

風圧によるビス引き抜き保持力及びボルトせん断保持力計算<参考>

設定条件
 建築物の高さH=31m (10階相当)
 基準風速Vo=46m/秒 (石垣島)
 帳壁の負のピーク外圧係数Cpe=-2.2 (壁面左右0.1aより外側部分 ※a:平面の短編の長さ)
 帳壁の負のピーク内圧係数Cpi=1.5 (開放型の建築物で風上開放の場合)
 平均風速の鉛直分布係数Er=1.7x(H/250)^{0.1} = 1.7x(31/250)^{0.1} = 1.38 (地表面粗度区分1:海岸地域)

ピーク風力係数Cf=ピーク外圧係数Cpe - ピーク内圧係数Cpi=-2.2-1.5=-3.7
 平均速度圧q(N/m²)=平均風速の鉛直分布係数Er² x 基準風速Vo² x 0.6 = 1.38² x 46² x 0.6 = 2418
 風圧力W(N/m²)=平均速度圧q x ピーク風力係数Cf=2418x(-3.7) = -8,946(N/m²)

アイテム名 (900角)	RYU-SUI 022	Streeam 023-①	Streeam 023-②	Streeam 023-③	Streeam 023-④	BRICKS 026-①	BRICKS 026-②	aero 027-①	aero 027-②	Waffle 028-①	Waffle 028-②	UROCO 029-①	UROCO 029-②	UROCO 029-③	KITE 030	Medal 032-①	Medal 032-②	WARP!! 024	SHELL 025	WOOL0% 031	NEST 001	ROPE 005	leaves 007	SIPPOU 011	HA-MON 033	Sponge 034	Forest 002	BLOCK 006	ROCK 035	
開口率	39.4%	27.4%	27.4%	41.2%	41.2%	39.0%	40.4%	23.5%	42.7%	40.1%	39.3%	44.5%	44.3%	44.4%	24.6%	21.9%	32.3%	36.8%	33.0%	47.2%	28.0%	27.7%	23.9%	51.4%	37.6%	35.7%	18.5%	30.3%	46.4%	
重量 (type Cの場合)	4.0kg	4.5kg	4.5kg	3.9kg	3.9kg	4.0kg	3.9kg	4.7kg	3.8kg	4.0kg	4.0kg	3.8kg	3.8kg	3.8kg	4.6kg	4.7kg	4.3kg	4.1kg	4.3kg	3.6kg	4.3kg	4.3kg	4.5kg	3.5kg	4.1kg	4.1kg	4.7kg	4.2kg	3.7kg	
受風面積 (m ²)	0.49	0.59	0.59	0.48	0.48	0.49	0.48	0.62	0.46	0.49	0.49	0.45	0.45	0.45	0.61	0.63	0.55	0.51	0.54	0.43	0.58	0.59	0.62	0.39	0.51	0.52	0.66	0.56	0.43	
風圧力W (N/m ²)	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	
負担風圧力N	-4,393	-5,264	-5,264	-4,258	-4,258	-4,422	-4,320	-5,542	-4,150	-4,342	-4,400	-4,024	-4,039	-4,030	-5,464	-5,661	-4,906	-4,578	-4,858	-3,829	-5,218	-5,241	-5,512	-3,521	-4,520	-4,656	-5,903	-5,050	-3,885	
ビス引き抜き保持力1(N) (SU5410/呼び径4/アルミ板2.0)	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300
ビス本数	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
総引き抜き保持力1 (N)	20,800	20,800	20,800	20,800	20,800	20,800	20,800	20,800	20,800	20,800	20,800	20,800	20,800	20,800	20,800	20,800	20,800	20,800	20,800	20,800	20,800	20,800	20,800	20,800	20,800	20,800	20,800	20,800	20,800	20,800
安全率	4.7	4.0	4.0	4.9	4.9	4.7	4.8	3.8	5.0	4.8	4.7	5.2	5.1	5.2	3.8	3.7	4.2	4.5	4.3	5.4	4.0	4.0	3.8	5.9	4.6	4.5	3.5	4.1	5.4	
ビス引き抜き保持力2(N) (SU5410/呼び径4/スチール板1.6)	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600
ビス本数	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
総引き抜き保持力1 (N)	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600
安全率	9.5	7.9	7.9	9.8	9.8	9.4	9.6	7.5	10.0	9.6	9.5	10.3	10.3	10.3	7.6	7.3	8.5	9.1	8.6	10.9	8.0	7.9	7.5	11.8	9.2	8.9	7.0	8.2	10.7	
ボルトせん断力(N) (強力M6/強度区分8.8)	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600
ボルト本数	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
総せん断保持力1 (N)	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600
安全率	9.5	7.9	7.9	9.8	9.8	9.4	9.6	7.5	10.0	9.6	9.5	10.3	10.3	10.3	7.6	7.3	8.5	9.1	8.6	10.9	8.0	7.9	7.5	11.8	9.2	8.9	7.0	8.2	10.7	

	RYU-SUI 022	Streeam 023-①	Streeam 023-②	Streeam 023-③	Streeam 023-④	BRICKS 026-①	BRICKS 026-②	aero 027-①	aero 027-②	Waffle 028-①	Waffle 028-②	UROCO 029-①	UROCO 029-②	UROCO 029-③	KITE 030	Medal 032-①	Medal 032-②	WARP!! 024	SHELL 025	WOOL0% 031	NEST 001	ROPE 005	leaves 007	SIPPOU 011	HA-MON 033	Sponge 034	Forest 002	BLOCK 006	ROCK 035	
開口率	40.6%	28.2%	28.2%	42.5%	42.5%	40.2%	41.6%	24.3%	44.1%	41.3%	40.5%	45.9%	45.6%	45.8%	25.4%	22.6%	33.4%	38.0%	34.0%	48.6%	28.7%	28.5%	24.7%	53.0%	38.8%	36.9%	19.1%	31.3%	47.8%	
重量 (type Cの場合)	7.8kg	9.0kg	9.0kg	7.6kg	7.6kg	7.9kg	7.7kg	9.4kg	7.5kg	7.8kg	7.8kg	7.3kg	7.3kg	7.3kg	9.3kg	9.6kg	8.5kg	8.1kg	8.5kg	7.0kg	9.0kg	9.0kg	9.4kg	6.6kg	8.0kg	8.2kg	9.9kg	8.7kg	7.1kg	
受風面積 (m ²)	1.08	1.31	1.31	1.05	1.05	1.09	1.06	1.38	1.02	1.07	1.08	0.99	0.99	0.99	1.36	1.41	1.21	1.13	1.20	0.94	1.30	1.30	1.37	0.86	1.12	1.15	1.47	1.25	0.95	
風圧力W (N/m ²)	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	-8,946	
負担風圧力N	-9,680	-11,703	-11,703	-9,371	-9,371	-9,750	-9,514	-12,350	-9,120	-9,565	-9,698	-8,827	-8,862	-8,841	-12,170	-12,626	-10,860	-10,114	-10,761	-8,374	-11,623	-11,650	-12,279	-7,657	-9,983	-10,291	-13,186	-11,209	-8,509	
ビス引き抜き保持力1(N) (SU5410/呼び径4/アルミ板2.0)	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300
ビス本数	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
総引き抜き保持力1 (N)	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000
安全率	2.7	2.2	2.2	2.8	2.8	2.7	2.7	2.1	2.9	2.7	2.7	2.9	2.9	2.9	2.1	2.1	2.4	2.6	2.4	3.1	2.2	2.2	2.1	3.4	2.6	2.5	2.0	2.3	3.1	
ビス引き抜き保持力2(N) (SU5410/呼び径4/スチール板1.6)	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600
ビス本数	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
総引き抜き保持力1 (N)	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000
安全率	5.4	4.4	4.4	5.5	5.5	5.3	5.5	4.2	5.7	5.4	5.4	5.9	5.9	5.9	4.3	4.1	4.8	5.1	4.8	6.2	4.5	4.5	4.2	6.8	5.2	5.1	3.9	4.6	6.1	
ボルトせん断力(N) (強力M6/強度区分8.8)	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600
ボルト本数	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
総せん断保持力1 (N)	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000
安全率	5.4	4.4	4.4	5.5	5.5	5.3	5.5	4.2	5.7	5.4	5.4	5.9	5.9	5.9	4.3	4.1	4.8	5.1	4.8	6.2	4.5	4.5	4.2	6.8	5.2	5.1	3.9	4.6	6.1	