



4/26/2017

Attn: Mr. Marshall Green
Quick Mount PV
2700 Mitchell Dr.
Walnut Creek, CA, 94598

RE: Quick Mount PV TRM System for use with
Unirac Solarmount Flush-to-Roof Rail System

SEI Project No.: 17054.00

Dear Mr. Green

Structural Enginuity Inc. (SEI) has completed its review of the Quickmount PV Tile Replacement Mount System for use in conjunction with the Unirac Solarmount Flush-to-Roof Rail System. The TRM product line includes the option of a 4.5" and 5.5" post.

The review was based on the following reference data:

- Unirac, Design & Engineering Guide – Solarmount: Flush-to-Roof Design, May 19, 2016
- Construction Testing Services, Quick Mount PV Load Testing – Tile Replacement Mount [QMPV# 1-28-2016-Rev C], Job Number 11304, April 29, 2016
- Construction Testing Services, Quick Mount PV Load Testing – Tile Replacement Mount [QMPV# 1-28-2016-Rev C], Job Number 11304, January 6, 2017
- Structural Enginuity, Inc., Quick Mount PV Tile Replacement Mount, Project Number 16411.00, November 16, 2016
- Structural Enginuity, Inc., Quick Mount PV Tile Replacement Mount 5.5" Extension Post TRM Assembly Certification, Project Number 16473.00, January 11, 2017

SEI has determined that the Tile Replacement Mount is suitable for use with the Unirac Solarmount System. The approved installation and allowable loads for the Quick Mount PV TRM products is outlined in the Structural Enginuity, Inc. letters referenced above. The allowable load values are shown below, no additional load duration factors may be applied to these values.

Table 1: TRM Allowable Loads		
Load Direction	Post Height	Allowable Load
Uplift	4.5"	623
	5.5"	623
Lateral	4.5"	197
	5.5"	195
Compression	4.5"	659
	5.5"	659

SEI has prepared allowable rail span charts for the Unirac Solarmount System used in conjunction with the Quick Mount PV TRM products. These span tables serve as a quick reference for looking up maximum rail spans based on building and site conditions and follow the 2016 CBC, 2015 IBC/IRC and applicable ASCE 7-10 load cases. The tables take into account the strength of the rail system as well as the allowable tension, compression, and lateral forces of the Tile Replacement Mount. A site specific analysis is required if the site conditions or building characteristics do not meet the requirements listed in the attached tables. In all cases, the tables are meant to be used in conjunction with Unirac Solarmount System Structural Report and Calculations and all requirements listed are still applicable for these tables including edge zones and edge distances.

Please contact our office if you have any further questions relating to this matter.

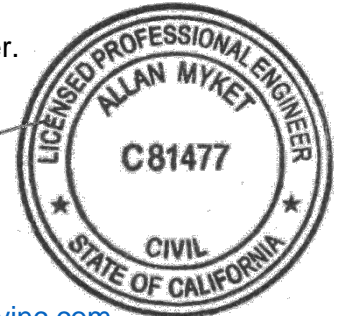
Sincerely,



Peter Martin
Engineer II
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Allan T. Myket, P.E.
President/Founder
amyket@structuralenginuityinc.com



4/26/17

Structural Enginuity Inc.

Rail Spans (in.) for Unirac Solarmount Rails for use with TRM Products

Table 1A		Roof Height: 0 - 30 feet						Post Height: 4.5"											
		Roof Angle: 7 - 27 degrees																	
Exposure B	Ultimate Wind Speed, V (mph)	Roof Wind Pressure Zone 1						Roof Wind Pressure Zone 2						Roof Wind Pressure Zone 3					
		Roof Snow Load (psf)						Roof Snow Load (psf)						Roof Snow Load (psf)					
		0	10	20	30	40	50	0	10	20	30	40	50	0	10	20	30	40	50
Roofs >7° to 27°	110	150	150	102	73	57	47	132	132	102	73	57	47	103	103	102	73	57	47
	115	150	132	102	73	57	47	120	120	102	73	57	47	94	94	94	73	57	47
	120	150	132	102	73	57	47	120	120	102	73	57	47	85	85	85	73	57	47
	130	150	132	102	73	57	47	114	114	102	73	57	47	72	72	72	72	57	47
	140	132	132	102	73	57	47	97	97	97	73	57	47	62	62	62	62	57	47
	150	132	132	102	73	57	47	83	83	83	73	57	47	53	53	53	53	53	47
	160	120	120	102	73	57	47	73	73	73	73	57	47	47	47	47	47	47	47
	170	120	120	101	73	57	47	64	64	64	64	57	47	41	41	41	41	41	41
	180	108	108	97	73	57	47	57	57	57	57	57	47	36	36	36	36	36	36
	200	89	89	89	73	57	47	45	45	45	45	45	45	29	29	29	29	29	29

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable uplift and lateral values of Quick Mount products per test reports.
2. Panels are assumed to be in portrait orientation with a maximum length of 66"

Rail Spans (in.) for Unirac Solarmount Rails for use with TRM Products

Table 1B		Roof Height: 0 - 30 feet						Post Height: 5.5"											
		Roof Angle: 7 - 27 degrees																	
Exposure B	Ultimate Wind Speed, V (mph)	Roof Wind Pressure Zone 1						Roof Wind Pressure Zone 2						Roof Wind Pressure Zone 3					
		Roof Snow Load (psf)						Roof Snow Load (psf)						Roof Snow Load (psf)					
		0	10	20	30	40	50	0	10	20	30	40	50	0	10	20	30	40	50
Roofs >7° to 27°	110	150	150	101	72	56	46	132	132	101	72	56	46	103	103	101	72	56	46
	115	150	132	101	72	56	46	120	120	101	72	56	46	94	94	94	72	56	46
	120	150	132	101	72	56	46	120	120	101	72	56	46	85	85	85	72	56	46
	130	150	132	101	72	56	46	114	114	101	72	56	46	72	72	72	72	56	46
	140	132	132	101	72	56	46	97	97	97	72	56	46	62	62	62	62	56	46
	150	132	132	101	72	56	46	83	83	83	72	56	46	53	53	53	53	53	46
	160	120	120	101	72	56	46	73	73	73	72	56	46	47	47	47	47	47	46
	170	120	120	101	72	56	46	64	64	64	64	56	46	41	41	41	41	41	41
	180	108	108	97	72	56	46	57	57	57	57	56	46	36	36	36	36	36	36
	200	89	89	89	72	56	46	45	45	45	45	45	45	29	29	29	29	29	29

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable uplift and lateral values of Quick Mount products per test reports.
2. Panels are assumed to be in portrait orientation with a maximum length of 66"

Rail Spans (in.) for Unirac Solarmount Rails for use with TRM Products

Table 2A		Roof Height: 0 - 30 feet						Post Height: 4.5"											
		Roof Angle: 7 - 27 degrees																	
Exposure C	Ultimate Wind Speed, V (mph)	Roof Wind Pressure Zone 1						Roof Wind Pressure Zone 2						Roof Wind Pressure Zone 3					
		Roof Snow Load (psf)						Roof Snow Load (psf)						Roof Snow Load (psf)					
		0	10	20	30	40	50	0	10	20	30	40	50	0	10	20	30	40	50
Roofs >7° to 27°	110	150	132	102	73	57	47	114	114	102	73	57	47	72	72	72	72	57	47
	115	132	132	102	73	57	47	103	103	102	73	57	47	65	65	65	65	57	47
	120	132	132	102	73	57	47	94	94	94	73	57	47	60	60	60	60	57	47
	130	132	132	102	73	57	47	79	79	79	73	57	47	50	50	50	50	50	47
	140	120	120	102	73	57	47	68	68	68	68	57	47	43	43	43	43	43	43
	150	116	116	98	73	57	47	58	58	58	58	57	47	38	38	38	38	38	38
	160	100	100	93	73	57	47	51	51	51	51	51	47	33	33	33	33	33	33
	170	88	88	88	73	57	47	45	45	45	45	45	45	29	29	29	29	29	29
	180	78	78	78	70	57	47	40	40	40	40	40	40	26	26	26	26	26	26
	200	62	62	62	62	55	47	32	32	32	32	32	32	21	21	21	21	21	21

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable uplift and lateral values of Quick Mount products per test reports.
2. Panels are assumed to be in portrait orientation with a maximum length of 66"

Rail Spans (in.) for Unirac Solarmount Rails for use with TRM Products

Table 2B		Roof Height: 0 - 30 feet						Post Height: 5.5"											
		Roof Angle: 7 - 27 degrees																	
Exposure C	Ultimate Wind Speed, V (mph)	Roof Wind Pressure Zone 1						Roof Wind Pressure Zone 2						Roof Wind Pressure Zone 3					
		Roof Snow Load (psf)						Roof Snow Load (psf)						Roof Snow Load (psf)					
		0	10	20	30	40	50	0	10	20	30	40	50	0	10	20	30	40	50
Roofs >7° to 27°	110	150	132	101	72	56	46	114	114	101	72	56	46	72	72	72	72	56	46
	115	132	132	101	72	56	46	103	103	101	72	56	46	65	65	65	65	56	46
	120	132	132	101	72	56	46	94	94	94	72	56	46	60	60	60	60	56	46
	130	132	132	101	72	56	46	79	79	79	72	56	46	50	50	50	50	50	46
	140	120	120	101	72	56	46	68	68	68	68	56	46	43	43	43	43	43	43
	150	116	116	98	72	56	46	58	58	58	58	56	46	38	38	38	38	38	38
	160	100	100	93	72	56	46	51	51	51	51	51	46	33	33	33	33	33	33
	170	88	88	88	72	56	46	45	45	45	45	45	45	29	29	29	29	29	29
	180	78	78	78	70	56	46	40	40	40	40	40	40	26	26	26	26	26	26
	200	62	62	62	62	55	46	32	32	32	32	32	32	21	21	21	21	21	21

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable uplift and lateral values of Quick Mount products per test reports.
2. Panels are assumed to be in portrait orientation with a maximum length of 66"

Rail Spans (in.) for Unirac Solarmount Rails for use with TRM Products

Table 3A		Roof Height: 0 - 30 feet						Post Height: 4.5"											
		Roof Angle: 7 - 27 degrees																	
Exposure D	Ultimate Wind Speed, V (mph)	Roof Wind Pressure Zone 1						Roof Wind Pressure Zone 2						Roof Wind Pressure Zone 3					
		Roof Snow Load (psf)						Roof Snow Load (psf)						Roof Snow Load (psf)					
		0	10	20	30	40	50	0	10	20	30	40	50	0	10	20	30	40	50
Roofs >7° to 27°	110	132	132	102	73	57	47	94	94	94	73	57	47	60	60	60	60	57	47
	115	132	132	102	73	57	47	86	86	86	73	57	47	55	55	55	55	55	47
	120	132	132	102	73	57	47	78	78	78	73	57	47	50	50	50	50	50	47
	130	120	120	102	73	57	47	66	66	66	66	57	47	42	42	42	42	42	42
	140	108	108	97	73	57	47	57	57	57	57	57	47	36	36	36	36	36	36
	150	96	96	92	73	57	47	49	49	49	49	49	47	32	32	32	32	32	32
	160	84	84	84	71	57	47	43	43	43	43	43	43	28	28	28	28	28	28
	170	73	73	73	68	57	47	38	38	38	38	38	38	24	24	24	24	24	24
	180	65	65	65	65	56	47	34	34	34	34	34	34	22	22	22	22	22	22
	200	52	52	52	52	52	46	27	27	27	27	27	27	18	18	18	18	18	18

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable uplift and lateral values of Quick Mount products per test reports.
2. Panels are assumed to be in portrait orientation with a maximum length of 66"

Rail Spans (in.) for Unirac Solarmount Rails for use with TRM Products

Table 3B		Roof Height: 0 - 30 feet						Post Height: 5.5"											
		Roof Angle: 7 - 27 degrees																	
Exposure D	Ultimate Wind Speed, V (mph)	Roof Wind Pressure Zone 1						Roof Wind Pressure Zone 2						Roof Wind Pressure Zone 3					
		Roof Snow Load (psf)						Roof Snow Load (psf)						Roof Snow Load (psf)					
		0	10	20	30	40	50	0	10	20	30	40	50	0	10	20	30	40	50
Roofs >7° to 27°	110	132	132	101	72	56	46	94	94	94	72	56	46	60	60	60	60	56	46
	115	132	132	101	72	56	46	86	86	86	72	56	46	55	55	55	55	55	46
	120	132	132	101	72	56	46	78	78	78	72	56	46	50	50	50	50	50	46
	130	120	120	101	72	56	46	66	66	66	66	56	46	42	42	42	42	42	42
	140	108	108	97	72	56	46	57	57	57	57	56	46	36	36	36	36	36	36
	150	96	96	92	72	56	46	49	49	49	49	49	46	32	32	32	32	32	32
	160	84	84	84	71	56	46	43	43	43	43	43	43	28	28	28	28	28	28
	170	73	73	73	68	56	46	38	38	38	38	38	38	24	24	24	24	24	24
	180	65	65	65	65	56	46	34	34	34	34	34	34	22	22	22	22	22	22
	200	52	52	52	52	52	46	27	27	27	27	27	27	18	18	18	18	18	18

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable uplift and lateral values of Quick Mount products per test reports.
2. Panels are assumed to be in portrait orientation with a maximum length of 66"

Rail Spans (in.) for Unirac Solarmount Rails for use with TRM Products

Table 4A		Roof Height: 0 - 30 feet						Post Height: 4.5"											
		Roof Angle: 27 - 45 degrees																	
Exposure B	Ultimate Wind Speed, V (mph)	Roof Wind Pressure Zone 1						Roof Wind Pressure Zone 2						Roof Wind Pressure Zone 3					
		Roof Snow Load (psf)						Roof Snow Load (psf)						Roof Snow Load (psf)					
		0	10	20	30	40	50	0	10	20	30	40	50	0	10	20	30	40	50
Roofs >27° to 45°	110	132	129	82	60	48	39	132	129	82	60	48	39	132	129	82	60	48	39
	115	132	129	82	60	48	39	132	129	82	60	48	39	132	129	82	60	48	39
	120	132	129	82	60	48	39	132	129	82	60	48	39	132	129	82	60	48	39
	130	132	129	82	60	48	39	132	129	82	60	48	39	132	129	82	60	48	39
	140	120	120	82	60	48	39	120	120	82	60	48	39	120	120	82	60	48	39
	150	120	120	82	60	48	39	120	120	82	60	48	39	120	120	82	60	48	39
	160	117	117	82	60	48	39	105	105	82	60	48	39	105	105	82	60	48	39
	170	105	105	82	60	48	39	92	92	82	60	48	39	92	92	82	60	48	39
	180	95	95	82	60	48	39	81	81	81	60	48	39	81	81	81	60	48	39
	200	79	79	76	60	48	39	65	65	65	60	48	39	65	65	65	60	48	39

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable uplift and lateral values of Quick Mount products per test reports.
2. Panels are assumed to be in portrait orientation with a maximum length of 66"

Rail Spans (in.) for Unirac Solarmount Rails for use with TRM Products

Table 4B		Roof Height: 0 - 30 feet						Post Height: 5.5"											
		Roof Angle: 27 - 45 degrees																	
Exposure B	Ultimate Wind Speed, V (mph)	Roof Wind Pressure Zone 1						Roof Wind Pressure Zone 2						Roof Wind Pressure Zone 3					
		Roof Snow Load (psf)						Roof Snow Load (psf)						Roof Snow Load (psf)					
		0	10	20	30	40	50	0	10	20	30	40	50	0	10	20	30	40	50
Roofs >27° to 45°	110	132	128	81	60	47	39	132	128	81	60	47	39	132	128	81	60	47	39
	115	132	128	81	60	47	39	132	128	81	60	47	39	132	128	81	60	47	39
	120	132	128	81	60	47	39	132	128	81	60	47	39	132	128	81	60	47	39
	130	132	128	81	60	47	39	132	128	81	60	47	39	132	128	81	60	47	39
	140	120	120	81	60	47	39	120	120	81	60	47	39	120	120	81	60	47	39
	150	120	120	81	60	47	39	120	120	81	60	47	39	120	120	81	60	47	39
	160	117	117	81	60	47	39	105	105	81	60	47	39	105	105	81	60	47	39
	170	105	105	81	60	47	39	92	92	81	60	47	39	92	92	81	60	47	39
	180	95	95	81	60	47	39	81	81	81	60	47	39	81	81	81	60	47	39
	200	79	79	76	60	47	39	65	65	65	60	47	39	65	65	65	60	47	39

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable uplift and lateral values of Quick Mount products per test reports.
2. Panels are assumed to be in portrait orientation with a maximum length of 66"

Rail Spans (in.) for Unirac Solarmount Rails for use with TRM Products

Table 5A		Roof Height: 0 - 30 feet						Post Height: 4.5"											
		Roof Angle: 27 - 45 degrees																	
Exposure C	Ultimate Wind Speed, V (mph)	Roof Wind Pressure Zone 1						Roof Wind Pressure Zone 2						Roof Wind Pressure Zone 3					
		Roof Snow Load (psf)						Roof Snow Load (psf)						Roof Snow Load (psf)					
		0	10	20	30	40	50	0	10	20	30	40	50	0	10	20	30	40	50
Roofs >27° to 45°	110	132	129	82	60	48	39	132	129	82	60	48	39	132	129	82	60	48	39
	115	132	129	82	60	48	39	120	120	82	60	48	39	120	120	82	60	48	39
	120	120	120	82	60	48	39	120	120	82	60	48	39	120	120	82	60	48	39
	130	120	120	82	60	48	39	114	114	82	60	48	39	114	114	82	60	48	39
	140	108	108	82	60	48	39	97	97	82	60	48	39	97	97	82	60	48	39
	150	98	98	82	60	48	39	84	84	82	60	48	39	84	84	82	60	48	39
	160	87	87	82	60	48	39	73	73	73	60	48	39	73	73	73	60	48	39
	170	78	78	75	60	48	39	64	64	64	60	48	39	64	64	64	60	48	39
	180	69	69	69	60	48	39	57	57	57	57	48	39	57	57	57	57	48	39
	200	55	55	55	55	48	39	46	46	46	46	46	39	46	46	46	46	46	39

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable uplift and lateral values of Quick Mount products per test reports.
2. Panels are assumed to be in portrait orientation with a maximum length of 66"

Rail Spans (in.) for Unirac Solarmount Rails for use with TRM Products

Table 5B		Roof Height: 0 - 30 feet						Post Height: 5.5"											
		Roof Angle: 27 - 45 degrees																	
Exposure C	Ultimate Wind Speed, V (mph)	Roof Wind Pressure Zone 1						Roof Wind Pressure Zone 2						Roof Wind Pressure Zone 3					
		Roof Snow Load (psf)						Roof Snow Load (psf)						Roof Snow Load (psf)					
		0	10	20	30	40	50	0	10	20	30	40	50	0	10	20	30	40	50
Roofs >27° to 45°	110	132	128	81	60	47	39	132	128	81	60	47	39	132	128	81	60	47	39
	115	132	128	81	60	47	39	120	120	81	60	47	39	120	120	81	60	47	39
	120	120	120	81	60	47	39	120	120	81	60	47	39	120	120	81	60	47	39
	130	120	120	81	60	47	39	114	114	81	60	47	39	114	114	81	60	47	39
	140	108	108	81	60	47	39	97	97	81	60	47	39	97	97	81	60	47	39
	150	98	98	81	60	47	39	84	84	81	60	47	39	84	84	81	60	47	39
	160	87	87	81	60	47	39	73	73	73	60	47	39	73	73	73	60	47	39
	170	78	78	75	60	47	39	64	64	64	60	47	39	64	64	64	60	47	39
	180	69	69	69	60	47	39	57	57	57	57	47	39	57	57	57	57	47	39
	200	55	55	55	55	47	39	46	46	46	46	46	39	46	46	46	46	46	39

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable uplift and lateral values of Quick Mount products per test reports.
2. Panels are assumed to be in portrait orientation with a maximum length of 66"

Rail Spans (in.) for Unirac Solarmount Rails for use with TRM Products

Table 6A		Roof Height: 0 - 30 feet						Post Height: 4.5"											
		Roof Angle: 27 - 45 degrees																	
Exposure D	Ultimate Wind Speed, V (mph)	Roof Wind Pressure Zone 1						Roof Wind Pressure Zone 2						Roof Wind Pressure Zone 3					
		Roof Snow Load (psf)						Roof Snow Load (psf)						Roof Snow Load (psf)					
		0	10	20	30	40	50	0	10	20	30	40	50	0	10	20	30	40	50
Roofs >27° to 45°	110	120	120	82	60	48	39	120	120	82	60	48	39	120	120	82	60	48	39
	115	120	120	82	60	48	39	120	120	82	60	48	39	120	120	82	60	48	39
	120	120	120	82	60	48	39	108	108	82	60	48	39	108	108	82	60	48	39
	130	108	108	82	60	48	39	95	95	82	60	48	39	95	95	82	60	48	39
	140	95	95	82	60	48	39	81	81	81	60	48	39	81	81	81	60	48	39
	150	84	84	80	60	48	39	70	70	70	60	48	39	70	70	70	60	48	39
	160	74	74	73	60	48	39	61	61	61	60	48	39	61	61	61	60	48	39
	170	65	65	65	60	48	39	54	54	54	54	48	39	54	54	54	54	48	39
	180	58	58	58	56	48	39	48	48	48	48	48	39	48	48	48	48	48	39
	200	47	47	47	47	45	39	39	39	39	39	39	39	39	39	39	39	39	39

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable uplift and lateral values of Quick Mount products per test reports.
2. Panels are assumed to be in portrait orientation with a maximum length of 66"

Rail Spans (in.) for Unirac Solarmount Rails for use with TRM Products

Table 6B		Roof Height: 0 - 30 feet						Post Height: 5.5"											
		Roof Angle: 27 - 45 degrees																	
Exposure D	Ultimate Wind Speed, V (mph)	Roof Wind Pressure Zone 1						Roof Wind Pressure Zone 2						Roof Wind Pressure Zone 3					
		Roof Snow Load (psf)						Roof Snow Load (psf)						Roof Snow Load (psf)					
		0	10	20	30	40	50	0	10	20	30	40	50	0	10	20	30	40	50
Roofs >27° to 45°	110	120	120	81	60	47	39	120	120	81	60	47	39	120	120	81	60	47	39
	115	120	120	81	60	47	39	120	120	81	60	47	39	120	120	81	60	47	39
	120	120	120	81	60	47	39	108	108	81	60	47	39	108	108	81	60	47	39
	130	108	108	81	60	47	39	95	95	81	60	47	39	95	95	81	60	47	39
	140	95	95	81	60	47	39	81	81	81	60	47	39	81	81	81	60	47	39
	150	84	84	80	60	47	39	70	70	70	60	47	39	70	70	70	60	47	39
	160	74	74	73	60	47	39	61	61	61	60	47	39	61	61	61	60	47	39
	170	65	65	65	60	47	39	54	54	54	54	47	39	54	54	54	54	47	39
	180	58	58	58	56	47	39	48	48	48	48	47	39	48	48	48	48	47	39
	200	47	47	47	47	45	39	39	39	39	39	39	39	39	39	39	39	39	39

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable uplift and lateral values of Quick Mount products per test reports.
2. Panels are assumed to be in portrait orientation with a maximum length of 66"