

APPROVED BY  
 BUREAU OF EXPLOSIVES  
*M. R. Miller*  
 SUPERVISOR, MILITARY & INTERMODAL SERVICES  
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# LOADING AND BRACING IN BOX CARS OF NITROGUANIDINE PACKED IN DOT 21C FIBER DRUMS

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CAUTION:

CARS EQUIPPED WITH MECHANICAL BRACING DEVICES MUST NOT BE USED FOR SHIPMENT OF NITROGUANIDINE AS IT IS LIABLE TO SIFT OR BECOME LODGED IN THE MECHANISM OF THE LOADING AND BRACING DEVICE IN THE EVENT OF A CONTAINER FAILURE. ALL STEEL CARS (I.E., CARS WITH STEEL LINING AND STEEL FLOORS, NAILABLE OR NON-NAILABLE) MUST ALSO NOT BE USED.

REVISIONS				DESIGNER <i>RB</i>	PROJ. ENG. <i>RSH</i>		
				CHECKER <i>346</i>	LOG. ENGRG. OFFICE <i>W. H. Omet</i>		
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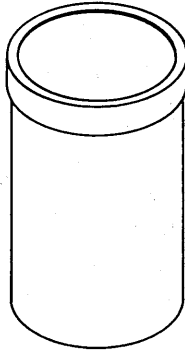
**DO NOT SCALE**

### 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 DRAWING ARE APPLICABLE FOR THE SHIPMENT OF NITROGUANIDINE IN DOT 21C FIBER DRUMS.
- C. DETAILS OF DRUM:  
DIMENSIONS-----14-1/2" DIA X 27" HIGH;  
GROSS WEIGHT-----57 POUNDS (APPROX).  
CUBE-----2.6 CUBIC FEET.
- D. THE SELECTION OF RAIL CARS FOR THE TRANSPORT OF THE DESIGNATED ITEM IS THE RESPONSIBILITY OF THE CARRIER AND THE SHIPPER. ONLY CARS WHICH HAVE "SOUND" FLOORS AND ARE OTHERWISE IN PROPER CONDITION TO SAFELY TRANSPORT THE LADING TO DESTINATION WITHOUT DAMAGE WILL BE SELECTED. EVERY EFFORT SHOULD BE MADE TO OBTAIN BOX CARS THAT DO NOT HAVE BOWED END WALLS, HOWEVER, CARS HAVING ONLY SLIGHTLY BOWED ENDS CAN BE USED.
- E. IT IS RECOMMENDED THAT CARS EQUIPPED WITH END-OF-CAR CUSHIONING DEVICES BE USED, PROVIDING THESE CARS ALSO COMPLY WITH THE RESTRICTIONS AND SAFETY REQUIREMENTS SET FORTH BY THE "CAUTION" NOTE ON THE COVER PAGE.
- F. A BOX CAR EQUIPPED WITH 10'-0" WIDE "THRU" PLUG TYPE DOORS IS SHOWN. HOWEVER, THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR CARS EQUIPPED WITH OTHER WIDTH "THRU" OR STAGGERED PLUG TYPE DOORS OR "THRU" OR STAGGERED CONVENTIONAL SLIDING DOORS. **CAUTION:** DUNNAGE MATERIAL MUST NOT BE NAILED TO ANY PLUG DOOR, WHETHER AUXILIARY OR MAIN. ALSO, AFTER THE PLUG DOORS ON A CAR ARE CLOSED AND READY FOR THE INSTALLATION OF CAR SEALS, A PIECE OF WIRE OF SUITABLE SIZE WILL BE USED IN ADDITION TO, AND IN CONJUNCTION WITH, EACH CAR SEAL USED TO SEAL THE CAR. THE WIRE WILL BE THREADED THRU THE HOLES IN THE DOOR LATCH ASSEMBLY ONE OR MORE TIMES, AND THE WIRE ENDS WILL BE TWISTED TOGETHER.
- G. PORTIONS OF THE DEPICTED CAR, SUCH AS A CAR SIDEWALL, HAVE BEEN OMITTED FROM THE LOAD VIEW FOR CLARITY PURPOSES.

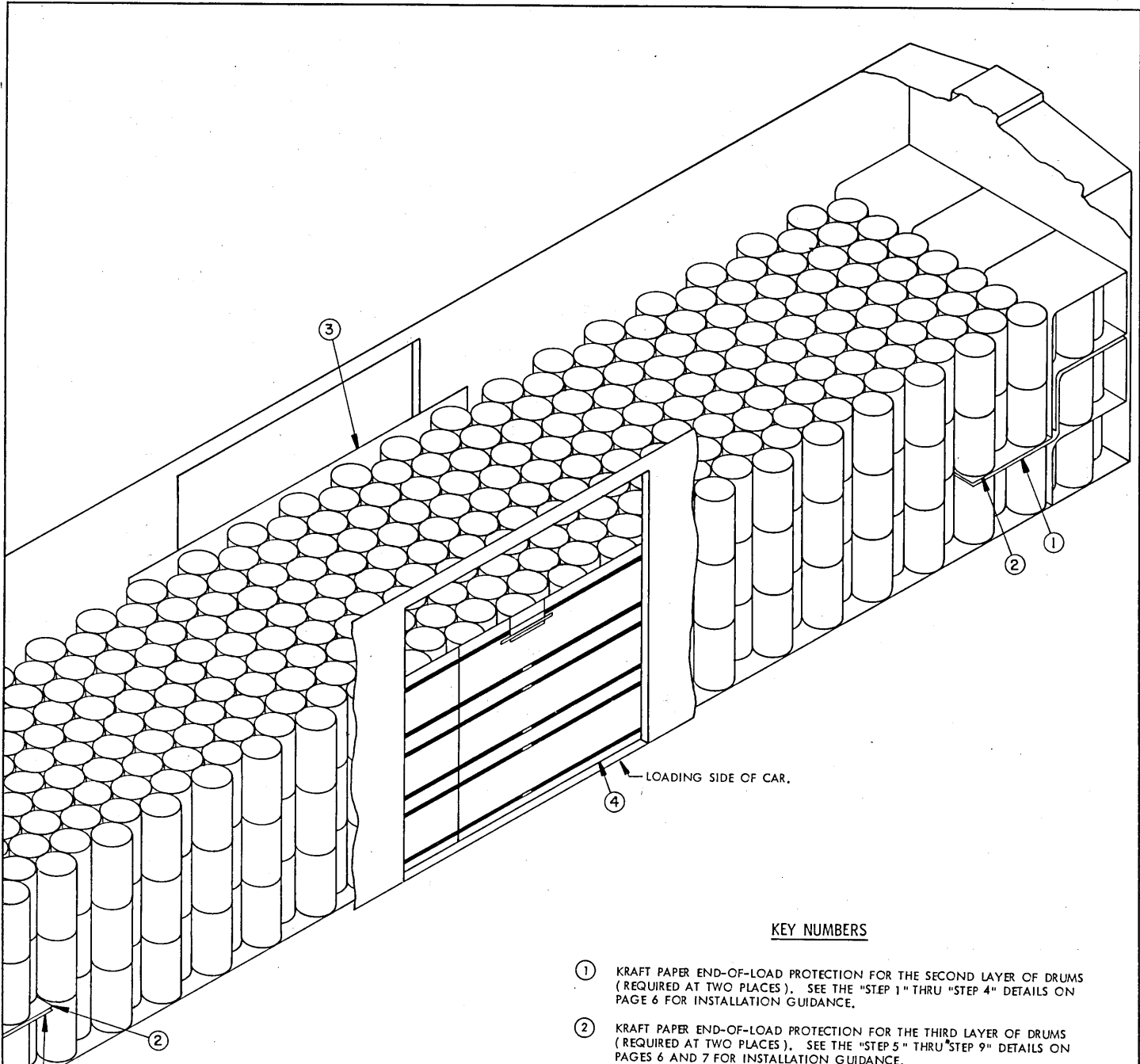
### MATERIAL SPECIFICATIONS

- NAILS-----: COMMON, FED SPEC FF-N-105.
- STRAPPING, STEEL-----: CLASS I, TYPE I, II, OR IV, HEAVY DUTY, FINISH A, B (GRADE 2), OR C, FED SPEC QQ-S-781.
- SEAL, STRAP-----: TYPE D, STYLE I, II, OR IV, HEAVY DUTY; FED SPEC QQ-S-781.
- PAPER-----: FED SPEC UU-P-268.
- STAPLE-----: COMMERCIAL GRADE.



DOT 21C FIBER DRUM

DIMENSIONS -----14-1/2" DIA X 27" HIGH.  
GROSS WEIGHT-----57 LBS ( APPROX ).  
CUBE-----2.6 CU. FT.



ISOMETRIC VIEW

KEY NUMBERS

- ① KRAFT PAPER END-OF-LOAD PROTECTION FOR THE SECOND LAYER OF DRUMS (REQUIRED AT TWO PLACES). SEE THE "STEP 1" THRU "STEP 4" DETAILS ON PAGE 6 FOR INSTALLATION GUIDANCE.
- ② KRAFT PAPER END-OF-LOAD PROTECTION FOR THE THIRD LAYER OF DRUMS (REQUIRED AT TWO PLACES). SEE THE "STEP 5" THRU "STEP 9" DETAILS ON PAGES 6 AND 7 FOR INSTALLATION GUIDANCE.
- ③ DOORWAY PROTECTION FOR THE SIDE OPPOSITE THE LOADING SIDE OF CAR (1 REQD.). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 8 FOR INSTALLATION GUIDANCE. SEE SPECIAL NOTE 2 ON PAGE 5.
- ④ DOORWAY PROTECTION FOR THE LOADING SIDE OF CAR (1 REQD.). SEE THE "DOORWAY PROTECTION B" DETAIL ON PAGE 8 FOR INSTALLATION GUIDANCE.

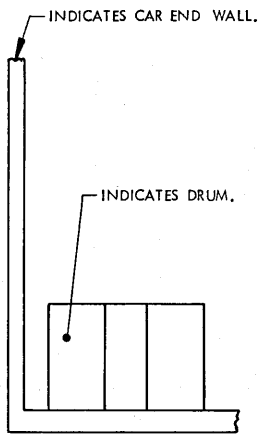
SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. OTHER LENGTH AND WIDTH CARS SHOULD NOT BE USED. THE DEPICTED CAR IS EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS. CARS HAVING NARROWER, WIDER, AND/OR STAGGERED DOOR OPENINGS MAY ALSO BE USED.
2. THE DEPICTED PROCEDURES ARE APPLICABLE ONLY FOR CARS EQUIPPED WITH PLUG TYPE DOORS. THE KRAFT PAPER/STEEL STRAPPING METHOD OF DOORWAY PROTECTION WILL NOT BE USED IN CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. REFER TO THE "DOORWAY PROTECTION C" DETAIL ON PAGE 9 OR THE "ALTERNATIVE DOORWAY PROTECTION D" AND/OR "ALTERNATIVE DOORWAY PROTECTION E" DETAILS ON THAT PAGE FOR GUIDANCE IF THE CAR BEING LOADED IS EQUIPPED WITH CONVENTIONAL SLIDING DOORS.
3. THE DEPICTED LOAD OF 1,008 DRUMS CONSISTS OF 48 STACKS OF 21 DRUMS EACH. TO OBTAIN A LOAD CONSISTING OF AN EVEN NUMBERED STACKS, THE STACKS IN THE ENDS OF THE CAR MUST BE STARTED IN DIAGONALLY OPPOSITE CORNERS.
4. THE LOAD SHOWN ON PAGE 4 CONSISTS OF 1,008 DRUMS OF WHICH 1,000 WILL CONTAIN NITROGUANIDINE AND EIGHT (8) DRUMS WILL BE FILLED WITH A MIXTURE OF SAND AND A LIGHT WEIGHT AGGREGATE OR OTHER NON-FLAMMABLE MATERIAL TO APPROXIMATE THE WEIGHT OF THE PRODUCT-FILLED DRUMS. THESE DRUMS SHOULD BE PAINTED ORANGE AND EACH PLAINLY MARKED "INERT" WITH TWO-INCH (2") HIGH LETTERS ON OPPOSITE SIDES AND ON THE TOP WITH BLACK OR OTHER CONTRASTING COLOR PAINT. THE "INERT" DRUMS SHOULD BE PLACED NEAR THE LOADING SIDE DOOR. SEE SPECIAL NOTE 5.
5. THE USE OF EIGHT ORANGE-PAINTED DRUMS BALLASTED WITH A MIXTURE OF SAND AND OTHER NON-FLAMMABLE MATERIAL IS SPECIFIED ONLY TO OBTAIN A QUANTITY OF 1,000 PRODUCT-FILLED DRUMS. IF THE SIZE OF THE LOTS DICTATE, OR FOR OTHER REASONS, THE NUMBER OF BALLAST-FILLED DRUMS MAY BE INCREASED OR DECREASED. IT IS PERMISSIBLE TO SHIP A COMPLETE 3-LAYER LOAD OF PRODUCT-FILLED DRUMS.

BILL OF MATERIAL		
NAILS	NO. REQD	POUNDS
6d (2")	72	1/2
STEEL STRAPPING, 1-1/4" X .035" OR .031"-----162' REQD-----24 LBS		
SEAL FOR 1-1/4" STRAPPING-----6 REQD-----NIL		
STAPLE, 3/4" X 1/2" OR 1" X 5/8"-----96 REQD-----NIL		
PAPER, KRAFT, 36" WIDE-----2,061' REQD-----84 LBS		

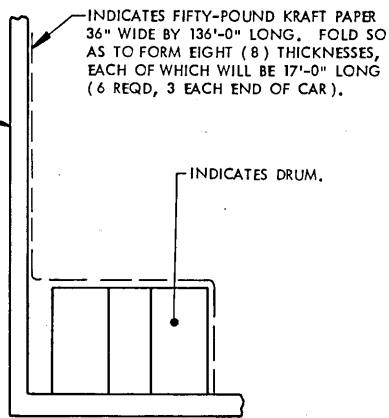
LOAD AS SHOWN

<u>ITEM</u>	<u>QUANTITY</u>	<u>WEIGHT (APPROX)</u>
FIBER DRUM -----	1,008-----	57,456 LBS
DUNNAGE -----		109 LBS
TOTAL WEIGHT-----		57,565 LBS



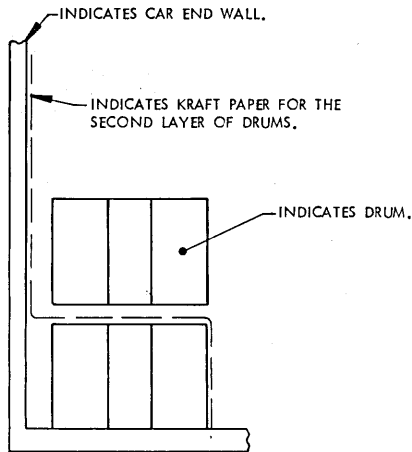
**STEP 1**

POSITION TWENTY-ONE (21) DRUMS IN END OF CAR USING A 7-7-7 OFFSET NESTED PATTERN.



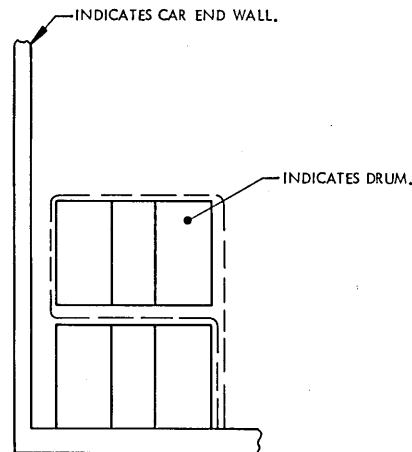
**STEP 2**

AT THREE (3) PLACES, SIDE-BY-SIDE ACROSS THE CAR, POSITION KRAFT PAPER SO AS TO EXTEND FROM FLOOR, UP THE FRONT AND OVER THE TOP OF THE DRUMS. EXTEND PAPER UP THE END WALL. IF DESIRED, PAPER MAY BE TEMPORARILY STAPLED OR TAPED TO END WALL WHILE LOADING NEXT DRUMS.



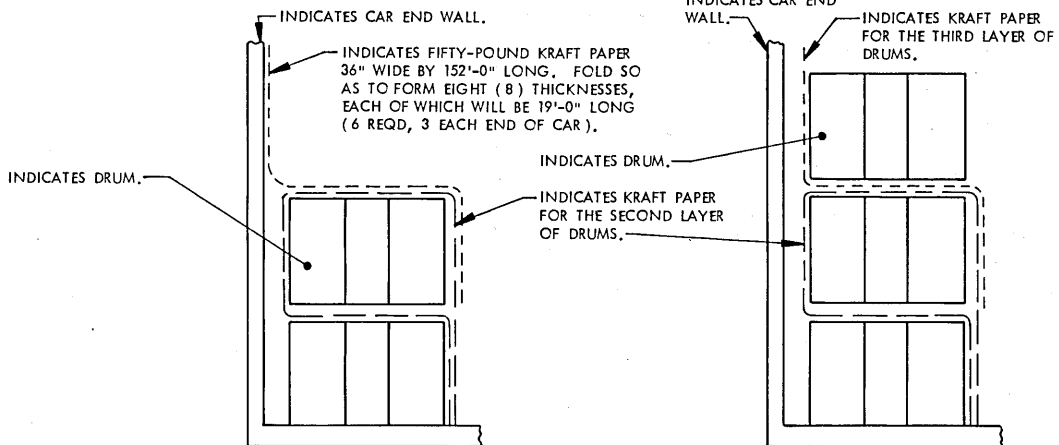
**STEP 3**

POSITION THE NEXT TWENTY-ONE (21) DRUMS ON THE KRAFT PAPER, DIRECTLY ABOVE THE DRUMS PREVIOUSLY LOADED.



**STEP 4**

LOOSEN PAPER FROM END WALL, IF SECURED, AND BRING OVER THE TOP OF AND DOWN THE FRONT OF THE LOAD AS SHOWN.



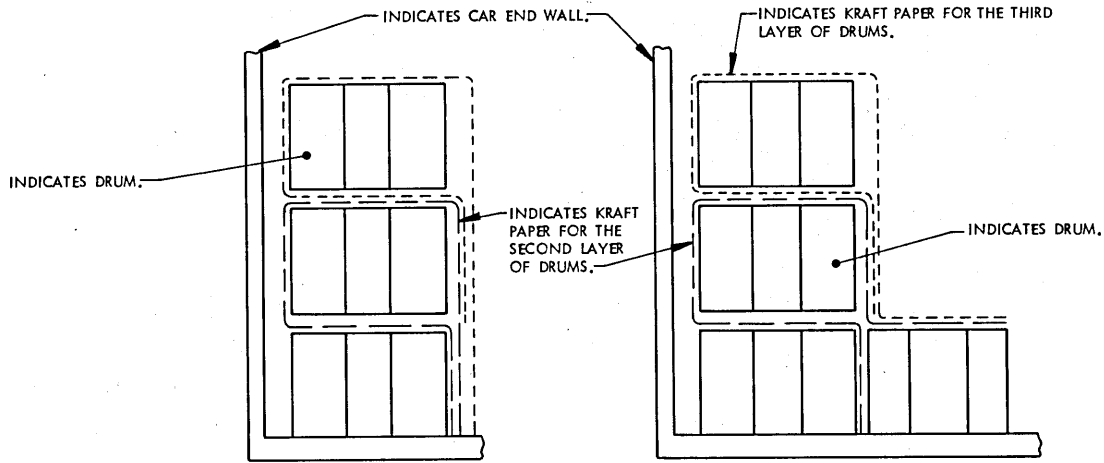
**STEP 5**

AT THREE (3) PLACES, POSITION KRAFT PAPER SO AS TO EXTEND FROM THE TOP OF THE FIRST LAYER OF DRUMS, UP THE FRONT AND OVER THE TOP OF THE SECOND LAYER OF DRUMS (OVER THE PREVIOUSLY-POSITIONED PAPER). EXTEND PAPER UP THE END WALL. IF DESIRED, PAPER MAY BE TEMPORARILY STAPLED OR TAPED TO END WALL WHILE LOADING NEXT DRUMS.

**STEP 6**

POSITION THE TOP LAYER OF TWENTY-ONE (21) DRUMS ON THE KRAFT PAPER AND DIRECTLY ABOVE THE DRUMS IN THE SECOND LAYER.

**KRAFT PAPER END-OF-LOAD PROTECTION**

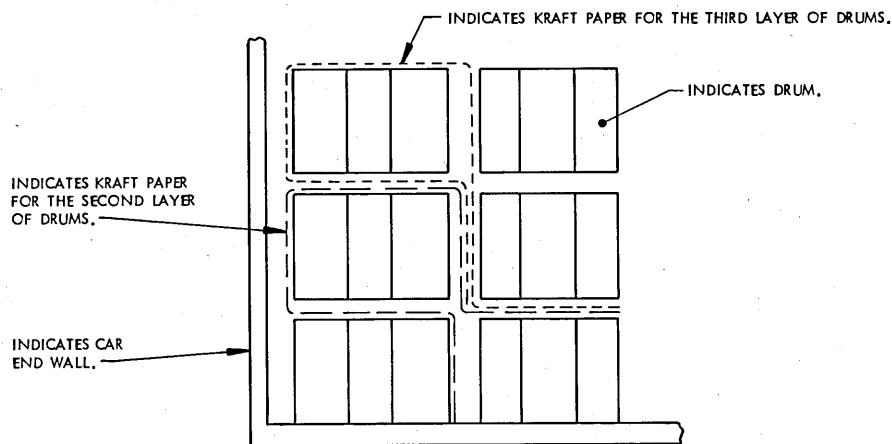


**STEP 7**

LOOSEN PAPER FROM END WALL, IF SECURED, AND BRING OVER THE TOP AND DOWN THE FRONT OF THE LOAD AS SHOWN.

**STEP 8**

LIFT ENDS OF PAPERS WHICH EXTEND OVER THE SECOND AND THIRD LAYERS OF DRUMS. POSITION SEVEN (7) DRUMS AGAINST THE FIRST-LAYER GROUP OF 21 DRUMS. FORCE DRUMS FIRMLY AGAINST THE KRAFT PAPER TO PROVIDE PROPER NESTING. POSITION THE NEXT FOURTEEN (14) DRUMS AND PLACE KRAFT PAPER ON TOP.



**STEP 9**

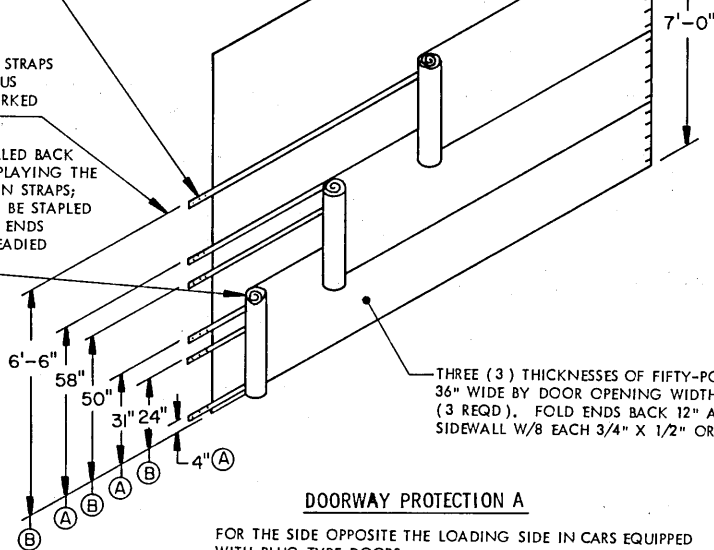
POSITION SEVEN (7) DRUMS AGAINST THE SECOND-LAYER GROUP OF 21 DRUMS. FORCE THE DRUMS FIRMLY AGAINST THE KRAFT PAPER TO PROVIDE PROPER NESTING. POSITION THE NEXT FOURTEEN (14) DRUMS OF THE 21-DRUM GROUP. POSITION SEVEN (7) DRUMS AGAINST THE THIRD-LAYER GROUP OF 21 DRUMS, FORCING FIRMLY AGAINST THE KRAFT PAPER TO PROVIDE PROPER NESTING. CONTINUE LOADING THE BALANCE OF THE CAR.

INSIDE OF CAR SIDEWALL.

DOORWAY PROTECTION STRAP, 1-1/4" X .035" OR .031" STEEL STRAPPING, DOOR OPENING WIDTH PLUS 18" IN LENGTH (6 REQD). NAIL TO THE CAR SIDEWALL W/3 EACH 6d COMMON NAILS AT EACH END. NOTE THAT PLAIN STRAPPING MAY BE PUNCHED OR DRILLED FOR USE IF PRE-PUNCHED STRAPPING IS NOT AVAILABLE.

TOLERANCE FOR PLACEMENT OF STRAPS MARKED (A) IS PLUS 4" OR MINUS 0". TOLERANCE FOR STRAPS MARKED (B) IS PLUS 0" OR MINUS 4".

THE KRAFT PAPER IS SHOWN ROLLED BACK ONLY FOR THE PURPOSE OF DISPLAYING THE INSTALLED DOORWAY PROTECTION STRAPS; ALL THREE PIECES OF PAPER WILL BE STAPLED TO THE CAR SIDEWALLS AT BOTH ENDS WHEN THE DOORWAY AREA IS READIED FOR THE LOADING OF DRUMS.



THREE (3) THICKNESSES OF FIFTY-POUND KRAFT PAPER 36" WIDE BY DOOR OPENING WIDTH PLUS 48" IN LENGTH (3 REQD). FOLD ENDS BACK 12" AND SECURE TO CAR SIDEWALL W/8 EACH 3/4" X 1/2" OR 1" X 5/8" STAPLES.

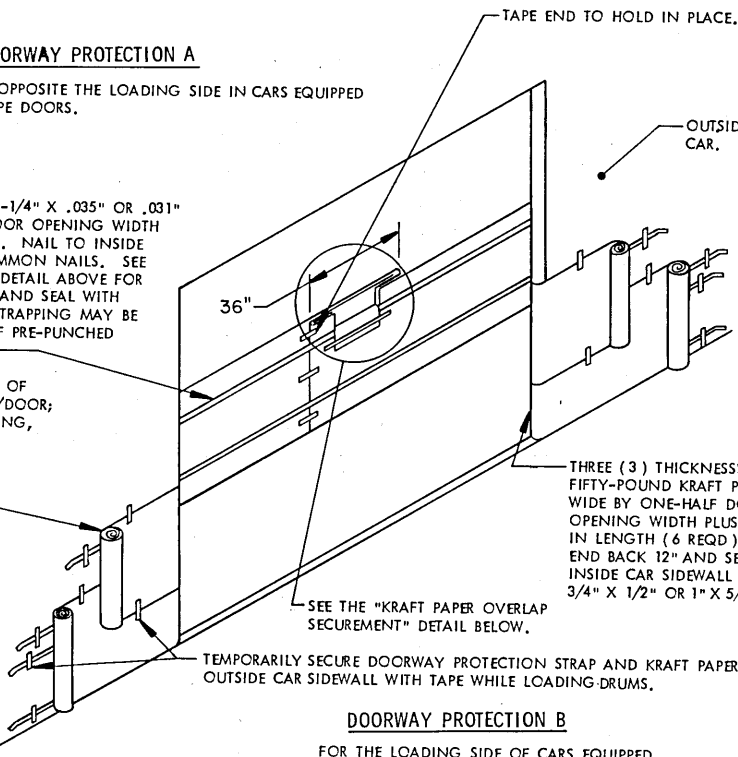
**DOORWAY PROTECTION A**

FOR THE SIDE OPPOSITE THE LOADING SIDE IN CARS EQUIPPED WITH PLUG TYPE DOORS.

DOORWAY PROTECTION STRAP, 1-1/4" X .035" OR .031" STEEL STRAPPING, ONE-HALF DOOR OPENING WIDTH PLUS 24" IN LENGTH (12 REQD). NAIL TO INSIDE CAR SIDEWALL W/3 EACH 6d COMMON NAILS. SEE THE "DOORWAY PROTECTION A" DETAIL ABOVE FOR HEIGHT LOCATIONS. TENSION AND SEAL WITH ONE SEAL. NOTE THAT PLAIN STRAPPING MAY BE PUNCHED OR DRILLED FOR USE IF PRE-PUNCHED STRAPPING IS NOT AVAILABLE.

THE KRAFT PAPER IS SHOWN ROLLED BACK ONLY FOR THE PURPOSE OF DEPICTING THE METHOD OF SECURING TO THE OUTSIDE CAR WALL/DOOR; ALL THREE PIECES WILL BE EXTENDED ACROSS THE DOORWAY OPENING, TAPED, AND SECURED AS SHOWN BY THE "KRAFT PAPER OVERLAP SECUREMENT" DETAIL BELOW.

INDICATES KRAFT PAPER. FORM 36" LONG FLAPS BY FOLDING THE INNER THREE THICKNESSES OUTWARD AND THE OUTER THREE THICKNESSES INWARD. INTERLOCK THE TWO FLAPS AS SHOWN.



THREE (3) THICKNESSES OF FIFTY-POUND KRAFT PAPER 36" WIDE BY ONE-HALF DOOR OPENING WIDTH PLUS 6'-6" IN LENGTH (6 REQD). FOLD END BACK 12" AND SECURE TO INSIDE CAR SIDEWALL W/8 EACH 3/4" X 1/2" OR 1" X 5/8" STAPLES.

SEE THE "KRAFT PAPER OVERLAP SECUREMENT" DETAIL BELOW.

TEMPORARILY SECURE DOORWAY PROTECTION STRAP AND KRAFT PAPER TO OUTSIDE CAR SIDEWALL WITH TAPE WHILE LOADING DRUMS.

**DOORWAY PROTECTION B**

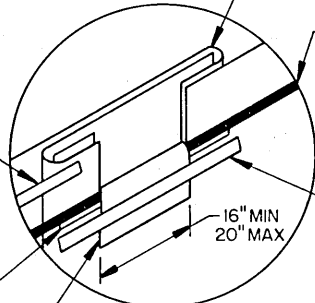
FOR THE LOADING SIDE OF CARS EQUIPPED WITH PLUG TYPE DOORS.

INDICATES TAPE.

INDICATES DOORWAY PROTECTION STRAP.

INDICATES TAPE.

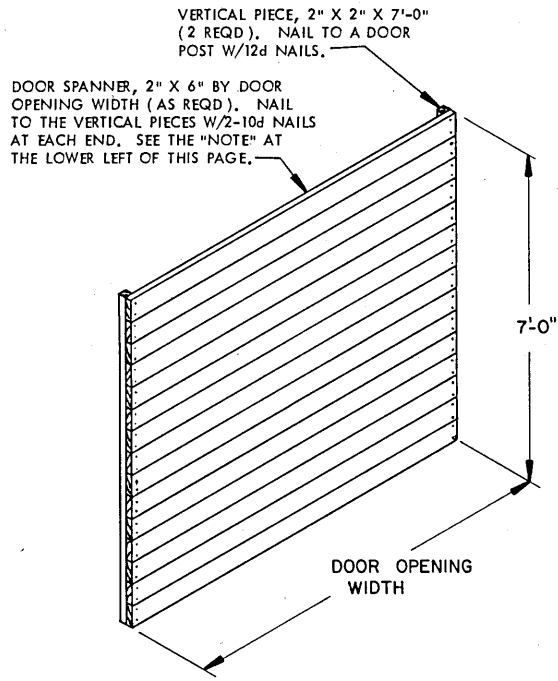
APPLY TAPE AT THIS AREA TO REINFORCE THE CUT PORTIONS OF THE KRAFT PAPER.



CUT/TEAR THROUGH THE OUTER SIX THICKNESSES OF THE KRAFT PAPER, FROM THE TOP EDGE DOWN TO THE DOORWAY PROTECTION STRAP (TO THE TOP STRAP OF A SET OF TWO DOORWAY PROTECTION STRAPS). FOLD THE SIX THICKNESSES OUTWARD OVER THE STRAP AND SECURE THE FLAP WITH TAPE AS SHOWN. THIS MUST BE ACCOMPLISHED ON ALL THREE LEVELS OF KRAFT PAPER SPANNING THE DOORWAY OPENING.

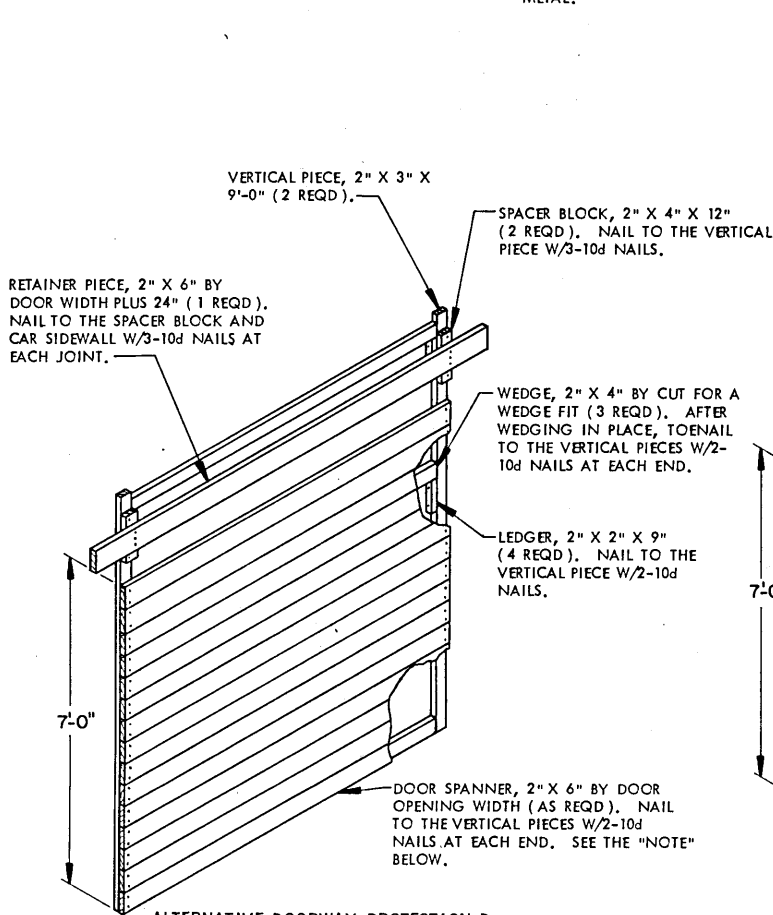
**KRAFT PAPER OVERLAP SECUREMENT**





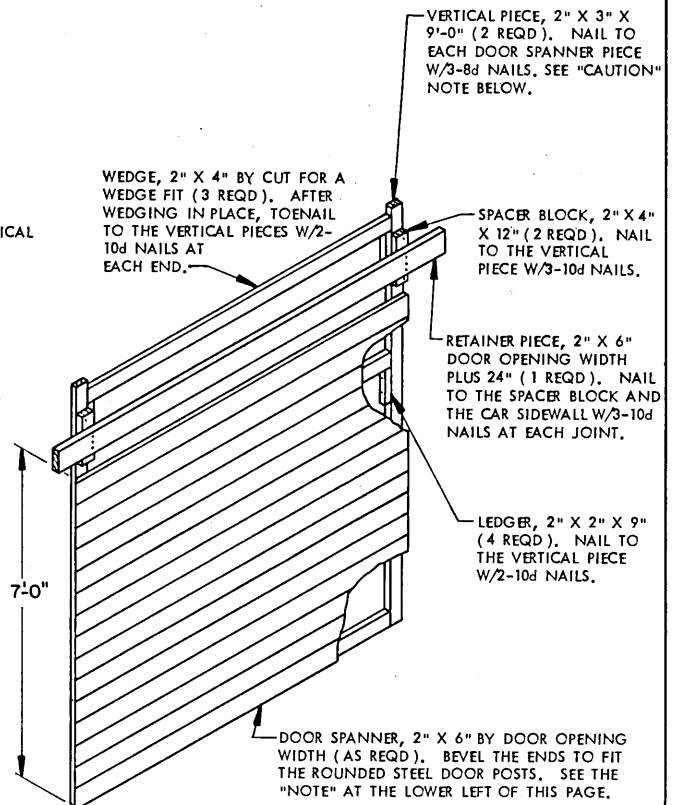
**DOORWAY PROTECTION C**

DOORWAY PROTECTION TO BE USED WHEN DOOR POSTS OF CONVENTIONAL SLIDING DOORS ARE WOOD OR NAILABLE METAL.



**ALTERNATIVE DOORWAY PROTECTION D**

DOORWAY PROTECTION TO BE USED WHEN DOOR POSTS OF CONVENTIONAL SLIDING DOORS ARE NOT NAILABLE. NOTE: ALTHOUGH 6" WIDE PIECES HAVE BEEN SPECIFIED FOR THE "DOOR SPANNER" PIECES, PIECES OF ANY WIDTH AND COMBINATIONS OF DIFFERENT WIDTHS CAN BE SUBSTITUTED, IF DESIRED, WHEN FABRICATING A "DOORWAY PROTECTION" GATE ASSEMBLY, PROVIDING THE PIECES USED ARE OF THE SPECIFIED THICKNESS (2") AND PROVIDING PIECES LESS THAN 3" WIDE ARE NOT USED.



**ALTERNATIVE DOORWAY PROTECTION E**

DOORWAY PROTECTION TO BE USED WHEN DOOR POSTS OF CONVENTIONAL SLIDING DOORS ARE ROUNDED STEEL, WITHOUT NAIL HOLES. CAUTION: WHEN DRIVING THE NAILS THROUGH THE VERTICAL PIECE INTO THE DOOR SPANNERS, EXERCISE CARE SO AS TO NOT DRIVE A NAIL INTO THE LADING.

