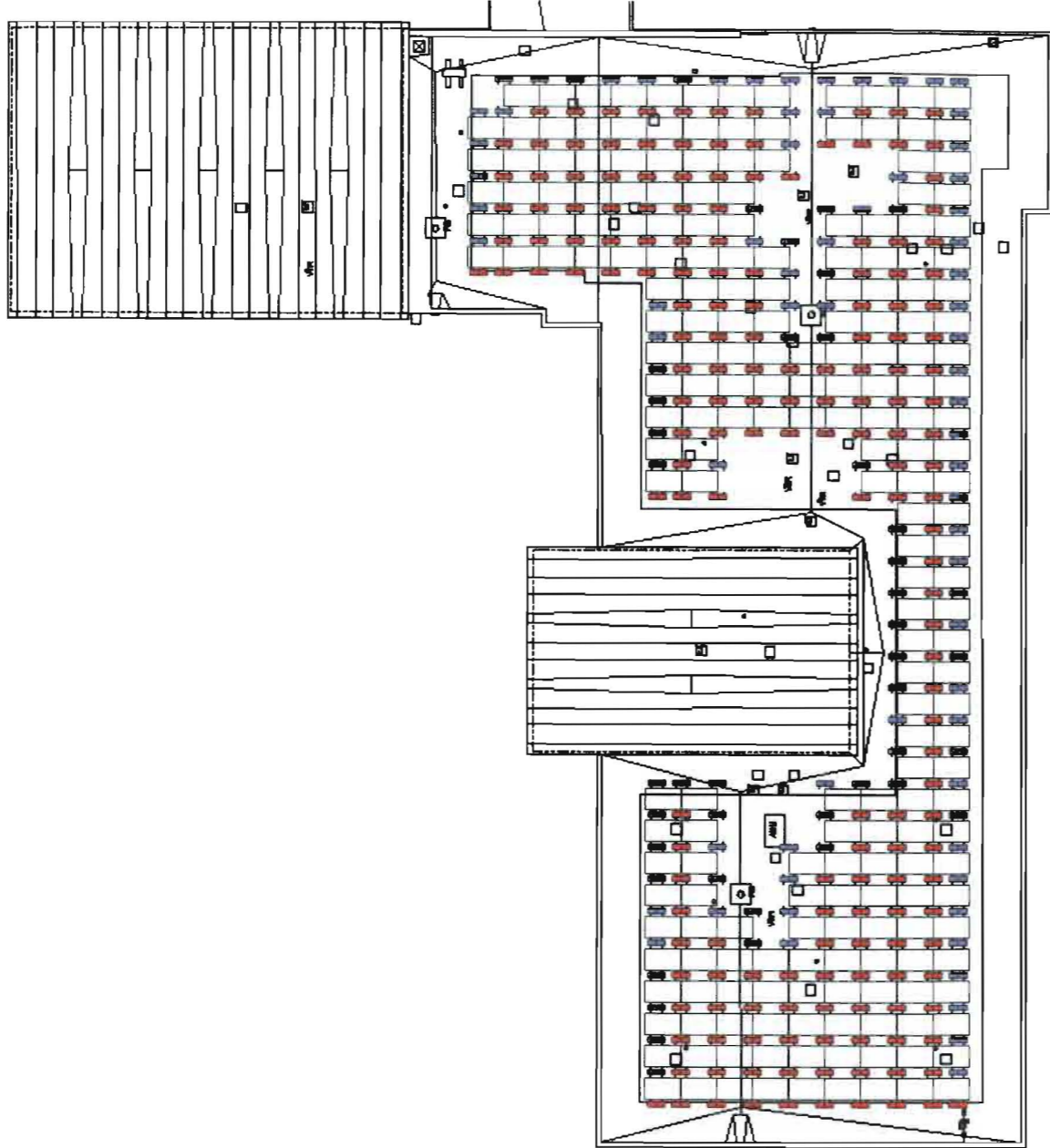


REV	DATE	DESCRIPTION	BY	CHECKED
-		RELEASED 10-0790-A1-10B FOR PROPOSAL	RGC	JEK
A		ADDED BALLAST REQUIREMENT	RGC	CRJ
B		REVISED BUILDING BACKGROUND	TJS	CRJ



Rayport 430 - 10 Degree Ballast Design
 *Based on ASCE 7-05



Project	VOA - Bayview Heights, ME	Quote No.	10-0790-01	Date	September 2, 2011
Customer	Kenyon Energy	Contact	Tim Ponczek	Phone	(907) 777-0833
Project Address	158 North Street Portland, ME 04101	Wind Speed (mph)	101.0	Building Height (ft)	20.0
Site Condition	No Topographical Features	Exposure Category	C	Module Tilt Angle	10.0
		Importance Factor per ASCE7-05 Section 6.5.5	1.00	Seismic, S₁	0.00
Module Manufacturer	REC	Model Number	REC240PE (BLK)	Output Rating (watts)	240
Module Length (in)	65.55	Module Width (in)	39.02	Module Height (in)	1.50
				Module Weight (lbs)	39.68
				Module Area (sf)	17.76

Ballast and Anchor Calculations per ASCE 7-05

V	K _d	I	K _z	K _{zt}	q	G	C _f	A _f	F	F _{normal}	lbs/Panel	F _{vert}	F _{horiz}	W _{req} /Module	Blocks/Module	Modules/Bolt	Modules/Lag
.101	0.85	1.00	0.90	1.00	19.98	0.85	1.3	3.08	41.5	7.3	129.4	127.4	22.5	180.5	6	0	0

System BOM

	Qty	Wt. - lbs	Total lbs.
Modules	221	39.7	8,770
Rails	535	2.9	1,537
Trays	293	5.6	1,640
Clamps / Screws	1070	0.20	214
Ballast Bricks	1233	33.0	41,056
Total System Dead Load (lbs)			53,218
		Area - ft²	6,038
		Pounds per Square Foot	8.81

Loading Details

	W _{req} /Panel	Modules	Total Wt. (lbs)
Total ballast required per ASCE calculations	180.5	221	39,890
		Bricks / Tray	Load (psf)*
North Row Tray Requirement		5	9.96
Second Row Tray Requirement		4	8.45
Edge Column Tray Requirement		5	9.96
Second Column Tray Requirement		4	8.45
Remaining Middle Tray Requirement		4	8.45

* Load is contact load of ballasted tray to roof surface in pounds per square inch.

Total required ballast weight of 39,890 lbs is exceeded by the total weight applied in ballast bricks of 41,056 lbs.

LEGEND

- 6 BALLAST BRICKS
- 5 BALLAST BRICKS
- 4 BALLAST BRICKS
- 3 BALLAST BRICKS
- 2 BALLAST BRICKS

RACKING/MODULE SPECIFICATIONS

SOLAR RACKING	AET RAYPORT 10 DEGREE STD TRAY 58.62in REPEATING ROW
SOLAR MODULE	REC SOLAR REC 240 PE-US MODULE PE MODULE SIZE: 1665mm x 991mm x 38mm

THIS LAYOUT IS AN APPROXIMATION AND IS INTENDED FOR QUOTING PURPOSES ONLY. ACTUAL SYSTEM SIZE AND/OR LOCATION OF RACKING MAY VARY. IT IS THE RESPONSIBILITY OF THE INSTALLER TO CONFIRM THAT THE LOCATION OF THE RACKING DOES NOT INTERFERE WITH OR BECOME SHADED BY ANY OBSTRUCTIONS. AET ASSUMES NO RESPONSIBILITY OF THE RACKING CONFIGURATION.

2140	5	80013	SCREW - 1/4-20x3/4 FLG HEX HD
1070	4	80022	CLAMP - 38 MDL
293	3	80009	BALLAST TRAY ASM
535	2	80283	SUPPORT RAIL ASM - 10 DRIS 991 MDL
221	1	-	SOLAR MODULE (NOT PAID QUOTE)

Kenyon Energy
 REC SOLAR REC 240 PE-US
 MODULE: 240 W / SYSTEM: 53.04 kW
 158 North Street
 Portland, ME 04101

Applied Energy Technologies
 Equipment Solutions to Energy Management

1:100 10-0790-A1-10B



CBL 010 - C - 001 - 001

Permit # 20116528

September 15, 2011

Mr. John Lederer
Construction/Facilities Management Manager
Volunteers of America

Sent via Email to: JLederer@voa.org

RE: Roof PV installations – Confirmation of available Roof Load Capacity
158 North Street, Portland, Maine

John:

We have reviewed the following items submitted by you regarding the proposed PV array on the Bayview building rooftop. These include:

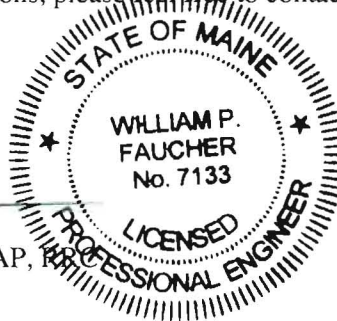
- Plan entitled “Module Layout”, drawing 10-0790-A1-10B as prepared by Applied Energy Technologies of Clinton Township, MI and dated 08/31/11.
- Applied Energy Technologies Cut Sheet for the Rayport Stainless Series Roof Ballast Rack assembly.

The intended PV array will increase the dead load on the roof surface by approximately 8.9 psf over the array field. It is our opinion, that the current plank spans, and provided intermediate support framing/foundation system recently introduced, has sufficient capacity to support the proposed array system.

Should you have additional questions, please feel free to contact us.

Sincerely;

William P. Faucher, P.E., LEED AP, Principal



n:\projects\2010\10088 ~ bayview apartments - bowman\20 correspondence\bayview heights pv array confirmation letter 9-15-11.doc