Dome Foundation Calculations

	Dome — circular	**r**	**d**	**w**			
	inner diameter		72.750			BTW, concrete is ~150 lbs / cu ft.	
	width			3.000			
	inner radius	36.375					
	outer radius	39.375					
					plywood thickness	0.375	
					concrete thickness	6.138	
	Concrete — dodecagon	**r**	**r_max**	**l**	**n**	**theta_over_2**	**in_radians**
	exterior of inner form	34.773	36.000	18.635	12	15	0.2618
	rebar	37.842	39.177	20.280			
	interior of outer form	40.911	42.355	21.924			
	exterior of outer form	41.286	42.743	22.125			
	Sill Plate — icositetragon	**r**	**r_max**	**l**	**n**	**theta_over_2**	**in_radians**
	inner	36.002	36.3125	9.479	24	7.5	0.1309
	outer (=inner+3.5)	39.502	39.843	10.401			
	Tack Strips (across diameters)	**d**	**d_max**				
	exterior of inner form	69.547	72.000				
	exterior of outer form	82.573	85.486		82.573 is ~82 9/16"		
	CLEARANCES						
	C1: dome inner - sill plate inner max		0.06				
	C2: sill plate outer - dome outer		0.13				
	C3: sill plate inner max - concrete inner max		0.31		*not a typo/thinko*		
	C4: concrete outer - sill plate outer max		1.07				
	I: sill plate inner max - concrete inner		1.54				
	E: concrete outer max - sill plate outer max		2.51				
	Input cells are highlighted in green — all other cells are calculated. Concrete inner is calculated but tuned to make its r_max 36". Concrete outer is calculated but tuned to make l for outer of outer form its actually cut value, which is 22 1/8". Sill plate inner calculated but tuned to make r_max for sill plate inner 36 5/16". Tuned values are in blue.						

1:5 Scale Values for 1:5 Scale Drawing

	Dome — circular	**r**	
	inner radius	7.275	
	outer radius	7.875	
	Concrete — dodecagon	**r**	**r_max**
	inner	6.955	7.200
	mean	7.568	
	outer	8.182	8.471
	Sill Plate — icositetragon	**r**	**r_max**
	inner	7.200	7.262
	outer	7.900	7.969