



SIP No. 2080

Subject: Roof Uplift Load Design Chart 8a — High Wind Regions

Date: April 2013

R-Control SIP roofs are connected with R-Control Screws to underlying support. The spacing of R-Control Screws to resist wind uplift loads is typically determined in accordance with Load Design Chart #8. However, some regions of the U.S. require higher wind resistance. This is most commonly in coastal regions.

The attached Load Design Chart #8a provides R-Control Screw spacing requirements for wind speeds up to 180 mph as required by the 2012 IBC.

Roof - Uplift Loads LOAD DESIGN CHART #8a Maximum Spacing of R-Control Wood Screws At Supports - INCHES¹												
ROOF PITCH	SIP SPAN ² (FT)	2009 IBC ³ 2009 IRC/2012 IRC WIND SPEED, V _{ASD}						2012 IBC ⁴ WIND SPEED, V _{ULT}				
		100 MPH	110 MPH	120 MPH	130 MPH	140 MPH	150 MPH	120 MPH	140 MPH	150 MPH	160 MPH	180 MPH
		1.5:12	8	12	9	8	6	5	4	12	9	8
12	9		7	6	5	4	3	9	7	6	5	4
16	8		6	5	4	3	3	8	6	5	4	3
20	6		5	4	3	3	2	6	5	4	3	3
24	6		4	3	3	2	2	6	4	3	3	2
3:12	8	12	9	7	6	5	4	12	9	7	6	5
	12	9	7	6	5	4	3	9	7	6	5	4
	16	8	6	5	4	3	3	8	6	5	4	3
	20	6	5	4	3	3	2	6	5	4	3	3
	24	5	4	3	3	2	2	5	4	3	3	2
6:12	8	14	11	9	7	6	5	14	11	9	7	6
	12	9	7	6	5	4	3	9	7	6	5	4
	16	8	6	5	4	3	3	8	6	5	4	3
	20	6	5	4	3	3	2	6	5	4	3	3
	24	5	4	3	3	2	2	5	4	3	2	2
9:12	8	12	10	8	6	5	4	12	10	8	6	5
	12	9	7	6	5	4	3	9	7	6	5	4
	16	7	6	4	4	3	2	7	6	4	4	3
	20	6	5	4	3	2	2	6	5	4	3	2
	24	5	4	3	2	2	2	5	4	3	2	2
12:12	8	11	8	7	6	5	4	11	8	7	6	5
	12	8	6	5	4	3	3	8	6	5	4	3
	16	6	5	4	3	3	2	6	5	4	3	3
	20	5	4	3	3	2	2	5	4	3	3	2
	24	4	3	3	2	2	1	4	3	3	2	2

- FASTENER SPACING IS BASED ON FASTENER HEAD PULL-THROUGH AND WITHDRAWAL STRENGTH OF R-CONTROL WOOD SCREWS TESTED IN ACCORDANCE WITH ASTM D1037. THE ALLOWABLE WITHDRAWAL STRENGTH AND PULL-THROUGH STRENGTH WERE TAKEN AS THE AVERAGE ULTIMATE LOAD DIVIDED BY A FACTOR OF SAFETY OF 5.0 AND A LOAD DURATION FACTOR OF 1.6 (ALLOWABLE PULL-THROUGH STRENGTH = 179 LBF, ALLOWABLE WITHDRAWAL STRENGTH - 200 LBF). FASTENERS INSTALLED AT 3-INCHES ON-CENTER OR LESS SHALL BE STAGGERED.
- TABLE VALUES APPLY TO SIMPLY SUPPORTED SIP ROOF MEMBERS HAVING AN OVERHANG NOT TO EXCEED 24-INCHES. WOOD SUPPORT TO HAVE A MINIMUM SPECIFIC GRAVITY, G=0.42 (SPRUCE-PINE-FUR). SCREW SHALL HAVE SUFFICIENT LENGTH AND BE INSTALLED SO THAT IT PENETRATES THE WOOD SUPPORT A MINIMUM OF 1.5-INCHES.
- THREE-SECOND-GUST WIND SPEED BASED ON A BUILDING HEIGHT OF 40-FEET, ZONE 2E, IMPORTANCE FACTOR, L_w=1.0 AND TOPOGRAPHIC FACTOR, K_{z1} = 1.0, INTERNAL PRESSURE COEFFICIENT, GC_{pl}=0.18 IN ACCORDANCE WITH ASCE 7, 2005 EDITION, SECTION 6.5.12.2.2 (MAIN WIND FORCE RESISTING SYSTEM, LOW-RISE BUILDING). A MINIMUM ROOF ASSEMBLY DEAD LOAD OF 10 PSF IS CONSIDERED IN THE TABULATED VALUES (UPLIFT PRESSURE REDUCE BY 0.6 TIMES 10 PSF).
- THREE-SECOND-GUST WIND SPEED; BASED ON A BUILDING HEIGHT OF 40- FEET, ZONE 2E, IMPORTANCE FACTOR, L_w=1.0 AND TOPOGRAPHIC FACTOR, K_{z1}=1.0, INTERNAL PRESSURE COEFFICIENT, GC_{pl}=0.18 IN ACCORDANCE WITH ASCE 7, 2010 EDITION, CHAPTER 28 (WIND LOADS ON BUILDING - MWFRS (ENVELOPE PROCEDURE). A MINIMUM ROOF ASSEMBLY DEAD LOAD OF 10 PSF IS CONSIDERED IN THE TABULATED VALUES (UPLIFT PRESSURE REDUCE BY 0.6 TIMES 10 PSF).