



171-10292

October 5, 2017

Taylor Hazell Architects Ltd.
333 Adelaide Street West, Fifth Floor
Toronto, Ontario, M5V 1R5

Attn: Charles Hazell

Email: chazell@taylorhazell.com

Dear Charles,

**Re: 13107 Refurbishment of Parry Sound CCG Base
PV Panel Structural Feasibility Study**

As requested, we have reviewed the feasibility of the existing roof structure to support an array of photovoltaic (PV) panels. Our findings, including documents reviewed and limitations, are summarized in this letter.

1. DOCUMENTS REVIEWED

- ▶ Base building structural drawing S-3 and S-5 prepared by Dowdell, Pal & Associates Limited Engineers dated 1984-05-31
- ▶ Preliminary PV Layout drawing E-E01 & E-E02, Issued for 99% Review, prepared by Goodkey Weedmark & Associates Limited dated 2017-09-14
- ▶ Roof Assembly details and weight estimates, prepared by R.Kendall Consulting Inc. dated 2017-09-18
- ▶ No Solar Panel Racking drawings were available at the time of our review

2. ROOF STRUCTURE DESCRIPTION

Based on the base building drawings, the building is single storey with a roof height of approximately 7.5m in the areas in question. The roof structure in the areas in question typically consists of 38mm deep steel deck on open web steel joist (OWSJ), supported by steel beams, and columns. The design roof loads are noted as 2.9 kPa snow load plus snow piling and 1.6 kPa dead load on the base building drawings.

Based on the provided information, we understand that the roof assembly system will be replaced with a new roof assembly. The new roof consists of inverted roof with approximately 3" ballast. Based on the information provided by R.Kendall (Roofing Consultant), we understand that the new roof assembly weighs 24.26 psf (1.16 kPa). Also based on the provided information, we understand that the proposed PV construction type is a ballasted 15° tilt system.

3. ASSESSMENT

The roof structure was reviewed against the structural capacity requirements of the 2012 Ontario Building Code. Based on the above information, it is our opinion that the existing base building roof structure is capable of supporting the installation of a solar array with a maximum distributed load of 0.31 kPa (6.5 psf) in the proposed area.



Because wind loads, and potentially snow loads, will have an impact on the total loading, we do not recommend selecting a rack system that weighs the full load allowance noted above. Concentrated loads under the ballast will have to be reviewed separately. A final assessment will be required when detailed site-specific panel layout and ballasting information is available.

Please note that the additional load of the PV system must be uniformly distributed on each existing joist. PV panels shall not be installed on a joist which is already supporting a rooftop unit. It is our understanding that the above information will be used to generate preliminary PV layout drawings which will be provided to us for review. Please refer to the attached sketch SK-1 for a summary of the PV panel layout.

4. LIMITATIONS OF FEASIBILITY STUDY

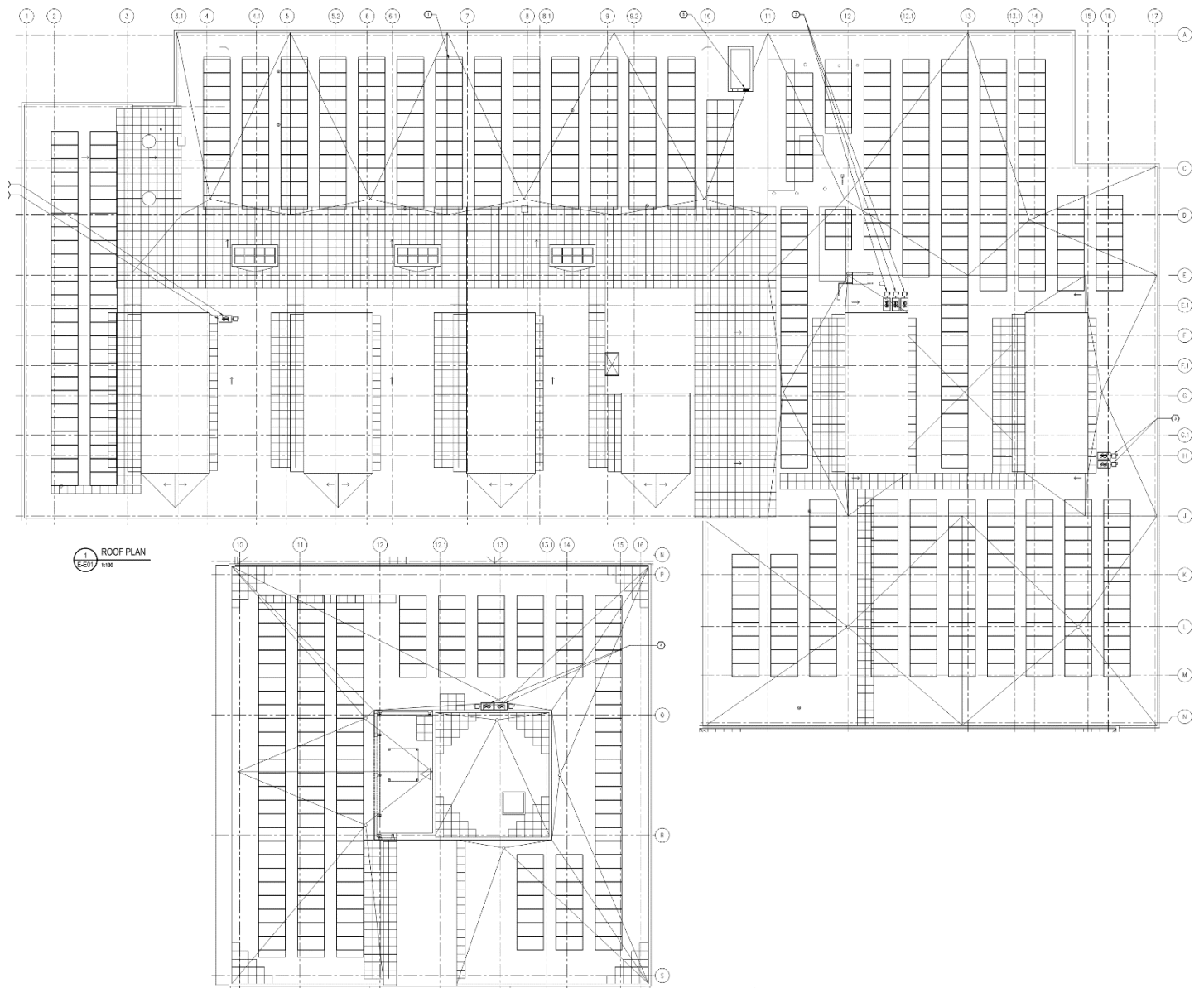
- ▶ This report is not confirmation that the existing building reviewed meets current building code requirements.
- ▶ The scope of work in this report is limited to the structural review of the existing structure under effect of the new loading arising from the installation of the solar panels and racking system.
- ▶ The impact of wind and snow loads on the base building Information was not reviewed, and will depend on the geometry and layout of the racks.
- ▶ The work reflects the Consultant's best judgement in light of the information reviewed by them at the time of preparation.
- ▶ The existing building structure is assumed to be in sound condition.
- ▶ Only the specific information identified has been reviewed. The Consultant has not verified the accuracy of the information from the various sources.
- ▶ Documents provided for our assessment represent the as built condition

We trust this is the information that you require. Please feel free to contact us with any questions.

Yours very truly,
WSP CANADA INC.

A handwritten signature in black ink, appearing to read 'Reza Sharifi', written over a horizontal line.

Reza Sharifi, P.Eng.
Project Manager



**13107 REFURBISHMENT OF PARRY SOUND
CCG BASE
PV STRUCTURAL FEASIBILITY STUDY**

PROPOSED PV LAYOUT

2300 YONGE ST., SUITE 2300, TORONTO, ON CANADA M4P 1E4
PHONE: 416.487.5256 www.wsp.com FAX: 416.487.9766

Date:
Oct. 5, 2017

Drawn by:
RYS

Project No.

Drawing No.

Scale:
N.T.S.

Checked by:
RYS

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SK-1