

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                        |                                                   |                                                            |                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|---------------------------------------------------|------------------------------------------------------------|------------------|
| <b>A. Project Information</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                        |                                                   |                                                            |                  |
| Building number, street name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                        |                                                   | Lot:                                                       |                  |
| 65-2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                        |                                                   | Lot/con.                                                   |                  |
| Municipality                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Brampton                                               | Postal code                                       | Plan number/ other description                             |                  |
| <b>B. Individual who reviews and takes responsibility for design activities</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                        |                                                   |                                                            |                  |
| Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                        | Firm                                              |                                                            |                  |
| David DaCosta                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                        | gtaDesigns Inc.                                   |                                                            |                  |
| Street address                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                        | Unit no.                                          | Lot/con.                                                   |                  |
| 2985 Drew Road, Suite 202                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                        |                                                   |                                                            |                  |
| Municipality                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Postal code                                            | Province                                          | E-mail                                                     |                  |
| Mississauga                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | L4T 0A4                                                | Ontario                                           | <a href="mailto:dave@gtadesigns.ca">dave@gtadesigns.ca</a> |                  |
| Telephone number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Fax number                                             | Cell number                                       |                                                            |                  |
| (905) 671-9800                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | (647) 494-9643                                         | (416) 268-6820                                    |                                                            |                  |
| <b>C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 of Division C]</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                        |                                                   |                                                            |                  |
| <input type="checkbox"/> House                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <input checked="" type="checkbox"/> HVAC – House       | <input type="checkbox"/> Building Structural      |                                                            |                  |
| <input type="checkbox"/> Small Buildings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <input type="checkbox"/> Building Services             | <input type="checkbox"/> Plumbing – House         |                                                            |                  |
| <input type="checkbox"/> Large Buildings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <input type="checkbox"/> Detection, Lighting and Power | <input type="checkbox"/> Plumbing – All Buildings |                                                            |                  |
| <input type="checkbox"/> Complex Buildings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <input type="checkbox"/> Fire Protection               | <input type="checkbox"/> On-site Sewage Systems   |                                                            |                  |
| <b>Description of designer's work</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                        | <b>Model Certification</b>                        |                                                            | <b>Project #</b> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                        |                                                   |                                                            | <b>PJ-00067</b>  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                        |                                                   |                                                            | <b>Layout #</b>  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                        |                                                   |                                                            | <b>JB-00860</b>  |
| Heating and Cooling Load Calculations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                        | Builder                                           | Highcastle Homes                                           |                  |
| Air System Design                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                        | Project                                           | Riverwalk Phase 2                                          |                  |
| Residential mechanical ventilation Design Summary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                        | Model                                             | 65-2                                                       |                  |
| Residential System Design per CAN/CSA-F280-12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                        | SB-12                                             | Package J                                                  |                  |
| Residential New Construction - Forced Air                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                        |                                                   |                                                            |                  |
| <b>D. Declaration of Designer</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                        |                                                   |                                                            |                  |
| <p>I, <u>David DaCosta</u> declare that (choose one as appropriate):</p> <p style="text-align: center;">(print name)</p> <p><input type="checkbox"/> I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4 Division C of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.</p> <p style="margin-left: 150px;">Individual BCIN: _____</p> <p style="margin-left: 150px;">Firm BCIN: _____</p> <p><input checked="" type="checkbox"/> I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5 of Division C, of the Building Code.</p> <p style="margin-left: 150px;">Individual BCIN: <u>32964</u></p> <p style="margin-left: 150px;">Basis for exemption from registration: <u>Division C 3.2.4.1. (4)</u></p> <p><input type="checkbox"/> The design work is exempt from the registration and qualification requirements of the Building Code.</p> <p style="margin-left: 150px;">Basis for exemption from registration and qualification: _____</p> <p>I certify that:</p> <p>1. The information contained in this schedule is true to the best of my knowledge.</p> <p>2. I have submitted this application with the knowledge and consent of the firm.</p> <p style="text-align: center;"> <u>August 4, 2015</u> <span style="margin-left: 200px;"></span> </p> <p style="text-align: center;">             Date             <span style="margin-left: 200px;">Signature of Designer</span> </p> |                                                        |                                                   |                                                            |                  |

**NOTE:**

- For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d), of Division C, Article 3.2.5.1. of Division C and all other persons who are exempt from qualifications under Subsections 3.2.4 . and 3.2.5 of Division C.
- Schedule 1 does not require to be completed a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited licence to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

| Heat loss and gain calculation summary sheet                                                                                |  |                                                                |                                                                   | CSA-F280-M12<br>Standard Form No. 1 |  |
|-----------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------|--|
| These documents issued for the use of <b>Highcastle Homes</b>                                                               |  |                                                                |                                                                   | Layout No.                          |  |
| and may not be used by any other persons without authorization. Documents for permit and/or construction are signed in red. |  |                                                                |                                                                   | <b>JB-00860</b>                     |  |
| Building Location                                                                                                           |  |                                                                |                                                                   |                                     |  |
| Address (Model): <b>65-2</b>                                                                                                |  |                                                                | Site: <b>Riverwalk Phase 2</b>                                    |                                     |  |
| Model:                                                                                                                      |  |                                                                | Lot:                                                              |                                     |  |
| City and Province: <b>Brampton</b>                                                                                          |  |                                                                | Postal code:                                                      |                                     |  |
| Calculations based on                                                                                                       |  |                                                                |                                                                   |                                     |  |
| Dimensional information based on:                                                                                           |  |                                                                | n/a                                                               |                                     |  |
| Attachment: <b>Detached</b>                                                                                                 |  | Front facing: <b>East/West</b>                                 |                                                                   | Assumed? <b>Yes</b>                 |  |
| No. of Levels: <b>3</b> Ventilated? <b>Included</b>                                                                         |  | Air tightness: <b>1961- Present (ACH=3.57)</b>                 |                                                                   | Assumed? <b>Yes</b>                 |  |
| Weather location: <b>Brampton</b>                                                                                           |  | Wind exposure: <b>Shelterd</b>                                 |                                                                   |                                     |  |
| HRV? <b>VanEE</b> <b>40H+</b>                                                                                               |  | Internal shading: <b>Light-translucent</b> Occupants: <b>5</b> |                                                                   |                                     |  |
| Sensible Eff. at -25C <b>55%</b> Apparent Effect. at -0C <b>72%</b>                                                         |  | Units: <b>Imperial</b>                                         |                                                                   | Area Sq. ft <b>4000</b>             |  |
| Heating design conditions                                                                                                   |  |                                                                | Cooling design conditions                                         |                                     |  |
| Outdoor temp <b>-2.2</b> Indoor temp: <b>72</b> Mean soil temp <b>48</b>                                                    |  |                                                                | Outdoor temp <b>86</b> Indoor temp: <b>75</b> Latitude: <b>44</b> |                                     |  |
| Above grade walls                                                                                                           |  |                                                                | Below grade walls                                                 |                                     |  |
| Style A: <b>As per Selected OBC SB12 Package J R 22</b>                                                                     |  |                                                                | Style A: <b>As per Selected OBC SB12 Package J R 12</b>           |                                     |  |
| Style B: <b>Existing Walls (When Applicable) R 12</b>                                                                       |  |                                                                | Style B:                                                          |                                     |  |
| Style C:                                                                                                                    |  |                                                                | Style C:                                                          |                                     |  |
| Style D:                                                                                                                    |  |                                                                | Style D:                                                          |                                     |  |
| Floors on soil                                                                                                              |  |                                                                | Ceilings                                                          |                                     |  |
| Style A: <b>As per Selected OBC SB12 Package J</b>                                                                          |  |                                                                | Style A: <b>As per Selected OBC SB12 Package J R 50</b>           |                                     |  |
| Style B:                                                                                                                    |  |                                                                | Style B: <b>As per Selected OBC SB12 Package J R 31</b>           |                                     |  |
| Exposed floors                                                                                                              |  |                                                                | Style C:                                                          |                                     |  |
| Style A: <b>As per Selected OBC SB12 Package J R 31</b>                                                                     |  |                                                                | Doors                                                             |                                     |  |
| Style B:                                                                                                                    |  |                                                                | Style A: <b>As per Selected OBC SB12 Package J R 3.01</b>         |                                     |  |
| Windows                                                                                                                     |  |                                                                | Style B:                                                          |                                     |  |
| Style A: <b>As per Selected OBC SB12 Package J R 3.15</b>                                                                   |  |                                                                | Style C:                                                          |                                     |  |
| Style B: <b>Existing Windows (When Applicable) R 1.99</b>                                                                   |  |                                                                | Skylights                                                         |                                     |  |
| Style C:                                                                                                                    |  |                                                                | Style A: <b>As per Selected OBC SB12 Package J R 2.03</b>         |                                     |  |
| Style D:                                                                                                                    |  |                                                                | Style B:                                                          |                                     |  |
| Attached documents: <b>As per Shedule 1</b>                                                                                 |  |                                                                |                                                                   |                                     |  |
| Notes: <b>Residential New Construction - Forced Air</b>                                                                     |  |                                                                |                                                                   |                                     |  |
| Calculations performed by                                                                                                   |  |                                                                |                                                                   |                                     |  |
| Name: <b>David DaCosta</b>                                                                                                  |  |                                                                | Postal code: <b>L4T 0A4</b>                                       |                                     |  |
| Company: <b>gtaDesigns Inc.</b>                                                                                             |  |                                                                | Telephone: <b>(905) 671-9800</b>                                  |                                     |  |
| Address: <b>2985 Drew Road, Suite 202</b>                                                                                   |  |                                                                | Fax: <b>(416) 268-6820</b>                                        |                                     |  |
| City: <b>Mississauga</b>                                                                                                    |  |                                                                | E-mail <b>dave@gtadesigns.ca</b>                                  |                                     |  |

Builder: **Highcastle Homes**

2015

August 4, 2015

Project: **Riverwalk Phase 2**

Model: **65-2**

**System 1**

I review and take responsibility for the design work and am qualified in the appropriate category as an "other designer" under Division C subsection 3.2.5. of the Building Code.

Individual BCIN: 32964

David DaCosta

Page 3  
Project # PJ-00067  
Layout # JB-00860

| DESIGN LOAD SPECIFICATIONS     |              | AIR DISTRIBUTION & PRESSURE            |                 | FURNACE/AIR HANDLER DATA: |                | BOILER/WATER HEATER DATA:       |          | A/C UNIT DATA:        |          |
|--------------------------------|--------------|----------------------------------------|-----------------|---------------------------|----------------|---------------------------------|----------|-----------------------|----------|
| Level 1 Net Load               | 26,381 btu/h | Equipment External Static Pressure     | 0.5 "w.c.       | Make                      | Amana          | Make                            | Type     | Amana                 | 4.0 Ton  |
| Level 2 Net Load               | 34,699 btu/h | Additional Equipment Pressure Drop     | 0.225 "w.c.     | Model                     | GMEC96-1004CNA | Model                           |          | Cond.-----            | 4.0      |
| Level 3 Net Load               | 21,699 btu/h | Available Design Pressure              | 0.275 "w.c.     | Input Btu/h               | 100000         | Input Btu/h                     |          | Coil -----            | 4.0      |
| Level 4 Net Load               | 0 btu/h      | Return Branch Longest Effective Length | 300 ft          | Output Btu/h              | 96000          | Output Btu/h                    |          |                       |          |
| Total Heat Loss                | 82,779 btu/h | R/A Plenum Pressure                    | 0.138 "w.c.     | E.s.p.                    | 0.50 " W.C.    | Min.Output Btu/h                | AWH      |                       |          |
| Total Heat Gain                | 42,789 btu/h | S/A Plenum Pressure                    | 0.14 "w.c.      | Water Temp                | deg. F.        | Blower DATA:                    |          |                       |          |
| Total Heat Loss + 10%          | 91,057 Btu/h | Heating Air Flow Proportioning Factor  | 0.0200 cfm/btuh | AFUE                      | 96%            | Blower Speed Selected:          | W2       | Blower Type           | ECM      |
| Building Volume Vb             | 51294 ft³    | Cooling Air Flow Proportioning Factor  | 0.0386 cfm/btuh | Aux. Heat                 |                | (Brushless DC OBC 12.3.1.5.(2)) |          |                       |          |
| Ventilation Load               | 2,574 Btu/h. | R/A Temp                               | 70 deg. F.      | SB-12 Package             | Package J      | Heating Check                   | 1653 cfm | Cooling Check         | 1653 cfm |
| Ventilation PVC                | 75 cfm       | S/A Temp                               | 124 deg. F.     |                           |                |                                 |          |                       |          |
| Supply Branch and Grill Sizing |              | Diffuser loss                          | 0.01 "w.c.      | Temp. Rise>>>             | 54 deg. F.     | Selected cfm>                   | 1653 cfm | Cooling Air Flow Rate | 1653 cfm |

| S/A Outlet No.           | Level 1 Outlets |      |      |      |      |      |      |      |      |      |      |      | Level 2 Outlets |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|-----------------|------|------|------|------|------|------|------|------|------|------|------|-----------------|------|------|------|------|------|------|------|------|------|------|------|
|                          | 24              | 25   | 26   | 27   | 28   | 29   |      |      |      |      |      |      | 13              | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 30   |
| Room Use                 | BASE            | BASE | BASE | BASE | BASE | BASE |      |      |      |      |      |      | LAUND           | KIT  | KIT  | FAM  | FAM  | DIN  | FOY  | LIV  | LIV  | DEN  | PWD  | FAM  |
| Btu/Outlet               | 4397            | 4397 | 4397 | 4397 | 4397 | 4397 |      |      |      |      |      |      | 4145            | 2936 | 2936 | 2727 | 2727 | 3017 | 1726 | 2876 | 2876 | 3906 | 2100 | 2727 |
| Heating Airflow Rate CFM | 88              | 88   | 88   | 88   | 88   | 88   |      |      |      |      |      |      | 83              | 59   | 59   | 54   | 54   | 60   | 34   | 57   | 57   | 78   | 42   | 54   |
| Cooling Airflow Rate CFM | 12              | 12   | 12   | 12   | 12   | 12   |      |      |      |      |      |      | 88              | 97   | 97   | 99   | 99   | 73   | 76   | 104  | 104  | 80   | 57   | 99   |
| Duct Design Pressure     | 0.13            | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13            | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| Actual Duct Length       | 32              | 34   | 35   | 46   | 48   | 63   |      |      |      |      |      |      | 24              | 45   | 36   | 37   | 45   | 53   | 56   | 74   | 73   | 78   | 68   | 37   |
| Equivalent Length        | 100             | 120  | 120  | 150  | 110  | 110  | 90   | 90   | 90   | 90   | 90   | 90   | 120             | 100  | 90   | 130  | 130  | 160  | 110  | 110  | 100  | 100  | 90   | 120  |
| Total Effective Length   | 132             | 154  | 155  | 196  | 158  | 173  | 90   | 90   | 90   | 90   | 90   | 90   | 144             | 145  | 126  | 167  | 175  | 213  | 166  | 184  | 173  | 178  | 158  | 157  |
| Adjusted Pressure        | 0.10            | 0.08 | 0.08 | 0.07 | 0.08 | 0.08 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.09            | 0.09 | 0.10 | 0.08 | 0.07 | 0.06 | 0.08 | 0.07 | 0.08 | 0.07 | 0.08 | 0.14 |
| Duct Size Round          | 6               | 6    | 6    | 6    | 6    | 6    |      |      |      |      |      |      | 6               | 6    | 6    | 6    | 6    | 6    | 6    | 6    | 6    | 5    | 6    |      |
| Outlet Size              | 4x10            | 4x10 | 4x10 | 4x10 | 4x10 | 4x10 | 4x10 | 4x10 | 4x10 | 4x10 | 4x10 | 4x10 | 4x10            | 4x10 | 4x10 | 4x10 | 4x10 | 4x10 | 4x10 | 4x10 | 4x10 | 4x10 | 3x10 | 4x10 |
| Trunk                    | H               | B    | C    | D    | D    | G    |      |      |      |      |      |      | H               | B    | B    | C    | C    | D    | D    | G    | G    | F    | F    | C    |

|                          | Level 3 Outlets |      |       |       |       |       |       |       |       |      |      |      | Level 4 Outlets |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|-----------------|------|-------|-------|-------|-------|-------|-------|-------|------|------|------|-----------------|------|------|------|------|------|------|------|------|------|------|------|------|
| S/A Outlet No.           | 1               | 2    | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10   | 11   | 12   |                 |      |      |      |      |      |      |      |      |      |      |      |      |
| Room Use                 | MAST            | MAST | BED 2 | ENS 2 | BED 3 | S.ENS | BED 4 | BED 4 | WIC 4 | WIC  | ENS  | ENS  |                 |      |      |      |      |      |      |      |      |      |      |      |      |
| Btu/Outlet               | 2033            | 2033 | 2888  | 1227  | 3649  | 1269  | 1920  | 1920  | 1682  | 729  | 1175 | 1175 |                 |      |      |      |      |      |      |      |      |      |      |      |      |
| Heating Airflow Rate CFM | 41              | 41   | 58    | 24    | 73    | 25    | 38    | 38    | 34    | 15   | 23   | 23   |                 |      |      |      |      |      |      |      |      |      |      |      |      |
| Cooling Airflow Rate CFM | 67              | 67   | 70    | 17    | 90    | 23    | 46    | 46    | 23    | 7    | 25   | 25   |                 |      |      |      |      |      |      |      |      |      |      |      |      |
| Duct Design Pressure     | 0.13            | 0.13 | 0.13  | 0.13  | 0.13  | 0.13  | 0.13  | 0.13  | 0.13  | 0.13 | 0.13 | 0.13 | 0.13            | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| Actual Duct Length       | 52              | 51   | 62    | 73    | 87    | 81    | 86    | 91    | 98    | 26   | 41   | 36   |                 |      |      |      |      |      |      |      |      |      |      |      |      |
| Equivalent Length        | 130             | 150  | 150   | 110   | 130   | 110   | 120   | 130   | 140   | 160  | 150  | 130  | 90              | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   |
| Total Effective Length   | 182             | 201  | 212   | 183   | 217   | 191   | 206   | 221   | 238   | 186  | 191  | 166  | 90              | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   |
| Adjusted Pressure        | 0.07            | 0.06 | 0.06  | 0.07  | 0.06  | 0.07  | 0.06  | 0.06  | 0.05  | 0.07 | 0.07 | 0.08 | 0.14            | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| Duct Size Round          | 6               | 6    | 6     | 4     | 6     | 4     | 5     | 5     | 5     | 3    | 4    | 4    |                 |      |      |      |      |      |      |      |      |      |      |      |      |
| Outlet Size              | 4x10            | 4x10 | 4x10  | 3x10  | 4x10  | 3x10  | 3x10  | 3x10  | 3x10  | 3x10 | 3x10 | 3x10 | 4x10            | 4x10 | 4x10 | 4x10 | 4x10 | 4x10 | 4x10 | 4x10 | 4x10 | 4x10 | 4x10 | 4x10 | 4x10 |
| Trunk                    | H               | B    | C     | D     | F     | E     | E     | E     | E     | H    | H    | H    |                 |      |      |      |      |      |      |      |      |      |      |      |      |

| Return Branch And Grill Sizing |      |      |      |      |      |      |      |      |      |      |      | Return Trunk Duct Sizing |      |        |       |            | Supply Trunk Duct Sizing |      |        |       |            |       |
|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|--------------------------|------|--------|-------|------------|--------------------------|------|--------|-------|------------|-------|
| R/A Inlet No.                  | 1R   | 2R   | 3R   | 4R   | 5R   | 6R   | 7R   | 8R   | 9R   | 10R  | 11R  | Trunk                    | CFM  | Press. | Round | Rect. Size | Trunk                    | CFM  | Press. | Round | Rect. Size |       |
| Inlet Air Volume CFM           | 150  | 100  | 100  | 100  | 376  | 376  | 200  | 251  |      |      |      | Drop                     | 1653 | 0.05   | 19.5  | 24x14      | A                        | 1382 | 0.05   | 18.0  | 30x10      | 24x12 |
| Duct Design Pressure           | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | Z                        | 1653 | 0.05   | 19.5  | 36x10      | B                        | 246  | 0.06   | 9.5   | 10x8       |       |
| Actual Duct Length             | 54   | 72   | 45   | 69   | 45   | 57   | 49   | 15   |      |      |      | Y                        | 776  | 0.05   | 14.5  | 24x8       | C                        | 1136 | 0.05   | 17.0  | 26x10      | 22x12 |
| Equivalent Length              | 200  | 175  | 175  | 190  | 185  | 110  | 110  | 175  | 70   | 70   | 70   | X                        | 200  | 0.07   | 8.5   | 8x8        | D                        | 827  | 0.05   | 15.0  | 26x8       | 20x10 |
| Total Effective Length         | 254  | 247  | 220  | 259  | 230  | 167  | 159  | 190  | 70   | 70   | 70   | W                        |      |        |       |            | E                        | 532  | 0.05   | 13.0  | 18x8       | 14x10 |
| Adjusted Pressure              | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.07 | 0.07 | 0.06 | 0.17 | 0.17 | 0.17 | V                        |      |        |       |            | F                        | 193  | 0.06   | 8.5   | 8x8        |       |
| Duct Size Round                | 8.0  | 6.0  | 6.0  | 6.0  | 11.5 | 10.5 | 8.5  | 8.0  |      |      |      | U                        |      |        |       |            | G                        | 203  | 0.07   | 8.5   | 8x8        |       |
| Inlet Size                     | 8    | 8    | 8    | 8    | 8    | 8    | 8    | FLC  |      |      |      | T                        |      |        |       |            | H                        | 273  | 0.07   | 9.5   | 10x8       |       |
| " "                            | x    | x    | x    | x    | x    | x    | x    | x    | x    | x    | x    | S                        |      |        |       |            | I                        |      |        |       |            |       |
| Inlet Size                     | 14   | 14   | 14   | 14   | 30   | 30   | 14   |      |      |      |      | R                        |      |        |       |            | J                        |      |        |       |            |       |
| Trunk                          | Z    | Y    | Z    | Y    | Y    | Z    | X    | Z    |      |      |      | O                        |      |        |       |            | K                        |      |        |       |            |       |

2012 OBC

Builder: Highcastle Homes

Date: August 4, 2015

Project: Riverwalk Phase 2

Model: 65-2

System 1

Weather Data Brampton 44 -2.2 86 20 48.2

Heat Loss ^T 74.2 deg. F Ht gain ^T 11 deg. F GTA: 4000

Project # PJ-00067  
Layout # JB-00860

## Level 1

### BASE

|                        |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Run ft. exposed wall A | 233  | A    | A    | A    | A    | A    | A    | A    | A    | A    | A    | A    | A    | A    | A    | A    |
| Run ft. exposed wall B | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    |
| Ceiling height         | 3.0  | AG   | AG   | AG   | AG   | AG   | AG   | AG   | AG   | AG   | AG   | AG   | AG   | AG   | AG   | AG   |
| Floor area             | 1870 | Area | Area | Area | Area | Area | Area | Area | Area | Area | Area | Area | Area | Area | Area | Area |
| Exposed Ceilings A     | A    | A    | A    | A    | A    | A    | A    | A    | A    | A    | A    | A    | A    | A    | A    | A    |
| Exposed Ceilings B     | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    |
| Exposed Floors         | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  |
| Gross Exp Wall A       | 699  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Gross Exp Wall B       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |

| Components                     | R-Values          | Loss   | Gain   | Loss  | Gain | Loss  | Gain | Loss | Gain | Loss | Gain | Loss | Gain | Loss | Gain | Loss | Gain |
|--------------------------------|-------------------|--------|--------|-------|------|-------|------|------|------|------|------|------|------|------|------|------|------|
| North Shaded                   | 3.15              | 23.56  | 11.31  | 3     | 71   | 34    |      |      |      |      |      |      |      |      |      |      |      |
| East/West                      | 3.15              | 23.56  | 27.75  | 9     | 212  | 250   |      |      |      |      |      |      |      |      |      |      |      |
| South                          | 3.15              | 23.56  | 21.28  | 6     | 141  | 128   |      |      |      |      |      |      |      |      |      |      |      |
| Existing Windows               | 1.99              | 37.29  | 22.15  |       |      |       |      |      |      |      |      |      |      |      |      |      |      |
| Skylight                       | 2.03              | 36.55  | 88.23  |       |      |       |      |      |      |      |      |      |      |      |      |      |      |
| Doors                          | 3.01              | 24.65  | 3.65   | 21    | 518  | 77    |      |      |      |      |      |      |      |      |      |      |      |
| Net exposed walls A            | 8.50              | 8.73   | 1.29   | 660   |      | 854   |      |      |      |      |      |      |      |      |      |      |      |
| Net exposed walls B            | 8.50              | 8.73   | 1.29   |       |      |       |      |      |      |      |      |      |      |      |      |      |      |
| Exposed Ceilings A             | 50.00             | 1.48   | 0.76   |       |      |       |      |      |      |      |      |      |      |      |      |      |      |
| Exposed Ceilings B             | 22.86             | 3.25   | 1.66   |       |      |       |      |      |      |      |      |      |      |      |      |      |      |
| Exposed Floors                 | 22.05             | 3.37   | 0.23   |       |      |       |      |      |      |      |      |      |      |      |      |      |      |
| Foundation Conductive Heatloss | Slab On Grade (x) |        |        |       |      |       |      |      |      |      |      |      |      |      |      |      |      |
| Total Conductive               | Heat Loss         |        |        |       |      |       |      |      |      |      |      |      |      |      |      |      |      |
|                                | Heat Gain         |        |        |       |      |       |      |      |      |      |      |      |      |      |      |      |      |
| Air Leakage                    | Heat Loss/Gain    | 0.7163 | 0.0384 | 10830 |      | 51    |      |      |      |      |      |      |      |      |      |      |      |
| Ventilation                    | Case 1            |        | 0.06   |       |      | 0.04  |      |      |      |      |      |      |      |      |      |      |      |
|                                | Case 2            |        | 22.44  |       |      | 11.88 |      |      |      |      |      |      |      |      |      |      |      |
|                                | Case 3            | x      | 0.03   |       |      | 0.04  |      |      |      |      |      |      |      |      |      |      |      |
| Heat Gain People               |                   |        |        |       |      | 239   |      |      |      |      |      |      |      |      |      |      |      |
| Appliances Loads               | 1 =.25 percent    |        |        |       |      | 6970  |      |      |      |      |      |      |      |      |      |      |      |
| Duct and Pipe loss             |                   |        |        |       |      | 10%   |      |      |      |      |      |      |      |      |      |      |      |
| Level 1 HL Total               | 26,381            |        |        | 26381 |      |       |      |      |      |      |      |      |      |      |      |      |      |
| Level 1 HG Total               | 1,875             |        |        |       |      | 1875  |      |      |      |      |      |      |      |      |      |      |      |

## Level 2

### LAUND

### KIT

### FAM

### DIN

### FOY

### LIV

### DEN

### PWD

|                        |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Run ft. exposed wall A | 39   | A    | 48   | A    | 35   | A    | 24   | A    | 8    | A    | 32   | A    | 28   | A    | 18   | A    | A    | A    |
| Run ft. exposed wall B | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    |
| Ceiling height         | 11.0 |      | 11.0 |      | 17.0 |      | 11.0 |      | 11.0 |      | 14.0 |      | 16.0 |      | 18.0 |      |      |      |
| Floor area             | 172  | Area | 480  | Area | 290  | Area | 340  | Area | 76   | Area | 175  | Area | 208  | Area | 99   | Area | Area | Area |
| Exposed Ceilings A     | A    | A    | A    | A    | A    | A    | A    | A    | A    | A    | A    | A    | A    | A    | A    | A    | A    | A    |
| Exposed Ceilings B     | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    | B    |
| Exposed Floors         | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  |
| Gross Exp Wall A       | 429  |      | 528  |      | 595  |      | 264  |      | 88   |      | 448  |      | 448  |      | 324  |      |      |      |
| Gross Exp Wall B       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |

| Components                     | R-Values          | Loss   | Gain   | Loss | Gain | Loss  | Gain | Loss | Gain | Loss | Gain | Loss | Gain | Loss | Gain | Loss | Gain |
|--------------------------------|-------------------|--------|--------|------|------|-------|------|------|------|------|------|------|------|------|------|------|------|
| North Shaded                   | 3.15              | 23.56  | 11.31  |      |      |       |      |      |      |      |      |      |      |      |      |      |      |
| East/West                      | 3.15              | 23.56  | 27.75  | 14   | 330  | 388   |      |      |      |      |      |      |      |      |      |      |      |
| South                          | 3.15              | 23.56  | 21.28  |      |      |       |      |      |      |      |      |      |      |      |      |      |      |
| Existing Windows               | 1.99              | 37.29  | 22.15  |      |      |       |      |      |      |      |      |      |      |      |      |      |      |
| Skylight                       | 2.03              | 36.55  | 88.23  |      |      |       |      |      |      |      |      |      |      |      |      |      |      |
| Doors                          | 3.01              | 24.65  | 3.65   | 42   | 1035 | 153   |      |      |      |      |      |      |      |      |      |      |      |
| Net exposed walls A            | 14.49             | 5.12   | 0.76   | 373  | 1910 | 283   | 423  | 2166 | 321  | 433  | 2217 | 329  | 208  | 1065 | 158  |      |      |
| Net exposed walls B            | 8.50              | 8.73   | 1.29   |      |      |       |      |      |      |      |      |      |      |      |      |      |      |
| Exposed Ceilings A             | 50.00             | 1.48   | 0.76   |      |      |       |      |      |      |      |      |      |      |      |      |      |      |
| Exposed Ceilings B             | 22.86             | 3.25   | 1.66   |      |      |       |      |      |      |      |      |      |      |      |      |      |      |
| Exposed Floors                 | 22.05             | 3.37   | 0.23   |      |      |       |      |      |      |      |      |      |      |      |      |      |      |
| Foundation Conductive Heatloss | Slab On Grade (x) |        |        |      |      |       |      |      |      |      |      |      |      |      |      |      |      |
| Total Conductive               | Heat Loss         |        |        |      |      |       |      |      |      |      |      |      |      |      |      |      |      |
|                                | Heat Gain         |        |        |      |      |       |      |      |      |      |      |      |      |      |      |      |      |
| Air Leakage                    | Heat Loss/Gain    | 0.2370 | 0.0384 |      |      |       |      |      |      |      |      |      |      |      |      |      |      |
| Ventilation                    | Case 1            |        | 0.02   |      |      | 0.04  |      |      |      |      |      |      |      |      |      |      |      |
|                                | Case 2            |        | 22.44  |      |      | 11.88 |      |      |      |      |      |      |      |      |      |      |      |
|                                | Case 3            | x      | 0.03   |      |      | 0.04  |      |      |      |      |      |      |      |      |      |      |      |
| Heat Gain People               |                   |        |        |      |      | 239   |      |      |      |      |      |      |      |      |      |      |      |
| Appliances Loads               | 1 =.25 percent    |        |        |      |      | 6970  |      |      |      |      |      |      |      |      |      |      |      |
| Duct and Pipe loss             |                   |        |        |      |      | 10%   |      |      |      |      |      |      |      |      |      |      |      |
| Level 2 HL Total               | 34,699            |        |        | 4145 |      |       |      | 5872 |      | 5043 |      |      | 8180 |      | 7693 |      |      |
| Level 2 HG Total               | 27,795            |        |        |      |      | 2285  |      |      |      |      |      | 1886 |      | 1726 |      | 1962 |      |

I review and take responsibility for the design work and am qualified in the appropriate category as an "other designer" under

Division C subsection 3.2.5. of the Building Code. Individual BCIN:

32964

David DaCosta

SB-12 Package

Package J

|                 |        |       |
|-----------------|--------|-------|
| Total Heat Loss | 82,779 | btu/h |
| Total Heat Gain | 42,789 | btu/h |

|          |                            |                      |          |                                          |                          |                      |           |                    |                   |
|----------|----------------------------|----------------------|----------|------------------------------------------|--------------------------|----------------------|-----------|--------------------|-------------------|
| 2012 OBC | Builder: Highcastle Homes  | Date: August 4, 2015 | System 1 | Weather Data Brampton 44 -2.2 86 20 48.2 | Heat Loss ^T 74.2 deg. F | Ht gain ^T 11 deg. F | GTA: 4000 | Project # PJ-00067 | Layout # JB-00860 |
|          | Project: Riverwalk Phase 2 | Model: 65-2          |          |                                          |                          |                      |           |                    |                   |

|                                | Level 3 |                |       |                         |      |        |      |       |      |       |      |       |      |       |      |      |      |      |      |      |      |      |      |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
|--------------------------------|---------|----------------|-------|-------------------------|------|--------|------|-------|------|-------|------|-------|------|-------|------|------|------|------|------|------|------|------|------|------|----|----|-----|-----|-----|-----|-----|-----|--|----|--|-----|--|----|--|-----|--|----|--|----|--|----|--|
|                                |         | MAST           |       | BED 2                   |      | ENS 2  |      | BED 3 |      | S.ENS |      | BED 4 |      | WIC 4 |      | WIC  |      | ENS  |      |      |      |      |      |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| Run ft. exposed wall A         |         | 32             | A     | 28                      | A    | 17     | A    | 42    | A    | 7     | A    | 21    | A    | 17    | A    | 8    | A    | 26   | A    |      | A    |      | A    |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| Run ft. exposed wall B         |         |                | B     |                         | B    |        | B    |       | B    |       | B    |       | B    |       | B    |      | B    |      | B    |      | B    |      | B    |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| Ceiling height                 |         | 8.0            |       | 8.0                     |      | 8.0    |      | 8.0   |      | 8.0   |      | 8.0   |      | 8.0   |      | 8.0  |      | 8.0  |      |      |      |      |      |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| Floor area                     |         | 426            | Area  | 333                     | Area | 70     | Area | 293   | Area | 87    | Area | 243   | Area | 70    | Area | 86   | Area | 170  | Area |      | Area |      | Area |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| Exposed Ceilings A             |         | 426            | A     | 333                     | A    | 70     | A    | 293   | A    | 87    | A    | 243   | A    | 70    | A    | 86   | A    | 170  | A    |      | A    |      | A    |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| Exposed Ceilings B             |         |                | B     |                         | B    |        | B    |       | B    |       | B    |       | B    |       | B    |      | B    |      | B    |      | B    |      | B    |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| Exposed Floors                 |         |                | Flr   |                         | Flr  |        | Flr  |       | Flr  |       | Flr  |       | Flr  |       | Flr  |      | Flr  |      | Flr  |      | Flr  |      | Flr  |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| Gross Exp Wall A               |         | 256            |       | 224                     |      | 136    |      | 336   |      | 56    |      | 168   |      | 136   |      | 64   |      | 208  |      |      |      |      |      |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| Gross Exp Wall B               |         |                |       |                         |      |        |      |       |      |       |      |       |      |       |      |      |      |      |      |      |      |      |      |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| Components                     |         | R-Values       | Loss  | Gain                    | Loss | Gain   | Loss | Gain  | Loss | Gain  | Loss | Gain  | Loss | Gain  | Loss | Gain | Loss | Gain | Loss | Gain | Loss | Gain | Loss | Gain |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| North Shaded                   |         | 3.15           | 23.56 | 11.31                   | 10   | 236    | 113  |       |      |       |      |       |      |       |      |      |      | 6    | 141  | 68   |      |      |      |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| East/West                      |         | 3.15           | 23.56 | 27.75                   | 45   | 1060   | 1249 |       |      |       |      |       |      |       |      |      |      | 21   | 495  | 583  |      |      |      |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| South                          |         | 3.15           | 23.56 | 21.28                   | 10   | 236    | 213  | 32    | 754  | 681   | 8    | 188   | 170  |       |      |      |      |      |      |      |      |      |      |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| Existing Windows               |         | 1.99           | 37.29 | 22.15                   |      |        |      |       |      |       |      |       |      |       |      |      |      |      |      |      |      |      |      |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| Skylight                       |         | 2.03           | 36.55 | 88.23                   |      |        |      |       |      |       |      |       |      |       |      |      |      |      |      |      |      |      |      |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| Doors                          |         | 3.01           | 24.65 | 3.65                    |      |        |      |       |      |       |      |       |      |       |      |      |      |      |      |      |      |      |      |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| Net exposed walls A            |         | 14.49          | 5.12  | 0.76                    | 191  | 978    | 145  | 192   | 983  | 146   | 128  | 655   | 97   | 300   | 1536 | 228  | 46   | 236  | 35   | 132  | 676  | 100  | 128  | 655  | 97 | 64 | 328 | 49  | 181 | 927 | 137 |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| Net exposed walls B            |         | 8.50           | 8.73  | 1.29                    |      |        |      |       |      |       |      |       |      |       |      |      |      |      |      |      |      |      |      |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| Exposed Ceilings A             |         | 50.00          | 1.48  | 0.76                    | 426  | 632    | 324  | 333   | 494  | 253   | 70   | 104   | 53   | 293   | 435  | 223  | 87   | 129  | 66   | 243  | 361  | 185  | 70   | 104  | 53 | 86 | 128 | 65  | 170 | 252 | 129 |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| Exposed Ceilings B             |         | 22.86          | 3.25  | 1.66                    |      |        |      |       |      |       |      |       |      |       |      |      |      |      |      |      |      |      |      |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| Exposed Floors                 |         | 22.05          | 3.37  | 0.23                    |      |        |      |       |      |       |      |       |      |       |      |      | 87   | 293  | 20   | 243  | 818  | 55   | 70   | 236  | 16 | 32 | 108 | 7   |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| Foundation Conductive Heatloss |         |                |       |                         |      |        |      |       |      |       |      |       |      |       |      |      |      |      |      |      |      |      |      |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| Total Conductive               |         | Heat Loss      |       |                         |      |        |      |       |      |       |      |       |      |       |      |      |      |      |      |      |      |      |      |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
|                                |         | Heat Gain      |       |                         |      |        |      |       |      |       |      |       |      |       |      |      |      |      |      |      |      |      |      |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| Air Leakage                    |         | Heat Loss/Gain |       | 0.2658                  |      | 0.0384 |      | 835   |      | 78    |      | 593   |      | 41    |      | 252  |      | 12   |      | 749  |      | 56   |      | 237  |    | 15 |     | 718 |     | 51  |     | 315 |  | 15 |  | 150 |  | 5  |  | 483 |  | 35 |  |    |  |    |  |
| Ventilation                    |         | Case 1         |       | 0.02                    |      | 0.04   |      |       |      |       |      |       |      |       |      |      |      |      |      |      |      |      |      |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
|                                |         | Case 2         |       | 22.44                   |      | 11.88  |      |       |      |       |      |       |      |       |      |      |      |      |      |      |      |      |      |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
|                                |         | Case 3         |       | x                       |      | 0.03   |      | 0.04  |      |       |      |       |      |       |      |      |      |      |      |      |      |      |      |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| Heat Gain People               |         |                |       | 239                     |      |        |      | 2     |      | 90    |      | 75    |      | 478   |      | 1    |      | 64   |      | 39   |      | 27   |      | 12   |    | 53 |     | 26  |     | 15  |     | 77  |  | 49 |  | 34  |  | 14 |  | 16  |  | 4  |  | 52 |  | 33 |  |
| Appliances Loads               |         | 1 =.25 percent |       | 6970                    |      |        |      |       |      |       |      |       |      |       |      |      |      |      |      |      |      |      |      |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| Duct and Pipe loss             |         |                |       | 10%                     |      |        |      |       |      |       |      |       |      |       |      |      |      |      |      |      |      |      |      |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| Level 3 HL Total               |         | 21,699         |       | Total HL for per room   |      | 4066   |      |       |      |       |      |       |      |       |      |      |      |      |      |      |      |      |      |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |
| Level 3 HG Total               |         | 13,118         |       | Total HG per room x 1.3 |      | 3476   |      |       |      |       |      |       |      |       |      |      |      |      |      |      |      |      |      |      |    |    |     |     |     |     |     |     |  |    |  |     |  |    |  |     |  |    |  |    |  |    |  |

| Level 4                        |                |        |        |      |      |      |      |      |      |      |      |
|--------------------------------|----------------|--------|--------|------|------|------|------|------|------|------|------|
| Run ft. exposed wall A         | A              | A      | 2015   | A    | A    | A    | A    | A    | A    | A    | A    |
| Run ft. exposed wall B         | B              | B      |        | B    | B    | B    | B    | B    | B    | B    | B    |
| Ceiling height                 |                |        |        |      |      |      |      |      |      |      |      |
| Floor area                     | Area           | Area   |        | Area | Area | Area | Area | Area | Area | Area | Area |
| Exposed Ceilings A             | A              | A      |        | A    | A    | A    | A    | A    | A    | A    | A    |
| Exposed Ceilings B             | B              | B      |        | B    | B    | B    | B    | B    | B    | B    | B    |
| Exposed Floors                 | Flr            | Flr    |        | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  | Flr  |
| Gross Exp Wall A               |                |        |        |      |      |      |      |      |      |      |      |
| Gross Exp Wall B               |                |        |        |      |      |      |      |      |      |      |      |
| Components                     | R-Values       | Loss   | Gain   | Loss | Gain | Loss | Gain | Loss | Gain | Loss | Gain |
| North Shaded                   | 3.15           | 23.56  | 11.31  |      |      |      |      |      |      |      |      |
| East/West                      | 3.15           | 23.56  | 27.75  |      |      |      |      |      |      |      |      |
| South                          | 3.15           | 23.56  | 21.28  |      |      |      |      |      |      |      |      |
| Existing Windows               | 1.99           | 37.29  | 22.15  |      |      |      |      |      |      |      |      |
| Skylight                       | 2.03           | 36.55  | 88.23  |      |      |      |      |      |      |      |      |
| Doors                          | 3.01           | 24.65  | 3.65   |      |      |      |      |      |      |      |      |
| Net exposed walls A            | 14.49          | 5.12   | 0.76   |      |      |      |      |      |      |      |      |
| Net exposed walls B            | 8.50           | 8.73   | 1.29   |      |      |      |      |      |      |      |      |
| Exposed Ceilings A             | 50.00          | 1.48   | 0.76   |      |      |      |      |      |      |      |      |
| Exposed Ceilings B             | 22.86          | 3.25   | 1.66   |      |      |      |      |      |      |      |      |
| Exposed Floors                 | 22.05          | 3.37   | 0.23   |      |      |      |      |      |      |      |      |
| Foundation Conductive Heatloss |                |        |        |      |      |      |      |      |      |      |      |
| Total Conductive               | Heat Loss      |        |        |      |      |      |      |      |      |      |      |
|                                | Heat Gain      |        |        |      |      |      |      |      |      |      |      |
| Air Leakage                    | Heat Loss/Gain | 0.0000 | 0.0384 |      |      |      |      |      |      |      |      |
| Ventilation                    | Case 1         |        | 0.00   |      |      |      |      |      |      |      |      |
|                                | Case 2         |        | 22.44  |      |      |      |      |      |      |      |      |
|                                | Case 3         | x      | 0.03   |      |      |      |      |      |      |      |      |
| Heat Gain People               |                |        | 239    |      |      |      |      |      |      |      |      |
| Appliances Loads               | 1 =.25 percent |        | 6970   |      |      |      |      |      |      |      |      |
| Duct and Pipe loss             |                |        | 10%    |      |      |      |      |      |      |      |      |
| Level 4 HL Total               | 0              |        |        |      |      |      |      |      |      |      |      |
| Level 4 HG Total               | 0              |        |        |      |      |      |      |      |      |      |      |

I review and take responsibility for the design work and am qualified in the appropriate category as an "other designer" under

Division C subsection 3.2.5. of the Building Code. Individual BCIN:

32964



David DaCosta

SB-12 Package

Package J

|                 |        |       |
|-----------------|--------|-------|
| Total Heat Loss | 82,779 | btu/h |
| Total Heat Gain | 42,789 | btu/h |

I review and take responsibility for the design work and am qualified in the appropriate category as an "other designer" under Division C subsection 3.2.5. of the Building Code.

Individual BCIN: 32964

*David DaCosta*

David DaCosta

Package:

Package J

Project:

Brampton

Model:

65-2

## RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

For systems serving one dwelling unit & conforming to the Ontario Building Code, O.geg 159/93

| Location of Installation |          |
|--------------------------|----------|
| Lot #                    | Plan #   |
| Township                 | Brampton |
| Roll #                   | Permit # |
| Address                  |          |

| Builder |                  |
|---------|------------------|
| Name    | Highcastle Homes |
| Address |                  |
| City    |                  |
| Tel     | Fax              |

| Installing Contractor |     |
|-----------------------|-----|
| Name                  |     |
| Address               |     |
| City                  |     |
| Tel                   | Fax |

| Combustion Appliances 9.32.3.1(1) |                                                                                        |
|-----------------------------------|----------------------------------------------------------------------------------------|
| a)                                | <input type="checkbox"/> Direct vent (sealed combustion) only                          |
| b)                                | <input checked="" type="checkbox"/> Positive venting induced draft (except fireplaces) |
| c)                                | <input type="checkbox"/> Natural draft, B-vent or induced draft fireplaces             |
| d)                                | <input type="checkbox"/> Solid fuel (including fireplaces)                             |
| e)                                | <input type="checkbox"/> No combustion Appliances                                      |

| Heating System                      |                                                |
|-------------------------------------|------------------------------------------------|
| <input checked="" type="checkbox"/> | Forced air                                     |
| <input type="checkbox"/>            | Non forced air                                 |
| <input type="checkbox"/>            | Electric space heat (if over 10% of heat load) |

| House Type 9.32.3.1(2) |                                                                                  |
|------------------------|----------------------------------------------------------------------------------|
| I                      | <input checked="" type="checkbox"/> Type a) or b) appliances only, no solid fuel |
| II                     | <input type="checkbox"/> Type I except with solid fuel (including fireplace)     |
| III                    | <input type="checkbox"/> Any type c) appliance                                   |
| IV                     | <input type="checkbox"/> Type I or II either electric space heat                 |
| Other                  | <input type="checkbox"/> Type I, II or IV no forced air                          |

| System Design Option |                                                                                    |
|----------------------|------------------------------------------------------------------------------------|
| 1                    | <input type="checkbox"/> Exhaust only / forced air system                          |
| 2                    | <input type="checkbox"/> HRV WITH DUCTING / forced air system                      |
| 3                    | <input checked="" type="checkbox"/> HRV simplified connection to forced air system |
| 4                    | <input type="checkbox"/> HRV full ducting/not coupled to forced air system         |
| Part 6 design        |                                                                                    |

| Total Ventilation Capacity 9.32.3.3(1) |            |        |  |
|----------------------------------------|------------|--------|--|
| Bsmt & Master Bdrm                     | 2 @ 20 cfm | 40 cfm |  |
| Other Bedrooms                         | 3 @ 10 cfm | 30 cfm |  |
| Bathrooms & Kitchen                    | 5 @ 10 cfm | 50 cfm |  |
| Other rooms                            | 5 @ 10 cfm | 50 cfm |  |
| Total                                  |            | 170    |  |

| Principal Ventilation Capacity 9.32.3.4(1) |            |        |  |
|--------------------------------------------|------------|--------|--|
| Master bedroom                             | 1 @ 30 cfm | 30 cfm |  |
| Other bedrooms                             | 3 @ 15 cfm | 45 cfm |  |
| Total                                      |            | 75     |  |

| Principal Exhaust Fan Capacity |       |          |
|--------------------------------|-------|----------|
| Make                           | Model | Location |
| VanEE                          | 40H+  | Base     |
| 80 cfm                         |       | Sones    |

| Heat Recovery Ventilator        |            |
|---------------------------------|------------|
| Make                            | VanEE      |
| Model                           | 40H+       |
| 80 cfm high                     | 40 cfm low |
| Sensible efficiency @ -25 deg C | 55%        |
| Sensible efficiency @ 0 deg C   | 63%        |

| Supplemental Ventilation Capacity    |          |
|--------------------------------------|----------|
| Total ventilation capacity           | 170.0    |
| Less principal exhaust capacity      | 75.0     |
| REQUIRED supplemental vent. Capacity | 95.0 cfm |

| Supplemental Fans 9.32.3.5. |       |           |       |
|-----------------------------|-------|-----------|-------|
| Location                    | cfm   | Model     | Sones |
| S.Ens                       | 50    | 770       | 2.5   |
| Pwd.                        | 50    | 770       | 2.5   |
| all fans HVI listed         |       |           |       |
| Make                        | Broan | or Equiv. |       |

| Designer Certification                                                                                        |                      |        |       |
|---------------------------------------------------------------------------------------------------------------|----------------------|--------|-------|
| I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code. |                      |        |       |
| Name                                                                                                          | David DaCosta        |        |       |
| Signature                                                                                                     | <i>David DaCosta</i> |        |       |
| HRAI #                                                                                                        | 5190                 | BCIN # | 32964 |
| Date                                                                                                          | August 4, 2015       |        |       |

2985 Drew Road, Suite 202, Mississauga, Ontario L4T 0A4 Tel: 905-671-9800 Fax: 647-494-9643  
e-mail dave@gtadesigns.ca

Page 7  
Project # PJ-00067  
Layout # JB-00860

This form is used to summarize the energy efficiency design of the project. Information on completing this form is on the reverse

For use by Principal Authority

|                 |                            |
|-----------------|----------------------------|
| Application No: | Model/Certification Number |
|-----------------|----------------------------|

## A. Project Information

|                              |             |                                      |
|------------------------------|-------------|--------------------------------------|
| Building number, street name | Unit number | Lot/Con                              |
| 65-2                         |             |                                      |
| Municipality                 | Postal code | Reg. Plan number / other description |
| Brampton                     |             |                                      |

## B. Compliance Option

|                                                                         |                                                                     |           |
|-------------------------------------------------------------------------|---------------------------------------------------------------------|-----------|
| <input checked="" type="checkbox"/> SB-12 Prescriptive [SB-12 - 2.1.1.] | Table: Package: A B C D E F G H I J K L M                           | Package J |
| <input type="checkbox"/> SB-12 Performance* [SB-12 - 2.1.2.]            | * Attach energy performance calculations using an approved software |           |
| <input type="checkbox"/> Energy Star®* [SB-12 - 2.1.3.]                 | * Attach BOP form                                                   |           |
| <input type="checkbox"/> EnerGuide 80® *                                | * House must be evaluated by NRCAN advisor and meet a rating of 80  |           |

## C. Project Design Conditions

| Climatic Zone (SB-1):                                           | Heating Equipment                              | Space Heating Fuel Source                                                                                    |
|-----------------------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Zone 1 (< 5000 degree days) | <input checked="" type="checkbox"/> ≥ 90% AFUE | <input checked="" type="checkbox"/> Gas <input type="checkbox"/> Propane <input type="checkbox"/> Solid Fuel |
| <input type="checkbox"/> Zone 2 (≥ 5000 degree days)            | <input type="checkbox"/> ≥ 78% < 90% AFUE      | <input type="checkbox"/> Oil <input type="checkbox"/> Electric <input type="checkbox"/> Earth Energy         |

| Windows+Skylights+Glass Doors | Other Building Conditions                                                                                              |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------|
| Gross Wall Area = 502 m²      | <input type="checkbox"/> ICF Basement <input type="checkbox"/> Walkout Basement <input type="checkbox"/> Log/Post&Beam |
| Gross Window+ Area = 70 m²    | <input type="checkbox"/> ICF Above Grade <input type="checkbox"/> Slab-on-ground                                       |
| % Windows+ 14%                |                                                                                                                        |

## D. Building Specifications [provide values and ratings of the energy efficiency components proposed, or attach Energy Star BOP form]

| Building Component                       | RSI / R values | Building Component                                                  | Efficiency Ratings |
|------------------------------------------|----------------|---------------------------------------------------------------------|--------------------|
| <b>Thermal Insulation</b>                |                | <b>Windows &amp; Doors<sup>1</sup></b>                              |                    |
| Ceiling with Attic Space                 | 50             | Windows/Sliding Glass Doors                                         | 1.8                |
| Ceiling without Attic Space              | 31             | Skylights                                                           | 2.8                |
| Exposed Floor                            | 31             | <b>Mechanicals</b>                                                  |                    |
| Walls Above Grade                        | 22             | Space Heating Equip. <sup>2</sup>                                   | 94%                |
| Basement Walls                           | 12             | HRV Efficiency (%)                                                  | 60%                |
| Slab (all >600mm below grade)            | x              | DHW Heater (EF)                                                     | 0.67               |
| Slab (edge only ≤600mm below grade)      | 10             | NOTES                                                               |                    |
| Slab (all ≤600mm below grade, or heated) | 10             | 1. Provide U-Value in W/m2.K, or ER rating                          |                    |
|                                          |                | 2. Provide AFUE or indicate if condensing type combined system used |                    |

## E. Performance Design Verification [complete applicable sections if SB-12 Performance, Energy Star or EnerGuide80 options used]

SB-12 Performance:

The annual energy consumption using Subsection 2.1.1. SB-12 Package \_\_\_\_\_ is \_\_\_\_\_ Gj (1 Gj =1000Mj)

The annual energy consumption of this house as designed is \_\_\_\_\_ Gj

The software used to simulate the annual energy use of the building is: \_\_\_\_\_

The building is being designed using an air leakage of \_\_\_\_\_ air changes per hour @50Pa.

Energy Star: BOP form attached. The house will be labeled on completion by:

Energy Star and EnerGuide80:

Evaluator/Advisor/Rater Name: \_\_\_\_\_ Evaluator/Advisor/Rater Licence #: \_\_\_\_\_

## F. Designers [names of designers who are responsible for the building code design and whose plans accompany the permit application]

|               |                                                                                                     |
|---------------|-----------------------------------------------------------------------------------------------------|
| Architectural | Mechanical                                                                                          |
|               | David DaCosta  |

Package: Package J System: System 1  
Project: Brampton Model: 65-2

## Air Leakage Calculations

| Building Air Leakage Heat Loss |        |       |                  |                    |
|--------------------------------|--------|-------|------------------|--------------------|
| B                              | LRairh | Vb    | HL <sup>AT</sup> | HL <sub>leak</sub> |
| 0.018                          | 0.316  | 51294 | 74.2             | 21659              |

| Building Air Leakage Heat Gain |        |       |                  |                    |
|--------------------------------|--------|-------|------------------|--------------------|
| B                              | LRairh | Vb    | HG <sup>AT</sup> | HG <sub>Leak</sub> |
| 0.018                          | 0.092  | 51294 | 11               | 937                |

| Air Leakage Heat Loss/Gain Multiplier Table (Section 11) |                   |              |                            |                                  |
|----------------------------------------------------------|-------------------|--------------|----------------------------|----------------------------------|
| Level                                                    | Level Factor (LF) | Building Air | Level Conductive Heat Loss | Air Leakage Heat Loss Multiplier |
| 1                                                        | 0.5               | 21659        | 15119                      | 0.7163                           |
| 2                                                        | 0.3               |              | 27417                      | 0.2370                           |
| 3                                                        | 0.2               |              | 16296                      | 0.2658                           |
| 4                                                        | 0                 |              | 0                          | 0.0000                           |

| Levels |      |      |      |
|--------|------|------|------|
| 1      | 2    | 3    | 4    |
| (LF)   | (LF) | (LF) | (LF) |
| 1.0    | 0.6  | 0.5  | 0.4  |
|        | 0.4  | 0.3  | 0.3  |
|        |      | 0.2  | 0.2  |
|        |      |      | 0.1  |

| HG LEAK                       |       | Air Leakage Heat Gain |        |
|-------------------------------|-------|-----------------------|--------|
|                               | 937   |                       |        |
| BUILDING CONDUCTIVE HEAT GAIN | 24428 |                       | 0.0384 |

| Levels this Dwelling |  |
|----------------------|--|
| 3                    |  |

## Ventilation Calculations

| Vent   | Ventilation Heat Loss                         |      |           |              |            | Ventilation Heat Gain                         |       |                |            | Vent |        |
|--------|-----------------------------------------------|------|-----------|--------------|------------|-----------------------------------------------|-------|----------------|------------|------|--------|
|        | Ventilation Heat Loss                         |      |           |              |            | Ventilation Heat Gain                         |       |                |            |      |        |
|        | C                                             | PVC  | HL^T      | (1-E) HRV    | HLbvent    | C                                             | PVC   | HG^T           | HGbvent    |      |        |
|        | 1.08                                          | 75   | 74.2      | 0.28         | 1683       | 1.1                                           | 75    | 11             | 891        |      |        |
| Case 1 |                                               |      |           |              |            | Case 1                                        |       |                |            |      |        |
| Case 1 | Ventilation Heat Loss (Exhaust only Systems)  |      |           |              |            | Ventilation Heat Gain (Exhaust Only Systems)  |       |                |            |      | Case 1 |
|        | Case 1 - Exhaust Only                         |      |           |              |            | Case 1 - Exhaust Only                         |       | Multiplier     |            |      |        |
|        | Level                                         | LF   | HLbvent   | LVL Cond. HL | Multiplier | HGbvent                                       | 891   | 0.04           |            |      |        |
|        | 1                                             | 0.5  | 1683      | 15119        | 0.06       | Building                                      | 24428 |                |            |      |        |
|        | 2                                             | 0.3  |           | 27417        | 0.02       |                                               |       |                |            |      |        |
|        | 3                                             | 0.2  |           | 16296        | 0.02       |                                               |       |                |            |      |        |
| 4      | 0                                             | 0    |           | 0.00         |            |                                               |       |                |            |      |        |
| Case 2 |                                               |      |           |              |            | Case 2                                        |       |                |            |      |        |
| Case 2 | Ventilation Heat Loss (Direct Ducted Systems) |      |           |              |            | Ventilation Heat Gain (Direct Ducted Systems) |       |                |            |      | Case 2 |
|        |                                               |      |           | Multiplier   |            |                                               |       | Multiplier     |            |      |        |
|        | C                                             | HL^T | (1-E) HRV | 22.44        |            | C                                             | HG^T  | 11.88          |            |      |        |
|        | 1.08                                          | 74.2 | 0.28      |              |            | 1.08                                          | 11    |                |            |      |        |
| Case 3 |                                               |      |           |              |            | Case 3                                        |       |                |            |      |        |
| Case 3 | Ventilation Heat Loss (Forced Air Systems)    |      |           |              |            | Ventilation Heat Gain (Forced Air Systems)    |       |                |            |      | Case 3 |
|        |                                               |      | HLbvent   | Multiplier   |            |                                               |       | Vent Heat Gain | Multiplier |      |        |
|        | Total Ventilation Load                        |      | 1683      | 0.03         |            | HGbvent                                       |       | HG*1.3         | 891        | 0.04 |        |
|        |                                               |      |           |              |            | 891                                           |       | 1              |            |      |        |

|                                        |      |       |       |       |
|----------------------------------------|------|-------|-------|-------|
| Foundation Conductive Heatloss Level 1 | 4155 | Watts | 14178 | Btu/h |
|----------------------------------------|------|-------|-------|-------|

|                                        |  |       |  |       |
|----------------------------------------|--|-------|--|-------|
| Foundation Conductive Heatloss Level 2 |  | Watts |  | Btu/h |
|----------------------------------------|--|-------|--|-------|

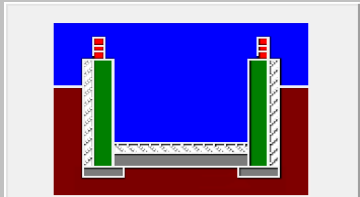
# Envelope Air Leakage Calculator

Supplemental tool for CAN/CSA-F280

| Weather Station Description       |                                                           |       |                |     |
|-----------------------------------|-----------------------------------------------------------|-------|----------------|-----|
| Province:                         | Ontario ▼                                                 |       |                |     |
| Region:                           | Brampton ▼                                                |       |                |     |
| Weather Station Location:         | Open flat terrain, grass ▼                                |       |                |     |
| Anemometer height (m):            | 10                                                        |       |                |     |
| Local Shielding                   |                                                           |       |                |     |
| Building Site:                    | Suburban, forest ▼                                        |       |                |     |
| Walls:                            | Heavy ▼                                                   |       |                |     |
| Flue:                             | Heavy ▼                                                   |       |                |     |
| Highest Ceiling Height (m):       | 6.71                                                      |       |                |     |
| Building Configuration            |                                                           |       |                | 6.4 |
| Type:                             | Detached ▼                                                |       |                |     |
| Number of Stories:                | Two ▼                                                     |       |                |     |
| Foundation:                       | Full ▼                                                    |       |                |     |
| House Volume (m <sup>3</sup> ):   | 566.3 1452.65                                             |       |                |     |
| Air Leakage/Ventilation           |                                                           |       |                |     |
| Air Tightness Type:               | Present (1961-) (ACH=3.57) ▼                              |       |                |     |
| Custom BDT Data:                  | ELA @ 10 Pa. ▼ 185.83 cm <sup>2</sup><br>3.57 ACH @ 50 Pa |       |                |     |
| Mechanical Ventilation (L/s):     | Total Supply:                                             |       | Total Exhaust: |     |
|                                   | 37.5                                                      |       | 37.5           |     |
| Flue Size                         |                                                           |       |                |     |
| Flue #:                           | #1                                                        | #2    | #3             | #4  |
| Diameter (mm):                    | 0                                                         | 0     | 0              | 0   |
| Envelope Air Leakage Rate         |                                                           |       |                |     |
| Heating Air Leakage Rate (ACH/H): |                                                           | 0.316 |                |     |
| Cooling Air Leakage Rate (ACH/H): |                                                           | 0.092 |                |     |

# Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

| Weather Station Description    |                               |                                                                                                                    |
|--------------------------------|-------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Province:                      | Ontario                       | ▼                                                                                                                  |
| Region:                        | Brampton                      | ▼                                                                                                                  |
| Site Description               |                               |                                                                                                                    |
| Soil Conductivity:             | High conductivity: moist soil | ▼                                                                                                                  |
| Water Table:                   | Normal (7-10 m, 23-33 Ft)     | ▼                                                                                                                  |
| Foundation Dimensions          |                               |                                                                                                                    |
| Floor Length (m):              | 29.65                         |  <p>Insulation Configuration</p> |
| Floor Width (m):               | 5.86                          |                                                                                                                    |
| Exposed Perimeter (m):         | 71.02                         |                                                                                                                    |
| Wall Height (m):               | 2.74                          |                                                                                                                    |
| Depth Below Grade (m):         | 1.83                          |                                                                                                                    |
| Window Area (m <sup>2</sup> ): | 1.67                          |                                                                                                                    |
| Door Area (m <sup>2</sup> ):   | 1.95                          |                                                                                                                    |
| Radiant Slab                   |                               |                                                                                                                    |
| Heated Fraction of the Slab:   | 0                             |                                                                                                                    |
| Fluid Temperature (°C):        | 23                            |                                                                                                                    |
| Design Months                  |                               |                                                                                                                    |
| Heating Month                  | 1                             |                                                                                                                    |
| Foundation Loads               |                               |                                                                                                                    |
| Heating Load (Watts):          |                               | 4155                                                                                                               |

SUPPLY AIR  
RETURN AIR  
THERMOSTAT  
PRINCIPAL EXHAUST FAN SWITCH  
WIR & PRINCIPAL EXHAUST FAN

S.A.  
R.A.  
T  
F

RETURN AIR GRILLE  
(SIZE INDICATED ON DRAWING)  
RETURN AIR RISER UP TO  
FLOOR ABOVE  
RETURN AIR FROM BASEMENT  
SECOND FLOOR

DUCT CONNECTION  
TO JOIST LINING  
RETURN AIR PIPE RISER  
RETURN ROUND DUCT

LOW/HIGH WALL/KICK  
HRV EXHAUST GRILL  
SUPPLY AIR PIPE RISER  
VOLUME DAMPER

FLEX DUCT  
RIDIT ROUND DUCT  
SUPPLY DIFFUSER

LOW/HIGH WALL/KICK  
HRV EXHAUST GRILL  
SUPPLY AIR PIPE RISER  
VOLUME DAMPER

FLEX DUCT  
RIDIT ROUND DUCT  
SUPPLY DIFFUSER

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**QUALIFICATION INFORMATION**

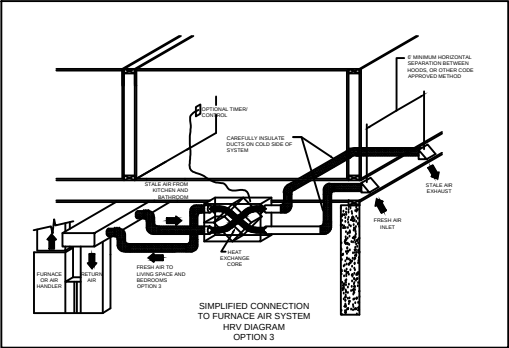
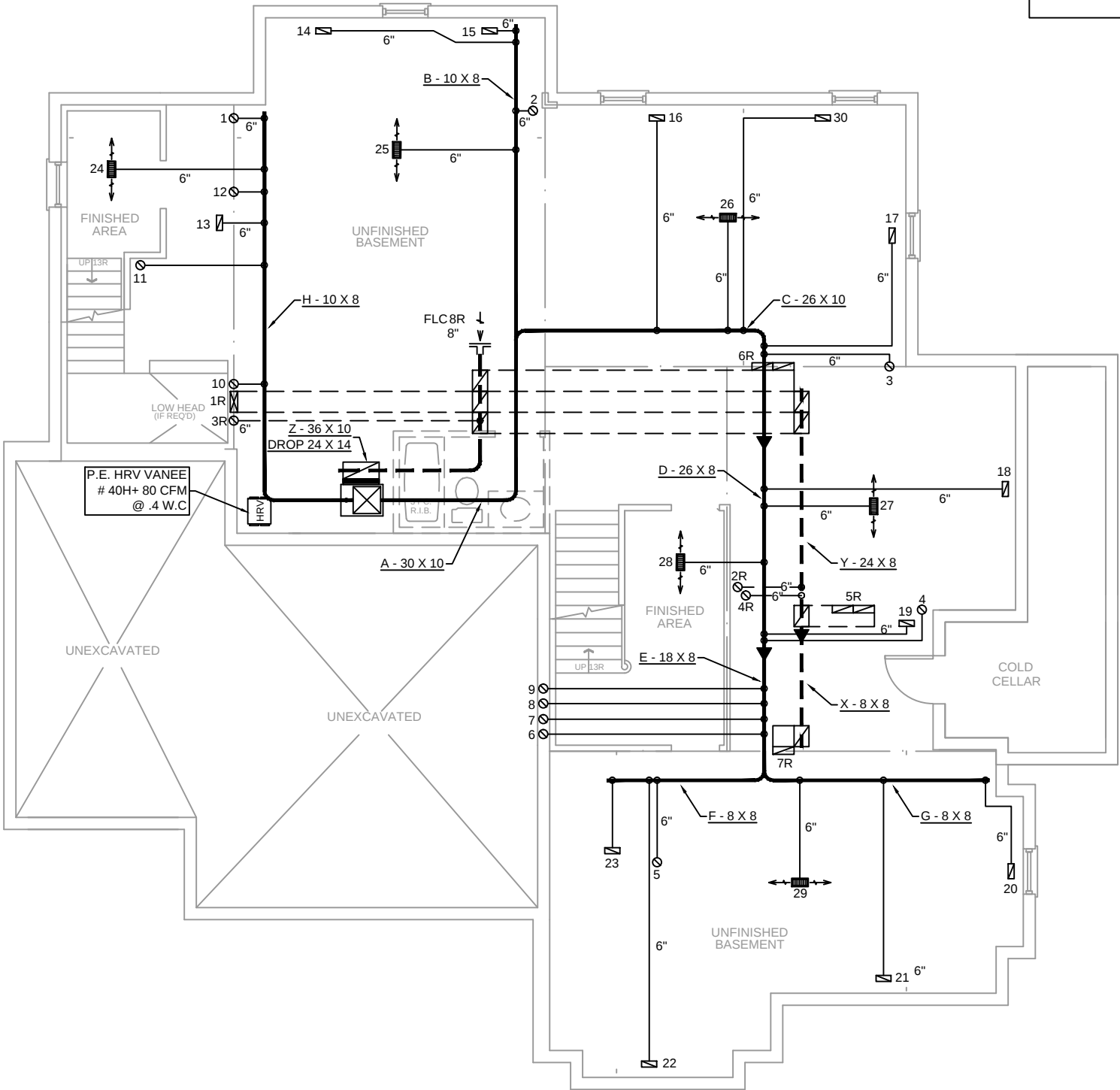
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David Da Costa



B.C.I.N. 32964

Signature of Designer



ALL DUCTWORK  
MUST BE SEALED TO  
CLASS A LEVEL AS PER  
OBC PART 6-6.2.4.3. (11)

FURNACE EQUIPPED WITH  
BRUSHLESS DC MOTOR AS  
PER OBC 12.3.1.5 (2)

FOR THE PURPOSE OF  
HEATLOSS/GAIN  
CALCULATIONS ALL  
ELEVATIONS HAVE BEEN  
CONSIDERED

OBC 2012

ZONE 1 COMPLIANCE  
PACKAGE "J" REF. TABLE 2.1.1.2.A

NOTES

INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE.

ALL SUPPLY OUTLETS TO BE 5" DIA. UNLESS OTHERWISE SPECIFIED.

ALL R/A PARTITIONS 6" (FIRST FLOOR ONLY)

INSULATE DUCTS IN UNCONDITIONED SPACES R12 UNDERCUT ALL DOORS 1" MIN.

HEATING CONTRACTOR MUST WORK FROM APPROVED PLANS. ANY ALTERATIONS TO THIS ORIGINAL PLAN ARE NOT THE RESPONSABILITY OF GTA DESIGNS.

GTA DESIGNS MUST BE CONSULTED IF KITCHEN EXHAUST EXCEEDS 700 CFM DEPRESSURIZATION MAY OCCUR WITHIN THE DWELLING



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e-mail: dave@gtadesigns.ca  
web: www.gtadesigns.ca

|                      |                |     |      |         |
|----------------------|----------------|-----|------|---------|
| HEAT-LOSS            | 82,779         |     |      | BTU/HR. |
| UNIT MAKE            | AMANA          |     |      |         |
| UNIT MODEL           | GMEC96-1004CNA |     |      |         |
| UNIT HEATING INPUT   | 100,000        |     |      | BTU/HR. |
| UNIT HEATING OUTPUT  | 96,000         |     |      | BTU/HR. |
| A/C COOLING CAPACITY | 4.0            |     |      | TONS.   |
| FAN SPEED            | 1653           |     |      | CFM     |
| # OF RUNS            | S/A            | R/A | FANS |         |
| 3RD FLOOR            |                |     |      |         |
| 2ND FLOOR            | 12             | 4   | 4    |         |
| 1ST FLOOR            | 12             | 3   | 2    |         |
| BASEMENT             | 6              | 1   |      |         |

|             |                                    |      |  |
|-------------|------------------------------------|------|--|
| DATE:       | JULY 31, 2015                      |      |  |
| CLIENT:     | HIGHCASTLE HOMES                   |      |  |
| MODEL:      | 65-2                               |      |  |
| PROJECT:    | RIVERWALK PHASE 2<br>BRAMPTON,ONT. |      |  |
| SCALE:      | 1/8" = 1'-0"                       |      |  |
| FLOOR PLAN: | BASEMENT                           |      |  |
| DRAWN BY:   | CHECKED:                           | SQFT |  |
| RB          | DD                                 | 4000 |  |
| LAYOUT NO.  | DRAWING NO.                        |      |  |
| JB-00860    | M1                                 |      |  |

SUPPLY AIR  
RETURN AIR  
THERMOSTAT  
PRINCIPAL EXHAUST FAN SWITCH  
WIR & PRINCIPAL EXHAUST FAN

S.A.  
R.A.  
T  
F

RETURN AIR GRILLE  
(SIZE INDICATED ON DRAWING)  
RETURN AIR RISER UP TO  
FLOOR ABOVE  
RETURN AIR FROM BASEMENT  
SECOND FLOOR

DUCT CONNECTION  
TO JOIST LINING  
RETURN AIR PIPE RISER  
RETURN ROUND DUCT

LOWHIGH WALL/KICK  
HRY EXHAUST GRILL  
SUPPLY AIR PIPE RISER  
VOLUME DAMPER

FLEX DUCT  
RIDIT ROUND DUCT  
SUPPLY DIFFUSER

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**QUALIFICATION INFORMATION**

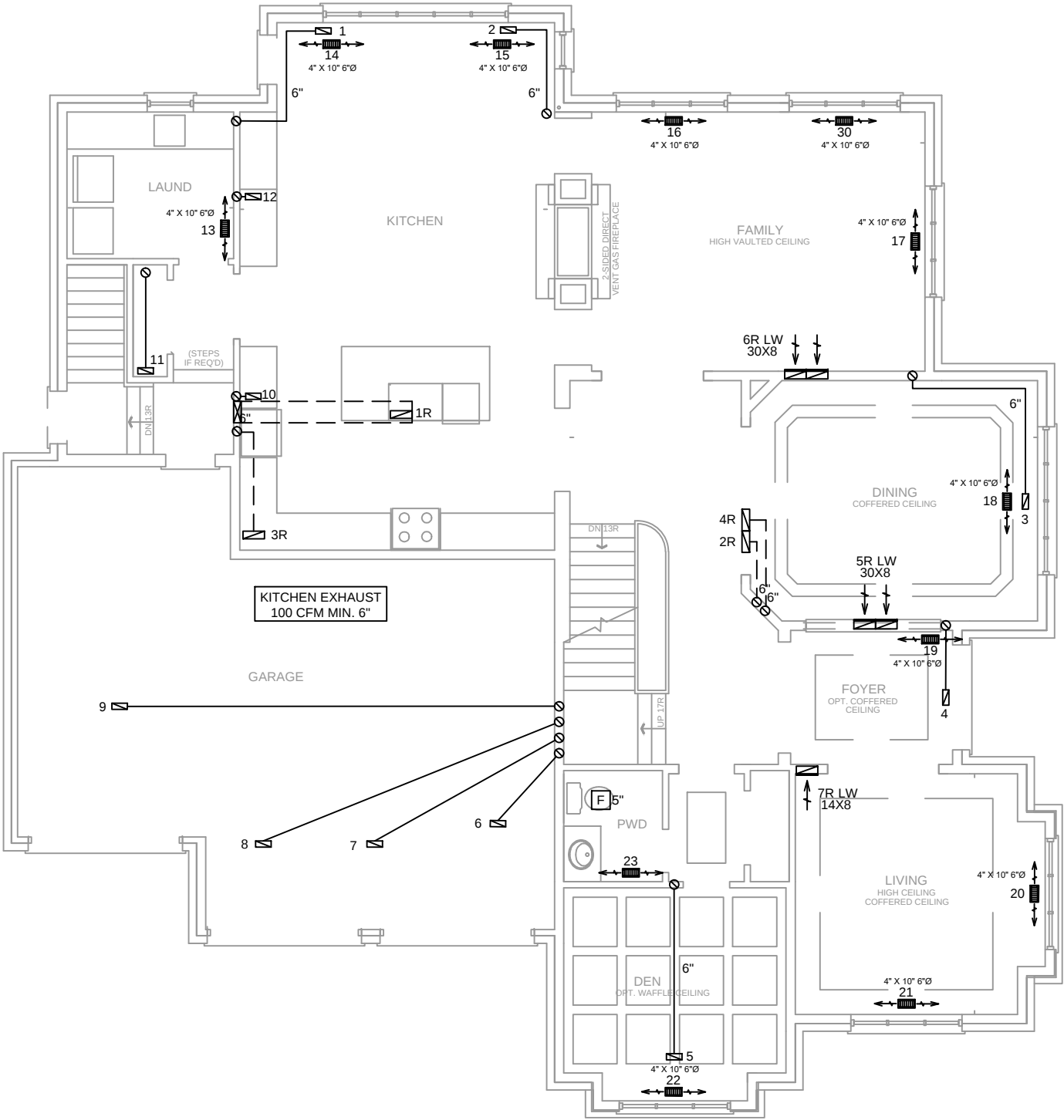
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David Da Costa



B.C.I.N. 32964

Signature of Designer



- CIRCULATION PRINCIPAL  
FAN SWITCH  
TO BE CENTRALLY  
LOCATED
- INSULATE ALL DUCTS IN  
UNCONDITIONED  
SPACES MIN. R12
- ALL DUCTWORK  
MUST BE SEALED TO  
CLASS A LEVEL AS PER  
OBC PART 6-6.2.4.3. (11)
- FOR THE PURPOSE OF  
HEATLOSS/GAIN  
CALCULATIONS ALL  
ELEVATIONS HAVE BEEN  
CONSIDERED

OBC 2012

ZONE 1 COMPLIANCE  
PACKAGE "J" REF. TABLE 2.1.1.2.A

NOTES

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ALL R/A PARTITIONS 6" (FIRST FLOOR ONLY)

INSULATE DUCTS IN UNCONDITIONED SPACES R12 UNDERCUT ALL DOORS 1" MIN.

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GTA DESIGNS MUST BE CONSULTED IF KITCHEN EXHAUST EXCEEDS 700 CFM DEPRESSURIZATION MAY OCCUR WITHIN THE DWELLING



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web: www.gtadesigns.ca

|                      |                |     |      |         |
|----------------------|----------------|-----|------|---------|
| HEAT-LOSS            | 82,779         |     |      | BTU/HR. |
| UNIT MAKE            | AMANA          |     |      |         |
| UNIT MODEL           | GMEC96-1004CNA |     |      |         |
| UNIT HEATING INPUT   | 100,000        |     |      | BTU/HR. |
| UNIT HEATING OUTPUT  | 96,000         |     |      | BTU/HR. |
| A/C COOLING CAPACITY | 4.0            |     |      | TONS.   |
| FAN SPEED            | 1653           |     |      | CFM     |
| # OF RUNS            | S/A            | R/A | FANS |         |
| 3RD FLOOR            |                |     |      |         |
| 2ND FLOOR            | 12             | 4   | 4    |         |
| 1ST FLOOR            | 12             | 3   | 2    |         |
| BASEMENT             | 6              | 1   |      |         |

|             |                                    |      |  |
|-------------|------------------------------------|------|--|
| DATE:       | JULY 31, 2015                      |      |  |
| CLIENT:     | HIGHCASTLE HOMES                   |      |  |
| MODEL:      | 65-2                               |      |  |
| PROJECT:    | RIVERWALK PHASE 2<br>BRAMPTON,ONT. |      |  |
| SCALE:      | 1/8" = 1"-0"                       |      |  |
| FLOOR PLAN: | GROUND FLOOR                       |      |  |
| DRAWN BY:   | CHECKED:                           | SQFT |  |
| RB          | DD                                 | 4000 |  |
| LAYOUT NO.  | DRAWING NO.                        |      |  |
| JB-00860    | M2                                 |      |  |

SUPPLY AIR  
RETURN AIR  
THERMOSTAT  
PRINCIPAL EXHAUST FAN SWITCH  
WIR & PRINCIPAL EXHAUST FAN

S.A.  
R.A.  
Ⓢ  
Ⓡ  
Ⓢ  
Ⓡ

RETURN AIR GRILLE  
(SIZE INDICATED ON DRAWING)  
RETURN AIR RISER UP TO  
FLOOR ABOVE  
RETURN AIR FROM BASEMENT  
SECOND FLOOR

DUCT CONNECTION  
TO JOIST LINING  
RETURN AIR PIPE RISER  
RETURN ROUND DUCT

LOW/HIGH WALL/KICK  
HRV EXHAUST GRILL  
SUPPLY AIR PIPE RISER  
VOLUME DAMPER

FLEX DUCT  
RIDIT ROUND DUCT  
SUPPLY DIFFUSER

INSULATE ALL DUCTS IN  
UNCONDITIONED  
SPACES MIN. R12

ALL DUCTWORK  
MUST BE SEALED TO  
CLASS A LEVEL AS PER  
OBC PART 6-6.2.4.3. (11)

FOR THE PURPOSE OF  
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CALCULATIONS ALL  
ELEVATIONS HAVE BEEN  
CONSIDERED

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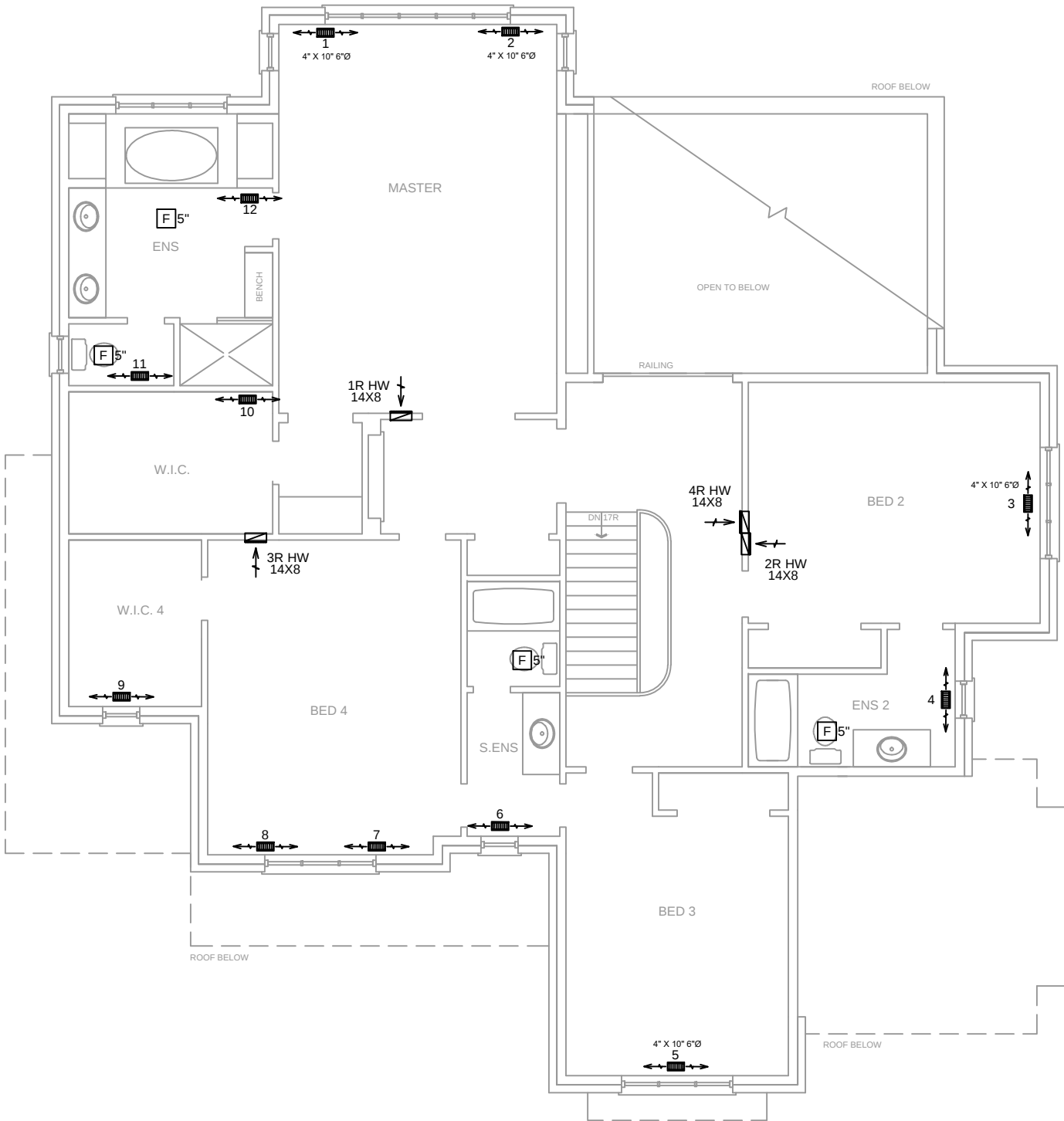
QUALIFICATION INFORMATION

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David Da Costa

Signature of Designer

B.C.I.N. 32964



INSULATE ALL DUCTS IN  
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SPACES MIN. R12

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MUST BE SEALED TO  
CLASS A LEVEL AS PER  
OBC PART 6-6.2.4.3. (11)

FOR THE PURPOSE OF  
HEATLOSS/GAIN  
CALCULATIONS ALL  
ELEVATIONS HAVE BEEN  
CONSIDERED

OBC 2012

ZONE 1 COMPLIANCE  
PACKAGE "J" REF. TABLE 2.1.1.2.A

NOTES

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DEPRESSURIZATION MAY OCCUR WITHIN THE DWELLING

gtaDesigns

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HEAT-LOSS BTU/HR.

82,779

UNIT MAKE

AMANA

UNIT MODEL

GMEC96-1004CNA

UNIT HEATING INPUT BTU/HR.

100,000

UNIT HEATING OUTPUT BTU/HR.

96,000

A/C COOLING CAPACITY TONS.

4.0

FAN SPEED CFM

1653

| # OF RUNS | S/A | R/A | FANS |
|-----------|-----|-----|------|
| 3RD FLOOR |     |     |      |
| 2ND FLOOR | 12  | 4   | 4    |
| 1ST FLOOR | 12  | 3   | 2    |
| BASEMENT  | 6   | 1   |      |

DATE:

JULY 31, 2015

CLIENT:

HIGHCASTLE HOMES

MODEL:

65-2

PROJECT:

RIVERWALK PHASE 2  
BRAMPTON,ONT.

SCALE:

1/8" = 1'-0"

FLOOR PLAN:

SECOND FLOOR

| DRAWN BY:  | CHECKED:    | SQFT |
|------------|-------------|------|
| RB         | DD          | 4000 |
| LAYOUT NO. | DRAWING NO. |      |
| JB-00860   | M3          |      |

SUPPLY AIR  
RETURN AIR  
THERMOSTAT  
PRINCIPAL EXHAUST FAN SWITCH  
W/R & PRINCIPAL EXHAUST FAN

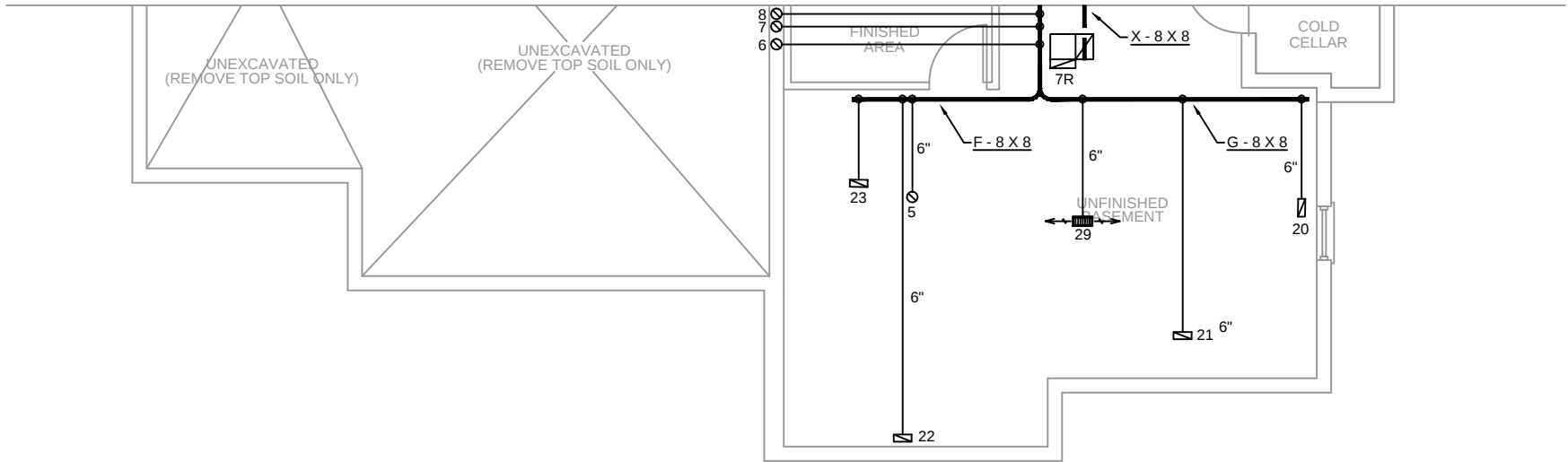
S.A.  
R.A.  
THERMOSTAT  
PRINCIPAL EXHAUST FAN SWITCH  
W/R & PRINCIPAL EXHAUST FAN

RETURN AIR GRILLE  
(SIZE INDICATED ON DRAWING)  
RETURN AIR RISER UP TO  
FLOOR ABOVE  
RETURN AIR FROM BASEMENT  
SECOND FLOOR

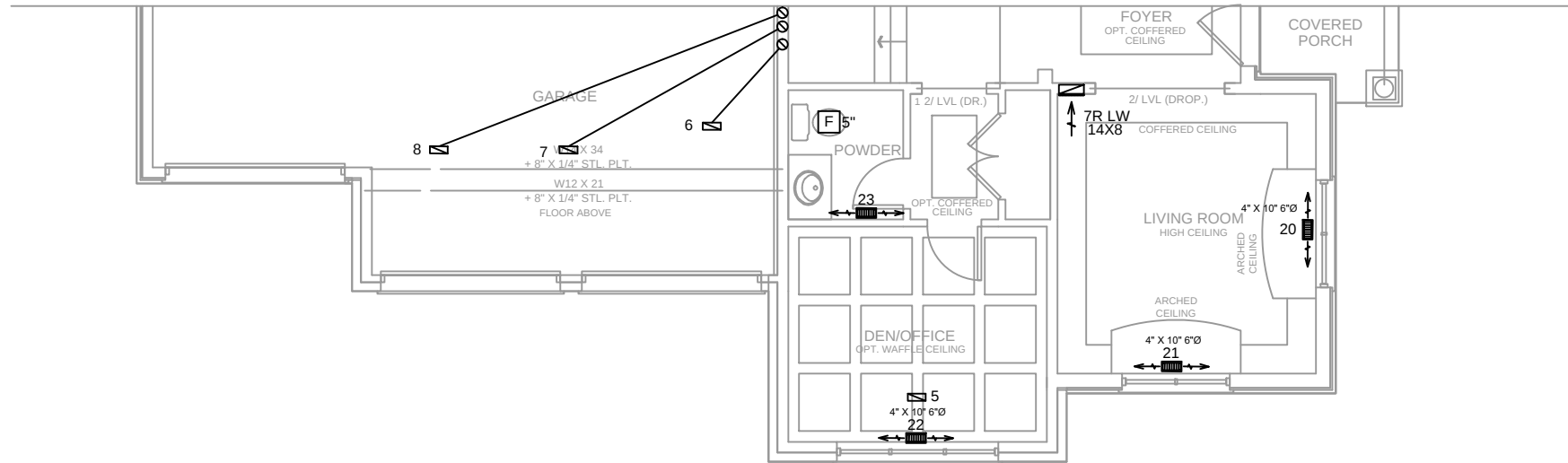
DUCT CONNECTION  
TO JOIST LINING  
RETURN AIR PIPE RISER  
RETURN ROUND DUCT

LOW/HIGH WALL/KICK  
HRV EXHAUST GRILL  
SUPPLY AIR PIPE RISER  
VOLUME DAMPER

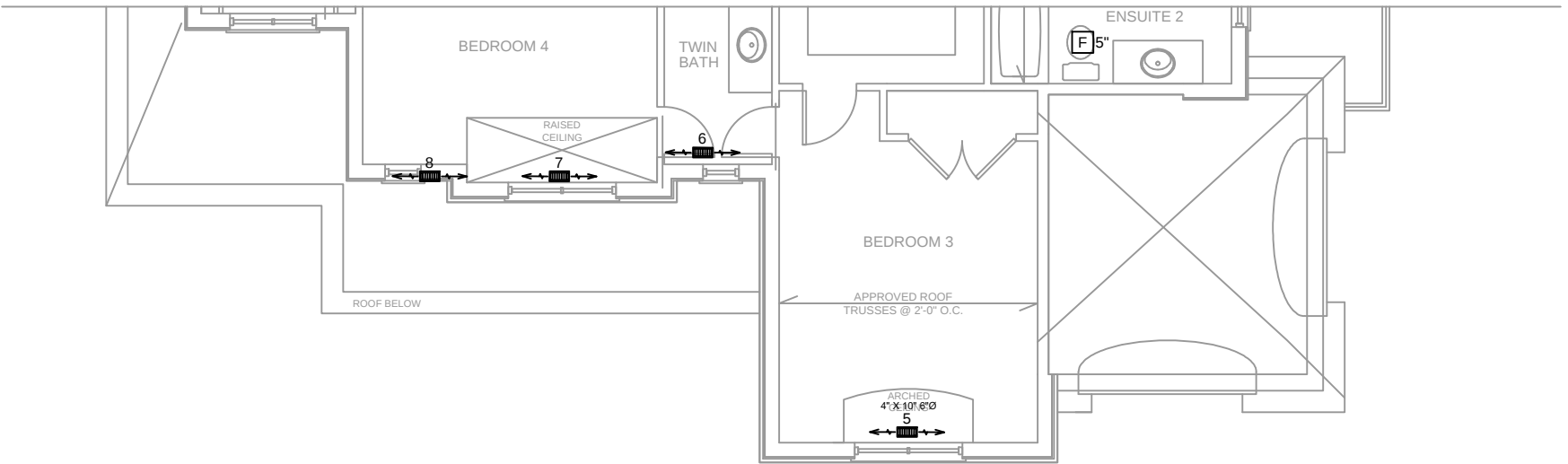
FLEX DUCT  
RIDIT ROUND DUCT  
SUPPLY DIFFUSER



PARTIAL BASEMENT ELEVATION C



PARTIAL GROUND FLOOR ELEVATION C



PARTIAL SECOND FLOOR ELEVATION C

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**QUALIFICATION INFORMATION**

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David Da Costa  B.C.I.N. 32964  
Signature of Designer

OBC 2012

ZONE 1 COMPLIANCE  
PACKAGE "J" REF. TABLE 2.1.1.2.A

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|                      |                |     |      |
|----------------------|----------------|-----|------|
| HEAT-LOSS            | BTU/HR.        |     |      |
|                      | 82,779         |     |      |
| UNIT MAKE            | AMANA          |     |      |
| UNIT MODEL           | GMEC96-1004CNA |     |      |
| UNIT HEATING INPUT   | BTU/HR.        |     |      |
|                      | 100,000        |     |      |
| UNIT HEATING OUTPUT  | BTU/HR.        |     |      |
|                      | 96,000         |     |      |
| A/C COOLING CAPACITY | TONS.          |     |      |
|                      | 4.0            |     |      |
| FAN SPEED            | CFM            |     |      |
|                      | 1653           |     |      |
| # OF RUNS            | S/A            | R/A | FANS |
| 3RD FLOOR            |                |     |      |
| 2ND FLOOR            | 12             | 4   | 4    |
| 1ST FLOOR            | 12             | 3   | 2    |
| BASEMENT             | 6              | 1   |      |

|                         |                                    |    |      |
|-------------------------|------------------------------------|----|------|
| DATE:                   | JULY 31, 2015                      |    |      |
| CLIENT:                 | HIGHCASTLE HOMES                   |    |      |
| MODEL:                  | 65-2                               |    |      |
| PROJECT:                | RIVERWALK PHASE 2<br>BRAMPTON,ONT. |    |      |
| SCALE:                  | 1/8" = 1'-0"                       |    |      |
| FLOOR PLAN:             | PARTIAL ELEVATION                  |    |      |
| DRAWN BY: CHECKED: SQFT | RB                                 | DD | 4000 |
| LAYOUT NO.              | JB-00860                           |    |      |
| DRAWING NO.             | M4                                 |    |      |