



Starling Madison Lofquist, Inc.

Consulting Structural and Forensic Engineers

5224 South 39th Street, Phoenix, Arizona 85040

tel: (602) 438-2500 fax: (602) 438-2505 www.smleng.com

IronRidge
1435 Baechtel Road
Willits, CA 95490

April 18, 2012
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Attn: Mr. William Kim, Chief Executive Officer

Subject: IronRidge Ballasted Roof Mounting System – Structural Analysis

Dear Sir:

We have analyzed the subject solar panel support system and determined that it is in compliance with the structural requirements of the following Reference Documents:

Codes: ASCE/SEI 7-05 Min. Design Loads for Buildings & Other Structures

International Building Code, 2006 & 2009 Editions

California Building Code, 2007 & 2010 Editions

Other: Aluminum Design Manual, 2005 Edition

AISI S100-2007, Spec. for the Design of Cold Formed Steel Structural Members

The Ballasted Roof Mounting system has PV panels laid out in a landscape orientation and attached near each corner to a proprietary framed ballast assembly. See Exhibit A, attached. The frames hold the panels at a 10 deg slope and are ballasted with concrete blocks as required for the wind loads. The frames may be connected by an aluminum or steel deflector beam. This beam serves to reduce the wind uplift loads by 1) preventing high wind pressures from developing on the underside of the panels and by 2) providing sufficient structural capacity to distribute higher localized wind loads over a larger area causing an averaging of the wind loads over several frames. Both these effects permit lower design wind loads to be used.

The wind uplift loads are resisted directly by the ballast. Lateral forces, both wind and seismic, are resisted by either friction between the ballast and the roof surface or by a proprietary anchorage system.

The ballasting requirements are determined using the online Design Assistant for the system at IronRidge.com. The Design Assistant covers a wide range of system configurations and loading and allows the user to customize the input to match the specific project conditions. Mounting heights up to 60 ft. and wind speeds up to 120 mph can be accommodated. The average weight of the system, the additional load the system imposes on the roof structure, is as low as 2.8 psf.

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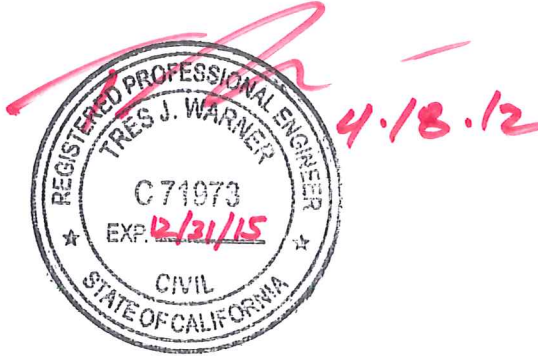
Our analysis assumes that the panels and frames, including the connections and associated hardware, are installed in a workmanlike manner in accordance with the “Ballasted Roof Mounting Installation Manual” by IronRidge and generally accepted standards of construction practice.

The adequacy of the supporting roof framing is to be determined by others.

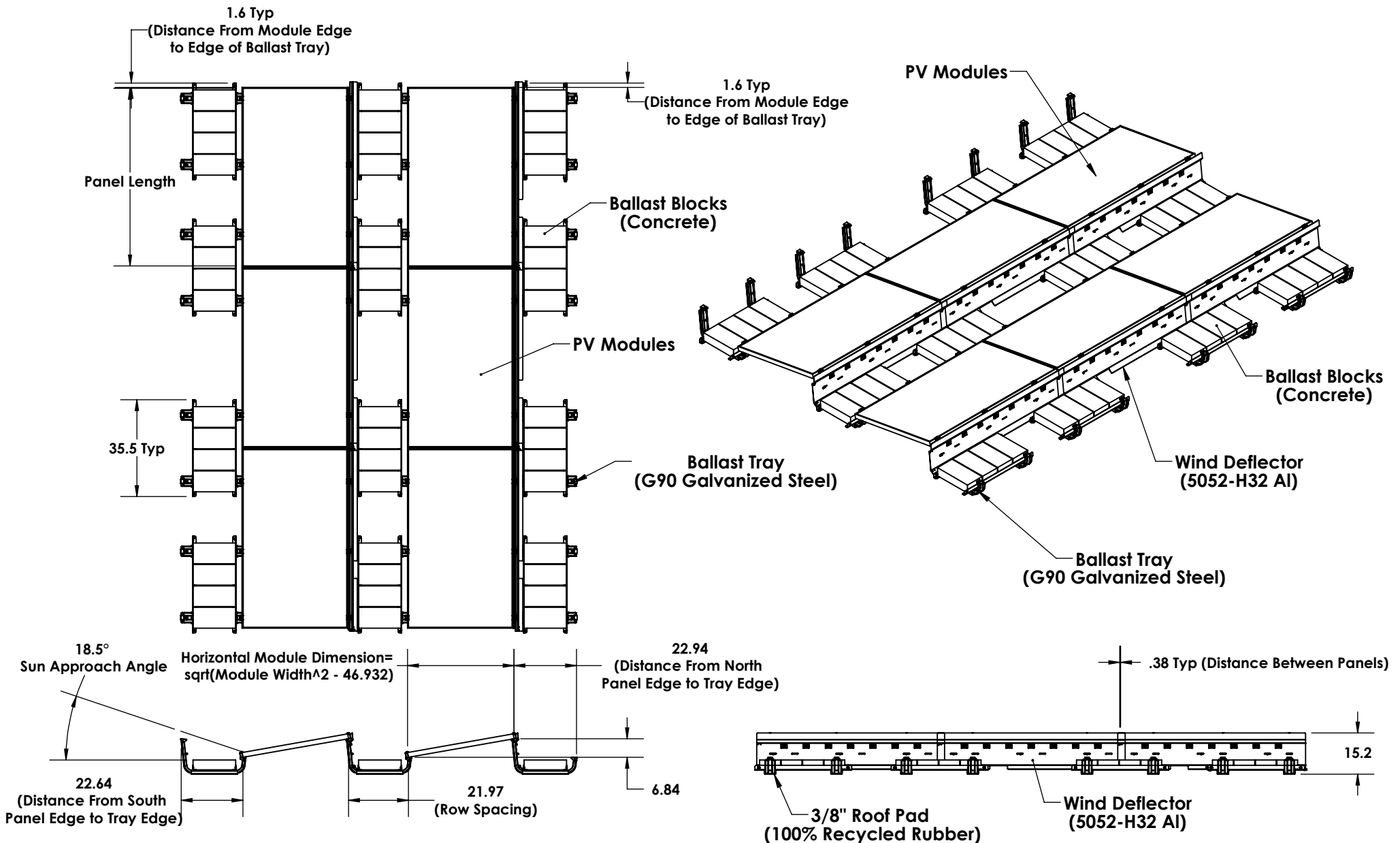
Please feel free to contact me at your convenience if you have any questions.

Respectfully yours,

Tres Warner, P.E.
Design Division Manager



IronRidge Ballasted Roof Mount System 10 Degree Exhibit A



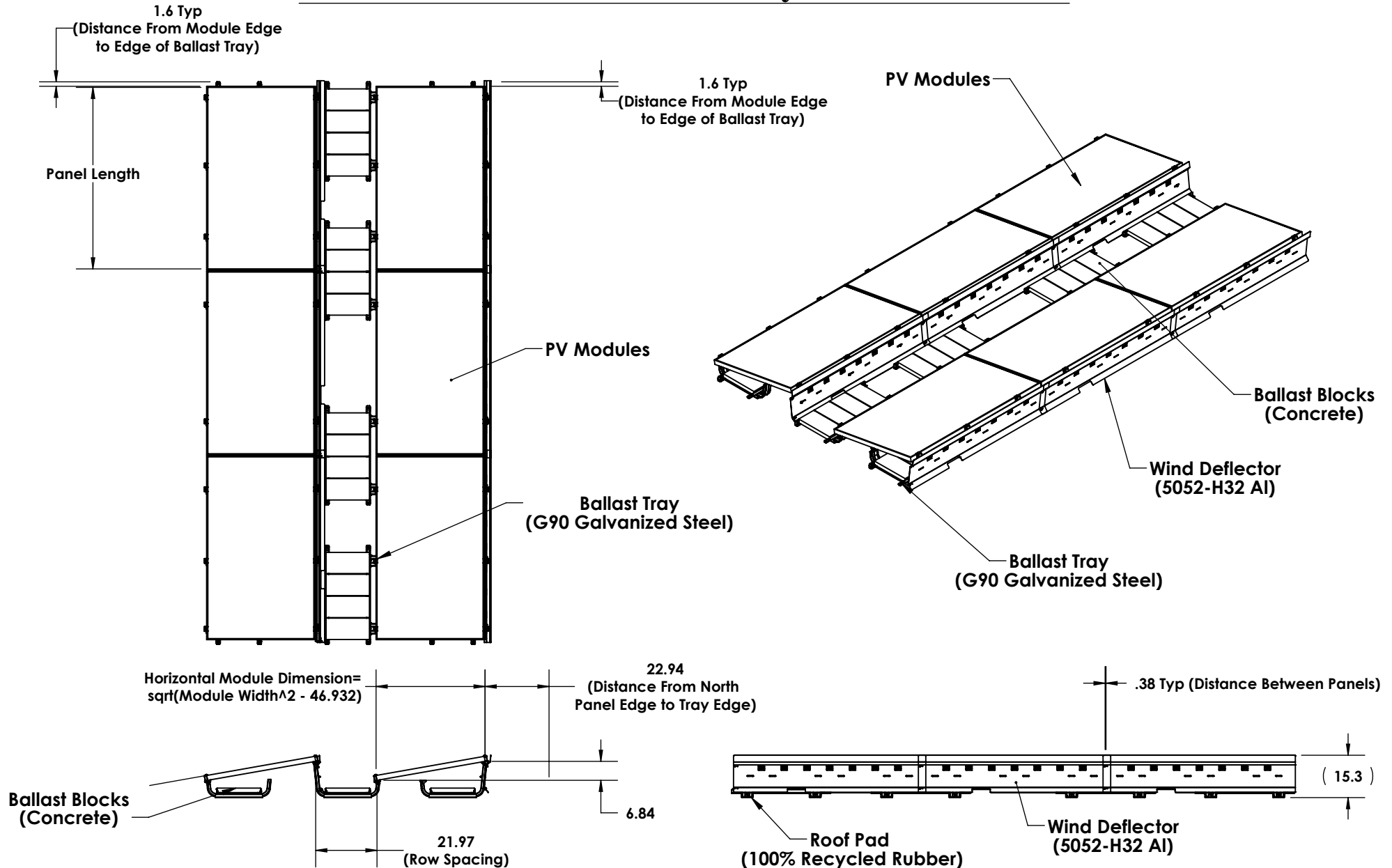
NOTES: UNLESS OTHERWISE SPECIFIED

1. THIS DRAWING IS FOR LAYOUT REFERENCE ONLY.
2. All Stainless Steel hardware.
3. All dimensions are in inches.



IronRidge Ballasted Roof Mount System 10 Degree

Exhibit A- North & South Trays Under Modules



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