John Martin

Structural Engineering, Inc.

9221 April Lane **Mokena, Illinois 60448** **Phone (708) 479-8133**

Dhaval Patel
15221 Cottonwood Court
Orland Park, Illinois 60462

1 May 2017
Job #17-079

RE: 15221 Cottonwood Court, Orland Park, Illinois
Visual Inspection of Roof Structure to Support Photovoltaic Solar Panels

On Tuesday, April 25, 2017 I went to the above-referenced site and made a visual inspection of the roof structure. The purpose of the inspection was to assist in the determination as to whether or not the roof can support the weight of proposed photovoltaic solar panels.

The building in question is a two-story, single-family residence. The roof is "stick-built" with 2x8 rafters spaced at 16" o.c. The maximum rafter span is approximately 14'-6". The roofing is cedar shakes. I have also reviewed product information for the proposed solar panels and the proposed solar panel layout, which is attached to this report for reference. My calculations indicate that the solar panels weigh approximately 2 ½ PSF.

Based on my observations and calculations it is my opinion that the roof structure can safely support the weight of the proposed solar panels.

This report is based on the visual inspection of the area of the structure as described above. We cannot guarantee that all problems have been discovered and/or resolved. Our recommendations represent our opinion as to the best solutions to the problems presented based on the information that we currently possess. No other warrantee is given nor implied. We should be contacted immediately if conditions are discovered to be other than as described in this report or if there are any questions about our recommendations.

We appreciate the opportunity to provide this inspection and report for you. If you have any questions about this report or are in additional need of our services, please feel free to call me.

Respectfully submitted,
John Martin Structural Engineering, Inc.
License No. 184-002643

5-1-17

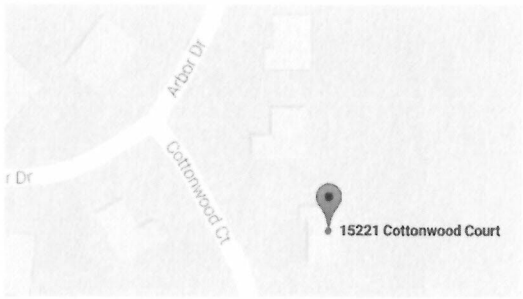
John M. Gorski, President

SOLAR PV INSTALLATION PROJECT

REFERENCED CODES AND ACTS

15221 Cottonwood Court, Orland Park, IL 60467

PLAN AND CONSTRUCTION SET
05/19/2017



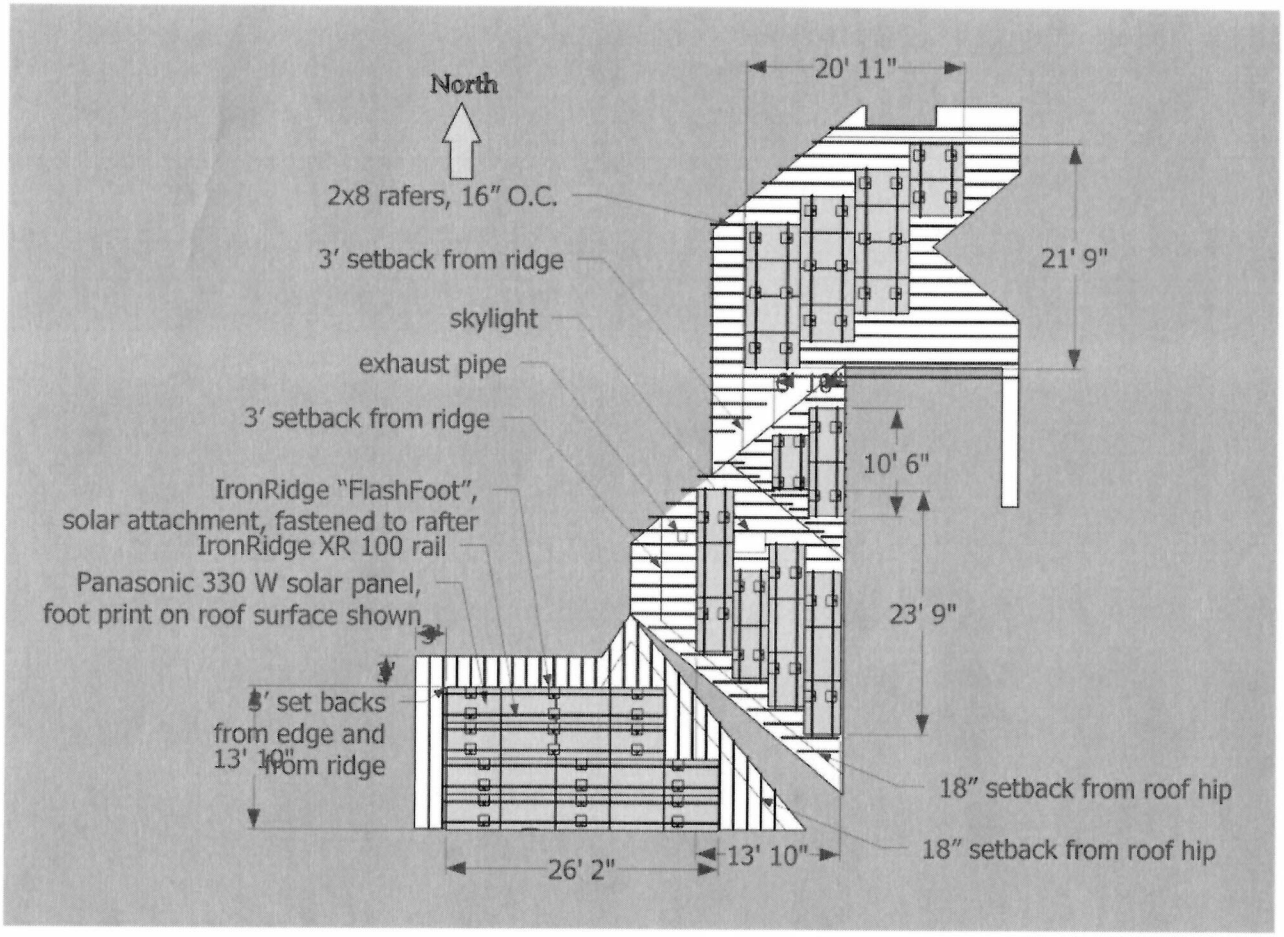
PROJECT SUMMARY:

- 15.18 kW Grid Interactive Solar Array
- Panasonic (46) 330W Modules
- 1 Solar Edge SE7600A-US Inverter and 1 Solar Edge SE5000A-US Inverter, IEEE-1547 AND UL-1741 COMPLIANT
- Ironridge XR-100 racking, 90° and 180° azimuth
- Inverter output: 240V, 1ϕ, 3W
- Building Service: 200A, 240V, 1ϕ, 3W

SHEET INDEX:

Ailey Solar	PROJECT/ADDRESS: 15221 Cottonwood Court, Orland Park, IL 60467 SHEET NUMBER: 1 VERSION: 5/16/2017 Drawn: JL-M Checked: DB *Ailey Solar: 1965 W. Pershing, Chicago, IL 60609 | (773) 245-3912 | info@aileysolar.com*

ARRAY AND RACKING PLAN - OVERVIEW



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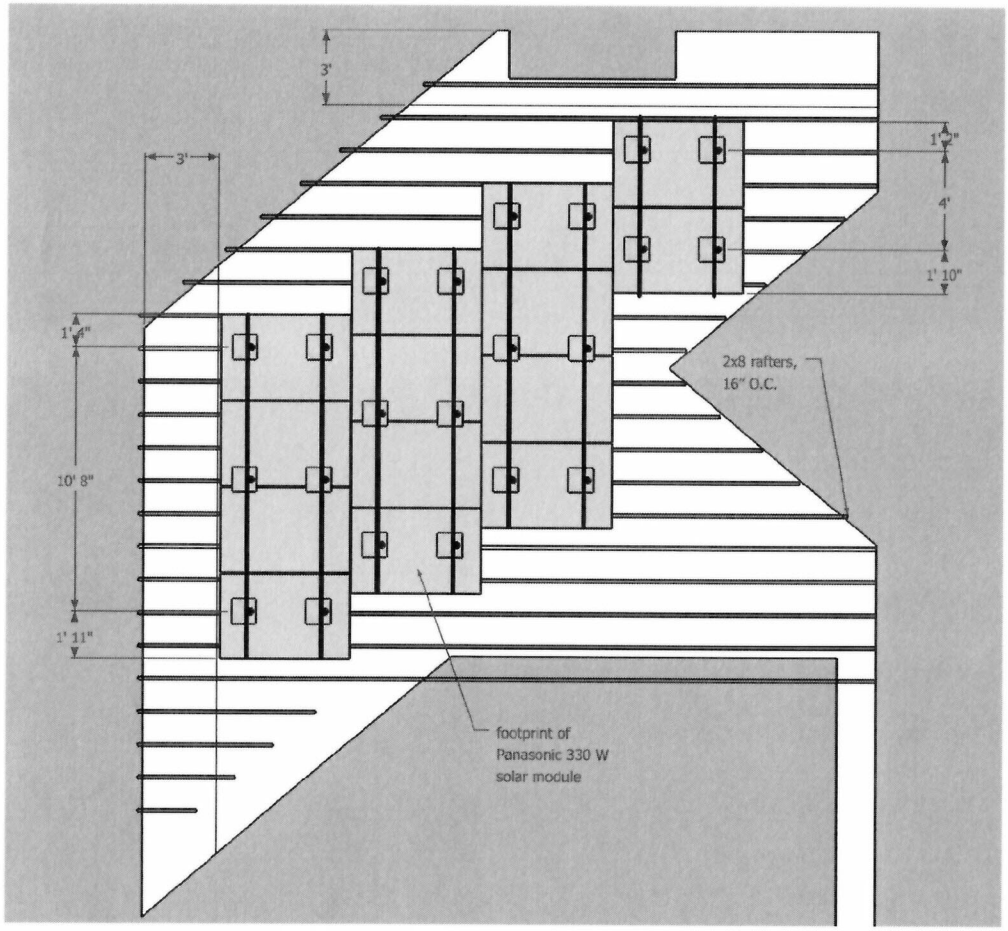
ARRAY AND RACKING PLAN - EAST-NORTH ROOF



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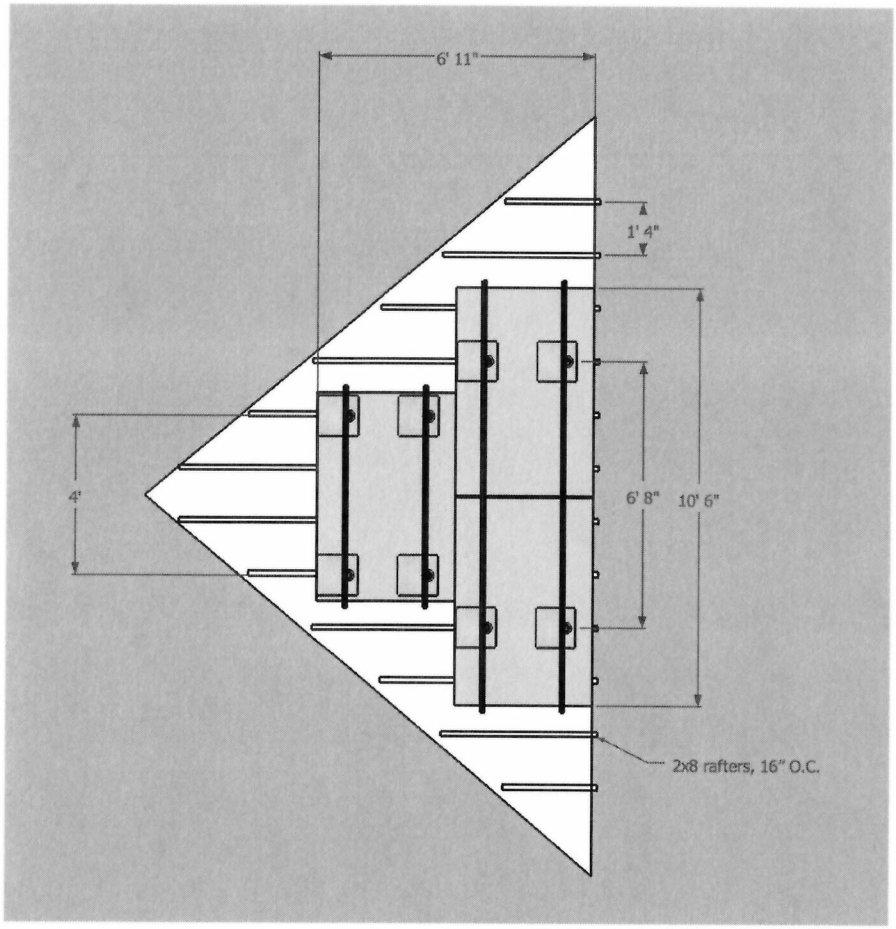
ARRAY AND RACKING PLAN - EAST-MIDDLE-ROOF



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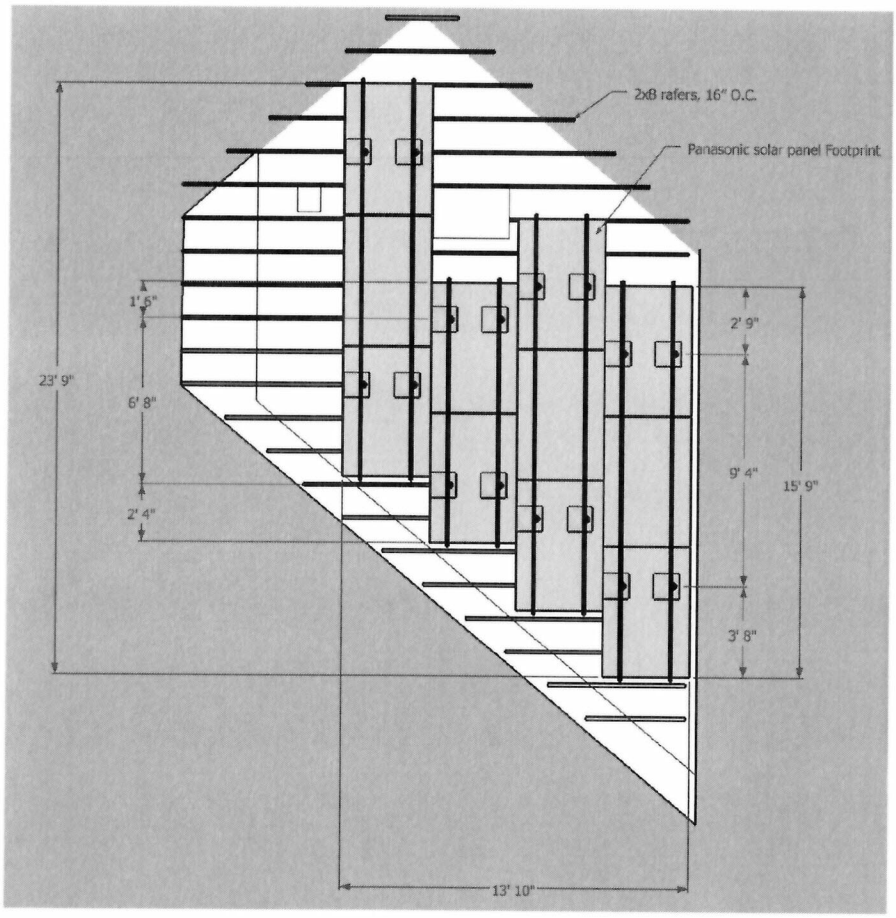
ARRAY AND RACKING PLAN - EAST-SOUTH-ROOF



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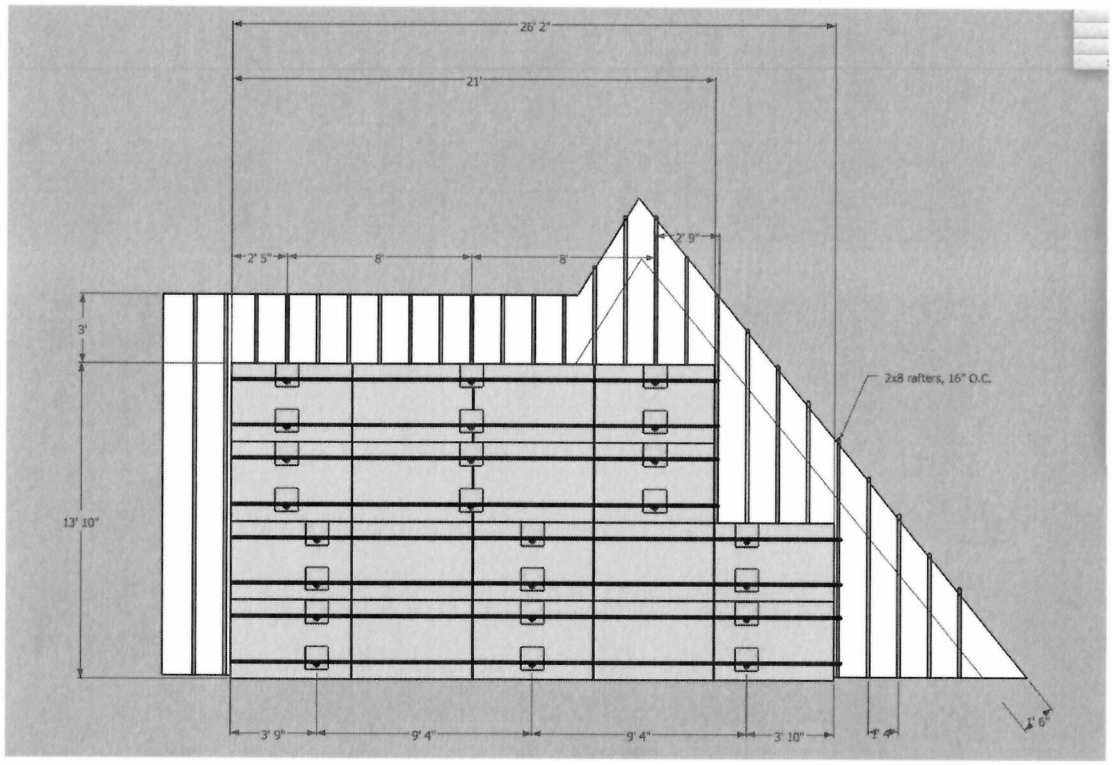
ARRAY AND RACKING PLAN - SOUTHROOF



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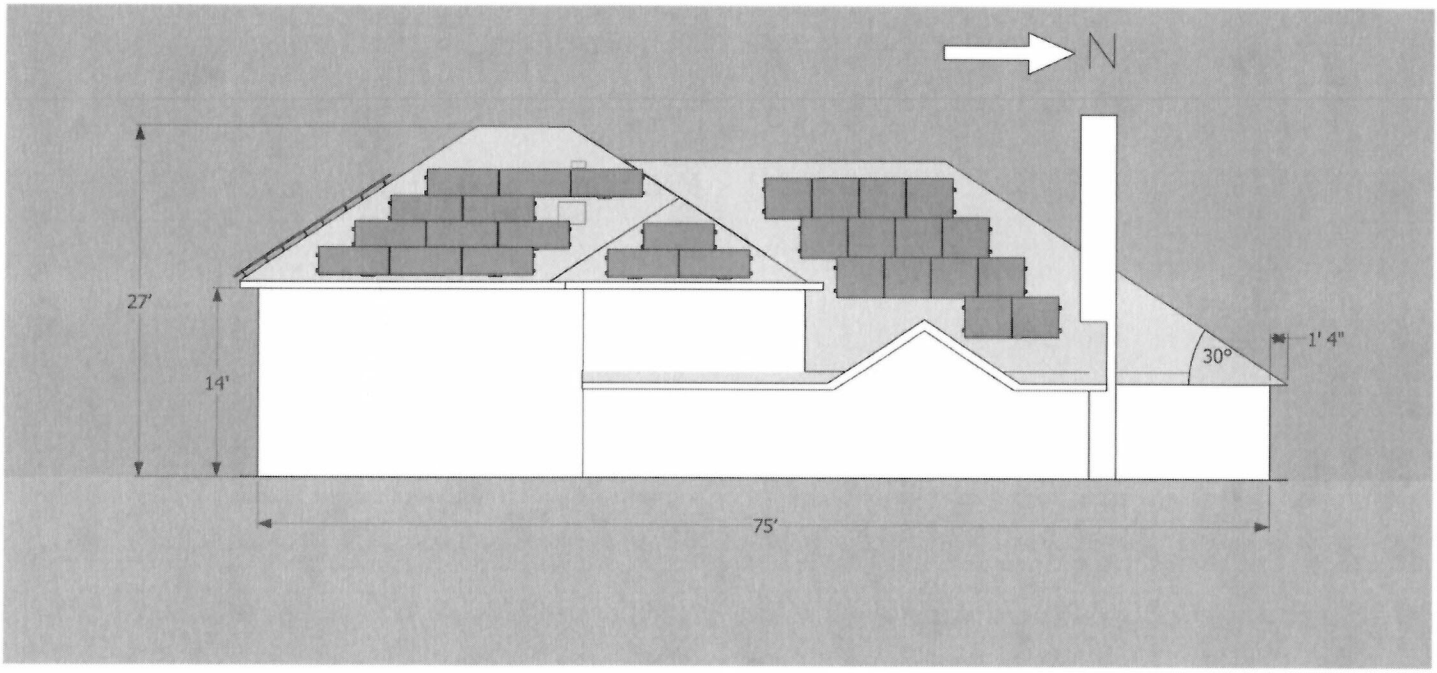
EAST ELEVATION



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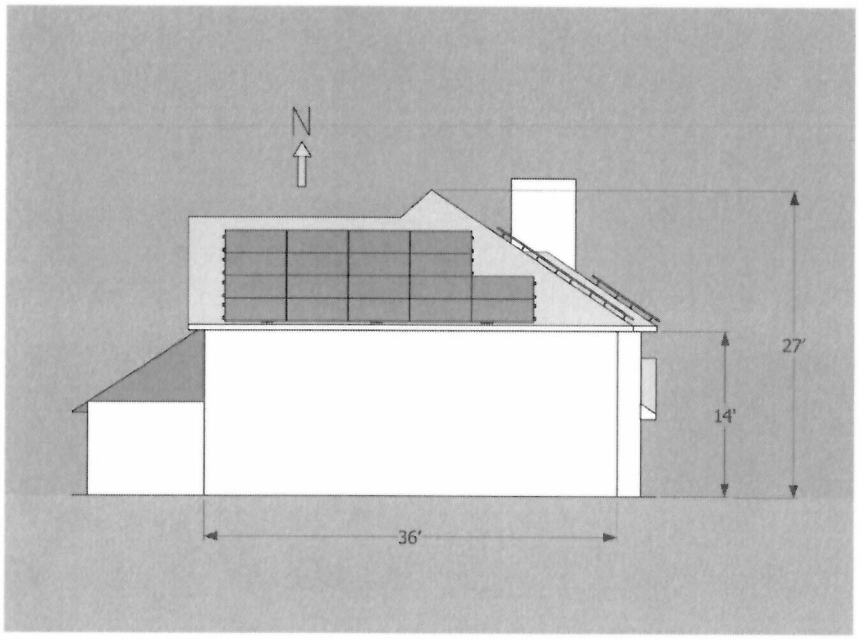
SOUTH ELEVATION



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Mike Mazza, ASLA
6/19/17
Planner I
Development Services
14700 Ravinia Avenue, Orland Park, IL 60462

RE: possibility for solar reflection at Patel Residence.

Dear Mr. Mazza,

Thank you for your email of June 16 to Dr. Patel where you request assurance from the contractor that solar reflection from the south array should not pose a glare problem. Your note is here:

> 7) SES collector panels shall be placed such that concentrated solar radiation or glare shall not be directed onto nearby properties, roadways or public right-of-ways.
>
> However, as there is a neighboring property in line with the solar panels you plan on installing on your south elevation, I was hoping you could work with your contractor to provide some type of assurance that "concentrated solar radiation or glare shall not be directed onto nearby properties". I ask this knowing the solar panels don't really reflect light, which would be contrary to their intended purpose of absorbing sunlight. But based on experience from a previous solar project, in which neighbors attended the Plan Commission meeting and wanted assurance that glare would not be an issue, I would like you to provide the Village with a letter or other documentation stating that your project will be in compliance with #7 above, which could be backed up by the professional experience of the contractor you are working with.

In our experience, none of the solar arrays being planned for Dr. Patel's property should pose a solar reflection or glare risk to any of the neighbors, including the south facing array and the neighbor directly to the south - so the installation will be in compliance with #7 above. For additional assurance, we have included a number of additional items below:

- A link to an industry article discuss solar reflection: http://solarprofessional.com/articles/design-installation/evaluating-glare-from-roof-mounted-pv-arrays#.WUgzcuvyuJC
- A photo of the Patel home and the property to the south.
- A scale plan drawing showing the expected direction of reflected sunlight on the Summer Solstice (the highest point in the year the sun will appear).
- A scale plan drawing showing the expected direction of reflected sunlight on the Winter Solstice (the lowest point in the year the sun will appear).

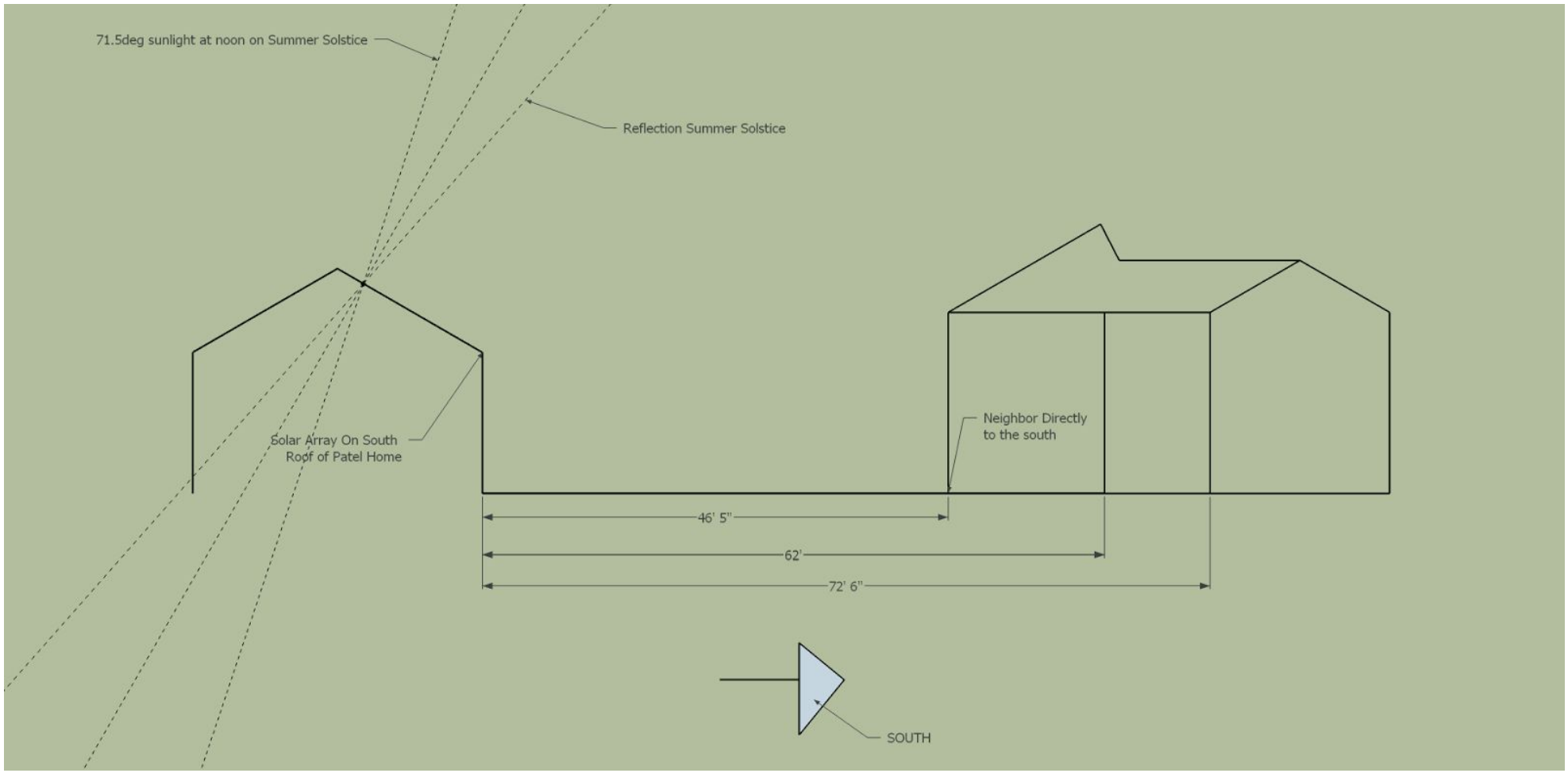
Please don't hesitate to contact me if you or any homeowners have any questions or concerns.

Sincerely,

Dorian Breuer
Co-Owner
Ailey Solar

A photo of the Patel home and the property to the south.

A scale plan drawing showing the expected direction of reflected sunlight on the Summer Solstice (the highest point in the year the sun will appear).



A scale plan drawing showing the expected direction of reflected sunlight on the Winter Solstice (the lowest point in the year the sun will appear).