

De - R

DATE 11/4/01

AFT END LOAD RESTRAINT[●] IN END OPENING ISO CONTAINERS USING UNIVERSAL LOAD RETAINERS, DOOR POST VERTICAL RETAINERS, OR WELDED LOAD RETAINERS[⊕]


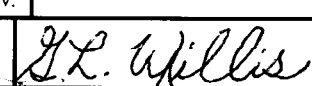
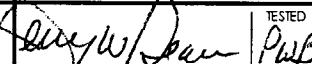
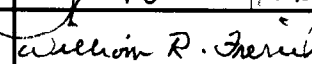
INDEX

ITEM	PAGE(S)
LOAD RETAINERS - - - - -	2
GENERAL NOTES AND CONTAINER DETAILS - - - - -	3
UNIVERSAL LOAD RETAINER - LOAD HEIGHT GREATER THAN 54" - - - - -	4, 5
UNIVERSAL LOAD RETAINER - LOAD HEIGHT NOT EXCEEDING 54" - - - - -	6, 7
UNIVERSAL LOAD RETAINER - FABRICATION - - - - -	8, 9
DOOR POST VERTICAL RETAINER - - - - -	10-11
DOOR POST VERTICAL RETAINER - FABRICATION - - - - -	12
DETAILS - - - - -	13
WELDED LOAD RETAINER WITH SOLID FILL - - - - -	14-15
WELDED LOAD RETAINER WITH STRUTS - - - - -	16-17

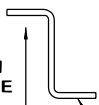
● THIS DRAWING IS A SUPPLEMENT TO END OPENING ISO CONTAINER OUTLOADING DRAWINGS AND, AS SUCH, DOES NOT DEPICT COMPLETE OUTLOADING PROCEDURES. WHEN OUTLOADING AMMUNITION IN END OPENING ISO CONTAINERS, PROCEDURES IN THIS DRAWING ARE TO BE FOLLOWED EXCEPT WHERE SUPERCEDED BY THE SPECIFIC OUTLOADING DRAWING.

⊕ 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.

DEPARTMENT OF ARMY DRAWING


APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND  U.S. ARMY DEFENSE AMMUNITION CENTER	ENGINEER	BASIC	WALTER GORDON	WEBSITE: HTTP://WWW.DAC.ARMY.MIL NOVEMBER 2001
		REV.		
	TECHNICIAN	BASIC		
		REV.		
	DRAFTSMAN	BASIC		
		REV.		
<u>DO NOT SCALE</u>	TRANSPORTATION ENGINEERING DIVISION			DRAWING NUMBER DA-116
	VALIDATION ENGINEERING DIVISION			
	ENGINEERING DIRECTORATE			

THE VIEWS ON THIS PAGE HAVE BEEN ROTATED 180° FROM THE INSTALLED POSITION AT THE AFT DRIVERSIDE CORNER POST AS DEPICTED IN THE ISOMETRIC VIEWS IN THIS DRAWING.




WOODEN DUNNAGE PLACED HERE

PLACE SLOTTED FLANGE INTO SHORING SLOT



WOODEN DUNNAGE PLACED HERE

PLACE SMALL TUBE INTO SHORING SLOT



WOODEN DUNNAGE PLACED HERE

THIS SURFACE WELDED TO DOOR POST

UNIVERSAL LOAD RETAINER

SEE GENERAL NOTES "F" AND "G" ON PAGE 3. SEE PAGES 4 THRU 7 FOR PROCEDURES. SEE PAGES 8 AND 9 FOR FABRICATION INSTRUCTIONS.

DOOR POST VERTICAL RETAINER

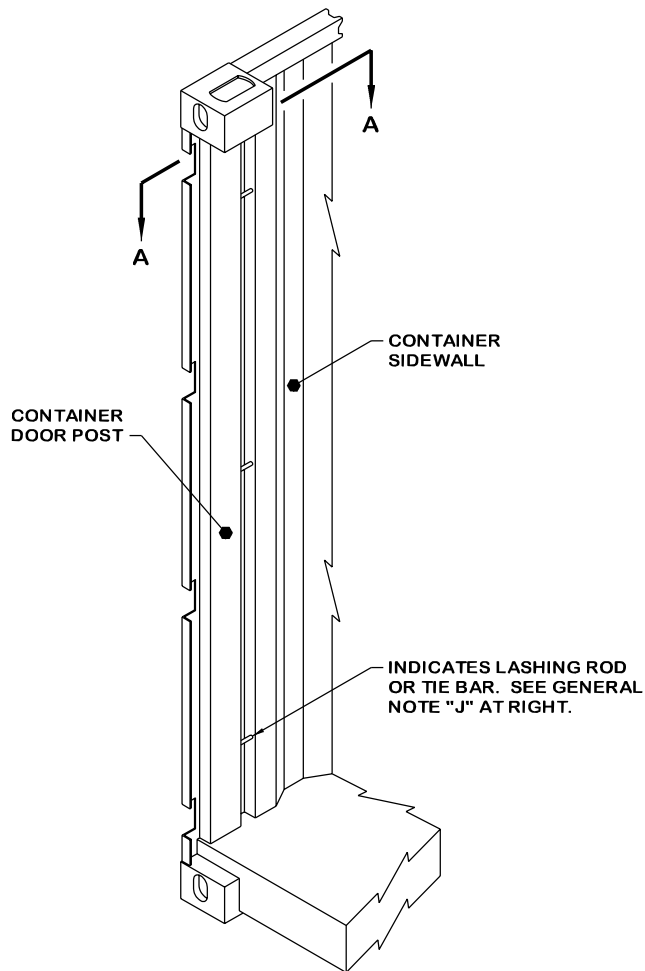
SEE GENERAL NOTES "H" AND "J" ON PAGE 3. SEE PAGES 10 THRU 12 FOR PROCEDURES.

WELDED LOAD RETAINER

SEE GENERAL NOTES "K" AND "L" ON PAGE 3. FOR PROCEDURES, SEE PAGES 14 THRU 17.

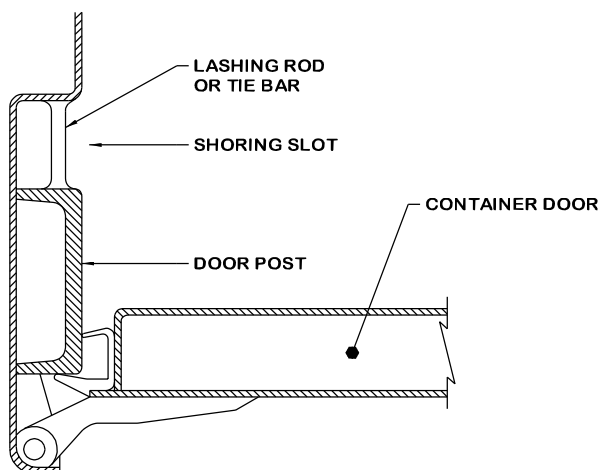
GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE SPECIFIED RESTRAINT PROCEDURES ARE APPLICABLE TO AMMUNITION LOADED IN END OPENING ISO CONTAINERS. COMPLETE OUTLOADING PROCEDURES ARE NOT CONTAINED IN THIS DRAWING AND, AS SUCH, THIS DRAWING SHALL BE USED AS A SUPPLEMENT TO END OPENING ISO CONTAINER OUTLOADING DRAWINGS. IN ADDITION TO THE PROCEDURES DEPICTED IN THIS DRAWING, APPLICABLE END OPENING ISO CONTAINER OUTLOADING DRAWINGS MUST BE FOLLOWED.
- C. THE CONTAINERS SHOWN IN THIS DRAWING ARE BASED ON A 4,700 POUND 20' LONG BY 8' WIDE BY 8'-6" HIGH END OPENING ISO CONTAINER WITH INSIDE DIMENSIONS OF 19'-4" LONG BY 92" WIDE BY 93" HIGH, WITH 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 OTHER SURFACE MODES OF TRANSPORT. **NOTICE:** OTHER CONTAINERS OF THE SAME DESIGN CONFIGURATION CAN BE USED.
- D. PORTIONS OF THE CONTAINER DEPICTED WITHIN THIS DRAWING HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.
- E. WHEN OUTLOADING AMMUNITION IN END OPENING ISO CONTAINERS, ONE OF THREE RESTRAINT METHODS DEPICTED HEREIN MUST BE USED. IF THE CONTAINER IS NOT EQUIPPED WITH WELDED LOAD RETAINERS, UNIVERSAL LOAD RETAINERS OR DOOR POST VERTICAL RETAINERS MUST BE USED. ALL RETAINERS MUST BE IN GOOD CONDITION AND UNDAMAGED.
- F. THE UNIVERSAL LOAD RETAINER (ULR) IS THE PREFERRED DEVICE FOR RETAINING LOADS IN END OPENING ISO CONTAINERS, BUT THE USE OF DOOR POST VERTICAL RETAINERS (DPVRs) OR WELDED LOAD RETAINERS (WLRs) IS NOT PRECLUDED. SEE PAGES 4 THRU 7 FOR UNIVERSAL LOAD RETAINER PROCEDURES. SEE PAGES 8 AND 9 FOR FABRICATION INSTRUCTIONS.
- G. WHEN THE UNIVERSAL LOAD RETAINER IS USED FOR LOAD RESTRAINT, A MINIMUM OF FOUR RETAINERS, TWO AT EACH CORNER POST, SHALL BE USED FOR LOADS NOT EXCEEDING 54 INCHES IN HEIGHT. FOR LOADS ABOVE THIS HEIGHT, SIX UNIVERSAL LOAD RETAINERS MUST BE USED (THREE AT EACH CORNER POST).
- H. IF DOOR POST VERTICAL RETAINERS ARE AVAILABLE, THEY MAY BE USED FOR LOAD RESTRAINT IN END OPENING ISO CONTAINERS, PROVIDED THE PROCEDURES ON PAGES 10 THRU 12 ARE FOLLOWED. REFER TO THE SPECIAL NOTES ON PAGE 11.
- J. IF DOOR POST VERTICAL RETAINERS ARE USED AND LASHING RODS OR TIE BARS ARE PRESENT IN THE SHORING SLOTS, THE DOOR POST VERTICAL RETAINERS MUST BE NOTCHED AT THE LASHING ROD OR TIE BAR LOCATIONS. SEE THE "NOTCH DETAIL" ON PAGE 11.
- K. WHEN AN END OPENING ISO CONTAINER HAS WELDED LOAD RETAINERS AT THE AFT CORNER POSTS, THEY NEED NOT BE REMOVED AS LONG AS THE PROCEDURES ON PAGES 14 THRU 17 ARE FOLLOWED. REFER TO THE SPECIAL NOTES ON PAGES 15 AND 17.
- L. IF THE WELDED LOAD RETAINER IS DAMAGED OR DOES NOT HAVE A CONTINUOUS TOP TO BOTTOM WELD, THE END OPENING ISO CONTAINER CANNOT BE USED FOR RESTRAINT OF AMMUNITION AS DEPICTED WITHIN THIS PROCEDURAL DRAWING.



AFT DRIVERSIDE CORNER OF END OPENING ISO CONTAINER

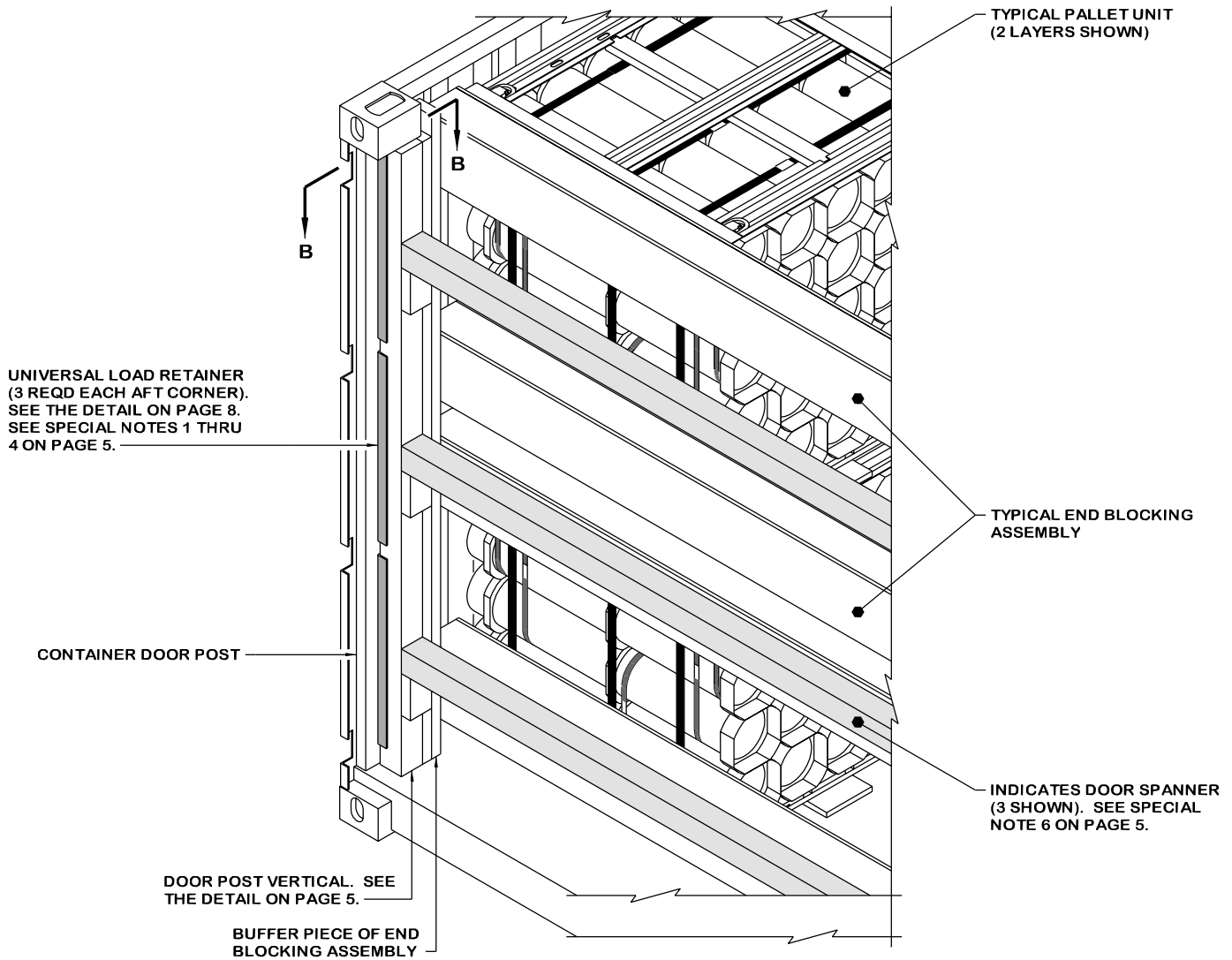
THE CONTAINER DOOR AND HINGES
ARE OMITTED IN THE VIEW ABOVE.



SECTION A-A

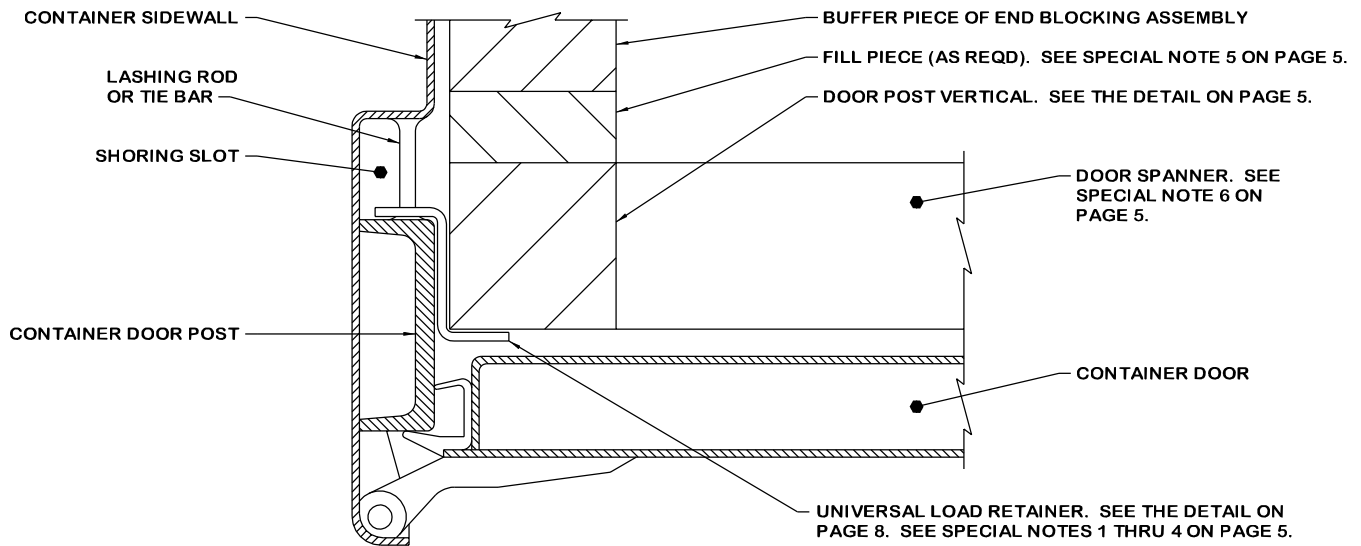
MATERIAL SPECIFICATIONS

THE MATERIAL SPECIFICATIONS FOR THE LOAD RETAINERS ARE IDENTIFIED AS NECESSARY WITHIN EACH SECTION (SEE SPECIAL NOTE 1 ON PAGE 9 AND SPECIAL NOTE 2 ON PAGE 12). THE REMAINING MATERIAL SPECIFICATIONS FOR OTHER COMPONENTS OF THE LOAD RESTRAINT ARE IDENTIFIED WITHIN THE SPECIFIC OUTLOADING PROCEDURES.



ISOMETRIC VIEW

THE CONTAINER DOOR AND HINGES
ARE OMITTED IN THE VIEW ABOVE.



SECTION B-B

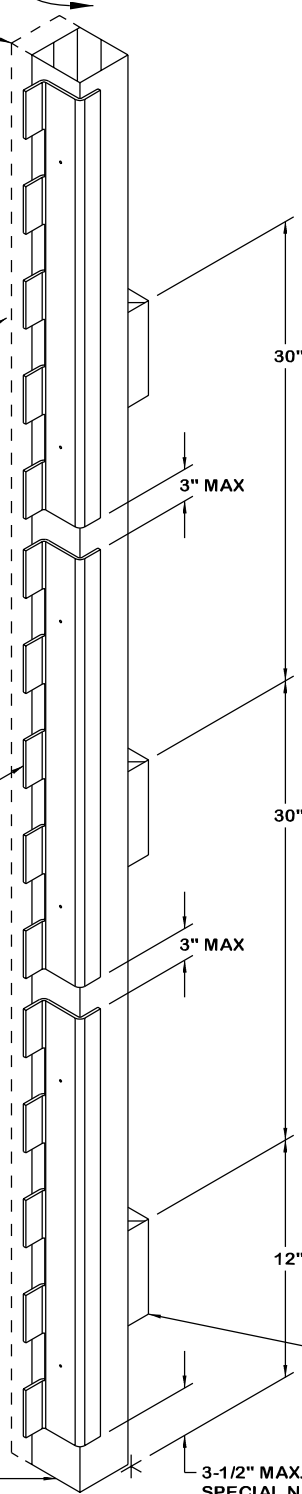
FILL PIECE, 4" WIDE MATERIAL (AS REQD). SEE SPECIAL NOTE 5 AT RIGHT.

ROTATED 90° FROM THE ISOMETRIC VIEW ON PAGE 4.

NOTE: INSERT SLOTTED FLANGE INTO THE SHORING SLOT OF THE CONTAINER.

UNIVERSAL LOAD RETAINER (3 REQD). NAIL TO THE DOOR POST VERTICAL W/2-10d NAILS. SEE THE DETAIL ON PAGE 8 AND SPECIAL NOTES 1 THRU 4 AT RIGHT.

DOOR POST VERTICAL, 4" X 4" BY DOORWAY HEIGHT MINUS 1" (REF: 7'-5") (1 REQD).



LEDGER PIECE FOR SPANNER, 2" X 4" X 6" (3 REQD). NAIL TO THE DOOR POST VERTICAL W/2-10d NAILS.

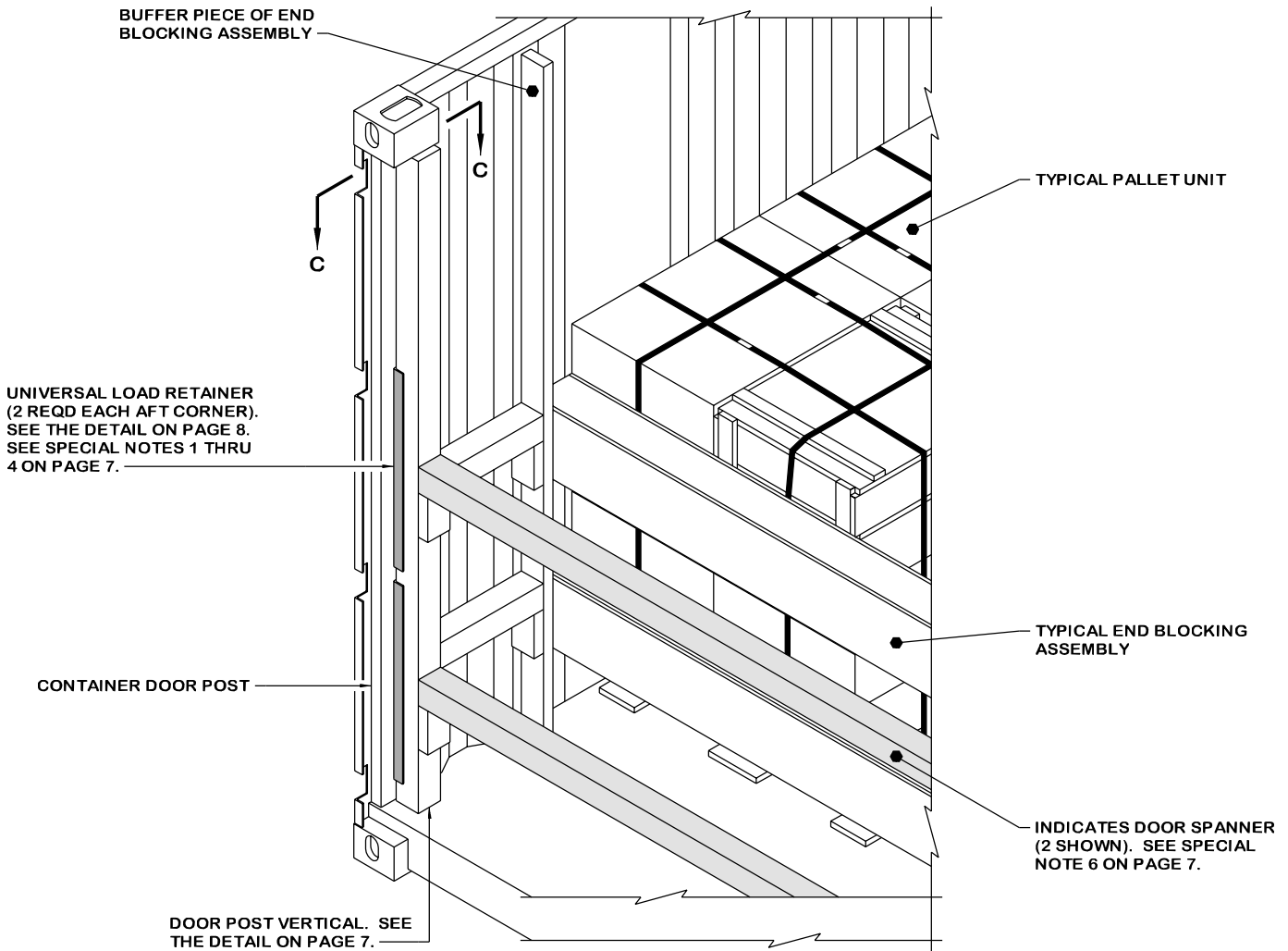
3-1/2" MAX. SEE SPECIAL NOTE 3.

DOOR POST VERTICAL WITH UNIVERSAL LOAD RETAINERS ATTACHED

HEIGHT OF LOAD SHOWN ON PAGE 4 IS GREATER THAN 54"; THEREFORE, THREE UNIVERSAL LOAD RETAINERS PER DOOR POST VERTICAL ARE REQUIRED (SIX PER CONTAINER). SEE SPECIAL NOTES 1 AND 2.

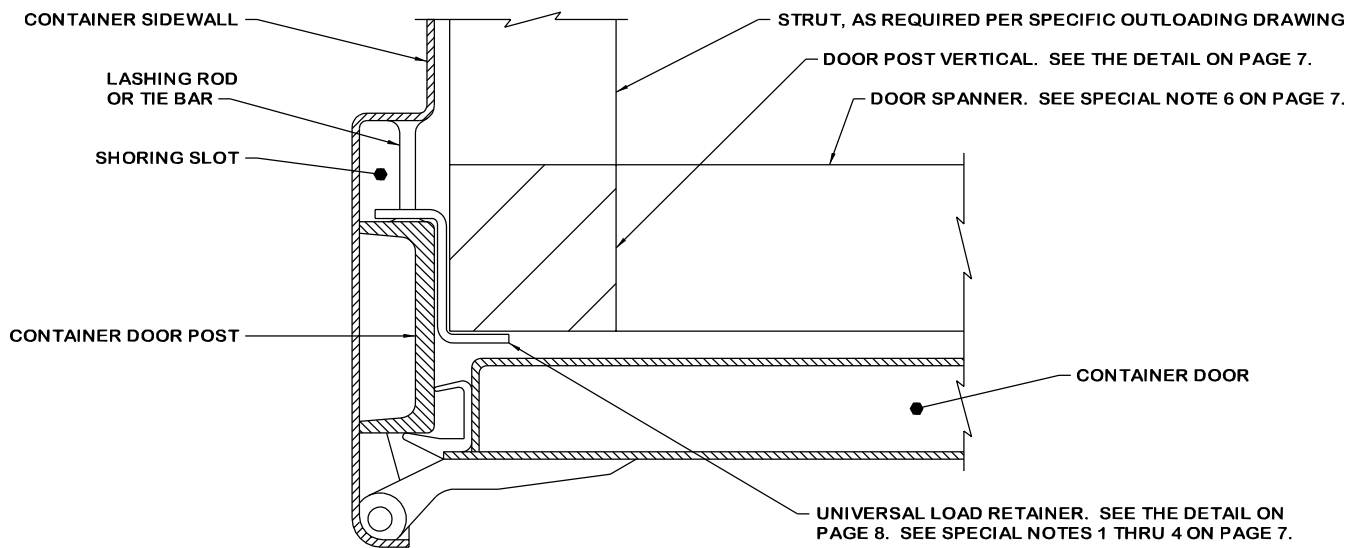
SPECIAL NOTES:

1. THE UNIVERSAL LOAD RETAINER HAS FOUR SLOTS IN ONE FLANGE. THIS FLANGE SHALL ALWAYS BE INSERTED INTO THE SHORING SLOT OF THE CONTAINER. ASSEMBLY ORIENTATION MUST BE REVERSED (MIRROR OF THAT SHOWN) FOR OPPOSITE CORNER (AFT) OF CONTAINER.
2. FOR LOAD HEIGHTS NOT EXCEEDING 54", ONLY TWO UNIVERSAL LOAD RETAINERS PER DOOR POST ARE REQUIRED (4 PER CONTAINER). FOR LOAD HEIGHTS GREATER THAN 54", THREE UNIVERSAL LOAD RETAINERS PER DOOR POST ARE REQUIRED (6 PER CONTAINER).
3. FOR SHORING SLOTS THAT CONTAIN LASHING RODS OR TIE BARS, THE UNIVERSAL LOAD RETAINER IS DESIGNED SUCH THAT ITS POSITION CAN BE ADJUSTED VERTICALLY TO ALLOW THE SLOTS TO FIT OVER THE LASHING RODS OR TIE BARS. THE UNIVERSAL LOAD RETAINER CLOSEST TO THE FLOOR OF THE CONTAINER MUST NOT BE PLACED MORE THAN 3-1/2" ABOVE THE FLOOR. VERTICALLY ADJACENT UNIVERSAL LOAD RETAINERS MUST NOT BE PLACED MORE THAN 3" APART. VERIFY PLACEMENT OF THE UNIVERSAL LOAD RETAINERS BEFORE NAILING TO THE WOODEN DUNNAGE.
4. IF NO LASHING RODS OR TIE BARS ARE PRESENT IN THE SHORING SLOT, THE UNIVERSAL LOAD RETAINERS SHOULD BE PLACED VERTICALLY ADJACENT TO EACH OTHER, WITH THE BOTTOM RETAINER SITTING ON THE FLOOR.
5. FILL PIECES WILL GENERALLY BE REQUIRED TO "FILL" THE VOID BETWEEN AN END BLOCKING ASSEMBLY AND THE DOOR POST VERTICAL. THE HEIGHT OF THE FILL PIECES NEED NOT EXCEED THE HEIGHT OF THE LOAD. LAMINATE OR TOENAIL THE FILL PIECES TOGETHER AND TO THE BUFFER PIECE OF THE END BLOCKING ASSEMBLY W/4 APPROPRIATELY SIZED NAILS EVENLY SPACED. IF MORE THAN 6" OF SPACE IS PRESENT, STRUTS SHOULD BE USED INSTEAD OF FILL PIECES. SEE THE LOAD ON PAGE 6 FOR GUIDANCE.
6. DOOR SPANNERS ARE REQUIRED FOR ALL LOADS WHERE THE UNIVERSAL LOAD RETAINER IS USED. INSTALL ONE SPANNER FOR EACH PAIR OF UNIVERSAL LOAD RETAINERS. A MINIMUM OF TWO SPANNERS WILL BE USED. THE SPANNERS WILL BE 4" X 4" MATERIAL AND CUT TO A LENGTH TO PROVIDE FOR A "DRIVE" FIT (REF: 7'-1-1/4"). INSTALL FLUSH WITH AND TOENAIL TO THE DOOR POST VERTICAL W/2-12d NAILS AT EACH END. SEE THE "DOOR SPANNER BEVEL-CUT" DETAIL ON PAGE 13.



ISOMETRIC VIEW

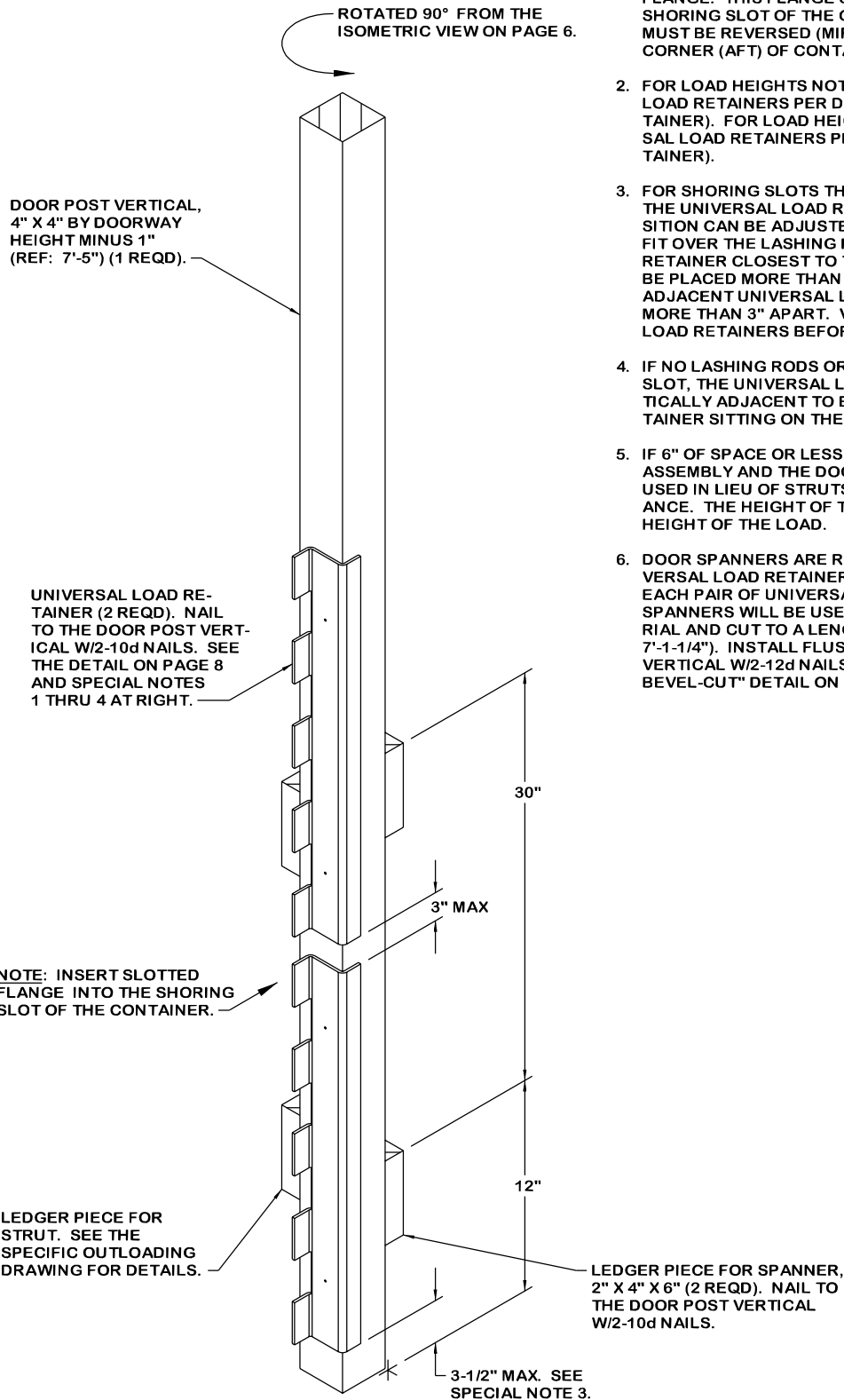
THE CONTAINER DOOR AND HINGES ARE OMITTED IN THE VIEW ABOVE.



SECTION C-C

SPECIAL NOTES:

1. THE UNIVERSAL LOAD RETAINER HAS FOUR SLOTS IN ONE FLANGE. THIS FLANGE SHALL ALWAYS BE INSERTED INTO THE SHORING SLOT OF THE CONTAINER. ASSEMBLY ORIENTATION MUST BE REVERSED (MIRROR OF THAT SHOWN) FOR OPPOSITE CORNER (AFT) OF CONTAINER.
2. FOR LOAD HEIGHTS NOT EXCEEDING 54", ONLY TWO UNIVERSAL LOAD RETAINERS PER DOOR POST ARE REQUIRED (4 PER CONTAINER). FOR LOAD HEIGHTS GREATER THAN 54", THREE UNIVERSAL LOAD RETAINERS PER DOOR POST ARE REQUIRED (6 PER CONTAINER).
3. FOR SHORING SLOTS THAT CONTAIN LASHING RODS OR TIE BARS, THE UNIVERSAL LOAD RETAINER IS DESIGNED SUCH THAT ITS POSITION CAN BE ADJUSTED VERTICALLY TO ALLOW THE SLOTS TO FIT OVER THE LASHING RODS OR TIE BARS. THE UNIVERSAL LOAD RETAINER CLOSEST TO THE FLOOR OF THE CONTAINER MUST NOT BE PLACED MORE THAN 3-1/2" ABOVE THE FLOOR. VERTICALLY ADJACENT UNIVERSAL LOAD RETAINERS MUST NOT BE PLACED MORE THAN 3" APART. VERIFY PLACEMENT OF THE UNIVERSAL LOAD RETAINERS BEFORE NAILING TO THE DOOR POST VERTICAL.
4. IF NO LASHING RODS OR TIE BARS ARE PRESENT IN THE SHORING SLOT, THE UNIVERSAL LOAD RETAINERS SHOULD BE PLACED VERTICALLY ADJACENT TO EACH OTHER, WITH THE BOTTOM RETAINER SITTING ON THE FLOOR.
5. IF 6" OF SPACE OR LESS IS PRESENT BETWEEN THE END BLOCKING ASSEMBLY AND THE DOOR POST VERTICAL, FILL PIECES MAY BE USED IN LIEU OF STRUTS. SEE THE LOAD ON PAGE 4 FOR GUIDANCE. THE HEIGHT OF THE FILL PIECES NEED NOT EXCEED THE HEIGHT OF THE LOAD.
6. DOOR SPANNERS ARE REQUIRED FOR ALL LOADS WHERE THE UNIVERSAL LOAD RETAINER IS USED. INSTALL ONE SPANNER FOR EACH PAIR OF UNIVERSAL LOAD RETAINERS. A MINIMUM OF TWO SPANNERS WILL BE USED. THE SPANNERS WILL BE 4" X 4" MATERIAL AND CUT TO A LENGTH TO PROVIDE FOR A "DRIVE" FIT (REF: 7'-1-1/4"). INSTALL FLUSH WITH AND TOENAIL TO THE DOOR POST VERTICAL W/2-12d NAILS AT EACH END. SEE THE "DOOR SPANNER BEVEL-CUT" DETAIL ON PAGE 13.

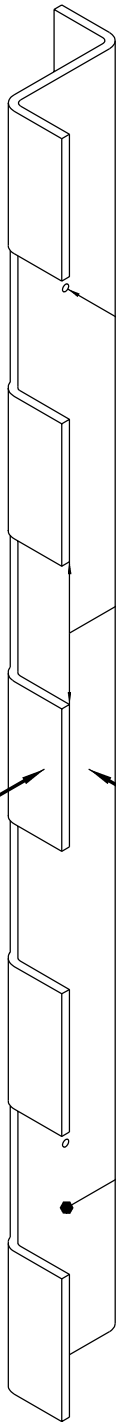


DOOR POST VERTICAL WITH UNIVERSAL LOAD RETAINERS ATTACHED

HEIGHT OF LOAD SHOWN ON PAGE 6 IS LESS THAN 54"; THEREFORE, A MINIMUM OF TWO UNIVERSAL LOAD RETAINERS PER DOOR POST VERTICAL ARE REQUIRED (FOUR PER CONTAINER). SEE SPECIAL NOTES 1 AND 2.

UNIVERSAL LOAD RETAINER - LOAD HEIGHT NOT EXCEEDING 54"

VIEW D



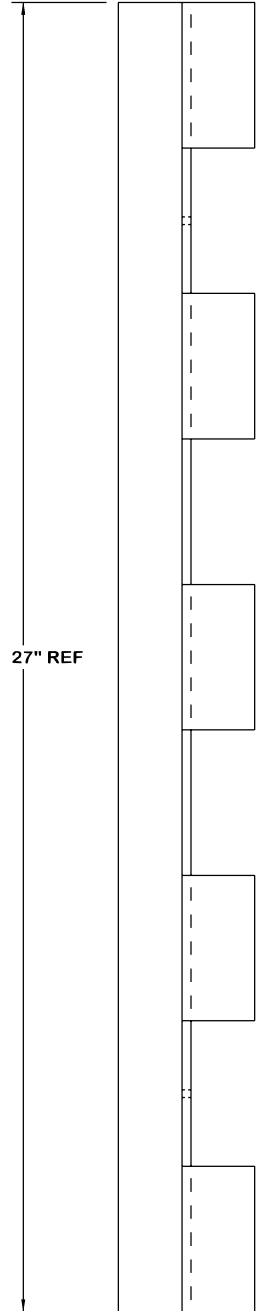
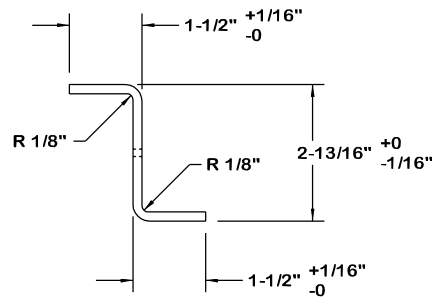
INDICATES 5/32" DIAMETER HOLE (2 PLACES).

3" SLOT (4 PLACES). SEE PAGE 9 FOR BLANK DETAILS.

3/16" THICK STRUCTURAL STEEL (ASTM A36; 36,000 PSI MINIMUM YIELD OR BETTER)

VIEW E

VIEW F



3" REF (4 PLACES)

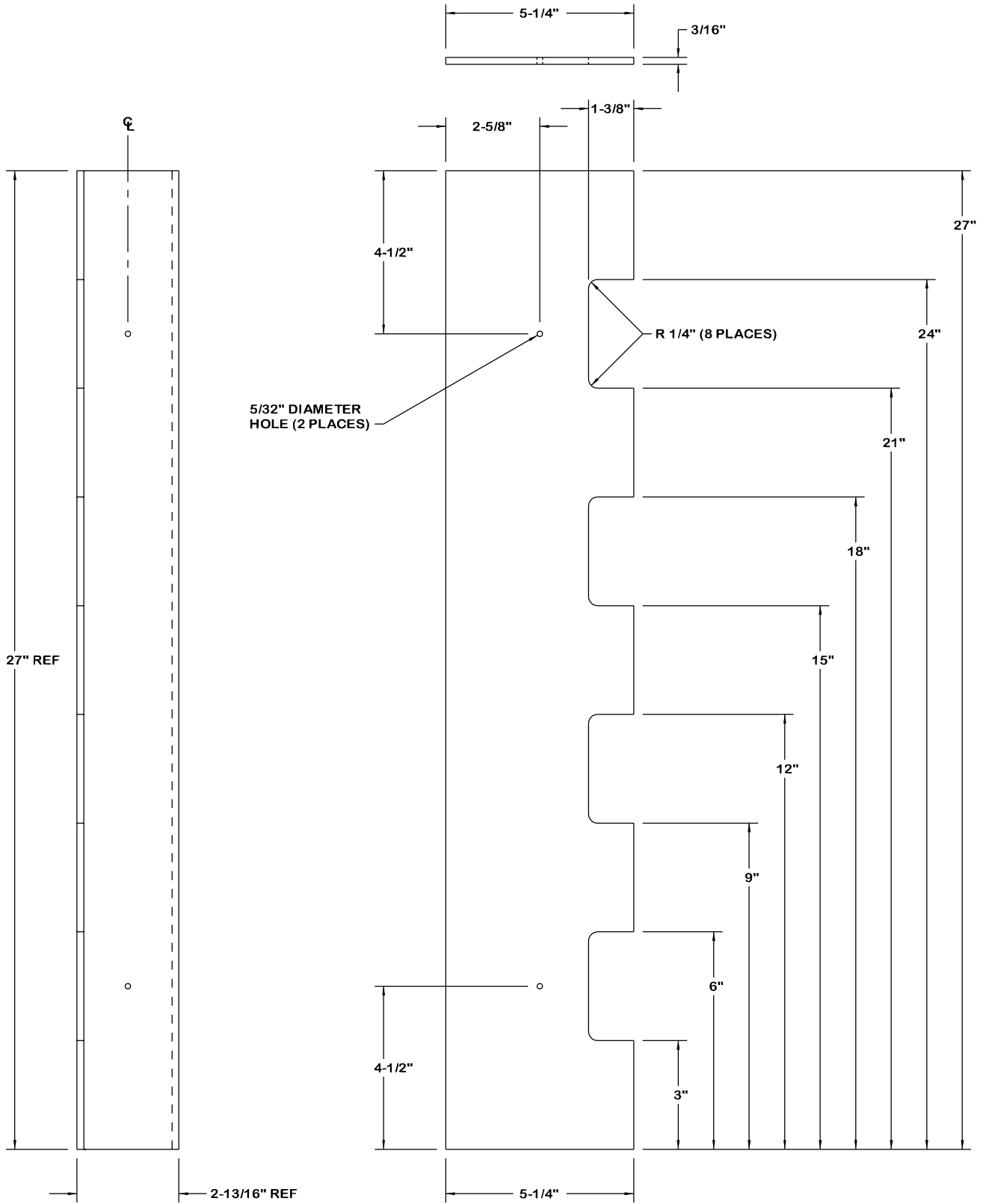
3" REF (5 PLACES)

2-13/16" REF

VIEW E

SPECIAL NOTES:

1. THE UNIVERSAL LOAD RETAINER WILL BE CONSTRUCTED OF STEEL, STRUCTURAL: ASTM A36, 36,000 PSI MINIMUM YIELD OR BETTER.
2. ALL TOLERANCES ARE $\pm 1/16$ " UNLESS OTHERWISE STATED.
3. THE WEIGHT OF THE FINISHED UNIVERSAL LOAD RETAINER IS 6-1/2 POUNDS (APPROX).



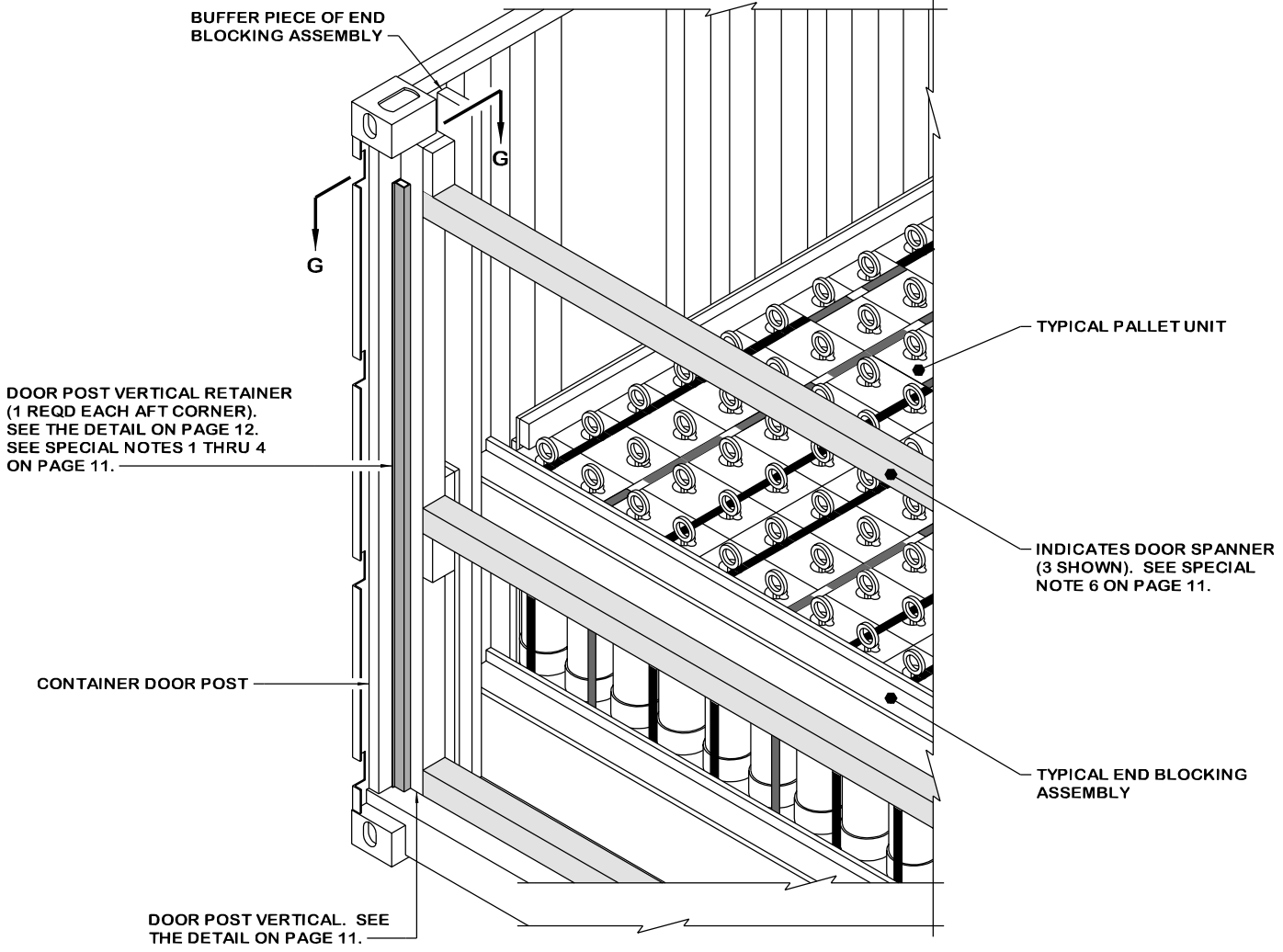
VIEW F

THE VIEW ABOVE DEPICTS THE FINISHED SHAPE. SEE PAGE 8 FOR OTHER VIEWS.

UNIVERSAL LOAD RETAINER BLANK

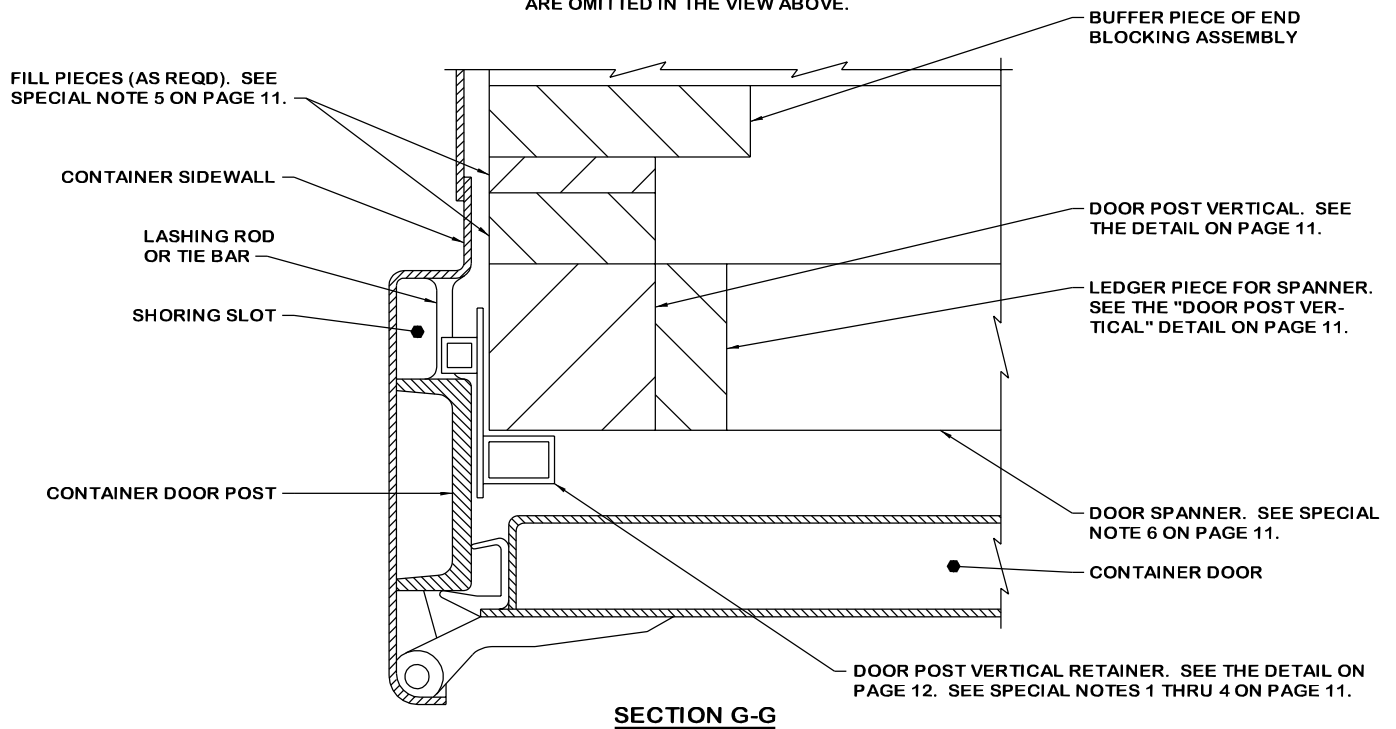
VIEW ABOVE DEPICTS SHEET STOCK PRIOR TO BENDING.

UNIVERSAL LOAD RETAINER - FABRICATION



ISOMETRIC VIEW

THE CONTAINER DOOR AND HINGES ARE OMITTED IN THE VIEW ABOVE.

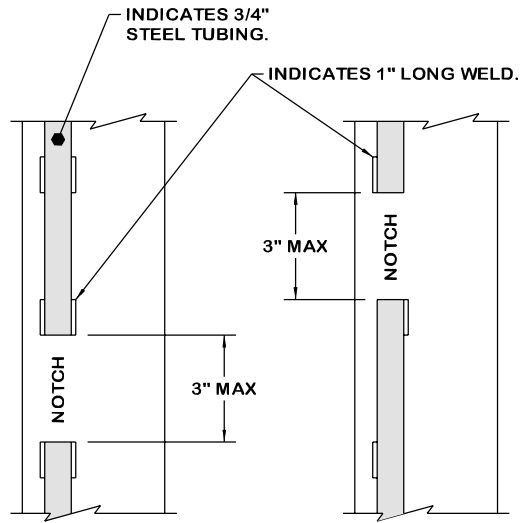
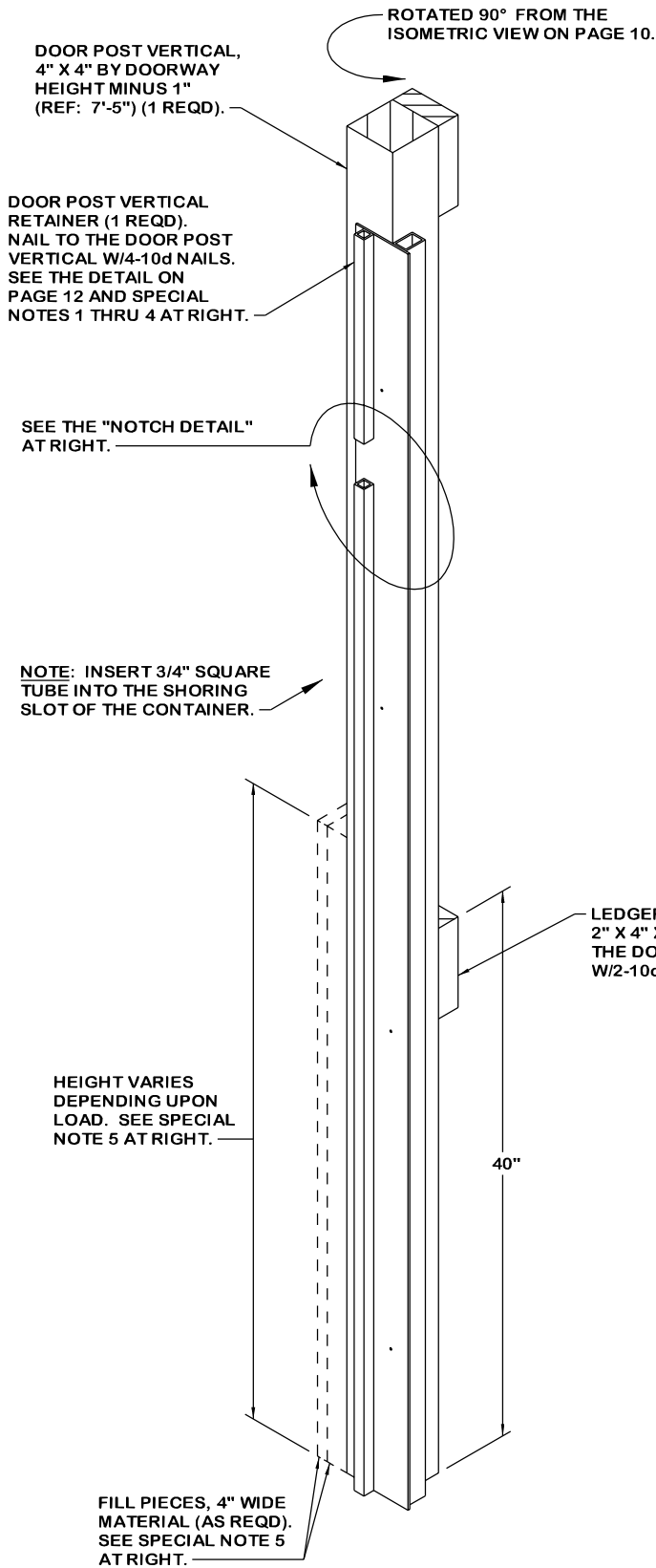


SECTION G-G

DOOR POST VERTICAL RETAINER

SPECIAL NOTES:

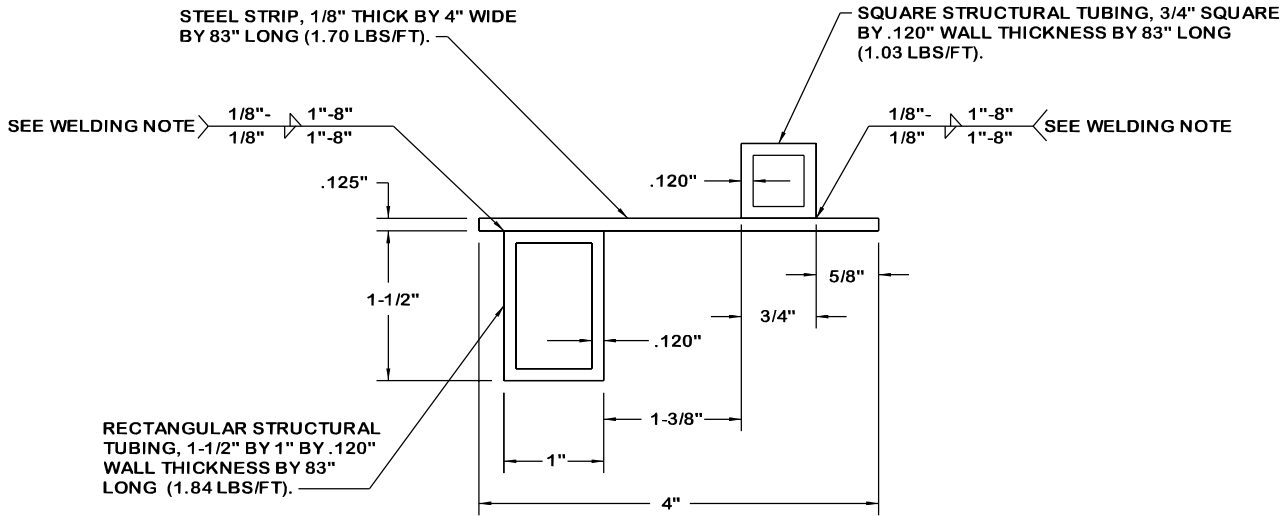
1. DOOR POST VERTICAL RETAINERS MAY BE USED TO RESTRAIN LOADS IN AN END OPENING ISO CONTAINER IF THEY ARE AVAILABLE AND MEET THE REQUIREMENTS OF THIS SECTION.
2. THE DOOR POST VERTICAL RETAINER HAS A 3/4" SQUARE STRUCTURAL TUBE WELDED TO A STEEL STRIP. THIS TUBE SHALL ALWAYS BE INSERTED INTO THE SHORING SLOT OF THE CONTAINER. ASSEMBLY ORIENTATION MUST BE REVERSED (MIRROR OF THAT SHOWN) FOR OPPOSITE CORNER (AFT) OF CONTAINER.
3. IN MOST CORRUGATED STEEL CONTAINERS, LASHING RODS OR TIE BARS WILL BE PRESENT IN THE SHORING SLOT WHERE THE 3/4" SQUARE STRUCTURAL TUBING IS TO BE POSITIONED. TO ENSURE PROPER ENGAGEMENT OF THE SQUARE TUBING WITH THE CONTAINER DOOR POST, THE TUBING MUST BE "NOTCHED" AT THE TIE BAR LOCATIONS. THE DOOR POST VERTICAL RETAINER MUST HAVE A 1" LONG WELD AT EACH END OF THE TUBING ADJACENT TO A NOTCH OR IT CANNOT BE USED. SEE THE "NOTCH DETAIL" BELOW.
4. IF A DOOR POST VERTICAL RETAINER HAS BEEN "NOTCHED" AND IT IS TO BE USED IN A SHORING SLOT WHERE THE NOTCH LOCATION DOES NOT MATCH THE LOCATION OF THE LASHING RODS OR TIE BARS, THE DOOR POST VERTICAL RETAINER CANNOT BE USED.
5. FILL PIECES WILL GENERALLY BE REQUIRED TO "FILL" THE VOID BETWEEN AN END BLOCKING ASSEMBLY AND THE DOOR POST VERTICAL. THE HEIGHT OF THE FILL PIECES NEED NOT EXCEED THE HEIGHT OF THE LOAD. LAMINATE OR TOENAIL THE FILL PIECES TOGETHER AND TO THE BUFFER PIECE OF THE END BLOCKING ASSEMBLY W/4 APPROPRIATELY SIZED NAILS EVENLY SPACED. IF MORE THAN 6" OF SPACE IS PRESENT, STRUTS SHOULD BE USED INSTEAD OF FILL PIECES.
6. DOOR SPANNERS ARE REQUIRED FOR ALL LOADS WHERE THE DOOR POST VERTICAL RETAINER IS USED. A MINIMUM OF THREE SPANNERS WILL BE USED. INSTALL THE FIRST SPANNER AT THE FLOOR LEVEL. INSTALL THE SECOND SPANNER NEAR THE TOP OF THE DOOR POST VERTICAL RETAINER. CENTER THE THIRD SPANNER VERTICALLY BETWEEN THE FIRST TWO SPANNERS. THE SPANNERS WILL BE 4" X 4" MATERIAL AND CUT TO A LENGTH TO PROVIDE FOR A "DRIVE" FIT (REF: 7'-1-3/8"). INSTALL FLUSH WITH AND TOENAIL TO THE DOOR POST VERTICAL W/2-12d NAILS AT EACH END. SEE THE "DOOR SPANNER BEVEL-CUT" DETAIL ON PAGE 13.



DOOR POST VERTICAL WITH DOOR POST VERTICAL RETAINER ATTACHED
 TWO DOOR POST VERTICAL RETAINERS ARE REQUIRED PER CONTAINER. SEE SPECIAL NOTES 1 AND 2.

NOTCH DETAIL
 DEPICTED ABOVE ARE ACCEPTABLE NOTCHES IN THE 3/4" SQUARE STRUCTURAL TUBING. SEE SPECIAL NOTE 3 ABOVE.

DOOR POST VERTICAL RETAINER

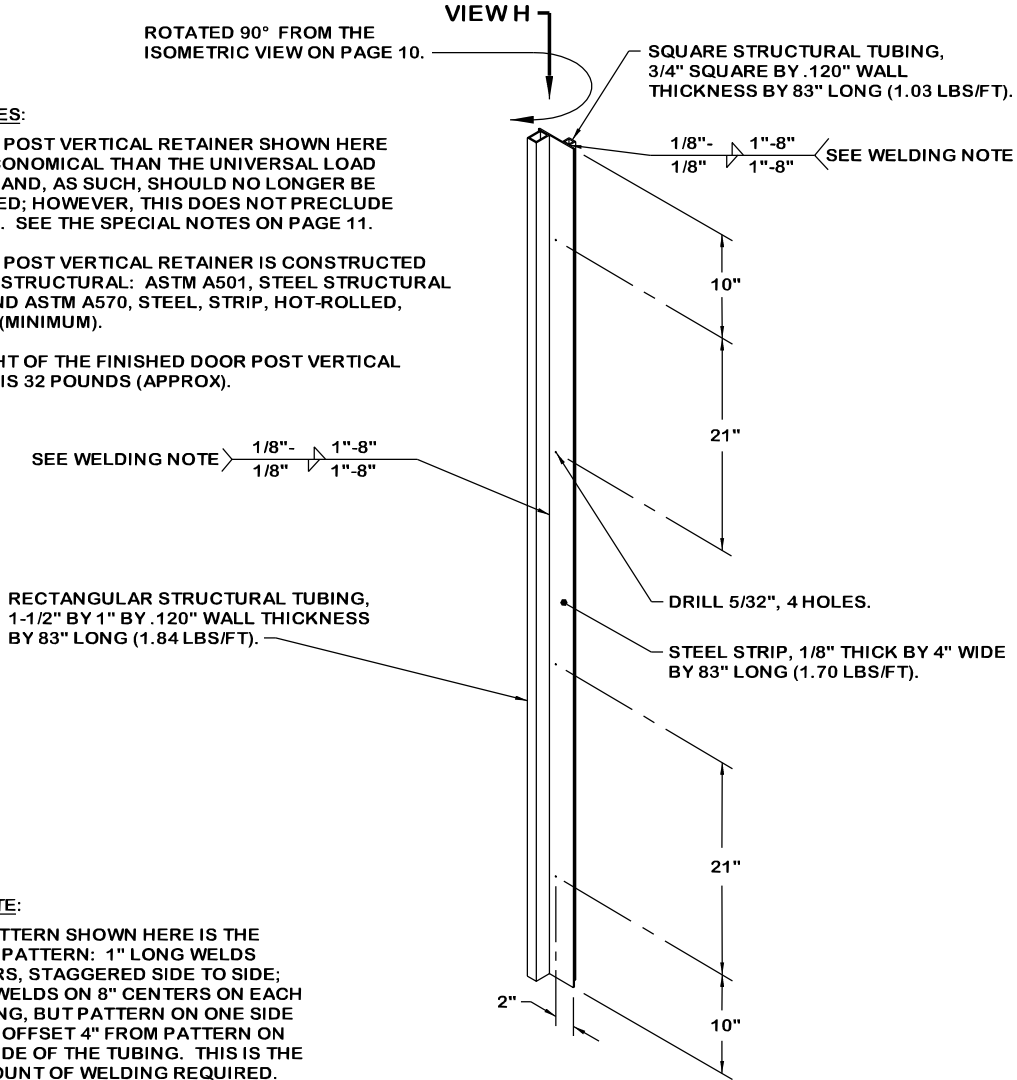


VIEW H

ROTATED 90° FROM THE ISOMETRIC VIEW ON PAGE 10.

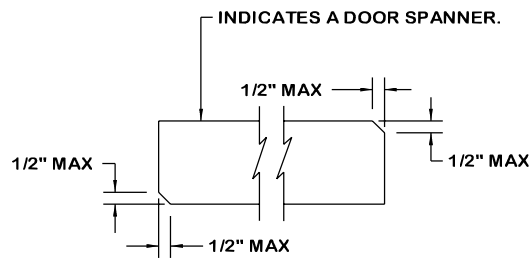
SPECIAL NOTES:

1. THE DOOR POST VERTICAL RETAINER SHOWN HERE IS LESS ECONOMICAL THAN THE UNIVERSAL LOAD RETAINER AND, AS SUCH, SHOULD NO LONGER BE FABRICATED; HOWEVER, THIS DOES NOT PRECLUDE THEIR USE. SEE THE SPECIAL NOTES ON PAGE 11.
2. THE DOOR POST VERTICAL RETAINER IS CONSTRUCTED OF STEEL, STRUCTURAL: ASTM A501, STEEL STRUCTURAL TUBING AND ASTM A570, STEEL, STRIP, HOT-ROLLED, GRADE 36 (MINIMUM).
3. THE WEIGHT OF THE FINISHED DOOR POST VERTICAL RETAINER IS 32 POUNDS (APPROX).



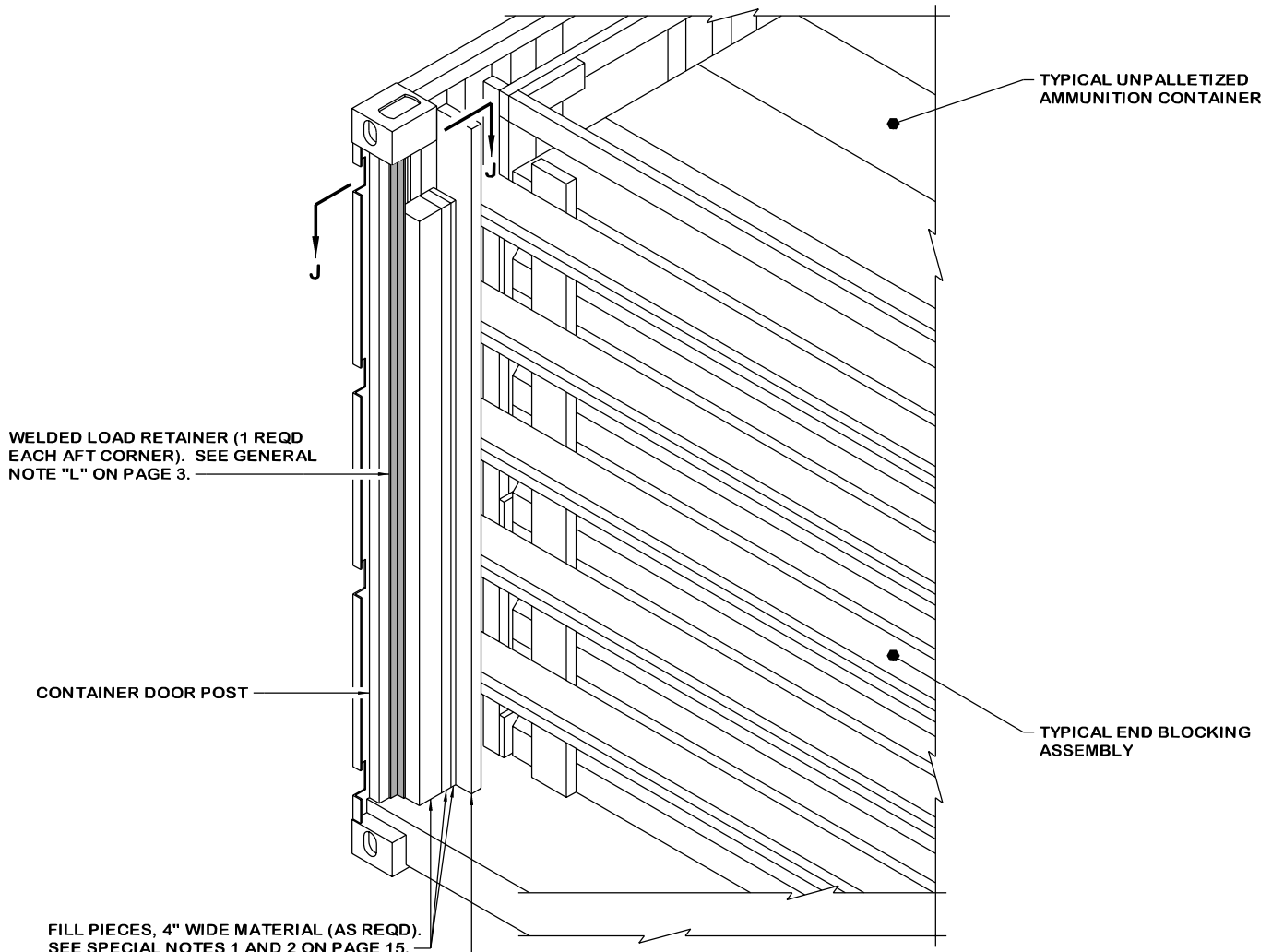
WELDING NOTE:

THE WELD PATTERN SHOWN HERE IS THE ALTERNATED PATTERN: 1" LONG WELDS ON 4" CENTERS, STAGGERED SIDE TO SIDE; i.e., 1" LONG WELDS ON 8" CENTERS ON EACH SIDE OF TUBING, BUT PATTERN ON ONE SIDE OF TUBING IS OFFSET 4" FROM PATTERN ON THE OTHER SIDE OF THE TUBING. THIS IS THE MINIMUM AMOUNT OF WELDING REQUIRED. DOOR POST VERTICAL RETAINERS WITH MORE WELDING THAN THIS MAY ALSO BE USED.



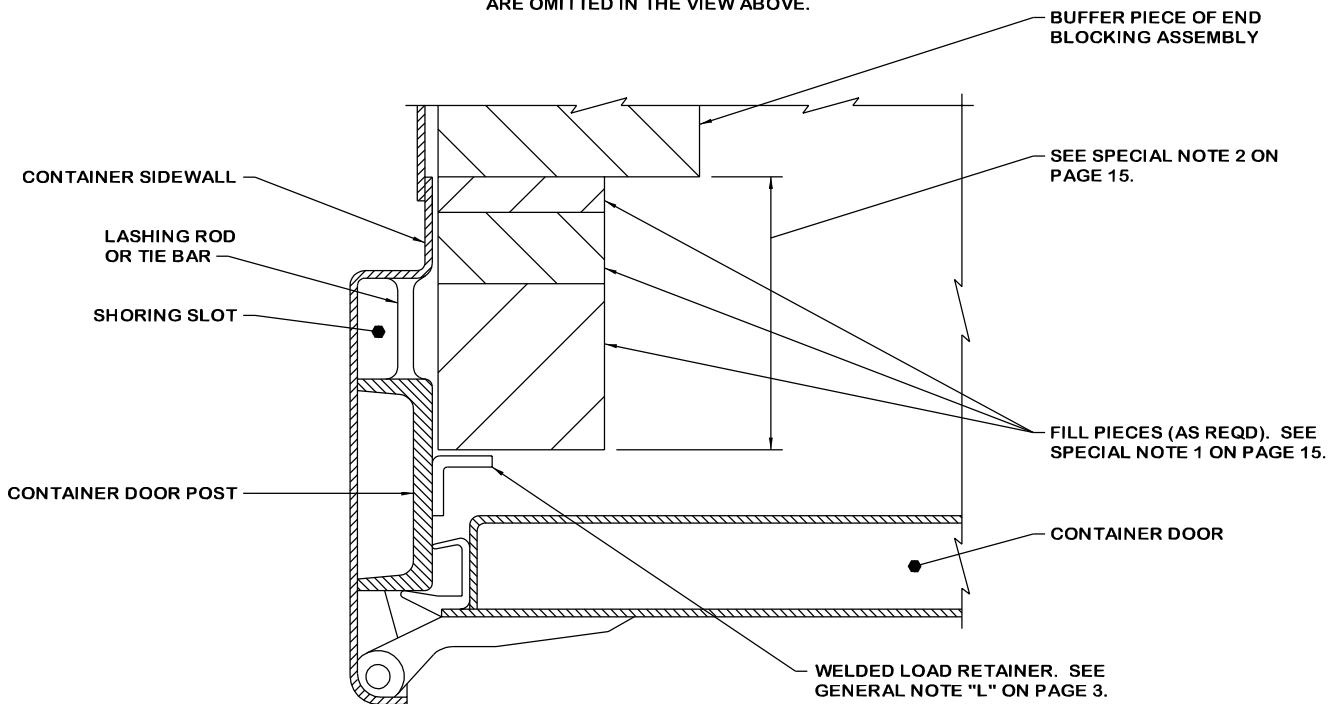
DOOR SPANNER BEVEL-CUT

BEVEL CUTTING THE DOOR SPANNERS AS SPECIFIED WILL FACILITATE INSTALLING THE SPANNERS WITH A "DRIVE FIT". CAUTION: DO NOT BEVEL A CORNER MORE THAN ONE-HALF INCH (1/2").



ISOMETRIC VIEW

THE CONTAINER DOOR AND HINGES ARE OMITTED IN THE VIEW ABOVE.



SECTION J-J

WELDED LOAD RETAINER WITH SOLID FILL

SPANNER LEDGER PIECE, 2" X 4" X 6" (4 REQD, 2 SHOWN). NAIL TO THE FILL PIECES W/2-10d NAILS. SEE SPECIAL NOTE 5.

WELDED LOAD RETAINER. SEE GENERAL NOTE "L" ON PAGE 3.

CONTAINER DOOR POST

FILL PIECES, 4" WIDE MATERIAL (AS REQD). SEE SPECIAL NOTE 1.

— BUFFER PIECE OF END BLOCKING ASSEMBLY

TYPICAL PALLET UNIT

SPECIAL NOTES:

1. WHEN FILL PIECES ARE USED TO "FILL" THE VOID BETWEEN AN END BLOCKING ASSEMBLY AND THE WELDED LOAD RETAINER, AS DEPICTED IN THE ISOMETRIC VIEWS ON PAGES 14 AND 15, THE HEIGHT OF THE FILL PIECES NEED NOT EXCEED THE HEIGHT OF THE LOAD. LAMINATE OR TOENAIL THE FILL PIECES TOGETHER AND TO THE BUFFER PIECE OF THE END BLOCKING ASSEMBLY W/4 APPROPRIATELY SIZED NAILS EVENLY SPACED.
2. IF THE SPACE BETWEEN THE BUFFER PIECE OF THE END BLOCKING ASSEMBLY AND THE WELDED LOAD RETAINER IS 6" OR LESS AND SOLID FILL IS USED, AS DEPICTED IN THE ISOMETRIC VIEW ON PAGE 14, NO DOOR SPANNERS ARE REQUIRED.
3. IF THE SPACE BETWEEN THE BUFFER PIECE OF THE END BLOCKING ASSEMBLY AND THE WELDED LOAD RETAINER EXCEEDS 6" AND SOLID FILL IS USED, DOOR SPANNERS MUST BE INSTALLED AS DEPICTED IN EITHER THE SPANNER DETAIL OR THE ALTERNATE SPANNER DETAIL ON THIS PAGE. NOTE: THE TWO SPANNER DETAILS ON THIS PAGE APPLY ONLY TO CONTAINERS WITH WELDED LOAD RETAINERS.
4. IF THE LOAD DOES NOT EXCEED 54" IN HEIGHT, ONLY TWO DOOR SPANNERS ARE REQUIRED. IF THE LOAD IS GREATER THAN 54" IN HEIGHT, THREE DOOR SPANNERS ARE REQUIRED.

(CONTINUED BELOW AT LEFT)

INDICATES 4" X 4" DOOR SPANNER (3 SHOWN). SEE SPECIAL NOTES 3 THRU 6 AND 8.

SPANNER DETAIL

THE CONTAINER DOOR AND HINGES ARE OMITTED IN THE VIEW ABOVE.

TYPICAL END BLOCKING ASSEMBLY

(SPECIAL NOTES CONTINUED)

5. INSTALL THE DOOR SPANNERS NEAR THE MIDDLE OF THE FILLED SPACE. INSTALL ONE SPANNER ON THE FLOOR OF THE CONTAINER AND ONE SPANNER AT OR NEAR THE TOP OF THE FILL PIECES. CENTER A THIRD SPANNER, IF REQUIRED, BETWEEN THE TOP AND BOTTOM SPANNERS.
6. CUT EACH 4" X 4" DOOR SPANNER TO A LENGTH THAT WILL PROVIDE FOR A "DRIVE" FIT (REF: 7'-1-3/8"). TOENAIL TO THE FILL PIECES W/2-12d NAILS AT EACH END. SEE THE "DOOR SPANNER BEVEL-CUT" DETAIL ON PAGE 13.
7. IF THE ALTERNATE 2" X 4" DOOR SPANNERS ARE USED, 2" X 4" FILL PIECES MUST BE CUT TO FIT BETWEEN THE ENDS OF THE 2" X 4" DOOR SPANNERS AND THE OTHER FILL PIECES.
8. IF THE SPACE BETWEEN THE BUFFER PIECE OF THE END BLOCKING ASSEMBLY AND THE WELDED LOAD RETAINER IS MORE THAN 9", DOOR POST VERTICALS AND STRUTS SHOULD BE USED INSTEAD OF FILL PIECES. SEE PROCEDURES ON PAGES 16 AND 17.

WELDED LOAD RETAINER. SEE GENERAL NOTE "L" ON PAGE 3.

CONTAINER DOOR POST

FILL PIECES, 4" WIDE MATERIAL (AS REQD). SEE SPECIAL NOTES 1 AND 7.

— BUFFER PIECE OF END BLOCKING ASSEMBLY

TYPICAL PALLET UNIT

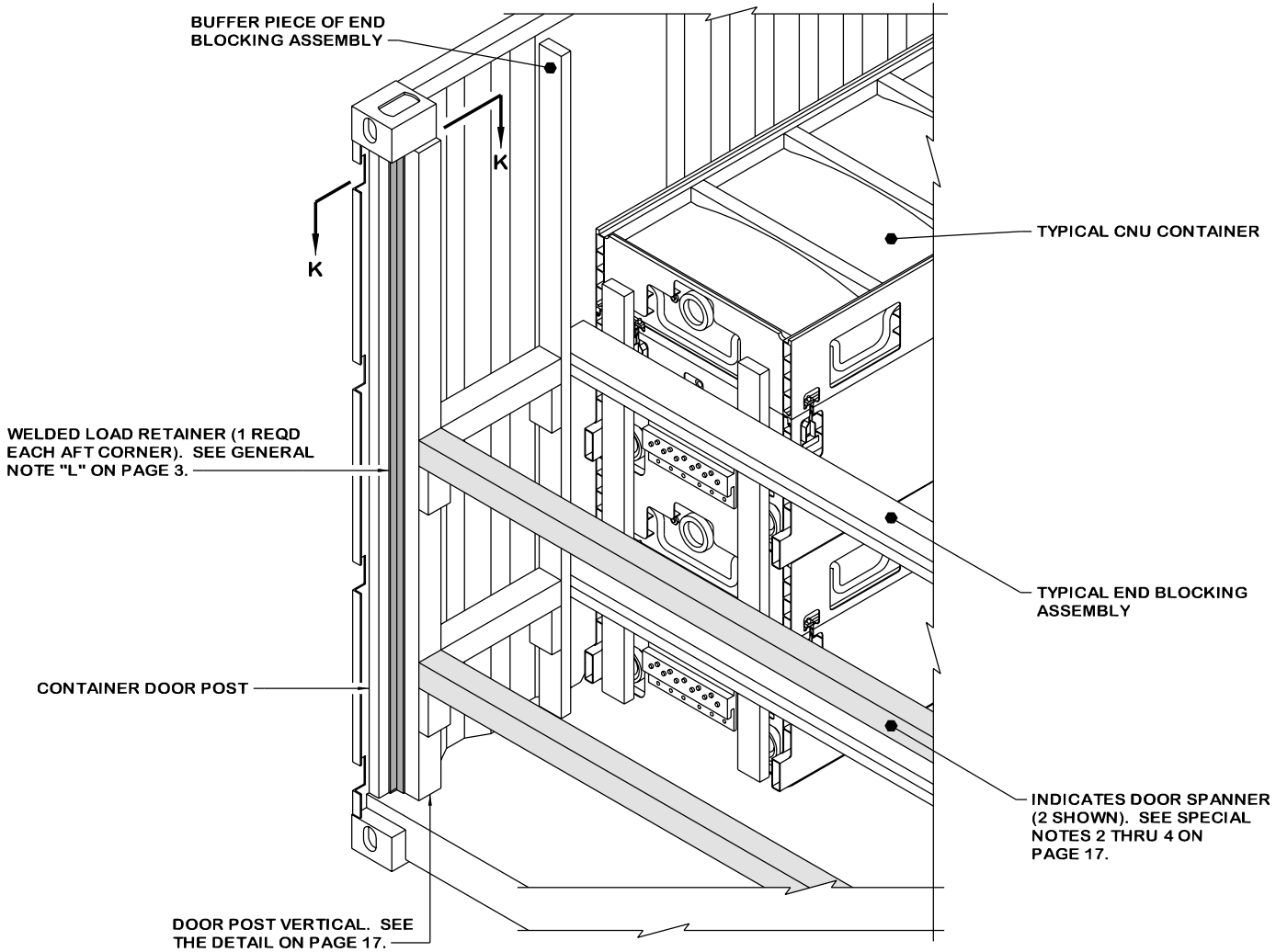
TYPICAL END BLOCKING ASSEMBLY

DOOR SPANNER, 2" X 4" X 7'-7-1/2" (3 REQD). NAIL TO THE FILL PIECE W/2-10d NAILS AT EACH END. SEE SPECIAL NOTES 3 THRU 5 AND 8.

ALTERNATE SPANNER DETAIL

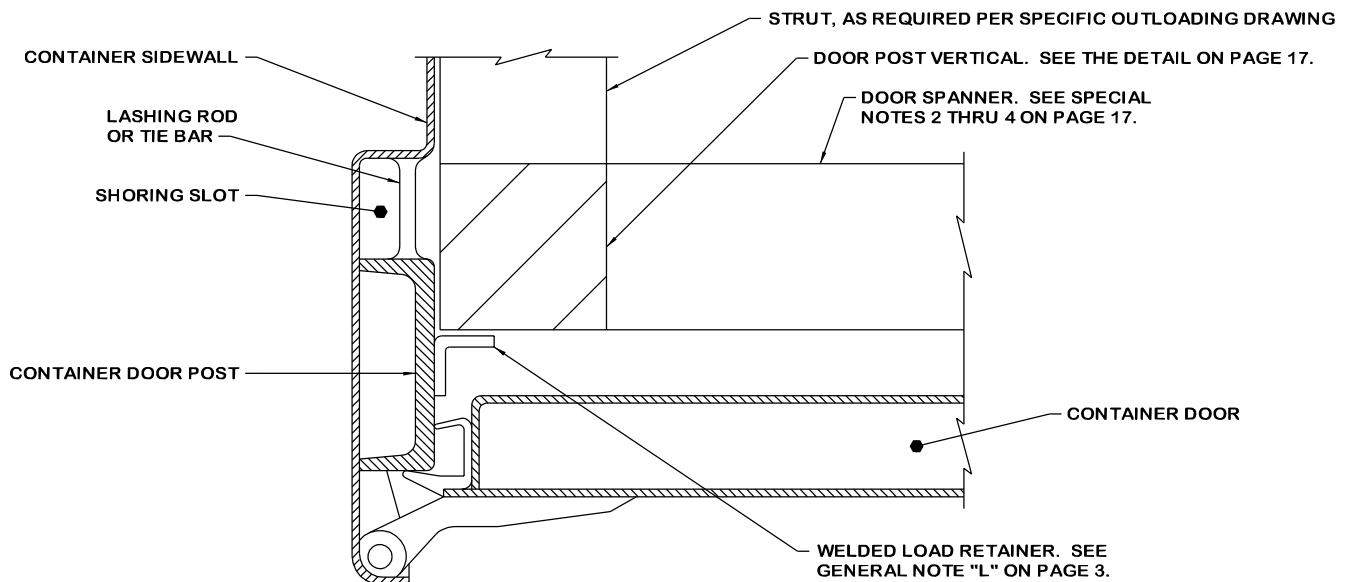
THE CONTAINER DOOR AND HINGES ARE OMITTED IN THE VIEW ABOVE.

WELDED LOAD RETAINER WITH SOLID FILL



ISOMETRIC VIEW

THE CONTAINER DOOR AND HINGES ARE OMITTED IN THE VIEW ABOVE.



SECTION K-K

WELDED LOAD RETAINER WITH STRUTS

DOOR POST VERTICAL,
4" X 4" BY DOORWAY
HEIGHT MINUS 1"
(REF: 7'-5") (1 REQD).

INDICATES WELDED
LOAD RETAINER.

SEE
SPECIAL
NOTE 3

SEE
SPECIAL
NOTE 3

LEDGER PIECE FOR
STRUT (2 SHOWN). SEE
SPECIFIC OUTLOADING
DRAWING FOR DETAILS.

LEDGER PIECE FOR SPANNER,
2" X 4" X 6" (2 OR 3 REQD). NAIL
TO THE DOOR POST VERTICAL
W/2-10d NAILS. SEE SPECIAL
NOTE 3 ABOVE.

DOOR POST VERTICAL

WELDED LOAD RETAINER WITH STRUTS

SPECIAL NOTES:

1. IF THE SPACE BETWEEN THE BUFFER PIECE OF THE END BLOCKING ASSEMBLY AND THE WELDED LOAD RETAINER IS MORE THAN 9", DOOR POST VERTICALS AND STRUTS SHOULD BE USED INSTEAD OF FILL PIECES, AS DEPICTED IN THE ISOMETRIC VIEW ON PAGE 16.
2. IF DOOR POST VERTICALS AND STRUTS ARE USED AS DEPICTED IN THE ISOMETRIC VIEW ON PAGE 16, DOOR SPANNERS SHALL BE INSTALLED AT THE SAME HEIGHT AS THE STRUTS. THE SPANNERS WILL BE 4" X 4" MATERIAL AND CUT TO A LENGTH TO PROVIDE FOR A "DRIVE" FIT (REF: 7'-1-3/8"). INSTALL FLUSH WITH AND TOENAIL TO THE DOOR POST VERTICAL W/2-12d NAILS AT EACH END. SEE THE "DOOR SPANNER BEVEL-CUT" DETAIL ON PAGE 13.
3. IF THE LOAD DOES NOT EXCEED 54" IN HEIGHT, ONLY TWO DOOR SPANNERS ARE REQUIRED. IF THE LOAD IS GREATER THAN 54" IN HEIGHT, THREE DOOR SPANNERS ARE REQUIRED. INSTALL ONE SPANNER IN LINE WITH THE LOWEST STRUT AND ONE SPANNER IN LINE WITH THE HIGHEST STRUT. POSITION A THIRD SPANNER, IF REQUIRED, IN LINE WITH A STRUT CLOSEST TO THE CENTER OF THE LOAD HEIGHT. PRIOR TO INSTALLING SPANNERS, FIRST INSTALL LEDGER PIECES FOR SPANNERS AT SAME HEIGHT AS THE LEDGER PIECES FOR THE STRUTS.
4. IF THE SPACE BETWEEN THE BUFFER PIECE OF THE END BLOCKING ASSEMBLY AND THE WELDED LOAD RETAINER DOES NOT EXCEED 9", SOLID FILL MAY BE USED INSTEAD OF DOOR POST VERTICALS AND STRUTS. SEE PROCEDURES ON PAGES 14 AND 15.

