APPROVED BY
BUREAU OF EXPLOSIVES

D. R. Ilg

DATE 6-25-98

LOADING AND BRACING● IN MILVAN CONTAINERS⊕ OF CHARGE, DEMOLITION, LINEAR, HE M58, M58A1 & M58A2, AND INERT M68 & M68A1, IN METAL SHIPPING AND STORAGE CONTAINER

● LOADING AND BRACING SPECIFICATIONS SET FORTH WITHIN THIS DRAWING ARE APPLICABLE TO LOADS THAT ARE TO BE SHIPPED BY TRAILER/CONTAINER-ON-FLATCAR (T/COFC) RAIL CARRIER SERVICE. THESE SPECIFICATIONS MAY ALSO BE USED FOR LOADS THAT ARE TO BE MOVED BY MOTOR OR WATER CARRIERS.

⊕ ONLY MILVAN CONTAINERS WHICH HAVE BEEN MODIFIED TO INCLUDE A MECHANICAL LOAD-BRACING SYSTEM THAT SATISFIES THE REQUIREMENTS OF THE BUREAU OF EXPLOSIVES PAMPHLET 6C WILL BE USED FOR THE MOVEMENT OF AMMUNITION BY T/COFC SERVICE. CAUTION: OTHER REQUIREMENTS OF PAMPHLET 6C ALSO APPLY.

U.S. ARMY MATERIEL COMMAND DRAWING

APPROVED, U.S. ARMY
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CLASS	DIVISION	DRAWING	FILE
19	48	4299	15J1004

PROJECT CA 317-94

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 HEREIN ARE APPLICABLE TO LOADS OF LINEAR DEMOLITION CHARGES, HE M58, M58A1, AND M58A2 AND INERT M68 AND M68A1 IN METAL SHIPPING AND STORAGE CONTAINERS. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE CONTAINER WITH CONTENTS. SEE PAGE 3 FOR DETAIL OF THE CONTAINER. CAUTION: REGARDLESS OF THE QUANTITY OF UNITS TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF THE MILVAN MUST NOT BE EXCEEDED.

C. THE LOADS AS SHOWN ARE BASED ON A 20' LONG BY 8' WIDE BY 8' HIGH MILVAN CONTAINER WITH INSIDE DIMENSIONS OF 19'-4" LONG BY 92" WIDE BY 87" HIGH. THE LOADS ARE DESIGNED FOR TRAILER/CONTAINER-ON-FLATCAR (T/COFC) SHIPMENT.

D. THE SPECIFIED OUTLOADING PROCEDURES ARE FOR CONTAINERS EQUIPPED WITH SELF-CONTAINED MECHANICAL BRACING DEVICES AS DESCRIBED IN MIL-C-52661. CROSS MEMBER ATTACHMENT FACILITIES WITHIN THESE CONTAINERS MUST PROVIDE FOR THE INSTALLATION OF LOAD BLOCKING CROSS MEMBERS AT THE HEIGHTS SPECIFIED. VOIDS LENGTHWISE WITHIN THE 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 HEIGHT AND AT EQUAL DISTANCES FROM THE END OF THE CONTAINER). CROSS MEMBERS IN EMPTY CONTAINERS AND THOSE NOT USED IN LOADED CONTAINERS MUST BE FASTENED INTO BELT RAILS FOR SHIPMENT. COMPONENTS ASSIGNED TO EACH CONTAINER MUST REMAIN THEREWITH EVEN THOUGH UNUSED DURING SOME SHIPMENTS. SEE THE "FILL DETAIL" ON PAGE 5 FOR THE DUNNAGING METHOD REQUIRED TO ELIMINATE AN EXCESSIVE LENGTHWISE VOID WITHIN A LOAD. THE LOAD BLOCKING COMPONENT DESIGNATED AS "CROSS MEMBER" HEREIN, IS IDENTIFIED AS "BEAM ASSEMBLY" WITHIN TM 55-8115-200-23 & P, DATED DECEMBER 1979. THE BEAM ASSEMBLY IS FURTHER IDENTIFIED AS NSN 8115-00-165-6623.

E. DUNNAGE LUMBER SPECIFIED IS OF A NOMINAL SIZE. FOR EXAMPLE, 1" X 4" MATERIAL IS ACTUALLY 3/4" THICK BY 3-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE.

F. CAUTION: DO NOT NAIL DUNNAGE MATERIAL TO THE MILVAN WALLS OR FLOOR. ALL NAILING WILL BE WITHIN THE DUNNAGE.

G. A STAGGERED NAILING PATTERN WILL BE USED WHENEVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES OR WHEN LAMINATING DUNNAGE. ADDITIONALLY, THE NAILING PATTERN FOR AN UPPER PIECE OF LAMINATED DUNNAGE WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL FOR THAT PIECE WILL NOT BE DRIVEN THROUGH ONTO OR RIGHT BESIDE A NAIL IN A LOWER PIECE.

H. PORTIONS OF THE MILVAN DEPICTED WITHIN THIS DRAWING, SUCH AS ONE OF THE SIDEWALLS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.

J. CONVERSION TO METRIC EQUIVALENTS: DIMENSIONS WITHIN THIS DOCUMENT ARE EXPRESSED IN INCHES, AND WEIGHTS ARE EXPRESSED IN POUNDS. WHEN NECESSARY, THE METRIC EQUIVALENTS MAY BE COMPUTED ON THE BASIS OF ONE INCH EQUALS 25.4 MM AND ONE POUND EQUALS 0.454 KG.

(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

LUMBER - - - - - - - - :	SEE TM 743-200-1 (DUNNAGE LUMBER) AND VOLUNTARY PRODUCT STANDARD PS 20.
NAILS - - - - - - - - :	ASTM F1667; COMMON STEEL NAIL (NLCMS OR NLCMMS).
STRAPPING, STEEL - - :	ASTM D3953; FLAT STRAPPING, TYPE 1, HEAVY DUTY, FINISH A, B (GRADE 2), OR C.
SEAL, STRAP - - - - :	ASTM D3953; CLASS H, FINISH A, B (GRADE 2), OR C, DOUBLE NOTCH TYPE, STYLE I, II, OR IV.
WIRE, CARBON STEEL - :	ASTM A853; ANNEALED AT FINISH, BLACK OXIDE FINISH, .0800" DIA, GRADE 1006 OR BETTER.

K. MAXIMUM LOAD WEIGHT CRITERIA:

THE MAXIMUM LOAD WEIGHTS ARE CONTROLLED BY EQUIPMENT CAPABILITY FACTORS. ALTHOUGH THE HEAVIEST MAXIMUM LOADS ARE DELINEATED IN THE LOAD VIEWS, PROVISIONS ARE INCLUDED WITHIN THIS DRAWING SO THAT THE BASIC LOADS CAN BE ADJUSTED TO SATISFY A LESSER QUANTITY OF LADING UNITS. DEPENDING ON TRANSPORTATION ROUTING, IT MAY BE NECESSARY TO REDUCE THE LOAD WEIGHT TO SATISFY "WEIGHT LAWS" OF CERTAIN STATES. ALSO, IT MAY BE NECESSARY TO REDUCE THE LOAD WEIGHT TO SATISFY OTHER WEIGHT RESTRICTIONS IMPOSED ON THE INTERMODAL CONTAINER SYSTEM.

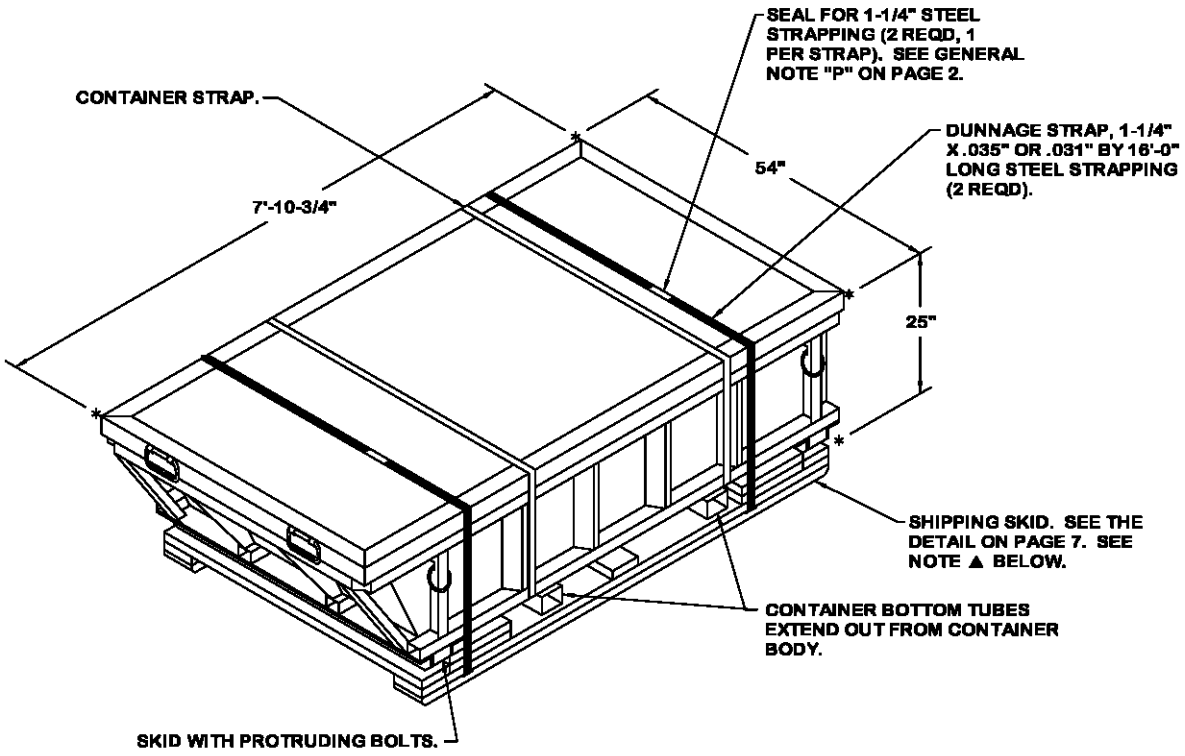
L. SPECIAL T/COFC NOTES:

1. CAUTION: LOADED CONTAINERS MUST BE ON CHASSIS EQUIPPED WITH TWO BOGIE ASSEMBLIES WHEN BEING MOVED IN TOFC SERVICE, REGARDLESS OF THE LOAD WEIGHT WITHIN THE CONTAINER.
2. LOAD LIMITS OF T/COFC RAIL CARS MUST NOT BE EXCEEDED, NOR WILL A CAR BE LOADED SO THAT THE TRUCK UNDER ONE END OF THE CAR CARRIES MORE THAN ONE-HALF OF THE LOAD LIMIT FOR THAT CAR.
3. CHASSIS/CONTAINERS COUPLED INTO A 40-FOOT TRAILER CONFIGURATION MUST BE PLACED AT THE B-END OF A TOFC RAIL CAR. THE REAR END OF THE 40-FOOT UNIT WILL OVERHANG THE END OF THE CAR IF IT IS PLACED AT THE A-END. TWENTYFOOT AND 40-FOOT UNITS CAN BE LOADED ON THE SAME CAR.

M. WHEN LOADING CONTAINERS, THEY ARE TO BE POSITIONED SO AS TO ACHIEVE A TIGHT LOAD (TIGHT AGAINST THE DUNNAGE ASSEMBLIES). THE UNBLOCKED SPACE ACROSS THE WIDTH OF A LOAD BAY IS NOT TO EXCEED 1-1/2".

N. WHETHER A CONTAINER IS FULL OR IS LOADED WITH A REDUCED QUANTITY OF LADING UNITS, THE LENGTHWISE CENTER OF GRAVITY OF THE LOAD MUST BE WITHIN 12", IN EITHER DIRECTION, OF THE MID-POINT OF THE CONTAINER.

O. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF ONE SEAL WITH TWO PAIR OF NOTCHES WILL BE USED TO SEAL THE JOINT WHEN A NOTCH-TYPE SEALER IS BEING USED. A MINIMUM OF TWO SEALS, BUTTED TOGETHER WITH TWO PAIR OF CRIMPS PER SEAL WILL BE USED TO SEAL THE JOINT WHEN A CRIMP-TYPE SEALER IS BEING USED.



SHIPPING AND STORAGE CONTAINER

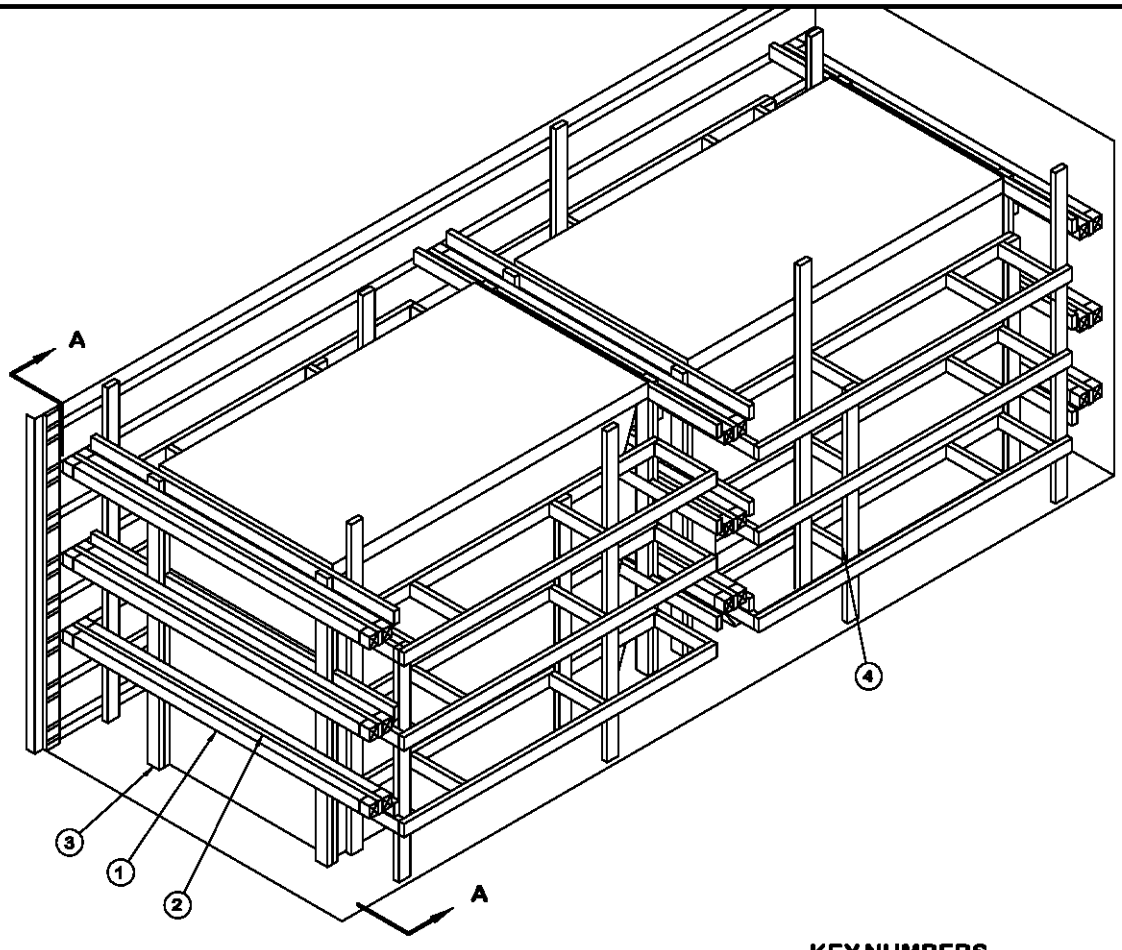
GROSS WEIGHT (APPROX)

WITH HE COMP C4, M58 CHARGE, DODIC M025	3,000 LBS
WITH HE COMP C4, M58A1 CHARGE, DODIC M025	3,000 LBS
WITH HE COMP, C54, M58A1 CHARGE, DODIC M913	3,000 LBS
WITH HE COMP C4, M58A2 CHARGE, DODIC M913	3,000 LBS
WITH INERT, M68 CHARGE, DODIC M051	3,000 LBS
WITH INERT, M68A1 CHARGE, DODIC M051	3,000 LBS

CUBE ---------- 74.0 CUBIC FEET

NOTE ▲:

THE USE OF A SHIPPING SKID AS SHOWN IN THE ABOVE VIEW IS OPTIONAL. METHODS DEPICTING TRANSPORTING WITHOUT THE SKID HAVE BEEN SHOWN ON PAGES 4 TROUGH 6. METHODS DEPICTING THE USE OF THE SHIPPING SKID HAVE BEEN SHOWN ON PAGES 7 THROUGH 11.

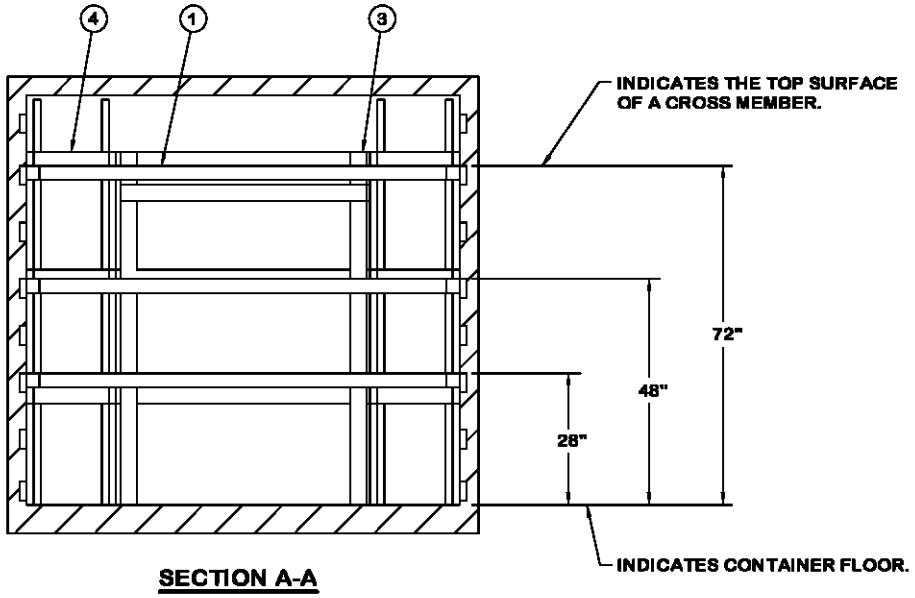


REAR OF CONTAINER.

ISOMETRIC VIEW

KEY NUMBERS

1. CROSS MEMBER (18 REQD). POSITION AT THE HEIGHTS SPECIFIED IN THE "SECTION A-A" VIEW. SEE THE "FILL DETAIL" ON PAGE 5.
2. FILL MATERIAL, 1-3/8" X 3-1/2" BY INSIDE CONTAINER WIDTH MINUS 1" (9 REQD). SEE THE "FILL MATERIAL INSTALLATION" DETAIL ON PAGE 5.
3. LOAD BEARING GATE (4 REQD). SEE THE "LOAD BEARING GATE A" DETAIL ON PAGE 6. SEE GENERAL NOTE "G" ON PAGE 2.
4. SIDE FILL ASSEMBLY (4 REQD). SEE THE "SIDE FILL ASSEMBLY A" DETAIL ON PAGE 6.



SECTION A-A

METHOD I (WITHOUT SHIPPING SKID)

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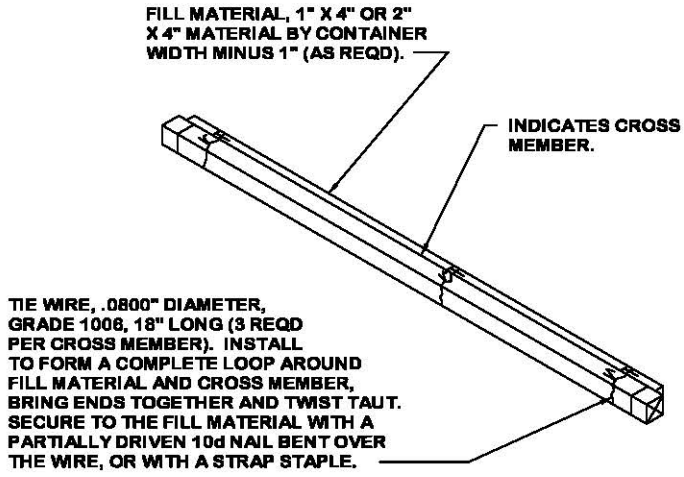
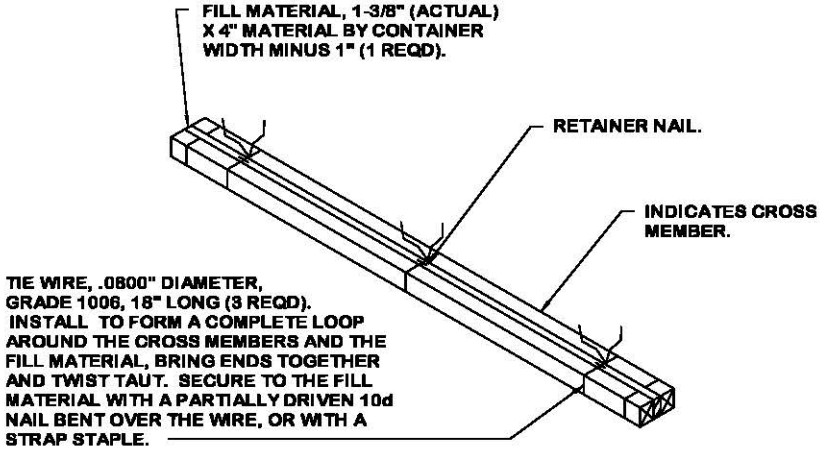


FILL DETAIL



FILL MATERIAL INSTALLATION

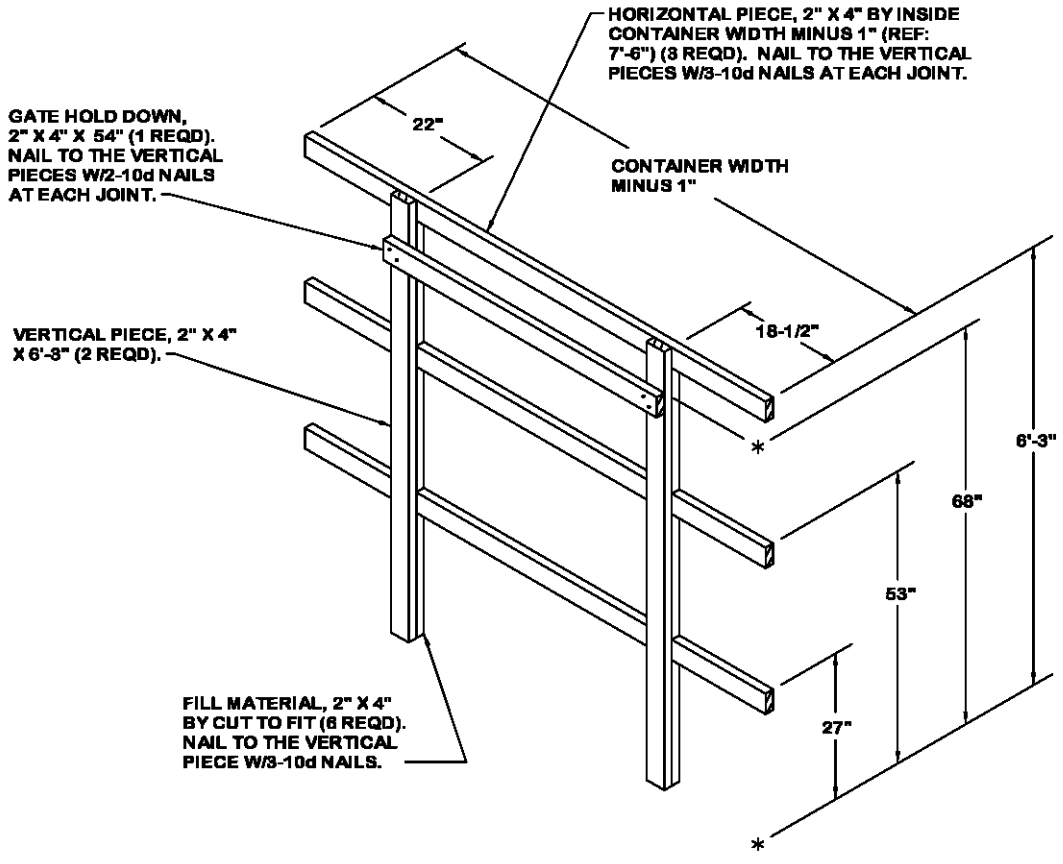
SEE GENERAL NOTE "Q" ON PAGE 3.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	619	413
NAILS	NO. REQD	POUNDS
10d (3")	523	8
WIRE - - - - - - - - - 54' REQD - - - - - - - - 1 LBS		
CROSS MEMBER - - - - - - - - - - - - - - - - - 18 REQD		

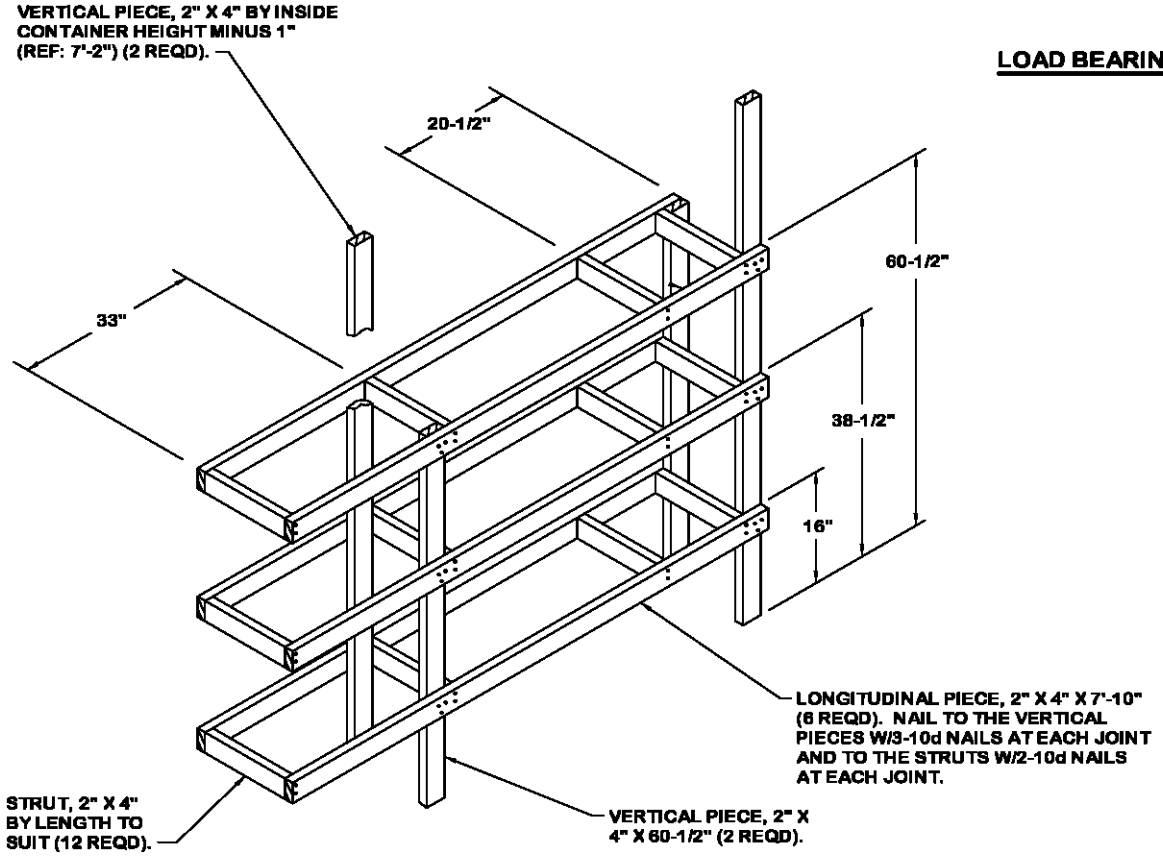
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER	6	18,000 LBS
DUNNAGE		835 LBS
MILVAN		5,700 LBS
TOTAL WEIGHT		24,535 LBS (APPROX)

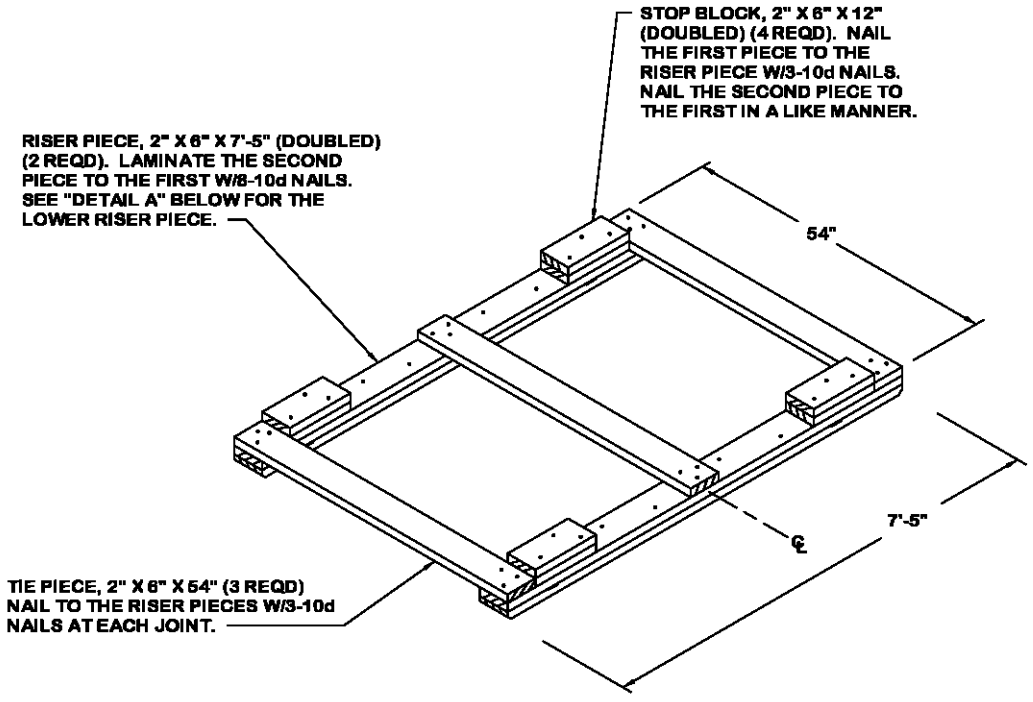
METHOD I (WITHOUT SHIPPING SKID)



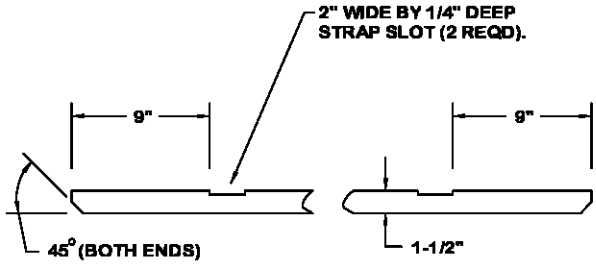
LOAD BEARING GATE A



SIDE FILL ASSEMBLY A

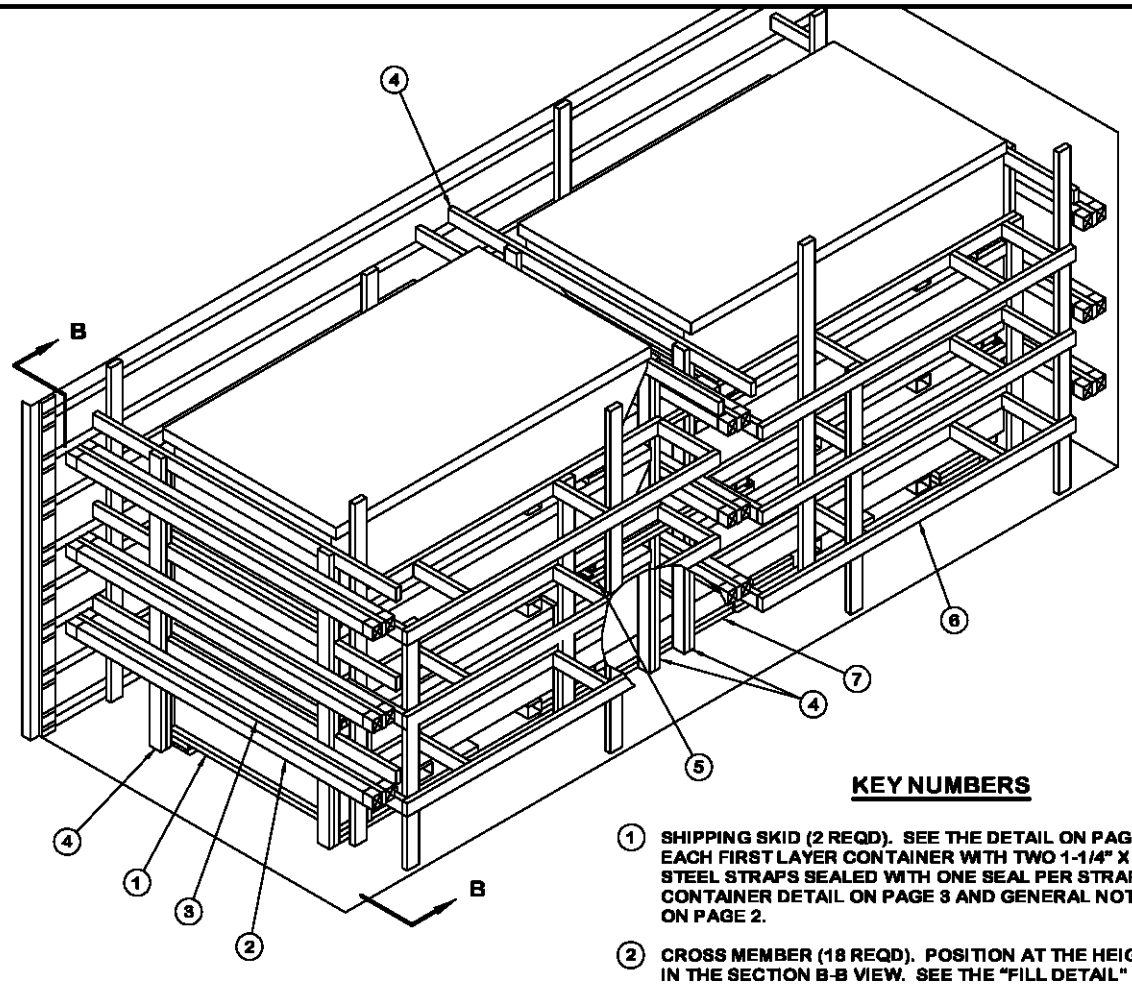


SHIPPING SKID



DETAIL A

PROJECT CA 317-94

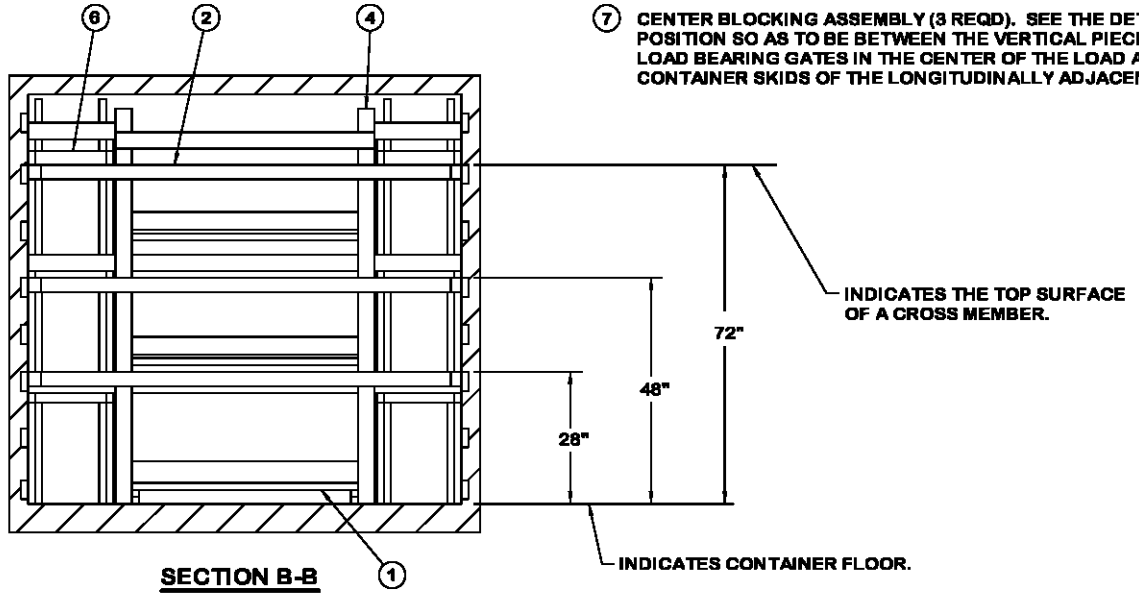


REAR OF CONTAINER.

ISOMETRIC VIEW

KEY NUMBERS

1. SHIPPING SKID (2 REQD). SEE THE DETAIL ON PAGE 7. ATTACH TO EACH FIRST LAYER CONTAINER WITH TWO 1-1/4" X 16'-0" LONG STEEL STRAPS SEALED WITH ONE SEAL PER STRAP. SEE THE CONTAINER DETAIL ON PAGE 3 AND GENERAL NOTES "G" AND "O" ON PAGE 2.
2. CROSS MEMBER (18 REQD). POSITION AT THE HEIGHTS SPECIFIED IN THE SECTION B-B VIEW. SEE THE "FILL DETAIL" ON PAGE 5.
3. FILL MATERIAL, 1-3/8" X 3-1/2" BY INSIDE CONTAINER WIDTH MINUS 1" (9 REQD). SEE THE "FILL MATERIAL INSTALLATION DETAIL" ON PAGE 5.
4. LOAD BEARING GATE (4 REQD). SEE THE "LOAD BEARING GATE B" DETAIL ON PAGE 10.
5. COVER SPANNER (8 REQD). SEE THE DETAIL ON PAGE 11. POSITION SO AS TO BE UNDER THE SKIDS ON THE SECOND AND THIRD LAYER CONTAINERS.
6. SIDE FILL ASSEMBLY (4 REQD). SEE THE "SIDE FILL ASSEMBLY B" DETAIL ON PAGE 10.
7. CENTER BLOCKING ASSEMBLY (3 REQD). SEE THE DETAIL ON PAGE 11. POSITION SO AS TO BE BETWEEN THE VERTICAL PIECES OF THE TWO LOAD BEARING GATES IN THE CENTER OF THE LOAD AND AGAINST THE CONTAINER SKIDS OF THE LONGITUDINALLY ADJACENT CONTAINERS.



SECTION B-B

METHOD II (WITH SHIPPING SKID)

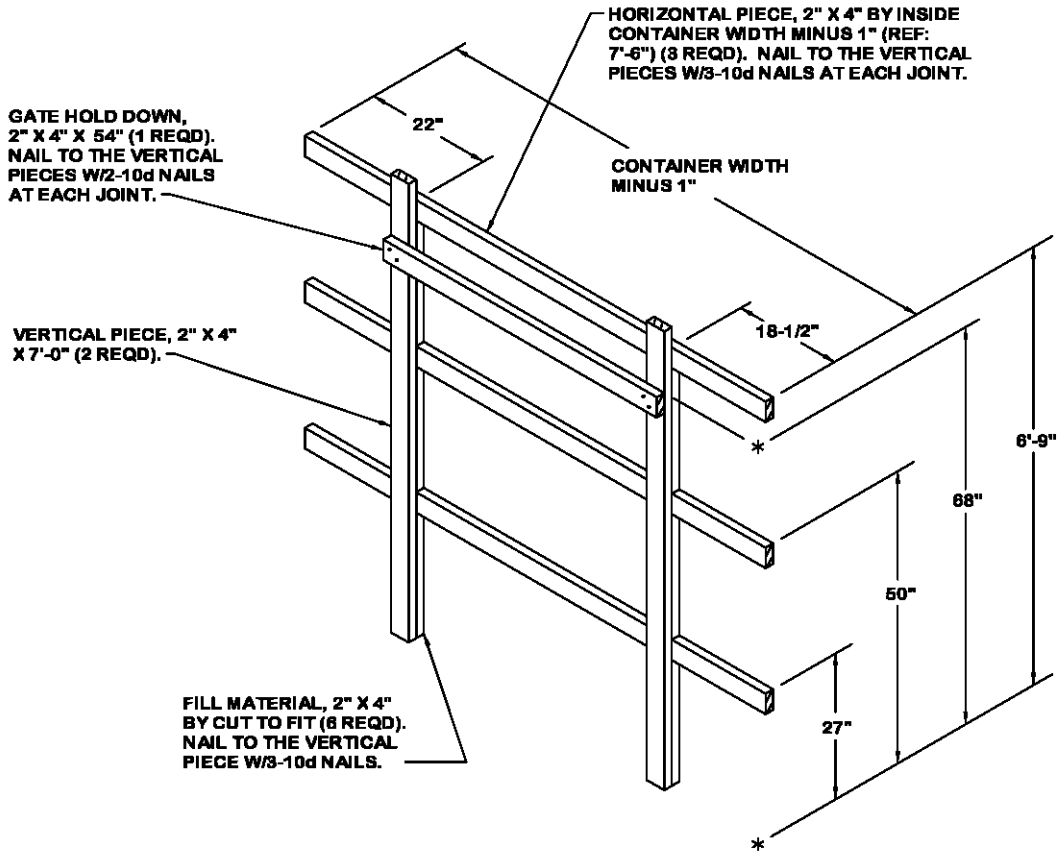
PROJECT CA 317-94

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 2" 2" X 4" 2" X 6" 2" X 8"	72 613 170 36	12 409 170 42
NAILS	NO. REQD	POUNDS
6d (2") 10d (3")	144 675	1 10
WIRE - - - - - - - - - - - - 54' REQD - - - - - - 1 LBS STEEL STRAPPING, 1-1/4" - 192' REQD - - - - - - 18 LBS SEAL FOR 1-1/4" STRAP - - - 12 REQD - - - - - - 3/4 LBS		
CROSS MEMBER - - - - - - - - - - - - - - - - - - 18 REQD		

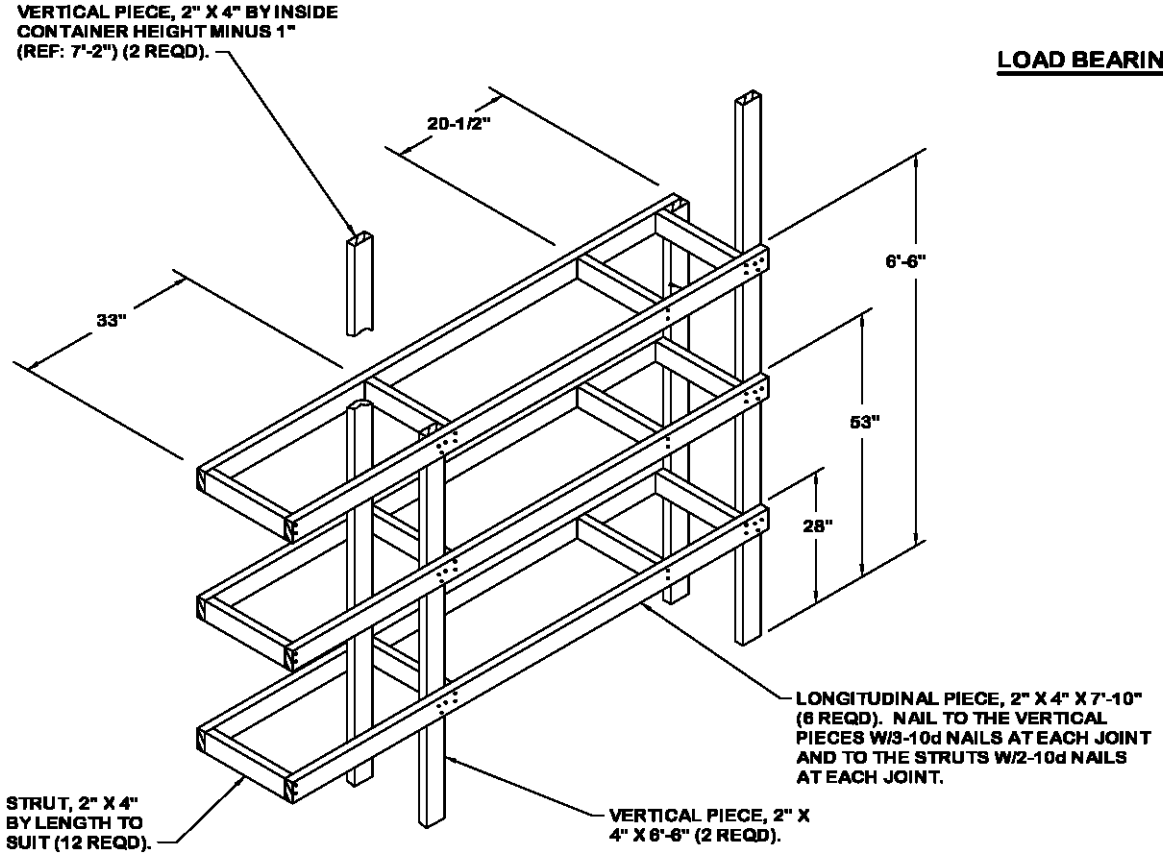
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER	6	18,000 LBS
DUNNAGE		1,297 LBS
MILVAN		5,700 LBS
TOTAL WEIGHT		24,997 LBS (APPROX)

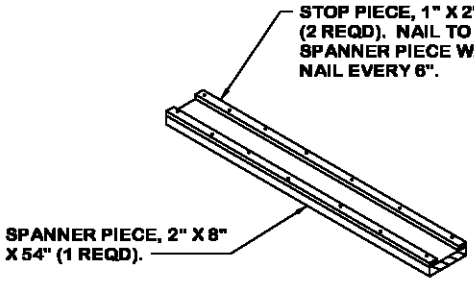
METHOD II (WITH SHIPPING SKID)



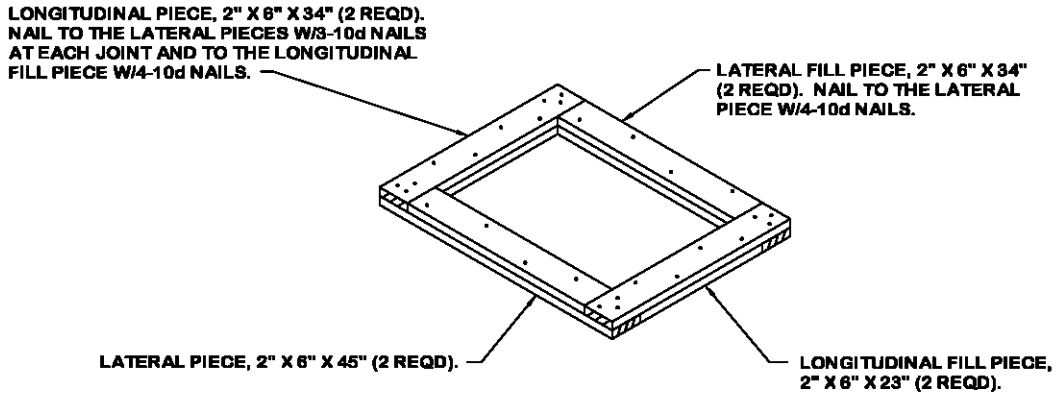
LOAD BEARING GATE B



SIDE FILL ASSEMBLY A



COVER SPANNER ASSEMBLY



CENTER BLOCKING ASSEMBLY