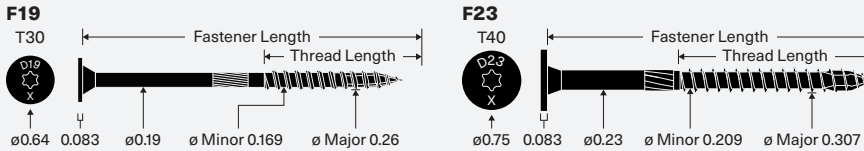


# Cladding Over Foam Sheathing

## Structural F19 and F23

Starborn® Structural Multipurpose screws can be used to attach rigid foam insulation to wood structural framing. This connection, with the use of either furring strips or WSP sheathing, is rated to support a wide range of exterior cladding materials.



### INSTALLATION INSTRUCTIONS

- Calculate screw spacing using Table 2: (1) Determine stud spacing. (2) Choose foam thickness and screw length to obtain required insulation effect/R-value. (3) Select WSP sheathing or wood furring. (4) Determine cladding weight per manufacturer's specifications.
- Select the proper length screw ensuring it does not penetrate through the backside of the stud.
- Install using a high-torque low-speed drill with a Torx® T30 or T40 driver bit. Pre-drilling is not required, but can be used where lumber is prone to splitting.
- Drive until the washer is drawn firm and flush with no gaps between the layers of materials. Do not overdrive or countersink.
- **Best practice:** Cover and seal screw heads with foam where possible to prevent thermal bridging.
- **Caution:** Map out mechanical systems in the exterior wall prior to installing screws to avoid penetrating wiring, plumbing, and other mechanical systems.

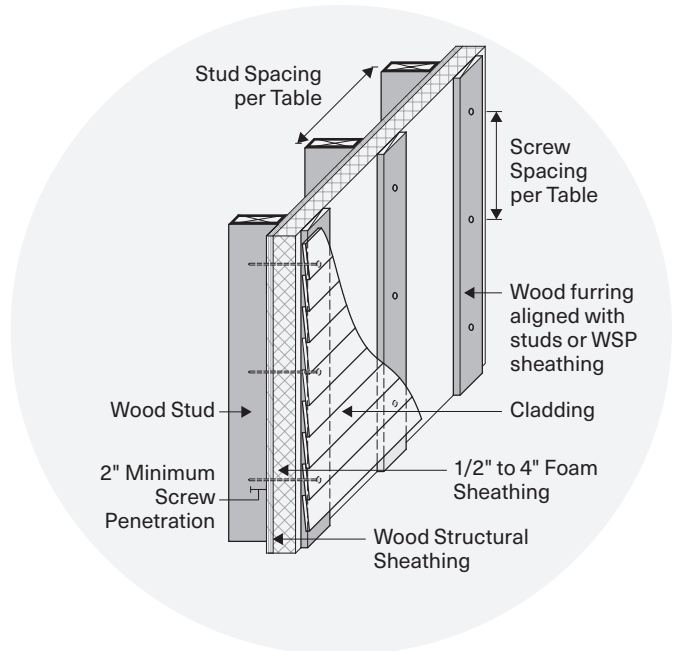


Figure 1—Cladding Over Foam Sheathing

### CORROSION RESISTANCE

- Structural F19 and F23 screws feature a high-adhesion exterior grade coating and are a code compliant alternative to hot-dip galvanized fasteners. The coating is approved for use in ACQ, Fire Retardant Treated (FRT), and other pressure treated lumbers.
- Structural F19 and F23 screws are not designed for use in or near saltwater environments.

TABLE 1: Screw Properties

PRODUCT NAME	HEAD MARKING	UNTHREADED SHANK DIAMETER (IN)	HEAD TYPE	SCREW LENGTH (IN)	THREAD LENGTH (IN)
Structural F19	D19 2.9	0.19	Flat T30	2-7/8	2
	D19 4.5			4-1/2	
	D19 6			6	
	D19 8			8	
Structural F23	D23 2.9	0.23	Flat T40	2-7/8	1.4
	D23 4			4	2-3/8
	D23 5			5	3
	D23 6			6	2-3/4
	D23 8			8	

For the most up to date version of this Technical Guide and more detailed information contained in the Cladding Through Foam Sheathing code compliance report (DrJ TER 1703-04), visit [starbornindustries.com](http://starbornindustries.com). For applications outside the scope of this Technical Guide, an engineered design is required.

TABLE 2: Recommended Screw Spacing to Support Cladding Over Foam Sheathing

STUD SPACING (IN O.C.)	MINIMUM SCREW LENGTH (IN)	FOAM THICKNESS (IN)	MAXIMUM VERTICAL OR HORIZONTAL ON-CENTER SPACING (IN) OF SCREWS ALONG EACH STUD													
			3/8" WSP SHEATHING <sup>1</sup>						3/4" X 3-1/2" WOOD FURRING <sup>1</sup>							
			MAXIMUM CLADDING WEIGHT (PSF) <sup>2</sup>						MAXIMUM CLADDING WEIGHT (PSF) <sup>2</sup>							
			5	10	15	20	25	30	5	10	15	20	25	30		
<b>STRUCTURAL F19</b>																
16	2-7/8	0.5							—							
	4-1/2	0.5							—							
		1.0							—							
		1.5	24					20	16	24					20	16
		2.0		20	16	12	8		24		20	16	12			
	6	1.5							—							
		2.0							—							
		2.5		20	16	12		24		20	16	12				
3.0			16	12		8		24		16	12					
8	4.0	20	12		8	7	20	12		8	6					
24	2-7/8	0.5							—							
	4-1/2	0.5							—							
		1							—							
		1.5	24					20	16	24					20	16
		2.0		16	12	8	7		24		20	12	8			
	6	1.5							—							
		2							—							
		2.5		20	12		8	7	24		20	12				
3			16	12		7	6	24		16	12					
8	4	20	8	7	5	4	—	24	20	12	8	6	5	4		
<b>STRUCTURAL F23</b>																
16	2-7/8	0.5							—							
	4	0.5							—							
		1.0							24							
		1.5							—							
	5	1.5							—							
		2.0							—							
		2.5	24					20	24					20		
	6	2.5							—							
3.0			20	16	12		24		20	16	12					
8	4.0		16	12	8		24		20	16	12	8				
24	2-7/8	0.5							—							
	4	1.0							24							
		1.5							—							
		1.5	24					20	16	24					20	16
	5	2.0							—							
		2.5		20	16	12		24		20	16	12				
		3.0		16	12		8		24		16	12				
	6	2.5							—							
3.0			16	12		8		24		20	12					
8	4.0	16	12	8	7	6	20	12	8	8	7					

- Wood stud, furring, and sheathing shall be designed by others and be adequate size, species, and grade to resist design loads and requirements in accordance with the applicable building code.
  - Select furring type and thickness per cladding manufacturer's installation requirements (e.g., required screw penetration into furring).
  - Maximum allowable cladding weight includes weight of furring, sheathing, cladding, and other supported materials.
  - Stud minimum of 2x nominal thickness.
  - Stud and furring shall be SPF or any species with specific gravity of 0.42 or greater.
  - Furring may be installed vertically or horizontally and installed at the same on-center (o.c.) spacing as the studs. Install screws through furring and into studs with a minimum 2" screw penetration.
  - Furring may be installed horizontally. When the required screw spacing is 6" o.c., install furring at 12" o.c. using 2 screws at each stud. For 8" o.c. screw spacing, install furring at 16" o.c. using 2 screws at each stud. For 12" o.c. screw spacing, install furring at 24" o.c. using 2 screws at each stud.
  - Where multiple screws are used, furring or sheathing shall be of adequate size to provide proper spacing, edge and end distances, as determined in NDS, Section 12.5.
  - Best practice:** Consider using preservative treated wood for horizontal furring or where moisture between the cladding and sheathing is a concern.
- WSP = Wood Structural Panels  
 SPF = Spruce-Pine-Fir  
 psf = pounds per square foot