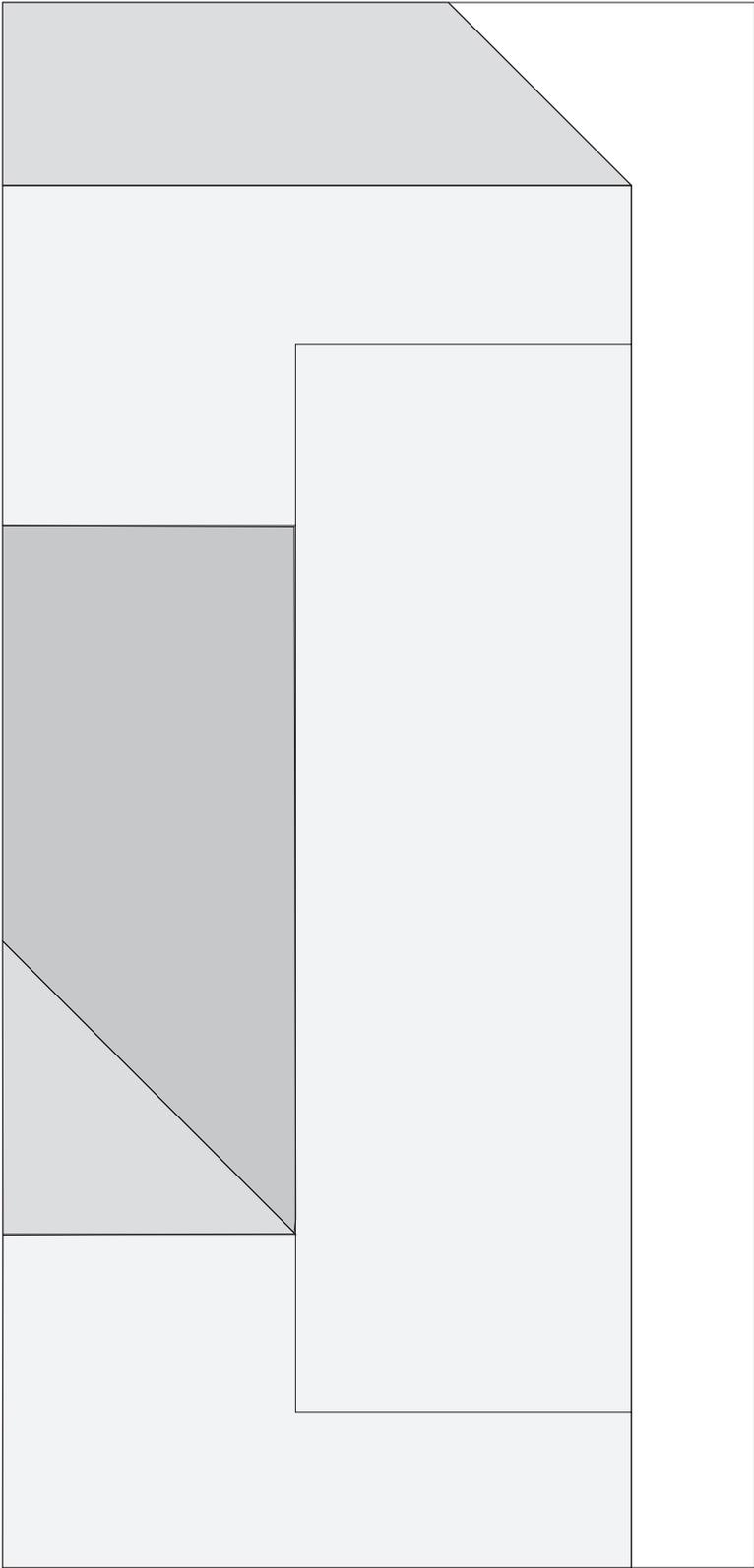


**FABRICATION  
DIMENSIONS  
FOR 2" (R-8.7)  
FIBROUS GLASS  
DUCT BOARD**



## Fabrication Dimensions for 2" (R-8.7) Fibrous Glass Duct Board



### Introduction

This publication provides dimensional data required for accurate fabrication of insulated duct systems using 2" (R-8.7) fibrous glass duct board. General fabrication principles for 2" fibrous glass duct board are basically the same as for 1" and 1½" duct board. For complete detailed duct board fabrication guidelines, refer to NAIMA *Fibrous Glass Duct Construction Standard*, 5th Edition (2002), Publication AH 116.

### Thermal Performance

Thermal resistance (R-value) of 2" fibrous glass duct board is 8.7, which enables it to comply with energy codes requiring duct system R-values of at least 8.0.

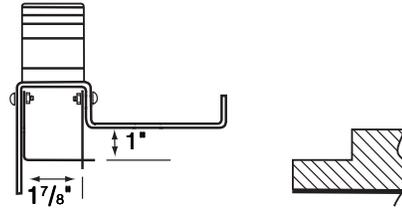
### Fabrication

Both hand and machine grooving tools are available for fabricating 2" fibrous glass duct board. Hand grooving tools are shown at right. Correct tool blade settings are very important in assuring accurate fabrication, tight joints, and an air-tight duct system that performs to specifications. Dimensions shown are nominal and may vary among tool manufacturers.

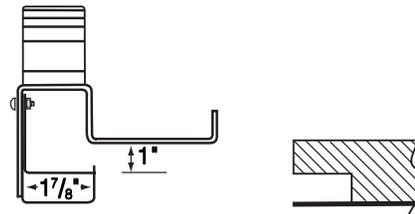
### Closure

Closure of longitudinal and transverse joints using 2" fibrous glass duct board is the same as with 1" or 1½" duct board, except that UL 181A/P pressure-sensitive closure tapes must be 3" wide.

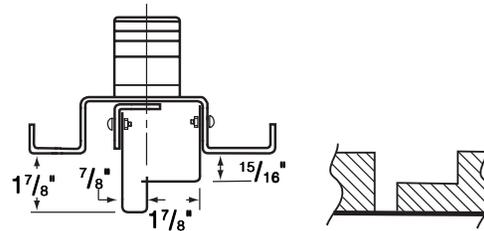
### Hand Grooving Tools



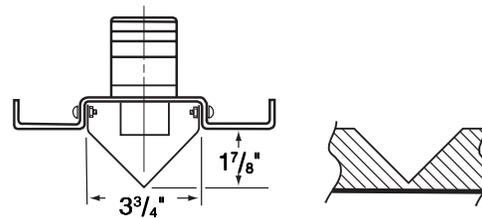
**Female Shiplap Tool:** Cuts female slip joint. Also used to cut seating edge of board at longitudinal closure corner.



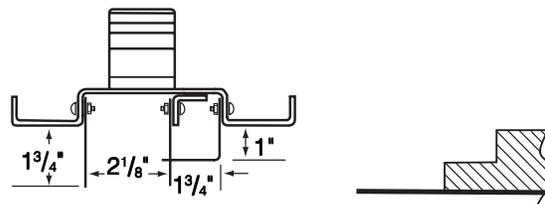
**Male Shiplap Tool:** Cuts male slip joint to mate with female slip joint to connect two duct sections.



**Modified Shiplap Tool:** Removes insulation for shiplap corner folds. Reversing tool allows both left and right hand cuts to be made.

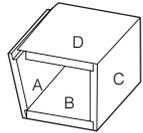


**V-Groove Tool:** Cuts 90° V-grooves for corner folds when modified shiplap grooving method is not used.

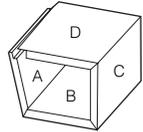
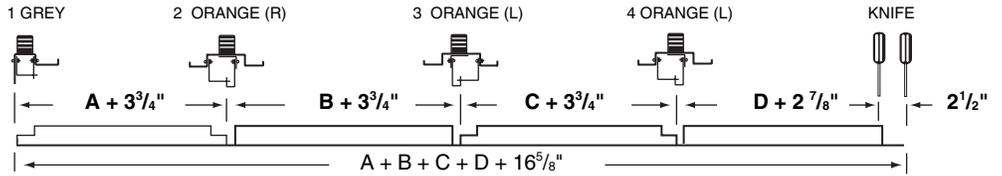


**Shiplap / End Cutoff Tool:** Cuts shiplap on end of board for longitudinal corner closure plus staple flap.

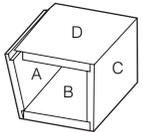
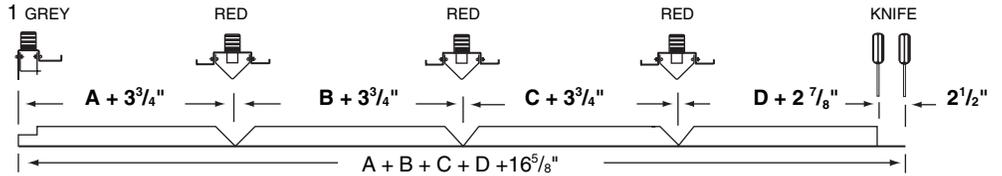
**Tool Settings For One Piece Duct**



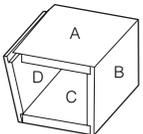
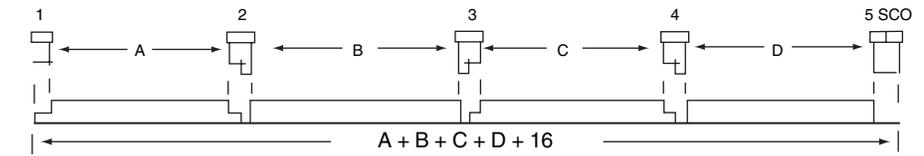
Hand Fabrication, Shiplap



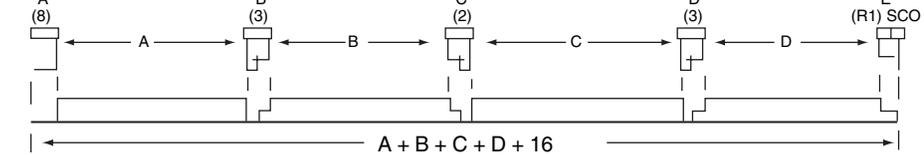
Hand Fabrication, V-Groove



Machine Fabrication, Standard

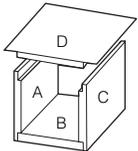


Machine Fabrication, Preferred

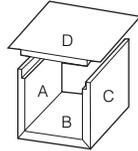
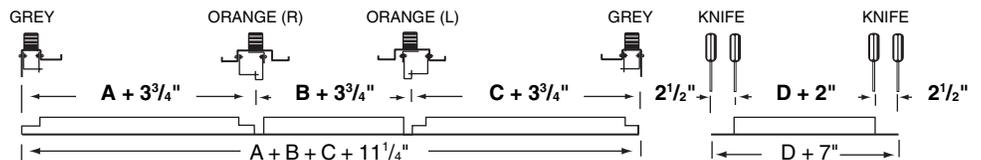


NOTE: A, B, C, & D ARE INSIDE DIMENSIONS AND ARE MEASURED BETWEEN TOOL TABS

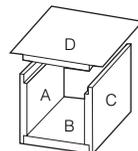
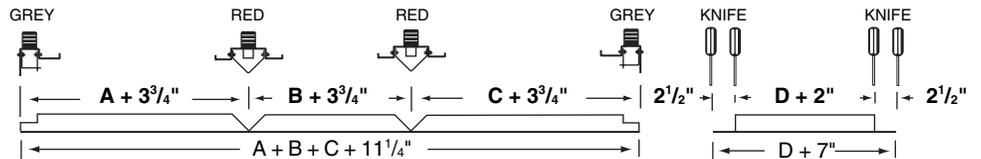
**Tool Settings For Two Piece "U" Style Duct**



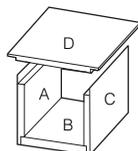
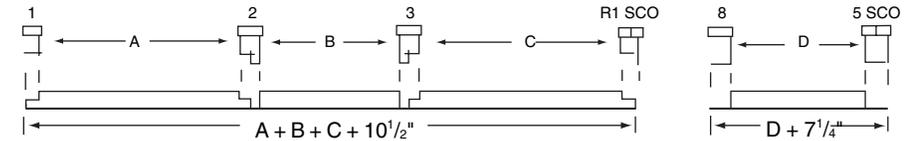
Hand Fabrication, Shiplap



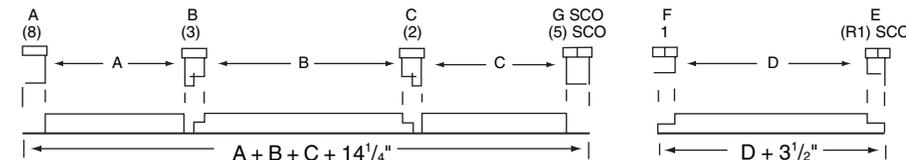
Hand Fabrication, V-Groove



Machine Fabrication, Standard

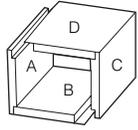


Machine Fabrication, Preferred

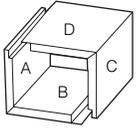
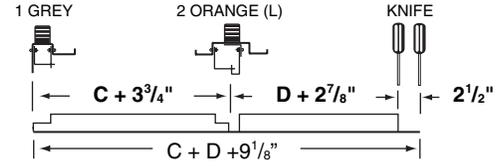
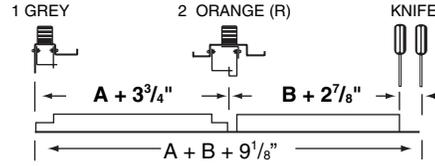


NOTE: A, B, C, & D ARE INSIDE DIMENSIONS AND ARE MEASURED BETWEEN TOOL TABS

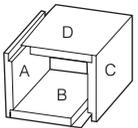
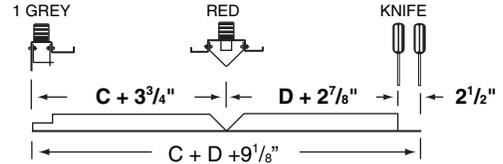
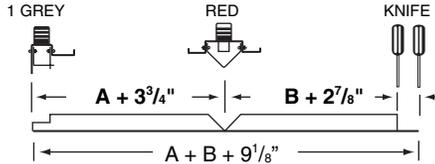
**Tool Settings For Two Piece  
"L" Style Duct**



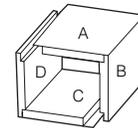
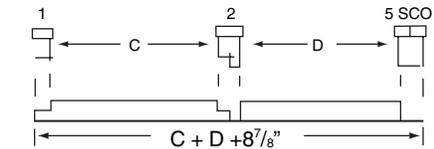
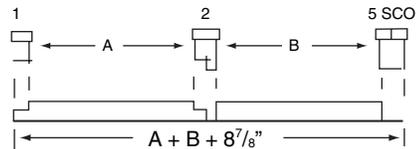
Hand  
Fabrication,  
Shiplap



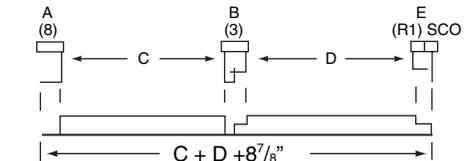
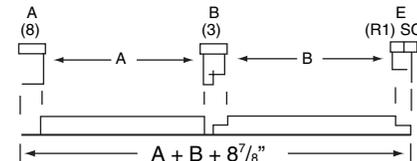
Hand  
Fabrication,  
V-Groove



Machine  
Fabrication,  
Standard

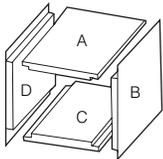


Machine  
Fabrication,  
Preferred

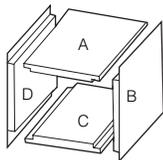
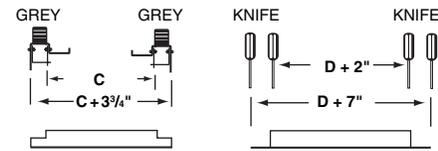
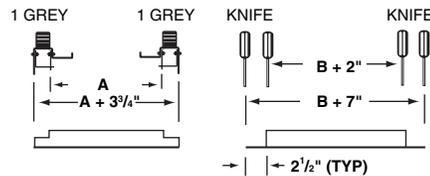


NOTE: A, B, C, & D ARE INSIDE DIMENSIONS AND ARE MEASURED BETWEEN TOOL TABS

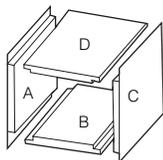
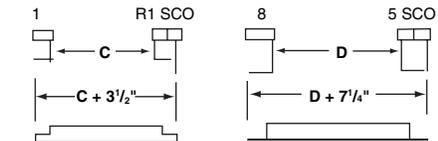
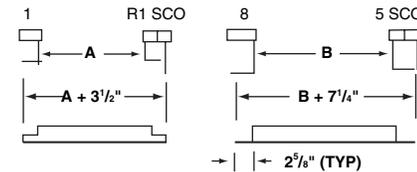
**Tool Settings For  
Four Piece Duct**



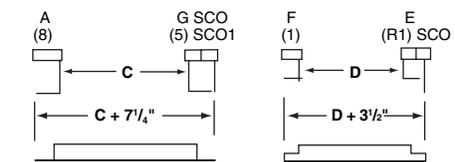
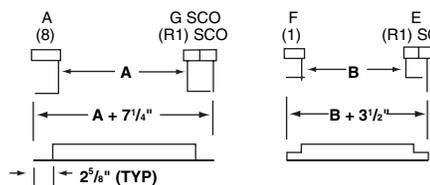
Hand  
Fabrication,  
Shiplap



Machine  
Fabrication,  
Standard



Machine  
Fabrication,  
Preferred



NOTE: A, B, C, & D ARE INSIDE DIMENSIONS AND ARE MEASURED BETWEEN TOOL TABS

**ONE PIECE STRETCH-OUT DIMENSIONS IN INCHES, 2" DUCT BOARD**

DUCT WIDTH in.	DUCT HEIGHT, in.																				
	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46
6	40	44	48	52	56	60	64	68	72	76	80	84	88	92	96	100	104	108	112	116	120
8	44	48	52	56	60	64	68	72	76	80	84	88	92	96	100	104	108	112	116	120	
10	48	52	56	60	64	68	72	76	80	84	88	92	96	100	104	108	112	116	120		
12	52	56	60	64	68	72	76	80	84	88	92	96	100	104	108	112	116	120			
14	56	60	64	68	72	76	80	84	88	92	96	100	104	108	112	116	120				
16	60	64	68	72	76	80	84	88	92	96	100	104	108	112	116	120					
18	64	68	72	76	80	84	88	92	96	100	104	108	112	116	120						
20	68	72	76	80	84	88	92	96	100	104	108	112	116	120							
22	72	76	80	84	88	92	96	100	104	108	112	116	120								
24	76	80	84	88	92	96	100	104	108	112	116	120									
26	80	84	88	92	96	100	104	108	112	116	120										
28	84	88	92	96	100	104	108	112	116	120											
30	88	92	96	100	104	108	112	116	120												
32	92	96	100	104	108	112	116	120													
34	96	100	104	108	112	116	120														
36	100	104	108	112	116	120															
38	104	108	112	116	120																
40	108	112	116	120																	
42	112	116	120																		
44	116	120																			
46	120																				

NOTE: This table assumes the total stretch-out (add-on) dimension is 16". If the process used results in a different stretch-out (add-on) dimension, this table must be modified accordingly.

NOTE: Maximum unreinforced size at 1/2" w.g. is 36" for 800EI board and 42" for 1400EI board.

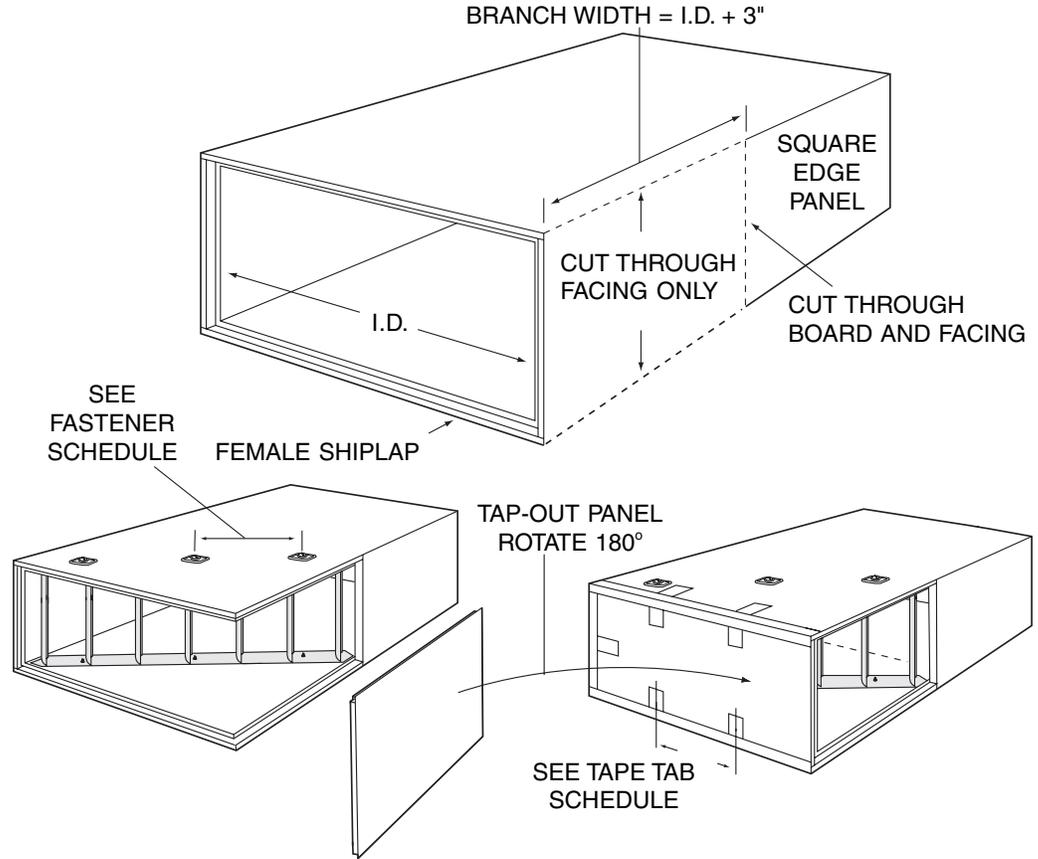
**BOARD UTILIZATION, ONE PIECE DUCT, 2" DUCT BOARD, FT<sup>2</sup> PER LINEAL FOOT OF DUCT**

DUCT WIDTH in.	DUCT HEIGHT, in.																				
	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46
6	3.33	3.67	4.00	4.33	4.67	5.00	5.33	5.67	6.00	6.33	6.67	7.00	7.33	7.67	8.00	8.33	8.67	9.00	9.33	9.67	10.00
8	3.67	4.00	4.33	4.67	5.00	5.33	5.67	6.00	6.33	6.67	7.00	7.33	7.67	8.00	8.33	8.67	9.00	9.33	9.67	10.00	
10	4.00	4.33	4.67	5.00	5.33	5.67	6.00	6.33	6.67	7.00	7.33	7.67	8.00	8.33	8.67	9.00	9.33	9.67	10.0		
12	4.33	4.67	5.00	5.33	5.67	6.00	6.33	6.67	7.00	7.33	7.67	8.00	8.33	8.67	9.00	9.33	9.67	10.0			
14	4.67	5.00	5.33	5.67	6.00	6.33	6.67	7.00	7.33	7.67	8.00	8.33	8.67	9.00	9.33	9.67	10.0				
16	5.00	5.33	5.67	6.00	6.33	6.67	7.00	7.33	7.67	8.00	8.33	8.67	9.00	9.33	9.67	10.0					
18	5.33	5.67	6.00	6.33	6.67	7.00	7.33	7.67	8.00	8.33	8.67	9.00	9.33	9.67	10.0						
20	5.67	6.00	6.33	6.67	7.00	7.33	7.67	8.00	8.33	8.67	9.00	9.33	9.67	10.0							
22	6.00	6.33	6.67	7.00	7.33	7.67	8.00	8.33	8.67	9.00	9.33	9.67	10.0								
24	6.33	6.67	7.00	7.33	7.67	8.00	8.33	8.67	9.00	9.33	9.67	10.0									
26	6.67	7.00	7.33	7.67	8.00	8.33	8.67	9.00	9.33	9.67	10.0										
28	7.00	7.33	7.67	8.00	8.33	8.67	9.00	9.33	9.67	10.0											
30	7.33	7.67	8.00	8.33	8.67	9.00	9.33	9.67	10.0												
32	7.67	8.00	8.33	8.67	9.00	9.33	9.67	10.0													
34	8.00	8.33	8.67	9.00	9.33	9.67	10.0														
36	8.33	8.67	9.00	9.33	9.67	10.0															
38	8.67	9.00	9.33	9.67	10.0																
40	9.00	9.33	9.67	10.0																	
42	9.33	9.67	10.00																		
44	9.67	10.00																			
46	10.00																				

NOTE: This table assumes the total stretch-out (add-on) dimension is 16". If the process used results in a different stretch-out (add-on) dimension, this table must be modified accordingly.

NOTE: Maximum unreinforced size at 1/2" w.g. is 36" for 800EI board and 42" for 1400EI board.

**90° Elbow With  
Rail Mounted  
Turning Vanes**



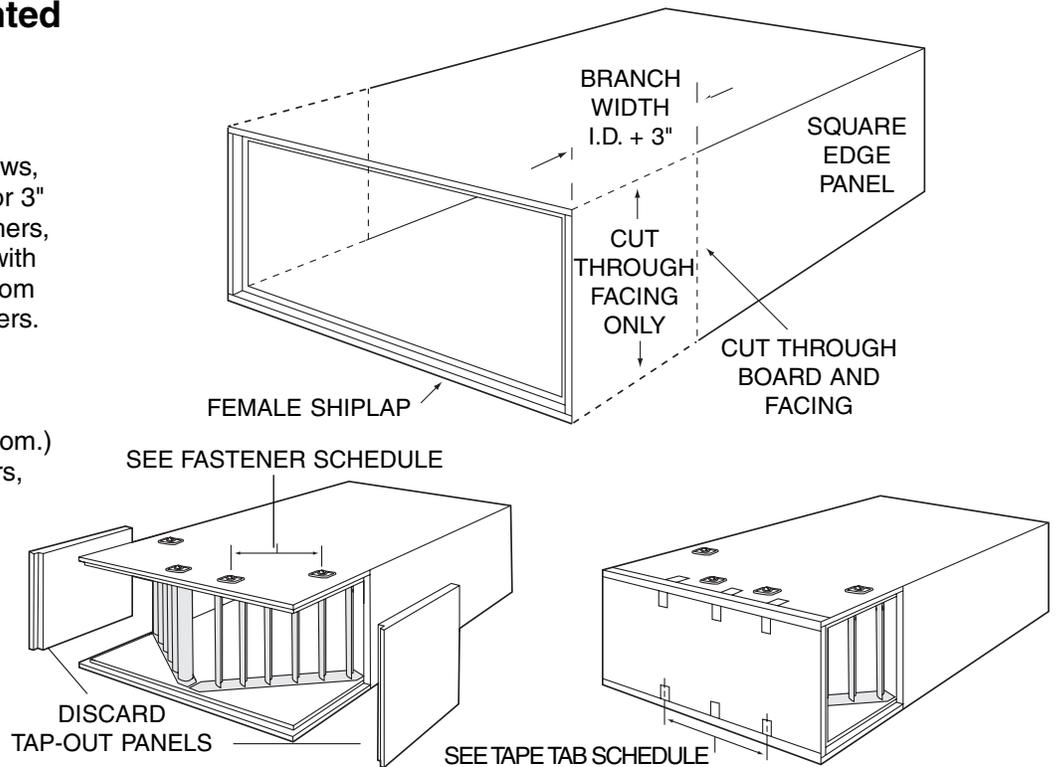
**Tee With Rail Mounted  
Turning Vanes**

**FASTENER SCHEDULE:**

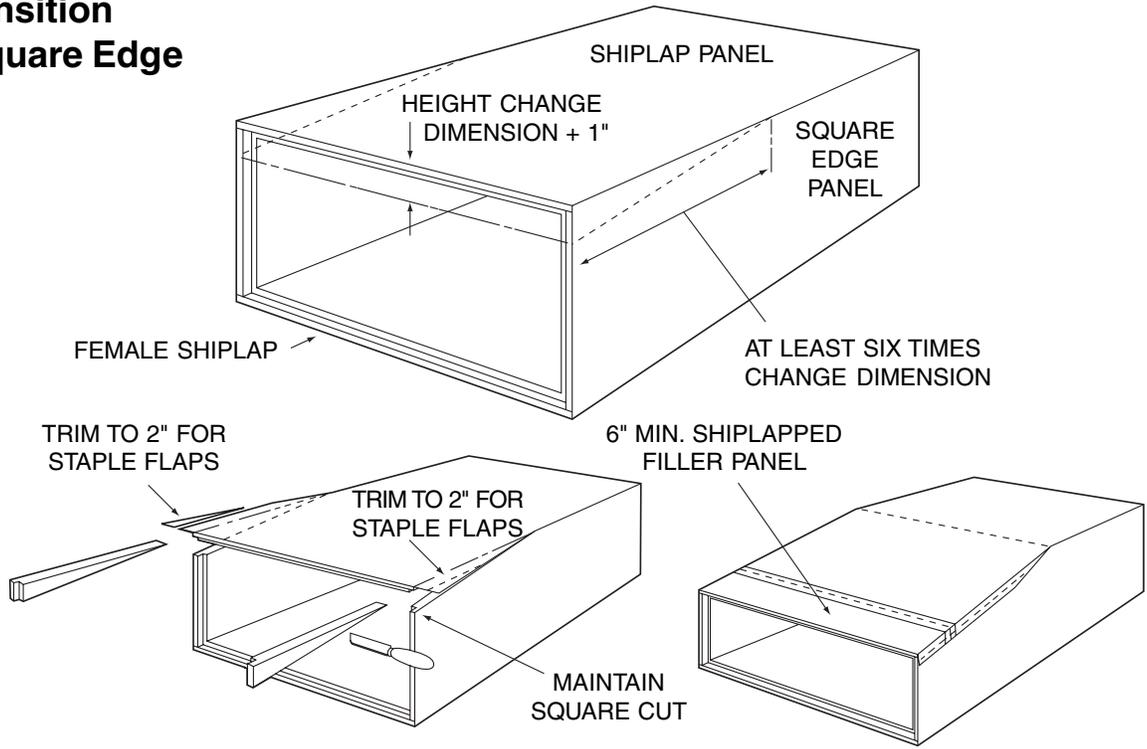
#10 plated sheet metal screws, 2¼" long, with 2½" square or 3" round galvanized steel washers, 0.028" thick, volcano type, with turned edges facing away from duct board, 12" (nom.) centers.

**TAPE TAB SCHEDULE:**

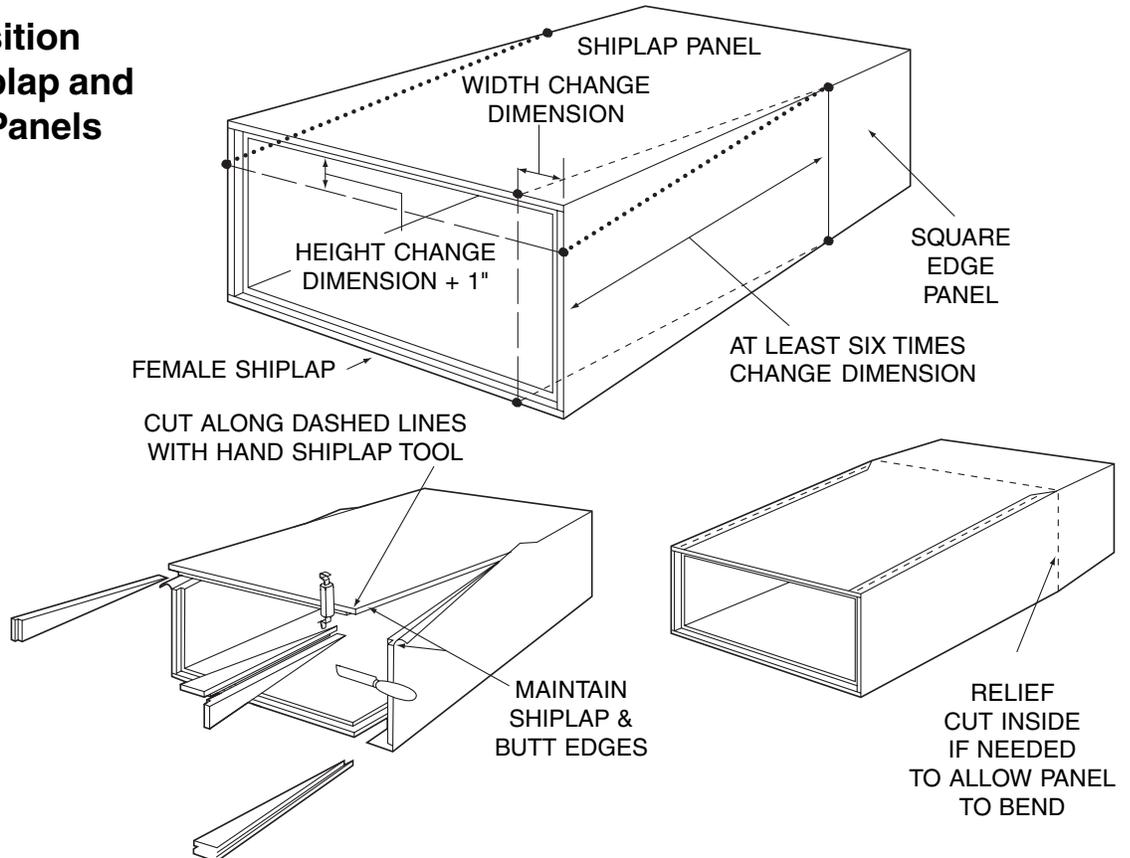
UL 181A pressure sensitive or heat activated tape, 8" (nom.) length, on 12" (nom.) centers, at least one per side. Refer to FGDCS, Section IV, CLOSURE



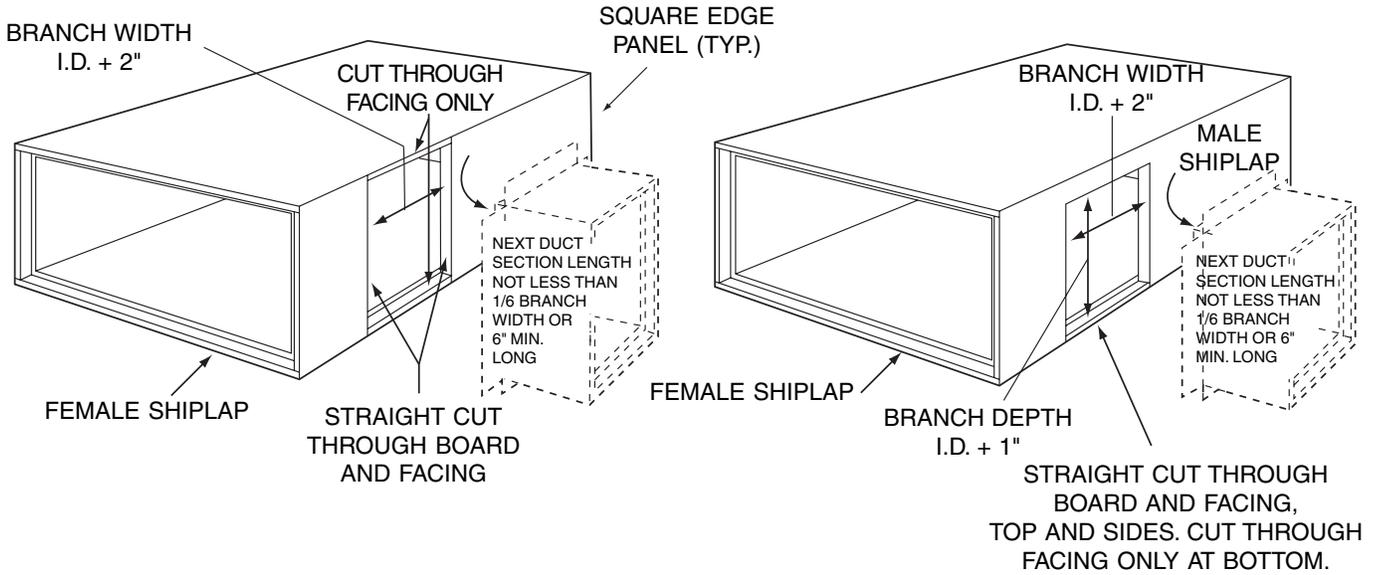
**One Way Transition  
Reducing Square Edge  
Panel**



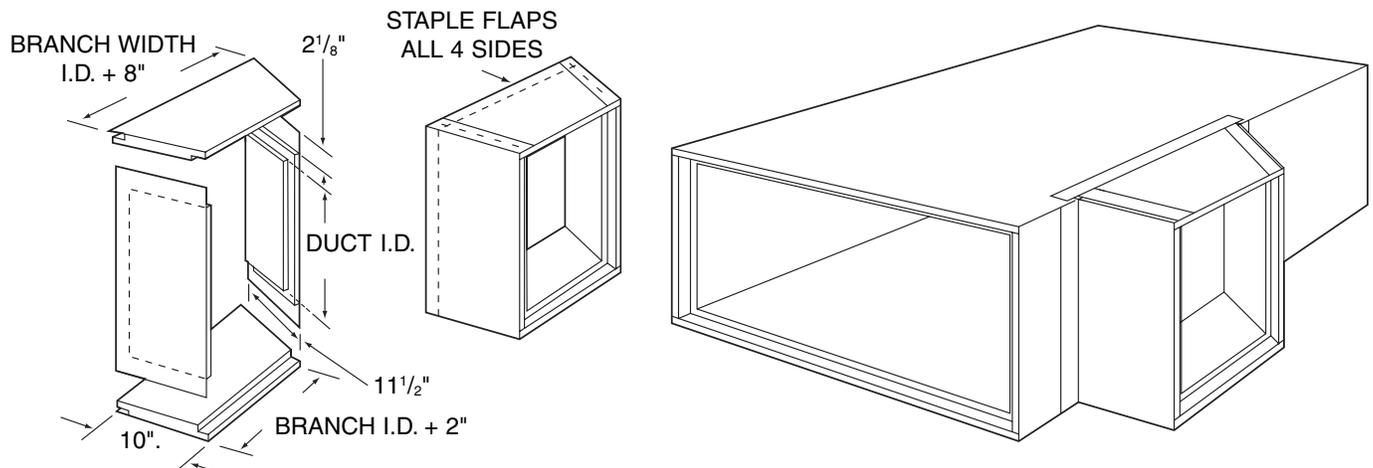
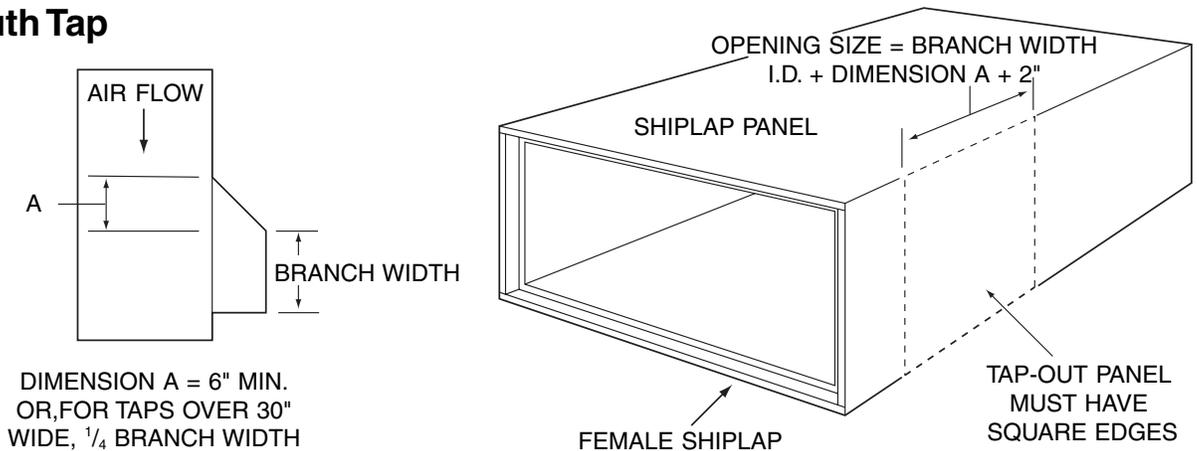
**Two Way Transition  
Reducing Shiplap and  
Square Edge Panels**



**Square Taps**

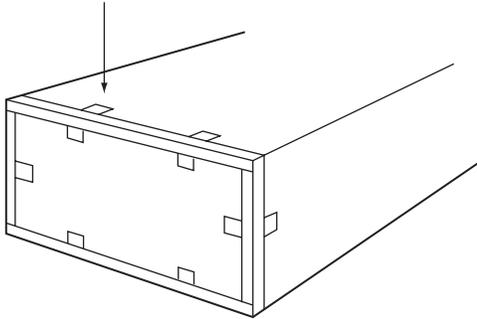


**Wide Mouth Tap**

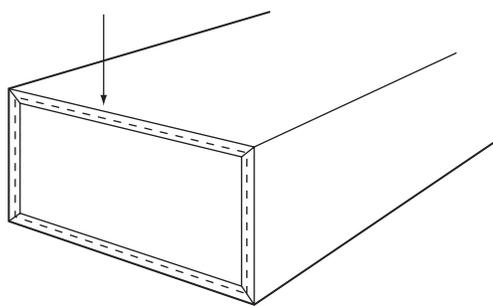


**End Caps**

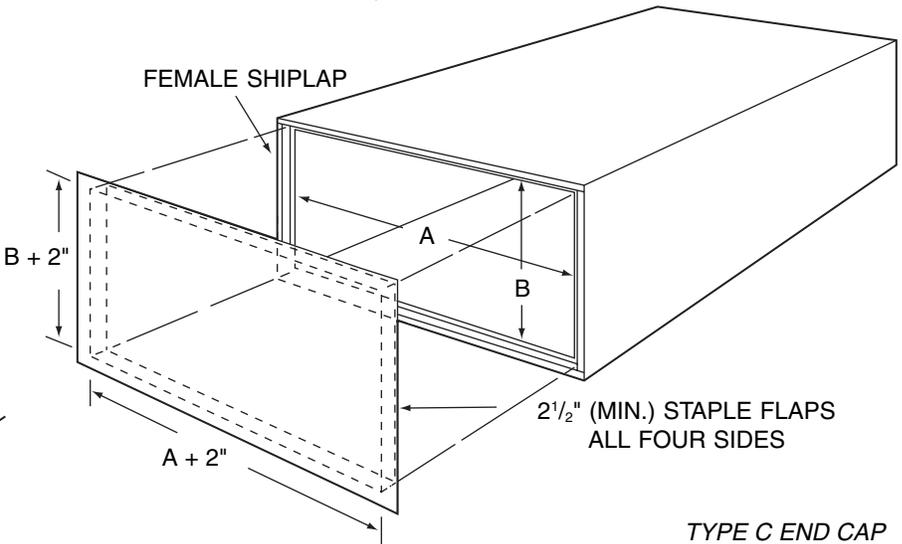
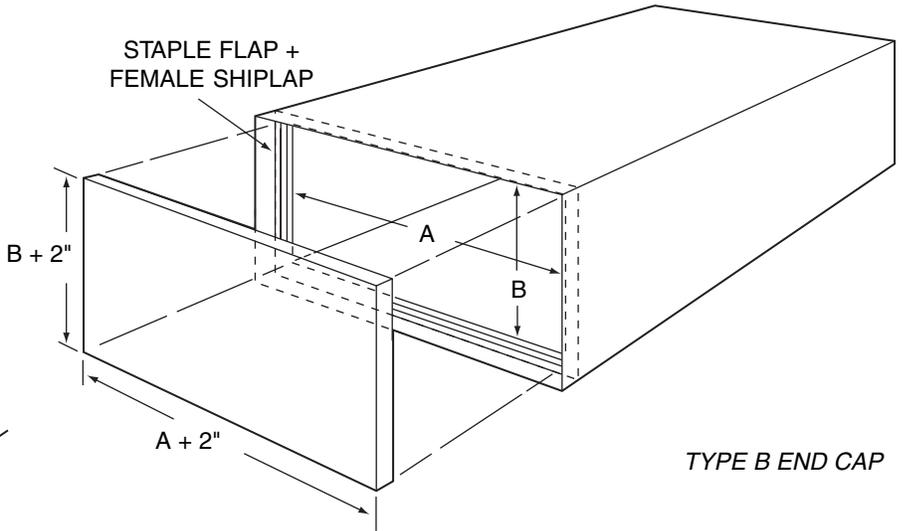
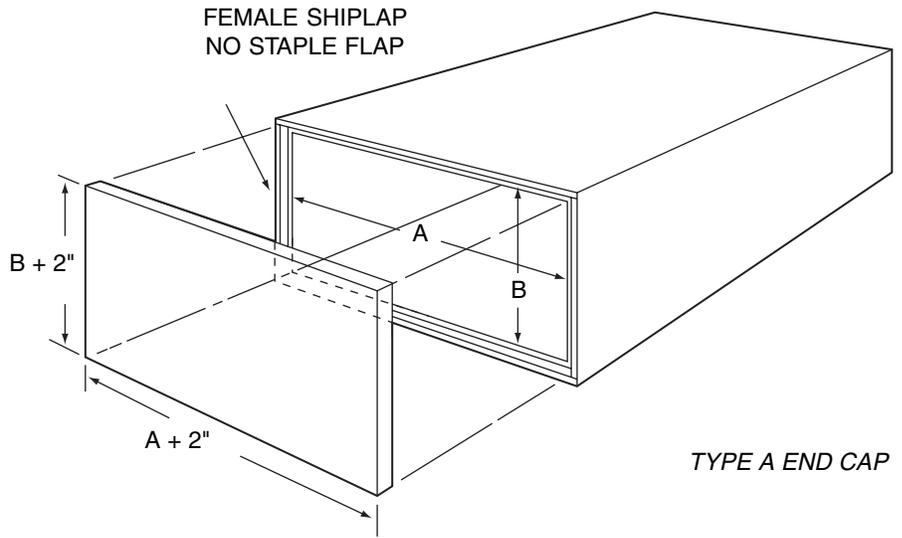
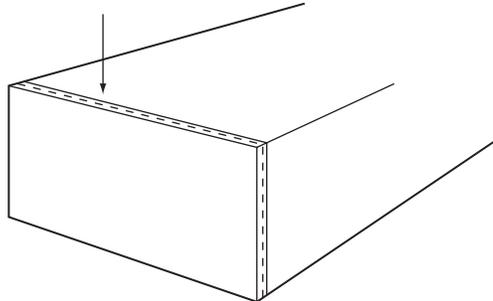
TAPE TABS: UL 181A PRESSURE SENSITIVE OR HEAT ACTIVATED TAPE, 8" (NOM.) LONG 12" (NOM.) CENTERS, MIN. ONE PER SIDE. APPLY CLOSURE



STAPLE FLAPS FOLDED NOT CUT, AT THE CORNERS. APPLY CLOSURE



STAPLE FLAPS FOLDED NOT CUT, AT THE CORNERS. APPLY CLOSURE



**Closure**

Closure systems are important in the proper assembly of fibrous glass duct systems. Closures must comply with UL 181A. These are:

- Pressure sensitive aluminum foil tapes listed under UL 181A, Part I (P).
- Heat activated aluminum foil/scrim tapes listed under UL 181A, Part II (H).
- Mastic and glass fabric tape closure systems listed under UL 181A, Part III (M).

**Joint and Seam Closures**

See Figure 1 (shiplap joint) and Figure 2 (butt joint with tape tabs). Staples: galvanized steel, outward clinching, 1/2" (min.) long, crown width 0.40" (min.) flat wire, 0.040" x 0.020" (min.).

**Surface Preparation**

Surfaces to which closures will be applied must be clean, dry, and free of oil or grease. Follow the cleaning instructions of closure manufacturers.

- Pressure sensitive tape closures: Tape must be 3" wide (min.), 1" (min.) overlap on adjacent surfaces. Press in place and rub firmly with sealing tool until scrim shows through tape. Apply heat when temperature is below 50°F.
- Heat activated tape closures: Tape must be 3" wide (min.), 1" (min.) overlap on adjacent surfaces. Seal with iron at 550°F - 600°F. Heat indicator dots on tape will change color when satisfactory bond is achieved.
- Glass fabric and mastic closures: Apply 3 1/2" wide coat of mastic, embed 3" wide fabric in it, fill scrim pattern with a second application of mastic. Allow joint to set up before stressing.

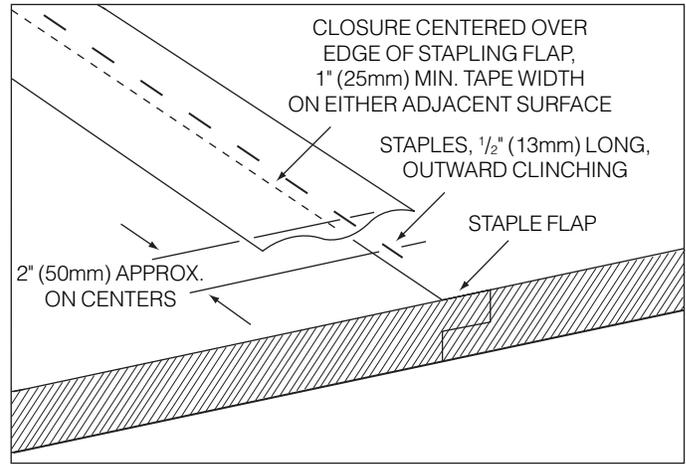


Fig. 1. Joint closure with shiplap and staple flap.

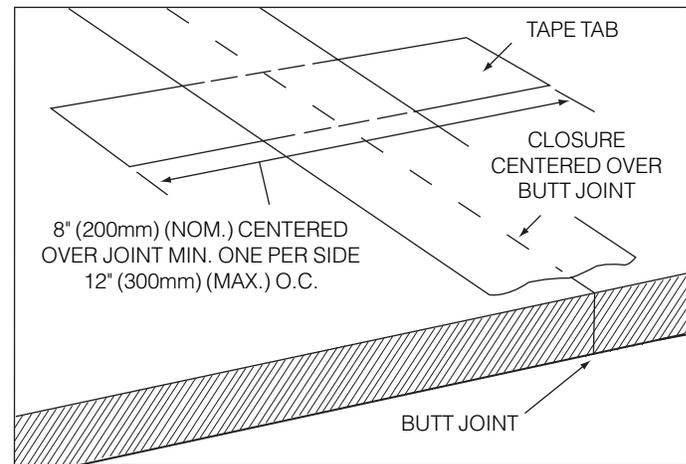


Fig. 2. Joint closure with tape tabs and no staple flap.

**For Complete Information on  
Fibrous Glass Duct Board Fabrication:**

For complete information on fibrous glass duct board fabrication, order NAIMA Fibrous Glass Duct Construction Standards, 5th Edition, 2002, Pub. No. AH-116. \$20.00 per copy, postpaid.

For additional information on fibrous glass duct systems, contact one of the manufacturers listed below.

**CertainTeed Corp.**

P.O. Box 860, Valley Forge, PA 19482  
800-233-8990

**Johns Manville Corp.**

P.O. Box 5108, Denver, CO 80217  
800-654-3103

**Knauf Fiber Glass**

One Knauf Drive, Shelbyville, IN 46176  
800-825-4434

**Owens Corning**

One Owens Corning Parkway, Toledo, OH 43659  
800-GET-PINK

**About NAIMA**

NAIMA is the association for North American manufacturers of fiber glass, rock wool, and slag wool insulation products. Its role is to promote energy efficiency and environmental preservation through the use of fiber glass, rock wool, and slag wool insulation, and to encourage the safe production and use of these materials.

In May 1999, NAIMA began implementing a comprehensive voluntary work practice partnership with the U.S. Occupational Safety and Health Administration (OSHA). The program, known as the Health and Safety Partnership Program, or HSPP, promotes the safe handling and use of insulation materials and incorporates education and training for the manufacture, fabrication, installation and removal of fiber glass, rock wool and slag wool insulation products.

**For more information, contact:**

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