

*On H*

DATE 10/14/03

# LOADING AND BRACING\* IN SIDE OPENING ISO CONTAINERS OF COMPLETE ROUNDS PACKED IN CYLINDRICAL METAL CONTAINERS

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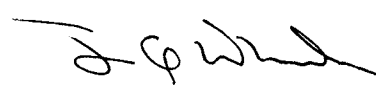
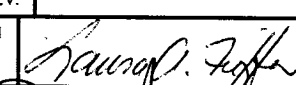
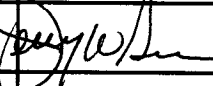

## M18 SERIES CONTAINERS

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- **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.**

## U.S. ARMY MATERIEL COMMAND DRAWING

|  |   |  |                                    |
|--|---|--|------------------------------------|
| APPROVED, U.S. ARMY<br>JOINT MUNITIONS COMMAND<br><br>  | <b>CAUTION: VERIFY PRIOR TO USE AT WWW.DAC.ARMY.MIL/DET THAT THIS IS THE MOST CURRENT VERSION OF THIS DOCUMENT. THIS IS PAGE 1 OF 18.</b> |  |                                    |
| APPROVED BY ORDER OF COMMANDING GENERAL,<br>U.S. ARMY MATERIEL COMMAND<br><br><br><br>U.S. ARMY DEFENSE AMMUNITION CENTER | <b>DO NOT SCALE</b>   | <b>AUGUST 2003</b>   |                                    |
|  | ENGINEER OR<br>TECHNICIAN   | BASIC<br>REV.  | <b>MELVIN D. SIX</b>               |
|  | TRANSPORTATION<br>ENGINEERING<br>DIVISION   |  | SEE THE REVISION LISTING ON PAGE 2 |
| VALIDATION<br>ENGINEERING<br>DIVISION  |    | TESTED   | CLASS                              |
| ENGINEERING<br>DIRECTORATE   |   | DIVISION   | DRAWING                            |
|  |   | <b>19</b>  | <b>48</b>                          |
|  |   | <b>4265/12</b>   | <b>15PM1014</b>                    |

**GENERAL NOTES**

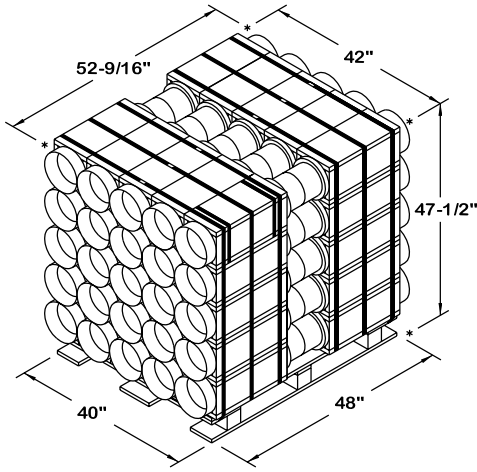
- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE FOR THE COMPLETE ROUNDS PACKED IN THE M18 SERIES CONTAINER ASSEMBLED ON THE 40" X 48" 4-WAY ENTRY PALLET. SEE THE PICTORIAL VIEWS ON PAGE 3 FOR SIZES AND WEIGHTS. SEE U. S. ARMY MATERIEL COMMAND DRAWING 19-48-4079/11-20PM1002 FOR UNITIZATION PROCEDURES FOR THE M18 SERIES CONTAINERS. CAUTION: REGARDLESS OF THE QUANTITY OF UNITS TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF THE SIDE OPENING ISO CONTAINER MUST NOT BE EXCEEDED.
- C. THE LOADS AS SHOWN ARE BASED ON 6,050 POUND 20' LONG BY 8' WIDE BY 8'-6" HIGH SIDE OPENING ISO CONTAINER WITH INSIDE DIMENSIONS OF 19'-4" LONG BY 89" WIDE BY 88" HIGH AND A MAXIMUM GROSS WEIGHT OF 52,910 POUNDS. THE LOAD IS DESIGNED FOR TRAILER/CONTAINER-ON-FLATCAR (T/COFC) SHIPMENT, HOWEVER, THE LOAD AS DESIGNED CAN ALSO BE MOVED BY MOTOR OR WATER CARRIERS. NOTICE: OTHER CONTAINERS OF THE SAME DESIGN CONFIGURATION CAN ALSO BE USED.
- D. WHEN LOADING THE UNITS, 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". EXCESSIVE SLACK CAN BE ELIMINATED FROM A LOAD BY LAMINATING ADDITIONAL PIECES OF APPROPRIATE THICKNESS TO THE CRIB FILL ASSEMBLIES. NAIL EACH ADDITIONAL PIECE TO THE HORIZONTAL PIECE W/1 APPROPRIATELY SIZED NAIL EVERY 12". ADDITIONALLY, THE THICKNESS AND QUANTITY OF THE DUNNAGE LUMBER USED MAY BE ADJUSTED AS REQUIRED TO FACILITATE VARIANCE IN THE SIZE OF THE CONTAINER.
- E. DUNNAGE LUMBER SPECIFIED IS OF NOMINAL SIZE. FOR EXAMPLE, 1" X 6" MATERIAL IS ACTUALLY 3/4" THICK BY 5-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE.
- F. 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 ON TO OR RIGHT BESIDE A NAIL IN A LOWER PIECE.
- G. IN SOME CONTAINERS THERE IS A SLOT AT THE CORNERS OF THE ENDWALLS. PIECES OF DUNNAGE MATERIAL MUST BE LAMINATED TO THE BUFFER PIECES ON THE END BLOCKING ASSEMBLY TO PROVIDE A FLAT SURFACE FOR THE BUFFER PIECES. A PIECE OF 2" X 4", 2" X 3" OR A SPECIAL WIDTH PIECE CUT-TO-FIT CAN BE USED. THIS FILL PIECE WILL BE NAILED WITH ONE APPROPRIATELY SIZED NAIL EVERY 12". NOTE THAT SOME CONTAINERS ARE EQUIPPED WITH "TIE-BARS" IN THE CORNER SLOT, WHICH PRECLUDE THE USE OF A FULL HEIGHT FILL PIECE. WHEN "TIE-BARS" ARE PRESENT, THE FILL PIECE MUST BE INSTALLED IN SEGMENTS DESIGNED TO FIT BETWEEN THE "TIE-BARS" VERTICALLY. THE FILL PIECE(S) IS NOT REQUIRED WHEN THE CORNER PORTIONS OF THE CONTAINER ENDWALLS ARE SMOOTH AND FLAT. DO NOT ALLOW ANY DUNNAGE ASSEMBLY TO CONTACT THE CONTAINER ENDWALLS, ONLY THE CORNER POSTS OF THE CONTAINER SHOULD BE USED FOR LONGITUDINAL BLOCKING.
- H. CAUTION: DO NOT NAIL DUNNAGE MATERIAL TO THE CONTAINER WALLS OR FLOOR. ALL NAILING WILL BE WITHIN THE DUNNAGE. PORTIONS OF THE CONTAINER DEPICTED WITHIN THIS DRAWING, SUCH AS THE SIDE DOORS, HAVE NOT BEEN SHOWN IN THE LOAD VIEW 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.

**(GENERAL NOTES CONTINUED)**

- 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. REQUIREMENTS CITED WITHIN THE ASSOCIATION OF AMERICAN RAILROADS (AAR) INTERMODAL LOADING GUIDE APPLY WHEN THE SHIPMENT MOVES BY TRAILER/CONTAINER-ON-FLATCAR (T/COFC). SPECIAL T/COFC NOTES FOLLOW:
  - A. A LOADED CONTAINER MUST BE ON A CHASSIS EQUIPPED WITH TWO BOGIE ASSEMBLIES WHEN BEING MOVED IN TOFC SERVICE.
  - B. THE LOAD LIMIT OF A T/COFC RAILCAR 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.
- M. DURING INTRASTATE AND/OR INTERSTATE MOVES BY MOTOR CARRIER, A PROPER CHASSIS OR MODIFIED FLATBED TRAILER MUST BE USED TO PRECLUDE VIOLATION OF ONE OR MORE "WEIGHT LAWS" APPLICABLE TO THE STATE OR STATES INVOLVED.
- 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. THE QUANTITY OF PALLET UNITS SHOWN IN THE LOAD ON PAGES 4, 6, 8, 10, 12 AND 14 MAY BE REDUCED FOR SHIPMENT, IF DESIRED. SEE THE OMITTED UNIT ASSEMBLY ON PAGE 18.

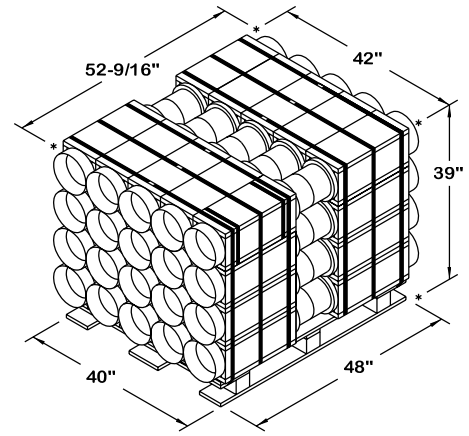
**MATERIAL SPECIFICATIONS**

- LUMBER - - - - - : SEE TM 743-200-1 (DUNNAGE LUMBER) AND VOLUNTARY PRODUCT STANDARD PS 20.
- NAILS - - - - - : ASTM F1667; COMMON STEEL NAIL (NLCMS OR NLCMS).
- PLYWOOD - - - - - : COMMERCIAL ITEM DESCRIPTION A-A-55057, INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE C-D. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER INTERIOR OR AN EXTERIOR GRADE MAY BE SUBSTITUTED.



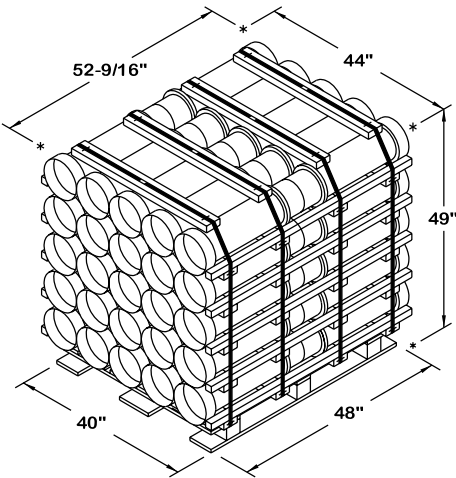
**PROTECTIVE COVER METHOD UNIT (BASIC HEIGHT)**

CONTAINER - - - - - 50 EACH @ 59 LBS (APPROX)  
 CUBE - - - - - 60.7 CUBIC FEET (APPROX)  
 GROSS WEIGHT - - - - - 3,508 POUNDS (APPROX)



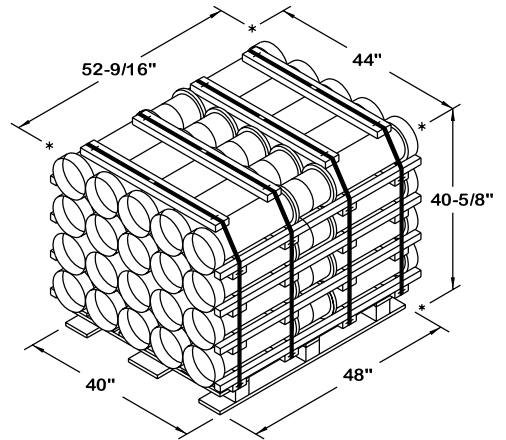
**PROTECTIVE COVER METHOD UNIT (DECREASED HEIGHT)**

CONTAINER - - - - - 40 EACH @ 59 LBS (APPROX)  
 CUBE - - - - - 49.9 CUBIC FEET (APPROX)  
 GROSS WEIGHT - - - - - 2,822 POUNDS (APPROX)



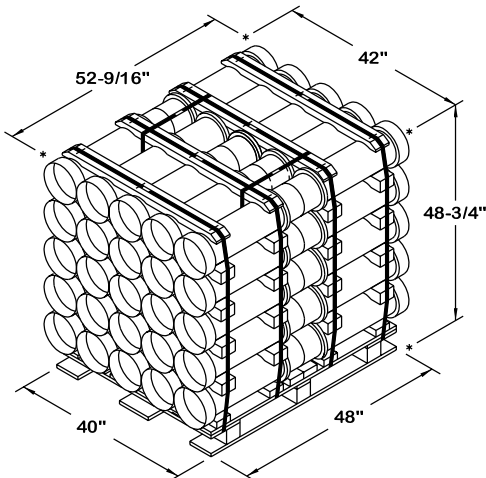
**FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)**

CONTAINER - - - - - 50 EACH @ 59 LBS (APPROX)  
 CUBE - - - - - 65.6 CUBIC FEET (APPROX)  
 GROSS WEIGHT - - - - - 3,180 POUNDS (APPROX)



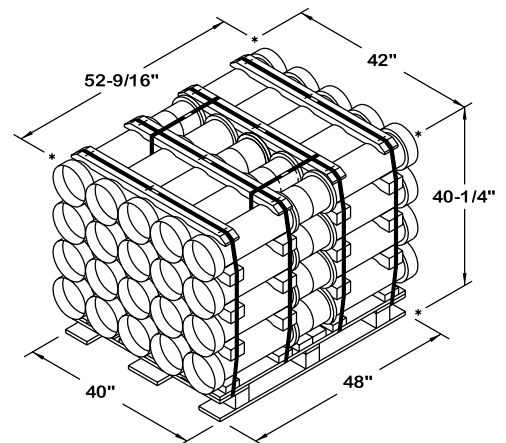
**FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)**

CONTAINER - - - - - 40 EACH @ 59 LBS (APPROX)  
 CUBE - - - - - 54.4 CUBIC FEET (APPROX)  
 GROSS WEIGHT - - - - - 2,563 POUNDS (APPROX)



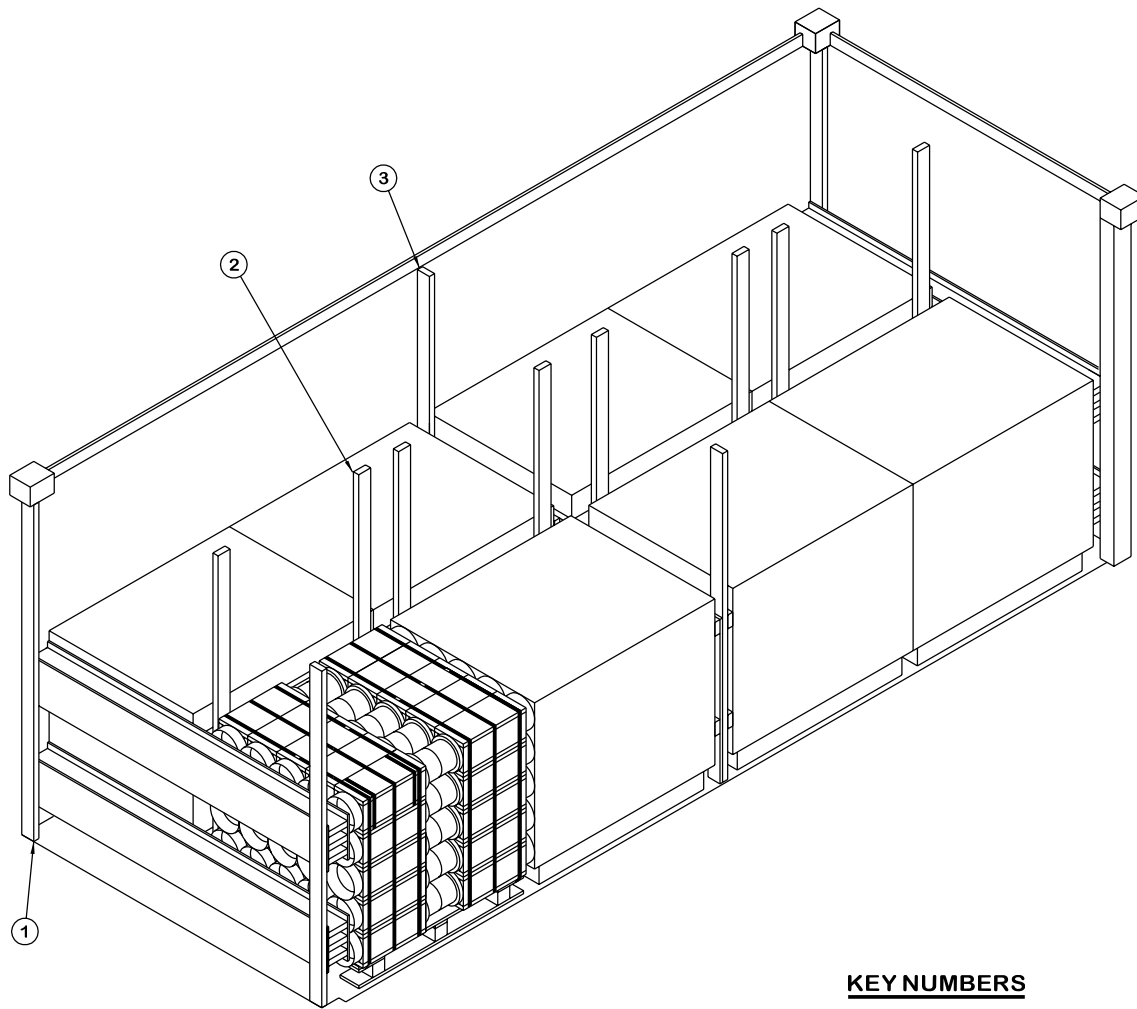
**ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)**

CONTAINER - - - - - 50 EACH @ 59 LBS (APPROX)  
 CUBE - - - - - 62.3 CUBIC FEET (APPROX)  
 GROSS WEIGHT - - - - - 3,194 POUNDS (APPROX)



**ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)**

CONTAINER - - - - - 40 EACH @ 59 LBS (APPROX)  
 CUBE - - - - - 51.4 CUBIC FEET (APPROX)  
 GROSS WEIGHT - - - - - 2,573 POUNDS (APPROX)



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① END BLOCKING ASSEMBLY (2 REQD). SEE THE DETAIL AND CHART ON PAGE 16.
- ② CRIB FILL (4 REQD). SEE THE DETAIL ON PAGE 17.
- ③ CENTER FILL ASSEMBLY (1 REQD). SEE THE DETAIL AND CHART ON PAGE 17.

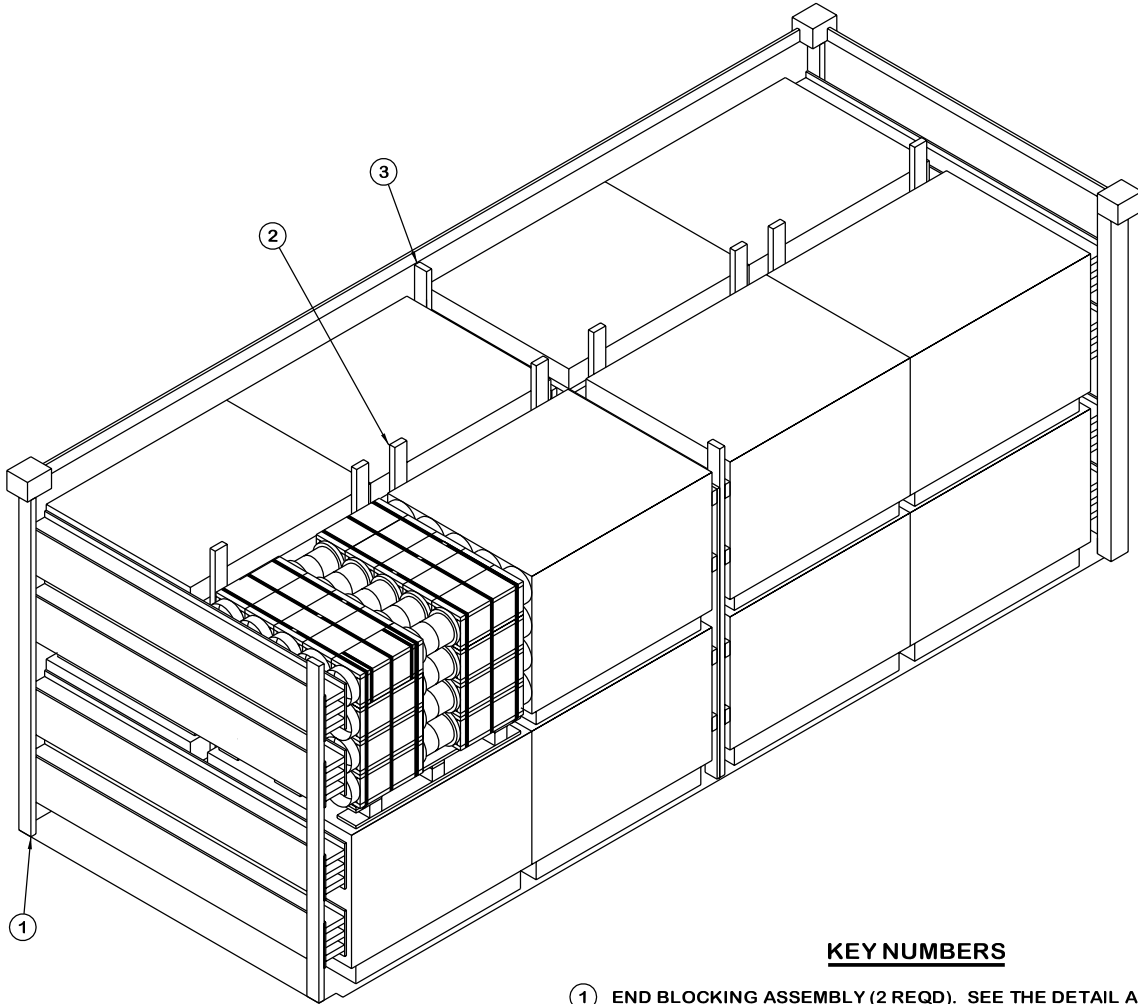
**RECOMMENDED SEQUENTIAL LOADING PROCEDURES**

1. PRE-FABRICATE TWO END BLOCKING ASSEMBLIES AND FOUR CRIB FILL ASSEMBLIES. THE CENTER FILL ASSEMBLY MAY BE PARTIALLY ASSEMBLED AT THIS TIME BUT CANNOT BE COMPLETED UNTIL THE REQUIRED NUMBER OF VERTICAL PIECES IS DETERMINED.
2. INSTALL ONE END BLOCKING ASSEMBLY.
3. LOAD TWO PALLET UNITS WITH ONE CRIB FILL ASSEMBLY AGAINST THE END BLOCKING ASSEMBLY.
4. LOAD TWO PALLET UNITS WITH ONE CRIB FILL ASSEMBLY AGAINST THE TWO PALLET UNITS.
5. REPEAT STEPS 2, 3 AND 4 FOR THE OTHER END OF THE CONTAINER.
6. MEASURE THE VOID BETWEEN THE PALLET UNITS AT THE CENTER OF THE CONTAINER AND COMPLETE THE ASSEMBLY AND INSTALLATION OF THE CENTER FILL ASSEMBLY.

| BILL OF MATERIAL                                   |             |            |
|--|-------------|------------|
| LUMBER   | LINEAR FEET | BOARD FEET |
| 1" X 4"  | 14          | 5          |
| 2" X 4"  | 207         | 138        |
| 2" X 6"  | 86          | 86         |
| NAILS  | NO. REQD    | POUNDS     |
| 6d (2")  | 280         | 1-3/4      |
| 10d (3")   | 144         | 2-1/4      |
| PLYWOOD, 1/2" - - - - 55 SQ FT REQD - - - - 76 LBS |             |            |

**LOAD AS SHOWN**

| <u>ITEM</u>            | <u>QUANTITY</u> | <u>WEIGHT (APPROX)</u> |
|------------------------|-----------------|------------------------|
| PALLET UNIT - - - - -  | 8 - - - - -     | 28,064 LBS             |
| DUNNAGE - - - - -      | - - - - -       | 537 LBS                |
| CONTAINER - - - - -    | - - - - -       | 6,050 LBS              |
| TOTAL WEIGHT - - - - - |                 | 34,651 LBS (APPROX)    |



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① END BLOCKING ASSEMBLY (2 REQD). SEE THE DETAIL AND CHART ON PAGE 16.
- ② CRIB FILL (4 REQD). SEE THE DETAIL ON PAGE 17.
- ③ CENTER FILL ASSEMBLY (1 REQD). SEE THE DETAIL AND CHART ON PAGE 17.

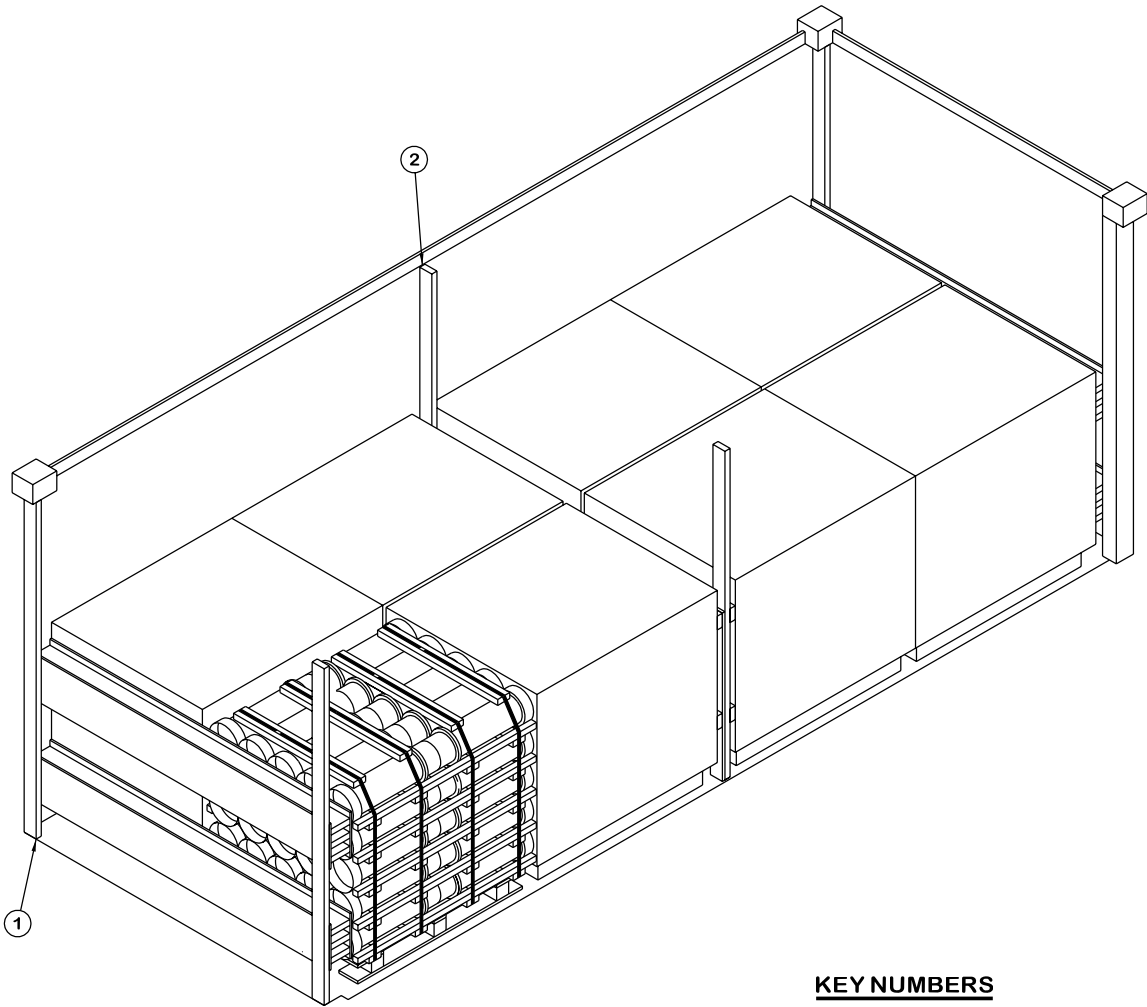
**RECOMMENDED SEQUENTIAL LOADING PROCEDURES**

1. PRE-FABRICATE TWO END BLOCKING ASSEMBLIES. THE CENTER FILL ASSEMBLY MAY BE PARTIALLY ASSEMBLED AT THIS TIME BUT CANNOT BE COMPLETED UNTIL THE REQUIRED NUMBER OF VERTICAL PIECES IS DETERMINED.
2. INSTALL ONE END BLOCKING ASSEMBLY.
3. LOAD FOUR PALLET UNITS WITH ONE CRIB FILL ASSEMBLY AGAINST THE END BLOCKING ASSEMBLY.
4. LOAD FOUR PALLET UNITS WITH ONE CRIB FILL ASSEMBLY AGAINST THE FOUR PALLET UNITS.
5. REPEAT STEPS 2, 3 AND 4 FOR THE OTHER END OF THE CONTAINER.
6. MEASURE THE VOID BETWEEN THE PALLET UNITS AT THE CENTER OF THE CONTAINER AND COMPLETE THE ASSEMBLY AND INSTALLATION OF THE CENTER FILL ASSEMBLY.

| BILL OF MATERIAL                                 |             |            |
|--|-------------|------------|
| LUMBER   | LINEAR FEET | BOARD FEET |
| 1" X 4"  | 26          | 9          |
| 2" X 4"  | 373         | 249        |
| 2" X 6"  | 172         | 172        |
| NAILS  | NO. REQD    | POUNDS     |
| 6d (2")  | 556         | 3-1/2      |
| 10d (3")   | 288         | 4-1/2      |
| PLYWOOD, 1/2" - - - 110 SQ FT REQD - - - 152 LBS |             |            |

**LOAD AS SHOWN**

| <u>ITEM</u>  | <u>QUANTITY</u> | <u>WEIGHT (APPROX)</u> |
|--------------|-----------------|------------------------|
| PALLET UNIT  | 16              | 45,152 LBS             |
| DUNNAGE      |                 | 1,013 LBS              |
| CONTAINER    |                 | 6,050 LBS              |
| TOTAL WEIGHT |                 | 52,215 LBS (APPROX)    |



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① END BLOCKING ASSEMBLY (2 REQD). SEE THE DETAIL AND CHART ON PAGE 16.
- ② CENTER FILL ASSEMBLY (1 REQD). SEE THE DETAIL AND CHART ON PAGE 17.



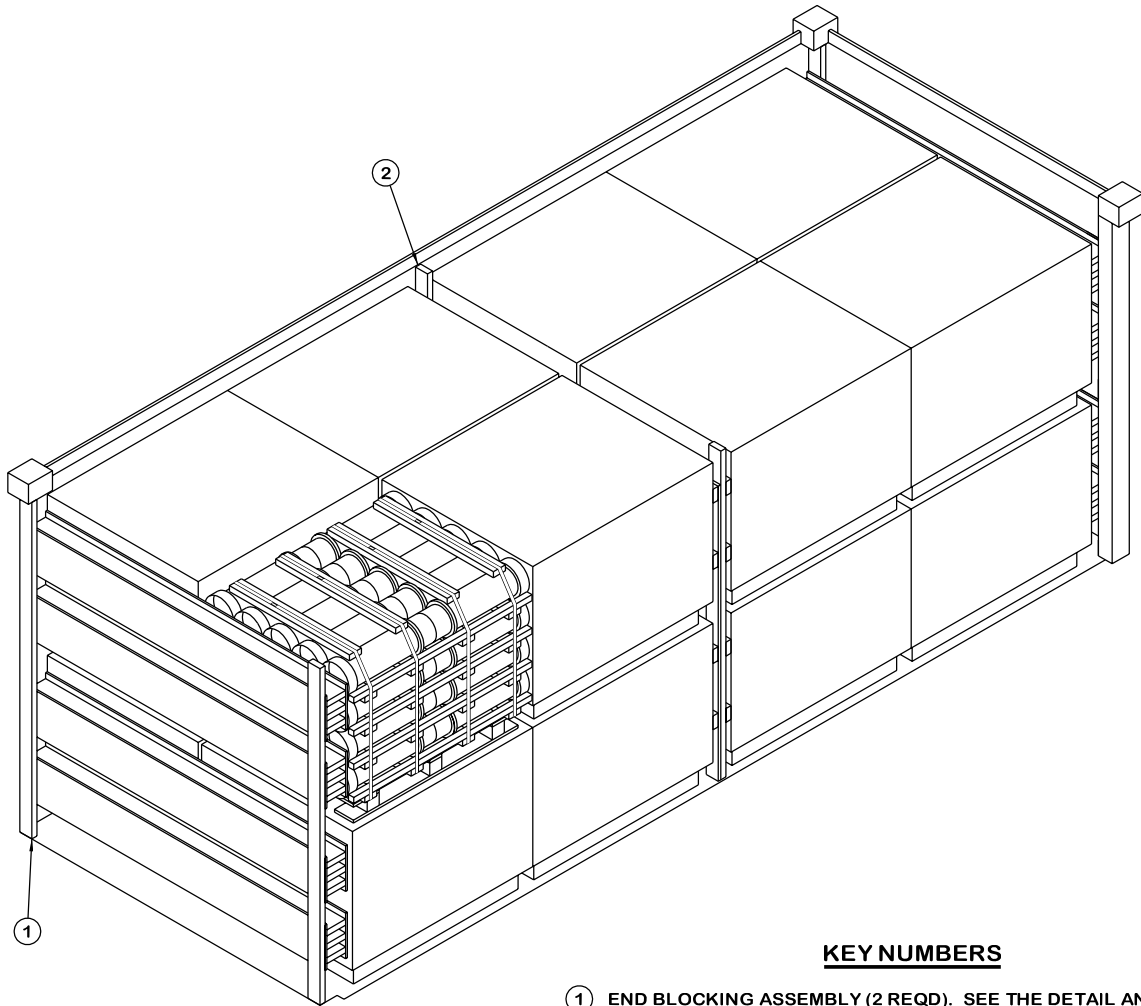
**RECOMMENDED SEQUENTIAL LOADING PROCEDURES**

1. PRE-FABRICATE TWO END BLOCKING ASSEMBLIES. THE CENTER FILL ASSEMBLY MAY BE PARTIALLY ASSEMBLED AT THIS TIME BUT CANNOT BE COMPLETED UNTIL THE REQUIRED NUMBER OF VERTICAL PIECES IS DETERMINED.
2. INSTALL ONE END BLOCKING ASSEMBLY AND LOAD TWO PALLET UNITS AGAINST THE END BLOCKING ASSEMBLY.
3. LOAD TWO PALLET UNITS AGAINST THE TWO PALLET UNITS.
4. REPEAT STEPS 2 AND 3 FOR THE OTHER END OF THE CONTAINER.
5. MEASURE THE VOID BETWEEN THE PALLET UNITS AT THE CENTER OF THE CONTAINER AND COMPLETE THE ASSEMBLY AND INSTALLATION OF THE CENTER FILL ASSEMBLY.

| BILL OF MATERIAL                                   |             |            |
|--|-------------|------------|
| LUMBER   | LINEAR FEET | BOARD FEET |
| 1" X 4"  | 15          | 5          |
| 2" X 4"  | 79          | 53         |
| 2" X 6"  | 86          | 86         |
| NAILS  | NO. REQD    | POUNDS     |
| 6d (2")  | 284         | 1-3/4      |
| 10d (3")   | 80          | 1-1/4      |
| PLYWOOD, 1/2" - - - - 55 SQ FT REQD - - - - 76 LBS |             |            |

**LOAD AS SHOWN**

| <u>ITEM</u>            | <u>QUANTITY</u> | <u>WEIGHT (APPROX)</u> |
|------------------------|-----------------|------------------------|
| PALLET UNIT - - - - -  | 8 - - - - -     | 25, 440 LBS            |
| DUNNAGE - - - - -      | - - - - -       | 365 LBS                |
| CONTAINER - - - - -    | - - - - -       | 6, 050 LBS             |
| TOTAL WEIGHT - - - - - |                 | 31, 855 LBS (APPROX)   |



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① END BLOCKING ASSEMBLY (2 REQD). SEE THE DETAIL AND CHART ON PAGE 16.
- ② CENTER FILL ASSEMBLY (1 REQD). SEE THE DETAIL AND CHART ON PAGE 17.

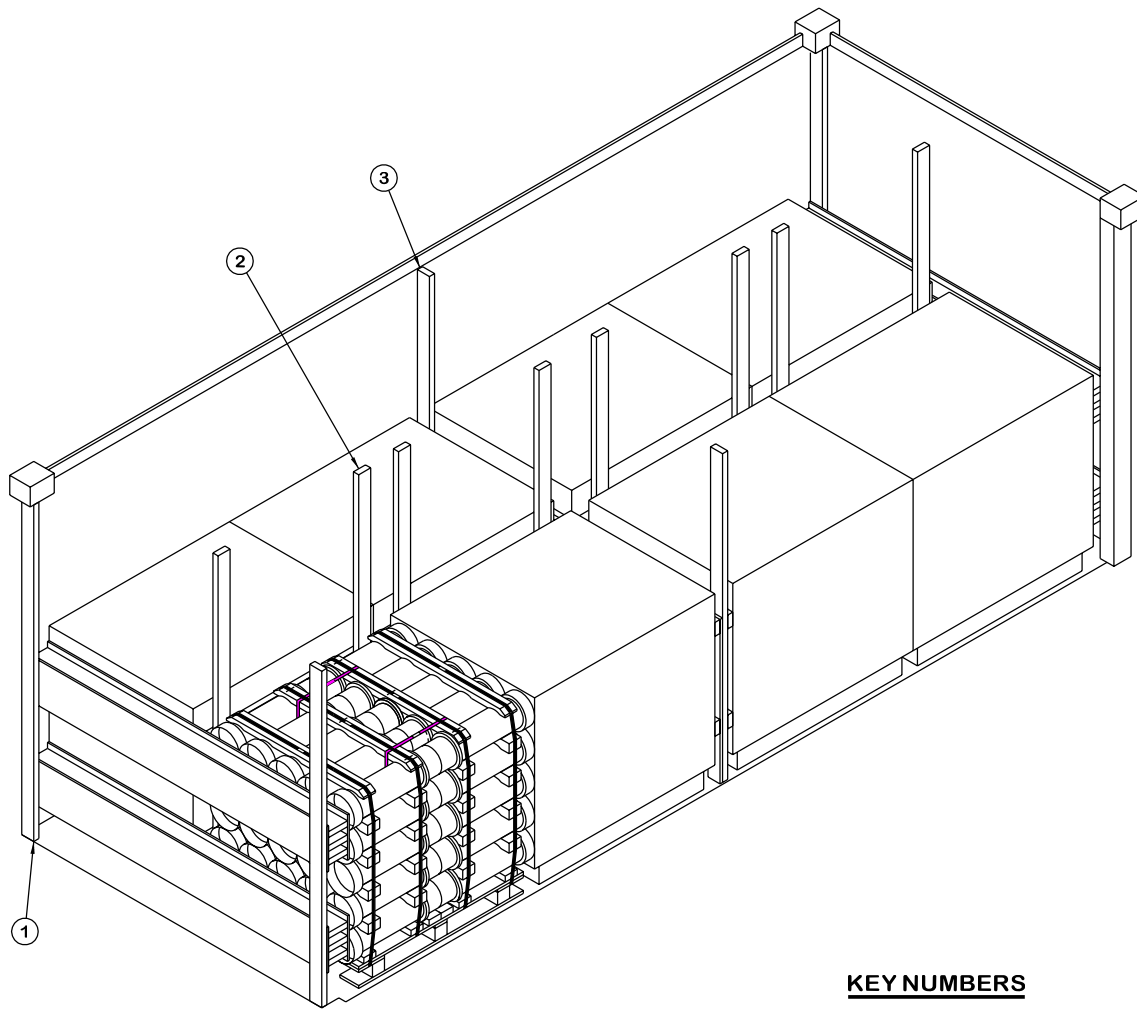
**RECOMMENDED SEQUENTIAL LOADING PROCEDURES**

1. PRE-FABRICATE TWO END BLOCKING ASSEMBLIES. THE CENTER FILL ASSEMBLY MAY BE PARTIALLY ASSEMBLED AT THIS TIME BUT CANNOT BE COMPLETED UNTIL THE REQUIRED NUMBER OF VERTICAL PIECES IS DETERMINED.
2. INSTALL ONE END BLOCKING ASSEMBLY AND LOAD FOUR PALLET UNITS AGAINST THE END BLOCKING ASSEMBLY.
3. LOAD FOUR PALLET UNITS AGAINST THE FOUR PALLET UNITS.
4. REPEAT STEPS 2 AND 3 FOR THE OTHER END OF THE CONTAINER.
5. MEASURE THE VOID BETWEEN THE PALLET UNITS AT THE CENTER OF THE CONTAINER AND COMPLETE THE ASSEMBLY AND INSTALLATION OF THE CENTER FILL ASSEMBLY.

| BILL OF MATERIAL    |                      |            |
|---------------------|----------------------|------------|
| LUMBER              | LINEAR FEET          | BOARD FEET |
| 1" X 4"             | 25                   | 9          |
| 2" X 4"             | 173                  | 115        |
| 2" X 6"             | 172                  | 172        |
| NAILS               | NO. REQD             | POUNDS     |
| 6d (2")             | 556                  | 3-1/2      |
| 10d (3")            | 160                  | 2-1/2      |
| PLYWOOD, 1/2" - - - | 110 SQ FT REQD - - - | 152 LBS    |

**LOAD AS SHOWN**

| <u>ITEM</u>            | <u>QUANTITY</u> | <u>WEIGHT (APPROX)</u> |
|------------------------|-----------------|------------------------|
| PALLET UNIT - - - - -  | 16 - - - - -    | 41,008 LBS             |
| DUNNAGE - - - - -      | - - - - -       | 747 LBS                |
| CONTAINER - - - - -    | - - - - -       | 6,050 LBS              |
| TOTAL WEIGHT - - - - - |                 | 47,805 LBS (APPROX)    |



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① END BLOCKING ASSEMBLY (2 REQD). SEE THE DETAIL AND CHART ON PAGE 16.
- ② CRIB FILL (4 REQD). SEE THE DETAIL ON PAGE 17
- ③ CENTER FILL ASSEMBLY (1 REQD). SEE THE DETAIL AND CHART ON PAGE 17.

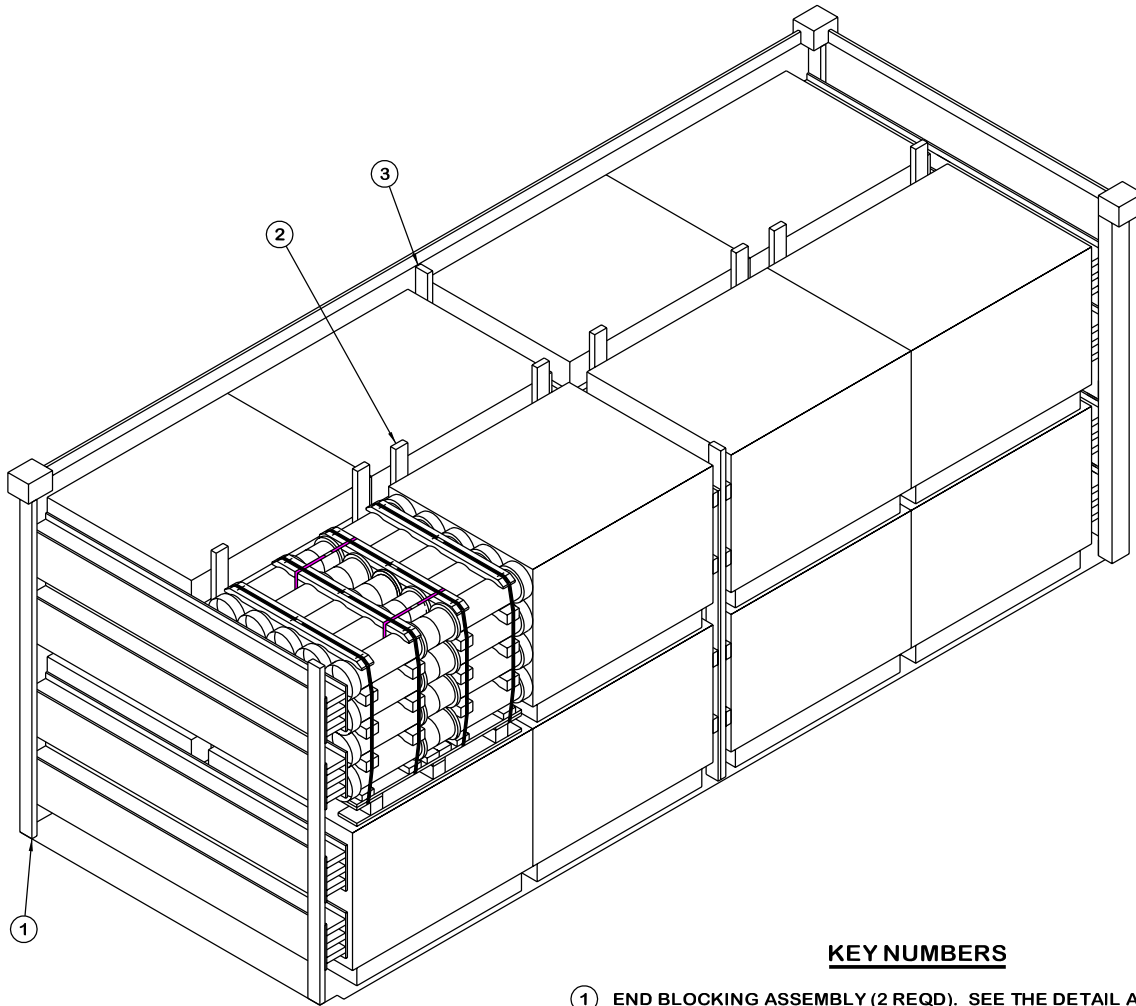
**RECOMMENDED SEQUENTIAL LOADING PROCEDURES**

1. PRE-FABRICATE TWO END BLOCKING ASSEMBLIES AND FOUR CRIB FILL ASSEMBLIES. THE CENTER FILL ASSEMBLY MAY BE PARTIALLY ASSEMBLED AT THIS TIME BUT CANNOT BE COMPLETED UNTIL THE REQUIRED NUMBER OF VERTICAL PIECES IS DETERMINED.
2. INSTALL ONE END BLOCKING ASSEMBLY.
3. LOAD TWO PALLET UNITS WITH ONE CRIB FILL ASSEMBLY AGAINST THE END BLOCKING ASSEMBLY.
4. LOAD TWO PALLET UNITS WITH ONE CRIB FILL ASSEMBLY AGAINST THE TWO PALLET UNITS.
5. REPEAT STEPS 2, 3 AND 4 FOR THE OTHER END OF THE CONTAINER.
6. MEASURE THE VOID BETWEEN THE PALLET UNITS AT THE CENTER OF THE CONTAINER AND COMPLETE THE ASSEMBLY AND INSTALLATION OF THE CENTER FILL ASSEMBLY.

| BILL OF MATERIAL                                   |             |            |
|--|-------------|------------|
| LUMBER   | LINEAR FEET | BOARD FEET |
| 1" X 4"  | 14          | 5          |
| 2" X 4"  | 207         | 138        |
| 2" X 6"  | 86          | 86         |
| NAILS  | NO. REQD    | POUNDS     |
| 6d (2")  | 284         | 1-3/4      |
| 10d (3")   | 144         | 2-1/4      |
| PLYWOOD, 1/2" - - - - 55 SQ FT REQD - - - - 76 LBS |             |            |

**LOAD AS SHOWN**

| <u>ITEM</u>            | <u>QUANTITY</u> | <u>WEIGHT (APPROX)</u> |
|------------------------|-----------------|------------------------|
| PALLET UNIT - - - - -  | 8 - - - - -     | 25,552 LBS             |
| DUNNAGE - - - - -      | - - - - -       | 536 LBS                |
| CONTAINER - - - - -    | - - - - -       | 6,050 LBS              |
| TOTAL WEIGHT - - - - - |                 | 32,138 LBS (APPROX)    |



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① END BLOCKING ASSEMBLY (2 REQD). SEE THE DETAIL AND CHART ON PAGE 16.
- ② CRIB FILL (4 REQD). SEE THE DETAIL ON PAGE 17.
- ③ CENTER FILL ASSEMBLY (1 REQD). SEE THE DETAIL AND CHART ON PAGE 17.

**RECOMMENDED SEQUENTIAL LOADING PROCEDURES**

1. PRE-FABRICATE TWO END BLOCKING ASSEMBLIES. THE CENTER FILL ASSEMBLY MAY BE PARTIALLY ASSEMBLED AT THIS TIME BUT CANNOT BE COMPLETED UNTIL THE REQUIRED NUMBER OF VERTICAL PIECES IS DETERMINED.
2. INSTALL ONE END BLOCKING ASSEMBLY.
3. LOAD FOUR PALLET UNITS WITH ONE CRIB FILL ASSEMBLY AGAINST THE END BLOCKING ASSEMBLY.
4. LOAD FOUR PALLET UNITS WITH ONE CRIB FILL ASSEMBLY AGAINST THE FOUR PALLET UNITS.
5. REPEAT STEPS 2, 3 AND 4 FOR THE OTHER END OF THE CONTAINER.
6. MEASURE THE VOID BETWEEN THE PALLET UNITS AT THE CENTER OF THE CONTAINER AND COMPLETE THE ASSEMBLY AND INSTALLATION OF THE CENTER FILL ASSEMBLY.

| BILL OF MATERIAL                                 |             |            |
|--|-------------|------------|
| LUMBER   | LINEAR FEET | BOARD FEET |
| 1" X 4"  | 26          | 9          |
| 2" X 4"  | 373         | 249        |
| 2" X 6"  | 172         | 172        |
| NAILS  | NO. REQD    | POUNDS     |
| 6d (2")  | 556         | 3-1/2      |
| 10d (3")   | 288         | 4-1/2      |
| PLYWOOD, 1/2" - - - 110 SQ FT REQD - - - 152 LBS |             |            |

**LOAD AS SHOWN**

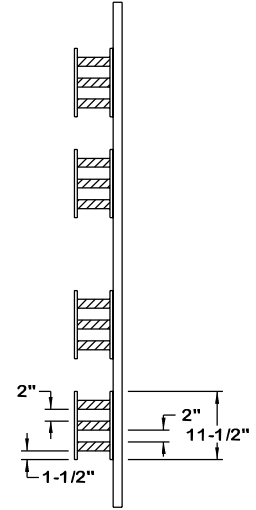
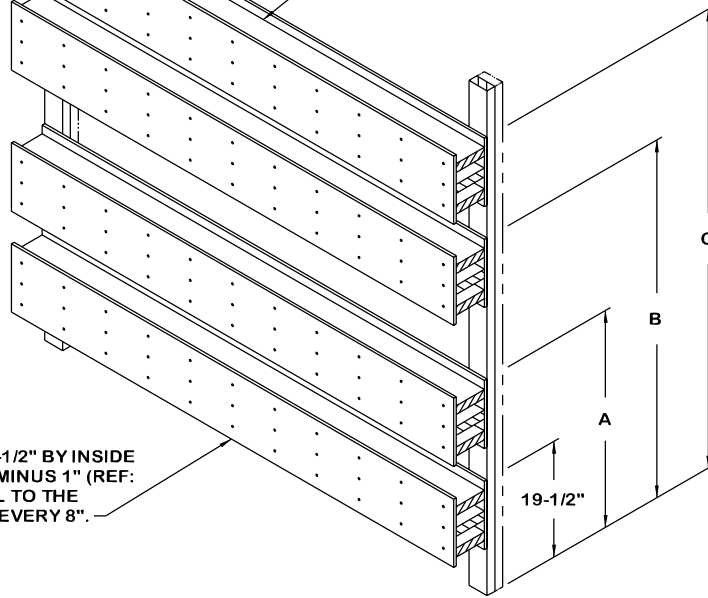
| <u>ITEM</u>  | <u>QUANTITY</u> | <u>WEIGHT (APPROX)</u>        |
|--------------|-----------------|-------------------------------|
| PALLET UNIT  | - - - - - 16    | - - - - - 41,168 LBS          |
| DUNNAGE      | - - - - -       | - - - - - 1,013 LBS           |
| CONTAINER    | - - - - -       | - - - - - 6,050 LBS           |
| TOTAL WEIGHT |                 | - - - - - 48,231 LBS (APPROX) |

SEE GENERAL NOTE "G" ON PAGE 2.

BUFFER PIECE, 2" X 4" BY INSIDE CONTAINER HEIGHT MINUS 1" (REF: 7'-1") (2 REQD). NAIL THROUGH PLYWOOD INTO THE BEAMS W/2-10d NAILS AT EACH JOINT.

BEAM, 2" X 6" BY INSIDE CONTAINER WIDTH MINUS 1" (REF: 7'-2") (12 REQD).

PLYWOOD, 1/2" X 11-1/2" BY INSIDE CONTAINER WIDTH MINUS 1" (REF: 7'-2") (8 REQD). NAIL TO THE BEAMS W/1-6d NAIL EVERY 8".



**VIEW A**

**VIEW A**

**END BLOCKING ASSEMBLY**

NOTE: FOR A ONE-HIGH LOAD, ELIMINATE THE TOP TWO BOX BEAM ASSEMBLIES.

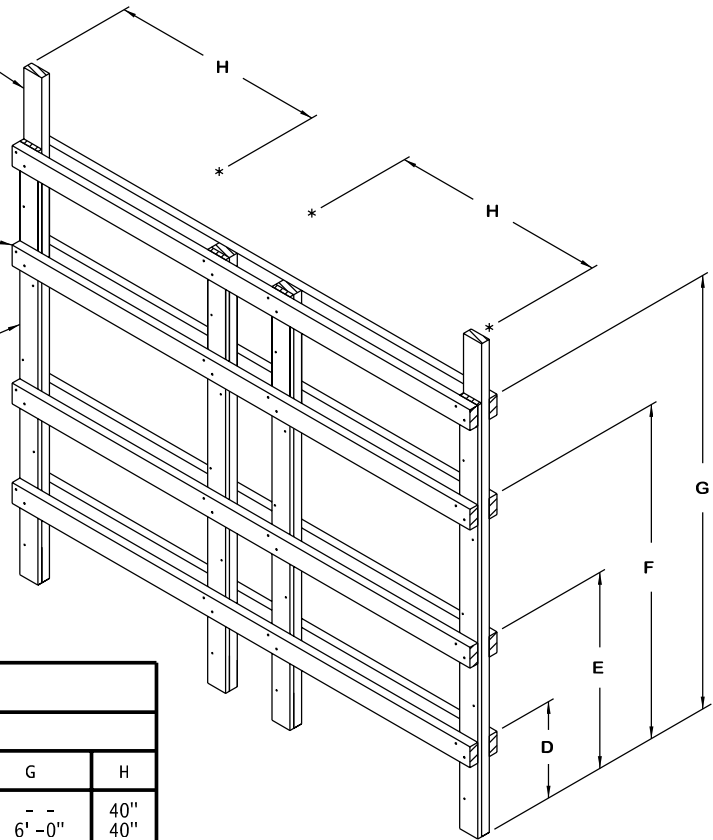
| END BLOCKING CHART     |           |         |            |
|------------------------|-----------|---------|------------|
| PALLET UNIT            | DIMENSION |         |            |
|                        | A         | B       | C          |
| PROTECTIVE (BASIC)     | 44-1/2"   | - -     | - -        |
| PROTECTIVE (DECREASED) | 36-1/2"   | 59"     | 6' -2-1/4" |
| FLAT (BASIC)           | 44-1/2"   | - -     | - -        |
| FLAT (DECREASED)       | 36-1/2"   | 60-1/4" | 6' -5-1/4" |
| ROUTED (BASIC)         | 44-1/2"   | - -     | - -        |
| ROUTED (DECREASED)     | 36-1/2"   | 60"     | 6' -4-3/4" |



VERTICAL PIECE, 2" X 4" BY INSIDE CONTAINER HEIGHT MINUS 1" (REF: 7'-1" ON FAR SIDE OF CONTAINER, 6'-11" ON DOOR SIDE OF CONTAINER AND DIMENSION "G" IN CENTER OF CONTAINER (2 REQD).

LOAD BEARING PIECE, 2" X 4" BY INSIDE CONTAINER WIDTH MINUS 1" (REF: 7'-4") (8 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.

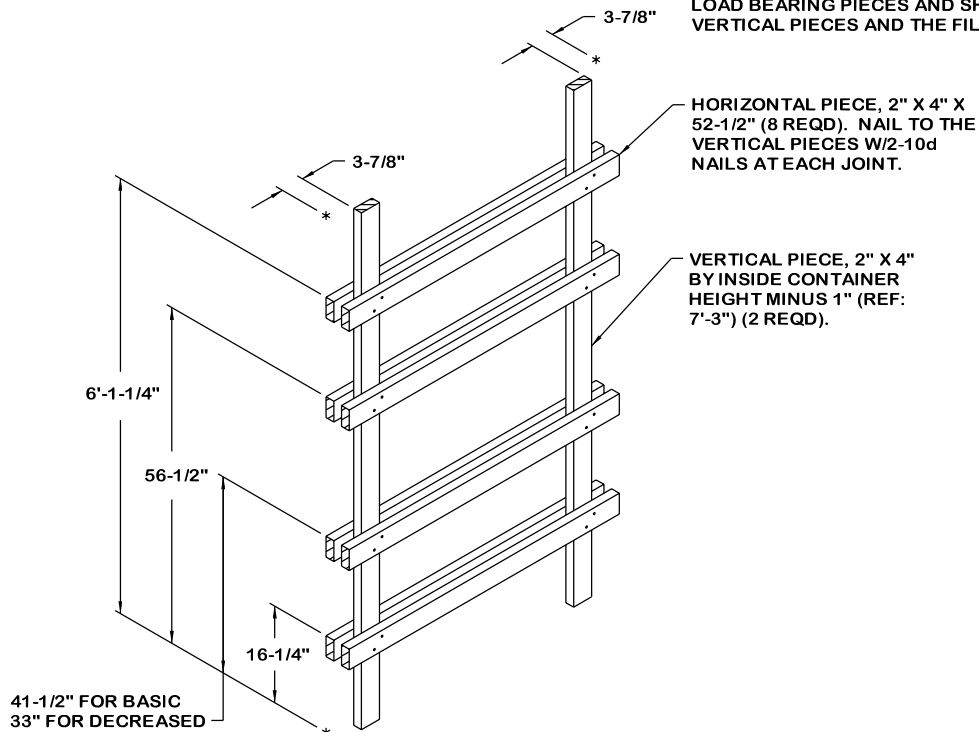
FILL PIECE, 4" WIDE BY DIMENSION "G" LONG MATERIAL (AS REQD). LAMINATE THE FIRST PIECE TO THE TALL VERTICAL PIECE W/1 NAIL OF A SUITABLE SIZE EVERY 12" (10d FOR 2" THICK MATERIAL). LAMINATE EACH ADDITIONAL PIECE IN A LIKE MANNER.



| CENTER FILL CHART      |           |         |         |           |     |
|------------------------|-----------|---------|---------|-----------|-----|
| PALLET UNIT            | DIMENSION |         |         |           |     |
|                        | D         | E       | F       | G         | H   |
| PROTECTIVE (BASIC)     | 16-3/4"   | 42-1/2" | --      | --        | 40" |
| PROTECTIVE (DECREASED) | 16-3/4"   | 33"     | 57"     | 6'-0"     | 40" |
| FLAT (BASIC)           | 17-1/4"   | 42-1/2" | --      | --        | 42" |
| FLAT (DECREASED)       | 17-1/4"   | 34"     | 57-3/4" | 6'-2-1/2" | 42" |
| ROUTED (BASIC)         | 16-1/4"   | 41-1/2" | --      | --        | 40" |
| ROUTED (DECREASED)     | 16-1/4"   | 33"     | 56-1/2" | 6'-1-1/4" | 40" |

**CENTER FILL ASSEMBLY**

FOR A ONE-HIGH LOAD, ELIMINATE THE TOP FOUR LOAD BEARING PIECES AND SHORTEN THE CENTER VERTICAL PIECES AND THE FILL PIECES APPROPRIATELY.



**CRIB FILL ASSEMBLY**

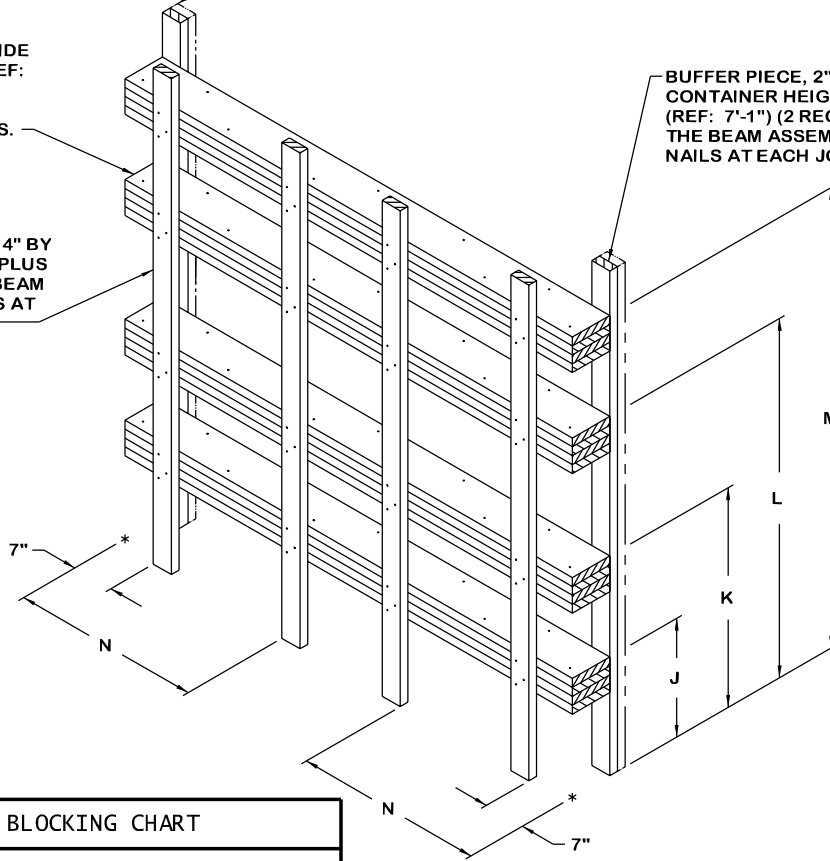
FOR A ONE-HIGH LOAD, ELIMINATE THE TOP FOUR HORIZONTAL PIECES.

SEE GENERAL NOTE "G" ON PAGE 2.

BEAM ASSEMBLY, 2" X 8" BY INSIDE CONTAINER WIDTH MINUS 1" (REF: 7'-2") (QUADRUPLED) (4 REQD). LAMINATE EACH PIECE TO THE PREVIOUS PIECE W/11-10d NAILS.

BUFFER PIECE, 2" X 4" BY INSIDE CONTAINER HEIGHT MINUS 1" (REF: 7'-1") (2 REQD). NAIL TO THE BEAM ASSEMBLIES W/2-10d NAILS AT EACH JOINT.

LOAD BEARING PIECE, 2" X 4" BY HEIGHT OF THE TOP BEAM PLUS 6" (4 REQD). NAIL TO THE BEAM ASSEMBLIES W/3-10d NAILS AT EACH JOINT.



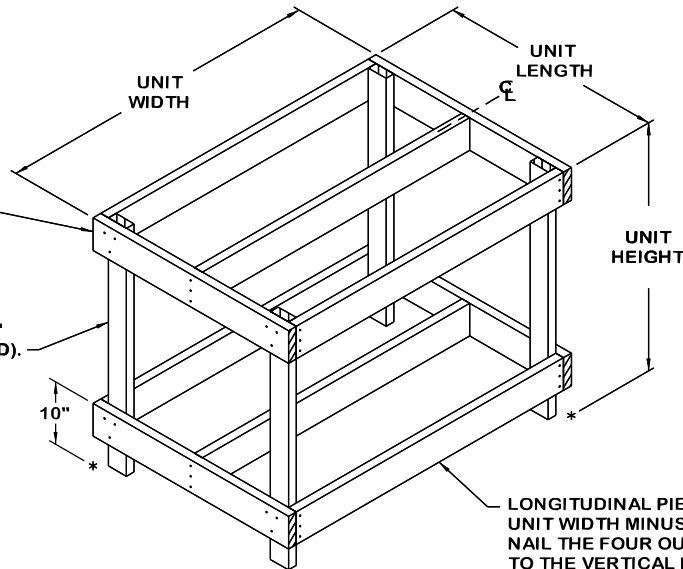
| ALTERNATIVE END BLOCKING CHART |           |         |         |       |     |
|--------------------------------|-----------|---------|---------|-------|-----|
| PALLET UNIT                    | DIMENSION |         |         |       |     |
|                                | J         | K       | L       | M     | N   |
| PROTECTIVE (BASIC)             | 18"       | 40-1/2" | --      | --    | 32" |
| PROTECTIVE (DECREASED)         | 18"       | 35"     | 57"     | 6'-2" | 32" |
| FLAT (BASIC)                   | 18-1/2"   | 40-1/2" | --      | --    | 32" |
| FLAT (DECREASED)               | 18-1/2"   | 35-1/4" | 59"     | 6'-4" | 32" |
| ROUTED (BASIC)                 | 17-1/2"   | 39-3/4" | --      | --    | 31" |
| ROUTED (DECREASED)             | 17-1/2"   | 34-1/4" | 58-1/4" | 6'-3" | 31" |

**ALTERNATIVE END BLOCKING ASSEMBLY**

FOR A ONE-HIGH LOAD, ELIMINATE THE TOP TWO BEAM ASSEMBLIES AND SHORTEN THE LOAD BEARING PIECES APPROPRIATELY.

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

VERTICAL PIECE, 2" X 4" BY UNIT HEIGHT (4 REQD).



LONGITUDINAL PIECE, 2" X 6" BY UNIT WIDTH MINUS 3" (6 REQD). NAIL THE FOUR OUTER PIECES TO THE VERTICAL PIECES W/3-10d NAILS AT EACH END.

**OMITTED UNIT ASSEMBLY**

THIS ASSEMBLY IS FOR USE IN PLACE OF AN OMITTED PALLET UNIT. NO MORE THAN THREE OMITTED UNIT ASSEMBLIES MAY BE USED PER LOAD. DO NOT INSTALL AN OMITTED UNIT ASSEMBLY IMMEDIATELY ADJACENT TO ANOTHER OMITTED UNIT ASSEMBLY.