

February 20, 2015

Everest Solar Systems, LLC
3809 Ocean Ranch Blvd, Suite 111
Oceanside, CA 92056
Attn: Andy Neshat



RE: *CrossRail PV Panel Mounting System Evaluation*

To whom it may concern:

Per your request, Moment Engineering + Design has performed a comprehensive structural analysis of the Everest Solar CrossRail Solar PV Mounting System for typical installations in the District of Columbia. When installed per the conditions and design criteria described herein, the CrossRail Solar PV Mounting System is compliant with the sections of the design reference documents noted below.

Design Reference Documents

- *2012 International Building Code with District of Columbia Municipal Regulations Construction Code Supplement of 2013 (DCMR 12A-2013)*
- *ASCE/SEI 7-10 – Minimum Design Loads for Buildings and Other Structures*
- *2010 Aluminum Design Manual*, by the Aluminum Association
- Section and materials data provided by Everest Solar Systems
 - Rail section properties appear in the appendix to this report

Overview

The CrossRail PV-panel roof mounting system consists of extruded aluminum support rails spanning between points of attachment on an existing roof structure. This analysis is limited to capacity of the CrossRail only. Attachment of the CrossRail Mounting System to the existing roof structure shall be the responsibility of the installer, and should be analyzed by a registered design professional where required by the local authority having jurisdiction.

Methods & Design Parameters

Applicable combinations of dead, wind, snow, and seismic loads were evaluated in accordance with current code requirements to determine allowable rail span lengths, based on assumptions of single-span conditions and allowable deflection of $L/60$.

Design wind pressures were determined using Components and Cladding calculations in Chapter 26-30 of ASCE 7-10, using the loading parameters listed below. Configurations not conforming to these parameters will require additional analysis. Calculation of applicable roof snow load should be based upon ground snow load maps and equations and factors of ASCE 7-10, Chapter 7 and applicable sections of the DCMR 12A-2013. For designated Case Study areas noted in the 2012 International Building Code with District of Columbia Municipal Regulations Construction Code

Supplement of 2013 (DCMR 12A-2013), refer to local jurisdiction requirements for snow and wind load determination. Seismic criteria were considered per provisions of ASCE 7-10 Chapter 13 with parameters specified below. While seismic effects did not appear to govern the capacity of this system, applicable seismic detailing requirements should be satisfied when installed per the manufacturer instructions and additional installation notes specified herein.

Loading Parameters:

- Ground snow load: Varies
- Ultimate 3-second gust wind speed (V): 115-180 mph
- Building roof mean height: 30 ft. or less
- Roof wind pressure region: Zone 1 - Zone 3
- Structural risk category: II
- Wind exposure: B, C, D
- Seismic site class: D
- Seismic design category: A through E
- 0.2s MCE_R ground motion parameter (S_S): Not to exceed 2.000
- 1s MCE_R ground motion parameter (S_1): Not to exceed 1.250
- Component importance factor (I_p): 1.0
- Component acceleration factor, (a_p): 1.0
- Component response modification factor (R_p): 1.5
- Panel orientation: Portrait or Landscape
- Panel installation angle: Flush with roof slope
- Roof slope (θ): 0-7°, >7-27°, >27-45°

Design Results

The allowable span lengths of the system are principally controlled by applicable wind and snow loads to the structure. Refer to the CrossRail span tables in the appendix to this document for recommended rail configurations based on combinations of these loading parameters. Note that reaction loads provided in the attached tables are only applicable when used with the corresponding span length recommendations provided therein. These reactions may be scaled linearly when shorter spans are used.

Installation Notes

The following guidelines apply to all installations using the CrossRail product line:

- Tables assume two independent support rails per row with either panel orientation.
- Maximum end cantilever of aluminum support rail shall not exceed one-third (1/3) of allowable span in the roof wind pressure zone of the cantilever.
- Rails shall be continuous (not spliced) over a minimum of two supports.
- Installation over roof overhangs or within 10" of any roof edge is not advised.
- Observe all local jurisdictional requirements regarding roof setback requirements.
- Ensure that actual span length does not exceed capacity of roof attachment.

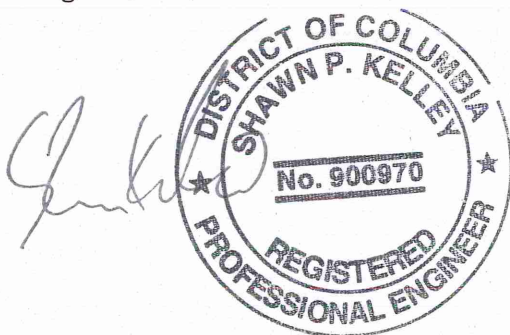
Summary

This assessment has provided design validation for code-compliant installations of the CrossRail PV Mounting System in the District of Columbia. For the configurations and design loadings noted previously, the attached span tables represent maximum span lengths based on allowable stresses and deflection criteria. For all other configurations, refer to Everest Solar Systems for engineering support.

This report does not provide analysis of roof attachment hardware, nor of any existing structures, as may be required by the local authority having jurisdiction.

We appreciate the opportunity to have assisted you with this project. Should you have any further questions regarding this analysis, please feel free to contact us by phone or email.

Best Regards,



Shawn P. Kelley, P.E.

Principal

moment ENGINEERING + DESIGN

spkelley@msegllc.com

		Table 1: Maximum Span Length (in.) - Wind Exposure B Condition								
Exposure B	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)							
			0	10	20	30	40	50		
ROOFS 0° TO 7°	Roof Wind Pressure Zone 1	115	X80	128	118	108	99	87	78	
			X48	96	88	81	72	63	56	
		120	X80	128	118	108	99	87	78	
			X48	96	88	81	72	63	56	
		130	X80	128	118	108	99	87	78	
			X48	95	88	81	72	63	56	
		140	X80	128	118	108	99	87	78	
			X48	90	88	81	72	63	56	
		150	X80	125	117	107	99	87	78	
			X48	85	85	80	72	63	56	
		160	X80	120	116	106	99	87	78	
			X48	81	81	80	71	63	56	
		170	X80	114	114	105	99	87	78	
			X48	78	78	78	70	63	56	
		180	X80	108	108	104	97	87	78	
			X48	74	74	74	69	63	56	
		Roof Wind Pressure Zone 2	115	X80	126	118	108	99	87	78
				X48	86	86	81	72	63	56
120	X80		122	118	108	99	87	78		
	X48		83	83	81	72	63	56		
130	X80		116	116	108	99	87	78		
	X48		79	79	79	72	63	56		
140	X80		107	107	107	99	87	78		
	X48		73	73	73	72	63	56		
150	X80		100	100	100	99	87	78		
	X48		68	68	68	68	63	56		
160	X80		93	93	93	93	87	78		
	X48		64	64	64	64	63	56		
170	X80		88	88	88	88	87	78		
	X48		60	60	60	60	60	56		
180	X80		83	83	83	83	83	78		
	X48		56	56	56	56	56	56		
Roof Wind Pressure Zone 3	115		X80	106	106	106	99	87	78	
			X48	73	73	73	72	63	56	
	120	X80	102	102	102	99	87	78		
		X48	69	69	69	69	63	56		
	130	X80	93	93	93	93	87	78		
		X48	64	64	64	64	63	56		
	140	X80	87	87	87	87	87	78		
		X48	59	59	59	59	59	56		
	150	X80	81	81	81	81	81	78		
		X48	55	55	55	55	55	55		
	160	X80	76	76	76	76	76	76		
		X48	52	52	52	52	52	52		
	170	X80	71	71	71	71	71	71		
		X48	48	48	48	48	48	48		
	180	X80	67	67	67	67	67	67		
		X48	46	46	46	46	46	46		

		Table 2: Maximum Uplift (lb.) - Wind Exposure B Condition								
Exposure	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)							
			0	10	20	30	40		50	
ROOFS 0° TO 7°	Roof Wind Pressure Zone 1	115	X80	-371	-340	-311	-287	-251	-226	
			X48	-278	-255	-233	-207	-181	-163	
		120	X80	-408	-374	-343	-315	-276	-248	
			X48	-305	-280	-257	-228	-199	-179	
		130	X80	-487	-447	-409	-377	-330	-297	
			X48	-360	-335	-307	-272	-238	-214	
		140	X80	-574	-527	-482	-443	-388	-350	
			X48	-401	-395	-361	-320	-280	-253	
		150	X80	-651	-609	-558	-514	-450	-406	
			X48	-443	-443	-418	-372	-325	-293	
		160	X80	-714	-690	-635	-591	-517	-466	
			X48	-486	-486	-475	-425	-374	-336	
		170	X80	-775	-773	-714	-668	-588	-529	
			X48	-529	-529	-529	-476	-425	-382	
		180	X80	-824	-824	-797	-743	-663	-597	
			X48	-563	-563	-563	-528	-479	-431	
		Roof Wind Pressure Zone 2	115	X80	-644	-601	-550	-506	-443	-399
				X48	-438	-438	-412	-366	-320	-288
	120		X80	-685	-660	-604	-555	-486	-438	
			X48	-466	-466	-452	-401	-351	-316	
	130		X80	-767	-767	-715	-658	-576	-518	
			X48	-522	-522	-522	-475	-416	-374	
	140		X80	-831	-831	-831	-770	-674	-607	
			X48	-568	-568	-568	-556	-487	-438	
150	X80		-893	-893	-893	-888	-778	-700		
	X48		-610	-610	-610	-610	-562	-506		
160	X80		-956	-956	-956	-956	-890	-801		
	X48		-653	-653	-653	-653	-643	-579		
170	X80		-1018	-1018	-1018	-1018	-1008	-908		
	X48		-695	-695	-695	-695	-695	-656		
180	X80		-1080	-1080	-1080	-1080	-1080	-1022		
	X48		-738	-738	-738	-738	-738	-738		
Roof Wind Pressure Zone 3	115	X80	-837	-837	-837	-782	-685	-616		
		X48	-573	-573	-573	-565	-494	-445		
	120	X80	-876	-876	-876	-854	-748	-673		
		X48	-599	-599	-599	-599	-540	-486		
	130	X80	-953	-953	-953	-953	-884	-796		
		X48	-651	-651	-651	-651	-639	-575		
	140	X80	-1029	-1029	-1029	-1029	-1029	-927		
		X48	-703	-703	-703	-703	-703	-670		
	150	X80	-1105	-1105	-1105	-1105	-1105	-1069		
		X48	-755	-755	-755	-755	-755	-755		
	160	X80	-1182	-1182	-1182	-1182	-1182	-1182		
		X48	-807	-807	-807	-807	-807	-807		
	170	X80	-1258	-1258	-1258	-1258	-1258	-1258		
		X48	-858	-858	-858	-858	-858	-858		
	180	X80	-1334	-1334	-1334	-1334	-1334	-1334		
		X48	-910	-910	-910	-910	-910	-910		

		Table 3: Maximum Downforce (lb.) - Wind Exposure B Condition								
Exposure B	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)							
			0	10	20	30	40		50	
ROOFS 0° TO 7°	Roof Wind Pressure Zone 1	115	X80	365	472	616	742	848	942	
			X48	273	353	461	536	612	680	
		120	X80	365	472	616	742	848	942	
			X48	273	353	461	536	612	680	
		130	X80	365	472	616	742	848	942	
			X48	270	353	461	536	612	680	
		140	X80	365	472	616	742	848	942	
			X48	255	353	461	536	612	680	
		150	X80	366	476	620	742	848	942	
			X48	249	346	464	536	612	680	
		160	X80	386	496	638	764	848	942	
			X48	262	349	478	550	612	680	
		170	X80	406	517	658	785	848	942	
			X48	277	354	488	559	612	680	
		180	X80	421	518	679	800	862	942	
			X48	288	354	480	569	623	680	
		Roof Wind Pressure Zone 2	115	X80	359	472	616	742	848	942
				X48	244	344	461	536	612	680
120	X80		348	472	616	742	848	942		
	X48		237	333	461	536	612	680		
130	X80		329	463	616	742	848	942		
	X48		224	315	450	536	612	680		
140	X80		304	429	612	742	848	942		
	X48		208	293	418	536	612	680		
150	X80		290	404	575	742	848	942		
	X48		198	276	393	510	612	680		
160	X80		300	399	559	718	848	942		
	X48		205	273	382	491	612	680		
170	X80		311	397	547	697	848	942		
	X48		212	271	374	476	585	680		
180	X80		323	397	538	679	821	942		
	X48		220	271	367	464	561	680		
Roof Wind Pressure Zone 3	115		X80	302	425	607	742	848	942	
			X48	207	291	415	536	612	680	
	120	X80	289	407	581	742	848	942		
		X48	198	278	397	520	612	680		
	130	X80	266	375	535	700	848	942		
		X48	182	256	365	479	612	680		
	140	X80	247	347	496	649	847	942		
		X48	169	237	339	443	579	680		
	150	X80	235	328	466	605	789	942		
		X48	161	224	318	413	539	665		
	160	X80	243	324	453	583	739	911		
		X48	166	221	310	398	504	622		
	170	X80	252	322	444	566	695	857		
		X48	172	220	303	386	474	585		
	180	X80	262	322	437	552	667	809		
		X48	179	220	298	376	455	552		

Exposure B		Table 4: Maximum Shear (lb.) - Wind Exposure B Condition								
		Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
				0	10	20	30	40	50	
ROOFS 0° TO 7°	Roof Wind Pressure Zone 1	115	X80	9	36	59	78	89	99	
			X48	6	27	44	56	64	71	
		120	X80	9	36	59	78	89	99	
			X48	6	27	44	56	64	71	
		130	X80	9	36	59	78	89	99	
			X48	6	27	44	56	64	71	
		140	X80	9	36	59	78	89	99	
			X48	6	27	44	56	64	71	
		150	X80	8	36	59	78	89	99	
			X48	6	26	44	56	64	71	
		160	X80	8	36	58	78	89	99	
			X48	6	25	44	56	64	71	
		170	X80	8	35	58	78	89	99	
			X48	5	24	43	55	64	71	
		180	X80	7	33	57	77	89	99	
			X48	5	23	40	54	64	71	
		Roof Wind Pressure Zone 2	115	X80	9	36	59	78	89	99
				X48	6	26	44	56	64	71
	120		X80	8	36	59	78	89	99	
			X48	6	26	44	56	64	71	
	130		X80	8	36	59	78	89	99	
			X48	5	24	43	56	64	71	
	140		X80	7	33	59	78	89	99	
			X48	5	22	40	56	64	71	
	150		X80	7	31	55	78	89	99	
			X48	5	21	37	54	64	71	
	160		X80	6	29	51	73	89	99	
			X48	4	20	35	50	64	71	
170	X80		6	27	48	69	89	99		
	X48		4	18	33	47	61	71		
180	X80		6	25	45	65	85	99		
	X48		4	17	31	44	58	71		
Roof Wind Pressure Zone 3	115		X80	7	33	58	78	89	99	
			X48	5	22	40	56	64	71	
	120	X80	7	31	56	78	89	99		
		X48	5	21	38	55	64	71		
	130	X80	6	29	51	74	89	99		
		X48	4	20	35	50	64	71		
	140	X80	6	27	47	68	89	99		
		X48	4	18	32	47	61	71		
	150	X80	5	25	44	64	83	99		
		X48	4	17	30	43	57	70		
	160	X80	5	23	41	60	78	96		
		X48	3	16	28	41	53	65		
	170	X80	5	22	39	56	73	90		
		X48	3	15	27	38	50	61		
	180	X80	5	21	37	53	69	85		
		X48	3	14	25	36	47	58		

		Table 5: Maximum Span Length (in.) - Wind Exposure C Condition							
Exposure C	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
ROOFS 0° TO 7°	Roof Wind Pressure Zone 1	115	X80	128	118	108	99	87	78
			X48	92	88	81	72	63	56
		120	X80	128	118	108	99	87	78
			X48	89	88	81	72	63	56
		130	X80	123	117	107	99	87	78
			X48	84	84	80	72	63	56
		140	X80	117	115	106	99	87	78
			X48	79	79	79	71	63	56
		150	X80	109	109	104	97	87	78
	X48		75	75	75	69	63	56	
	160	X80	102	102	102	96	87	78	
		X48	70	70	70	68	62	56	
	170	X80	96	96	96	94	86	78	
		X48	66	66	66	66	61	56	
	180	X80	91	91	91	91	84	78	
		X48	62	62	62	62	60	56	
	Roof Wind Pressure Zone 2	115	X80	110	110	108	99	87	78
			X48	75	75	75	72	63	56
120		X80	105	105	105	99	87	78	
		X48	72	72	72	72	63	56	
130		X80	97	97	97	97	87	78	
		X48	66	66	66	66	63	56	
140		X80	90	90	90	90	87	78	
		X48	61	61	61	61	61	56	
150		X80	84	84	84	84	84	78	
		X48	57	57	57	57	57	56	
160		X80	78	78	78	78	78	78	
		X48	54	54	54	54	54	54	
170		X80	74	74	74	74	74	74	
		X48	50	50	50	50	50	50	
180		X80	70	70	70	70	70	70	
		X48	47	47	47	47	47	47	
Roof Wind Pressure Zone 3		115	X80	89	89	89	89	87	78
			X48	61	61	61	61	61	56
	120	X80	85	85	85	85	85	78	
		X48	58	58	58	58	58	56	
	130	X80	79	79	79	79	79	78	
		X48	54	54	54	54	54	54	
	140	X80	73	73	73	73	73	73	
		X48	50	50	50	50	50	50	
	150	X80	68	68	68	68	68	68	
		X48	46	46	46	46	46	46	
	160	X80	64	64	64	64	64	64	
		X48	43	43	43	43	43	43	
	170	X80	60	60	60	60	60	60	
		X48	41	41	41	41	41	41	
	180	X80	57	57	57	57	57	57	
		X48	39	39	39	39	39	39	

		Table 6: Maximum Uplift (lb.) - Wind Exposure C Condition								
C	Exposure	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
				0	10	20	30	40	50	
ROOFS 0° TO 7°	Roof Wind Pressure Zone 1	115	X80	-539	-495	-453	-416	-365	-328	
			X48	-385	-371	-339	-301	-263	-237	
		120	X80	-591	-542	-496	-457	-400	-360	
			X48	-409	-406	-372	-330	-289	-260	
		130	X80	-675	-639	-586	-543	-475	-428	
			X48	-459	-459	-439	-392	-343	-309	
		140	X80	-750	-737	-679	-636	-557	-501	
			X48	-510	-510	-509	-454	-402	-362	
		150	X80	-812	-812	-776	-724	-644	-580	
			X48	-555	-555	-555	-515	-465	-419	
		160	X80	-870	-870	-870	-816	-738	-664	
			X48	-594	-594	-594	-579	-527	-480	
		170	X80	-926	-926	-926	-909	-827	-753	
			X48	-633	-633	-633	-633	-588	-544	
		180	X80	-984	-984	-984	-984	-917	-848	
			X48	-672	-672	-672	-672	-652	-605	
		Roof Wind Pressure Zone 2	115	X80	-805	-805	-787	-724	-634	-571
				X48	-551	-551	-551	-523	-458	-412
	120		X80	-843	-843	-843	-793	-694	-625	
			X48	-577	-577	-577	-573	-501	-451	
	130		X80	-917	-917	-917	-917	-820	-738	
			X48	-627	-627	-627	-627	-592	-533	
	140		X80	-991	-991	-991	-991	-957	-861	
			X48	-677	-677	-677	-677	-677	-622	
	150		X80	-1065	-1065	-1065	-1065	-1065	-992	
			X48	-727	-727	-727	-727	-727	-717	
	160		X80	-1139	-1139	-1139	-1139	-1139	-1134	
X48			-777	-777	-777	-777	-777	-777		
170	X80		-1212	-1212	-1212	-1212	-1212	-1212		
	X48		-827	-827	-827	-827	-827	-827		
180	X80		-1285	-1285	-1285	-1285	-1285	-1285		
	X48		-877	-877	-877	-877	-877	-877		
Roof Wind Pressure Zone 3	115		X80	-999	-999	-999	-999	-972	-875	
			X48	-683	-683	-683	-683	-683	-632	
	120	X80	-1044	-1044	-1044	-1044	-1044	-955		
		X48	-713	-713	-713	-713	-713	-690		
	130	X80	-1135	-1135	-1135	-1135	-1135	-1126		
		X48	-775	-775	-775	-775	-775	-775		
	140	X80	-1224	-1224	-1224	-1224	-1224	-1224		
		X48	-836	-836	-836	-836	-836	-836		
	150	X80	-1314	-1314	-1314	-1314	-1314	-1314		
		X48	-897	-897	-897	-897	-897	-897		
	160	X80	-1404	-1404	-1404	-1404	-1404	-1404		
		X48	-958	-958	-958	-958	-958	-958		
	170	X80	-1494	-1494	-1494	-1494	-1494	-1494		
		X48	-1019	-1019	-1019	-1019	-1019	-1019		
	180	X80	-1583	-1583	-1583	-1583	-1583	-1583		
		X48	-1080	-1080	-1080	-1080	-1080	-1080		

Table 7: Maximum Downforce (lb.) - Wind Exposure C Condition									
Exposure C	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	365	472	616	742	848	942	
		X48	261	353	461	536	612	680	
	120	X80	365	472	616	742	848	942	
		X48	253	353	461	536	612	680	
	130	X80	374	484	627	750	848	942	
		X48	254	348	470	542	612	680	
	140	X80	397	508	649	778	848	942	
		X48	270	352	486	555	612	680	
	150	X80	418	519	674	796	857	942	
		X48	286	355	483	566	619	680	
	160	X80	434	517	692	814	884	942	
		X48	297	354	473	578	632	680	
	170	X80	453	520	684	832	905	957	
		X48	309	355	467	580	644	691	
	180	X80	472	524	679	834	923	986	
		X48	323	358	464	570	656	704	
	Roof Wind Pressure Zone 2	115	X80	314	442	616	742	848	942
			X48	215	302	431	536	612	680
120		X80	300	422	603	742	848	942	
		X48	205	289	412	536	612	680	
130		X80	294	403	569	735	848	942	
		X48	201	275	389	502	612	680	
140		X80	306	398	552	705	848	942	
		X48	209	272	377	482	600	680	
150		X80	320	397	541	684	828	942	
		X48	219	271	369	467	565	680	
160		X80	333	397	531	665	800	942	
		X48	227	271	363	454	546	646	
170		X80	347	399	525	651	778	904	
		X48	237	272	358	445	531	617	
180		X80	363	402	521	641	760	879	
		X48	247	275	356	437	518	600	
Roof Wind Pressure Zone 3		115	X80	254	358	510	668	848	942
			X48	173	244	349	456	596	680
	120	X80	243	342	489	640	835	942	
		X48	166	234	334	437	570	680	
	130	X80	239	326	461	596	769	942	
		X48	163	223	315	407	525	648	
	140	X80	248	323	448	573	713	880	
		X48	169	220	306	391	487	601	
	150	X80	260	323	439	556	672	820	
		X48	178	220	300	379	459	560	
	160	X80	271	322	431	541	650	768	
		X48	185	220	294	369	443	524	
	170	X80	282	324	427	529	632	734	
		X48	193	221	291	361	431	501	
	180	X80	295	327	424	521	617	714	
		X48	201	223	289	355	421	487	

Table 8: Maximum Shear (lb.) - Wind Exposure C Condition									
Exposure C	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	9	36	59	78	89	99	
		X48	6	27	44	56	64	71	
	120	X80	9	36	59	78	89	99	
		X48	6	27	44	56	64	71	
	130	X80	8	36	59	78	89	99	
		X48	6	26	44	56	64	71	
	140	X80	8	35	58	78	89	99	
		X48	5	24	43	56	64	71	
	150	X80	7	34	57	77	89	99	
		X48	5	23	41	55	64	71	
	160	X80	7	31	56	76	89	99	
		X48	5	21	38	54	64	71	
	170	X80	6	30	53	74	88	99	
		X48	4	20	36	52	63	71	
	180	X80	6	28	50	71	87	99	
		X48	4	19	34	49	62	71	
	Roof Wind Pressure Zone 2	115	X80	7	34	59	78	89	99
			X48	5	23	41	56	64	71
120		X80	7	32	58	78	89	99	
		X48	5	22	39	56	64	71	
130		X80	7	30	53	76	89	99	
		X48	4	20	36	52	64	71	
140		X80	6	28	49	71	89	99	
		X48	4	19	34	48	63	71	
150		X80	6	26	46	66	86	99	
		X48	4	18	31	45	59	71	
160		X80	5	24	43	62	81	99	
		X48	4	16	29	42	55	68	
170		X80	5	23	40	58	76	93	
		X48	3	15	28	40	52	64	
180		X80	5	21	38	55	71	88	
		X48	3	15	26	37	49	60	
Roof Wind Pressure Zone 3		115	X80	6	27	49	70	89	99
			X48	4	19	33	48	63	71
	120	X80	6	26	47	67	88	99	
		X48	4	18	32	46	60	71	
	130	X80	5	24	43	62	81	99	
		X48	4	17	29	42	55	68	
	140	X80	5	22	40	57	75	92	
		X48	3	15	27	39	51	63	
	150	X80	5	21	37	54	70	86	
		X48	3	14	25	37	48	59	
	160	X80	4	20	35	50	65	81	
		X48	3	13	24	34	45	55	
	170	X80	4	18	33	47	62	76	
		X48	3	13	22	32	42	52	
	180	X80	4	17	31	45	58	72	
		X48	3	12	21	30	40	49	

		Table 9: Maximum Span Length (in.) - Wind Exposure D Condition								
Exposure	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)							
			0	10	20	30	40	50		
ROOFS 0° TO 7°	Roof Wind Pressure Zone 1	115	X80	127	118	108	99	87	78	
			X48	86	86	81	72	63	56	
		120	X80	123	117	107	99	87	78	
			X48	83	83	80	72	63	56	
		130	X80	116	114	106	99	87	78	
			X48	79	79	79	70	63	56	
		140	X80	107	107	104	97	87	78	
			X48	73	73	73	69	63	56	
		150	X80	100	100	100	95	87	78	
			X48	68	68	68	68	62	56	
		160	X80	94	94	94	93	85	78	
			X48	64	64	64	64	61	56	
		170	X80	88	88	88	88	84	78	
			X48	60	60	60	60	60	55	
		180	X80	83	83	83	83	82	77	
			X48	57	57	57	57	57	54	
		Roof Wind Pressure Zone 2	115	X80	101	101	101	99	87	78
				X48	69	69	69	69	63	56
	120		X80	96	96	96	96	87	78	
			X48	66	66	66	66	63	56	
	130		X80	89	89	89	89	87	78	
			X48	61	61	61	61	61	56	
	140		X80	82	82	82	82	82	78	
			X48	56	56	56	56	56	56	
150	X80		77	77	77	77	77	77		
	X48		52	52	52	52	52	52		
160	X80		72	72	72	72	72	72		
	X48		49	49	49	49	49	49		
170	X80		68	68	68	68	68	68		
	X48		46	46	46	46	46	46		
180	X80		64	64	64	64	64	64		
	X48		44	44	44	44	44	44		
Roof Wind Pressure Zone 3	115		X80	82	82	82	82	82	78	
			X48	56	56	56	56	56	56	
	120	X80	78	78	78	78	78	78		
		X48	53	53	53	53	53	53		
	130	X80	72	72	72	72	72	72		
		X48	49	49	49	49	49	49		
	140	X80	67	67	67	67	67	67		
		X48	46	46	46	46	46	46		
	150	X80	62	62	62	62	62	62		
		X48	43	43	43	43	43	43		
	160	X80	58	58	58	58	58	58		
		X48	40	40	40	40	40	40		
	170	X80	55	55	55	55	55	55		
		X48	37	37	37	37	37	37		
	180	X80	52	52	52	52	52	52		
		X48	35	35	35	35	35	35		

Exposure		Table 10: Maximum Uplift (lb.) - Wind Exposure D Condition								
		Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
				0	10	20	30	40	50	
ROOFS 0° TO 7°	Roof Wind Pressure Zone 1	115	X80	-640	-595	-544	-501	-439	-395	
			X48	-435	-435	-408	-362	-317	-285	
		120	X80	-680	-646	-592	-548	-480	-432	
			X48	-462	-462	-444	-396	-347	-312	
		130	X80	-762	-751	-693	-649	-569	-513	
			X48	-518	-518	-518	-462	-411	-370	
		140	X80	-826	-826	-801	-747	-667	-600	
			X48	-565	-565	-565	-531	-481	-434	
		150	X80	-888	-888	-888	-846	-768	-693	
			X48	-607	-607	-607	-600	-547	-501	
		160	X80	-951	-951	-951	-950	-866	-793	
			X48	-650	-650	-650	-650	-616	-571	
		170	X80	-1013	-1013	-1013	-1013	-965	-894	
			X48	-692	-692	-692	-692	-685	-637	
		180	X80	-1075	-1075	-1075	-1075	-1067	-992	
			X48	-734	-734	-734	-734	-734	-705	
		Roof Wind Pressure Zone 2	115	X80	-881	-881	-881	-866	-758	-682
				X48	-603	-603	-603	-603	-547	-493
	120		X80	-922	-922	-922	-922	-829	-747	
			X48	-630	-630	-630	-630	-599	-539	
	130		X80	-1002	-1002	-1002	-1002	-978	-881	
			X48	-685	-685	-685	-685	-685	-636	
	140		X80	-1083	-1083	-1083	-1083	-1083	-1027	
			X48	-740	-740	-740	-740	-740	-740	
	150		X80	-1163	-1163	-1163	-1163	-1163	-1163	
			X48	-794	-794	-794	-794	-794	-794	
	160		X80	-1243	-1243	-1243	-1243	-1243	-1243	
X48			-848	-848	-848	-848	-848	-848		
170	X80		-1322	-1322	-1322	-1322	-1322	-1322		
	X48		-902	-902	-902	-902	-902	-902		
180	X80		-1402	-1402	-1402	-1402	-1402	-1402		
	X48		-957	-957	-957	-957	-957	-957		
Roof Wind Pressure Zone 3	115		X80	-1092	-1092	-1092	-1092	-1092	-1043	
			X48	-745	-745	-745	-745	-745	-745	
	120	X80	-1140	-1140	-1140	-1140	-1140	-1138		
		X48	-779	-779	-779	-779	-779	-779		
	130	X80	-1239	-1239	-1239	-1239	-1239	-1239		
		X48	-846	-846	-846	-846	-846	-846		
	140	X80	-1336	-1336	-1336	-1336	-1336	-1336		
		X48	-912	-912	-912	-912	-912	-912		
	150	X80	-1434	-1434	-1434	-1434	-1434	-1434		
		X48	-978	-978	-978	-978	-978	-978		
	160	X80	-1532	-1532	-1532	-1532	-1532	-1532		
		X48	-1045	-1045	-1045	-1045	-1045	-1045		
	170	X80	-1629	-1629	-1629	-1629	-1629	-1629		
		X48	-1111	-1111	-1111	-1111	-1111	-1111		
	180	X80	-1726	-1726	-1726	-1726	-1726	-1726		
		X48	-1177	-1177	-1177	-1177	-1177	-1177		

Table 11: Maximum Downforce (lb.) - Wind Exposure D Condition									
Exposure D	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	362	473	617	742	848	942	
		X48	246	346	462	536	612	680	
	120	X80	374	485	628	751	848	942	
		X48	254	347	470	542	612	680	
	130	X80	403	513	654	782	848	942	
		X48	274	354	489	557	612	680	
	140	X80	421	517	679	800	863	942	
		X48	288	353	479	569	623	680	
	150	X80	442	519	691	820	894	942	
		X48	302	355	472	582	636	680	
	160	X80	461	521	681	841	912	969	
		X48	315	356	465	575	649	697	
	170	X80	481	526	677	827	932	997	
		X48	329	359	462	565	662	710	
	180	X80	503	533	675	817	953	1016	
		X48	344	364	461	558	655	722	
	Roof Wind Pressure Zone 2	115	X80	289	405	578	742	848	942
			X48	197	277	395	517	612	680
120		X80	294	401	566	731	848	942	
		X48	201	274	387	500	612	680	
130		X80	309	398	551	703	848	942	
		X48	211	272	376	480	594	680	
140		X80	322	396	537	678	819	942	
		X48	220	270	367	463	559	678	
150		X80	339	398	530	661	793	926	
		X48	232	272	362	451	541	632	
160		X80	354	400	523	646	769	892	
		X48	241	273	357	441	525	609	
170		X80	370	404	520	636	751	867	
		X48	252	276	355	434	513	592	
180		X80	387	410	519	628	737	847	
		X48	264	279	354	429	503	578	
Roof Wind Pressure Zone 3		115	X80	234	328	468	612	799	942
			X48	160	224	320	418	546	673
	120	X80	238	325	459	593	765	942	
		X48	163	222	314	405	522	644	
	130	X80	251	323	447	570	705	870	
		X48	171	221	305	389	481	594	
	140	X80	262	322	436	551	666	807	
		X48	179	220	298	376	454	551	
	150	X80	276	324	430	537	644	752	
		X48	188	221	294	367	439	513	
	160	X80	287	325	425	525	625	725	
		X48	196	222	290	358	427	495	
	170	X80	301	328	422	517	611	705	
		X48	205	224	288	352	417	481	
	180	X80	315	333	422	511	600	688	
		X48	215	227	288	348	409	470	

ROOFS 0° TO 7°

Exposure D		Table 12: Maximum Shear (lb.) - Wind Exposure D Condition								
		Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
				0	10	20	30	40	50	
ROOFS 0° TO 7°	<u>Roof Wind Pressure Zone 1</u>	115	X80	9	36	59	78	89	99	
			X48	6	26	44	56	64	71	
		120	X80	8	36	59	78	89	99	
			X48	6	26	44	56	64	71	
		130	X80	8	35	58	78	89	99	
			X48	5	24	43	55	64	71	
		140	X80	7	33	57	77	89	99	
			X48	5	23	40	54	64	71	
		150	X80	7	31	55	75	89	99	
			X48	5	21	37	53	63	71	
		160	X80	6	29	51	74	88	99	
			X48	4	20	35	50	62	71	
		170	X80	6	27	48	69	86	99	
			X48	4	18	33	47	61	70	
		180	X80	6	26	45	65	85	97	
			X48	4	17	31	45	58	69	
		<u>Roof Wind Pressure Zone 2</u>	115	X80	7	31	55	78	89	99
				X48	5	21	38	54	64	71
	120		X80	7	30	53	76	89	99	
			X48	4	20	36	52	64	71	
	130		X80	6	27	49	70	89	99	
			X48	4	19	33	48	62	71	
	140		X80	6	25	45	65	85	99	
			X48	4	17	31	44	58	71	
	150		X80	5	24	42	60	79	97	
			X48	4	16	29	41	54	66	
	160		X80	5	22	39	57	74	91	
X48			3	15	27	39	50	62		
170	X80		5	21	37	53	69	86		
	X48		3	14	25	36	47	58		
180	X80		4	20	35	50	66	81		
	X48		3	13	24	34	45	55		
<u>Roof Wind Pressure Zone 3</u>	115		X80	6	25	45	64	84	99	
			X48	4	17	31	44	57	71	
	120	X80	5	24	43	62	80	99		
		X48	4	16	29	42	55	68		
	130	X80	5	22	39	57	74	91		
		X48	3	15	27	39	51	62		
	140	X80	5	21	37	53	69	85		
		X48	3	14	25	36	47	58		
	150	X80	4	19	34	49	64	79		
		X48	3	13	23	34	44	54		
	160	X80	4	18	32	46	60	74		
		X48	3	12	22	31	41	51		
	170	X80	4	17	30	43	56	70		
		X48	3	12	21	30	39	48		
	180	X80	4	16	28	41	53	66		
		X48	2	11	19	28	36	45		

Table 13: Maximum Span Length (in.) - Wind Exposure B Condition									
Exposure B	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	129	119	97	81	71	64	
		X48	97	89	78	66	58	52	
	120	X80	129	119	97	81	71	64	
		X48	97	89	78	66	58	52	
	130	X80	127	118	97	81	71	64	
		X48	95	89	77	66	58	52	
	140	X80	123	116	97	81	71	64	
		X48	92	87	76	66	58	52	
	150	X80	119	114	95	81	71	64	
		X48	88	85	74	65	58	52	
	160	X80	116	112	94	81	71	64	
		X48	84	84	73	64	58	52	
	170	X80	113	110	92	81	71	64	
		X48	80	80	71	63	57	52	
	180	X80	110	107	91	80	71	64	
		X48	76	76	69	62	57	52	
	Roof Wind Pressure Zone 2	115	X80	128	119	97	81	71	64
			X48	87	87	78	66	58	52
120		X80	124	119	97	81	71	64	
		X48	84	84	78	66	58	52	
130		X80	116	116	97	81	71	64	
		X48	80	80	77	66	58	52	
140		X80	108	108	97	81	71	64	
		X48	74	74	74	66	58	52	
150		X80	100	100	95	81	71	64	
		X48	69	69	69	65	58	52	
160		X80	94	94	94	81	71	64	
		X48	65	65	65	64	58	52	
170		X80	89	89	89	81	71	64	
		X48	61	61	61	61	57	52	
180		X80	84	84	84	80	71	64	
		X48	58	58	58	58	57	52	
Roof Wind Pressure Zone 3		115	X80	108	108	97	81	71	64
			X48	75	75	75	66	58	52
	120	X80	103	103	97	81	71	64	
		X48	71	71	71	66	58	52	
	130	X80	95	95	95	81	71	64	
		X48	66	66	66	66	58	52	
	140	X80	89	89	89	81	71	64	
		X48	61	61	61	61	58	52	
	150	X80	83	83	83	81	71	64	
		X48	57	57	57	57	57	52	
	160	X80	77	77	77	77	71	64	
		X48	53	53	53	53	53	52	
	170	X80	73	73	73	73	71	64	
		X48	50	50	50	50	50	50	
	180	X80	69	69	69	69	69	64	
		X48	47	47	47	47	47	47	

ROOFS >7° TO 27°

Table 14: Maximum Uplift (lb.) - Wind Exposure B Condition									
Exposure B	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	-342	-317	-258	-215	-188	-169	
		X48	-256	-237	-208	-176	-154	-139	
	120	X80	-376	-348	-283	-236	-207	-186	
		X48	-282	-261	-228	-193	-169	-152	
	130	X80	-441	-411	-338	-282	-247	-222	
		X48	-330	-308	-269	-231	-202	-182	
	140	X80	-504	-476	-398	-332	-290	-261	
		X48	-377	-357	-311	-272	-238	-214	
	150	X80	-567	-542	-453	-384	-336	-303	
		X48	-417	-406	-352	-311	-275	-248	
	160	X80	-633	-611	-512	-441	-386	-348	
		X48	-458	-458	-396	-351	-316	-285	
	170	X80	-702	-683	-573	-502	-440	-396	
		X48	-499	-499	-441	-392	-357	-324	
	180	X80	-771	-751	-634	-559	-495	-446	
		X48	-535	-535	-486	-434	-396	-365	
	Roof Wind Pressure Zone 2	115	X80	-624	-582	-473	-394	-345	-311
			X48	-425	-425	-381	-323	-282	-254
120		X80	-664	-638	-518	-432	-378	-341	
		X48	-451	-451	-418	-354	-310	-279	
130		X80	-733	-733	-613	-511	-447	-403	
		X48	-505	-505	-489	-418	-366	-330	
140		X80	-796	-796	-717	-598	-524	-471	
		X48	-550	-550	-550	-490	-429	-386	
150		X80	-858	-858	-815	-691	-605	-544	
		X48	-592	-592	-592	-559	-495	-446	
160		X80	-920	-920	-917	-790	-691	-622	
		X48	-634	-634	-634	-628	-566	-510	
170		X80	-981	-981	-981	-894	-783	-705	
		X48	-675	-675	-675	-675	-636	-577	
180		X80	-1042	-1042	-1042	-995	-882	-794	
		X48	-716	-716	-716	-716	-706	-650	
Roof Wind Pressure Zone 3		115	X80	-794	-794	-715	-596	-522	-470
			X48	-549	-549	-549	-488	-427	-385
	120	X80	-832	-832	-781	-652	-570	-514	
		X48	-575	-575	-575	-533	-467	-420	
	130	X80	-907	-907	-907	-770	-674	-607	
		X48	-625	-625	-625	-625	-552	-497	
	140	X80	-983	-983	-983	-898	-786	-708	
		X48	-676	-676	-676	-676	-644	-579	
	150	X80	-1057	-1057	-1057	-1035	-906	-816	
		X48	-726	-726	-726	-726	-726	-668	
	160	X80	-1131	-1131	-1131	-1131	-1034	-931	
		X48	-777	-777	-777	-777	-777	-762	
	170	X80	-1205	-1205	-1205	-1205	-1170	-1054	
		X48	-827	-827	-827	-827	-827	-827	
	180	X80	-1279	-1279	-1279	-1279	-1279	-1184	
		X48	-877	-877	-877	-877	-877	-877	

ROOFS >7° TO 27°

Table 15: Maximum Downforce (lb.) - Wind Exposure B Condition									
Exposure B	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	359	452	517	556	626	695	
		X48	269	338	417	455	512	569	
	120	X80	359	452	517	556	626	695	
		X48	269	338	417	455	512	569	
	130	X80	379	465	532	569	626	695	
		X48	284	349	424	466	512	569	
	140	X80	415	491	560	592	628	695	
		X48	311	368	438	485	514	569	
	150	X80	452	518	581	617	650	695	
		X48	333	388	452	499	532	569	
	160	X80	491	546	602	644	673	705	
		X48	355	409	466	512	551	577	
	170	X80	533	575	625	673	699	728	
		X48	379	420	481	526	568	596	
	180	X80	574	601	648	695	725	752	
		X48	398	428	497	540	581	616	
	Roof Wind Pressure Zone 2	115	X80	357	452	517	556	626	695
			X48	243	330	417	455	512	569
120		X80	346	452	517	556	626	695	
		X48	235	320	417	455	512	569	
130		X80	347	457	532	569	626	695	
		X48	239	315	424	466	512	569	
140		X80	364	455	560	592	628	695	
		X48	251	314	430	485	514	569	
150		X80	381	456	581	617	650	695	
		X48	263	314	422	499	532	569	
160		X80	399	458	602	644	673	705	
		X48	275	316	416	512	551	577	
170		X80	418	464	601	673	699	728	
		X48	288	319	414	508	568	596	
180		X80	436	469	599	695	725	752	
		X48	300	322	411	500	581	616	
Roof Wind Pressure Zone 3		115	X80	300	408	517	556	626	695
			X48	208	282	397	455	512	569
	120	X80	288	391	517	556	626	695	
		X48	199	270	380	455	512	569	
	130	X80	285	375	523	569	626	695	
		X48	197	259	360	462	512	569	
	140	X80	299	374	511	592	628	695	
		X48	206	257	352	446	514	569	
	150	X80	313	375	503	617	650	695	
		X48	215	258	345	433	521	569	
	160	X80	328	377	497	617	673	705	
		X48	225	259	341	424	506	577	
	170	X80	344	381	494	607	699	728	
		X48	236	262	339	416	494	571	
	180	X80	359	386	492	599	706	752	
		X48	246	264	338	411	484	557	

ROOFS >7° TO 27°

Table 16: Maximum Shear (lb.) - Wind Exposure B Condition									
Exposure B	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	37	154	223	267	305	339	
		X48	27	115	180	219	250	278	
	120	X80	37	154	223	267	305	339	
		X48	27	115	180	219	250	278	
	130	X80	36	152	223	267	305	339	
		X48	27	114	178	219	250	278	
	140	X80	35	150	223	267	305	339	
		X48	26	112	174	219	250	278	
	150	X80	34	147	219	267	305	339	
		X48	25	110	170	216	250	278	
	160	X80	33	145	216	267	305	339	
		X48	24	108	167	213	250	278	
	170	X80	32	142	212	267	305	339	
		X48	23	104	163	209	248	278	
	180	X80	31	139	208	264	305	339	
		X48	22	99	160	205	244	278	
	Roof Wind Pressure Zone 2	115	X80	36	154	223	267	305	339
			X48	25	112	180	219	250	278
120		X80	35	154	223	267	305	339	
		X48	24	109	180	219	250	278	
130		X80	33	150	223	267	305	339	
		X48	23	103	178	219	250	278	
140		X80	31	139	223	267	305	339	
		X48	21	96	171	219	250	278	
150		X80	28	130	219	267	305	339	
		X48	20	89	159	216	250	278	
160		X80	27	122	216	267	305	339	
		X48	18	84	149	213	250	278	
170		X80	25	114	204	267	305	339	
		X48	17	79	140	202	248	278	
180		X80	24	108	192	264	305	339	
		X48	16	74	132	190	244	278	
Roof Wind Pressure Zone 3		115	X80	31	139	223	267	305	339
			X48	21	96	171	219	250	278
	120	X80	29	133	223	267	305	339	
		X48	20	92	164	219	250	278	
	130	X80	27	123	219	267	305	339	
		X48	19	85	151	217	250	278	
	140	X80	25	114	203	267	305	339	
		X48	17	79	140	201	250	278	
	150	X80	23	107	190	267	305	339	
		X48	16	73	130	188	245	278	
	160	X80	22	100	178	256	305	339	
		X48	15	69	122	176	229	278	
	170	X80	21	94	167	241	305	339	
		X48	14	65	115	165	216	266	
	180	X80	20	89	158	228	297	339	
		X48	13	61	108	156	203	251	

ROOFS >7° TO 27°

Table 17: Maximum Span Length (in.) - Wind Exposure C Condition									
Exposure C	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	124	117	97	81	71	64	
		X48	93	88	76	66	58	52	
	120	X80	122	116	97	81	71	64	
		X48	91	87	75	66	58	52	
	130	X80	118	113	95	81	71	64	
		X48	86	85	74	65	58	52	
	140	X80	114	111	93	81	71	64	
		X48	82	82	72	64	58	52	
	150	X80	111	108	91	80	71	64	
		X48	78	78	70	62	57	52	
	160	X80	105	105	89	79	71	64	
		X48	73	73	68	61	56	52	
	170	X80	99	99	87	78	70	64	
		X48	68	68	66	60	55	51	
	180	X80	93	93	85	76	69	64	
		X48	64	64	64	58	54	50	
	Roof Wind Pressure Zone 2	115	X80	111	111	97	81	71	64
			X48	77	77	76	66	58	52
120		X80	106	106	97	81	71	64	
		X48	73	73	73	66	58	52	
130		X80	98	98	95	81	71	64	
		X48	68	68	68	65	58	52	
140		X80	91	91	91	81	71	64	
		X48	63	63	63	63	58	52	
150		X80	85	85	85	80	71	64	
		X48	58	58	58	58	57	52	
160		X80	80	80	80	79	71	64	
		X48	55	55	55	55	55	52	
170		X80	75	75	75	75	70	64	
		X48	51	51	51	51	51	51	
180		X80	71	71	71	71	69	64	
		X48	49	49	49	49	49	49	
Roof Wind Pressure Zone 3		115	X80	91	91	91	81	71	64
			X48	63	63	63	63	58	52
	120	X80	87	87	87	81	71	64	
		X48	60	60	60	60	58	52	
	130	X80	81	81	81	81	71	64	
		X48	55	55	55	55	55	52	
	140	X80	75	75	75	75	71	64	
		X48	51	51	51	51	51	51	
	150	X80	70	70	70	70	70	64	
		X48	48	48	48	48	48	48	
	160	X80	65	65	65	65	65	64	
		X48	45	45	45	45	45	45	
	170	X80	62	62	62	62	62	62	
		X48	42	42	42	42	42	42	
	180	X80	58	58	58	58	58	58	
		X48	40	40	40	40	40	40	

ROOFS >7° TO 27°

Table 18: Maximum Uplift (lb.) - Wind Exposure C Condition									
Exposure C	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	-479	-451	-374	-312	-273	-246	
		X48	-359	-338	-295	-255	-224	-201	
	120	X80	-516	-489	-408	-342	-299	-269	
		X48	-386	-366	-319	-280	-245	-220	
	130	X80	-592	-568	-475	-405	-355	-320	
		X48	-433	-425	-369	-326	-291	-262	
	140	X80	-672	-653	-547	-476	-416	-375	
		X48	-481	-481	-422	-375	-340	-307	
	150	X80	-753	-734	-618	-544	-481	-433	
		X48	-527	-527	-475	-424	-386	-354	
	160	X80	-817	-816	-693	-613	-550	-495	
		X48	-564	-564	-529	-475	-434	-403	
	170	X80	-873	-873	-771	-685	-623	-563	
		X48	-602	-602	-585	-528	-485	-451	
	180	X80	-928	-928	-848	-757	-690	-633	
		X48	-639	-639	-639	-581	-535	-499	
	Roof Wind Pressure Zone 2	115	X80	-771	-771	-675	-563	-493	-444
			X48	-533	-533	-532	-461	-404	-363
120		X80	-808	-808	-736	-616	-539	-486	
		X48	-558	-558	-558	-504	-442	-398	
130		X80	-881	-881	-852	-727	-636	-573	
		X48	-607	-607	-607	-584	-521	-469	
140		X80	-954	-954	-954	-849	-743	-669	
		X48	-657	-657	-657	-657	-607	-548	
150		X80	-1027	-1027	-1027	-970	-856	-771	
		X48	-706	-706	-706	-706	-688	-631	
160		X80	-1099	-1099	-1099	-1090	-978	-880	
		X48	-755	-755	-755	-755	-755	-716	
170		X80	-1171	-1171	-1171	-1171	-1101	-996	
		X48	-803	-803	-803	-803	-803	-797	
180		X80	-1243	-1243	-1243	-1243	-1221	-1120	
		X48	-853	-853	-853	-853	-853	-853	
Roof Wind Pressure Zone 3		115	X80	-953	-953	-953	-845	-740	-666
			X48	-656	-656	-656	-656	-606	-546
	120	X80	-997	-997	-997	-923	-808	-728	
		X48	-686	-686	-686	-686	-662	-596	
	130	X80	-1085	-1085	-1085	-1085	-953	-858	
		X48	-745	-745	-745	-745	-745	-703	
	140	X80	-1173	-1173	-1173	-1173	-1110	-1000	
		X48	-805	-805	-805	-805	-805	-805	
	150	X80	-1261	-1261	-1261	-1261	-1261	-1151	
		X48	-864	-864	-864	-864	-864	-864	
	160	X80	-1348	-1348	-1348	-1348	-1348	-1312	
		X48	-923	-923	-923	-923	-923	-923	
	170	X80	-1435	-1435	-1435	-1435	-1435	-1435	
		X48	-982	-982	-982	-982	-982	-982	
	180	X80	-1521	-1521	-1521	-1521	-1521	-1521	
		X48	-1041	-1041	-1041	-1041	-1041	-1041	

ROOFS >7° TO 27°

Table 19: Maximum Downforce (lb.) - Wind Exposure C Condition									
Exposure C	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	401	481	549	583	626	695	
		X48	300	360	432	477	512	569	
	120	X80	422	496	564	597	632	695	
		X48	316	371	440	489	518	569	
	130	X80	467	528	589	627	659	695	
		X48	342	396	457	504	539	569	
	140	X80	514	562	615	660	688	718	
		X48	368	415	475	520	562	588	
	150	X80	563	594	642	689	718	745	
		X48	394	427	493	536	577	610	
	160	X80	598	626	670	715	751	775	
		X48	413	433	511	553	593	630	
	170	X80	629	639	700	742	783	807	
		X48	434	441	531	572	610	646	
	180	X80	660	660	729	769	809	840	
		X48	454	454	549	590	627	662	
	Roof Wind Pressure Zone 2	115	X80	357	455	549	583	626	695
			X48	247	315	432	477	512	569
120		X80	367	455	564	597	632	695	
		X48	253	314	428	489	518	569	
130		X80	388	457	589	627	659	695	
		X48	267	315	420	504	539	569	
140		X80	409	461	602	660	688	718	
		X48	282	317	414	511	562	588	
150		X80	431	467	598	689	718	745	
		X48	296	321	411	502	577	610	
160		X80	453	475	598	715	751	775	
		X48	311	326	411	495	580	630	
170		X80	477	485	601	717	783	807	
		X48	328	333	412	492	572	646	
180		X80	500	500	604	714	809	840	
		X48	343	343	414	489	564	640	
Roof Wind Pressure Zone 3		115	X80	294	375	516	583	626	695
			X48	202	258	355	452	512	569
	120	X80	302	374	509	597	632	695	
		X48	208	257	350	443	518	569	
	130	X80	319	376	500	625	659	695	
		X48	219	258	344	429	515	569	
	140	X80	336	379	495	611	688	718	
		X48	231	260	340	419	498	578	
	150	X80	354	384	492	600	708	745	
		X48	243	263	337	412	486	560	
	160	X80	373	390	492	593	695	775	
		X48	255	268	337	406	476	545	
	170	X80	392	399	494	589	685	780	
		X48	269	273	338	404	469	534	
	180	X80	411	411	497	587	677	767	
		X48	281	281	340	402	463	525	

ROOFS >7° TO 27°

Table 20: Maximum Shear (lb.) - Wind Exposure C Condition									
Exposure C	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	35	151	223	267	305	339	
		X48	26	113	175	219	250	278	
	120	X80	35	149	222	267	305	339	
		X48	26	112	173	219	250	278	
	130	X80	33	146	218	267	305	339	
		X48	24	109	169	215	250	278	
	140	X80	32	143	214	267	305	339	
		X48	23	106	165	210	249	278	
	150	X80	31	139	209	265	305	339	
		X48	22	100	161	206	245	278	
	160	X80	30	135	205	261	305	339	
		X48	21	94	156	202	241	276	
	170	X80	28	128	200	256	304	339	
		X48	19	88	152	197	236	271	
	180	X80	26	121	196	252	300	339	
		X48	18	83	148	193	232	267	
	Roof Wind Pressure Zone 2	115	X80	31	143	223	267	305	339
			X48	22	99	175	219	250	278
120		X80	30	137	222	267	305	339	
		X48	21	95	168	219	250	278	
130		X80	28	126	218	267	305	339	
		X48	19	87	155	215	250	278	
140		X80	26	117	209	267	305	339	
		X48	18	81	144	207	249	278	
150		X80	24	110	195	265	305	339	
		X48	17	75	134	193	245	278	
160		X80	23	103	183	261	305	339	
		X48	16	71	126	181	236	276	
170		X80	21	97	172	248	304	339	
		X48	15	66	118	170	222	271	
180		X80	20	91	163	234	300	339	
		X48	14	63	111	160	209	258	
Roof Wind Pressure Zone 3		115	X80	26	118	209	267	305	339
			X48	18	81	144	207	250	278
	120	X80	25	113	201	267	305	339	
		X48	17	77	138	198	250	278	
	130	X80	23	104	185	266	305	339	
		X48	16	71	127	183	239	278	
	140	X80	21	97	172	247	305	339	
		X48	15	66	118	170	221	273	
	150	X80	20	90	160	231	301	339	
		X48	14	62	110	158	206	255	
	160	X80	19	84	150	216	282	339	
		X48	13	58	103	148	193	239	
	170	X80	17	80	142	204	266	328	
		X48	12	54	97	139	182	224	
	180	X80	17	75	134	192	251	310	
		X48	11	51	91	132	172	212	

ROOFS >7° TO 27°

Table 21: Maximum Span Length (in.) - Wind Exposure D Condition									
Exposure D	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	120	114	96	81	71	64	
		X48	89	86	74	66	58	52	
	120	X80	118	113	95	81	71	64	
		X48	86	85	73	65	58	52	
	130	X80	114	111	93	81	71	64	
		X48	81	81	71	64	58	52	
	140	X80	110	107	91	80	71	64	
		X48	76	76	69	62	57	52	
	150	X80	103	103	89	78	71	64	
		X48	71	71	67	61	56	52	
	160	X80	97	97	86	77	70	64	
		X48	67	67	66	59	54	51	
	170	X80	91	91	84	76	69	64	
		X48	62	62	62	58	53	50	
	180	X80	86	86	82	74	68	63	
		X48	59	59	59	56	52	49	
	Roof Wind Pressure Zone 2	115	X80	102	102	96	81	71	64
			X48	70	70	70	66	58	52
120		X80	97	97	95	81	71	64	
		X48	67	67	67	65	58	52	
130		X80	90	90	90	81	71	64	
		X48	62	62	62	62	58	52	
140		X80	84	84	84	80	71	64	
		X48	57	57	57	57	57	52	
150		X80	78	78	78	78	71	64	
		X48	54	54	54	54	54	52	
160		X80	73	73	73	73	70	64	
		X48	50	50	50	50	50	50	
170		X80	69	69	69	69	69	64	
		X48	47	47	47	47	47	47	
180		X80	65	65	65	65	65	63	
		X48	45	45	45	45	45	45	
Roof Wind Pressure Zone 3		115	X80	84	84	84	81	71	64
			X48	58	58	58	58	58	52
	120	X80	80	80	80	80	71	64	
		X48	55	55	55	55	55	52	
	130	X80	74	74	74	74	71	64	
		X48	51	51	51	51	51	51	
	140	X80	69	69	69	69	69	64	
		X48	47	47	47	47	47	47	
	150	X80	64	64	64	64	64	64	
		X48	44	44	44	44	44	44	
	160	X80	60	60	60	60	60	60	
		X48	41	41	41	41	41	41	
	170	X80	57	57	57	57	57	57	
		X48	39	39	39	39	39	39	
	180	X80	53	53	53	53	53	53	
		X48	37	37	37	37	37	37	

ROOFS >7° TO 27°

Table 22: Maximum Uplift (lb.) - Wind Exposure D Condition									
Exposure D	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	-556	-531	-444	-375	-328	-296	
		X48	-411	-397	-345	-304	-269	-242	
	120	X80	-597	-574	-480	-410	-359	-323	
		X48	-436	-430	-373	-329	-294	-265	
	130	X80	-684	-665	-557	-486	-426	-383	
		X48	-488	-488	-429	-382	-347	-314	
	140	X80	-775	-755	-638	-562	-498	-449	
		X48	-536	-536	-489	-437	-399	-367	
	150	X80	-835	-835	-719	-637	-574	-517	
		X48	-577	-577	-547	-492	-451	-418	
	160	X80	-896	-896	-803	-715	-651	-592	
		X48	-617	-617	-608	-550	-505	-470	
	170	X80	-957	-957	-890	-796	-727	-672	
		X48	-658	-658	-658	-609	-562	-525	
	180	X80	-1016	-1016	-976	-877	-804	-746	
		X48	-699	-699	-699	-668	-619	-579	
	Roof Wind Pressure Zone 2	115	X80	-846	-846	-796	-673	-589	-530
			X48	-584	-584	-584	-546	-482	-434
120		X80	-886	-886	-862	-736	-644	-580	
		X48	-611	-611	-611	-591	-527	-475	
130		X80	-965	-965	-965	-867	-759	-683	
		X48	-664	-664	-664	-664	-619	-560	
140		X80	-1045	-1045	-1045	-999	-885	-797	
		X48	-718	-718	-718	-718	-708	-653	
150		X80	-1123	-1123	-1123	-1123	-1020	-918	
		X48	-771	-771	-771	-771	-771	-743	
160		X80	-1202	-1202	-1202	-1202	-1152	-1048	
		X48	-824	-824	-824	-824	-824	-824	
170		X80	-1280	-1280	-1280	-1280	-1280	-1185	
		X48	-877	-877	-877	-877	-877	-877	
180		X80	-1358	-1358	-1358	-1358	-1358	-1316	
		X48	-930	-930	-930	-930	-930	-930	
Roof Wind Pressure Zone 3		115	X80	-1043	-1043	-1043	-1008	-882	-794
			X48	-717	-717	-717	-717	-717	-650
	120	X80	-1091	-1091	-1091	-1091	-963	-867	
		X48	-749	-749	-749	-749	-749	-710	
	130	X80	-1186	-1186	-1186	-1186	-1135	-1022	
		X48	-814	-814	-814	-814	-814	-814	
	140	X80	-1282	-1282	-1282	-1282	-1282	-1189	
		X48	-879	-879	-879	-879	-879	-879	
	150	X80	-1377	-1377	-1377	-1377	-1377	-1369	
		X48	-943	-943	-943	-943	-943	-943	
	160	X80	-1471	-1471	-1471	-1471	-1471	-1471	
		X48	-1007	-1007	-1007	-1007	-1007	-1007	
	170	X80	-1566	-1566	-1566	-1566	-1566	-1566	
		X48	-1071	-1071	-1071	-1071	-1071	-1071	
	180	X80	-1660	-1660	-1660	-1660	-1660	-1660	
		X48	-1135	-1135	-1135	-1135	-1135	-1135	

ROOFS >7° TO 27°

Table 23: Maximum Downforce (lb.) - Wind Exposure D Condition									
Exposure D	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	445	513	577	613	646	695	
		X48	329	384	449	497	529	569	
	120	X80	470	530	590	629	661	695	
		X48	343	397	458	505	541	569	
	130	X80	522	568	619	665	692	722	
		X48	372	417	477	522	564	591	
	140	X80	575	602	649	696	726	752	
		X48	398	428	497	541	581	616	
	150	X80	608	631	680	724	763	785	
		X48	420	435	518	559	598	635	
	160	X80	641	644	711	753	793	820	
		X48	442	444	539	579	617	652	
	170	X80	676	676	745	783	822	859	
		X48	465	465	551	599	636	670	
	180	X80	709	709	778	814	851	887	
		X48	488	488	557	620	655	689	
	Roof Wind Pressure Zone 2	115	X80	378	456	577	613	646	695
			X48	261	314	423	497	529	569
120		X80	389	457	590	629	661	695	
		X48	268	315	419	505	541	569	
130		X80	413	462	601	665	692	722	
		X48	284	318	414	510	564	591	
140		X80	436	469	598	696	726	752	
		X48	300	322	411	500	581	616	
150		X80	461	478	598	719	763	785	
		X48	316	328	411	494	577	635	
160		X80	486	488	601	714	793	820	
		X48	333	335	412	490	568	645	
170		X80	512	512	607	714	820	859	
		X48	351	351	416	489	562	635	
180		X80	537	537	614	714	815	887	
		X48	368	368	420	489	558	627	
Roof Wind Pressure Zone 3		115	X80	311	375	504	613	646	695
			X48	214	258	347	436	525	569
	120	X80	320	376	500	624	661	695	
		X48	220	258	343	429	514	569	
	130	X80	339	380	494	609	692	722	
		X48	233	261	339	418	496	575	
	140	X80	359	386	492	598	705	752	
		X48	246	264	337	410	483	556	
	150	X80	379	393	492	591	691	785	
		X48	260	269	337	405	473	541	
	160	X80	399	401	495	588	681	774	
		X48	273	275	338	402	466	530	
	170	X80	421	421	499	587	675	762	
		X48	288	288	342	402	462	521	
	180	X80	442	442	505	587	670	753	
		X48	302	302	345	402	458	515	

ROOFS >7° TO 27°

Table 24: Maximum Shear (lb.) - Wind Exposure D Condition									
Exposure D	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	34	148	220	267	305	339	
		X48	25	111	171	217	250	278	
	120	X80	33	146	218	267	305	339	
		X48	24	109	169	214	250	278	
	130	X80	32	143	213	267	305	339	
		X48	23	105	164	210	249	278	
	140	X80	31	138	208	264	305	339	
		X48	22	98	160	205	244	278	
	150	X80	29	133	203	259	305	339	
		X48	20	92	155	200	239	274	
	160	X80	27	125	199	254	302	339	
		X48	19	86	151	196	235	270	
	170	X80	26	117	194	250	297	339	
		X48	18	81	144	191	230	265	
	180	X80	24	111	189	245	293	335	
		X48	17	76	135	186	225	260	
	Roof Wind Pressure Zone 2	115	X80	29	131	220	267	305	339
			X48	20	91	161	217	250	278
120		X80	28	126	218	267	305	339	
		X48	19	87	154	214	250	278	
130		X80	26	116	207	267	305	339	
		X48	18	80	142	205	249	278	
140		X80	24	108	192	264	305	339	
		X48	16	74	132	190	244	278	
150		X80	22	101	179	258	305	339	
		X48	15	69	123	177	231	274	
160		X80	21	94	168	242	302	339	
		X48	14	65	115	166	216	267	
170		X80	20	89	158	227	297	339	
		X48	13	61	108	156	203	251	
180		X80	18	84	149	215	280	335	
		X48	13	57	102	147	192	237	
Roof Wind Pressure Zone 3		115	X80	24	108	192	267	305	339
			X48	16	74	132	190	248	278
	120	X80	23	103	184	265	305	339	
		X48	16	71	127	182	237	278	
	130	X80	21	96	170	245	305	339	
		X48	14	66	117	168	219	270	
	140	X80	19	89	158	227	296	339	
		X48	13	61	108	156	203	250	
	150	X80	18	83	147	212	276	339	
		X48	12	57	101	145	189	234	
	160	X80	17	78	138	199	259	320	
		X48	12	53	95	136	177	219	
	170	X80	16	73	130	187	244	301	
		X48	11	50	89	128	167	206	
	180	X80	15	69	123	177	230	284	
		X48	10	47	84	121	158	194	

ROOFS >7° TO 27°

Table 25: Maximum Span Length (in.) - Wind Exposure B Condition									
Exposure B	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	121	113	92	77	67	60	
		X48	91	87	74	65	57	52	
	120	X80	119	111	91	77	67	60	
		X48	89	86	73	65	57	52	
	130	X80	115	108	90	77	67	60	
		X48	86	84	71	63	57	52	
	140	X80	111	105	88	77	67	60	
		X48	83	81	69	62	56	52	
	150	X80	108	102	86	76	67	60	
		X48	81	78	68	61	55	51	
	160	X80	105	99	84	75	67	60	
		X48	79	75	66	59	54	51	
	170	X80	102	96	82	73	67	60	
		X48	75	72	64	58	53	50	
	180	X80	99	93	81	72	66	60	
		X48	71	70	62	57	52	49	
	Roof Wind Pressure Zone 2	115	X80	121	113	92	77	67	60
			X48	91	87	74	65	57	52
120		X80	119	111	91	77	67	60	
		X48	89	86	73	65	57	52	
130		X80	115	108	90	77	67	60	
		X48	86	84	71	63	57	52	
140		X80	111	105	88	77	67	60	
		X48	83	81	69	62	56	52	
150		X80	108	102	86	76	67	60	
		X48	80	78	68	61	55	51	
160		X80	105	99	84	75	67	60	
		X48	76	75	66	59	54	51	
170		X80	102	96	82	73	67	60	
		X48	71	71	64	58	53	50	
180		X80	97	93	81	72	66	60	
		X48	67	67	62	57	52	49	
Roof Wind Pressure Zone 3		115	X80	121	113	92	77	67	60
			X48	91	87	74	65	57	52
	120	X80	119	111	91	77	67	60	
		X48	89	86	73	65	57	52	
	130	X80	115	108	90	77	67	60	
		X48	86	84	71	63	57	52	
	140	X80	111	105	88	77	67	60	
		X48	83	81	69	62	56	52	
	150	X80	108	102	86	76	67	60	
		X48	80	78	68	61	55	51	
	160	X80	105	99	84	75	67	60	
		X48	76	75	66	59	54	51	
	170	X80	102	96	82	73	67	60	
		X48	71	71	64	58	53	50	
	180	X80	97	93	81	72	66	60	
		X48	67	67	62	57	52	49	

ROOFS >27° TO 45°

Table 26: Maximum Uplift (lb.) - Wind Exposure B Condition									
Exposure B	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	-360	-334	-272	-227	-199	-179	
		X48	-269	-258	-220	-193	-170	-153	
	120	X80	-388	-362	-297	-249	-218	-196	
		X48	-290	-280	-239	-210	-186	-168	
	130	X80	-446	-419	-347	-297	-260	-234	
		X48	-334	-324	-277	-245	-222	-199	
	140	X80	-507	-477	-399	-349	-305	-275	
		X48	-379	-367	-316	-282	-257	-234	
	150	X80	-569	-537	-453	-399	-353	-318	
		X48	-426	-409	-356	-319	-292	-270	
	160	X80	-633	-598	-509	-450	-405	-365	
		X48	-474	-452	-397	-358	-328	-305	
	170	X80	-699	-658	-564	-502	-457	-414	
		X48	-514	-495	-437	-396	-365	-340	
	180	X80	-767	-720	-622	-556	-507	-466	
		X48	-551	-538	-479	-436	-403	-377	
	Roof Wind Pressure Zone 2	115	X80	-426	-396	-323	-269	-236	-212
			X48	-319	-306	-261	-229	-201	-181
120		X80	-460	-429	-353	-296	-259	-233	
		X48	-345	-332	-283	-249	-221	-199	
130		X80	-528	-496	-411	-352	-308	-277	
		X48	-396	-384	-328	-290	-263	-236	
140		X80	-597	-563	-471	-411	-360	-324	
		X48	-447	-432	-372	-332	-302	-276	
150		X80	-670	-633	-534	-470	-416	-375	
		X48	-498	-482	-419	-376	-344	-318	
160		X80	-746	-704	-599	-530	-477	-430	
		X48	-538	-533	-467	-421	-387	-359	
170		X80	-822	-775	-664	-591	-537	-487	
		X48	-573	-573	-515	-467	-430	-400	
180		X80	-880	-847	-732	-654	-597	-549	
		X48	-609	-609	-564	-514	-475	-443	
Roof Wind Pressure Zone 3		115	X80	-426	-396	-323	-269	-236	-212
			X48	-319	-306	-261	-229	-201	-181
	120	X80	-460	-429	-353	-296	-259	-233	
		X48	-345	-332	-283	-249	-221	-199	
	130	X80	-528	-496	-411	-352	-308	-277	
		X48	-396	-384	-328	-290	-263	-236	
	140	X80	-597	-563	-471	-411	-360	-324	
		X48	-447	-432	-372	-332	-302	-276	
	150	X80	-670	-633	-534	-470	-416	-375	
		X48	-498	-482	-419	-376	-344	-318	
	160	X80	-746	-704	-599	-530	-477	-430	
		X48	-538	-533	-467	-421	-387	-359	
	170	X80	-822	-775	-664	-591	-537	-487	
		X48	-573	-573	-515	-467	-430	-400	
	180	X80	-880	-847	-732	-654	-597	-549	
		X48	-609	-609	-564	-514	-475	-443	

ROOFS >27° TO 45°

Table 27: Maximum Downforce (lb.) - Wind Exposure B Condition									
Exposure B	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	429	473	515	538	566	601	
		X48	321	365	417	458	482	512	
	120	X80	453	489	530	553	579	606	
		X48	339	378	426	466	494	517	
	130	X80	502	521	558	585	607	632	
		X48	376	403	445	484	518	539	
	140	X80	555	554	588	621	638	660	
		X48	416	426	465	502	537	563	
	150	X80	608	588	618	651	671	689	
		X48	456	448	485	520	554	586	
	160	X80	664	627	649	680	706	721	
		X48	498	475	506	540	572	603	
	170	X80	723	681	682	710	740	756	
		X48	532	512	528	560	591	621	
	180	X80	783	735	715	740	768	791	
		X48	562	549	550	581	611	639	
	Roof Wind Pressure Zone 2	115	X80	429	473	515	538	566	601
			X48	321	365	417	458	482	512
120		X80	453	489	530	553	579	606	
		X48	339	378	426	466	494	517	
130		X80	502	521	558	585	607	632	
		X48	376	403	445	484	518	539	
140		X80	555	554	588	621	638	660	
		X48	416	426	465	502	537	563	
150		X80	608	588	618	651	671	689	
		X48	453	448	485	520	554	586	
160		X80	664	627	649	680	706	721	
		X48	479	475	506	540	572	603	
170		X80	723	681	682	710	740	756	
		X48	504	504	528	560	591	621	
180		X80	764	735	715	740	768	791	
		X48	528	528	550	581	611	639	
Roof Wind Pressure Zone 3		115	X80	429	473	515	538	566	601
			X48	321	365	417	458	482	512
	120	X80	453	489	530	553	579	606	
		X48	339	378	426	466	494	517	
	130	X80	502	521	558	585	607	632	
		X48	376	403	445	484	518	539	
	140	X80	555	554	588	621	638	660	
		X48	416	426	465	502	537	563	
	150	X80	608	588	618	651	671	689	
		X48	453	448	485	520	554	586	
	160	X80	664	627	649	680	706	721	
		X48	479	475	506	540	572	603	
	170	X80	723	681	682	710	740	756	
		X48	504	504	528	560	591	621	
	180	X80	764	735	715	740	768	791	
		X48	528	528	550	581	611	639	

ROOFS >27° TO 45°

Table 28: Maximum Shear (lb.) - Wind Exposure B Condition									
Exposure B	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	45	190	276	331	379	420	
		X48	34	147	223	282	323	359	
	120	X80	44	188	275	331	379	420	
		X48	33	145	221	279	323	359	
	130	X80	43	183	270	331	379	420	
		X48	32	141	215	274	323	359	
	140	X80	41	177	264	331	379	420	
		X48	31	136	209	268	318	359	
	150	X80	40	172	259	328	379	420	
		X48	30	131	203	262	313	357	
	160	X80	39	167	253	322	379	420	
		X48	29	127	198	256	307	351	
	170	X80	38	162	248	317	376	420	
		X48	28	122	192	250	301	346	
	180	X80	37	158	242	311	371	420	
		X48	26	118	187	244	295	340	
	Roof Wind Pressure Zone 2	115	X80	45	190	276	331	379	420
			X48	34	147	223	282	323	359
120		X80	44	188	275	331	379	420	
		X48	33	145	221	279	323	359	
130		X80	43	183	270	331	379	420	
		X48	32	141	215	274	323	359	
140		X80	41	177	264	331	379	420	
		X48	31	136	209	268	318	359	
150		X80	40	172	259	328	379	420	
		X48	30	131	203	262	313	357	
160		X80	39	167	253	322	379	420	
		X48	28	127	198	256	307	351	
170		X80	38	162	248	317	376	420	
		X48	26	120	192	250	301	346	
180		X80	36	158	242	311	371	420	
		X48	25	113	187	244	295	340	
Roof Wind Pressure Zone 3		115	X80	45	190	276	331	379	420
			X48	34	147	223	282	323	359
	120	X80	44	188	275	331	379	420	
		X48	33	145	221	279	323	359	
	130	X80	43	183	270	331	379	420	
		X48	32	141	215	274	323	359	
	140	X80	41	177	264	331	379	420	
		X48	31	136	209	268	318	359	
	150	X80	40	172	259	328	379	420	
		X48	30	131	203	262	313	357	
	160	X80	39	167	253	322	379	420	
		X48	28	127	198	256	307	351	
	170	X80	38	162	248	317	376	420	
		X48	26	120	192	250	301	346	
	180	X80	36	158	242	311	371	420	
		X48	25	113	187	244	295	340	

ROOFS >27° TO 45°

Table 29: Maximum Span Length (in.) - Wind Exposure C Condition									
Exposure C	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	113	106	89	77	67	60	
		X48	85	82	70	62	57	52	
	120	X80	111	104	88	77	67	60	
		X48	83	80	69	62	56	52	
	130	X80	107	101	85	75	67	60	
		X48	80	77	67	60	55	51	
	140	X80	103	97	83	74	67	60	
		X48	77	73	65	58	54	50	
	150	X80	100	94	81	72	66	60	
		X48	72	70	63	57	53	49	
	160	X80	97	91	79	71	65	60	
		X48	68	67	61	55	51	48	
	170	X80	92	88	77	69	64	59	
		X48	65	65	59	54	50	47	
	180	X80	88	85	75	68	62	58	
		X48	61	61	57	52	49	46	
	Roof Wind Pressure Zone 2	115	X80	113	106	89	77	67	60
			X48	85	82	70	62	57	52
120		X80	111	104	88	77	67	60	
		X48	83	80	69	62	56	52	
130		X80	107	101	85	75	67	60	
		X48	79	77	67	60	55	51	
140		X80	103	97	83	74	67	60	
		X48	73	73	65	58	54	50	
150		X80	98	94	81	72	66	60	
		X48	68	68	63	57	53	49	
160		X80	92	91	79	71	65	60	
		X48	64	64	61	55	51	48	
170		X80	87	87	77	69	64	59	
		X48	60	60	59	54	50	47	
180		X80	82	82	75	68	62	58	
		X48	57	57	57	52	49	46	
Roof Wind Pressure Zone 3		115	X80	113	106	89	77	67	60
			X48	85	82	70	62	57	52
	120	X80	111	104	88	77	67	60	
		X48	83	80	69	62	56	52	
	130	X80	107	101	85	75	67	60	
		X48	79	77	67	60	55	51	
	140	X80	103	97	83	74	67	60	
		X48	73	73	65	58	54	50	
	150	X80	98	94	81	72	66	60	
		X48	68	68	63	57	53	49	
	160	X80	92	91	79	71	65	60	
		X48	64	64	61	55	51	48	
	170	X80	87	87	77	69	64	59	
		X48	60	60	59	54	50	47	
	180	X80	82	82	75	68	62	58	
		X48	57	57	57	52	49	46	

ROOFS >27° TO 45°

Table 30: Maximum Uplift (lb.) - Wind Exposure C Condition									
Exposure C	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	-482	-454	-378	-328	-287	-258	
		X48	-361	-350	-300	-267	-243	-220	
	120	X80	-518	-489	-409	-359	-314	-283	
		X48	-388	-375	-323	-289	-263	-241	
	130	X80	-593	-559	-474	-418	-372	-335	
		X48	-444	-425	-371	-333	-305	-283	
	140	X80	-670	-632	-540	-480	-436	-392	
		X48	-499	-476	-420	-380	-349	-325	
	150	X80	-750	-705	-608	-543	-494	-453	
		X48	-542	-527	-469	-426	-394	-368	
	160	X80	-832	-779	-677	-608	-556	-515	
		X48	-585	-579	-519	-475	-440	-412	
	170	X80	-898	-851	-747	-674	-618	-575	
		X48	-627	-627	-568	-522	-486	-457	
	180	X80	-962	-926	-819	-742	-683	-636	
		X48	-669	-669	-619	-572	-534	-503	
	Roof Wind Pressure Zone 2	115	X80	-569	-536	-447	-387	-339	-305
			X48	-426	-413	-354	-315	-287	-260
120		X80	-612	-577	-484	-424	-371	-334	
		X48	-459	-443	-382	-341	-311	-285	
130		X80	-700	-661	-559	-494	-440	-396	
		X48	-515	-502	-438	-394	-360	-334	
140		X80	-788	-743	-635	-564	-512	-461	
		X48	-557	-557	-493	-446	-410	-382	
150		X80	-866	-828	-714	-637	-581	-532	
		X48	-600	-600	-551	-501	-463	-432	
160		X80	-930	-915	-796	-714	-653	-606	
		X48	-642	-642	-610	-558	-517	-484	
170		X80	-992	-992	-878	-791	-726	-675	
		X48	-684	-684	-668	-614	-571	-536	
180		X80	-1054	-1054	-962	-871	-802	-748	
		X48	-726	-726	-726	-672	-627	-591	
Roof Wind Pressure Zone 3		115	X80	-569	-536	-447	-387	-339	-305
			X48	-426	-413	-354	-315	-287	-260
	120	X80	-612	-577	-484	-424	-371	-334	
		X48	-459	-443	-382	-341	-311	-285	
	130	X80	-700	-661	-559	-494	-440	-396	
		X48	-515	-502	-438	-394	-360	-334	
	140	X80	-788	-743	-635	-564	-512	-461	
		X48	-557	-557	-493	-446	-410	-382	
	150	X80	-866	-828	-714	-637	-581	-532	
		X48	-600	-600	-551	-501	-463	-432	
	160	X80	-930	-915	-796	-714	-653	-606	
		X48	-642	-642	-610	-558	-517	-484	
	170	X80	-992	-992	-878	-791	-726	-675	
		X48	-684	-684	-668	-614	-571	-536	
	180	X80	-1054	-1054	-962	-871	-802	-748	
		X48	-726	-726	-726	-672	-627	-591	

ROOFS >27° TO 45°

Table 31: Maximum Downforce (lb.) - Wind Exposure C Condition									
Exposure C	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	534	541	576	607	626	649	
		X48	400	417	457	495	530	553	
	120	X80	565	561	593	628	645	666	
		X48	423	430	469	505	540	568	
	130	X80	630	601	630	662	684	701	
		X48	472	457	493	528	561	592	
	140	X80	698	658	668	697	728	741	
		X48	519	496	519	552	583	613	
	150	X80	767	721	706	732	760	782	
		X48	554	540	545	576	606	634	
	160	X80	840	785	746	769	795	822	
		X48	590	584	571	601	629	657	
	170	X80	898	851	787	808	831	856	
		X48	627	627	599	627	654	680	
	180	X80	951	916	829	847	868	891	
		X48	662	662	626	653	678	704	
	Roof Wind Pressure Zone 2	115	X80	534	541	576	607	626	649
			X48	400	417	457	495	530	553
120		X80	565	561	593	628	645	666	
		X48	423	430	469	505	540	568	
130		X80	630	601	630	662	684	701	
		X48	464	457	493	528	561	592	
140		X80	698	658	668	697	728	741	
		X48	494	494	519	552	583	613	
150		X80	754	721	706	732	760	782	
		X48	522	522	545	576	606	634	
160		X80	798	785	746	769	795	822	
		X48	551	551	571	601	629	657	
170		X80	844	844	787	808	831	856	
		X48	582	582	599	627	654	680	
180		X80	888	888	829	847	868	891	
		X48	612	612	626	653	678	704	
Roof Wind Pressure Zone 3		115	X80	534	541	576	607	626	649
			X48	400	417	457	495	530	553
	120	X80	565	561	593	628	645	666	
		X48	423	430	469	505	540	568	
	130	X80	630	601	630	662	684	701	
		X48	464	457	493	528	561	592	
	140	X80	698	658	668	697	728	741	
		X48	494	494	519	552	583	613	
	150	X80	754	721	706	732	760	782	
		X48	522	522	545	576	606	634	
	160	X80	798	785	746	769	795	822	
		X48	551	551	571	601	629	657	
	170	X80	844	844	787	808	831	856	
		X48	582	582	599	627	654	680	
	180	X80	888	888	829	847	868	891	
		X48	612	612	626	653	678	704	

ROOFS >27° TO 45°

Table 32: Maximum Shear (lb.) - Wind Exposure C Condition									
Exposure C	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	42	179	266	331	379	420	
		X48	31	138	211	270	321	359	
	120	X80	41	176	263	331	379	420	
		X48	31	135	208	267	317	359	
	130	X80	40	170	257	326	379	420	
		X48	30	129	201	260	310	355	
	140	X80	38	164	250	319	378	420	
		X48	28	124	194	253	303	348	
	150	X80	37	159	244	313	372	420	
		X48	27	119	188	246	296	341	
	160	X80	36	153	237	306	366	418	
		X48	25	114	182	239	289	334	
	170	X80	34	148	231	300	359	412	
		X48	24	109	176	233	282	327	
	180	X80	33	143	225	293	352	405	
		X48	23	103	170	226	276	320	
	Roof Wind Pressure Zone 2	115	X80	42	179	266	331	379	420
			X48	31	138	211	270	321	359
120		X80	41	176	263	331	379	420	
		X48	31	135	208	267	317	359	
130		X80	40	170	257	326	379	420	
		X48	29	129	201	260	310	355	
140		X80	38	164	250	319	378	420	
		X48	27	123	194	253	303	348	
150		X80	37	159	244	313	372	420	
		X48	25	115	188	246	296	341	
160		X80	34	153	237	306	366	418	
		X48	24	108	182	239	289	334	
170		X80	32	147	231	300	359	412	
		X48	22	101	176	233	282	327	
180		X80	30	139	225	293	352	405	
		X48	21	96	170	226	276	320	
Roof Wind Pressure Zone 3		115	X80	42	179	266	331	379	420
			X48	31	138	211	270	321	359
	120	X80	41	176	263	331	379	420	
		X48	31	135	208	267	317	359	
	130	X80	40	170	257	326	379	420	
		X48	29	129	201	260	310	355	
	140	X80	38	164	250	319	378	420	
		X48	27	123	194	253	303	348	
	150	X80	37	159	244	313	372	420	
		X48	25	115	188	246	296	341	
	160	X80	34	153	237	306	366	418	
		X48	24	108	182	239	289	334	
	170	X80	32	147	231	300	359	412	
		X48	22	101	176	233	282	327	
	180	X80	30	139	225	293	352	405	
		X48	21	96	170	226	276	320	

ROOFS >27° TO 45°

Table 33: Maximum Span Length (in.) - Wind Exposure D Condition									
Exposure D	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	109	103	86	76	67	60	
		X48	81	78	68	61	56	51	
	120	X80	107	101	85	75	67	60	
		X48	80	76	67	60	55	51	
	130	X80	103	97	83	74	67	60	
		X48	76	73	64	58	54	50	
	140	X80	99	93	81	72	66	60	
		X48	71	70	62	56	52	49	
	150	X80	96	90	78	70	64	60	
		X48	67	67	60	55	51	48	
	160	X80	91	86	76	69	63	59	
		X48	63	63	58	53	50	47	
	170	X80	86	83	74	67	62	58	
		X48	60	60	56	52	48	45	
	180	X80	82	80	72	66	61	57	
		X48	56	56	54	50	47	44	
	Roof Wind Pressure Zone 2	115	X80	109	103	86	76	67	60
			X48	81	78	68	61	56	51
120		X80	107	101	85	75	67	60	
		X48	78	76	67	60	55	51	
130		X80	103	97	83	74	67	60	
		X48	72	72	64	58	54	50	
140		X80	97	93	81	72	66	60	
		X48	67	67	62	56	52	49	
150		X80	90	90	78	70	64	60	
		X48	62	62	60	55	51	48	
160		X80	85	85	76	69	63	59	
		X48	58	58	58	53	50	47	
170		X80	80	80	74	67	62	58	
		X48	55	55	55	52	48	45	
180		X80	75	75	72	66	61	57	
		X48	52	52	52	50	47	44	
Roof Wind Pressure Zone 3		115	X80	109	103	86	76	67	60
			X48	81	78	68	61	56	51
	120	X80	107	101	85	75	67	60	
		X48	78	76	67	60	55	51	
	130	X80	103	97	83	74	67	60	
		X48	72	72	64	58	54	50	
	140	X80	97	93	81	72	66	60	
		X48	67	67	62	56	52	49	
	150	X80	90	90	78	70	64	60	
		X48	62	62	60	55	51	48	
	160	X80	85	85	76	69	63	59	
		X48	58	58	58	53	50	47	
	170	X80	80	80	74	67	62	58	
		X48	55	55	55	52	48	45	
	180	X80	75	75	72	66	61	57	
		X48	52	52	52	50	47	44	

ROOFS >27° TO 45°

Table 34: Maximum Uplift (lb.) - Wind Exposure D Condition									
Exposure D	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	-557	-526	-443	-390	-344	-310	
		X48	-417	-401	-348	-312	-285	-264	
	120	X80	-598	-564	-478	-422	-376	-339	
		X48	-448	-429	-374	-336	-308	-286	
	130	X80	-682	-643	-550	-489	-444	-401	
		X48	-505	-484	-427	-386	-356	-331	
	140	X80	-770	-723	-625	-558	-509	-469	
		X48	-552	-540	-481	-438	-405	-378	
	150	X80	-857	-803	-701	-630	-576	-535	
		X48	-599	-595	-535	-490	-455	-427	
	160	X80	-926	-884	-778	-703	-646	-601	
		X48	-645	-645	-590	-544	-507	-476	
	170	X80	-993	-963	-855	-777	-716	-668	
		X48	-689	-689	-644	-597	-558	-527	
	180	X80	-1061	-1044	-934	-853	-789	-738	
		X48	-732	-732	-699	-651	-611	-578	
	Roof Wind Pressure Zone 2	115	X80	-656	-619	-522	-459	-405	-365
			X48	-490	-473	-410	-368	-336	-311
120		X80	-705	-665	-564	-498	-444	-400	
		X48	-518	-506	-441	-397	-363	-337	
130		X80	-804	-758	-649	-576	-524	-473	
		X48	-565	-565	-504	-456	-419	-390	
140		X80	-882	-848	-734	-656	-598	-550	
		X48	-610	-610	-565	-514	-475	-444	
150		X80	-950	-942	-822	-739	-677	-628	
		X48	-656	-656	-628	-576	-534	-501	
160		X80	-1019	-1019	-914	-826	-759	-706	
		X48	-702	-702	-693	-639	-595	-560	
170		X80	-1086	-1086	-1004	-912	-841	-785	
		X48	-748	-748	-748	-700	-655	-618	
180		X80	-1154	-1154	-1097	-1001	-927	-867	
		X48	-793	-793	-793	-764	-718	-679	
Roof Wind Pressure Zone 3		115	X80	-656	-619	-522	-459	-405	-365
			X48	-490	-473	-410	-368	-336	-311
	120	X80	-705	-665	-564	-498	-444	-400	
		X48	-518	-506	-441	-397	-363	-337	
	130	X80	-804	-758	-649	-576	-524	-473	
		X48	-565	-565	-504	-456	-419	-390	
	140	X80	-882	-848	-734	-656	-598	-550	
		X48	-610	-610	-565	-514	-475	-444	
	150	X80	-950	-942	-822	-739	-677	-628	
		X48	-656	-656	-628	-576	-534	-501	
	160	X80	-1019	-1019	-914	-826	-759	-706	
		X48	-702	-702	-693	-639	-595	-560	
	170	X80	-1086	-1086	-1004	-912	-841	-785	
		X48	-748	-748	-748	-700	-655	-618	
	180	X80	-1154	-1154	-1097	-1001	-927	-867	
		X48	-793	-793	-793	-764	-718	-679	

ROOFS >27° TO 45°

Table 35: Maximum Downforce (lb.) - Wind Exposure D Condition									
Exposure D	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	599	582	613	647	665	684	
		X48	449	445	482	517	551	583	
	120	X80	634	604	632	664	687	704	
		X48	475	459	495	529	562	594	
	130	X80	708	667	673	702	732	747	
		X48	524	503	523	555	586	616	
	140	X80	786	738	716	742	769	793	
		X48	564	551	552	582	612	640	
	150	X80	862	807	760	782	807	833	
		X48	602	598	580	609	637	664	
	160	X80	920	878	804	824	846	870	
		X48	641	641	610	637	664	690	
	170	X80	979	950	851	867	887	909	
		X48	680	680	641	666	692	716	
	180	X80	1037	1021	913	911	929	949	
		X48	715	715	684	696	719	743	
	Roof Wind Pressure Zone 2	115	X80	599	582	613	647	665	684
			X48	447	445	482	517	551	583
120		X80	634	604	632	664	687	704	
		X48	466	459	495	529	562	594	
130		X80	708	667	673	702	732	747	
		X48	497	497	523	555	586	616	
140		X80	767	738	716	742	769	793	
		X48	530	530	552	582	612	640	
150		X80	814	807	760	782	807	833	
		X48	562	562	580	609	637	664	
160		X80	862	862	804	824	846	870	
		X48	594	594	610	637	664	690	
170		X80	912	912	851	867	887	909	
		X48	628	628	634	666	692	716	
180		X80	960	960	913	911	929	949	
		X48	661	661	661	696	719	743	
Roof Wind Pressure Zone 3		115	X80	599	582	613	647	665	684
			X48	447	445	482	517	551	583
	120	X80	634	604	632	664	687	704	
		X48	466	459	495	529	562	594	
	130	X80	708	667	673	702	732	747	
		X48	497	497	523	555	586	616	
	140	X80	767	738	716	742	769	793	
		X48	530	530	552	582	612	640	
	150	X80	814	807	760	782	807	833	
		X48	562	562	580	609	637	664	
	160	X80	862	862	804	824	846	870	
		X48	594	594	610	637	664	690	
	170	X80	912	912	851	867	887	909	
		X48	628	628	634	666	692	716	
	180	X80	960	960	913	911	929	949	
		X48	661	661	661	696	719	743	

ROOFS >27° TO 45°

Table 36: Maximum Shear (lb.) - Wind Exposure D Condition									
Exposure D	Ultimate Wind Speed, V (mph)	Rail Type	Roof Snow Load (psf)						
			0	10	20	30	40	50	
Roof Wind Pressure Zone 1	115	X80	40	173	260	329	379	420	
		X48	30	132	204	263	314	358	
	120	X80	40	170	256	325	379	420	
		X48	30	129	201	259	310	355	
	130	X80	38	164	249	318	377	420	
		X48	28	123	193	252	302	347	
	140	X80	37	157	242	311	370	420	
		X48	26	118	186	244	294	339	
	150	X80	36	152	235	304	363	416	
		X48	25	112	180	237	287	332	
	160	X80	34	146	229	297	356	409	
		X48	23	107	173	230	280	324	
	170	X80	32	140	222	290	349	402	
		X48	22	101	167	223	272	316	
	180	X80	30	135	216	283	342	395	
		X48	21	95	162	216	265	309	
	Roof Wind Pressure Zone 2	115	X80	40	173	260	329	379	420
			X48	30	132	204	263	314	358
120		X80	40	170	256	325	379	420	
		X48	29	129	201	259	310	355	
130		X80	38	164	249	318	377	420	
		X48	27	122	193	252	302	347	
140		X80	36	157	242	311	370	420	
		X48	25	113	186	244	294	339	
150		X80	34	152	235	304	363	416	
		X48	23	105	180	237	287	332	
160		X80	31	143	229	297	356	409	
		X48	22	99	173	230	280	324	
170		X80	30	135	222	290	349	402	
		X48	20	93	165	223	272	316	
180		X80	28	127	216	283	342	395	
		X48	19	88	156	216	265	309	
Roof Wind Pressure Zone 3		115	X80	40	173	260	329	379	420
			X48	30	132	204	263	314	358
	120	X80	40	170	256	325	379	420	
		X48	29	129	201	259	310	355	
	130	X80	38	164	249	318	377	420	
		X48	27	122	193	252	302	347	
	140	X80	36	157	242	311	370	420	
		X48	25	113	186	244	294	339	
	150	X80	34	152	235	304	363	416	
		X48	23	105	180	237	287	332	
	160	X80	31	143	229	297	356	409	
		X48	22	99	173	230	280	324	
	170	X80	30	135	222	290	349	402	
		X48	20	93	165	223	272	316	
	180	X80	28	127	216	283	342	395	
		X48	19	88	156	216	265	309	

ROOFS >27° TO 45°

Table 2.1: CrossRail Section Properties				
	48-S	X48	X80	(unit)
Cross Sectional Area (A)	0.5433	0.7130	0.7770	(in ²)
Moments of Inertia:				
Vertical (Ix)	0.2183	0.2518	0.8000	(in ⁴)
Horizontal (Iy)	0.1614	0.2306	0.1970	(in ⁴)
Section Moduli:				
Vertical (Sx)	0.2229	0.2457	0.5290	(in ³)
Horizontal (Sy)	0.1910	0.2966	0.2514	(in ³)
Material:	AL EN AW 6063-T66 AL 6005A-T61 AL 6005A-T5 AL 6005-T5 AL 6061-T6			
Note:	Material selection is region dependent. Analysis based on worst-case.			