.
 - (3) FOR A "NESTED PATTERN" SUCH AS THE 4-3-4 ARRANGEMENT SHOWN ON PAGE 5 DIVIDE THE EXCESS SPACE ANSWER FOUND BY (2) ABOVE BY ONE LESS THAN THE WHOLE NUMBER ANSWER FOUND BY (1) ABOVE, TO OBTAIN THE SPACE TO BE LEFT AT EACH LOCATION BETWEEN LATERAL ADJACENT DRUMS.
 - (4) FOR AN "OFF-SET NESTED PATTERN" SUCH AS THE 4-4-4 ARRANGEMENT SHOWN ON PAGE 5, SUBTRACT ONE-HALF (1/2) OF THE DRUM DIAMETER FROM THE EXCESS SPACE ANSWER FOUND BY (2) ABOVE, AND DIVIDE THIS ANSWER BY ONE LESS THAN THE NUMBER OF DRUMS IN WIDTH PLUS ONE-HALF (3.5 FOR A 4 DRUM WIDE LOAD) TO OBTAIN THE SPACE TO BE LEFT BETWEEN LATERALLY ADJACENT DRUMS.
 - B. TO DETERMINE NUMBER OF STACKS PER A CERTAIN LENGTH BAY AND/OR THE TOTAL LENGTH OF A TRAILER IT IS NECESSARY TO SELECT THE TYPE OF NESTED CONFIGURATION THAT WILL BE USED BY APPLYING PARAGRAPH A CRITERIA ABOVE. TO DETERMINE THE LENGTHWISE CENTER-TO-CENTER DISTANCE BETWEEN "NESTED STACKS":
 - (1) SQUARE THE DIAMETER OF THE DRUM.
 - (2) SQUARE THE SUM OF ONE-HALF DRUM DIAMETER AND ONE-HALF OF THE SPACE BETWEEN LATERALLY ADJACENT DRUMS.
 - (3) SUBTRACT THE ANSWER OF (2) ABOVE FROM (1) ABOVE.
 - (4) THE "SQUARE ROOT" OF THE ANSWER OF (3) ABOVE IS THE CENTER-TO-CENTER DISTANCE OF NESTED DRUMS.
 - (5) SUBTRACT THE DIAMETER OF ONE DRUM FROM THE PRE-SELECTED BAY LENGTH AND/OR TRAILER LENGTH. DIVIDE THIS RESULTANT ANSWER BY THE CENTER-TO-CENTER ANSWER FOUND BY (4) ABOVE, DROP THE FRACTIONAL PART OF THIS ANSWER KEEPING THE WHOLE NUMBER PART, AND ADD ONE TO THE WHOLE NUMBER PART TO GET THE NUMBER-OF-STACKS ANSWER. WHERE CALCULATIONS ARE BASED ON A BAYED-LOAD, INCREASING THE NUMBER OF BAYS OR USING UNEVEN LENGTH BAYS WILL MAKE IT POSSIBLE TO PLAN AN EFFICIENT LOAD FOR THE QUANTITY OF DRUMS THAT ARE TO BE SHIPPED. NOTE: WHEN SHIPPING A BAYED-LOAD OF DRUMS AND THE PATTERN BEING USED IS OF THE 5-4-5 TYPE, IT IS BEST TO BEGIN AND END A BAY WITH THE WIDER STACK; I. E. 5 FOR EXAMPLE USED HERE.

(CONTINUED AT RIGHT)

LOAD PLANNING CHART								
ITEM	CHARACTERISTICS	STACKABLE	RISER	DECKING	SEPARATOR OR STRAPPING GATE	SUGGESTED LOADING PATTERN	REFERENCE LOADING PROCEDURES	
FIBER BOARD DRUM	SPECIMEN DRUM NO. 1	NO	NO	NO	SEE SPECIAL NOTE 4 ABOVE.	NO. 1, 2 OR 3	PAGES 6 THRU 11, 15, 28, 29, 34, 36, 39, 40 AND 41.	
	SPECIMEN NO. 2	YES	NO	NO			NO. 1 OR 2	PAGES 12 THRU 17, 30 THRU 33, 35, 37, 39, 40 AND 41. ALSO, SEE GENERAL NOTE "X" ON PAGE 2.
METAL DRUM	SPECIMEN DRUM NO. 3*	YES	YES*	YES, IF NOT STACKABLE*		NO. 1 OR 2		PAGES 12 THRU 17, 30 THRU 33, 35, 37, 39, 40 AND 41. ALSO, SEE GENERAL NOTE "X" ON PAGE 2.
	SPECIMEN DRUM NO. 4	NO	YES	YES				
	SPECIMEN DRUM NO. 5	NO	YES	YES				
SPECIMEN DRUM NO. 6	NO	YES	YES					

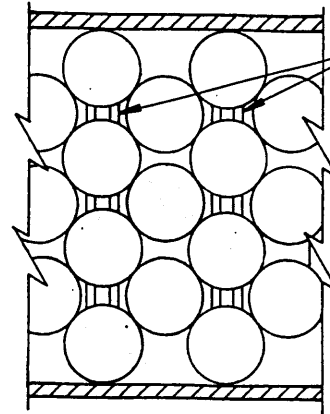
*SEE THE SPECIAL NOTE ON PAGE 42.



RISER ASSEMBLIES
REQUIRED FOR
METAL DRUMS

PATTERN NO.1

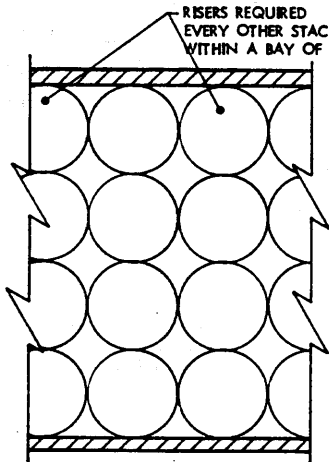
OFF-SET NESTED PATTERN



RISER ASSEMBLIES
REQUIRED FOR
METAL DRUMS.

PATTERN NO.2

NESTED PATTERN



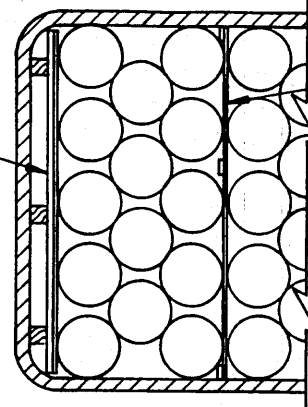
RISERS REQUIRED
EVERY OTHER STACK
WITHIN A BAY OF METAL DRUMS.

NOTE:
A STRAIGHT-LINE LOADING
PATTERN CAN BE USED
IF THE SUM OF THE
DIAMETERS OF THE DRUMS
IN A STACK EQUALS
THE INSIDE WIDTH OF
THE TRAILER.

PATTERN NO.3

STRAIGHT-LINE PATTERN

FORWARD BLOCKING.
SEE SPECIAL NOTE 1 ON
PAGE 4 AND DETAIL
ON PAGE 22.



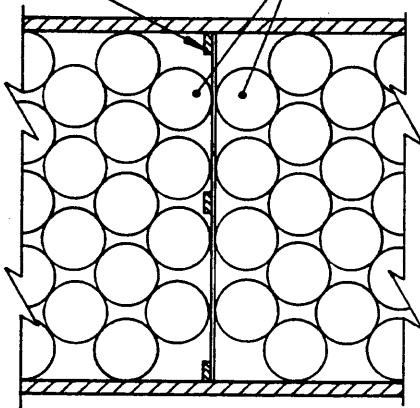
SEPARATOR GATE.
SEE DETAIL ON
PAGE 27 AND
SPECIAL NOTE
4 ON PAGE 4.

FORWARD BLOCKING

FOR FIBERBOARD DRUMS

SEPARATOR GATE. SEE
DETAIL ON PAGE 27.

SEE SPECIAL NOTE
4 ON PAGE 4.

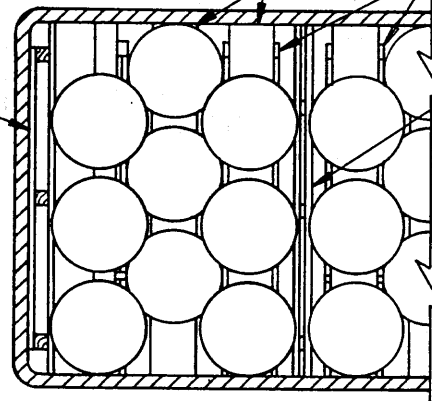


**LOADING PATTERN FOR DRUMS
ADJACENT TO GATES**

FIBERBOARD DRUM LOAD SHOWN

INTERMEDIATE DECKING FOR
STACKS MORE THAN 1-LAYER.
WHEN DRUMS DO NOT NEST VERTICALLY.

FORWARD BLOCKING.
SEE SPECIAL NOTE 1
ON PAGE 4 AND DETAIL
ON PAGE 22.

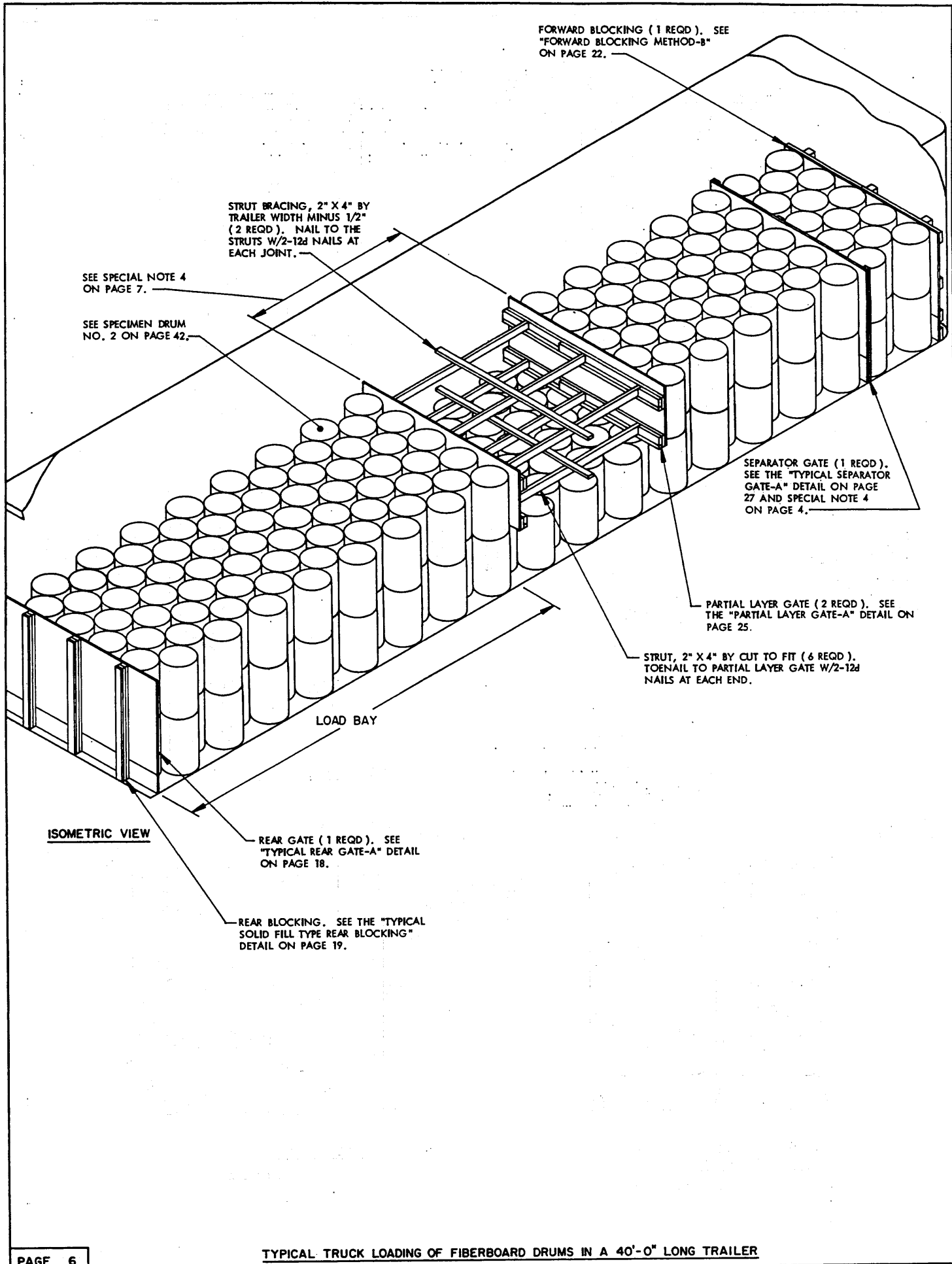


RISER ASSEMBLIES.
SEE DETAIL ON
PAGE 24.

SEPARATOR
GATE. SEE DETAIL
ON PAGE 27 AND
SPECIAL NOTE
4 ON PAGE 4.

FORWARD BLOCKING

FOR METAL DRUMS



FORWARD BLOCKING (1 REQD). SEE "FORWARD BLOCKING METHOD-B" ON PAGE 22.

STRUT BRACING, 2" X 4" BY TRAILER WIDTH MINUS 1/2" (2 REQD). NAIL TO THE STRUTS W/2-12d NAILS AT EACH JOINT.

SEE SPECIAL NOTE 4 ON PAGE 7.

SEE SPECIMEN DRUM NO. 2 ON PAGE 42.

SEPARATOR GATE (1 REQD). SEE THE "TYPICAL SEPARATOR GATE-A" DETAIL ON PAGE 27 AND SPECIAL NOTE 4 ON PAGE 4.

PARTIAL LAYER GATE (2 REQD). SEE THE "PARTIAL LAYER GATE-A" DETAIL ON PAGE 25.

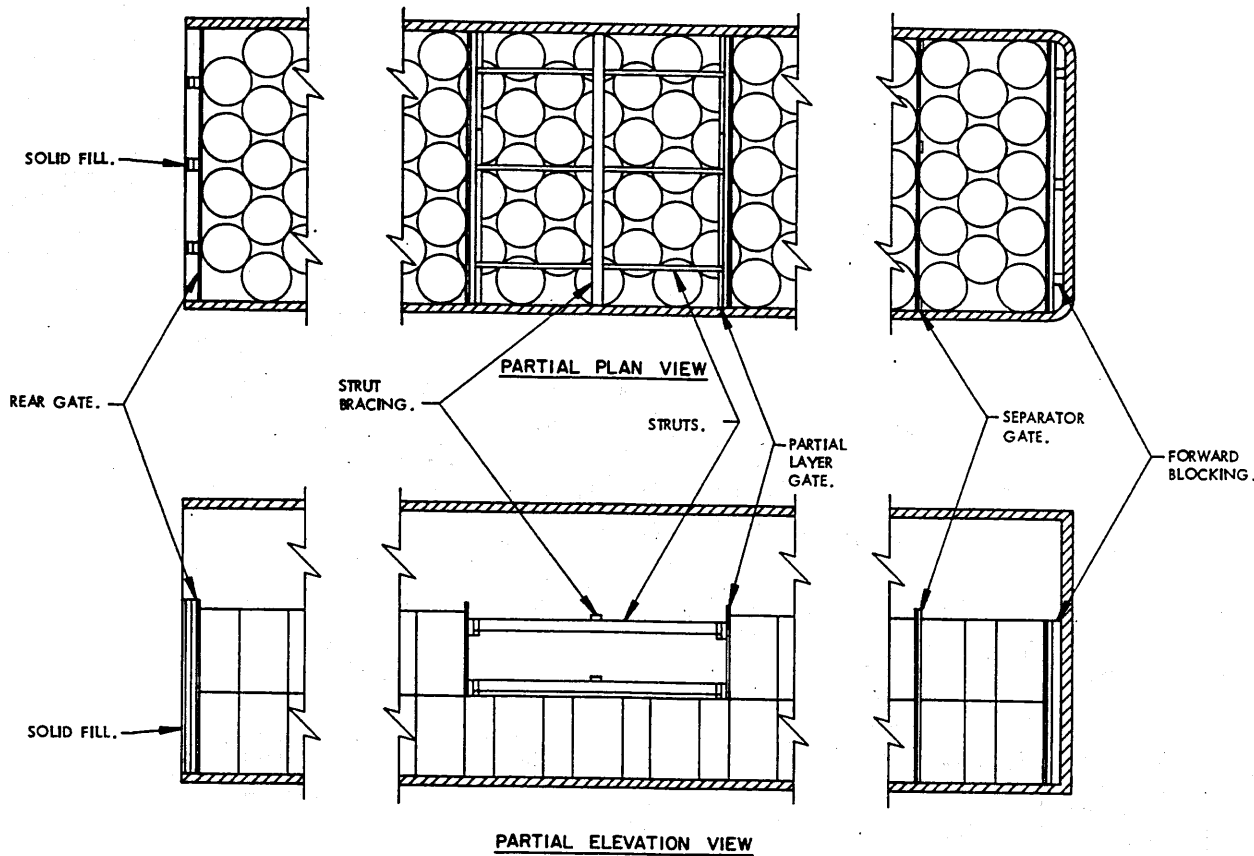
STRUT, 2" X 4" BY CUT TO FIT (6 REQD). TOENAIL TO PARTIAL LAYER GATE W/2-12d NAILS AT EACH END.

LOAD BAY

ISOMETRIC VIEW

REAR GATE (1 REQD). SEE "TYPICAL REAR GATE-A" DETAIL ON PAGE 18.

REAR BLOCKING. SEE THE "TYPICAL SOLID FILL TYPE REAR BLOCKING" DETAIL ON PAGE 19.



PARTIAL ELEVATION VIEW

SPECIAL NOTES:

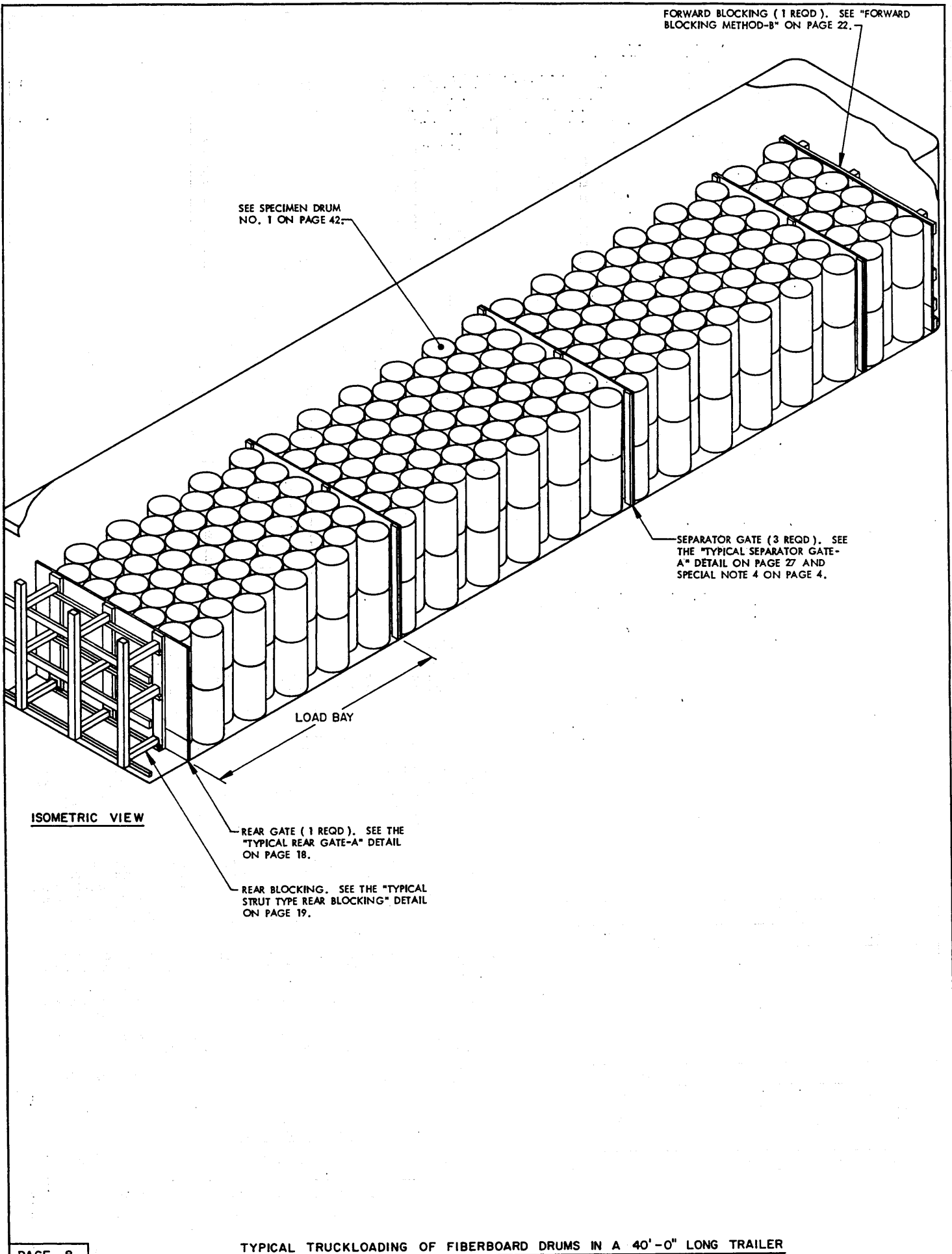
1. THE LOAD AS SHOWN IS BASED ON A 40'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) TRAILER EQUIPPED WITH ROUNDED-CORNERS AT THE FORWARD END. A 285-DRUM LOAD IS DEPICTED USING A "NESTED" TYPE OF LOADING PATTERN.
2. DETAILS OF FIBERBOARD DRUM DEPICTED IN THE LOAD VIEWS:
 DRUM DIMENSIONS ----- 16-1/8" DIAMETER BY 27-3/8" HIGH.
 GROSS WEIGHT ----- 145 POUNDS (APPROX).
3. THE "FORWARD BLOCKING" IS SHOWN IN THE LOAD VIEW TO DEPICT A TYPICAL INSTALLATION. IF THE ROUNDED-CORNERS AT THE FORWARD END OF THE TRAILER HAVE A RADIUS OF MORE THAN 6", ADDITIONAL LATERAL PIECES WILL BE REQUIRED AS SPECIFIED IN THE "PLAN VIEW" AND "GATE THICKNESS REQUIREMENTS" CHART ON PAGE 22. HOWEVER, IF A SQUARE-FRONT TRAILER IS TO BE LOADED, A "SEPARATOR GATE-A" AS DETAILED ON PAGE 27 MAY BE USED AT THE FRONT OF THE TRAILER IN LIEU OF THE "FORWARD BLOCKING" SHOWN IN THE LOAD VIEWS.
4. THE "PARTIAL LAYER GATES", "STRUTS", AND "STRUT BRACING" IS SHOWN IN THE LOAD VIEWS TO DEPICT A TYPICAL INSTALLATION WHEN THE WEIGHT OF TWO (2) COMPLETE LAYERS OF DRUMS IS GREATER THAN THE CAPACITY OF THE TRAILER. HOWEVER, IF THE DISTANCE BETWEEN THE SECOND LAYER DRUMS EXCEEDS 10'-0", PARTIAL LAYER GATES AND STRUTS WILL NOT BE USED. IN LIEU THEREOF, THE THREE 2 LAYER STACKS AT EACH END OF THE 1-LAYER BAY SHALL BE BUNDLED WITH STRAPPING AND GATES AS SPECIFIED IN THE LOAD SHOWN ON PAGES 10 AND 11.
5. IF TWO (2) COMPLETE LAYERS ARE TO BE LOADED IN A TRAILER, THE LOAD WILL BE SEPARATED INTO "LOAD BAYS" AS DEPICTED IN THE PROCEDURES ON PAGES 8 AND 9. SEE GENERAL NOTE "G" ON PAGE 2.
6. WIDER, NARROWER, SHORTER OR LONGER TRAILERS AND TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY BE USED. SEE GENERAL NOTES "R" AND "S" ON PAGE 2.
7. THIS LOAD CONFIGURATION MAY ALSO BE USED FOR A LOAD OF METAL DRUMS IF REQUIREMENTS OF GENERAL NOTE "X" ON PAGE 2 ARE APPLIED.
8. IF THE DRUMS TO BE SHIPPED HAVE A GROSS WEIGHT OF LESS THAN 100 POUNDS, SEE GENERAL NOTE "Z" ON PAGE 3.

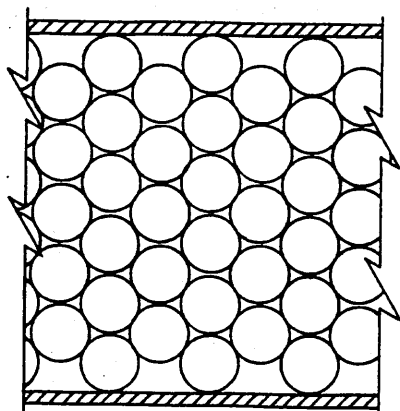
TYPICAL BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	14	5
2" X 2"	31	10
2" X 4"	70	46
2" X 6"	105	105
4" X 4"	14	19
NAILS		
	NO. REQD	POUNDS
4d (1-1/2")	147	1/2
10d (3")	134	2
12d (3-1/4")	36	3/4
PLYWOOD, 1/2" ----- 147 SQ. FT. REQD ----- 202 LBS		

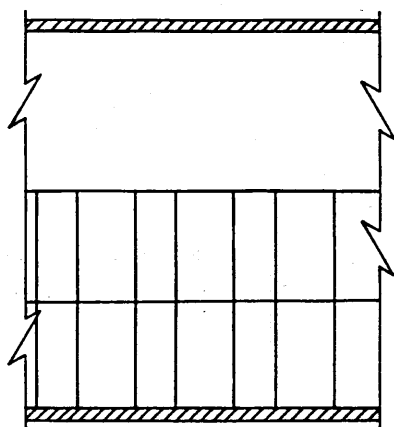
TYPICAL LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
DRUM -----	285 -----	41,325 LBS
DUNNAGE -----	-----	576 LBS
TOTAL WEIGHT -----		41,901 LBS





PARTIAL PLAN VIEW



PARTIAL ELEVATION

SPECIAL NOTES:

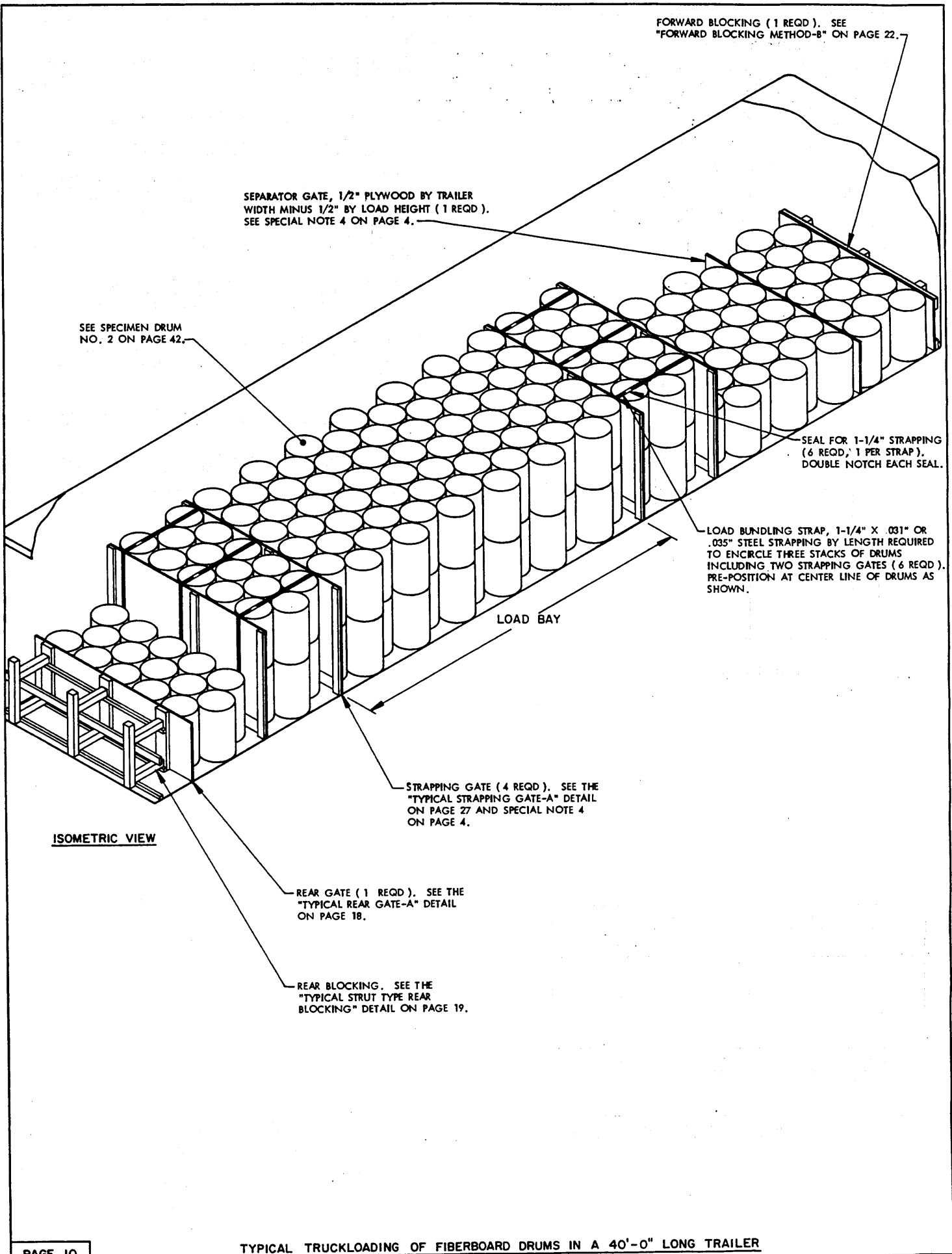
1. THE LOAD AS SHOWN IS BASED ON A 40'-0" LONG BY 7'-6" WIDE (INSIDE DIMENSION) TRAILER EQUIPPED WITH ROUNDED-CORNERS AT THE FORWARD END. A 388-DRUM LOAD IS DEPICTED USING A "NESTED" TYPE OF LOADING PATTERN.
2. DETAILS OF FIBERBOARD DRUM DEPICTED IN THE LOAD VIEWS:
 DRUM DIMENSIONS ----- 14-1/2" DIAMETER BY 27-1/2" HIGH
 GROSS WEIGHT ----- 100 POUNDS (APPROX).
3. THE "FORWARD BLOCKING" IS SHOWN IN THE LOAD VIEW TO DEPICT A TYPICAL INSTALLATION. IF THE ROUNDED-CORNERS AT THE FORWARD END OF THE TRAILER HAVE A RADIUS OF MORE THAN 6", ADDITIONAL LATERAL PIECES WILL BE REQUIRED AS SPECIFIED IN THE "PLAN VIEW" AND "GATE THICKNESS REQUIREMENTS" CHART ON PAGE 22. HOWEVER, IF A SQUARE-FRONT TRAILER IS TO BE LOADED, A "SEPARATOR GATE-A" AS DETAILED ON PAGE 27 MAY BE USED AT THE FRONT OF THE TRAILER IN LIEU OF THE "FORWARD BLOCKING" SHOWN IN THE LOAD VIEWS.
4. IF LESS THAN 12" OF SPACE IS LEFT BETWEEN THE REAR OF THE LOAD AND THE TRAILER DOORS, WHEN CLOSED, A SOLID FILL TYPE OF BLOCKING WILL BE USED AT THE REAR OF THE LOAD. SEE "TYPICAL SOLID FILL TYPE REAR BLOCKING" DETAIL ON PAGE 19.
5. IF A LESSER QUANTITY OF DRUMS IS TO BE SHIPPED, A 1-LAYER LOAD BAY CAN BE PROVIDED. HOWEVER, THE THREE 2-LAYER STACKS AT EACH END OF THE 1-LAYER BAY MUST BE BUNDLED WITH STRAPPING AND GATES AS SPECIFIED IN THE LOAD DEPICTED ON PAGES 10 AND 11. SEE SPECIAL NOTE 4 ON PAGE 4.
6. WIDER, NARROWER, SHORTER OR LONGER TRAILERS AND TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY BE USED. SEE GENERAL NOTES "R" AND "S" ON PAGE 2.
7. THIS LOAD CONFIGURATION MAY ALSO BE USED FOR A LOAD OF METAL DRUMS IF REQUIREMENTS OF GENERAL NOTE "X" ON PAGE 2 ARE APPLIED.
8. IF THE DRUMS TO BE SHIPPED HAVE A GROSS WEIGHT OF LESS THAN 100 POUNDS, SEE GENERAL NOTE "Z" ON PAGE 3.

TYPICAL BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	43	15
2" X 2"	24	8
2" X 4"	15	10
2" X 6"	45	45
4" X 4"	45	60
NAILS	NO. REQD	POUNDS
4d (1-1/2")	147	1/2
10d (3")	78	1-1/4
12d (3-1/4")	36	3/4
PLYWOOD, 1/2" -----		178 SQ. FT. REQD-----245 LBS

TYPICAL LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
DRUM -----	388 -----	38,800 LBS
DUNNAGE -----		524 LBS
TOTAL WEIGHT -----		39,324 LBS



FORWARD BLOCKING (1 REQD). SEE "FORWARD BLOCKING METHOD-B" ON PAGE 22.

SEPARATOR GATE, 1/2" PLYWOOD BY TRAILER WIDTH MINUS 1/2" BY LOAD HEIGHT (1 REQD). SEE SPECIAL NOTE 4 ON PAGE 4.

SEE SPECIMEN DRUM NO. 2 ON PAGE 42.

SEAL FOR 1-1/4" STRAPPING (6 REQD.) 1 PER STRAP. DOUBLE NOTCH EACH SEAL.

LOAD BUNDLING STRAP, 1-1/4" X .031" OR .035" STEEL STRAPPING BY LENGTH REQUIRED TO ENCIRCLE THREE STACKS OF DRUMS INCLUDING TWO STRAPPING GATES (6 REQD). PRE-POSITION AT CENTER LINE OF DRUMS AS SHOWN.

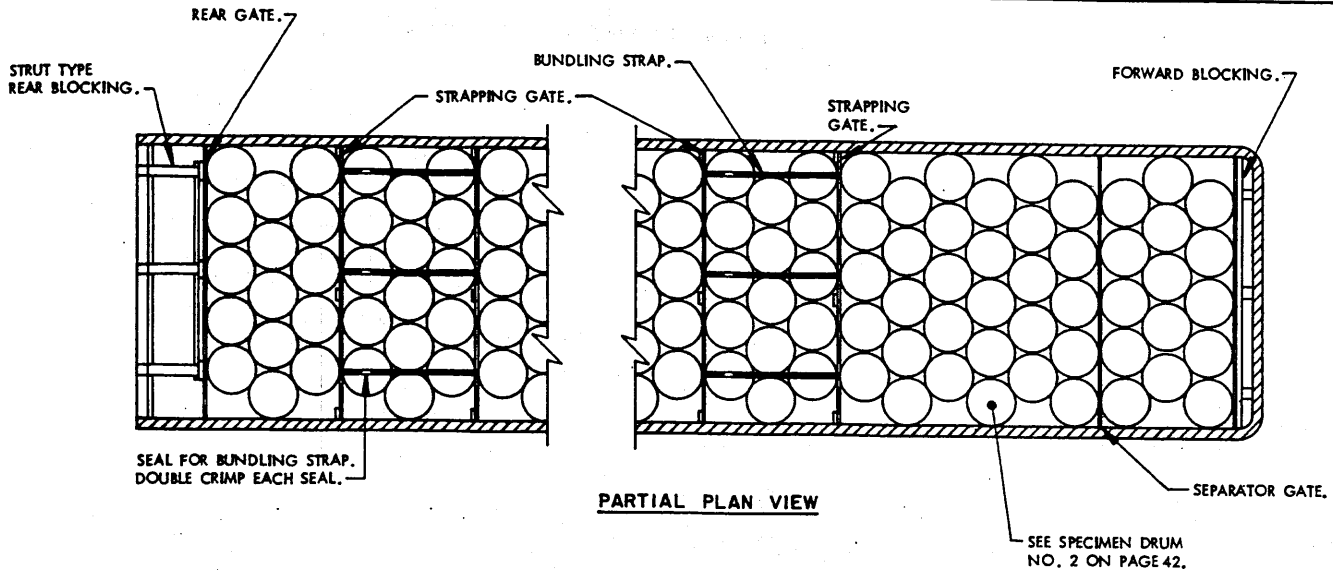
LOAD BAY

STRAPPING GATE (4 REQD). SEE THE "TYPICAL STRAPPING GATE-A" DETAIL ON PAGE 27 AND SPECIAL NOTE 4 ON PAGE 4.

ISOMETRIC VIEW

REAR GATE (1 REQD). SEE THE "TYPICAL REAR GATE-A" DETAIL ON PAGE 18.

REAR BLOCKING. SEE THE "TYPICAL STRUT TYPE REAR BLOCKING" DETAIL ON PAGE 19.



SPECIAL NOTES:

1. THE LOAD AS SHOWN IS BASED ON A 40'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) TRAILER EQUIPPED WITH ROUNDED-CORNERS AT THE FORWARD END. A 250-DRUM LOAD IS DEPICTED USING AN "OFF-SET NESTED" LOADING PATTERN.
2. DETAILS OF FIBERBOARD DRUM DEPICTED IN THE LOAD VIEWS:
 DRUM DIMENSIONS-----16-1/8" DIAMETER BY 27-5/8" HIGH.
 GROSS WEIGHT-----176 POUNDS (APPROX).
3. FORWARD BLOCKING IS DEPICTED IN THE LOAD VIEW. IF THE FRONT OF THE TRAILER HAS SQUARE CORNERS, A SEPARATOR GATE MAY BE USED IN LIEU OF THE FORWARD BLOCKING. THE SEPARATOR GATE WILL BE 1/2" PLYWOOD BY TRAILER WIDTH MINUS 1/2" BY LOAD HEIGHT.
4. SOLID FILL TYPE REAR BLOCKING, AS DETAILED ON PAGE 19, SHOULD BE USED IF THE SPACE BETWEEN THE REAR OF THE LOAD AND THE TRAILER DOORS, WHEN CLOSED, IS 12" OR LESS.
5. WIDER, NARROWER, SHORTER, OR LONGER TRAILERS AND TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY BE USED. SEE GENERAL NOTES "R" AND "S" ON PAGE 2.
6. THIS LOAD CONFIGURATION MAY ALSO BE USED FOR A LOAD OF METAL DRUMS IF REQUIREMENTS OF GENERAL NOTE "X" ON PAGE 2 ARE APPLIED.
7. IF THE DRUMS TO BE SHIPPED HAVE A GROSS WEIGHT OF LESS THAN 100 POUNDS, SEE GENERAL NOTE "Z" ON PAGE 3.

TYPICAL BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	56	19
2" X 2"	20	7
2" X 4"	8	6
2" X 6"	23	23
4" X 4"	25	34
NAILS	NO. REQD	POUNDS
4d (1-1/2")	135	1/2
10d (3")	27	1/2
12d (3-1/4")	24	1/2
PLYWOOD, 1/2"-----199 SQ. FT. REQD-----274 LBS		
STEEL STRAPPING, 1-1/4" X .031" OR .035"---120 FT. REQD---18 LBS		
SEAL FOR 1-1/4" STRAPPING-----6 REQD-----1/4 LB		

TYPICAL LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
DRUM	250	44,000 LBS
DUNNAGE		472 LBS
TOTAL WEIGHT		44,472 LBS

FORWARD BLOCKING (1 REQD), SEE
"FORWARD BLOCKING METHOD-A" ON PAGE 22.

SEPARATOR GATE (2 REQD),
SEE THE "TYPICAL SEPARATOR
GATE-B" DETAIL ON PAGE 27.

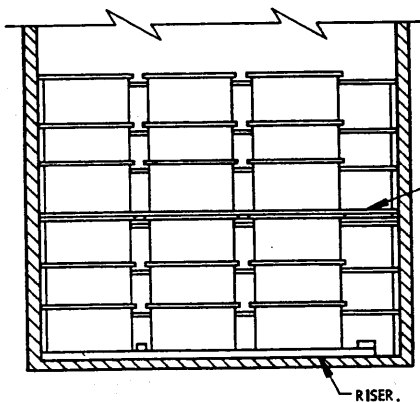
SEE SPECIMEN DRUM NO. 3
OR NO. 4 AND THE SPECIAL
NOTE ON PAGE 42.

RISER (12 REQUIRED FOR THE
LOAD AS SHOWN), SEE "RISER
ASSEMBLY-A" DETAIL ON PAGE 24.

INTERMEDIATE DECKING, 1" X 12" BY TRAILER
WIDTH MINUS 1/2" (23 REQUIRED FOR THE
LOAD AS SHOWN). SEE "PARTIAL PLAN
VIEW" AND SPECIAL NOTE 7 ON PAGE 13.

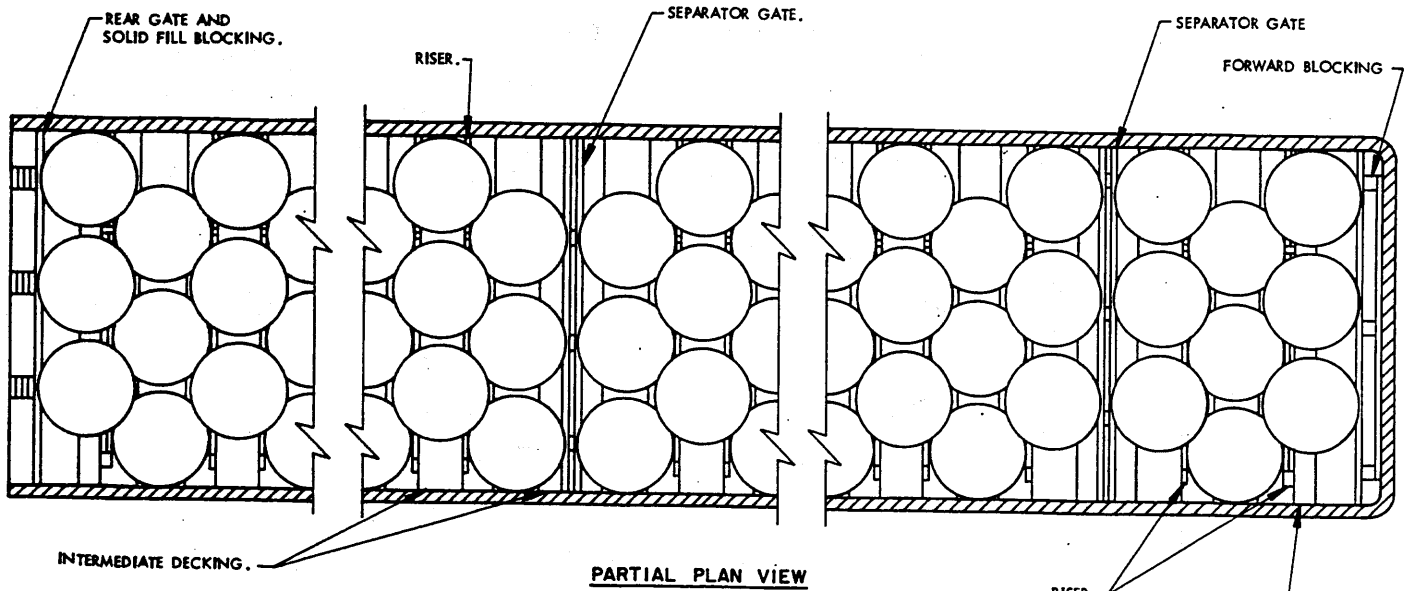
REAR GATE (1 REQD), SEE "TYPICAL REAR GATE-B"
DETAIL ON PAGE 18 AND "TYPICAL SOLID FILL TYPE
REAR BLOCKING" DETAIL ON PAGE 19.

ISOMETRIC VIEW



SECTION A-A

TYPICAL TRUCKLOADING OF METAL DRUMS IN A 40'-0" LONG TRAILER



IN CONJUNCTION WITH THE 1" X 12" INTERMEDIATE DECKING, AN ADDITIONAL PIECE OF 1" X 6" BY TRAILER WIDTH MINUS 1/2" MATERIAL WILL BE REQUIRED AT LOCATIONS SPECIFIED IN SPECIAL NOTE 7 BELOW.

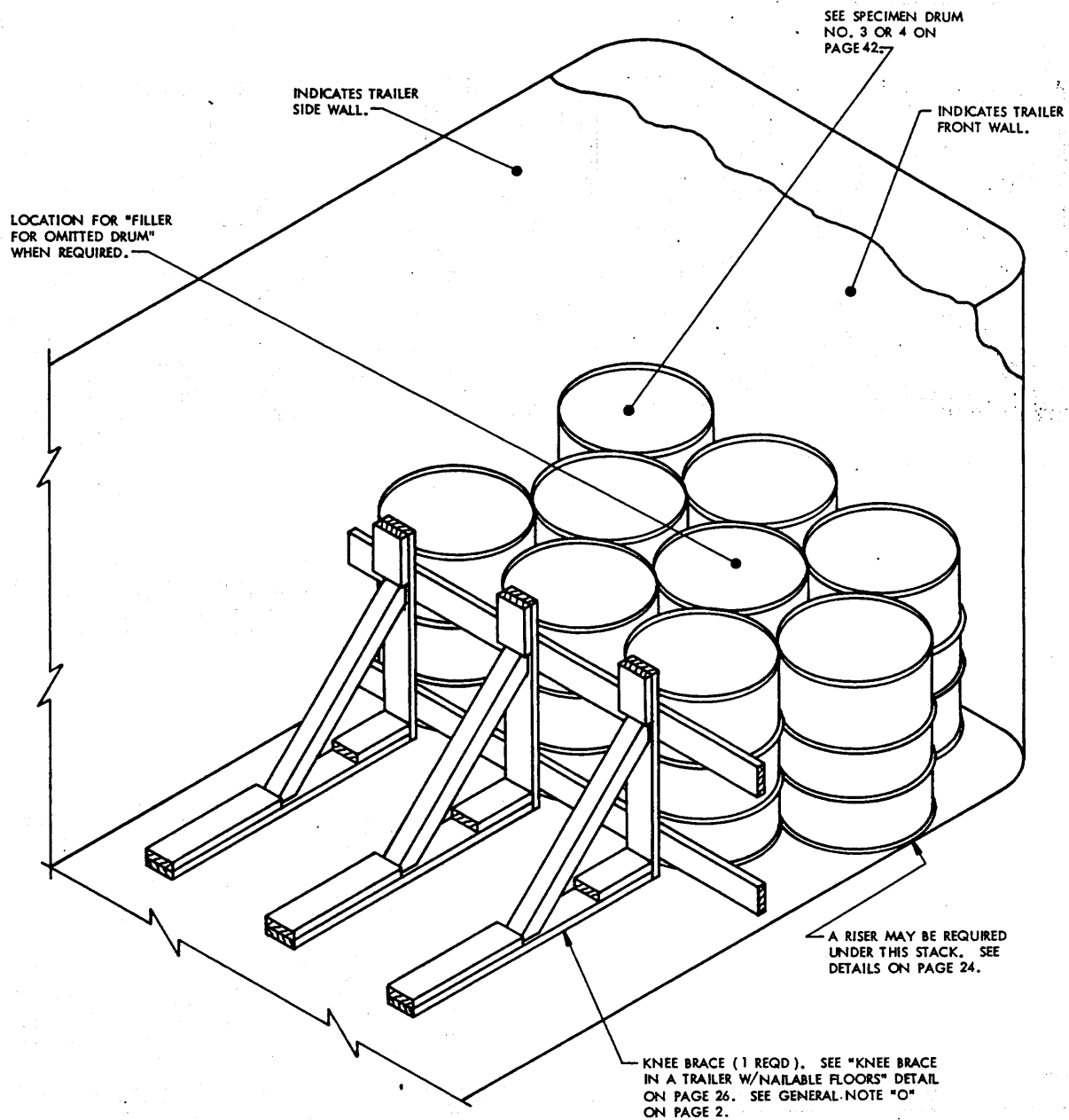
SPECIAL NOTES:

1. THE LOAD AS SHOWN IS BASED ON A 40'-0" LONG BY 7'-6" WIDE (INSIDE DIMENSION) TRAILER EQUIPPED WITH ROUNDED-CORNERS AT THE FORWARD END. A 138-DRUM LOAD IS DEPICTED USING AN "OFF-SET NESTED" LOADING PATTERN. SEE "LOAD PLANNING CHART" ON PAGE 4.
2. DETAILS OF METAL DRUM DEPICTED IN THE LOAD VIEWS:
 DRUM DIMENSIONS ----- 23-5/8" DIAMETER BY 35-3/16" HIGH.
 GROSS WEIGHT ----- 201 POUNDS (APPROX).
3. THE "FORWARD BLOCKING" IS SHOWN IN THE LOAD VIEW TO DEPICT A TYPICAL INSTALLATION. IF THE ROUNDED-CORNERS AT THE FORWARD END OF THE TRAILER HAVE A RADIUS OF MORE THAN 6", ADDITIONAL LATERAL PIECES WILL BE REQUIRED AS SPECIFIED IN THE "PLAN VIEW" AND "GATE THICKNESS REQUIREMENTS" CHART ON PAGE 22. HOWEVER, IF A SQUARE-FRONT TRAILER IS TO BE LOADED, A "SEPARATOR GATE-B" AS DETAILED ON PAGE 27 MAY BE USED AT THE FRONT OF THE TRAILER IN LIEU OF THE "FORWARD BLOCKING" SHOWN IN THE LOAD VIEWS.
4. IF MORE THAN 12" OF SPACE IS LEFT BETWEEN THE REAR OF THE LOAD AND THE TRAILER DOORS, WHEN CLOSED, A STRUT TYPE OF BLOCKING WILL BE USED AT THE REAR OF THE LOAD. SEE "TYPICAL STRUT TYPE REAR BLOCKING" DETAIL ON PAGE 19.
5. IF A LESSER QUANTITY OF DRUMS IS TO BE SHIPPED, A 1-LAYER LOAD BAY CAN BE PROVIDED. HOWEVER, THE THREE 2-LAYER STACKS AT EACH END OF THE 1-LAYER BAY MUST BE BUNDLED WITH STRAPPING AND STRAPPING GATES AS DEPICTED FOR THE THREE 2-LAYER STACKS OF THE METAL DRUM LOAD ON PAGE 39. SEE THE "TYPICAL STRAPPING GATE-B" DETAIL ON PAGE 27. SEE SPECIAL NOTE 4 ON PAGE 4.
6. WIDER, NARROWER, SHORTER AND LONGER TRAILERS AND TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY BE USED. SEE GENERAL NOTES "R" AND "S" ON PAGE 2.
7. INTERMEDIATE DECKING WILL BE REQUIRED FOR METAL DRUMS WHICH DO NOT HAVE VERTICAL NESTING CAPABILITIES, THAT IS, WHEN THE BOTTOM OF A TOP LAYER DRUM WILL NOT FIT INTO THE RECESS OF THE TOP OF A BOTTOM LAYER DRUM. THE WIDTH OF THE DECKING WILL VARY AS THE DRUM DIAMETER AND THE INSIDE WIDTH OF THE TRAILER VARIES. AN ADDITIONAL PIECE OF DECKING WILL BE REQUIRED IN THE STACKS ADJACENT TO THE FORWARD BLOCKING, SEPARATOR GATES, AND/OR REAR GATES TO PROVIDE FOR A FULL BEARING SURFACE FOR THE TOP LAYER OF DRUMS. SEE THE SPECIAL NOTE ON PAGE 42.

TYPICAL BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	45	23
1" X 12"	173	1731
2" X 2"	12	4
2" X 4"	181	121
2" X 6"	314	314
4" X 4"	18	24
NAILS	NO. REQD	POUNDS
10d (3")	426	6-3/4

TYPICAL LOAD AS SHOWN

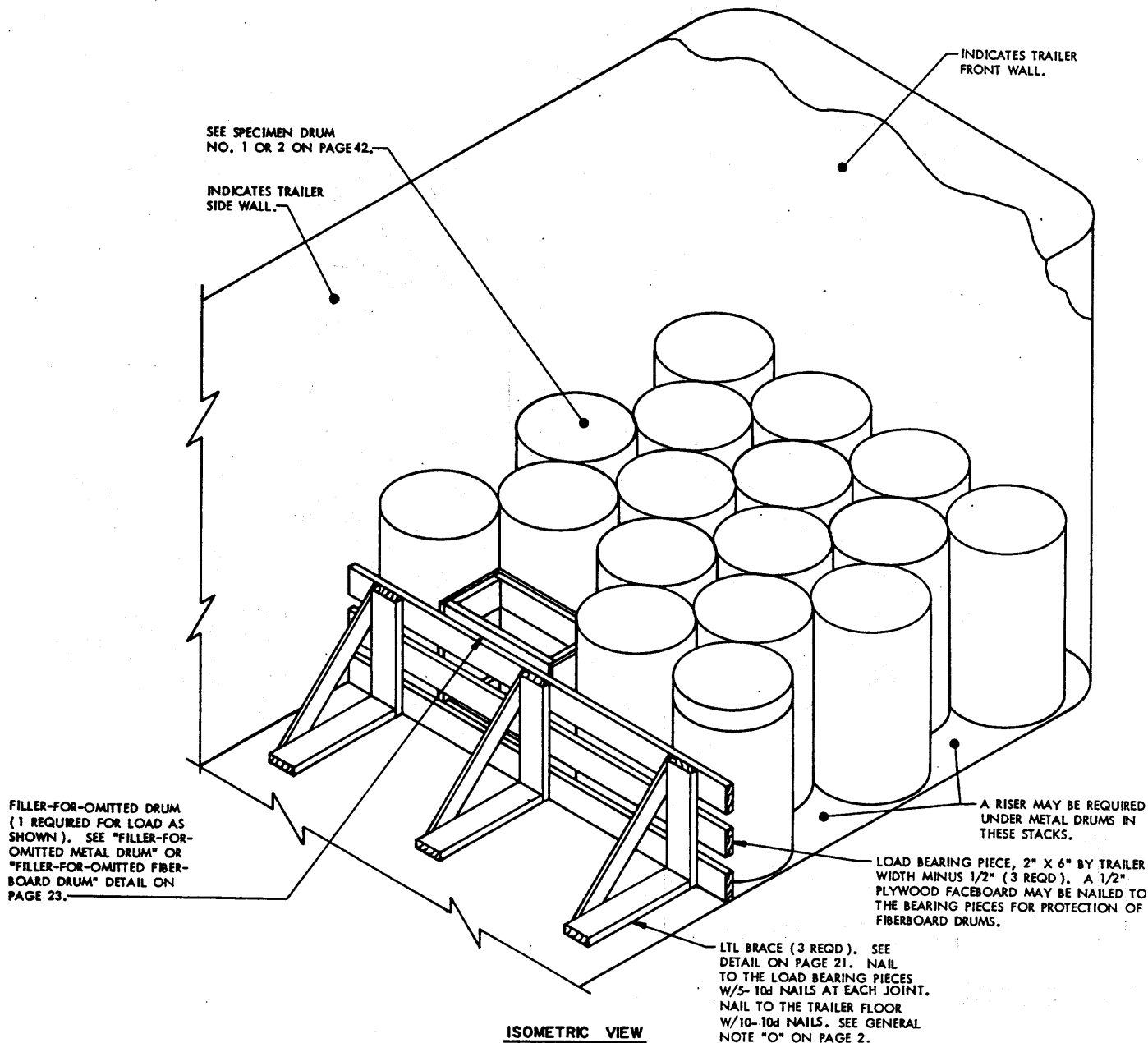
ITEM	QUANTITY	WEIGHT (APPROX.)
DRUM	138	27,738 LBS
DUNNAGE		1,325 LBS
TOTAL WEIGHT		29,063 LBS



ISOMETRIC VIEW

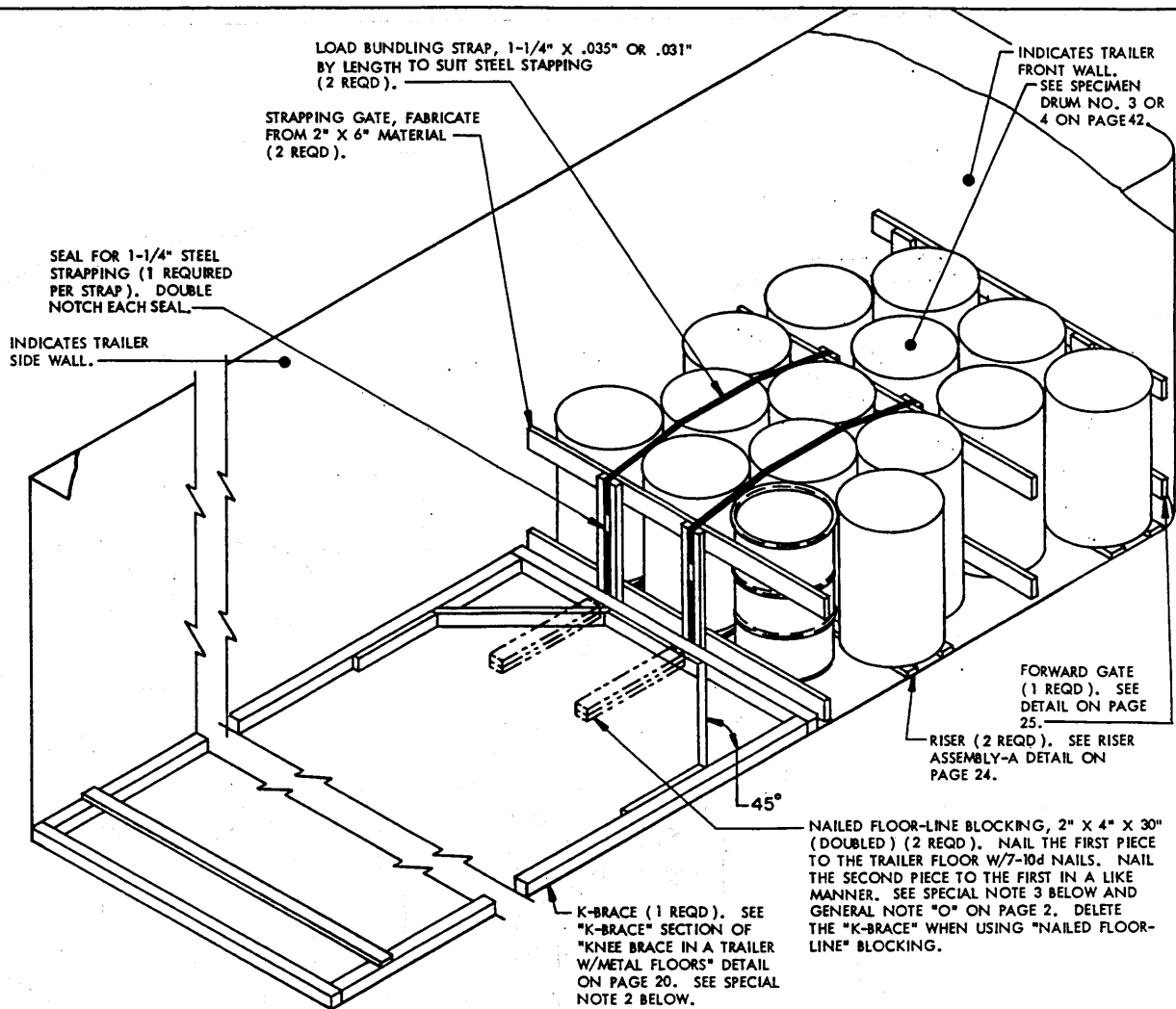
SPECIAL NOTES:

1. THESE OUTLOADING PROCEDURES ARE SHOWN DEPICTING THE USE OF KNEE BRACES IN A TRAILER EQUIPPED WITH A NAIABLE FLOOR. SEE SPECIAL NOTE 3 FOR TRAILERS WITH ALL METAL FLOORS.
2. THE KNEE BRACE ASSEMBLY AS SHOWN IS ADEQUATE FOR RETAINING NOT MORE THAN 18,000 POUNDS OF LADING.
3. IF THE TRAILER IS EQUIPPED WITH NON-NAIABLE FLOOR, SEE "KNEE BRACE IN A TRAILER W/METAL FLOORS" DETAIL ON PAGE 20. THE KNEE BRACE NAILED TO THE TRAILER FLOOR SHOULD BE USED, IF POSSIBLE.
4. DETAILS OF METAL DRUM DEPICTED IN THE LOAD VIEW:
 DRUM DIAMETER ----- 23-5/8" DIAMETER BY 34" HIGH.
 GROSS WEIGHT ----- 300 POUNDS (APPROX).
5. AN "OFF-SET NESTED" LOADING PATTERN IS DEPICTED. FORWARD BLOCKING, RISERS, SEPARATOR GATES, AND FILLER FOR OMITTED DRUM MAY BE USED WITH THE DEPICTED PROCEDURES. SEE "LOAD PLANNING CHART" ON PAGE 4 FOR ADDITIONAL GUIDANCE.



SPECIAL NOTES:

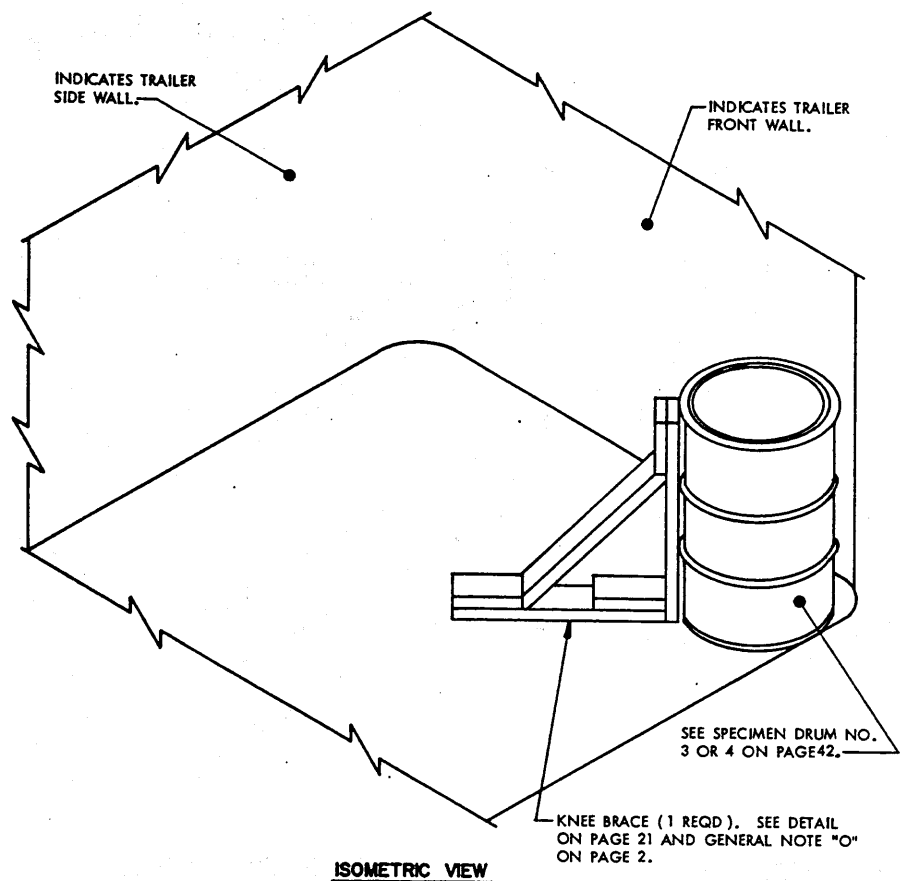
1. THESE OUTLOADING PROCEDURES ARE SHOWN DEPICTING THE USE OF LTL BRACES IN A TRAILER EQUIPPED WITH A NAILABLE FLOOR. TRAILERS WITH ALL METAL FLOORS CANNOT BE USED.
2. THE THREE (3) LTL BRACES AS SHOWN ARE ADEQUATE FOR RETAINING NOT MORE THAN 6,000 POUNDS OF LADING.
3. DETAIL OF DRUM DEPICTED IN THE LOAD VIEW:
 DRUM DIMENSIONS ----- 20" DIAMETER BY 36" HIGH.
 GROSS WEIGHT ----- 200 POUNDS (APPROX).
4. THE FILLER-FOR-OMITTED-DRUM IS SHOWN IN THE LOAD VIEW TO SHOW A TYPICAL INSTALLATION. FILLERS MAY BE USED AS REQUIRED, TO ADJUST TO THE NUMBER OF DRUMS TO BE OUTLOADED. EITHER A FILLER OR A SEPARATOR GATE CAN BE USED TO ADJUST TO THE NUMBER OF DRUMS TO BE OUTLOADED.
5. A "NESTED" LOADING PATTERN IS DEPICTED. FORWARD BLOCKING, RISERS, SEPARATOR GATES, AND FILLER FOR OMITTED DRUM MAY BE USED WITH THE DEPICTED PROCEDURES. SEE "LOAD PLANNING CHART" ON PAGE 4 FOR ADDITIONAL GUIDANCE.



ISOMETRIC VIEW

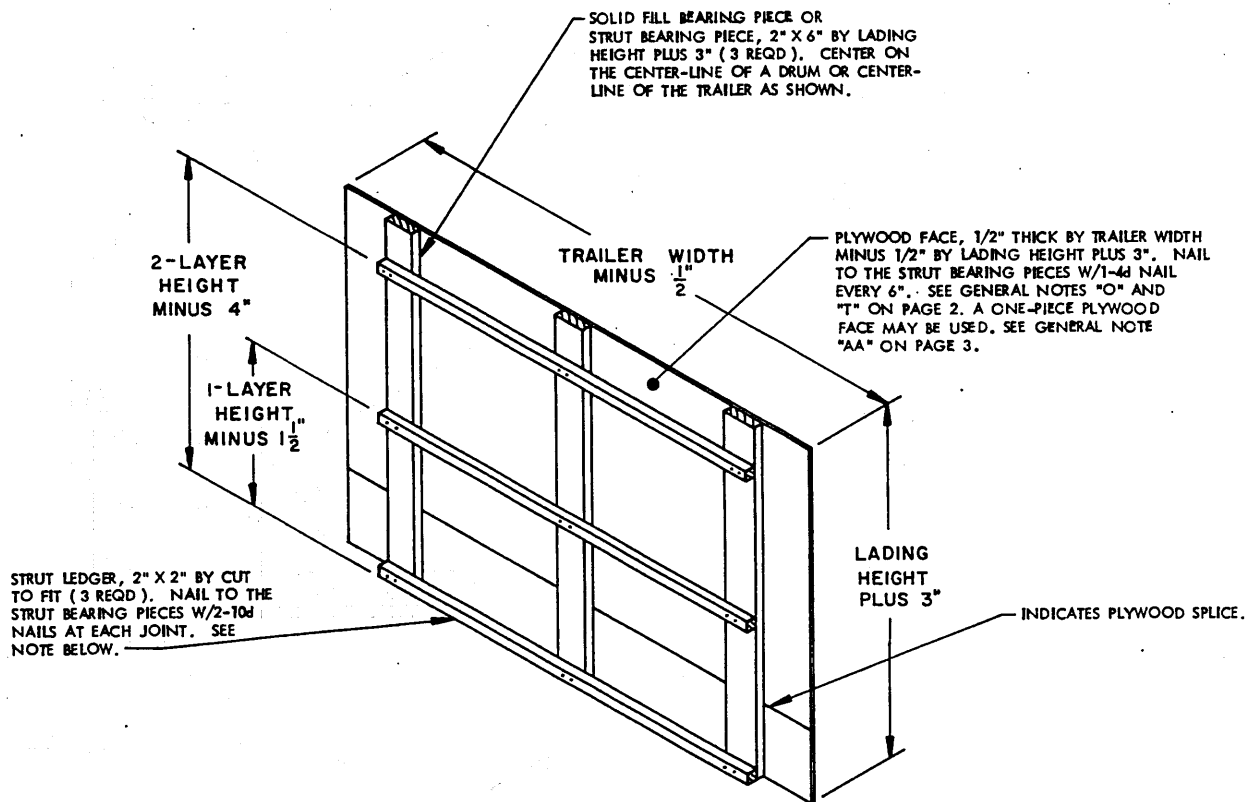
SPECIAL NOTES:

1. THESE OUTLOADING PROCEDURES ARE SHOWN DEPICTING THE USE OF TWO METHODS OF BLOCKING; THE USE OF A "K-BRACE" AND "NAILED FLOOR-LINE" BLOCKING.
2. THE "K-BRACE" BLOCKING, TO BE USED IN TRAILERS WITH NON-NAILED FLOORS, IS ADEQUATE FOR RETAINING NOT MORE THAN 24,000 POUNDS OF LADING.
3. THE "NAILED FLOOR LINE BLOCKING" TO BE USED IN TRAILERS WITH NAIL-ABLE FLOORS, IS ADEQUATE FOR RETAINING NOT MORE THAN 10,000 POUNDS OF LADING.
4. DETAILS OF METAL DRUMS DEPICTED IN THE LOAD VIEW:
 DRUM DIMENSIONS ----- 23-5/8" DIAMETER BY 35-3/16" HIGH.
 GROSS WEIGHT ----- 201 POUNDS (APPROX).
5. TO PROVIDE FOR A STABLE LOAD, NOT LESS THAN NINE (9) DRUMS WILL BE ENCIRCLED WITH STEEL STRAPPING. IF LESS THAN NINE (9) DRUMS ARE TO BE OUTLOADED SEE THE "TYPICAL LTL FOR METAL DRUMS" ON PAGE 14.
6. AN "OFF-SET NESTED" LOADING PATTERN IS DEPICTED. ADDITIONAL FORWARD BLOCKING AND FILLER FOR OMITTED DRUM MAY BE USED WITH THE DEPICTED PROCEDURES. SEE "LOAD PLANNING CHART" ON PAGE 4 FOR ADDITIONAL GUIDANCE.
7. IF DESIRED, IN A 1-LAYER LTL LOAD, UP TO 5 STACKS MAY BE BUNDLED WITH STRAPPING AS SHOWN.



SPECIAL NOTES:

1. THESE OUTLOADING PROCEDURES ARE SHOWN DEPICTING THE USE OF A KNEE BRACE BLOCKING ONE (1) DRUM IN A TRAILER EQUIPPED WITH NAILABLE FLOORS.
2. THE KNEE BRACE AS SHOWN IS ADEQUATE FOR BLOCKING ONE (1) DRUM. AN ADDITIONAL DRUM MAY BE LOADED IN THE OPPOSITE FORWARD CORNER OF THE TRAILER USING THE DEPICTED PROCEDURES.
3. DETAILS OF METAL DRUM DEPICTED IN THE LOAD VIEW:
 DRUM DIMENSIONS----- 23-5/8" DIAMETER BY 35-3/16" HIGH.
 GROSS WEIGHT ----- 201 POUNDS (APPROX).
4. IF THREE (3) OR MORE DRUMS ARE TO BE OUTLOADED SEE THE PROCEDURES DEPICTED ON PAGE 14.



STRUT LEDGER, 2" X 2" BY CUT TO FIT (3 REQD.). NAIL TO THE STRUT BEARING PIECES W/2-10d NAILS AT EACH JOINT. SEE NOTE BELOW.

PLYWOOD FACE, 1/2" THICK BY TRAILER WIDTH MINUS 1/2" BY LADING HEIGHT PLUS 3". NAIL TO THE STRUT BEARING PIECES W/1-4d NAIL EVERY 6". SEE GENERAL NOTES "O" AND "T" ON PAGE 2. A ONE-PIECE PLYWOOD FACE MAY BE USED. SEE GENERAL NOTE "AA" ON PAGE 3.

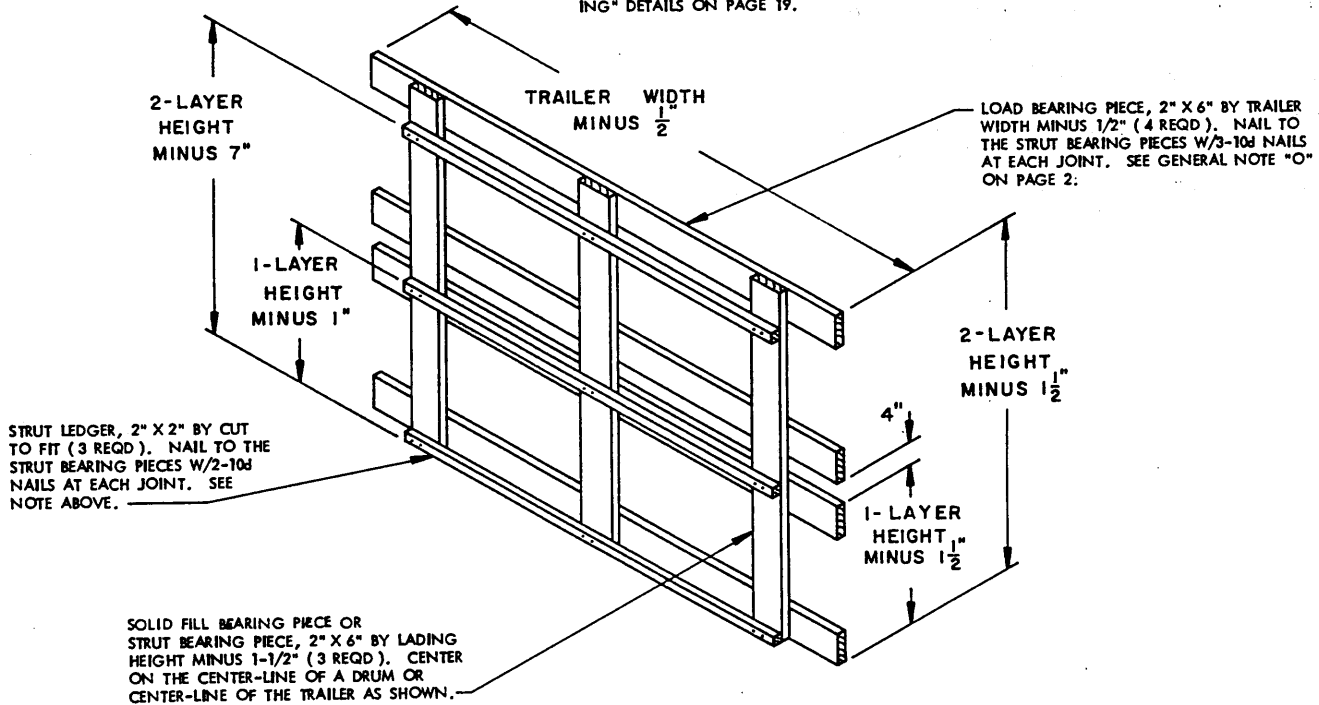
INDICATES PLYWOOD SPLICE.

NOTE:
OMIT STRUT LEDGER PIECES WHEN SOLID FILL TYPE REAR BLOCKING IS USED OR WHEN TRAILER IS EQUIPPED WITH MECHANICAL BRACING DEVICES.

TYPICAL REAR GATE - A

(FOR FIBERBOARD DRUMS)

SEE "TYPICAL SOLID FILL" AND "TYPICAL STRUT TYPE REAR BLOCKING" DETAILS ON PAGE 19.



STRUT LEDGER, 2" X 2" BY CUT TO FIT (3 REQD.). NAIL TO THE STRUT BEARING PIECES W/2-10d NAILS AT EACH JOINT. SEE NOTE ABOVE.

LOAD BEARING PIECE, 2" X 6" BY TRAILER WIDTH MINUS 1/2" (4 REQD.). NAIL TO THE STRUT BEARING PIECES W/3-10d NAILS AT EACH JOINT. SEE GENERAL NOTE "O" ON PAGE 2.

SOLID FILL BEARING PIECE OR STRUT BEARING PIECE, 2" X 6" BY LADING HEIGHT MINUS 1-1/2" (3 REQD.). CENTER ON THE CENTER-LINE OF A DRUM OR CENTER-LINE OF THE TRAILER AS SHOWN.

TYPICAL REAR GATE - B

(FOR METAL DRUMS)

SEE "TYPICAL SOLID FILL" AND "TYPICAL STRUT TYPE REAR BLOCKING" DETAILS ON PAGE 19.

SOLID FILL, 6" WIDE MATERIAL BY GATE HEIGHT LONG BY THE THICKNESS REQUIRED TO CONTACT THE REAR DOORS OF THE TRAILER WHEN THEY ARE CLOSED (REQUIRED AT THREE (3) LOCATIONS). LAMINATE TO STRUT BEARING PIECE OF REAR GATE OR SELF W/1-10d NAIL EVERY 12". SEE GENERAL NOTE "O" ON PAGE 2.

REAR GATE (1 REQD). SEE "TYPICAL REAR GATE" DETAILS ON PAGE 18. (REAR GATE-A FOR FIBERBOARD DRUMS IS SHOWN).

INDICATES PLYWOOD SPLICE. SEE GENERAL NOTE "AA" ON PAGE 3.

TYPICAL SOLID FILL TYPE REAR BLOCKING

TO BE USED IN A TRAILER LOADED WITH DRUMS WHEN THE VOID BETWEEN THE LADING AND THE REAR DOORS OF THE TRAILER, WHEN CLOSED, MEASURES 12" OR LESS; WHEN THE VOID MEASURES MORE THAN 12" SEE "TYPICAL STRUT TYPE REAR BLOCKING" DETAIL BELOW.

STRUT LEDGER, 2" X 4" BY TRAILER WIDTH MINUS 1/2" (2 REQD). ALIGN WITH STRUT LEDGERS OF REAR GATE AND NAIL TO THE STRUT BEARING PIECES W/3-10d NAILS AT EACH JOINT. SEE GENERAL NOTE "O" ON PAGE 2.

STRUT BEARING PIECES, 4" X 4" BY LADING HEIGHT PLUS 9" (3 REQD). ALIGN WITH VERTICAL PIECES OF REAR GATE.

STRUT LEDGER/RETAINER, 2" X 2" BY TRAILER WIDTH MINUS 1/2" (1 REQD). NAIL TO THE STRUT BEARING PIECES W/2-10d NAILS AT EACH JOINT.

REAR GATE (1 REQD). SEE THE "TYPICAL REAR GATE" DETAILS ON PAGE 18. (REAR GATE-B FOR METAL DRUMS IS SHOWN).

STRUTS, 4" X 4" BY CUT TO FIT (9 REQD). TOENAIL TO STRUT BEARING PIECE AND TO REAR GATE W/2-12d NAILS AT EACH END.

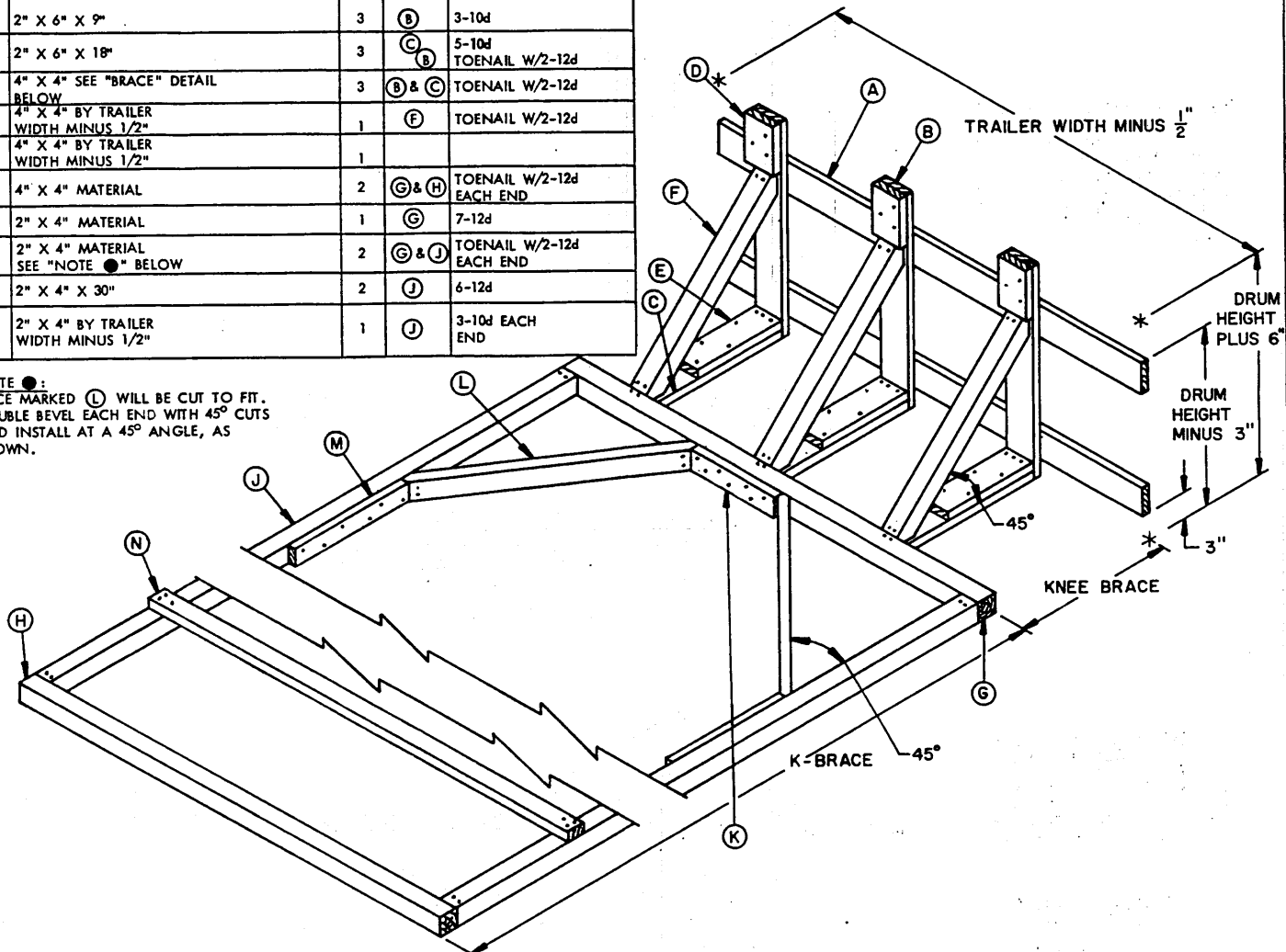
TYPICAL STRUT TYPE REAR BLOCKING

TO BE USED IN TRAILERS WHEN THE VOID BETWEEN THE LADING AND THE REAR DOORS OF THE TRAILER, WHEN CLOSED, MEASURES MORE THAN 12". WHEN THE VOID MEASURES 12" OR LESS, SEE "TYPICAL SOLID FILL" DETAIL ABOVE.

LUMBER AND NAILING CHART

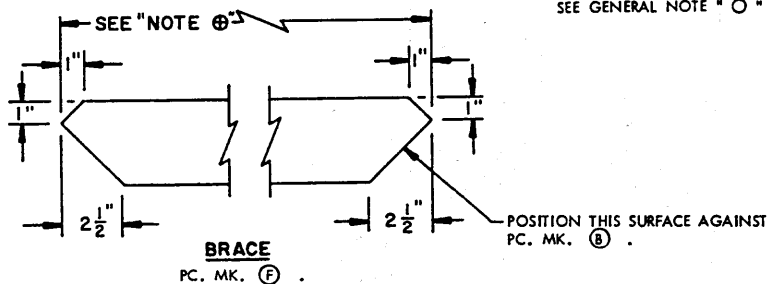
PC MK	MATERIAL	NO REQD	NAIL TO	NO AND SIZE OF NAILS
(A)	2" X 6" MATERIAL	2	(B)	3-10d EACH JOINT
(B)	2" X 6" BY DRUM HEIGHT PLUS 6"	3		
(C)	2" X 6" MATERIAL SEE "NOTE ⊕" BELOW	3	TRAILER FLOOR	6-10d
(D)	2" X 6" X 9"	3	(B)	3-10d
(E)	2" X 6" X 18"	3	(C) (B)	5-10d TOENAIL W/2-12d
(F)	4" X 4" SEE "BRACE" DETAIL BELOW	3	(B & C)	TOENAIL W/2-12d
(G)	4" X 4" BY TRAILER WIDTH MINUS 1/2"	1	(F)	TOENAIL W/2-12d
(H)	4" X 4" BY TRAILER WIDTH MINUS 1/2"	1		
(J)	4" X 4" MATERIAL	2	(G & H)	TOENAIL W/2-12d EACH END
(K)	2" X 4" MATERIAL	1	(G)	7-12d
(L)	2" X 4" MATERIAL SEE "NOTE ●" BELOW	2	(G & J)	TOENAIL W/2-12d EACH END
(M)	2" X 4" X 30"	2	(J)	6-12d
(N)	2" X 4" BY TRAILER WIDTH MINUS 1/2"	1	(J)	3-10d EACH END

NOTE ● :
PIECE MARKED (L) WILL BE CUT TO FIT. DOUBLE BEVEL EACH END WITH 45° CUTS AND INSTALL AT A 45° ANGLE, AS SHOWN.



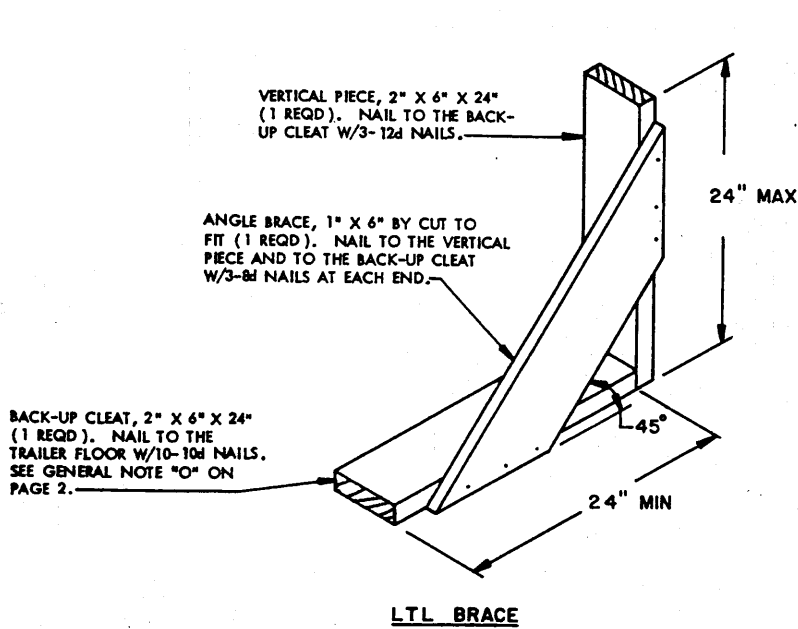
KNEE BRACE IN A TRAILER W/METAL FLOORS

SEE GENERAL NOTE "O" ON PAGE 2.

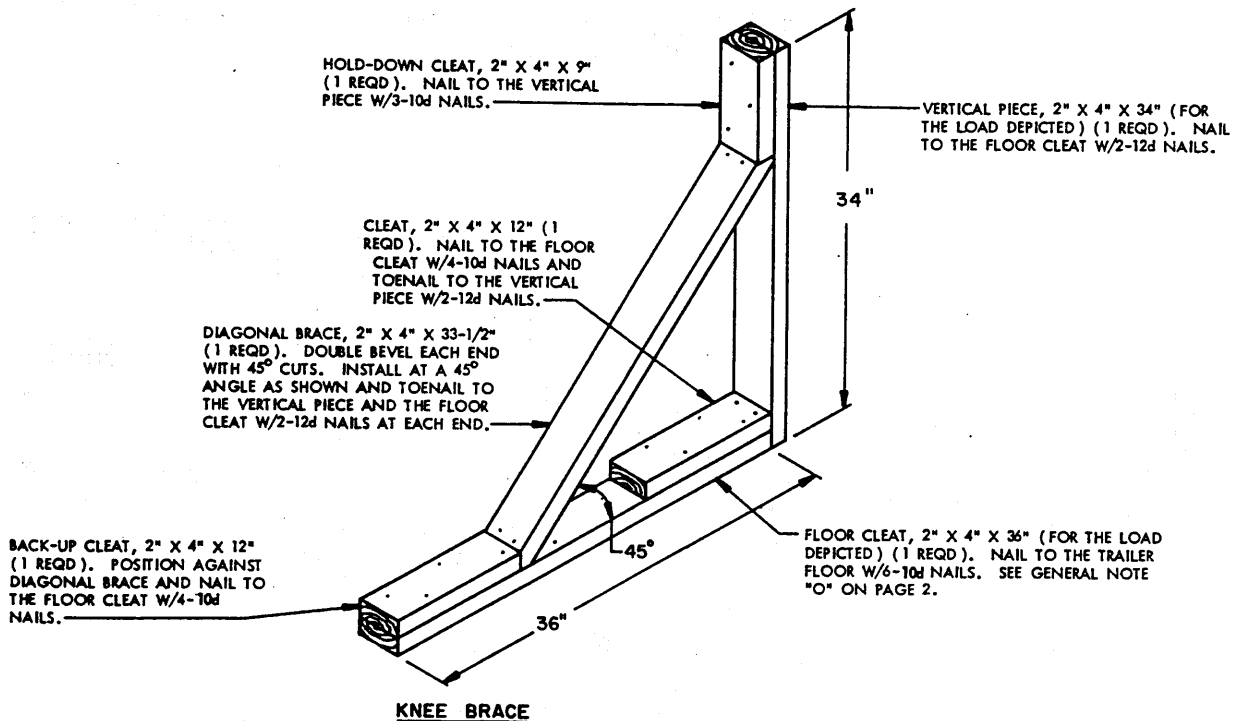


NOTE ⊕ :

- TO CALCULATE THE LENGTH OF PC. MK. (F) THE FOLLOWING STEPS WILL BE REQUIRED:
- STEP 1: SUBTRACT 4-1/2" FROM THE DRUM HEIGHT (EXAMPLE: IF THE DRUM HEIGHT IS 36" THE ANSWER WOULD BE 31-1/2").
 - STEP 2: DIVIDE THE ANSWER FROM STEP 1 BY .707 (EXAMPLE: ANSWER FROM STEP 1 BEING 31-1/2", DIVIDE 31-1/2" BY .707 WHICH EQUALS 44.55).
 - STEP 3: THE LENGTH OF PC. MK. (E) WOULD BE THE ANSWER OF STEP 2 ABOVE (EXAMPLE: 44-1/2" FOR A 36" HIGH DRUM).
 - STEP 4: THE ANSWER TO STEP 1 ABOVE IS ALSO THE LENGTH OF PC. MK. (C).



NOTE:
EACH LTL BRACE AS APPLIED FOR LONGITUDINAL BRACING WILL SUPPORT 2,000 POUNDS OF LADING. NOT LESS THAN THREE (3) LTL BRACES WILL BE USED ACROSS THE WIDTH OF THE TRAILER. RELATIVE TO APPLYING LTL BRACES FOR LATERAL BLOCKING, ONE (1) BRACE WILL BE USED FOR EACH LESS-THAN-FULL STACK.



NOTE:
THE 34" HEIGHT DIMENSION IS BASED ON A DRUM HEIGHT OF 35". THIS DIMENSION MAY BE ADJUSTED TO SUIT THE DRUM BEING OUTLOADED.

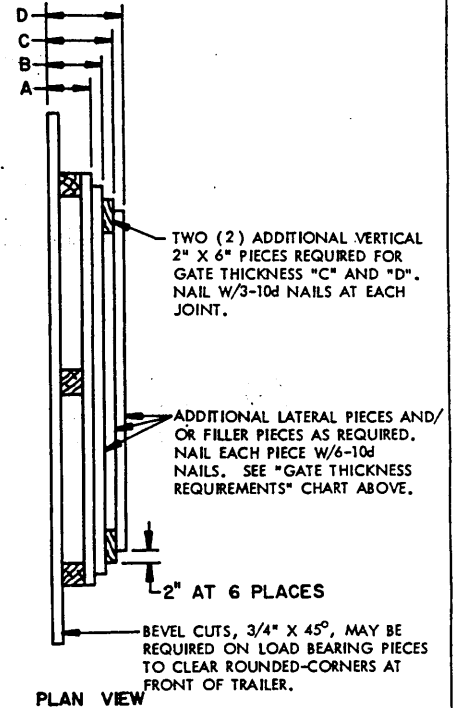
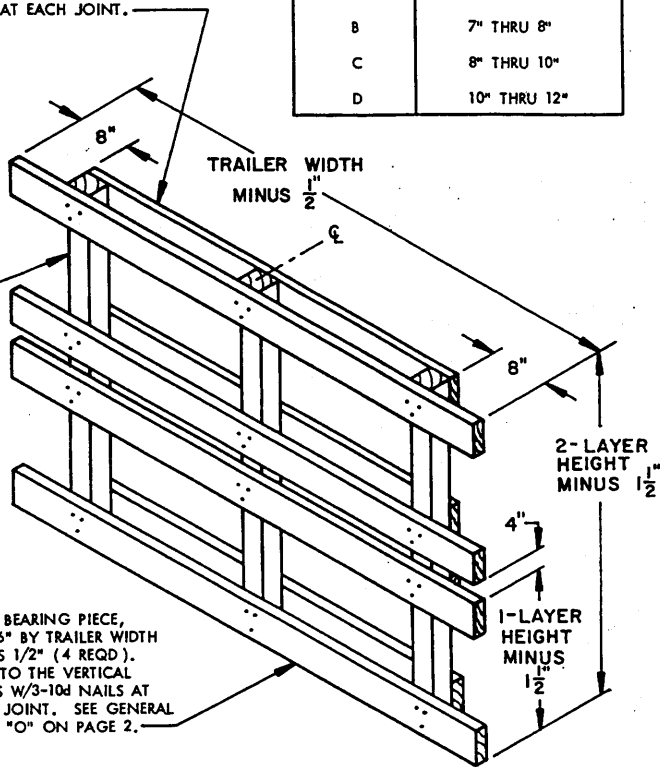
NOTE:
EACH KNEE BRACE ASSEMBLY WILL RETAIN A MAXIMUM LOAD OF 2,000 POUNDS. THIS KNEE BRACE MUST BE USED IN TRAILERS WITH NAILABLE FLOORS.

GATE THICKNESS REQUIREMENTS	
LAMINATIONS	CORNER RADIUS (INSIDE)
A	UP THRU 7"
B	7" THRU 8"
C	8" THRU 10"
D	10" THRU 12"

LATERAL PIECE, 2" X 6" BY CUT TO FIT (4 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

VERTICAL PIECE, 4" X 4" BY LOAD HEIGHT MINUS 1-1/2" (3 REQD).

LOAD BEARING PIECE, 2" X 6" BY TRAILER WIDTH MINUS 1/2" (4 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. SEE GENERAL NOTE "O" ON PAGE 2.



FORWARD BLOCKING METHOD - A (FOR METAL DRUMS).

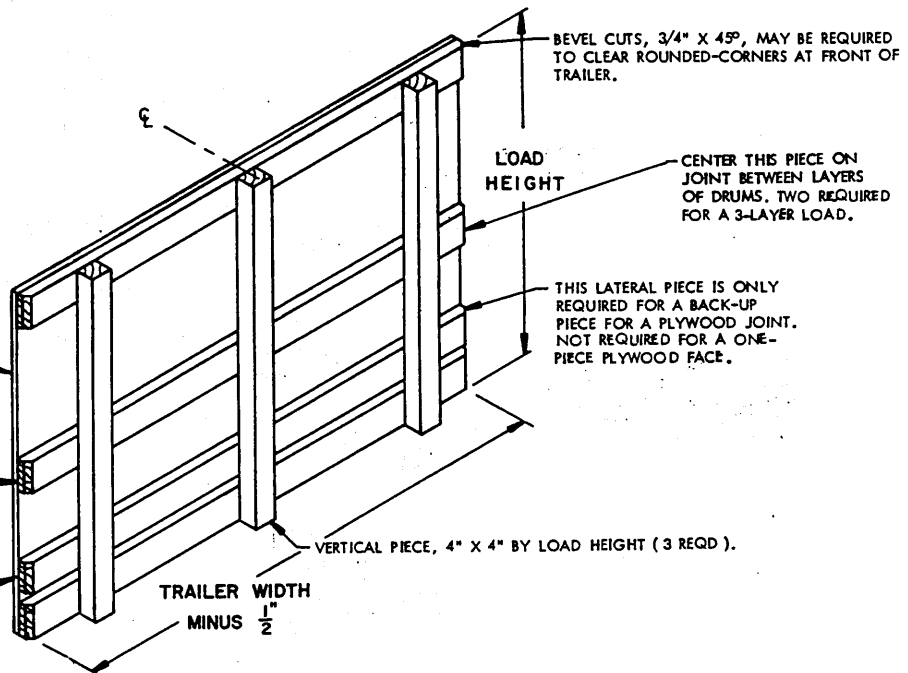
SEE "PLAN VIEW" AND "GATE THICKNESS REQUIREMENTS" CHART ABOVE WHEN THE TRAILER HAS ROUNDED CORNERS WITH A RADIUS GREATER THAN 6".

PLAN VIEW

PLYWOOD FACE, 1/2" THICK BY TRAILER WIDTH MINUS 1/2" BY LOAD HEIGHT (1 REQD). NAIL TO EACH LATERAL PIECE W/6-4d NAILS. SEE GENERAL NOTE "O" ON PAGE 2. A ONE-PIECE PLYWOOD FACE MAY BE USED. SEE GENERAL NOTE "AA" ON PAGE 3.

LATERAL PIECE, 2" X 6" BY TRAILER WIDTH MINUS 1/2" (4 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

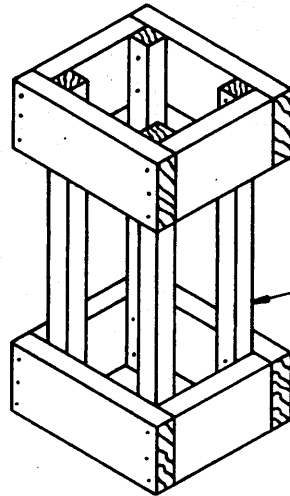
INDICATES PLYWOOD JOINT OF THE ASSEMBLY WHEN THE LOAD HEIGHT IS GREATER THAN 48".



FORWARD BLOCKING METHOD - B (FOR FIBERBOARD DRUMS).

IF THE TRAILER HAS ROUNDED-CORNERS WITH A RADIUS GREATER THAN 6", SEE "GATE THICKNESS REQUIREMENTS" CHART ABOVE FOR ADDITIONAL FILLER PIECES THAT WILL BE REQUIRED ON THE FRONT SIDE OF THE ASSEMBLY.

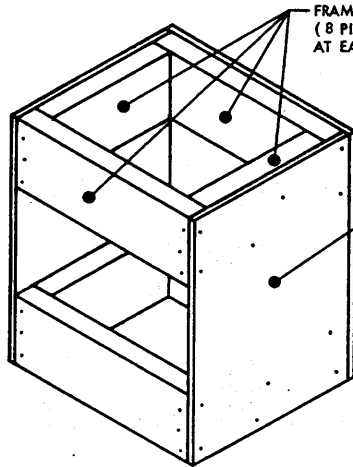
DETAILS



LOAD BEARING PIECE, 2" X 6" BY CUT TO FIT (8 PIECES REQD). NAIL W/3-10d NAILS AT EACH JOINT.

SUPPORT PIECE, 2" X 2" BY CUT TO FIT (4 REQD). NAIL EACH TO ONE LOAD BEARING PIECE W/2-10d NAILS.

FILLER FOR OMITTED METAL DRUM



FRAMING MATERIAL, 2" X 6" MATERIAL (8 PIECES REQD). NAIL W/3-10d NAILS AT EACH JOINT.

PLYWOOD FACE, 1/2" THICK BY LENGTH AND WIDTH TO SUIT (REQUIRED ON THREE SURFACES). NAIL TO THE FRAMING W/6d NAILS.

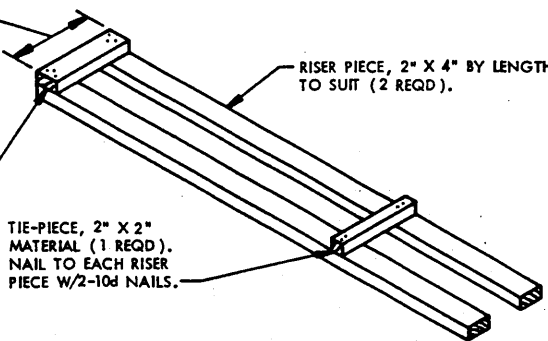
FILLER FOR OMITTED FIBERBOARD DRUM

SEE "NOTE ①" BELOW.

TIE-PIECE, 2" X 4" MATERIAL (1 REQD). NAIL TO EACH RISER PIECE W/3-10d NAILS.

TIE-PIECE, 2" X 2" MATERIAL (1 REQD). NAIL TO EACH RISER PIECE W/2-10d NAILS.

RISER PIECE, 2" X 4" BY LENGTH TO SUIT (2 REQD).



RISER ASSEMBLY-A

THIS RISER IS APPLICABLE TO DRUMS WHEN LOADED IN THE TRAILER WITH AN "OFF-SET NESTED" PATTERN AS DEPICTED ON PAGE 5 AND AS SHOWN IN THE LOAD VIEWS ON PAGE 12.

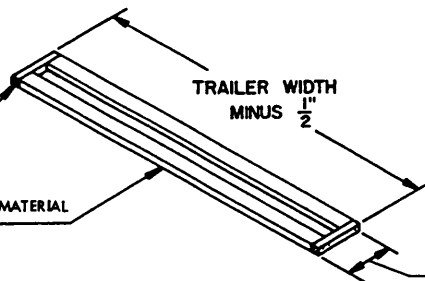
NOTE ① :

THE WIDTH OF THE RISER ASSEMBLY MUST BE FABRICATED TO FIT. AFTER A LOADING PATTERN IS ESTABLISHED, THIS DIMENSION MUST BE FIELD CHECKED. THE WIDTH OF THE RISER ASSEMBLY MUST BE CONSTRUCTED SO THAT IT WILL NOT CONTACT LONGITUDINALLY ADJACENT STACKS OF DRUMS. THE THICKNESS OF THE RISER PIECE OF THE ASSEMBLY MUST BE ADJUSTED AS REQUIRED TO SUIT THE LOADING PATTERN AND/OR DRUM CONFIGURATION.

TIE-PIECE, 2" X 2" MATERIAL (2 REQD). NAIL TO EACH RISER PIECE W/2-12d NAILS.

RISER PIECE, 2" X 4" MATERIAL (2 REQD).

TRAILER WIDTH MINUS $\frac{1}{2}$ "



SEE "NOTE ①" ABOVE.

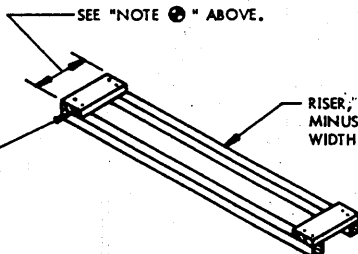
RISER ASSEMBLY-C

THIS RISER IS APPLICABLE TO DRUMS WHEN LOADED IN THE TRAILER WITH A "NESTED" PATTERN OR AN "OFF-SET NESTED" PATTERN.

SEE "NOTE ①" ABOVE.

TIE-PIECE, 1" X 4" MATERIAL (2 REQD). NAIL TO EACH 2" X 2" RISER PIECE W/2-6d NAILS OR TO EACH 2" X 4" RISER PIECE W/3-6d NAILS.

RISER, 2" X 2" BY TRAILER WIDTH MINUS $\frac{1}{2}$ " OR 2" X 4" BY TRAILER WIDTH MINUS $\frac{1}{2}$ " (2 REQD).



RISER ASSEMBLY-B

THIS RISER IS APPLICABLE TO DRUMS WHEN LOADED IN THE TRAILER WITH A "NESTED" PATTERN AS DEPICTED IN THE LTL LOAD ON PAGES 15 AND 35.

SUPPORT BLOCK, 2" X 4" X 12"
(6 REQD). NAIL TO THE STRUT
BEARING PIECE W/3-10d NAILS.

PLYWOOD FACE, 1/2" THICK BY TRAILER WIDTH MINUS 1/2" BY
DRUM HEIGHT PLUS 3" (1 REQD). NAIL TO EACH STRUT BEAR-
ING PIECE W/1-4d NAIL EVERY 6". SEE GENERAL NOTES "O"
AND "T" ON PAGE 2.

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

STRUT LEDGER, 2" X 2" BY
TRAILER WIDTH MINUS 1/2"
(2 REQD). NAIL TO THE
STRUT BEARING PIECE W/1-10d
NAIL EVERY 12".

DRUM HEIGHT PLUS 3"

OF GATE

$\frac{3}{4}$ DRUM HEIGHT

PARTIAL LAYER GATE - A

(FOR FIBERBOARD DRUMS)

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

PARTIAL LAYER
HEIGHT MINUS 6"

STRUT BEARING PIECE, 2" X 6" BY
PARTIAL LAYER HEIGHT (3 REQD).
POSITION ON CENTER LINE OF
DRUM. NAIL TO THE LOAD
BEARING PIECE W/3-10d NAILS
AT EACH JOINT.

STRUT LEDGER, 2" X 2" BY
LENGTH TO SUIT (2 REQD).
NAIL TO THE STRUT BEARING
PIECES W/2-10d NAILS AT
EACH JOINT.

PARTIAL LAYER $1\frac{1}{2}$ "
HEIGHT MINUS $\frac{1}{2}$ "

PARTIAL LAYER GATE - B

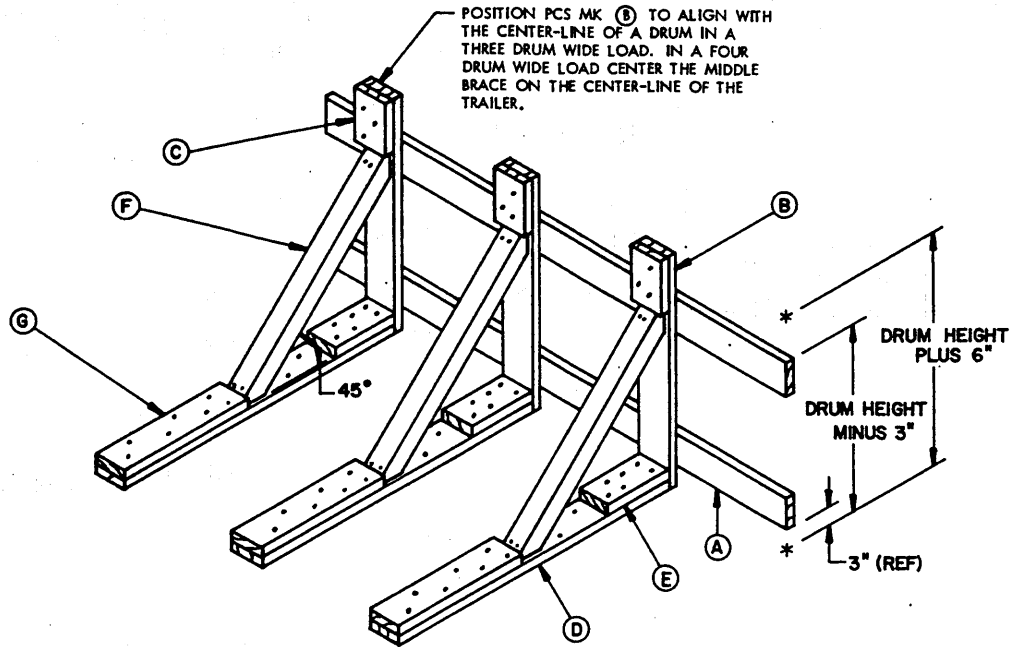
(FOR METAL DRUMS)

BEARING PIECE, 2" X 6" BY LENGTH
REQUIRED TO CONTACT THE FRONT WALL
OF THE TRAILER (2 REQD).

VERTICAL PIECE, 2" X 4" BY
GATE HEIGHT (2 REQD).
POSITION BETWEEN DRUMS AND
NAIL TO THE BEARING PIECES
W/3-10d NAILS AT EACH JOINT.

LAYER
HEIGHT
MINUS $\frac{1}{2}$ "

FORWARD LTL GATE



KNEE BRACE IN A TRAILER W/NAILABLE FLOORS

SEE GENERAL NOTE "O" ON PAGE 2.

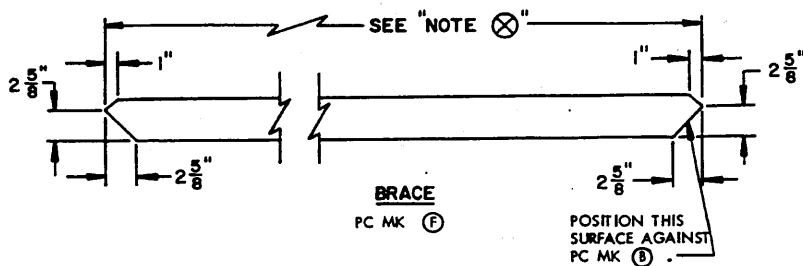
LUMBER AND NAILING CHART

PC MK	MATERIAL	NO. REQD	NAIL TO	NUMBER AND SIZE OF NAILS
(A)	2" X 6" BY TRAILER WIDTH MINUS 1/2"	2	(B)	3-10d EACH JOINT
(B)	2" X 6" BY LADING HEIGHT PLUS 6"	3		
(C)	2" X 6" X 9"	3	(B)	3-10d
(D)	2" X 6" MATERIAL SEE "NOTE (X)".	3	TRAILER FLOOR	1-10d EVERY 8"
(E)	2" X 6" X 18" SEE "NOTE (X)".	3	(D) & (B)	4-10d TOENAIL 2-12d
(F)	4" X 4" MATERIAL SEE "BRACE" DETAIL BELOW	3	(B) & (D)	TOENAIL W/2-12d EACH END
(G)	2" X 6" X 30"	3	(D)	7-10d

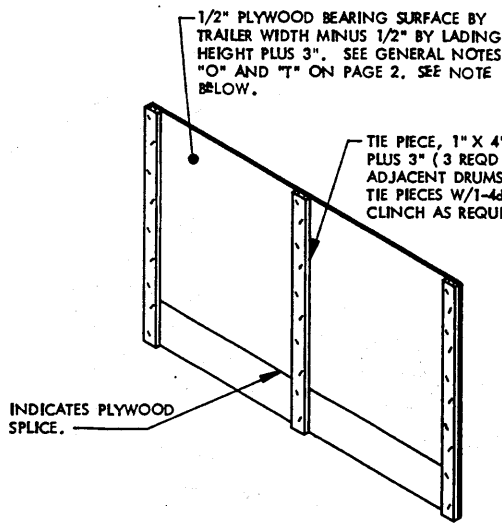
NOTE (X) :

TO CALCULATE THE LENGTH OF PCS MK (F) AND (D) THE FOLLOWING STEPS WILL BE REQUIRED:
 STEP 1. SUBTRACT 4-1/2" FROM THE DRUM HEIGHT (EXAMPLE: IF THE DRUM HEIGHT IS 36", THE ANSWER WOULD BE 31-1/2").
 STEP 2. DIVIDE THE ANSWER FROM STEP 1 BY .707 (EXAMPLE: ANSWER FROM STEP 1 BEING 31-1/2", DIVIDE 31-1/2" BY .707 WHICH EQUALS 44.55").
 STEP 3. THE LENGTH OF PC MK (F) WOULD BE THE ANSWER OF STEP 2 ABOVE. (44-1/2" FOR A DRUM HEIGHT OF 36").
 STEP 4. LIKEWISE, THE ANSWER FROM STEP 1 ABOVE PLUS 30" IS THE LENGTH OF PC MK (D) (31-1/2" PLUS 30" = 61-1/2" FOR A 36" HIGH DRUM).

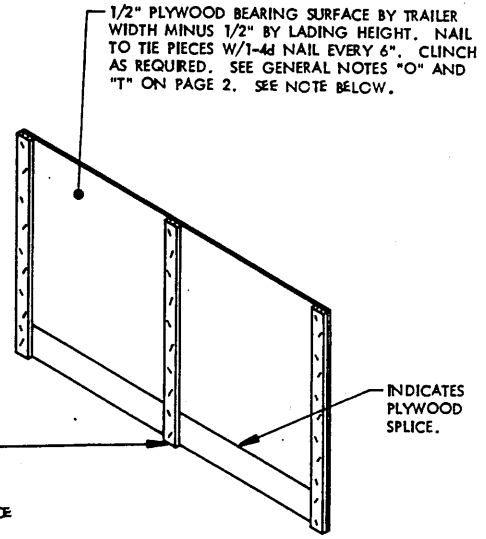
NOTE (O) : 2" X 6" X 15" FOR DRUMS 27" OR LESS IN HEIGHT.



DETAILS



TYPICAL SEPARATOR GATE-A
(FOR FIBERBOARD DRUMS)

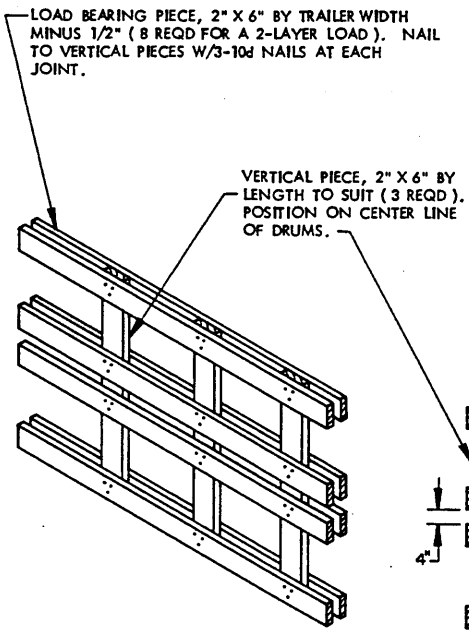


TYPICAL STRAPPING GATE-A
(FOR FIBERBOARD DRUMS)

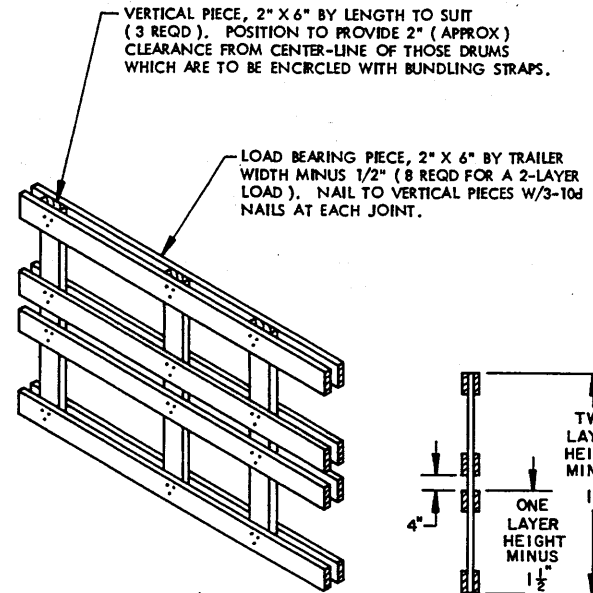
TIE PIECE, 1" X 4" BY LADING HEIGHT PLUS 3" (3 REQD). POSITION TO MISS ADJACENT DRUMS. NAIL PLYWOOD TO TIE PIECES W/1-4d NAIL EVERY 6". CLINCH AS REQUIRED. SEE NOTE BELOW.

TIE PIECE, 1" X 4" BY LADING HEIGHT (3 REQD). POSITION TO PROVIDE 2" (APPROX) CLEARANCE FROM CENTER LINE OF THOSE DRUMS WHICH ARE TO BE ENCIRCLED WITH BUNDLING STRAPS. SEE NOTE BELOW.

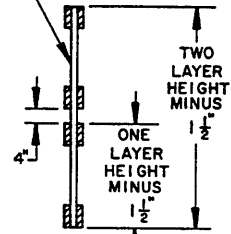
NOTE: A ONE-PIECE PLYWOOD BEARING SURFACE MAY BE USED AND ALL 1" X 4" TIE PIECES OMITTED. SEE GENERAL NOTE "AA" ON PAGE 3.



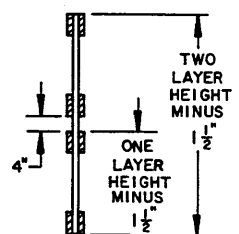
TYPICAL SEPARATOR GATE-B
(FOR METAL DRUMS)



TYPICAL STRAPPING GATE-B
(FOR METAL DRUMS)

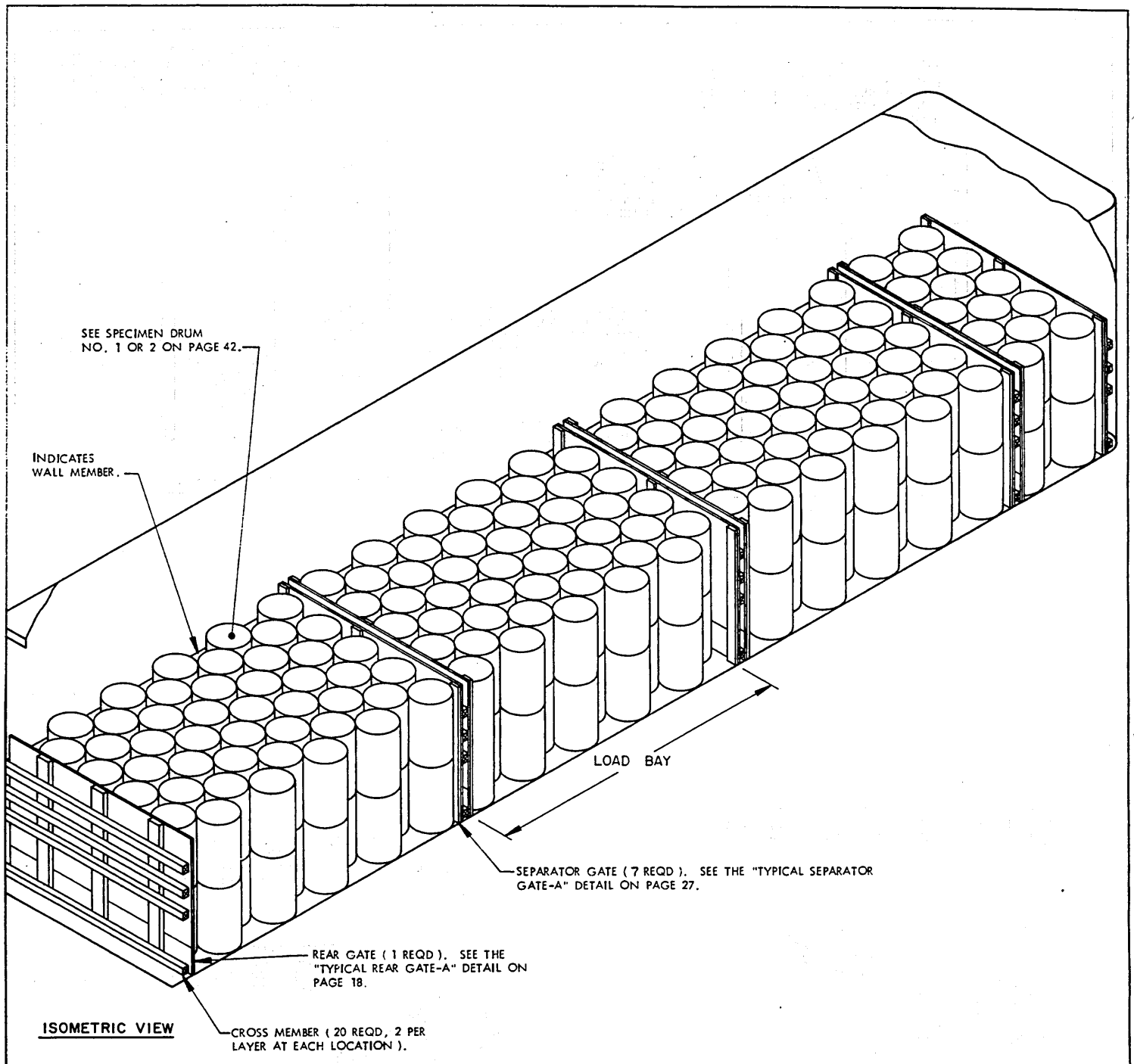


END VIEW
SEE NOTE BELOW.



END VIEW
SEE NOTE BELOW.

NOTE: IF THE GATE IS ADJACENT TO DRUMS ON RISER ASSEMBLIES, THE THICKNESS OF THE RISER MUST BE INCLUDED IN THE LADING HEIGHT FOR 1-LAYER OR 2-LAYER LOADS.



SEE SPECIMEN DRUM
NO. 1 OR 2 ON PAGE 42.

INDICATES
WALL MEMBER.

LOAD BAY

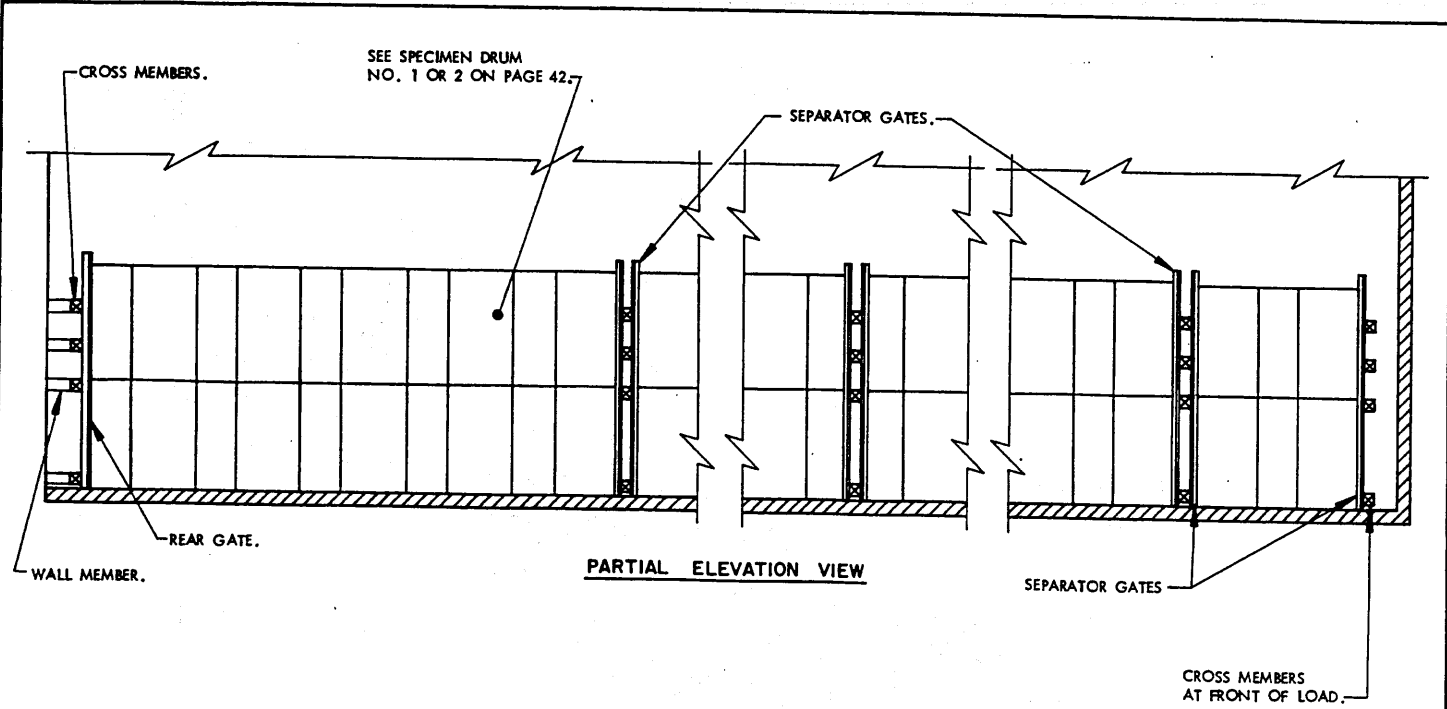
SEPARATOR GATE (7 REQD). SEE THE "TYPICAL SEPARATOR
GATE-A" DETAIL ON PAGE 27.

REAR GATE (1 REQD). SEE THE
"TYPICAL REAR GATE-A" DETAIL ON
PAGE 18.

ISOMETRIC VIEW

CROSS MEMBER (20 REQD, 2 PER
LAYER AT EACH LOCATION).

CAUTION:
MECHANICAL TRAILERS MUST NOT
BE USED FOR SHIPMENT OF CERTAIN
EXPLOSIVES. SEE THE "CAUTION"
NOTES ON THE COVER PAGE.



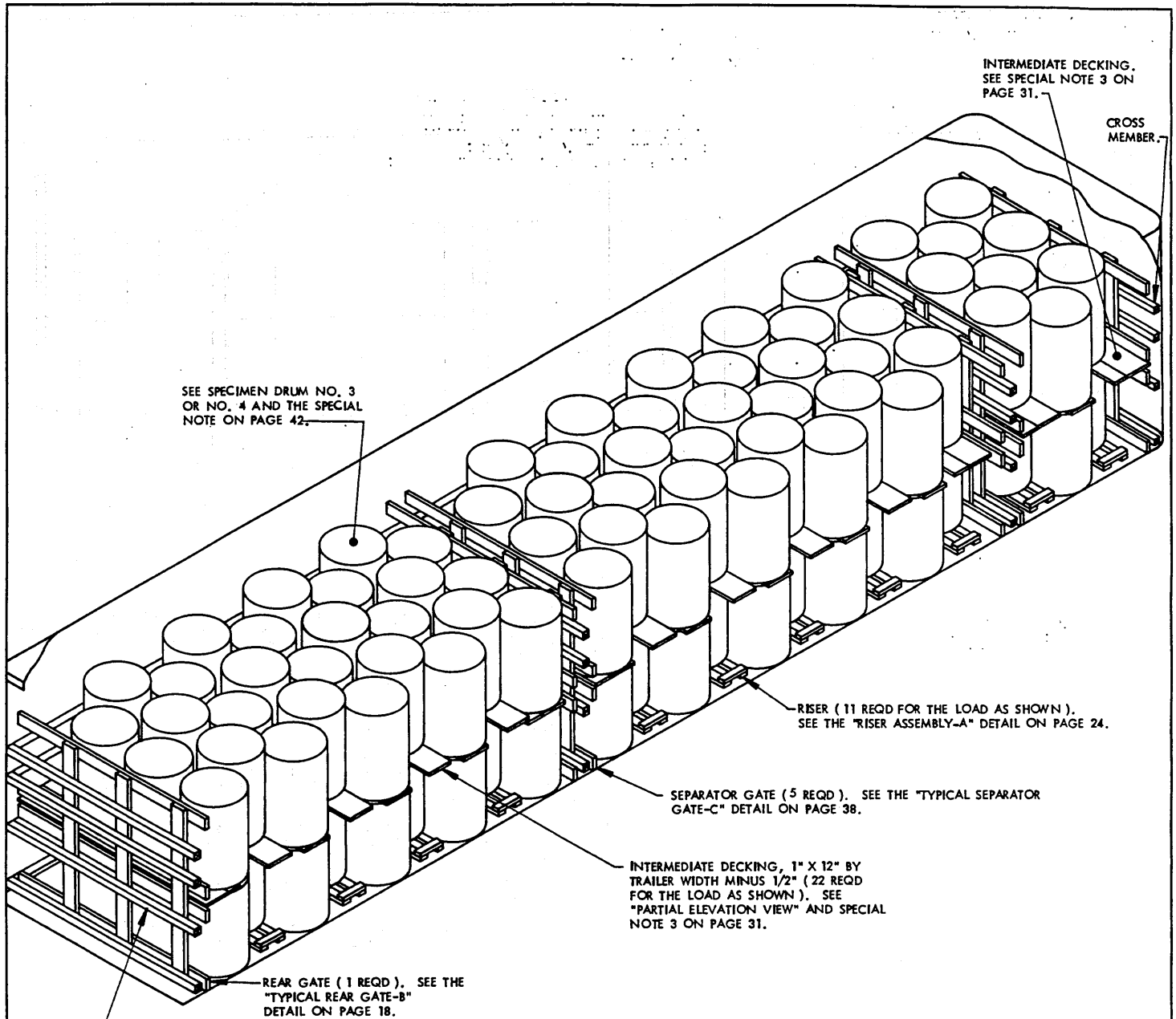
SPECIAL NOTES:

1. THE LOAD AS SHOWN IS BASED ON A 40'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) TRAILER EQUIPPED WITH MECHANICAL BRACING DEVICES. A 298-DRUM LOAD IS DEPICTED USING A "NESTED" TYPE LOADING PATTERN. SEE "LOAD PLANNING CHART" ON PAGE 4 AND THE "CAUTION" NOTE ON PAGE 28.
2. DETAILS OF FIBERBOARD DRUM DEPICTED IN THE LOAD VIEWS:
 DRUM DIMENSIONS ----- 16-1/8" DIAMETER BY 28" HIGH.
 GROSS WEIGHT ----- 130 POUNDS (APPROX).
3. THERE SHOULD BE A MINIMUM OF TWO (2) CROSS MEMBERS AGAINST EACH LAYER OF DRUMS AT EACH LOCATION. IF THE HEIGHT AND WEIGHT OF THE DRUMS TO BE SHIPPED PERMIT STACKING THREE HIGH IN THE TRAILER, THE TOP CROSS MEMBER MUST BE ABOVE THE CENTER OF HEIGHT OF THE DRUMS IN THE THIRD LAYER.
4. IF A LESSER QUANTITY OF DRUMS IS TO BE SHIPPED, THE SECOND LAYER OF DRUMS IN A LOAD BAY MAY BE OMITTED. THE SEPARATOR GATE AT EACH END OF THE BAY SHOULD BE REDUCED IN HEIGHT FOR A 1-LAYER LOAD.
5. WIDER, NARROWER, SHORTER OR LONGER TRAILERS MAY BE USED. SEE GENERAL NOTE "R" ON PAGE 2.
6. THIS LOAD CONFIGURATION MAY ALSO BE USED FOR A LOAD OF METAL DRUMS IF REQUIREMENTS OF GENERAL NOTE "X" ON PAGE 2 ARE APPLIED.

TYPICAL BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	103	35
2" X 6"	17	17
NAILS	NO. REQD	POUNDS
4d (1-1/2")	240	1
PLYWOOD, 1/2" ----- 295 SQ. FT. REQD ---407 LBS		

TYPICAL LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
DRUM	298	38,740 LBS
DUNNAGE		512 LBS
TOTAL WEIGHT		39,252 LBS

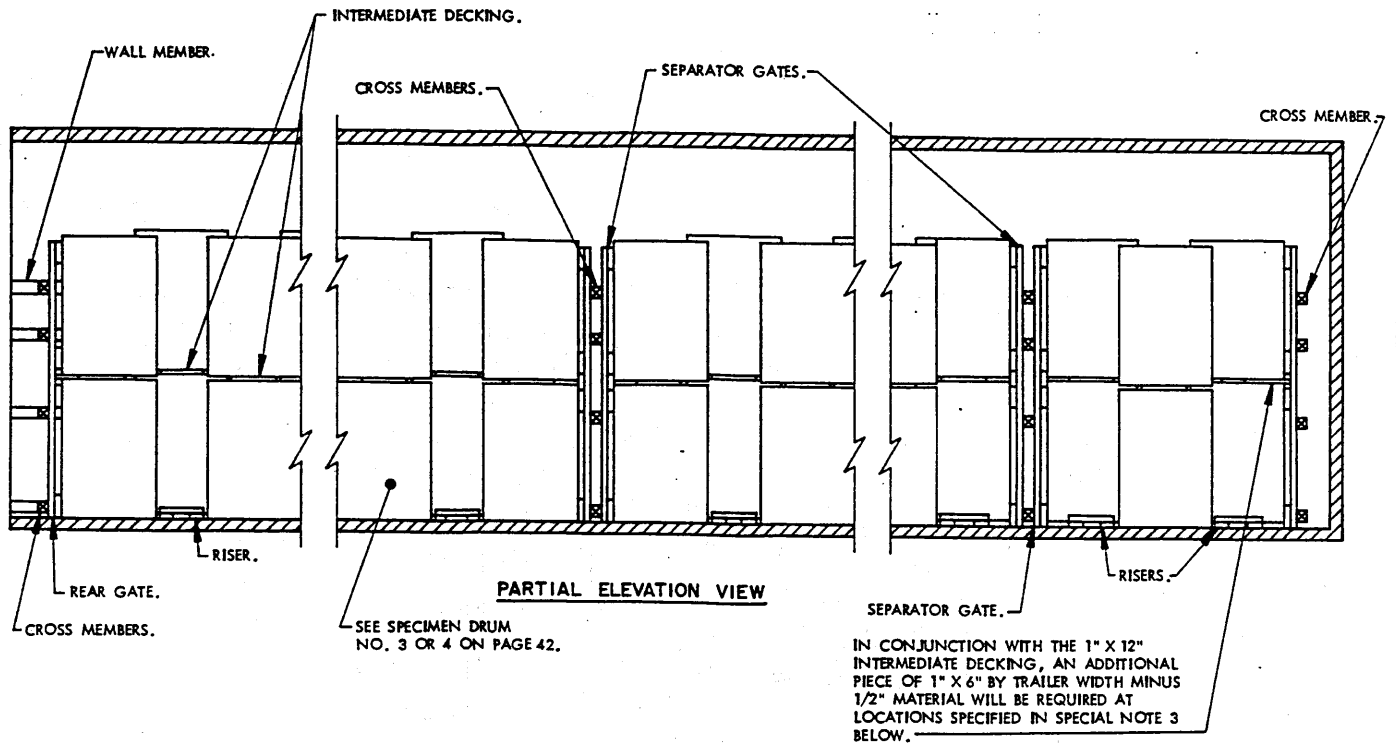


ISOMETRIC VIEW

CROSS MEMBER (16 REQD, 2 PER LAYER AT EACH LOCATION).

CAUTION:

MECHANICAL TRAILERS MUST NOT BE USED FOR SHIPMENT OF CERTAIN EXPLOSIVES. SEE THE "CAUTION" NOTES ON THE COVER PAGE.



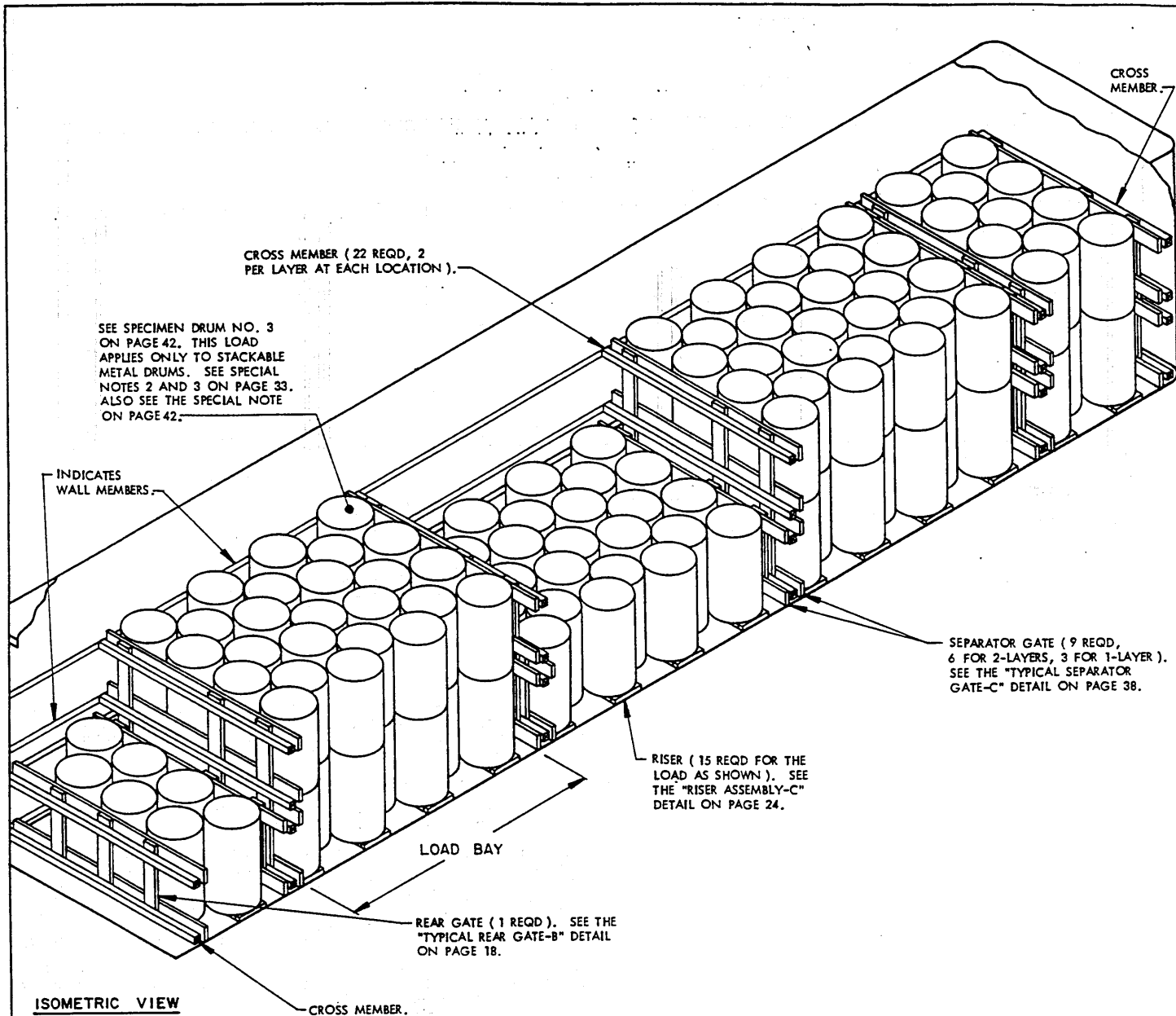
SPECIAL NOTES:

1. THE LOAD AS SHOWN IS BASED ON A 40'-0" LONG BY 7'-6" WIDE (INSIDE DIMENSION) TRAILER EQUIPPED WITH MECHANICAL BRACING DEVICES. A 132-DRUM LOAD IS DEPICTED USING AN "OFF-SET NESTED" LOADING PATTERN. SEE "LOAD PLANNING CHART" ON PAGE 4 AND THE "CAUTION" NOTE ON PAGE 30.
2. DETAILS OF METAL DRUM DEPICTED IN THE LOAD VIEWS:
 DRUM DIMENSIONS ----- 23-5/8" DIAMETER BY 35-3/16" HIGH.
 GROSS WEIGHT ----- 201 POUNDS (APPROX).
3. INTERMEDIATE DECKING WILL BE REQUIRED FOR METAL DRUMS WHICH DO NOT HAVE VERTICAL NESTING CAPABILITIES, THAT IS, WHEN THE BOTTOM OF A TOP LAYER DRUM WILL NOT FIT INTO THE RECESS OF THE TOP OF A BOTTOM LAYER DRUM. THE WIDTH OF THE DECKING WILL VARY AS THE DRUM DIAMETER AND THE INSIDE WIDTH OF THE TRAILER VARIES. AN ADDITIONAL PIECE OF DECKING WILL BE REQUIRED IN THE STACKS ADJACENT TO THE SEPARATOR AND REAR GATES TO PROVIDE FOR A FULL BEARING SURFACE FOR THE TOP LAYER OF DRUMS. SEE THE SPECIAL NOTE ON PAGE 42.
4. THERE SHOULD BE A MINIMUM OF TWO (2) CROSS MEMBERS AGAINST EACH LAYER OF DRUMS AT EACH LOCATION. IF THE HEIGHT AND WEIGHT OF THE DRUMS TO BE SHIPPED PERMIT STACKING THREE HIGH IN THE TRAILER, THE TOP CROSS MEMBER MUST BE ABOVE THE CENTER OF HEIGHT OF THE DRUMS IN THE THIRD LAYER.
5. IF A LESSER QUANTITY OF DRUMS IS TO BE SHIPPED, THE SECOND LAYER OF DRUMS IN A LOAD BAY MAY BE OMITTED. THE SEPARATOR GATE AT EACH END OF THE BAY SHOULD BE REDUCED IN HEIGHT FOR A 1-LAYER LOAD.
6. WIDER, NARROWER, SHORTER, OR LONGER TRAILERS MAY BE USED. SEE GENERAL NOTE "R" ON PAGE 2.

TYPICAL BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	15	8
1" X 12"	165	165
2" X 2"	14	5
2" X 4"	180	120
2" X 6"	287	287
NAILS	NO. REQD	POUNDS
10d (3")	326	5

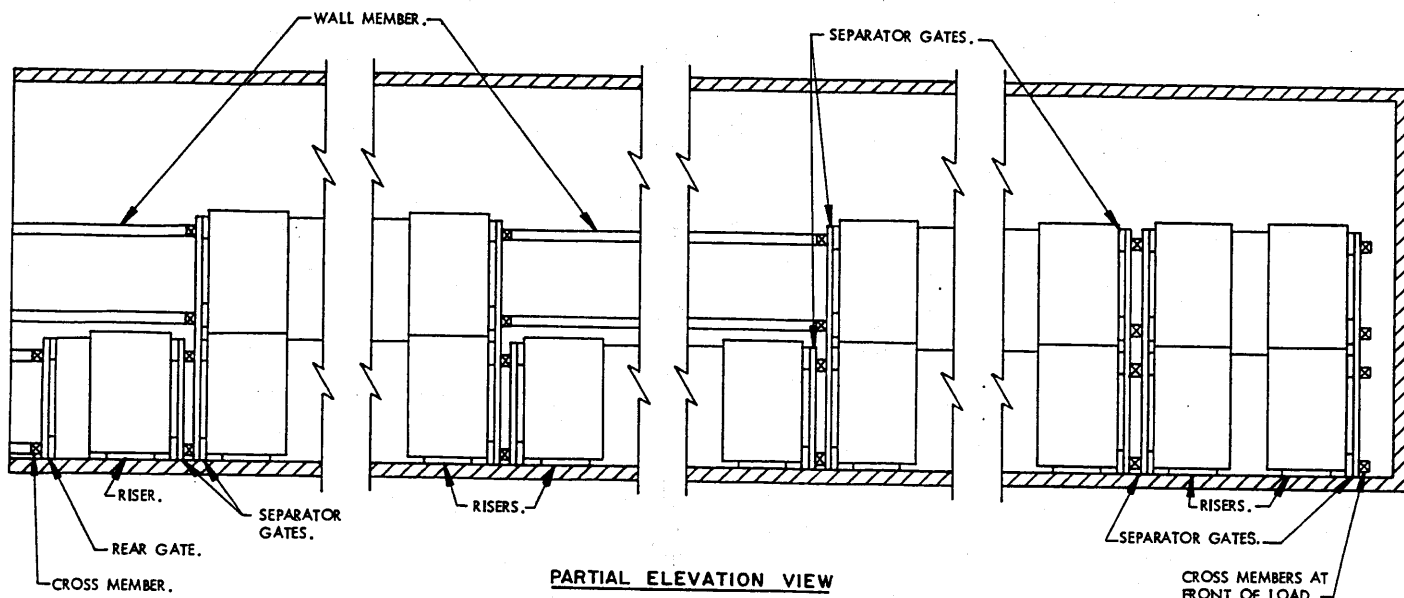
TYPICAL LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
DRUM	132	26,532 LBS
DUNNAGE		1,175 LBS
TOTAL WEIGHT		27,707 LBS



CAUTION:

MECHANICAL TRAILERS MUST NOT BE USED FOR SHIPMENT OF CERTAIN EXPLOSIVES. SEE THE "CAUTION" NOTES ON THE COVER PAGE.



SPECIAL NOTES:

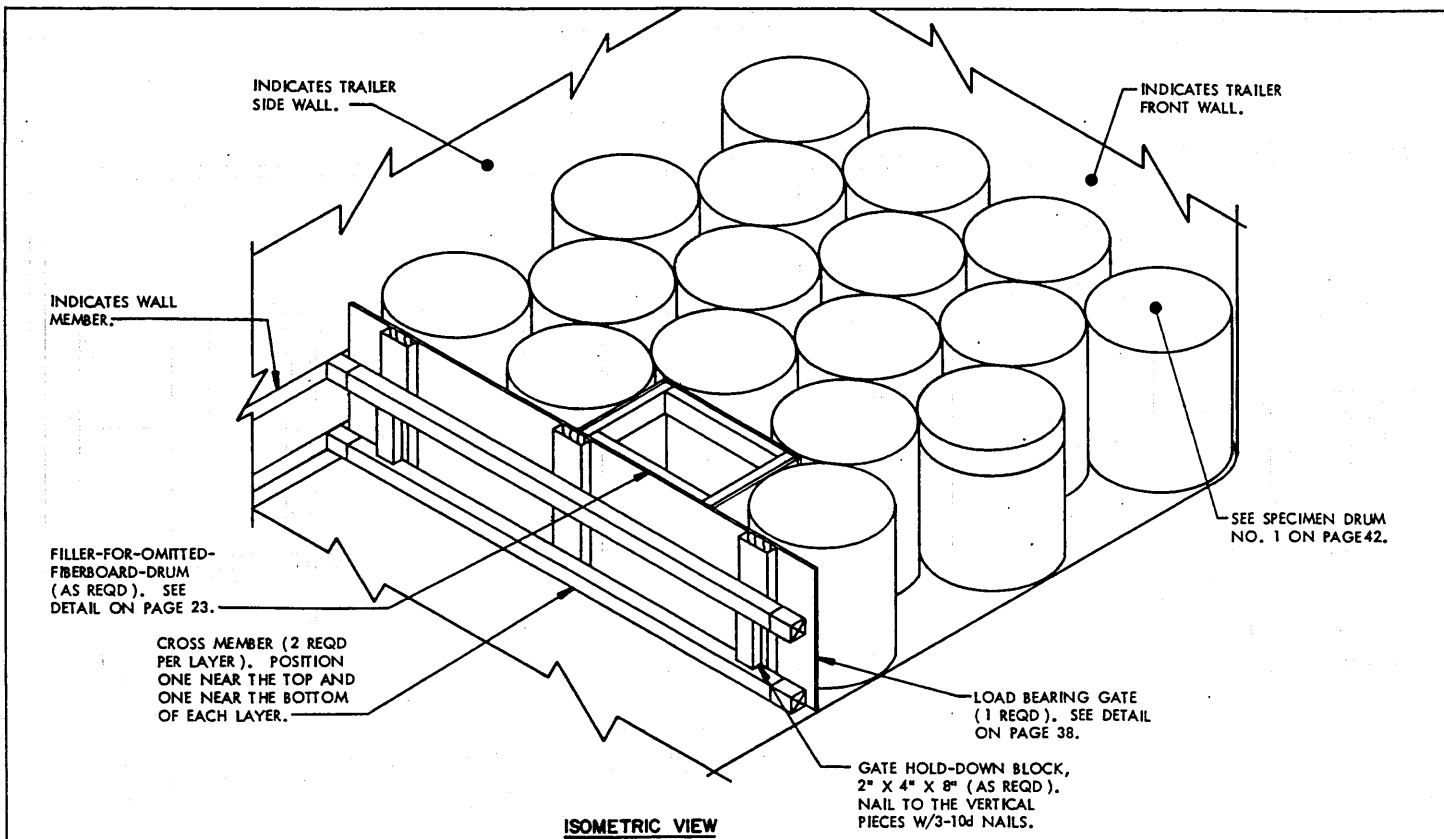
1. THE LOAD AS SHOWN IS BASED ON A 40'-0" LONG BY 7'-6" WIDE (INSIDE DIMENSION) TRAILER EQUIPPED WITH MECHANICAL BRACING DEVICES. A 154-DRUM LOAD IS DEPICTED USING A "NESTED" TYPE LOADING PATTERN. SEE "LOAD PLANNING CHART" ON PAGE 4 AND THE "CAUTION" NOTE ON PAGE 32.
2. DETAILS OF METAL DRUM DEPICTED IN THE LOAD VIEWS:
 - DRUM DIMENSIONS ----- 20" DIAMETER BY 31" HIGH.
 - GROSS WEIGHT ----- 220 POUNDS (APPROX).
3. DRUMS DEPICTED HAVE VERTICAL NESTING CAPABILITIES, THAT IS, THE BOTTOM OF A TOP LAYER DRUM WILL FIT INTO THE RECESS OF THE TOP OF A BOTTOM LAYER DRUM. SEE THE SPECIAL NOTE ON PAGE 42.
4. IF DRUMS DO NOT HAVE VERTICAL NESTING CAPABILITIES, INTERMEDIATE DECKING WILL BE REQUIRED BETWEEN LAYERS AS DEPICTED IN THE LOAD VIEWS ON PAGES 30 AND 31.
5. THERE SHOULD BE A MINIMUM OF TWO (2) CROSS MEMBERS AGAINST EACH LAYER OF DRUMS AT EACH LOCATION. IF THE HEIGHT OF THE DRUMS TO BE SHIPPED PERMIT STACKING THREE HIGH IN THE TRAILER, THE TOP CROSS MEMBER MUST BE ABOVE THE CENTER OF HEIGHT OF THE DRUMS IN THE THIRD LAYER.
6. IF A LARGER QUANTITY OF DRUMS IS TO BE SHIPPED, A SECOND LAYER MAY BE ADDED TO A 1-LAYER LOAD BAY AND THE HEIGHT OF THE ADJACENT GATES INCREASED. HOWEVER, THE WEIGHT LIMITATIONS PRESCRIBED IN GENERAL NOTES "G", "H", AND "Q" MUST BE COMPLIED WITH.
7. THE NUMBER OF LOAD BAYS MAY BE INCREASED AND THE QUANTITY OF DRUMS WITHIN A LOAD BAY MAY BE DECREASED. SEE SPECIAL NOTE 4 ON PAGE 4 FOR ADDITIONAL GUIDANCE.
8. WIDER, NARROWER, SHORTER, OR LONGER TRAILERS MAY BE USED. SEE GENERAL NOTE "R" ON PAGE 2.

TYPICAL BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	30	10
2" X 4"	216	144
2" X 6"	364	364
NAILS	NO. REQD	POUNDS
10d (3")	288	4-1/2
12d (3-1/4")	120	2

TYPICAL LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
DRUM -----	154	33,880 LBS
DUNNAGE -----		1,043 LBS
TOTAL WEIGHT -----		34,923 LBS



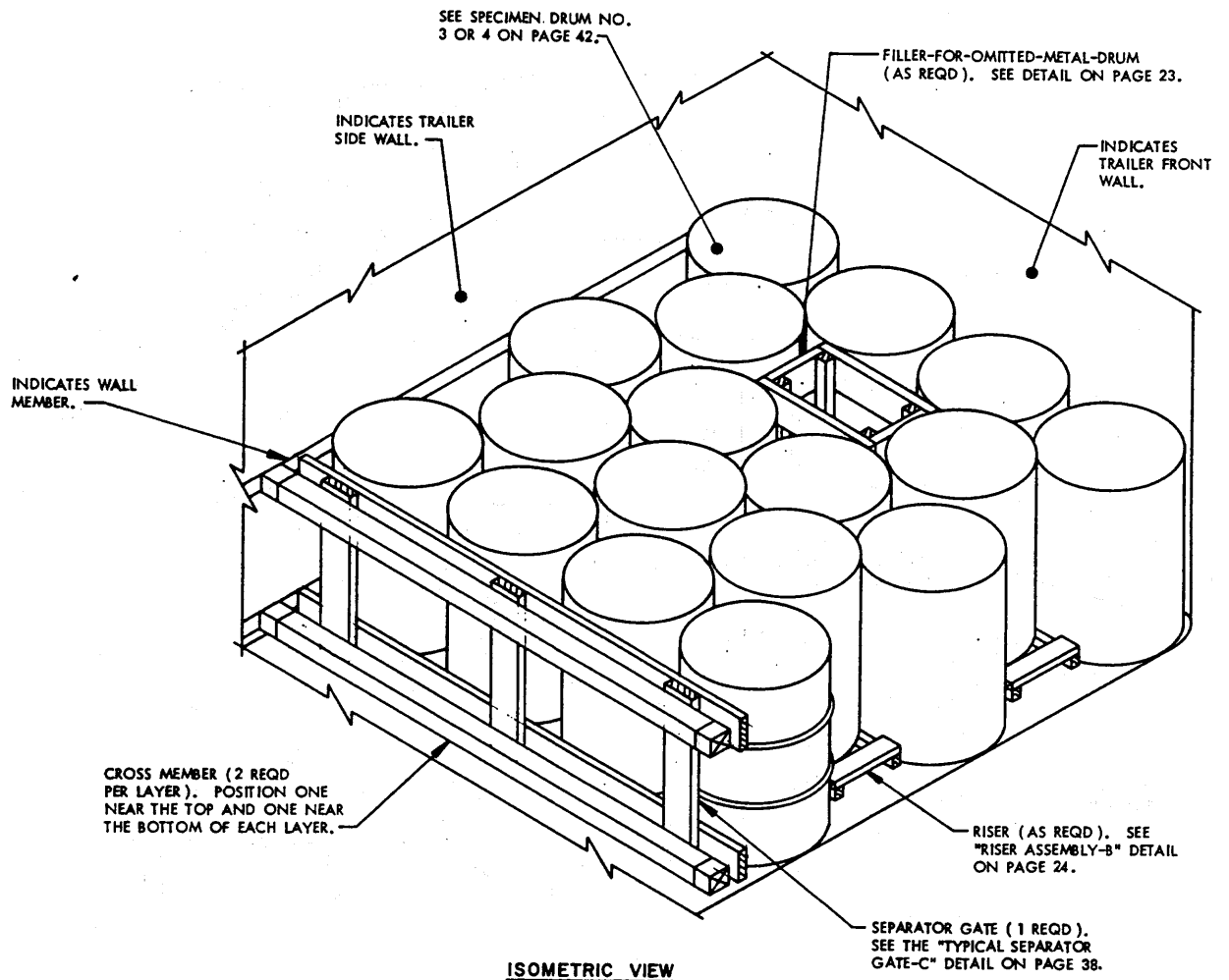
ISOMETRIC VIEW

SPECIAL NOTES:

1. THESE OUTLOADING PROCEDURES ARE SHOWN DEPICTING THE METHOD OF BRACING AN LTL LOAD OF FIBERBOARD DRUMS IN A TRAILER EQUIPPED WITH MECHANICAL BRACING DEVICES. A "NESTED" LOADING PATTERN IS DEPICTED. SEE "LOAD PLANNING CHART" ON PAGE 4.
2. TWO (2) CROSS MEMBERS, AS DEPICTED ABOVE, ARE ADEQUATE FOR RETAINING NOT MORE THAN 20,000 POUNDS OF LADING.
3. DETAILS OF FIBERBOARD DRUM DEPICTED IN THE LOAD VIEW:
 DRUM DIMENSIONS ----- 20" DIAMETER BY 24" HIGH.
 GROSS WEIGHT ----- 150 POUNDS (APPROX).
4. THE FILLER-FOR-OMITTED-DRUM IS SHOWN IN THE LOAD VIEW TO SHOW A TYPICAL INSTALLATION. FILLERS MAY BE USED, AS REQUIRED, TO ADJUST TO THE NUMBER OF DRUMS TO BE OUTLOADED. A FILLER CAN BE USED ADJACENT TO A LOAD BEARING GATE OR IN THE LOAD. EITHER A FILLER OR A PLYWOOD SEPARATOR GATE CAN BE USED TO ADJUST THE NUMBER OF DRUMS TO BE OUTLOADED. SEE "LOAD PLANNING CHART" ON PAGE 4.
5. IF THE TRAILER IS EQUIPPED WITH ROUNDED-CORNERS WITH A RADIUS WHICH IS GREATER THAN THE RADIUS OF THE DRUM BEING OUTLOADED, IT WILL BE NECESSARY TO INSTALL AN ADDITIONAL SET OF CROSS MEMBERS AND AN ADDITIONAL LOAD BEARING GATE AT THE FRONT OF THE LOAD. THE CROSS MEMBERS WILL BE POSITIONED AT THE SAME HEIGHT DIMENSIONS AS SHOWN FOR THE REAR OF THE LOAD.

CAUTION:

MECHANICAL TRAILERS MUST NOT BE USED FOR SHIPMENT OF CERTAIN EXPLOSIVES. SEE THE "CAUTION" NOTES ON THE COVER PAGE.

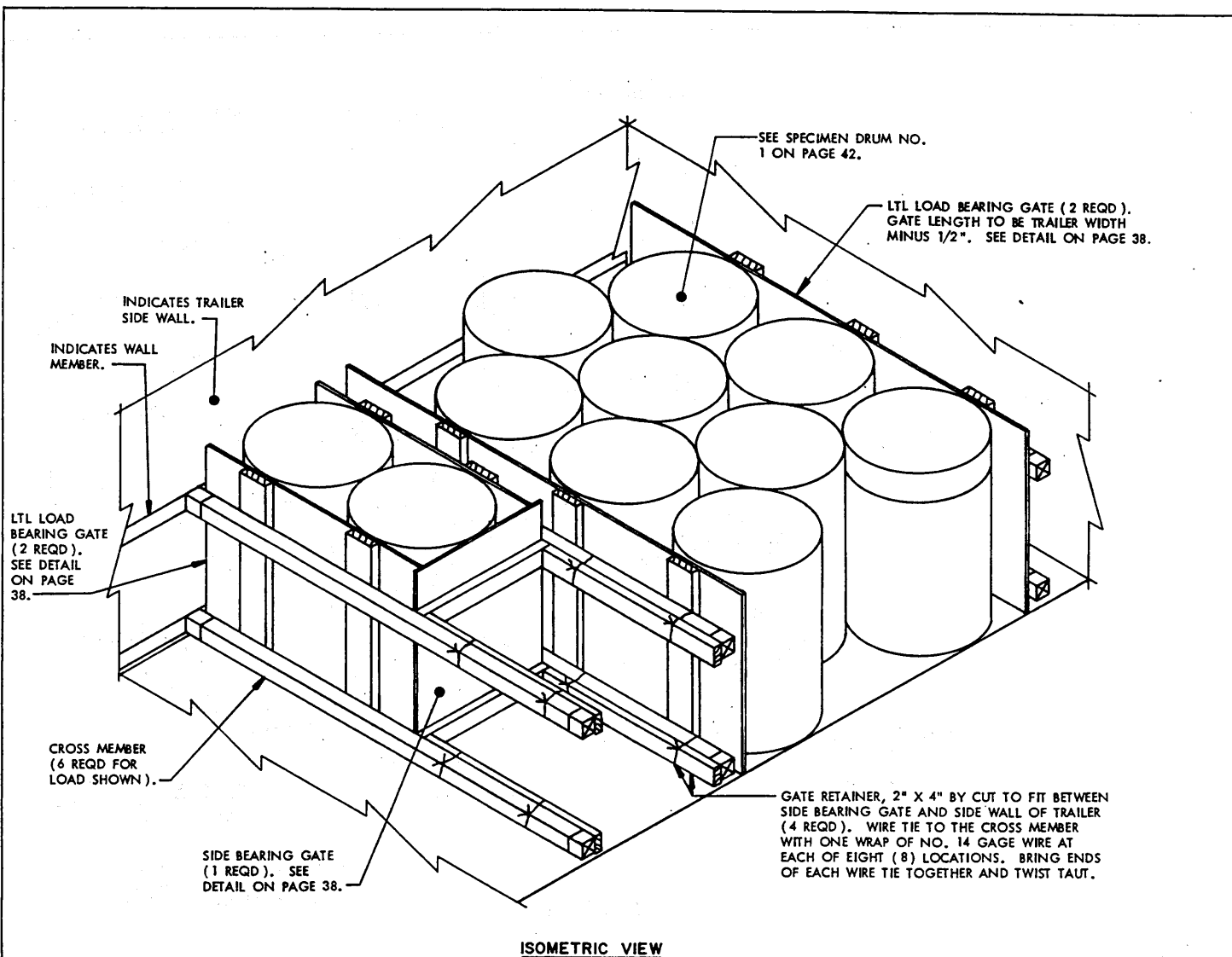


SPECIAL NOTES:

1. THESE OUTLOADING PROCEDURES ARE SHOWN DEPICTING THE METHOD OF BRACING AN LTL LOAD OF METAL DRUMS IN A TRAILER EQUIPPED WITH MECHANICAL BRACING DEVICES. A "NESTED" LOADING PATTERN IS DEPICTED. SEE "LOAD PLANNING CHART" ON PAGE 4.
2. TWO (2) CROSS MEMBERS, AS DEPICTED ABOVE, ARE ADEQUATE FOR RETAINING NOT MORE THAN 20,000 POUNDS OF LADING.
3. DETAILS OF METAL DRUM DEPICTED IN THE LOAD VIEW:
 DRUM DIMENSIONS ----- 21" DIAMETER BY 30" HIGH.
 GROSS WEIGHT ----- 200 POUNDS (APPROX).
4. THE FILLER-FOR-OMITTED-METAL-DRUM IS SHOWN IN THE LOAD VIEW TO SHOW A TYPICAL INSTALLATION. FILLERS MAY BE USED, AS REQUIRED, TO ADJUST TO THE NUMBER OF DRUMS TO BE OUTLOADED. A FILLER MUST NOT BE INSTALLED ADJACENT TO A CROSS MEMBER. EITHER A FILLER OR A SEPARATOR GATE CAN BE USED TO ADJUST THE NUMBER OF DRUMS TO BE OUTLOADED. SEE "LOAD PLANNING CHART" ON PAGE 4.
5. IF THE TRAILER IS EQUIPPED WITH ROUNDED-CORNERS WITH A RADIUS WHICH IS GREATER THAN THE RADIUS OF THE DRUM BEING OUTLOADED, IT WILL BE NECESSARY TO INSTALL AN ADDITIONAL SET OF CROSS MEMBERS AND AN ADDITIONAL SEPARATOR GATE AT THE FRONT OF THE LOAD.

CAUTION:

MECHANICAL TRAILERS MUST NOT BE USED FOR SHIPMENT OF CERTAIN EXPLOSIVES. SEE THE "CAUTION" NOTES ON THE COVER PAGE.



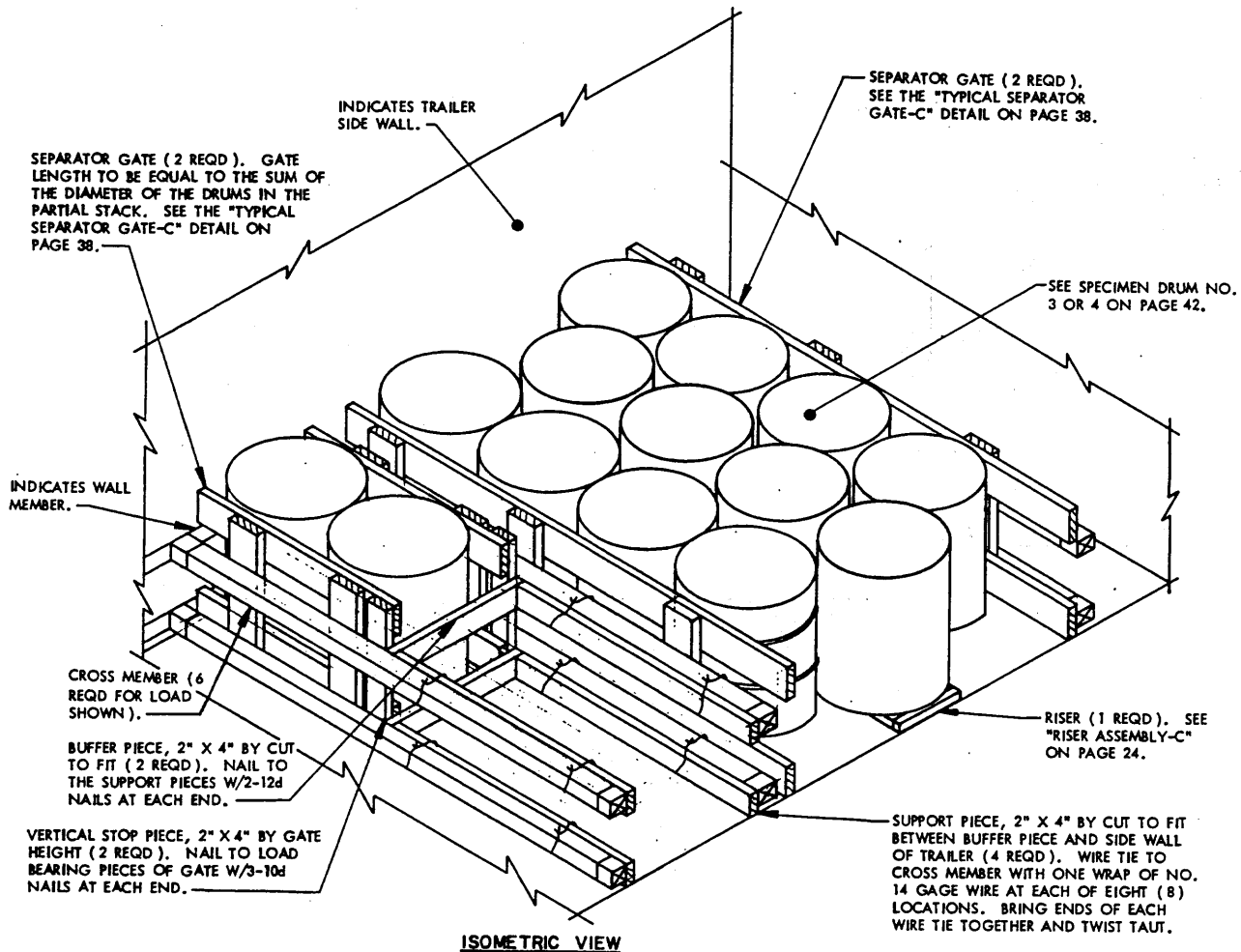
ISOMETRIC VIEW

SPECIAL NOTES:

1. THE OUTLOADING PROCEDURES ARE SHOWN DEPICTING THE METHOD OF BRACING AN LTL LOAD OF FIBERBOARD DRUMS IN A TRAILER EQUIPPED WITH MECHANICAL BRACING DEVICES. AN "OFF-SET NESTED" LOADING PATTERN IS DEPICTED. ALSO, THESE PROCEDURES DEPICT THE METHOD OF BLOCKING A LESS THAN TRAILER WIDTH STACK. SEE "LOAD PLANNING CHART" ON PAGE 4.
2. TWO (2) CROSS MEMBERS, AT EACH END OF A BAY, ARE ADEQUATE FOR RETAINING NOT MORE THAN 20,000 POUNDS OF LADING.
3. DETAILS OF FIBERBOARD DRUM DEPICTED IN THE LOAD VIEW:
 DRUM DIMENSIONS -----24" DIAMETER BY 36" HIGH.
 GROSS WEIGHT -----200 POUNDS (APPROX).
4. THIS METHOD OF BLOCKING A LESS THAN TRAILER WIDTH STACK IS SHOWN IN THE LOAD VIEW TO SHOW A TYPICAL INSTALLATION. THIS METHOD CAN BE USED WITH MOST FIBERBOARD DRUMS TO BLOCK AS MANY DRUMS AS REQUIRED IN A PARTIAL STACK.

CAUTION:

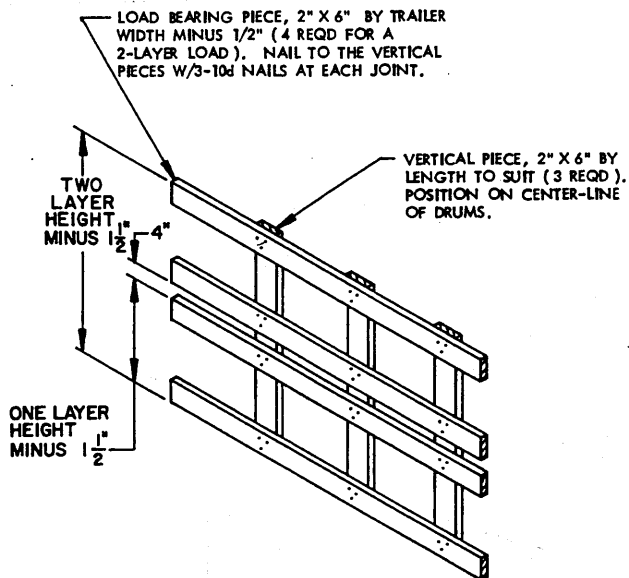
MECHANICAL TRAILERS MUST NOT BE USED FOR SHIPMENT OF CERTAIN EXPLOSIVES. SEE THE "CAUTION" NOTES ON THE COVER PAGE.



SPECIAL NOTES:

1. THESE OUTLOADING PROCEDURES ARE SHOWN DEPICTING THE METHOD OF BRACING AN LTL LOAD OF METAL DRUMS IN A TRAILER EQUIPPED WITH MECHANICAL BRACING DEVICES. AN "OFF-SET NESTED" LOADING PATTERN IS DEPICTED. ALSO, THESE PROCEDURES DEPICT THE METHOD OF BLOCKING A LESS THAN TRAILER WIDTH STACK. SEE "LOAD PLANNING CHART" ON PAGE 4.
2. TWO (2) CROSS MEMBERS, AT EACH END OF A BAY, ARE ADEQUATE FOR RETAINING NOT MORE THAN 20,000 POUNDS OF LADING.
3. DETAILS OF METAL DRUM DEPICTED IN THE LOAD VIEW:
 DRUM DIMENSIONS ----- 20" DIAMETER BY 24" HIGH.
 GROSS WEIGHT ----- 200 POUNDS (APPROX).
4. THIS METHOD OF BLOCKING A LESS THAN TRAILER WIDTH STACK IS SHOWN IN THE LOAD VIEW TO SHOW A TYPICAL INSTALLATION. THIS METHOD CAN BE USED WITH MOST ANY METAL DRUM TO BLOCK AS MANY DRUMS AS REQUIRED IN A PARTIAL STACK.

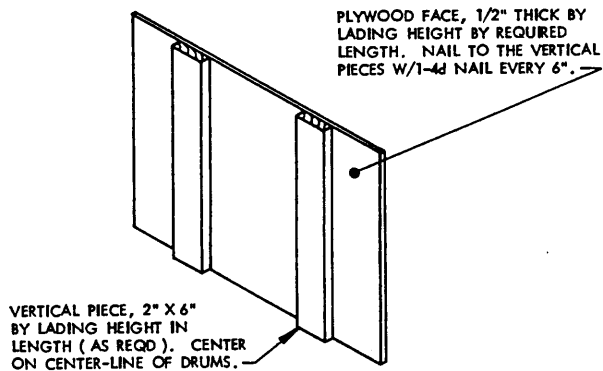
CAUTION:
MECHANICAL TRAILERS MUST NOT
BE USED FOR SHIPMENT OF CERTAIN
EXPLOSIVES. SEE THE "CAUTION"
NOTES ON THE COVER PAGE.



TYPICAL SEPARATOR GATE—C

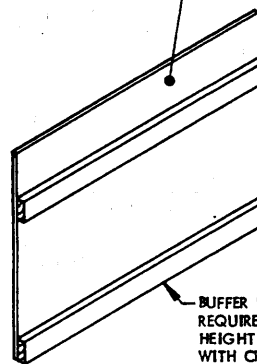
(FOR METAL DRUMS)

TO BE USED BETWEEN METAL DRUMS AND CROSS MEMBERS IN A TRAILER EQUIPPED WITH MECHANICAL BRACING DEVICES.



LTL LOAD BEARING GATE

PLYWOOD FACE, 1/2" THICK BY LADING HEIGHT BY REQUIRED LENGTH. NAIL TO THE BUFFER PIECES W/1-4d NAIL EVERY 6".



SIDE BEARING GATE

DETAILS

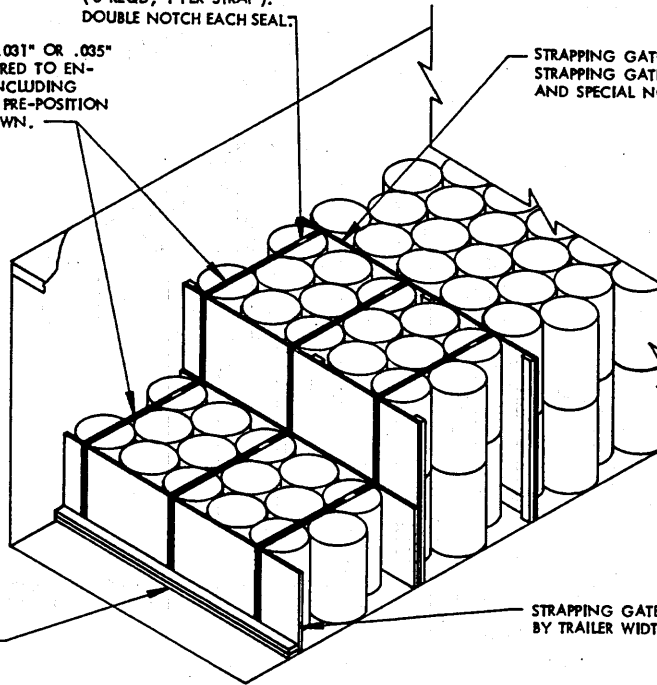
SEAL FOR 1-1/4" STRAPPING
(6 REQD, 1 PER STRAP).
DOUBLE NOTCH EACH SEAL.

LOAD BUNDLING STRAP, 1-1/4" X .031" OR .035"
STEEL STRAPPING BY LENGTH REQUIRED TO EN-
CIRCLE THREE STACKS OF DRUMS INCLUDING
THE STRAPPING GATES (6 REQD). PRE-POSITION
AT CENTER-LINE OF DRUMS AS SHOWN.

STRAPPING GATE (2 REQD). SEE THE "TYPICAL
STRAPPING GATE-A" DETAIL ON PAGE 27
AND SPECIAL NOTE 4 ON PAGE 4.

SPECIAL NOTES:

1. THE NAILED-HEADER METHOD OF REAR BLOCKING CAN ONLY BE USED IN TRAILERS HAVING A NAILABLE FLOOR AREA BETWEEN THE LADING AND THE METAL THRESHOLD, OR A THRESHOLD PLATE IF THE TRAILER IS SO EQUIPPED, OF AT LEAST EIGHT INCHES (8").
2. THE NAILED-HEADER METHOD OF REAR BLOCKING IS ADEQUATE FOR THE RETENTION OF THE MAXIMUM WEIGHT LOAD.
3. THE NAILED-HEADER METHOD, ALTHOUGH DESIGNED ESPECIALLY FOR TRAILERS HAVING ROLL-UP TYPE DOORS, MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS.



REAR BLOCKING, 2" X 4" BY TRAILER
WIDTH MINUS 1/2", DOUBLED (1 REQD).
NAIL THE FIRST PIECE TO THE TRAILER
FLOOR W/15-10d NAILS, 1 EVERY 6".
NAIL THE SECOND PIECE TO THE FIRST
IN A LIKE MANNER.

STRAPPING GATE, 1/2" PLYWOOD BY LADING HEIGHT
BY TRAILER WIDTH MINUS 1/2" (2 REQD).

FIBERBOARD DRUM LOAD

SEE GENERAL NOTE "S" ON PAGE 2
AND SPECIAL NOTES ABOVE.

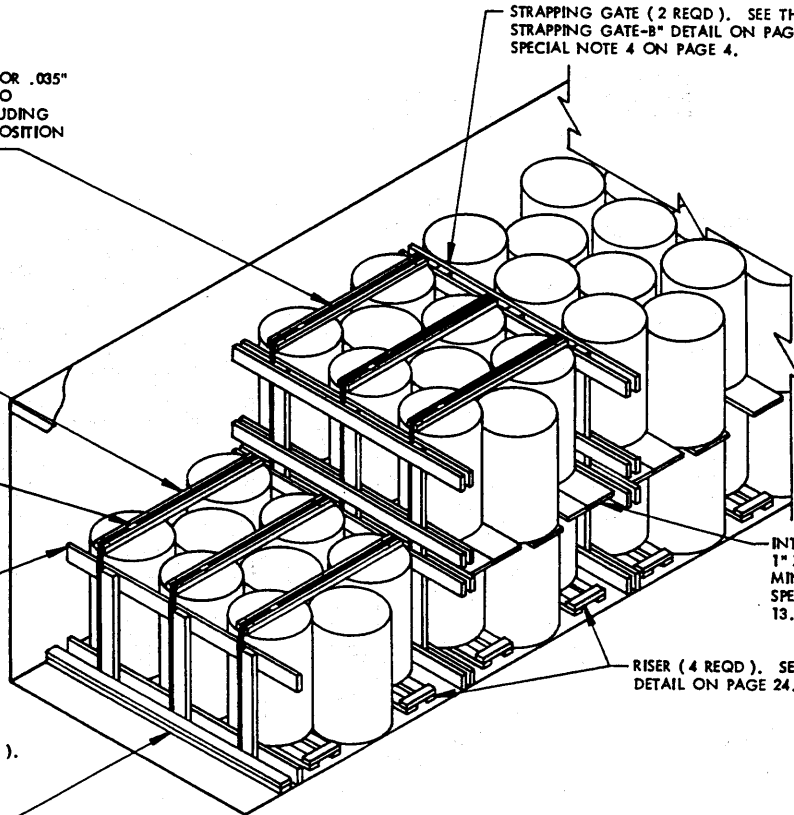
LOAD BUNDLING STRAP, 1-1/4" X .031" OR .035"
STEEL STRAPPING BY LENGTH REQUIRED TO
ENCIRCLE THREE STACKS OF DRUMS INCLUDING
THE STRAPPING GATES (6 REQD). PRE-POSITION
AT CENTER LINE OF DRUMS AS SHOWN.

STRAPPING GATE (2 REQD). SEE THE "TYPICAL
STRAPPING GATE-B" DETAIL ON PAGE 27 AND
SPECIAL NOTE 4 ON PAGE 4.

STRAPPING BOARD, 2" X 4" BY LENGTH
TO SPAN THREE STACKS (6 REQD).

SEAL FOR 1-1/4" STRAPPING
(6 REQD, 1 PER STRAP).
DOUBLE NOTCH EACH SEAL.

STRAPPING GATE (1 REQD). SEE
THE "TYPICAL STRAPPING GATE-B"
DETAIL ON PAGE 27. FABRICATE
FOR A 1-LAYER LOAD AND OMIT
THE 2 LOAD BEARING PIECES ON
THE DOOR SIDE OF THE GATE.



INTERMEDIATE DECKING
1" X 12" BY TRAILER WIDTH
MINUS 1/2" (3 REQD). SEE
SPECIAL NOTE 7 ON PAGE
13.

RISER (4 REQD). SEE "RISER ASSEMBLY-A"
DETAIL ON PAGE 24.

REAR BLOCKING, 2" X 4" BY TRAILER
WIDTH MINUS 1/2", DOUBLED (1 REQD).
NAIL THE FIRST PIECE TO THE TRAILER
FLOOR W/15-10d NAILS, 1 EVERY 6".
NAIL THE SECOND PIECE TO THE FIRST
IN A LIKE MANNER.

METAL DRUM LOAD

SEE GENERAL NOTE "S" ON PAGE 2
AND SPECIAL NOTES ABOVE.

SEAL FOR 1-1/4" STRAPPING
(6 REQD, 1 PER STRAP)
DOUBLE NOTCH EACH SEAL.

LOAD BUNDLING STRAP, 1-1/4" X .031" OR
.035" STEEL STRAPPING BY LENGTH REQUIRED
TO ENCIRCLE THREE STACKS OF DRUMS INCLUDING
THE GATES (6 REQD). PRE-POSITION AT CENTER-
LINE OF DRUMS AS SHOWN.

STRAPPING GATE (2 REQD). SEE THE "TYPICAL
STRAPPING GATE-A" DETAIL ON PAGE 27 AND
SPECIAL NOTE 4 ON PAGE 4.

LOAD BEARING GATE (1 REQD).
SEE THE REAR-OF-LOAD GATE
DETAIL ON PAGE 41.

TYGARD PATCH PIECE.

STRAPPING GATE, 1/2" PLYWOOD BY LADING HEIGHT
BY TRAILER WIDTH MINUS 1/2" (1 REQD).

INDICATES TYGARD MATERIAL.
STAPLE TO THE LOAD BEARING
GATE TO PREVENT SAGGING. AS
AN ALTERNATIVE, A 1" X 4" BY
GATE HEIGHT PIECE MAY BE NAILED
THRU THE TYGARD MATERIAL INTO
THE LOAD BEARING GATE.

36" MINIMUM

FIBERBOARD DRUM LOAD
SEE GENERAL NOTE "5" ON PAGE 2
AND SPECIAL NOTES ON PAGE 41.

LOAD BUNDLING STRAP, 1-1/4" X .031" OR .035"
STEEL STRAPPING BY LENGTH REQUIRED TO ENCIRCLE
THREE STACKS OF DRUMS INCLUDING THE GATES
(6 REQD). PRE-POSITION AT CENTER LINE OF
DRUMS AS SHOWN.

STRAPPING GATE (2 REQD). SEE THE "TYPICAL
STRAPPING GATE-B" DETAIL ON PAGE 27 AND
SPECIAL NOTE 4 ON PAGE 4.

STRAPPING BOARD, 2" X 4" BY LENGTH
TO SPAN THREE STACKS (6 REQD).

SEAL FOR 1-1/4" STRAPPING
(6 REQD, 1 PER STRAP).
DOUBLE NOTCH EACH SEAL.

LOAD BEARING GATE (1 REQD).
SEE THE REAR-OF-LOAD GATE
DETAIL ON PAGE 41.

INTERMEDIATE DECKING
1" X 12" BY TRAILER WIDTH
MINUS 1/2" (3 REQD).
SEE SPECIAL NOTE 7 ON
PAGE 13.

TYGARD PATCH PIECE.

RISER (4 REQD). SEE "RISER ASSEMBLY-A"
DETAIL ON PAGE 24.

INDICATES TYGARD MATERIAL.
STAPLE TO THE LOAD BEARING
GATE TO PREVENT SAGGING. AS
AN ALTERNATIVE, A 1" X 4" BY
GATE HEIGHT PIECE MAY BE NAILED
THRU THE TYGARD MATERIAL INTO
THE LOAD BEARING GATE.

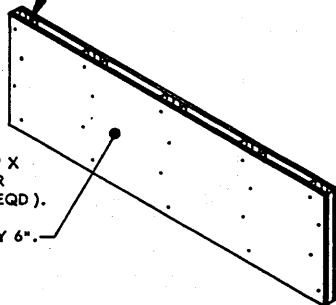
36" MINIMUM

METAL DRUM LOAD
SEE GENERAL NOTE "5" ON PAGE 2
AND SPECIAL NOTES ON PAGE 41.

TYPICAL REAR-OF-LOAD PROCEDURES FOR CONVENTIONAL TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS
TYGARD METHOD

VERTICAL PIECE, 2" X 6" X LOAD HEIGHT (5 REQD). POSITION THREE PIECES AT CENTER LINE OF DRUMS TO BE STRAPPED AND ONE PIECE AT EACH END OF GATE.

PLYWOOD FACING, 1/2" X LOAD HEIGHT BY TRAILER WIDTH MINUS 1/2" (2 REQD). NAIL TO EACH VERTICAL PIECE W/1-4d NAIL EVERY 6".

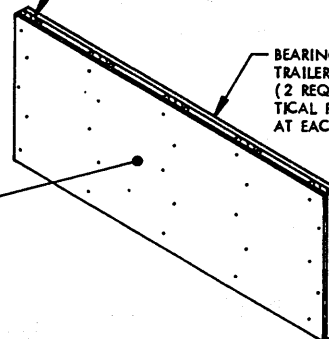


**REAR-OF-LOAD GATE
FOR FIBERBOARD DRUMS**

PLYWOOD FACING, 1/2" X LOAD HEIGHT MINUS 1-1/2" BY TRAILER WIDTH MINUS 1/2" (1 REQD). NAIL TO EACH VERTICAL PIECE W/1-4d NAIL EVERY 6".

VERTICAL PIECE, 2" X 6" X LOAD HEIGHT MINUS 1-1/2" (5 REQD). POSITION THREE PIECES AT CENTER LINE OF DRUMS TO BE STRAPPED AND ONE PIECE AT EACH END OF GATE.

BEARING PIECE, 2" X 6" BY TRAILER WIDTH MINUS 1/2" (2 REQD). NAIL TO VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.



**REAR-OF-LOAD GATE
FOR METAL DRUMS**

SPECIAL NOTES:

1. THE TYGARD METHOD OF REAR BLOCKING DEPICTED ON PAGE 40 CAN ONLY BE USED IN TRAILERS WHICH HAVE REASONABLY SMOOTH AND ADEQUATELY SECURED SIDEWALL PANELS IN THE AREA WHERE THE TYGARD MATERIAL IS TO BE APPLIED.
2. A PLYWOOD COVERED GATE MUST BE INSTALLED AT THE REAR OF THE LOAD TO PROVIDE A SMOOTH SURFACE FOR THE TYGARD MATERIAL TO EXTEND AROUND.
3. THE TYGARD MATERIAL AND THE ADHESIVE FOR ATTACHING IT ARE COMMERCIAL PRODUCTS. FOR A SOURCE OF SUPPLY, CONTACT WALNUT INDUSTRIES, INC., 1344 ADAMS ROAD, P.O. BOX "E", BENSALEM, PA 19020-0860, PHONE 1-800-523-6536. APPLICATION INSTRUCTIONS AND GUIDANCE CAN ALSO BE OBTAINED FROM THAT OFFICE.
4. THE TYGARD METHOD, ALTHOUGH ESPECIALLY FOR TRAILERS HAVING ROLL-UP TYPE DOORS, MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS.
5. NOTICE: IF THE AREA OF A SIDEWALL WHERE THE TYGARD SHOULD BE ATTACHED IS ROUGH AND/OR BROKEN, THE APPLICABLE PIECE(S) OF TYGARD CAN BE LENGTHENED A SUITABLE AMOUNT AND ATTACHED TO THE SIDEWALL AHEAD OF THE INDICATED PREFERRED LOCATION.

RECOMMENDED EQUIPMENT/INSTALLATION PROCEDURES

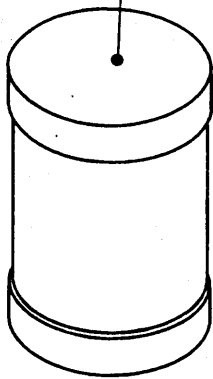
EQUIPMENT REQUIRED

PAINT ROLLER, LATEX
PAINT ROLLER PAN
TENSIONING ROD/TOOL
PRESSURE ROLLER
RATCHET WRENCH (12" TO 15" HANDLE)
OPEN END OR BOX WRENCH (12" TO 15" HANDLE)
SCISSORS OR KNIFE
TYGARD (15" WIDE ROLL)
TYGARD ADHESIVE

BASIC INSTALLATION GUIDANCE

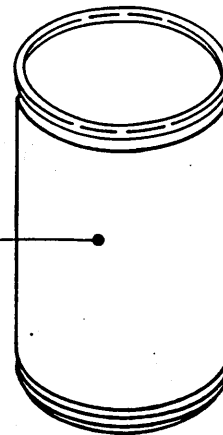
1. CUT TO LENGTH THE REQUIRED NUMBER OF TYGARD PIECES (4 PER LAYER OF DRUMS) FOR ATTACHMENT TO THE TRAILER SIDEWALL. PIECES WILL BE OF A LENGTH AS REQUIRED TO PROVIDE PROPER BONDING TO THE TRAILER SIDEWALL AND TO EXTEND 60" ACROSS THE REAR OF THE LOAD. ALSO, CUT 72" LONG "PATCH" PIECES OF TYGARD MATERIAL, ONE FOR EACH SET OF TWO PIECES PREVIOUSLY CUT.
2. PRIOR TO POSITIONING OF THE 3 STACKS OF DRUMS IN THE REARMOST LOAD UNIT, APPLY TYGARD ADHESIVE TO THE PROPER PORTIONS OF THE TRAILER SIDEWALLS AND TO THE CORD SIDE OF A CORRESPONDING LENGTH OF EACH OF THE TYGARD PIECES THAT ARE TO BE ATTACHED TO THE SIDEWALLS OF THE TRAILER. ALLOW TIME FOR THE ADHESIVE TO "CURE" BEFORE PLACING A STRIP OF TYGARD ONTO A SIDEWALL (ADHESIVE WILL FEEL ALMOST DRY WHEN TOUCHED). NOTE: APPLICATION OF TYGARD IS SIMILAR TO THE APPLICATION OF "FORMICA".
3. APPLY THE TYGARD PIECES TO EACH SIDEWALL OF THE TRAILER SO THAT THE PIECES ARE PARALLEL OR NEARLY PARALLEL TO THE FLOOR. ROLL THE TYGARD WITH THE PRESSURE ROLLER TO ENSURE PROPER BONDING IS ACHIEVED. TEMPORARILY SECURE THE LOOSE ENDS TO THE TRAILER SIDEWALL OR TO AN OPEN HINGED TYPE DOOR OR TO THE OUTSIDE WALL, AS APPLICABLE.
4. POSITION THE 3 STACKS OF DRUMS OF THE REARMOST LOAD UNIT INTO THE TRAILER INCLUDING GATES, STRAPS AND OTHER DUNNAGE ITEMS AS APPLICABLE.
5. UNDO THE PREVIOUSLY SECURED LOOSE ENDS AND BRING A SET OF TWO PIECES TOGETHER ACROSS THE REAR OF THE LOAD. POSITION THE TENSIONING ROD SO THAT THE LOOSE ENDS OF THE TYGARD MATERIAL EXTEND THRU THE SLOT IN ROD. USING THE TWO WRENCHES, ROLL UP THE TYGARD TO TENSION IT ACROSS REAR OF THE LOAD. POSITION A WRENCH SO AS TO MAINTAIN THE TENSION IN THE TYGARD PIECES. CUT OFF AND DISCARD EXCESS MATERIAL FROM ONE PIECE OF THE TYGARD.
6. APPLY TYGARD ADHESIVE TO THE TENSIONED TYGARD PIECES AND ALSO TO THE CORD SIDE OF THE PREVIOUSLY CUT "PATCH" PIECE. APPLY THE "PATCH" AND ROLL WITH THE PRESSURE ROLLER TO ENSURE PROPER BONDING.

CAN, FIBER BOARD,
FED SPEC PPP-C-55, AND
PPP-D-723, FRICTION
CAP TYPE CLOSURE.



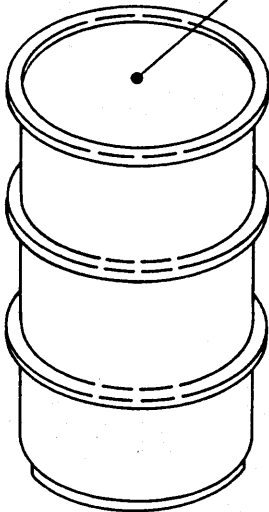
SPECIMEN DRUM NO. 1

DRUM, FIBERBOARD,
MIL SPEC MIL-C-70470,
FED SPEC PPP-C-55 AND
PPP-D-723, PRESS ON,
BOLT-RING OR LEVER
SNAP FASTENER TYPE
CLOSURE.



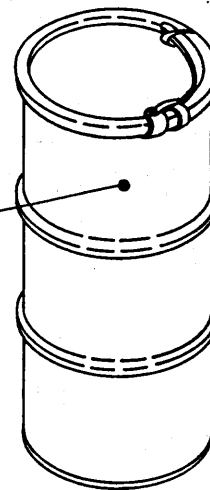
SPECIMEN DRUM NO. 2

DRUM, METAL SHIPPING, STEEL,
FED SPEC PPP-D-705 AND 736,
BOLTED-RING CLOSURE,
SWEDGED-IN OR I BAR ROLLING
HOOP. FOR METAL DRUM
MIL SPEC MIL-C-70469, SEE
SPECIAL NOTE BELOW.



SPECIMEN DRUM NO. 3

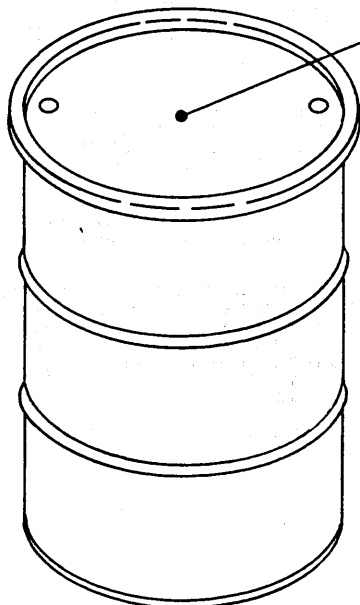
DRUM, METAL SHIPPING, STEEL,
FED SPEC PPP-D-705 AND 736,
LEVER-LOCK TYPE CLOSURE,
SWEDGED-IN OR I BAR ROLLING
HOOP.



SPECIMEN DRUM NO. 4

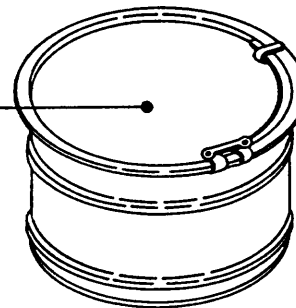
SPECIAL NOTE:
INCLUDED AS SPECIMEN NO. 3 IS AN IMPROVED
METAL DRUM, MIL SPEC MIL-C-70469 WHICH IS
STACKABLE (VERTICAL NESTING), HAS A LEVER-
LOCK TYPE CLOSURE AND FOUR WIDE-FACED FLAT
ROLLING HOOPS. FOR BLOCKING AND BRACING
A LOAD OF THIS SPECIFIC TYPE IMPROVED METAL
DRUM, THE PROCEDURES SPECIFIED IN THIS DRAW-
ING FOR "FIBERBOARD DRUMS" WILL BE USED IN
LIEU OF PROCEDURES FOR METAL DRUMS. RISERS
AND INTERMEDIATE DECKING ARE NOT REQUIRED.

DRUM, METAL, 55 GAL
FED SPEC PPP-D-729
AND 732.



SPECIMEN DRUM NO. 5

POWDER CONTAINER,
METAL, MK2 MOD O,
FOR BALLISTITE SHEET
PROPELLANT. SEE
BUORD DRAWING NO.
591971, DATED 12-31-47.



SPECIMEN DRUM NO. 6

TYPICAL DRUM DETAILS