

DuPont Surfaces

DUPONT™ CORIAN® SOLID SURFACE COMMERCIAL INTERIOR VERTICAL CLADDING

TECHNICAL BULLETIN

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INTRODUCTION

This bulletin is offered to facilitate installation of DuPont™ Corian® solid surface commercial interior wall cladding. The information needed to make design decisions on the primary features for a cladding application is summarized in Table 1.

Disclaimer

DuPont is the manufacturer of sheets of material and is not in the business of designing, fabricating or performing installations; nor do we employ architects skilled in the art of design. Accordingly, we do not claim to have any expertise in this area. As a result, we do not approve or disapprove any designs or drawing submittals or assume any liability for the design you selected. Any and all liability for a design rests with the architect, or the designer, or the owner, or the user, based on whatever contractual arrangements have been made.



corian®

Table 1
Design Decisions; Interior Wall Vertical Cladding

FEATURE	COMMENTS
Color	DuPont™ Corian® solid surface is offered in over one hundred colors. Colors can be viewed at www.corian.com . Local distributors can provide color brochures and samples. Call 1 800 436 6072 for the location of the distributor nearest you.
Cladding Sheet Thickness	All of the bulletin sketches show ¼-inch sheet material, but ½-inch material could also be used. Although ¼-inch material is very durable in most applications, ½-inch material will provide additional protection against impact damage in areas where high levels of abuse can be anticipated.
Cladding Adhesive	A 100% silicone sealant is suggested for bonding sheets to walls. Reference Section A for silicone thickness and placement. Silicone thickness needs to be increased if inside corners are hardseamed (reference Figure 6).
Cladding Wall Seams (Hard versus Silicone)	Long expanses of inconspicuous hardseamed cladding provide desirable seamless appearance and can ease cleaning and maintenance. However, hardseamed wall lengths need to be limited per Table 2, page 4 to accommodate thermal expansion and contraction. Soft or silicone seams (Figure 10) may be inserted as needed to allow for expansion.
Outside Corner Details	Outside corners can be made with either inconspicuous hardseams or silicone soft seams, reference Figure 3. The wall length limits in Table 2 also apply to walls with outside corners.
Inside Corner Details	Inside corners can also be made with either inconspicuous hardseams or silicone soft seams. The hardseam wall length limits in Table 3 apply to walls with inside corners. The decision process for room inside corners is summarized in Figure 5. Options for hardseamed inside corners appear in Figure 6. Options for silicone soft seamed inside corners appear in Figures 7 through 10.
Wall to Floor Details	Options for the connection between wall cladding and floors appear in Figures 11a through 11d.
Wall to Ceiling Details	Options for the connection between wall cladding and ceilings appear in Figures 12a through 12c.

Additional introductory comments most applicable to the fabricator/installer include:

- DuPont™ Corian® sheet can be mounted with either horizontal or vertical seams in vertical cladding applications. Sheets can be seamed together using butt or tongue and groove edge seams. Reference Section M for more information on tongue and groove joints.
- To ease alignment between sheets it is preferable to only have vertical or horizontal seams, not both. Therefore, for long, full height walls vertical seams are preferable. Develop an overall installation plan based on the application. Care must be taken to mount sheets with plumb and level vertical and horizontal edges, respectively, especially for the initial sheet mounted on a wall. Both vertical edges of corner panels should be plumb. It is easier to align a larger sheet than a narrow vertical or horizontal strip. To ease alignment for hardseamed panels it is suggested that narrow strip pieces, e.g., corner pieces or baseboards, be seamed to larger pieces prior to installation on the wall.
- Reference Section J for requirements for cutouts.

A. Silicone Adhesive

A 100% silicone sealant is suggested for bonding sheets to walls. An adhesive thickness greater than or equal to 1/16-inch is suggested to apply the sheet to the wall. The use of an elastic silicone and the final thickness of the silicone bond are important to create an elastic connection between the Corian® sheet and the wall substrate to allow for differential expansion and contraction (reference Figure 1). A silicone bead between 1/4-inch and 3/8-inch diameter will yield bond line widths between 3/4-inch and 1 3/4-inches when compressed to 1/16-inch thickness. Make a perimeter bead of silicone about 1-inch in from edges of the sheet and run beads across the width of sheet about every 6 to 12 inches (reference Figure 2).

Figure 1
DuPont™ Surfaces Sealant for Corian®, DuPont™ Zodiac® and DuPont™ Wall Surfaces
Bondline Lap Shear Data Between DuPont™ Corian® and Gypsum Wallboard

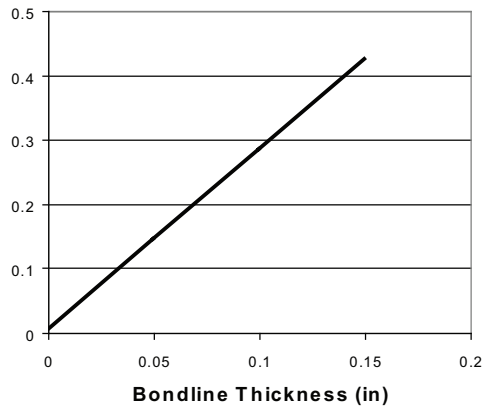
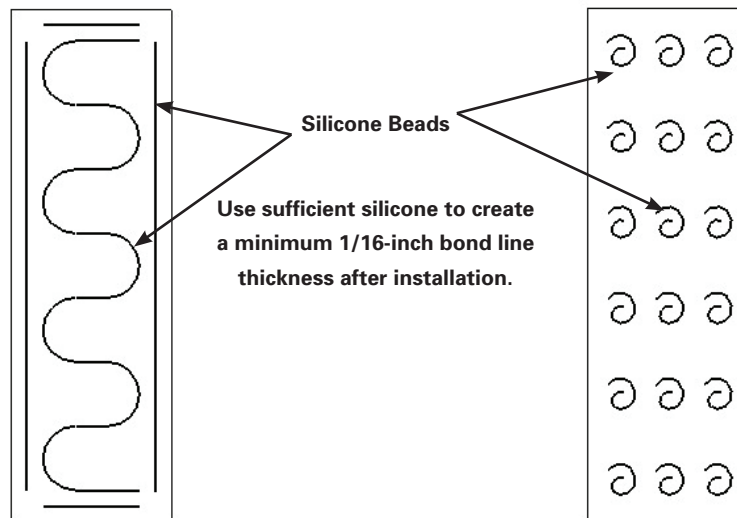


Figure 2
Silicone Adhesive Placement



B. Hardseamed Wall Length Limitations

Long expanses of inconspicuous hardseamed cladding can be fabricated using Corian® solid surface sheets and DuPont™ Joint Adhesive. Maximum suggested wall lengths versus the expected temperature change appear in Table 2. If desired wall dimensions exceed those suggested, an expansion joint is required (Reference Figure 10).

Table 2
Hardseamed Wall Length Limits as Function of Expected Temperature Change

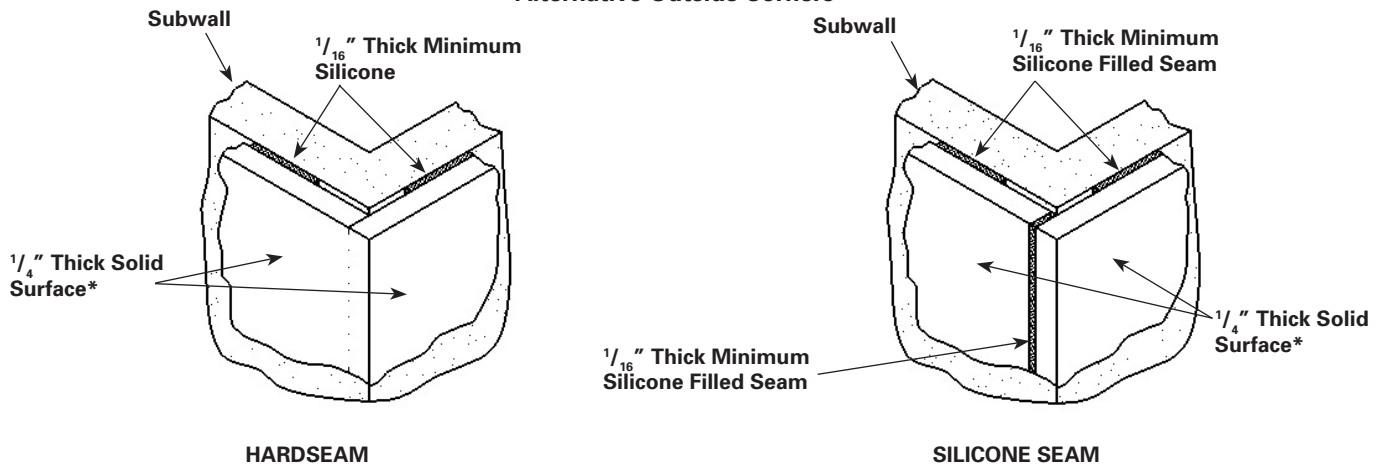
°F	Length Limit (ft)	°C	Length Limit (m)
±10	72	±6	20
±15	48	±9	14
±20	36	±12	10
±25	29	±15	8
±30	24	±18	7
±35	21	±21	6
±40	18	±24	5

The temperature range used for design should be based on the expected deviation from the installation temperature and should include consideration for the construction phase as well as occupation. Plan the installation to minimize ambient temperature changes on site. If possible, the building should be heated prior to installation. Acclimate the materials and building to the design temperature for at least 48 hours with air circulation around the materials.

C. Outside Corners

Outside corners may be either hardseamed or silicone seamed as shown in Figure 3.

Figure 3
Alternative Outside Corners



* $\frac{1}{4}$ " Thick Solid Surface shown.
 $\frac{1}{2}$ " Solid Surface could also be used.

D. Inside Corners

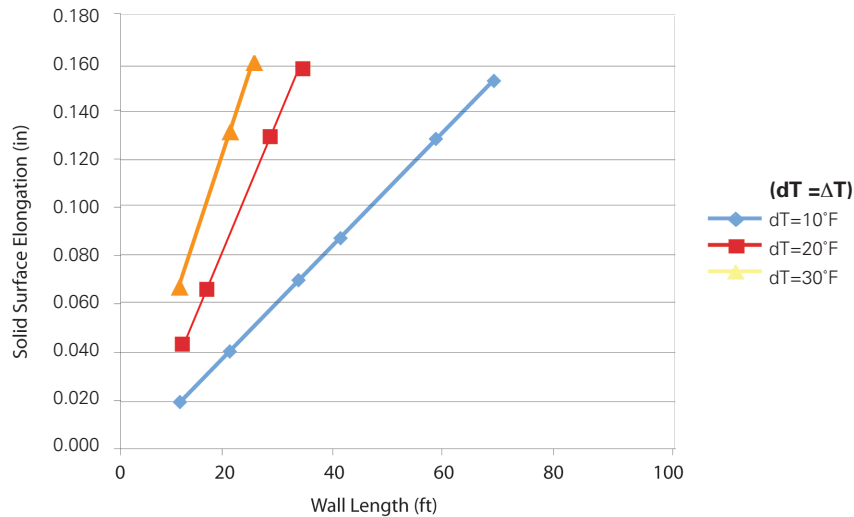
Any inside corners at the end of walls should be designed to allow for expansion. Corian® wall-panel expansions as a function of wall length for three different temperatures are shown in Figure 4. Corian® wall-panel expansion can be calculated using the following formula:

$$\Delta\text{Length (in)} = \alpha \text{ (in/in-}^\circ\text{)} \times \text{Length (in)} \times \Delta\text{Temperature (}^\circ\text{)}$$

where $\alpha = 0.000018 \text{ in/in-}^\circ\text{F}$ (in English units)
 $\alpha = 0.000032 \text{ in/in-}^\circ\text{C}$ (in SI units)

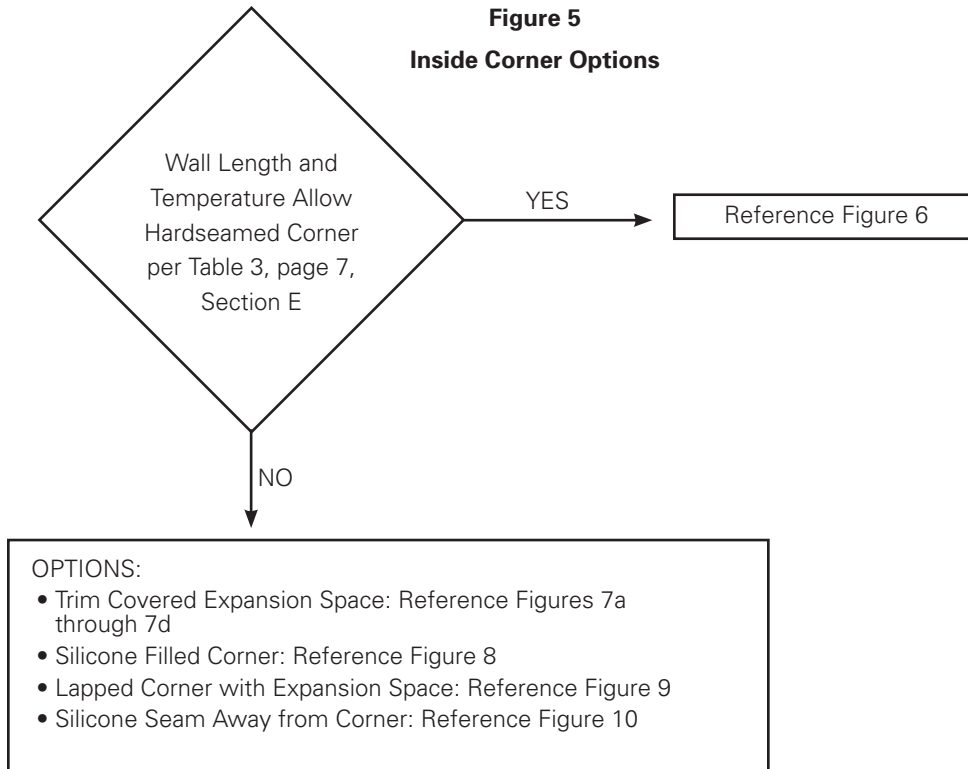
Use of this formula is suggested, neglecting the expansion of the wall substrate material. Neglecting the differential expansion or contraction of the wall substrate simply adds a factor of safety.

Figure 4
Wall Expansion and Contraction



Five alternatives for inside corners at the end of walls are outlined below. Figure 5 presents a decision tree outlining inside corner options.

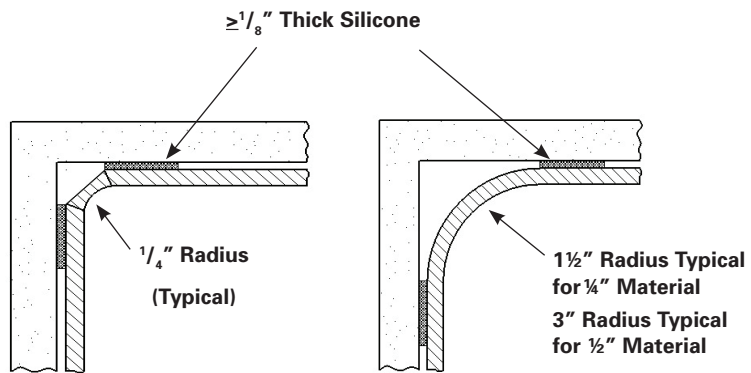
Figure 5
Inside Corner Options



E. Inside Corner Alternative: Hardseamed Wall Corners

Perpendicular walls can be completely hardseamed including the corners as shown in Figure 6, subject to the wall length limits suggested in Table 3. A minimum 1/8-inch gap behind each panel is suggested. Be sure to radius the inside corner of butting panels.

Figure 6
Hardseamed Corners



V-Groove Cove

Thermoformed

*1/4" Thick Solid Surface shown.
1/2" Solid Surface could also be used.*

Table 3
Suggested Wall Length Limits for Hardseamed Corners as
Function of Expected Temperature Change (Reference Figure 5)

ΔT (°F)	Suitable Wall Length Limit (ft)
±10	30.9
±15	20.6
±20	15.4
±25	12.3
±30	10.3
±35	8.8
±40	7.7

F. Inside Corner Alternative: Trim Covered Expansion Space

Corners may be made using trim pieces as shown in Figures 7a through 7d. Expansion clearance greater than 0.75 times the greatest wall expansion is suggested relative to the projection of any perpendicular wall into the corner to prevent interference between adjacent walls. Typical values are tabulated in Table 4.

Figure 7a
V-Groove Trim Covered Expansion Space

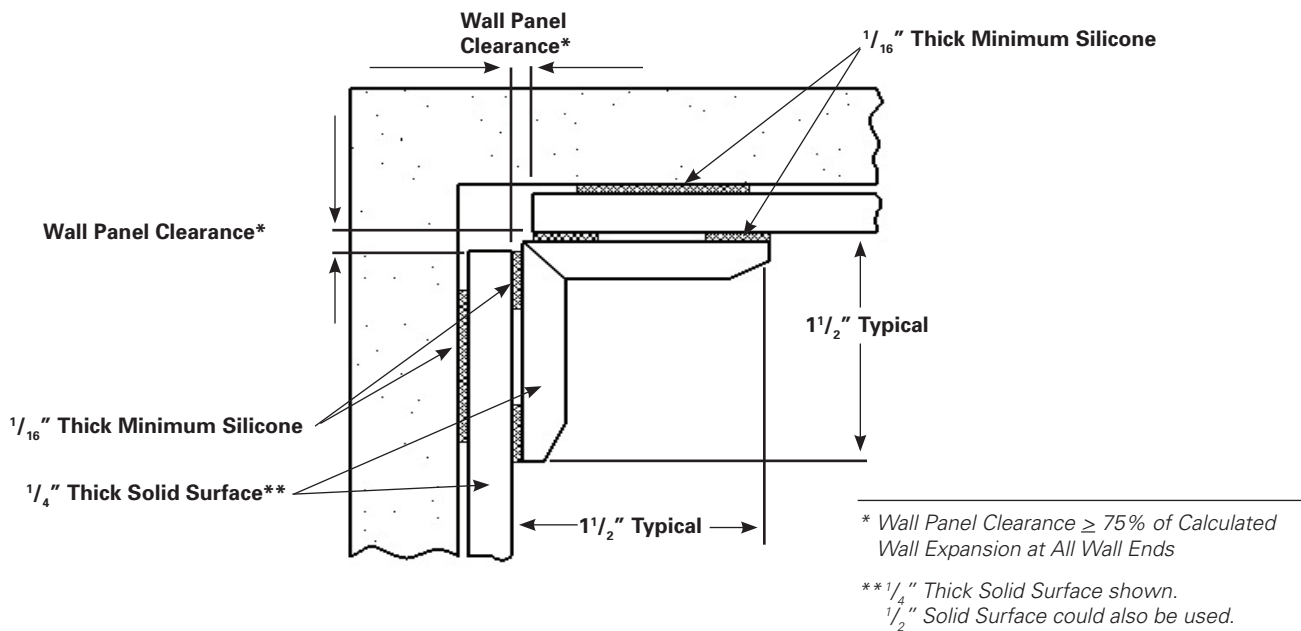
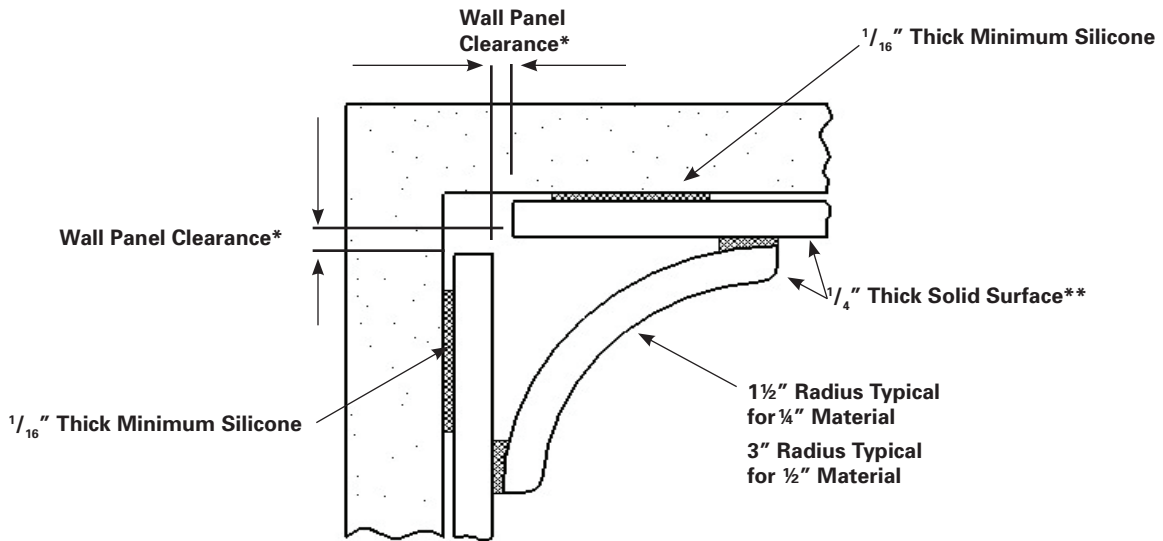


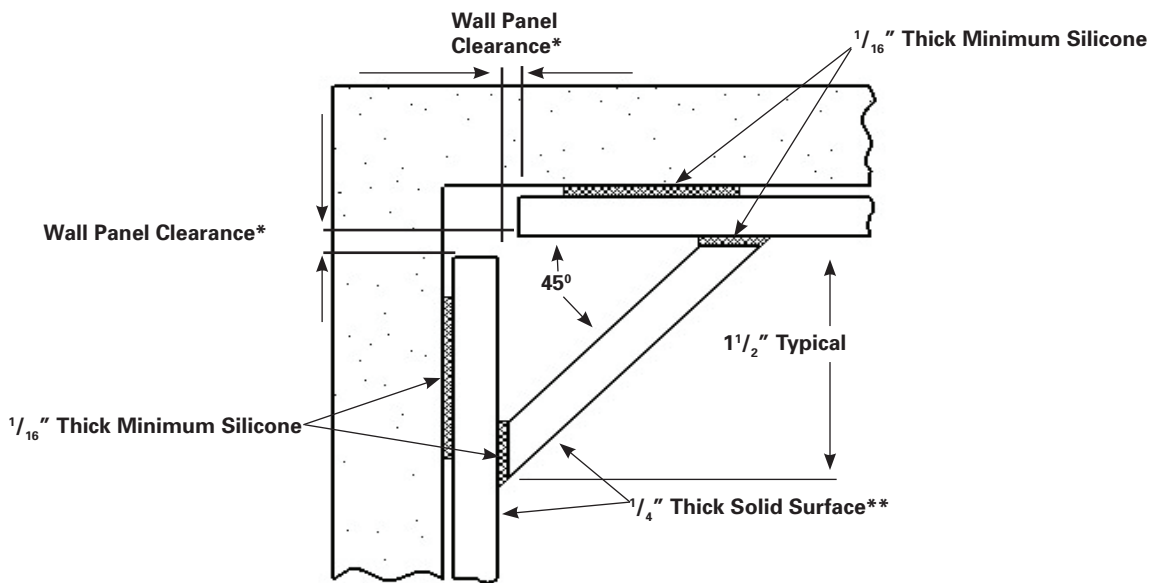
Figure 7b
Thermoformed Trim Covered Expansion Space



* Wall Panel Clearance \geq 75% of Calculated Wall Expansion at All Wall Ends

** $1/4$ " Thick Solid Surface shown.
 $1/2$ " Solid Surface could also be used.

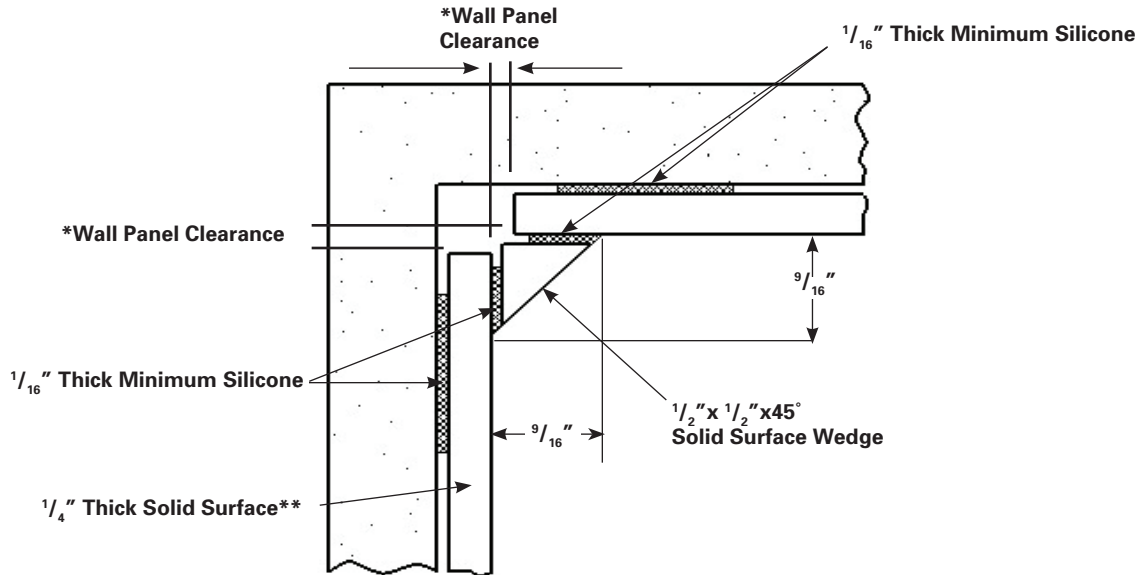
Figure 7c
Baffle Trim Covered Expansion Space



* Wall Panel Clearance \geq 75% of Calculated Wall Expansion at All Wall Ends

** $1/4$ " Thick Solid Surface shown.
 $1/2$ " Solid Surface could also be used.

Figure 7d
Wedge Trim Covered Expansion Space



* Wall Panel Clearance \geq 75% of Calculated Wall Expansion at All Wall Ends

** $\frac{1}{4}$ " Thick Solid Surface shown.
 $\frac{1}{2}$ " Solid Surface could also be used.

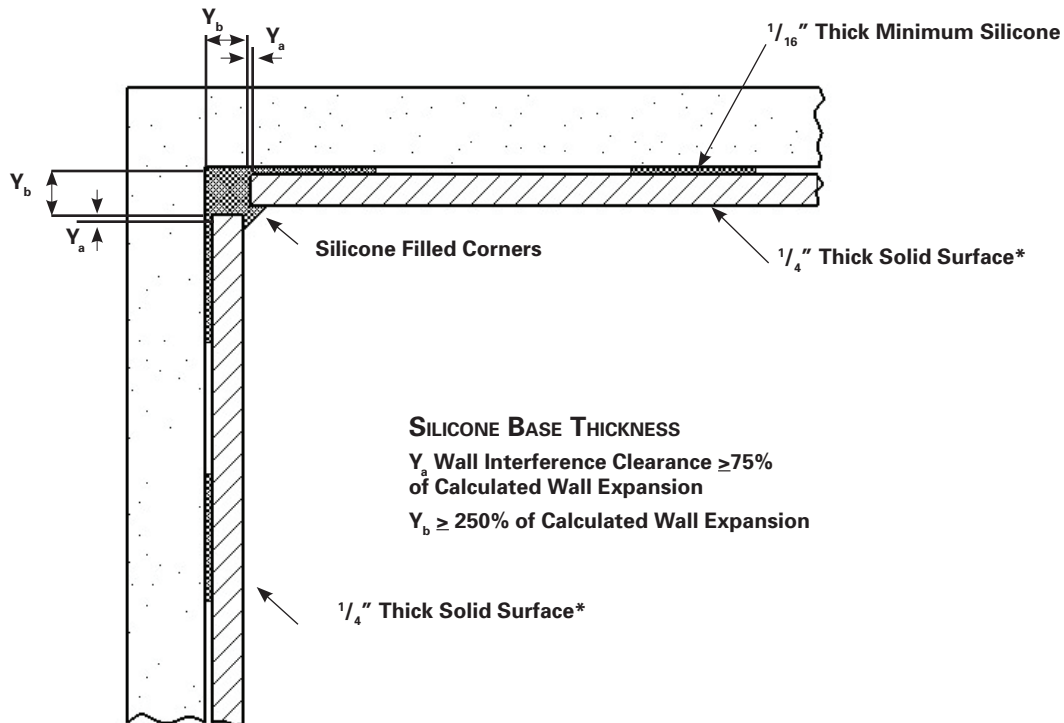
Table 4
Suggested Wall Panel Clearance as Function of Expected Temperature Change for Trim Covered Expansion Spaces (Reference Figures 7a through 7d)

	$\Delta T = \pm 10^{\circ}\text{F}$	$\Delta T = \pm 20^{\circ}\text{F}$	$\Delta T = \pm 30^{\circ}\text{F}$
Length (ft)	Clearance (in)	Clearance (in)	Clearance (in)
10	0.016	0.032	0.049
20	0.032	0.065	0.097
30	0.049	0.097	0.116
40	0.065	0.116	
50	0.081	0.130	
60	0.097		
70	0.113		

G. Inside Corner Alternative: Silicone Filled Corners

Corners may be silicone filled as shown in Figure 8. Suggested minimum dimensions are shown.

Figure 8
Silicone Filled Corners

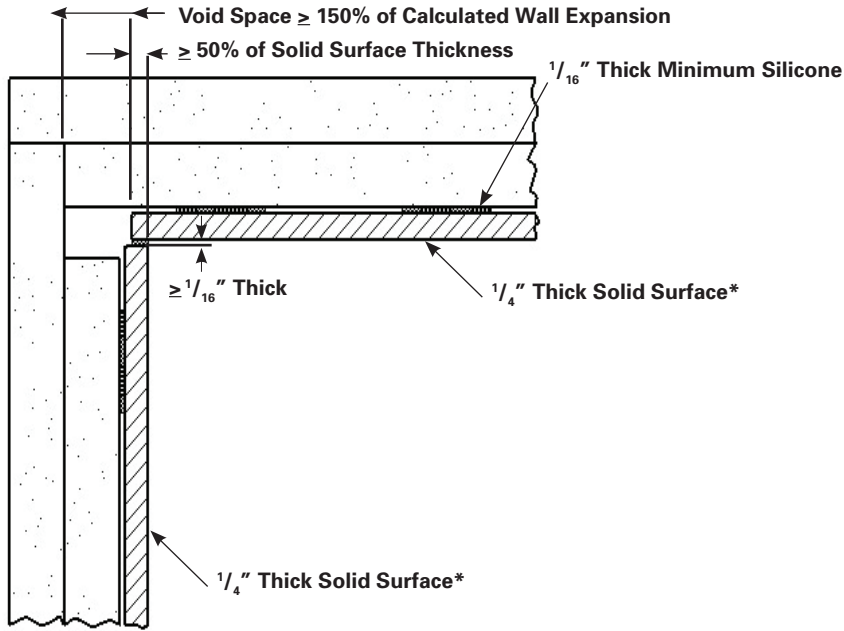


* $\frac{1}{4}$ " Thick Solid Surface shown.
 $\frac{1}{2}$ " Solid Surface could also be used.

H. Inside Corner Alternative: Lapped Corner with Expansion Space

Perpendicular walls can lap adjacent walls as shown in Figure 9, allowing expansion space for one wall length in each corner of the room. Corner void spaces equal to 1.5 times the estimated wall expansion for the free expanding wall are suggested. Typical values are tabulated in Table 5. The free expanding wall should project behind the lapping wall by at least one half the thickness of the wall sheet. The space between the lapping wall is suggested to be at least 1/16-inch in dimension and filled with color matched DuPont™ Surfaces Silicone Sealant. **Caution: do not remove wall material from a fire-rated wall to create a corner void space.**

Figure 9
Lapped Corner with Expansion Space



* $\frac{1}{4}$ " Thick Solid Surface shown.
 $\frac{1}{2}$ " Solid Surface could also be used.

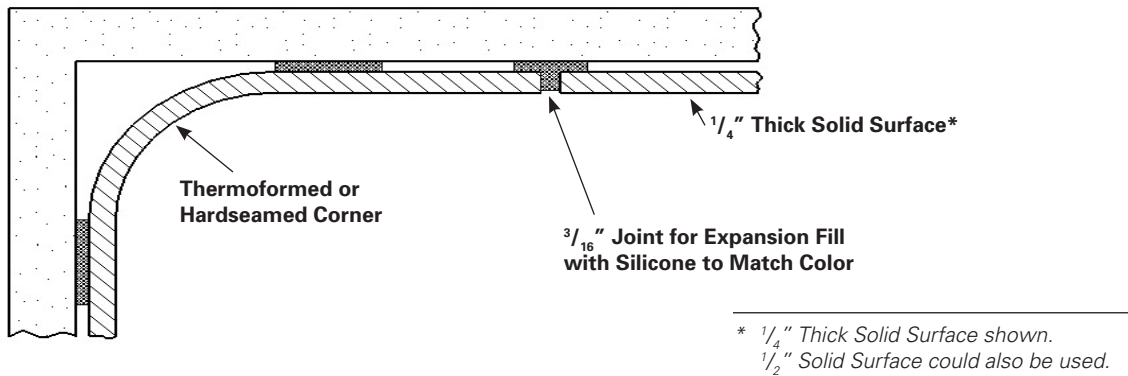
Table 5
Suggested Void Space as Function of Expected Temperature Change for Lapped Corner with Expansion Space (Reference Figure 9)

Length (ft)	$\Delta T = \pm 10$ °F	$\Delta T = \pm 20$ °F	$\Delta T = \pm 30$ °F
	Void (in)	Void (in)	Void (in)
10	0.032	0.065	0.097
20	0.065	0.130	0.194
30	0.097	0.194	0.233
40	0.130	0.233	
50	0.162	0.259	
60	0.194		
70	0.227		

I. Inside Corner Alternative: Adjacent Silicone Soft Seams

It may be desirable to locate exposed silicone away from inside corners to ease janitorial maintenance. An example of a seamless corner with an adjacent soft seam appears in Figure 10. Soft seams can also be used at other locations in extensive wall lengths as expansion joints. A minimum gap of 3/16-inch filled with color matched DuPont™ Surfaces Sealant for Corian®, Zodiac® and DuPont™ Wall Surfaces is suggested.

**Figure 10
Silicone Soft Seams**



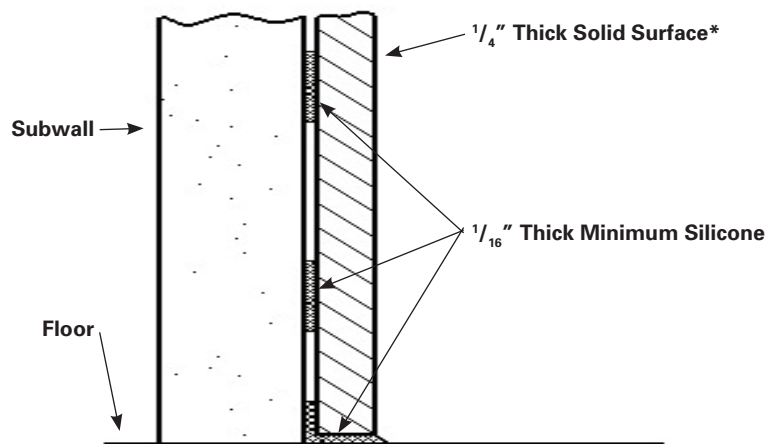
J. Cutouts

Cutouts in Corian® vertical wall applications are suggested to be made oversized by 1/8-inch to allow for expansion and contraction. Radius cutout corners with 3/16-inch radii and sand edges smooth to prevent possible cracking.

K. Wall to Floor Details

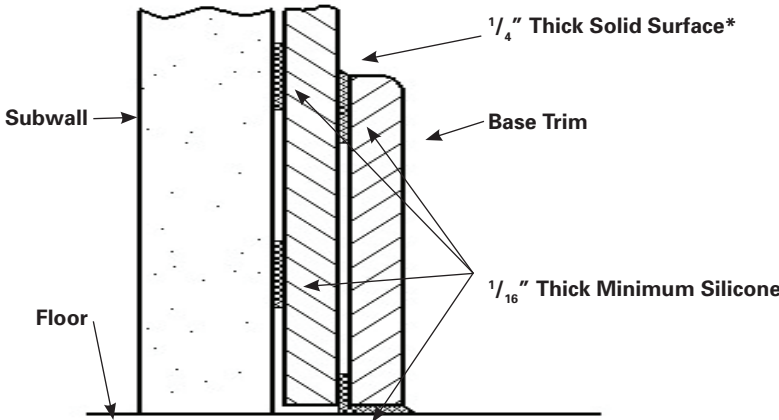
Wall to floor alternatives are shown in Figures 11a through 11c.

**Figure 11a
Floor Detail Alternative**



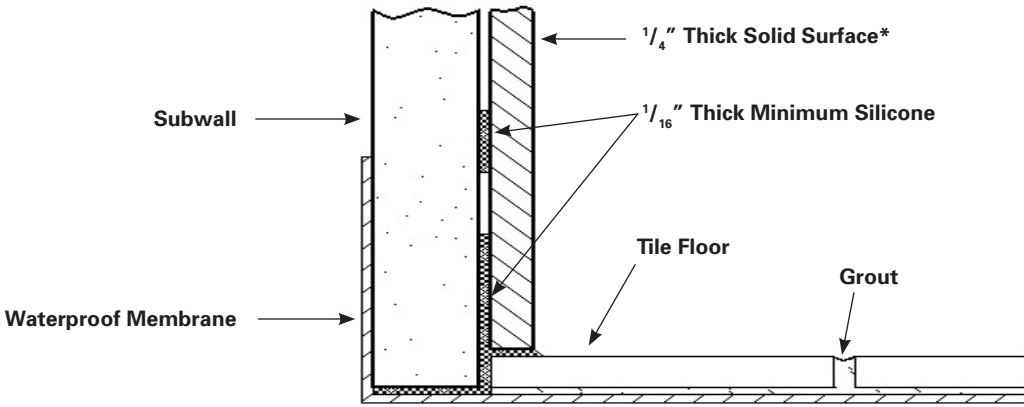
* 1/4" Thick Solid Surface shown.
1/2" Solid Surface could also be used.

Figure 11b
Floor Detail Alternative with Trim



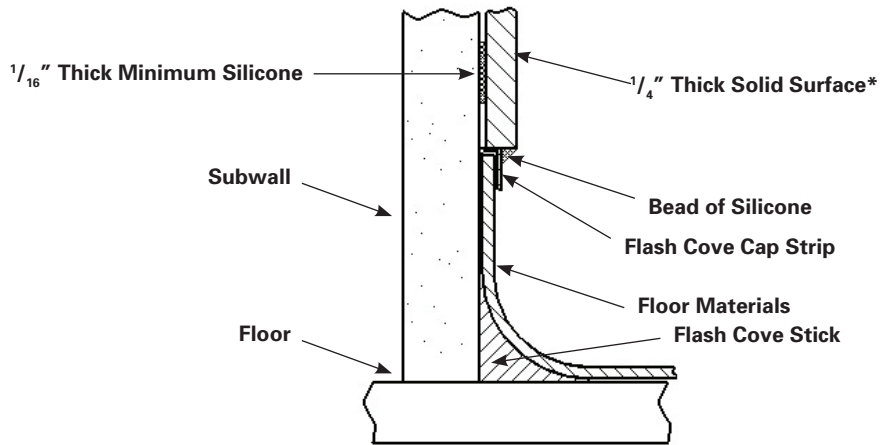
* 1/4" Thick Solid Surface shown.
1/2" Solid Surface could also be used.

Figure 11c
Floor Detail Alternative with Tile



* 1/4" Thick Solid Surface shown.
1/2" Solid Surface could also be used.

Figure 11d
Floor Detail Alternative with Flash Cove

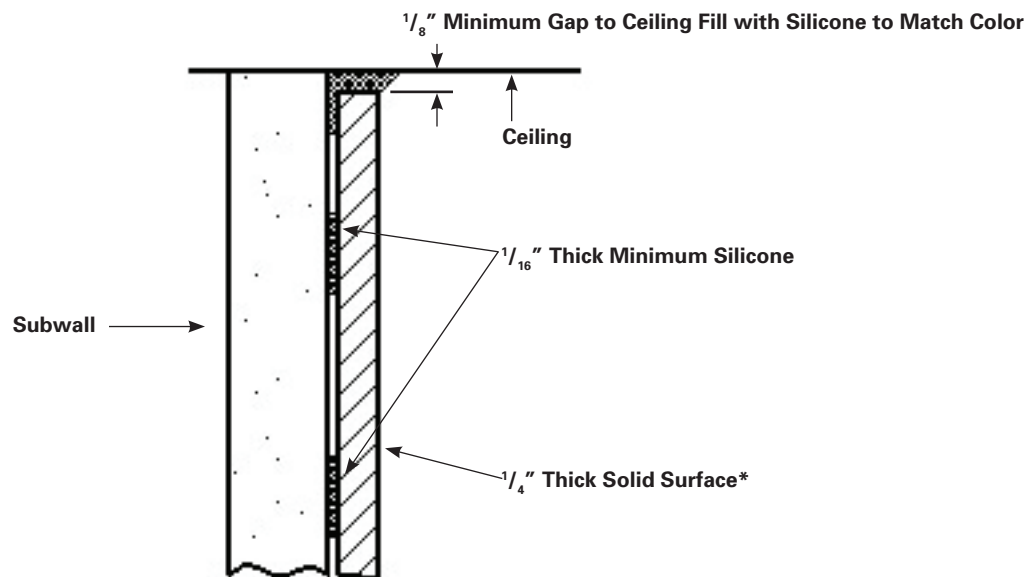


* 1/4" Thick Solid Surface shown.
 1/2" Solid Surface could also be used.

L. Wall to Ceiling Details

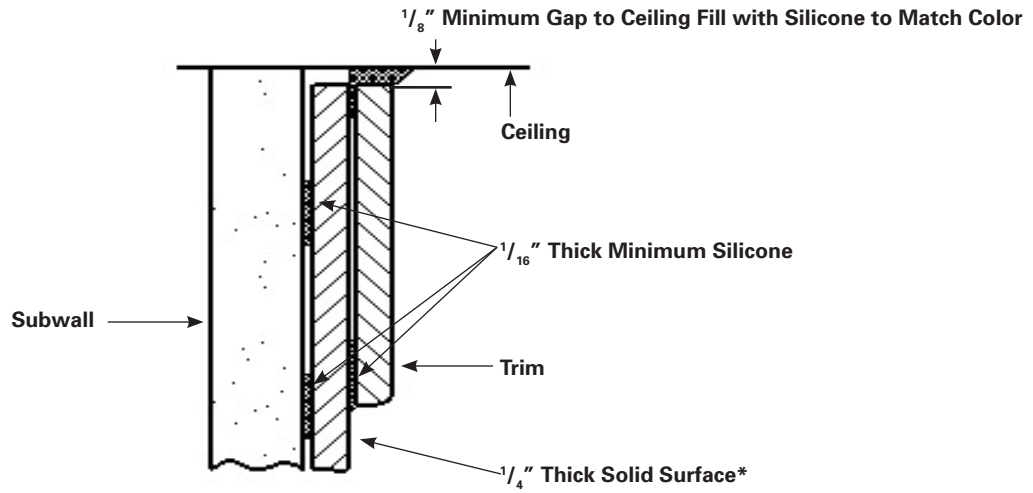
Wall to ceiling alternatives are shown in Figures 12a through 12c.

Figure 12a
Ceiling Detail Alternative



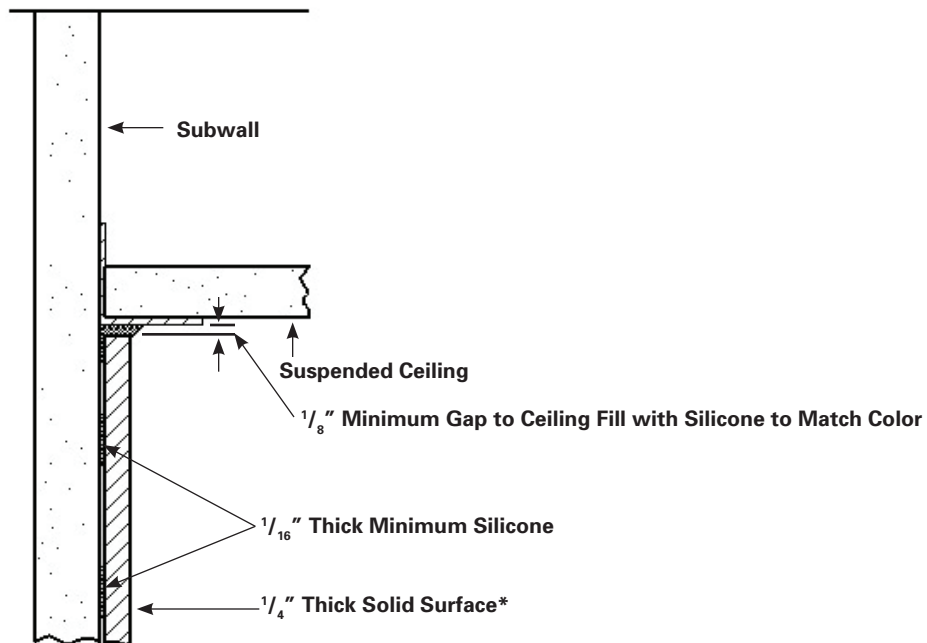
* 1/4" Thick Solid Surface shown.
 1/2" Solid Surface could also be used.

Figure 12b
 Ceiling Detail Alternative with Trim



* 1/4" Thick Solid Surface shown.
 1/2" Solid Surface could also be used.

Figure 12c
 Detail for Suspended Ceiling



* 1/4" Thick Solid Surface shown.
 1/2" Solid Surface could also be used.

M. Seaming

Sheets can be seamed together using either DuPont™ Joint Adhesive or DuPont™ Surfaces Sealant for Corian®, Zodiac® and DuPont™ Wall Surfaces. DuPont™ Corian® sheets can be seamed together using either butt or tongue and groove joints.

The choice between a butt or tongue and groove seam should be based on ease of installation and fabrication cost. The potential advantage of a tongue and groove joint relative to a butt joint is easier sheet alignment. This can translate into labor savings by reducing the time it takes to finish sand the seam. Depending on the installer's capability to align butt joints using clamps or other methods, the added cost of cutting the tongue and groove detail may not be justified.

Figure 13 shows the assembly of a tongue and groove seam for ¼-inch (6.5 mm) solid surface sheet. Figure 14 shows ¼-inch cutter detail dimensions. Cutters are also available for ½-inch sheet. Potential sources for tongue and groove cutters or router bits include those listed in Table 6.

Figure 13
Assembled Tongue and Groove Joint

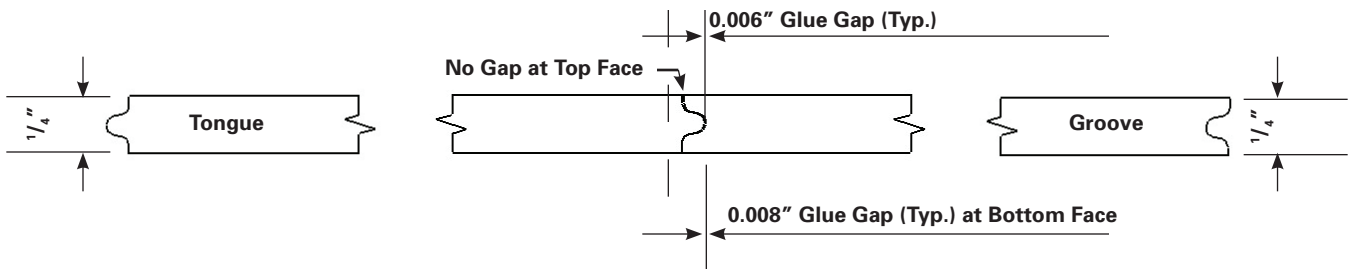


Figure 14
Tongue and Groove Profile, ¼-inch
Figure Dimensions in Metric Units (mm)

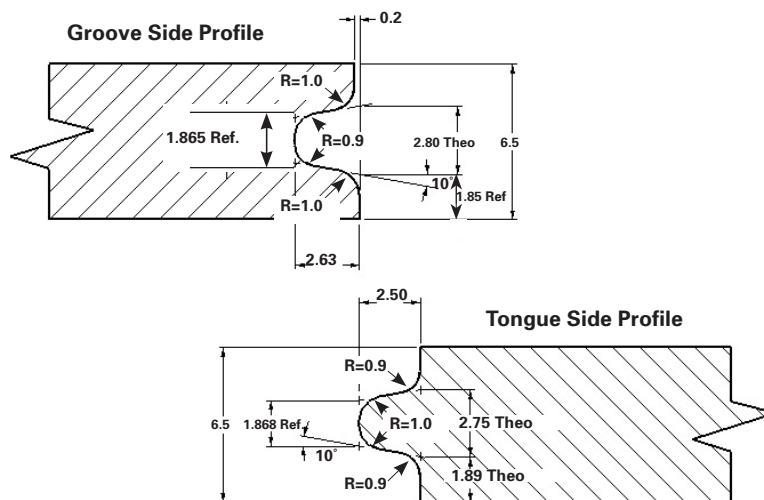


Table 6
Potential Tongue and Groove Cutter Sources

Sources	Part Numbers	
	¼-inch	½-inch
Diversified Equipment (704) 533-1891	H9662, H9663	H6664, H9665
Titman USA (800) 722-6486	0.506.190.21 and 0.511.190.21	
F. M. Velepec Co. (800) 365-6636	60-250	

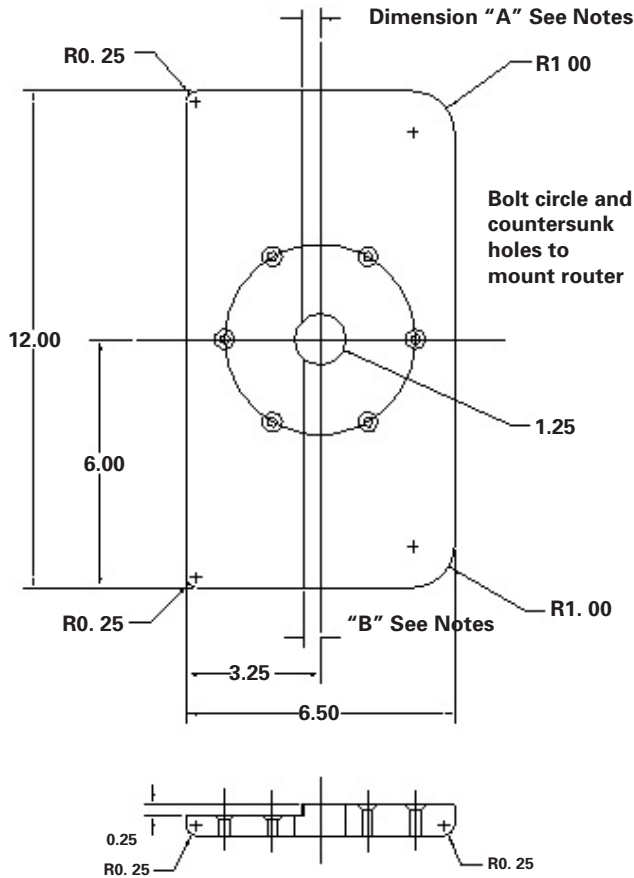
It is important to center tongue and groove features in the material thickness and remove the same amount of material on both sides of the tongue. CNC equipment can be used with proper sheet hold down. It is critical to hold the sheet flat, especially the edge which is being routed. Alternatively, hand held routers can be used either in the field or shop. Figure 15 is a drawing of a base plate useful for router set up. Setting up two routers with base plates for both cutters is suggested.

Complete as much of the fabrication as possible before wall installation. Fabrication tasks are typically easier with the sheet flat in a horizontal plane either in the shop or at the job site. Handle panels carefully to prevent breakage until panels are mounted to the wall. Dry fit sheet panels before adhesive application. A good dry fit is needed to produce inconspicuous seams. Completely fill seams with adhesive. Application of adhesive to both sides on the tongue and into the groove of tongue and groove features is suggested to eliminate air pockets.

N. Safety

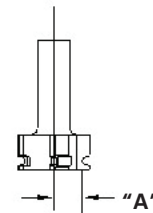
DuPont™ Corian® solid surface can be cut and worked with like wood. It is best to minimize all dust and shavings by containing them with a vacuum. Use proper safety equipment when working with Corian®, DuPont™ Joint Adhesive, and DuPont Surfaces Sealant for Corian®, Zodiaq® and DuPont™ Wall Surfaces including safety glasses, appropriate gloves, steel-toe shoes, and ear plugs. Lifting devices or carts may be use to improve safe handling for larger pieces. Reference product MSDS available on: http://www2.dupont.com/Surfaces_Commercial/en_US/tech_info/bulletins/corian.html.

Figure 15
Router Base Plate for Tongue and Groove Cutter Set Up

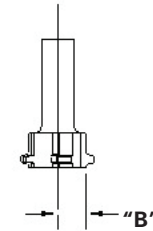


In all cases, Dimension "A" minus Dimension "B" equals the amount of extra stock that will be removed. Dimension "A" is the radius of the router bit and may be different for each bit supplier.

For the tongue bit "A" and "B" can be equal. Measure the "A" feature shown here:



For the groove bit, measure the feature shown here:



For the groove bit "A" – "B" is recommended to be 1/16-inch. One or two cuts may be needed if sheet edges are rounded.

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